GENERAL NOTES

THE EARTH RETENTION DESIGNER IS DEFINED AS THE REGISTERED CIVIL ENGINEER WHOSE STAMP IS ON THESE PLANS.

THE EARTH RETENTION CONTRACTOR IS DEFINED AS THE ORGANIZATION(S) OR PERSON(S) WHO INSTALL THE EARTH SUPPORT SYSTEMS INDICATED ON THESE PLANS.

THE GENERAL CONTRACTOR IS AS DEFINED AS THE ORGANIZATION(S) OR PERSON(S) WITH OVERALL CONTROL OF THE SITE CONSTRUCTION.

THE PROJECT GEOTECHNICAL ENGINEER IS DEFINED AS THE ORGANIZATION OR PERSON WHO AUTHORED THE APPROVED SOILS/GEOLOGY REPORT ASSOCIATED WITH THE PROJECT.

THESE EARTH RETENTION PLANS SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO BEGINNING WORK.

LOCATION OF ALL EXISTING FACILITIES, ADJACENT STRUCTURES AND UNDERGROUND AND OVERHEAD UTILITIES SHOWN ARE AS INTERPRETED FROM INFORMATION PROVIDED TO DRS ENGINEERING DURING DESIGN. THE ACTUAL LOCATIONS OF ALL SUCH ITEMS SHALL BE FIELD VERIFIED PRIOR TO COMMENCING CONSTRUCTION OF THE EARTH RETENTION. ANY DISCREPANCIES OR POTENTIAL CONFLICTS BETWEEN EXISTING FACILITIES AND THIS WORK SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE EARTH RETENTION DESIGNER. THE EARTH RETENTION DESIGNER SHALL NOT BE RESPONSIBLE FOR DAMAGE TO EXISTING FACILITIES, STRUCTURES OR UTILITIES DUE TO INCORRECT INTERPRETATION OF EXISTING DRAWINGS OR DATA OR MISSING LOCATION INFORMATION.

AN UNDERGROUND SERVICE ALERT INQUIRY IDENTIFICATION NUMBER MUST BE OBTAINED AT LEAST TWO WORKING DAYS BEFORE STARTING WORK WITH THIS PERMIT. TELEPHONE NUMBER (800) 227-2600.

EXCAVATION SHALL BE CO-ORDINATED WITH THE INSTALLATION OF THE EARTH RETENTION SYSTEM SO AS TO PREVENT LOSS OF GROUND OR SETTLEMENT OF ADJACENT STRUCTURES. HEAVY EQUIPMENT OR CRANES SHALL NOT BE LOCATED ADJACENT TO THE EARTH RETENTION BULKHEAD EXCEPT WHERE SPECIFICALLY PROVIDED FOR IN THE DESIGN.

THE EARTH RETENTION CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT THE EARTH RETENTION IS BUILT IN ACCORDANCE WITH THESE PLANS. IF THERE IS ANY QUESTION REGARDING THESE PLANS, THE CONTRACTOR SHALL REQUEST AN INTERPRETATION BEFORE DOING ANY WORK BY CONTACTING THE EARTH RETENTION DESIGNER.

SITE DRAINAGE AND SITE DEWATERING TO BE PROVIDED BY OTHERS.
THE GENERAL CONTRACTOR SHALL ALSO TAKE THE NECESSARY STEPS TO PROTECT THE PROJECT AND ADJACENT PROPERTY FROM ANY EROSION AND SILTATION THAT RESULT FROM HIS OPERATIONS BY APPROPRIATE MEANS (SAND BAGS, HAY BALES, TEMPORARY DESILTING BASINS, DIKES, EARTH RETENTION, ETC.) UNTIL SUCH TIME THAT THE PROJECT IS COMPLETED AND ACCEPTED FOR MAINTENANCE BY THE OWNER. ALL CONSTRUCTION SHALL CONFORM TO ALL LOCAL CODES, ORDINANCES, RESTRICTIONS AND OSHA REQUIREMENTS.

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NO EXCAVATION OR GRADING SHALL COMMENCE UNTIL 10 DAYS AFTER ADJOINING PROPERTY OWNERS HAVE BEEN NOTIFIED IN WRITING AS REQUIRED BY SECTION 3307.1 OF THE CALIFORNIA BUILDING CODE 2010.

ABBREVIATIONS

TW = TOP OF WALL
BW = BOTTOM OF WALL
TF = TOP OF FOOTING
BF = BOTTOM OF FOOTING
TS = TOP OF SLAB
DWY = DRIVEWAY

EXCAVATION NOTIFICATION

CALL 1-800-422-4133 A MINIMUM OF TWO DAYS BEFORE COMMENCING EXCAVATION ENSURE ALL RELEVANT UTILITY COMPANIES HAVE CLEARED THE LOCATION. UPDATE ALL DIG ALERT NOTIFICATIONS EVERY TEN DAYS.

IF PILES, TIEBACKS OR SOIL NAILS ARE TO BE INSTALLED WITHIN THREE FEET OF A UTILITY, THEN UTILITY MUST BE EXPOSED TO CONFIRM LOCATION AND CLEARANCE DURING DRILLING/DRIVING.

CODES AND SPECIFICATIONS

CALIFORNIA BUILDING CODE	- 2010 EDITION
STEEL DESIGN	- AISC 13th EDITION
CONCRETE DESIGN	- ACI-318
SOIL NAIL DESIGN	- FHWA-A0-IF-03-017

DESIGN CRITERIA

EARTH RETENTION DESIGN IS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT BY GEOCON WEST INC. DATED FEBRUARY 17 2011 INCLUDING SUPPLEMENTAL LETTERS DATED MARCH 8 2012 AND AUGUST 1 2012.

GEOTECHNICAL DESIGN PARAMETERS ARE AS FOLLOWS:

ACTIVE EARTH PRESSURES
UNRESTRAINED CAISSON WALLS — EFPa = 35H TRIANGULAR
CANTILEVER TEMPORARY SHORING — EFPa = 25H TRIANGULAR
TIEBACK TEMPORARY SHORING — Pa = 25H TRAPEZOIDAL
SEISMIC EARTH PRESSURES — EFPs = 15H TRIANGULAR

FOR SLOPING ABOVE THE EARTH RETENTION THE EARTH PRESSURES ARE FACTORED BY THE RATION H'/H

PASSIVE PRESSURES
LEVEL SUBGRADE — EFP(p) = 200psf/ft TO P(p) max = 2000psf/ft

DESIGN OF STEEL & TIMBER FOR USE IN TEMPORARY EARTH RETENTION UTILIZES A 133% INCREASE IN ALLOWABLE STRESS FOR TEMPORARY CONDITIONS.

ISOLATED PILE ARCHING FACTOR = 2.0

TIEBACK WORKING BOND STRESS (POST-GROUTED) 13.8psi (2.0 ksf)

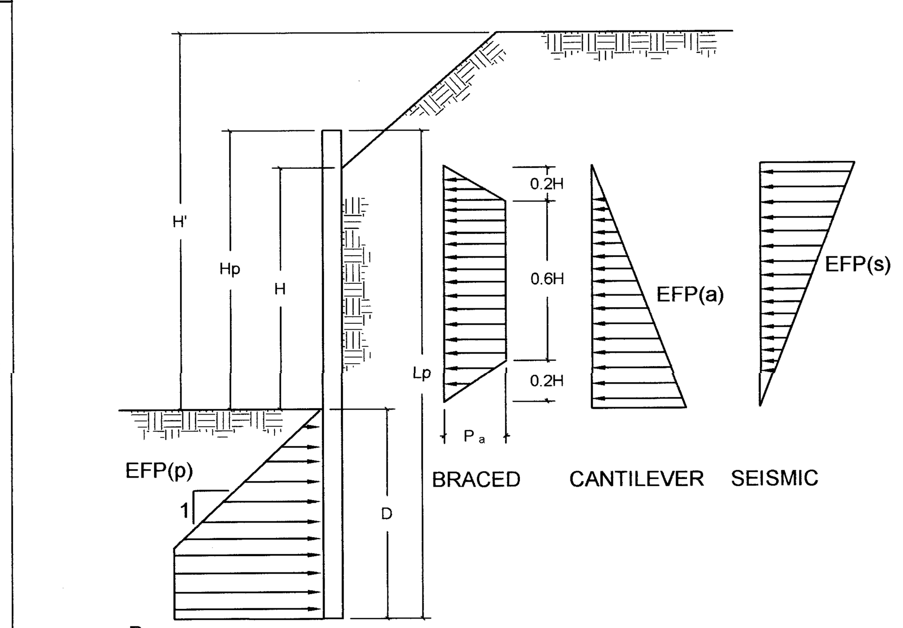
LAGGING PRESSURE 400psf MAX.

SEISMIC COEFFICIENT DBE = 0.32g Kh = DBE/2 = 0.16g

SOIL SHEAR STRENGTH PARAMETERS

	UNIT WEIGHT PCF	FRICTION ANGLE DEG	COHESION PSF	NON POST GROUTED BOND PSI	POST GROUTED BOND PSI
ARTIFICAL FILL	115	10	300 (PERMANENT DESIGN) 1000 (TEMPORARY DESIGN)	7	14
BEDROCK	120	27	650 (PERMANENT DESIGN)	10	14

A 33% INCREASE IN SOIL SHEAR STRENGTH IS ADOPTED FOR SEISMIC ANALYSIS.



EARTH PRESSURES FOR DESIGN

MATERIALS

STEEL

SOLDIER PILE STEEL:	ASTM GR-50
MISCELLANEOUS STEEL:	ASTM A-36
REINFORCING STEEL:	ASTM A-615 - GRADE 60
WELDED WIRE FABRIC:	ASTM A-82, A-185, A-496 OR A-497 fy (min) = 60ksi
TIEBACK BARS:	150ksi (ULT) BAR TO ASTM A-722
SOIL NAIL BAR:	ASTM A-615 GRADE 75 SOLID BAR

CEMENTITIOUS

CEMENT:	ASTM C-150, TYPE II / V (1)
CIP CONCRETE:	f'c (28) = 3000psi OR f'c=4000psi (SEE DETAILS) MIX DESIGN TO BE SUBMITTED BY EARTH RETENTION CONTRACTOR.
SHOTCRETE:	f'c (28) = 4000psi MIX DESIGN TO BE SUBMITTED BY EARTH RETENTION CONTRACTOR.
DRILLED PILE BACKFILL:	2500 psi CONCRETE IN PILE TOES 1 1/2 SACK SLURRY MIX FOR REMAINING SHAFT LENGTH UNLESS OTHERWISE NOTED ON THESE DRAWINGS.
TIEBACK GROUT:	NEAT WATER/CEMENT GROUT 0.45 W/C RATIO
SOIL NAILS GROUT:	NEAT WATER/CEMENT GROUT 0.45 W/C RATIO

MISCELLANEOUS

WOOD LAGGING:	DOUGLAS FIR #2, HEM FIR #2 OR EQUIVALENT, TREATED, 3"x12" UNLESS OTHERWISE NOTED ON THE ELEVATION DRAWINGS.
WALL DRAINAGE:	MIRADRAIN 2000 OR EQUIVALENT
EPOXY COATING:	ASTM A775 OR ASTM A934

MEMBERS OR DETAILS MAY BE SUBSTITUTED FOR EQUIVALENT OR BETTER, AS APPROVED BY ENGINEER.

WELDING

1. ALL WELDING ELECTRODES SHALL BE E-70XX MINIMUM
2. ALL WELDING SHALL BE DONE BY WELDERS CERTIFIED BY THE GOVERNING LOCAL BUILDING AUTHORITY. ALL FIELD WELDING SHALL BE DONE UNDER THE SUPERVISION OF A DEPUTY INSPECTOR, CERTIFIED BY THE GOVERNING LOCAL BUILDING AUTHORITY.
3. ALL WELDING OF REINFORCING SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE LATEST EDITION OF AMERICAN WELDING SOCIETY (AWS) D1.4
4. CONTINUOUS INSPECTION IS REQUIRED FOR ALL FIELD WELDING.

SPECIAL INSPECTIONS

IF REQUIRED BY THE LOCAL GOVERNING AGENCY, CERTIFIED REGISTERED DEPUTY INSPECTORS SHALL INSPECT THE FOLLOWING ITEMS WHERE USED.

CONCRETE:	f'c (28day) >2500psi
REINFORCING STEEL:	fy=60ksi, (PERIODIC INSPECTION PRIOR TO CONCRETE PLACEMENT)
PRESTRESSING STEEL TENDONS:	fy=75ksi, 150ksi, and 270ksi (DURING PLACING AND TESTING)
STRUCTURAL WELDING:	E-70xx WELDS (PERIODIC INSPECTION FOR SINGLE PASS FILLET WELDS<=5/16")
HIGH STRENGTH BOLTING:	A-325 AND A-490 BOLTS
PILING, DRILLED PIERS:	DURING DRILLING / DRIVING
SHOTCRETE:	SHOTCRETE >2500psi
SPECIAL GRADING:	EXCAVATION & FILLING

THIS SPECIAL INSPECTION IS NOT A SUBSTITUTE FOR INSPECTION BY A CITY INSPECTOR. SPECIALLY INSPECTED WORK INSTALLED OR COVERED WITHOUT THE APPROVAL OF THE CITY INSPECTOR IS SUBJECT TO REMOVAL OR EXPOSURE.

THE DEPUTY INSPECTOR MUST BE APPROVED BY RELEVANT AGENCY IN ADVANCE IN ORDER TO PERFORM THE TYPES OF INSPECTION SPECIFIED

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SCHEDULE THE TIME WITH THE DEPUTY INSPECTOR OR INSPECTION AGENCY PRIOR TO PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION.

SPECIAL INSPECTION REPORTS SHALL BE SUBMITTED TO THE BUILDING DIVISION FOR APPROVAL PRIOR TO CITY INSPECTOR APPROVAL OF THAT WORK.

GENERAL PROCEDURES

ALL NECESSARY PERMITS SHALL BE OBTAINED (BY OTHERS) PRIOR TO COMMENCEMENT OF INSTALLATION OF THE EARTH RETENTION SYSTEM.

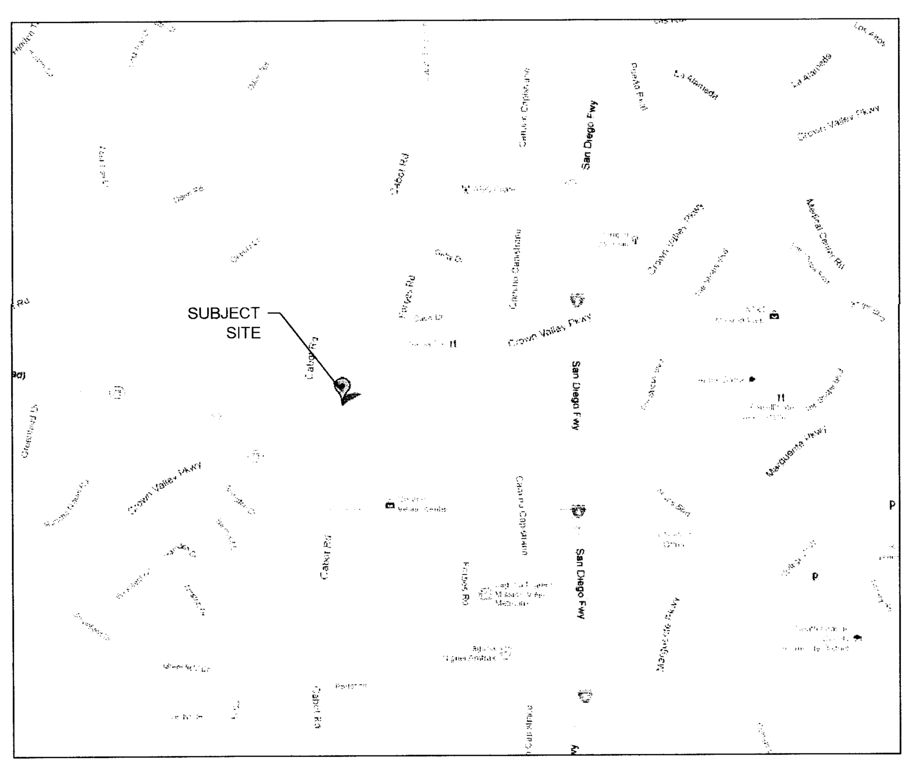
GENERAL CONTRACTOR AND EARTH RETENTION CONTRACTOR WILL FOLLOW ALL APPLICABLE CAL-OSHA REQUIREMENTS IN THE EXECUTION OF THE WORK DESCRIBED HEREIN.

PRIOR TO THE START OF WORK THE EXISTING GRADE ELEVATIONS AND THE LOCATION AND DEPTH OF ALL EXISTING AND NEW UTILITIES SHALL BE DETERMINED BY THE GENERAL CONTRACTOR AND PROVIDED IN WRITING TO THE EARTH RETENTION CONTRACTOR.

LAYOUT OF EARTH RETENTION LINE AND ELEVATIONS SHALL BE PROVIDED BY GENERAL CONTRACTOR. WHERE APPLICABLE, ALL BUILDING OUTSIDE CORNERS SHALL BE FIELD STAKED AND EARTH RETENTION PILES LOCATED IN RELATIONSHIP TO STAKED BUILDING CORNERS TAKING INTO ACCOUNT ANTICIPATED PILE DEFLECTION DURING EXCAVATION. PILES MAY BE MOVED UP TO ONE FOOT IN ANY DIRECTION FROM LOCATIONS SHOWN THESE PLANS TO ACCOMMODATE AS STAKED BUILDING LOCATIONS. PILE LOCATIONS SHALL BE VERIFIED BY OTHERS IMMEDIATELY AFTER INSTALLATION OF SOLDIER BEAMS.

A SAFETY RAILING AROUND THE PERIMETER OF THE EXCAVATION, BUILT PER CAL-OSHA STANDARDS, WILL BE PROVIDED PRIOR TO CREATING FALL HAZARDS OVER 6 FEET.

VICINITY MAP



TEMPORARY SHORING

DRILLED SOLDIER PILES

DRILL VERTICAL SOLDIER PILE SHAFTS TO DEPTHS INDICATED ON THESE PLANS AND WITHIN ACCEPTABLE TOLERANCES FOR LOCATION AND ALIGNMENT. WHERE DRILLED SHAFTS WILL NOT STAY OPEN, PROVIDE PROTECTION AGAINST SLOUGHING OR CAVING AS REQUIRED.

PLACE SOLDIER PILES IN DRILLED SHAFTS AND POUR 2500psi CONCRETE WITHIN THE TOE OF THE SOLDIER PILE. MAINTAIN VERTICALITY OF SOLDIER PILES DURING CONCRETE POUR.

FILL BALANCE OF SHAFT WITH 1-1/2 SACK SLURRY BACKFILL.

IF GROUNDWATER IS ENCOUNTERED, CONCRETE FOR PILE TOES SHOULD BE TREMIED INTO POSITION WITH APPROVED DEVICES, AND COMPRESSIVE STRENGTH OF CONCRETE SHALL BE INCREASED BY 1,000 PSI.

SHAFTS CLOSER THAN TWO SHAFT DIAMETERS ON CENTER SHALL BE DRILLED AND POURED IN AN ALTERNATING SEQUENCE SUCH THAT THE ALTERNATE SHAFT IS NOT DRILLED UNTIL THE ADJACENT PILE HAS CURED FOR AT LEAST 24 HOURS.

LAGGING

BEGIN EXCAVATION IN LIFTS NOT EXCEEDING 5 FT. UNLESS APPROVED BY THE GRADING INSPECTOR, THE GEOTECHNICAL ENGINEER AND THE EARTH RETENTION DESIGNER.

CLEAN SOLDIER PILES AS REQUIRED. PLACE TREATED WOOD LAGGING OR SHOTCRETE AS GRADE DESCENDS. PLACE LAGGING AS INDICATED ON THE EARTH RETENTION PLAN.

FOR CANTILEVER PILES, CONTINUE THIS SEQUENCE TO THE BOTTOM OF EXCAVATION.

FILL VOIDS BEHIND WOOD LAGGING WITH SLURRY OR NATIVE SOILS AS REQUIRED TO ENSURE CONTINUOUS CONTACT WITH GROUND.

POST-GROUTED TIEBACK INSTALLATION

PRIOR TO START OF THE WORK, VERIFY LOCATION OF UTILITIES. LOCATE TIEBACKS TO ASSURE CLEARANCE OF EXISTING OR NEW LINES.

A SUITABLE FIRM, DRY AND LEVEL BENCH SHALL BE PROVIDED "BY EXCAVATOR" FOR TIEBACK INSTALLATION AT EACH TIEBACK LEVEL. ALL BENCHING AND SLOPING SHALL CONFORM TO OSHA REQUIREMENTS.

TIEBACK ANGLE AND LOCATIONS MAY BE ALTERED, PROVIDED THE DESIGN LOADS ARE ADJUSTED ACCORDINGLY BY THE EARTH RETENTION DESIGNER. A TOLERANCE OF FIVE DEGREES ON THE ANGLE OF INCLINATION, AND 12 INCHES ± ON LOCATION WILL BE PERMITTED.

MACHINE DRILL THE TIEBACK SHAFT (WITH A TEMPORARY CASING WHERE REQUIRED) TO PREVENT SLOUGHING OR CAVING OF MATERIAL INTO THE HOLE. BOREHOLE DIAMETERS SHALL BE AS INDICATED ON THESE PLANS.

WHEN THE SHAFT HAS BEEN ADVANCED TO TIP, ENSURE ADEQUATE CLEANING OF THE BOREHOLE WITH AIR OR WATER FLUSHING AND INSTALL THE PREFABRICATED ANCHOR WITH ATTACHED CENTRALIZING DEVICES INTO THE BOREHOLE. THE PREFABRICATED ANCHOR SHALL CONSIST OF: HIGH-STRENGTH STEEL TENDONS OR RODS, SPACERS TO SEPARATE THE INDIVIDUAL STRANDS, CENTRALIZERS TO CENTRALIZE THE ASSEMBLY, TREMIE GROUT TUBE, POST-GROUT TUBE(S) WITH ATTACHED VALVES AND A PVC SHEATHING IN THE FREE STRESSING LENGTH.

FILL THE BOREHOLE THROUGH A MIN. 1/2" I.D. POLYETHYLENE TREMIE PIPE WITH APPROVED HIGH-STRENGTH GROUT. TERMINATE TREMIE GROUTING WHEN THE BOREHOLE IS COMPLETELY FILLED.

ONCE THE TREMIE GROUT HAS ATTAINED ITS INITIAL SET, PERFORM POST-GROUTING OF THE ANCHOR BOND ZONE THROUGH THE ATTACHED POST-GROUT LINE AND VALVES. THE POST-GROUT LINE CONSISTS OF A 1/2" SCH 40 PVC PIPE WITH RUBBER VALVES AT FOUR FEET O.C. IN THE POST-GROUT ZONE. FRACTURE THE INITIALLY SET BOND ZONE GROUT BY INJECTING WATER OR CEMENT GROUT UNDER PRESSURE. AFTER INITIAL FRACTURE, PUMP NEAT GROUT UNTIL A MINIMUM PRESSURE OF 300 PSI IS ACHIEVED. FLUSH THE POST-GROUT LINE WITH WATER FOR REUSE. ACTUAL REQUIRED INJECTION PRESSURES AND GROUT VOLUMES WILL VARY DEPENDING ON GROUND CONDITIONS AND HOLDING CAPACITIES REQUIRED.

THE ANCHOR SHALL REMAIN UNDISTURBED UNTIL THE GROUT HAS CURED A MINIMUM OF THREE DAYS.

AFTER TESTING THE TIEBACKS, LOCK OFF TO TIEBACK DESIGN LOAD INDICATED ON THESE PLANS.

CUT OFF EXCESS TENDON LEAVING A MINIMUM OF TWO INCHES BEYOND THE ANCHOR PLATE.

TIEBACK TESTING

EACH ANCHOR SHALL BE SATISFACTORILY PROOF TESTED TO A MINIMUM OF 150% OF THE DESIGN LOAD. PROOF TESTING LOADING SHALL BE APPLIED INCREMENTS OF 25% OF DESIGN LOAD WITH THE INCREMENTAL LOAD HELD FOR 1 MINUTE. THE PROOF LOAD OF 150% OF DESIGN LOAD SHALL BE HELD FOR 15 MINUTES. THE ANCHOR TENDON INCLUDING TENDON STRETCH SHALL NOT MOVE MORE THAN 12" TOTAL DURING APPLICATION OF THE TEST LOAD FROM 0% TO 150%. AT 150% TEST LOAD THE ANCHOR MOVEMENT SHALL NOT EXCEED 0.1 INCH DURING A 15 MINUTE TEST PERIOD.

ONE ANCHORS SHALL BE PROOF TESTED TO 200%. THE ANCHOR TENDON INCLUDING TENDON STRETCH SHALL NOT MOVE MORE THAN 12" TOTAL DURING APPLICATION OF THE TEST LOAD FROM 0% TO 200%. AT 200% TEST LOAD THE ANCHOR MOVEMENT SHALL NOT EXCEED 0.25" DURING A 30 MINUTE TEST PERIOD.

AFTER TESTING ALL ANCHORS SHOULD BE LOCKED OFF THE THE SPECIFIED DESIGN LOAD AND THE LOCK-OFF LOAD SHALL BE VERIFIED BY MEANS OF A LIFT OFF TEST. IF THE LOCK-OFF LOAD VARIES BY MORE THAN 10% FROM THE DESIGN LOAD, THE LOAD SHOULD BE RESET UNTIL THE LOCK-OFF LOAD IS WITHIN 10% OF THE DESIGN LOAD.

CERTIFICATION FROM AN APPROVED TESTING LABORATORY IS REQUIRED FOR THE CALIBRATION OF THE ANCHOR LOADING DEVICES AT THE START OF EACH JOB.

NO TEST SHALL BE PERFORMED UNTIL THE CONCRETE HAS ATTAINED AT LEAST 100% OF ITS ASSUMED DESIGN ULTIMATE COMPRESSIVE STRENGTH, f'c.

THE DEPUTY INSPECTOR SHALL INSPECT AND APPROVE THE TESTING OF ALL ANCHORS. HE SHALL KEEP A RECORD OF ALL TEST LOADS AND TOTAL ANCHOR MOVEMENTS AND CERTIFY TO THEIR ACCURACY. THIS RECORD SHALL BE KEPT ON THE JOB SITE AND SHALL BE AVAILABLE FOR INSPECTION BY THE BUILDING INSPECTOR.

ANCHORS FAILING THE TEST CRITERIA SHALL BE DISAPPROVED EXCEPT THAT REDUCED CAPACITIES MAY BE ASSIGNED TO SUCH ANCHORS UPON RECOMMENDATION OF THE EARTH RETENTION ENGINEER.

MONITORING

EARTH RETENTION PILES SHALL BE SURVEY MONITORED WEEKLY BY A LICENSED SURVEYOR FOR LATERAL AND VERTICAL MOVEMENT. MOVEMENT DATA SHALL BE PROVIDED TO THE EARTH RETENTION DESIGNER ON WEEKLY BASIS. THE EARTH RETENTION DESIGNER SHALL REVIEW DATA AND TRANSMIT TO THE CITY ONCE PER WEEK.

THE MOVEMENT DATA SHOULD BE UTILIZED BY THE GENERAL CONTRACTOR AND THE EARTH RETENTION CONTRACTOR TO DETERMINE IF LAGGING POSITIONS NEED TO BE ADJUSTED TO MAINTAIN THE LAGGING TOLERANCES AGREED FOR THE PROJECT.

ONCE EXCAVATION SUBGRADE IS REACHED AND THE PILE MOVEMENT DATA INDICATES THE EARTH RETENTION SYSTEM IS STABLE THEN MONITORING INTERVALS MAY BE INCREASED TO MONTHLY UNTIL THE EARTH SUPPORT SYSTEM IS NO LONGER REQUIRED. ANY ONE INCH MOVEMENT SHALL BE ANALYZED BY THE SOILS ENGINEER AND AN APPROVED REMEDIAL EARTH RETENTION PLAN PREPARED. ANY MOVEMENT OF 2-INCHES OR MORE MAY REQUIRE ADDITIONAL REMEDIAL ACTION TO BE TAKEN TO PREVENT ADDITIONAL MOVEMENT PRIOR TO FURTHER CONSTRUCTION.

PLANNING & ZONE CLEARANCE
... inspected on 2-20-13 and found to comply with ... use regulations.
... is only valid for the life of the building permit.
... of this building shall not be changed from the ... permit application except by issuance of ... of Use and Occupancy. Deviation from the approved ... cause for stopping construction.
This stamp ... not ... partial review only and does ... building permit.
Laguna Niguel Community Development Department

PERMANENT CAISSONS

PERMANENT CAISSON INSTALLATION

TOLERANCES
LOCATION VARIATION AT CUT-OFF SHALL BE NO GREATER 6 IN.
THE OUT-OF-PLUMBNESS OF PIERS SHALL NOT EXCEED 1.5 PERCENT.
PIER SHAFT DIAMETER SHOWN ON THE PROJECT DRAWINGS IS MINIMUM ACCEPTABLE.

EXCAVATION
EXCAVATE DRILLED PIERS TO DIMENSIONS AND REQUIRED ELEVATIONS SHOWN ON PROJECT DRAWINGS.
CLEAR ALL OBSTRUCTIONS ENCOUNTERED DURING EXCAVATION.
MAINTAIN SIDEWALL STABILITY DURING DRILLING.WHERE CAVING GROUND EXISTS, PROVIDE TEMPORARY STEEL CASING FOR SHAFT EXCAVATION. MAKE DIAMETER OF EXCAVATION SUCH THAT THE VOID SPACE OUTSIDE ANY TEMPORARY CASING IS MINIMIZED.

REINFORCEMENT
PLACE REINFORCEMENT FOR DRILLED PIERS AS SHOWN ON THE CONTRACT DOCUMENTS AFTER ACCEPTANCE OF THE DRILLED PIER EXCAVATION.
REINFORCEMENT SHALL BE FREE OF MUD, OIL, OR OTHER SURFACE CONTAMINATION AT TIME OF CONCRETE PLACEMENT.
TIE STEEL OF THE SIZES AND CONFIGURATION SHOWN ON PROJECT DRAWINGS AND TIE SECURELY TO MAINTAIN PROPER DIMENSION AND LOCATION DURING CONCRETING OPERATIONS.
PROVIDE SPACER ROLLERS TO MAINTAIN COVER.
ONLY EVERY THIRD VERTICAL REINFORCING BAR SHALL BE LAP-SPLICED AT THE SAME ELEVATION.
WELD REINFORCING BARS IN ACCORDANCE WITH AWS D1.4. USE AWS CERTIFIED WELDERS.
THE MINIMUM CLEAR DISTANCES BETWEEN VERTICAL REINFORCEMENT, INCLUDING LAPPED BARS, SHALL BE 4 IN. (100 MM) BUT NOT LESS THAN 1.5 TIMES THE BAR DIAMETER NOR FOUR TIMES THE MAXIMUM AGGREGATE SIZE, WHICHEVER IS LARGER.
REINFORCEMENT SHALL BE PLACED BEFORE PIER CONCRETING BEGINS.

CONCRETE
CONCRETE WORK SHALL CONFORM TO ACI 301.
DEWATER DRILLED PIER EXCAVATION PRIOR TO PLACING CONCRETE. DEWATER IN A MANNER THAT WILL NOT CREATE SUBSIDENCE OR GROUND LOSS THAT MIGHT ADVERSELY AFFECT THE WORK OR EXISTING ADJACENT STRUCTURES.

PLACE CONCRETE AS SOON AS POSSIBLE AFTER COMPLETION OF EXCAVATION.

FOR FREE-FALL CONCRETE, DIRECT IN SUCH A WAY THAT THE FALL IS VERTICAL DOWN THE CENTER OF THE SHAFT WITHOUT HITTING SIDES OR REINFORCEMENT. PLACE CONCRETE IN PIER IN ONE CONTINUOUS OPERATION

WHERE TEMPORARY CASINGS ARE UTILIZED, COORDINATE CASING WITHDRAWAL CAREFULLY WITH CONCRETE PLACEMENT. MAINTAIN HEAD OF CONCRETE TO EXCEED THE ANTICIPATED OUTSIDE SOIL AND WATER PRESSURE ABOVE THE BOTTOM OF THE CASING AT ALL TIMES DURING CASING WITHDRAWAL. WHERE CASING IS WITHDRAWN, PROVIDE CONCRETE WITH A MINIMUM SLUMP OF 6IN.

DO NOT VIBRATE CONCRETE INTERNALLY BEFORE THE CASING IS WITHDRAWN. A CASING VIBRATORY EXTRACTOR IS PERMITTED. DO NOT WITHDRAW CASING AFTER CONCRETE HAS ATTAINED INITIAL SET. VIBRATE TOP 3 FT. OF CONCRETE AFTER TEMPORARY CASING HAS BEEN WITHDRAWN.

PROTECT TOPS OF PIERS AGAINST DAMAGE AND CURE AND PROTECT TO PREVENT MOISTURE LOSS AND TEMPERATURE EXTREMES IN ACCORDANCE WITH ACI 301.

TESTING
THE TESTING AGENCY WILL TAKE AND TEST A MINIMUM OF ONE SET OF FOUR CYLINDERS PER DRILLED PIER BUT NOT MORE THAN ONE SET PER TRUCKLOAD FOR QUALITY ASSURANCE.

THE TESTING AGENCY WILL PERFORM COMPRESSION TESTS AT 7, 14 AND 28 DAYS.

PERMANENT CAISSON FACING

NO EARLIER THAN 14 DAYS AFTER CAISSON INSTALLATION, BEGIN EXCAVATION IN LIFTS NOT EXCEEDING 5 FT. UNLESS APPROVED BY THE GRADING INSPECTOR, THE GEOTECHNICAL ENGINEER AND THE EARTH RETENTION DESIGNER.

CLEAN CAISSONS AS REQUIRED. PLACE DRAINAGE CHIMNEYS AGAINST THE EARTH AND TEMPORARY SHOTCRETE LAGGING AS GRADE DESCENDS.

CONTINUE THIS SEQUENCE TO THE BOTTOM OF EXCAVATION.

INSTALL PERMANENT FACING REBAR, DRAINAGE OUTLETS ETC. PER THESE PLANS

INSTALL PERMANENT SHOTCRETE FACING.

CURE PERMANENT SHOTCRETE FACING

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
N. Chy 2/18/2013
CAA DATE

SOIL NAIL WALLS

SOIL NAIL WALL CONSTRUCTION

EXCAVATION FOR SOIL NAILS SHOULD BE MADE IN VERTICAL LIFTS TO ACCOMMODATE THE VERTICAL NAIL SPACINGS INDICATED ON THESE PLANS.

EXCAVATE TO THE REQUIRED BACK OF TEMPORARY SHOTCRETE.

DRILL SOIL NAILS TO THE DIAMETER, DEPTH AND LINE AS INDICATED ON THE DRAWINGS. THE HOLE SHALL BE DRILLED SO THAT ITS DIAMETER IS NOT MORE THAN 1/4 INCH SMALLER THAN THE SPECIFIED DIAMETER. HOLES SHALL BE DRILLED AT AN INCLINATION AS SHOWN ON THESE DRAWING. TOLERANCES FOR DRILL HOLE LOCATION SHALL BE +ONE FOOT FOR HORIZONTAL AND VERTICAL POSITION AT THE WALL FACE AND WITHIN 2.5 DEGREES OF THE SPECIFIED SOIL NAIL GRADIENT.

TO THE EXTENT PRACTICABLE, SOILS NAILS SHALL BE SHOP FABRICATED. SOIL NAILS SHALL BE HANDLED AND PROTECTED IN SUCH A MANNER AS TO AVOID CORROSION AND PHYSICAL DAMAGE THERETO.

PRIOR TO PLACEMENT, SOIL NAILS SHALL BE FREE OF DIRT, DETRIMENTAL RUST OR ANY OTHER DELETERIOUS SUBSTANCES. DRILLED HOLES SHALL BE CLEARED OF ANY LOOSE ROCK FRAGMENTS, SOIL OR OTHER SUBSTANCES WHICH MAY PREVENT THE PROPER PLACEMENT OF THE SOIL NAIL OR GROUT.

SOIL NAILS SHALL BE PLACED IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER. SOIL NAILS SHALL BE SECURELY FASTENED IN PLACE TO PREVENT MOVEMENT DURING GROUTING AND TO ASSURE THAT THE BOND LENGTH OF THE SOIL NAIL IS CENTRALLY LOCATED IN THE DRILL HOLE.

WATER CEMENT SHALL HAVE A WATER CEMENT RATIO (w/c) OF 0.45

GROUT SHALL BE PUMPED INTO THE SOIL HOLE THROUGH A TREMIE GROUT TUBE PROVIDED BY THE CONTRACTOR FOR THAT PURPOSE UNTIL THE HOLE IS FILLED TO THE TOP OF THE SOIL NAIL ZONE. PROVISIONS SHALL BE MADE FOR DETERMINING THE TOP OF THE GROUT TO ASSURE ADEQUATE SOIL NAILAGE.

AFTER GROUTING, THE SOIL NAIL SHALL REMAIN UNDISTURBED UNTIL THE NECESSARY GROUT STRENGTH HAS BEEN ATTAINED.

ON COMPLETION OF SOIL NAIL DRILLING, PLACE TEMPORARY FACING DRAINAGE CHIMNEYS AND REINFORCING AND SHOOT TEMPORARY SHOTCRETE FACING.

PROOF TEST SOIL NAILS AS REQUIRED FOR THIS NAIL ROW

REPEAT ITEMS FOR SUBSEQUENT SOIL NAIL ROWS UNTIL SUBGRADE IS REACHED.

WHERE REQUIRED, INSTALL PERMANENT FACING REINFORCIN AND SHOTCRETE PERMANENT FACING.

CURE PERMANENT SHOTCRETE FACING PER SHOTCRETE DETAILS.

SOIL NAIL TESTING EQUIPMENT

TESTING EQUIPMENT SHALL INCLUDE, AT A MINIMUM, A DIAL GAUGE, A DIAL GAUGE SUPPORT, JACK AND PRESSURE GAUGE, AND A REACTION FRAME. SOIL NAIL MOVEMENT SHALL BE MONITORED BY THE USE OF A DIAL GAUGES CAPABLE OF MEASURING TO 0.001 INCH. THE DIAL GAUGES SHALL HAVE A MINIMUM STROKE EQUAL TO THE THEORETICAL ELASTIC ELONGATION OF THE TOTAL NAIL LENGTH PLUS 1 INCH. THE DIAL GAUGES SHALL BE ALIGNED WITHIN 5 DEGREES FROM THE AXIS OF THE NAIL.

A HYDRAULIC JACK AND PUMP SHALL BE USED TO APPLY THE TEST LOAD.
THE JACK AND PRESSURE GAUGE SHALL BE CALIBRATED BY AN INDEPENDENT TESTING LABORATORY AS A UNIT. THE PRESSURE GAUGE SHALL BE GRADUATED IN 100 PSI INCREMENTS OR LESS AND SHALL HAVE A RANGE NOT EXCEEDING TWICE THE ANTICIPATED MAXIMUM PRESSURE DURING TESTING UNLESS OTHERWISE APPROVED BY ENGINEER. THE PRESSURE GAUGE SHALL BE USED TO MEASURE THE APPLIED LOAD. THE MINIMUM RAM TRAVEL OF THE JACK SHALL NOT BE LESS THAN THE THEORETICAL ELASTIC ELONGATION OF THE TOTAL NAIL LENGTH AT THE MAXIMUM TEST LOAD PLUS 1 INCH. THE JACK SHALL BE CAPABLE OF APPLYING EACH LOAD IN LESS THAN 1 MINUTE. THE JACK SHALL BE INDEPENDENTLY SUPPORTED AND CENTERED OVER THE NAIL SO THAT THE NAIL DOES NOT CARRY THE WEIGHT OF THE JACK.

THE LOADS ON THE NAILS DURING TESTING SHALL BE MONITORED WITH A PRESSURE GAUGE. THE CONTRACTOR SHALL PROVIDE A RECENT (WITHIN 60DAYS) CALIBRATION CURVES IN ACCORDANCE WITH SUBMITTALS. THE STRESSING EQUIPMENT SHALL BE PLACED OVER THE NAIL IN SUCH A MANNER THAT THE JACK, BEARING PLATES, LOAD CELL, AND STRESSING ANCHORAGE ARE IN ALIGNMENT. THE JACK SHALL BE POSITIONED AT THE BEGINNING OF THE TEST SUCH THAT UNLOADING AND REPOSITIONING OF THE JACK DURING THE TEST WILL NOT BE REQUIRED.

THE REACTION FRAME SHALL BE SUFFICIENTLY RIGID AND OF ADEQUATE DIMENSION SUCH THAT EXCESSIVE DEFORMATION OF THE TEST APPARATUS REQUIRING REPOSITIONING OF ANY COMPONENTS SHALL BE AVOIDED. WHERE THE REACTION FRAME BEARS DIRECTLY ON THE SHOTCRETE, THE REACTION FRAME SHALL BE DESIGNED TO PRECLUDE FRACTURE OF THE SHOTCRETE. NO PART OF THE REACTION FRAME SHALL BEAR WITHIN 6 INCHES OF THE EDGE OF THE TEST NAIL BLOCKOUT UNLESS OTHERWISE APPROVED BY ENGINEER.

SOIL NAIL TESTING

PROOF TESTS SHALL BE PERFORMED TO VERIFY THE SOIL TO GROUT VALUE ASSUMED IN THE DESIGN. PROOF TESTS SHALL BE PERFORMED ON FIVE PERCENT (5%) OF THE SOIL NAILS. NAILS SHOULD BE TESTED ON EVERY LIFT AND ON DIFFERENT LOCATIONS ALONG THE WALL.

PROOF TESTS SHALL BE PERFORMED USING TESTING EQUIPMENT CALIBRATED WITHIN 1 MONTHS OF START OF TESTING.

PROOF TEST NAILS DIMENSIONS AND TEST LOADS:

	DRIVEWAY WALL NAIL IN FILL	BUILDING WALL NAIL IN FILL	BUILDING & DRIVEWAY WALL NAIL IN BEDROCK
ULTIMATE BOND STRESS FOR DESIGN	14psi	14psi	20psi
ALLOWABLE STRESS	7psi	7psi	10psi
HOLE DIAMETER:	8"	6"	6"
PROOF TEST NAIL BONDED LENGTH	10ft	15ft	10ft
DESIGN LOAD (DL):	21.1 kip	23.8 kip	22.6 kip
MAXIMUM TEST LOAD (1.50 DL)	31.7 kip	35.6 kip	34.0 kip
MINIMUM PROOF TEST NAIL BAR SIZE	#7 Gr 75	#7 Gr. 75	#7 Gr 75
90% fy FOR #7 Gr. 75 BAR	40.5 kip	40.5 kip	40.5 kip

PROOF TESTS SHALL BE PERFORMED ON PRODUCTION NAILS TO 150% OF THE ALLOWABLE BOND STRESS VALUE USED IN DESIGN. INSTALL THE PROOF TEST NAILS BY THE SAME METHOD THAT IS USED FOR ALL PRODUCTION NAILS, EXCEPT GROUT ONLY THE BOND LENGTH SPECIFIED ON THESE PLANS.

SECURELY BLOCK OUT THE FRONT ONE FOOT OF THE SOIL NAIL HOLE WITH LOOSE SOIL OR OTHER FLEXIBLE MATERIAL TO AVOID PENETRATION OF SHOTCRETE IN THE OPEN HOLE. PERFORM THE PROOF TEST BY LOADING THE SOIL NAIL IN FOLLOWING INCREMENTS.

AL — AL = ALIGNMENT LOAD
0.25 DL — DL = NAIL DESIGN LOAD
0.50 DL
0.75 DL
1.00 DL
1.50 DL

ALL LOAD INCREMENTS SHALL BE MAINTAINED WITHIN 5 PERCENT OF THE INTENDED LOAD. DEPENDING ON THE PERFORMANCE WITHER 10 MINUTE OR 60 MINUTE CREEP TESTS SHALL BE PERFORMED AT THE MAXIMUM TEST LOAD. THE CREEP PERIOD SHALL START AS SOON AS THE MAXIMUM TEST LOAD IS APPLIED AND THE NAIL MOVEMENT WITH RESPECT TO A FIXED REFERENCE SHALL BE MEASURED AND RECORDED AT 1 MINUTE, 2, 3, 5, 6, 10 MINUTES. WHERE NAIL MOVEMENT BETWEEN 1 MINUTE AND 10 MINUTES EXCEEDS 0.04 INCHES, THE MAXIMUM TEST LOAD SHALL BE MAINTAINED AN ADDITIONAL 50 MINUTES AND MOVEMENTS SHALL BE RECORDED AT 20 MINUTE, 30, 50, AND 60 MINUTES.

PROOF TEST ACCEPTANCE CRITERIA:

IF AT THE PROOF TEST LOAD THE MOVEMENT BETWEEN 1 AND 10 MINUTES IS LESS THAN 0.04 INCH, THE TEST IS SUCCESSFUL. IF THE MOVEMENT EXCEEDS 0.04 INCH, THE PROOF TEST LOAD MAY BE HELD FOR AN ADDITIONAL 50 MINUTES AND A CREEP CURVE SHALL BE PLOTTED FOR MOVEMENT BETWEEN 6 AND 60 MINUTES. IF THE CREEP CURVE INDICATES A CREEP RATE OF LESS THAN 0.08 INCHES PER LOG CYCLE TIME, THE TEST IS SUCCESSFUL.

ALL TEST RESULTS SHOULD BE PROVIDED TO THE DESIGNER WITHIN 5 DAYS OF TESTING AND IMMEDIATELY FOR ANY TESTS THAT FAIL TO MEET THE ACCEPTANCE CRITERIA.

This plan has been reviewed and appears to be in general conformity with the recommendations of the referenced Geocon report(s) (and addenda).
Project No. A8803-06-01
No representation is made regarding the design shown, or the accuracy of any measurement or dimension. Calculations by others were not reviewed by this office.
Date: 1/29/13 By:

REGISTERED PROFESSIONAL ENGINEER
NEAL D. BERLINER
2576
GEOTECHNICAL
STATE OF CALIFORNIA

DRS Engineering Inc.
3300 AIRPORT AVE. STE. 11
SANTA MONICA, CA 90405
TEL: (818) 402-3962
FAX: (818) 276-1922
WWW.DRS-ENGINEERING.NET
DRS@DRS-ENGINEERING.NET

PROJECT No. 2012-20

PROJECT NAME

CROWN VALLEY

25891 CROWN VALLEY PKWY
LAGUNA NIGUEL
CA 92677

CONSULTANTS

GEOTECHNICAL
GEOCON INC.
3303 N. SAN FERNANDO BLVD., SUITE 100
BURBANK
CA 91504
TEL (818) 841-8388
FAX (818) 841-1704

CIVIL
KHR
4100 NEWPORT PLACE DRIVE SUITE 200
NEWPORT BEACH, CA 92660
TEL (949) 756-6440
FAX (949) 756-6444

ARCHITECTURAL
THOMAS P. COX; ARCHITECTS, INC.
19782 MACARTHUR BLVD. SUITE 300
IRVINE, CA 92612
TEL (949) 862-0270
FAX (949) 862-0289

STRUCTURAL
VANDROPE CHOU ASSOCIATES
2200 WEST ORANGEWOOD AVE STE 150
ORANGE, CA 92868
TEL (714) 978-9780
FAX (714) 978-9929

OWNER
MILL CREEK RESIDENTIAL TRUST LLC
949 SOUTH COSAT DRIVE SUITE 400
COSTA MESA, CA 92626
TEL (714) 800-1385
FAX (714) 966-9353

EARTH RETENTION PLAN

NOTES

REV	DESCRIPTION	DATE
1	PLAN CHECK CORRECTION	10-25-12
2	CO-ORD. WITH CIVIL	01-24-13

DATE	09-05-2012
DRAWN	DRS - ODO
CHECKED	DRS
SCALE	AS SHOWN
SHEET No.	

SH 1.0

TEMPORARY SHOTCRETE

SUBMIT MIX DESIGN TO ENGINEER FOR APPROVAL MAXIMUM SLUMP: 2 1/2"

NO ADMIXTURES SHALL BE USED WITHOUT THE APPROVAL OF THE ENGINEER

THE MIXING TIME FOR MATERIALS DELIVERED BY READY-MIX TRUCKS TO THE JOB SITE SHALL NOT EXCEED TWO HOURS OR 250 REVOLUTIONS OF THE DRUM, WHICHEVER COMES FIRST

ALL REINFORCEMENT SHALL BE CLEAN AND FREE FROM LOOSE MILL SCALE, LOOSE RUST, OIL OR OTHER COATING INTERFERING WITH BOND.

THICKNESS AND REINFORCEMENT COVER TOLERANCES: DESIGN CONCRETE THICKNESS AND CONCRETE COVER OVER REINFORCEMENT IS SHOWN ON THE DRAWINGS. MINIMUM TOLERANCES FOR IN-PLACE THICKNESS SHALL BE MINUS 0.5 INCH. MINUS TOLERANCE ON COVER SHALL BE 0.5 INCH.

ALL VERTICAL EXCAVATIONS FOR SOIL NAILS SHALL BE COVERED WITH SHOTCRETE THE SAME DAY AS EXCAVATION OCCURS.

VERTICAL FACES THAT CANNOT BE COVERED WITH SHOTCRETE FACING THE SAME DAY SHALL BE PROTECTED WITH A SOIL BERM. THE TEMPORARY BERM SHALL BE A MINIMUM OF 3FT WIDE WITH SIDE SLOPES LESS THAN OR EQUAL TO FORTY FIVE DEGREES

WHERE VERTICAL CUTS DO NOT STAND WHILE DRILLING OR STAND LONG ENOUGH TO RECEIVE SHOTCRETE THEN A SLOT CUTTING PROCEDURE SHALL BE EMPLOYED. SLOT CUT WIDTHS TO BE AGREED ON SITE BETWEEN THE EARTH RETENTION CONTRACTOR AND THE GEOTECHNICAL ENGINEER.

THICKNESS AND REINFORCEMENT COVER TOLERANCES: DESIGN CONCRETE THICKNESS AND CONCRETE COVER OVER REINFORCEMENT ARE SHOWN ON THE DRAWINGS. MINIMUM TOLERANCES FOR ON-PLACE THICKNESS SHALL BE 0.5 INCH.

SHOTCRETE SHALL BE APPLIED BY AN EXPERIENCED NOZZLEMAN WHOSE QUALIFICATIONS MEET THE MINIMUM REQUIREMENTS AS SET FORTH IN ACI 506R-90.

REBOUND MATERIAL CANNOT BE RE-USED AND MUST BE KEPT OUT OF THE WALL BY USE OF AIR HOSE.

SHOTCRETE SHALL BE PLACED IN CONTINUOUS HORIZONTAL LIFTS. SUBSEQUENT EXCAVATION BELOW A LIFT SHOULD NOT PROCEED UNTIL THE SHOTCRETE HAS CURED FOR A MINIMUM OF 36HRS OR IT CAN BE DEMONSTRATED THAT A COMPRESSIVE STRENGTH OF 2,000 PSI HAS BEEN ACHIEVED.

TEMPORARY SHOTCRETE MAY BE AIR CURED WITHOUT THE NEED FOR CURING COMPOUNDS OR APPLICATION OF WATER.

STRENGTH TEST FOR SHOTCRETE SHALL BE MADE BY AN APPROVED AGENCY ON SPECIMENS WHICH ARE REPRESENTATIVE OF WORK AND WHICH HAVE BEEN WATER SOAKED FOR AT LEAST 24 HOURS PRIOR TO TESTING. WHEN THE MAXIMUM SIZE AGGREGATE IS LARGER THAN 3/8", SPECIMENS SHALL CONSIST OF NOT LESS THAN THREE 3" DIAMETER CYLINDERS OR 3" CUBES. WHEN THE MAXIMUM SIZE AGGREGATE IS SMALLER THAN 3/8", SPECIMENS SHALL CONSIST OF NOT LESS THAN THREE 2" DIAMETER CYLINDERS OR 2" CUBES.

SAMPLING FREQUENCY SHALL BE ONE SPECIMEN DURING EACH SHIFT WHEN SHOTCRETE WORK IS PERFORMED OR 1 SPECIMEN FOR EACH 50 CUBIC YARDS OR SHOTCRETE.

2010 CBC
PERMANENT SHOTCRETE REQUIREMENTS

1913.2 PROPORTIONS AND MATERIALS. SHOTCRETE PROPORTIONS SHALL BE SELECTED THAT ALLOW SUITABLE PLACEMENT PROCEDURES USING THE DELIVERY EQUIPMENT SELECTED AND SHALL RESULT IN FINISHED IN-PLACE HARDENED SHOTCRETE MEETING THE STRENGTH REQUIREMENTS OF THIS CODE.

1913.3 AGGREGATE. COARSE AGGREGATE, IF USED, SHALL NOT EXCEED 3/4 INCH (19.1 MM).

1913.4 REINFORCEMENT. REINFORCEMENT USED IN SHOTCRETE CONSTRUCTION SHALL COMPLY WITH THE PROVISIONS OF SECTIONS 1913.4.1 THROUGH 1913.4.4.

1913.4.1 SIZE. THE MAXIMUM SIZE OF REINFORCEMENT SHALL BE NO.5 BARS UNLESS IT IS DEMONSTRATED BY PRECONSTRUCTION TESTS THAT ADEQUATE ENCASEMENT OF LARGER BARS WILL BE ACHIEVED.

1913.4.2 CLEARANCE. WHEN NO.5 OR SMALLER BARS ARE USED, THERE SHALL BE A MINIMUM CLEARANCE BETWEEN PARALLEL REINFORCEMENT BARS OF 21/2 INCHES. WHEN BARS LARGER THAN NO.5 ARE PERMITTED, THERE SHALL BE A MINIMUM CLEARANCE BETWEEN PARALLEL BARS EQUAL TO SIX DIAMETERS OF THE BARS USED. WHEN TWO CURTAINS OF STEEL ARE PROVIDED, THE CURTAIN NEARER THE NOZZLE SHALL HAVE A MINIMUM SPACING EQUAL TO 12 BAR DIAMETERS AND THE REMAINING CURTAIN SHALL HAVE A MINIMUM SPACING OF SIX BAR DIAMETERS.

EXCEPTION: SUBJECT TO THE APPROVAL OF THE BUILDING OFFICIAL, REQUIRED CLEARANCES SHALL BE REDUCED WHERE IT IS DEMONSTRATED BY PRECONSTRUCTION TESTS THAT ADEQUATE ENCASEMENT OF THE BARS USED IN THE DESIGN WILL BE ACHIEVED.

1913.4.3 SPLICES. LAP SPLICES OF REINFORCING BARS SHALL UTILIZE THE NONCONTACT LAP SPLICE METHOD WITH A MINIMUM CLEARANCE OF 2 INCHES BETWEEN BARS. THE USE OF CONTACT LAP SPLICES NECESSARY FOR SUPPORT OF THE REINFORCING IS PERMITTED WHEN APPROVED BY THE BUILDING OFFICIAL, BASED ON SATISFACTORY PRECONSTRUCTION TESTS THAT SHOW THAT ADEQUATE ENCASEMENT OF THE BARS WILL BE ACHIEVED, AND PROVIDED THAT THE SPLICE IS ORIENTED SO THAT A PLANE THROUGH THE CENTER OF THE SPLICED BARS IS PERPENDICULAR TO THE SURFACE OF THE SHOTCRETE.

1913.4.4 SPIRALLY TIED COLUMNS. SHOTCRETE SHALL NOT BE APPLIED TO SPIRALLY TIED COLUMNS.

1913.5 PRECONSTRUCTION TESTS. WHEN REQUIRED BY THE BUILDING OFFICIAL, A TEST PANEL SHALL BE SHOT, CURED, CORED OR SAWN, EXAMINED AND TESTED PRIOR TO COMMENCEMENT OF THE PROJECT. THE SAMPLE PANEL SHALL BE REPRESENTATIVE OF THE PROJECT AND SIMULATE JOB CONDITIONS AS CLOSELY AS POSSIBLE. THE PANEL THICKNESS AND REINFORCING SHALL REPRODUCE THE THICKEST AND MOST CONGESTED AREA SPECIFIED IN THE STRUCTURAL DESIGN. IT SHALL BE SHOT AT THE SAME ANGLE, USING THE SAME NOZZLEMAN AND WITH THE SAME CONCRETE MIX DESIGN THAT WILL BE USED ON THE PROJECT. THE EQUIPMENT USED IN PRECONSTRUCTION TESTING SHALL BE THE SAME EQUIPMENT USED IN THE WORK REQUIRING SUCH TESTING, UNLESS SUBSTITUTE EQUIPMENT IS APPROVED BY THE BUILDING OFFICIAL.

1913.6 REBOUND. ANY REBOUND OR ACCUMULATED LOOSE AGGREGATE SHALL BE REMOVED FROM THE SURFACES TO BE COVERED PRIOR TO PLACING THE INITIAL OR ANY SUCCEEDING LAYERS OF SHOTCRETE. REBOUND SHALL NOT BE USED AS AGGREGATE.

1913.7 JOINTS. EXCEPT WHERE PERMITTED HEREIN, UNFINISHED WORK SHALL NOT BE ALLOWED TO STAND FOR MORE THAN 30 MINUTES UNLESS EDGES ARE SLOPED TO A THIN EDGE. FOR STRUCTURAL ELEMENTS THAT WILL BE UNDER COMPRESSION AND FOR CONSTRUCTION JOINTS SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS, SQUARE JOINTS ARE PERMITTED. BEFORE PLACING ADDITIONAL MATERIAL ADJACENT TO PREVIOUSLY APPLIED WORK, SLOPING AND SQUARE EDGES SHALL BE CLEANED AND WETTED.

1913.8 DAMAGE. IN-PLACE SHOTCRETE THAT EXHIBITS SAGS, SLOUGHS, SEGREGATION, HONEYCOMBING, SAND POCKETS OR OTHER OBVIOUS DEFECTS SHALL BE REMOVED AND REPLACED. SHOTCRETE ABOVE SAGS AND SLOUGHS SHALL BE REMOVED AND REPLACED WHILE STILL PLASTIC.

1913.9 CURING. DURING THE CURING PERIODS SPECIFIED HEREIN, SHOTCRETE SHALL BE MAINTAINED ABOVE 40°F (4°C) AND IN MOIST CONDITION.

1913.9.1 INITIAL CURING. SHOTCRETE SHALL BE KEPT CONTINUOUSLY MOIST FOR 24 HOURS AFTER SHOTCRETING IS COMPLETE OR SHALL BE SEALED WITH AN APPROVED CURING COMPOUND.

1913.9.2 FINAL CURING. FINAL CURING SHALL CONTINUE FOR SEVEN DAYS AFTER SHOTCRETING, OR FOR THREE DAYS IF HIGH EARLY-STRENGTH CEMENT IS USED, OR UNTIL THE SPECIFIED STRENGTH IS OBTAINED. FINAL CURING SHALL CONSIST OF THE INITIAL CURING PROCESS OR THE SHOTCRETE SHALL BE COVERED WITH AN APPROVED MOISTURE-RETAINING COVER.

1913.9.3 NATURAL CURING. NATURAL CURING SHALL NOT BE USED IN LIEU OF THAT SPECIFIED IN THIS SECTION UNLESS THE RELATIVE HUMIDITY REMAINS AT OR ABOVE 85 PERCENT, AND IS AUTHORIZED BY THE REGISTERED DESIGN PROFESSIONAL AND APPROVED BY THE BUILDING OFFICIAL.

1913.10 STRENGTH TESTS. STRENGTH TESTS FOR SHOTCRETE SHALL BE MADE BY AN APPROVED AGENCY ON SPECIMENS THAT ARE REPRESENTATIVE OF THE WORK AND WHICH HAVE BEEN WATER SOAKED FOR AT LEAST 24 HOURS PRIOR TO TESTING. WHEN THE MAXIMUM-SIZE AGGREGATE IS LARGER THAN 3/8 INCH , SPECIMENS SHALL CONSIST OF NOT LESS THAN THREE 3-INCH-DIAMETER CORES OR 3-INCH CUBES. WHEN THE MAXIMUM-SIZE AGGREGATE IS 3/8 INCH OR SMALLER, SPECIMENS SHALL CONSIST OF NOT LESS THAN 2-INCH-DIAMETER CORES OR 2-INCH CUBES.

1913.10.1 SAMPLING. SPECIMENS SHALL BE TAKEN FROM THE IN-PLACE WORK OR FROM TEST PANELS, AND SHALL BE TAKEN AT LEAST ONCE EACH SHIFT, BUT NOT LESS THAN ONE FOR EACH 50 CUBIC YARDS OF SHOTCRETE.

1913.10.2 PANEL CRITERIA. WHEN THE MAXIMUM-SIZE AGGREGATE IS LARGER THAN 3/8 INCH, THE TEST PANELS SHALL HAVE MINIMUM DIMENSIONS OF 18 INCHES BY 18 INCHES. WHEN THE MAXIMUM SIZE AGGREGATE IS 3/8 INCH OR SMALLER, THE TEST PANELS SHALL HAVE MINIMUM DIMENSIONS OF 12 INCHES BY 12 INCHES. PANELS SHALL BE SHOT IN THE SAME POSITION AS THE WORK, DURING THE COURSE OF THE WORK AND BY THE NOZZLEMEN DOING THE WORK. THE CONDITIONS UNDER WHICH THE PANELS ARE CURED SHALL BE THE SAME AS THE WORK.

1913.10.3 ACCEPTANCE CRITERIA. THE AVERAGE COMPRESSIVE STRENGTH OF THREE CORES FROM THE IN-PLACE WORK OR A SINGLE TEST PANEL SHALL EQUAL OR EXCEED 0.85 f'c WITH NO SINGLE CORE LESS THAN 0.75 f'c. THE AVERAGE COMPRESSIVE STRENGTH OF THREE CUBES TAKEN FROM THE IN-PLACE WORK OR A SINGLE TEST PANEL SHALL EQUAL OR EXCEED 1.0f'c WITH NO INDIVIDUAL CUBE LESS THAN 0.88 f'c. TO CHECK ACCURACY, LOCATIONS REPRESENTED BY ERRATIC CORE OR CUBE STRENGTHS SHALL BE RETESTED.

ADDITIONAL
PERMANENT SHOTCRETE REQUIREMENTS

EXCEPT AS OTHERWISE INDICATED HEREIN, SHOTCRETE SHALL CONFORM TO THE REQUIREMENTS OF ACI 506R-90

SUBMIT MIX DESIGN TO ENGINEER FOR APPROVAL MAXIMUM SLUMP: 2 1/2" NO ADMIXTURES SHALL BE USED WITHOUT THE APPROVAL OF THE ENGINEER.

THE MIXING TIME FOR MATERIALS DELIVERED BY READY-MIX TRUCKS TO THE JOB SITE SHALL NOT EXCEED TWO HOURS OR 250 REVOLUTIONS OF THE DRUM, WHICHEVER COMES FIRST

ALL REINFORCEMENT SHALL BE CLEAN AND FREE FROM LOOSE MILL SCALE, LOOSE RUST, OIL OR OTHER COATING INTERFERING WITH BOND.

THICKNESS AND REINFORCEMENT COVER TOLERANCES: DESIGN CONCRETE THICKNESS AND CONCRETE COVER OVER REINFORCEMENT IS SHOWN ON THE DRAWINGS. MINIMUM TOLERANCES FOR IN-PLACE THICKNESS SHALL BE MINUS 0.5 INCH. MINUS TOLERANCE ON COVER SHALL BE 0.5 INCH.

SOIL NAIL SCHEDULE

Design Case	Row	Drill Hole Dia	Nail Length	Nail Inclination	Bar Size
		in	ft	Deg.	Gr 75 Bar
1	1	6	35	15	#7
	2	6	35	15	#7
	3	6	30	15	#7
	4	6	30	15	#7
	5	6	25	15	#7
	6	6	25	15	#7
	7	6	20	15	#7
2	1	6	15	25	#6
	2	6	15	25	#6
	3	6	10	25	#6
3	1	8	15	25	#7
	2	8	15	25	#7
	3	8	15	25	#7
	4	8	15	25	#7
	5	8	15	25	#7
4 Temp	1	6	35	15	#7
	2	6	30	15	#7
	3	6	25	15	#7
	4	6	20	15	#7
	5	6	20	15	#7
	6	6	15	15	#7
	7	6	15	15	#7
5	1	6	40	15	#10
	2	6	40	15	#10
	3	6	40	15	#8
	4	6	35	15	#8
	5	6	35	15	#8
	6	6	25	15	#8
	7	6	20	15	#8

2

SOLDIER PILES									TIEBACKS								
				Drilled Piles													
Pile No.	Top Pile Elev.	Design Subgrade Elev.	Max. Retained Height H	Min. Shaft Dia.	Min. Embed. D	Min. Pile Length	Min. Sx Reqd.	Suggested Soldier Pile	Tieback Elevation	Tieback Angle	Tieback Dia.	Design Load	Test Load	Tendon Size 270ksi strand or Gr 150 bar	Tieback Type	Unbonded Length Lu	Bonded Length La
	ft	ft	ft	ft	ft	ft	50ksi Steel		ft	deg.	in	kip	kip			ft	ft
1c	301.0	297.0	5.0	2.5	11.0	15.0	9.1	W14x22									
1b	303.0	297.0	5.0	2.5	11.0	17.0	9.1	W14x22									
1a	306.0	297.0	9.0	2.5	20.0	29.0	53.2	W14x38									
1	307.0	297.0	9.0	2.5	20.0	30.0	53.2	W14x38									
2	310.0	297.0	13.0	2.5	33.0	46.0	153.1	W16x89									
3	312.0	297.0	13.0	2.5	33.0	48.0	153.1	W16x89									
4	320.0	297.0	16.0	2.5	5.0	28.0	15.5	W14x30	307.0	25	6	40.0	60.0	1" Bar	Partially Removable	10.0	15.0
5	328.0	297.0	24.0	2.5	7.0	38.0	40.7	W14x30	313.0	25	6	82.0	123.0	1 1/4" Bar	Partially Removable	10.0	25.0
6	328.0	297.0	32.0	2.5	9.0	40.0	109.6	W14x74	319.0	25	6	142.0	213.0	1 3/4" Bar	Partially Removable	15.0	40.0
7	332.0	298.0	16.0	2.5	16.0	50.0	82.5	W14x61									
8	324.0	298.0	11.0	2.5	12.0	38.0	32.5	W14x26									
9	309.0	298.0	11.0	2.5	12.0	23.0	32.5	W14x26									
10	309.0	298.0	11.0	2.5	12.0	23.0	32.5	W14x26									
11	309.0	298.0	11.0	2.5	12.0	23.0	32.5	W14x26									
12	308.0	296.5	11.0	2.5	12.0	23.5	32.5	W14x26									
13	308.0	296.5	11.0	2.5	12.0	23.5	32.5	W14x26									
14	308.0	295.0	11.0	2.5	12.0	25.0	32.5	W14x26									
15	307.0	293.5	14.0	2.5	15.0	28.5	67.1	W14x48									
16	306.0	292.0	15.0	2.5	16.0	30.0	82.5	W14x61									
17	306.0	290.5	15.0	2.5	16.0	31.5	82.5	W14x61									
18	304.5	290.5	15.0	2.5	16.0	30.0	82.5	W14x61									
19	305.0	289.0	15.0	2.5	16.0	32.0	82.5	W14x61									
20	304.0	288.0	15.0	2.5	16.0	32.0	82.5	W14x61									
21	303.0	288.0	15.0	2.5	16.0	31.0	82.5	W14x61									
22	303.0	288.0	14.0	2.5	15.0	30.0	67.1	W14x48									
23	302.0	288.0	14.0	2.5	15.0	29.0	67.1	W14x48									
24	301.0	288.0	14.0	2.5	15.0	28.0	67.1	W14x48									
25	300.0	288.0	14.0	2.5	15.0	27.0	67.1	W14x48									
26	301.0	295.0	6.0	2.5	7.0	13.0	5.3	W14x22									
27	297.0	288.0	11.0	2.5	12.0	21.0	32.5	W14x26									

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE

CAA DATE

EARTH RETENTION PLAN

NOTES & SCHEDULES

DRS Engineering Inc.
3300 AIRPORT AVE. STE. 11
SANTA MONICA, CA 90405
TEL: (818) 402-3962
FAX: (818) 276-1922
WWW.DRS-ENGINEERING.NET
DRS@DRS-ENGINEERING.NET

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CROWN VALLEY

25891 CROWN VALLEY PKWY
LAGUNA NIGUEL
CA 92677

CONSULTANTS

GEOTECHNICAL
GEOCON INC.
3303 N. SAN FERNANDO BLVD., SUITE 100
BURBANK
CA 91504
TEL (818) 841-8388
FAX (818) 841-1704

CIVIL
KHR
4100 NEWPORT PLACE DRIVE SUITE 200
NEWPORT BEACH, CA 92660
TEL (949) 756-6440
FAX (949) 756-6444

ARCHITECTURAL
THOMAS P. COX; ARCHITECTS, INC.
19782 MACARTHUR BLVD. SUITE 300
IRVINE, CA 92612
TEL (949) 862-0270
FAX (949) 862-0289

STRUCTURAL
VANDROPE CHOU ASSOCIATES
2200 WEST ORANGEWOOD AVE STE 150
ORANGE, CA 92868
TEL (714) 978-9780
FAX (714) 978-9929

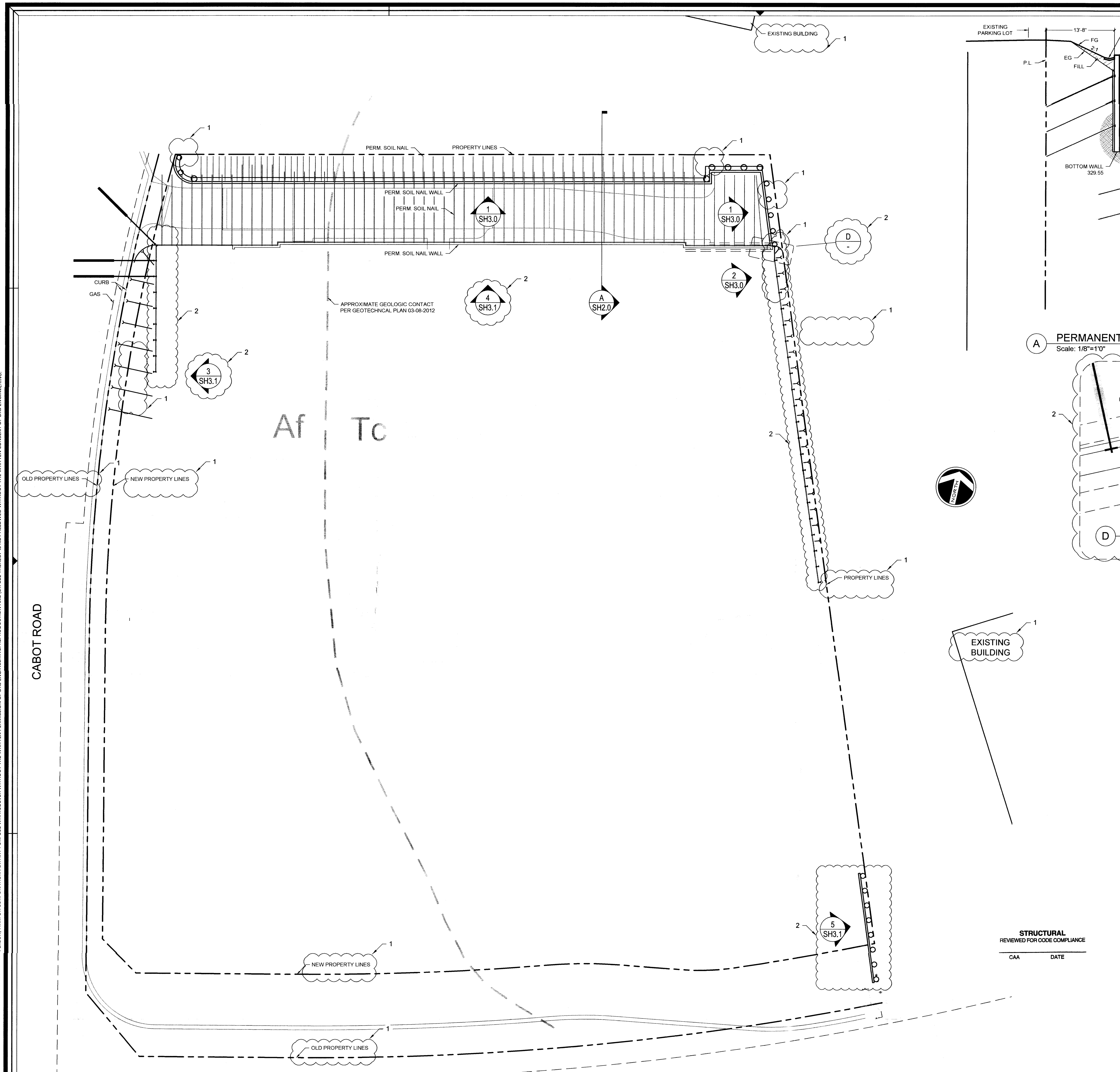
OWNER
MILL CREEK RESIDENTIAL TRUST LLC
949 SOUTH COSAT DRIVE SUITE 400
COSTA MESA, CA 92626
TEL (714) 800-1385
FAX (714) 966-9353

REGISTERED PROFESSIONAL ENGINEER
NEAL D. BERLINER
2576
GEOTECHNICAL
STATE OF CALIFORNIA

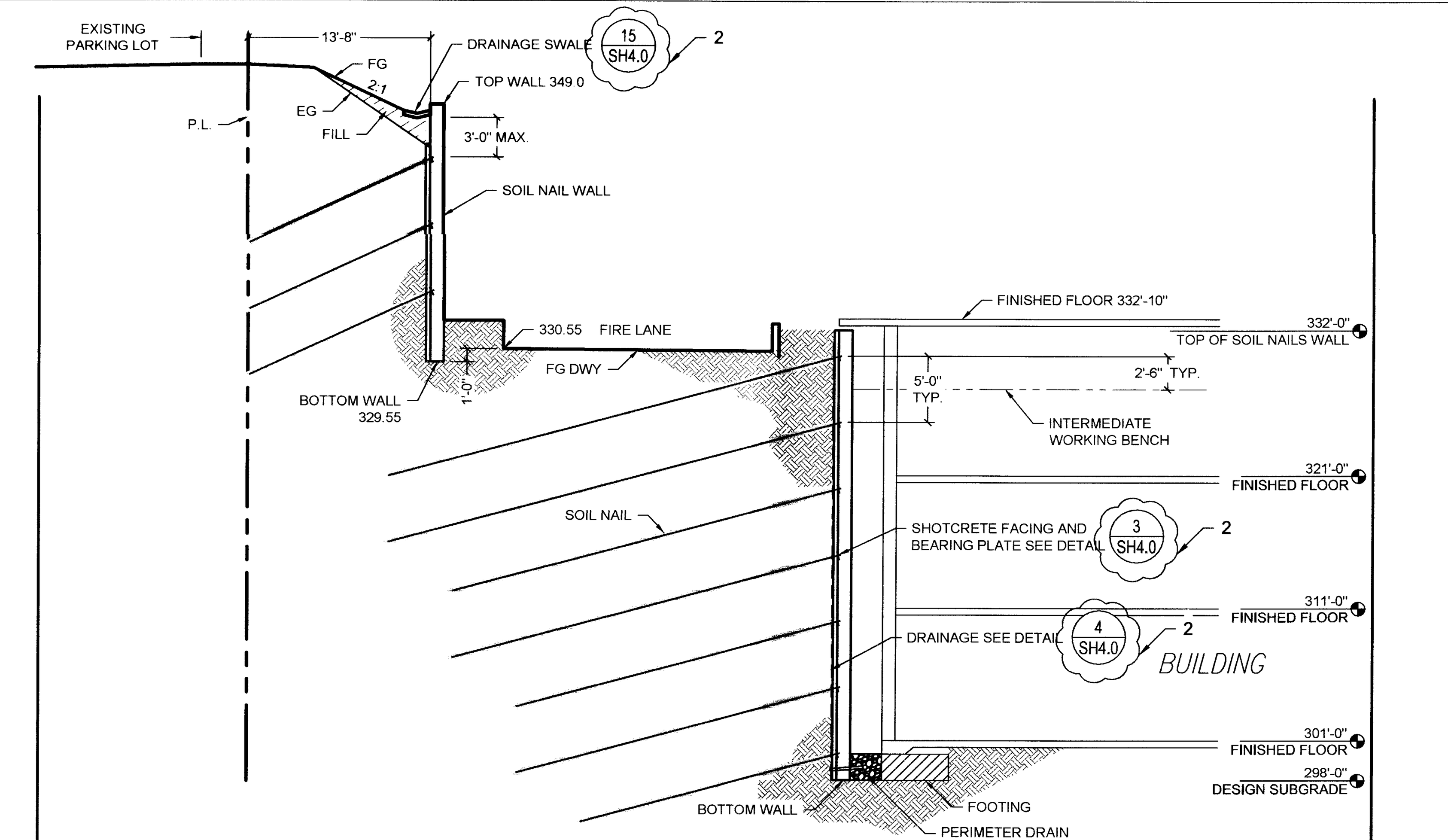
REGISTERED PROFESSIONAL ENGINEER
DAVID R. SALTER
C 69911
Exp. 9.30.14
CIVIL
STATE OF CALIFORNIA

REV.	DESCRIPTION	DATE
1	PLAN CHECK CORRECTION	10-25-12
2	CO-ORD. WITH CIVIL	01-24-13

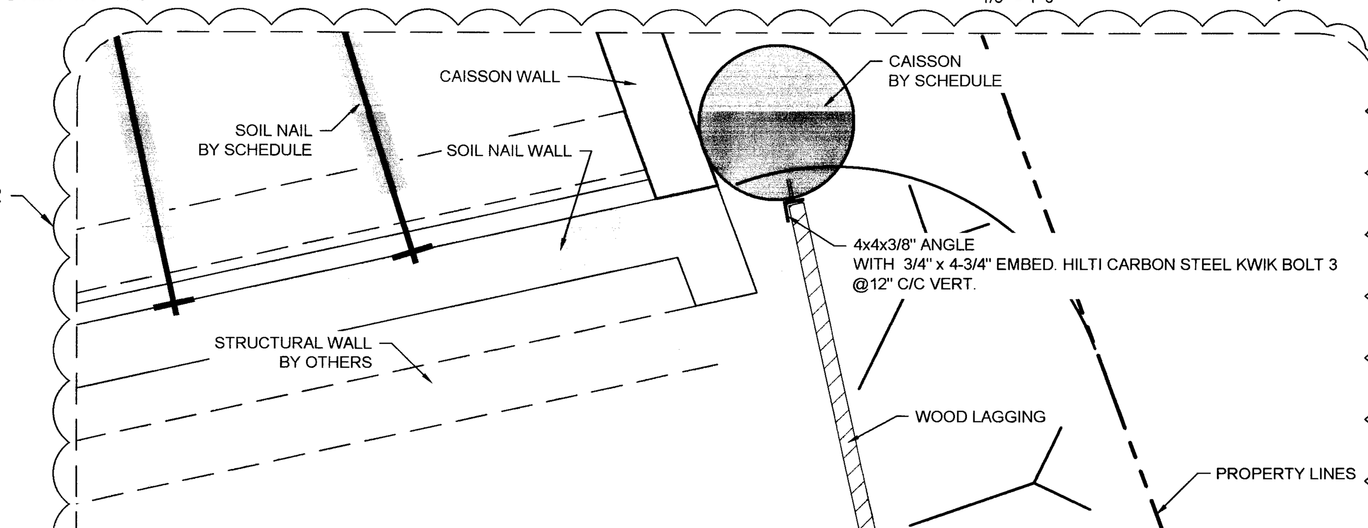
DATE	09-05-2012
DRAWN	DRS - ODO
CHECKED	DRS
SCALE	AS SHOWN
SHEET No.	SH-1.1



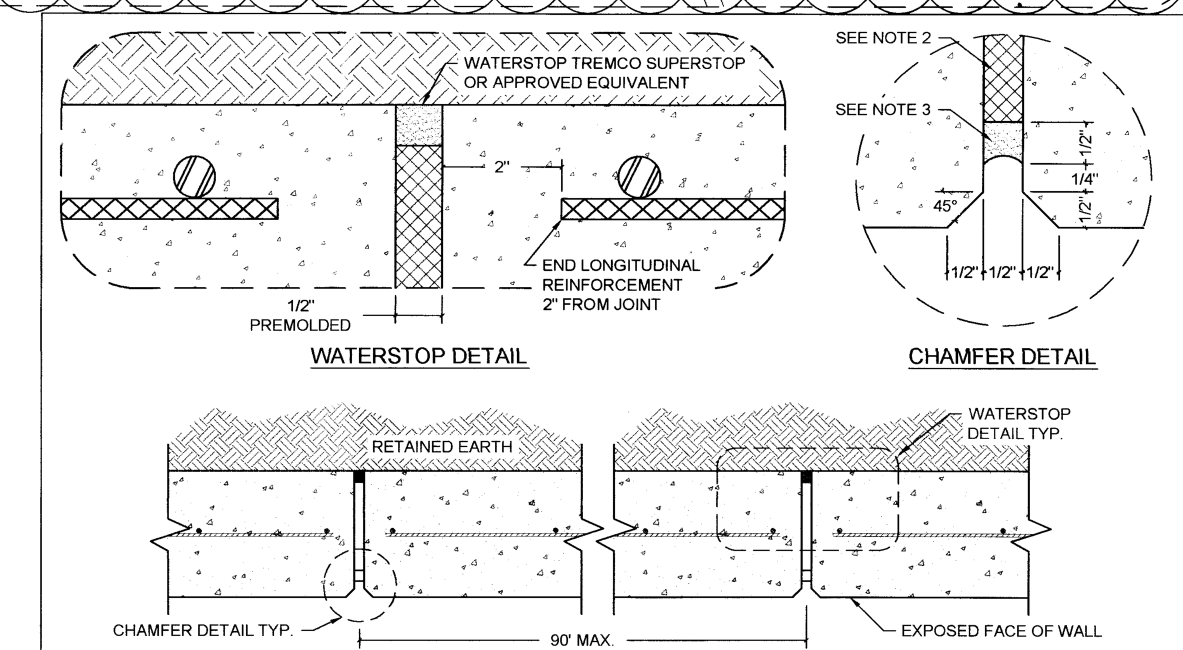
1 SHORING PLAN
1" = 20'-0"



A PERMANENT SOIL NAIL WALL SECTION
Scale: 1/8"=1'0"

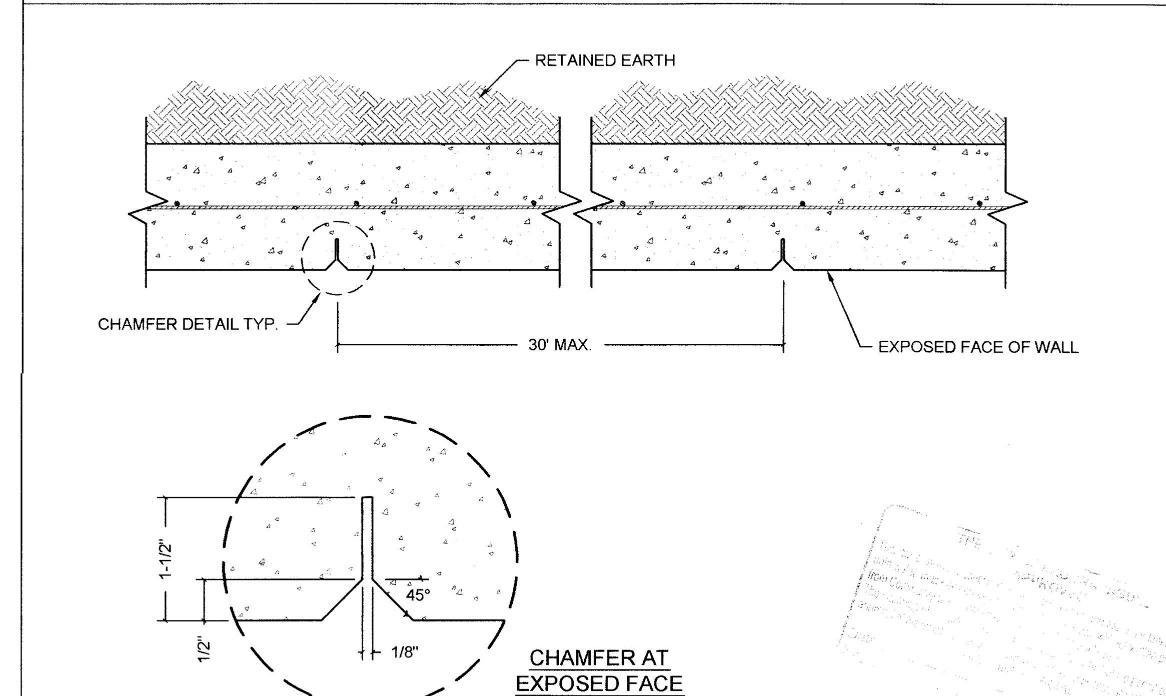


D CAISSON WALL TO LAGGING WALL
Scale: 1/2"=1'-0"



NOTES:
1. WATERSTOPS SHALL BE FLEXIBLE BENTONITE TYPE WATERSTOPS SUCH AS TREMCO SUPERSTOP OR APPROVED EQUIV.
2. JOINT FILLER SHALL BE CLOSED CELL SUPERIOR GRADE POLYETHYLENE OR NON-EXTRUDING PVC, SUCH AS SONNEBORN "VINYLFOAM", SERVICISED "RODOFOAM II" BY W.R. GRACE, DECK-O-FOAM BY W.R. MEADOWS OR APPROVED EQUIV.
3. TWO COMPOUND NONSTAINING GRAY SEALING COMPOUND WITH POLYSULFIDE LIQUID POLYMER GUN-GRADE WITH PRIMER.

B EXPANSION JOINT
Scale: N.T.S.



C CRACK CONTROL (WEAKENED PLANE) JOINT
Scale: N.T.S.

DRS Engineering Inc.

3300 AIRPORT AVE. STE. 11
SANTA MONICA, CA 90405
TEL: (818) 402-3962
FAX: (818) 276-1922
WWW.DRS-ENGINEERING.NET
DRS@DRS-ENGINEERING.NET

PROJECT No. 2012-20

PROJECT NAME

CROWN VALLEY

25891 CROWN VALLEY PKWY
LAGUNA NIGUEL
CA 92677

CONSULTANTS

GEOTECHNICAL
GEOCON INC.
3303 N. SAN FERNANDO BLVD., SUITE 100
BURBANK
CA 91504
TEL (818) 841-8388
FAX (818) 841-1704

CIVIL
KHR
4100 NEWPORT PLACE DRIVE SUITE 200
NEWPORT BEACH, CA 92660
TEL (949) 756-6440
FAX (949) 756-6444

ARCHITECTURAL
THOMAS P. COX; ARCHITECTS, INC.
19782 MACARTHUR BLVD. SUITE 300
IRVINE, CA 92612
TEL (949) 862-0270
FAX (949) 862-0289

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EARTH RETENTION PLAN

PLAN

REGISTERED PROFESSIONAL ENGINEER
NEAL D. BERLINER
2576
GEOTECHNICAL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
DAVID R. SALTER
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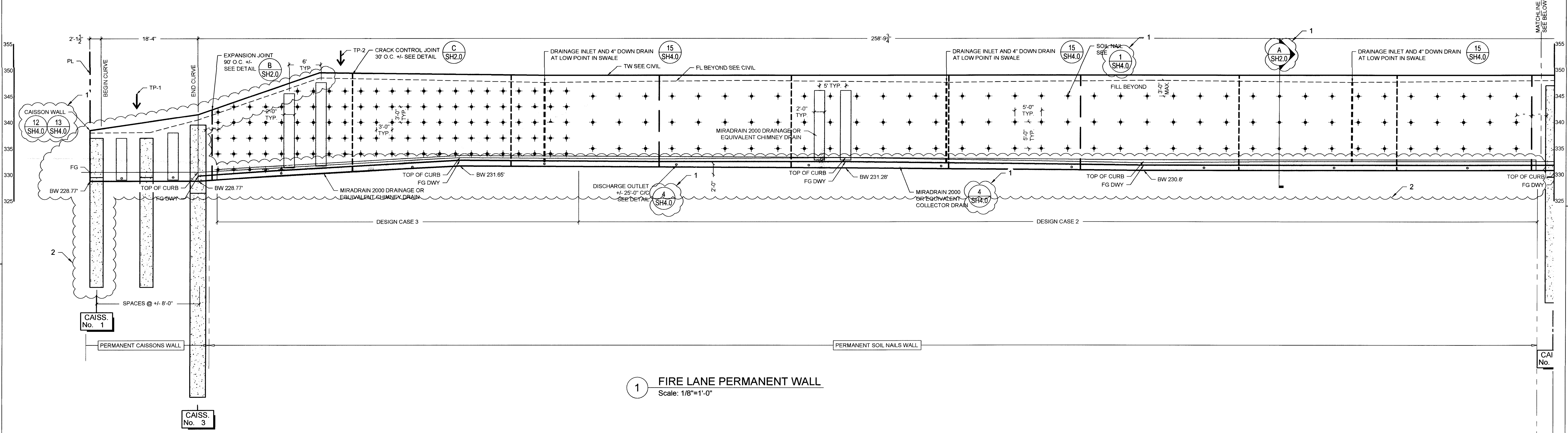
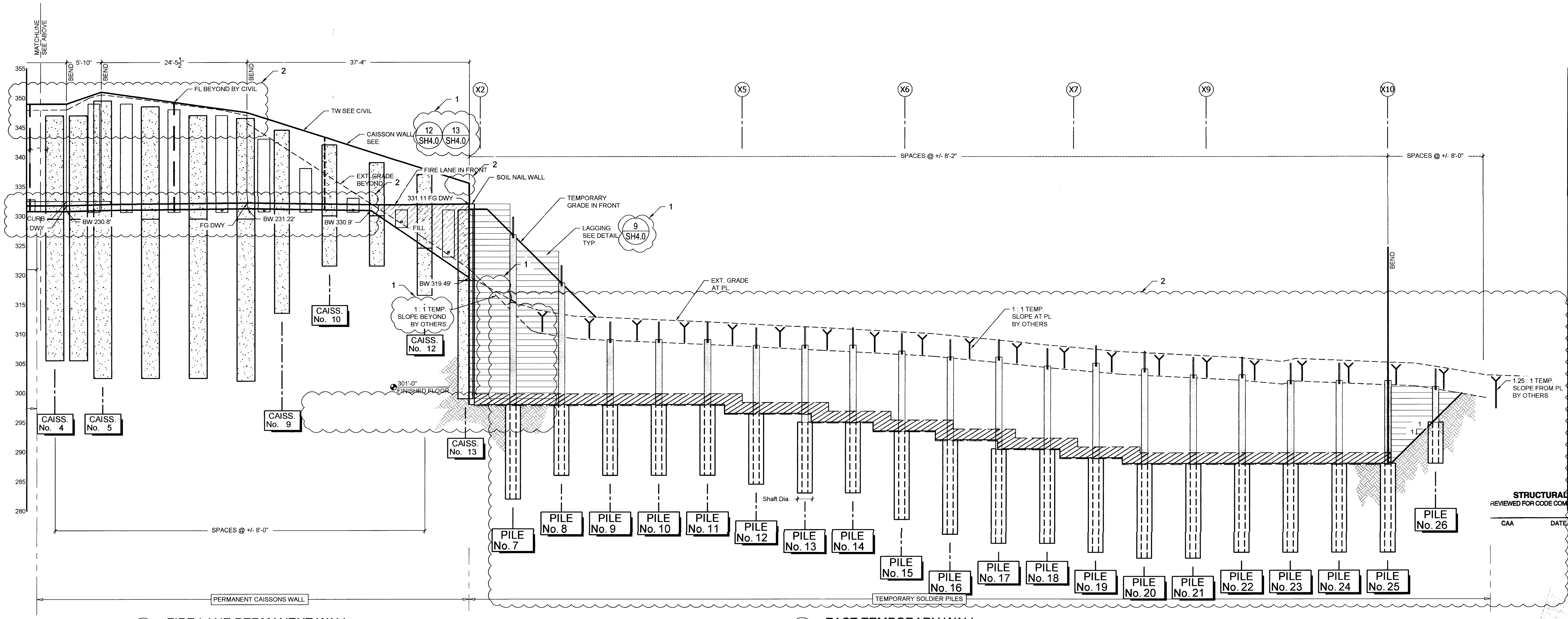
SHEET No.
SH-2.0



1 FIRE LANE PERMANENT WALL
Scale: 1/8"=1'-0"



1 FIRE LANE PERMANENT WALL

2 EAST TEMPORARY WALL

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE

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SANTA MONICA, CA 90405
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EARTH RETENTION PLAN
ELEVATIONS

REGISTERED PROFESSIONAL ENGINEER NEAL D. BERLINER 2576 GEOTECHNICAL STATE OF CALIFORNIA

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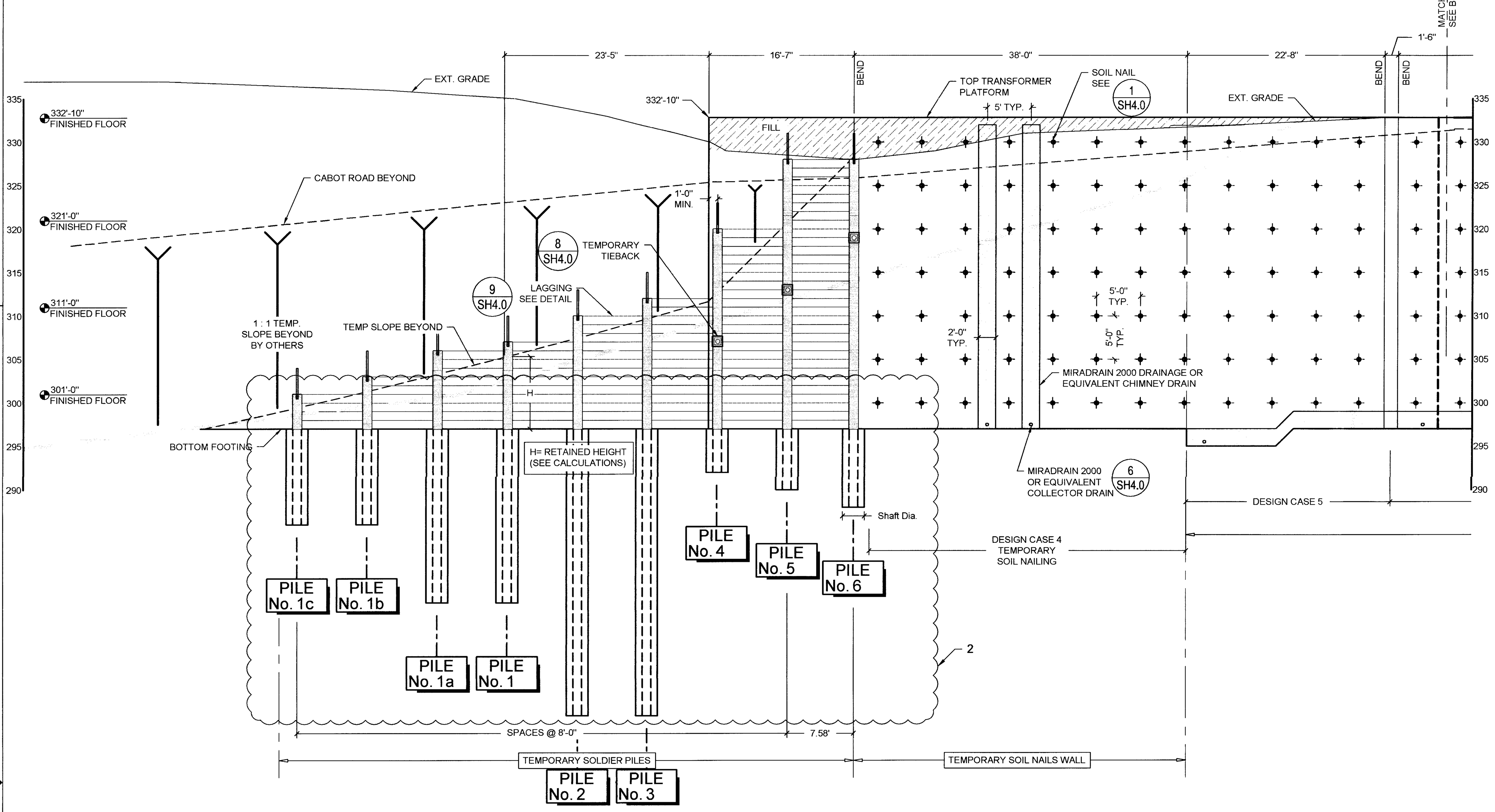
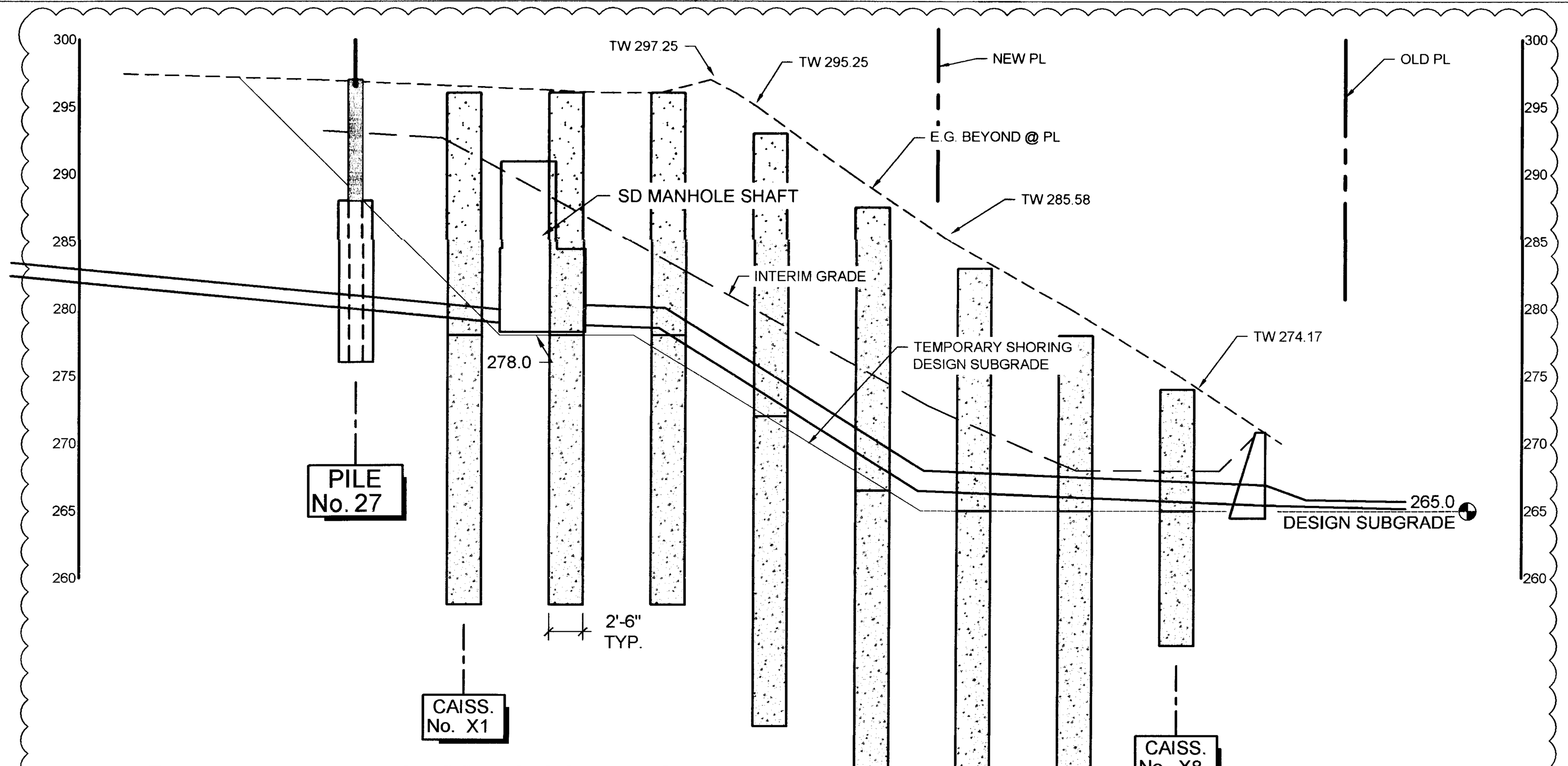


3 WEST TEMPORARY WALL

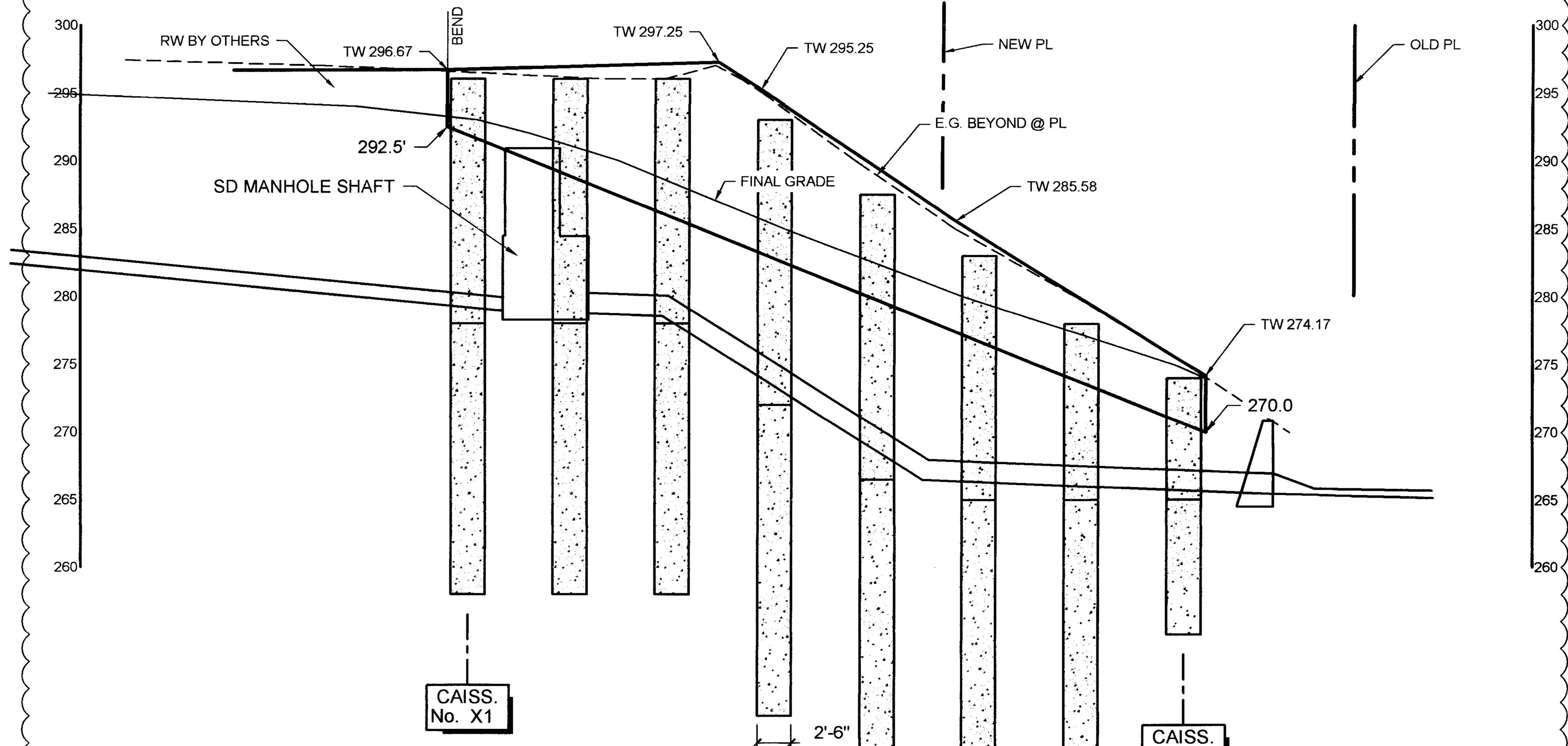
1/8" = 1'-0"



5 TEMPORARY SHORING CONDITION

SOUTH-EAST WALL

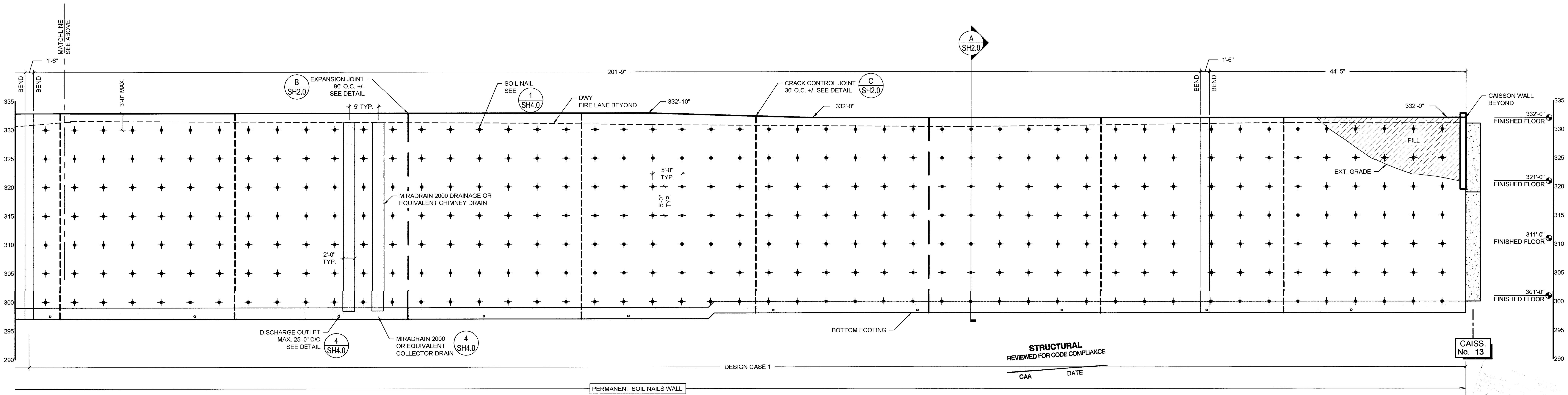
1/8" = 1'-0"



5 PERMANENT RETAINING WALL

SOUTH-EAST WALL

1/8" = 1'-0"



STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA DATE

4 NORTH PERMANENT WALL

1/8" = 1'-0"

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EARTH RETENTION PLAN

ELEVATIONS

REGISTERED PROFESSIONAL ENGINEER
REAL D. BERLINER
2576
GEOTECHNICAL
STATE OF CALIFORNIA

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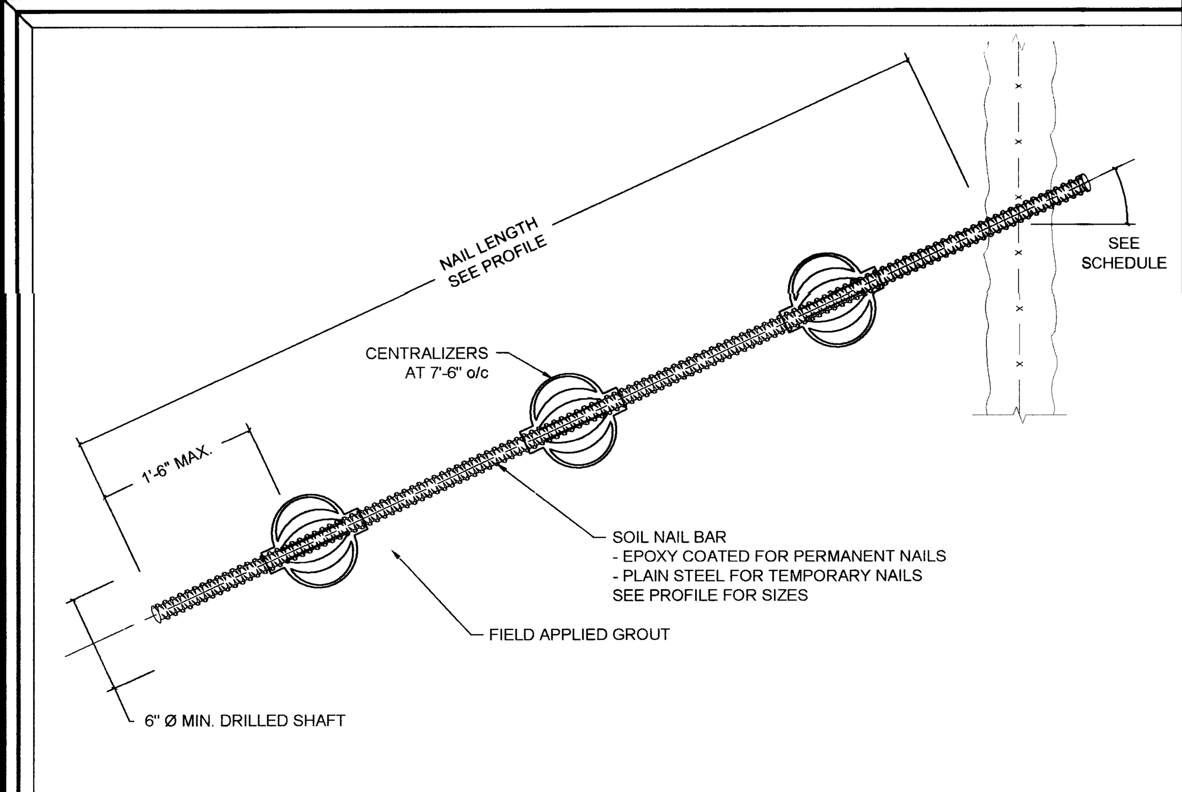
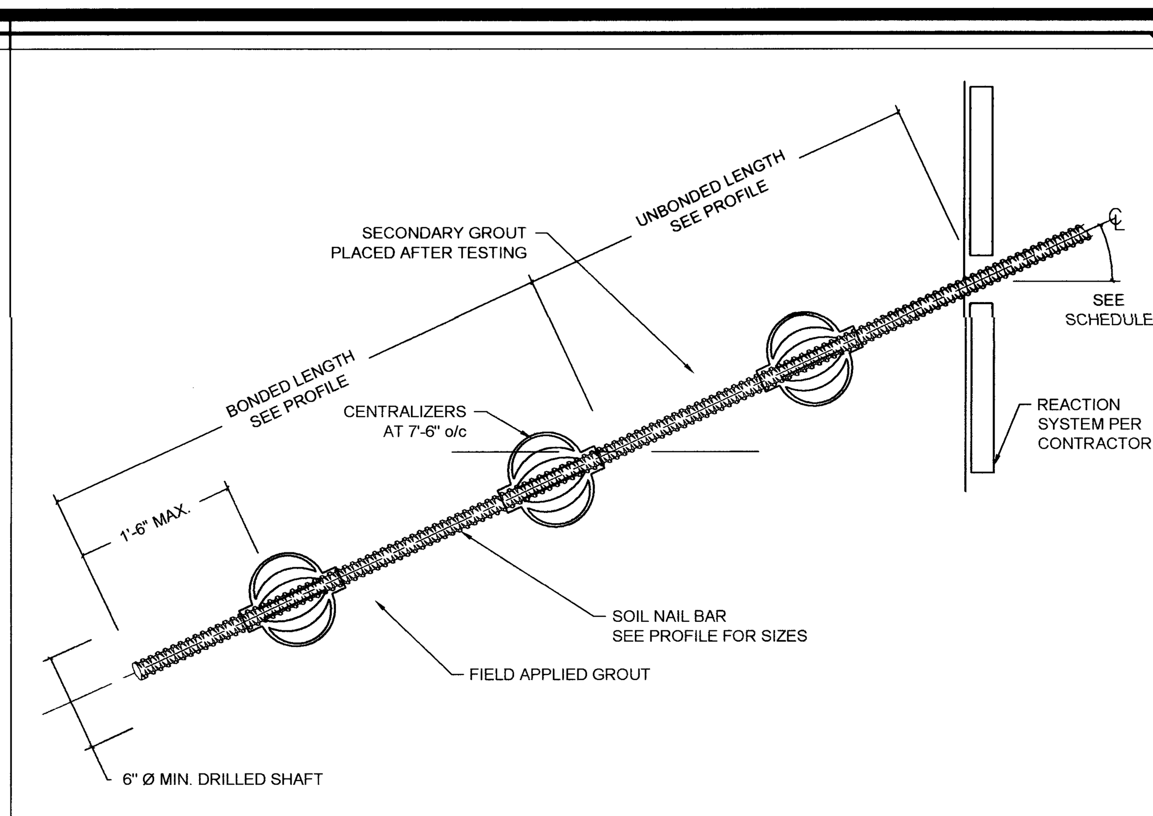
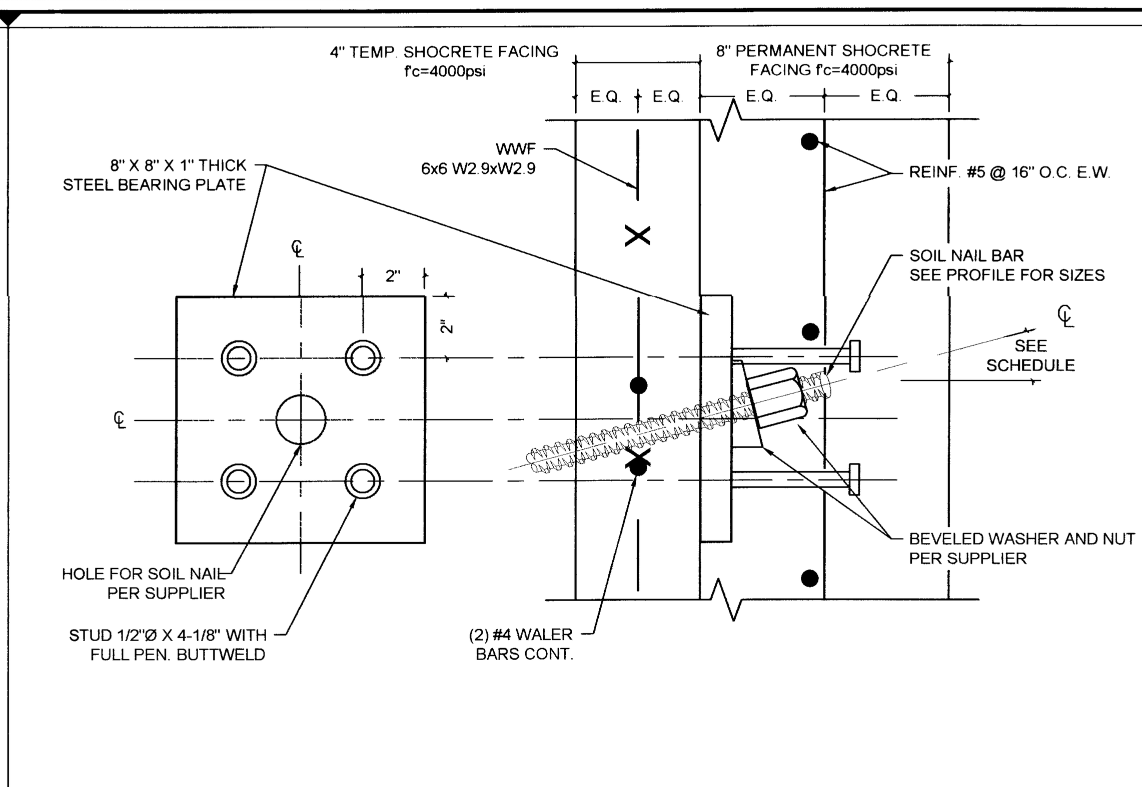


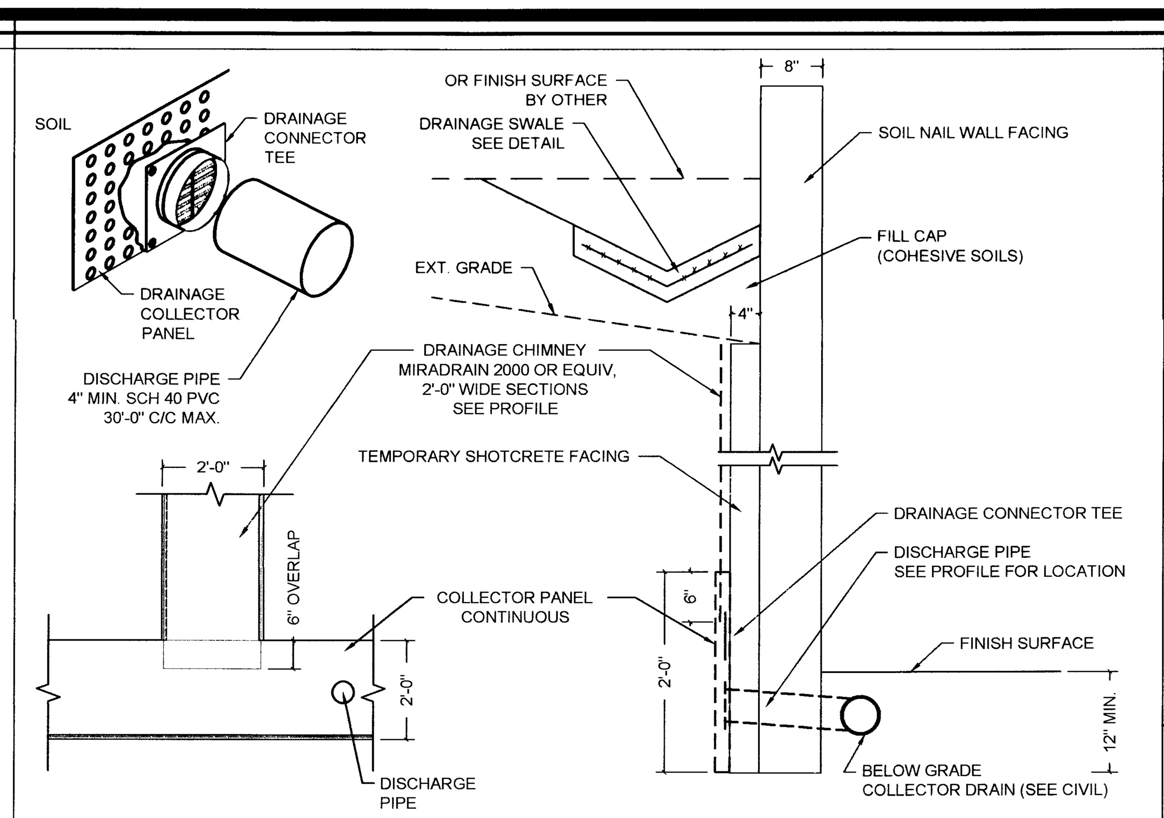
1 SOIL NAIL
Scale: N.T.S.



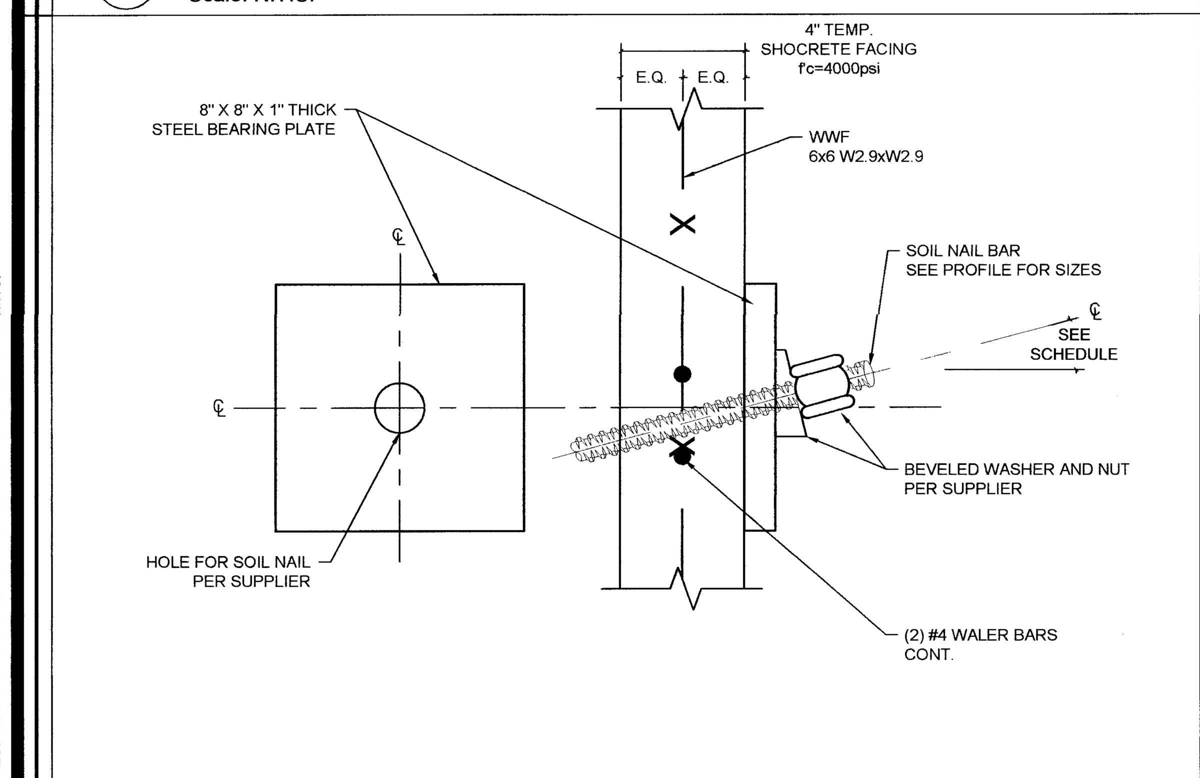
2 PROOF TEST SOIL NAIL
Scale: N.T.S.



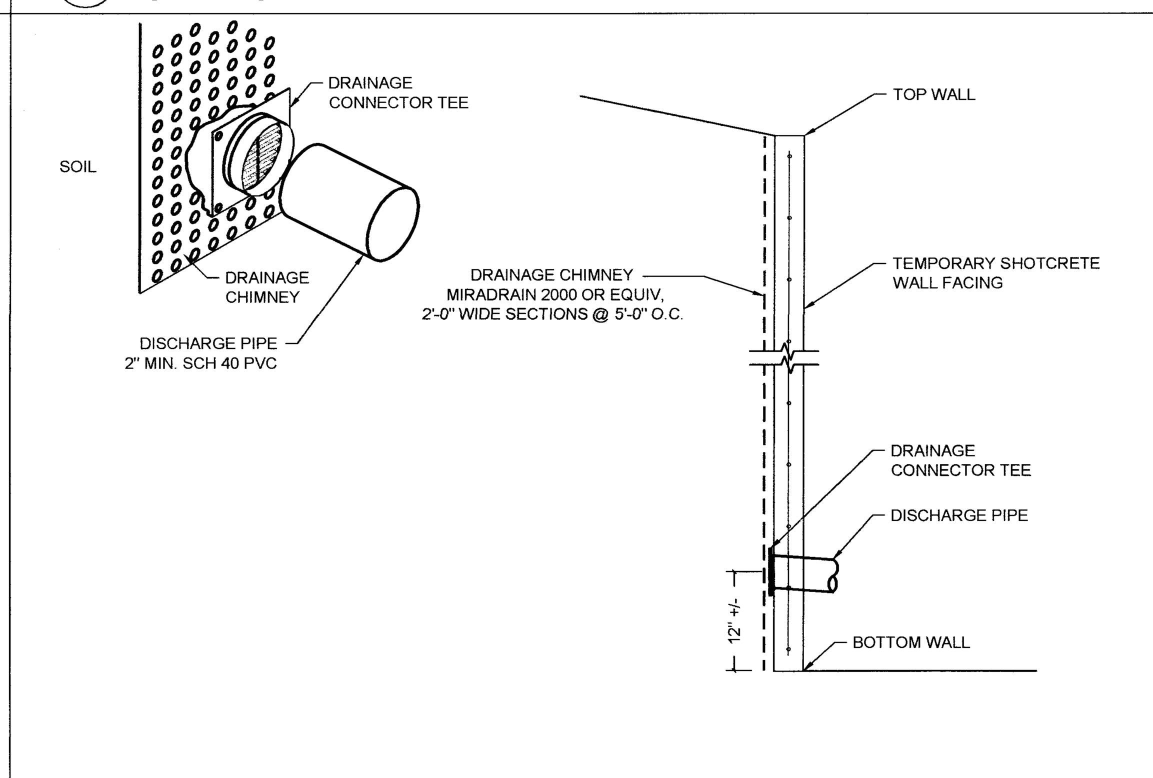
3 PERMANENT SOIL NAIL FACING & BEARING PLATE
Scale: N.T.S.



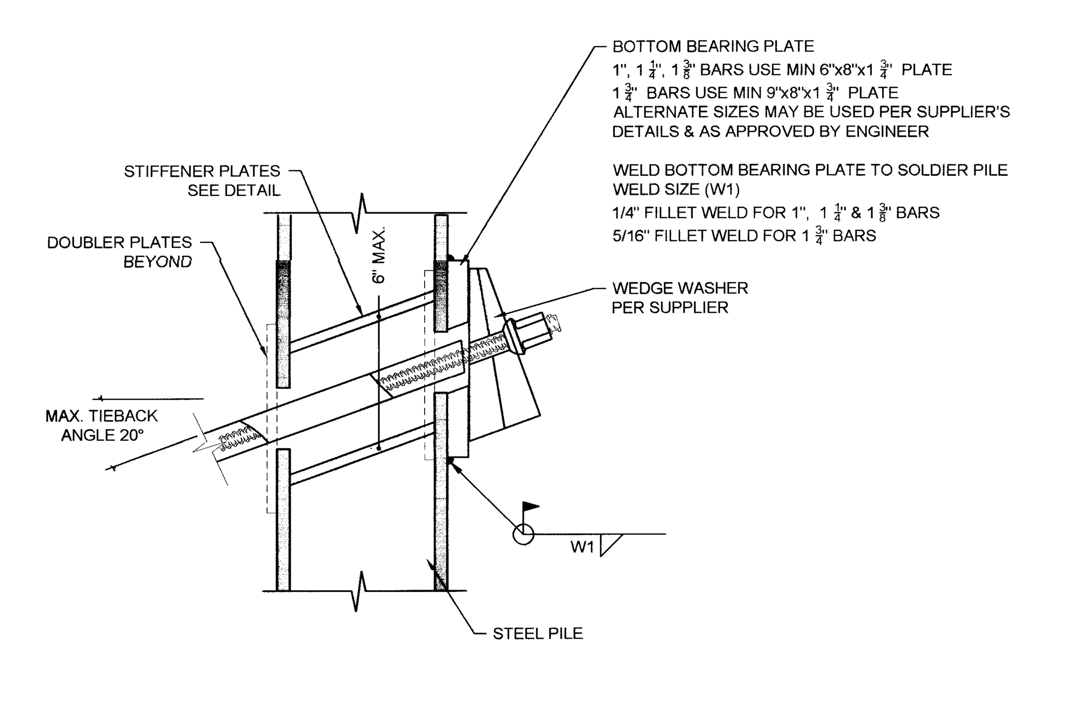
4 PERMANENT SOIL NAIL WALL DRAINAGE
Scale: N.T.S.



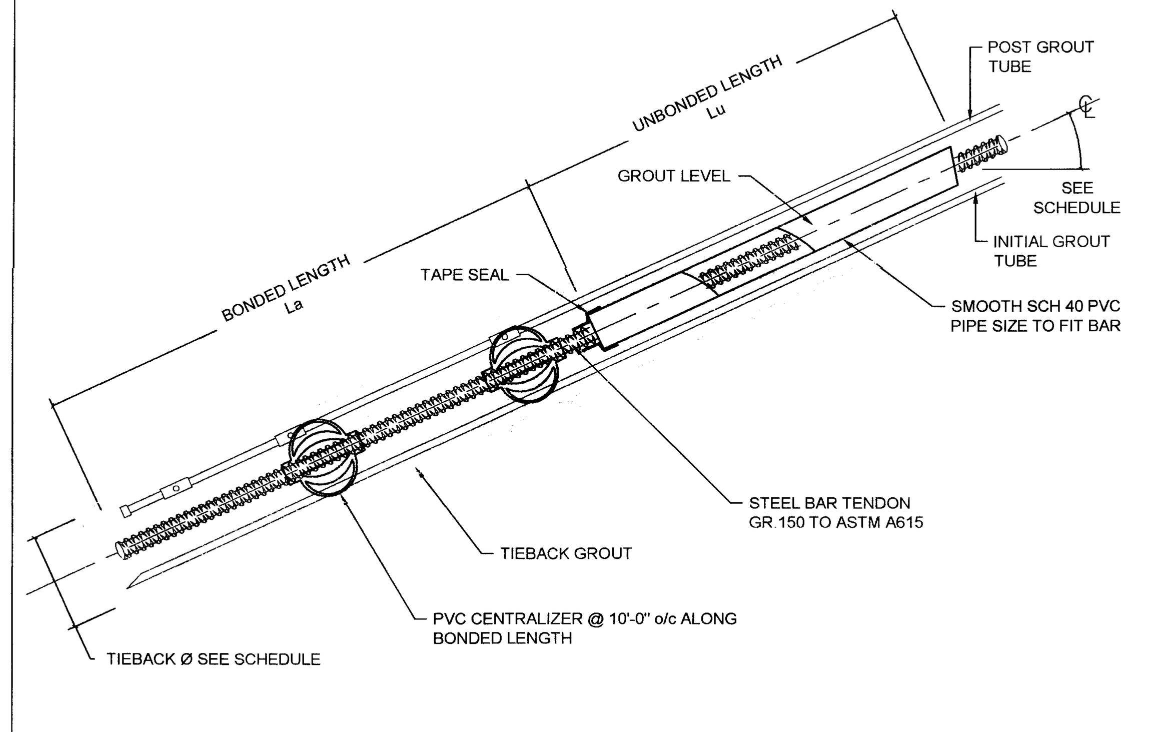
5 TEMPORARY SOIL NAIL FACING & BEARING PLATE DETAIL
Scale: N.T.S.



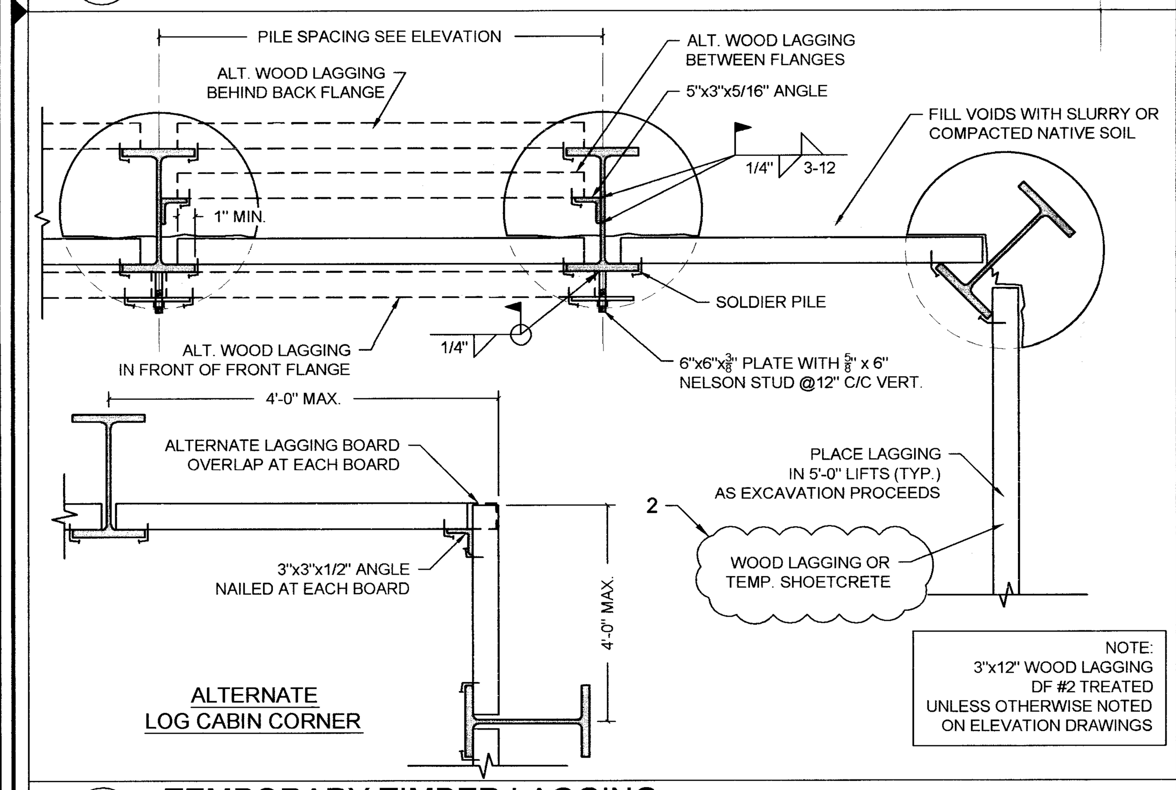
6 TEMPORARY SOIL NAIL WALL DRAINAGE
Scale: N.T.S.



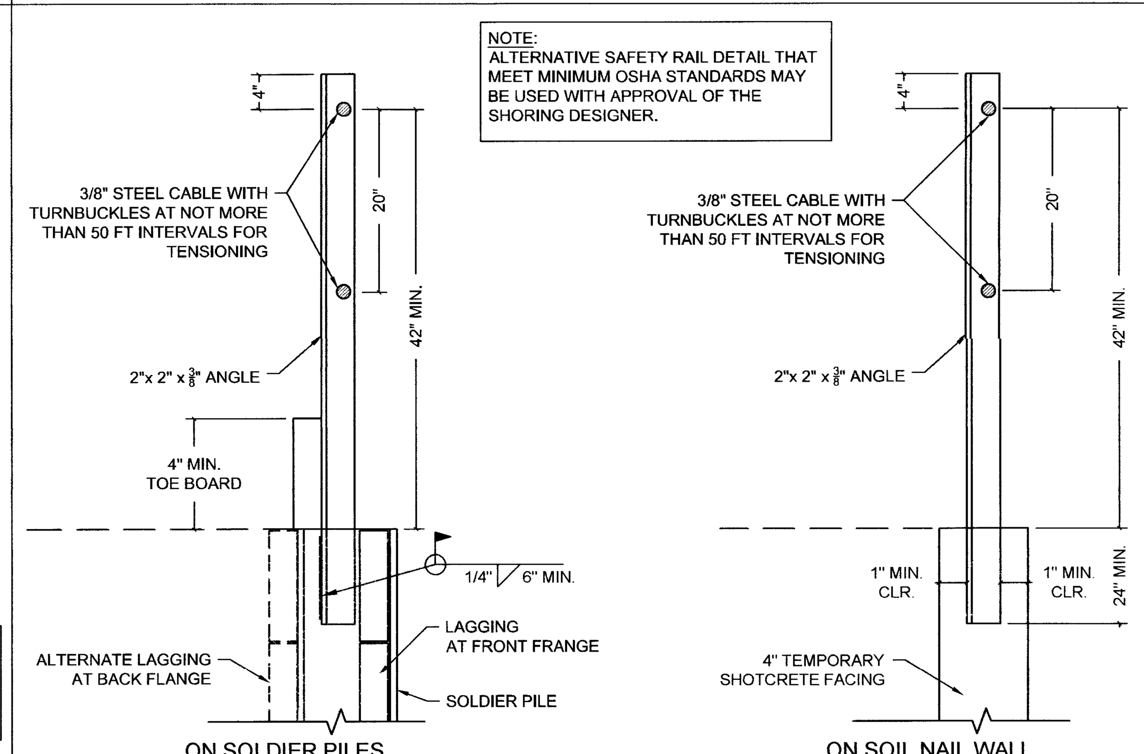
7 TEMPORARY BAR TIEBACK HEAD WITH WEDGE WASHER
Scale: N.T.S.



8 NON REMOVABLE TEMPORARY BAR TIEBACK
Scale: N.T.S.



9 TEMPORARY TIMBER LAGGING
Scale: N.T.S.

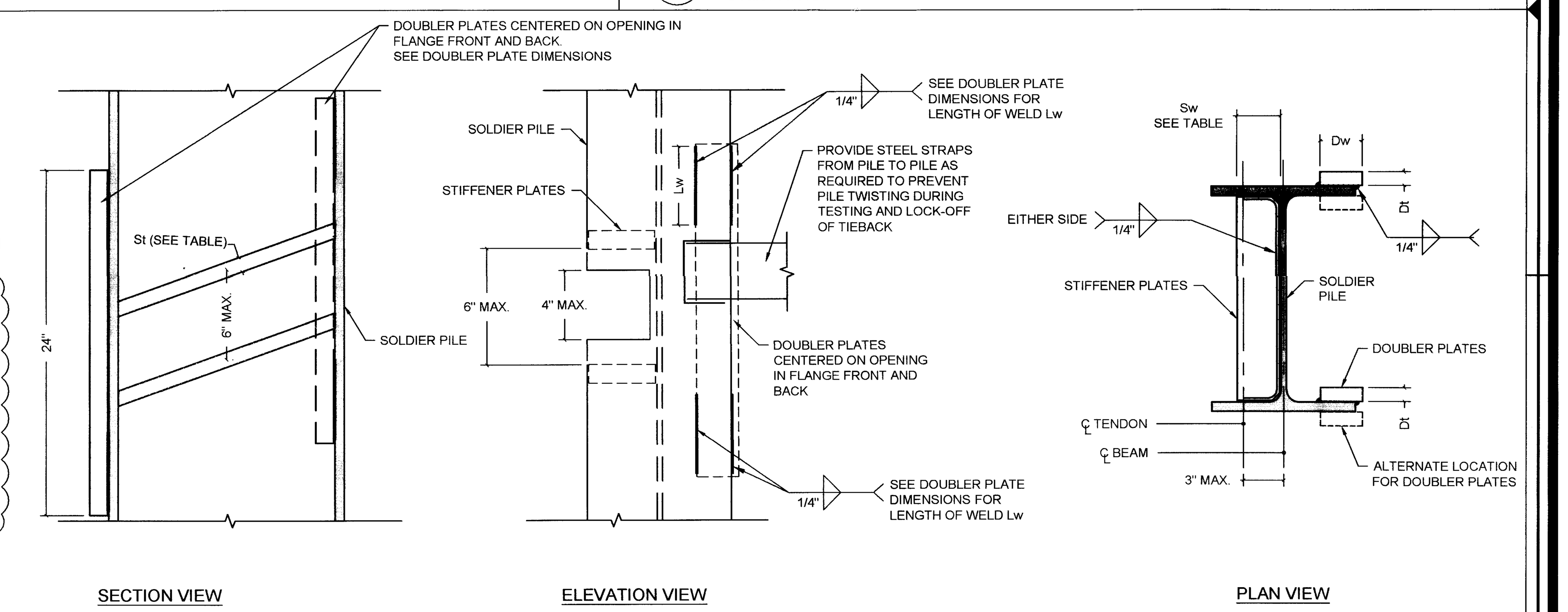


10 TEMPORARY SAFETY RAIL
Scale: N.T.S.

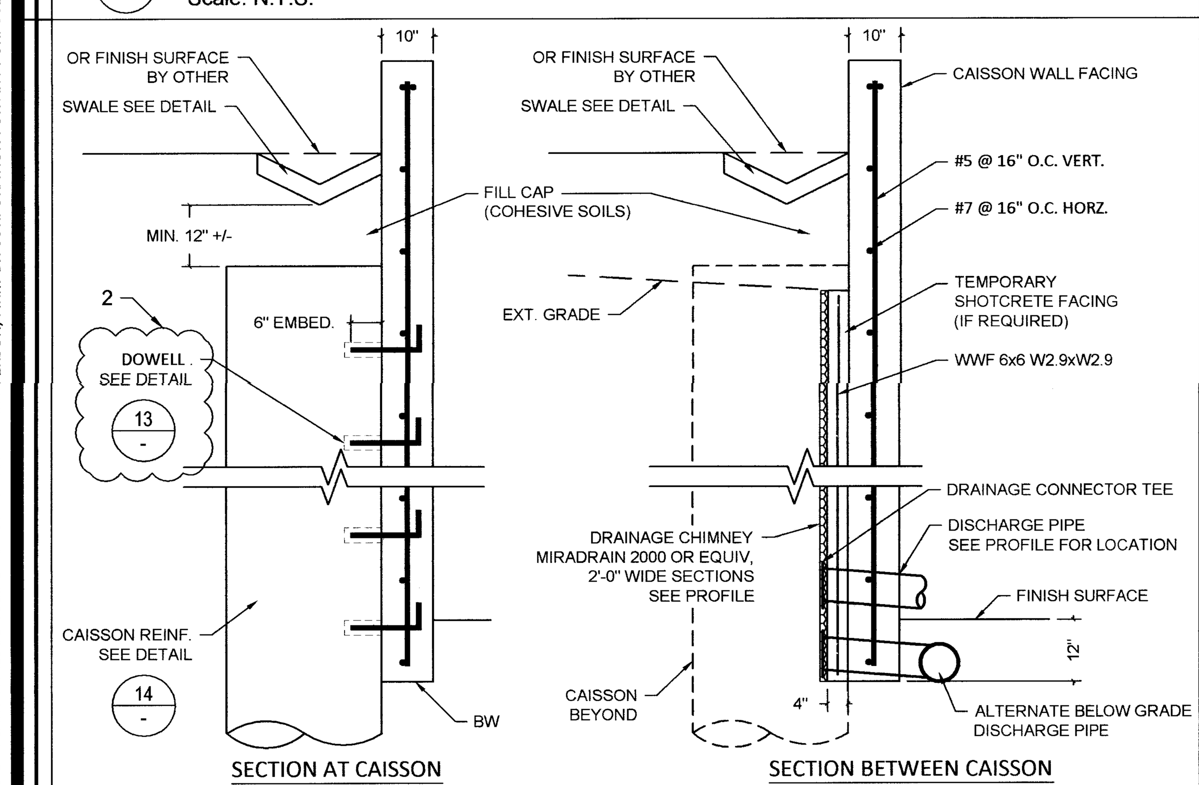
Tieback Design Load	Stiffner Plate Dimensions	
kip	Sw	St
<=100	3"	1/2"
<=150	3"	1"
<=200	3"	1-1/4"
<=250	3"	1-1/2"
<=300	3-1/4"	1-3/4"
<=350	3-1/2"	2"

Doubler Plate Dimensions

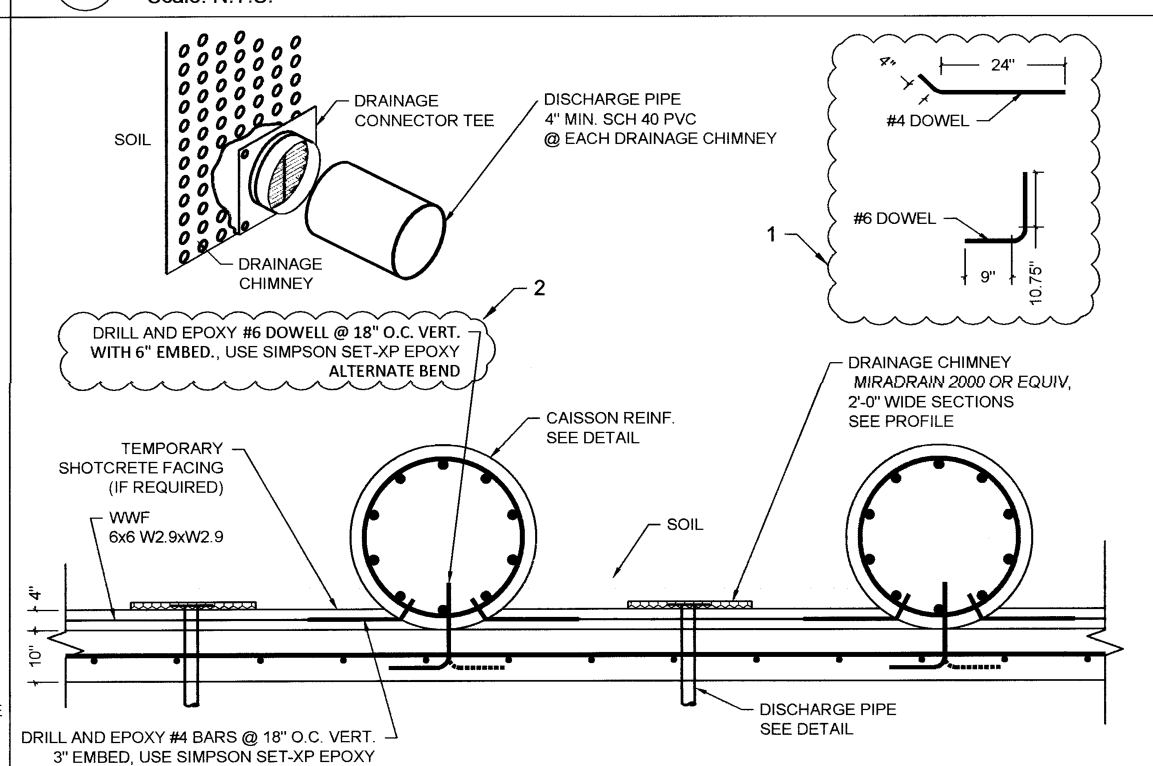
Soldier Pile Size	SIDEWINDER CONNECTION Doubler Plate Sizes		
	Dw	Dt	Lw 1/4" Weld
	in	in	in
W14X30	3.00	0.50	3
W14X48	3.50	0.75	4
W14X61	3.50	1.00	6
W14X74	4.00	1.00	6



10-2 TEMPORARY TIEBACK TO PILE CONNECTION
Scale: N.T.S.



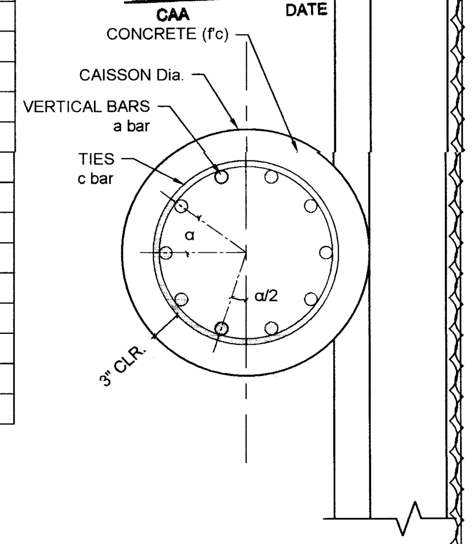
12 PERMANENT CAISSON WALL SECTION
Scale: N.T.S.



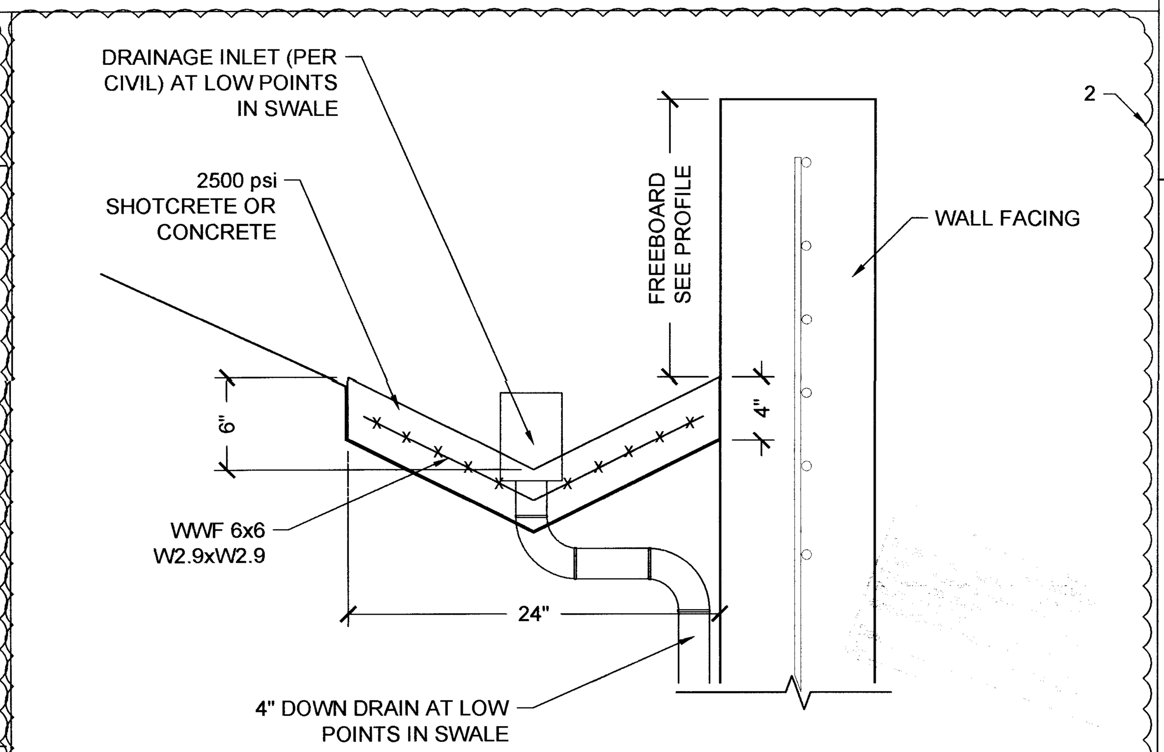
13 PERMANENT CAISSON WALL FACING PLAN
Scale: N.T.S.

Caisson No	Caisson Dia	Top Elev.	Tip Elev.	Caisson Depth	f'c	Vertical bars		Ties
						a bars	α	c bars
	ft	ft	ft	ft	ksi			
1	2.5	337.0	308.5	28.5	3	8 #10	45.00	#4@6
2	2.5	337.0	308.5	28.5	3	8 #10	45.00	#4@6
3	3.0	339.5	287.5	52.0	4	14 #14	25.71	#4@6
4	3.0	347.5	305.5	42.0	4	14 #14	25.71	#5@4
5-6	3.0	350.0	302.5	47.5	4	22 #14	16.36	#6@4
7	3.0	349.5	302.5	47.0	4	22 #14	16.36	#6@4
8	3.0	349.0	302.0	47.0	4	22 #14	16.36	#6@4
9	2.5	346.0	313.5	32.5	3	10 #10	36.00	#5@6
10	2.5	342.0	321.5	20.5	3	6 #7	60.00	#4@6
11	2.5	338.0	321.5	16.5	3	6 #7	60.00	#4@6
12	2.5	334.5	316.5	18.0	3	6 #7	60.00	#4@6
13	2.5	331.0	299.0	32.0	4	12 #14	30.00	#5@4
X1 to X3	2.5	296.0	258.0	38.0	3	10 #10	36.00	#4@5
X4	2.5	293.0	249.0	44.0	3	12 #14	30.00	#5@5
X5	2.5	287.5	243.5	44.0	3	12 #14	30.00	#5@5
X6	2.5	283.0	245.0	38.0	3	10 #10	36.00	#4@5
X7	2.5	278.0	245.0	33.0	3	10 #10	36.00	#4@5
X8	2.5	274.0	255.0	19.0	3	6 #7	60.00	#4@6

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA DATE



14 CAISSONS REINF. DETAIL
Scale: N.T.S.



15 TYPICAL TOP OF WALL DRAINAGE SWALE
Scale: N.T.S.

EARTH RETENTION PLAN

DETAILS

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6.29.13 714-494-2304

John, To get me copy
for ABDULLAH (1 week)
Jeo

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CITY OF ... QUEL
COMMUN...

PLN

25891 CROWN VALLEY PKWY LN

B12-1900

Crown - Storing
mill creek

TCA
ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHAHBAZIAN
No. C19002
STATE OF CALIFORNIA

REVISION | REMARKS

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

MILL CREEK
RESIDENTIAL TRUST LLC

LEASING SUBMITTAL - ASI #10

MAY 8TH, 2014
TCA Job# 2010 - 089

PLUMBING

- P0.11 PLUMBING: WASTE & VENT GARAGE LEVEL B1
- P0.12 PLUMBING: WASTE & VENT BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1
- P0.21W PLUMBING: WATER GARAGE LEVEL B1
- P0.22 PLUMBING: WATER & GAS BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1
- P0.23W PLUMBING: WATER BLDG. "A" LEVEL 2 & GARAGE LEVEL P2
- P1.11C PLUMBING: WASTE & VENT GARAGE LEVEL B1 SEGMENT C
- P1.12C PLUMBING: WASTE & VENT BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 - SEGMENT C
- P1.21WC PLUMBING: WATER GARAGE LEVEL B1 - SEGMENT C
- P1.22C PLUMBING: WATER & GAS BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 - SEGMENT C
- P1.23WC PLUMBING: WATER BLDG. "A" LEVEL 2 & GARAGE LEVEL P2 - SEGMENT C

MECHANICAL

- MG-1 LEGEND, SYMBOLS & EQUIPMENT SCHEDULES
- MG-15 ENLARGED FLOOR PLANS
- MR-0.17 BUILDING B LOW ROOF
- MR-1 LEGEND, SYMBOLS & EQUIPMENT SCHEDULES
- MR-8 ENLARGED FLOOR PLANS
- MR-11 DETAILS
- MR-12 DETAILS

ARCHITECTURAL

- T.1 COVER SHEET / SHEET INDEX
- A6.14A LEASING - FLOOR PLANS
- A6.14B LEASING - RCP
- A6.14C LEASING - SECTIONS
- A6.14D LEASING - INTERIOR ELEVATIONS
- A6.14E LEASING - DETAILS
- AD3.1 DOOR DETAILS
- AD3.2 DOOR DETAILS
- AD3.5 STOREFRONT DETAILS
- AD10.1 ACCESSIBILITY DETAILS

INTERIOR

ELECTRICAL

- E1.1 PRELIMINARY LIGHTING FIXTURE SCHEDULE
- E1.12A BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 ELECTRICAL PLAN - SEGMENT A
- E1.13C BLDG. "A" LEVEL 2 & GARAGE LEVEL P2 ELECTRICAL PLAN - SEGMENT C
- E1.18C BLDG. "B" LOW ROOF ELECTRICAL PLAN - SEGMENT C
- E1.4 TITLE 24 LEASING & FITNESS CENTERS
- E6.1 LEASING OFFICE LIGHTING PLAN - PODIUM LEVEL
- E6.2 LEASING OFFICE POWER PLAN - PODIUM LEVEL

STRUCTURAL

- S0.12 BLDG. "A" PODIUM SLAB PLAN; BLDG. "B" LEVEL P1 SLAB PLAN
- S0.12.1 BLDG. "A" PODIUM REBAR PLAN; BLDG. "B" LEVEL P1 REBAR PLAN - (NORTH-SOUTH)
- S0.12.2 BLDG. "A" PODIUM REBAR PLAN; BLDG. "B" LEVEL P1 REBAR PLAN - (EAST-WEST)
- S0.13 GARAGE LEVEL P2 SLAB PLAN
- S0.13.1 GARAGE LEVEL P2 REBAR PLAN - (NORTH-SOUTH)
- S0.13.2 GARAGE LEVEL P2 REBAR PLAN - (EAST-WEST)
- SC-9 STRUCTURAL DETAILS
- SW-8 STRUCTURAL DETAILS

DRAWING CONTENTS
COVER SHEET

FOR CONSTRUCTION

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T.1

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JOB NUMBER

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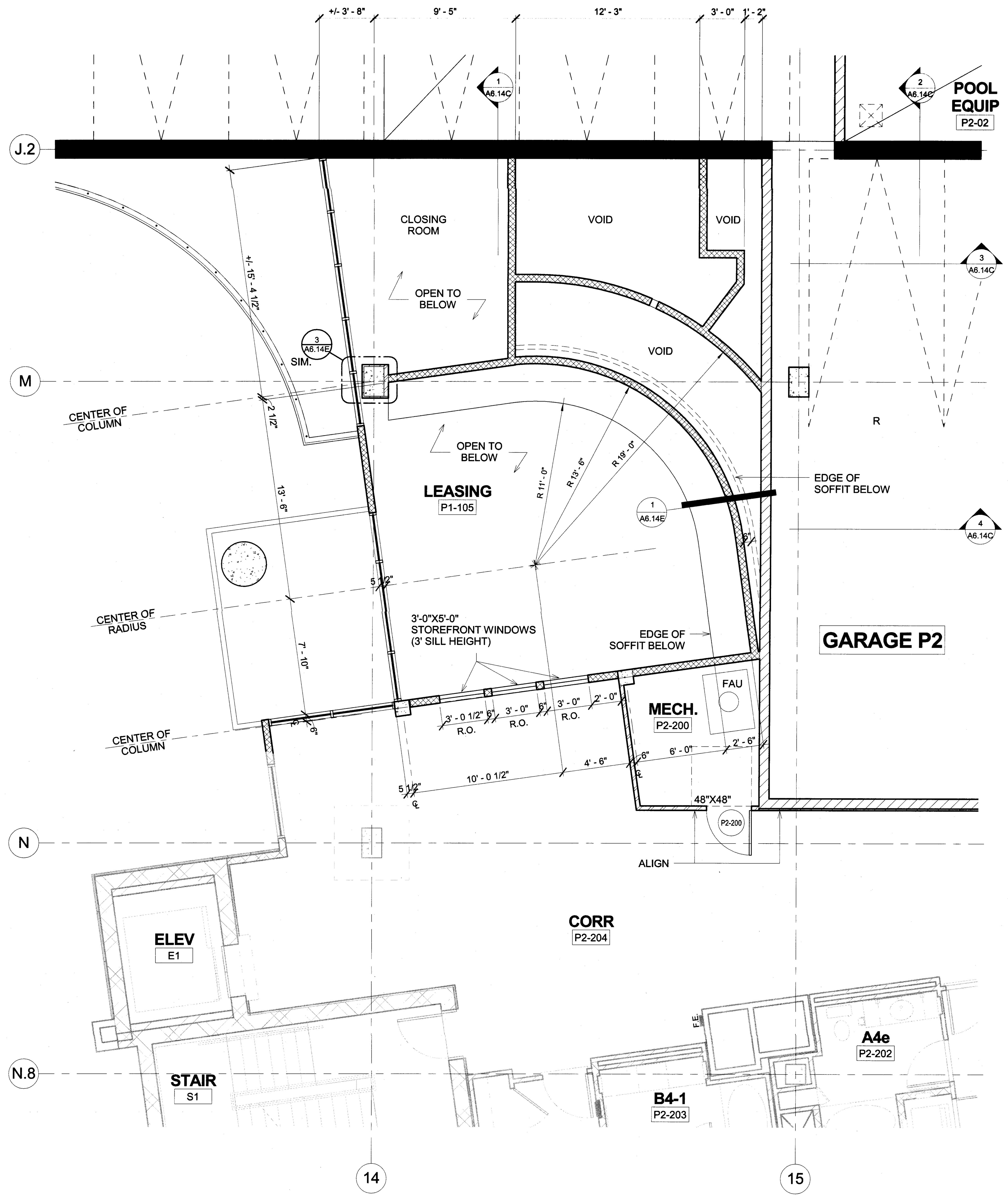
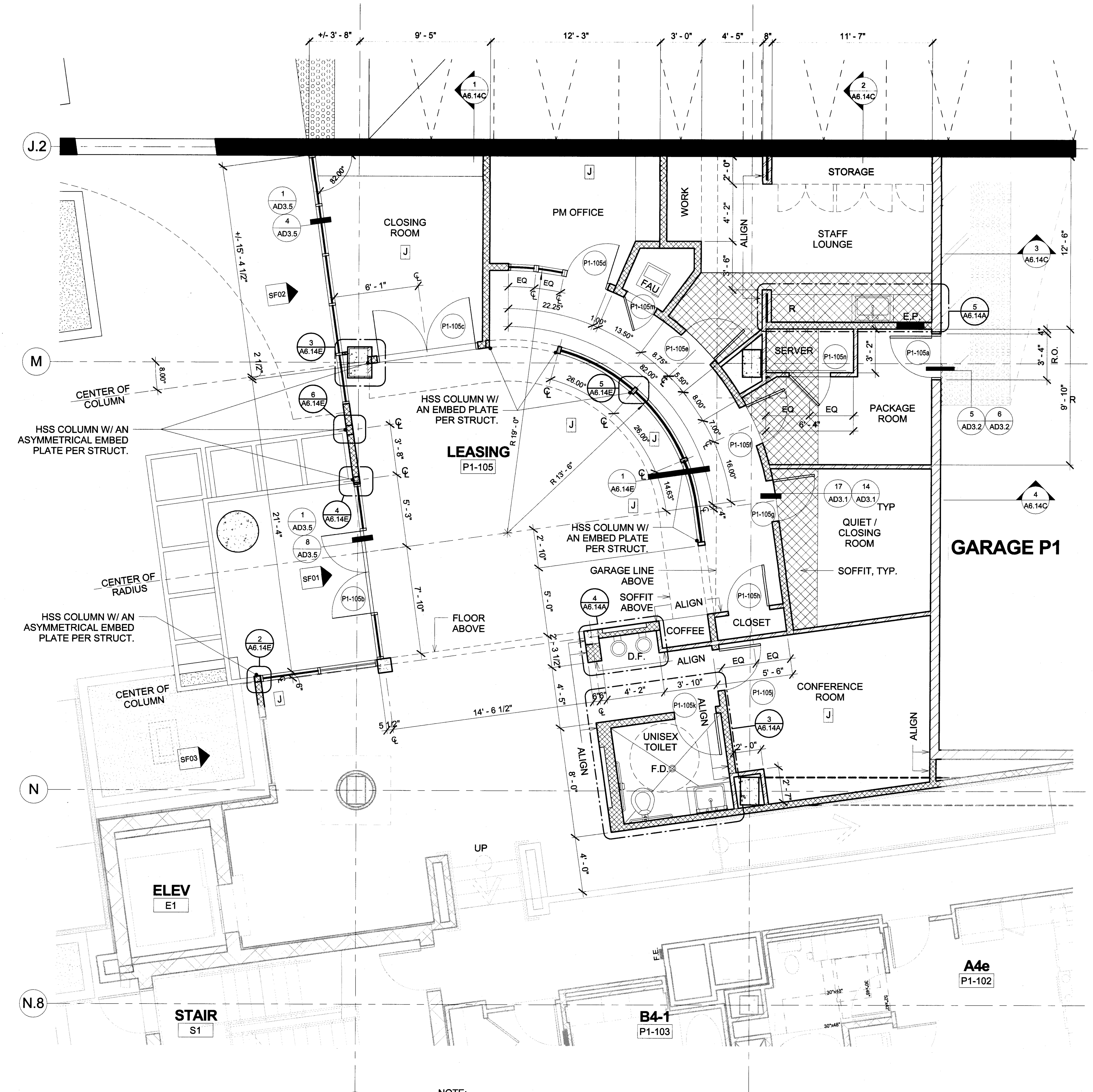
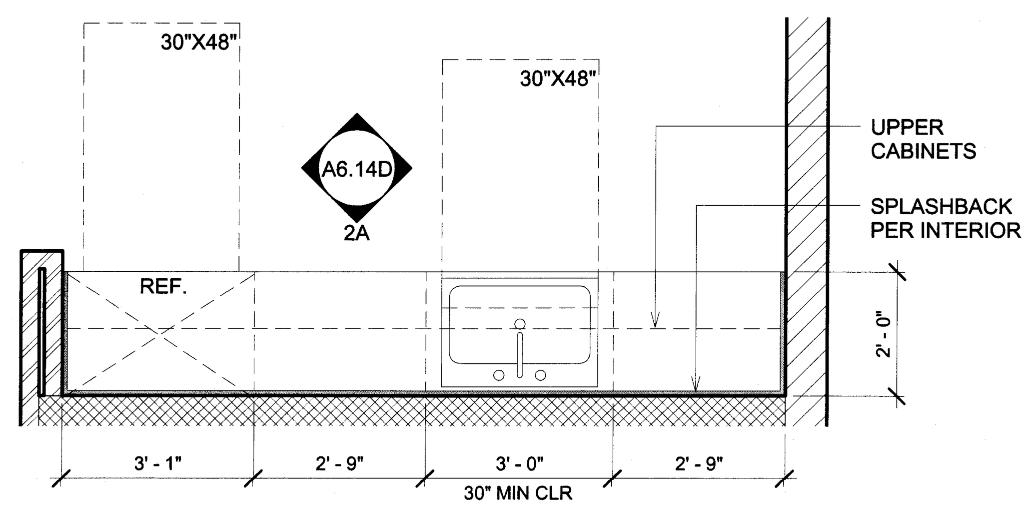


2 LEASING - 2ND FLOOR PLAN
1/4" = 1'-0"

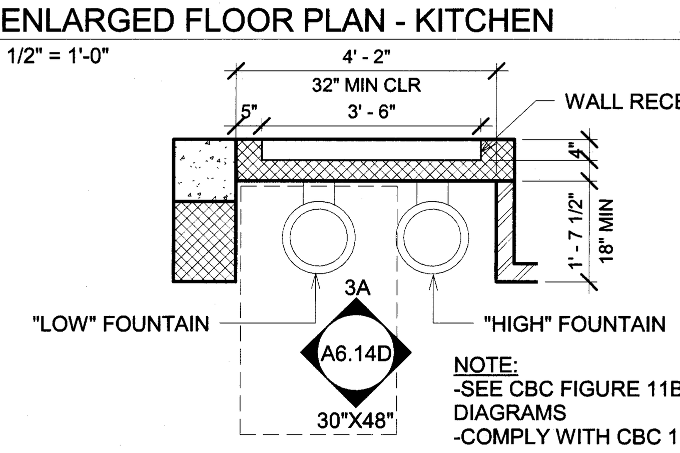


NOTE:
SEE SHEET 2/A2 FOR EXACT LOCATION OF ELECTRICAL AND PLUMBING PENETRATIONS

1 LEASING - 1ST FLOOR PLAN
1/4" = 1'-0"

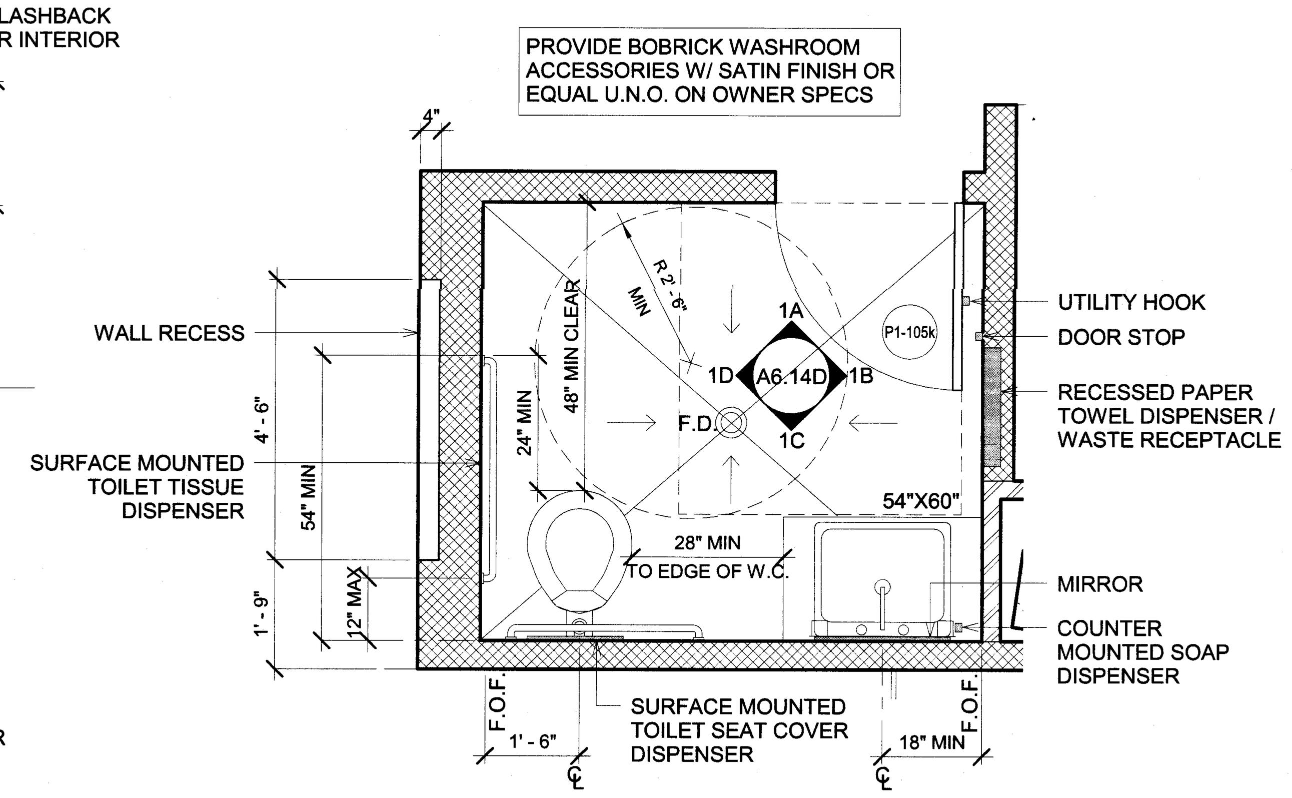


5 ENLARGED FLOOR PLAN - KITCHEN
1/2" = 1'-0"



NOTE:
-SEE CBC FIGURE 11B-3A AND 11B-3B FOR DIAGRAMS
-COMPLY WITH CBC 1117B.1

4 ENLARGED FLOOR PLAN - DRINKING FOUNTAIN
1/2" = 1'-0"

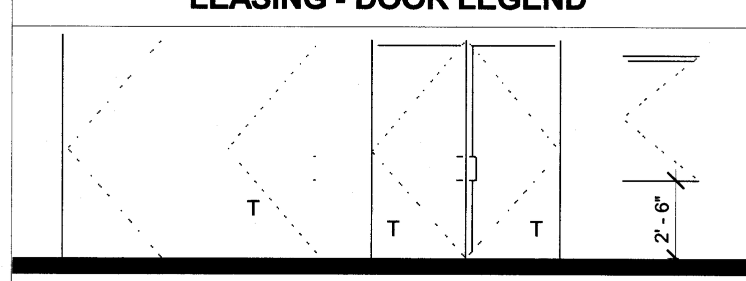


3 ENLARGED FLOOR PLAN - RESTROOM
1/2" = 1'-0"

LEASING - DOOR SCHEDULE

Mark	DOOR TYPE	SIZE Width	Height	Thickness	Fire Rating	COMMENT
P1-105a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS
P1-105b	E	6' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT, CLOSER, SS
P1-105c	E	7' - 0"	8' - 8"	0' - 1 3/4"		STOREFRONT
P1-105d	C	3' - 0"	8' - 0"	0' - 1 3/4"		STOREFRONT
P1-105e	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105f	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105g	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105h	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105j	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105k	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105m	I	2' - 6"	4' - 0"	0' - 1 3/8"		
P1-105n	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P2-200	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS

LEASING - DOOR LEGEND



NOTE:
SEE DETAILS ON SHEETS AD3.1 TO AD3.5 FOR DOOR JAMB, SILL AND HEAD DETAILS (TYP.)

ABBREVIATIONS & SYMBOLS

F.D. FLOOR DRAIN
D.F. DRINKING FOUNTAIN
S.S. SMOKE SEAL
E.P. ELECTRICAL PANEL

EXIT SIGN PER SECTION 1011 2010 CFC. SIGNS SHALL BE PERMANENTLY ILLUMINATED. FACE OF EXIT SIGN SHALL BE ILLUMINATED FROM AN EXTERNAL SOURCE AND SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT-CANDLES (54 lux). EXIT SIGN PLACEMENT SHALL BE SUCH THAT NO POINT IN AN ACCESS CORRIDOR OR EXIT PASSAGEWAY IS MORE THAN 100 FT OR THE LISTED VIEWING DISTANCE FOR THE SIGN, WHICHEVER IS LESS, FROM THE NEAREST VISIBLE EXIT SIGN. SHADED REGION INDICATES THE DIRECTION OF TRAVEL TO THE EXIT.

F.E. FIRE EXT. PER SECTION 906 & TABLE 906.3(1) 2010 CFC. MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER 75 FT. MOUNT FIRE EXTINGUISHER TO NEAREST COL OR WALL 3/AD8.2

J J-BOX FOR POWER AND DATA

LEASING - WALL LEGEND

- 3-5/8" METAL STUD WALL
- 6" METAL STUD WALL
- CMU BLOCK WALL
- CONCRETE WALL
- SHEAR CONCRETE WALL

GENERAL NOTES

1. ALL DOORS SHALL HAVE 4" MIN JAMBS U.N.O.
2. ALL DOORS, COUNTERTOPS, PLUMBING FIXTURES, AND KITCHEN APPLIANCES SHALL COMPLY WITH ACCESSIBILITY REQUIREMENTS PER CH.11 CBC AND LOCAL SECURITY ORDINANCES.
3. CEILING HEIGHTS ARE FROM TOP OF SLAB OR TOP OF SHEATHING TO BOTTOM OF SOFFIT FRAMING, TYPICAL.
4. ALL GYPSUM WALL BOARD TO BE 5/8" TYPE "X" 1-HOUR RATED. PROVIDE 5/8" TYPE "X" WATER RESISTANT GYPSUM WALL BOARD AT ALL WET WALLS. WATER RESISTANT GYPSUM WALL BOARD SHALL EXTEND FROM FLOOR TO CEILING.
5. PROVIDE 90 DEGREE GYPSUM CORNER BEADS AT ALL LOCATIONS.
6. CONTRACTOR, DOOR SUPPLIER, GLASS MANUFACTURER, AND INSTALLER WILL PROVIDE SAFETY GLAZING AS REQUIRED BY CALIFORNIA BUILDING CODE SECTION 2406 AND ALL OTHER FEDERAL, STATE, AND LOCAL LAWS, CODES, ORDINANCES, AND REGULATIONS, WHETHER OR NOT INDICATED ON THE PLANS.
7. REFER TO SHEETS AS1.10 - AS1.31 FOR ADDITIONAL INFORMATION REGARDING DOORS, WINDOWS, AND STOREFRONTS.

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT ADAM C. CHAMBERS No. C19002 STATE OF CALIFORNIA

REMARKS
REVISION

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - FLOOR PLANS

FOR CONSTRUCTION

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A6.14A

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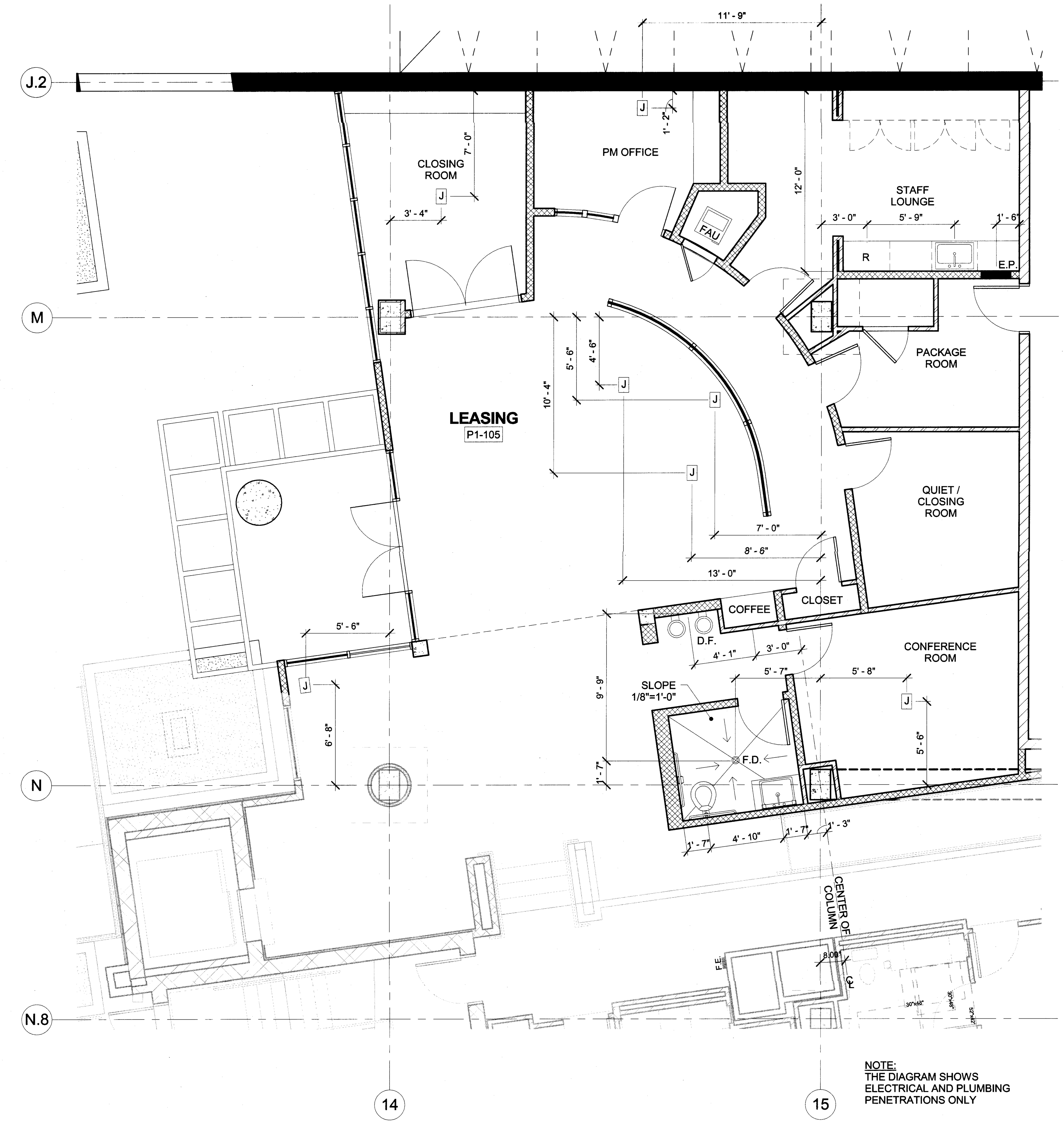
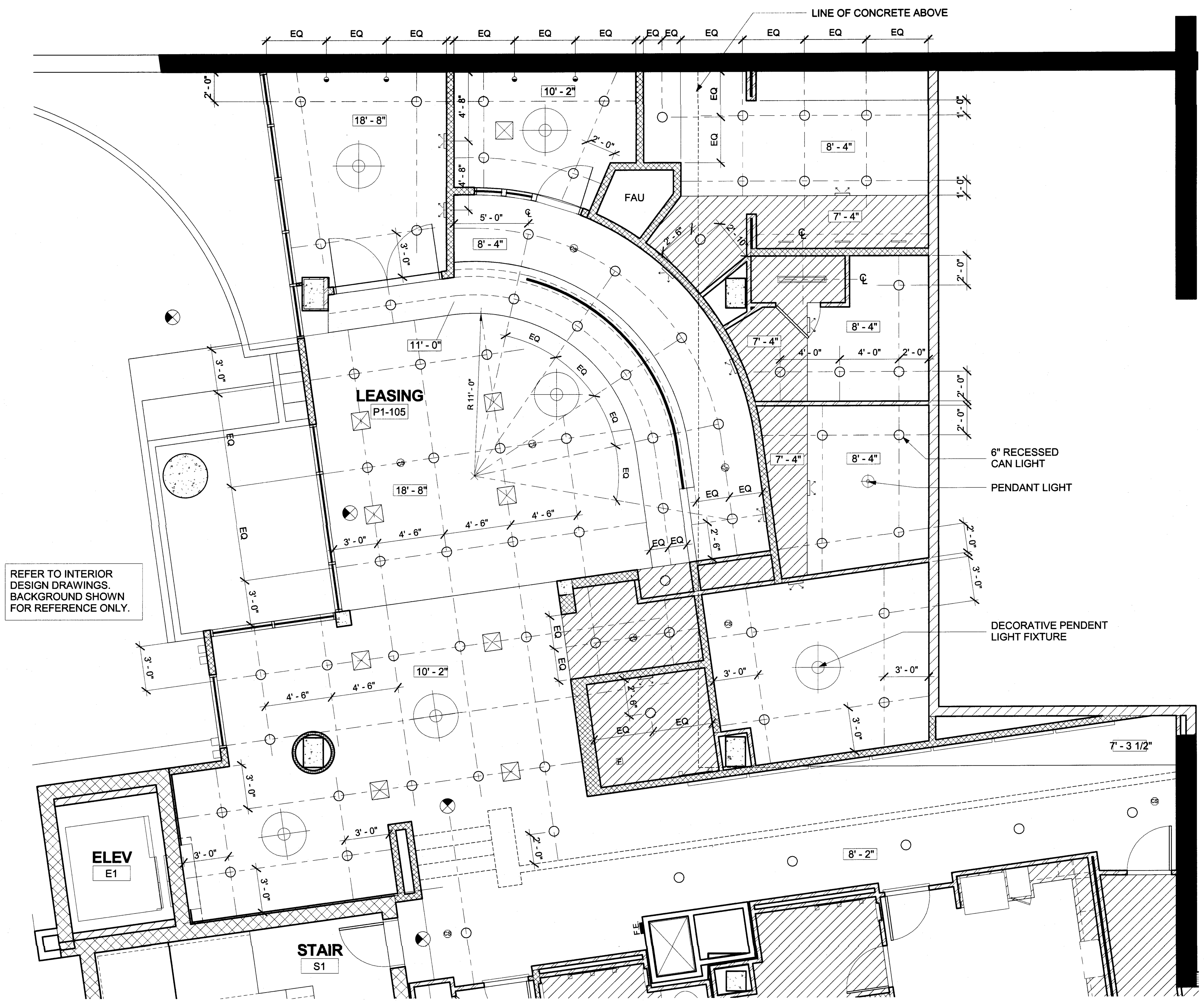


2 LEASING - SLAB PENETRATION DIAGRAM
1/4" = 1'-0"



1 LEASING - RCP
1/4" = 1'-0"

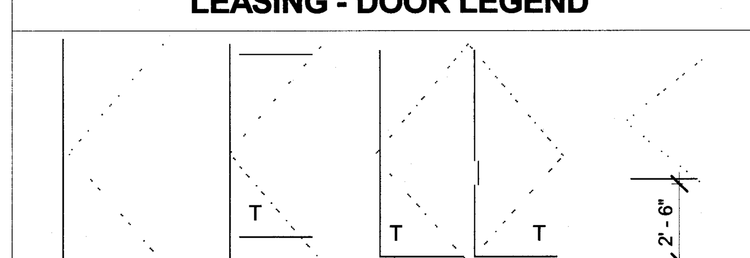
CEILING LEGEND

- DROP CEILING
- RECESSED CAN FIXTURE 6" DIA.
- HANGING LIGHT FIXTURE
- UNDER COUNTER LIGHT
- SUPPLY AIR
- EXHAUST FAN
- WALL WASHER
- COMBINATION CO2 & SMOKE DETECTOR, HARDWIRE W/ BATTERY BACKUP, REFER TO CBC SECTION 420 & ELECTRICAL DRAWINGS. INSTALL ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- FLOURESCENT LIGHT

LEASING - DOOR SCHEDULE

Mark	DOOR TYPE	SIZE Width	Height	Thickness	Fire Rating	COMMENT
P1-105a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS
P1-105b	E	6' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT, CLOSER, SS
P1-105c	E	7' - 0"	8' - 8"	0' - 1 3/4"		STOREFRONT
P1-105d	C	3' - 0"	8' - 0"	0' - 1 3/4"		STOREFRONT
P1-105e	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105f	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105g	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105h	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105j	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105k	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105m	I	2' - 6"	4' - 0"	0' - 1 3/8"		
P1-105n	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P2-200	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS

LEASING - DOOR LEGEND



NOTE:
SEE DETAILS ON SHEETS AD3.1 TO AD3.5 FOR DOOR JAMB, SILL AND HEAD DETAILS (TYP.)

ABBREVIATIONS & SYMBOLS

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D.F. DRINKING FOUNTAIN
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J J-BOX FOR POWER AND DATA

LEASING - WALL LEGEND

- 3-5/8" METAL STUD WALL
- 6" METAL STUD WALL
- CMU BLOCK WALL
- CONCRETE WALL
- SHEAR CONCRETE WALL

GENERAL NOTES

1. LIGHTS TO BE CENTERED IN CEILING AREA WITHIN ROOM UNLESS NOTED OTHERWISE.

2. CEILING HEIGHTS ARE FROM TOP OF SLAB OR TOP OF SHEATHING TO BOTTOM OF SOFFIT FRAMING, TYPICAL.

3. ALL CEILINGS ARE 5/8" GYPSUM WALL BOARD TYPE 'X' OVER 1/2" RESILIENT CHANNELS TIGHT TO CEILING.

AT COMMON AREAS (CLUB ROOM, FITNESS, COMP/LOUNGE & YOGA) PROVIDE 3 LAYERS OF 5/8" GYPSUM WALL BOARD TYPE 'X' OVER 1/2" RESILIENT CHANNELS TIGHT TO CEILING.

4. INTERIOR WALL & CEILING FINISH SHALL HAVE A "LIGHT ORANGE PEEL TEXTURE".

5. VERIFY ALL LIGHTING REQUIREMENTS WITH THE ELECTRICAL DRAWINGS.

6. VERIFY ALL RECESSED FIXTURES FIT WITHIN THE GIVEN CEILING SPACE. CONTRACTOR TO VERIFY DEPTH CLEARANCES FOR THESE LIGHTS.

7. LOCATION OF ALL CEILING ITEMS IS GOVERNED BY THE ARCHITECTURAL DRAWINGS - CONTRACTOR TO NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH TECH WORK.

8. VERIFY ALL MECHANICAL SUPPLY, RETURN, AND EXHAUST GRILLES WITH MECHANICAL DRAWINGS.

9. REFER TO MECHANICAL, ELECTRICAL & PLUMBING FOR ADDITIONAL INFORMATION.

10. ALL FIXTURES ARE SPECIFIED BY OWNER.

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHAHBAZIAN
No. C19003
STATE OF CALIFORNIA

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

FOR CONSTRUCTION

DRAWING CONTENTS
LEASING - RCP

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A6.14B

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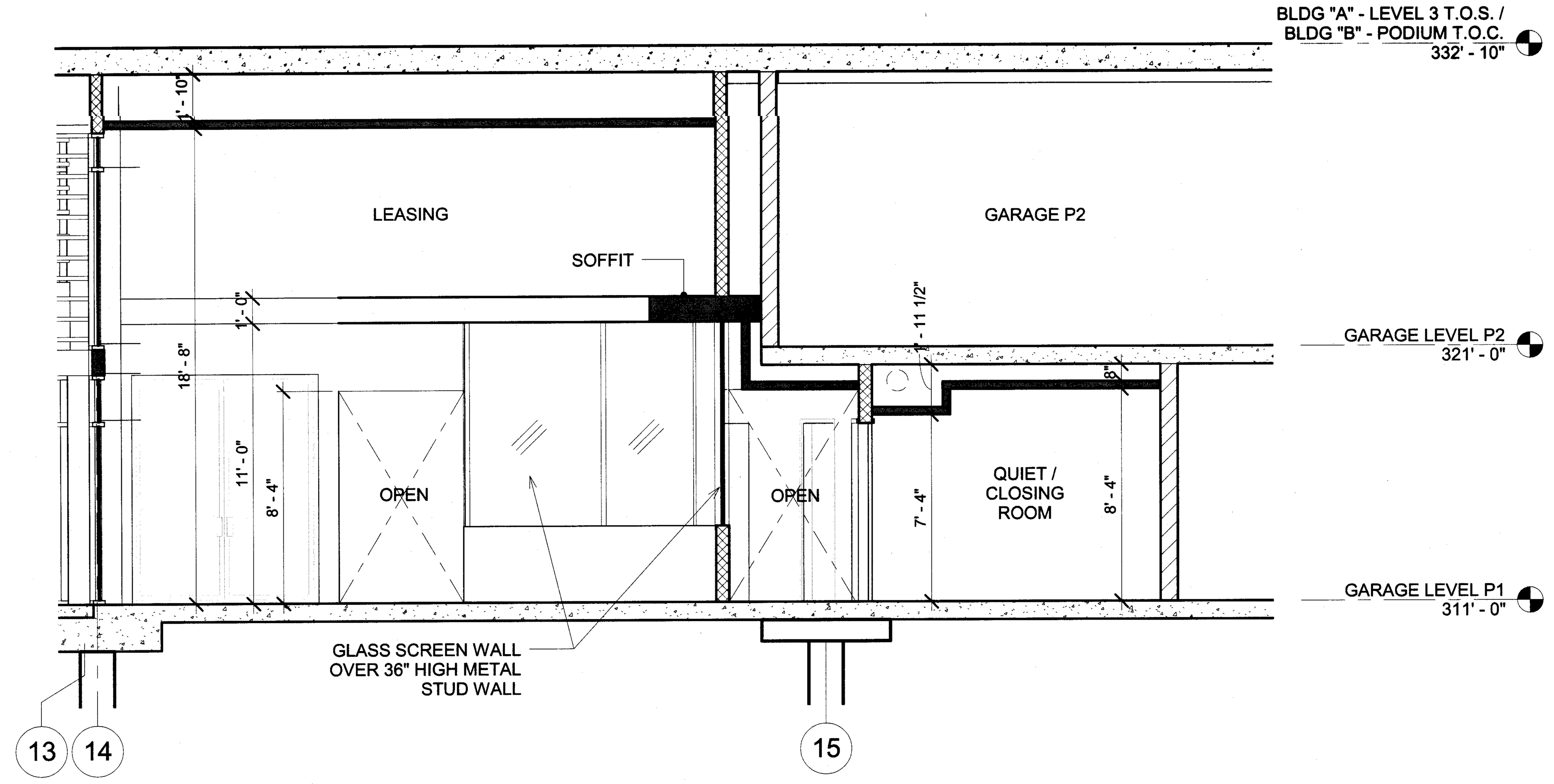
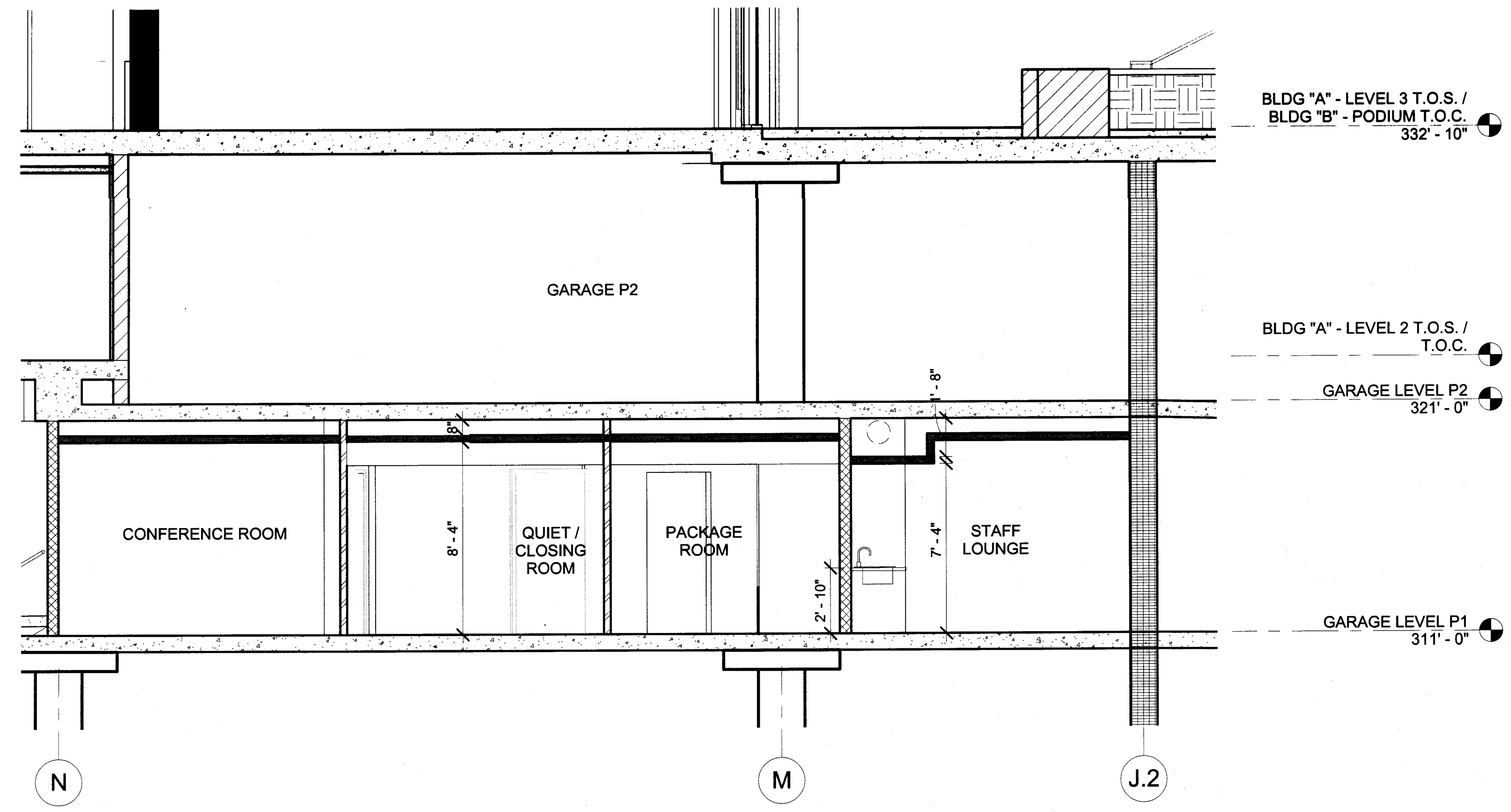
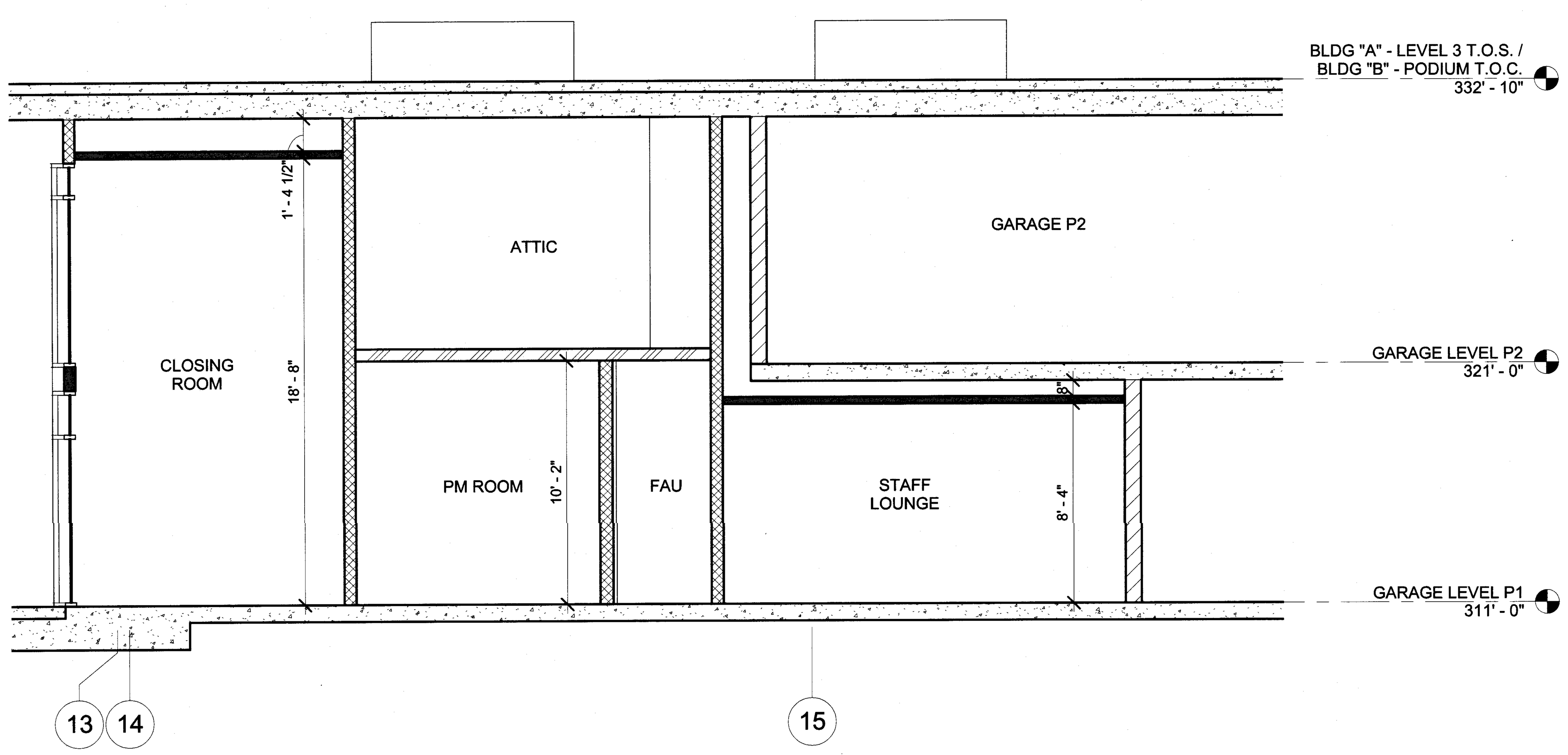


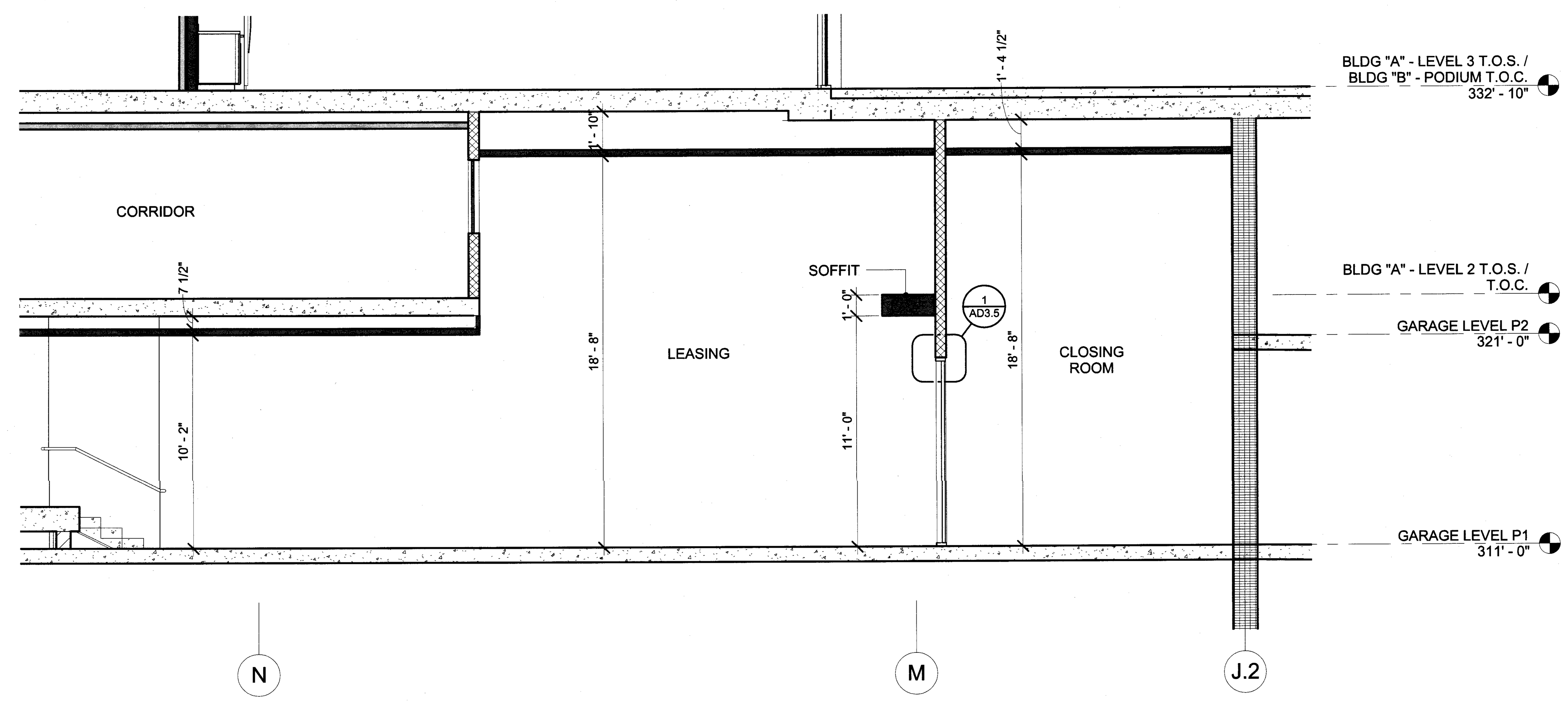
4 *LEASING SECTION*
1/4" = 1'-0"



2 LEASING SECTION
1/4" = 1'-0"



3 LEASING SECTION
1/4" = 1'-0"



1 LEASING SECTION
1/4" = 1'-0"

ABBREVIATIONS & SYMBOLS

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J J-BOX FOR POWER AND DATA

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3. CEILING HEIGHTS ARE FROM TOP OF SLAB OR TOP OF SHEATHING TO BOTTOM OF SOFFIT FRAMING, TYPICAL.
4. ALL GYPSUM WALL BOARD TO BE 5/8" TYPE "X" 1-HOUR RATED. PROVIDE 5/8" TYPE "X" WATER RESISTANT GYPSUM WALL BOARD AT ALL WET WALLS. WATER RESISTANT GYPSUM WALL BOARD SHALL EXTEND FROM FLOOR TO CEILING.
5. PROVIDE 90 DEGREE GYPSUM CORNER BEADS AT ALL LOCATIONS.
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TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT — ADAM C. CHAMBERS — No. C19002 — STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - SECTIONS

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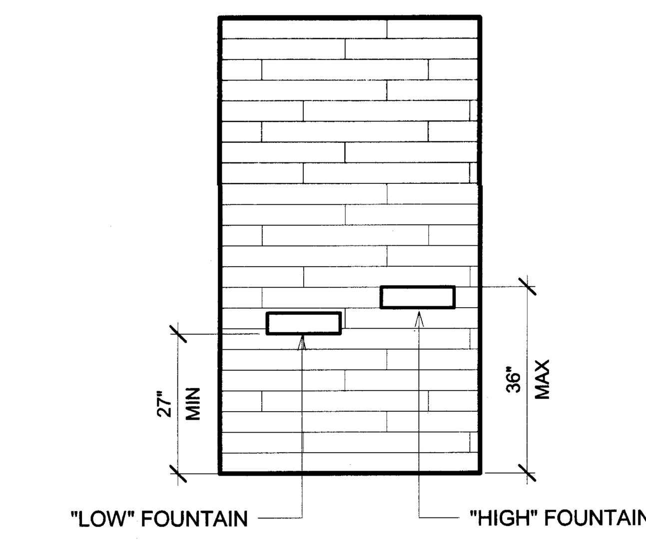
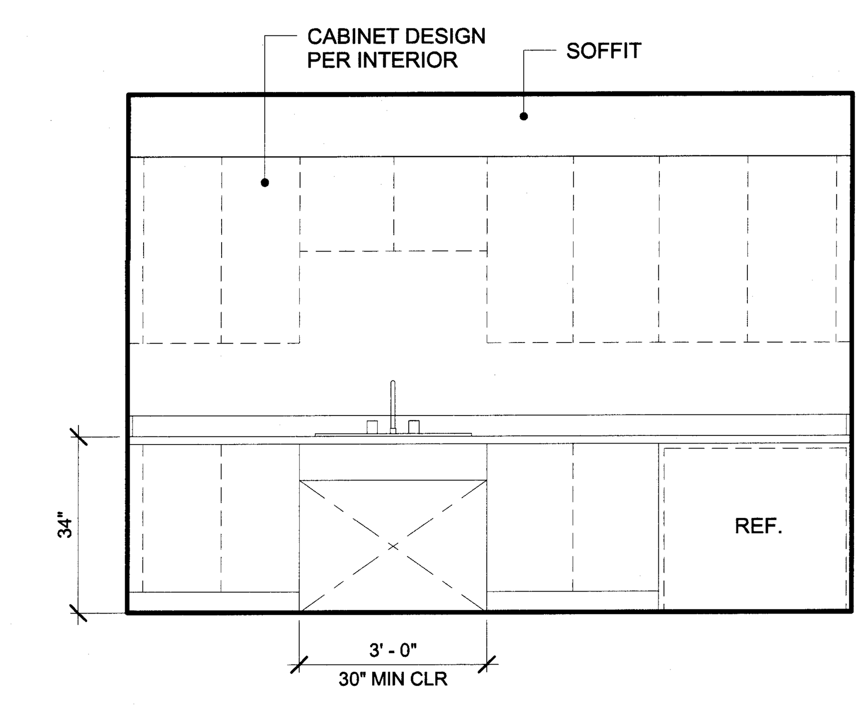
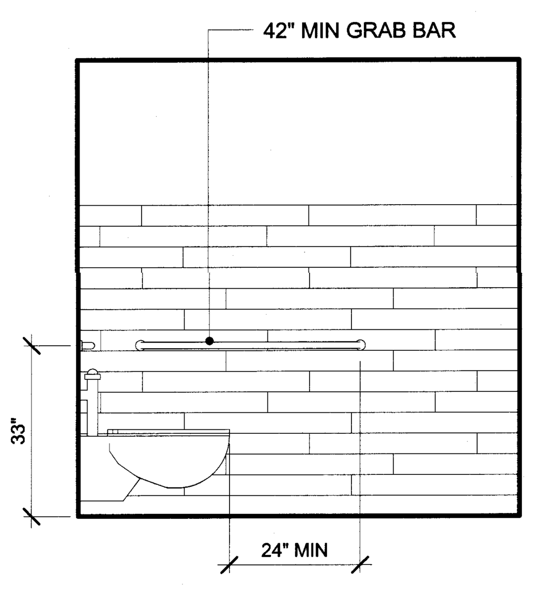


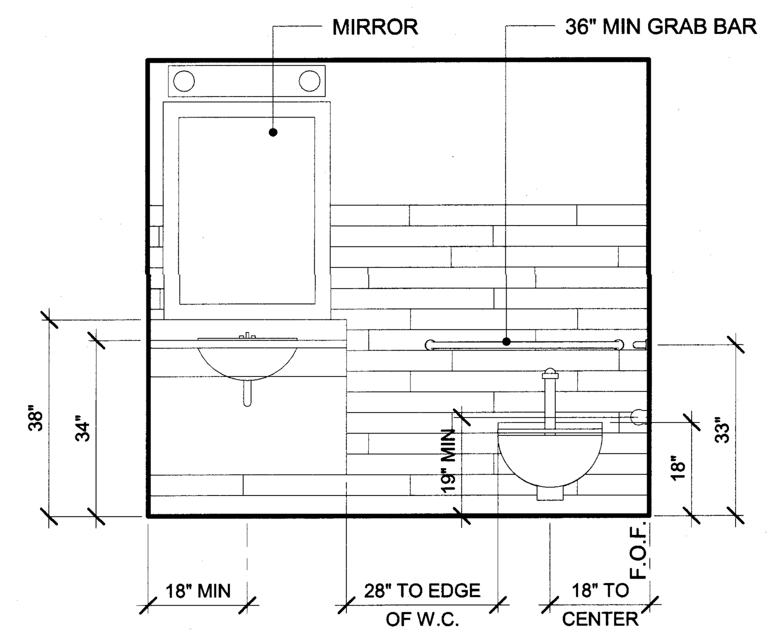
3A WATER FOUNTAIN ELEVATION
1/2" = 1'-0"



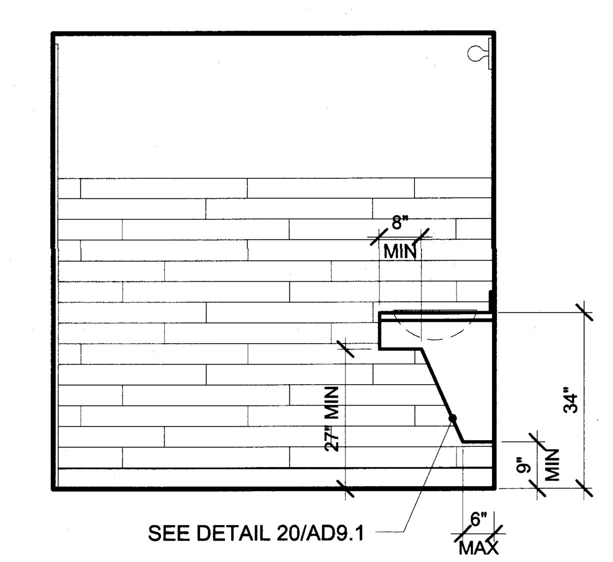
2A KITCHEN ELEVATION
1/2" = 1'-0"



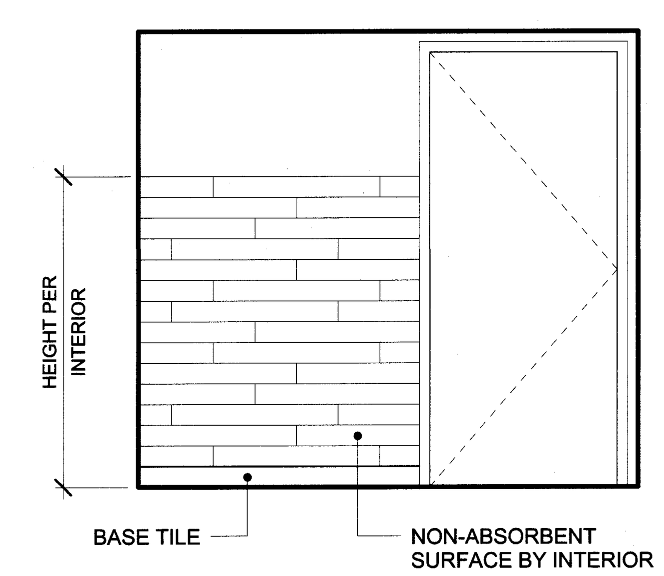
1D BATHROOM ELEVATION
1/2" = 1'-0"



1C BATHROOM ELEVATION
1/2" = 1'-0"



1B BATHROOM ELEVATION
1/2" = 1'-0"



1A BATHROOM ELEVATION
1/2" = 1'-0"

TYPICAL ACCESSIBILITY NOTES

DOORS

1. ALL FIRST FLOOR DOORS SHALL COMPLY WITH 2010 CBC SECTION 1133B.

SUB-SECTION 1133B.2 DOORS:

A. REQUIRED EXIT DOORWAYS SHALL PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET AND NOT LESS THAN 6 FEET – 8 INCHES IN HEIGHT.

B. SWINGING DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES.

C. PASSAGE SWINGING DOOR SHALL PROVIDE A NET CLEAR OPENING WIDTH OF NOT LESS THAN 32", MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM THE CLOSED POSITION.

SUB-SECTION 1133B.2.4.1 THRESHOLDS:

A. THRESHOLDS SHALL BE NO HIGHER THAN 1/2" AND A SLOPE LESS THAN 50%.

SUB-SECTION 1133B.2.4.2 MANEUVERING CLEARANCES:

A. A LEVEL AREA OF 60" IN LENGTH IN THE DIRECTION OF THE DOOR SWING AND A LEVEL AREA OF 48" IN LENGTH IN THE DIRECTION OPPOSITE THE DOOR SWING SHALL BE PROVIDED AT RIGHT ANGLES TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION.

B. 18" CLEAR ON STRIKE SIDE OF DOOR ON INTERIOR – 24" CLEAR ON STRIKE SIDE OF DOOR ON EXTERIOR.

C. PROVIDE 12" CLEAR PAST THE STRIKE EDGE OF THE DOOR IF IT HAS BOTH A LATCH AND A CLOSER.

SUB-SECTION 1133B.2.5 DOOR OPENING FORCE:

A. MAXIMUM EFFORT SHALL NOT EXCEED 5 LBS FOR DOORS.

SUB-SECTION 1133B.2.1 LOCKS OR LATCH:

A. SHALL COMPLY WITH CHAPTER 10 SECTION 1008.

SUB-SECTION 1133B.2.5.2 DOOR HARDWARE:

A. HARDWARE SHALL BE CENTERED BETWEEN 30" AND 44" ABOVE THE FLOOR AND OPERATED BY A SINGLE EFFORT BY LEVER HARDWARE.

SUB-SECTION 1133B.2.6 SMOOTH SURFACE:

A. THE BOTTOM 10" OF THE DOOR SHALL HAVE A SMOOTH SURFACE.

BATHROOMS

1. ALL BATHING / TOILET FACILITIES SHALL COMPLY WITH 2010 CBC SECTION 1115B.

SUB-SECTION 1115B.3.1 MULTIPLE-ACCOMMODATION FACILITIES:

A. 60" DIAMETER CLEAR SPACE MEASURED TO A HEIGHT OF 27" FROM THE FLOOR IS REQUIRED WITHIN THE ROOM. EXCEPT FOR THE DOOR TO THE ACCESSIBLE WATER CLOSET COMPARTMENT, A DOOR IN ANY POSITION MAY NOT ENCROACH INTO THIS CLEAR SPACE BY MORE THAN 12".

B. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED FOR ANY FIXTURE. (PER CBC 1127A.2.1)

C. WATER CLOSET COMPARTMENT:

i. SHALL BE A MINIMUM OF 60" WIDE.

ii. A COMPARTMENT WITH A SIDE-OPENING DOOREQUIRES A MINIMUM OF 60" WIDE AND 60" DEEPMANEUVERING SPACE IN FRONT OF THE WATER CLOSET.

iii. THE COMPARTMENT DOOR SHALL HAVE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 34" WITH THE DOOR AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.

iv. A LEVEL AREA OF 60" IN LENGTH IN THE DIRECTION OF THE DOOR SWING, EXTENDED 18" PAST THE STRIKE EDGE OF THE DOOR, SHALL BE PROVIDED. A LEVEL AREA OF 48" IN LENGTH IN THE DIRECTION OPPOSITE THE DOOR SWING, EXTENDED 12" PAST THE STRIKE EDGE OF THE DOOR, SHALL BE PROVIDED.

v. A CLEAR, UNOBSTRUCTED ACCESS OF NOT LESS THAN 44" SHALL BE PROVIDED TO THE COMPARTMENT.

vi. COMPARTMENT DOOR SHALL BE EQUIPPED WITH WITH A SELF-CLOSING DEVICE (CBC SECTION 1127A.2.1).

D. TOILET ROOM FLOORS SHALL HAVE A SLIP RESISTANT SURFACE PER SECTION 1124B.

SUB-SECTION 1115B.3.2 SINGLE-ACCOMMODATION FACILITIES:

A. THERE SHALL BE IN THE ROOM A CLEAR FLOOR SPACE OF AT LEAST 60 INCHES IN DIAMETER, OR A T-SHAPED SPACE COMPLYING WITH FIGURE 11B-12 (A) AND (B) CBC.

B. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED FOR ANY FIXTURE.

C. A MINIMUM 60 INCHES WIDE AND 48 INCHES DEEP MANEUVERING SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET.

D. ALL DOORS, FIXTURES, AND CONTROLS SHALL BE ON AN ACCESSIBLE ROUTE. THE MINIMUM CLEAR WIDTH OF AN ACCESSIBLE ROUTE SHALL BE 36 INCHES EXCEPT AT DOORS.

SUB-SECTION 1115B.4.1 ACCESSIBLE WATER CLOSETS:

A. THE CENTERLINE OF THE WATER CLOSET SHALL BE 18" FROM THE SIDE WALL OR PARTITION. ON THE OTHER SIDE, PROVIDE A MINIMUM OF 28" WIDE CLEAR FLOOR SPACE TO A FIXTURE OR 32" WIDE CLEAR FLOOR SPACE TO A WALL OR PARTITION. CLEAR FLOOR SPACE SHALL EXTEND FROM THE REAR WALL TO THE FRONT OF THE WATER CLOSET.

B. WATER CLOSET REQUIRES A CLEAR FLOOR SPACE OF 60" MINIMUM PERPENDICULAR FROM THE SIDE WALL CLOSEST TO THE WATER CLOSET AND 56" MINIMUM PERPENDICULAR FROM THE REAR WALL. IN ADDITION, A MINIMUM 60" WIDE BY 36" DEEP MANEUVERING SPACE TO BE PROVIDED IN FRONT OF THE CLEAR FLOOR SPACE AT THE COMPARTMENT DOOR.

C. GRAB BARS SHALL BE CENTERED 33" ABOVE THE FLOOR. SIDE WALL GRAB BAR SHALL BE 42" LONG MINIMUM, LOCATED 12" MAXIMUM FROM THE REAR WALL AND EXTEND 54" MINIMUM FROM THE REAR WALL. THE FRONT END SHALL BE 24" MINIMUM IN FRONT OF THE WATER CLOSET. REAR WALL GRAB BAR SHALL BE 36" LONG MINIMUM AND EXTEND FROM THE CENTERLINE OF THE WATER CLOSET 12" MINIMUM ON ONE SIDE AND 24" MINIMUM OF THE OTHER SIDE.

D. THE HEIGHT OF ACCESSIBLE WATER CLOSETS SHALL BE A MINIMUM OF 17" AND A MAXIMUM OF 19" MEASURED TO THE TOP OF A MAXIMUM 2" HIGH TOILET SEAT.

E. WATER CLOSET CONTROLS SHALL BE MOUNTED ON THE SIDE OF THE TOILET AREA AND NO MORE THE 44" ABOVE THE FLOOR. THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE.

SUB-SECTION 1115B.4.2 ACCESSIBLE URINALS:

A. AT LEAST ONE URINAL SHALL HAVE A 30" x 48" CLEAR FLOOR SPACE IN FRONT OF THE URINAL TO ALLOW FORWARD APPROACH.

B. THE CONTROL MECHANISM IS TO BE LOCATED SO AS TO NOT EXCEED 44" ABOVE THE FLOOR.

SUB-SECTION 1115B.4.3 ACCESSIBLE LAVATORIES:

A. LAVATORIES SHALL BE INSTALLED 18" HORIZONTALLY FROM AN ADJOINING WALL OR PARTITION. THE TOP OF THE FIXTURE RIM OR COUNTER SHALL BE A MAXIMUM OF 34" ABOVE THE FINISH FLOOR AND WITH VERTICAL CLEARANCE MEASURED FROM THE BOTTOM OF THE APRON OR OUTSIDE BOTTOM EDGE OF THE LAVATORY OF 29" REDUCING TO 27" AT A POINT LOCATED 8" BACK FROM THE FRONT EDGE. A MINIMUM 9" HIGH TOE CLEARANCE EXTENDING BACK TOWARD THE BACK WALL TO A DISTANCE OF NO MORE THAN 6" SHALL BE PROVIDED.

B. A CLEAR FLOOR SPACE OF AT LEAST 30" x 48" SHALL BE CENTERED ON LAVATORIES.

C. HOT WATER AND DRAIN PIPES EXPOSED UNDER THE LAVATORY SHALL BE INSULATED OR COVERED.

D. LAVATORY CONTROLS SHALL BE OPERATED WITH ONE HAND, AND THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. LEVER OR PUSH OPERATED ARE EXAMPLES OF ACCEPTABLE DESIGNS.

SUB-SECTION 1115B.4.4 ACCESSIBLE SHOWERS:

A. ROLL-IN SHOWER 60" MINIMUM CLEAR WIDTH AND 30" MINIMUM CLEAR DEPTH. FULL OPENING WIDTH TO BE ON THE LONG SIDE.

B. THRESHOLDS IN ROLL-IN TYPE SHOWERS SHALL BE 1/2" MAXIMUM.

C. SHOWER CONTROLS SHALL BE OPERATED WITH ONE HAND; THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. THE CENTERLINE OF THE CONTROLS SHALL BE 39" TO 41" ABOVE THE SHOWER FLOOR. CONTROLS SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THE CENTERLINE OF THE CONTROLS IS WITHIN 19" AND 27" FROM THE SEAT WALL.

D. A FLEXIBLE HAND-HELD SPRAYER UNIT WITH A MINIMUM HOSE LENGTH OF 60" THAT CAN BE USED AS A FIXED SHOWER OR HAND-HELD SHOWER SHALL BE PROVIDED. THE TOP OF THE MOUNTING BRACKET SHALL BE AT A MAXIMUM HEIGHT OF 48" ABOVE THE SHOWER FLOOR. THE UNIT SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THAT THE CENTERLINE SHALL BE NO MORE THAN 27" FROM THE SEAT WALL.

E. THE MAXIMUM SLOPE OF THE FLOOR SHALL NOT EXCEED 2% IN ANY DIRECTION. DRAIN GRATE OPENINGS SHALL BE A MAXIMUM OF 1/4" AND BE FLUSH WITH THE FLOOR SURFACE.

F. A FOLDING SEAT IS TO BE MOUNTED 18" ABOVE THE FLOOR, WITH A MINIMUM SPACE OF 1" AND A MAXIMUM SPACE OF 1-1/2" BETWEEN THE EDGE OF THE SEAT AND ANY WALL. WHEN FOLDED, THE SEAT SHALL NOT EXTEND MORE THAN 6" FROM THE MOUNTING WALL.

G. AN L-SHAPED GRAB BAR SHALL BE MOUNTED A MINIMUM OF 33" AND A MAXIMUM OF 36" ABOVE THE SHOWER FLOOR ON WALLS ADJACENT AND OPPOSITE THE SEAT. GRAB BAR SHALL NOT EXTEND INTO THAT PORTION OF THE WALL OVER THE SEAT.

H. GRAB BARS SHALL BE NOT LESS THAN 1-1/4" AND NOT MORE THAN 1-1/2" IN DIAMETER. STRUCTURAL STRENGTH ACCORDING TO CBC SECTION 1127.A.4.4.

SUB-SECTION 1115B.8 ACCESSORIES:

A. MIRRORS SHALL BE MOUNTED WITH THE BOTTOM EDGE OF THE REFLECTIVE SURFACE NO HIGHER THAN 40" FROM THE FINISH FLOOR.

B. TOWEL, SANITARY NAPKINS, WASTE RECEPTACLES, DISPENSERS, AND OTHER EQUIPMENT AND CONTROLS SHALL BE MOUNTED WITH OPERABLE PARTS WITHIN 40" OF THE FINISHED FLOOR AND ON AN ACCESSIBLE ROUTE.

C. TOILET TISSUE DISPENSERS SHALL BE LOCATED ON THE WALL WITHIN 12" OF THE FRONT EDGE OF THE TOILET SEAT, MOUNTED AT A MINIMUM HEIGHT OF 19", AND 36" MAXIMUM TO THE FAR EDGE FROM THE REAR WALL.

SUB-SECTION 1117B.1 ACCESSIBLE DRINKING FOUNTAINS:

A. PROVIDE A "HI-LOW" DRINKING FOUNTAINS. CENTER A 30" x 48" CLEAR FLOOR SPACE ON THE "LOW" FOUNTAIN FIXTURE TO ALLOW FORWARD APPROACH.

GENERAL NOTES

1. ALL KITCHEN FINISH MATERIAL SHALL BE SELECTED BY INTERIOR DESIGNER.
2. ALL NOTES AND DIMENSIONS APPLY TO ALL KITCHENS UNLESS NOTED OTHERWISE.
3. DIMENSIONS SHOWN ARE FOR DESIGN INTENT ONLY. ALL CABINET DIMENSIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CABINET FABRICATION. SHOP DRAWINGS SHALL BE SUBMITTED TO ARCHITECT FOR APPROVAL PRIOR TO FABRICATION.
4. REPOSITIONABLE COUNTERTOPS: STONE, CULTURED STONE AND TILE COUNTERTOPS MAY BE USED WITHOUT MEETING THE REPOSITIONAL REQUIREMENTS PER CBC SUB-SECTION 1133A.4.1
5. PER 2010 CBC SECTION 1133A.3 REMOVABLE BASE CABINETS: BASE CABINETS DIRECTLY UNDER THE KITCHEN SINK COUNTER AREA, INCLUDING TOEBOARD AND SHELVING, SHALL BE REMOVABLE WITHOUT THE USE OF SPECIALIZED TOOLS OR SPECIALIZED KNOWLEDGE IN ORDER TO PROVIDE CLEARANCE FOR A WHEELCHAIR. THE FINISH FLOOR BENEATH THE KITCHEN SINK COUNTER AREA SHALL BE EXTENDED TO THE WALL.
6. NO COUNTERTOP LIP AT EITHER SIDE OF RANGE.
7. VERIFY ALL MANUFACTURER SPECIFICATIONS AND CLEARANCES WITH OWNER SELECTIONS PRIOR TO CABINET FABRICATION. ALL CLEAR DIMENSIONS SHALL BE SHOWN ON SHOP DRAWINGS FOR APPROVAL.

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHAHBAZIAN
No. C19002
STATE OF CALIFORNIA

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - INTERIOR ELEVATIONS

FOR CONSTRUCTION

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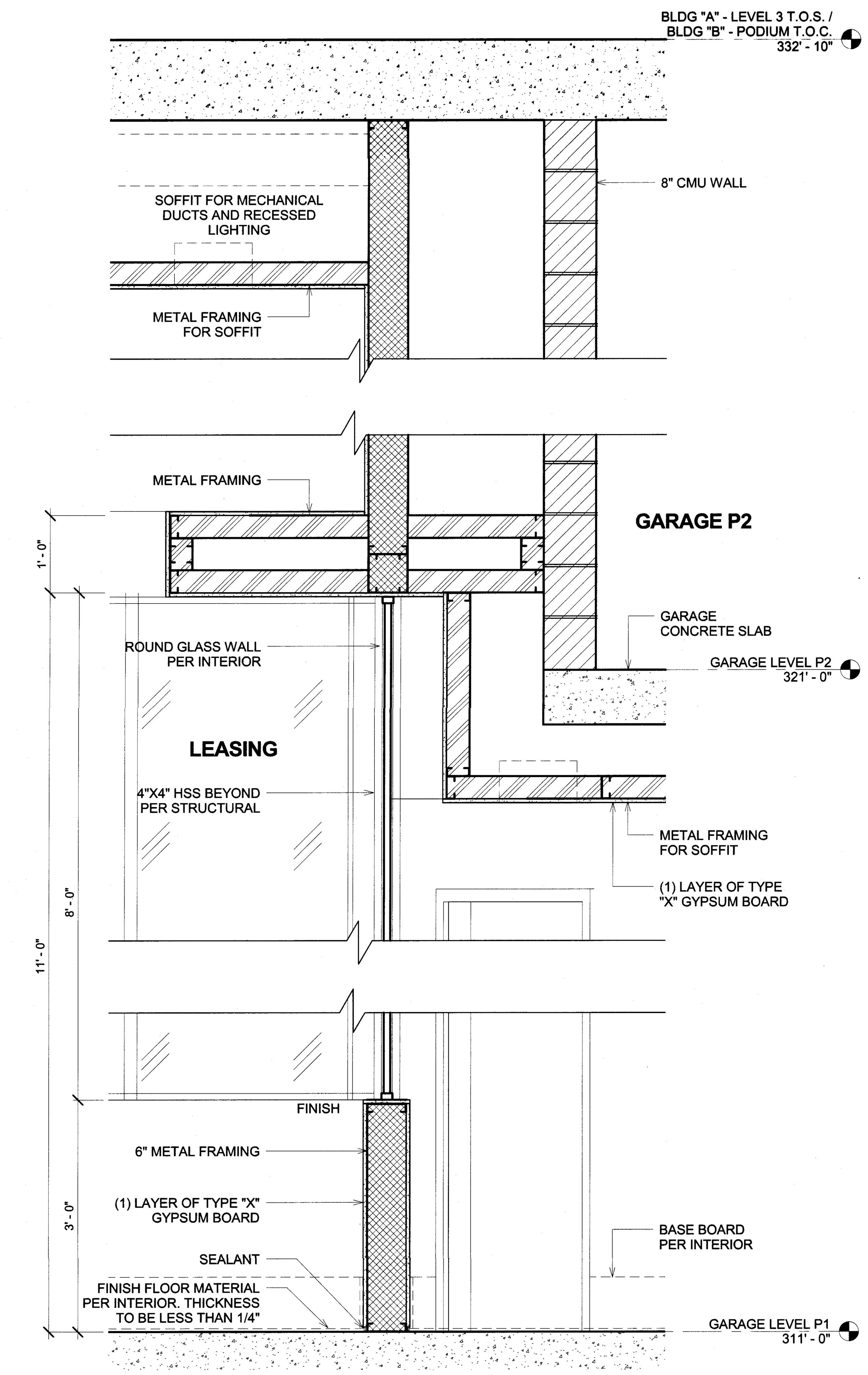
A6.14D

2010-089
JOB NUMBER

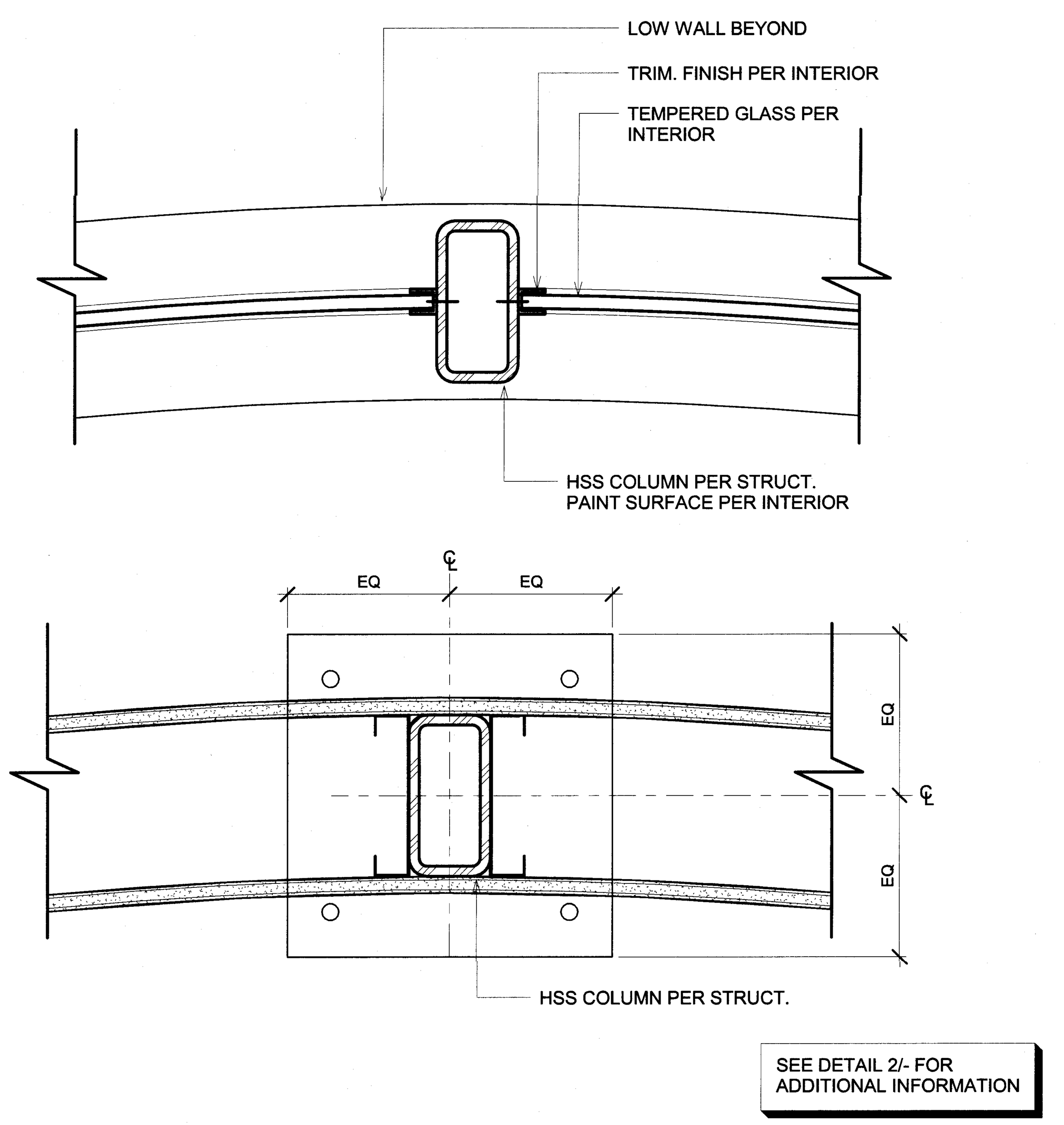
1/2" = 1'-0"
SCALE

ISSUED AS

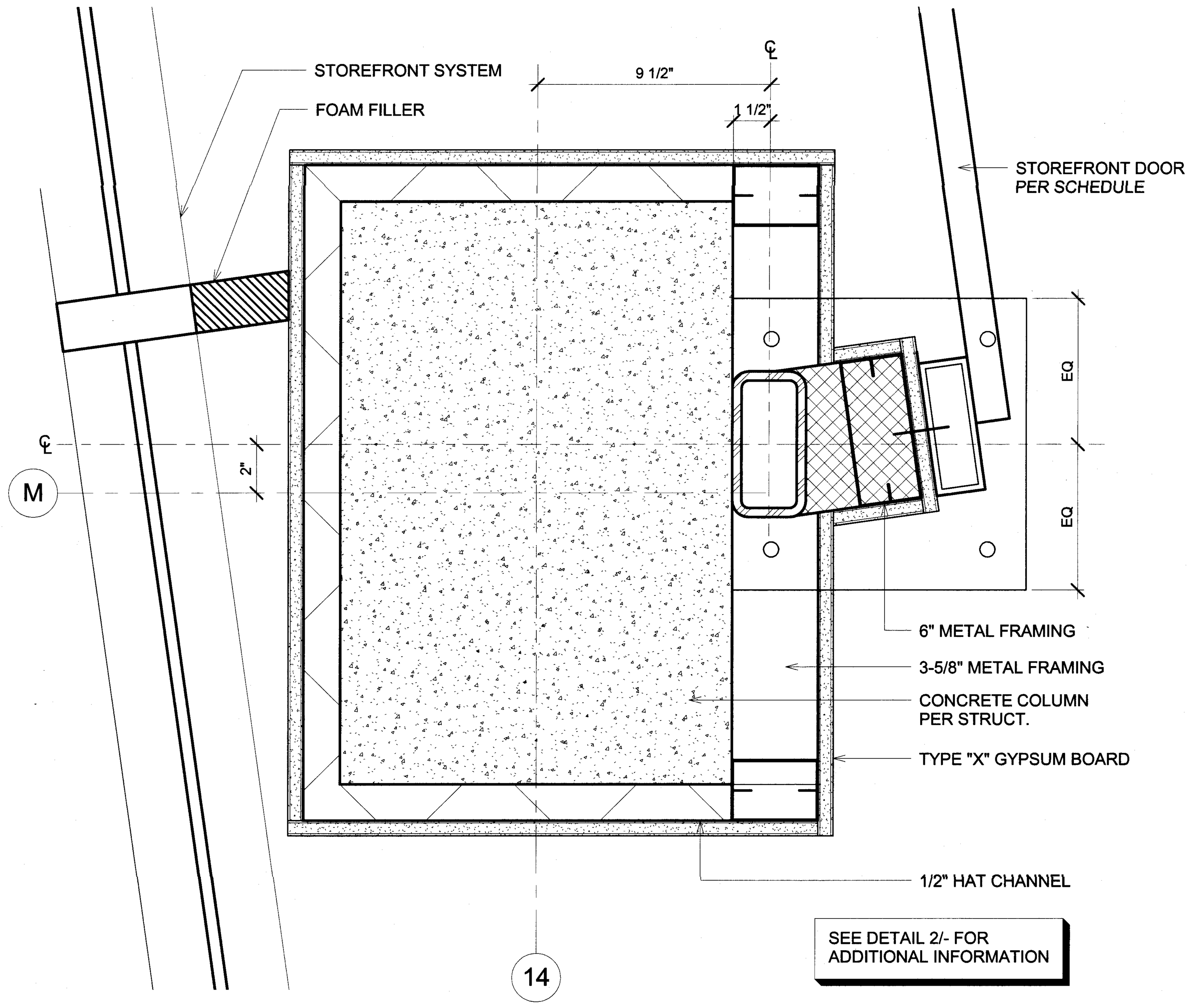
5/8/2014
DATE



1 WALL DETAIL
1" = 1'-0"



5 COLUMN DETAIL
3" = 1'-0"



3 COLUMN DETAIL
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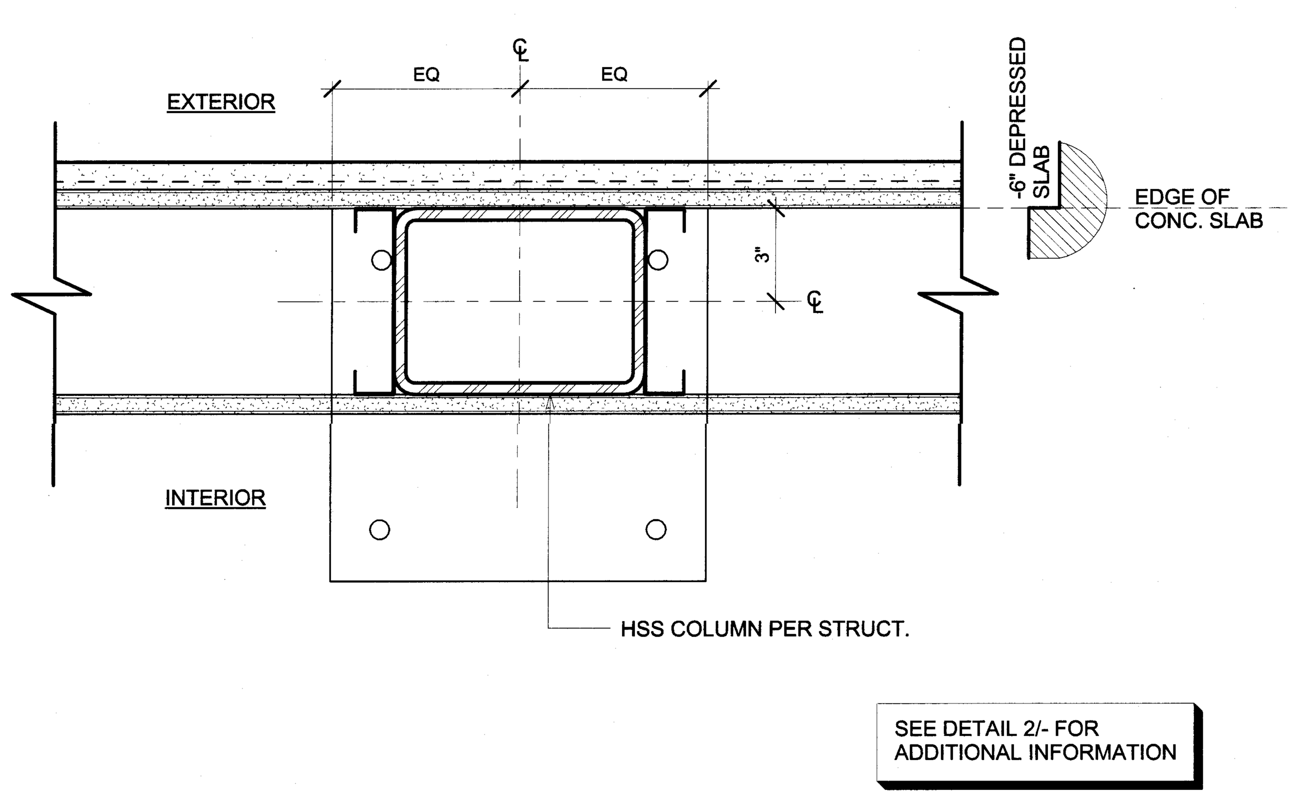

6 COLUMN DETAIL
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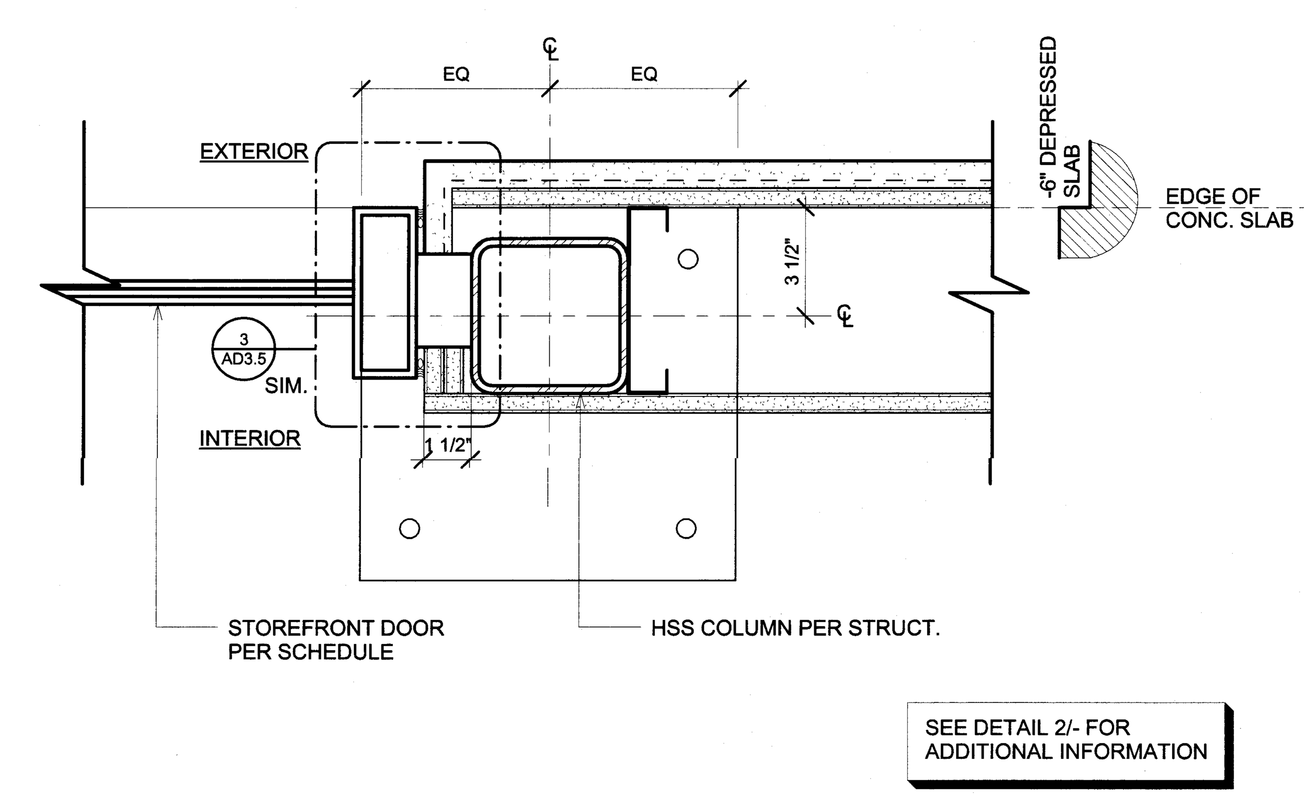

4 COLUMN DETAIL
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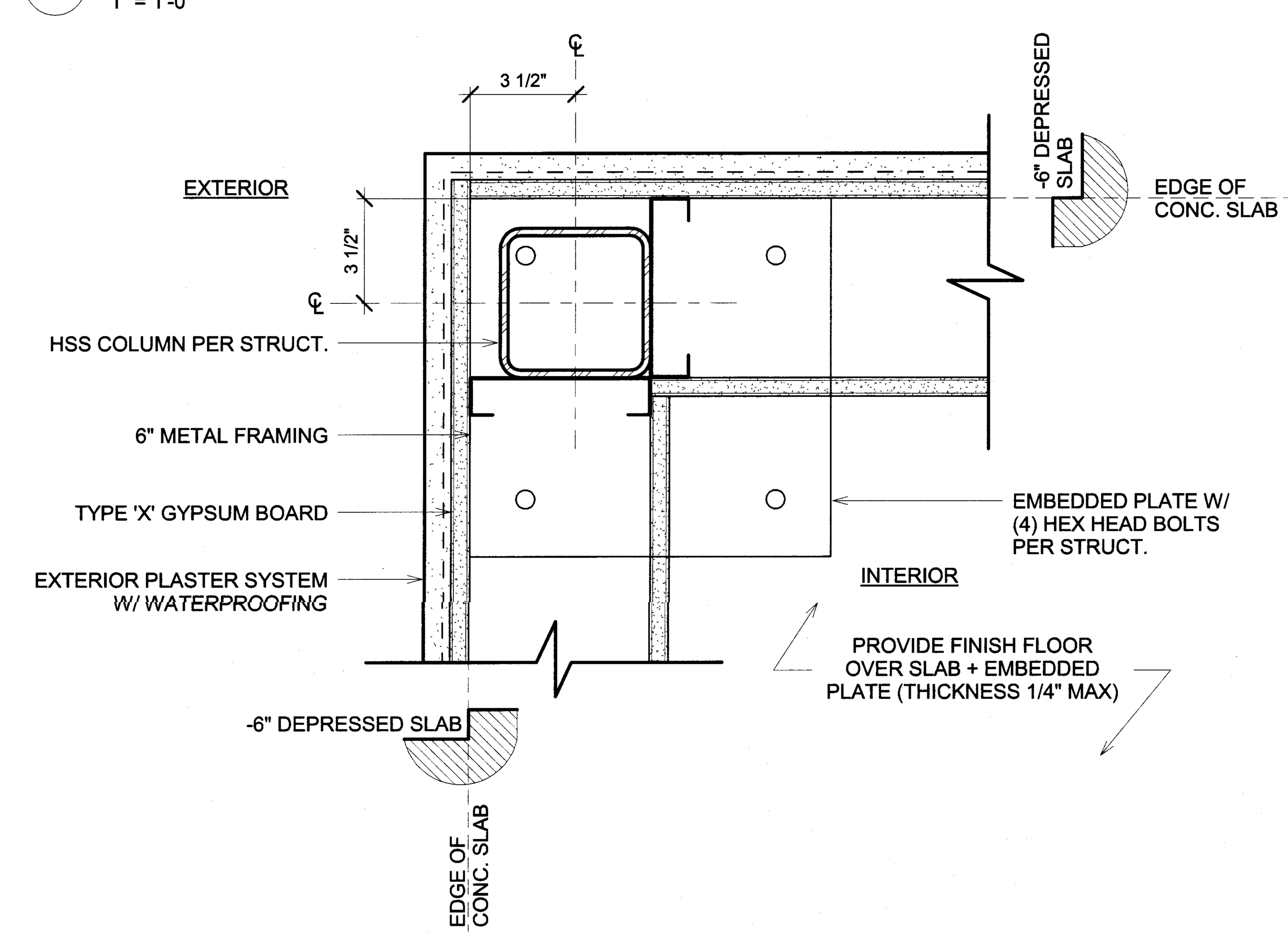

2 COLUMN DETAIL
3" = 1'-0"

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHARBAGHIAN
No. C19002
Renewal 9-30-
STATE OF CALIFORNIA

REMARKS

REVISION

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - DETAILS

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A6.14E

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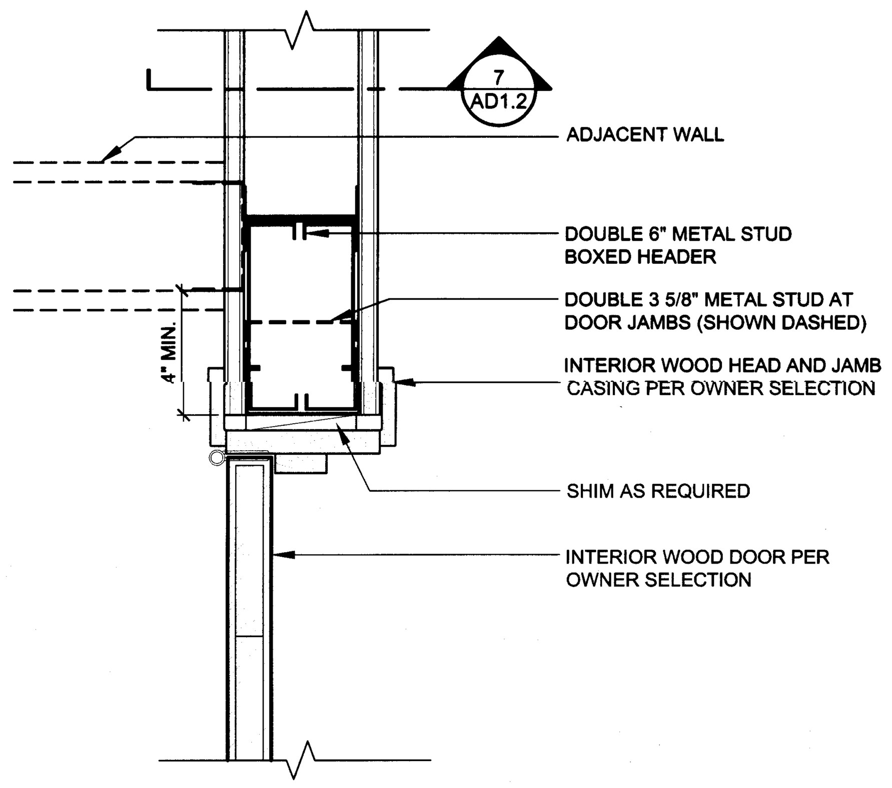
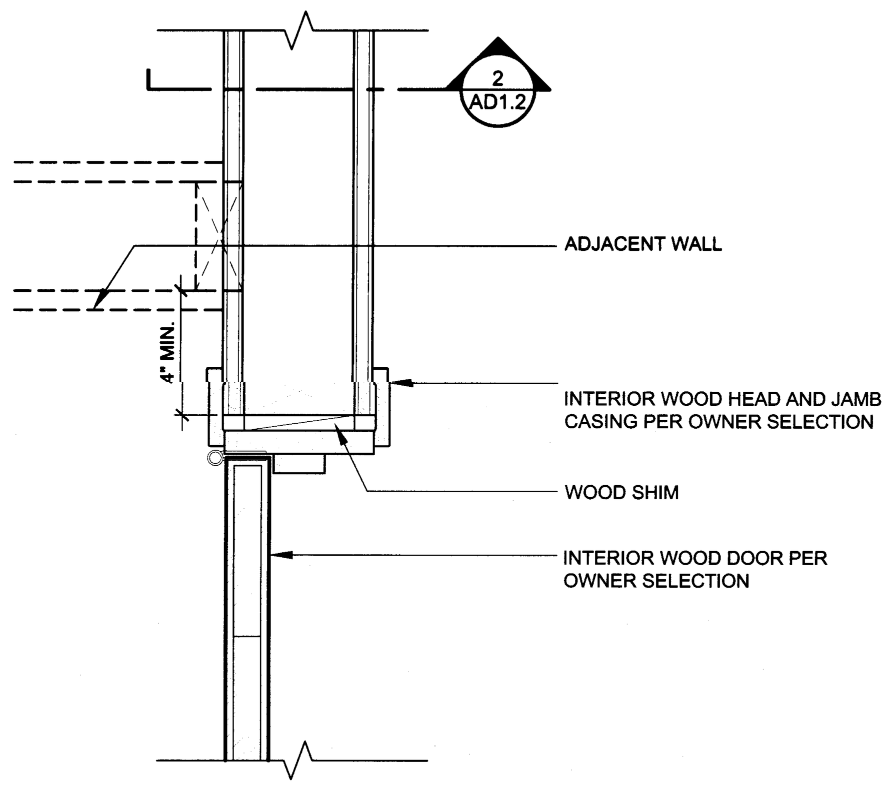
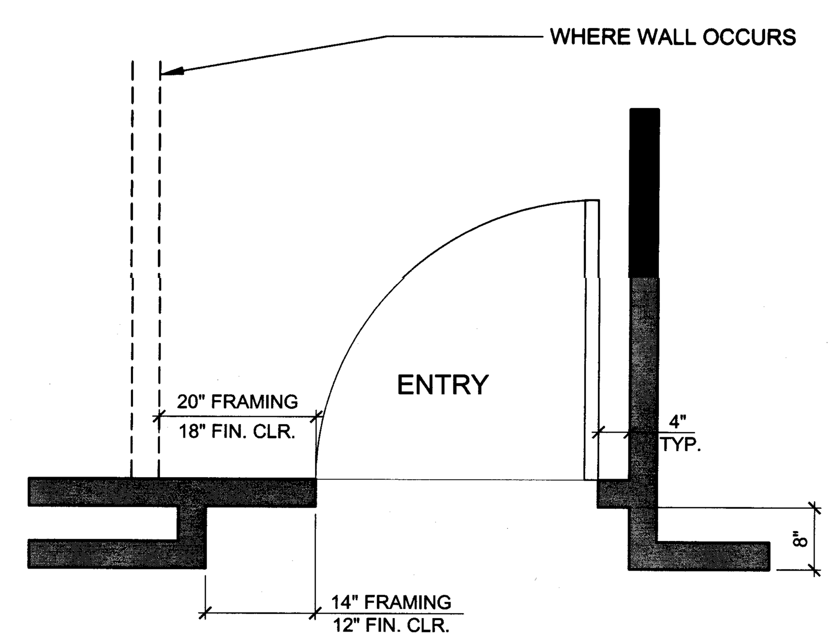
5/8/2014
DATE



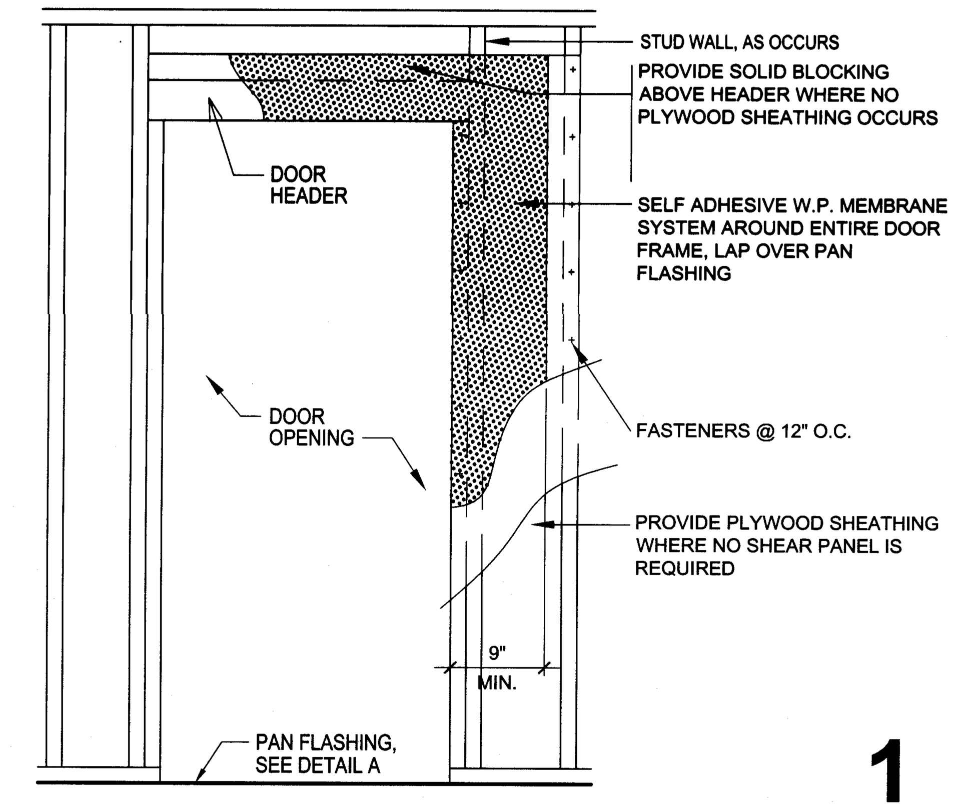
INTERIOR DOOR JAMB (HEAD SIM.) 3" = 1'-0" **17**



INTERIOR DOOR JAMB (HEAD SIM.) 3" = 1'-0" **13**



ENRTY DOOR FRAMING DIAGRAM 3/4" = 1'-0" **9**



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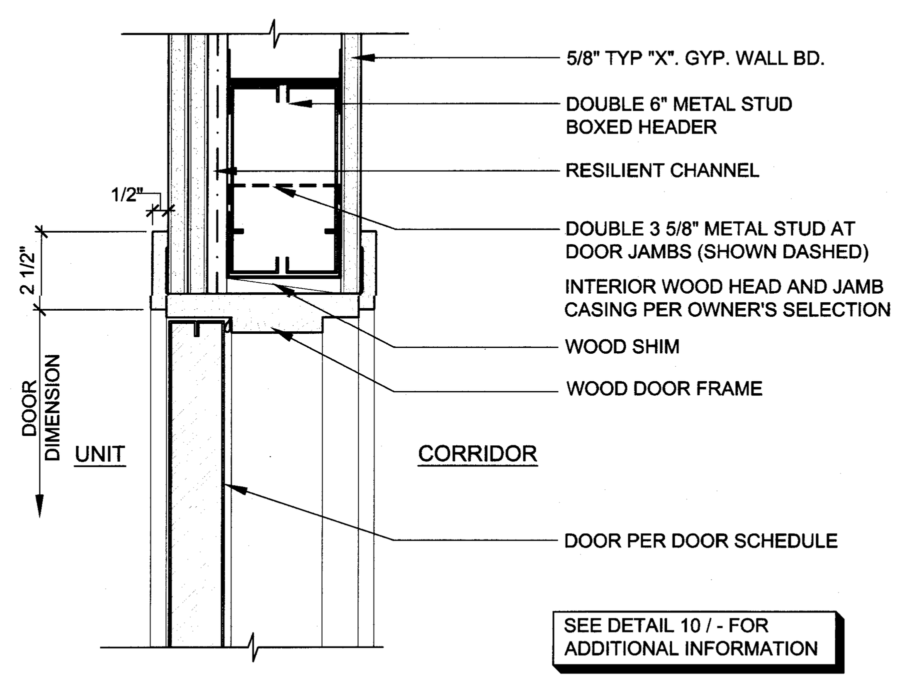
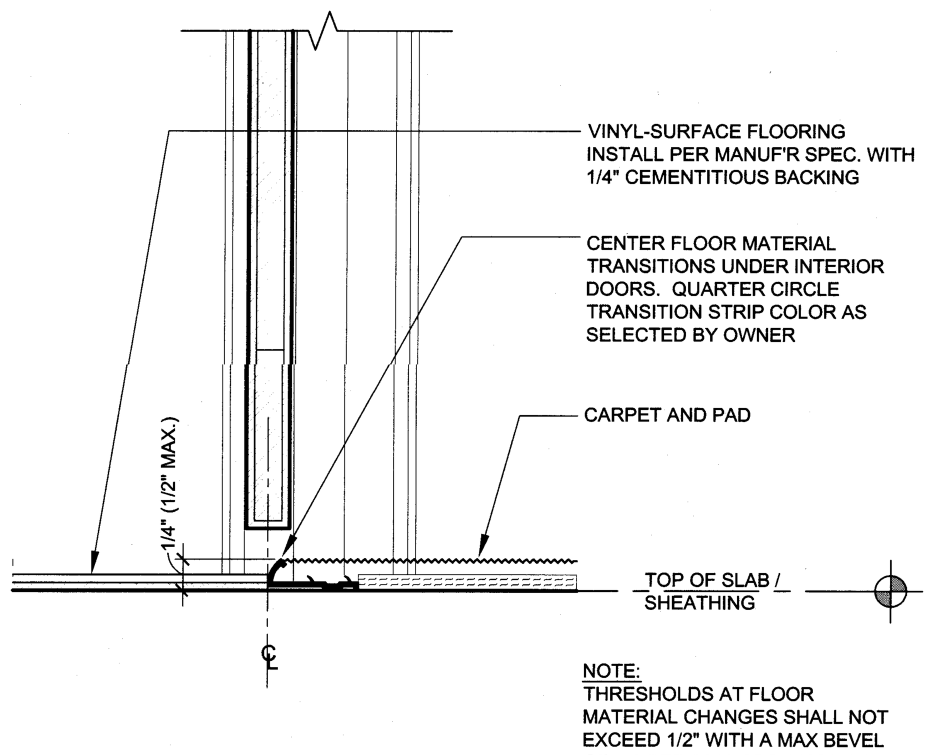
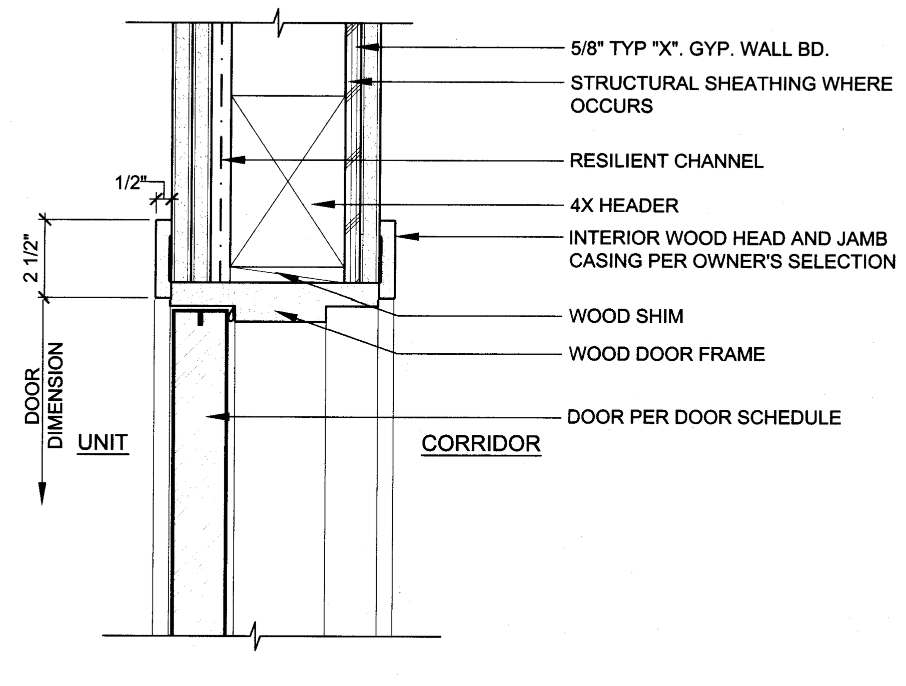


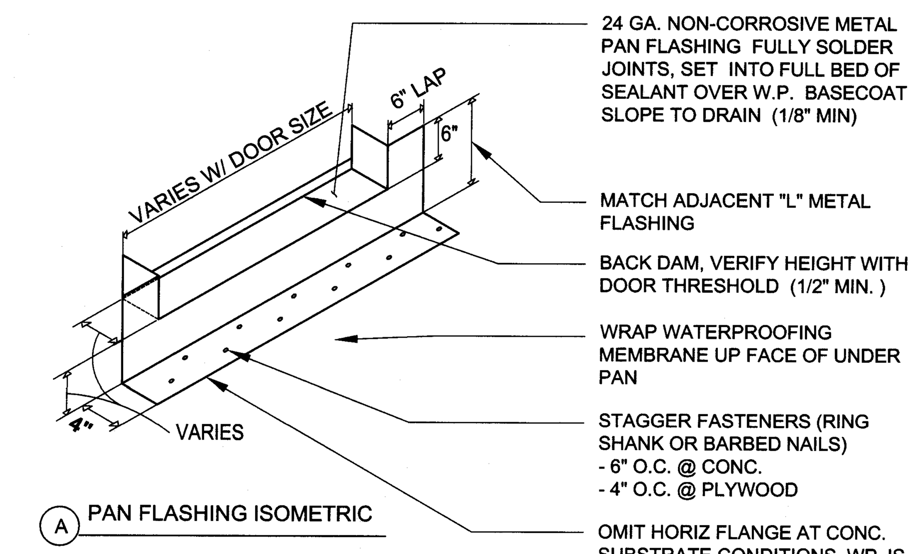
UNIT ENTRY DOOR HEAD WD STUD (JAMB SIM.) 3" = 1'-0" **18**



INTERIOR DOOR THRESHOLD / MATERIAL TRANSITION 3" = 1'-0" **14**

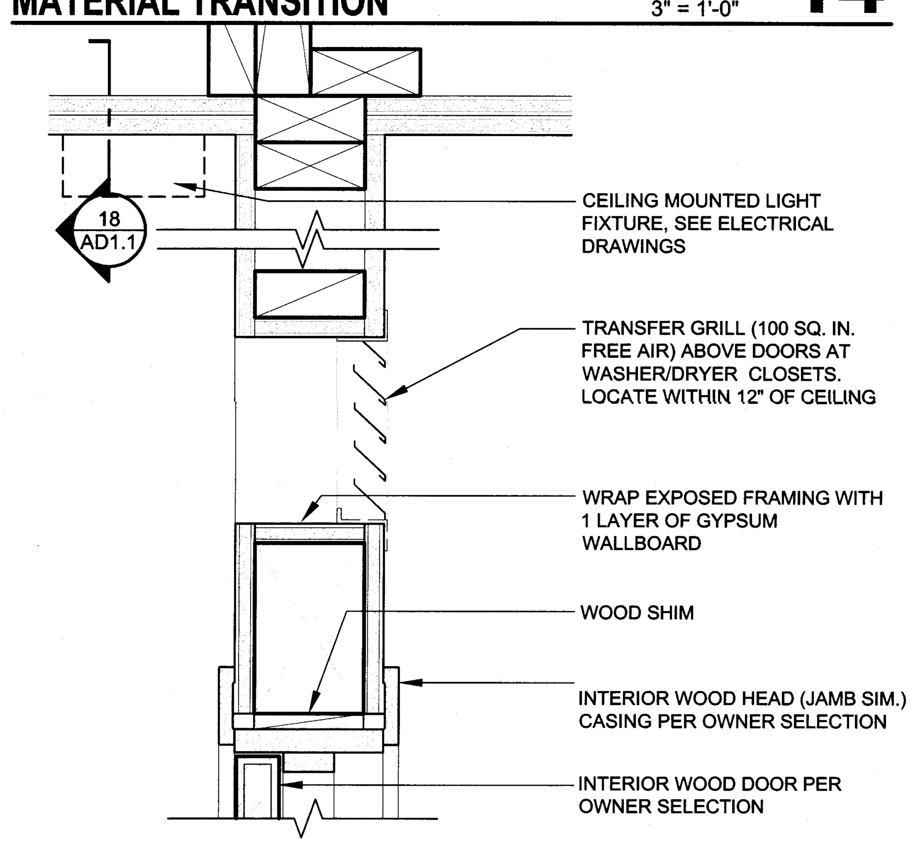


UNIT ENTRY DOOR HEAD WD STUD (JAMB SIM.) 3" = 1'-0" **10**

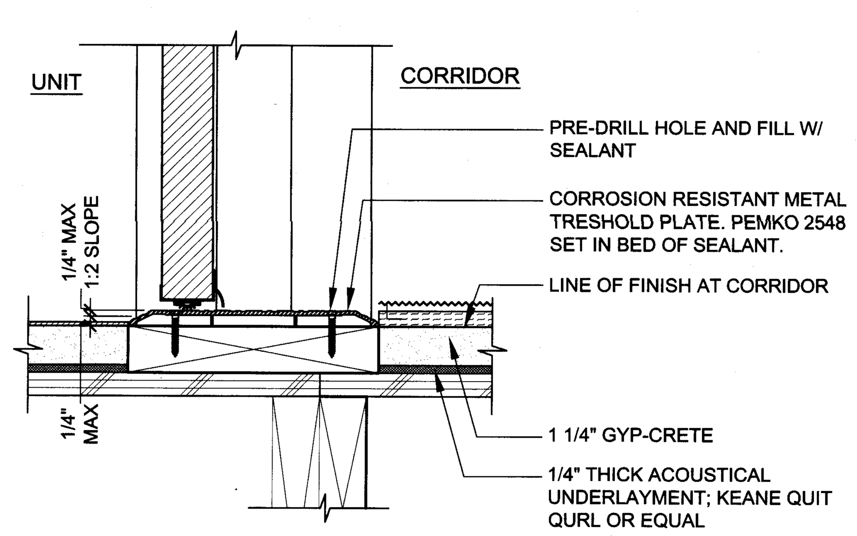


NOTE:
1. NOTCH DOOR THRESHOLD OR OTHERWISE ENSURE INTEGRITY OF BACK DAM DURING DOOR INSTALLATION
2. PROTECT BACK DAM FROM DAMAGE WITH WOOD BLOCKING DURING CONSTRUCTION
3. INSTALL THRESHOLD PRIOR TO DOOR INSTALLATION WITH FULLY SOLDERED SEAMS

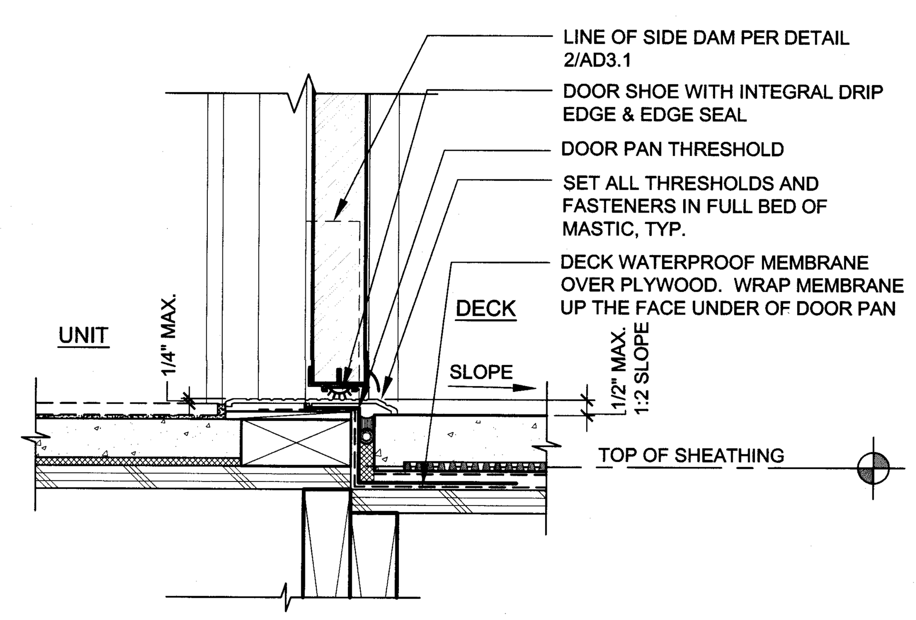
DOORWAY WATERPROOFING AND PAN FLASHING N.T.S. **2**



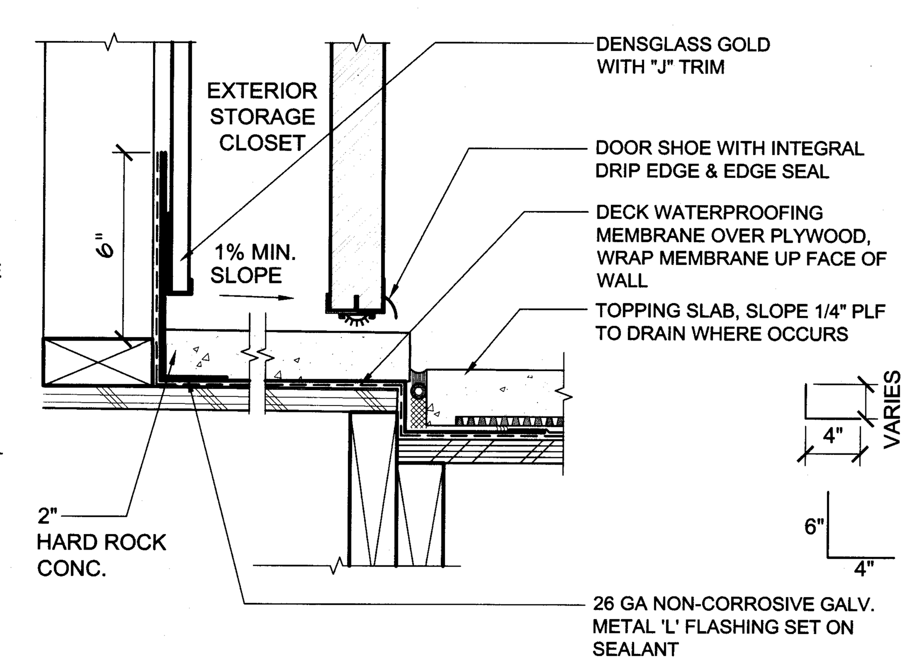
LOUVER VENT ABOVE INTERIOR DOOR HEAD 3" = 1'-0" **15**



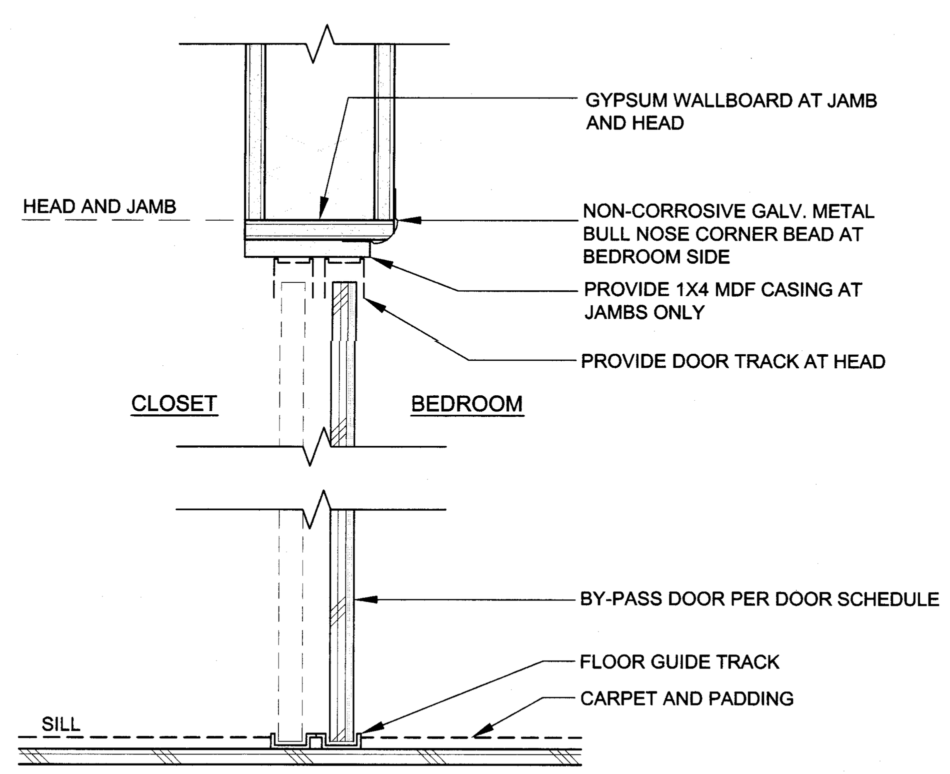
UNIT ENTRY DOOR THRESHOLD 3" = 1'-0" **11**



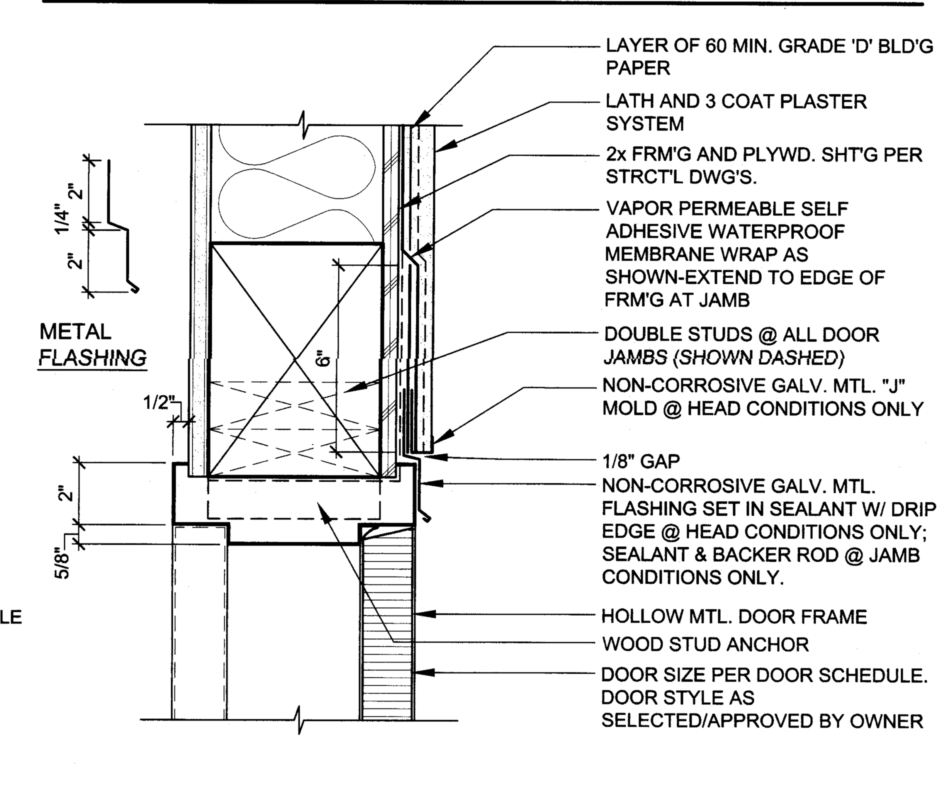
EXTERIOR DOOR THRESHOLD AT DECKS 3" = 1'-0" **7**



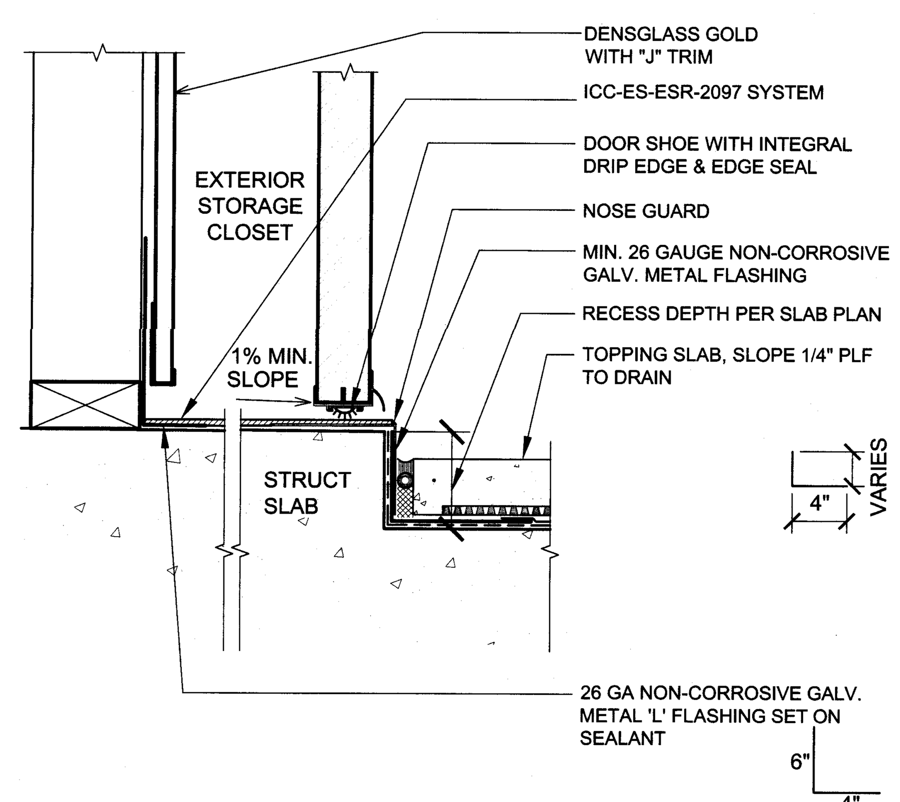
UTILITY CLOSET DOOR AT UPPER DECK 3" = 1'-0" **3**



SLIDING BI-PASS DOOR AT HEAD / JAMB / SILL 3" = 1'-0" **16**



EXTERIOR DOOR HEAD (JAMB SIM.) 3" = 1'-0" **12**
MINIMUM REQUIREMENTS



UTILITY DOOR AT PODIUM 3" = 1'-0" **4**

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT ADAM C. CHAMBERS No. C19002 Renewal 9-30-15 STATE OF CALIFORNIA

REVISION		DATE
	THIRD PARTY WATERPROOF CONSULTANT	
	ASI #6 - MCRT REVISIONS	12/27/2013
	ASI #8 - ACCESSIBILITY REVISIONS	03/05/2014
	ASI #9 - PRA FINAL COMMENTS	05/07/2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS: DOOR DETAILS

FOR CONSTRUCTION

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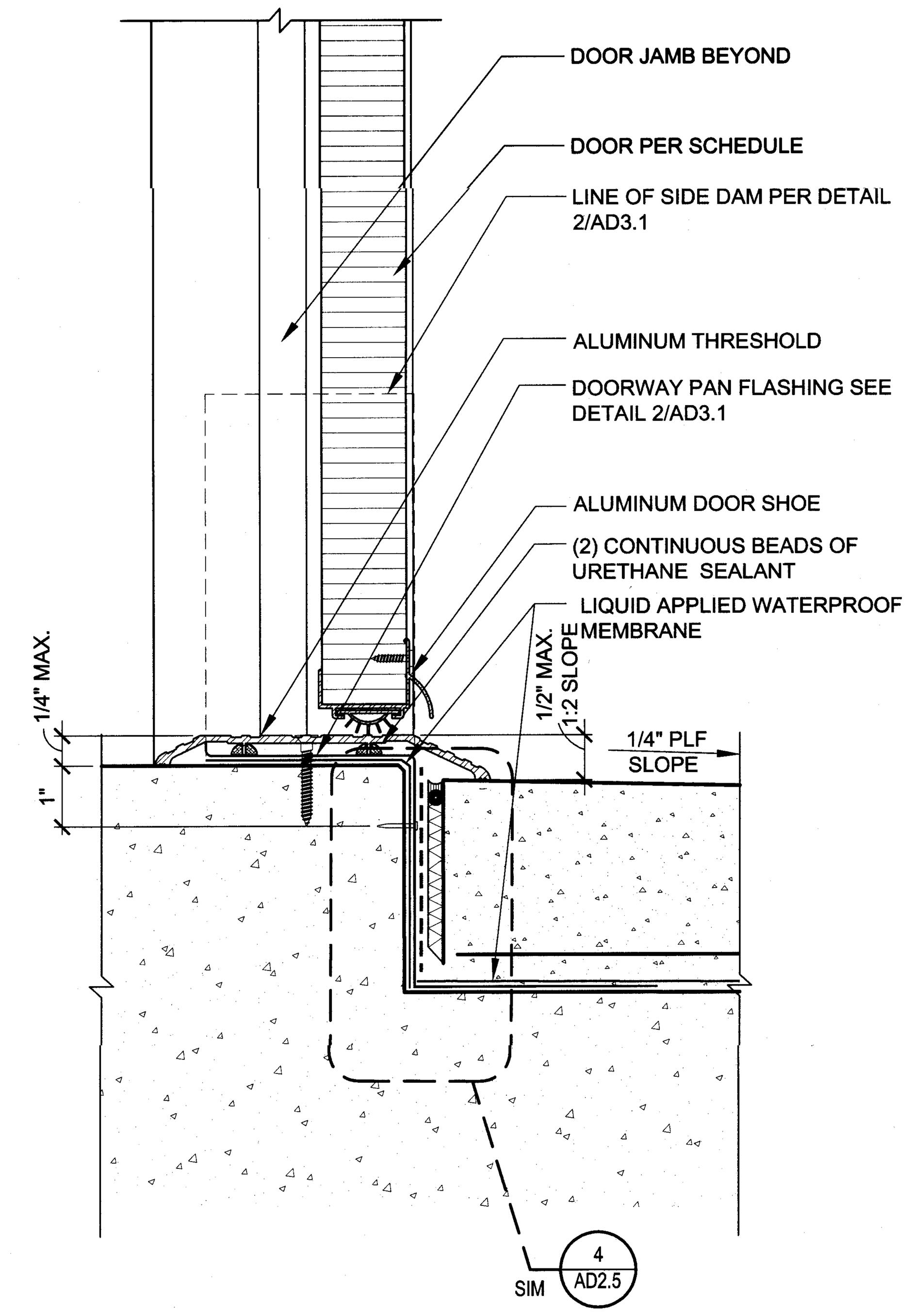
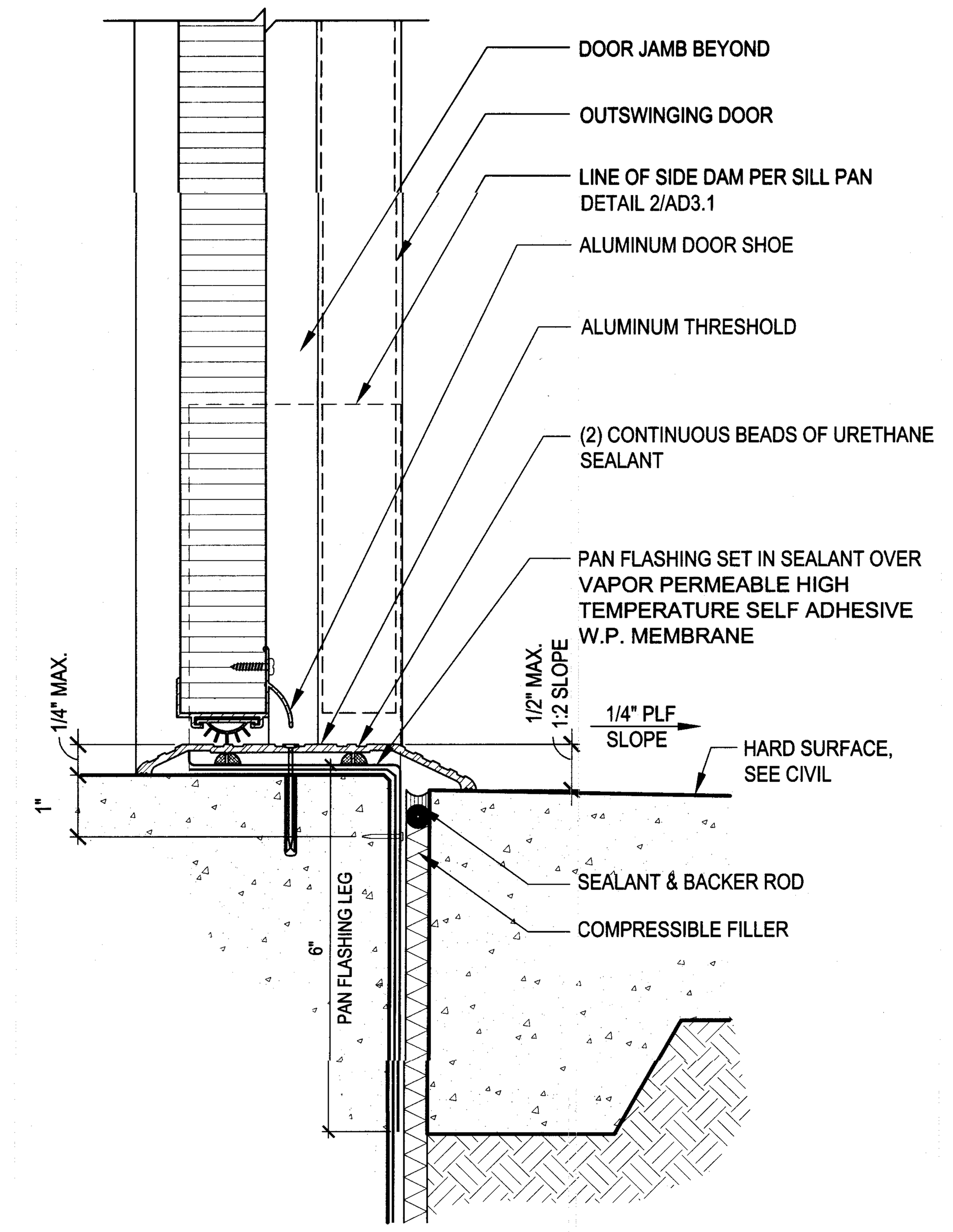
AD3.1

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5 / 8 / 2014
DATE

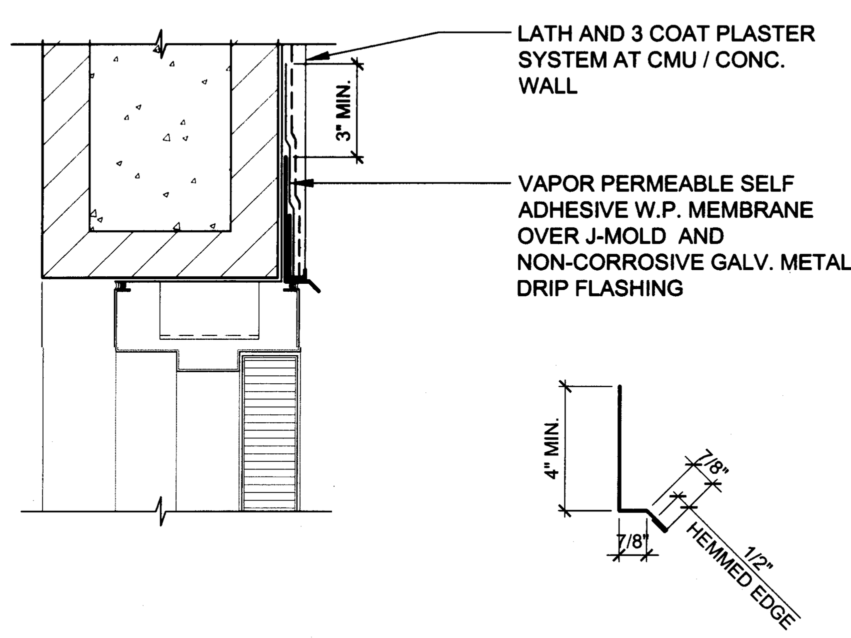
ALL THRESHOLDS AT ACCESSIBLE UNITS SHALL MEET ADA REQUIREMENT.



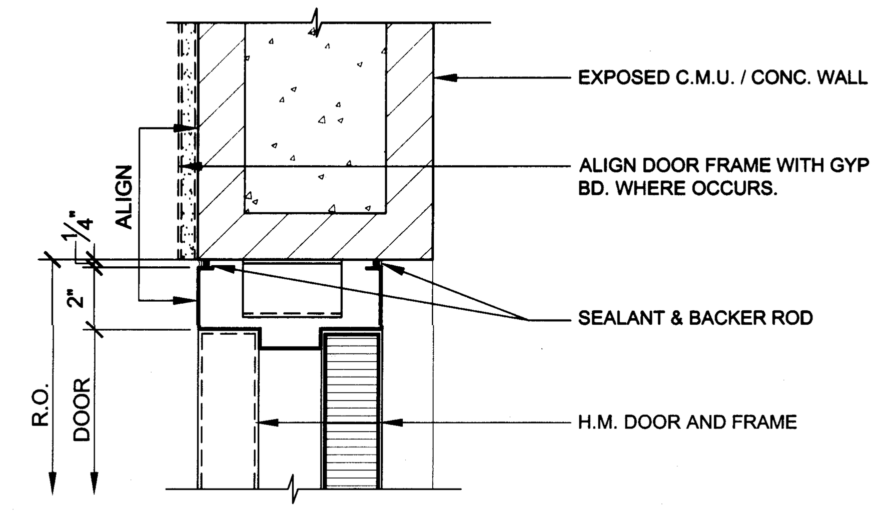
THRESHOLD AT PODIUM 18
SC: 6"=1'-0"



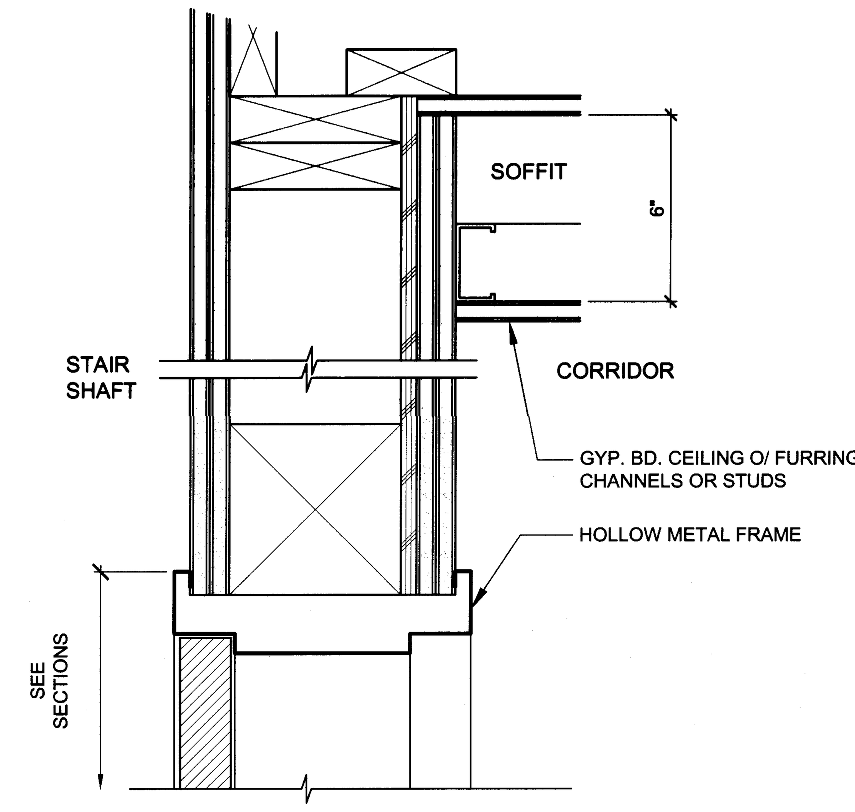
THRESHOLD AT ENTRY DOOR 14
SC: 6"=1'-0"



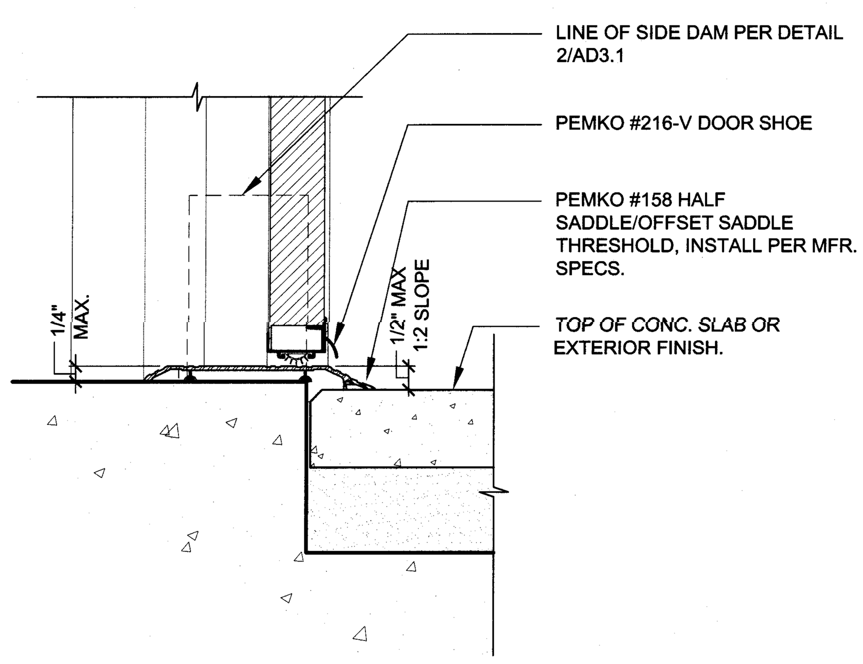
H. M. DOOR HEAD EXT. CMU 9
3" = 1'-0"



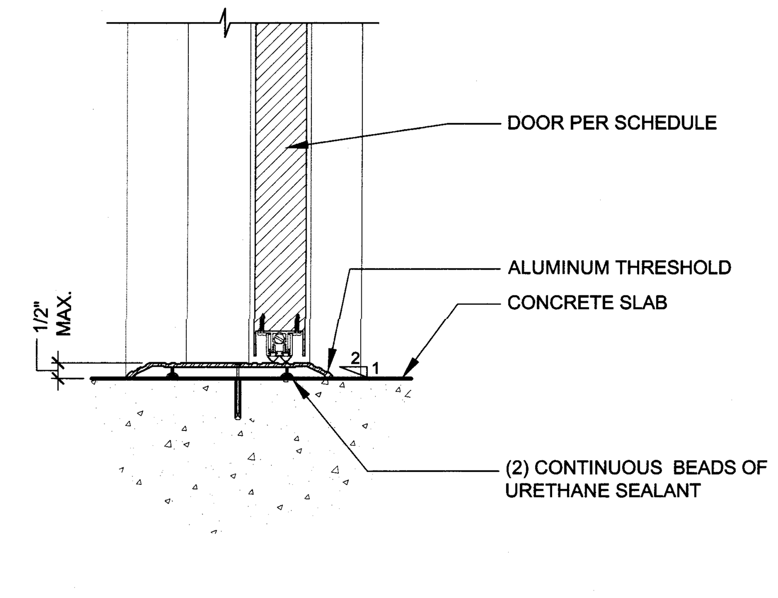
H.M. DOOR HEAD AT GARAGE 5
3" = 1'-0"



2 HOUR DOOR HEAD AT STAIR (TYPICAL) 1
MINIMUM REQUIREMENTS
3" = 1'-0"

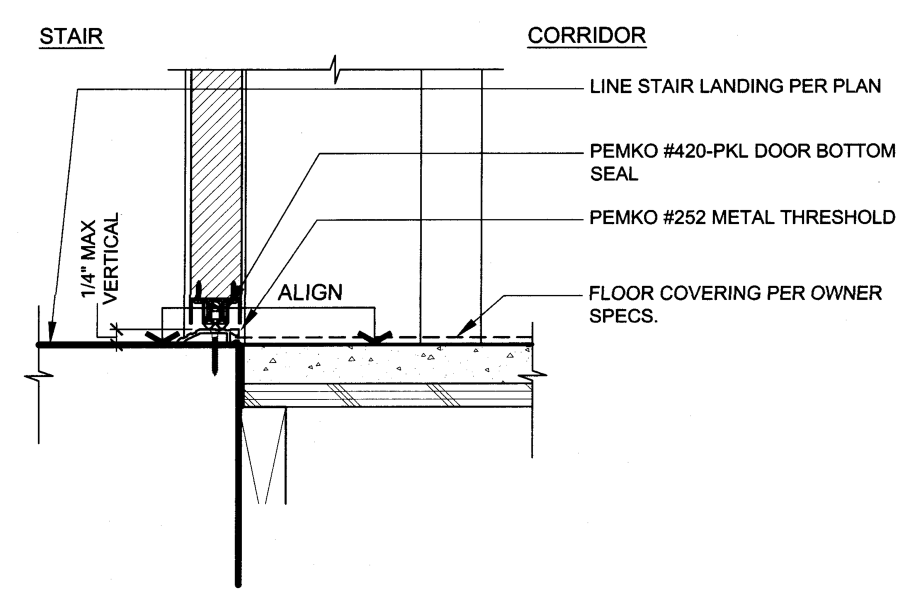


EXTERIOR DOOR THRESHOLD - TYPICAL 10
3" = 1'-0"



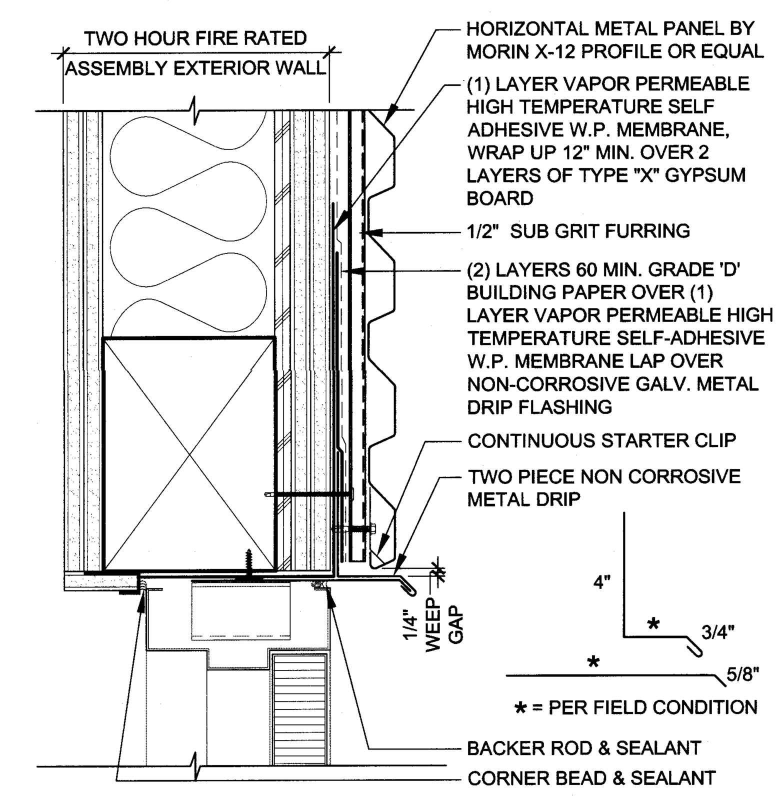
FOR ADDITOINAL INFORMATION SEE DETAIL 2/-

INT. H.M. DOOR THRESHOLD AT GARAGE 6
3" = 1'-0"

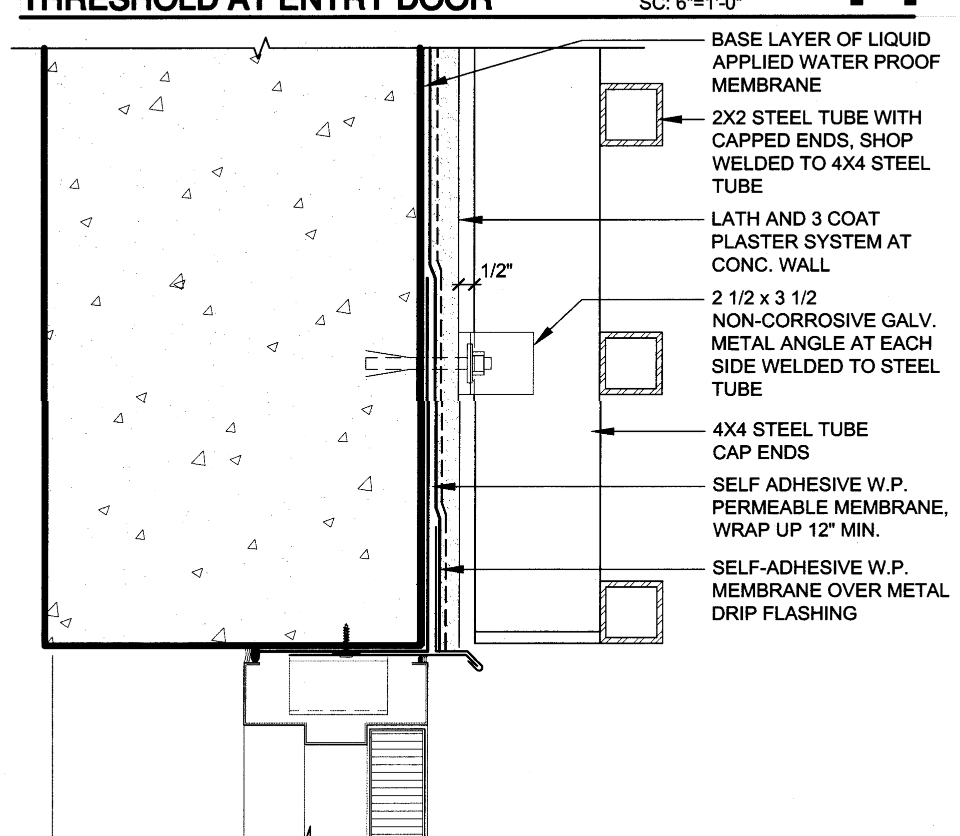


NOTE:
THRESHOLDS AT FLOOR MATERIAL CHANGES SHALL NOT EXCEED 1/2" WITH A MAX BEVEL OF 1:2 PER 2010 CBC 1132A.4.1

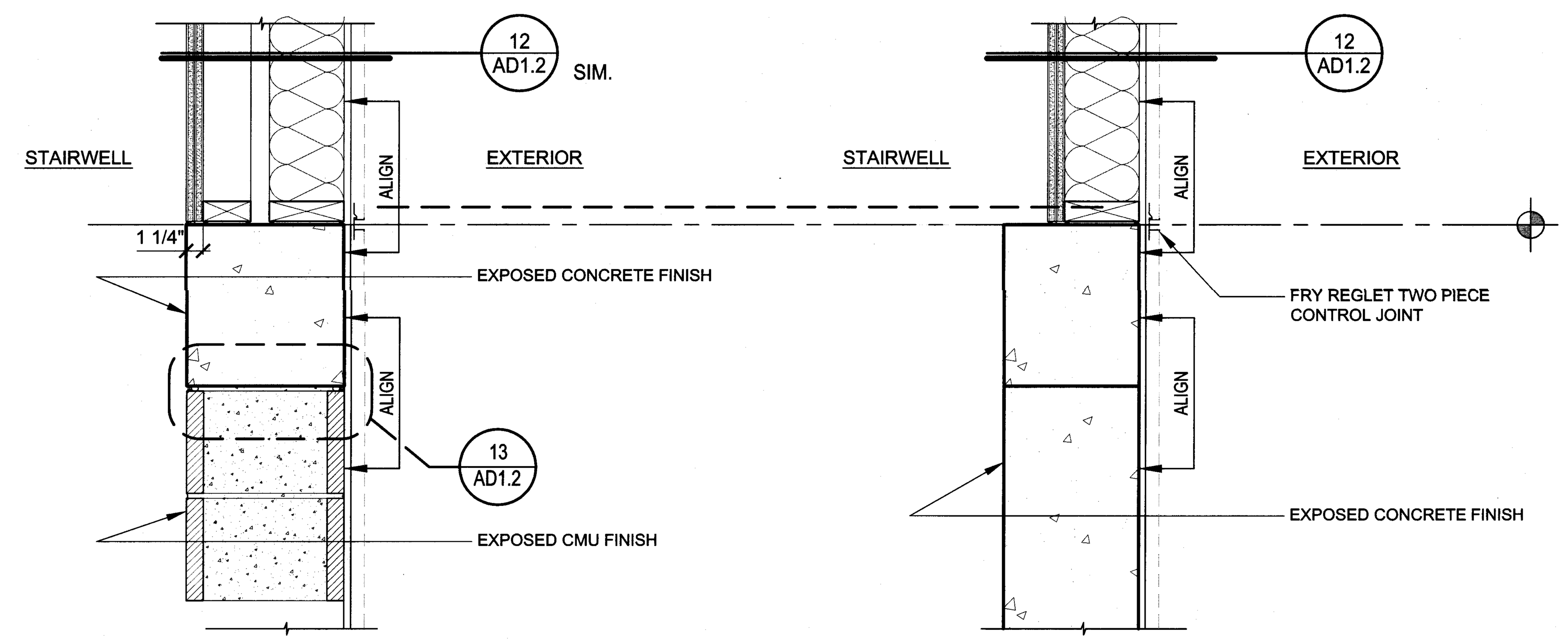
DOOR THRESHOLD AT STAIR 2
3" = 1'-0"



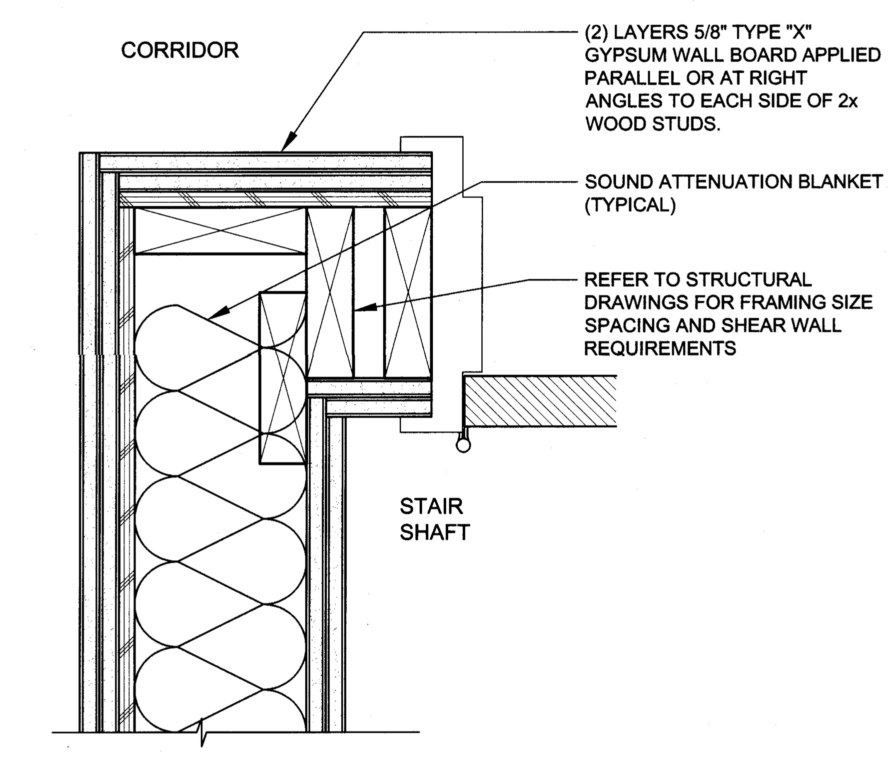
H. M. DOOR HEAD AT METAL PANEL 19
3" = 1'-0"



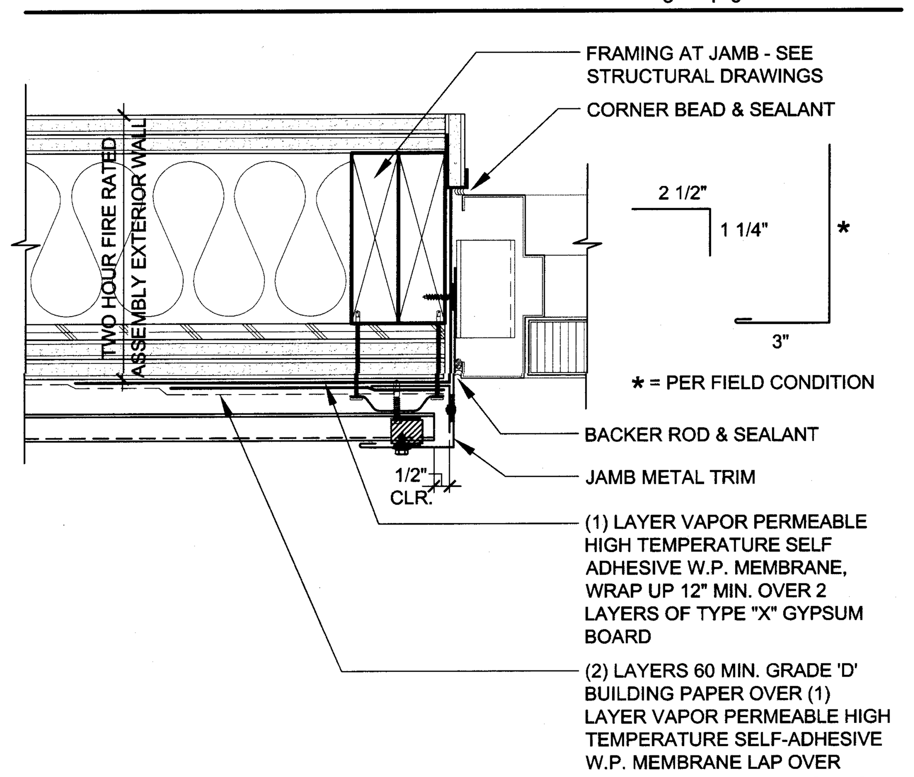
H. M. DOOR HEAD AT EXT. STEEL TUBE WALL 15
3" = 1'-0"



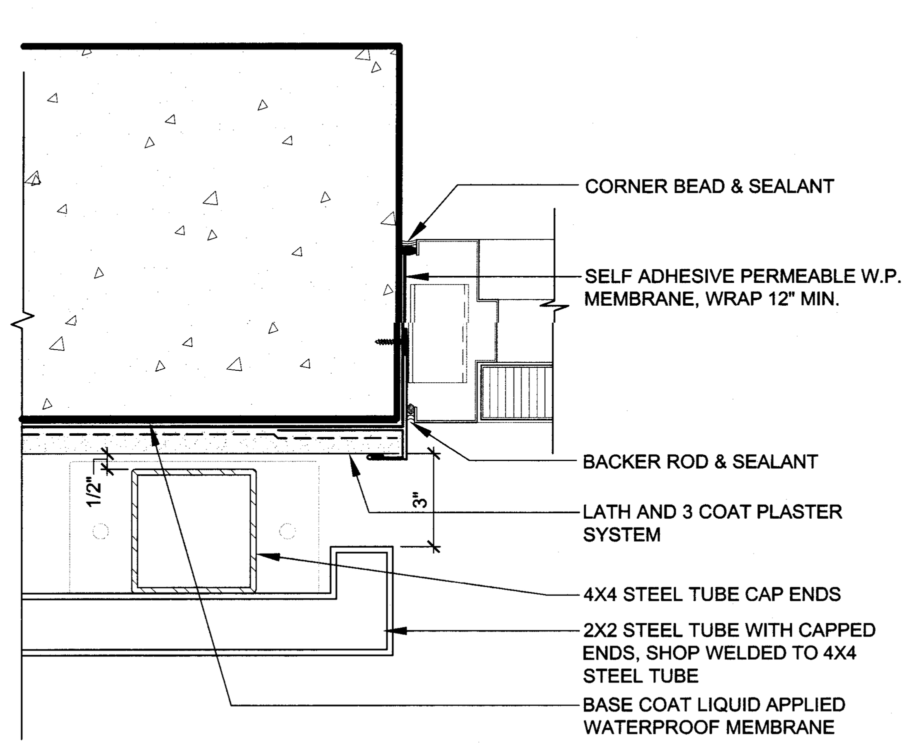
STAIRWELL PODIUM TRANSITION (EXTERIOR) 7
1 1/2" = 1'-0"



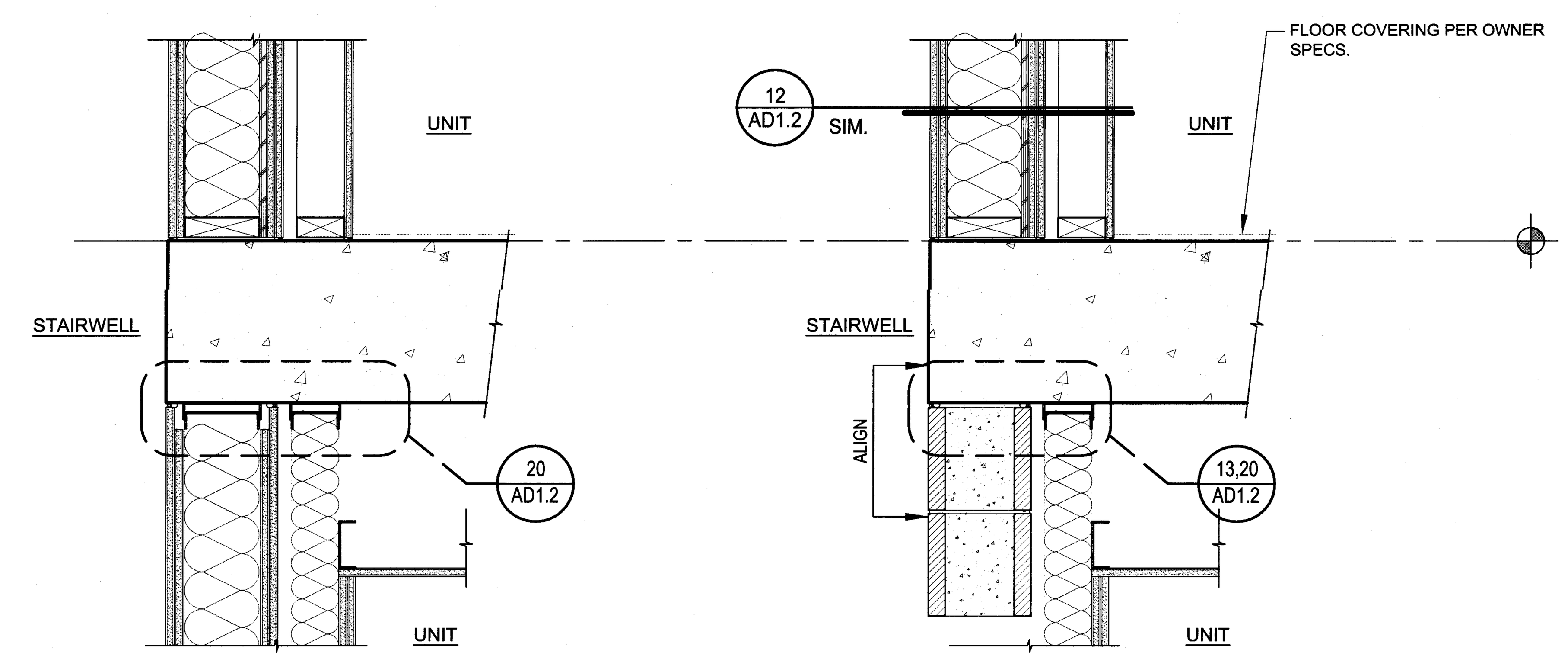
2 HOUR DOOR JAMB AT STAIR 3
3" = 1'-0"



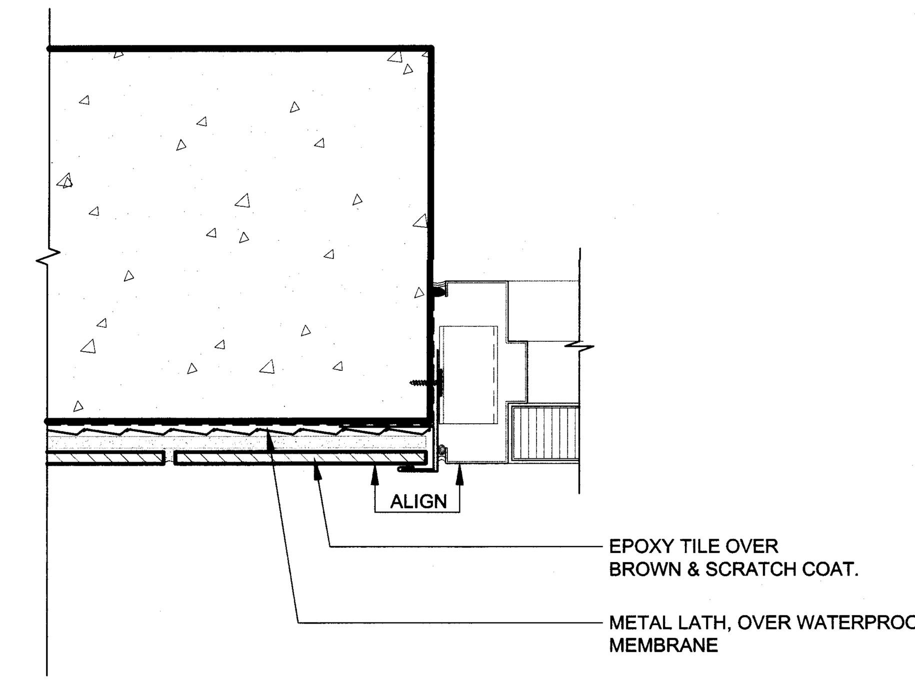
H. M. DOOR JAMB AT METAL PANEL 20
3" = 1'-0"



H. M. DOOR JAMB AT EXT. STEEL TUBE WALL 16
3" = 1'-0"



STAIRWELL PODIUM TRANSITION 8
1 1/2" = 1'-0"



H. M. DOOR JAMB AT EXT. TILE 4
3" = 1'-0"

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	ASI #8 - ACCESSIBILITY REVISIONS	05/05/2014

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

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DOOR DETAILS

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2010-089
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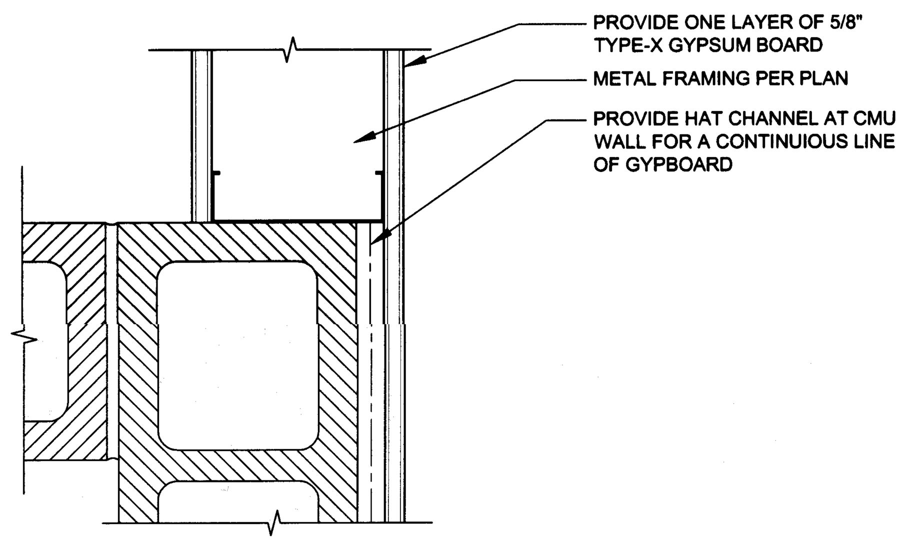
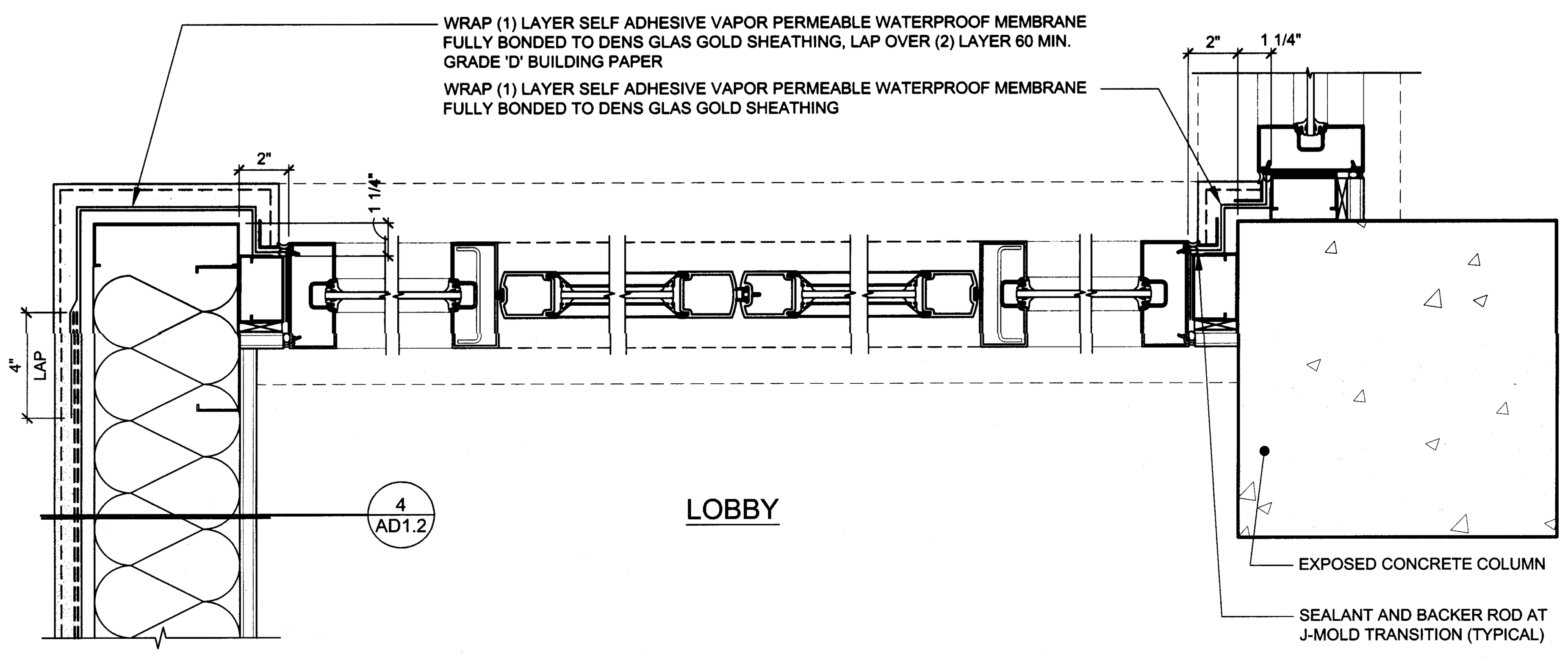
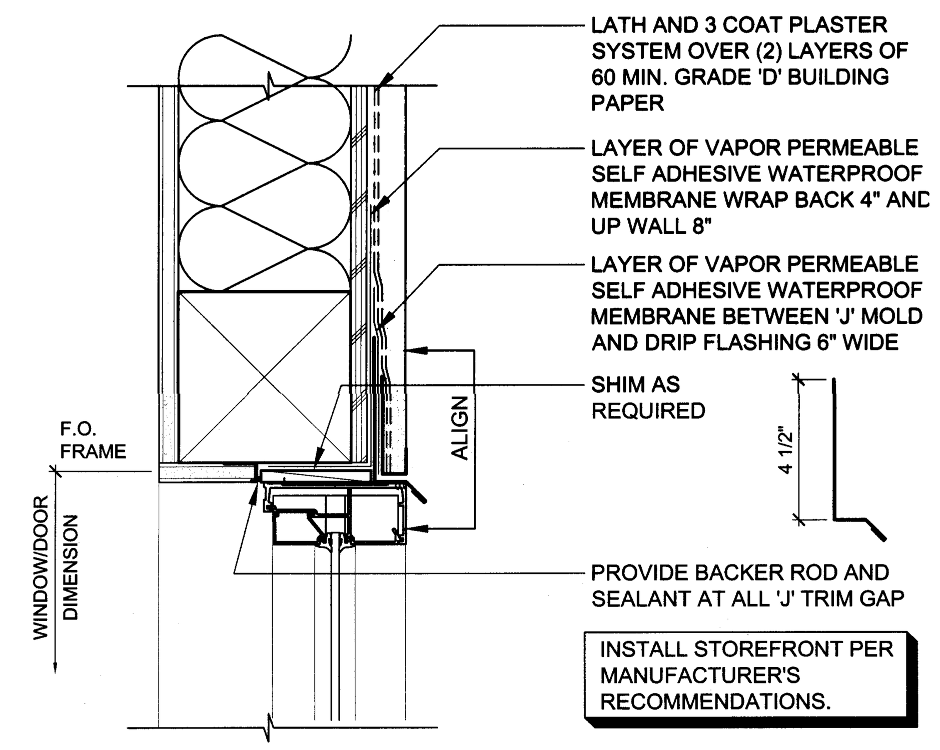


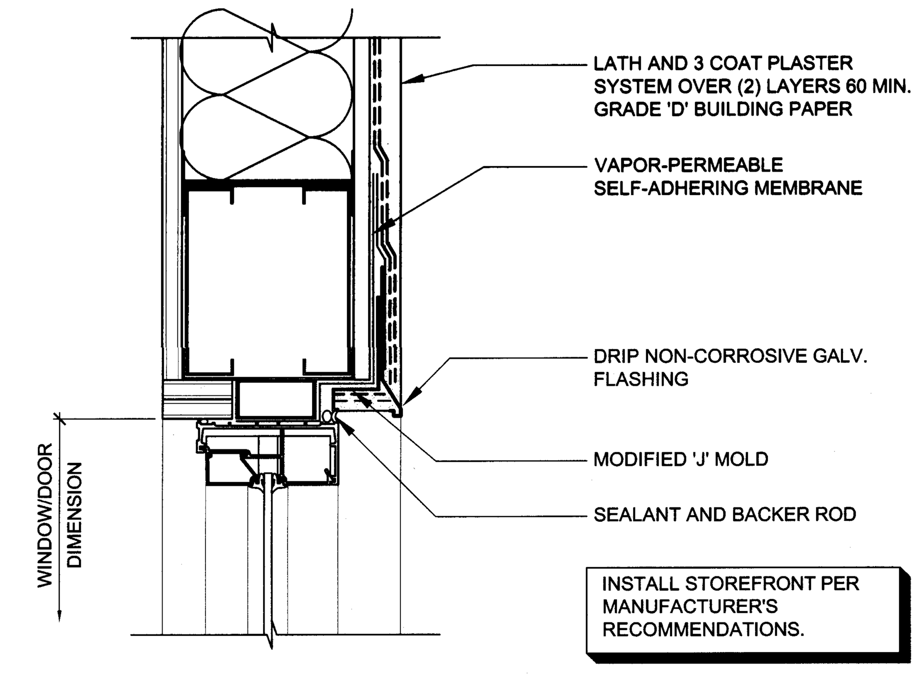
CMU TO METAL FRAMING TRANSITION 3" = 1'-0" **17**



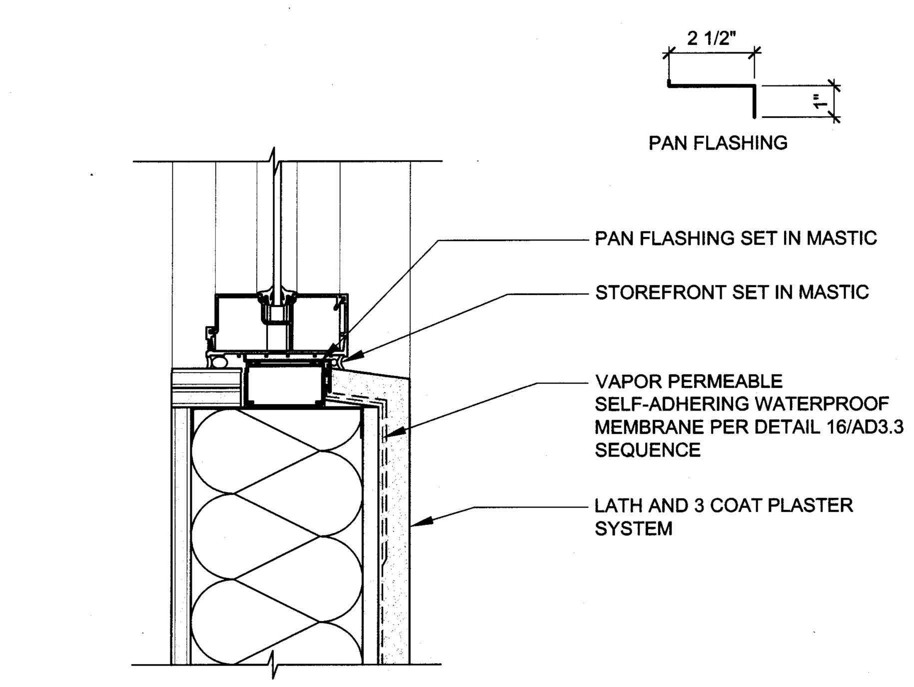
STOREFRONT DOOR SIDELITE 3" = 1'-0" **9**



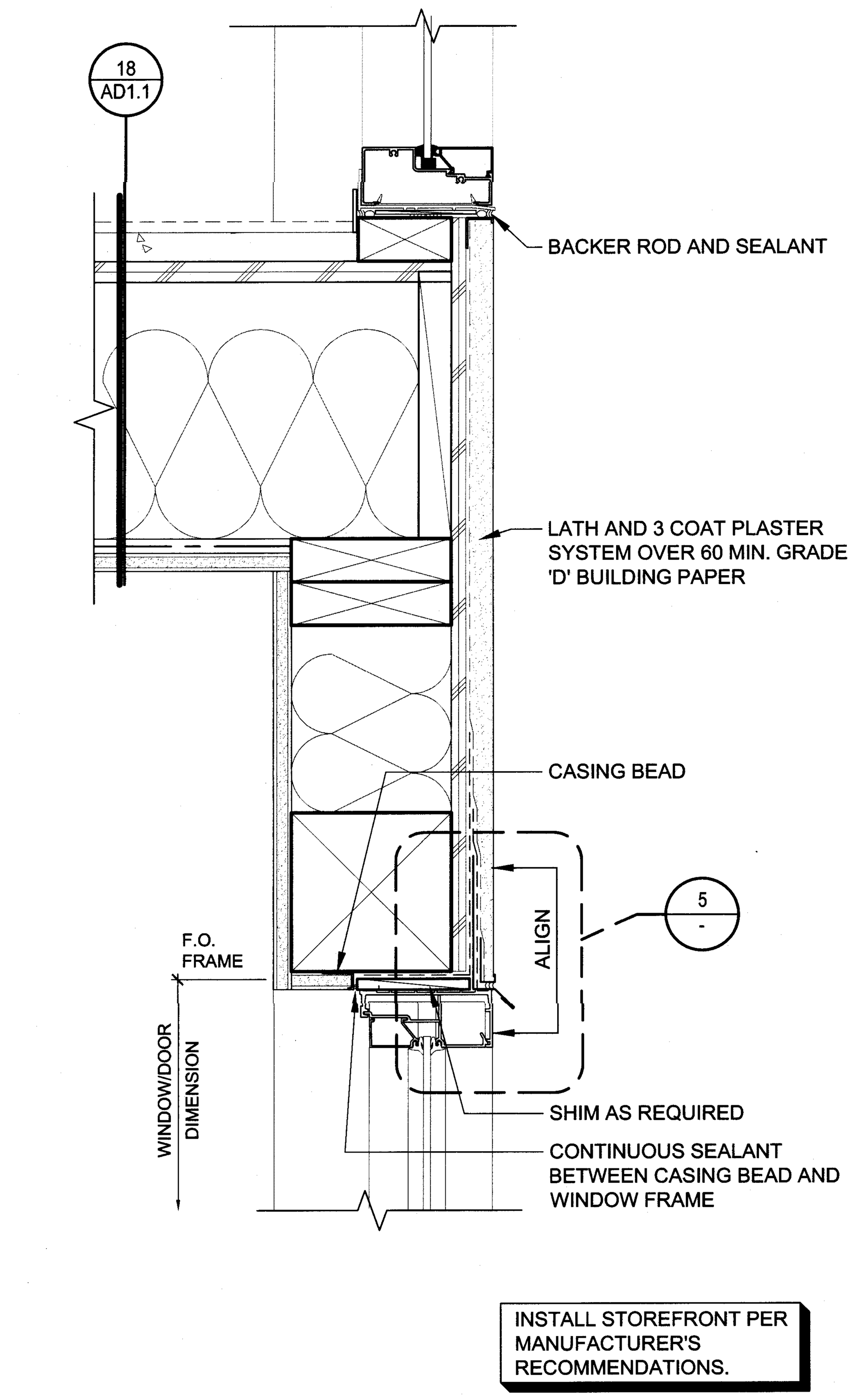
STOREFRONT HEAD 3" = 1'-0" **5**



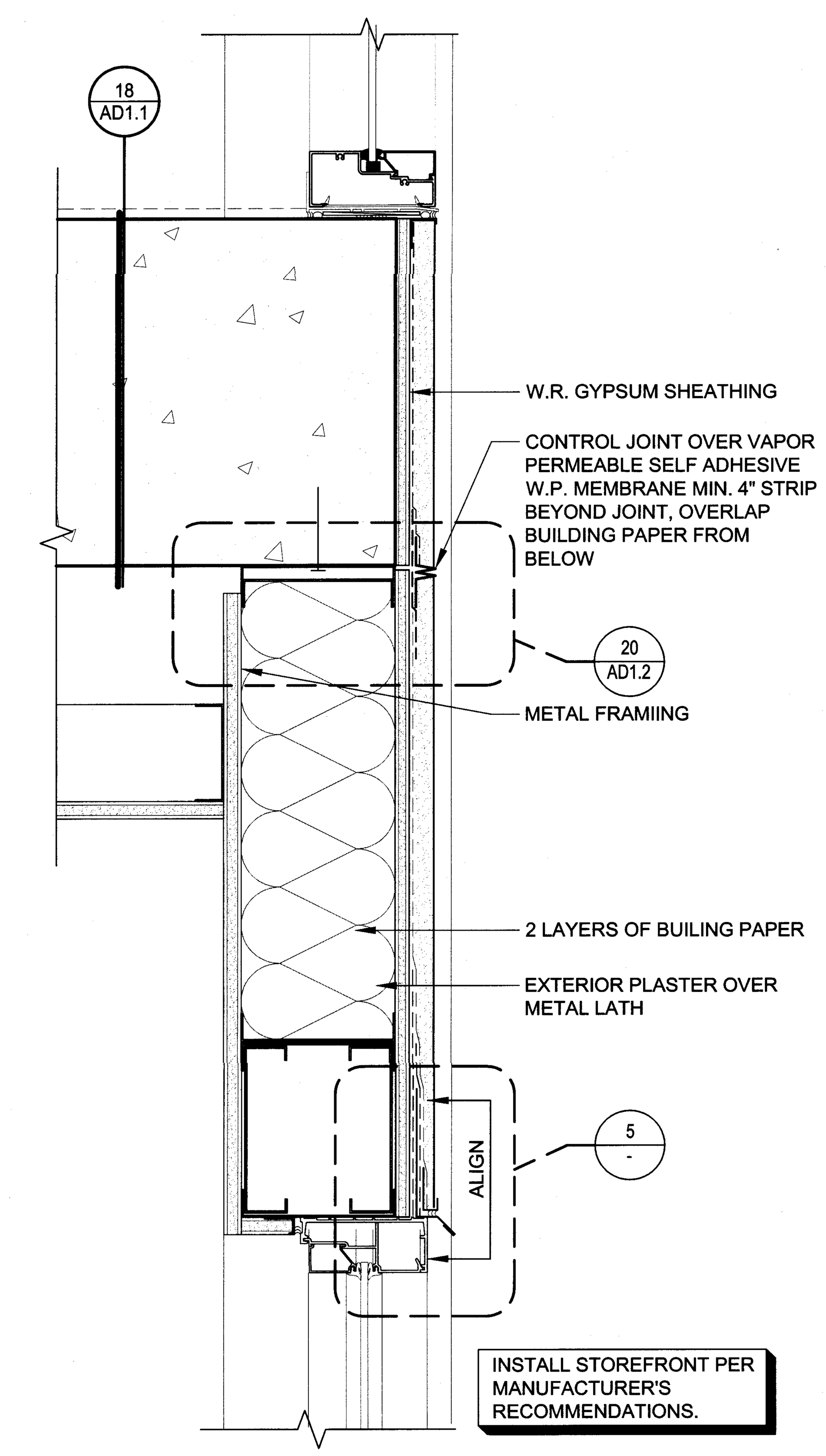
STOREFRONT HEAD 3" = 1'-0" **1**



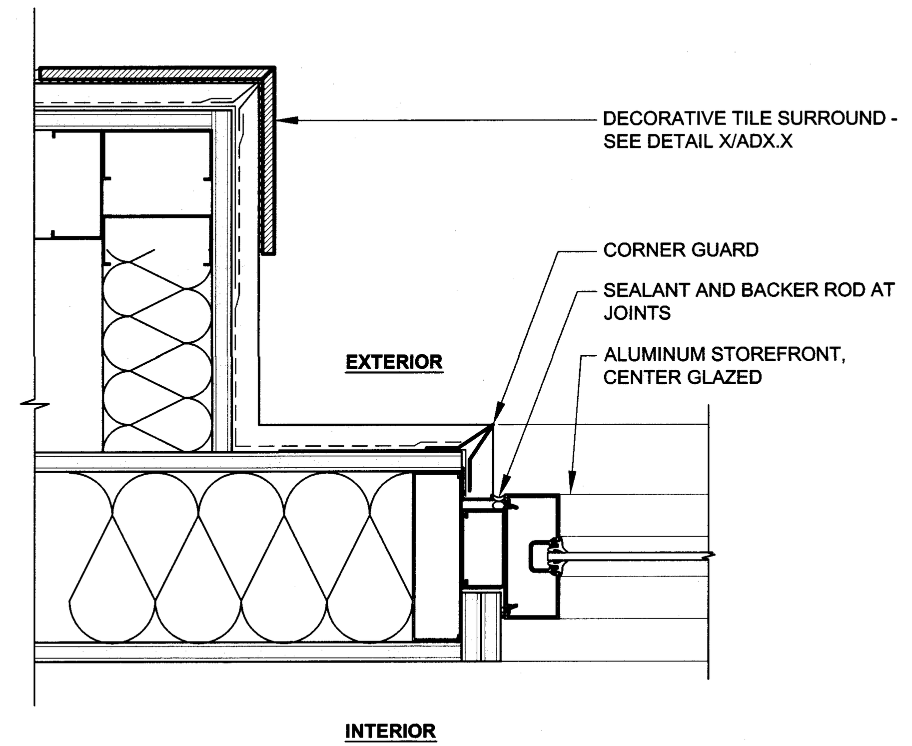
STOREFRONT SILL 3" = 1'-0" **2**



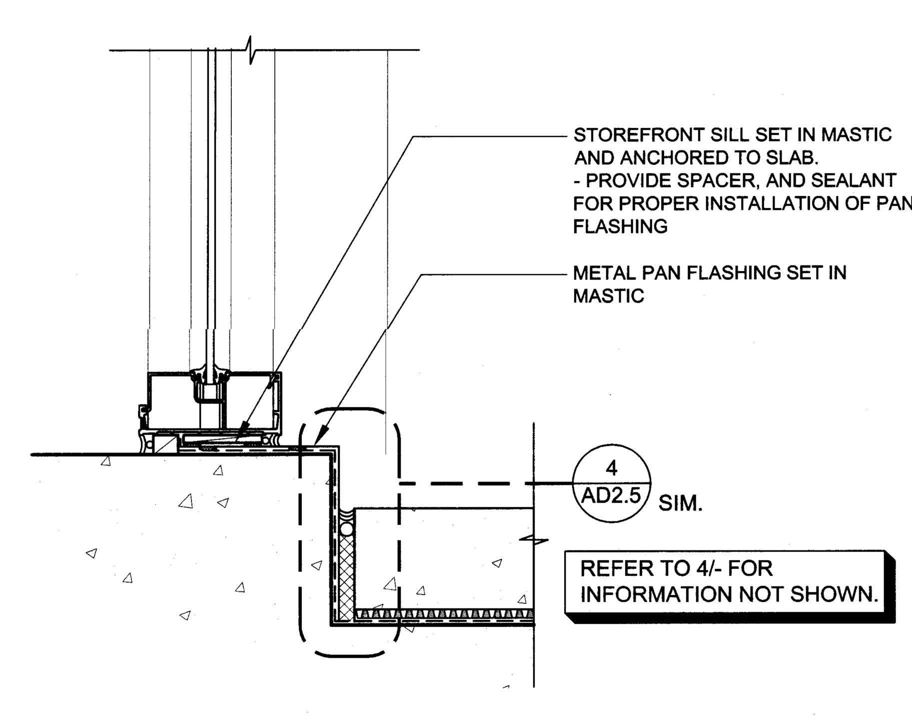
STOREFRONT HEAD AND SILL 3" = 1'-0" **15**



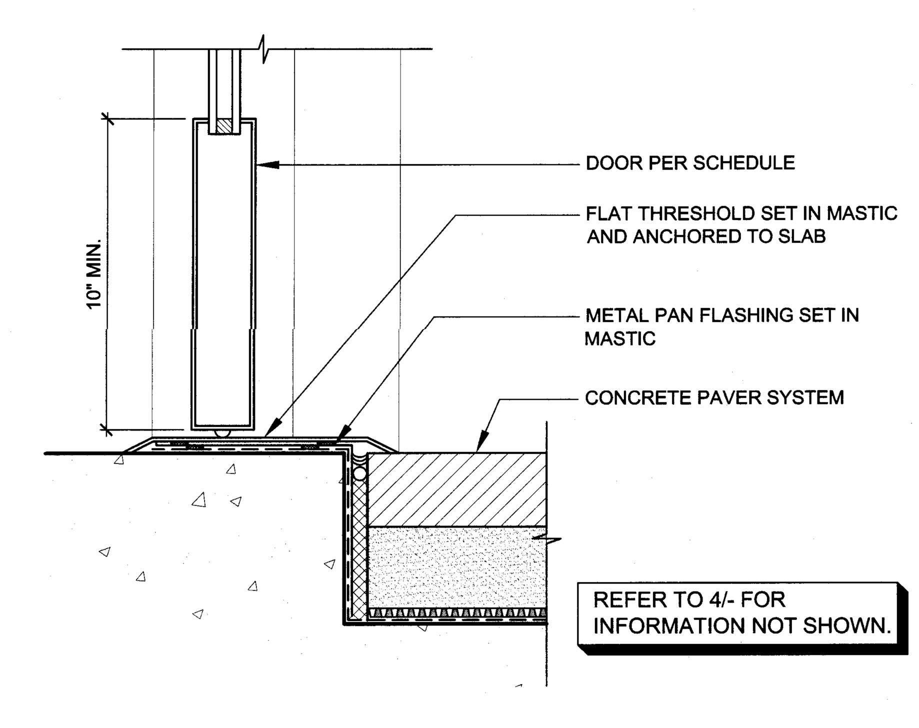
STOREFRONT HEAD AND SILL 3" = 1'-0" **11**



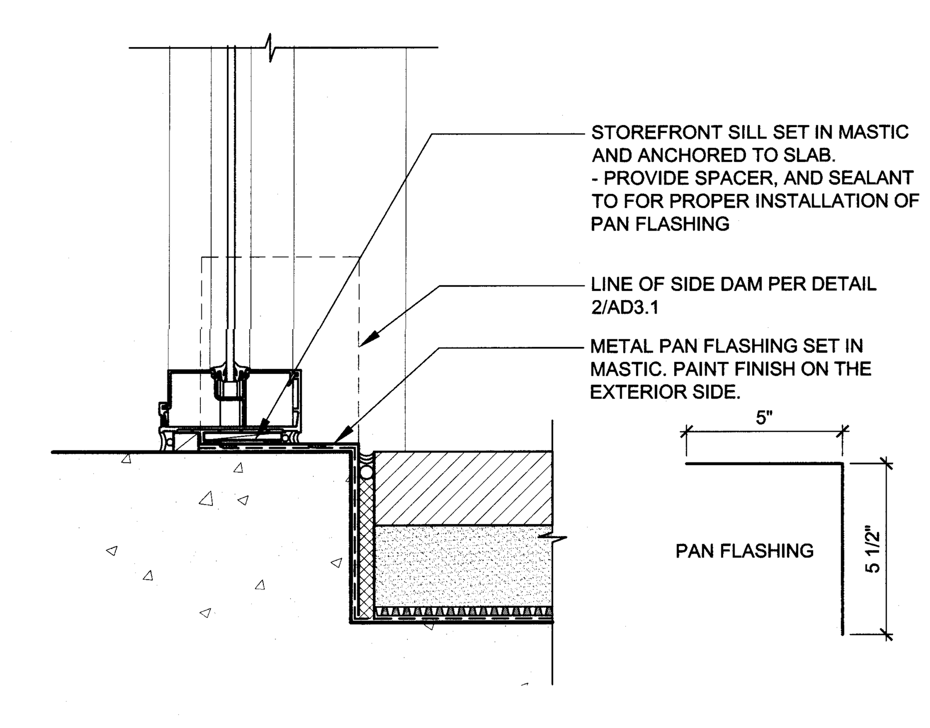
STOREFRONT JAMB AT RETAIL/LEASING 3" = 1'-0" **3**



STOREFRONT SILL AT RETAIL/LEASING 3" = 1'-0" **12**



STOREFRONT THRESHOLD AT PODIUM 3" = 1'-0" **8**



STOREFRONT SILL AT PODIUM 3" = 1'-0" **4**

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CROWN CABOT LUXURY APARTMENTS
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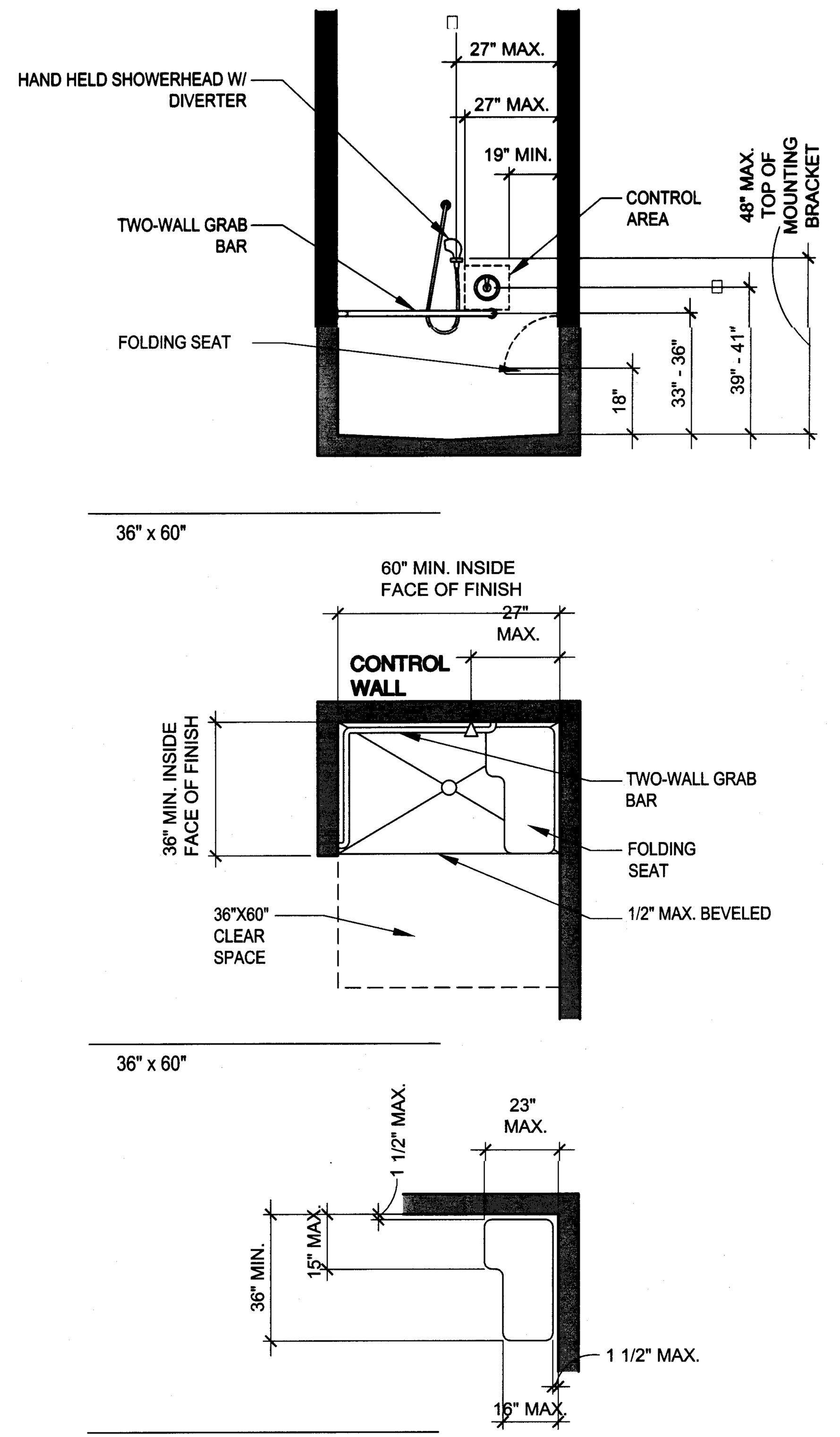
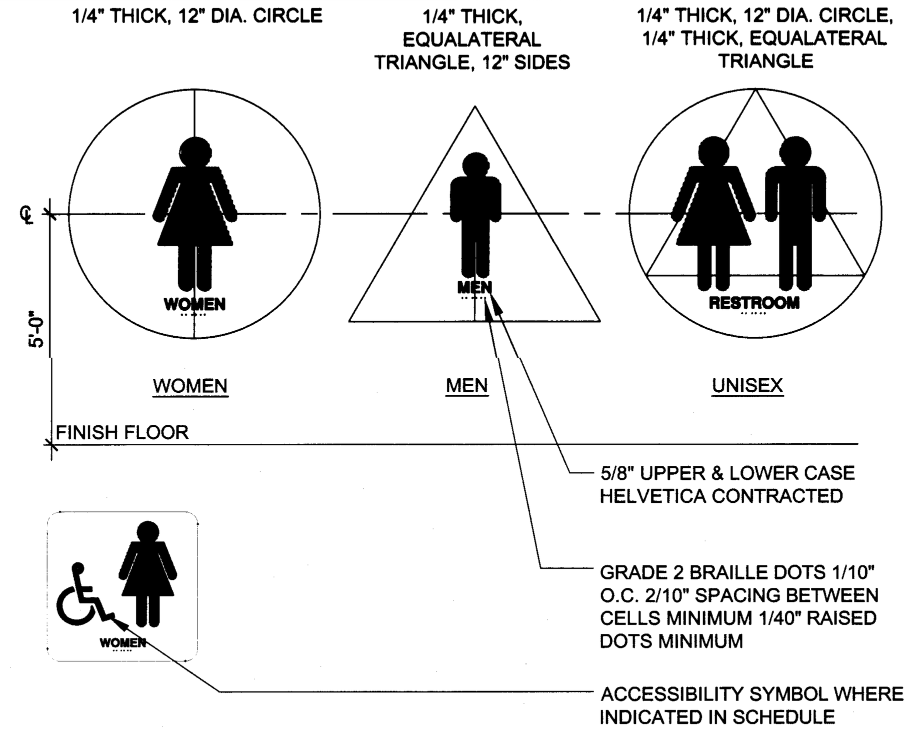
Common Facilities

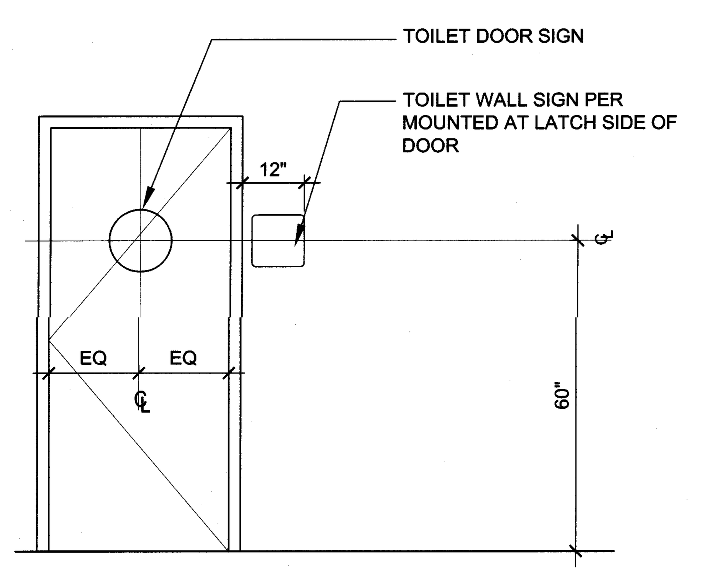


NOTE:
THE CONTROLS AND HAND HELD SHOWER HOSE BRACKET MUST BE RELOCATED TO THE REAR WALL WITHIN 24" MAX. OF THE SEAT FOLDING SEAT. THE HAND HELD SHOWERHEAD MUST HAVE A DIVERTER FROM THE FIXED SHOWERHEAD ON THE OPPOSITE WALL.

ACCESSIBLE SHOWER STALL N.T.S. 18



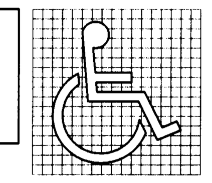
1. ATTACH SIGNS USING (3) THREE FLATHEAD COUNTERSUNK SCREWS TO SOLID BACKING & ADHESIVE TO BACK.
2. SIGNS ARE TO BE MOUNTED 5'-0" FROM C TO FINISHED FLOOR ON WALL ADJACENT TO TOILET ROOM DOOR STRIKE.
3. SIGNS ARE TO BE DISTINCTLY DIFFERENT FROM THE WALL IN COLOR AND CONTRAST.



NOTE:
ALL SIGNS TO HAVE WHITE FIGURES ON A BLUE BACKGROUND. SIGNS ARE TO BE DISTINCTLY DIFFERENT FROM THE WALL IN COLOR AND CONTRAST.

TOILET SIGNAGE/ PLACEMENT N.T.S. 14

ALL DIAGRAMS ON THIS SHEET ILLUSTRATE REQUIREMENTS OF CALIF. TITLE 24 AND EXAMPLES OF CONFORMING DESIGNS AND ARE INTENDED TO SUPPLEMENT THE CONSTRUCTION DRAWINGS. SEE PLANS FOR ACTUAL CONDITIONS.



ACCESSIBLE ROUTE OF TRAVEL

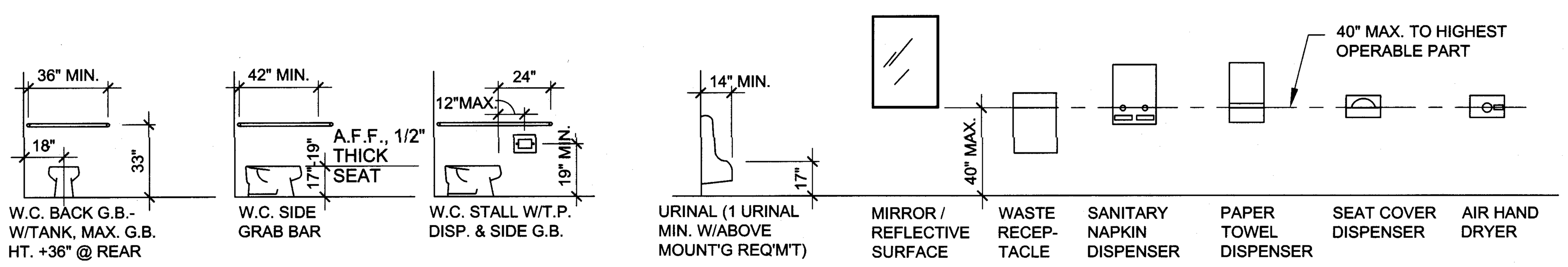
1. AT EVERY PRIMARY PUBLIC ENTRANCE AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL, THERE SHALL BE A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY. SIGNS SHALL INDICATE THE DIRECTION TO ACCESSIBLE BUILDING ENTRANCES AND FACILITIES. IF AN ACCESSIBLE ROUTE HAS CHANGES IN LEVEL GREATER THAN INCH, THEN A CURB RAMP, RAMP, ELEVATOR OR PLATFORM LIFT SHALL BE PROVIDED. STAIRS SHALL NOT BE PART OF AN ACCESSIBLE ROUTE.
2. WHEN CROSSING VEHICLE TRAFFIC LANES IS NECESSARY, THE ROUTE OF TRAVEL SHALL BE DESIGNATED AND MARKED AS A CROSSWALK.
3. WHEN EMERGENCY WARNING SYSTEMS ARE REQUIRED (E.G., MANUAL AND/OR AUTOMATIC FIRE ALARM SYSTEMS), THEY SHALL COMPLY WITH NFPA 72 AND CBC CHAPTER 9. PROVIDE BOTH AUDIBLE AND VISUAL ALARMS (I.E., STROBES) IN RESTROOM, CORRIDORS, MULTI-PURPOSE ROOMS, LOBBIES, MEETING ROOMS, AND ANY OTHER COMMON USE ROOMS. CBC 1114B.2.2
4. PROVIDE 36 INCHES OF HALLWAYS WHEN OCCUPANT LOAD IS LESS THAN 10, 44 INCHES HALLWAYS WHEN OCCUPANT LOAD OF 10 OR MORE. CBC 1133B.3.
5. PROVIDE STAIRWAYS AND HANDRAILS PER CBC 1133B.4.
6. PROVIDE WARNING STRIP AT STAIRS PER CBC 1133B.4.
7. PROVIDE RAMP, HANDRAILS, AND LANDING PER CBC 1133B.5.
8. PASSENGER ELEVATORS SHALL COMPLY PER CBC 1124A & 1116B.
9. MINIMUM HEAD ROOM CLEARANCE IS 90 INCHES PER CBC 1003.2. MINIMUM VERTICAL CLEARANCE IS 8'-2" IN PARKING GARAGE PER CBC 1109A.8.1 AND 1130B.
10. NO PROJECTION INTO CLEAR WIDTH LOWER THAN 34 INCHES ABOVE THE FLOOR OR GROUND, PROJECTION INTO CLEAR SPACE BETWEEN 34 INCHES AND 80 INCHES ABOVE FLOOR SHALL NOT EXCEED 4 INCHES PER CBC 1008.1.1.1.

DRINKING FOUNTAINS

11. A SIDE APPROACH DRINKING FOUNTAIN IS NOT ACCEPTABLE.
12. DRINKING FOUNTAINS AND WATER COOLERS SHALL BE ON AN ACCESSIBLE ROUTE. 1139A.2
13. *PROVIDE WATER FLOW OF AT LEAST 4" HIGH TO ALLOW THE INSERTION OF A CUP OR GLASS.*
14. MANUAL OPERATION SHALL NOT REQUIRE A FORCE GREATER THAN 5LBS. THAT IS MOUNTED EITHER IN THE FRONT OR SIDE AND LOCATED WITHIN 6" OF THE FRONT EDGE OF THE FOUNTAIN.

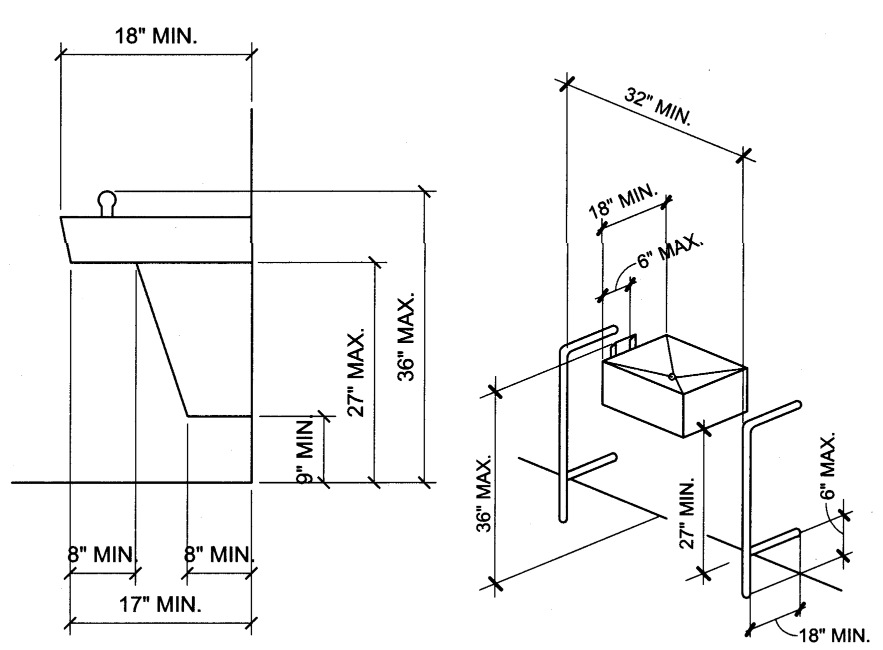
ACCESSIBLITY NOTES FOR PUBLIC SPACES N.T.S. 10

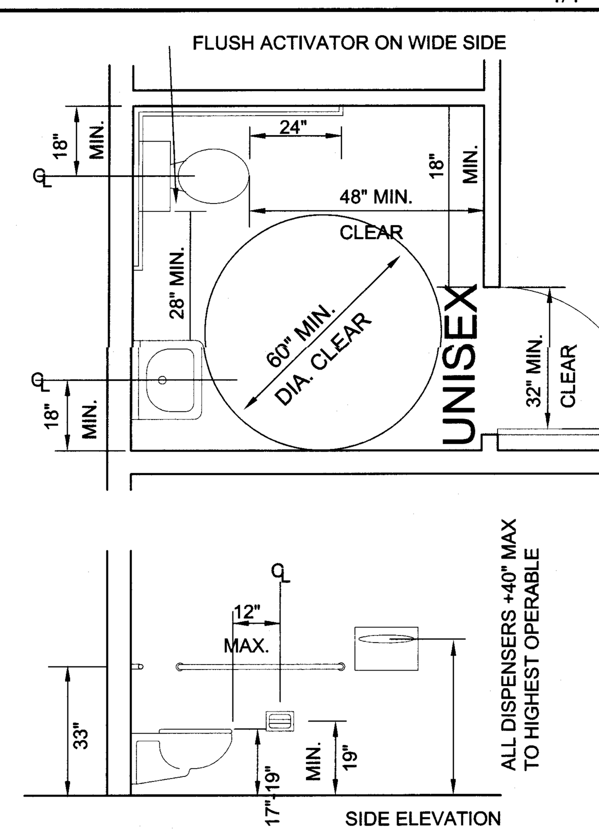
GRAB BARS PER SECTION 1127A.4
MIN 1¼" DIA. - MAX 1½" DIA. WITH SPACE BTW WALL AND BAR TO BE 1½"



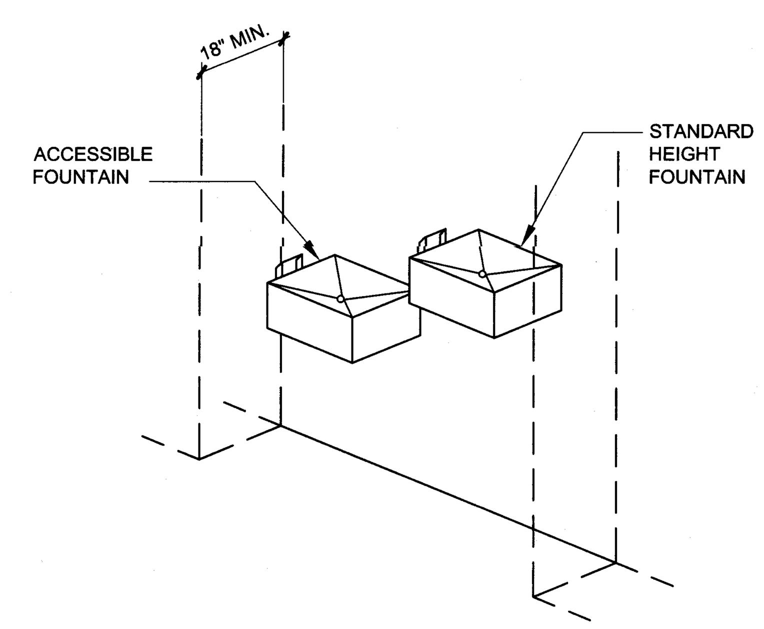
NOTE:
THIS DETAIL REFLECTS STANDARD HEIGHTS FOR VARIOUS FIXTURES & ACCESSORIES. SEE SPECIFICATIONS FOR LIST OF FIXTURES & ACCESSORIES TO BE PROVIDED FOR THIS PROJECT. PROVIDE SOLID BLOCKING FOR MOUNTING AS REQUIRED.

FIXTURE AND ACCESSORY MOUNTING HEIGHT COMMON AREA FACILITIES 1/4" = 1'-0" 15





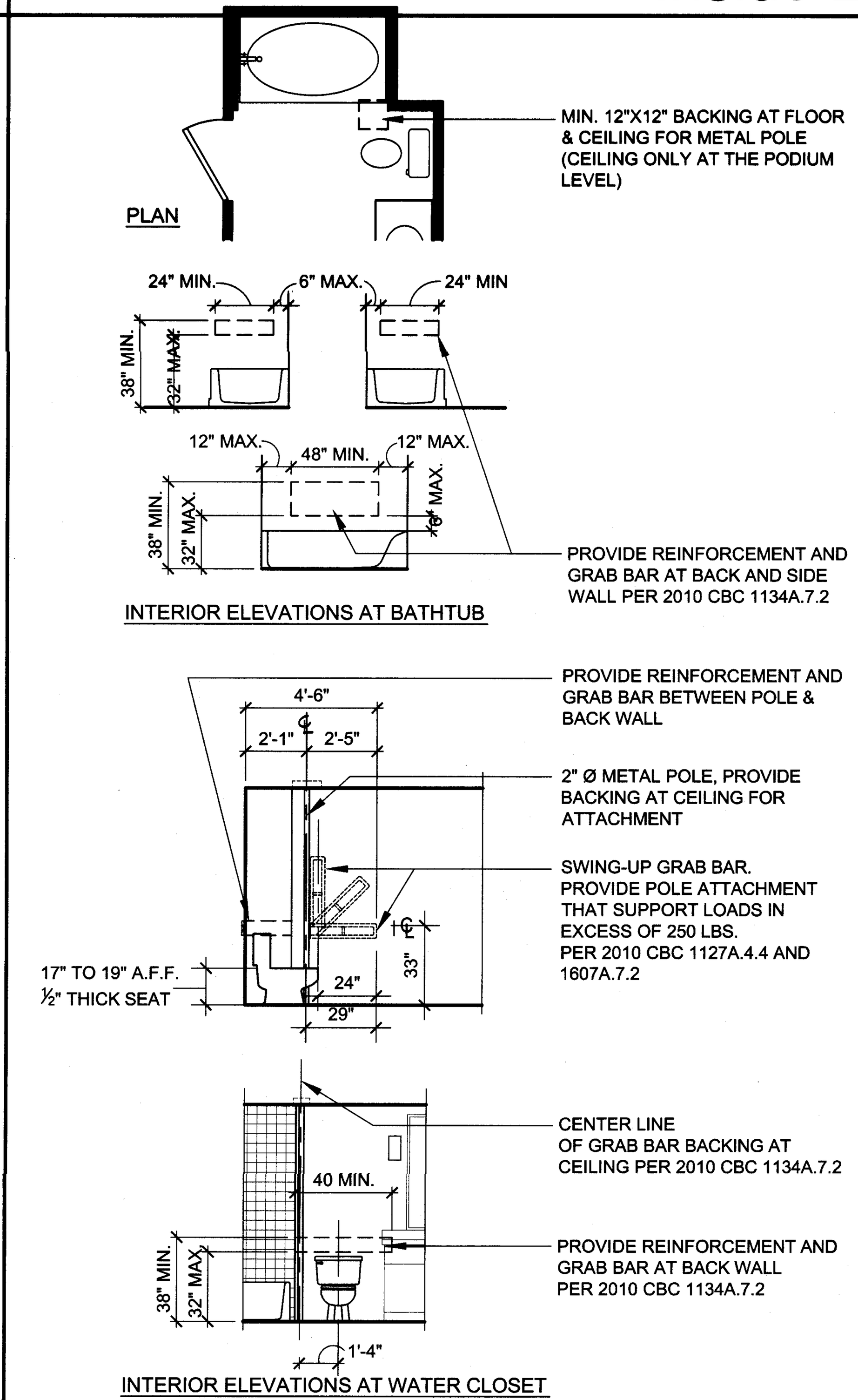
RESTROOM AT RETAIL N.T.S. 16



ACCESSIBLE DRINKING FOUTAIN AT ALCOVE
(SEE ABOVE FOR ADDITIONAL INFORMATION)

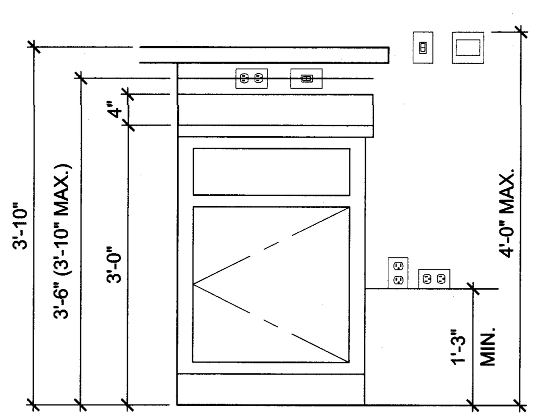
DRINKING FOUNTAIN 1/4" = 1'-0" 12

Inside Living Unit



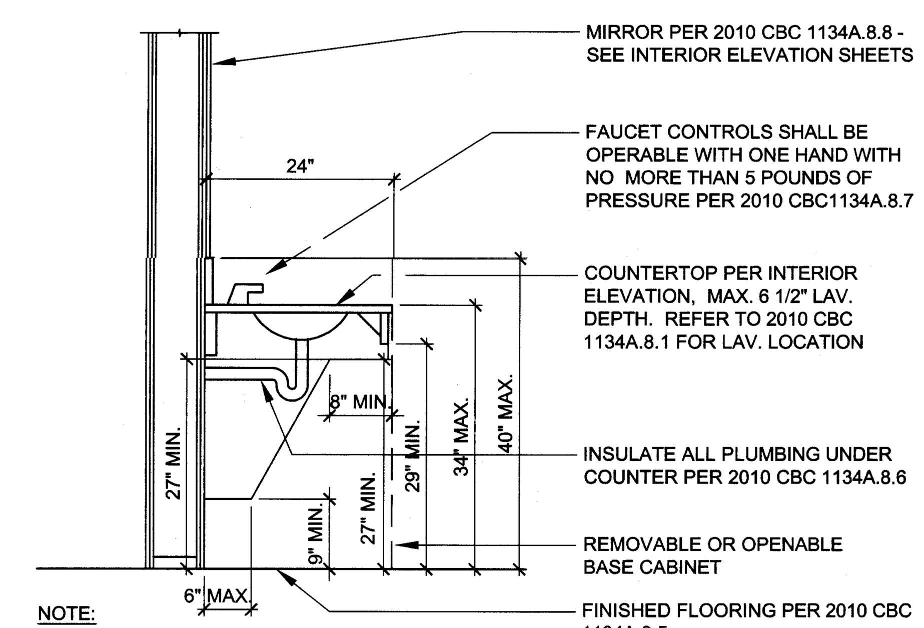
NOTE:
- ALL REINFORCING SHALL BE 2x SOLID WOOD BLOCKING, SECURELY FASTENED TO STUDS & JOISTS (FIBER BOARD OR WAFER BOARD NOT PERMITTED) BACKING AT FIBERGLASS TUB ASSEMBLY MAY BE INTEGRAL IN THE FIBERLASS ASSEMBLY.
- AT CONCRETE FLOOR, REINFORCEMENT FOR METAL POLE IS NOT REQUIRED.

6



NOTES :
THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF SWITCHES USED TO CONTROL LIGHT SWITCHES, THERMOSTATS AND OTHER ENVIRONMENTAL CONTROLS & ELECTRICAL OUTLETS SHALL BE LOCATED NO HIGHER THAN 48 INCHES, & NO LOWER THAN 15 INCHES, ABOVE THE FLOOR. IF THE REACH IS OVER AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES IN DEPTH, THE MAXIMUM HEIGHT IS REDUCED TO 44 INCHES FOR FORWARD APPROACH, OR 46 INCHES FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES IN DEPTH.

SWITCHES & OUTLETS N.T.S.



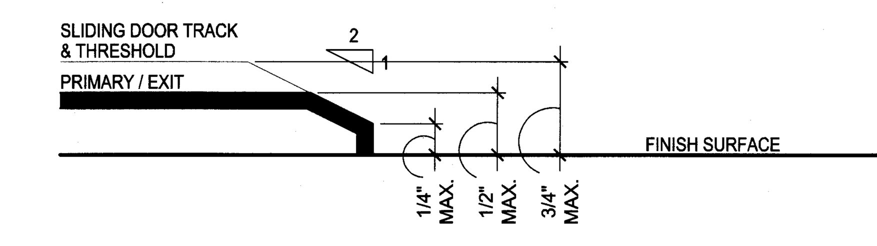
NOTE:
1. KNEE & TOE CLEARANCES SHALL MEET ALL ACCESSIBLITIY REQUIREMENTS PER 2010 CBC 1134A.8.4

LAVATORY 3/4" = 1'-0" 8

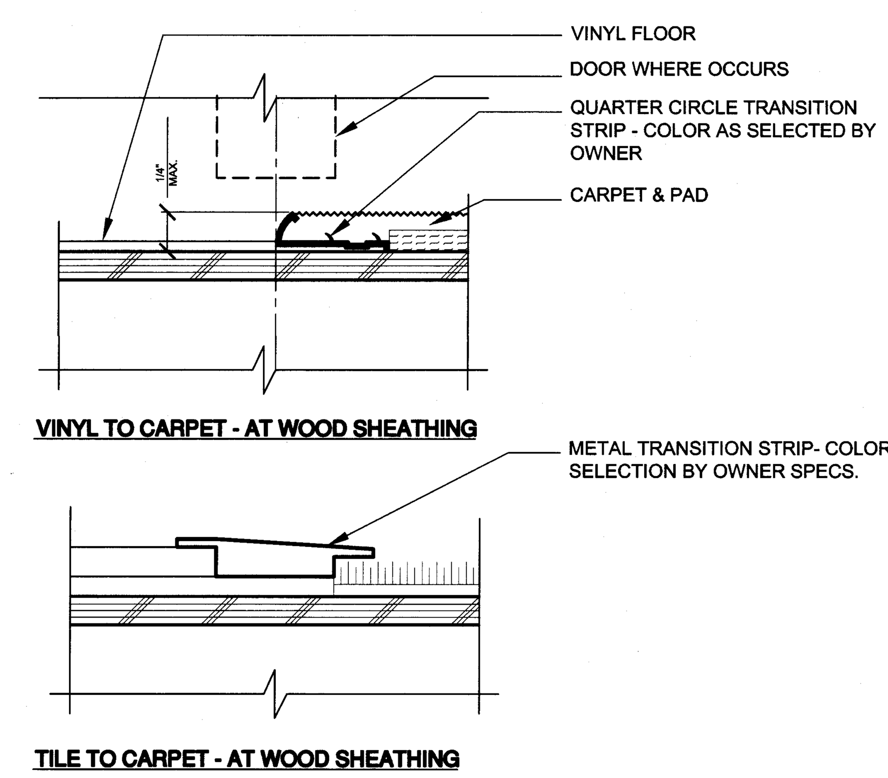
1. ALL UNITS ARE REQUIRED TO BE ADAPTABLE TO THE PHYSICALLY HANDICAPPED. REQUIREMENTS FOR SWITCHES, OUTLETS, DOOR HARDWARE, DOOR SIZE, THRESHOLDS & BACKING FOR FUTURE GRAB BARS, ETC. SHALL APPLY TO THESE UNITS INCLUDING REMOVABLE BASE CABINETS @ KITCHEN SINKS.
2. ALL ENTRANCES TO DWELLING UNITS ARE EQUIPPED WITH PERMANENTLY WIRED DOOR BUZZER/ BELL, CHIME OR EQUAL. MOUNT THE DEVICE 40" ABOVE THE FLOOR (48" MAX.) PER 2010 CBC 1132A.10.
3. MAXIMUM DOOR OPENING EFFORTS: 8.5 LBS AT EXTERIOR AND 5 LBS AT INTERIOR DOORS PER 2010 CBC 1132A.6. ALL DOORS SHALL BE EQUIPPED WITH SINGLE-EFFORT, NON-GRASP HARDWARE (I.E., LEVER). ALL HARDWARE SHALL BE CENTERED BETWEEN 30 AND 44 INCHES ABOVE THE FLOOR. THE BOTTOM 10" OF ALL DOORS SHALL HAVE A SMOOTH AND UNITERRUPTED SURFACE. 2010 CBC 1132A.8 AND 1132A.9
4. THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF SWITCHES USED TO CONTROL LIGHT SWITCHES, THERMOSTATS AND OTHER ENVIRONMENTAL CONTROLS & ELECTRICAL CONTROLS & ELECTRICAL OUTLETS SHALL BE LOCATED NO HIGHER THAN 48 INCHES, & NO LOWER THAN 15 INCHES, ABOVE THE FLOOR. FOR REACH OVER AN OBSTRUCTION LESS THAN 24 INCHES, SUCH AS BATHROOM VANITY, PROVIDE 46 SIDE APPROACH PER 2010 CBC 1136A
5. CHANGES IN LEVEL ON ACCESSIBLE ROUTE SHALL NOT EXCEED 1/2", CHANGES IN LEVEL SHALL BE BEVELED WITH A SLOPE NO GREATER THAN 1 UNIT VERTICAL IN 2 UNITS HORIZONTAL. CHANGES IN LEVEL NOT EXCEEDING 1/4" MAY BE VERTICAL PER 2010 CBC 1131A.1.
6. THE FLOOR OR LANDING SHALL NOT BE MORE THAN 1/2" LOWER THAN THE TOP OF THE THRESHOLD OF THE DOORWAY AT THE ENTRY AND INTERIOR DOOR PER 2010 CBC 1132A.4.1.

ACCESSIBLE GENERAL NOTES 1

NOTES:
1. PER 2010 CBC 1132A4.1. - THRESHOLD AT THE PRIMARY ENTRY AND REQUIRED EXIT DOORS SHALL BE NO HIGHER THAN 1/2". THRESHOLD AT SECONDARY EXTERIOR DOORS, INCLUDING SLIDING DOOR TRACKS, SHALL BE NO HIGHER THAN 3/4".



ACCESSIBLE THRESHOLD N.T.S 2



FLOOR METAL TRANSITION N.T.S. 3

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STATE OF CALIFORNIA

REVISION: ASI #8 - ACCESSIBILITY REVISIONS DATE 05/05/2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
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NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:

   . SLAB THICKNESS:

B1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P2 LEVEL:	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
PODIUM LEVEL(S):	t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.

   . COLUMN CAPITAL: SEE SCHEDULE BELOW
   . CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   . SHEAR WALL: 5,000 psi @ 28 DAYS
   . TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   . REBAR: ASTM GRADE 60, fy = 60ksi.
   . DESIGN LOADS: SEE SHEET SC-0

2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:

   . ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   . BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   . REBAR TO BE SPLICED PER 1/SC-2.

3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
6. REFER TO STRUCTURAL PLANS FOR PLACEMENT OF ALL STRUCTURAL HARDWARE AND IMBEDS. ALL STRUCTURAL IMBEDS MUST BE SECURELY TIED IN PLACE AND INSPECTED PRIOR TO CONCRETE PLACEMENT.
7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T
NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

COLUMN CAPITAL OR DROP PANEL

CONCRETE COLUMN

15.5 1 F=535

BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)

DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a
LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
W-1 — WALL BELOW SLAB

C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)

SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b
W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER
ROBERT SHEUNG-CHI CHOU
S 003518
STRUCTURAL
STATE OF CALIFORNIA

REVISION	DATE
1 1ST PCC	02-04-2013
7 ASI #5 -STRUCTURAL MODIFICATIONS	10-29-2013
12 ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

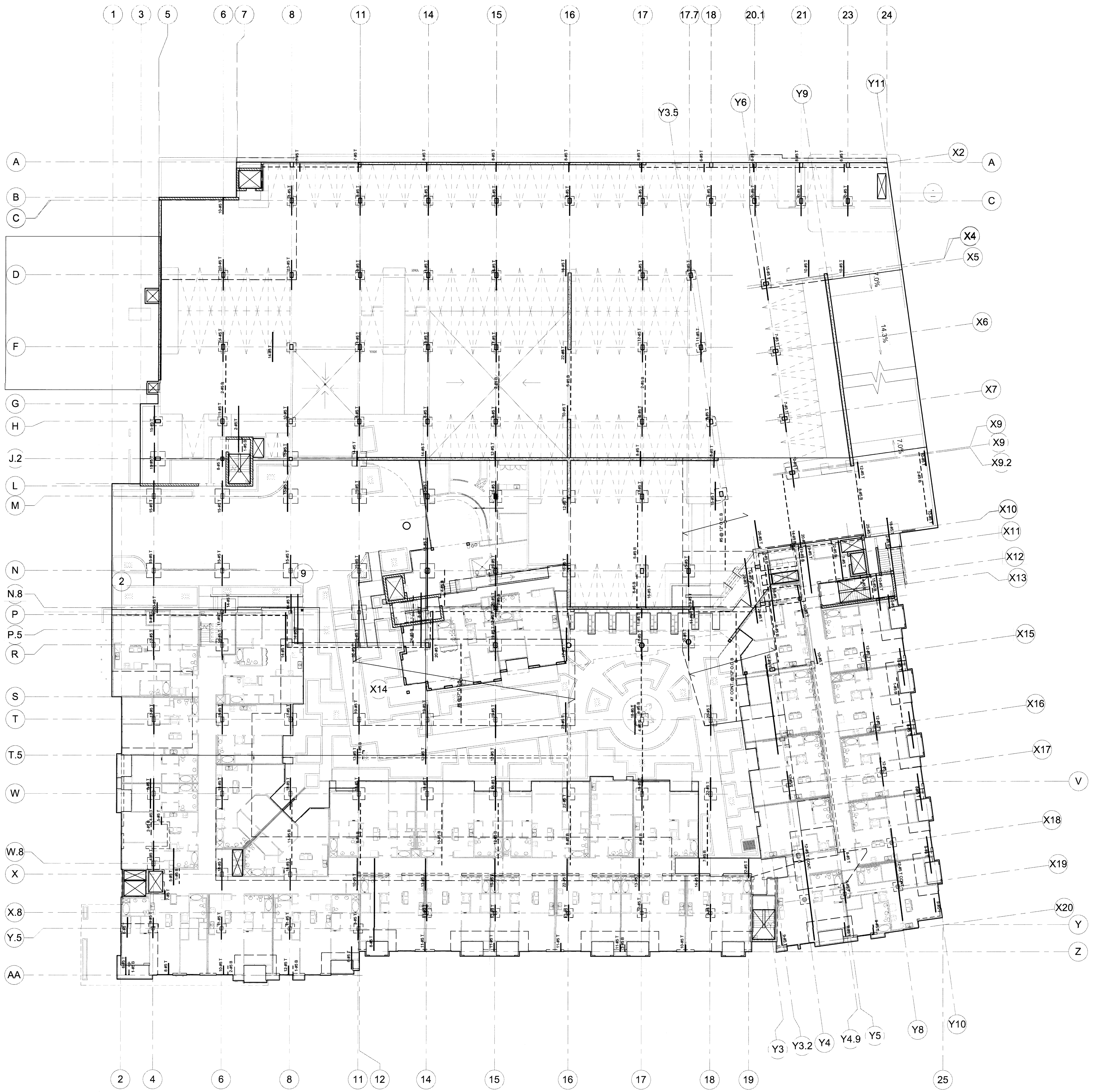
BLDG. "A" PODIUM SLAB PLAN
BLDG. "B" LEVEL P1 SLAB PLAN

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

S0.12

11-2730
JOB NUMBER
1/16" = 1'-0"
SCALE
ISSUED AS
5/8/2014
DATE



NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:

. SLAB THICKNESS:	
B1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P2 LEVEL:	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
PODIUM LEVEL(S):	t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
. COLUMN CAPITAL:	SEE SCHEDULE BELOW
. CONCRETE STRENGTH:	3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
. SHEAR WALL:	5,000 psi @ 28 DAYS
. TENDON:	1/2" DIAM. 7 WIRE 270 ksi STRAND.
. REBAR:	ASTM GRADE 60, fy = 60ksi.
. DESIGN LOADS:	SEE SHEET SC-0

2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:

. ENTIRE SLAB:	#4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
. BANDED TENDON DIRECTION:	STRAIGHT TEMP. TENDON @ 5 FT. APART.

. REBAR TO BE SPLICED PER 1/SC-2.

3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
6. REFER TO STRUCTURAL PLANS FOR PLACEMENT OF ALL STRUCTURAL HARDWARE AND IMBEDS. ALL STRUCTURAL IMBEDS MUST BE SECURELY TIED IN PLACE AND INSPECTED PRIOR TO CONCRETE PLACEMENT.
7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T

- NUMBER OF BARS
- BAR SIZE
- CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
- DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
- PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN. (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

COLUMN CAPITAL OR DROP PANEL

CONCRETE COLUMN

BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)

DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.

W-1 — WALL BELOW SLAB

C-* — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P-* — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W-* — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' SW-A — MIN. LENGHT OF SW (SEE ARCH. PLANS)

CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b

W-12 — CMU BEARING WALL PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.

SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. *SOIL NAIL WALL BY OTHERS*
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

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REVISION	DATE
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CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
BLDG. "A" PODIUM REBAR PLAN
BLDG. "B" LEVEL P1 REBAR
PLAN - (NORTH-SOUTH)
FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE *CONSTRUCTION OF AN* APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

S0.12.1

11-2730
JOB NUMBER
1/16" = 1'-0"
SCALE
ISSUED AS
5/8/2014
DATE

NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:

   . SLAB THICKNESS:

B1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P2 LEVEL:	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
PODIUM LEVEL(S):	t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
. COLUMN CAPITAL:	SEE SCHEDULE BELOW
. CONCRETE STRENGTH:	3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
. SHEAR WALL:	5,000 psi @ 28 DAYS
. TENDON:	1/2" DIAM. 7 WIRE 270 ksi STRAND.
. REBAR:	ASTM GRADE 60, fy = 60ksi.
. DESIGN LOADS:	SEE SHEET SC-0

2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:

. ENTIRE SLAB:	#4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
. BANDED TENDON DIRECTION:	STRAIGHT TEMP. TENDON @ 5 FT. APART.

   . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
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7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T (A)
- NUMBER OF BARS
- BAR SIZE
- CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
- DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
- PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

15.5 1 F=535 F=535 15.5
- TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)
- TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)
- COLUMN CAPITAL OR DROP PANEL
- CONCRETE COLUMN
- BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)
- DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

- DEAD END PER DETAILS 5/SC-2a
- STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a. W-1 — WALL BELOW SLAB

C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)

SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b

W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB 8 — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB. SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

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12 ASI #10 - LEASING SUBMITTAL	05-08-2014

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25881 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" PODIUM REBAR PLAN
BLDG. "B" LEVEL P1 REBAR
PLAN - (EAST-WEST)
FOR CONSTRUCTION

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S0.12.2

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS

5/8/2014
DATE

NOTES

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   . SLAB THICKNESS:
   B1 LEVEL t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   P1 LEVEL t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   P2 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   PODIUM LEVEL(S): t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   . COLUMN CAPITAL: SEE SCHEDULE BELOW
   . CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   . SHEAR WALL: 5,000 psi @ 28 DAYS
   . TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   . REBAR: ASTM GRADE 60, fy = 60ksi.
   . DESIGN LOADS: SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   . ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
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8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
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11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B
18 - #5T
NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B
INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

15.5
COLUMN CAPITAL OR DROP PANEL
CONCRETE COLUMN

F=535
1
BANDED DIR.:
EFFECTIVE FORCE (KIPS) AFTER LOSSES
FORCE (KIPS) PER PT PLAN(S)

F=535
DISTRIBUTED DIR.:
EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES
PODIUM(S) AT LEVEL P1, BLDG B PODIUM:
F = 30 K/FT MIN. UNO FOR DIST. CABLES
GARAGE(S) AT LEVEL B1, P1, P2:
F = 17 K/FT MIN. UNO FOR DIST. CABLES
15.5

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a
LATE POUR STRIP PER 13/ SC-2a.
(LEAVE OPEN FOR MIN. 60 DAYS)

W-1
PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
W-1
WALL BELOW SLAB

C - * COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25'
MIN. LENGHT OF SW (SEE ARCH. PLANS)
SW-A
CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b.
PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU.
PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU.
EXTEND REINF. TO COLUMN GRID(S)
NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8
CMU BEARING WALL. SEE SCHEDULE PER SC-4b
W-12
CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1
86
CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB
ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.
OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. *SOIL NAIL WALL BY OTHERS*
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
DROP CAP /	SYMBOL	SIZE	
	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REVISION		DATE
1	1ST PCC	02-04-2013
5	ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
10	ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

GARAGE LEVEL P2 SLAB PLAN

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

S0.13

11-2730
JOB NUMBER
1/16" = 1'-0"
SCALE
ISSUED AS
5/8/2014
DATE

NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:
   - . SLAB THICKNESS:
     - B1 LEVEL — t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P1 LEVEL — t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P2 LEVEL: — t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - PODIUM LEVEL(S): — t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - . COLUMN CAPITAL: — SEE SCHEDULE BELOW
   - . CONCRETE STRENGTH: — 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   - . SHEAR WALL: — 5,000 psi @ 28 DAYS
   - . TENDON: — 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   - . REBAR: — ASTM GRADE 60, fy = 60ksi.
   - . DESIGN LOADS: — SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   - . ENTIRE SLAB: — #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   - . BANDED TENDON DIRECTION: — STRAIGHT TEMP. TENDON @ 5 FT. APART.
   - . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
6. REFER TO STRUCTURAL PLANS FOR PLACEMENT OF ALL STRUCTURAL HARDWARE AND IMBEDS. ALL STRUCTURAL IMBEDS MUST BE SECURELY TIED IN PLACE AND INSPECTED PRIOR TO CONCRETE PLACEMENT.
7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B
18 - #5T
(A)

NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

15.5
COLUMN CAPITAL OR DROP PANEL
CONCRETE COLUMN

F=535
1
BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)

F=535
15.5
DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.

W-1 — WALL BELOW SLAB

C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)
SW-A

CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b

W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1
86
CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER
ROBERT SHEUNG-CHI CHOU
S 003518
STRUCTURAL
STATE OF CALIFORNIA

REVISION	DATE
1ST PCC	02-04-2013
ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

GARAGE LEVEL P2 REBAR PLAN - (NORTH-SOUTH)

FOR CONSTRUCTION

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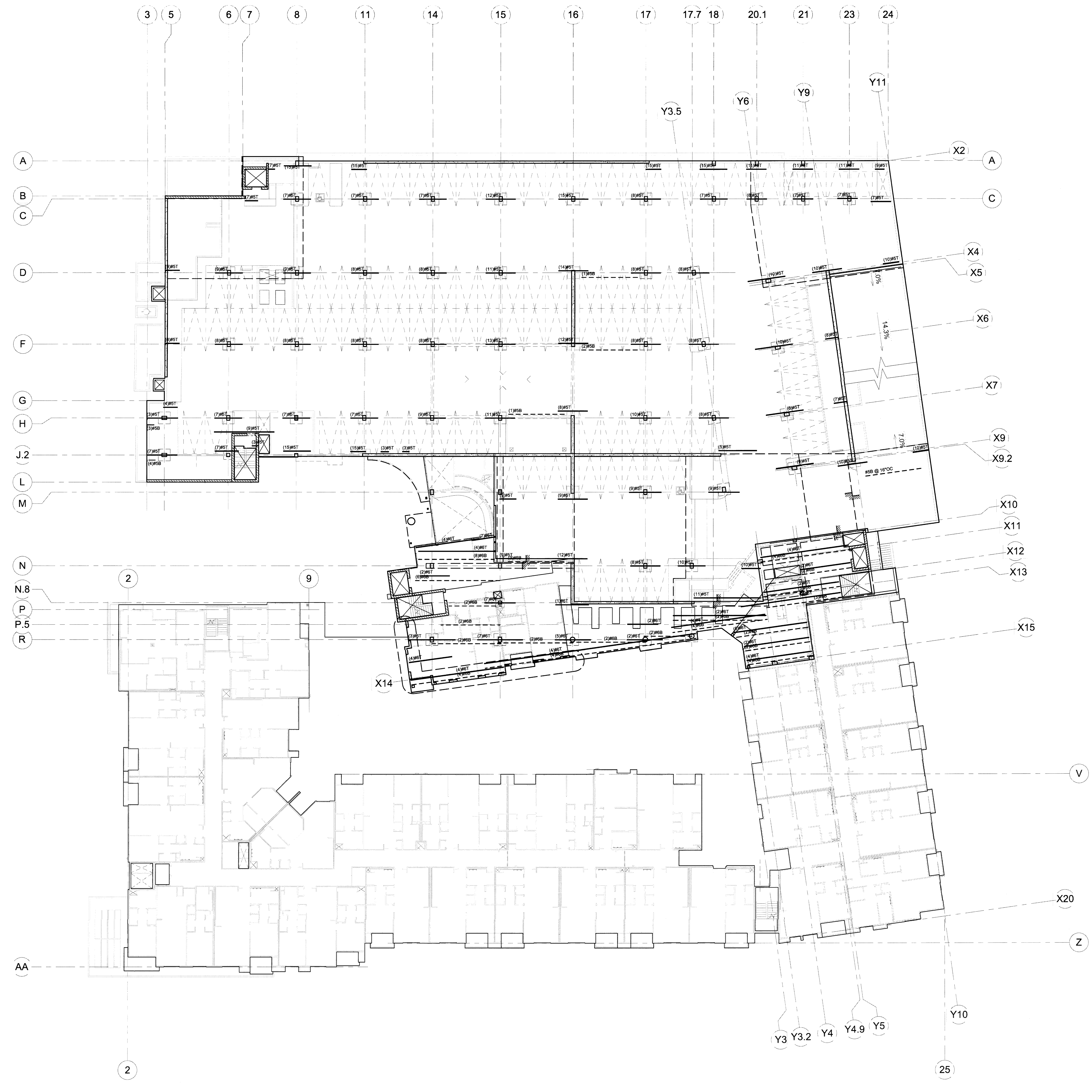
S0.13.1

11-2730
JOB NUMBER
1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE



NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:
   - . SLAB THICKNESS:
     - B1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P2 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - PODIUM LEVEL(S): t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - . COLUMN CAPITAL: SEE SCHEDULE BELOW
   - . CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   - . SHEAR WALL: 5,000 psi @ 28 DAYS
   - . TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   - . REBAR: ASTM GRADE 60, fy = 60ksi.
   - . DESIGN LOADS: SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   - . ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   - . BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   - . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
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7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B
18 - #5T
NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
A — DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

15.5
COLUMN CAPITAL OR DROP PANEL
CONCRETE COLUMN

1 F=535
BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)

F=535
15.5
DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
W-1 — WALL BELOW SLAB

C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)
SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b
W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1
86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.
OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE. SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER ROBERT SHEUNG-CHI CHOU S 003518 STRUCTURAL STATE OF CALIFORNIA

REVISION		DATE
1	1ST PCC	02-04-2013
5	ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
10	ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25591 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

GARAGE LEVEL P2 REBAR PLAN - (EAST-WEST)

FOR CONSTRUCTION

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S0.13.2

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE

1. ALL LIGHT GAUGE STEEL FRAMING MEMBERS SHALL COMPLY WITH IBC 2210 AND AISI STANDARDS:

   NAS-01, INCLUDING 2004 SUPPLEMENT
   GENERAL-04
   HEADER-04
   LATERAL-04
   PM-01
   TRUSS-04
   WSD-04

2. ALL LIGHT GUAGE MEMBERS SHALL BE PRODUCTS MANUFACTURED BY THE MEMBERS OF THE STEEL STUD MANUFACTURES ASSOCIATION, SSMA, COMPLYING WITH THE INTERNATIONAL BUILDING CODE AND ICC ES EVALUATION REPORT 4943-P (LA R.R. #25529)

3. ALL STUD/TRACK MATERIAL SHALL CONFORM TO THE FOLLOWING:

   16 GAUGE AND HEAVIER - 50 KSI MIN. YIELD 65 KSI MIN. TENSILE STRENGTH

PAINTED STEEL PER	ASTM A570-GRADE 50 ASTM A607-GRADE 50
GALVANIZED STEEL PER	ASTM A446-GRADE D

   18 GAUGE AND LIGHTER - 33 KSI MIN. YIELD 45 KSI MIN. TENSILE STRENGTH

PAINTED STEEL PER	ASTM A570-GRADE 33 ASTM A611-GRADE C
GALVANIZED STEEL PER	ASTM A446-GRADE A

4. ALL MISCELLANEOUS STEELS SHALL CONFORM TO THE FOLLOWING U.N.O.:

   20 TO 18 GAUGE - 33 KSI MIN. YIELD
   16 TO 10 GAUGE - 50 KSI MIN. YIELD
   3/16" AND HEAVIER - ASTM A36

5. ALL WELDING SHALL BE PERFORMED BY CERTIFIED LIGHT GAUGE WELDERS, CERTIFIED FOR ALL APPROPRIATE DIRECTIONS PER 2008 AWS D1.3. WELDING RODS SHALL CONFORM TO THE FOLLOWING:
   18 GA. AND LIGHTER SHEET TO SHEET - E60XX
   16 GA. AND HEAVIER SHEET TO SHEET - E70XX OR E6013
   LT. GPT STEEL TO STRUCTURAL STEEL. ASTM A36

6. ALL CALCULATED STUD PROPERTIES, PER 2007 AISI SPECIFICATION, ARE BASED ON THE FOLLOWING THICKNESS TABLE:

MILS	GAUGE	(IN)
97	12 GA.	0.1017
68	14 GA.	0.0713
54	16 GA.	0.0566
43	18 GA.	0.0451
33	20 GA.	0.0346
27	22 GA.	0.0283
18	25 GA.	0.0188

7. LATERAL BRIDGING FOR STEEL STUDS IS REQUIRED WHEN WALL BOARD, INSTALLED PER IBC (CHAPTER 25) DOES NOT CONTINUE FULL-HEIGHT ON BOTH SIDES. BRIDGING SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY SHOWN OTHERWISE ON THESE PLANS.

8. ALL SCREWS SHALL BE INSTALLED IN ACCORDANCE WITH THE SCREW MANUFACTURER'S RECOMMENDATIONS. ALL SCREWS SHALL PENETRATE AND PROTRUDE THROUGH THE ATTACH MATERIALS A MINIMUM OF 3 FULL EXPOSED THREADS PER AISI STANDARD GENERAL PROVISIONS D1.3.

9. ALL SCREWS MUST COMPLY WITH SAE STANDARD J78, STEEL SELF-DRILLING *SELF-TAPPING SCREWS, AND MUST HAVE A TYPE II COATING IN ACCORDANCE WITH* ASTM B633, ELECTRODEPOSITED COATINGS OF ZINC ON IRON AND STEEL.

10. ALL SHEET METAL SCREWS SHALL BE DART BRAND SELF DRILLING SELF TAPPING PER ICC-ER 5202 (LARR 25294) PER PLAN OR APPROVED EQUAL BY ENGINEER.

11. MAXIMUM STUD DEPTH IS 8", UNLESS WEB BRACING IS SPECIFICALLY DESIGNED BY ENGINEER.

12. AXIALLY LOADED STUDS SHALL HAVE FULL BEARING AGAINST INSIDE TRACK WEB PRIOR TO STUD AND TRACK ATTACHMENT. SPLICES IN AXIALLY LOADED MEMBERS SHALL NOT BE PERMITTED.

13. BUTT WELDS OR SPLICES SHALL BE USED AT ALL JOINTS IN TRACK. SPLICES IN AXIAL LOADED STUDS OR BRACES ARE NOT PERMITTED. ALL WELDS SHALL BE PLUG, BUTT, OR SEAM WELDS. WHERE STUDS ARE BURNED THROUGH BY WELDING, PROVIDE SUITABLE STITCH PLATE OF THE SAME GAUGE.

14. WHERE HOLES ARE SPECIFICALLY PERMITTED ON THESE PLANS, HOLES SHALL BE NEATLY DRILLED. TORCH CUTTING IS NOT PERMITTED.

15. TOP AND BOTTOM TRACKS SHALL BE OF EQUAL MATERIAL, THICKNESS AND WIDTH AS STUDS AND SHALL BE UNPUNCHED. USE DEFLECTION RATED TRACK.

16. STUDS AT CABINETS AND SHELVES SHALL BE SPACED AT 50% OF STUD SPACEING SPECIFIED PER SCHEDULE.

17. ALL SHEATHING AND WALL FINISHES MUST REMAIN ON STUDS UNLESS SPECIFICALLY APPROVED BY ENGINEER IN WRITING.

18. UTILITY PUNCH HOLES IN STUDS SHALL BE LOCATED AWAY FROM CONNECTIONS.

19. TRACK SHALL BE UNPUNCHED WITH GAUGE TO MATCH STUD FRAMING UNLESS OTHERWISE NOTED.

20. ALL STUDS FOR SUBMITTAL SHALL BE PUNCHED (i.e. WITH SPACING @ 24" O.C.) UNLESS NOTED OTHERWISE.

21. WALL STUD BRIDGING SHALL BE INSTALLED IN A MANNER TO PROVIDE RESISTANCE TO BOTH MINOR AXIS BENDING AND ROTATION. BRIDGING ROWS TO BE EQUALLY SPACED.

22. ALL BUILT-UP MEMBERS MUST BE FASTENED TOGETHER TO ACT AS ONE UNIT.

23. HOLES FOR 1/2" DIAMETER OR GREATER BOLTS, SHALL BE NO MORE THAN 1/16" LARGER THAN THE BOLT DIAMETER PER AISI NAS E3A.

24. TEMPORARY BRACING REQUIREMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR

25. FOR LIGHT GA. STEEL CONNECTIONS USE SIMPSON S/JCT (MAX. FILL IN ALL HOLES INCLUDING TRIANGLE HOLES) AT ALL SINGLE JOIST TO FLUSH BEAM CONNECTIONS.

26. STEEL BRACING (ALL STEEL SOLUTION) MUST BE PROVIDED ON WEBS OF ALL BEARING STUDS PER THE GENERAL DETAILS. ALTERNATIVELY, BRACING MAY BE ACHEIVED AFTER DRYWALL OR STUCCO IS DIRECTLY ATTACHED FULL HEIGHT TO BOTH SIDES OF THE STUD. ATTACHMENT OF DRYWALL/STUCCO IS TO BE PER IBC CHAPTER 25, WITH MAXIMUM CONNECTOR SPACING OF 7" O.C. ALONG EDGES AND 12" O.C. ALONG INTERMEDIATE STUDS. NOTE: MATERIALS INSTALLED OVER RESILIENT CHANNELS OR SIMILAR IS NOT CONSIDERED DIRECTLY ATTACHED.

27. CARRY ALL MULTIPLE STUDS OR POSTS FROM FLOOR ABOVE DOWN TO FLOOR OR BEAM BELOW. PROVIDE 4X SOLID BLOCKING AT FLOOR LEVEL TO TRANSFER LOAD FROM UPPER POST TO LOWER POST.

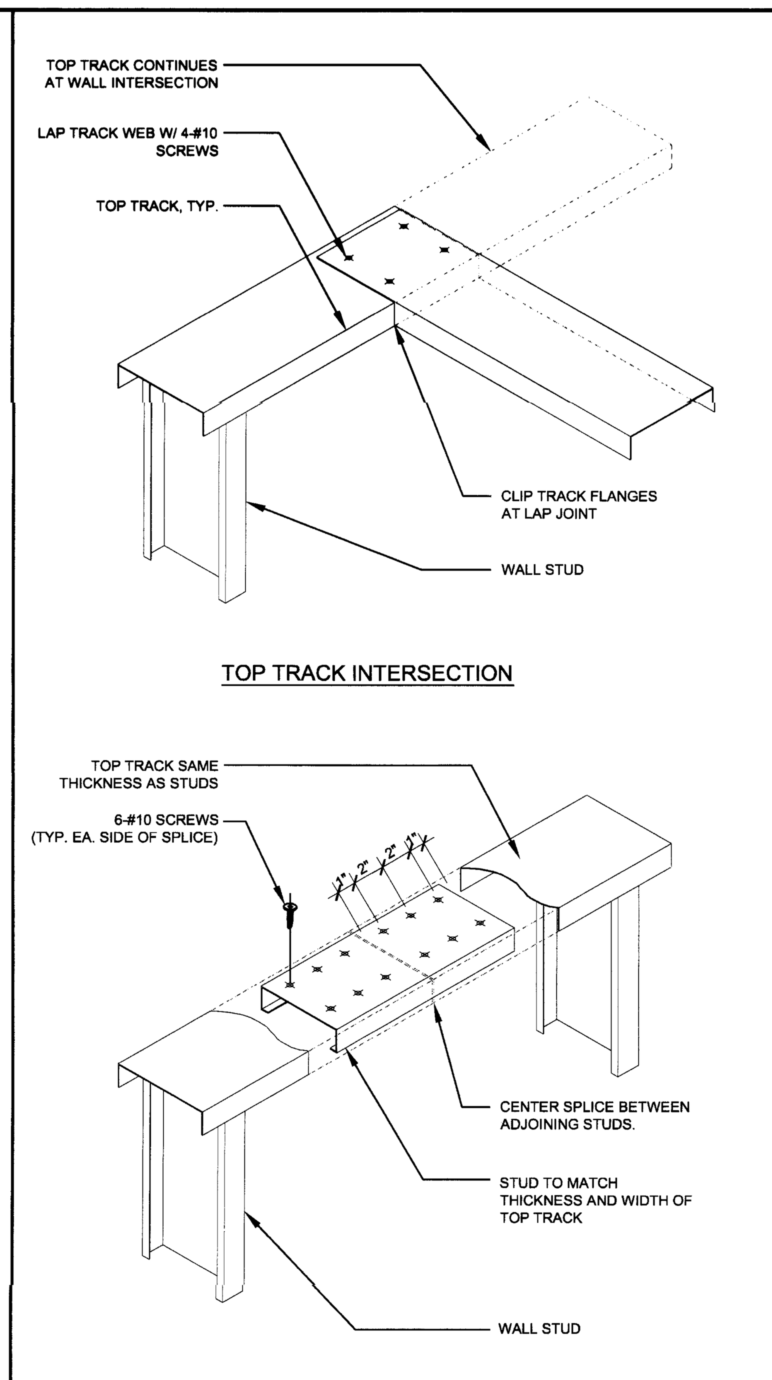
28. ALL SCREWS TO HAVE 3/4" MIN. EDGE DISTANCE, U.N.O.

29. WELD STUDS ONLY AS INDICATED ON PLANS. WELDS SHALL COMPLY WITH ANSI/AWS D1.1, D1.3 AND IBC 2204. WELDERS SHALL BE CERTIFIED AS REQUIRED BY THE BUILDING OFFICIAL.

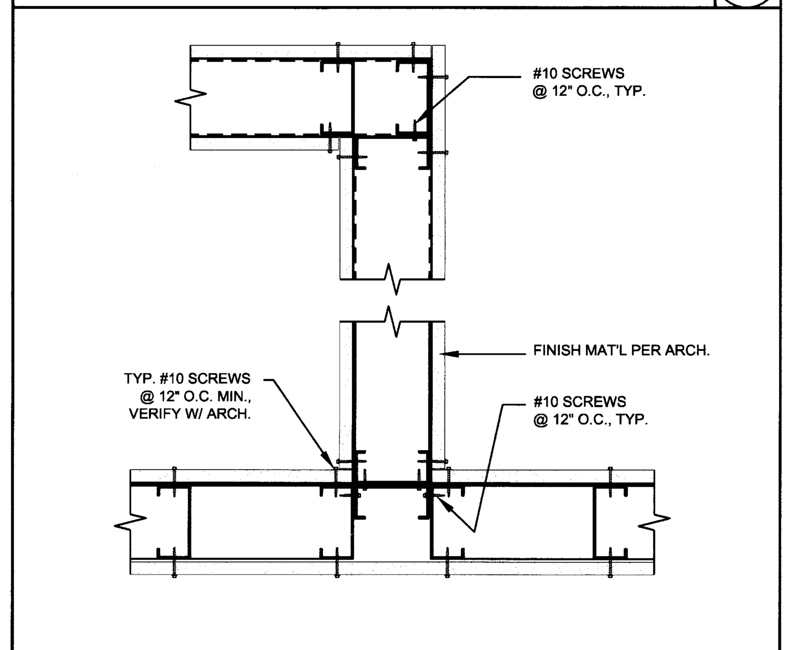
30. ALL FRAMING MEMBERS AND PREFABRICATED ASSEMBLIES SHALL BE INSTALLED TIGHT AGAINST ABUTTING MEMBERS. ENDS SHALL BE CUT SQUARELY OR AT AN ANGLE TO ENSURE A TIGHT FIT.

31. STUDS AT VENEER SHALL BE MIN. 43 MIL. U.N.O. ON PLANS.

SPECIFICATIONS 29



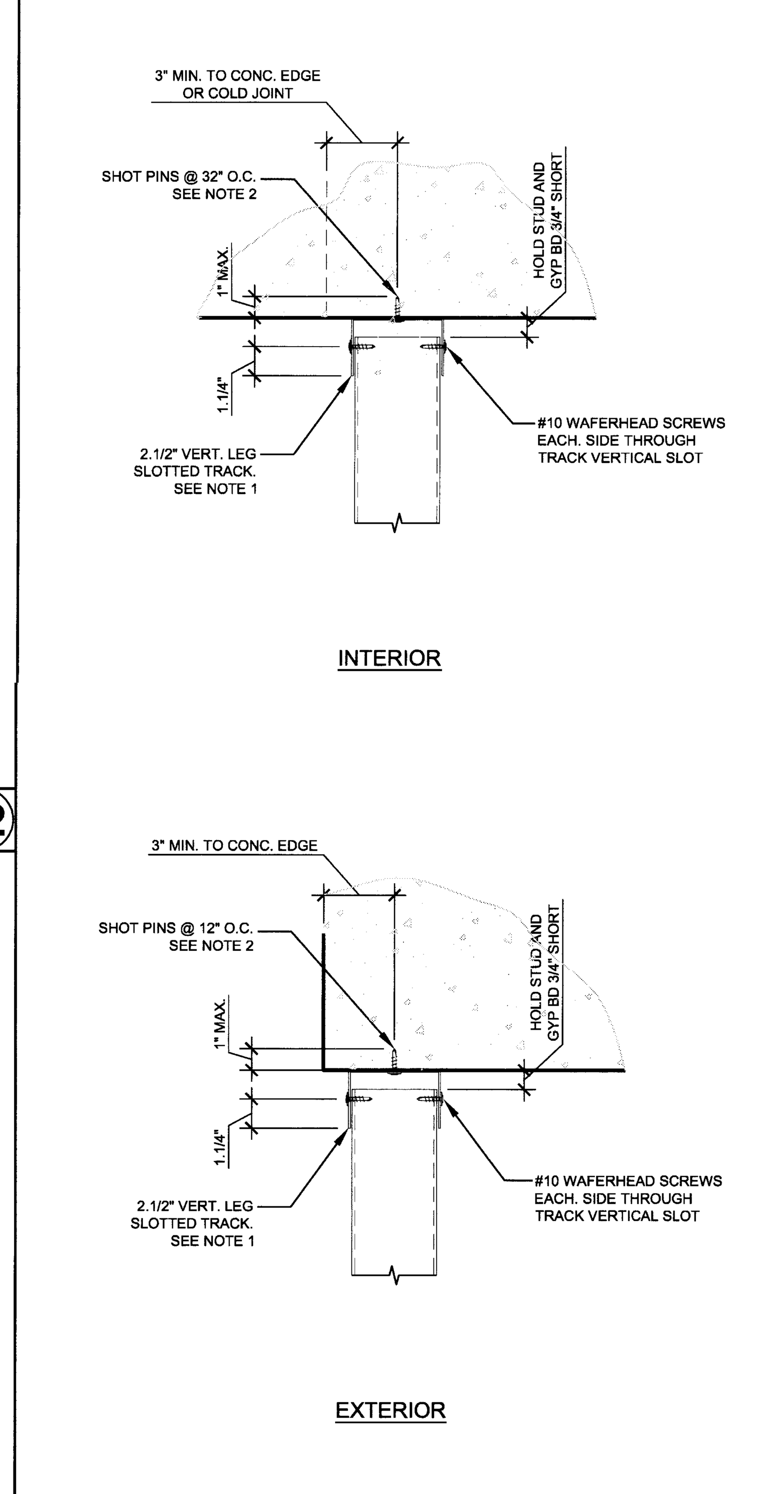
TOP PLATE SPLICE DETAIL 22



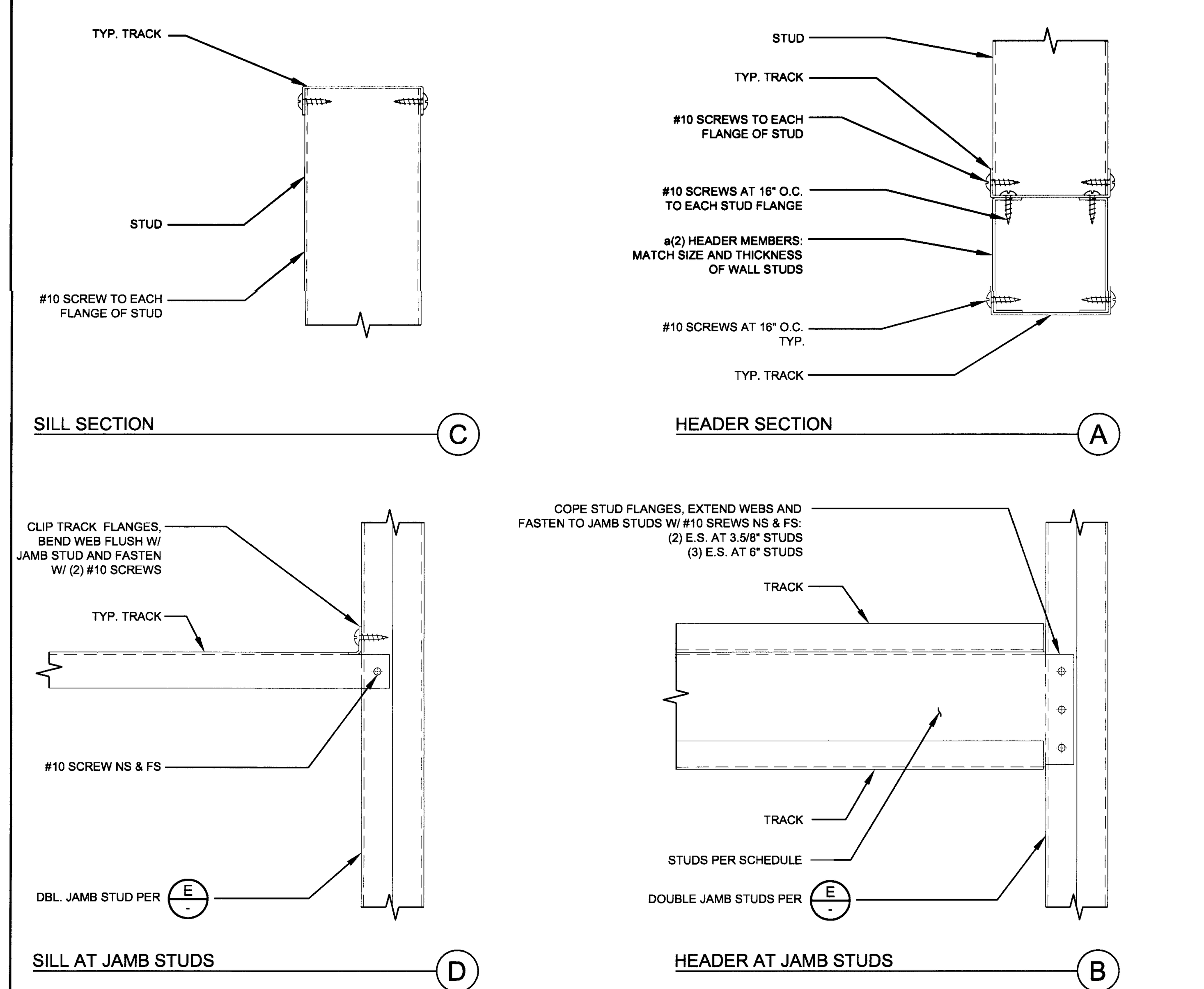
CORNER CONNECTION 23

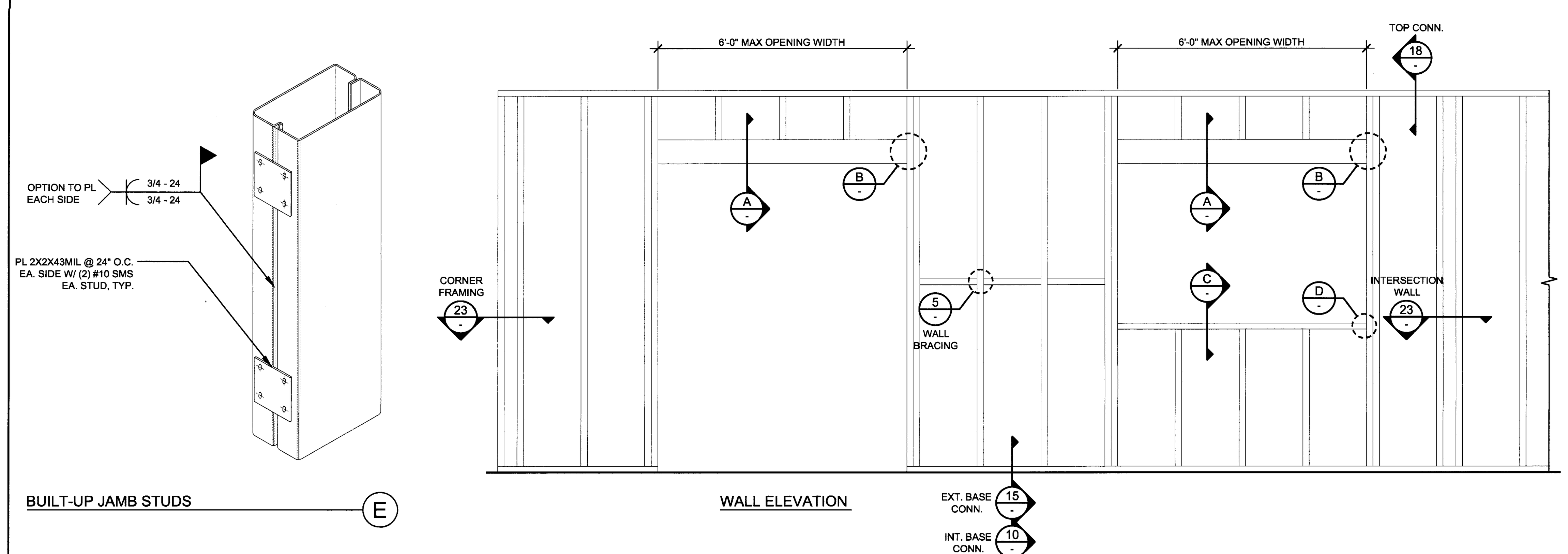
NOTES

1. SLOTTED TRACK SHALL MATCH THICKNESS OF STUDS. TRACK SHALL HAVE 2.1/2" LEGS WITH 1.1/2" VERTICAL SLOTS AT 1" O.C. USE "SLP TRK" BY SLIPTRACK SYSTEMS PER ICC ESR-1042 OR APPROVED EQUAL.
2. SHOT PINS SHALL BE HILTI X-U 0.157"Ø POWER DRIVEN FASTENERS PER ICC ESR-2269 OR APPROVED EQUAL. PINS SHALL PENETRATE CONCRETE EXACTLY 1".
3. DO NOT SCREW DRYWALL TO SLOTTED TRACK. THERE SHALL BE NO ATTACHMENT THROUGH THE SLOTTED TRACK THAT WILL IMPAIR MOVEMENT



WALL ELEVATION 18





STUD SCHEDULE				
PROPERTIES			MAXIMUM HEIGHT (L/240)	
STUD SIZE	GROSS PROP I in4	I in4	INTERIOR 5 PSF	EXTERIO 25 PSF
3625162 - 33	.551	.304	16'-6"	-
3625162 - 43	.710	.392	18'-0"	-
3625162 - 54	.873	.481	19-6"	-
6005162 - 33	1.739	.598	25'-0"	-
6005162 - 54	2.860	.953	-	17'-0"

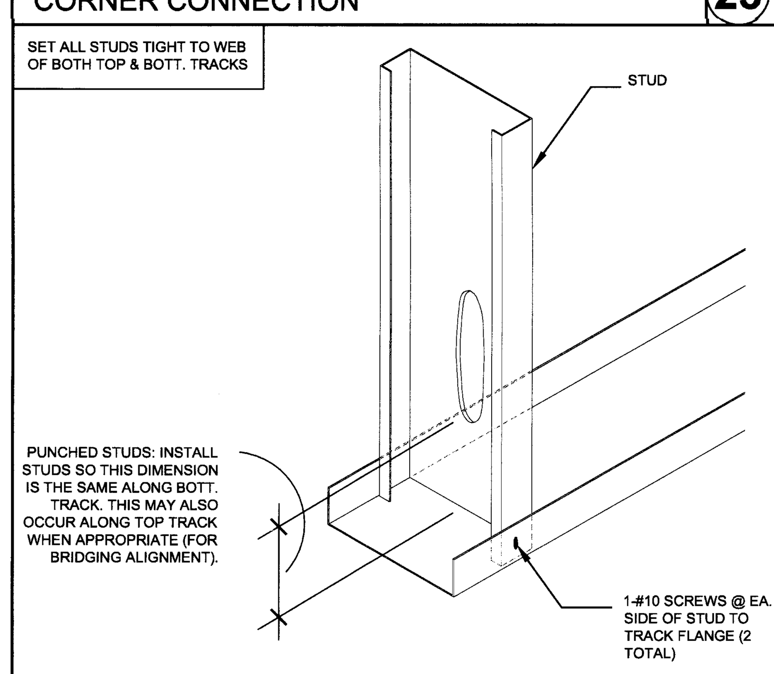
NOTE: MEMBER DEPTH — FLANGE WIDTH — 6005162 - 54 — STYLE — MIL THICKNESS

NOTES

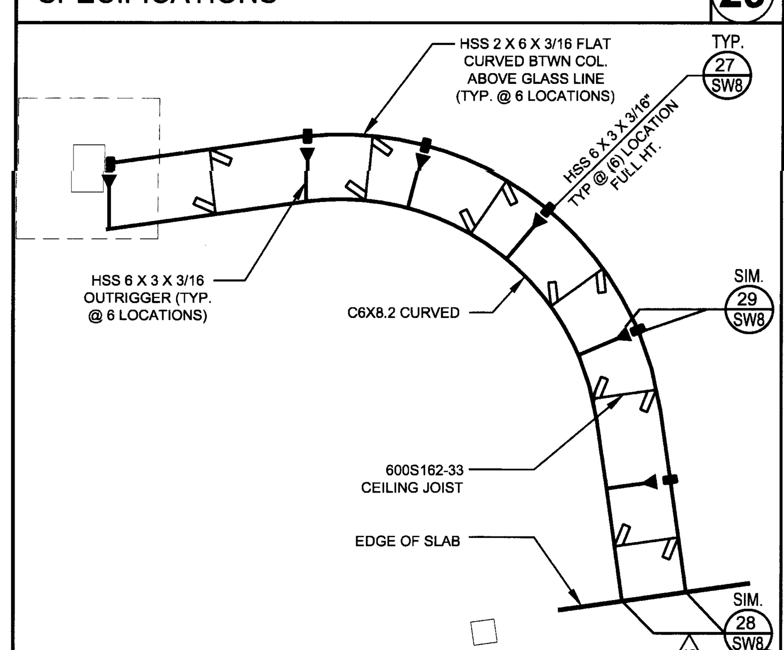
1. ALL STEEL STUD CONSTRUCTION SHALL CONFORM WITH ICC-ES ER-4943P (SSMA SECTION).
2. LATERAL LOADS HAVE NOT BEEN MODIFIED FOR STRENGTH CHECKS: FULL LOADS ARE APPLIED.
3. 15PSF WIND PRESSURE HAS BEEN MULTIPLIED BY 0.7 FOR DEFLECTION DETERMINATION, IN ACCORDANCE WITH FOOTNOTE "f" OF IBC.CBC TABLE 1604.3 THE 5PSF PRESSURE HAS NOT BEEN REDUCED FOR DEFLECTION CHECK.
4. WEB CRIPPLING CHECK BASED ON 1" END BEARING.
5. STUD SPACING SHALL BE 16" O.C., TYPICAL. EXCEPTION: EXTERIOR STUDS WITHIN 5 FEET OF BUILDING CORNERS SHALL BE SPACED AT 12" O.C. STUD SP[ACING IN A STRUCTURAL MAXIMUM AND MAY BE DECREASED - VERIFY WITH ARCHITECTURAL REQUIREMENTS.
6. COORDINATE WALL STUD SIZE AND SPACING REQUIREMENTS WITH ARCHITECTURAL DRAWINGS.
7. "MAXIMUM HEIGHT" INDICATES THE MAXIMUM DISTANCE BETWEEN SUPPORT CONNECTIONS.
8. STUD SIZE SHOWN IN THE TABLE IS A STRUCTURAL MINIMUM AND MAY BE INCREASED - VERIFY WITH ARCHITECTURAL DRAWINGS.
9. STUD GAUGE SHOWN IN THE TABLE IS A STRUCTURAL MINIMUM AND MAY BE INCREASED -
10. STUDS REDUCED BRACING PER 5/-

WALL ELEVATION 3

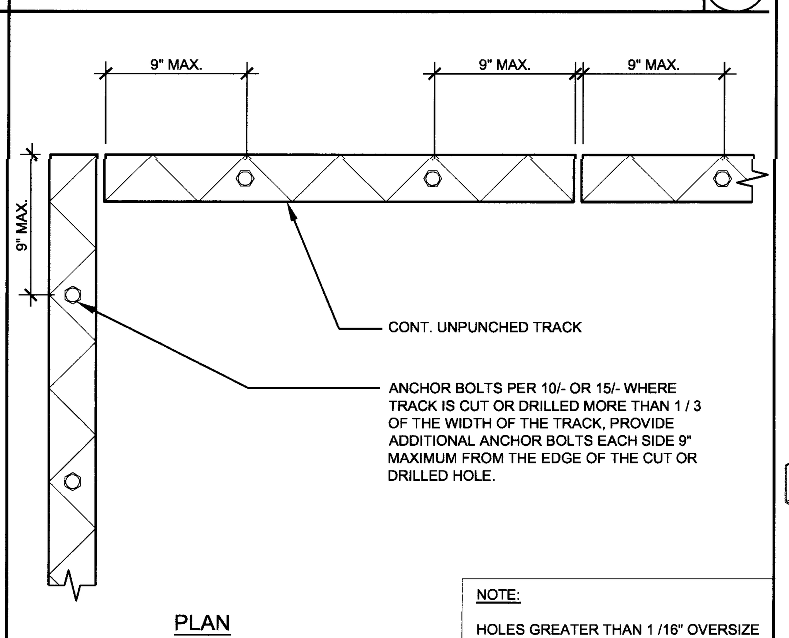
SET ALL STUDS TIGHT TO WEB OF BOTH TOP & BOTT. TRACKS



TYP. STUD TO TRACK CONNECTION 24

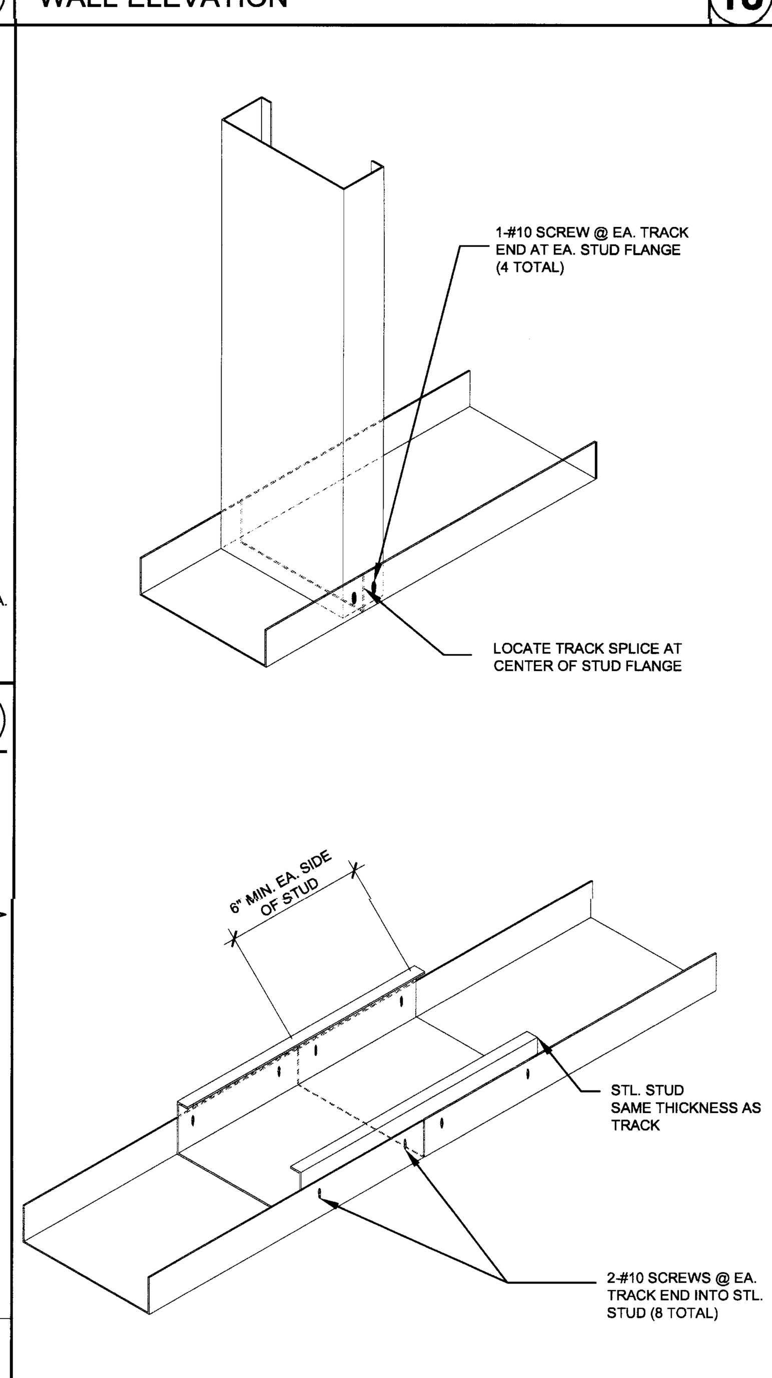


FRAMING @ SOFFIT W/ CURVED GLASS @ LEASING 30

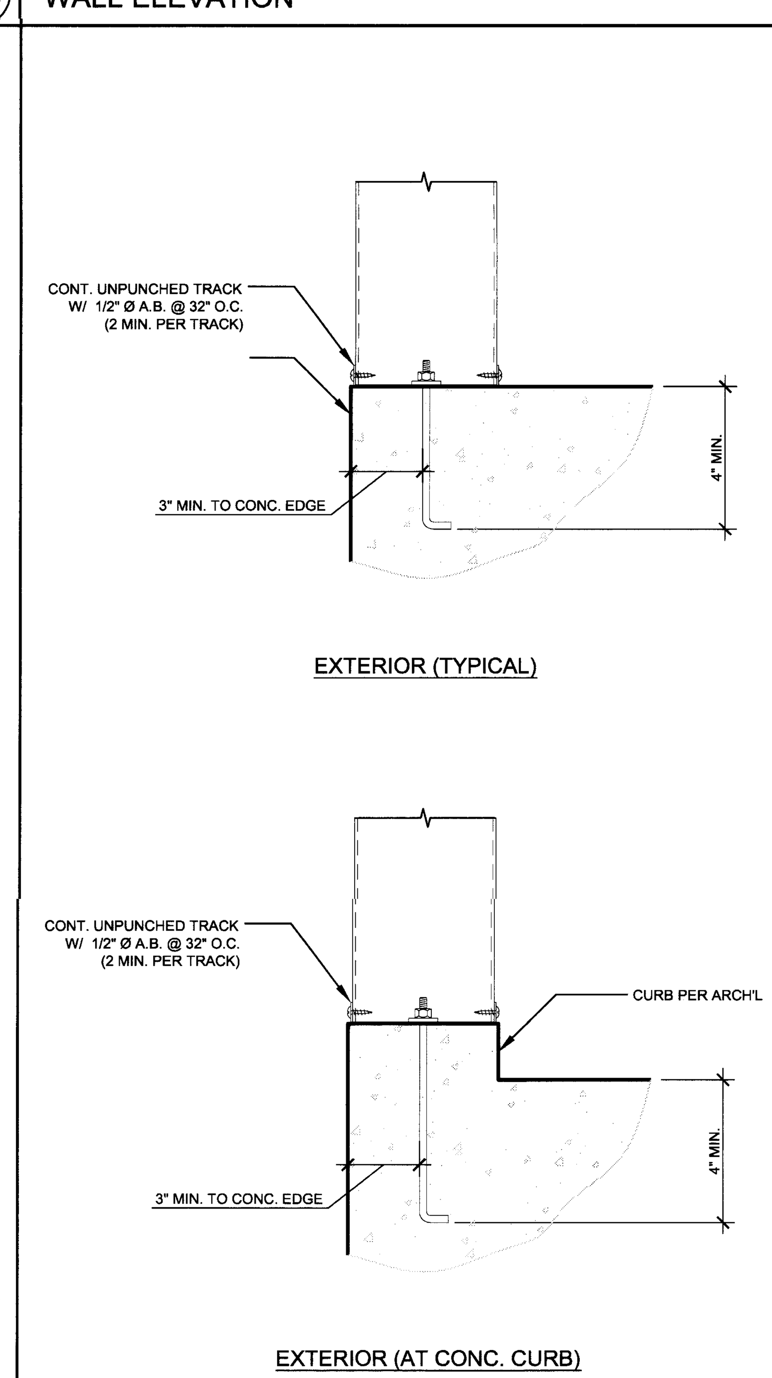


NOTE:
HOLES GREATER THAN 1 /16" OVERSIZE SHALL RECEIVE WELD WASHERS

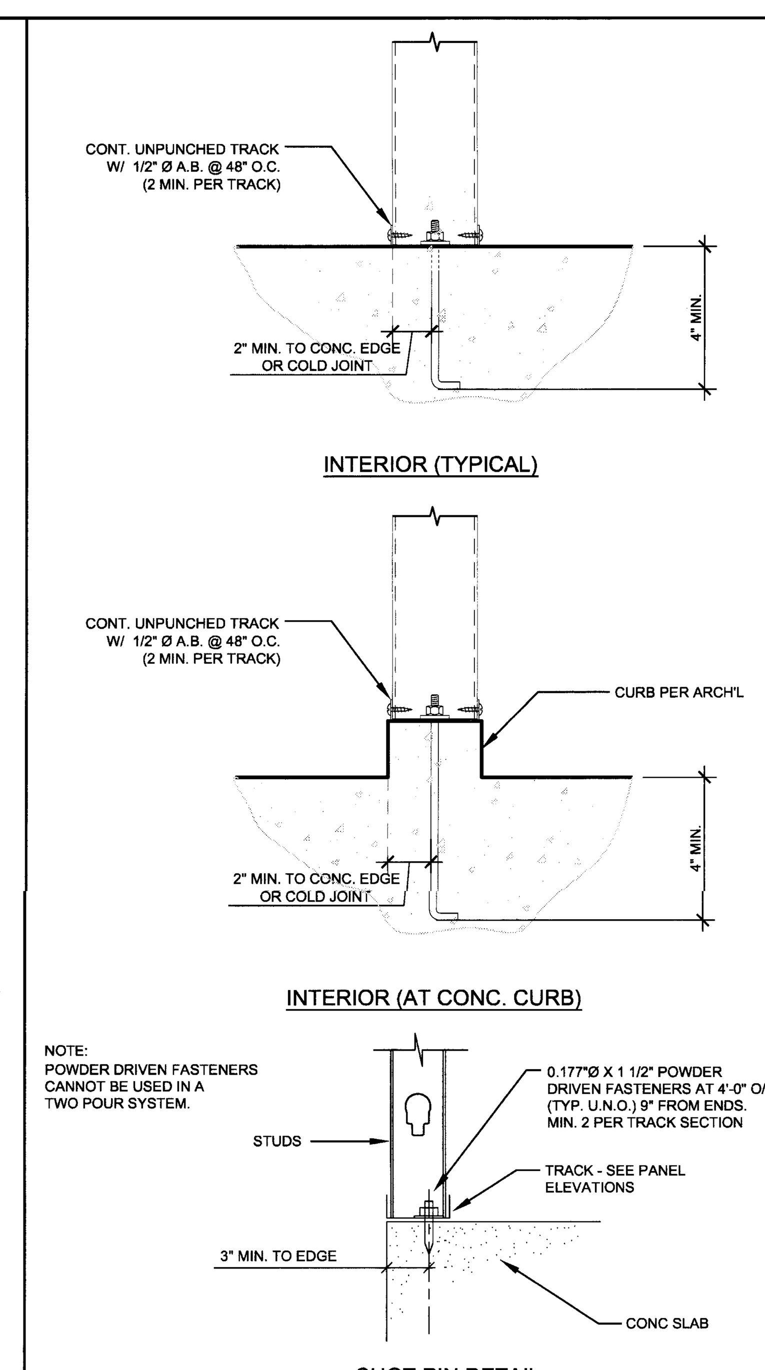
TYP. DETAIL AT BOTTOM TRACK SPLICES 25



TYP. DETAIL AT BOTTOM TRACK SPLICES 20

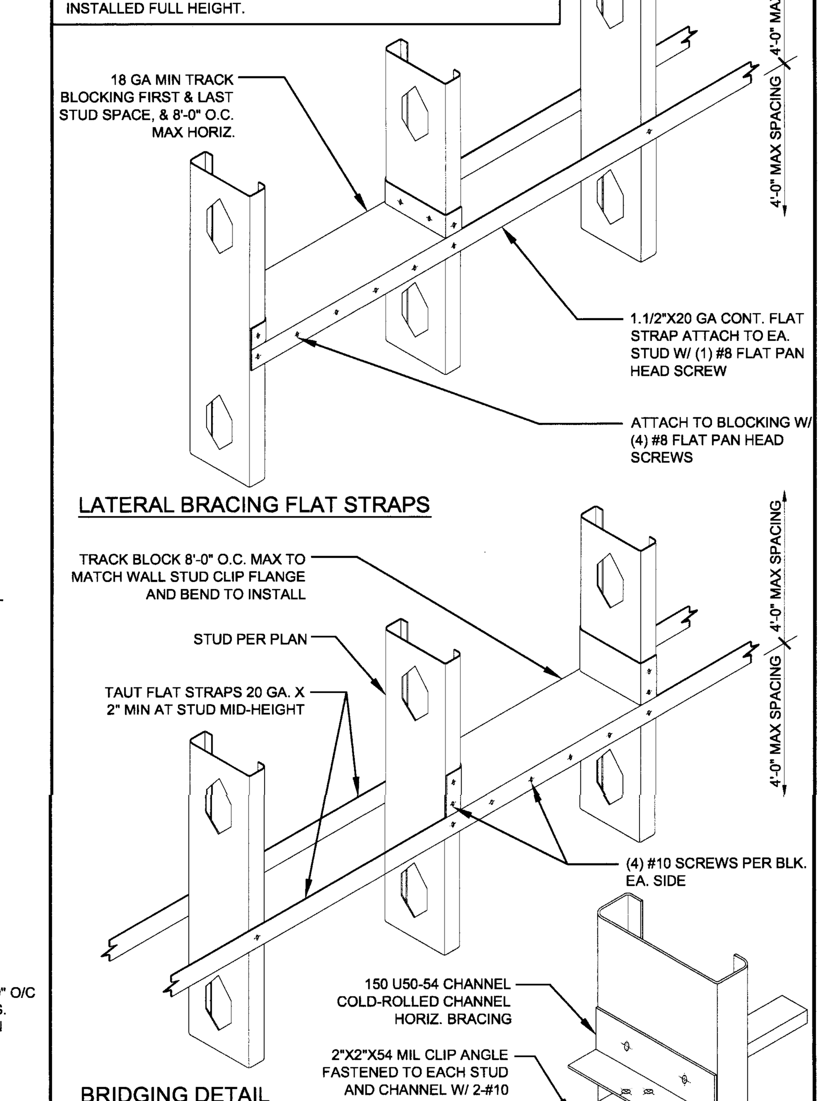


DETAIL 15



INTERIOR (AT CONCRETE CURB) 10

NOTE:
UNO FLAT STRAP ONLY REQUEST ON SIDE OF STUD WITHOUT FULL HEIGHT GYPSUM BOARD. INSTALL FIRST STRAP AT A MAXIMUM OF 4'-0" ABOVE TOP OF GYPBOARD , WHEN GYPBOARD IS NOT INSTALLED FULL HEIGHT.



NOTE:
1. INSTALL HORIZ. BRACING WITHIN 12" OF STUD MID-HEIGHT.
2. ADD HORIZ BRACING AT STUD QUARTER POINTS WHEN STUD HEIGHT EXCEEDS 13'
3. ALTERNATIVELY, BRACING MAY BE ACHEIVED AFTER DRYWALL OR SSTUD IS APPLIED PER IBC CH. 25
4. UNBRACED STUDS WILL NOT CARRY LOADS.

ALT: ONLY @ 6" STUD OR SMALLER

DETAIL 5

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER ROBERT SHEUNG-CHI CHOU S 003518 STRUCTURAL STATE OF CALIFORNIA

REVISION	DATE
1 1ST PCC	02-04-2013
7 ASI #5 -STRUCTURAL MODIFICATIONS	10-29-2013
12 ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

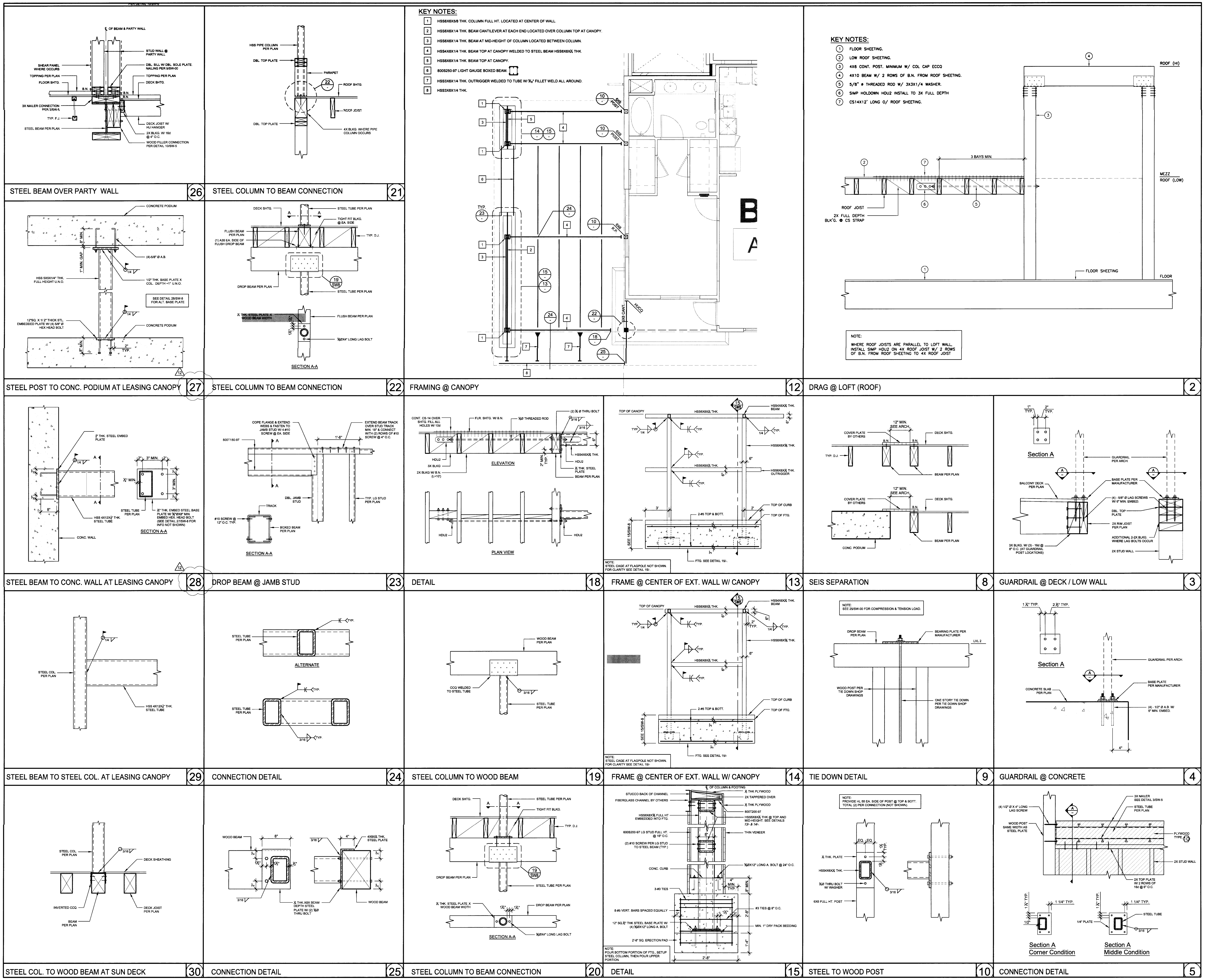
DRAWING CONTENTS
STRUCTURAL DETAILS

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

SC-9

11-2730
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE



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SUITE 150
ORANGE, CA 92868
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REVISION	DATE
1ST PCC	02-04-2013
ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
ASI #7 - MCRT FRAMING CHANGES	01-30-2014
ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS
25591 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
STRUCTURAL DETAILS

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SW-8

11-2730
JOB NUMBER
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SCALE
ISSUED AS
5/8/2014
DATE

SUPPLY, EXHAUST ¢ TRANSFER FANS

UNIT NO.	MANUFACTURER ¢ MODEL NO.	TYPE	CFM	S.P. (INCHES)	RPM	ELECTRICAL WATTS	ELECTRICAL HP	ELECTRICAL VOLT	OPER. WT. (LBS.)	REMARKS
EF 1	COOK 402 CA - DWDI	UTILITY CENTRIFUGAL	63,000	1.75	898	-	50	460V/3Ø	4,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD ¢ BOTTOM HORIZONTAL CONFIGURATION.
EF 2	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	37,000	1.75	997	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD ¢ BOTTOM HORIZONTAL CONFIGURATION.
EF 3	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	37,000	1.75	997	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD ¢ TOP HORIZONTAL CONFIGURATION.
EF 4	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	35,000	1.75	960	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD ¢ UPBLAST CONFIGURATION.
EF 5	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	38,000	1.75	1015	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD ¢ BOTTOM HORIZONTAL CONFIGURATION.
EF 6	COOK GC-520	CLG. MTD. CENTRIFUGAL	300	0.5	1200	172	-	120V/1Ø	50	FURNISH W/ DISCONNECT.
EF 7	COOK 195 ACRU-B	ROOF MTD. CENTRIFUGAL	3,400	0.75	954	-	1	460V/3Ø	200	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
EF 8	COOK 150 ACRU-B	ROOF MTD. CENTRIFUGAL	12 1,800	0.75	1255	-	12 1/2	460V/3Ø	200	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
EF 9	COOK 135 ACRU-B	ROOF MTD. CENTRIFUGAL	1,600	0.75	1386	-	3/4	460V/3Ø	150	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
TF 1	COOK 120 ACW-B	WALL MTD. CENTRIFUGAL	1200	0.25	1300	-	1/4	120V/1Ø	100	FURNISH W/ DISCONNECT ¢ THERMOSTAT.
TF 2	COOK 100 ACW-D	WALL MTD. CENTRIFUGAL	640	0.25	1550	-	1/8	120V/1Ø	100	FURNISH W/ DISCONNECT ¢ THERMOSTAT.
TF 3	COOK 100 ACW-D	WALL MTD. CENTRIFUGAL	640	0.25	1550	-	1/8	120V/1Ø	100	FURNISH W/ DISCONNECT ¢ LOCAL TIMECLOCK.
SF 1	COOK GN-520	IN-LINE CENTRIFUGAL	310	0.5	1200	171	-	120V/1Ø	50	FURNISH W/ DISCONNECT, FILTER BOX (FIELD FURNISHED), 16-11/16"W X 11-11/16"H X 4"D FLANDERS PRE-PLEAT 40 LPD MERV 8 FILTERS, ¢ ELECTRONIC SPEED CONTROLLER.
SF 2	COOK 90 ASP-T	ROOF MTD. CENTRIFUGAL	2,000	1.0	1228	-	1.5	460V/3Ø	400	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
SF 3	COOK 150 ASP-T	ROOF MTD. CENTRIFUGAL	4,600	1.0	796	-	2.5	460V/3Ø	500	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
SF 4	COOK 90 ASP-T	ROOF MTD. CENTRIFUGAL	2,100	1.0	1250	-	1.5	460V/3Ø	400	FURNISH W/ SOUND ATTENUATOR ROOF CURB.

SPLIT-SYSTEM OUTDOOR HEAT PUMPS

UNIT NO.	MANUFACTURER ¢ MODEL NO.	NOM. COOLING CAPACITY @ 95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @ 47°F AMB (BTU/HR)	ELECTRICAL DATA VOLTAGE VOLTS	VOLTAGE MCA	VOLTAGE MOCP	COMPRESSOR RLA	COMPRESSOR LRA	FAN FLA	FAN HP	SEER	HSPF	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.)	REMARKS ②③④
HP 1	CARRIER 38 QRF 018	17,900	16,800	208V/1Ø	12.1	20	9.0	48.0	0.8	1/8	13.0	7.7	3/8	5/8	170	-

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES ¢ INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.
③ PROVIDE WITH LOW AMBIENT KIT.
④ PROVIDE WITH CRANKCASE HEATER.

HORIZONTAL CASSETTE FAN COILS (HEAT PUMP)

UNIT NO.	MANUFACTURER ¢ MODEL NO.	CFM	E.S.P. (INCHES)	ELECTRICAL DATA VOLTAGE VOLTS	VOLTAGE MCA	VOLTAGE MOCP	FAN FLA	FAN WATTS	CONDENSATE PUMP FLA	ELECTRIC STRIP HEAT (KW)	OPER. WT. (LBS.)	REMARKS
FC 1	CARRIER 40KMQ 018	690	-	208V/1Ø	16.3	20	0.5	110.0	0.06	3	100	- ①②③

① PROVIDE W/TXV (R410A).
② PROVIDE W/ELECTRONIC PROGRAMMABLE THERMOSTAT.
③ PROVIDE W/CONDENSATE PUMP.

VIBRATION ISOLATION

UNIT NO.	MANUFACTURER	BASE MODEL NO.	SPRING MODEL NO.	DEFLECTION (IN.)	REMARKS
EF 1, EF 2, EF 3, EF 4, EF 5	M.W. SAUSSE	RMLSF-EQ	RMLS	1.0	FURNISH W/ HEIGHT - SAVING MOUNTING BRACKETS ¢ SEISMIC RESTRAINTS.
EF 6, SF 1	M.W. SAUSSE	-	-	-	NEOPRENE GROMMETS.
	M.W. SAUSSE	-	RMLS-EQ	1.0	FURNISH W/SEISMIC RESTRAINTS.

AIR DISTRIBUTION SCHEDULE

TYPE	MANUFACTURER	MODEL	REMARKS
CEILING DIFFUSER	TITUS	PCS	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF DIFFUSER FOR SURFACE MOUNTED INSTALLATIONS.
RETURN AIR GRILLE	TITUS	PAR	
RETURN/EXHAUST AIR REGISTER	TITUS	PAR	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF REGISTER FOR SURFACE MOUNTED INSTALLATIONS.
SUPPLY WALL REGISTER	TITUS	300 RL	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF REGISTER FOR SURFACE MOUNTED INSTALLATIONS.
RETURN/EXHAUST WALL REGISTER	TITUS	355 RL	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF REGISTER FOR SURFACE MOUNTED INSTALLATIONS.

SOUND ATTENUATORS

UNIT NO.	MANUFACTURER ¢ MODEL NO.	NO. OF	SERVICE	SIZE (NO.) W. X H. X L. (IN.)	CFM	AIR PD (IN.)	D.I.L. IN OCTAVE BAND (DB) * 1000 FPM 125	250	500	1K	2K	4K	OPER. WT. (LBS.)	REMARKS
ST 1	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-1	(16) 24" x 24" x 36"	63,000	0.59	14	23	27	29	18	19	1360	
ST 2	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-2	(8) 30" x 24" x 36"	37,000	0.52	14	23	27	29	18	19	960	
ST 3	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-3	(8) 30" x 24" x 36"	37,000	0.52	14	23	27	29	18	19	960	
ST 4	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-4	(8) 30" x 24" x 36"	35,000	0.47	14	23	27	29	18	19	960	
ST 5	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-5	(8) 30" x 24" x 36"	38,000	0.55	14	23	27	29	18	19	960	

EQUIPMENT SCHEDULES (4)

1. GENERAL: THIS WORK IS SUBJECT TO THE PROVISIONS OF DIVISION 1 OF THE SPECIFICATIONS AND THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS THEREUNDER AFFECTING HIS WORK IN ANY WAY.

2. SCOPE: THE WORK COVERED BY THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION AND OTHER ITEMS NECESSARY FOR AND REASONABLE INCIDENTAL TO THE PROPER AND SATISFACTORY INSTALLATION OF THE HEATING, AIR CONDITIONING, AND VENTILATING SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

3. CODES: ALL HEATING, AIR CONDITIONING, AND VENTILATING WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE N.F.P.A.,LATEST BUILDING ¢ MECHANICAL CODES AND ANY OTHER LEGALLY CONSTITUTED BODY HAVING JURISDICTION THEREOF.

4. PERMITS: THE OWNER SHALL OBTAIN AND PAY FOR ALL FEES, PERMITS, AND LICENSES REQUIRED FOR THE INSTALLATION OF THE WORK.

5. SUBMITTALS: WITHIN 30 DAYS AFTER THE AWARD OF THE CONTRACT AND BEFORE THEIR PURCHASE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT SIX BOUND BOOKLETS CONTAINING A COMPLETE LIST OF MATERIALS AND EQUIPMENT BEING FURNISHED, TOGETHER WITH ALL CATALOG DATA, MANUFACTURER'S NAMES AND ADDRESSES AND OTHER DATA NECESSARY TO EVALUATE THE MATERIAL AND EQUIPMENT.

6. SHEET METAL DUCTWORK: SUPPLY RETURN AND OUTSIDE AIR DUCTWORK PENETRATING RATED CONSTRUCTION SHALL BE MINIMUM 26 GA. GALVANIZED SHEET METAL. SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED PER ENERGY CODE HAVING JURISDICTION. DRYER VENTS ¢ ALL OTHER EXHAUST SHALL BE GALVANIZED SHEET METAL MIN. 26 GAGE. DUCTWORK SHALL BE CONSTRUCTED ¢ INSTALLED IN CONFORMANCE WITH THE LATEST SMACNA DUCT MANUAL, AND LOCAL CODES.

7. FLEXIBLE DUCTWORK: INSULATED LOW PRESSURE FLEXIBLE DUCT SHALL BE A FACTORY ASSEMBLY CONSISTING OF A GALVANIZED SPRING STEEL WIRE HELIX, A CONTINUOUS INNER LINER WRAPPED WITH A NOMINAL 1 IN. THICK BY 1 LB/CU. FT. DENSITY GLASS FIBER INSULATION. THE ASSEMBLY SHALL BE ENCLOSED IN A CLASS 1 VAPOR BARRIER JACKET. THE FLEXIBLE DUCT SHALL BE LISTED BY U.L. AND SHALL CONFORM TO THE 90-A AND 90-B CLASS 1 REQUIREMENTS OF THE N.F.P.A. FLEXIBLE DUCT SHALL BE INSTALLED IN A FULLY EXTENDED CONDITION FREE OF SAGS AND KINKS AS FAR AS PRACTICAL. FLEXIBLE DUCT SHALL BE BY GOODMAN QUIETFLEX (RIP-STOP) OR APPROVED EQUAL.

8. EQUIPMENT: SHALL BE OF MODEL, TYPE AND CAPACITIES AS INDICATED ON THE DRAWINGS AND SHALL MEET OR EXCEED THE MINIMUM EFFICIENCY AS LISTED IN THE BUILDING ENERGY EFFICIENCY STANDARDS.

9. CONTROLS: SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE DRAWINGS.

10. ACCESS PANELS: WHERE SHOWN, AIR HANDLERS ¢ FAN COILS SHALL INCLUDE A FACTORY FURNISHED CEILING ACCESS DOOR OR WALL PANEL. ALL OTHER MECHANICAL EQUIPMENT REQUIRING ACCESS MUST BE PROVIDED WITH ADEQUATE PANELS.

11. GUARANTEE: THE SYSTEM AS INSTALLED INCLUDING ALL EQUIPMENT AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE THE INSTALLATION IS ACCEPTED AND PLACED INTO OPERATION.

12. MATERIALS (INCLUDING INSULATION) EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

13. ONLY APPROVED MATERIALS SHALL BE INSTALLED WITHIN DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD HUMIDITY AND RESISTANT SURFACE THAT MEET THE REQUIREMENTS OF UL181.

14. WHERE SOUND INSULATION IS INDICATED, DUCT DIMENSIONS ARE NET CLEAR- e.g. AFTER INSULATION HAS BEEN INSTALLED.

15. CORRIDORS SHALL BE MECHANICALLY VENTILATED,SEE ARCHITECTURAL DRAWINGS.

16. FUSIBLE LINK FIRE DAMPERS SHALL BE POTTORFF MODEL VFD-10/FD-140 (1-1/2 HOUR RATING) OR VFD-30/FD-340 (3-HOUR RATING), INSTALL PER MANUFACTURER'S SPECIFICATIONS. FACTORY INSTALLATION SHEETS SHALL BE PROVIDED TO CONTRACTOR.

17. COMBINATION SMOKE ¢ FIRE DAMPERS SHALL BE POTTORFF MODEL FSD-142 (1-1/2 HOUR RATING) OR FSD-342 (3-HOUR RATING) W/ ELECTRIC ACTUATOR. INSTALL PER MANUFACTURER'S SPECIFICATIONS. FACTORY INSTALLATION SHEETS SHALL BE PROVIDED TO CONTRACTOR.

18. CONTRACTOR SHALL COORDINATE ALL DUCT, PIPE ¢ EQUIPMENT LOCATIONS WITH ELECTRICAL, STRUCTURAL, PLUMBING AND ALL OTHER TRADES PRIOR TO WORK.

19. DO NOT SCALE DRAWINGS. ALL DIMENSIONS ¢ JOB SITE CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION AND / OR FABRICATION OF MATERIALS. IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.

20. SEE ARCHITECTURAL DRAWINGS FOR ROOF / ATTIC ACCESS.

21. VERIFY FINAL LOCATION OF THERMOSTATS WITH ARCHITECT AND / OR OWNER PRIOR TO START OF WORK.

22. CONTRACTOR SHALL PROVIDE APPROVED FIRE-STOP AT PENETRATIONS THRU RATED CONSTRUCTION ASSEMBLIES.

23. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.

24. DRYER VENT CLEAN OUTS (IF APPLICABLE), SHALL BE REGULARLY INSPECTED / CLEANED FOR LINT ACCUMULATION.

25. ALL CEILING DIFFUSERS ARE 4-WAY THROW UNLESS SHOWN OTHERWISE.

26. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF CEILING DIFFUSERS AND GRILLES.

GENERAL NOTES (2)

SHEET INDEX (3)

SYMBOL	ABBREVIATION	DESCRIPTION
R		DUCT RISE / DUCT DROP
		DUCT WITH SOUND INSULATION
		DUCT SECTION - SUPPLY
		DUCT SECTION - RETURN
		DUCT SECTION - EXHAUST
		DUCT ELBOW W/ TURNING VANES
		EXISTING MECHANICAL EQUIPMENT
		REMOVE EXISTING EQUIPMENT SHOWN HATCHED
		POINT OF CONNECTION
		NEW SUPPLY, RETURN OR EXHAUST CEILING REGISTER
		RELOCATED SUPPLY, RETURN OR EXHAUST CEILING REGISTER
T x		ROOM THERMOSTAT ¢ ZONE NUMBER
T T		EXISTING THERMOSTAT TO BE RELOCATED
TC x		TIME CLOCK
S x		SWITCH NUMBER
SD		SMOKE DETECTOR
U/C		DOOR UNDERCUT
	A.C.D.	AUTOMATIC CONTROL DAMPER
	F.D.	FUSIBLE LINK FIRE DAMPER
	V.D.	MANUAL VOLUME DAMPER
	S.F.D.	COMBINATION SMOKE ¢ FIRE DAMPER
	A.D.	ACCESS DOOR
	A.F.F.	ABOVE FINISHED FLOOR
	A.P.	ACCESS PANEL
	B.M.C.S.	BUILDING MANAGEMENT ¢ TEMPERATURE CONTROL SYSTEM
	C.D.	CEILING DIFFUSER
	D.T.R.	DOWN THRU ROOF
	E.A.	EXHAUST AIR
	E.A.G.	EXHAUST AIR GRILLE
	H.O.A.	HAND-OFF-AUTOMATIC
	N.C.	NORMALLY CLOSED
	N.O.	NORMALLY OPEN
	N.I.C.	NOT IN CONTRACT
	M.U.A.	MAKE UP AIR
	O.B.D.	OPPOSED BLADE DAMPER
	O.S.A.	OUTSIDE SUPPLY AIR
	RE.A.	RELIEF AIR
	RE.A.G.	RELIEF AIR GRILLE
	R.A.	RETURN AIR
	R.A.G.	RETURN AIR GRILLE
	S.A.	SUPPLY AIR
	S.I.	SOUND INSULATION
	U.N.O.	UNLESS NOTED OTHERWISE
	U.T.R.	UP THRU ROOF
	V.A.V.	VARIABLE AIR VOLUME
	V.T.R.	VENT THRU ROOF
M		FURNISHED ¢ INSTALLED BY MECHANICAL
ME		FURNISHED BY MECHANICAL INSTALLED BY ELECTRICAL
EM		FURNISHED BY ELECTRICAL INSTALLED BY MECHANICAL
E		FURNISHED AND INSTALLED BY ELECTRICAL
		EQUIPMENT TAG UNIT NO.
		LINEAR SLOT NO. OF SLOTS - WIDTH CFM / FT. TOTAL LENGTH
		SUPPLY, RETURN ¢ EXHAUST GRILLE CALL OUT CFM GRILLE SIZE GRILLE STYLE

LEGEND AND SYMBOLS (1)

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

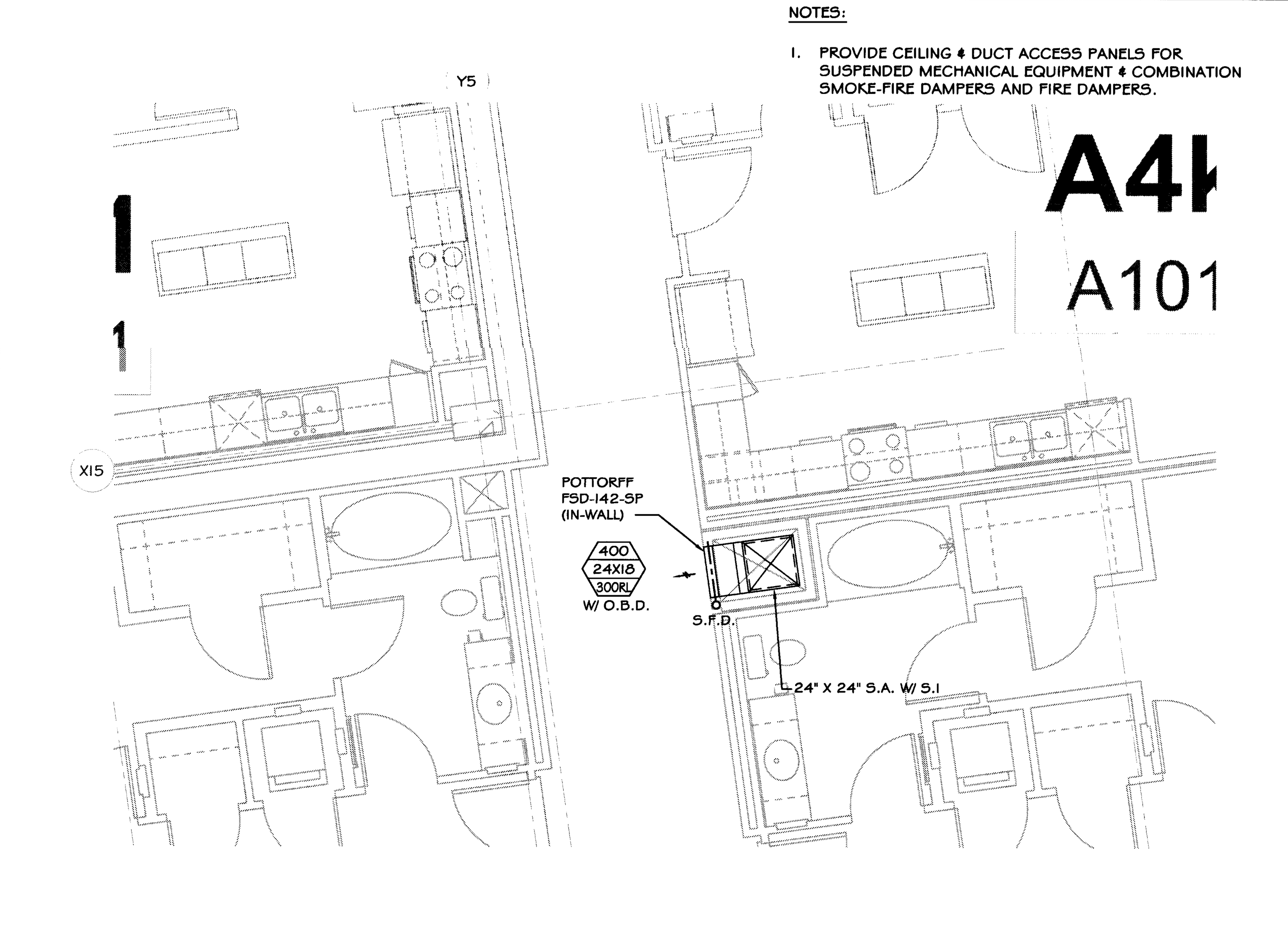
DRAWING CONTENTS
LEGEND, SYMBOLS & EQUIPMENT SCHEDULES

FOR CONSTRUCTION

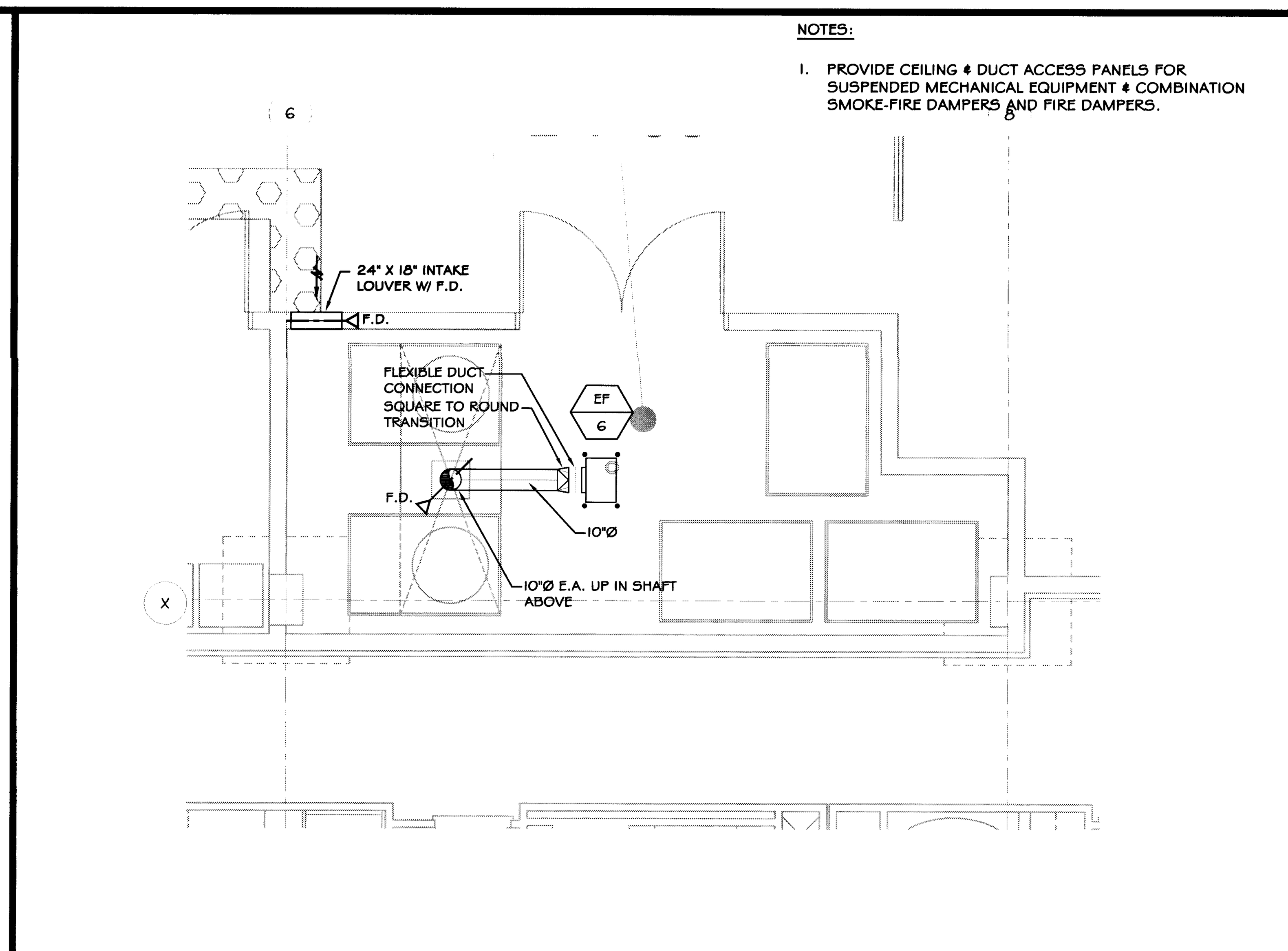
REGISTERED PROFESSIONAL ENGINEER LUIS A. GARCIA Exp date Jun 30 2014 MECHANICAL STATE OF CALIFORNIA

MG-1

2010-089
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE



ENLARGED CORRIDOR HVAC (P1 LEVEL) — SCALE 1/4" = 1'-0" — 7



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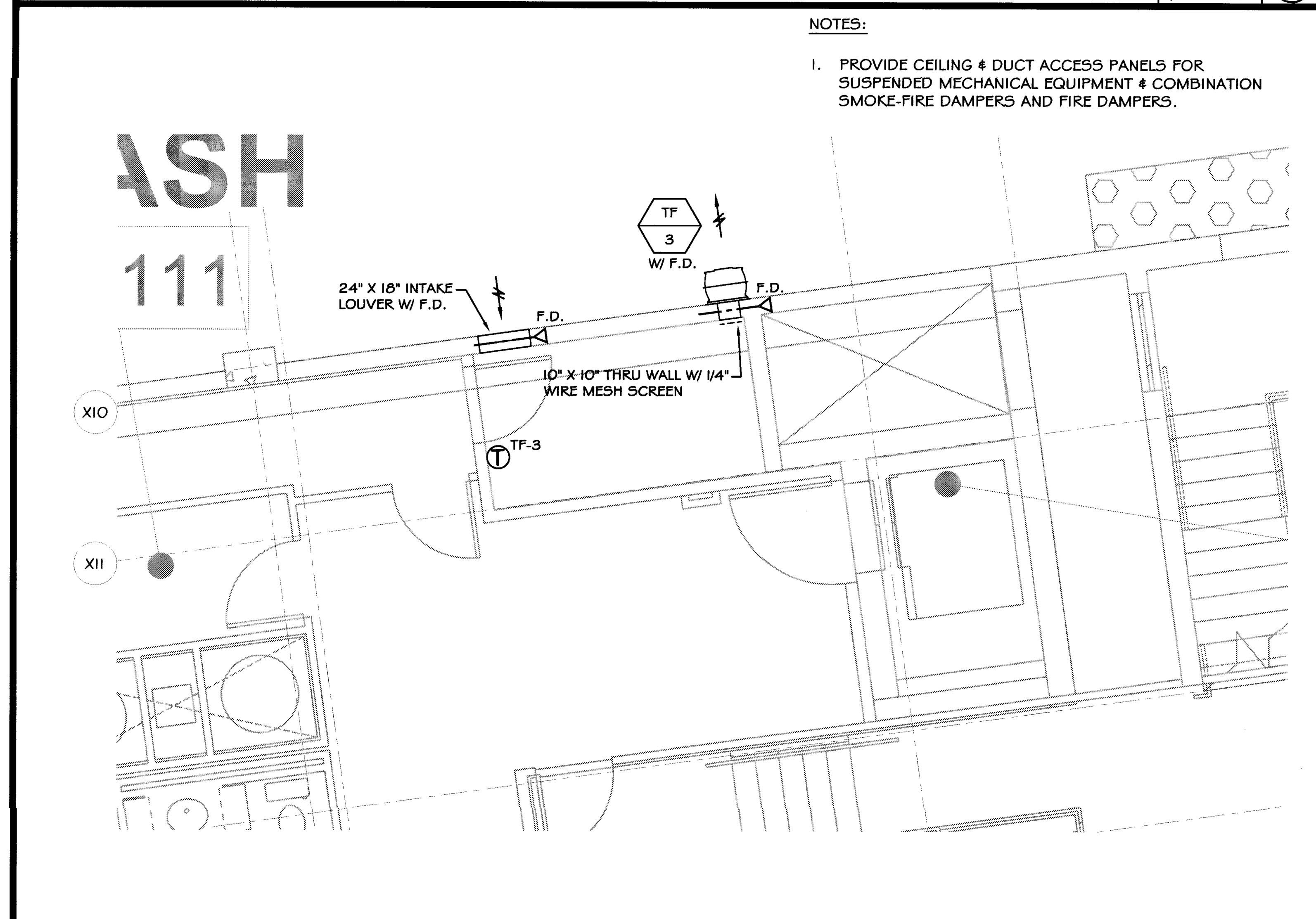
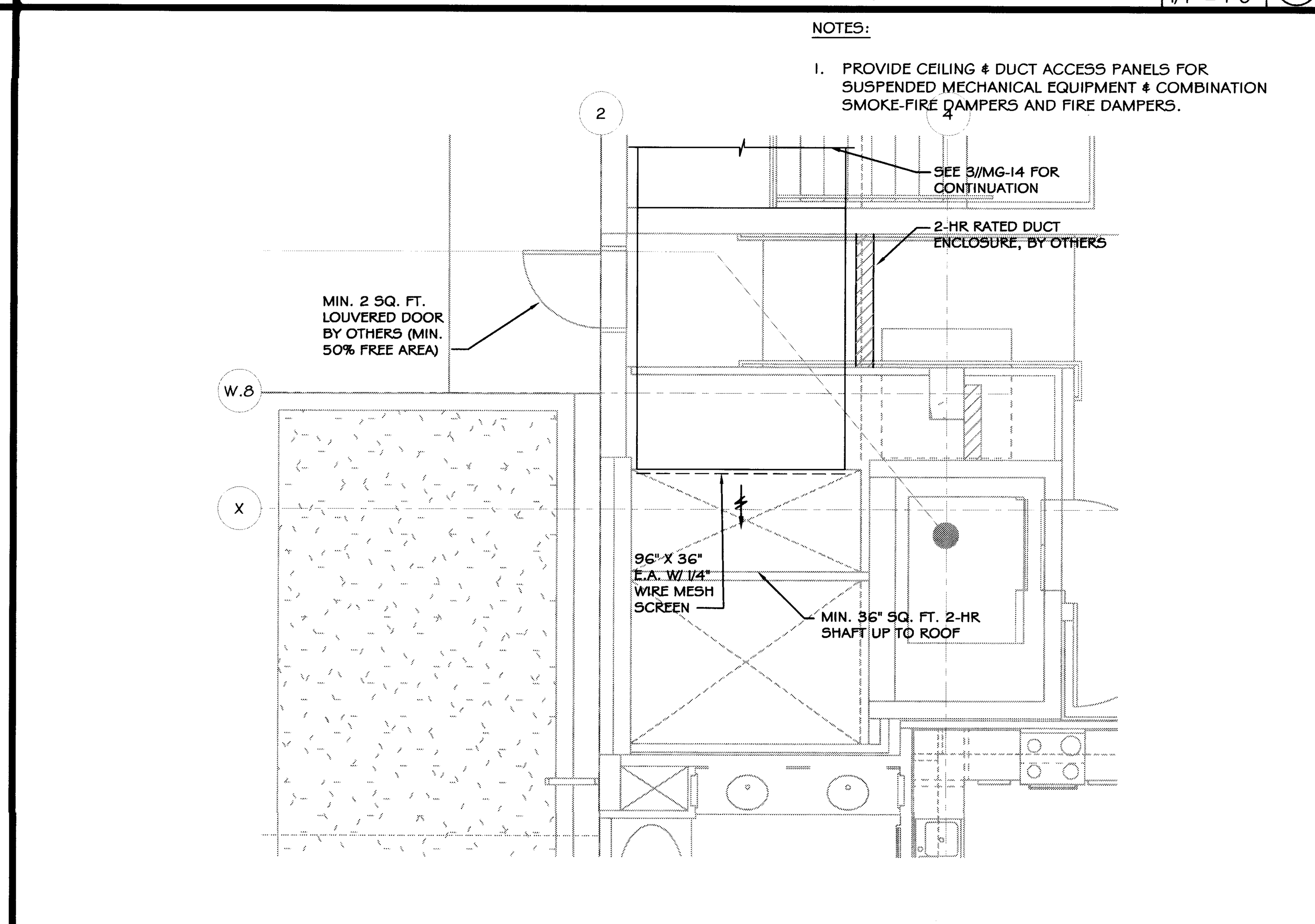


ENLARGED ELEVATOR CORE (P1 LEVEL) — SCALE 1/4" = 1'-0" — 8



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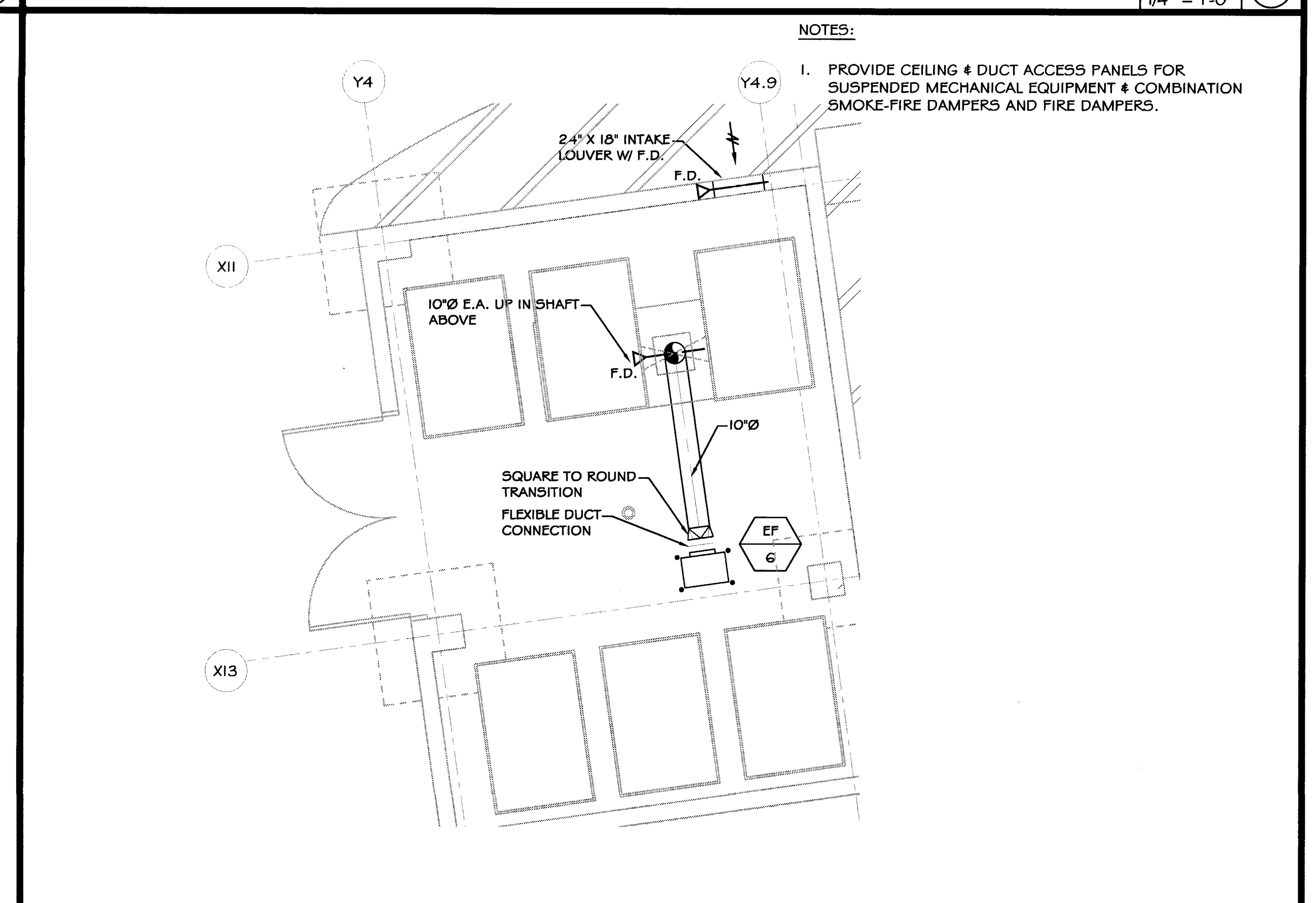

ENLARGED TRASH ROOM (B2 LEVEL) — SCALE 1/4" = 1'-0" — 2

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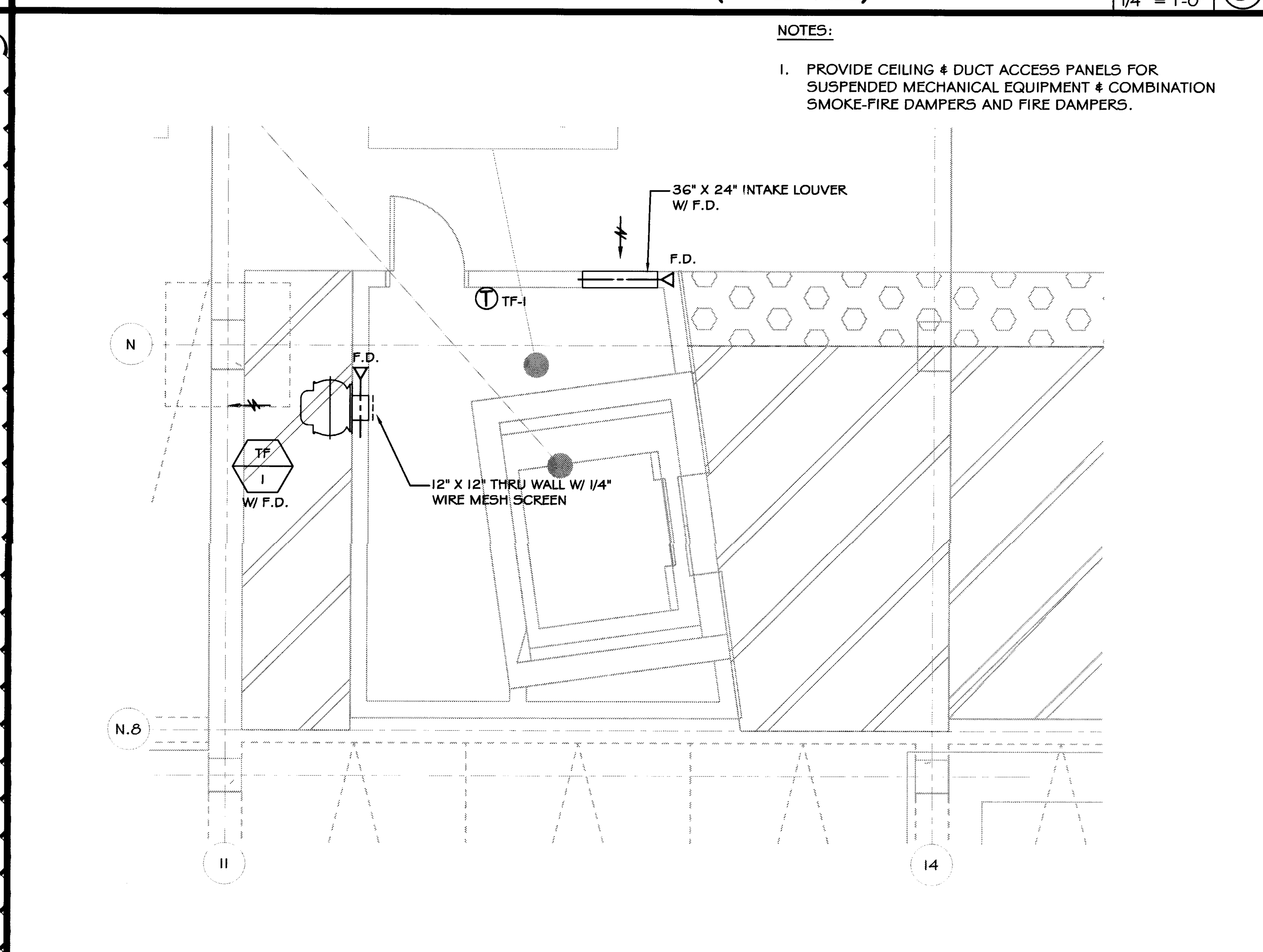
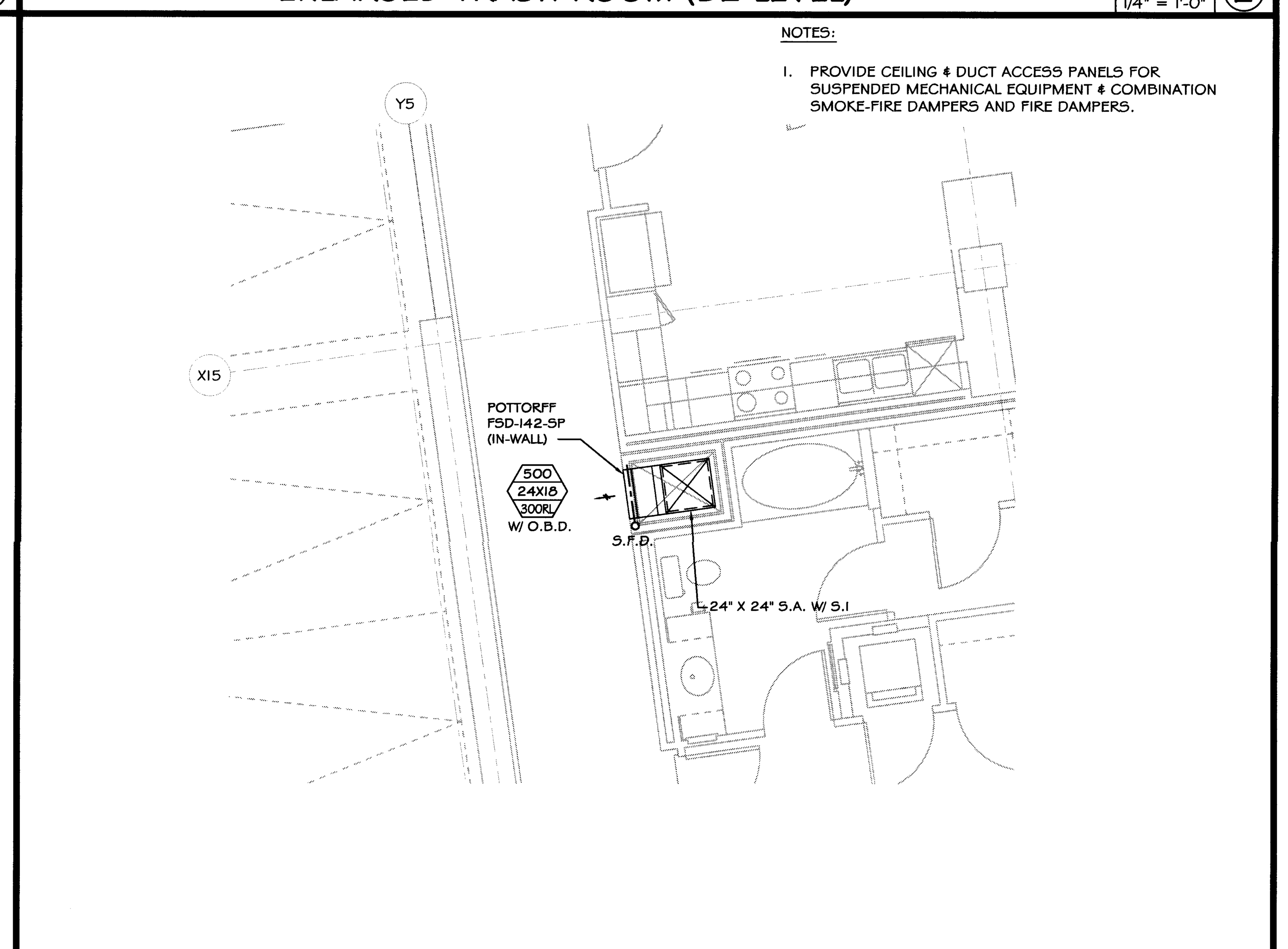


ENLARGED ELEVATOR EQUIP. (B1 LEVEL) — SCALE 1/4" = 1'-0" — 6



ENLARGED CORRIDOR HVAC (B1 LEVEL) — SCALE 1/4" = 1'-0" — 3

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CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

ENLARGED FLOOR PLANS

FOR CONSTRUCTION

MG-15

2010-089
JOB NUMBER

AS NOTED
SCALE

ISSUED AS
5/8/2014
DATE

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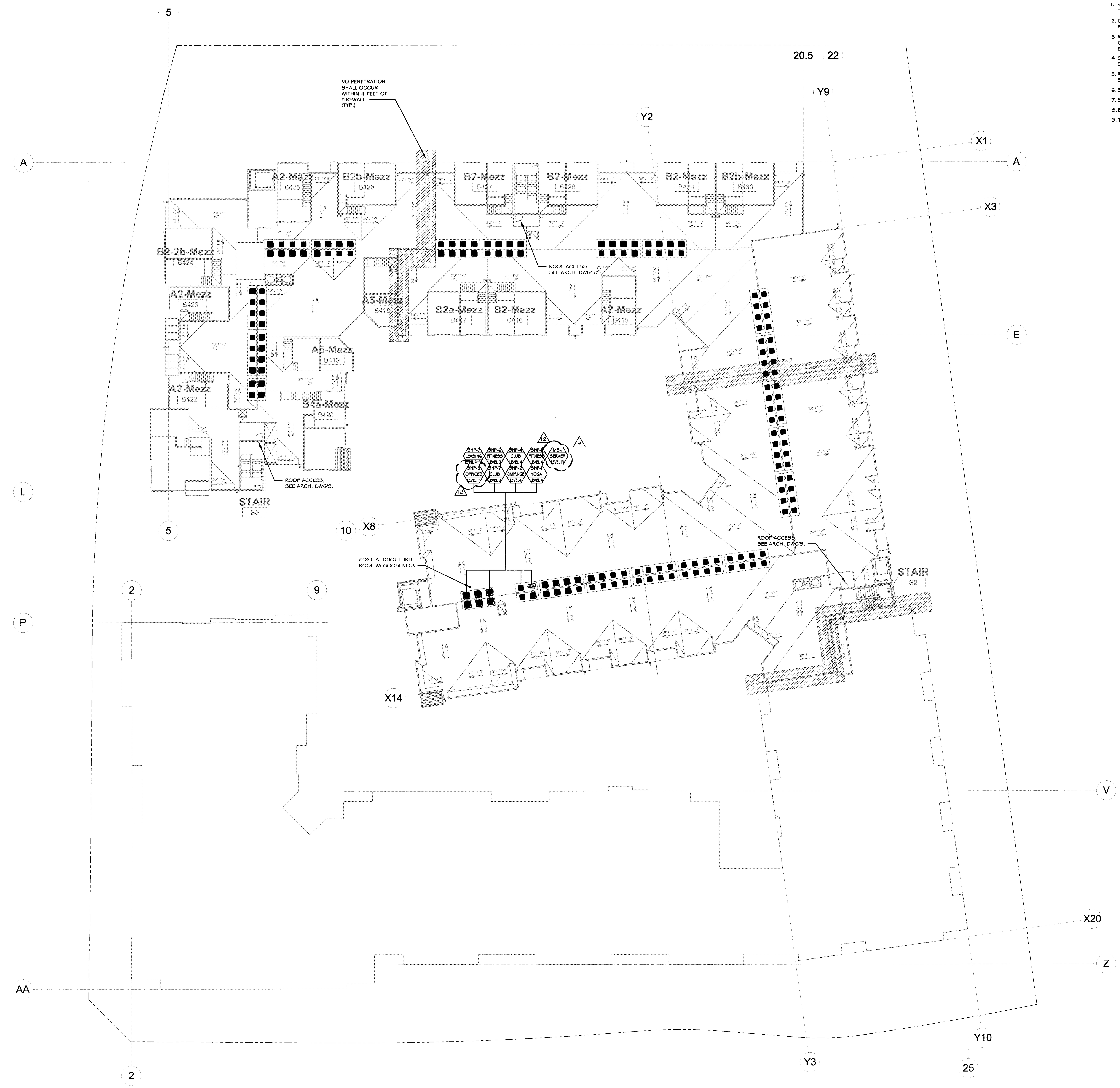

GENERAL NOTES:

1. REFER TO SHEET MR-1 FOR CONDENSING UNIT OR HEAT PUMP EQUIPMENT SCHEDULE.
2. CONSULT MANUFACTURER'S RECOMMENDATIONS FOR LONG REFRIGERANT LINE APPLICATIONS.
3. REFRIGERANT LINES SHALL BE INSTALLED IN WALL CAVITIES OR CHASES. CONTRACTOR TO COORDINATE EXACT ROUTING OF REFRIGERANT LINES IN FIELD.
4. CONDENSING/HEAT PUMP UNITS SHALL BE INSTALLED ON BUILT-UP PLATFORM/PAD PROVIDED BY OTHERS.
5. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.
6. SEE "MG" SHEETS FOR HVAC DESIGN OF GARAGE AREAS.
7. SEE "M" SHEETS FOR HVAC DESIGN OF LIVING UNITS.
8. ELEVATOR HOISTWAY VENT DESIGN / INSTALL, BY OTHERS.
9. TRASH CHUTE VENT DESIGN / INSTALL, BY OTHERS.

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.

California Nevada Colorado Maryland

REVISION	DATE
1 1ST PLAN CHECK SUBMITTAL	01/30/13
9 ASI #07 – CLIENT REVISIONS	04/25/14
12 ASI #10 – LEASING SUBMITTAL	05/08/14

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

BUILDING B LOW ROOF

FOR CONSTRUCTION

Exp date Jun 30 2014

MR-0.17

2010-089
JOB NUMBER
1/16" = 1'-0"
SCALE
ISSUED AS
5/8/2014
DATE

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HORIZONTAL & VERTICAL FAN COILS (HEAT PUMP)

UNIT NO.	MANUFACTURER & MODEL NO.	CFM	E.S.P. (INCHES)	ELECTRICAL DATA – VOLTAGE – VOLTS	FLA	MCA	MOCP	FAN – HP	ELECTRIC STRIP HEAT (KW)	FILTER SIZE (IN.)	OPER. WT. (LBS.)	REMARKS	
SFC 1	CARRIER FB4C 018	600	0.5	208V / 1Ø	2.8	3.5	15	1/3	-	-	120	FITNESS (LVL 4); YOGA (LVL 4)	①②③④
SFC 2	CARRIER FB4C 024	800	0.5	208V / 1Ø	4.1	5.1	15	1/2	-	-	120	COMP/LOUNGE (LVL 4)	①②③④
SFC 3	CARRIER FB4C 030	1,000	0.5	208V / 1Ø	2.8	3.5	15	1/3	-	-	130	-	①②③④
SFC 4	CARRIER FB4C 036	1,200	0.5	208V / 1Ø	4.1	5.1	15	1/2	-	-	130	CLUBROOM (LVL 4)	①②③④
SFC 5	CARRIER FB4C 042	1,400	0.5	208V / 1Ø	4.1	5.1	15	1/2	-	-	160	OFFICES/CONF RM. (P1, P2)	①②③④
SFC 6	CARRIER FB4C 048	1,600	0.5	208V / 1Ø	6.0	7.5	15	3/4	-	-	160	FITNESS (LVL 3)	①②③④
SFC 7	CARRIER FB4C 060	2,000	0.6	208V / 1Ø	6.0	7.5	15	3/4	-	-	180	LEASING/CLOSING (P1, P2); CLUBROOM (LVL 3)	①②③④

① CONDENSATE PUMP (IF REQUIRED) PIPING BY OTHERS, SEE PLBG. DWG'S.
② PROVIDE W/TXV (R410A).
③ INSTALL CONDENSATE OVERFLOW SWITCH IN LIEU OF SECONDARY CONDENSATE DRAIN ON VERTICAL UNITS.
④ PROVIDE W/ CARRIER FNCCAB FILTER CABINET & FLANDERS PRE-PLEAT 40 LPD HIGH CAPACITY 4-INCH DEEP MERV 8 FILTER.

SPLIT-SYSTEM OUTDOOR HEAT PUMPS

UNIT NO.	MANUFACTURER & MODEL NO.	NOM. COOLING CAPACITY @ 95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @ 47°F AMB (BTU/HR)	ELECTRICAL DATA – VOLTAGE – VOLTS	MCA	MOCP	COMPRESSOR – RLA	LRA	FAN – FLA	HP	SEER	HSPF	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.)	REMARKS	
SHP 1	CARRIER 25HBC3 018	17,100	18,000	208V / 1Ø	11.8	20	9.0	48.0	0.5	1/12	13.0	7.7	3/8	5/8	130	SFC-1	②
SHP 2	CARRIER 25HBC3 024	22,800	24,000	208V / 1Ø	16.8	25	12.8	58.3	0.5	1/10	13.0	8.2	3/8	5/8	140	SFC-2	②
SHP 3	CARRIER 25HBC3 030	28,400	29,000	208V / 1Ø	21.1	30	16.0	77.0	1.1	1/5	13.0	8.0	3/8	3/4	150		②
SHP 4	CARRIER 25HBC3 036	34,200	35,000	208V / 1Ø	22.0	35	16.7	79.0	1.1	1/5	13.0	7.8	3/8	3/4	160	SFC-4	②
SHP 5	CARRIER 25HBC3 042	40,000	41,000	208V / 1Ø	25.7	40	19.9	109.0	0.8	1/10	13.0	8.1	3/8	7/8	200	SFC-5	②
SHP 6	CARRIER 25HBC3 048	46,000	46,500	208V / 1Ø	28.7	50	21.8	117.0	1.4	1/4	13.0	8.0	3/8	7/8	220	SFC-6	②
SHP 7	CARRIER 25HBC3 060	57,000	59,000	208V / 1Ø	34.1	50	26.3	134.0	1.2	1/4	13.0	7.7	3/8	1-1/8	260	SFC-7	②

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES & INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.

EXHAUST FANS

UNIT NO.	MANUFACTURER & MODEL NO.	LOCATION	TYPE	CFM	S.P. (INCHES)	ELECTRICAL – VOLTS	WATTS	AMPS	SONES	OPER. WT. (LBS.)	REMARKS
EF 1	BROAN QTRE080	BATHROOMS	CLG.	80	0.10	120V / 1Ø	57	0.30	0.8	20	LO-SONE FAN. FURNISH W/ SWITCH AND INSTALL WITH BACKDRAFT DAMPER.
EF 2	BROAN L150	BATHROOMS	CLG.	150	0.10	120V / 1Ø	100	1.3	1.5	30	FURNISH W/ SWITCH AND INSTALL WITH BACKDRAFT DAMPER.

9 12

CASSETTE MINI-SPLIT HEAT PUMP INDOOR & OUTDOOR SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	NOM. COOLING CAPACITY @95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @47°F AMB (BTU/HR)	SEER	HSPF	CFM	ELECTRICAL DATA – VOLTS	MCA	MOCP	DIMENSIONS (W X H X D) – IN	OUT	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.) – IN	OUT	REMARKS	
MS 1	TOSHIBA RAV-SP18	19,000	18,800	20.5	11.5	600	208V / 1Ø	17	30	33.1"X10.1"X33.1"	30.7"X21.7"X11.4"	1/4	1/2	50	110	SERVER (LVL P1)	②③④⑤

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES & INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.
③ PROVIDE WITH CONDENSATE PUMP.
④ PROVIDE WITH LOW AMBIENT KIT.
⑤ PROVIDE WITH CRANKCASE HEATER.

AIR DISTRIBUTION SCHEDULE

MANUFACTURER	MODEL NO.	DEFLECTION	COLOR	TYPE	REMARKS
TRU-AIRE	303-O	3-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY REGISTER, PROVIDE W/ O.B.D.
TRU-AIRE	302-O	2-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY REGISTER, PROVIDE W/ O.B.D.
TRU-AIRE	304-O	4-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY DIFFUSER, PROVIDE W/ O.B.D.
TRU-AIRE	210-VO	1-WAY	WHITE	ADJUSTABLE BAR	TYP. CEILING / SIDEWALL SUPPLY REGISTER, PROVIDE W/ O.B.D.
TITUS	355 RL	-	WHITE	BAR	TYP. SIDEWALL RETURN / TRANSFER GRILLE, PROVIDE W/ O.B.D.
TITUS	PAR	-	*WHITE*	*PERFORATED FACE*	*TYP. CEILING RETURN / TRANSFER GRILLE, PROVIDE W/ O.B.D.*
TITUS	ML (SUPPLY) MLR (RETURN)	-	WHITE	LINEAR SLOT	LINEAR DIFFUSER, PROVIDE W/ POTTORFF RD-10R ELECTRONIC VOLUME DAMPER.

CONDENSATE PUMPS

UNIT NO.	MANUFACTURER & MODEL NO.	SERVICE	ELECTRICAL – VOLTS	WATTS	AMPS	OPER. WT. (LBS.)	REMARKS
CP 1	BECKETT CB201UL	SFC -	120V / 1Ø	85	2.2	5	ALL CONDENSATE PIPING TO BE PROVIDED/INSTALLED BY PLBG.

EQUIPMENT SCHEDULES ④

1. GENERAL: THIS WORK IS SUBJECT TO THE PROVISIONS OF DIVISION 1 OF THE SPECIFICATIONS AND THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS THEREUNDER AFFECTING HIS WORK IN ANY WAY.

2. SCOPE: THE WORK COVERED BY THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION AND OTHER ITEMS NECESSARY FOR AND REASONABLE INCIDENTAL TO THE PROPER AND SATISFACTORY INSTALLATION OF THE HEATING, AIR CONDITIONING, AND VENTILATING SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

3. CODES: ALL HEATING, AIR CONDITIONING, AND VENTILATING WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE N.F.P.A.,LATEST BUILDING & MECHANICAL CODES AND ANY OTHER LEGALLY CONSTITUTED BODY HAVING JURISDICTION THEREOF.

4. PERMITS: THE OWNER SHALL OBTAIN AND PAY FOR ALL FEES, PERMITS, AND LICENSES REQUIRED FOR THE INSTALLATION OF THE WORK.

5. SUBMITTALS: WITHIN 30 DAYS AFTER THE AWARD OF THE CONTRACT AND BEFORE THEIR PURCHASE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT SIX BOUND BOOKLETS CONTAINING A COMPLETE LIST OF MATERIALS AND EQUIPMENT BEING FURNISHED, TOGETHER WITH ALL CATALOG DATA, MANUFACTURER'S NAMES AND ADDRESSES AND OTHER DATA NECESSARY TO EVALUATE THE MATERIAL AND EQUIPMENT.

6. SHEET METAL DUCTWORK: SUPPLY RETURN AND OUTSIDE AIR DUCTWORK PENETRATING RATED CONSTRUCTION SHALL BE MINIMUM 26 GA. GALVANIZED SHEET METAL. SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED PER ENERGY CODE HAVING JURISDICTION. DRYER VENTS & ALL OTHER EXHAUST SHALL BE GALVANIZED SHEET METAL MIN. 26 GAGE. DUCTWORK SHALL BE CONSTRUCTED & INSTALLED IN CONFORMANCE WITH THE LATEST SMACNA DUCT MANUAL, AND LOCAL CODES.

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9. CONTROLS: SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE DRAWINGS. ALL OFFICE, RECREATION AND CORRIDOR THERMOSTATS TO BE HONEYWELL TH2110D1009 ENERGY STAR PROGRAMMABLE WITH DIGITAL NIGHT SET BACK.

10. ACCESS PANELS: WHERE SHOWN, AIR HANDLERS & FAN COILS SHALL *INCLUDE A FACTORY FURNISHED CEILING ACCESS DOOR OR WALL PANEL.* ALL OTHER MECHANICAL EQUIPMENT REQUIRING ACCESS MUST BE PROVIDED WITH ADEQUATE PANELS.

11. GUARANTEE: THE SYSTEM AS INSTALLED INCLUDING ALL EQUIPMENT AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE THE INSTALLATION IS ACCEPTED AND PLACED INTO OPERATION.

12. MATERIALS (INCLUDING INSULATION) EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

13. ONLY APPROVED MATERIALS SHALL BE INSTALLED WITHIN DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD HUMIDITY AND RESISTANT SURFACE THAT MEET THE REQUIREMENTS OF UL181.

14. FOR EQUIPMENT IN ATTIC, GENERAL CONTRACTOR (G.C.) TO PROVIDE ACCESS, LIGHT AND CAT WALK AS REQUIRED BY MECHANICAL CODE HAVING JURISDICTION.

15. CORRIDORS SHALL BE NATURALLY VENTILATED,SEE ARCHITECTURAL DRAWINGS.

16. FUSIBLE LINK FIRE DAMPERS SHALL BE UL LISTED AND STATE FIRE MARSHALL APPROVED. MANUFACTURED BY POTTORFF, INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO PROVIDE ACCESS PANELS. CEILING RADIATION FIRE DAMPERS SHALL BE MODEL CFD-15 OR APPROVED EQUAL.

17. COMBINATION SMOKE & FIRE DAMPERS SHALL BE UL LISTED AND STATE FIRE MARSHALL APPROVED. MANUFACTURED BY POTTORFF WITH ELECTRIC ACTUATOR, INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO PROVIDE ACCESS PANELS.

18. CONTRACTOR SHALL COORDINATE ALL DUCT, PIPE & EQUIPMENT LOCATIONS WITH ELECTRICAL, STRUCTURAL, PLUMBING AND ALL OTHER TRADES PRIOR TO WORK.

19. DO NOT SCALE DRAWINGS. ALL DIMENSIONS & JOB SITE CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION AND / OR FABRICATION OF MATERIALS. IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.

20. SEE ARCHITECTURAL DRAWINGS FOR ROOF / ATTIC ACCESS.

21. VERIFY FINAL LOCATION OF THERMOSTATS WITH ARCHITECT AND / OR OWNER PRIOR TO START OF WORK.

22. CONTRACTOR SHALL PROVIDE APPROVED FIRE-STOP AT PENETRATIONS THRU RATED CONSTRUCTION ASSEMBLIES.

23. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.

24. DRYER VENT CLEAN OUTS (IF APPLICABLE), SHALL BE REGULARLY INSPECTED / CLEANED FOR LINT ACCUMULATION.

GENERAL NOTES ②

SHEET INDEX ③

SYMBOL	ABBREVIATION	DESCRIPTION
	S.A.	FLEXIBLE SUPPLY AIR DUCT
	R.A.	FLEXIBLE RETURN AIR DUCT
		SPIRAL SHEET METAL AIR DUCT
		RECTANGULAR DUCT
		WALL LOUVER
	EF	CEILING / WALL EXHAUST FAN
		COMBUSTION AIR LOUVER
		DUCT DOWN
		DUCT UP
		SIDEWALL SUPPLY REGISTER
		SIDEWALL SUPPLY REGISTER W/ BOOT
		CEILING SUPPLY REGISTER
		CEILING RETURN GRILLE
		DUCT SECTION - SUPPLY
		DUCT SECTION - RETURN
	RAG	RETURN AIR GRILLE
	RAFG	RETURN AIR FILTER GRILLE
		DIRECTION OF AIR FLOW
	MVD	MANUAL VOLUME DAMPER
	CFM	CUBIC FEET PER MINUTE
EXH		EXHAUST AIR DUCT
OSA	OSA	OUTSIDE SUPPLY AIR DUCT
T	T-STAT	THERMOSTAT
0"Ø		FLEX SIZE
	RED	REDUCER
	TRI	TRIANGLE
	FD	FIRE DAMPER
SD	SD	SMOKE DETECTOR
	SFD	COMBINATION SMOKE & FIRE DAMPER
	E.A.	EXHAUST AIR DUCT
	VTR	VENT THRU ROOF
	D.B.	DUCT BOARD
	S.M.	SHEET METAL
	OBD	OPPOSED BLADE DAMPER
	F.J.	FLOOR JOIST DIRECTION
		SUPPLY, RETURN & EXHAUST GRILLE CALL OUT CFM GRILLE SIZE GRILLE STYLE
		HEAT PUMP / CONDENSING UNIT CALL OUT HEAT PUMP / CONDENSER MODEL HEAT PUMP / CONDENSER NUMBER
		FAN COIL / FORCED AIR UNIT CALL OUT FAN COIL / FORCED AIR UNIT MODEL FAN COIL / FORCED AIR UNIT NUMBER
		EXHAUST FAN CALL OUT EXHAUST FAN MODEL EXHAUST FAN NUMBER
S R		HORIZONTAL FAN COIL / FORCED AIR UNIT
		CONDENSING UNIT / HEAT PUMP
		VERTICAL FAN COIL / FORCED AIR UNIT

LEGEND AND SYMBOLS ①

Thomas P. Cox: Architects, Inc.

LDI Mechanical, Inc.
California Nevada Colorado Maryland

REVISION / DATE
1 1ST PLAN CHECK SUBMITTAL - 01/30/13
9 ASI #07 - CLIENT REVISIONS - 04/25/14
12 ASI #10 - LEASING SUBMITTAL - 05/08/14

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEGEND, SYMBOLS & EQUIPMENT SCHEDULES

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER LUIS A. GARCIA Exp date Jun 30 2014 MECHANICAL STATE OF CALIFORNIA

MR-1

2010-089
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE

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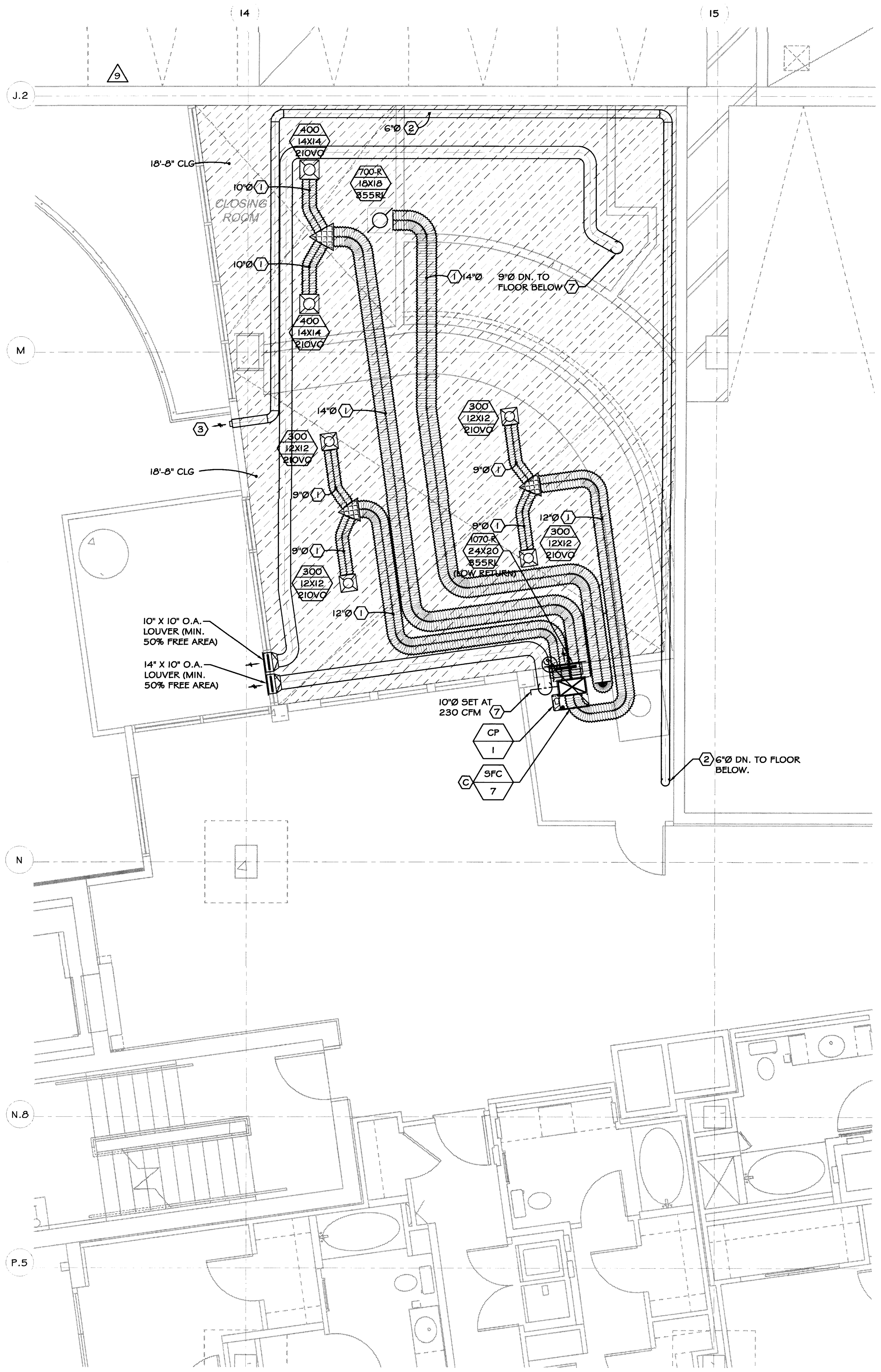
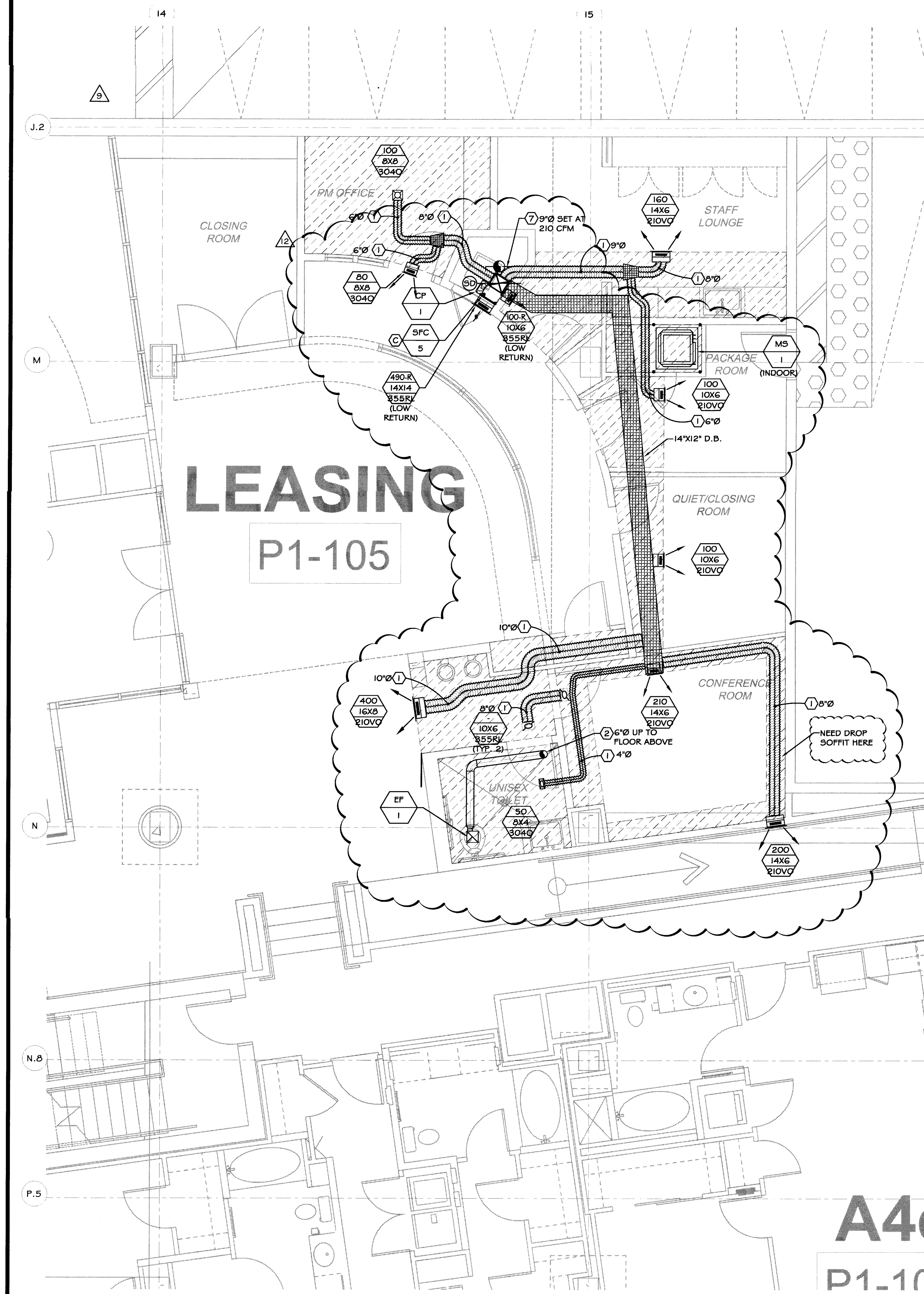


ENLARGED LEASING AREA (LEVEL P2)

SCALE 1/4" = 1'-0" (2)



ENLARGED LEASING AREA (LEVEL P1)

SCALE 1/4" = 1'-0" (1)

(A) HORIZONTAL (CASED) FAN COIL WITH SOLID ACCESS PANEL.

(B) HORIZONTAL FAU/FAN COIL IN ATTIC. EQUIPMENT IN ATTIC TO COMPLY WITH 2007 CALIFORNIA MECHANICAL CODE.

EQUIPMENT IN ATTIC REQUIRING ACCESS SHALL BE PROVIDED WITH:

1. AN ACCESS OPENING LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT, BUT NOT LESS THAN 30 INCHES BY 22 INCHES.

2. AN UNOBSTRUCTED PASSAGE WAY WHICH:

2.1 IS LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT BUT NOT LESS THAN 30 INCHES HIGH BY 30 INCHES WIDE,

2.2 IS NO MORE THAN 20 FEET IN LENGTH WHEN MEASURED ALONG THE CENTER LINE OF THE PASSAGEWAY FROM THE ACCESS OPENING TO THE EQUIPMENT, AND

2.3 HAS CONTINUOUS SOLID FLOORING NOT LESS THAN 24 INCHES WIDE THROUGHOUT ITS LENGTH: AND

3. A LEVEL SERVICE SPACE AT LEAST 30 INCHES DEEP AND 30 INCHES WIDE LOCATED AT THE FRONT OR SERVICE SIDE OF THE EQUIPMENT.

(C) VERTICAL AIR HANDLER IN MECHANICAL CLOSET. GENERAL CONTRACTOR TO PROVIDE PLATFORM & ACCESS DOORS.

(1) SUPPLY/RETURN DUCT IN FURRED SPACE BELOW (NON-RATED) CEILING.

(1A) SUPPLY / RETURN DUCT IN ATTIC SPACE ABOVE THE (NON-RATED) CEILING.

(1B) EXPOSED S.M. SPIRAL DUCT. REFER TO CMC CHAPTER 6 FOR SUPPORT AND INSTALLATION.

(2) EXHAUST AIR DUCT TO WALL/CEILING CAP OR ROOF JACK. EXHAUST DUCT SHALL BE 26 GAUGE SHEET METAL. POSITIVELY PRESSURIZED DUCTS/FANS SHALL BE ISOLATED FROM REST OF RETURN AIR PLENUM WITH GYPSUM BOARD, BY GENERAL CONTRACTOR.

(3) WALL/CEILING/ROOF S.M. JACK MINIMUM 3'-0" AWAY FROM OPENINGS INTO BUILDING & 10' - 0" AWAY FROM O.A. INLETS

(4) DOMESTIC WATER HEATER BY OTHERS, REFER TO PLUMBING PLANS FOR SIZE & SPECIFICATIONS.

(5) MIN. 20 SQ. IN. FREE AREA HI/LO OPENING FOR COMBUSTION AIR BY GENERAL CONTACTOR (OPENINGS TO BE WITHIN 12 INCHES OF CEILING & FLOOR).

(6) KITCHEN RANGE HOOD EXHAUST DUCT TO WALL/CEILING CAP OR ROOF JACK. EXHAUST DUCT SHALL BE 26 GAUGE SHEET METAL WITH SMOOTH INTERIOR SURFACE & ISOLATED FROM REST OF RETURN AIR PLENUM WITH GYPSUM BOARD, BY GENERAL CONTRACTOR. INSTALL PER RANGE HOOD (BY OTHERS) MANUFACTURER'S RECOMMENDATIONS.

(7) OUTSIDE AIR DUCT MIN. 10 FT. IN LENGTH OR SIX FEET WITH ONE ELBOW. MAINTAIN MIN. 10 FT. OF SEPARATION FROM EXHAUST/ VENTS. DUCT CONSTRUCTION SHALL BE MIN. 26 GAUGE SHEET METAL WITHIN RATED ASSEMBLIES OR FLEX DUCT WITHIN NON-RATED CAVITIES.

(8) VENTING DESIGN/INSTALL BY OTHERS.

(9) REFRIGERANT LINES, SIZE & INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO COORDINATE EXACT ROUTING OF REFRIGERANT LINES IN FIELD.

(10) FAU TYPE B FLUE VENT.

KEY NOTES

DENOTES LINED JOIST BAY

DENOTES 9'-3" CEILING UNLESS NOTED OTHERWISE

DENOTES 7'-10" DROP CEILING UNLESS NOTED OTHERWISE

CEILING LEGEND

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.

California Nevada Colorado Maryland

REVISION | DATE

1 1ST PLAN CHECK SUBMITTAL - 01/30/13

ASI #07 - CLIENT REVISIONS - 04/25/14

ASI #10 - LEASING SUBMITTAL - 05/08/14

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

ENLARGED FLOOR PLANS

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER ... A. GARCIA ... Exp date Jun 30 2014 ... MECHANICAL ... STATE OF CALIFORNIA

MR-8

2010-089
JOB NUMBER

AS NOTED
SCALE

ISSUED AS
5/8/2014
DATE

May 12, 2014 - 4:57pm noel.ubiadas
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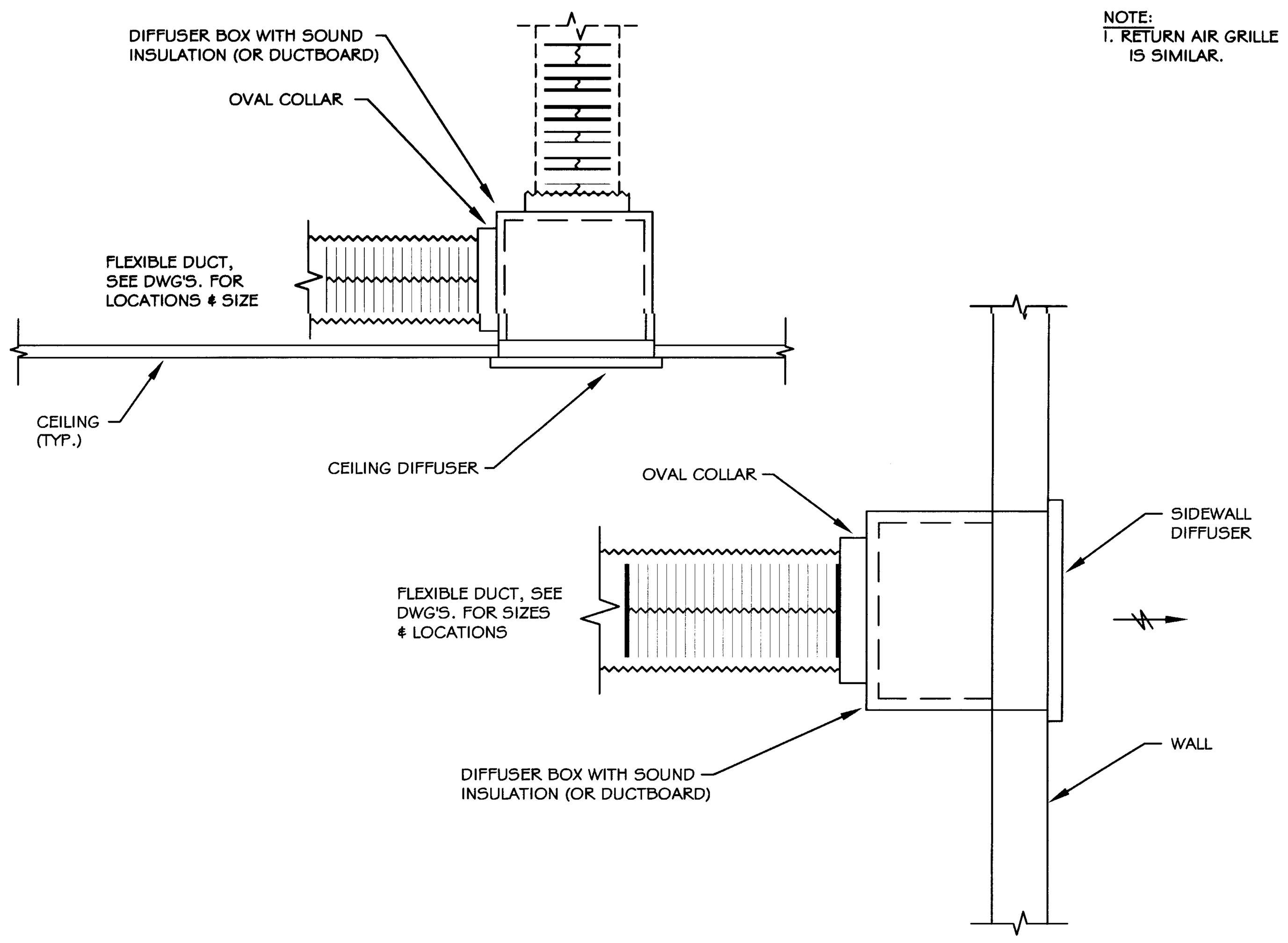
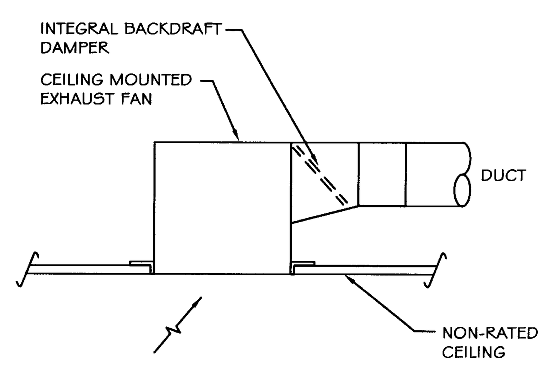
NOTE:
1. RETURN AIR GRILLE IS SIMILAR.



CEILING DIFFUSER & SIDEWALL DIFFUSER

SCALE NONE (2)



CEILING MTD. EXHAUST FAN

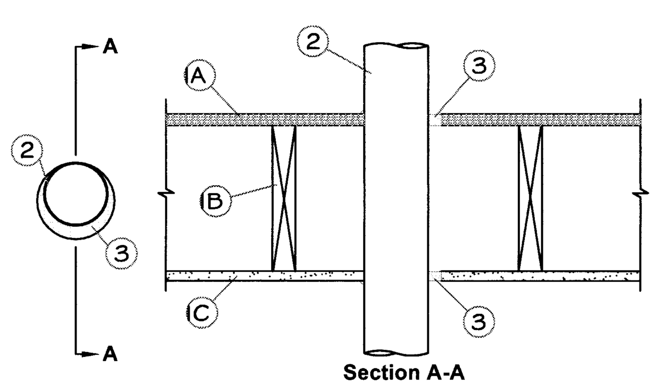
SCALE NONE (2)

-

SCALE NONE (2)

2010 CBC Section 713 PENETRATION FIRESTOP SYSTEM.

Penetration shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479. The system shall have an F rating and a T rating not less than one-hour but not less than the required rating of the floor penetrated. EXCEPTION: Floor penetrations contained and located within the cavity of wall do not require a T rating.



System No.F-C-7014
November 5, 2009
F Rating ---1Hr
T Rating ---1/4 and 1HR (See Item 2)
Specified Technologies INC -- SpecSeal LCI Sealant

1. **Floor-Ceiling Assembly** -- The 1hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory, as summarized below:

   A. **Flooring System** -- Lumber or plywood subfloor with finish floor of lumber, plywood or floor topping mixture* as specified in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. larger than diam of steel duct.

   B. **Wood Joists** -- Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.

   C. **Gypsum Board*** -- Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. larger than diam of steel duct.

1A. **Chase wall**-- (Optional, Not Shown) -- The through penetrant (item 2) may be routed through a 1hr fire rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (item 2). The chase wall shall be constructed of the materials and in the manner specified in the individual u300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs**-- Nom 2 by 4 in., 2 by 6 in. or double nom 2 by 4 in. lumber studs.

   B. **Sole Plate**-- Nom 2 by 4 in., 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly butted. Diam of opening is to be max 1 in. larger than diam of steel pipe.

   C. **Top Plate**-- The double top plate shall consist of two nom 2 by 4 in., two nom 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates tightly butted. Diam of opening is to be max 1 in. larger than diam of steel duct.

   D. **Gypsum Board*** -- Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

2. **Steel Duct**-- One Nom 4 in. diam (or smaller) No. 30 GA (or heavier) steel duct or one nom 10 in. diam (or smaller) no. 28 ga (or heavier) steel duct to be installed either concentrically or eccentrically within the opening. Annular space to be min 0 in. (point contact) to max 1 in.Steel duct to be rigidly supported on both sides of floor-ceiling assembly.

   T rating is 1hr for nom 4 in. diam (or smaller) ducts. T rating is 1/4hr for ducts greater than nom 4 in. diam.

3. **Fill, Void or Cavity Material*** -- Sealant-- Min 3/4 in. thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. thickness of fill material applied within the annulus, flush with bottom surface of ceiling or top plate. Min 1/4 in. diam bead of fill material applied at point contact location on the top surface of floor or chase wall sole plate and at the penetrant/ceiling of chase wall top plate interface.

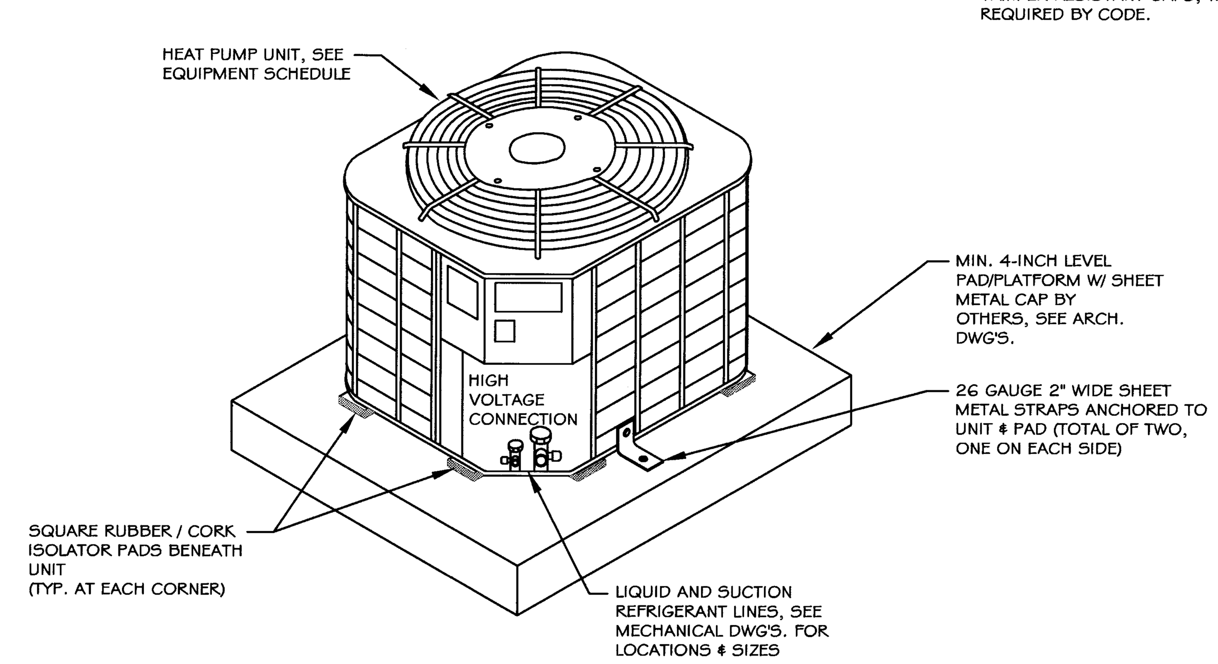
*Bearing the UL Classification Mark

FIRE-STOP (MAX. 4"Ø VENT)

SCALE NONE (2)

CLEARANCE REQUIREMENTS:
48" OVERHEAD
18" BETWEEN UNITS (NO OVERHANG)
36" IN FRONT FOR SERVICE
12" FROM WALL

NOTES:
1. EQUIPMENT SHALL BE PERMANENTLY LABELED INDICATING WHICH AREA IS BEING SERVED.
2. SECURE EQUIPMENT TO PAD / PLATFORM ADEQUATELY.
3. PROVIDE OUTDOOR REFRIGERANT SERVICE PORTS WITH LOCKING TYPE TAMPER-RESISTANT CAPS, WHERE REQUIRED BY CODE.

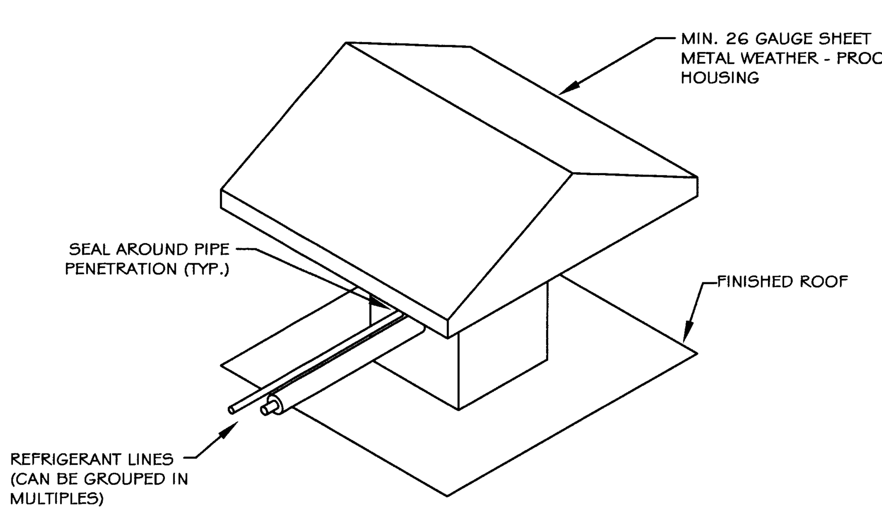


HEAT PUMP

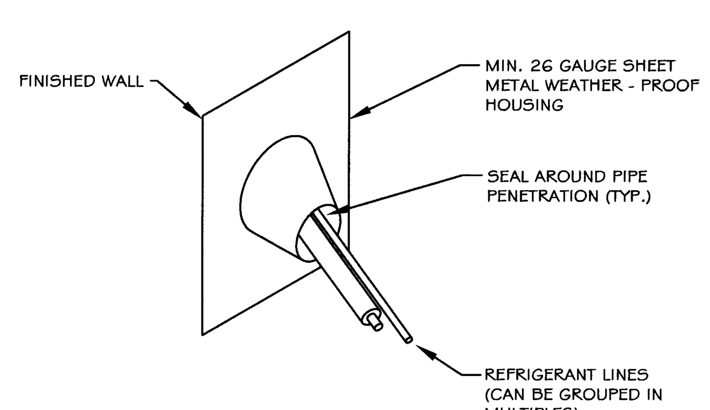
SCALE NONE (2)

-

SCALE NONE (2)



ROOF PENETRATIONS

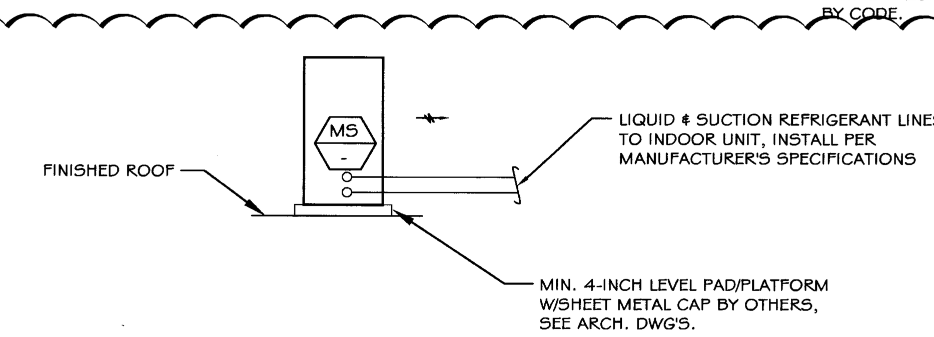


WALL PENETRATIONS

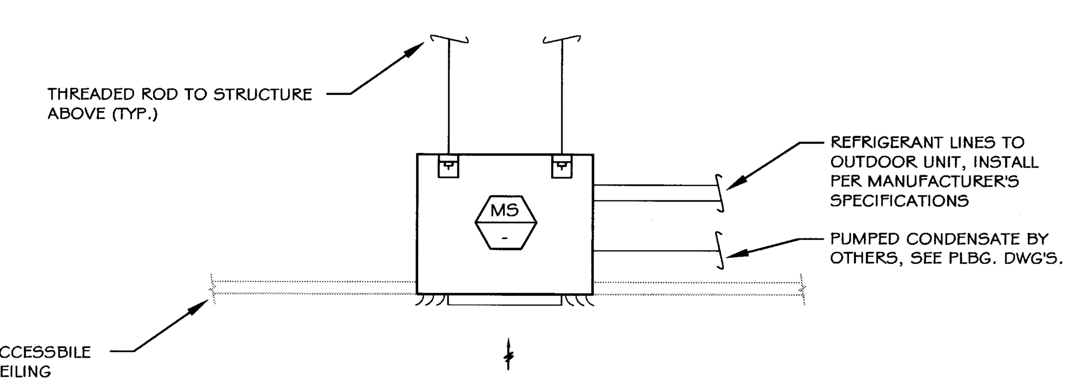
REFRIGERANT LINESET WEATHER-PROOF HOUSING

SCALE NONE (2)

NOTES:
1. EQUIPMENT SHALL BE PERMANENTLY LABELED INDICATING WHICH AREA IS BEING SERVED.
2. SECURE EQUIPMENT TO WALL BRACKET ADEQUATELY.
3. PROVIDE OUTDOOR REFRIGERANT SERVICING PORTS WITH LOCKING TYPE TAMPER-RESISTANT CAPS, WHERE REQUIRED BY CODE.



OUTDOOR UNIT

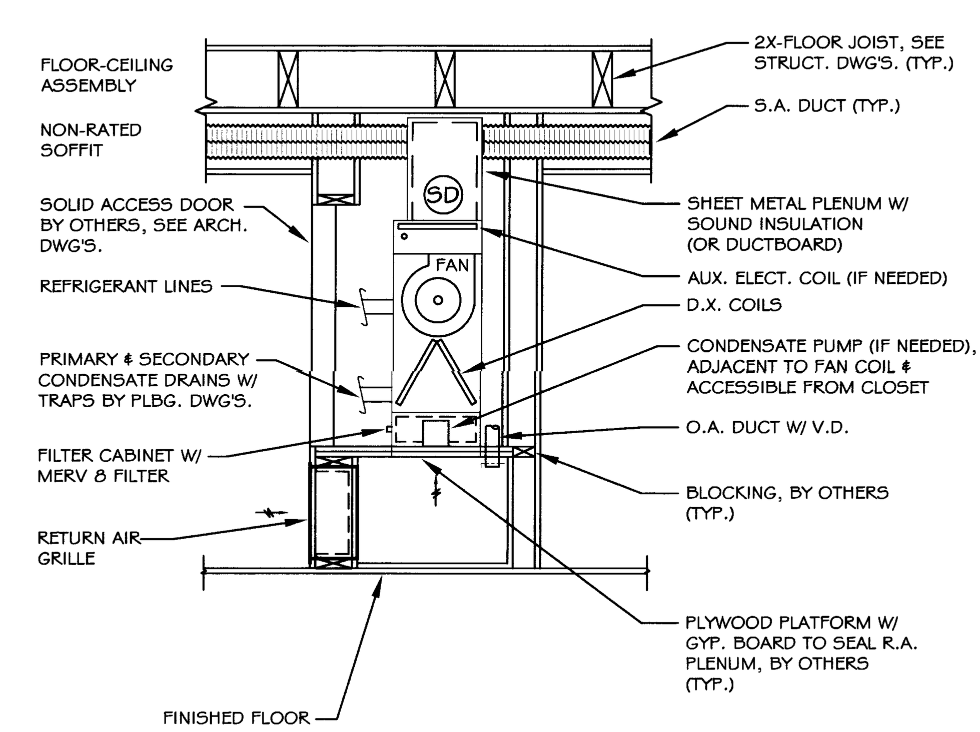


INDOOR UNIT

CASSETTE MINI SPLIT HEAT PUMP

SCALE NONE (2)

NOTES:
1. PROVIDE 1-1/2" SHEET METAL STRAPS FASTENED TO FAN COIL & PLATFORM FOR SEISMIC BRACING (TYP. AT 4 CORNERS OF FAN COIL).



VERTICAL FAN COIL (MERV 8)

SCALE NONE (2)

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.
California Nevada Colorado Maryland

REVISION	DATE
1	1ST PLAN CHECK SUBMITTAL - 01/30/13
9	ASI #07 - CLIENT REVISIONS - 04/25/14
12	ASI #10 - LEASING SUBMITTAL - 05/08/14

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
DETAILS

FOR CONSTRUCTION

MR-11

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5/8/2014
DATE

May 12, 2014 - 4:55pm noeLubiadas
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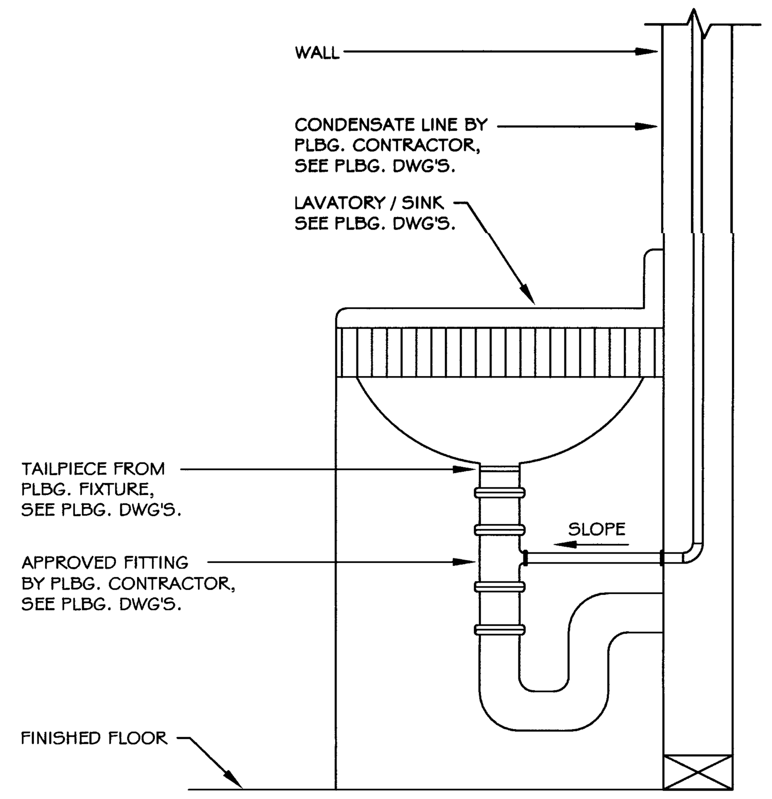
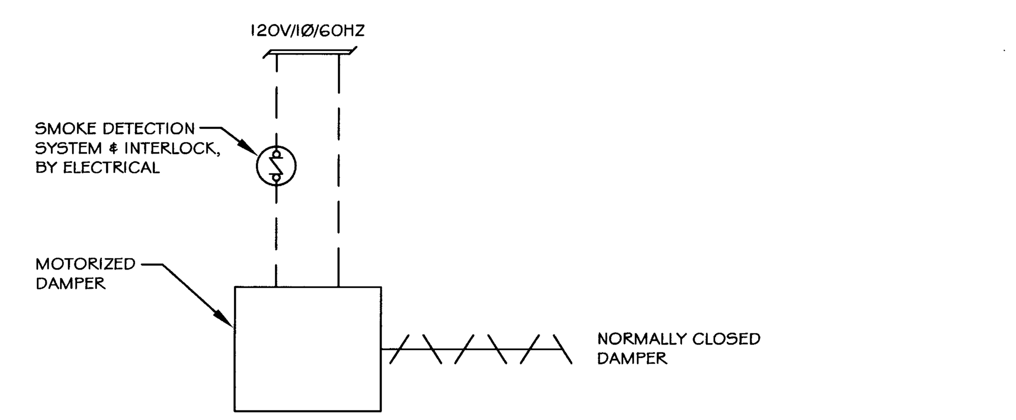


CONDENSATE DRAIN TERMINATION

SCALE NONE (7)

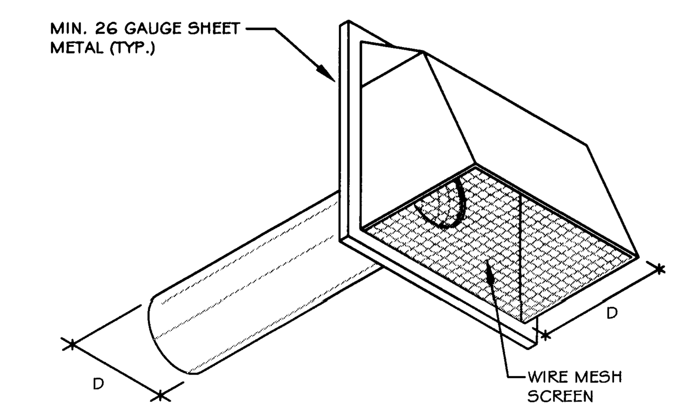
WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL

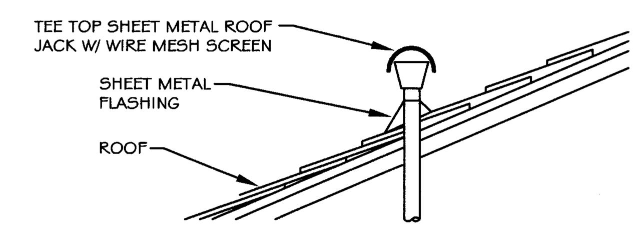


COMBINATION SMOKE & FIRE DAMPER WIRING

SCALE NONE (4)



EYE BROW (WALL JACK)



ROOF JACK

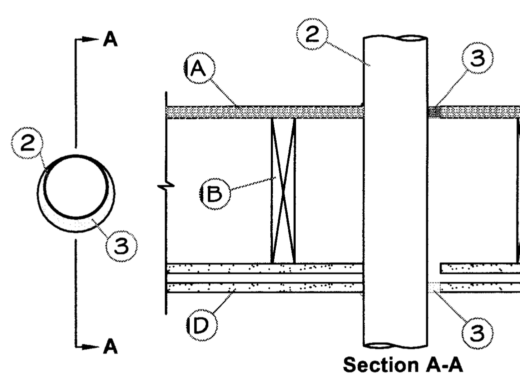
NOTES:
1. TYPICAL FOR EXHAUST & OUTSIDE AIR TERMINATION.
2. EXHAUST TERMINATION MUST BE MIN. 3 FEET AWAY FROM OPENING'S INTO BLDG.
3. OUTSIDE AIR TERMINATION MUST BE MIN. 10 FEET AWAY FROM EXHAUST & PLBG. VENTS

VENT TERMINATION

SCALE NONE (1)

2010 CBC Section 713 PENETRATION FIRESTOP SYSTEM.

Penetration shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479. The system shall have an F rating and a T rating not less than one-hour but not less than the required rating of the floor penetrated. EXCEPTION: Floor penetrations contained and located within the cavity of wall do not require a T rating.



Section A-A

System No.F-C-7019

January 7, 2010
F Rating ---1 and 2 Hr (See Item 1)
T Rating ---1 and 1-1/2 Hr (See Item 1)
L Rating at ambient ---Less than 1 CFM/sq ft
L Rating at 400° F ---Less than 1 CFM/sq ft
Rectorseal -- FS900+ Sealant

1. **Floor-Ceiling Assembly** -- The 1hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The 2hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511 or L536 in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:

   A. **Flooring System** -- Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 6-1/2 in. (165 mm).

   B. **Wood Joists*** -- For 1hr fire-rated floor-ceiling assemblies nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped. For 2hr fire-rated floor-ceiling assemblies, nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped.

   C. **Furring Channels** -- (Not Shown) -- In 2hr fire-rated assemblies, resilient galv steel furring installed perpendicular to wood joists between first and second layers of gypsum board (item 1D). furring channels spaced max 24 in. (610 mm) OC. In 1 hr fire-rated assemblies, resilient galv steel furring installed perpendicular to wood joists between gypsum board and wood joists as specified in the individual Floor-Ceiling Design. Furring channels spaced max 24 in. (610 mm) OC.

   D. **Gypsum Board*** -- Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. First layer of gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Second layer of gypsum board (2 hr fire-rated assembly) screw attached to furring channels as specified in the individual Floor-Ceiling Design. Max diam of ceiling opening is 6-1/2 in. (165 mm)

   The hourly F and T ratings of the firestop system are dependent on the hourly fire rating of the floor-ceiling/chase wall assembly in which it is installed as shown in the following table:

Rating of Assembly, Hr	F Rating, Hr	T Rating, Hr
2	2	1-1/2
1	1	1

1.1 **Chase wall** -- (Not Shown, Optional) -- The through penetrants (item 2) may be routed through a 1 or 2hr fire-rated single, double or staggered wood stud/gypsum board chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance and shall include the following construction features:

   A. **Studs**-- Nom 2 by 8 in. (51 by 203 mm) lumber or double nom 2 by 6 in. (51 by 152 mm) lumber studs.

   B. **Sole Plate**-- Nom 2 by 8 in. (51 by 203) lumber or parallel 2 by 6 in. (51 by 152 mm) lumber plates, tightly butted.

   C. **Top Plate**-- The double top plate shall consist of two nom 2 by 8 in. (51 by 203 mm) lumber plates or two sets of nom 2 by 6 in. (51 by 152 mm) lumber plates tightly butted. Max diam of opening is 6-1/2 in. (165 mm).

   D. **Gypsum Board*** -- Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Designs.

2. **Through Penetrant** -- Nom 6 in. (152 mm) diam (or smaller) by No. 30 MSG (or heavier) steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. The annular space within the firestop system shall be a min 0 in. (point contract) to a max 1/2 in. (13 mm). Steel duct to be rigidly supported on both sides of floor-ceiling assembly.

3. **Fill, Void or Cavity Material*** -- Sealant -- Min 3/4 in. (19 mm) thickness of fill material applied flush with annulus on top surface of floor or sole plate. Min 1/2 in. (13 mm) thickness of fill material applied flush with annulus on bottom surface of ceiling or on bottom surface of lower top plate of chase wall assembly. At point contact, min 3/8 in. (10 mm) diam bead of fill material applied at penetrant/floor or sole plate interface and at penetrant/ceiling or top plate interface.

   RECTORSEAL -- FS900+ Sealant

   +Bearing the UL Listing Mark
   *Bearing the UL Classification Mark

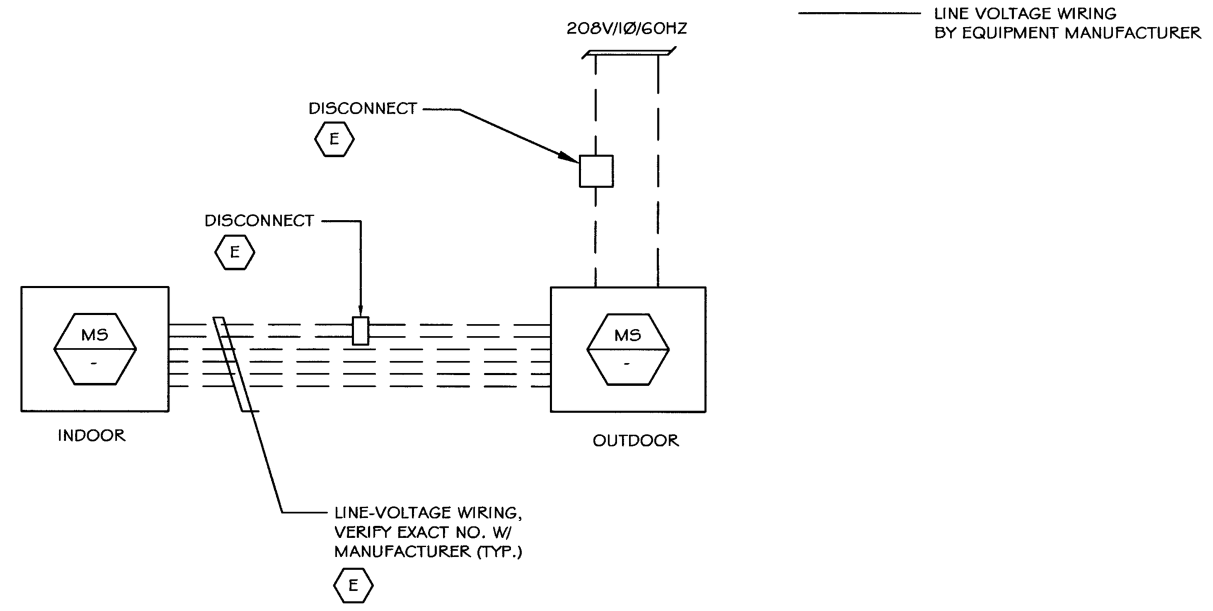
FIRE-STOP (5"Ø & 6"Ø VENTS)

SCALE NONE (8)

2

WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL
— - — LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR
——— LINE VOLTAGE WIRING BY EQUIPMENT MANUFACTURER



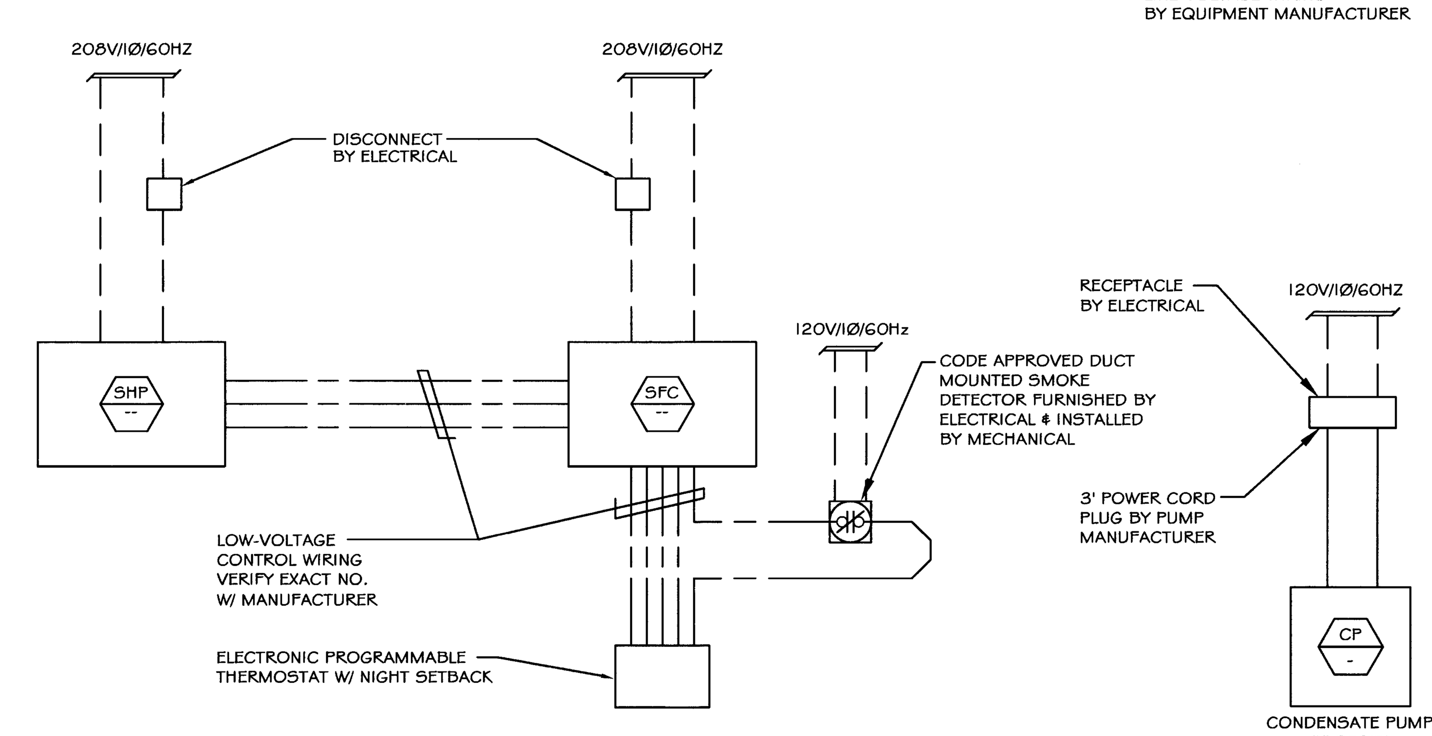
NOTE:
1. PROVIDE WITH WIRELESS REMOTE CONTROLLER.

CASSETTE MINI SPLIT HEAT PUMP WIRING

SCALE NONE (5)

WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL
— - — LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR
——— LINE VOLTAGE WIRING BY EQUIPMENT MANUFACTURER



NOTES:
1. PROVIDE 7-DAY PROGRAMMABLE THERMOSTATS FOR RETAIL, RESTAURANTS AND THEATERS.

SPLIT SYSTEM HEAT PUMP WIRING

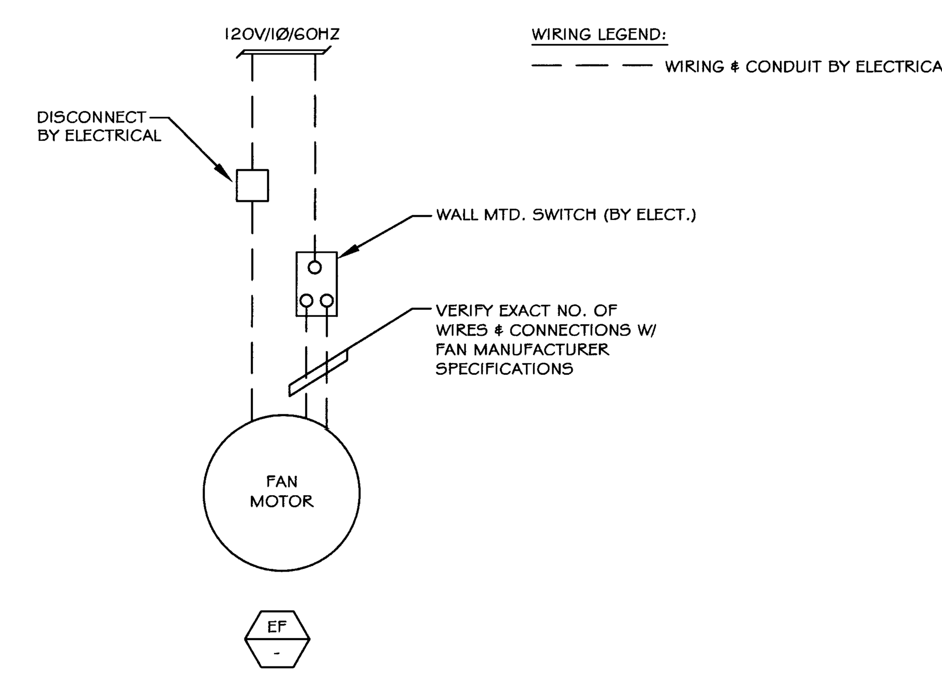
SCALE NONE (2)

-

SCALE NONE (6)

WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL



NOTES:
1. HUMIDITY SENSING FANS SHALL BE WIRED FOR MANUAL (ON/OFF) AND AUTOMATIC (HUMIDITY SENSING) MODES, SEE MANUF. SPECS.
2. PROVIDE "VENTILATION CONTROL" SIGN ABOVE SWITCH WHEN FAN (FOR EXAMPLE BROAN SMART SENSE) ALSO PROVIDES MECHANICAL VENTILATION.

EXHAUST FAN WIRING

SCALE NONE (3)

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.
California Nevada Colorado Maryland

REVISION	DATE
1ST PLAN CHECK SUBMITTAL	01/30/13
ASI #07 - CLIENT REVISIONS	04/25/14
ASI #10 - LEASING SUBMITTAL	05/08/14

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
DETAILS

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
LUIS A. GARCIA
Exp date Jun 30 2014
MECHANICAL
STATE OF CALIFORNIA

MR-12

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5/8/2014
DATE

FIXTURE SCHEDULE NOTES:

1. REFER TO THE PROJECT GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
2. VERIFY THE VOLTAGE OF ALL LIGHTING FIXTURES PRIOR TO SUBMITTING SHOP DRAWINGS AND INSTALLATION.
3. VERIFY THE MOUNTING AND CEILING CONDITIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
4. VERIFY THE COLOR AND FINISH OF ALL SURFACE MOUNTED LIGHTING FIXTURES WITH THE ARCHITECT AND ENGINEER.
5. PROVIDE ALL MOUNTING HARDWARE REQUIRED FOR A COMPLETE AND OPERATIONAL LIGNTING SYSTEM.
6. COORDINATE EMERGENCY LIGHTING FIXTURE LOCATIONS WITH THE ELECTRICAL LIGHTING PLANS PRIOR TO SUBMITTING SHOP DRAWINGS.
7. EXIT LIGHTING SHALL BE PROVIDED WITH EMERGENCY BATTERY UNITS WITH TEST SWITCHES.
8. VERIFY THE COLOR TEMPURATURE OF ALL LAMPS WITH THE ENGINEERING PRIOR TO INSTALLATION.
9. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN THE ELECTRICAL CONTRACT THE SPECIFIED UNIT COSTS NOTED IN THE FIXTURE SCHEDULE AND PROVIDE ALL COSTS TO INSTALL EACH FIXTURE.
10. CONFLICTS BETWEEN THE CATALOG NUMBERS AND FIXTURE DESCRIPTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE BID TIME.
11. COMPACT FLUORESCENT BALLASTS SHALL BE ELECTRONIC AND BE MANUFACTURED BY ADVANCE, ESI, MAGNETEK OR ROBERTSON. HARMONIC CONTENT SHALL NOT EXCEED TWENTY PERCENT (20%). EXTERIOR APPLICATIONS SHALL USE LOW TEMPERATURE BALLASTS FOR ZERO DEGREES FAHENHEIT.
12. BALLASTS SHALL BE HIGH POWER FACTOR RATED.
13. EMERGENCY LIGHTING FIXTURES SHALL BE PROVIDED WITH NINETY (90) MINUTE EMERGENCY BALLASTS AS MANUFACTURED BY BODINE #B50 SERIES FOR 2 TO 8 LAMPS OR BODINE #B84 SERIES FOR COMPACT FLUORESCENT LAMPS. REFER TO THE LIGHTING PLANS FOR CONTROL REQUIREMENTS.

LEASING OFFICE AND FITNESS CENTER

(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
LT-1	NICHE MODERN #OCULO	30W	120V.		(1) G.E. 30W A19 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED LEASING LOBBY	PENDANT
LT-2A	GRAYPANTS #MOON_T8	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2B	GRAYPANTS #DROP_18	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2C	GRAYPANTS #DROP_36	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2D	GRAYPANTS #CLOCHE_24	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2E	GRAYPANTS #SUN	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-3	GRAYPANTS #OHIO_24 SCRAPLIGHTS	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-4	BIG ASS FNAS				OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	CEILING FAN. LOCATED IN FITNESS CENTER	
LT-5	Y LIGHTING #IE-OMI-VESSEL_FL	36W.	277V.		(1) G.E. F32TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	POOL TABLE LIGHTING	SURFACE
LT-6	Y LIGHTING #SPINNING BH1-PENDANT LIGHT	30W	277		(1) G.E. 30W A19 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT.	PENDANT
LT-7	NICHE MODERN #PHAROS, CP-PACK-4	75W	120V.		(1) G.E. 75W OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN TECH LOUNGE	SURFACE
LT-8	BIRCHWOOD LIGHTING # HALEY 125RAS	28W	277V.		(1) G.E. 28WT5 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LINEAR WALL WASHER. LOCATED IN LEASING	WALL
LT-9	EDEN# ONLINE L4000.BK.B1	200W	277V.		(4) G.E. 25W A19 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	TRACK LIGHTING LOCATED IN TECH LOUNGE	TRACK
LT-10	GRAYPANTS #DRUM_18	28W.	277V.		(1) G.E. F28DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN LEASING AGENT	PENDANT
LT-11	MARSET #A631-0 SOHO LARGE OUTDOOR PENDANT	72W	277V.		(1) G.E. FC22/FC40 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN MEZZANINE	PENDANT
LT-12	SYSTEMLUX #REEF2X90 S5229	70W	277V.		(1) G.E. 70W T6 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE WALL SCONCE LOCATED IN MEZZANINE	WALL
LT-13	SYSTEMLUX #INITECHNO SPOT S.3560	50W	277V.		(1) G.E. 50W PAR 20 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	UPLIGHT. LOCATED IN MEZZAINIE	SURFACE
LT-14	TECHLIGHTING #E3SFWW	19W	277W		INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LED WALL WASH. LOCATED IN SOCIAL LOUNGE	WALL
LT-15	GOTHAM LIGHTING #AVF-32TRT	28W.	277V.		(1) G.E. F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECSEED COMPACT FLUORESCENT FIXTURE	SURFACE
LT-16	SELECTED BY OWNER	30W.	277V.		(1) G.E. F28T25 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE MOUNTED FIXTURE LOACTED IN CORRIDOR NEAR LEASING SPACE	SURFACE
LT-17	NORA LIGHTING #NUTP9-LED	4W/FT	120V.		OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	24V. LABEL HIGH OUTPUT LIGHT TAPE. 10 FOOT	COVE
LT-18	DELTA LIGHTING# FEMTOLINE145-6-376-01-500K/1.5W				LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	OUTDOOR RECESSED WALL LIGHT	SURFACE
LT-19	T.B.D.	60W	120V.		LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDAT LOCATED IN LEASING SPACE	SURFACE
LT-20	ELITE LIGHTING #EU-33	60W	120V.		(2) #F14T5/CW OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	UNDER COUTNER CABINET LIGHTING, LOCATED IN LEASING AREA KITCHEN	SURFACE

COMMON LIGHTING FIXTURE SCHEDULE

(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
1	GOTHAM LIGHTING #AFV-26TRT-6AR-MVOLT	28W	277V.		(1) G.E. F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH CLEAR SPECULAR REFLECTOR "ELECTRONIC BALLAST"	SURFACE
2	LIGHTWAY IND. #MERW-A-A-1Q18-3-P9-WAS-MCH	20W	277V.		(1) G.E. F18DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE COMPACT FLUORESCENT WALL SCONCE SATIN NICKLE FINISH, MESH CENTER CAGE AND ELECTRONIC BALLAST	WALL
3	GOTHAM LIGHTING #AFV-32TRT-6AR-MVOLT	36W	277V.		(1) G.E. F32TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT FIXTURE. OFFICE SPACES	RECESSED
4	LITHONIA # AWN-232-MVOLT-GEB10IS-ADD-EL65 WHERE INDICATED AS "EM"	54W	277V.		(2) G.E. F32T8/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	4 FOOT WRAP AROUND FLUORESCENT FIXTURE IN STAIRWAYS	SURFACE
5	LITHONIA # TZ-232-MVOLT-GEB10IS-ADD-EL65 WHERE INDICATED AS "EM"	104W	277V.		(4) G.E. F32T8/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	8 FOOT 2-LAMP ROWS FLUORESCENT FIXTURE WITH WIRE GUARD AND ELECTONIC BALLAST.	SURFACE
6	LITHONIA # Z-23-MVOLT-GEB10IS-ADD-EL65 WHERE INDICATED AS "EM"	54W	277V.		(2) G.E. F32T8/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	4 FOOT 2-LAMP ROWS FLUORESCENT FIXTURE WITH WIRE GUARD AND ELECTONIC BALLAST.	SURFACE
7	LITHONIA # WSQ-42TRT-MD-277-ELDW-PE	45W.	277V.		(1) G.E. F42TBX/4P/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE QUARTER SPHERE COMPACT FLUORESCENT WALL SCONCE WITH INTEGRAL BATTERY PACK AND PHOTOCELL.	WALL
8	B-K LIGHTING # DE-LEDX25-FL-BZP-12-A COMPLETE WITH WEATHERPROOF	25W.	120V.		LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LED AREA FLOOD LIGHT MOUNTED ON TRELLIS WITH REMOTE WEATHERPROOF DRIVER.	SURFACE

UNIT LIGHTING FIXTURE SCHEDULE

(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
A	EFFICIENT LIGHTING # EL-801	36W.	120V.		(2) 18W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE SURFACE MOUNTED DECORATIVE COMPACT FLUORESCENT FIXTURE.	SURFACE CEILING
B	NORA LIGHTING # NHPIC-2642ELAT-NTA97 TRIM	28W.	120V.		(1) G.E. #26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT FIXTURE, CLEAR SPECULAR REFLECTOR, ELECTRONIC BALLAST. HALLWAYS	RECESSED
C	NORA LIGHTING # NHPIC-2642ELAT-NTM46 TRIM	28W.	120V.		(1) G.E. #F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH REGRESSED DROP OPAL LENS, WHITE TRIM, ELECTRONIC BALLAST, IC- AND AT-RATED., BATHROOM.	RECESSED
D	SUNSTARS LIGHTING # 3002-GU313	45W.	120V.		(3) 13W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE WALL MOUNTED INCANDESCENT VANITY LIGHT CENTERED OVER BATHROOM MIRROR.	SURFACE WALL
E	NORA LIGHTING # NHPIC-2642ELAT-NTA97 TRIM	28W.	120V.		(1) G.E. #F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT FIXTURE, CLEAR SPECULAR REFLECTOR, ELECTRONIC BALLAST. HALLWAYS	RECESSED
F-C	EFFICIENT LIGHTING # EL-801	36W.	120V.,		(2) 18W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE CEILING MOUNTED DECORATIVE COMPACT FLUORESCENT FIXTURE FOR CLOSET	SURFACE CEILING
F-L	UTOPIA LIGHTING # WB-217-120	34W.	120V.,		(2) G.E. #F17T8 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE CEILING MOUNTED DECORATIVE COMPACT FLUORESCENT FIXTURE FOR LAUNDRY	SURFACE CEILING
G	ACCESS LIGHTING #52204BS	200W.	120V.		(4) G.E. #50W MR16 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE CEILING MOUNTED RAIL-STYLE TRACK LIGHTING FIXTURE WITH FIVE HEADS OF BRUSHED NICKEL FINISH AND WHITE SHADES., DINING ROOM	SURFACE
H	NORA LIGHTING # NHPIC-2642ELAT-NTM46 TRIM	28W.	120V.		(1) G.E. #F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH REGRESSED DROP OPAL LENS, WHITE TRIM, ELECTRONIC BALLAST, IC- AND AT-RATED.	RECESSED
J	ACCESS LIGHTING #882-65CUST	18W.	120V.		(1) G.E. #F18DTT OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT MOUNTED COMPACT FLUORESCENT FIXTURE WITH SATIN NICKEL FINISH, ELECTRONIC BALLAST.	SURFACE PENDANT
K	LITE RITE # UC-LED-WHT	12W	120V.		LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	3 FOOT SURFACE MOUNTED UNDERCABINET LIGHTING	UNDERCABINET
L	ACCESS #20445	26W.	120V.		(2) 13W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE SURFACE MOUNTED WALL FIXTURE. LOCATED ON STAIRS.	SURFACE WALL

MILL CREEK SITE LIGHTING FIXTURE SCHEDULE

(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
SA	COLE LIGHTING #F2153-26-277-EB-W-J	28W	277V.		(1) G.E. F26DBX OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT STEP LIGHT WITH GLASS FACEPLATE, WET LOCATION LISTING, BACK J-BOX AND ELECTRONIC BALLAST.	RECESSED
SB	TUBE LIGHTING PRODUCTS SERIES BPS 307 - LED/WW - F - BK-8 WITH ALL POWER SUPPLIES AND CABLES	1.0W/FT.	120V.		(2) .5W LED / FT. (INCLUDED) OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	WARM WHITE STRING LIGHTING W/ FROSTED GLOBE, BLACK CABLE. PROVIDE TWO (2) 100 WATT POWER SUPPLIES, ONE AT EACH END, FOR A MAX. RUN OF 80FT. PROVIDE CABLE FOR MTG. (NOT INCLUDED WITH FIXT.)	STRING
SC	(4) BK #DE-LED-X21-FL-SAP-09-A MTD. ON (2) PM2D-TS-30-2150E-120-SC DUAL TREE STRAPS	15W.	120V.		INCLUDED W/FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	(4) LED TREE UPLIGHT MTD. ON (2) PM2D DRIVERS AND ATTACHED TO NYLON TREE STRAP WITH STAINLESS STEEL SAFETY CABLE. TWO UPLIGHT FIXTURES AND TWO DOWNLIGHT FIXTURES.	SURFACE ON TREE
SD	BK LIGHTING # DE-LED-X21-FL-BLP-09-A MTD. ON # HP2-D15-MT DRIVER HOUSING	15W.	120V.		INCLUDED W/FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LED TREE UPLIGHT, BLACK FINISH, MOUNTED ON RECESSED DRIVER HOUSING.	IN GRADE
SE	HADCO #R830-H-42F-H	46W	277V.		(1) G.E. F42TBX/SPX30/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	COMPACT FLUORESCENT BOLLARD FIXTURE, BRONZE FINISH, ELECTRONIC BALLAST.	GROUND
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
1720 EAST GARRY AVE., SUITE 114
SANTA ANA, CALIFORNIA 92705
(949) 756-0807 | FAX: (949) 756-0816

REGISTERED PROFESSIONAL ENGINEER
RANDALL V. MOSS
No. E13453
Exp. 09/30/14
ELECTRICAL
STATE OF CALIFORNIA

THOMAS P. COX: ARCHITECTS, INC.
19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
LOS ANGELES, CA 90017
PHONE 213 553-1100

REVISION

A	1st Plan Check	01/30/2013	11	A.S.I. #9 05/07/2014
B	2nd Plan Check	02/28/2013	12	LEASING REVISION 05/08/2014
C	3rd Plan Check	04/15/2013		
3	A.S.I.#1 I.D. Coord..	07/11/2013		
4	A.S.I.#2 Site Coord..	07/12/2013		
5	Unit Coordination	03/14/2014		
9	A.S.I. #7	04/25/2014		

CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
Preliminary Lighting Fixture Schedule

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

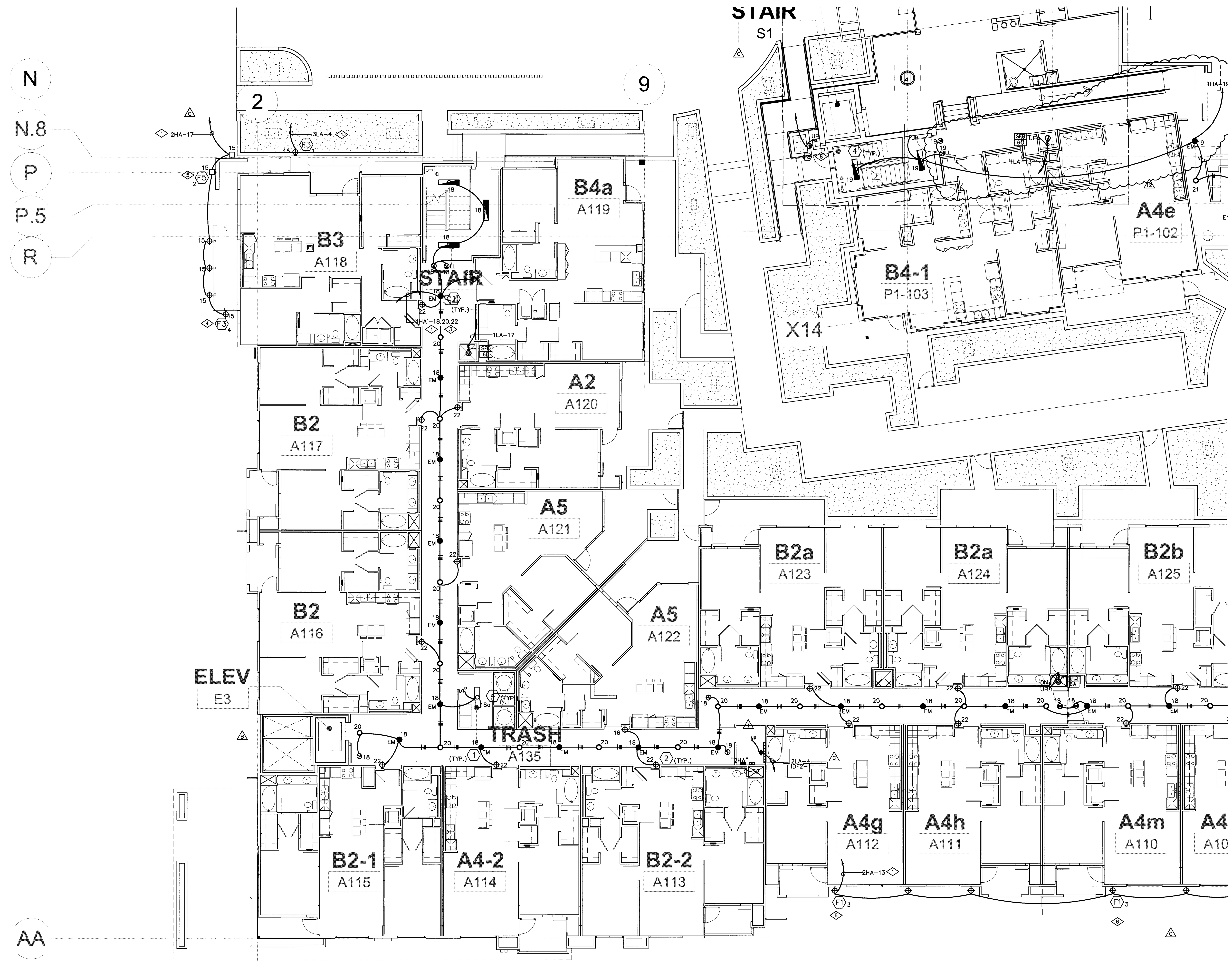
E1.1

1125-00
JOB NUMBER

AS NOTED
SCALE

LEASING REVISION
ISSUED AS

05.08.14
DATE



1 BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 ELECTRICAL PLAN - SEGMENT A
1/8" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. LIGHTING CIRCUITS SHALL ROUTE THROUGH RESPECTIVE LIGHTING CONTROL PANEL.
4. ALL LIGHTING CIRCIT CONDUCTORS SHOWN SHALL BE #10 AWG UNO.
5. FIELD VERIFY ALL EXIT LIGHT ARROW DIRECTIONS, EXIT LIGHT ARROW SHALL PONT TO THE NEAREST EXIT.

ELECTRICAL PLAN KEYNOTES:

1. ROUTE LIGHTING CIRCUITS THROUGH LIGHTING CONTROL PANEL.
2. FULL WIDTH x 8 FT. HIGH x 3/4" THK. PLYWOOD BACKBOARD PER IDF CLOSET. REFER TO SHEET E8.1 FOR ADDITIONAL INFORMATION.
3. PROVIDE AN ADDITIONAL "HOT" CIRCUIT CONDUCTOR ROUTED AROUND L.C.P. RELAY TO MAINTAIN CONSTANT POWER TO THE INTEGRAL BATTERY PACKS, ENTIRE RUNS, CIRCUIT EXIT SIGNS AND BATTERY CHARGERS TO THIS CONSTANT HOT CONDUCTOR.
4. SURFACE MOUNTED LED ACCENT UPLIGHT FIXTURE. REQUIRED J-BOX TO BE MOUNTED AT THE BOTTOM OF HORIZONTAL SLOTS.
5. SURFACE MOUNTED METAL HALIDE UP / DOWN LIGHT. REQUIRED RECESSED J-BOX TO BE MOUNTED @ + 18" A.F.F. TYP.
6. WALL MOUNTED LED ACCENT UPLIGHT. REQUIRED RECESSED JUNCTION BOX FOR FIXTURE TO BE LOCATED @ +6" ABOVE PODIOM T.O.C. TYP.
7. SURFACE MOUNTED VERITCALLY ORIENTED LINEAR COVE FLUORESCENT. (TO BE CONCEALED).

THOMAS P. COX: ARCHITECTS, INC.
19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
LOS ANGELES, CA 90017
PHONE 213 553-1100

REVISION

A	1st Plan Check	01/30/2013	
B	2nd Plan Check	02/28/2013	
C	3rd Plan Check	04/15/2013	
3	A.S.I. #1 I.D. Coord.	07/11/2013	
4	A.S.I. #2 Site Coord.	07/12/2013	
5	Unit Coordination	03/14/2014	
6	A.S.I. #7	04/25/2014	
11	A.S.I. #9	05/07/2014	
12	LEASING REVISION	05/08/2014	

CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 ELECTRICAL PLAN - SEGMENT A
FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
No. E13453
Exp. 06/30/14
ELECTRICAL
STATE OF CALIFORNIA

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
SANTA ANA, CALIFORNIA
(949) 756-0807 | FAX: (949) 756-0816

E1.12A

1125-00
JOB NUMBER

AS NOTED
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05.08.14
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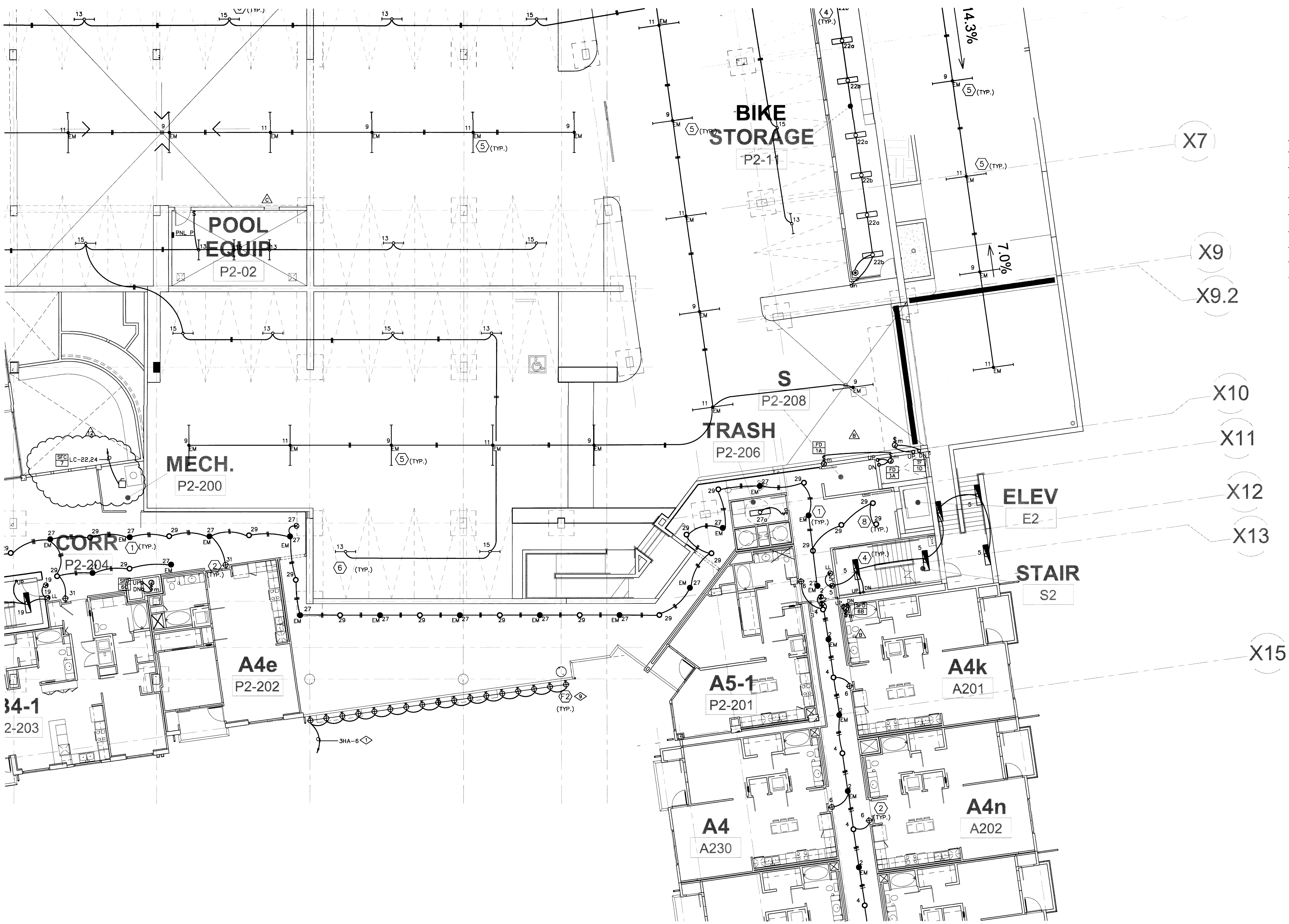

1 Bldg. "A" Level 2 & Garage Level P2 Electrical Floor Plan - Segment C
1/8" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. LIGHTIING CIRCUITS SHALL ROUTE THROUGH RESPECTIVE LIGHTING CONTROL PANEL.
4. ALL LIGHTING CIRCIT CONDUCTORS SHOWN SHALL BE #10 AWG UNO.
5. FIELD VERIFY ALL EXIT LIGHT ARROW DIRECTIONS, EXIT LIGHT ARROW SHALL PONT TO THE NEAREST EXIT.

ELECTRICAL PLAN KEYNOTES:

1 ROUTE LIGHTING CIRCITS THROUGH LIGHTING CONTROL PANEL.
2 FULL WIDTH x 8 FT. HIGH x 3/4" THK. PLYWOOD BACKBOARD PER IDF CLOSET. REFER TO SHEET E8.1 FOR ADDITIONAL INFORMATION.
3 PROVIDE AN ADDITIONAL "HOT" CIRCUIT CONDUCTOR ROUTED AROUND L.C.P. RELAY TO MAINTAIN CONSTANT POWER TO THE INTEGRAL BATTERY PACKS, ENTIRE RUNS, CIRCUIT EXIT SIGNS AND BATTERY CHARGERS TO THIS CONSTANT HOT CONDUCTOR.
4 ARM MOUNTED LINEAR FLUORESCENT UPLIGHT. FIXTURE TO BE MOUNTED ABOVE CANOPY.
5 ARM MOUNTED LINEAR FLUORESCENT UPLIGHT. FIXTURE TO BE MOUNTED AT BOTTOM OF SLOTS.
6 FOR FIXTURE TO BE LOCATED @ +6" ABOVE LEVEL 2 T.O.C. TYP.
7 FOR FIXTURE TO BE LOCATED @ +2'-0" ABOVE LEVEL 2 T.O.C. TYP.
8 SURFACE MOUNTED VERTICALLY ORIENTED LINEAR FLUORESCENT COVE LIGHT (TO BE CONCEALED).
9 ARM MOUNTED LINEAR FLUORESCENT UPLIGHT (TYP.).

THOMAS P. COX: ARCHITECTS, INC.
19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
LOS ANGELES, CA 90017
PHONE 213 553-1100

REVISION

1	1st Plan Check	01/30/2013
2	2nd Plan Check	02/28/2013
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CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
Bldg "A" Level 2 & Gargae Level P2
Electrical Floor Plan - Segment C

FOR CONSTRUCTION

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RVM ENGINEERING, INC.

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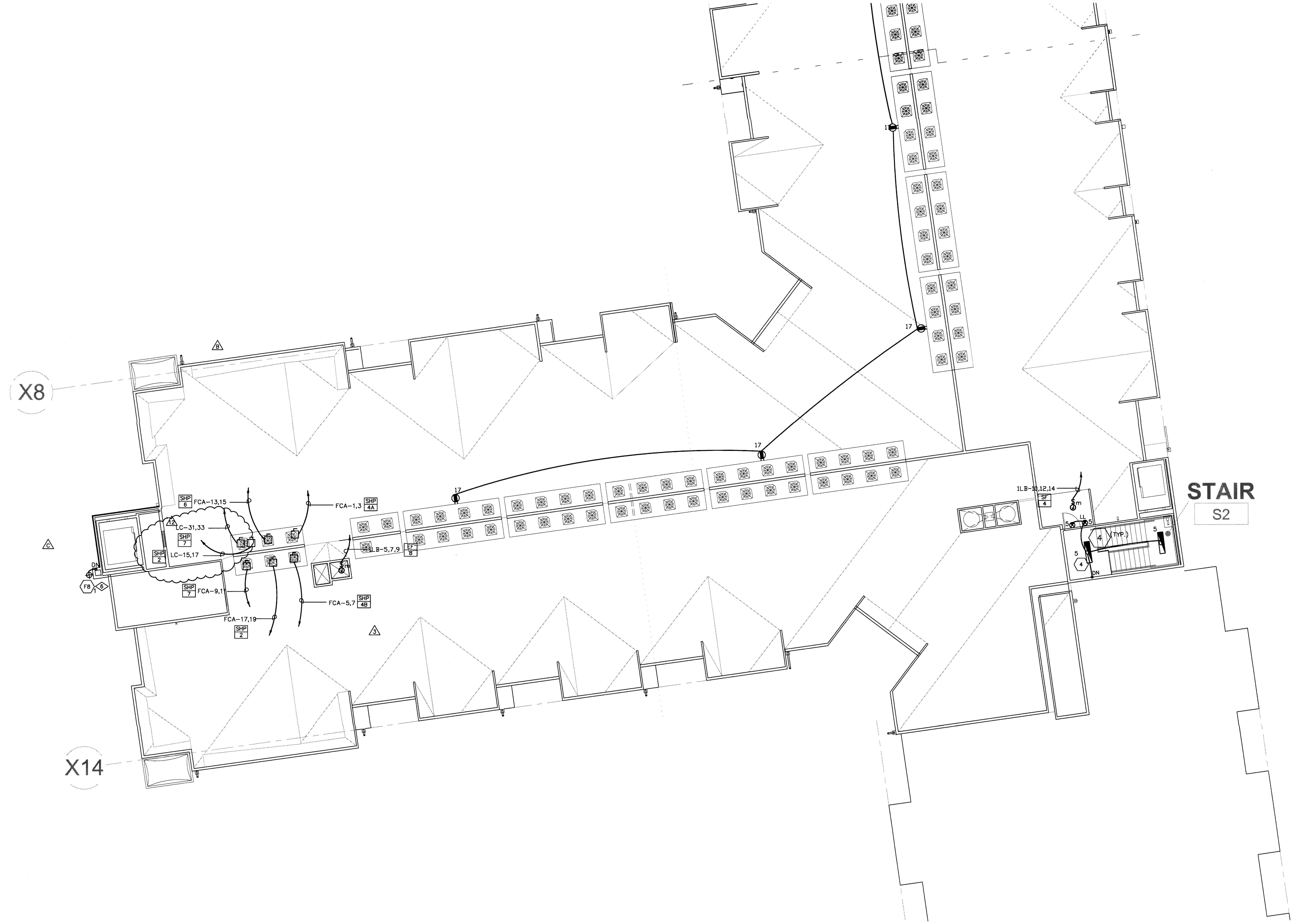

1 Bldg. "B" Low Roof Electrical Floor Plan - Segment C
1/8" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

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5. FIELD VERIFY ALL EXIT LIGHT ARROW DIRECTIONS, EXIT LIGHT ARROW SHALL PONT TO THE NEAREST EXIT.

ELECTRICAL PLAN KEYNOTES:

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1 SURFACE MOUNTED VERTICALLY ORIENTED LINEAR FLUORESCENT COVE LIGHT TO BE CONCEALED (TYP)

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CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
Bldg "B" Low Roof Electrical Plan - Segment C

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REGISTERED PROFESSIONAL ENGINEER
RANDALL V. MOSS
No. E13453
Exp. 09/30/14
ELECTRICAL
STATE OF CALIFORNIA

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
1720 EAST GARRY AVE., SUITE 114
SANTA ANA, CALIFORNIA 92705
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INDOOR LIGHTING POWER ALLOWANCE — LTG-3C

Project Name: Crown Cabot Leasing / Fitness — Date: 5/9/2013

ALLOWED LIGHTING POWER (Chose One Method)

A Separate LTG-3C must be filled out for Conditioned and Unconditioned Spaces. Indoor Lighting Power Allowances listed on this page are only for: ☒ CONDITIONED spaces ☐ UNCONDITIONED spaces

COMPLETE BUILDING METHOD

BUILDING CATEGORY (From §146 Table 146-E)	WATTS PER (ft^2)	X	COMPLETE BLDG. AREA	=	ALLOWED WATTS
	TOTALS				
			AREA		WATTS

AREA CATEGORY METHOD – Part A

A: AREA CATEGORY (From §146 Table 146-F)	B: WATTS PER (ft^2)	X	C: AREA (ft^2)	=	D: ALLOWED WATTS
Server Room	1.0		60		60
Leasing Office	0.9		1,500		1,350
Office Space	1.1		300		330
Rest Rooms / Storage	0.6		150		90
Kitchen	1.6		250		400
Tech Lounge	1.2		500		600
Yoga / Fitness	1.0		1,495		1,495
Multi-Purpose Area	1.4		1,200		1,680
Sum of Additional Allowed Watts from Area Category Method – Part B (from table below)					
	TOTALS		5,312		6,005
			AREA		WATTS

AREA CATEGORY METHOD – Part B — Additional Wattage Allowance (from Table 146-F Footnotes)

A: Primary Function	B: Sq Ft	C[1]: Additional Watts Per ft^2 Allowed	D: Wattage Allowance (B x C)	E: Description(s) and Quantity of Special Luminaire[2] Types in each Primary Function Area	F: Total Design Watts	G: ALLOWED WATTS Smaller of D or F
				TOTALS – Enter into Area Category Method – Part A (table above)		

1. Additional watts available only when allowed according to the footnotes on bottom of Table 146-F for chandelier or sconce; art, craft, assembly or manufacturing specialized task work; precision commercial/ industrial work; or lab specialized task work.
2. Special luminaires are light fixtures described in the Table 146-F Footnotes that are subject to an additional wattage allowance.

TAILORED METHOD

Total Allowed Watts using the Tailored Method taken from LTG-4C (Page 1 of 4) Row 3

The indoor lighting power allowance using the Tailored Method of compliance shall be determined using the LTG-4C set of forms. A separate set of LTG-4C forms shall be filled out for CONDITIONED and UNCONDITIONED spaces

CERTIFICATE OF COMPLIANCE (Page 4 of 4) LTG-1C

Project Name: Crown Cabot Leasing / Fitness — Date: 5/9/2013

Conditioned and Unconditioned space Lighting must not be combined for compliance

Indoor Lighting Power for Conditioned Spaces			Indoor Lighting Power for Unconditioned Spaces		
		Watts			Watts
Installed Lighting (from Conditioned LTG-1C Page 2)		5,975	**Installed** Lighting (from Unconditioned LTG-1C Page 2)		
Lighting Control Credit Conditioned Spaces (from LTG-2C)	-		Lighting Control Credit Unconditioned Spaces (from LTG-2C)	-	
Adjusted **Installed** Lighting Power	=		Adjusted **Installed** Lighting Power	=	
Complies if **Installed** ≤ **Allowed**		↕	Complies if **Installed** ≤ **Allowed**		↕
Allowed Lighting Power Conditioned Spaces (from LTG-3C)		6,005	**Allowed** Lighting Power Unconditioned Spaces (from LTG-3C)		

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, LTG-2A. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. ***Forms can be grouped by type of Luminaire controlled.***

Enforcement Agency:

Systems Acceptance. *Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements.*
The LTG-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the LTG-2A for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

Luminaires Controlled				LTG-2A
Equipment Requiring Testing	Description	Number of like Controls	Location	Controls and Sensors and Automatic Daylighting Controls Acceptance
Lighting Control Panels	LCP	2	Electrical Room	☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐
				☐

Certificate of Compliance (Page 3 of 4) OLTG-1C

Project Name: Crown Cabot Site Plan — Date: 07/15/2013

A. OUTDOOR LIGHTING ZONE

OUTDOOR LIGHTING ZONE: ☐ OLZ 1 ☐ OLZ 2 ☒ OLZ 3 ☐ OLZ 4

Is the Outdoor Lighting Zone: ☐ Default in accordance with §10-114, or ☐ Amended by JHA

Complete the information below if the default Outdoor Lighting Zone has been amended by the local jurisdiction having authority (JHA):

- ☐ The site is a government designated park, recreation area, wildlife preserve, or portion thereof, and has been designated as LZ2 or LZ3, in accordance with Table 10-114-A, because the site is contained within such a zone.
- ☐ The local jurisdiction having authority has officially adopted a change to the State Default Lighting Zone and has notified the Energy Commission by providing the materials required in §10-114(d) to the Executive Director.
- ☐ The adopted change is posted on the Energy Commission website.

B. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Are additional lighting power allowances for ordinance in Table 147-C used? ☐ Yes ☒ No

Complete the information below if additional lighting power allowances for ordinance requirements are used:

- ☐ The local jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.
- ☐ The local jurisdiction having authority which adopted specific outdoor light levels and has notified the Commission by providing the following materials required §10-114(f) to the Executive Director.

C. ACCEPTANCE FORMS

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, LTG-2A. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. ***Forms can be grouped by type of Luminaire controlled.***

Enforcement Agency:

Systems Acceptance. *Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements.*
The LTG-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the LTG-2A for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

	Luminaires Controlled			Certificate of Acceptance OLTG-2A[1]
Equipment Requiring Testing	Description	Number of Like Controls	Location	Outdoor Lighting Acceptance Tests
Lighting Control Panel	LCP	2	Electrical Room	

1. Insert: **OMS** for Outdoor Motion Sensor; **OLSC** for Outdoor Lighting Shutoff Controls; **OP** for Outdoor Photocontrol; **ATS** for Astronomical Time Switch; and, **STS** for Standard (non-astronomical) Time Switch acceptance.

CERTIFICATE OF COMPLIANCE (Page 2 of 4) LTG-1C

INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

Project Name: Crown Cabot Leasing — Date: 5/9/2013

Installation Certificate, LTG-1-INST (Retain a copy and verify form is completed and signed.) ☐ **Field Inspector**

Certificate of Acceptance, LTG-2A (Retain a copy and verify form is completed and signed.) ☐ **Field Inspector**

A separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces Installed Lighting Power listed on this Lighting Schedule is only for: ☒ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**

☒ *The actual indoor lighting power listed below includes all installed permanent and portable lighting systems in accordance with §146(a)*

☐ *Only for offices: Up to the first 0.2 watts per square foot of portable lighting shall not be required to be included in the calculation of actual indoor lighting power density in accordance with the Exception to §146(a). All portable lighting in excess of 0.2 watts per square foot is totaled below.*

A: Name or Item Tag	B: Complete Luminaire Description (i.e, 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast)	C	D: Watts per Luminaire[1]	E: CEC Default from NA8	E: According to §130 (d or e)	F: Number of Luminaires	G: Installed Watts (D x F)	H: Field Inspector[2] Pass	H: Fail
				☐	☐			☐	☐
LT-2a	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	☒	☐	3	84	☐	☐
LT-2b	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	☒	☐	1	28	☐	☐
LT-2c	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	☒	☐	1	28	☐	☐
LT-2d	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	☒	☐	1	28	☐	☐
LT-2e	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	☒	☐	1	28	☐	☐
LT-3	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	☒	☐	2	56	☐	☐
LT-5	T5HO, Pendant, Electronic Ballast		62	☒	☐	1	62	☐	☐
LT-6	(1) 30W., Inc. Pendant, Dimming		30	☒	☐	4	120	☐	☐
LT-7	(1) 75W., Inc. Pendant, Dimming		75	☒	☐	1	75	☐	☐
LT-8	T5, Wall Wash, Electronic Ballast		30	☒	☐	9	270	☐	☐
LT-9	45W, Per Linear Foot,Track Lighting,		180	☒	☐	2	360	☐	☐
				☒	☐			☐	☐
LT-14	(1) 30W Halogen, Wall Wash		30	☒	☐	6	180	☐	☐
LT-16	(1) 32T8, Fluorescent, Electronic Ballast		36	☒	☐	9	324	☐	☐
LT-15	(1) 28W., C.F. Down Light, Electronic Ballast		28	☒	☐	144	4,032	☐	☐
LT-18	(4) 15W LED		60	☐	☐	5	300	☐	☐
					INSTALLED WATTS PAGE TOTAL:		5,975		

Building total number of pages: 1 — Installed Watts Building Total (Sum of all pages): 5,975 — Enter into LTG-1C Page 4 of 4

1. *Wattage shall be determined according to Section 130(d and e). Wattage shall be rating of light fixture, not rating of bulb.*
2. *If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.*

CERTIFICATE OF COMPLIANCE (Page 1 of 4) LTG-1C

Project Name: Crown Cabot Leasing — Date: 5/9/2013

Project Address: Laguna Niguel, CA — Climate Zone: — Building CFA: 6,005 — Unconditioned Floor Area:

General Information

Building Type:	☒ Nonresidential	☐ High-Rise Residential	☐ Hotel/Motel
☐ Schools	☐ Relocatable Public Schools	☒ Conditioned Spaces	☐ Unconditioned Spaces
Phase of Construction:	☐ New Construction	☐ Addition	☒ Alteration
Method of Compliance:	☒ Complete Building	☐ Area Category	☐ Tailored

Documentation Author's Declaration Statement

- I certify that this Certificate of Compliance documentation is accurate and complete.

Name: Randall V. Moss, P.E. — Signature:
Company: RVM Engineering, Inc. — Date: 5/9/20136
Address: 1720 E. Garry Ave., Suite 114 — If applicable: CEA # CEPE #
City/State/Zip: Santa Ana, California 92705 — Phone: 949.756.0807

Principal Lighting Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name: Randall V. Moss, P.E. — Signature:
Company: RVM Engineering, Inc. — Phone: 949.756.0807
Address: 1720 E. Garry Ave., Suite 114 — License #: E13453
City/State/Zip: Santa Ana, California 92705 — Date: 09/30/14

Lighting Mandatory Measures
Indicate location on building plans of Mandatory Measures Note Block: ______

LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.

☒	LTG-1C Pages 1 through 4	Certificate of Compliance. All Pages required on plans for all submittals.
☐	LTG-2C	Lighting Controls Credit Worksheet
☒	LTG-3C	Indoor Lighting Power Allowance
☐	LTG-4C Pages 1 through 4	Tailored Method Worksheet
☐	LTG-5C Pages 1 and 2	Line Voltage Track Lighting Worksheet

REGISTERED PROFESSIONAL ENGINEER — RANDALL V. MOSS — No. E13453 — Exp. 09/30/14 — ELECTRICAL — STATE OF CALIFORNIA

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CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS: Title 24 Leasing & Fitness Centers

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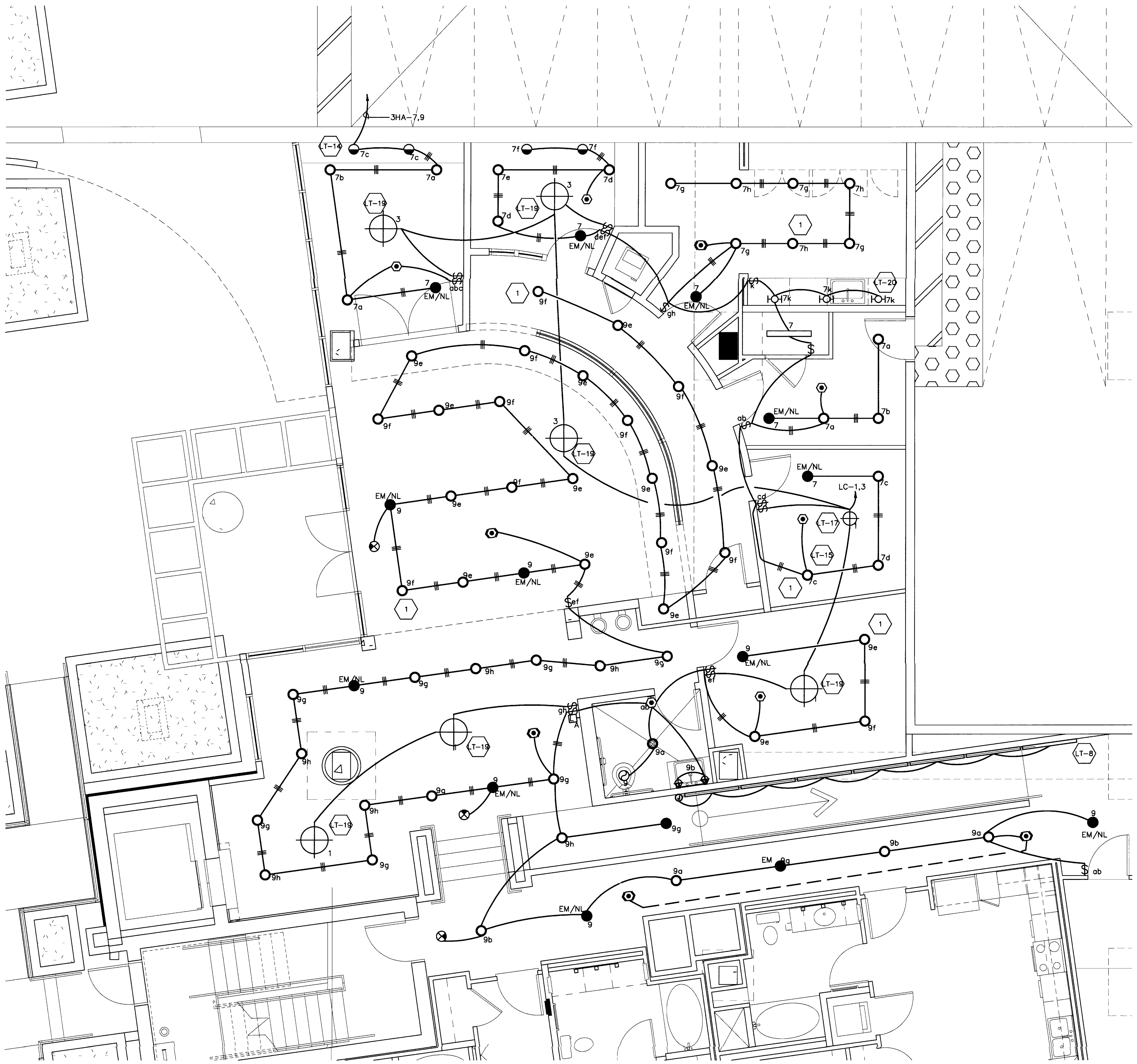

LEASING OFFICE LIGHTING PLAN - PODIUM LEVEL

1/4"=1'-0"

LIGHTING PLAN GENERAL NOTES:

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2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE
3. ALL LIGHTING FIXTURES DEVOTED AS "EM" AND/OR "NL" SHALL BE PROVIDED WITH A CONSTANT "HOT" CIRCUIT FOR CHARGING THE INTEGRAL BATTERY PACK. 12

LIGHTING PLAN SPECIFIC NOTES:

1 ROUTE THROUGHT LIGHTING CONTROL PNAEL.

TCA
THOMAS P. COX: ARCHITECTS, INC.
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CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING OFFICE LIGHTING PLAN - PODIUM LEVEL

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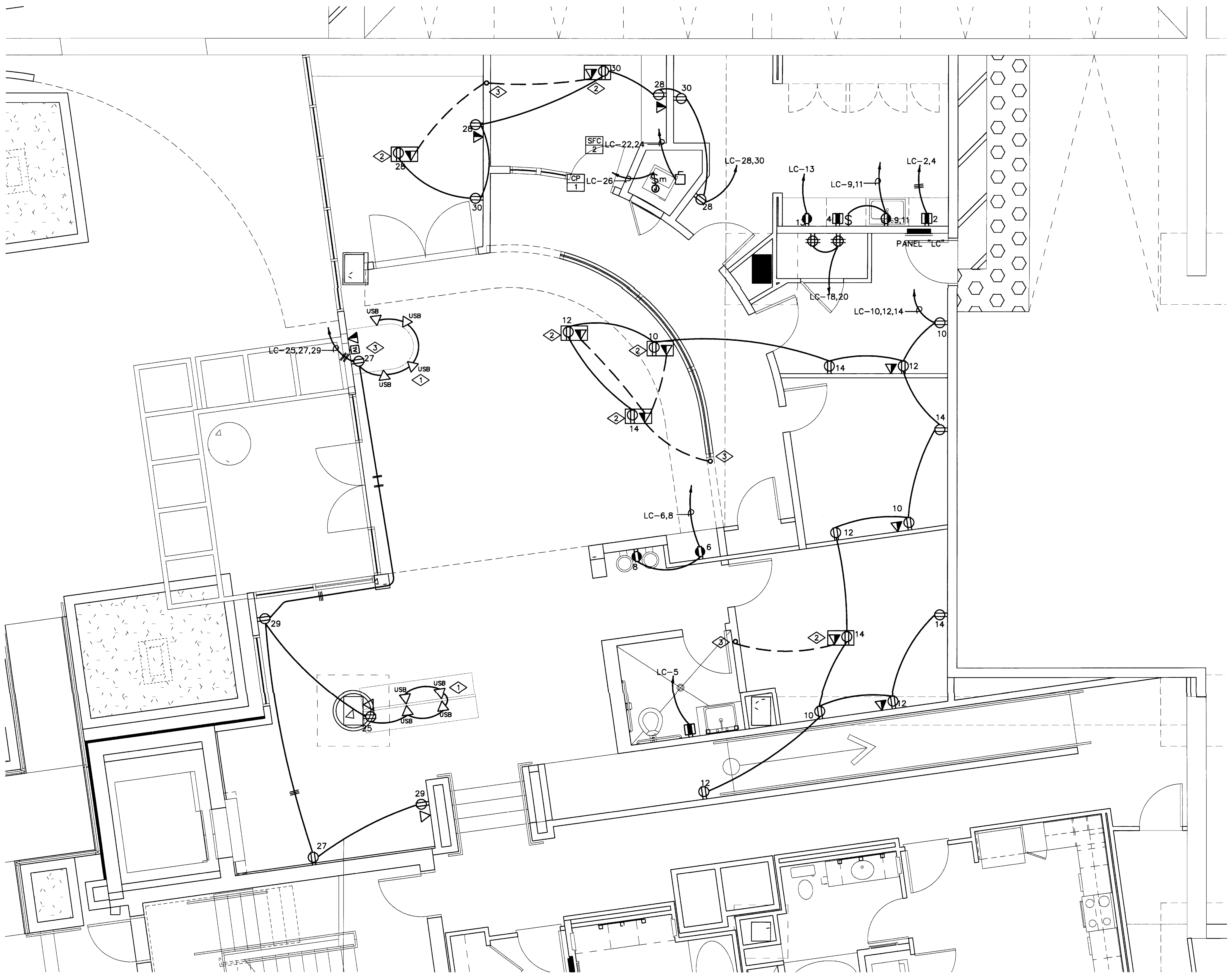

LEASING OFFICE POWER PLAN - PODIUM LEVEL

1/4"=1'-0"

POWER PLAN GENERAL NOTES:

1. ALL RECEPTALCES ON COMMON WALLS SHALL BE SEPRATE BOXES AND OFFSET 24" MINIMUM.
2. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE PROTECTED FROM THE SPREAD OF FIRE WITH AND APPROVED FIRESTOP SYSTEM EQUAL OR GREATER THAN THE FIRE RATING OF THE WALL.
3. HEIGHT OF ALL RECEPTACLES AT COUNTER SHELVES, ETC., SHALL BE CERTIFIED WITH OWNER PRIOR TO ROUGH IN. PROVIDE GFCI TYPE RECEPTACLES WITHIN 6 FT. OF ANY SINK.
4. GROUNDING FAULT PROTECTION SHALL BE PERFORMANCE TESTED PER NEC ARTICLE #210-9(c).
5. PUBLE TELEPHONE SHALL COMPLY WITH SECTION 11117B2.

POWER PLAN SPECIFIC NOTES:

1. PROVIDE PWER SOURCE FOR FOUR (4) USB PORTS TO BE LOCATED WITHIN TABLE. REFER TO ELEVATION PLANS. OWNER TO CONFIRM TECH EQUIPMENT BEING USED.
2. PROVIDE HUBBLE #PFBRG2, 2-GANG NON METALIC FLOOR BOX WITH 2-GANG CARPET FLANGE, 2-BRASS COVERS FOR ONE 20A DEDICATED RECEPTACLE, ONE INTERNET/CATV COMBINATION. REFER TO ARCHITECTURAL SHEET A2 FOR EXACT LOCATION.
3. 1-1/2" C. UP WALL TO NEAREST TELEPHONE BACKBOARD.

THOMAS P. COX: ARCHITECTS, INC.

19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
LOS ANGELES, CA 90017
PHONE 213 553-1100

REVISION

A	1st Plan Check	01/30/2013
B	2nd Plan Check	02/28/2013
C	3rd Plan Check	04/15/2013
3	A.S.I. #1 I.D. Coord..	07/11/2013
4	A.S.I. #2 Site Coord..	07/12/2013
5	Unit Coordination	03/14/2014
9	A.S.I. #7	04/25/2014
11	A.S.I. #9	05/07/2014
12	LEASING REVISION	05/08/2014

CROWN CABOT

LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

LEASING OFFICE POWER PLAN - PODIUM LEVEL

FOR CONSTRUCTION

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REGISTERED PROFESSIONAL ENGINEER
RANDALL V. MOSS
No. E13453
Exp. 09/30/14
ELECTRICAL
STATE OF CALIFORNIA

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
1720 EAST GARRY AVE., SUITE 114
SANTA ANA, CALIFORNIA 92705
(949) 756-0807 | FAX: (949) 756-0816

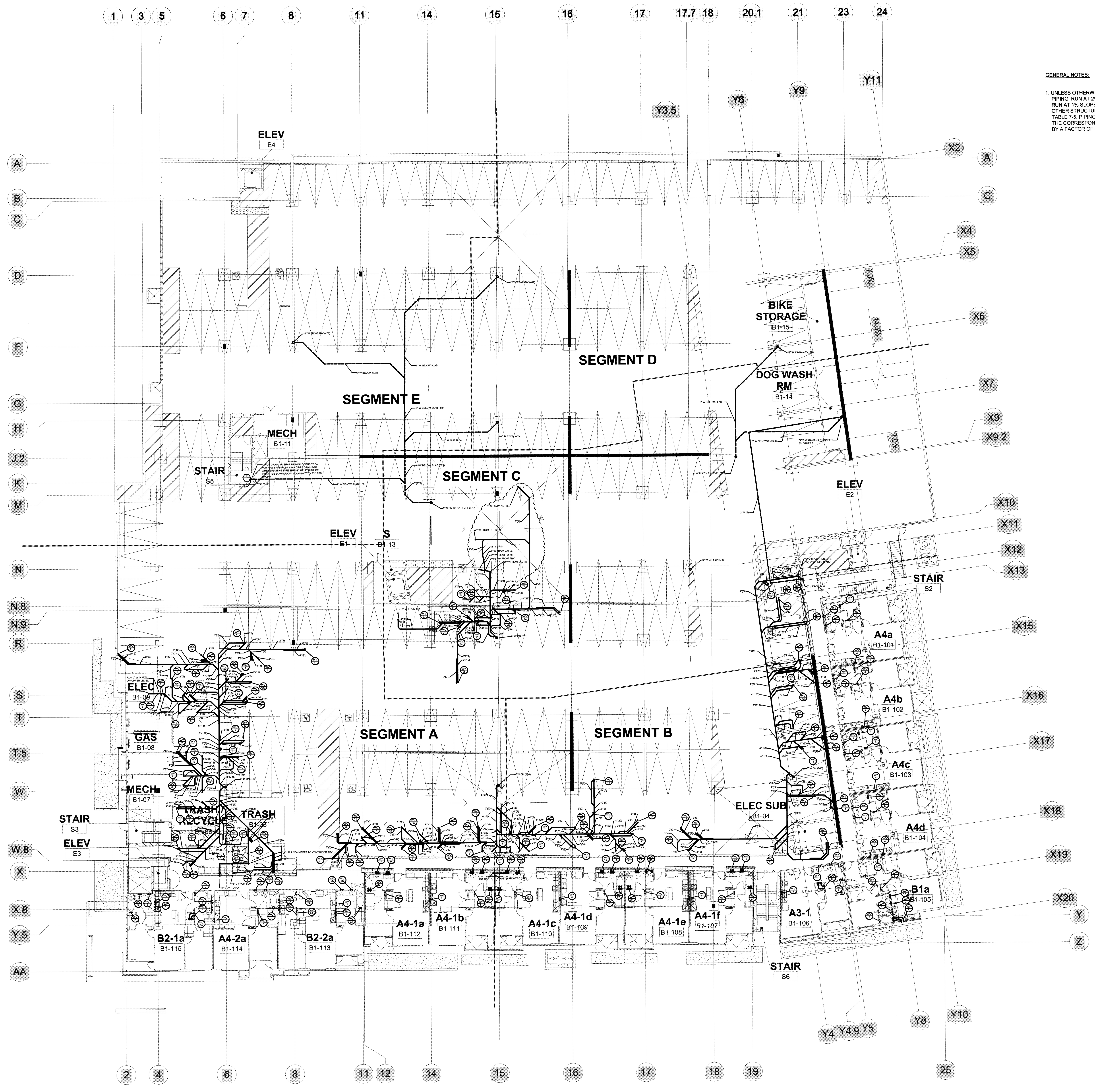
E6.2

1125-00
JOB NUMBER

AS NOTED
SCALE

LEASING REVISION
ISSUED AS

05.08.14
DATE



1 PLUMBING: WASTE & VENT-GARAGE LEVEL B1
1/16" = 1'-0"

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, 3" AND SMALLER HORIZONTAL PIPING RUN AT 2% SLOPE, 4" AND LARGER HORIZONTAL PIPING RUN AT 1% SLOPE DUE TO THE MINIMUM HEADROOM REQUIRED AND OTHER STRUCTURE RESTRAINTS. ALL PIPING ARE SIZED PER 2010 CPC TABLE 7-5, PIPING WITH 1% SLOPE IS SIZED WITH ADJUSTMENT FOR THE CORRESPONDING MAX. FIXTURE UNITS IN TABLE 7-5 MULTIPLIED BY A FACTOR OF 0.8 ACCORDINGLY.

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER QIZHAO WANG M 32631 EXP. 12-31-15 MECHANICAL STATE OF CALIFORNIA

REVISION		DATE
1		02-01-2013
12	ASI #10 - CLIENT REVISIONS	05-08-2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WASTE & VENT GARAGE LEVEL B1

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P0.11

2010-089
JOB NUMBER

1/16"=1'-0"
SCALE

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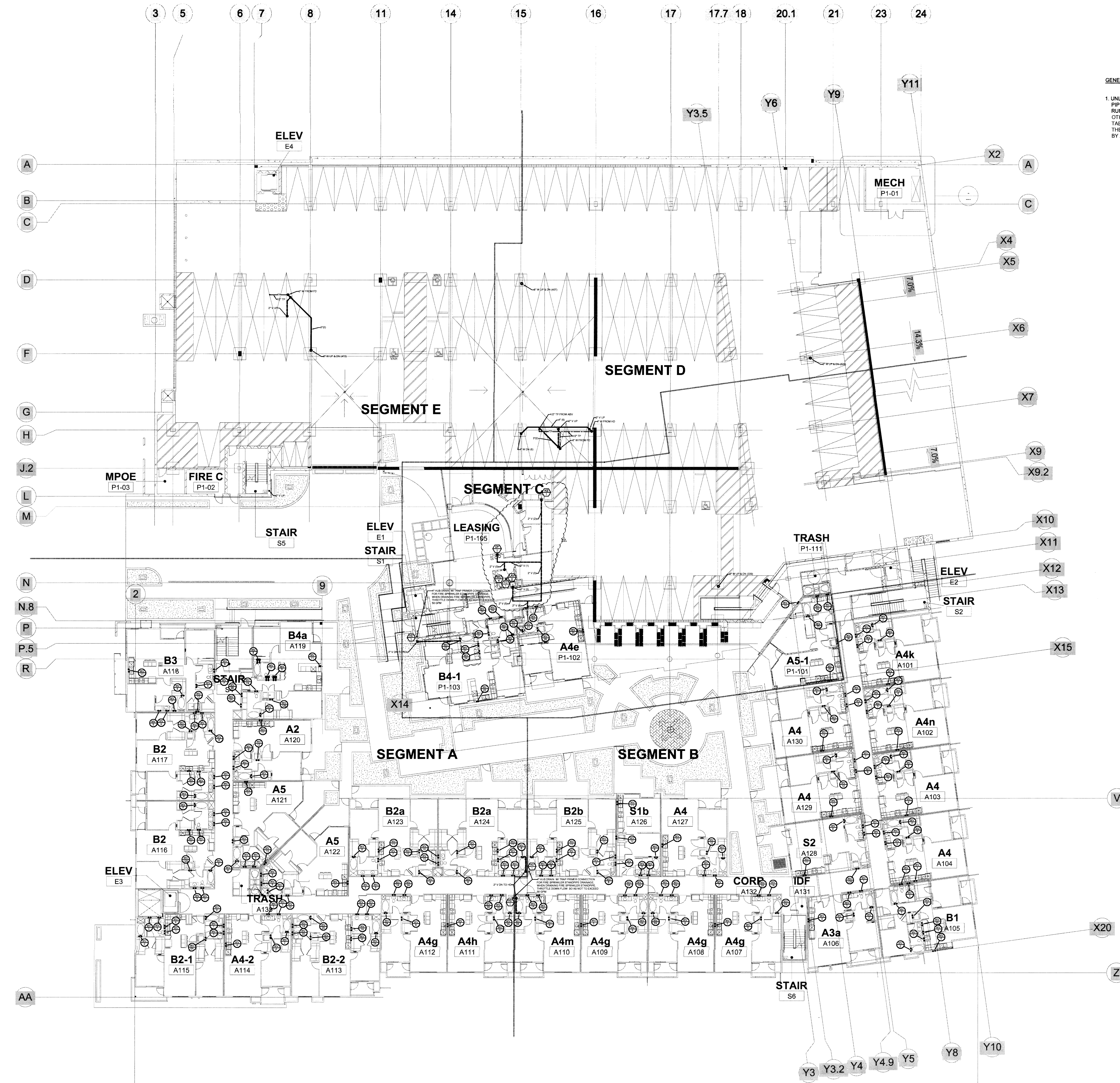
05-08-2014
DATE



1 PLUMBING: WASTE & VENT-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1
1/16" = 1'-0"

GENERAL NOTES:

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CROWN CABOT LUXURY APARTMENTS

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MILL CREEK RESIDENTIAL TRUST LLC

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PLUMBING: WASTE & VENT BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1

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P0.12

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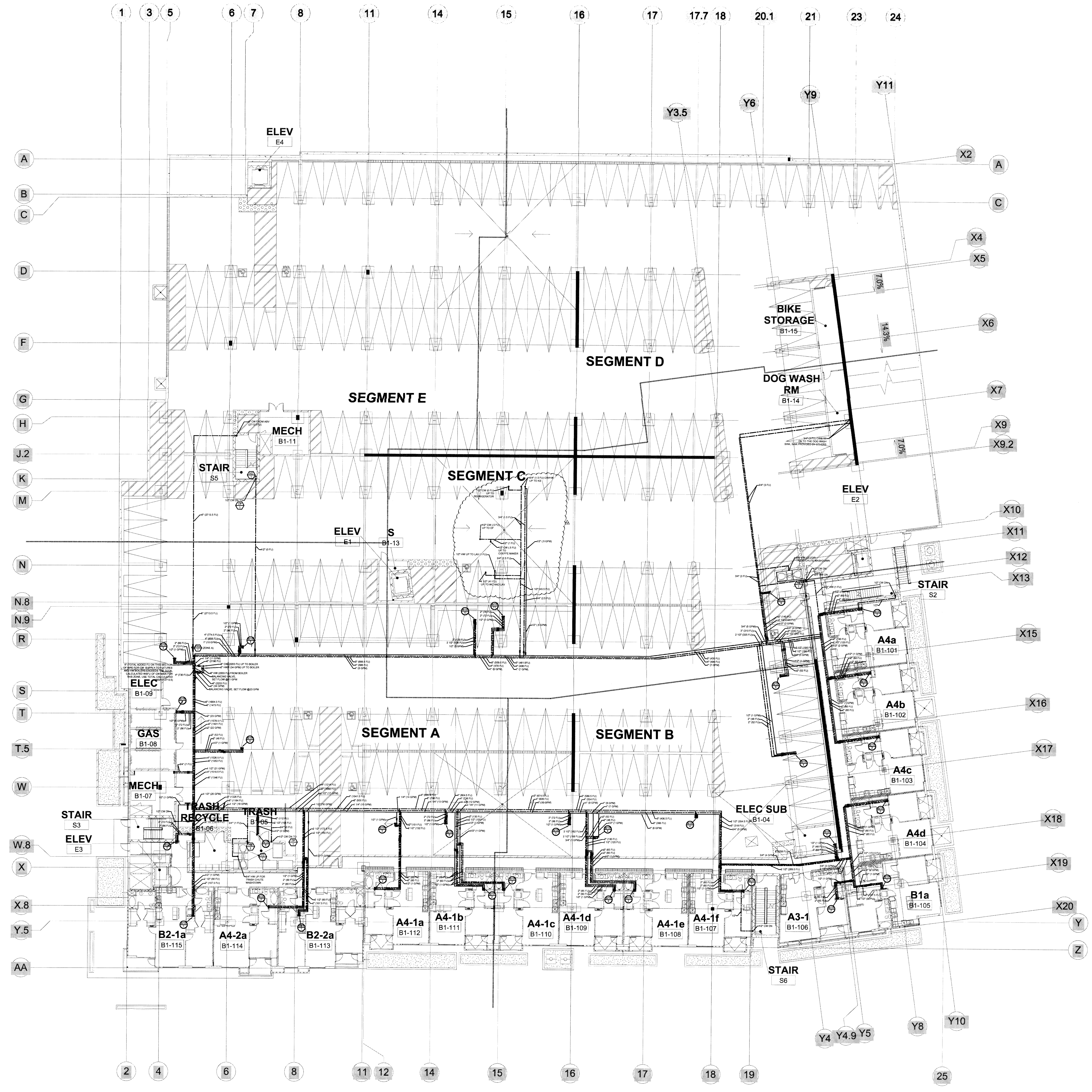

1 PLUMBING: WATER-GARAGE LEVEL B1
1/16" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM
Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
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CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

PLUMBING: WATER GARAGE LEVEL B1

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P0.21W

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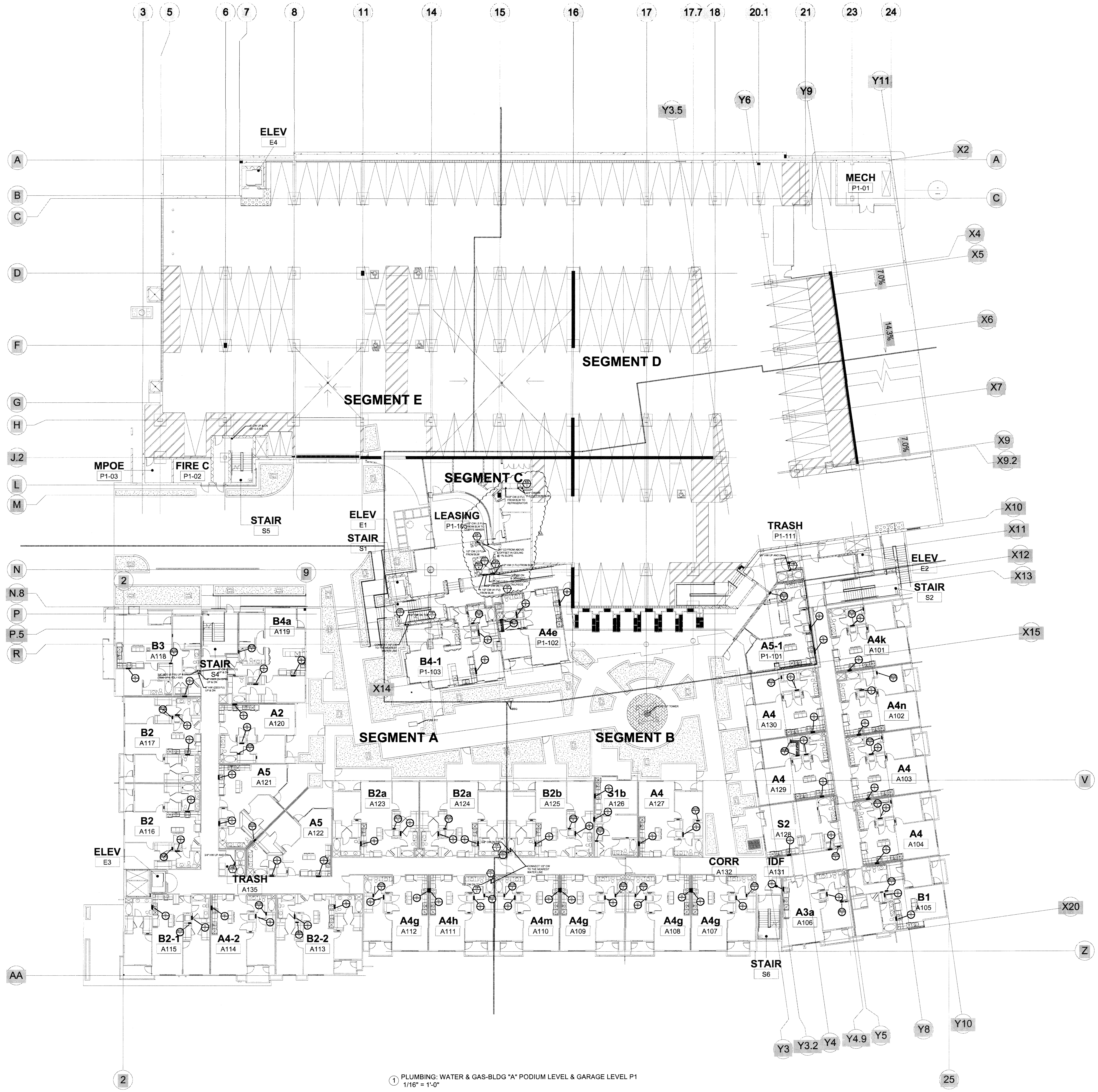

1 PLUMBING: WATER & GAS-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1
1/16" = 1'-0"

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CONSULTANT

AMPAN Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
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REGISTERED PROFESSIONAL ENGINEER QIZHAO WANG M 32631 EXP. 12-31-15 MECHANICAL STATE OF CALIFORNIA

REVISION | DATE
ASI #10 - CLIENT REVISIONS | 02-01-2013 / 08-08-2014

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER & GAS BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1

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P0.22

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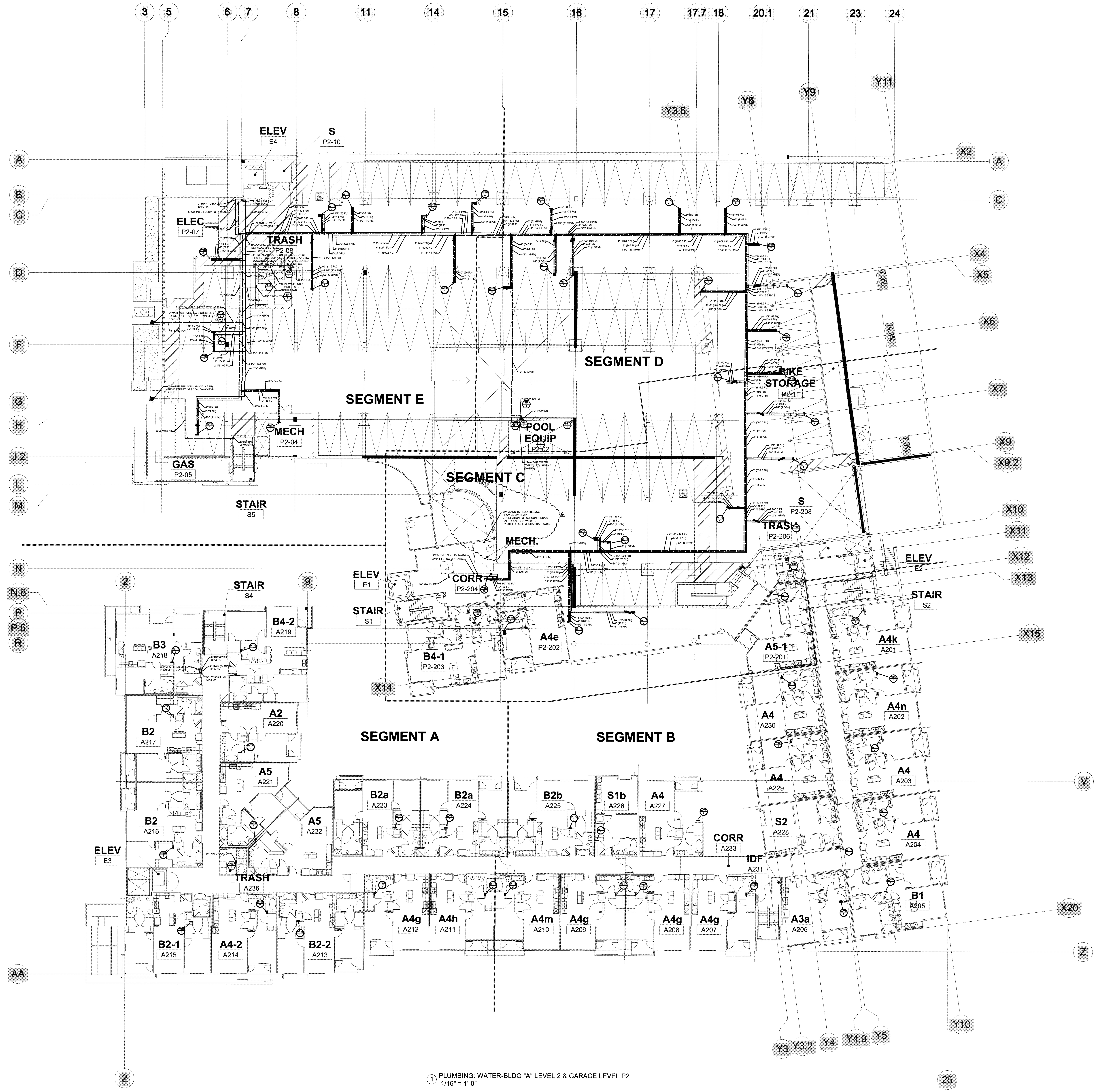

1 PLUMBING: WATER-BLDG "A" LEVEL 2 & GARAGE LEVEL P2
1/16" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical

1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532 Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

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CROWN CABOT LUXURY APARTMENTS

25691 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

PLUMBING: WATER
BLDG "A" LEVEL 2 & GARAGE
LEVEL P2

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P0.23W

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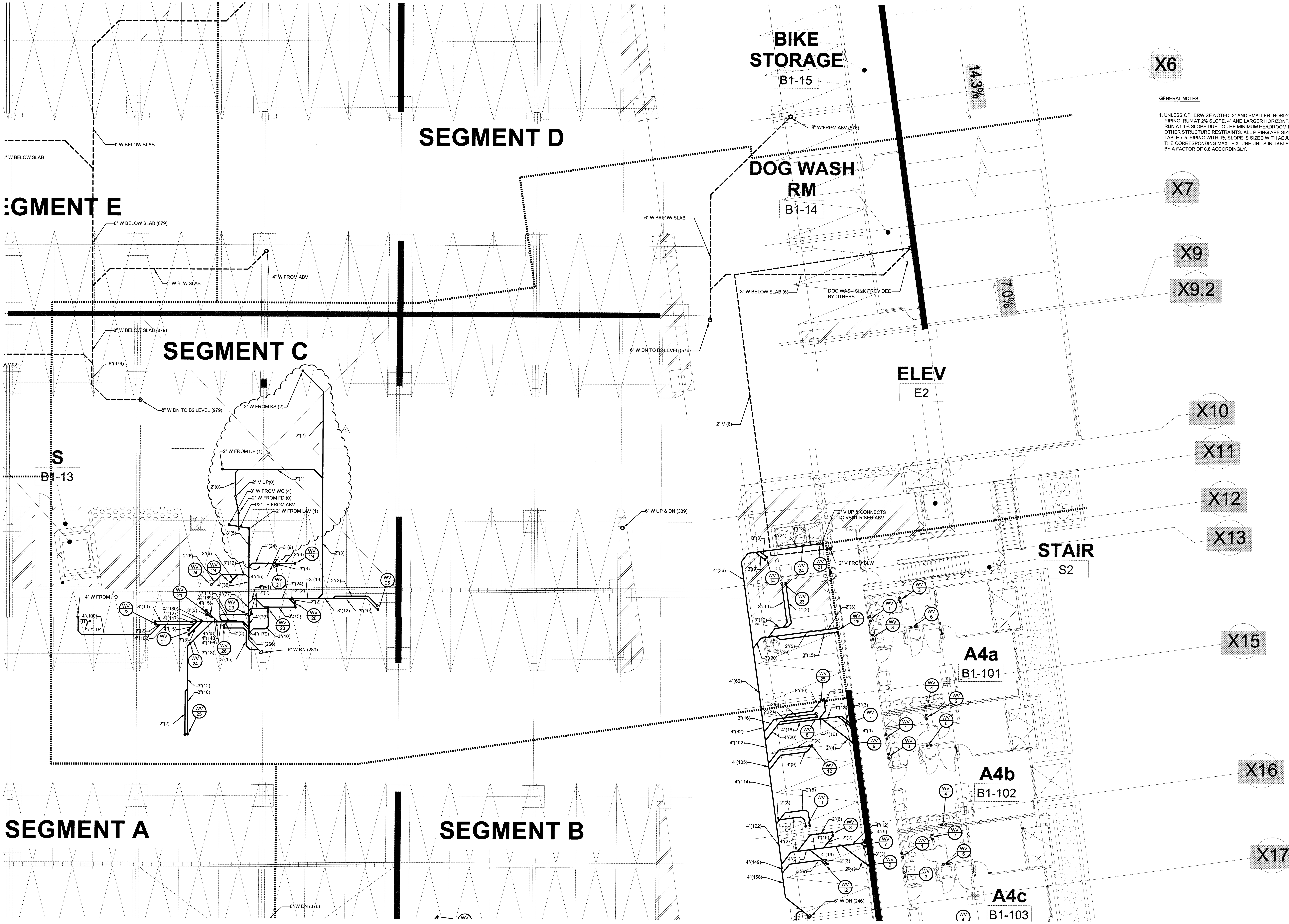

1 PLUMBING: WASTE & VENT-GARAGE LEVEL B1-SEGMENT C
1/8" = 1'-0"

GENERAL NOTES:

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CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WASTE & VENT
GARAGE LEVEL B1
SEGMENT C

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P1.11C

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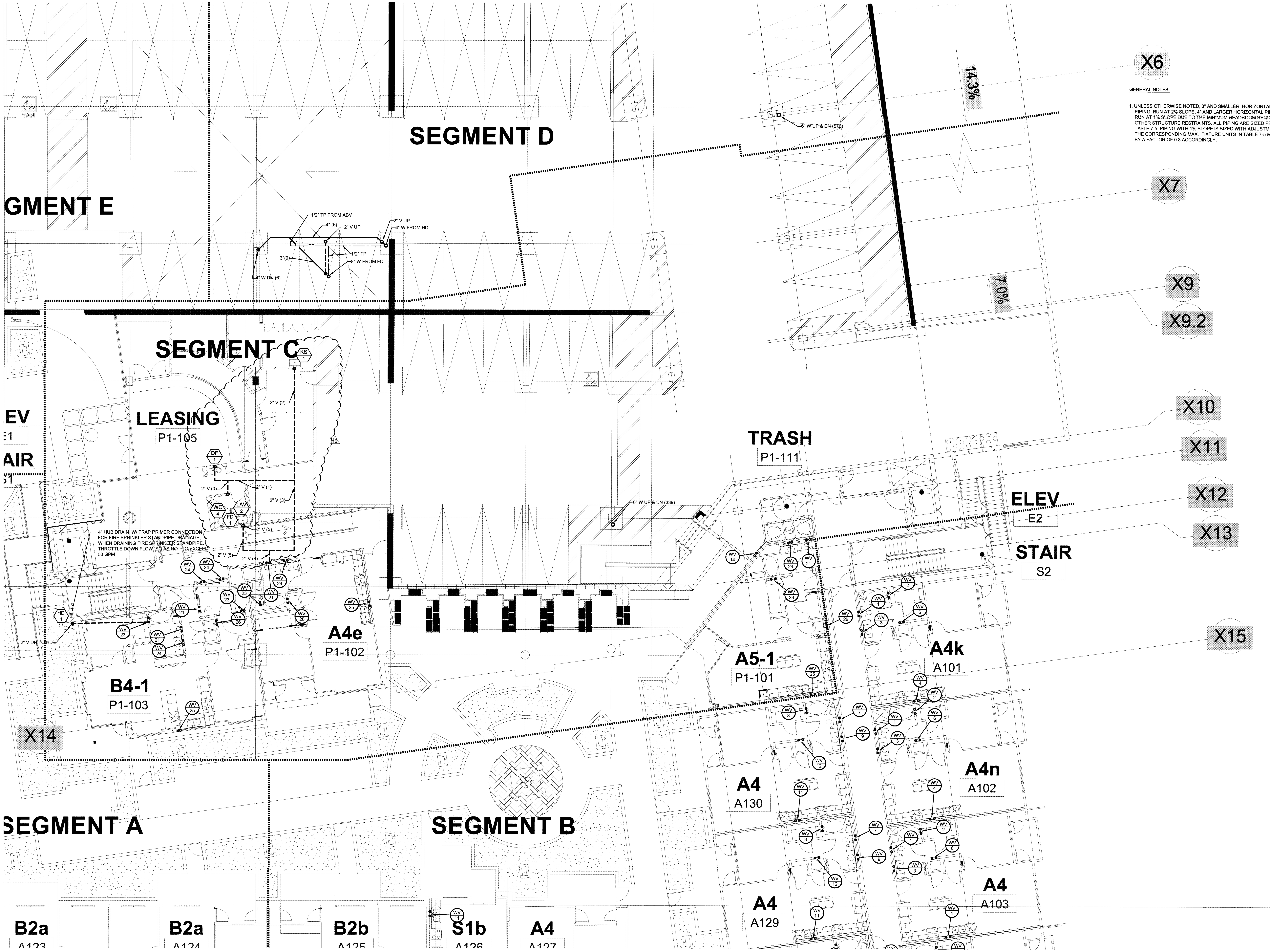

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(1) PLUMBING: WASTE & VENT-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1-SEGMENT C
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CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
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CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
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P1.12C

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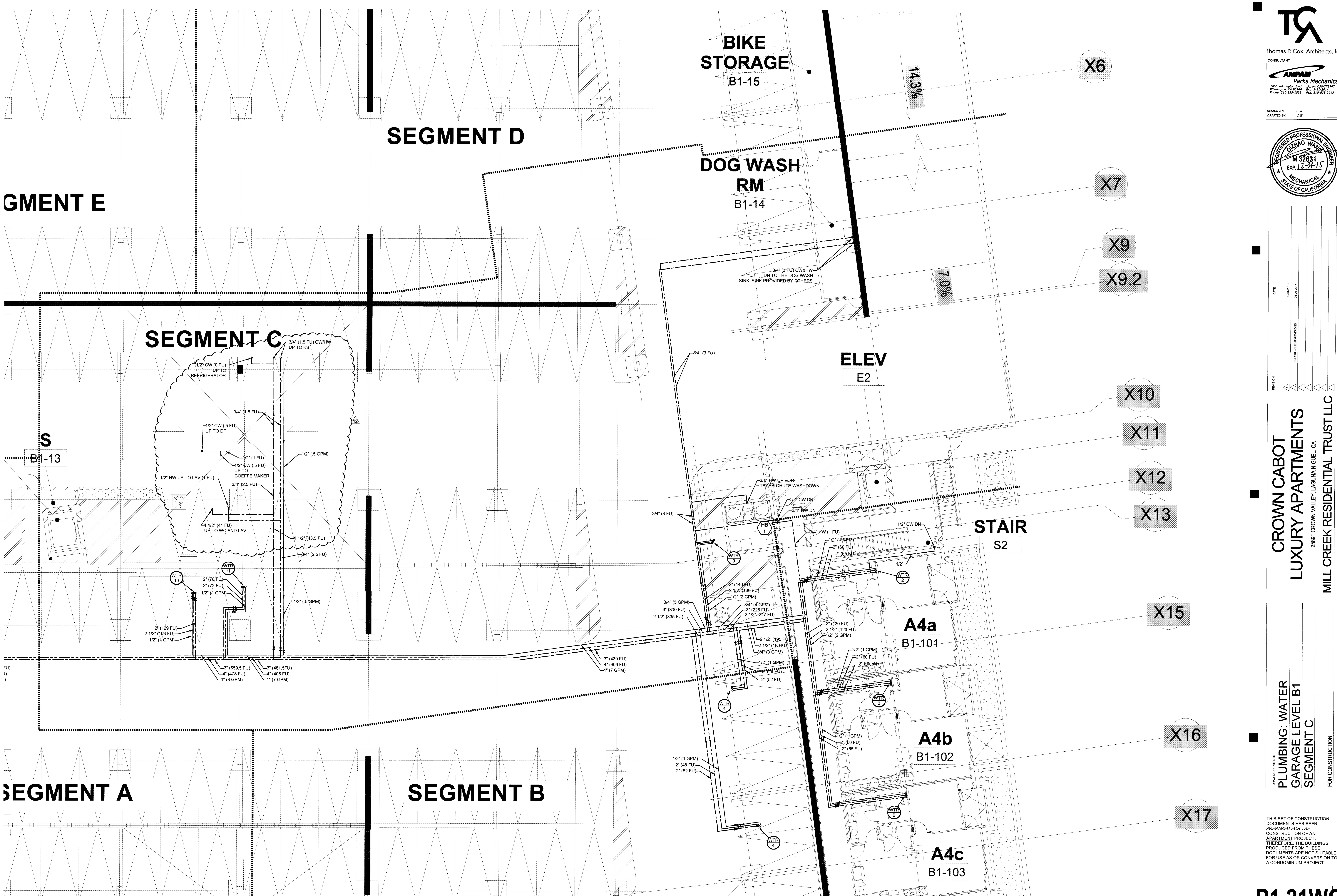

1 PLUMBING: WATER-GARAGE LEVEL B1-SEGMENT C
1/8" = 1'-0"

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CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER
GARAGE LEVEL B1
SEGMENT C

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P1.21WC

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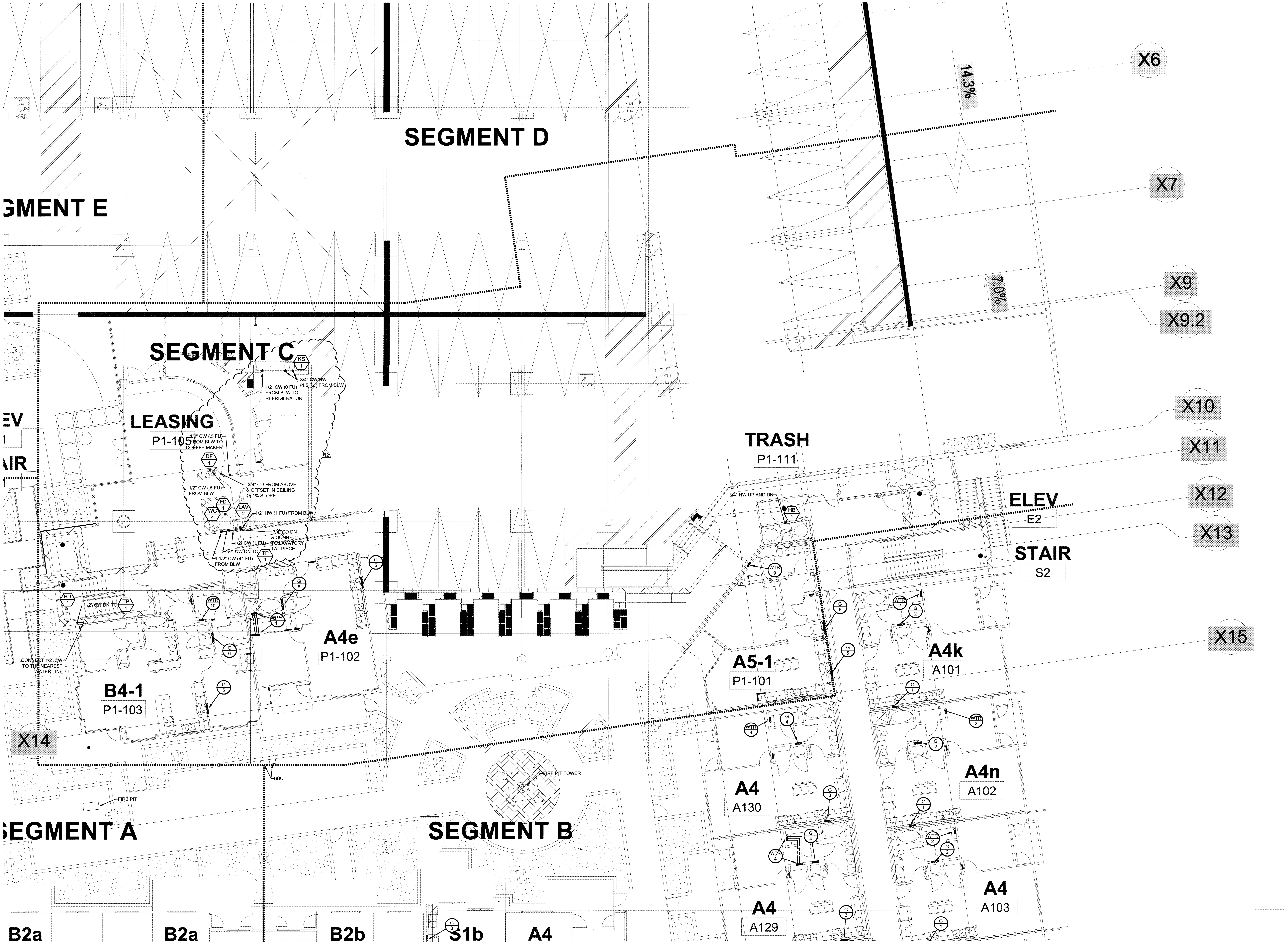

1 PLUMBING: WATER & GAS-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1-SEGMENT C
1/8" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
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REGISTERED PROFESSIONAL ENGINEER
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M 32631
EXP. 12-31-15
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CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER & GAS
BLDG "A" PODIUM LEVEL &
GARAGE LEVEL P1-SEGMENT C

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P1.22C

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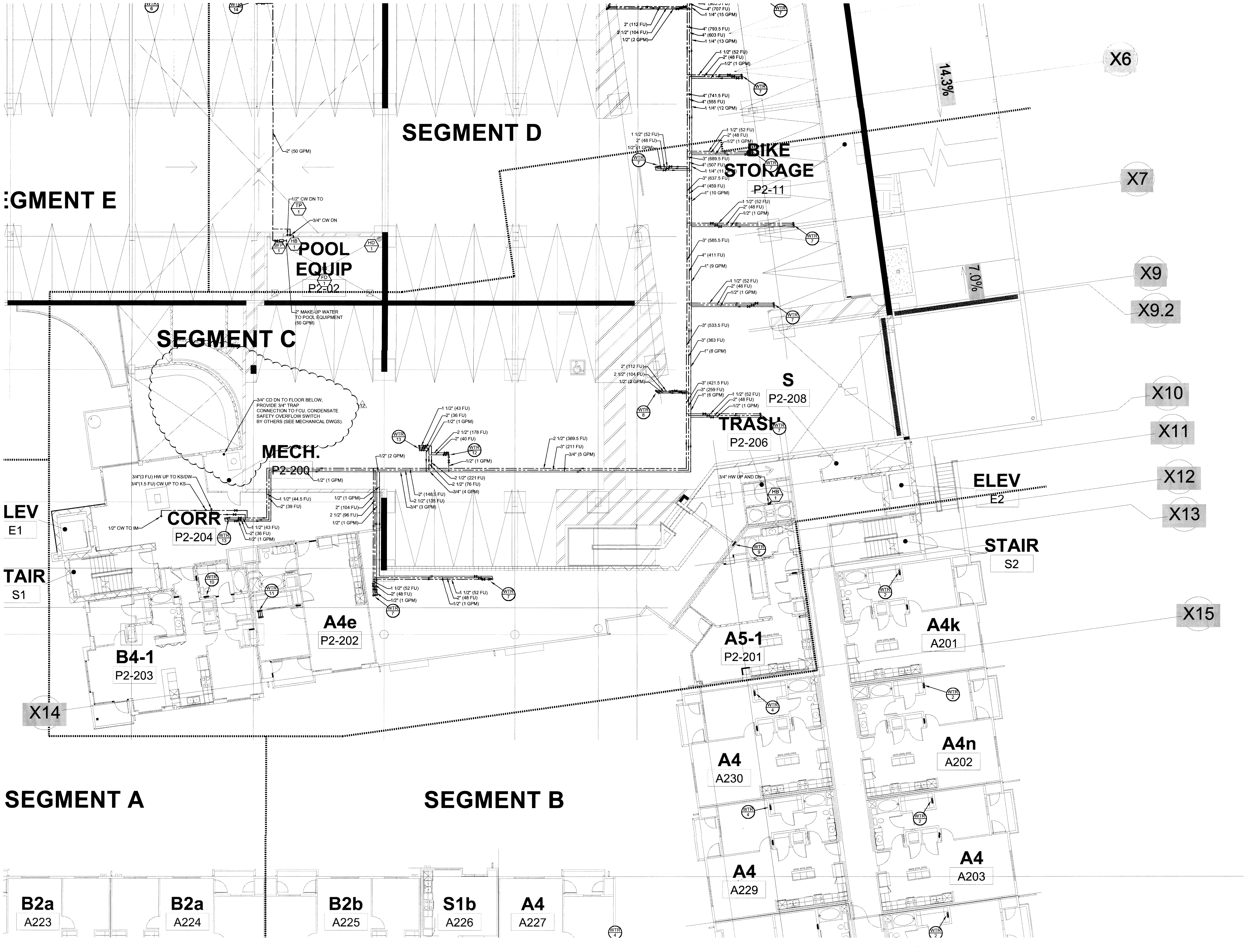

① PLUMBING: WATER-BLDG "A" LEVEL 2 & GARAGE LEVEL P2-SEGMENT C
1/8" = 1'-0"

TCA
Thomas P. Cox: Architects, Inc.

CONSULTANT
AMPAM Parks Mechanical

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER
BLDG "A" LEVEL 2 & GARAGE
LEVEL P2-SEGMENT C

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P1.23WC

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1/8"=1'-0"
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05-08-2014
DATE

Mill Creek

Corrections

PLN

25891 CROWN VALLEY PKWY
27960 CABOT RD

B12-2453-R1

B14-1392 - REVISION Expired 11/30/14

Leasing Office

10/21/15 [illegible]
Don't See Stamped Approved Set
Keeping this Set Was in hold
bin

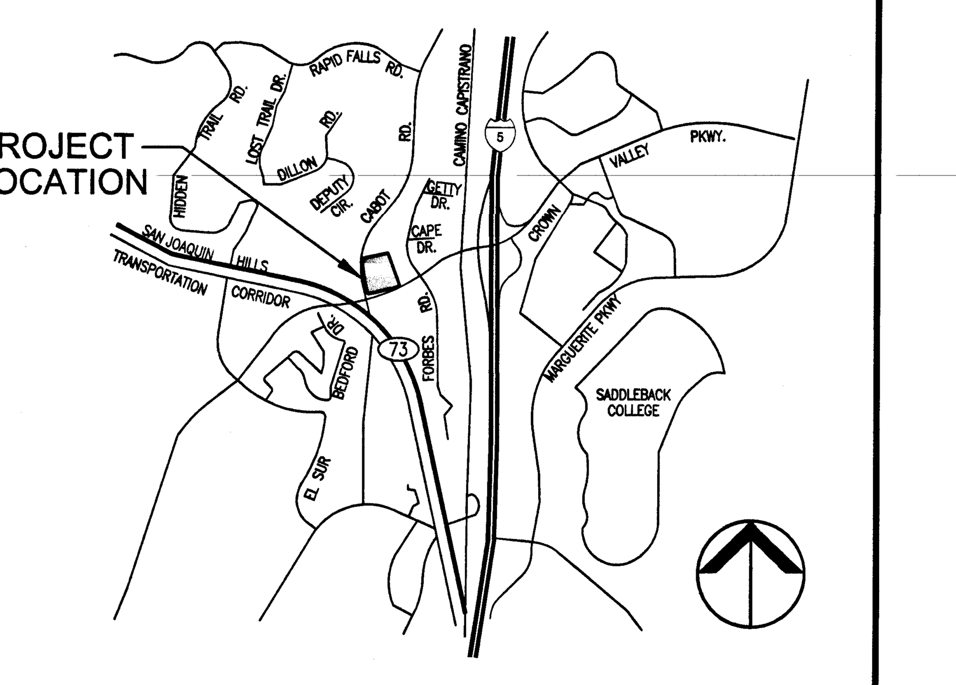
MILL CREEK RESIDENTIAL TRUST

CROWN CABOT LUXURY APARTMENTS

ON-SITE PRIVATE SEWER & WATER IMPROVEMENT PLANS

CROWN VALLEY & CABOT ROAD

LAGUNA NIGUEL, CALIFORNIA



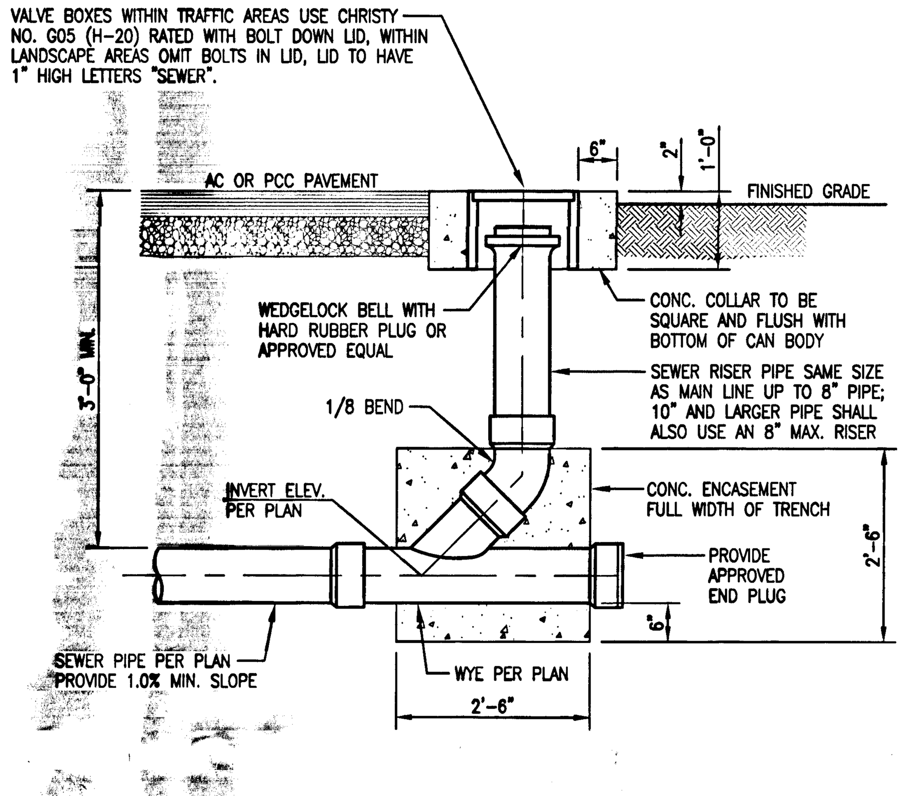
VICINITY MAP
N.T.S.
T.G. 922-A7

STANDARD WATER NOTES

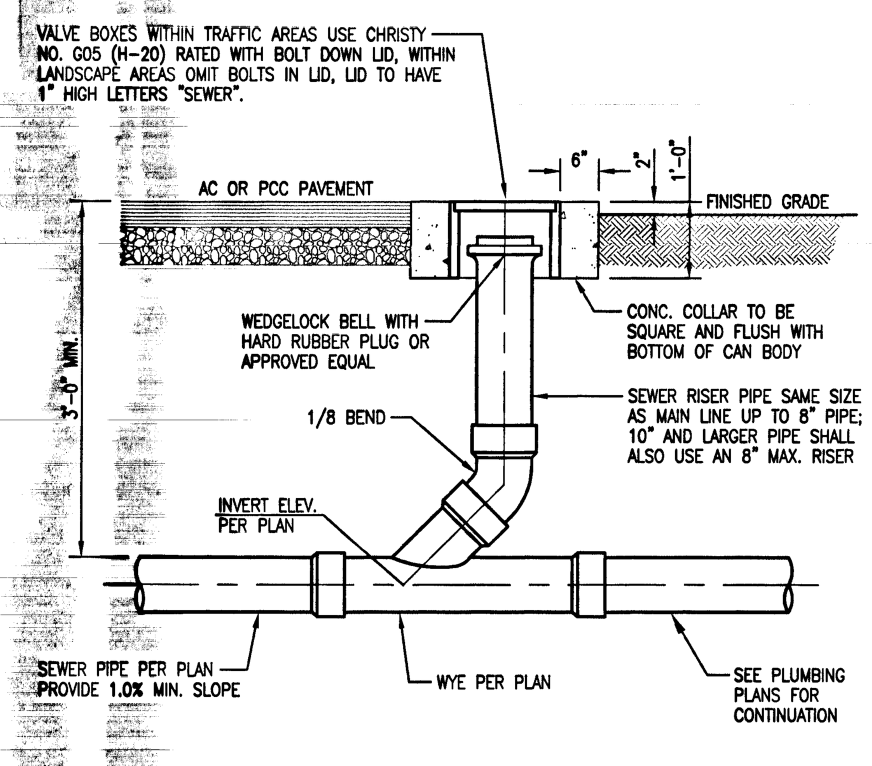
1. THE WATER SYSTEM WORK SHALL CONFORM TO THE MOULTON NIGUEL WATER DISTRICT "STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF DOMESTIC WATER AND RECYCLED WATER FACILITIES," AS LAST REVISED. THE CONTRACTOR SHALL HAVE A COPY OF THESE PLANS AND STANDARD SPECIFICATIONS ON THE JOB AT ALL TIMES.
2. ALL NUTS AND BOLTS, INCLUDING VALVES, SHALL BE GRADE 316 STAINLESS STEEL. ALL BURIED FLANGES, VALVES AND FITTINGS SHELL BE WRAPPED WITH 10-MIL POLYETHYLENE SHEET.
3. ALL MAIN LINE VALVES SHALL BE MAINTAINED SO AS TO BE ACCESSIBLE DURING CONSTRUCTION, AND ALL VALVE STEM TOPS HAVING OVER 48 INCHES OF COVER WILL REQUIRE AN EXTENSION AS PER MNWD STANDARD DRAWING W-8.
4. THE TOP OF THE PIPE 12 INCHES AND SMALLER SHALL BE A MINIMUM OF 30 INCHES OF COVER FROM THE STREET SUBGRADE OR UNDERCUT, WHICHEVER IS GREATER, UNLESS INDICATED OTHERWISE ON THE JOB PLANS OR DIRECTED OTHERWISE BY THE DISTRICT BECAUSE OF UNUSUAL CONDITIONS. PIPE SHALL BE BEDDED AND BACKFILLED PER MNWD STANDARD DRAWING W-11.
5. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROPRIATE DETAILS HEREIN AND INSTALLED BEHIND CURBS AND SIDEWALKS WHERE THE SIDEWALKS ARE ADJACENT TO THE CURBS. FIRE HYDRANTS SHALL BE PER THE DISTRICT'S SPECIFICATIONS AND SHALL HAVE A CONCRETE PAD POURED AROUND THEM. ALL FIRE HYDRANTS SHALL BE SET WITH THE BOTTOM FLANGE 4 INCHES ABOVE THE CONCRETE PAD OR SIDEWALK.
6. ALL WATER MAINS 4" THROUGH 16" IN UNPAVED AREAS SHALL BE PRESSURE CLASS 350, DUCTILE IRON PIPE (DIP) UNLESS OTHERWISE NOTED.
7. NO FACILITY IS TO BE BACKFILLED UNTIL INSPECTED.
8. INDIVIDUAL PRESSURE REGULATORS WILL BE REQUIRED BY THE PLUMBING CODES OF THE CITY HAVING JURISDICTION IF STATIC PRESSURE REACHES 80 PSI OR MORE.
9. ANY DISTRICT WATER USED SHALL BE METERED WITH A CONSTRUCTION METER OBTAINED FROM THE DISTRICT. THE USE OF JUMPERS IS ALLOWED BY PERMIT ONLY. METERS MUST BE INSTALLED PRIOR TO OCCUPANCY OF A DWELLING.
10. AN ENCROACHMENT PERMIT FROM THE COUNTY OR CITY HAVING JURISDICTION IS REQUIRED PRIOR TO ANY WORK WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT.

STANDARD SEWER NOTES

1. THE SEWER SYSTEM AS SHOWN ON THESE PLANS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD DRAWINGS AND SPECIFICATIONS OF THE MOULTON NIGUEL WATER DISTRICT. CONTRACTOR SHALL KEEP A COPY OF THE STANDARD SPECIFICATIONS AND DRAWINGS ON THE JOBSITE AT ALL TIMES.
2. ALL SEWER LENGTHS ARE CALCULATED ON HORIZONTAL DISTANCES ALONG THE CENTERLINE OF THE SEWER.
3. PRESSURE TESTING OF SEWERS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE MOULTON NIGUEL WATER DISTRICT. .
4. CONTRACTOR SHALL VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY CROSSINGS BEFORE CONSTRUCTING ANY SEWERS FOR THIS PROJECT.
5. ALL CLEANOUT LIDS ARE TO HAVE "S" CAST THEREON AS SHOWN IN STANDARD DRAWINGS S-3 AND S-4 OF MOULTON NIGUEL WATER DISTRICT'S "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF DOMESTIC WATER, SEWER AND RECYCLED WATER FACILITIES."
6. SANITARY SEWER MANHOLES AND CLEANOUT FRAME AND COVER SETS SHALL BE ADJUSTED TO THE NEW FINISHED SURFACE GRADE BY THE CONTRACTOR. THE USE OF CAST IRON RAISING RINGS WILL NOT BE ACCEPTED.



TERMINAL SEWER CLEANOUT
SCALE: NONE



IN-LINE SEWER CLEANOUT
SCALE: NONE

NOTICE TO CONTRACTOR:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO EXISTING UTILITIES EXCEPT AS SHOWN ON THESE PLANS. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS AND SHALL BE RESPONSIBLE FOR ANY DAMAGE THERETO.
2. CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND SHALL REPORT ALL DISCREPANCIES TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. PRIOR TO CONSTRUCTION OF ANY CONCRETE STRUCTURE, THE CONTRACTOR SHALL VERIFY WITH THE SOILS ENGINEER, THE TYPE OF CONCRETE RECOMMENDED.
4. CONTRACTOR AGREES THAT HE/SHE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AN THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER, THE ENGINEER, AND THE CITY OF LAGUNA NIGUEL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM SOLE NEGLIGENCE OF OWNER, ENGINEER, OR CITY OF LAGUNA NIGUEL.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CENTERLINE OF CABOT ROAD SHOWN AS "N11°58'02"W" ON RECORD OF SURVEY 94-1072, FILED IN RECORD OF SURVEY BOOK 154 PAGE 33, IN THE OFFICE OF THE COUNTY RECORDER OF ORANGE COUNTY.

BENCHMARK

ORANGE COUNTY SURVEY BENCHMARK NO. 3U-41-70

DESCRIBED BY OCS 2003 - FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "3U-41-70", SET IN THE NORTHWESTERLY CORNER OF A CONCRETE BRIDGE ABUTMENT. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF FORBES ROAD AND CROWN VALLEY PARKWAY, 150 FT. WESTERLY OF THE CENTERLINE OF FORBES, 22.6 FT. NORTHERLY OF THE CENTERLINE OF CROWN VALLEY PARKWAY AND IN THE NORTHERLY END OF THE WESTERLY ABUTMENT. MONUMENT IS SET LEVEL WITH THE BRIDGE DECK.

ELEVATION = 264.878, DATUM NAVD 88

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF LAGUNA NIGUEL, COUNTY OF ORANGE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

THAT PORTION OF SECTION 14, TOWNSHIP 7 SOUTH, RANGE 8 WEST OF THE SAN BERNARDINO MERIDIAN, IN THE CITY OF LAGUNA NIGUEL, COUNTY OF ORANGE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND IN THE DISTRICT LAND OFFICE MAY 19, 1873, DESCRIBED AS FOLLOW:

COMMENCING AT THE MOST NORTHERLY CORNER OF THE LAND DESCRIBED IN THE DEED TO LAGUNA DEVELOPMENT COMPANY, RECORDED MARCH 22, 1963, IN BOOK 6476, PAGES 877 TO 881 INCLUSIVE OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, SAID CORNER BEING A POINT ON A 1500.00 FOOT RADIUS CURVE, CONCAVE SOUTHEASTERLY A RADIAL TO SAID POINT BEARS NORTH 50°00'00" WEST; THENCE NORTHEASTERLY 505.86 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°19'22"; THENCE NORTH 59°19'22" EAST, 70.50 FEET TO THE BEGINNING OF A CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 538.54 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 20°34'14"; THENCE NORTH 38°45'08" EAST, 540.85 FEET TO THE BEGINNING OF A CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 1028.08 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 39°16'11"; THENCE NORTH 78°01'19" EAST, 767.43 FEET TO THE BEGINNING OF A CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 305.59 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 11°40'22"; THENCE NORTH 23°39'03" WEST, 52.00 FEET RADIAL TO LAST MENTIONED CURVE TO THE TRUE POINT OF BEGINNING, BEING A POINT ON A CURVE CONCAVE NORTHWESTERLY CONCENTRIC WITH LAST MENTIONED CURVE; THENCE SOUTHWESTERLY 295.00 FEET ALONG SAID CONCENTRIC CURVE THROUGH A CENTRAL ANGLE OF 11°40'22"; THENCE SOUTH 78°01'19" WEST, 78.00 FEET; THENCE NORTH 52°08'03" WEST, 41.87 FEET; THENCE NORTH 11°58'41" WEST, 178.00 FEET TO THE BEGINNING OF A CURVE CONCAVE EASTERLY HAVING A RADIUS OF 945.00 FEET; THENCE NORTHERLY 72.00 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 4°21'56"; THENCE NORTH 77°48'01" EAST, 359.07 FEET TO A POINT WHICH BEARS NORTH 20°05'55" WEST, 255.94 FEET FROM THE TRUE POINT OF BEGINNING; THENCE SOUTH 20°05'55" EAST, 255.94 FEET TO THE TRUE POINT OF BEGINNING.

APN: 636-043-03

THAT PORTION OF SECTION 14, TOWNSHIP 7 SOUTH, RANGE 8 WEST, OF THE SAN BERNARDINO MERIDIAN, IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER THE OFFICIAL PLAT OF SAID LAND FILED IN THE DISTRICT LAND OFFICE, IN THE CITY OF LAGUNA NIGUEL, COUNTY OF ORANGE, STATE OF CALIFORNIA DESCRIBED AS FOLLOWS:

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EXCEPT THEREFROM AN UNDIVIDED TWO-THIRDS INTEREST AND TO ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES UNDERLYING SAID LAND FOR A PERIOD OF 20 YEARS AS CONVEYED TO FIRST NATIONAL BANK IN SANTA ANA BY DEED DATED AUGUST 30, 1950 RECORDED NOVEMBER 2, 1951 IN BOOK 2249, PAGE 286, OFFICIAL RECORDS SUBJECT HOWEVER, TO THE CONDITIONS RELATING THERETO AS CONTAINED IN SAID DEED.

APN: 636-043-02

SEWER CONSTRUCTION NOTES

	SEWER CONSTRUCTION NOTES	QUANTITY
1	TRENCH AND INSTALL 8-INCH PVC (SDR-35) SEWER MAIN PER MOULTON NIGUEL STANDARD PLAN S-5.	231 L.F.
2	CONSTRUCT SEWER CLEANOUT (SIZE TO BE SAME AS MAINLINE) SEE SHEET 1, FOR DETAILS.	3 EA.
3	PROVIDE AND INSTALL PVC WYE FITTING (SIZE PER PLAN).	5 EA.
4	PROVIDE AND INSTALL 45° PVC BEND (SIZE PER PLAN).	6 EA.

WATER CONSTRUCTION NOTES

	WATER CONSTRUCTION NOTES	QUANTITY
10	PROVIDE, TRENCH AND INSTALL 1-1/2-INCH SCHEDULE 80 PVC (PURPLE) PIPE, PER LANDSCAPE ARCHITECT'S STANDARDS & SPECIFICATIONS.	11 L.F.
11	PROVIDE, TRENCH AND INSTALL 2-INCH SCHEDULE 80 PVC (PURPLE) PIPE PER LANDSCAPE ARCHITECT'S STANDARDS & SPECIFICATIONS.	10 l.f.
12	PROVIDE AND INSTALL 2-INCH IRRIGATION BACKFLOW PREVENTION DEVICE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-17.	1 EA.
13	PROVIDE, TRENCH AND INSTALL 4-INCH C900 PC150 PVC WATER PIPE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-11.	8 L.F.
14	PROVIDE, TRENCH AND INSTALL 6-INCH C900 PC150 PVC WATER PIPE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-11.	44 L.F.
15	PROVIDE AND INSTALL 4-INCH BACKFLOW PREVENTION DEVICE (WILKINS #375) PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-16.	2 EA.
16	CONSTRUCT CONCRETE THRUST BLOCKING PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-12.	2 EA.
17	PROVIDE AND INSTALL PRESSURE CLASS GASKETED PVC FITTING (SIZE AND ANGLE PER PLAN).	2 EA.

OWNER

MCRT INVESTMENTS LLC
949 S. COAST DRIVE
SUITE 400
COSTA MESA, CALIFORNIA 92626
ATTN.: MICHAEL GENTHE
PHONE NO.: (714) 800-1382

SOIL ENGINEER

GEOCON WEST, INC.
3303 N. SAN FERNANDO BLVD.
SUITE 100
BURBANK, CALIFORNIA 91504
ATTN.: GERALD KASMAN
PHONE NO.: (818) 841-1704

CIVIL ENGINEER

KHR ASSOCIATES
4100 NEWPORT PLACE DRIVE
SUITE 200
NEWPORT BEACH, CALIFORNIA 92660
ATTN.: JAMES KAWAMURA/MIKE THOMAS
PHONE NO.: (949) 756-6440

UTILITY	NAME	TELEPHONE NO.
POWER	SDG&E	(800) 336-7343
WATER	MOULTON NIGUEL WATER	(949) 831-2500
SEWER	MOULTON NIGUEL WATER	(949) 831-2500
GAS	SOUTHERN CALIFORNIA GAS COMPANY	(800) 427-2200
PHONE/CABLE TV	COX	(949) 546-2600
PHONE/CABLE TV	AT&T	(800) 310-2355

SHEET INDEX

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specification must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from Community Development Division, City of Laguna Niguel.
The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date 10-17-13
By

811
Know what's below.
Call before you dig.

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL

PREPARED BY:
KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
4100 Newport Place Drive - Suite 200
Newport Beach, California 92660
(949) 756-6440 Fax (949) 756-6444
UNDER THE SUPERVISION OF: JAMES H. KAWAMURA (R.C.E. 30560)

REGISTERED PROFESSIONAL ENGINEER
JAMES H. KAWAMURA
No. 30560
Expiration: 03/31/14
CIVIL
STATE OF CALIFORNIA

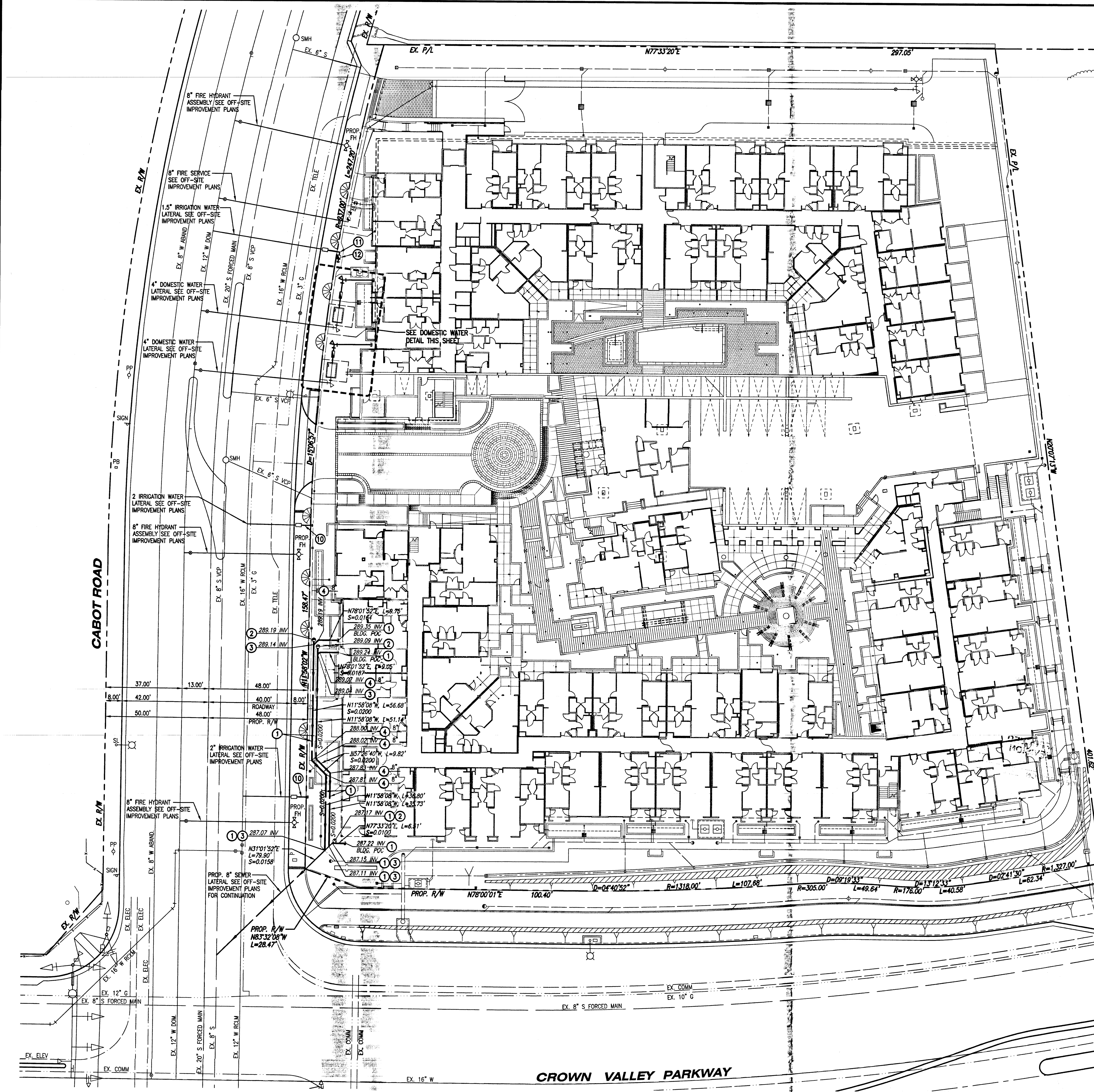
SHEET DESCRIPTION: TITLE SHEET

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER
5376001

SHEET NO.
1 OF 2

R:\MCRT\MCRT-Laguna Niguel\CD\On-Site Utilities\Sewer & Water\MCRLN-SW-01-T.dwg October 17, 2013



SEWER CONSTRUCTION NOTES

1. TRENCH AND INSTALL 8-INCH PVC (SDR-35) SEWER MAIN PER MOULTON NIGUEL STANDARD PLAN S-5.
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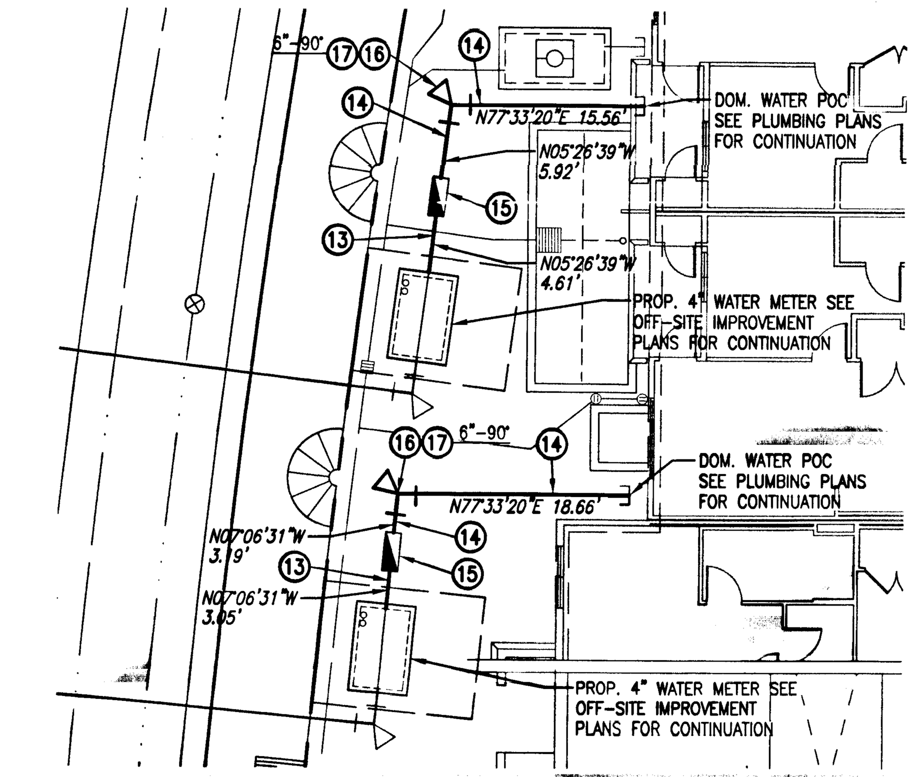

DOMESTIC WATER SERVICE DETAIL

SCALE: 1" =10'

THE CITY OF LAGUNA NIGUEL APPROVED
Date 10-17-13

811 Know what's below. Call before you dig.

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REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL

PREPARED BY:
KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
4100 Newport Place Drive - Suite 200
Newport Beach, California 92660
(949) 756-6440 Fax (949) 756-6444
UNDER THE SUPERVISION OF: JAMES H. KAWAMURA (R.C.E. 30560)

REGISTERED PROFESSIONAL ENGINEER JAMES H. KAWAMURA No. 30560 Expiration: 03/31/14 CIVIL STATE OF CALIFORNIA

SHEET DESCRIPTION:
ON-SITE PRIVATE SEWER & WATER PLAN

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER
5376001

SHEET NO.
2 OF 2

APPROVED REVISION

BY:

DATE: 10-17-13

DESCRIPTION sewer change

THE CITY OF LAGUNA NIGUEL
APPROVED

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BUILDING OFFICIAL

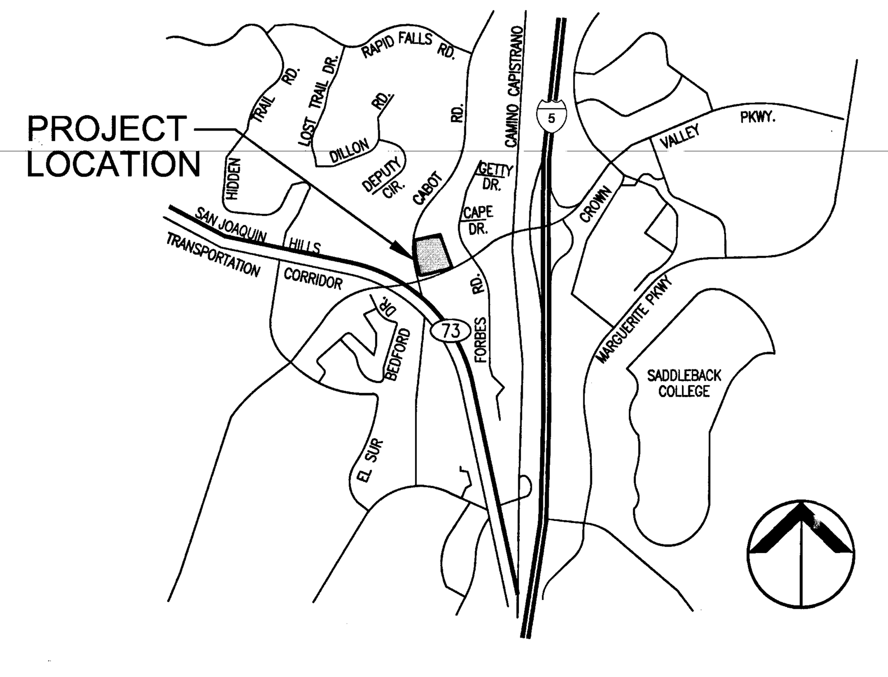
Date 10/17/13

By

B13-0918

B13-0918

MILL CREEK RESIDENTIAL TRUST
CROWN CABOT LUXURY APARTMENTS
ON-SITE PRIVATE SEWER & WATER IMPROVEMENT PLANS
CROWN VALLEY & CABOT ROAD
LAGUNA NIGUEL, CALIFORNIA



VICINITY MAP
N.T.S.
T.G. 922-A7

STANDARD WATER NOTES

1. THE WATER SYSTEM WORK SHALL CONFORM TO THE MOULTON NIGUEL WATER DISTRICT "STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF DOMESTIC WATER AND RECYCLED WATER FACILITIES," AS LAST REVISED. THE CONTRACTOR SHALL HAVE A COPY OF THESE PLANS AND STANDARD SPECIFICATIONS ON THE JOB AT ALL TIMES.
2. ALL NUTS AND BOLTS, INCLUDING VALVES, SHALL BE GRADE 316 STAINLESS STEEL. ALL BURIED FLANGES, VALVES AND FITTINGS SHELL BE WRAPPED WITH 10-MIL POLYETHYLENE SHEET.
3. ALL MAIN LINE VALVES SHALL BE MAINTAINED SO AS TO BE ACCESSIBLE DURING CONSTRUCTION, AND ALL VALVE STEM TOPS HAVING OVER 48 INCHES OF COVER WILL REQUIRE AN EXTENSION AS PER MNWD STANDARD DRAWING W-8.
4. THE TOP OF THE PIPE 12 INCHES AND SMALLER SHALL BE A MINIMUM OF 30 INCHES OF COVER FROM THE STREET SUBGRADE OR UNDERCUT, WHICHEVER IS GREATER, UNLESS INDICATED OTHERWISE ON THE JOB PLANS OR DIRECTED OTHERWISE BY THE DISTRICT BECAUSE OF UNUSUAL CONDITIONS. PIPE SHALL BE BEDDED AND BACKFILLED PER MNWD STANDARD DRAWING W-11.
5. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROPRIATE DETAILS HEREIN AND INSTALLED BEHIND CURBS AND SIDEWALKS WHERE THE SIDEWALKS ARE ADJACENT TO THE CURBS. FIRE HYDRANTS SHALL BE PER THE DISTRICT'S SPECIFICATIONS AND SHALL HAVE A CONCRETE PAD POURED AROUND THEM. ALL FIRE HYDRANTS SHALL BE SET WITH THE BOTTOM FLANGE 4 INCHES ABOVE THE CONCRETE PAD OR SIDEWALK.
6. ALL WATER MAINS 4" THROUGH 16" IN UNPAVED AREAS SHALL BE PRESSURE CLASS 350, DUCTILE IRON PIPE (DIP) UNLESS OTHERWISE NOTED.
7. NO FACILITY IS TO BE BACKFILLED UNTIL INSPECTED.
8. INDIVIDUAL PRESSURE REGULATORS WILL BE REQUIRED BY THE PLUMBING CODES OF THE CITY HAVING JURISDICTION IF STATIC PRESSURE REACHES 80 PSI OR MORE.
9. ANY DISTRICT WATER USED SHALL BE METERED WITH A CONSTRUCTION METER OBTAINED FROM THE DISTRICT. THE USE OF JUMPERS IS ALLOWED BY PERMIT ONLY. METERS MUST BE INSTALLED PRIOR TO OCCUPANCY OF A DWELLING.
10. AN ENCROACHMENT PERMIT FROM THE COUNTY OR CITY HAVING JURISDICTION IS REQUIRED PRIOR TO ANY WORK WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT.

STANDARD SEWER NOTES

1. THE SEWER SYSTEM AS SHOWN ON THESE PLANS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD DRAWINGS AND SPECIFICATIONS OF THE MOULTON NIGUEL WATER DISTRICT. CONTRACTOR SHALL KEEP A COPY OF THE STANDARD SPECIFICATIONS AND DRAWINGS ON THE JOBSITE AT ALL TIMES.
2. ALL SEWER LENGTHS ARE CALCULATED ON HORIZONTAL DISTANCES ALONG THE CENTERLINE OF THE SEWER.
3. PRESSURE TESTING OF SEWERS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE MOULTON NIGUEL WATER DISTRICT. .
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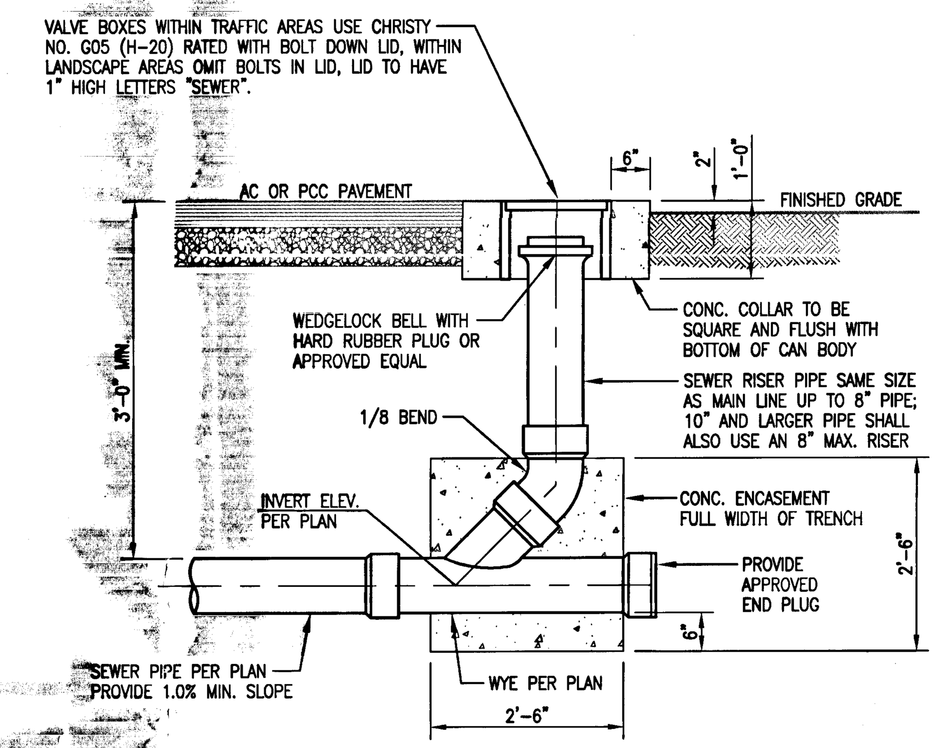
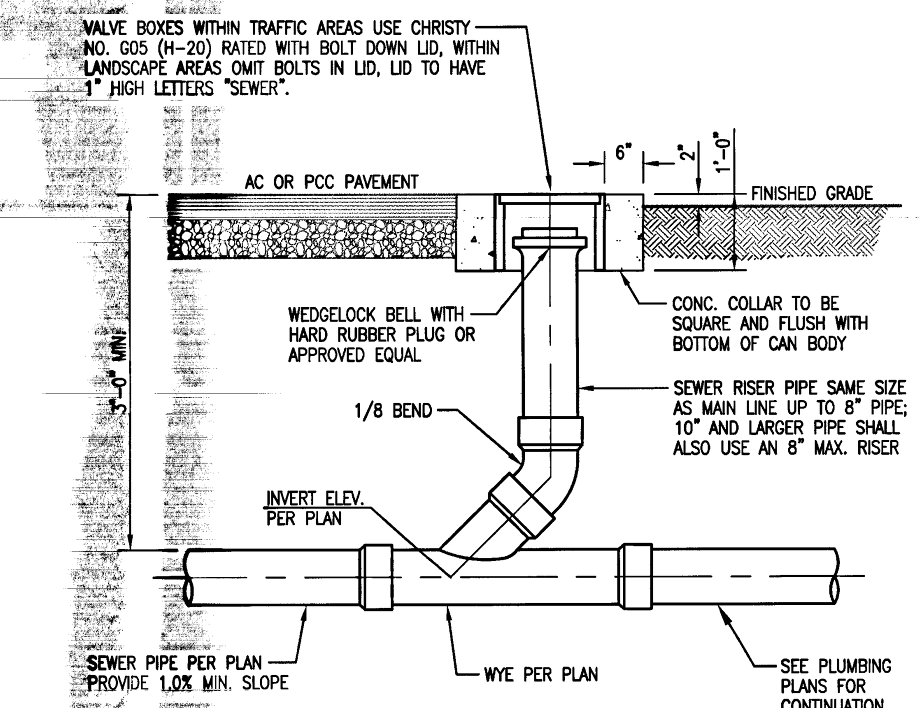


TERMINAL SEWER CLEANOUT
SCALE: NONE



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ORANGE COUNTY SURVEY BENCHMARK NO. 3U-41-70

DESCRIBED BY OCS 2003 – FOUND 3 3\4" OCS ALUMINUM BENCHMARK DISK STAMPED "3U-41-70", SET IN THE NORTHWESTERLY CORNER OF A CONCRETE BRIDGE ABUTMENT. MONUMENT IS LOCATED IN THE NORTHWESTERLY CORNER OF THE INTERSECTION OF FORBES ROAD AND CROWN VALLEY PARKWAY, 150 FT. WESTERLY OF THE CENTERLINE OF FORBES, 22.6 FT. NORTHERLY OF THE CENTERLINE OF CROWN VALLEY PARKWAY AND IN THE NORTHERLY END OF THE WESTERLY ABUTMENT. MONUMENT IS SET LEVEL WITH THE BRIDGE DECK.

ELEVATION = 264.878, DATUM NAVD 88

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF LAGUNA NIGUEL, COUNTY OF ORANGE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

THAT PORTION OF SECTION 14, TOWNSHIP 7 SOUTH, RANGE 8 WEST OF THE SAN BERNARDINO MERIDIAN, IN THE CITY OF LAGUNA NIGUEL, COUNTY OF ORANGE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT OF SAID LAND IN THE DISTRICT LAND OFFICE MAY 19, 1873, DESCRIBED AS FOLLOW:

COMMENCING AT THE MOST NORTHERLY CORNER OF THE LAND DESCRIBED IN THE DEED TO LAGUNA DEVELOPMENT COMPANY, RECORDED MARCH 22, 1963, IN BOOK 6476, PAGES 877 TO 881 INCLUSIVE OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, SAID CORNER BEING A POINT ON A 1500.00 FOOT RADIUS CURVE, CONCAVE SOUTHEASTERLY A RADIAL TO SAID POINT BEARS NORTH 50°00'00" WEST; THENCE NORTHEASTERLY 505.86 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°19'22"; THENCE NORTH 59°19'22" EAST, 70.50 FEET TO THE BEGINNING OF A CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 538.54 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 20°34'14"; THENCE NORTH 38°45'08" EAST, 540.85 FEET TO THE BEGINNING OF A CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 1028.08 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 39°16'11"; THENCE NORTH 78°01'19" EAST, 767.43 FEET TO THE BEGINNING OF A CURVE CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 305.59 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 11°40'22"; THENCE NORTH 23°39'03" WEST, 52.00 FEET RADIAL TO LAST MENTIONED CURVE TO THE TRUE POINT OF BEGINNING, BEING A POINT ON A CURVE CONCAVE NORTHWESTERLY CONCENTRIC WITH LAST MENTIONED CURVE; THENCE SOUTHWESTERLY 295.00 FEET ALONG SAID CONCENTRIC CURVE THROUGH A CENTRAL ANGLE OF 11°40'22"; THENCE SOUTH 78°01'19" WEST, 78.00 FEET; THENCE NORTH 52°08'03" WEST, 41.87 FEET; THENCE NORTH 11°58'41" WEST, 178.00 FEET TO THE BEGINNING OF A CURVE CONCAVE EASTERLY HAVING A RADIUS OF 945.00 FEET; THENCE NORTHERLY 72.00 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 4°21'56"; THENCE NORTH 77°48'01" EAST, 359.07 FEET TO A POINT WHICH BEARS NORTH 20°05'55" WEST, 255.94 FEET FROM THE TRUE POINT OF BEGINNING; THENCE SOUTH 20°05'55" EAST, 255.94 FEET TO THE TRUE POINT OF BEGINNING.

APN: 636-043-03

THAT PORTION OF SECTION 14, TOWNSHIP 7 SOUTH, RANGE 8 WEST, OF THE SAN BERNARDINO MERIDIAN, IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER THE OFFICIAL PLAT OF SAID LAND FILED IN THE DISTRICT LAND OFFICE, IN THE CITY OF LAGUNA NIGUEL, COUNTY OF ORANGE, STATE OF CALIFORNIA DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST NORTHERLY CORNER OF THE LAND DESCRIBED IN THE DEED TO LAGUNA DEVELOPMENT COMPANY, RECORDED MARCH 22, 1963 IN BOOK 6476, PAGES 877 TO 881 INCLUSIVE OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, SAID CORNER BEING A POINT ON A 1500.00 FOOT RADIUS CURVE CONCAVE SOUTHEASTERLY A RADIAL TO SAID POINT BEARS NORTH 50°00'00" WEST, THENCE NORTHEASTERLY 505.86 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 19°19'22"; THENCE NORTH 59°19'22" EAST 70.50 FEET TO THE BEGINNING OF A CURVE, CONCAVE NORTHWESTERLY HAVING A RADIUS OF 1,500.00 FEET; THENCE NORTHEASTERLY 538.54 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 20°34'14"; THENCE NORTH 38°45'08" EAST 540.85 FEET TO THE BEGINNING OF A CURVE CONCAVE SOUTHEASTERLY HAVING A RADIUS OF 1500.00 FEET; THENCE NORTHEASTERLY 1028.08 FEET ALONG SAID CURVE, THROUGH A CENTRAL ANGLE OF 39°16'11"; THENCE NORTH 78°01'19" EAST 767.43 FEET TO THE BEGINNING OF A CURVE CONCAVE NORTHEASTERLY HAVING A RADIUS OF 1500.00 FEET THENCE NORTHEASTERLY 305.59 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 11°40'22"; THENCE NORTH 23°39'03" WEST, RADIAL TO SAID LAST MENTIONED CURVE 52.00 FEET; THENCE NORTH 20°05'55" WEST 255.94 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 20°05'55" WEST 175.00 FEET; THENCE SOUTH 77°34'38" WEST 305.00 FEET TO A POINT ON A CURVE CONCAVE EASTERLY HAVING A RADIUS OF 945.00 FEET A RADIAL TO SAID POINT BEARS NORTH 87°00'08" WEST; THENCE SOUTHERLY 175.00 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 10°36'37" TO A POINT WHICH BEARS SOUTH 77°48'01" WEST 359.07 FEET FROM THE TRUE POINT OF BEGINNING; THENCE NORTH 77°48'01" EAST 359.07 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPT THEREFROM AN UNDIVIDED TWO-THIRDS INTEREST AND TO ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES UNDERLYING SAID LAND FOR A PERIOD OF 20 YEARS AS CONVEYED TO FIRST NATIONAL BANK IN SANTA ANA BY DEED DATED AUGUST 30, 1950 RECORDED NOVEMBER 2, 1951 IN BOOK 2249, PAGE 286, OFFICIAL RECORDS SUBJECT HOWEVER, TO THE CONDITIONS RELATING THERETO AS CONTAINED IN SAID DEED.

APN: 636-043-02

SEWER CONSTRUCTION NOTES

	SEWER CONSTRUCTION NOTES	QUANTITY
1	TRENCH AND INSTALL 8-INCH PVC (SDR-35) SEWER MAIN PER MOULTON NIGUEL STANDARD PLAN S-5.	125.5 L.F.
2	CONSTRUCT SEWER CLEANOUT (SIZE TO BE SAME AS MAINLINE) SEE SHEET 1, FOR DETAILS.	2 EA.
3	PROVIDE AND INSTALL PVC WYE FITTING (SIZE PER PLAN).	3 EA.
4	PROVIDE AND INSTALL 45° PVC BEND (SIZE PER PLAN).	3 EA.

WATER CONSTRUCTION NOTES

	WATER CONSTRUCTION NOTES	QUANTITY
10	PROVIDE, TRENCH AND INSTALL 2-INCH BRASS PIPE WRAPPED WITH 10 MIL (UPC) PIPE WRAP FOR BELOW GRADE INSTALLATIONS PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN IRR-11.	8 L.F.
11	PROVIDE, TRENCH AND INSTALL 6-INCH C900 PC150 PVC WATER PIPE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-11.	49 L.F.
12	PROVIDE AND INSTALL 2-INCH IRRIGATION BACKFLOW PREVENTION DEVICE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-17 & IRR-2.	2 EA.
13	PROVIDE AND INSTALL 4-INCH BACKFLOW PREVENTION DEVICE (WILKINS #375) PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-16.	2 EA.
14	CONSTRUCT CONCRETE THRUST BLOCKING PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-12.	2 EA.
15	PROVIDE AND INSTALL DUCTILE IRON, POLY WRAPPED FITTING (SIZE AND ANGLE PER PLAN).	2 EA.

OWNER

MCRT INVESTMENTS LLC
949 S. COAST DRIVE
SUITE 400
COSTA MESA, CALIFORNIA 92626
ATTN.: MICHAEL GENTHE
PHONE NO.: (714) 800-1382

SOIL ENGINEER

GEOCON WEST, INC.
3303 N. SAN FERNANDO BLVD.
SUITE 100
BURBANK, CALIFORNIA 91504
ATTN.: GERALD KASMAN
PHONE NO.: (818) 841-1704

CIVIL ENGINEER

KHR ASSOCIATES
4100 NEWPORT PLACE DRIVE
SUITE 200
NEWPORT BEACH, CALIFORNIA 92660
ATTN.: JAMES KAWAMURA/MIKE THOMAS
PHONE NO.: (949) 756-6440

UTILITY	NAME	TELEPHONE NO.
POWER	SDG&E	(800) 336-7343
WATER	MOULTON NIGUEL WATER	(949) 831-2500
SEWER	MOULTON NIGUEL WATER	(949) 831-2500
GAS	SOUTHERN CALIFORNIA GAS COMPANY	(800) 427-2200
PHONE/CABLE TV	COX	(949) 546-2600
PHONE/CABLE TV	AT&T	(800) 310-2355

SHEET INDEX

THE CITY OF LAGUNA NIGUEL
APPROVED

04/15/13

Know what's below. Call before you dig.

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS			
NO.	DATE:	DESCRIPTION	APPROVAL

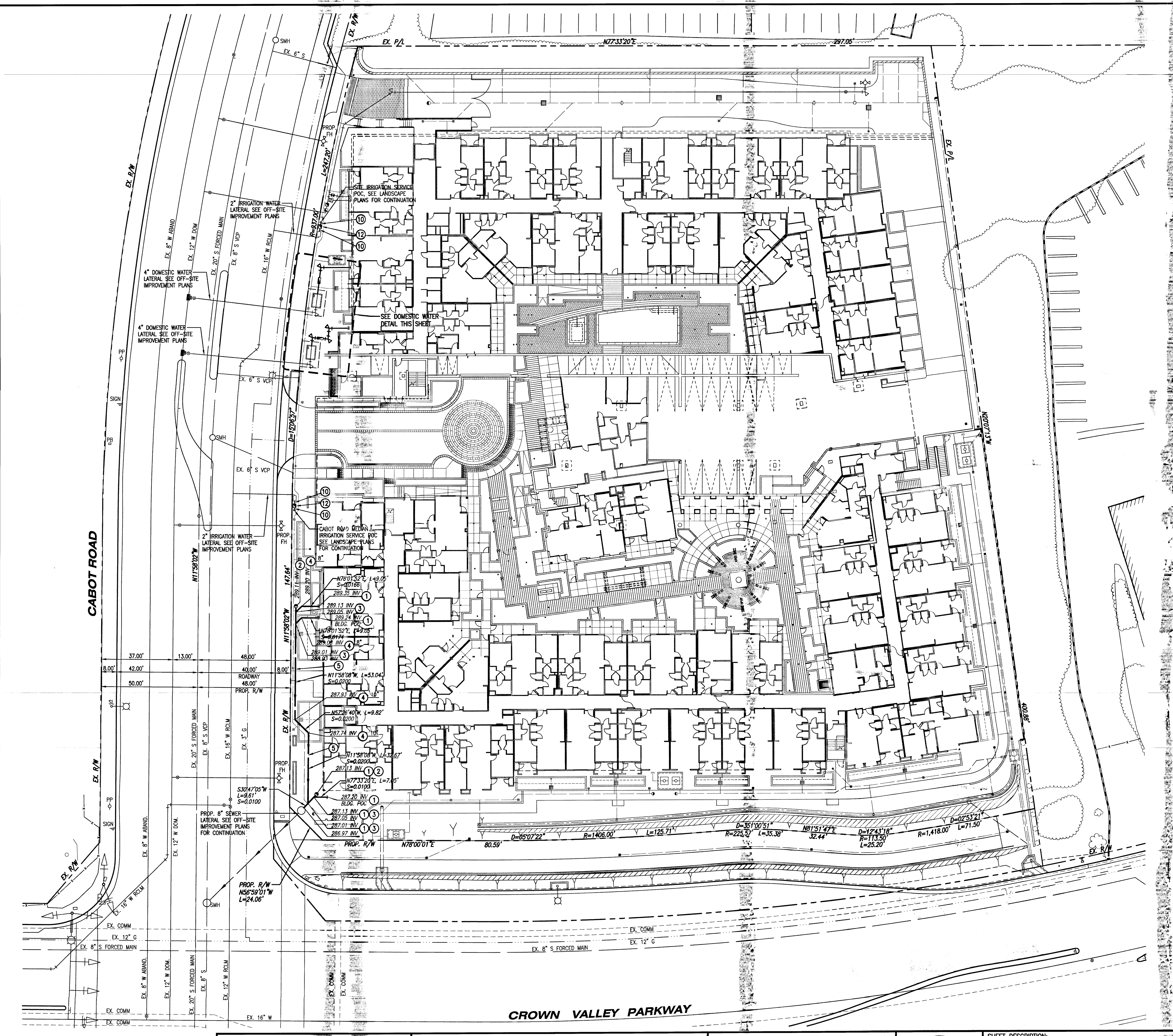
PREPARED BY:
KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
4100 Newport Place Drive - Suite 200
Newport Beach, California 92660
(949) 756-6440 Fax (949) 756-6444
UNDER THE SUPERVISION OF: JAMES H. KAWAMURA (R.C.E. 30560)

REGISTERED PROFESSIONAL ENGINEER
JAMES H. KAWAMURA
No. 30560
CIVIL
STATE OF CALIFORNIA

SHEET DESCRIPTION: **TITLE SHEET**

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER
5376001

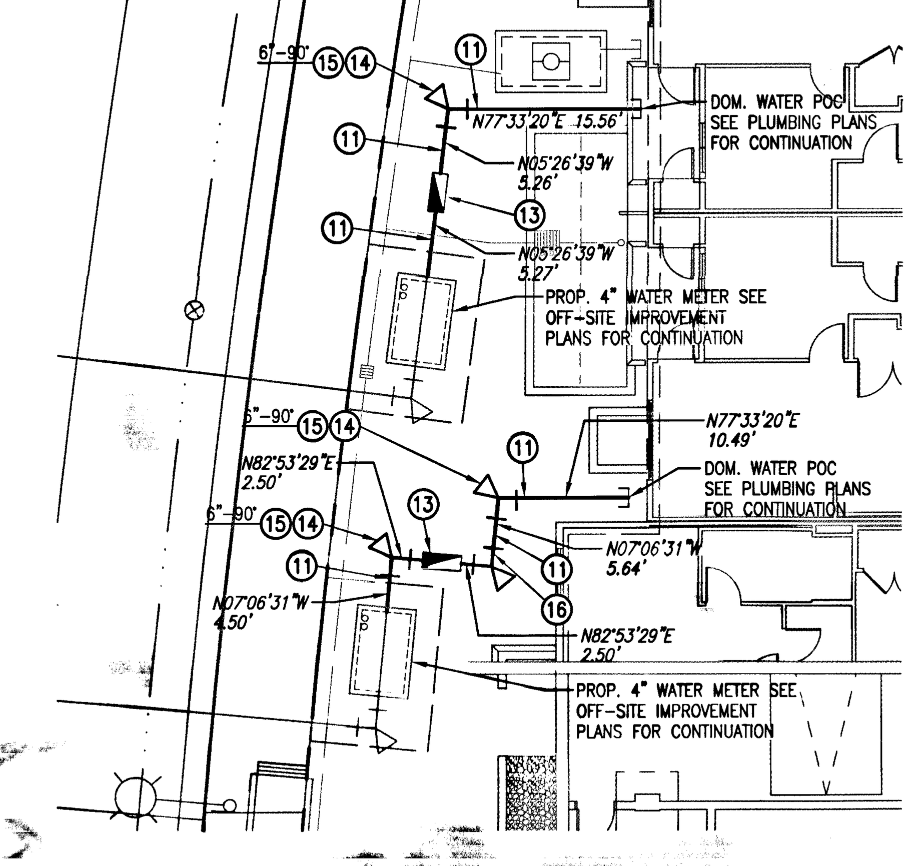


SEWER CONSTRUCTION NOTES

1. TRENCH AND INSTALL 8-INCH PVC (SDR-35) SEWER MAIN PER MOULTON NIGUEL STANDARD PLAN S-5.
2. CONSTRUCT SEWER CLEANOUT (SIZE TO BE SAME AS MAINLINE) SEE SHEET 1, FOR DETAILS.
3. PROVIDE AND INSTALL PVC WYE FITTING (SIZE PER PLAN).
4. PROVIDE AND INSTALL 45° PVC BEND (SIZE PER PLAN).
5. TRENCH AND INSTALL 10-INCH PVC (SDR-35) SEWER MAIN PER MOULTON NIGUEL STANDARD PLAN S-5.

WATER CONSTRUCTION NOTES

10. PROVIDE, TRENCH AND INSTALL 2-INCH BRASS PIPE WRAPPED WITH 10 MIL (UPC) PIPE WRAP FOR BELOW GRADE INSTALLATIONS PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN IRR-11.
11. PROVIDE, TRENCH AND INSTALL 6-INCH C900 PC150 PVC WATER PIPE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-11.
12. PROVIDE AND INSTALL 2-INCH IRRIGATION BACKFLOW PREVENTION DEVICE PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-17 & IRR-2.
13. PROVIDE AND INSTALL 4-INCH BACKFLOW PREVENTION DEVICE (WILKINS #375) PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-16.
14. CONSTRUCT CONCRETE THRUST BLOCKING PER MOULTON NIGUEL WATER DISTRICT STANDARD PLAN W-12.
15. PROVIDE AND INSTALL DUCTILE IRON, POLY WRAPPED FITTING (SIZE AND ANGLE PER PLAN).
16. PROVIDE AND INSTALL DUCTILE IRON, POLY WRAPPED FITTING WITH RESTRAINT JOINT (SIZE AND ANGLE PER PLAN).



DOMESTIC WATER SERVICE DETAIL

SCALE: 1" =10'

0 10 20 40 60
SCALE: 1"=20'
04/15/13

Know what's below. Call before you dig.

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL

PREPARED BY:
KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
4100 Newport Place Drive - Suite 200
Newport Beach, California 92660
(949) 756-6440 Fax (949) 756-6444
UNDER THE SUPERVISION OF: JAMES H. KAWAMURA (R.C.E. 30560)

REGISTERED PROFESSIONAL ENGINEER
JAMES H. KAWAMURA
No. 30560
Expiration: 03/31/14
CIVIL
STATE OF CALIFORNIA

SHEET DESCRIPTION: **ON-SITE PRIVATE SEWER & WATER PLAN**

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER: 5376001

SHEET NO. 2 OF 2

PLANNING & ZONE CLEARANCE

This Plan was inspected on__________and found to comply with applicable City land-use regulations.

This clearance is only valid for the life of the building permit.

The occupancy of this building shall not be changed from the use stated in the permit application except by issuance of a new Certificate of Use and Occupancy. Deviation from the approved plan shall be cause for stopping construction.

WARNING: This stamp indicates partial review only and does not constitute a building permit.

Laguna Niguel Community Development Department

PLANNING OK LRL

@ the Crown underground Sewer

PLN

25891 CROWN VALLEY PKWY LN

B13-0918

4 Sets Rec'd - 1 to GMU

Rev #1

B13-1232

SOIL RETENTION

DESIGNS INC.

Delta Revision #1 -
Verdura® 40 Segmental Retaining Wall Design

Project:
Crown Cabot Luxury Apartments
27961 Cabot Road
Laguna Niguel, CA

Prepared for:
Mill Creek Residential Trust, LLC
949 South Coast Drive
Suite 400
Costa Mesa, CA 92626

SRD Project No: 1105-004
August 14, 2013

2501 State Street • Carlsbad, CA 92008 • P: (760) 966-6090 • F: (760) 966-6099 • www.soilretention.com

SOIL RETENTION
D E S I G N S I N C .

Date: August 14, 2013 SRD Project No: 1105-004

Client: Mill Creek Residential Trust, LLC
Attn: Mr. Greg Lucas
949 South Coast Drive, Suite 400
Costa Mesa, CA 92626
Phone: (714) 800-1385; Fax: (714) 966-9384

Subject: Delta Revision #1 - ***Verdura***® 40 Segmental Retaining Wall Design, Crown Cabot Luxury Apartments, Laguna Niguel, CA

In accordance with your request, ***Soil Retention Designs, Inc. (SRD)*** has prepared this report for the proposed ***Verdura***® retaining wall at the subject site. The enclosed design addresses two (2) ***Verdura***® retaining walls located along the southerly perimeter of the proposed project site as depicted within the accompanying construction drawings (Delta 1 - ***Verdura***® Segmental Retaining Wall Plans - Sheets 1 through 4). The subject design is based upon the referenced grading plan and retaining wall elevations, prepared by KHR Associates. The subject report and accompanying construction drawings are both updated from the originally permitted design, dated June 20, 2013.

REFERENCED DOCUMENTS

The information used in the enclosed structural analyses included the following:

1. Updated Civil Grading Plans, Crown Cabot Luxury Apartments, prepared by KHR Associates.
2. Updated Geotechnical Design Criteria for Mechanically Stabilized Earth Retaining Walls, Proposed Multi-Family Residential Development, 25891 Crown Valley Parkway and 27961 Cabot Road, Laguna Niguel, CA, prepared by Geocon West, Inc., dated March 12, 2013. **(Appendix 2)**

SCOPE OF WORK

The scope of design services provided for this project included the following:

1. Review of the above referenced documents relative to obtaining necessary design parameters.
2. In-office analysis and design of the proposed ***Verdura***® retaining walls as required to accommodate the established civil design.
3. Preparation of this report, which contains our calculations and associated specifications, and accompanying construction plans that relate directly and specifically to the proposed ***Verdura***® retaining walls.

LIMITATIONS

The design and recommendations provided herein are applicable to the use of the ***Verdura***® retaining wall products, which is of proprietary ownership by Soil Retention Products, Inc.

Note that the scope of services authorized and provided herein is limited to design of the proposed ***Verdura***® retaining wall system. ***SRD*** did not provide any on-site geotechnical services such as subsurface investigations or identification/testing of soil materials that may be used in or near the proposed ***Verdura***® retaining wall. Information presented herein is based on data provided in the reference documents. If the conditions differ from those presented in the referenced documents, the engineering design and analyses provided by ***SRD*** may no longer be valid and additional engineering and analysis services may be required. Conditions noted above include, but are not limited to, slope configurations, wall system type, wall/slope heights, soil materials and structural and/or external loadings. In addition, it should be noted that ***SRD*** is the wall designer and not the geotechnical engineer-of-record.

VERDURA® RETAINING WALL DESIGN

General Project Description – The subject project consists of two (2) proposed ***Verdura***® Segmental Retaining Walls located along the southerly boundary of the proposed project. The walls are identified as Wall "A" and Wall "B" and are briefly described as follows:

- ***Wall "A"*** – The Wall "A" is located along the southerly boundary of the proposed project. Wall "A" has a proposed level grade above the wall crest. The wall is approximately 350 feet long with a maximum exposed height of 4.67 feet. A 3:1 slope descends from the toe of the wall to an existing curb. The embedment depth was designed to be a minimum of 2 feet from finish grade in front of the wall. Including embedment, the total wall height is a maximum of 6.67 feet per plan.

- ***Wall "B"*** – The Wall "B" is located along the southerly boundary of the proposed project. Wall "B" has a proposed low-height 2:1 slope above the wall crest. The wall is approximately 325 feet long with a maximum exposed height of 15.5 feet. A low-height 2:1 slope (roughly 1.5 feet high) descends from the toe of the wall to a proposed travelled way. The embedment depth was designed to be a minimum of 3 feet below finish grade in front of the wall, which is approximately 1.5-feet below the finish grade of the travelled way. Including embedment, the maximum total wall height is approximately 19 feet per plan.

Geotechnical Parameters - The geotechnical parameters used in design of the ***Verdura***® retaining wall are based on review of the referenced geotechnical report (Referenced Document #2) and are as follows:

- Reinforced zone (cohesion [c]=100 psf, friction angle [φ]=30°);
- Retained/foundation zone for bedrock (c=100 psf, φ=27°); and,
- Retained/foundation zone for engineered fill (c=100 psf, φ=20°).

In accordance with nationally recognized design methodology, cohesion within the reinforced and retained soils has been conservatively disregarded. The materials used within the reinforced zone may consist of either select onsite and/or imported fill material, provided the following quality criterion is met:

- Friction angle ≥ 30 degrees;
- Percent passing #200 sieve ≤ 35 percent;
- Expansion index of ≤ 50; and,
- Plasticity index of ≤ 20.

Seismic Design Parameters – The site acceleration of 0.32g was utilized for ***VRW*** design at the subject site based upon Geotechnical Design Criteria (Referenced Document #2).

Verdura® **Wall Components** – The subject wall designs use ***Verdura®*** 40 SRW units, Mirafi geogrids and other accessory products as described in "Part 2 – Products" of the "Specifications" of the accompanying construction drawings (Sheet 1).

Verdura® **Wall Design** - The ***Verdura®*** Retaining Wall proposed for the subject site have been designed for both static and pseudo-static conditions using computer program MSEW (Mechanically Stabilized Earth Wall) 3.0 design software, developed by ADAMA Engineering, Inc. The structural designs have been completed per the AASHTO 2002 (ASD) design methodology. Structural design calculations include internal, external and local stability analyses. The design calculations are provided in **Appendix 1** of this report and are preceded by summary pages of the critical factors of safety for the structural designs at the rear of this text.

Our analyses consisted of the incorporation of three (3) total designs for the proposed ***Verdura®*** Retaining Wall, which were incorporated within the accompanying construction drawings. The structural designs are as follows:

- **Design 1**– Wall "A" – 6.67-ft Total Height Design – Includes 4.67-ft high exposed height with a 2-ft embedment with a level crest condition. The design is completed for engineered fill materials in the retained and foundation zones. This design is also valid for the stronger the bedrock materials in the retained and foundations zones. The lower Wall "A" is designed without influence from the upper Wall "B" due to the offset of over 20 feet.

- **Design 2** – Wall "B" - 12.67-ft Total Height Design – Includes 9.67-ft high exposed height with a 3-ft embedment with a low-height 2:1 slope crest condition. The design is completed for engineered fill materials in the retained and foundation zones. This design is also valid for the stronger the bedrock materials in the retained and foundations zones if encountered.

- **Design 3** – Wall "B" – 19.33-ft Total Height Design – Includes 16.33-ft high exposed height with a 3-ft embedment with a 2:1 slope crest condition. The design is completed for bedrock materials in the retained and foundation zones.

Both Wall "B" designs incorporate an estimated 3,000-psf strip-load surcharge located 20 feet behind the wall for the proposed building perimeter footing.

The accompanying construction drawings (Delta 1 - ***Verdura***® Segmental Retaining Wall Plans - Sheets 1 through 4) consist of geogrid lengths, strengths and placement based upon these structural designs.

Minimum safety factors for external and internal stability satisfy the following criteria:

External Stability Calculations		
	Static	***Seismic***
Base Sliding	1.5	1.1
Bearing Capacity	2.0	1.5
Overturning	2.0	1.5
Internal Stability Calculations		
	Static	***Seismic***
Sliding	1.5	1.1
Geogrid Pullout	1.5	1.1
Geogrid Strength	1.5	1.1
Local Stability Calculations		
	Static	***Seismic***
Geogrid – Block Connection	1.5	1.1

Toe Embedment - Toe embedment (embedment of the wall base into the foundation soils) is typically provided to minimize the potential for erosion undermining of the wall base, enhance bearing capacity and enhance sliding resistance of the basal reinforcement layers. Embedment of the wall is accounted for in the calculations as part of the "total wall height". The embedment has no impact on the wall calculations (i.e. design methodology conservatively ignores passive earth pressures from soils in front of the wall and hence has no effect on the internal or external stability of the wall system/components).

Per nationally recognized standards and incorporation of project specific recommendations, the minimum requirements for wall embedment are summarized as follows:

MINIMUM EMBEDMENT REQUIREMENTS	
Sloping Condition at Toe of Wall	***Embedment Requirement****
Level	H'/20 (Minimum 1-foot)
3H:1V	H'/10
2H:1V	H'/7

**Note: H' equals the exposed height of an MSE wall.*

Toe embedment of a minimum of 2 to 3 feet for the proposed ***Verdura***® Retaining Walls, as specified on the accompanying construction plans, exceeds the minimum nationally recognized standards. A minimum 5-foot to slope daylight condition is also satisfied in sloping toe areas.

Wall Backfill – Requirements for backfill materials surrounding the proposed wall are included in the specifications of the construction drawings for this project. In summary, the materials should consist of engineered fill comprised of select onsite and/or imported soils accepted by the geotechnical engineer–of-record and having a minimum friction angle of 30 degrees shear strength when remolded to 90% of modified proctor density (ASTM D-1557). Soils within 6 inches of a reinforcing geosynthetic layer shall not contain particles larger than 4 inches.

Backfill Drainage – Retaining wall sub-drainage should be constructed in accordance with the details shown on the accompanying construction drawings and/or as directed by the geotechnical engineer of record.

Surface Water Drainage – Drainage and channeling of surface water from above wall and from surrounding improvements should be directed to collection devices away from the retaining wall structures. Where possible, surface water should be collected in v-ditches, swales, or other collection/channeling devices in order to contain and discharge water to either end of the wall or away from the structures. Berms, curbs, gutters, swales or other devices may be required to prevent excessive amount of concentrated runoff from draining over the crest of the wall and creating erosion problems. In no case should large volumes of runoff or concentrated flows be allowed to cascade over the top of ***Verdura***® Segmental Retaining Walls, discharge into the backfill or infill soils from which the wall is constructed or otherwise be allowed to saturate the structural fill of the wall.

Improvements Above Walls – The uppermost geogrid reinforcements are designed to be at least 2 feet beneath the top of wall elevations within the zone depicted on the accompanying construction drawings. The 2-foot zone is typically considered a suitable depth in which landscaping can be installed.

Infrastructure improvements installed after wall construction should be designed to not conflict with the geogrid reinforcements when possible. Where unavoidable, trench excavations within geogrid zones should be minimized to the fullest extent and should be aligned perpendicular to the wall face to remove the smallest amount of the geogrid reinforcements.

SRD should be notified of any structural loading when planned within the vicinity of the proposed ***Verdura***® Retaining Wall. Additional analyses may be required in order to assess the stability of the designed walls should they differ from our assumptions.

Construction Details – Detailed specifications, relative to the construction of the ***Verdura***® retaining wall system, are provided on the accompanying construction drawings (Delta 1 - ***Verdura***® Segmental Retaining Wall Plans - Sheets 1 through 4). The lengths, types and spacing of geosynthetic reinforcements are depicted on the wall profiles with corresponding cross-sections for reference. The minimum recommended geogrid lengths in accordance with the total heights should be maintained throughout the wall per the accompanying drawings. Geogrid spacing for all wall areas shall not be more than three (3) block courses except for top of wall areas as noted on the accompanying construction plans.

Plantability and Landscaping – The ***Verdura***® retaining wall system has a fully plantable fascia. The ***Verdura***® SRW unit is designed with a "lip" on the block which helps to retain soils within the block when the units are spaced apart up to 9 inches. The free-face design allows for vegetation to root itself back into the cooler soils of the reinforced mass and does not limit the root area to a smaller concrete planter pocket. A landscape architect should be consulted for the site specific applications.

GLOBAL STABILITY ANALYSES

The global stability of any slope and retaining wall combination is the responsibility of the geotechnical engineer-of-record and should be provided under separate cover. Minimum safety factors for potential failure surfaces that may occur behind and beneath the ***Verdura***® retaining walls within the surrounding slopes should be documented and approved by all appropriate reviewing agencies.

GEOTECHNICAL ENGINEER-OF-RECORD

It is the project geotechnical engineer-of-record's responsibility to review the enclosed design calculations, plans, and specifications in order to ensure that the assumptions made herein are consistent with their intentions. The geotechnical engineer of record will be responsible for ensuring that the soil, materials, and methods used in construction of the proposed ***Verdura***® retaining wall systems are conducted in accordance with the specifications outlined herein.

CONCLUSIONS

Construction of the above referenced ***Verdura***® retaining walls is feasible provided that the recommendations included herein and within the accompanying construction drawings are followed.

If you have any questions or wish additional information, please contact the undersigned.

Respectfully Submitted,

Darien Osborne, RCE 64108
Senior Project Engineer

REGISTERED PROFESSIONAL ENGINEER
DARIEN A. OSBORNE
No. C64108
EXP. 12/31/14
CIVIL
STATE OF CALIFORNIA

Distribution: (6) Addressee

Attachments: Design Summary Tables – Rear of Text
Appendix 1 - ***Verdura***® Retaining Wall Design Calculations
Appendix 2 – Geotechnical Design Criteria for MSE Retaining Walls

Design Summary Table Total Height Design (H_{TOT}=6.67')					
DESIGN 1					
Structure Geometry					
	Total Height	6.67' (4.67' Exposed with 2' Embedment)			
	Crest Condition	Level Crest Condition			
	Minimum Length/Height Ratio	8'/6.67' (1.20)			
Geotechnical Parameters		**Reinforced**	**Retained**	**Foundation**	
	Friction angle, φ, degrees	30	20*	20*	
	Dry Unit Weight, γ_d, pcf	120	115	115	
	Cohesion, c, psf	100**	100**	100	
	Seismic acceleration, g	0.32g			
Global Stability		**Per Geotechnical Engineer of Record**			
***Soils within the retained and foundation zones are modeled as "Engineered Fill". **Cohesion within the reinforced and retained soil zones is conservatively ignored within the analysis.**					
Minimum Factor of Safety					
		FS, Static		**FS, Seismic**	
External Stability		**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
	Sliding	2.75	≥1.5	1.66	≥1.1
	Overturning	10.79	≥2.0	5.43	≥1.5
	Bearing Capacity/Settlement	5.51	≥2.0	4.64	≥1.5
Internal Stability		**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
	Sliding	3.95	≥1.5	2.39	≥1.1
	Pullout	6.69	≥1.5	2.84	≥1.1
	Geogrid Strength	6.72	≥1.5	5.00	≥1.1
Local Stability		**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
	Geogrid to Block Connection	7.08	≥1.5	3.61	≥1.1

Design Summary Table Total Height Design (H_{TOT}=12.67')			
DESIGN 2			
Structure Geometry			
Total Height	12.67' (9.67' Exposed with 3' Embedment)		
Crest Condition	2:1 Slope Crest Condition		
Minimum Length/Height Ratio	17'/12.67' (1.34)		
Geotechnical Parameters	**Reinforced**	**Reinforced**	**Reinforced**
Friction angle, φ, degrees	30	20*	20*
Dry Unit Weight, γ_d, pcf	120	115	115
Cohesion, c, psf	100**	100**	100
Seismic acceleration, g	0.32g		
Global Stability	**Per Geotechnical Engineer of Record**		

*Soils within the retained and foundation zones are modeled as "Engineered Fill".
**Cohesion within the reinforced and retained soil zones is conservatively ignored within the analysis.

Minimum Factor of Safety				
	FS, Static		**FS, Seismic**	
External Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	1.80	≥1.5	1.14	≥1.1
Overturning	8.96	≥2.0	4.61	≥1.5
Bearing Capacity/Settlement	4.08	≥2.0	3.37	≥1.5
Internal Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.38	≥1.5	1.55	≥1.1
Pullout	10.25	≥1.5	3.06	≥1.1
Geogrid Strength	2.68	≥1.5	1.64	≥1.1
Local Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Geogrid to Block Connection	3.30	≥1.5	1.60	≥1.1

Design Summary Table
Total Height Design (H_{TOT}=19.33')

DESIGN 3

Structure Geometry			
Total Height	19.33' (16.33' Exposed with 3' Embedment)		
Crest Condition	2:1 Slope Crest Condition		
Minimum Length/Height Ratio	17'/19.33' (0.88)		
Geotechnical Parameters	**Reinforced**	**Reinforced**	**Reinforced**
Friction angle, φ, degrees	30	27*	27*
Dry Unit Weight, γ_d, pcf	120	115	115
Cohesion, c, psf	100**	100**	100
Seismic acceleration, g	0.32g		
Global Stability	**Per Geotechnical Engineer of Record**		

***Soils within the retained and foundation zones are modeled as "Bedrock".**
****Cohesion within the reinforced and retained soil zones is conservatively ignored within the analysis.**

Minimum Factor of Safety

	FS, Static		**FS, Seismic**	
External Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.25	≥1.5	1.28	≥1.1
Overturning	5.74	≥2.0	2.63	≥1.5
Bearing Capacity/Settlement	7.05	≥2.0	4.16	≥1.5
Internal Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	1.98	≥1.5	1.17	≥1.1
Pullout	7.88	≥1.5	3.09	≥1.1
Geogrid Strength	3.33	≥1.5	1.83	≥1.1
Local Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Geogrid to Block Connection	4.34	≥1.5	1.47	≥1.1

Appendix 1

Verdura® Retaining Wall Design Calculations

(30 Pages)

AASHTO 2002 ASD DESIGN METHOD
Crown Cabot Luxury Apartments

MSEW(3.0): Update # 14.3

PROJECT IDENTIFICATION

Title:	Crown Cabot Luxury Apartments
Project Number:	1105 004
Client:	Mill Creek Residential Trust, LLC
Designer:	DO
Station Number:	

Description:

Wall "A" - 6.67 FT with Level Crest Condition - Engineered Fill in Retained and Foundation Soil Zones

Company's information:

Name: Soil Retention Designs, Inc.
Street: 2501 State Street

Carlsbad, CA 92008
Telephone #: (760) 966-6090
Fax #: (760) 966-6099
E-Mail: dosborne@soilretention.com

Original file path and name: J:\SRDesign\Job Folder\1105-004 Crown Cabot Luxery Apar..... .....WALL A - 6.67 FT.BEN

Original date and time of creating this file: Mon Nov 29 16:13:17 2010

PROGRAM MODE: ANALYSIS of a SIMPLE STRUCTURE using GEOGRID as reinforcing material.

SOIL DATA

REINFORCED SOIL

Unit weight, γ 120.0 lb/ft^3

Design value of internal angle of friction, ϕ 30.0 °

RETAINED SOIL

Unit weight, γ 115.0 lb/ft^3

Design value of internal angle of friction, ϕ 20.0 °

FOUNDATION SOIL (Considered as an equivalent uniform soil)

Equivalent unit weight, $\gamma_{equiv.}$ 115.0 lb/ft^3

Equivalent internal angle of friction, $\phi_{equiv.}$ 20.0 °

Equivalent cohesion, $c_{equiv.}$ 100.0 lb/ft^2

Water table does not affect bearing capacity

LATERAL EARTH PRESSURE COEFFICIENTS

Ka (internal stability) = 0.2467 (if batter is less than 10°, Ka is calculated from eq. 15. Otherwise, eq. 38 is utilized)
Inclination of internal slip plane, ψ = 53.00° (see Fig. 28 in DEMO 82).
Ka (external stability) = 0.4113 (if batter is less than 10°, Ka is calculated from eq. 16. Otherwise, eq. 17 is utilized)

BEARING CAPACITY

Bearing capacity coefficients (calculated by MSEW): Nc = 14.83 N γ= 5.39

SEISMICITY

Maximum ground acceleration coefficient, A = 0.320
Design acceleration coefficient in Internal Stability: Kh = Am = 0.362
Design acceleration coefficient in External Stability: Kh_d = 0.208 => Kh = Am = 0.208
(Kh in External Stability is based on allowable displacement, d = 25 mm. using FHWA-NHI-00-043 equation)

Kae (Kh > 0) = 0.6200 Kae (Kh = 0) = 0.4113 Δ Kae = 0.2087
Seismic soil-geogrid friction coefficient, F* is 80.0% of its specified static value.

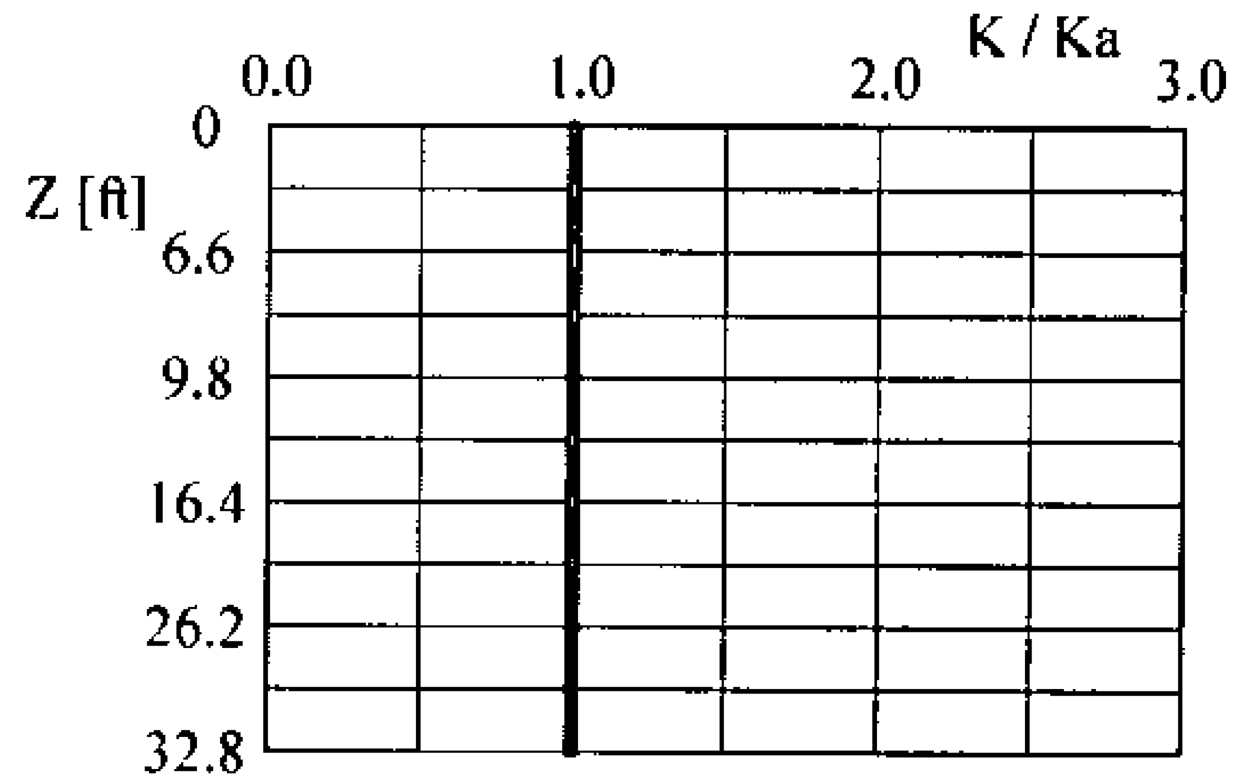
INPUT DATA: Geogrids
(Analysis)

DATA	Geogrid type #1	Geogrid type #2	Geogrid type #3	Geogrid type #4	Geogrid type #5
Tult [lb/ft]	3590.0	6230.0	8300.0	12420.0	
Durability reduction factor, RFd	1.10	1.10	1.10	1.10	
Installation-damage reduction factor, RFid	1.11	1.10	1.10	1.10	
Creep reduction factor, RFc	1.67	1.67	1.67	1.67	N/A
Fs-overall for strength	N/A	N/A	N/A	N/A	
Coverage ratio, Rc	1.000	1.000	1.000	1.000	
Friction angle along geogrid-soil interface, ρ	26.10	26.10	26.10	26.10	
Pullout resistance factor, F*	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	N/A
Scale-effect correction factor, α	0.8	0.8	0.8	0.8	

Note: Z for calculating K/Ka and F* is measured from top of the wall at the face (AASHTO).

Variation of Lateral Earth Pressure Coefficient With Depth

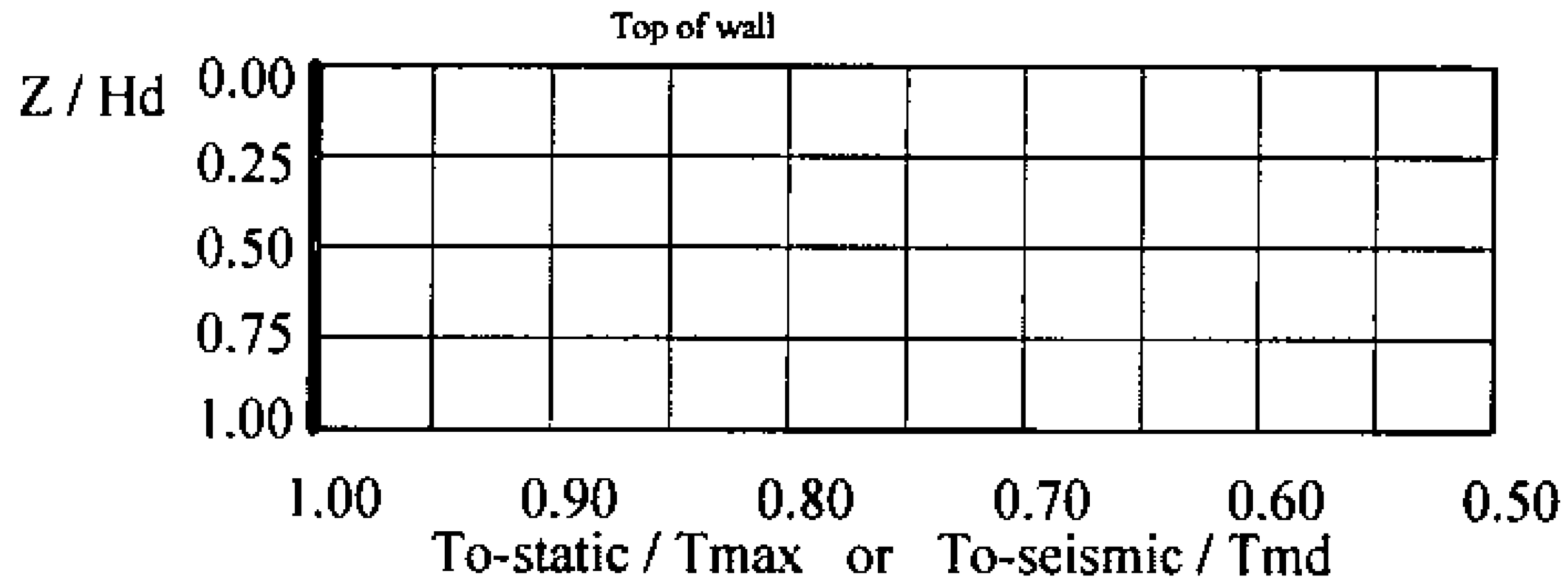
Z	K / Ka
0 ft	1.00
3.3 ft	1.00
6.6 ft	1.00
9.8 ft	1.00
13.1 ft	1.00
16.4 ft	1.00
19.7 ft	1.00



INPUT DATA: Facia and Connection (according to revised Demo 82) (Analysis)

FACIA type: Facing enabling frictional connection of reinforcement (e.g., modular concrete blocks, gabions)
Depth/height of block is 1.00/0.67 ft. Horizontal distance to Center of Gravity of block is 0.42 ft.
Average unit weight of block is $\gamma_f = 117.00$ lb/ft³

Z / Hd	To-static / Tmax or To-seismic / Tmd
0.00	1.00
0.25	1.00
0.50	1.00
0.75	1.00
1.00	1.00



Geogrid Type #1		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ [1]	CRult [2]	σ	CRult	σ	CRult	σ	CRult	σ	CRult
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

Geogrid Type #1 [3]		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

(1) σ = Confining stress in between stacked blocks [lb/ft²]
(2) CRult = Tc-ult / Tult
(3) CRcr = Tcre / Tult

In seismic analysis, long term strength is reduced to 80% of its static value.

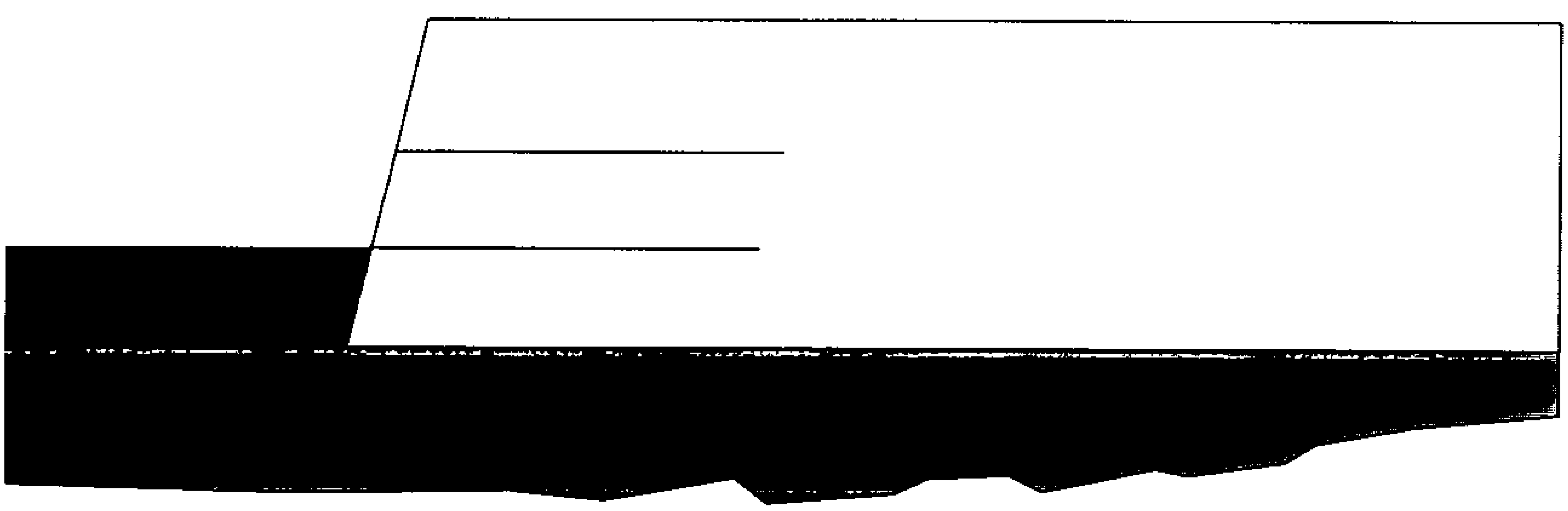
D A T A (for connection only)	Type #1	Type #2	Type #3	Type #4	Type #5
Product Name	V40 - 5XT	V40 - 8XT	V40 - 10XT	V40 - 20XT	N/A
Connection strength reduction factor, RFd	1.10	1.10	1.10	1.10	N/A
Creep reduction factor, RFc	N/A	N/A	N/A	N/A	N/A

INPUT DATA: Geometry and Surcharge loads (of a SIMPLE STRUCTURE)

Design height, Hd	6.67	[ft]	{ Embedded depth is E = 2.00 ft, and height above top of finished bottom grade is H = 4.67 ft }
Batter, ω	14.0	[deg]	
Backslope, β	0.0	[deg]	
Backslope rise	0.0	[ft]	Broken back equivalent angle, I = 0.00° (see Fig. 25 in DEMO 82)

UNIFORM SURCHARGE
Uniformly distributed dead load is 0.0 [lb/ft ^{2}]

ANALYZED REINFORCEMENT LAYOUT:



SCALE:

0 2 4 6 [ft]

ANALYSIS: CALCULATED FACTORS (Static conditions)

Bearing capacity, Fs = 5.51, Meyerhof stress = 719 lb/ft².

Foundation Interface: Direct sliding, Fs = 2.745, Eccentricity, e/L = 0.0010, Fs-overturning = 10.79

GEOGRID				CONNECTION						
#	Elevation [ft]	Length [ft]	Type #	Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	8.00	2	7.08	6.71	6.715	6.690	3.948	-0.0113	V40 - 8XT
2	4.00	8.00	2	15.41	15.46	15.465	7.549	7.138	-0.0129	V40 - 8XT

ANALYSIS: CALCULATED FACTORS (Seismic conditions)

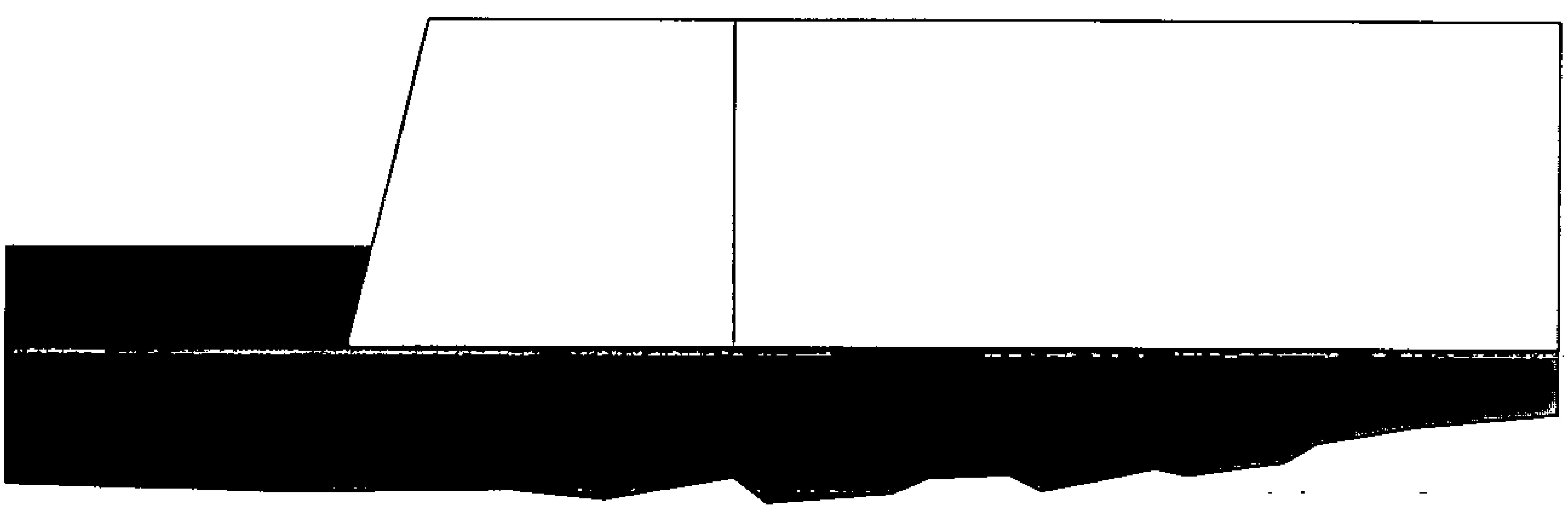
Bearing capacity, Fs = 4.64, Meyerhof stress = 799 lb/ft².

Foundation Interface: Direct sliding, Fs = 1.664, Eccentricity, e/L = 0.0512, Fs-overturning = 5.43

GEOGRID				CONNECTION						
#	Elevation [ft]	Length [ft]	Type #	Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	8.00	2	3.61	5.00	5.004	3.406	2.393	0.0125	V40 - 8XT
2	4.00	8.00	2	5.80	9.24	9.238	2.841	4.326	-0.0053	V40 - 8XT

BEARING CAPACITY for GIVEN LAYOUT

	STATIC	SEISMIC	UNITS
(Water table does not affect bearing capacity)			
Ultimate bearing capacity, q-ult	3956	3707	[lb/ft ^{2}]
Meyerhof stress, σ_V	718.7	799	[lb/ft ^{2}]
Eccentricity, e	0.01	0.41	[ft]
Eccentricity, e/L	0.001	0.051	
Fs calculated	5.51	4.64	
Base length	8.00	8.00	[ft]



SCALE:

0 2 4 6 [ft]

DIRECT SLIDING for GIVEN LAYOUT (for GEOGRID reinforcements)

Along reinforced and foundation soils interface: Fs-static = 2.745 and Fs-seismic = 1.664

#	Geogrid Elevation [ft]	Geogrid Length [ft]	Fs Static	Fs Seismic	Geogrid Type #	Product name
1	2.00	8.00	3.948	2.393	2	V40 - 8XT
2	4.00	8.00	7.138	4.326	2	V40 - 8XT

ECCENTRICITY for GIVEN LAYOUT

At interface with foundation: e/L static = 0.0010, e/L seismic = 0.0512; Overturning: Fs-static = 10.79, Fs-seismic = 5.43

#	Geogrid Elevation [ft]	Geogrid Length [ft]	e / L Static	e / L Seismic	Geogrid Type #	Product name
1	2.00	8.00	-0.0113	0.0125	2	V40 - 8XT
2	4.00	8.00	-0.0129	-0.0053	2	V40 - 8XT

RESULTS for STRENGTH

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Tavailable [lb/ft]	Tmax [lb/ft]	Tmd [lb/ft]	Specified minimum Fs-overall static	Actual calculated Fs-overall static	Specified minimum Fs-overall seismic	Actual calculated Fs-overall seismic	Product name
1	2.00	3083	459.14	262.25	N/A	6.715	N/A	5.004	V40 - 8XT
2	4.00	3083	199.36	224.43	N/A	15.465	N/A	9.238	V40 - 8XT

RESULTS for PULLOUT

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Coverage Ratio	Tmax [lb/ft]	Tmd [lb/ft]	Le [ft]	La [ft]	Avail.Static Pullout, Pr [lb/ft]	Specified Static Fs	Actual Static Fs	Avail.Seism. Pullout, Pr [lb/ft]	Specified Seismic Fs	Actual Seismic Fs
1	2.00	1.000	459.1	262.3	6.99	1.01	3071.7	N/A	6.690	2457.4	N/A	3.406
2	4.00	1.000	199.4	224.4	5.98	2.02	1505.0	N/A	7.549	1204.0	N/A	2.841

RESULTS for CONNECTION (static conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	459	0.57	0.57	3252	3083	N/A	7.08	N/A	6.71	V40 - 8XT
2	4.00	199	0.54	0.54	3072	3083	N/A	15.41	N/A	15.46	V40 - 8XT

RESULTS for CONNECTION (seismic conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	721	0.57	0.46	2602	3083	N/A	3.61	N/A	5.00	V40 - 8XT
2	4.00	424	0.54	0.43	2458	3083	N/A	5.80	N/A	9.24	V40 - 8XT

AASHTO 2002 ASD DESIGN METHOD
Crown Cabot Luxury Apartments
MSEW(3.0): Update # 14.3

PROJECT IDENTIFICATION

Title:	Crown Cabot Luxury Apartments
Project Number:	1105 004
Client:	Mill Creek Residential Trust, LLC
Designer:	DO
Station Number:	

Description:

Wall "B" - 12.67 FT with 2:1 Crest Condition - Engineered Fill in Foundation and Retained Soil Zones

Company's information:

Name: Soil Retention Designs, Inc.
Street: 2501 State Street

Carlsbad, CA 92008
Telephone #: (760) 966-6090
Fax #: (760) 966-6099
E-Mail: dosborne@soilretention.com

Original file path and name: J:\SRDesign\Job Folder\1105-004 Crown Cabot Luxery Apar..... .....ALL B - 12.67 FT.BEN
Original date and time of creating this file: Mon Nov 29 16:13:17 2010

PROGRAM MODE: ANALYSIS of a SIMPLE STRUCTURE using GEOGRID as reinforcing material.

SOIL DATA

REINFORCED SOIL

Unit weight, γ	120.0 lb/ft ^{3}
Design value of internal angle of friction, ϕ	30.0 °

RETAINED SOIL

Unit weight, γ	115.0 lb/ft ^{3}
Design value of internal angle of friction, ϕ	20.0 °

FOUNDATION SOIL (Considered as an equivalent uniform soil)

Equivalent unit weight, $\gamma_{equiv.}$	115.0 lb/ft ^{3}
Equivalent internal angle of friction, $\phi_{equiv.}$	20.0 °
Equivalent cohesion, $c_{equiv.}$	100.0 lb/ft ^{2}

Water table does not affect bearing capacity

LATERAL EARTH PRESSURE COEFFICIENTS

Ka (internal stability) = 0.2467 (if batter is less than 10°, Ka is calculated from eq. 15. Otherwise, eq. 38 is utilized)
Inclination of internal slip plane, ψ= 40.87° (see Fig. 28 in DEMO 82).
Ka (external stability) = 0.4113 (if batter is less than 10°, Ka is calculated from eq. 16. Otherwise, eq. 17 is utilized)

BEARING CAPACITY

Bearing capacity coefficients (calculated by MSEW): Nc = 14.83 N γ= 5.39

SEISMICITY

Maximum ground acceleration coefficient, A = 0.320
Design acceleration coefficient in Internal Stability: Kh = Am = 0.362
Design acceleration coefficient in External Stability: Kh_d = 0.208 => Kh = Am = 0.208
(Kh in External Stability is based on allowable displacement, d = 25 mm. using FHWA-NHI-00-043 equation)

Kae (Kh > 0) = 0.7107 Kae (Kh = 0) = 0.4113 Δ Kae = 0.2994
Seismic soil-geogrid friction coefficient, F* is 80.0% of its specified static value.

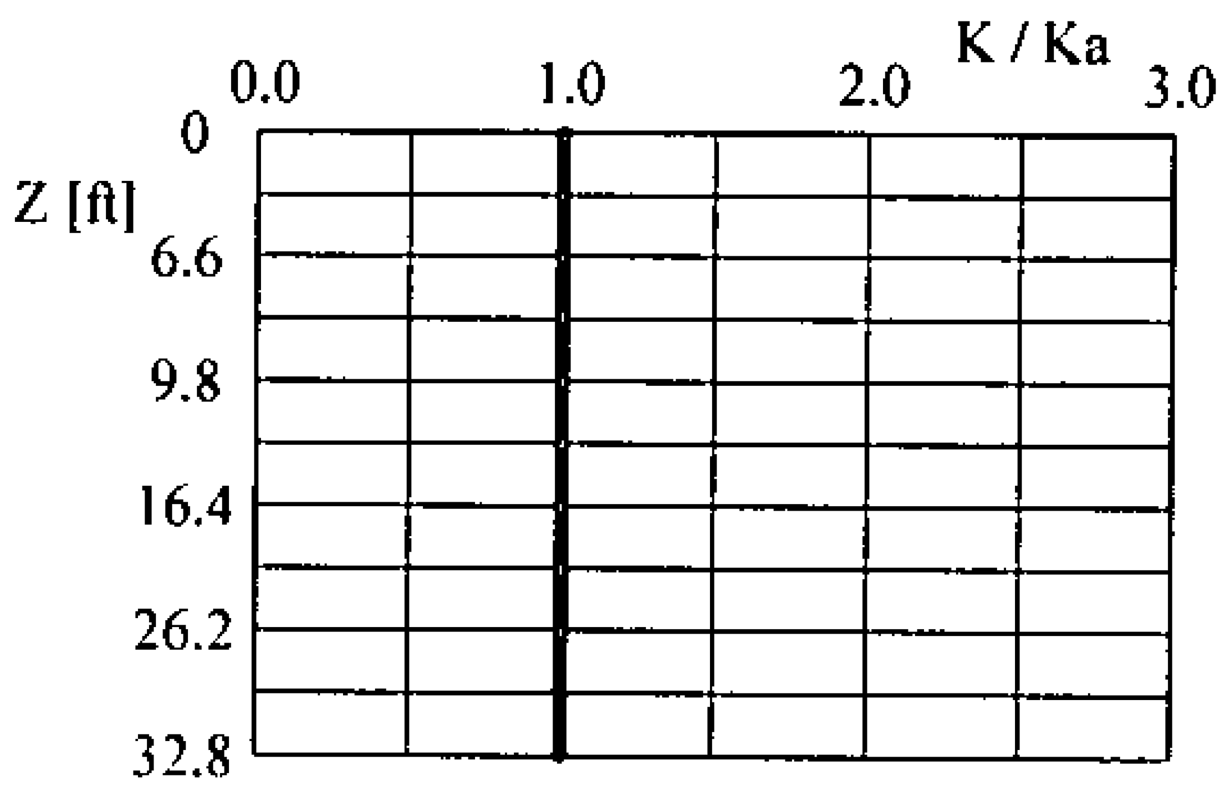
INPUT DATA: Geogrids
(Analysis)

D A T A	Geogrid type #1	Geogrid type #2	Geogrid type #3	Geogrid type #4	Geogrid type #5
Tult [lb/ft]	3590.0	6230.0	8300.0	12420.0	
Durability reduction factor, RFd	1.10	1.10	1.10	1.10	
Installation-damage reduction factor, RFid	1.11	1.10	1.10	1.10	
Creep reduction factor, RFc	1.67	1.67	1.67	1.67	N/A
Fs-overall for strength	N/A	N/A	N/A	N/A	
Coverage ratio, Rc	1.000	1.000	1.000	1.000	
Friction angle along geogrid-soil interface, ρ	26.10	26.10	26.10	26.10	
Pullout resistance factor, F*	0.85·tanϕ	0.85·tanϕ	0.85·tanϕ	0.85·tanϕ	N/A
Scale-effect correction factor, α	0.8	0.8	0.8	0.8	

Note: Z for calculating K/Ka and F* is measured from top of the wall at the face (AASHTO).

Variation of Lateral Earth Pressure Coefficient With Depth

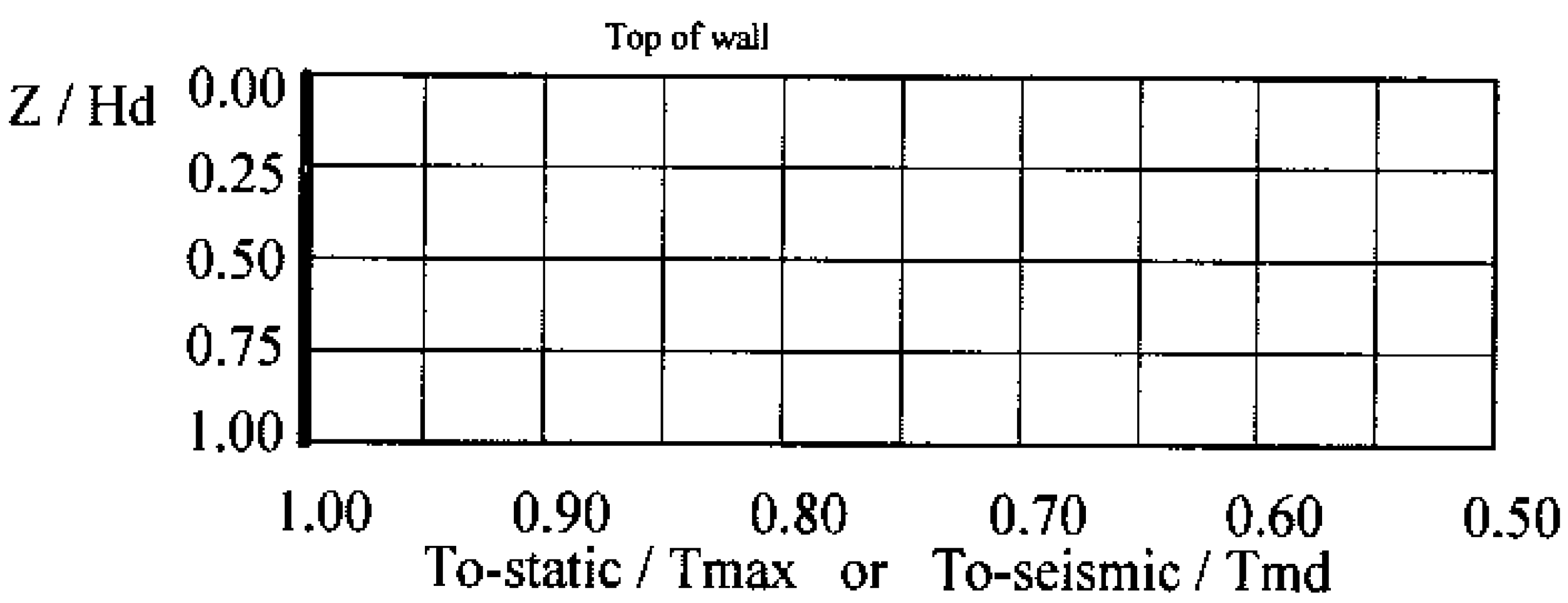
Z	K / Ka
0 ft	1.00
3.3 ft	1.00
6.6 ft	1.00
9.8 ft	1.00
13.1 ft	1.00
16.4 ft	1.00
19.7 ft	1.00



INPUT DATA: Facia and Connection (according to revised Demo 82)
(Analysis)

FACIA type: Facing enabling frictional connection of reinforcement (e.g., modular concrete blocks, gabions)
Depth/height of block is 1.00/0.67 ft. Horizontal distance to Center of Gravity of block is 0.42 ft.
Average unit weight of block is $\gamma_f = 117.00$ lb/ft [3]

Z / Hd	To-static / Tmax or To-seismic / Tmd
0.00	1.00
0.25	1.00
0.50	1.00
0.75	1.00
1.00	1.00



Geogrid Type #1		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ [(1)]	CRult [(2)]	σ	CRult	σ	CRult	σ	CRult	σ	CRult
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

Geogrid Type #1 [3)]		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

[(1)] σ = Confining stress in between stacked blocks [lb/ft ²]
[(2)] CRult = Tc-ult / Tult
[(3)] CRcr = Tcre / Tult

In seismic analysis, long term strength is reduced to 100% of its static value.

D A T A (for connection only)	Type #1	Type #2	Type #3	Type #4	Type #5
Product Name	V40 - 5XT	V40 - 8XT	V40 - 10XT	V40 - 20XT	N/A
Connection strength reduction factor, RFd	1.10	1.10	1.10	1.10	N/A
Creep reduction factor, RFc	N/A	N/A	N/A	N/A	N/A

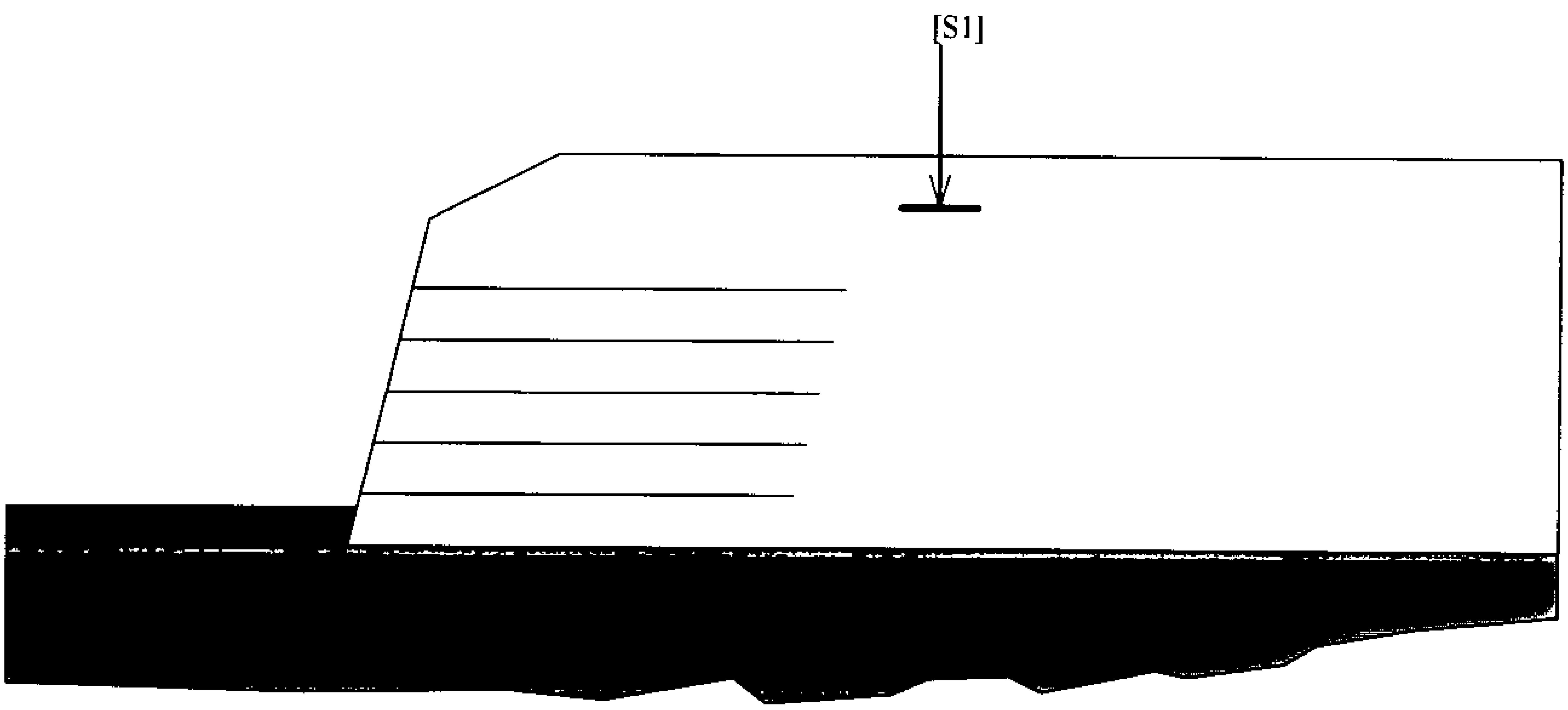
INPUT DATA: Geometry and Surcharge loads (of a SIMPLE STRUCTURE)

Design height, Hd	12.67	[ft]	{ Embedded depth is E = 1.50 ft, and height above top of finished bottom grade is H = 11.17 ft }
Batter, ω	14.0	[deg]	
Backslope, β	26.0	[deg]	
Backslope rise	2.5	[ft]	Broken back equivalent angle, I = 5.63° (see Fig. 25 in DEMO 82)

UNIFORM SURCHARGE
Uniformly distributed dead load is 0.0 [lb/ft ²]

OTHER EXTERNAL LOAD(S)
[S1] Strip Load, Qv-d = 3000.0 and Qv-l = 0.0 [lb/ft ²].
Footing width, b=3.0 [ft]. Distance of center of footing from wall face, d = 20.0 [ft] @ depth of 2.0 [ft] below soil surface.

ANALYZED REINFORCEMENT LAYOUT:



SCALE:

ANALYSIS: CALCULATED FACTORS (Static conditions)

Bearing capacity, Fs = 4.08, Meyerhof stress = 1637 lb/ft².
Foundation Interface: Direct sliding, Fs = 1.801, Eccentricity, e/L = -0.0063, Fs-overturning = 8.96

GEOGRID				CONNECTION						
#	Elevation [ft]	Length [ft]	Type #	Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	17.00	2	3.30	2.68	2.681	16.166	2.379	-0.0164	V40 - 8XT
2	4.00	17.00	2	5.84	4.98	4.984	23.039	2.826	-0.0244	V40 - 8XT
3	6.00	17.00	2	6.86	6.16	6.164	20.461	3.612	-0.0304	V40 - 8XT
4	8.00	17.00	2	8.52	8.08	8.077	17.252	5.386	-0.0348	V40 - 8XT
5	10.00	17.00	2	8.14	8.17	8.173	10.246	7.424	-0.0411	V40 - 8XT

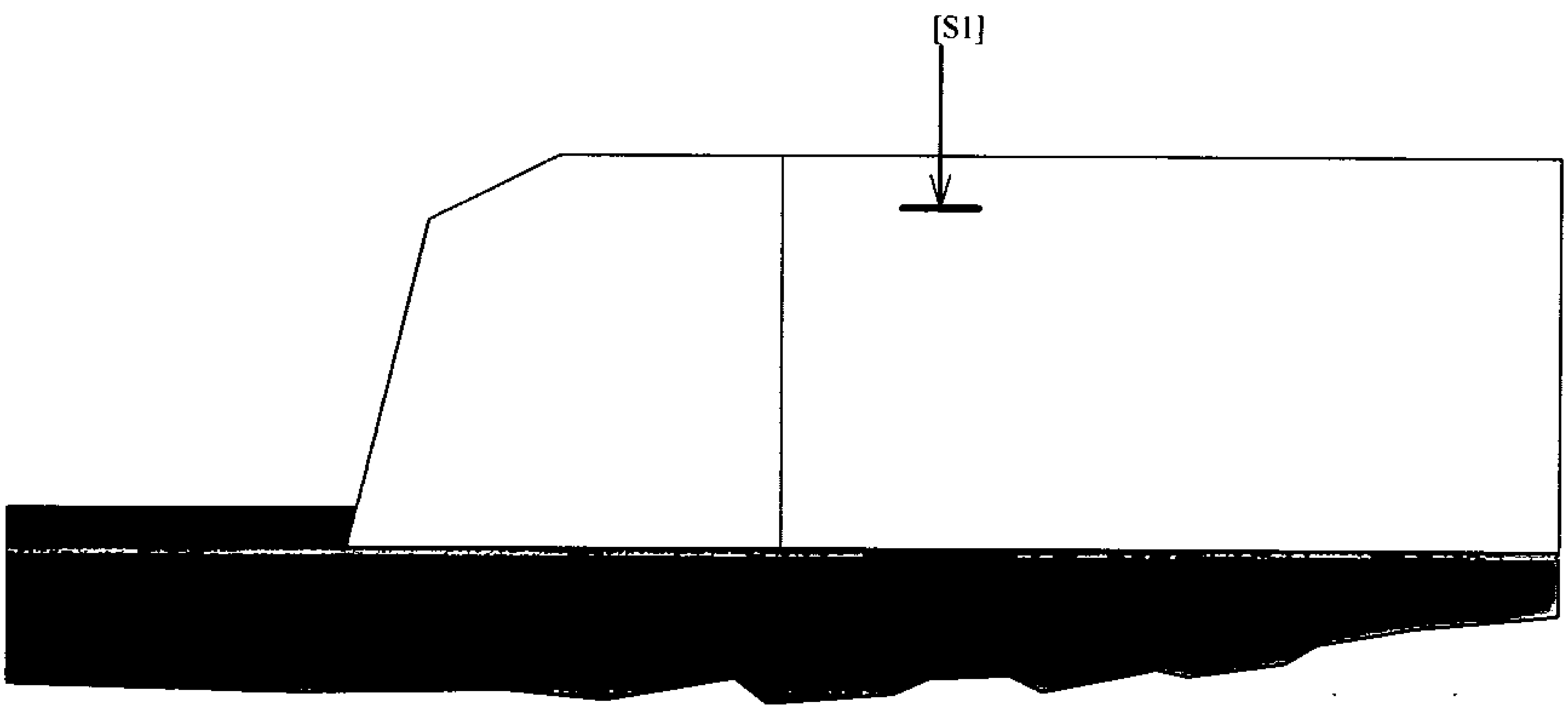
ANALYSIS: CALCULATED FACTORS (Seismic conditions)

Bearing capacity, Fs = 3.37, Meyerhof stress = 1830 lb/ft².
Foundation Interface: Direct sliding, Fs = 1.144, Eccentricity, e/L = 0.0545, Fs-overturning = 4.61

GEOGRID				CONNECTION						
#	Elevation [ft]	Length [ft]	Type #	Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	17.00	2	1.60	1.64	1.642	6.289	1.551	0.0256	V40 - 8XT
2	4.00	17.00	2	2.14	2.45	2.449	6.753	1.895	0.0024	V40 - 8XT
3	6.00	17.00	2	2.41	2.93	2.926	5.746	2.488	-0.0152	V40 - 8XT
4	8.00	17.00	2	2.80	3.63	3.633	4.536	3.784	-0.0278	V40 - 8XT
5	10.00	17.00	2	3.04	4.07	4.071	3.056	5.861	-0.0391	V40 - 8XT

BEARING CAPACITY for GIVEN LAYOUT

	STATIC	SEISMIC	UNITS
(Water table does not affect bearing capacity)			
Ultimate bearing capacity, q-ult	6682	6165	[lb/ft ²]
Meyerhof stress, σ_V	1636.6	1830	[lb/ft ²]
Eccentricity, e	-0.11	0.94	[ft]
Eccentricity, e/L	-0.006	0.055	
Fs calculated	4.08	3.37	
Base length	17.00	17.00	[ft]



SCALE:

0 2 4 6 8 10 [ft]

DIRECT SLIDING for GIVEN LAYOUT (for GEOGRID reinforcements)

Along reinforced and foundation soils interface: Fs-static = 1.801 and Fs-seismic = 1.144

#	Geogrid Elevation [ft]	Geogrid Length [ft]	Fs Static	Fs Seismic	Geogrid Type #	Product name
1	2.00	17.00	2.379	1.551	2	V40 - 8XT
2	4.00	17.00	2.826	1.895	2	V40 - 8XT
3	6.00	17.00	3.612	2.488	2	V40 - 8XT
4	8.00	17.00	5.386	3.784	2	V40 - 8XT
5	10.00	17.00	7.424	5.861	2	V40 - 8XT

ECCENTRICITY for GIVEN LAYOUT

At interface with foundation: e/L static = -0.0063, e/L seismic = 0.0545; Overturning: Fs-static = 8.96, Fs-seismic = 4.61

#	Geogrid Elevation [ft]	Geogrid Length [ft]	e / L Static	e / L Seismic	Geogrid Type #	Product name
1	2.00	17.00	-0.0164	0.0256	2	V40 - 8XT
2	4.00	17.00	-0.0244	0.0024	2	V40 - 8XT
3	6.00	17.00	-0.0304	-0.0152	2	V40 - 8XT
4	8.00	17.00	-0.0348	-0.0278	2	V40 - 8XT
5	10.00	17.00	-0.0411	-0.0391	2	V40 - 8XT

RESULTS for STRENGTH

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Tavailable [lb/ft]	Tmax [lb/ft]	Tmd [lb/ft]	Specified minimum Fs-overall static	Actual calculated Fs-overall static	Specified minimum Fs-overall seismic	Actual calculated Fs-overall seismic	Product name
1	2.00	3083	1149.86	1214.56	N/A	2.681	N/A	1.642	V40 - 8XT
2	4.00	3083	618.56	1069.61	N/A	4.984	N/A	2.449	V40 - 8XT
3	6.00	3083	500.15	924.66	N/A	6.164	N/A	2.926	V40 - 8XT
4	8.00	3083	381.73	779.71	N/A	8.077	N/A	3.633	V40 - 8XT
5	10.00	3083	377.24	634.76	N/A	8.173	N/A	4.071	V40 - 8XT

RESULTS for PULLOUT

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Coverage Ratio	Tmax [lb/ft]	Tmd [lb/ft]	Le [ft]	La [ft]	Avail.Static Pullout, Pr [lb/ft]	Specified Static Fs	Actual Static Fs	Avail.Seism. Pullout, Pr [lb/ft]	Specified Seismic Fs	Actual Seismic Fs
1	2.00	1.000	1149.9	1214.6	15.19	1.81	18588.7	N/A	16.166	14870.9	N/A	6.289
2	4.00	1.000	618.6	1069.6	13.37	3.63	14251.2	N/A	23.039	11401.0	N/A	6.753
3	6.00	1.000	500.1	924.7	11.56	5.44	10233.6	N/A	20.461	8186.9	N/A	5.746
4	8.00	1.000	381.7	779.7	9.75	7.25	6585.6	N/A	17.252	5268.5	N/A	4.536
5	10.00	1.000	377.2	634.8	7.94	9.06	3865.2	N/A	10.246	3092.2	N/A	3.056

RESULTS for CONNECTION (static conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	1150	0.67	0.67	3793	3083	N/A	3.30	N/A	2.68	V40 - 8XT
2	4.00	619	0.64	0.64	3613	3083	N/A	5.84	N/A	4.98	V40 - 8XT
3	6.00	500	0.61	0.61	3433	3083	N/A	6.86	N/A	6.16	V40 - 8XT
4	8.00	382	0.57	0.57	3252	3083	N/A	8.52	N/A	8.08	V40 - 8XT
5	10.00	377	0.54	0.54	3072	3083	N/A	8.14	N/A	8.17	V40 - 8XT

RESULTS for CONNECTION (seismic conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	2364	0.67	0.67	3793	3083	N/A	1.60	N/A	1.64	V40 - 8XT
2	4.00	1688	0.64	0.64	3613	3083	N/A	2.14	N/A	2.45	V40 - 8XT
3	6.00	1425	0.61	0.61	3433	3083	N/A	2.41	N/A	2.93	V40 - 8XT
4	8.00	1161	0.57	0.57	3252	3083	N/A	2.80	N/A	3.63	V40 - 8XT
5	10.00	1012	0.54	0.54	3072	3083	N/A	3.04	N/A	4.07	V40 - 8XT

AASHTO 2002 ASD DESIGN METHOD
Crown Cabot Luxury Apartments
MSEW(3.0): Update # 14.3

PROJECT IDENTIFICATION

Title:	Crown Cabot Luxury Apartments
Project Number:	1105 004
Client:	Mill Creek Residential Trust, LLC
Designer:	DO
Station Number:	

Description:

Wall "B" - 19.33 FT with 2:1 Crest Condition - Bedrock wihtin Foundation and Retained Soil Zones

Company's information:

Name: Soil Retention Designs, Inc.
Street: 2501 State Street

Carlsbad, CA 92008
Telephone #: (760) 966-6090
Fax #: (760) 966-6099
E-Mail: dosborne@soilretention.com

Original file path and name: J:\SRDesign\Job Folder\1105-004 Crown Cabot Luxery Apar.....
.....ALL B - 19.33 FT.BEN

Original date and time of creating this file: Mon Nov 29 16:13:17 2010

PROGRAM MODE: ANALYSIS
of a SIMPLE STRUCTURE
using GEOGRID as reinforcing material.

SOIL DATA

REINFORCED SOIL

Unit weight, γ	120.0 lb/ft ³
Design value of internal angle of friction, ϕ	30.0 °

RETAINED SOIL

Unit weight, γ	115.0 lb/ft ³
Design value of internal angle of friction, ϕ	27.0 °

FOUNDATION SOIL (Considered as an equivalent uniform soil)

Equivalent unit weight, $\gamma_{equiv.}$	115.0 lb/ft ³
Equivalent internal angle of friction, $\phi_{equiv.}$	27.0 °
Equivalent cohesion, $c_{equiv.}$	100.0 lb/ft ²

Water table does not affect bearing capacity

LATERAL EARTH PRESSURE COEFFICIENTS

Ka (internal stability) = 0.2467 (if batter is less than 10°, Ka is calculated from eq. 15. Otherwise, eq. 38 is utilized)
Inclination of internal slip plane, ψ= 40.87° (see Fig. 28 in DEMO 82).
Ka (external stability) = 0.2868 (if batter is less than 10°, Ka is calculated from eq. 16. Otherwise, eq. 17 is utilized)

BEARING CAPACITY

Bearing capacity coefficients (calculated by MSEW): Nc = 23.94 N γ= 14.47

SEISMICITY

Maximum ground acceleration coefficient, A = 0.320
Design acceleration coefficient in Internal Stability: Kh = Am = 0.362
Design acceleration coefficient in External Stability: Kh_d = 0.208 => Kh = Am = 0.208
(Kh in External Stability is based on allowable displacement, d = 25 mm, using FHWA-NHI-00-043 equation)

Kae (Kh > 0) = 0.4736 Kae (Kh = 0) = 0.2868 Δ Kae = 0.1868
Seismic soil-geogrid friction coefficient, F* is 80.0% of its specified static value.

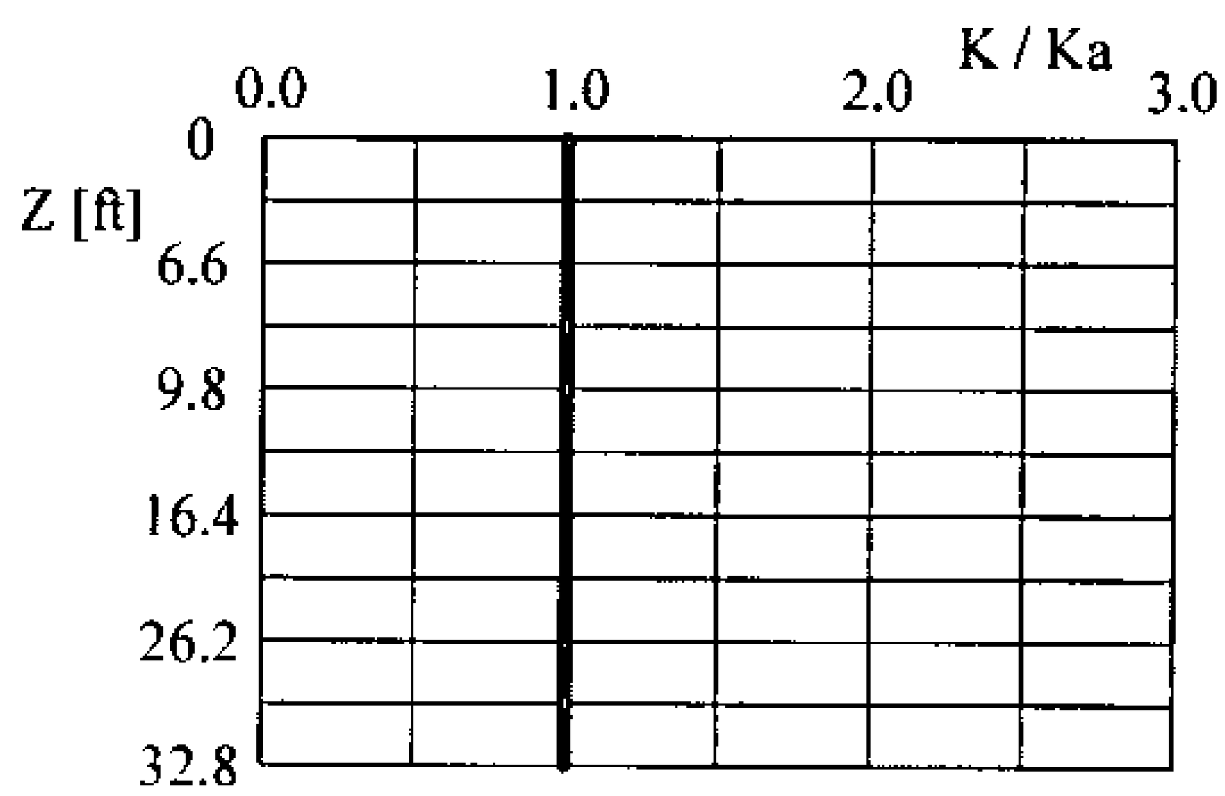
INPUT DATA: Geogrids
(Analysis)

D A T A	Geogrid type #1	Geogrid type #2	Geogrid type #3	Geogrid type #4	Geogrid type #5
Tult [lb/ft]	3590.0	6230.0	8300.0	12420.0	
Durability reduction factor, RFd	1.10	1.10	1.10	1.10	
Installation-damage reduction factor, RFid	1.11	1.10	1.10	1.10	
Creep reduction factor, RFc	1.67	1.67	1.67	1.67	N/A
Fs-overall for strength	N/A	N/A	N/A	N/A	
Coverage ratio, Rc	1.000	1.000	1.000	1.000	
Friction angle along geogrid-soil interface, ρ	26.10	26.10	26.10	26.10	
Pullout resistance factor, F*	0.85·tanϕ	0.85·tanϕ	0.85·tanϕ	0.85·tanϕ	N/A
Scale-effect correction factor, α	0.8	0.8	0.8	0.8	

Note: Z for calculating K/Ka and F* is measured from top of the wall at the face (AASHTO).

Variation of Lateral Earth Pressure Coefficient With Depth

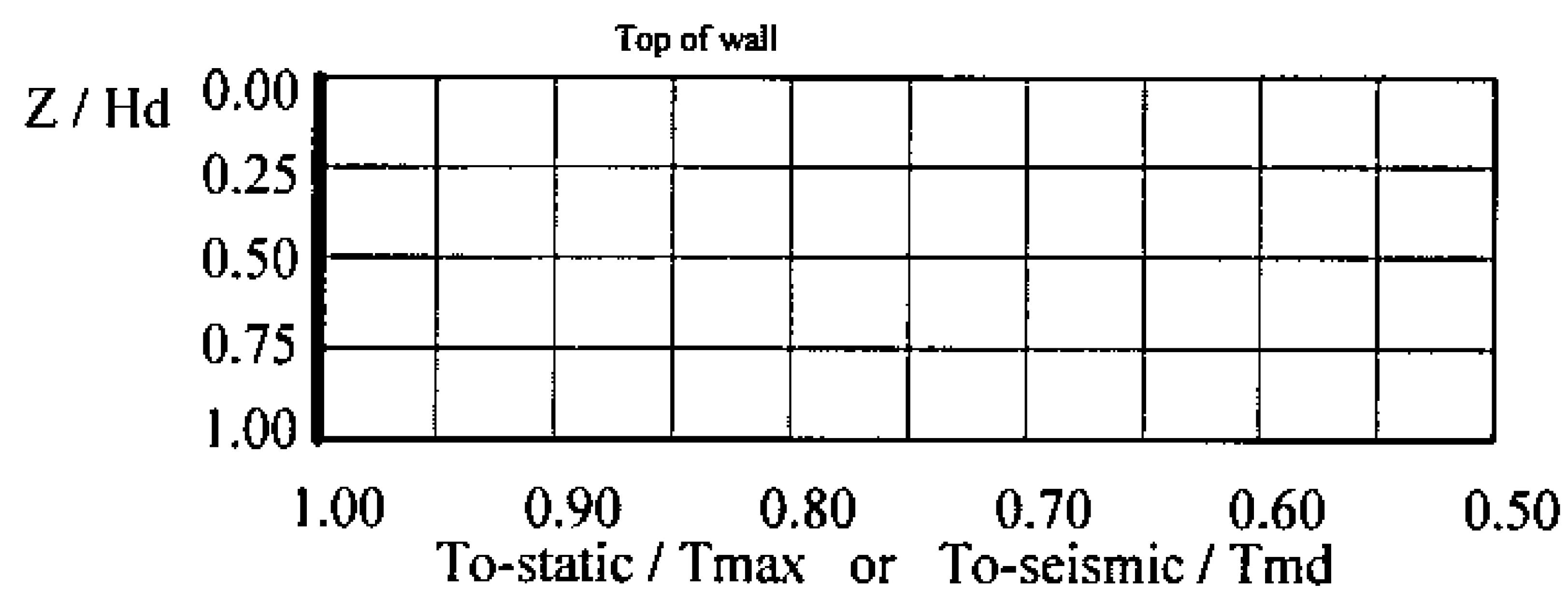
Z	K / Ka
0 ft	1.00
3.3 ft	1.00
6.6 ft	1.00
9.8 ft	1.00
13.1 ft	1.00
16.4 ft	1.00
19.7 ft	1.00



INPUT DATA: Facia and Connection (according to revised Demo 82)
(Analysis)

FACIA type: Facing enabling frictional connection of reinforcement (e.g., modular concrete blocks, gabions)
Depth/height of block is 1.00/0.67 ft. Horizontal distance to Center of Gravity of block is 0.42 ft.
Average unit weight of block is $\gamma_f = 117.00$ lb/ft^3

Z / Hd	To-static / Tmax or To-seismic / Tmd
0.00	1.00
0.25	1.00
0.50	1.00
0.75	1.00
1.00	1.00



Geogrid Type #1 σ [1]	CRult [2]	Geogrid Type #2 σ	CRult	Geogrid Type #3 σ	CRult	Geogrid Type #4 σ	CRult	Geogrid Type #5 σ	CRult
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

Geogrid Type #1 [3] σ	CRcr	Geogrid Type #2 σ	CRcr	Geogrid Type #3 σ	CRcr	Geogrid Type #4 σ	CRcr	Geogrid Type #5 σ	CRcr
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

[1] σ = Confining stress in between stacked blocks [lb/ft^2]
[2] CRult = Tc-ult / Tult
[3] CRcr = Tcre / Tult

In seismic analysis, long term strength is reduced to 80% of its static value.

D A T A (for connection only)	Type #1	Type #2	Type #3	Type #4	Type #5
Product Name	V40 - 5XT	V40 - 8XT	V40 - 10XT	V40 - 20XT	N/A
Connection strength reduction factor, RFd	1.10	1.10	1.10	1.10	N/A
Creep reduction factor, RFc	N/A	N/A	N/A	N/A	N/A

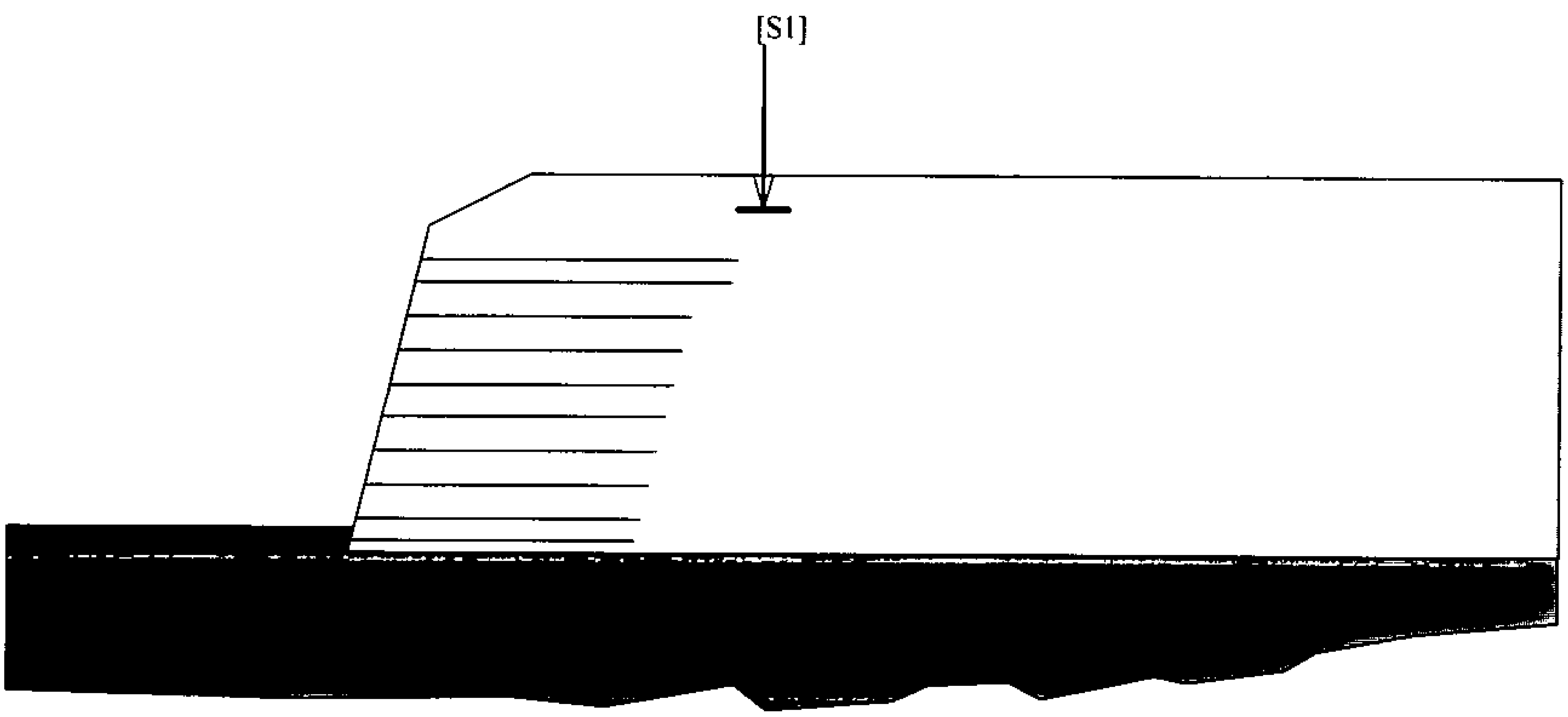
INPUT DATA: Geometry and Surcharge loads (of a SIMPLE STRUCTURE)

Design height, Hd	19.33	[ft]	{ Embedded depth is E = 1.50 ft, and height above top of finished bottom grade is H = 17.83 ft }
Batter, ω	14.0	[deg]	
Backslope, β	26.0	[deg]	
Backslope rise	3.0	[ft]	Broken back equivalent angle, I = 4.44° (see Fig. 25 in DEMO 82)

UNIFORM SURCHARGE
Uniformly distributed dead load is 0.0 [lb/ft ^{2}]

OTHER EXTERNAL LOAD(S)
[S1] Strip Load, Qv-d = 3000.0 and Qv-l = 0.0 [lb/ft ^{2}].
Footing width, b=3.0 [ft]. Distance of center of footing from wall face, d = 20.0 [ft] @ depth of 2.0 [ft] below soil surface.

ANALYZED REINFORCEMENT LAYOUT:



SCALE:

0 2 4 6 8 10[ft]

ANALYSIS: CALCULATED FACTORS (Static conditions)

Bearing capacity, Fs = 7.05, Meyerhof stress = 2290 lb/ft².

Foundation Interface: Direct sliding, Fs = 2.246, Eccentricity, e/L = 0.0139, Fs-overturning = 5.74

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	0.67	17.00	3	6.55	4.95	4.954	35.547	2.045	0.0096	V40 - 10XT
2	2.00	17.00	3	5.66	4.28	4.278	28.519	2.175	0.0017	V40 - 10XT
3	4.00	17.00	3	5.13	3.93	3.931	22.174	2.401	-0.0088	V40 - 10XT
4	6.00	17.00	2	4.34	3.33	3.328	19.803	2.675	-0.0175	V40 - 8XT
5	8.00	17.00	2	4.77	3.82	3.815	17.247	3.021	-0.0248	V40 - 8XT
6	10.00	17.00	2	5.32	4.47	4.471	14.257	3.486	-0.0309	V40 - 8XT
7	12.00	17.00	2	6.11	5.40	5.397	11.198	4.188	-0.0361	V40 - 8XT
8	14.00	17.00	2	7.31	6.81	6.809	7.880	5.526	-0.0409	V40 - 8XT
9	16.00	19.00	2	10.93	10.76	10.756	15.365	2.293	-0.0309	V40 - 8XT
10	17.33	19.00	2	10.81	11.07	11.069	11.315	1.977	-0.0380	V40 - 8XT

ANALYSIS: CALCULATED FACTORS (Seismic conditions)

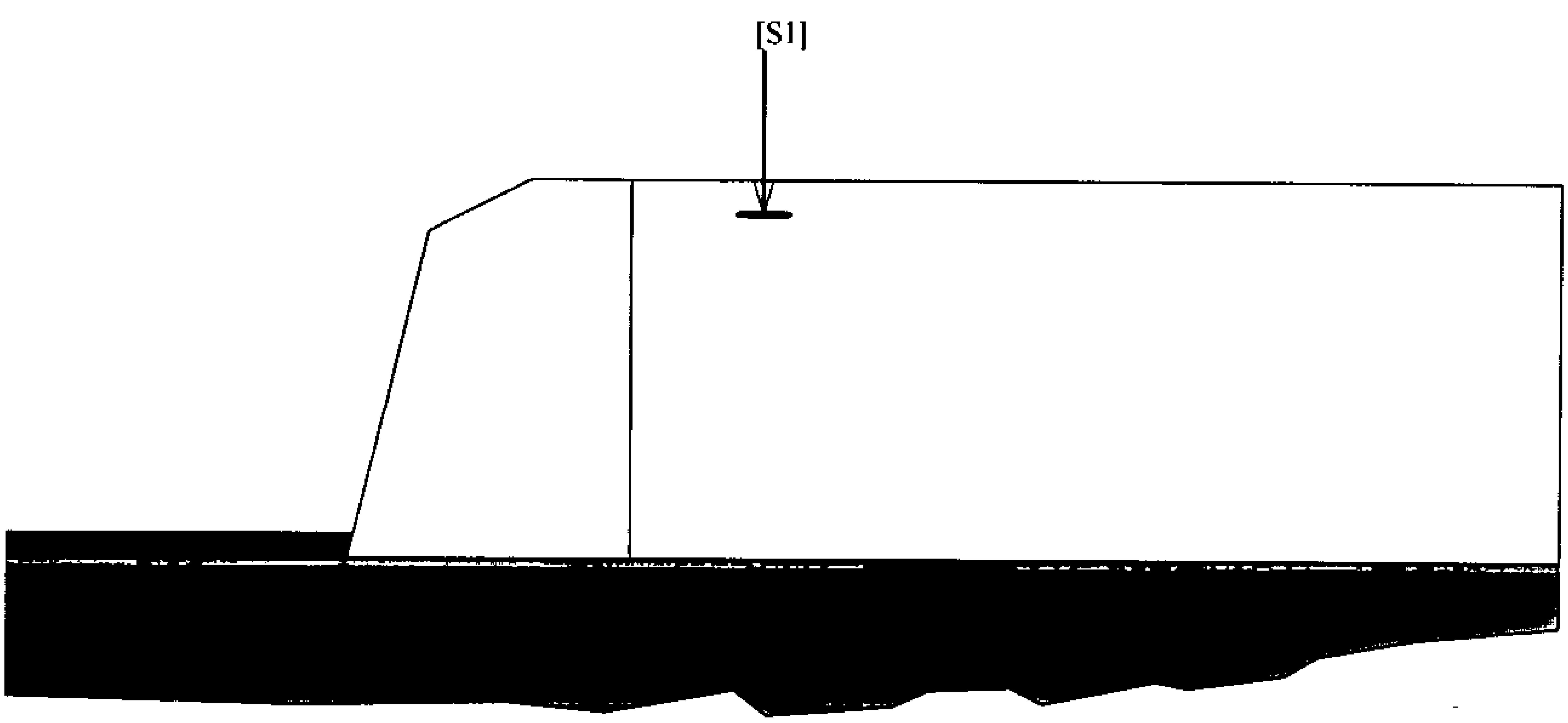
Bearing capacity, Fs = 4.16, Meyerhof stress = 3062 lb/ft².

Foundation Interface: Direct sliding, Fs = 1.279, Eccentricity, e/L = 0.1345, Fs-overturning = 2.63

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	0.67	17.00	3	1.66	2.16	2.162	9.011	1.169	0.1223	V40 - 10XT
2	2.00	17.00	3	1.66	2.10	2.104	8.373	1.259	0.0965	V40 - 10XT
3	4.00	17.00	3	1.71	2.14	2.141	7.404	1.421	0.0634	V40 - 10XT
4	6.00	17.00	2	1.47	1.83	1.834	6.710	1.626	0.0354	V40 - 8XT
5	8.00	17.00	2	1.65	2.13	2.134	5.958	1.895	0.0121	V40 - 8XT
6	10.00	17.00	2	1.89	2.55	2.552	5.058	2.269	-0.0069	V40 - 8XT
7	12.00	17.00	2	2.25	3.17	3.175	4.130	2.845	-0.0221	V40 - 8XT
8	14.00	17.00	2	2.87	4.20	4.198	3.092	3.924	-0.0341	V40 - 8XT
9	16.00	19.00	2	3.22	5.31	5.311	4.533	2.131	-0.0290	V40 - 8XT
10	17.33	19.00	2	3.78	6.25	6.245	3.953	1.919	-0.0375	V40 - 8XT

BEARING CAPACITY for GIVEN LAYOUT

	STATIC	SEISMIC	UNITS
(Water table does not affect bearing capacity)			
Ultimate bearing capacity, q-ult	16144	12733	[lb/ft ²]
Meyerhof stress, σ_V	2290.1	3062	[lb/ft ²]
Eccentricity, e	0.24	2.29	[ft]
Eccentricity, e/L	0.014	0.135	
Fs calculated	7.05	4.16	
Base length	17.00	17.00	[ft]



SCALE:

0 2 4 6 8 10 [ft]

DIRECT SLIDING for GIVEN LAYOUT (for GEOGRID reinforcements)

Along reinforced and foundation soils interface: Fs-static = 2.246 and Fs-seismic = 1.279

#	Geogrid Elevation [ft]	Geogrid Length [ft]	Fs Static	Fs Seismic	Geogrid Type #	Product name
1	0.67	17.00	2.045	1.169	3	V40 - 10XT
2	2.00	17.00	2.175	1.259	3	V40 - 10XT
3	4.00	17.00	2.401	1.421	3	V40 - 10XT
4	6.00	17.00	2.675	1.626	2	V40 - 8XT
5	8.00	17.00	3.021	1.895	2	V40 - 8XT
6	10.00	17.00	3.486	2.269	2	V40 - 8XT
7	12.00	17.00	4.188	2.845	2	V40 - 8XT
8	14.00	17.00	5.526	3.924	2	V40 - 8XT
9	16.00	19.00	2.293	2.131	2	V40 - 8XT
10	17.33	19.00	1.977	1.919	2	V40 - 8XT

ECCENTRICITY for GIVEN LAYOUT

At interface with foundation: e/L static = 0.0139, e/L seismic = 0.1345; Overturning: Fs-static = 5.74, Fs-seismic = 2.63

#	Geogrid Elevation [ft]	Geogrid Length [ft]	e / L Static	e / L Seismic	Geogrid Type #	Product name
1	0.67	17.00	0.0096	0.1223	3	V40 - 10XT
2	2.00	17.00	0.0017	0.0965	3	V40 - 10XT
3	4.00	17.00	-0.0088	0.0634	3	V40 - 10XT
4	6.00	17.00	-0.0175	0.0354	2	V40 - 8XT
5	8.00	17.00	-0.0248	0.0121	2	V40 - 8XT
6	10.00	17.00	-0.0309	-0.0069	2	V40 - 8XT
7	12.00	17.00	-0.0361	-0.0221	2	V40 - 8XT
8	14.00	17.00	-0.0409	-0.0341	2	V40 - 8XT
9	16.00	19.00	-0.0309	-0.0290	2	V40 - 8XT
10	17.33	19.00	-0.0380	-0.0375	2	V40 - 8XT

RESULTS for STRENGTH

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Tavailable [lb/ft]	Tmax [lb/ft]	Tmd [lb/ft]	Specified minimum Fs-overall static	Actual calculated Fs-overall static	Specified minimum Fs-overall seismic	Actual calculated Fs-overall seismic	Product name
1	0.67	4107	829.15	1787.58	N/A	4.954	N/A	2.162	V40 - 10XT
2	2.00	4107	960.18	1656.14	N/A	4.278	N/A	2.104	V40 - 10XT
3	4.00	4107	1044.87	1458.49	N/A	3.931	N/A	2.141	V40 - 10XT
4	6.00	3083	926.46	1260.84	N/A	3.328	N/A	1.834	V40 - 8XT
5	8.00	3083	808.05	1063.19	N/A	3.815	N/A	2.134	V40 - 8XT
6	10.00	3083	689.64	865.54	N/A	4.471	N/A	2.552	V40 - 8XT
7	12.00	3083	571.23	667.89	N/A	5.397	N/A	3.175	V40 - 8XT
8	14.00	3083	452.81	470.24	N/A	6.809	N/A	4.198	V40 - 8XT
9	16.00	3083	286.65	490.69	N/A	10.756	N/A	5.311	V40 - 8XT
10	17.33	3083	278.54	359.25	N/A	11.069	N/A	6.245	V40 - 8XT

RESULTS for PULLOUT

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Coverage Ratio	Tmax [lb/ft]	Tmd [lb/ft]	Le [ft]	La [ft]	Avail.Static Pullout, Pr [lb/ft]	Specified Static Fs	Actual Static Fs	Avail.Seism. Pullout, Pr [lb/ft]	Specified Seismic Fs	Actual Seismic Fs
1	0.67	1.000	829.2	1787.6	16.39	0.61	29473.8	N/A	35.547	23579.0	N/A	9.011
2	2.00	1.000	960.2	1656.1	15.19	1.81	27383.5	N/A	28.519	21906.8	N/A	8.373
3	4.00	1.000	1044.9	1458.5	13.37	3.63	23168.6	N/A	22.174	18534.9	N/A	7.404
4	6.00	1.000	926.5	1260.8	11.56	5.44	18346.4	N/A	19.803	14677.1	N/A	6.710
5	8.00	1.000	808.1	1063.2	9.75	7.25	13936.6	N/A	17.247	11149.3	N/A	5.958
6	10.00	1.000	689.6	865.5	7.94	9.06	9832.5	N/A	14.257	7866.0	N/A	5.058
7	12.00	1.000	571.2	667.9	6.12	10.88	6396.8	N/A	11.198	5117.4	N/A	4.130
8	14.00	1.000	452.8	470.2	4.31	12.69	3568.0	N/A	7.880	2854.4	N/A	3.092
9	16.00	1.000	286.6	490.7	4.50	14.50	4404.3	N/A	15.365	3523.5	N/A	4.533
10	17.33	1.000	278.5	359.2	3.29	15.71	3151.8	N/A	11.315	2521.4	N/A	3.953

RESULTS for CONNECTION (static conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	0.67	829	0.72	0.72	5433	4107	N/A	6.55	N/A	4.95	V40 - 10XT
2	2.00	960	0.72	0.72	5433	4107	N/A	5.66	N/A	4.28	V40 - 10XT
3	4.00	1045	0.71	0.71	5360	4107	N/A	5.13	N/A	3.93	V40 - 10XT
4	6.00	926	0.71	0.71	4021	3083	N/A	4.34	N/A	3.33	V40 - 8XT
5	8.00	808	0.68	0.68	3852	3083	N/A	4.77	N/A	3.82	V40 - 8XT
6	10.00	690	0.65	0.65	3672	3083	N/A	5.32	N/A	4.47	V40 - 8XT
7	12.00	571	0.62	0.62	3492	3083	N/A	6.11	N/A	5.40	V40 - 8XT
8	14.00	453	0.58	0.58	3312	3083	N/A	7.31	N/A	6.81	V40 - 8XT
9	16.00	287	0.55	0.55	3132	3083	N/A	10.93	N/A	10.76	V40 - 8XT
10	17.33	279	0.53	0.53	3012	3083	N/A	10.81	N/A	11.07	V40 - 8XT

RESULTS for CONNECTION (seismic conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	0.67	2617	0.72	0.58	4346	4107	N/A	1.66	N/A	2.16	V40 - 10XT
2	2.00	2616	0.72	0.58	4346	4107	N/A	1.66	N/A	2.10	V40 - 10XT
3	4.00	2503	0.71	0.57	4288	4107	N/A	1.71	N/A	2.14	V40 - 10XT
4	6.00	2187	0.71	0.57	3217	3083	N/A	1.47	N/A	1.83	V40 - 8XT
5	8.00	1871	0.68	0.54	3082	3083	N/A	1.65	N/A	2.13	V40 - 8XT
6	10.00	1555	0.65	0.52	2938	3083	N/A	1.89	N/A	2.55	V40 - 8XT
7	12.00	1239	0.62	0.49	2794	3083	N/A	2.25	N/A	3.17	V40 - 8XT
8	14.00	923	0.58	0.47	2650	3083	N/A	2.87	N/A	4.20	V40 - 8XT
9	16.00	777	0.55	0.44	2505	3083	N/A	3.22	N/A	5.31	V40 - 8XT
10	17.33	638	0.53	0.43	2410	3083	N/A	3.78	N/A	6.25	V40 - 8XT

Appendix 2

Geotechnical Design Criteria for MSE Retaining Walls (Reference Document #2)

Project No. A8803-06-01A
March 12, 2013

CAL I Crown Valley, LLC
949 South Coast Drive, Suite 400
Costa Mesa, CA 92626

Attention: Mr. Ron Schulman

Subject: UPDATED GEOTECHNICAL DESIGN CRITERIA FOR MECHANICALLY STABILIZED EARTH RETAINING WALLS
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
25891 CROWN VALLEY PARKWAY AND 27961 CABOT ROAD
LAGUNA NIGUEL, CALIFORNIA

Reference: *Updated Geotechnical Investigation,* by Geocon West, Inc. dated February 17, 2011;

Geotechnical Design Criteria for Mechanically Stabilized Earth Retaining Walls, by Geocon West, Inc. dated January 5, 2012.

Dear Mr. Schulman:

In accordance with your request, we are providing updated geotechnical design parameters for the proposed mechanically stabilized earth (MSE) retaining walls at the subject project. We understand a Verdura Wall system is being considered as a part of the proposed development. It is our further understanding that the exposed height of the proposed MSE walls will range between 3 and 15 feet. The exposed height does not include the embedded portion of the wall.

MSE WALL DESIGN PARAMETERS

The following table presents the recommended geotechnical parameters to be used for design of the MSE retaining walls, including the assumed shear strength values for imported soils to be used within the reinforced zone.

Parameter	Reinforced Zone	Retained Zone OR Foundation Zone (Bedrock)	Retained Zone OR Foundation Zone (Engineered Fill)
Angle of Internal Friction	30 degrees*	27 degrees	20 degrees*
Cohesion	100 psf*	100 psf	100 psf*
Wet Unit Weight	120 pcf*	115 pcf	115 pcf

*Assumed value based on discussion with Soil Retention

The above soil parameters for the retained and foundation zones are based on direct shear-strength tests performed during preparation of the referenced geotechnical investigation, our experience at the subject site, and discussions with the MSE wall designer.

Due to the silty and clayey nature of the on-site soils, we understand the reinforced zone of the MSE retaining wall will be backfilled with imported granular materials. Therefore, the shear strength values for the reinforced zone in the above table assume that granular import soil will be utilized as backfill. It is up to the wall designer to use his judgment in selection of design parameters.

Once backfill materials are selected, sufficient samples should be collected and tested to assess the suitability for use as wall backfill. Results should be provided to the designer for confirmation that the parameters are acceptable. Depending on the test results, the designer may require modifications to the original wall design (e.g., longer geogrid embedment lengths).

Based on information obtained during the referenced geotechnical investigation, it is anticipated that both artificial fill and Capistrano Formation bedrock will be exposed in the excavation along the base of the wall (foundation zone), as well as the back-cut behind the wall (retained zone). The wall designer should be aware of this condition during selection of the design parameters. In addition, where artificial fill is exposed at the base of the wall, the grading recommendations for preparation of the foundation zone described herein should be followed prior to wall construction.

GENERAL DESIGN CONSIDERATIONS

It is recommended that the MSE wall design consider the proximity of the proposed building and associated foundations. Based on current project plans, the upper MSE wall is offset between 22 and 30 feet from the proposed structure. Depending on the length of geogrid reinforcement required for the wall design, the proposed structure could impose a surcharge on the retained zones and/or reinforced zones of the proposed MSE walls.

Consideration should be also given to the construction sequence of the proposed building and MSE walls. Required temporary excavations for construction of the proposed MSE walls should be conducted such that vertical and lateral support is not removed from any existing foundations.

The wall should be provided with a drainage system that is sufficient to collect water and prevent excessive seepage through the wall, as well as provide proper drainage at the base of the wall to eliminate formation of hydrostatic pressures behind the wall.

As a part of the preparation of this updated letter, Geocon has performed slope stability analyses to evaluate the global stability of the wall based on preliminary wall design information provided by Soil Retention. Stability analyses were performed using GeoStudio Slope/W (2007). The analyses were performed for both the upper and lower MSE walls, at a location where it is anticipated that existing artificial will be exposed within the excavation along the base of the wall (foundation zone). The cross-section analyzed for slope stability incorporated the grading recommendations presented herein.

The results of the analyses indicate that the proposed walls will have a minimum Factor of Safety of at least 1.5 and 1.1 for static and pseudo-static conditions, respectively. A pseudo-static coefficient of 0.15 was used for the seismic analysis of the walls. The results of the analysis are provided herein as Figures 1 through 4.

Geocon West, Inc. should review retaining wall plans once they become available and revise the stability analysis as necessary based on the final wall design information. Depending on the results of the global stability analysis, modifications to the design grid type, spacing, or length may be needed to satisfy global stability.

GRADING RECOMMENDATIONS

Recommendations for earthwork are provided in the above referenced February 17, 2011 geotechnical investigation report, and are considered applicable to the construction of the proposed MSE walls. Where differing, the grading recommendations presented herein supersede those presented in the referenced report.

Based on our observations during site exploration, the existing artificial fill anticipated to be exposed within the excavation along the base of the wall (foundation zone & reinforced zone) may not be suitable for support of the proposed walls. The condition of the existing artificial fill will need to be verified during construction by a representative of Geocon. Where unsuitable artificial fill is exposed within the foundation zone and reinforced zone of the wall excavation, it is recommended that a blanket of newly placed engineered fill be placed for support of the proposed MSE wall.

As a minimum, it is recommended that the upper 3 feet of existing unsuitable artificial fill within the foundation and reinforced zones of the proposed wall be excavated and properly compacted. Deeper excavations should be conducted as necessary to remove soft, unsuitable soils at the direction of the Geotechnical Engineer (a representative of Geocon). The limits of existing fill and/or soft soil removal must be verified by a Geocon representative during site grading activities. The engineered fill blanket should extend at least three feet beyond the edge of the foundation zone and reinforced zone, or for a distance equal to the depth of fill below the foundations, whichever is greater.

All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing fill. If determined to be excessively soft, additional removals or stabilization of the excavation bottom may be required in order to provide a firm working surface upon which engineered fill can be placed, and/or heavy equipment can operate.

If subgrade stabilization is required at the excavation bottom, rubber tire equipment should not be allowed in the excavation bottom until it is stabilized or extensive soil disturbance could result. It is suggested that excavation and grading be performed during the summer season to promote moisture control of the soils. In addition, the use of track equipment should be considered to minimize disturbance to the soils if they become wet at the excavation bottom. Bottom stabilization, if necessary, may be achieved by introducing a thin lift of three to six-inch diameter crushed angular rock into the soft excavation bottom. The use of crushed concrete will also be acceptable. The crushed rock should be spread thinly across the excavation bottom and pressed into the soils by track rolling or wheel rolling with heavy equipment. It is very important that voids between the rock fragments are not created so the rock must be thoroughly pressed or blended into the soils.

Backfill materials within the reinforced zone should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditions to optimum moisture content, and properly compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D 1557 (latest edition). This is applicable to the entire embedment length of the geogrid reinforcement. Typically, wall designers specify that heavy compaction equipment be excluded from within 3 feet of the face of the wall; however, smaller equipment (e.g., walk-behind, self-driven compactors or hand whackers) should be used to compact the materials without causing deformation of the wall. If the designer specifies no compactive effort for this zone, the materials are essentially not properly compacted and the geogrid within the uncompacted zone should not be relied upon for reinforcement and overall embedment lengths should be increased to account for the difference.

All imported fill shall be observed, tested and approved by Geocon West, Inc. prior to use as backfill. Rocks larger than six inches in diameter shall not be used in the fill. Import soils to be used in the proposed MSE wall areas should have an expansion index of less than 50 and corrosive characteristics that are equally or less detrimental than that of the existing onsite soils.

TEMPORARY EXCAVATIONS

Where artificial fill will be exposed within the temporary excavation, temporary unsurcharged embankments should be sloped back at a uniform 1:1 slope gradient or flatter. A uniform slope does not have a vertical portion.

Where bedrock will be exposed within the temporary excavation, it is anticipated that unsurcharged embankments could be sloped back at a uniform ½:1 (H:V) gradient. However, it is very important that Project Geologist (a representative of Geocon) observe the cuts during the grading process in order to identify any unforeseen variations within the bedrock. Any necessary recommendations to eliminate or support any unfavorably oriented bedding planes will be made at that time.

Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The soils exposed in the cut slopes should be inspected during excavation by our personnel so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

WALL PERFORMANCE

Geosynthetic reinforcement must elongate to develop full tensile resistance. This elongation generally results in movement at the top of the wall. The amount of movement is dependent upon the height of the wall (e.g., higher walls rotate more), construction, and the type of geosynthetic used. In addition, over time reinforced-earth retaining walls have been known to exhibit creep and can undergo additional movement. Given this condition, the owner should be aware that structures and pavement placed within the reinforced and retained zones of the wall may undergo movement and should be designed to accommodate this movement.

Should you have questions regarding these recommendations, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,
GEOCON WEST, INC.

REGISTERED PROFESSIONAL ENGINEER
JELISA M. THOMAS
74946
CIVIL
STATE OF CALIFORNIA

Jelisa M. Thomas
PE 74946

PROFESSIONAL GEOLOGIST
GERALD KASMAN
NO. 2251
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

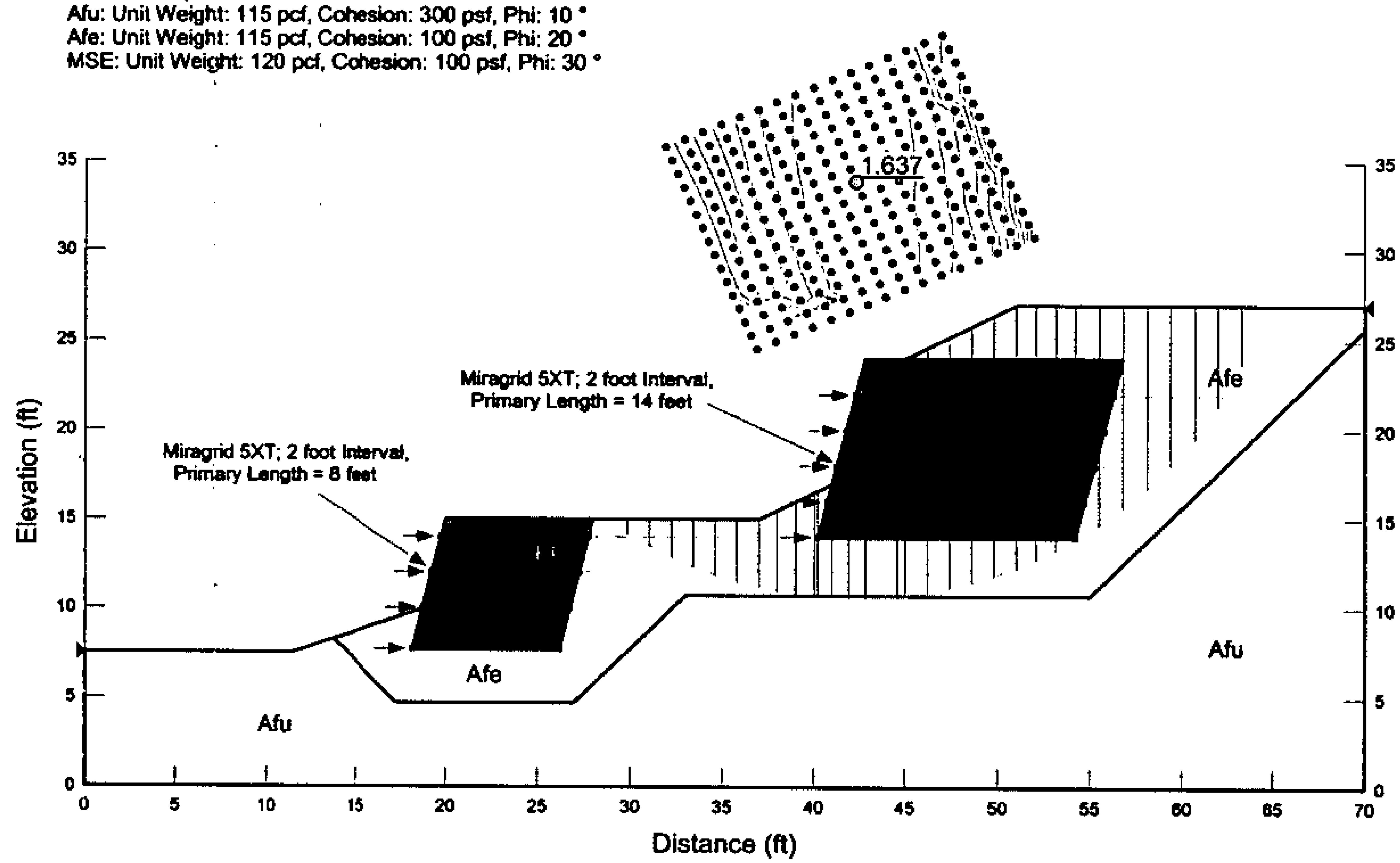
Gerald A. Kasman
CEG 2251

Enclosures: Figures 1 through 4, Stability Analysis

(1/EMAIL) Addressee; Soil Retention, Attn. Darien Osborne

Project Name: Cal I Crown Valley LLC
Project No.: A8303-06-01A
Name: Case I_Upper Wall.gsz
Date: 3/12/2013 Time: 8:55:29 AM
Description: Upper MSE Wall

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °

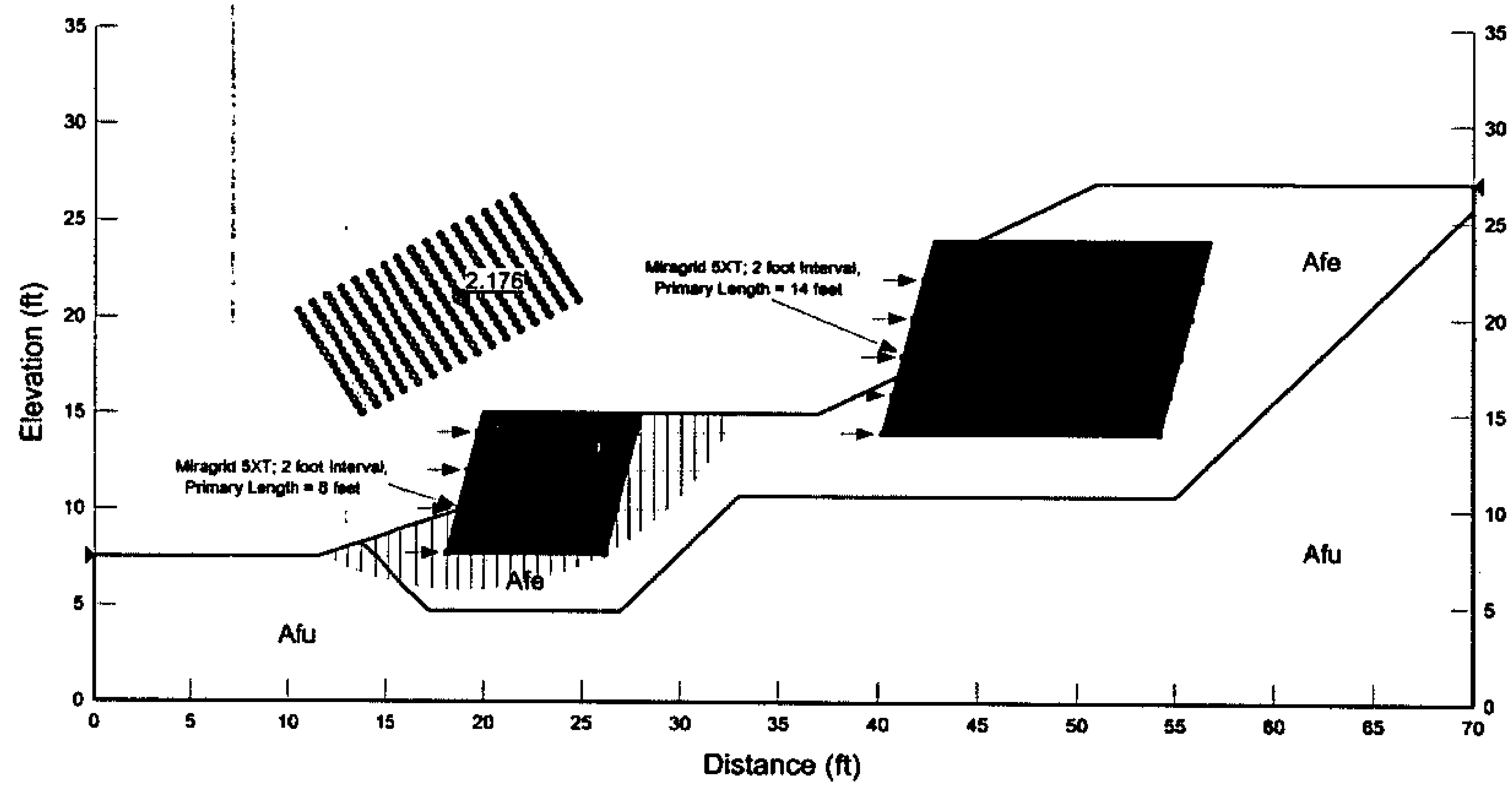


SCALE: 1" = 8' (H&V)

GEOCON WEST, INC. ENVIRONMENTAL GEOTECHNICAL MATERIALS 3303 N. SAN FERNANDO BLVD - SUITE 100 - BURBANK, CA 91504 PHONE (818) 841-8388 · FAX (818) 841-1704			STABILITY ANALYSIS - UPPER WALL - STATIC
			CAL I CROWN VALLEY, LLC 25891 CROWN VALLEY PARKWAY LAGUNA NIGUEL, CALIFORNIA
JMT		8000	MAR 12, 2013 · PROJECT NO. A8803-06-01A · FIG. 1

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case II_Lower Wall.gsz
Date: 3/12/2013 Time: 8:57:56 AM
Description: Lower MSE Wall

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °

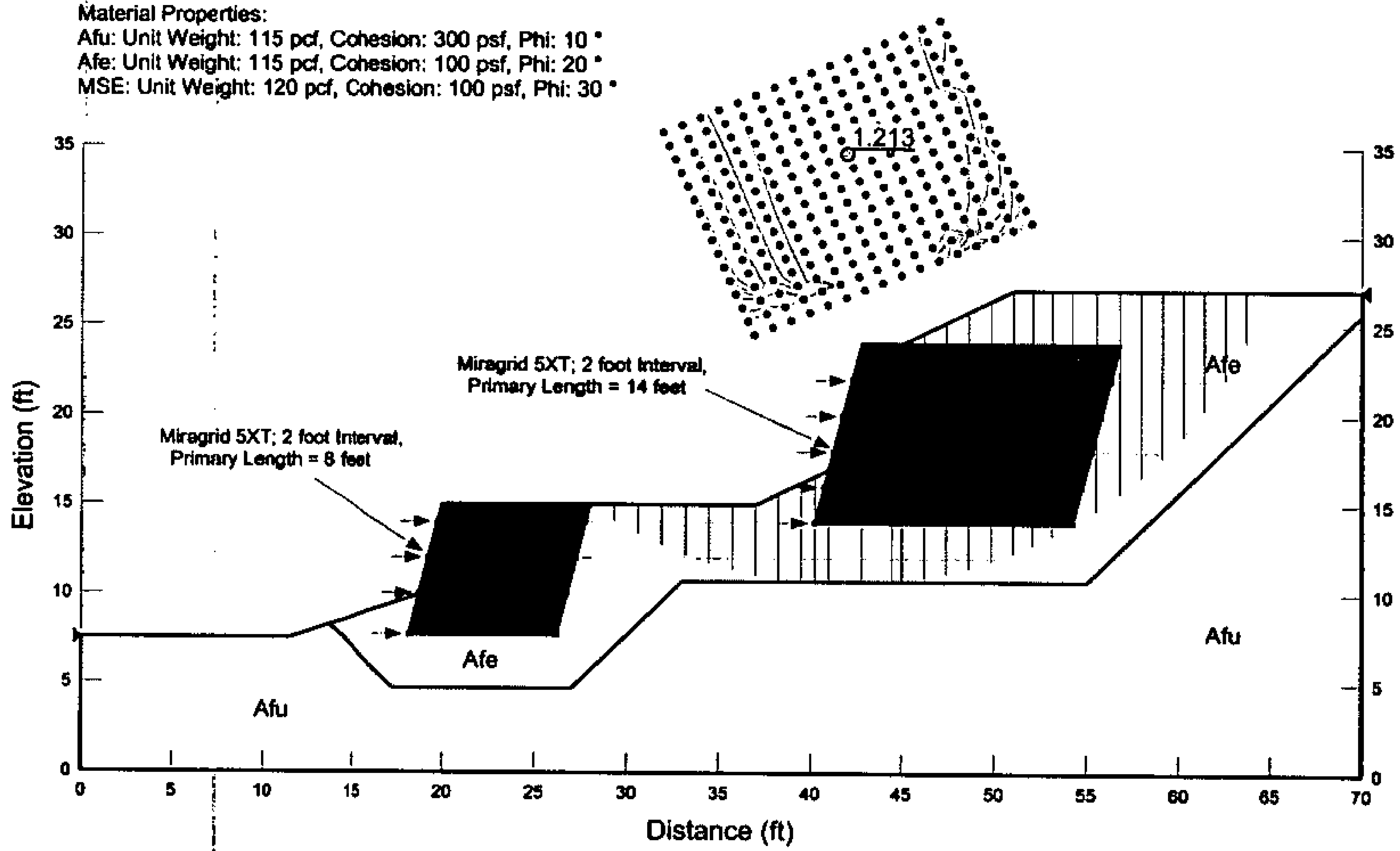


SCALE: 1" = 8' (H&V)

GEOCON WEST, INC.	STABILITY ANALYSIS - LOWER WALL - STATIC
ENVIRONMENTAL GEOTECHNICAL MATERIALS 3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504 PHONE (818) 841-8388 - FAX (818) 841-1704	CAL I CROWN VALLEY, LLC 25891 CROWN VALLEY PARKWAY LAGUNA NIGUEL, CALIFORNIA
JMT | | 8000	MAR 12, 2013 | PROJECT NO. A8803-06-01A | FIG. 2

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case I_Upper Wall.gsz
Date: 3/12/2013 Time: 8:48:12 AM
Description: Upper MSE Wall
Horz Seismic Load: 0.15g

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °



SCALE: 1" = 8' (H&V)

GEOCON WEST, INC.
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

JMT		8000

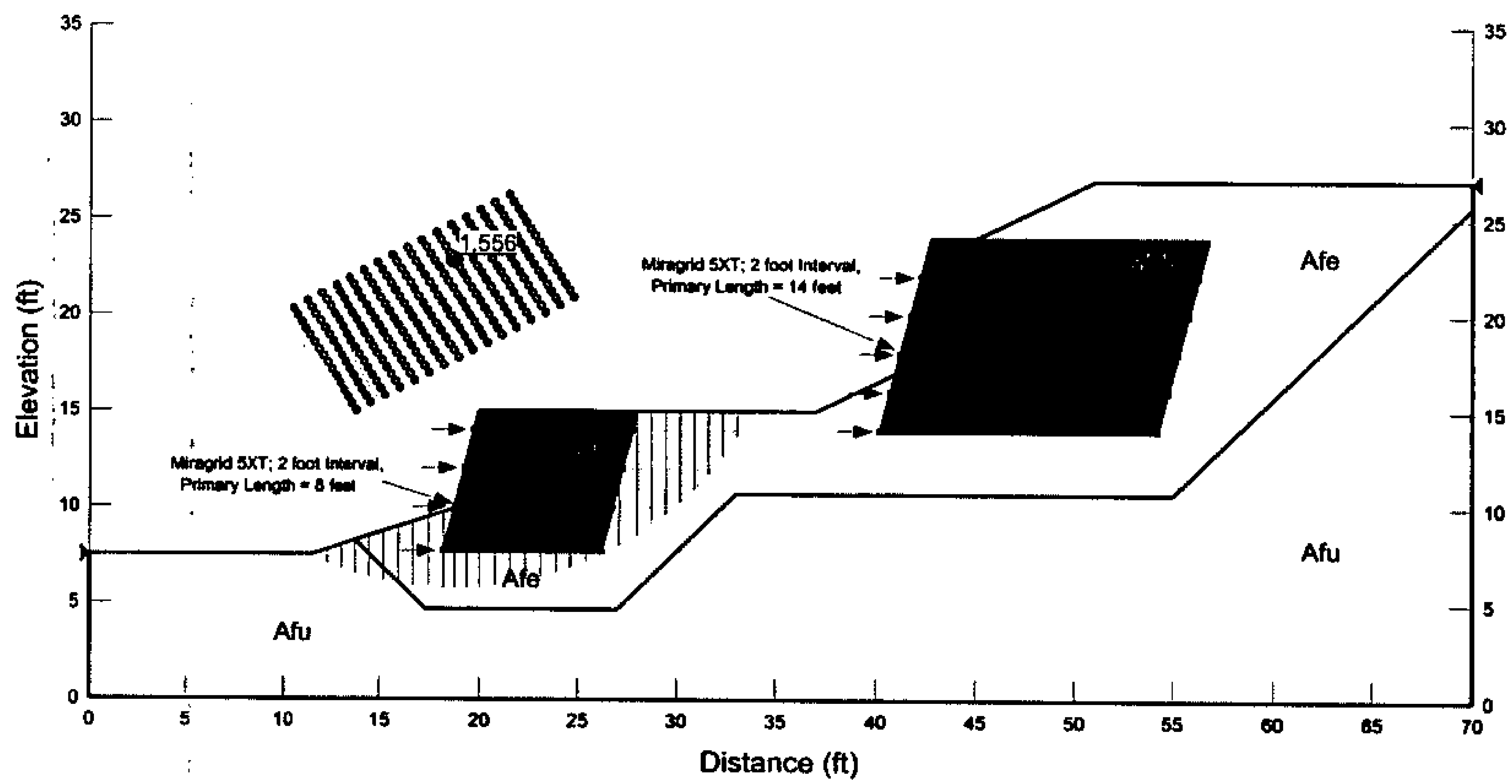
STABILITY ANALYSIS - UPPER WALL - PSEUDOSTATIC

CAL I CROWN VALLEY, LLC
25891 CROWN VALLEY PARKWAY
LAGUNA NIGUEL, CALIFORNIA

MAR 12, 2013	PROJECT NO. A8803-06-01A	FIG. 3

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case II_Lower Wall.gsz
Date: 3/12/2013 Time: 8:57:56 AM
Description: Lower MSE Wall
Horz Seismic Load: 0.15g

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °



SCALE: 1" = 8' (H&V)

GEOCON WEST, INC. ENVIRONMENTAL GEOTECHNICAL MATERIALS 3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504 PHONE (818) 841-8388 - FAX (818) 841-1704			
JMT		8000	

STABILITY ANALYSIS - LOWER WALL - PSEUDOSTATIC

CAL I CROWN VALLEY, LLC
25891 CROWN VALLEY PARKWAY
LAGUNA NIGUEL, CALIFORNIA

MAR 12, 2013	PROJECT NO. A8803-06-01A	FIG. 4

B13-1237
6-24-13

SOIL RETENTION

DESIGNS INC.

Verdura® 40 Segmental Retaining Wall Design

Project:
Crown Cabot Luxury Apartments
27961 Cabot Road
Laguna Niguel, CA

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans ... kept on the job at all times and it
unlawful to ma... ...s on same without written permission
from Comm... ...y of Laguna Niguel.
The stamp ... SHALL NOT be held to permit or be an
approva... ...of any City Ordinance or State Law
...ING OFFICIAL
Date__________
By__________

Prepared for:
Mill Creek Residential Trust, LLC
949 South Coast Drive
Suite 400
Costa Mesa, CA 92626

SRD Project No: 1105-004
June 20, 2013

SOIL RETENTION

DESIGNS INC.

Date: June 20, 2013 SRD Project No: 1105-004

Client: Mill Creek Residential Trust, LLC
Attn: Mr. Greg Lucas
949 South Coast Drive, Suite 400
Costa Mesa, CA 92626
Phone: (714) 800-1385; Fax: (714) 966-9384

Subject: ***Verdura***® 40 Segmental Retaining Wall Design, Crown Cabot Luxury Apartments, Laguna Niguel, CA

In accordance with your request, ***Soil Retention Designs, Inc. (SRD)*** has prepared this report for the proposed ***Verdura***® retaining wall at the subject site. The enclosed design addresses two (2) ***Verdura***® retaining walls located along the southerly perimeter of the proposed project site as depicted within the accompanying construction drawings (***Verdura***® Segmental Retaining Wall Plans - Sheets 1 through 4). The subject design is based upon the referenced grading plan and retaining wall elevations, prepared by KHR Associates.

REFERENCED DOCUMENTS

The information used in the enclosed structural analyses included the following:

1. Civil Interim Grading Plans, Crown Cabot Luxury Apartments, prepared by KHR Associates.
2. Updated Geotechnical Design Criteria for Mechanically Stabilized Earth Retaining Walls, Proposed Multi-Family Residential Development, 25891 Crown Valley Parkway and 27961 Cabot Road, Laguna Niguel, CA, prepared by Geocon West, Inc., dated March 12, 2013. **(Appendix 2)**

SCOPE OF WORK

The scope of design services provided for this project included the following:

1. Review of the above referenced documents relative to obtaining necessary design parameters.
2. Modification of Street Improvement plans and wall profiles for the application of the proposed ***Verdura***® retaining walls to accommodate the previous civil design.
3. In-office analysis and design of the proposed ***Verdura***® retaining walls as required to accommodate the established civil design.
4. Preparation of this report, which contains our calculations and associated specifications, and accompanying construction plans that relate directly and specifically to the proposed ***Verdura***® retaining walls.

LIMITATIONS

The design and recommendations provided herein are applicable to the use of the ***Verdura***® retaining wall products, which is of proprietary ownership by Soil Retention Products, Inc.

Note that the scope of services authorized and provided herein is limited to design of the proposed ***Verdura***® retaining wall system. ***SRD*** did not provide any on-site geotechnical services such as subsurface investigations or identification/testing of soil materials that may be used in or near the proposed ***Verdura***® retaining wall. Information presented herein is based on data provided in the reference documents. If the conditions differ from those presented in the referenced documents, the engineering design and analyses provided by ***SRD*** may no longer be valid and additional engineering and analysis services may be required. Conditions noted above include, but are not limited to, slope configurations, wall system type, wall/slope heights, soil materials and structural and/or external loadings. In addition, it should be noted that ***SRD*** is the wall designer and not the geotechnical engineer-of-record.

VERDURA® RETAINING WALL DESIGN

General Project Description – The subject project consists of two (2) proposed ***Verdura***® Segmental Retaining Walls located along the southerly boundary of the proposed project. The walls are identified as Wall "A" and Wall "B" and are briefly described as follows:

- ***Wall "A"*** – The Wall "A" is located along the southerly boundary of the proposed project. Wall "A" has a proposed level grade above the wall crest. The wall is approximately 350 feet long with a maximum exposed height of 6.67 feet. A 3:1 slope descends from the toe of the wall to an existing curb. The embedment depth was designed to be a minimum of 2 feet from finish grade in front of the wall. Including embedment, the total wall height is a maximum of 8.67 feet per plan.

- ***Wall "B"*** – The Wall "B" is located along the southerly boundary of the proposed project. Wall "B" has a proposed low-height 2:1 slope above the wall crest. The wall is approximately 300 feet long with a maximum exposed height of 13.6 feet. A low-height 2:1 slope (roughly 2 feet high) descends from the toe of the wall to a proposed travelled way. The embedment depth was designed to be a minimum of 2.67 feet below finish grade in front of the wall, which is approximately 1-foot below the finish grade of the travelled way. Including embedment, the maximum total wall height is 16.5 feet per plan.

Geotechnical Parameters - The geotechnical parameters used in design of the ***Verdura***® retaining wall are based on review of the referenced geotechnical report (Referenced Document #2) and are as follows:

- Reinforced zone (cohesion [c]=100 psf, friction angle [φ]=30°);
- Retained/foundation zone for bedrock (c=100 psf, φ=27°); and,
- Retained/foundation zone for engineered fill (c=100 psf, φ=20°).

In accordance with nationally recognized design methodology, cohesion within the reinforced and retained soils has been conservatively disregarded. The materials used within the reinforced zone may consist of either select onsite and/or imported fill material, provided the following quality criterion is met:

- Friction angle ≥ 30 degrees;

- Percent passing #200 sieve ≤ 35 percent;
- Expansion index of ≤ 50; and,
- Plasticity index of ≤ 20.

Seismic Design Parameters – The site acceleration of 0.32g was utilized for ***VRW*** design at the subject site based upon Geotechnical Design Criteria (Referenced Document #2).

Verdura® **Wall Components** – The subject wall designs use ***Verdura®*** 40 SRW units, Mirafi geogrids and other accessory products as described in "Part 2 – Products" of the "Specifications" of the accompanying construction drawings (Sheet 1).

Verdura® **Wall Design** - The ***Verdura®*** Retaining Wall proposed for the subject site have been designed for both static and pseudo-static conditions using computer program MSEW (Mechanically Stabilized Earth Wall) 3.0 design software, developed by ADAMA Engineering, Inc. The structural designs have been completed per the AASHTO 2002 (ASD) design methodology. Structural design calculations include internal, external and local stability analyses. The design calculations are provided in **Appendix 1** of this report and are preceded by summary pages of the critical factors of safety for the structural designs at the rear of this text.

Our analyses consisted of the incorporation of three (3) total designs for the proposed ***Verdura®*** Retaining Wall, which were incorporated within the accompanying construction drawings. The structural designs are as follows:

- **Design 1**– Wall "A" - 9.33-ft Total Height Design – Includes 7.33-ft high exposed height with 2-ft embedment with a level crest condition. The design is completed for a slightly higher wall (8.67 feet needed per plan) and for engineered fill materials in the retained and foundation zones. This design is also valid for the stronger the bedrock materials in the retained and foundations zones. The lower Wall "A" is designed without influence from the upper Wall "B" due to the offset of over 20 feet.

- **Design 2** – Wall "B" - 10.67-ft Total Height Design – Includes 8-ft high exposed height with 2.67-ft embedment with a low-height 2:1 slope crest condition. The design is completed a slightly higher wall (10 feet needed per plan) and for engineered fill materials in the retained and foundation zones. This design is also valid for the stronger the bedrock materials in the retained and foundations zones if encountered.

- **Design 3** – Wall "B" - 16.67-ft Total Height Design – Includes 14-ft high exposed height with 2.67-ft embedment with a 2:1 slope crest condition. The design is completed for a slightly higher wall (16.5 feet needed per plan) and for bedrock materials in the retained and foundation zones.

Both Wall "B" designs incorporate an estimated 3,000-psf strip-load surcharge located 20 feet behind the wall for the proposed building perimeter footing.

The accompanying construction drawings (***Verdura®*** Segmental Retaining Wall Plans - Sheets 1 through 4) consist of geogrid lengths, strengths and placement based upon these structural designs.

Minimum safety factors for external and internal stability satisfy the following criteria:

External Stability Calculations		
	Static	***Seismic***
Base Sliding	1.5	1.1
Bearing Capacity	2.0	1.5
Overturning	2.0	1.5
Internal Stability Calculations		
	Static	***Seismic***
Sliding	1.5	1.1
Geogrid Pullout	1.5	1.1
Geogrid Strength	1.5	1.1
Local Stability Calculations		
	Static	***Seismic***
Geogrid – Block Connection	1.5	1.1

Toe Embedment - Toe embedment (embedment of the wall base into the foundation soils) is typically provided to minimize the potential for erosion undermining of the wall base, enhance bearing capacity and enhance sliding resistance of the basal reinforcement layers. Embedment of the wall is accounted for in the calculations as part of the "total wall height". The embedment has no impact on the wall calculations (i.e. design methodology conservatively ignores passive earth pressures from soils in front of the wall and hence has no effect on the internal or external stability of the wall system/components).

Per nationally recognized standards and incorporation of project specific recommendations, the minimum requirements for wall embedment are summarized as follows:

MINIMUM EMBEDMENT REQUIREMENTS	
Sloping Condition at Toe of Wall	***Embedment Requirement****
Level	H'/20 (Minimum 1-foot)
3H:1V	H'/10
2H:1V	H'/7

**Note: H' equals the exposed height of an MSE wall.*

Toe embedment of a minimum of 2 to 2.67 feet for the proposed *Verdura*® Retaining Walls, as specified on the accompanying construction plans, exceeds the minimum nationally recognized standards. A minimum 5-foot to slope daylight condition is also satisfied in sloping toe areas.

Wall Backfill – Requirements for backfill materials surrounding the proposed wall are included in the specifications of the construction drawings for this project. In summary, the materials should consist of engineered fill comprised of select onsite and/or imported soils accepted by the geotechnical engineer–of-record and having a minimum friction angle of 30 degrees shear strength when remolded to 90% of modified proctor density (ASTM D-1557). Soils within 6 inches of a reinforcing geosynthetic layer shall not contain particles larger than 4 inches.

Backfill Drainage – Retaining wall sub-drainage should be constructed in accordance with the details shown on the accompanying construction drawings and/or as directed by the geotechnical engineer of record.

Surface Water Drainage – Drainage and channeling of surface water from above wall and from surrounding improvements should be directed to collection devices away from the retaining wall structures. Where possible, surface water should be collected in v-ditches, swales, or other collection/channeling devices in order to contain and discharge water to either end of the wall or away from the structures. Berms, curbs, gutters, swales or other devices may be required to prevent excessive amount of concentrated runoff from draining over the crest of the wall and creating erosion problems. In no case should large volumes of runoff or concentrated flows be allowed to cascade over the top of ***Verdura***® Segmental Retaining Walls, discharge into the backfill or infill soils from which the wall is constructed or otherwise be allowed to saturate the structural fill of the wall.

Improvements Above Walls – The uppermost geogrid reinforcements are designed to be at least 2 feet beneath the top of wall elevations within the zone depicted on the accompanying construction drawings. The 2-foot zone is typically considered a suitable depth in which landscaping can be installed.

Infrastructure improvements installed after wall construction should be designed to not conflict with the geogrid reinforcements when possible. Where unavoidable, trench excavations within geogrid zones should be minimized to the fullest extent and should be aligned perpendicular to the wall face to remove the smallest amount of the geogrid reinforcements.

SRD should be notified of any structural loading when planned within the vicinity of the proposed ***Verdura***® Retaining Wall. Additional analyses may be required in order to assess the stability of the designed walls should they differ from our assumptions.

Construction Details – Detailed specifications, relative to the construction of the ***Verdura***® retaining wall system, are provided on the accompanying construction drawings (***Verdura***® Segmental Retaining Wall Plans - Sheets 1 through 4). The lengths, types and spacing of geosynthetic reinforcements are depicted on the wall profiles with corresponding cross-sections for reference. The minimum recommended geogrid lengths in accordance with the total heights should be maintained throughout the wall per the accompanying drawings. Geogrid spacing for all wall areas shall not be more than three (3) block courses except for top of wall areas as noted on the accompanying construction plans.

Plantability and Landscaping – The ***Verdura***® retaining wall system has a fully plantable fascia. The ***Verdura***® SRW unit is designed with a "lip" on the block which helps to retain soils within the block when the units are spaced apart up to 9 inches. The free-face design allows for vegetation to root itself back into the cooler soils of the reinforced mass and does not limit the root area to a smaller concrete planter pocket. A landscape architect should be consulted for the site specific applications.

GLOBAL STABILITY ANALYSES

The global stability of any slope and retaining wall combination is the responsibility of the geotechnical engineer-of-record and should be provided under separate cover. Minimum safety factors for potential failure surfaces that may occur behind and beneath the ***Verdura***® retaining walls within the surrounding slopes should be documented and approved by all appropriate reviewing agencies.

GEOTECHNICAL ENGINEER-OF-RECORD

It is the project geotechnical engineer-of-record's responsibility to review the enclosed design calculations, plans, and specifications in order to ensure that the assumptions made herein are consistent with their intentions. The geotechnical engineer of record will be responsible for ensuring that the soil, materials, and methods used in construction of the proposed ***Verdura***® retaining wall systems are conducted in accordance with the specifications outlined herein.

CONCLUSIONS

Construction of the above referenced ***Verdura***® retaining walls is feasible provided that the recommendations included herein and within the accompanying construction drawings are followed.

If you have any questions or wish additional information, please contact the undersigned.

Respectfully Submitted,

Darien Osborne, RCE 64108
Senior Project Engineer

REGISTERED PROFESSIONAL ENGINEER
DARIEN A. OSBORNE
No. C64108
EXP. 12/31/14
CIVIL
STATE OF CALIFORNIA

Distribution: (6) Addressee

Attachments: Design Summary Tables – Rear of Text
Appendix 1 - ***Verdura***® Retaining Wall Design Calculations
Appendix 2 – Geotechnical Design Criteria for MSE Retaining Walls

Design Summary Table Total Height Design (H_{TOT}=9.33')			
DESIGN 1			
Structure Geometry			
Total Height	9.33' (7.33' Exposed with 2' Embedment)		
Crest Condition	Level Crest Condition		
Minimum Length/Height Ratio	9'/9.33' (0.96)		
Geotechnical Parameters	**Reinforced**	**Retained**	**Foundation**
Friction angle, φ, degrees	30	20*	20*
Dry Unit Weight, γ_d, pcf	120	115	115
Cohesion, c, psf	100**	100**	100
Seismic acceleration, g	0.32g		
Global Stability	**Per Geotechnical Engineer of Record**		

*Soils within the retained and foundation zones are modeled as "Engineered Fill".
**Cohesion within the reinforced and retained soil zones is conservatively ignored within the analysis.

Minimum Factor of Safety				
	FS, Static		**FS, Seismic**	
External Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	1.99	≥1.5	1.21	≥1.1
Overturning	6.92	≥2.0	3.49	≥1.5
Bearing Capacity/Settlement	4.10	≥2.0	3.05	≥1.5
Internal Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.74	≥1.5	1.66	≥1.1
Pullout	6.76	≥1.5	2.73	≥1.1
Geogrid Strength	2.53	≥1.5	1.93	≥1.1
Local Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Geogrid to Block Connection	4.60	≥1.5	3.02	≥1.1

Design Summary Table
Total Height Design (H_{TOT}=10.67')

DESIGN 2

Structure Geometry			
Total Height	10.67' (8' Exposed with 2.67' Embedment)		
Crest Condition	2:1 Slope Crest Condition		
Minimum Length/Height Ratio	14'/10.67' (1.31)		
Geotechnical Parameters	**Reinforced**	**Reinforced**	**Reinforced**
Friction angle, φ, degrees	30	20*	20*
Dry Unit Weight, γ_d, pcf	120	115	115
Cohesion, c, psf	100**	100**	100
Seismic acceleration, g	0.32g		
Global Stability	**Per Geotechnical Engineer of Record**		

*Soils within the retained and foundation zones are modeled as "Engineered Fill".
**Cohesion within the reinforced and retained soil zones is conservatively ignored within the analysis.

Minimum Factor of Safety

	FS, Static		FS, Seismic	
External Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.06	≥1.5	1.22	≥1.1
Overturning	8.66	≥2.0	4.31	≥1.5
Bearing Capacity/Settlement	4.08	≥2.0	3.32	≥1.5
Internal Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.76	≥1.5	1.69	≥1.1
Pullout	8.75	≥1.5	2.58	≥1.1
Geogrid Strength	3.20	≥1.5	1.86	≥1.1
Local Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Geogrid to Block Connection	3.75	≥1.5	1.70	≥1.1

Design Summary Table
Total Height Design (H_{TOT}=16.67')

DESIGN 3

Structure Geometry			
Total Height	16.67' (14' Exposed with 2.67' Embedment)		
Crest Condition	2:1 Slope Crest Condition		
Minimum Length/Height Ratio	14'/16.67' (0.83)		
Geotechnical Parameters	**Reinforced**	**Reinforced**	**Reinforced**
Friction angle, φ, degrees	30	27*	27*
Dry Unit Weight, γ_d, pcf	120	115	115
Cohesion, c, psf	100**	100**	100
Seismic acceleration, g	0.32g		
Global Stability	**Per Geotechnical Engineer of Record**		

*Soils within the retained and foundation zones are modeled as "Bedrock".
**Cohesion within the reinforced and retained soil zones is conservatively ignored within the analysis.

Minimum Factor of Safety

	FS, Static		FS, Seismic	
External Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.36	≥1.5	1.29	≥1.1
Overturning	5.36	≥2.0	2.43	≥1.5
Bearing Capacity/Settlement	6.89	≥2.0	3.81	≥1.5
Internal Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Sliding	2.34	≥1.5	1.30	≥1.1
Pullout	4.16	≥1.5	1.52	≥1.1
Geogrid Strength	2.00	≥1.5	1.16	≥1.1
Local Stability	**Actual FS**	**Target FS**	**Actual FS**	**Target FS**
Geogrid to Block Connection	2.61	≥1.5	1.18	≥1.1

Appendix 1

Verdura® Retaining Wall Design Calculations

(30 Pages)

AASHTO 2002 ASD DESIGN METHOD
Crown Cabot Luxury Apartments

MSEW(3.0): Update # 14.3

PROJECT IDENTIFICATION

Title: Crown Cabot Luxury Apartments
Project Number: 1105 004
Client: Mill Creek Residential Trust, LLC
Designer: DO
Station Number:

Description:

Wall "A" - 9.33 FT with Level Crest Condition - Engineered Fill in Retained and Foundation Soil Zones

Company's information:

Name: Soil Retention Designs, Inc.
Street: 2501 State Street

Carlsbad, CA 92008
Telephone #: (760) 966-6090
Fax #: (760) 966-6099
E-Mail: dosborne@soilretention.com

Original file path and name: C:\Users\dosborne\Desktop\Crown Cabot\WALL A - 9.33 FT.BEN
Original date and time of creating this file: Mon Nov 29 16:13:17 2010

PROGRAM MODE: ANALYSIS
of a SIMPLE STRUCTURE
using GEOGRID as reinforcing material.

SOIL DATA

REINFORCED SOIL

Unit weight, γ 120.0 lb/ft ^{3}

Design value of internal angle of friction, ϕ 30.0 °

RETAINED SOIL

Unit weight, γ 115.0 lb/ft ^{3}

Design value of internal angle of friction, ϕ 20.0 °

FOUNDATION SOIL (Considered as an equivalent uniform soil)

Equivalent unit weight, $\gamma_{equiv.}$ 115.0 lb/ft ^{3}

Equivalent internal angle of friction, $\phi_{equiv.}$ 20.0 °

Equivalent cohesion, $c_{equiv.}$ 100.0 lb/ft ^{2}

Water table does not affect bearing capacity

LATERAL EARTH PRESSURE COEFFICIENTS

Ka (internal stability) = 0.2467 (if batter is less than 10°, Ka is calculated from eq. 15. Otherwise, eq. 38 is utilized)
Inclination of internal slip plane, ψ = 53.00° (see Fig. 28 in DEMO 82).
Ka (external stability) = 0.4113 (if batter is less than 10°, Ka is calculated from eq. 16. Otherwise, eq. 17 is utilized)

BEARING CAPACITY

Bearing capacity coefficients (calculated by MSEW): Nc = 14.83 N γ = 5.39

SEISMICITY

Maximum ground acceleration coefficient, A = 0.320
Design acceleration coefficient in Internal Stability: Kh = Am = 0.362
Design acceleration coefficient in External Stability: Kh_d = 0.208 => Kh = Am = 0.208
(Kh in External Stability is based on allowable displacement, d = 25 mm. using FHWA-NHI-00-043 equation)

Kae (Kh > 0) = 0.6200 Kae (Kh = 0) = 0.4113 Δ Kae = 0.2087
Seismic soil-geogrid friction coefficient, F* is 80.0% of its specified static value.

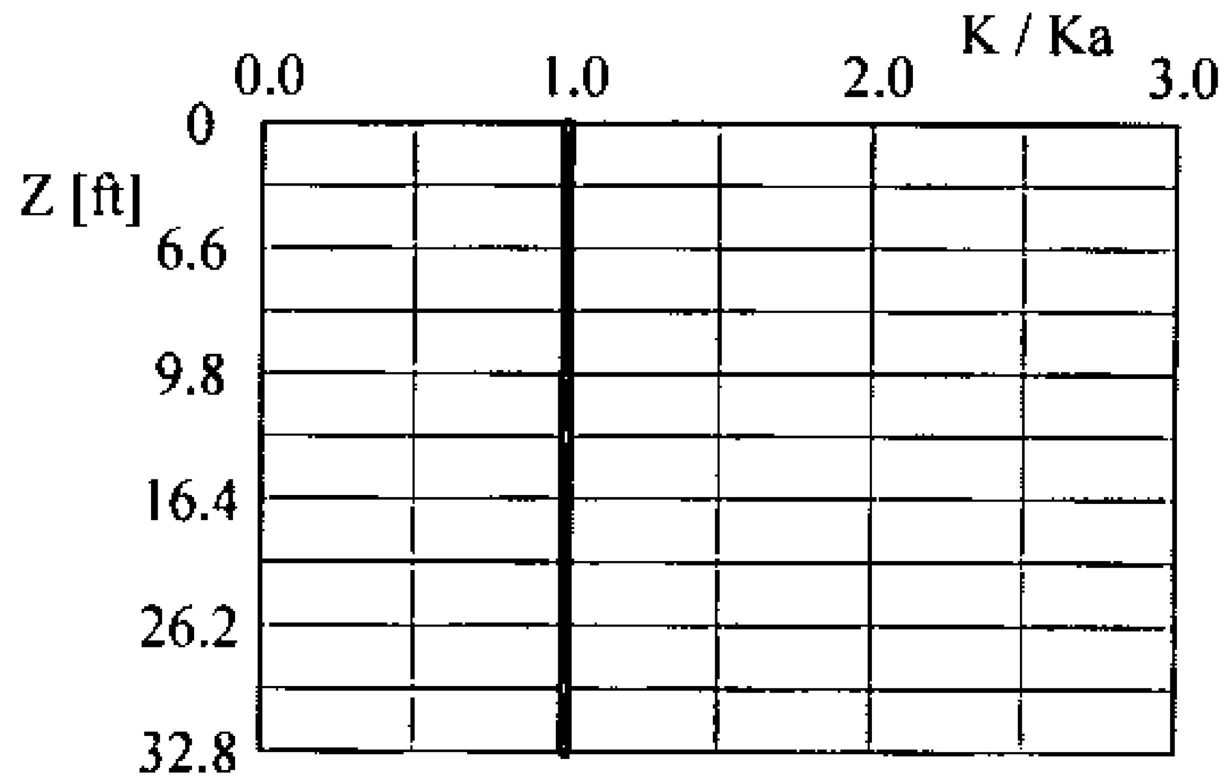
INPUT DATA: Geogrids
(Analysis)

D A T A	Geogrid type #1	Geogrid type #2	Geogrid type #3	Geogrid type #4	Geogrid type #5
Tult [lb/ft]	3590.0	6230.0	8300.0	12420.0	
Durability reduction factor, RFd	1.10	1.10	1.10	1.10	
Installation-damage reduction factor, RFid	1.11	1.10	1.10	1.10	
Creep reduction factor, RFc	1.67	1.67	1.67	1.67	N/A
Fs-overall for strength	N/A	N/A	N/A	N/A	
Coverage ratio, Rc	1.000	1.000	1.000	1.000	
Friction angle along geogrid-soil interface, ρ	26.10	26.10	26.10	26.10	
Pullout resistance factor, F*	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	N/A
Scale-effect correction factor, α	0.8	0.8	0.8	0.8	

Note: Z for calculating K/Ka and F* is measured from top of the wall at the face (AASHTO).

Variation of Lateral Earth Pressure Coefficient With Depth

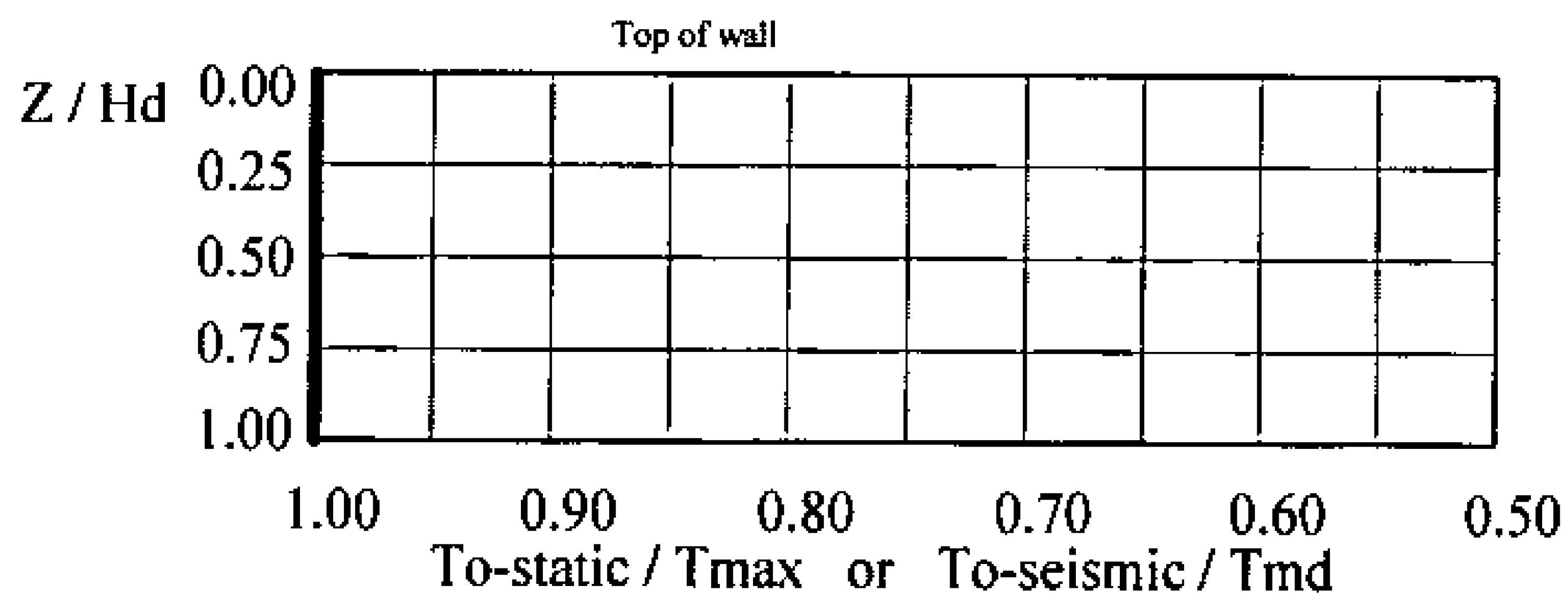
Z	K / Ka
0 ft	1.00
3.3 ft	1.00
6.6 ft	1.00
9.8 ft	1.00
13.1 ft	1.00
16.4 ft	1.00
19.7 ft	1.00



INPUT DATA: Facia and Connection (according to revised Demo 82)
(Analysis)

FACIA type: Facing enabling frictional connection of reinforcement (e.g., modular concrete blocks, gabions)
Depth/height of block is 1.00/0.67 ft. Horizontal distance to Center of Gravity of block is 0.42 ft.
Average unit weight of block is γ_f = 117.00 lb/ft³

Z / Hd	To-static / Tmax or To-seismic / Tmd
0.00	1.00
0.25	1.00
0.50	1.00
0.75	1.00
1.00	1.00



Geogrid Type #1		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ [1]	CRult [2]	σ	CRult	σ	CRult	σ	CRult	σ	CRult
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

Geogrid Type #1[3]		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

(1) σ = Confining stress in between stacked blocks [lb/ft ²]
(2) CRult = Tc-ult / Tult
(3) CRcr = Tcre / Tult

In seismic analysis, long term strength is reduced to 100% of its static value.

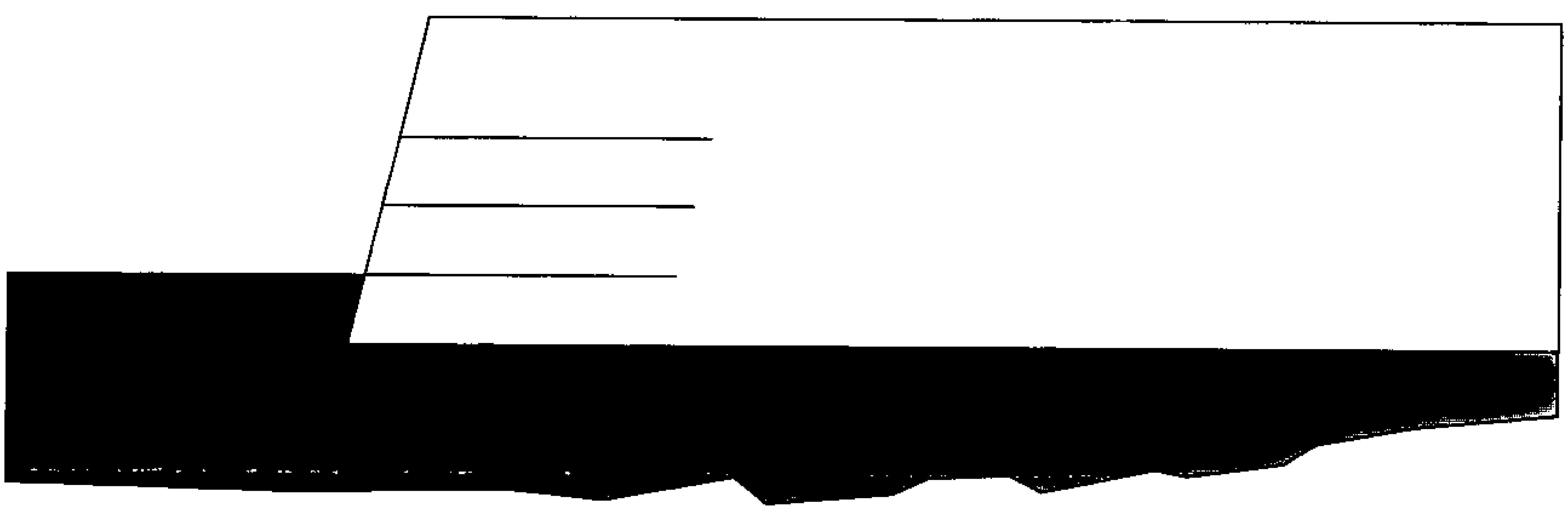
D A T A (for connection only)	Type #1	Type #2	Type #3	Type #4	Type #5
Product Name	V40 - 5XT	V40 - 8XT	V40 - 10XT	V40 - 20XT	N/A
Connection strength reduction factor, RFd	1.10	1.10	1.10	1.10	N/A
Creep reduction factor, RFc	N/A	N/A	N/A	N/A	N/A

INPUT DATA: Geometry and Surcharge loads (of a SIMPLE STRUCTURE)

Design height, Hd	9.33	[ft]	{ Embedded depth is E = 2.00 ft, and height above top of finished bottom grade is H = 7.33 ft }
Batter, ω	14.0	[deg]	
Backslope, β	0.0	[deg]	
Backslope rise	0.0	[ft]	Broken back equivalent angle, I = 0.00° (see Fig. 25 in DEMO 82)

UNIFORM SURCHARGE
Uniformly distributed dead load is 0.0 [lb/ft ^{2}]

ANALYZED REINFORCEMENT LAYOUT:



SCALE:

0 2 4 6 [ft]

ANALYSIS: CALCULATED FACTORS (Static conditions)

Bearing capacity, Fs = 4.10, Meyerhof stress = 1015 lb/ft².
Foundation Interface: Direct sliding, Fs = 1.988, Eccentricity, e/L = 0.0197, Fs-overturning = 6.92

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	9.00	1	4.60	2.53	2.532	7.752	2.742	-0.0004	V40 - 5XT
2	4.00	9.00	1	10.14	5.58	5.579	11.113	3.887	-0.0111	V40 - 5XT
3	6.00	9.00	1	11.53	6.34	6.344	6.755	6.408	-0.0133	V40 - 5XT

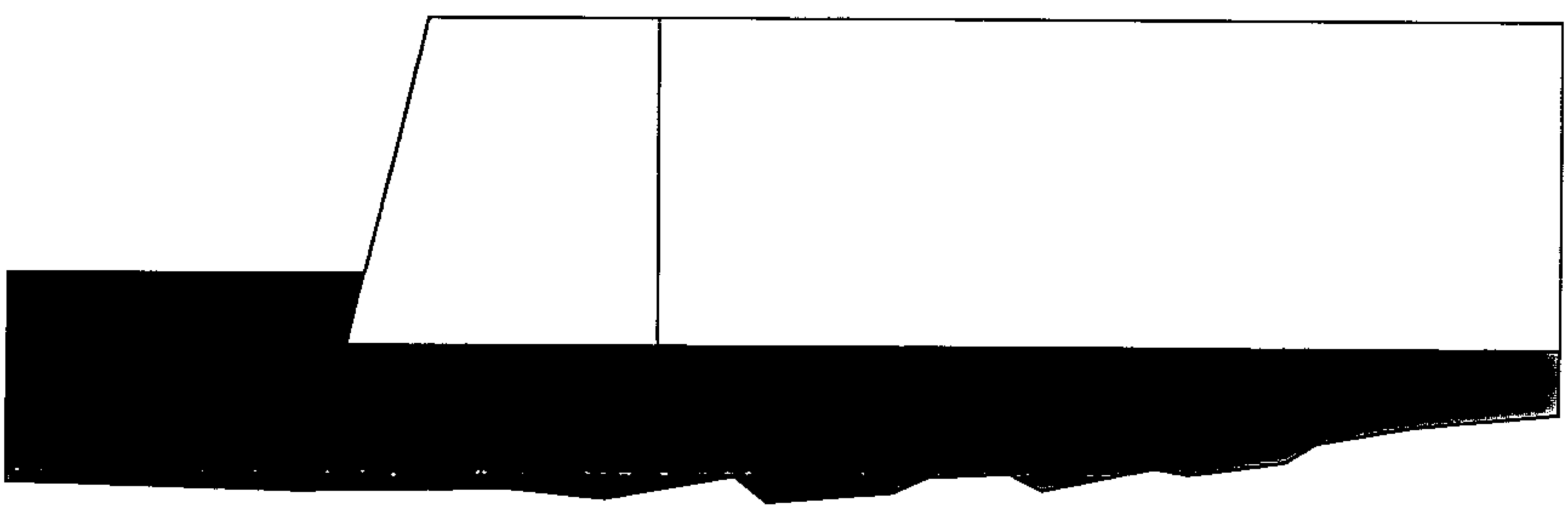
ANALYSIS: CALCULATED FACTORS (Seismic conditions)

Bearing capacity, Fs = 3.05, Meyerhof stress = 1217 lb/ft².
Foundation Interface: Direct sliding, Fs = 1.205, Eccentricity, e/L = 0.0996, Fs-overturning = 3.49

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	9.00	1	3.02	1.93	1.929	4.074	1.662	0.0474	V40 - 5XT
2	4.00	9.00	1	5.05	3.48	3.482	4.432	2.356	0.0135	V40 - 5XT
3	6.00	9.00	1	5.82	4.00	4.000	2.731	3.883	-0.0040	V40 - 5XT

BEARING CAPACITY for GIVEN LAYOUT

	STATIC	SEISMIC	UNITS
(Water table does not affect bearing capacity)			
Ultimate bearing capacity, q-ult	4161	3716	[lb/ft ²]
Meyerhof stress, σ_V	1014.8	1217	[lb/ft ²]
Eccentricity, e	0.18	0.90	[ft]
Eccentricity, e/L	0.020	0.100	
Fs calculated	4.10	3.05	
Base length	9.00	9.00	[ft]



SCALE:

0 2 4 6 [ft]

DIRECT SLIDING for GIVEN LAYOUT (for GEOGRID reinforcements)

Along reinforced and foundation soils interface: Fs-static = 1.988 and Fs-seismic = 1.205

#	Geogrid Elevation [ft]	Geogrid Length [ft]	Fs Static	Fs Seismic	Geogrid Type #	Product name
1	2.00	9.00	2.742	1.662	1	V40 - 5XT
2	4.00	9.00	3.887	2.356	1	V40 - 5XT
3	6.00	9.00	6.408	3.883	1	V40 - 5XT

ECCENTRICITY for GIVEN LAYOUT

At interface with foundation: e/L static = 0.0197, e/L seismic = 0.0996; Overturning: Fs-static = 6.92, Fs-seismic = 3.49

#	Geogrid Elevation [ft]	Geogrid Length [ft]	e / L Static	e / L Seismic	Geogrid Type #	Product name
1	2.00	9.00	-0.0004	0.0474	1	V40 - 5XT
2	4.00	9.00	-0.0111	0.0135	1	V40 - 5XT
3	6.00	9.00	-0.0133	-0.0040	1	V40 - 5XT

RESULTS for STRENGTH

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Tavailable [lb/ft]	Tmax [lb/ft]	Tmd [lb/ft]	Specified minimum Fs-overall static	Actual calculated Fs-overall static	Specified minimum Fs-overall seismic	Actual calculated Fs-overall seismic	Product name
1	2.00	1761	695.37	363.26	N/A	2.532	N/A	1.929	V40 - 5XT
2	4.00	1761	315.57	317.42	N/A	5.579	N/A	3.482	V40 - 5XT
3	6.00	1761	277.51	271.58	N/A	6.344	N/A	4.000	V40 - 5XT

RESULTS for PULLOUT Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Coverage Ratio	Tmax [lb/ft]	Tmd [lb/ft]	Le [ft]	La [ft]	Avail.Static Pullout, Pr [lb/ft]	Specified Static Fs	Actual Static Fs	Avail.Seism. Pullout, Pr [lb/ft]	Specified Seismic Fs	Actual Seismic Fs
1	2.00	1.000	695.4	363.3	7.99	1.01	5390.8	N/A	7.752	4312.7	N/A	4.074
2	4.00	1.000	315.6	317.4	6.98	2.02	3506.9	N/A	11.113	2805.5	N/A	4.432
3	6.00	1.000	277.5	271.6	5.97	3.03	1874.5	N/A	6.755	1499.6	N/A	2.731

RESULTS for CONNECTION (static conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	695	0.98	0.98	3198	1761	N/A	4.60	N/A	2.53	V40 - 5XT
2	4.00	316	0.98	0.98	3198	1761	N/A	10.14	N/A	5.58	V40 - 5XT
3	6.00	278	0.98	0.98	3198	1761	N/A	11.53	N/A	6.34	V40 - 5XT

RESULTS for CONNECTION (seismic conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	1059	0.98	0.98	3198	1761	N/A	3.02	N/A	1.93	V40 - 5XT
2	4.00	633	0.98	0.98	3198	1761	N/A	5.05	N/A	3.48	V40 - 5XT
3	6.00	549	0.98	0.98	3198	1761	N/A	5.82	N/A	4.00	V40 - 5XT

AASHTO 2002 ASD DESIGN METHOD
Crown Cabot Luxury Apartments

MSEW(3.0): Update # 14.3

PROJECT IDENTIFICATION

Title:	Crown Cabot Luxury Apartments
Project Number:	1105 004
Client:	Mill Creek Residential Trust, LLC
Designer:	DO
Station Number:	

Description:

Wall "B" - 10.67 FT with 2:1 Crest Condition - Engineered Fill in Foundation and Retained Soil Zones

Company's information:

Name: Soil Retention Designs, Inc.
Street: 2501 State Street

Carlsbad, CA 92008
Telephone #: (760) 966-6090
Fax #: (760) 966-6099
E-Mail: dosborne@soilretention.com

Original file path and name: C:\Users\dosborne\Desktop\Crown Cabot\WALL B - 10.67 FT.BEN
Original date and time of creating this file: Mon Nov 29 16:13:17 2010

PROGRAM MODE: ANALYSIS
of a SIMPLE STRUCTURE
using GEOGRID as reinforcing material.

SOIL DATA

REINFORCED SOIL

Unit weight, γ 120.0 lb/ft ^{3}

Design value of internal angle of friction, ϕ 30.0 °

RETAINED SOIL

Unit weight, γ 115.0 lb/ft ^{3}

Design value of internal angle of friction, ϕ 20.0 °

FOUNDATION SOIL (Considered as an equivalent uniform soil)

Equivalent unit weight, $\gamma_{equiv.}$ 115.0 lb/ft ^{3}

Equivalent internal angle of friction, $\phi_{equiv.}$ 20.0 °

Equivalent cohesion, $c_{equiv.}$ 100.0 lb/ft ^{2}

Water table does not affect bearing capacity

LATERAL EARTH PRESSURE COEFFICIENTS

Ka (internal stability) = 0.2467 (if batter is less than 10°, Ka is calculated from eq. 15. Otherwise, eq. 38 is utilized)
Inclination of internal slip plane, ψ = 40.18° (see Fig. 28 in DEMO 82).
Ka (external stability) = 0.4137 (if batter is less than 10°, Ka is calculated from eq. 16. Otherwise, eq. 17 is utilized)

BEARING CAPACITY

Bearing capacity coefficients (calculated by MSEW): Nc = 14.83 N γ = 5.39

SEISMICITY

Maximum ground acceleration coefficient, A = 0.320
Design acceleration coefficient in Internal Stability: Kh = Am = 0.362
Design acceleration coefficient in External Stability: Kh_d = 0.208 => Kh = Am = 0.208
(Kh in External Stability is based on allowable displacement, d = 25 mm. using FHWA-NHI-00-043 equation)

Kae (Kh > 0) = 0.7506 Kae (Kh = 0) = 0.4137 Δ Kae = 0.3370
Seismic soil-geogrid friction coefficient, F* is 80.0% of its specified static value.

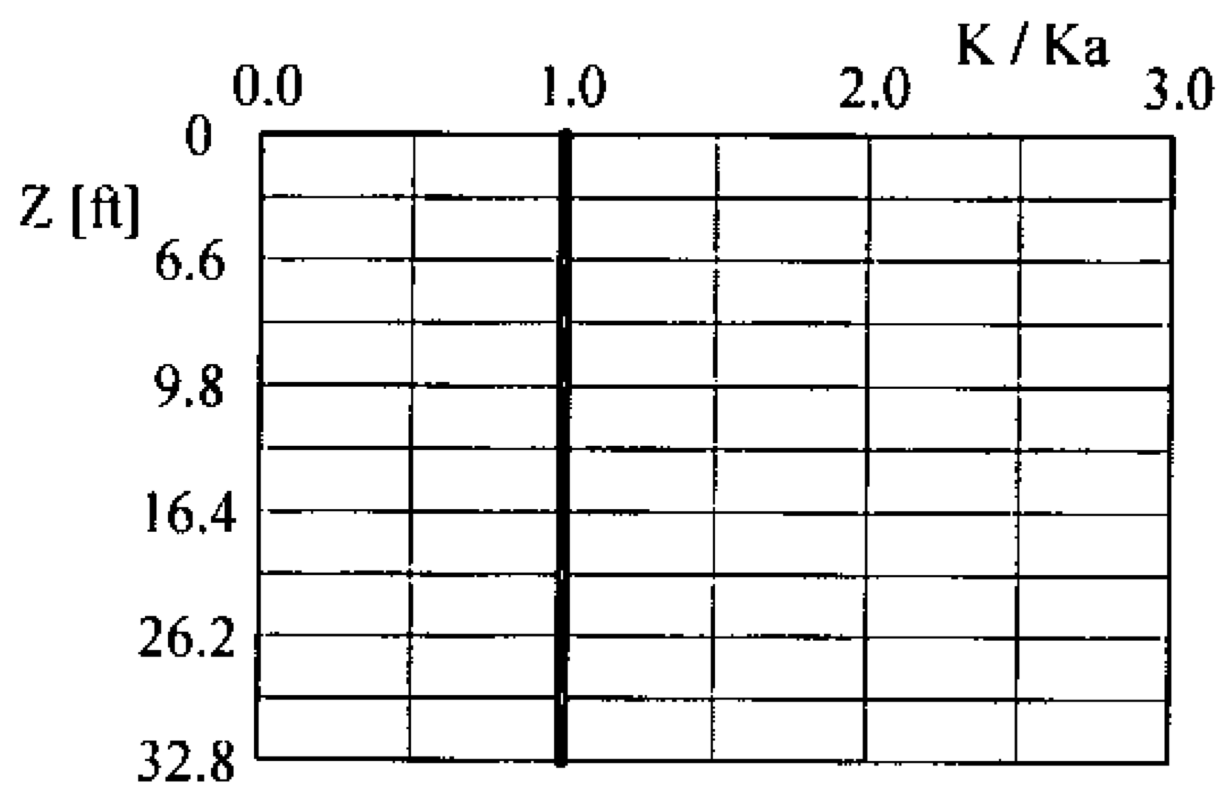
INPUT DATA: Geogrids (Analysis)

D A T A	Geogrid type #1	Geogrid type #2	Geogrid type #3	Geogrid type #4	Geogrid type #5
Tult [lb/ft]	3590.0	6230.0	8300.0	12420.0	
Durability reduction factor, RFd	1.10	1.10	1.10	1.10	
Installation-damage reduction factor, RFid	1.11	1.10	1.10	1.10	
Creep reduction factor, RFc	1.67	1.67	1.67	1.67	N/A
Fs-overall for strength	N/A	N/A	N/A	N/A	
Coverage ratio, Rc	1.000	1.000	1.000	1.000	
Friction angle along geogrid-soil interface, ρ	26.10	26.10	26.10	26.10	
Pullout resistance factor, F*	$0.85 \cdot \tan\rho$	$0.85 \cdot \tan\rho$	$0.85 \cdot \tan\rho$	$0.85 \cdot \tan\rho$	N/A
Scale-effect correction factor, α	0.8	0.8	0.8	0.8	

Note: Z for calculating K/Ka and F* is measured from top of the wall at the face (AASHTO).

Variation of Lateral Earth Pressure Coefficient With Depth

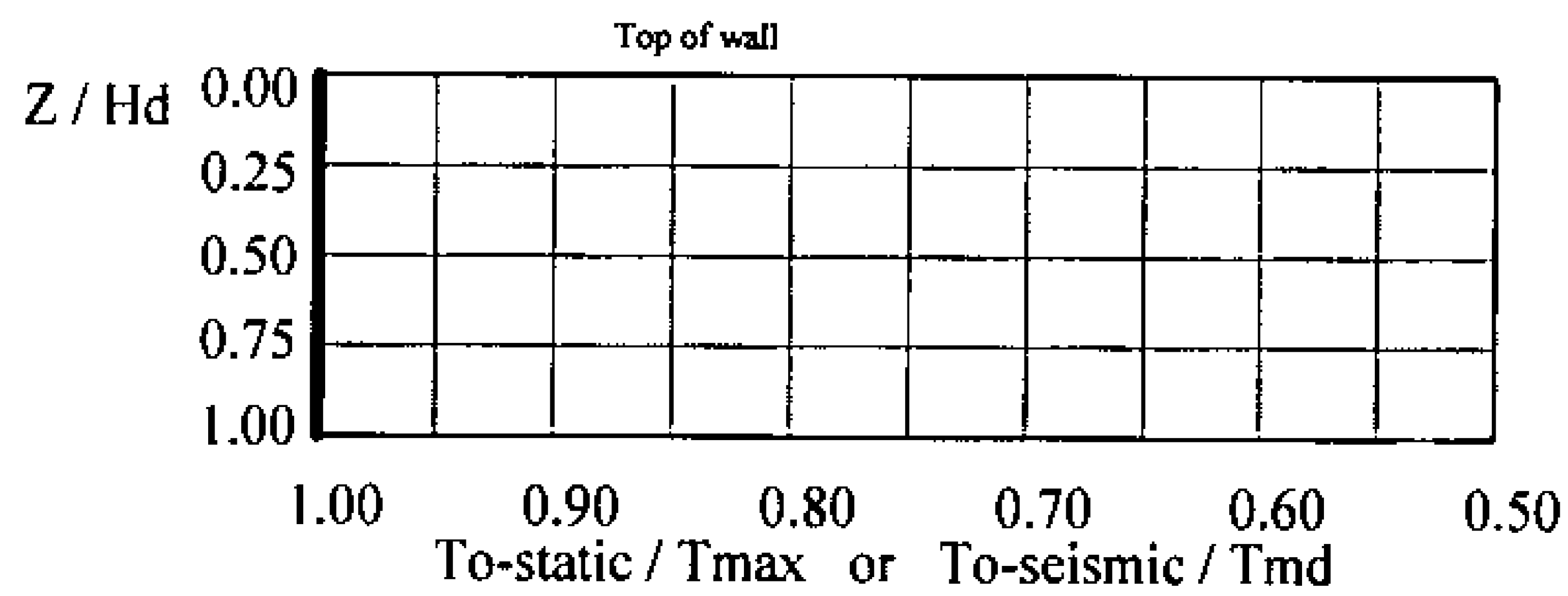
Z	K / Ka
0 ft	1.00
3.3 ft	1.00
6.6 ft	1.00
9.8 ft	1.00
13.1 ft	1.00
16.4 ft	1.00
19.7 ft	1.00



INPUT DATA: Facia and Connection (according to revised Demo 82)
(Analysis)

FACIA type: Facing enabling frictional connection of reinforcement (e.g., modular concrete blocks, gabions)
Depth/height of block is 1.00/0.67 ft. Horizontal distance to Center of Gravity of block is 0.42 ft.
Average unit weight of block is $\gamma_f = 117.00$ lb/ft³

Z / Hd	To-static / Tmax or To-seismic / Tmd
0.00	1.00
0.25	1.00
0.50	1.00
0.75	1.00
1.00	1.00



Geogrid Type #1		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ (1)	CRult (2)	σ	CRult	σ	CRult	σ	CRult	σ	CRult
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

Geogrid Type #1 (3)		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

(1) σ = Confining stress in between stacked blocks [lb/ft²]
(2) CRult = Tc-ult / Tult
(3) CRcr = Tcre / Tult

In seismic analysis, long term strength is reduced to 100% of its static value.

D A T A (for connection only)	Type #1	Type #2	Type #3	Type #4	Type #5
Product Name	V40 - 5XT	V40 - 8XT	V40 - 10XT	V40 - 20XT	N/A
Connection strength reduction factor, RFd	1.10	1.10	1.10	1.10	N/A
Creep reduction factor, RFc	N/A	N/A	N/A	N/A	N/A

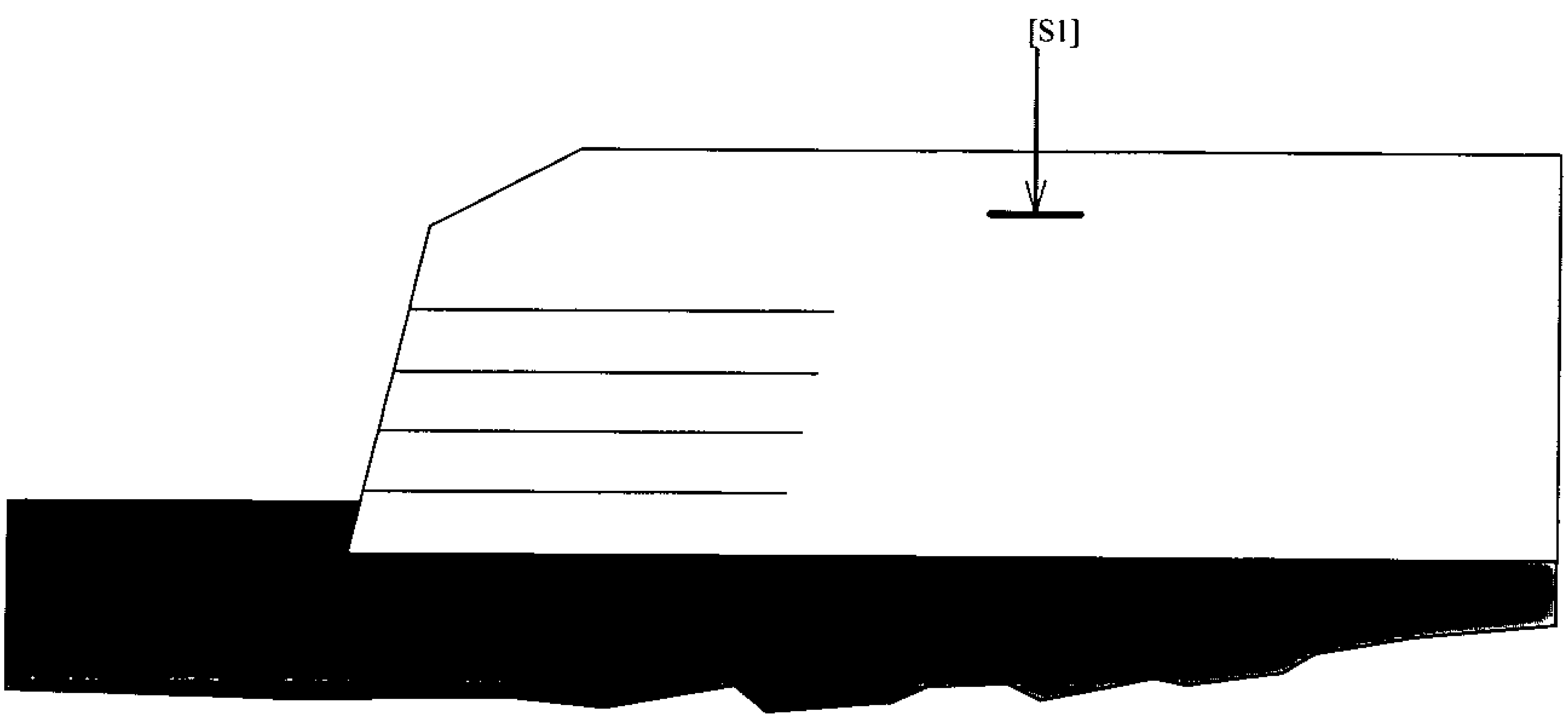
INPUT DATA: Geometry and Surcharge loads (of a SIMPLE STRUCTURE)

Design height, Hd	10.67	[ft]	{ Embedded depth is E = 1.67 ft, and height above top of finished bottom grade is H = 9.00 ft }
Batter, ω	14.0	[deg]	
Backslope, β	26.6	[deg]	
Backslope rise	2.5	[ft]	Broken back equivalent angle, I = 6.68° (see Fig. 25 in DEMO 82)

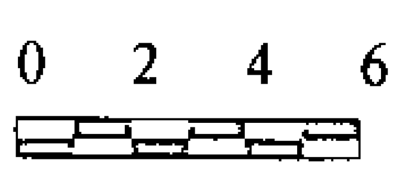
UNIFORM SURCHARGE
Uniformly distributed dead load is 0.0 [lb/ft ^{2}]

OTHER EXTERNAL LOAD(S)
[S1] Strip Load, Qv-d = 3000.0 and Qv-l = 0.0 [lb/ft ^{2}].
Footing width, b=3.0 [ft]. Distance of center of footing from wall face, d = 20.0 [ft] @ depth of 2.0 [ft] below soil surface.

ANALYZED REINFORCEMENT LAYOUT:



SCALE:



ANALYSIS: CALCULATED FACTORS (Static conditions)

Bearing capacity, Fs = 4.08, Meyerhof stress = 1407 lb/ft².

Foundation Interface: Direct sliding, Fs = 2.061, Eccentricity, e/L = -0.0085, Fs-overturning = 8.66

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	14.00	2	3.75	3.20	3.204	12.569	2.757	-0.0203	V40 - 8XT
2	4.00	14.00	2	6.96	6.25	6.248	17.558	3.385	-0.0295	V40 - 8XT
3	6.00	14.00	2	8.67	8.22	8.221	15.093	4.342	-0.0373	V40 - 8XT
4	8.00	14.00	2	8.46	8.49	8.488	8.746	5.977	-0.0462	V40 - 8XT

ANALYSIS: CALCULATED FACTORS (Seismic conditions)

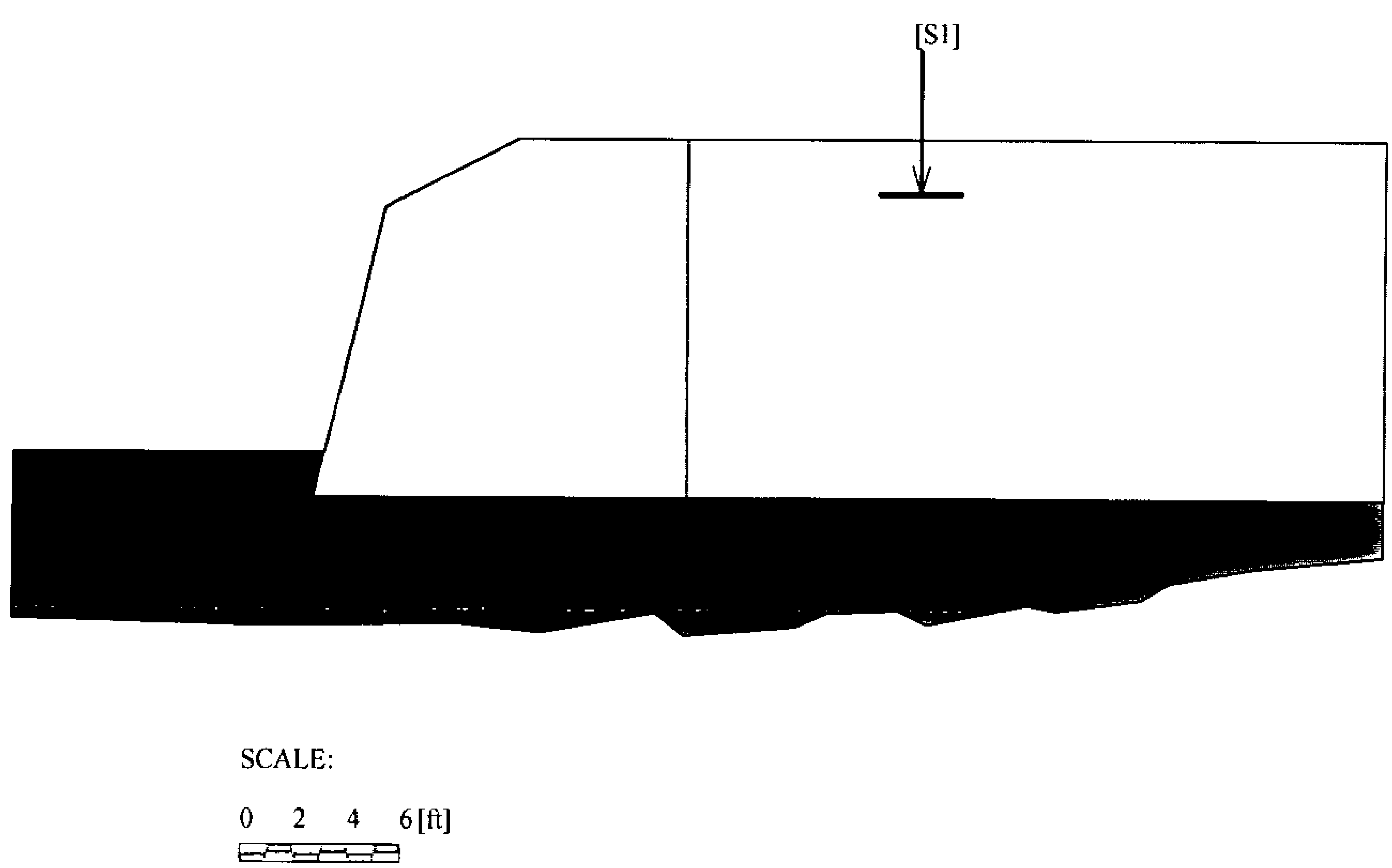
Bearing capacity, Fs = 3.32, Meyerhof stress = 1590 lb/ft².

Foundation Interface: Direct sliding, Fs = 1.220, Eccentricity, e/L = 0.0593, Fs-overturning = 4.31

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	14.00	2	1.70	1.86	1.861	4.558	1.688	0.0230	V40 - 8XT
2	4.00	14.00	2	2.33	2.85	2.851	4.699	2.172	-0.0050	V40 - 8XT
3	6.00	14.00	2	2.76	3.60	3.603	3.845	2.995	-0.0260	V40 - 8XT
4	8.00	14.00	2	3.11	4.18	4.184	2.575	4.657	-0.0429	V40 - 8XT

BEARING CAPACITY for GIVEN LAYOUT

	STATIC	SEISMIC	UNITS
(Water table does not affect bearing capacity)			
Ultimate bearing capacity, q-ult	5745	5287	[lb/ft ²]
Meyerhof stress, σ_V	1406.5	1590	[lb/ft ²]
Eccentricity, e	-0.12	0.86	[ft]
Eccentricity, e/L	-0.009	0.061	
Fs calculated	4.08	3.32	
Base length	14.00	14.00	[ft]



DIRECT SLIDING for GIVEN LAYOUT (for GEOGRID reinforcements)

Along reinforced and foundation soils interface: Fs-static = 2.061 and Fs-seismic = 1.220

#	Geogrid Elevation [ft]	Geogrid Length [ft]	Fs Static	Fs Seismic	Geogrid Type #	Product name
1	2.00	14.00	2.757	1.688	2	V40 - 8XT
2	4.00	14.00	3.385	2.172	2	V40 - 8XT
3	6.00	14.00	4.342	2.995	2	V40 - 8XT
4	8.00	14.00	5.977	4.657	2	V40 - 8XT

ECCENTRICITY for GIVEN LAYOUT

At interface with foundation: e/L static = -0.0085, e/L seismic = 0.0593; Overturning: Fs-static = 8.66, Fs-seismic = 4.31

#	Geogrid Elevation [ft]	Geogrid Length [ft]	e / L Static	e / L Seismic	Geogrid Type #	Product name
1	2.00	14.00	-0.0203	0.0230	2	V40 - 8XT
2	4.00	14.00	-0.0295	-0.0050	2	V40 - 8XT
3	6.00	14.00	-0.0373	-0.0260	2	V40 - 8XT
4	8.00	14.00	-0.0462	-0.0429	2	V40 - 8XT

RESULTS for STRENGTH

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Tavailable [lb/ft]	Tmax [lb/ft]	Tmd [lb/ft]	Specified minimum Fs-overall static	Actual calculated Fs-overall static	Specified minimum Fs-overall seismic	Actual calculated Fs-overall seismic	Product name
1	2.00	3083	962.20	1160.43	N/A	3.204	N/A	1.861	V40 - 8XT
2	4.00	3083	493.45	981.61	N/A	6.248	N/A	2.851	V40 - 8XT
3	6.00	3083	375.04	802.79	N/A	8.221	N/A	3.603	V40 - 8XT
4	8.00	3083	363.25	623.97	N/A	8.488	N/A	4.184	V40 - 8XT

RESULTS for PULLOUT Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Coverage Ratio	Tmax [lb/ft]	Tmd [lb/ft]	Le [ft]	La [ft]	Avail.Static Pullout, Pr [lb/ft]	Specified Static Fs	Actual Static Fs	Avail.Seism. Pullout, Pr [lb/ft]	Specified Seismic Fs	Actual Seismic Fs
1	2.00	1.000	962.2	1160.4	12.13	1.87	12094.2	N/A	12.569	9675.3	N/A	4.558
2	4.00	1.000	493.5	981.6	10.26	3.74	8664.2	N/A	17.558	6931.3	N/A	4.699
3	6.00	1.000	375.0	802.8	8.39	5.61	5660.6	N/A	15.093	4528.4	N/A	3.845
4	8.00	1.000	363.2	624.0	6.52	7.48	3177.1	N/A	8.746	2541.7	N/A	2.575

RESULTS for CONNECTION (static conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	962	0.64	0.64	3613	3083	N/A	3.75	N/A	3.20	V40 - 8XT
2	4.00	493	0.61	0.61	3433	3083	N/A	6.96	N/A	6.25	V40 - 8XT
3	6.00	375	0.57	0.57	3252	3083	N/A	8.67	N/A	8.22	V40 - 8XT
4	8.00	363	0.54	0.54	3072	3083	N/A	8.46	N/A	8.49	V40 - 8XT

RESULTS for CONNECTION (seismic conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	2123	0.64	0.64	3613	3083	N/A	1.70	N/A	1.86	V40 - 8XT
2	4.00	1475	0.61	0.61	3433	3083	N/A	2.33	N/A	2.85	V40 - 8XT
3	6.00	1178	0.57	0.57	3252	3083	N/A	2.76	N/A	3.60	V40 - 8XT
4	8.00	987	0.54	0.54	3072	3083	N/A	3.11	N/A	4.18	V40 - 8XT

AASHTO 2002 ASD DESIGN METHOD
Crown Cabot Luxury Apartments

MSEW(3.0): Update # 14.3

PROJECT IDENTIFICATION

Title:	Crown Cabot Luxury Apartments
Project Number:	1105 004
Client:	Mill Creek Residential Trust, LLC
Designer:	DO
Station Number:	

Description:

Wall "B" - 16.67 FT with 2:1 Crest Condition - Bedrock wihtin Foundation and Retained Soil Zones

Company's information:

Name: Soil Retention Designs, Inc.
Street: 2501 State Street

Carlsbad, CA 92008
Telephone #: (760) 966-6090
Fax #: (760) 966-6099
E-Mail: dosborne@soilretention.com

Original file path and name: C:\Users\dosborne\Desktop\Crown Cabot\WALL B - 16.67 FT.BEN
Original date and time of creating this file: Mon Nov 29 16:13:17 2010

PROGRAM MODE: ANALYSIS
of a SIMPLE STRUCTURE
using GEOGRID as reinforcing material.

SOIL DATA

REINFORCED SOIL

Unit weight, γ — 120.0 lb/ft³
Design value of internal angle of friction, ϕ — 30.0 °

RETAINED SOIL

Unit weight, γ — 115.0 lb/ft³
Design value of internal angle of friction, ϕ — 27.0 °

FOUNDATION SOIL (Considered as an equivalent uniform soil)

Equivalent unit weight, $\gamma_{equiv.}$ — 115.0 lb/ft³
Equivalent internal angle of friction, $\phi_{equiv.}$ — 27.0 °
Equivalent cohesion, $c_{equiv.}$ — 100.0 lb/ft²

Water table does not affect bearing capacity

LATERAL EARTH PRESSURE COEFFICIENTS

Ka (internal stability) = 0.2467 (if batter is less than 10°, Ka is calculated from eq. 15. Otherwise, eq. 38 is utilized)
Inclination of internal slip plane, ψ = 40.87° (see Fig. 28 in DEMO 82).
Ka (external stability) = 0.2870 (if batter is less than 10°, Ka is calculated from eq. 16. Otherwise, eq. 17 is utilized)

BEARING CAPACITY

Bearing capacity coefficients (calculated by MSEW): Nc = 23.94 N γ = 14.47

SEISMICITY

Maximum ground acceleration coefficient, A = 0.320
Design acceleration coefficient in Internal Stability: Kh = Am = 0.362
Design acceleration coefficient in External Stability: Kh_d = 0.208 => Kh = Am = 0.208
(Kh in External Stability is based on allowable displacement, d = 25 mm. using FHWA-NHI-00-043 equation)

Kae (Kh > 0) = 0.4787 Kae (Kh = 0) = 0.2870 Δ Kae = 0.1917
Seismic soil-geogrid friction coefficient, F* is 80.0% of its specified static value.

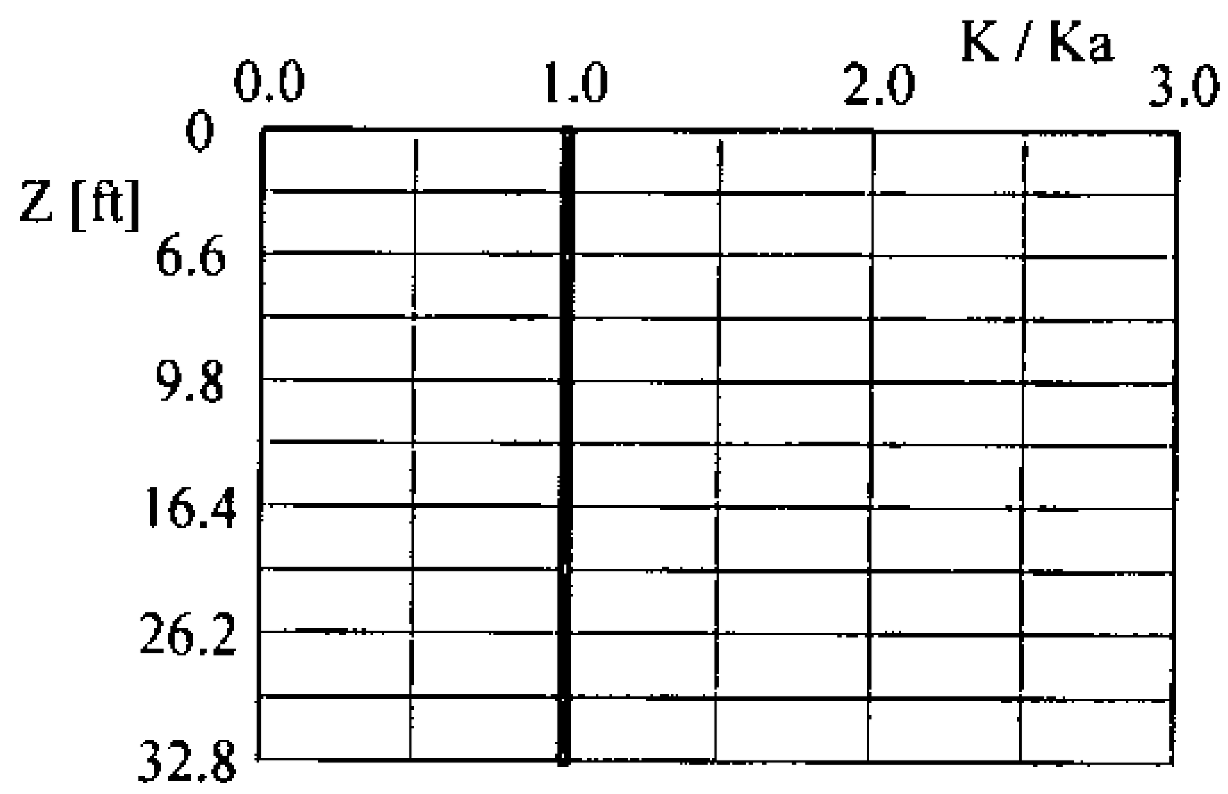
INPUT DATA: Geogrids
(Analysis)

DATA	Geogrid type #1	Geogrid type #2	Geogrid type #3	Geogrid type #4	Geogrid type #5
Tult [lb/ft]	3590.0	6230.0	8300.0	12420.0	
Durability reduction factor, RFd	1.10	1.10	1.10	1.10	
Installation-damage reduction factor, RFid	1.11	1.10	1.10	1.10	
Creep reduction factor, RFc	1.67	1.67	1.67	1.67	N/A
Fs-overall for strength	N/A	N/A	N/A	N/A	
Coverage ratio, Rc	1.000	1.000	1.000	1.000	
Friction angle along geogrid-soil interface, ρ	26.10	26.10	26.10	26.10	
Pullout resistance factor, F*	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	$0.85 \cdot \tan\phi$	N/A
Scale-effect correction factor, α	0.8	0.8	0.8	0.8	

Note: Z for calculating K/Ka and F* is measured from top of the wall at the face (AASHTO).

Variation of Lateral Earth Pressure Coefficient With Depth

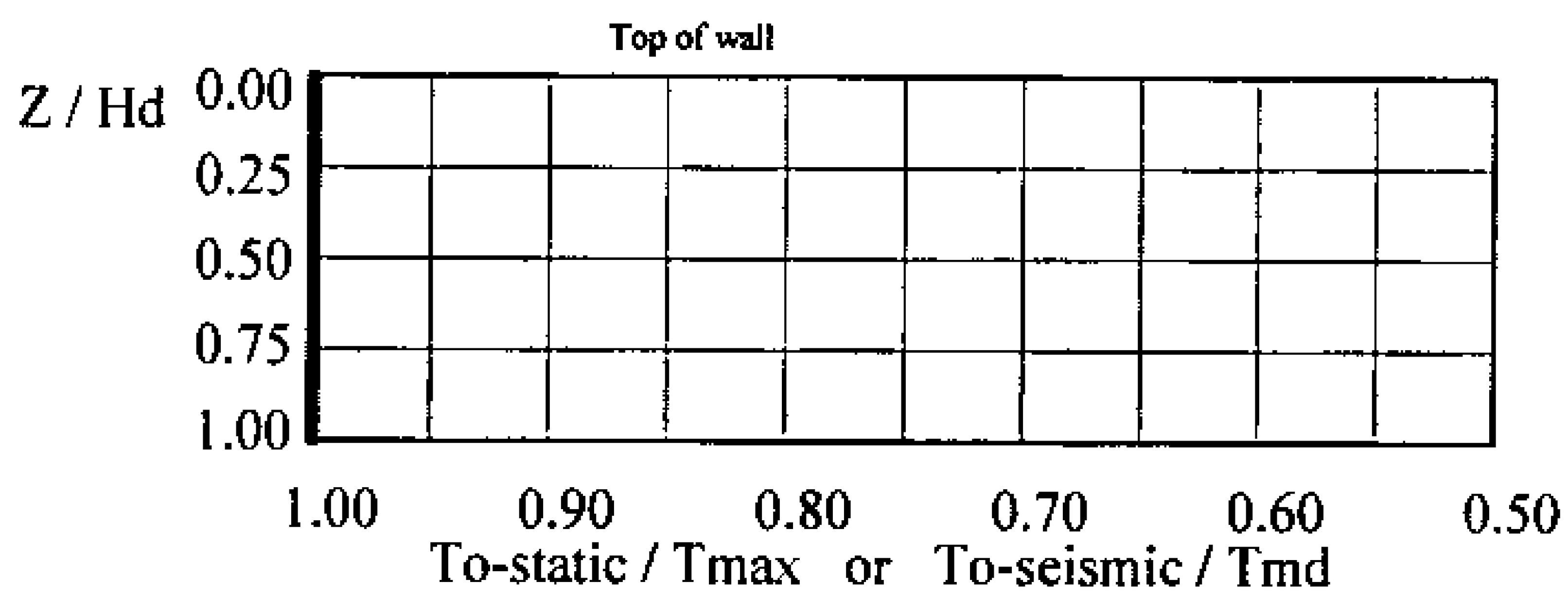
Z	K / Ka
0 ft	1.00
3.3 ft	1.00
6.6 ft	1.00
9.8 ft	1.00
13.1 ft	1.00
16.4 ft	1.00
19.7 ft	1.00



INPUT DATA: Facia and Connection (according to revised Demo 82)
(Analysis)

FACIA type: Facing enabling frictional connection of reinforcement (e.g., modular concrete blocks, gabions)
Depth/height of block is 1.00/0.67 ft. Horizontal distance to Center of Gravity of block is 0.42 ft.
Average unit weight of block is $\gamma_f = 117.00$ lb/ft^3

Z / Hd	To-static / Tmax or To-seismic / Tmd
0.00	1.00
0.25	1.00
0.50	1.00
0.75	1.00
1.00	1.00



Geogrid Type #1		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ [1]	CRult [2]	σ	CRult	σ	CRult	σ	CRult	σ	CRult
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

Geogrid Type #1 [3]		Geogrid Type #2		Geogrid Type #3		Geogrid Type #4		Geogrid Type #5	
σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr	σ	CRcr
0.0	0.98	0.0	0.50	0.0	0.25	0.0	0.34		
4000.0	0.98	1545.0	0.71	1831.0	0.72	1914.0	0.63	N/A	
		4000.0	0.71	4000.0	0.72	4000.0	0.63		

[1] σ = Confining stress in between stacked blocks [lb/ft^2]
[2] CRult = Tc-ult / Tult
[3] CRcr = Tcrc / Tult

In seismic analysis, long term strength is reduced to 100% of its static value.

D A T A (for connection only)	Type #1	Type #2	Type #3	Type #4	Type #5
Product Name	V40 - 5XT	V40 - 8XT	V40 - 10XT	V40 - 20XT	N/A
Connection strength reduction factor, RFd	1.10	1.10	1.10	1.10	N/A
Creep reduction factor, RFc	N/A	N/A	N/A	N/A	N/A

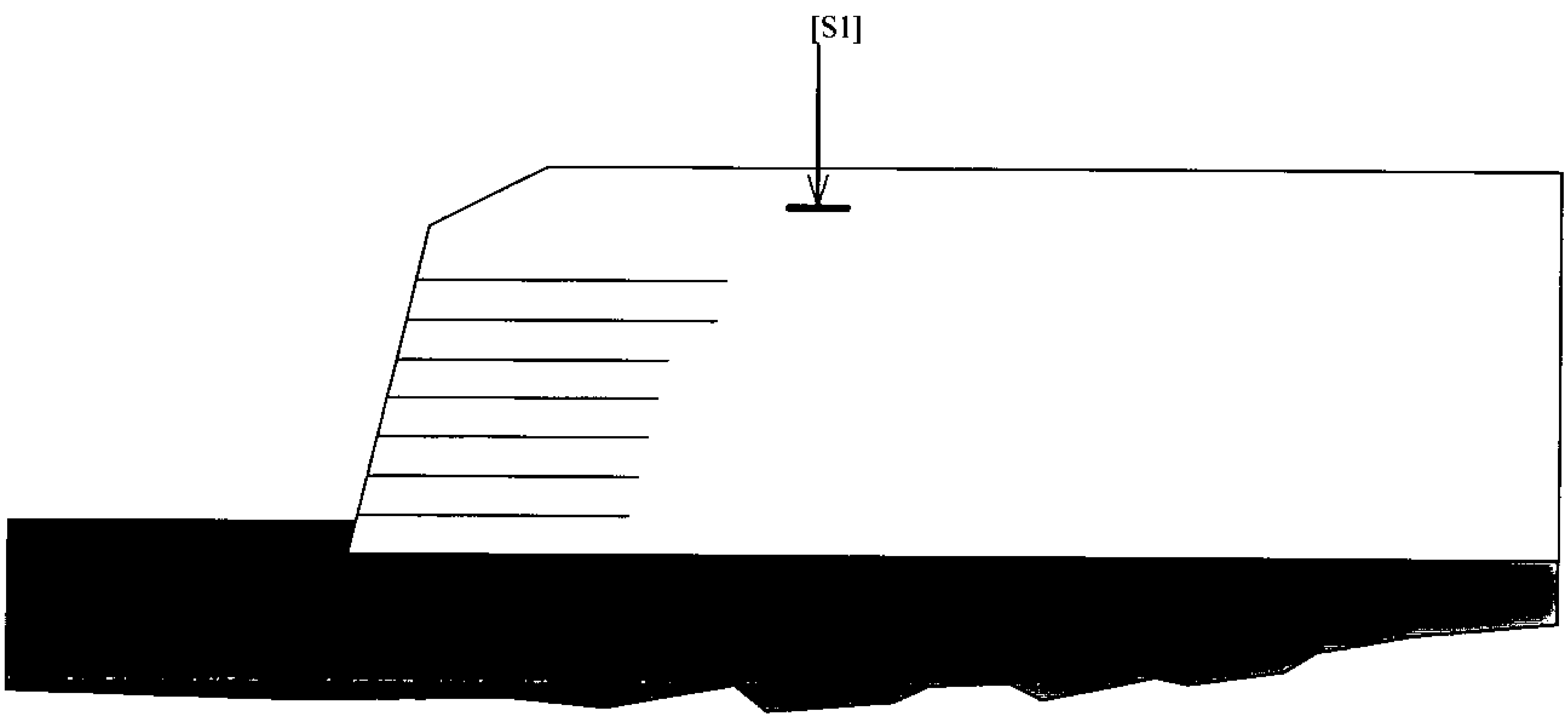
INPUT DATA: Geometry and Surcharge loads (of a SIMPLE STRUCTURE)

Design height, Hd	16.67	[ft]	{ Embedded depth is E = 1.67 ft, and height above top of finished bottom grade is H = 15.00 ft }
Batter, ω	14.0	[deg]	
Backslope, β	26.0	[deg]	
Backslope rise	3.0	[ft]	Broken back equivalent angle, I = 5.14° (see Fig. 25 in DEMO 82)

UNIFORM SURCHARGE
Uniformly distributed dead load is 0.0 [lb/ft ^{2}]

OTHER EXTERNAL LOAD(S)
[S1] Strip Load, Qv-d = 3000.0 and Qv-l = 0.0 [lb/ft ^{2}].
Footing width, b=3.0 [ft]. Distance of center of footing from wall face, d = 20.0 [ft] @ depth of 2.0 [ft] below soil surface.

ANALYZED REINFORCEMENT LAYOUT:



SCALE:

0 2 4 6 8 10 [ft]

ANALYSIS: CALCULATED FACTORS (Static conditions)

Bearing capacity, Fs = 6.89, Meyerhof stress = 1983 lb/ft².
Foundation Interface: Direct sliding, Fs = 2.356, Eccentricity, e/L = 0.0162, Fs-overturning = 5.36

GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	14.00	2	2.61	2.00	1.998	11.826	2.339	0.0004	V40 - 8XT
2	4.00	14.00	2	4.51	3.50	3.500	16.541	2.676	-0.0126	V40 - 8XT
3	6.00	14.00	2	4.97	4.04	4.043	14.115	3.106	-0.0232	V40 - 8XT
4	8.00	14.00	2	5.61	4.79	4.787	11.476	3.676	-0.0317	V40 - 8XT
5	10.00	14.00	2	6.53	5.86	5.865	8.550	4.467	-0.0389	V40 - 8XT
6	12.00	16.00	2	7.99	7.57	7.570	9.086	6.567	-0.0440	V40 - 8XT
7	14.00	16.00	2	7.23	7.25	7.255	4.158	8.790	-0.0521	V40 - 8XT

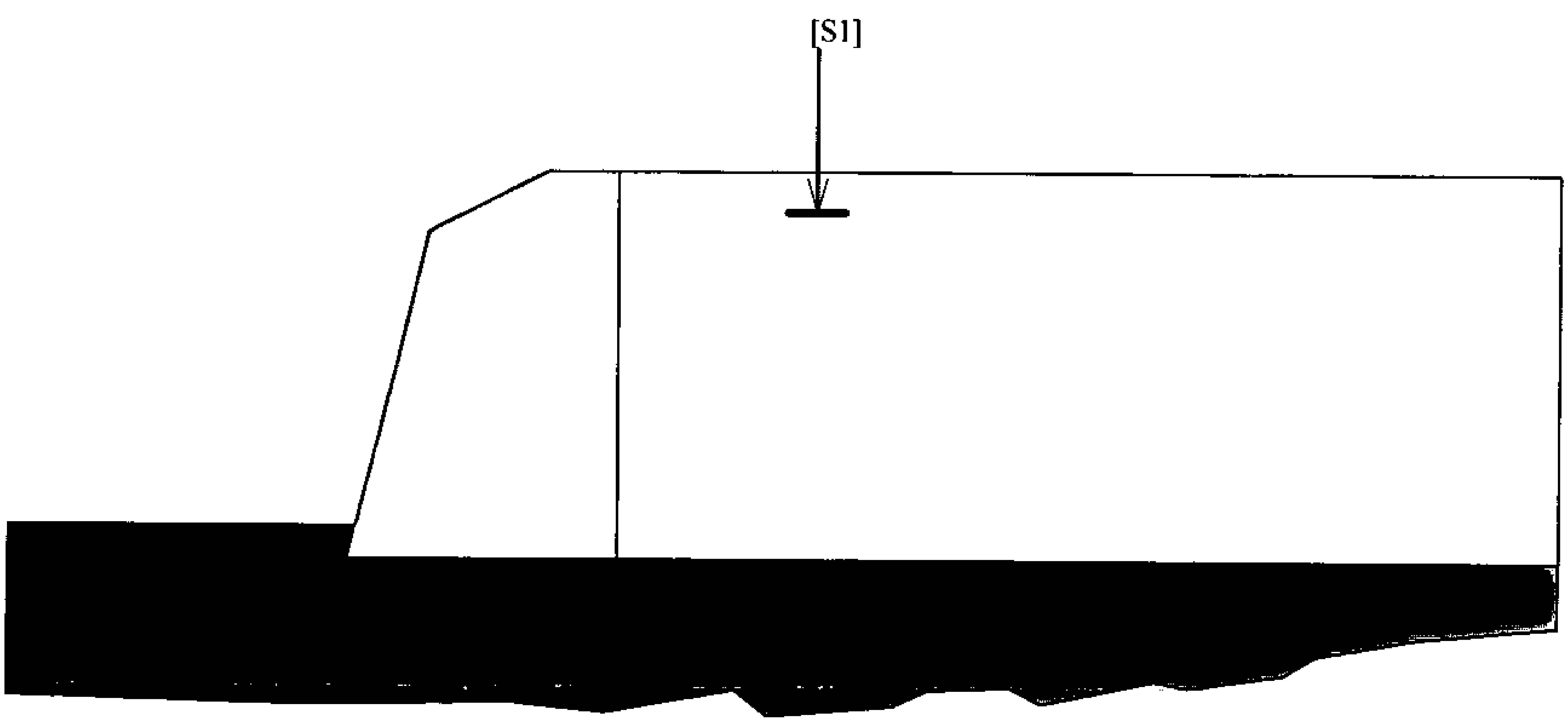
ANALYSIS: CALCULATED FACTORS (Seismic conditions)

Bearing capacity, Fs = 3.81, Meyerhof stress = 2767 lb/ft².
Foundation Interface: Direct sliding, Fs = 1.285, Eccentricity, e/L = 0.1499, Fs-overturning = 2.43

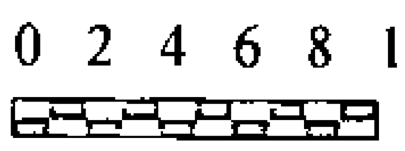
GEOGRID #	Elevation [ft]	Length [ft]	Type #	CONNECTION Fs-overall [connection strength]	Fs-overall [geogrid strength]	Geogrid strength Fs	Pullout resistance Fs	Direct sliding Fs	Eccentricity e/L	Product name
1	2.00	14.00	2	1.18	1.16	1.162	4.298	1.295	0.1009	V40 - 8XT
2	4.00	14.00	2	1.62	1.69	1.688	4.740	1.515	0.0598	V40 - 8XT
3	6.00	14.00	2	1.84	2.00	1.999	4.169	1.811	0.0262	V40 - 8XT
4	8.00	14.00	2	2.16	2.45	2.449	3.539	2.229	-0.0007	V40 - 8XT
5	10.00	14.00	2	2.69	3.16	3.161	2.816	2.862	-0.0217	V40 - 8XT
6	12.00	16.00	2	2.74	3.53	3.527	2.494	4.568	-0.0381	V40 - 8XT
7	14.00	16.00	2	3.31	4.24	4.242	1.522	6.964	-0.0505	V40 - 8XT

BEARING CAPACITY for GIVEN LAYOUT

	STATIC	SEISMIC	UNITS
(Water table does not affect bearing capacity)			
Ultimate bearing capacity, q-ult	13665	10528	[lb/ft ^{2}]
Meyerhof stress, σ_V	1982.8	2767	[lb/ft ^{2}]
Eccentricity, e	0.23	2.11	[ft]
Eccentricity, e/L	0.016	0.151	
Fs calculated	6.89	3.81	
Base length	14.00	14.00	[ft]



SCALE:



DIRECT SLIDING for GIVEN LAYOUT (for GEOGRID reinforcements)

Along reinforced and foundation soils interface: Fs-static = 2.356 and Fs-seismic = 1.285

#	Geogrid Elevation [ft]	Geogrid Length [ft]	Fs Static	Fs Seismic	Geogrid Type #	Product name
1	2.00	14.00	2.339	1.295	2	V40 - 8XT
2	4.00	14.00	2.676	1.515	2	V40 - 8XT
3	6.00	14.00	3.106	1.811	2	V40 - 8XT
4	8.00	14.00	3.676	2.229	2	V40 - 8XT
5	10.00	14.00	4.467	2.862	2	V40 - 8XT
6	12.00	16.00	6.567	4.568	2	V40 - 8XT
7	14.00	16.00	8.790	6.964	2	V40 - 8XT

ECCENTRICITY for GIVEN LAYOUT

At interface with foundation: e/L static = 0.0162, e/L seismic = 0.1499; Overturning: Fs-static = 5.36, Fs-seismic = 2.43

#	Geogrid Elevation [ft]	Geogrid Length [ft]	e / L Static	e / L Seismic	Geogrid Type #	Product name
1	2.00	14.00	0.0004	0.1009	2	V40 - 8XT
2	4.00	14.00	-0.0126	0.0598	2	V40 - 8XT
3	6.00	14.00	-0.0232	0.0262	2	V40 - 8XT
4	8.00	14.00	-0.0317	-0.0007	2	V40 - 8XT
5	10.00	14.00	-0.0389	-0.0217	2	V40 - 8XT
6	12.00	16.00	-0.0440	-0.0381	2	V40 - 8XT
7	14.00	16.00	-0.0521	-0.0505	2	V40 - 8XT

RESULTS for STRENGTH

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Tavailable [lb/ft]	Tmax [lb/ft]	Tmd [lb/ft]	Specified minimum Fs-overall static	Actual calculated Fs-overall static	Specified minimum Fs-overall seismic	Actual calculated Fs-overall seismic	Product name
1	2.00	3083	1543.44	1854.15	N/A	1.998	N/A	1.162	V40 - 8XT
2	4.00	3083	880.94	1578.40	N/A	3.500	N/A	1.688	V40 - 8XT
3	6.00	3083	762.53	1302.65	N/A	4.043	N/A	1.999	V40 - 8XT
4	8.00	3083	644.12	1026.90	N/A	4.787	N/A	2.449	V40 - 8XT
5	10.00	3083	525.71	751.15	N/A	5.865	N/A	3.161	V40 - 8XT
6	12.00	3083	407.30	779.67	N/A	7.570	N/A	3.527	V40 - 8XT
7	14.00	3083	424.99	503.92	N/A	7.255	N/A	4.242	V40 - 8XT

RESULTS for PULLOUT Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Coverage Ratio	Tmax [lb/ft]	Tmd [lb/ft]	Le [ft]	La [ft]	Avail.Static Pullout, Pr [lb/ft]	Specified Static Fs	Actual Static Fs	Avail.Seism. Pullout, Pr [lb/ft]	Specified Seismic Fs	Actual Seismic Fs
1	2.00	1.000	1543.4	1854.1	12.19	1.81	18252.5	N/A	11.826	14602.0	N/A	4.298
2	4.00	1.000	880.9	1578.4	10.37	3.63	14571.3	N/A	16.541	11657.0	N/A	4.740
3	6.00	1.000	762.5	1302.6	8.56	5.44	10762.8	N/A	14.115	8610.2	N/A	4.169
4	8.00	1.000	644.1	1026.9	6.75	7.25	7392.1	N/A	11.476	5913.7	N/A	3.539
5	10.00	1.000	525.7	751.2	4.94	9.06	4494.9	N/A	8.550	3595.9	N/A	2.816
6	12.00	1.000	407.3	779.7	5.12	10.88	3700.8	N/A	9.086	2960.6	N/A	2.494
7	14.00	1.000	425.0	503.9	3.31	12.69	1767.3	N/A	4.158	1413.8	N/A	1.522

RESULTS for CONNECTION (static conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	1543	0.71	0.71	4021	3083	N/A	2.61	N/A	2.00	V40 - 8XT
2	4.00	881	0.70	0.70	3973	3083	N/A	4.51	N/A	3.50	V40 - 8XT
3	6.00	763	0.67	0.67	3793	3083	N/A	4.97	N/A	4.04	V40 - 8XT
4	8.00	644	0.64	0.64	3613	3083	N/A	5.61	N/A	4.79	V40 - 8XT
5	10.00	526	0.61	0.61	3433	3083	N/A	6.53	N/A	5.86	V40 - 8XT
6	12.00	407	0.57	0.57	3252	3083	N/A	7.99	N/A	7.57	V40 - 8XT
7	14.00	425	0.54	0.54	3072	3083	N/A	7.23	N/A	7.25	V40 - 8XT

RESULTS for CONNECTION (seismic conditions)

Live Load included in calculating Tmax

#	Geogrid Elevation [ft]	Connection force, To [lb/ft]	Reduction factor for connection (short-term strength) CRult	Reduction factor for connection (long-term strength) CRcr	Available connection strength [lb/ft]	Available Geogrid strength, Tavailable [lb/ft]	Fs-overall connection strength Specified	Fs-overall connection strength Actual	Fs-overall Geogrid strength Specified	Fs-overall Geogrid strength Actual	Product name
1	2.00	3398	0.71	0.71	4021	3083	N/A	1.18	N/A	1.16	V40 - 8XT
2	4.00	2459	0.70	0.70	3973	3083	N/A	1.62	N/A	1.69	V40 - 8XT
3	6.00	2065	0.67	0.67	3793	3083	N/A	1.84	N/A	2.00	V40 - 8XT
4	8.00	1671	0.64	0.64	3613	3083	N/A	2.16	N/A	2.45	V40 - 8XT
5	10.00	1277	0.61	0.61	3433	3083	N/A	2.69	N/A	3.16	V40 - 8XT
6	12.00	1187	0.57	0.57	3252	3083	N/A	2.74	N/A	3.53	V40 - 8XT
7	14.00	929	0.54	0.54	3072	3083	N/A	3.31	N/A	4.24	V40 - 8XT

Appendix 2

Geotechnical Design Criteria for MSE Retaining Walls (Reference Document #2)

Project No. A8803-06-01A
March 12, 2013

CAL I Crown Valley, LLC
949 South Coast Drive, Suite 400
Costa Mesa, CA 92626

Attention: Mr. Ron Schulman

Subject: UPDATED GEOTECHNICAL DESIGN CRITERIA FOR MECHANICALLY STABILIZED EARTH RETAINING WALLS
PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
25891 CROWN VALLEY PARKWAY AND 27961 CABOT ROAD
LAGUNA NIGUEL, CALIFORNIA

Reference: *Updated Geotechnical Investigation,* by Geocon West, Inc. dated February 17, 2011;

Geotechnical Design Criteria for Mechanically Stabilized Earth Retaining Walls, by Geocon West, Inc. dated January 5, 2012.

Dear Mr. Schulman:

In accordance with your request, we are providing updated geotechnical design parameters for the proposed mechanically stabilized earth (MSE) retaining walls at the subject project. We understand a Verdura Wall system is being considered as a part of the proposed development. It is our further understanding that the exposed height of the proposed MSE walls will range between 3 and 15 feet. The exposed height does not include the embedded portion of the wall.

MSE WALL DESIGN PARAMETERS

The following table presents the recommended geotechnical parameters to be used for design of the MSE retaining walls, including the assumed shear strength values for imported soils to be used within the reinforced zone.

Parameter	Reinforced Zone	Retained Zone OR Foundation Zone (Bedrock)	Retained Zone OR Foundation Zone (Engineered Fill)
Angle of Internal Friction	30 degrees*	27 degrees	20 degrees*
Cohesion	100 psf*	100 psf	100 psf*
Wet Unit Weight	120 pcf*	115 pcf	115 pcf

*Assumed value based on discussion with Soil Retention

The above soil parameters for the retained and foundation zones are based on direct shear-strength tests performed during preparation of the referenced geotechnical investigation, our experience at the subject site, and discussions with the MSE wall designer.

Due to the silty and clayey nature of the on-site soils, we understand the reinforced zone of the MSE retaining wall will be backfilled with imported granular materials. Therefore, the shear strength values for the reinforced zone in the above table assume that granular import soil will be utilized as backfill. It is up to the wall designer to use his judgment in selection of design parameters.

Once backfill materials are selected, sufficient samples should be collected and tested to assess the suitability for use as wall backfill. Results should be provided to the designer for confirmation that the parameters are acceptable. Depending on the test results, the designer may require modifications to the original wall design (e.g., longer geogrid embedment lengths).

Based on information obtained during the referenced geotechnical investigation, it is anticipated that both artificial fill and Capistrano Formation bedrock will be exposed in the excavation along the base of the wall (foundation zone), as well as the back-cut behind the wall (retained zone). The wall designer should be aware of this condition during selection of the design parameters. In addition, where artificial fill is exposed at the base of the wall, the grading recommendations for preparation of the foundation zone described herein should be followed prior to wall construction.

GENERAL DESIGN CONSIDERATIONS

It is recommended that the MSE wall design consider the proximity of the proposed building and associated foundations. Based on current project plans, the upper MSE wall is offset between 22 and 30 feet from the proposed structure. Depending on the length of geogrid reinforcement required for the wall design, the proposed structure could impose a surcharge on the retained zones and/or reinforced zones of the proposed MSE walls.

Consideration should be also given to the construction sequence of the proposed building and MSE walls. Required temporary excavations for construction of the proposed MSE walls should be conducted such that vertical and lateral support is not removed from any existing foundations.

The wall should be provided with a drainage system that is sufficient to collect water and prevent excessive seepage through the wall, as well as provide proper drainage at the base of the wall to eliminate formation of hydrostatic pressures behind the wall.

As a part of the preparation of this updated letter, Geocon has performed slope stability analyses to evaluate the global stability of the wall based on preliminary wall design information provided by Soil Retention. Stability analyses were performed using GeoStudio Slope/W (2007). The analyses were performed for both the upper and lower MSE walls, at a location where it is anticipated that existing artificial will be exposed within the excavation along the base of the wall (foundation zone). The cross-section analyzed for slope stability incorporated the grading recommendations presented herein.

The results of the analyses indicate that the proposed walls will have a minimum Factor of Safety of at least 1.5 and 1.1 for static and pseudo-static conditions, respectively. A pseudo-static coefficient of 0.15 was used for the seismic analysis of the walls. The results of the analysis are provided herein as Figures 1 through 4.

Geocon West, Inc. should review retaining wall plans once they become available and revise the stability analysis as necessary based on the final wall design information. Depending on the results of the global stability analysis, modifications to the design grid type, spacing, or length may be needed to satisfy global stability.

GRADING RECOMMENDATIONS

Recommendations for earthwork are provided in the above referenced February 17, 2011 geotechnical investigation report, and are considered applicable to the construction of the proposed MSE walls. Where differing, the grading recommendations presented herein supersede those presented in the referenced report.

Based on our observations during site exploration, the existing artificial fill anticipated to be exposed within the excavation along the base of the wall (foundation zone & reinforced zone) may not be suitable for support of the proposed walls. The condition of the existing artificial fill will need to be verified during construction by a representative of Geocon. Where unsuitable artificial fill is exposed within the foundation zone and reinforced zone of the wall excavation, it is recommended that a blanket of newly placed engineered fill be placed for support of the proposed MSE wall.

As a minimum, it is recommended that the upper 3 feet of existing unsuitable artificial fill within the foundation and reinforced zones of the proposed wall be excavated and properly compacted. Deeper excavations should be conducted as necessary to remove soft, unsuitable soils at the direction of the Geotechnical Engineer (a representative of Geocon). The limits of existing fill and/or soft soil removal must be verified by a Geocon representative during site grading activities. The engineered fill blanket should extend at least three feet beyond the edge of the foundation zone and reinforced zone, or for a distance equal to the depth of fill below the foundations, whichever is greater.

All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing fill. If determined to be excessively soft, additional removals or stabilization of the excavation bottom may be required in order to provide a firm working surface upon which engineered fill can be placed, and/or heavy equipment can operate.

If subgrade stabilization is required at the excavation bottom, rubber tire equipment should not be allowed in the excavation bottom until it is stabilized or extensive soil disturbance could result. It is suggested that excavation and grading be performed during the summer season to promote moisture control of the soils. In addition, the use of track equipment should be considered to minimize disturbance to the soils if they become wet at the excavation bottom. Bottom stabilization, if necessary, may be achieved by introducing a thin lift of three to six-inch diameter crushed angular rock into the soft excavation bottom. The use of crushed concrete will also be acceptable. The crushed rock should be spread thinly across the excavation bottom and pressed into the soils by track rolling or wheel rolling with heavy equipment. It is very important that voids between the rock fragments are not created so the rock must be thoroughly pressed or blended into the soils.

Backfill materials within the reinforced zone should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditions to optimum moisture content, and properly compacted to a minimum 90 percent of the maximum dry density in accordance with ASTM D 1557 (latest edition). This is applicable to the entire embedment length of the geogrid reinforcement. Typically, wall designers specify that heavy compaction equipment be excluded from within 3 feet of the face of the wall; however, smaller equipment (e.g., walk-behind, self-driven compactors or hand whackers) should be used to compact the materials without causing deformation of the wall. If the designer specifies no compactive effort for this zone, the materials are essentially not properly compacted and the geogrid within the uncompacted zone should not be relied upon for reinforcement and overall embedment lengths should be increased to account for the difference.

All imported fill shall be observed, tested and approved by Geocon West, Inc. prior to use as backfill. Rocks larger than six inches in diameter shall not be used in the fill. Import soils to be used in the proposed MSE wall areas should have an expansion index of less than 50 and corrosive characteristics that are equally or less detrimental than that of the existing onsite soils.

TEMPORARY EXCAVATIONS

Where artificial fill will be exposed within the temporary excavation, temporary unsurcharged embankments should be sloped back at a uniform 1:1 slope gradient or flatter. A uniform slope does not have a vertical portion.

Where bedrock will be exposed within the temporary excavation, it is anticipated that unsurcharged embankments could be sloped back at a uniform ½:1 (H:V) gradient. However, it is very important that Project Geologist (a representative of Geocon) observe the cuts during the grading process in order to identify any unforeseen variations within the bedrock. Any necessary recommendations to eliminate or support any unfavorably oriented bedding planes will be made at that time.

Where sloped embankments are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction embankments are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The soils exposed in the cut slopes should be inspected during excavation by our personnel so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

WALL PERFORMANCE

Geosynthetic reinforcement must elongate to develop full tensile resistance. This elongation generally results in movement at the top of the wall. The amount of movement is dependent upon the height of the wall (e.g., higher walls rotate more), construction, and the type of geosynthetic used. In addition, over time reinforced-earth retaining walls have been known to exhibit creep and can undergo additional movement. Given this condition, the owner should be aware that structures and pavement placed within the reinforced and retained zones of the wall may undergo movement and should be designed to accommodate this movement.

Should you have questions regarding these recommendations, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,
GEOCON WEST, INC.

Jelisa M. Thomas
PE 74946

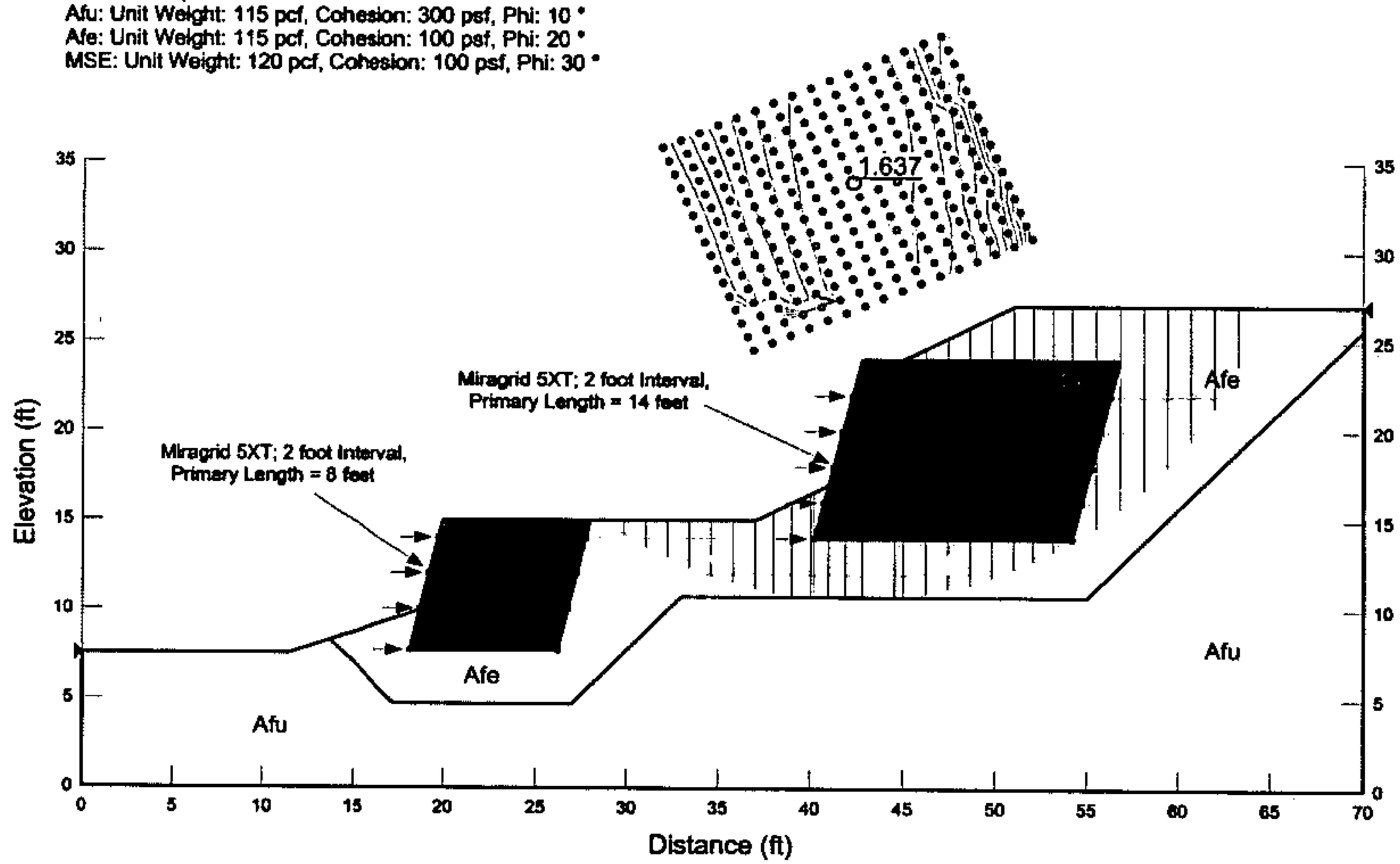
Gerald A. Kasman
CEG 2251

Enclosures: Figures 1 through 4, Stability Analysis

(1/EMAIL) Addressee; Soil Retention, Attn. Darien Osborne

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case I_Upper Wall.gsz
Date: 3/12/2013 Time: 8:55:29 AM
Description: Upper MSE Wall

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °



SCALE: 1" = 8' (H&V)

GEOCON WEST, INC.
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 · FAX (818) 841-1704

JMT		8000

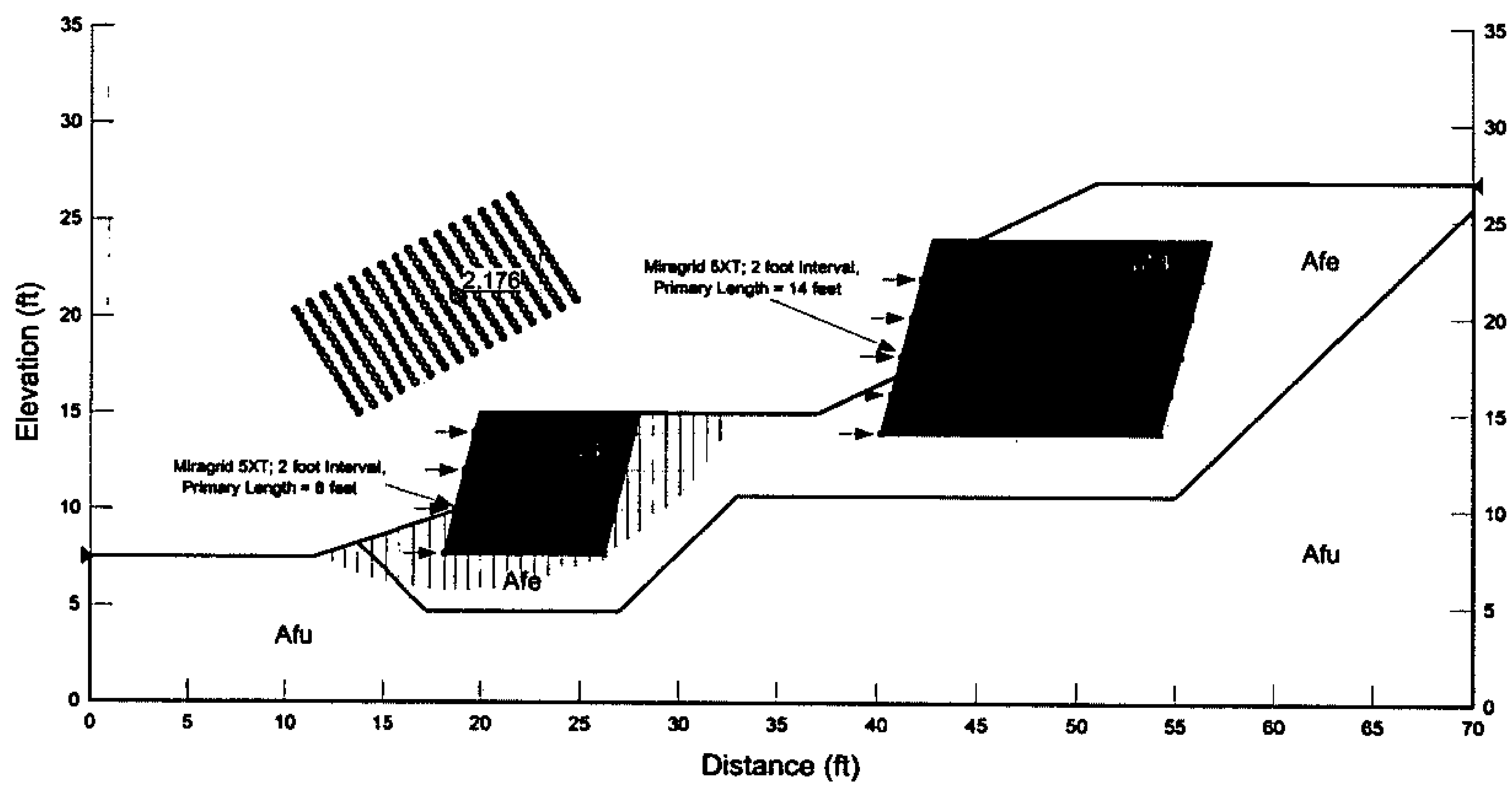
STABILITY ANALYSIS - UPPER WALL - STATIC

CAL I CROWN VALLEY, LLC
25891 CROWN VALLEY PARKWAY
LAGUNA NIGUEL, CALIFORNIA

MAR 12, 2013	PROJECT NO. A8803-06-01A	FIG. 1

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case II_Lower Wall.gsz
Date: 3/12/2013 Time: 8:57:56 AM
Description: Lower MSE Wall

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °



SCALE: 1" = 8' (H&V)

GEOCON WEST, INC.
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

JMT		6000

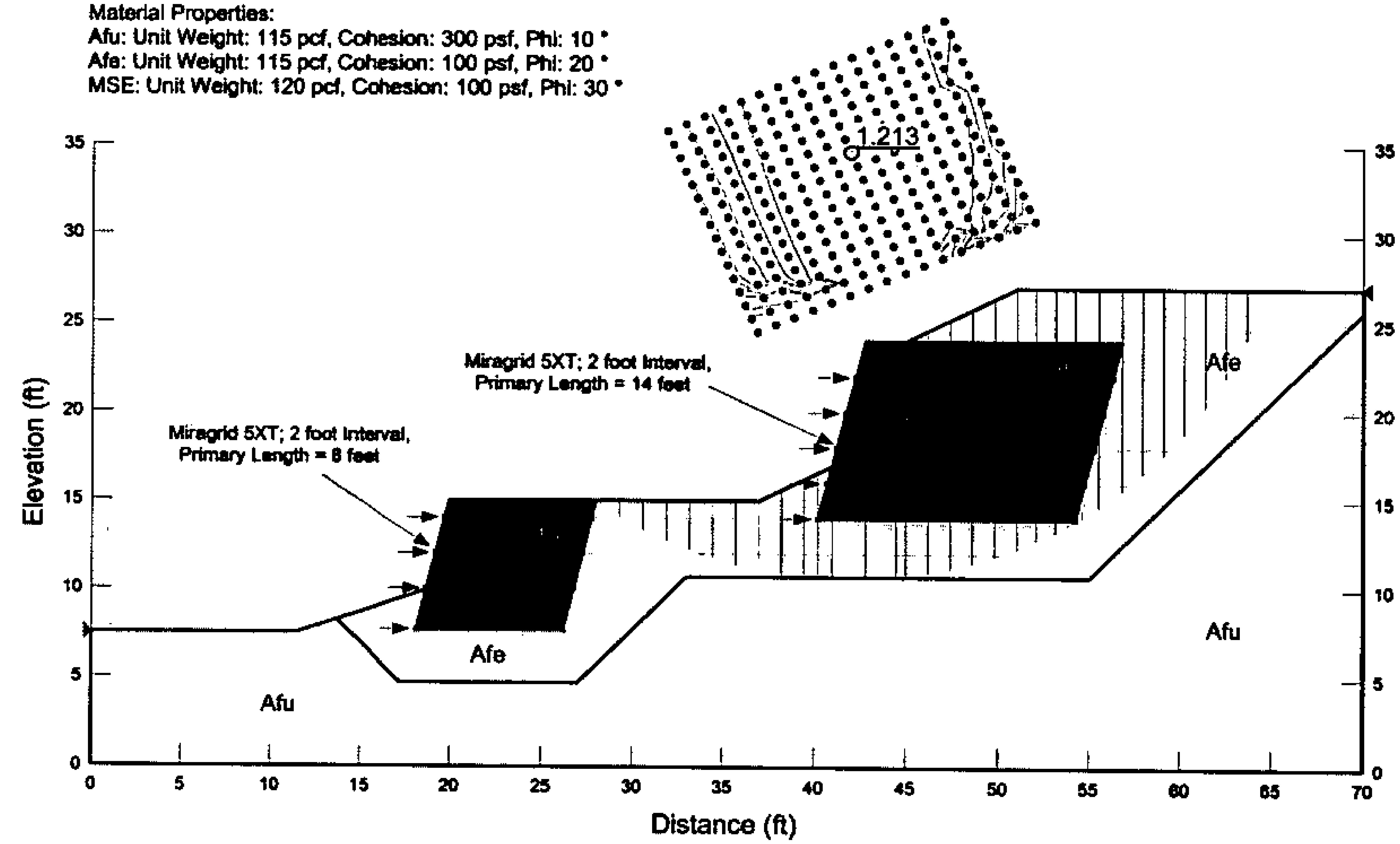
STABILITY ANALYSIS - LOWER WALL - STATIC

CAL I CROWN VALLEY, LLC
25891 CROWN VALLEY PARKWAY
LAGUNA NIGUEL, CALIFORNIA

MAR 12, 2013	PROJECT NO. A8803-06-01A	FIG. 2

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case I_Upper Wall.gsz
Date: 3/12/2013 Time: 8:48:12 AM
Description: Upper MSE Wall
Horz Seismic Load: 0.15g

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °



SCALE: 1" = 8' (H&V)

GEOCON
WEST, INC.
ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N. SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

JMT		8000

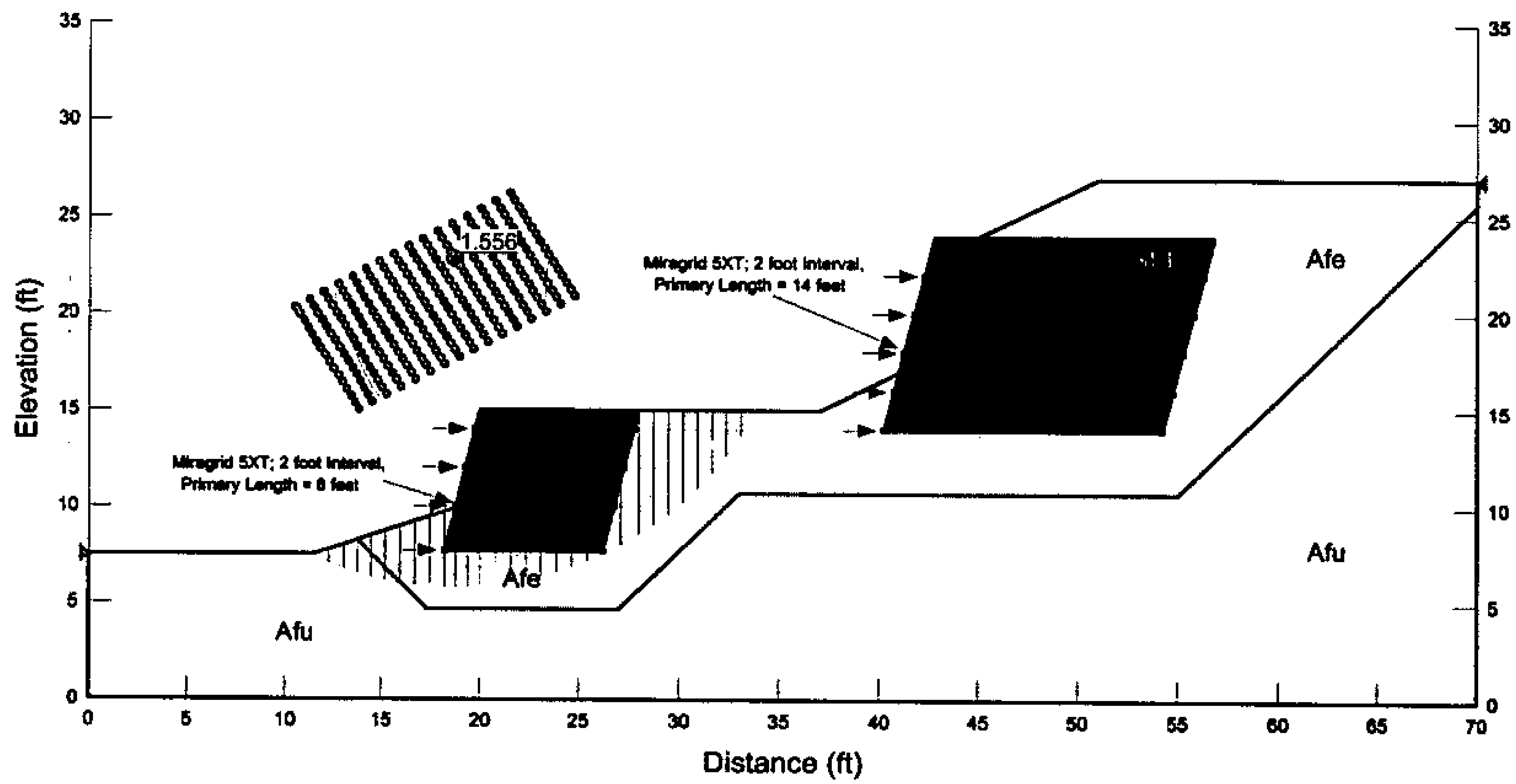
STABILITY ANALYSIS - UPPER WALL - PSEUDOSTATIC

CAL I CROWN VALLEY, LLC
25891 CROWN VALLEY PARKWAY
LAGUNA NIGUEL, CALIFORNIA

MAR 12, 2013	PROJECT NO. A8803-06-01A	FIG. 3

Project Name: Cal I Crown Valley LLC
Project No.: A8803-06-01A
Name: Case II_Lower Wall.gsz
Date: 3/12/2013 Time: 8:57:56 AM
Description: Lower MSE Wall
Horz Seismic Load: 0.15g

Material Properties:
Afu: Unit Weight: 115 pcf, Cohesion: 300 psf, Phi: 10 °
Afe: Unit Weight: 115 pcf, Cohesion: 100 psf, Phi: 20 °
MSE: Unit Weight: 120 pcf, Cohesion: 100 psf, Phi: 30 °



SCALE: 1" = 8' (H&V)

GEOCON WEST, INC.

ENVIRONMENTAL GEOTECHNICAL MATERIALS
3303 N SAN FERNANDO BLVD. - SUITE 100 - BURBANK, CA 91504
PHONE (818) 841-8388 - FAX (818) 841-1704

JMT		8000

STABILITY ANALYSIS - LOWER WALL - PSEUDOSTATIC

CAL I CROWN VALLEY, LLC
25891 CROWN VALLEY PARKWAY
LAGUNA NIGUEL, CALIFORNIA

MAR 12, 2013	PROJECT NO. A8803-06-01A	FIG. 4

VERDURA® SEGMENTAL WALL PLANS

PART 1: GENERAL

1.01 DESCRIPTION
A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A VERDURA SEGMENTAL RETAINING WALL SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN AND DIMENSIONS SHOWN ON THESE PLANS.
B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD (IF REQUIRED), PLANTABLE SOIL UNIT FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.
C. WORK INCLUDES FURNISHING AND INSTALLING GEOSYNTHETIC SOIL REINFORCEMENT OF THE TYPE, SIZE, LOCATION, STRENGTH AND LENGTHS DESIGNATED ON THE CONSTRUCTION DRAWINGS.
D. WORK INCLUDES FURNISHING AND INSTALLING FOUNDATION DRAIN, SUBDRAIN AND OTHER WALL-RELATED DRAINAGE SYSTEMS THAT MAY BE SHOWN ON THE CONSTRUCTION DRAWINGS.
E. CALCULATIONS ADDRESSING INTERNAL AND EXTERNAL STABILITY PROVIDED IN DOCUMENTATION AS NOTED IN TABLE 1.

1.02 REFERENCE DOCUMENTS
A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
1) ASTM C-1372-SPECIFICATION FOR SEGMENTAL RETAINING WALL UNITS
2) ASTM D-3080-DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
3) ASTM D-1557-LABORATORY COMPACTION CHARACTERISTICS OF SOIL MODIFIED PROCTOR
4) ASTM D-4318-LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS
5) ASTM D-4595-TENSILE PRIORITIES OF GEOTEXTILES – WIDE WIDTH STRIP
6) ASTM D-5262-UNCONFINED TENSION CREEP BEHAVIOR OF GEOSYNTHETICS
7) ASTM D-3034-POLYVINYL CHLORIDE PIPE (PVC)
8) ASTM D-4829-EXPANSION INDEX OF SOILS
9) ASTM C-140-STD. SPEC. FOR SAMPLING AND TESTING CONCRETE MASONRY UNITS
10) ASTM C-145-STD. SPEC. FOR SOLID LOAD BEARING CONCRETE MASONRY UNITS
B. GEOSYNTHETIC RESEARCH INSTITUTE (GRI)
1) GRI-GG4-DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOGRIDS
2) GRI-GT7-DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOTEXTILES
3) GRI-GG5-DETERMINATION OF GEOGRID (SOIL) PULLOUT
C. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
1) NCMA SRWU-1-TEST METHOD FOR DETERMINING CONNECTION STRENGTH OF SRW UNITS
2) NCMA SRWU-2-TEST METHOD FOR DETERMINING SHEAR STRENGTH OF SRW UNITS
3) "DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS, 2ND EDITION," (1997)

1.03 SUBMITTALS/CERTIFICATION
A. CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION PRIOR TO START OF WORK THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF THESE SPECIFICATION AND STRUCTURE DESIGN PLANS.
B. CONTRACTOR SHALL SUBMIT A TEST REPORT DOCUMENTING STRENGTH OF SPECIFIC MODULAR CONCRETE UNIT AND GEOSYNTHETIC REINFORCEMENT CONNECTION TO VERDURA BLOCKS. THE MAXIMUM DESIGN TENSILE LOAD OF THE GEOSYNTHETIC-FACING UNIT CONNECTION AT A MAXIMUM NORMAL FORCE AS IS APPROPRIATE FOR THE VERTICAL LOCATION OF REINFORCEMENT UNDER CONSIDERATION. THE CONNECTION STRENGTH EVALUATION SHALL BE PERFORMED IN ACCORDANCE WITH NCMA TEST METHOD SRWU-1.

1.04 QUALITY ASSURANCE
A. CONTRACTOR SHALL SUBMIT CERTIFICATION, PRIOR TO START OF WORK, THAT THE RETAINING WALL SYSTEM (MODULAR CONCRETE UNITS AND SPECIFIC GEOSYNTHETIC):
1) HAS BEEN SUCCESSFULLY UTILIZED ON A MINIMUM OF FIVE (5) SIMILAR PROJECTS, I.E., HEIGHT, SOIL FILL TYPES, ERECTION TOLERANCES, ETC.; AND...
2) HAS BEEN SUCCESSFULLY INSTALLED ON A MINIMUM OF 1 MILLION SQUARE FEET (93,000 M^2) OF RETAINING WALLS.
B. CONTRACTOR SHALL SUBMIT A LIST OF FIVE (5) PREVIOUSLY CONSTRUCTED PROJECTS OF SIMILAR SIZE AND MAGNITUDE BY THE WALL INSTALLER WHERE THE SPECIFIC RETAINING WALL SYSTEM HAS BEEN CONSTRUCTED SUCCESSFULLY. CONTACT NAMES AND TELEPHONE NUMBERS SHALL BE LISTED FOR EACH PROJECT.
C. CONTRACTOR SHALL PROVIDE EVIDENCE THAT THE DESIGN ENGINEER HAS A MINIMUM OF FIVE YEARS OF DOCUMENTABLE EXPERIENCE IN THE DESIGN OF REINFORCED SOIL STRUCTURES.
D. OWNER SHALL PROVIDE SOIL TESTING AND QUALITY ASSURANCE DURING EARTHWORK AND WALL CONSTRUCTION OPERATION. OWNER'S QUALITY ASSURANCE PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR WALL PERFORMANCE.

1.05 DELIVERY, STORAGE AND HANDLING
A. CONTRACTOR SHALL CHECK ALL MATERIALS UPON DELIVERY TO ASSURE THAT THE PROPER TYPE, GRADE, AND CERTIFICATION HAVE BEEN RECEIVED.
B. CONTRACTOR SHALL PROTECT ALL MATERIALS FROM DAMAGE DUE TO JOBSITE CONDITIONS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DAMAGED MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK.

PART 2: PRODUCTS

2.01 MODULAR CONCRETE RETAINING WALL UNITS
A. MODULAR CONCRETE UNITS SHALL BE VERDURA, AS INDICATED IN TABLE 2.
B. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-1372 – STANDARD SPECIFICATIONS FOR SRW UNITS.
C. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING STRUCTURAL AND GEOMETRIC REQUIREMENTS MEASURED IN ACCORDANCE WITH SECTION 1.03 AND OTHER APPROPRIATE REFERENCES:
- COMPRESSIBLE STRENGTH = 4000 PSI (27,000 KPA) MINIMUM AT 28 DAYS;
- MOISTURE ABSORPTION = 8% MAXIMUM FOR STANDARD WEIGHT AGGREGATES;
- BATTER = AS INDICATED IN TABLE 2.
- DIMENSIONAL TOLERANCES = ±1/8" (3MM) FROM NOMINAL UNIT DIMENSIONS (NOT INCLUDING EXPOSED AGGREGATE FACE TEXTURE), ±1/8" (3 MM) UNIT HEIGHT – TOP AND BOTTOM PLANES.

2.02 GEOSYNTHETIC-CONCRETE BLOCK CONNECTORS
A. CONNECTORS SHALL BE 1 INCH (2.5 CM) DIAMETER OR GREATER SCHEDULE 80 PIPE OR EQUIVALENT AND MUST BE CAPABLE OF PROVIDING POSITIVE MECHANICAL INTERLOCK BETWEEN GEOSYNTHETIC SOIL REINFORCEMENT MATERIAL (GEOTEXTILE OR GEOGRID) AND BLOCK.
B. CONNECTORS SHALL BE CAPABLE OF HOLDING THE GEOSYNTHETIC SOIL REINFORCEMENT IN THE PROPER DESIGN POSITION DURING GEOSYNTHETIC PRE-TENSIONING AND BACKFILLING PROCEDURES

2.03 UNIT FILL
A. UNIT FILL SHALL CONSIST OF SOILS USED FOR WALL BACKFILL OR AS SPECIFIED BY THE PROJECT LANDSCAPE ARCHITECT.

2.04 SOIL FILL
A. SELECT ENGINEERED FILL FOR THE REINFORCED/INFILL SOIL AND RETAINED/BACKFILL SOIL. SOIL ZONES SHALL BE ON-SITE OR IMPORTED SOILS ACCEPTED BY THE GEOTECHNICAL ENGINEER OF RECORD AND HAVING THE SOIL STRENGTH PROPERTIES AS NOTED TABLE 3 WHEN COMPACTED TO 90% RELATIVE COMPACTION PER ASTM D- 1557.
B. ENGINEERED FILL MATERIALS FOR THE UPPER ONE (1) FOOT IMMEDIATELY BEHIND THE TOPMOST BLOCK AND ABOVE THE ZONE OF SELECTED SOIL MATERIALS AS SHOWN ON THE TYPICAL SECTION SHALL BE COMPROMISED OF MORE IMPERVIOUS ON-SITE SOILS.
C. MATERIALS CAN BE SITE-EXCAVATED SOILS WHERE THE ABOVE REQUIREMENTS CAN BE MET. UNSUITABLE SOILS (HIGH PLASTIC CLAYS OR ORGANIC SOILS) SHALL NOT BE USED.
D. SOIL WITHIN 6 INCHES OF A GEOGRID LAYER SHALL NOT CONTAIN PARTICLES LARGER THAN 6 INCHES.
E. GEOTECHNICAL-ENGINEER-OF-RECORD SHALL PERFORM LABORATORY TESTS ON THE SOIL MATERIAL PROPOSED FOR USE TO ENSURE COMPLIANCE WITH REQUIREMENTS STATED IN SECTION 2.05, ITEM A AS OUTLINED ABOVE PRIOR TO THE PLACEMENT OF THE MATERIALS FOR THE SELECT BACKFILL/REINFORCED SOIL ZONE.

2.05 GEOGRID SOIL REINFORCEMENT
A. GEOSYNTHETIC REINFORCEMENT SHALL BE OF THE TYPE SHOWN ON THESE DESIGN PLANS. THE CONTRACTOR, OR THE SUPPLIER AS HIS AGENT, SHALL FURNISH THE GEOTECHNICAL ENGINEER OF RECORD WITH A CERTIFICATE OF COMPLIANCE CERTIFYING THAT THE GEOSYNTHETIC REINFORCEMENT COMPLIES WITH THIS SECTION OF THE SPECIFICATIONS, THE DRAWINGS AND THE DESIGN CALCULATIONS.

2.06 DRAINAGE PIPE
A. PROVIDE A PERFORATED AND SOLID PIPING SYSTEM CONSISTING OF 4-INCH-DIAMETER SCHEDULE 40 PVC PIPE AS SHOWN ON THESE PLANS.

2.07 FILTER FABRIC
A. PROVIDE FILTER FABRIC CONSISTING OF MIRAFI 140N OR EQUIVALENT AS SPECIFIED BY THE GEOTECHNICAL ENGINEER OF RECORD.

PART 3: EXECUTION

3.01 SURFACE CONDITIONS
A. PRIOR TO WORK, CAREFULLY INSPECT PREVIOUS GRADING WORK. VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
B. VERIFY THAT WORK OF THIS SECTION MAY BE INSTALLED IN STRICT ACCORDANCE WITH THE ORIGINAL DESIGN, ALL PERTINENT CODES AND REGULATIONS.
C. VERIFY WALL DRAINAGE SYSTEM IS COORDINATED WITH POINTS OF CONNECTION TO STORM DRAINAGE SYSTEM OR OTHER PROPER DRAINAGE DEVICE.
D. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROJECT COORDINATOR. DO NOT PROCEED WITH INSTALLATION UNTIL ALL SUCH DISCREPANCIES HAVE BEEN RESOLVED.

3.02 LAYOUT
A. VERIFY ALL STAKING AND FIELD ENGINEERING REQUIRED TO IMPLEMENT THE WORK AS SHOWN ON THE DRAWINGS.
B. PROTECT ALL STAKES AND BENCHMARKS. REPLACE ALL STAKES AND BENCHMARKS DAMAGED DURING THE COURSE OF CONSTRUCTION AT NO COST TO OWNER.
C. SET GRADE STAKES USING INSTRUMENT TECHNOLOGY, AT 50-FOOT GRID INTERVALS AT AREAS WHERE GRADIENTS ARE LESS THAN 2 PERCENT. SET GRADE STAKES USING INSTRUMENT TECHNOLOGY, 25-FOOT-INTERVALS AT AREAS WHERE GRADES ARE GREATER THAN 2 PERCENT.
D. HAND TRIM EXCAVATIONS TO REQUIRED ELEVATIONS. CORRECT OVER-EXCAVATION WITH FILL MATERIALS APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD.
E. REMOVE LARGE STONES OR OTHER HARD MATTER WHICH WOULD DAMAGE PIPES OR IMPEDE CONSISTENT BACKFILLING OR COMPACTION.
F. PROVIDE ALL EQUIPMENT OF SUCH TYPE, FUNCTION, AND DESIGN AS REQUIRED TO ACHIEVE SPECIFIC VALUES. WHERE NECESSARY, PROVIDE RUBBER-TIRED AND VIBRATORY SHEEPSFOOT COMPACTION EQUIPMENT.

3.03 SUBSURFACE DRAINAGE SYSTEM INSTALLATION
A. EXCAVATE TRENCHES FOR DRAINAGE PIPING SHOWN ON DRAWINGS.
B. LAY FILTER FABRIC IN BOTTOM OF EXCAVATION PRIOR TO PLACING PERMEABLE FILL. PLACE MINIMUM 4-INCH-THICK BED OF PERMEABLE FILL OVER FABRIC
C. INSTALL AND JOIN PIPE AND PIPE FITTINGS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. INSTALL DRAINAGE PIPING WITH PERFORATIONS DOWN. JOIN PIPE ENDS AND SOLVENT ENDS.
D. LAY PIPE TO SLOPE GRADIENTS NOTED ON DRAWINGS, WITH MAXIMUM VARIATION FROM TRUE SLOPE OF 1/8 INCH IN 10 FEET.
E. BACKFILL PIPE USING FILTER AGGREGATE.
F. WRAP FILTER FABRIC AROUND AGGREGATE COVER AND TUCK LOOSE EDGE BETWEEN AGGREGATE COVER AND TUCK LOOSE EDGE BETWEEN AGGREGATE AND SOIL.
G. INSTALL BACKFILL IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION. DO NOT DISPLACE OR DAMAGE PIPE WHEN COMPACTING.
H. EXTEND NON-PERFORATED PIPING TO DRAINAGE PIPING AS SHOWN ON DRAWINGS. PROVIDE TRENCHING, BEDDING, AND BACKFILL AS REQUIRED.

3.04 EXCAVATION
A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. OWNER'S REPRESENTATIVE SHALL INSPECT THE EXCAVATION AND APPROVE PRIOR TO PLACEMENT OF LEVELING MATERIAL OR FILL SOILS. PROOF ROLL FOUNDATION AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD TO DETERMINE IF REMEDIAL WORK IS REQUIRED.
B. OVER-EXCAVATION AND REPLACEMENT OF UNSUITABLE FOUNDATION SOILS AND REPLACEMENT WITH APPROVED COMPACTED FILL WILL BE COMPENSATED AS AGREED UPON WITH THE OWNER.

3.05 MODULAR UNIT INSTALLATION
A. FIRST COURSE OF UNITS SHALL BE PLACED ON THE FOUNDATION SOILS OR LEVELING PAD, AS DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD, AT THE APPROPRIATE LINES AND GRADES. MOLDED SURFACE OF MODULAR UNITS SHALL BE USED FOR ALIGNMENT. ALIGNMENT AND LEVEL SHALL BE CHECKED IN ALL DIRECTIONS AND ENSURE THAT ALL UNITS ARE IN FULL CONTACT WITH THE BASE AND PROPERLY SEATED.
B. UNITS SHALL BE PLACED ON THE FOUNDATION SOILS WITH A MAXIMUM DISTANCE OF 9 INCHES (23 CM) BETWEEN ADJACENT UNITS. THE SPACING BETWEEN UNITS INSTALLED IN CURVED REGIONS (CONCAVE OR CONVEX) MUST BE ADJUSTED ACCORDINGLY AND SUCH THAT THE RUNNING BOND LAYOUT IS MAINTAINED. VERTICALLY ADJACENT UNITS SHALL BE CENTERED ON UNITS ABOVE AND BELOW. ALL BLOCK LAYOUT AND PLACEMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
C. MODULAR UNITS MAY BE INSTALLED HORIZONTALLY WITH RESPECT TO THE PROFILE WALL ALIGNMENT OR MAY BE MADE TO FOLLOW THE BOTTOM OF WALL CONTOURS ("RUN WITH THE GRADE"). WHERE BOTTOM OF WALL CONTOURS ARE USED TO SET THE FIRST ROW OF MODULAR BLOCKS, GRADES MAY NOT SLOPE MORE THAN 15% WITH RESPECT TO THE WALL PROFILE BASE.
D. PLACE AND COMPACT FILL BEHIND WALL UNITS. AFTER UNIT FILL IS COMPACTED EXCESS UNIT FILL MUST BE SCREEDED (ROD-BOARDED) OFF TO DEVELOP A FLAT BASE UPON WHICH SUBSEQUENT UNITS CAN BE POSITIONED. PLACE AND COMPACT BACKFILL SOIL BEHIND UNITS. FOLLOW WALL ERECTION AND UNIT FILL CLOSELY WITH STRUCTURE BACKFILL.
E. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS PRIOR TO UNIT FILL AND BACKFILL PLACEMENT AND COMPACTION SHALL NOT EXCEED ONE COURSE.

3.06 GEOSYNTHETIC SOIL REINFORCEMENT INSTALLATION
A. GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE ORIENTED WITH THE HIGHEST STRENGTH AXIS PERPENDICULAR TO THE WALL ALIGNMENT.
B. GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE PLACED AT THE STRENGTHS, LENGTHS, AND ELEVATIONS SHOWN ON THESE DRAWINGS. WHERE GEOSYNTHETIC PLACEMENT ELEVATIONS VARY FROM FACING UNIT INCREMENTS, GEOSYNTHETIC ELEVATIONS MAY BE ADJUSTED UP OR DOWN BY 4 INCHES MAXIMUM.
C. THE GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND ATTACHED TO THE MODULAR WALL UNITS IN ACCORDANCE WITH THE DETAILS OF THESE PLANS AND SPECIFICATIONS. A TOLERANCE FROM FACE TO TAIL OF REINFORCEMENT OF 6" IN 10' IS ACCEPTABLE RELATIVE TO HORIZONTAL GEOSYNTHETIC ORIENTATION. PLACE THE NEXT COURSE OF MODULAR CONCRETE UNITS OVER THE GEOSYNTHETIC SOIL REINFORCEMENT. THE GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE LAID FLAT PRIOR TO BACKFILL PLACEMENT ON THE GEOSYNTHETIC SOIL REINFORCEMENT.
D. GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF EMBEDMENT. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF GEOSYNTHETIC SOIL REINFORCEMENT WILL NOT BE PERMITTED.

3.07 REINFORCED BACKFILL PLACEMENT
A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF SLACK IN THE GEOSYNTHETIC SOIL REINFORCEMENT AND INSTALLATION DAMAGE.
B. REINFORCED SOIL BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT TO EXCEED THE "RAIL HEIGHT" OF THE UNITS BEING PLACED. LIFT THICKNESSES SHALL BE DECREASED TO ACHIEVE THE REQUIRED DENSITY AS REQUIRED.
C. REINFORCED BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL PRIOR TO AND DURING COMPACTION SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER.
D. ONLY LIGHTWEIGHT HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 1 FOOT (0.3 METERS) FROM THE BACK OF THE MODULAR CONCRETE UNIT.
E. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY UPON THE GEOSYNTHETIC SOIL REINFORCEMENT. A MINIMUM FILL THICKNESS OF 6 INCHES (15 CM) IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE GEOSYNTHETIC SOIL REINFORCEMENT. TRACKED VEHICLE TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FORM DISPLACING THE FILL AND DAMAGING THE GEOSYNTHETIC SOIL REINFORCEMENT.
F. RUBBER TIRED EQUIPMENT SHALL PASS OVER GEOSYNTHETIC SOIL REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH (16 KPH). SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.
G. AT THE END OF EACH DAY'S OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT OF REINFORCED BACKFILL AWAY FROM THE WALL UNITS TO DIRECT RUNOFF AWAY FROM THE WALL FACE. THE CONTRACTOR SHALL NOT ALLOW SURFACE RUN-OFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION SITE.
H. CARE SHOULD BE TAKEN DURING EXCAVATION FOR AND CONSTRUCTION OF THE V-DITCH AND ALL OTHER TYPE OF WALL STRUCTURE NOT TO DAMAGE THE UPPER GEOGRID LAYER. IF THE GEOGRID LAYERS ARE DAMAGED, THEY NEED TO BE PROPERLY REPLACED.

3.08 EROSION CONTROL
A. PROVIDE DUST AND EROSION CONTROL PROTECTION PLAN IN ACCORDANCE WITH CONTACT DOCUMENTS.

3.9 AS-BUILT CONSTRUCTION TOLERANCES
A. VERTICAL ALIGNMENT: ±1.5 INCHES (37 MM) OVER ANY 10 FT (3 M) DISTANCE.
B. WALL BATTER: WITHIN 2 DEGREES OF DESIGN BATTER.
C. HORIZONTAL ALIGNMENT: ±1.5 INCHES (37 MM) OVER ANY 10 FT (3 M) DISTANCE.
D. CORNERS, BENDS, CURVES: ±1 FT (0.3 M) TO DESIGN LOCATIONS.
E. MAXIMUM HORIZONTAL GAP BETWEEN ERECTED UNITS SHALL BE 9 INCHES (23 CM).

3.10 FIELD QUALITY CONTROL
A. THE OWNER SHALL ENGAGE INSPECTION AND TESTING SERVICES, INCLUDING INDEPENDENT LABORATORIES, TO PROVIDE QUALITY ASSURANCE AND TESTING SERVICES DURING CONSTRUCTION. THIS DOES NOT RELIEVE THE CONTRACTOR FROM SECURING THE NECESSARY CONSTRUCTION CONTROL TESTING DURING CONSTRUCTION.
B. QUALIFIED AND EXPERIENCED TECHNICIANS AND ENGINEERS SHALL PERFORM TESTING AND INSPECTION SERVICES.
C. AS A MINIMUM, QUALITY ASSURANCE TESTING SHOULD INCLUDE FOUNDATION SOIL INSPECTION, SOIL AND BACKFILL TESTING, VERIFICATION OF DESIGN PARAMETERS, AND OBSERVATION OF CONSTRUCTION FOR GENERAL COMPLIANCE WITH DESIGN DRAWINGS AND SPECIFICATIONS.
D. FIELD INSPECTION AND TESTING SHALL BE PERFORMED BY THE GEOTECHNICAL ENGINEER OF RECORD.

3.11 SPECIAL INSPECTIONS
A. SPECIAL INSPECTIONS DURING INSTALLATION MUST BE PERFORMED IN ACCORDANCE WITH SECTION 1704 OF THE 2010 CBC. THE SPECIAL INSPECTOR MUST BE QUALIFIED BY THE BUILDING OFFICIAL IN ACCORDANCE WITH SECTION 1704 OF THE CBC. THE INSPECTOR'S RESPONSIBILITIES INCLUDE VERIFYING THE FOLLOWING AS DESCRIBED PREVIOUSLY:
1. FOUNDATION PREPARATION.
2. UNIT PLACEMENT, INCLUDING ALIGNMENT AND INCLINATION.
3. GEOSYNTHETIC REINFORCEMENT LENGTH, STRENGTH, AND PLACEMENT WITH RESPECT TO ELEVATION AND ORIENTATION.
4. BACKFILL SOIL STRUCTURAL PROPERTIES
5. BACKFILL PLACEMENT AND COMPACTION

TABLE 1 – REFERENCED DOCUMENTATION:

1. PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 25891 CROWN VALLEY PARKWAY & 27961 CABOT ROAD, LAGUNA NIGUEL, CA. PROJECT NUMBER: A8803-06-01A PREPARED BY GEOCON WEST, INC., DATED 02/17/2011
2. UPDATED GEOTECHNICAL DESIGN CRITERIA FOR MECHANICALLY STABILIZED EARTH RETAINING WALLS, PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 25891 CROWN VALLEY PARKWAY AND 27961 CABOT ROAD, LAGUNA NIGUEL, CA. PROJECT NO. A8803-06-01A ~~PREPARED BY GEOCON WEST, INC., DATED 03/12/2013~~
3. DELTA REVISION #1 – VERDURA 40 SEGMENTAL RETAINING WALL DESIGN CROWN CABOT LUXURY APARTMENTS LAGUNA NIGUEL, CA PROJECT NUMBER: 1105-004 PREPARED BY SOIL RETENTION DESIGNS, DATED 08/14/2013.

TABLE 2 – VERDURA BLOCK PROPERTIES

UNIT TYPE, VERDURA	V40
UNIT SIZE, RAIL HEIGHT, IN. (MM)	8(203)
UNIT SIZE, CROWN HEIGHT, IN. (MM)	10.75(273)
UNIT SIZE, WIDTH, IN. (MM)	18(457)
UNIT SIZE, DEPTH, IN. (MM)	12(305)
WEIGHT, (TYPE), LBS. (KG)	82(37)
BATTER = (DEGREES FROM VERTICAL)	14

TABLE 3 – SOIL STRENGTH REQUIREMENTS

MATERIAL	SHEAR STRENGTH		UNIT WEIGHT (pcf)
	FRICTION ANGLE	COHESION (psf)	
REINFORCED/INFILL SOIL*	30	0	120
RETAINED/BACKFILL SOIL¹	27	0	115
RETAINED/BACKFILL SOIL²	20	0	115
FOUNDATION SOIL¹	27	100	115
FOUNDATION SOIL²	20	100	115
SEISMICITY	.32g		

* REINFORCED/INFILL SOIL SHALL HAVE MAXIMUM FINE SOIL FRACTION (% PASSING #200 SIEVE) OF 35%. THE MAXIMUM PLASTICITY INDEX (PI) OF THE FINE SOIL FRACTION SHALL BE 20.
¹ CAPISTRANO FOUNDATION (TC) OR BEDROCK
² ARTIFICIAL FILL (AF) OR ENGINEERED FILL

TABLE 4 – GEOSYNTHETIC REINFORCEMENT PROPERTIES

	MIRAGRID			
	TEST METHOD	UNIT	5XT	8XT
TENSILE STRENGTH (AT ULTIMATE)	ASTM D6637	kN/m (lbs/ft)	51.4 (3527)	90.9 (6230)
LONG TERM ALLOWABLE DESIGN LOAD	GRI GC-4	kN/m (lbs/ft)	25.2 (1733)	45.0 (3089)

* ACTUAL GEOGRID STRENGTHS EXCEED THESE DESIGN VALUES

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL
1	8/14/13	REVISED WALL A & WALL B ON SHEETS 2 & 3 AND ADDED DETAIL TO SHEET 4	

PREPARED BY:
SOIL RETENTION DESIGNS INC.
2501 STATE STREET, CARLSBAD CA 92008 800-346-7995
UNDER THE SUPERVISION OF: DARIEN A. OSBORNE (R.C.E. 64108)

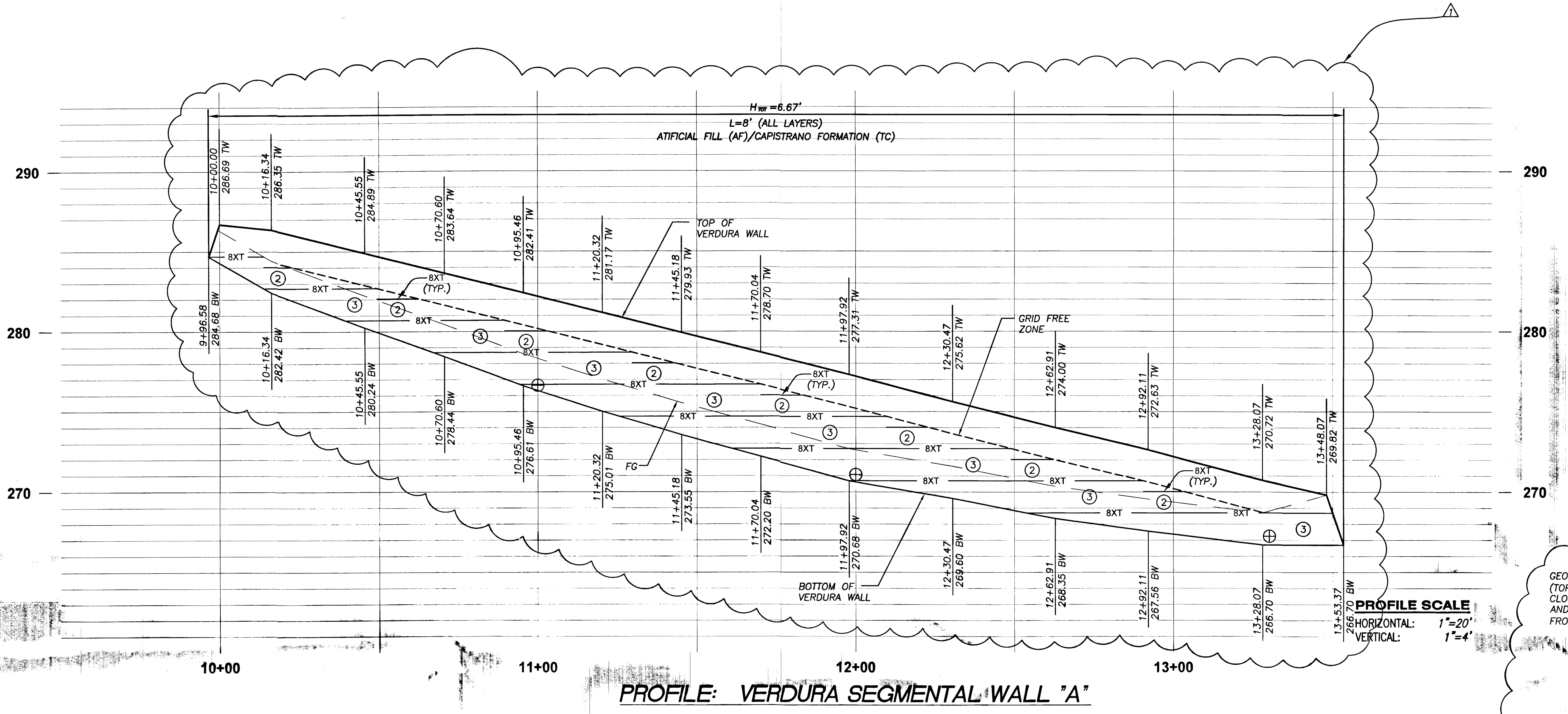
REGISTERED PROFESSIONAL ENGINEER DARIEN A. OSBORNE No 64108 EXP 12/31/14 CIVIL STATE OF CALIFORNIA

VERDURA SEGMENTAL WALL PLANS
CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER 5376001

SHEET NO. 1 OF 4

PLAN DATE: 08/14/2013



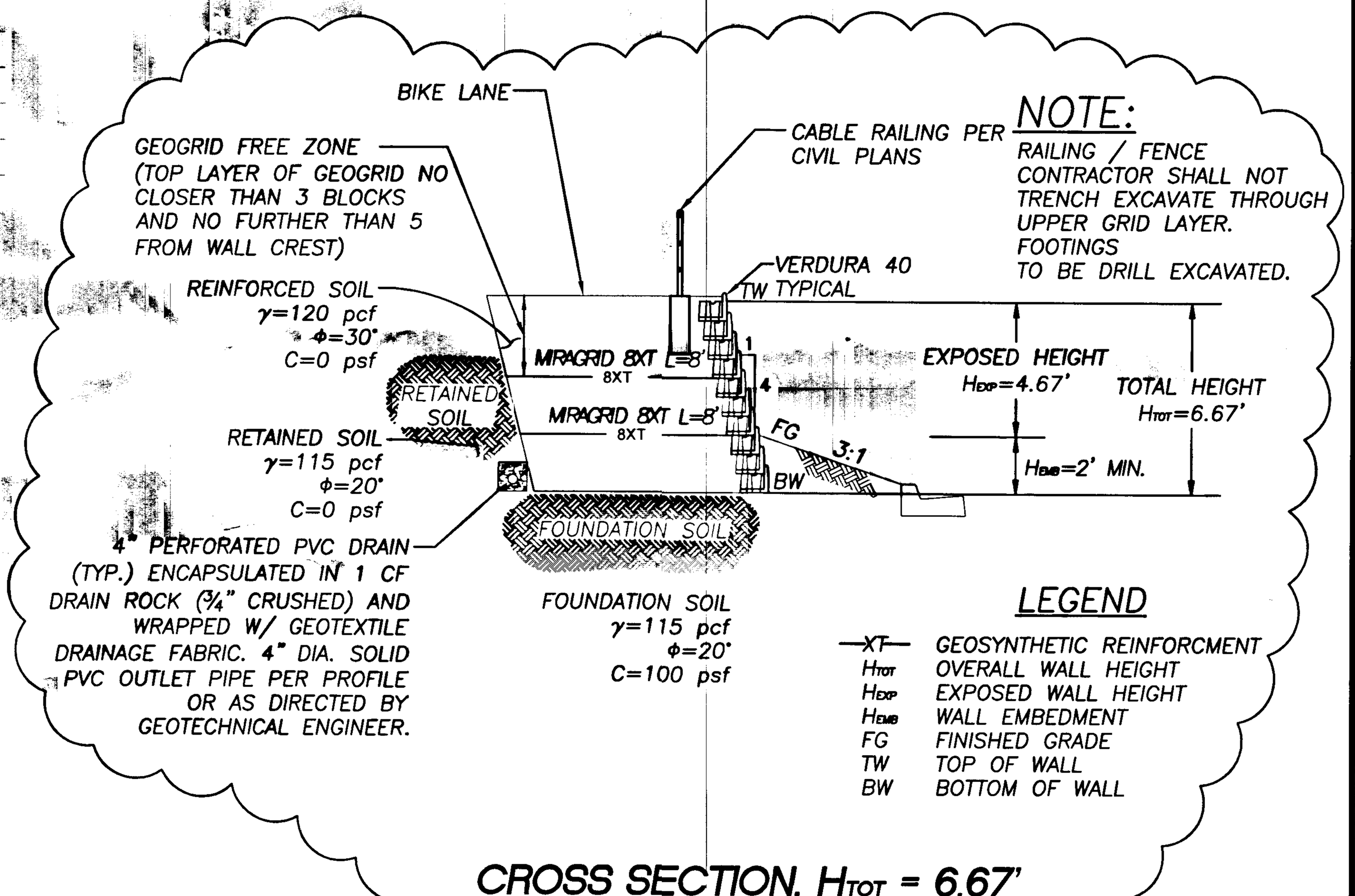
PROFILE: VERDURA SEGMENTAL WALL "A"

PROFILE LEGEND

- -FG FINISH GRADE
- -TW TOP OF WALL
- -BW BOTTOM OF MSE STRUCTURE
- -#XT- DENOTES TYPE OF MIRAGRID REINFORCING REQ'D
- -(#) DENOTES THE NO OF BLOCKS BET. THE MIRAGRID LAYER
- -L LENGTH OF GEOSYNTHETIC REINFORCING (FEET) GEOGRID TRANSITION (LENGTH OR TYPE)
- -⊕ APPROXIMATE LOCATION OF SUBDRAIN. TO BE DETERMINED IN THE FIELD OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

GEOGRID NOTES:

1. GEOGRID LENGTH MEASURED FROM BLOCK CONNECTION.



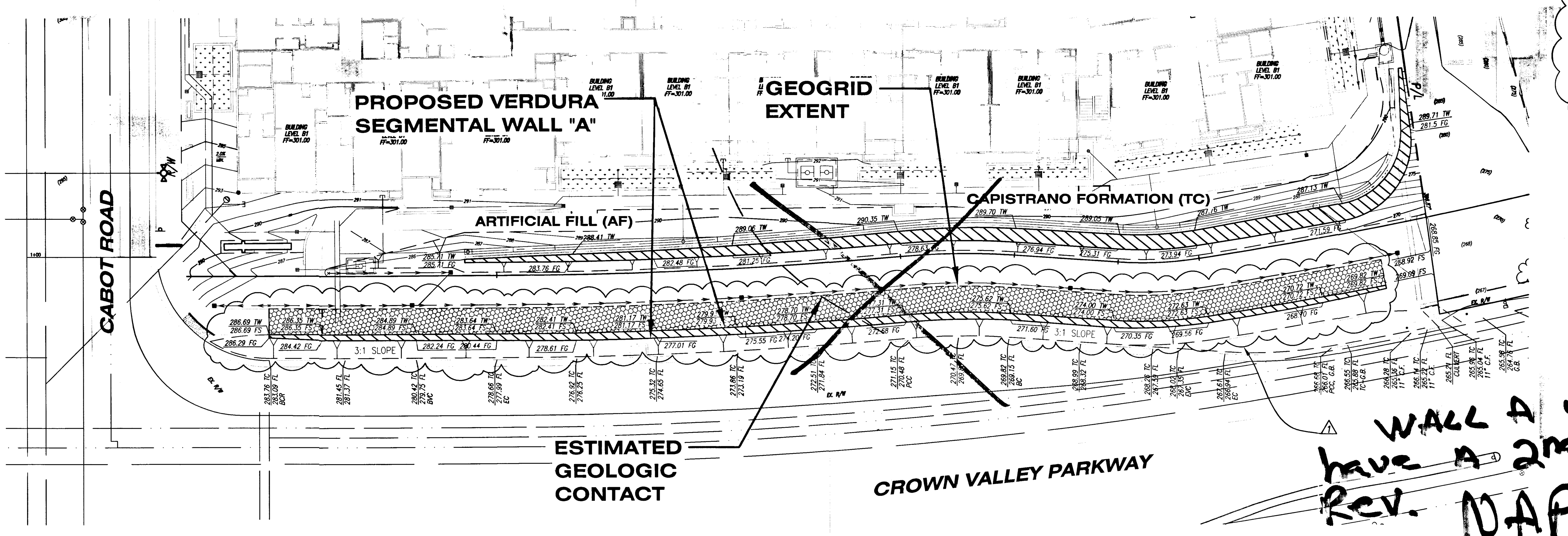
NOTE: RAILING / FENCE CONTRACTOR SHALL NOT TRENCH EXCAVATE THROUGH UPPER GRID LAYER. FOOTINGS TO BE DRILL EXCAVATED.

LEGEND

- -XT- GEOSYNTHETIC REINFORCMENT
- H_{TOT} OVERALL WALL HEIGHT
- H_{EXP} EXPOSED WALL HEIGHT
- H_{EMB} WALL EMBEDMENT
- FG FINISHED GRADE
- TW TOP OF WALL
- BW BOTTOM OF WALL

CROSS SECTION, H_{TOT} = 6.67'

SCALE: 1"=5'



WALL A will have a 2nd Rev. NAP.

PLAN: VERDURA SEGMENTAL WALL "A"

PLAN LEGEND

- VERDURA SEGMENTAL WALL SHOWN WITH BATTER
- GEOGRID LOCATION

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL
1	8/14/13	REVISED WALL A AND CROSS SECTIONS	

PREPARED BY:

SOIL RETENTION DESIGNS INC.

2501 STATE STREET, CARLSBAD, CA 92008 800-346-7995

UNDER THE SUPERVISION OF: DARIEN A. OSBORNE (R.C.E. 64108)

REGISTERED PROFESSIONAL ENGINEER DARIEN A. OSBORNE No. 64108 EXP 12/31/14 CIVIL STATE OF CALIFORNIA

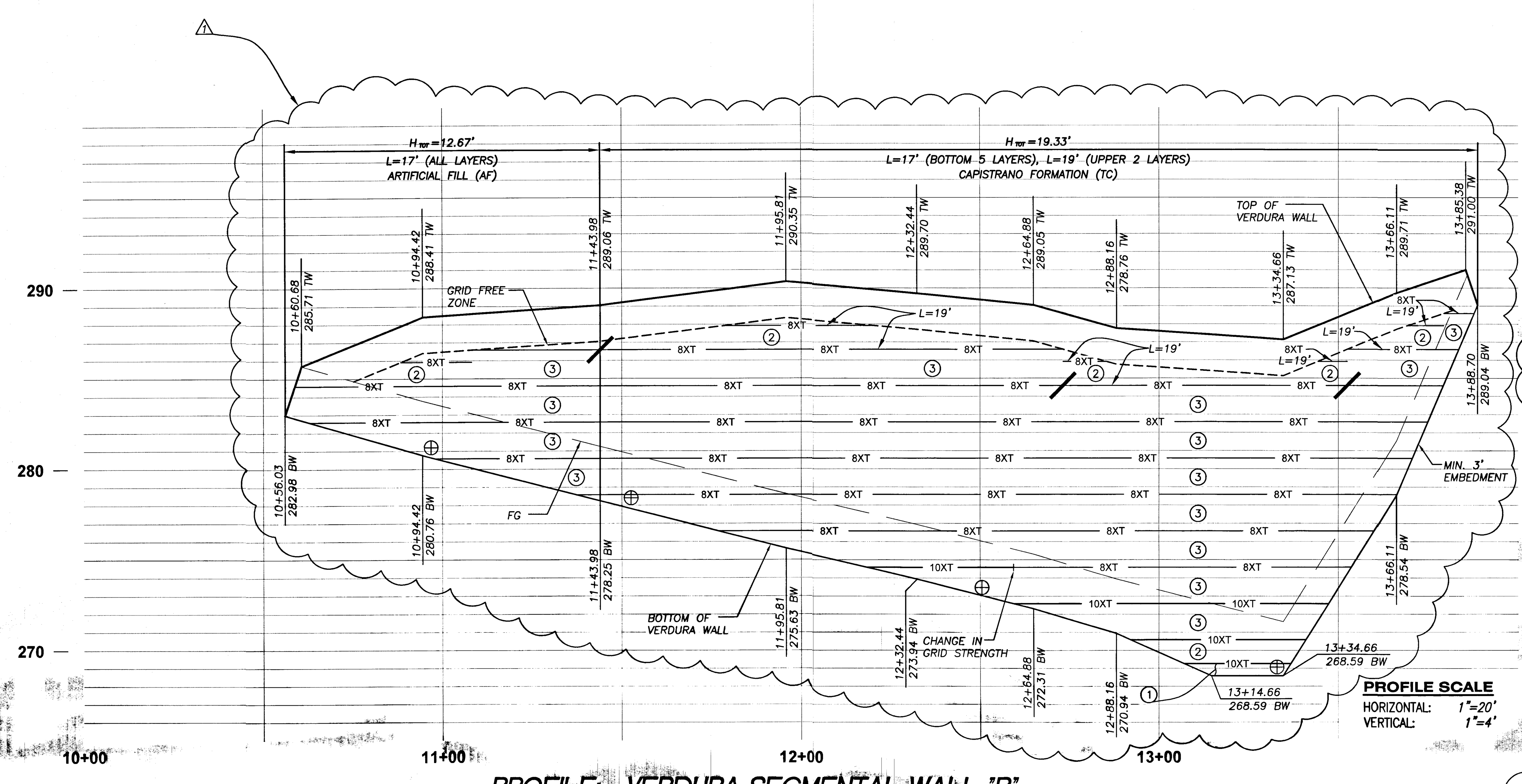
VERDURA SEGMENTAL WALL PLANS

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

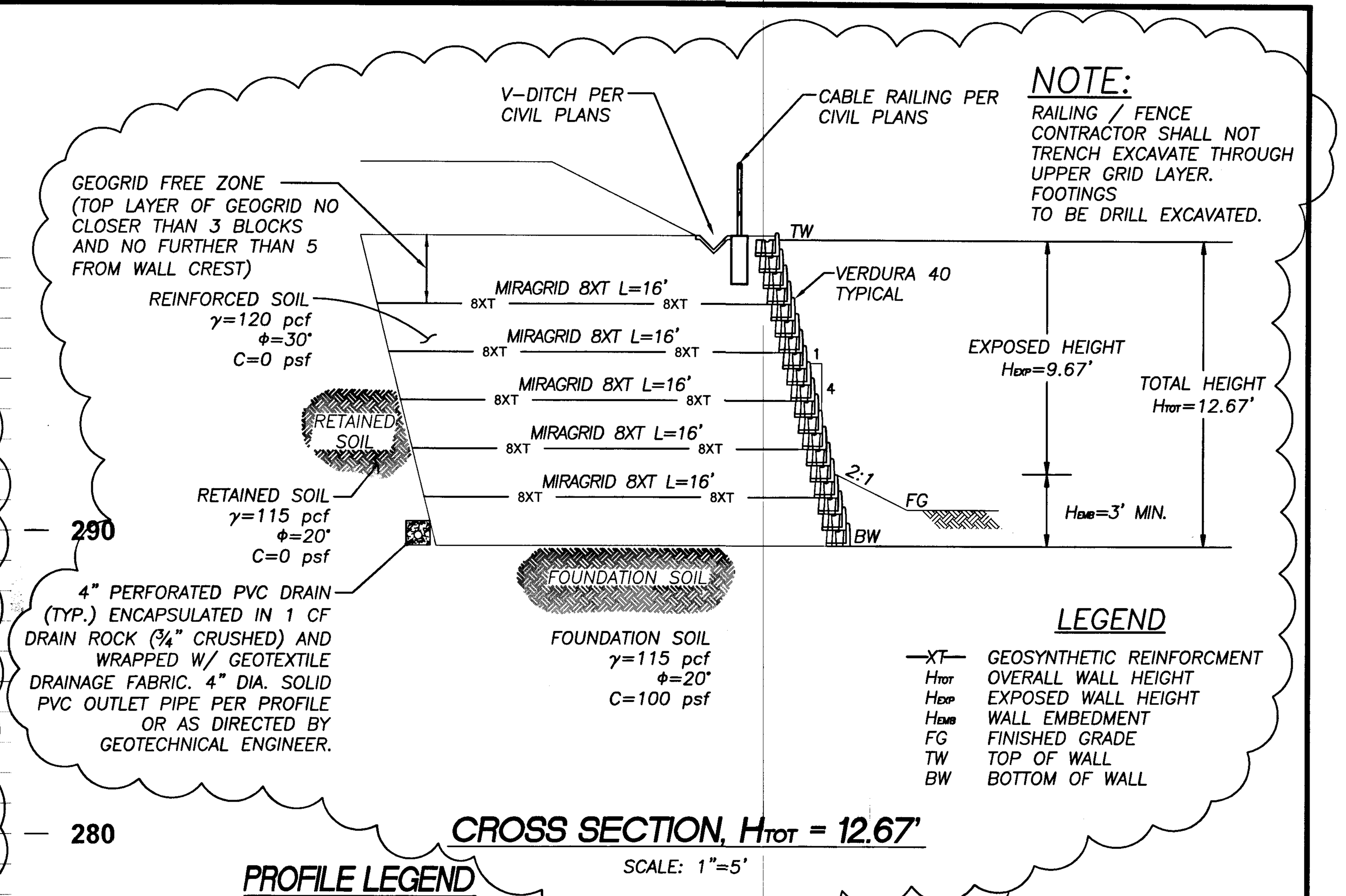
PROJECT NUMBER **5376001**

SHEET NO. **2 OF 4**

PLAN DATE: 08/14/2013



PROFILE: VERDURA SEGMENTAL WALL "B"



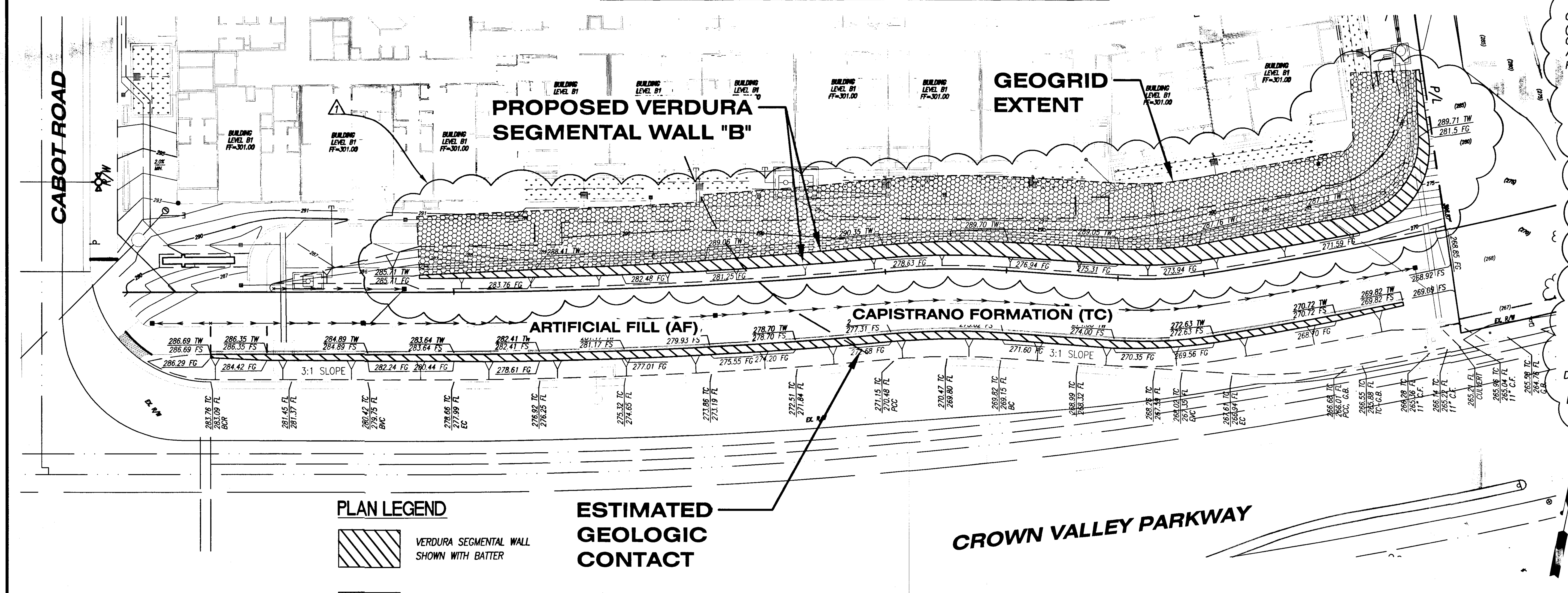
CROSS SECTION, H_{TOT} = 12.67'
SCALE: 1"=5'

PROFILE LEGEND

- FG — FINISH GRADE
- TW — TOP OF WALL
- BW — BOTTOM OF MSE STRUCTURE
- 8XT — DENOTES TYPE OF MIRAGRID REINFORCING REQ'D
- (1) — DENOTES THE NO OF BLOCKS BET. THE MIRAGRID LAYER
- L — LENGTH OF GEOSYNTHETIC REINFORCING (FEET)
- GEOGRID TRANSITION (LENGTH OR TYPE)
- ⊕ — SUBDRAIN
- / — CHANGE IN GEOGRID LENGTH ON RUN

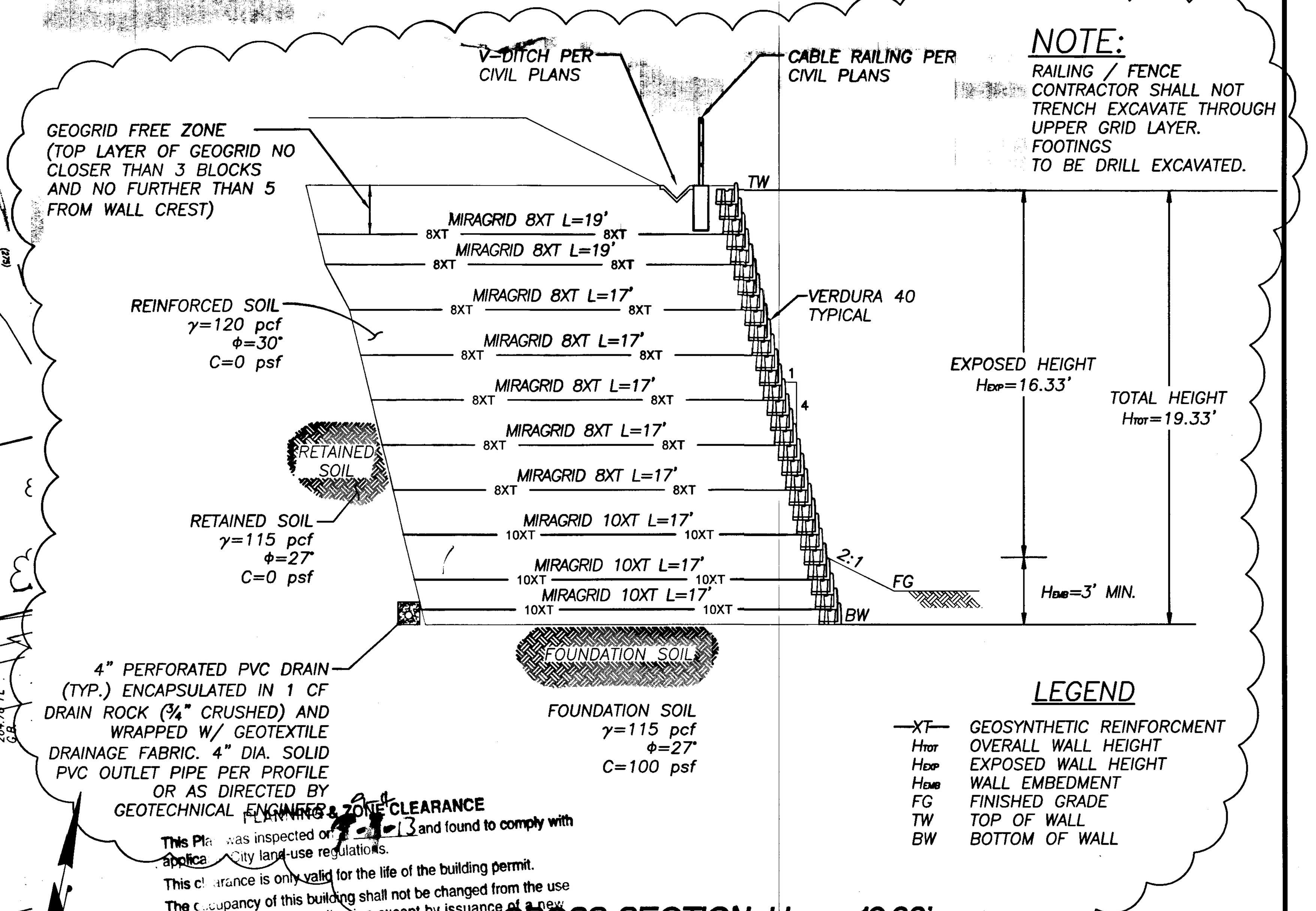
GEOGRID NOTES:

1. GEOGRID LENGTH MEASURED FROM BLOCK CONNECTION.



PLAN: VERDURA SEGMENTAL WALL "B"

SCALE: 1" = 20'



CROSS SECTION, H_{TOT} = 19.33'
SCALE: 1"=5'

PLANNING & ZONING CLEARANCE
This Plan was inspected on 8-13-13 and found to comply with applicable city land use regulations.
This clearance is only valid for the life of the building permit.
The occupancy of this building shall not be changed from the use stated in the permit application except by issuance of a new Certificate of Use and Occupancy. Deviation from the approved plans will be cause for stopping construction.
WARNING: This stamp indicates partial review only and does not constitute a building permit.
Laguna Niguel Community Development Department

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL
1	8/14/13	REVISED WALL B AND CROSS SECTIONS	

PREPARED BY:
SOIL RETENTION DESIGNS INC.
2501 STATE STREET, CARLSBAD, CA 92008 800-346-7995
UNDER THE SUPERVISION OF: DAREN A. OSBORNE (R.C.E. 64108)

REGISTERED PROFESSIONAL ENGINEER DAREN A. OSBORNE No. 64108 EXP. 12/31/14 CIVIL STATE OF CALIFORNIA

VERDURA SEGMENTAL WALL PLANS

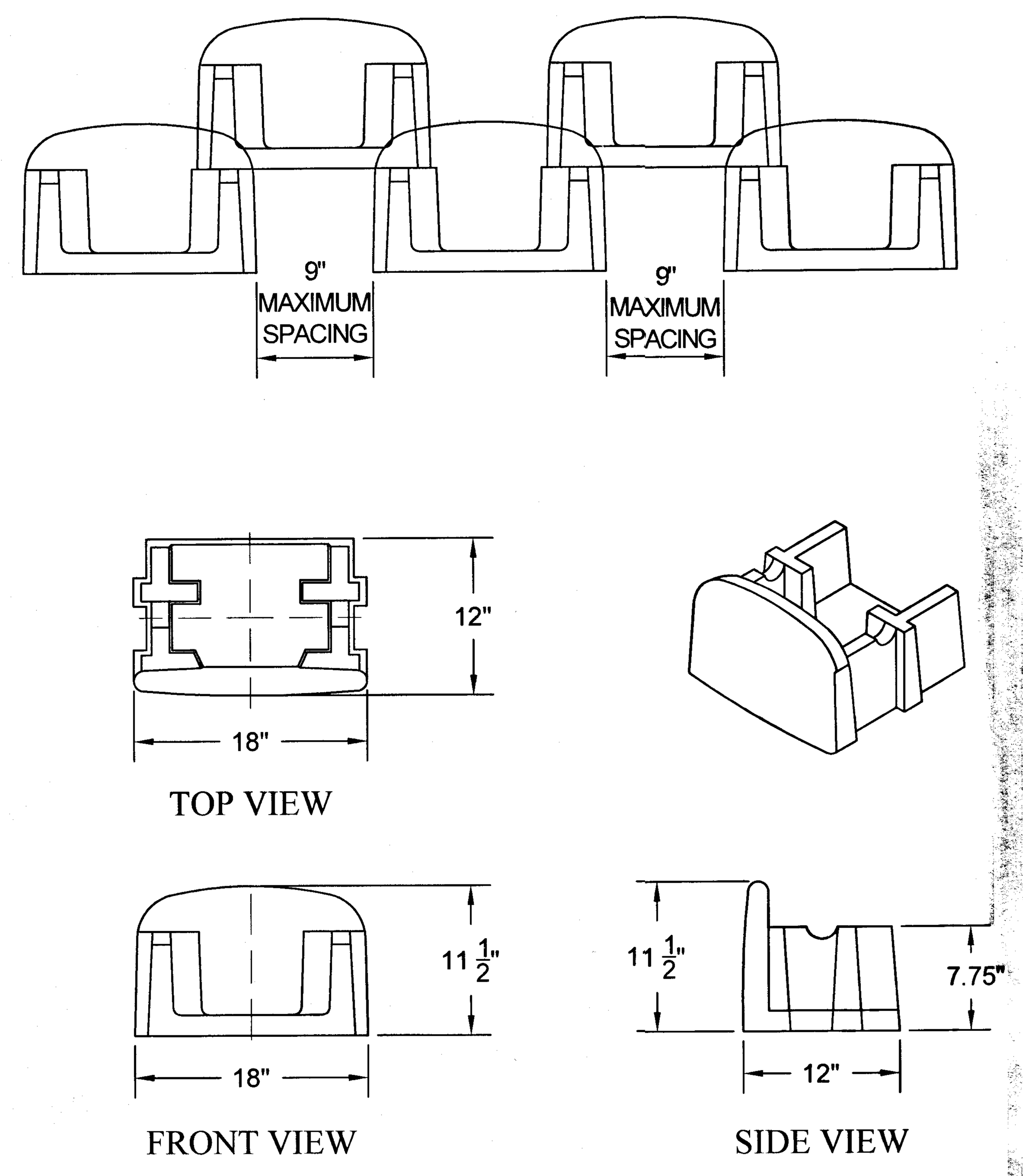
CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

THE CITY OF LAGUNA NIGUEL APPROVED

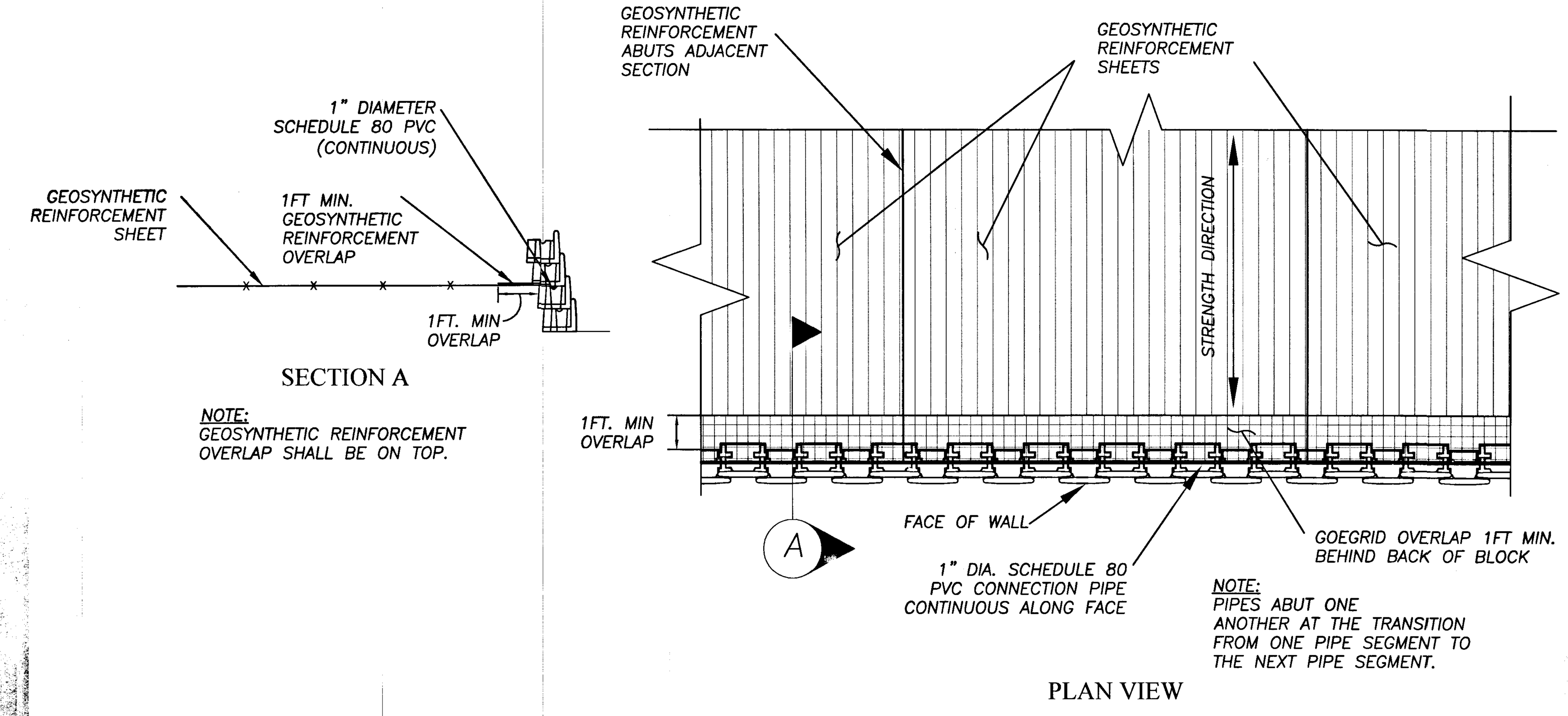
PROJECT NUMBER 5376001

SHEET NO. 3 OF 4

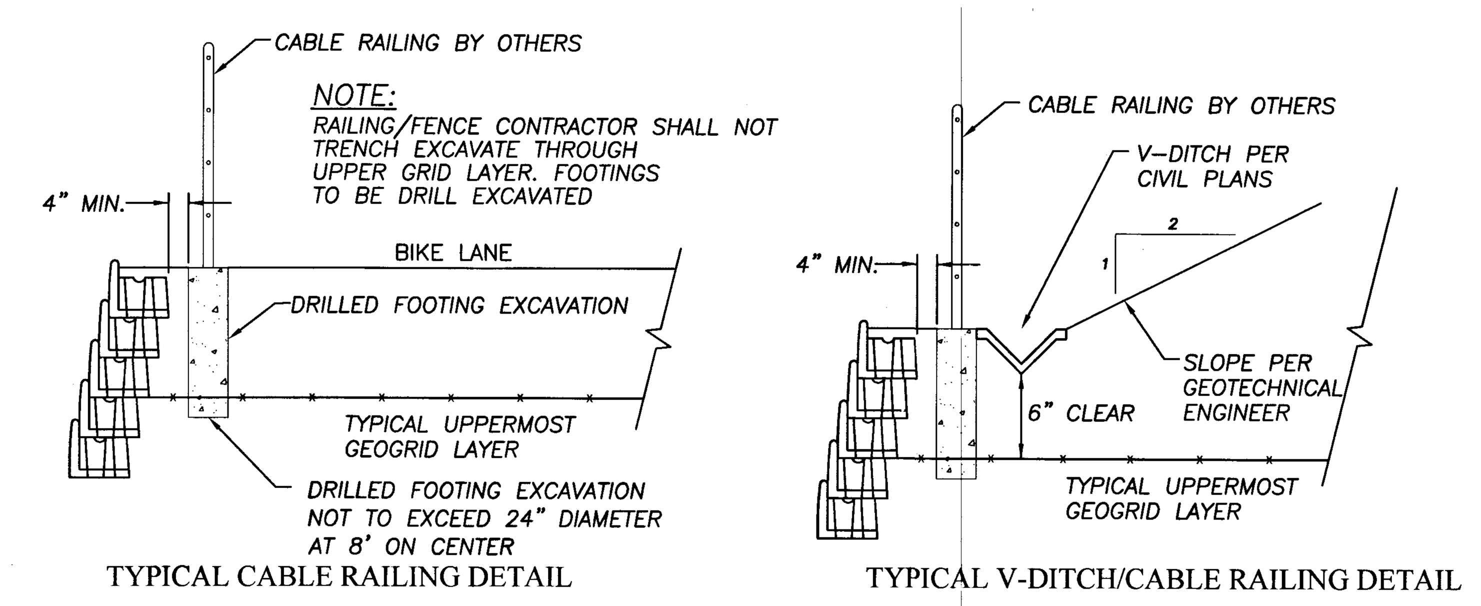
PLAN DATE: 08/14/2013



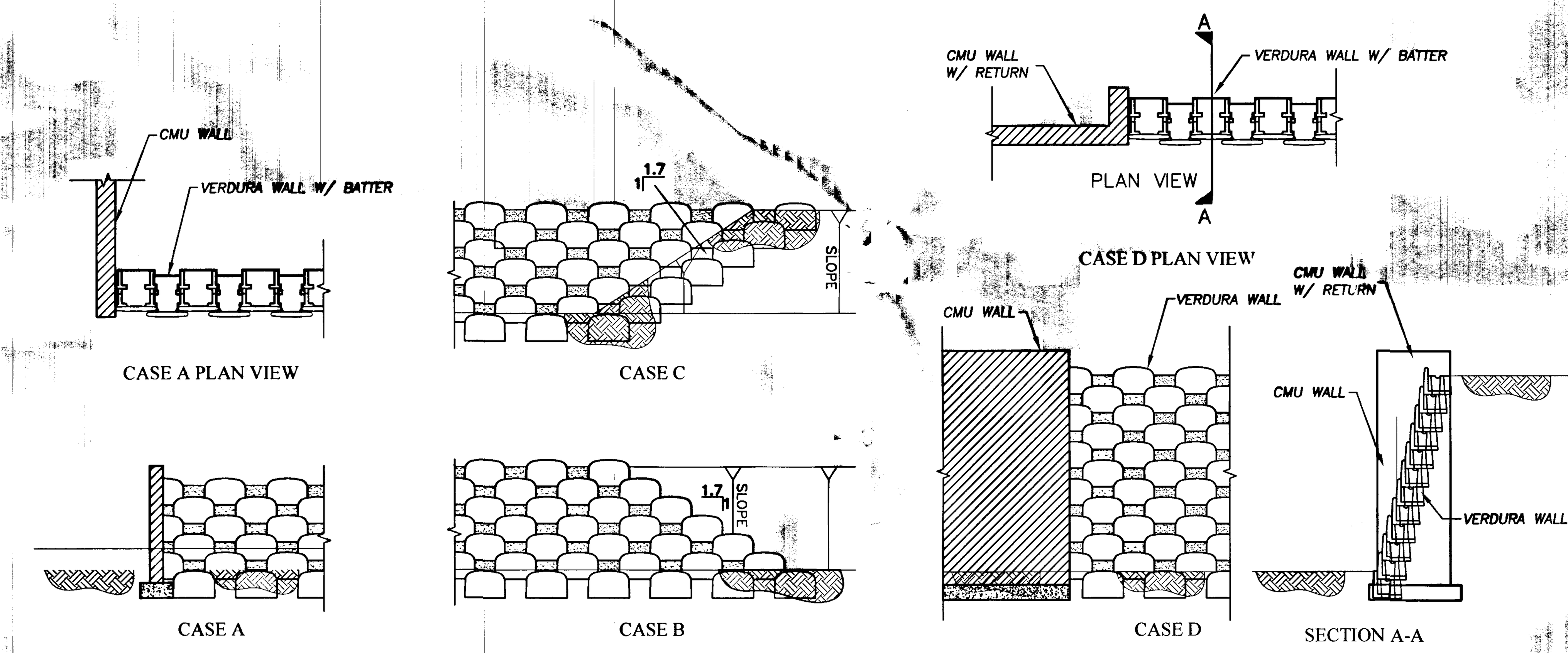
VERDURA 40 BLOCK DETAIL



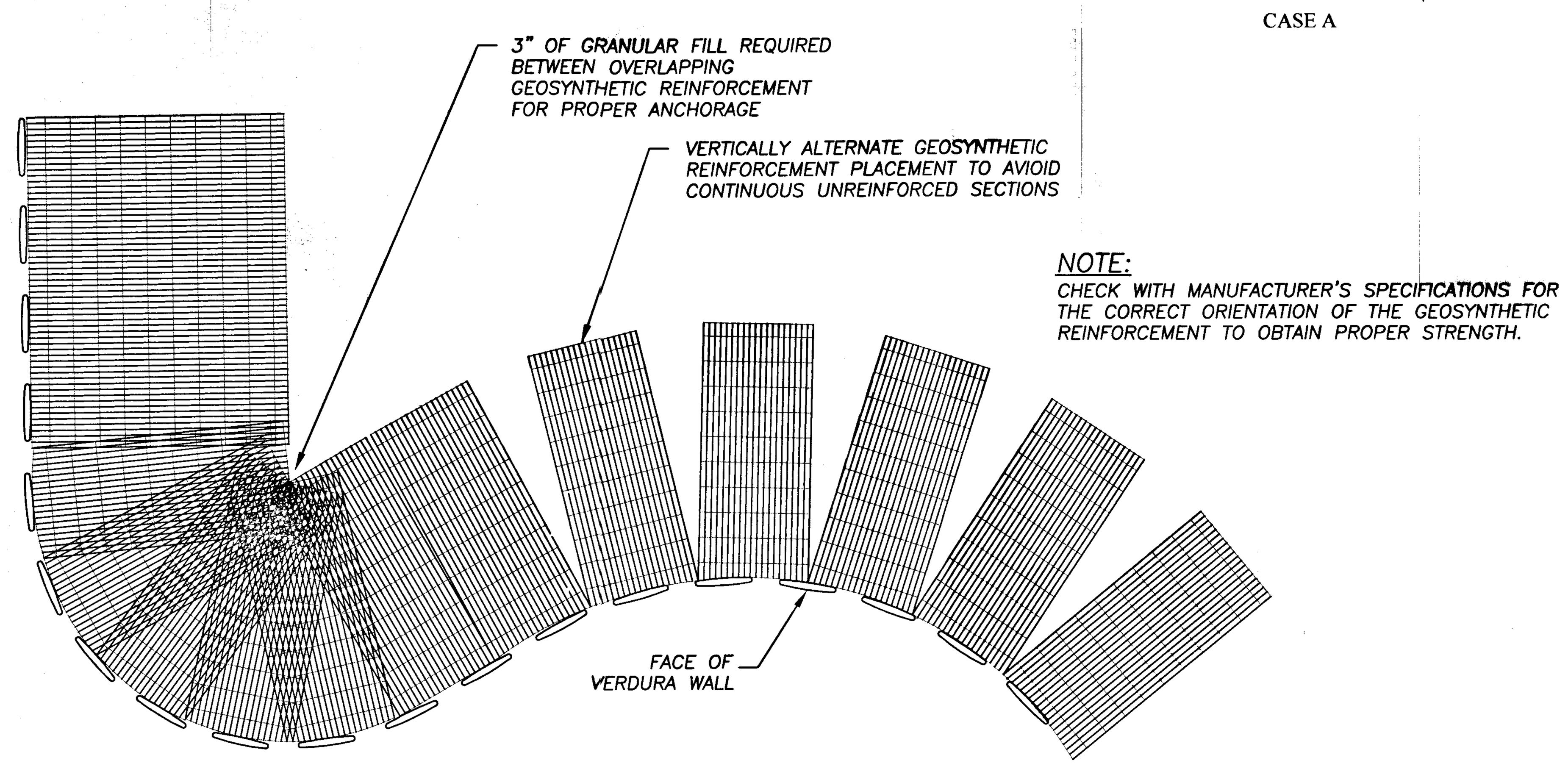
GEOGRID CONNECTION DETAIL



TOP OF WALL DETAILS

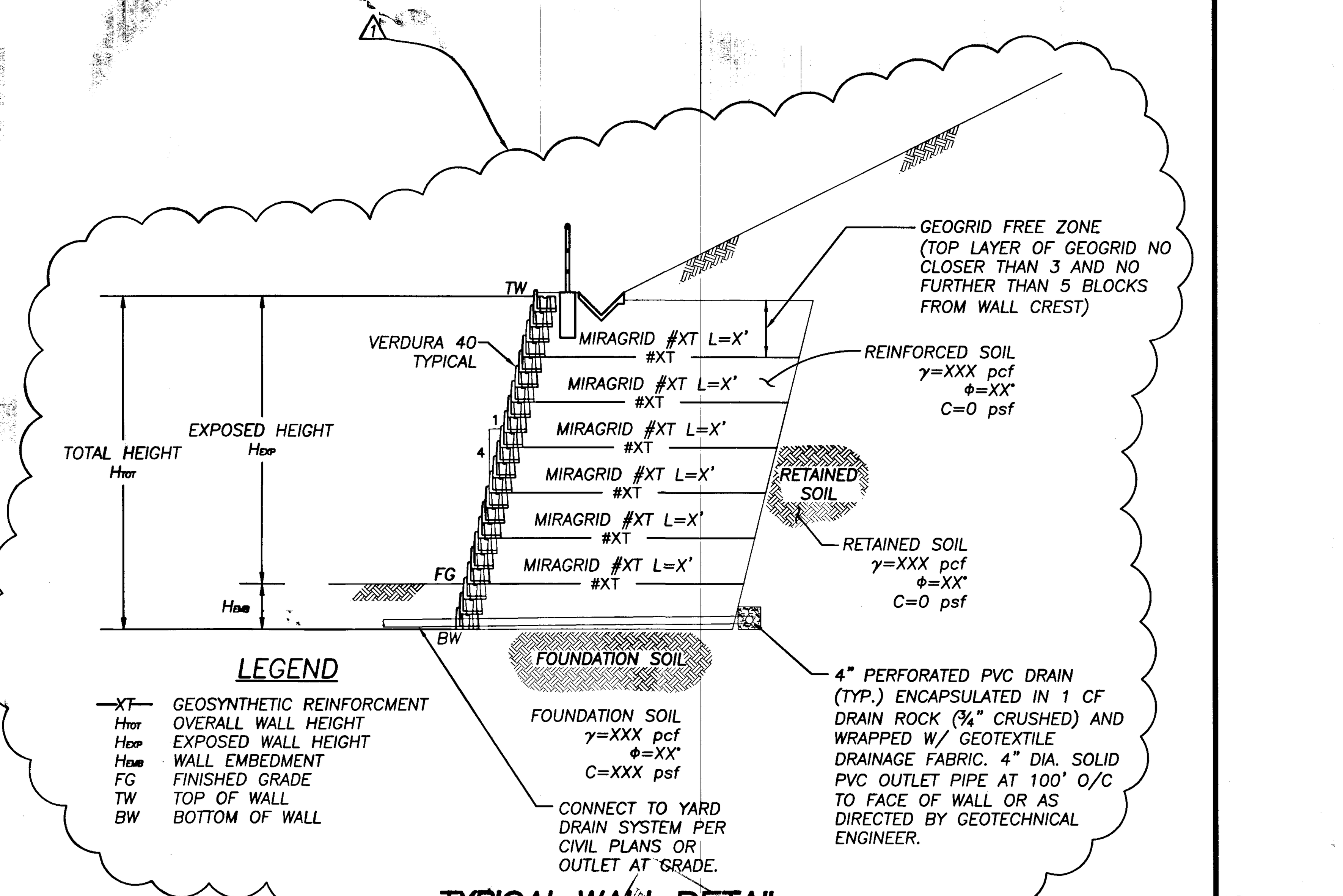


END OF WALL TRANSITION DETAILS



NOTE:
CHECK WITH MANUFACTURER'S SPECIFICATIONS FOR THE CORRECT ORIENTATION OF THE GEOSYNTHETIC REINFORCEMENT TO OBTAIN PROPER STRENGTH.

GEOGRID PLACEMENT ON CURVES



TYPICAL WALL DETAIL

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL
1	8/14/13	ADDED TYPICAL WALL DETAIL	

PREPARED BY:

SOIL RETENTION DESIGNS INC.

2501 STATE STREET, CARLSBAD, CA 92008 800-346-7995

UNDER THE SUPERVISION OF: DAREN A. OSBORNE (R.C.E. 64108)

REGISTERED PROFESSIONAL ENGINEER DAREN A. OSBORNE No. 64108 EXP 12/31/14 CIVIL STATE OF CALIFORNIA

VERDURA SEGMENTAL WALL PLANS

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER 5376001

SHEET NO. 4 OF 4

PLAN DATE: 08/14/2013

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Soils OK To Plng

Gary-ok

BLD

25891 CROWN VALLEY PKWY LN

B13-1237

The CROWN

VERDURA® SEGMENTAL WALL PLANS

PART 1: GENERAL

1.01 DESCRIPTION
- A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A VERDURA SEGMENTAL RETAINING WALL SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN AND DIMENSIONS SHOWN ON THESE PLANS.
- B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD (IF REQUIRED), PLANTABLE SOIL UNIT FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.
- C. WORK INCLUDES FURNISHING AND INSTALLING GEOSYNTHETIC SOIL REINFORCEMENT OF THE TYPE, SIZE, LOCATION, STRENGTH AND LENGTHS DESIGNATED ON THE CONSTRUCTION DRAWINGS.
- D. WORK INCLUDES FURNISHING AND INSTALLING FOUNDATION DRAIN, SUBDRAIN AND OTHER WALL-RELATED DRAINAGE SYSTEMS THAT MAY BE SHOWN ON THE CONSTRUCTION DRAWINGS.
- E. CALCULATIONS ADDRESSING INTERNAL AND EXTERNAL STABILITY PROVIDED IN DOCUMENTATION AS NOTED IN TABLE 1.

1.02 REFERENCE DOCUMENTS
- A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
  1) ASTM C-1372-SPECIFICATION FOR SEGMENTAL RETAINING WALL UNITS
  2) ASTM D-3080-DIRECT SHEAR TEST OF SOILS UNDER CONSOLIDATED DRAINED CONDITIONS
  3) ASTM D-1557-LABORATORY COMPACTION CHARACTERISTICS OF SOIL MODIFIED PROCTOR
  4) ASTM D-4318-LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS
  5) ASTM D-4595-TENSILE PRIORITIES OF GEOTEXTILES – WIDE WIDTH STRIP
  6) ASTM D-5262-UNCONFINED TENSION CREEP BEHAVIOR OF GEOSYNTHETICS
  7) ASTM D-3034-POLYVINYL CHLORIDE PIPE (PVC)
  8) ASTM D-4829-EXPANSION INDEX OF SOILS
  9) ASTM C-140-STD. SPEC. FOR SAMPLING AND TESTING CONCRETE MASONRY UNITS
  10) ASTM C-145-STD. SPEC. FOR SOLID LOAD BEARING CONCRETE MASONRY UNITS
- B. GEOSYNTHETIC RESEARCH INSTITUTE (GRI)
  1) GRI-GG4-DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOGRIDS
  2) GRI-GT7-DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOTEXTILES
  3) GRI-GG5-DETERMINATION OF GEOGRID (SOIL) PULLOUT
- C. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
  1) NCMA SRWU-1-TEST METHOD FOR DETERMINING CONNECTION STRENGTH OF SRW UNITS
  2) NCMA SRWU-2-TEST METHOD FOR DETERMINING SHEAR STRENGTH OF SRW UNITS
  3) "DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS, 2ND EDITION," (1997)

1.03 SUBMITTALS/CERTIFICATION
- A. CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION PRIOR TO START OF WORK THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF THESE SPECIFICATION AND STRUCTURE DESIGN PLANS.
- B. CONTRACTOR SHALL SUBMIT A TEST REPORT DOCUMENTING STRENGTH OF SPECIFIC MODULAR CONCRETE UNIT AND GEOSYNTHETIC REINFORCEMENT CONNECTION TO VERDURA BLOCKS. THE MAXIMUM DESIGN TENSILE LOAD OF THE GEOSYNTHETIC-FACING UNIT CONNECTION AT A MAXIMUM NORMAL FORCE AS IS APPROPRIATE FOR THE VERTICAL LOCATION OF REINFORCEMENT UNDER CONSIDERATION. THE CONNECTION STRENGTH EVALUATION SHALL BE PERFORMED IN ACCORDANCE WITH NCMA TEST METHOD SRWU-1.

1.04 QUALITY ASSURANCE
- A. CONTRACTOR SHALL SUBMIT CERTIFICATION, PRIOR TO START OF WORK, THAT THE RETAINING WALL SYSTEM (MODULAR CONCRETE UNITS AND SPECIFIC GEOSYNTHETIC):
  1) HAS BEEN SUCCESSFULLY UTILIZED ON A MINIMUM OF FIVE (5) SIMILAR PROJECTS, I.E., HEIGHT, SOIL FILL TYPES, ERECTION TOLERANCES, ETC.; AND...
  2) HAS BEEN SUCCESSFULLY INSTALLED ON A MINIMUM OF 1 MILLION SQUARE FEET (93,000 M^2) OF RETAINING WALLS.
- B. CONTRACTOR SHALL SUBMIT A LIST OF FIVE (5) PREVIOUSLY CONSTRUCTED PROJECTS OF SIMILAR SIZE AND MAGNITUDE BY THE WALL INSTALLER WHERE THE SPECIFIC RETAINING WALL SYSTEM HAS BEEN CONSTRUCTED SUCCESSFULLY. CONTACT NAMES AND TELEPHONE NUMBERS SHALL BE LISTED FOR EACH PROJECT.
- C. CONTRACTOR SHALL PROVIDE EVIDENCE THAT THE DESIGN ENGINEER HAS A MINIMUM OF FIVE YEARS OF DOCUMENTABLE EXPERIENCE IN THE DESIGN OF REINFORCED SOIL STRUCTURES.
- D. OWNER SHALL PROVIDE SOIL TESTING AND QUALITY ASSURANCE DURING EARTHWORK AND WALL CONSTRUCTION OPERATION. OWNER'S QUALITY ASSURANCE PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR WALL PERFORMANCE.

1.05 DELIVERY, STORAGE AND HANDLING
- A. CONTRACTOR SHALL CHECK ALL MATERIALS UPON DELIVERY TO ASSURE THAT THE PROPER TYPE, GRADE, AND CERTIFICATION HAVE BEEN RECEIVED.
- B. CONTRACTOR SHALL PROTECT ALL MATERIALS FROM DAMAGE DUE TO JOBSITE CONDITIONS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DAMAGED MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK.

PART 2: PRODUCTS

2.01 MODULAR CONCRETE RETAINING WALL UNITS
- A. MODULAR CONCRETE UNITS SHALL BE VERDURA, AS INDICATED IN TABLE 2.
- B. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-1372 – STANDARD SPECIFICATIONS FOR SRW UNITS.
- C. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING STRUCTURAL AND GEOMETRIC REQUIREMENTS MEASURED IN ACCORDANCE WITH SECTION 1.03 AND OTHER APPROPRIATE REFERENCES:
  * COMPRESSIBLE STRENGTH = 4000 PSI (27,000 KPA) MINIMUM AT 28 DAYS;
  * MOISTURE ABSORPTION = 8% MAXIMUM FOR STANDARD WEIGHT AGGREGATES;
  * BATTER = AS INDICATED IN TABLE 2.
  * DIMENSIONAL TOLERANCES = ±1/8" (3MM) FROM NOMINAL UNIT DIMENSIONS (NOT INCLUDING EXPOSED AGGREGATE FACE TEXTURE), ±1/8" (3 MM) UNIT HEIGHT – TOP AND BOTTOM PLANES.

2.02 GEOSYNTHETIC-CONCRETE BLOCK CONNECTORS
- A. CONNECTORS SHALL BE 1 INCH (2.5 CM) DIAMETER OR GREATER SCHEDULE 80 PIPE OR EQUIVALENT AND MUST BE CAPABLE OF PROVIDING POSITIVE MECHANICAL INTERLOCK BETWEEN GEOSYNTHETIC SOIL REINFORCEMENT MATERIAL (GEOTEXTILE OR GEOGRID) AND BLOCK.
- B. CONNECTORS SHALL BE CAPABLE OF HOLDING THE GEOSYNTHETIC SOIL REINFORCEMENT IN THE PROPER DESIGN POSITION DURING GEOSYNTHETIC PRE-TENSIONING AND BACKFILLING PROCEDURES

2.03 UNIT FILL
- A. UNIT FILL SHALL CONSIST OF SOILS USED FOR WALL BACKFILL OR AS SPECIFIED BY THE PROJECT LANDSCAPE ARCHITECT.

2.04 SOIL FILL
- A. SELECT ENGINEERED FILL FOR THE REINFORCED/INFILL SOIL AND RETAINED/BACKFILL SOIL. SOIL ZONES SHALL BE ON-SITE OR IMPORTED SOILS ACCEPTED BY THE GEOTECHNICAL ENGINEER OF RECORD AND HAVING THE SOIL STRENGTH PROPERTIES AS NOTED TABLE 3 WHEN COMPACTED TO 90% RELATIVE COMPACTION PER ASTM D- 1557.
- B. ENGINEERED FILL MATERIALS FOR THE UPPER ONE (1) FOOT IMMEDIATELY BEHIND THE TOPMOST BLOCK AND ABOVE THE ZONE OF SELECTED SOIL MATERIALS AS SHOWN ON THE TYPICAL SECTION SHALL BE COMPROMISED OF MORE IMPERVIOUS ON-SITE SOILS.
- C. MATERIALS CAN BE SITE-EXCAVATED SOILS WHERE THE ABOVE REQUIREMENTS CAN BE MET. UNSUITABLE SOILS (HIGH PLASTIC CLAYS OR ORGANIC SOILS) SHALL NOT BE USED.
- D. SOIL WITHIN 6 INCHES OF A GEOGRID LAYER SHALL NOT CONTAIN PARTICLES LARGER THAN 6 INCHES.
- E. GEOTECHNICAL-ENGINEER-OF-RECORD SHALL PERFORM LABORATORY TESTS ON THE SOIL MATERIAL PROPOSED FOR USE TO ENSURE COMPLIANCE WITH REQUIREMENTS STATED IN SECTION 2.05, ITEM A AS OUTLINED ABOVE PRIOR TO THE PLACEMENT OF THE MATERIALS FOR THE SELECT BACKFILL/REINFORCED SOIL ZONE.

2.05 GEOGRID SOIL REINFORCEMENT
- A. GEOSYNTHETIC REINFORCEMENT SHALL BE OF THE TYPE SHOWN ON THESE DESIGN PLANS. THE CONTRACTOR, OR THE SUPPLIER AS HIS AGENT, SHALL FURNISH THE GEOTECHNICAL ENGINEER OF RECORD WITH A CERTIFICATE OF COMPLIANCE CERTIFYING THAT THE GEOSYNTHETIC REINFORCEMENT COMPLIES WITH THIS SECTION OF THE SPECIFICATIONS, THE DRAWINGS AND THE DESIGN CALCULATIONS.

2.06 DRAINAGE PIPE
- A. PROVIDE A PERFORATED AND SOLID PIPING SYSTEM CONSISTING OF 4-INCH-DIAMETER SCHEDULE 40 PVC PIPE AS SHOWN ON THESE PLANS.

2.07 FILTER FABRIC
- A. PROVIDE FILTER FABRIC CONSISTING OF MIRAFI 140N OR EQUIVALENT AS SPECIFIED BY THE GEOTECHNICAL ENGINEER OF RECORD.

PART 3: EXECUTION

3.01 SURFACE CONDITIONS
- A. PRIOR TO WORK, CAREFULLY INSPECT PREVIOUS GRADING WORK. VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
- B. VERIFY THAT WORK OF THIS SECTION MAY BE INSTALLED IN STRICT ACCORDANCE WITH THE ORIGINAL DESIGN, ALL PERTINENT CODES AND REGULATIONS.
- C. VERIFY WALL DRAINAGE SYSTEM IS COORDINATED WITH POINTS OF CONNECTION TO STORM DRAINAGE SYSTEM OR OTHER PROPER DRAINAGE DEVICE.
- D. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROJECT COORDINATOR. DO NOT PROCEED WITH INSTALLATION UNTIL ALL SUCH DISCREPANCIES HAVE BEEN RESOLVED.

3.02 LAYOUT
- A. VERIFY ALL STAKING AND FIELD ENGINEERING REQUIRED TO IMPLEMENT THE WORK AS SHOWN ON THE DRAWINGS.
- B. PROTECT ALL STAKES AND BENCHMARKS. REPLACE ALL STAKES AND BENCHMARKS DAMAGED DURING THE COURSE OF CONSTRUCTION AT NO COST TO OWNER.
- C. SET GRADE STAKES USING INSTRUMENT TECHNOLOGY, AT 50-FOOT GRID INTERVALS AT AREAS WHERE GRADIENTS ARE LESS THAN 2 PERCENT. SET GRADE STAKES USING INSTRUMENT TECHNOLOGY, 25-FOOT-INTERVALS AT AREAS WHERE GRADES ARE GREATER THAN 2 PERCENT.
- D. HAND TRIM EXCAVATIONS TO REQUIRED ELEVATIONS. CORRECT OVER-EXCAVATION WITH FILL MATERIALS APPROVED BY THE GEOTECHNICAL ENGINEER OF RECORD.
- E. REMOVE LARGE STONES OR OTHER HARD MATTER WHICH WOULD DAMAGE PIPES OR IMPEDE CONSISTENT BACKFILLING OR COMPACTION.
- F. PROVIDE ALL EQUIPMENT OF SUCH TYPE, FUNCTION, AND DESIGN AS REQUIRED TO ACHIEVE SPECIFIC VALUES. WHERE NECESSARY, PROVIDE RUBBER-TIRED AND VIBRATORY SHEEPSFOOT COMPACTION EQUIPMENT.

3.03 SUBSURFACE DRAINAGE SYSTEM INSTALLATION
- A. EXCAVATE TRENCHES FOR DRAINAGE PIPING SHOWN ON DRAWINGS.
- B. LAY FILTER FABRIC IN BOTTOM OF EXCAVATION PRIOR TO PLACING PERMEABLE FILL. PLACE MINIMUM 4-INCH-THICK BED OF PERMEABLE FILL OVER FABRIC
- C. INSTALL AND JOIN PIPE AND PIPE FITTINGS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS. INSTALL DRAINAGE PIPING WITH PERFORATIONS DOWN. JOIN PIPE ENDS AND SOLVENT ENDS.
- D. LAY PIPE TO SLOPE GRADIENTS NOTED ON DRAWINGS, WITH MAXIMUM VARIATION FROM TRUE SLOPE OF 1/8 INCH IN 10 FEET.
- E. BACKFILL PIPE USING FILTER AGGREGATE.
- F. WRAP FILTER FABRIC AROUND AGGREGATE COVER AND TUCK LOOSE EDGE BETWEEN AGGREGATE COVER AND TUCK LOOSE EDGE BETWEEN AGGREGATE AND SOIL.
- G. INSTALL BACKFILL IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION. DO NOT DISPLACE OR DAMAGE PIPE WHEN COMPACTING.
- H. EXTEND NON-PERFORATED PIPING TO DRAINAGE PIPING AS SHOWN ON DRAWINGS. PROVIDE TRENCHING, BEDDING, AND BACKFILL AS REQUIRED.

3.04 EXCAVATION
- A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. OWNER'S REPRESENTATIVE SHALL INSPECT THE EXCAVATION AND APPROVE PRIOR TO PLACEMENT OF LEVELING MATERIAL OR FILL SOILS. PROOF ROLL FOUNDATION AREA AS DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD TO DETERMINE IF REMEDIAL WORK IS REQUIRED.
- B. OVER-EXCAVATION AND REPLACEMENT OF UNSUITABLE FOUNDATION SOILS AND REPLACEMENT WITH APPROVED COMPACTED FILL WILL BE COMPENSATED AS AGREED UPON WITH THE OWNER.

3.05 MODULAR UNIT INSTALLATION
- A. FIRST COURSE OF UNITS SHALL BE PLACED ON THE FOUNDATION SOILS OR LEVELING PAD, AS DIRECTED BY THE GEOTECHNICAL ENGINEER OF RECORD, AT THE APPROPRIATE LINES AND GRADES. MOLDED SURFACE OF MODULAR UNITS SHALL BE USED FOR ALIGNMENT. ALIGNMENT AND LEVEL SHALL BE CHECKED IN ALL DIRECTIONS AND ENSURE THAT ALL UNITS ARE IN FULL CONTACT WITH THE BASE AND PROPERLY SEATED.
- B. UNITS SHALL BE PLACED ON THE FOUNDATION SOILS WITH A MAXIMUM DISTANCE OF 9 INCHES (23 CM) BETWEEN ADJACENT UNITS. THE SPACING BETWEEN UNITS INSTALLED IN CURVED REGIONS (CONCAVE OR CONVEX) MUST BE ADJUSTED ACCORDINGLY AND SUCH THAT THE RUNNING BOND LAYOUT IS MAINTAINED. VERTICALLY ADJACENT UNITS SHALL BE CENTERED ON UNITS ABOVE AND BELOW. ALL BLOCK LAYOUT AND PLACEMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- C. MODULAR UNITS MAY BE INSTALLED HORIZONTALLY WITH RESPECT TO THE PROFILE WALL ALIGNMENT OR MAY BE MADE TO FOLLOW THE BOTTOM OF WALL CONTOURS ("RUN WITH THE GRADE"). WHERE BOTTOM OF WALL CONTOURS ARE USED TO SET THE FIRST ROW OF MODULAR BLOCKS, GRADES MAY NOT SLOPE MORE THAN 15% WITH RESPECT TO THE WALL PROFILE BASE.
- D. PLACE AND COMPACT FILL BEHIND WALL UNITS. AFTER UNIT FILL IS COMPACTED EXCESS UNIT FILL MUST BE SCREEDED (ROD-BOARDED) OFF TO DEVELOP A FLAT BASE UPON WHICH SUBSEQUENT UNITS CAN BE POSITIONED. PLACE AND COMPACT BACKFILL SOIL BEHIND UNITS. FOLLOW WALL ERECTION AND UNIT FILL CLOSELY WITH STRUCTURE BACKFILL.
- E. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS PRIOR TO UNIT FILL AND BACKFILL PLACEMENT AND COMPACTION SHALL NOT EXCEED ONE COURSE.

3.06 GEOSYNTHETIC SOIL REINFORCEMENT INSTALLATION
- A. GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE ORIENTED WITH THE HIGHEST STRENGTH AXIS PERPENDICULAR TO THE WALL ALIGNMENT.
- B. GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE PLACED AT THE STRENGTHS, LENGTHS, AND ELEVATIONS SHOWN ON THESE DRAWINGS. WHERE GEOSYNTHETIC PLACEMENT ELEVATIONS VARY FROM FACING UNIT INCREMENTS, GEOSYNTHETIC ELEVATIONS MAY BE ADJUSTED UP OR DOWN BY 4 INCHES MAXIMUM.
- C. THE GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND ATTACHED TO THE MODULAR WALL UNITS IN ACCORDANCE WITH THE DETAILS OF THESE PLANS AND SPECIFICATIONS. A TOLERANCE FROM FACE TO TAIL OF REINFORCEMENT OF 6" IN 10' IS ACCEPTABLE RELATIVE TO HORIZONTAL GEOSYNTHETIC ORIENTATION. PLACE THE NEXT COURSE OF MODULAR CONCRETE UNITS OVER THE GEOSYNTHETIC SOIL REINFORCEMENT. THE GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE LAID FLAT PRIOR TO BACKFILL PLACEMENT ON THE GEOSYNTHETIC SOIL REINFORCEMENT.
- D. GEOSYNTHETIC SOIL REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF EMBEDMENT. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF GEOSYNTHETIC SOIL REINFORCEMENT WILL NOT BE PERMITTED.

3.07 REINFORCED BACKFILL PLACEMENT
- A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF SLACK IN THE GEOSYNTHETIC SOIL REINFORCEMENT AND INSTALLATION DAMAGE.
- B. REINFORCED SOIL BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT TO EXCEED THE "RAIL HEIGHT" OF THE UNITS BEING PLACED. LIFT THICKNESSES SHALL BE DECREASED TO ACHIEVE THE REQUIRED DENSITY AS REQUIRED.
- C. REINFORCED BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION AS DETERMINED BY ASTM D-1557. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL PRIOR TO AND DURING COMPACTION SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER.
- D. ONLY LIGHTWEIGHT HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 1 FOOT (0.3 METERS) FROM THE BACK OF THE MODULAR CONCRETE UNIT.
- E. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY UPON THE GEOSYNTHETIC SOIL REINFORCEMENT. A MINIMUM FILL THICKNESS OF 6 INCHES (15 CM) IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE GEOSYNTHETIC SOIL REINFORCEMENT. TRACKED VEHICLE TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FORM DISPLACING THE FILL AND DAMAGING THE GEOSYNTHETIC SOIL REINFORCEMENT.
- F. RUBBER TIRED EQUIPMENT SHALL PASS OVER GEOSYNTHETIC SOIL REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH (16 KPH). SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.
- G. AT THE END OF EACH DAY'S OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT OF REINFORCED BACKFILL AWAY FROM THE WALL UNITS TO DIRECT RUNOFF AWAY FROM THE WALL FACE. THE CONTRACTOR SHALL NOT ALLOW SURFACE RUN-OFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION SITE.
- H. CARE SHOULD BE TAKEN DURING EXCAVATION FOR AND CONSTRUCTION OF THE V-DITCH AND ALL OTHER TYPE OF WALL STRUCTURE NOT TO DAMAGE THE UPPER GEOGRID LAYER. IF THE GEOGRID LAYERS ARE DAMAGED, THEY NEED TO BE PROPERLY REPLACED.

3.08 EROSION CONTROL
- A. PROVIDE DUST AND EROSION CONTROL PROTECTION PLAN IN ACCORDANCE WITH CONTACT DOCUMENTS.

3.9 AS-BUILT CONSTRUCTION TOLERANCES
- A. VERTICAL ALIGNMENT: ±1.5 INCHES (37 MM) OVER ANY 10 FT (3 M) DISTANCE.
- B. WALL BATTER: WITHIN 2 DEGREES OF DESIGN BATTER.
- C. HORIZONTAL ALIGNMENT: ±1.5 INCHES (37 MM) OVER ANY 10 FT (3 M) DISTANCE.
- D. CORNERS, BENDS, CURVES: ±1 FT (0.3 M) TO DESIGN LOCATIONS.
- E. MAXIMUM HORIZONTAL GAP BETWEEN ERECTED UNITS SHALL BE 9 INCHES (23 CM).

3.10 FIELD QUALITY CONTROL
- A. THE OWNER SHALL ENGAGE INSPECTION AND TESTING SERVICES, INCLUDING INDEPENDENT LABORATORIES, TO PROVIDE QUALITY ASSURANCE AND TESTING SERVICES DURING CONSTRUCTION. THIS DOES NOT RELIEVE THE CONTRACTOR FROM SECURING THE NECESSARY CONSTRUCTION CONTROL TESTING DURING CONSTRUCTION.
- B. QUALIFIED AND EXPERIENCED TECHNICIANS AND ENGINEERS SHALL PERFORM TESTING AND INSPECTION SERVICES.
- C. AS A MINIMUM, QUALITY ASSURANCE TESTING SHOULD INCLUDE FOUNDATION SOIL INSPECTION, SOIL AND BACKFILL TESTING, VERIFICATION OF DESIGN PARAMETERS, AND OBSERVATION OF CONSTRUCTION FOR GENERAL COMPLIANCE WITH DESIGN DRAWINGS AND SPECIFICATIONS.
- D. FIELD INSPECTION AND TESTING SHALL BE PERFORMED BY THE GEOTECHNICAL ENGINEER OF RECORD.

3.11 SPECIAL INSPECTIONS
- A. SPECIAL INSPECTIONS DURING INSTALLATION MUST BE PERFORMED IN ACCORDANCE WITH SECTION 1704 OF THE 2010 CBC. THE SPECIAL INSPECTOR MUST BE QUALIFIED BY THE BUILDING OFFICIAL IN ACCORDANCE WITH SECTION 1704 OF THE CBC. THE INSPECTOR'S RESPONSIBILITIES INCLUDE VERIFYING THE FOLLOWING AS DESCRIBED PREVIOUSLY:
  1. FOUNDATION PREPARATION.
  2. UNIT PLACEMENT, INCLUDING ALIGNMENT AND INCLINATION.
  3. GEOSYNTHETIC REINFORCEMENT LENGTH, STRENGTH, AND PLACEMENT WITH RESPECT TO ELEVATION AND ORIENTATION.
  4. BACKFILL SOIL STRUCTURAL PROPERTIES
  5. BACKFILL PLACEMENT AND COMPACTION

TABLE 1 – REFERENCED DOCUMENTATION:

1. PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 25891 CROWN VALLEY PARKWAY & 27961 CABOT ROAD, LAGUNA NIGUEL, CA. PROJECT NUMBER: A8803-06-01A PREPARED BY GEOCON WEST, INC., DATED 02/17/2011
2. UPDATED GEOTECHNICAL DESIGN CRITERIA FOR MECHANICALLY STABILIZED EARTH RETAINING WALLS, PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 25891 CROWN VALLEY PARKWAY AND 27961 CABOT ROAD, LAGUNA NIGUEL, CA. PROJECT NO. A8803-06-01A PREPARED BY GEOCON WEST, INC., DATED 03/12/2013.
3. VERDURA 40 SEGMENTAL RETAINING WALL DESIGN CROWN CABOT LUXURY APARTMENTS LAGUNA NIGUEL, CA PROJECT NUMBER: 1105-004 PREPARED BY SOIL RETENTION DESIGNS, DATED 06/20/2013.

TABLE 2 – VERDURA BLOCK PROPERTIES

UNIT TYPE, VERDURA	V40
UNIT SIZE, RAIL HEIGHT, IN. (MM)	8(203)
UNIT SIZE, CROWN HEIGHT, IN. (MM)	10.75(273)
UNIT SIZE, WIDTH, IN. (MM)	18(457)
UNIT SIZE, DEPTH, IN. (MM)	12(305)
WEIGHT, (TYPE), LBS. (KG)	82(37)
BATTER = (DEGREES FROM VERTICAL)	14

PLANNING & ZONE CLEARANCE
This Plan was inspected on 7-24-13 and found to comply with applicable City land-use regulations.
This clearance is only valid for the life of the building permit.
The occupancy of this building shall not be changed from the use stated in the permit application except by issuance of a new Certificate of Use and Occupancy. Deviation from the approved plan shall be cause for stopping construction.
WARNING: This stamp indicates partial review only and does not constitute a building permit.
Laguna Niguel Community Development Department

TABLE 3 – SOIL STRENGTH REQUIREMENTS

MATERIAL	SHEAR STRENGTH		UNIT WEIGHT (pcf)
	FRICTION ANGLE	COHESION (psf)	
REINFORCED/INFILL SOIL*	30	0	120
RETAINED/BACKFILL SOIL[1]	27	0	115
RETAINED/BACKFILL SOIL[2]	20	0	115
FOUNDATION SOIL[1]	27	100	115
FOUNDATION SOIL[2]	20	100	115
SEISMICITY	.32g		

* REINFORCED/INFILL SOIL SHALL HAVE MAXIMUM FINE SOIL FRACTION (% PASSING #200 SIEVE) OF 35%. THE MAXIMUM PLASTICITY INDEX (PI) OF THE FINE SOIL FRACTION SHALL BE 20.

[1] CAPISTRANO FOUNDATION (TC) OR BEDROCK

[2] ARTIFICIAL FILL (AF) OR ENGINEERED FILL

TABLE 4 – GEOSYNTHETIC REINFORCEMENT PROPERTIES

MIRAGRID				
	TEST METHOD	UNIT	5XT	8XT
TENSILE STRENGTH (AT ULTIMATE)	ASTM D6637	kN/m (lbs/ft)	51.4 (3527)	90.9 (6230)
LONG TERM ALLOWABLE DESIGN LOAD	GRI GC-4	kN/m (lbs/ft)	25.2 (1733)	45.0 (3089)

* ACTUAL GEOGRID STRENGTHS EXCEED THESE DESIGN VALUES

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specifications must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from Community Development, City of Laguna Niguel.
The stamping of this plan and specifications SHALL NOT be held to permit or be an approval of the violation of any City Ordinance or State Law.
BUILDING OFFICIAL
Date 7/24/13
By

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL

PREPARED BY:

SOIL RETENTION DESIGNS INC.

2501 STATE STREET, CARLSBAD, CA 92008 800-346-7995

UNDER THE SUPERVISION OF:

DARIEN A. OSBORNE (R.C.E. 64108)

REGISTERED PROFESSIONAL ENGINEER DARIEN A. OSBORNE No. 64108 EXP. 12/31/14 CIVIL STATE OF CALIFORNIA

VERDURA SEGMENTAL WALL PLANS

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER 5376001

SHEET NO. 1 OF 4

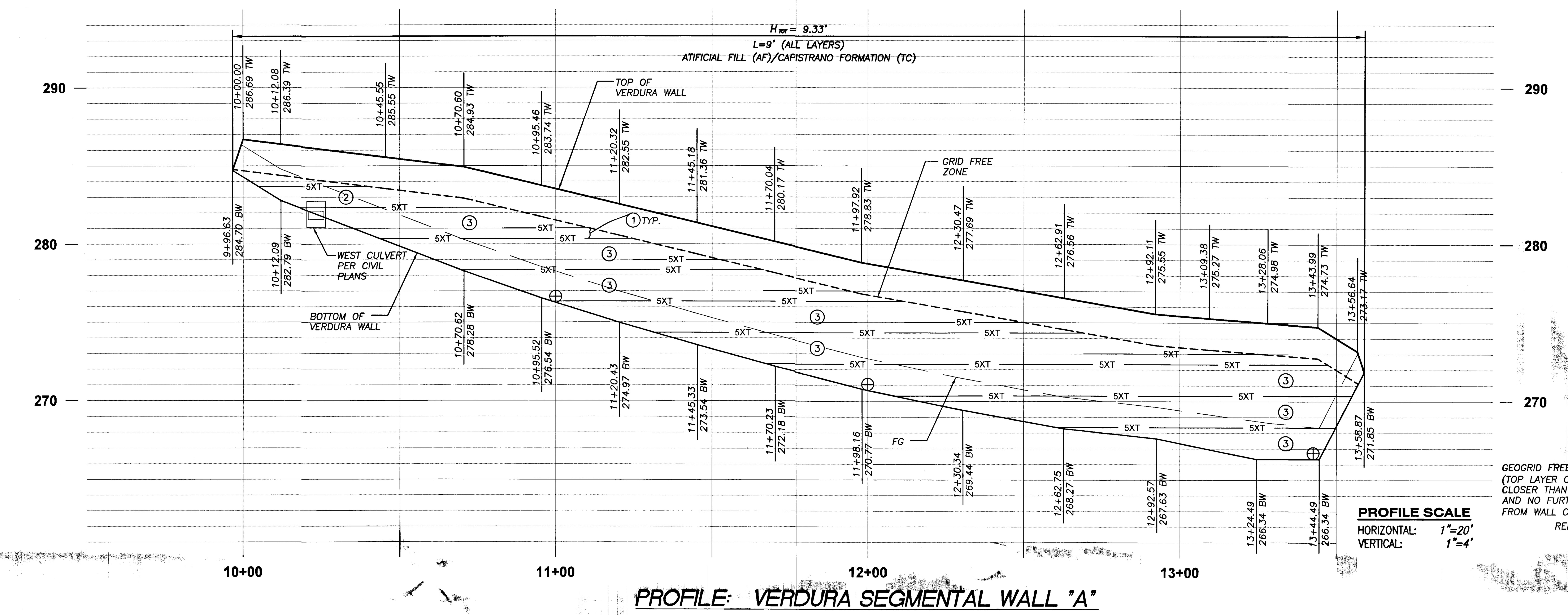
PLAN DATE: 06/20/2013

PROFILE LEGEND

- -FG FINISH GRADE
- -TW TOP OF WALL
- -BW BOTTOM OF MSE STRUCTURE
- -#XT- DENOTES TYPE OF MIRAGRID REINFORCING REQ'D
- -(#) DENOTES THE NO OF BLOCKS BET. THE MIRAGRID LAYER
- -L LENGTH OF GEOSYNTHETIC REINFORCING (FEET) GEOGRID TRANSITION (LENGTH OR TYPE)
- -⊕ APPROXIMATE LOCATION OF SUBDRAIN. TO BE DETERMINED IN THE FIELD OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

GEOGRID NOTES:

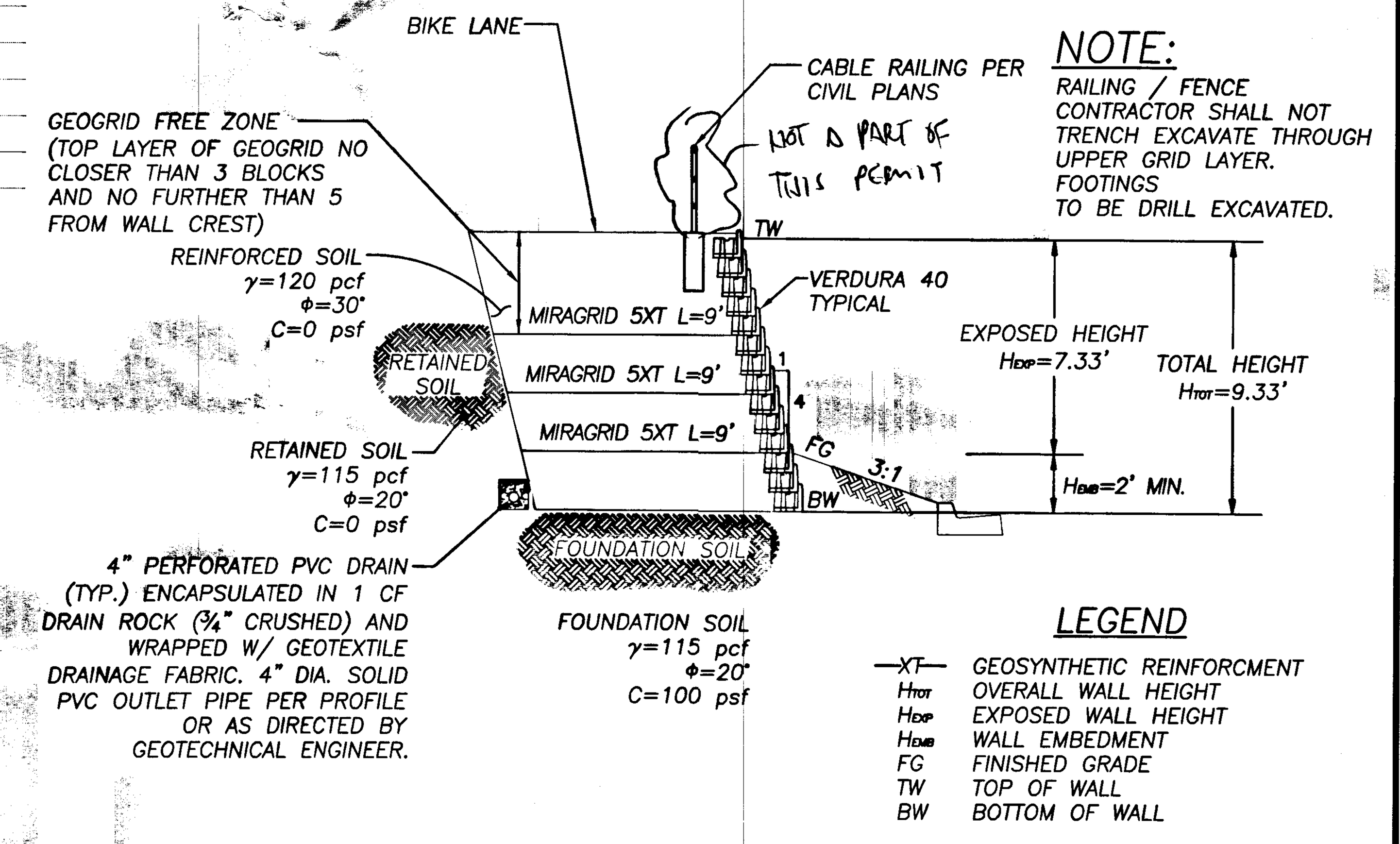
1. GEOGRID LENGTH MEASURED FROM BLOCK CONNECTION.



PROFILE SCALE

HORIZONTAL: 1"=20'
VERTICAL: 1"=4'

PROFILE: VERDURA SEGMENTAL WALL "A"



NOTE:

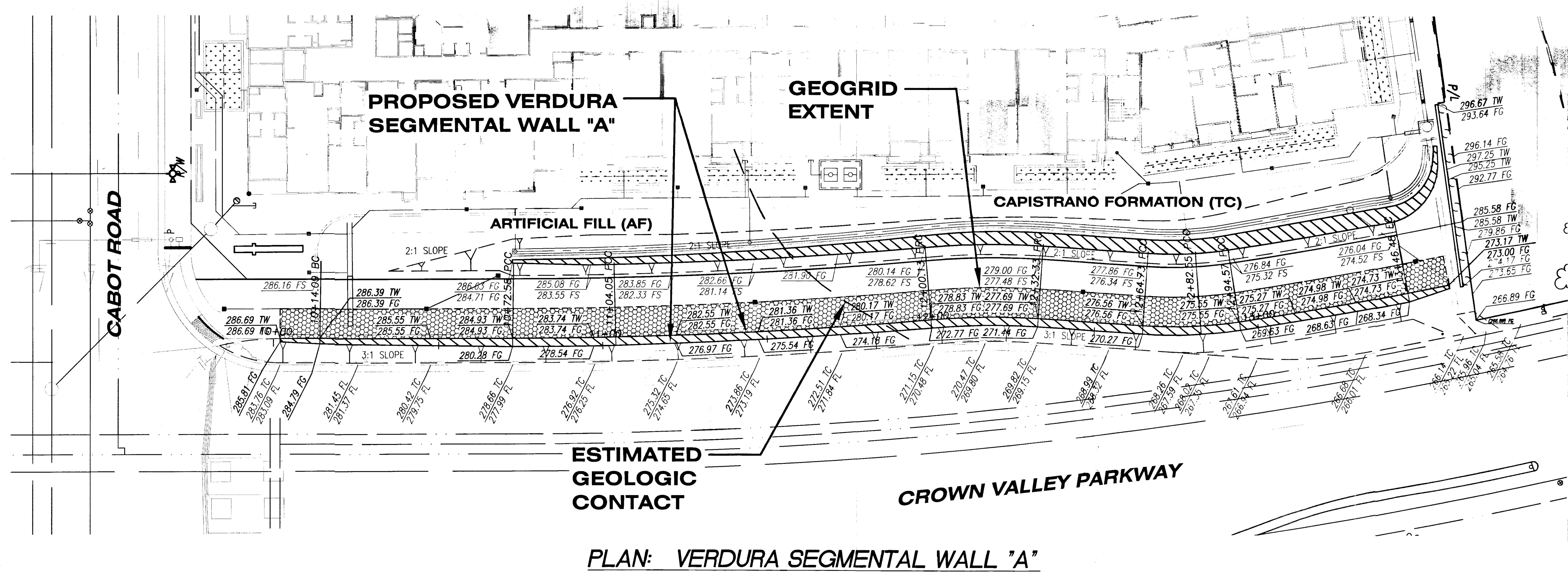
RAILING / FENCE CONTRACTOR SHALL NOT TRENCH EXCAVATE THROUGH UPPER GRID LAYER. FOOTINGS TO BE DRILL EXCAVATED.

LEGEND

- -XT- GEOSYNTHETIC REINFORCMENT
- H_{TOT} OVERALL WALL HEIGHT
- H_{EXP} EXPOSED WALL HEIGHT
- H_{EMB} WALL EMBEDMENT
- FG FINISHED GRADE
- TW TOP OF WALL
- BW BOTTOM OF WALL

CROSS SECTION, H_{TOT} = 9.33'

SCALE: 1"=5'



PLAN: VERDURA SEGMENTAL WALL "A"

PLAN LEGEND

- VERDURA SEGMENTAL WALL SHOWN WITH BATTER
- GEOGRID LOCATION

SCALE: 1" = 20'

THE CITY OF LAGUNA NIGUEL APPROVED

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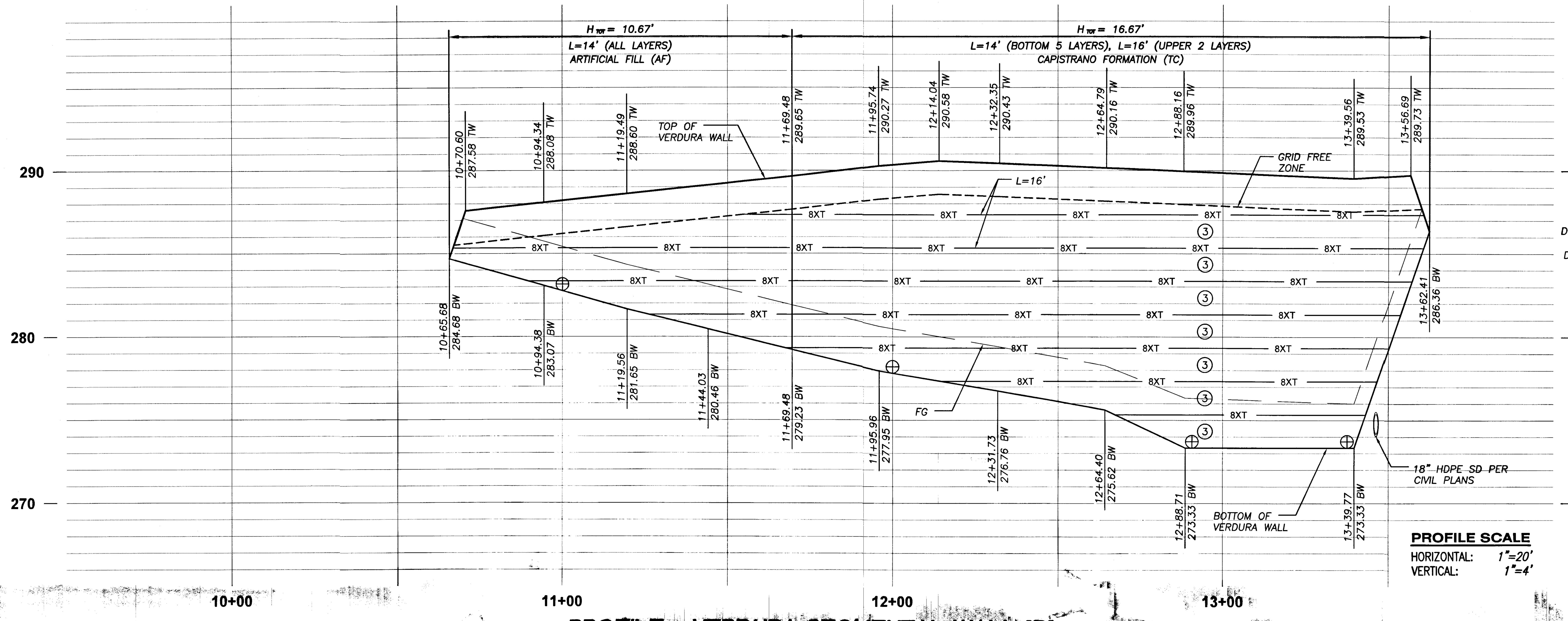
VERDURA SEGMENTAL WALL PLANS

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER 5376001

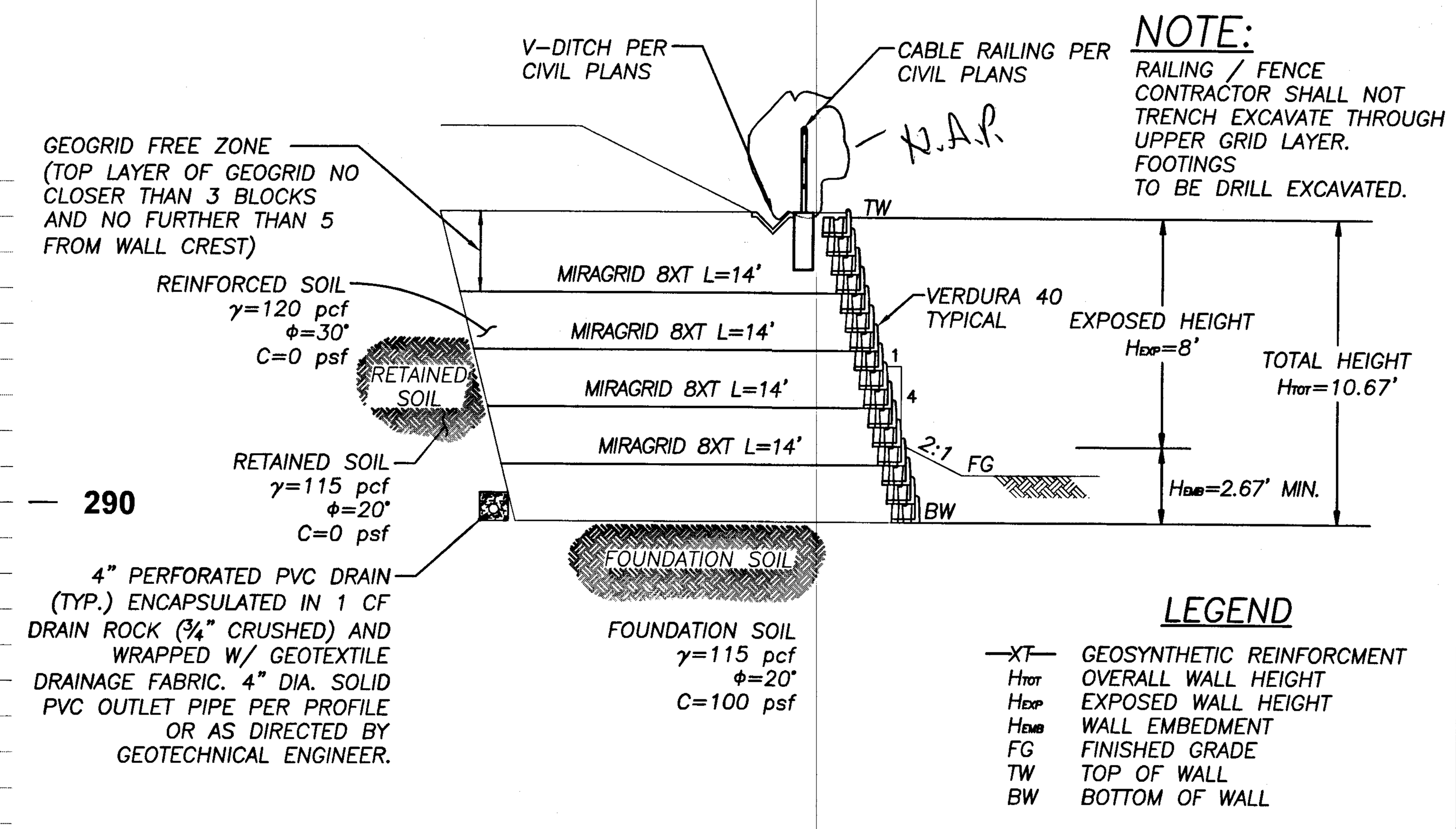
SHEET NO. 2 OF 4

PLAN DATE: 06/20/2013



PROFILE SCALE
HORIZONTAL: 1"=20'
VERTICAL: 1"=4'

PROFILE: VERDURA SEGMENTAL WALL "B"



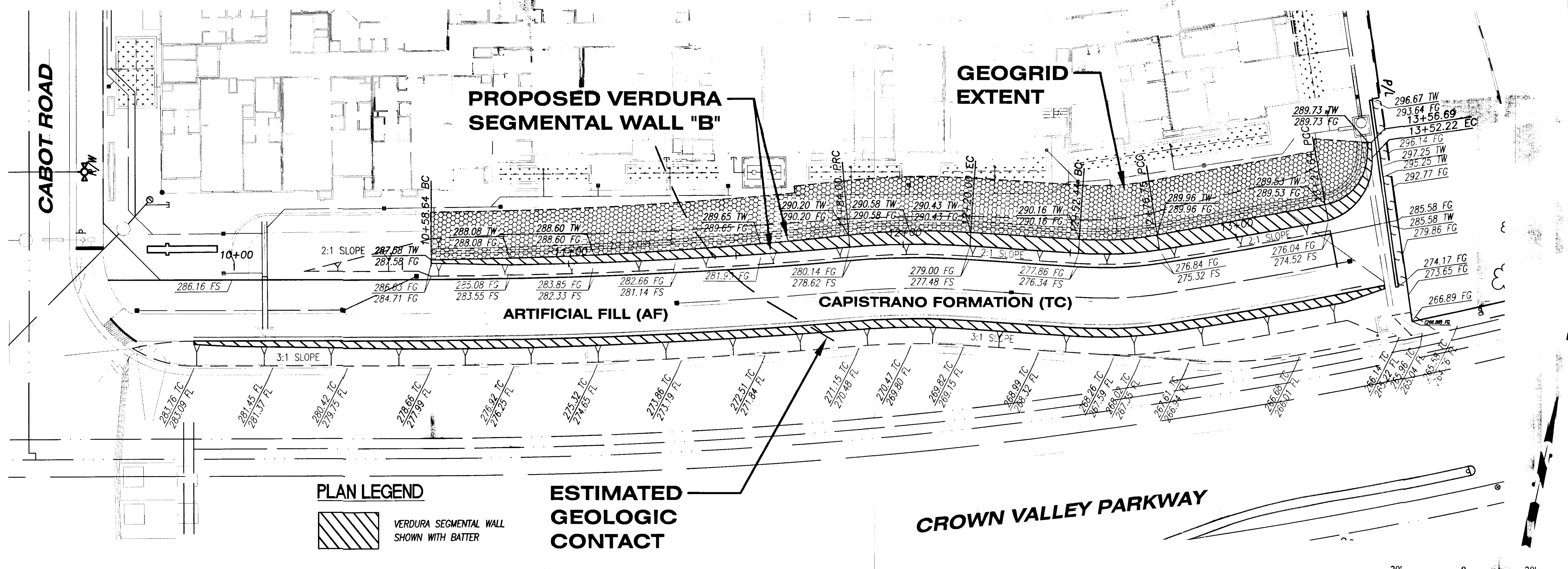
NOTE:
RAILING / FENCE CONTRACTOR SHALL NOT TRENCH EXCAVATE THROUGH UPPER GRID LAYER. FOOTINGS TO BE DRILL EXCAVATED.

LEGEND
- XT — GEOSYNTHETIC REINFORCMENT
- H_{TOT} — OVERALL WALL HEIGHT
- H_{EXP} — EXPOSED WALL HEIGHT
- H_{EMB} — WALL EMBEDMENT
- FG — FINISHED GRADE
- TW — TOP OF WALL
- BW — BOTTOM OF WALL

CROSS SECTION, H_{TOT} = 10.67'
SCALE: 1"=5'

PROFILE LEGEND
- -FG — FINISH GRADE
- -TW — TOP OF WALL
- -BW — BOTTOM OF MSE STRUCTURE
- -#XT- — DENOTES TYPE OF MIRAGRID REINFORCING REQ'D
- -(#) — DENOTES THE NO OF BLOCKS BET. THE MIRAGRID LAYER
- -L — LENGTH OF GEOSYNTHETIC REINFORCING (FEET) GEOGRID TRANSITION (LENGTH OR TYPE)
- -⊕ — APPROXIMATE LOCATION OF SUBDRAIN. TO BE DETERMINED IN THE FIELD OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

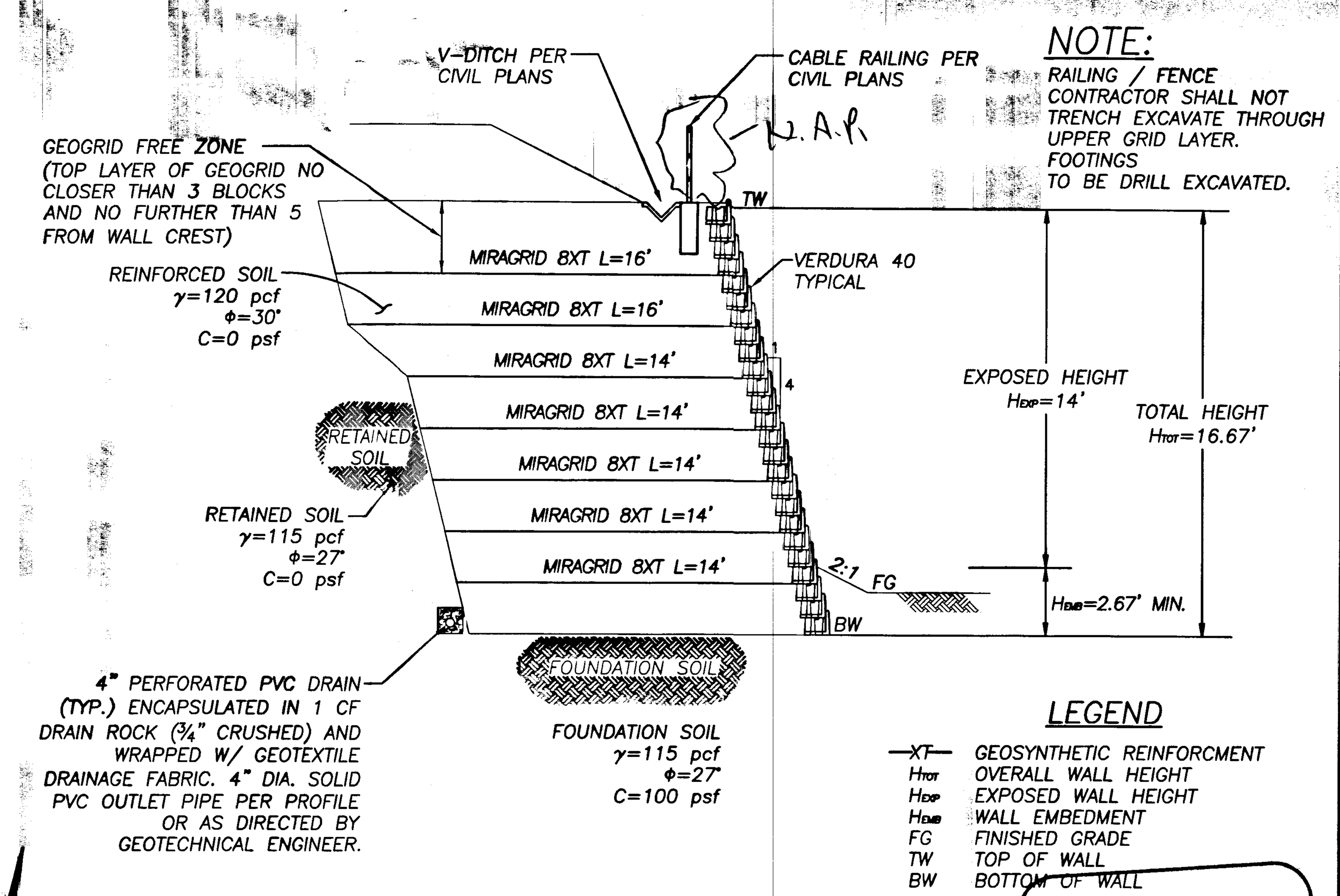
GEOGRID NOTES:
1. GEOGRID LENGTH MEASURED FROM BLOCK CONNECTION.



PLAN LEGEND
- VERDURA SEGMENTAL WALL SHOWN WITH BATTER
- GEOGRID LOCATION

PLAN: VERDURA SEGMENTAL WALL "B"

SCALE: 1" = 20'



NOTE:
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LEGEND
- XT — GEOSYNTHETIC REINFORCMENT
- H_{TOT} — OVERALL WALL HEIGHT
- H_{EXP} — EXPOSED WALL HEIGHT
- H_{EMB} — WALL EMBEDMENT
- FG — FINISHED GRADE
- TW — TOP OF WALL
- BW — BOTTOM OF WALL

CROSS SECTION, H_{TOT} = 16.67'
SCALE: 1"=5'

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PREPARED BY:
SOIL RETENTION DESIGNS INC.
2501 STATE STREET, CARLSBAD, CA 92008 | 800-346-7995
UNDER THE SUPERVISION OF: DARIEN A. OSBORNE (R.C.E. 64108)

REGISTERED PROFESSIONAL ENGINEER DARIEN A. OSBORNE No. 64108 EXP. 12/31/14 CIVIL STATE OF CALIFORNIA

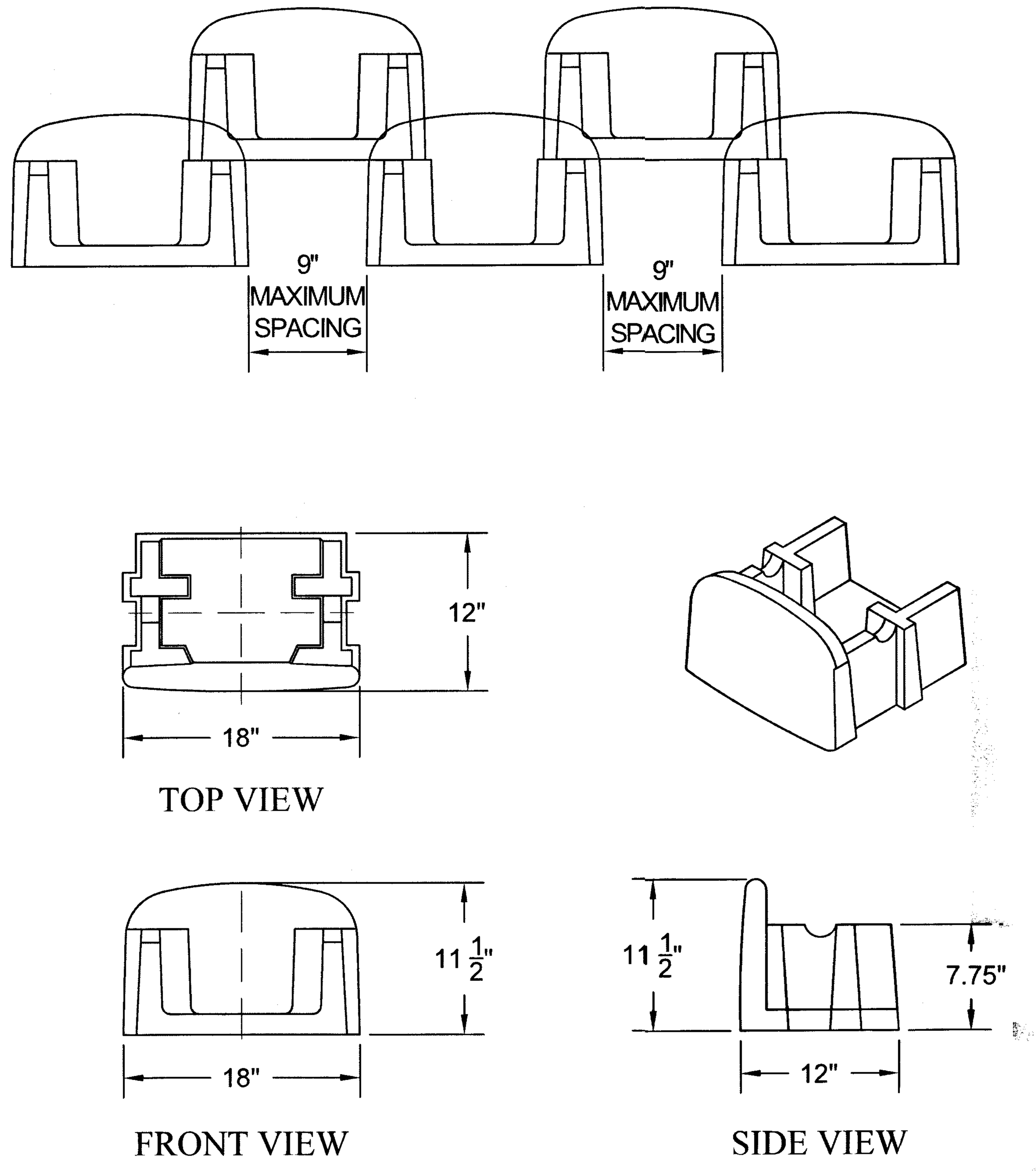
VERDURA SEGMENTAL WALL PLANS
CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

THE CITY OF LAGUNA NIGUEL APPROVED

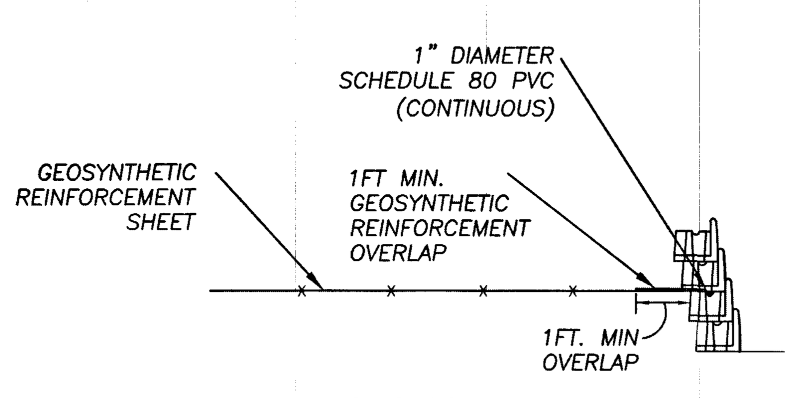
PROJECT NUMBER 5376001

SHEET NO. 3 OF 4

PLAN DATE: 06/20/2013

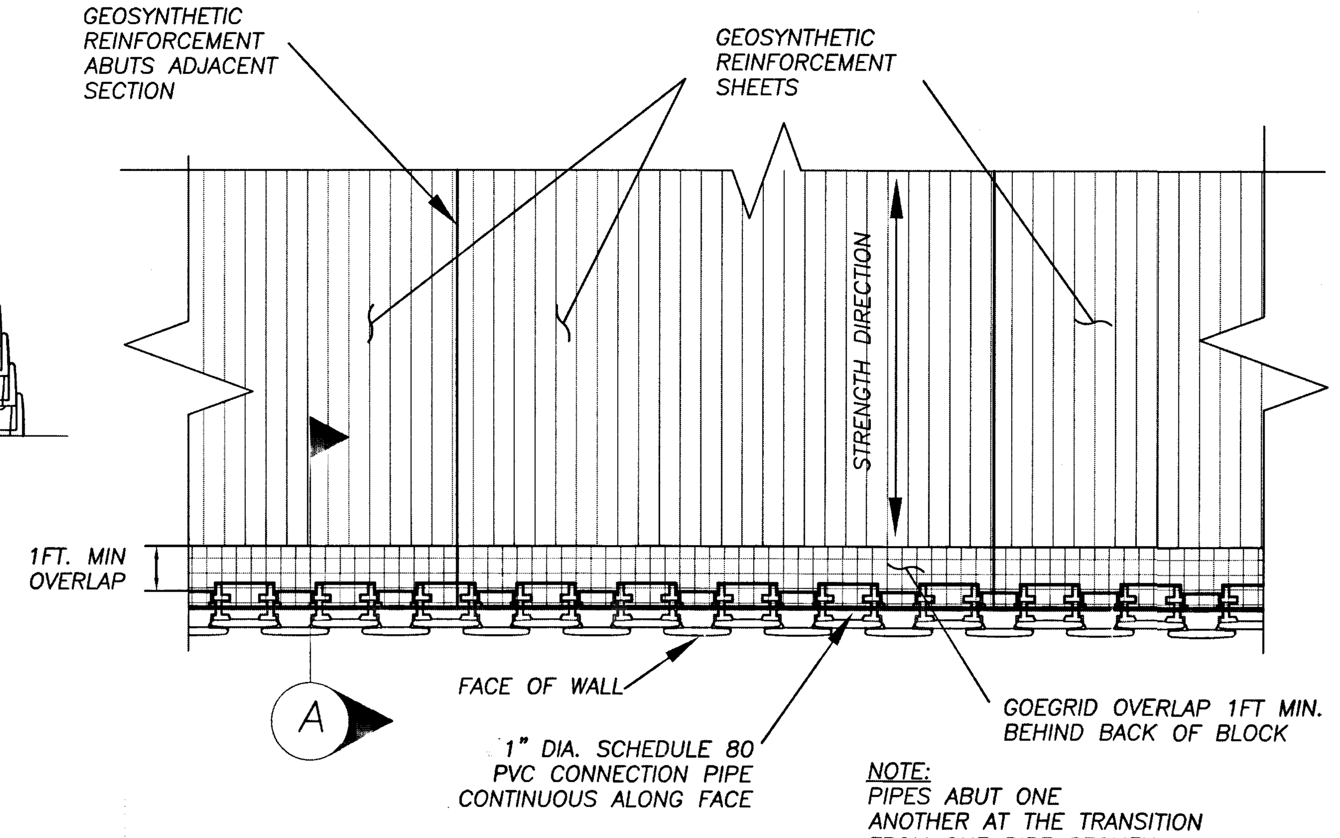


VERDURA 40 BLOCK DETAIL



SECTION A

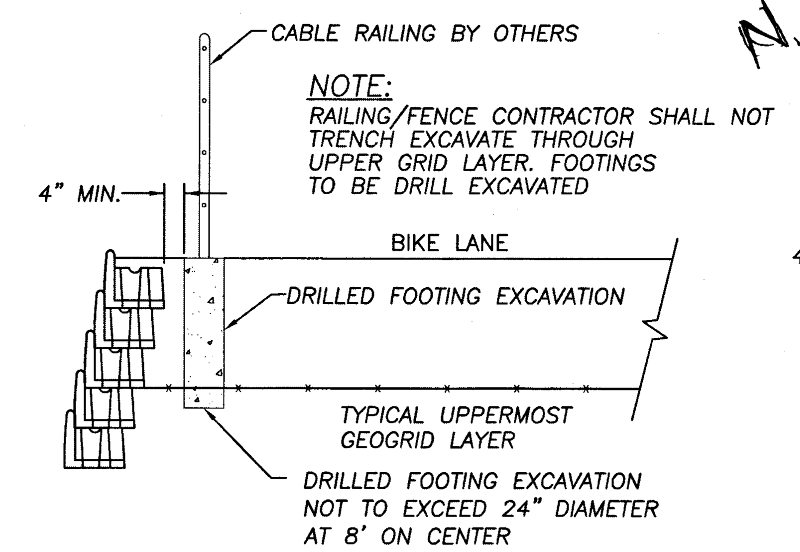
NOTE:
GEOSYNTHETIC REINFORCEMENT OVERLAP SHALL BE ON TOP.



NOTE:
PIPES ABUT ONE ANOTHER AT THE TRANSITION FROM ONE PIPE SEGMENT TO THE NEXT PIPE SEGMENT.

PLAN VIEW

GEOGRID CONNECTION DETAIL



NOTE:
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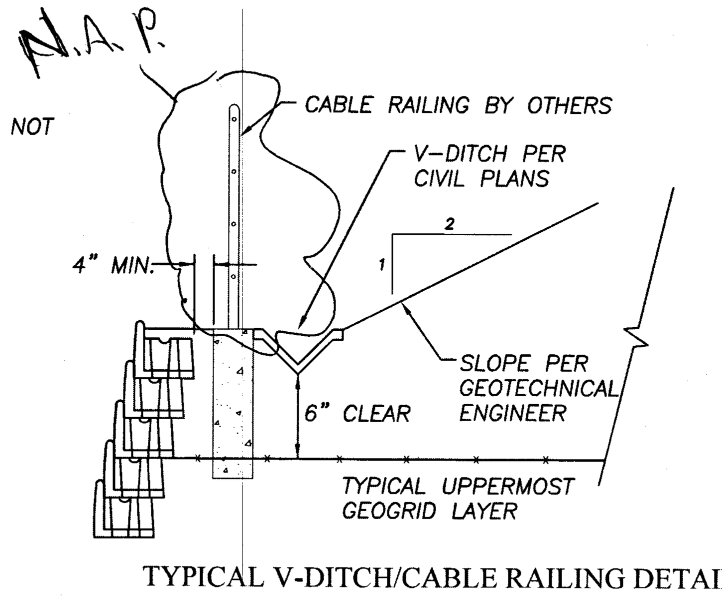
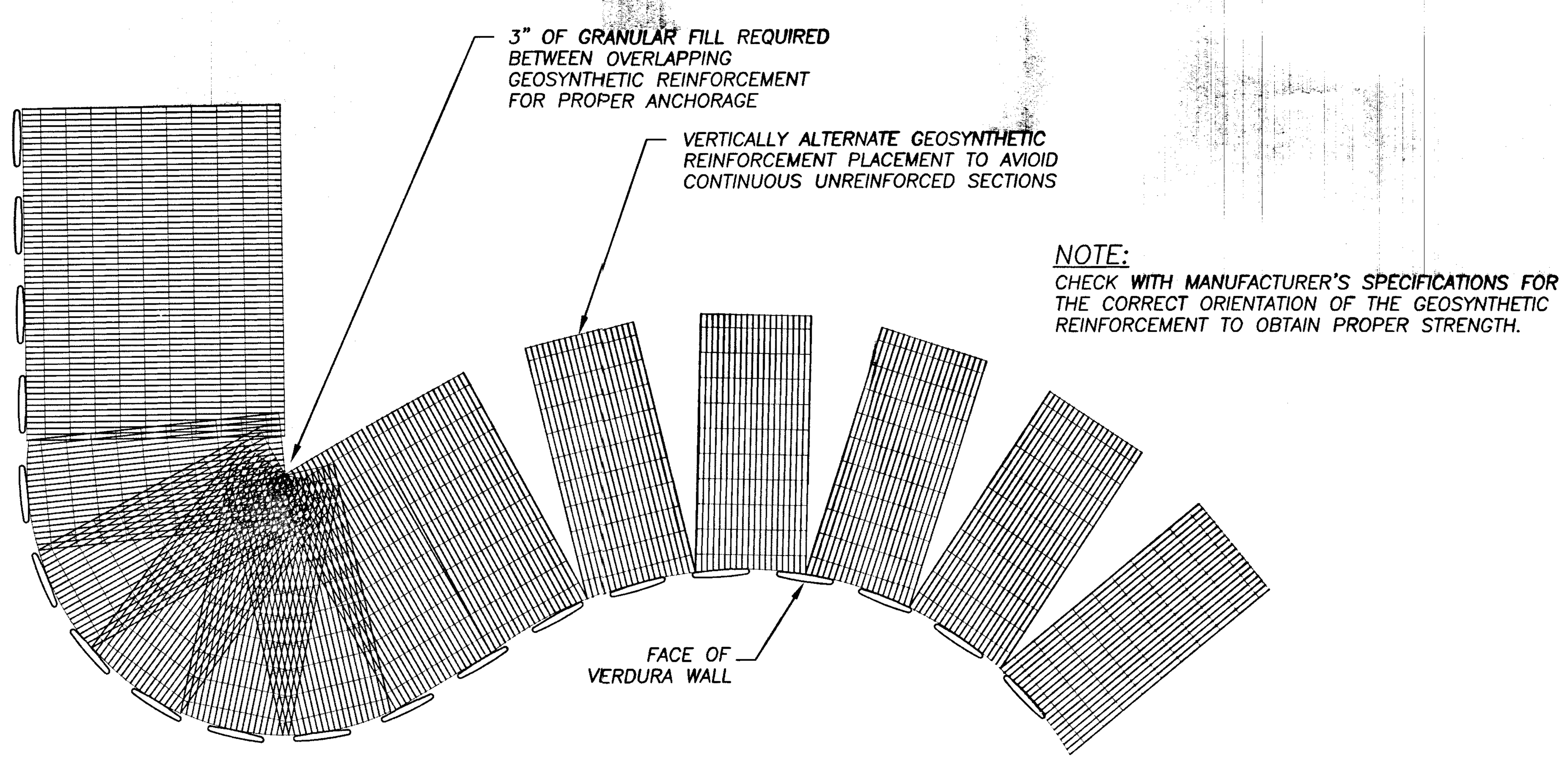
TYPICAL CABLE RAILING DETAIL

N.A.P.



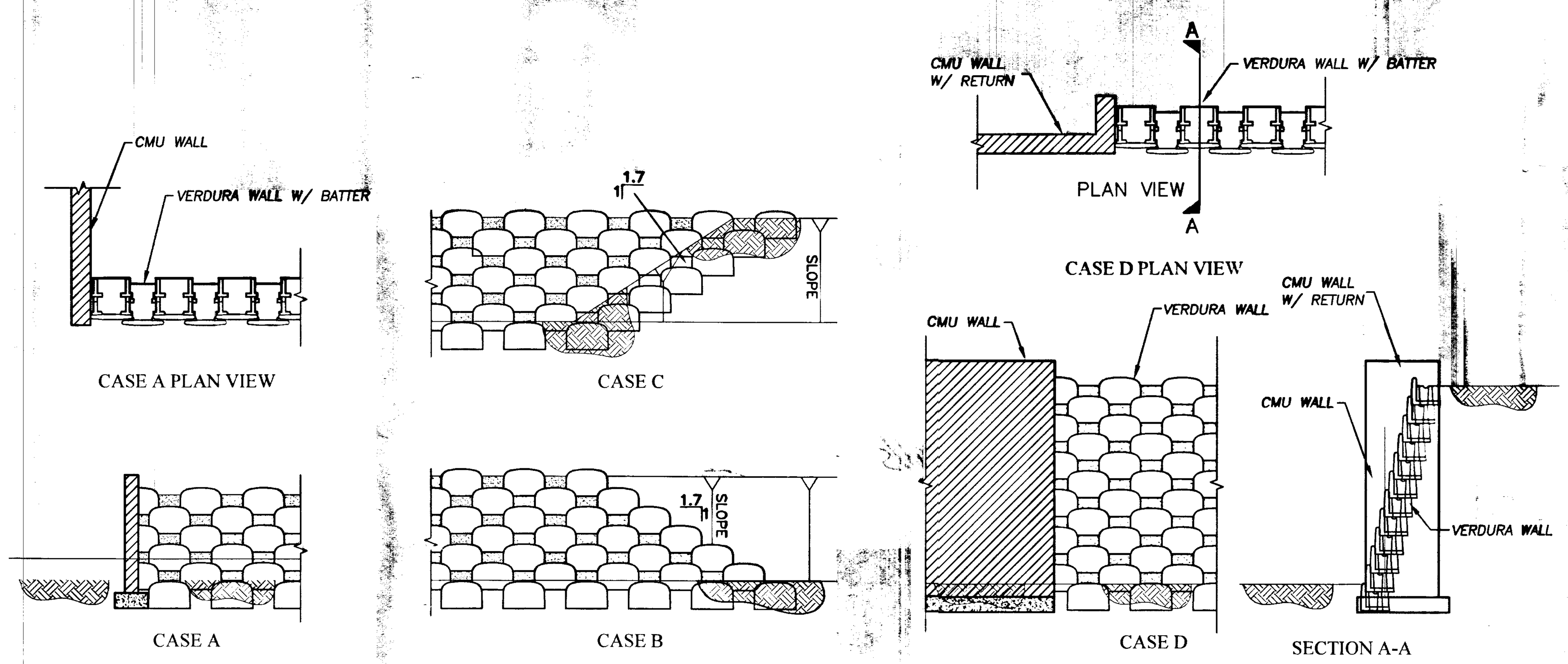
TYPICAL V-DITCH/CABLE RAILING DETAIL

TOP OF WALL DETAILS

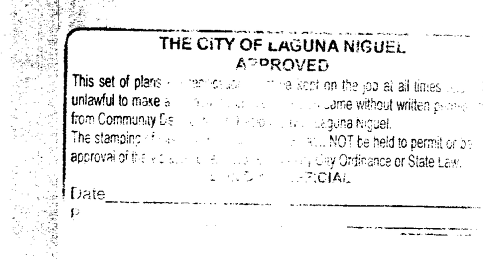


NOTE:
CHECK WITH MANUFACTURER'S SPECIFICATIONS FOR THE CORRECT ORIENTATION OF THE GEOSYNTHETIC REINFORCEMENT TO OBTAIN PROPER STRENGTH.

GEOGRID PLACEMENT ON CURVES



END OF WALL TRANSITION DETAILS



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PREPARED BY:
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REGISTERED PROFESSIONAL ENGINEER DAREN A. OSBORNE No. 64108 EXP. 12/31/14 CIVIL STATE OF CALIFORNIA

VERDURA SEGMENTAL WALL PLANS

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER
5376001

PLAN DATE: 06/20/2013

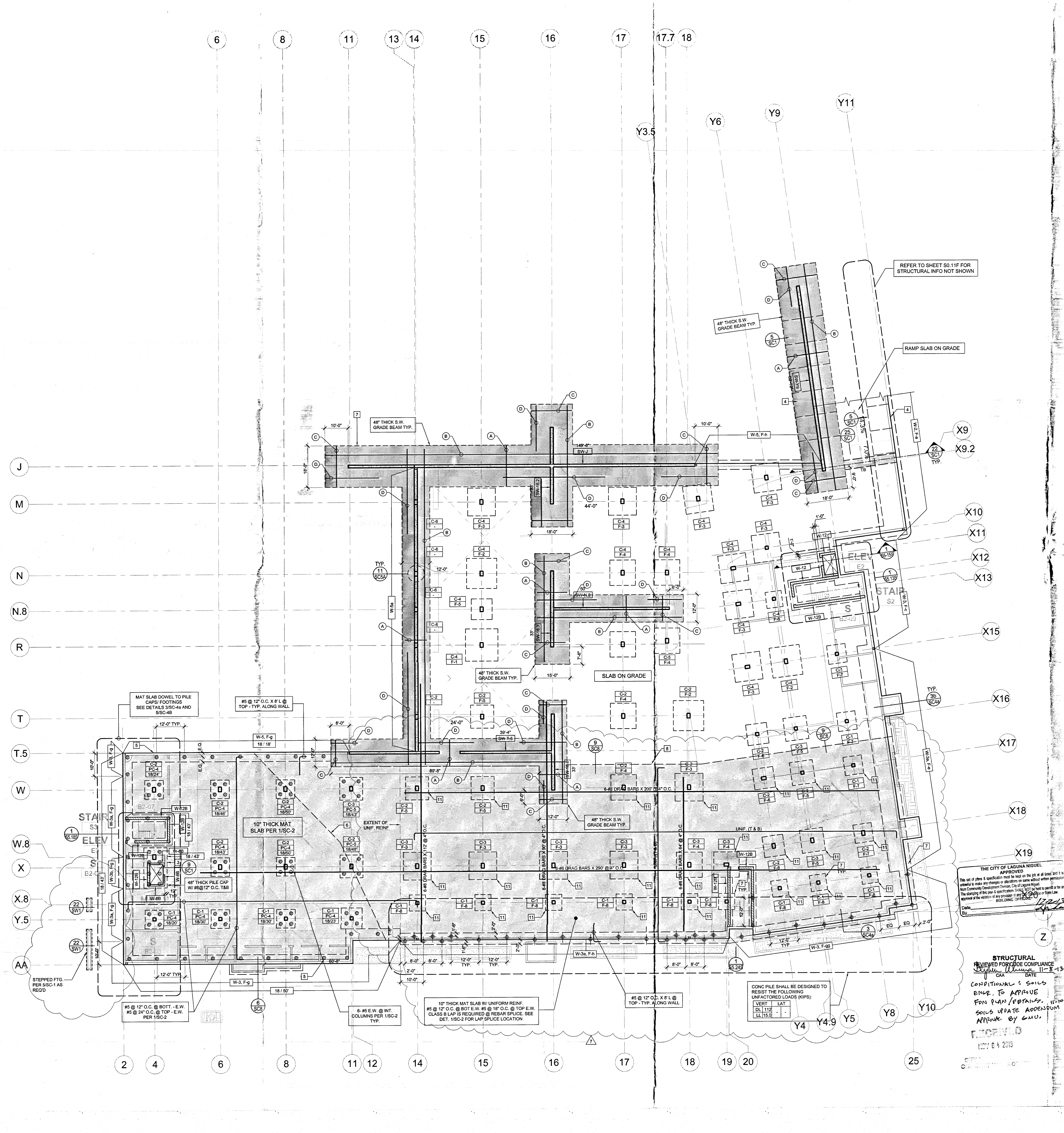
RECEIVED
JUN 25 2013
CITY OF
COMMUN

Crown - Walls - To GMU for Stru. & Geo

BLD

25891 CROWN VALLEY PKWY LN

B13-1237



FOUNDATION NOTES

1. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL FLOOR PLAN AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK. REFER TO ARCHITECTURAL PLANS & PLANS FROM OTHER DISCIPLINES FOR SLOPE AND TOP OF SLAB ELEVATIONS, UTILITY IMBEDS, TRENCHES, PIT & SURFACE VARIATIONS.
2. THE GENERAL CONDITIONS, SPECIFICATIONS, GENERAL NOTES ON SHEET SC-0, & GENERAL DETAILS SHOWN ON SC-* DWGS APPLY TO THE WORK OF THE FOUNDATION.
3. SUB-GRADE PREPARATIONS SHALL CONFORM TO THE REQUIREMENTS OF THE SOILS REPORT AND SHALL BE PERFORMED UNDER THE SUPERVISION OF THE SOILS ENGINEER.
4. FOOTING TRENCHES ARE TO BE EXAMINED AND CERTIFIED IN WRITING BY THE PROJECT SOIL/GEOLOGY ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
5. ALL STRUCTURAL IMBEDS, DOWELS & REINFORCEMENT MUST BE TIGHTLY SECURED IN PLACE & PROPERLY INSPECTED PRIOR TO PLACEMENT OF CONCRETE.
6. COLUMN CARRYING CONCENTRATED LOAD SHALL BE CENTERED @ ISOLATED FOOTING, U.N.O.
7. SEE SOILS REPORT FOR SUBGRADE, MOISTURE BARRIER, AND PARKING GARAGE SUBDRAIN REQUIREMENTS.
8. SEE SOILS REPORT, ARCH. DWGS & CIVIL ENG. DWGS FOR WATERPROOFING @ BACK OF RETAINING WALL & BOTTOM OF SLAB.
9. SEE SOILS REPORT FOR SUBGRADE PREPARATION & PAVEMENT REQUIREMENTS UNDER CONCRETE SLAB ON GRADE.
10. NON STRUCT. WALL IDENTIFIED BY ARCH. AS CMU WALL SHALL BE BUILT PER DETAILS SHOWN ON SHEET SC-4b, OTHERWISE SEE ARCH. DETAILS.
11. PROVIDE JAMB BARS PER DETAIL 8/SC-5a AT EACH END OF PERIMETER WALL WHERE WALL BREAK OCCURS.
12. PROVIDE 1/2" FULL HEIGHT VERTICAL JOINT BETWEEN SHEAR WALL AND NON SHEAR WALL (BEARING AND NON BEARING WALL) & BETWEEN CONCRETE WALL & CMU WALL.
13. REPLACE UNSUITABLE MATERIAL (ARTIFICIAL FILL) WITH STRUCTURAL FILL, APPROVED BY THE PROJECT SOILS/GEOTECHNICAL ENGINEER.
14. THE PERIMETER WALLS ARE NOT BE BACKFILLED UNTIL THE FLOOR SLABS ARE POURED & CURED.
15. REFER TO DETAIL 22/SC-8 FOR MAT SLAB CONSTRUCTION JOINT.
16. FOOTING/GRADE BEAM MUST BE FOUNDED ON BEDROCK OR CONCRETE PILE. EXTENT OF BEDROCK MUST BE FIELD VERIFIED.

LEGEND

C-1 — COLUMN NO. SEE SCHEDULE ON SHEET SC-3.
F-1 — FOOTING NO. SEE SCHEDULE ON SHEET SC-3 WHERE REQUIRED.
COLUMN FOOTING (CENTER OF FOOTING TO COINCIDE W/ CENTER OF COLUMN), U.N.O.
COLUMN
COLUMN GRID LINE
8" MIN(OR EQ)
FACE OF COLUMN ON AISLE SIDE
EQ. EQ.
COLUMN GRID LINE
WALL TYPE SEE SCHEDULE ON SHEET SC-4a.
W-1, F-a — FOOTING TYPE SEE SCHEDULE ON SHEET SC-4a.
SLAB ON GRADE — 5" CONC. SLAB ON GRADE W/ #4 @ 18" O.C. E.W. @ MID DEPTH OF SLAB.
RAMP SLAB ON GRADE — 5" CONC. SLAB ON GRADE W/ #4 @ 18" O.C. E.W. @ MID DEPTH OF SLAB.
CONT. CONC FOOTING. SEE SCHEDULE ON SHEET SC-4a.
SQUARE DRIVEN CONC. PILE DIM (IN.)
18 / XX — MIN CONC PILE EMBEDMENT INTO BEDROCK.
CONT. CONC FOOTING WITH DRIVEN CONC PILE. SEE DET 3/SC-4a.
PILE CAP
DRIVEN CONCRETE PILE
C-2 — COLUMN NUMBER. SEE SCHED. ON SHEET SC-3
PC-4 — PILE CAP TYPE. SEE SCHEDULE ON SHEET SC-3
18 / XX — MIN CONC PILE EMBEDMENT INTO BEDROCK.
SQUARE DRIVEN CONC. PILE DIM (IN.)
TB — FOOTING TIED BEAM PER 22 / SC-1
W - ## — WALL THICKNESS
INTERIOR BEARING WALL. SEE SCHEDULE ON SHEET SC-4b
INTERIOR NON BEARING WALL (CMU OR LIGHT GAUGE STEEL). REFER TO ARCH. PLAN FOR WALL TYPE. SEE FOUNDATION NOTE #10.
NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. FLOOR PLAN FOR WALLS NOT SHOWN.
WALL EXPANSION JOINT. SEE DETAIL ON SHEET SC-1.
CONCRETE SHEAR WALL GRADE BEAM PER 1/SC-5b
SW-A — MIN. LENGTH OF SHEAR WALL (WHERE SHOWN)
CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEET SC-5a, SC-5b, SC-5c

GRADE BEAM REINFORCEMENT *			
TYPE	TOP	BOTTTOM	REMARK
A	#7 @ 12" O.C.	#8 @ 6" O.C.	UNIFORM
B	#7 @ 12" O.C.	#8 @ 12" O.C.	UNIFORM
C	#7 @ 12" O.C.	#8 @ 6" O.C.	ADDED
D	#7 @ 6" O.C.	#8 @ 12" O.C.	ADDED
E	6- #4 @ 4" O.C.	TIED BARS	PER PLAN WHERE OCCURS

* SEE DETAIL ON SHEET SC-5b FOR ADDED REBAR LAYOUTS.

CONSTRUCTION KEY NOTES

1. EXTEND EMBED COL. REINF. FR. LEVEL ABV. TO FOUNDATION. SEE 11/SC-5a.
2. ADDED STIRRUPS BARS UNDER COLUMN SEE DETAIL 5 / SC-8.
3. DEEPEN FOOTING TO AVOID FTG. SURCHARGE TO BELOW GRADE INSTALLATION PER DET. 2/SC-3
4. STEPPED FOOTING PER DET. 5/SC-1.
5. PILE PER SHEET SC-3
6. ARTIFICIAL FILL BOUNDARY TO BE VERIFIED IN FIELD
7. FTG. ARE FOUNDED ON BED ROCK
8. EXTENT OF MAT SLAB AREA. MAT SLAB MUST BE FOUNDED ON BEDROCK AT EXTENT LINE. ADJUSTMENT OF MAT SLAB EXTENT MAY BE REQUIRED UPON FIELD INVESTIGATION FOR BEDROCK.
9. SEE DETAIL 1/SC-3 FOR PIER INFORMATION.
10. MODIFY FTG. AND REINF. AS REQ'D
11. INSTALL DOWELS FROM MAT SLAB TO SHADED FOOTINGS PER DET 29/SC-8
12. SOIL NAIL WALL BY OTHER

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER — STRUCTURAL — STATE OF CALIFORNIA

REVISION	DATE
1 1ST PCC	02-04-2013
1 ASI #5 -STRUCTURAL MODIFICATIONS	10-29-2013

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
GARAGE LEVEL B2 FOUNDATION PLAN

FOR CONSTRUCTION

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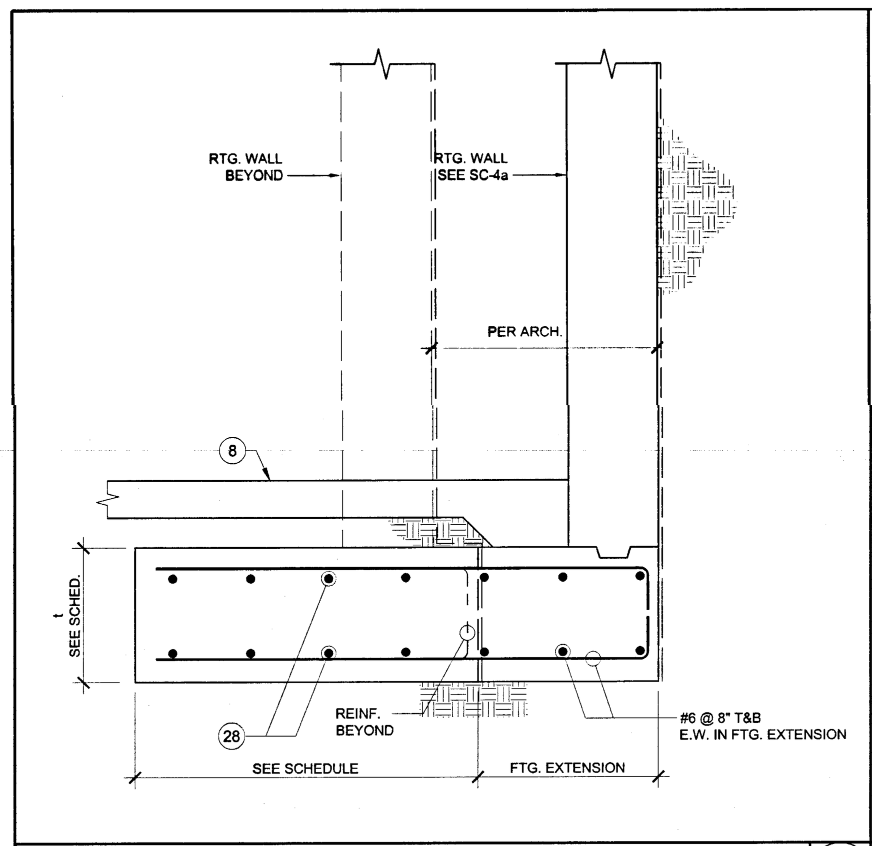
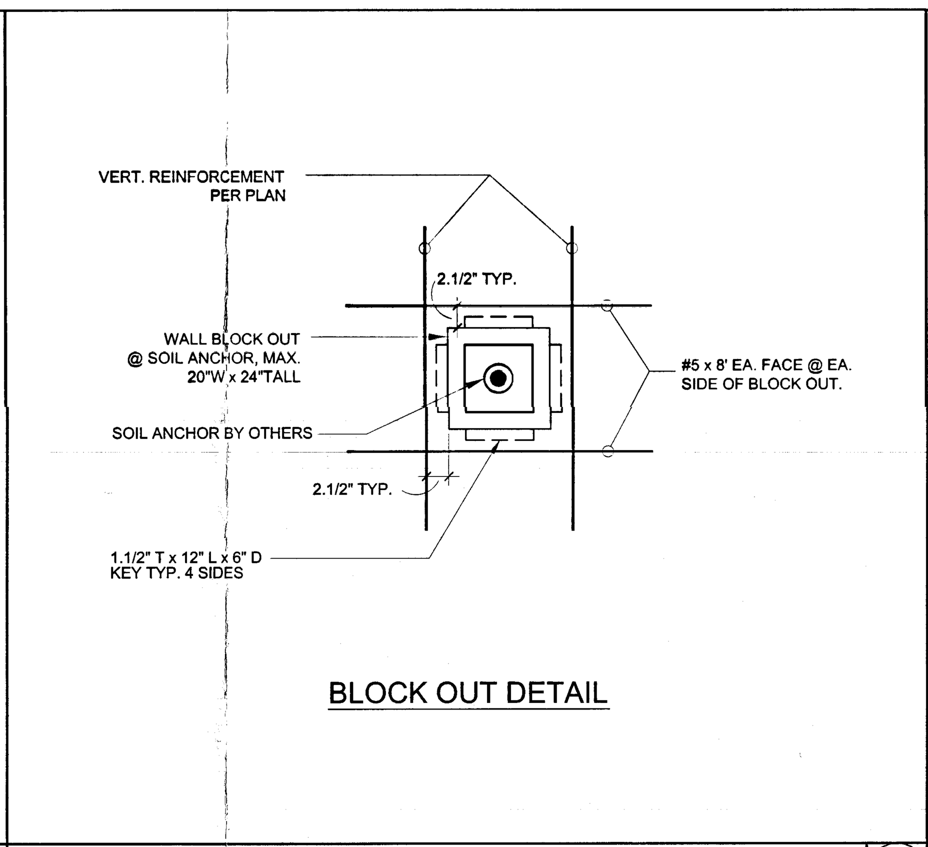
S0.10

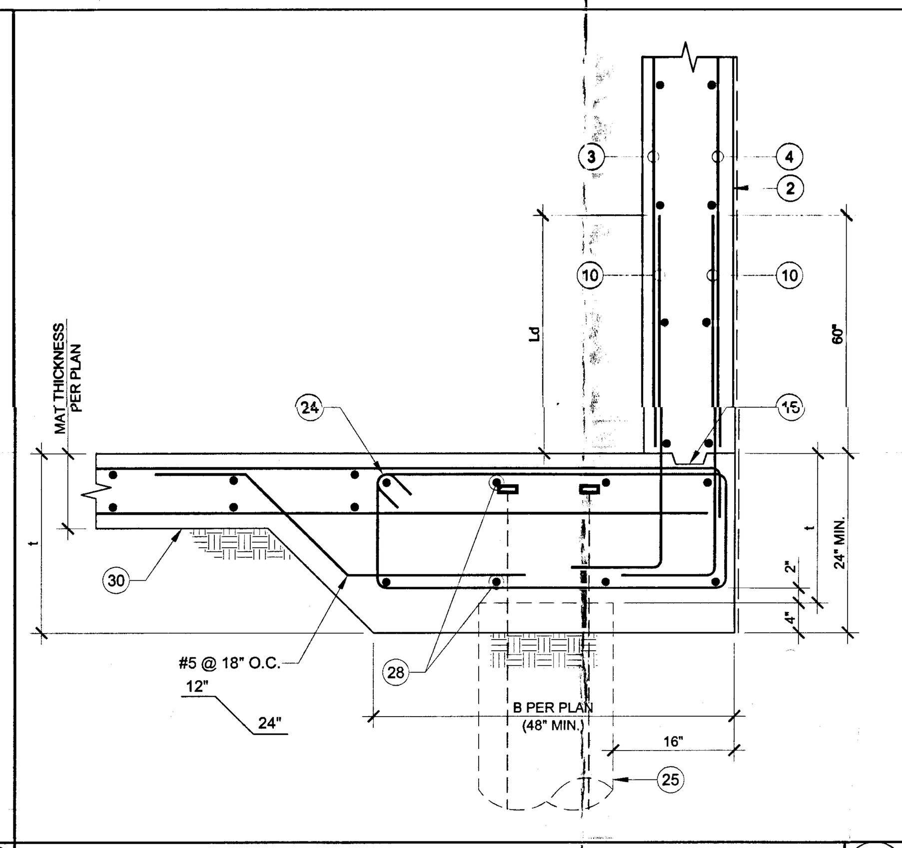
11-2730
JOB NUMBER
1/16" = 1'-0"
SCALE
ISSUED AS
4/15/2013
DATE



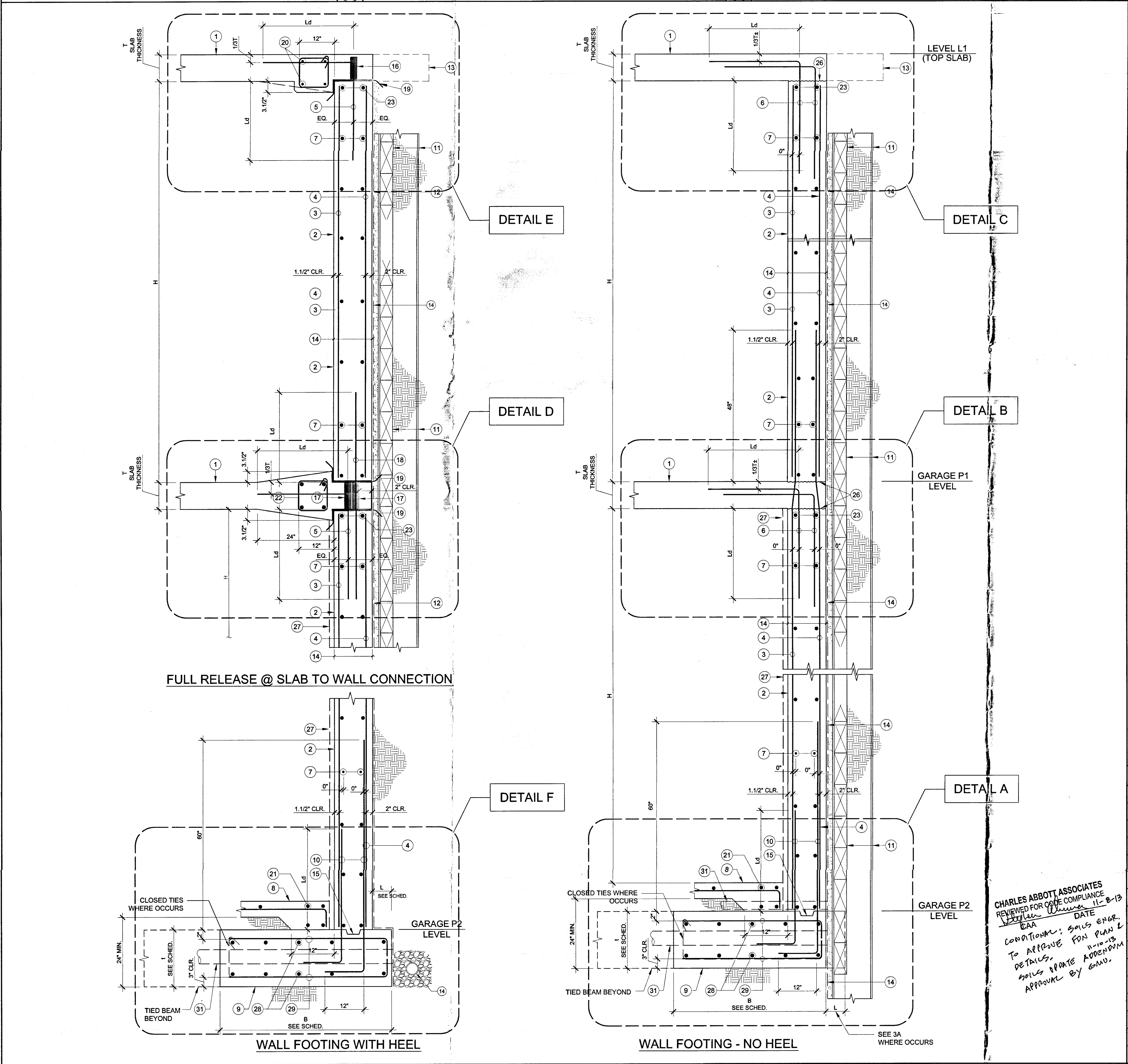
WALL FOOTING AT SHAFT 5



BLOCK OUT DETAIL 4



PERIMETER AT MAT SLAB 3



CHARLES ABBOTT ASSOCIATES
REVIEWED FOR CODE COMPLIANCE
[signature] 11-8-13
CAA DATE
CONDITIONAL: SOILS ENGR. TO APPROVE FDN PLAN & DETAILS. 11-10-13 SOILS UPDATE ADDENDUM APPROVAL BY GMU.

TYPICAL PERIMETER WALL SECTION DETAILS 2

PERIMETER WALL SCHEDULE (*)

		W-5a	W-5	W-4	W-3b	W-3a	W-3	W-2	W-1	KEYNOTE	DESIGNATION	WALL SEGMENT
		G	F	E	C	C	D	A	B		SECTION	
								12"	12"	14	THICKNESS t (IN.)	3
								SHOTCRETE	SHOTCRETE		TYPE	
								#5 @ 12" O.C.	#5 @ 8" O.C.	3	VERTICAL REINFORCEMENT @ INSIDE FACE	
								#5 @ 12" O.C.	#5 @ 8" O.C.	4	VERTICAL REINFORCEMENT @ OUTSIDE (EARTH) FACE	
								#5 @ 12" O.C.	#5 @ 8" O.C.	7	HORIZONTAL REINFORCEMENT @ EACH FACE	
								-	#5 @ 16" O.C.	5	DOWEL TO SLAB @ FULL RELEASE JOINT	
									-	6	DOWEL TO SLAB @ NO RELEASE JOINT	
								#4 @ 16" O.C.	#4 @ 16" O.C.	18	DOWEL TO WALL ABOVE & BELOW	
								10'-0"	10'-0"		MAXIMUM HEIGHT H (FT.)	
								12"	12"	14	THICKNESS t (IN.)	2
								SHOTCRETE	SHOTCRETE		TYPE	
								#6 @ 12" O.C.	#6 @ 8" O.C.	3	VERTICAL REINFORCEMENT @ INSIDE FACE	
								#6 @ 12" O.C.	#6 @ 8" O.C.	4	VERTICAL REINFORCEMENT @ OUTSIDE (EARTH) FACE	
								#6 @ 12" O.C.	#6 @ 8" O.C.	7	HORIZONTAL REINFORCEMENT @ EACH FACE	
								-	#5 @ 12" O.C.	5	DOWEL TO SLAB @ FULL RELEASE JOINT	
									-	6	DOWEL TO SLAB @ NO RELEASE JOINT	
								#4 @ 16" O.C.	#4 @ 16" O.C.	18	DOWEL TO WALL ABOVE & BELOW	
								12'-0"	12'-0"		MAXIMUM HEIGHT H (FT.)	
		12"	12"	12"	14.5"	12"	12"	12"	16"	14	THICKNESS t (IN.)	1
		SHOTCRETE	SHOTCRETE	SHOTCRETE	SHOTCRETE	SHOTCRETE	SHOTCRETE	SHOTCRETE	SHOTCRETE		TYPE	
		#6 @ 10" O.C.	#6 @ 12" O.C.	#6 @ 12" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C. (**)	#6 @ 8" O.C.	#7 @ 8" O.C.	3	VERTICAL REINFORCEMENT @ INSIDE FACE	
		#6 @ 10" O.C.	#6 @ 12" O.C.	#6 @ 10" O.C.	#6 @ 10" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#6 @ 8" O.C.	#7 @ 8" O.C.	4	VERTICAL REINFORCEMENT @ OUTSIDE (EARTH) FACE	
		#6 @ 10" O.C.	#6 @ 12" O.C.	#6 @ 12" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#6 @ 8" O.C.	#6 @ 8" O.C.	7	HORIZONTAL REINFORCEMENT @ EACH FACE	
		-	-	-	-	-	#5 @ 12" O.C.	-	#5 @ 16" O.C.	5	DOWEL TO SLAB @ FULL RELEASE JOINT	
		#6 @ 8" O.C.	#6 @ 12" O.C.	#7 @ 8" O.C.	-	#6 @ 8" O.C.	-		-	6	DOWEL TO SLAB @ NO RELEASE JOINT	
		#4 @ 16" O.C.	#4 @ 16" O.C.	#4 @ 16" O.C.	#4 @ 16" O.C.	#4 @ 16" O.C.	#4 @ 16" O.C.	#4 @ 16" O.C.	#4 @ 16" O.C.	18	DOWEL TO WALL ABOVE & BELOW	
		10'-0"	10'-0"	12'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"		MAXIMUM HEIGHT H (FT.)	

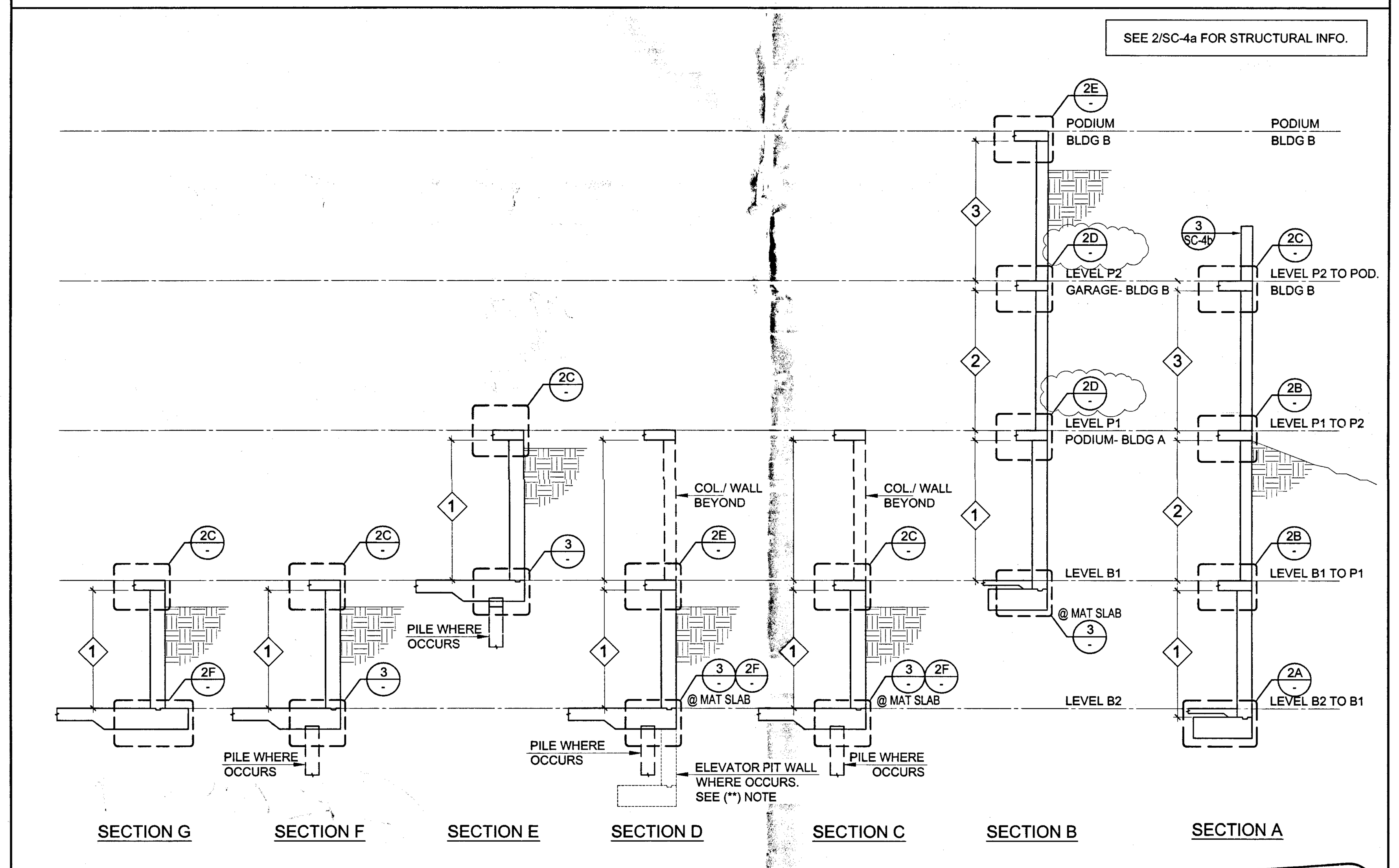
FOOTING SCHEDULE

	F-gg	F-h	TB	F-g	F-e	F-d	F-c	F-b	F-a	KEYNOTE	DESIGNATION	FOUNDATION
	48	60	6'-0"	48	114	48	66	78	114	B	WIDTH B (IN.)	
	24	24	27	24	24	18	24	24	27	t	THICKNESS t (IN.)	
	CENTER FOOTING ON WALL	24	-	-	24	0	24	0	48	L	HEEL LENGTH (IN.) (SEE DET 2F)	
	#5 @ 8" O.C. CLOSED TIES	#5 @ 8" O.C. CLOSED TIES	SEE 22/SC-1	#5 @ 8" O.C. CLOSED TIES	#6 @ 8" O.C.	#6 @ 12" T&B	#5 @ 10" T&B	#6 @ 12" T&B	#6 @ 10" T&B	29	TRANSVERSE REINFORCEMENT	
	6-#6 @ TOP & BOT.	#7 @ 8" T&B	12-#8 TOP & 10-#8 @ BOT.	6-#6 @ TOP & BOT.	#7 @ 8" T&B	#6 @ 12" T&B	#5 @ 10" T&B	#6 @ 12" T&B	#8 @ 8" T&B	28	LONGITUDINAL REINFORCEMENT	

7

NOTE:
(*) SEE SC-0 SPECIFICATIONS - 'SHOTCRETE'
(**) INSTALL #6 @ 12" O.C. VERT @ EARTH SIDE WHERE ELEVATOR PIT WALL OCCURS

PERIMETER WALL SECTIONS



KEYNOTES

1	STRUCTURAL CONCRETE DECK PER PLAN.	17	2"Ø x FULL SLAB DEPTH RUBATEX WRAP AROUND DOWEL.
2	CONCRETE RETAINING WALL PER PLAN.	18	DOWEL TO WALL PER SCHEDULE.
3	VERTICAL REINFORCEMENT @ INSIDE FACE OF WALL PER SCHED	19	2 LAYERS OF 10 MIL PLASTIC SHEETS O/ SMOOTHLY FINISHED CONCRETE. (OMIT @ NO RELEASE JOINT) REMOVE EXPO PORTION OF PLASTIC SHEET & SEAL ALL VISIBLE CRACKS & GAPS W/ APPROVED FLEXIBLE SEALANT @ JUNCTURE OF WALL & SLAB 90 DAYS AFTER CONCRETE IS POURED.
4	VERTICAL REINFORCEMENT @ OUTSIDE FACE OF WALL PER SCHED.		
5	DOWEL TO SLAB AT FULL RELEASE JOINT PER SCHEDULE.	20	IN LIEU OF KEY SHAPED AS SHOWN SLAB MAY BE SLOPED @ TOP & BOTTOM W/ A SLOPE OF 3.5" V : 36" H (SHOWN DASHED)
6	DOWEL @ NO-RELEASE JOINT PER SCHEDULE.	21	2-#5 T&B CONTINUOUS.
7	HORIZONTAL REINFORCEMENT @ EACH FACE OF WALL PER SCHED.	22	2-#5 T&B W/ #3 TIES @ 12" O.C.
8	SLAB ON GRADE PER PLAN.	23	2-#6 MINIMUM CONT.
9	CONTINUOUS CONCRETE FOOTING PER SCHED.	24	CLOSED TIES PER WALL SCHEDULE
10	DOWEL FROM WALL TO FOOTING. (MATCH VERTICAL REINFORCEMENT OF WALL)	25	CONCRETE PILE DESIGNED BY OTHERS. SEE PLAN FOR MIN SIZE AND REQ'D EMBEDMENT LENGTH.
11	SHORING BY OTHERS.	26	ROUGHEN SURFACE TO 1/4" AMPLITUDE.
12	WATER & MOISTURE PROOFING BY OTHERS; SEE ARCHITECT DRAWINGS FOR REQUIREMENTS.	27	THICKEN RETAINING WALL ON INSIDE FACE
13	CANT. STRUCT. SLAB FOR PLANTER WALL WHERE OCCURS.	28	FOOTING LONGIT. REINF. PER SCHEDULE.
14	DRAINAGE MAT BY OTHERS.	29	FOOTING TRANSVERE REINF. SEE SCHEDULE.
15	2x6 CONTINUOUS BEVELED KEY.	30	MAT SLAB PER PLAN
16	2"Øx12" LONG RUBATEX WRAP AROUND DOWEL.	31	DRAINAGE PIPE (4" Φ MAX.) IN WALL/ FTG WHERE OCCURS (PLACE PIPE WITHIN MIDDLE THIRD OF SLAB/ FTG THICKNESS).

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specification must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from Community Development Division, City of Laguna Niguel. The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date
By

WALL SCHEDULE, SECTIONS, & DETAIL KEYNOTES 1

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REVISION	DATE
1ST PCC	02-04-2013
7 ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
STRUCTURAL DETAILS

FOR CONSTRUCTION

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SC-4a

11-2730
JOB NUMBER
NONE
SCALE
ISSUED AS
4/15/2013
DATE

500
349.56

849.56

City
CROWN

OK
To : Planning

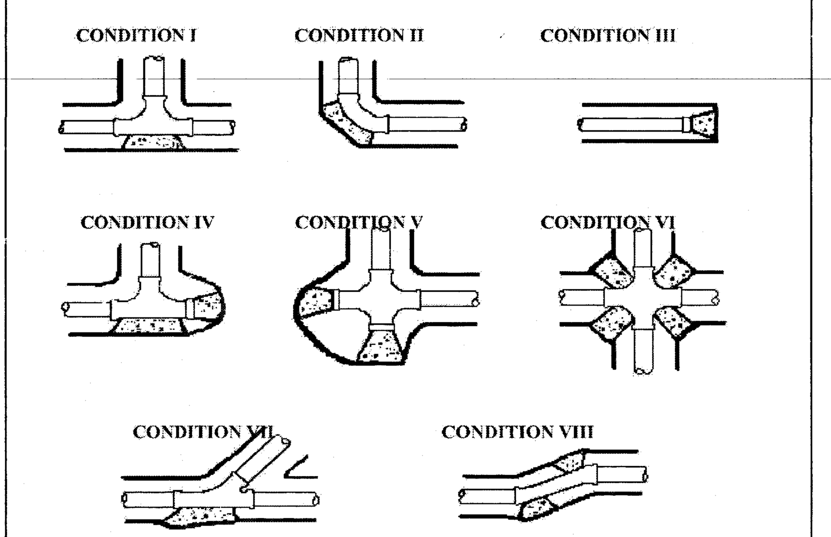
11.13.13 - Larry No.
11-14 Called emu Review Not Done - Review Needed

BLD

25891 CROWN VALLEY PKWY LN

B13-1826
REVISION 1

ORANGE COUNTY FIRE AUTHORITY
NOTES FOR THRUST BLOCK RESTRAINTS



SEE SHEET #2 FOR OCFA UNDERGROUND NOTES

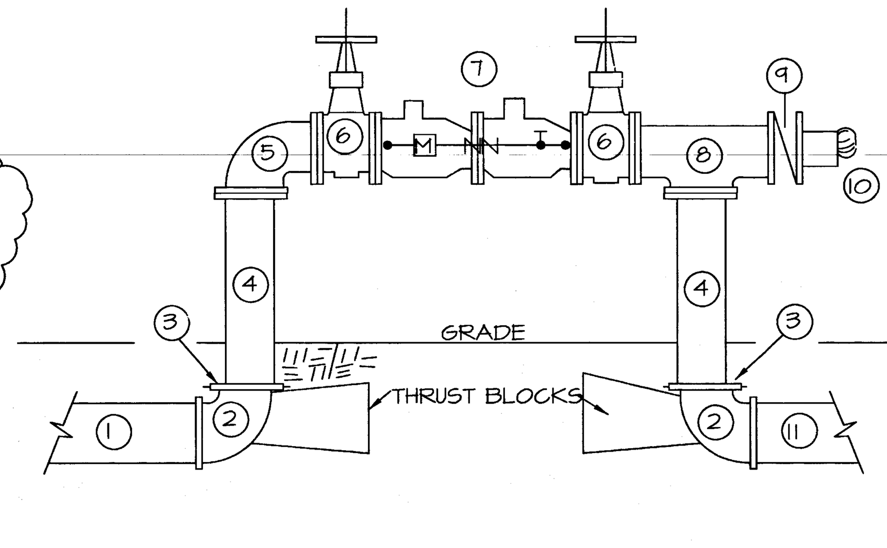
THRUST BLOCK BEARING AREA IN SQUARE FEET

Pipe Size	CONDITION I	II	III	IV	V	VI	VII	VIII
<6"	2.0	2.9	2.0	2@ 2.0	2@ 2.0	4@ 1.6	2.0	2@ 1.6
6"	4.3	4.0	4.3	2@ 4.3	2@ 4.3	4@ 3.3	4.3	2@ 3.3
8"	7.4	10.6	7.4	2@ 7.4	2@ 7.4	4@ 5.7	7.4	2@ 5.7
10"	12.1	17.1	12.1	2@ 12.1	2@ 12.1	4@ 9.3	12.1	2@ 9.3
12"	17.2	24.1	17.2	2@ 17.2	2@ 17.2	4@ 13.2	17.2	2@ 13.2

NOTES

1. Thrust block areas based on 225 PSI and 2,000 PSF soil pressure with 2 ½ feet of cover minimum.
2. Thrust block bearing faces shall be placed against undisturbed soil, approved compacted backfill, or Class 100-E-100 slurry.
3. Thrust blocks shall be Class 560-C-3250 concrete, unless specified otherwise.
4. To facilitate future removal of thrust blocks and line extension use cardboard separators between blocks, if needed.

ALL VALVES CONTROLLING THE WATER SUPPLY FOR THE FIRE SPRINKLER AND STANDPIPE SYSTEMS, WILL BE ELECTRICALLY SUPERVISED.



DOUBLE DETECTOR CHECK ASSEMBLY
NO SCALE

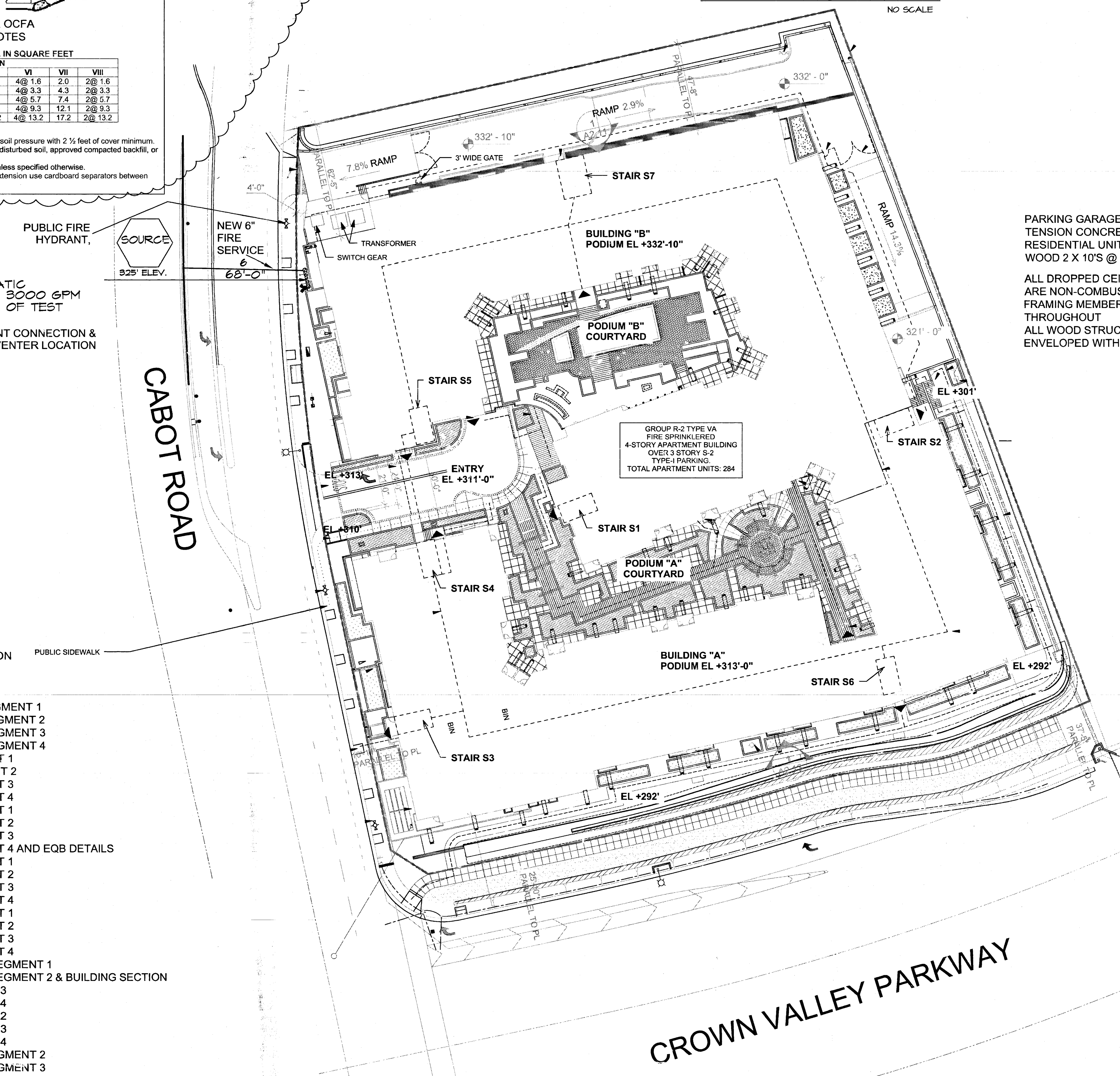
DOUBLE CHECK ASSEMBLY DEVICES SCHEDULE

1. INCOMING 6" PIPING FROM MAIN.
2. MECHANICAL JOINT ELBOW.
3. 6" LOCKING RETAINING GLAND.
4. 6" DUCTILE IRON PIPE.
5. 6" FLANGE 90 DEGREE ELBOW.
6. 6" O. S. & Y. CONTROL VALVE WITH TAMPER SWITCHES
7. 6" DOUBLE CHECK DETECTOR CHECK. AMES MODEL 3000 SS
8. 6 X 6 X 6 FLANGE TEE.
9. 6" WAFER CHECK VALVE.
10. 2 1/2 X 2 1/2 X 2 1/2 X 2 1/2 X 6 FIRE DEPARTMENT CONNECTION
11. PIPING TO BUILDING

LEGEND	QUANTITY
SPRINKLERS OF SAME SPECIFICATIONS AND DIFFERENT MANUFACTURER MAY BE SUBSTITUTED	
TYCO SERIES TY-FRB CHROME PENDENT, 1/2", K=5.6, 155 DEGREE S.I.N. TY3231	656
TYCO SERIES TY-B BRASS UPRIGHT, 1/2", K=5.6, 155 DEGREE S.I.N. TY3151	189
TYCO SERIES EC-11 EXTENDED COVERAGE UPRIGHT, 3/4", K=11.2, 155 DEGREE TY5137	1005
TYCO MODEL LFII, RESIDENTIAL PENDENT K=4.9, 155 DEGREE S.I.N. TY2234 175 DEGREE AT EXTERIOR BALCONIES AND LAUNDRY ROOMS	3052
TYCO MODEL LFII, RESIDENTIAL SIDEWALL K=4.2, 155 DEGREE S.I.N. TY1334	344
TYCO SERIES TY-L BRASS SIDEWALL, 1/2", K=5.6, 200 DEGREE TY3311	3

NEW UNDERGROUND BY OTHERS
EXISTING UNDERGROUND PIPING
CPVC PIPING MAIN IN CORRIDOR
STEEL PIPING UNDER STAIR IN RESIDENTIAL UNIT
RISER NIPPLE LOCATION
HANGER LOCATION
HANGER TO RESTRAIN AGAINST EXCESSIVE MOVEMENT
FLEXIBLE GROOVED COUPLING
2 WAY SWAY BRACE TOLCO FIGURE 1000 AND FIGURE 910 1" OR 1 1/4"
4 WAY SWAY BRACE 2) TOLCO FIGURE 1000 AND 2) FIGURE 910 1" OR 1 1/4"
HYDRAULIC REFERENCE NODE

5,249 TOTAL SPRINKLERS



PARKING GARAGE DECKS ARE POST TENSION CONCRETE SLAB
RESIDENTIAL UNITS ARE FRAMED WITH WOOD 2 X 10'S @ 16" O.C. TYPICAL

ALL DROPPED CEILING ATTIC SPACES ARE NON-COMBUSTIBLE, METAL FRAMING MEMBERS ARE USED THROUGHOUT
ALL WOOD STRUCTURAL FRAMING IS ENVELOPED WITH DRYWALL

GENERAL NOTES

1. INSTALL COMPLETE AUTOMATIC FIRE SPRINKLER PROTECTION THROUGHOUT THE NEW 4 STORY RESIDENTIAL BUILDINGS AND THE FOUR LEVELS OF PARKING GARAGE AS SHOWN. SYSTEMS TO INCLUDE A MANUAL WET STANDPIPE SYSTEM UTILIZING A COMBINATION RISER TO FEED FIRE SPRINKLERS AND FLOOR CONTROL ASSEMBLIES. ONLY LISTED MATERIALS AND EQUIPMENT TO BE USED.
2. PARKING AND STORAGE AREAS TO BE DESIGNED TO AN ORDINARY HAZARD GROUP #1 OCCUPANCY WITH A MAXIMUM SPACING OF 130 SQUARE FEET PER SPRINKLER UNDER SMOOTH CEILING CONSTRUCTION FOR STANDARD COVERAGE SPRINKLERS AND 16' X 16' MAXIMUM SPACING FOR EXTENDED COVERAGE ORDINARY HAZARD SPRINKLERS. 9' BETWEEN EXTENDED COVERAGE SPRINKLERS IS THE MINMUM ALLAOWABLE WITH 8' THE MINMUM BETWEEN EXTENDED COVERAGE UPRIGHTS. PARKING LEVELS ARE HYDRAULICALLY CALCULATED TO A DESIGN DENSITY OF .15 GPM PER SQUARE FOOT OVER THE MOST REMOTE 1500 SQUARE FOOT AREA.
3. RESIDENTIAL AREAS ARE DESIGNED TO A LIGHT HAZARD OCCUPANCY WITH A DESIGN DENSITY OF .10 GPM PER SQUARE FOOT OVER THE MOST DEMANDING FOUR RESIDENTIAL SPRINKLERS. RESIDENTIAL PENDENT MAXIMUM SPACING IS 180 SQUARE FEET PER SPRINKLER WITH A MAXIMUM DISTANCE BETWEEN SPRINKLERS OF 18' AND A MAXIMUM FROM WALLS OF 9'. RESIDENTIAL SIDEWALL MAXIMUM SPACING IS 180 SQUARE FEET PER SPRINKLER WITH A MAXIMUM DISTANCE THROW OF 16', MAXIMUM WIDTH OF 8' TO A WALL OR 16' TO A SPRINKLER. 8' IS THE MINIMUM SPACING OF RESIDENTIAL SPRINKLERS.
4. ALL ARMOVERS GREATER THAN 2'-0" SHALL BE PROVIDED WITH A HANGER.
5. ALL UNNOTED ARMOVERS ARE 3/4 X 0-4
6. DEFLECTOR DISTANCE PER CODE: 1"-12" BELOW UNOBSTRUCTED CONSTRUCTION, AND 1"-6" BELOW STRUCTURAL MEMBERS TO A MAXIMUM OF 22" IN OBSTRUCTED CONSTRUCTION.
7. HANGERS TO BE PER N.F.P.A. #13. THE LAST HANGER ON A BRANCHLINE SHALL BE THE TYPE WHICH PREVENTS MOVEMENT.
8. EARTHQUAKE SWAY BRACING TO BE PER N.F.P.A. #13.
9. ALL NEW EXPOSED PIPING THROUGHOUT THE PARKING LEVELS TO BE DYNA THREAD STEEL FOR 1"-1 1/4" SCREWED PIPING AND JOINED WITH CAST OR DUCTILE IRON SCREWED FITTINGS. STANDPIPES, 4" STANDPIPE BULK RUNES, 3" RESIDENTIAL PIPING AND PARKING GARAGE PIPING TO BE DYNA FLOW STEEL FOR 1 1/4" - 4" AND JOINED WITH GROOVED FITTINGS AND COUPLINGS. 6" PIPING TO BE SCHEDULE 10 STEEL AND JOINED WITH GROOVED FITTINGS AND COUPLINGS. ALL CONCEALED PIPING 3/4" - 2" IN THE RESIDENTIAL AREAS TO BE CPVC PIPING UTILIZING SLIP/GLUED FITTINGS.
10. ALL WORK TO BE IN CONFORMANCE WITH N.F.P.A. #13 2010 EDITION AND ORANGE COUNTY CODES
12. ALL LIGHTS ARE RECESSED U.N.O
13. WHERE CORROSIVE CONDITIONS EXIST OR PIPING IS EXPOSED TO THE WEATHER, A CORROSION-RESISTANT COATINGS SHALL BE APPLIED TO ALL EXPOSED PIPING.
14ALL LINE PIPING DIMENSIONS ARE CUT PIPE (TAKE-OUTS HAVE BEEN PERFORMED). ALL MAIN PIPING DIMENSIONS ARE CENTER TO END OR CENTER TO CENTER (FITTING TAKEOUTS HAVE BEEN PERFORMED, DIMENSIONS TO OUTLETS ARE CENTER).
15. ALL PIPING AND ATTACHED APPURTENANCES SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE HYDROSTATICALLY TESTED AT 200 PSI OR 50 PSI IN EXCESS OF THE SYSTEM WORKING PRESSURE, WHICHEVER IS GREATER, AND SHALL MAINTAIN THAT PRESSURE WITHOUT LOSS FOR 2 HOURS.

City Set

B13-2462 Crown F/S S/R 188803

SHEET INDEX

SEE SHEET #2 FOR
ORANGE COUNTY FIRE AUTHORITY
NOTES FOR NEW NFPA 13
SPRINKLER SYSTEMS

ORANGE COUNTY FIRE AUTHORITY
REVIEWED by Planning & Development
Approval subject to field inspection and required test, notations hereon, conditions in correspondence and conformance with applicable regulations. The stamping of these plans shall not be held to permit or approve the violation of any law.
OCFA Service Request # 188803
Fee Codes: PR425, PR460, PR470
By: [signature] Date: 5-30-13
(Employee # 8184)
ONLY STAMPED SHEETS REVIEWED BY ORANGE COUNTY FIRE AUTHORITY
Call 48 hrs. in advance to schedule inspections:
714-573-6150 As Noted

A/O
Address Changed
27960 CABOT RD
Mill Creek/Crown ~~Pts~~
B12-2453

LICENSED FIRE PROTECTION CONTRACTOR
BROWNING FIRE PROTECTION INC.
CLASSIFICATION C-16
LICENSE NO. 619731
TORRANCE
STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:
SCALE: 1" = 30'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: PLOT PLAN

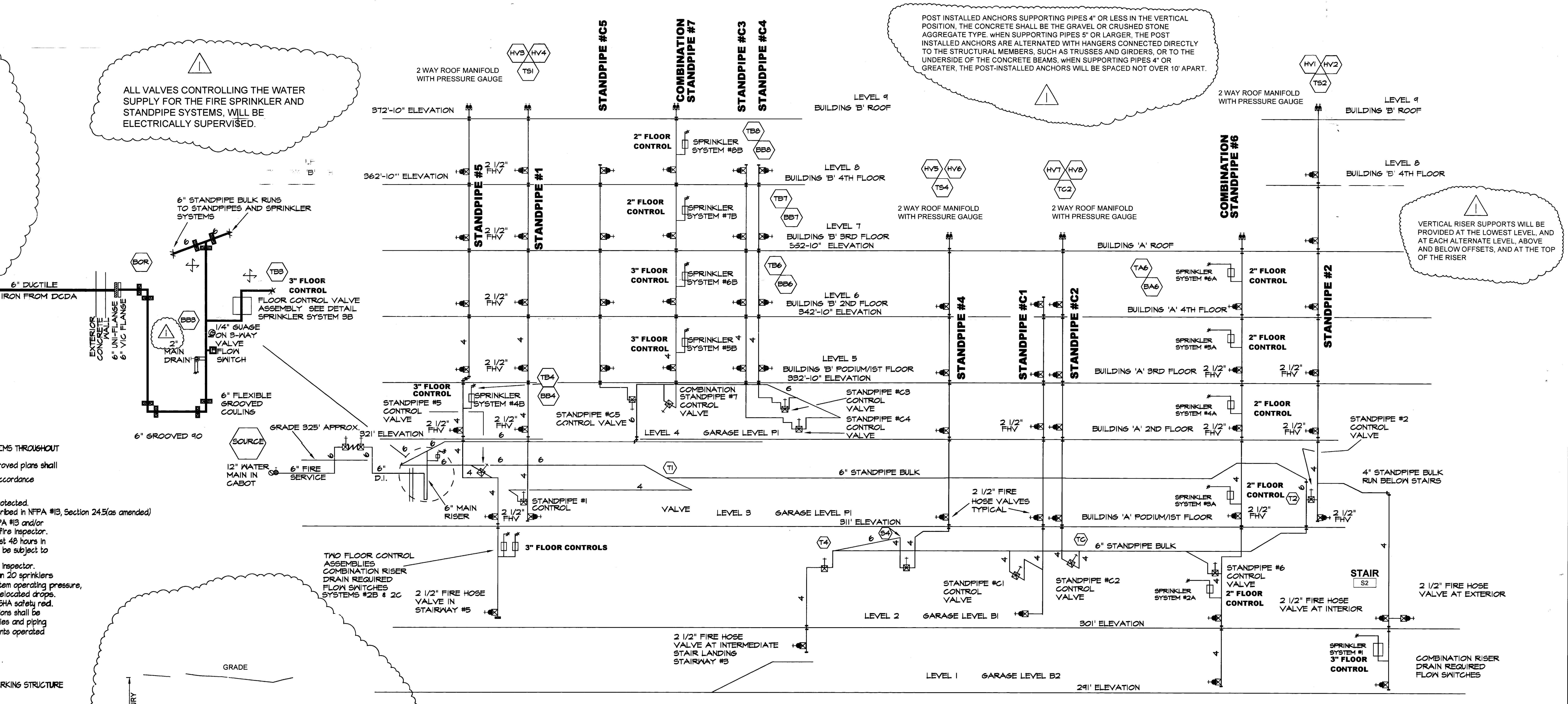
BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: DATE: 1-30-13
DRAWN: R DRAWING NO:
CONTRACT: 1 OF 41

DRAIN NOTES

8.16.2.4.7 Where drain connections for floor control valves are tied into a common drain riser, the drain riser shall be one pipe size larger than the largest size drain connection tying into it.

8.16.2.5.2 Auxiliary Drains for Wet Pipe Systems and Preaction Systems in Areas Not Subject to Freezing.
8.16.2.5.2.1* Where the capacity of isolated trapped sections of pipe is 50 gal (189 L) or more, the auxiliary drain shall consist of a valve not smaller than 1 in. (25 mm), piped to an accessible location.
8.16.2.5.2.2 Where the capacity of isolated trapped sections of pipe is more than 5 gal (18.9 L) and less than 50 gal (189 L), the auxiliary drain shall consist of a valve 3/4 in. (20 mm) or larger and a plug or a nipple and cap.
8.16.2.5.2.3 Where the capacity of trapped sections of pipes in wet systems is less than 5 gal (18.9 L), one of the following arrangements shall be provided:
(1) An auxiliary drain shall consist of a nipple and cap or plug not less than 1/2 in. (15 mm) in size.
(2) An auxiliary drain shall not be required for trapped sections less than 5 gal (18.9 L) where the system piping can be drained by removing a single pendent sprinkler.
(3) Where flexible couplings or other easily separated connections are used, the nipple and cap or plug shall be permitted to be omitted.



STANDPIPE DIAGRAM

NO SCALE

FIRE HOSE VALVE OUTLETS TO BE LOCATED ABOVE THE FLOOR A MINIMUM OF 18" AND A MAXIMUM OF 24"

ALL STANDPIPE CONTROL VALVES TO BE LOCATED NO GREATER THAN 7' AFF AND TO BE EQUIPPED WITH TAMPER SWITCHES.

ORANGE COUNTY FIRE AUTHORITY
NOTES FOR NEW NFPA 13
SPRINKLER SYSTEMS

1. Scope of work: INSTALL FOURTEEN COMPLETE OVERHEAD FIRE SPRINKLER SYSTEMS THROUGHOUT THE FOUR STORY RESIDENTIAL BUILDING AND TWO STORY PARKING GARAGES
2. Sprinkler plans shall be approved prior to the installation of any pipe. A set of approved plans shall be maintained at all times at the construction site.
3. This automatic fire protection system shall be designed. fabricated and installed in accordance with 2010 NFPA 13 and local amendments enforced by the OCFA.
4. The point of connection is AT THE PROPERTYLINE
5. All valves shall have a permanently affixed sign indicating it's function and building protected.
6. All systems risers shall be equipped with a Hydraulic Design Information Sign as described in NFPA #13, Section 24.5(as amended)
7. All underground mains and lead in connections shall be fushed in accordance with NFPA #13 and/or 24 prior to connection to the overhead system and shall be witnessed by an OCFA fire inspector.
8. Call OCFA Inspection Scheduling at (714) 573-6150 to schedule all inspections at least 48 hours in advance. Inspections canceled after 1PM on the day before the scheduled date will be subject to a reinspection fee.
9. The installer shall perform all required acceptance tests in the presence of the fire inspector.
10. All new systems and additions or modifications to existing piping affecting more than 20 sprinklers shall be hydrostatically tested @ 200 psi for two hours or at 50 psi above the system operating pressure, whichever is greater. Hydro testing above operating pressure is not required for relocated drops.
11. All FDCs, wall PIVs, and exterior/exposed sprinkler riser valves shall be painted OSHA safety red. Other fire sprinkler or supply pipe exposed to the sky or susceptible to wet conditions shall be painted (any color) or otherwise coated to inhibit corrosion. Stainless steel assemblies and piping may be left unpainted provided that any hose connections, valves, or other components operated by the fire department are painted red.
12. All sprinkler piping shall remain uncovered until inspected by OCFA.

Building Occupancy Classification(s) = R-2 PRIMARY A3, B, S2 PARKING GARAGE

Building Square Footage = 333,745 sq. ft. RESIDENTIAL BUILDING 235,365 sq. ft. PARKING STRUCTURE
COMMON AREAS 6,632 SQUARE FEET 575,743 TOTAL SQUARE FEET THIS PROJECT

Ceiling Construction Type _ Obstructed _____ Unobstucted ✓ (check one)

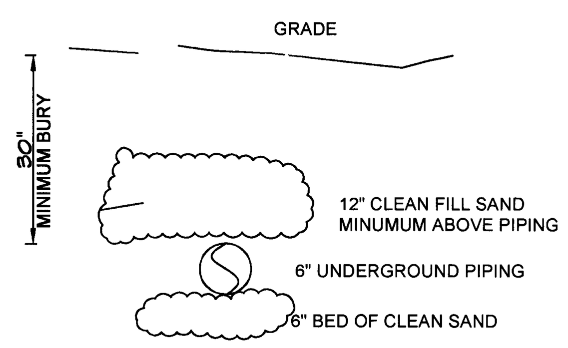
FIRE SPRINKLER DESIGN CRITERIA RESIDENTIAL SYSTEMS #1 & #2

Hydraulic Design Density .10 gpm / sq OVER THE MOST REMOTE 4 RESIDENTIAL SPRINKLERS

FIRE SPRINKLER DESIGN CRITERIA PARKING AREAS

Hydraulic Design Density .15 gpm / sq OVER THE MOST REMOTE 1,500 SQUARE FEET

HYDRAULIC INFORMATION (all blanks must be complete)
Flow Test Location: Cabot Road & Crown Valley Date **6-6-11** Elevation **290'**
Static Pressure 140 psi Residual Pressure 121 psi @ 3000 gpm Flow 2,717 gpm



TRENCH DETAIL

NO SCALE

ORANGE COUNTY FIRE AUTHORITY
NOTES FOR UNDERGROUND PLANS

All of the notes listed below shall be placed, verbatim, on the plan under the heading "ORANGE COUNTY FIRE AUTHORITY NOTES"

INSPECTION REQUIREMENTS
1. A minimum of three OCFA inspections are required for underground piping serving sprinkler systems and/or private hydrants: 1) Pre-pour inspection; 2) Hydrostatic testing; 3) Flush inspection. Please schedule all inspections at least 48 hours in advance. Inspections canceled after 1 p.m. on the day before the scheduled date are subject to a re-inspection fee. Call OCFA Inspection Scheduling at (714) 573-6150.
2. ***Pre-pour Inspection:*** Thrust block excavation shall be completed, but thrust blocks shall not be poured. All pipe shall be in place and exposed for visual inspection. Pipe shall be laid on a minimum six-inch bed of clean sand. Trenches shall be of a sufficient depth to allow the required cover above pipe. Ferrous pipe and fittings shall be encased in polyethylene tubing (not wrapped) and tightly taped to inhibit water infiltration. Ferrous joints (with the exception of stainless steel 316) shall be coated with asphaltic sealant or other corrosion retarding material. See items 11 – 19, 21 and 22 below for detailed requirements.
3. ***Hydro Testing:*** Thrust blocks shall be in place. Pipe shall be center-loaded with clean sand to prevent uplift, but all joints shall remain exposed. The system shall be hydrostatically tested at 200 psi (or 50 psi over maximum static pressure, whichever is greater) for a duration of at least two hours prior to the arrival of the OCFA inspector. See item 16 for detailed requirements.
4. ***Flush inspection:*** All portions of the underground system shall be flushed to remove debris prior to connection to overhead piping. Flow shall be through a minimum of a four-inch hose or pipe, unless otherwise approved by the OCFA inspector prior to scheduling the flush. Hose or pipe shall be restrained to prevent injury and damage. Discharged water shall be collected or diverted in accordance with applicable SWPPP/NPDES provisions. The local public works department, water district, and/or other applicable agency shall be notified of the scheduled flush by the contractor. The OCFA flush and hydro inspections may be scheduled concurrently. See items 11, 18, and 20 – 23 below for detailed requirements.
5. Upon flush inspection or prior to final sprinkler or site inspection, all detector check assemblies, control valves, and fire department connections (FDC) shall be clearly labeled with the address(es) served by the device. Address signs shall be securely attached to the device and be of a durable, fade-resistant material which is visible and legible from the fire lane. FDC and four-inch hydrant outlets shall be unobstructed and oriented toward the fire lane. Valves shall be locked in the open position with breakaway locks. All PIV valves and private hydrants shall be painted OSHA safety red. The closest upstream indicating valve to the riser shall be painted OSHA safety red. Hydrant and FDC caps shall be in place. See items 6 – 9, 18, and 20 – 23 for detailed requirements.

GENERAL REQUIREMENTS
6. Installation, inspection, and testing shall conform to 2010 editions of NFPA 13 and NFPA 24. OCFA jurisdiction begins at the downstream side of the last valve on the detector check assembly. Verify design and installation requirements for the portion of the system preceding this point with the local water district.
7. Vegetation shall be selected and maintained in such a manner as to allow immediate location of, and unobstructed access to; all hydrants, control valves, fire department connections, and other devices or areas used for firefighting purposes.
8. A minimum three-foot clearance shall be provided around all hydrants and post indicating valves. A minimum three-foot clearance shall be provided on at least one side of a detector check assembly to allow proper operation of the device. The front of FDC and the adjacent fire access roadway shall be free of any obstructions.

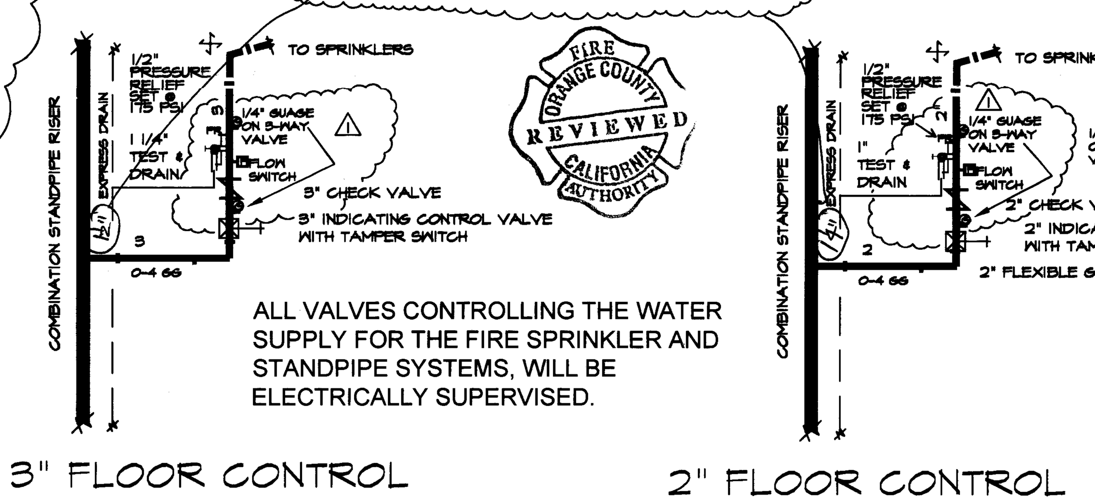
UNDERGROUND NOTES CONTINUED

9. Any future modification to the approved private underground piping system is subject to review, inspection, and approval by the Orange County Fire Authority.
10. Approval of this plan shall not be interpreted as approval of any information or project conditions other than those items and requirements identified in OCFA Guideline B-03, and applicable sections of the 2010 editions of NFPA 13 and NFPA 24. This project may be subject to additional requirements not stated herein upon examination of actual site and project conditions or disclosure of additional information.

PIPE AND TRENCH REQUIREMENTS
11. A 6-inch bed of clean fill sand shall be provided below the pipe and 12-inches above the pipe (total of 18 inches plus outer diameter of the pipe).
12. Pipe shall be buried at least 36" where subject to loading (e.g., driveways, parking lots) and at least 30" elsewhere.
13. All pipe shall be approved for use in fire service systems. Class 150 will be used at a minimum, and class 200 pipe shall be used where the water pressure exceeds 150 psi. The use of galvanized pipe is prohibited when a portion of the system is buried.
14. All ferrous pipe and fittings shall be protected with a loose 8-mil polyethylene tube. Wrapping the pipe in polyethylene sheeting is not acceptable. The ends of the tube and any splices made for tees or other piping components shall be tightly sealed with two-inch tape that is approved for underground use.
15. All bolts used for underground connections, including T bolts, shall be 316 stainless steel. All ferrous fittings (with the exception of 316 stainless steel) shall be cleaned and thoroughly coated with asphalt or other corrosion retarding material after assembly and prior to the installation of polyethylene tube.
16. Thrust blocks, or another approved method of thrust restraint, shall be provided wherever pipe changes direction.
17. A minimum two-inch clearance shall be provided where the pipe passes through slabs or walls. Underground system shall terminate at the riser flange and placed a maximum of 18 inches from an exterior wall and 6 inches above the slab.
18. The FDC shall contain a minimum of two 2 ½" inlets. When the system design demand, including the interior hose stream demand or a standpipe, is a minimum 500 gpm, four 2 ½" inlets shall be provided. FDCs shall be painted OSHA safety red.
19. Pipe running under a building or building foundation shall be stainless steel and shall not contain mechanical joints.

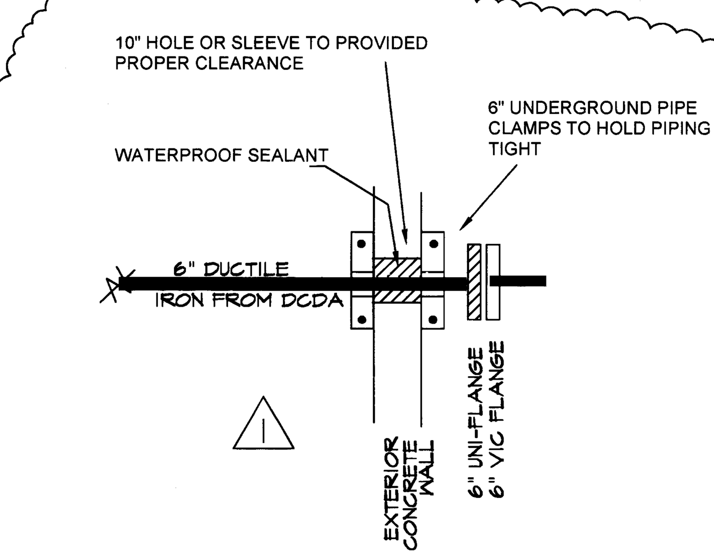
HYDRANT REQUIREMENTS
20. Private fire hydrants shall be listed with a minimum of one 2 ½" and one 4" outlet. The 4" outlet shall face the fire department access road. All outlets shall be provided with National Standard Threads (NST). Private hydrants shall be painted OSHA safety red.
21. Fire hydrant supply piping shall be a minimum of six inches in diameter. The lowest valve operating nut shall be a minimum of eighteen inches above grade and the hydrant flange shall be a minimum of two inches above grade.
22. A keyed gate valve shall be provided for each hydrant in an accessible location. Keyed gate valves shall be located within six to ten feet of the hydrant in an area that is unobstructed and clearly visible. Valves shall not be located in parking stalls.
23. All fire hydrants shall have a "Blue Reflective Pavement Marker" indicating their location per the OCFA standard detailed in Guideline B-09. Private hydrants and markers are to be maintained in good condition by the property owner.

SEE NOTE REGARDING DRAIN SIZES TO BE INCREASED ONE SIZE THAN THE LARGEST REQUIRED DRAIN SIZE



FLOOR CONTROL DETAILS

NO SCALE



BUILDING PENETRATION DETAIL

NO SCALE

188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

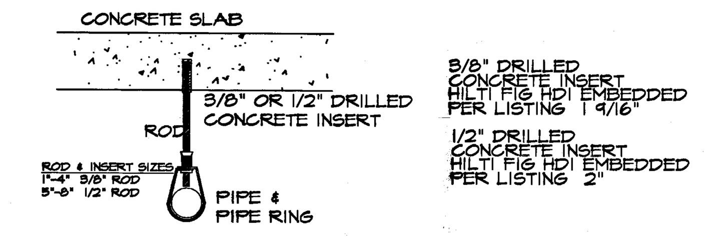
MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:
SCALE: NOTED

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: STANDPIPE DIAGRAM

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 2 OF 41

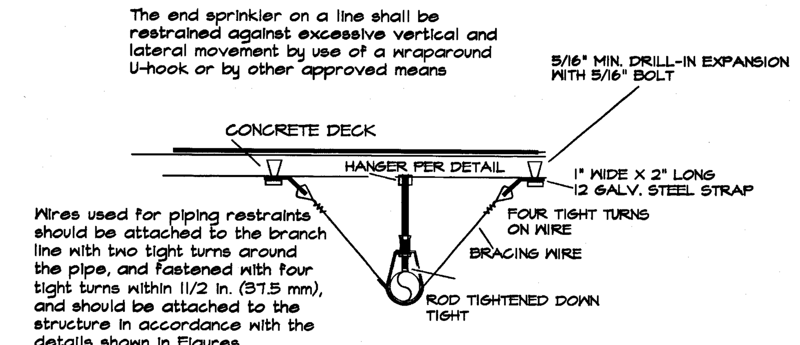


HANGER DETAIL

NO SCALE

RESTRAINT HANGER TO BE INSTALLED
EVERY 26' FOR 1" PIPING
27' FOR 1 1/4", 29' FOR 1 1/2"
AND 31' FOR 2" LINE PIPING

The end sprinkler on a line shall be restrained against excessive vertical and lateral movement by use of a wraparound U-hook or by other approved means



Wires used for piping restraints should be attached to the branch line with two tight turns around the pipe, and fastened with four tight turns within 11/2 in. (37.5 mm), and should be attached to the structure in accordance with the details shown in Figures A-4-14.4.3.5.13(a) through (d) or other approved method.

HANGER TO RESTRAIN AGAINST
LATERAL AND VERTICAL MOVEMENT

PARKING GARAGE SPRINKLER SYSTEM
PIPING TO BE HUNG WITH HANGERS LESS
THAN 6" LONG FROM TOP OF PIPE TO
BOTTOM OF DECK. NO LATERAL
BRACING IS REQUIRED
SEE SHEET #17 FOR EQB CALCULATIONS

FOR POST INSTALLED ANCHORS SUPPORTING PIPES 4" OR LESS IN THE VERTICAL POSITION, THE CONCRETE SHALL BE THE GRAVEL OR CRUSHED STONE AGGREGATE TYPE. WHEN SUPPORTING PIPES 5" OR LARGER, THE POST INSTALLED ANCHORS ARE ALTERNATED WITH HANGERS CONNECTED DIRECTLY TO THE STRUCTURAL MEMBERS, SUCH AS TRUSSES AND GIRDERS, OR TO THE UNDERSIDE OF THE CONCRETE BEAMS, WHEN SUPPORTING PIPES 4" OR GREATER, THE POST-INSTALLED ANCHORS WILL BE SPACED NOT OVER 10' APART.

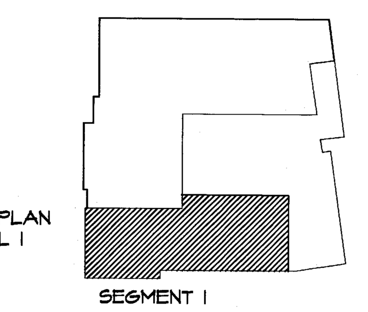
1

SYSTEM #1 HEAD COUNTS

- 33 1/2" SSU S.R.
- 226 EXTENDED COVERAGE SSU
- 2 1/2" SSP Q.R.
- 2 1/2" SIDEWALL SPRINKLERS S.R.

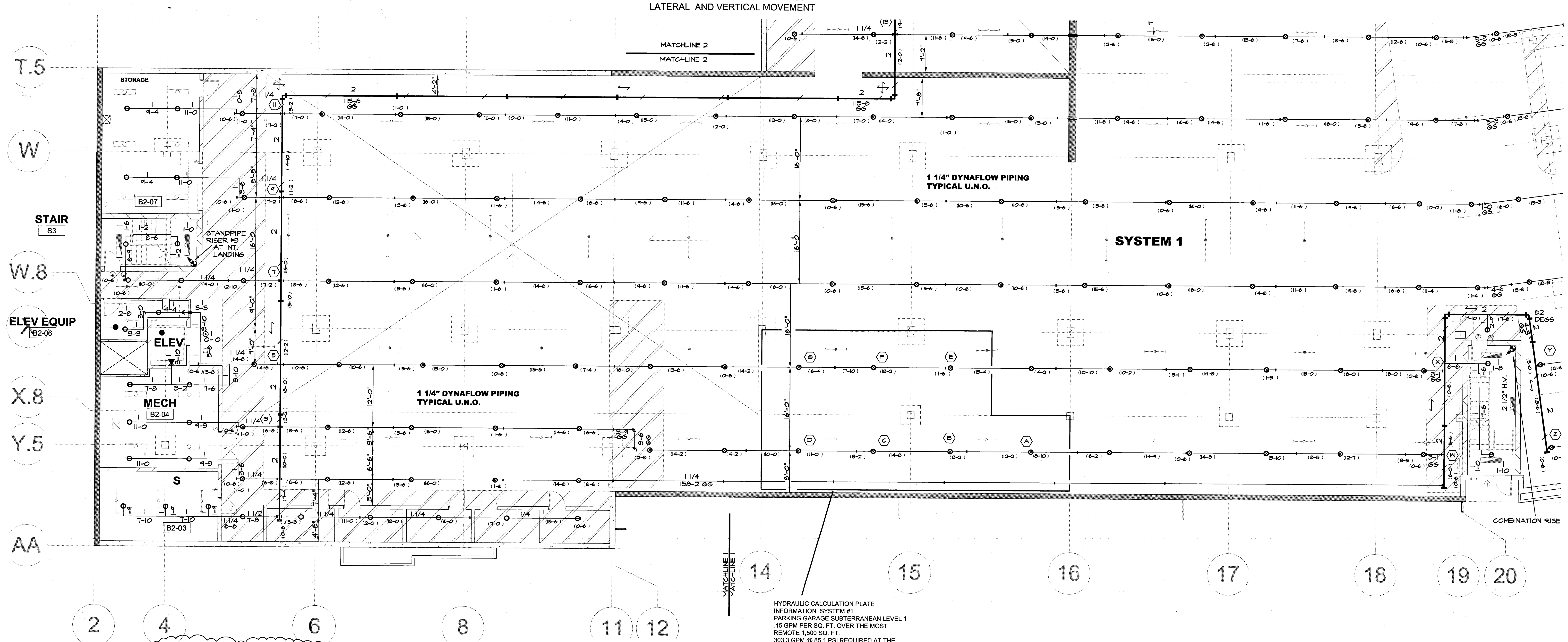
263 TOTAL SPRINKLERS

SYSTEM #1 51,990 SQUARE FEET



KEY PLAN

NO SCALE



HYDRAULIC CALCULATION PLATE
INFORMATION SYSTEM #1
PARKING GARAGE SUBTERRANEAN LEVEL 1
.15 GPM PER SQ. FT. OVER THE MOST
REMOTE 1,500 SQ. FT.
303.3 GPM @ 85.1 PSI REQUIRED AT THE
BASE OF RISER
ORDINARY HAZARD GROUP #1
250 GPM HOSE STREAM OUTSIDE
BROWNING FIRE PROTECTION
553.3 GPM @ 101.0 PSI REQUIRED
AT THE WATER SUPPLY SOURCE
NO FIRE PUMP
7 K=11.2 SPRINKLERS CALCULATED
SSU & SSP
SIN TY5137 & TY5237 STANDARD RESPONSE
200 DEGREE
39 GPM @ 12.1 PSI REQUIRED AT REMOTE
SPRINKLER
NO PRESSURE REDUCING VALVES
NO DELUGE SYSTEM
16' X 16' MAXIMUM SPACING
DESIGN PER NFPA #13 2010 EDITION

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

Maximum Distance between Hangers (ft - in.)

Nominal Pipe Size (in.)	1	11/4	11/2	2	21/2	3	4	6
Steel pipe except threaded lightwall	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0

1

9.2.3.2.3* Starter lengths less than 6 ft (1.8 m) shall not require a hanger, unless on the end line of a sidefeed system or where an intermediate cross main hanger has been omitted. 9.2.3.3 Clearance to Hangers. The distance between a hanger and the centerline of an upright sprinkler shall not be less than 3 in. (76 mm).
9.2.3.4* Unsupported Lengths.
9.2.3.4.1 The unsupported length between the end sprinkler and the last hanger on the line shall not be greater than 36 in. (0.9 m) for 1 in. (25 mm) pipe, 48 in. (1.2 m) for 11/4 in. (32 mm) pipe, and 60 in. (1.5 m) for 11/2 in. (40 mm) or larger pipe.
9.2.3.4.2 For copper tube, the unsupported length between the end sprinkler and the last hanger on the line shall not be greater than 18 in. (457 mm) for 1 in. (25 mm) pipe, 24 in. (610 mm) for 11/4 in. (32 mm) pipe, and 30 in. (762 mm) for 11/2 in. (40 mm) or larger pipe.
9.2.3.4.3 Where the limits of 9.2.3.4.1 and 9.2.3.4.2 are exceeded, the pipe shall be extended beyond the end sprinkler and shall be supported by an additional hanger.
9.2.3.4.4* Unsupported Length with Maximum Pressure Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling Supplying Sprinklers in a Pendent Position Below the Ceiling.
9.2.3.4.4.1 When the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendent position below the ceiling, the hanger assembly supporting the pipe supplying an end sprinkler in a pendent position shall be of a type that prevents upward movement of the pipe.
9.2.3.4.4.2 The unsupported length between the end sprinkler in a pendent position or drop nipple and the last hanger on the branch line shall not be greater than 12 in. (305 mm) for steel pipe or 6 in. (152 mm) for copper pipe.
9.2.3.4.4.3 When the limit of 9.2.3.4.4.2 is exceeded, the pipe shall be extended beyond the end sprinkler and supported by an additional hanger.
9.2.3.4.4.4 The hanger closest to the sprinkler shall be of a type that prevents upward movement of the piping. 9.2.3.5* Unsupported Armover Length.
9.2.3.5.1 The cumulative horizontal length of an unsupported armover to a sprinkler, sprinkler drop, or sprig shall not exceed 24 in. (610 mm) for steel pipe or 12 in. (305 mm) for copper tube.
9.2.3.5.2* Unsupported Armover Length with Maximum Pressures Exceeding 100 psi (6.9 bar) and a Branch Line Above a Ceiling Supplying Sprinklers in a Pendent Position Below the Ceiling.
9.2.3.5.2.1 Where the maximum static or flowing pressure, whichever is greater at the sprinkler, applied other than through the fire department connection, exceeds 100 psi (6.9 bar) and a branch line above a ceiling supplies sprinklers in a pendent position below the ceiling, the cumulative horizontal length of an unsupported armover to a sprinkler or sprinkler drop shall not exceed 12 in. (305 mm) for steel pipe and 6 in. (152 mm) for copper tube.
9.2.3.5.2.2 The hanger closest to the sprinkler shall be of a type that prevents upward movement of the piping.
9.2.3.6 Wall-mounted sidewall sprinklers shall be restrained to prevent movement.

ORANGE COUNTY FIRE AUTHORITY REVIEWED CALIFORNIA

188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

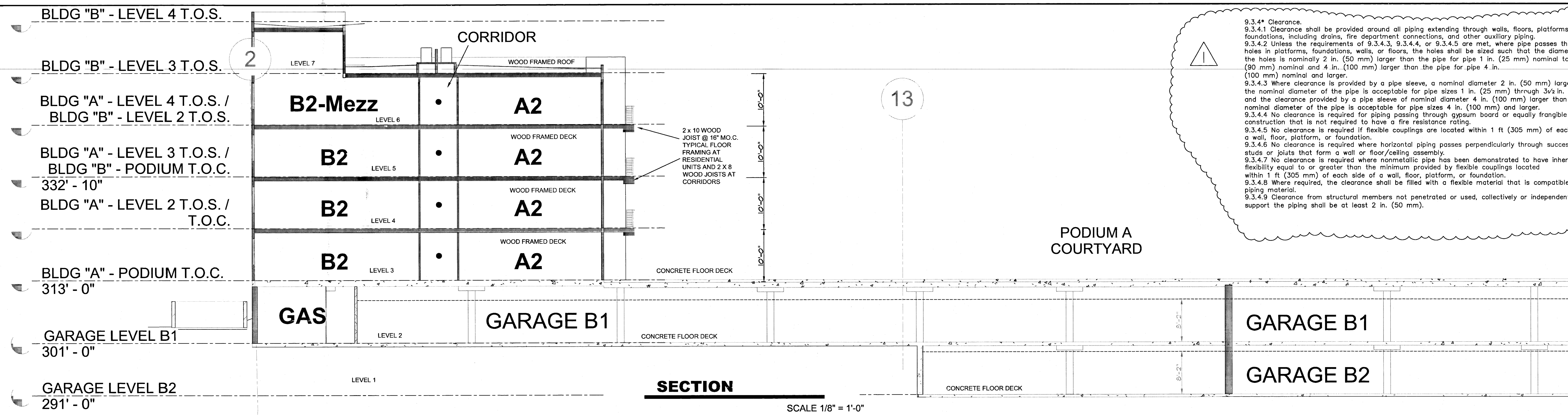
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 1 SYSTEM 1 SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

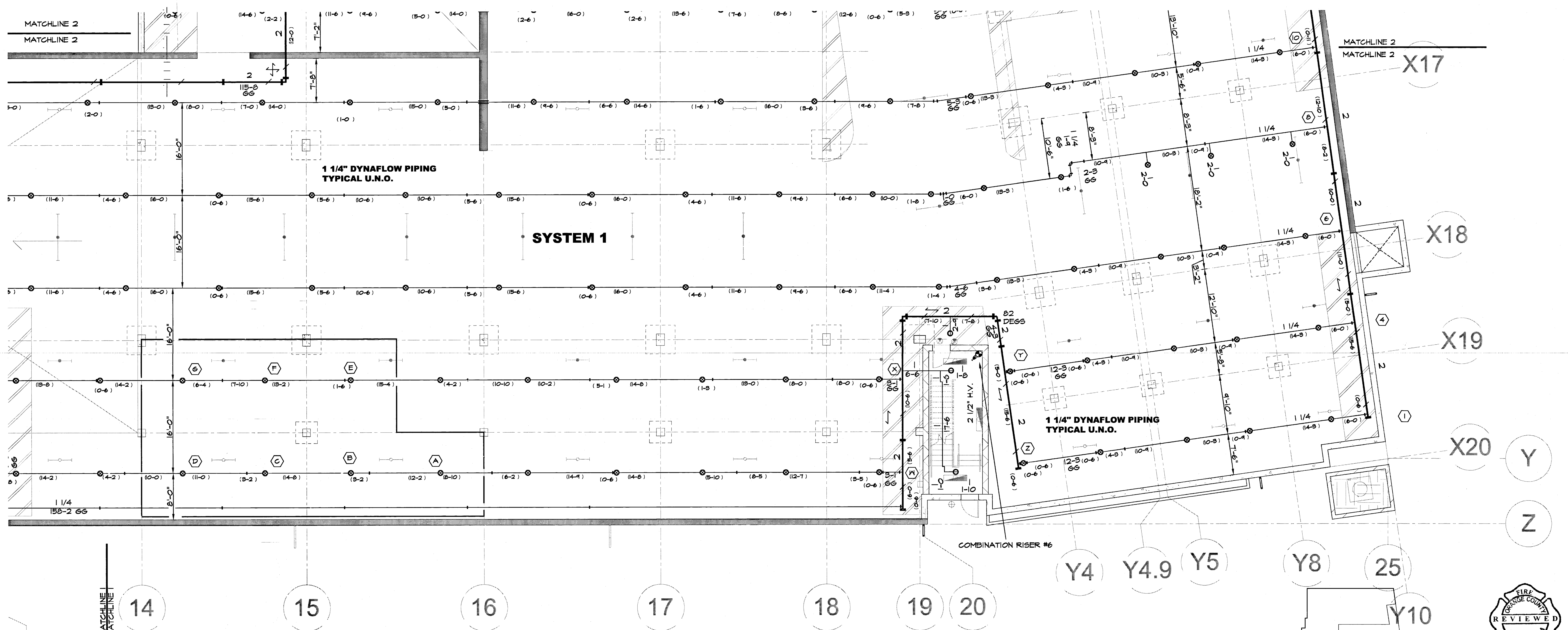
SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	3 OF 41



SECTION

SCALE 1/8" = 1'-0"

9.3.4* Clearance.
9.3.4.1 Clearance shall be provided around all piping extending through walls, floors, platforms, and foundations, including drains, fire department connections, and other auxiliary piping.
9.3.4.2 Unless the requirements of 9.3.4.3, 9.3.4.4, or 9.3.4.5 are met, where pipe passes through holes in platforms, foundations, walls, or floors, the holes shall be sized such that the diameter of the holes is nominally 2 in. (50 mm) larger than the pipe for pipe 1 in. (25 mm) nominal to 3½ in. (90 mm) nominal and 4 in. (100 mm) larger than the pipe for pipe 4 in. (100 mm) nominal and larger.
9.3.4.3 Where clearance is provided by a pipe sleeve, a nominal diameter 2 in. (50 mm) larger than the nominal diameter of the pipe is acceptable for pipe sizes 1 in. (25 mm) through 3½ in. (90 mm), and the clearance provided by a pipe sleeve of nominal diameter 4 in. (100 mm) larger than the nominal diameter of the pipe is acceptable for pipe sizes 4 in. (100 mm) and larger.
9.3.4.4 No clearance is required for piping passing through gypsum board or equally frangible construction that is not required to have a fire resistance rating.
9.3.4.5 No clearance is required if flexible couplings are located within 1 ft (305 mm) of each side of a wall, floor, platform, or foundation.
9.3.4.6 No clearance is required where horizontal piping passes perpendicularly through successive studs or joists that form a wall or floor/ceiling assembly.
9.3.4.7 No clearance is required where nonmetallic pipe has been demonstrated to have inherent flexibility equal to or greater than the minimum provided by flexible couplings located within 1 ft (305 mm) of each side of a wall, floor, platform, or foundation.
9.3.4.8 Where required, the clearance shall be filled with a flexible material that is compatible with the piping material.
9.3.4.9 Clearance from structural members not penetrated or used, collectively or independently, to support the piping shall be at least 2 in. (50 mm).

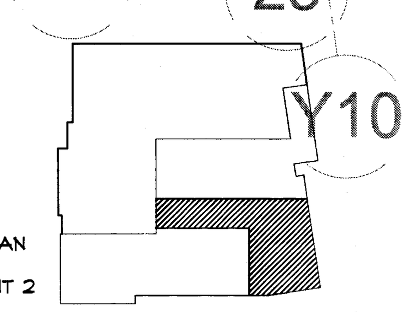


SYSTEM #1 HEAD COUNTS
- 33 1/2" SSU S.R.
- 226 EXTENDED COVERAGE SSU
- 2 1/2" SSP Q.R.
- 2 1/2" SIDEWALL SPRINKLERS S.R.

263 TOTAL SPRINKLERS

SYSTEM #1 51,990 SQUARE FEET

PARKING GARAGE SPRINKLER SYSTEM PIPING TO BE HUNG WITH HANGERS LESS THAN 6" LONG FROM TOP OF PIPE TO BOTTOM OF DECK. NO LATERAL BRACING IS REQUIRED
SEE SHEET #17 FOR EQB CALCULATIONS



KEY PLAN

NO SCALE

188803

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
1.
2.
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4.
WATER DEPT:
ADDRESS:
CITY:
PHONE:

CONTRACT WITH:
ADDRESS:
CITY:
PHONE:
ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 1 SYSTEM 1 SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
4 OF 41

9.3.2* Couplings.
9.3.2.1 Listed flexible pipe couplings joining grooved end pipe shall be provided as flexure joints to allow individual sections of piping 2½ in. (65 mm) or larger to move differentially with the individual sections of the building to which it is attached.
9.3.2.2 Couplings shall be arranged to coincide with structural separations within a building.
9.3.2.3 Systems having more flexible couplings than required by this section shall be provided with additional sway bracing as required in 9.3.5.3.7. The flexible couplings shall be installed as follows:
(1) Within 24 in. (610 mm) of the top and bottom of all risers, unless the following provisions are met:
(a) In risers less than 3 ft (0.9 m) in length, flexible couplings are permitted to be omitted.
(b) In risers 3 ft to 7 ft (0.9 m to 2.1 m) in length, one flexible coupling is adequate.
(2) Within 12 in. (305 mm) above and within 24 in. (610 mm) below the floor in multistory buildings. When the flexible coupling below the floor is above the tie-in main to the main supplying that floor, a flexible coupling shall be provided in accordance with one of the following:
(a)*On the horizontal portion within 24 in. (610 mm) of the tie-in where the tie-in is horizontal
(b)*On the vertical portion of the tie-in where the tie-in incorporates a riser
(3) On both sides of concrete or masonry walls within 1 ft (305 mm) of the wall surface, unless clearance is provided in accordance with 9.3.4
(4)*Within 24 in. (610 mm) of building expansion joints
(5) Within 24 in. (610 mm) of the top of drops exceeding 15 ft (4.6 m) in length to portions of systems supplying more than one sprinkler, regardless of pipe size
(6) Above and below any intermediate points of support for a riser or other vertical pipe

PARKING GARAGE SPRINKLER SYSTEM PIPING TO BE HUNG WITH HANGERS LESS THAN 6" LONG FROM TOP OF PIPE TO BOTTOM OF DECK. NO LATERAL BRACING IS REQUIRED
SEE SHEET #17 FOR EQB CALCULATIONS

SYSTEM #1 HEAD COUNTS
- 33 1/2" SSU S.R.
- 226 EXTENDED COVERAGE SSU
- 2 1/2" SSP Q.R.
- 2 1/2" SIDEWALL SPRINKLERS S.R.
- 263 TOTAL SPRINKLERS

SYSTEM #1 51,990 SQUARE FEET

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
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2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 1 SYSTEM 1 SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

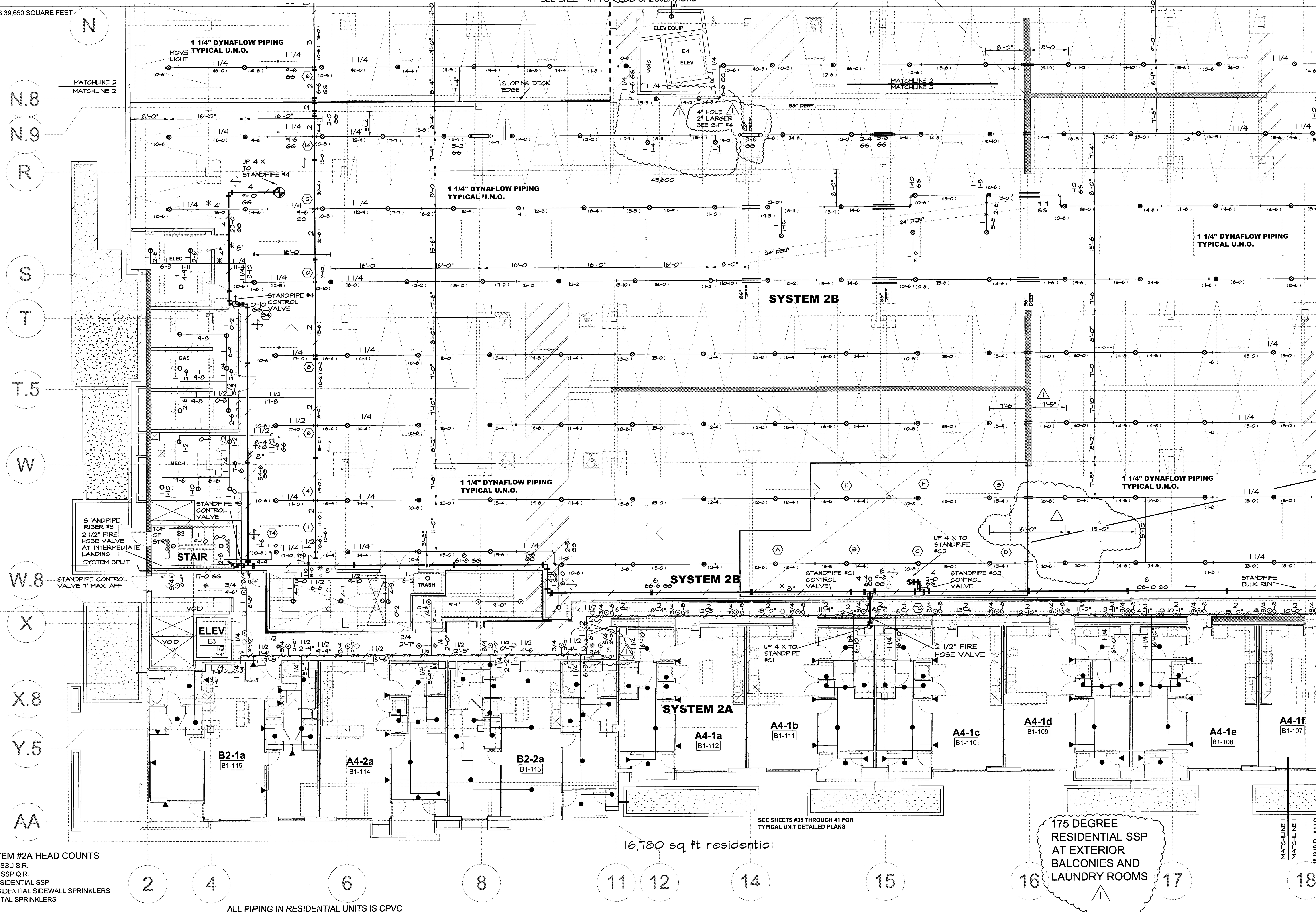
SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	5 OF 41

SYSTEM #2B HEAD COUNTS
27 1/2" SSU S.R.
174 EXTENDED COVERAGE SSU
201 TOTAL SPRINKLERS

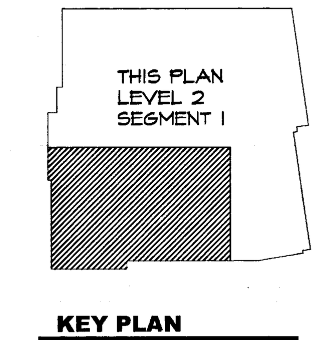
SYSTEM #2B 39,650 SQUARE FEET

PARKING GARAGE SPRINKLER SYSTEM PIPING TO BE HUNG WITH HANGERS LESS THAN 6" LONG FROM TOP OF PIPE TO BOTTOM OF DECK, NO LATERAL BRACING IS REQUIRED
SEE SHEET #17 FOR EQB CALCULATIONS

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL



HYDRAULIC CALCULATION PLATE
INFORMATION SYSTEM #2B
PARKING GARAGE LEVEL 2
.15 GPM PER SQ. FT. OVER THE MOST REMOTE 1,500 SQ. FT.
303.4 GPM @ 94.4 PSI REQUIRED AT THE BASE OF RISER
ORDINARY HAZARD GROUP #1
250 GPM HOSE STREAM OUTSIDE
BROWNING FIRE PROTECTION
553.5 GPM @ 111.1 PSI REQUIRED AT THE WATER SUPPLY SOURCE
NO FIRE PUMP
7 K=11.2 SPRINKLERS CALCULATED
SSU & SSP
SIN TY5137 & TY5237 STANDARD RESPONSE
200 DEGREE
39 GPM @ 12.1 PSI REQUIRED AT REMOTE SPRINKLER
NO PRESSURE REDUCING VALVES
NO DELUGE SYSTEM
16' X 16' MAXIMUM SPACING
DESIGN PER NFPA #13 2010 EDITION



KEY PLAN
NO SCALE

188803

SYSTEM #2A HEAD COUNTS
- 11 1/2" SSU S.R.
- 37 1/2" SSP Q.R.
- 111 RESIDENTIAL SSP
- 75 RESIDENTIAL SIDEWALL SPRINKLERS

234 TOTAL SPRINKLERS

SYSTEM #2A 18,500 SQUARE FEET

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

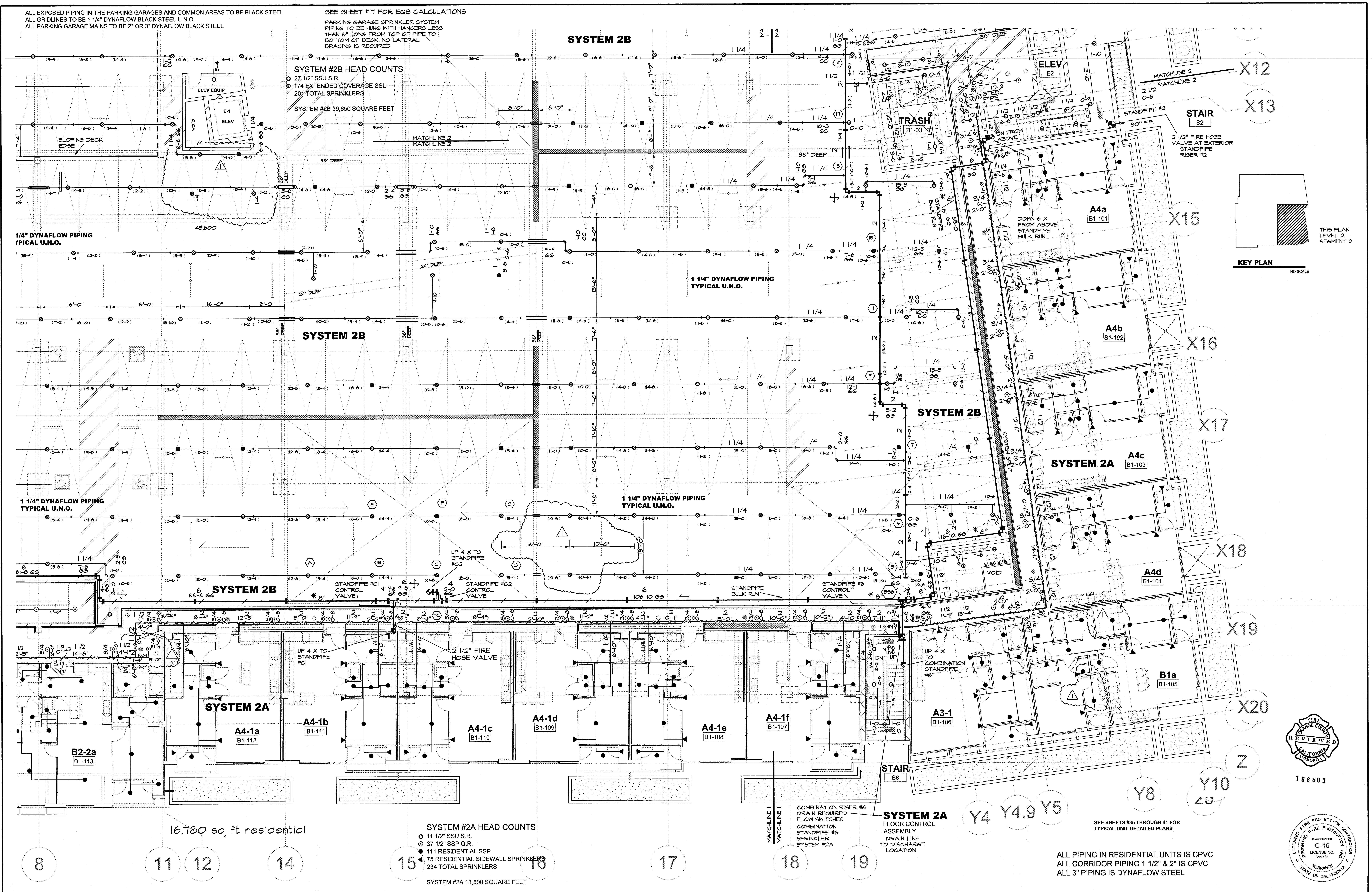
FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 2 SYSTEMS 2A & 2B SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 6 OF 41



NOTES:

HANGER LEGEND
- #1 EXPANSION SHELL, ROD AND RING
- #2 C-CLAMP, ROD AND RING
- #3 POWDER DRIVEN STUD, ROD AND RING
- #4 ANGLE CLIP ROD AND RING
- #5 L-ROD AND RING
- #6 EYE ROD AND RING
- #7 COACH SCREW ROD AND RING
- #8 CEILING FLANGE, ROD AND RING

STANDARD SYMBOLS
- POST INDICATOR VALVE
- KEY VALVE
- FIRE HYDRANT
- FIRE DEPARTMENT CONNECTION
- OSY GATE VALVE
- SWING CHECK VALVE
- NEW UNDERGROUND
- EXISTING UNDERGROUND

STANDARD SYMBOLS
- ALARM CHECK VALVE
- RISER W/ ALARM CHECK VALVE
- RISER W/ DELUGE VALVE
- RISER W/ DRY PIPE VALVE
- RISER W/ ELECT FLOW SWITCH
- WATER MOTOR ALARM GONG
- ELECTRIC ALARM BELL
- FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
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PHONE:

CONTRACT WITH:
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CITY:
PHONE:
ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 2 SYSTEMS #2A & 2B SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
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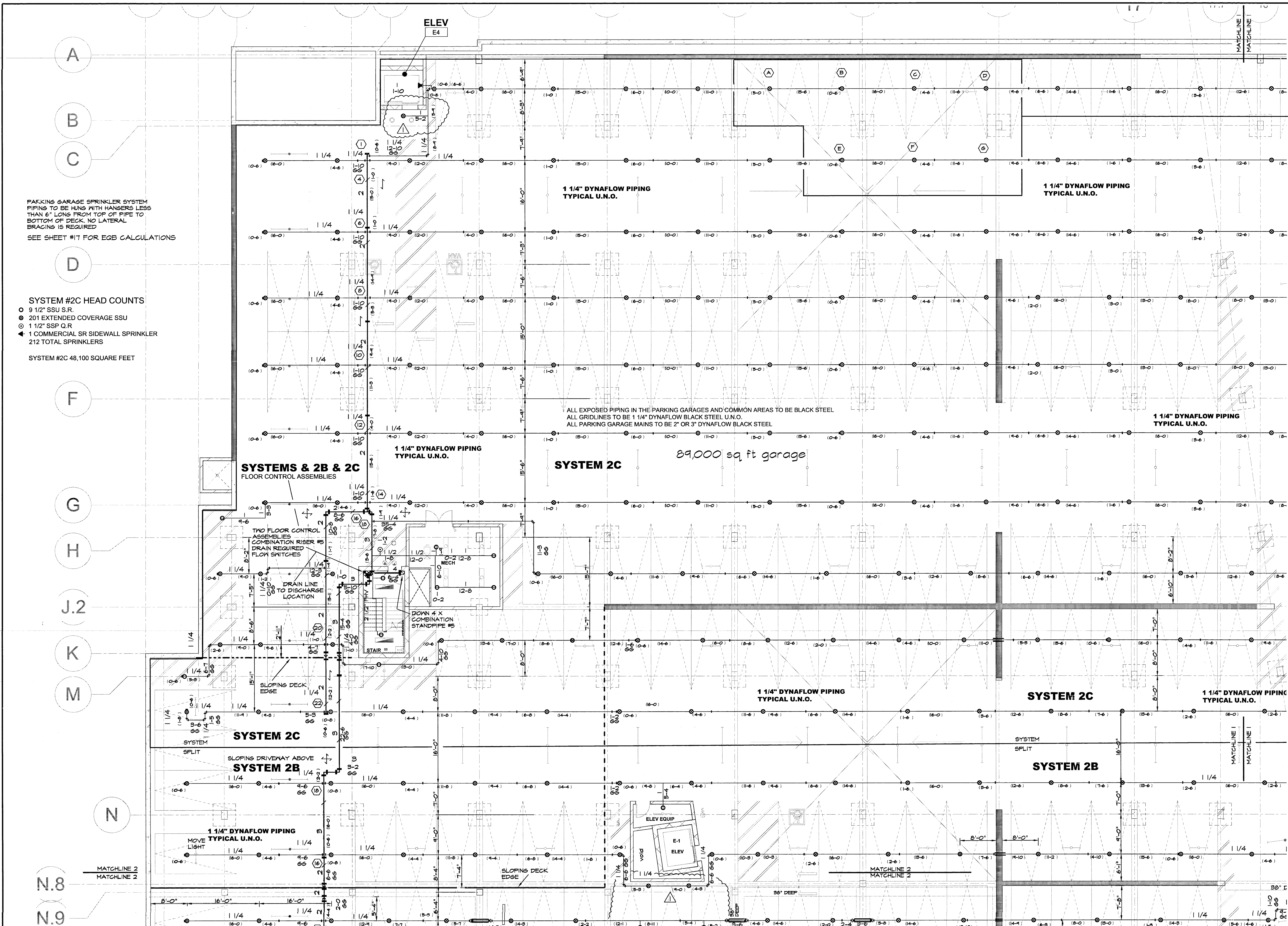
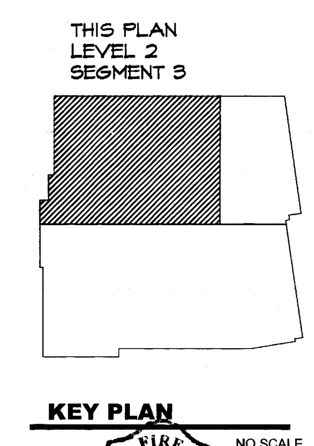
CONTRACT:
7 OF 41



HYDRAULIC CALCULATION PLATE
INFORMATION SYSTEM #2C
PARKING GARAGE LEVEL 2
.15 GPM PER SQ. FT. OVER THE MOST
REMOTE 1,500 SQ. FT.
306.1 GPM @ 72.4 PSI REQUIRED AT THE
BASE OF RISER
ORDINARY HAZARD GROUP #1
250 GPM HOSE STREAM OUTSIDE
BROWNING FIRE PROTECTION
556.2 GPM @ 89.2 PSI REQUIRED
AT THE WATER SUPPLY SOURCE
NO FIRE PUMP
7 K=11.2 SPRINKLERS CALCULATED
SSU & SSP
SIN TY5137 & TY5237 STANDARD RESPONSE
200 DEGREE
39 GPM @ 12.1 PSI REQUIRED AT REMOTE
SPRINKLER
NO PRESSURE REDUCING VALVES
NO DELUGE SYSTEM
16' X 16' MAXIMUM SPACING
DESIGN PER NFPA #13 2010 EDITION



REVIEWED
ORANGE COUNTY FIRE AUTHORITY
188803

LICENSED FIRE PROTECTION CONTRACTOR
BROWNING FIRE PROTECTION INC.
CLASSIFICATION C-16
LICENSE NO. 619731
TORRANCE
STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

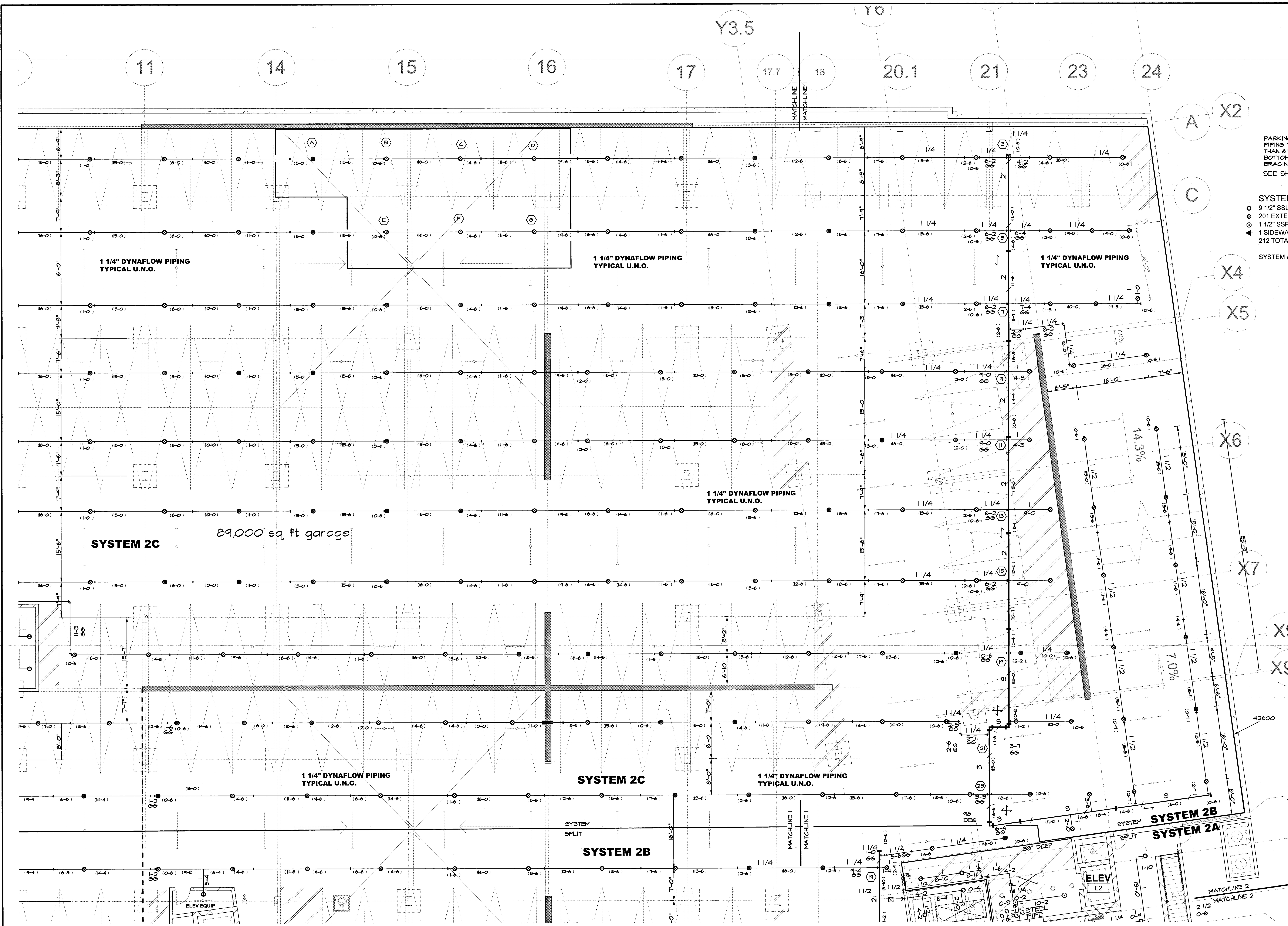
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 2 SYSTEMS #2B & 2C SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	8 OF 41



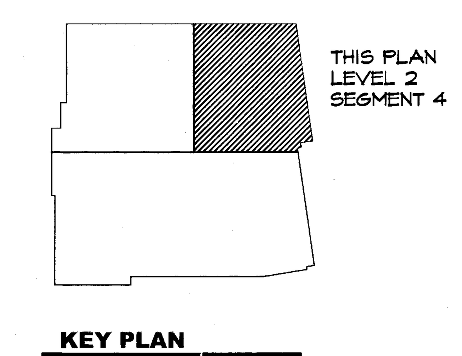
PARKING GARAGE SPRINKLER SYSTEM PIPING TO BE HUNG WITH HANGERS LESS THAN 6" LONG FROM TOP OF PIPE TO BOTTOM OF DECK. NO LATERAL BRACING IS REQUIRED

SEE SHEET #17 FOR EQB CALCULATIONS

SYSTEM #2C HEAD COUNTS
- 9 1/2" SSU S.R.
- 201 EXTENDED COVERAGE SSU
- 1 1/2" SSP Q.R
- 1 SIDEWALL SPRINKLER

212 TOTAL SPRINKLERS

SYSTEM #2C 48,100 SQUARE FEET



KEY PLAN
NO SCALE

188803

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
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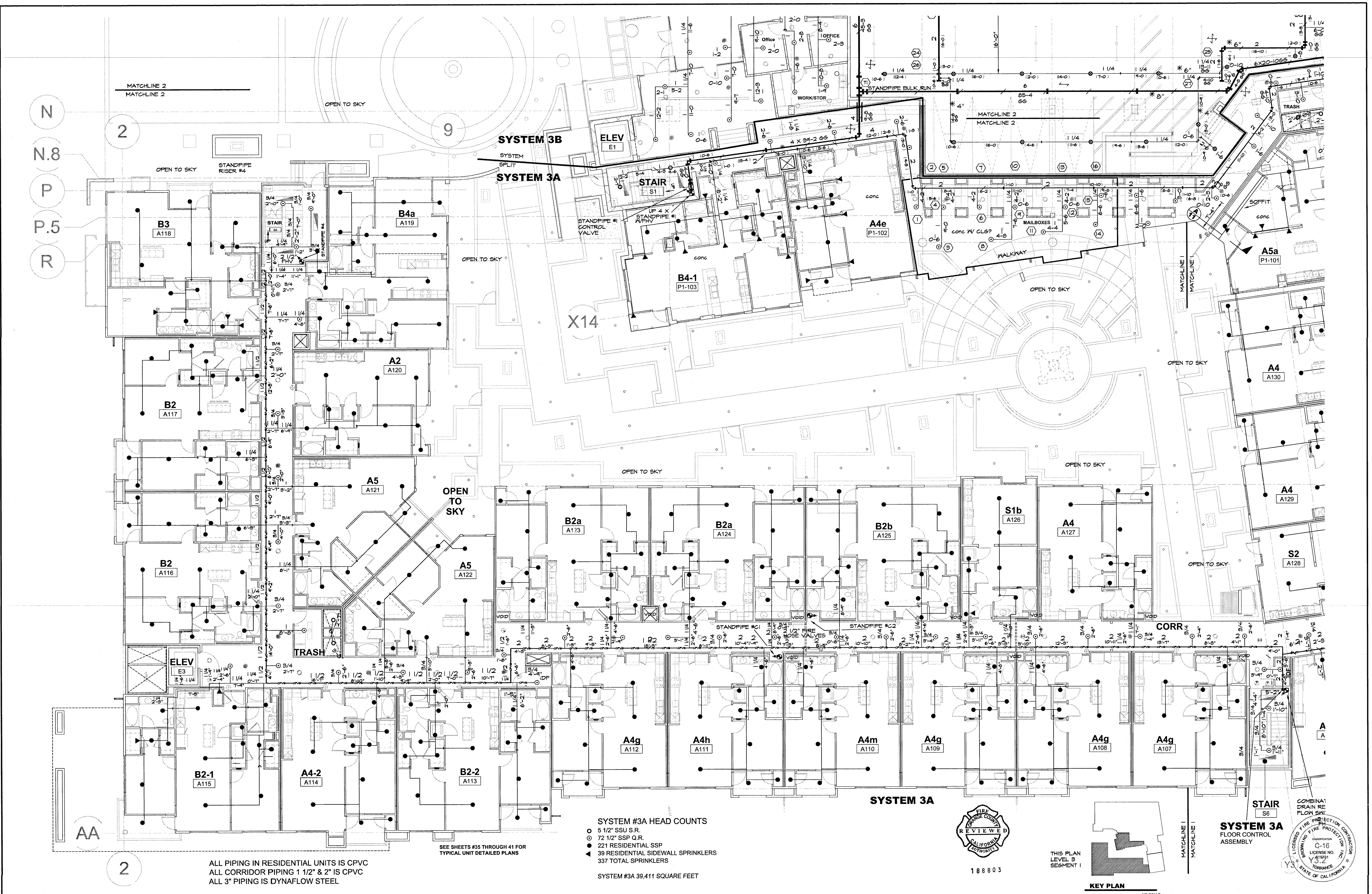
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 2 SYSTEMS #2B & 2C SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	9 OF 41



SYSTEM #3A HEAD COUNTS
- 5 1/2" SSU S.R.
- 72 1/2" SSP Q.R.
- 221 RESIDENTIAL SSP
- 39 RESIDENTIAL SIDEWALL SPRINKLERS
- 337 TOTAL SPRINKLERS

SYSTEM #3A 39,411 SQUARE FEET

SEE SHEETS #35 THROUGH 41 FOR TYPICAL UNIT DETAILED PLANS

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
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WATER DEPT:
ADDRESS:
CITY:
PHONE:

CONTRACT WITH:
ADDRESS:
CITY:
PHONE:

ARCHITECT:
ADDRESS:
CITY:
PHONE:

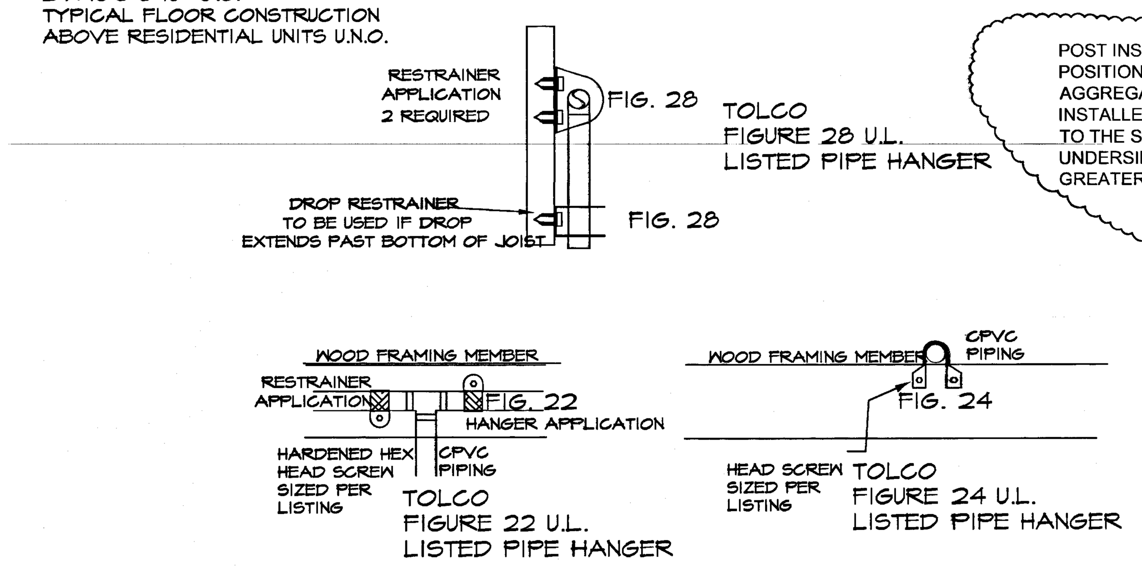
SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 3 SYSTEM #3A SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
10 OF 41

2 X 10'S @ 16" O.C.
TYPICAL FLOOR CONSTRUCTION
ABOVE RESIDENTIAL UNITS U.N.O.



POST INSTALLED ANCHORS SUPPORTING PIPES 4" OR LESS IN THE VERTICAL POSITION, THE CONCRETE SHALL BE THE GRAVEL OR CRUSHED STONE AGGREGATE TYPE. WHEN SUPPORTING PIPES 5" OR LARGER, THE POST INSTALLED ANCHORS ARE ALTERNATED WITH HANGERS CONNECTED DIRECTLY TO THE STRUCTURAL MEMBERS, SUCH AS TRUSSES AND GIRDERS, OR TO THE UNDERSIDE OF THE CONCRETE BEAMS. WHEN SUPPORTING PIPES 4" OR GREATER, THE POST-INSTALLED ANCHORS WILL BE SPACED NOT OVER 10' APART.

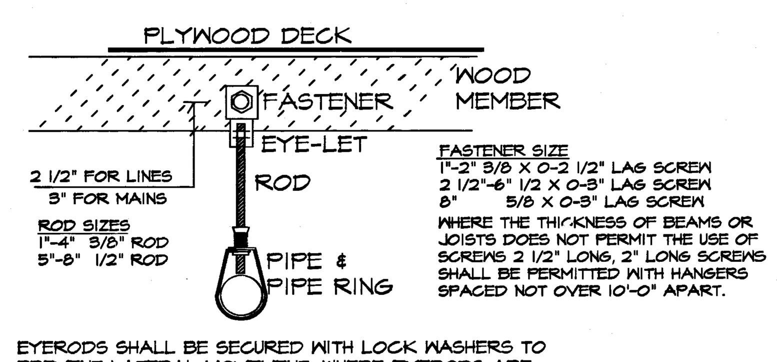
CPVC PIPING HANGER DETAILS

NO SCALE

LIGHT HAZARD
.10 GPM PER SQ. FT. OVER THE REMOTE 400 SQUARE FEET
10 SPRINKLERS CALCULATED
162.0 GPM @ 87.4 PSI REQUIRED AT THE BASE OF RISER
100 GPM HOSE STREAM OUTSIDE

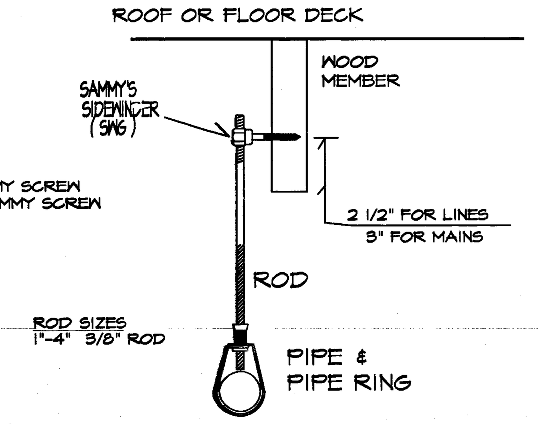
INSTALLATION OF SPRINKLER HEADS TYCO SPRINKLER COMPANY
PENDENT SPRINKLER SPACING:
180 SQUARE FEET MAXIMUM SPACING 18' MAXIMUM BETWEEN HEADS
9' MAXIMUM FROM WALLS
8' MINIMUM DISTANCE BETWEEN SPRINKLERS
SIDEWALL SPRINKLER SPACING:
180 SQUARE FEET MAXIMUM SPACING 16' MAXIMUM BETWEEN HEADS
16' MAXIMUM WIDTH X 16' MAXIMUM THROW
8' MINIMUM DISTANCE BETWEEN SPRINKLERS

1. MINIMUM DISTANCE FROM ADJACENT WALL 4".
2. MINIMUM DISTANCES FROM HEAT SOURCES:
1'-6" LATERALLY FROM THE SURFACE OF KITCHEN RANGES AND WALL OVENS.
3' LATERALLY FROM THE EDGES AND 5' LATERALLY FROM THE FRONT OF FIREPLACES.
3'-6" LATERALLY FROM THE SURFACES OF A COAL OR WOOD BURNING STOVE.
6" LATERALLY FROM THE SURFACES OF FURNACES AND WATER HEATERS AND FLUSH MOUNTED LIGHT FIXTURES.
2' LATERALLY FROM THE SURFACES OF HOT AIR FLUES, UNINSULATED HEATING DUCTS, AND UNINSULATED WATER PIPES.
2' LATERALLY FROM THE EDGES OF A CEILING MOUNTED HOT AIR DIFFUSER, AND 2' LATERALLY FROM THE SIDES AND 3' LATERALLY FROM THE FRONT OF A WALL MOUNTED HOT AIR DIFFUSER.
3. TO AVOID COLD SOLDIERING SPRINKLERS SHALL BE NO CLOSER THAN 8'.
4. SPRINKLERS MAY BE OMITTED FROM BATHROOMS NOT EXCEEDING 55 SQUARE FEET WITH WALLS AND CEILINGS OF NONCOMBUSTIBLE OR LIMITED COMBUSTIBLE MATERIALS WITH A 15-MINUTE THERMAL BARRIER RATING INCLUDING THE WALLS AND CEILINGS BEHIND FIXTURES.
5. SPRINKLERS SHALL BE LOCATED AT LEAST 2' FROM ALL SURFACE MOUNTED SMOKE DETECTORS.

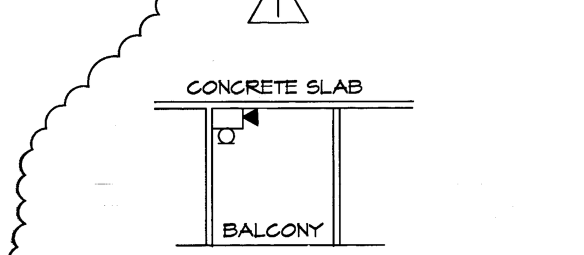


FASTENER SIZE
1"-2" 3/8 X 0-2 1/2" LAG SCREW
2 1/2"-6" 1/2 X 0-3" LAG SCREW
8" 5/8 X 0-3" LAG SCREW
WHERE THE THICKNESS OF BEAMS OR JOISTS DOES NOT PERMIT THE USE OF SCREWS 2 1/2" LONG, 2" LONG SCREWS SHALL BE PERMITTED WITH HANGERS SPACED NOT OVER 10'-0" APART.

EYERODS SHALL BE SECURED WITH LOCK WASHERS TO PREVENT LATERAL MOVEMENT. WHERE EYERODS ARE FASTENED TO WOOD MEMBERS, THE EYEROD SHALL BE BACKED BACKED WITH A LARGE FLAT WASHER BEARING DIRECTLY AGAINST THE WOOD MEMBER, IN ADDITION TO THE LOCK WASHER



SAMMY SCREW SIZE
1"-3" PIPE USE SWG 20 SAMMY SCREW
4" PIPE USE SWG 25-380 SAMMY SCREW



SECTION A/11 SCALE 1/8" = 1'-0"

HANGER DETAILS

NO SCALE

Maximum Distance between Hangers (ft - in.)

Nominal Pipe Size (in.)	3/4	1	11/4	11/2	2	21/2	3	4	6
Steel pipe except threaded lightwall	N.A.	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0
CPVC	5-6	6-0	6-6	7-0	8-0	9-0	10-0	N/A	N/A
COPPER	8-0	8-0	10-0	10-0	12-0	12-0	12-0	12-0	12-0

Maximum Support Spacing Distance From Sprinkler Drop Along Line

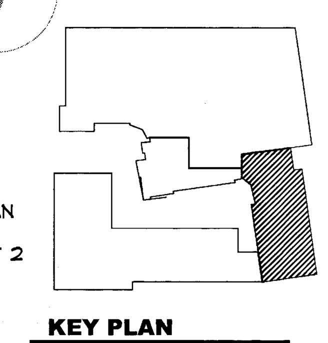
Nominal Pipe Size (in.)	3/4	1	11/4	11/2	2	21/2	3	4	6
CPVC < 100 psi	4'	5'	6'	7'	7'	7'	7'	N/A	N/A
CPVC > 100 psi	3'	4'	5'	7'	7'	7'	7'	N/A	N/A

Maximum Support Spacing Distance From Sprinkler Drop At End Of Line

Nominal Pipe Size (in.)	3/4	1	11/4	11/2	2	21/2	3	4	6
CPVC < 100 psi	9"	1'	16"	2'	2'	2'	2'	N/A	N/A
CPVC > 100 psi	6"	9"	1'	1'	1'	1'	1'	N/A	N/A

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS

ALL STANDPIPE CONTROL VALVES TO BE LOCATED NO GREATER THAN 7' AFF



KEY PLAN
NO SCALE

SYSTEM #3A HEAD COUNTS
5 1/2" SSU S.R.
72 1/2" SSP Q.R.
221 RESIDENTIAL SSP
39 RESIDENTIAL SIDEWALL SPRINKLERS
337 TOTAL SPRINKLERS

SYSTEM #3A 39,411 SQUARE FEET

ORANGE COUNTY FIRE AUTHORITY REVIEWED CALIFORNIA
188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

NOTES:

HANGER LEGEND
#1 EXPANSION SHELL, ROD AND RING
#2 C-CLAMP, ROD AND RING
#3 POWDER DRIVEN STUD, ROD AND RING
#4 ANGLE CLIP ROD AND RING
#5 L-ROD AND RING
#6 EYE ROD AND RING
#7 COACH SCREW ROD AND RING
#8 CEILING FLANGE, ROD AND RING

STANDARD SYMBOLS	STANDARD SYMBOLS
POST INDICATOR VALVE	ALARM CHECK VALVE
KEY VALVE	RISER W/ ALARM CHECK VALVE
FIRE HYDRANT	RISER W/ DELUGE VALVE
FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
SWING CHECK VALVE	WATER MOTOR ALARM GONG
NEW UNDERGROUND	ELECTRIC ALARM BELL
EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT:
ADDRESS:
CITY:
PHONE:

CONTRACT WITH:
ADDRESS:
CITY:
PHONE:
ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

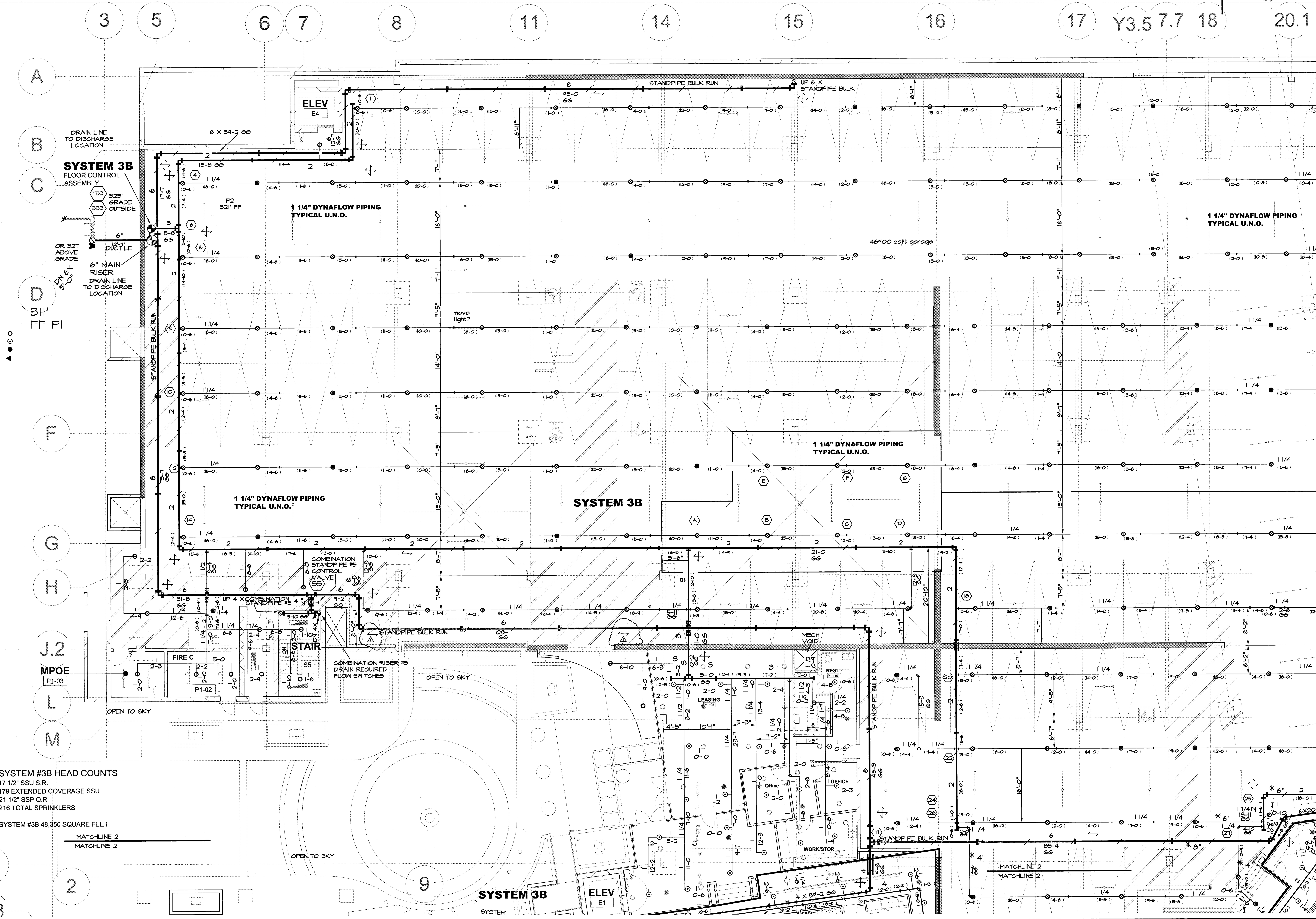
PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 3 SYSTEM #3A SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

PARKING GARAGE SPRINKLER SYSTEM
PIPING TO BE HUNG WITH HANGERS LESS
THAN 6" LONG FROM TOP OF PIPE TO
BOTTOM OF DECK. NO LATERAL
BRACING IS REQUIRED
SEE SHEET #17 FOR EQB CALCULATIONS



HYDRAULIC CALCULATION PLATE
INFORMATION SYSTEM #3B
PARKING GARAGE LEVEL 3
.15 GPM PER SQ. FT. OVER THE MOST
REMOTE 1,500 SQ. FT.
301.6 GPM @ 68.4 PSI REQUIRED AT THE
BASE OF RISER
ORDINARY HAZARD GROUP #1
250 GPM HOSE STREAM OUTSIDE
BROWNING FIRE PROTECTION
551.6 GPM @ 85.1 PSI REQUIRED
AT THE WATER SUPPLY SOURCE
NO FIRE PUMP
7 K=11.2 SPRINKLERS CALCULATED
SSU & SSP
SIN TY5137 & TY5237 STANDARD RESPONSE
200 DEGREE
39 GPM @ 12.1 PSI REQUIRED AT REMOTE
SPRINKLER
NO PRESSURE REDUCING VALVES
NO DELUGE SYSTEM
16' X 16' MAXIMUM SPACING
DESIGN PER NFPA #13 2010 EDITION

SYSTEM #3B HEAD COUNTS
- 17 1/2" SSU S.R.
- 179 EXTENDED COVERAGE SSU
- 21 1/2" SSP Q.R
216 TOTAL SPRINKLERS

SYSTEM #3B 48,350 SQUARE FEET

ORANGE COUNTY CALIFORNIA REVIEWED AUTHORITY
188803

LICENSED FIRE PROTECTION CONTRACTOR
BROWNING FIRE PROTECTION INC.
CLASSIFICATION C-16
LICENSE NO. 619731
TORRANCE
STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
1.
2.
3.
4.
WATER DEPT:
ADDRESS:
CITY:
PHONE:

CONTRACT WITH:
ADDRESS:
CITY:
PHONE:
ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

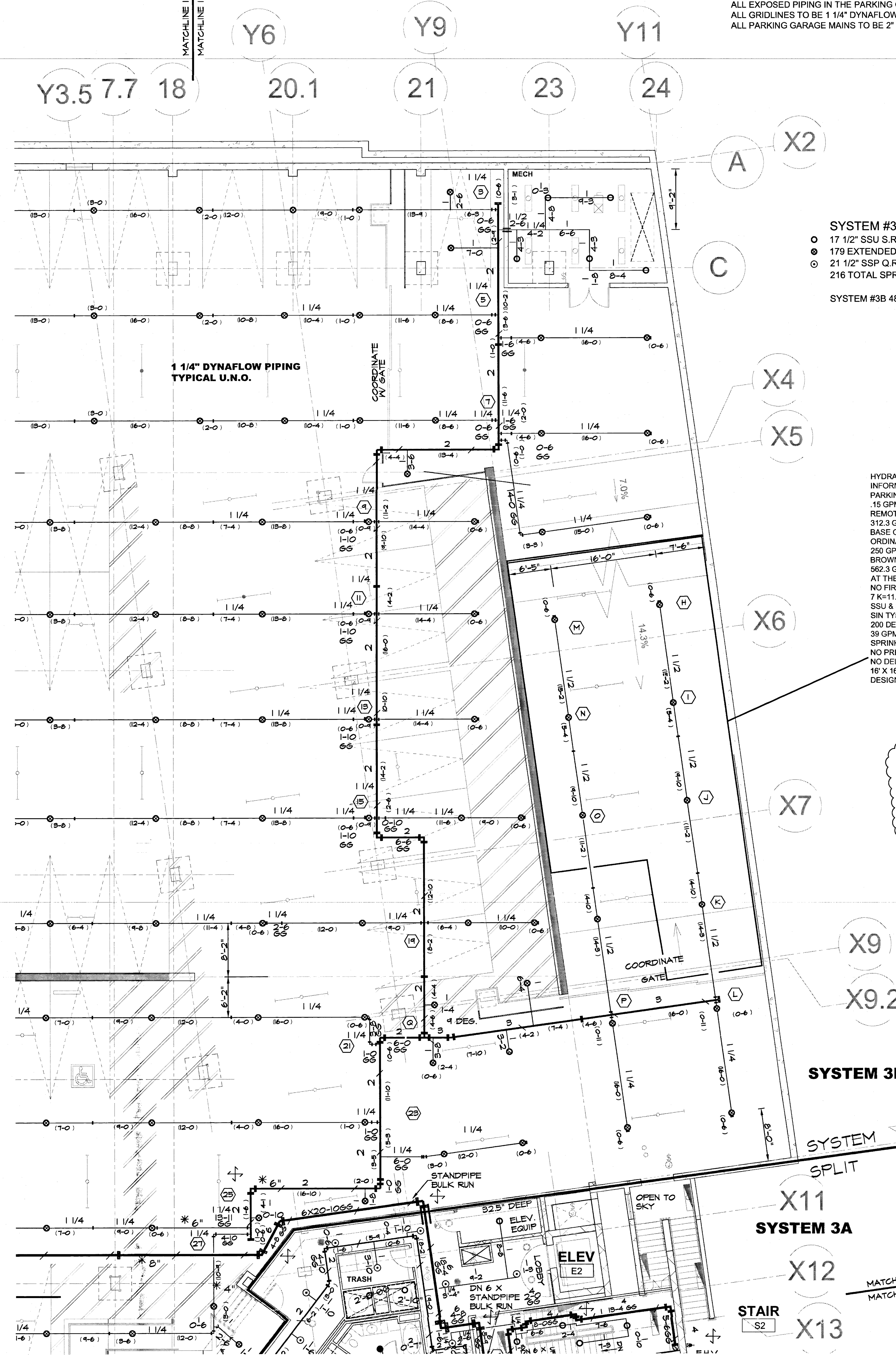
PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 3 SYSTEM #3B SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
12 OF 41

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

PARKING GARAGE SPRINKLER SYSTEM PIPING TO BE HUNG WITH HANGERS LESS THAN 6" LONG FROM TOP OF PIPE TO BOTTOM OF DECK. NO LATERAL BRACING IS REQUIRED
SEE SHEET #17 FOR EQB CALCULATIONS



SYSTEM #3B HEAD COUNTS
- 17 1/2" SSU S.R.
- 179 EXTENDED COVERAGE SSU
- 21 1/2" SSP Q.R
- 216 TOTAL SPRINKLERS

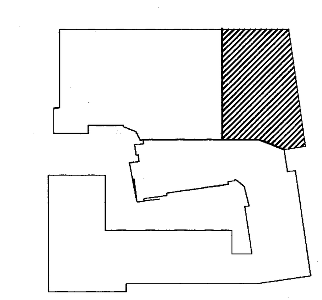
SYSTEM #3B 48,350 SQUARE FEET

HYDRAULIC CALCULATION PLATE
INFORMATION SYSTEM #3B
PARKING RAMP LEVEL 3
.15 GPM PER SQ. FT. OVER THE MOST REMOTE 1,500 SQ. FT.
312.3 GPM @ 92.2 PSI REQUIRED AT THE BASE OF RISER
ORDINARY HAZARD GROUP #1
250 GPM HOSE STREAM OUTSIDE
BROWNING FIRE PROTECTION
562.3 GPM @ 109.0 PSI REQUIRED AT THE WATER SUPPLY SOURCE
NO FIRE PUMP
7 K=11.2 SPRINKLERS CALCULATED
SSU & SSP
SIN TY5137 & TY5237 STANDARD RESPONSE
200 DEGREE
39 GPM @ 12.1 PSI REQUIRED AT REMOTE SPRINKLER
NO PRESSURE REDUCING VALVES
NO DELUGE SYSTEM
16' X 16' MAXIMUM SPACING
DESIGN PER NFPA #13 2010 EDITION

175 DEGREE
RESIDENTIAL SSP
AT EXTERIOR
BALCONIES AND
LAUNDRY ROOMS
1

SYSTEM 3B

SYSTEM 3A



KEY PLAN
NO SCALE

FIRE
ORANGE COUNTY
REVIEWED
CALIFORNIA
AUTHORITY
188803

LICENSED FIRE PROTECTION CONTRACTOR
BROWNING FIRE PROTECTION INC.
C-16
LICENSE NO. 619731
TORRANCE
STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

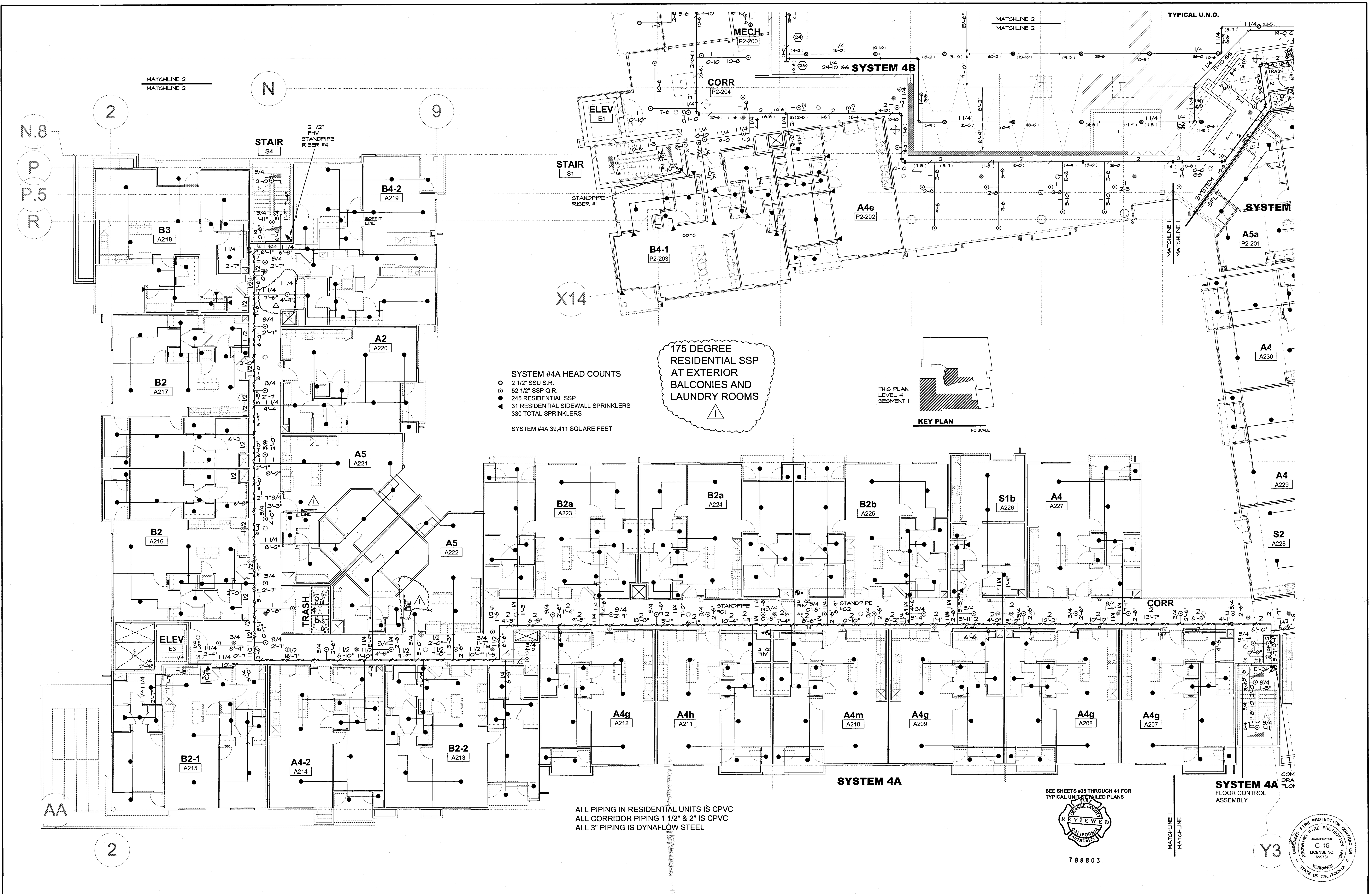
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 3 SYSTEM #3B SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	13 OF 41



NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

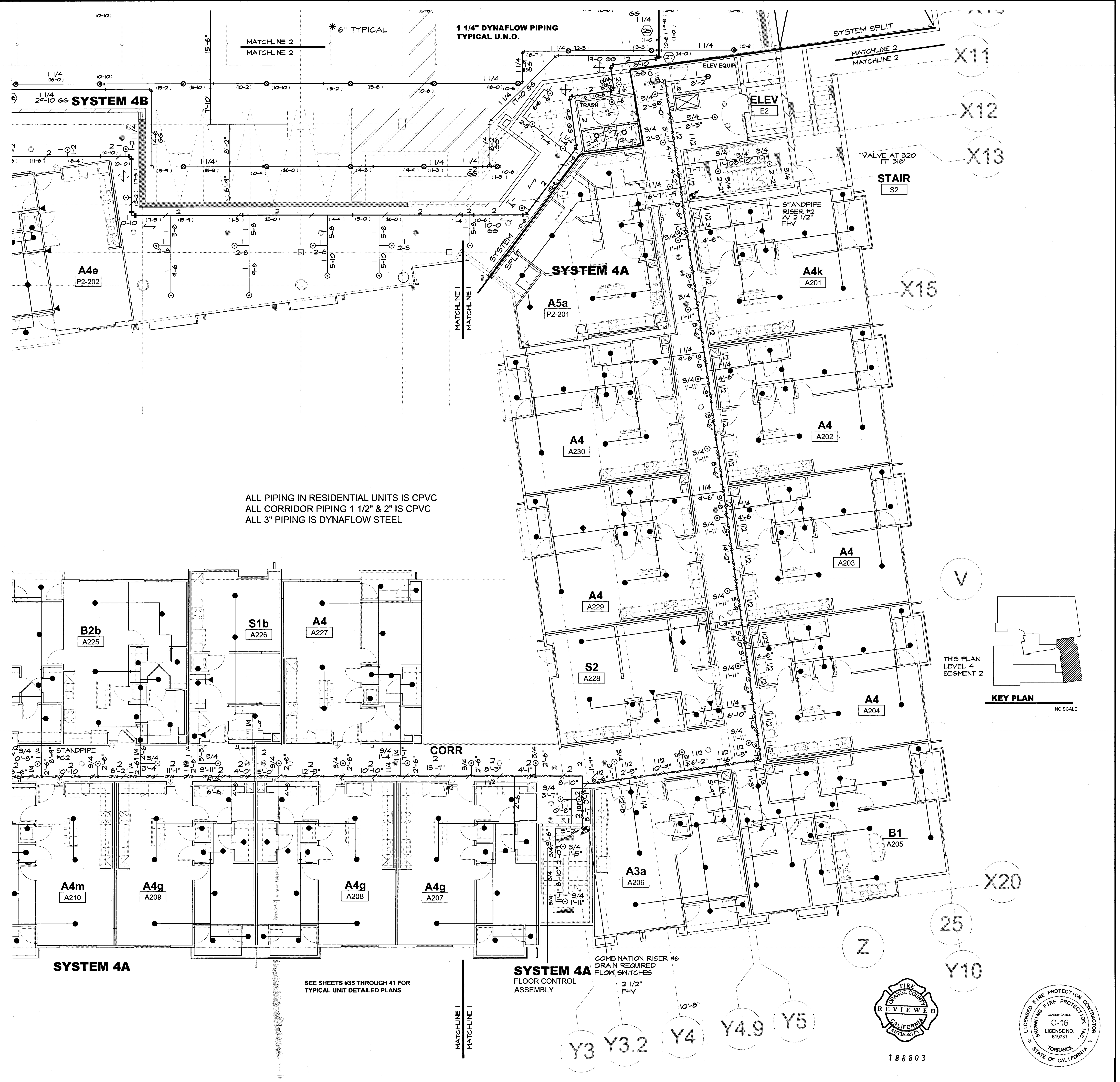
FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 4 SYSTEM #4A SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 14 OF 41



175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS

SYSTEM #4A HEAD COUNTS
- 2 1/2" SSU S.R.
- 52 1/2" SSP Q.R.
- 245 RESIDENTIAL SSP
- 31 RESIDENTIAL SIDEWALL SPRINKLERS
- 330 TOTAL SPRINKLERS

SYSTEM #4A 39,411 SQUARE FEET

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
1.
2.
3.
4.

WATER DEPT:
ADDRESS:
CITY:
PHONE:

CONTRACT WITH:
ADDRESS:
CITY:
PHONE:

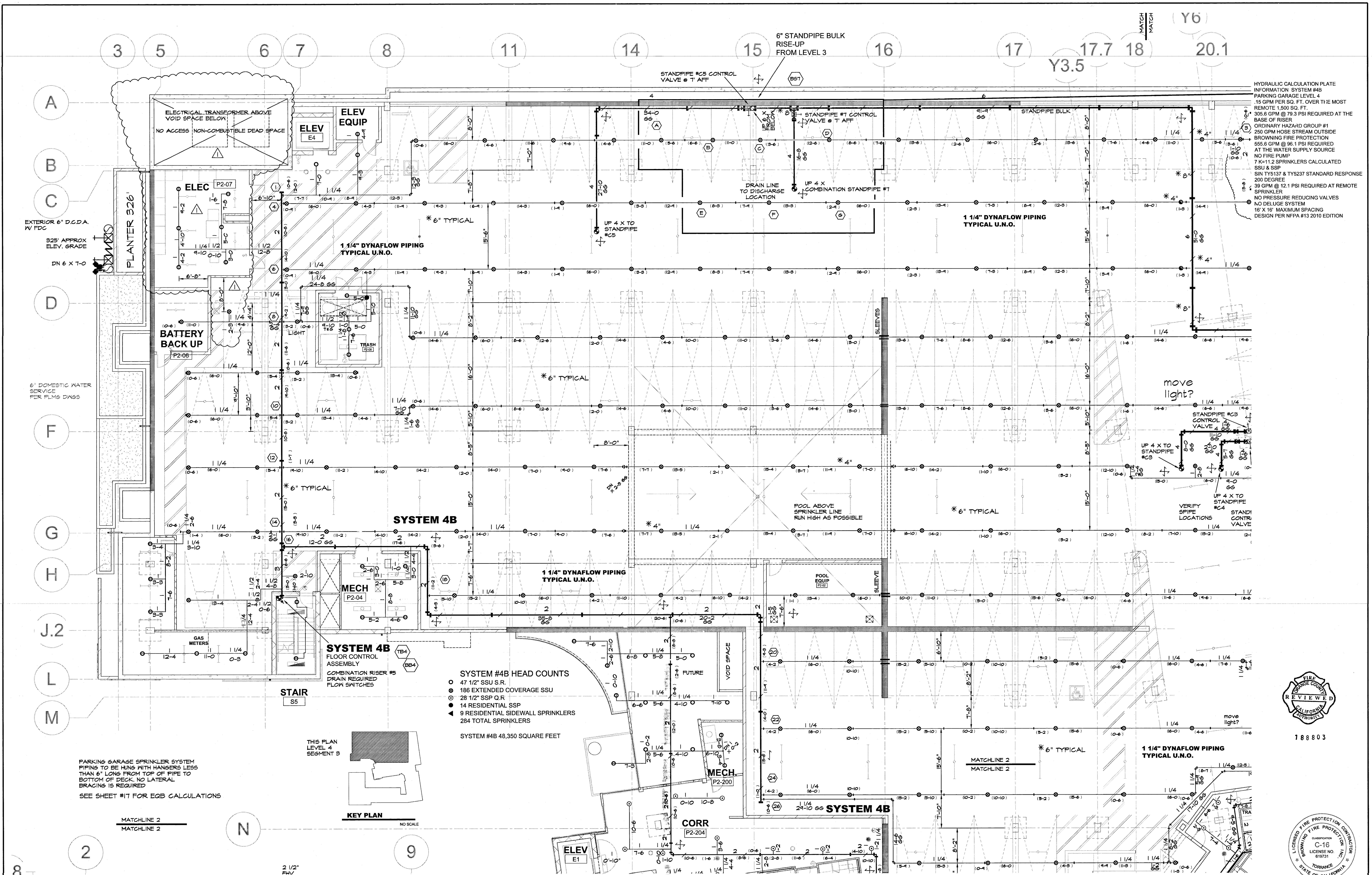
ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 4 SYSTEM #4A SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DRAWN: R
CONTRACT:
DATE: 1-30-13
DRAWING NO: 15 OF 41



ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 4 SYSTEM #4B SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 16 OF 41

Ss = 1.396 for this project Cp = .65

PARKING GARAGE EQB CALCULATIONS

Seismic Bracing Calculations

Brace Information

Length of brace:	7' MAX
Diameter of brace:	1"
Type of brace	SCH 40
Angle of brace	60-90
Least radius of gyration:	.42
L/R Value	200
Maximum horizontal load:	1,604

Seismic Brace Attachments

Structure attachment fitting or tension-only bracing system:
Make: TOLCO Model: 910
Listed load rating: 1600 Adjusted load rating per 9-3.5.10.3 1384
Sway brace (pipe attachment) fitting:
Make: TOLCO Model: 2002
Listed load rating: 2015 Adjusted load rating per 9-3.5.10.3 1744

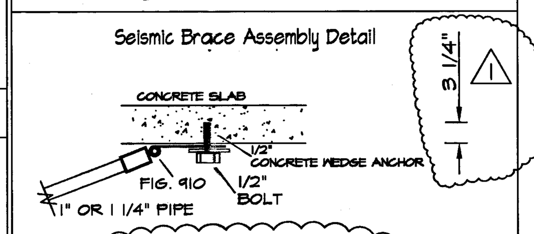
Fastener Information

Orientation of connecting surface: 60-90 DEGS 'C'

Fastener:

Type:	WEDGE ANCHOR
Diameter	1/2"
CONCRETE TYPE	3000 PSI
Maximum load:	970

Seismic Brace Assembly Detail



Brace identification no. to be used on plans)

Lateral brace ✕ Longitudinal brace ✕

Sprinkler System Load Calculation F_p = .65 X W_p

Diameter	Type	Length	Total (ft)	weight per ft		W_p	Total weight	
2"	DFLOW	40	40	3.79	lb/ft	.65	28.46	lb
					lb/ft			lb
1 1/4"	DFLOW	2 X 150'	300	1.87	lb/ft	.65	364.66	lb
1	DTHRD	3 X 20-0	60	1.75	lb/ft	.73	76.65	lb
					lb/ft			lb
					lb/ft			lb
				Total 65% Total weight			470.0	lb
				F_p X 1.15			540.25	lb

LATERAL BRACE LOAD

Diameter	Type	Length	weight per ft	W_p	X 1.15	Total weight
LONGITUDINAL BRACE CALCULATION						LONG BRACE LOAD
4"	DFLOW	80	10.86	.65	X 1.15	650
6"	SCH 10	55	23.03	.65	X 1.15	947

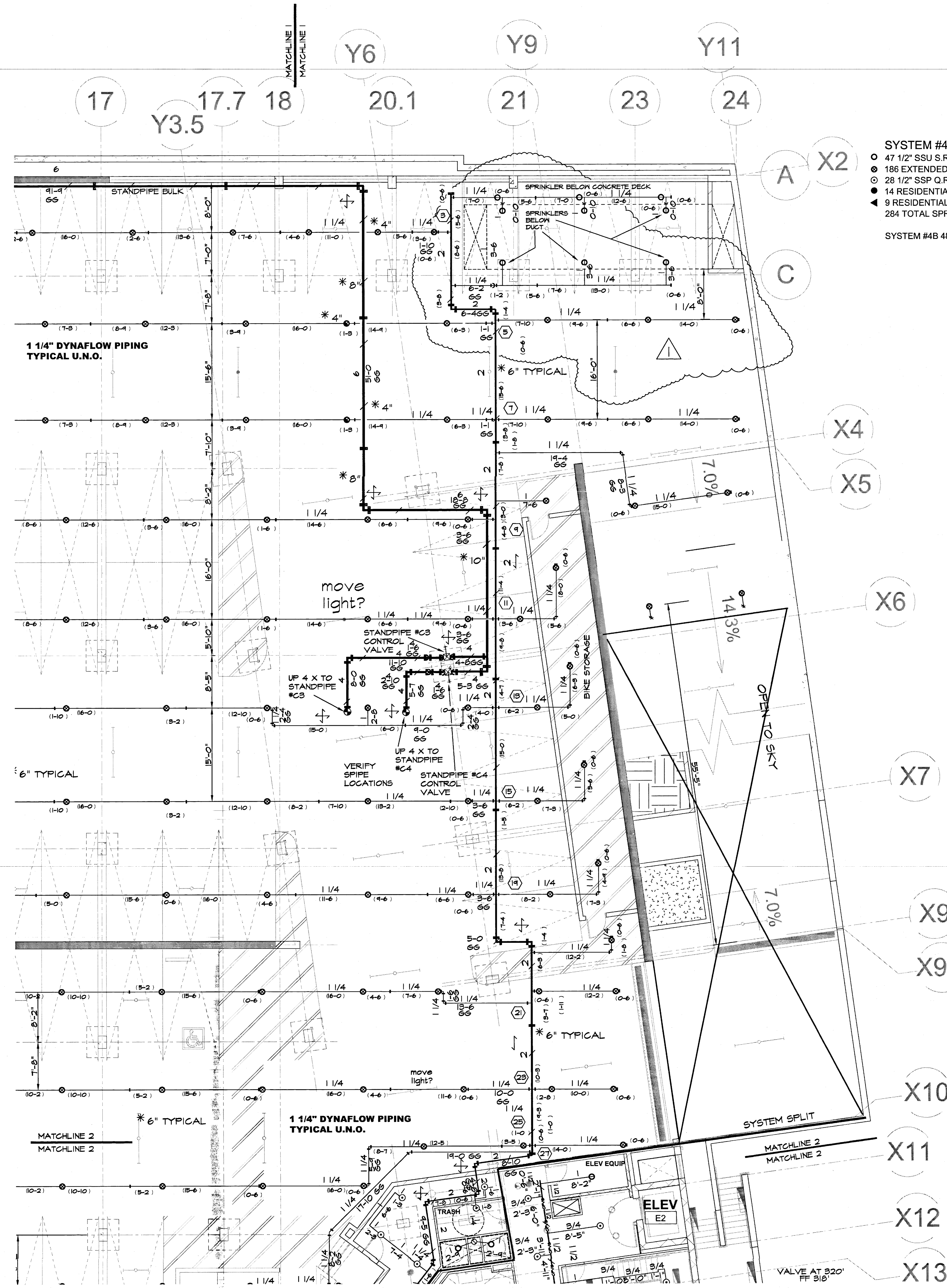
PARKING GARAGE SPRINKLER SYSTEM PIPING TO BE HUNG WITH HANGERS LESS THAN 6" LONG FROM TOP OF PIPE TO BOTTOM OF DECK. NO LATERAL BRACING IS REQUIRED

RESIDENTIAL CORRIDOR PIPING TO BE HUNG WITH RODS LESS THAN 6" LONG FROM TOP OF PIPE TO ATTACHEMENT TO THE STRUCTURE.. NO LATERAL BRACES REQUIRED

4" AND SMALLER MAINS TO HAVE LONGITUDINAL SWAY BRACING AT 80' MAXIMUM ON CENTER
4" MAINS TO HAVE LATERAL BRACES AT 40' ON CENTER WHERE HANGERS USED EXCEED 6" IN LENGTH

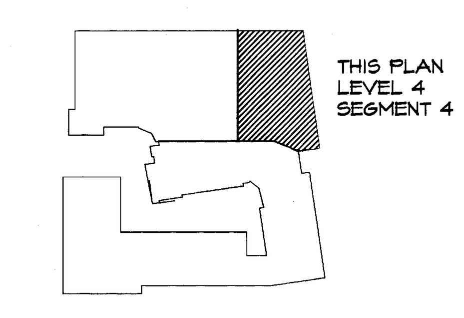
6" MAINS TO HAVE LONGITUDINAL SWAY BRACING AT 55' MAXIMUM ON CENTER
6" MAINS TO HAVE LATERAL BRACES AT 40' ON CENTER WHERE HANGERS USED EXCEED 6" IN LENGTH

RESIDENTIAL UNIT PIPING IS CPVC
2" MAIN IN COMMON CORRIDOR IS CPVC
ALL 2 1/2", 3" & 4" ARE DYNA FLOW.
ALL 1" ARMOVERS FROM STEEL MAINS ARE DYNATHREAD
ALL EXPOSED PIPING IN SPRINKLERED ATTIC SPACES ARE STEEL



SYSTEM #4B HEAD COUNTS
- 47 1/2" SSU S.R.
- 186 EXTENDED COVERAGE SSU
- 28 1/2" SSP Q.R
- 14 RESIDENTIAL SSP
- 9 RESIDENTIAL SIDEWALL SPRINKLERS
- 284 TOTAL SPRINKLERS

SYSTEM #4B 48,350 SQUARE FEET



KEY PLAN
NO SCALE

ALL EXPOSED PIPING IN THE PARKING GARAGES AND COMMON AREAS TO BE BLACK STEEL
ALL GRIDLINES TO BE 1 1/4" DYNAFLOW BLACK STEEL U.N.O.
ALL PARKING GARAGE MAINS TO BE 2" OR 3" DYNAFLOW BLACK STEEL

FIRE ORANGE COUNTY REVIEWED CALIFORNIA AUTHORITY
188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:

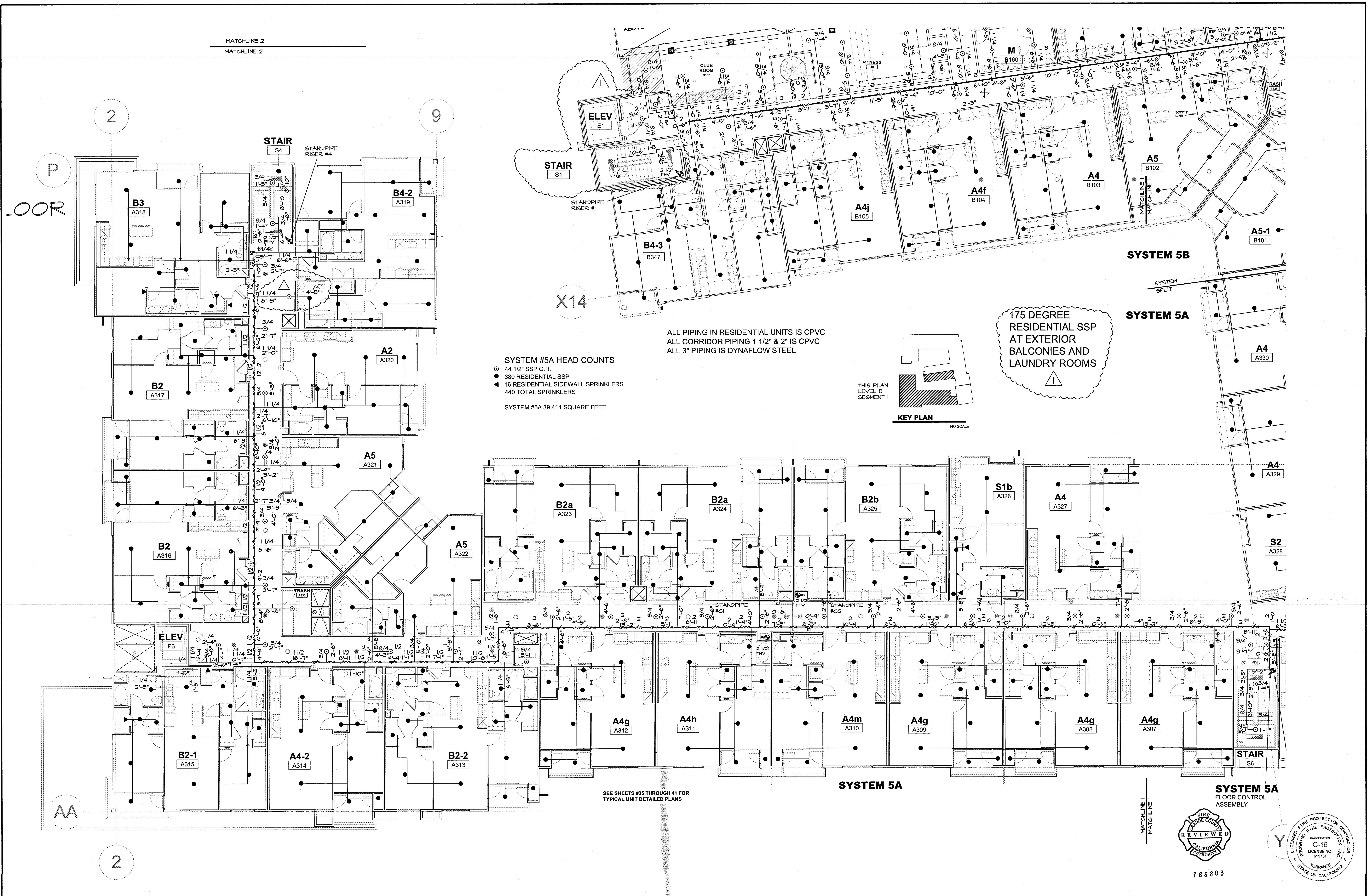
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 4 SYSTEM #4B SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: DATE: 1-30-13
DRAWN: R DRAWING NO:
CONTRACT: 17 OF 41



NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
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WATER DEPT:
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CITY:
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ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 5 SYSTEM #5A SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
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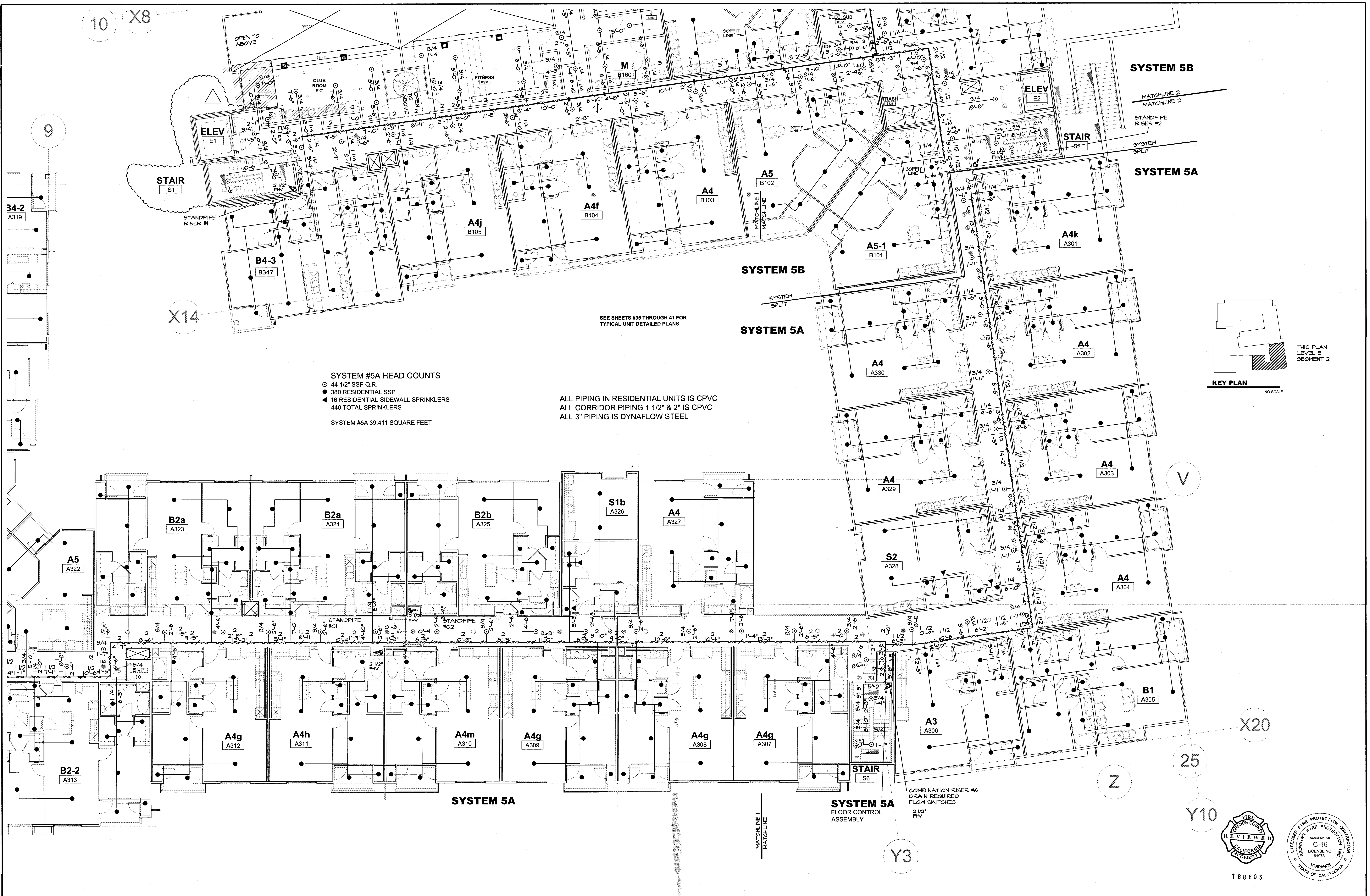
CONTRACT:
18 OF 41



SYSTEM #5A HEAD COUNTS
- 44 1/2" SSP Q.R.
- 380 RESIDENTIAL SSP
- 16 RESIDENTIAL SIDEWALL SPRINKLERS
- 440 TOTAL SPRINKLERS

SYSTEM #5A 39,411 SQUARE FEET

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

ORANGE COUNTY FIRE AUTHORITY CALIFORNIA REVIEWED

188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
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WATER DEPT:
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CITY:
PHONE:

ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 5 SYSTEM #5A SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
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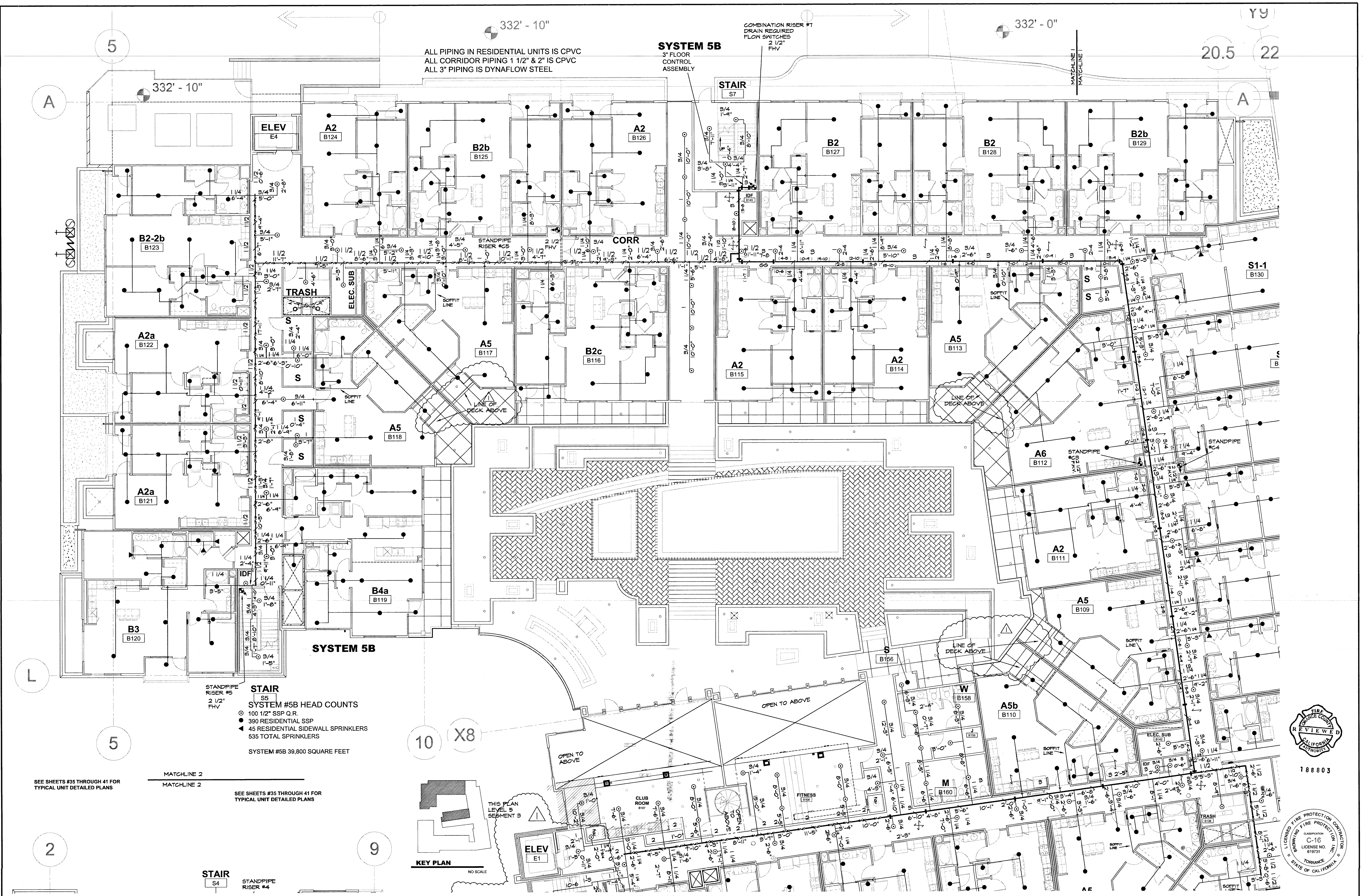
DRAWING NO:
CONTRACT:
19 OF 41



NOTES:

HANGER LEGEND
#1 EXPANSION SHELL, ROD AND RING
#2 C-CLAMP, ROD AND RING
#3 POWDER DRIVEN STUD, ROD AND RING
#4 ANGLE CLIP ROD AND RING
#5 L-ROD AND RING
#6 EYE ROD AND RING
#7 COACH SCREW ROD AND RING
#8 CEILING FLANGE, ROD AND RING

STANDARD SYMBOLS	STANDARD SYMBOLS
POST INDICATOR VALVE	ALARM CHECK VALVE
KEY VALVE	RISER W/ ALARM CHECK VALVE
FIRE HYDRANT	RISER W/ DELUGE VALVE
FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
SWING CHECK VALVE	WATER MOTOR ALARM GONG
NEW UNDERGROUND	ELECTRIC ALARM BELL
EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 5 SYSTEM #5B SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: DATE: 1-30-13
DRAWN: R DRAWING NO:
CONTRACT: 20 OF 41

SYSTEM #5B HEAD COUNTS

- 100 1/2" SSP Q.R.
- 390 RESIDENTIAL SSP
- 45 RESIDENTIAL SIDEWALL SPRINKLERS
- 535 TOTAL SPRINKLERS

SYSTEM #5B 39,800 SQUARE FEET

SEE SHEETS #35 THROUGH 41 FOR TYPICAL UNIT DETAILED PLANS

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
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WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 5 SYSTEM #5B SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DRAWN: R
CONTRACT:
DATE: 1-30-13
DRAWING NO: 21 OF 41

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
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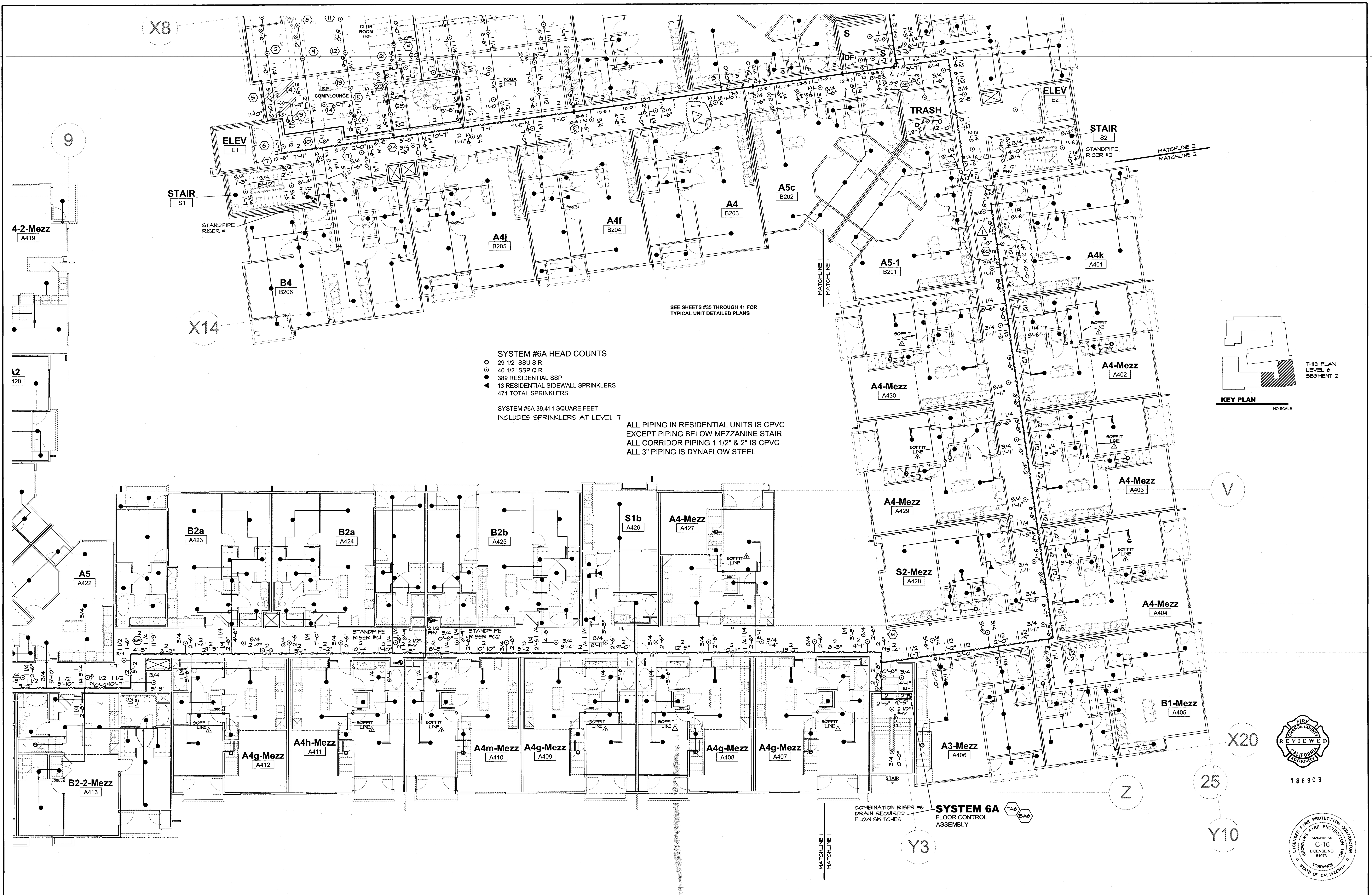
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 6 SYSTEM #6A SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DRAWN: R
CONTRACT:
DATE: 1-30-13
DRAWING NO: 22 OF 41



NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

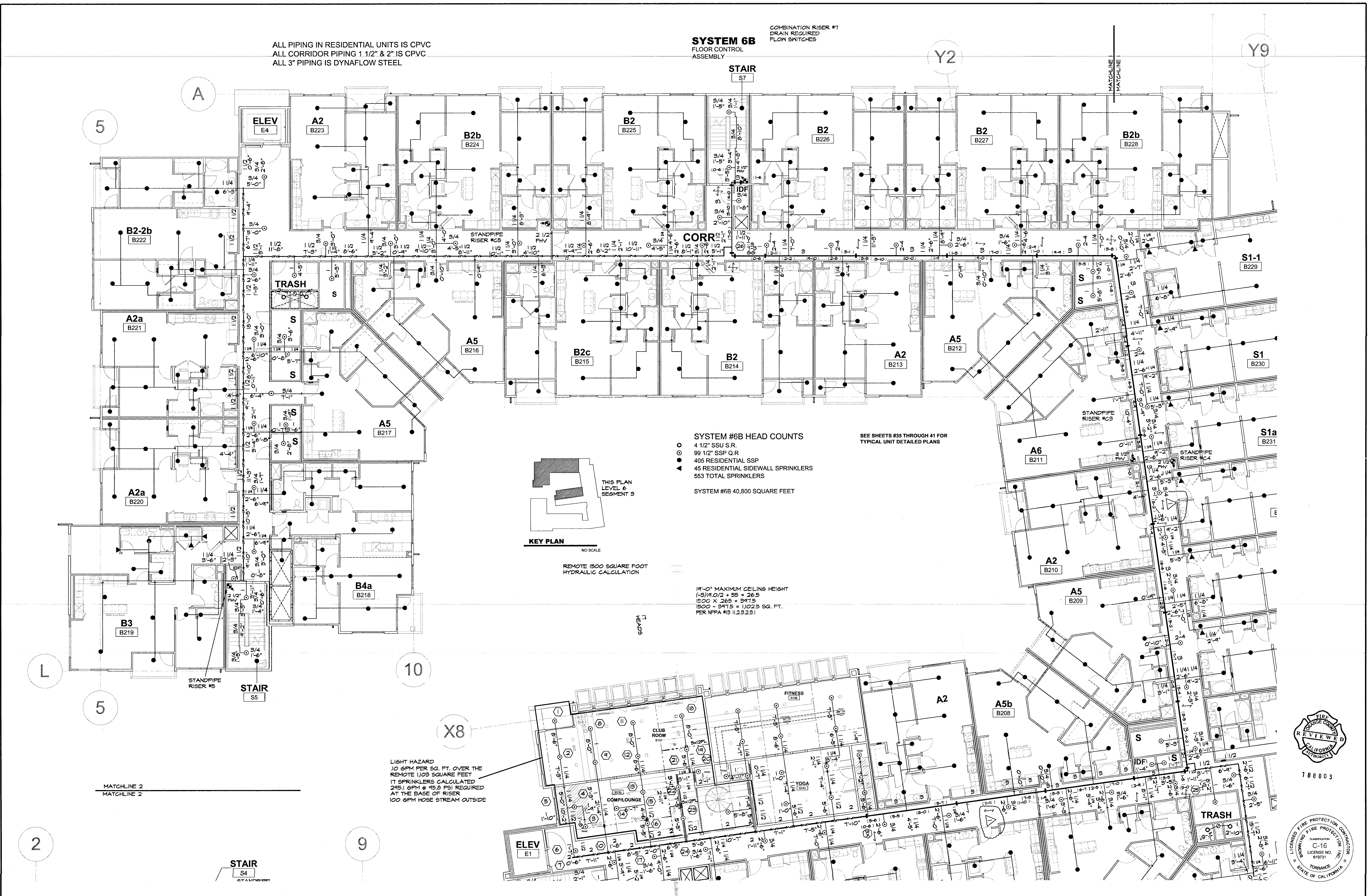
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 6 SYSTEM #6A SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	23 OF 41



NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
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WATER DEPT:
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CITY:
PHONE:

ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 6 SYSTEM #6B SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
24 OF 41

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

SYSTEM 6B
FLOOR CONTROL ASSEMBLY

COMBINATION RISER #7
DRAIN REQUIRED
FLOW SWITCHES

SEE SHEETS #35 THROUGH 41 FOR TYPICAL UNIT DETAILED PLANS

SYSTEM #6B HEAD COUNTS
- 4 1/2" SSU S.R.
- 99 1/2" SSP Q.R
- 405 RESIDENTIAL SSP
- 45 RESIDENTIAL SIDEWALL SPRINKLERS
- 553 TOTAL SPRINKLERS

SYSTEM #6B 40,800 SQUARE FEET

THIS PLAN LEVEL 6 SEGMENT 4

KEY PLAN
NO SCALE

19'-0" MAXIMUM CEILING HEIGHT
(-3)19.0/2 + 55 = 26.5
1500 X .265 = 397.5
1500 - 397.5 = 1,102.5 SQ. FT.
PER NFPA #13 11.2.3.2.3.1

188803

LICENSED FIRE PROTECTION CONTRACTOR — BROWNING FIRE PROTECTION INC. — CLASSIFICATION C-16 — LICENSE NO. 619731 — TORRANCE — STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
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2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 6 SYSTEM #6B SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
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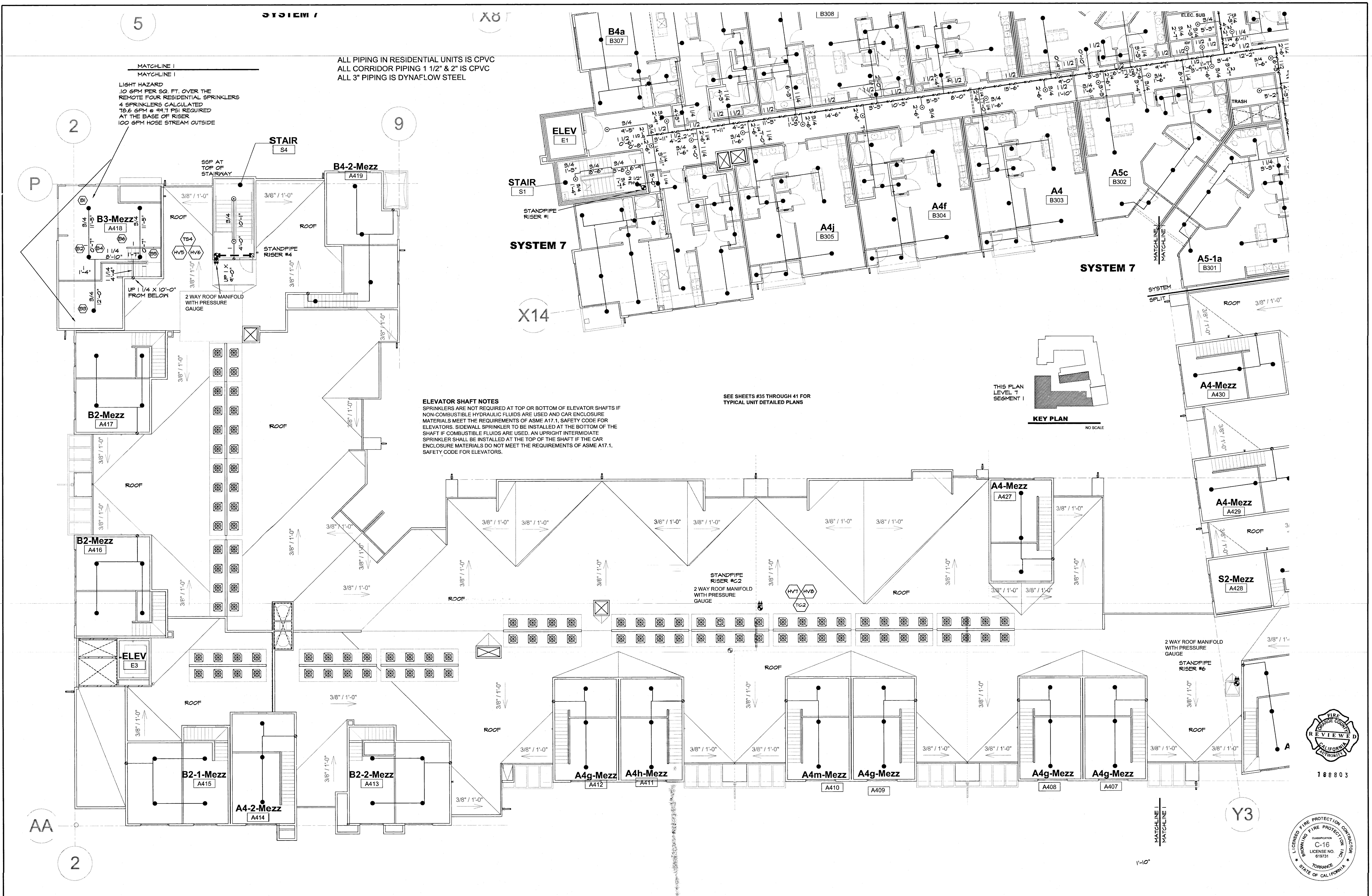
DRAWING NO:
CONTRACT:
25 OF 41



NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
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WATER DEPT:
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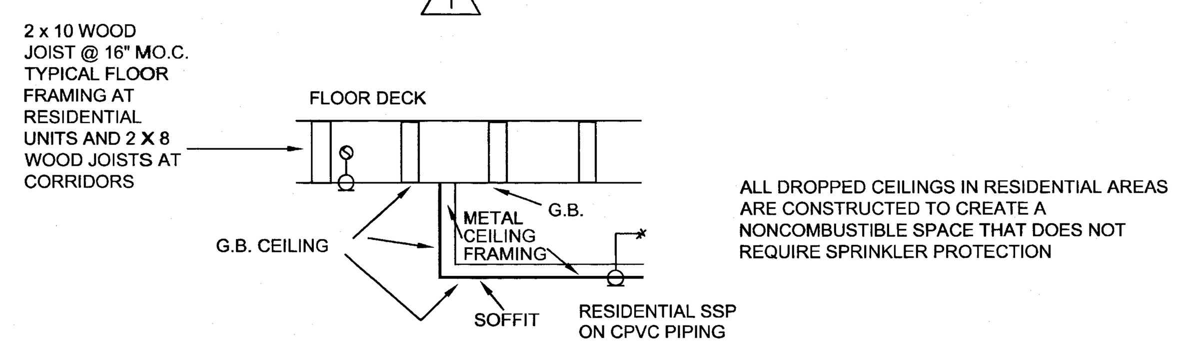
CONTRACT WITH:
ADDRESS:
CITY:
PHONE:
ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 7 SYSTEM #6A ROOF SEGMENT 1

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
26 OF 41



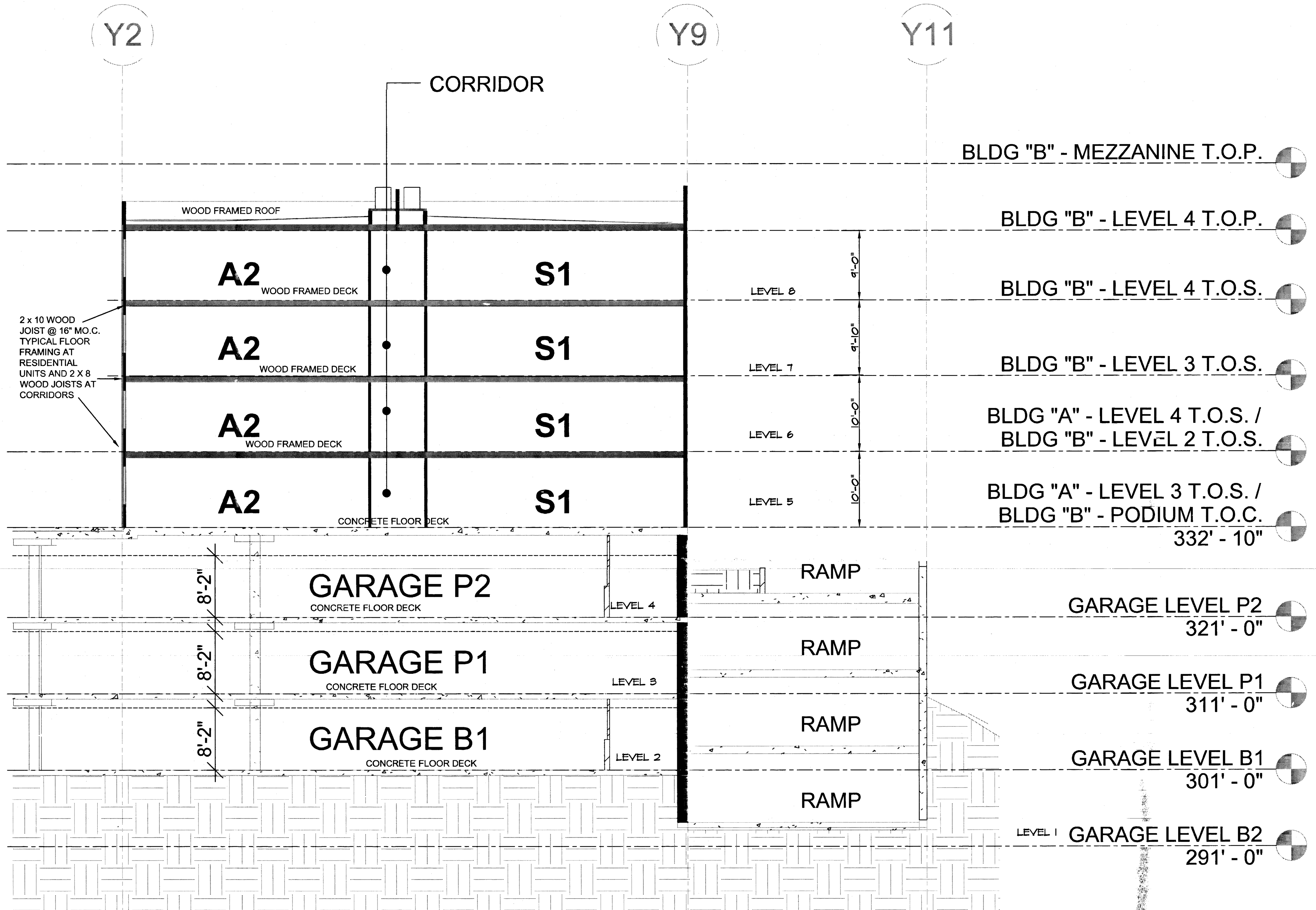
ALL DROPPED CEILINGS IN RESIDENTIAL AREAS ARE CONSTRUCTED TO CREATE A NONCOMBUSTIBLE SPACE THAT DOES NOT REQUIRE SPRINKLER PROTECTION

RESIDENTIAL SPRINKLER DEFLECTORS TO BE PER SPRINKLER LISTING AND NFPA #13D

DETAIL B / 27 NO SCALE

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS

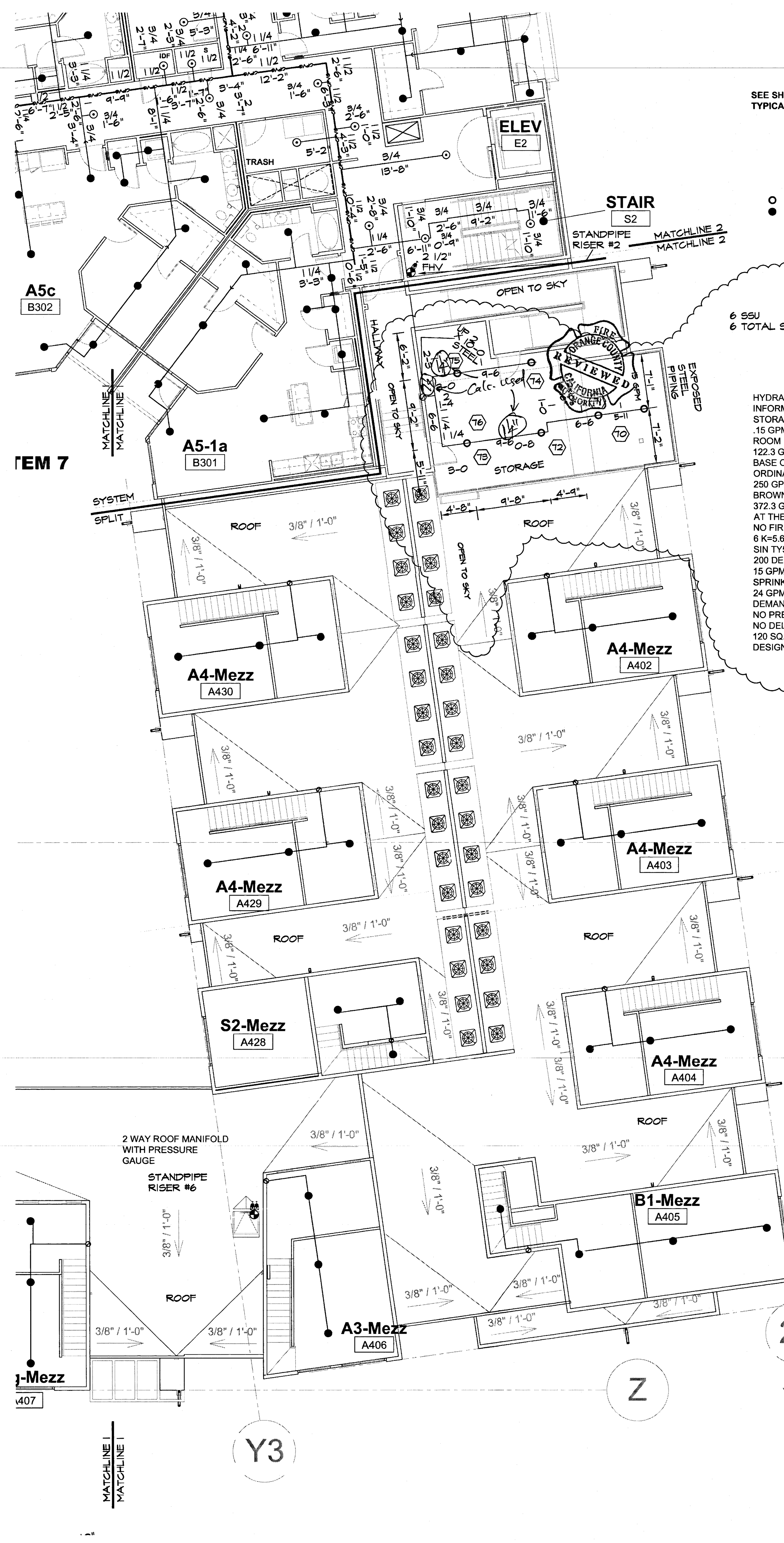


SECTION

SCALE 1/8" = 1'-0"

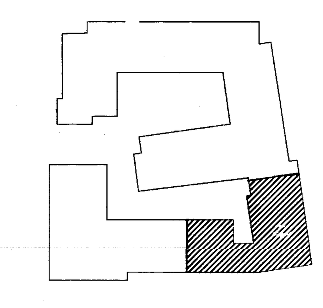
SEE SHEETS #35 THROUGH 41 FOR TYPICAL UNIT DETAILED PLANS

○ COMMERCIAL S.R. SSU
● RESIDENTIAL SSP



6 SSU
6 TOTAL SPRINKLERS SYSTEM #6A THIS LEVEL

HYDRAULIC CALCULATION PLATE
INFORMATION SYSTEM #6A
STORAGE ROOM LEVEL 7
.15 GPM PER SQ. FT. OVER THE ENTIRE ROOM
122.3 GPM @ 108.2 PSI REQUIRED AT THE BASE OF RISER
ORDINARY HAZARD GROUP #1
250 GPM HOSE STREAM OUTSIDE
BROWNING FIRE PROTECTION
372.3 GPM @ 124.1 PSI REQUIRED AT THE WATER SUPPLY SOURCE
NO FIRE PUMP
6 K=5.6 SPRINKLERS CALCULATED
SIN TY5137 STANDARD RESPONSE
200 DEGREE
15 GPM @ 7 PSI REQUIRED AT REMOTE SPRINKLER
24 GPM @ 18.4 PSI REQUIRED AT MOST DEMANDING SPRINKLER NODE #24
NO PRESSURE REDUCING VALVES
NO DELUGE SYSTEM
120 SQ. FT. MAXIMUM SPACING
DESIGN PER NFPA #13 2010 EDITION



THIS PLAN LEVEL 7 SEGMENT 2

KEY PLAN NO SCALE

ORANGE COUNTY FIRE AUTHORITY — REVIEWED — CALIFORNIA
188803

LICENSED FIRE PROTECTION CONTRACTOR — BROWNING FIRE PROTECTION INC. — CLASSIFICATION C-16 — LICENSE NO. 619731 — TORRANCE — STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

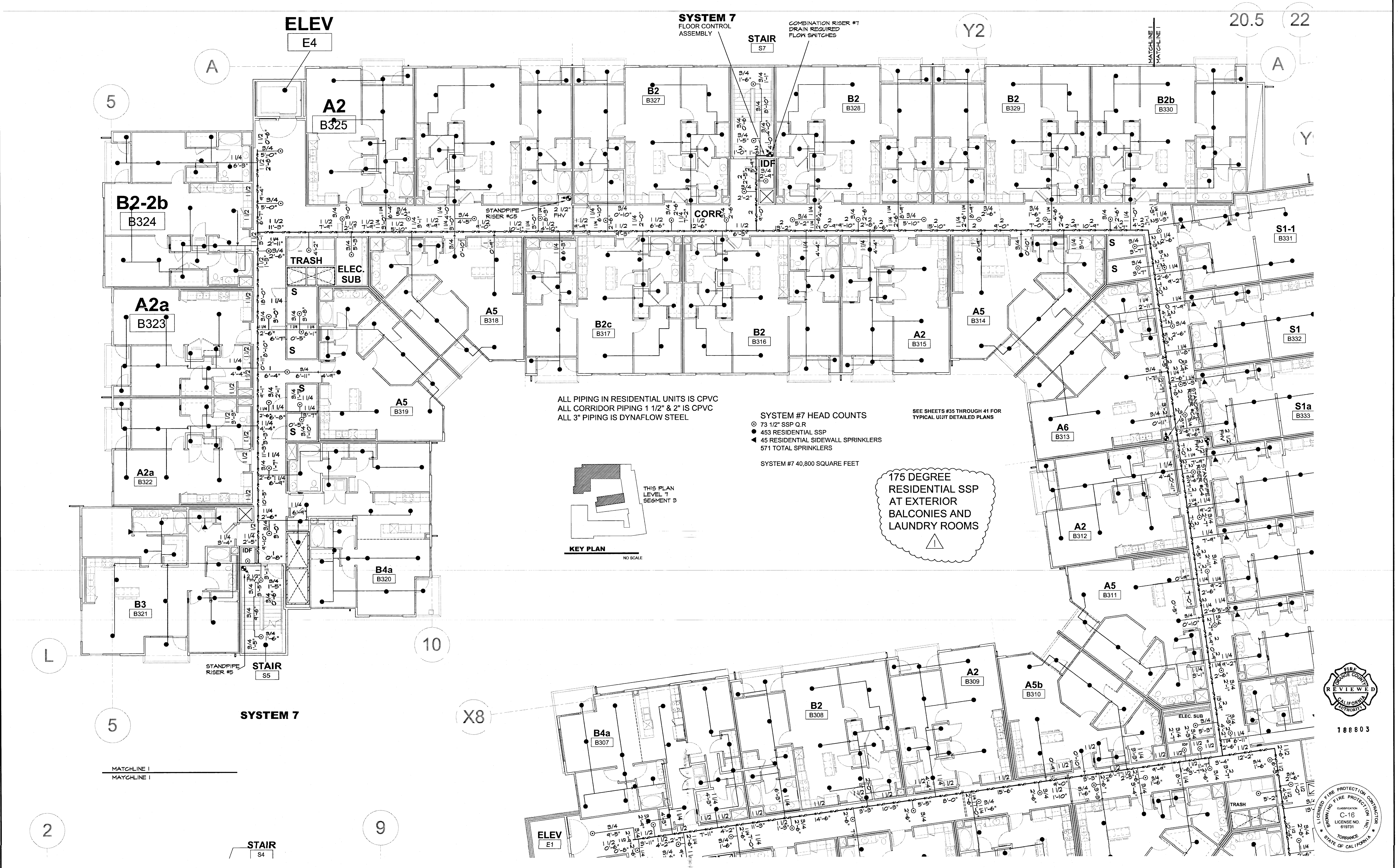
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 7 SYSTEM #6A ROOF SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	27 OF 41



NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:
1.
2.
3.
4.

WATER DEPT:
ADDRESS:
CITY:
PHONE:

CONTRACT WITH:
ADDRESS:
CITY:
PHONE:

ARCHITECT:
ADDRESS:
CITY:
PHONE:

SCALE: 1/8" =1'-0"

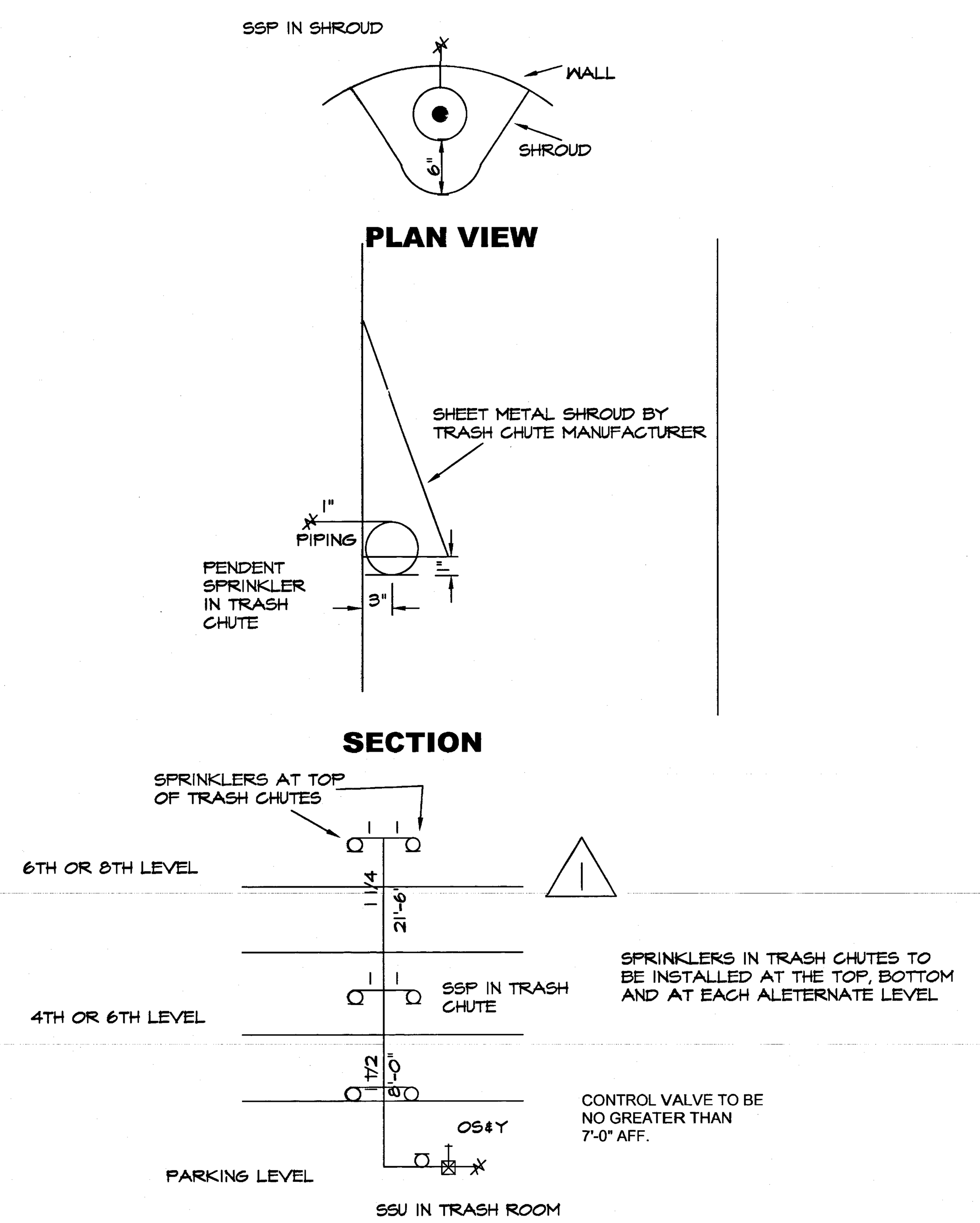
PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 7 SYSTEM #7B SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
28 OF 41

SYSTEM #7 HEAD COUNTS
- 73 1/2" SSP Q.R
- 453 RESIDENTIAL SSP
- 45 RESIDENTIAL SIDEWALL SPRINKLERS
- 571 TOTAL SPRINKLERS

SYSTEM #7 40,800 SQUARE FEET



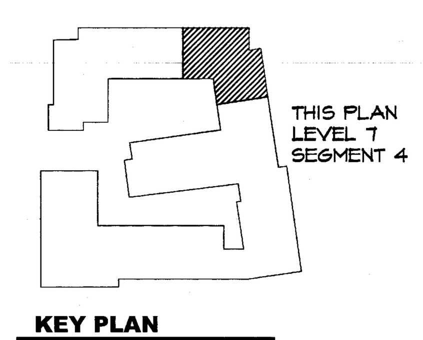
RISER DETAIL FOR TRASH CHUTES

TRASH CHUTE DETAIL

NO SCALE

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL

SEE SHEETS #35 THROUGH 41 FOR TYPICAL UNIT DETAILED PLANS



THIS PLAN LEVEL 7 SEGMENT 4

KEY PLAN

NO SCALE

FIRE ORANGE COUNTY REVIEWED AUTHORITY CALIFORNIA

188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

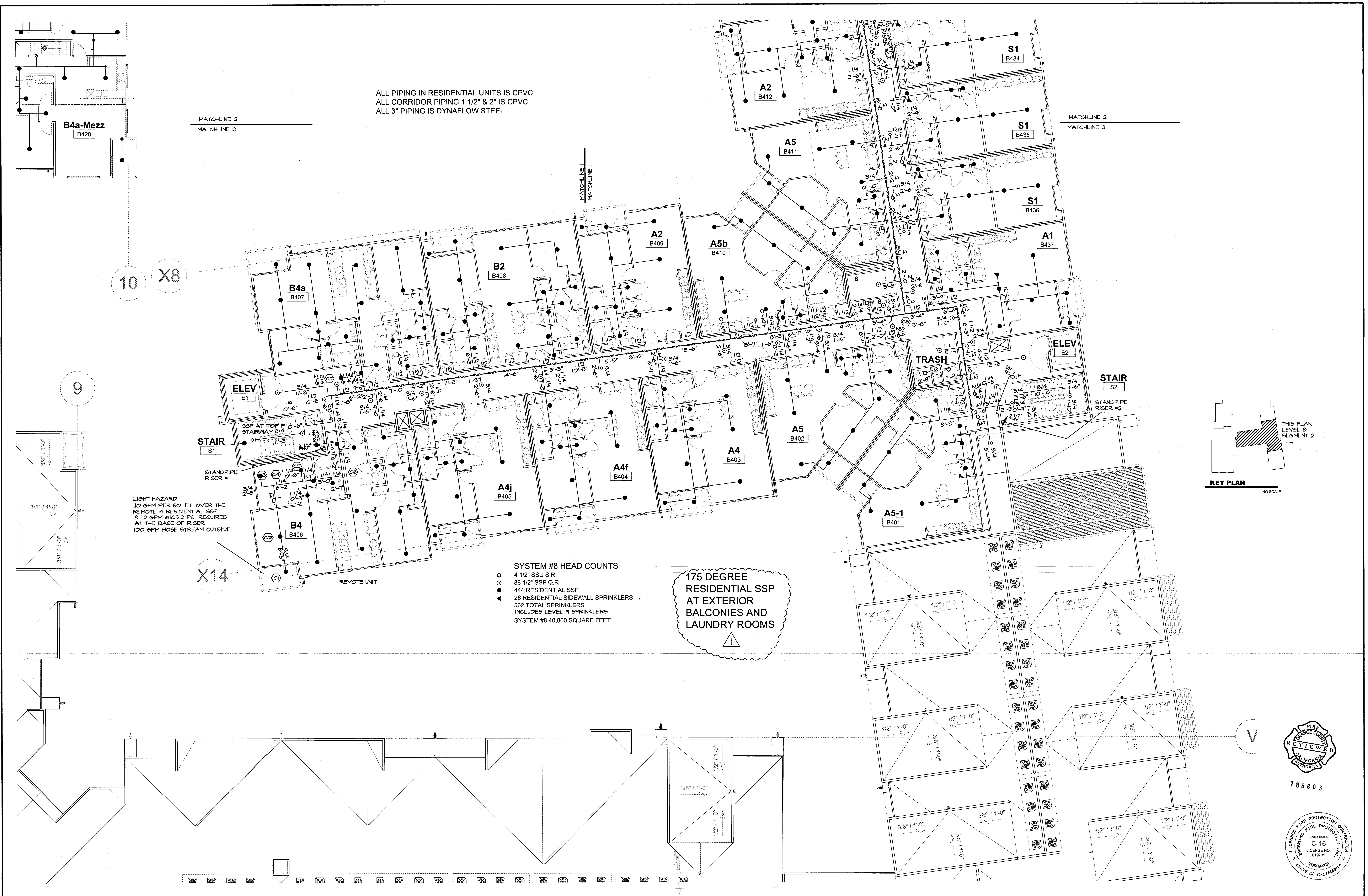
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 7 SYSTEM #7B SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 29 OF 41



NOTES:

HANGER LEGEND
#1 EXPANSION SHELL, ROD AND RING
#2 C-CLAMP, ROD AND RING
#3 POWDER DRIVEN STUD, ROD AND RING
#4 ANGLE CLIP ROD AND RING
#5 L-ROD AND RING
#6 EYE ROD AND RING
#7 COACH SCREW ROD AND RING
#8 CEILING FLANGE, ROD AND RING

STANDARD SYMBOLS	STANDARD SYMBOLS
POST INDICATOR VALVE	ALARM CHECK VALVE
KEY VALVE	RISER W/ ALARM CHECK VALVE
FIRE HYDRANT	RISER W/ DELUGE VALVE
FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
SWING CHECK VALVE	WATER MOTOR ALARM GONG
NEW UNDERGROUND	ELECTRIC ALARM BELL
EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

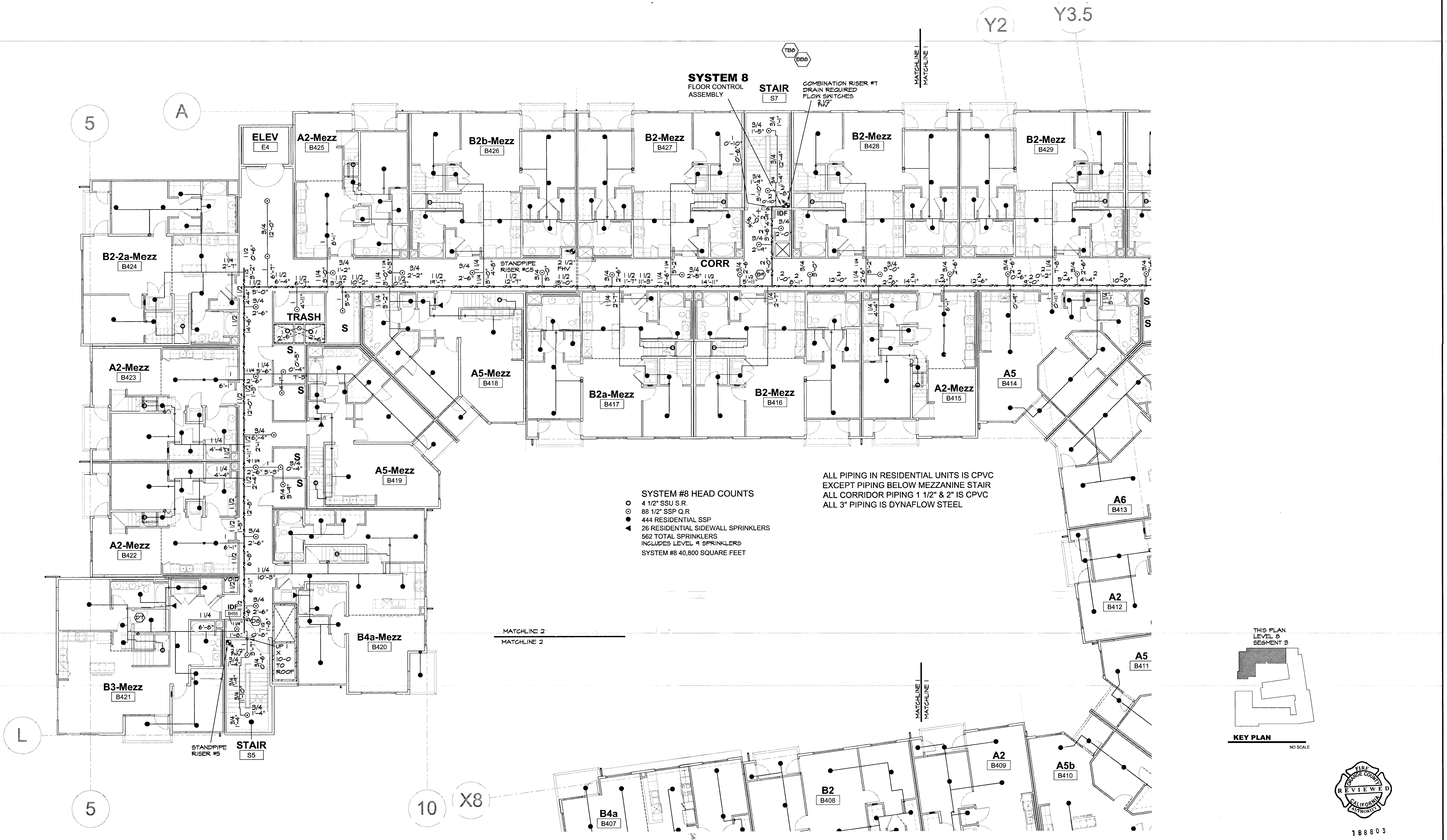
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 8 SYSTEM #8 SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	30 OF 41



NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
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	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:

CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

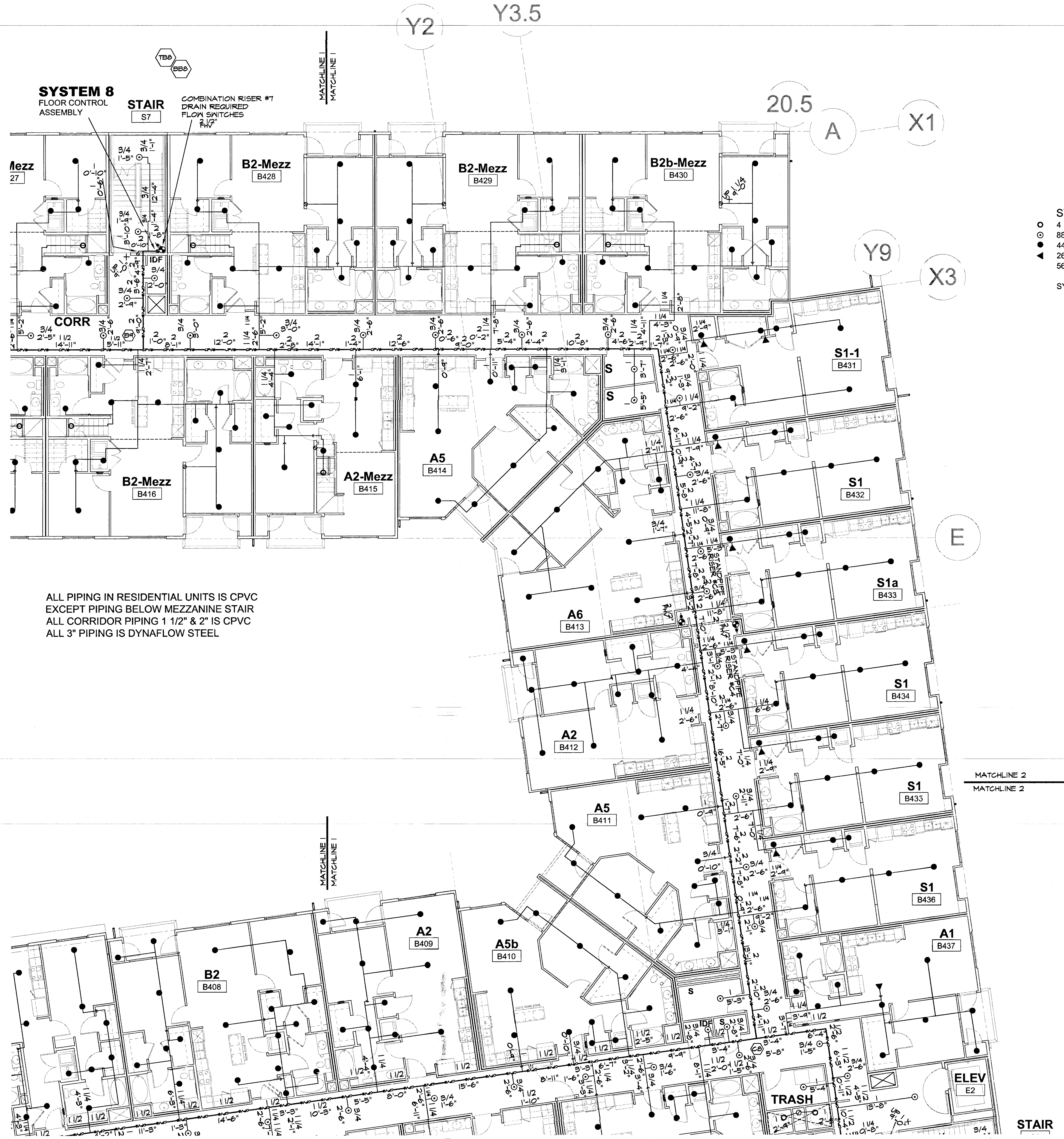
SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 8 SYSTEM #8 SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 31 OF 41

175 DEGREE
RESIDENTIAL SSP
AT EXTERIOR
BALCONIES AND
LAUNDRY ROOMS

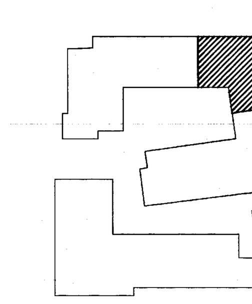


SYSTEM #8B HEAD COUNTS
- 4 1/2" SSU S.R.
- 88 1/2" SSP Q.R
- 444 RESIDENTIAL SSP
- 26 RESIDENTIAL SIDEWALL SPRINKLERS
- 562 TOTAL SPRINKLERS

SYSTEM #8B 40,800 SQUARE FEET

INCLUDES LEVEL 9 SPRINKLERS

ALL PIPING IN RESIDENTIAL UNITS IS CPVC
EXCEPT PIPING BELOW MEZZANINE STAIR
ALL CORRIDOR PIPING 1 1/2" & 2" IS CPVC
ALL 3" PIPING IS DYNAFLOW STEEL



KEY PLAN
NO SCALE

ORANGE COUNTY FIRE AUTHORITY
REVIEWED
CALIFORNIA

188803

LICENSED FIRE PROTECTION CONTRACTOR
BROWNING FIRE PROTECTION INC.
CLASSIFICATION C-16
LICENSE NO. 619731
TORRANCE
STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
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	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

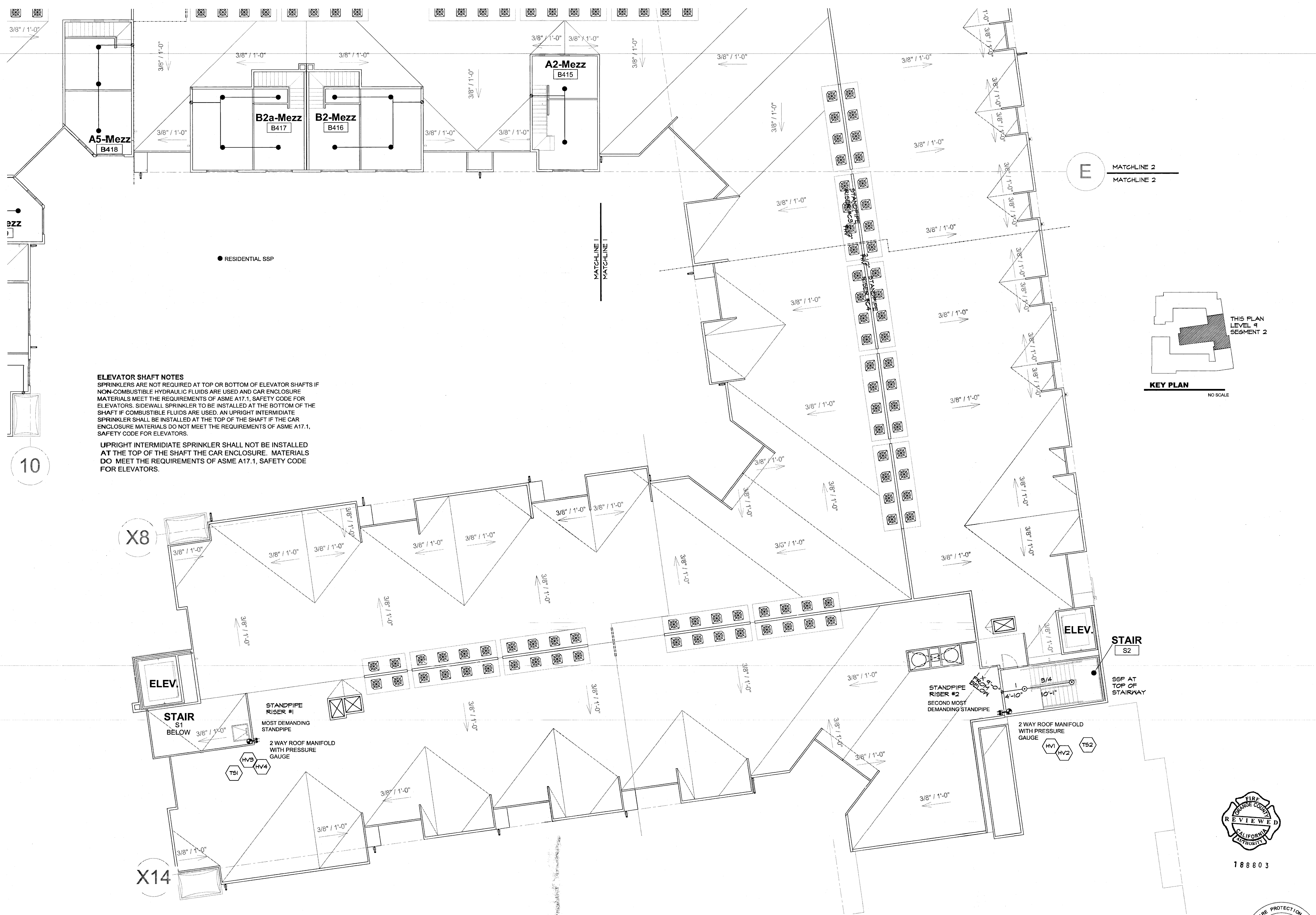
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL8 SYSTEM #8 SEGMENT 4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	32 OF 41



ELEVATOR SHAFT NOTES
SPRINKLERS ARE NOT REQUIRED AT TOP OR BOTTOM OF ELEVATOR SHAFTS IF NON-COMBUSTIBLE HYDRAULIC FLUIDS ARE USED AND CAR ENCLOSURE MATERIALS MEET THE REQUIREMENTS OF ASME A17.1, SAFETY CODE FOR ELEVATORS. SIDEWALL SPRINKLER TO BE INSTALLED AT THE BOTTOM OF THE SHAFT IF COMBUSTIBLE FLUIDS ARE USED. AN UPRIGHT INTERMIDIATE SPRINKLER SHALL BE INSTALLED AT THE TOP OF THE SHAFT IF THE CAR ENCLOSURE MATERIALS DO NOT MEET THE REQUIREMENTS OF ASME A17.1, SAFETY CODE FOR ELEVATORS.

UPRIGHT INTERMIDIATE SPRINKLER SHALL NOT BE INSTALLED AT THE TOP OF THE SHAFT THE CAR ENCLOSURE. MATERIALS DO MEET THE REQUIREMENTS OF ASME A17.1, SAFETY CODE FOR ELEVATORS.

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
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#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
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#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

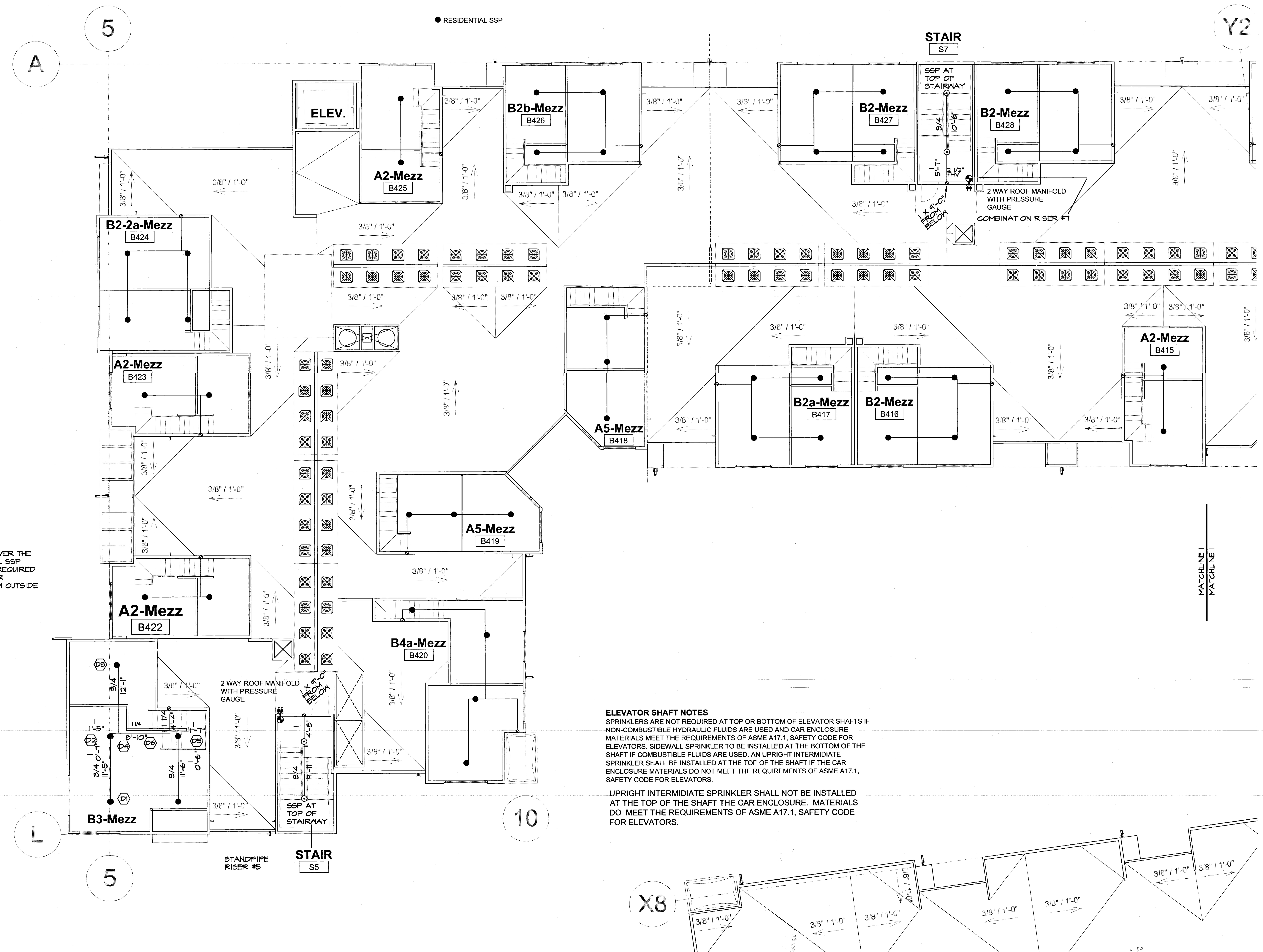
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 9 ROOF PLAN SEGMENT 2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	33 OF 41



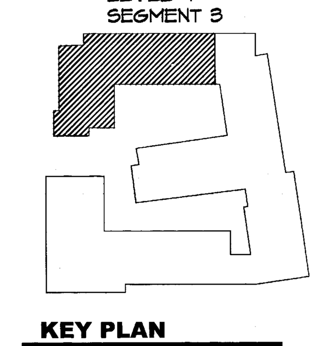
LIGHT HAZARD
.10 GPM PER SQ. FT. OVER THE REMOTE 4 RESIDENTIAL SSP
78.6 GPM @104.0 PSI REQUIRED AT THE BASE OF RISER
100 GPM HOSE STREAM OUTSIDE

ELEVATOR SHAFT NOTES

SPRINKLERS ARE NOT REQUIRED AT TOP OR BOTTOM OF ELEVATOR SHAFTS IF NON-COMBUSTIBLE HYDRAULIC FLUIDS ARE USED AND CAR ENCLOSURE MATERIALS MEET THE REQUIREMENTS OF ASME A17.1, SAFETY CODE FOR ELEVATORS. SIDEWALL SPRINKLER TO BE INSTALLED AT THE BOTTOM OF THE SHAFT IF COMBUSTIBLE FLUIDS ARE USED. AN UPRIGHT INTERMEDIATE SPRINKLER SHALL BE INSTALLED AT THE TOP OF THE SHAFT IF THE CAR ENCLOSURE MATERIALS DO NOT MEET THE REQUIREMENTS OF ASME A17.1, SAFETY CODE FOR ELEVATORS.

UPRIGHT INTERMIDIATE SPRINKLER SHALL NOT BE INSTALLED AT THE TOP OF THE SHAFT THE CAR ENCLOSURE. MATERIALS DO MEET THE REQUIREMENTS OF ASME A17.1, SAFETY CODE FOR ELEVATORS.

THIS PLAN LEVEL 9 SEGMENT 3



KEY PLAN
NO SCALE

REVIEWED — ORANGE COUNTY FIRE AUTHORITY — CALIFORNIA

188803

LICENSED FIRE PROTECTION CONTRACTOR — BROWNING FIRE PROTECTION INC. — CLASSIFICATION C-16 — LICENSE NO. 619731 — TORRANCE — STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING #2 C-CLAMP, ROD AND RING #3 POWDER DRIVEN STUD, ROD AND RING #4 ANGLE CLIP ROD AND RING #5 L-ROD AND RING #6 EYE ROD AND RING #7 COACH SCREW ROD AND RING #8 CEILING FLANGE, ROD AND RING	POST INDICATOR VALVE KEY VALVE FIRE HYDRANT FIRE DEPARTMENT CONNECTION OSY GATE VALVE SWING CHECK VALVE NEW UNDERGROUND EXISTING UNDERGROUND	ALARM CHECK VALVE RISER W/ ALARM CHECK VALVE RISER W/ DELUGE VALVE RISER W/ DRY PIPE VALVE RISER W/ ELECT FLOW SWITCH WATER MOTOR ALARM GONG ELECTRIC ALARM BELL FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

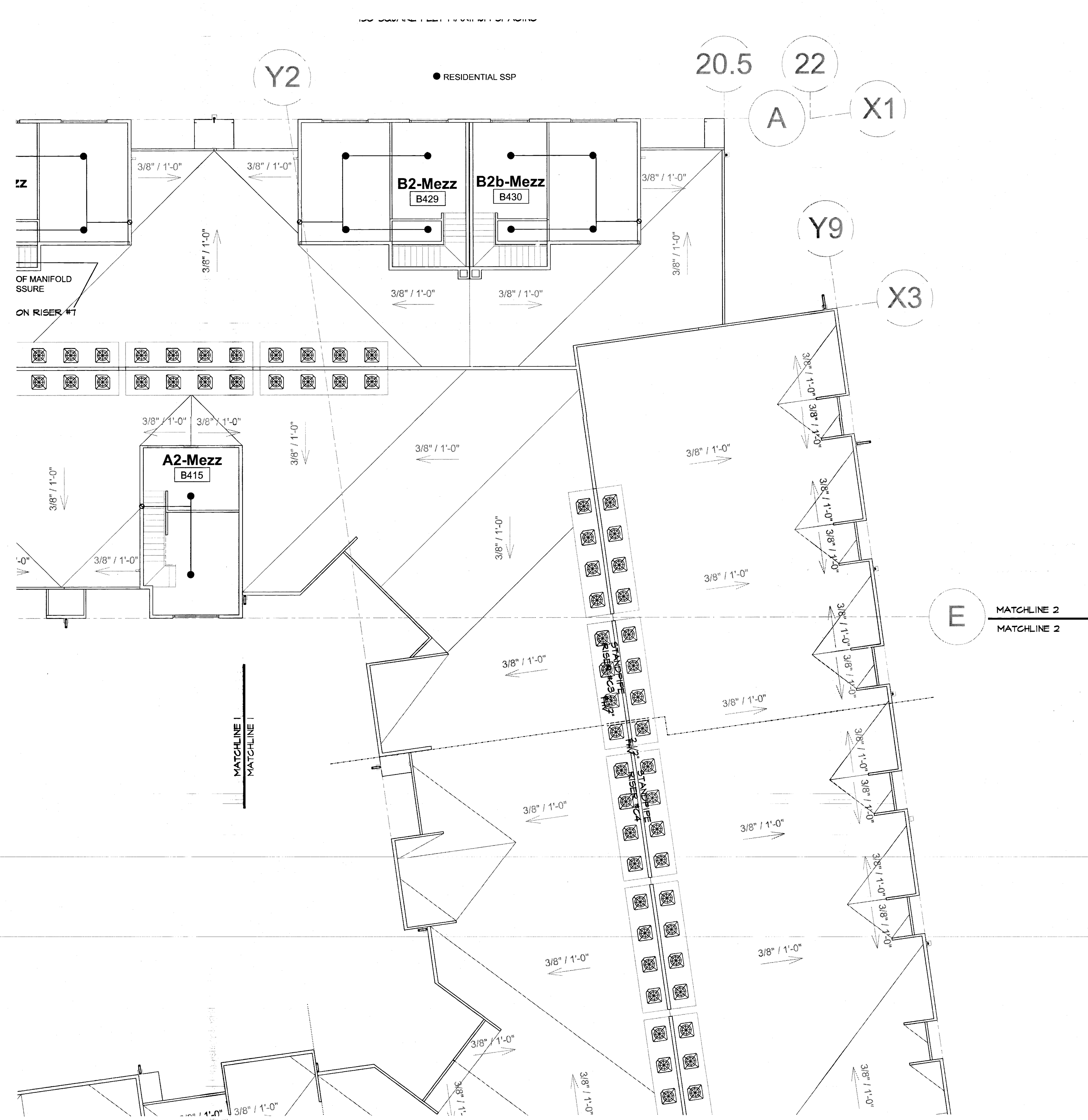
FIELD INSPECTED BY:	CONTRACT WITH:
1. 2. 3. 4.	ADDRESS: CITY: PHONE:
WATER DEPT: ADDRESS: CITY: PHONE:	ARCHITECT: ADDRESS: CITY: PHONE:

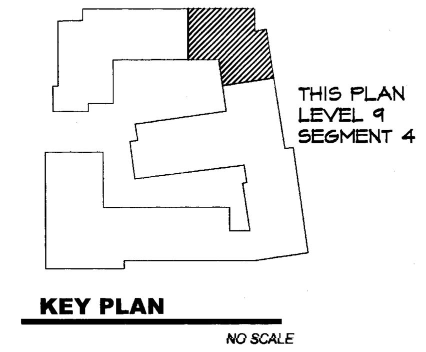
SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 9 ROOF PLAN SEGMENT 3

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	34 OF 41





FIRE ORANGE COUNTY REVIEWED CALIFORNIA AUTHORITY

188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/8" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: LEVEL 9 ROOF PLAN SEGMENT 4

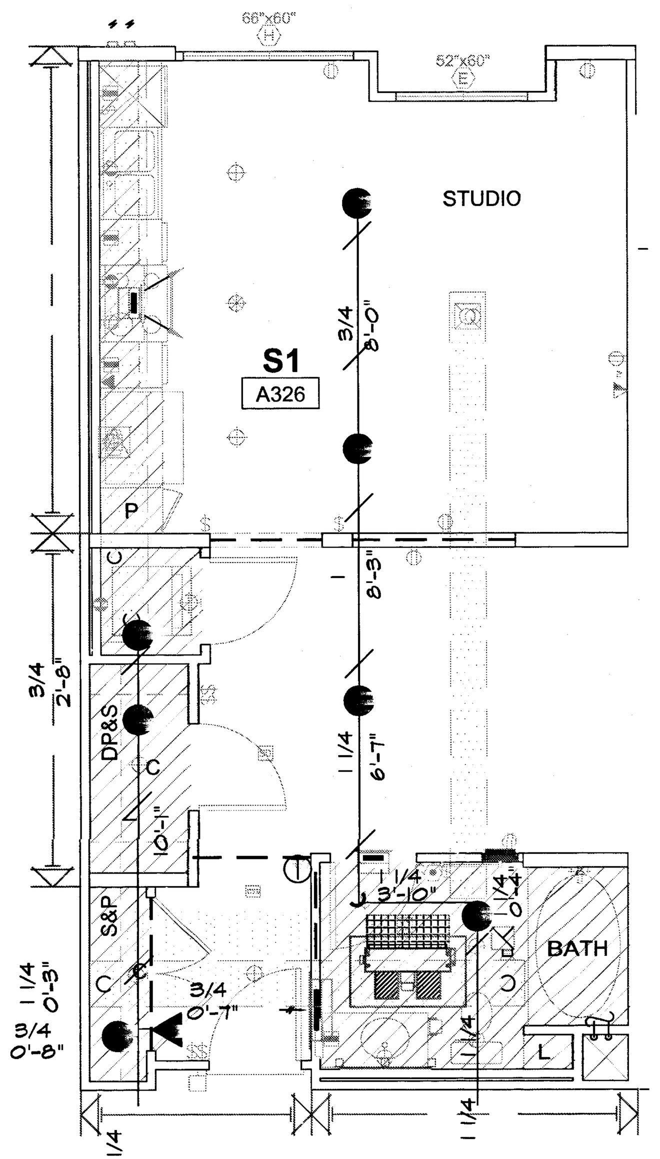
BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	35 OF 41

◄ RESIDENTIAL SIDEWALL SPRINK.
● RESIDENTIAL SSP TYPICAL
○ COMMERCIAL SSU BELOW STAIR TYPICAL

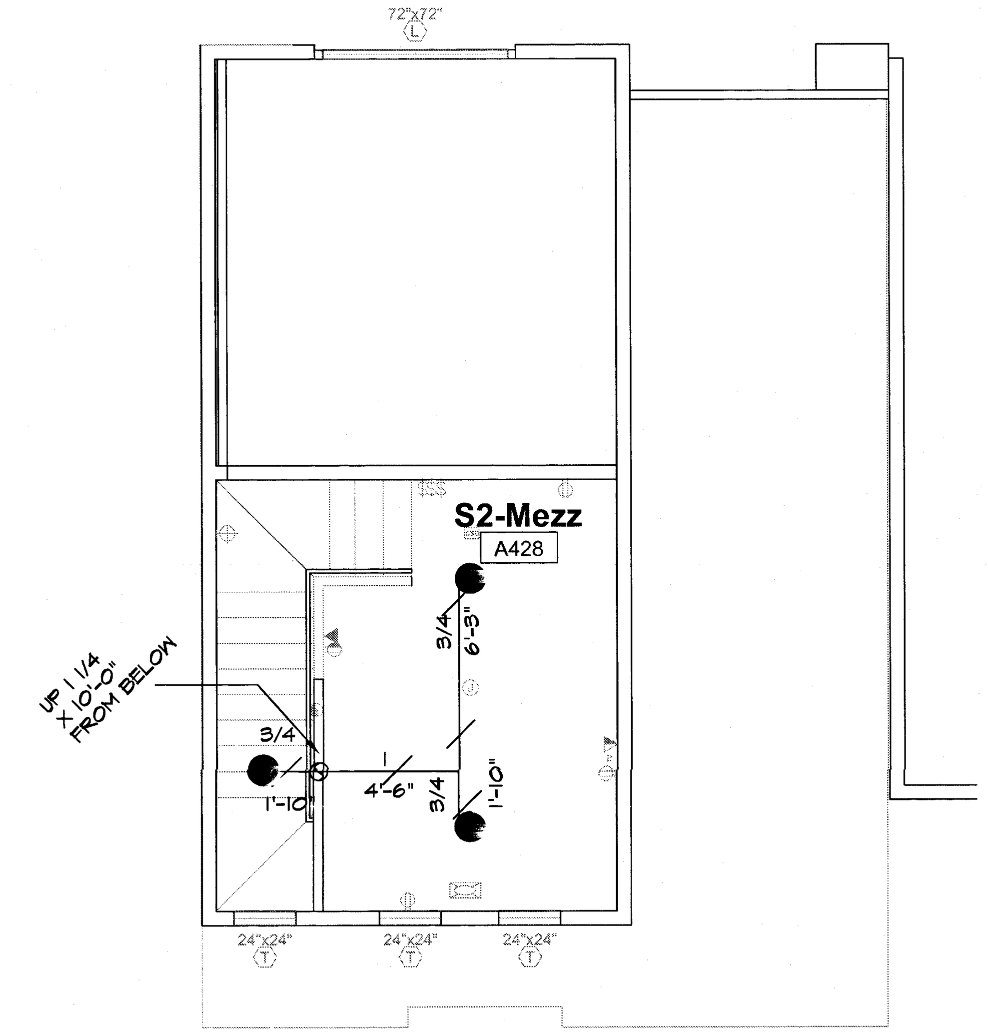
ALL SHADED CEILING AREAS ARE DROPPED CEILING TO 7'-8"
ALL OTHER CEILINGS ARE 9'-0" AFF

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS



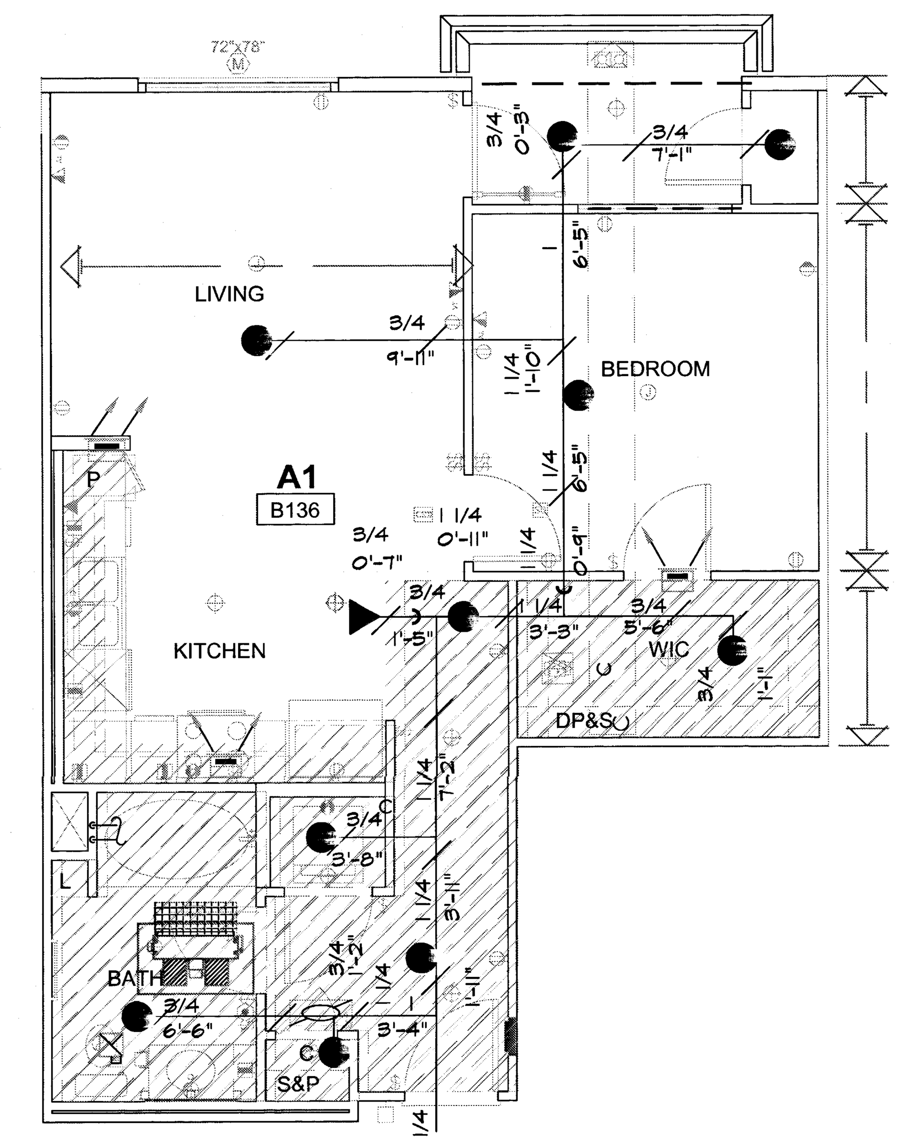
UNIT S1

SCALE 1/4" = 1'-0"



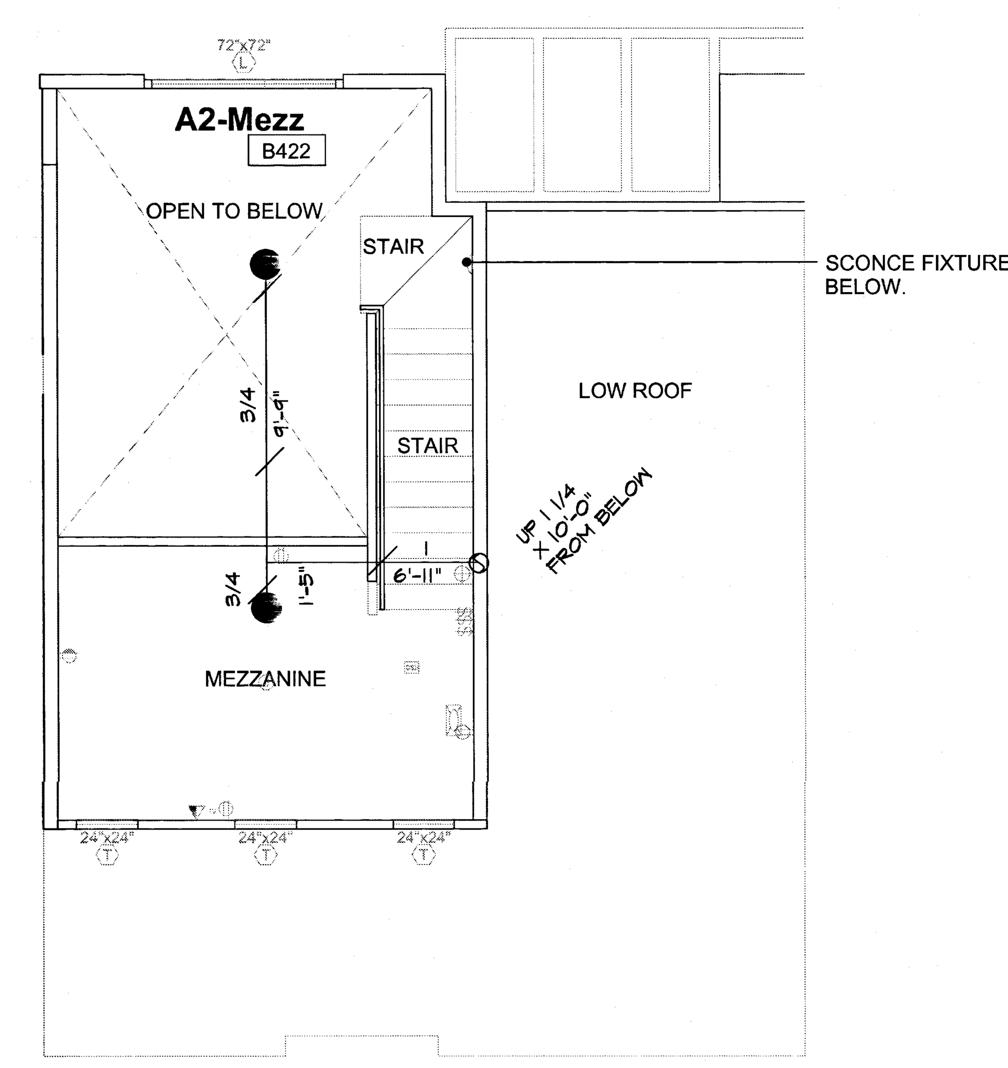
UNIT S2 MEZZ. UPPER

SCALE 1/4" = 1'-0"



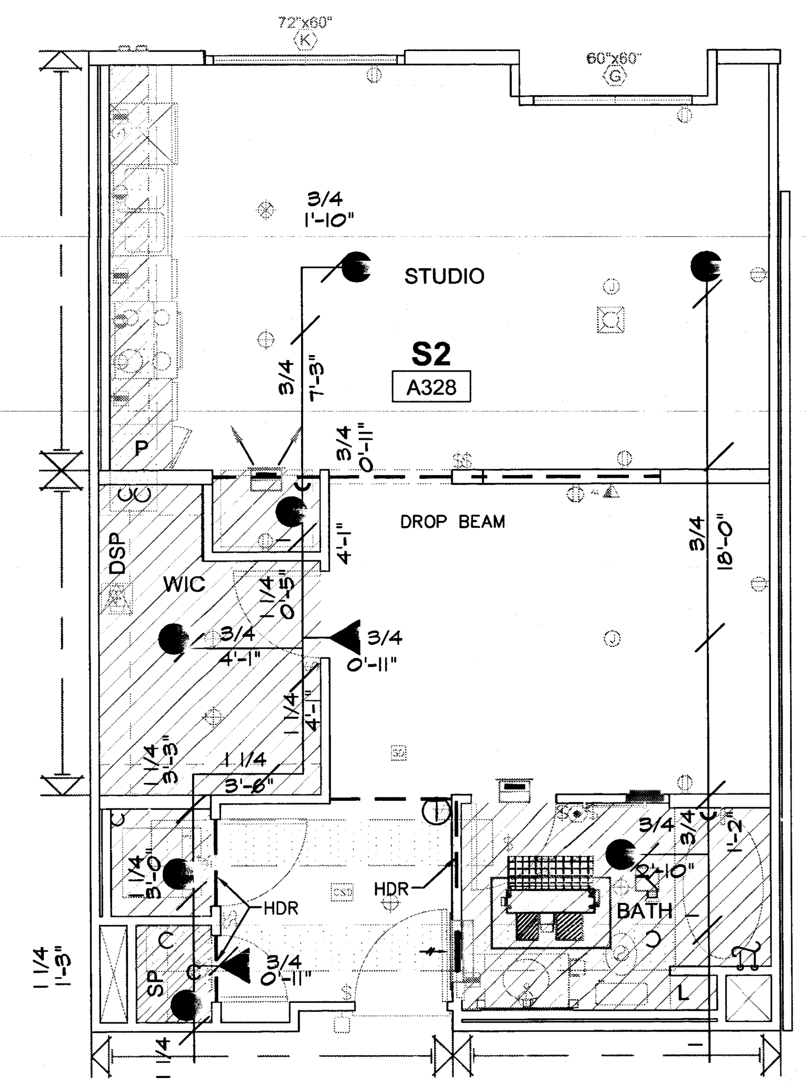
UNIT A1

SCALE 1/4" = 1'-0"



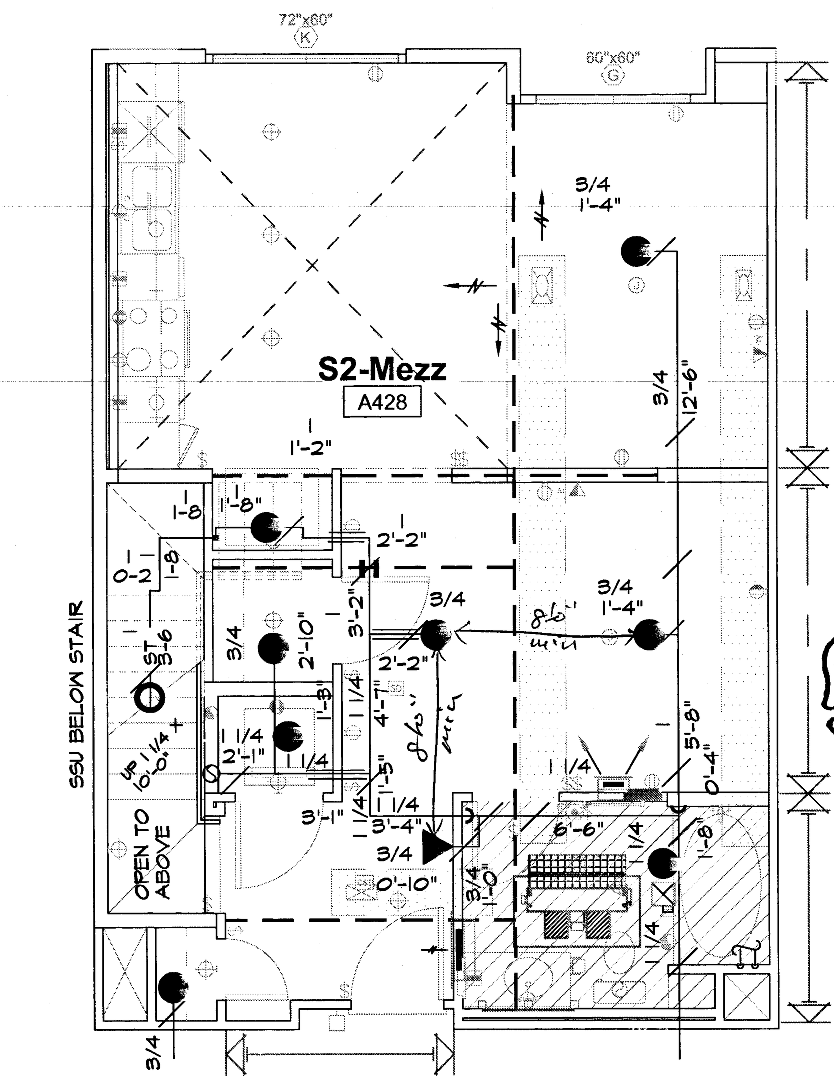
UNIT A2 MEZZ. UPPER

SCALE 1/4" = 1'-0"



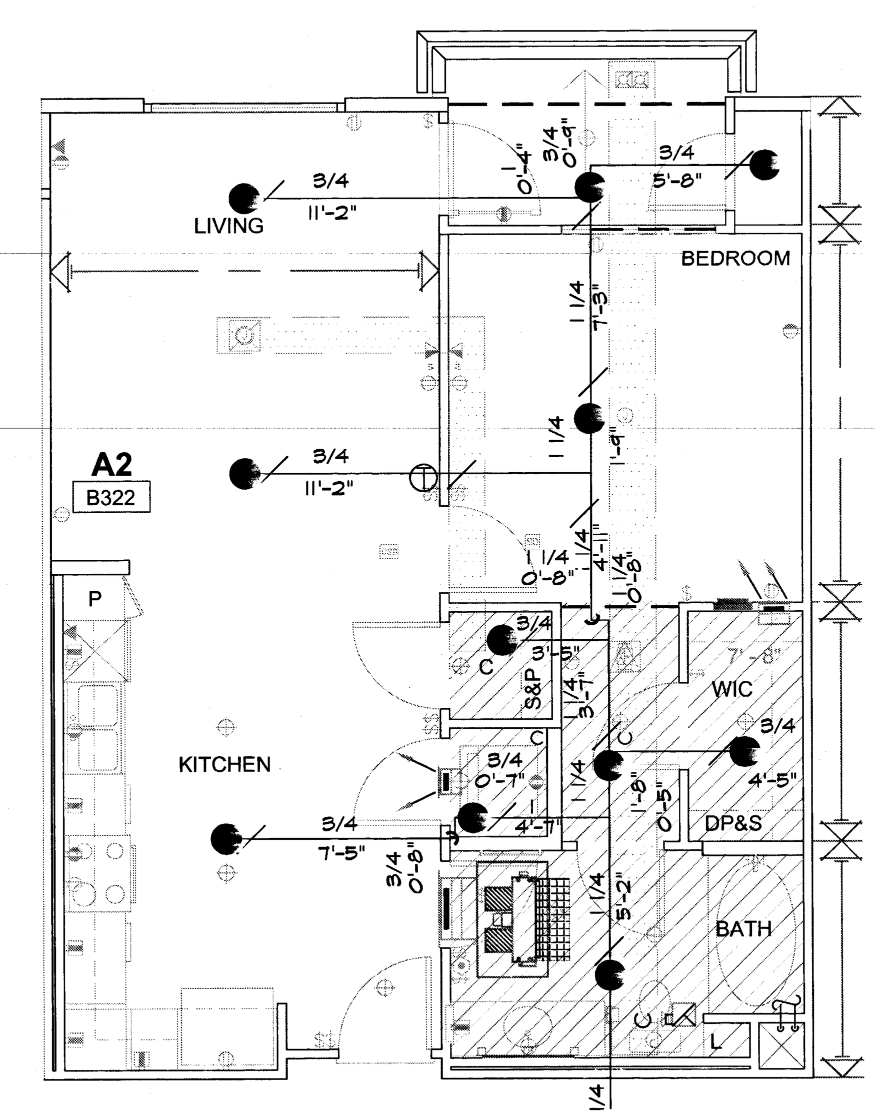
UNIT S2

SCALE 1/4" = 1'-0"



UNIT S2 MEZZ. LOWER

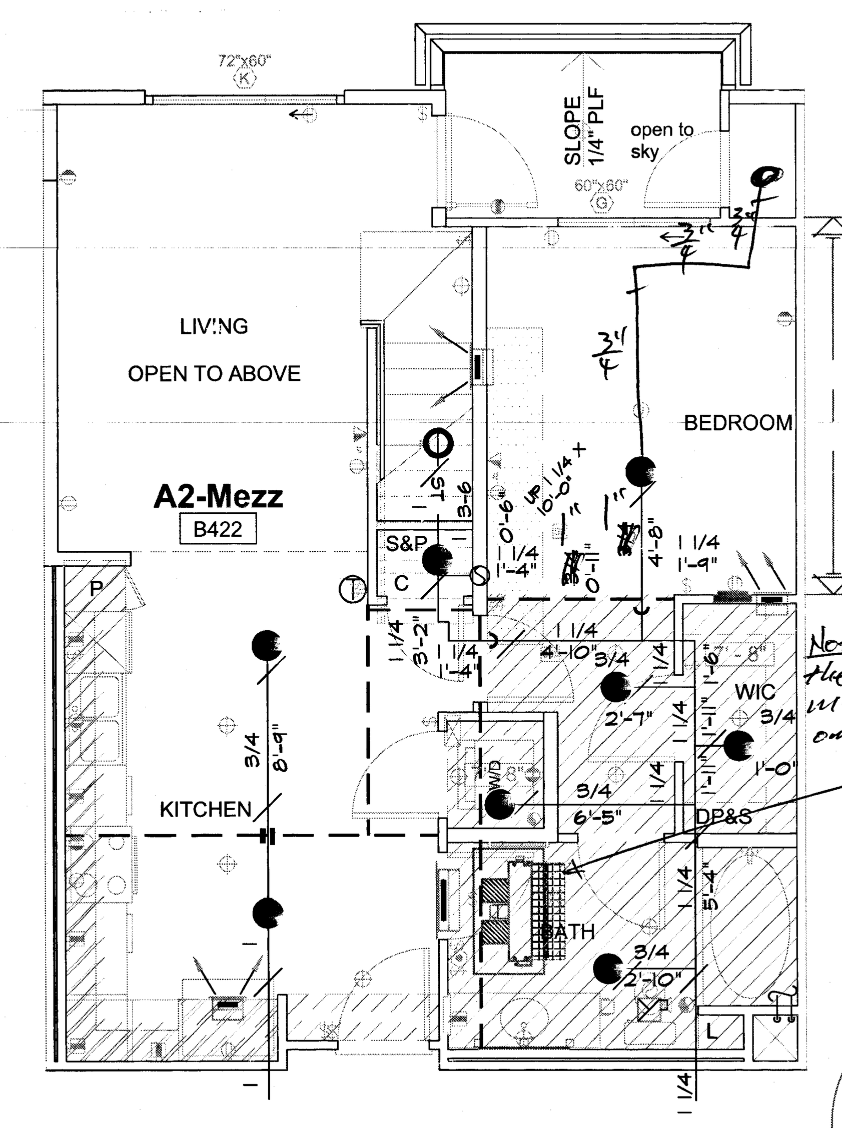
SCALE 1/4" = 1'-0"



UNIT A2

SCALE 1/4" = 1'-0"

188803



Note: The entire space around the mechanical unit must be made non-combustible to omit sprinkler protection

UNIT A2 MEZZ. LOWER

SCALE 1/4" = 1'-0"

FIRE ORANGE COUNTY REVIEWED CALIFORNIA AUTHORITY

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:
SCALE: 1/4" =1'-0"

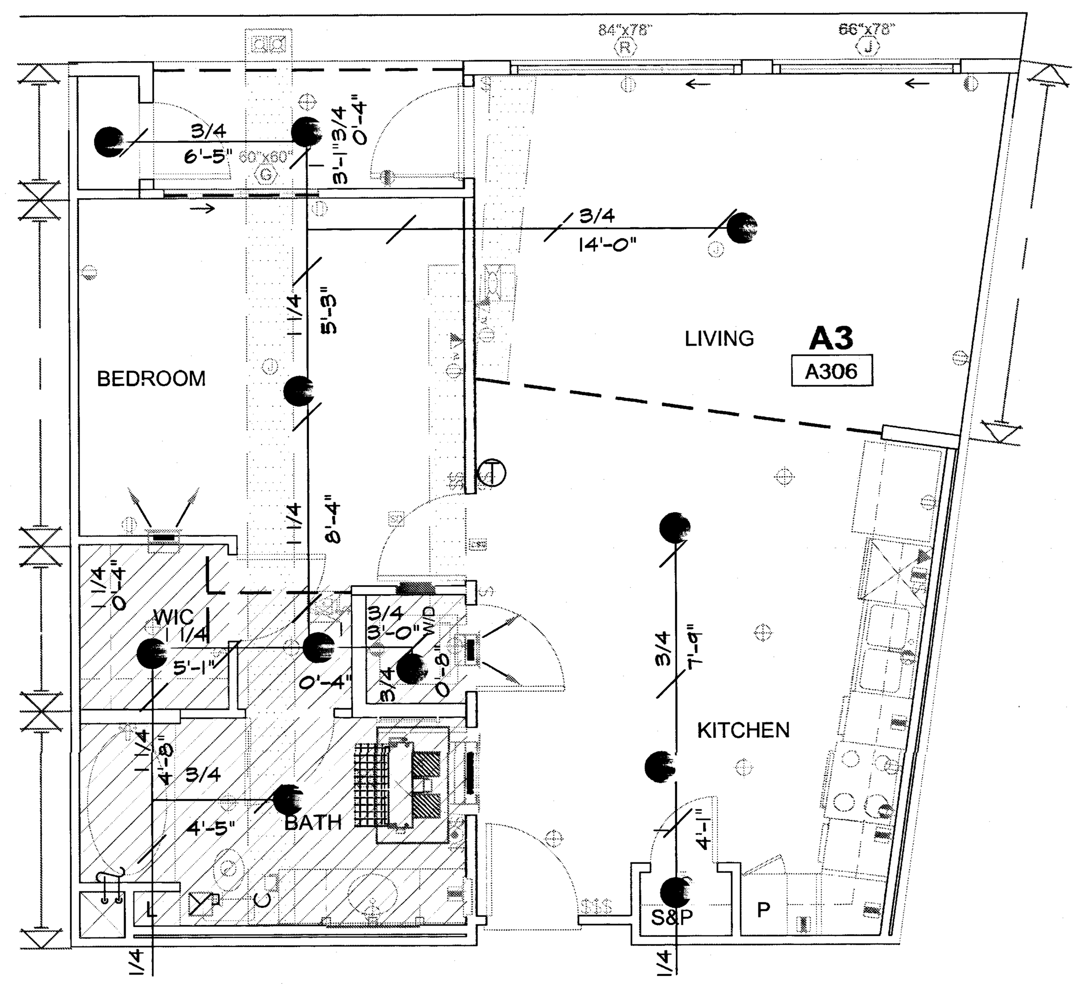
PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: TYPICAL UNITS S1, S2, A1, A2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 36 OF 41

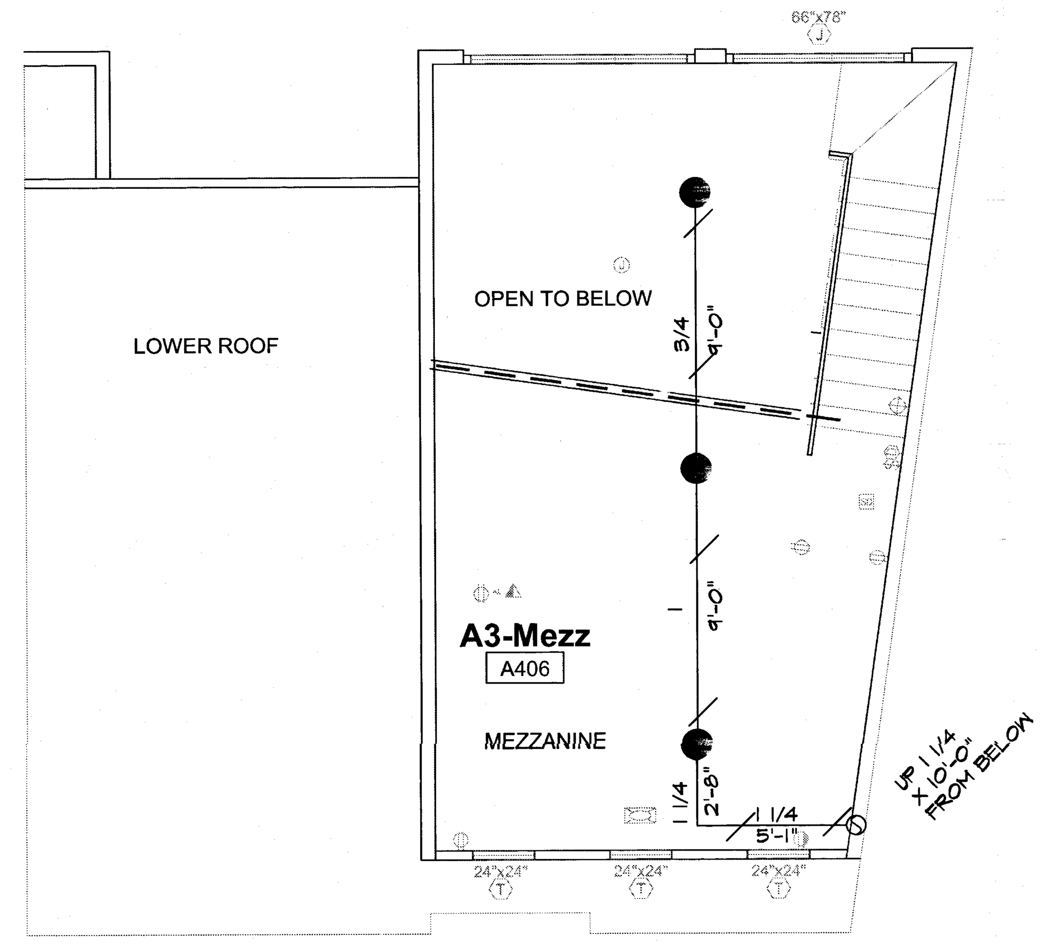
RESIDENTIAL SIDEWALL SPRINK.
RESIDENTIAL SSP TYPICAL
COMMERCIAL SSU BELOW STAIR TYPICAL

175 DEGREE
RESIDENTIAL SSP
AT EXTERIOR
BALCONIES AND
LAUNDRY ROOMS
1



UNIT A3

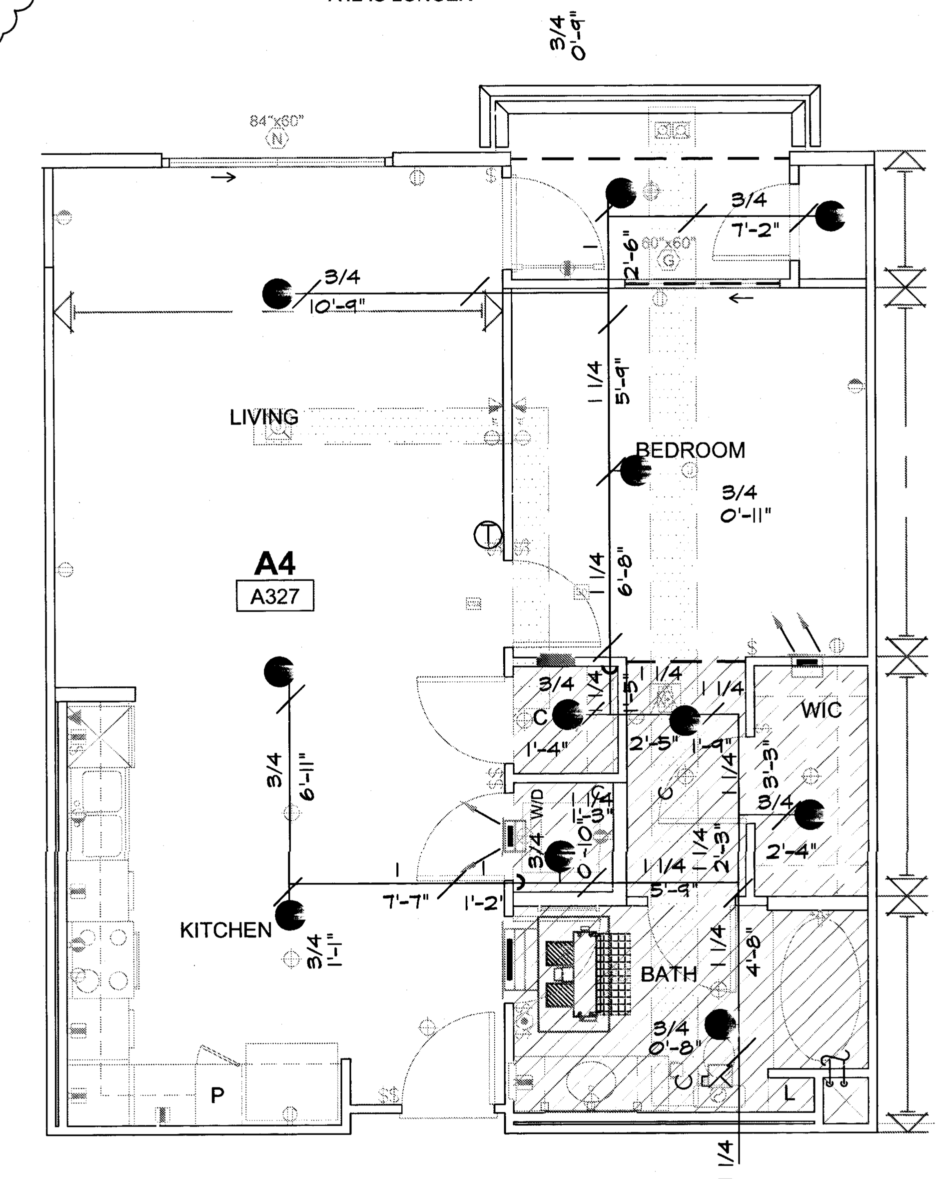
SCALE 1/4" = 1'-0"



UNIT A3 MEZZ. UPPER

SCALE 1/4" = 1'-0"

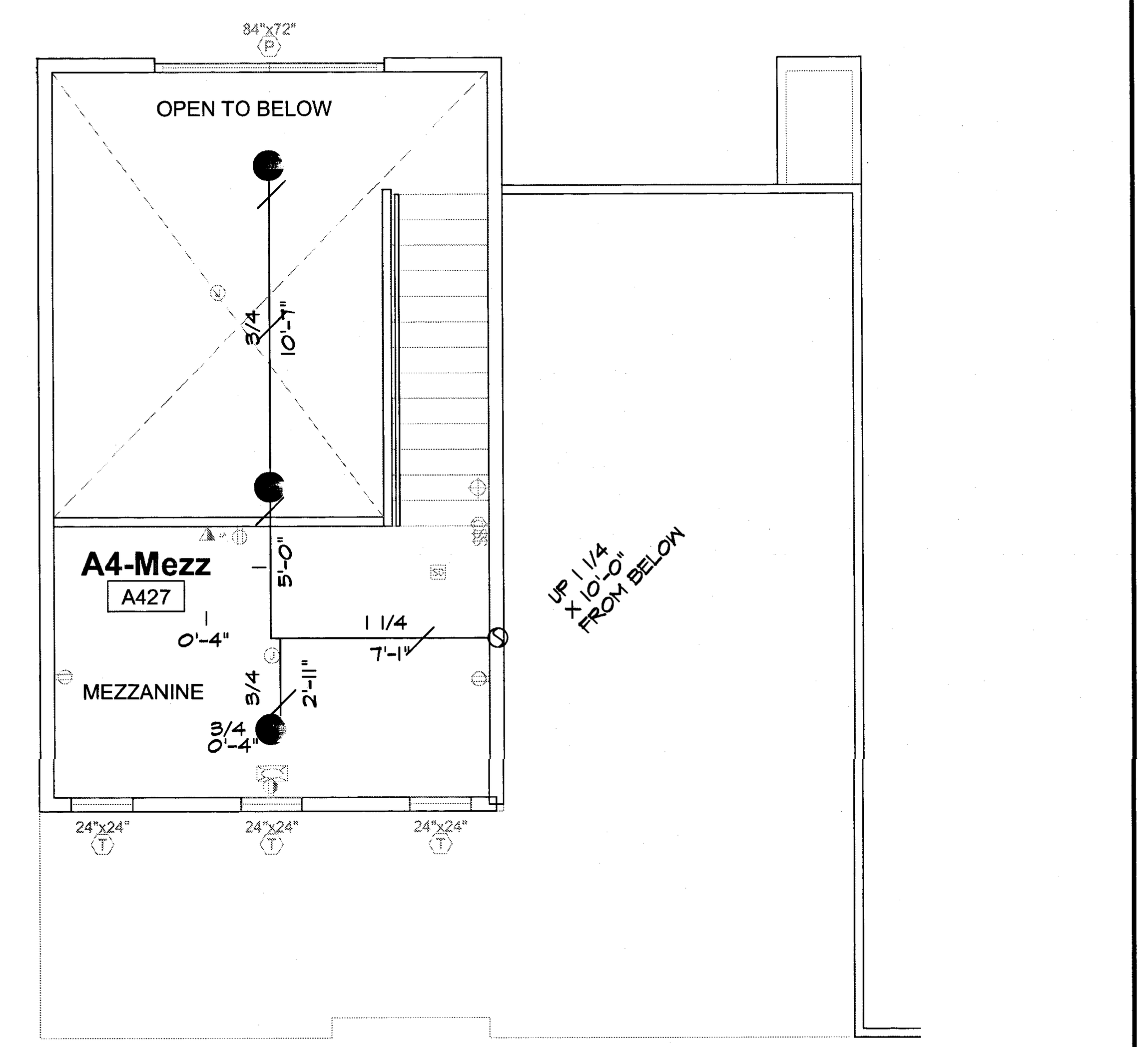
A42 IS LONGER



UNIT A4

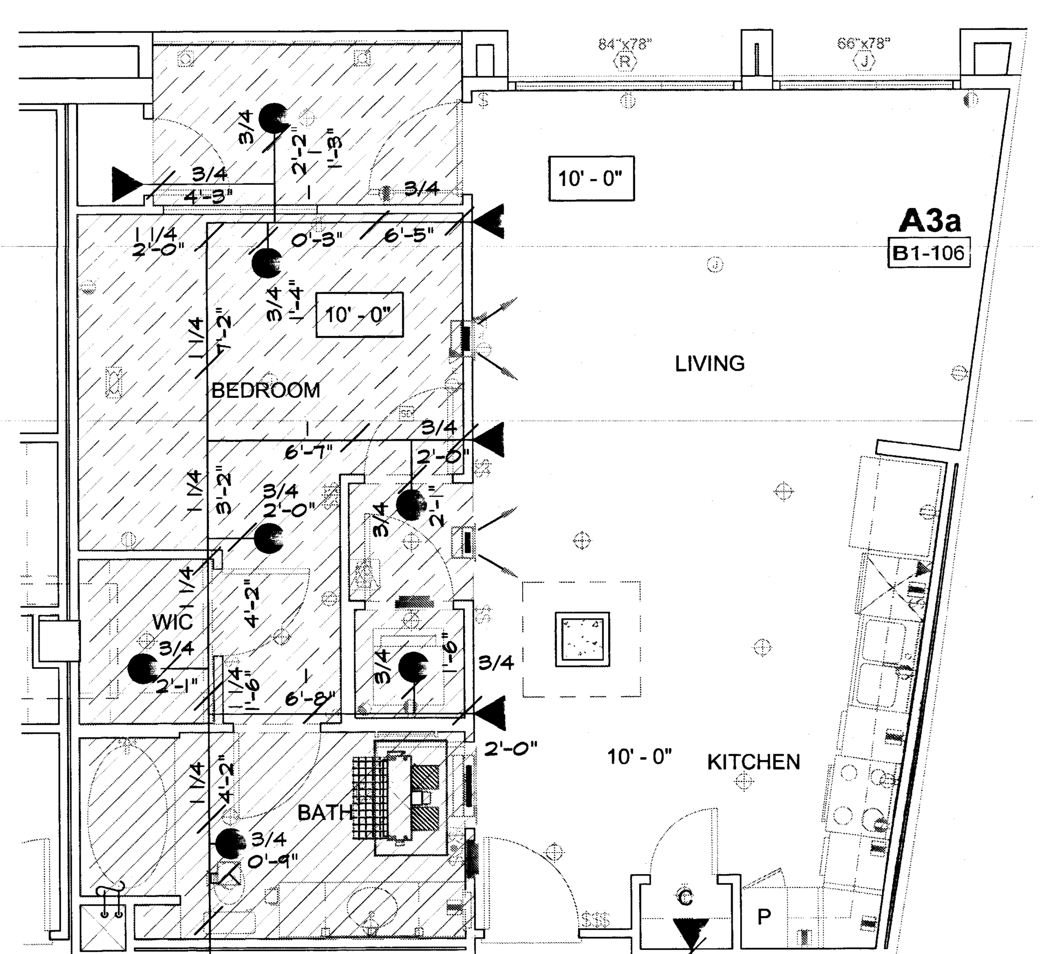
INCLUDES VARIATIONS b-m

SCALE 1/4" = 1'-0"



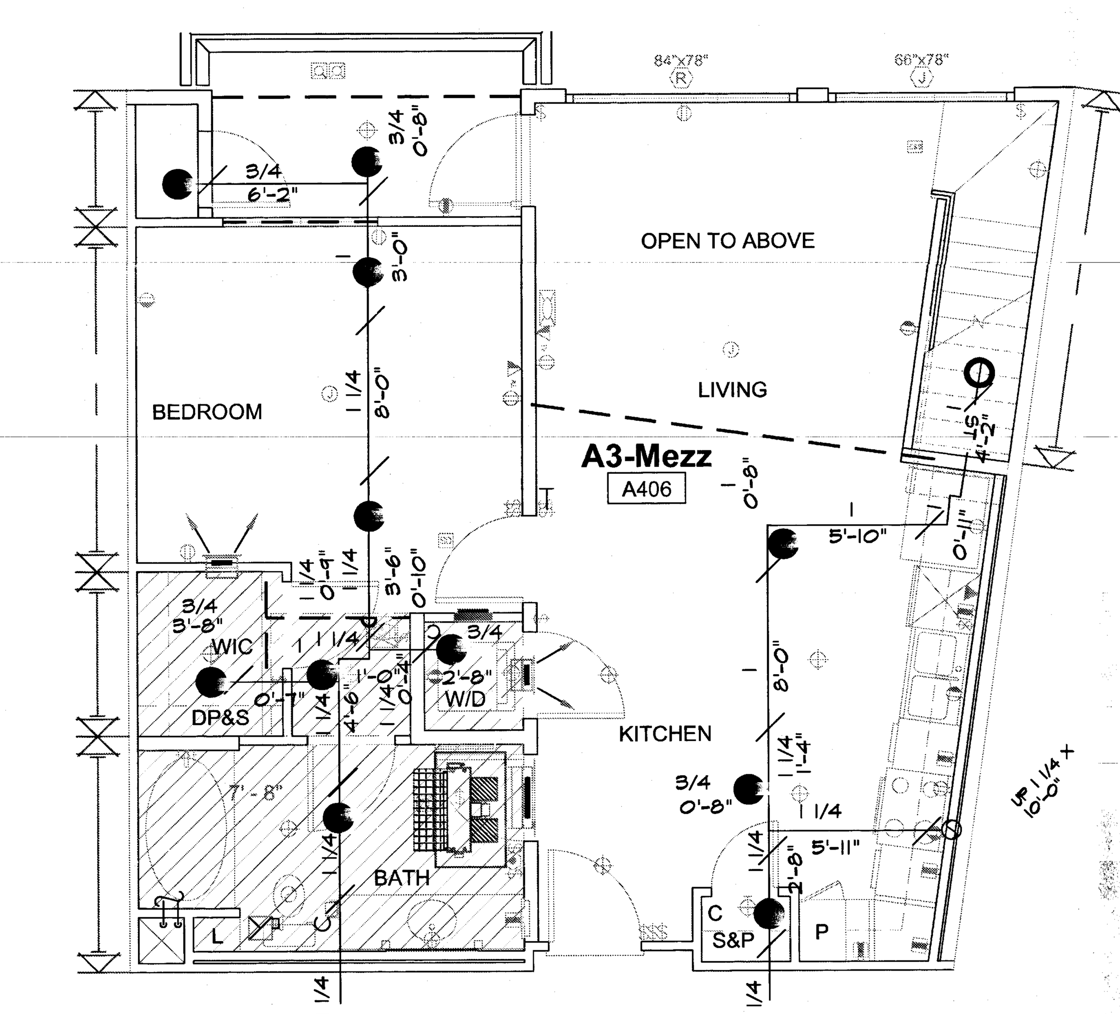
UNIT A4 MEZZ. UPPER

SCALE 1/4" = 1'-0"



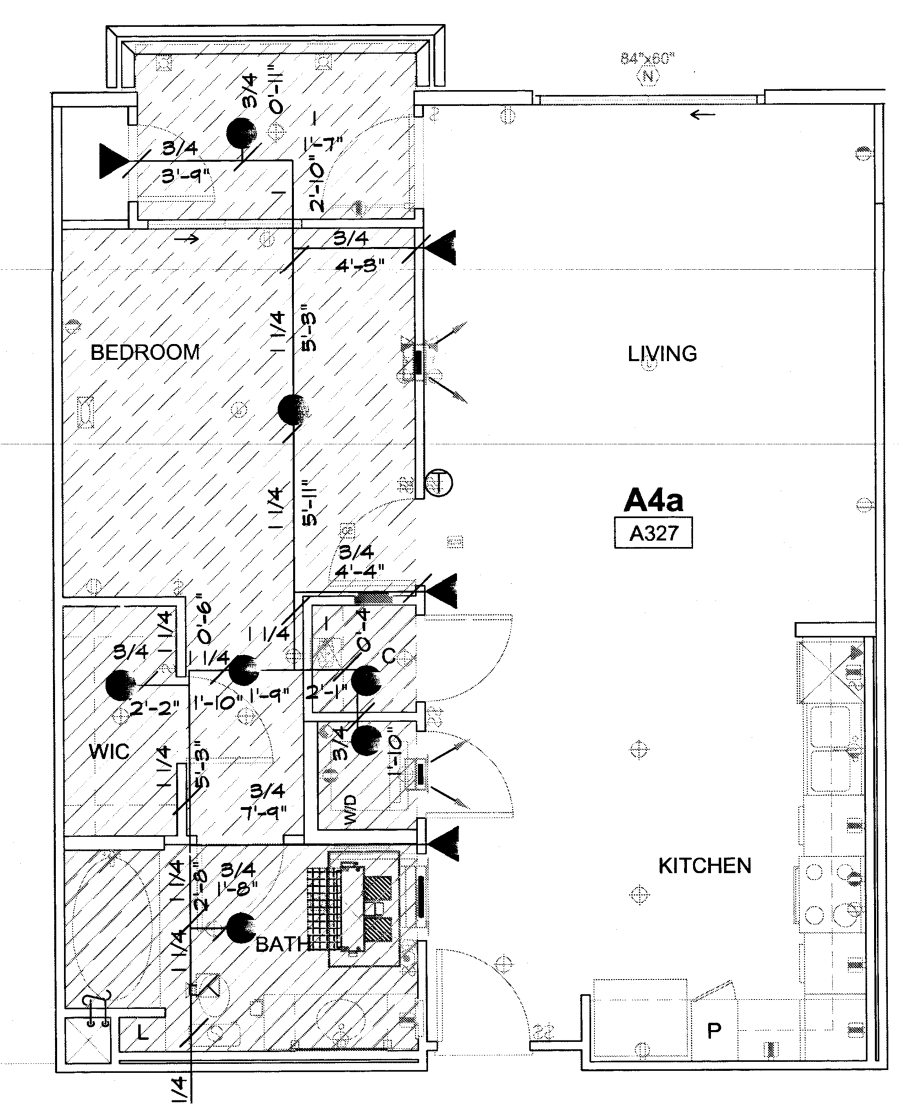
UNIT A3a CONCRETE

SCALE 1/4" = 1'-0"



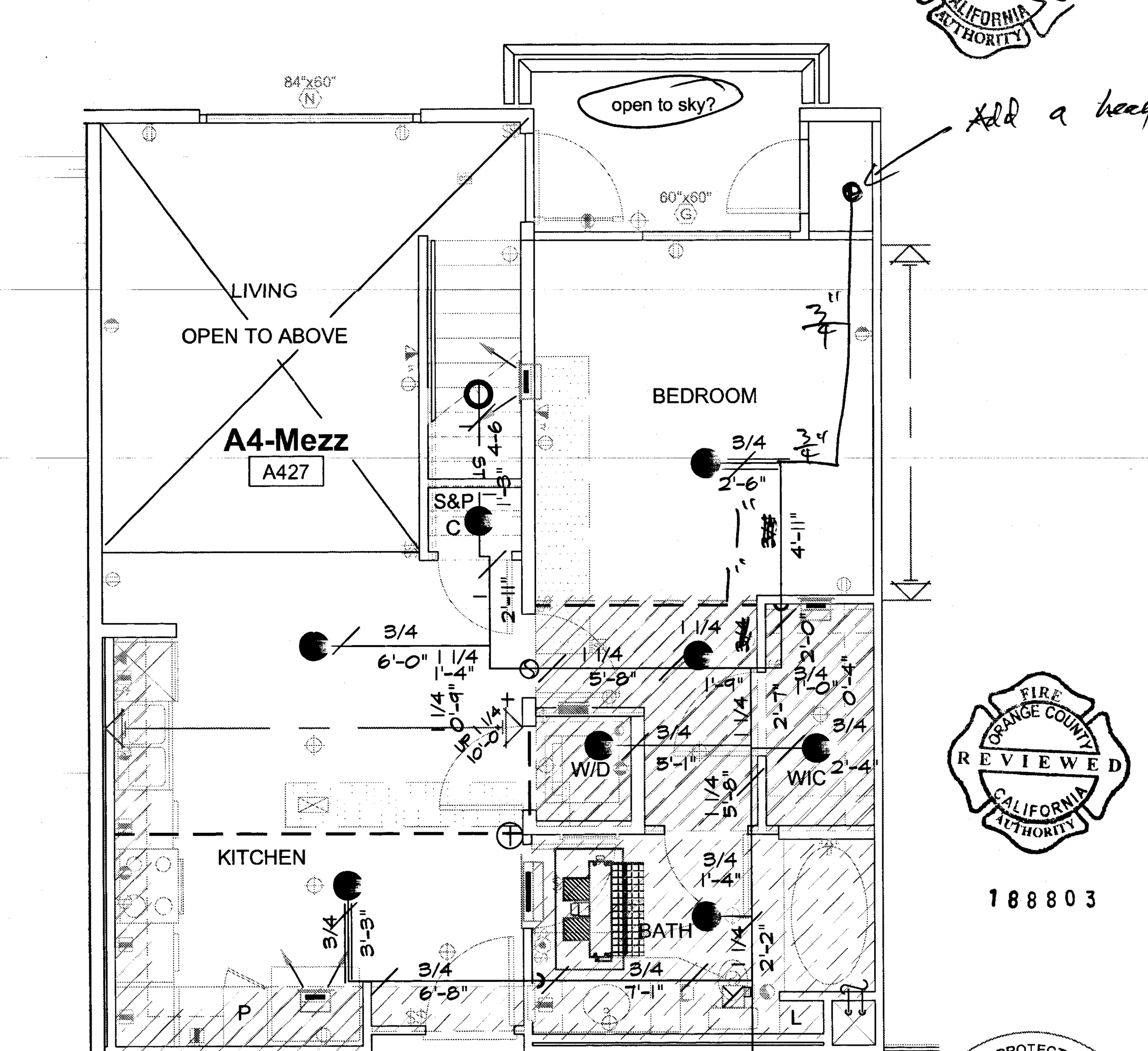
UNIT A3 MEZZ. LOWER

SCALE 1/4" = 1'-0"



UNIT A4a

SCALE 1/4" = 1'-0"



UNIT A4 MEZZ. LOWER

INCLUDES VARIATIONS b-m SCALE 1/4" = 1'-0"

188803

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/4" =1'-0"

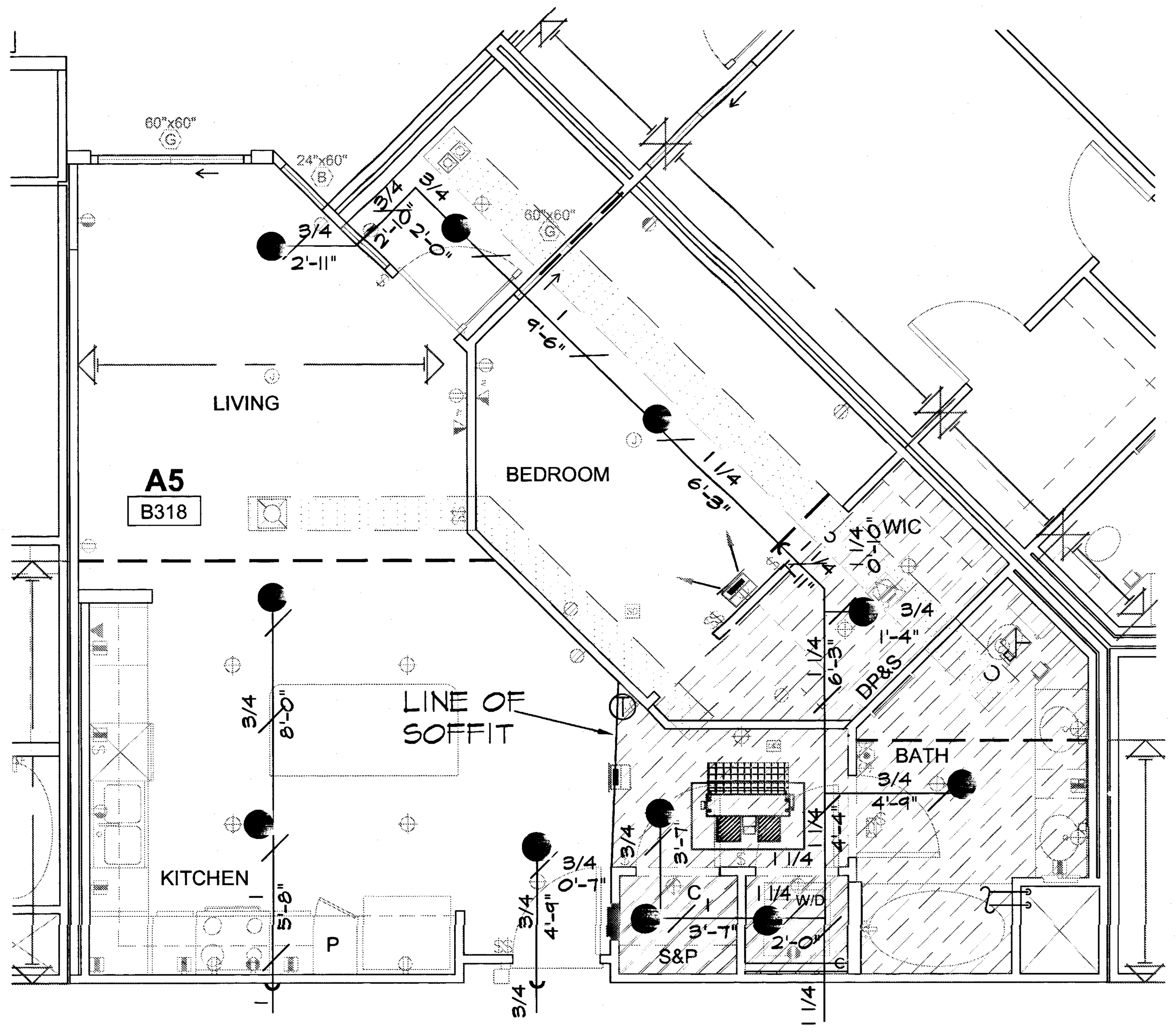
PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: TYPICAL UNITS A3, A4

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 37 OF 41

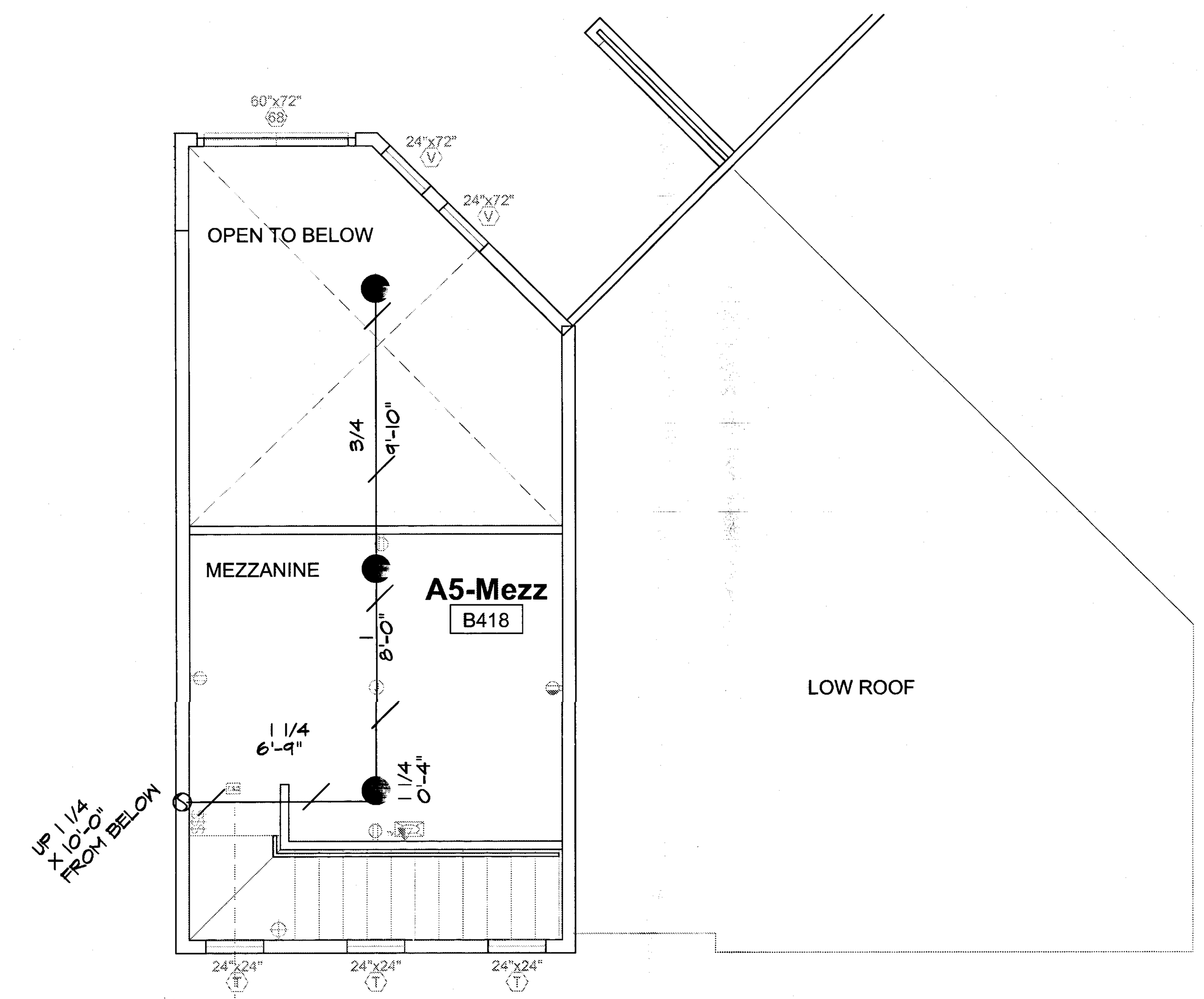
RESIDENTIAL SIDEWALL SPRINK.
RESIDENTIAL SSP TYPICAL
COMMERCIAL SSU BELOW STAIR TYPICAL

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS



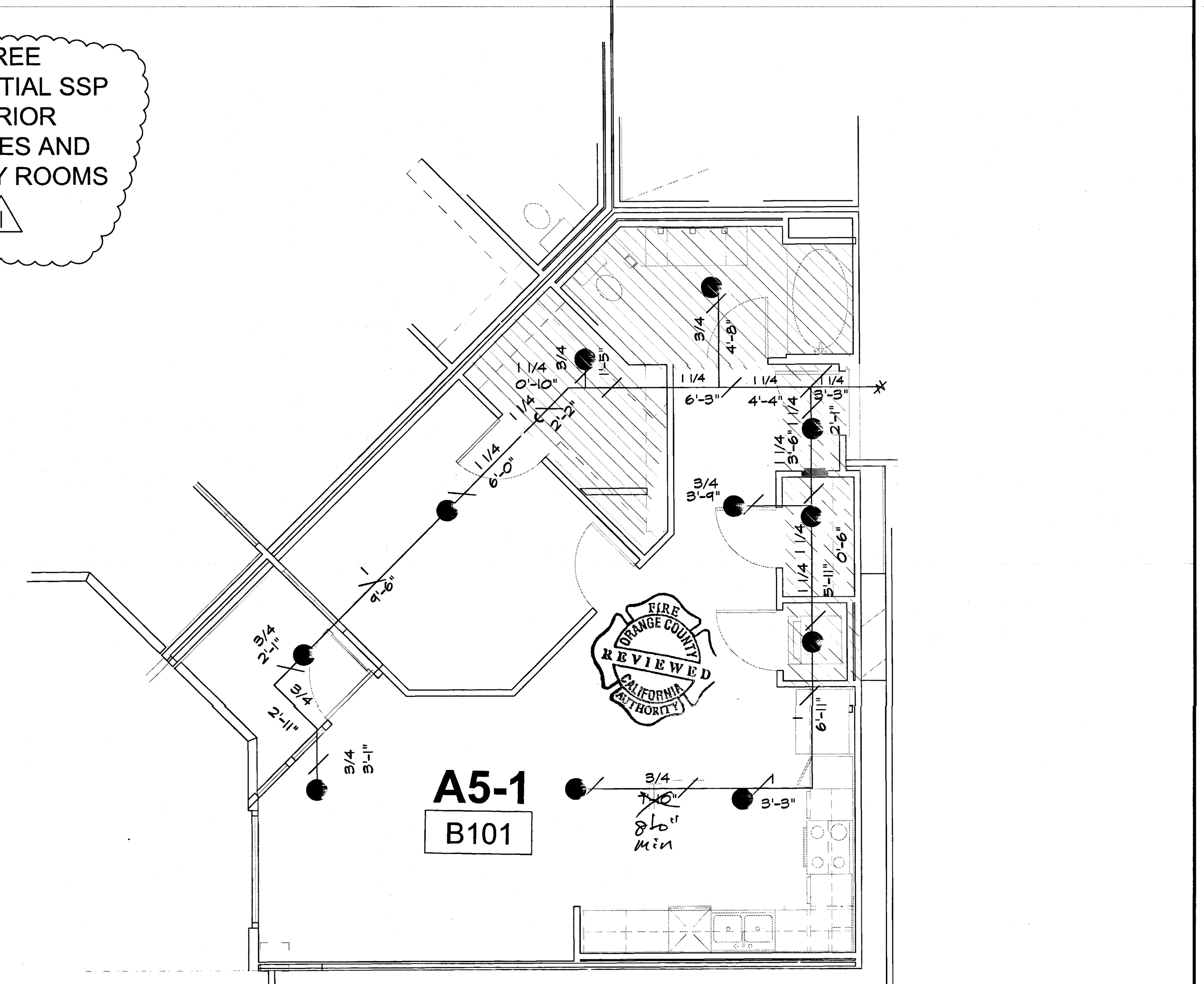
UNIT A5

SCALE 1/4" = 1'-0"



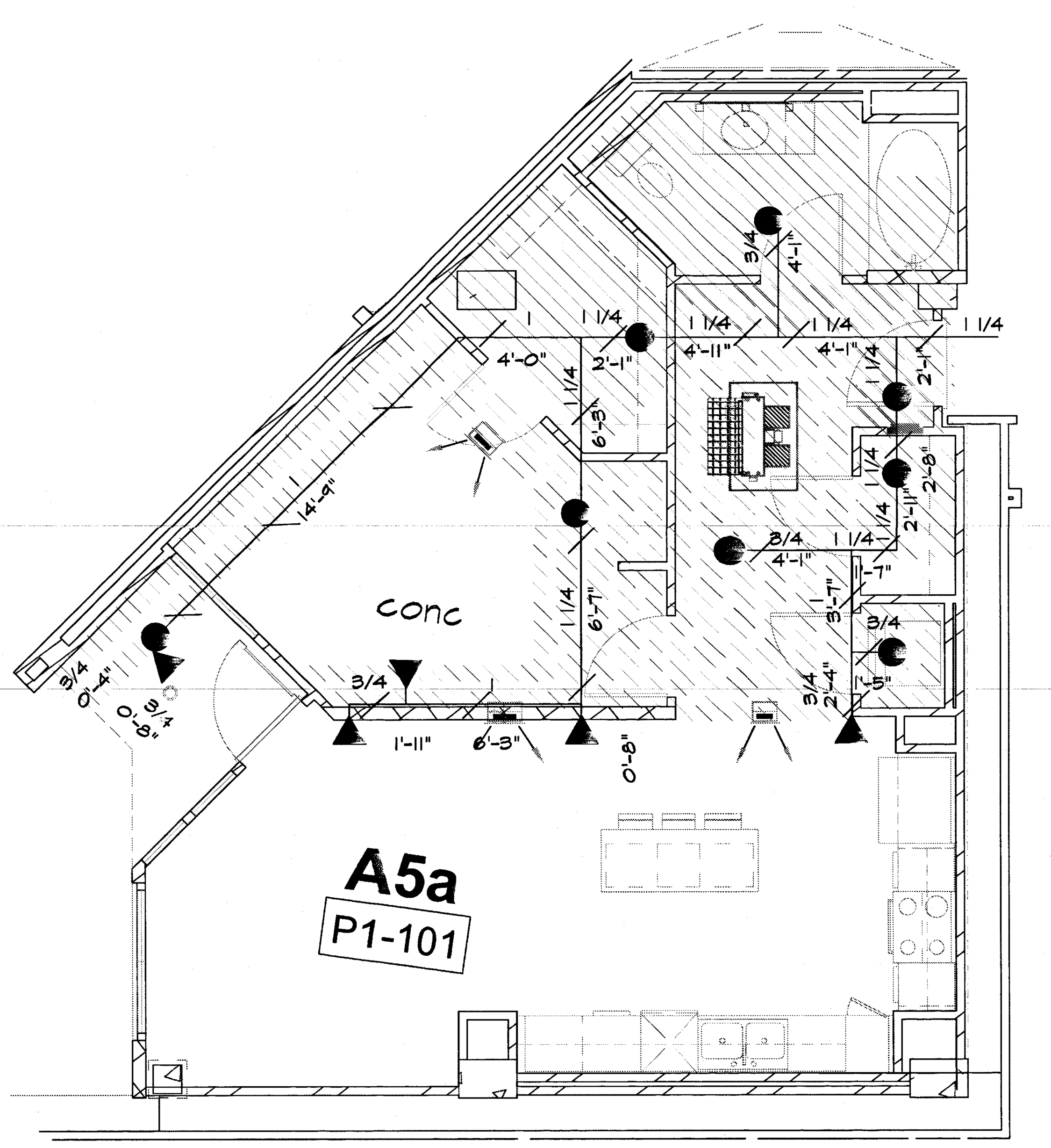
UNIT A5 MEZZ. UPPER

SCALE 1/4" = 1'-0"



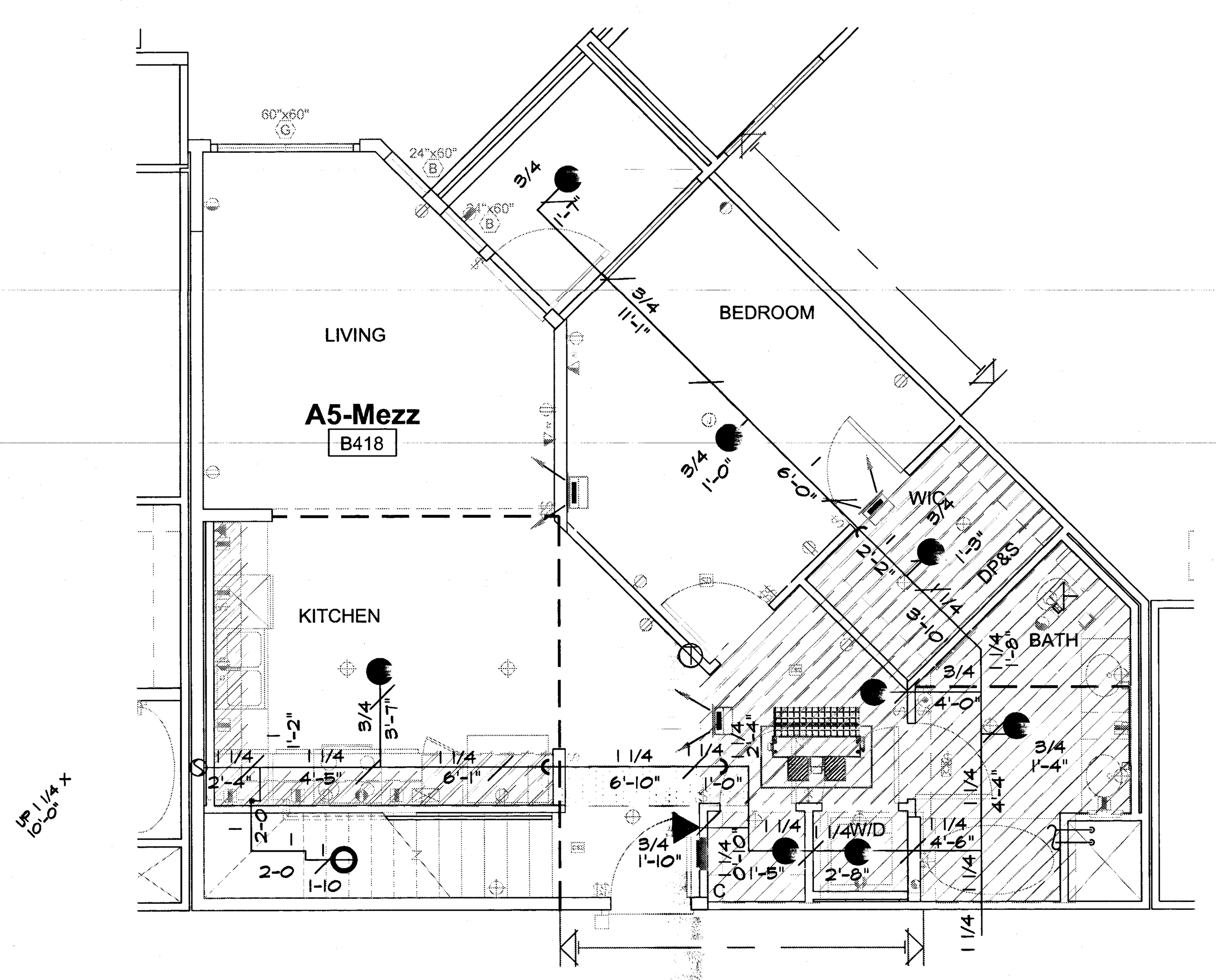
UNIT A5-1

SCALE 1/4" = 1'-0"



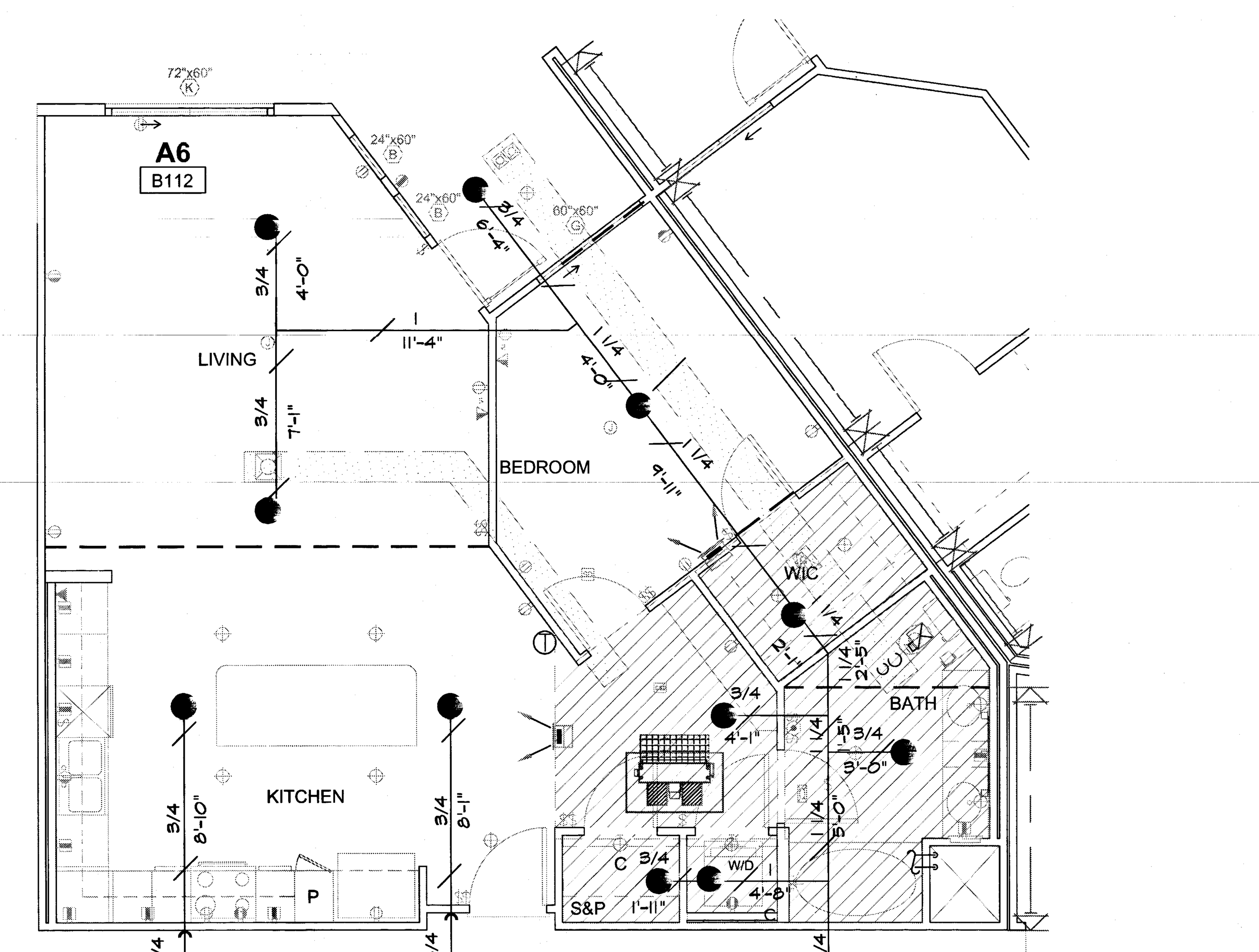
UNIT A5a

SCALE 1/4" = 1'-0"



UNIT A5 MEZZ. LOWER

SCALE 1/4" = 1'-0"



UNIT A6

SCALE 1/4" = 1'-0"

FIRE ORANGE COUNTY REVIEWED CALIFORNIA AUTHORITY

188803

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

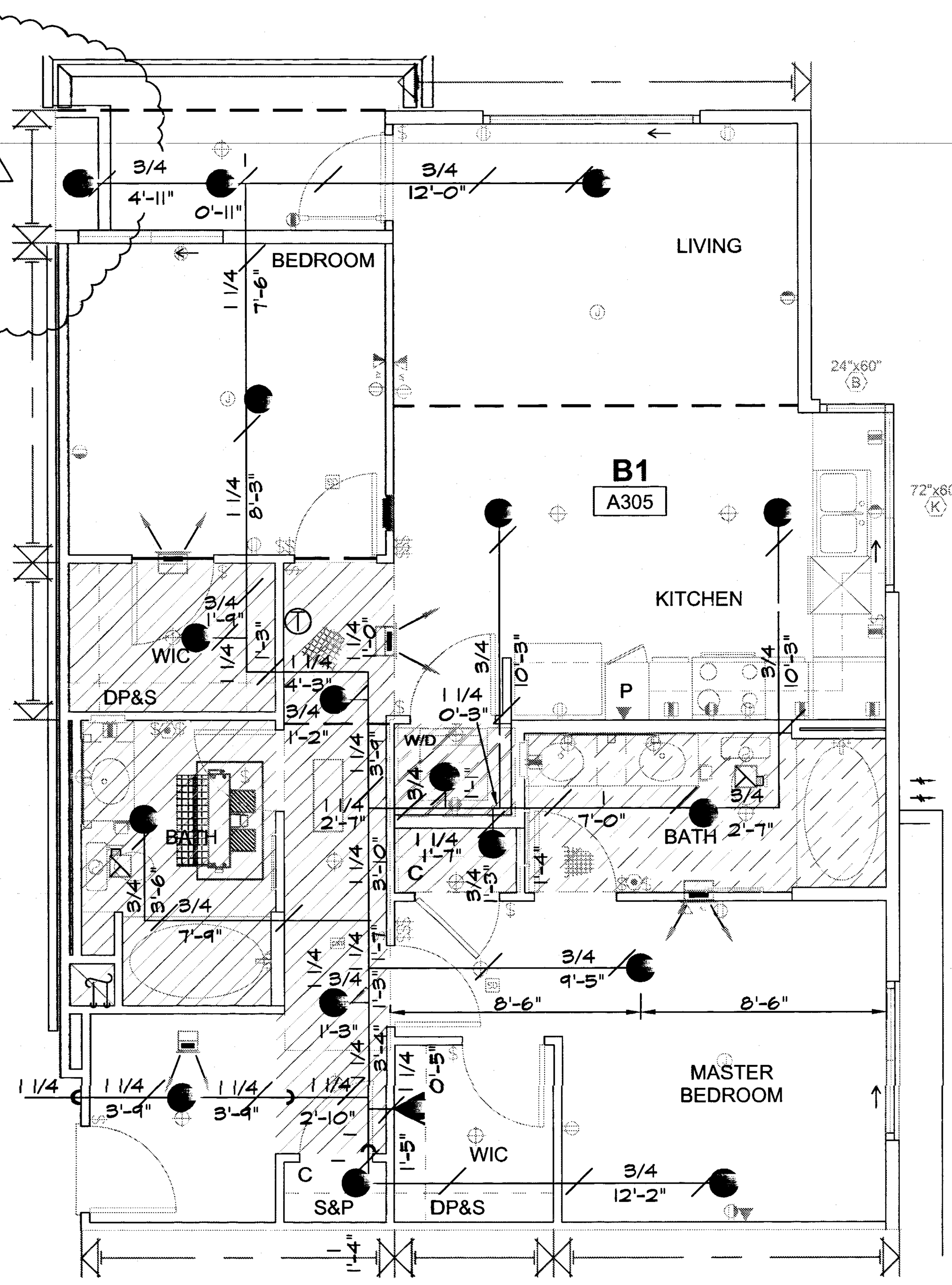
SCALE: 1/4" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: TYPICAL UNITS A5, A6

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

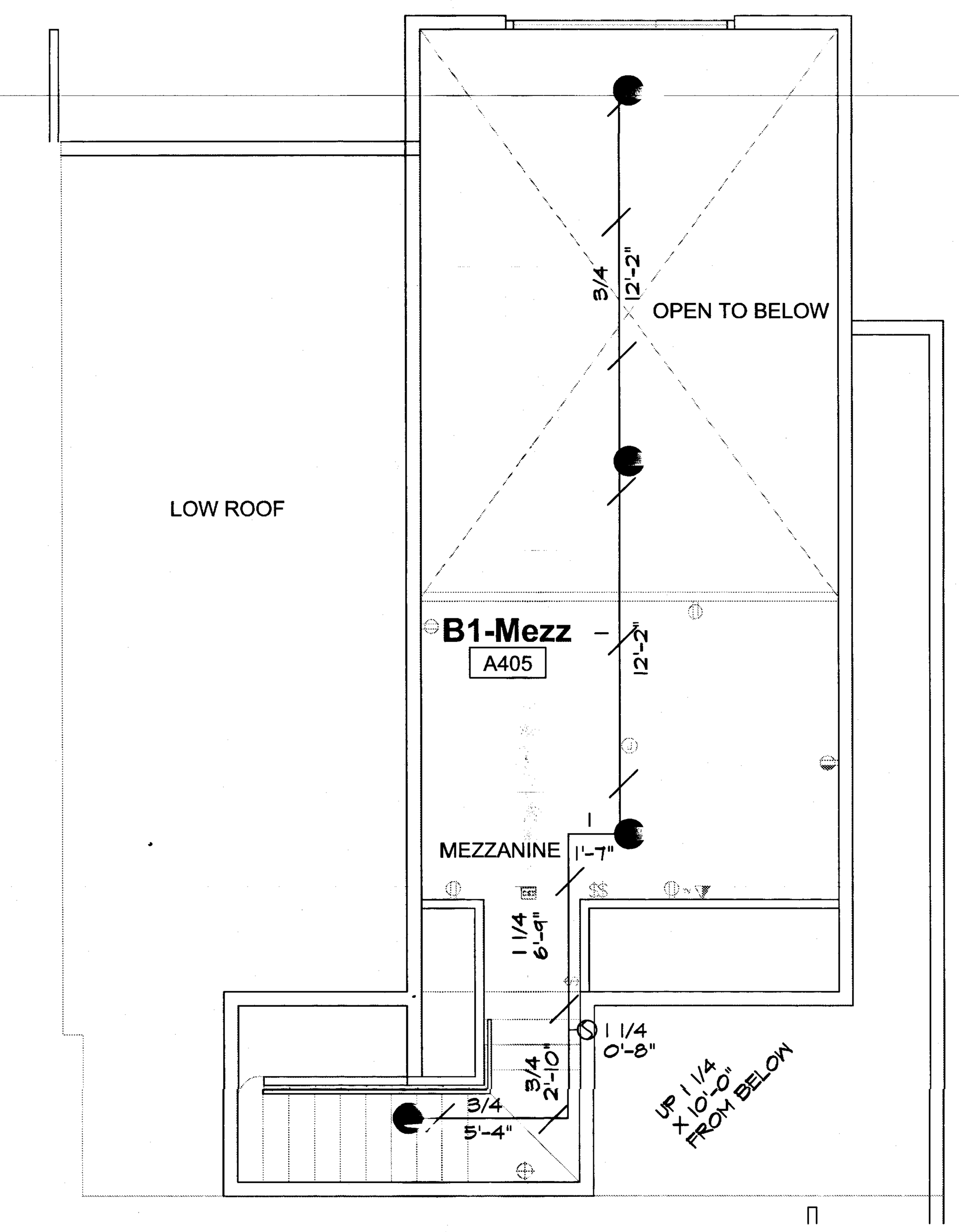
SURVEYED:
DATE: 1-30-13
DRAWN: R
DRAWING NO:
CONTRACT:
38 OF 41

ALL SHADED CEILING AREAS ARE DROPPED CEILING TO 7'-8"
ALL OTHER CEILINGS ARE 9'-0" AFF



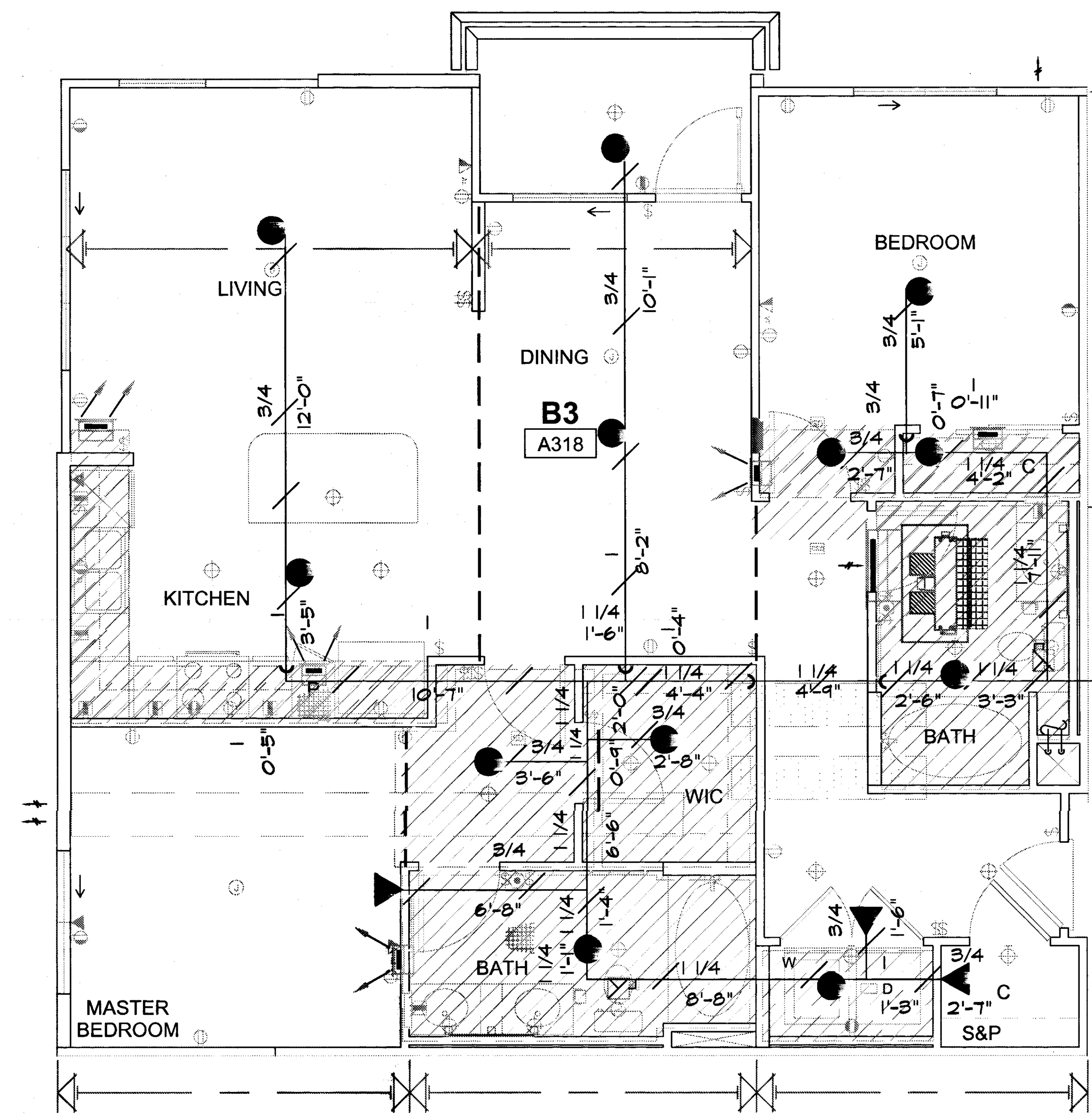
UNIT B1

SCALE 1/4" = 1'-0"



UNIT B1 MEZZ. UPPER

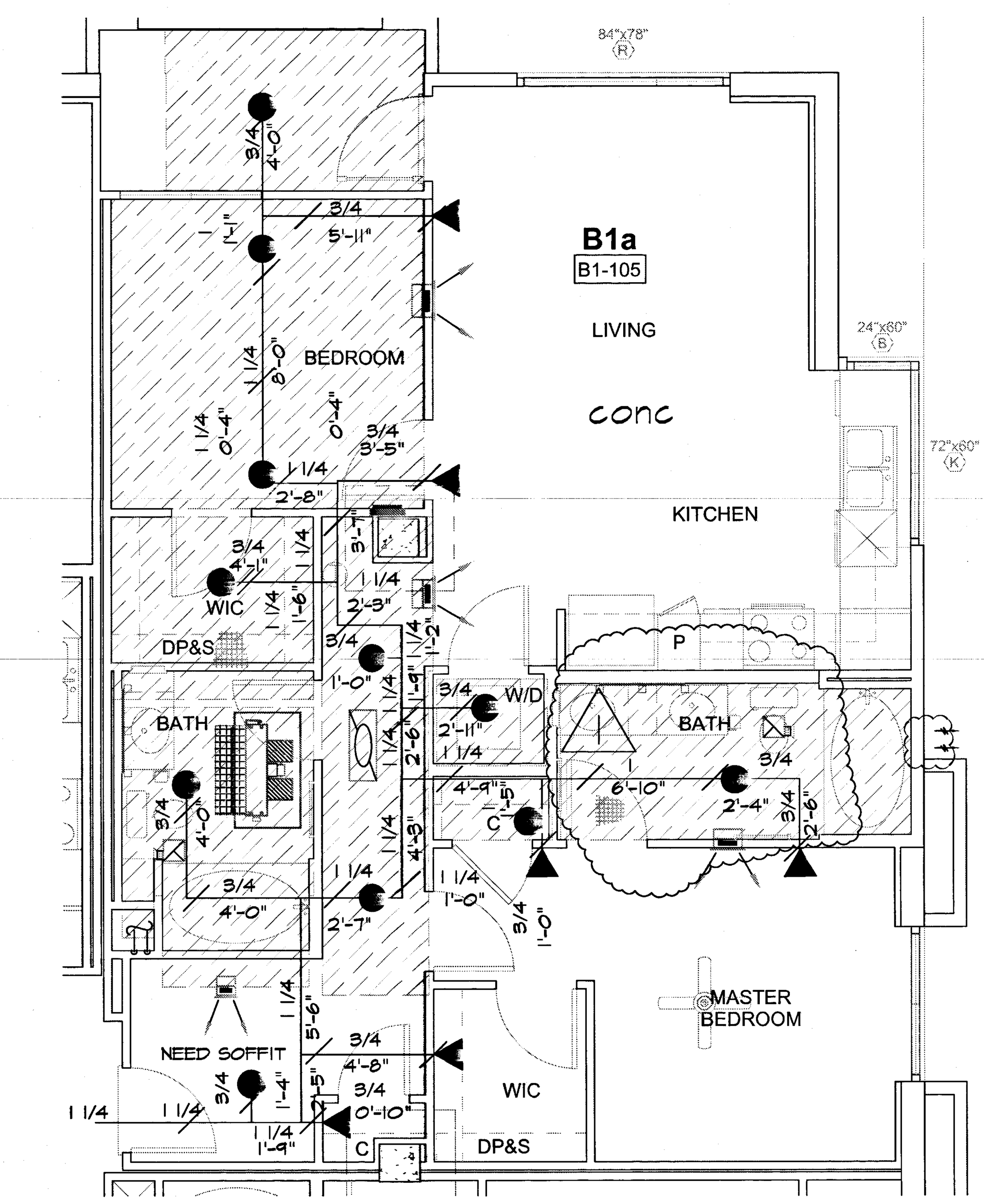
SCALE 1/4" = 1'-0"



UNIT B3

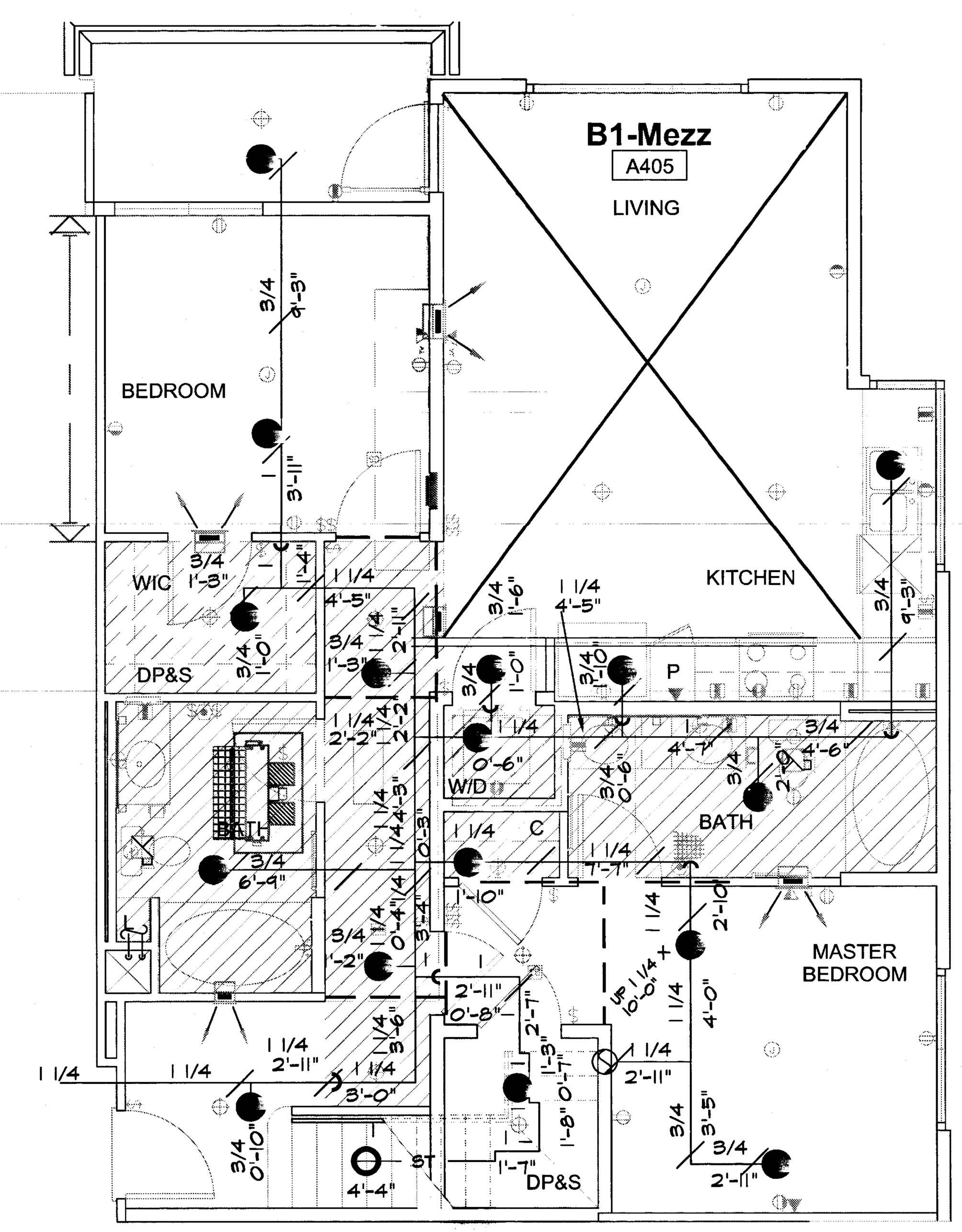
SCALE 1/4" = 1'-0"

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS



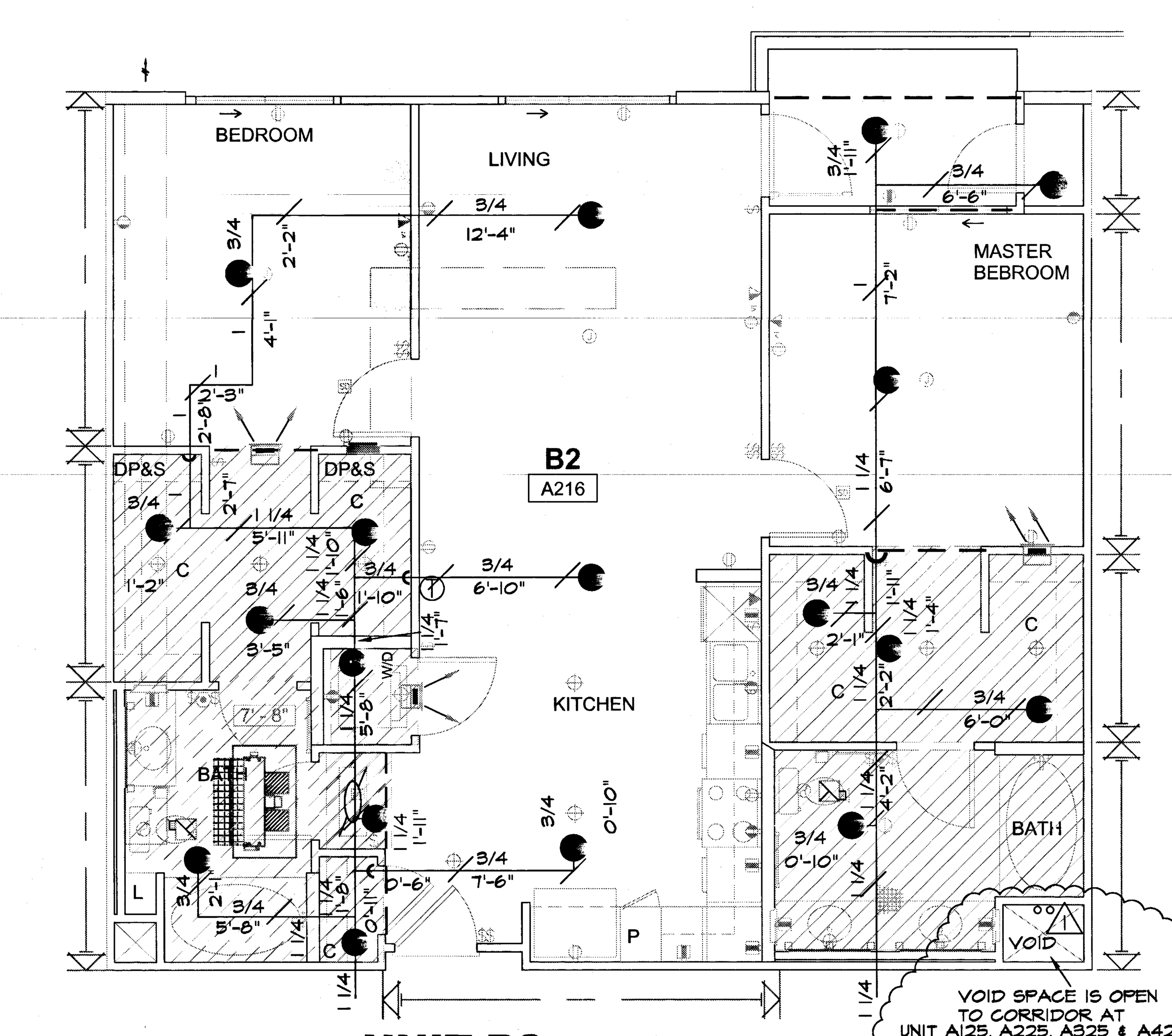
UNIT B1a

SCALE 1/4" = 1'-0"



UNIT B1 MEZZ. LOWER

SCALE 1/4" = 1'-0"



UNIT B2

SCALE 1/4" = 1'-0"

RESIDENTIAL SIDEWALL SPRINK.
RESIDENTIAL SSP TYPICAL
COMMERCIAL SSU BELOW STAIR TYPICAL

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:
CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/4" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: TYPICAL UNITS B1, B2

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 39 OF 41

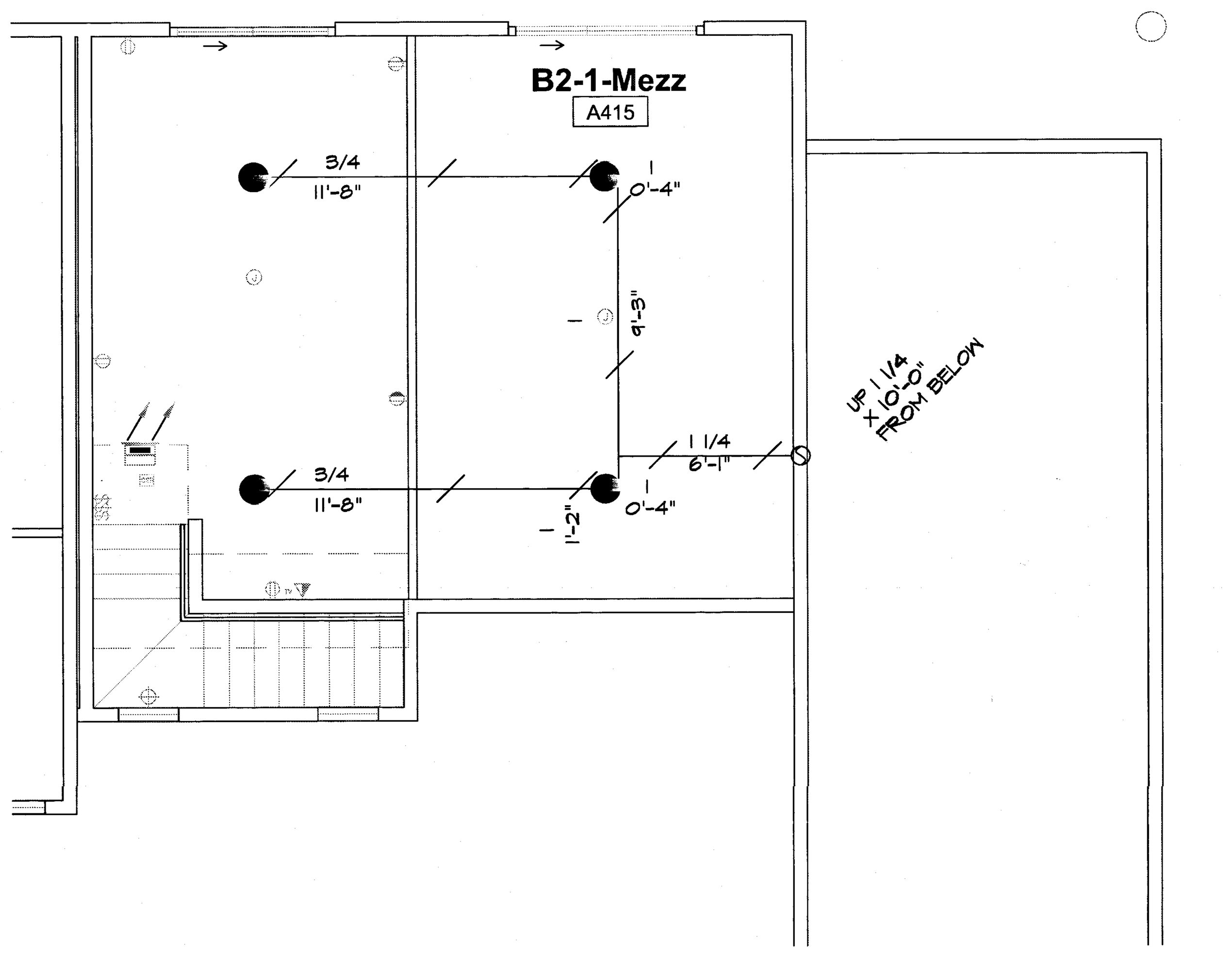
REVIEWED — ORANGE COUNTY FIRE AUTHORITY — CALIFORNIA
188803

LICENSED FIRE PROTECTION CONTRACTOR — BROWNING FIRE PROTECTION INC. — CLASSIFICATION C-16 — LICENSE NO. 619731 — TORRANCE — STATE OF CALIFORNIA

RESIDENTIAL SIDEWALL SPRINK.

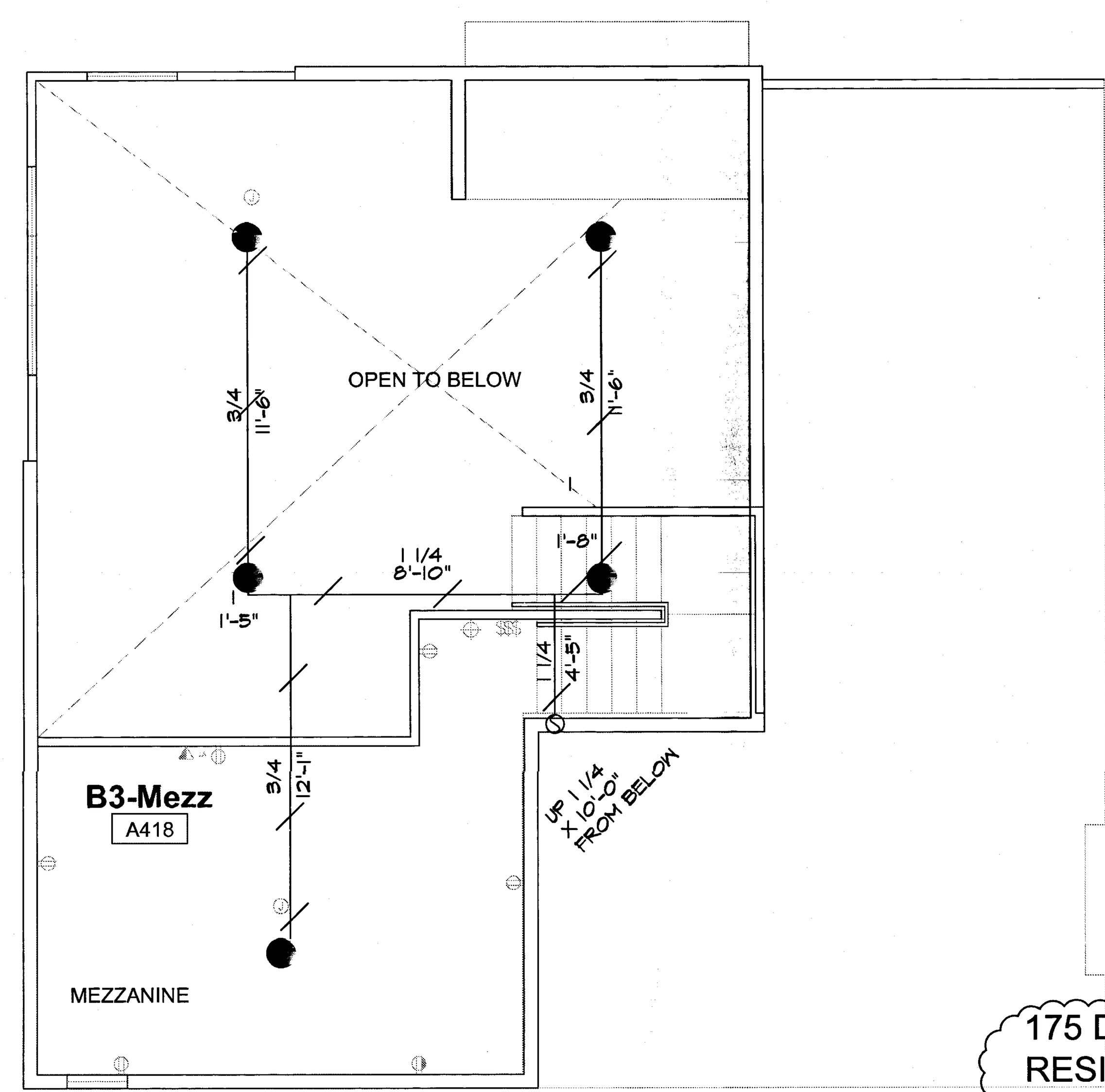
RESIDENTIAL SSP TYPICAL

COMMERCIAL SSU BELOW STAIR TYPICAL



UNIT B2 MEZZ. UPPER

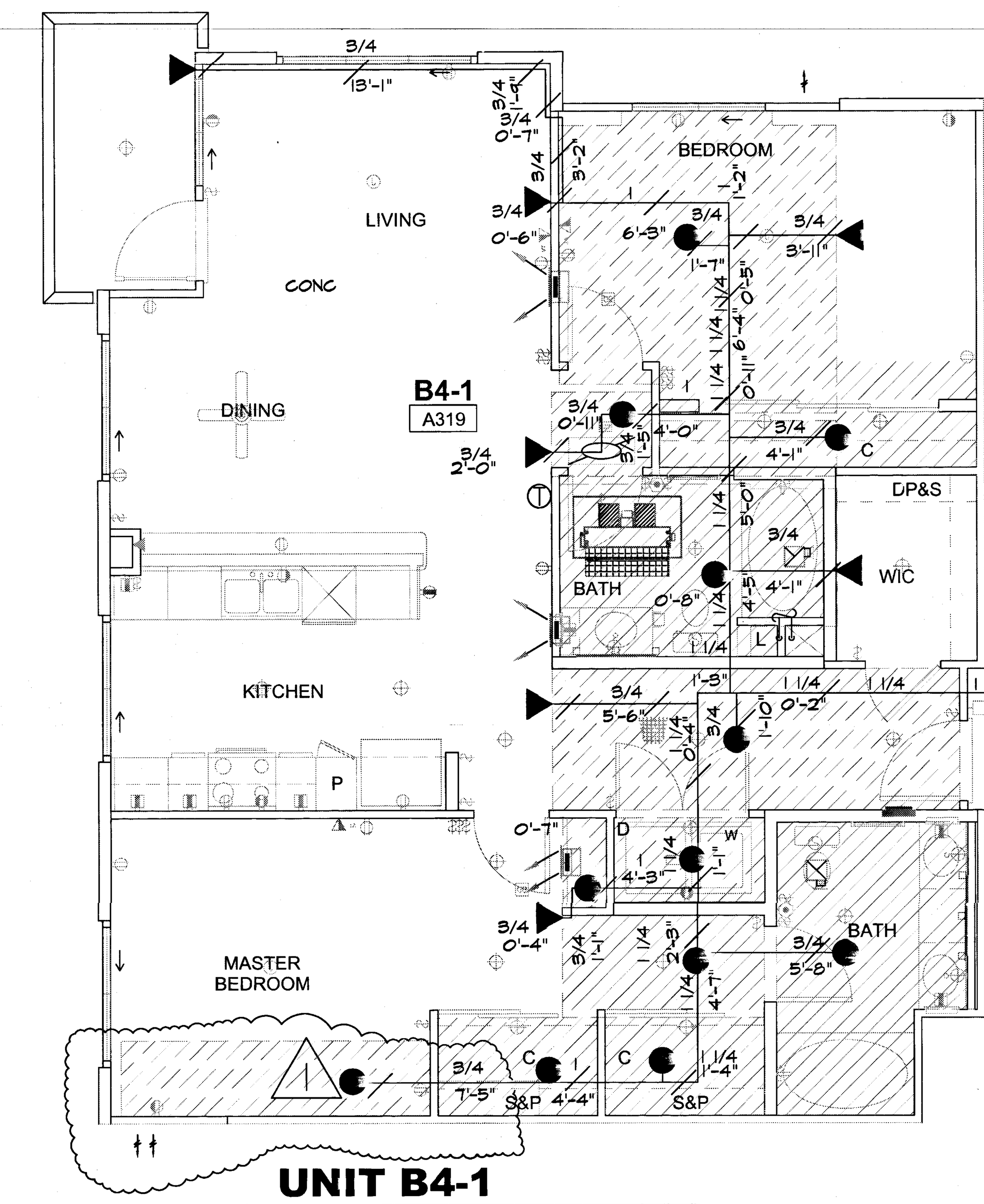
SCALE 1/4" = 1'-0"



UNIT B3 MEZZ. UPPER

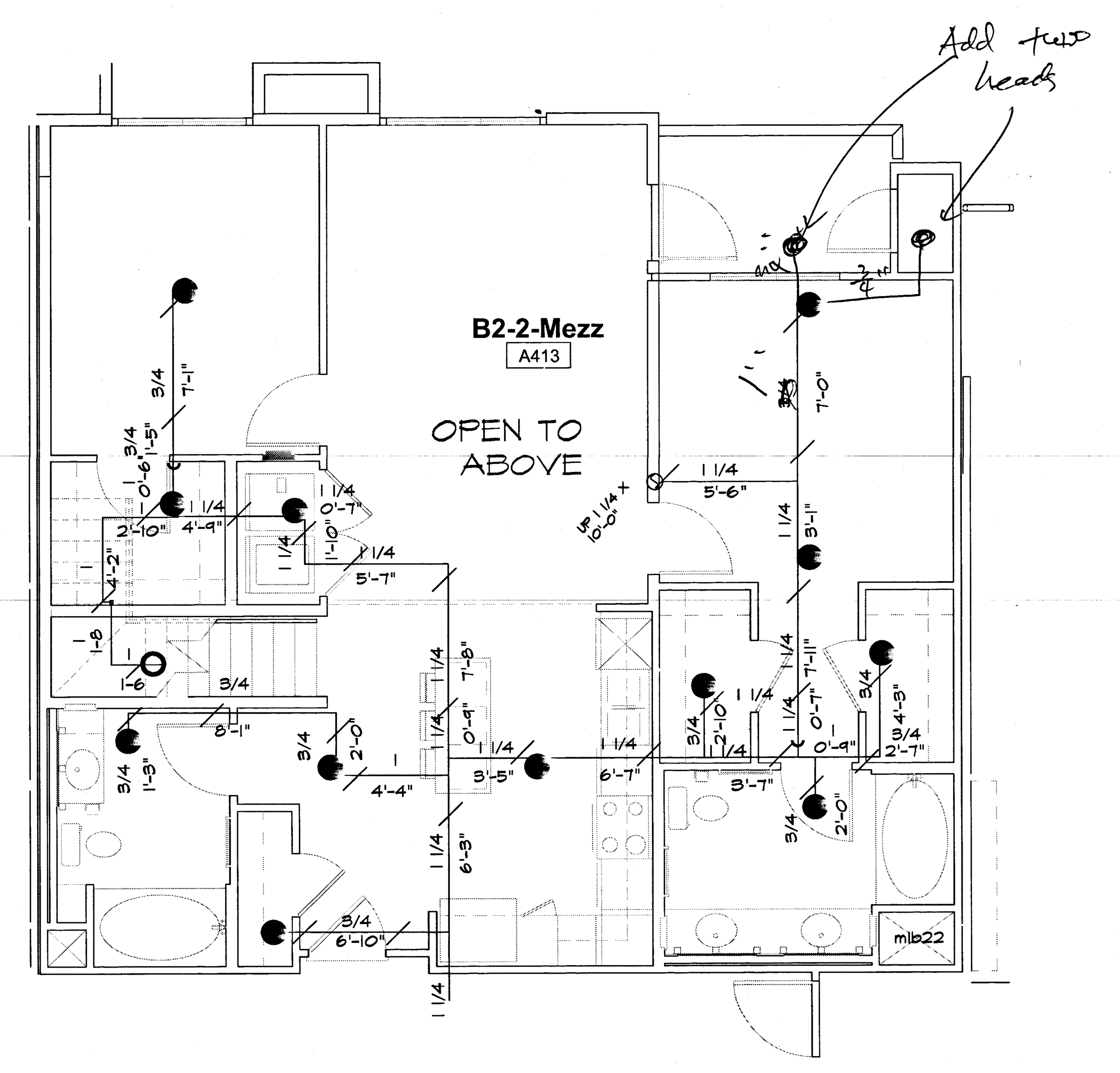
SCALE 1/4" = 1'-0"

175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS



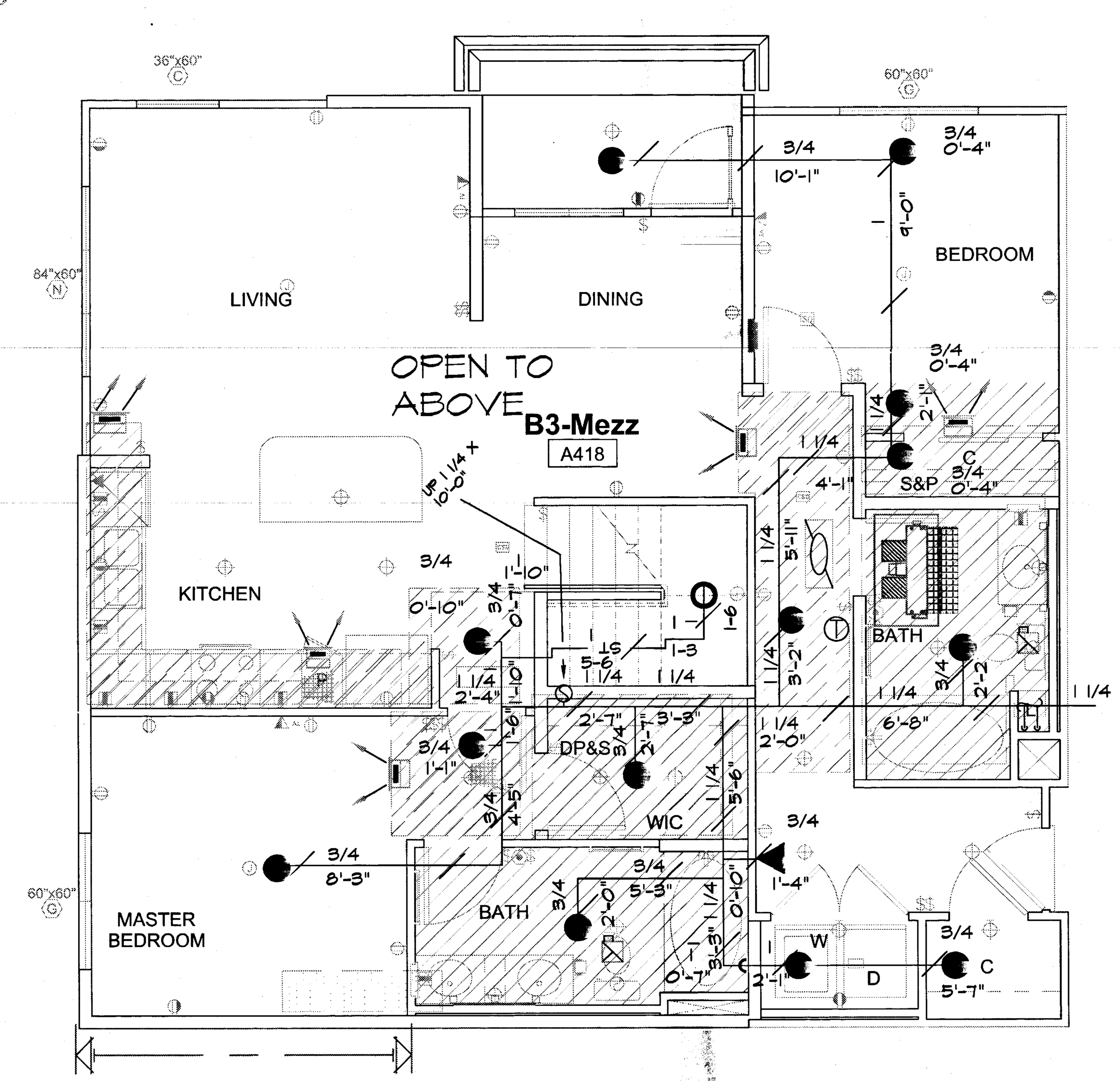
UNIT B4-1

SCALE 1/4" = 1'-0"



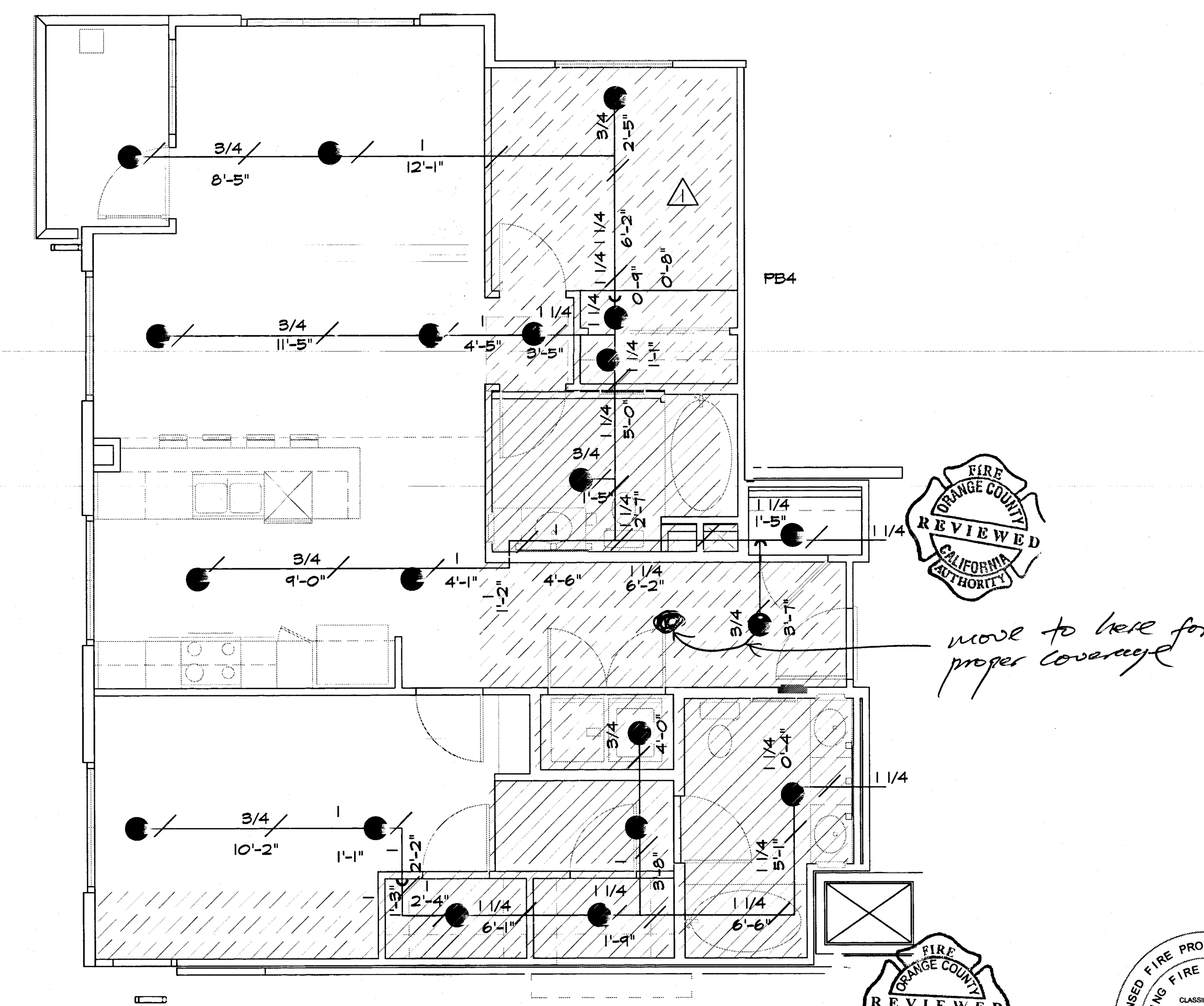
UNIT B2 MEZZ. LOWER

SCALE 1/4" = 1'-0"



UNIT B3 MEZZ. LOWER

SCALE 1/4" = 1'-0"



UNIT B4

SCALE 1/4" = 1'-0"

FIRE ORANGE COUNTY REVIEWED CALIFORNIA AUTHORITY

LICENSED FIRE PROTECTION CONTRACTOR BROWNING FIRE PROTECTION INC. CLASSIFICATION C-16 LICENSE NO. 619731 TORRANCE STATE OF CALIFORNIA

188803

NOTES:	HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS	ALARM TYPE:
	#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE	
	#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE	
	#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE	
	#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE	
	#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH	
	#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG	
	#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL	
	#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION	TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

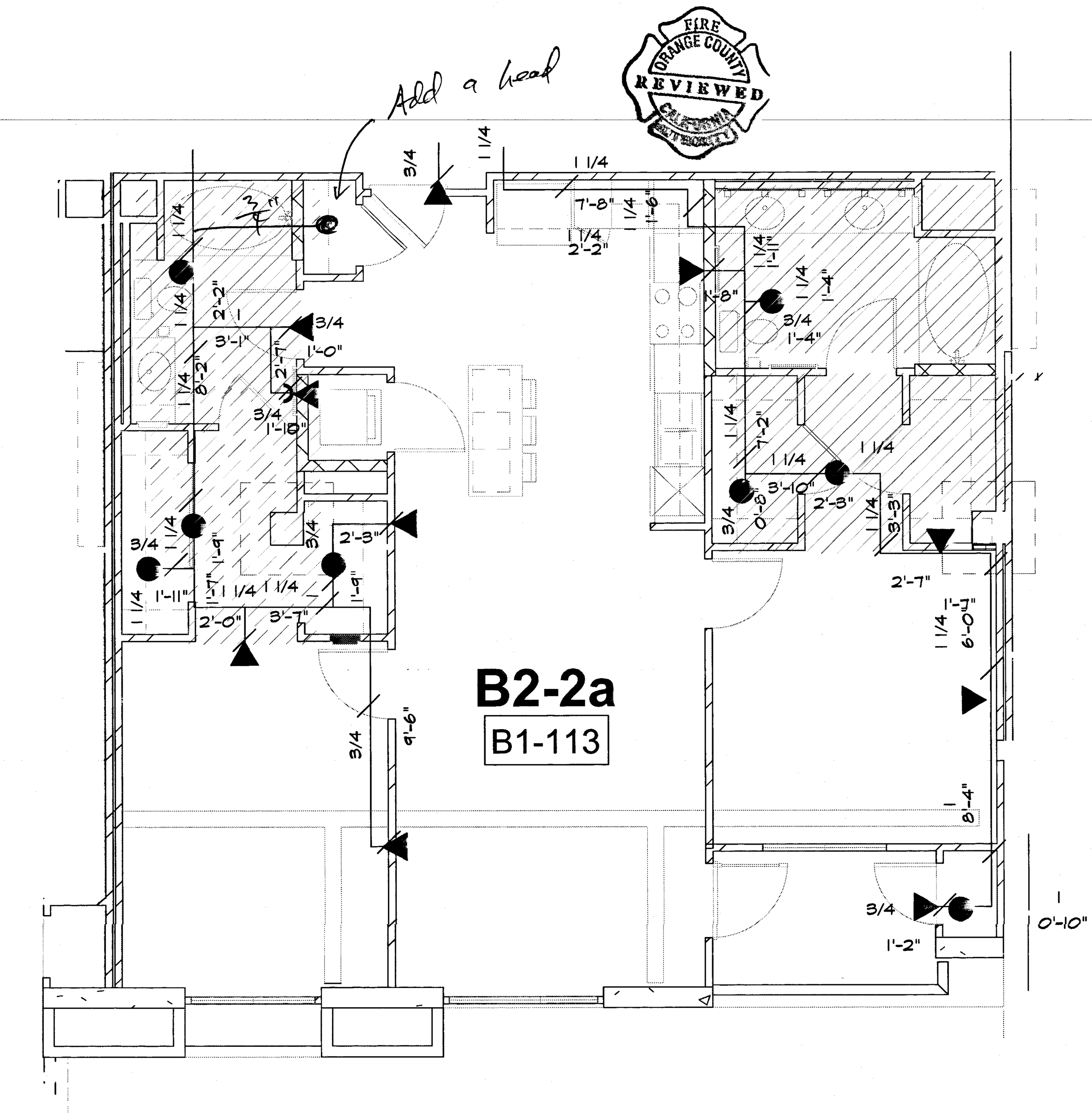
FIELD INSPECTED BY:	CONTRACT WITH:
1.	
2.	ADDRESS:
3.	CITY:
4.	PHONE:
WATER DEPT:	ARCHITECT:
ADDRESS:	ADDRESS:
CITY:	CITY:
PHONE:	PHONE:

SCALE: 1/4" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: TYPICAL UNITS B2, B3, B4

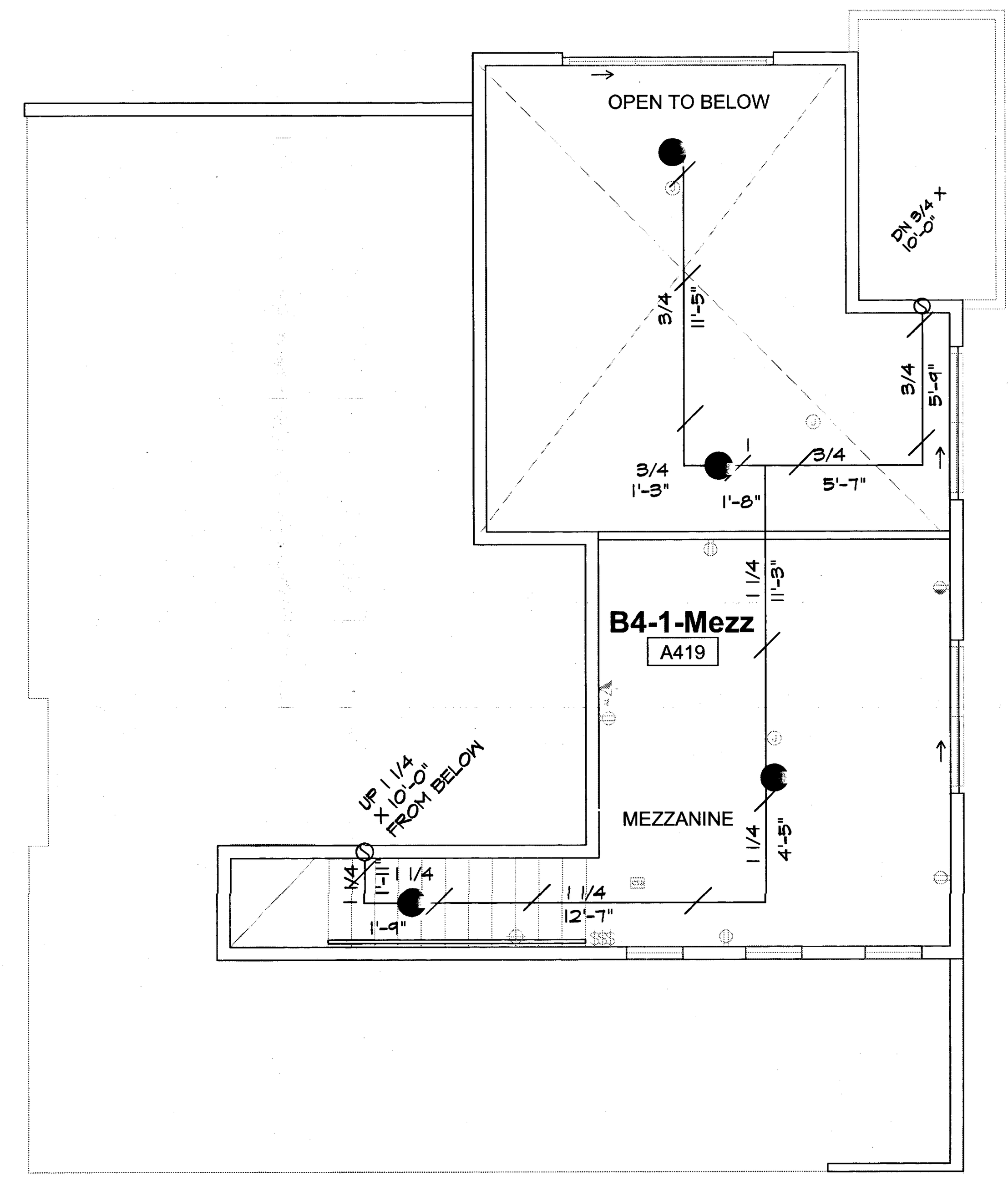
BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED:	DATE: 1-30-13
DRAWN: R	DRAWING NO:
CONTRACT:	40 OF 41



UNIT B2 CONCRETE

SCALE 1/4" = 1'-0"



UNIT B4 MEZZ. UPPER

SCALE 1/4" = 1'-0"

◄ RESIDENTIAL SIDEWALL SPRINK.

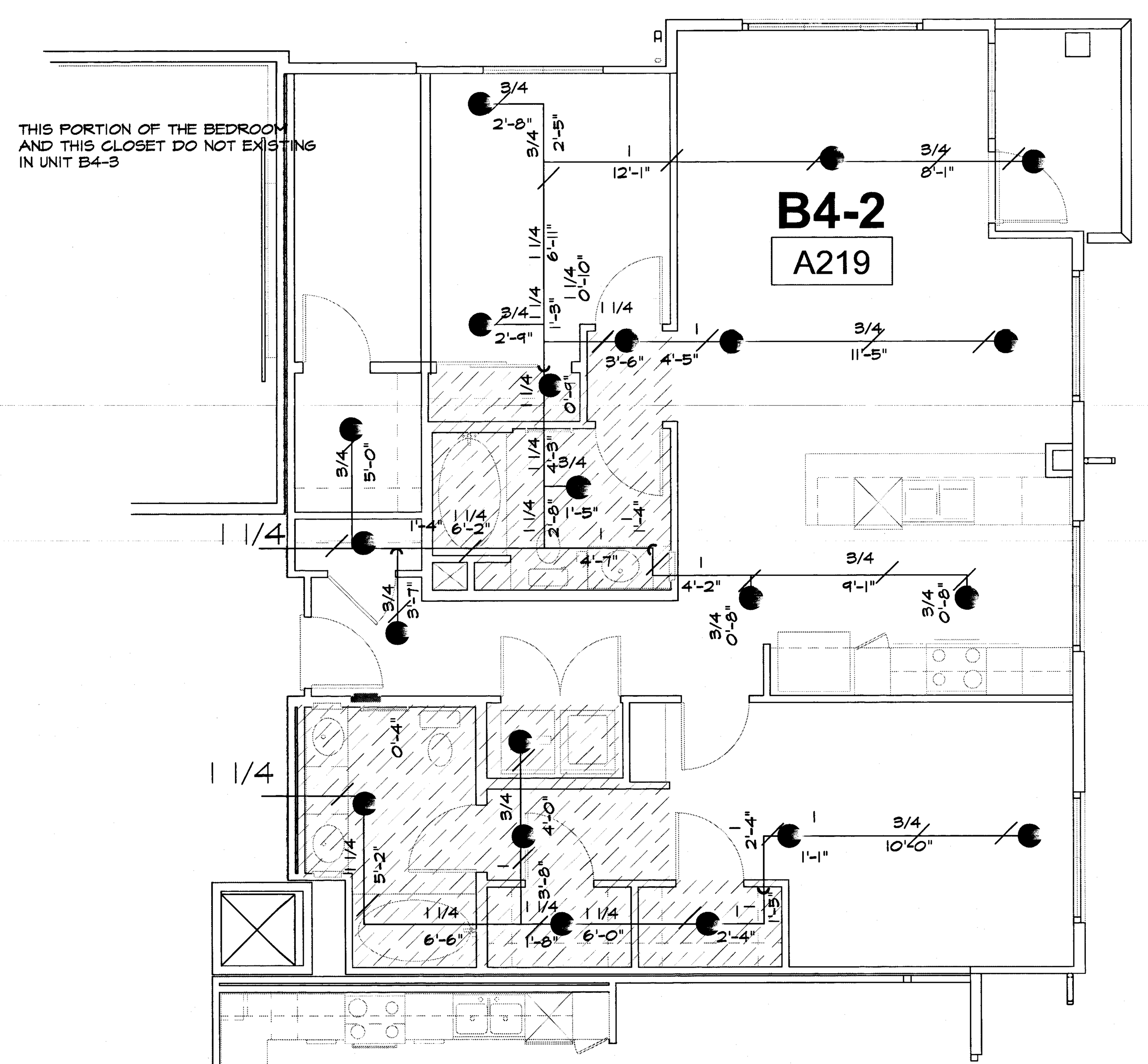
● RESIDENTIAL SSP TYPICAL

○ COMMERCIAL SSU BELOW STAIR TYPICAL

INSTALLATION OF SPRINKLER HEADS TYCO SPRINKLER COMPANY
PENDENT SPRINKLER SPACING:
180 SQUARE FEET MAXIMUM SPACING 18' MAXIMUM BETWEEN HEADS
9' MAXIMUM FROM WALLS
8' MINIMUM DISTANCE BETWEEN SPRINKLERS
SIDEWALL SPRINKLER SPACING:
180 SQUARE FEET MAXIMUM SPACING 16' MAXIMUM BETWEEN HEADS
16' MAXIMUM WIDTH X 16' MAXIMUM THROW
8' MINIMUM DISTANCE BETWEEN SPRINKLERS

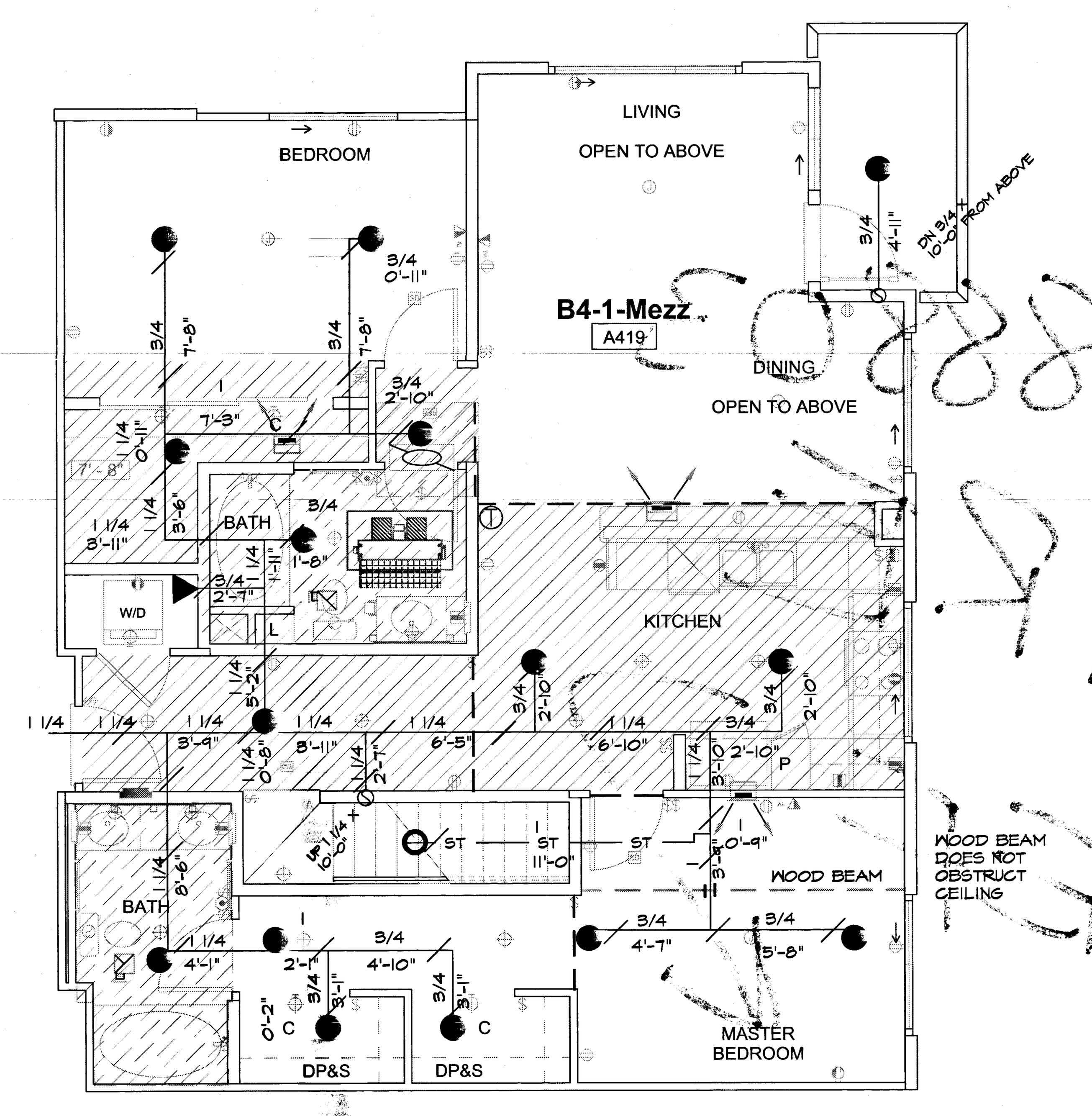
1. MINIMUM DISTANCE FROM ADJACENT WALL 4".
2. MINIMUM DISTANCES FROM HEAT SOURCES:
1'-6" LATERALLY FROM THE SURFACE OF KITCHEN RANGES AND WALL OVENS.
3' LATERALLY FROM THE EDGES AND 5' LATERALLY FROM THE FRONT OF FIREPLACES.
3'-6" LATERALLY FROM THE SURFACES OF A COAL OR WOOD BURNING STOVE.
6" LATERALLY FROM THE SURFACES OF FURNACES AND WATER HEATERS AND FLUSH MOUNTED LIGHT FIXTURES.
2' LATERALLY FROM THE SURFACES OF HOT AIR FLUES, UNINSULATED HEATING DUCTS, AND UNINSULATED WATER PIPES.
2' LATERALLY FROM THE EDGES OF A CEILING MOUNTED HOT AIR DIFFUSER, AND 2' LATERALLY FROM THE SIDES AND 3' LATERALLY FROM THE FRONT OF A WALL MOUNTED HOT AIR DIFFUSER.
3. TO AVOID COLD SOLDIERING SPRINKLERS SHALL BE NO CLOSER THAN 8'.
4. SPRINKLERS MAY BE OMITTED FROM BATHROOMS NOT EXCEEDING 55 SQUARE FEET WITH WALLS AND CEILINGS OF NONCOMBUSTIBLE OR LIMITED COMBUSTIBLE MATERIALS WITH A 15-MINUTE THERMAL BARRIER RATING INCLUDING THE WALLS AND CEILINGS BEHIND FIXTURES.
5. SPRINKLERS SHALL BE LOCATED AT LEAST 2' FROM ALL SURFACE MOUNTED SMOKE DETECTORS.

THIS PORTION OF THE BEDROOM AND THIS CLOSET DO NOT EXISTING IN UNIT B4-3



UNIT B4-2 & B4-3

SCALE 1/4" = 1'-0"



175 DEGREE RESIDENTIAL SSP AT EXTERIOR BALCONIES AND LAUNDRY ROOMS

WOOD BEAM DOES NOT OBSTRUCT CEILING

UNIT B4 MEZZ. LOWER

SCALE 1/4" = 1'-0"

ORANGE COUNTY FIRE AUTHORITY REVIEWED CALIFORNIA

188803

LICENSED FIRE PROTECTION CONTRACTOR — BROWNING FIRE PROTECTION, INC. — CLASSIFICATION C-16 — LICENSE NO. 619731 — TORRANCE — STATE OF CALIFORNIA

NOTES:

HANGER LEGEND	STANDARD SYMBOLS	STANDARD SYMBOLS
#1 EXPANSION SHELL, ROD AND RING	POST INDICATOR VALVE	ALARM CHECK VALVE
#2 C-CLAMP, ROD AND RING	KEY VALVE	RISER W/ ALARM CHECK VALVE
#3 POWDER DRIVEN STUD, ROD AND RING	FIRE HYDRANT	RISER W/ DELUGE VALVE
#4 ANGLE CLIP ROD AND RING	FIRE DEPARTMENT CONNECTION	RISER W/ DRY PIPE VALVE
#5 L-ROD AND RING	OSY GATE VALVE	RISER W/ ELECT FLOW SWITCH
#6 EYE ROD AND RING	SWING CHECK VALVE	WATER MOTOR ALARM GONG
#7 COACH SCREW ROD AND RING	NEW UNDERGROUND	ELECTRIC ALARM BELL
#8 CEILING FLANGE, ROD AND RING	EXISTING UNDERGROUND	FLUSH FIRE DEPT CONNECTION

ALARM TYPE:

TOTAL SPRINKLERS THIS DRAWING

MK	DATE	BY	COORD	REVISIONS - LOCATE BY GRID COORDINATES
1	5-8-13	R		

FIELD INSPECTED BY: 1. 2. 3. 4.
WATER DEPT: ADDRESS: CITY: PHONE:

CONTRACT WITH: ADDRESS: CITY: PHONE:
ARCHITECT: ADDRESS: CITY: PHONE:

SCALE: 1/4" =1'-0"

PROJECT: **CROWN CABOT**
ADDRESS: 25891 CROWN VALLEY
CITY: LAGUNA NIGEL, CA
TITLE: TYPICAL UNITS B4 MEZZANINE

BROWNING FIRE PROTECTION, INC.
2335 ABALONE AVENUE, UNIT #110
TORRANCE CA 90501
PH: (310) 212-0622 FAX: (310) 212-3428 LICENSE # C-16 619731

SURVEYED: | DATE: 1-30-13
DRAWN: R | DRAWING NO:
CONTRACT: | 41 OF 41

SR188803
FIRE
REF

[redacted]

27960 CABOT RD
Mill Creek/Crown [redacted]S
B12-2453

EARTHBOUND
"Holdowns that Work"

December 30, 2013

Mr. Hiep Tran
Plan Check and Engineering
City of Laguna Niguel
30111 Crown Valley Parkway
Laguna Niguel, CA 92677

SUBJECT: Crown Cabot Luxury Apts.
25891 Crown Valley
Laguna Niguel, CA 92677
P.C. #B13-2653

Mr. Tran:

This letter shall address comments received by our office on 12/26/13:

Comment 9A: *Sheet SH-2: Table "Earthbound Welded Anchor Specifications: Show Capacity of weld and provide calculations for welds.*

Response: We will submit calcs per this comment in Appendix A and have revised this table on SH-2.

Comment 9B: *Sheet SH-2: Detail II-SB and 0-SB shows 3/16" weld which to do match with Earthbound Welded Anchor Table (1/4").*

Response: Concur, we will correct the table to 3/16" and our calculations justify this requirement. We will also delete the weld anchors not used on this project.

Comment 10: *Details 0, I, II show a single stud on right hand side of rod anchor and located on the 3rd, 2nd and 1st floor. Capacity of single 2x4 stud is 9' = 2338# which is less than trimmer (3281#). Should the 2338 stud control or be considered?*

Response: For these runs on *3rd, 2nd and 1st floor,* the studs are based on full height (2x4 = 2338#, 2x6 = 5156#). The number of members shown in these scenarios is OK in meeting the compression download requirement. No revisions necessary.

Comment 11: *ESR-2848 is expired until Dec 1, 2012. Please update the report.*

Response: Concur, we just received the latest publication and will include in Appendix B.

Please call me at (360) 863-0722 if you have any comments or questions.

Sincerely,

Edward Chin

Edward Chin, PE, Vice-President

Earthbound Corporation
17361 Tye Street SE
Monroe, WA 98272

http://www.holdown.com
Phone: (800) 944-5669
Fax: (206) 260-3484

EARTHBOUND
"Holdowns that Work"

Appendix A
Weld Anchor Calculations

Earthbound Corporation
17361 Tye Street SE
Monroe, WA 98272

http://www.holdown.com
Phone: (800) 944-5669
Fax: (206) 260-3484

Earthbound Holdown System Welded Coupler Calculations

Objective: Find a welded coupler to steel beam connection able to handle 1/2 inch diameter A36/A307 Threaded Rod. Calculate the welding requirements for welding a round cylindrical coupler to an existing W Flange in the field to connect a Earthbound System Holdown run. Use 1.000" diameter Coupler for this calculation check.

Determine Rod Allowable Load Given Rod Diameter Size: Calculate threaded rod capacity in accordance to AISC 13th Edition from a given rod size diameter below.

$RodDia := 0.500 \cdot in$; Provide nominal rod diameter

$n := \frac{13}{in}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.08 \cdot in$; To calculate rod stress area, define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (RodDia - 0.938194 \cdot \rho)^2$ $\quad At = 0.144 \cdot in^2$ $\quad Ab := \frac{\pi}{4} \cdot RodDia^2$ $\quad Ab = 0.2 \cdot in^2$

$Fu := 60000 \cdot psi$

$Fy := 43000 \cdot psi$

; Define ultimate and yield strength of threaded rod material.
In this case ASTM A36/A307.
For reference A307 standard strength rod: Fy=43ksi, Fu=60ksi.
For reference A449 high strength rod: Fy=105ksi, Fu=120ksi.

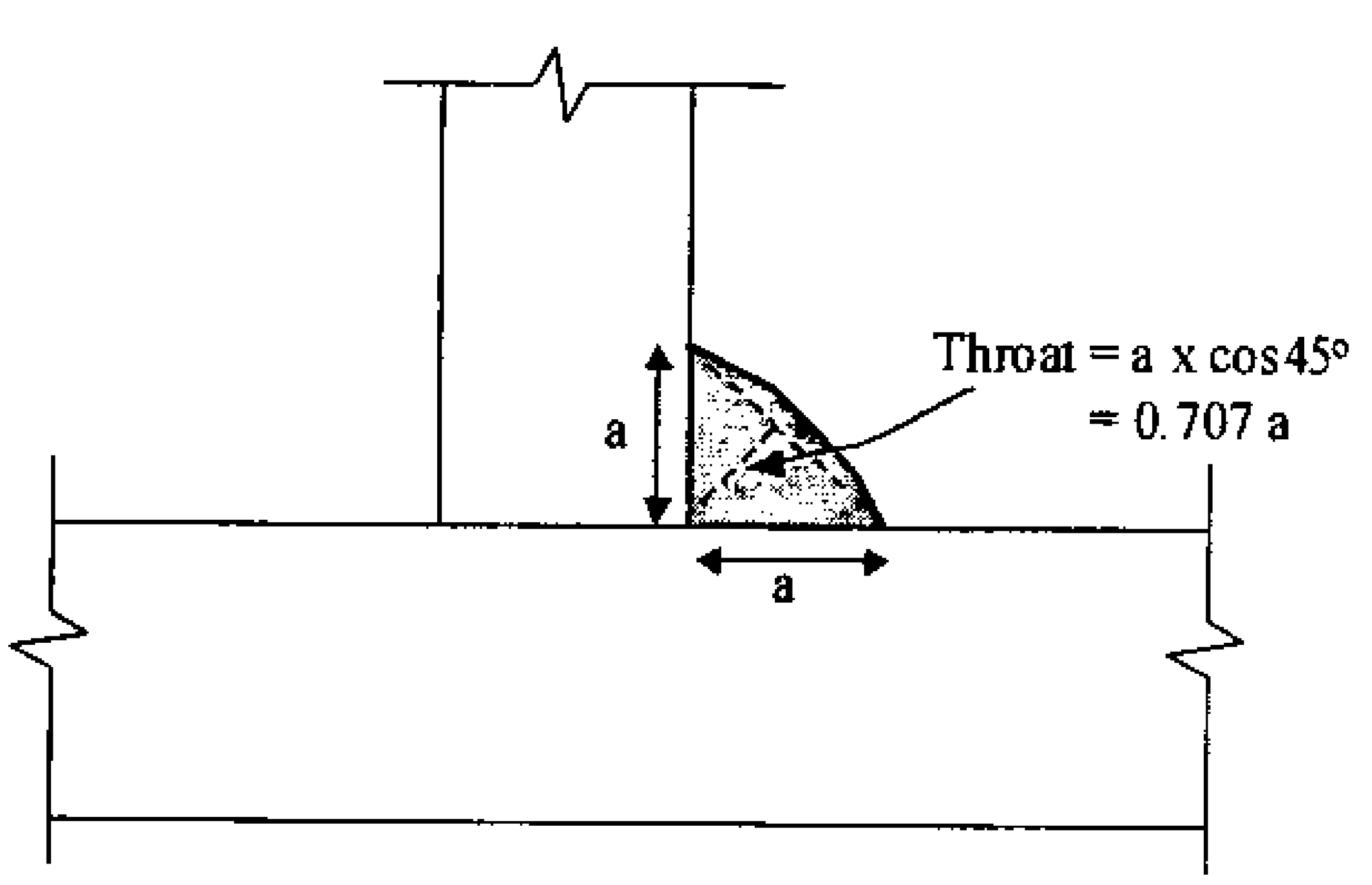
$Fnt := 0.75 \cdot Fu \cdot At$; Equation J3-1 and Table J3-2.

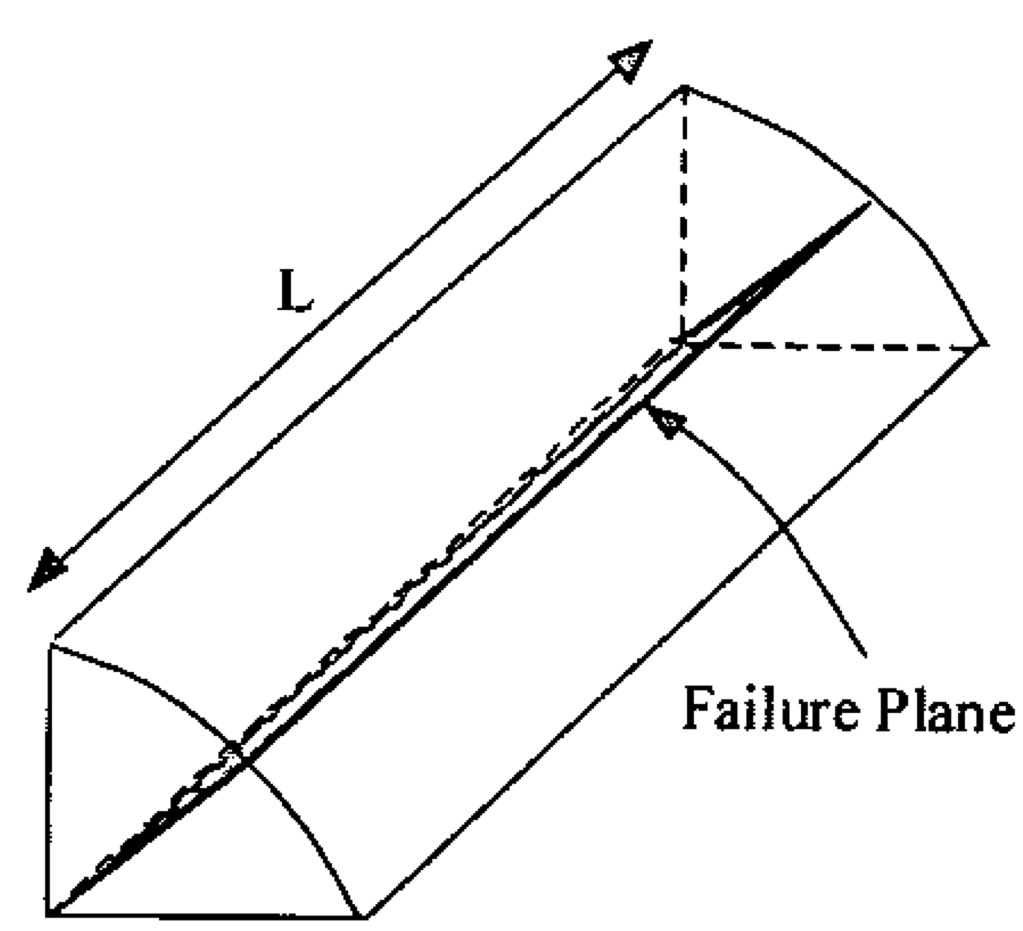
$Fnt = 6469.15 \cdot lbf$; Rod Strength in LRFD

$T := 0.7 \cdot Fnt$ $\quad T = 4528\,lbf$;Per ASCE 7, we convert LRFD to ASD using 0.7.

Analyze Weld Design:

A fillet weld can be loaded in any direction in shear, compression, or tension. However, it always **fails in *shear***. The shear failure of the fillet weld occurs along a plane through the throat of the weld, as shown in the Figure below:





Determine Weld Capacity given Weld Thickness and Weld Length for Coupler Connection:
Per AISC Table J2-5 for fillet welds, use Equations J-4 for Base Metal check and J2.2a for Weld Calculation. The following segment is taken from AISC 360 13th Edition.

Alternatively, for *fillet welds* loaded in-plane the *design strength*, ϕR_n and the *allowable strength*, R_n/Ω, of welds is permitted to be determined as follows:

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

(a) For a linear weld group loaded in-plane through the center of gravity

$$R_n = F_w A_w \qquad \text{(J2-4)}$$

where

$$F_w = 0.60 F_{EXX}\left(1.0 + 0.50\sin^{1.5}\theta\right) \qquad \text{(J2-5)}$$

and

F_{EXX} = electrode classification number, ksi (MPa)
θ = angle of loading measured from the weld longitudinal axis, degrees
A_w = effective area of the weld, in.^{2} (mm^2)

$\Omega := 2.00$; Define Ω (ASD) per AISC 13th Table J2-5

$\theta := 90°$ $\quad$ $\text{FEXX} := 70\cdot\text{ksi}$; Define θ and FEXX electrode strength

$a := \frac{3}{16}\cdot\text{in}$; Define Fillet Weld Size. Per AISC Table J2.4, if the material thickness of steel beam member is greater than 3/4", use 5/16" Fillet Weld Size.

$\text{Throat} := a\cdot\cos(45°)$ $\quad$ $\text{Throat} = 0.133\cdot\text{in}$; Calculate Throat Thickness per Sketch above

$\text{Rn} := 0.60\cdot\text{FEXX}\cdot\left(1.0 + 0.50\cdot\sin(\theta)^{1.5}\right)\cdot\text{Throat}$ $\quad$ $\text{Rn} = 8353\cdot\frac{\text{lbf}}{\text{in}}$; Based on 3/16" fillet weld

$\text{CouplerDia} := 1.000\cdot\text{in}$; Define Coupler Diameter

$\text{WeldLength} := \pi\cdot\text{CouplerDia}$ $\quad$ $\text{WeldLength} = 3.142\cdot\text{in}$; Calc Weld Length by using Circumference of Coupler.

$\text{WeldCapacity} := \frac{\text{Rn}\cdot\text{WeldLength}}{\Omega}$ $\quad$ $\text{WeldCapacity} = 13120\,\text{lbf}$; Calc ASD Weld Capacity

; <u>Since WeldCapacity > Tension Force (T), use 3/16" Fillet E70xx for 1.00 inch diameter coupler is OK.</u>

Check Base Metal (Coupler) Tensile Strength.
Thickness of base metal = (CouplerDia - RodDia) / 2

$\text{Thickness} := \frac{\text{CouplerDia} - \text{RodDia}}{2}$ $\qquad$ $\text{Thickness} = 0.25 \cdot \text{in}$

$\text{CouplerArea} := \frac{\pi \cdot \text{CouplerDia}^2}{4}$ $\qquad$ $\text{RodArea} := \frac{\pi \cdot \text{RodDia}^2}{4}$; We use Nominal Rod Area to be conservative.

$\text{TensileArea} := \text{CouplerArea} - \text{RodArea}$ $\qquad$ $\text{TensileArea} = 0.589 \cdot \text{in}^2$

$\text{Coupler\_Fy} := 53.7 \cdot \text{ksi}$

$\text{Coupler\_Fu} := 63.8 \cdot \text{ksi}$

; Define Properties of AISI 1018 Steel (weldable!)

Strength of Elements in Tension

The *design strength*, ϕR_n, and the *allowable strength*, R_n / Ω, of affected and connecting elements loaded in tension shall be the lower value obtained according to the *limit states* of *tensile yielding* and *tensile rupture*.

(a) For tensile yielding of connecting elements:

$$R_n = F_y A_g \tag{J4-1}$$

$$\phi = 0.90 \text{ (LRFD)} \qquad \Omega = 1.67 \text{ (ASD)}$$

(b) For tensile rupture of connecting elements:

$$R_n = F_u A_e \tag{J4-2}$$

$$\phi = 0.75 \text{ (LRFD)} \qquad \Omega = 2.00 \text{ (ASD)}$$

where

A_e = *effective net area* as defined in Section D3.3, in.^{2} (mm^2); for bolted *splice* plates, $A_e = A_n \leq 0.85 A_g$

Check Coupler Strength via Equation J4-1: $\quad \Omega := 1.67$

$\text{Rn} := \text{Coupler\_Fy} \cdot \text{TensileArea}$ $\qquad$ $\text{CouplerASD} := \frac{\text{Rn}}{\Omega}$ $\qquad$ $\text{CouplerASD} = 18941.26 \, \text{lbf}$

; OK > Tension Force (T)

Check Coupler Strength via Equation J4-2:

$\text{MinCouplerStrength} := 1.25 \text{Fy} \cdot \text{Ab}$ $\qquad$ $\text{MinCouplerStrength} = 10554 \, \text{lbf}$

; Determine Minimum Coupler Strength based upon 125% of threaded rod yield strength (Fy).

$\phi := 0.75$

$\phi \text{Rn} := \phi \cdot \text{Coupler\_Fu} \cdot \text{TensileArea}$ $\qquad$ $\phi \text{Rn} = 28186 \, \text{lbf}$; OK > MinCouplerStrength

Calculate Minimum Thread Engagement Length: Coupler thread should be 1.25 times stronger than the rod yield, therefore it is necessary for the shear area of the threaded feature be at least 2.5 times the tensile area. (Assuming the threaded feature is of the identical material). Formula is based on BS EN ISO 898.

First we must solve for nominal Stress Area below:

In BS EN ISO 898-1 the nominal stress area is defined as

$$A_t\,\text{nom}\ (A_s \text{ in ISO } 898) = \frac{\pi}{4}\left(\frac{d_2 + d_3}{2}\right)^2$$

D= Nominal screw diameter

d_2 = basic pitch dia = D - 0.75 H

d_3 = minor dia = d_1 - H / 6

d_1 = basic minor diameter = D - 1.25 H

H =The height of the triangle on which the thread is based = 0.866025 x p.

$$A_t\,\text{nom} = \frac{\pi}{4}\left(\frac{D - 0.75 \times 0.866025 \times p + D - 1.25 \times 0.866025 \times p - 1/6 \times 0.866025 \times p}{2}\right)^2$$

$$A_t\,\text{nom} = \frac{\pi}{4}\left(D - 0.938194 \cdot p\right)^2$$

$D := \text{RodDia}$ $\quad D = 0.5 \cdot \text{in}$

$n := \frac{13}{\text{in}}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.08 \cdot \text{in}$

; Reference Rod Diameter from Above and define number ("n") of threads UNC for this rod size.

$$At := \frac{\pi}{4} \cdot (D - 0.938194 \cdot \rho)^2 \qquad At = 0.144 \cdot \text{in}^2$$

Solve for Engagement Length which is 2.0 times the tensile area:

$$Le := \frac{2.0 \cdot At}{0.5 \cdot \pi \cdot (D - 0.64952 \cdot \rho)} \qquad Le = 0.407 \cdot \text{in}$$

Threaded Fastener Strength Ratio: The previous formula for Le was based upon the male and female thread materials have the same strength. If the Female Strength is lower, i.e. J as calculated below is greater than one (1), then the length of engagement must be increased to prevent the female thread stripping.

$$J = \frac{\text{Tensile strength of external thread material (screw)}}{\text{Tensile strength of internal thread material (hole)}}$$

$Fy = 43000\,psi$

$J := \dfrac{Fy}{Coupler\_Fy}$ $J = 0.801$; Fy = Rod yield from above.

$Le2 := J \cdot Le$ $Le2 = 0.326 \cdot in$; Final min. thread length or height of coupler.

Conclusion: We have checked the following four parameters and have shown that we exceed the required tension load of the rod.. $T = 4528.41\,lbf$

1) Weld Strength. $WeldCapacity = 13120.39\,lbf$

2) Coupler Tension Strength. $MinCouplerStrength = 10554\,lbf$ $\phi Rn = 28186\,lbf$

3) Thread Engagement. $Le2 = 0.326 \cdot in$; We will use a 1:1 ratio coupler of the coupler height = rod diameter which will exceed the minimum Le2 requirement.

<u>The final coupler will be a 1.000 inch dia x 1/2 inch tall coupler tapped for 1/2" dia rod UNC with 3/16" Fillet E70xx.</u>

Earthbound Holdown System Welded Coupler Calculations

Objective: Find a welded coupler to steel beam connection able to handle 5/8 inch diameter A36/A307 Threaded Rod. Calculate the welding requirements for welding a round cylindrical coupler to an existing W Flange in the field to connect a Earthbound System Holdown run. Use 1.375" diameter Coupler for this calculation check.

Determine Rod Allowable Load Given Rod Diameter Size: Calculate threaded rod capacity in accordance to AISC 13th Edition from a given rod size diameter below.

$RodDia := 0.625 \cdot in$; Provide nominal rod diameter

$n := \frac{11}{in}$ $\rho := \frac{1}{n}$ $\rho = 0.09 \cdot in$; To calculate rod stress area, define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (RodDia - 0.938194 \cdot \rho)^2$ $At = 0.229 \cdot in^2$ $Ab := \frac{\pi}{4} \cdot RodDia^2$ $Ab = 0.31 \cdot in^2$

$Fu := 60000 \cdot psi$

$Fy := 43000 \cdot psi$

; Define ultimate and yield strength of threaded rod material.
In this case ASTM A36/A307.
For reference A307 standard strength rod: Fy=43ksi, Fu=60ksi.
For reference A449 high strength rod: Fy=105ksi, Fu=120ksi.

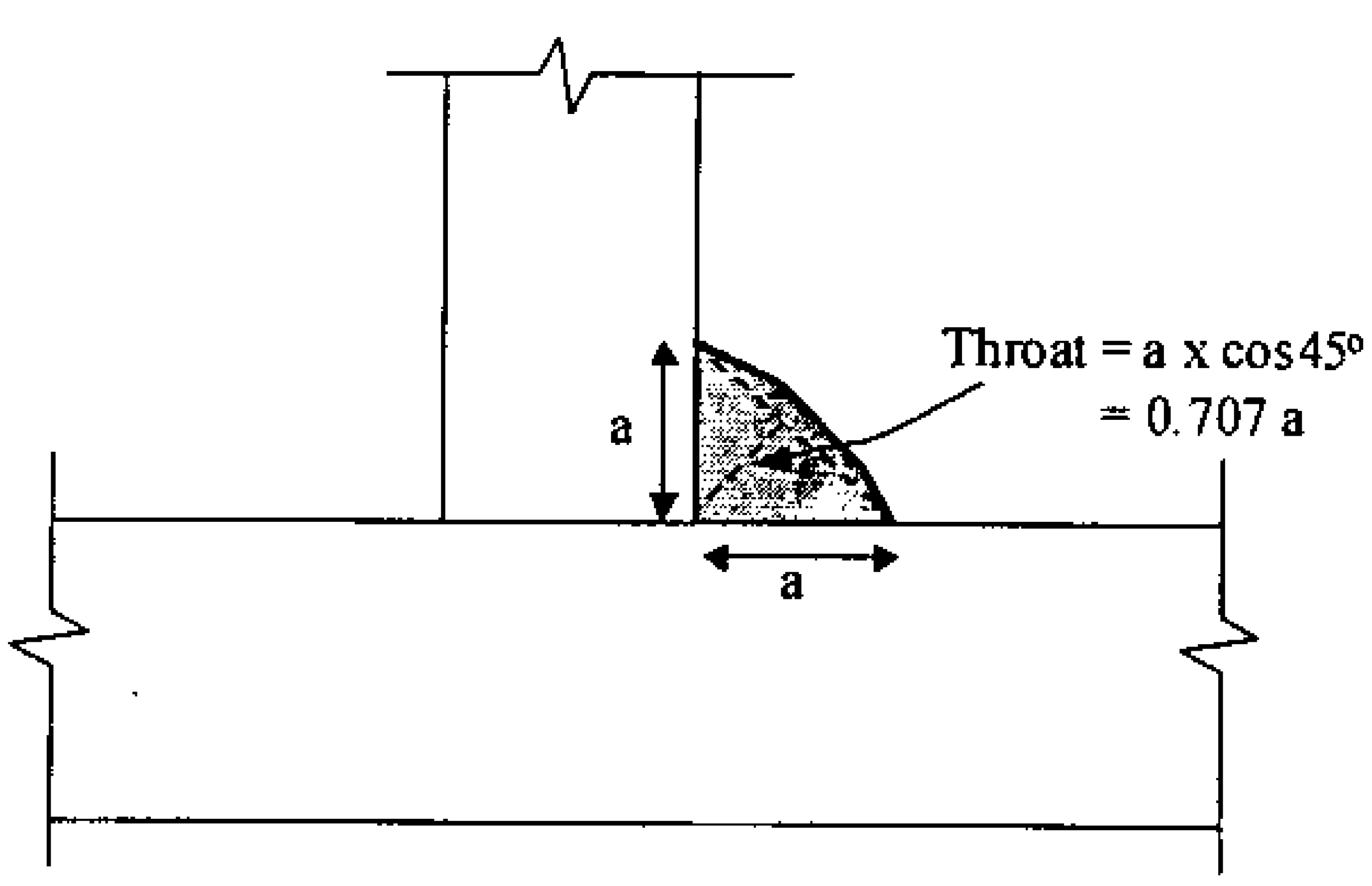
$Fnt := 0.75 \cdot Fu \cdot At$; Equation J3-1 and Table J3-2.

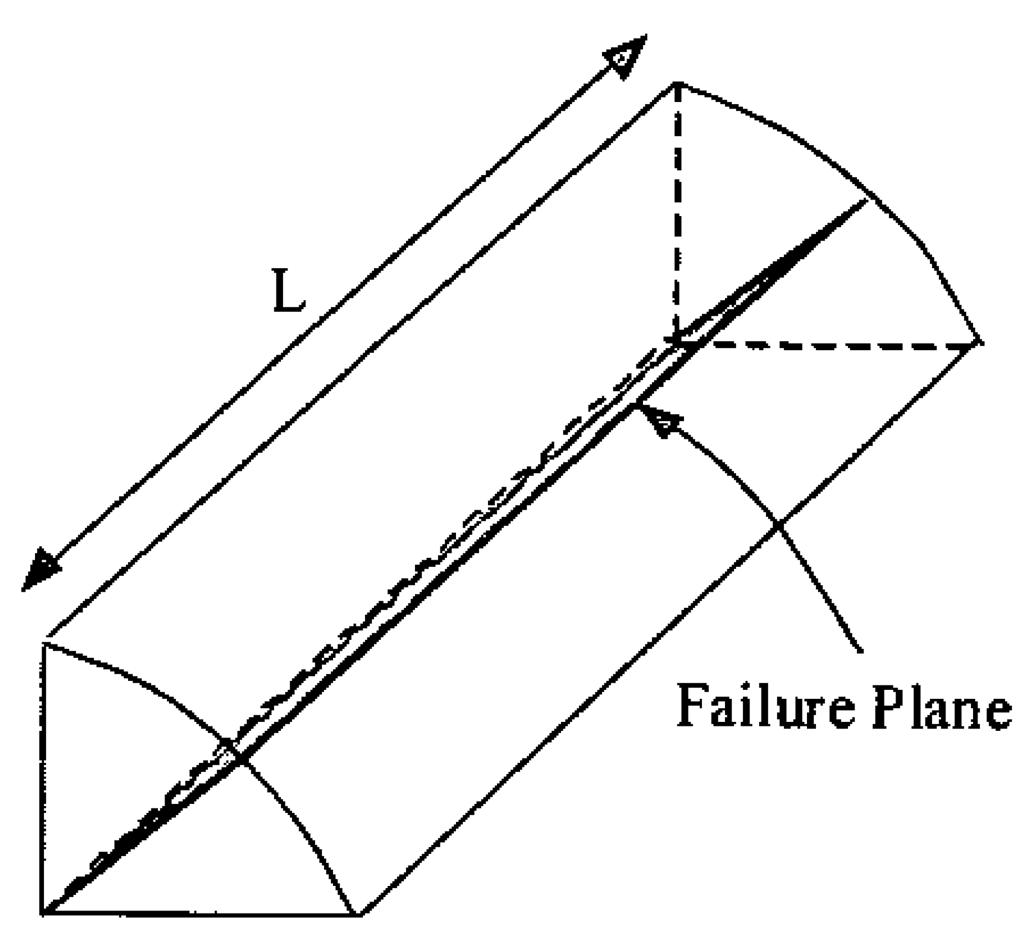
$Fnt = 10294.91 \cdot lbf$; Rod Strength in LRFD

$T := 0.7 \cdot Fnt$ $T = 7206 \, lbf$;Per ASCE 7, we convert LRFD to ASD using 0.7.

Analyze Weld Design:

A fillet weld can be loaded in any direction in shear, compression, or tension. However, it always **fails in *shear***. The shear failure of the fillet weld occurs along a plane through the throat of the weld, as shown in the Figure below:





Determine Weld Capacity given Weld Thickness and Weld Length for Coupler Connection:
Per AISC Table J2-5 for fillet welds, use Equations J-4 for Base Metal check and J2.2a for Weld Calculation. The following segment is taken from AISC 360 13th Edition.

Alternatively, for *fillet welds* loaded in-plane the *design strength*, ϕR_n and the *allowable strength*, R_n/Ω, of welds is permitted to be determined as follows:

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

(a) For a linear weld group loaded in-plane through the center of gravity

$$R_n = F_w A_w \tag{J2-4}$$

where

$$F_w = 0.60 F_{EXX}\left(1.0 + 0.50 \sin^{1.5}\theta\right) \tag{J2-5}$$

and

F_{EXX} = electrode classification number, ksi (MPa)
θ = angle of loading measured from the weld longitudinal axis, degrees
A_w = effective area of the weld, in.^{2} (mm^2)

$\Omega := 2.00$; Define Ω (ASD) per AISC 13th Table J2-5

$\theta := 90°$ $\quad$ $FEXX := 70 \cdot ksi$; Define θ and FEXX electrode strength

$a := \frac{3}{16} \cdot in$; Define Fillet Weld Size. Per AISC Table J2.4, if the material thickness of steel beam member is greater than 3/4", use 5/16" Fillet Weld Size.

$Throat := a \cdot \cos(45°)$ $\quad$ $Throat = 0.133 \cdot in$; Calculate Throat Thickness per Sketch above

$Rn := 0.60 \cdot FEXX \cdot \left(1.0 + 0.50 \cdot \sin(\theta)^{1.5}\right) \cdot Throat$ $\quad$ $Rn = 8353 \cdot \frac{lbf}{in}$; Based on 3/16" fillet weld

$CouplerDia := 1.375 \cdot in$; Define Coupler Diameter

$WeldLength := \pi \cdot CouplerDia$ $\quad$ $WeldLength = 4.32 \cdot in$; Calc Weld Length by using Circumference of Coupler.

$WeldCapacity := \frac{Rn \cdot WeldLength}{\Omega}$ $\quad$ $WeldCapacity = 18041\ lbf$; Calc ASD Weld Capacity

; **Since WeldCapacity > Tension Force (T), use 3/16" Fillet E70xx for 1.375 inch diameter coupler is OK.**

Check Base Metal (Coupler) Tensile Strength.
Thickness of base metal = (CouplerDia - RodDia) / 2

$\text{Thickness} := \dfrac{\text{CouplerDia} - \text{RodDia}}{2}$ $\qquad$ $\text{Thickness} = 0.375 \cdot \text{in}$

$\text{CouplerArea} := \dfrac{\pi \cdot \text{CouplerDia}^2}{4}$ $\qquad$ $\text{RodArea} := \dfrac{\pi \cdot \text{RodDia}^2}{4}$; We use Nominal Rod Area to be conservative.

$\text{TensileArea} := \text{CouplerArea} - \text{RodArea}$ $\qquad$ $\text{TensileArea} = 1.178 \cdot \text{in}^2$

$\text{Coupler\_Fy} := 53.7 \cdot \text{ksi}$

$\text{Coupler\_Fu} := 63.8 \cdot \text{ksi}$

; Define Properties of AISI 1018 Steel (weldable!)

Strength of Elements in Tension

The *design strength*, ϕR_n, and the *allowable strength*, R_n/Ω, of affected and connecting elements loaded in tension shall be the lower value obtained according to the *limit states* of *tensile yielding* and *tensile rupture*.

(a) For tensile yielding of connecting elements:

$$R_n = F_y A_g \qquad \text{(J4-1)}$$

$$\phi = 0.90\,(\text{LRFD}) \qquad \Omega = 1.67\,(\text{ASD})$$

(b) For tensile rupture of connecting elements:

$$R_n = F_u A_e \qquad \text{(J4-2)}$$

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

where

A_e = *effective net area* as defined in Section D3.3, in.^{2} (mm^2); for bolted *splice* plates, $A_e = A_n \le 0.85 A_g$

Check Coupler Strength via Equation J4-1: $\quad \Omega := 1.67$

$\text{Rn} := \text{Coupler\_Fy} \cdot \text{TensileArea}$ $\qquad$ $\text{CouplerASD} := \dfrac{\text{Rn}}{\Omega}$ $\qquad$ $\text{CouplerASD} = 37882.53\,\text{lbf}$

; OK > Tension Force (T)

Check Coupler Strength via Equation J4-2:

$\text{MinCouplerStrength} := 1.25\text{Fy} \cdot \text{Ab}$ $\qquad$ $\text{MinCouplerStrength} = 16490\,\text{lbf}$

; Determine Minimum Coupler Strength based upon 125% of threaded rod yield strength (Fy).

$\phi := 0.75$

$\phi\text{Rn} := \phi \cdot \text{Coupler\_Fu} \cdot \text{TensileArea}$ $\qquad$ $\phi\text{Rn} = 56372\,\text{lbf}$; OK > MinCouplerStrength

Calculate Minimum Thread Engagement Length: Coupler thread should be 1.25 times stronger than the rod yield, therefore it is necessary for the shear area of the threaded feature be at least 2.5 times the tensile area. (Assuming the threaded feature is of the identical material). Formula is based on BS EN ISO 898.

First we must solve for nominal Stress Area below:

In BS EN ISO 898-1 the nominal stress area is defined as

$$A_t\,\text{nom}\ (A_s\ \text{in ISO 898}) = \frac{\pi}{4}\left(\frac{d_2 + d_3}{2}\right)^2$$

D= Nominal screw diameter

d_2 = basic pitch dia = D - 0.75 H

d_3 = minor dia = d_1 - H / 6

d_1 = basic minor diameter = D - 1.25 H

H =The height of the triangle on which the thread is based = 0.866025 x p.

$$A_t\,\text{nom} = \frac{\pi}{4}\left(\frac{D - 0.75 \times 0.866025 \times p + D - 1.25 \times 0.866025 \times p - 1/6 \times 0.866025 \times p}{2}\right)^2$$

$$A_t\,\text{nom} = \frac{\pi}{4}\left(D - 0.938194 \cdot p\right)^2$$

$D := \text{RodDia}$ $\quad D = 0.63 \cdot in$

$n := \frac{11}{in}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.09 \cdot in$

; Reference Rod Diameter from Above and define number ("n") of threads UNC for this rod size.

$$At := \frac{\pi}{4} \cdot (D - 0.938194 \cdot \rho)^2 \qquad At = 0.229 \cdot in^2$$

Solve for Engagement Length which is 2.0 times the tensile area:

$$Le := \frac{2.0 \cdot At}{0.5 \cdot \pi \cdot (D - 0.64952 \cdot \rho)} \qquad Le = 0.515 \cdot in$$

Threaded Fastener Strength Ratio: The previous formula for Le was based upon the male and female thread materials have the same strength. If the Female Strength is lower, i.e. J as calculated below is greater than one (1), then the length of engagement must be increased to prevent the female thread stripping.

$$J = \frac{\text{Tensile strength of external thread material (screw)}}{\text{Tensile strength of internal thread material (hole)}}$$

$Fy = 43000\,\text{psi}$

$J := \frac{Fy}{Coupler\_Fy}$ $\quad J = 0.801$; Fy = Rod yield from above.

$Le2 := J \cdot Le$ $\quad Le2 = 0.412 \cdot in$; Final min. thread length or height of coupler.

Conclusion: We have checked the following four parameters and have shown that we exceed the required tension load of the rod.. $T = 7206.44\,lbf$

1) Weld Strength. $WeldCapacity = 18040.53\,lbf$

2) Coupler Tension Strength. $MinCouplerStrength = 16490\,lbf$ $\quad \phi Rn = 56372\,lbf$

3) Thread Engagement. $Le2 = 0.412 \cdot in$; We will use a 1:1 ratio coupler of the coupler height = rod diameter which will exceed the minimum Le2 requirement.

The final coupler will be a 1.375 inch dia x 5/8 (0.625) inch tall coupler tapped for 5/8" dia rod UNC with 3/16" Fillet E70xx.

Earthbound Holdown System Welded Coupler Calculations

Objective: Find a welded coupler to steel beam connection able to handle 3/4 inch diameter A36/A307 Threaded Rod. Calculate the welding requirements for welding a round cylindrical coupler to an existing W Flange in the field to connect a Earthbound System Holdown run. Use 1.375" diameter Coupler for this calculation check.

Determine Rod Allowable Load Given Rod Diameter Size: Calculate threaded rod capacity in accordance to AISC 13th Edition from a given rod size diameter below.

$RodDia := 0.750 \cdot in$; Provide nominal rod diameter

$n := \frac{10}{in}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.1 \cdot in$; To calculate rod stress area, define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (RodDia - 0.938194 \cdot \rho)^2$ $\quad At = 0.338 \cdot in^2$ $\quad Ab := \frac{\pi}{4} \cdot RodDia^2$ $\quad Ab = 0.44 \cdot in^2$

$Fu := 60000 \cdot psi$

$Fy := 43000 \cdot psi$

; Define ultimate and yield strength of threaded rod material.
In this case ASTM A36/A307.
For reference A307 standard strength rod: Fy=43ksi, Fu=60ksi.
For reference A449 high strength rod: Fy=105ksi, Fu=120ksi.

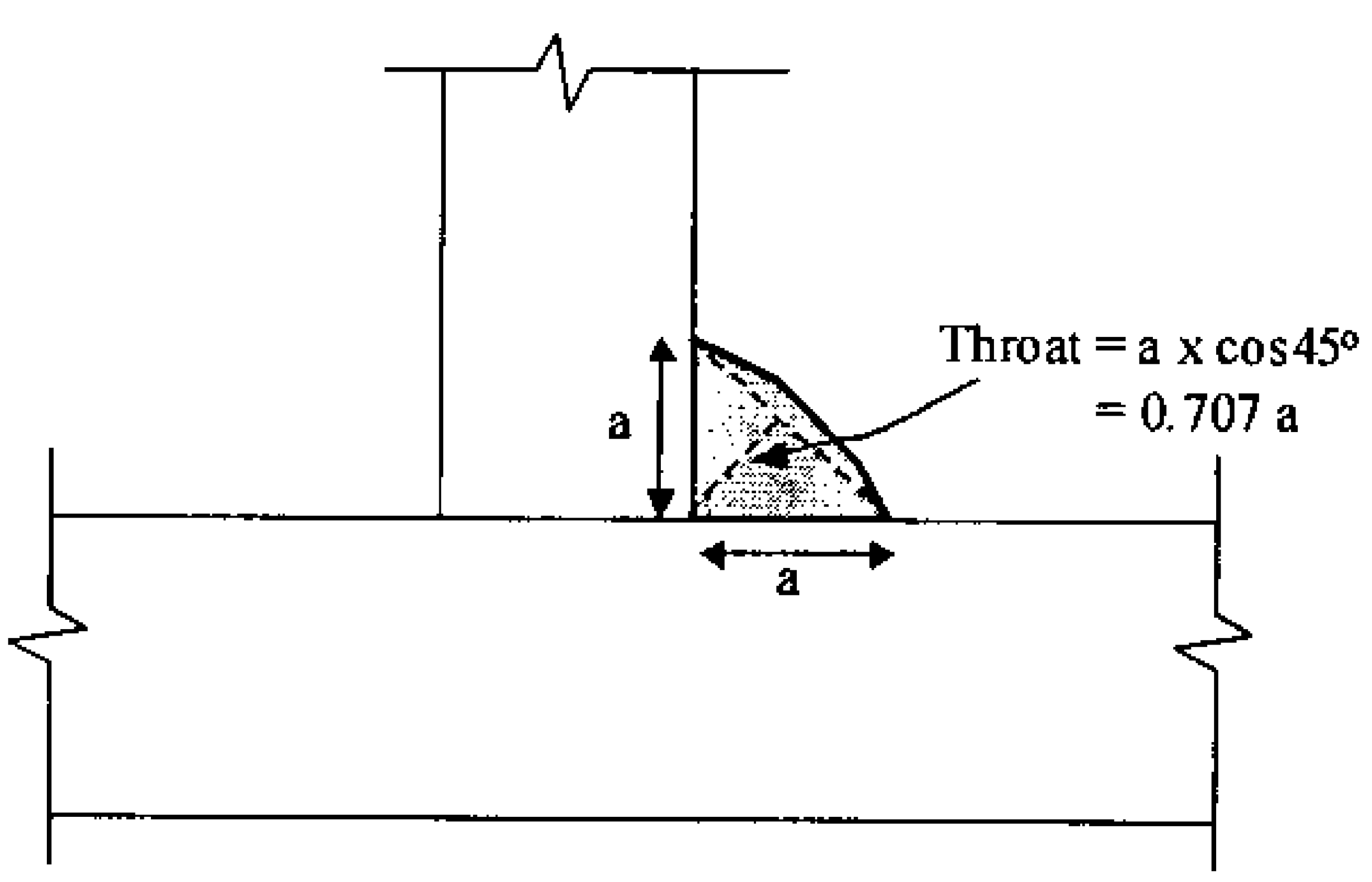
$Fnt := 0.75 \cdot Fu \cdot At$; Equation J3-1 and Table J3-2.

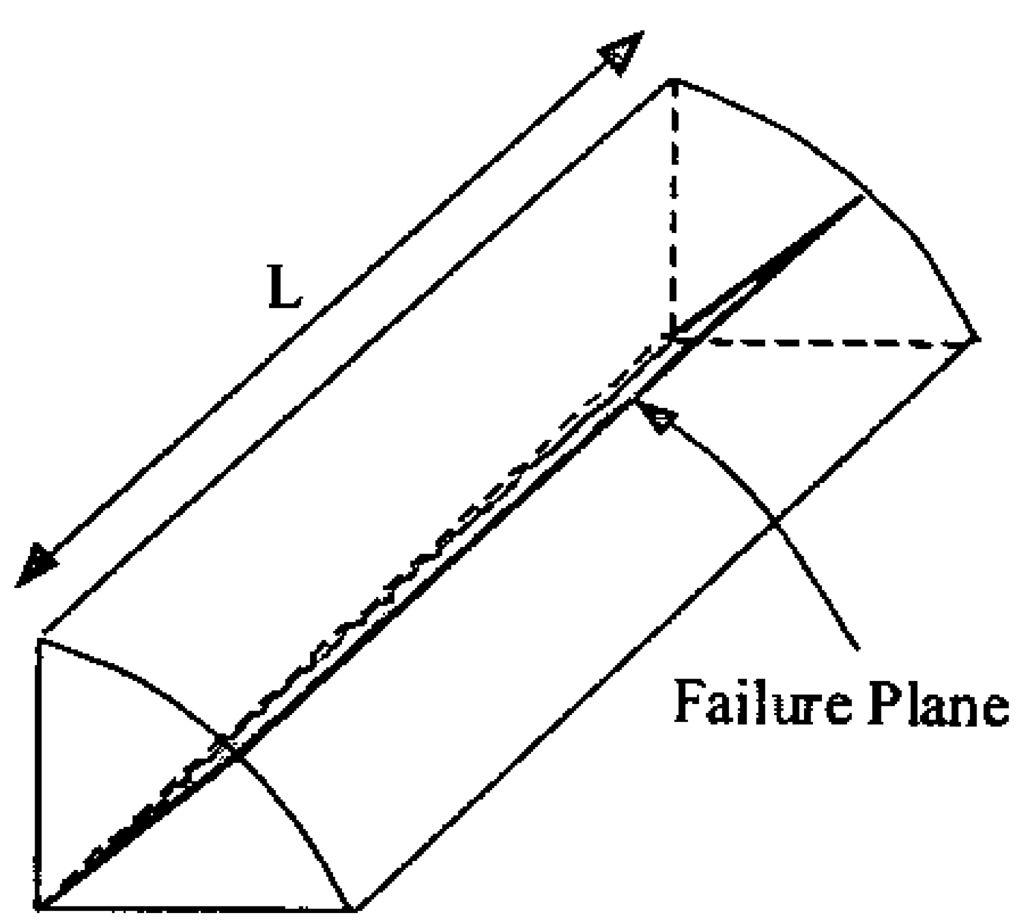
$Fnt = 15217.71 \cdot lbf$; Rod Strength in LRFD

$T := 0.7 \cdot Fnt$ $\quad T = 10652\,lbf$;Per ASCE 7, we convert LRFD to ASD using 0.7.

Analyze Weld Design:

A fillet weld can be loaded in any direction in shear, compression, or tension. However, it always **<u>fails in *shear*</u>**. The shear failure of the fillet weld occurs along a plane through the throat of the weld, as shown in the Figure below:





Determine Weld Capacity given Weld Thickness and Weld Length for Coupler Connection:
Per AISC Table J2-5 for fillet welds, use Equations J-4 for Base Metal check and J2.2a for Weld Calculation. The following segment is taken from AISC 360 13th Edition.

Alternatively, for *fillet welds* loaded in-plane the *design strength*, ϕR_n and the *allowable strength*, R_n/Ω, of welds is permitted to be determined as follows:

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

(a) For a linear weld group loaded in-plane through the center of gravity

$$R_n = F_w A_w \qquad \text{(J2-4)}$$

where

$$F_w = 0.60 F_{EXX}\left(1.0 + 0.50 \sin^{1.5}\theta\right) \qquad \text{(J2-5)}$$

and

F_{EXX} = electrode classification number, ksi (MPa)
θ = angle of loading measured from the weld longitudinal axis, degrees
A_w = effective area of the weld, in.^{2} (mm^2)

$\Omega := 2.00$; Define Ω (ASD) per AISC 13th Table J2-5

$\theta := 90°$ $\quad FEXX := 70\cdot ksi$; Define θ and FEXX electrode strength

$a := \frac{3}{16}\cdot in$; Define Fillet Weld Size. Per AISC Table J2.4, if the material thickness of steel beam member is greater than 3/4", use 5/16" Fillet Weld Size.

$Throat := a\cdot\cos(45°)$ $\quad Throat = 0.133\cdot in$; Calculate Throat Thickness per Sketch above

$Rn := 0.60\cdot FEXX\cdot\left(1.0 + 0.50\cdot\sin(\theta)^{1.5}\right)\cdot Throat$ $\quad Rn = 8353\cdot\frac{lbf}{in}$; Based on 3/16" fillet weld

$CouplerDia := 1.375\cdot in$; Define Coupler Diameter

$WeldLength := \pi\cdot CouplerDia$ $\quad WeldLength = 4.32\cdot in$; Calc Weld Length by using Circumference of Coupler.

$WeldCapacity := \frac{Rn\cdot WeldLength}{\Omega}$ $\quad WeldCapacity = 18041\,lbf$; Calc ASD Weld Capacity

; <u>Since WeldCapacity > Tension Force (T), use 3/16" Fillet E70xx for 1.375 inch diameter coupler is OK.</u>

Check Base Metal (Coupler) Tensile Strength.
Thickness of base metal = (CouplerDia - RodDia) / 2

$\text{Thickness} := \dfrac{\text{CouplerDia} - \text{RodDia}}{2}$ $\qquad \text{Thickness} = 0.313 \cdot \text{in}$

$\text{CouplerArea} := \dfrac{\pi \cdot \text{CouplerDia}^2}{4}$ $\qquad \text{RodArea} := \dfrac{\pi \cdot \text{RodDia}^2}{4}$; We use Nominal Rod Area to be conservative.

$\text{TensileArea} := \text{CouplerArea} - \text{RodArea}$ $\qquad \text{TensileArea} = 1.043 \cdot \text{in}^2$

$\text{Coupler\_Fy} := 53.7 \cdot \text{ksi}$

$\text{Coupler\_Fu} := 63.8 \cdot \text{ksi}$

; Define Properties of AISI 1018 Steel (weldable!)

Strength of Elements in Tension

The *design strength*, ϕR_n, and the *allowable strength*, R_n/Ω, of affected and connecting elements loaded in tension shall be the lower value obtained according to the *limit states* of *tensile yielding* and *tensile rupture*.

(a) For tensile yielding of connecting elements:

$$R_n = F_y A_g \tag{J4-1}$$

$$\phi = 0.90\,(\text{LRFD}) \qquad \Omega = 1.67\,(\text{ASD})$$

(b) For tensile rupture of connecting elements:

$$R_n = F_u A_e \tag{J4-2}$$

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

where

A_e = *effective net area* as defined in Section D3.3, in.^{2} (mm^2); for bolted *splice* plates, $A_e = A_n \le 0.85 A_g$

Check Coupler Strength via Equation J4-1: $\Omega := 1.67$

$\text{Rn} := \text{Coupler\_Fy} \cdot \text{TensileArea}$ $\qquad \text{CouplerASD} := \dfrac{\text{Rn}}{\Omega}$ $\qquad \text{CouplerASD} = 33541.82\,\text{lbf}$

; OK > Tension Force (T)

Check Coupler Strength via Equation J4-2:

$\text{MinCouplerStrength} := 1.25\text{Fy} \cdot \text{Ab}$ $\qquad \text{MinCouplerStrength} = 23746\,\text{lbf}$

; Determine Minimum Coupler Strength based upon 125% of threaded rod yield strength (Fy).

$\phi := 0.75$

$\phi\text{Rn} := \phi \cdot \text{Coupler\_Fu} \cdot \text{TensileArea}$ $\qquad \phi\text{Rn} = 49913\,\text{lbf}$; OK > MinCouplerStrength

Calculate Minimum Thread Engagement Length: Coupler thread should be 1.25 times stronger than the rod yield, therefore it is necessary for the shear area of the threaded feature be at least 2.5 times the tensile area. (Assuming the threaded feature is of the identical material). Formula is based on BS EN ISO 898.

First we must solve for nominal Stress Area below:

In BS EN ISO 898-1 the nominal stress area is defined as

$$A_t\,\text{nom}\ (A_s \text{ in ISO 898}) = \frac{\pi}{4}\left(\frac{d_2 + d_3}{2}\right)^2$$

D= Nominal screw diameter

d_2 = basic pitch dia = D - 0.75 H

d_3 = minor dia = d_1 - H / 6

d_1 = basic minor diameter = D - 1.25 H

H =The height of the triangle on which the thread is based = 0.866025 x p.

$$A_t\,\text{nom} = \frac{\pi}{4}\left(\frac{D - 0.75 \times 0.866025 \times p + D - 1.25 \times 0.866025 \times p - 1/6 \times 0.866025 \times p}{2}\right)^2$$

$$A_t\,\text{nom} = \frac{\pi}{4}\left(D - 0.938194 \,.\, p\right)^2$$

$D := \text{RodDia}$ $\qquad D = 0.75 \cdot \text{in}$

$n := \dfrac{10}{\text{in}}$ $\qquad \rho := \dfrac{1}{n}$ $\qquad \rho = 0.1 \cdot \text{in}$

; Reference Rod Diameter from Above and define number ("n") of threads UNC for this rod size.

$$At := \frac{\pi}{4} \cdot (D - 0.938194 \cdot \rho)^2 \qquad At = 0.338 \cdot \text{in}^2$$

Solve for Engagement Length which is 2.0 times the tensile area:

$$Le := \frac{2.0 \cdot At}{0.5 \cdot \pi \cdot (D - 0.64952 \cdot \rho)} \qquad Le = 0.629 \cdot \text{in}$$

Threaded Fastener Strength Ratio: The previous formula for Le was based upon the male and female thread materials have the same strength. If the Female Strength is lower, i.e. J as calculated below is greater than one (1), then the length of engagement must be increased to prevent the female thread stripping.

$$J = \frac{\text{Tensile strength of external thread material (screw)}}{\text{Tensile strength of internal thread material (hole)}}$$

$Fy = 43000\,psi$

$J := \frac{Fy}{Coupler\_Fy}$ $\quad J = 0.801$; Fy = Rod yield from above.

$Le2 := J \cdot Le$ $\quad Le2 = 0.503 \cdot in$; Final min. thread length or height of coupler.

Conclusion: We have checked the following four parameters and have shown that we exceed the required tension load of the rod.. $T = 10652.39\,lbf$

1) Weld Strength. $WeldCapacity = 18040.53\,lbf$

2) Coupler Tension Strength. $MinCouplerStrength = 23746\,lbf$ $\quad \phi Rn = 49913\,lbf$

3) Thread Engagement. $Le2 = 0.503 \cdot in$; We will use a 1:1 ratio coupler of the coupler height = rod diameter which will exceed the minimum Le2 requirement.

The final coupler will be a 1.375 inch dia x 3/4 (0.750) inch tall coupler tapped for 3/4" dia rod UNC with 3/16" Fillet E70xx.

Appendix B
Latest ICC-ES ESR-2848

Earthbound Corporation
17361 Tye Street SE
Monroe, WA 98272

http://www.holdown.com
Phone: (800) 944-5669
Fax: (206) 260-3484

ICC-ES Evaluation Report

ESR-2848

Reissued November 1, 2013

This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

EARTHBOUND CORPORATION
17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)

Property evaluated:

Structural

2.0 USES

SlackJack® and MiniJack™ shrinkage compensating devices are used in conjunction with hold-down and tension tie connectors or a continuous tie-down system for wood frame construction. The devices are installed as components of the restraint system, with the threaded anchor bolts or rods passing through the axis of the devices, to remove slack in the restraint system that occurs due to wood shrinkage or building settlement, or both.

3.0 DESCRIPTION

3.1 General:

The SlackJack® and MiniJack™ are factory-assembled, preloaded, compression-controlled shrinkage and settlement compensating devices that can be used with hold-down connectors or tension tie connectors with threaded rods or threaded anchor bolts. The devices are cylindrical, and automatically expand axially along a rod or bolt, to eliminate any gaps between a bearing surface or plate and the nut on the threaded rod or bolt when shrinkage or settlement occurs within the structure. A portion of the SlackJack® or MiniJack™ is color-coded to identify the specific model number. Model numbers beginning with an "A" or "T" have aluminum bodies, and are designed for use with W3 through W10 swivel washers capable of fitting over threaded rods or bolts having diameters ranging from $^3/_8$ inch to $1^1/_4$ inches (9.5 mm to 32 mm). Model numbers beginning with an "S" or "X" have steel bodies, and are designed for use with W10 or W12 swivel washers capable of fitting over threaded rods or bolts having diameters of $1^1/_4$ inches and $1^1/_2$ inches (32 mm and 38 mm), respectively. Model numbers beginning with an "M" (MiniJack™) have aluminum bodies, are designed for use without swivel washers, and will fit over threaded rods or bolts having diameters of $^3/_8$ inch and $^1/_2$ inch (9.5 mm and 12.7 mm). See Figure 1 for diagrams of each model type. See Table 1 for recognized models, and their corresponding color codes and dimensions. The SlackJack® "A", "T", "S" and "X" series are supplied with swivel washers, which are used to center the device on the threaded rod or bolt. Swivel washers are color-coded, as noted in Table 1, to indicate the corresponding appropriate threaded rod or bolt diameter. The SlackJack® A620 model and MiniJack™ "M" series are supplied with color-coded compression springs, as noted in Table 1, to indicate the specific model and rated compensation capacity.

3.2 Materials:

For the SlackJack® and MiniJack™ model numbers beginning with an "A", "T" or "M", the inner and outer cylinder bodies of the shrinkage compensating devices are manufactured from ASTM B221-06 6061-T6511 alloy extruded aluminum tubing. Model numbers beginning with an "S" or "X" have inner and outer cylinder bodies manufactured from ASTM A513-08a, Type 5 DOM steel tubing, as specified in the manufacturer's quality documentation. Locking rings are manufactured from ASTM A313-08 stainless steel spring wire. The compression spring and pull clip are manufactured from galvanized hard-drawn spring wire. The color-coded capture ring consists of injection-molded plastic. The color-coded swivel washer is manufactured from ASTM A108-07, grade 12L14 steel. A hex nut conforming to ASTM A563-07 is included in the packaging of each device.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The allowable compression loads, corresponding deflections at allowable loads, rated shrinkage and settlement compensation capacities, and average travel and seating increments, Δ_R, for the SlackJack® and MiniJack™ shrinkage compensating devices designed under allowable stress design are as shown in Table 1.

The devices are used where the expected shrinkage or settlement does not exceed their rated compensation capacities. Calculations, demonstrating that the applied

loads do not exceed the tabulated allowable loads, and that the expected slack due to wood shrinkage and building settlement does not exceed the rated compensation capacity for the SlackJack® and MiniJack™ shrinkage compensating devices, must be submitted to the code official for approval. Supports must be designed in accordance with the applicable code to transfer loads into the restraint system. The calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

4.2 Installation:

The SlackJack® and MiniJack™ shrinkage compensating devices must be installed in accordance with this report and the manufacturer's published installation instructions. The devices must be installed over the hold-down or a bearing surface or plate, with the threaded rod or bolt running through its axis. The threaded rod with which the SlackJack® or MiniJack™ is used must be installed plumb, such that the offset angle between the top of the floor and the bottom of the top plates or bridge block above does not exceed 1.33 degrees from vertical. For the SlackJack® "A", "T", "S" and "X" series, the appropriate color-coded swivel washer corresponding to the threaded rod or bolt diameter, as indicated in Table 1, must be installed over each SlackJack® device, with the flat side facing up. The steel hex nut must be screwed onto the threaded rod or bolt, and hand-tightened over the top of the swivel washer. Once the hex nut is hand-tightened onto the swivel washer, the device must be activated by removal of the factory-installed pull clip.

5.0 CONDITIONS OF USE

The SlackJack® and MiniJack™ shrinkage compensating devices described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The SlackJack® and MiniJack™ shrinkage compensating devices must be installed in accordance with this report, the manufacturer's installation instructions and the plans approved by the code official. In the event of a conflict between this report and the manufacturer's published installation instructions, the most restrictive governs.

5.2 The design values given in this report are for the SlackJack® or MiniJack™ shrinkage compensating devices alone. No further increase in allowable capacity is permitted. Design must be performed in accordance with Section 4.1 of this report.

5.3 Calculations in accordance with Section 4.1 of this report must be submitted to the code official for approval.

5.4 The SlackJack® and MiniJack™ devices are limited to installations in dry, interior locations.

5.5 The SlackJack® and MiniJack™ shrinkage compensating devices must not be used to support dead loads other than their own weight.

5.6 Use of the SlackJack® and MiniJack™ shrinkage compensating devices in direct contact with fire-retardant-treated wood or preservative-treated wood is outside of the scope of this report.

5.7 When the SlackJack® and MiniJack™ shrinkage compensating devices are used as fasteners independent of a continuous tie-down system, the applied loads must not exceed the allowable loads noted in this report.

5.8 When the devices are used in continuous rod systems that resist light-frame shear wall overturning forces, calculations must be submitted to the code official confirming that the total vertical displacement, which would include steel rod elongation and the shrinkage compensating device deflection, is less than or equal to 0.200 inch (5 mm) for each story, or between restraints, whichever is more restrictive, using allowable stress design (ASD). Shear wall drift limit calculations must consider the 0.200-inch (5 mm) vertical displacement limit. This 0.200-inch (5 mm) vertical displacement limit may be exceeded when it can be demonstrated that the shear wall story drift limit and the deformation compatibility requirements of IBC Section 1604.4 are met when considering all sources of vertical displacement.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Shrinkage Compensating Devices (AC316), dated June 2012.

7.0 IDENTIFICATION

Each SlackJack® and MiniJack™ shrinkage compensating device bears a label, either on the body of the device or on the packaging, with the evaluation report holder name (Earthbound) and Web address, the product name (SlackJack® or MiniJack™), and the evaluation report number (ESR-2848). The devices are color-coded, as indicated in Table 1, to identify the specific model and series number. SlackJack® shrinkage compensating devices are packaged together in a common box or container, which includes corresponding swivel washers and nuts labeled in separate plastic packaging. The MiniJack™ "M" series devices are packaged in lots of five, and do not require a swivel washer.

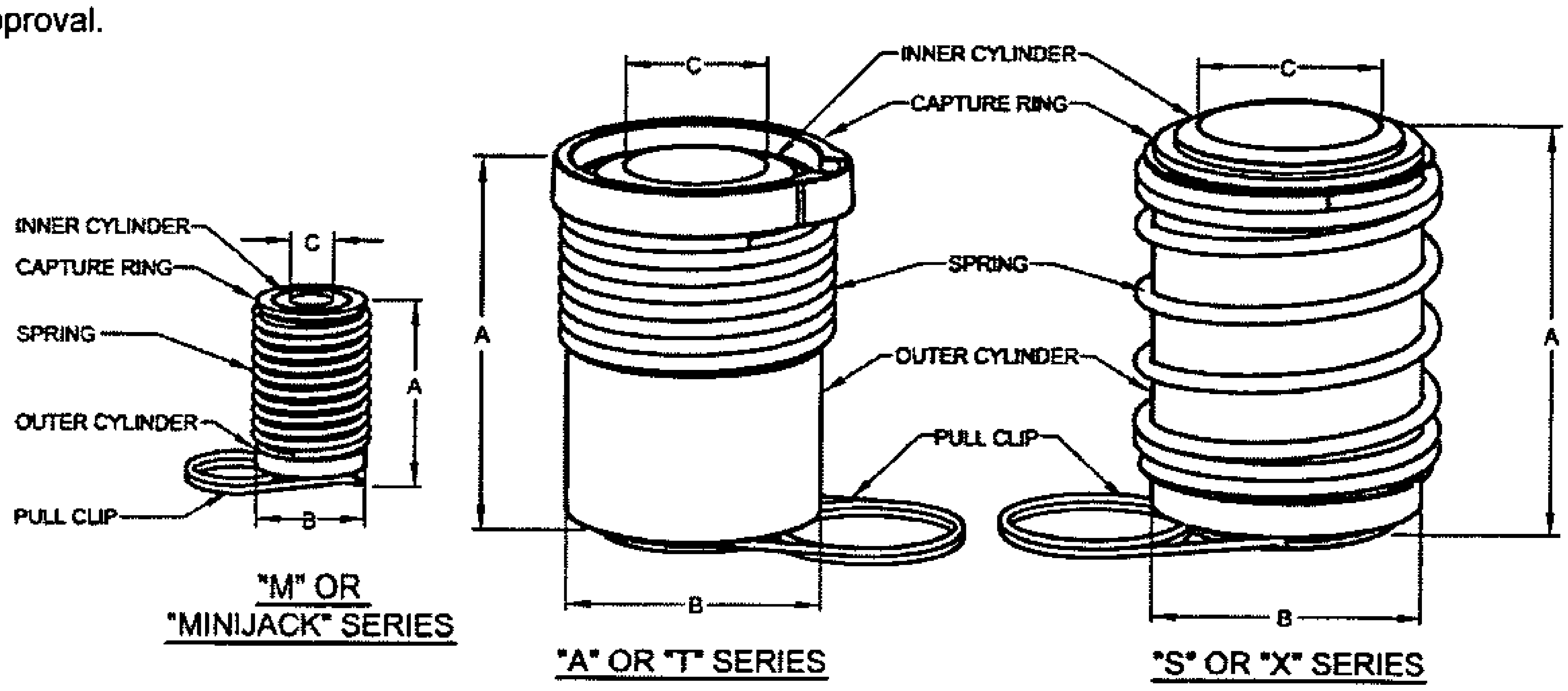

FIGURE 1—SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

TABLE 1—SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICE SPECIFICATIONS

MODEL AND SERIES NUMBER	CAPTURE RING COLOR CODE	SPRING COLOR CODE	NOMINAL DIMENSIONS[3] (inches)			RATED COMPENSATION CAPACITY (inches)	ALLOWABLE COMPRESSION LOAD[1,2] (lbs)	DEFLECTION AT ALLOWABLE LOAD (inch)	DEVICE AVG TRAVEL & SEATING INCREMENT Δ_R[4,5] (inch)
			Height Before Activation (A)	Outer Diameter of Body (B)	Inner Diameter of Body (C)				
M100[8]	N/A	Red	2.540	1.349	0.532	1.0	**5,000**	0.028	0.032
M150[8]	N/A	Green	3.040	1.349	0.532	1.50	**5,000**	0.030	0.032
M200[8]	N/A	Orange	3.540	1.349	0.532	2.00	**4,900**	0.033	0.031
A210	Blue	N/A	3.330	2.365	1.420	1.0	**7,360**	0.013	0.045
A21-50	White	N/A	3.830	2.365	1.420	1.50	**8,000**	0.018	0.047
A220	Yellow	N/A	4.330	2.365	1.420	2.0	**7,730**	0.018	0.050
T410	Orange	N/A	3.700	2.365	1.375	1.0	**9,000**	0.020	0.024
T420	Black	N/A	4.700	2.365	1.375	2.0	**9,000**	0.018	0.028
A410	Red	N/A	3.800	2.365	1.250	1.0	**14,000**	0.022	0.051
A420	Green	N/A	4.800	2.365	1.250	2.0	**14,000**	0.030	0.047
A430	Brown	N/A	5.800	2.365	1.250	3.0	**14,750**	0.033	0.046
T610	Gray	N/A	4.325	2.365	1.250	1.0	**15,000**	0.019	0.035
T620	Purple	N/A	5.325	2.365	1.250	2.0	**15,000**	0.019	0.030
A610	Tan	N/A	4.800	2.365	1.250	1.0	**20,340**	0.028	0.045
A620	White	Blue	5.800	2.365	1.250	2.0	**20,100**	0.038	0.048
S410[5]	Blue	N/A	3.270	2.500	1.625	1.0	**22,000**	0.020	0.028
S420[5]	Yellow	N/A	4.270	2.500	1.625	2.0	**22,000**	0.026	0.028
X410[5]	Gold	N/A	3.700	2.500	1.625	1.0	**34,220**	0.035	0.047

MODEL AND SERIES NUMBER NOTATION FOR THE "A", "T", "S" AND "X" SERIES[8]				
1st Digit: Model Type:	2nd Digit: Series Type:	3rd Digit: Rated Compensation Capacity:	4th Digit: (and 5th Digit, where applicable) Swivel Washer Color Code[6,7]:	
"A" = Aluminum Body	2 = 2 locking rings	1 = 1.0 inch	0 = Base Model	
"T" = Aluminum Body	4 = 4 locking rings	1-5 = 1.50 inches	3 = $^3/_8$" Rod	Orange
"S" = Steel Body	6 = 6 locking rings	2 = 2.0 inches	4 = $^1/_2$" Rod	Purple
"X" = Steel Body		3 = 3.0 inches	5 = $^5/_8$" Rod	Black
			6 = $^3/_4$" Rod	Gray
			7 = $^7/_8$" Rod	Blue
			8 = 1" Rod	Yellow
			9 = $1^1/_8$" Rod	White
			10 = $1^1/_4$" Rod	Green
			12 = $1^1/_2$" Rod	Red

For **SI:** 1 inch = 25.4 mm, 1 pound = 4.45 N.

[1]Tabulated allowable loads are for the SlackJack® and MiniJack™ shrinkage compensating devices only. The attached components (including anchors, tension rods, bearing plates, wood framing members, etc.) must be designed to resist design loads in accordance with the applicable code.

[2]No further increases to the tabulated allowable loads are permitted.

[3]See Figure 1 (following page) for dimensioned drawings of the SlackJack® and MiniJack™ shrinkage compensating devices.

[4]The average travel and seating increment, Δ_R, is defined as the average of the movement required to cause incremental motion from a seated position and the opposite movement required to reseat the device after incremental motion.

[5]The device average travel and seating increment, Δ_R, and deflection at allowable load, Δ_A, are additive, and describe the total movement of the device at allowable load, Δ_T. For design loads, P_D, less than the allowable load, P_A, the total movement of the device, Δ_T, is calculated as follows: $\Delta_T = \Delta_R + \Delta_A(P_D/P_A)$.

[6]A swivel washer, having the appropriate inner diameter corresponding to the threaded rod or bolt diameter as indicated under the *Swivel Washer Color Code* section of the table above, must be used in accordance with Section 4.2. Exception: "M" series devices do not require swivel washers.

[7]Model numbers beginning with an "A" or "T" are designed for use with W3 through W10 swivel washers capable of fitting over threaded rods or bolts having diameters ranging from $^3/_8$ inch to $1^1/_4$ inches (9.5 mm to 32 mm). Model numbers beginning with an "S" or "X" are designed for use with W10 or W12 swivel washers capable of fitting over threaded rods or bolts having diameters of $1^1/_4$ inches and $1^1/_2$ inches (32 mm and 38 mm), respectively.

[8]The model and series number notation given above does not apply to the "M" series (MiniJack™). The M100, M150 and M200 have three locking rings, and rated compensation capacities of 1.0 inch, 1.5 inches and 2.0 inches, respectively. They are intended for use with either $^3/_8$ inch or $^1/_2$-inch rod diameters.

ICC-ES Evaluation Report

ESR-2848 FBC Supplement

Reissued November 1, 2013
This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

EARTHBOUND CORPORATION
17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® SHRINKAGE COMPENSATING DEVICE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2010 *Florida Building Code—Building*
- 2010 *Florida Building Code—Residential*

Property evaluated:

Structural

2.0 PURPOSE OF THIS SUPPLMENT

This supplement is issued to indicate that the SlackJack® shrinkage compensating device described in Sections 2.0 through 7.0 of the master report ESR-2848 complies with the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code®* provisions noted in the master report.

The SlackJack® shrinkage compensating device described in the master evaluation report has also been found to comply with the High-Velocity Hurricane Zone provisions of the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential.*

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report reissued November 1, 2013.

ICC-ES Evaluation Report

ESR-2848 CBC Supplement

Reissued November 1, 2013

This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

EARTHBOUND CORPORATION
17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

1.0 EVALUATION SCOPE

Compliance with the following code:

2010 *California Building Code* (CBC)

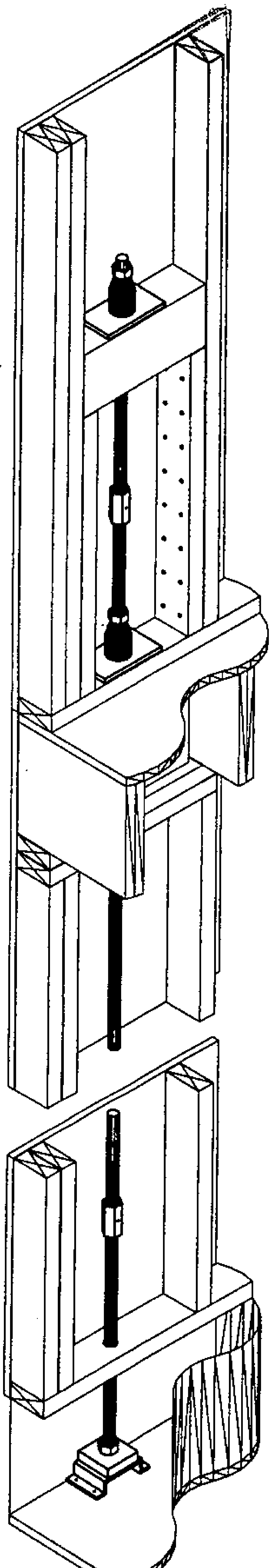
Property evaluated:

Structural

2.0 PURPOSE OF THIS SUPPLEMENT

This supplement is issued to indicate that the SlackJack® and MiniJack™ Shrinkage Compensation Devices, described in master report ESR-2848, comply with the CBC, when design and installation are in accordance with the CBC and with the *International Building Code®* provisions described in the master evaluation report.

This supplement expires concurrently with the master report reissued on November 1, 2013.



EARTHBOUND

"Holdowns That Work"

Earthbound System
Calculations Package for:

Crown Cabot Luxury Apts.
25891 Crown Valley
Laguna Niguel, CA 92677

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA 01/07/14 DATE

Earthbound Corp Job: 13071

August 5th, 2013

RECEIVED
DEC 16 2013
CITY OF LAGUNA NIGUEL
COMMUNITY DEVELOPMENT

Contains:
1) Run Type Analysis
2) ICC ESR-2848
3) Wood Calculations (9'-0" Sample)
4) Bridge and Nailing Calculations

Prepared by:
Earthbound Corporation
17361 Tye Street SE
Monroe, WA 98272
800-944-5669
360-863-0724
http://www.holdown.com

REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. NELSON
No. 3417
Exp. 3-31-14
STRUCTURAL
STATE OF CALIFORNIA

B13-2653

EARTHBOUND
"Holdowns that Work"

DATE: August 5, 2013

PROJECT: Crown Cabot Luxury Apts.
25891 Crown Valley
Laguna Niguel, CA 92677

SUBJECT: Calculations Package

The following package is submitted for review:

1) Earthbound Run Analysis
2) ICC ESR-2848 ("The Earthbound Seismic Holdown System")
3) Sample Wood Calculations (9'-0")
4) Sample Bridge Calculations

Calculation Assumptions:

1) Earthbound Corporation took no part in the preparation or review of the project structural design and disclaims any liability regarding shear wall design, determination of holdown locations in the structure and/or magnitude of the holdown forces.
2) The specified uplift loads were based from the structural drawings.
3) Slackjack Devices are referenced from ICC ESR-2848. This report is included in this submittal.
4) All compression members shown are to equal the uplift tension force on the opposite end of the wall or specified download forces per plans whichever is greater.

EARTHBOUND CORPORATION
17361 Tye Street SE
Monroe, WA 98272
Phone: (360) 863-0722
Fax: (360) 863-0724

Project:	13071	*CALCULATION SUMMARY*
Project #	Crown Cabot Luxury Apts.	*OF ASSIGNED RUN TYPES*
Date:	8/6/2013	

A	B	C	D	E	F	G	H			P	Q	R	S	T

Plans Date: 4/15/2013

CALCULATION NOTES ON COLUMNS:

A	Tension load provided by the structural plans.
B	Floor to floor differential loads.
C	Collected differential loads, if tiedowns on floors are skipped, the loads are brought up to the next level.
D	Assigned rod loads may be increased over column A if tiedowns are skipped on lower stories.
E	Final rod selection in accordance to specified design code (ASD)
F	Earthbound Shrinkage Fastener assigned to differential load (Column C) and travel required.
G	Bearing plate assigned to differential loads of Column C. Actual size shown.
H	Bearing plate is sized for both net area perpendicular to wood grain and bending thickness
I	Column Not Used
J	Column Not Used
K	Column Not Used
L	Column Not Used
M	Column Not Used
N	Deflection total of Columns I thru M.
O	Quick check results if total system elongation is greater than required by the plans or local jurisdiction.
P	Final Stud or Post Height subracting Joist Height (if applicable) and subtracting 4.5 inches for double 2x top plates and 2x bottom plate.
Q	Bridge trimmer height used in determining compression requirement at top level of run.
R	Wood download force required.
S	Member requirements for 4 inch walls. (3x4 scenarios available on EB shop drawings)
T	Member requirements for 6 inch walls.

SHRINKAGE DEVICE PROPERTIES

DEVICE	CAPACITY	DEFLECTION	
IMP1	18,750 #	0.025	0.070
IMP2	18,750 #	0.025	0.070
MJ10	3,500 #	0.026	0.032
MJ15	3,500 #	0.030	0.032
MJ17	3,500 #	0.030	0.031
M31	11,800 #	0.076	0.037
N14			
SJA21	7,360 #	0.013	0.045
SJA22	7,730 #	0.018	0.050
SJA41	14,000 #	0.022	0.051
SJA42	14,000 #	0.030	0.047
SJA43	14,750 #	0.033	0.046
SJA61	20,340 #	0.028	0.045
SJA62	20,100 #	0.038	0.048
SJS41	22,000 #	0.020	0.028
SJS42	22,000 #	0.026	0.028
SJT41	9,000 #	0.020	0.024
SJT42	9,000 #	0.018	0.028
SJT61	15,000 #	0.019	0.035
SJT62	15,000 #	0.019	0.030
SJX41	34,220 #	0.035	0.047

A	B	C	D	E	F	G	H			P	Q	R	S	T

RUN TYPE 0

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	2,000 #	2,000 #	2,000 #	2,000 #	RS4-72	MJ200	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	5.0 FT	8.7 FT	4.5 FT	2,600 #	see dwg	see dwg
3rd	3,600 #	1,500 #	1,500 #	3,500 #	R4	MJ200	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	10.1 FT	8.7 FT		4,550 #	see dwg	see dwg
2nd	6,200 #	2,700 #	2,700 #	6,200 #	SR5-10.5	SJA215	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	10.1 FT	8.7 FT		8,060 #	see dwg	see dwg
1st	8,000 #	1,800 #	1,800 #	8,000 #	SR6-10.5	SJA216	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.750 in	10.1 FT	8.7 FT		10,400 #	see dwg	see dwg

RUN TYPE I

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	3,000 #	3,000 #	3,000 #	3,000 #	RS4-72	MJ200	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	5.0 FT	8.7 FT	4.5 FT	3,900 #	see dwg	see dwg
3rd	5,000 #	2,000 #	2,000 #	5,000 #	SR5-10.5	SJA225	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	10.1 FT	8.7 FT		6,500 #	see dwg	see dwg
2nd	11,000 #	6,000 #	6,000 #	11,000 #	SR7-10.5	SJA217	P8	3.00 x 3.50 x 1/4	6,630 lbs	0.875 in	10.1 FT	8.7 FT		14,300 #	see dwg	see dwg
1st	18,000 #	7,000 #	7,000 #	18,000 #	SR8-10.5	SJA218	P8	3.25 x 5 x 1/4	8,470 lbs	1.000 in	10.1 FT	8.7 FT		25,000 #	see dwg	see dwg

RUN TYPE II

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	2,000 #	2,000 #	2,000 #	2,000 #	RS4-72	MJ200	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	5.0 FT	8.7 FT	4.5 FT	2,600 #	see dwg	see dwg
3rd	5,000 #	3,000 #	3,000 #	5,000 #	SR5-10.5	SJA225	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	10.1 FT	8.7 FT		6,500 #	see dwg	see dwg
2nd	10,000 #	5,000 #	5,000 #	10,000 #	SR6-10.5	SJA216	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.750 in	10.1 FT	8.7 FT		13,000 #	see dwg	see dwg
1st	15,000 #	5,000 #	5,000 #	15,000 #	SR8-10.5	SJA218	P6	3.00 x 3.50 x 1/4	6,630 lbs	1.000 in	10.1 FT	8.7 FT		21,000 #	see dwg	see dwg

RUN TYPE III

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	5,000 #	5,000 #	5,000 #	5,000 #	RS5-72	SJA225	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	5.0 FT	8.7 FT	4.5 FT	6,500 #	see dwg	see dwg
3rd	10,000 #	5,000 #	5,000 #	10,000 #	R6	SJA226	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.750 in	10.1 FT	8.7 FT		13,000 #	see dwg	see dwg
2nd	19,000 #	9,000 #	9,000 #	19,000 #	R6HS	SJA416	P10	3.25 x 5 x 3/8	10,510 lbs	0.750 in	10.1 FT	8.7 FT		24,700 #	see dwg	see dwg
1st	25,000 #	6,000 #	6,000 #	25,000 #	R7HS	SJA217	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.875 in	10.1 FT	8.7 FT		35,000 #	see dwg	see dwg

RUN TYPE I-WB

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	3,000 #	3,000 #	3,000 #	3,000 #	RS4-72	MJ100	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	5.0 FT	8.7 FT	4.5 FT	3,900 #	see dwg	see dwg
3rd	5,000 #	2,000 #	2,000 #	5,000 #	R5-12	SJA215	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	10.1 FT	8.7 FT		6,500 #	see dwg	see dwg
2nd							P8-5			0.625 in						
1st																

RUN TYPE III-WB

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	5,000 #	5,000 #	5,000 #	5,000 #	RS5-72	SJA215	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	5.0 FT	8.7 FT	4.5 FT	6,500 #	see dwg	see dwg
3rd	10,000 #	5,000 #	5,000 #	10,000 #	R6-12	SJA216	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.750 in	10.1 FT	8.7 FT		13,000 #	see dwg	see dwg
2nd							P12-6			0.750 in						
1st																

EARTHBOUND CORPORATION
17361 Tye Street, SE
Monroe, WA 98272
Phone: (360) 863-0722
Fax: (360) 863-0724

Project:	13071	*CALCULATION SUMMARY*
Project #	Crown Cabot Luxury Apts.	*OF ASSIGNED RUN TYPES*
Date:	8/5/2013	

RUN TYPE III-SB

	A	B	C	D	E	F		G	H			P	Q	R	S	T
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	5,000 #	5,000 #	5,000 #	5,000 #	RS5-72	SJA215	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	5.0 FT	8.7 FT	4.5 FT	6,500 #	see dwg	see dwg
3rd	10,000 #	5,000 #	5,000 #	10,000 #	SR6-10.5	SJA216	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.750 in	10.1 FT	8.7 FT		13,000 #	see dwg	see dwg
2nd										0.750 in						
1st																

RUN TYPE II-SB

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	2,000 #	2,000 #	2,000 #	2,000 #	RS4-72	MJ100	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	5.0 FT	8.7 FT	4.5 FT	2,500 #	see dwg	see dwg
3rd	5,000 #	3,000 #	3,000 #	5,000 #	SR5-10.5	SJA215	P6	3.00 x 3.50 x 1/4	6,630 lbs	0.625 in	10.1 FT	8.7 FT		6,500 #	see dwg	see dwg
2nd										0.625 in						
1st																

RUN TYPE 0-SB

WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	ASSIGNED ROD TENSION LOADS	FINAL ROD SIZE	SHRINKAGE FASTENER SIZE	EBOUND PLATE PART NO.	ACTUAL PLATE DIMENSIONS	RATED PLATE CAPACITY	DEFLECTION CHECK THREADED ROD DIA. (IN)	DEFLECTION CHECK THREADED ROD LENGTH (FT)	WOOD COMPRESSION AREA MEMBER HEIGHT	BRIDGE HEIGHT	WOOD DOWNLOAD	4 INCH WALLS	6 INCH WALLS
5th																
4th	2,000 #	2,000 #	2,000 #	2,000 #	RS4-72	MJ100	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	5.0 FT	8.7 FT	4.5 FT	2,600 #	see dwg	see dwg
3rd	3,500 #	1,500 #	1,500 #	3,500 #	R4	MJ100	P6-4	3.00 x 3.50 x 1/4	6,630 lbs	0.500 in	10.1 FT	8.7 FT		4,550 #	see dwg	see dwg
2nd										0.500 in						
1st																

EARTHBOUND CORPORATION
17361 Tye Street, SE
Monroe, WA 98272
Phone: (360) 863-0722
Fax: (360) 863-0724

Project:	Crown Cabot Luxury Apts.
Project #	13071
Date:	8/5/2013

EARTHBOUND THREADED ROD CAPACITIES (IBC 2009-12)

ROD SIZE	ROD SIZE (INCHES)	ALLOWABLE TENSION LOAD IBC 2009	ROD REMARKS	SLACKJACK SIZE
R4	1/2" DIA.	4,470 LBS	ASTM A 36 (UNC)	SJA 214, 224, 414, 424
R5	5/8" DIA.	7,120 LBS	ASTM A 36 (UNC)	SJA 215, 225, 415, 425
R6	3/4" DIA.	10,540 LBS	ASTM A 36 (UNC)	SJA 216, 226, 416, 426
R7	7/8" DIA.	14,540 LBS	ASTM A 36 (UNC)	SJA 217, 227, 417, 427
R8	1" DIA.	19,080 LBS	ASTM A 36 (UNC)	SJA 218, 228, 418, 428
R9	1 1/8" DIA.	24,040 LBS	ASTM A 36 (UNC)	SJA 219, 229, 419, 429
R10	1 1/4" DIA.	30,530 LBS	ASTM A 36 (UNC)	SJA 2110, 2210, 4110, 4210, SJS 4110, 4210
R12	1 1/2" DIA.	44,270 LBS	ASTM A 36 (UNC)	SJS 4112, 4212
R14	1 3/4" DIA.	59,830 LBS	ASTM A 36 (UNC)	—
R5HS	5/8" DIA.	14,240 LBS	ASTM A 449 (UNC)	SJA 215, 225, 415, 425
R6HS	3/4" DIA.	21,070 LBS	ASTM A 449 (UNC)	SJA 216, 226, 416, 426
R7HS	7/8" DIA.	29,090 LBS	ASTM A 449 (UNC)	SJA 217, 227, 417, 427
R8HS	1" DIA.	38,160 LBS	ASTM A 449 (UNC)	SJA 218, 228, 418, 428
R9HS	1 1/8" DIA.	42,080 LBS	ASTM A 449 (UNC)	SJA 219, 229, 419, 429
R10HS	1 1/4" DIA.	53,420 LBS	ASTM A 449 (UNC)	SJA 2110, 2210, 4110, 4210, SJS 4110, 4210
R12HS	1 1/2" DIA.	77,460 LBS	ASTM A 449 (UNC)	SJS 4112, 4212
R14HS	1 3/4" DIA.	104,710 LBS	ASTM A 449 (UNC)	—

EARTHBOUND BEARING PLATE CAPACITIES (DF)

PLATE SIZE	DIFFERENTIAL LOAD	COLOR CODE	PLATE DIMENSIONS (INCHES) WIDTH	LENGTH	THICK.
P6	6,630 LBS	GREEN	3"	3.5"	1/4"
P8	8,470 LBS	BLACK	3-1/4"	5"	1/4"
P10	10,510 LBS	BLUE	3-1/4"	5"	3/8"
P12	12,270 LBS	GRAY	3-1/4"	6"	5/8"
P14	14,460 LBS	RED	3-1/4"	7"	3/4"
P16	16,650 LBS	TAN	3-1/4"	8"	3/4"
P18	18,840 LBS	YELLOW	3-1/2"	9"	1"
P20	21,020 LBS	BROWN	3-1/2"	10"	1"
P22	23,210 LBS	WHITE	3-1/2"	11"	1 1/4"
P24	24,310 LBS	GOLD	3-1/2"	12"	1 1/2"

SJA ROD SIZE CODES

PART NO.	ROD DIAMETER	ROD SIZE	WASHER COLOR
SJA 2x4 or 4x4	1/2"	R4	PURPLE
SJA 2x5 or 4x5	5/8"	R5	BLACK
SJA 2x6 or 4x6	3/4"	R6 or R6HS	GRAY
SJA 2x7 or 4x7	7/8"	R7 or R7HS	BLUE
SJA 2x8 or 4x8	1"	R8 or R8HS	YELLOW
SJA 2x9 or 4x9	1 1/8"	R9 or R9HS	WHITE
SJA 2x10, 4x10, SJS 4x10	1 1/4"	R10 or R10HS	GREEN
SJS 4x12	1 1/2"	R12 or R12HS	RED

"x" = SLACKJACK TRAVEL IN "INCHES"

NOTES:

1. TENSION LOAD WAS CALCULATED FROM THE FOLLOWING EQUATION:
   A. ASTM A 307 Threaded Rod Capacities are F'u = 60,000 psi. UNC thread pitch
      HS Rods are based on ASTM A449, F'u = 120 ksi, 105 ksi above R8HS
   B. The IBC 2009-12 column is calculated in accordance to Section 1912 and ASCE 7-05.

2. PLATE STEEL SHALL BE ASTM A36: F'u = 60,000 PSI.

3. SUBSTITUTIONS OF DESIGNATED BEARING PLATE SHALL NOT BE PERMITTED. OBTAIN WRITTEN APPROVAL FROM THE ENGINEER.

4. SLACKJACK SELECTION NOTES:
   THE SIZES SHOWN ABOVE ARE FOR BOTH ONE AND TWO INCH TRAVEL ("SJA 4xy")
   (x = TRAVEL HEIGHT IN INCHES, y = ROD SIZE). TWO INCH TRAVEL SLACKJACKS ARE REQUIRED ON FOURTH WOOD FRAME LEVELS AND HIGHER.

5. THIS TABLE IS FOR REFERENCE OF FULL PRODUCT LINE, SOME ROD AND PLATE SIZES MAY NOT BE IN USE. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVE CAPACITIES.

ICC-ES Evaluation Report

ESR-2848

Reissued November 1, 2013
This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

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www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)

Property evaluated:

Structural

2.0 USES

SlackJack® and MiniJack™ shrinkage compensating devices are used in conjunction with hold-down and tension tie connectors or a continuous tie-down system for wood frame construction. The devices are installed as components of the restraint system, with the threaded anchor bolts or rods passing through the axis of the devices, to remove slack in the restraint system that occurs due to wood shrinkage or building settlement, or both.

3.0 DESCRIPTION

3.1 General:

The SlackJack® and MiniJack™ are factory-assembled, preloaded, compression-controlled shrinkage and settlement compensating devices that can be used with hold-down connectors or tension tie connectors with threaded rods or threaded anchor bolts. The devices are cylindrical, and automatically expand axially along a rod or bolt, to eliminate any gaps between a bearing surface or plate and the nut on the threaded rod or bolt when shrinkage or settlement occurs within the structure. A portion of the SlackJack® or MiniJack™ is color-coded to identify the specific model number. Model numbers beginning with an "A" or "T" have aluminum bodies, and are designed for use with W3 through W10 swivel washers capable of fitting over threaded rods or bolts having diameters ranging from $^3/_8$ inch to $1^1/_4$ inches (9.5 mm to 32 mm). Model numbers beginning with an "S" or "X" have steel bodies, and are designed for use with W10 or W12 swivel washers capable of fitting over threaded rods or bolts having diameters of $1^1/_4$ inches and $1^1/_2$ inches (32 mm and 38 mm), respectively. Model numbers beginning with an "M" (MiniJack™) have aluminum bodies, are designed for use without swivel washers, and will fit over threaded rods or bolts having diameters of $^3/_8$ inch and $^1/_2$ inch (9.5 mm and 12.7 mm). See Figure 1 for diagrams of each model type. See Table 1 for recognized models, and their corresponding color codes and dimensions. The SlackJack® "A", "T", "S" and "X" series are supplied with swivel washers, which are used to center the device on the threaded rod or bolt. Swivel washers are color-coded, as noted in Table 1, to indicate the corresponding appropriate threaded rod or bolt diameter. The SlackJack® A620 model and MiniJack™ "M" series are supplied with color-coded compression springs, as noted in Table 1, to indicate the specific model and rated compensation capacity.

3.2 Materials:

For the SlackJack® and MiniJack™ model numbers beginning with an "A", "T" or "M", the inner and outer cylinder bodies of the shrinkage compensating devices are manufactured from ASTM B221-06 6061-T6511 alloy extruded aluminum tubing. Model numbers beginning with an "S" or "X" have inner and outer cylinder bodies manufactured from ASTM A513-08a, Type 5 DOM steel tubing, as specified in the manufacturer's quality documentation. Locking rings are manufactured from ASTM A313-08 stainless steel spring wire. The compression spring and pull clip are manufactured from galvanized hard-drawn spring wire. The color-coded capture ring consists of injection-molded plastic. The color-coded swivel washer is manufactured from ASTM A108-07, grade 12L14 steel. A hex nut conforming to ASTM A563-07 is included in the packaging of each device.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The allowable compression loads, corresponding deflections at allowable loads, rated shrinkage and settlement compensation capacities, and average travel and seating increments, Δ_R, for the SlackJack® and MiniJack™ shrinkage compensating devices designed under allowable stress design are as shown in Table 1.

The devices are used where the expected shrinkage or settlement does not exceed their rated compensation capacities. Calculations, demonstrating that the applied

loads do not exceed the tabulated allowable loads, and that the expected slack due to wood shrinkage and building settlement does not exceed the rated compensation capacity for the SlackJack® and MiniJack™ shrinkage compensating devices, must be submitted to the code official for approval. Supports must be designed in accordance with the applicable code to transfer loads into the restraint system. The calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

4.2 Installation:

The SlackJack® and MiniJack™ shrinkage compensating devices must be installed in accordance with this report and the manufacturer's published installation instructions. The devices must be installed over the hold-down or a bearing surface or plate, with the threaded rod or bolt running through its axis. The threaded rod with which the SlackJack® or MiniJack™ is used must be installed plumb, such that the offset angle between the top of the floor and the bottom of the top plates or bridge block above does not exceed 1.33 degrees from vertical. For the SlackJack® "A", "T", "S" and "X" series, the appropriate color-coded swivel washer corresponding to the threaded rod or bolt diameter, as indicated in Table 1, must be installed over each SlackJack® device, with the flat side facing up. The steel hex nut must be screwed onto the threaded rod or bolt, and hand-tightened over the top of the swivel washer. Once the hex nut is hand-tightened onto the swivel washer, the device must be activated by removal of the factory-installed pull clip.

5.0 CONDITIONS OF USE

The SlackJack® and MiniJack™ shrinkage compensating devices described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The SlackJack® and MiniJack™ shrinkage compensating devices must be installed in accordance with this report, the manufacturer's installation instructions and the plans approved by the code official. In the event of a conflict between this report and the manufacturer's published installation instructions, the most restrictive governs.

5.2 The design values given in this report are for the SlackJack® or MiniJack™ shrinkage compensating devices alone. No further increase in allowable capacity is permitted. Design must be performed in accordance with Section 4.1 of this report.

5.3 Calculations in accordance with Section 4.1 of this report must be submitted to the code official for approval.

5.4 The SlackJack® and MiniJack™ devices are limited to installations in dry, interior locations.

5.5 The SlackJack® and MiniJack™ shrinkage compensating devices must not be used to support dead loads other than their own weight.

5.6 Use of the SlackJack® and MiniJack™ shrinkage compensating devices in direct contact with fire-retardant-treated wood or preservative-treated wood is outside of the scope of this report.

5.7 When the SlackJack® and MiniJack™ shrinkage compensating devices are used as fasteners independent of a continuous tie-down system, the applied loads must not exceed the allowable loads noted in this report.

5.8 When the devices are used in continuous rod systems that resist light-frame shear wall overturning forces, calculations must be submitted to the code official confirming that the total vertical displacement, which would include steel rod elongation and the shrinkage compensating device deflection, is less than or equal to 0.200 inch (5 mm) for each story, or between restraints, whichever is more restrictive, using allowable stress design (ASD). Shear wall drift limit calculations must consider the 0.200-inch (5 mm) vertical displacement limit. This 0.200-inch (5 mm) vertical displacement limit may be exceeded when it can be demonstrated that the shear wall story drift limit and the deformation compatibility requirements of IBC Section 1604.4 are met when considering all sources of vertical displacement.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Shrinkage Compensating Devices (AC316), dated June 2012.

7.0 IDENTIFICATION

Each SlackJack® and MiniJack™ shrinkage compensating device bears a label, either on the body of the device or on the packaging, with the evaluation report holder name (Earthbound) and Web address, the product name (SlackJack® or MiniJack™), and the evaluation report number (ESR-2848). The devices are color-coded, as indicated in Table 1, to identify the specific model and series number. SlackJack® shrinkage compensating devices are packaged together in a common box or container, which includes corresponding swivel washers and nuts labeled in separate plastic packaging. The MiniJack™ "M" series devices are packaged in lots of five, and do not require a swivel washer.

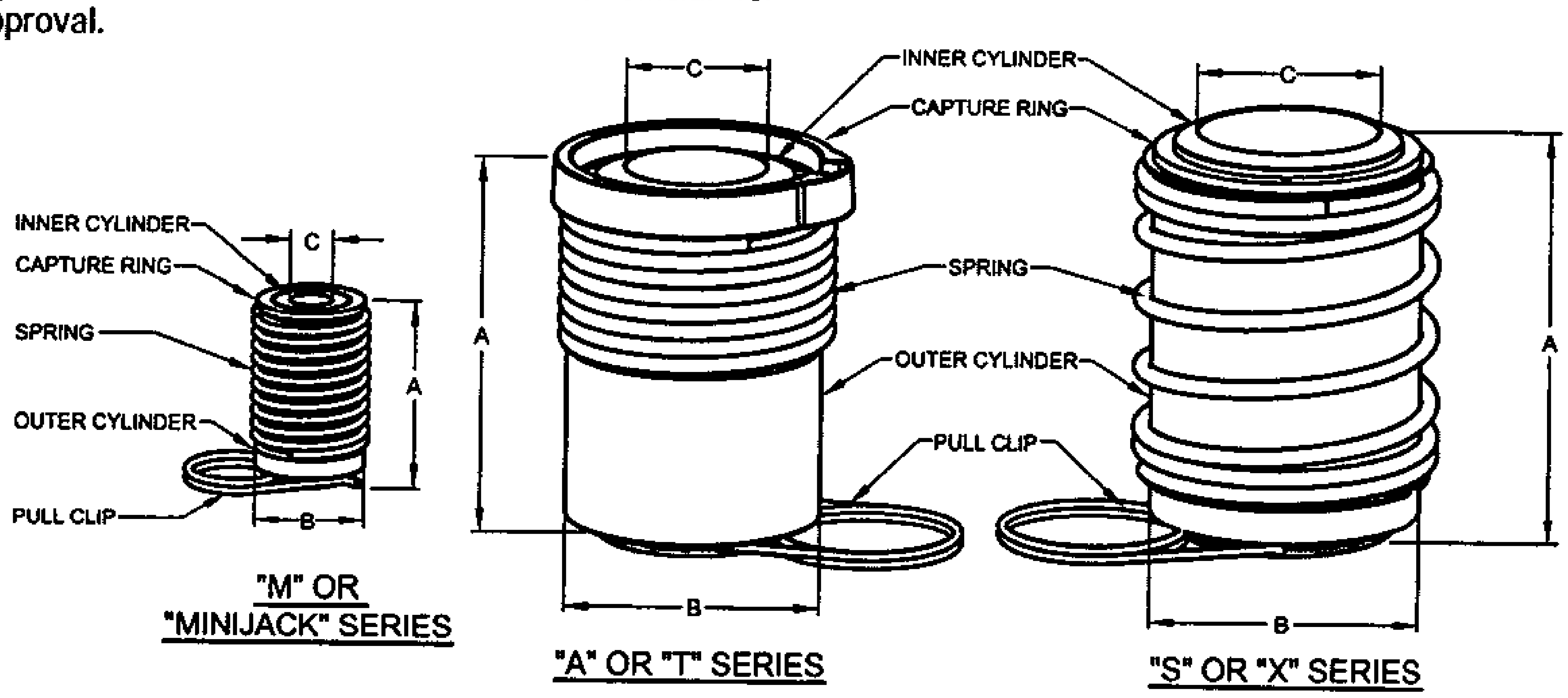

FIGURE 1—SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

TABLE 1—SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICE SPECIFICATIONS

MODEL AND SERIES NUMBER	CAPTURE RING COLOR CODE	SPRING COLOR CODE	NOMINAL DIMENSIONS[3] (inches)			RATED COMPENSATION CAPACITY (inches)	ALLOWABLE COMPRESSION LOAD[1,2] (lbs)	DEFLECTION AT ALLOWABLE LOAD (inch)	DEVICE AVG TRAVEL & SEATING INCREMENT Δ_R[4,5] (inch)
			Height Before Activation (A)	Outer Diameter of Body (B)	Inner Diameter of Body (C)				
M100[8]	N/A	Red	2.540	1.349	0.532	1.0	**5,000**	0.028	0.032
M150[8]	N/A	Green	3.040	1.349	0.532	1.50	**5,000**	0.030	0.032
M200[8]	N/A	Orange	3.540	1.349	0.532	2.00	**4,900**	0.033	0.031
A210	Blue	N/A	3.330	2.365	1.420	1.0	**7,360**	0.013	0.045
A21-50	White	N/A	3.830	2.365	1.420	1.50	**8,000**	0.018	0.047
A220	Yellow	N/A	4.330	2.365	1.420	2.0	**7,730**	0.018	0.050
T410	Orange	N/A	3.700	2.365	1.375	1.0	**9,000**	0.020	0.024
T420	Black	N/A	4.700	2.365	1.375	2.0	**9,000**	0.018	0.028
A410	Red	N/A	3.800	2.365	1.250	1.0	**14,000**	0.022	0.051
A420	Green	N/A	4.800	2.365	1.250	2.0	**14,000**	0.030	0.047
A430	Brown	N/A	5.800	2.365	1.250	3.0	**14,750**	0.033	0.046
T610	Gray	N/A	4.325	2.365	1.250	1.0	**15,000**	0.019	0.035
T620	Purple	N/A	5.325	2.365	1.250	2.0	**15,000**	0.019	0.030
A610	Tan	N/A	4.800	2.365	1.250	1.0	**20,340**	0.028	0.045
A620	White	Blue	5.800	2.365	1.250	2.0	**20,100**	0.038	0.048
S410[5]	Blue	N/A	3.270	2.500	1.625	1.0	**22,000**	0.020	0.028
S420[5]	Yellow	N/A	4.270	2.500	1.625	2.0	**22,000**	0.026	0.028
X410[5]	Gold	N/A	3.700	2.500	1.625	1.0	**34,220**	0.035	0.047

MODEL AND SERIES NUMBER NOTATION FOR THE "A", "T", "S" AND "X" SERIES[8]

1st Digit: Model Type:	**2nd Digit: Series Type:**	**3rd Digit: Rated Compensation Capacity:**	**4th Digit: (and 5th Digit, where applicable) Swivel Washer Color Code[6,7]:**	
"A" = Aluminum Body	2 = 2 locking rings	1 = 1.0 inch	0 = Base Model	
"T" = Aluminum Body	4 = 4 locking rings	1-5 = 1.50 inches	3 = $^3/_8$" Rod	Orange
"S" = Steel Body	6 = 6 locking rings	2 = 2.0 inches	4 = $^1/_2$" Rod	Purple
"X" = Steel Body		3 = 3.0 inches	5 = $^5/_8$" Rod	Black
			6 = $^3/_4$" Rod	Gray
			7 = $^7/_8$" Rod	Blue
			8 = 1" Rod	Yellow
			9 = $1^1/_8$" Rod	White
			10 = $1^1/_4$" Rod	Green
			12 = $1^1/_2$" Rod	Red

For **SI**: 1 inch = 25.4 mm, 1 pound = 4.45 N.

[1]Tabulated allowable loads are for the SlackJack® and MiniJack™ shrinkage compensating devices only. The attached components (including anchors, tension rods, bearing plates, wood framing members, etc.) must be designed to resist design loads in accordance with the applicable code.

[2]No further increases to the tabulated allowable loads are permitted.

[3]See Figure 1 (following page) for dimensioned drawings of the SlackJack® and MiniJack™ shrinkage compensating devices.

[4]The average travel and seating increment, Δ_R, is defined as the average of the movement required to cause incremental motion from a seated position and the opposite movement required to reseat the device after incremental motion.

[5]The device average travel and seating increment, Δ_R, and deflection at allowable load, Δ_A, are additive, and describe the total movement of the device at allowable load, Δ_T. For design loads, P_D, less than the allowable load, P_A, the total movement of the device, Δ_T, is calculated as follows: $\Delta_T = \Delta_R + \Delta_A(P_D/P_A)$.

[6]A swivel washer, having the appropriate inner diameter corresponding to the threaded rod or bolt diameter as indicated under the *Swivel Washer Color Code* section of the table above, must be used in accordance with Section 4.2. Exception: "M" series devices do not require swivel washers.

[7]Model numbers beginning with an "A" or "T" are designed for use with W3 through W10 swivel washers capable of fitting over threaded rods or bolts having diameters ranging from $^3/_8$ inch to $1^1/_4$ inches (9.5 mm to 32 mm). Model numbers beginning with an "S" or "X" are designed for use with W10 or W12 swivel washers capable of fitting over threaded rods or bolts having diameters of $1^1/_4$ inches and $1^1/_2$ inches (32 mm and 38 mm), respectively.

[8]The model and series number notation given above does not apply to the "M" series (MiniJack™). The M100, M150 and M200 have three locking rings, and rated compensation capacities of 1.0 inch, 1.5 inches and 2.0 inches, respectively. They are intended for use with either $^3/_8$ inch or $^1/_2$-inch rod diameters.

ICC-ES Evaluation Report

ESR-2848 FBC Supplement

Reissued November 1, 2013
This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

EARTHBOUND CORPORATION
17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® SHRINKAGE COMPENSATING DEVICE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2010 *Florida Building Code—Building*
- 2010 *Florida Building Code—Residential*

Property evaluated:

Structural

2.0 PURPOSE OF THIS SUPPLMENT

This supplement is issued to indicate that the SlackJack® shrinkage compensating device described in Sections 2.0 through 7.0 of the master report ESR-2848 complies with the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code®* provisions noted in the master report.

The SlackJack® shrinkage compensating device described in the master evaluation report has also been found to comply with the High-Velocity Hurricane Zone provisions of the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential.*

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report reissued November 1, 2013.

ICC-ES Evaluation Report

ESR-2848 CBC Supplement

Reissued November 1, 2013
This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
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REPORT HOLDER:

EARTHBOUND CORPORATION
17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

1.0 EVALUATION SCOPE

Compliance with the following code:

2010 *California Building Code* (CBC)

Property evaluated:

Structural

2.0 PURPOSE OF THIS SUPPLEMENT

This supplement is issued to indicate that the SlackJack® and MiniJack™ Shrinkage Compensation Devices, described in master report ESR-2848, comply with the CBC, when design and installation are in accordance with the CBC and with the *International Building Code®* provisions described in the master evaluation report.

This supplement expires concurrently with the master report reissued on November 1, 2013.

EARTHBOUND CORPORATION
17361 Tye Street, SE
Monroe, WA 98272
Phone: (360) 863-0722
Fax: (360) 863-0724

Project:	Crown Cabot Luxury Apts.
Project #	13071
Date:	08/06/13
Struct Plans Date:	Plans Date

WOOD COMPRESSION CALCULATION BASED ON IBC 2006 (NDS 2005)
BASED ON NO. 2 DOUG FIR STUDS/POSTS ON DOUG FIR PLATES
SEE SPECIFIC MEMBER HEIGHTS

POST COLUMN DESIGN STUD HEIGHT #1

DOUG-FIR POSTS ON DOUG FIR FLOOR PLATES

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Size	Grade	Height	PARALLEL	DURATION	REPETITIVE	SIZE FACT.	M.O.E	PERPENDICULAR TO GRAIN		WIDTH	THICK					COLUMN FACTOR	COL. STRESS	VERTICAL CAPACITY	BEARING CAPACITY	ALLOW.	Size
		h	F_{cll}	C_D	C_r	C_F	E	F_{cp}	C_b	b(d)	t	E_{min}	F_{c^*}	l/d	F_{ce} =	C_p	F'_c	P_v	P_b	P_c	
		inch	psi				ksi	psi		inch	inch	ksi	psi		(0.822*Emin)/(le/d)^2		psi	lbs	lbs	lbs	
2 x 4	Stud	103.5	850	1.60	1.00	1.15	1,400	625	1.00	3.50	1.50	511	1,564	29.57	480.75	0.285	445.30	2,338	3,281	**2,338**	2 x 4
3 x 4	No. 2	103.5	1,350	1.60	1.00	1.15	1,600	625	1.00	3.50	2.50	584	2,484	29.57	549.42	0.210	521.69	4,565	5,469	**4,565**	3 x 4
4 x 4	No. 2	103.5	1,350	1.60	1.00	1.15	1,600	625	1.00	3.50	3.50	584	2,484	29.57	549.42	0.210	521.69	6,391	7,656	**6,391**	4 x 4
4 x 6	No. 2	103.5	1,350	1.60	1.00	1.10	1,600	625	1.00	3.50	5.50	584	2,376	29.57	549.42	0.219	520.25	10,015	12,031	**10,015**	4 x 6
4 x 8	No. 2	103.5	1,350	1.60	1.00	1.05	1,600	625	1.00	3.50	7.25	584	2,268	29.57	549.42	0.229	518.67	13,161	15,859	**13,161**	4 x 8
4 x 10	No. 2	103.5	1,350	1.60	1.00	1.00	1,600	625	1.00	3.50	9.25	584	2,160	29.57	549.42	0.239	516.90	16,735	20,234	**16,735**	4 x 10
4 x 12	No. 2	103.5	1,350	1.60	1.00	1.00	1,600	625	1.00	3.50	11.25	584	2,160	29.57	549.42	0.239	516.90	20,353	24,609	**20,353**	4 x 12
2 x 6	No. 2	103.5	1,350	1.60	1.00	1.00	1,600	625	1.00	5.50	1.50	584	2,160	18.82	1356.74	0.517	1117.30	9,218	5,156	**5,156**	2 x 6
3 x 6	No. 2	103.5	1,350	1.60	1.00	1.05	1,600	625	1.00	5.50	2.50	584	2,268	18.82	1356.74	0.499	1131.46	15,558	8,594	**8,594**	3 x 6
6 x 4	No. 2	103.5	1,350	1.60	1.00	1.10	1,600	625	1.00	5.50	3.50	584	2,376	18.82	1356.74	0.482	1144.18	22,026	12,031	**12,031**	6 x 4
6 x 6	No. 1	103.5	1,000	1.60	1.00	1.10	1,600	625	1.00	5.50	5.50	584	1,760	18.82	1356.74	0.596	1048.11	31,705	18,906	**18,906**	6 x 6
6 x 8	No. 1	103.5	1,000	1.60	1.00	1.10	1,600	625	1.00	5.50	7.25	584	1,760	18.82	1356.74	0.596	1048.11	41,793	24,922	**24,922**	6 x 8
6 x 10	No. 1	103.5	1,000	1.60	1.00	1.10	1,600	625	1.00	5.50	9.25	584	1,760	18.82	1356.74	0.596	1048.11	53,323	31,797	**31,797**	6 x 10
2 x 8	Stud	103.5	850	1.60	1.00	1.15	1,400	625	1.00	7.25	1.50	511	1,564	14.28	2062.79	0.777	1215.38	13,217	6,797	**6,797**	2 x 8

2 x 4	Stud	70.5	850	1.60	1.00	1.15	1,400	625	1.00	3.50	1.50	511	1,564	20.14	1036.14	0.538	840.70	4,414	3,281	**3,281**	2 x 4
2 x 6	No. 2	70.5	1,350	1.60	1.00	1.15	1,600	625	1.00	5.50	1.50	584	2,484	12.82	2924.15	0.744	1848.57	15,251	5,156	**5,156**	2 x 6

COLUMN NOTES

A	Nominal Member Size
B	Lumber Grade
C	Nominal Post Height - 4.5 inches for double 2x top plate and single 2x bottom plate.
D - J	Coefficients and parameters per NDS 2005
K	Lumber depth (3.5" in 4" wall, 5.5" in 6" wall)
L	Lumber thickness parallel to wall direction
M	Emin' = (2.03)(E)(2-2.645(CoVE)))/2.66, CoVE = 0.25 for sawn lumber
N	$F^*_c = (F_{cll})(C_d)(C_r)(C_F)$ - (Columns D, E, F, G)
O	Slenderness Ratio: Effective Length / depth ratio: (Col. C / Col. K)
P	$E_{min'}$ = Euler critical buckling stress for columns $F_{ce} = 08.22(E_{min'})/(l_e/d)^2$. Equation H-2 in NDS 2005.
Q	Column Stability Factor CP, Equation 3.7-2 in NDS 2005
R	Column Stress F'c = F*c x Cp (Col. N x Col. Q). Equation H-2 in NDS 2005
S	Final Buckling Capacity: Post Area x F'_c (Col. K x Col. L x Col. R)
T	Maximum Bearing Capacity Perpendicular to Grain Code Limitation: (Col. I x Col. K x Col. L).
U	Final Post Capacity, minimum value of Col. S or Col. T.
V	Nominal Member Size (Same as Col. A)

Earthbound System Stud/Post Capacity Sample Calculation

Objective: Calculate final vertical compression capacity of a single stud:
The final vertical compression capacity will be the lower of the following:
1) Perpendicular to grain bearing capacity of the floor plate below the vertical member.
2) Column Buckling calculations using wood properties, coefficients and formulas from 2005 NDS. All table references are from 2005 NDS.

Define Variables and Coefficients:

From Table 4.3.1 of 2005 NDS, the following are Applicable Adjustment Factors for Sawn Lumber:

$C_D := 1.60$;Load Duration Factor = 1.60 for seismic used in buckling calc only, not in perp to grain calc.

$C_M := 1.0$;Wet Service Factor = 1.0 if dry conditions

$C_F := 1.15$;Size Factor from Table 4A Adjustment Factor for (Fc) compression parallel calculations. No. 1 = 1.15, No. 2 = 1.15, Stud grade = 1.05.

Calculate Stud or Post Bearing Capacity: This is a calculation of the maximum capacity per stud bearing perpendicular to grain on the bottom plates:

$\text{StudHeight} := 9.000 \cdot \text{ft}$;Stud or Post Height in feet

$l := \text{StudHeight} \cdot \frac{12\text{in}}{1\text{ft}}$ $\quad l_e := l - 4.5 \cdot \text{in}$ $\quad l_e = 103.5\,\text{in}$;Effective Column Length or true member height in inches after subtracting 4.5 inches for double 2x plate and single 2x bottom plate.

For this calculation example we will use a **No. 2 grade 2x4 post**, (1.5 inches x 3.5 inches) **Doug Fir Studs on Doug Fir floor plates**. Refer to 2005 NDS Table 4A (attached).

$d := 3.5\text{in}$;Stud or Post Depth

$t := 1.5\text{in}$;Stud or Post Thickness (Parallel to Plate Grain Direction)

$A := t \cdot d$

$A = 5.25\,\text{in}^2$;Total Bearing Area

Calculate Bearing Area Factor, Cb in accordance to 2005 NDS 3.10.4. This only applies to studs/posts less than 6".

$l_b := t$ $\quad l_b = 1.5\,\text{in}$;Assign Bearing Length parallel to plate grain, same as "t" variable above to match NDS 3.10.4 Nomenclature.

$C_b := 1.00$;Equation NDS 3.10-2 allows an increase of bearing area factor if members are located more than 3 inches away from end of floor plate member. This calculation will be conservative and leave Cb = 1.0.

$Fc_{perp} := 625\text{psi}$;From 2005 NDS Table 4A Douglas Fir Perp to Grain = 625 psi

$\text{StudBearingCapacity} := A \cdot Fc_{perp} \cdot C_b$

$\text{StudBearingCapacity} = 3281.2\,\text{lbf}$;NDS does not allow for Load Duration Factor greater than 1.0 to be applied to loads perpendicular to grain.

Calculate Trimmer Stud or Post Vertical (Column Buckling) Capacity: This is a calculation of the maximum buckling or column capacity per stud or post. Calculations are based from 2005 NDS Chapters 3 and 4 with references to Appendix D.3, F.2 and H.

$Fc_{para} := 1350psi$;Fc (parallel) for No. 1 Grade up to 4" thick Douglas Fir, will be 1500 psi. Table 4A Reference for DF: No. 1 = 1500 psi, No. 2 = 1350 psi, Stud Grade = 850 psi

$C_D := 1.60$;Load Duration Factor = 1.60 for seismic, used in buckling calc only, not perp. to grain calc.

$C_F := 1.15$;Size Factor from Table 4A Adjustment Factor for (Fc) compression parallel calculations. No. 1 Grade = 1.15, No. 2 Grade = 1.15, Stud grade = 1.05.

$C_M := 1.0$;Wet Service Factor = 1.0

$E := 1600000psi$;Modulus of Elasticity (MOE) of wood, From Table 4A: No. 1 Grade = 1,700,000 psi, No. 2 Grade = 1,600,000 psi, Stud Grade = 1,400,000 psi.

$c := 0.80$;c = 0.8 for sawn lumber, 0.9 for engineered lumber per NDS 3.7-1

$Adjusted\_Fc_{para} := Fc_{para} \cdot C_D \cdot C_F \cdot C_M$;Adjusted_Fc(para) is also known as F*c from NDS 2005 reference. Mathcad cannot show the asterisk in "F*c".

$Adjusted\_Fc_{para} = 2484\,psi$

$CoV_E := 0.25$;Coefficient of variation of E, CoV(E) = 0.25 for sawn lumber, 0.10 for glue lam lumber per NDS 2005 Appendix F.2.

$$E_{min} := 1.03 \cdot E \cdot \frac{(1 - 1.645 \cdot CoV_E)}{1.66}$$

;Equation D-4 in NDS 2005. Determine reference modulus of elasticity where:

E = Modulus of Elasticity

1.03 = adjustment factor to convert E to pure bending basis. Use 1.05 for structural glued laminated timber.

1.66 = factor of safety

CoV(E) = cofficient of varation in modulus of elasticity defined in NDS 2005 Appendix F.2.

Emin represents an approx 5% lower exclusion value on pure bending MOE, plus a factor of safety of 1.66.

$E_{min} = 584494\,psi$

$$F_{cE} := \frac{(0.822 \cdot E_{min})}{\left(\frac{l_e}{d}\right)^2} \qquad F_{cE} = 549\,psi$$

;Equation H-2 in NDS 2005: The 0.822 factor in Equation H-2 represents the Euler buckling coefficient for rectangular columns calulated as $\pi^2/12$. MOE for beam and column stability Emin in H-2 represents an approximate 5% lower exclusion value on pure bending MOE, plus a 1.66 factor of safety (See NDS 2005 D.4.)

We effectively removed the 1.66 factor of safety from Equation H-2 by dividing Emin by 1.66 used in Equation D-4 above.

The maximum design value Fc in psi of cross-sectional area of individual members of columns shall be determined in accordance with the following formula. (Based on Equation 3.7-1 from 2005 NDS showing (Cp x F*c).

$$F_c := Adjusted\_Fc_{para} \cdot \left[\frac{\left[1 + \left(\frac{F_{cE}}{Adjusted\_Fc_{para}}\right)\right]}{2 \cdot c} - \sqrt{\left[\frac{\left[1 + \left(\frac{F_{cE}}{Adjusted\_Fc_{para}}\right)\right]}{2 \cdot c}\right]^2 - \left(\frac{\frac{F_{cE}}{Adjusted\_Fc_{para}}}{c}\right)} \right]$$

$$F_c = 521.7\,psi$$

The vertical capacity of this column is design value Fc multiplied by the bearing area of the stud or post, in this case a **2x4 stud**:

$d = 3.5\,in$ $t = 1.5\,in$

$$StudVerticalCapacity := d \cdot t \cdot F_c$$

$$StudVerticalCapacity = 2738.8\,lbf$$

$StudBearingCapacity = 3281.2\,lbf$;From above bearing calculations

The allowable stud capacity should be the <u>lower</u> value between Vertical Capacity and Bearing Capacity:

$$AllowStudCapacity := if(StudBearingCapacity > StudVerticalCapacity, StudVerticalCapacity, StudBearingCapacity)$$

;The above formula is a conditional statement inherent to Mathcad to use the lower capacity as the final value.

$AllowStudCapacity = 2739\,lbf$;or Allowable Post Capacity for a **9'-0" 2x4 No. 2 Grade DF on DF**

Calculation Summary:

Using above calculation example, we can calculate the final capacities of other wood members for 9'-0" members as used on this project. See attached spreadsheets.

The following tables on the next pages are taken from the NDS 2005 Reference Tables Volume and are provided here for ease of reference. Highlighted values are commonly used lumber types and may or may not be used in these calculations:

Table 4A Reference Design Values for Visually Graded Dimension Lumber (2" - 4" thick)[1,2,3]

(All species except Southern Pine — see Table 4B) (Tabulated design values are for normal load duration and dry service conditions. See NDS 4.3 for a comprehensive description of design value adjustment factors.)

USE WITH TABLE 4A ADJUSTMENT FACTORS

Species and commercial grade	Size classification	Design values in pounds per square inch (psi): Bending F_b	Tension parallel to grain F_t	Shear parallel to grain F_v	Compression perpendicular to grain $F_{c\perp}$	Compression parallel to grain F_c	Modulus of Elasticity E	E_{min}	Grading Rules Agency
DOUGLAS FIR-LARCH									
Select Structural		1,500	1,000	180	625	1,700	1,900,000	690,000	
No.1 & Btr		1,200	800	180	625	1,550	1,800,000	660,000	
No.1	2" & wider	1,000	675	180	625	1,500	1,700,000	620,000	
No.2		900	575	180	625	1,350	1,600,000	580,000	WCLIB
No.3		525	325	180	625	775	1,400,000	510,000	WWPA
Stud	2" & wider	700	450	180	625	850	1,400,000	510,000	
Construction		1,000	650	180	625	1,650	1,500,000	550,000	
Standard	2" - 4" wide	575	375	180	625	1,400	1,400,000	510,000	
Utility		275	175	180	625	900	1,300,000	470,000	
DOUGLAS FIR-LARCH (NORTH)									
Select Structural		1,350	825	180	625	1,900	1,900,000	690,000	
No.1 & Btr		1,150	750	180	625	1,800	1,800,000	660,000	
No.1/No.2	2" & wider	850	500	180	625	1,400	1,600,000	580,000	
No.3		475	300	180	625	825	1,400,000	510,000	NLGA
Stud	2" & wider	650	400	180	625	900	1,400,000	510,000	
Construction		950	575	180	625	1,800	1,500,000	550,000	
Standard	2" - 4" wide	525	325	180	625	1,450	1,400,000	510,000	
Utility		250	150	180	625	950	1,300,000	470,000	
HEM-FIR									
Select Structural		1,400	925	150	405	1,500	1,600,000	580,000	
No.1 & Btr		1,100	725	150	405	1,350	1,500,000	550,000	
No.1	2" & wider	975	625	150	405	1,350	1,500,000	550,000	
No.2		850	525	150	405	1,300	1,300,000	470,000	
No.3		500	300	150	405	725	1,200,000	440,000	WCLIB
Stud	2" & wider	675	400	150	405	800	1,200,000	440,000	WWPA
Construction		975	600	150	405	1,550	1,300,000	470,000	
Standard	2" - 4" wide	550	325	150	405	1,300	1,200,000	440,000	
Utility		250	150	150	405	850	1,100,000	400,000	
HEM-FIR (NORTH)									
Select Structural		1,300	775	145	405	1,700	1,700,000	620,000	
No.1 & Btr	2" & wider	1,200	725	145	405	1,550	1,700,000	620,000	
No.1/No.2		1,000	575	145	405	1,450	1,600,000	580,000	
No.3		575	325	145	405	850	1,400,000	510,000	
Stud	2" & wider	775	450	145	405	925	1,400,000	510,000	NLGA
Construction		1,150	650	145	405	1,750	1,500,000	550,000	
Standard	2" - 4" wide	650	350	145	405	1,500	1,400,000	510,000	
Utility		300	175	145	405	975	1,300,000	470,000	

1. **LUMBER DIMENSIONS.** Tabulated design values are applicable to lumber that will be used under dry conditions such as in most covered structures. For 2" to 4" thick lumber the DRY dressed sizes shall be used (see Table 1A) regardless of the moisture content at the time of manufacture or use. In calculating design values, the natural gain in strength and stiffness that occurs as lumber dries has been taken into consideration as well as the reduction in size that occurs when unseasoned lumber shrinks. The gain in load carrying capacity due to increased strength and stiffness resulting from drying more than offsets the design effect of size reductions due to shrinkage.
2. **STRESS-RATED BOARDS.** Stress-rated boards of nominal 1", 1-¼" and 1-½" thickness, 2" and wider, of most species, are permitted to use the design values shown for Select Structural, No.1 & Btr, No.1, No.2, No.3, Stud, Construction, Standard, Utility, and Clear Structural grades as shown in the 2" to 4" thick categories herein, when graded in accordance with the stress-rated board provisions in the applicable grading rules. Information on stress-rated board grades applicable to the various species is available from the respective grading rules agencies. Information on additional design values may also be available from the respective grading rules agencies.
3. When individual species or species groups are combined, the design values to be used for the combination shall be the lowest design values for each individual species or species group for each design property.

Table 4.3.1 Applicability of Adjustment Factors for Sawn Lumber

		ASD only	ASD and LRFD										LRFD only		
		Load Duration Factor	Wet Service Factor	Temperature Factor	Beam Stability Factor	Size Factor	Flat Use Factor	Incising Factor	Repetitive Member Factor	Column Stability Factor	Buckling Stiffness Factor	Bearing Area Factor	Format Conversion Factor	Resistance Factor	Time Effect Factor
$F_b' = F_b$	x	C_D	C_M	C_t	C_L	C_F	C_{fu}	C_i	C_r	-	-	-	K_F	ϕ_b	λ
$F_t' = F_t$	x	C_D	C_M	C_t	-	C_F	-	C_i	-	-	-	-	K_F	ϕ_t	λ
$F_v' = F_v$	x	C_D	C_M	C_t	-	-	-	C_i	-	-	-	-	K_F	ϕ_v	λ
$F_{c\perp}' = F_{c\perp}$	x	-	C_M	C_t	-	-	-	C_i	-	-	-	C_b	K_F	ϕ_c	λ
$F_c' = F_c$	x	C_D	C_M	C_t	-	C_F	-	C_i	-	C_P	-	-	K_F	ϕ_c	λ
$E' = E$	x	-	C_M	C_t	-	-	-	C_i	-	-	-	-	-	-	-
$E_{min}' = E_{min}$	x	-	C_M	C_t	-	-	-	C_i	-	-	C_T	-	K_F	ϕ_s	-

Size Factor, C_F

Tabulated bending, tension, and compression parallel to grain design values for dimension lumber 2" to 4" thick shall be multiplied by the following size factors:

Size Factors, C_F

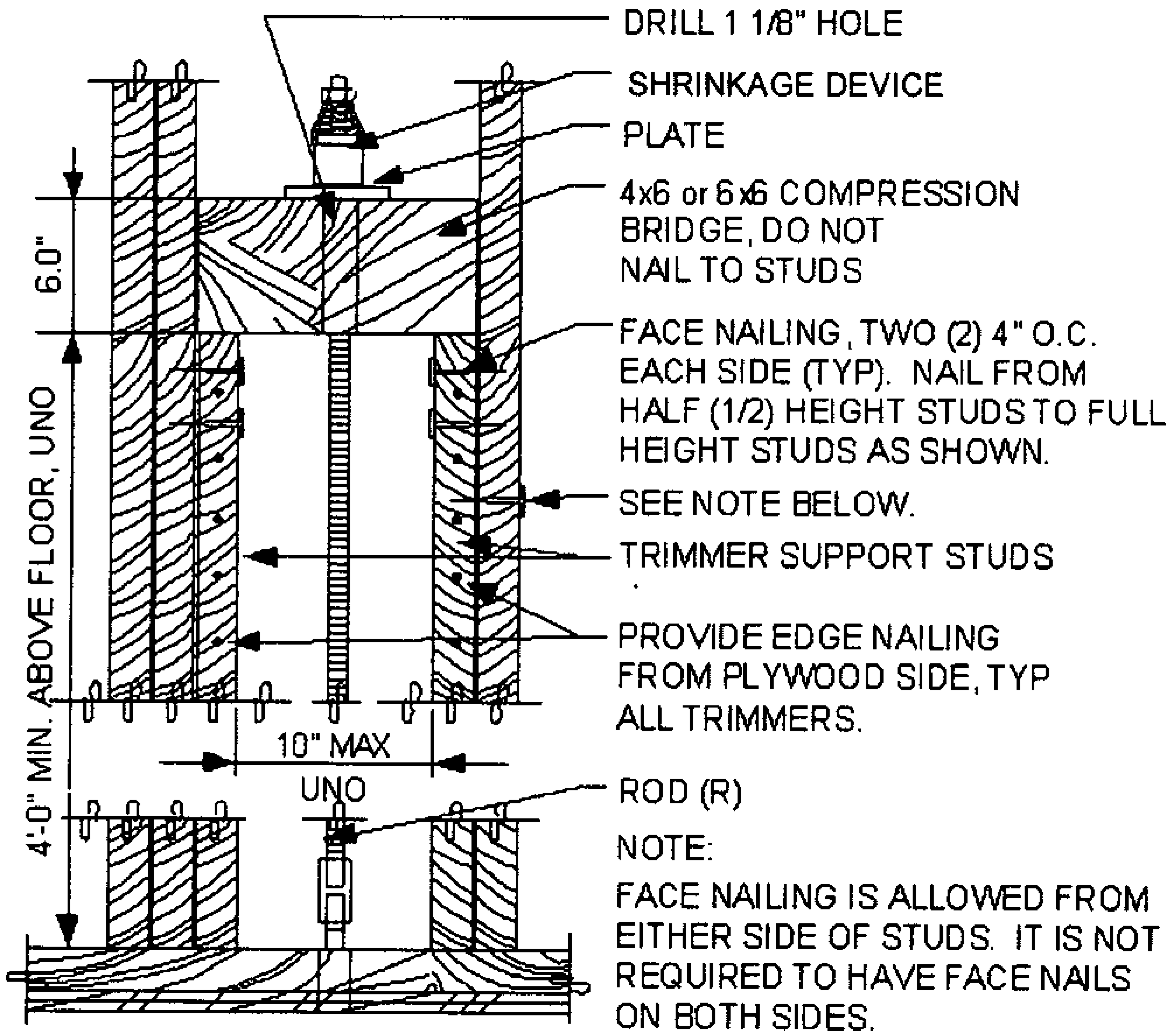
		F_b		F_t	F_c
		Thickness (breadth)			
Grades	Width (depth)	2" & 3"	4"		
Select Structural, No.1 & Btr, No.1, No.2, No.3	2", 3", & 4"	1.5	1.5	1.5	1.15
	5"	1.4	1.4	1.4	1.1
	6"	1.3	1.3	1.3	1.1
	8"	1.2	1.3	1.2	1.05
	10"	1.1	1.2	1.1	1.0
	12"	1.0	1.1	1.0	1.0
	14" & wider	0.9	1.0	0.9	0.9
Stud	2", 3", & 4"	1.1	1.1	1.1	1.05
	5" & 6"	1.0	1.0	1.0	1.0
	8" & wider	Use No.3 Grade tabulated design values and size factors			
Construction, Standard	2", 3", & 4"	1.0	1.0	1.0	1.0
Utility	4"	1.0	1.0	1.0	1.0
	2" & 3"	0.4	—	0.4	0.6

Earthbound System Compression Bridge and Support Trimmer Calculation

Summary of Compression Bridge Concept:
The "Compression Bridge" consists of 4x6 sawn lumber turned upright (or 6x6) and framed in the stud bay at each end of a shear wall. These bridges are utilized at the top floor of every holdown run in the Earthbound System. The 4x6 is framed in the wall similar to a header where it is supported by cripple studs. Depending on load, the minimum number of cripple studs is two, one at each end of the 4x6 bridge.

If the bearing load exceeds the maximum bearing pressure of the cripple studs peripendicular to grain of the floor plate, more studs can be added under the bridge. The outermost cripple studs are faced nailed two (2) nails on 4" o.c. to the adjacent full height stud members. The following example calculation will be based on **4'-6"** tall cripple studs in performing the face nail calculation. The Earthbound System also recommends these cripple studs receive nailing for redundancy from the sheathing side equivalent to required plywood edge nailing schedules for the shear wall. For this calculation, we will use 4" o.c. plywood edge nailing.

The Slackjack or Impasse Device is mounted at the top of the bridge resting on the Earthbound System bearing plates. The holdown load path is intended to transfer down via the bearing plate through the 4x6 bridge to the cripple studs with load transferring from the face nails into the full length studs.



COMPRESSION BRIDGE INSTALLATION

Objective: Calculate lumber and nailing capacities to support holdown load under the Shrinkage Device and bearing plate. We are using face nailing and diaphragm nailing to transfer holdown load back into wall:

Define Variables and Coefficients:

From Table 10.3.1 2005 NDS (attached at end of calculation), the following are Adjustments Factors for Corrections applicable in calculating nail and spike capacities (under Dowel-Type Fasteners)

$C_D := 1.33$;Load Duration Factor = 1.33 for seismic

$C_{D\_Nails} := 1.60$;Load Duration Factor = 1.6 for Nails in 2005 NDS.

$C_M := 1.0$;Wet Service Factor = 1.0 if dry conditions

$C_t := 1.0$;Temperature Factor = 1.0 if below 100 degrees

$C_\Delta := 1.0$;Geometry Factor = 1.0 unless you have a split ring or shear plate connection.

$C_{eg} := 1.0$;End Grain Factor = 1.0 if non end grain nailing application

$C_{di} := 1.0$;Diaphragm Factor = 1.0 if non diaphragm nailing application. 1.1 if diaphragm nailing

$C_{tn} := 1.0$;Toenail Factor = 1.0 if non toe nailing application

$Z := 93\text{lbf}$;Box Nail Shear Design values from 2005 NDS Table 11Q (attached at end of calc) using 1 1/4" side member thickness 10d nails (x 3 inches nail length) and Douglas Fir Larch lumber. Note: 10d entry is not present at 1 1/2" member, so nail value for 1 1/4" member is used at 93 lbf. Supplemental calculation from WWPA Wood-To-Wood Single Shear Connections is at the end of this document..

Calculate Shear Value of one FACE nail based on above adjustment factors:

$Z_{nail} := Z \cdot C_{D\_Nails} \cdot C_M \cdot C_t \cdot C_\Delta \cdot C_{eg} \cdot C_{di} \cdot C_{tn}$ $\qquad Z_{nail} = 148.8\,\text{lbf}$

Calculate Face Nailing Capacity based on two (2) nails on 4"o.c. rows and 4'-6" trimmer stud length:

$\text{StudHeight} := 4.5\text{ft}$;Typically Trimmer Stud Height is set at mid floor or 1/2 full length studs used for wall framing

$\text{NailRowSeperationOC} := 4.0\text{in}$

$$\text{NumberNailRows} := \left(\frac{\text{StudHeight} \cdot 12 \dfrac{\text{in}}{\text{ft}}}{\text{NailRowSeperationOC}}\right) - 1$$

;We subtract one row of nails for spacing and clearance to the bridge.

$\text{NumberNailRows} = 13$

$\text{NumberNailsPerRow} := 2$

$\text{NumberofRowArrays} := 2$

$\text{TotalFaceNailCapacity} := \text{NumberNailRows} \cdot \text{NumberNailsPerRow} \cdot \text{NumberofRowArrays} \cdot Z_{nail}$

$\text{TotalFaceNailCapacity} = 7440\,\text{lbf}$;This is (number of rows) x (2 nails per row) x (2 rows, one each side) x (nail capacity)

Nailing Capacity Summary: The above calculation is based on the cripple stud height used and the spacing between rows of nails. Note that the Earthbound System does recommend sheathing nailing to match plywood edge nailing schedules. The additional transfer from shear panel nails is calculated later in this document.

Calculate Cripple Stud Bearing Capacity: This is a calculation of the maximum capacity per stud bearing perpendicular to grain on the bottom plates:

$l_e := StudHeight \cdot \frac{12in}{1ft}$ $l_e = 54\,in$;Stud Height in inches

$d := 3.5in$;Stud Depth

$t := 1.5in$;Stud Thickess

$A := t \cdot d$;Stud Bearing Area

$A = 5.25\,in^2$;Note the effective stud bearing area for a 2x6 cripple stud will be based on a 2x4 (1.5 in x 3.5 in) because we specify a 4x6 bridge turned upwards, the effective stud bearing area will be the same for a 2x4 or 2x6.

$Fc_{perp} := 625psi$;From 2005 NDS Table 4A Douglas Fir Stud Grade = 625 psi

$StudBearingCapacity := A \cdot Fc_{perp}$

$StudBearingCapacity = 3281\,lbf$;NDS does not allow for Load Duration Factor greater than 1.0 to be applied to loads perpendicular to grain.

Calculate Trimmer Stud Vertical (Column Buckling) Capacity: This is a calculation of the maximum buckling or column capacity per stud. Calculations are based from 2005 NDS:

$Fc_{para} := 850psi$;Fc (parallel): Douglas Fir (stud grade) = 850 psi

$C_D := 1.333$;Load Duration Factor = 1.33 for seismic

$C_r := 1.00$;Repetitive Member Factor = 1.00

$C_F := 1.05$;Size Factor = 1.05, From 2005 NDS Table 4A for 2,3,4 inch width Stud Grade

$C_M := 1.0$;Wet Service Factor = 1.0, From 2005 NDS Table 4A, assume lumber is below 19% moisture content

$E := 1400000psi$;Modulus of Elasticity of wood, From 2005 NDS Table 4A: Douglas Fir Stud. Grade = 1,400,000 psi

$c := 0.80$;c = 0.8 for sawn lumber

$Adjusted\_Fc_{para} := Fc_{para} \cdot C_D \cdot C_F \cdot C_M$;Adjusted_Fc(para) is also known as F*c from NDS 2005 reference. Mathcad cannot show the asterisk in "F*c".

$Adjusted\_Fc_{para} = 1189.7\,psi$

$CoV_E := 0.25$;Coefficient of variation of E, CoV(E) = 0.25 for sawn lumber, 0.10 for glue lam lumber per NDS 2005 Appendix F.2.

$$E_{min} := 1.03 \cdot E \cdot \frac{(1 - 1.645 \cdot CoV_E)}{1.66}$$

$$E_{min} = 511432.2\,psi$$

;Equation D-4 in NDS 2005. Determine reference modulus of elasticity where:
E = Modulus of Elasticity
1.03 = adjustment factor to convert E to pure bending basis. Use 1.05 for structural glued laminated timber.
1.66 = factor of safety
CoV(E) = cofficient of varation in modulus of elasticity defined in NDS 2005 Appendix F.2.
Emin represents an approx 5% lower exclusion value on pure bending MOE, plus a factor of safety of 1.66.

$$F_{cE} := \frac{(0.822 \cdot E_{min})}{\left(\frac{l_e}{d}\right)^2} \qquad F_{cE} = 1766\,psi$$

;Equation H-2 in NDS 2005: The 0.822 factor in Equation H-2 represents the Euler buckling coefficient for rectangular columns calulated as $\pi^2/12$. MOE for beam and column stability Emin in H-2 represents an approximate 5% lower exclusion value on pure bending MOE, plus a 1.66 factor of safety (See NDS 2005 D.4.)

We effectively removed the 1.66 factor of safety from Equation H-2 by dividing Emin by 1.66 used in Equation D-4 above.

The maximum design value Fc in psi of cross-sectional area of individual members of columns shall be determined in accordance with the following formula. (Taken from 2005 NDS Equation 3.7-1).

$$F_c := Adjusted\_Fc_{para} \cdot \left[\frac{\left[1 + \left(\frac{F_{cE}}{Adjusted\_Fc_{para}}\right)\right]}{2 \cdot c} - \sqrt{\left[\frac{\left[1 + \left(\frac{F_{cE}}{Adjusted\_Fc_{para}}\right)\right]}{2 \cdot c}\right]^2 - \left(\frac{\frac{F_{cE}}{Adjusted\_Fc_{para}}}{c}\right)} \right]$$

$$F_c = 960.6\,psi$$

The vertical capacity of this column if design value Fc multiplied by the bearing area of the stud, in this case a 2x4:

$d = 3.5\,in \qquad t = 1.5\,in$

$$StudVerticalCapacity := d \cdot t \cdot F_c$$

$$StudVerticalCapacity = 5043\,lbf$$

$StudBearingCapacity = 3281\,lbf$;From above bearing calculations, based on DF at Fc(perp)=625 psi.

The allowable stud capacity should be the <u>lower</u> value between Vertical Capacity and Bearing Capacity:

$$AllowStudCapacity := if(StudBearingCapacity > StudVerticalCapacity, StudVerticalCapacity, StudBearingCapacity)$$

;The above formula is a conditional statement inherent to Mathcad to use the lower capacity as the final value.

$$AllowStudCapacity = 3281\,lbf$$

Calculate Shear Value of 10d nail assuming 1/2" Plywood:

$Z := 70\text{lbf}$;Box Nail Shear Design values from 2005 NDS Table 11Q (attached at end of calc) using 1/2" side member thickness 10d nails (x 3 inches nail length) and Douglas Fir Larch lumber.

$C_{di} := 1.1$;Cdi is 1.1 for diaphragm nailing.

$Z_{nail} := Z \cdot C_{D\_Nails} \cdot C_M \cdot C_t \cdot C_\Delta \cdot C_{eg} \cdot C_{di} \cdot C_{tn}$;Incorporate all adjustment factors including C(D_Nails) = 1.60

$Z_{nail} = 123.2\,\text{lbf}$

Calculate Plywood Side Nailing Capacity based on 4"o.c. and 6'-0" trimmer stud length:

$\text{StudHeight} := 4.5\text{ft}$

$\text{NailRowSeperationOC} := 4.0\text{in}$

$$\text{NumberNailsPerStud} := \left(\frac{\text{StudHeight}\cdot 12\frac{\text{in}}{\text{ft}}}{\text{NailRowSeperationOC}}\right) - 1$$

$\text{NumberNailsPerStud} = 12.5$

$\text{NumberStuds} := 4$

$\text{TotalPlywoodNailCapacity} := \text{NumberNailsPerStud}\cdot\text{NumberStuds}\cdot Z_{nail}$

$\text{TotalPlywoodNailCapacity} = 6160\,\text{lbf}$

$\text{TotalNailCapacity} := \text{TotalPlywoodNailCapacity} + \text{TotalFaceNailCapacity}$; See Page 2 for Face Nail Calc...

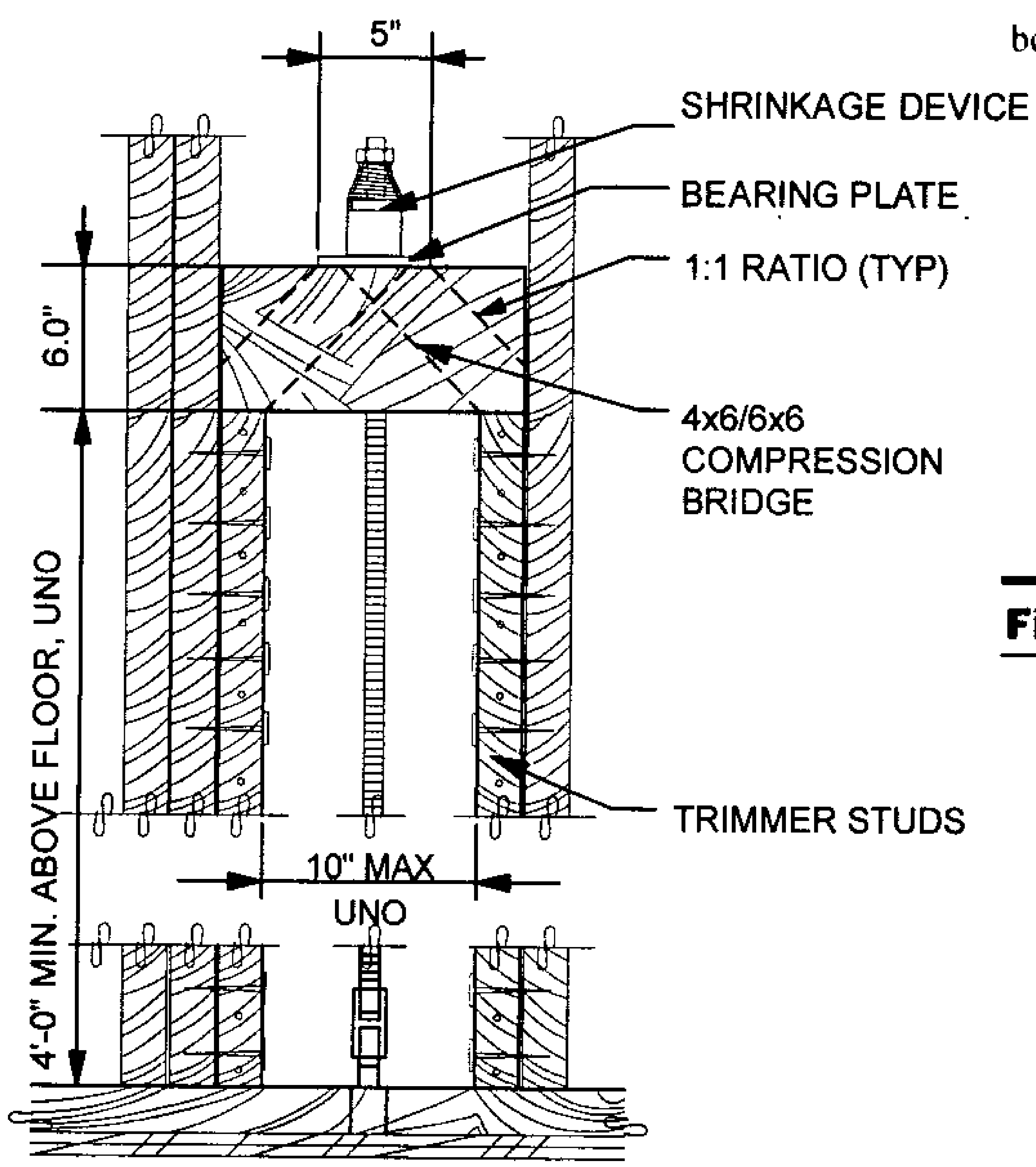
$\text{TotalNailCapacity} = 13600\,\text{lbf}$

Nailing Capacity Summary: The above calculation is based on the trimmer stud height used and the spacing between rows of nails. Note that the Earthbound System does require 4" o.c. sheathing nailing on all trimmer members and 4" o.c. face nailing of the outermost trimmer to the full height stud members.

Calculation Summary:
For a given bearing load underneath the Impasse Device, the required amount of cripple studs under the bridge is an even number of multiples of the above Allowable Stud Capacity. We use even numbers to balance the supporting under the 4x6 or 6x6 bridge.

This bearing load may be greater that the actual uplift load required for the top floor due to assignment of loads upward in the building using the threaded rod system. The face nailing portion of the cripple studs need to exist to transfer shear load that occurs above the bridge back underneath the bridge and into the threaded rod. The loads required for panel nailing calculations will be the uplift load for that floor only. The additional studs required are to take up the bearing loads from loads transferred from below.

Examine Shear at Bridge:
The figure at the left shows a worst case scenario of a bridge trimmer with our smallest plate (Part "P8" 3 1/4 x 5 x 3/8) and only two (2) trimmers total. By inspection we are within a 1:1 requirement per 2005 NDS 3.4.3 to ignore shear force. If the load under the shrinkage device exceeds 8,000 lbs, a larger bearing plate will used. Depending on the lumber species (Hem vs Doug Fir) of the trimmers and floor plates, we would also increase the number of trimmer members under the bridge.



3.4.3 Shear Design

3.4.3.1 When calculating the shear force, V, in bending members:

(a) For beams supported by full bearing on one surface and loads applied to the opposite surface, uniformly distributed loads within a distance from supports equal to the depth of the bending member, d, shall be permitted to be ignored. For beams supported by full bearing on one surface and loads applied to the opposite surface, concentrated loads within a distance, d, from supports shall be permitted to be multiplied by x/d where x is the distance from the beam support face to the load (see Figure 3C).

Figure 3C Shear at Supports

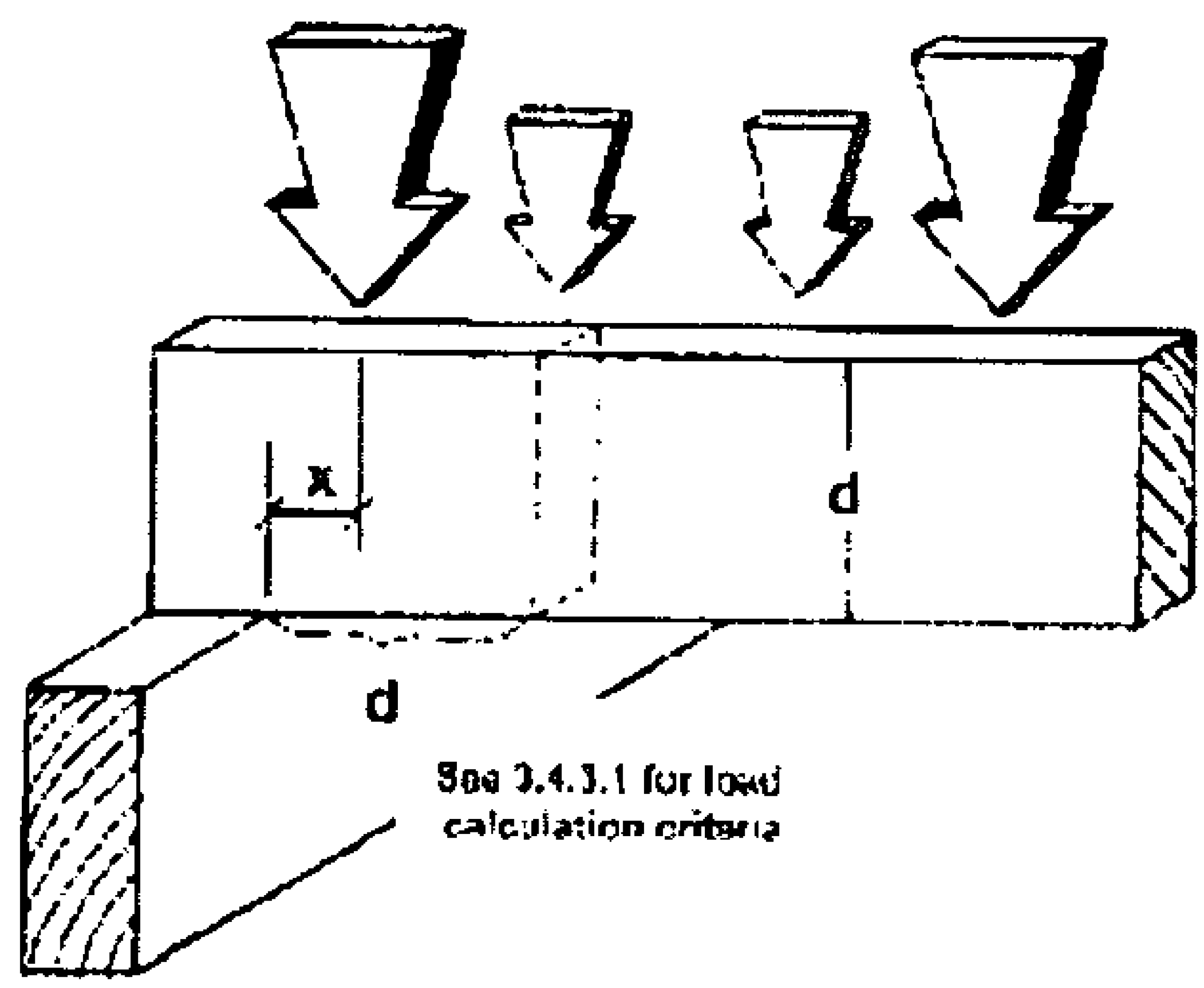


Table 10.3.1 Applicability of Adjustment Factors for Connections

		ASD Only	ASD and LRFD										LRFD Only		
		Load Duration Factor[1]	Wet Service Factor[2]	Temperature Factor	Group Action Factor	Geometry Factor[3]	Penetration Depth Factor[3]	End Grain Factor[3]	Metal Side Plate Factor[3]	Diaphragm Factor[3]	Toe-Nail Factor[3]		Format Conversion Factor	Resistance Factor	Time Effect Factor
Lateral Loads															
Dowel-type Fasteners	$Z' = Z$ x	C_D	C_M	C_t	C_g	C_Δ	-	C_{eg}	-	C_{di}	C_{tn}		K_F	ϕ_z	λ
Split Ring and Shear Plate Connectors	$P' = P$ x	C_D	C_M	C_t	C_g	C_Δ	C_d	-	C_{st}	-	-		K_F	ϕ_z	λ
	$Q' = Q$ x	C_D	C_M	C_t	C_g	C_Δ	C_d	-	-	-	-		K_F	ϕ_z	λ
Timber Rivets	$P' = P$ x	C_D[4]	C_M	C_t	-	-	-	-	C_{st}[5]	-	-		K_F	ϕ_z	λ
	$Q' = Q$ x	C_D[4]	C_M	C_t	-	C_Δ[6]	-	-	C_{st}[5]	-	-		K_F	ϕ_z	λ
Metal Plate Connectors	$Z' = Z$ x	C_D	C_M	C_t	-	-	-	-	-	-	-		K_F	ϕ_z	λ
Spike Grids	$Z' = Z$ x	C_D	C_M	C_t	-	C_Δ	-	-	-	-	-		K_F	ϕ_z	λ
Withdrawal Loads															
Nails, spikes, lag screws, wood screws, and drift pins	$W' = W$ x	C_D	C_M	C_t	-	-	-	C_{eg}	-	-	C_{tn}		K_F	ϕ_z	λ

1. The load duration factor, C_D, shall not exceed 1.6 for connections (see 10.3.2).
2. The wet service factor, C_M, shall not apply to toe-nails loaded in withdrawal (see 11.5.4.1).
3. Specific information concerning geometry factors C_Δ, penetration depth factors C_d, end grain factors, C_{eg}, metal side plate factors, C_{st}, diaphragm factors, C_{di}, and toe-nail factors, C_{tn}, is provided in Chapters 11, 12, and 13.
4. The load duration factor, C_D, is only applied when wood capacity (P_w, Q_w) controls (see Chapter 13).
5. The metal side plate factor, C_{st}, is only applied when rivet capacity (P_r, Q_r) controls (see Chapter 13).
6. The geometry factor, C_Δ, is only applied when wood capacity, Q_w, controls (see Chapter 13).

NAILS

Table 11Q COMMON WIRE, BOX, or SINKER NAILS: Reference Lateral Design Values (Z) for Single Shear (two member) Connections[1,2,3,4]

with wood structural panel side members with an effective G = 0.50

Side Member Thickness t_s in.	Nail Diameter D in.	Common Wire Nail (Pennyweight)	Box Nail (Pennyweight)	Sinker Nail (Pennyweight)	G=0.67 Red Oak lbs.	G=0.55 Mixed Maple Southern Pine lbs.	G=0.5 Douglas Fir-Larch lbs.	G=0.49 Douglas Fir-Larch (N) lbs.	G=0.46 Douglas Fir(S) Hem-Fir(N) lbs.	G=0.43 Hem-Fir lbs.	G=0.42 Spruce-Pine-Fir lbs.	G=0.37 Redwood (open grain) lbs.	G=0.36 Eastern Softwoods Spruce-Pine-Fir(S) Western Cedars Western Woods lbs.	G=0.35 Northern Species lbs.
3/8	0.099		6d	7d	47	45	43	43	42	40	40	38	37	37
	0.113	6d	8d	8d	60	66	64	54	62	61	50	47	47	45
	0.120			10d	67	62	60	60	58	58	56	52	52	51
	0.128		10d		75	70	68	67	65	63	63	59	58	57
	0.131	8d			78	73	71	70	68	66	65	61	61	60
	0.135		16d	12d	83	78	75	74	72	70	69	65	64	63
	0.148	10d	20d	16d	94	88	85	84	82	79	78	73	72	71
7/16	0.099		6d	7d	50	47	45	45	44	43	42	40	40	39
	0.113	6d	8d	8d	62	58	56	56	56	53	52	49	49	48
	0.120			10d	69	65	63	62	60	59	53	55	54	53
	0.128		10d		77	72	70	69	68	66	65	61	60	59
	0.131	8d			80	75	73	72	70	68	67	63	63	62
	0.135		16d	12d	85	80	77	76	74	72	71	67	66	65
	0.148	10d	20d	16d	96	90	87	86	84	81	80	76	75	73
	0.162	16d	40d		114	106	102	101	99	96	95	89	88	86
15/32	0.099		6d	7d	51	48	47	46	45	44	44	41	41	40
	0.113	6d	8d	8d	64	60	58	57	56	54	54	51	50	49
	0.120			10d	70	66	64	63	62	60	59	56	55	54
	0.128		10d		78	74	71	71	69	67	66	62	62	61
	0.131	8d			82	77	74	73	72	70	69	65	64	63
	0.135		16d	12d	86	81	78	77	76	73	72	68	67	66
	0.148	10d	20d	16d	97	91	88	87	86	83	82	77	76	75
	0.162	16d	40d		115	108	104	103	100	97	96	90	89	88
19/32	0.099		6d	7d	58	55	53	53	51	50	50	47	46	46
	0.113	6d	8d	8d	70	66	64	64	62	61	60	57	56	55
	0.120			10d	77	73	70	70	68	66	66	62	61	60
	0.128		10d		85	80	78	77	75	73	72	68	68	67
	0.131	8d			88	83	80	80	78	76	75	71	70	69
	0.135		16d	12d	93	87	84	84	82	79	79	74	73	72
	0.148	10d	20d	16d	104	98	96	94	92	89	88	83	82	81
	0.162	16d	40d		121	114	110	109	107	103	102	98	95	94
	0.177			20d	137	128	124	123	120	116	115	108	107	105
	0.192	20d		30d	142	133	128	127	124	120	119	112	111	109
23/32	0.099		6d	7d	62	58	55	55	53	51	51	47	47	46
	0.113	6d	8d	8d	78	74	72	71	69	67	66	62	61	60
	0.120			10d	85	80	78	77	76	73	73	69	68	67
	0.128		10d		93	88	85	85	83	80	80	75	75	74
	0.131	8d			96	91	88	87	86	83	82	78	77	76
	0.135		16d	12d	101	95	92	91	89	87	86	81	81	79
	0.148	10d	20d	16d	113	106	103	102	100	97	96	91	90	89
	0.162	16d	40d		130	122	118	117	115	111	110	104	103	102
	0.177			20d	145	137	132	131	128	124	123	116	115	113
	0.192	20d		30d	150	141	136	135	132	128	127	120	118	116
1	0.099[4]		6d	7d	62	58	56	55	53	51	51	47	47	46
	0.113[4]	6d[4]	8d	8d	81	75	72	71	69	67	66	62	61	60
	0.120[4]			10d	92	86	81	81	78	76	75	69	69	67
	0.128		10d		104	97	93	92	89	86	85	79	78	77
	0.131	8d			109	101	97	96	93	90	89	83	82	80
	0.135		16d	12d	116	108	103	102	99	96	94	88	87	85
	0.148	10d	20d	16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d	40d		154	146	141	139	136	131	129	120	119	116
	0.177			20d	169	160	155	154	151	146	145	137	136	134
	0.192	20d		30d	174	164	159	158	155	150	149	141	140	138
1-1/8	0.128[5]		10d		104	97	93	92	89	86	85	79	78	77
	0.131[5]	8d			109	101	97	96	93	90	89	83	82	80
	0.135[5]		16d	12d	116	108	103	102	99	96	94	88	87	85
	0.148[5]	10d	20d	16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d	40d		158	147	141	139	136	131	129	120	119	116
	0.177			20d	181	170	163	161	157	151	149	139	137	135
	0.192	20d		30d	186	176	170	168	163	157	155	145	143	140
1-1/4	0.148	10d	20d	16d	132	123	118	116	113	109	108	100	99	97
	0.162	16d	40d		158	147	141	139	136	131	129	120	119	116
	0.177			20d	183	170	163	161	157	151	149	139	137	135
	0.192	20d		30d	191	177	170	168	163	157	156	146	143	140

1. Tabulated lateral design values (Z) shall be multiplied by all applicable adjustment factors (see Table 10.3.1).
2. Tabulated lateral design values (Z) are for common wire, box, and sinker nails (see Appendix L) inserted in side grain with nail axis perpendicular to wood fibers; minimum nail penetration, p, into the main member equal to 10D and nail bending yield strengths (F_{yb}): F_{yb} = 100,000 psi for 0.099" ≤ D ≤ 0.142"; F_{yb} = 90,000 psi for 0.142" < D ≤ 0.177"; F_{yb} = 80,000 psi for 0.177" < D ≤ 0.236"
3. When 6D ≤ p < 10D, tabulated lateral design values (Z) shall be multiplied by p/10D.
4. Nail length is insufficient to provide 10D penetration. Tabulated lateral design values (Z) shall be adjusted per footnote 3.
5. Tabulated lateral design values (Z) shall be permitted to apply for greater side member thickness when adjusted per footnote 3.

Version: 2.0 Designed on: August 20, 2008

Wood-to-Wood Single Shear Connections

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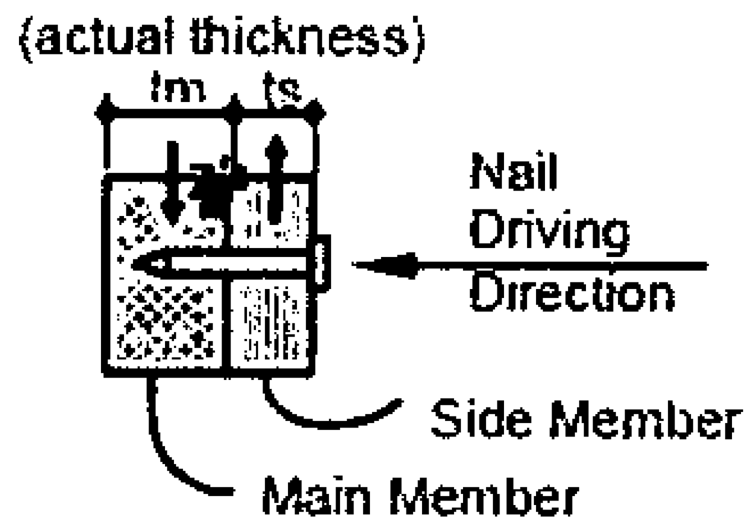

Main Member Species	Douglas Fir-Larch
Main Member Thickness (tm ")	1 1/2
Side Member Species	Douglas Fir-Larch
Side Member Thickness (ts ")	1 1/2
Loading Type	Seismic Load
End Grain Condition?	No

Mode

Open Detailed Calculation Sheet

Type of Connector

- [x] Box Nail
- [ ] Common Wire Nail
- [ ] Sinker Nail
- [ ] Bolt
- [ ] Wood Screw
- [ ] Lag Screw

Connector Size		Length (in)		Shear Capacity		Controlling Mode
10d	x	3	=	148	lb each	MODE IV

Version: 2.0 Designed on: August 20, 2008

Wood-to-Wood Single Shear Connections

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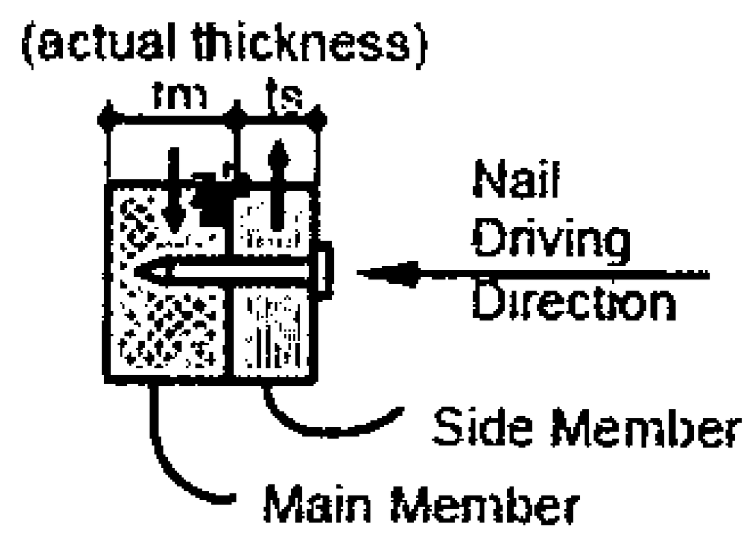
How to Enter Data Home Print Order Pro Version

Developed by: Forum Engineers



Main Member Species	Douglas Fir-Larch
Main Member Thickness (tm ")	3 1/2
Side Member Species	Plywood (Str. 1 or Marine Gr.)
Side Member Thickness (ts ")	7/16
Loading Type	Seismic Load
End Grain Condition?	No

Mode

Open Detailed Calculation Sheet

Type of Connector

- [x] Box Nail
- [ ] Common Wire Nail
- [ ] Sinker Nail
- [ ] Bolt
- [ ] Wood Screw
- [ ] Lag Screw

Connector Size		Length (in)		Shear Capacity		Controlling Mode
10d	x	3	=	112	lb each	MODE IIIs

NOTE: THIS CALCULATION MUST INCLUDE Cdl = 1.1 FOR DIAPHRAGM FACTOR. THEREFORE 112 LBS x 1.1 = 123 lbs PER SHEAR NAIL.

Appendix A
Weld Anchor Calculations

Earthbound Holdown System Welded Coupler Calculations

Objective: Find a welded coupler to steel beam connection able to handle 1/2 inch diameter A36/A307 Threaded Rod. Calculate the welding requirements for welding a round cylindrical coupler to an existing W Flange in the field to connect a Earthbound System Holdown run. Use 1.000" diameter Coupler for this calculation check.

Determine Rod Allowable Load Given Rod Diameter Size: Calculate threaded rod capacity in accordance to AISC 13th Edition from a given rod size diameter below.

$RodDia := 0.500 \cdot in$; Provide nominal rod diameter

$n := \frac{13}{in}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.08 \cdot in$; To calculate rod stress area, define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (RodDia - 0.938194 \cdot \rho)^2$ $\quad At = 0.144 \cdot in^2$ $\quad Ab := \frac{\pi}{4} \cdot RodDia^2$ $\quad Ab = 0.2 \cdot in^2$

$Fu := 60000 \cdot psi$

$Fy := 43000 \cdot psi$

; Define ultimate and yield strength of threaded rod material. In this case ASTM A36/A307.
For reference A307 standard strength rod: Fy=43ksi, Fu=60ksi.
For reference A449 high strength rod: Fy=105ksi, Fu=120ksi.

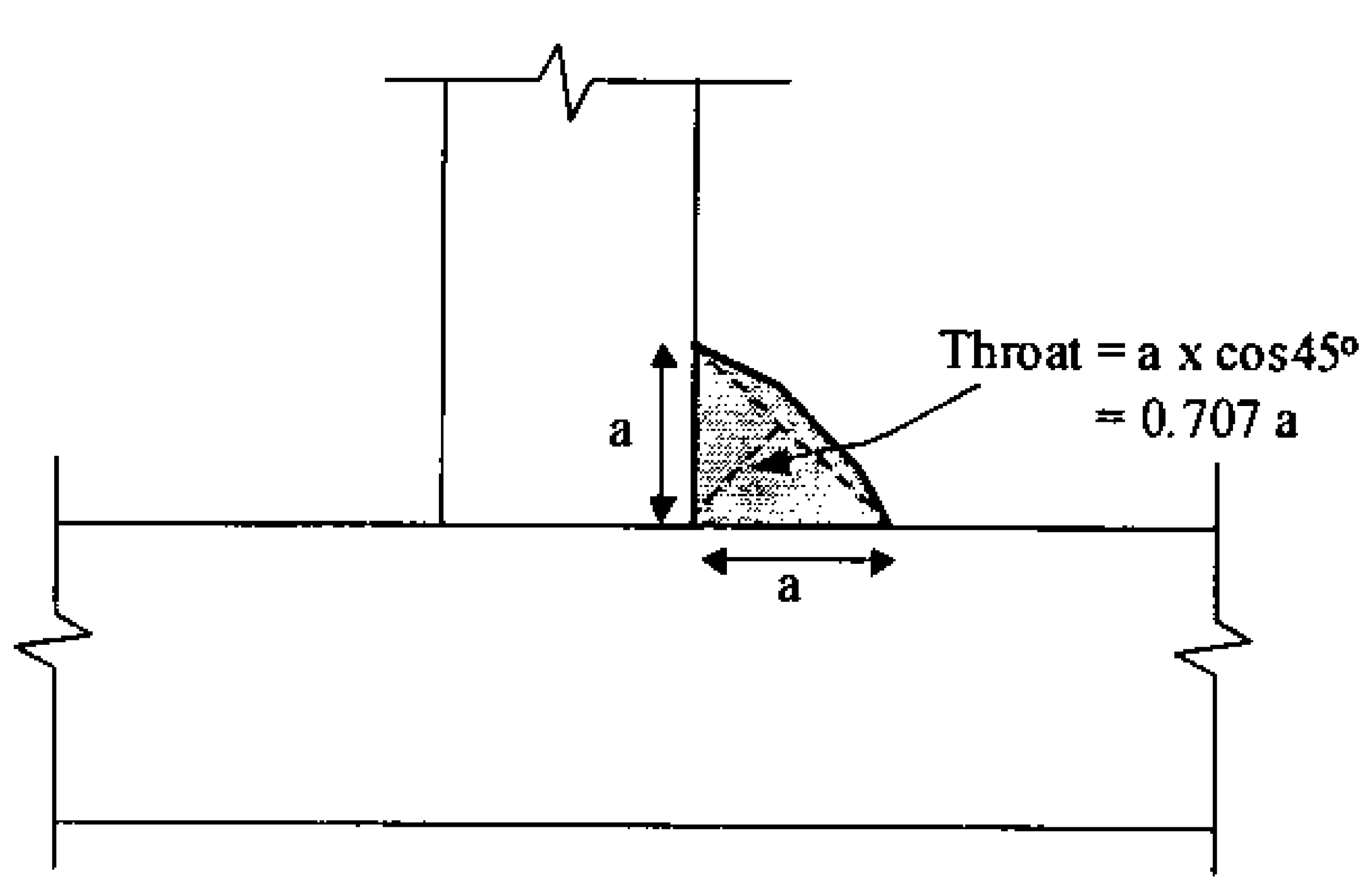
$Fnt := 0.75 \cdot Fu \cdot At$; Equation J3-1 and Table J3-2.

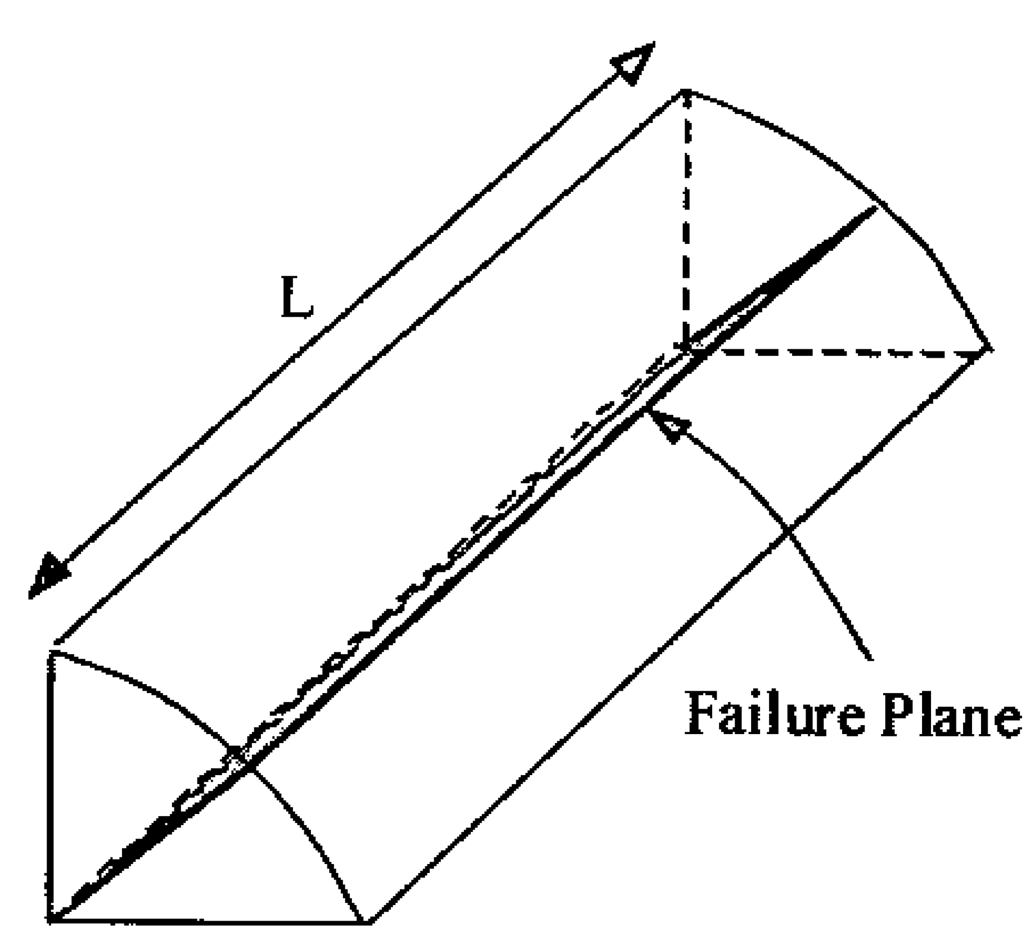
$Fnt = 6469.15 \cdot lbf$; Rod Strength in LRFD

$T := 0.7 \cdot Fnt$ $\quad T = 4528\, lbf$;Per ASCE 7, we convert LRFD to ASD using 0.7.

Analyze Weld Design:

A fillet weld can be loaded in any direction in shear, compression, or tension. However, it always **<u>fails in *shear*</u>**. The shear failure of the fillet weld occurs along a plane through the throat of the weld, as shown in the Figure below:





Determine Weld Capacity given Weld Thickness and Weld Length for Coupler Connection:
Per AISC Table J2-5 for fillet welds, use Equations J-4 for Base Metal check and J2.2a for Weld Calculation. The following segment is taken from AISC 360 13th Edition.

> Alternatively, for *fillet welds* loaded in-plane the *design strength*, ϕR_n and the *allowable strength*, R_n/Ω, of welds is permitted to be determined as follows:
>
> $$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$
>
> (a) For a linear weld group loaded in-plane through the center of gravity
>
> $$R_n = F_w A_w \tag{J2-4}$$
>
> where
>
> $$F_w = 0.60 F_{EXX}\left(1.0 + 0.50 \sin^{1.5}\theta\right) \tag{J2-5}$$
>
> and
>
> F_{EXX} = electrode classification number, ksi (MPa)
> θ = angle of loading measured from the weld longitudinal axis, degrees
> A_w = effective area of the weld, in.^{2} (mm^2)

$\Omega := 2.00$; Define Ω (ASD) per AISC 13th Table J2-5

$\theta := 90°$ $\quad FEXX := 70\cdot ksi$; Define θ and FEXX electrode strength

$a := \frac{3}{16}\cdot in$; Define Fillet Weld Size. Per AISC Table J2.4, if the material thickness of steel beam member is greater than 3/4", use 5/16" Fillet Weld Size.

$Throat := a\cdot\cos(45°)$ $\quad Throat = 0.133\cdot in$; Calculate Throat Thickness per Sketch above

$Rn := 0.60\cdot FEXX\cdot\left(1.0 + 0.50\cdot\sin(\theta)^{1.5}\right)\cdot Throat$ $\quad Rn = 8353\cdot\frac{lbf}{in}$; Based on 3/16" fillet weld

$CouplerDia := 1.000\cdot in$; Define Coupler Diameter

$WeldLength := \pi\cdot CouplerDia$ $\quad WeldLength = 3.142\cdot in$; Calc Weld Length by using Circumference of Coupler.

$WeldCapacity := \frac{Rn\cdot WeldLength}{\Omega}$ $\quad WeldCapacity = 13120\, lbf$; Calc ASD Weld Capacity

; Since WeldCapacity > Tension Force (T), use 3/16" Fillet E70xx for 1.00 inch diameter coupler is OK.

Check Base Metal (Coupler) Tensile Strength.
Thickness of base metal = (CouplerDia - RodDia) / 2

$\text{Thickness} := \dfrac{\text{CouplerDia} - \text{RodDia}}{2}$ $\qquad$ $\text{Thickness} = 0.25 \cdot \text{in}$

$\text{CouplerArea} := \dfrac{\pi \cdot \text{CouplerDia}^2}{4}$ $\qquad$ $\text{RodArea} := \dfrac{\pi \cdot \text{RodDia}^2}{4}$; We use Nominal Rod Area to be conservative.

$\text{TensileArea} := \text{CouplerArea} - \text{RodArea}$ $\qquad$ $\text{TensileArea} = 0.589 \cdot \text{in}^2$

$\text{Coupler\_Fy} := 53.7 \cdot \text{ksi}$

$\text{Coupler\_Fu} := 63.8 \cdot \text{ksi}$

; Define Properties of AISI 1018 Steel (weldable!)

Strength of Elements in Tension

The *design strength*, ϕR_n, and the *allowable strength*, R_n/Ω, of affected and connecting elements loaded in tension shall be the lower value obtained according to the *limit states* of *tensile yielding* and *tensile rupture*.

(a) For tensile yielding of connecting elements:

$$R_n = F_y A_g \tag{J4-1}$$

$$\phi = 0.90\,(\text{LRFD}) \qquad \Omega = 1.67\,(\text{ASD})$$

(b) For tensile rupture of connecting elements:

$$R_n = F_u A_e \tag{J4-2}$$

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

where

A_e = *effective net area* as defined in Section D3.3, in.^{2} (mm^2); for bolted *splice* plates, $A_e = A_n \le 0.85A_g$

Check Coupler Strength via Equation J4-1: $\Omega := 1.67$

$\text{Rn} := \text{Coupler\_Fy} \cdot \text{TensileArea}$ $\qquad$ $\text{CouplerASD} := \dfrac{\text{Rn}}{\Omega}$ $\qquad$ $\text{CouplerASD} = 18941.26\,\text{lbf}$

; OK > Tension Force (T)

Check Coupler Strength via Equation J4-2:

$\text{MinCouplerStrength} := 1.25\text{Fy} \cdot \text{Ab}$ $\qquad$ $\text{MinCouplerStrength} = 10554\,\text{lbf}$

; Determine Minimum Coupler Strength based upon 125% of threaded rod yield strength (Fy).

$\phi := 0.75$

$\phi\text{Rn} := \phi \cdot \text{Coupler\_Fu} \cdot \text{TensileArea}$ $\qquad$ $\phi\text{Rn} = 28186\,\text{lbf}$; OK > MinCouplerStrength

Calculate Minimum Thread Engagement Length: Coupler thread should be 1.25 times stronger than the rod yield, therefore it is necessary for the shear area of the threaded feature be at least 2.5 times the tensile area. (Assuming the threaded feature is of the identical material). Formula is based on BS EN ISO 898.

First we must solve for nominal Stress Area below:

In BS EN ISO 898-1 the nominal stress area is defined as

$$A_t\,\text{nom}\ (A_s \text{ in ISO 898}) = \frac{\pi}{4}\left(\frac{d_2+d_3}{2}\right)^2$$

D= Nominal screw diameter

d_2 = basic pitch dia = D - 0.75 H

d_3 = minor dia = d_1 - H / 6

d_1 = basic minor diameter = D - 1.25 H

H =The height of the triangle on which the thread is based = 0.866025 x p.

$$A_t\,\text{nom} = \frac{\pi}{4}\left(\frac{D - 0.75 \times 0.866025 \times p + D - 1.25 \times 0.866025 \times p - 1/6 \times 0.866025 \times p}{2}\right)^2$$

$$A_t\,\text{nom} = \frac{\pi}{4}\left(D - 0.938194 \cdot p\right)^2$$

$D := \text{RodDia}$ $\qquad D = 0.5 \cdot \text{in}$

$n := \frac{13}{\text{in}}$ $\qquad \rho := \frac{1}{n}$ $\qquad \rho = 0.08 \cdot \text{in}$

; Reference Rod Diameter from Above and define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (D - 0.938194 \cdot \rho)^2$ $\qquad At = 0.144 \cdot \text{in}^2$

Solve for Engagement Length which is 2.0 times the tensile area:

$Le := \frac{2.0 \cdot At}{0.5 \cdot \pi \cdot (D - 0.64952 \cdot \rho)}$ $\qquad Le = 0.407 \cdot \text{in}$

Threaded Fastener Strength Ratio: The previous formula for Le was based upon the male and female thread materials have the same strength. If the Female Strength is lower, i.e. J as calculated below is greater than one (1), then the length of engagement must be increased to prevent the female thread stripping.

$$J = \frac{\text{Tensile strength of external thread material (screw)}}{\text{Tensile strength of internal thread material (hole)}}$$

$Fy = 43000\,psi$

$J := \frac{Fy}{Coupler\_Fy}$ $\quad J = 0.801$; Fy = Rod yield from above.

$Le2 := J \cdot Le$ $\quad Le2 = 0.326 \cdot in$; Final min. thread length or height of coupler.

Conclusion: We have checked the following four parameters and have shown that we exceed the required tension load of the rod.. $T = 4528.41\,lbf$

1) Weld Strength. $WeldCapacity = 13120.39\,lbf$

2) Coupler Tension Strength. $MinCouplerStrength = 10554\,lbf$ $\quad \phi Rn = 28186\,lbf$

3) Thread Engagement. $Le2 = 0.326 \cdot in$; We will use a 1:1 ratio coupler of the coupler height = rod diameter which will exceed the minimum Le2 requirement.

The final coupler will be a 1.000 inch dia x 1/2 inch tall coupler tapped for 1/2" dia rod UNC with 3/16" Fillet E70xx.

Earthbound Holdown System Welded Coupler Calculations

Objective: Find a welded coupler to steel beam connection able to handle 5/8 inch diameter A36/A307 Threaded Rod. Calculate the welding requirements for welding a round cylindrical coupler to an existing W Flange in the field to connect a Earthbound System Holdown run. Use 1.375" diameter Coupler for this calculation check.

Determine Rod Allowable Load Given Rod Diameter Size: Calculate threaded rod capacity in accordance to AISC 13th Edition from a given rod size diameter below.

$RodDia := 0.625 \cdot in$; Provide nominal rod diameter

$n := \frac{11}{in}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.09 \cdot in$; To calculate rod stress area, define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (RodDia - 0.938194 \cdot \rho)^2$ $\quad At = 0.229 \cdot in^2$ $\quad Ab := \frac{\pi}{4} \cdot RodDia^2$ $\quad Ab = 0.31 \cdot in^2$

$Fu := 60000 \cdot psi$

$Fy := 43000 \cdot psi$

; Define ultimate and yield strength of threaded rod material. In this case ASTM A36/A307.
For reference A307 standard strength rod: Fy=43ksi, Fu=60ksi.
For reference A449 high strength rod: Fy=105ksi, Fu=120ksi.

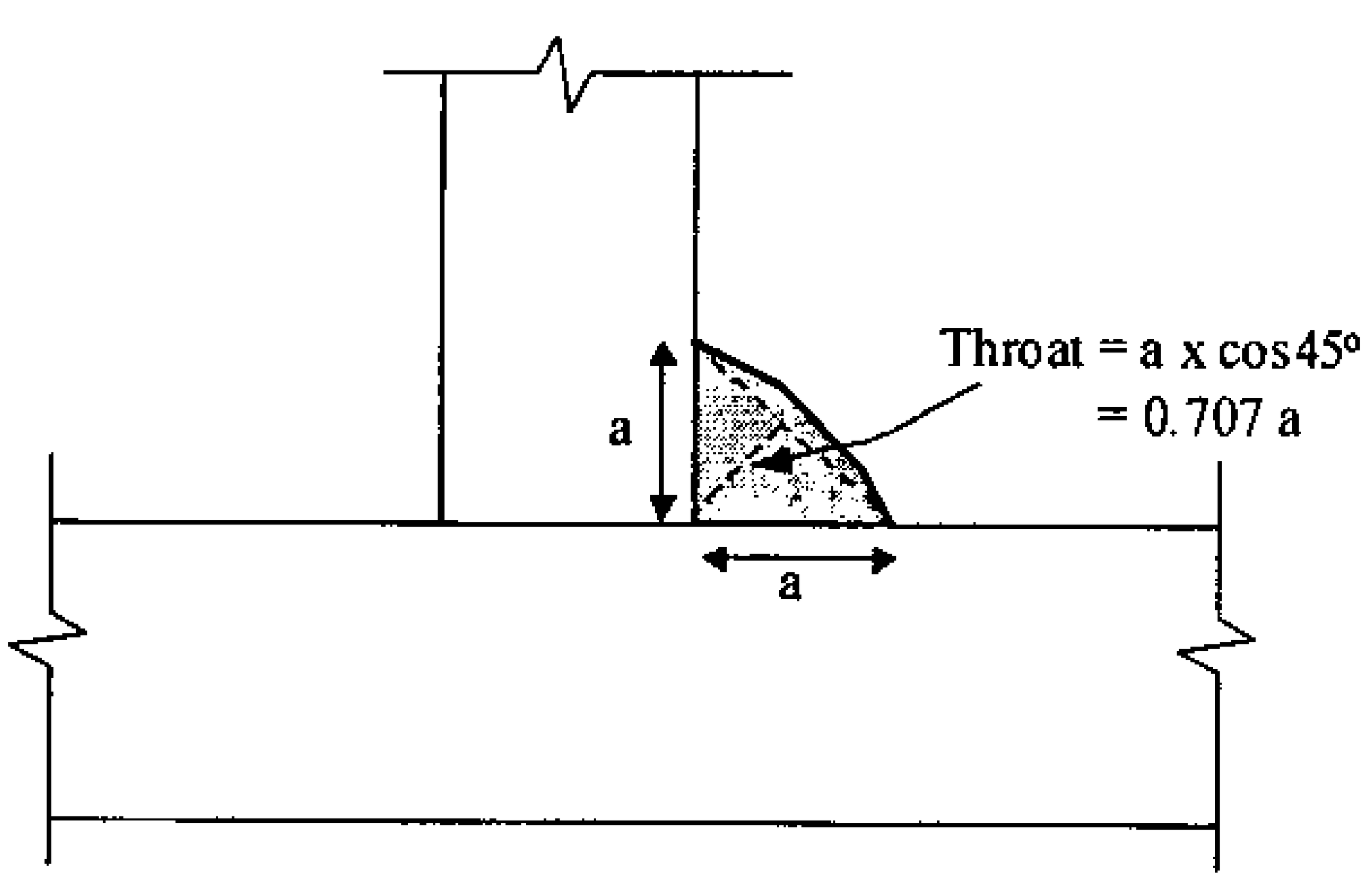
$Fnt := 0.75 \cdot Fu \cdot At$; Equation J3-1 and Table J3-2.

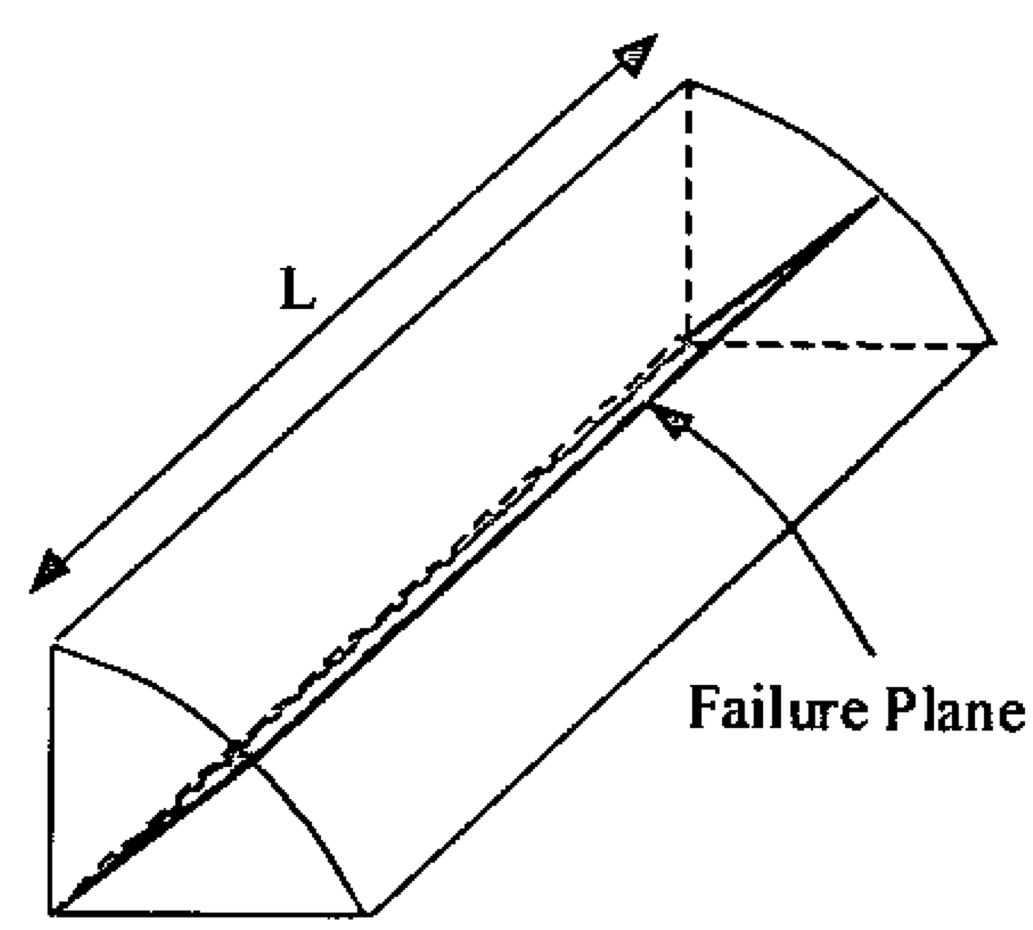
$Fnt = 10294.91 \cdot lbf$; Rod Strength in LRFD

$T := 0.7 \cdot Fnt$ $\quad T = 7206\,lbf$;Per ASCE 7, we convert LRFD to ASD using 0.7.

Analyze Weld Design:

A fillet weld can be loaded in any direction in shear, compression, or tension. However, it always **fails in *shear***. The shear failure of the fillet weld occurs along a plane through the throat of the weld, as shown in the Figure below:





Determine Weld Capacity given Weld Thickness and Weld Length for Coupler Connection:
Per AISC Table J2-5 for fillet welds, use Equations J-4 for Base Metal check and J2.2a for Weld Calculation. The following segment is taken from AISC 360 13th Edition.

Alternatively, for *fillet welds* loaded in-plane the *design strength*, ϕR_n and the *allowable strength*, R_n/Ω, of welds is permitted to be determined as follows:

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

(a) For a linear weld group loaded in-plane through the center of gravity

$$R_n = F_w A_w \tag{J2-4}$$

where

$$F_w = 0.60 F_{EXX}\left(1.0 + 0.50\sin^{1.5}\theta\right) \tag{J2-5}$$

and

F_{EXX} = electrode classification number, ksi (MPa)
θ = angle of loading measured from the weld longitudinal axis, degrees
A_w = effective area of the weld, in.^{2} (mm^2)

$\Omega := 2.00$; Define Ω (ASD) per AISC 13th Table J2-5

$\theta := 90°$ $\quad$ $FEXX := 70\cdot ksi$; Define θ and FEXX electrode strength

$a := \frac{3}{16}\cdot in$; Define Fillet Weld Size. Per AISC Table J2.4, if the material thickness of steel beam member is greater than 3/4", use 5/16" Fillet Weld Size.

$Throat := a\cdot\cos(45°)$ $\quad$ $Throat = 0.133\cdot in$; Calculate Throat Thickness per Sketch above

$Rn := 0.60\cdot FEXX\cdot\left(1.0 + 0.50\cdot\sin(\theta)^{1.5}\right)\cdot Throat$ $\quad$ $Rn = 8353\cdot\frac{lbf}{in}$; Based on 3/16" fillet weld

$CouplerDia := 1.375\cdot in$; Define Coupler Diameter

$WeldLength := \pi\cdot CouplerDia$ $\quad$ $WeldLength = 4.32\cdot in$; Calc Weld Length by using Circumference of Coupler.

$WeldCapacity := \frac{Rn\cdot WeldLength}{\Omega}$ $\quad$ $WeldCapacity = 18041\ lbf$; Calc ASD Weld Capacity

; **<u>Since WeldCapacity > Tension Force (T), use 3/16" Fillet E70xx for 1.375 inch diameter coupler is OK.</u>**

Check Base Metal (Coupler) Tensile Strength.
Thickness of base metal = (CouplerDia - RodDia) / 2

$\text{Thickness} := \dfrac{\text{CouplerDia} - \text{RodDia}}{2}$ $\text{Thickness} = 0.375 \cdot \text{in}$

$\text{CouplerArea} := \dfrac{\pi \cdot \text{CouplerDia}^2}{4}$ $\text{RodArea} := \dfrac{\pi \cdot \text{RodDia}^2}{4}$; We use Nominal Rod Area to be conservative.

$\text{TensileArea} := \text{CouplerArea} - \text{RodArea}$ $\text{TensileArea} = 1.178 \cdot \text{in}^2$

$\text{Coupler\_Fy} := 53.7 \cdot \text{ksi}$

$\text{Coupler\_Fu} := 63.8 \cdot \text{ksi}$

; Define Properties of AISI 1018 Steel (weldable!)

Strength of Elements in Tension

The *design strength*, ϕR_n, and the *allowable strength*, R_n / Ω, of affected and connecting elements loaded in tension shall be the lower value obtained according to the *limit states* of *tensile yielding* and *tensile rupture*.

(a) For tensile yielding of connecting elements:

$$R_n = F_y A_g \qquad \text{(J4-1)}$$

$$\phi = 0.90\,\text{(LRFD)} \qquad \Omega = 1.67\,\text{(ASD)}$$

(b) For tensile rupture of connecting elements:

$$R_n = F_u A_e \qquad \text{(J4-2)}$$

$$\phi = 0.75\,\text{(LRFD)} \qquad \Omega = 2.00\,\text{(ASD)}$$

where

A_e = *effective net area* as defined in Section D3.3, in.^{2} (mm^2); for bolted *splice* plates, $A_e = A_n \le 0.85 A_g$

Check Coupler Strength via Equation J4-1: $\Omega := 1.67$

$\text{Rn} := \text{Coupler\_Fy} \cdot \text{TensileArea}$ $\text{CouplerASD} := \dfrac{\text{Rn}}{\Omega}$ $\text{CouplerASD} = 37882.53\,\text{lbf}$

; OK > Tension Force (T)

Check Coupler Strength via Equation J4-2:

$\text{MinCouplerStrength} := 1.25 \text{Fy} \cdot \text{Ab}$ $\text{MinCouplerStrength} = 16490\,\text{lbf}$

; Determine Minimum Coupler Strength based upon 125% of threaded rod yield strength (Fy).

$\phi := 0.75$

$\phi\text{Rn} := \phi \cdot \text{Coupler\_Fu} \cdot \text{TensileArea}$ $\phi\text{Rn} = 56372\,\text{lbf}$; OK > MinCouplerStrength

Calculate Minimum Thread Engagement Length: Coupler thread should be 1.25 times stronger than the rod yield, therefore it is necessary for the shear area of the threaded feature be at least 2.5 times the tensile area. (Assuming the threaded feature is of the identical material). Formula is based on BS EN ISO 898.

First we must solve for nominal Stress Area below:

In BS EN ISO 898-1 the nominal stress area is defined as

$$A_t\,\text{nom}\ (A_s\ \text{in ISO 898}) = \frac{\pi}{4}\left(\frac{d_2 + d_3}{2}\right)^2$$

D= Nominal screw diameter

d_2 = basic pitch dia = D - 0.75 H

d_3 = minor dia = d_1 - H / 6

d_1 = basic minor diameter = D - 1.25 H

H =The height of the triangle on which the thread is based = 0.866025 x p.

$$A_t\,\text{nom} = \frac{\pi}{4}\cdot\left(\frac{D - 0.75 \times 0.866025 \times p + D - 1.25 \times 0.866025 \times p - 1/6 \times 0.866025 \times p}{2}\right)^2$$

$$A_t\,\text{nom} = \frac{\pi}{4}\left(D - 0.938194 \,.\, p\right)^2$$

$D := \text{RodDia}$ $\qquad D = 0.63\cdot in$

$n := \frac{11}{in}$ $\qquad \rho := \frac{1}{n}$ $\qquad \rho = 0.09\cdot in$

; Reference Rod Diameter from Above and define number ("n") of threads UNC for this rod size.

$$At := \frac{\pi}{4}\cdot(D - 0.938194\cdot\rho)^2 \qquad At = 0.229\cdot in^2$$

Solve for Engagement Length which is 2.0 times the tensile area:

$$Le := \frac{2.0\cdot At}{0.5\cdot\pi\cdot(D - 0.64952\cdot\rho)} \qquad Le = 0.515\cdot in$$

Threaded Fastener Strength Ratio: The previous formula for Le was based upon the male and female thread materials have the same strength. If the Female Strength is lower, i.e. J as calculated below is greater than one (1), then the length of engagement must be increased to prevent the female thread stripping.

$$J = \frac{\text{Tensile strength of external thread material (screw)}}{\text{Tensile strength of internal thread material (hole)}}$$

$Fy = 43000\,psi$

$J := \frac{Fy}{Coupler\_Fy}$ $\quad J = 0.801$; Fy = Rod yield from above.

$Le2 := J \cdot Le$ $\quad Le2 = 0.412 \cdot in$; Final min. thread length or height of coupler.

Conclusion: We have checked the following four parameters and have shown that we exceed the required tension load of the rod.. $T = 7206.44\,lbf$

1) Weld Strength. $WeldCapacity = 18040.53\,lbf$

2) Coupler Tension Strength. $MinCouplerStrength = 16490\,lbf$ $\quad \phi Rn = 56372\,lbf$

3) Thread Engagement. $Le2 = 0.412 \cdot in$; We will use a 1:1 ratio coupler of the coupler height = rod diameter which will exceed the minimum Le2 requirement.

<u>The final coupler will be a 1.375 inch dia x 5/8 (0.625) inch tall coupler tapped for 5/8" dia rod UNC with 3/16" Fillet E70xx.</u>

Earthbound Holdown System Welded Coupler Calculations

Objective: Find a welded coupler to steel beam connection able to handle 3/4 inch diameter A36/A307 Threaded Rod. Calculate the welding requirements for welding a round cylindrical coupler to an existing W Flange in the field to connect a Earthbound System Holdown run. Use 1.375" diameter Coupler for this calculation check.

Determine Rod Allowable Load Given Rod Diameter Size: Calculate threaded rod capacity in accordance to AISC 13th Edition from a given rod size diameter below.

$RodDia := 0.750 \cdot in$; Provide nominal rod diameter

$n := \frac{10}{in}$ $\quad \rho := \frac{1}{n}$ $\quad \rho = 0.1 \cdot in$; To calculate rod stress area, define number ("n") of threads UNC for this rod size.

$At := \frac{\pi}{4} \cdot (RodDia - 0.938194 \cdot \rho)^2$ $\quad At = 0.338 \cdot in^2$ $\quad Ab := \frac{\pi}{4} \cdot RodDia^2$ $\quad Ab = 0.44 \cdot in^2$

$Fu := 60000 \cdot psi$

$Fy := 43000 \cdot psi$

; Define ultimate and yield strength of threaded rod material.
In this case ASTM A36/A307.
For reference A307 standard strength rod: Fy=43ksi, Fu=60ksi.
For reference A449 high strength rod: Fy=105ksi, Fu=120ksi.

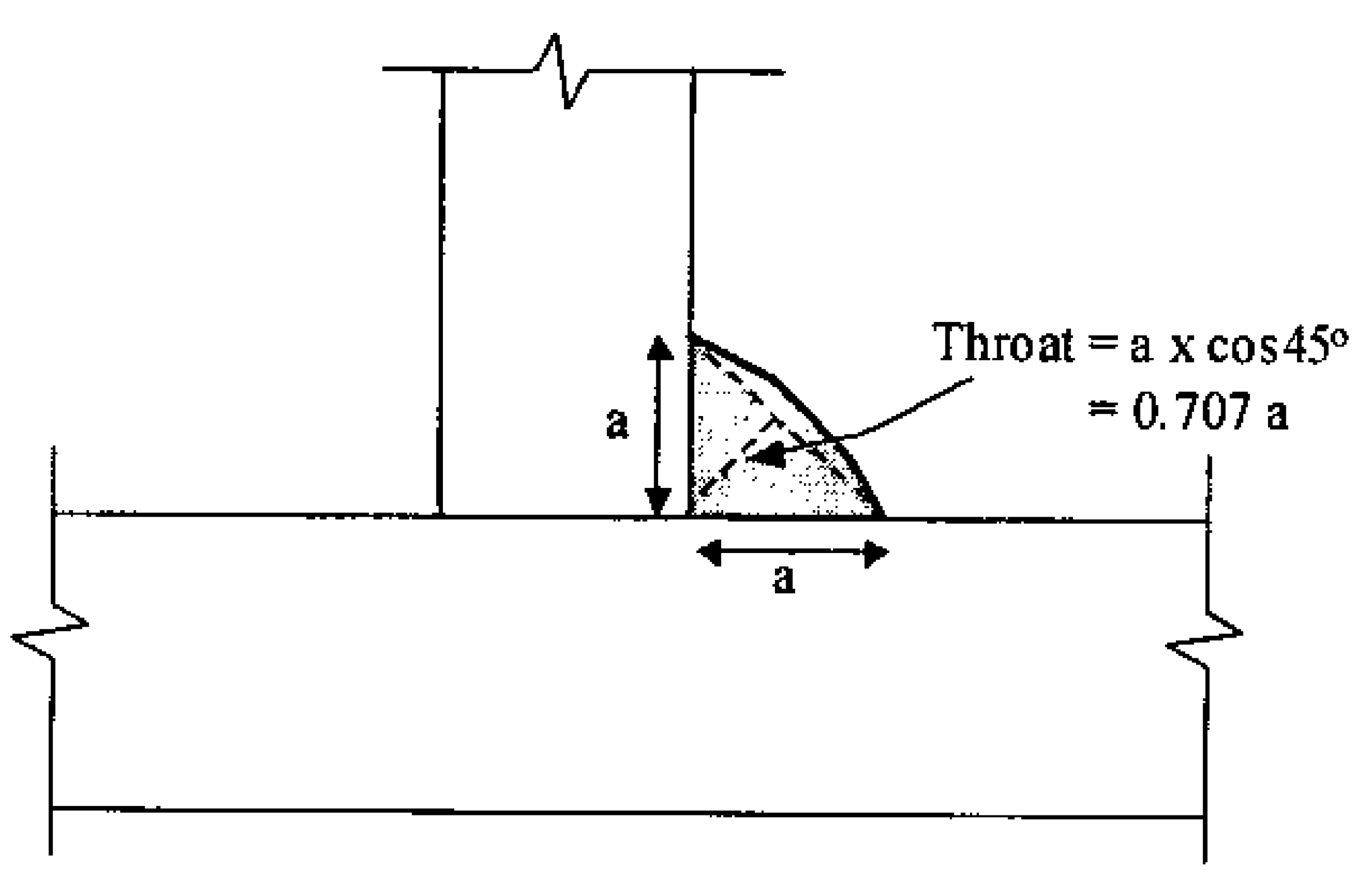
$Fnt := 0.75 \cdot Fu \cdot At$; Equation J3-1 and Table J3-2.

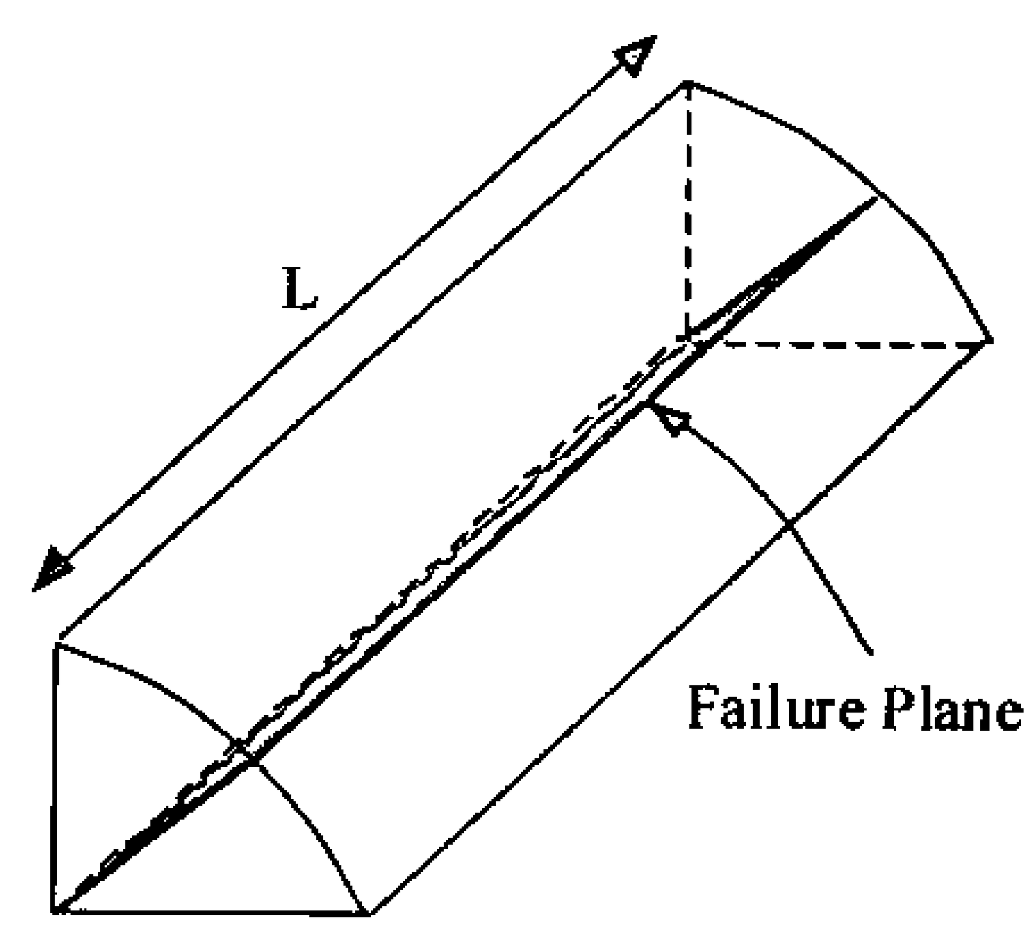
$Fnt = 15217.71 \cdot lbf$; Rod Strength in LRFD

$T := 0.7 \cdot Fnt$ $\quad T = 10652\, lbf$;Per ASCE 7, we convert LRFD to ASD using 0.7.

Analyze Weld Design:

A fillet weld can be loaded in any direction in shear, compression, or tension. However, it always **<u>fails in *shear*</u>**. The shear failure of the fillet weld occurs along a plane through the throat of the weld, as shown in the Figure below:





Determine Weld Capacity given Weld Thickness and Weld Length for Coupler Connection:
Per AISC Table J2-5 for fillet welds, use Equations J-4 for Base Metal check and J2.2a for Weld Calculation. The following segment is taken from AISC 360 13th Edition.

Alternatively, for *fillet welds* loaded in-plane the *design strength*, ϕR_n and the *allowable strength*, R_n/Ω, of welds is permitted to be determined as follows:

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

(a) For a linear weld group loaded in-plane through the center of gravity

$$R_n = F_w A_w \tag{J2-4}$$

where

$$F_w = 0.60 F_{EXX}\left(1.0 + 0.50 \sin^{1.5}\theta\right) \tag{J2-5}$$

and

F_{EXX} = electrode classification number, ksi (MPa)
θ = angle of loading measured from the weld longitudinal axis, degrees
A_w = effective area of the weld, in.^{2} (mm^2)

$\Omega := 2.00$; Define Ω (ASD) per AISC 13th Table J2-5

$\theta := 90°$ $\quad$ $FEXX := 70\cdot ksi$; Define θ and FEXX electrode strength

$a := \frac{3}{16}\cdot in$; Define Fillet Weld Size. Per AISC Table J2.4, if the material thickness of steel beam member is greater than 3/4", use 5/16" Fillet Weld Size.

$Throat := a\cdot\cos(45°)$ $\quad$ $Throat = 0.133\cdot in$; Calculate Throat Thickness per Sketch above

$Rn := 0.60\cdot FEXX\cdot\left(1.0 + 0.50\cdot\sin(\theta)^{1.5}\right)\cdot Throat$ $\quad$ $Rn = 8353\cdot\frac{lbf}{in}$; Based on 3/16" fillet weld

$CouplerDia := 1.375\cdot in$; Define Coupler Diameter

$WeldLength := \pi\cdot CouplerDia$ $\quad$ $WeldLength = 4.32\cdot in$; Calc Weld Length by using Circumference of Coupler.

$WeldCapacity := \frac{Rn\cdot WeldLength}{\Omega}$ $\quad$ $WeldCapacity = 18041\ lbf$; Calc ASD Weld Capacity

; Since WeldCapacity > Tension Force (T), use 3/16" Fillet E70xx for 1.375 inch diameter coupler is OK.

Check Base Metal (Coupler) Tensile Strength.
Thickness of base metal = (CouplerDia - RodDia) / 2

$\text{Thickness} := \dfrac{\text{CouplerDia} - \text{RodDia}}{2}$ $\qquad$ $\text{Thickness} = 0.313 \cdot \text{in}$

$\text{CouplerArea} := \dfrac{\pi \cdot \text{CouplerDia}^2}{4}$ $\qquad$ $\text{RodArea} := \dfrac{\pi \cdot \text{RodDia}^2}{4}$; We use Nominal Rod Area to be conservative.

$\text{TensileArea} := \text{CouplerArea} - \text{RodArea}$ $\qquad$ $\text{TensileArea} = 1.043 \cdot \text{in}^2$

$\text{Coupler\_Fy} := 53.7 \cdot \text{ksi}$

$\text{Coupler\_Fu} := 63.8 \cdot \text{ksi}$

; Define Properties of AISI 1018 Steel (weldable!)

Strength of Elements in Tension

The *design strength*, ϕR_n, and the *allowable strength*, R_n/Ω, of affected and connecting elements loaded in tension shall be the lower value obtained according to the *limit states* of *tensile yielding* and *tensile rupture*.

(a) For tensile yielding of connecting elements:

$$R_n = F_y A_g \qquad \text{(J4-1)}$$

$$\phi = 0.90\,(\text{LRFD}) \qquad \Omega = 1.67\,(\text{ASD})$$

(b) For tensile rupture of connecting elements:

$$R_n = F_u A_e \qquad \text{(J4-2)}$$

$$\phi = 0.75\,(\text{LRFD}) \qquad \Omega = 2.00\,(\text{ASD})$$

where

A_e = *effective net area* as defined in Section D3.3, in.^{2} (mm^2); for bolted *splice* plates, $A_e = A_n \leq 0.85 A_g$

Check Coupler Strength via Equation J4-1: $\quad \Omega := 1.67$

$\text{Rn} := \text{Coupler\_Fy} \cdot \text{TensileArea}$ $\qquad$ $\text{CouplerASD} := \dfrac{\text{Rn}}{\Omega}$ $\qquad$ $\text{CouplerASD} = 33541.82\,\text{lbf}$

; OK > Tension Force (T)

Check Coupler Strength via Equation J4-2:

$\text{MinCouplerStrength} := 1.25\text{Fy} \cdot \text{Ab}$ $\qquad$ $\text{MinCouplerStrength} = 23746\,\text{lbf}$

; Determine Minimum Coupler Strength based upon 125% of threaded rod yield strength (Fy).

$\phi := 0.75$

$\phi\text{Rn} := \phi \cdot \text{Coupler\_Fu} \cdot \text{TensileArea}$ $\qquad$ $\phi\text{Rn} = 49913\,\text{lbf}$; OK > MinCouplerStrength

Calculate Minimum Thread Engagement Length: Coupler thread should be 1.25 times stronger than the rod yield, therefore it is necessary for the shear area of the threaded feature be at least 2.5 times the tensile area. (Assuming the threaded feature is of the identical material). Formula is based on BS EN ISO 898.

First we must solve for nominal Stress Area below:

In BS EN ISO 898-1 the nominal stress area is defined as

$$A_t\,\text{nom}\ (A_s \text{ in ISO 898}) = \frac{\pi}{4}\left(\frac{d_2+d_3}{2}\right)^2$$

D= Nominal screw diameter

d_2 = basic pitch dia = D - 0.75 H

d_3 = minor dia = d_1 - H / 6

d_1 = basic minor diameter = D - 1.25 H

H =The height of the triangle on which the thread is based = 0.866025 x p.

$$A_t\,\text{nom} = \frac{\pi}{4}\left(\frac{D - 0.75 \times 0.866025 \times p + D - 1.25 \times 0.866025 \times p - 1/6 \times 0.866025 \times p}{2}\right)^2$$

$$A_t\,\text{nom} = \frac{\pi}{4}\left(D - 0.938194 . p\right)^2$$

$D := \text{RodDia}$ $\qquad D = 0.75\cdot in$

$n := \dfrac{10}{in}$ $\qquad \rho := \dfrac{1}{n}$ $\qquad \rho = 0.1\cdot in$

; Reference Rod Diameter from Above and define number ("n") of threads UNC for this rod size.

$At := \dfrac{\pi}{4}\cdot(D - 0.938194\cdot\rho)^2$ $\qquad At = 0.338\cdot in^2$

Solve for Engagement Length which is 2.0 times the tensile area:

$Le := \dfrac{2.0\cdot At}{0.5\cdot\pi\cdot(D - 0.64952\cdot\rho)}$ $\qquad Le = 0.629\cdot in$

Threaded Fastener Strength Ratio: The previous formula for Le was based upon the male and female thread materials have the same strength. If the Female Strength is lower, i.e. J as calculated below is greater than one (1), then the length of engagement must be increased to prevent the female thread stripping.

$$J = \frac{\text{Tensile strength of external thread material (screw)}}{\text{Tensile strength of internal thread material (hole)}}$$

$Fy = 43000\,psi$

$J := \frac{Fy}{Coupler\_Fy}$ $\quad J = 0.801$; Fy = Rod yield from above.

$Le2 := J \cdot Le$ $\quad Le2 = 0.503 \cdot in$; Final min. thread length or height of coupler.

Conclusion: We have checked the following four parameters and have shown that we exceed the required tension load of the rod.. $T = 10652.39\,lbf$

1) Weld Strength. $WeldCapacity = 18040.53\,lbf$

2) Coupler Tension Strength. $MinCouplerStrength = 23746\,lbf$ $\quad \phi Rn = 49913\,lbf$

3) Thread Engagement. $Le2 = 0.503 \cdot in$; We will use a 1:1 ratio coupler of the coupler height = rod diameter which will exceed the minimum Le2 requirement.

<u>The final coupler will be a 1.375 inch dia x 3/4 (0.750) inch tall coupler tapped for 3/4" dia rod UNC with 3/16" Fillet E70xx.</u>

Appendix B
Latest ICC-ES ESR-2848

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ESR-2848

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EVALUATION SUBJECT:

SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)

Property evaluated:

Structural

2.0 USES

SlackJack® and MiniJack™ shrinkage compensating devices are used in conjunction with hold-down and tension tie connectors or a continuous tie-down system for wood frame construction. The devices are installed as components of the restraint system, with the threaded anchor bolts or rods passing through the axis of the devices, to remove slack in the restraint system that occurs due to wood shrinkage or building settlement, or both.

3.0 DESCRIPTION

3.1 General:

The SlackJack® and MiniJack™ are factory-assembled, preloaded, compression-controlled shrinkage and settlement compensating devices that can be used with hold-down connectors or tension tie connectors with threaded rods or threaded anchor bolts. The devices are cylindrical, and automatically expand axially along a rod or bolt, to eliminate any gaps between a bearing surface or plate and the nut on the threaded rod or bolt when shrinkage or settlement occurs within the structure. A portion of the SlackJack® or MiniJack™ is color-coded to identify the specific model number. Model numbers beginning with an "A" or "T" have aluminum bodies, and are designed for use with W3 through W10 swivel washers capable of fitting over threaded rods or bolts having diameters ranging from $^3/_8$ inch to $1^1/_4$ inches (9.5 mm to 32 mm). Model numbers beginning with an "S" or "X" have steel bodies, and are designed for use with W10 or W12 swivel washers capable of fitting over threaded rods or bolts having diameters of $1^1/_4$ inches and $1^1/_2$ inches (32 mm and 38 mm), respectively. Model numbers beginning with an "M" (MiniJack™) have aluminum bodies, are designed for use without swivel washers, and will fit over threaded rods or bolts having diameters of $^3/_8$ inch and $^1/_2$ inch (9.5 mm and 12.7 mm). See Figure 1 for diagrams of each model type. See Table 1 for recognized models, and their corresponding color codes and dimensions. The SlackJack® "A", "T", "S" and "X" series are supplied with swivel washers, which are used to center the device on the threaded rod or bolt. Swivel washers are color-coded, as noted in Table 1, to indicate the corresponding appropriate threaded rod or bolt diameter. The SlackJack® A620 model and MiniJack™ "M" series are supplied with color-coded compression springs, as noted in Table 1, to indicate the specific model and rated compensation capacity.

3.2 Materials:

For the SlackJack® and MiniJack™ model numbers beginning with an "A", "T" or "M", the inner and outer cylinder bodies of the shrinkage compensating devices are manufactured from ASTM B221-06 6061-T6511 alloy extruded aluminum tubing. Model numbers beginning with an "S" or "X" have inner and outer cylinder bodies manufactured from ASTM A513-08a, Type 5 DOM steel tubing, as specified in the manufacturer's quality documentation. Locking rings are manufactured from ASTM A313-08 stainless steel spring wire. The compression spring and pull clip are manufactured from galvanized hard-drawn spring wire. The color-coded capture ring consists of injection-molded plastic. The color-coded swivel washer is manufactured from ASTM A108-07, grade 12L14 steel. A hex nut conforming to ASTM A563-07 is included in the packaging of each device.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The allowable compression loads, corresponding deflections at allowable loads, rated shrinkage and settlement compensation capacities, and average travel and seating increments, Δ_R, for the SlackJack® and MiniJack™ shrinkage compensating devices designed under allowable stress design are as shown in Table 1.

The devices are used where the expected shrinkage or settlement does not exceed their rated compensation capacities. Calculations, demonstrating that the applied

loads do not exceed the tabulated allowable loads, and that the expected slack due to wood shrinkage and building settlement does not exceed the rated compensation capacity for the SlackJack® and MiniJack™ shrinkage compensating devices, must be submitted to the code official for approval. Supports must be designed in accordance with the applicable code to transfer loads into the restraint system. The calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.

4.2 Installation:

The SlackJack® and MiniJack™ shrinkage compensating devices must be installed in accordance with this report and the manufacturer's published installation instructions. The devices must be installed over the hold-down or a bearing surface or plate, with the threaded rod or bolt running through its axis. The threaded rod with which the SlackJack® or MiniJack™ is used must be installed plumb, such that the offset angle between the top of the floor and the bottom of the top plates or bridge block above does not exceed 1.33 degrees from vertical. For the SlackJack® "A", "T", "S" and "X" series, the appropriate color-coded swivel washer corresponding to the threaded rod or bolt diameter, as indicated in Table 1, must be installed over each SlackJack® device, with the flat side facing up. The steel hex nut must be screwed onto the threaded rod or bolt, and hand-tightened over the top of the swivel washer. Once the hex nut is hand-tightened onto the swivel washer, the device must be activated by removal of the factory-installed pull clip.

5.0 CONDITIONS OF USE

The SlackJack® and MiniJack™ shrinkage compensating devices described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The SlackJack® and MiniJack™ shrinkage compensating devices must be installed in accordance with this report, the manufacturer's installation instructions and the plans approved by the code official. In the event of a conflict between this report and the manufacturer's published installation instructions, the most restrictive governs.

5.2 The design values given in this report are for the SlackJack® or MiniJack™ shrinkage compensating devices alone. No further increase in allowable capacity is permitted. Design must be performed in accordance with Section 4.1 of this report.

5.3 Calculations in accordance with Section 4.1 of this report must be submitted to the code official for approval.

5.4 The SlackJack® and MiniJack™ devices are limited to installations in dry, interior locations.

5.5 The SlackJack® and MiniJack™ shrinkage compensating devices must not be used to support dead loads other than their own weight.

5.6 Use of the SlackJack® and MiniJack™ shrinkage compensating devices in direct contact with fire-retardant-treated wood or preservative-treated wood is outside of the scope of this report.

5.7 When the SlackJack® and MiniJack™ shrinkage compensating devices are used as fasteners independent of a continuous tie-down system, the applied loads must not exceed the allowable loads noted in this report.

5.8 When the devices are used in continuous rod systems that resist light-frame shear wall overturning forces, calculations must be submitted to the code official confirming that the total vertical displacement, which would include steel rod elongation and the shrinkage compensating device deflection, is less than or equal to 0.200 inch (5 mm) for each story, or between restraints, whichever is more restrictive, using allowable stress design (ASD). Shear wall drift limit calculations must consider the 0.200-inch (5 mm) vertical displacement limit. This 0.200-inch (5 mm) vertical displacement limit may be exceeded when it can be demonstrated that the shear wall story drift limit and the deformation compatibility requirements of IBC Section 1604.4 are met when considering all sources of vertical displacement.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Shrinkage Compensating Devices (AC316), dated June 2012.

7.0 IDENTIFICATION

Each SlackJack® and MiniJack™ shrinkage compensating device bears a label, either on the body of the device or on the packaging, with the evaluation report holder name (Earthbound) and Web address, the product name (SlackJack® or MiniJack™), and the evaluation report number (ESR-2848). The devices are color-coded, as indicated in Table 1, to identify the specific model and series number. SlackJack® shrinkage compensating devices are packaged together in a common box or container, which includes corresponding swivel washers and nuts labeled in separate plastic packaging. The MiniJack™ "M" series devices are packaged in lots of five, and do not require a swivel washer.

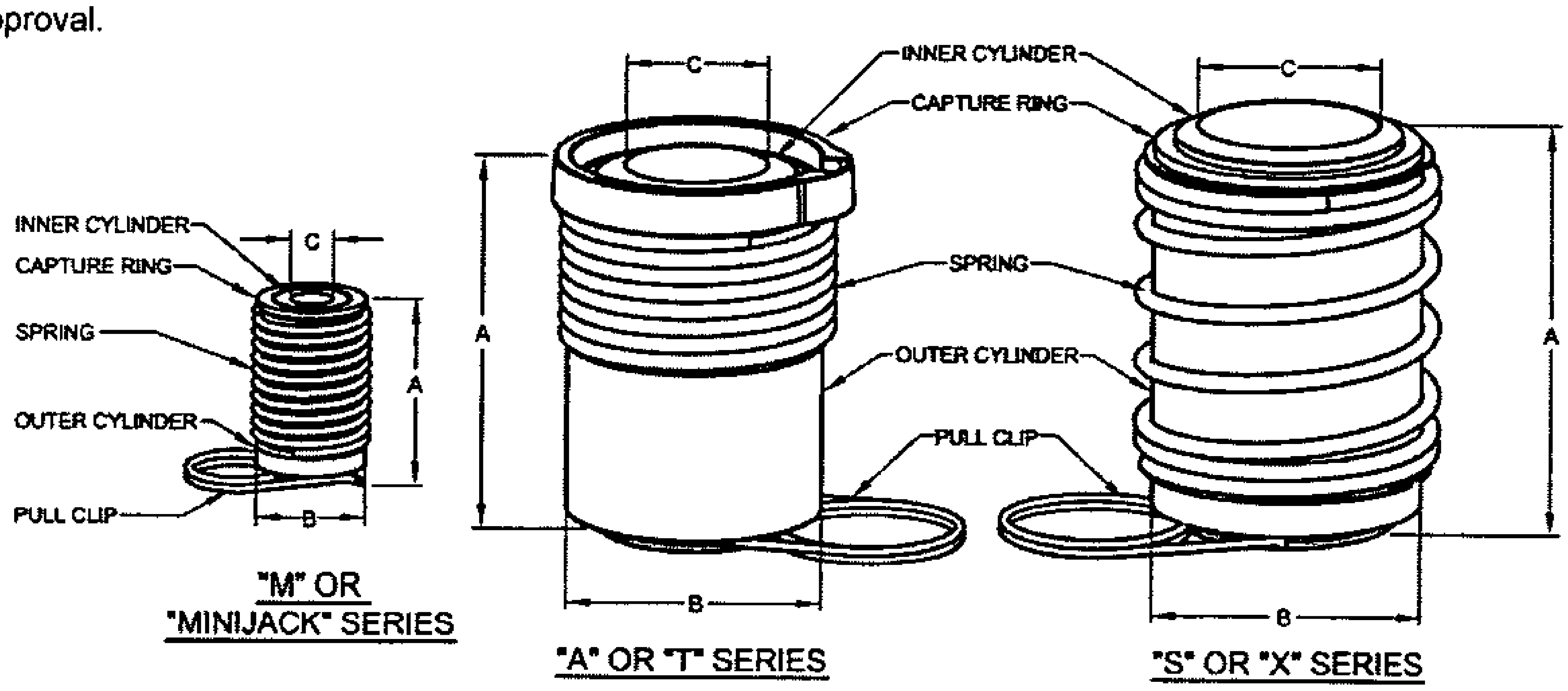

FIGURE 1—SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

TABLE 1—SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICE SPECIFICATIONS

MODEL AND SERIES NUMBER	CAPTURE RING COLOR CODE	SPRING COLOR CODE	NOMINAL DIMENSIONS[3] (inches)			RATED COMPENSATION CAPACITY (inches)	ALLOWABLE COMPRESSION LOAD[1,2] (lbs)	DEFLECTION AT ALLOWABLE LOAD (inch)	DEVICE AVG TRAVEL & SEATING INCREMENT Δ_R[4,5] (inch)
			Height Before Activation (A)	Outer Diameter of Body (B)	Inner Diameter of Body (C)				
M100[8]	N/A	Red	2.540	1.349	0.532	1.0	5,000	0.028	0.032
M150[8]	N/A	Green	3.040	1.349	0.532	1.50	5,000	0.030	0.032
M200[8]	N/A	Orange	3.540	1.349	0.532	2.00	4,900	0.033	0.031
A210	Blue	N/A	3.330	2.365	1.420	1.0	7,360	0.013	0.045
A21-50	White	N/A	3.830	2.365	1.420	1.50	8,000	0.018	0.047
A220	Yellow	N/A	4.330	2.365	1.420	2.0	7,730	0.018	0.050
T410	Orange	N/A	3.700	2.365	1.375	1.0	9,000	0.020	0.024
T420	Black	N/A	4.700	2.365	1.375	2.0	9,000	0.018	0.028
A410	Red	N/A	3.800	2.365	1.250	1.0	14,000	0.022	0.051
A420	Green	N/A	4.800	2.365	1.250	2.0	14,000	0.030	0.047
A430	Brown	N/A	5.800	2.365	1.250	3.0	14,750	0.033	0.046
T610	Gray	N/A	4.325	2.365	1.250	1.0	15,000	0.019	0.035
T620	Purple	N/A	5.325	2.365	1.250	2.0	15,000	0.019	0.030
A610	Tan	N/A	4.800	2.365	1.250	1.0	20,340	0.028	0.045
A620	White	Blue	5.800	2.365	1.250	2.0	20,100	0.038	0.048
S410[5]	Blue	N/A	3.270	2.500	1.625	1.0	22,000	0.020	0.028
S420[5]	Yellow	N/A	4.270	2.500	1.625	2.0	22,000	0.026	0.028
X410[5]	Gold	N/A	3.700	2.500	1.625	1.0	34,220	0.035	0.047

MODEL AND SERIES NUMBER NOTATION FOR THE "A", "T", "S" AND "X" SERIES[8]

1st Digit: Model Type:	2nd Digit: Series Type:	3rd Digit: Rated Compensation Capacity:	4th Digit: (and 5th Digit, where applicable) Swivel Washer Color Code[6,7]:	
"A" = Aluminum Body	2 = 2 locking rings	1 = 1.0 inch	0 = Base Model	
"T" = Aluminum Body	4 = 4 locking rings	1-5 = 1.50 inches	3 = 3/8" Rod	Orange
"S" = Steel Body	6 = 6 locking rings	2 = 2.0 inches	4 = 1/2" Rod	Purple
"X" = Steel Body		3 = 3.0 inches	5 = 5/8" Rod	Black
			6 = 3/4" Rod	Gray
			7 = 7/8" Rod	Blue
			8 = 1" Rod	Yellow
			9 = 1 1/8" Rod	White
			10 = 1 1/4" Rod	Green
			12 = 1 1/2" Rod	Red

For **SI:** 1 inch = 25.4 mm, 1 pound = 4.45 N.

[1]Tabulated allowable loads are for the SlackJack® and MiniJack™ shrinkage compensating devices only. The attached components (including anchors, tension rods, bearing plates, wood framing members, etc.) must be designed to resist design loads in accordance with the applicable code.

[2]No further increases to the tabulated allowable loads are permitted.

[3]See Figure 1 (following page) for dimensioned drawings of the SlackJack® and MiniJack™ shrinkage compensating devices.

[4]The average travel and seating increment, Δ_R, is defined as the average of the movement required to cause incremental motion from a seated position and the opposite movement required to reseat the device after incremental motion.

[5]The device average travel and seating increment, Δ_R, and deflection at allowable load, Δ_A, are additive, and describe the total movement of the device at allowable load, Δ_T. For design loads, P_D, less than the allowable load, P_A, the total movement of the device, Δ_T, is calculated as follows: $\Delta_T = \Delta_R + \Delta_A(P_D/P_A)$.

[6]A swivel washer, having the appropriate inner diameter corresponding to the threaded rod or bolt diameter as indicated under the *Swivel Washer Color Code* section of the table above, must be used in accordance with Section 4.2. Exception: "M" series devices do not require swivel washers.

[7]Model numbers beginning with an "A" or "T" are designed for use with W3 through W10 swivel washers capable of fitting over threaded rods or bolts having diameters ranging from 3/8 inch to 1 1/4 inches (9.5 mm to 32 mm). Model numbers beginning with an "S" or "X" are designed for use with W10 or W12 swivel washers capable of fitting over threaded rods or bolts having diameters of 1 1/4 inches and 1 1/2 inches (32 mm and 38 mm), respectively.

[8]The model and series number notation given above does not apply to the "M" series (MiniJack™). The M100, M150 and M200 have three locking rings, and rated compensation capacities of 1.0 inch, 1.5 inches and 2.0 inches, respectively. They are intended for use with either 3/8 inch or 1/2-inch rod diameters.

ICC-ES Evaluation Report

ESR-2848 FBC Supplement

Reissued November 1, 2013
This report is subject to renewal December 1, 2014.

www.icc-es.org | (800) 423-6587 | (562) 699-0543 *A Subsidiary of the International Code Council®*

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

EARTHBOUND CORPORATION
17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® SHRINKAGE COMPENSATING DEVICE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2010 *Florida Building Code—Building*
- 2010 *Florida Building Code—Residential*

Property evaluated:

Structural

2.0 PURPOSE OF THIS SUPPLMENT

This supplement is issued to indicate that the SlackJack® shrinkage compensating device described in Sections 2.0 through 7.0 of the master report ESR-2848 complies with the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code®* provisions noted in the master report.

The SlackJack® shrinkage compensating device described in the master evaluation report has also been found to comply with the High-Velocity Hurricane Zone provisions of the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential.*

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report reissued November 1, 2013.

ICC-ES Evaluation Report

ESR-2848 CBC Supplement

Reissued November 1, 2013

This report is subject to renewal December 1, 2014.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
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17361 TYE STREET S.E.
MONROE, WASHINGTON 98272
(360) 863-0722
(800) 944-5669
www.holdown.com

EVALUATION SUBJECT:

SLACKJACK® AND MINIJACK™ SHRINKAGE COMPENSATING DEVICES

1.0 EVALUATION SCOPE

Compliance with the following code:

2010 *California Building Code* (CBC)

Property evaluated:

Structural

2.0 PURPOSE OF THIS SUPPLEMENT

This supplement is issued to indicate that the SlackJack® and MiniJack™ Shrinkage Compensation Devices, described in master report ESR-2848, comply with the CBC, when design and installation are in accordance with the CBC and with the *International Building Code®* provisions described in the master evaluation report.

This supplement expires concurrently with the master report reissued on November 1, 2013.

CROWN CABOT

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

ABBREVIATIONS

ICC	INTERNATIONAL CODE COUNCIL	A.B.	ANCHOR BOLT
I.D.	INSIDE DIAMETER	ABV.	ABOVE
IN.	INCH	ACI	AMERICAN CONCRETE INSTITUTE
INFO.	INFORMATION	ADD'L	ADDITIONAL
INT.	INTERIOR	ADJ.	ADJACENT
J.T.	JACK TRUSS	AISC	AMERICAN INSTITUTE STEEL CONSTRUCTION
K	KIP	ALT	ALTERNATE
KSI	KIPS PER SQUARE INCH	ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
L	ANGLE	APP	APPROXIMATE
LA.R.R.	LOS ANGELES RESEARCH REPORT	ARCH.	ARCHITECTURAL/ARCHITECT
LB	POUND	ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
L.L.	LIVE LOAD	AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
LLH	LONG LEG HORIZONTAL	&	AND
LLV	LONG LEG VERTICAL	@	AT
LONG.	LONGITUDINAL	BLDG.	BUILDING
LT.	LIGHT	BLKG.	BLOCKING
MATL	MATERIAL	BLW.	BELOW
MAX.	MAXIMUM	BM.	BEAM
M.B.	MACHINE BOLT	B.N.	BOUNDARY NAILING
MED.	MEDIUM	B.O.B.	BOTTOM OF BEAM
MEZZ.	MEZZANINE	BOT.	BOTTOM
M.F.	MOMENT FRAME	B.P.	BASE PLATE
MFR.	MANUFACTURER	BRCG.	BRACING
MIN.	MINIMUM	BRG.	BEARING
MISC.	MISCELLANEOUS	B.S.	BOTH SIDES
MI.	MICROLAM	BTWN.	BETWEEN
N.G.	NATURAL GRADE	C	CHANNEL
N.T.S.	NOT TO SCALE	CBC	CALIFORNIA BUILDING CODE
O/	OVER	C.J.	CEILING JOIST
O.C.	ON CENTER	CL	CENTER LINE
O.D.	OUTSIDE DIAMETER	CLG.	CEILING
OPP.	OPPOSITE	CLR.	CLEAR
OPNG.	OPENING	CMU	CONCRETE MASONRY UNIT
OSB	ORIENTED STRAND BOARD	COL.	COLUMN
P.C.	PRECAST CONCRETE	CONC.	CONCRETE
PCF	POUNDS PER CUBIC FOOT	CONN.	CONNECTION
PL	PARALLAM	CONST.	CONSTRUCTION
PLF	POUNDS PER LINEAR FOOT	CONT.	CONTINUOUS
PLY.	PLYWOOD	C.P.	COMPLETE JOINT PENETRATION
PSF	POUNDS PER SQUARE FOOT	CU.FT.	CUBIC FEET
PSI	POUNDS PER SQUARE INCH	C.W.	CUT WASHER
P.T.	POST TENSION	d	PENNY WEIGHT
P.T.D.F.	PRESSURE TREATED DOUGLAS FIR	DBL.	DOUBLE
QTY.	QUANTITY	DEG.	DEGREE
R.D.	ROOF DRAIN	DEPT.	DEPARTMENT
REF.	REFERENCE	DET.	DETAIL
REINF.	REINFORCEMENT	D.F.	DOUGLAS FIR
REQ'D	REQUIRED	DIA.	DIAMETER
REV.	REVISION	DIAG.	DIAGONAL
R.J.	ROOF JOIST	DIM.	DIMENSION
R.O.	ROUGH OPENING	DIST.	DISTANCE
R.R.	ROOF RAFTER	D.J.	DECK JOIST
R.T.	ROOF TRUSS	D.L.	DEAD LOAD
SCHED.	SCHEDULE	DN	DOWN
SECT.	SECTION	DO	DITTO
S.C.	SLIP CRITICAL	D.S.	DOWN SPOUT
SHTG.	SHEATHING	DSA	DIVISION OF THE STATE ARCHITECT
SIM.	SIMILAR	D.T.	DRAG TRUSS
SPEC.	SPECIFICATION	DWG.	DRAWING
SQ. FT.	SQUARE FOOT	EA.	EACH
S.S.	SELECT STRUCTURAL	E.G.	EXISTING GRADE
STL.	STEEL	E.S.	EACH SIDE
STAGG.	STAGGERED	ELEV.	ELEVATION
STD.	STANDARD	E.N.	EDGE NAILING
STIFF	STIFFENER	E.O.R.	ENGINEER OF RECORD
S.W.	SHEAR WALL	EQ.	EQUAL
SYM.	SYMMETRIC	ETC.	ETCETERA
T&B	TOP & BOTTOM	EVA	EMERGENCY VEHICLE ACCESS
T&G	TONGUE & GROOVE	E.W.	EACH WAY
TEMP.	TEMPORARY	EXIST.	EXISTING
THK.	THICK	EXP.	EXPOSURE
T.N.	TOE NAIL	EXT.	EXTERIOR
T.O.B.	TOP OF BEAM	FAB.	FABRICATED(OR)
T.O.C.	TOP OF CONCRETE	FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
T.O.F.	TOP OF FOOTING	FND.	FOUNDATION
T.O.S.	TOP OF STEEL	FIN.	FINISH
TRANS.	TRANSVERSE	F.F.	FINISH FLOOR
T.S.	TIMBERSTRAND	F.G.	FINISH GRADE
TYP.	TYPICAL	F.H.	FULL HEIGHT
U.N.O.	UNLESS NOTED OTHERWISE	F.J.	FLOOR JOIST
VAR.	VARIES	FLR.	FLOOR
W	WIDE FLANGE	F.O.C.	FACE OF CONCRETE
W/	WITH	F.O.M.	FACE OF MASONRY
W/O	WITHOUT	F.R.C.	FIBER REINFORCED CONCRETE
W.L.	WIND LOAD	FRMG.	FRAMING
WT.	WEIGHT	F.T.	FLOOR TRUSS
W.W.F.	WELDED WIRE FABRIC	FT.	FEET / FOOT
		FTG.	FOOTING
		GA	GAUGE
		GALV.	GALVANIZED
		G.C.	GENERAL CONTRACTOR
		GLB	GLULAM BEAM
		G.T.	GIRDER TRUSS
		GYP.	GYPSUM
		HD	HOLDOWN
		HDR.	HEADER
		HGR.	HANGER
		HORIZ.	HORIZONTAL
		HS	HIGH STRENGTH
		HSS	HOLLOW STRUCTURAL STEEL
		HT.	HEIGHT
		IBC	INTERNATIONAL BUILDING CODE
		ICBO	INTERNATIONAL COUNCIL OF BUILDING OFFICIALS

GENERAL NOTES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS, CONDITIONS AT THE JOBSITE, AND TO CROSS CHECK ALL DETAILS AND DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH RELATED REQUIREMENTS ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND/OR CIVIL DRAWINGS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. FLOOR AND WALL OPENINGS, SLEEVES, VARIATIONS IN STRUCTURAL SLAB ELEVATIONS, DEPRESSED AREAS AND ALL OTHER ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND/OR CIVIL REQUIREMENTS MUST BE COORDINATED BEFORE THE CONTRACTOR PROCEEDS WITH CONSTRUCTION.
3. IN ALL CASES WHERE A CONFLICT MAY OCCUR SUCH AS BETWEEN ITEMS INCLUDED IN THE SPECIFICATIONS AND NOTES ON THE DRAWINGS OR BETWEEN GENERAL NOTES AND SPECIFIC DETAILS, THE ENGINEER SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENT.
4. DETAIL MARKED "TYPICAL" SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY INDICATED OTHERWISE.
5. WHERE NO SPECIFIC DETAIL IS SHOWN, THE FRAMING OR CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION.
6. EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE NOTED OR SHOWN IN THE PLANS OR SPECIFICATIONS, ALL PHASES OF WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE 2008 LOS ANGLES COUNTY BUILDING CODE, AS WELL AS ALL APPLICABLE LOCAL ORDINANCES.
7. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
8. THE PRECISE DIMENSIONS AND LOCATIONS OF ALL DOOR AND WINDOW OPENINGS SHALL BE DETERMINED FROM THE ARCHITECTURAL DRAWINGS; OTHER FLOOR, WALL AND ROOF OPENINGS AS REQUIRED BY MECHANICAL ELECTRICAL OR SIMILAR REQUIREMENTS SHALL BE VERIFIED FROM SHOP DRAWINGS, EQUIPMENT DATA, ETC., AS REQUIRED.
9. THE MEANS AND METHODS OF CONSTRUCTION, INCLUDING THE DESIGN, ADEQUACY AND SAFETY OF BRACING, SHORING, GUYING, AND ERECTION AS WELL AS THE SEQUENCE OF CONSTRUCTION HAVE NOT BEEN CONSIDERED BY THE E.O.R. THE ENGINEER AND HIS REPRESENTATIVES WILL NOT COVER SUCH ITEMS IN THE COURSE OF THE STRUCTURAL OBSERVATIONS.
10. VIBRATION ANALYSIS HAS NOT BEEN CONSIDERED BY E.O.R.
11. THE USE OF THESE PLANS, DRAWINGS, SPECIFICATIONS, AND/OR ELEVATIONS IS RESTRICTED TO THE ORIGINAL USE FOR WHICH THEY WERE PREPARED AND FURNISHED TO THE CLIENT. PUBLICATION THEREOF IS EXPRESSLY LIMITED TO SUCH USE. REUSE, REPRODUCTION OR OTHER PUBLICATION BY ANY METHOD IS PROHIBITED. VANDORPE CHOU ASSOCIATES, INC. ASSUMES NO LIABILITY FOR THE UNAUTHORIZED USE OF THESE PLANS.
12. THESE PLANS AND SPECIFICATIONS ARE TO SHOW THE PRIMARY STRUCTURAL SYSTEM AND ARE SOLELY FOR THE USE OF A BUILDER KNOWLEDGEABLE AND EXPERIENCED IN THIS TYPE OF WORK. STRUCTURAL COMPONENTS WHICH ARE NOT A PART OF THE PRIMARY STRUCTURAL SYSTEM: SUCH AS GLAZING WINDOW WALLS, GUARDRAILS, TEMPORARY SHORING, MANUFACTURED STRUCTURAL ELEMENTS, SITE IMPROVEMENTS, PAVING, DRAINAGE STRUCTURES, FREE STANDING SIGNS AND POLES, AND LANDSCAPE IMPROVEMENTS ARE NOT A PART OF THIS WORK.
13. ALL WORK OF THE CONTRACTOR, SUB-CONTACTORS, AND BUILDER SHALL CONFORM TO CURRENT GOOD PRACTICES.
14. DURING THE COURSE OF CONSTRUCTION CHANGES MAY OCCUR, THESE PLANS DO NOT REFLECT THE "AS-BUILT" PRODUCT.
15. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR LOCATION AND CONSTRUCTION OF DRAFT STOPS, FIRE BLOCKING, DAMPERS AND OTHERS ITEMS NECESSARY FOR FIRE PROTECTION. COORDINATE WITH OTHERS FOR LOCATION AND CONSTRUCTION OF FLASHING, BLOCKING, EXTERIOR FINISHES, TREATMENTS OR OTHER MATERIAL REQUIRED FOR DAMP PROOFING OR MOISTURE CONTROL.
16. FOR ANY PRE-MANUFACTURED PRODUCTS OR MATERIALS OF CONSTRUCTION, CONTRACTOR SHALL BE RESPONSIBLE FOR BEING FAMILIAR WITH AND FOR PROPER EXECUTION OF MANUFACTURER'S INSTRUCTIONS, REQUIREMENTS AND CONDITIONS OF APPROVAL PRIOR TO INSTALLATION AND/OR USE. THE ACCEPTANCE OF DEFERRED SUBMITTALS, TESTS AND MATERIALS BY E.O.R. DOES NOT CONSTITUTE THE APPROVAL BY THE LOCAL JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACQUIRE APPROVAL FROM THE LOCAL JURISDICTION PRIOR TO START OF WORK.
17. DUE TO LOCATION, SOME STRUCTURAL COMPONENTS ARE REQUIRED BY CODE TO BE PROTECTED FROM WATER/MOISTURE PENETRATION OR FROM FIRE DAMAGE. THE METHODS OF PROTECTION OF THESE STRUCTURAL COMPONENTS ARE NOT THE RESPONSIBILITY OF THE E.O.R. AND NOT DETAILED. REFER TO OTHERS FOR WATER / MOISTURE PROOFING METHODS AND FIRE PROOFING DETAILS.
18. THERE SHALL BE NO TRENCHES OR EXCAVATIONS 5 FEET OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND: OR OBTAIN NECESSARY PERMIT FROM STATE OF CALIFORNIA, DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE ISSUANCE OF A BUILDING OR GRADING PERMIT.
19. ANY ASTM DESIGNATIONS SHALL BE AS AMENDED TO DATE.
20. MECHANICAL AND PLUMBING ENGINEERS TO VERIFY THEIR SYSTEMS CAN ACCOMMODATE UP TO ¼" SHRINKAGE PER FLOOR LEVEL AND MAXIMUM STORY DRIFT OF 0.025h PER ASCE 7-05 12.12.1, WHERE h IS THE STORY HEIGHT BELOW THE LEVEL CONSIDERED.

SHOP DRAWING SUBMITTALS

1. PLEASE REFER TO SHEETS: SW-0, SC-0.

FRAMING NOTES

1. THE GENERAL CONDITIONS, SPECIFICATIONS, STRUCTURAL DETAILS ON SHEET SW-1 TO SW-8, AND THE FOLLOWING APPLY TO THE WORK.
2. CONTRACTOR SHALL CHECK FRAMING DIMENSIONS AGAINST THE ARCHITECTURAL PLAN AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY OMISSIONS AND / OR DISCREPANCIES BEFORE STARTING WORK.
3. ALL SHEAR CONNECTORS AND BLOCKINGS MUST BE INSTALLED PRIOR TO THE INSTALLATION OF ROOF & FLOOR SHEATHING.
4. USE SIMPSON U-HANGER FOR 2X FLOOR JOIST TO FLUSH BEAM CONNECTION U.N.O.
5. USE SIMPSON FULL DEPTH HU-HANGER (MAX - FILL ALL HOLES INCLUDING TRIANGLE HOLES) FOR BEAM TO BEAM CONNECTIONS, U.N.O.
6. CARRY ALL MULTIPLE STUDS OR POSTS FROM FLOOR ABOVE DOWN TO FLOOR BELOW OR BEAM BELOW. PROVIDE SOLID BLOCKING @ FLOOR LEVEL TO TRANSFER LOAD FROM UPPER POST TO LOWER POST.
7. PROVIDE POST / MULTI- STUD (U.N.O.) IN WALL TO SUPPORT FLUSH BM. PER 12/SW-2.
8. NO UTILITY LINE PENETRATION (STRUCT. SHTG, DBL TOP PLATES, SILL / SOLE PLATES, BLKG ABV. & BLW) @ SHEAR WALL IS ALLOWED. UNLESS SPECIFICALLY DETAILED.
9. INTERIOR NON-BEARING WALL TOP PLATE MAY BE 1X4 OVER 2X4
10. PROVIDE STRAP FOR DROP / FLUSH BEAMS PER 11 / SW-4, TYP.
11. TOP PLATE SPLICES PER 21/SW-4, TYP.
12. INSTALL 2-MSTA36 STRAPS AT TOP PLATE OF 4" TO 6" STRUCTURAL WALL TRANSITIONS, TYP.
13. EXTEND FLOOR SHEATHING TO WALL @ PARTY WALL.
14. SHEAR WALL WITH HIGH TO LOW PLATE TRANSFER PER DETAIL 23/SW-4.
15. INTERIOR NON BEARING WALL INSTALLED OVER FLOOR SYSTEM PER DETAIL 5/SW-2.
16. DETAIL 3 / SW-00 MAY BE USED WHERE SHEAR WALL A.B. ARE INTERRUPTED BY THE COMPRESSION STUDS / POSTS.
17. GLB = GLU-LAMINATED BEAM, SEE SHEET SW-0 FOR SPECS.
18. SEE DETAILS 18 AND 19/SW-2 FOR TYPICAL SPREAD-JOIST AND HEAD-OUT.
19. SEE DETAIL 4/SW-8 FOR FRAMING AT ELEVATOR GUIDE RAIL SUPPORT.
20. ALL BEAMS/GIRDER TRUSSES TO BE SUPPORTED WITH FULL BEARING MULTI-STUDS/ POSTS PER 14/SW-4, U.N.O.
21. *REFER TO UNIT FRAMING PLANS FOR UNIT FRAMING INFORMATION NOT SHOWN ON BUILDING FRAMING PLAN*
22. DOUBLE FULL-SPAN ROOF JOISTS AT ROOF TOP EQUIPMENT PAD OCCURING OVER UNIT LIVING AREA, U.N.O.
23. HEADER MAY BE INTERCHANGEABLE. REFER TO DETAIL 1/SW-2 FOR HEADER SIZE INFORMATION.

SYMBOLS

1. 1/SW1 — DETAIL NUMBER; SHEET NUMBER
2. [1] — CONSTRUCTION KEY NOTE
3. △1 — REVISIONS NUMBER; REVISION AREA

STRUCTURAL SHEET INDEX

PROJECT INFORMATION

VCA ENGINEERS®

2200 W. Orangewood Ave., Suite 150
Orange, CA 92868-1948
Tel: 714.978.9780 Fax: 714.978.9780
www.vcaengineers.com

VCA CONTACT

PRINCIPAL	ABE BLUNDA
PHONE	(714) 978-9780 EXT. 113
EMAIL	ablunda@vcaengineers.com

ENGINEER OF RECORD

REGISTERED PROFESSIONAL ENGINEER
ROBERT SHEUNG-CHI CHOU
S 003518
STRUCTURAL
STATE OF CALIFORNIA

DRAWING SUBMITTALS & REVISIONS

40% CD SET	10-16-2012
1st CITY SUBMITTAL	12-10-2012
1st PCC	02-04-2013
FOR CONSTRUCTION	04-15-2013

FOR REFERENCE COPIES OF APPROVED STRUCTURAL —

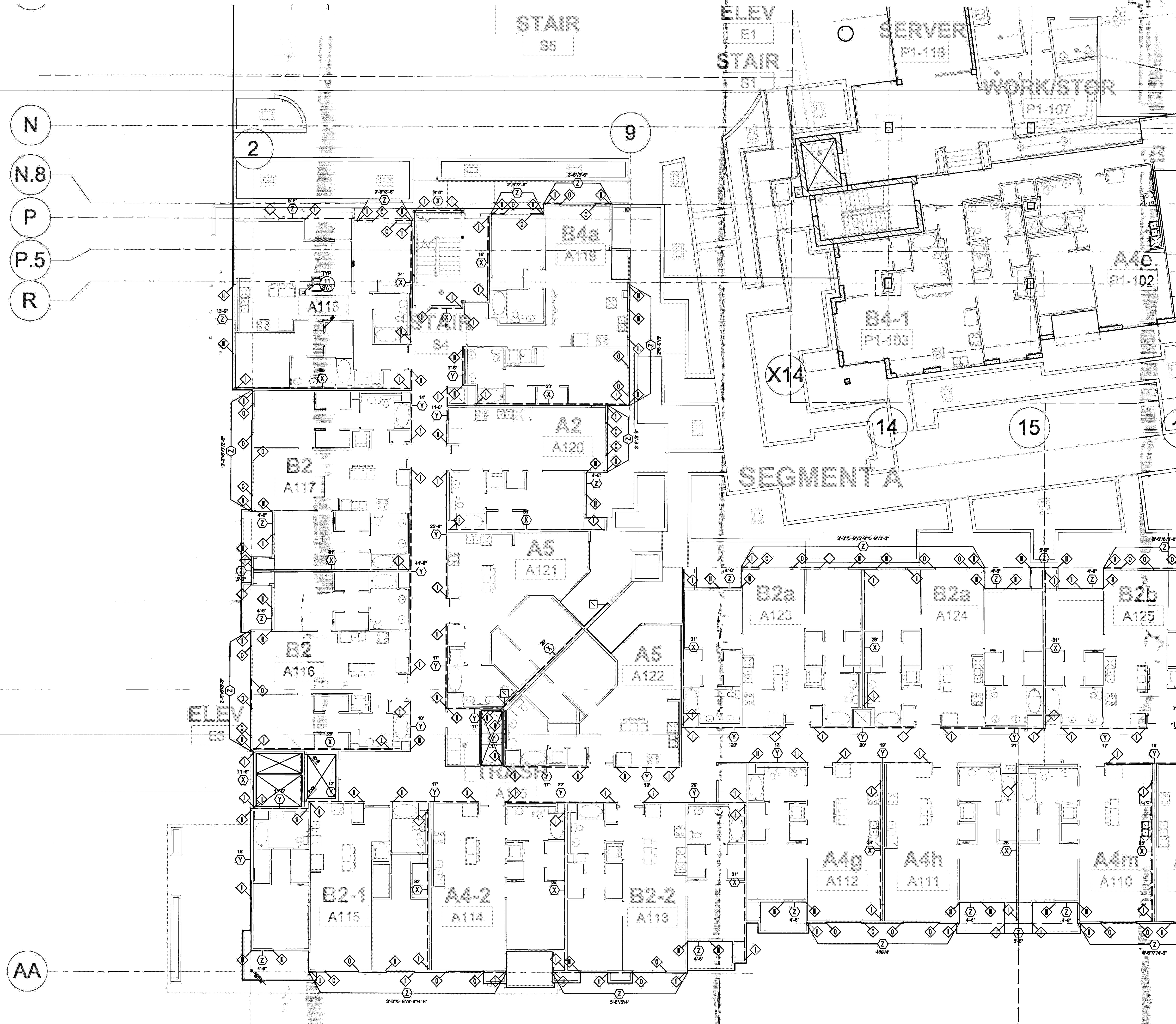
RECEIVED
DEC 16 2013
CITY OF LAGUNA NIGUEL
COMMUNITY DEVELOPMENT

JOB DESCRIPTION

OWNER	MILL CREEK RESIDENTIAL TRUST LLC
PROJECT ADDRESS	25891 CROWN VALLEY, LAGUNA NIGUEL, CA
JURISDICTION	LAGUNA NIGUEL, CA
APPLICABLE CODE(S)	2010 CBC
VCA PROJECT NUMBER	11-2730

STRUCTURAL TITLE SHEET

S-TS



LEGEND

1. INDICATES VERT. POST. SEE DETAIL 12, 13,14 & 15 SW-2 IF NO HARDWARE SHOWN.
   INDICATES POST SIZE. IF SIZE NOT SHOWN, SEE FRAMING AND ALSO BEAM SYMBOL ABOVE FOR BEAM SUPPORT REQ'D.
   INDICATES POST HARDWARE AT TOP OF POST.
   INDICATES POST HARDWARE AT BOTTOM OF POST. IF POST IS SUPPORTED BY AN ELEVATED FLOOR, PROVIDE BLOCKING (THICKNESS EQUAL TO THE WIDTH OF POST) UNDER POST AND BETWEEN FRAMING MEMBERS.
2. INDICATES SHEAR PANEL AND LENGTH. SEE DETAILS FOR MORE INFORMATION. LENGTHS SHOWN ON SHEAR WALLS ARE MINIMUM SHEATHING LENGTHS. VERIFY ACTUAL WALL LENGTHS WITH ARCHITECTURAL PLANS. IF LENGTH IS NOT INDICATED, EXTEND SHEATHING ON ENTIRE WALL.
   INDICATES SHEAR WALL HOLDOWN PER DETAIL 25/SW-00.
3. 12'/3'/ETC. — INDICATES MIN. SHEAR PANEL LENGTH/MIN. PANEL LENGTH/ETC.
   INDICATES SHEAR WALL AROUND OPENING W/ CONTINUOUS RIM. SEE DETAILS 1 AND 25 AND SHEAR WALL SCHEDULE ON SHEET SW-00.
4. INDICATES STEEL COL. W/ BASE PLATE & ATTACHMENT PER 8/SW-1

SLAB NOTES

1. IT IS THE CONTRACTOR RESPONSIBILITY TO VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL FLOOR PLANS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. THE GENERAL CONDITIONS, SPECIFICATIONS, GENERAL NOTES ON SHEET SW-0, GENERAL STRUCTURAL DETAILS ON SHEET SW-00 THRU SW-8, AND THE FOLLOWING APPLY TO THE WORK OF THE FOUNDATION.
3. THE FOUNDATION SYSTEM FOR THE PROPOSED CONSTRUCTION IS A SUSPENDED SLAB SYSTEM.
4. ALL HOLDOWNS, ANCHOR BOLTS, STRAPS, POST BASES & REINFORCEMENT MUST BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION & PLACEMENT OF CONCRETE.
5. SEE SHEET SW-1 FOR ANCHOR BOLT, HOLD DOWN PLACEMENT.
6. SEE SHEET SW-1 FOR GENERAL FOUNDATION DETAILS.
7. DEPRESSED AREAS FOR TILE FLOORING SHALL HAVE A ROUGHENED SURFACE TO ALLOW FOR BONDING OF MORTAR. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
8. ALL HOLDOWNS, ANCHOR BOLTS, STRAPS, POST BASES & REINFORCEMENT MUST BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION & PLACEMENT OF CONCRETE.

SHEAR WALL SCHEDULE

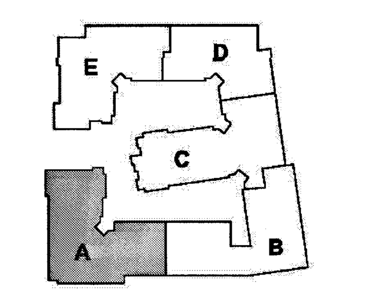
LEVEL	X	Y	Z	REMARKS
5	20	20	20	SEE SHEAR WALL SCHEDULE ON SW-00
4	21	21	21a	
3	22	22	21a	
2	22	22	22a	
1	22	22	22a	

HOLDOWN SCHEDULE

SYMBOL	BUILDING A	BUILDING B	1	REMARKS
0	SEE 25/SW-00 FOR TENSION & COMPRESSION LOAD. BOLT SIZE PER TIE DOWN SHOP DRAWING.			SEE TIE DOWN SHOP DRAWINGS
I				
II				
III				

NOTE:
1. SEE DET 3/SW-1 FOR HOLDOWN EMBEDMENTS AND ADDED REINFORCEMENT.
2. SEE DET. 5/SW-1 FOR ANCHOR BOLT INSTALLATION.
3. SEE DET. 4/SW-1 FOR HOLDOWN BOLT INSTALLED @ EDGE OF SLAB.

KEYPLAN



Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER ROBERT SHEUNG-CHI CHOU S 003518 STRUCTURAL STATE OF CALIFORNIA

DATE 02-04-2013

REVISION 1 1ST PCC

CROWN CABOT
LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
BLDG. "A" PODIUM LEVEL
SLAB HARDWARE PLACEMENT
PLAN SEGMENT A
FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

S1.12AH

11-2730
JOB NUMBER
1/8" = 1'-0"
SCALE

ISSUED AS
4/15/2013
DATE

LEGEND

1. INDICATES VERT. POST. SEE DETAIL 12, 13,14 & 15 SW-2 IF NO HARDWARE SHOWN.
INDICATES POST SIZE. IF SIZE NOT SHOWN, SEE FRAMING AND ALSO BEAM SYMBOL ABOVE FOR BEAM SUPPORT REQ'D.
INDICATES POST HARDWARE AT TOP OF POST.
INDICATES POST HARDWARE AT BOTTOM OF POST. IF POST IS SUPPORTED BY AN ELEVATED FLOOR, PROVIDE BLOCKING (THICKNESS EQUAL TO THE WIDTH OF POST) UNDER POST AND BETWEEN FRAMING MEMBERS.

2. INDICATES SHEAR PANEL AND LENGTH. SEE DETAILS FOR MORE INFORMATION. LENGTHS SHOWN ON SHEAR WALLS ARE MINIMUM SHEATHING LENGTHS. VERIFY ACTUAL WALL LENGTHS WITH ARCHITECTURAL PLANS. IF LENGTH IS NOT INDICATED, EXTEND SHEATHING ON ENTIRE WALL.
INDICATES SHEAR WALL HOLDOWN PER DETAIL 25/SW-00.

3. 12'/3'/ETC. INDICATES MIN. SHEAR PANEL LENGTH/MIN. PANEL LENGTH/ETC.
INDICATES SHEAR WALL AROUND OPENING W/ CONTINUOUS RIM. SEE DETAILS 1 AND 25 AND SHEAR WALL SCHEDULE ON SHEET SW-00.

4. INDICATES STEEL COL. W/ BASE PLATE & ATTACHMENT PER 8/SW-1

SLAB NOTES

1. IT IS THE CONTRACTOR RESPONSIBILITY TO VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL FLOOR PLANS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. THE GENERAL CONDITIONS, SPECIFICATIONS, GENERAL NOTES ON SHEET SW-0, GENERAL STRUCTURAL DETAILS ON SHEET SW-00 THRU SW-8, AND THE FOLLOWING APPLY TO THE WORK OF THE FOUNDATION.
3. THE FOUNDATION SYSTEM FOR THE PROPOSED CONSTRUCTION IS A SUSPENDED SLAB SYSTEM.
4. ALL HOLDOWNS, ANCHOR BOLTS, STRAPS, POST BASES & REINFORCEMENT MUST BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION & PLACEMENT OF CONCRETE.
5. SEE SHEET SW-1 FOR ANCHOR BOLT, HOLD DOWN PLACEMENT.
6. SEE SHEET SW-1 FOR GENERAL FOUNDATION DETAILS.
7. DEPRESSED AREAS FOR TILE FLOORING SHALL HAVE A ROUGHENED SURFACE TO ALLOW FOR BONDING OF MORTAR. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS.
8. ALL HOLDOWNS, ANCHOR BOLTS, STRAPS, POST BASES & REINFORCEMENT MUST BE TIED IN PLACE PRIOR TO FOUNDATION INSPECTION & PLACEMENT OF CONCRETE.

SHEAR WALL SCHEDULE

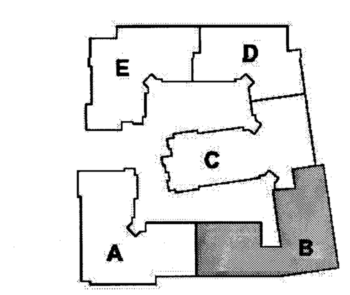
LEVEL	X	Y	Z	REMARKS
5	20	20	20	SEE SHEAR WALL SCHEDULE ON SW-00
4	21	21	21a	
3	22	22	21a	
2	22	22	22a	
1	22	22	22a	

HOLDOWN SCHEDULE

SYMBOL	BUILDING A	BUILDING B	1	REMARKS
0	SEE 25/SW-00 FOR TENSION & COMPRESSION LOAD. BOLT SIZE PER TIE DOWN SHOP DRAWING.			SEE TIE DOWN SHOP DRAWINGS
I				
II				
III				

NOTE:
1. SEE DET 3/SW-1 FOR HOLDOWN EMBEDMENTS AND ADDED REINFORCEMENT.
2. SEE DET. 5/SW-1 FOR ANCHOR BOLT INSTALLATION.
3. SEE DET. 4/SW-1 FOR HOLDOWN BOLT INSTALLED @ EDGE OF SLAB.

KEYPLAN



Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER ROBERT SHEUNG-CHI CHOU S 003518 STRUCTURAL STATE OF CALIFORNIA

REVISION	DATE
1 1ST PCC	02-04-2013

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" PODIUM LEVEL SLAB HARDWARE PLACEMENT PLAN SEGMENT B

FOR CONSTRUCTION

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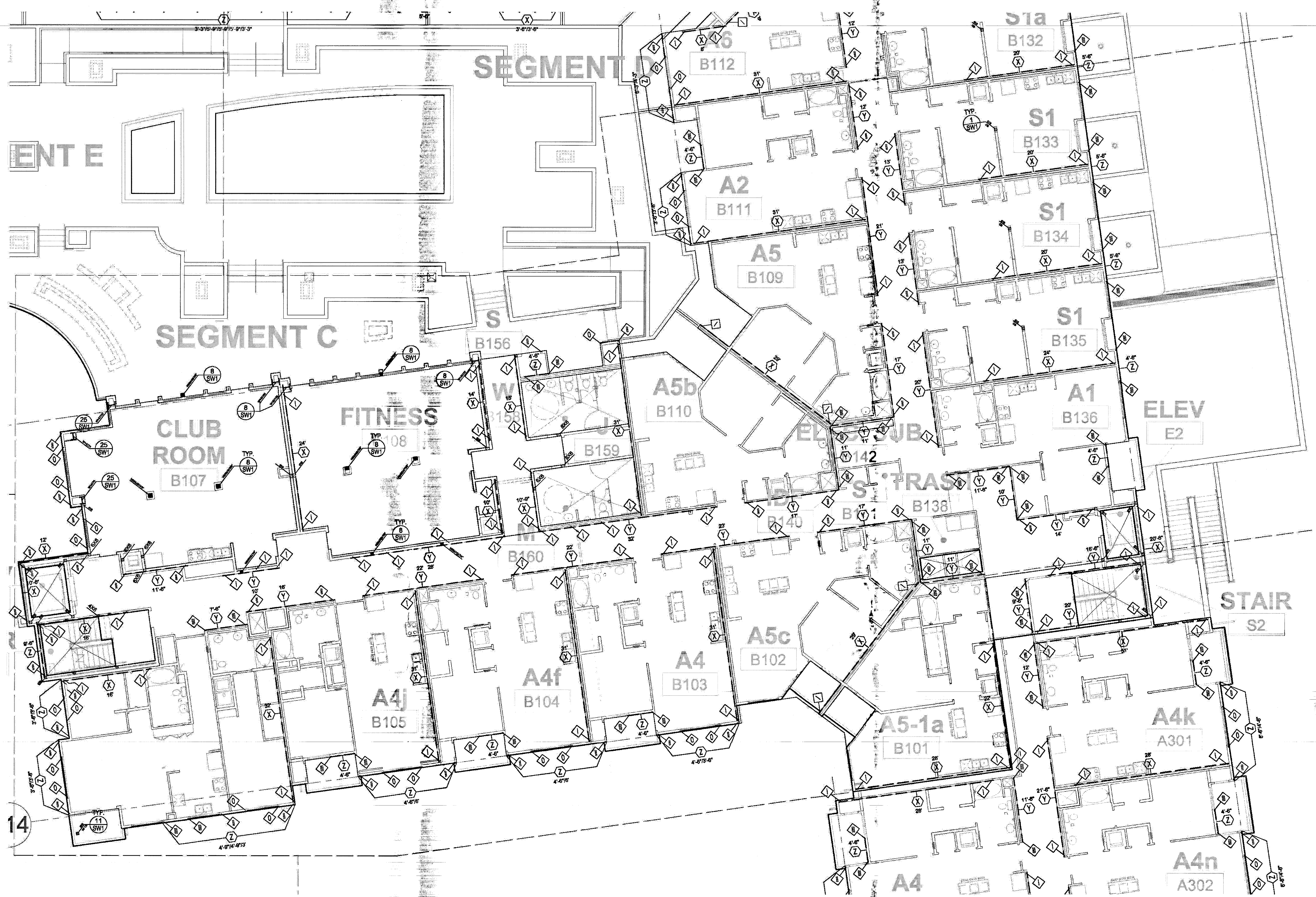
S1.12BH

11-2730
JOB NUMBER

1/8" = 1'-0"
SCALE

ISSUED AS

4/15/2013
DATE



LEGEND

1. INDICATES VERT. POST. SEE DETAIL 12, 13,14 & 15 SW-2 IF NO HARDWARE SHOWN.
   INDICATES POST SIZE. IF SIZE NOT SHOWN, SEE FRAMING AND ALSO BEAM SYMBOL ABOVE FOR BEAM SUPPORT REQ'D.
   INDICATES POST HARDWARE AT TOP OF POST.
   INDICATES POST HARDWARE AT BOTTOM OF POST. IF POST IS SUPPORTED BY AN ELEVATED FLOOR, PROVIDE BLOCKING (THICKNESS EQUAL TO THE WIDTH OF POST) UNDER POST AND BETWEEN FRAMING MEMBERS.
2. INDICATES SHEAR PANEL AND LENGTH. SEE DETAILS FOR MORE INFORMATION. LENGTHS SHOWN ON SHEAR WALLS ARE MINIMUM SHEATHING LENGTHS. VERIFY ACTUAL WALL LENGTHS WITH ARCHITECTURAL PLANS. IF LENGTH IS NOT INDICATED, EXTEND SHEATHING ON ENTIRE WALL.
   INDICATES SHEAR WALL HOLDOWN PER DETAIL 25/SW-00.
3. 12'/3'/ETC. INDICATES MIN. SHEAR PANEL LENGTH/MIN. PANEL LENGTH/ETC.
   INDICATES SHEAR WALL AROUND OPENING W/ CONTINUOUS RIM. SEE DETAILS 1 AND 25 AND SHEAR WALL SCHEDULE ON SHEET SW-00.
4. HSS W INDICATES STEEL COL. W/ BASE PLATE & ATTACHMENT PER 8/SW-1

SLAB NOTES

1. IT IS THE CONTRACTOR RESPONSIBILITY TO VERIFY ALL DIMENSIONS WITH THE ARCHITECTURAL FLOOR PLANS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
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SHEAR WALL SCHEDULE

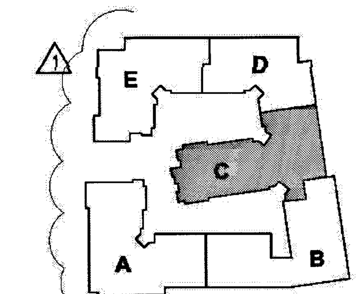
LEVEL	X	Y	Z	REMARKS
5	20	20	20	SEE SHEAR WALL SCHEDULE ON SW-00
4	21	21	21a	
3	22	22	21a	
2	22	22	22a	
1	22	22	22a	

HOLDOWN SCHEDULE

SYMBOL	BUILDING A	BUILDING B	1	REMARKS
0	SEE 25/SW-00 FOR TENSION & COMPRESSION LOAD. BOLT SIZE PER TIE DOWN SHOP DRAWING.			SEE TIE DOWN SHOP DRAWINGS
I				
II				
III				

NOTE:
1. SEE DET 3/SW-1 FOR HOLDOWN EMBEDMENTS AND ADDED REINFORCEMENT.
2. SEE DET. 5/SW-1 FOR ANCHOR BOLT INSTALLATION.
3. SEE DET. 4/SW-1 FOR HOLDOWN BOLT INSTALLED @ EDGE OF SLAB.

KEYPLAN



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VCA ENGINEERS®
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SUITE 150
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REVISION	DATE
1 1ST PCC	02-04-2013

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "B" PODIUM LEVEL SLAB HARDWARE PLACEMENT PLAN SEGMENT C

FOR CONSTRUCTION

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S1.14CH

11-2730
JOB NUMBER

1/8" = 1'-0"
SCALE

ISSUED AS
4/15/2013
DATE

LEGEND

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   INDICATES POST HARDWARE AT TOP OF POST.
   INDICATES POST HARDWARE AT BOTTOM OF POST. IF POST IS SUPPORTED BY AN ELEVATED FLOOR, PROVIDE BLOCKING (THICKNESS EQUAL TO THE WIDTH OF POST) UNDER POST AND BETWEEN FRAMING MEMBERS.
   4X4 W/CC CBS
2. 12' INDICATES SHEAR PANEL AND LENGTH. SEE DETAILS FOR MORE INFORMATION. LENGTHS SHOWN ON SHEAR WALLS ARE MINIMUM SHEATHING LENGTHS. VERIFY ACTUAL WALL LENGTHS WITH ARCHITECTURAL PLANS. IF LENGTH IS NOT INDICATED, EXTEND SHEATHING ON ENTIRE WALL.
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SHEAR WALL SCHEDULE

LEVEL	X	Y	Z	REMARKS
5	20	20	20	SEE SHEAR WALL SCHEDULE ON SW-00
4	21	21	21a	
3	22	22	21a	
2	22	22	22a	
1	22	22	22a	

HOLDOWN SCHEDULE

SYMBOL	BUILDING A	BUILDING B	1	REMARKS
0	SEE 25/SW-00 FOR TENSION & COMPRESSION LOAD. BOLT SIZE PER TIE DOWN SHOP DRAWING.			SEE TIE DOWN SHOP DRAWINGS
I				
II				
III				

NOTE:
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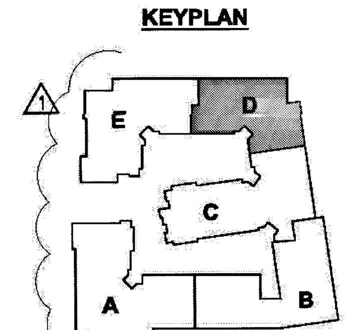
3. SEE DET. 4/SW-1 FOR HOLDOWN BOLT INSTALLED @ EDGE OF SLAB.

KEYPLAN



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SUITE 150
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REVISION	DATE
1ST PCC	02-04-2013

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BLDG. "B" PODIUM LEVEL SLAB HARDWARE PLACEMENT PLAN SEGMENT D
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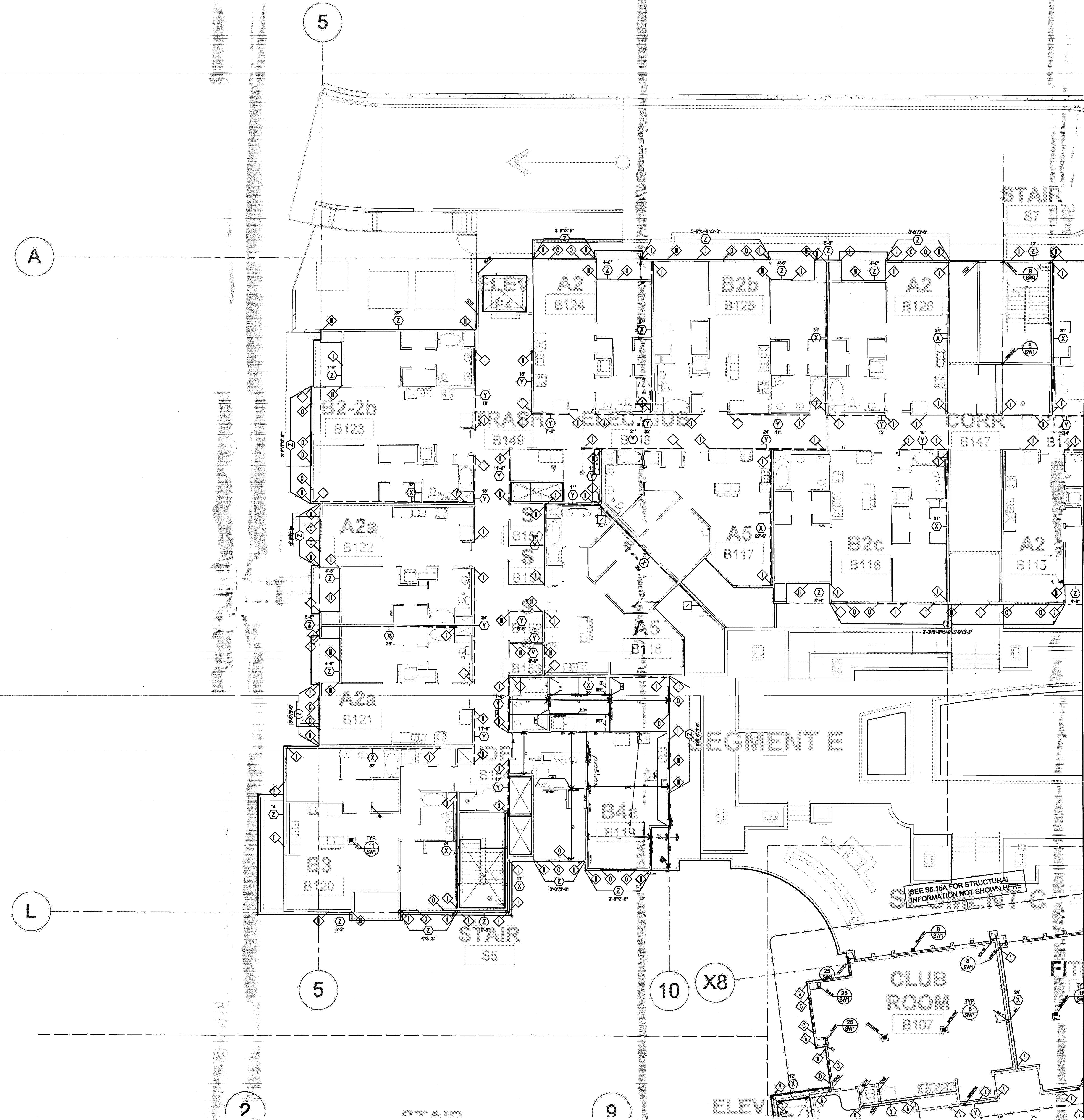

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SHEAR WALL SCHEDULE

LEVEL	X	Y	Z	REMARKS
5				SEE SHEAR WALL SCHEDULE ON SW-00
4				
3				
2				
1				

HOLDOWN SCHEDULE

SYMBOL	BUILDING A	BUILDING B	REMARKS
	SEE 25/SW-00 FOR TENSION & COMPRESSION LOAD. BOLT SIZE PER TIE DOWN SHOP DRAWING.		SEE TIE DOWN SHOP DRAWINGS

NOTE:
1. SEE DET 3/SW-1 FOR HOLDOWN EMBEDMENTS AND ADDED REINFORCEMENT.
2. SEE DET. 5/SW-1 FOR ANCHOR BOLT INSTALLATION.
3. SEE DET. 4/SW-1 FOR HOLDOWN BOLT INSTALLED @ EDGE OF SLAB.

KEYPLAN

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
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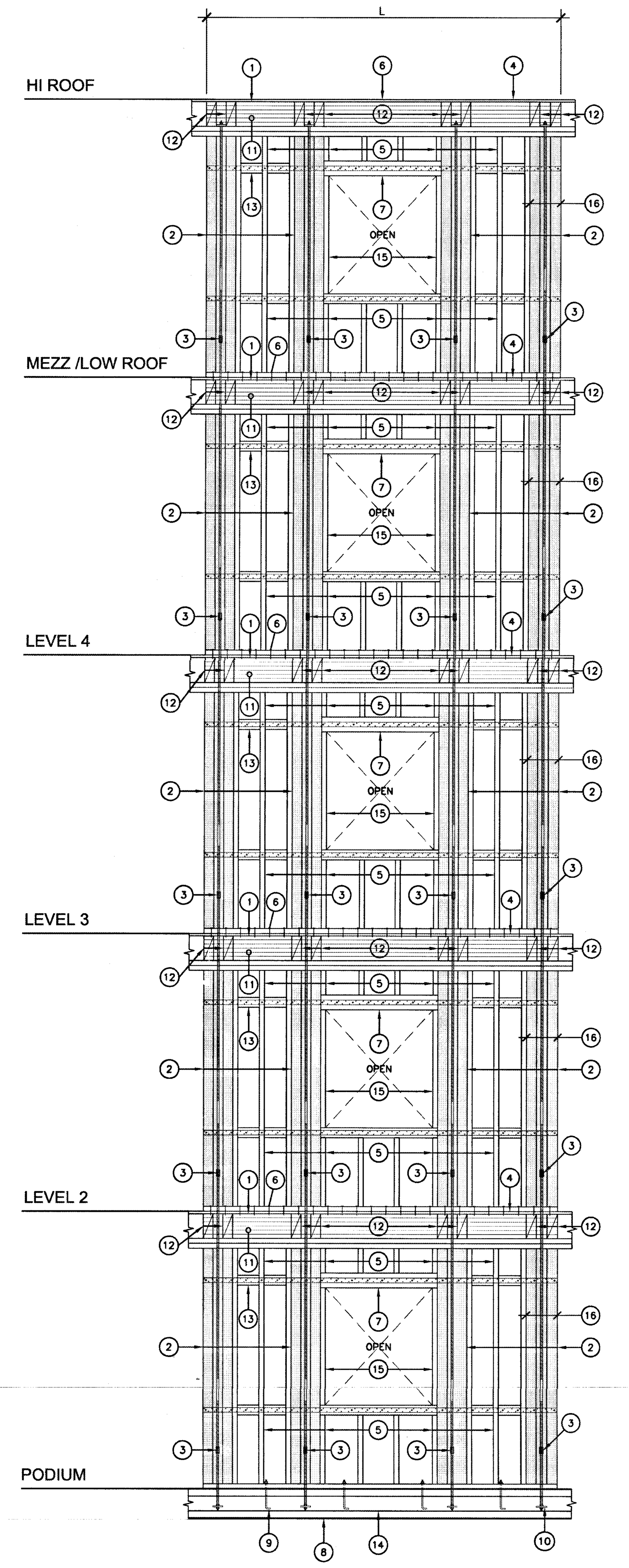
HOLDOWN SYSTEM NOTES

1. TIE-DOWN SUPPLIER SHALL PROVIDE TIE-DOWN DRAWINGS (SEE SHEET SW-0) STAMPED AND SIGNED BY A LICENSED CIVIL OR STRUCTURAL ENGINEER SHOWING COMPLETE TIE-DOWN SYSTEM INFO., INCLUDING RODS, BEARING PLATES, CONNECTORS, POSTS, ADDED STUDS, AND ALL OTHER RELATED COMPONENTS.
2. SHRINKAGE COMPENSATING DEVICES SHALL BE PROVIDED WITH THE SYSTEM AT EACH FLOOR.
3. FOR NON-STACKING HOLDOWN, DESIGN LOAD AT CONSIDERED LEVEL MAY BE REDUCED BY DEDUCTING ACCUMULATED LOADS AT MISSING LEVELS FROM THE CONSIDERED LEVEL LOADS. TIE-DOWN SUPPLIER SHALL PROVIDE ROD SIZE AND BEARING PLATE ACCORDINGLY.



SHEAR WALL

ALL BUILDINGS

HOR. STRAP	CMSTC16
BLOCKING	2X
WINDOW SILL	2-2X

MARK / LOADS	[illegible]	[illegible]	[illegible]	[illegible]	
TENSION LOAD (K)	-	-	-	-	-
COMPRESSION (K)	-	-	-	-	-
TIE ROD SIZE	-	-	-	-	-

HOR. STRAP	CMSTC16
BLOCKING	2X
WINDOW SILL	2-2X

MARK / LOADS	[illegible]	[illegible]	[illegible]	[illegible]	
TENSION LOAD (K)	2	3	2	5	-
COMPRESSION (K)	2.6	3.9	2.6	6.5	-
TIE ROD SIZE	1/2"ø	1/2"ø	1/2"ø	5/8"ø	-

HOR. STRAP	2-CMSTC16
BLOCKING	3X
WINDOW SILL	2-2X

MARK / LOADS	[illegible]	[illegible]	[illegible]	[illegible]	
TENSION LOAD (K)	3.5	5	5	10	-
COMPRESSION (K)	4.55	6.5	6.5	13	-
TIE ROD SIZE	1/2"ø	1/2"ø	5/8"ø	3/4"ø	-

HOR. STRAP	CMSTC16
BLOCKING	4X
WINDOW SILL	4X

MARK / LOADS	[illegible]	[illegible]	[illegible]	[illegible]	
TENSION LOAD (K)	6.2	11	10	19	-
COMPRESSION (K)	8.06	14.3	13	24.7	-
TIE ROD SIZE	5/8"ø	3/4"ø	3/4"ø	1"ø	-

HOR. STRAP	CMSTC14
BLOCKING	4X
WINDOW SILL	4X

MARK / LOADS	[illegible]	[illegible]	[illegible]	[illegible]	
TENSION LOAD (K)	8	18	15	25	-
COMPRESSION (K)	10.4	25	21	35	-
TIE ROD SIZE	3/4"ø	1"ø	1"ø	1.1/8"ø	-

HD ANCHOR TO SLAB / FDN.				
EDGE DIST. > 18" (DIA./GRADE)-INCH/KSI	5/8/36	1/36	1/36	1 3/8/36
EDGE DIST. < 18" (DIA./GRADE)-INCH/KSI	5/8/36	1/36	1/36	1 3/8/36

* SEE DETAIL 3/SW-1 FOR A.B. SLEEVE REQ'MT.

KEY NOTES:

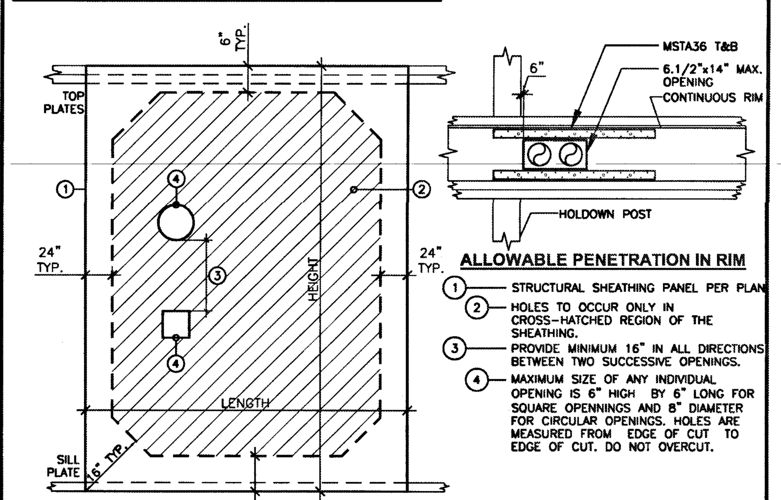
1. FLOOR/ROOF ASSEMBLY. CONT. RIM REQUIRED OVER SHEAR WALL W/OPENING.
2. TIE-DOWN SYSTEM ASSEMBLY. SEE TIE-DOWN SUPPLIER DRAWINGS.
3. COUPLER PER TIE-DOWN SUPPLIER SHOP DRAWINGS.
4. FLOOR OR ROOF SHEATHING.
5. STUD WALL PER PLAN.
6. SHEAR TRANSFER CONNECTOR PER SHEAR WALL SCHEDULE & 5/SW-00.
7. HEADER AT OPENING.
8. CONCRETE SLAB OR FOUNDATION PER PLAN.
9. ANCHOR BOLT AND SILL PLATE PER SHEAR WALL SCHEDULE.
10. TIE-DOWN ANCHOR PER SCHEDULE. SEE DETAIL 3/SW-1 FOR EMBEDMENT.
11. 3X MIN. CONT. RIM, EXTENDED FROM EDGE TO EDGE OF SHEAR WALL. USE A 4X CONT. RIM IF ANY PIER ELEMENT LESS THAN 48" WIDE. HANGERS MAY BE REQ'D FOR FLOOR FRAMING. SEE DETAIL 2/SW-2. SEE 16/SW-00 FOR ALLOWABLE HOLES AT RIM.
12. ADDED BLOCKS TO MATCH POSTS ABOVE & BELOW.
13. STRAP ABOVE & BELOW EACH WINDOW PER TABLE. EXTEND STRAP MIN. 48" PAST OPENING OR TO END OF SHEAR WALL. STRAP MAY BE INSTALLED ON EITHER SIDE OF WALL. REQUIRED ON ONE SIDE ONLY @ DOUBLE SIDED SHEARWALLS.
14. REBAR PER SLAB PLANS.
15. TRIMMER PER PLAN.
16. NO HOLES ARE ALLOWED IN THIS AREA. TYPICAL ALL LEVELS.

MINIMUM END LENGTHS FOR STRAP

STRAP	END LENGTH, L (MIN.)	MIN. FASTENERS (TOTAL)
CS14	18"	34-10d
CMSTC16	25"	64-16d SINKERS
CMST14	40"	88-10d
CMST12	54"	118-10d
MST48	EQUAL	32-16d
MST60	EQUAL	46-16d
MST72	EQUAL	56-16d

SHEAR WALL ELEVATION 25

NOTE:
THE TOTAL COMBINED LENGTH OF ALL OPENINGS MUST BE LESS THAN 10% OF THE LENGTH OF THE SHEATHING SHOWN ON THE STRUCTURAL PLAN. THE TOTAL COMBINED HEIGHT OF ALL OPENINGS MUST BE LESS THAN 10% OF THE HEIGHT OF SHEATHING (PLATE HEIGHT) SHOWN ON THE STRUCTURAL PLAN.



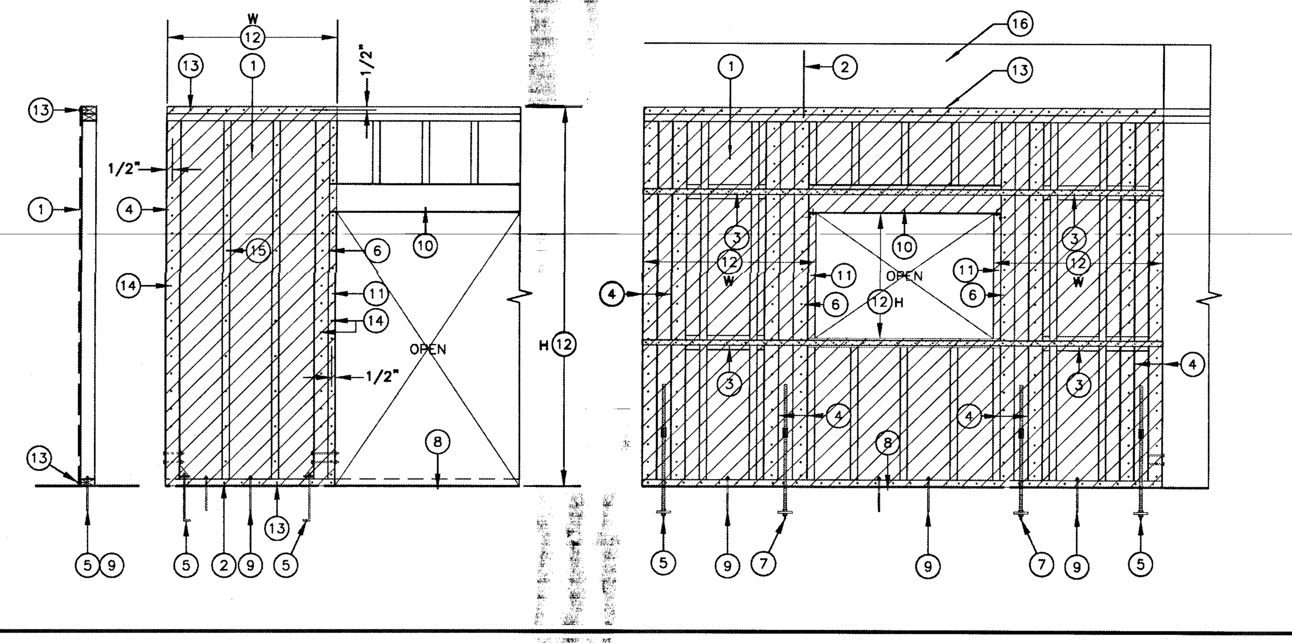
ALLOWABLE PENETRATION IN RIM

1. STRUCTURAL SHEATHING PANEL PER PLAN
2. HOLES TO OCCUR ONLY IN CROSS-HATCHED REGION OF THE SHEATHING.
3. PROVIDE MINIMUM 16" IN ALL DIRECTIONS BETWEEN TWO SUCCESSIVE OPENINGS.
4. MAXIMUM SIZE OF ANY INDIVIDUAL OPENING IS 6" HIGH BY 6" LONG FOR SQUARE OPENNINGS AND 8" DIAMETER FOR CIRCULAR OPENINGS. HOLES ARE MEASURED FROM EDGE OF CUT TO EDGE OF CUT. DO NOT OVERCUT.

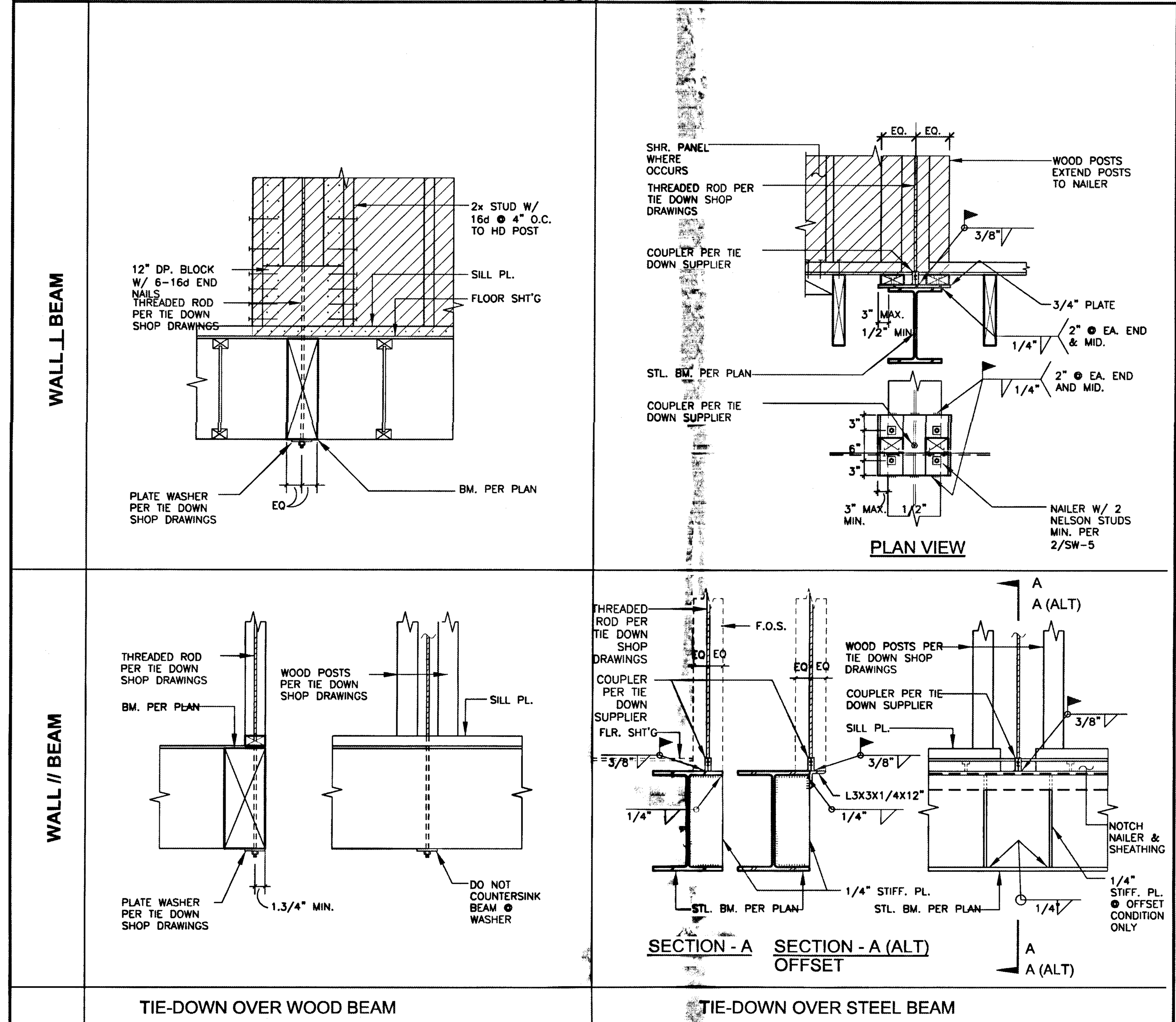
ALLOWABLE HOLES IN SHEAR PANEL & RIM 16

KEY NOTES:

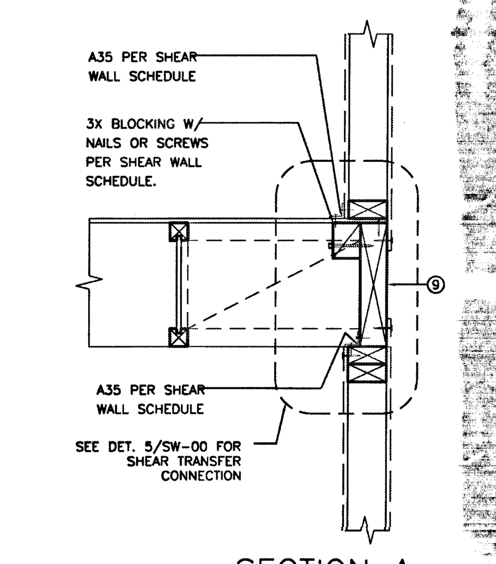
1. RATED STRUCTURAL PANEL PER PLAN & S.W. SCHEDULE. SHEATHING TO BE FLUSH FROM BOTTOM OF SILL/SOLE PLATE TO TOP OF DOUBLE TOP PLATES. 1" SHORTER SHEATHING (EX: 9'-0" SHT'G W/9'-1" PLATES) MAY BE USED IF DOUBLE TOP PLATES STITCH NAILED W/16d'S AT B.N. SPACING W/SHT'G FLUSH TO BOTTOM OF SILL.
2. LOCATE PANEL JOINTS AT COMMON STUD OR POST. IF LOCATED ON TRIMMER, STITCH NAIL TRIMMER TO KING STUD OR HOLDOWN POST W/16d @ B.N. SPACING.
3. STRAP (CS 16 MIN.) OVER BLK'G (3X MIN.) W/ NAILS @ EVERY HOLE PER SCHEDULE ON SHEAR WALL ELEVATION 25/SW-00.
4. B.N. @ ALL HOLDOWN POSTS. SEE TIE-DOWN SHOP DRAWINGS.
5. HOLDOWN PER 25/SW-00.
6. KING POST / HOLDOWN POST PER PLAN
7. INSIDE HOLDOWN PER 25/SW-00.
8. SLAB OR FOUNDATION
9. ANCHOR BOLT TO FOUNDATION OR SOLE PLATE CONNECTION @ UPPER SHEAR WALL. SIZE & SPACING PER SHEAR WALL SCHEDULE
10. HEADER PER PLAN
11. 2X TRIMMER U.N.O. (MAY BE 2-2X, 4X OR 6X PER PLAN)
12. MINIMUM HEIGHT TO WIDTH RATIO: $H/W \geq 2$
13. BOUNDARY NAILING (B.N.) @ TOP PLATE AND SILL PLATE
14. BOUNDARY NAILING (B.N.) @ EDGE OF SHEAR WALL.
15. FIELD NAILING FROM PANEL FIELD TO STUD OR EDGE NAILING FROM PANEL EDGE TO STUD. (NOTE: MINIMUM SHEATHING WIDTH IS 24")
16. CONTINUOUS RIM REQUIRED OVER SHEAR WALL AROUND OPENING. SEE DETAIL 5/SW-00.



TYPICAL SHEAR WALL DETAIL 1



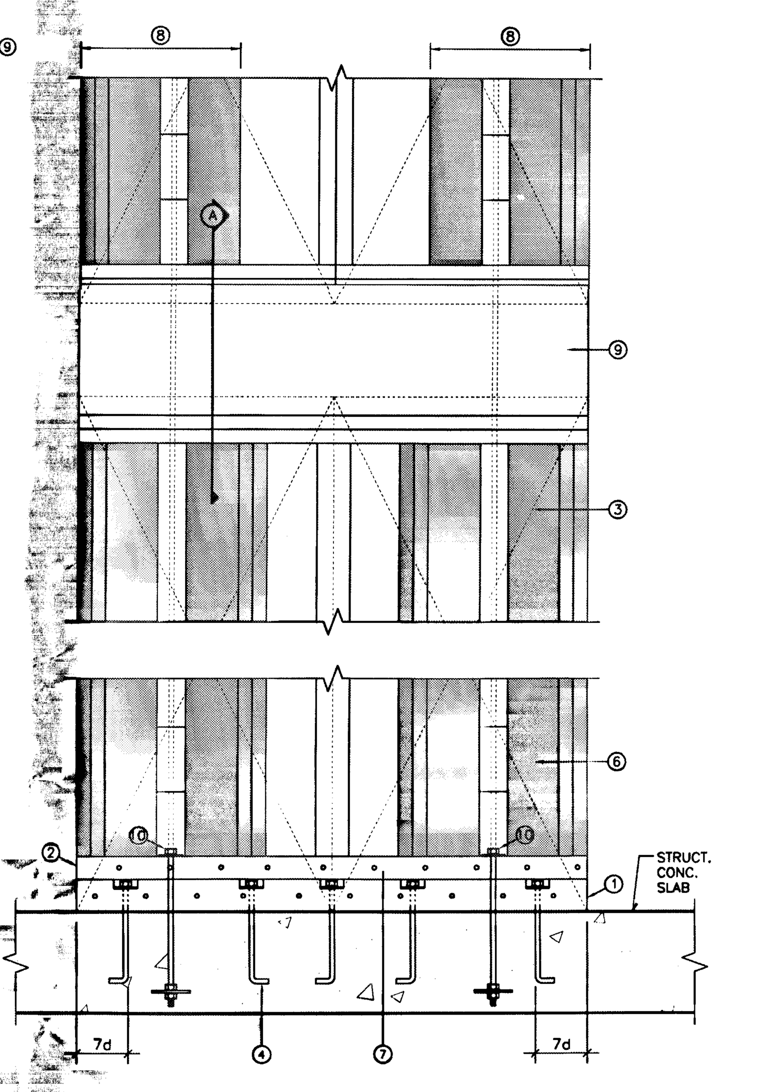
TYPICAL HOLDOWN / WOOD & STEEL BEAM DETAILS 13



SECTION A
(USE WHERE HD POSTS WILL NOT ALLOW FULL SOLE PLATE NAILING)

KEY NOTES

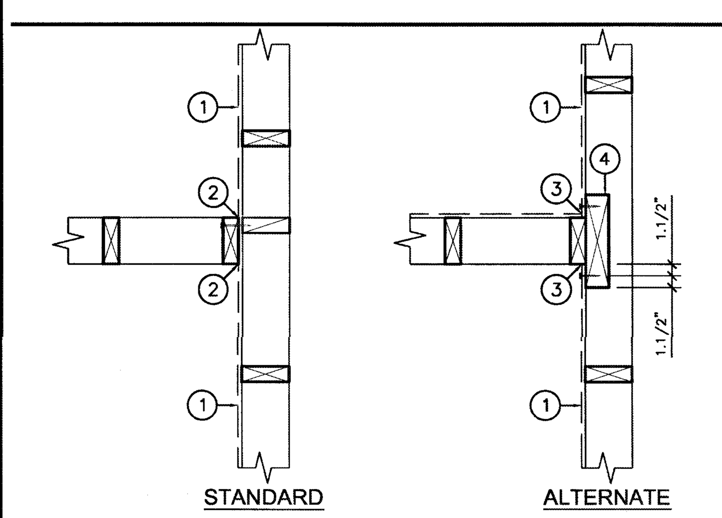
1. CONT. 4X P.T.D.F. SILL PLATE W/ MAX. 1" NOTCH TO COUNTERSINK A.B. & WASHER
2. 3X CONT. SILL PLATE
3. SHEAR WALL TYPE PER PLAN
4. A.B. W/ PLATE WASHER SPACING PER SHEAR WALL SCHEDULE
5. TIE-DOWN SYSTEM PER PLAN
6. COMPRESSION STUDS / POSTS PER HOLDOWN SCHEDULE
7. BOUNDARY NAILING PER SHEAR WALL SCHEDULE
8. SHEAR CONN. INTERFERENCE ZONE
9. CONT. RIM / BLK'G (4XMIN.)
10. 3.1/2X3.1/2X1/4" SQ. PLATE WASHER & NUT



TIE-DOWNW/ANCHORS @ CONGESTED SHEAR WALLS < 6' 3

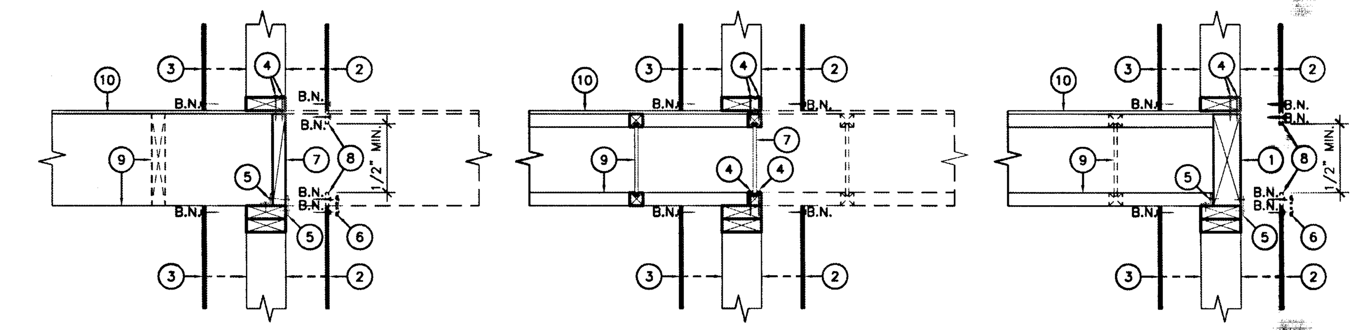
NOTE:
REFER TO TIE-DOWN SUPPLIERS DETAILS

TIE-DOWNS @ CORNERS / SHARED HD & HD POST 19



1. CONTINUOUS SHEAR WALL PER PLAN.
2. DO NOT TERMINATE SHEAR PANEL AT INTERSECTION.
3. SHEAR PANEL MAY BE TERMINATED AT INTERSECTION.
4. 3X MIN. FULL HEIGHT POST.

SHEAR PANEL AT INTERSECTION 20



2x FRAMING, TYPICAL EXTERIOR WALL (#12 & LIGHTER) OR INTERIOR WALL

I-JOIST FRAMING, TYPICAL EXTERIOR WALL (#12 & LIGHTER) OR INTERIOR WALL

2X OR I-JOIST FRAMING, TYPICAL EXTERIOR WALL (#13 & STRONGER) & ALL SHEAR WALLS W/ OPENINGS

KEY NOTES

1. SHEAR TRANSFER CONTINUOUS RIM. SEE SHEAR WALL SCHED. FOR MINIMUM WIDTH.
2. SHEAR PANEL ON ONE SIDE OF WALL.
3. SHEAR PANEL ON SECOND SIDE OF WALL WHERE OCCURS.
4. SHEAR TRANSFER NAILING, STAGGER AS REQ'D. PROVIDE MINIMUM 3/8" EDGE DISTANCE.
5. LOCATION OF SHEAR TRANSFER HARDWARE SPACING PER SCHED.
6. SOME SHEAR TRANSFER HARDWARE MAY BE APPLIED OVER SHEATHING WITH LONGER NAIL. SEE SCHED.
7. SHEAR TRANSFER RIM OR BLOCKING. SEE SHEAR WALL SCHED. FOR MINIMUM WIDTH.
8. EXTERIOR FACE OF SHEAR PANEL MAY BE EXTENDED 2" MINIMUM TO RIM IN ORDER TO OMIT SHEAR TRANSFER NAILING FOR SINGLE SIDED SHEAR WALL. (REDUCE 50% SHEAR TRANSFER NAILING FOR DOUBLE-SIDED SHEAR WALL.)
9. FRAMING PERPENDICULAR OR PARALLEL TO SHEAR WALL.
10. HORIZONTAL DIAPHRAGM.

		CONNECTION TO CONCRETE								CONNECTION AT UPPER FLOOR								
		DESCRIPTION				SILL PLATE	ANCHOR BOLT[5]		SOLE[13] PLATE	BLOCK OR RIM[6]		NAIL OR SCREW (IN. O.C.)			SIMP. SHR. CONN. (IN LIEU OF NAIL OR SCREW) (IN. O.C.)		
SHEAR WALL NO.	SIDE(S)	T (IN.)	SHEATHING GRADE	NAIL (COMMON)	EDGE NAILING[3] (IN. O.C.)	MINIMUM THICKNESS	DIAM. (IN.)	SPACING (IN. O.C.)	MINIMUM THICKNESS	I-JOIST MINIMUM WIDTH	2x FRM'G MINIMUM WIDTH	16d COMMON NAIL 0.162"x3.1/2"[17]	1/4" SCREW[6] (SIMP. SDS 1/4")	1/2" LAG SCREW[4]	A35[2, 10]	LTP4[10]	CAPACITY (PLF)
NO SHEAR		NO SHEAR (EXTERIOR & BEARING WALLS)[8]				2x	5/8	48	2x	1.3/4"	2x	8	-	-	32	32	-
9	1	3/8	RATED	8d	6	2x	5/8	32	2x	1.3/4"	2x	5.1/2	-	-	20	24	260
10	1	3/8	RATED	8d	4	2x	5/8	24	2x	1.3/4"	2x	4	-	-	12	22	350
11	1	3/8	RATED	8d	3	3x	5/8	16	2x	1.3/4"	2x	3	12	-	10	16	490
12	1	3/8	RATED	8d	2	3x	5/8	16	2x	1.3/4"	2x	2.1/4	12	-	8	12	640
13	1	15/32	STRUCT I	10d	2	3x	5/8	16	3x	3.1/2"	3x	2 @ 3" O.C.	5	12	6	8	870
14	2	3/8	RATED	8d	3	3x	5/8	16	3x OR 2-2x	3.1/2"	3x	-	4	10	5.5[9]	7	980
15	2	3/8	RATED	8d	2	3x	5/8	12	3x OR 2-2x	3.1/2"	3x	-	3	8	4[9]	6	1280
16	2	15/32	STRUCT I	10d	2	3x	5/8	8	3x OR 2-2x	3.1/2"	3x	2 @ 5" O.C.	4	6	3[9]	4	1740

NOTES:
1. USE MINIMUM 3x MEMBER BEHIND ADJOINING PANEL JOINTS AND STAGGER EDGE NAILING.
2. INSTALL CONNECTOR WITH LONG DIRECTION PARALLEL TO PLATES.
3. STAGGER IN ROWS OFFSET BY 1/2".
4. MINIMUM 4" PENETRATION INTO BLOCKING/RIM BELOW.
5. SQUARE PLATE WASHER IS REQUIRED FOR ALL ANCHOR BOLTS.

ANCHOR BOLT	SQUARE PLATE WASHER
5/8"	3"x3"x1/4"
3/4"	3"x3"x1/4"
7/8"	3"x3"x5/16"
1"	3.1/2"x3.1/2"x3/8"

NOTES:
THE HOLE IN THE PLATE WASHER IS PERMITTED TO BE DIAGONALLY SLOTTED WITH A WIDTH OF UP TO 3/16 IN. LARGER THAN THE BOLT DIAMETER AND A SLOT LENGTH NOT TO EXCEED 1.3/4 IN., PROVIDED STANDARD CUT WASHER IS PLACED BETWEEN THE PLATE WASHER AND THE NUT.

6. MINIMUM 2" (3.1/2" AT FIRST TWO LEVELS) PENETRATION INTO BLOCKING/RIM BELOW.
7. OFFSET PANEL JOINT AT OPPOSING FACES OF WALL SO THAT JOINTS DO NOT LAND ON ONE COMMON STUD.
8. FOR INTERIOR NON-STRUCTURAL WALLS USE SHOT PINS @ 24" O.C.
9. INSTALL & STAGGER SHEAR CONNECTORS ON EACH SIDE OF BLOCKING/RIM.
10. IF CONNECTOR IS APPLIED OVER SHEATHING, USE 8d x 2.1/2" NAIL.
11. ALL FIELD NAILING @ 12" O.C.
12. MINIMUM TJI 230 SERIES JOISTS OR EQUAL SHALL BE USED AT ALL SHEAR TRANSFER JOISTS AND BLOCKING.
13. CLOSEST 16d COMMON SOLE PLATE NAILING INTO NARROW FACE OF RIM SHALL BE 4" O.C.
14. CAPACITY PER 2010 CBC TABLE 2306.4.1
15. 10d SHORTS (0.148"ø x2.1/8") MAY BE USED IN LIEU OF 10d COMMON.
16. USE 4X MINIMUM RIM OVER PERFORATED SHEAR WALLS. SEE 1/SW-00.
17. OPTIONAL: 40d NAILS (0.162"øx5.1/8") AT 16d SPACINGS MAY BE USED AT 3X SOLE PLATES.
18. OPTIONAL: 3X SOLE PLATES AT ALL WALLS FOR GYPBOARD ATTACHMENT.
19. 4X MINIMUM CONTINUOUS RIM REQUIRED AT SHEARWALLS W/ OPENINGS.

SHEAR WALL SCHEDULE AND SHEAR TRANSFER DETAIL 5

TCA
Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER
S 003518
STRUCTURAL
STATE OF CALIFORNIA

DATE 02-04-2013
REVISION 1ST PCC

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

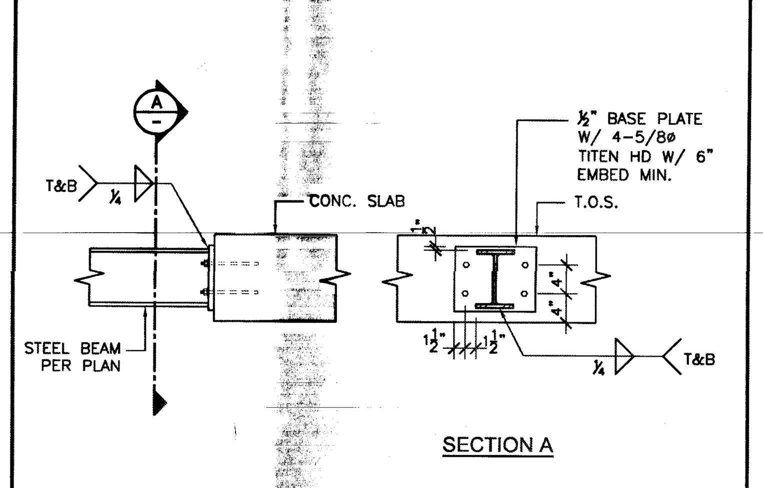
FOR CONSTRUCTION

DRAWING CONTENTS: STRUCTURAL NOTES

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

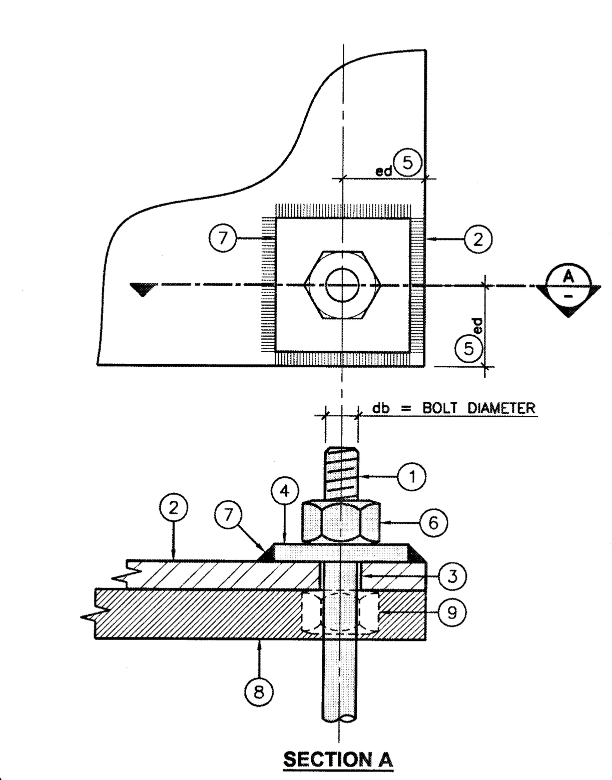
SW-00

11-2730
JOB NUMBER
NONE
SCALE
ISSUED AS
4/15/2013
DATE



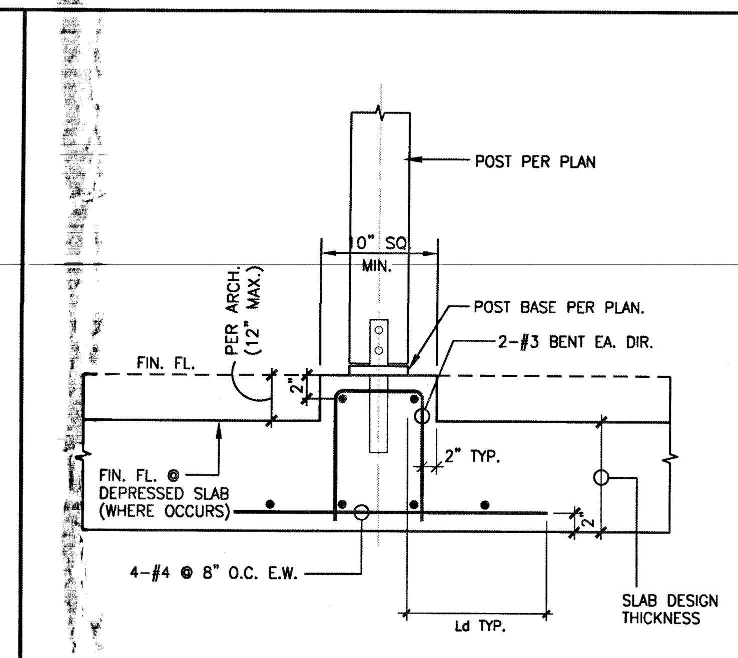
STEEL BEAM @ CONC. SLAB 21

BOLT DIAMETER	MAX. OVERSIZE	MIN. ed	WASHER
7/8"	1.3/16"	1.1/2"	2.1/2"x2.1/2"x3/8"
1"	1.5/16"	1.3/4"	3"x3"x3/8"
1.1/8"	1.7/16"	2.1/2"	4"x4"x1/2"
1.1/2"	1.13/16"	3.1/4"	5.1/4"x5.1/4"x1/2"

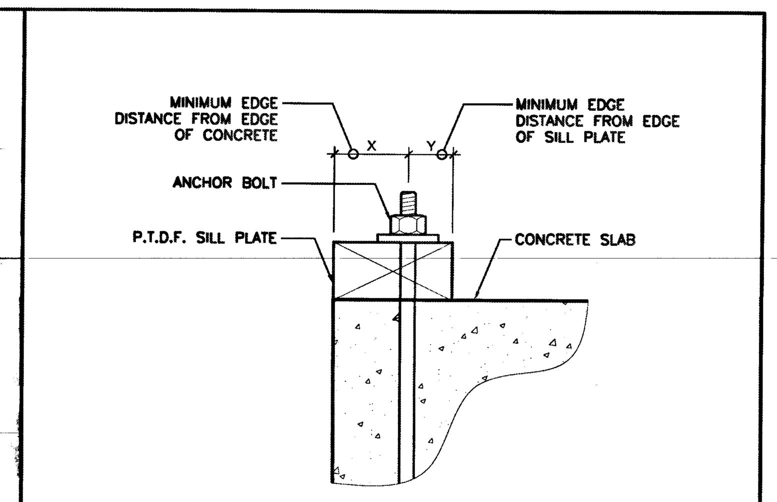


1. ANCHOR BOLT.
2. BASE PLATE W/ OVERSIZE HOLE FOR ANCHOR BOLT REPLACEMENT.
3. MAXIMUM OVERSIZE HOLE PER TABLE ABOVE.
4. PLATE WASHER PER TABLE ABOVE W/ HOLE (1/16" LARGER THAN BOLT DIAMETER).
5. MINIMUM EDGE DISTANCE - SEE BASE PLATE DETAIL & TABLE ABOVE.
6. NUT.
7. 1/4" FILLET WELD ALL AROUND.
8. NON-SHRINK GROUT.
9. LEVELING NUT.

BASE PLATE W/ OVERSIZE HOLE 17

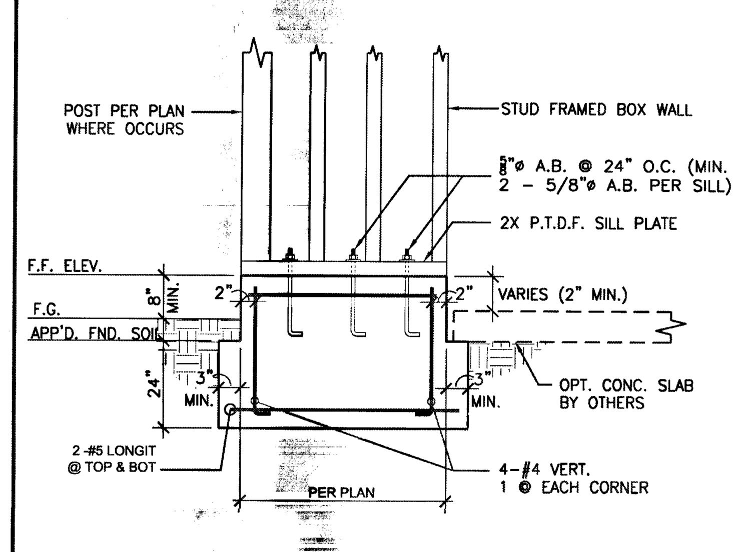


TYPICAL WOOD POST BASE 11

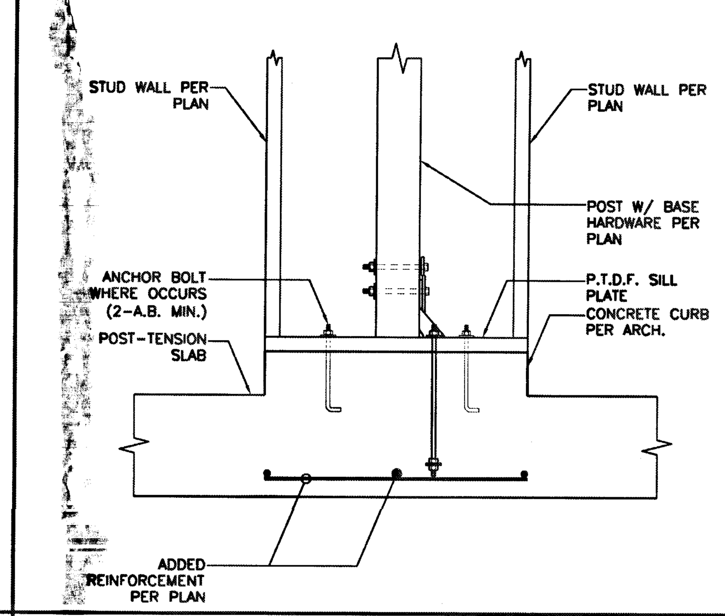


2x4 SILLS			2x6 SILLS		
DIAMETER	X	Y	DIAMETER	X	Y
1/2"	1.1/2"	1"	1/2"	1.1/2"	1"
5/8"	1.7/8"	1"	5/8"	1.7/8"	1"
3/4"	2.1/4"	1.1/8"	3/4"	2.1/4"	1.1/8"
7/8"	N/A	N/A	7/8"	2.5/8"	1.5/16"

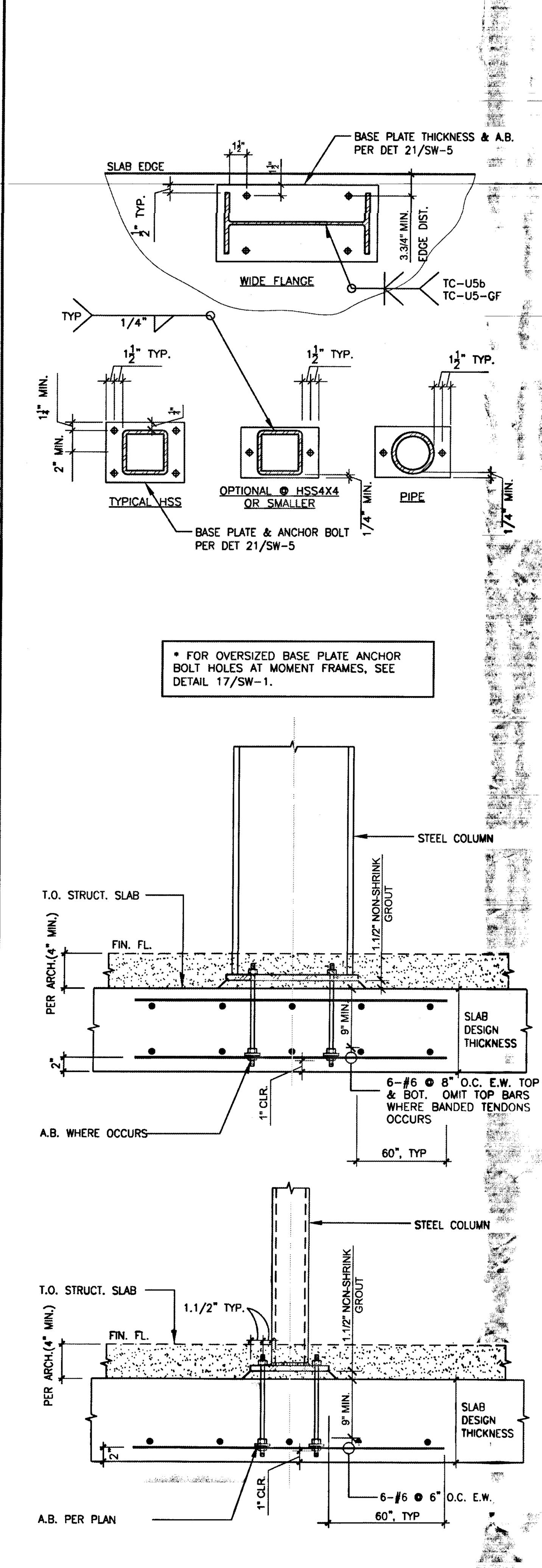
TYPICAL ANCHOR BOLT PLACEMENT 1



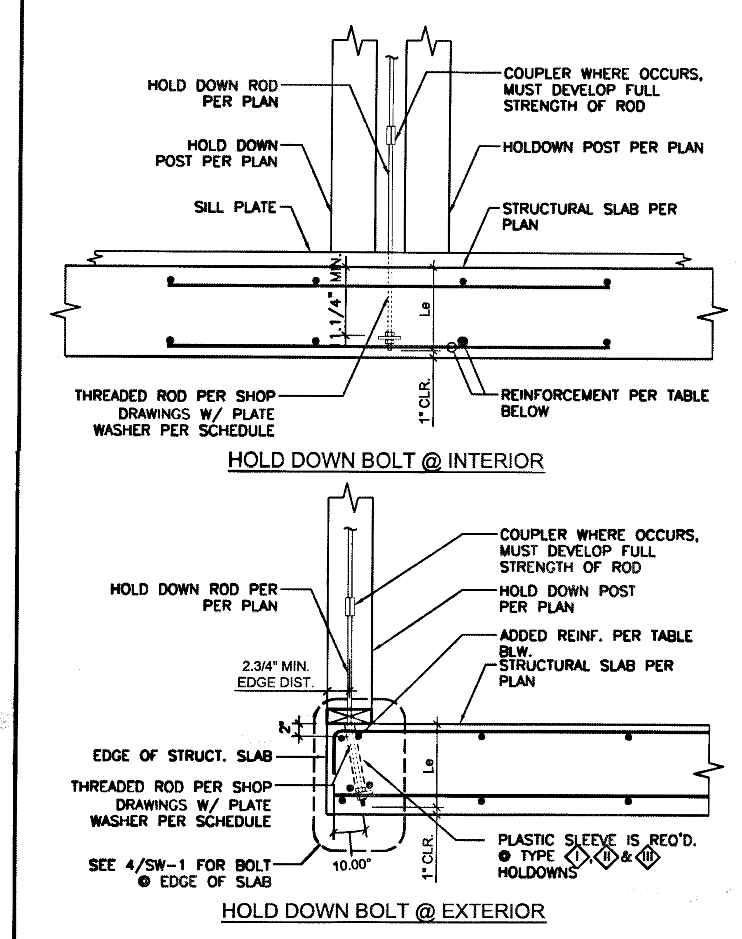
FOOTING @ BOXED WALL 22



COLUMN BASE @ PODIUM 12



TYPICAL STEEL COLUMN BASE 8

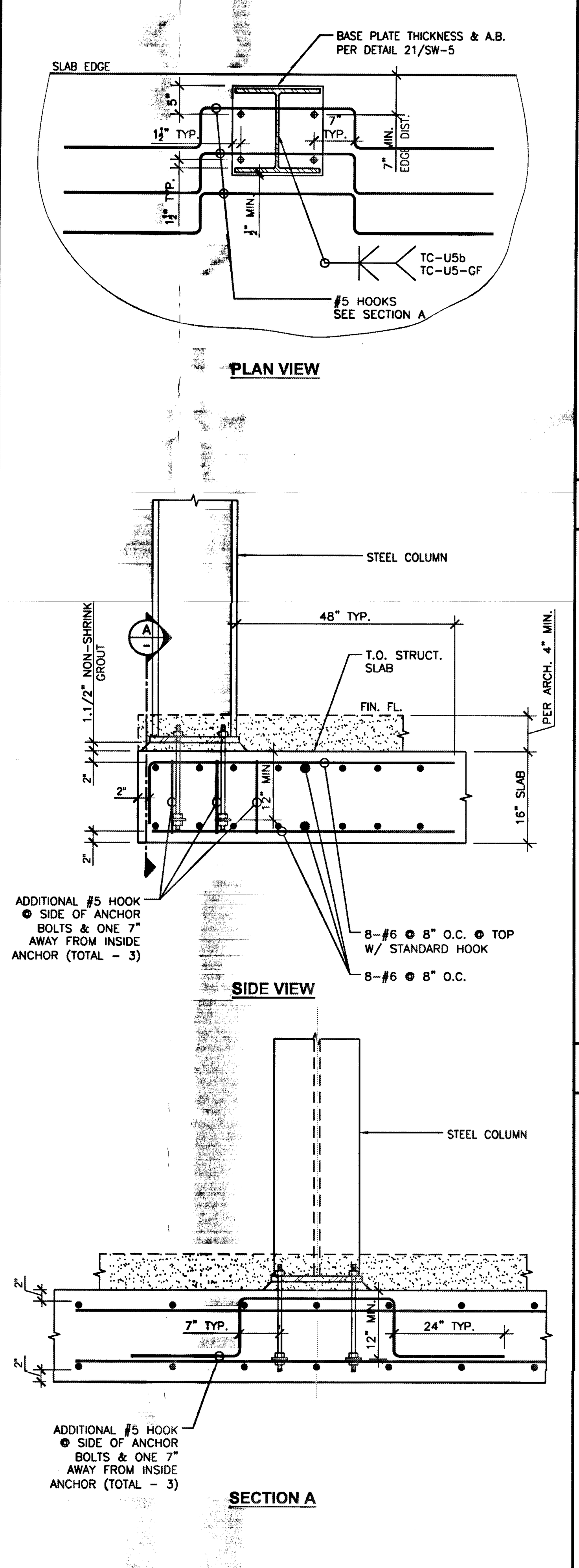


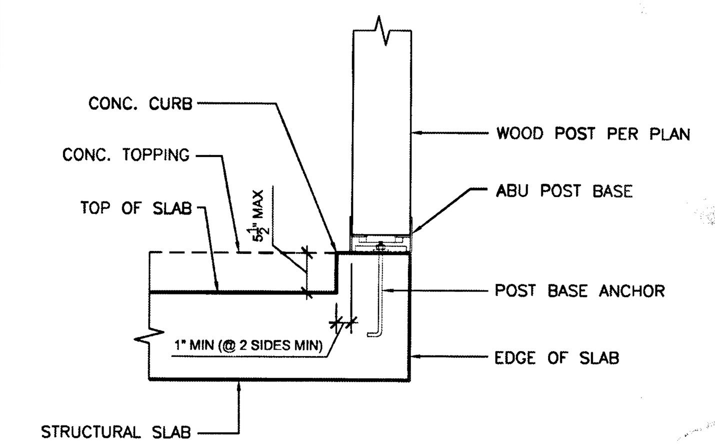
HOLD DOWN BOLT EMBEDMENT SCHEDULE

THREADED ROD		PLATE WASHER	EMBEDMENT Le	REINFORCEMENT* (T&B)	
MATERIAL	DIAMETER			BARS	LENGTH E.W.
A36 & A307	5/8"	3"x3"x3/8"	EXTEND ROD TO 1" CLEAR FROM BOTTOM OF STRUCTURAL SLAB	2-#5	48"
	3/4" & 7/8"	3.5"x3.5"x1/2"		2-#5	48"
	1" & 1.1/4"	4"x4"x3/4"		2-#5	72"
A449	7/8"	3.5"x3.5"x5/8"		2-#5	60"
	1"	4.5"x4.5"x3/4"		4-#6	72"
	1.1/8"	5"x5"x3/4"		6-#6	96"

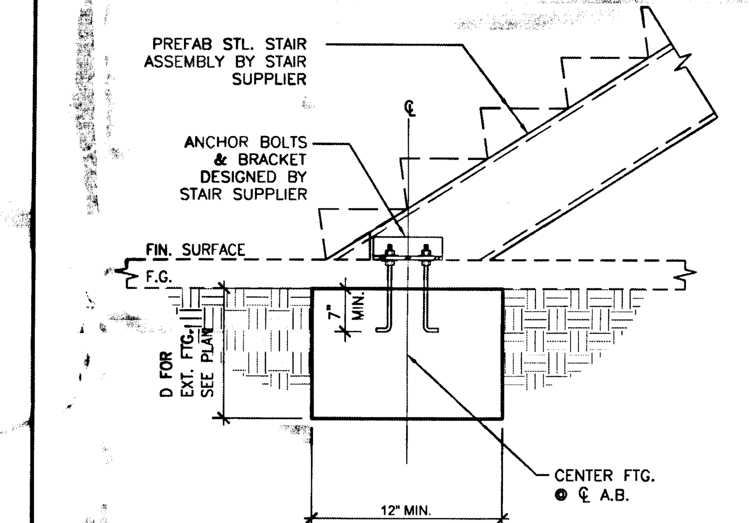
* HOLD DOWN REINFORCEMENT MAY BE OMITTED WHERE CONTINUOUS PODIUM REINFORCING OCCURS WITHIN 6" TO EACH SIDE OF THE HOLDOWN BOLT IN SUFFICIENT QUANTITY/LENGTH PER THE SCHEDULE. WHERE BAR OVERLAP, PROVIDE CONT. BARS OVER ENTIRE LENGTH OR REQ'D REINF.
* Le, EMBED LENGTH MEASURED FROM THE LOWEST ADJACENT SLAB.

TYPICAL HOLD DOWN BOLT EMBEDMENT 3

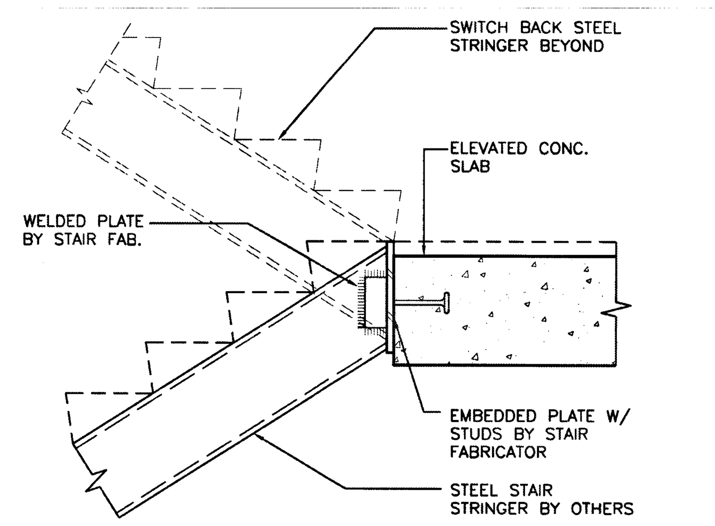




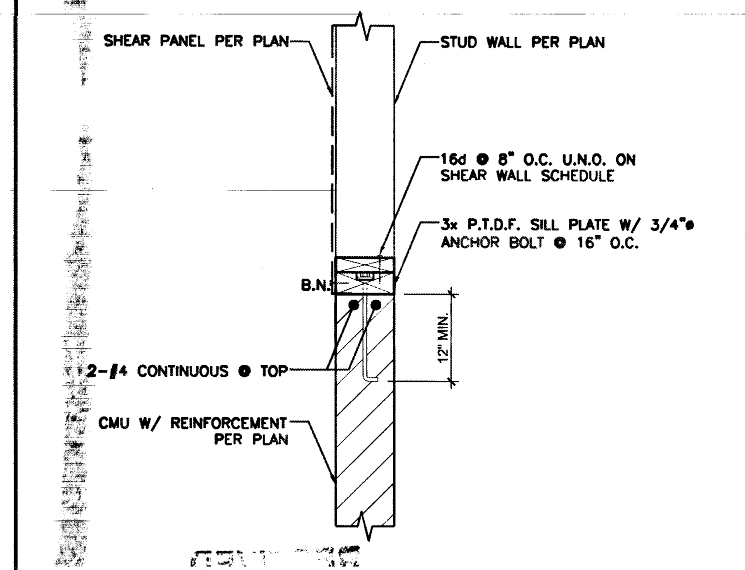
ABU WOOD POST BASE 18



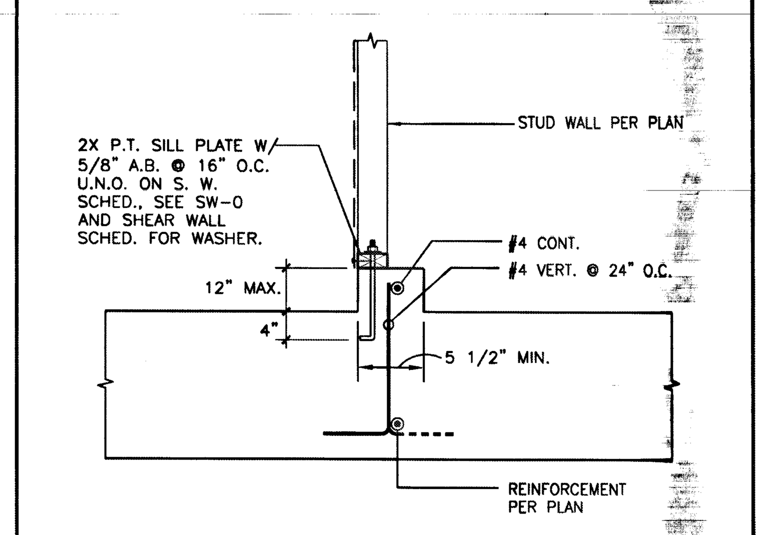
TYPICAL STRINGER @ FOUNDATION 13



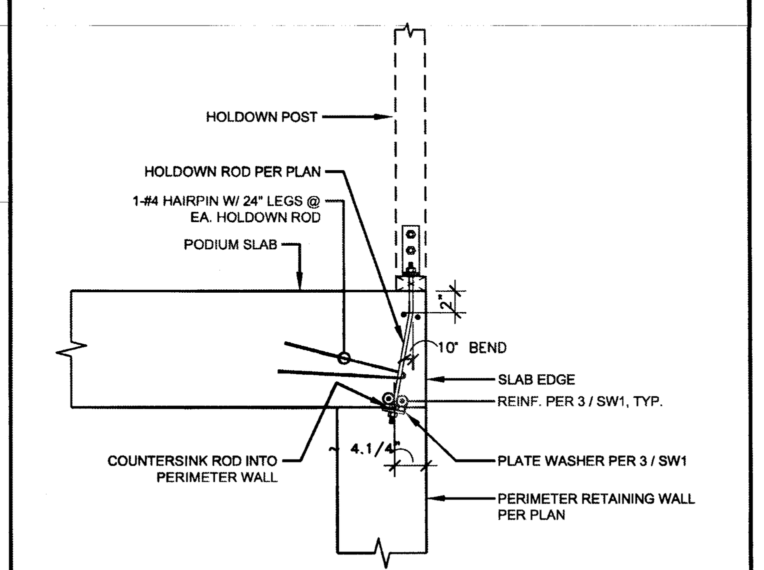
STEEL STAIR STRINGER @ SLAB 19



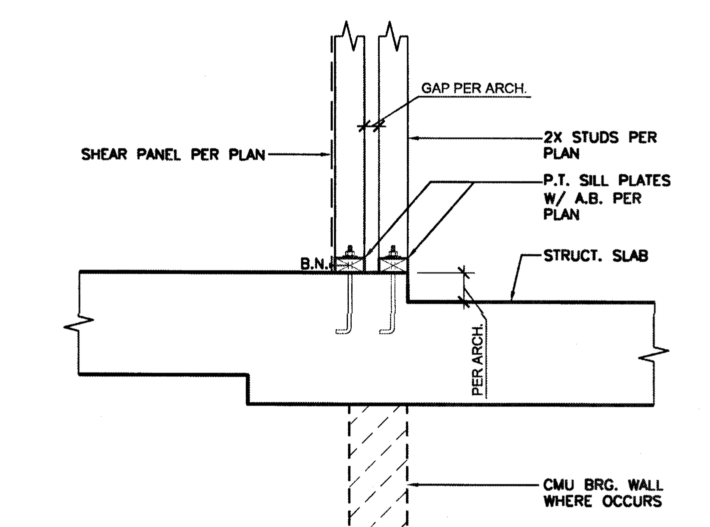
STUD WALL OVER CMU WALL 14



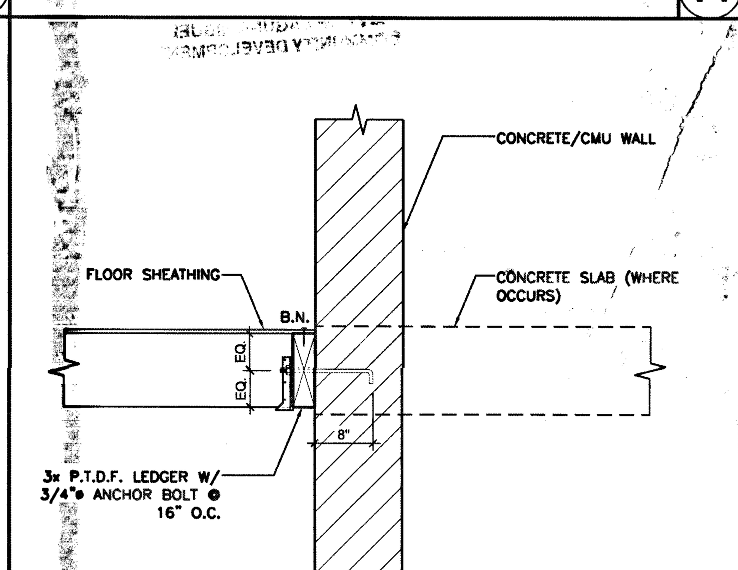
TYPICAL RAISED CONC. CURB @ STUD WALL 9



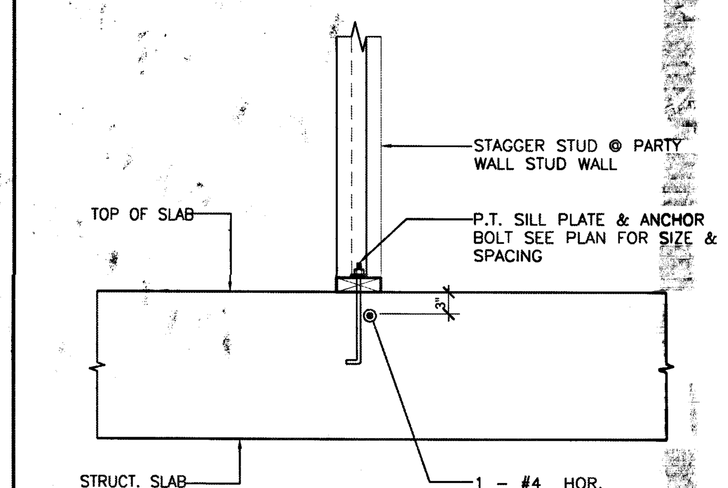
TYPICAL HOLDOWN @ EDGE 4



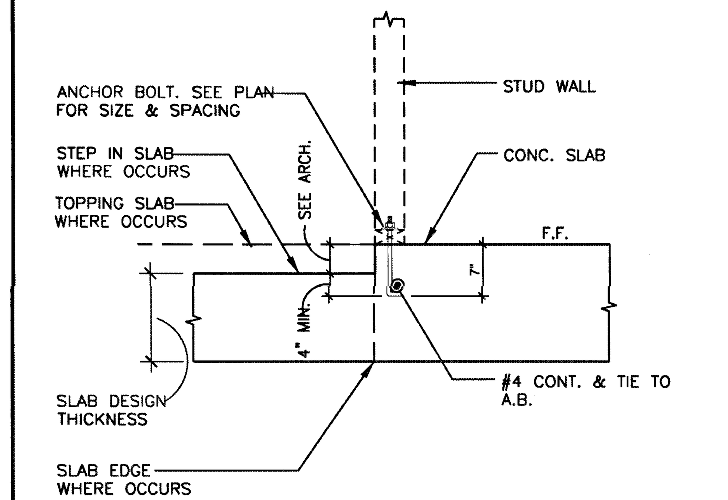
PARTY WALL 20



WOOD FLOOR @ CONCRETE (CMU WALL/SLAB) 15



TYPICAL STAGGERED STUD @ SLAB 10



REFER TO 1/SW-1 FOR A.B. PLACEMENT

TYPICAL ANCHOR BOLT @ SLAB 5

TYPICAL STEEL COLUMN BASE @ CONC. EDGE 25

26
27
28
29
30

TCA
Thomas P. Cox: Architects, Inc.

VCA
VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER
S 003518
STRUCTURAL
STATE OF CALIFORNIA

REVISION		DATE
1	1ST PCC	02-04-2013

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
STRUCTURAL DETAILS

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SW-1

11-2730
JOB NUMBER
NONE
SCALE
ISSUED AS
4/15/2013
DATE

FOR REFERENCE COPIES OF APPROVED STRUCTURAL

0019-061053-1

VANDORPE CHOU ASSOCIATES INC.
THIS SUBMITTAL HAS BEEN REVIEWED FOR GENERAL COMPLIANCE WITH THE DESIGN CONCEPT.

- ■ REVIEWED
- ☐ REVISE AND RESUBMIT
- ☐ MAKE CORRECTIONS AS NOTED
- ☐ REJECTED

9/20/13

SHOP DRAWING/SUBMITTAL REVIEW
- ☒ REVIEWED AS NOTED
- ☐ NOTES
- ☐ APPROVE WITH CHANGES
- ☐ REVISE AND RESUBMIT
- REJECTED

SUBMITTAL WAS REVIEWED FOR DESIGN CONFORMITY AND GENERAL CONFORMANCE TO CONTRACT DOCUMENTS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING DIUMENSIONS AT JOBSITE FOR TOLERANCE, CLEARANCE, QUANTITIES, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION, COORDINATION OF HIS WORK WITH OTHER TRADES AND FULL COMPLIANCE WITH CONTRACT DOCUMENTS.

By: Courtney Marshall Date: 9/9/13

MCRT

GENERAL NOTES

1. THE SLACKJACK™ DEVICE COMPONENTS INCLUDE:
   A. SJA INNER AND OUTER SLEEVE CYLINDERS
   B. PRE-COMPRESSED COMPRESSION SPRING
   C. NUT; ALL NUTS TO CONFORM TO ASTM A563 GRADE "A" FOR 60 KSI AND GRADE "C" FOR 120 KSI TENSILE STRENGTH THREADED RODS.
   D. SWIVEL WASHER
2. ALL THREADED RODS SHALL BE ASTM A36 AND BE RATED FOR MINIMUM TENSILE STRENGTH OF 60,000 PSI. HIGH STRENGTH (HS) RODS SHALL BE EITHER ASTM A449 OR ASTM 193-B7. ALL THREADED RODS ARE UNIFORM NATIONAL COURSE (UNC THREADED.
3. **STANDARD RODS ARE ZINC PLATED, HIGH STRENGTH (HS) RODS ARE BLACK STEEL.**
4. ALL BEARING PLATES ARE FABRICATED FROM ASTM A36 STEEL.
5. ALL STEEL BEARING PLATES SHALL HAVE FULL BEARING CONTACT AREA ON WOOD MEMBERS.
6. COUPLING NUT CONNECTION: CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THAT AT CONNECTIONS WITH THE SAME SIZE ROD THAT EACH ROD IS THREADED HALF WAY INTO COUPLER FROM EACH SIDE. HIGH STRENGTH (HS) COUPLERS SHALL BE USED WITH HIGH STRENGTH (HS) RODS UNLESS NOTED OTHERWISE. STANDARD STRENGTH COUPLERS ARE ZINC PLATED. HIGH STRENGTH (HS) ARE NOT PLATED. WHERE REDUCING COUPLERS ARE USED, COUPLER SHALL BE FULLY SEATED ON THE LARGER DIAMETER ROD BEFORE ENGAGING THE SMALLER DIAMETER ROD.
7. COLORS REFERENCED ON THIS DRAWING ARE PROVIDED FOR CONVENIENCE TO THE INSTALLER AND FOR INSPECTION PURPOSES.
8. SILICONE OR CAULKING SHALL NOT BE PLACED INTO THE SLACKJACK DEVICE OR ANY DRILLED HOLE FOR RODS AT ANY TIME. CONTRACTOR SHALL USE FIRE RATED ROCKWOOL OR NON-HARDENING FIRESTOP. (PROVIDED BY OTHERS).
9. ANCHOR BOLT ASSEMBLIES AND EMBEDMENT DEPTHS ARE PROVIDED BY OTHERS. ANCHOR BOLTS ARE SHOWN FOR CONVENIENCE TO THE INSTALLER.
10. HOLDOWN RUN ELEVATION VIEWS ARE DIAGRAMS AND MAY NOT DEPICT THE CORRECT NUMBER OF COLLECTOR STUDS REQUIRED. REFER TO COLLECTOR STUD PLAN DIAGRAMS FOR REQUIRED AMOUNT OF ADDITIONAL STUDS DEPENDING ON SHEAR WALL FRAMING TYPE. ADDITIONAL COMPRESSION STUDS OR POSTS MAY BE REQUIRED BY THE STRUCTURAL PLANS FOR DEAD AND LIVE LOADS.
11. THIS DRAWING WILL BE REVIEWED BY THE ENGINEER OF RECORD. UPON APPROVAL, U.N.O. THIS DRAWING REPLACES THE HOLDOWN SYSTEM PER THE STRUCTURAL PLANS.
12. ENGINEER OF RECORD SHALL VERIFY COMPLETE LOAD TRANSFER TO FOUNDATION LEVEL INCLUDING ALL CODE REQUIRED LOAD FACTORS.
13. WOOD FLOOR LEVELS SHOWN ARE RELATIVE TO THE CONCRETE FOUNDATION AND MAY NOT REFLECT THOSE SHOWN IN THE PLANS.
14. --
15. REFER TO THE COLLECTOR STUD SCHEDULE FOR WOOD STUD AND FLOOR PLATE MATERIALS USED IN LOAD CALCULATION ASSUMPTIONS. THE MATERIALS SHALL MATCH STRUCTURAL DRAWING REQUIREMENTS UNLESS NOTED OTHERWISE.
16. FULL HEIGHT COLLECTOR STUD REQUIREMENTS:
   A. ALL FULL HEIGHT 2x4, 2x6, 3x4, 3x6, 4x4, AND 4x6 COLLECTOR/COMPRESSION STUDS SHALL RECEIVE NAILING PER THE SHEAR WALL SCHEDULE OF THE STRUCTURAL PLANS, EXCEPT AT THE BRIDGE LEVEL (SEE NOTE 17-A).
   B. ALL FULL HEIGHT 6x AND LARGER COLLECTOR/COMPRESSION POSTS SHALL RECEIVE TWO (2) ROWS OF EDGE NAILING PER THE SHEAR WALL SCHEDULE OF THE STRUCTURAL PLANS.
   C. WINDOW AND DOOR TRIMMERS MAY BE USED AS HOLDOWN COLLECTOR STUDS IF THE FOLLOWING CONDITIONS ARE MET:
      - A CONTINUOUS VERTICAL LOAD PATH SHALL EXIST FROM WALL TOP PLTS. TO WALL BOTTOM PLTS.
      - ALL WOOD MEMBERS IN THE CONTINUOUS VERTICAL LOAD PATH SHALL BE NAILED ACCORDING TO THE EARTHBOUND SYSTEM REQUIREMENTS.
      - THE SHEAR PANEL MUST EXTEND TO INCLUDE THE TRIMMERS USED.
   D. COMPRESSION STUDS/POSTS SHALL BE INSTALLED SYMMETRICALLY ABOUT ROD. WHERE QUANTITY OF STUDS IS GREATER THAN THE SPACE BETWEEN ROD OR BEARING PLATE AND THE END OF SHEAR WALL THE ADDITIONAL REQUIRED STUDS SHALL BE ADDED TO THE OPPOSITE SIDE OF ROD (ASYMMETRICALLY).
   E. WHERE MULTIPLE STUDS ARE USED PROVIDE EDGE NAILING AT PLYWOOD EDGE MEMBERS ONLY. REMAINDER OF STUDS SHALL BE FIELD NAILED.
   F. COLLECTOR STUDS DO NOT NEED TO BE STITCH NAILED.
17. COMPRESSION BRIDGE REQUIREMENTS:
   A. ALL FULL HEIGHT 2x4, 2x6, 3x4, 3x6, 4x4, & 4x6 MEMBERS ON EITHER END OF THE BRIDGE SHALL RECEIVE EDGE NAILING PER THE SHEAR WALL SCHEDULE OF THE STRUCTURAL PLANS.
   B. ALL FULL HEIGHT 6x AND LARGER COLLECTOR/COMPRESSION POSTS ON EITHER SIDE OF THE BRIDGE SHALL RECEIVE TWO (2) ROWS OF EDGE NAILING PER THE SHEAR WALL SCHEDULE OF THE STRUCTURAL PLANS.
   C. ALL BRIDGE TRIMMERS SHALL BE 2x MEMBERS ONLY (U.N.O.) AND SHALL BE INSTALLED SYMMETRICALLY AS SHOWN (U.N.O.).
   D. ALL BRIDGE TRIMMERS SHALL RECEIVE EDGE NAILING PER THE SHEAR WALL SCHEDULE OF THE STRUCTURAL PLANS (U.N.O.).
   E. THE BRIDGE TRIMMERS ADJACENT TO THE FULL HEIGHT STUDS (ONE EACH SIDE) SHALL RECEIVE FACE (STITCH) NAILING TWO (2) ROWS AT 4" O.C. STAGGERED ROWS ARE ACCEPTABLE BUT NOT REQUIRED. TRIMMERS IN ADDITION TO ONE EACH SIDE DO NOT REQUIRE FACE (STITCH) NAILING. FACE NAILS MAY BE NAILED FROM THE OPPOSITE DIRECTION THAN THAT SHOWN IN THE DETAIL.
   F. FACE NAILS SHALL BE 10d MINIMUM. USE 16d NAILS MINIMUM WHEN NAILING THROUGH 3x STUDS INTO 2x BRIDGE TRIMMERS.
   G. IF MULTIPLE BRIDGE TRIMMERS ON EACH SIDE ARE REQUIRED, DO NOT INSTALL THE TRIMMERS IN ADDITION TO ONE EACH SIDE UNTIL THE FACE NAILING HAS BEEN INSPECTED AND APPROVED.
   H. BRIDGE BLOCK SHALL BE 4x6 DF IN 4x WALLS, 6x6 DF IN 6x WALLS (U.N.O.). BRIDGE BLOCK SHALL ALWAYS BE 5-1/2" TALL MINIMUM. NAILING OF BRIDGE BLOCK IS PROHIBITED.
   I. BRIDGE BLOCK SHALL BE DOUGLAS FIR CONSTRUCTION GRADE WITH MINIMUM 800 PSI ALLOWABLE BENDING STRESS. TIMBERSTRAND LSL BEAM MATERIAL OF EQUAL OR GREATER DIMENSION IS AN ACCEPTABLE ALTERNATE (U.N.O.).
   J. **BRIDGE HEIGHTS SHOWN ARE THE MINIMUM HEIGHT FROM SUBFLOOR TO BOTTOM OF BRIDGE MEMBER.**
   K. **ONLY COMMON NAILS SHALL BE USED.**
18. DRILLED OR BORED HOLES: DRILLED HOLES THROUGH VERTICAL COMPRESSION MEMBERS SHALL NOT EXCEED 25% OF THE STUD OR POST WIDTH, FOR EXAMPLE: 7/8" DIA. HOLE IS MAXIMUM ALLOWED IN 3 1/2" WIDE STUD OR POST WIDTH PER EOR. THE BORED HOLE SHALL BE AT LEAST 5/8" AWAY FROM EDGE OF STUD.
19. CUTTING AND NOTCHING: WOOD VERTICAL COMPRESSION MEMBERS ARE PERMITTED TO BE CUT OR NOTCHED TO A DEPTH NOT EXCEEDING 25% OF IT'S WIDTH PER 2308.9.10 PER IBC 2006/09.
20. STUD/POST/TRIMMER NOTCHING AT CONFLICTING BEARING PLATES INTERFERENCE.
   A. THE MEMBER SHALL BE NOTCHED TO THE EXACT THICKNESS AND AREA OF THE STEEL PLATE TO MAINTAIN THE FULL BEARING AREA OF THE NOTCHED COMPRESSION MEMBER.
   B. IF THE REQUIREMENTS OF ITEM "A" ABOVE ARE NOT MET, THEN ADDITIONAL COMPRESSION MEMBERS SHALL BE ADDED TO ACHIEVE THE REQUIRED TOTAL BEARING AREA. ADDITIONAL COMPRESSION MEMBERS SHALL RECEIVE SHEAR PANEL NAILING PER THE REQUIREMENTS OF THE EARTHBOUND SHOP DRAWINGS. (1)
   C. STEEL PLATES MATCHING THE EXACT THICKNESS OF THE STEEL BEARING PLATE MAY BE USED IN LIEU OF NOTCHING. ALL ADDITIONAL REQUIREMENTS ABOVE SHALL BE MET.
21. MINIMUM REQUIREMENTS FOR BLOCKING IN THE JOIST SPACE AT HOLDOWN LOCATIONS ARE:
   A. BLOCKING SHALL SPAN THE FULL WIDTH OF THE SHEAR WALL TOP PLATE OF THE FLOOR LEVEL BELOW THE JOIST SPACE.
   B. BLOCKING SHALL EQUAL THE OUTERMOST DIMENSIONS OF THE "FOOTPRINT" OF THE TOTAL HOLDOWN WOOD COMPRESSION MEMBERS OF THE FLOOR LEVELS BELOW AND ABOVE THE JOIST SPACE.
   C. THE SPACE BETWEEN BLOCKING WHERE THE ROD IS LOCATED SHALL NOT EXCEED 3" FOR DOUBLE PLATES OR 1.5" FOR SINGLE PLATE CONSTRUCTION.
   D. COMPRESSION CAPACITIES OF BLOCKING MATERIALS SHALL BE EQUAL TO OR GREATER THAN THE RELATED JOISTS. THE VERTICAL DIMENSIONS SHALL BE EQUAL. SEE NOTE "E" FOR EXCEPTION.
   E. VERTICAL GRAIN BLOCKING SHALL BE TRIMMED TO ACCOUNT FOR POSSIBLE SHRINKAGE OF THE JOISTS. CONTACT JOIST MANUFACTURER FOR SHRINKAGE INFORMATION.
   F. FLOOR JOISTS SHALL NOT BE REMOVED TO ALLOW FOR THE INSTALLATION OF BLOCKING. BLOCKING IS IN ADDITION TO THE EXISTING JOISTS.
   G. WEB STIFFENERS SHALL BE ADDED TO ENGINEERED LUMBER "I" JOISTS AND "I" JOIST MATERIAL USED AS BLOCKING. SEE NOTE "B" ABOVE.

JOB SPECIFIC NOTES:

1. **FOR HOLDOWN ANCHOR BOLT INFORMATION NOT SHOWN SEE 3/SW-1.**
2. **CONTRACTOR MAY SUBSTITUTE POSTING WITH 2x MEMBERS ONLY IF TOTAL BEARING PLATE AREA ON BOTTOM PLATE IS EQUAL.**

ABBREVIATIONS

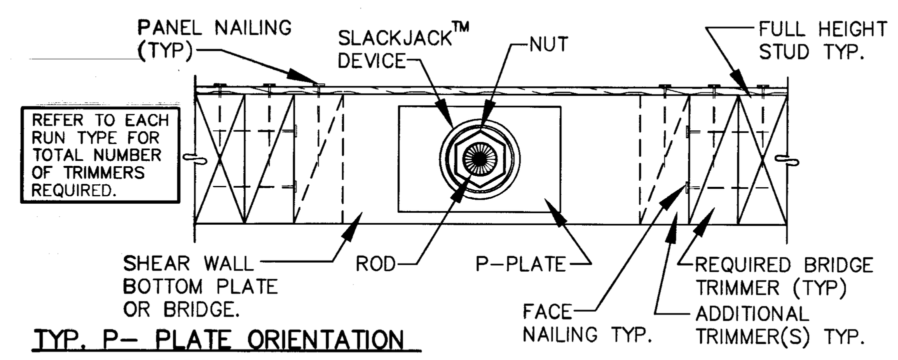
AB	ANCHOR BOLT PER ROD COMPONENT
	SCHEDULE
BLKG	BLOCKING
	COUPLER
FND	FOUNDATION
G	HOT DIPPED GALVANIZED ROD OR GALV. TAPPED COMPONENT
GG	COUPLER GALV. TAPPED ON BOTH ENDS
CB	CORROSION BARRIER
HS	HIGH STRENGTH
SJA 4XY	SLACKJACK™ COMPONENT (X) = SLACKJACK DEVICE SERIES TRAVEL 1=1 INCH (RED), 2=2 INCHES (GREEN) (Y) = ROD SIZE
JST	JOIST
MIN.	MINIMUM
O.C.	ON CENTER
P	PLATE
PG	PERPENDICULAR TO GRAIN
R	ROD
UNO	UNLESS NOTED OTHERWISE

SHOP DRAWING DISCLAIMER

THESE SHOP DRAWINGS ILLUSTRATE THE DETAILS OF THE EARTHBOUND SEISMIC HOLDOWN SYSTEM. THEY WERE PREPARED IN CONFORMANCE WITH THE STRUCTURAL DESIGN PROVIDED TO EARTHBOUND CORPORATION ("EB CORP.") BY THE PROJECT OWNER OR ITS REPRESENTATIVE.

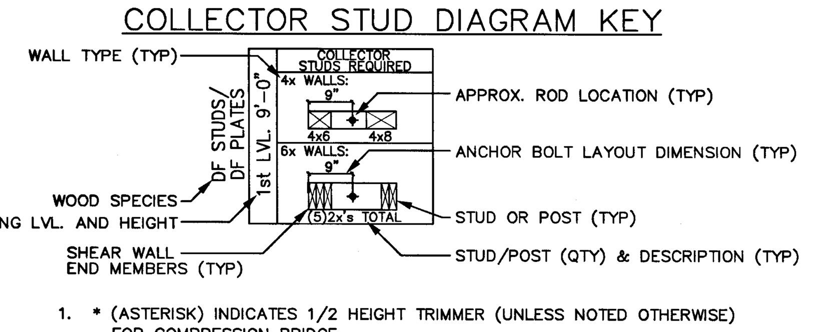
EB CORP. TOOK NO PART IN THE PREPARATION OR REVIEW OF SAID STRUCTURAL DESIGN AND EB CORP. DISCLAIMS ANY LIABILITY FOR IT. THE STAMP OR SEAL OF AN EB CORP. EMPLOYEE OR AGENT ON THESE SHOP DRAWINGS PERTAIN ONLY TO THE TRANSFER OF THE FORCES REQUIRED BY THE ENGINEER OF RECORD ON THE STRUCTURAL DRAWINGS AND NOT TO THE ADEQUACY OF THE STRUCTURAL DESIGN.

NO WARRANTY, EXPRESSED OR IMPLIED, AS TO THE ADEQUACY OF THE STRUCTURAL DESIGN IS MADE BY ANY SUCH STAMP OR SEAL.



TYP. P- PLATE ORIENTATION & SAMPLE BRIDGE TRIMMER NAILING DETAIL
SCALE: NONE

COLLECTOR STUD DIAGRAM KEY



1. * (ASTERISK) INDICATES 1/2 HEIGHT TRIMMER (UNLESS NOTED OTHERWISE) FOR COMPRESSION BRIDGE.
2. COLLECTOR STUDS SHOWN ARE THE MINIMUM REQUIREMENT TO EQUAL THE COMPRESSION FORCES CALLED OUT BY THE STRUCTURAL DWGS. *APPLIES TO ALL HOLDOWN RUNS.*

COLLECTOR STUD CAPACITY SCHEDULES

COLLECTOR STUD CAPACITIES FOR DOUG FIR STUDS ON DOUG FIR PLATES

TOTAL STUDS REQUIRED		9'-0" CAPACITY **									4'-6"/6'-0" CAPACITY BRIDGE TRIMMERS ONLY		
QTY.	PLAN VIEW	2x4 STUDS	2x6 STUDS	3x4 STUDS	4x4 POSTS	4x6 POSTS	4x8 POSTS	6x6 POSTS	6x8 POSTS	6x10 POSTS	NO. OF BRIDGE TRIMMERS	2x4s	2x6s
SINGLE CAPACITY:		2,338#	5,156#	4,565#	6,391#	10,015#	13,161#	18,906#	24,922#	31,797#		3,281#	5,156#
2				9,129#	12,781#	20,030#	26,322#	37,813#	49,844#	63,594#	2*	6,563#	10,313#
3		7,013#	15,469#	13,694#	19,172#	30,045#	39,484#	56,719#	74,766#	95,391#			
4		9,351#	20,625#	18,259#	25,563#	40,059#	52,645#	75,625#	99,688#	127,188#	4*	13,125#	20,625#
5		11,689#	25,781#	22,824#	31,953#	50,074#	65,806#	94,531#	124,609#	158,984#			
6		14,027#	30,938#	27,388#	38,344#	60,089#	78,967#	113,438#	149,531#	190,781#	6*	19,688#	30,938#
7		16,365#	36,094#	31,953#	44,735#	70,104#	92,128#	132,344#	174,453#	222,578#			
8		18,702#	41,250#	36,518#	51,125#	80,119#	105,289#	151,250#	199,375#	254,375#	8*	26,250#	41,250#
9		21,040#	46,406#	41,083#	57,516#	90,134#	118,451#	170,156#	224,297#	286,172#			
10		23,378#	51,563#	45,647#	63,906#	100,149#	131,612#	189,063#	249,219#	317,969#			

NOTES:
1) STUDS SHOWN ARE THE MINIMUM COMPRESSION MEMBERS REQUIRED FOR THE EARTHBOUND SYSTEM.
2) DOUG FIR CALCULATION NOTES: (BASED ON 2005 NDS)
   2x4s (STUD GRADE): F'c PARALLEL = 850 PSI PER NDS TABLE 4A
   3x, 4x4s AND LARGER (NO. 2 GRADE): F'c PARALLEL = 1350 PSI PER NDS TABLE 4A
   6x6s AND LARGER (NO. 1 GRADE): F'c PARALLEL = 1000 PSI PER NDS TABLE 4D
   F'c PERPENDICULAR = 625 PSI FOR DOUG FIR PLATES.
3) * DENOTES NO. OF BRIDGE TRIMMERS UNDER COMPRESSION BRIDGE.
4) ** DENOTES THAT FINAL POST HEIGHT SUBTRACTS 4 1/2" FOR 2x TOP PLATES AND 2x BOTTOM PLATE.

COMPONENT SELECTION SCHEDULES

EARTHBOUND THREADED ROD CAPACITIES (IBC 2009)

ROD SIZE	ROD SIZE (INCHES)	ALLOWABLE TENSION LOAD IBC 2009	ROD REMARKS	SLACKJACK SIZE
R4	1/2" DIA.	4,470 LBS	ASTM A 36 (UNC)	SJA 214, 224, 414, 424
R5/SR5	5/8" DIA.	7,120 LBS	ASTM A 36 (UNC)	SJA 215, 225, 415, 425
R6/SR6	3/4" DIA.	10,540 LBS	ASTM A 36 (UNC)	SJA 216, 226, 416, 426
R7/SR7	7/8" DIA.	14,540 LBS	ASTM A 36 (UNC)	SJA 217, 227, 417, 427
R8/SR8	1" DIA.	19,080 LBS	ASTM A 36 (UNC)	SJA 218, 228, 418, 428
R9/SR9	1 1/8" DIA.	24,040 LBS	ASTM A 36 (UNC)	SJA 219, 229, 419, 429
R10/SR10	1 1/4" DIA.	30,530 LBS	ASTM A 36 (UNC)	SJA 2110, 2210, 4110, 4210, SJS 4110, 4210
R12	1 1/2" DIA.	44,270 LBS	ASTM A 36 (UNC)	SJS 4112, 4212
R14	1 3/4" DIA.	59,830 LBS	ASTM A 36 (UNC)	-----
R5HS	5/8" DIA.	14,240 LBS	ASTM A 449 (UNC)	SJA 215, 225, 415, 425
R6HS	3/4" DIA.	21,070 LBS	ASTM A 449 (UNC)	SJA 216, 226, 416, 426
R7HS	7/8" DIA.	29,090 LBS	ASTM A 449 (UNC)	SJA 217, 227, 417, 427
R8HS	1" DIA.	38,160 LBS	ASTM A 449 (UNC)	SJA 218, 228, 418, 428
R9HS	1 1/8" DIA.	42,080 LBS	ASTM A 449 (UNC)	SJA 219, 229, 419, 429
R10HS	1 1/4" DIA.	53,420 LBS	ASTM A 449 (UNC)	SJA 2110, 2210, 4110, 4210, SJS 4110, 4210
R12HS	1 1/2" DIA.	77,460 LBS	ASTM A 449 (UNC)	SJS 4112, 4212
R14HS	1 3/4" DIA.	104,710 LBS	ASTM A 449 (UNC)	-----

EARTHBOUND BEARING PLATE CAPACITIES (DF)

PLATE SIZE	DIFFERENTIAL LOAD	COLOR CODE	PLATE DIMENSIONS (INCHES) WIDTH	LENGTH	THICK.
P6	6,630 LBS	GREEN	3"	3.5"	1/4"
P8	8,470 LBS	BLACK	3-1/4"	5"	1/4"
P10	10,510 LBS	BLUE	3-1/4"	5"	3/8"
P12	12,270 LBS	GRAY	3-1/4"	6"	5/8"
P14	14,460 LBS	RED	3-1/4"	7"	3/4"
P16	16,650 LBS	TAN	3-1/4"	8"	3/4"
P18	18,840 LBS	YELLOW	3-1/2"	9"	1"
P20	21,020 LBS	BROWN	3-1/2"	10"	1"
P22	23,210 LBS	WHITE	3-1/2"	11"	1 1/4"
P24	24,310 LBS	GOLD	3-1/2"	12"	1 1/2"
P34	34,445 LBS	PURPLE	3-1/2"	16"	1 3/4"

SJA ROD SIZE CODES

PART NO.	ROD DIAMETER	ROD SIZE	WASHER COLOR
SJA 2x4 or 4x4	1/2"	R4	PURPLE
SJA 2x5 or 4x5	5/8"	R5	BLACK
SJA 2x6 or 4x6	3/4"	R6 or R6HS	GRAY
SJA 2x7 or 4x7	7/8"	R7 or R7HS	BLUE
SJA 2x8 or 4x8	1"	R8 or R8HS	YELLOW
SJA 2x9 or 4x9	1 1/8"	R9 or R9HS	WHITE
SJA 2x10, 4x10, SJS 4x10	1 1/4"	R10 or R10HS	GREEN
SJS 4x12	1 1/2"	R12 or R12HS	RED

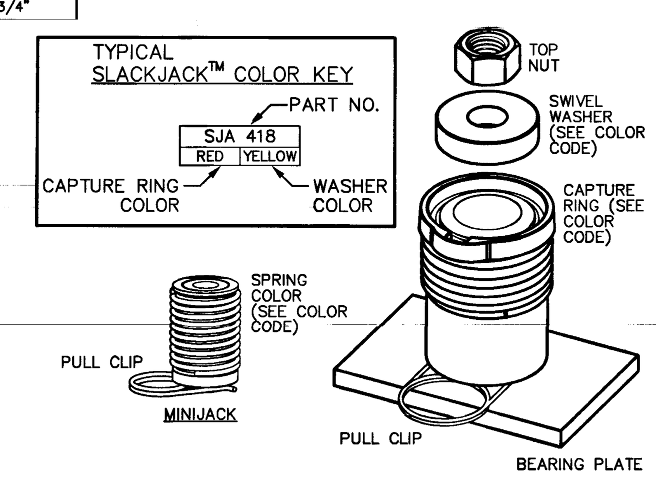
"x" = SLACKJACK TRAVEL IN "INCHES"

NOTES:
1. TENSION LOAD WAS CALCULATED FROM THE FOLLOWING EQUATION:
   A. **A36 /A 307 Threaded Rod Capacities are F'u = 60,000 psi. UNC thread pitch HS Rods are based on ASTM A449, F'u = 120 ksi, 105 ksi above R8HS**
   B. **The IBC 2009 column is calculated in accordance to Section 1912 and ASCE 7-05.**
2. PLATE STEEL SHALL BE ASTM A36: F'u = 60,000 PSI.
3. SUBSTITUTIONS OF DESIGNATED BEARING PLATE SHALL NOT BE PERMITTED, OBTAIN WRITTEN APPROVAL FROM THE ENGINEER.
4. SLACKJACK SELECTION NOTES:
   THE SIZES SHOWN ABOVE ARE FOR BOTH ONE AND TWO INCH TRAVEL ("SJA 4xy") (x = TRAVEL HEIGHT IN INCHES, y = ROD SIZE). TWO INCH TRAVEL SLACKJACKS ARE REQUIRED ON FOURTH WOOD FRAME LEVELS AND HIGHER.
5. THIS TABLE IS FOR REFERENCE OF FULL PRODUCT LINE, SOME ROD AND PLATE SIZES MAY NOT BE IN USE. THE ENGINEER OF RECORD SHALL REVIEW AND APPROVE CAPACITIES.

TYPICAL SLACKJACK™ COLOR KEY

SJA 418	
RED	YELLOW

PART NO.
CAPTURE RING COLOR
WASHER COLOR



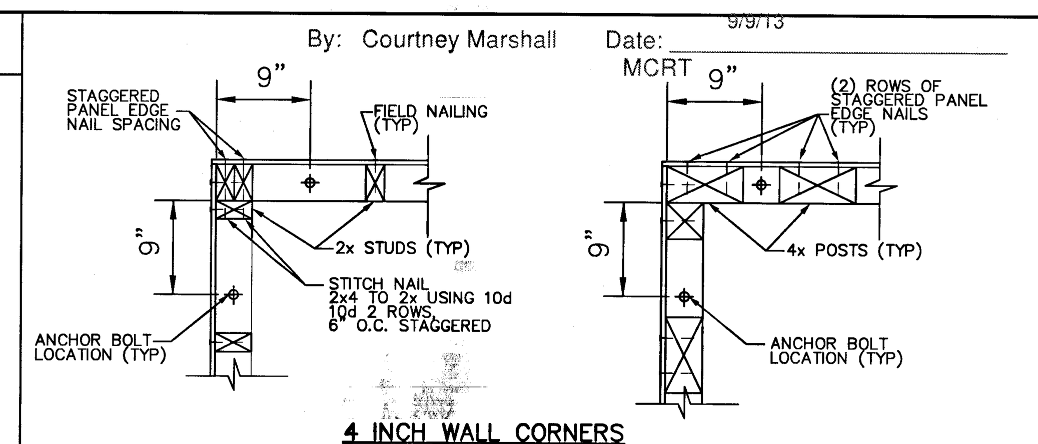
SLACKJACK – ICC ESR-2848 & LA RR 25404 LISTED CAPACITIES
COLOR CODE AND MODEL/SERIES TO PART NUMBER CROSS REFERENCE

ICC ESR 2848/ LA RR 25404 MODEL/SERIES	SLACKJACK PART NO. ON DWGS	THREADED ROD DIAMETER	COMPRESSION CAPACITY	TRAVEL COMPENSATION AMOUNT	CAPTURE RING COLOR	SWIVEL WASHER COLOR
M 100	MJ 100	1/2"	5,000 LBS	1-INCH	N/A	RED
A 210	SJA 214	1/2"	7,360 LBS	1-INCH	BLUE	PURPLE
A 210	SJA 215	5/8"	7,360 LBS	1-INCH	BLUE	BLACK
A 210	SJA 216	3/4"	7,360 LBS	1-INCH	BLUE	GRAY
A 210	SJA 217	7/8"	7,360 LBS	1-INCH	BLUE	BLUE
A 210	SJA 218	1"	7,360 LBS	1-INCH	BLUE	YELLOW
A 210	SJA 219	1 1/8"	7,360 LBS	1-INCH	BLUE	WHITE
A 210	SJA 2110	1 1/4"	7,360 LBS	1-INCH	BLUE	GREEN
A 410	SJA 414	1/2"	14,000 LBS	1-INCH	RED	PURPLE
A 410	SJA 415	5/8"	14,000 LBS	1-INCH	RED	BLACK
A 410	SJA 416	3/4"	14,000 LBS	1-INCH	RED	GRAY
A 410	SJA 417	7/8"	14,000 LBS	1-INCH	RED	BLUE
A 410	SJA 418	1"	14,000 LBS	1-INCH	RED	YELLOW
A 410	SJA 419	1 1/8"	14,000 LBS	1-INCH	RED	WHITE
A 410	SJA 4110	1 1/4"	14,000 LBS	1-INCH	RED	GREEN
T 410	SJT 414	1/2"	9,000 LBS	1-INCH	ORANGE	PURPLE
T 410	SJT 415	5/8"	9,000 LBS	1-INCH	ORANGE	BLACK
T 410	SJT 416	3/4"	9,000 LBS	1-INCH	ORANGE	GRAY
T 410	SJT 417	7/8"	9,000 LBS	1-INCH	ORANGE	BLUE
T 410	SJT 418	1"	9,000 LBS	1-INCH	ORANGE	YELLOW
T 410	SJT 419	1 1/8"	9,000 LBS	1-INCH	ORANGE	WHITE
T 410	SJT 4110	1 1/4"	9,000 LBS	1-INCH	ORANGE	GREEN
S 410	SJS 4110	1 1/4"	22,000 LBS	1-INCH	BLUE	GREEN
S 410	SJS 4112	1 1/2"	22,000 LBS	1-INCH	BLUE	RED

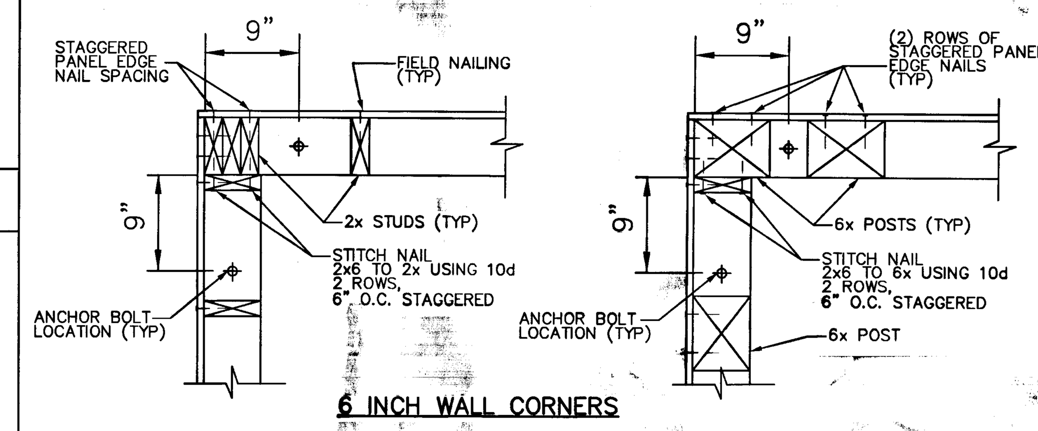
ICC ESR 2848/ LA RR 25404 MODEL/SERIES	SLACKJACK PART NO. ON DWGS	THREADED ROD DIAMETER	COMPRESSION CAPACITY	TRAVEL COMPENSATION AMOUNT	CAPTURE RING COLOR	SWIVEL WASHER COLOR
M 200	MJ 200	1/2"	4,900 LBS	2-INCH	N/A	ORANGE
A 220	SJA 224	1/2"	7,730 LBS	2-INCH	YELLOW	PURPLE
A 220	SJA 225	5/8"	7,730 LBS	2-INCH	YELLOW	BLACK
A 220	SJA 226	3/4"	7,730 LBS	2-INCH	YELLOW	GRAY
A 220	SJA 227	7/8"	7,730 LBS	2-INCH	YELLOW	BLUE
A 220	SJA 228	1"	7,730 LBS	2-INCH	YELLOW	YELLOW
A 220	SJA 229	1 1/8"	7,730 LBS	2-INCH	YELLOW	WHITE
A 220	SJA 2210	1 1/4"	7,730 LBS	2-INCH	YELLOW	GREEN
A 420	SJA 424	1/2"	14,000 LBS	2-INCH	GREEN	PURPLE
A 420	SJA 425	5/8"	14,000 LBS	2-INCH	GREEN	BLACK
A 420	SJA 426	3/4"	14,000 LBS	2-INCH	GREEN	GRAY
A 420	SJA 427	7/8"	14,000 LBS	2-INCH	GREEN	BLUE
A 420	SJA 428	1"	14,000 LBS	2-INCH	GREEN	YELLOW
A 420	SJA 429	1 1/8"	14,000 LBS	2-INCH	GREEN	WHITE
A 420	SJA 4210	1 1/4"	14,000 LBS	2-INCH	GREEN	GREEN
A 610	SJA 614	1/2"	20,340 LBS	1-INCH	TAN	PURPLE
A 610	SJA 615	5/8"	20,340 LBS	1-INCH	TAN	BLACK
A 610	SJA 616	3/4"	20,340 LBS	1-INCH	TAN	GRAY
A 610	SJA 617	7/8"	20,340 LBS	1-INCH	TAN	BLUE
A 610	SJA 618	1"	20,340 LBS	1-INCH	TAN	YELLOW
A 610	SJA 619	1 1/8"	20,340 LBS	1-INCH	TAN	WHITE
A 610	SJA 6110	1 1/4"	20,340 LBS	1-INCH	TAN	GREEN
S 420	SJS 4210	1 1/4"	22,000 LBS	2-INCH	YELLOW	GREEN
S 420	SJS 4212	1 1/2"	22,000 LBS	2-INCH	YELLOW	RED

SLACKJACK COLOR CODE TABLE
TRAVEL HEIGHT AND ROD SIZE COORDINATION

SJA 428
- MODEL: SLACKJACK
- MODEL TYPE: A=ALUM, S=STEEL
- SERIES TYPE (# RINGS)
- TRAVEL IN INCHES
- ROD DIA IN EIGHTH INCH



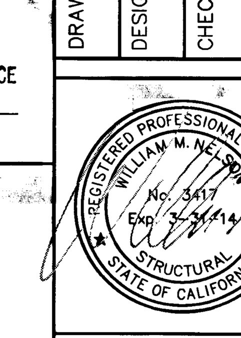
4 INCH WALL CORNERS



6 INCH WALL CORNERS

NOTES:
1. THIS SKETCH IS ISSUED TO ILLUSTRATE POSTING LAYOUT AT CORNER CONDITIONS. ALL NAIL SIZES SHALL BE PER THE STRUCTURAL PLAN REQUIREMENTS.
2. ANCHOR BOLTS SHALL BE LOCATED AS SHOWN ABOVE. ANCHOR BOLT SHALL NOT EXCEED 3 INCH MAX FROM INSIDE FACE OF POST MEMBERS.
3. COORDINATE POSTING REQUIREMENTS WITH ELEVATION VIEWS.
4. WHERE MULTIPLE POSTS ARE SPECIFIED, PROVIDE SINGLE POST AT END OF SHEAR WALL AND INSTALL REMAINING POST MEMBERS ON THE OPPOSITE SIDE OF THE THREADED ROD HOLDOWN.

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA 1/4/14
DATE

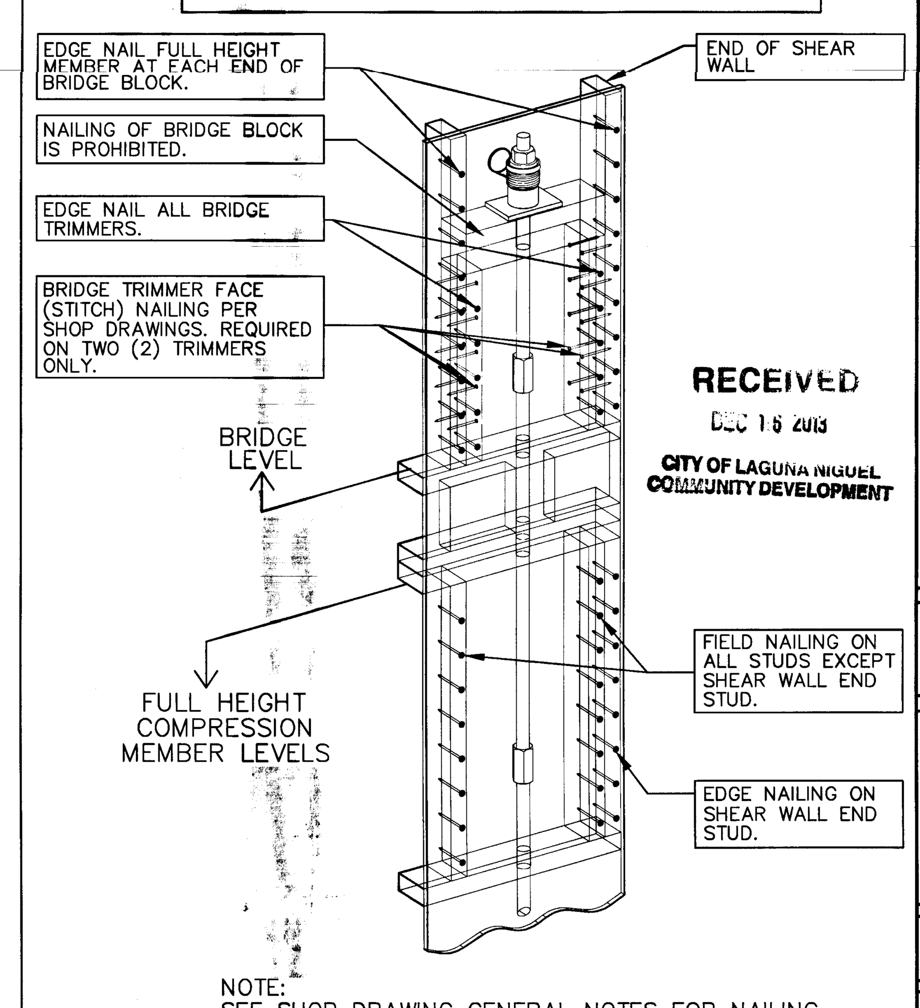


ROD HOLE SCHEDULE THROUGH TOP/BOTTOM PLATES AND BRIDGES

ROD SIZE		MIN HOLE SIZE	MAX HOLE SIZE
R4	1/2"ø	1"ø	1-1/8"ø
R5	5/8"ø	1"ø	1-1/8"ø
R6	3/4"ø	1"ø	1-1/8"ø
R7	7/8"ø	1-1/8"ø	1-1/4"ø
R8	1"ø	1-1/4"ø	1-3/8"ø
R9	1-1/8"ø	1-3/8"ø	* 1-1/2"ø
R10	1-1/4"ø	* 1-1/2"ø	* 1-5/8"ø
R12	1-1/2"ø	* 1-3/4"ø	* 1-7/8"ø

* HOLE SIZES INTENDED FOR 6" WALL TYPES ONLY. ENGINEER OF RECORD SHALL APPROVE THE USE OF THESE HOLE SIZES FOR 4" WALL TYPES.

ALL SHEAR PANEL NAIL SPACING IS PER THE SHEAR WALL SCHEDULE



NOTE:
SEE SHOP DRAWING GENERAL NOTES FOR NAILING REQUIREMENTS WHEN POSTS ARE USED.

NAILING SAMPLE

RECEIVED
DEC 18 2013
CITY OF LAGUNA NIGUEL
COMMUNITY DEVELOPMENT

NO.	DATE	DESCRIPTION
1	12/30/13	REVISED PER PLAN CHECK COMMENTS
	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

DRAWN: KT
DESIGNED: MN
CHECKED: KT
APPROVED: MN

PROJECT: CROWN CABOT LUXURY APTS. 25891 CROWN VALLEY, LAGUNA NIGUEL, CA

EARTHBOUND
"Holdowns That Work"

EARTHBOUND CORPORATION 17361 Tye Street SE Monroe, WA 98272
http://www.holdown.com (800) 944-5669 Fax (360) 863-0722

EB CORP JOB NO: 13071

SHEET TITLE: EARTHBOUND SEISMIC HOLDOWN SYSTEM INSTALLATION DRAWINGS ICC-ES ESR-2848

DATE: 08/05/13

SHEET NO. SH-1

EBS CONTACTS: JAMES MILLER 323-855-9188, KEN KEYSE 213-925-1118

CROWN_1.DWG
September 6, 2013 at 2:34 PM

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specifications must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from Community Development Division, City of Laguna Niguel. The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date 1-13-14
By

HOLDOWN RUN DETAILS

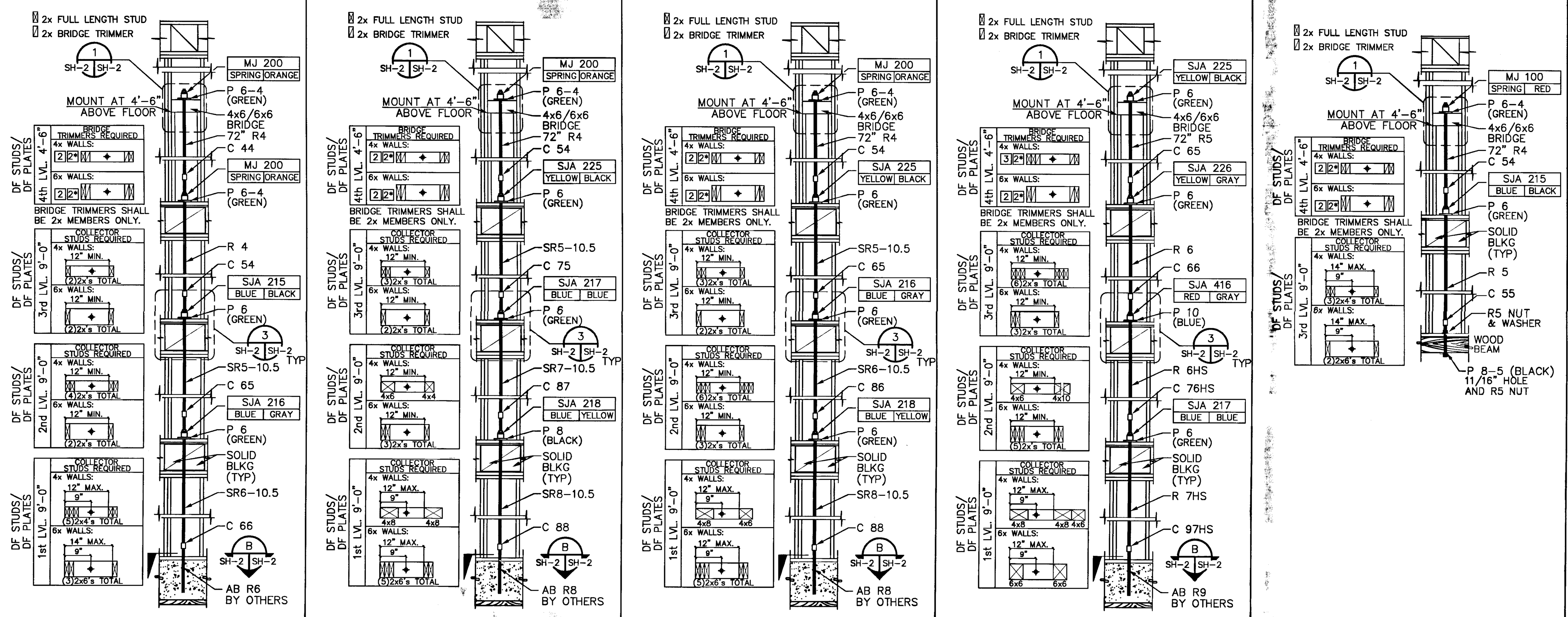
RUN TYPE 0				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	2,000 LBS	2,000 LBS	2,000 LBS	2,600 LBS
3rd	3,500 LBS	1,500 LBS	1,500 LBS	4,550 LBS
2nd	6,200 LBS	2,700 LBS	2,700 LBS	8,060 LBS
1st	8,000 LBS	1,800 LBS	1,800 LBS	10,400 LBS

RUN TYPE I				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	3,000 LBS	3,000 LBS	3,000 LBS	3,900 LBS
3rd	5,000 LBS	2,000 LBS	2,000 LBS	6,500 LBS
2nd	11,000 LBS	6,000 LBS	6,000 LBS	14,300 LBS
1st	18,000 LBS	7,000 LBS	7,000 LBS	25,000 LBS

RUN TYPE II				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	2,000 LBS	2,000 LBS	2,000 LBS	2,600 LBS
3rd	5,000 LBS	3,000 LBS	3,000 LBS	6,500 LBS
2nd	10,000 LBS	5,000 LBS	5,000 LBS	13,000 LBS
1st	15,000 LBS	5,000 LBS	5,000 LBS	21,000 LBS

RUN TYPE III				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	5,000 LBS	5,000 LBS	5,000 LBS	6,500 LBS
3rd	10,000 LBS	5,000 LBS	5,000 LBS	13,000 LBS
2nd	19,000 LBS	9,000 LBS	9,000 LBS	24,700 LBS
1st	25,000 LBS	6,000 LBS	6,000 LBS	35,000 LBS

RUN TYPE I-WB				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	3,000 LBS	3,000 LBS	3,000 LBS	3,900 LBS
3rd	5,000 LBS	2,000 LBS	2,000 LBS	6,500 LBS
2nd	-----	-----	-----	-----
1st	-----	-----	-----	-----



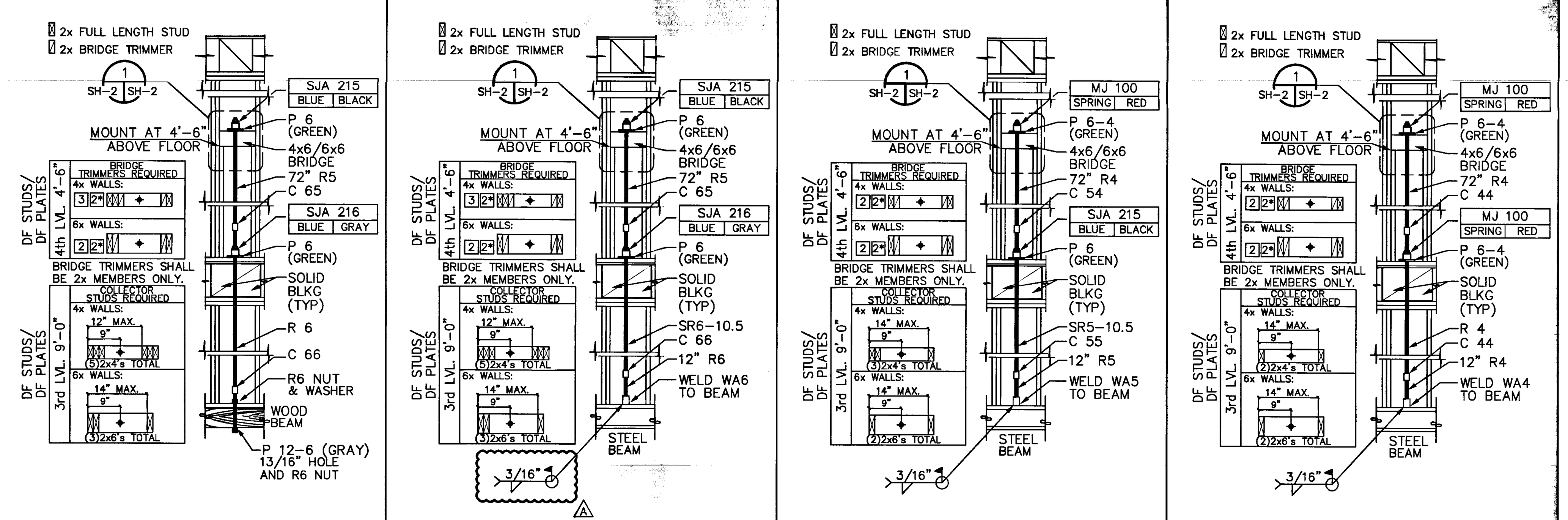
0 | I | II | III | I-WB

RUN TYPE III-WB				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	5,000 LBS	5,000 LBS	5,000 LBS	6,500 LBS
3rd	10,000 LBS	5,000 LBS	5,000 LBS	13,000 LBS
2nd	-----	-----	-----	-----
1st	-----	-----	-----	-----

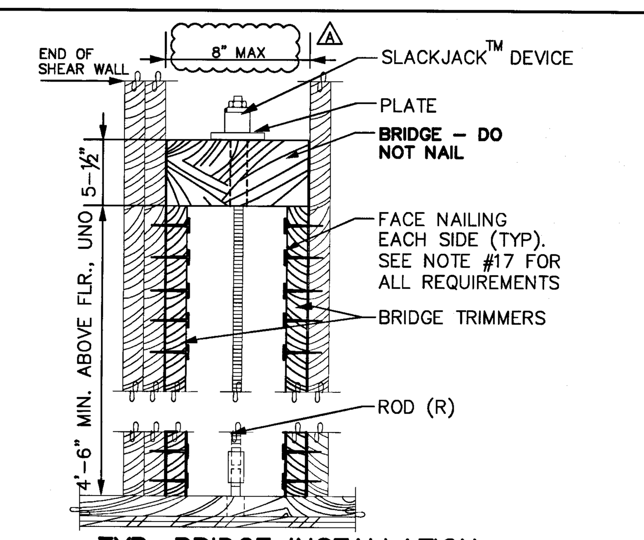
RUN TYPE III-SB				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	5,000 LBS	5,000 LBS	5,000 LBS	6,500 LBS
3rd	10,000 LBS	5,000 LBS	5,000 LBS	13,000 LBS
2nd	-----	-----	-----	-----
1st	-----	-----	-----	-----

RUN TYPE II-SB				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	2,000 LBS	2,000 LBS	2,000 LBS	2,500 LBS
3rd	5,000 LBS	3,000 LBS	3,000 LBS	6,500 LBS
2nd	-----	-----	-----	-----
1st	-----	-----	-----	-----

RUN TYPE 0-SB				
WOOD FLOOR LEVEL	UPLIFT TENSION LOADS	CALCULATED DIFFERENTIAL LOADS	COLLECTED DIFFERENTIAL LOADS	WOOD COMPRESSION DOWNLOAD
5th	-----	-----	-----	-----
4th	2,000 LBS	2,000 LBS	2,000 LBS	2,600 LBS
3rd	3,500 LBS	1,500 LBS	1,500 LBS	4,550 LBS
2nd	-----	-----	-----	-----
1st	-----	-----	-----	-----

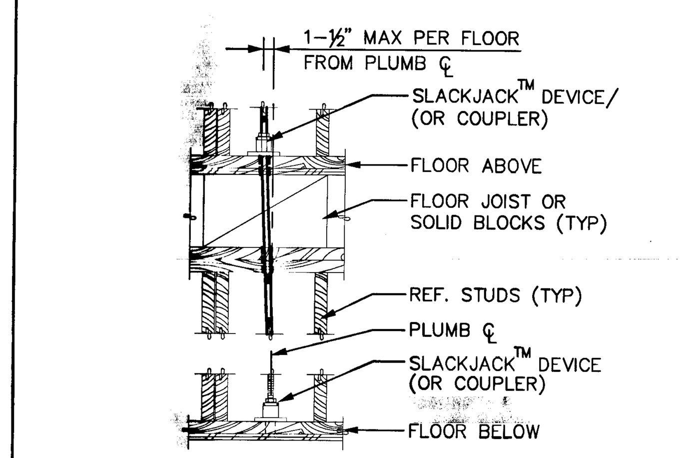


III-WB | III-SB | II-SB | 0-SB



TYP. BRIDGE INSTALLATION DETAIL 1 SH-2 | SH-2

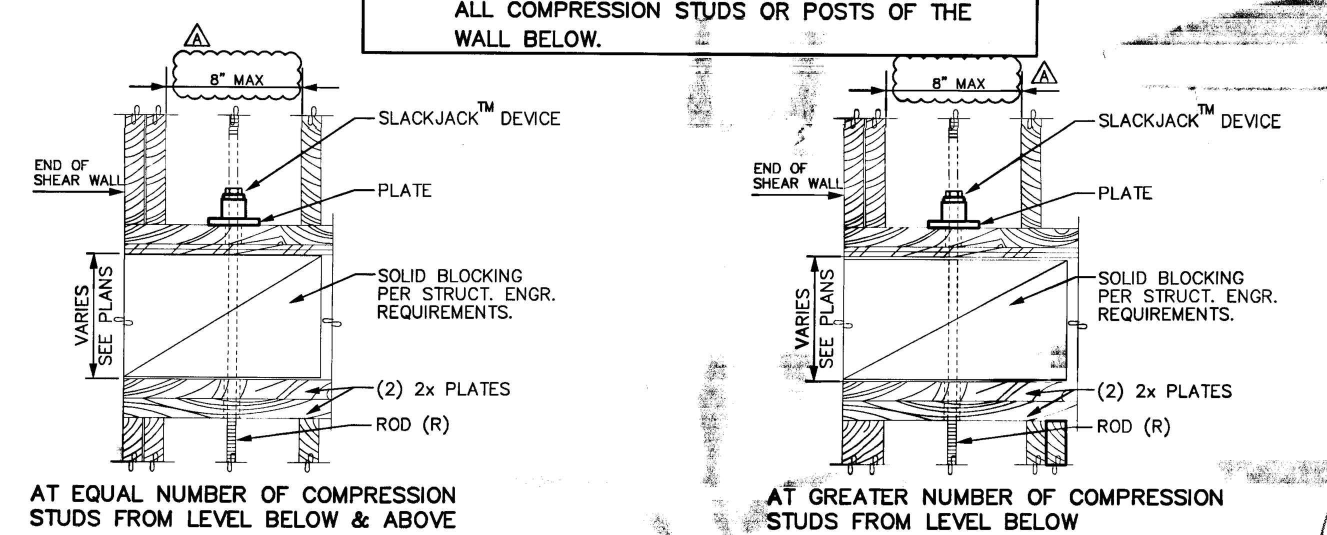
SCALE: NONE



ALLOWABLE ROD OFFSET DETAIL 2 SH-2 | SH-2

SCALE: NONE

NOTE: SOLID BLOCKING, PROVIDE ENOUGH SOLID BLOCKING IN JOIST SPACE TO MATCH WIDTH OF ALL COMPRESSION STUDS OR POSTS OF THE WALL BELOW.

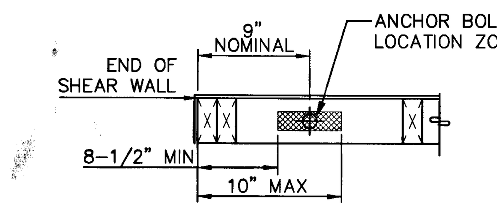


AT EQUAL NUMBER OF COMPRESSION STUDS FROM LEVEL BELOW & ABOVE

AT GREATER NUMBER OF COMPRESSION STUDS FROM LEVEL BELOW

TYP. SLACKJACK™ INSTALLATION DETAIL 3 SH-2 | SH-2

SCALE: NONE

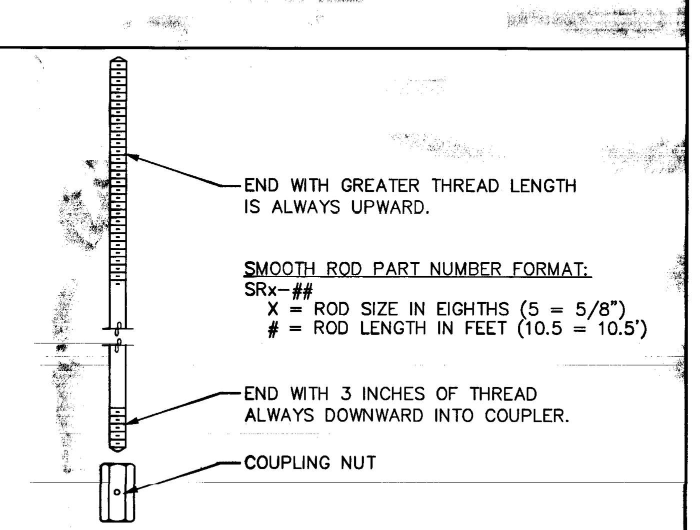


TYP. ANCHOR BOLT PLAN DETAIL B SH-2 | SH-2

SCALE: NONE

ANCHOR BOLT NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF WALL TYPE AND FRAMING LAYOUT BEFORE LOCATING ANCHOR BOLTS IN CONCRETE.
2. ALL DIMENSIONS ARE TYPICAL U.N.O.



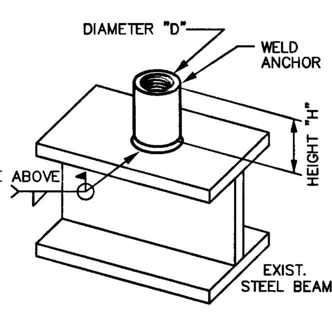
SMOOTH ROD INSTALLATION DETAIL C SH-2 | SH-2

SCALE: NONE

EARTHBOUND WELDED ANCHOR SPECIFICATIONS WELD ANCHOR MATERIAL: ASTM A108, 1018 STEEL, FU = 63.8 ksi min.								
PART NO	ROD DIA	THREADED ROD		WELD ANCHOR PROPERTIES				
		GRADE	IBC 2009 ASD CAPACITY	DIA "D"	HEIGHT "H"	MIN. FILLET	WELD LENGTH	
WA4	1/2	ASTM A36/A307	4470 LBS	1	1/2	3/16 IN	3.53 IN	
WA5	5/8	ASTM A36/A307	7120 LBS	1 3/8	5/8	3/16 IN	4.32 IN	
WA6	3/4	ASTM A36/A307	10540 LBS	1 3/8	3/4	3/16 IN	5.11 IN	

NOTES:

1. THREADED ROD CAPACITY CALCULATED PER IBC SECTION 1912 AND ASCE 7-05.
2. COUPLER STRENGTH IS BASED ON MINIMUM MECHANCIAL PROPERTIES VALUE OF COUPLER ITSELF (higher of [100% Fu * At] or [125% Fy * At]) TO ALWAYS EXCEED THE CONNECTED ROD STRENGTH BY 125%.
3. ENGINEER OF RECORD SHALL VERIFY WELD REQUIREMENTS SHOWN ON SHOP DRAWINGS.
4. WELD REQUIREMENTS SHALL MEET OR EXCEED CONNECTED THREADED ROD CAPACITY.
5. MINIMUM FILLET SIZE CALLOUT IS BASED ON E70 (70 ksi) ELECTRODES.
6. WELD LENGTH IS CIRCUMFERENCE BASED ON WELDED ANCHOR DIAMETER + 0.25 INCHES.
7. COUPLER SHALL BE ORIENTED WITH SITE HOLE CLOSEST TO THE STEEL BEAM CONNECTION.
8. HIGH STRENGTH WELDED ANCHORS (WAxHS) WILL HAVE NOTCHED GROOVE.



STRUCTURAL REVIEWED FOR CODE COMPLIANCE 1/7/14 CAA DATE

NO.	DATE	DESCRIPTION
B	12/30/13	REVISED PER PLAN CHECK COMMENTS
A	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

DRAWN: KT
DESIGNED: MN
CHECKED: KT
APPROVED: WMN

REGISTERED PROFESSIONAL ENGINEER WILLIAM M. NELSON No. 3417 Exp. 3-31-14 STRUCTURAL STATE OF CALIFORNIA

PROJECT: CROWN CABOT LUXURY APTS. 25891 CROWN VALLEY, LAGUNA NIGUEL, CA

EARTHBOUND "Holdowns That Work"

EARTHBOUND CORPORATION
17361 Tye Street SE
Monroe, WA 98272
http://www.holdown.com
(800) 944-5669
Fax (360) 863-0722

EB CORP JOB NO: 13071

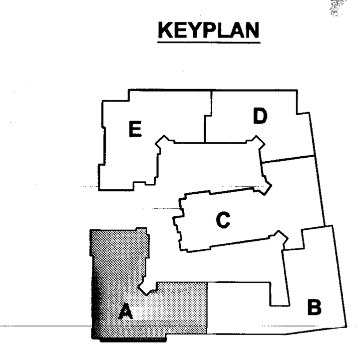
SHEET TITLE: EARTHBOUND SEISMIC HOLDOWN SYSTEM INSTALLATION DRAWINGS ICC-ES ESR-2848

DATE: 12/30/13

SHEET NO. SH-2

EBS CONTACTS, JAMES MILLER 323-855-9188, KEN KEYSE 213-925-1118

For more information about the Earthbound Holdown System, visit http://www.holdown.com



STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
DATE 1/7/14

SEGMENT "A"

EARTHBOUND SYSTEM LOCATION LAYOUT SHEET

III INDICATES EARTHBOUND SYSTEM HOLDOWN RUNS.

ALL RUNS ALIGN WITH WALLS ABOVE.

THIS SHEET IS INTENDED FOR THE LOCATION OF THE EARTHBOUND HOLDOWNS ONLY. REFER TO THE CONSTRUCTION PLANS FOR ALL OTHER INFORMATION.

NO.:	DATE:	DESCRIPTION:
1	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. NELSON
No. 3417
Exp. 3-31-14
STRUCTURAL
STATE OF CALIFORNIA

PROJECT:
CROWN CABOT LUXURY APTS.
25891 CROWN VALLEY, LAGUNA NIGUEL, CA 92677

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THE CITY OF LAGUNA NIGUEL
APPROVED
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BUILDING OFFICIAL
Date
By

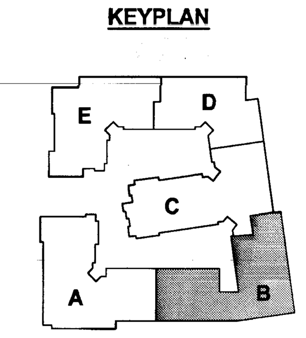
EB CORP JOB NO.
13071

DATE:
09/06/2013

SHEET TITLE:
EARTHBOUND SEISMIC HOLDOWN SYSTEM LOCATION LAYOUT DRAWINGS.
ICC-ES ESR-2848

SHEET NO.
R1

KEYPLAN



STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
1/7/14

SEGMENT "B"

EARTHBOUND SYSTEM LOCATION LAYOUT SHEET

III — INDICATES EARTHBOUND SYSTEM HOLDOWN RUNS.

ALL RUNS ALIGN WITH WALLS ABOVE.

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THE CITY OF LAGUNA NIGUEL APPROVED

NO.	DATE:	DESCRIPTION:
1	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

PROJECT: CROWN CABOT LUXURY APTS.
25891 CROWN VALLEY, LAGUNA NIGUEL, CA 92677

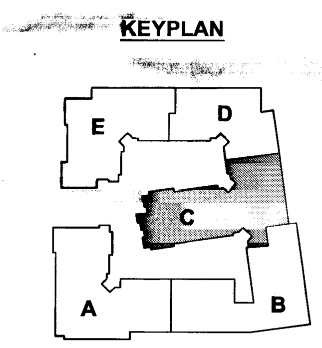
EARTHBOUND "Holdowns That Work"
EARTHBOUND CORPORATION

EB CORP JOB NO.: 13071

DATE: 09/06/2013

SHEET TITLE: EARTHBOUND SEISMIC HOLDOWN SYSTEM LOCATION LAYOUT DRAWINGS. ICC-ES ESR-2848

SHEET NO.: R2



STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA DATE 1/7/14

SEGMENT "C"

EARTHBOUND SYSTEM LOCATION LAYOUT SHEET

III INDICATES EARTHBOUND SYSTEM HOLDOWN RUNS.

ALL RUNS ALIGN WITH WALLS ABOVE.

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THE CITY OF LAGUNA NIGUEL APPROVED
BUILDING OFFICIAL
Date
By

NO.:	DATE:	DESCRIPTION:
A	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. NELSON
No. 3417
Exp. 3-31-14
STRUCTURAL
STATE OF CALIFORNIA

PROJECT:
CROWN CABOT LUXURY APTS.
25891 CROWN VALLEY, LAGUNA NIGUEL, CA 92677

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(800) 944-5669
Fax (360) 863-0722

EB CORP JOB NO.
13071

DATE:
09/06/2013

SHEET TITLE:
EARTHBOUND SEISMIC HOLDOWN SYSTEM LOCATION LAYOUT DRAWINGS.
ICC-ES ESR-2848

SHEET NO.
R3

SEGMENT "D"

EARTHBOUND SYSTEM LOCATION LAYOUT SHEET

III INDICATES EARTHBOUND SYSTEM HOLDOWN RUNS.

ALL RUNS ALIGN WITH WALLS ABOVE.

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THE CITY OF LAGUNA NIGUEL APPROVED BUILDING OFFICIAL

NO.	DATE:	DESCRIPTION:
1	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

REGISTERED PROFESSIONAL ENGINEER WILLIAM M. NELSON No. 3417 STRUCTURAL STATE OF CALIFORNIA

PROJECT: **CROWN CABOT LUXURY APTS. 25891 CROWN VALLEY, LAGUNA NIGUEL, CA 92677**

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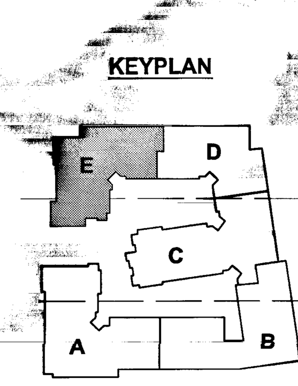
EB CORP JOB NO. **13071**

DATE: 09/06/2013

SHEET TITLE: EARTHBOUND SEISMIC HOLDOWN SYSTEM LOCATION LAYOUT DRAWINGS. ICC-ES ESR-2848

SHEET NO. **R4**



STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA DATE 01/7/14

REGISTERED PROFESSIONAL ENGINEER
WILLIAM M. NELSON
No. 3417
Exp. 8-31-14
STRUCTURAL
STATE OF CALIFORNIA

NO.:	DATE:	DESCRIPTION:
1	09/06/13	REVISED PER STRUCTURAL ENGR COMMENTS

REVISIONS

SEGMENT "E"

EARTHBOUND SYSTEM LOCATION LAYOUT SHEET

III INDICATES EARTHBOUND SYSTEM HOLDOWN RUNS.

ALL RUNS ALIGN WITH WALLS ABOVE.

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REFER TO THE CONSTRUCTION PLANS FOR ALL OTHER INFORMATION.

THE CITY OF LAGUNA NIGUEL
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BUILDING OFFICIAL
Date
By

PROJECT:
CROWN CABOT LUXURY APTS.
25891 CROWN VALLEY, LAGUNA NIGUEL, CA 92677

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EB CORP JOB NO.
13071

DATE:
09/06/2013

SHEET TITLE:
EARTHBOUND SEISMIC HOLDOWN SYSTEM LOCATION LAYOUT DRAWINGS.
ICC-ES ESR-2848

SHEET NO.
R5

1-2-14

BLD

25891 CROWN VALLEY PKWY LN

B13-2653

RECEIVED
DEC 16 2013
CITY OF LAGUNA NIGUEL
COMMUNITY DEVELOPMENT

See: Comment Sheet

13-2653

MILL CREEK
RESIDENTIAL TRUST LLC

LEASING SUBMITTAL - ASI #10

MAY 8TH, 2014
TCA Job# 2010 - 089

PLUMBING

P0.11	PLUMBING: WASTE & VENT GARAGE LEVEL B1
P0.12	PLUMBING: WASTE & VENT BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1
P0.21W	PLUMBING: WATER GARAGE LEVEL B1
P0.22	PLUMBING: WATER & GAS BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1
P0.23W	PLUMBING: WATER BLDG. "A" LEVEL 2 & GARAGE LEVEL P2
P1.11C	PLUMBING: WASTE & VENT GARAGE LEVEL B1 SEGMENT C
P1.12C	PLUMBING: WASTE & VENT BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 - SEGMENT C
P1.21WC	PLUMBING: WATER GARAGE LEVEL B1 - SEGMENT C
P1.22C	PLUMBING: WATER & GAS BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 - SEGMENT C
P1.23WC	PLUMBING: WATER BLDG. "A" LEVEL 2 & GARAGE LEVEL P2 - SEGMENT C

MECHANICAL

MG-1	LEGEND, SYMBOLS & EQUIPMENT SCHEDULES
MG-15	ENLARGED FLOOR PLANS
MR-0.17	BUILDING B LOW ROOF
MR-1	LEGEND, SYMBOLS & EQUIPMENT SCHEDULES
MR-8	ENLARGED FLOOR PLANS
MR-11	DETAILS
MR-12	DETAILS

ARCHITECTURAL

T.1	COVER SHEET / SHEET INDEX
A6.14A	LEASING - FLOOR PLANS
A6.14B	LEASING - RCP
A6.14C	LEASING - SECTIONS
A6.14D	LEASING - INTERIOR ELEVATIONS
A6.14E	LEASING - DETAILS
AD3.1	DOOR DETAILS
AD3.2	DOOR DETAILS
AD3.5	STOREFRONT DETAILS
AD10.1	ACCESSIBILITY DETAILS

INTERIOR

ELECTRICAL

E1.1	PRELIMINARY LIGHTING FIXTURE SCHEDULE
E1.12A	BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 ELECTRICAL PLAN - SEGMENT A
E1.13C	BLDG. "A" LEVEL 2 & GARAGE LEVEL P2 ELECTRICAL PLAN - SEGMENT C
E1.18C	BLDG. "B" LOW ROOF ELECTRICAL PLAN - SEGMENT C
E1.4	TITLE 24 LEASING & FITNESS CENTERS
E6.1	LEASING OFFICE LIGHTING PLAN - PODIUM LEVEL
E6.2	LEASING OFFICE POWER PLAN - PODIUM LEVEL

STRUCTURAL

S0.12	BLDG. "A" PODIUM SLAB PLAN BLDG. "B" LEVEL P1 SLAB PLAN
S0.12.1	BLDG. "A" PODIUM REBAR PLAN BLDG. "B" LEVEL P1 REBAR PLAN - (NORTH-SOUTH)
S0.12.2	BLDG. "A" PODIUM REBAR PLAN BLDG. "B" LEVEL P1 REBAR PLAN - (EAST-WEST)
S0.13	GARAGE LEVEL P2 SLAB PLAN
S0.13.1	GARAGE LEVEL P2 REBAR PLAN - (NORTH-SOUTH)
S0.13.2	GARAGE LEVEL P2 REBAR PLAN - (EAST-WEST)
SC-9	STRUCTURAL DETAILS
SW-8	STRUCTURAL DETAILS

TCA
ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHAHBAZIAN
No. C19002
STATE OF CALIFORNIA

REVISION
REMARKS

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
COVER SHEET

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE *CONSTRUCTION OF AN APARTMENT PROJECT*. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

T.1

2010-089
JOB NUMBER

SCALE

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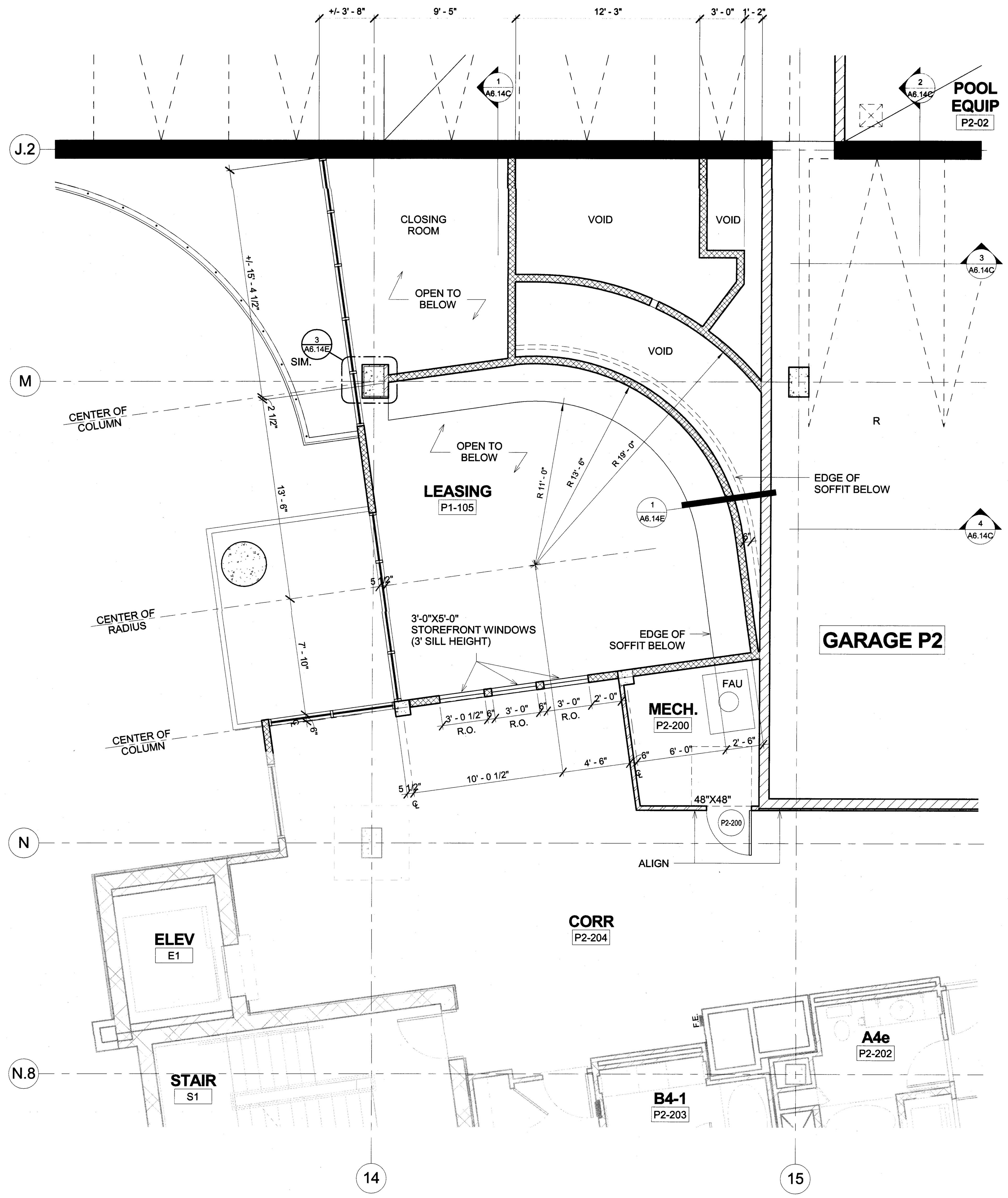
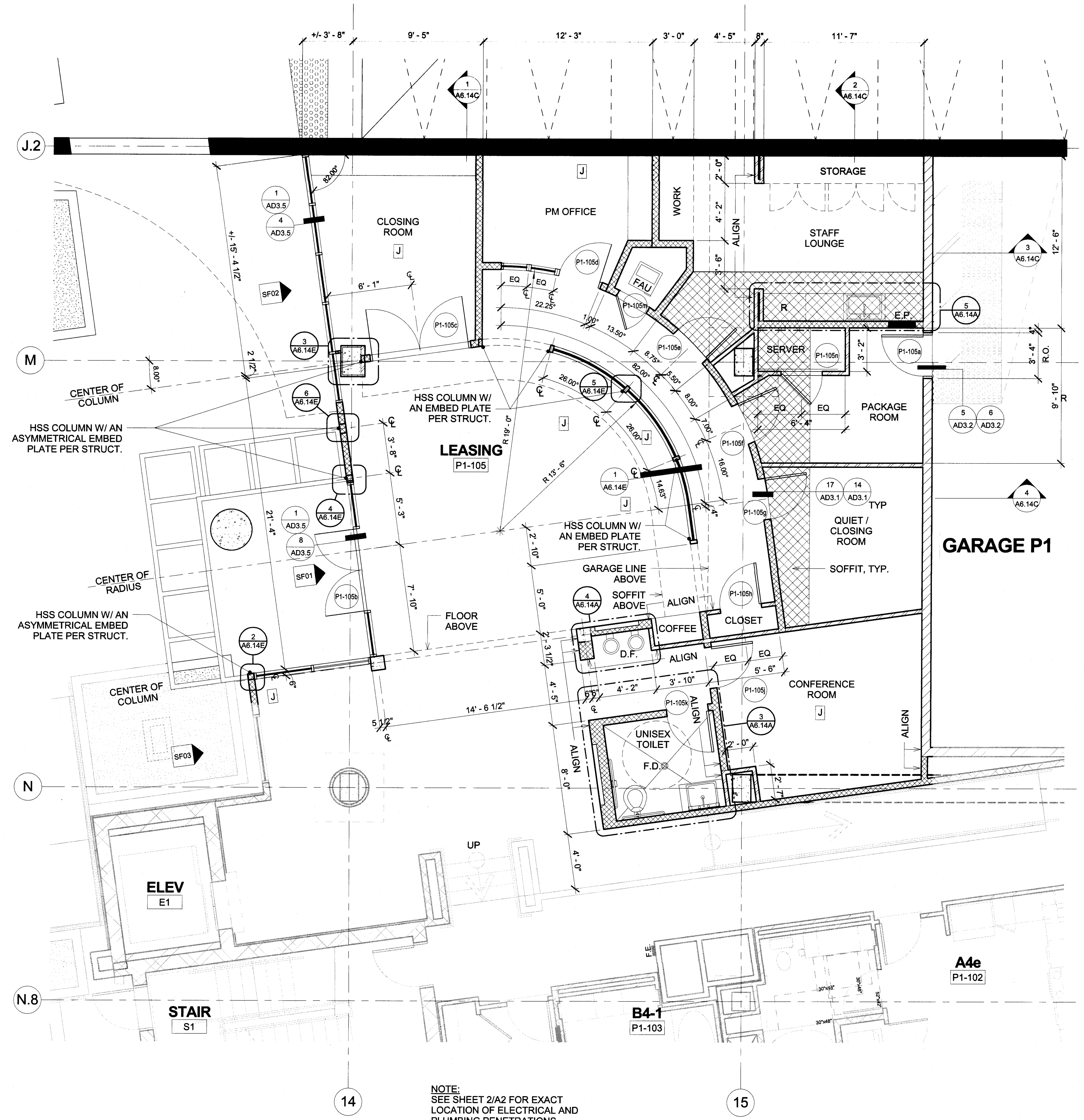
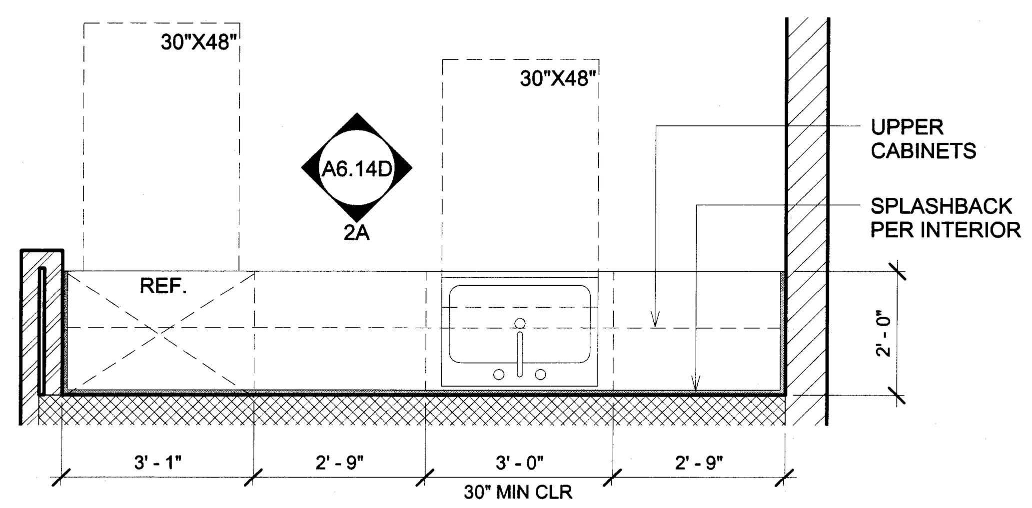


2 LEASING - 2ND FLOOR PLAN
1/4" = 1'-0"

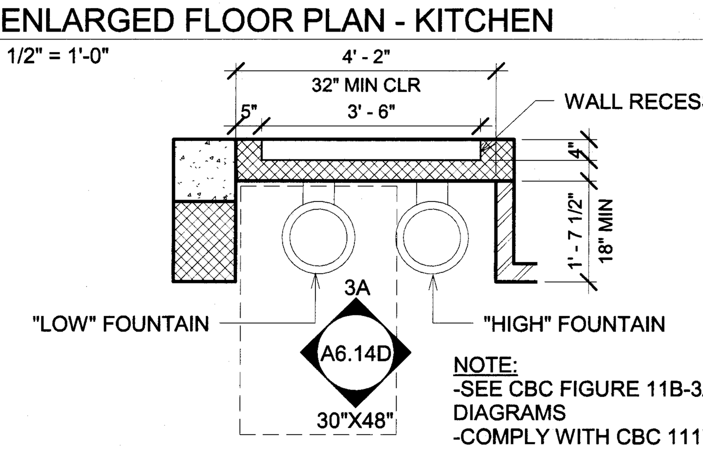


NOTE:
SEE SHEET 2/A2 FOR EXACT LOCATION OF ELECTRICAL AND PLUMBING PENETRATIONS

1 LEASING - 1ST FLOOR PLAN
1/4" = 1'-0"



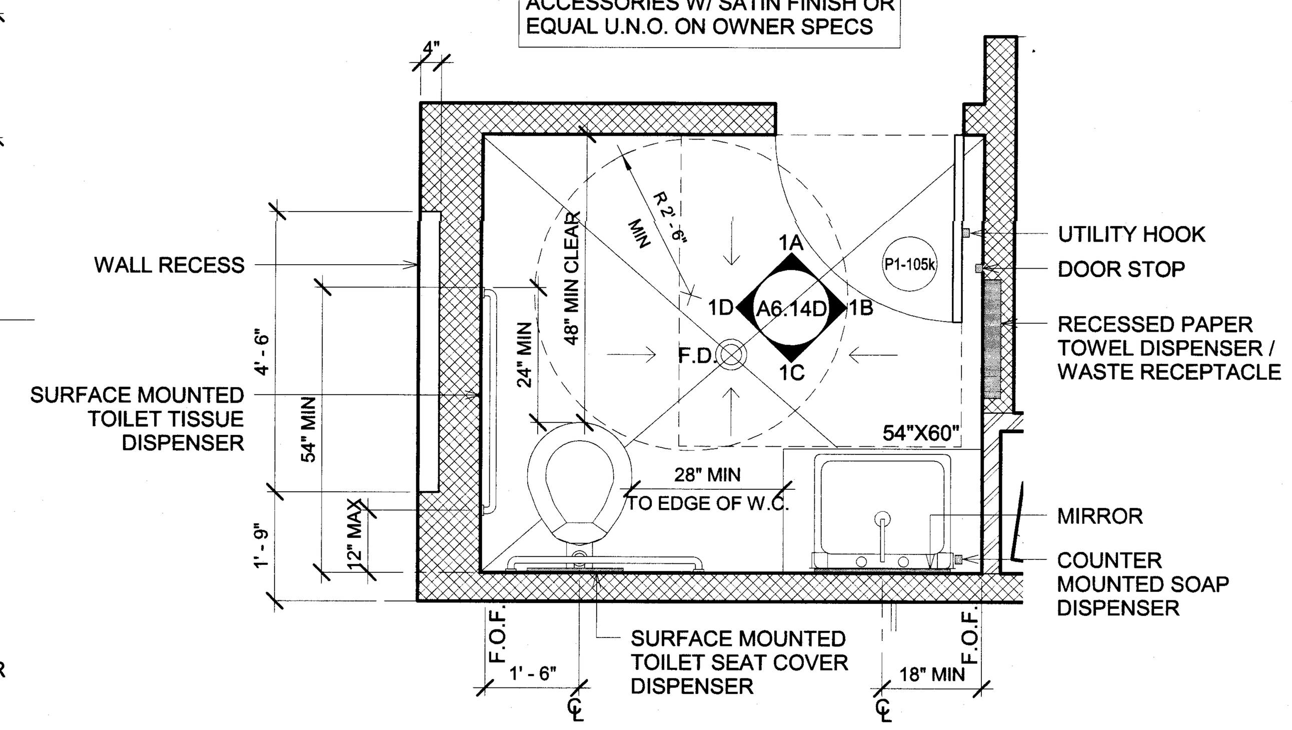
5 ENLARGED FLOOR PLAN - KITCHEN
1/2" = 1'-0"



NOTE:
-SEE CBC FIGURE 11B-3A AND 11B-3B FOR DIAGRAMS
-COMPLY WITH CBC 1117B.1

4 ENLARGED FLOOR PLAN - DRINKING FOUNTAIN
1/2" = 1'-0"

PROVIDE BOBRICK WASHROOM ACCESSORIES W/ SATIN FINISH OR EQUAL U.N.O. ON OWNER SPECS

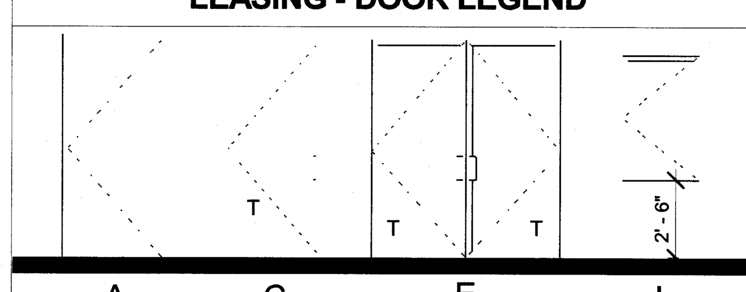


3 ENLARGED FLOOR PLAN - RESTROOM
1/2" = 1'-0"

LEASING - DOOR SCHEDULE

Mark	DOOR TYPE	SIZE Width	Height	Thickness	Fire Rating	COMMENT
P1-105a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS
P1-105b	E	6' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT, CLOSER, SS
P1-105c	E	7' - 0"	8' - 8"	0' - 1 3/4"		STOREFRONT
P1-105d	C	3' - 0"	8' - 0"	0' - 1 3/4"		STOREFRONT
P1-105e	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105f	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105g	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105h	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105j	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105k	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105m	I	2' - 6"	4' - 0"	0' - 1 3/8"		
P1-105n	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P2-200	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS

LEASING - DOOR LEGEND



NOTE:
SEE DETAILS ON SHEETS AD3.1 TO AD3.5 FOR DOOR JAMB, SILL AND HEAD DETAILS (TYP.)

ABBREVIATIONS & SYMBOLS

F.D. FLOOR DRAIN
D.F. DRINKING FOUNTAIN
S.S. SMOKE SEAL
E.P. ELECTRICAL PANEL

EXIT SIGN PER SECTION 1011 2010 CFC. SIGNS SHALL BE PERMANENTLY ILLUMINATED. FACE OF EXIT SIGN SHALL BE ILLUMINATED FROM AN EXTERNAL SOURCE AND SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT-CANDLES (54 lux). EXIT SIGN PLACEMENT SHALL BE SUCH THAT NO POINT IN AN ACCESS CORRIDOR OR EXIT PASSAGEWAY IS MORE THAN 100 FT OR THE LISTED VIEWING DISTANCE FOR THE SIGN, WHICHEVER IS LESS, FROM THE NEAREST VISIBLE EXIT SIGN. SHADED REGION INDICATES THE DIRECTION OF TRAVEL TO THE EXIT.

F.E. FIRE EXT. PER SECTION 906 & TABLE 906.3(1) 2010 CFC. MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER 75 FT. MOUNT FIRE EXTINGUISHER TO NEAREST COL OR WALL 3/AD8.2

J J-BOX FOR POWER AND DATA

LEASING - WALL LEGEND

- 3-5/8" METAL STUD WALL
- 6" METAL STUD WALL
- CMU BLOCK WALL
- CONCRETE WALL
- SHEAR CONCRETE WALL

GENERAL NOTES

1. ALL DOORS SHALL HAVE 4" MIN JAMBS U.N.O.

2. ALL DOORS, COUNTERTOPS, PLUMBING FIXTURES, AND KITCHEN APPLIANCES SHALL COMPLY WITH ACCESSIBILITY REQUIREMENTS PER CH.11 CBC AND LOCAL SECURITY ORDINANCES.

3. CEILING HEIGHTS ARE FROM TOP OF SLAB OR TOP OF SHEATHING TO BOTTOM OF SOFFIT FRAMING, TYPICAL.

4. ALL GYPSUM WALL BOARD TO BE 5/8" TYPE "X" 1-HOUR RATED. PROVIDE 5/8" TYPE "X" WATER RESISTANT GYPSUM WALL BOARD AT ALL WET WALLS. WATER RESISTANT GYPSUM WALL BOARD SHALL EXTEND FROM FLOOR TO CEILING.

5. PROVIDE 90 DEGREE GYPSUM CORNER BEADS AT ALL LOCATIONS.

6. CONTRACTOR, DOOR SUPPLIER, GLASS MANUFACTURER, AND INSTALLER WILL PROVIDE SAFETY GLAZING AS REQUIRED BY CALIFORNIA BUILDING CODE SECTION 2406 AND ALL OTHER FEDERAL, STATE, AND LOCAL LAWS, CODES, ORDINANCES, AND REGULATIONS, WHETHER OR NOT INDICATED ON THE PLANS.

7. REFER TO SHEETS AS1.10 - AS1.31 FOR ADDITIONAL INFORMATION REGARDING DOORS, WINDOWS, AND STOREFRONTS.

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT ADAM C. CHAHBAZIAN No. C19002 STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

LEASING - FLOOR PLANS

FOR CONSTRUCTION

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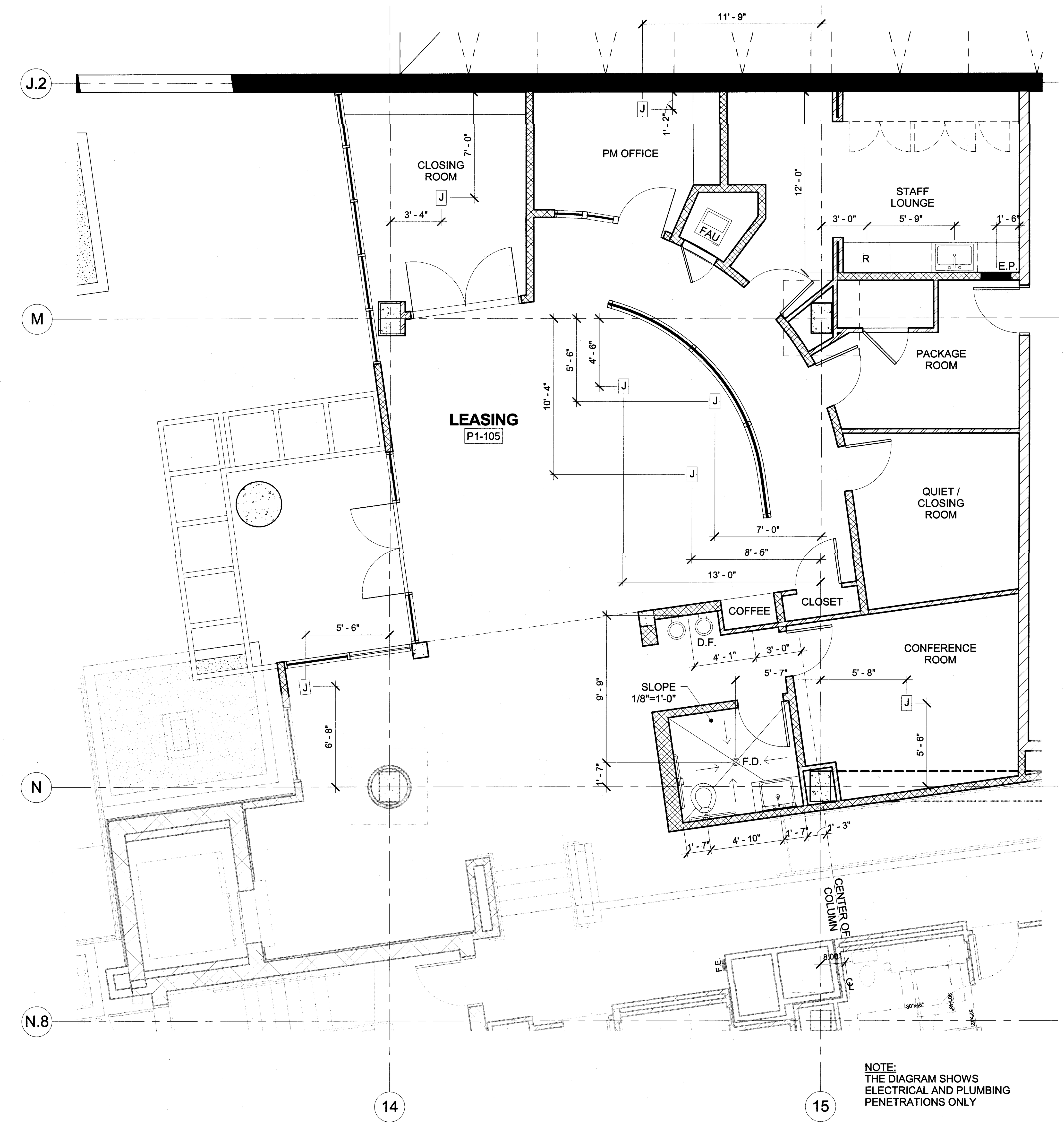
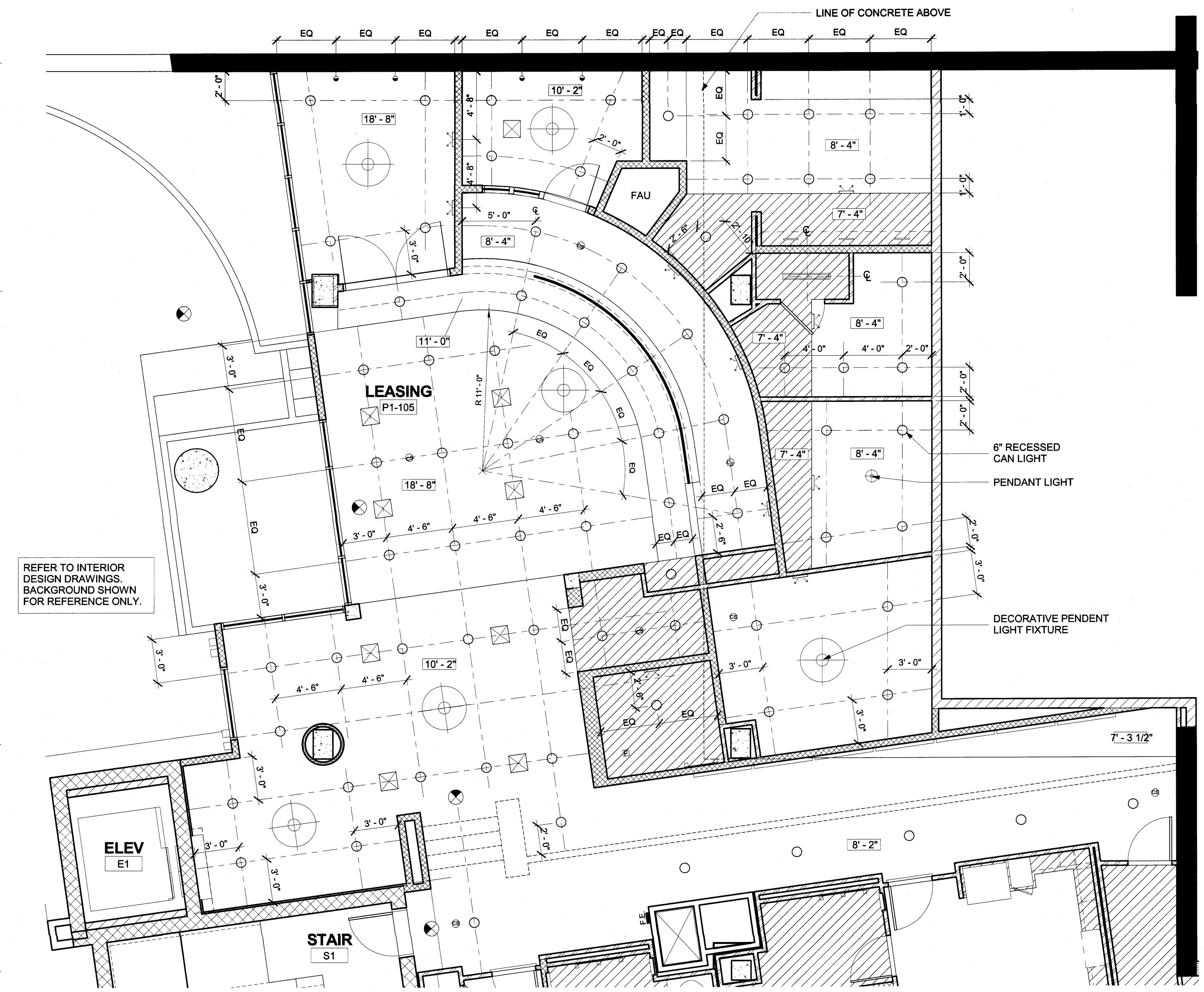


2 LEASING - SLAB PENETRATION DIAGRAM
1/4" = 1'-0"



1 LEASING - RCP
1/4" = 1'-0"

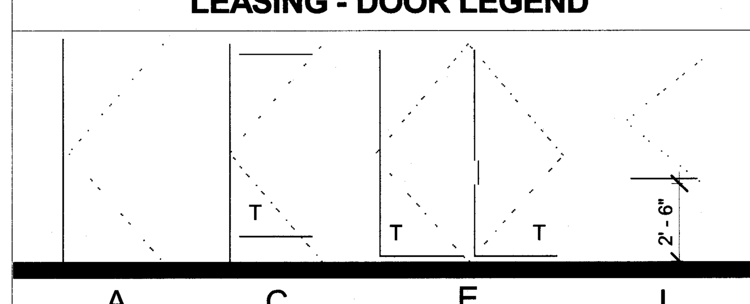
CEILING LEGEND

- DROP CEILING
- RECESSED CAN FIXTURE 6" DIA.
- HANGING LIGHT FIXTURE
- UNDER COUNTER LIGHT
- SUPPLY AIR
- EXHAUST FAN
- WALL WASHER
- COMBINATION CO2 & SMOKE DETECTOR, HARDWIRE W/ BATTERY BACKUP, REFER TO CBC SECTION 420 & ELECTRICAL DRAWINGS. INSTALL ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- FLOURESCENT LIGHT

LEASING - DOOR SCHEDULE

Mark	DOOR TYPE	SIZE Width	SIZE Height	SIZE Thickness	Fire Rating	COMMENT
P1-105a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS
P1-105b	E	6' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT, CLOSER, SS
P1-105c	E	7' - 0"	8' - 8"	0' - 1 3/4"		STOREFRONT
P1-105d	C	3' - 0"	8' - 0"	0' - 1 3/4"		STOREFRONT
P1-105e	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105f	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105g	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105h	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105j	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105k	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-105m	I	2' - 6"	4' - 0"	0' - 1 3/8"		
P1-105n	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P2-200	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	CLOSER, SS

LEASING - DOOR LEGEND



NOTE:
SEE DETAILS ON SHEETS AD3.1 TO AD3.5 FOR DOOR JAMB, SILL AND HEAD DETAILS (TYP.)

ABBREVIATIONS & SYMBOLS

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J J-BOX FOR POWER AND DATA

LEASING - WALL LEGEND

- 3-5/8" METAL STUD WALL
- 6" METAL STUD WALL
- CMU BLOCK WALL
- CONCRETE WALL
- SHEAR CONCRETE WALL

GENERAL NOTES

1. LIGHTS TO BE CENTERED IN CEILING AREA WITHIN ROOM UNLESS NOTED OTHERWISE.

2. CEILING HEIGHTS ARE FROM TOP OF SLAB OR TOP OF SHEATHING TO BOTTOM OF SOFFIT FRAMING, TYPICAL.

3. ALL CEILINGS ARE 5/8" GYPSUM WALL BOARD TYPE 'X' OVER 1/2" RESILIENT CHANNELS TIGHT TO CEILING.

AT COMMON AREAS (CLUB ROOM, FITNESS, COMP/LOUNGE & YOGA) PROVIDE 3 LAYERS OF 5/8" GYPSUM WALL BOARD TYPE 'X' OVER 1/2" RESILIENT CHANNELS TIGHT TO CEILING.

4. INTERIOR WALL & CEILING FINISH SHALL HAVE A "LIGHT ORANGE PEEL TEXTURE".

5. VERIFY ALL LIGHTING REQUIREMENTS WITH THE ELECTRICAL DRAWINGS.

6. VERIFY ALL RECESSED FIXTURES FIT WITHIN THE GIVEN CEILING SPACE. CONTRACTOR TO VERIFY DEPTH CLEARANCES FOR THESE LIGHTS.

7. LOCATION OF ALL CEILING ITEMS IS GOVERNED BY THE ARCHITECTURAL DRAWINGS - CONTRACTOR TO NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH TECH WORK.

8. VERIFY ALL MECHANICAL SUPPLY, RETURN, AND EXHAUST GRILLES WITH MECHANICAL DRAWINGS.

9. REFER TO MECHANICAL, ELECTRICAL & PLUMBING FOR ADDITIONAL INFORMATION.

10. ALL FIXTURES ARE SPECIFIED BY OWNER.

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25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

FOR CONSTRUCTION

DRAWING CONTENTS
LEASING - RCP

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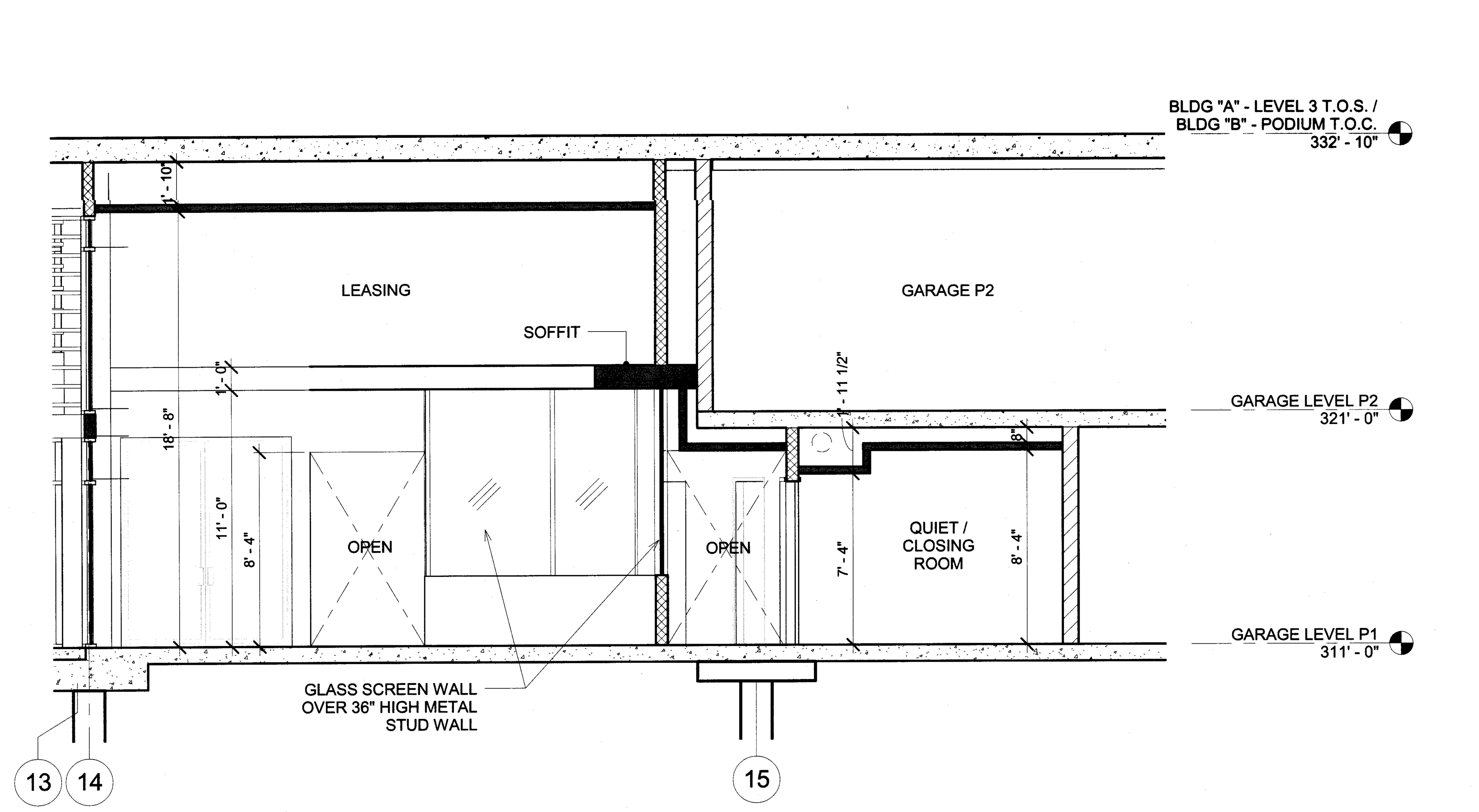
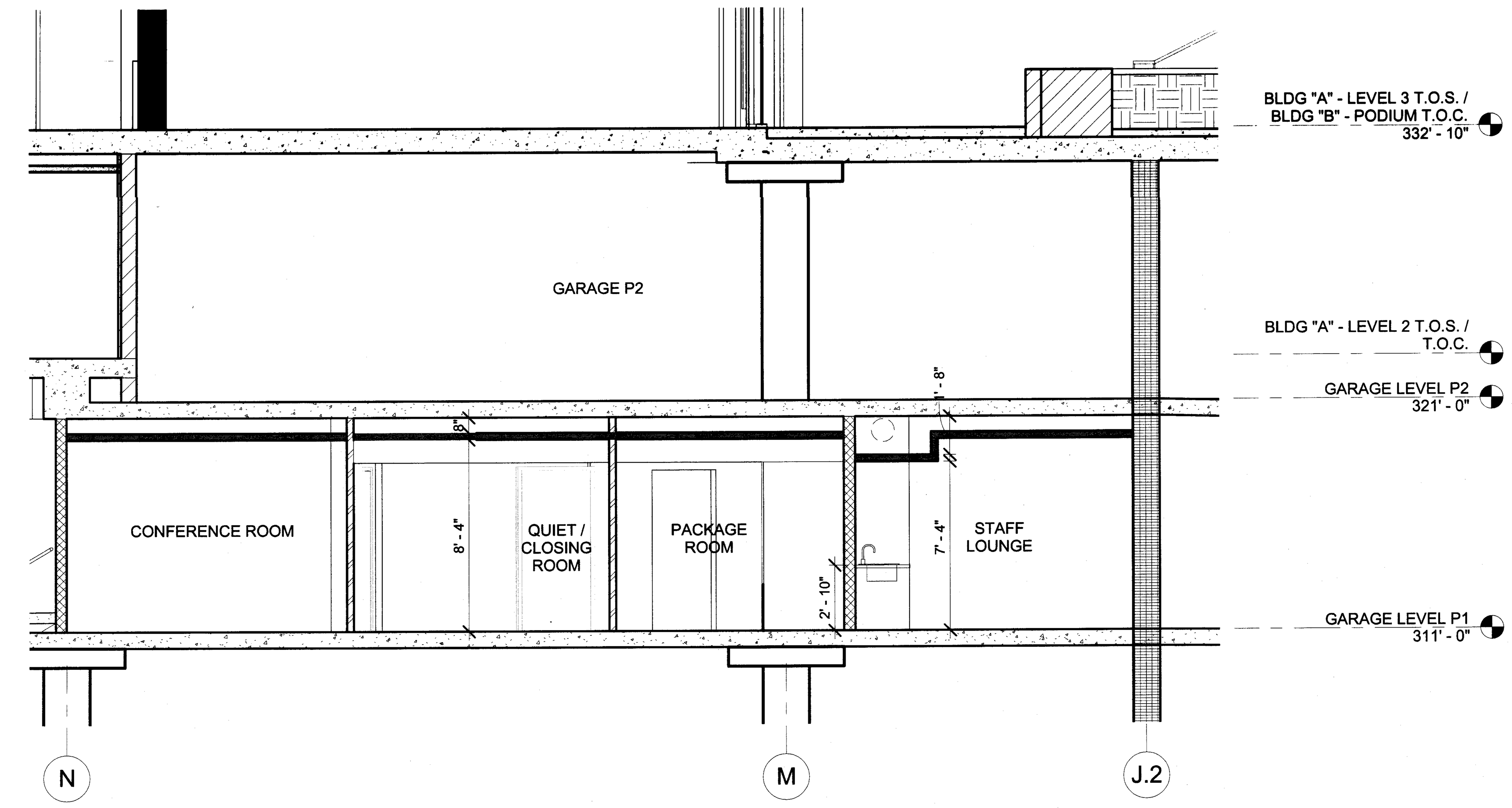
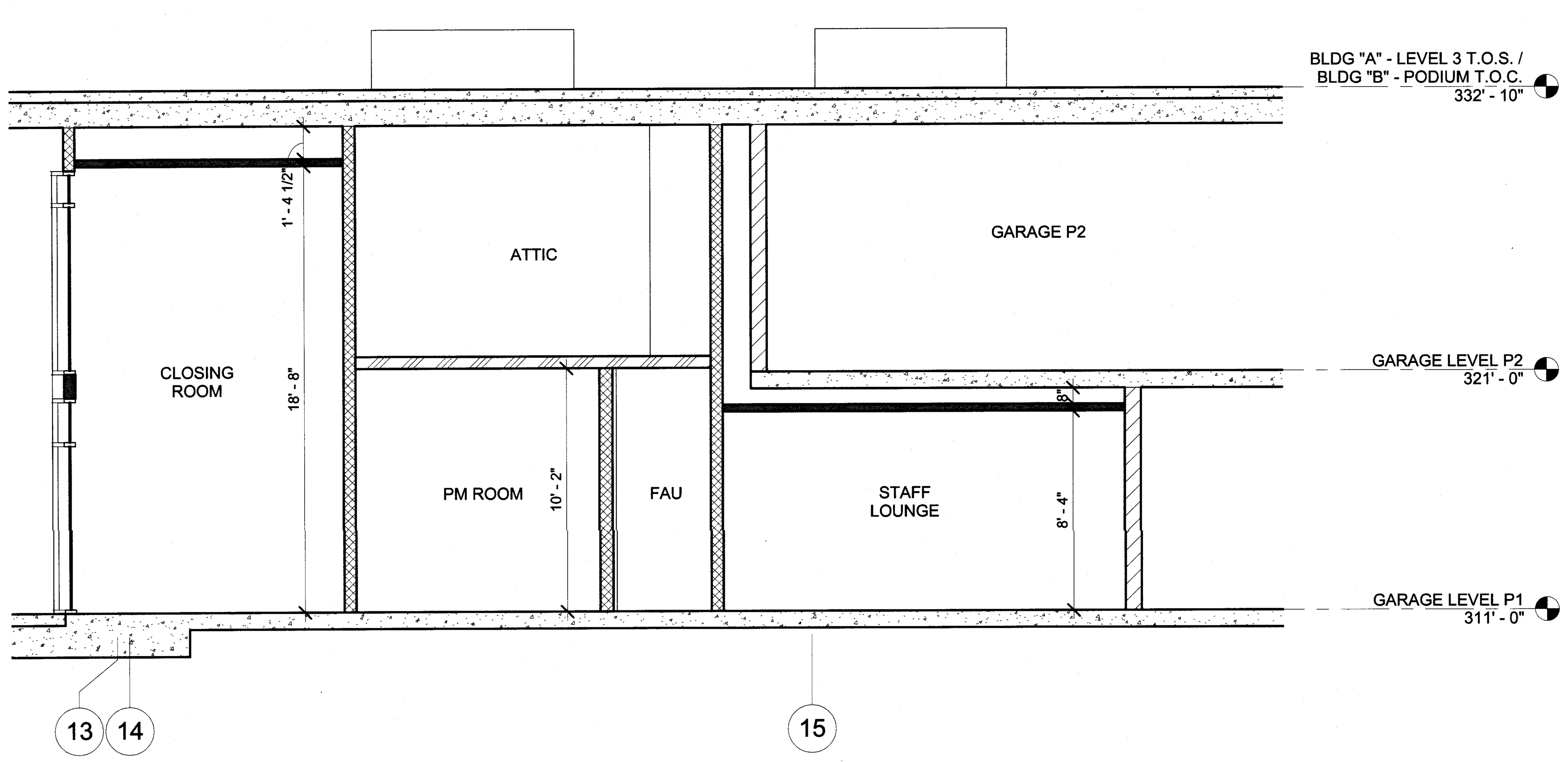


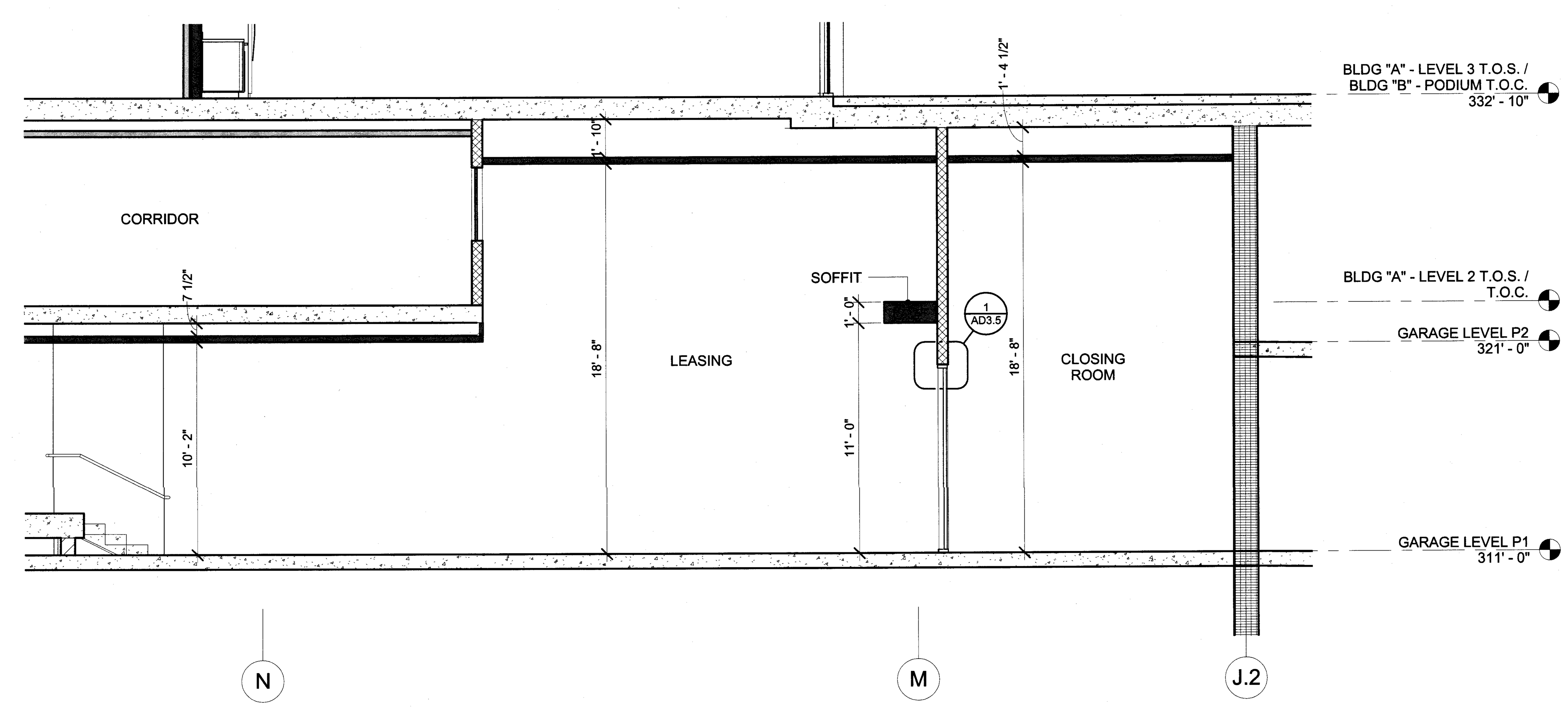
4 LEASING SECTION
1/4" = 1'-0"



2 LEASING SECTION
1/4" = 1'-0"



3 LEASING SECTION
1/4" = 1'-0"



1 LEASING SECTION
1/4" = 1'-0"

ABBREVIATIONS & SYMBOLS

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D.F. DRINKING FOUNTAIN
S.S. SMOKE SEAL
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3. CEILING HEIGHTS ARE FROM TOP OF SLAB OR TOP OF SHEATHING TO BOTTOM OF SOFFIT FRAMING, TYPICAL.
4. ALL GYPSUM WALL BOARD TO BE 5/8" TYPE "X" 1-HOUR RATED. PROVIDE 5/8" TYPE "X" WATER RESISTANT GYPSUM WALL BOARD AT ALL WET WALLS. WATER RESISTANT GYPSUM WALL BOARD SHALL EXTEND FROM FLOOR TO CEILING.
5. PROVIDE 90 DEGREE GYPSUM CORNER BEADS AT ALL LOCATIONS.
6. CONTRACTOR, DOOR SUPPLIER, GLASS MANUFACTURER, AND INSTALLER WILL PROVIDE SAFETY GLAZING AS REQUIRED BY CALIFORNIA BUILDING CODE SECTION 2406 AND ALL OTHER FEDERAL, STATE, AND LOCAL LAWS, CODES, ORDINANCES, AND REGULATIONS, WHETHER OR NOT INDICATED ON THE PLANS.
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MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - SECTIONS

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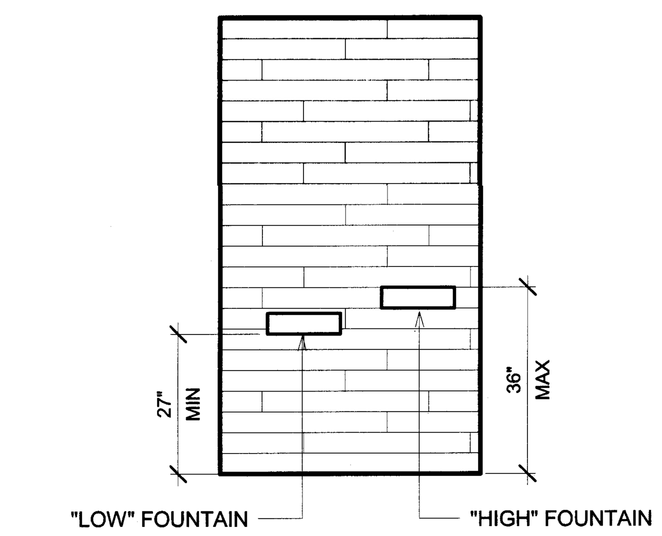
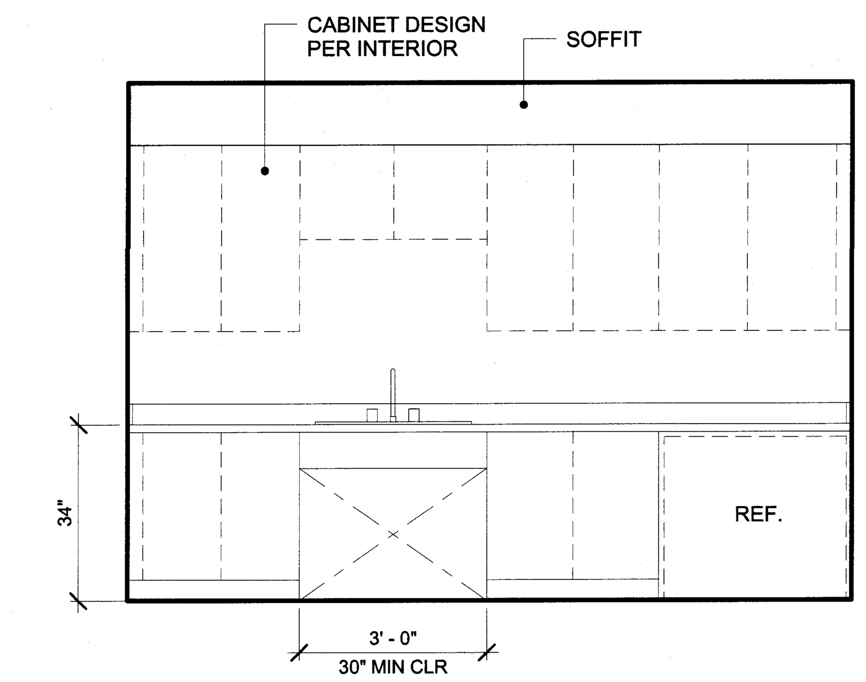
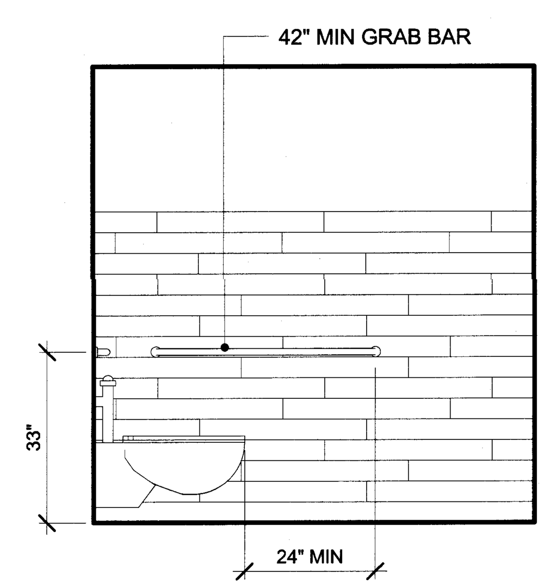


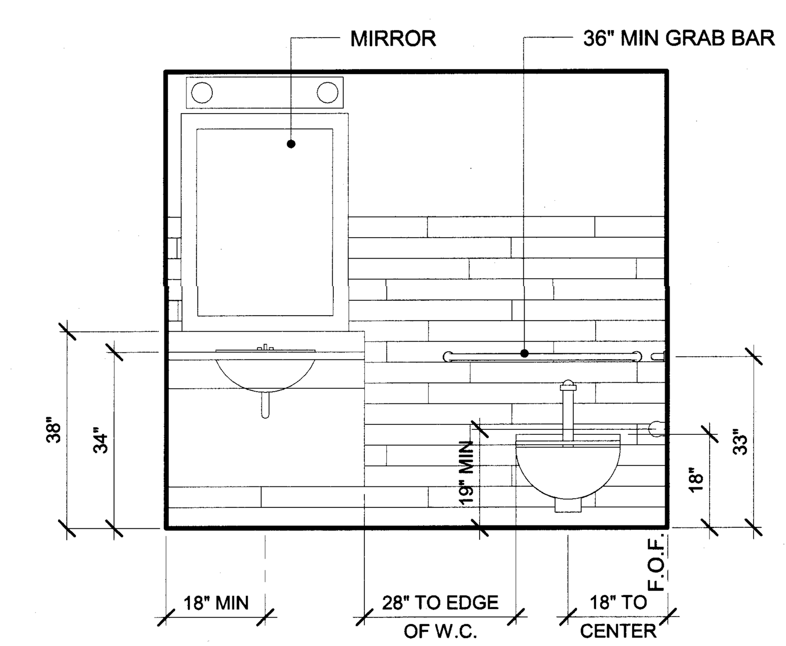
3A WATER FOUNTAIN ELEVATION
1/2" = 1'-0"



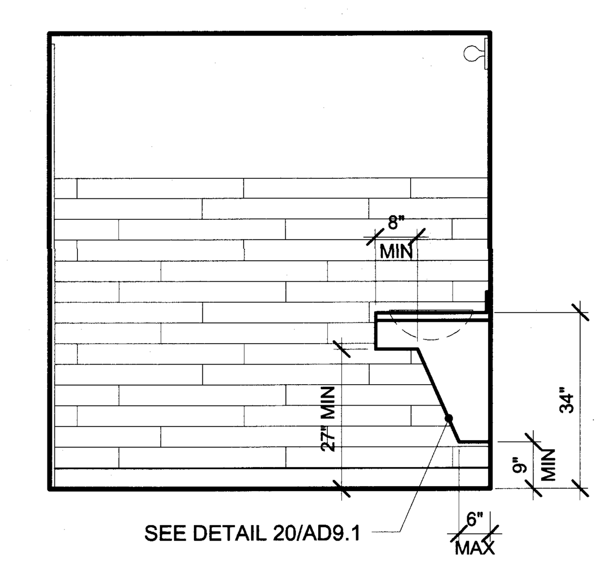
2A KITCHEN ELEVATION
1/2" = 1'-0"



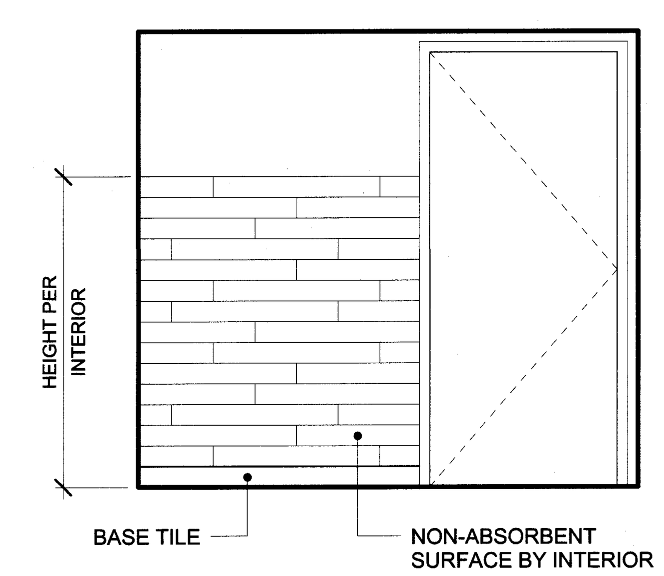
1D BATHROOM ELEVATION
1/2" = 1'-0"



1C BATHROOM ELEVATION
1/2" = 1'-0"



1B BATHROOM ELEVATION
1/2" = 1'-0"



1A BATHROOM ELEVATION
1/2" = 1'-0"

TYPICAL ACCESSIBILITY NOTES

DOORS

1. ALL FIRST FLOOR DOORS SHALL COMPLY WITH 2010 CBC SECTION 1133B.

SUB-SECTION 1133B.2 DOORS:

A. REQUIRED EXIT DOORWAYS SHALL PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET AND NOT LESS THAN 6 FEET – 8 INCHES IN HEIGHT.

B. SWINGING DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES.

C. PASSAGE SWINGING DOOR SHALL PROVIDE A NET CLEAR OPENING WIDTH OF NOT LESS THAN 32", MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM THE CLOSED POSITION.

SUB-SECTION 1133B.2.4.1 THRESHOLDS:

A. THRESHOLDS SHALL BE NO HIGHER THAN 1/2" AND A SLOPE LESS THAN 50%.

SUB-SECTION 1133B.2.4.2 MANEUVERING CLEARANCES:

A. A LEVEL AREA OF 60" IN LENGTH IN THE DIRECTION OF THE DOOR SWING AND A LEVEL AREA OF 48" IN LENGTH IN THE DIRECTION OPPOSITE THE DOOR SWING SHALL BE PROVIDED AT RIGHT ANGLES TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION.

B. 18" CLEAR ON STRIKE SIDE OF DOOR ON INTERIOR – 24" CLEAR ON STRIKE SIDE OF DOOR ON EXTERIOR.

C. PROVIDE 12" CLEAR PAST THE STRIKE EDGE OF THE DOOR IF IT HAS BOTH A LATCH AND A CLOSER.

SUB-SECTION 1133B.2.5 DOOR OPENING FORCE:

A. MAXIMUM EFFORT SHALL NOT EXCEED 5 LBS FOR DOORS.

SUB-SECTION 1133B.2.1 LOCKS OR LATCH:

A. SHALL COMPLY WITH CHAPTER 10 SECTION 1008.

SUB-SECTION 1133B.2.5.2 DOOR HARDWARE:

A. HARDWARE SHALL BE CENTERED BETWEEN 30" AND 44" ABOVE THE FLOOR AND OPERATED BY A SINGLE EFFORT BY LEVER HARDWARE.

SUB-SECTION 1133B.2.6 SMOOTH SURFACE:

A. THE BOTTOM 10" OF THE DOOR SHALL HAVE A SMOOTH SURFACE.

BATHROOMS

1. ALL BATHING / TOILET FACILITIES SHALL COMPLY WITH 2010 CBC SECTION 1115B.

SUB-SECTION 1115B.3.1 MULTIPLE-ACCOMMODATION FACILITIES:

A. 60" DIAMETER CLEAR SPACE MEASURED TO A HEIGHT OF 27" FROM THE FLOOR IS REQUIRED WITHIN THE ROOM. EXCEPT FOR THE DOOR TO THE ACCESSIBLE WATER CLOSET COMPARTMENT, A DOOR IN ANY POSITION MAY NOT ENCROACH INTO THIS CLEAR SPACE BY MORE THAN 12".

B. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED FOR ANY FIXTURE. (PER CBC 1127A.2.1)

C. WATER CLOSET COMPARTMENT:

i. SHALL BE A MINIMUM OF 60" WIDE.

ii. A COMPARTMENT WITH A SIDE-OPENING DOORREQUIRES A MINIMUM OF 60" WIDE AND 60" DEEPMANEUVERING SPACE IN FRONT OF THE WATER CLOSET.

iii. THE COMPARTMENT DOOR SHALL HAVE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 34" WITH THE DOOR AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.

iv. A LEVEL AREA OF 60" IN LENGTH IN THE DIRECTION OF THE DOOR SWING, EXTENDED 18" PAST THE STRIKE EDGE OF THE DOOR, SHALL BE PROVIDED. A LEVEL AREA OF 48" IN LENGTH IN THE DIRECTION OPPOSITE THE DOOR SWING, EXTENDED 12" PAST THE STRIKE EDGE OF THE DOOR, SHALL BE PROVIDED.

v. A CLEAR, UNOBSTRUCTED ACCESS OF NOT LESS THAN 44" SHALL BE PROVIDED TO THE COMPARTMENT.

vi. COMPARTMENT DOOR SHALL BE EQUIPPED WITH WITH A SELF-CLOSING DEVICE (CBC SECTION 1127A.2.1).

D. TOILET ROOM FLOORS SHALL HAVE A SLIP RESISTANT SURFACE PER SECTION 1124B.

SUB-SECTION 1115B.3.2 SINGLE-ACCOMMODATION FACILITIES:

A. THERE SHALL BE IN THE ROOM A CLEAR FLOOR SPACE OF AT LEAST 60 INCHES IN DIAMETER, OR A T-SHAPED SPACE COMPLYING WITH FIGURE 11B-12 (A) AND (B) CBC.

B. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED FOR ANY FIXTURE.

C. A MINIMUM 60 INCHES WIDE AND 48 INCHES DEEP MANEUVERING SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET.

D. ALL DOORS, FIXTURES, AND CONTROLS SHALL BE ON AN ACCESSIBLE ROUTE. THE MINIMUM CLEAR WIDTH OF AN ACCESSIBLE ROUTE SHALL BE 36 INCHES EXCEPT AT DOORS.

SUB-SECTION 1115B.4.1 ACCESSIBLE WATER CLOSETS:

A. THE CENTERLINE OF THE WATER CLOSET SHALL BE 18" FROM THE SIDE WALL OR PARTITION. ON THE OTHER SIDE, PROVIDE A MINIMUM OF 28" WIDE CLEAR FLOOR SPACE TO A FIXTURE OR 32" WIDE CLEAR FLOOR SPACE TO A WALL OR PARTITION. CLEAR FLOOR SPACE SHALL EXTEND FROM THE REAR WALL TO THE FRONT OF THE WATER CLOSET.

B. WATER CLOSET REQUIRES A CLEAR FLOOR SPACE OF 60" MINIMUM PERPENDICULAR FROM THE SIDE WALL CLOSEST TO THE WATER CLOSET AND 56" MINIMUM PERPENDICULAR FROM THE REAR WALL. IN ADDITION, A MINIMUM 60" WIDE BY 36" DEEP MANEUVERING SPACE TO BE PROVIDED IN FRONT OF THE CLEAR FLOOR SPACE AT THE COMPARTMENT DOOR.

C. GRAB BARS SHALL BE CENTERED 33" ABOVE THE FLOOR. SIDE WALL GRAB BAR SHALL BE 42" LONG MINIMUM, LOCATED 12" MAXIMUM FROM THE REAR WALL AND EXTEND 54" MINIMUM FROM THE REAR WALL. THE FRONT END SHALL BE 24" MINIMUM IN FRONT OF THE WATER CLOSET. REAR WALL GRAB BAR SHALL BE 36" LONG MINIMUM AND EXTEND FROM THE CENTERLINE OF THE WATER CLOSET 12" MINIMUM ON ONE SIDE AND 24" MINIMUM OF THE OTHER SIDE.

D. THE HEIGHT OF ACCESSIBLE WATER CLOSETS SHALL BE A MINIMUM OF 17" AND A MAXIMUM OF 19" MEASURED TO THE TOP OF A MAXIMUM 2" HIGH TOILET SEAT.

E. WATER CLOSET CONTROLS SHALL BE MOUNTED ON THE SIDE OF THE TOILET AREA AND NO MORE THE 44" ABOVE THE FLOOR. THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE.

SUB-SECTION 1115B.4.2 ACCESSIBLE URINALS:

A. AT LEAST ONE URINAL SHALL HAVE A 30" x 48" CLEAR FLOOR SPACE IN FRONT OF THE URINAL TO ALLOW FORWARD APPROACH.

B. THE CONTROL MECHANISM IS TO BE LOCATED SO AS TO NOT EXCEED 44" ABOVE THE FLOOR.

SUB-SECTION 1115B.4.3 ACCESSIBLE LAVATORIES:

A. LAVATORIES SHALL BE INSTALLED 18" HORIZONTALLY FROM AN ADJOINING WALL OR PARTITION. THE TOP OF THE FIXTURE RIM OR COUNTER SHALL BE A MAXIMUM OF 34" ABOVE THE FINISH FLOOR AND WITH VERTICAL CLEARANCE MEASURED FROM THE BOTTOM OF THE APRON OR OUTSIDE BOTTOM EDGE OF THE LAVATORY OF 29" REDUCING TO 27" AT A POINT LOCATED 8" BACK FROM THE FRONT EDGE. A MINIMUM 9" HIGH TOE CLEARANCE EXTENDING BACK TOWARD THE BACK WALL TO A DISTANCE OF NO MORE THAN 6" SHALL BE PROVIDED.

B. A CLEAR FLOOR SPACE OF AT LEAST 30" x 48" SHALL BE CENTERED ON LAVATORIES.

C. HOT WATER AND DRAIN PIPES EXPOSED UNDER THE LAVATORY SHALL BE INSULATED OR COVERED.

D. LAVATORY CONTROLS SHALL BE OPERATED WITH ONE HAND, AND THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. LEVER OR PUSH OPERATED ARE EXAMPLES OF ACCEPTABLE DESIGNS.

SUB-SECTION 1115B.4.4 ACCESSIBLE SHOWERS:

A. ROLL-IN SHOWER 60" MINIMUM CLEAR WIDTH AND 30" MINIMUM CLEAR DEPTH. FULL OPENING WIDTH TO BE ON THE LONG SIDE.

B. THRESHOLDS IN ROLL-IN TYPE SHOWERS SHALL BE 1/2" MAXIMUM.

C. SHOWER CONTROLS SHALL BE OPERATED WITH ONE HAND; THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. THE CENTERLINE OF THE CONTROLS SHALL BE 39" TO 41" ABOVE THE SHOWER FLOOR. CONTROLS SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THE CENTERLINE OF THE CONTROLS IS WITHIN 19" AND 27" FROM THE SEAT WALL.

D. A FLEXIBLE HAND-HELD SPRAYER UNIT WITH A MINIMUM HOSE LENGTH OF 60" THAT CAN BE USED AS A FIXED SHOWER OR HAND-HELD SHOWER SHALL BE PROVIDED. THE TOP OF THE MOUNTING BRACKET SHALL BE AT A MAXIMUM HEIGHT OF 48" ABOVE THE SHOWER FLOOR. THE UNIT SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THAT THE CENTERLINE SHALL BE NO MORE THAN 27" FROM THE SEAT WALL.

E. THE MAXIMUM SLOPE OF THE FLOOR SHALL NOT EXCEED 2% IN ANY DIRECTION. DRAIN GRATE OPENINGS SHALL BE A MAXIMUM OF 1/4" AND BE FLUSH WITH THE FLOOR SURFACE.

F. A FOLDING SEAT IS TO BE MOUNTED 18" ABOVE THE FLOOR, WITH A MINIMUM SPACE OF 1" AND A MAXIMUM SPACE OF 1-1/2" BETWEEN THE EDGE OF THE SEAT AND ANY WALL. WHEN FOLDED, THE SEAT SHALL NOT EXTEND MORE THAN 6" FROM THE MOUNTING WALL.

G. AN L-SHAPED GRAB BAR SHALL BE MOUNTED A MINIMUM OF 33" AND A MAXIMUM OF 36" ABOVE THE SHOWER FLOOR ON WALLS ADJACENT AND OPPOSITE THE SEAT. GRAB BAR SHALL NOT EXTEND INTO THAT PORTION OF THE WALL OVER THE SEAT.

H. GRAB BARS SHALL BE NOT LESS THAN 1-1/4" AND NOT MORE THAN 1-1/2" IN DIAMETER. STRUCTURAL STRENGTH ACCORDING TO CBC SECTION 1127.A.4.4.

SUB-SECTION 1115B.8 ACCESSORIES:

A. MIRRORS SHALL BE MOUNTED WITH THE BOTTOM EDGE OF THE REFLECTIVE SURFACE NO HIGHER THAN 40" FROM THE FINISH FLOOR.

B. TOWEL, SANITARY NAPKINS, WASTE RECEPTACLES, DISPENSERS, AND OTHER EQUIPMENT AND CONTROLS SHALL BE MOUNTED WITH OPERABLE PARTS WITHIN 40" OF THE FINISHED FLOOR AND ON AN ACCESSIBLE ROUTE.

C. TOILET TISSUE DISPENSERS SHALL BE LOCATED ON THE WALL WITHIN 12" OF THE FRONT EDGE OF THE TOILET SEAT, MOUNTED AT A MINIMUM HEIGHT OF 19", AND 36" MAXIMUM TO THE FAR EDGE FROM THE REAR WALL.

SUB-SECTION 1117B.1 ACCESSIBLE DRINKING FOUNTAINS:

A. PROVIDE A "HI-LOW" DRINKING FOUNTAINS. CENTER A 30" x 48" CLEAR FLOOR SPACE ON THE "LOW" FOUNTAIN FIXTURE TO ALLOW FORWARD APPROACH.

GENERAL NOTES

1. ALL KITCHEN FINISH MATERIAL SHALL BE SELECTED BY INTERIOR DESIGNER.
2. ALL NOTES AND DIMENSIONS APPLY TO ALL KITCHENS UNLESS NOTED OTHERWISE.
3. DIMENSIONS SHOWN ARE FOR DESIGN INTENT ONLY. ALL CABINET DIMENSIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO CABINET FABRICATION. SHOP DRAWINGS SHALL BE SUBMITTED TO ARCHITECT FOR APPROVAL PRIOR TO FABRICATION.
4. REPOSITIONABLE COUNTERTOPS: STONE, CULTURED STONE AND TILE COUNTERTOPS MAY BE USED WITHOUT MEETING THE REPOSITIONAL REQUIREMENTS PER CBC SUB-SECTION 1133A.4.1
5. PER 2010 CBC SECTION 1133A.3 REMOVABLE BASE CABINETS: BASE CABINETS DIRECTLY UNDER THE KITCHEN SINK COUNTER AREA, INCLUDING TOEBOARD AND SHELVING, SHALL BE REMOVABLE WITHOUT THE USE OF SPECIALIZED TOOLS OR SPECIALIZED KNOWLEDGE IN ORDER TO PROVIDE CLEARANCE FOR A WHEELCHAIR. THE FINISH FLOOR BENEATH THE KITCHEN SINK COUNTER AREA SHALL BE EXTENDED TO THE WALL.
6. NO COUNTERTOP LIP AT EITHER SIDE OF RANGE.
7. VERIFY ALL MANUFACTURER SPECIFICATIONS AND CLEARANCES WITH OWNER SELECTIONS PRIOR TO CABINET FABRICATION. ALL CLEAR DIMENSIONS SHALL BE SHOWN ON SHOP DRAWINGS FOR APPROVAL.

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHAHBAZIAN
No. C19002
Renewal 9-30-1
STATE OF CALIFORNIA

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - INTERIOR ELEVATIONS

FOR CONSTRUCTION

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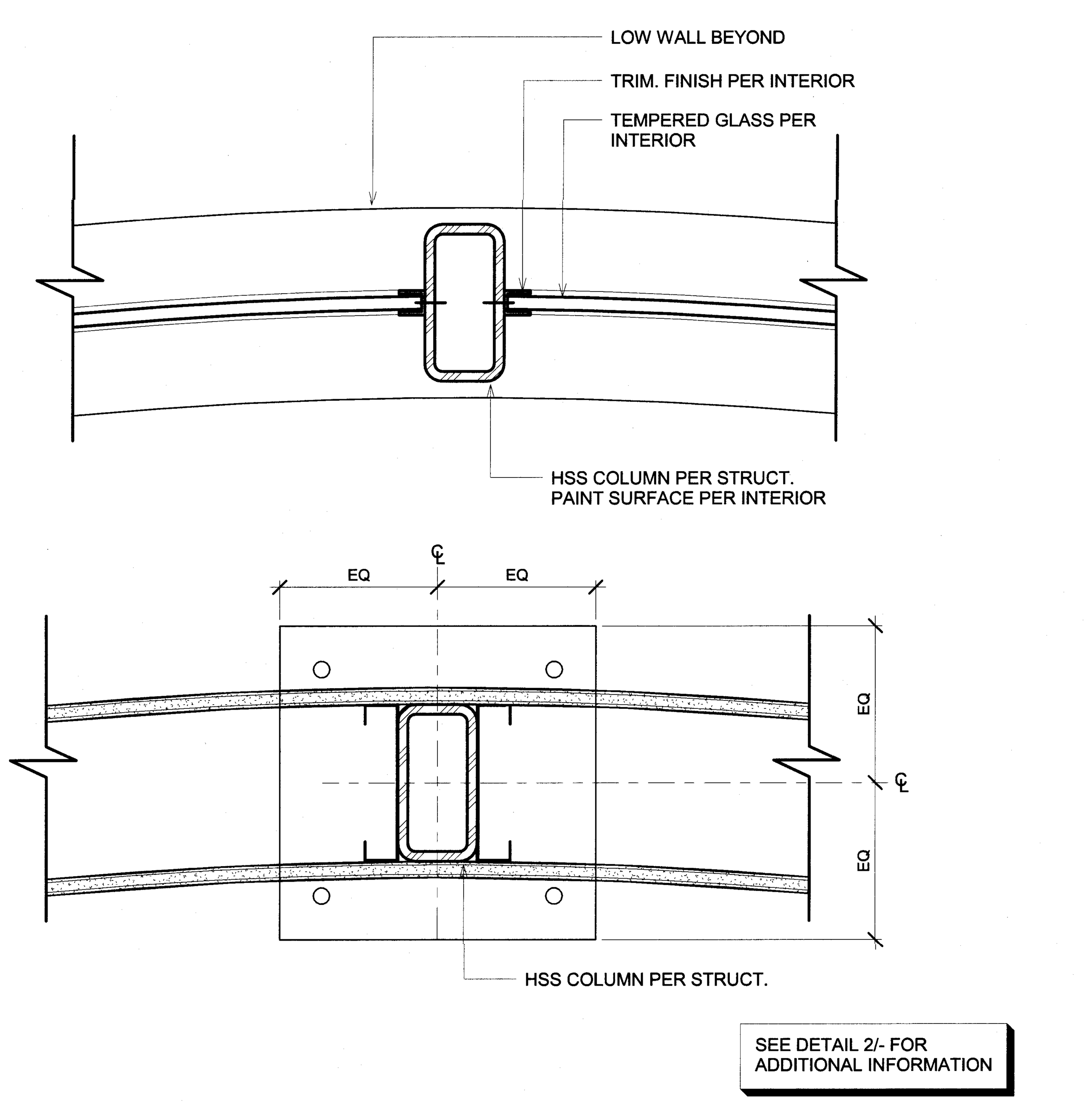
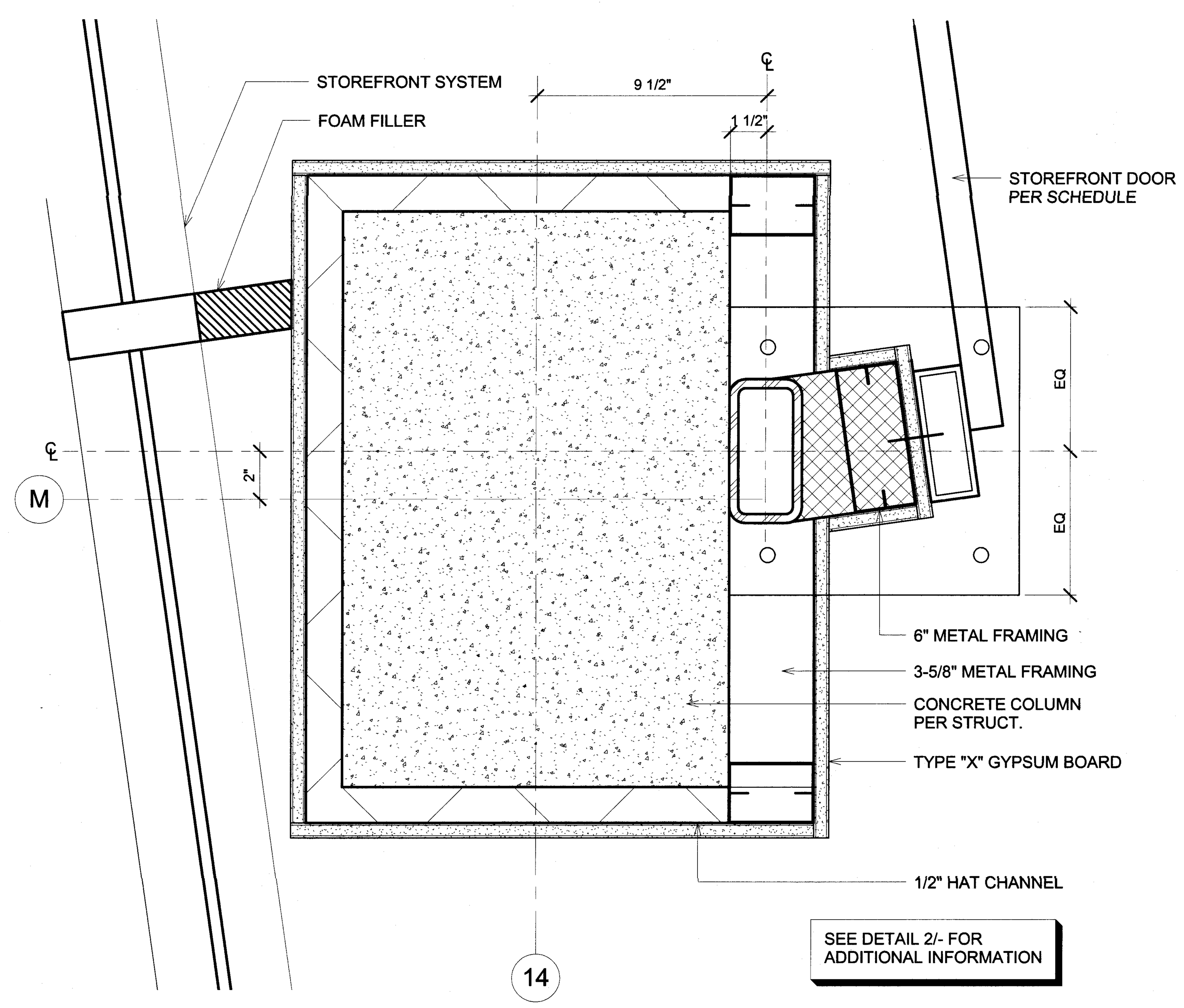
A6.14D

2010-089
JOB NUMBER
1/2" = 1'-0"
SCALE
ISSUED AS
5/8/2014
DATE



5 COLUMN DETAIL
3" = 1'-0"



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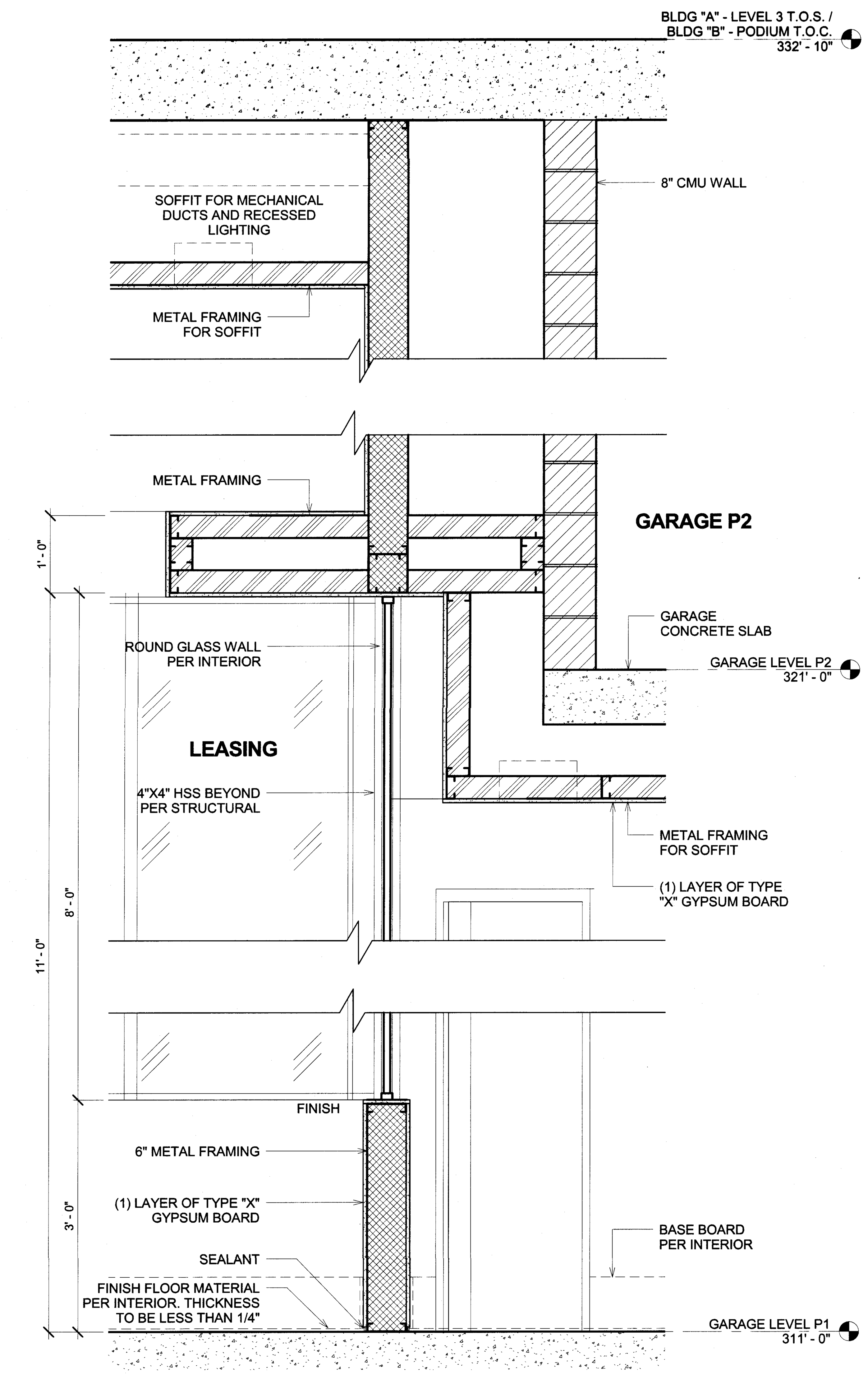
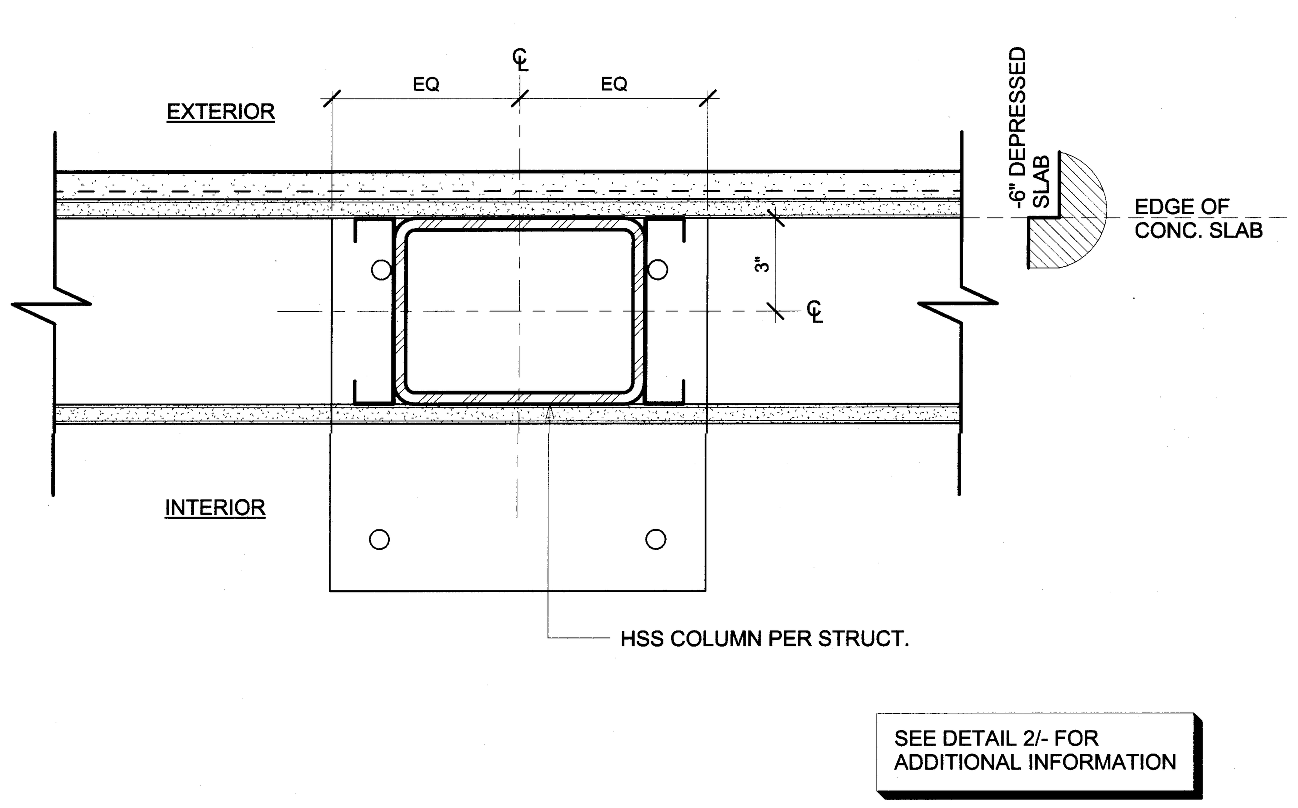


1 WALL DETAIL
1" = 1'-0"



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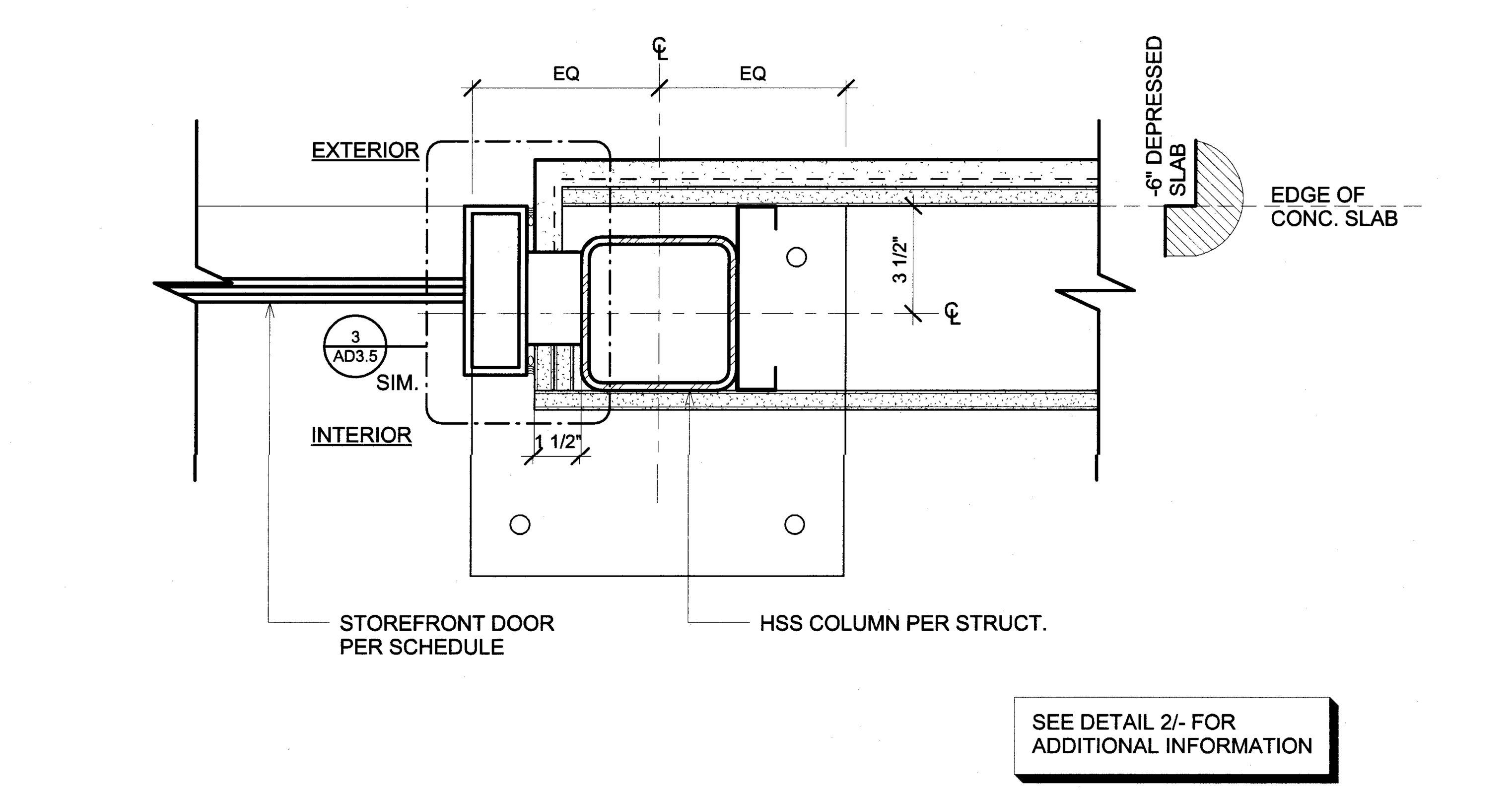

4 COLUMN DETAIL
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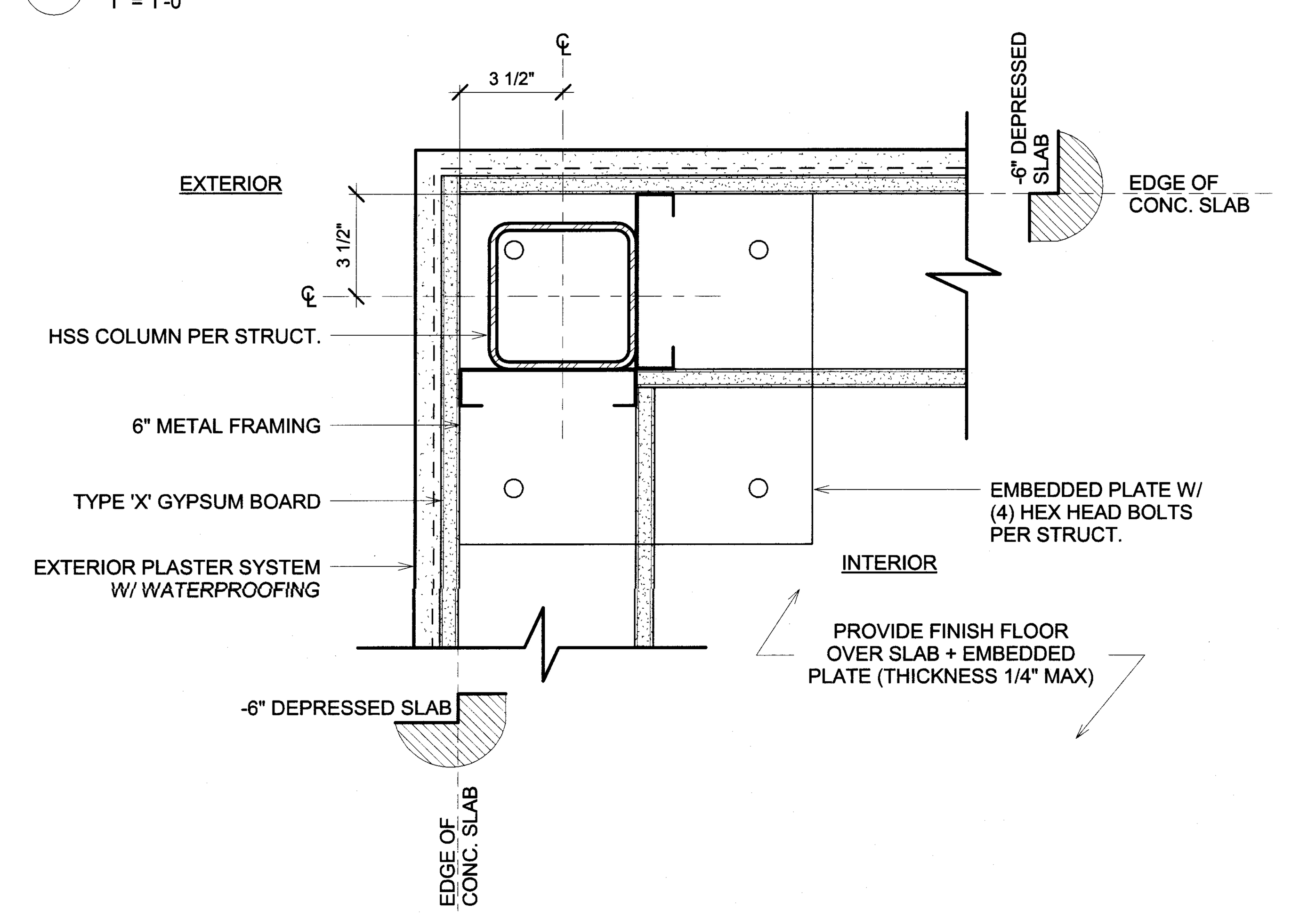

2 COLUMN DETAIL
3" = 1'-0"

TCA ARCHITECTS
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LICENSED ARCHITECT
ARAM C. CHARBAJIAN
No. C19002
Renewal 9-30-
STATE OF CALIFORNIA

REMARKS

REVISION

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING - DETAILS

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A6.14E

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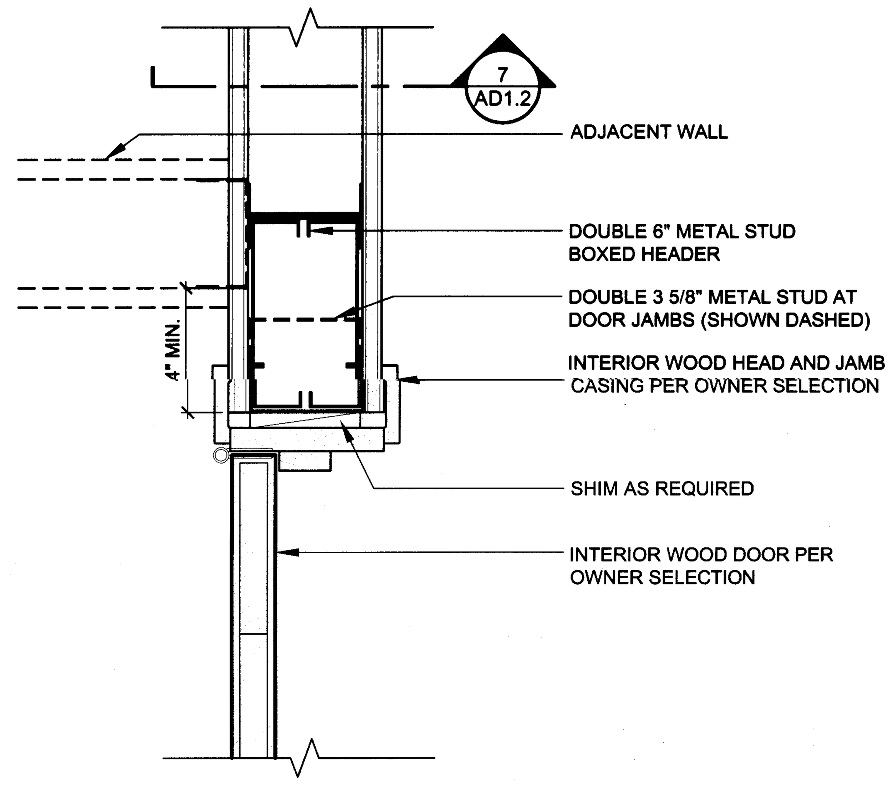
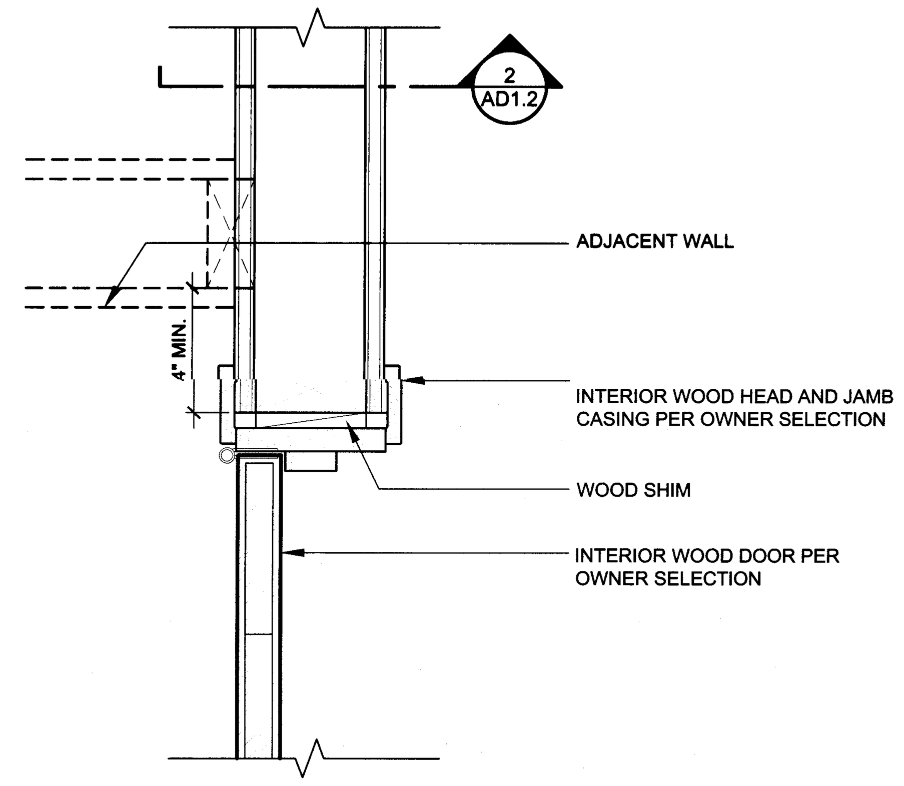
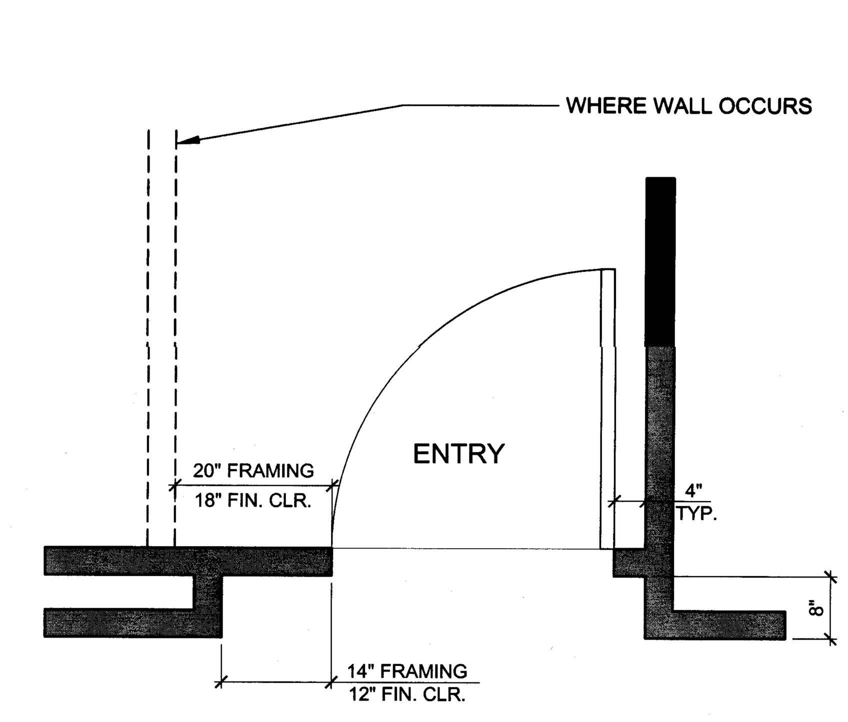
5/8/2014
DATE



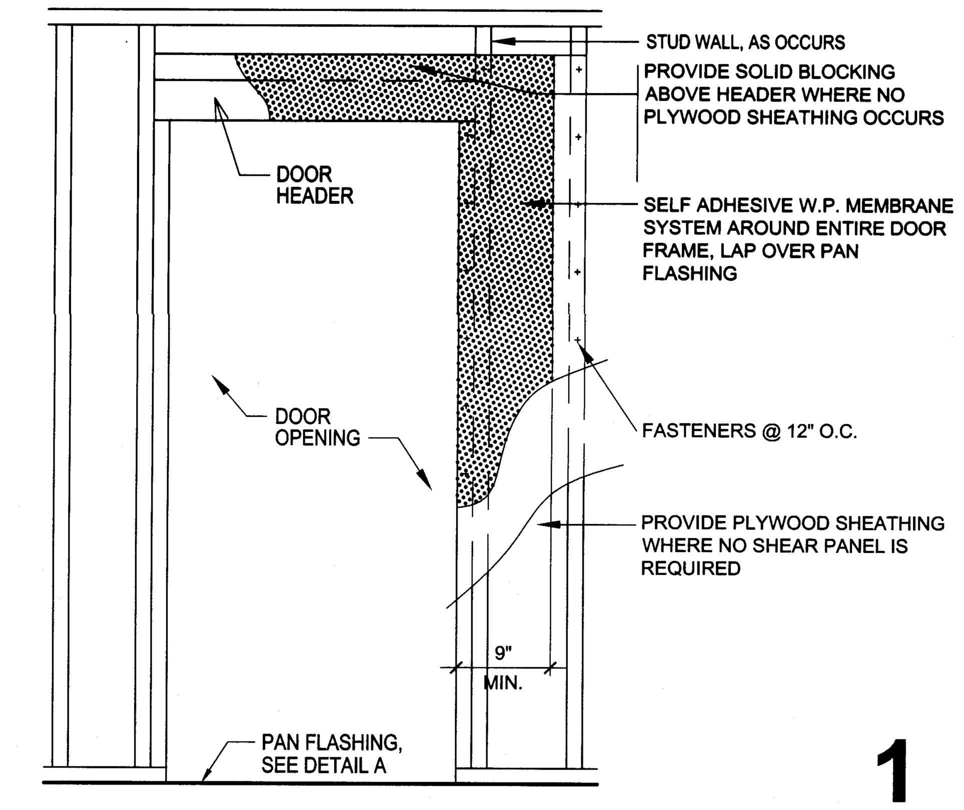
INTERIOR DOOR JAMB (HEAD SIM.) 3" = 1'-0" **17**



INTERIOR DOOR JAMB (HEAD SIM.) 3" = 1'-0" **13**



ENRTY DOOR FRAMING DIAGRAM 3/4" = 1'-0" **9**



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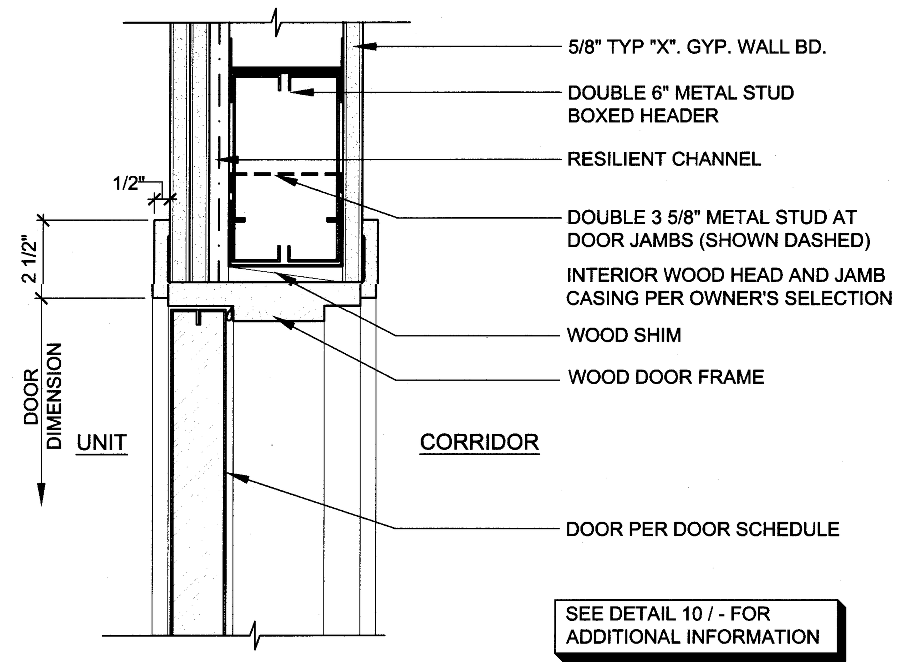
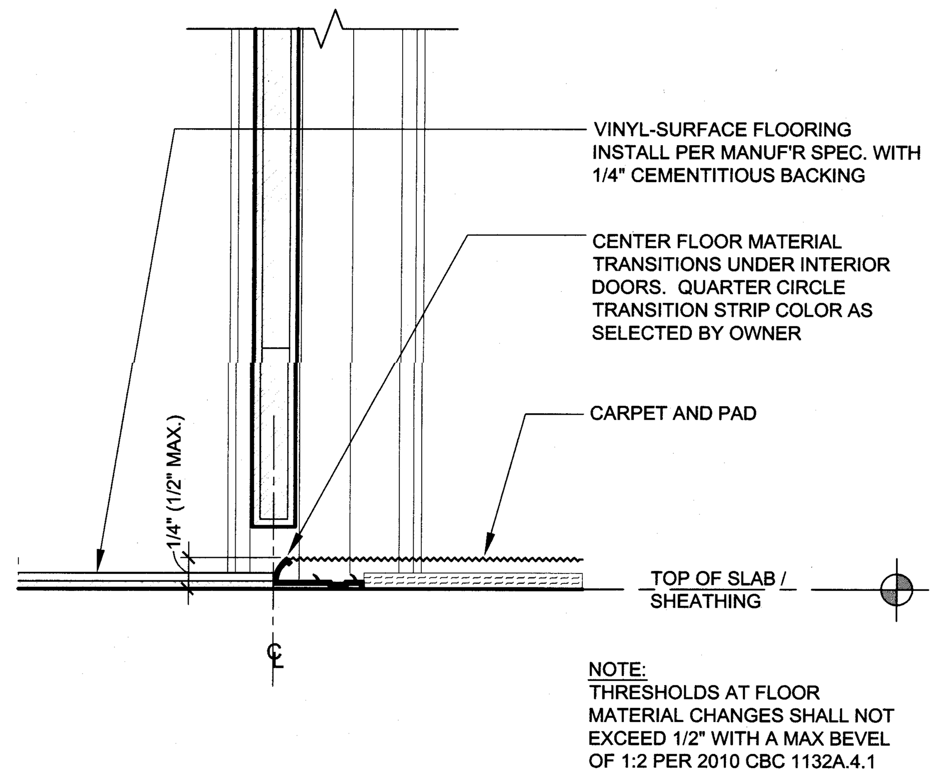
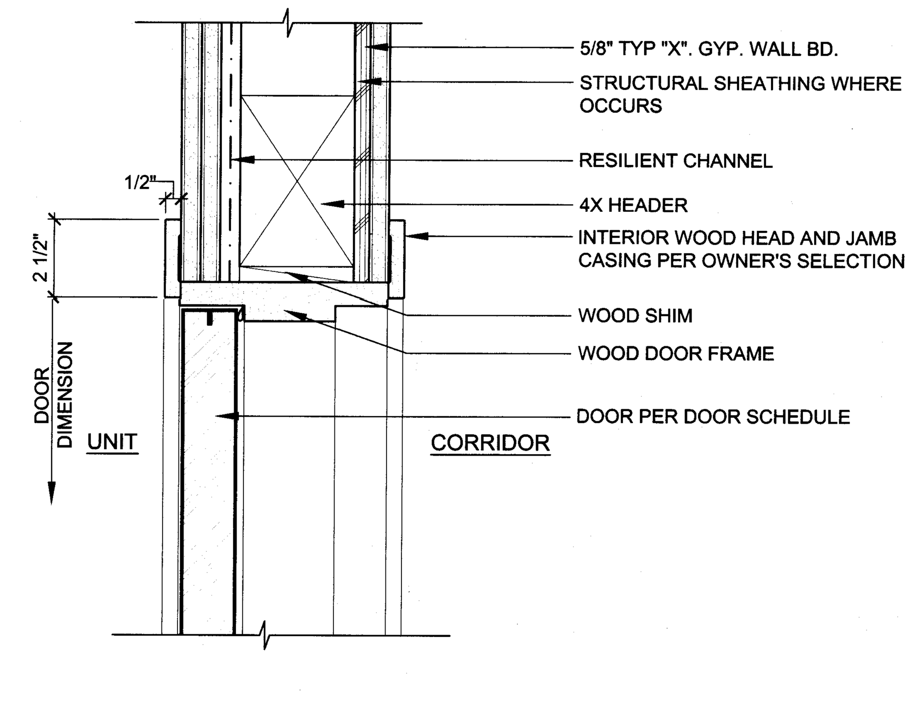


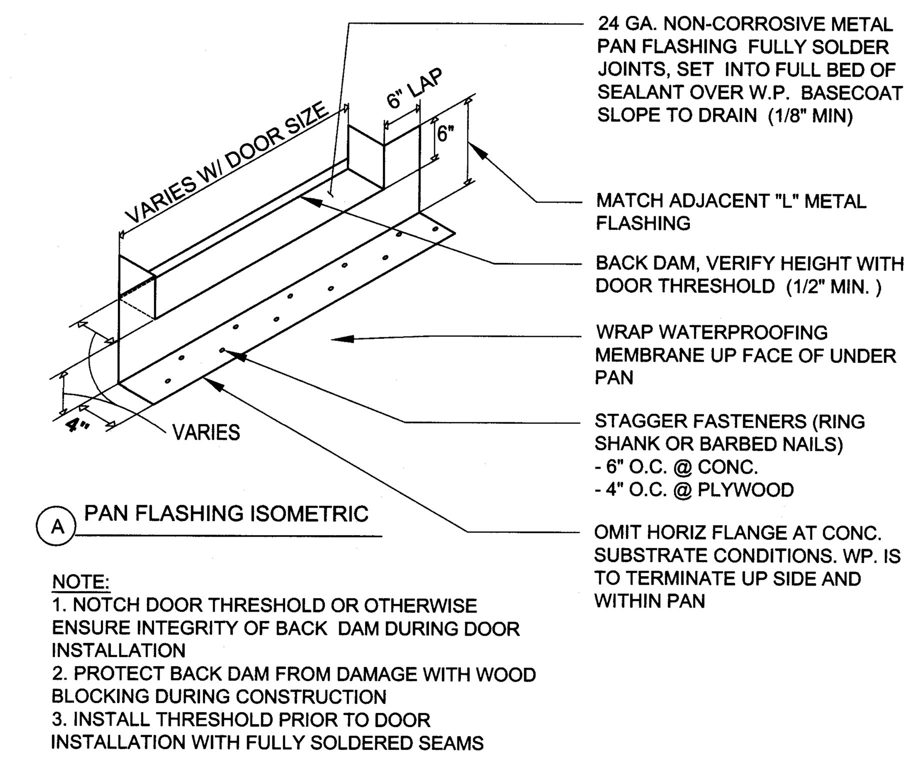
UNIT ENTRY DOOR HEAD WD STUD (JAMB SIM.) 3" = 1'-0" **18**



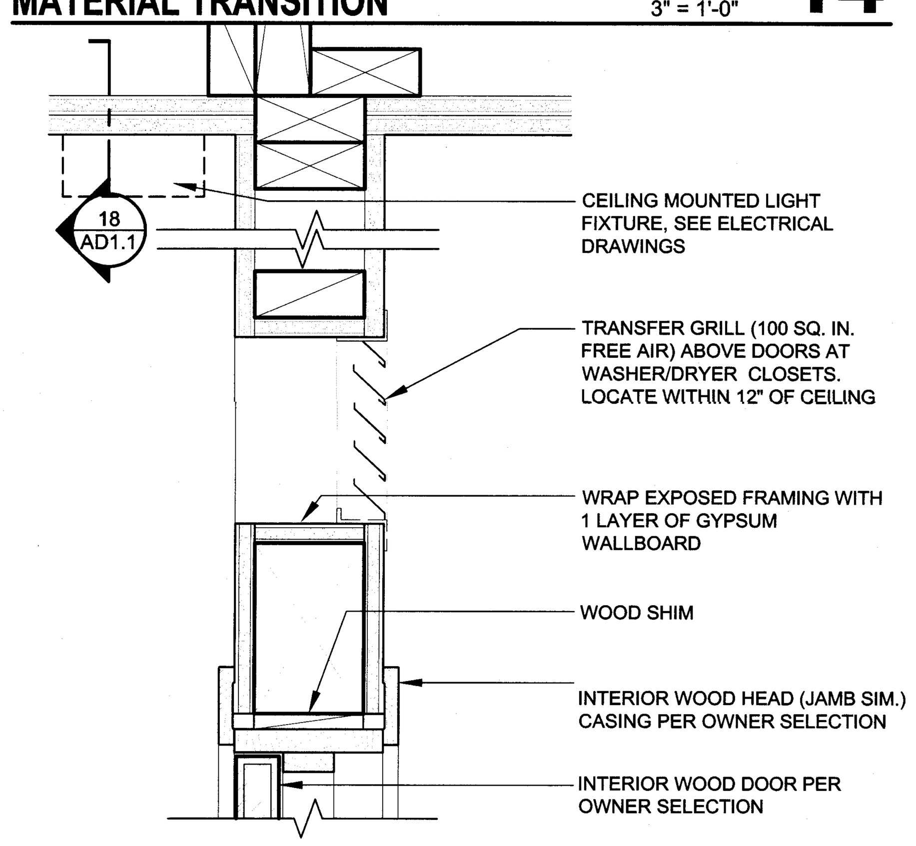
INTERIOR DOOR THRESHOLD / MATERIAL TRANSITION 3" = 1'-0" **14**



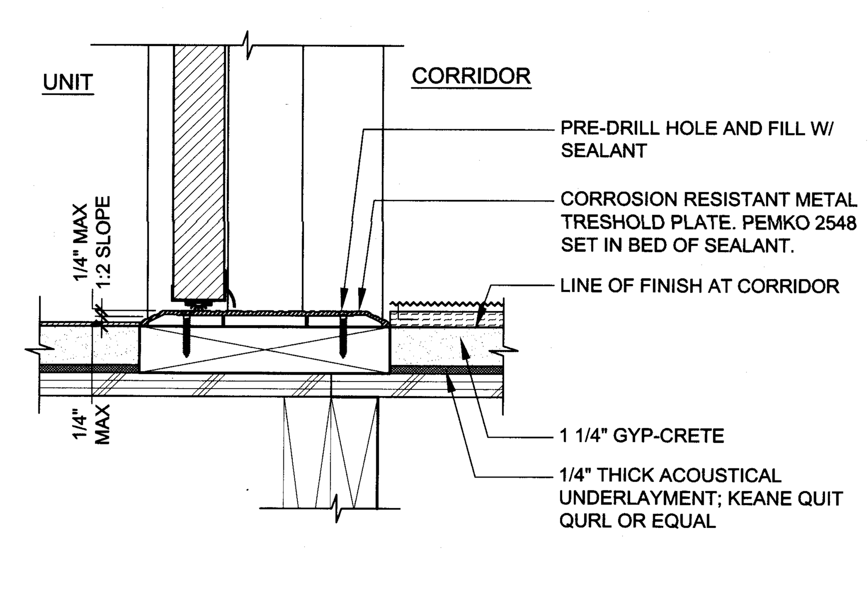
UNIT ENTRY DOOR HEAD WD STUD (JAMB SIM.) 3" = 1'-0" **10**



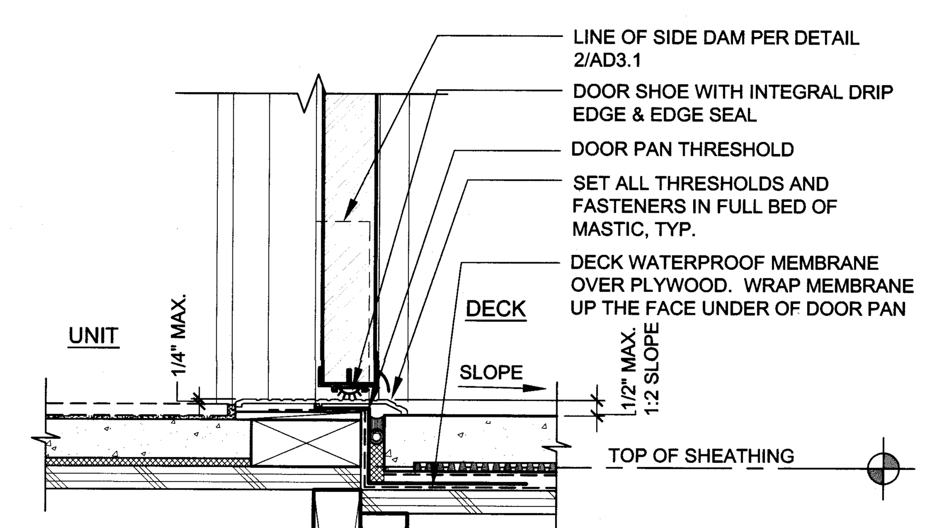
DOORWAY WATERPROOFING AND PAN FLASHING N.T.S. **2**



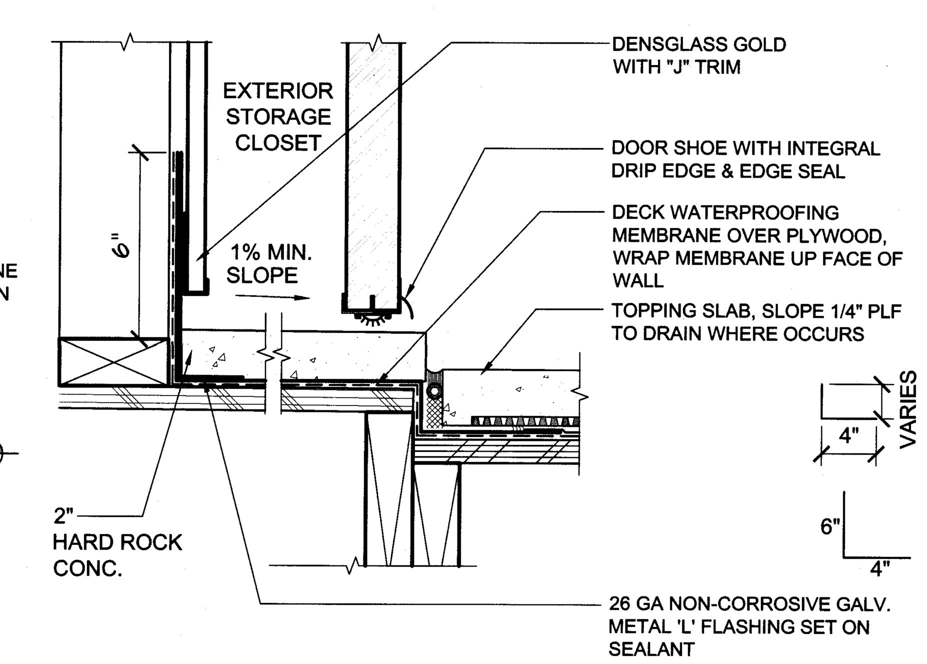
LOUVER VENT ABOVE INTERIOR DOOR HEAD 3" = 1'-0" **15**



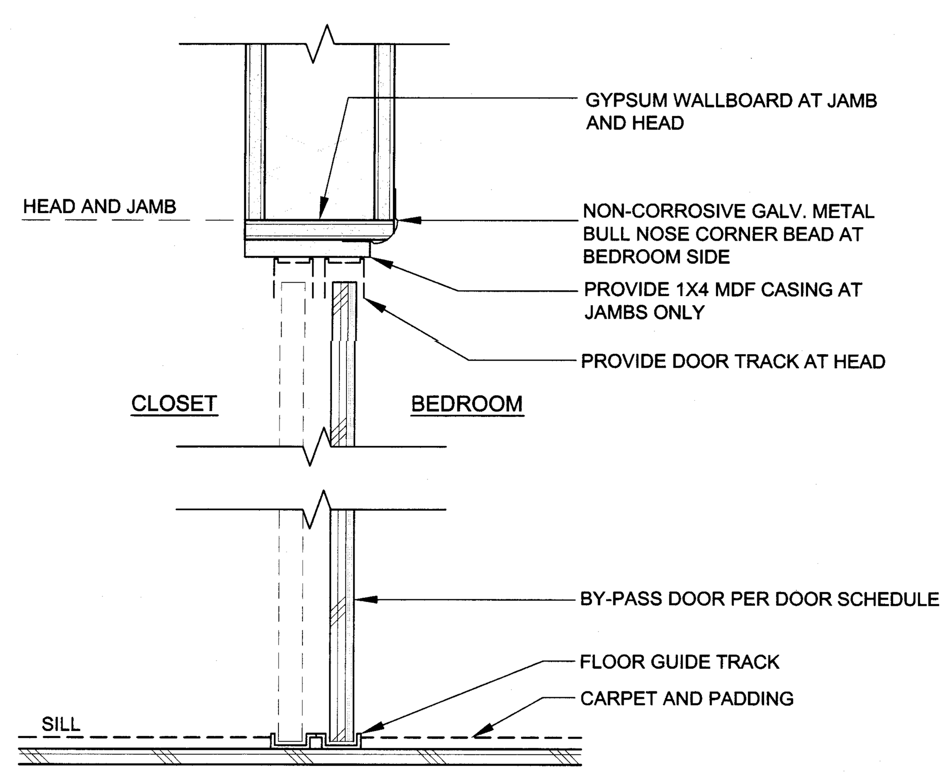
UNIT ENTRY DOOR THRESHOLD 3" = 1'-0" **11**



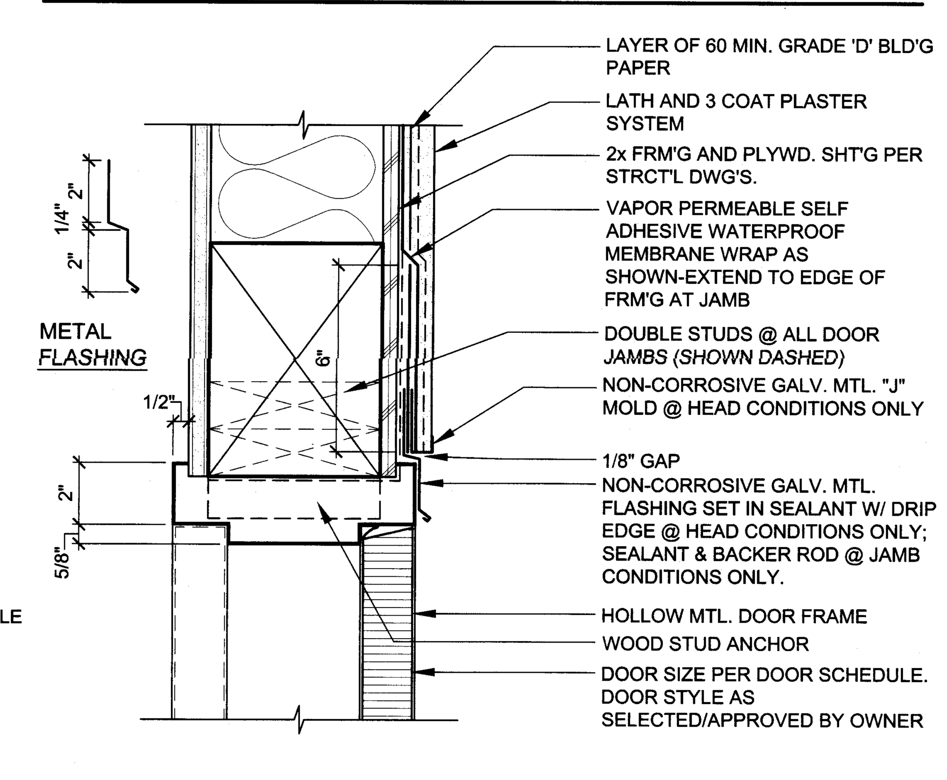
EXTERIOR DOOR THRESHOLD AT DECKS 3" = 1'-0" **7**



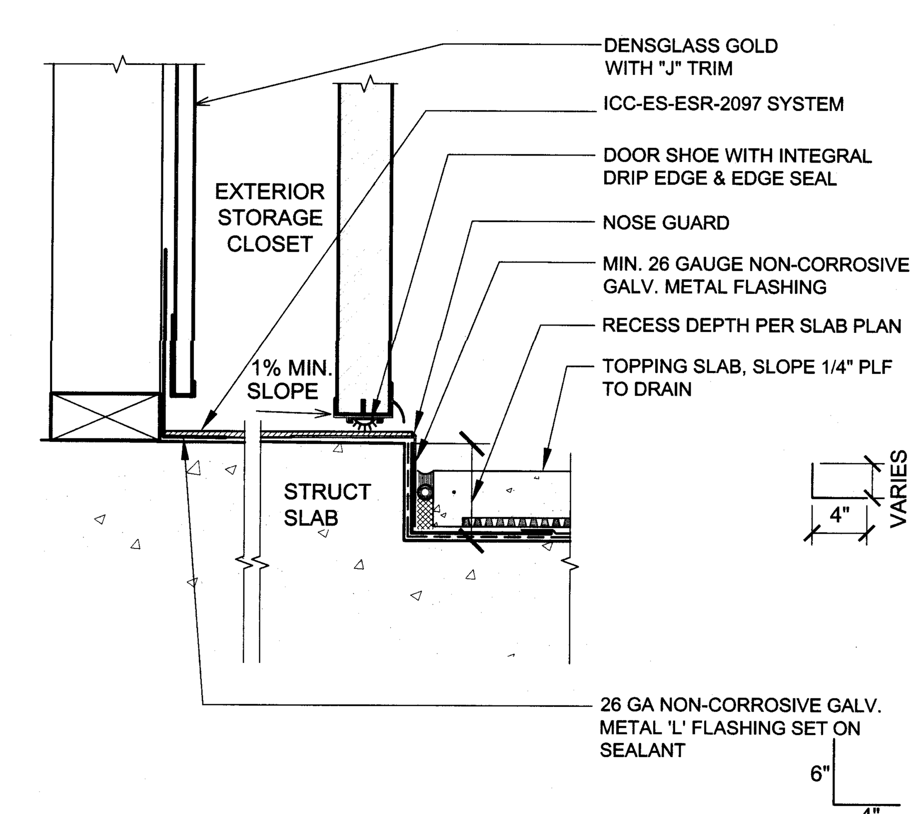
UTILITY CLOSET DOOR AT UPPER DECK 3" = 1'-0" **3**



SLIDING BI-PASS DOOR AT HEAD / JAMB / SILL 3" = 1'-0" **16**



EXTERIOR DOOR HEAD (JAMB SIM.) 3" = 1'-0" **12**
MINIMUM REQUIREMENTS



UTILITY DOOR AT PODIUM 3" = 1'-0" **4**

TCA ARCHITECTS
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LICENSED ARCHITECT
ADAM C. CHAMBERS
No. C19002
Renewal 9-30-15
STATE OF CALIFORNIA

REVISION		DATE
	THIRD PARTY WATERPROOF CONSULTANT	12/27/2013
	ASI #6 - MCRT REVISIONS	12/27/2013
	ASI #8 - ACCESSIBILITY REVISIONS	05/05/2014
	ASI #9 - PRA FINAL COMMENTS	05/07/2014

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

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DOOR DETAILS

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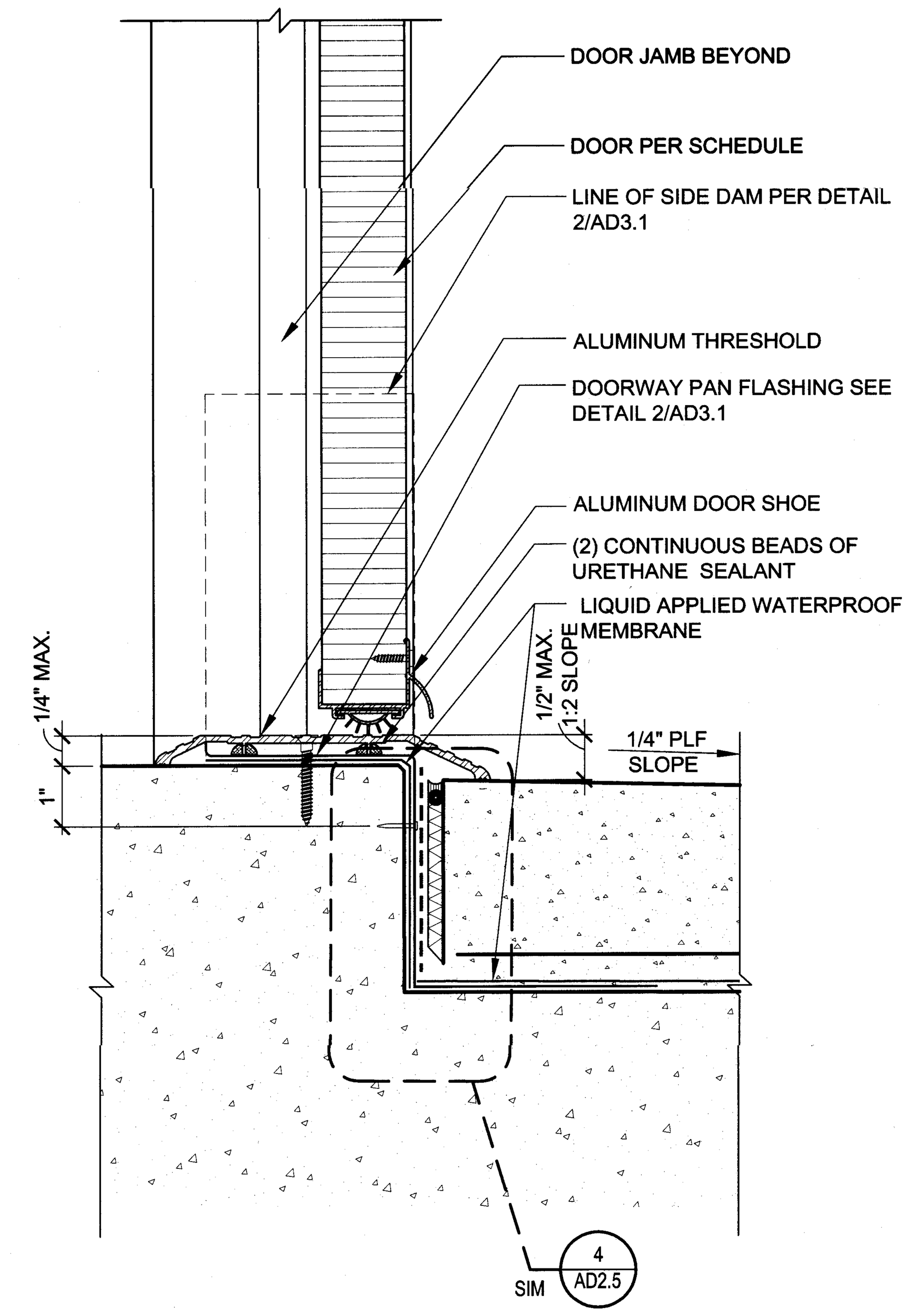
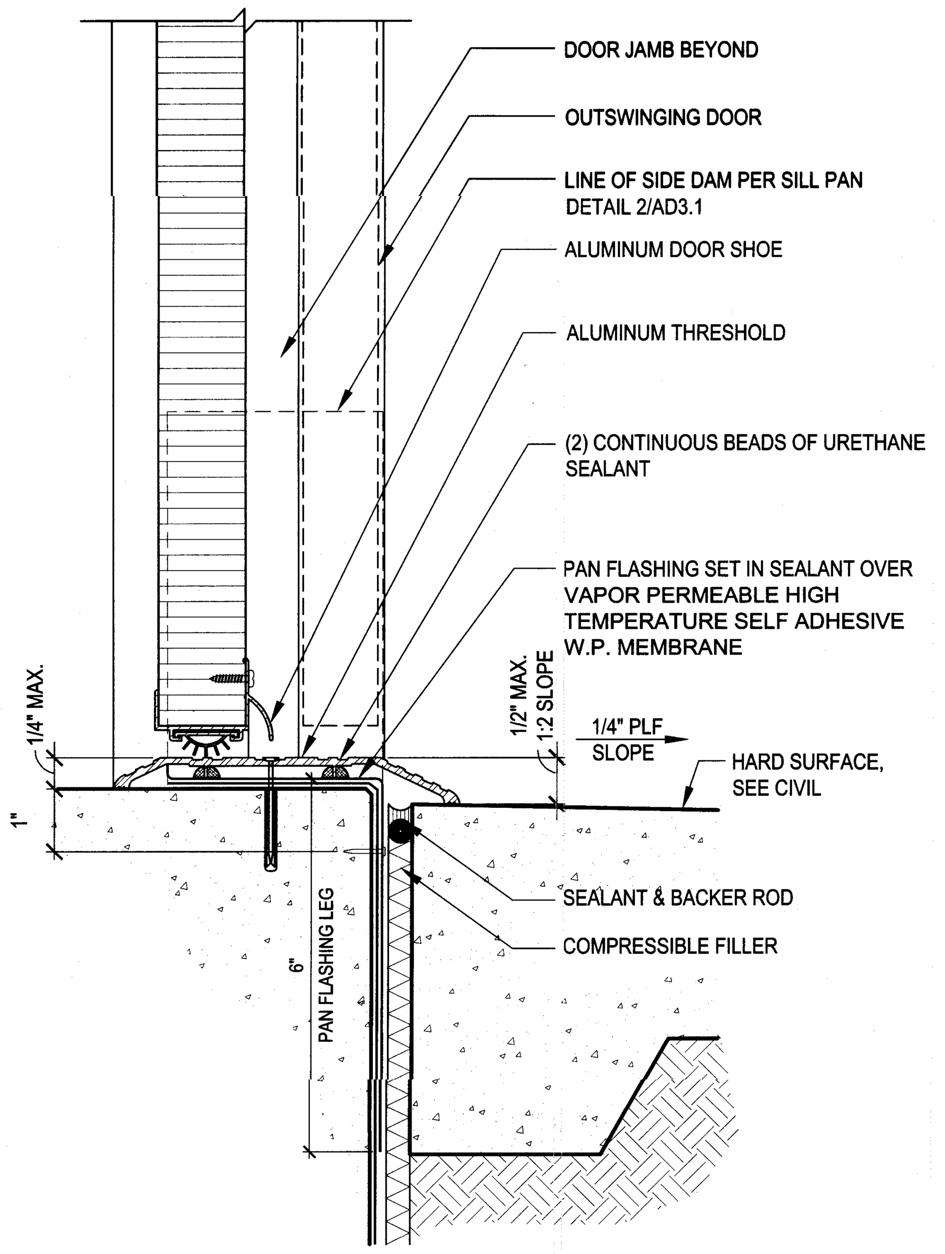
5 / 8 / 2014
DATE

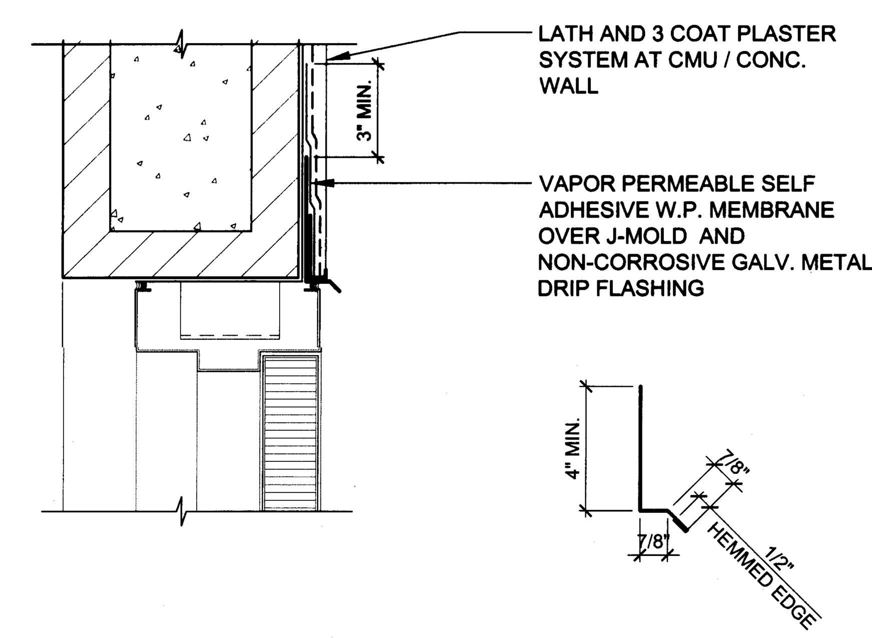
ALL THRESHOLDS AT ACCESSIBLE UNITS SHALL MEET ADA REQUIREMENT.



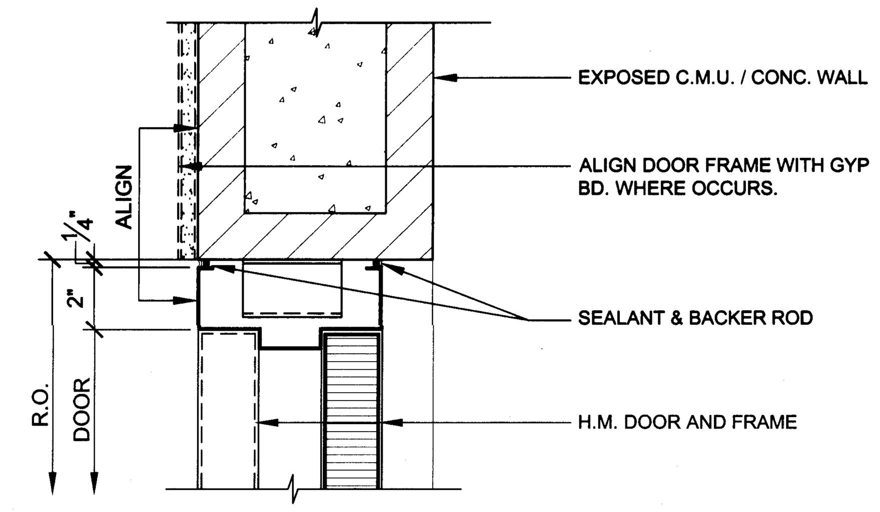
THRESHOLD AT PODIUM — SC: 6"=1'-0" — 18



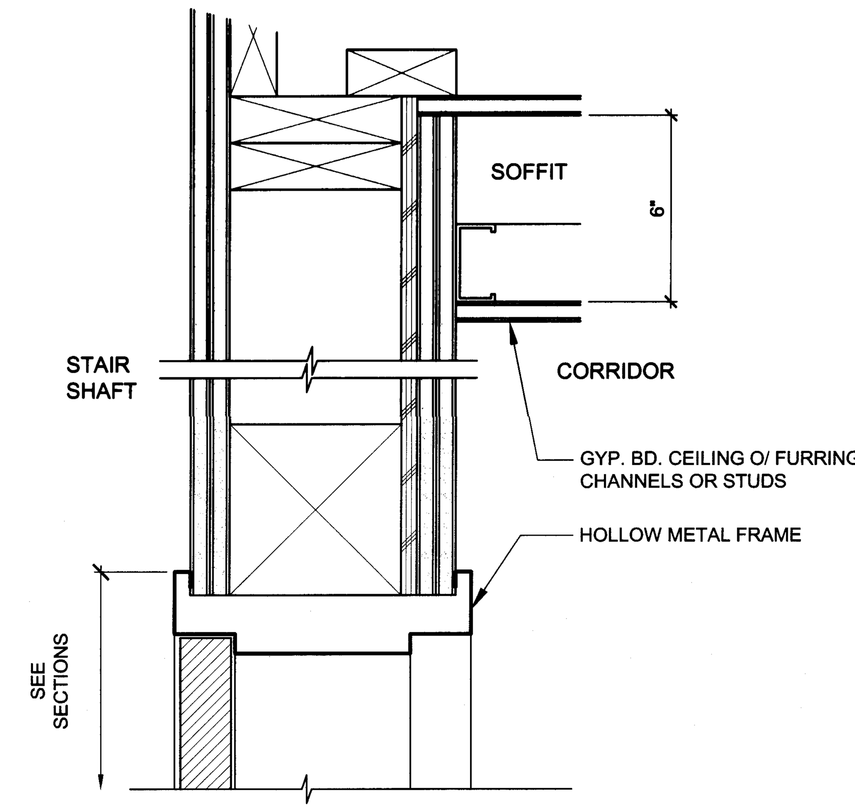
THRESHOLD AT ENTRY DOOR — SC: 6"=1'-0" — 14



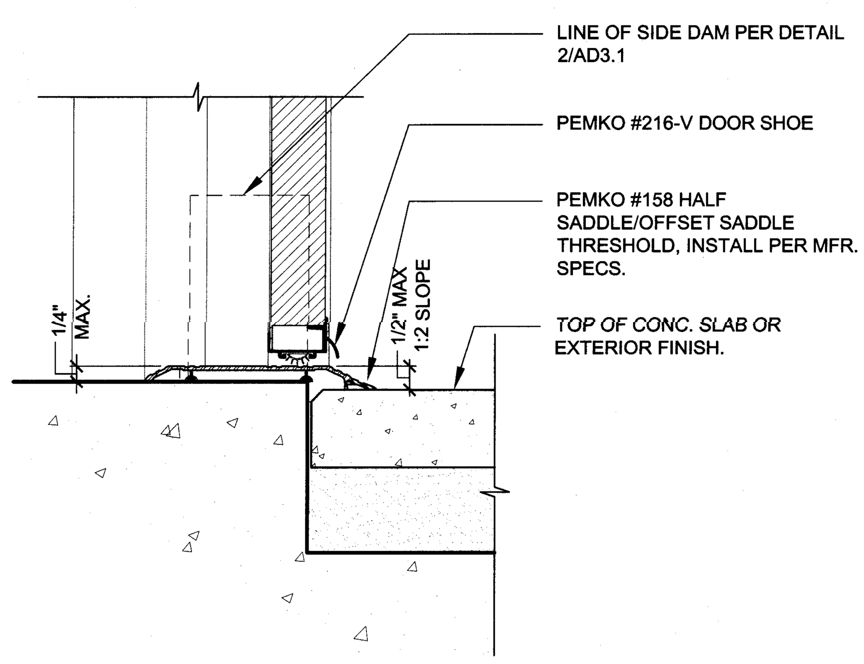
H. M. DOOR HEAD EXT. CMU — 3" = 1'-0" — 9



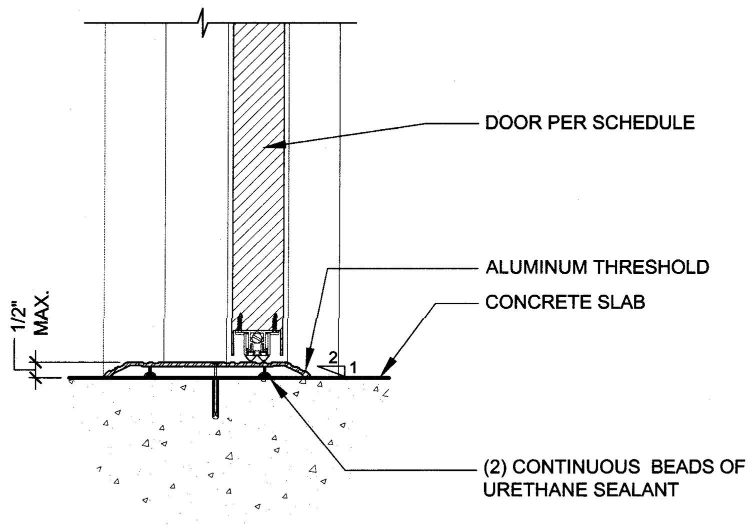
H.M. DOOR HEAD AT GARAGE — 3" = 1'-0" — 5



2 HOUR DOOR HEAD AT STAIR (TYPICAL) — MINIMUM REQUIREMENTS — 3" = 1'-0" — 1

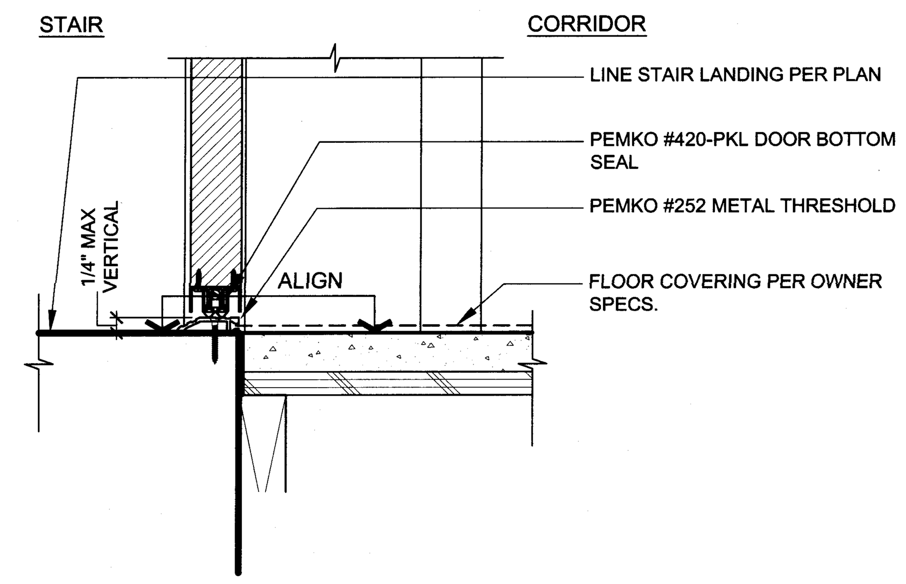


EXTERIOR DOOR THRESHOLD - TYPICAL — 3" = 1'-0" — 10



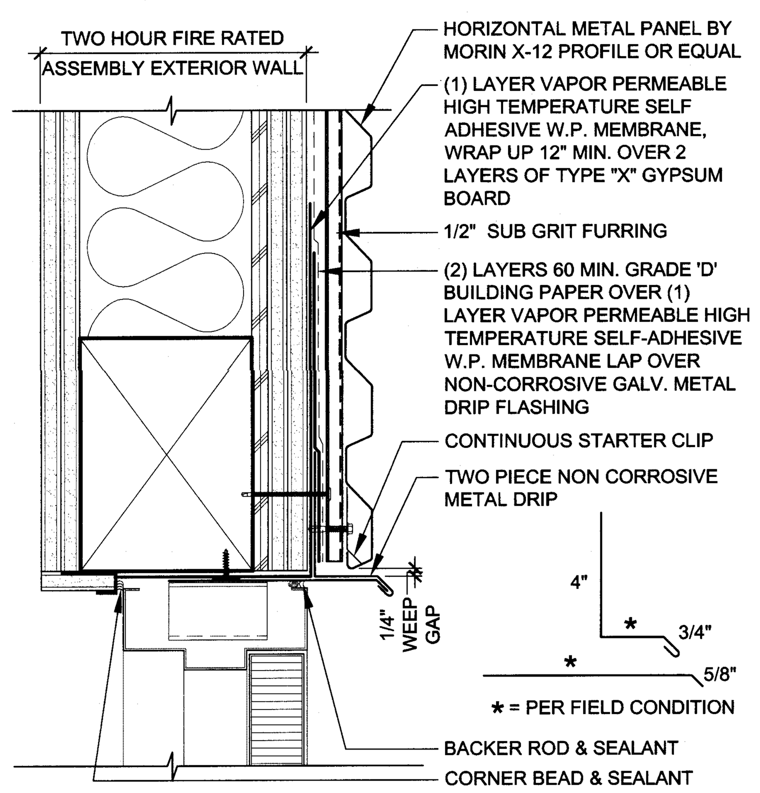
FOR ADDITOINAL INFORMATION SEE DETAIL 2/-

INT. H.M. DOOR THRESHOLD AT GARAGE — 3" = 1'-0" — 6

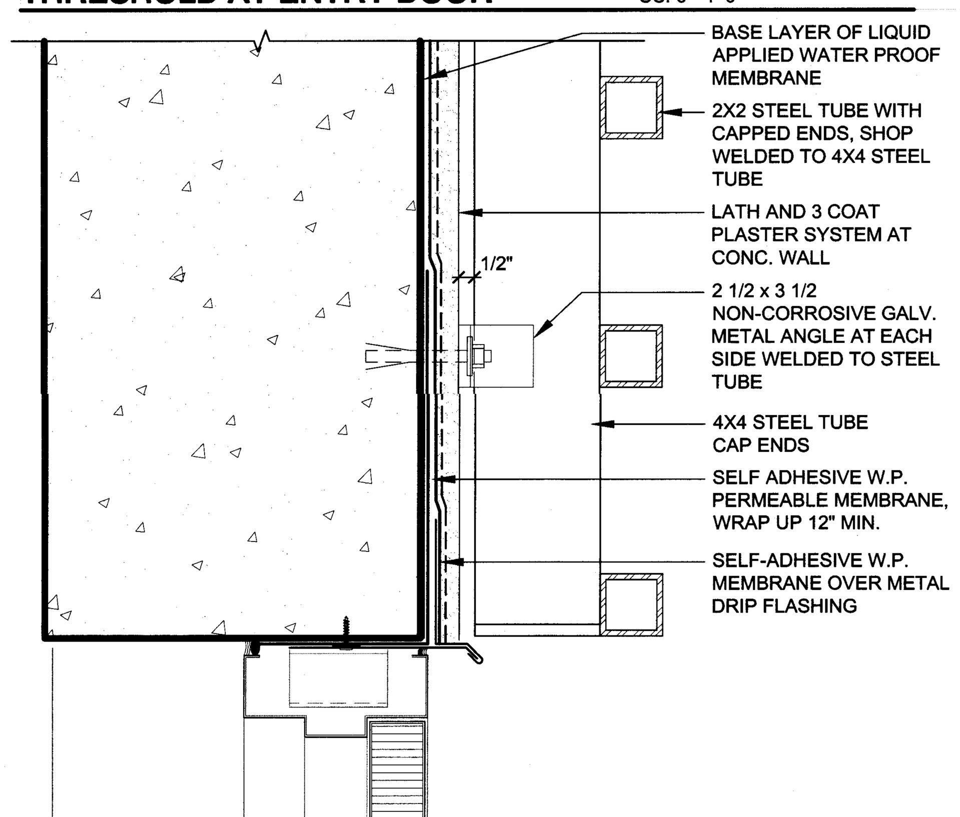


NOTE:
THRESHOLDS AT FLOOR MATERIAL CHANGES SHALL NOT EXCEED 1/2" WITH A MAX BEVEL OF 1:2 PER 2010 CBC 1132A.4.1

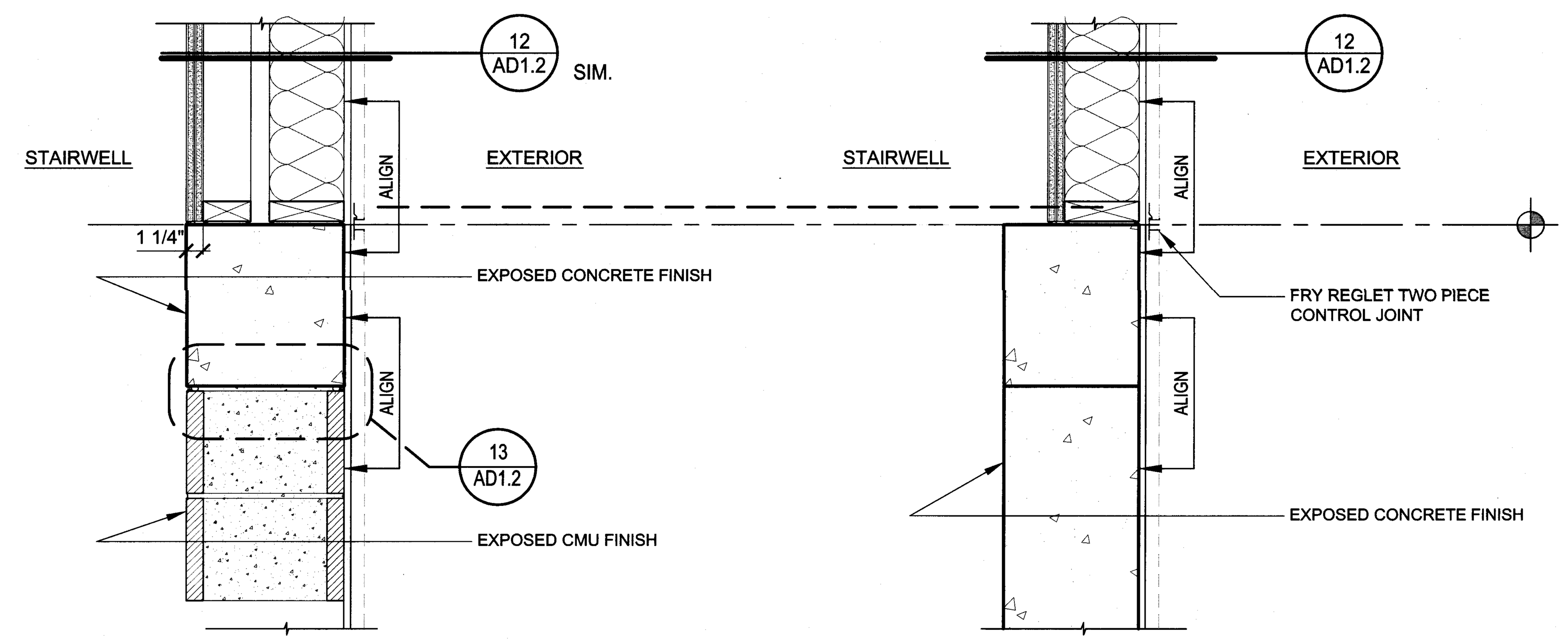
DOOR THRESHOLD AT STAIR — 3" = 1'-0" — 2



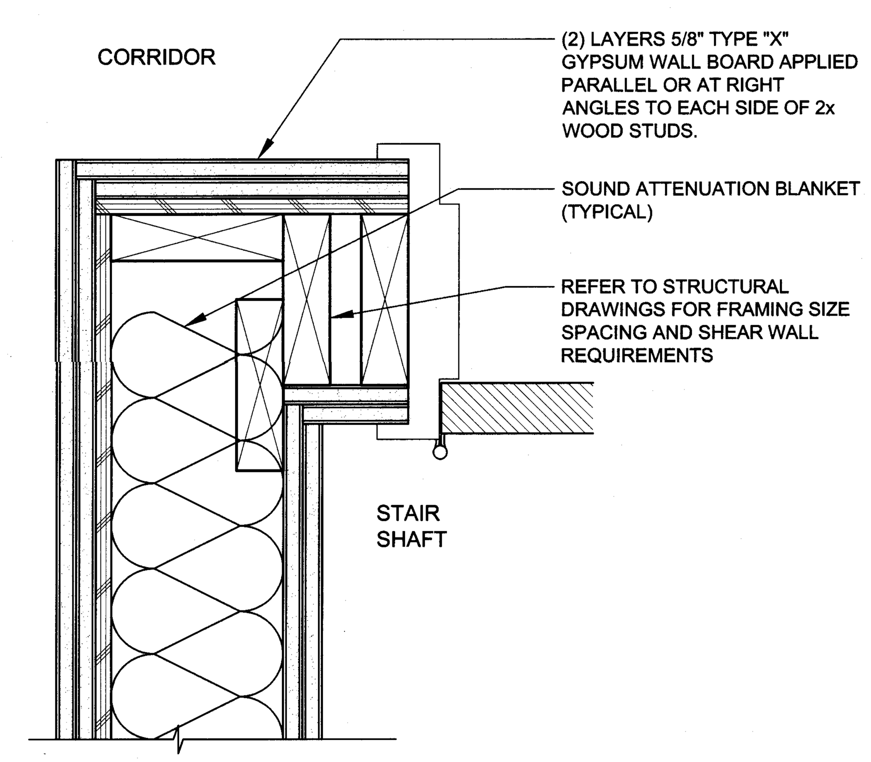
H. M. DOOR HEAD AT METAL PANEL — 3" = 1'-0" — 19



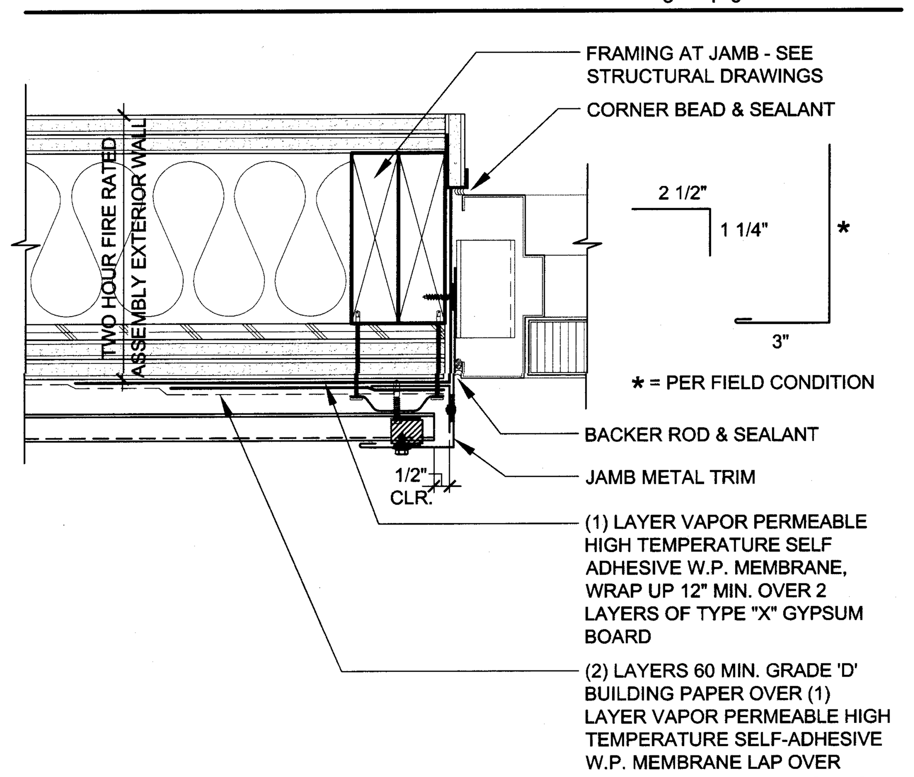
H. M. DOOR HEAD AT EXT. STEEL TUBE WALL — 3" = 1'-0" — 15



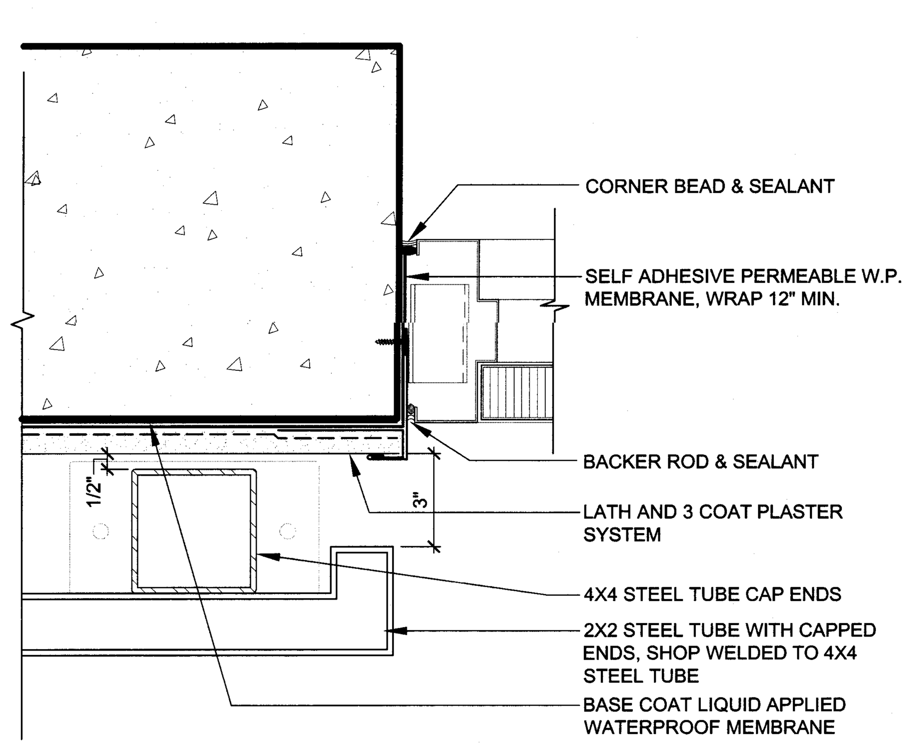
STAIRWELL PODIUM TRANSITION (EXTERIOR) — 1 1/2" = 1'-0" — 7



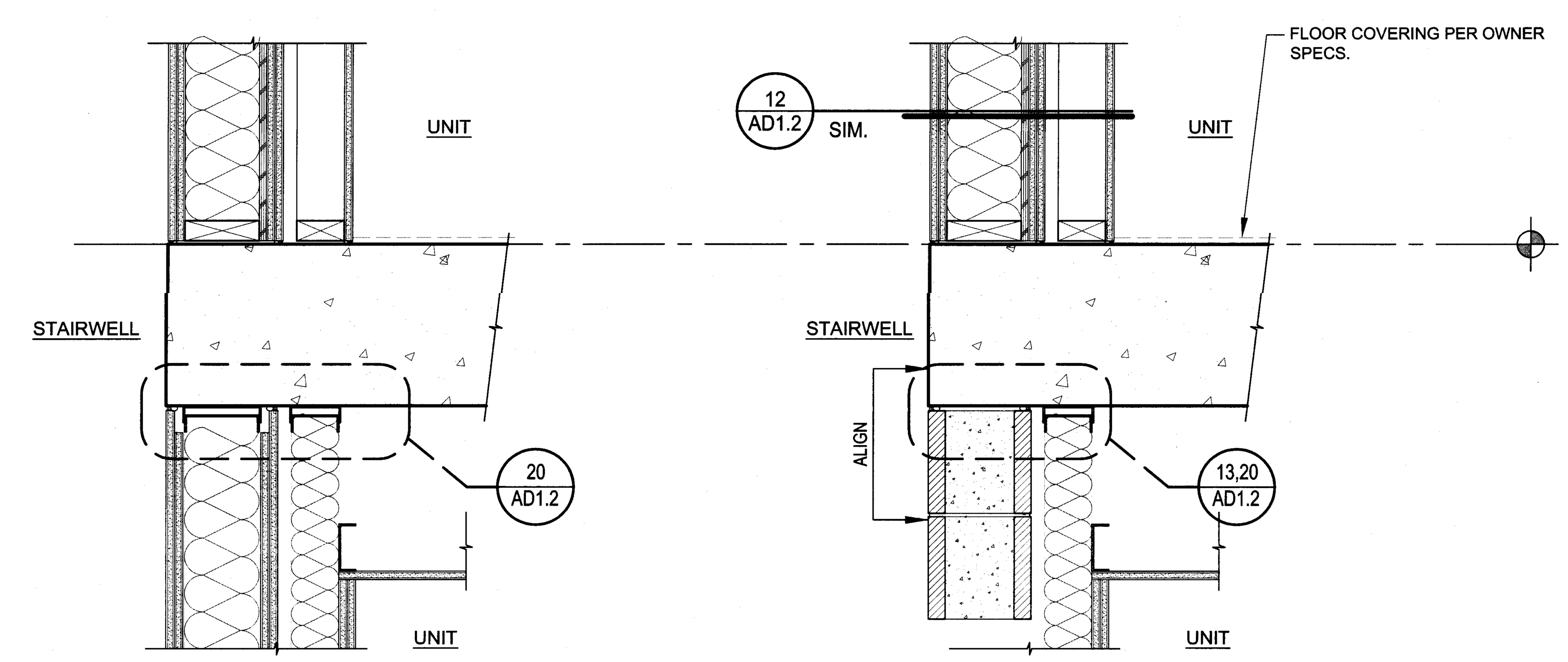
2 HOUR DOOR JAMB AT STAIR — 3" = 1'-0" — 3



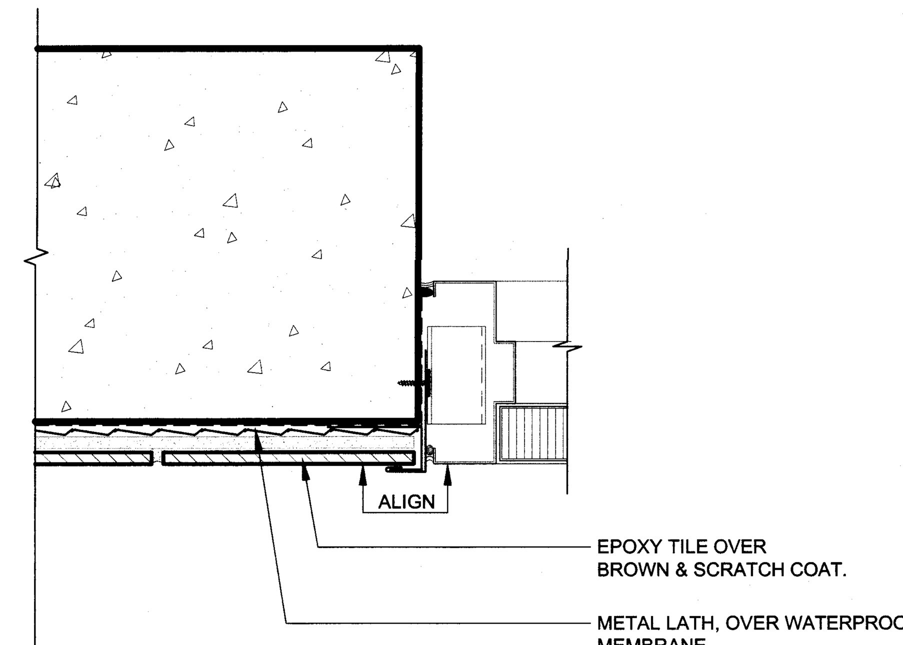
H. M. DOOR JAMB AT METAL PANEL — 3" = 1'-0" — 20



H. M. DOOR JAMB AT EXT. STEEL TUBE WALL — 3" = 1'-0" — 16



STAIRWELL PODIUM TRANSITION — 1 1/2" = 1'-0" — 8



H. M. DOOR JAMB AT EXT. TILE — 3" = 1'-0" — 4

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT — C19002 — STATE OF CALIFORNIA

REVISION	DATE
THIRD PARTY WATERPROOF CONSULTANT	
ASI #8 : ACCESSIBILITY REVISIONS	05/05/2014

CROWN CABOT LUXURY APARTMENTS
25591 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS: DOOR DETAILS

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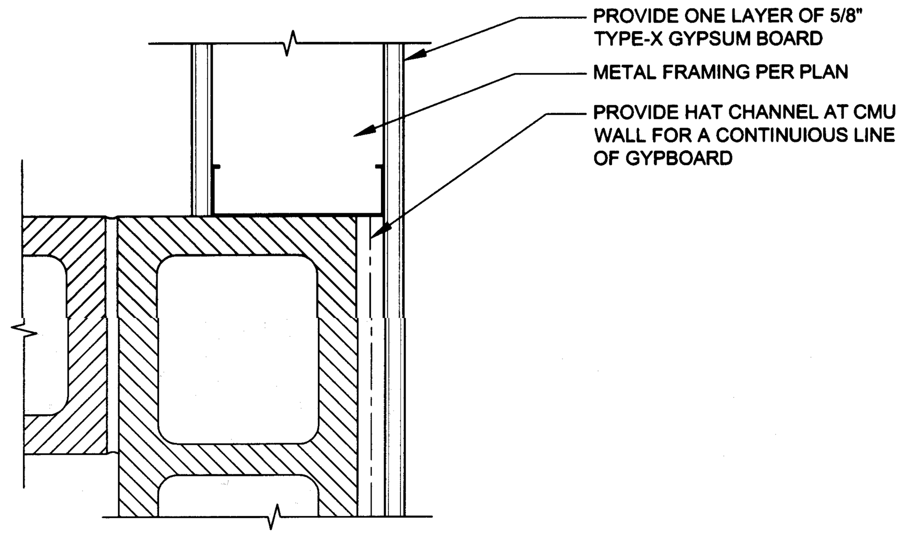
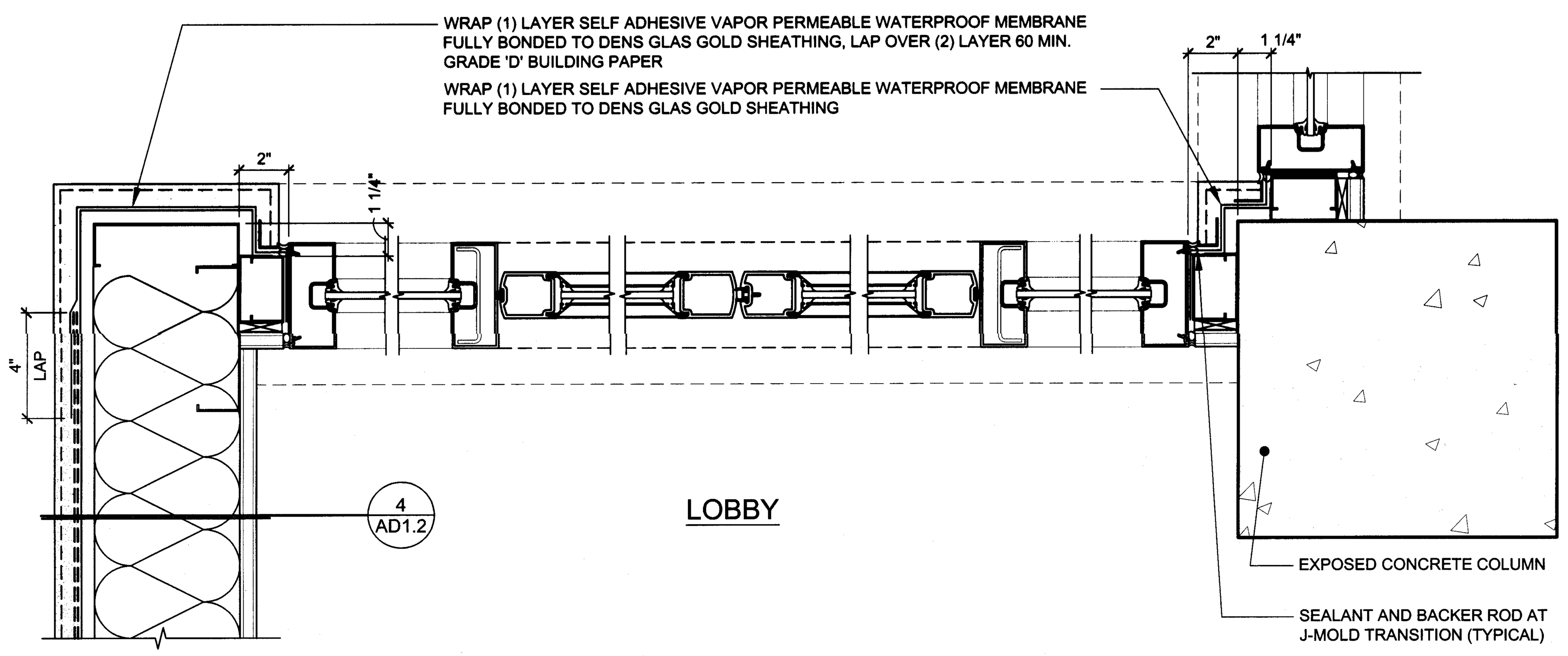
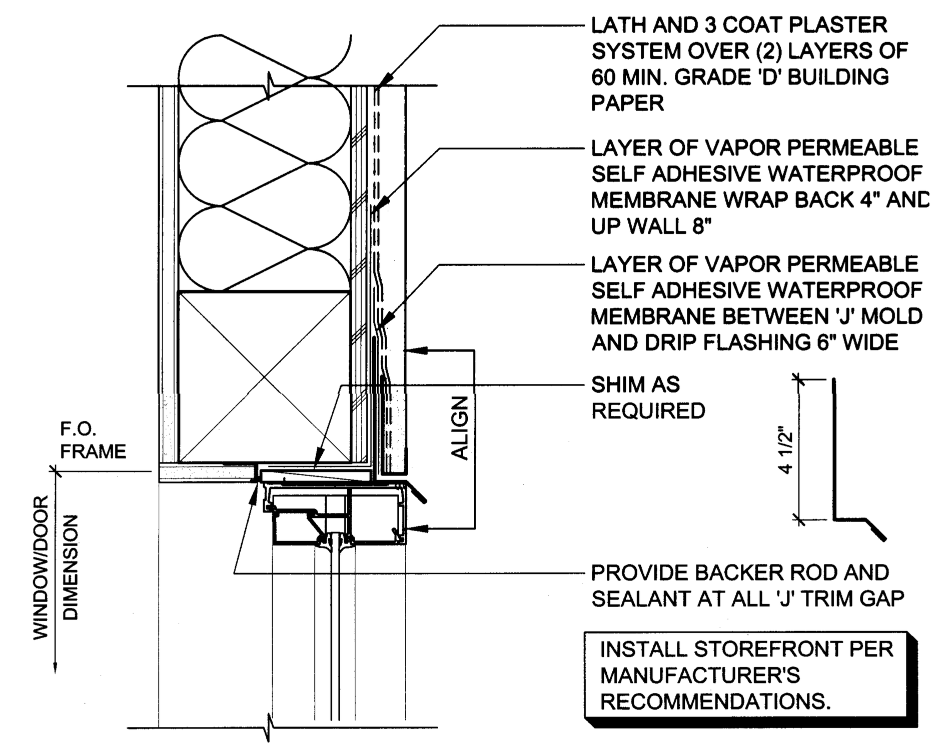
5 / 8 / 2014
DATE



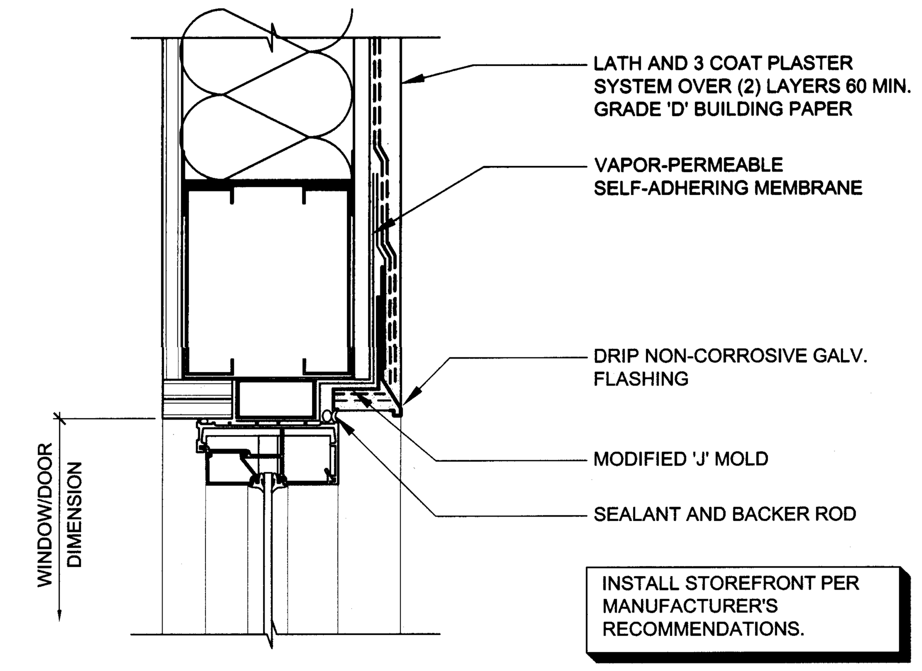
CMU TO METAL FRAMING TRANSITION 3" = 1'-0" **17**



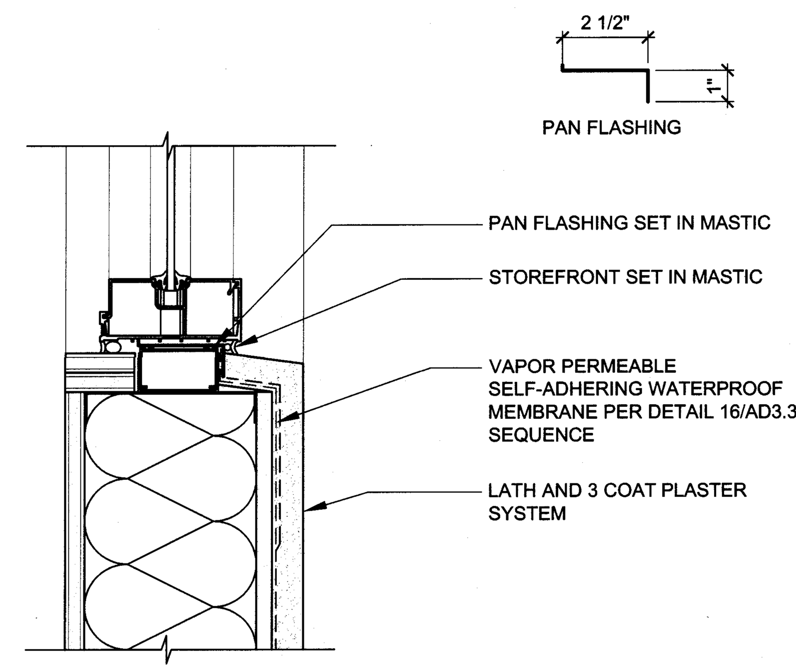
STOREFRONT DOOR SIDELITE 3" = 1'-0" **9**



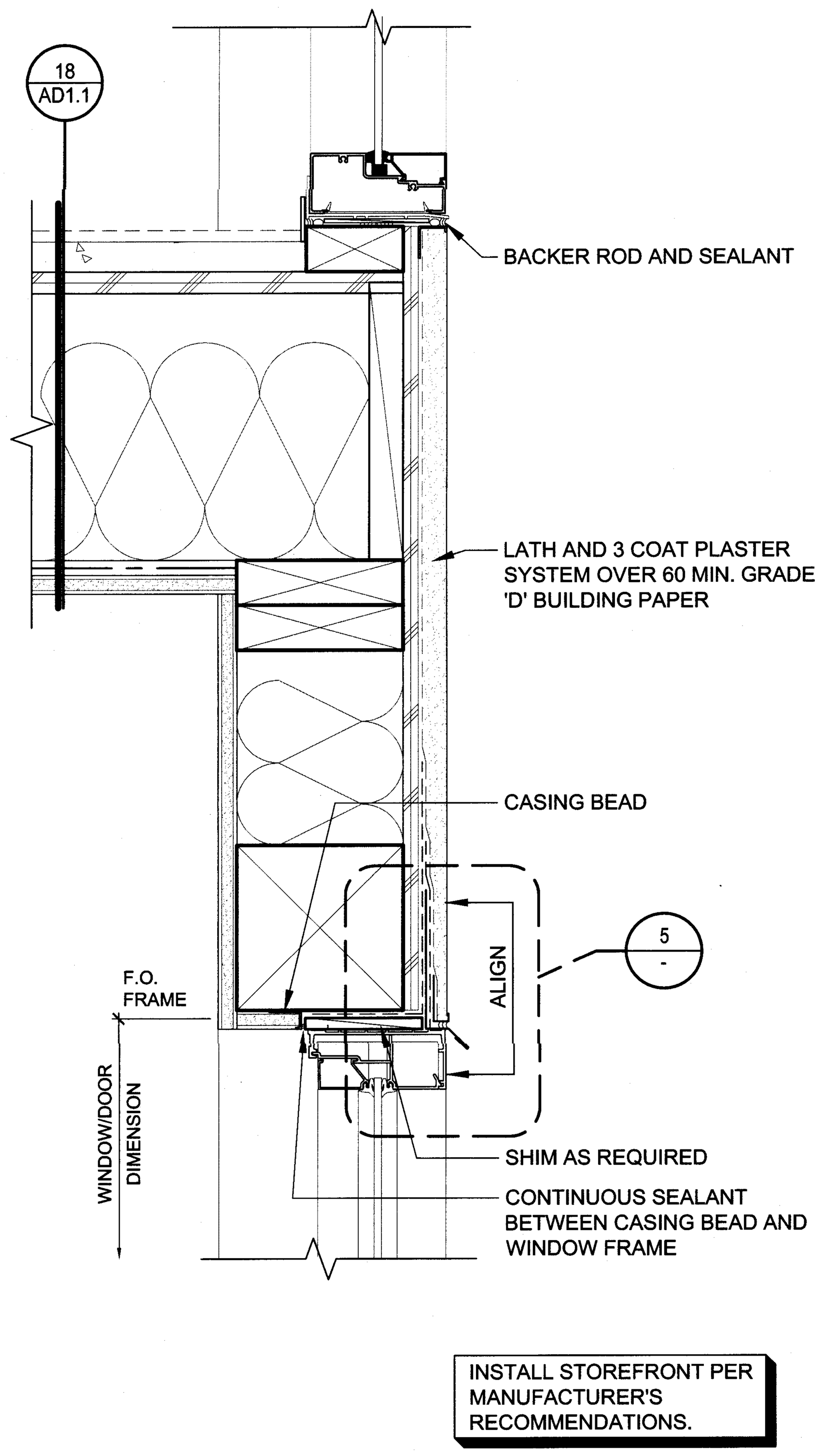
STOREFRONT HEAD 3" = 1'-0" **5**



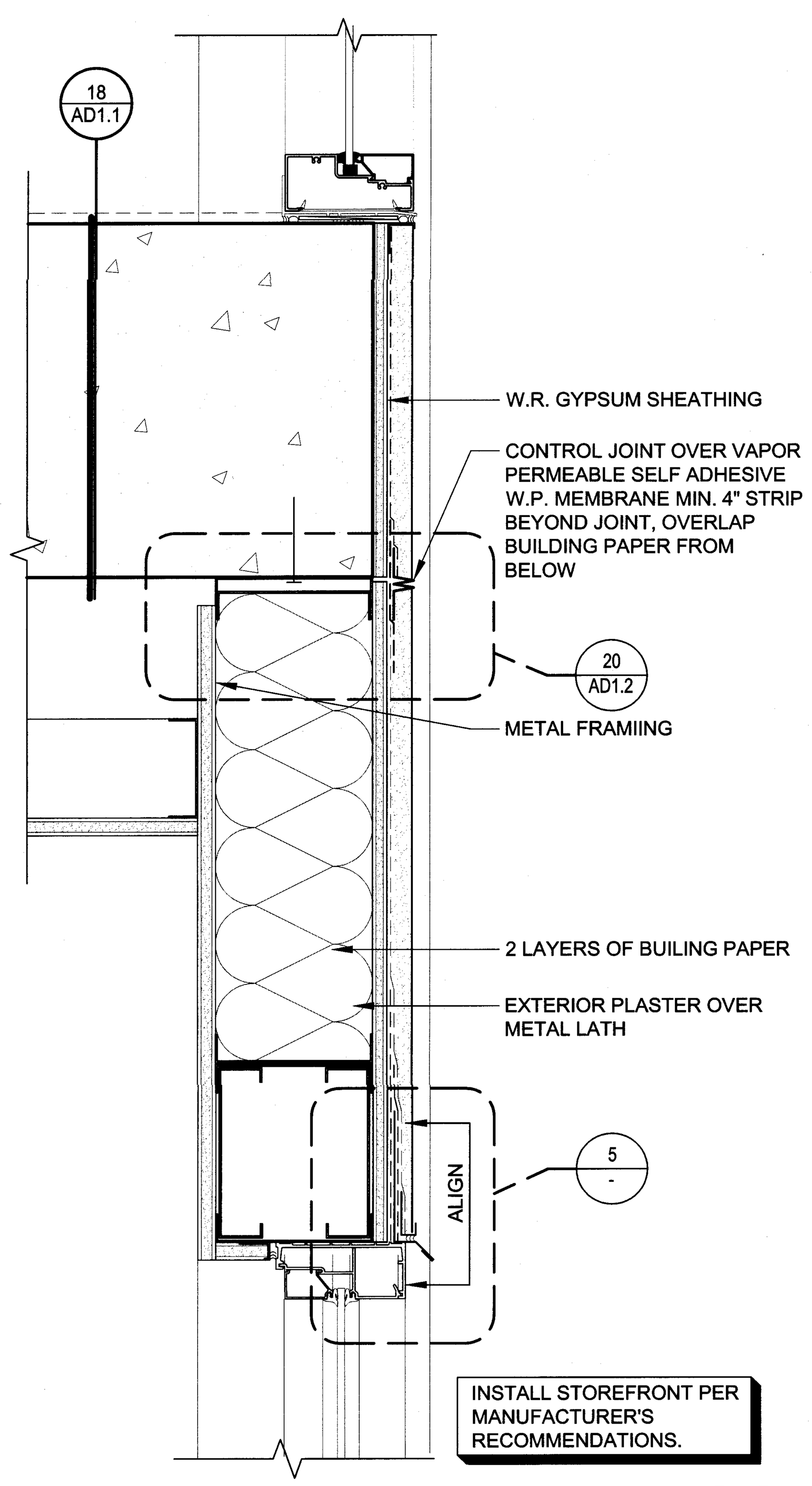
STOREFRONT HEAD 3" = 1'-0" **1**



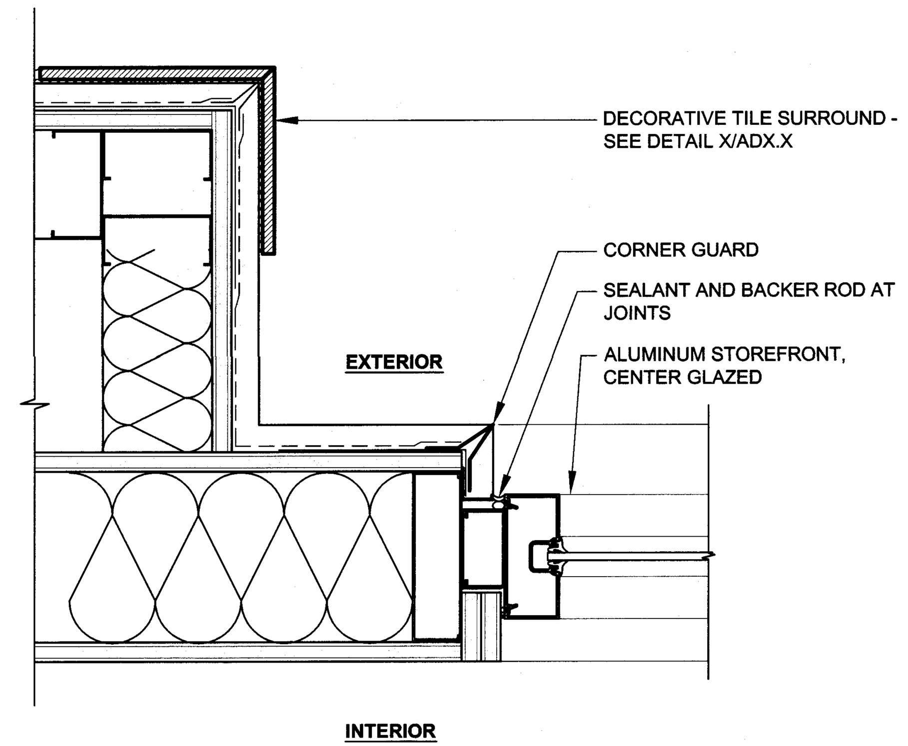
STOREFRONT SILL 3" = 1'-0" **2**



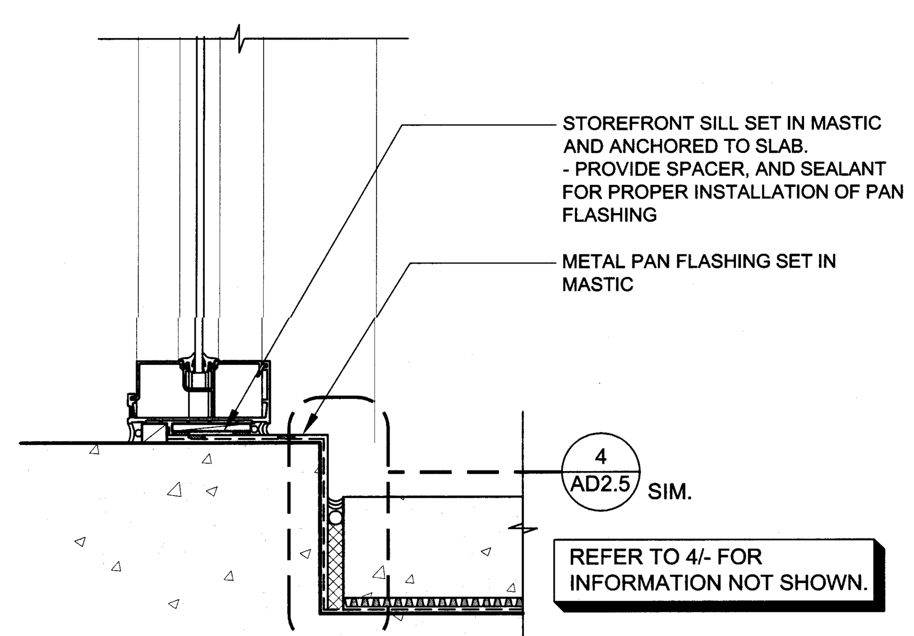
STOREFRONT HEAD AND SILL 3" = 1'-0" **15**



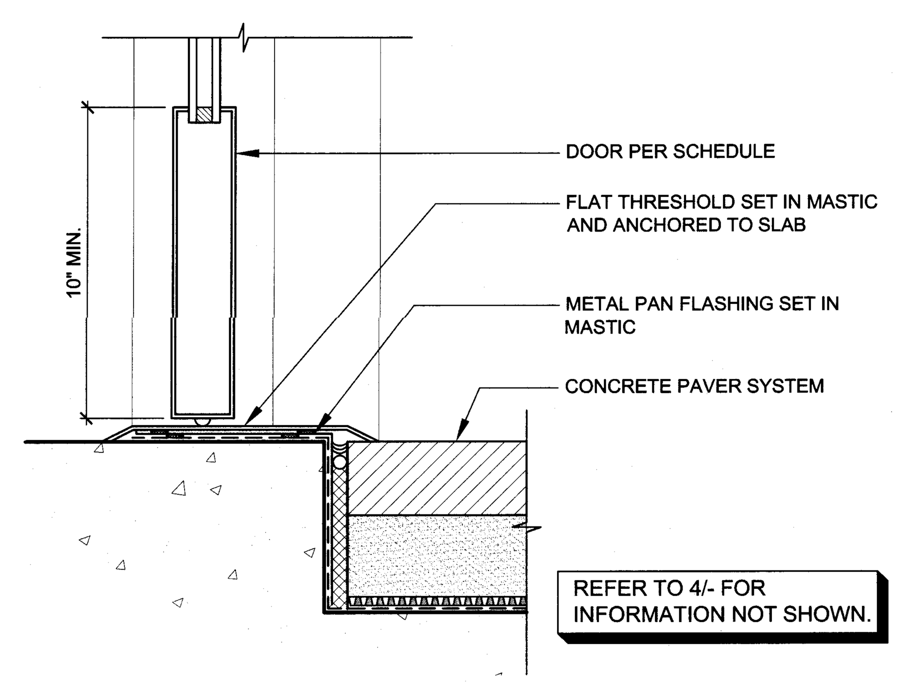
STOREFRONT HEAD AND SILL 3" = 1'-0" **11**



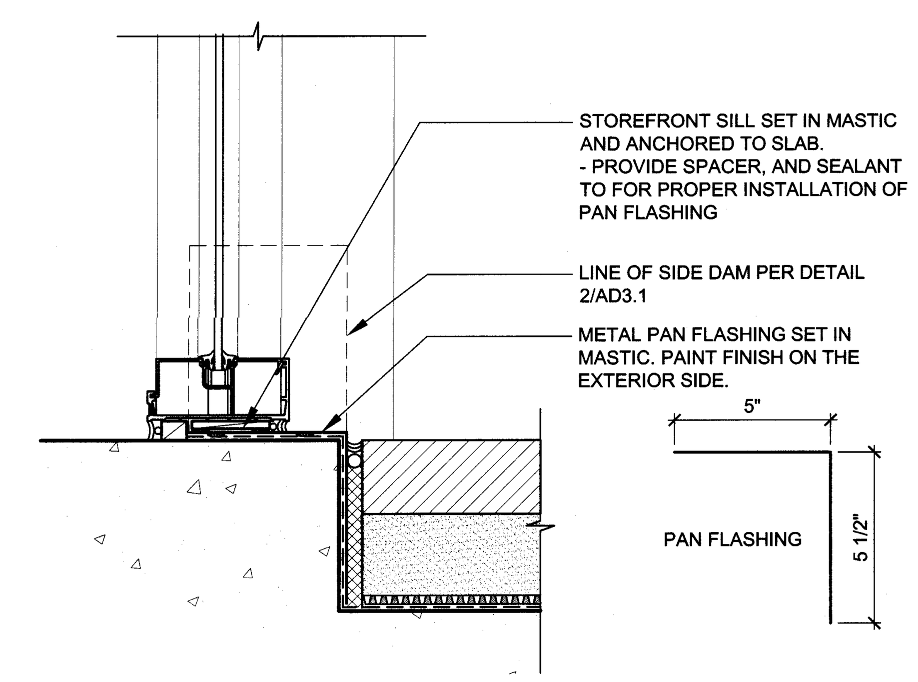
STOREFRONT JAMB AT RETAIL/LEASING 3" = 1'-0" **3**



STOREFRONT SILL AT RETAIL/LEASING 3" = 1'-0" **12**



STOREFRONT THRESHOLD AT PODIUM 3" = 1'-0" **8**



STOREFRONT SILL AT PODIUM 3" = 1'-0" **4**

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT
ARAM C. CHAHBAZIAN
No. C19002
Renewal 9-30-15
STATE OF CALIFORNIA

REVISION | DATE
THIRD PARTY WATERPROOF CONSULTANT
ASI #6 - MCRT REVISIONS 12/07/2013

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
STOREFRONT DETAILS

FOR CONSTRUCTION

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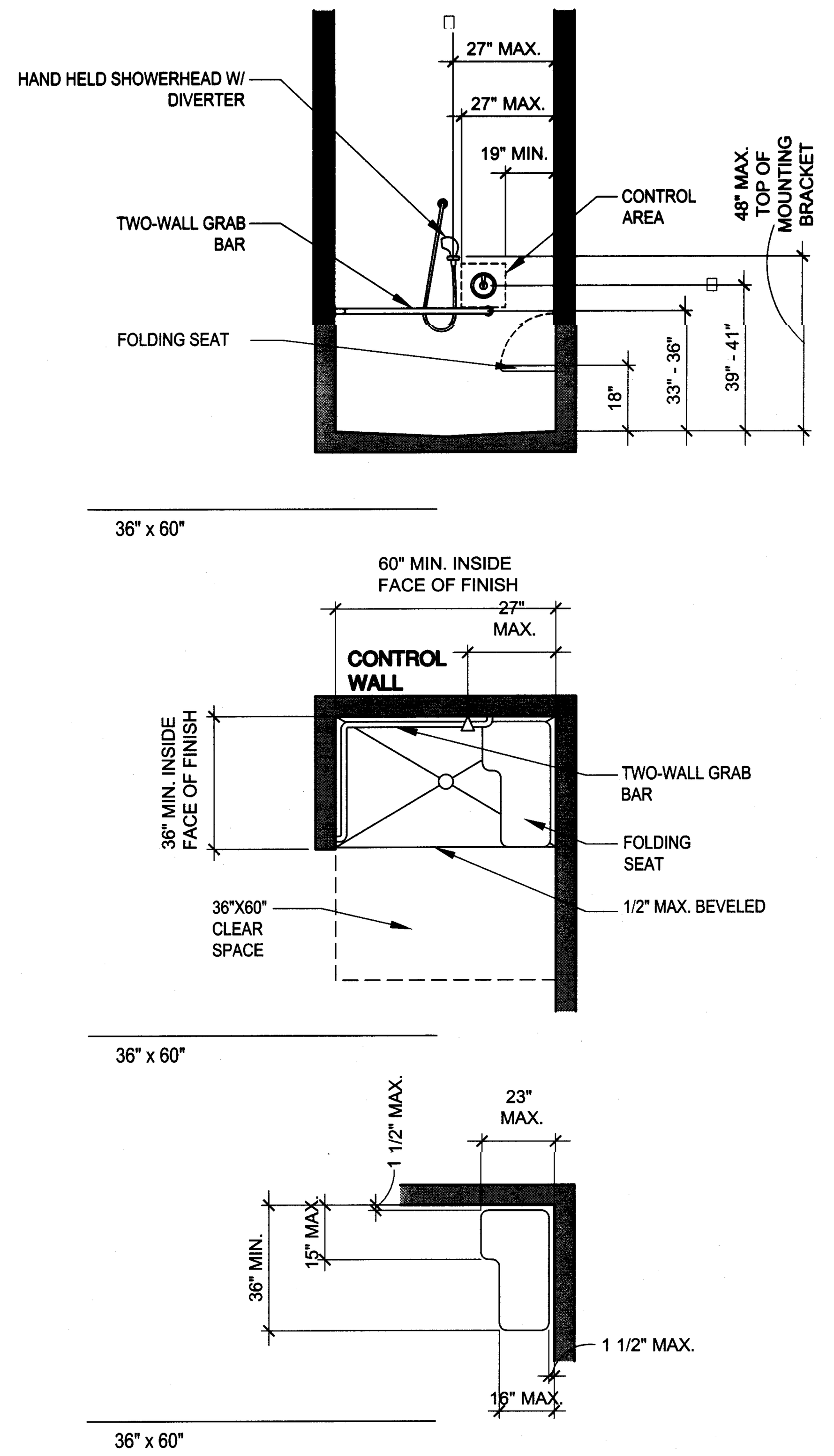
AD3.5

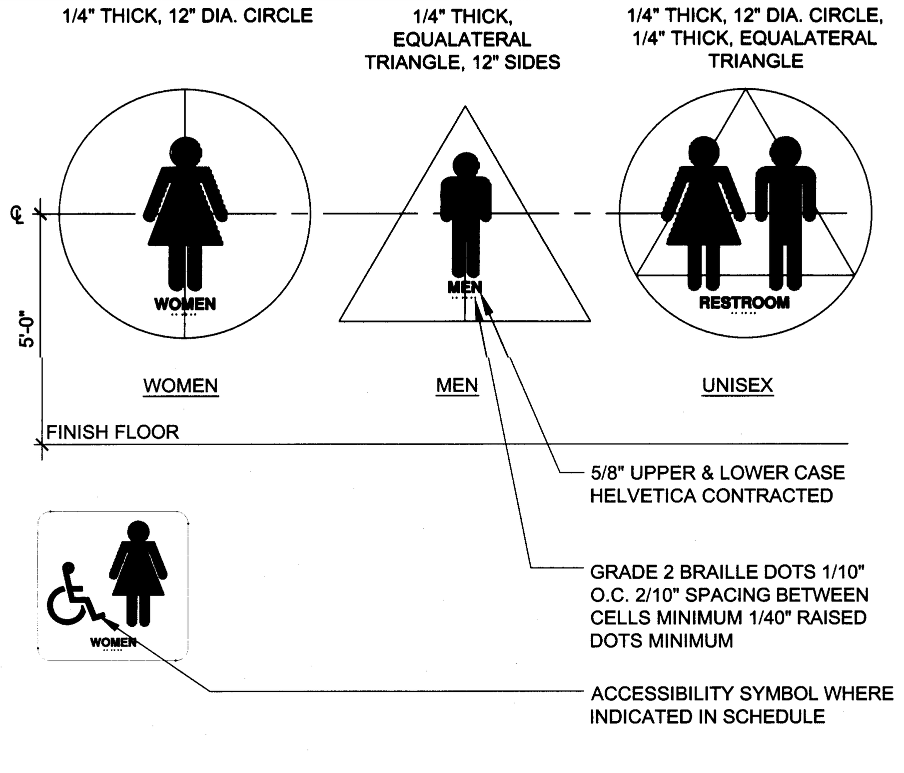
2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5 / 8 / 2014
DATE

Common Facilities

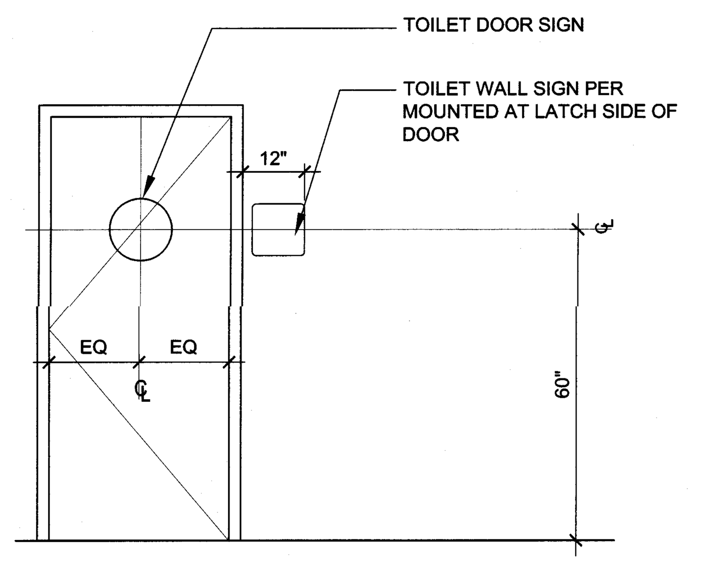


NOTE:
THE CONTROLS AND HAND HELD SHOWER HOSE BRACKET MUST BE RELOCATED TO THE REAR WALL WITHIN 24" MAX. OF THE SEAT FOLDING SEAT. THE HAND HELD SHOWERHEAD MUST HAVE A DIVERTER FROM THE FIXED SHOWERHEAD ON THE OPPOSITE WALL.

ACCESSIBLE SHOWER STALL N.T.S. 18



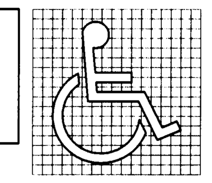
1. ATTACH SIGNS USING (3) THREE FLATHEAD COUNTERSUNK SCREWS TO SOLID BACKING & ADHESIVE TO BACK.
2. SIGNS ARE TO BE MOUNTED 5'-0" FROM C TO FINISHED FLOOR ON WALL ADJACENT TO TOILET ROOM DOOR STRIKE.
3. SIGNS ARE TO BE DISTINCTLY DIFFERENT FROM THE WALL IN COLOR AND CONTRAST.



NOTE:
ALL SIGNS TO HAVE WHITE FIGURES ON A BLUE BACKGROUND. SIGNS ARE TO BE DISTINCTLY DIFFERENT FROM THE WALL IN COLOR AND CONTRAST.

TOILET SIGNAGE/ PLACEMENT N.T.S. 14

ALL DIAGRAMS ON THIS SHEET ILLUSTRATE REQUIREMENTS OF CALIF. TITLE 24 AND EXAMPLES OF CONFORMING DESIGNS AND ARE INTENDED TO SUPPLEMENT THE CONSTRUCTION DRAWINGS. SEE PLANS FOR ACTUAL CONDITIONS.



ACCESSIBLE ROUTE OF TRAVEL

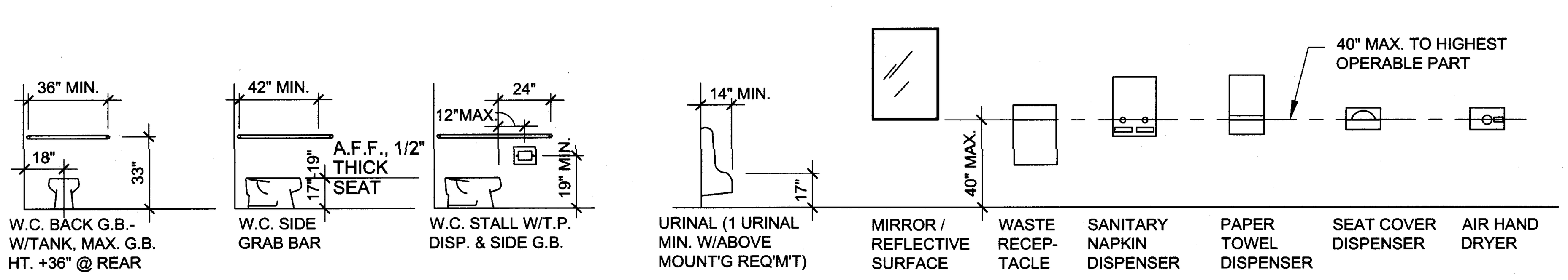
1. AT EVERY PRIMARY PUBLIC ENTRANCE AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL, THERE SHALL BE A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY. SIGNS SHALL INDICATE THE DIRECTION TO ACCESSIBLE BUILDING ENTRANCES AND FACILITIES.
IF AN ACCESSIBLE ROUTE HAS CHANGES IN LEVEL GREATER THAN INCH, THEN A CURB RAMP, RAMP, ELEVATOR OR PLATFORM LIFT SHALL BE PROVIDED. STAIRS SHALL NOT BE PART OF AN ACCESSIBLE ROUTE.
2. WHEN CROSSING VEHICLE TRAFFIC LANES IS NECESSARY, THE ROUTE OF TRAVEL SHALL BE DESIGNATED AND MARKED AS A CROSSWALK.
3. WHEN EMERGENCY WARNING SYSTEMS ARE REQUIRED (E.G., MANUAL AND/OR AUTOMATIC FIRE ALARM SYSTEMS), THEY SHALL COMPLY WITH NFPA 72 AND CBC CHAPTER 9. PROVIDE BOTH AUDIBLE AND VISUAL ALARMS (I.E., STROBES) IN RESTROOM, CORRIDORS, MULTI-PURPOSE ROOMS, LOBBIES, MEETING ROOMS, AND ANY OTHER COMMON USE ROOMS. CBC 1114B.2.2
4. PROVIDE 36 INCHES OF HALLWAYS WHEN OCCUPANT LOAD IS LESS THAN 10, 44 INCHES HALLWAYS WHEN OCCUPANT LOAD OF 10 OR MORE. CBC 1133B.3.
5. PROVIDE STAIRWAYS AND HANDRAILS PER CBC 1133B.4.
6. PROVIDE WARNING STRIP AT STAIRS PER CBC 1133B.4.
7. PROVIDE RAMP, HANDRAILS, AND LANDING PER CBC 1133B.5.
8. PASSENGER ELEVATORS SHALL COMPLY PER CBC 1124A & 1116B.
9. MINIMUM HEAD ROOM CLEARANCE IS 90 INCHES PER CBC 1003.2. MINIMUM VERTICAL CLEARANCE IS 8'-2" IN PARKING GARAGE PER CBC 1109A.8.1 AND 1130B.
10. NO PROJECTION INTO CLEAR WIDTH LOWER THAN 34 INCHES ABOVE THE FLOOR OR GROUND, PROJECTION INTO CLEAR SPACE BETWEEN 34 INCHES AND 80 INCHES ABOVE FLOOR SHALL NOT EXCEED 4 INCHES PER CBC 1008.1.1.1.

DRINKING FOUNTAINS

11. A SIDE APPROACH DRINKING FOUNTAIN IS NOT ACCEPTABLE.
12. DRINKING FOUNTAINS AND WATER COOLERS SHALL BE ON AN ACCESSIBLE ROUTE. 1139A.2
13. *PROVIDE WATER FLOW OF AT LEAST 4" HIGH TO ALLOW THE INSERTION OF A CUP OR GLASS.*
14. MANUAL OPERATION SHALL NOT REQUIRE A FORCE GREATER THAN 5LBS. THAT IS MOUNTED EITHER IN THE FRONT OR SIDE AND LOCATED WITHIN 6" OF THE FRONT EDGE OF THE FOUNTAIN.

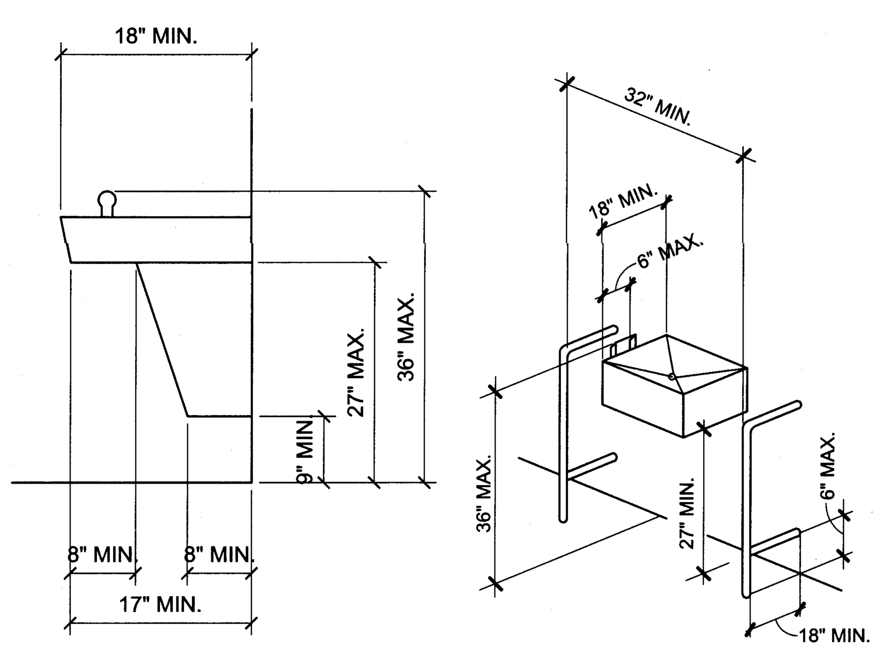
ACCESSIBLITY NOTES FOR PUBLIC SPACES N.T.S. 10

GRAB BARS PER SECTION 1127A.4
MIN 1¼" DIA. - MAX 1½" DIA. WITH SPACE BTW WALL AND BAR TO BE 1½"



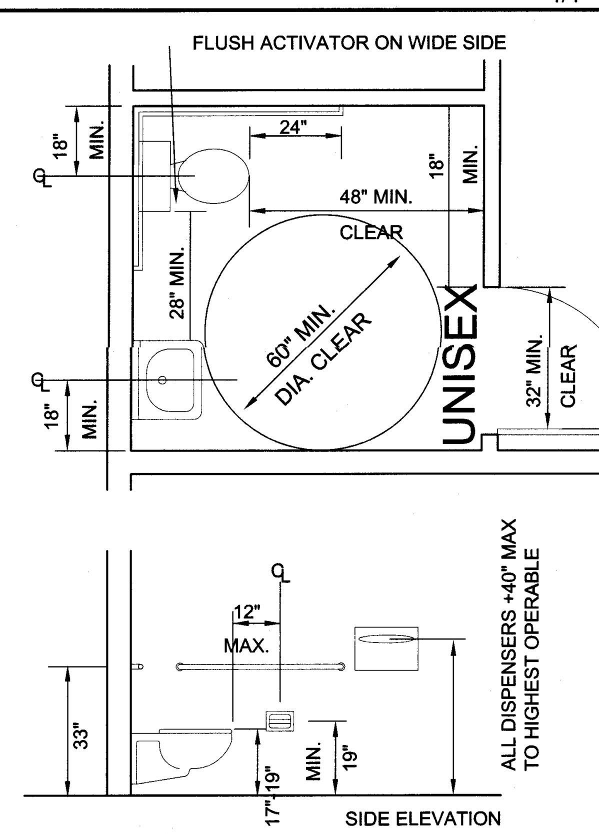
NOTE:
THIS DETAIL REFLECTS STANDARD HEIGHTS FOR VARIOUS FIXTURES & ACCESSORIES. SEE SPECIFICATIONS FOR LIST OF FIXTURES & ACCESSORIES TO BE PROVIDED FOR THIS PROJECT. PROVIDE SOLID BLOCKING FOR MOUNTING AS REQUIRED.

FIXTURE AND ACCESSORY MOUNTING HEIGHT COMMON AREA FACILITIES 1/4" = 1'-0" 15

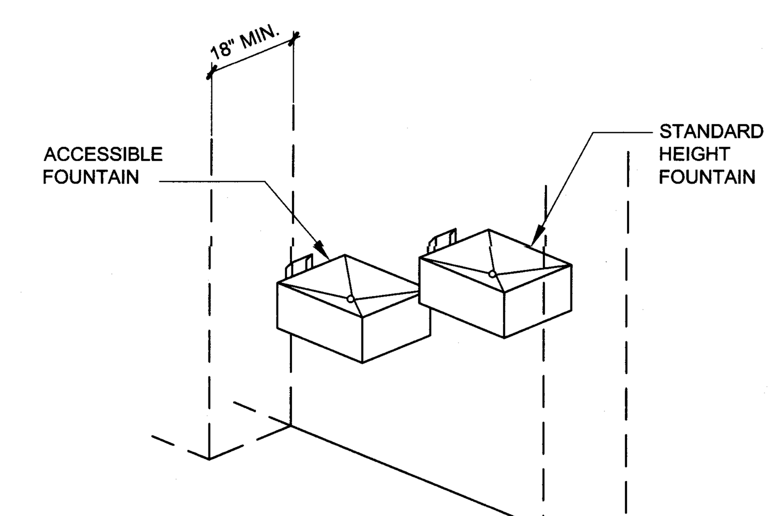


ACCESSIBLE DRINKING FOUNTAIN CONSTRAINTS

ACCESSIBLE DRINKING FOUNTAIN WITH WING WALL



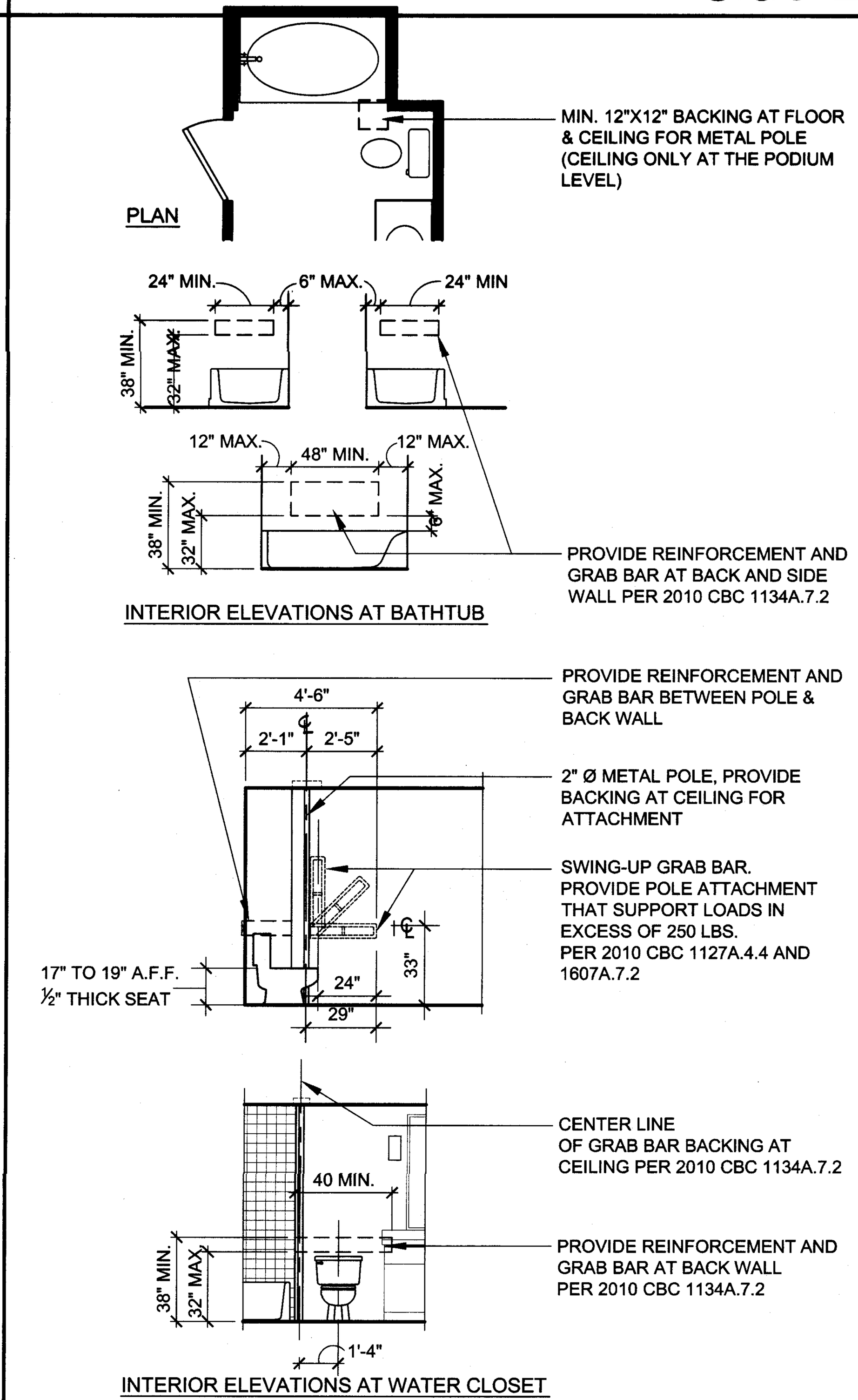
RESTROOM AT RETAIL N.T.S. 16



ACCESSIBLE DRINKING FOUTAIN AT ALCOVE
(SEE ABOVE FOR ADDITIONAL INFORMATION)

DRINKING FOUNTAIN 1/4" = 1'-0" 12

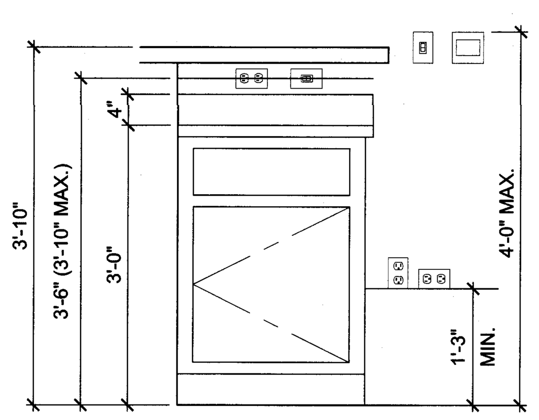
Inside Living Unit



NOTE:
- ALL REINFORCING SHALL BE 2x SOLID WOOD BLOCKING, SECURELY FASTENED TO STUDS & JOISTS (FIBER BOARD OR WAFER BOARD NOT PERMITTED) BACKING AT FIBERGLASS TUB ASSEMBLY MAY BE INTEGRAL IN THE FIBERLASS ASSEMBLY.

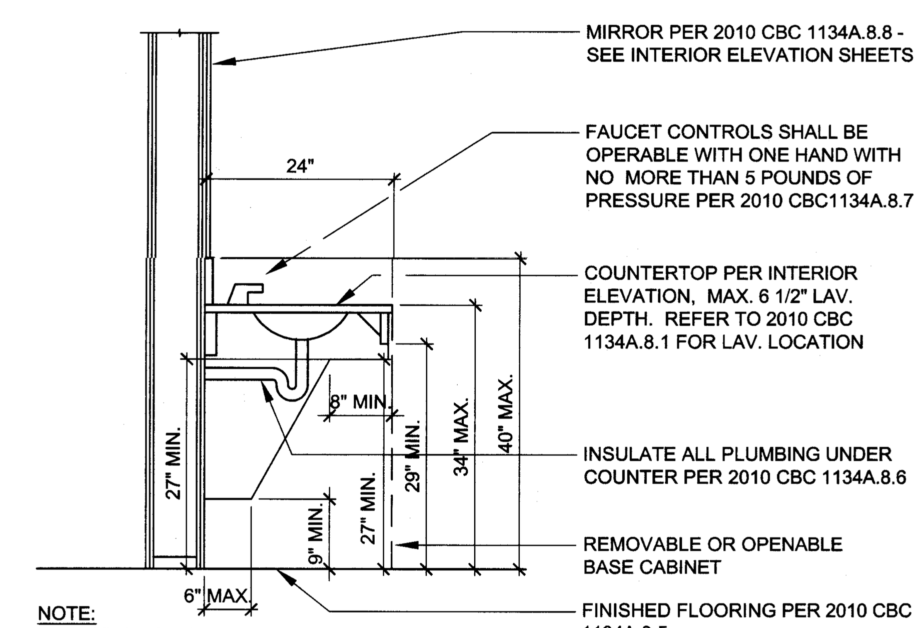
- AT CONCRETE FLOOR, REINFORCEMENT FOR METAL POLE IS NOT REQUIRED.

6



NOTES :
THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF SWITCHES USED TO CONTROL LIGHT SWITCHES, THERMOSTATS AND OTHER ENVIRONMENTAL CONTROLS & ELECTRICAL OUTLETS SHALL BE LOCATED NO HIGHER THAN 48 INCHES, & NO LOWER THAN 15 INCHES, ABOVE THE FLOOR. IF THE REACH IS OVER AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES IN DEPTH, THE MAXIMUM HEIGHT IS REDUCED TO 44 INCHES FOR FORWARD APPROACH, OR 46 INCHES FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES IN DEPTH.

SWITCHES & OUTLETS N.T.S.



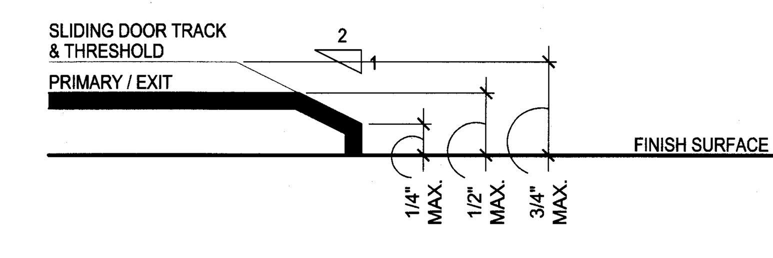
NOTE:
1. KNEE & TOE CLEARANCES SHALL MEET ALL ACCESSIBLITIY REQUIREMENTS PER 2010 CBC 1134A.8.4

LAVATORY 3/4" = 1'-0" 8

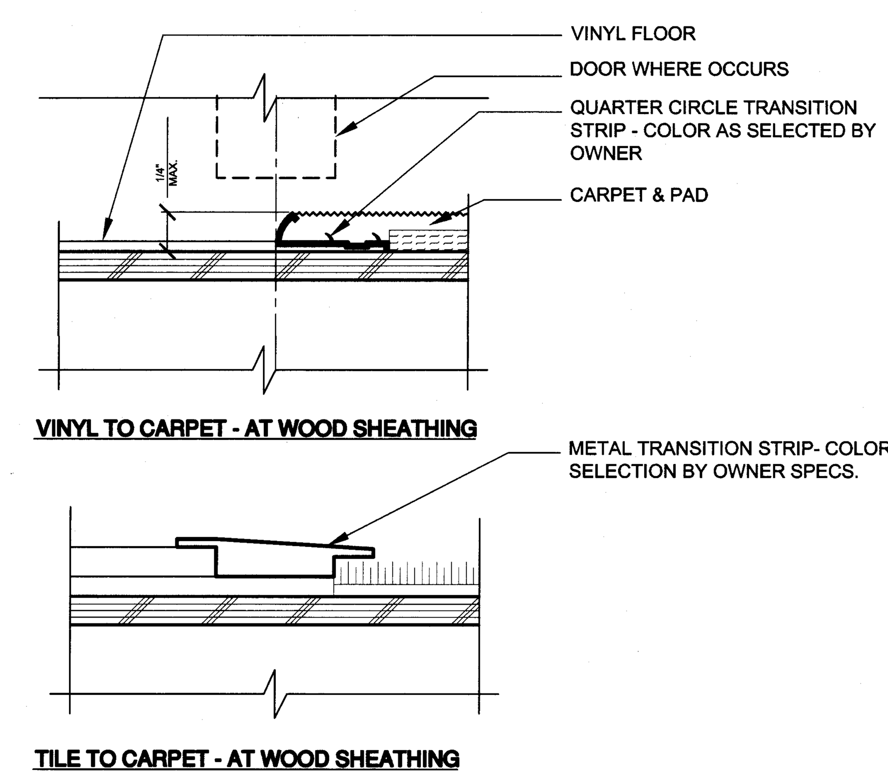
1. ALL UNITS ARE REQUIRED TO BE ADAPTABLE TO THE PHYSICALLY HANDICAPPED. REQUIREMENTS FOR SWITCHES, OUTLETS, DOOR HARDWARE, DOOR SIZE, THRESHOLDS & BACKING FOR FUTURE GRAB BARS, ETC. SHALL APPLY TO THESE UNITS INCLUDING REMOVABLE BASE CABINETS @ KITCHEN SINKS.
2. ALL ENTRANCES TO DWELLING UNITS ARE EQUIPPED WITH PERMANENTLY WIRED DOOR BUZZER/ BELL, CHIME OR EQUAL. MOUNT THE DEVICE 40" ABOVE THE FLOOR (48" MAX.) PER 2010 CBC 1132A.10.
3. MAXIMUM DOOR OPENING EFFORTS: 8.5 LBS AT EXTERIOR AND 5 LBS AT INTERIOR DOORS PER 2010 CBC 1132A.6. ALL DOORS SHALL BE EQUIPPED WITH SINGLE-EFFORT, NON-GRASP HARDWARE (I.E., LEVER). ALL HARDWARE SHALL BE CENTERED BETWEEN 30 AND 44 INCHES ABOVE THE FLOOR. THE BOTTOM 10" OF ALL DOORS SHALL HAVE A SMOOTH AND UNITERRUPTED SURFACE. 2010 CBC 1132A.8 AND 1132A.9
4. THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF SWITCHES USED TO CONTROL LIGHT SWITCHES, THERMOSTATS AND OTHER ENVIRONMENTAL CONTROLS & ELECTRICAL CONTROLS & ELECTRICAL OUTLETS SHALL BE LOCATED NO HIGHER THAN 48 INCHES, & NO LOWER THAN 15 INCHES, ABOVE THE FLOOR. FOR REACH OVER AN OBSTRUCTION LESS THAN 24 INCHES, SUCH AS BATHROOM VANITY, PROVIDE 46 SIDE APPROACH PER 2010 CBC 1136A
5. CHANGES IN LEVEL ON ACCESSIBLE ROUTE SHALL NOT EXCEED 1/2", CHANGES IN LEVEL SHALL BE BEVELED WITH A SLOPE NO GREATER THAN 1 UNIT VERTICAL IN 2 UNITS HORIZONTAL. CHANGES IN LEVEL NOT EXCEEDING 1/4" MAY BE VERTICAL PER 2010 CBC 1131A.1.
6. THE FLOOR OR LANDING SHALL NOT BE MORE THAN 1/2" LOWER THAN THE TOP OF THE THRESHOLD OF THE DOORWAY AT THE ENTRY AND INTERIOR DOOR PER 2010 CBC 1132A.4.1.

ACCESSIBLE GENERAL NOTES 1

NOTES:
1. PER 2010 CBC 1132A4.1. - THRESHOLD AT THE PRIMARY ENTRY AND REQUIRED EXIT DOORS SHALL BE NO HIGHER THAN 1/2". THRESHOLD AT SECONDARY EXTERIOR DOORS, INCLUDING SLIDING DOOR TRACKS, SHALL BE NO HIGHER THAN 3/4".



ACCESSIBLE THRESHOLD N.T.S 2



FLOOR METAL TRANSITION N.T.S. 3

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

LICENSED ARCHITECT C19002 STATE OF CALIFORNIA

REVISION: ASI #8 - ACCESSIBILITY REVISIONS — DATE: 05/05/2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS: ACCESSIBILITY DETAILS

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AD10.1

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5 / 8 / 2014
DATE

NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:

   . SLAB THICKNESS:

B1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P1 LEVEL	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
P2 LEVEL:	t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
PODIUM LEVEL(S):	t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.

. COLUMN CAPITAL:	SEE SCHEDULE BELOW
. CONCRETE STRENGTH:	3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
. SHEAR WALL:	5,000 psi @ 28 DAYS
. TENDON:	1/2" DIAM. 7 WIRE 270 ksi STRAND.
. REBAR:	ASTM GRADE 60, fy = 60ksi.
. DESIGN LOADS:	SEE SHEET SC-0

2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:

. ENTIRE SLAB:	#4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
. BANDED TENDON DIRECTION:	STRAIGHT TEMP. TENDON @ 5 FT. APART.

   . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
6. REFER TO STRUCTURAL PLANS FOR PLACEMENT OF ALL STRUCTURAL HARDWARE AND IMBEDS. ALL STRUCTURAL IMBEDS MUST BE SECURELY TIED IN PLACE AND INSPECTED PRIOR TO CONCRETE PLACEMENT.
7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T (A)

NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

COLUMN CAPITAL OR DROP PANEL
CONCRETE COLUMN

15.5 — F=535 — 1 — F=535 — 15.5

BANDED DIR.:
EFFECTIVE FORCE (KIPS) AFTER LOSSES
FORCE (KIPS) PER PT PLAN(S)

DISTRIBUTED DIR.:
EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES
PODIUM(S) AT LEVEL P1, BLDG B PODIUM:
F = 30 K/FT MIN. UNO FOR DIST. CABLES
GARAGE(S) AT LEVEL B1, P1, P2:
F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a
LATE POUR STRIP PER 13/ SC-2a.
(LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.

W-1 — WALL BELOW SLAB

C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)

SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b.
PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU.
PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU.
EXTEND REINF. TO COLUMN GRID(S)
NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN.
REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b

W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REVISION		DATE
1	1ST PCC	02-04-2013
5	ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
10	ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" PODIUM SLAB PLAN BLDG. "B" LEVEL P1 SLAB PLAN

FOR CONSTRUCTION

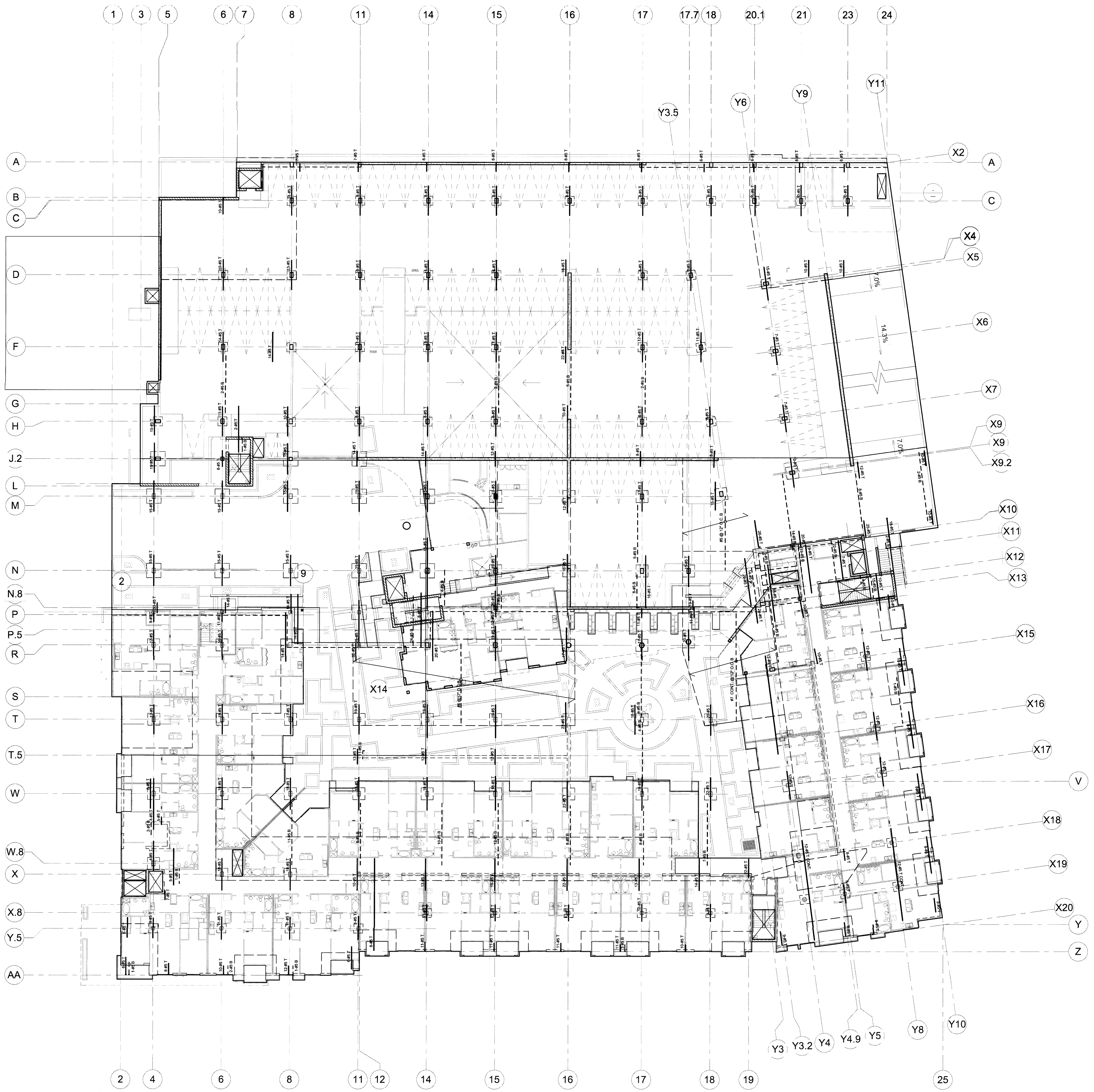
THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

S0.12

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE



NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:
   - . SLAB THICKNESS:
     - B1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P2 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - PODIUM LEVEL(S): t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - . COLUMN CAPITAL: SEE SCHEDULE BELOW
   - . CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   - . SHEAR WALL: 5,000 psi @ 28 DAYS
   - . TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   - . REBAR: ASTM GRADE 60, fy = 60ksi.
   - . DESIGN LOADS: SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   - . ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   - . BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   - . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
6. REFER TO STRUCTURAL PLANS FOR PLACEMENT OF ALL STRUCTURAL HARDWARE AND IMBEDS. ALL STRUCTURAL IMBEDS MUST BE SECURELY TIED IN PLACE AND INSPECTED PRIOR TO CONCRETE PLACEMENT.
7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T
NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

COLUMN CAPITAL OR DROP PANEL

CONCRETE COLUMN

F=535

BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)

DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a
LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
W-1 WALL BELOW SLAB

C-* COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P-* PIER NO. * SEE SCHEDULE ON SHEET SC-3

W-* WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' SW-A MIN. LENGHT OF SW (SEE ARCH. PLANS)

CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 CMU BEARING WALL. SEE SCHEDULE PER SC-4b
W-12 CMU BEARING WALL PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1 86 CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. *SOIL NAIL WALL BY OTHERS*
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

TCA
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VCA
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REGISTERED PROFESSIONAL ENGINEER
ROBERT SHEUNG-CHI CHOU
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STATE OF CALIFORNIA

REVISION		DATE
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CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" PODIUM REBAR PLAN BLDG. "B" LEVEL P1 REBAR PLAN - (NORTH-SOUTH) FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE *CONSTRUCTION OF AN* APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

S0.12.1

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS

5/8/2014
DATE

NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:
   - . SLAB THICKNESS:
     - B1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P2 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - PODIUM LEVEL(S): t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - . COLUMN CAPITAL: SEE SCHEDULE BELOW
   - . CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   - . SHEAR WALL: 5,000 psi @ 28 DAYS
   - . TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   - . REBAR: ASTM GRADE 60, fy = 60ksi.
   - . DESIGN LOADS: SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   - . ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   - . BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   - . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
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7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T (A)
- NUMBER OF BARS
- BAR SIZE
- CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
- DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
- PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

15.5 F=535 1

- TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)
- TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)
- COLUMN CAPITAL OR DROP PANEL
- CONCRETE COLUMN
- BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)
- DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

- DEAD END PER DETAILS 5/SC-2a
- STRESSING END PER DETAILS 5/SC-2a
- STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)
- W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
- W-1 — WALL BELOW SLAB
- C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3
- P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3
- W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b
- 25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)
- SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c
- CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.
- W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b
- W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1
- RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a
- B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.
- WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.
- ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.
- THICKENED SLAB. SOFFIT LINE.
- OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

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REVISION	DATE
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CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" PODIUM REBAR PLAN BLDG. "B" LEVEL P1 REBAR PLAN - (EAST-WEST)

FOR CONSTRUCTION

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S0.12.2

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE

NOTES

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   . SLAB THICKNESS:
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   - P1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - P2 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - PODIUM LEVEL(S): t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.

   . COLUMN CAPITAL: SEE SCHEDULE BELOW
   . CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   . SHEAR WALL: 5,000 psi @ 28 DAYS
   . TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   . REBAR: ASTM GRADE 60, fy = 60ksi.
   . DESIGN LOADS: SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   . ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   . BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
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9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
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11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B — 18 - #5T
- NUMBER OF BARS
- BAR SIZE
- CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
- DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
- PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

15.5, F=535, 1

- TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)
- TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)
- COLUMN CAPITAL OR DROP PANEL
- CONCRETE COLUMN
- BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)
- DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

- DEAD END PER DETAILS 5/SC-2a
- STRESSING END PER DETAILS 5/SC-2a
- STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)
- W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
- W-1 — WALL BELOW SLAB
- C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3
- P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3
- W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b
- 25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)
- SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c
- CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.
- W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b
- W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1
- RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a
- B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.
- WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.
- ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.
- THICKENED SLAB.
- SOFFIT LINE.
- OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REVISION		DATE
	1ST PCC	02-04-2013
5	ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
10	ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS: GARAGE LEVEL P2 SLAB PLAN

FOR CONSTRUCTION

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S0.13

11-2730
JOB NUMBER
1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE

NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:
   - SLAB THICKNESS:
     - B1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P1 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P2 LEVEL: t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - PODIUM LEVEL(S): t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - COLUMN CAPITAL: SEE SCHEDULE BELOW
   - CONCRETE STRENGTH: 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   - SHEAR WALL: 5,000 psi @ 28 DAYS
   - TENDON: 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   - REBAR: ASTM GRADE 60, fy = 60ksi.
   - DESIGN LOADS: SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   - ENTIRE SLAB: #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   - BANDED TENDON DIRECTION: STRAIGHT TEMP. TENDON @ 5 FT. APART.
   - REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
5. IT IS THE RESPONSIBILITY OF CONTRACTOR TO VERIFY ALL DIMENSIONS AND ARCHITECTURAL FEATURES WITH ARCHITECT'S DRAWINGS, AND VERIFY LOCATIONS OF ALL UTILITY IMBEDS AND PENETRATIONS WITH UTILITY DRAWINGS.
6. REFER TO STRUCTURAL PLANS FOR PLACEMENT OF ALL STRUCTURAL HARDWARE AND IMBEDS. ALL STRUCTURAL IMBEDS MUST BE SECURELY TIED IN PLACE AND INSPECTED PRIOR TO CONCRETE PLACEMENT.
7. REFER TO SHEET SC-* FOR GENERAL AND SPECIFIC CONSTRUCTION DETAILS.
8. SEE CIVIL & ARCH. DRAWINGS FOR SLOPING OF SLAB. (MAINTAIN SPECIFIED SLAB THICKNESS @ ALL LOCATIONS)
9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B 18 - #5T A
NUMBER OF BARS
BAR SIZE
CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)

TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)

15.5 — COLUMN CAPITAL OR DROP PANEL

CONCRETE COLUMN

1 F=535 — BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)

F=535 — DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

DEAD END PER DETAILS 5/SC-2a
STRESSING END PER DETAILS 5/SC-2a

STRESSING BLOCKOUT PER 12/SC-2a
LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)

W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.

W-1 — WALL BELOW SLAB

C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3

P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3

W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b

25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)

SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c

CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S)
NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.

W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b

W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1

RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a

B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.

WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.

ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.

THICKENED SLAB.
SOFFIT LINE.

OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
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VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER ROBERT SHEUNG-CHU CHOU S 003518 STRUCTURAL STATE OF CALIFORNIA

REVISION		DATE
1	1ST PCC	02-04-2013
5	ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
10	ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

GARAGE LEVEL P2 REBAR PLAN - (NORTH-SOUTH)

FOR CONSTRUCTION

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S0.13.1

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE

NOTES

1. THE PROPOSED SUSPENDED STRUCTURAL SLAB IS A POST-TENSION CONCRETE SLAB. THE FOLLOWING ARE THE DESIGN PARAMETERS:
   - . SLAB THICKNESS:
     - B1 LEVEL — t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P1 LEVEL — t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - P2 LEVEL: — t = 8.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
     - PODIUM LEVEL(S): — t = 12.5" - POST TENSIONING CONCRETE SLAB, U.N.O.
   - . COLUMN CAPITAL: — SEE SCHEDULE BELOW
   - . CONCRETE STRENGTH: — 3,000 psi @ 3 DAYS AND 4,000 psi @ 28 DAYS (5000 psi @ PODIUM DECK)
   - . SHEAR WALL: — 5,000 psi @ 28 DAYS
   - . TENDON: — 1/2" DIAM. 7 WIRE 270 ksi STRAND.
   - . REBAR: — ASTM GRADE 60, fy = 60ksi.
   - . DESIGN LOADS: — SEE SHEET SC-0
2. PROVIDE ADDITIONAL UNIFORM REINFORCEMENT & TENDON NOT SHOWN ON POST TENSIONING PLANS AS FOLLOWS:
   - . ENTIRE SLAB: — #4 @ 30" O.C. EA. WAY @ BOTTOM OF SLAB REINF. TO BE SPLICED @ COLUMN GRID.
   - . BANDED TENDON DIRECTION: — STRAIGHT TEMP. TENDON @ 5 FT. APART.
   - . REBAR TO BE SPLICED PER 1/SC-2.
3. PROVIDE CONSTRUCTION JOINTS TO DIVIDE SLAB INTO SECTIONS W/ MAX. DIM. NOT TO EXCEED 150 FEET. JOINTS MAY NOT BE LOCATED WITHIN 1/4 SPAN OF COLUMN GRID LINE. TENDONS & REBAR ACROSS CONSTRUCTION JOINTS MUST BE CONTINUOUS. JOINT LOCATIONS MUST BE SUBMITTED TO THE E.O.R. PRIOR TO CONSTRUCTION.
4. CONTRACTOR MUST REVIEW AND APPROVE CONC. MIX DESIGN, P.T. AND REBAR SHOP DRAWINGS. THEN SUBMIT THE CONTRACTOR APPROVED PACKAGES TO THE DESIGN ENGINEER'S OFFICE FOR REVIEW PRIOR TO MATERIAL FABRICATION.
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9. DO NOT STEP SLAB UNLESS SPECIFICALLY NOTED ON PLANS
10. PRIOR TO FORMING, CONTRACTOR SHALL SUBMIT ANTICIPATED SOFFIT PLAN FOR ENGINEERS REVIEW.
11. POWER DRIVEN STEEL ANCHORS SHALL NOT PENETRATE INTO P.T. ELEMENT A DISTANCE GREATER THAN THE MINIMUM COVER OF THE TENDONS.
12. REFER TO DETAIL 25/SC-2a FOR TENDON LAYOUT @ STRUCTURAL WALL.
13. REFER TO DETAILS 10/SC-2 & 2/SC-2a FOR DEPRESSED SLAB (PER ARCH) AND SOFFIT LINE STEP(S) FOR REBAR AND PT PLACEMENT.
14. CONT. DRAG REINF. OR TYPE II (MECH.) SPLICE IS REQ'D.
15. DISTRIBUTED TENDONS TO BE SPACED A MAXIMUM OF 2 FT O.C.

LEGEND

14 - #4B — 18 - #5T — (A)
- NUMBER OF BARS
- BAR SIZE
- CONCRETE COLUMN, SEE FOUNDATION PLAN FOR COLUMN TYPE.
- DROP CAP TYPE PER SCHEDULE BELOW. (16/SC-2a) IF NOT CALLED OUT SEE TYP. @ SCH.
- PLACEMENT OF BAR (T=TOP, B=BOTTOM)

4 - #5B — INDICATES ADDED REINF. AT INDICATED POSITION (TOP OR BOTTOM) LENGTH PER 19/SC-2a U.N.O.

15.5 — 1 — F=535

- TENDON LOW POINT @ MID SPAN, (SEE 1/ SC-2a) DISTANCE (IN.) OF TENDON C.G.S. FROM BOTT. OF SLAB (OR BEAM) TYPICAL DIST. @ GARAGE LEVELS IS 1" (1.75" @ END BAY) & TYP. DIST. @ PODIUM LEVEL IS 1.25" (2.25" @ END BAY)
- TENDON HIGH POINT @ COLUMN (SEE 1/ SC-2a FOR LOCATION OF HIGH POINT) DISTANCE OF TENDON C.G.S. FROM BOTT. OF SLAB. (OR BEAM) TYPICAL DISTANCE (IN.) IS 1" FROM TOP OF SLAB @ GARAGE LEVELS (1.25" @ PODIUM LEVEL)
- COLUMN CAPITAL OR DROP PANEL
- CONCRETE COLUMN
- BANDED DIR.: EFFECTIVE FORCE (KIPS) AFTER LOSSES FORCE (KIPS) PER PT PLAN(S)
- DISTRIBUTED DIR.: EFFECTIVE FORCE (KIPS/FT) AFTER LOSSES PODIUM(S) AT LEVEL P1, BLDG B PODIUM: F = 30 K/FT MIN. UNO FOR DIST. CABLES GARAGE(S) AT LEVEL B1, P1, P2: F = 17 K/FT MIN. UNO FOR DIST. CABLES

- DEAD END PER DETAILS 5/SC-2a
- STRESSING END PER DETAILS 5/SC-2a
- STRESSING BLOCKOUT PER 12/SC-2a LATE POUR STRIP PER 13/ SC-2a. (LEAVE OPEN FOR MIN. 60 DAYS)
- W-1 — PERIMETER RETAINING WALL. SEE PLAN & RETAINING WALL SCHEDULE ON SHEET SC-4a.
- W-1 — WALL BELOW SLAB
- C - * — COLUMN NO. * SEE SCHEDULE ON SHEET SC-3
- P - * — PIER NO. * SEE SCHEDULE ON SHEET SC-3
- W - * — WALL TYPE. * SEE SCHEDULE ON SHEET SC-4a & SC-4b
- 25' — MIN. LENGHT OF SW (SEE ARCH. PLANS)
- SW-A — CONCRETE SHEAR WALL. SEE SCHEDULE & DETAILS ON SHEETS: SC-5a, SC-5b, SC-5c
- CMU NON BEARING WALL PER SC-4b. PROVIDE MIN. 2- #4 T&B @ SLAB UNDER WALL - 8" CMU. PROVIDE MIN. 2- #5 T&B @ SLAB UNDER WALL - 12" CMU. EXTEND REINF. TO COLUMN GRID(S) NOTE: FOR CLARITY, SOME NON-BEARING WALLS MAY NOT BE SHOWN. REFER TO ARCH. PLAN FOR WALLS NOT SHOWN.
- W-8 — CMU BEARING WALL. SEE SCHEDULE PER SC-4b
- W-12 — CMU BEARING WALL. PER SC-4b W/ LINTEL PER 11/SC-1
- RET. WALL TO FLOOR SLAB WITH NO RELEASE SEE SC-4a
- B-1 86 — CONC. BEAM. SEE SHEET SC-6 FOR SCHEDULE AND DETAILS.
- WALL EXPANSION JOINT. SEE DETAIL SHEET SC-1.
- ELEVATED RAMP SLAB — ELEVATED RAMP SLAB. 12" THICK CONC W/ #6 @10" TRANS. T/B & #5 @14" LONG T/B - 3,000 PSI MIN. U.N.O.
- THICKENED SLAB.
- SOFFIT LINE.
- OVER-POURED SLAB PER 24/SC-1

CONSTRUCTION NOTES

1. OVER POUR SLAB PER DETAIL 3/SC-8.
2. DO NOT REMOVE SHORING TIE BACK UNTIL CMU WALL @ AIR WAY SHAFT IS IN PLACE.
3. INSTALL SOFFIT FOR ELECT. CONDUITS PER DET. 19/SC-8.
4. COLUMN TO BE POURED MONOLITHIC.
5. SOIL NAIL WALL BY OTHERS
6. SEE 1/SC-3 FOR PIER INFORMATION.
7. DRAG REINF. PER NOTE #14. INSTALL REBARS AT SLAB MID DEPTH. EXTEND REBAR 40' MIN ONTO CONC SHEAR WALL, U.N.O.

DROP CAP SCHEDULE

LOCATION		SIZE (TYP.)	REMARK
BUILDING "A"	BUILDING "B"		
PODIUM	PODIUM	60" X 60" X 10" U.N.O.	
B1 LEVEL	P1 & P2 LEVEL	45" X 45" X 8" U.N.O.	
	SYMBOL	SIZE	
DROP CAP /	A	45" X 45" X 8"	
	B	60" X 60" X 10"	
	C	72" X 72" X 12"	
	D	60" X 60" X 4"	

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S 003518
STRUCTURAL
STATE OF CALIFORNIA

REVISION		DATE
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CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

GARAGE LEVEL P2 REBAR PLAN - (EAST-WEST)

FOR CONSTRUCTION

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S0.13.2

11-2730
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE

1. ALL LIGHT GAUGE STEEL FRAMING MEMBERS SHALL COMPLY WITH IBC 2210 AND AISI STANDARDS:

   NAS-01, INCLUDING 2004 SUPPLEMENT
   GENERAL-04
   HEADER-04
   LATERAL-04
   PM-01
   TRUSS-04
   WSD-04

2. ALL LIGHT GUAGE MEMBERS SHALL BE PRODUCTS MANUFACTURED BY THE MEMBERS OF THE STEEL STUD MANUFACTURES ASSOCIATION, SSMA, COMPLYING WITH THE INTERNATIONAL BUILDING CODE AND ICC ES EVALUATION REPORT 4943-P (LA R.R. #25529)

3. ALL STUD/TRACK MATERIAL SHALL CONFORM TO THE FOLLOWING:

   16 GAUGE AND HEAVIER - 50 KSI MIN. YIELD   65 KSI MIN. TENSILE STRENGTH

   PAINTED STEEL PER   ASTM A570-GRADE 50
   ASTM A607-GRADE 50

   GALVANIZED STEEL PER   ASTM A446-GRADE D

   18 GAUGE AND LIGHTER - 33 KSI MIN. YIELD   45 KSI MIN. TENSILE STRENGTH

   PAINTED STEEL PER   ASTM A570-GRADE 33
   ASTM A611-GRADE C

   GALVANIZED STEEL PER   ASTM A446-GRADE A

4. ALL MISCELLANEOUS STEELS SHALL CONFORM TO THE FOLLOWING U.N.O.:

   20 TO 18 GAUGE - 33 KSI MIN. YIELD
   16 TO 10 GAUGE - 50 KSI MIN. YIELD
   3/16" AND HEAVIER - ASTM A36

5. ALL WELDING SHALL BE PERFORMED BY CERTIFIED LIGHT GAUGE WELDERS, CERTIFIED FOR ALL APPROPRIATE DIRECTIONS PER 2008 AWS D1.3. WELDING RODS SHALL CONFORM TO THE FOLLOWING:

   18 GA. AND LIGHTER SHEET TO SHEET - E60XX
   16 GA. AND HEAVIER SHEET TO SHEET - E70XX OR E6013
   LT. GPT STEEL TO STRUCTURAL STEEL. ASTM A36

6. ALL CALCULATED STUD PROPERTIES, PER 2007 AISI SPECIFICATION, ARE BASED ON THE FOLLOWING THICKNESS TABLE:

MILS	GAUGE	(IN)
97	12 GA.	0.1017
68	14 GA.	0.0713
54	16 GA.	0.0566
43	18 GA.	0.0451
33	20 GA.	0.0346
27	22 GA.	0.0283
18	25 GA.	0.0188

7. LATERAL BRIDGING FOR STEEL STUDS IS REQUIRED WHEN WALL BOARD, INSTALLED PER IBC (CHAPTER 25) DOES NOT CONTINUE FULL-HEIGHT ON BOTH SIDES. BRIDGING SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY SHOWN OTHERWISE ON THESE PLANS.

8. ALL SCREWS SHALL BE INSTALLED IN ACCORDANCE WITH THE SCREW MANUFACTURER'S RECOMMENDATIONS. ALL SCREWS SHALL PENETRATE AND PROTRUDE THROUGH THE ATTACH MATERIALS A MINIMUM OF 3 FULL EXPOSED THREADS PER AISI STANDARD GENERAL PROVISIONS D1.3.

9. ALL SCREWS MUST COMPLY WITH SAE STANDARD J78, STEEL SELF-DRILLING *SELF-TAPPING SCREWS, AND MUST HAVE A TYPE II COATING IN ACCORDANCE WITH* ASTM B633, ELECTRODEPOSITED COATINGS OF ZINC ON IRON AND STEEL.

10. ALL SHEET METAL SCREWS SHALL BE DART BRAND SELF DRILLING SELF TAPPING PER ICC-ER 5202 (LARR 25294) PER PLAN OR APPROVED EQUAL BY ENGINEER.

11. MAXIMUM STUD DEPTH IS 8", UNLESS WEB BRACING IS SPECIFICALLY DESIGNED BY ENGINEER.

12. AXIALLY LOADED STUDS SHALL HAVE FULL BEARING AGAINST INSIDE TRACK WEB PRIOR TO STUD AND TRACK ATTACHMENT. SPLICES IN AXIALLY LOADED MEMBERS SHALL NOT BE PERMITTED.

13. BUTT WELDS OR SPLICES SHALL BE USED AT ALL JOINTS IN TRACK. SPLICES IN AXIAL LOADED STUDS OR BRACES ARE NOT PERMITTED. ALL WELDS SHALL BE PLUG, BUTT, OR SEAM WELDS. WHERE STUDS ARE BURNED THROUGH BY WELDING, PROVIDE SUITABLE STITCH PLATE OF THE SAME GAUGE.

14. WHERE HOLES ARE SPECIFICALLY PERMITTED ON THESE PLANS, HOLES SHALL BE NEATLY DRILLED. TORCH CUTTING IS NOT PERMITTED.

15. TOP AND BOTTOM TRACKS SHALL BE OF EQUAL MATERIAL, THICKNESS AND WIDTH AS STUDS AND SHALL BE UNPUNCHED. USE DEFLECTION RATED TRACK.

16. STUDS AT CABINETS AND SHELVES SHALL BE SPACED AT 50% OF STUD SPACEING SPECIFIED PER SCHEDULE.

17. ALL SHEATHING AND WALL FINISHES MUST REMAIN ON STUDS UNLESS SPECIFICALLY APPROVED BY ENGINEER IN WRITING.

18. UTILITY PUNCH HOLES IN STUDS SHALL BE LOCATED AWAY FROM CONNECTIONS.

19. TRACK SHALL BE UNPUNCHED WITH GAUGE TO MATCH STUD FRAMING UNLESS OTHERWISE NOTED.

20. ALL STUDS FOR SUBMITTAL SHALL BE PUNCHED (i.e. WITH SPACING @ 24" O.C.) UNLESS NOTED OTHERWISE.

21. WALL STUD BRIDGING SHALL BE INSTALLED IN A MANNER TO PROVIDE RESISTANCE TO BOTH MINOR AXIS BENDING AND ROTATION. BRIDGING ROWS TO BE EQUALLY SPACED.

22. ALL BUILT-UP MEMBERS MUST BE FASTENED TOGETHER TO ACT AS ONE UNIT.

23. HOLES FOR 1/2" DIAMETER OR GREATER BOLTS, SHALL BE NO MORE THAN 1/16" LARGER THAN THE BOLT DIAMETER PER AISI NAS E3A.

24. TEMPORARY BRACING REQUIREMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR

25. FOR LIGHT GA. STEEL CONNECTIONS USE SIMPSON S/JCT (MAX. FILL IN ALL HOLES INCLUDING TRIANGLE HOLES) AT ALL SINGLE JOIST TO FLUSH BEAM CONNECTIONS.

26. STEEL BRACING (ALL STEEL SOLUTION) MUST BE PROVIDED ON WEBS OF ALL BEARING STUDS PER THE GENERAL DETAILS. ALTERNATIVELY, BRACING MAY BE ACHEIVED AFTER DRYWALL OR STUCCO IS DIRECTLY ATTACHED FULL HEIGHT TO BOTH SIDES OF THE STUD. ATTACHMENT OF DRYWALL/STUCCO IS TO BE PER IBC CHAPTER 25, WITH MAXIMUM CONNECTOR SPACING OF 7" O.C. ALONG EDGES AND 12" O.C. ALONG INTERMEDIATE STUDS. NOTE: MATERIALS INSTALLED OVER RESILIENT CHANNELS OR SIMILAR IS NOT CONSIDERED DIRECTLY ATTACHED.

27. CARRY ALL MULTIPLE STUDS OR POSTS FROM FLOOR ABOVE DOWN TO FLOOR OR BEAM BELOW. PROVIDE 4X SOLID BLOCKING AT FLOOR LEVEL TO TRANSFER LOAD FROM UPPER POST TO LOWER POST.

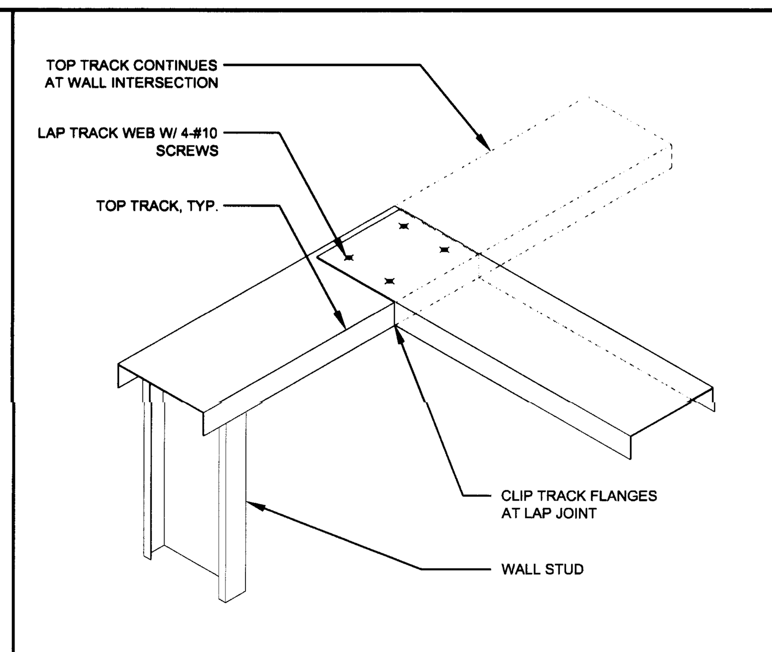
28. ALL SCREWS TO HAVE 3/4" MIN. EDGE DISTANCE, U.N.O.

29. WELD STUDS ONLY AS INDICATED ON PLANS. WELDS SHALL COMPLY WITH ANSI/AWS D1.1, D1.3 AND IBC 2204. WELDERS SHALL BE CERTIFIED AS REQUIRED BY THE BUILDING OFFICIAL.

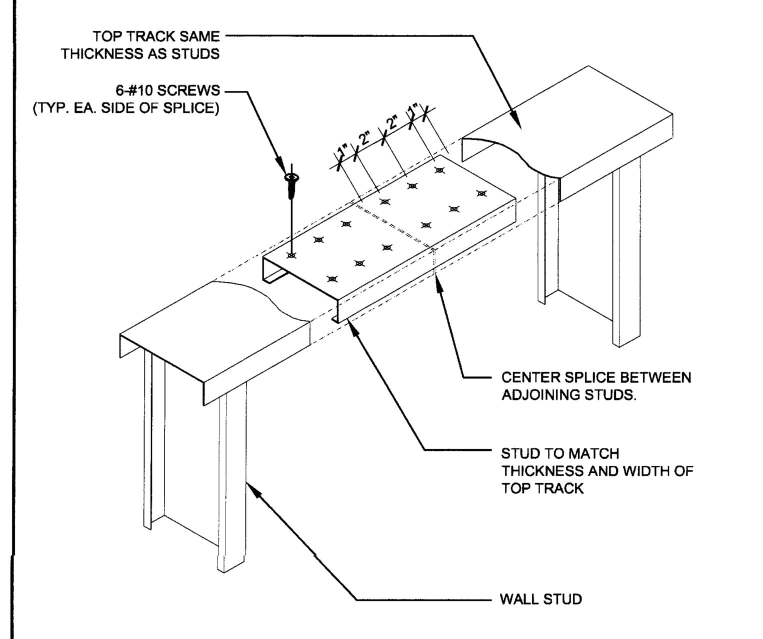
30. ALL FRAMING MEMBERS AND PREFABRICATED ASSEMBLIES SHALL BE INSTALLED TIGHT AGAINST ABUTTING MEMBERS. ENDS SHALL BE CUT SQUARELY OR AT AN ANGLE TO ENSURE A TIGHT FIT.

31. STUDS AT VENEER SHALL BE MIN. 43 MIL. U.N.O. ON PLANS.

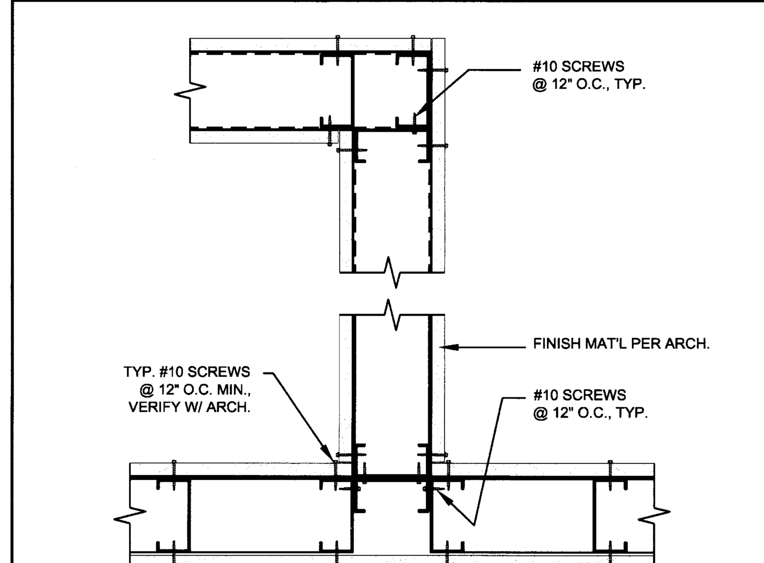
SPECIFICATIONS (29)



TOP TRACK INTERSECTION



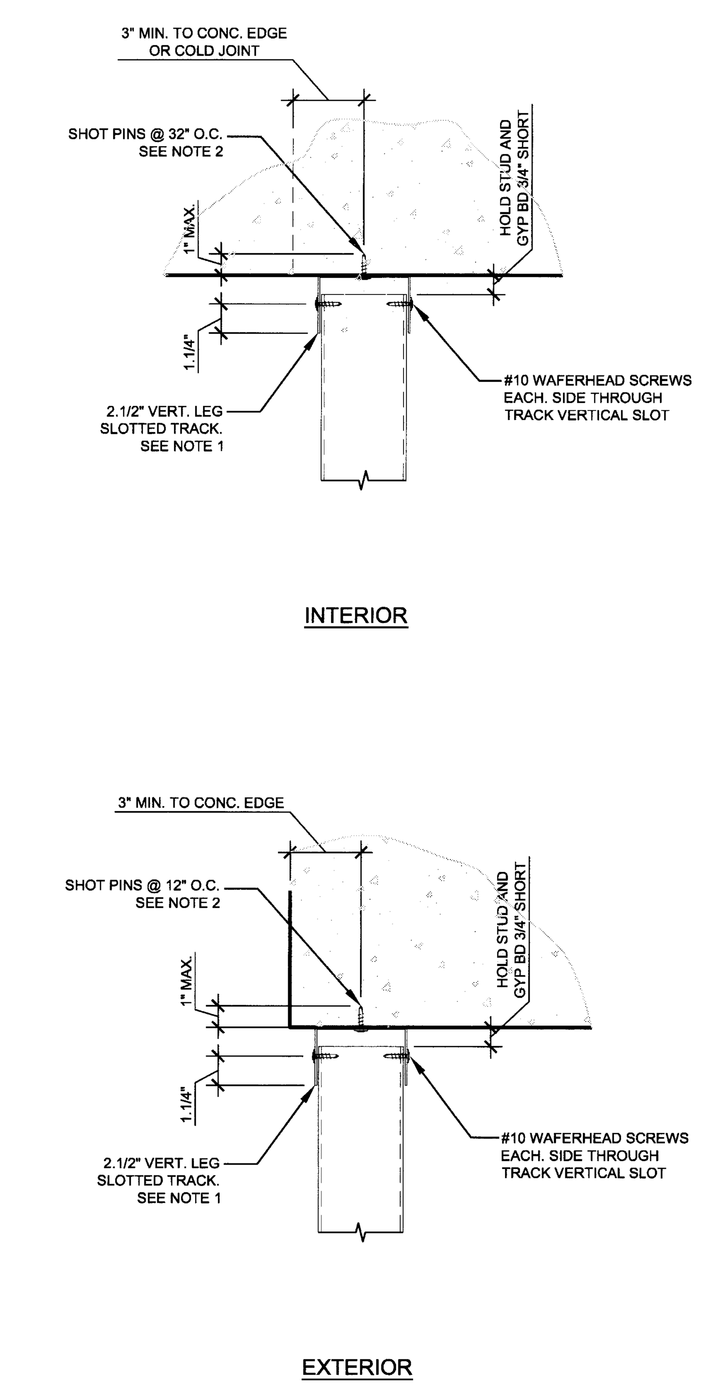
TOP PLATE SPLICE DETAIL (22)



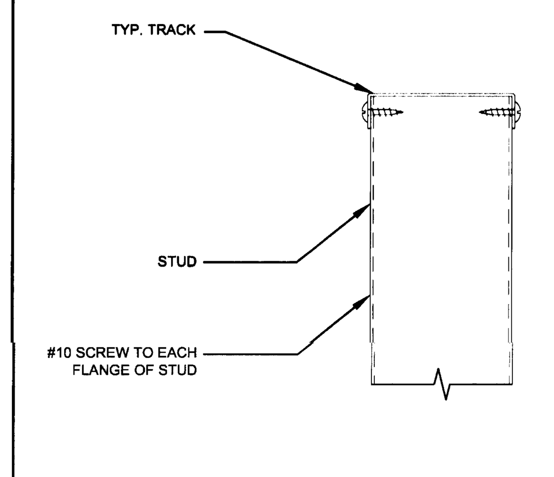
CORNER CONNECTION (23)

NOTES

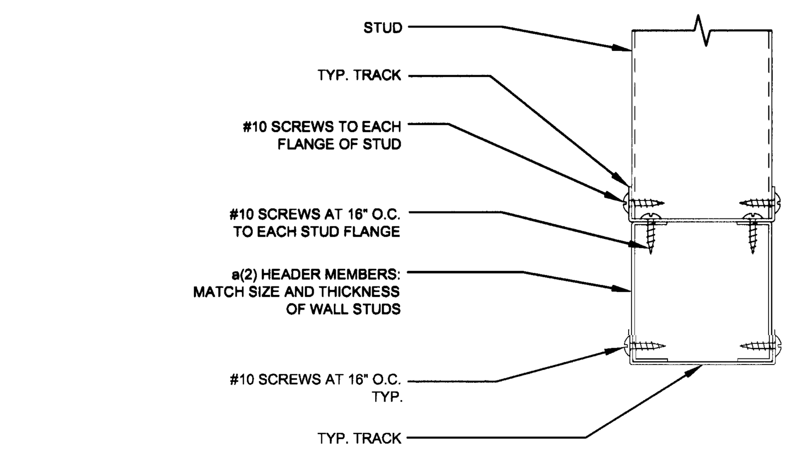
1. SLOTTED TRACK SHALL MATCH THICKNESS OF STUDS. TRACK SHALL HAVE 2 1/2" LEGS WITH 1 1/2" VERTICAL SLOTS AT 1" O.C. USE "SLP TRK" BY SLIPTRACK SYSTEMS PER ICC ESR-1042 OR APPROVED EQUAL.
2. SHOT PINS SHALL BE HILTI X-U 0.157"Ø POWER DRIVEN FASTENERS PER ICC ESR-2269 OR APPROVED EQUAL. PINS SHALL PENETRATE CONCRETE EXACTLY 1".
3. DO NOT SCREW DRYWALL TO SLOTTED TRACK. THERE SHALL BE NO ATTACHMENT THROUGH THE SLOTTED TRACK THAT WILL IMPAIR MOVEMENT



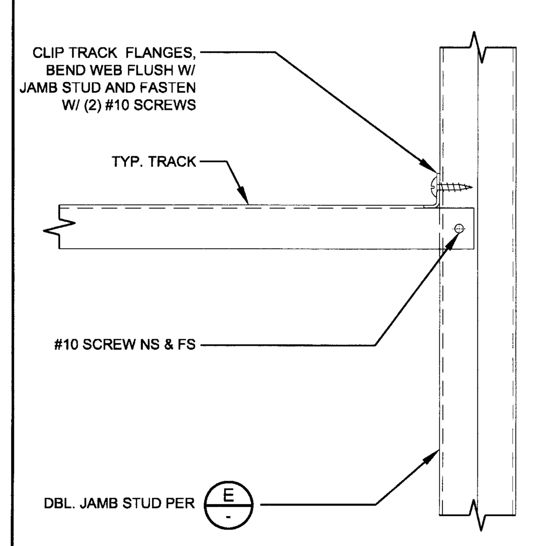
WALL ELEVATION (18)



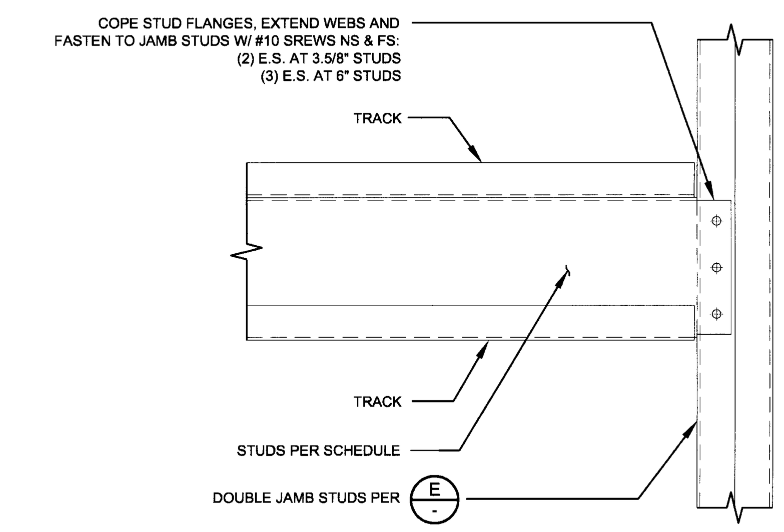
SILL SECTION (C)



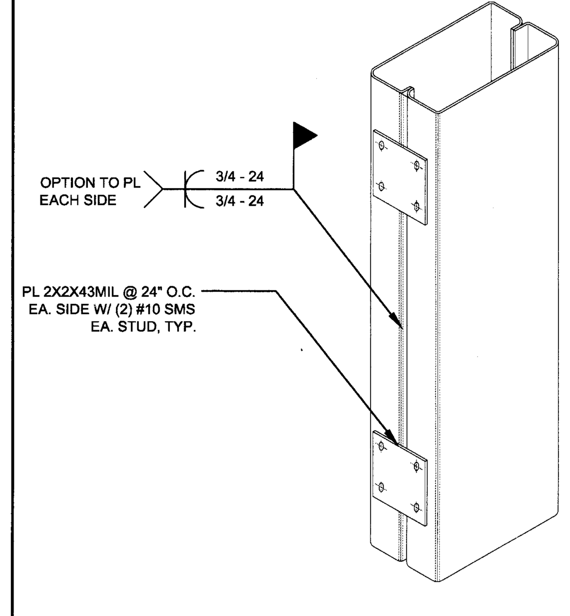
HEADER SECTION (A)



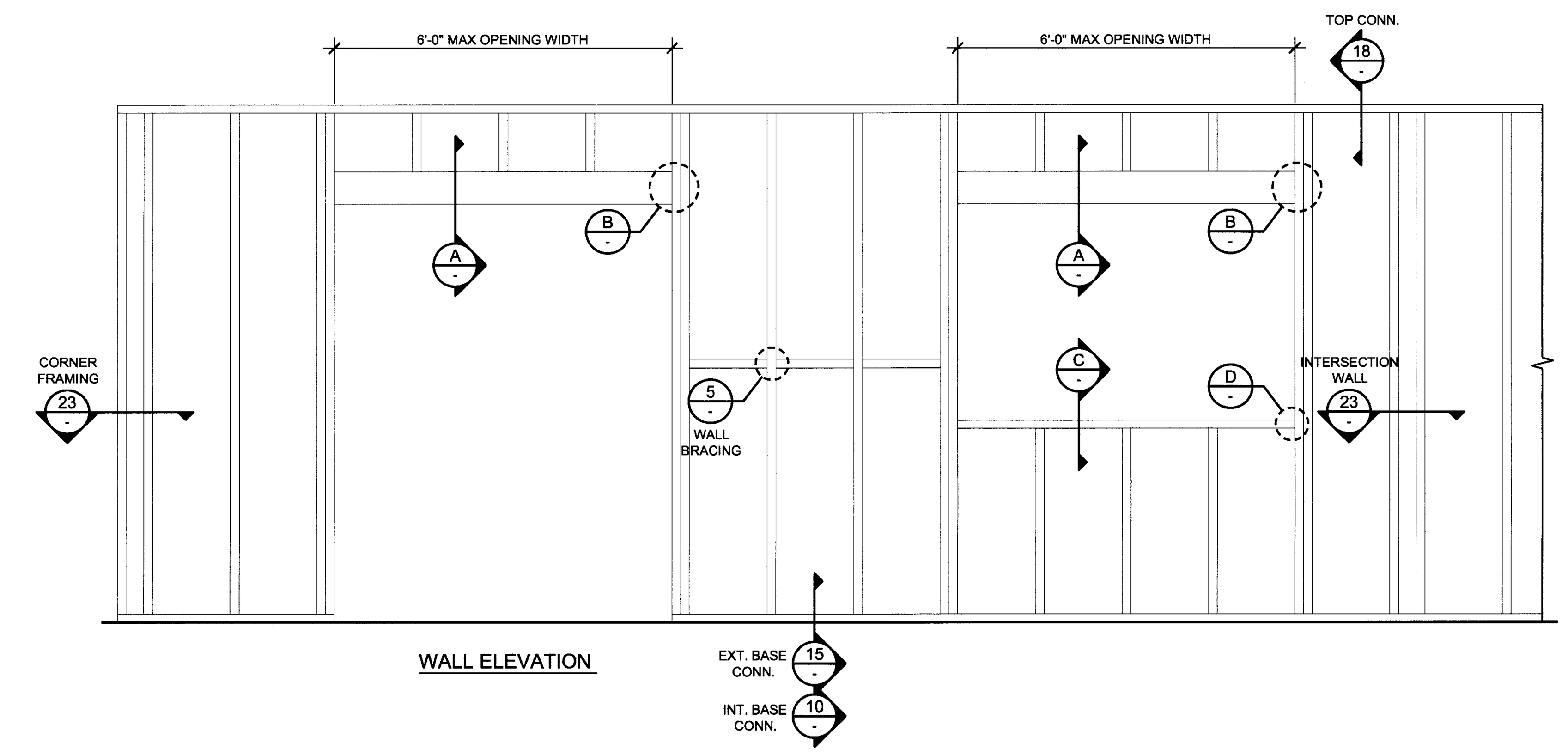
SILL AT JAMB STUDS (D)



HEADER AT JAMB STUDS (B)



BUILT-UP JAMB STUDS (E)



WALL ELEVATION (3)

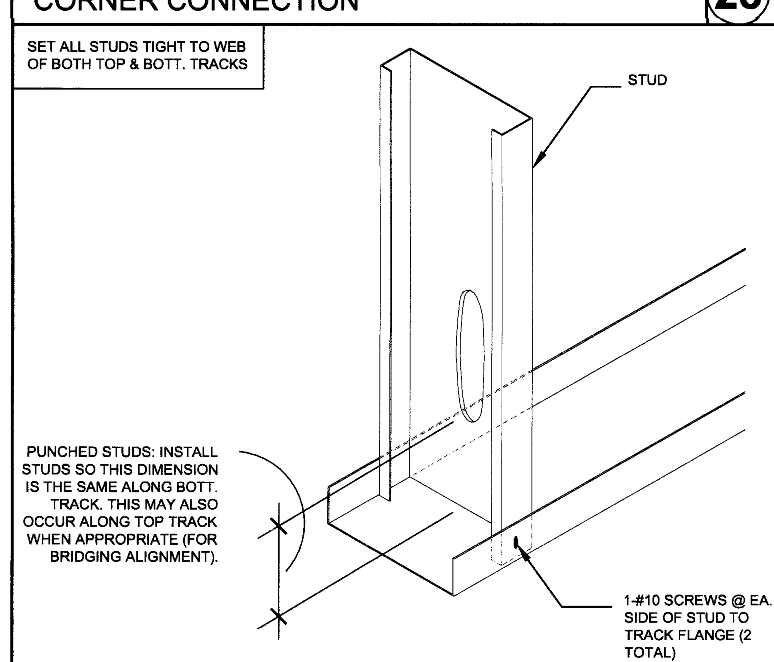
STUD SCHEDULE

PROPERTIES			MAXIMUM HEIGHT (L/240)	
STUD SIZE	GROSS PROP I in4	GROSS PROP I in4	INTERIOR 5 PSF	EXTERIO 25 PSF
3625162 - 33	.551	.304	16'-6"	-
3625162 - 43	.710	.392	18'-0"	-
3625162 - 54	.873	.481	19-6"	-
6005162 - 33	1.739	.598	25'-0"	-
6005162 - 54	2.860	.953	-	17'-0"

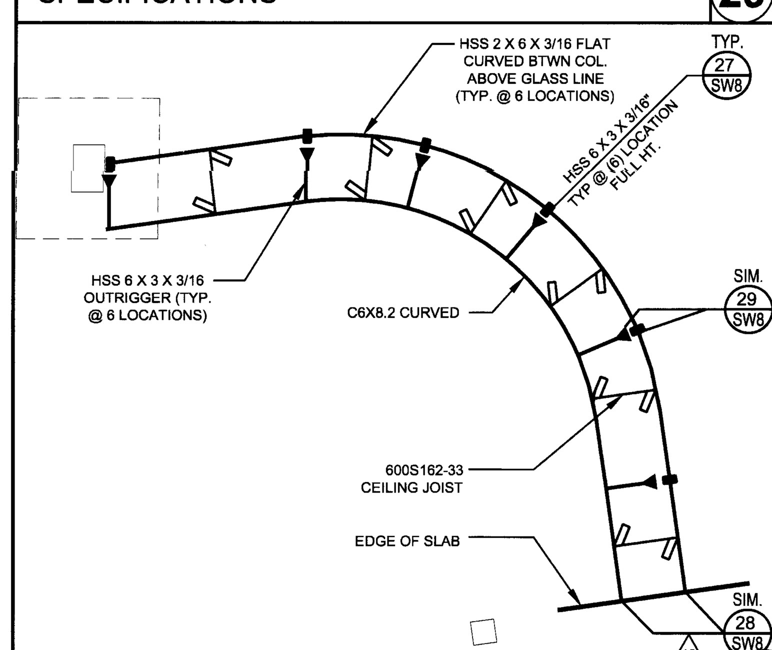
NOTE: MEMBER DEPTH — FLANGE WIDTH — 6005162 - 54 — STYLE — MIL THICKNESS

NOTES

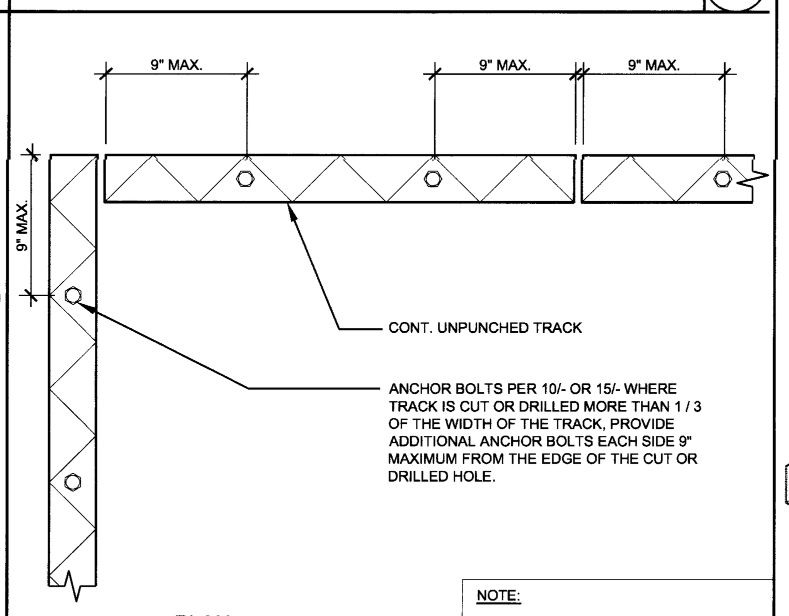
1. ALL STEEL STUD CONSTRUCTION SHALL CONFORM WITH ICC-ES ER-4943P (SSMA SECTION).
2. LATERAL LOADS HAVE NOT BEEN MODIFIED FOR STRENGTH CHECKS: FULL LOADS ARE APPLIED.
3. 15PSF WIND PRESSURE HAS BEEN MULTIPLIED BY 0.7 FOR DEFLECTION DETERMINATION, IN ACCORDANCE WITH FOOTNOTE "f" OF IBC.CBC TABLE 1604.3 THE 5PSF PRESSURE HAS NOT BEEN REDUCED FOR DEFLECTION CHECK.
4. WEB CRIPPLING CHECK BASED ON 1" END BEARING.
5. STUD SPACING SHALL BE 16" O.C., TYPICAL. EXCEPTION: EXTERIOR STUDS WITHIN 5 FEET OF BUILDING CORNERS SHALL BE SPACED AT 12" O.C. STUD SP[ACING IN A STRUCTURAL MAXIMUM AND MAY BE DECREASED - VERIFY WITH ARCHITECTURAL REQUIREMENTS.
6. COORDINATE WALL STUD SIZE AND SPACING REQUIREMENTS WITH ARCHITECTURAL DRAWINGS.
7. "MAXIMUM HEIGHT" INDICATES THE MAXIMUM DISTANCE BETWEEN SUPPORT CONNECTIONS.
8. STUD SIZE SHOWN IN THE TABLE IS A STRUCTURAL MINIMUM AND MAY BE INCREASED - VERIFY WITH ARCHITECTURAL DRAWINGS.
9. STUD GAUGE SHOWN IN THE TABLE IS A STRUCTURAL MINIMUM AND MAY BE INCREASED -
10. STUDS REDUCED BRACING PER 5/-



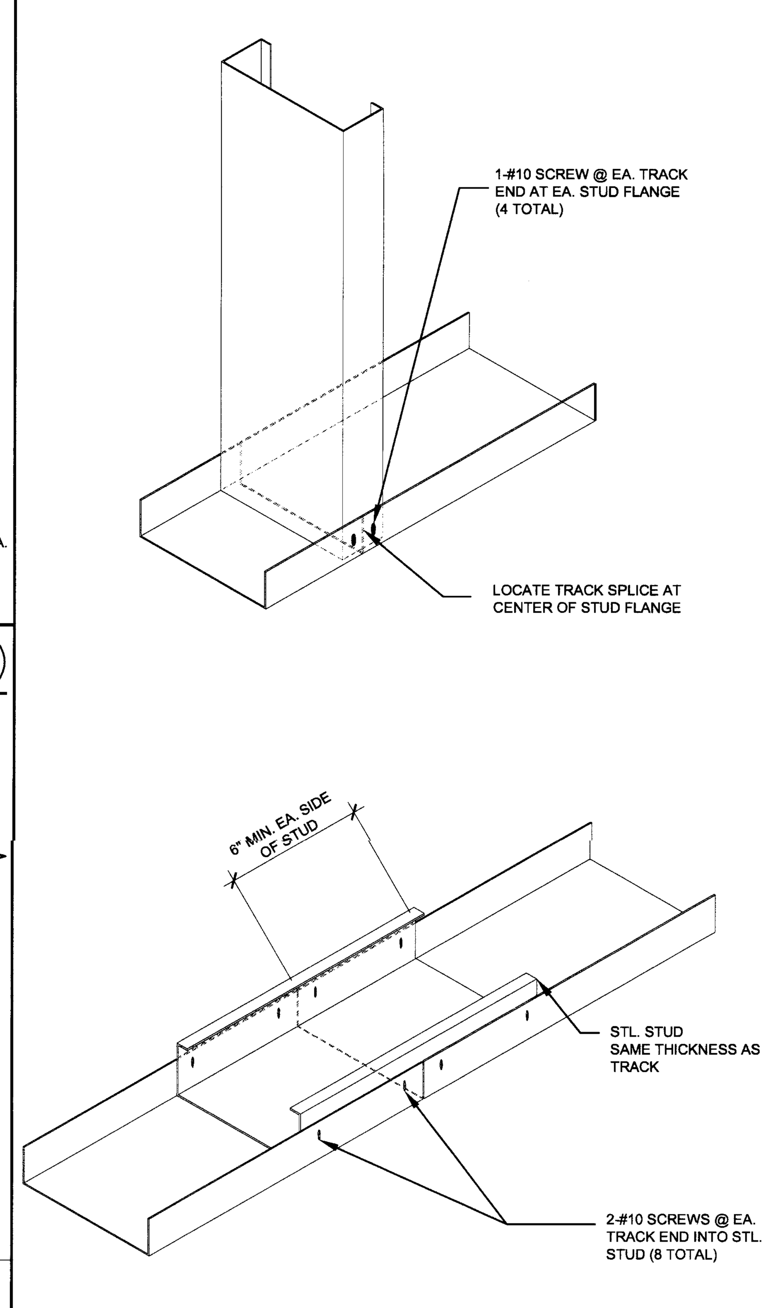
TYP. STUD TO TRACK CONNECTION (24)



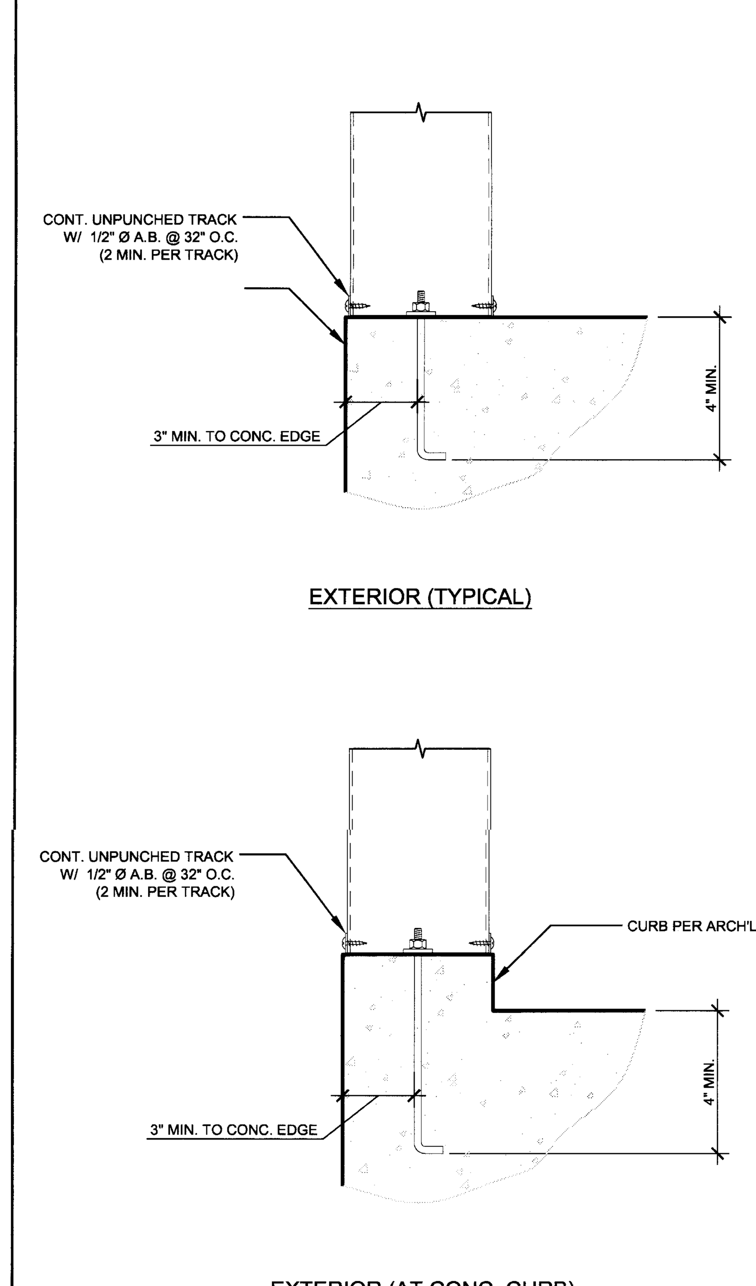
FRAMING @ SOFFIT W/ CURVED GLASS @ LEASING (30)



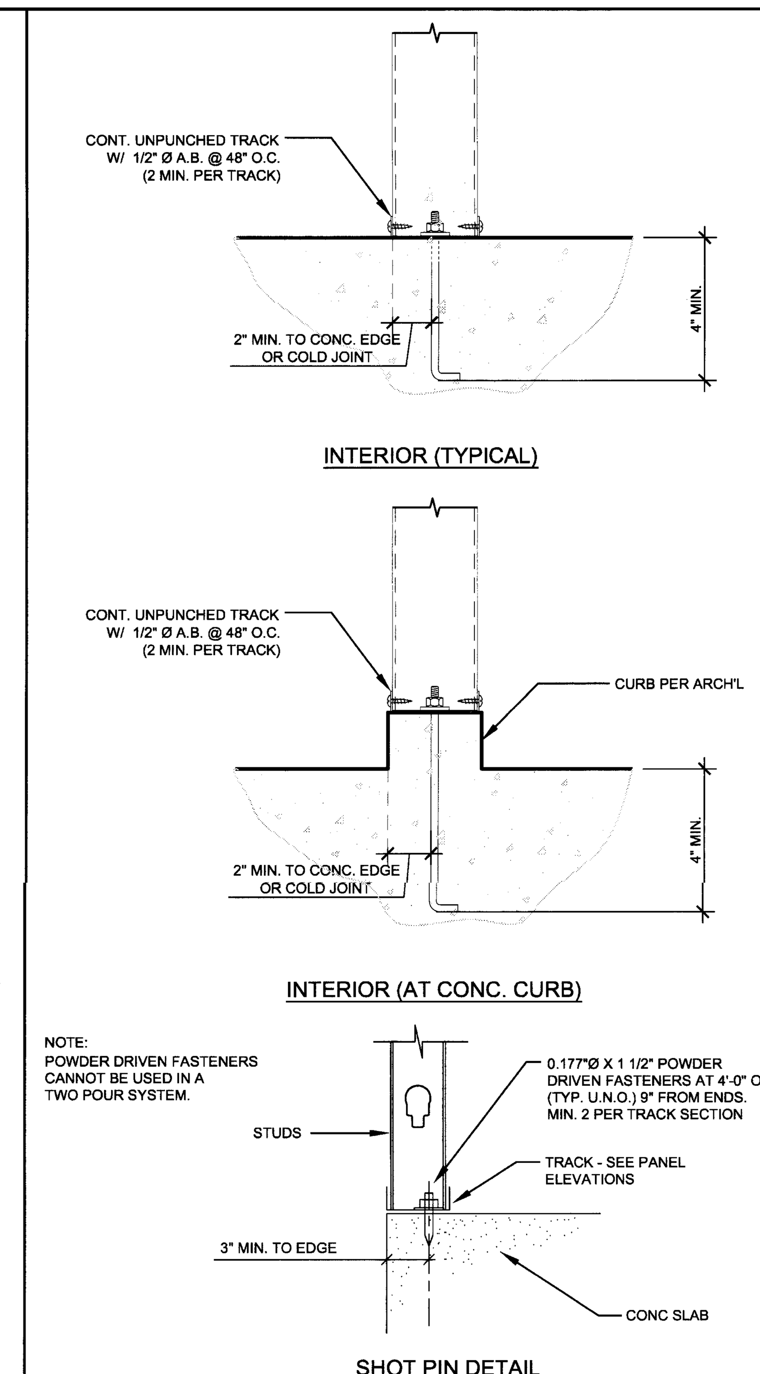
TYP. DETAIL AT BOTTOM TRACK SPLICES (25)



TYP. DETAIL AT BOTTOM TRACK SPLICES (20)

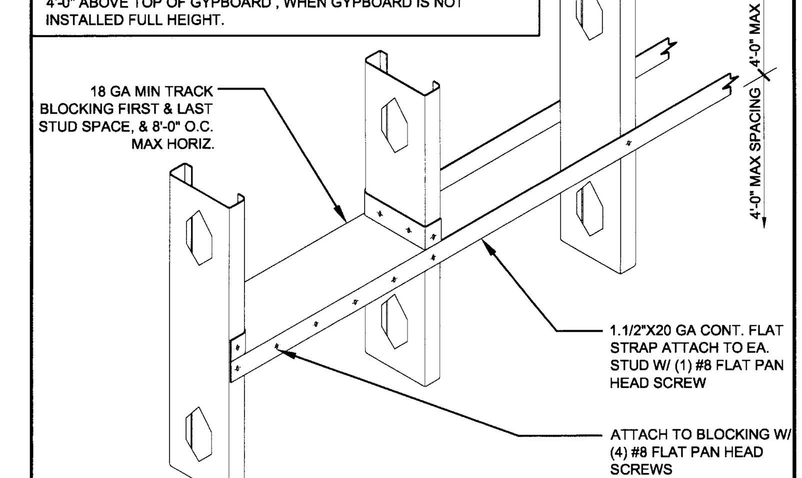


DETAIL (15)

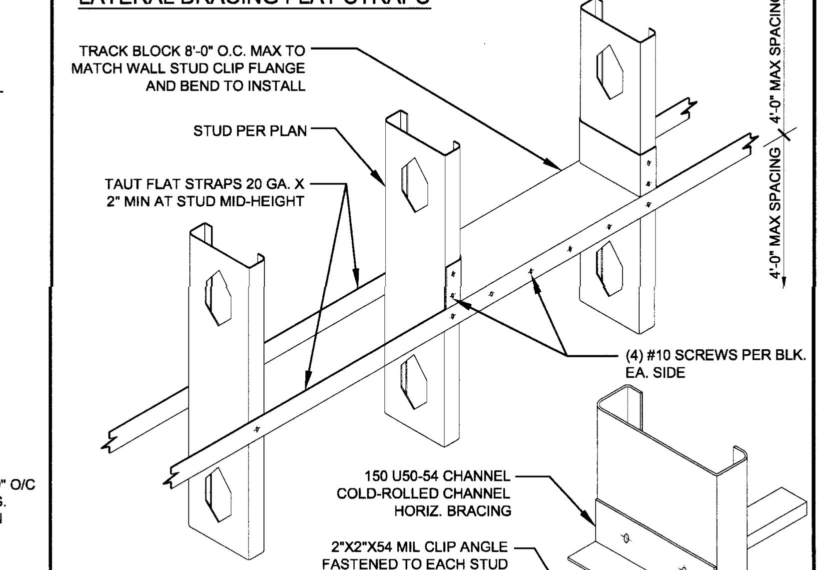


INTERIOR (AT CONCRETE CURB) (10)

NOTE:
UNO FLAT STRAP ONLY REQUEST ON SIDE OF STUD WITHOUT FULL HEIGHT GYPSUM BOARD. INSTALL FIRST STRAP AT A MAXIMUM OF 4'-0" ABOVE TOP OF GYPBOARD , WHEN GYPBOARD IS NOT INSTALLED FULL HEIGHT.



LATERAL BRACING FLAT STRAPS



BRIDGING DETAIL

ALT: ONLY @ 6" STUD OR SMALLER

NOTE:
1. INSTALL HORIZ. BRACING WITHIN 12" OF STUD MID-HEIGHT.
2. ADD HORIZ BRACING AT STUD QUARTER POINTS WHEN STUD HEIGHT EXCEEDS 13'
3. ALTERNATIVELY, BRACING MAY BE ACHEIVED AFTER DRYWALL OR SSTUD IS APPLIED PER IBC CH. 25
4. UNBRACED STUDS WILL NOT CARRY LOADS.

DETAIL (5)

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REVISION		DATE
1	1ST PCC	02-04-2013
2	ASI #5 - STRUCTURAL MODIFICATIONS	10-29-2013
3	ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

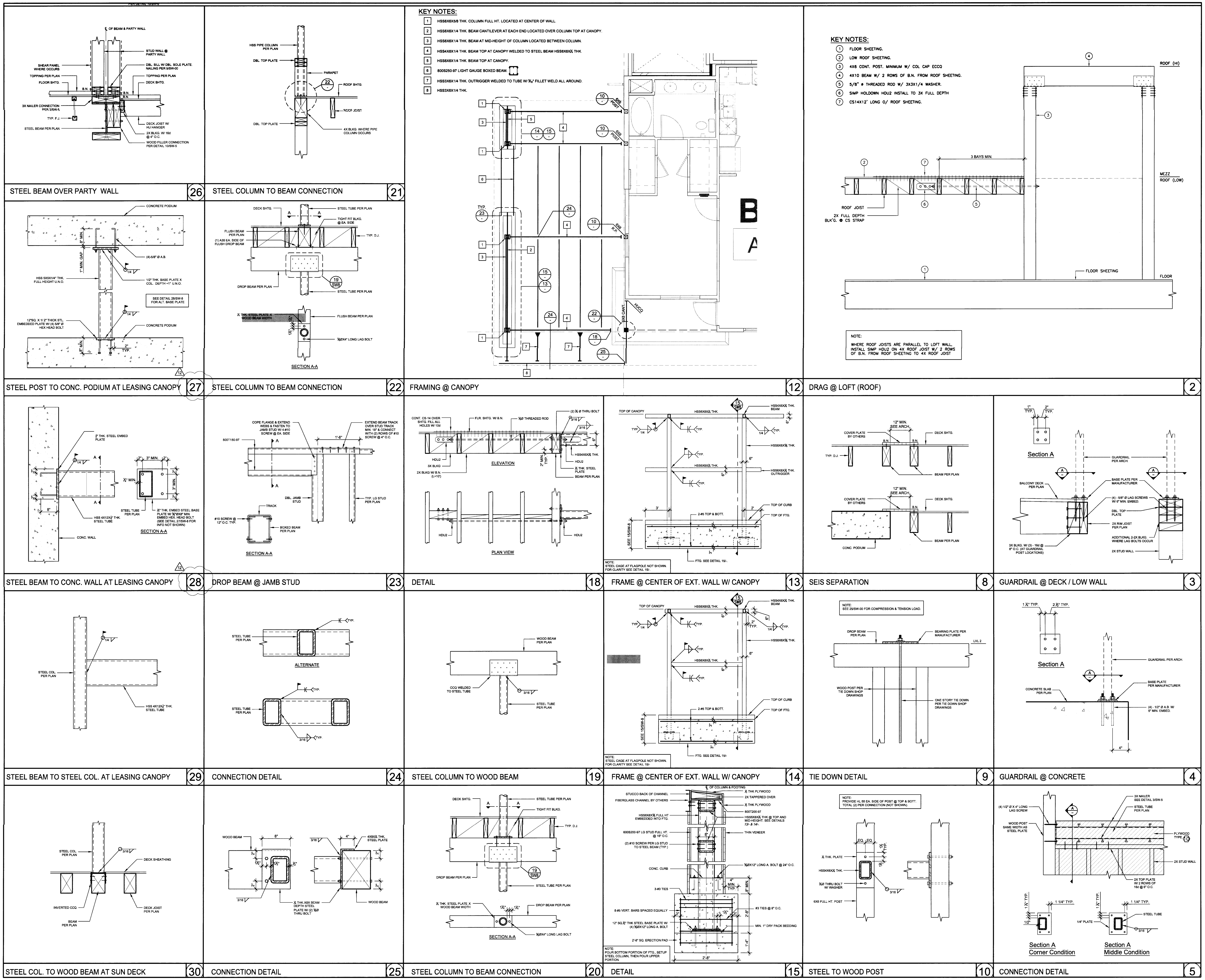
DRAWING CONTENTS
STRUCTURAL DETAILS

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

SC-9

11-2730
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE



Thomas P. Cox: Architects. Inc.

VCA ENGINEERS®
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER
ROBERT SHEUNG-CHI CHOU
S 003518
STRUCTURAL
STATE OF CALIFORNIA

REVISION	DATE
1 1ST PCC	02-04-2013
7 ASI #5 -STRUCTURAL MODIFICATIONS	10-29-2013
9 ASI #7 - MCRT FRAMING CHANGES	01-30-2014
12 ASI #10 - LEASING SUBMITTAL	05-08-2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
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SW-8

11-2730
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE

SUPPLY, EXHAUST & TRANSFER FANS

UNIT NO.	MANUFACTURER & MODEL NO.	TYPE	CFM	S.P. (INCHES)	RPM	ELECTRICAL WATTS	ELECTRICAL HP	ELECTRICAL VOLT	OPER. WT. (LBS.)	REMARKS
EF 1	COOK 402 CA - DWDI	UTILITY CENTRIFUGAL	63,000	1.75	898	-	50	460V/3Ø	4,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD & BOTTOM HORIZONTAL CONFIGURATION.
EF 2	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	37,000	1.75	997	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD & BOTTOM HORIZONTAL CONFIGURATION.
EF 3	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	37,000	1.75	997	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD & TOP HORIZONTAL CONFIGURATION.
EF 4	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	35,000	1.75	960	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD & UPBLAST CONFIGURATION.
EF 5	COOK 330 CA - DWDI	UTILITY CENTRIFUGAL	38,000	1.75	1015	-	25	460V/3Ø	3,000	FURNISH W/ STEEL INLET SAFETY SCREEN, VARIABLE FREQUENCY DRIVE, INVERTER DUTY PREMIUM EFFICIENCY MOTOR, BELT GUARD & BOTTOM HORIZONTAL CONFIGURATION.
EF 6	COOK GC-520	CLG. MTD. CENTRIFUGAL	300	0.5	1200	172	-	120V/1Ø	50	FURNISH W/ DISCONNECT.
EF 7	COOK 195 ACRU-B	ROOF MTD. CENTRIFUGAL	3,400	0.75	954	-	1	460V/3Ø	200	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
EF 8	COOK 150 ACRU-B	ROOF MTD. CENTRIFUGAL	1,800	0.75	1255	-	1/2	460V/3Ø	200	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
EF 9	COOK 135 ACRU-B	ROOF MTD. CENTRIFUGAL	1,600	0.75	1386	-	3/4	460V/3Ø	150	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
TF 1	COOK 120 ACW-B	WALL MTD. CENTRIFUGAL	1200	0.25	1300	-	1/4	120V/1Ø	100	FURNISH W/ DISCONNECT & THERMOSTAT.
TF 2	COOK 100 ACW-D	WALL MTD. CENTRIFUGAL	640	0.25	1550	-	1/8	120V/1Ø	100	FURNISH W/ DISCONNECT & THERMOSTAT.
TF 3	COOK 100 ACW-D	WALL MTD. CENTRIFUGAL	640	0.25	1550	-	1/8	120V/1Ø	100	FURNISH W/ DISCONNECT & LOCAL TIMECLOCK.
SF 1	COOK GN-520	IN-LINE CENTRIFUGAL	310	0.5	1200	171	-	120V/1Ø	50	FURNISH W/ DISCONNECT, FILTER BOX (FIELD FURNISHED), 16-11/16"W X 11-11/16"H X 4"D FLANDERS PRE-PLEAT 40 LPD MERV 8 FILTERS, & ELECTRONIC SPEED CONTROLLER.
SF 2	COOK 90 ASP-T	ROOF MTD. CENTRIFUGAL	2,000	1.0	1228	-	1.5	460V/3Ø	400	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
SF 3	COOK 150 ASP-T	ROOF MTD. CENTRIFUGAL	4,600	1.0	796	-	2.5	460V/3Ø	500	FURNISH W/ SOUND ATTENUATOR ROOF CURB.
SF 4	COOK 90 ASP-T	ROOF MTD. CENTRIFUGAL	2,100	1.0	1250	-	1.5	460V/3Ø	400	FURNISH W/ SOUND ATTENUATOR ROOF CURB.

SPLIT-SYSTEM OUTDOOR HEAT PUMPS

UNIT NO.	MANUFACTURER & MODEL NO.	NOM. COOLING CAPACITY @ 95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @ 47°F AMB (BTU/HR)	ELECTRICAL DATA VOLTAGE VOLTS	VOLTAGE MCA	VOLTAGE MOCP	COMPRESSOR RLA	COMPRESSOR LRA	FAN FLA	FAN HP	SEER	HSPF	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.)	REMARKS ②③④
HP 1	CARRIER 38 QRF 018	17,900	16,800	208V/1Ø	12.1	20	9.0	48.0	0.8	1/8	13.0	7.7	3/8	5/8	170	-

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES & INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.
③ PROVIDE WITH LOW AMBIENT KIT.
④ PROVIDE WITH CRANKCASE HEATER.

HORIZONTAL CASSETTE FAN COILS (HEAT PUMP)

UNIT NO.	MANUFACTURER & MODEL NO.	CFM	E.S.P. (INCHES)	ELECTRICAL DATA VOLTAGE VOLTS	VOLTAGE MCA	VOLTAGE MOCP	FAN FLA	FAN WATTS	CONDENSATE PUMP FLA	ELECTRIC STRIP HEAT (KW)	OPER. WT. (LBS.)	REMARKS
FC 1	CARRIER 40KMQ 018	690	-	208V/1Ø	16.3	20	0.5	110.0	0.06	3	100	- ①②③

① PROVIDE W/TXV (R410A).
② PROVIDE W/ELECTRONIC PROGRAMMABLE THERMOSTAT.
③ PROVIDE W/CONDENSATE PUMP.

VIBRATION ISOLATION

UNIT NO.	MANUFACTURER	BASE MODEL NO.	SPRING MODEL NO.	DEFLECTION (IN.)	REMARKS
EF 1, EF 2, EF 3, EF 4, EF 5	M.W. SAUSSE	RMLSF-EQ	RMLS	1.0	FURNISH W/ HEIGHT - SAVING MOUNTING BRACKETS & SEISMIC RESTRAINTS.
EF 6, SF 1	M.W. SAUSSE	-	-	-	NEOPRENE GROMMETS.
	M.W. SAUSSE	-	RMLS-EQ	1.0	FURNISH W/SEISMIC RESTRAINTS.

AIR DISTRIBUTION SCHEDULE

TYPE	MANUFACTURER	MODEL	REMARKS
CEILING DIFFUSER	TITUS	PCS	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF DIFFUSER FOR SURFACE MOUNTED INSTALLATIONS.
RETURN AIR GRILLE	TITUS	PAR	
RETURN/EXHAUST AIR REGISTER	TITUS	PAR	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF REGISTER FOR SURFACE MOUNTED INSTALLATIONS.
SUPPLY WALL REGISTER	TITUS	300 RL	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF REGISTER FOR SURFACE MOUNTED INSTALLATIONS.
RETURN/EXHAUST WALL REGISTER	TITUS	355 RL	PROVIDE OPPOSED BLADE DAMPERS (O.B.D.) ACCESSIBLE THROUGH FACE OF REGISTER FOR SURFACE MOUNTED INSTALLATIONS.

SOUND ATTENUATORS

UNIT NO.	MANUFACTURER & MODEL NO.	NO. OF	SERVICE	SIZE (NO.) W. X H. X L. (IN.)	CFM	AIR PD (IN.)	D.I.L. IN OCTAVE BAND (DB) * 1000 FPM 125	250	500	1K	2K	4K	OPER. WT. (LBS.)	REMARKS
ST 1	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-1	(16) 24" x 24" x 36"	63,000	0.59	14	23	27	29	18	19	1360	
ST 2	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-2	(8) 30" x 24" x 36"	37,000	0.52	14	23	27	29	18	19	960	
ST 3	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-3	(8) 30" x 24" x 36"	37,000	0.52	14	23	27	29	18	19	960	
ST 4	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-4	(8) 30" x 24" x 36"	35,000	0.47	14	23	27	29	18	19	960	
ST 5	COMMERCIAL ACOUSTICS 3HP-LF	1	EF-5	(8) 30" x 24" x 36"	38,000	0.55	14	23	27	29	18	19	960	

EQUIPMENT SCHEDULES ④

1. GENERAL: THIS WORK IS SUBJECT TO THE PROVISIONS OF DIVISION 1 OF THE SPECIFICATIONS AND THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS THEREUNDER AFFECTING HIS WORK IN ANY WAY.

2. SCOPE: THE WORK COVERED BY THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION AND OTHER ITEMS NECESSARY FOR AND REASONABLE INCIDENTAL TO THE PROPER AND SATISFACTORY INSTALLATION OF THE HEATING, AIR CONDITIONING, AND VENTILATING SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

3. CODES: ALL HEATING, AIR CONDITIONING, AND VENTILATING WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE N.F.P.A.,LATEST BUILDING & MECHANICAL CODES AND ANY OTHER LEGALLY CONSTITUTED BODY HAVING JURISDICTION THEREOF.

4. PERMITS: THE OWNER SHALL OBTAIN AND PAY FOR ALL FEES, PERMITS, AND LICENSES REQUIRED FOR THE INSTALLATION OF THE WORK.

5. SUBMITTALS: WITHIN 30 DAYS AFTER THE AWARD OF THE CONTRACT AND BEFORE THEIR PURCHASE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT SIX BOUND BOOKLETS CONTAINING A COMPLETE LIST OF MATERIALS AND EQUIPMENT BEING FURNISHED, TOGETHER WITH ALL CATALOG DATA, MANUFACTURER'S NAMES AND ADDRESSES AND OTHER DATA NECESSARY TO EVALUATE THE MATERIAL AND EQUIPMENT.

6. SHEET METAL DUCTWORK: SUPPLY RETURN AND OUTSIDE AIR DUCTWORK PENETRATING RATED CONSTRUCTION SHALL BE MINIMUM 26 GA. GALVANIZED SHEET METAL. SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED PER ENERGY CODE HAVING JURISDICTION. DRYER VENTS & ALL OTHER EXHAUST SHALL BE GALVANIZED SHEET METAL MIN. 26 GAGE. DUCTWORK SHALL BE CONSTRUCTED & INSTALLED IN CONFORMANCE WITH THE LATEST SMACNA DUCT MANUAL, AND LOCAL CODES.

7. FLEXIBLE DUCTWORK: INSULATED LOW PRESSURE FLEXIBLE DUCT SHALL BE A FACTORY ASSEMBLY CONSISTING OF A GALVANIZED SPRING STEEL WIRE HELIX, A CONTINUOUS INNER LINER WRAPPED WITH A NOMINAL 1 IN. THICK BY 1 LB/CU. FT. DENSITY GLASS FIBER INSULATION. THE ASSEMBLY SHALL BE ENCLOSED IN A CLASS 1 VAPOR BARRIER JACKET. THE FLEXIBLE DUCT SHALL BE LISTED BY U.L. AND SHALL CONFORM TO THE 90-A AND 90-B CLASS 1 REQUIREMENTS OF THE N.F.P.A. FLEXIBLE DUCT SHALL BE INSTALLED IN A FULLY EXTENDED CONDITION FREE OF SAGS AND KINKS AS FAR AS PRACTICAL. FLEXIBLE DUCT SHALL BE BY GOODMAN QUIETFLEX (RIP-STOP) OR APPROVED EQUAL.

8. EQUIPMENT: SHALL BE OF MODEL, TYPE AND CAPACITIES AS INDICATED ON THE DRAWINGS AND SHALL MEET OR EXCEED THE MINIMUM EFFICIENCY AS LISTED IN THE BUILDING ENERGY EFFICIENCY STANDARDS.

9. CONTROLS: SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE DRAWINGS.

10. ACCESS PANELS: WHERE SHOWN, AIR HANDLERS & FAN COILS SHALL INCLUDE A FACTORY FURNISHED CEILING ACCESS DOOR OR WALL PANEL. ALL OTHER MECHANICAL EQUIPMENT REQUIRING ACCESS MUST BE PROVIDED WITH ADEQUATE PANELS.

11. GUARANTEE: THE SYSTEM AS INSTALLED INCLUDING ALL EQUIPMENT AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE THE INSTALLATION IS ACCEPTED AND PLACED INTO OPERATION.

12. MATERIALS (INCLUDING INSULATION) EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

13. ONLY APPROVED MATERIALS SHALL BE INSTALLED WITHIN DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD HUMIDITY AND RESISTANT SURFACE THAT MEET THE REQUIREMENTS OF UL181.

14. WHERE SOUND INSULATION IS INDICATED, DUCT DIMENSIONS ARE NET CLEAR- e.g. AFTER INSULATION HAS BEEN INSTALLED.

15. CORRIDORS SHALL BE MECHANICALLY VENTILATED,SEE ARCHITECTURAL DRAWINGS.

16. FUSIBLE LINK FIRE DAMPERS SHALL BE POTTORFF MODEL VFD-10/FD-140 (1-1/2 HOUR RATING) OR VFD-30/FD-340 (3-HOUR RATING), INSTALL PER MANUFACTURER'S SPECIFICATIONS. FACTORY INSTALLATION SHEETS SHALL BE PROVIDED TO CONTRACTOR.

17. COMBINATION SMOKE & FIRE DAMPERS SHALL BE POTTORFF MODEL FSD-142 (1-1/2 HOUR RATING) OR FSD-342 (3-HOUR RATING) W/ ELECTRIC ACTUATOR. INSTALL PER MANUFACTURER'S SPECIFICATIONS. FACTORY INSTALLATION SHEETS SHALL BE PROVIDED TO CONTRACTOR.

18. CONTRACTOR SHALL COORDINATE ALL DUCT, PIPE & EQUIPMENT LOCATIONS WITH ELECTRICAL, STRUCTURAL, PLUMBING AND ALL OTHER TRADES PRIOR TO WORK.

19. DO NOT SCALE DRAWINGS. ALL DIMENSIONS & JOB SITE CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION AND / OR FABRICATION OF MATERIALS. IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.

20. SEE ARCHITECTURAL DRAWINGS FOR ROOF / ATTIC ACCESS.

21. VERIFY FINAL LOCATION OF THERMOSTATS WITH ARCHITECT AND / OR OWNER PRIOR TO START OF WORK.

22. CONTRACTOR SHALL PROVIDE APPROVED FIRE-STOP AT PENETRATIONS THRU RATED CONSTRUCTION ASSEMBLIES.

23. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.

24. DRYER VENT CLEAN OUTS (IF APPLICABLE), SHALL BE REGULARLY INSPECTED / CLEANED FOR LINT ACCUMULATION.

25. ALL CEILING DIFFUSERS ARE 4-WAY THROW UNLESS SHOWN OTHERWISE.

26. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF CEILING DIFFUSERS AND GRILLES.

GENERAL NOTES ②

SHEET INDEX ③

SYMBOL	ABBREVIATION	DESCRIPTION
R		DUCT RISE / DUCT DROP
		DUCT WITH SOUND INSULATION
		DUCT SECTION - SUPPLY
		DUCT SECTION - RETURN
		DUCT SECTION - EXHAUST
		DUCT ELBOW W/ TURNING VANES
		EXISTING MECHANICAL EQUIPMENT
		REMOVE EXISTING EQUIPMENT SHOWN HATCHED
		POINT OF CONNECTION
		NEW SUPPLY, RETURN OR EXHAUST CEILING REGISTER
		RELOCATED SUPPLY, RETURN OR EXHAUST CEILING REGISTER
T x		ROOM THERMOSTAT & ZONE NUMBER
T T		EXISTING THERMOSTAT TO BE RELOCATED
TC x		TIME CLOCK
S x		SWITCH NUMBER
SD		SMOKE DETECTOR
U/C		DOOR UNDERCUT
	A.C.D.	AUTOMATIC CONTROL DAMPER
	F.D.	FUSIBLE LINK FIRE DAMPER
	V.D.	MANUAL VOLUME DAMPER
	S.F.D.	COMBINATION SMOKE & FIRE DAMPER
	A.D.	ACCESS DOOR
	A.F.F.	ABOVE FINISHED FLOOR
	A.P.	ACCESS PANEL
	B.M.C.S.	BUILDING MANAGEMENT & TEMPERATURE CONTROL SYSTEM
	C.D.	CEILING DIFFUSER
	D.T.R.	DOWN THRU ROOF
	E.A.	EXHAUST AIR
	E.A.G.	EXHAUST AIR GRILLE
	H.O.A.	HAND-OFF-AUTOMATIC
	N.C.	NORMALLY CLOSED
	N.O.	NORMALLY OPEN
	N.I.C.	NOT IN CONTRACT
	M.U.A.	MAKE UP AIR
	O.B.D.	OPPOSED BLADE DAMPER
	O.S.A.	OUTSIDE SUPPLY AIR
	RE.A.	RELIEF AIR
	RE.A.G.	RELIEF AIR GRILLE
	R.A.	RETURN AIR
	R.A.G.	RETURN AIR GRILLE
	S.A.	SUPPLY AIR
	S.I.	SOUND INSULATION
	U.N.O.	UNLESS NOTED OTHERWISE
	U.T.R.	UP THRU ROOF
	V.A.V.	VARIABLE AIR VOLUME
	V.T.R.	VENT THRU ROOF
M		FURNISHED & INSTALLED BY MECHANICAL
ME		FURNISHED BY MECHANICAL INSTALLED BY ELECTRICAL
EM		FURNISHED BY ELECTRICAL INSTALLED BY MECHANICAL
E		FURNISHED AND INSTALLED BY ELECTRICAL
		EQUIPMENT TAG UNIT NO.
		LINEAR SLOT NO. OF SLOTS - WIDTH CFM / FT. TOTAL LENGTH
		SUPPLY, RETURN & EXHAUST GRILLE CALL OUT CFM GRILLE SIZE GRILLE STYLE

LEGEND AND SYMBOLS ①

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.
California Nevada Colorado Maryland

REVISION | DATE
1ST PLAN CHECK SUBMITTAL - 01/30/13
ASI #07 - CLIENT REVISIONS - 04/25/14
ASI #10 - LEASING SUBMITTAL - 05/08/14

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEGEND, SYMBOLS & EQUIPMENT SCHEDULES

FOR CONSTRUCTION

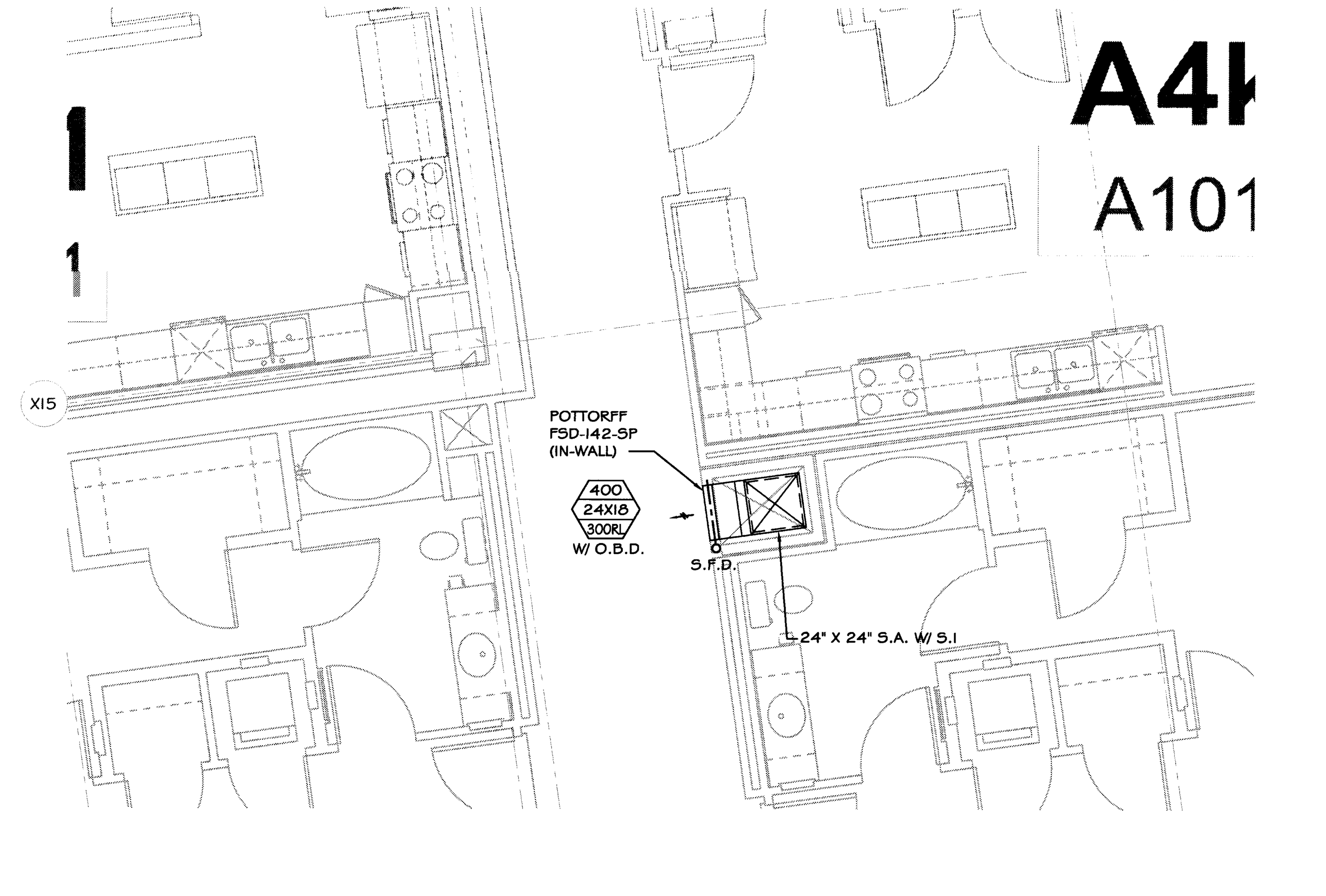
REGISTERED PROFESSIONAL ENGINEER
Exp date Jun 30 2014
MECHANICAL
STATE OF CALIFORNIA

MG-1

2010-089
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE

NOTES:

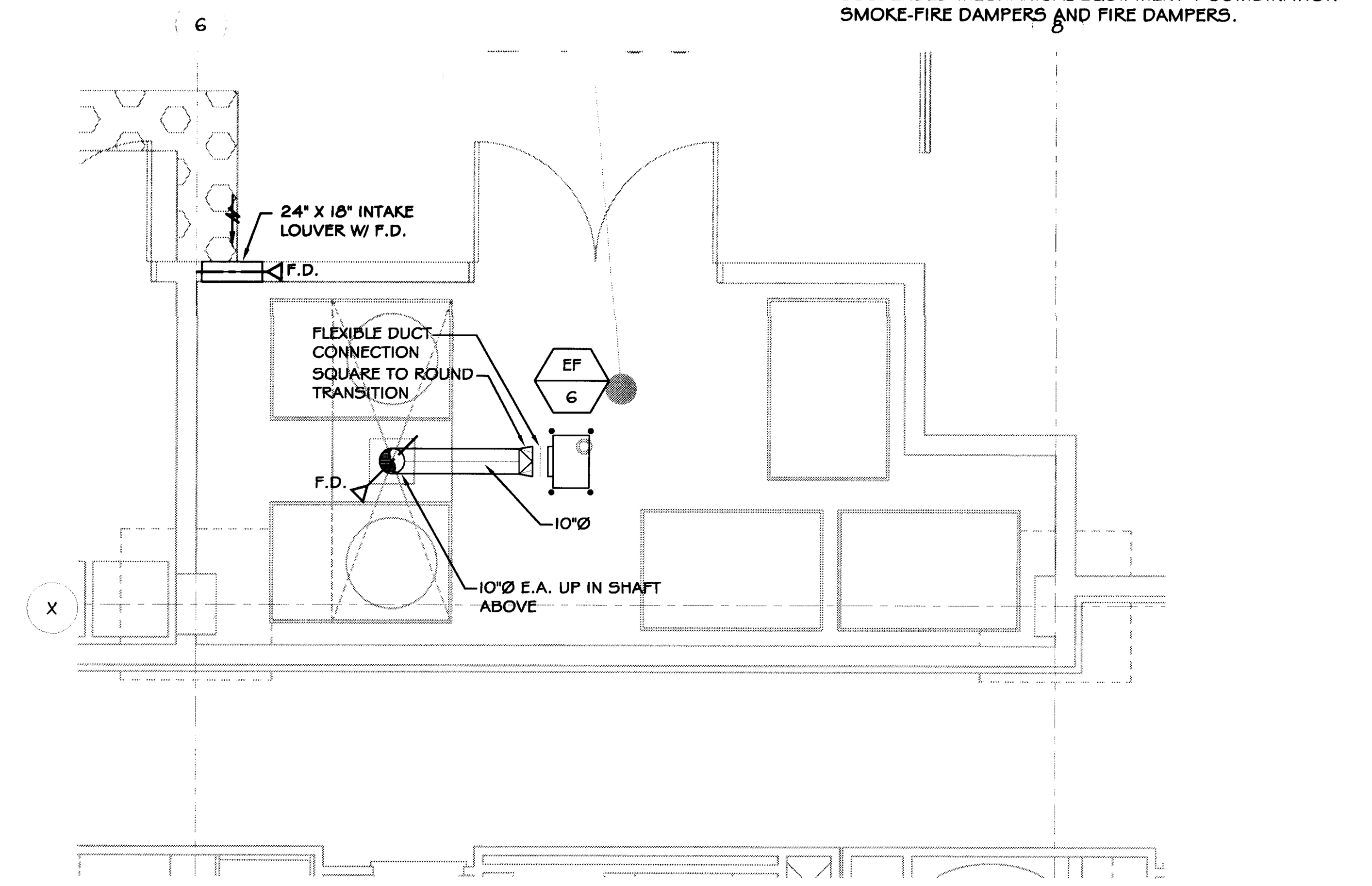
1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.



ENLARGED CORRIDOR HVAC (P1 LEVEL) — SCALE 1/4" = 1'-0" — 7

NOTES:

1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.

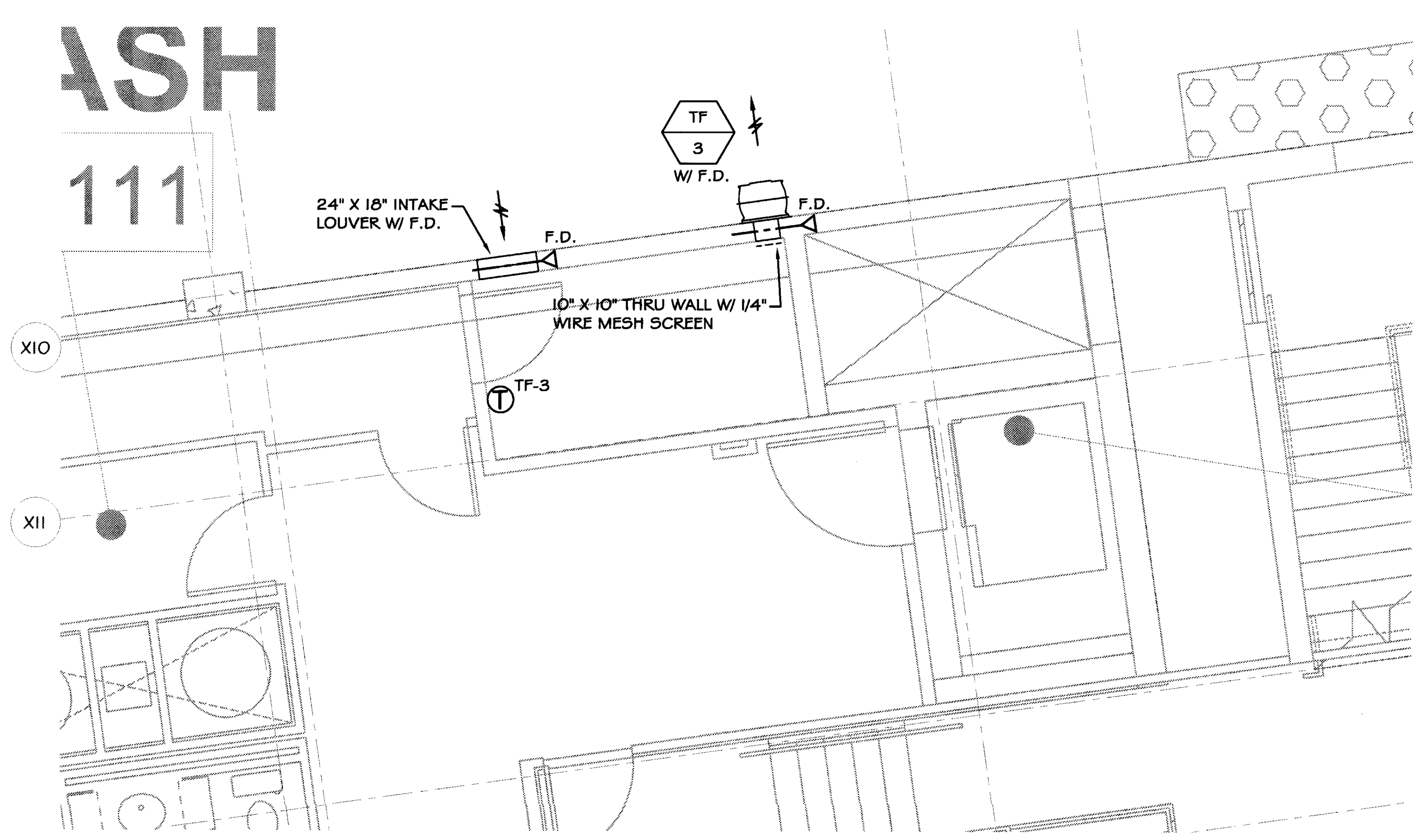


ENLARGED TRASH ROOM (B1 LEVEL) — SCALE 1/4" = 1'-0" — 4

- — SCALE 1/4" = 1'-0" — 1

NOTES:

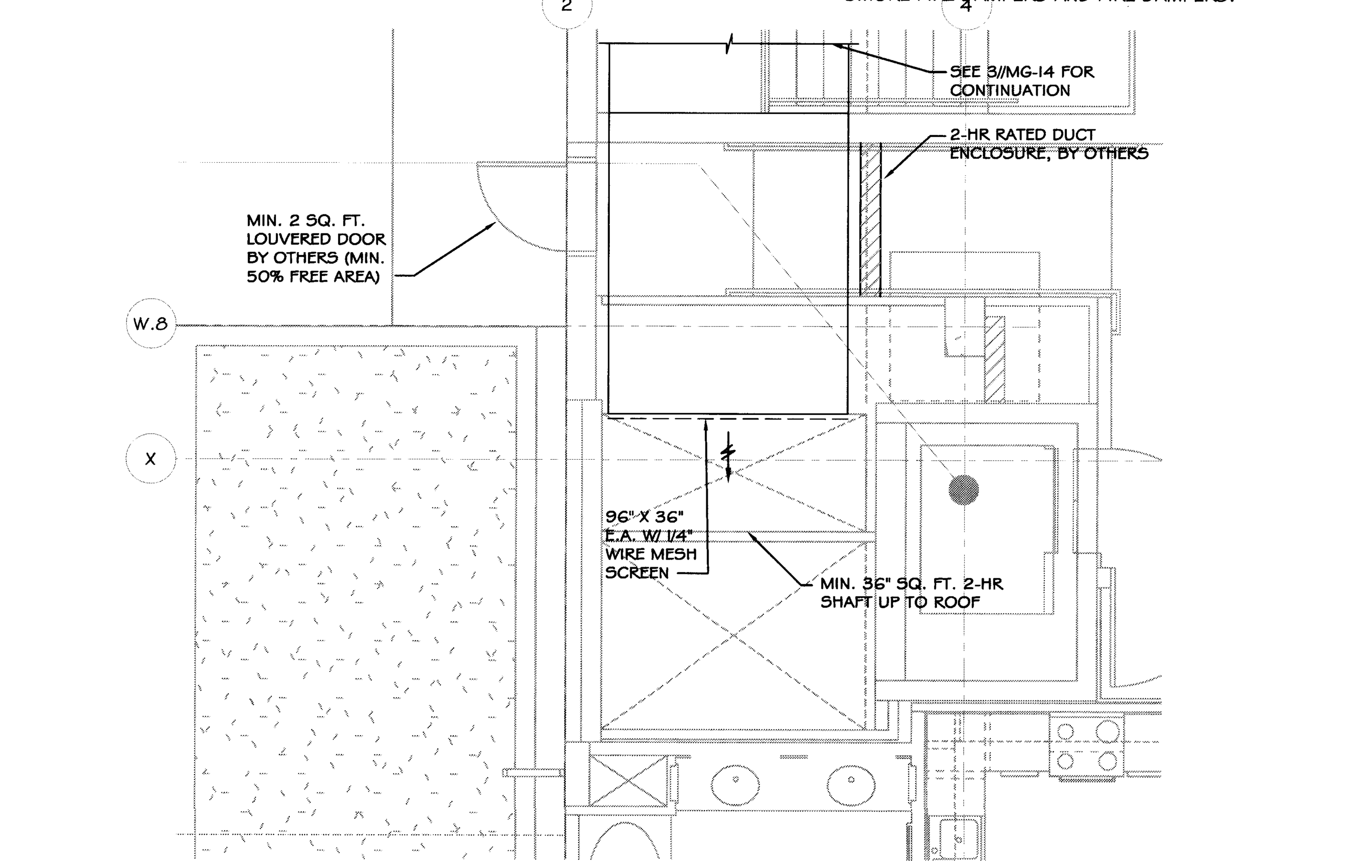
1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.



ENLARGED ELEVATOR CORE (P1 LEVEL) — SCALE 1/4" = 1'-0" — 8

NOTES:

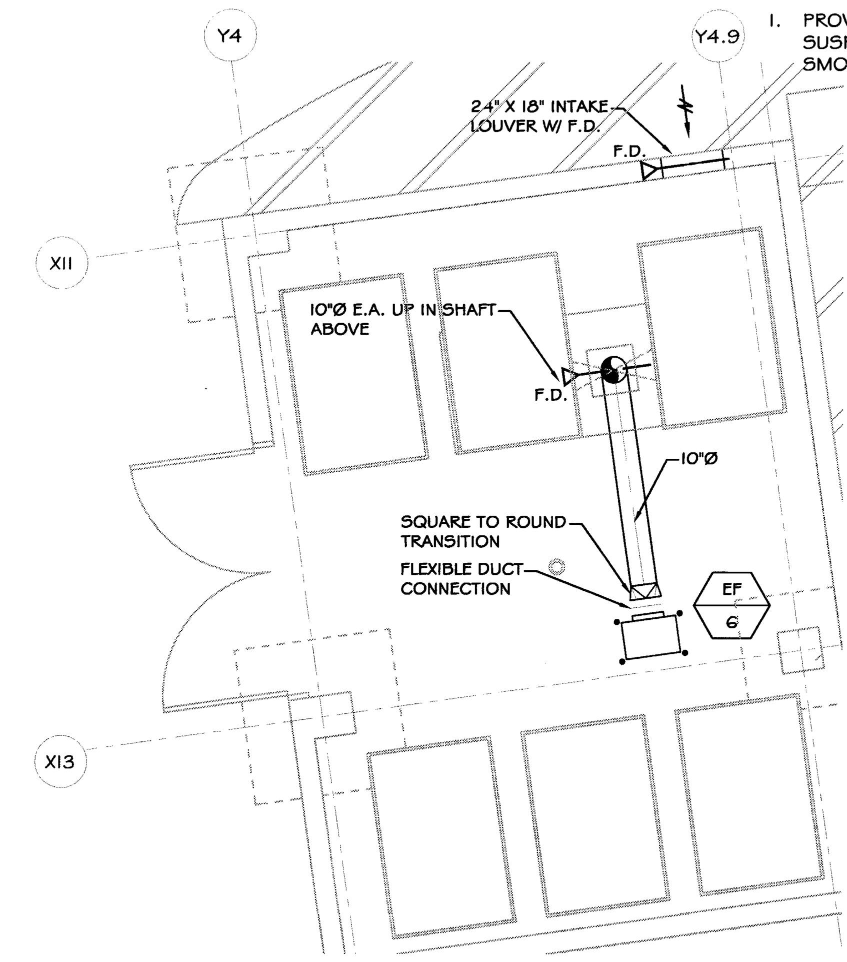
1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.



ENLARGED CORRIDOR HVAC (B1 LEVEL) — SCALE 1/4" = 1'-0" — 5

NOTES:

1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.

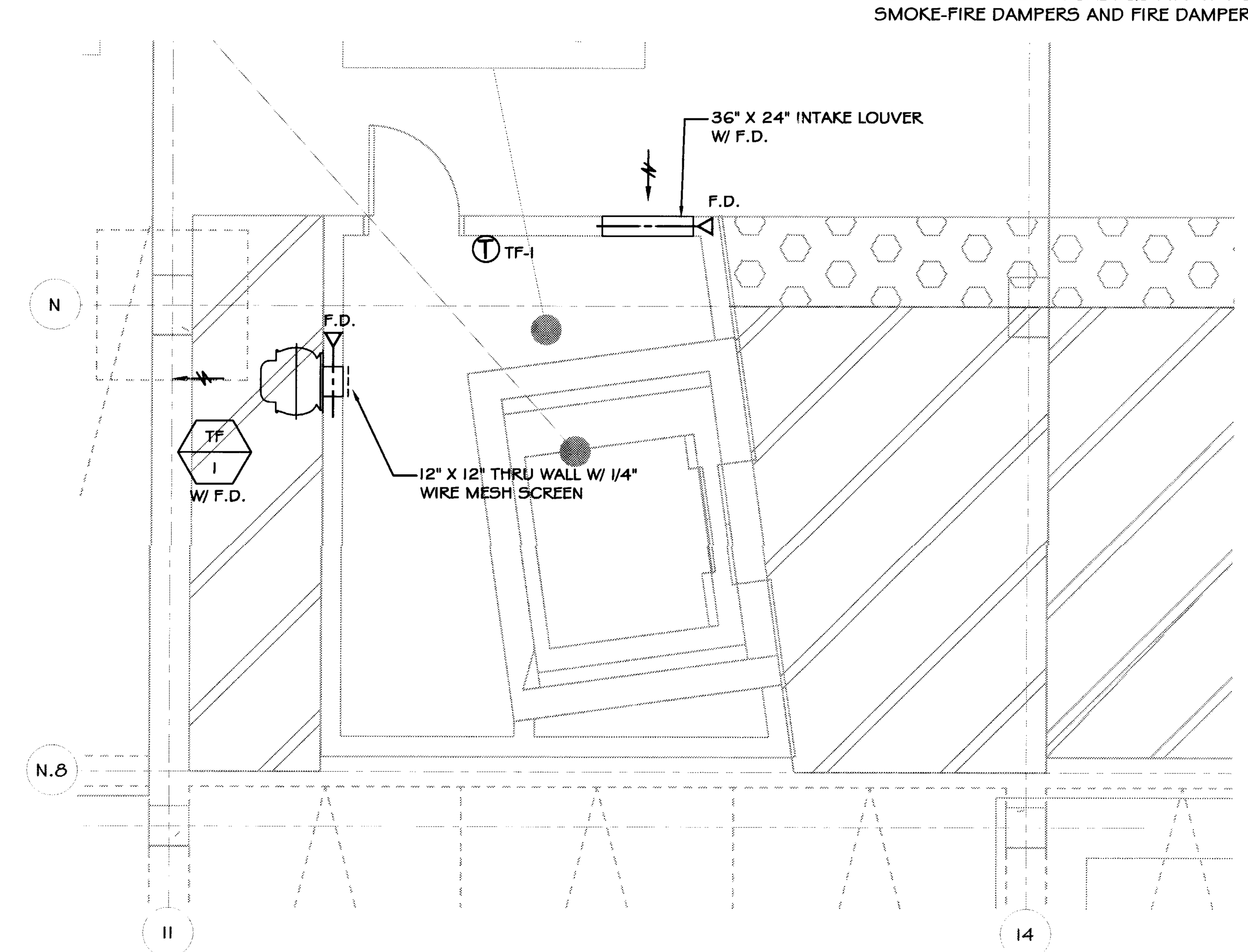


ENLARGED TRASH ROOM (B2 LEVEL) — SCALE 1/4" = 1'-0" — 2

- — SCALE 1/4" = 1'-0" — 9

NOTES:

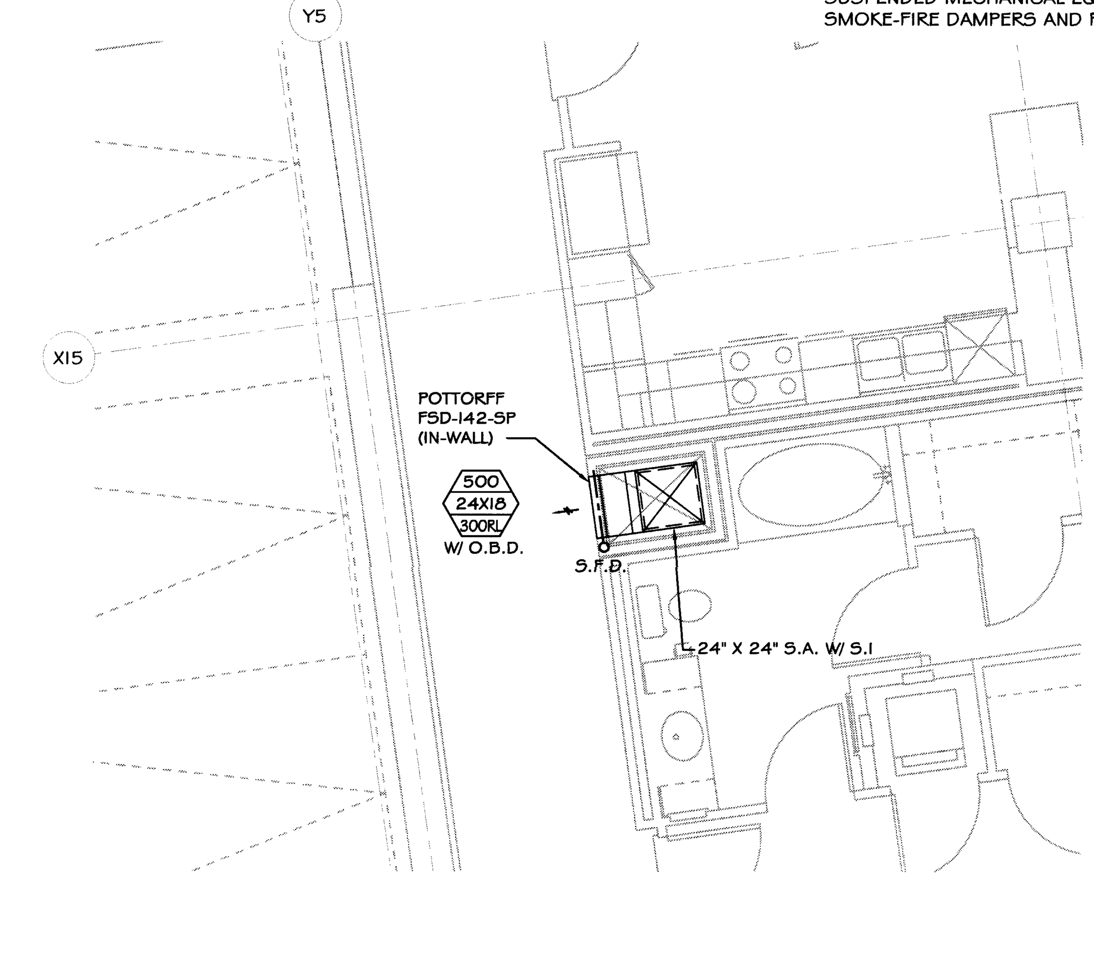
1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.



ENLARGED ELEVATOR EQUIP. (B1 LEVEL) — SCALE 1/4" = 1'-0" — 6

NOTES:

1. PROVIDE CEILING & DUCT ACCESS PANELS FOR SUSPENDED MECHANICAL EQUIPMENT & COMBINATION SMOKE-FIRE DAMPERS AND FIRE DAMPERS.



ENLARGED CORRIDOR HVAC (B1 LEVEL) — SCALE 1/4" = 1'-0" — 3

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS: ENLARGED FLOOR PLANS

FOR CONSTRUCTION

Exp date Jun 30 2014

MG-15

2010-089
JOB NUMBER

AS NOTED
SCALE

ISSUED AS
5/8/2014
DATE

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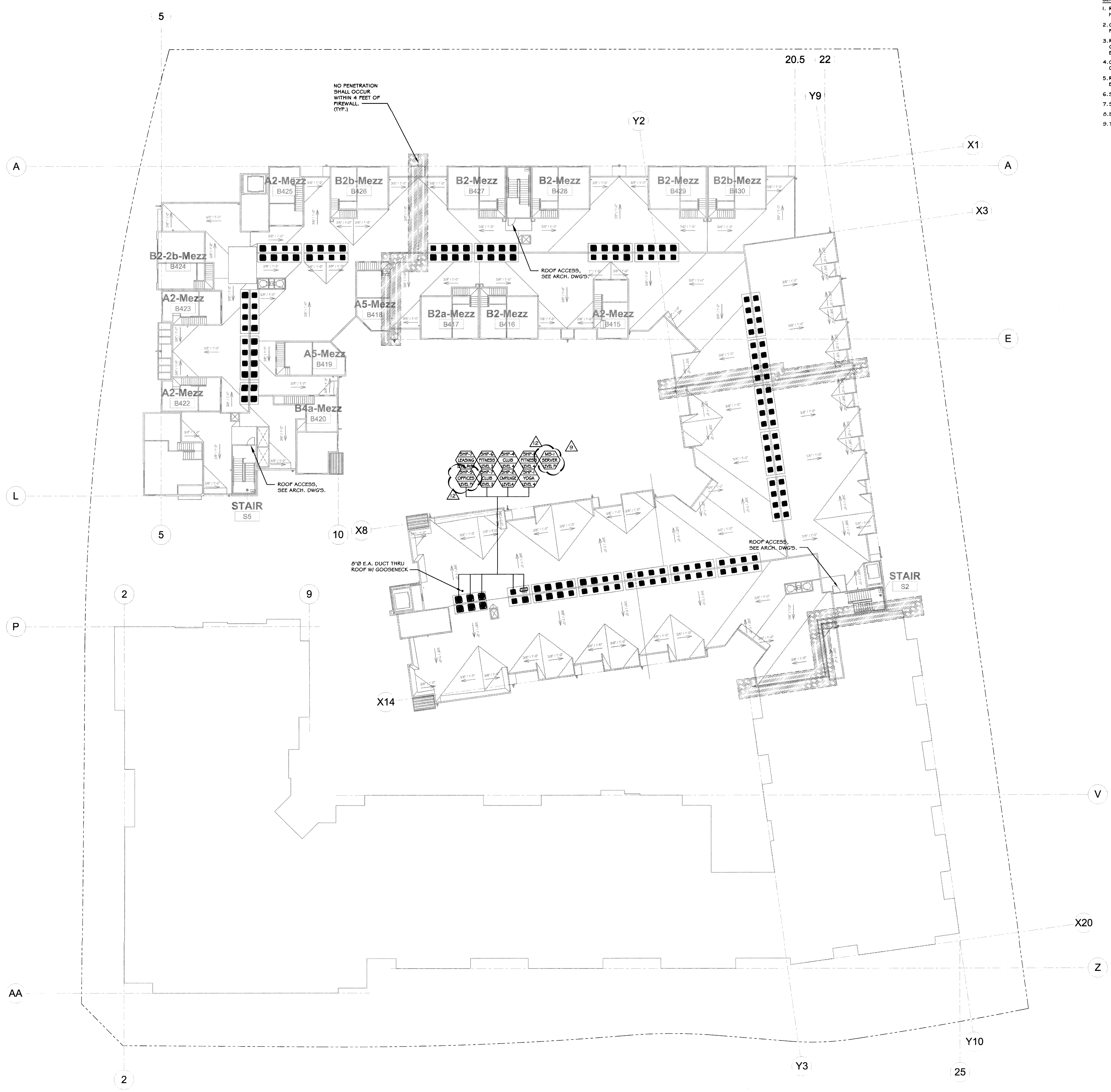

GENERAL NOTES:

1. REFER TO SHEET MR-1 FOR CONDENSING UNIT OR HEAT PUMP EQUIPMENT SCHEDULE.
2. CONSULT MANUFACTURER'S RECOMMENDATIONS FOR LONG REFRIGERANT LINE APPLICATIONS.
3. REFRIGERANT LINES SHALL BE INSTALLED IN WALL CAVITIES OR CHASES. CONTRACTOR TO COORDINATE EXACT ROUTING OF REFRIGERANT LINES IN FIELD.
4. CONDENSING/HEAT PUMP UNITS SHALL BE INSTALLED ON BUILT-UP PLATFORM/PAD PROVIDED BY OTHERS.
5. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.
6. SEE "MG" SHEETS FOR HVAC DESIGN OF GARAGE AREAS.
7. SEE "M" SHEETS FOR HVAC DESIGN OF LIVING UNITS.
8. ELEVATOR HOISTWAY VENT DESIGN / INSTALL, BY OTHERS.
9. TRASH CHUTE VENT DESIGN / INSTALL, BY OTHERS.

Thomas P. Cox: Architects, Inc.

LDI Mechanical, Inc.

California Nevada Colorado Maryland

REVISION	DATE
1	1ST PLAN CHECK SUBMITTAL – 01/30/13
9	ASI #07 – CLIENT REVISIONS – 04/25/14
12	ASI #10 – LEASING SUBMITTAL – 05/08/14

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BUILDING B LOW ROOF

FOR CONSTRUCTION

Exp date Jun 30 2014

STATE OF CALIFORNIA

MR-0.17

2010-089
JOB NUMBER

1/16" = 1'-0"
SCALE

ISSUED AS
5/8/2014
DATE

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HORIZONTAL & VERTICAL FAN COILS (HEAT PUMP)

UNIT NO.	MANUFACTURER & MODEL NO.	CFM	E.S.P. (INCHES)	ELECTRICAL DATA VOLTAGE VOLTS	FLA	MCA	MOCP	FAN HP	ELECTRIC STRIP HEAT (KW)	FILTER SIZE (IN.)	OPER. WT. (LBS.)	REMARKS
SFC 1	CARRIER FB4C 018	600	0.5	208V/1Ø	2.8	3.5	15	1/3	-	-	120	FITNESS (LVL 4); YOGA (LVL 4) ①②③④
SFC 2	CARRIER FB4C 024	800	0.5	208V/1Ø	4.1	5.1	15	1/2	-	-	120	COMP/LOUNGE (LVL 4) 12 9 ①②③④
SFC 3	CARRIER FB4C 030	1,000	0.5	208V/1Ø	2.8	3.5	15	1/3	-	-	130	- ①②③④
SFC 4	CARRIER FB4C 036	1,200	0.5	208V/1Ø	4.1	5.1	15	1/2	-	-	130	9 CLUBROOM (LVL 4) ①②③④
SFC 5	CARRIER FB4C 042	1,400	0.5	208V/1Ø	4.1	5.1	15	1/2	-	-	160	OFFICES/CONF RM. (P1, P2) 12 ①②③④
SFC 6	CARRIER FB4C 048	1,600	0.5	208V/1Ø	6.0	7.5	15	3/4	-	-	160	FITNESS (LVL 3) ①②③④
SFC 7	CARRIER FB4C 060	2,000	0.6	208V/1Ø	6.0	7.5	15	3/4	-	-	180	LEASING/CLOSING (P1, P2); 9 CLUBROOM (LVL 3) ①②③④

① CONDENSATE PUMP (IF REQUIRED) PIPING BY OTHERS, SEE PLBG. DWG'S.
② PROVIDE W/TXV (R410A).
③ INSTALL CONDENSATE OVERFLOW SWITCH IN LIEU OF SECONDARY CONDENSATE DRAIN ON VERTICAL UNITS.
④ PROVIDE W/ CARRIER FNCCAB FILTER CABINET & FLANDERS PRE-PLEAT 40 LPD HIGH CAPACITY 4-INCH DEEP MERV 8 FILTER.

SPLIT-SYSTEM OUTDOOR HEAT PUMPS

UNIT NO.	MAUNFACTURER & MODEL NO.	NOM. COOLING CAPACITY @ 95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @ 47°F AMB (BTU/HR)	ELECTRICAL DATA VOLTAGE VOLTS	MCA	MOCP	COMPRESSOR RLA	LRA	FAN FLA	HP	SEER	HSPF	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.)	REMARKS
SHP 1	CARRIER 25HBC3 018	17,100	18,000	208V/1Ø	11.8	20	9.0	48.0	0.5	1/12	13.0	7.7	3/8	5/8	130	SFC-1 ②
SHP 2	CARRIER 25HBC3 024	22,800	24,000	208V/1Ø	16.8	25	12.8	58.3	0.5	1/10	13.0	8.2	3/8	5/8	140	SFC-2 ②
SHP 3	CARRIER 25HBC3 030	28,400	29,000	208V/1Ø	21.1	30	16.0	77.0	1.1	1/5	13.0	8.0	3/8	3/4	150	②
SHP 4	CARRIER 25HBC3 036	34,200	35,000	208V/1Ø	22.0	35	16.7	79.0	1.1	1/5	13.0	7.8	3/8	3/4	160	SFC-4 ②
SHP 5	CARRIER 25HBC3 042	40,000	41,000	208V/1Ø	25.7	40	19.9	109.0	0.8	1/10	13.0	8.1	3/8	7/8	200	SFC-5 12 ②
SHP 6	CARRIER 25HBC3 048	46,000	46,500	208V/1Ø	28.7	50	21.8	117.0	1.4	1/4	13.0	8.0	3/8	7/8	220	SFC-6 ②
SHP 7	CARRIER 25HBC3 060	57,000	59,000	208V/1Ø	34.1	50	26.3	134.0	1.2	1/4	13.0	7.7	3/8	1-1/8	260	SFC-7 ②

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES & INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.

EXHAUST FANS

UNIT NO.	MANUFACTURER & MODEL NO.	LOCATION	TYPE	CFM	S.P. (INCHES)	ELECTRICAL VOLTS	WATTS	AMPS	SONES	OPER. WT. (LBS.)	REMARKS
EF 1	BROAN QTRE080	BATHROOMS	CLG.	80	0.10	120V/1Ø	57	0.30	0.8	20	LO-SONE FAN. FURNISH W/ SWITCH AND INSTALL WITH BACKDRAFT DAMPER.
EF 2	BROAN L150	BATHROOMS	CLG.	150	0.10	120V/1Ø	100	1.3	1.5	30	FURNISH W/ SWITCH AND INSTALL WITH BACKDRAFT DAMPER.

9 12

CASSETTE MINI-SPLIT HEAT PUMP INDOOR & OUTDOOR SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	NOM. COOLING CAPACITY @95° AMB (BTU/HR)	NOM. HEATING CAPACITY @47° AMB (BTU/HR)	SEER	HSPF	CFM	ELECTRICAL DATA VOLTS	MCA	MOCP	DIMENSIONS (W X H X D) IN	OUT	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.) IN	OUT	REMARKS
MS 1	TOSHIBA RAV-SP18	19,000	18,800	20.5	11.5	600	208V/1Ø	17	30	33.1"X10.1"X33.1"	30.7"X21.7"X11.4"	1/4	1/2	50	110	SERVER (LVL P1) ①②③④⑤

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES & INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.
③ PROVIDE WITH CONDENSATE PUMP.
④ PROVIDE WITH LOW AMBIENT KIT.
⑤ PROVIDE WITH CRANKCASE HEATER.

AIR DISTRIBUTION SCHEDULE

MANUFACTURER	MODEL NO.	DEFLECTION	COLOR	TYPE	REMARKS
TRU-AIRE	303-O	3-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY REGISTER, PROVIDE W/ O.B.D.
TRU-AIRE	302-O	2-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY REGISTER, PROVIDE W/ O.B.D.
TRU-AIRE	304-O	4-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY DIFFUSER, PROVIDE W/ O.B.D.
TRU-AIRE	210-VO	1-WAY	WHITE	ADJUSTABLE BAR	TYP. CEILING / SIDEWALL SUPPLY REGISTER, PROVIDE W/ O.B.D.
TITUS	355 RL	-	WHITE	BAR	TYP. SIDEWALL RETURN / TRANSFER GRILLE, PROVIDE W/ O.B.D.
TITUS	PAR	-	WHITE	PERFORATED FACE	TYP. CEILING RETURN / TRANSFER GRILLE, PROVIDE W/ O.B.D.
TITUS	ML (SUPPLY) MLR (RETURN)	-	WHITE	LINEAR SLOT	LINEAR DIFFUSER, PROVIDE W/ POTTORFF RD-10R ELECTRONIC VOLUME DAMPER.

CONDENSATE PUMPS

UNIT NO.	MANUFACTURER & MODEL NO.	SERVICE	ELECTRICAL VOLTS	WATTS	AMPS	OPER. WT. (LBS.)	REMARKS
CP 1	BECKETT CB20IUL	SFC -	120V/1Ø	85	2.2	5	ALL CONDENSATE PIPING TO BE PROVIDED/INSTALLED BY PLBG.

EQUIPMENT SCHEDULES ④

1. GENERAL: THIS WORK IS SUBJECT TO THE PROVISIONS OF DIVISION I OF THE SPECIFICATIONS AND THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS THEREUNDER AFFECTING HIS WORK IN ANY WAY.

2. SCOPE: THE WORK COVERED BY THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION AND OTHER ITEMS NECESSARY FOR AND REASONABLE INCIDENTAL TO THE PROPER AND SATISFACTORY INSTALLATION OF THE HEATING, AIR CONDITIONING, AND VENTILATING SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

3. CODES: ALL HEATING, AIR CONDITIONING, AND VENTILATING WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE N.F.P.A.,LATEST BUILDING & MECHANICAL CODES AND ANY OTHER LEGALLY CONSTITUTED BODY HAVING JURISDICTION THEREOF.

4. PERMITS: THE OWNER SHALL OBTAIN AND PAY FOR ALL FEES, PERMITS, AND LICENSES REQUIRED FOR THE INSTALLATION OF THE WORK.

5. SUBMITTALS: WITHIN 30 DAYS AFTER THE AWARD OF THE CONTRACT AND BEFORE THEIR PURCHASE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT SIX BOUND BOOKLETS CONTAINING A COMPLETE LIST OF MATERIALS AND EQUIPMENT BEING FURNISHED, TOGETHER WITH ALL CATALOG DATA, MANUFACTURER'S NAMES AND ADDRESSES AND OTHER DATA NECESSARY TO EVALUATE THE MATERIAL AND EQUIPMENT.

6. SHEET METAL DUCTWORK: SUPPLY RETURN AND OUTSIDE AIR DUCTWORK PENETRATING RATED CONSTRUCTION SHALL BE MINIMUM 26 GA. GALVANIZED SHEET METAL. SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED PER ENERGY CODE HAVING JURISDICTION. DRYER VENTS & ALL OTHER EXHAUST SHALL BE GALVANIZED SHEET METAL MIN. 26 GAGE. DUCTWORK SHALL BE CONSTRUCTED & INSTALLED IN CONFORMANCE WITH THE LATEST SMACNA DUCT MANUAL, AND LOCAL CODES.

7. FLEXIBLE DUCTWORK: INSULATED LOW PRESSURE FLEXIBLE DUCT SHALL BE A FACTORY ASSEMBLY CONSISTING OF A GALVANIZED SPRING STEEL WIRE HELIX, A CONTINUOUS INNER LINER WRAPPED WITH A NOMINAL 1 IN. THICK BY 1 LB/CU. FT. DENSITY GLASS FIBER INSULATION. THE ASSEMBLY SHALL BE ENCLOSED IN A CLASS 1 VAPOR BARRIER JACKET. THE FLEXIBLE DUCT SHALL BE LISTED BY U.L. AND SHALL CONFORM TO THE 90-A AND 90-B CLASS 1 REQUIREMENTS OF THE N.F.P.A. FLEXIBLE DUCT SHALL BE INSTALLED IN A FULLY EXTENDED CONDITION FREE OF SAGS AND KINKS AS FAR AS PRACTICAL. FLEXIBLE DUCT SHALL BE BY GOODMAN QUIETFLEX (RIP-STOP) OR APPROVED EQUAL.

8. EQUIPMENT: SHALL BE OF MODEL, TYPE AND CAPACITIES AS INDICATED ON THE DRAWINGS AND SHALL MEET OR EXCEED THE MINIMUM EFFICIENCY AS LISTED IN THE BUILDING ENERGY EFFICIENCY STANDARDS.

9. CONTROLS: SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE DRAWINGS. ALL OFFICE, RECREATION AND CORRIDOR THERMOSTATS TO BE HONEYWELL TH2110D1009 ENERGY STAR PROGRAMMABLE WITH DIGITAL NIGHT SET BACK.

10. ACCESS PANELS: WHERE SHOWN, AIR HANDLERS & FAN COILS SHALL *INCLUDE A FACTORY FURNISHED CEILING ACCESS DOOR OR WALL PANEL.* ALL OTHER MECHANICAL EQUIPMENT REQUIRING ACCESS MUST BE PROVIDED WITH ADEQUATE PANELS.

11. GUARANTEE: THE SYSTEM AS INSTALLED INCLUDING ALL EQUIPMENT AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE THE INSTALLATION IS ACCEPTED AND PLACED INTO OPERATION.

12. MATERIALS (INCLUDING INSULATION) EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

13. ONLY APPROVED MATERIALS SHALL BE INSTALLED WITHIN DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD HUMIDITY AND RESISTANT SURFACE THAT MEET THE REQUIREMENTS OF UL181.

14. FOR EQUIPMENT IN ATTIC, GENERAL CONTRACTOR (G.C.) TO PROVIDE ACCESS, LIGHT AND CAT WALK AS REQUIRED BY MECHANICAL CODE HAVING JURISDICTION.

15. CORRIDORS SHALL BE NATURALLY VENTILATED,SEE ARCHITECTURAL DRAWINGS.

16. FUSIBLE LINK FIRE DAMPERS SHALL BE UL LISTED AND STATE FIRE MARSHALL APPROVED. MANUFACTURED BY POTTORFF, INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO PROVIDE ACCESS PANELS. CEILING RADIATION FIRE DAMPERS SHALL BE MODEL CFD-15 OR APPROVED EQUAL.

17. COMBINATION SMOKE & FIRE DAMPERS SHALL BE UL LISTED AND STATE FIRE MARSHALL APPROVED. MANUFACTURED BY POTTORFF WITH ELECTRIC ACTUATOR, INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO PROVIDE ACCESS PANELS.

18. CONTRACTOR SHALL COORDINATE ALL DUCT, PIPE & EQUIPMENT LOCATIONS WITH ELECTRICAL, STRUCTURAL, PLUMBING AND ALL OTHER TRADES PRIOR TO WORK.

19. DO NOT SCALE DRAWINGS. ALL DIMENSIONS & JOB SITE CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION AND / OR FABRICATION OF MATERIALS. IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.

20. SEE ARCHITECTURAL DRAWINGS FOR ROOF / ATTIC ACCESS.

21. VERIFY FINAL LOCATION OF THERMOSTATS WITH ARCHITECT AND / OR OWNER PRIOR TO START OF WORK.

22. CONTRACTOR SHALL PROVIDE APPROVED FIRE-STOP AT PENETRATIONS THRU RATED CONSTRUCTION ASSEMBLIES.

23. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.

24. DRYER VENT CLEAN OUTS (IF APPLICABLE), SHALL BE REGULARLY INSPECTED / CLEANED FOR LINT ACCUMULATION.

GENERAL NOTES ②

SHEET INDEX ③

SYMBOL	ABBREVIATION	DESCRIPTION
	S.A.	FLEXIBLE SUPPLY AIR DUCT
	R.A.	FLEXIBLE RETURN AIR DUCT
		SPIRAL SHEET METAL AIR DUCT
		RECTANGULAR DUCT
		WALL LOUVER
	EF	CEILING / WALL EXHAUST FAN
		COMBUSTION AIR LOUVER
		DUCT DOWN
		DUCT UP
		SIDEWALL SUPPLY REGISTER
		SIDEWALL SUPPLY REGISTER W/ BOOT
		CEILING SUPPLY REGISTER
		CEILING RETURN GRILLE
		DUCT SECTION - SUPPLY
		DUCT SECTION - RETURN
	RAG	RETURN AIR GRILLE
	RAFG	RETURN AIR FILTER GRILLE
		DIRECTION OF AIR FLOW
	MVD	MANUAL VOLUME DAMPER
	CFM	CUBIC FEET PER MINUTE
EXH		EXHAUST AIR DUCT
OSA	OSA	OUTSIDE SUPPLY AIR DUCT
T	T-STAT	THERMOSTAT
0"Ø		FLEX SIZE
	RED	REDUCER
	TRI	TRIANGLE
	FD	FIRE DAMPER
SD	SD	SMOKE DETECTOR
	SFD	COMBINATION SMOKE & FIRE DAMPER
	E.A.	EXHAUST AIR DUCT
	VTR	VENT THRU ROOF
	D.B.	DUCT BOARD
	S.M.	SHEET METAL
	OBD	OPPOSED BLADE DAMPER
	F.J.	FLOOR JOIST DIRECTION
		SUPPLY, RETURN & EXHAUST GRILLE CALL OUT CFM GRILLE SIZE GRILLE STYLE
		HEAT PUMP / CONDENSING UNIT CALL OUT HEAT PUMP / CONDENSER MODEL HEAT PUMP / CONDENSER NUMBER
		FAN COIL / FORCED AIR UNIT CALL OUT FAN COIL / FORCED AIR UNIT MODEL FAN COIL / FORCED AIR UNIT NUMBER
		EXHAUST FAN CALL OUT EXHAUST FAN MODEL EXHAUST FAN NUMBER
S R		HORIZONTAL FAN COIL / FORCED AIR UNIT
		CONDENSING UNIT / HEAT PUMP
		VERTICAL FAN COIL / FORCED AIR UNIT

LEGEND AND SYMBOLS ①

Thomas P. Cox: Architects, Inc.

LDI Mechanical, Inc.
California Nevada Colorado Maryland

REVISION DATE
1 1ST PLAN CHECK SUBMITTAL - 01/30/13
9 ASI #07 - CLIENT REVISIONS - 04/25/14
12 ASI #10 - LEASING SUBMITTAL - 05/08/14

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEGEND, SYMBOLS & EQUIPMENT SCHEDULES

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER LUIS A. GARCIA Exp date Jun 30 2014 MECHANICAL STATE OF CALIFORNIA

MR-1

2010-089
JOB NUMBER
NONE
SCALE
ISSUED AS
5/8/2014
DATE

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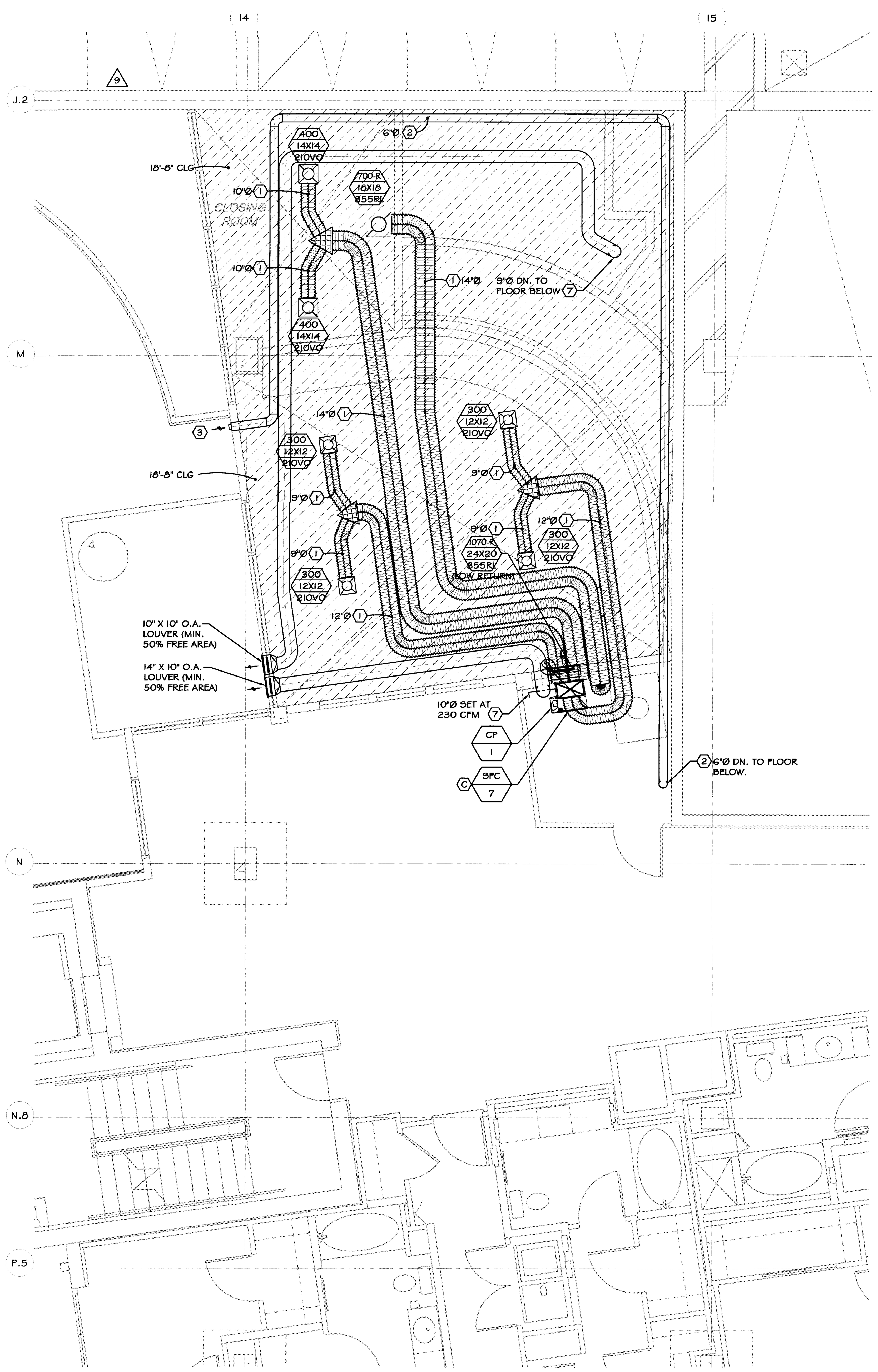
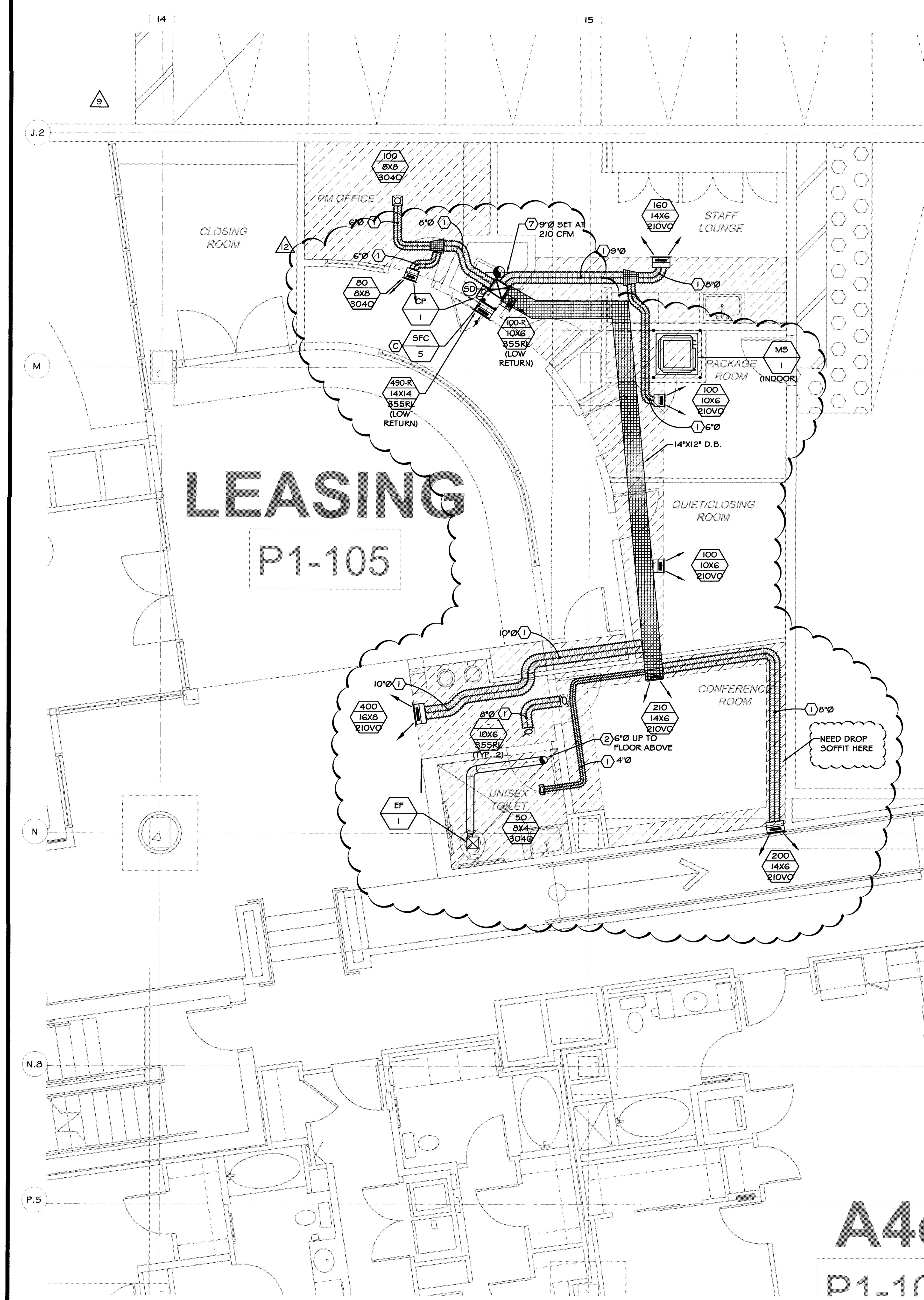


ENLARGED LEASING AREA (LEVEL P2)

SCALE 1/4" = 1'-0" (2)



ENLARGED LEASING AREA (LEVEL P1)

SCALE 1/4" = 1'-0" (1)

KEY NOTES

(A) HORIZONTAL (CASED) FAN COIL WITH SOLID ACCESS PANEL.

(B) HORIZONTAL FAU/FAN COIL IN ATTIC. EQUIPMENT IN ATTIC TO COMPLY WITH 2007 CALIFORNIA MECHANICAL CODE.

EQUIPMENT IN ATTIC REQUIRING ACCESS SHALL BE PROVIDED WITH:

1. AN ACCESS OPENING LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT, BUT NOT LESS THAN 30 INCHES BY 22 INCHES.
2. AN UNOBSTRUCTED PASSAGE WAY WHICH:
   - 2.1 IS LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT BUT NOT LESS THAN 30 INCHES HIGH BY 30 INCHES WIDE,
   - 2.2 IS NO MORE THAN 20 FEET IN LENGTH WHEN MEASURED ALONG THE CENTER LINE OF THE PASSAGEWAY FROM THE ACCESS OPENING TO THE EQUIPMENT, AND
   - 2.3 HAS CONTINUOUS SOLID FLOORING NOT LESS THAN 24 INCHES WIDE THROUGHOUT ITS LENGTH: AND
3. A LEVEL SERVICE SPACE AT LEAST 30 INCHES DEEP AND 30 INCHES WIDE LOCATED AT THE FRONT OR SERVICE SIDE OF THE EQUIPMENT.

(C) VERTICAL AIR HANDLER IN MECHANICAL CLOSET. GENERAL CONTRACTOR TO PROVIDE PLATFORM & ACCESS DOORS.

(1) SUPPLY/RETURN DUCT IN FURRED SPACE BELOW (NON-RATED) CEILING.

(1A) SUPPLY / RETURN DUCT IN ATTIC SPACE ABOVE THE (NON-RATED) CEILING.

(1B) EXPOSED S.M. SPIRAL DUCT. REFER TO CMC CHAPTER 6 FOR SUPPORT AND INSTALLATION.

(2) EXHAUST AIR DUCT TO WALL/CEILING CAP OR ROOF JACK. EXHAUST DUCT SHALL BE 26 GAUGE SHEET METAL. POSITIVELY PRESSURIZED DUCTS/FANS SHALL BE ISOLATED FROM REST OF RETURN AIR PLENUM WITH GYPSUM BOARD, BY GENERAL CONTRACTOR.

(3) WALL/CEILING/ROOF S.M. JACK MINIMUM 3'-0" AWAY FROM OPENINGS INTO BUILDING & 10' - 0" AWAY FROM O.A. INLETS

(4) DOMESTIC WATER HEATER BY OTHERS, REFER TO PLUMBING PLANS FOR SIZE & SPECIFICATIONS.

(5) MIN. 20 SQ. IN. FREE AREA HI/LO OPENING FOR COMBUSTION AIR BY GENERAL CONTACTOR (OPENINGS TO BE WITHIN 12 INCHES OF CEILING & FLOOR).

(6) KITCHEN RANGE HOOD EXHAUST DUCT TO WALL/CEILING CAP OR ROOF JACK. EXHAUST DUCT SHALL BE 26 GAUGE SHEET METAL WITH SMOOTH INTERIOR SURFACE & ISOLATED FROM REST OF RETURN AIR PLENUM WITH GYPSUM BOARD, BY GENERAL CONTRACTOR. INSTALL PER RANGE HOOD (BY OTHERS) MANUFACTURER'S RECOMMENDATIONS.

(7) OUTSIDE AIR DUCT MIN. 10 FT. IN LENGTH OR SIX FEET WITH ONE ELBOW. MAINTAIN MIN. 10 FT. OF SEPARATION FROM EXHAUST/ VENTS. DUCT CONSTRUCTION SHALL BE MIN. 26 GAUGE SHEET METAL WITHIN RATED ASSEMBLIES OR FLEX DUCT WITHIN NON-RATED CAVITIES.

(8) VENTING DESIGN/INSTALL BY OTHERS.

(9) REFRIGERANT LINES, SIZE & INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO COORDINATE EXACT ROUTING OF REFRIGERANT LINES IN FIELD.

(10) FAU TYPE B FLUE VENT.

KEY NOTES

[hatch: lined joist bay]	DENOTES LINED JOIST BAY
[blank]	DENOTES 9'-3" CEILING UNLESS NOTED OTHERWISE
[hatch: diagonal]	DENOTES 7'-10" DROP CEILING UNLESS NOTED OTHERWISE

CEILING LEGEND

Thomas P. Cox: Architects, Inc.

LDI Mechanical, Inc.

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

ENLARGED FLOOR PLANS

FOR CONSTRUCTION

MR-8

2010-089

JOB NUMBER

AS NOTED

SCALE

ISSUED AS

5/8/2014

DATE

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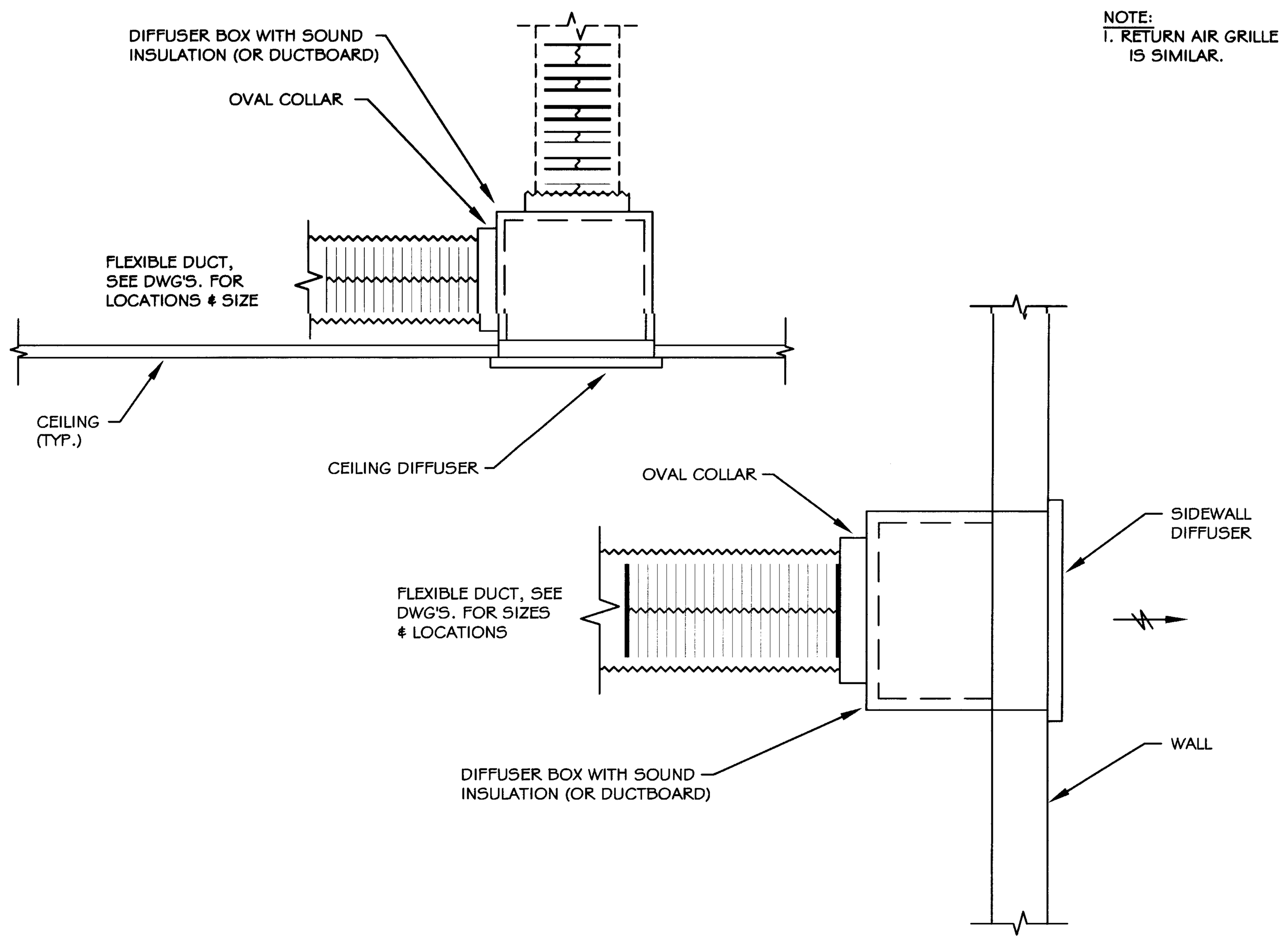
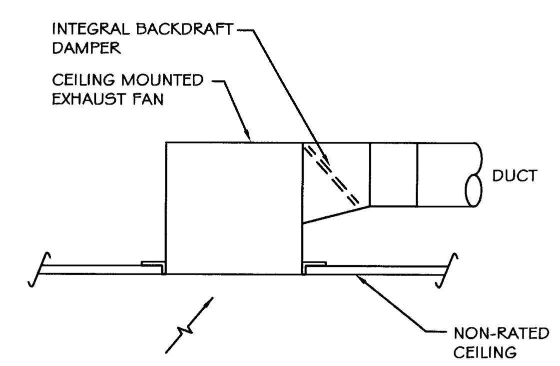


NOTE:
1. RETURN AIR GRILLE IS SIMILAR.

CEILING DIFFUSER & SIDEWALL DIFFUSER

SCALE NONE (2)



CEILING MTD. EXHAUST FAN

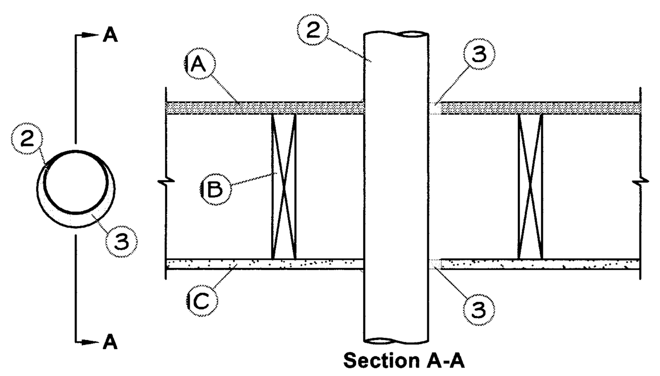
SCALE NONE (2)

-

SCALE NONE (2)

2010 CBC Section 713 PENETRATION FIRESTOP SYSTEM.

Penetration shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479. The system shall have an F rating and a T rating not less than one-hour but not less than the required rating of the floor penetrated. EXCEPTION: Floor penetrations contained and located within the cavity of wall do not require a T rating.



Section A-A

System No.F-C-7014
November 5, 2009
F Rating ---1Hr
T Rating ---1/4 and 1HR (See Item 2)
Specified Technologies INC -- SpecSeal LCI Sealant

1. **Floor-Ceiling Assembly** -- The 1hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Designs in the UL Fire Resistance Directory, as summarized below:

   A. **Flooring System** -- Lumber or plywood subfloor with finish floor of lumber, plywood or floor topping mixture* as specified in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. larger than diam of steel duct.

   B. **Wood Joists** -- Nom 10 in. deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped.

   C. **Gypsum Board*** -- Thickness, type, number of layers and fasteners as required in the individual Floor-Ceiling Design. Diam of opening is to be max 1 in. larger than diam of steel duct.

1A. **Chase wall**-- (Optional, Not Shown) -- The through penetrant (item 2) may be routed through a 1hr fire rated single, double or staggered wood stud/gypsum board chase wall. Depth of chase wall stud cavity to be min 1/2 in. greater than diameter of opening cut in sole and top plates to accommodate the through penetrant (item 2). The chase wall shall be constructed of the materials and in the manner specified in the individual u300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs**-- Nom 2 by 4 in., 2 by 6 in. or double nom 2 by 4 in. lumber studs.

   B. **Sole Plate**-- Nom 2 by 4 in., 2 by 6 in. or parallel 2 by 4 in. lumber plates, tightly butted. Diam of opening is to be max 1 in. larger than diam of steel pipe.

   C. **Top Plate**-- The double top plate shall consist of two nom 2 by 4 in., two nom 2 by 6 in. or two sets of parallel 2 by 4 in. lumber plates tightly butted. Diam of opening is to be max 1 in. larger than diam of steel duct.

   D. **Gypsum Board*** -- Thickness, type, number of layers and fasteners shall be as specified in the individual Wall and Partition Design.

2. **Steel Duct**-- One Nom 4 in. diam (or smaller) No. 30 GA (or heavier) steel duct or one nom 10 in. diam (or smaller) no. 28 ga (or heavier) steel duct to be installed either concentrically or eccentrically within the opening. Annular space to be min 0 in. (point contact) to max 1 in.Steel duct to be rigidly supported on both sides of floor-ceiling assembly.

   T rating is 1hr for nom 4 in. diam (or smaller) ducts. T rating is 1/4hr for ducts greater than nom 4 in. diam.

3. **Fill, Void or Cavity Material*** -- Sealant-- Min 3/4 in. thickness of fill material applied within the annulus, flush with the top surface of the floor or sole plate. Min 5/8 in. thickness of fill material applied within the annulus, flush with bottom surface of ceiling or top plate. Min 1/4 in. diam bead of fill material applied at point contact location on the top surface of floor or chase wall sole plate and at the penetrant/ceiling of chase wall top plate interface.

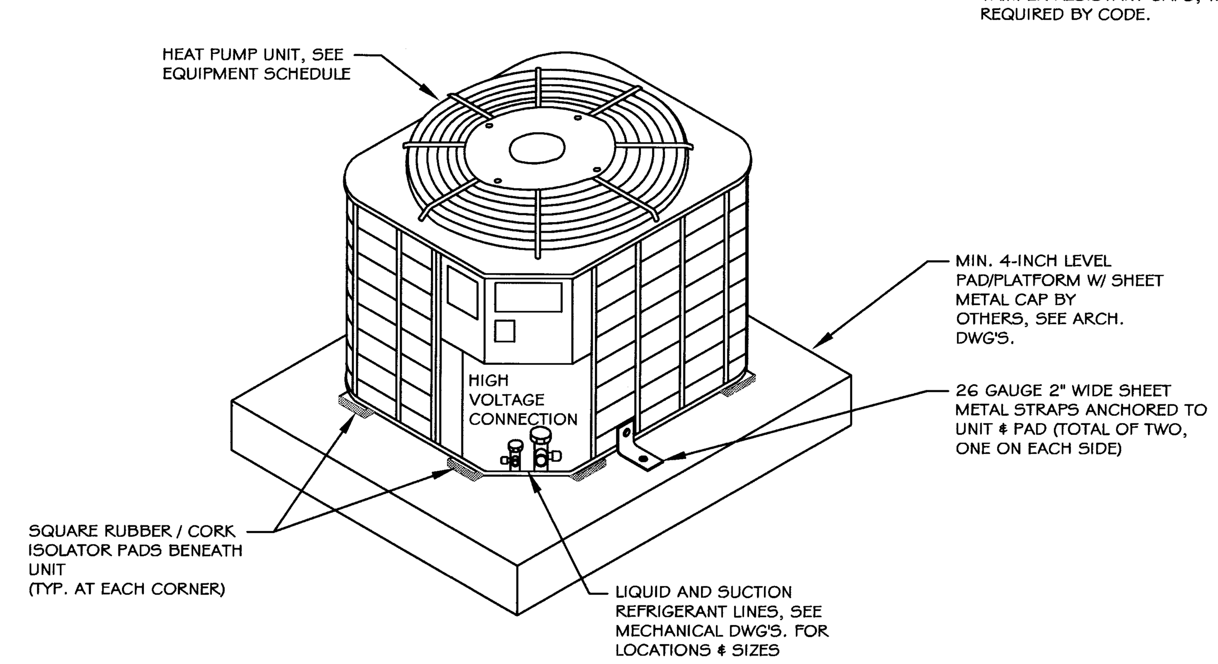
*Bearing the UL Classification Mark

FIRE-STOP (MAX. 4"Ø VENT)

SCALE NONE (2)

CLEARANCE REQUIREMENTS:
48" OVERHEAD
18" BETWEEN UNITS (NO OVERHANG)
36" IN FRONT FOR SERVICE
12" FROM WALL

NOTES:
1. EQUIPMENT SHALL BE PERMANENTLY LABELED INDICATING WHICH AREA IS BEING SERVED.
2. SECURE EQUIPMENT TO PAD / PLATFORM ADEQUATELY.
3. PROVIDE OUTDOOR REFRIGERANT SERVICE PORTS WITH LOCKING TYPE TAMPER-RESISTANT CAPS, WHERE REQUIRED BY CODE.

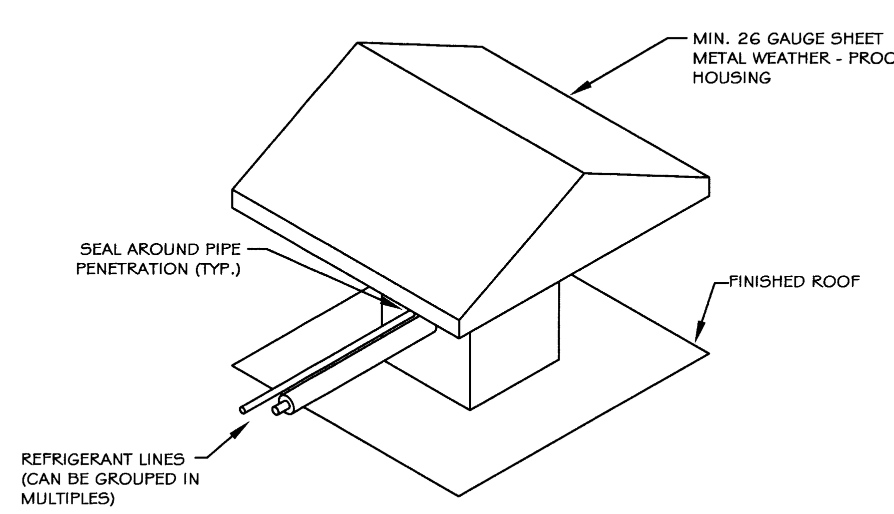


HEAT PUMP

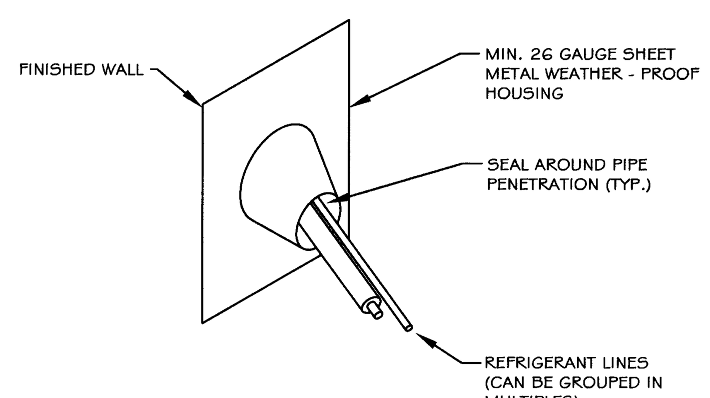
SCALE NONE (2)

-

SCALE NONE (2)



ROOF PENETRATIONS

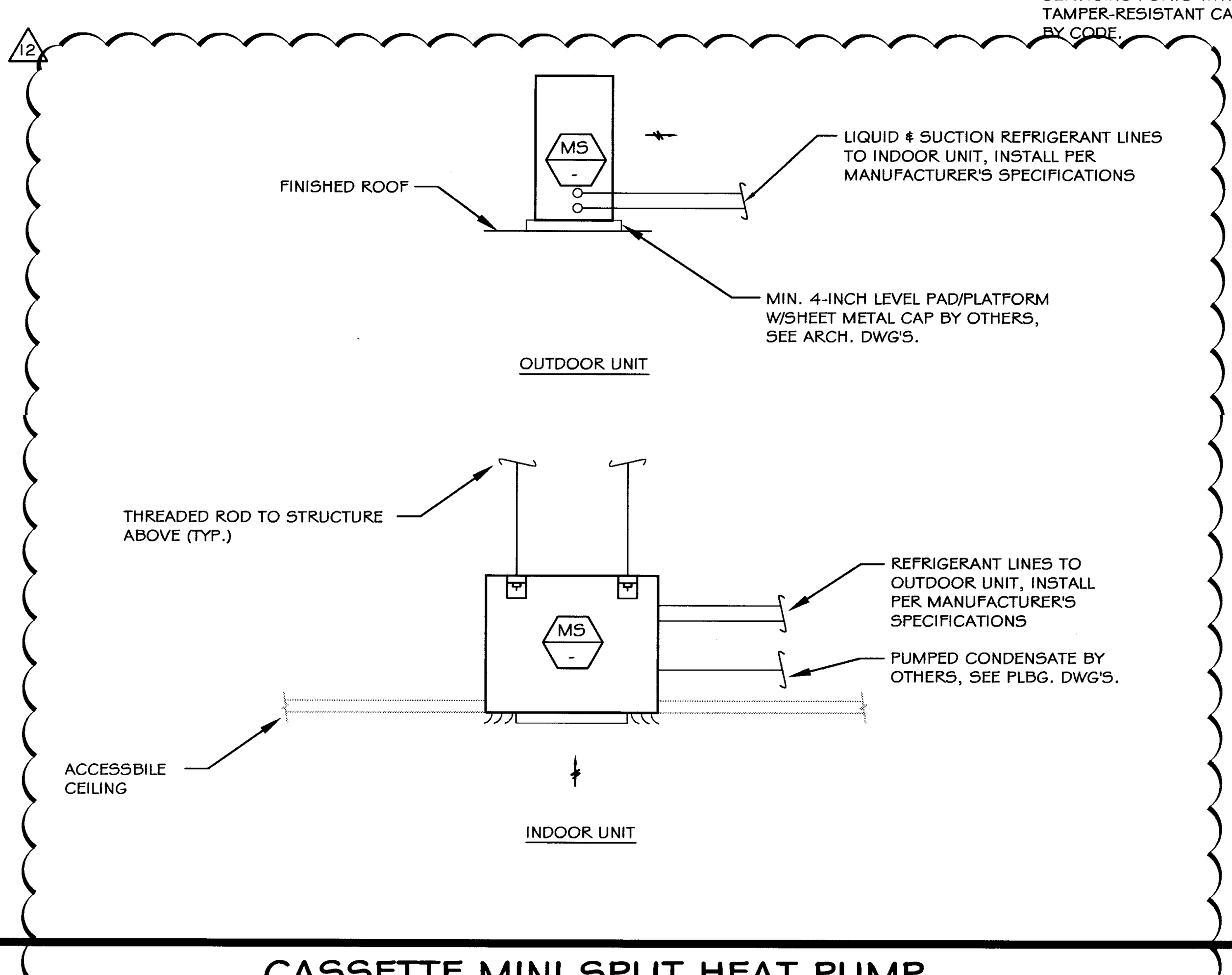


WALL PENETRATIONS

REFRIGERANT LINESET WEATHER-PROOF HOUSING

SCALE NONE (2)

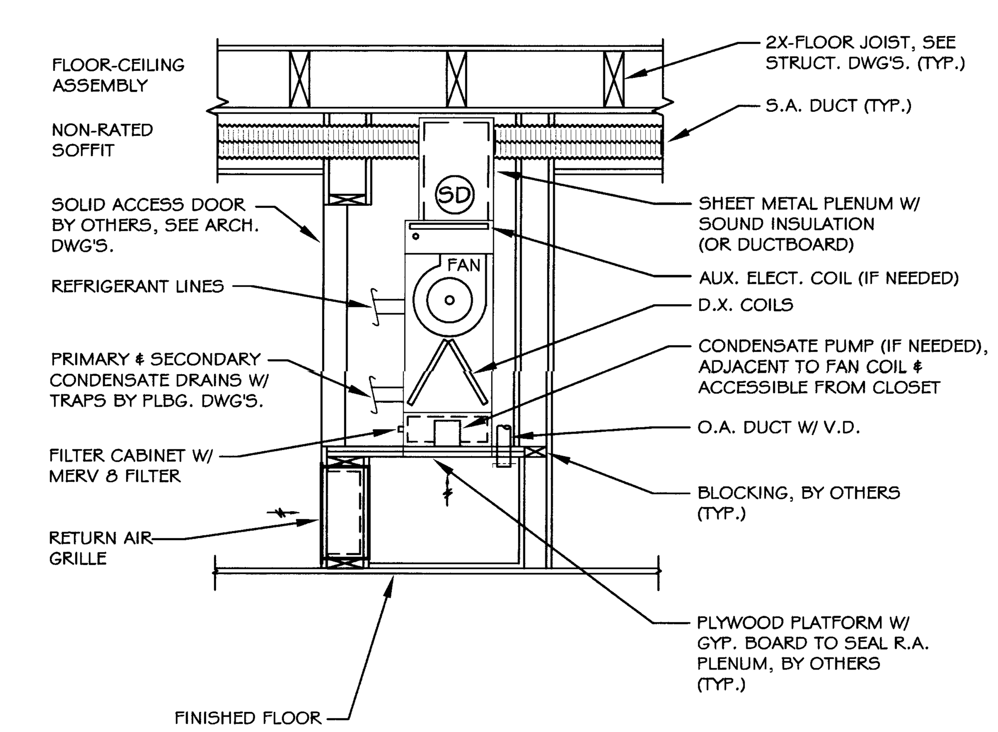
NOTES:
1. EQUIPMENT SHALL BE PERMANENTLY LABELED INDICATING WHICH AREA IS BEING SERVED.
2. SECURE EQUIPMENT TO WALL BRACKET ADEQUATELY.
3. PROVIDE OUTDOOR REFRIGERANT SERVICING PORTS WITH LOCKING TYPE TAMPER-RESISTANT CAPS, WHERE REQUIRED BY CODE.



CASSETTE MINI SPLIT HEAT PUMP

SCALE NONE (2)

NOTES:
1. PROVIDE 1-1/2" SHEET METAL STRAPS FASTENED TO FAN COIL & PLATFORM FOR SEISMIC BRACING (TYP. AT 4 CORNERS OF FAN COIL).



VERTICAL FAN COIL (MERV 8)

SCALE NONE (2)

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DETAILS

FOR CONSTRUCTION

MR-11

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5/8/2014
DATE

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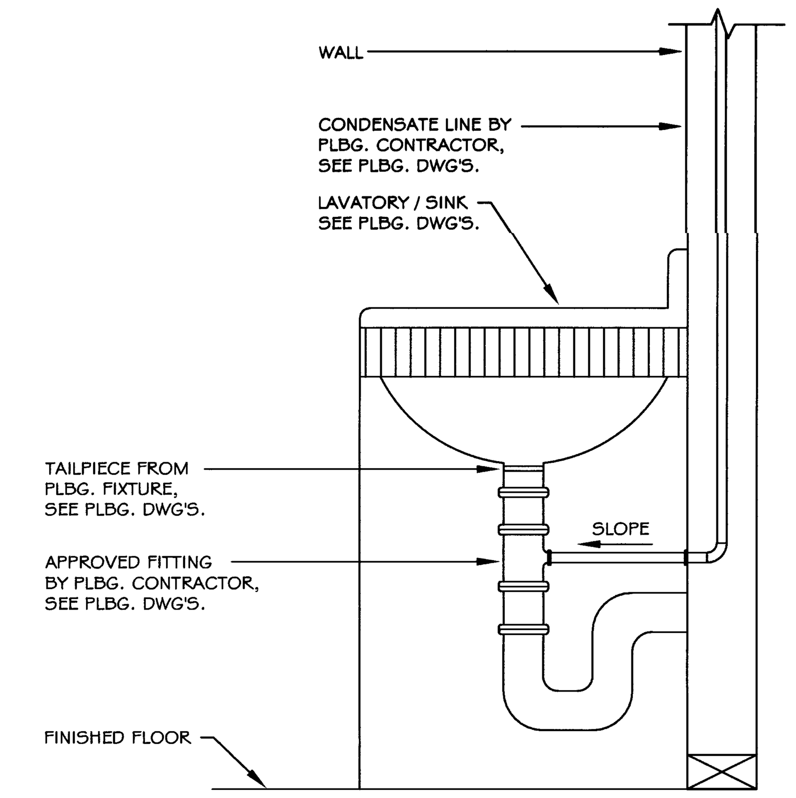
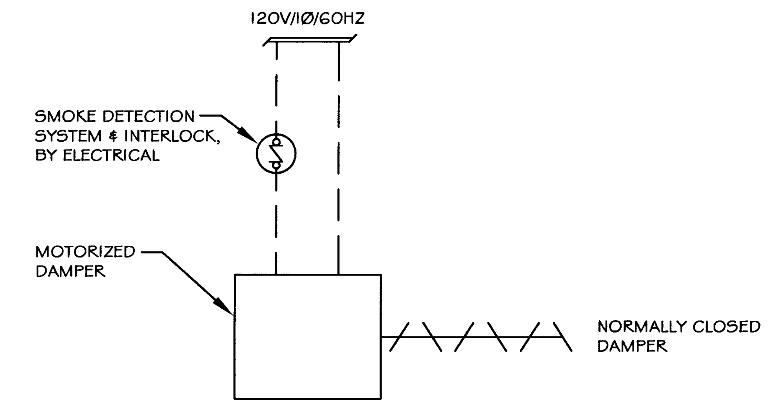


CONDENSATE DRAIN TERMINATION

SCALE NONE (7)

WIRING LEGEND:

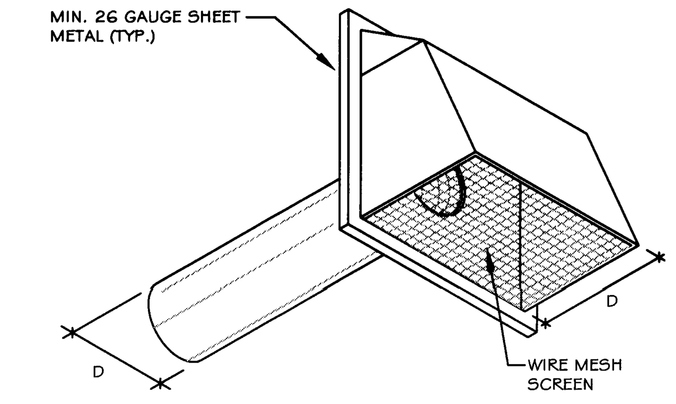
— — — WIRING & CONDUIT BY ELECTRICAL



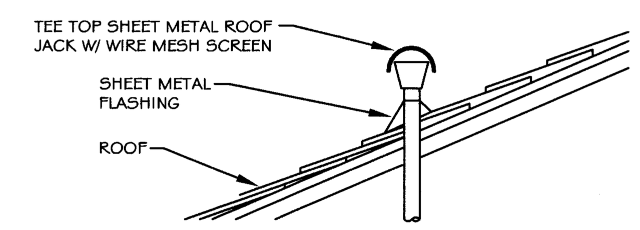
COMBINATION SMOKE & FIRE DAMPER WIRING

SCALE NONE (4)

NOTES:
1. TYPICAL FOR EXHAUST & OUTSIDE AIR TERMINATION.
2. EXHAUST TERMINATION MUST BE MIN. 3 FEET AWAY FROM OPENING'S INTO BLDG.
3. OUTSIDE AIR TERMINATION MUST BE MIN. 10 FEET AWAY FROM EXHAUST & PLBG. VENTS



EYE BROW (WALL JACK)



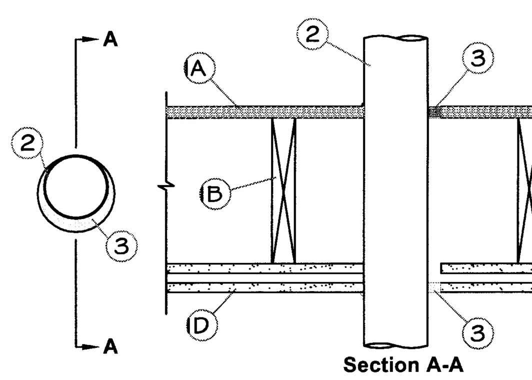
ROOF JACK

VENT TERMINATION

SCALE NONE (1)

2010 CBC Section 713 PENETRATION FIRESTOP SYSTEM.

Penetration shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479. The system shall have an F rating and a T rating not less than one-hour but not less than the required rating of the floor penetrated. EXCEPTION: Floor penetrations contained and located within the cavity of wall do not require a T rating.



Section A-A

System No.F-C-7019

January 7, 2010
F Rating ---1 and 2 Hr (See Item 1)
T Rating ---1 and 1-1/2 Hr (See Item 1)
L Rating at ambient ---Less than 1 CFM/sq ft
L Rating at 400° F ---Less than 1 CFM/sq ft
Rectorseal -- FS900+ Sealant

1. **Floor-Ceiling Assembly** -- The 1hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The 2hr fire-rated wood joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in Design Nos. L505, L511 or L536 in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:

   A. **Flooring System** -- Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max diam of floor opening is 6-1/2 in. (165 mm).

   B. **Wood Joists*** -- For 1hr fire-rated floor-ceiling assemblies nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped. For 2hr fire-rated floor-ceiling assemblies, nom 2 by 10 in. (51 by 254 mm) lumber joists spaced 16 in. (406 mm) OC with nom 1 by 3 in. (25 by 76 mm) lumber bridging and with ends firestopped.

   C. **Furring Channels** -- (Not Shown) -- In 2hr fire-rated assemblies, resilient galv steel furring installed perpendicular to wood joists between first and second layers of gypsum board (item 1D). furring channels spaced max 24 in. (610 mm) OC. In 1 hr fire-rated assemblies, resilient galv steel furring installed perpendicular to wood joists between gypsum board and wood joists as specified in the individual Floor-Ceiling Design. Furring channels spaced max 24 in. (610 mm) OC.

   D. **Gypsum Board*** -- Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. First layer of gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Second layer of gypsum board (2 hr fire-rated assembly) screw attached to furring channels as specified in the individual Floor-Ceiling Design. Max diam of ceiling opening is 6-1/2 in. (165 mm)

   The hourly F and T ratings of the firestop system are dependent on the hourly fire rating of the floor-ceiling/chase wall assembly in which it is installed as shown in the following table:

Rating of Assembly, Hr	F Rating, Hr	T Rating, Hr
2	2	1-1/2
1	1	1

1.1 **Chase wall** -- (Not Shown, Optional) -- The through penetrants (item 2) may be routed through a 1 or 2hr fire-rated single, double or staggered wood stud/gypsum board chase wall having a fire rating consistent with that of the floor-ceiling assembly. The chase wall shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance and shall include the following construction features:

   A. **Studs**-- Nom 2 by 8 in. (51 by 203 mm) lumber or double nom 2 by 6 in. (51 by 152 mm) lumber studs.

   B. **Sole Plate**-- Nom 2 by 8 in. (51 by 203) lumber or parallel 2 by 6 in. (51 by 152 mm) lumber plates, tightly butted.

   C. **Top Plate**-- The double top plate shall consist of two nom 2 by 8 in. (51 by 203 mm) lumber plates or two sets of nom 2 by 6 in. (51 by 152 mm) lumber plates tightly butted. Max diam of opening is 6-1/2 in. (165 mm).

   D. **Gypsum Board*** -- Thickness, type, number of layers and fasteners shall be as specified in individual Wall and Partition Designs.

2. **Through Penetrant** -- Nom 6 in. (152 mm) diam (or smaller) by No. 30 MSG (or heavier) steel duct. One steel duct to be installed either concentrically or eccentrically within the firestop system. The annular space within the firestop system shall be a min 0 in. (point contract) to a max 1/2 in. (13 mm). Steel duct to be rigidly supported on both sides of floor-ceiling assembly.

3. **Fill, Void or Cavity Material*** -- Sealant -- Min 3/4 in. (19 mm) thickness of fill material applied flush with annulus on top surface of floor or sole plate. Min 1/2 in. (13 mm) thickness of fill material applied flush with annulus on bottom surface of ceiling or on bottom surface of lower top plate of chase wall assembly. At point contact, min 3/8 in. (10 mm) diam bead of fill material applied at penetrant/floor or sole plate interface and at penetrant/ceiling or top plate interface.

RECTORSEAL -- FS900+ Sealant

+Bearing the UL Listing Mark
*Bearing the UL Classification Mark

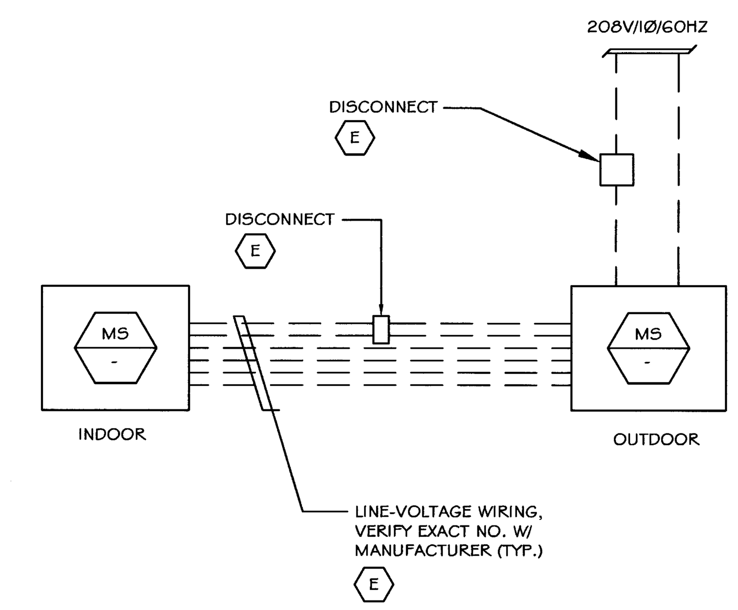
FIRE-STOP (5"Ø & 6"Ø VENTS)

SCALE NONE (8)

12

WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL
—— — —— LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR
———— LINE VOLTAGE WIRING BY EQUIPMENT MANUFACTURER



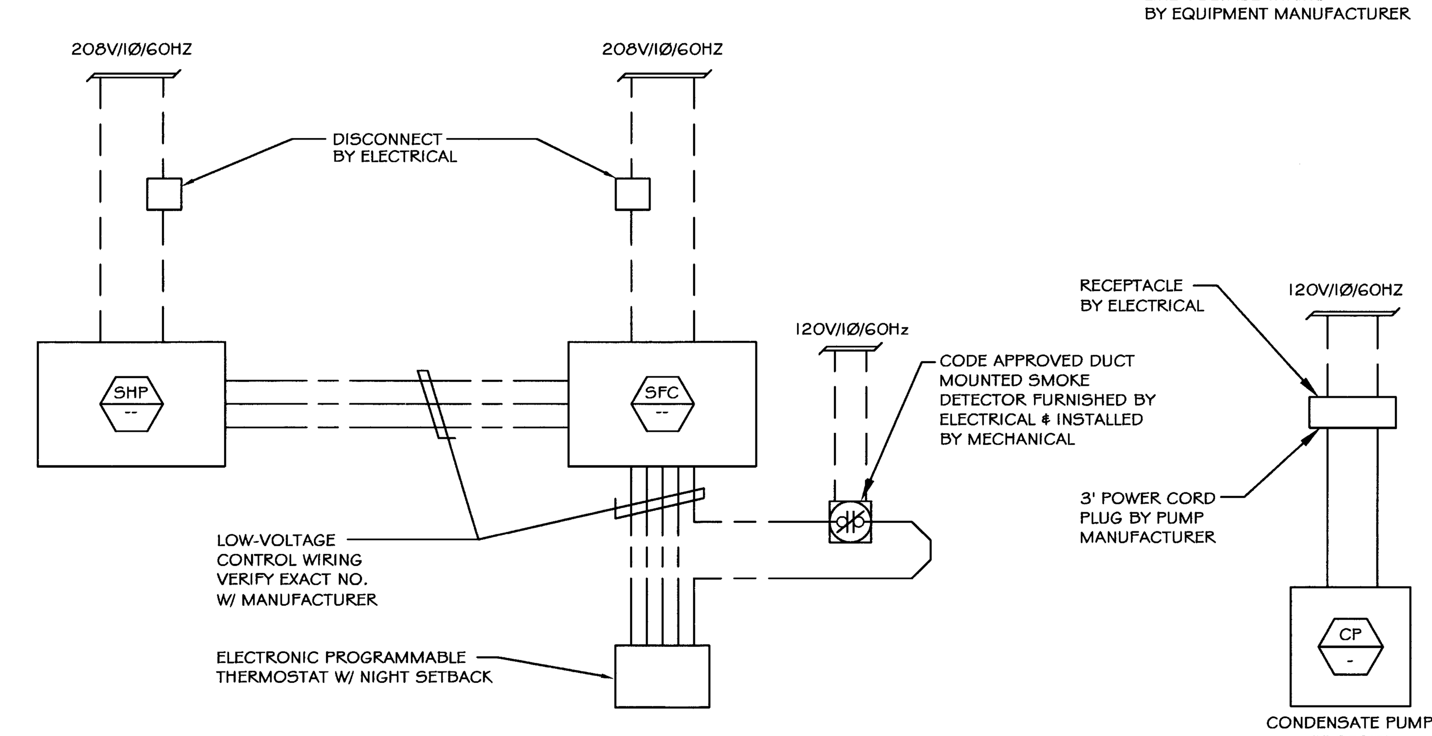
NOTE:
1. PROVIDE WITH WIRELESS REMOTE CONTROLLER.

CASSETTE MINI SPLIT HEAT PUMP WIRING

SCALE NONE (5)

WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL
—— — —— LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR
———— LINE VOLTAGE WIRING BY EQUIPMENT MANUFACTURER



NOTES:
1. PROVIDE 7-DAY PROGRAMMABLE THERMOSTATS FOR RETAIL, RESTAURANTS AND THEATERS.

SPLIT SYSTEM HEAT PUMP WIRING

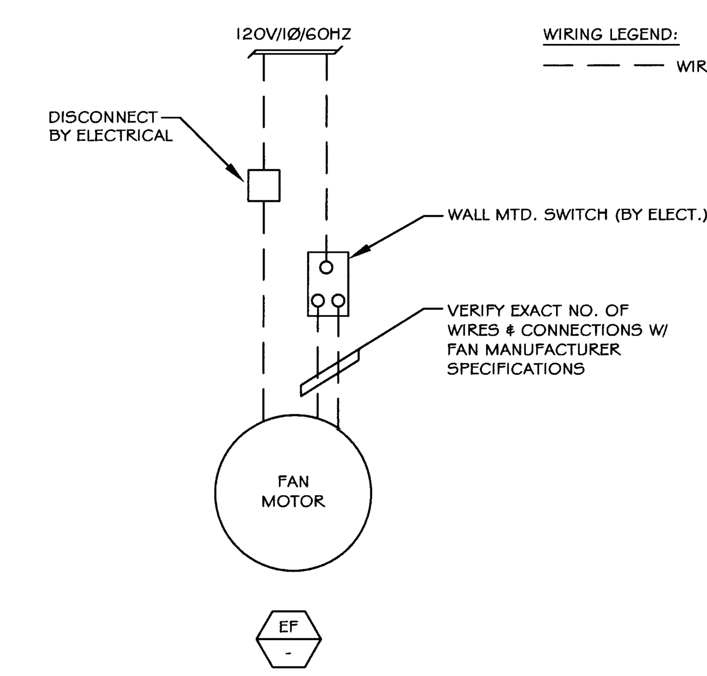
SCALE NONE (2)

-

SCALE NONE (6)

WIRING LEGEND:

— — — WIRING & CONDUIT BY ELECTRICAL



NOTES:
1. HUMIDITY SENSING FANS SHALL BE WIRED FOR MANUAL (ON/OFF) AND AUTOMATIC (HUMIDITY SENSING) MODES, SEE MANUF. SPECS.
2. PROVIDE "VENTILATION CONTROL" SIGN ABOVE SWITCH WHEN FAN (FOR EXAMPLE BROAN SMART SENSE) ALSO PROVIDES MECHANICAL VENTILATION.

EXHAUST FAN WIRING

SCALE NONE (3)

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.

California Nevada Colorado Maryland

DATE
REVISION
1ST PLAN CHECK SUBMITTAL - 01/30/13
ASI #07 - CLIENT REVISIONS - 04/25/14
ASI #10 - LEASING SUBMITTAL - 05/08/14

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
DETAILS

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
Exp date Jun 30 2014
MECHANICAL
STATE OF CALIFORNIA

MR-12

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
5/8/2014
DATE

May 12, 2014 - 4:55pm noel.ubiadas
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FIXTURE SCHEDULE NOTES:

1. REFER TO THE PROJECT GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
2. VERIFY THE VOLTAGE OF ALL LIGHTING FIXTURES PRIOR TO SUBMITTING SHOP DRAWINGS AND INSTALLATION.
3. VERIFY THE MOUNTING AND CEILING CONDITIONS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.
4. VERIFY THE COLOR AND FINISH OF ALL SURFACE MOUNTED LIGHTING FIXTURES WITH THE ARCHITECT AND ENGINEER.
5. PROVIDE ALL MOUNTING HARDWARE REQUIRED FOR A COMPLETE AND OPERATIONAL LIGNTING SYSTEM.
6. COORDINATE EMERGENCY LIGHTING FIXTURE LOCATIONS WITH THE ELECTRICAL LIGHTING PLANS PRIOR TO SUBMITTING SHOP DRAWINGS.
7. EXIT LIGHTING SHALL BE PROVIDED WITH EMERGENCY BATTERY UNITS WITH TEST SWITCHES.
8. VERIFY THE COLOR TEMPURATURE OF ALL LAMPS WITH THE ENGINEERING PRIOR TO INSTALLATION.
9. THE ELECTRICAL CONTRACTOR SHALL INCLUDE IN THE ELECTRICAL CONTRACT THE SPECIFIED UNIT COSTS NOTED IN THE FIXTURE SCHEDULE AND PROVIDE ALL COSTS TO INSTALL EACH FIXTURE.
10. CONFLICTS BETWEEN THE CATALOG NUMBERS AND FIXTURE DESCRIPTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE BID TIME.
11. COMPACT FLUORESCENT BALLASTS SHALL BE ELECTRONIC AND BE MANUFACTURED BY ADVANCE, ESI, MAGNETEK OR ROBERTSON. HARMONIC CONTENT SHALL NOT EXCEED TWENTY PERCENT (20%). EXTERIOR APPLICATIONS SHALL USE LOW TEMPERATURE BALLASTS FOR ZERO DEGREES FAHENHEIT.
12. BALLASTS SHALL BE HIGH POWER FACTOR RATED.
13. EMERGENCY LIGHTING FIXTURES SHALL BE PROVIDED WITH NINETY (90) MINUTE EMERGENCY BALLASTS AS MANUFACTURED BY BODINE #B50 SERIES FOR 2 TO 8 LAMPS OR BODINE #B84 SERIES FOR COMPACT FLUORESCENT LAMPS. REFER TO THE LIGHTING PLANS FOR CONTROL REQUIREMENTS.

LEASING OFFICE AND FITNESS CENTER
(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE / LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
LT-1	NICHE MODERN #OCULO	30W	120V.		(1) G.E. 30W A19 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED LEASING LOBBY	PENDANT
LT-2A	GRAYPANTS #MOON_T8	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2B	GRAYPANTS #DROP_18	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2C	GRAYPANTS #DROP_36	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2D	GRAYPANTS #CLOCHE_24	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-2E	GRAYPANTS #SUN	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-3	GRAYPANTS #OHIO_24 SCRAPLIGHTS	28W	277V.		(1) G.E. F26DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN SOCIAL LOUNGE	PENDANT
LT-4	BIG ASS FNAS				OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	CEILING FAN. LOCATED IN FITNESS CENTER	
LT-5	Y LIGHTING #IE-OMI-VESSEL_FL	36W.	277V.		(1) G.E. F32TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	POOL TABLE LIGHTING	SURFACE
LT-6	Y LIGHTING #SPINNING BH1-PENDANT LIGHT	30W	277		(1) G.E. 30W A19 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT.	PENDANT
LT-7	NICHE MODERN #PHAROS, CP-PACK-4	75W	120V.		(1) G.E. 75W OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN TECH LOUNGE	SURFACE
LT-8	BIRCHWOOD LIGHTING # HALEY 125RAS	28W	277V.		(1) G.E. 28WT5 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LINEAR WALL WASHER. LOCATED IN LEASING	WALL
LT-9	EDEN# ONLINE L4000.BK.B1	200W	277V.		(4) G.E. 25W A19 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	TRACK LIGHTING LOCATED IN TECH LOUNGE	TRACK
LT-10	GRAYPANTS #DRUM_18	28W.	277V.		(1) G.E. F28DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN LEASING AGENT	PENDANT
LT-11	MARSET #A631-0 SOHO LARGE OUTDOOR PENDANT	72W	277V.		(1) G.E. FC22/FC40 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT. LOCATED IN MEZZANINE	PENDANT
LT-12	SYSTEMLUX #REEF2X90 S5229	70W	277V.		(1) G.E. 70W T6 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE WALL SCONCE LOCATED IN MEZZANINE	WALL
LT-13	SYSTEMLUX #INITECHNO SPOT S.3560	50W	277V.		(1) G.E. 50W PAR 20 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	UPLIGHT. LOCATED IN MEZZAINIE	SURFACE
LT-14	TECHLIGHTING #E3SFWW	19W	277W		INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LED WALL WASH. LOCATED IN SOCIAL LOUNGE	WALL
LT-15	GOTHAM LIGHTING #AVF-32TRT	28W.	277V.		(1) G.E. F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECSEED COMPACT FLUORESCENT FIXTURE	SURFACE
LT-16	SELECTED BY OWNER	30W.	277V.		(1) G.E. F28T25 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE MOUNTED FIXTURE LOACTED IN CORRIDOR NEAR LEASING SPACE	SURFACE
LT-17	NORA LIGHTING #NUTP9-LED	4W/FT	120V.		OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	24V. LABEL HIGH OUTPUT LIGHT TAPE. 10 FOOT	COVE
LT-18	DELTA LIGHTING# FEMTOLINE145-6-376-01-500K/1.5W				LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	OUTDOOR RECESSED WALL LIGHT	SURFACE
LT-19	T.B.D.	60W	120V.		LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDAT LOCATED IN LEASING SPACE	SURFACE
LT-20	ELITE LIGHTING #EU-33	60W	120V.		(2) #F14T5/CW OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	UNDER COUTNER CABINET LIGHTING, LOCATED IN LEASING AREA KITCHEN	SURFACE

12

COMMON LIGHTING FIXTURE SCHEDULE
(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE / LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
1	GOTHAM LIGHTING #AFV-26TRT-6AR-MVOLT	28W	277V.		(1) G.E. F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH CLEAR SPECULAR REFLECTOR "ELECTRONIC BALLAST"	SURFACE
2	LIGHTWAY IND. #MERW-A-A-1Q18-3-P9-WAS-MCH	20W	277V.		(1) G.E. F18DBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE COMPACT FLUORESCENT WALL SCONCE SATIN NICKLE FINISH, MESH CENTER CAGE AND ELECTRONIC BALLAST	WALL
3	GOTHAM LIGHTING #AFV-32TRT-6AR-MVOLT	36W	277V.		(1) G.E. F32TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT FIXTURE. OFFICE SPACES	RECESSED
4	LITHONIA # AWN-232-MVOLT-GEB10IS-ADD-EL65 WHERE INDICATED AS "EM"	54W	277V.		(2) G.E. F32T8/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	4 FOOT WRAP AROUND FLUORESCENT FIXTURE IN STAIRWAYS	SURFACE
5	LITHONIA # TZ-232-MVOLT-GEB10IS-ADD-EL65 WHERE INDICATED AS "EM"	104W	277V.		(4) G.E. F32T8/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	8 FOOT 2-LAMP ROWS FLUORESCENT FIXTURE WITH WIRE GUARD AND ELECTONIC BALLAST.	SURFACE
6	LITHONIA # Z-23-MVOLT-GEB10IS-ADD-EL65 WHERE INDICATED AS "EM"	54W	277V.		(2) G.E. F32T8/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	4 FOOT 2-LAMP ROWS FLUORESCENT FIXTURE WITH WIRE GUARD AND ELECTONIC BALLAST.	SURFACE
7	LITHONIA # WSQ-42TRT-MD-277-ELDW-PE	45W.	277V.		(1) G.E. F42TBX/4P/SPX35 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE QUARTER SPHERE COMPACT FLUORESCENT WALL SCONCE WITH INTEGRAL BATTERY PACK AND PHOTOCELL.	WALL
8	B-K LIGHTING # DE-LEDX25-FL-BZP-12-A COMPLETE WITH WEATHERPROOF	25W.	120V.		LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LED AREA FLOOD LIGHT MOUNTED ON TRELLIS WITH REMOTE WEATHERPROOF DRIVER.	SURFACE

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UNIT LIGHTING FIXTURE SCHEDULE
(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE / LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
A	EFFICIENT LIGHTING # EL-801	36W.	120V.		(2) 18W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE SURFACE MOUNTED DECORATIVE COMPACT FLUORESCENT FIXTURE.	SURFACE CEILING
B	NORA LIGHTING # NHPIC-2642ELAT-NTA97 TRIM	28W.	120V.		(1) G.E. #26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT FIXTURE, CLEAR SPECULAR REFLECTOR, ELECTRONIC BALLAST. HALLWAYS	RECESSED
C	NORA LIGHTING # NHPIC-2642ELAT-NTM46 TRIM	28W.	120V.		(1) G.E. #F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH REGRESSED DROP OPAL LENS, WHITE TRIM, ELECTRONIC BALLAST, IC- AND AT-RATED., BATHROOM.	RECESSED
D	SUNSTARS LIGHTING # 3002-GU313	45W.	120V.		(3) 13W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE WALL MOUNTED INCANDESCENT VANITY LIGHT CENTERED OVER BATHROOM MIRROR.	SURFACE WALL
E	NORA LIGHTING # NHPIC-2642ELAT-NTA97 TRIM	28W.	120V.		(1) G.E. #F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT FIXTURE, CLEAR SPECULAR REFLECTOR, ELECTRONIC BALLAST. HALLWAYS	RECESSED
F-C	EFFICIENT LIGHTING # EL-801	36W.	120V.,		(2) 18W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE CEILING MOUNTED DECORATIVE COMPACT FLUORESCENT FIXTURE FOR CLOSET	SURFACE CEILING
F-L	UTOPIA LIGHTING # WB-217-120	34W.	120V.,		(2) G.E. #F17T8 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE CEILING MOUNTED DECORATIVE COMPACT FLUORESCENT FIXTURE FOR LAUNDRY	SURFACE CEILING
G	ACCESS LIGHTING #52204BS	200W.	120V.		(4) G.E. #50W MR16 OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	SURFACE CEILING MOUNTED RAIL-STYLE TRACK LIGHTING FIXTURE WITH FIVE HEADS OF BRUSHED NICKEL FINISH AND WHITE SHADES., DINING ROOM	SURFACE
H	NORA LIGHTING # NHPIC-2642ELAT-NTM46 TRIM	28W.	120V.		(1) G.E. #F26TBX/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT DOWNLIGHT WITH REGRESSED DROP OPAL LENS, WHITE TRIM, ELECTRONIC BALLAST, IC- AND AT-RATED.	RECESSED
J	ACCESS LIGHTING #882-65CUST	18W.	120V.		(1) G.E. #F18DTT OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE PENDANT MOUNTED COMPACT FLUORESCENT FIXTURE WITH SATIN NICKEL FINISH, ELECTRONIC BALLAST.	SURFACE PENDANT
K	LITE RITE # UC-LED-WHT	12W	120V.		LED INCLUDED WITH FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	3 FOOT SURFACE MOUNTED UNDERCABINET LIGHTING	UNDERCABINET
L	ACCESS #20445	26W.	120V.		(2) 13W GU24 LAMPS OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	DECORATIVE SURFACE MOUNTED WALL FIXTURE. LOCATED ON STAIRS.	SURFACE WALL

5

MILL CREEK SITE LIGHTING FIXTURE SCHEDULE
(REFER TO THE PROJECT ELECTRICAL GENERAL NOTES FOR ADDITIONAL LIGHTING FIXTURE REQUIREMENTS)

TYPE	FIXTURE MANUFACTURE	WATTAGE	VOLTAGE	EMERG.	LAMP TYPE / LAMP MANUFACTURE	LIGHTING FIXTURE DESCRIPTION	MOUNTING
SA	COLE LIGHTING #F2153-26-277-EB-W-J	28W	277V.		(1) G.E. F26DBX OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	RECESSED COMPACT FLUORESCENT STEP LIGHT WITH GLASS FACEPLATE, WET LOCATION LISTING, BACK J-BOX AND ELECTRONIC BALLAST.	RECESSED
SB	TUBE LIGHTING PRODUCTS SERIES BPS 307 - LED/WW - F - BK-8 WITH ALL POWER SUPPLIES AND CABLES	1.0W/FT.	120V.		(2) .5W LED / FT. (INCLUDED) OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	WARM WHITE STRING LIGHTING W/ FROSTED GLOBE, BLACK CABLE. PROVIDE TWO (2) 100 WATT POWER SUPPLIES, ONE AT EACH END, FOR A MAX. RUN OF 80FT. PROVIDE CABLE FOR MTG. (NOT INCLUDED WITH FIXT.)	STRING
SC	(4) BK #DE-LED-X21-FL-SAP-09-A MTD. ON (2) PM2D-TS-30-2150E-120-SC DUAL TREE STRAPS	15W.	120V.		INCLUDED W/FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	(4) LED TREE UPLIGHT MTD. ON (2) PM2D DRIVERS AND ATTACHED TO NYLON TREE STRAP WITH STAINLESS STEEL SAFETY CABLE. TWO UPLIGHT FIXTURES AND TWO DOWNLIGHT FIXTURES.	SURFACE ON TREE
SD	BK LIGHTING # DE-LED-X21-FL-BLP-09-A MTD. ON # HP2-D15-MT DRIVER HOUSING	15W.	120V.		INCLUDED W/FIXTURE OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	LED TREE UPLIGHT, BLACK FINISH, MOUNTED ON RECESSED DRIVER HOUSING.	IN GRADE
SE	HADCO #R830-H-42F-H	46W	277V.		(1) G.E. F42TBX/SPX30/4P OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC	COMPACT FLUORESCENT BOLLARD FIXTURE, BRONZE FINISH, ELECTRONIC BALLAST.	GROUND
	.				OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		
					OSHRAM SYLVANIA, PHILLIPS OR GENERAL ELECTRIC		

4

REGISTERED PROFESSIONAL ENGINEER
RANDALL V. MOSS
No. E13453
Exp. 09/30/14
ELECTRICAL
STATE OF CALIFORNIA

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
1720 EAST GARRY AVE., SUITE 114
SANTA ANA, CALIFORNIA 92705
(949) 756-0807 | FAX: (949) 756-0816

THOMAS P. COX: ARCHITECTS, INC.
19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
LOS ANGELES, CA 90017
PHONE 213 553-1100

REVISION

A	1st Plan Check	01/30/2013	11	A.S.I. #9	05/07/2014
B	2nd Plan Check	02/28/2013	12	LEASING REVISION	05/08/2014
C	3rd Plan Check	04/15/2013			
3	A.S.I.#1 I.D. Coord..	07/11/2013			
4	A.S.I.#2 Site Coord..	07/12/2013			
5	Unit Coordination	03/14/2014			
9	A.S.I. #7	04/25/2014			

CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

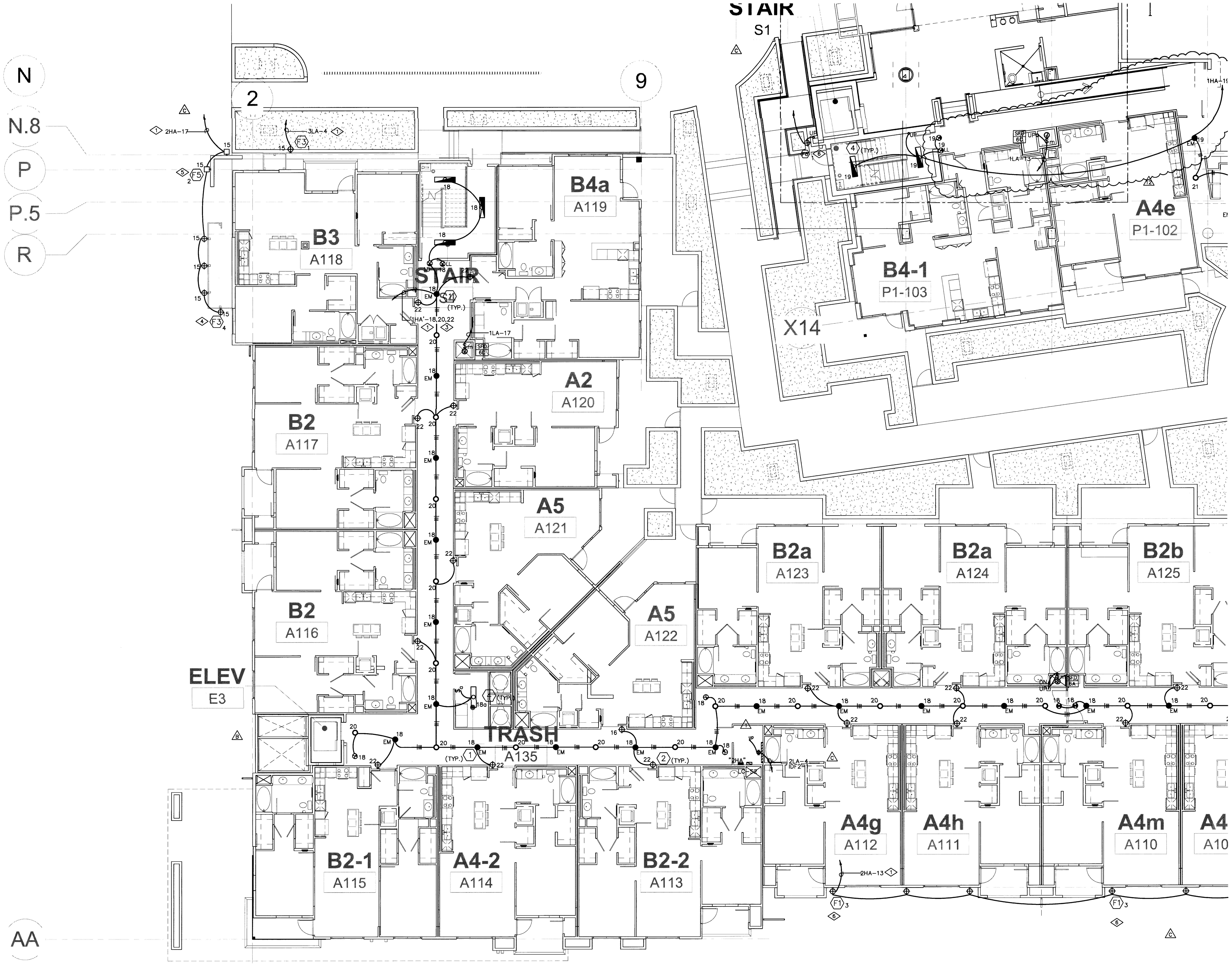
DRAWING CONTENTS
Preliminary Lighting Fixture Schedule

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

E1.1

1125-00
JOB NUMBER
AS NOTED
SCALE
LEASING REVISION
ISSUED AS
05.08.14
DATE



(1) BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 ELECTRICAL PLAN - SEGMENT A
1/8" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. LIGHTIING CIRCUITS SHALL ROUTE THROUGH RESPECTIVE LIGHTING CONTROL PANEL.
4. ALL LIGHTING CIRCIT CONDUCTORS SHOWN SHALL BE #10 AWG UNO.
5. FIELD VERIFY ALL EXIT LIGHT ARROW DIRECTIONS, EXIT LIGHT ARROW SHALL PONT TO THE NEAREST EXIT.

ELECTRICAL PLAN KEYNOTES:

1. ROUTE LIGHTING CIRCITS THROUGH LIGHTING CONTROL PANEL.
2. FULL WIDTH x 8 FT. HIGH x 3/4" THK. PLYWOOD BACKBOARD PER IDF CLOSET. REFER TO SHEET E8.1 FOR ADDITIONAL INFORMATION.
3. PROVIDE AN ADDITIONAL "HOT" CIRCUIT CONDUCTOR ROUTED AROUND L.C.P. RELAY TO MAINTAIN CONSTANT POWER TO THE INTEGRAL BATTERY PACKS, ENTIRE RUNS, CIRCUIT EXIT SIGNS AND BATTERY CHARGERS TO THIS CONSTANT HOT CONDUCTOR.
4. SURFACE MOUNTED LED ACCENT UPLIGHT FIXTURE. REQUIRED J-BOX TO BE MOUNTED AT THE BOTTOM OF HORIZONTAL SLOTS.
5. SURFACE MOUNTED METAL HALIDE UP / DOWN LIGHT. REQUIRED RECESSED J-BOX TO BE MOUNTED @ + 18" A.F.F. TYP.
6. WALL MOUNTED LED ACCENT UPLIGHT. REQUIRED RECESSED JUNCTION BOX FOR FIXTURE TO BE LOCATED @ +6" ABOVE PODIOM T.O.C. TYP.
7. SURFACE MOUNTED VERITCALLY ORIENTED LINEAR COVE FLUORESCENT. (TO BE CONCEALED).

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
1720 EAST GARRY AVE., SUITE 114
SANTA ANA, CALIFORNIA 92705
(949) 756-0807 | FAX: (949) 756-0816

REGISTERED PROFESSIONAL ENGINEER
RANDALL V. MOSS
No. E13453
Exp. 09/30/14
ELECTRICAL
STATE OF CALIFORNIA

THOMAS P. COX: ARCHITECTS, INC.
19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
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CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
BLDG. "A" PODIUM LEVEL & GARAGE LEVEL P1 ELECTRICAL PLAN - SEGMENT A
FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

E1.12A

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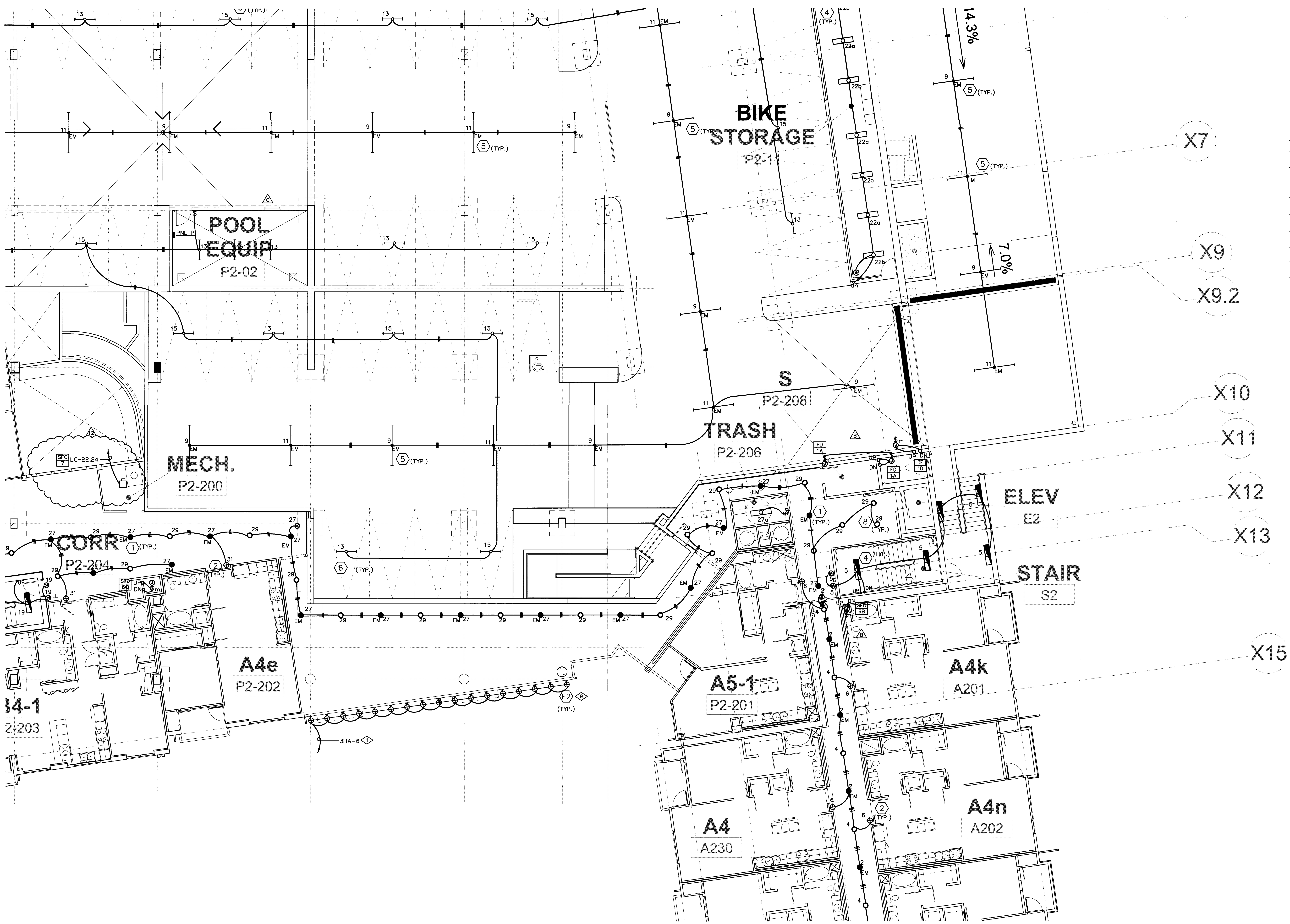

1 Bldg. "A" Level 2 & Garage Level P2 Electrical Floor Plan - Segment C
1/8" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. LIGHTIING CIRCUITS SHALL ROUTE THROUGH RESPECTIVE LIGHTING CONTROL PANEL.
4. ALL LIGHTING CIRCIT CONDUCTORS SHOWN SHALL BE #10 AWG UNO.
5. FIELD VERIFY ALL EXIT LIGHT ARROW DIRECTIONS, EXIT LIGHT ARROW SHALL PONT TO THE NEAREST EXIT.

ELECTRICAL PLAN KEYNOTES:

1 ROUTE LIGHTING CIRCITS THROUGH LIGHTING CONTROL PANEL.
2 FULL WIDTH x 8 FT. HIGH x 3/4" THK. PLYWOOD BACKBOARD PER IDF CLOSET. REFER TO SHEET E8.1 FOR ADDITIONAL INFORMATION.
3 PROVIDE AN ADDITIONAL "HOT" CIRCUIT CONDUCTOR ROUTED AROUND L.C.P. RELAY TO MAINTAIN CONSTANT POWER TO THE INTEGRAL BATTERY PACKS, ENTIRE RUNS, CIRCUIT EXIT SIGNS AND BATTERY CHARGERS TO THIS CONSTANT HOT CONDUCTOR.
4 ARM MOUNTED LINEAR FLUORESCENT UPLIGHT. FIXTURE TO BE MOUNTED ABOVE CANOPY.
5 ARM MOUNTED LINEAR FLUORESCENT UPLIGHT. FIXTURE TO BE MOUNTED AT BOTTOM OF SLOTS.
6 FOR FIXTURE TO BE LOCATED @ +6" ABOVE LEVEL 2 T.O.C. TYP.
7 FOR FIXTURE TO BE LOCATED @ +2'-0" ABOVE LEVEL 2 T.O.C. TYP.
8 SURFACE MOUNTED VERTICALLY ORIENTED LINEAR FLUORESCENT COVE LIGHT (TO BE CONCEALED).
9 ARM MOUNTED LINEAR FLUORESCENT UPLIGHT (TYP.).

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19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
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LOS ANGELES, CA 90017
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CROWN CABOT
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MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
Bldg "A" Level 2 & Gargae Level P2
Electrical Floor Plan - Segment C

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STATE OF CALIFORNIA

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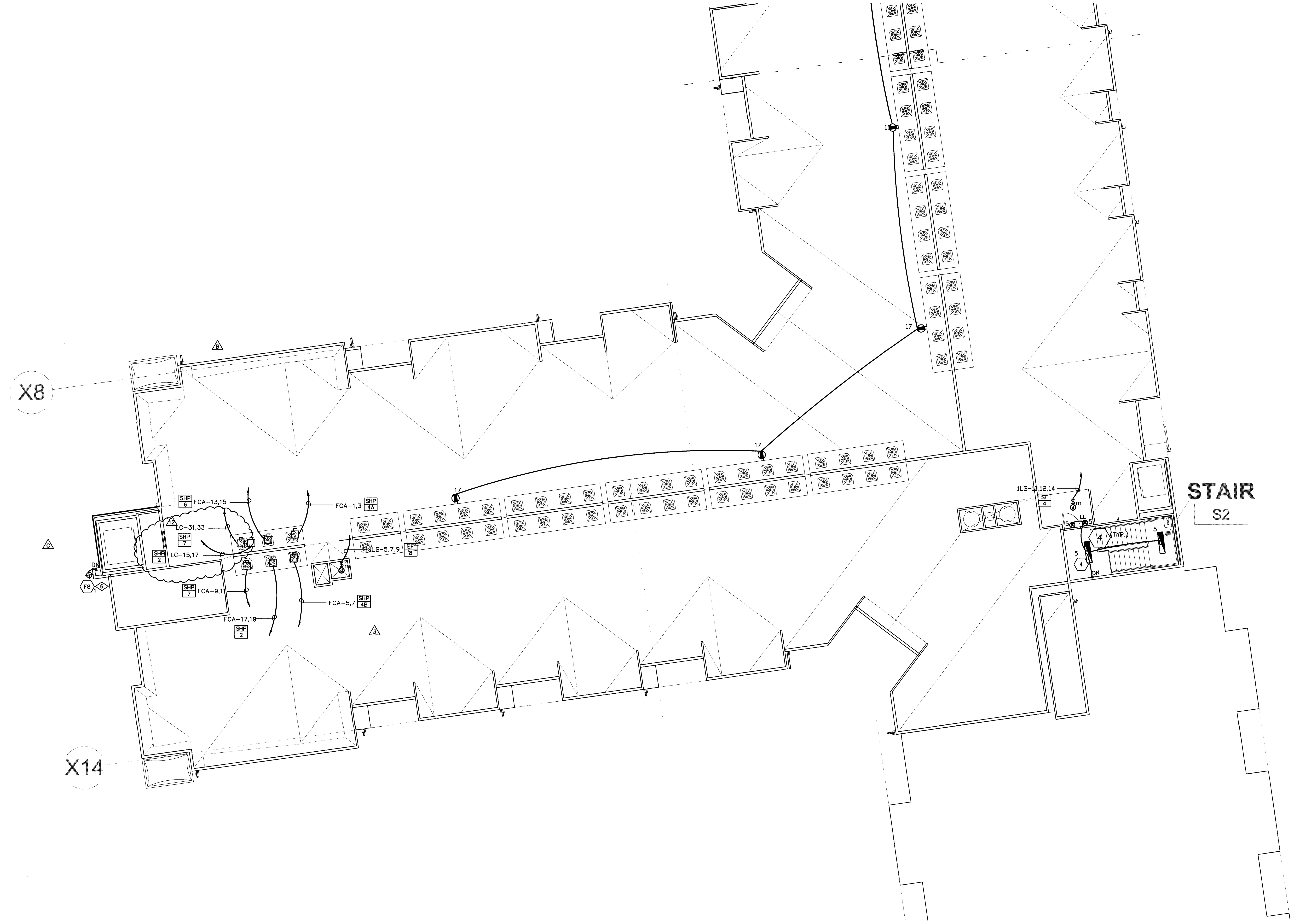

(1) Bldg. "B" Low Roof Electrical Floor Plan - Segment C
1/8" = 1'-0"

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. LIGHTIING CIRCUITS SHALL ROUTE THROUGH RESPECTIVE LIGHTING CONTROL PANEL.
4. ALL LIGHTING CIRCIT CONDUCTORS SHOWN SHALL BE #10 AWG UNO.
5. FIELD VERIFY ALL EXIT LIGHT ARROW DIRECTIONS, EXIT LIGHT ARROW SHALL PONT TO THE NEAREST EXIT.

ELECTRICAL PLAN KEYNOTES:

1. ROUTE LIGHTING CIRCITS THROUGH LIGHTING CONTROL PANEL.
2. FULL WIDTH x 8 FT. HIGH x 3/4" THK. PLYWOOD BACKBOARD PER IDF CLOSET. REFER TO SHEET E8.1 FOR ADDITIONAL INFORMATION.
3. PROVIDE AN ADDITIONAL "HOT" CIRCUIT CONDUCTOR ROUTED AROUND L.C.P. RELAY TO MAINTAIN CONSTANT POWER TO THE INTEGRAL BATTERY PACKS, ENTIRE RUNS, CIRCUIT EXIT SIGNS AND BATTERY CHARGERS TO THIS CONSTANT HOT CONDUCTOR.
1. SURFACE MOUNTED VERTICALLY ORIENTED LINEAR FLUORESCENT COVE LIGHT TO BE CONCEALED (TYP)

THOMAS P. COX: ARCHITECTS, INC.

19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
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CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
Bldg "B" Low Roof Electrical Plan - Segment C

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INDOOR LIGHTING POWER ALLOWANCE — LTG-3C

Project Name: Crown Cabot Leasing / Fitness
Date: 5/9/2013

ALLOWED LIGHTING POWER (Chose One Method)

A Separate LTG-3C must be filled out for Conditioned and Unconditioned Spaces. Indoor Lighting Power Allowances listed on this page are only for: [x] CONDITIONED spaces [ ] UNCONDITIONED spaces

COMPLETE BUILDING METHOD

BUILDING CATEGORY (From §146 Table 146-E)	WATTS PER (ft^2)	X	COMPLETE BLDG. AREA	=	ALLOWED WATTS
	TOTALS				
			AREA		WATTS

AREA CATEGORY METHOD – Part A

A	B		C		D
AREA CATEGORY (From §146 Table 146-F)	WATTS PER (ft^2)	X	AREA (ft^2)	=	ALLOWED WATTS
Server Room	1.0		60		60
Leasing Office	0.9		1,500		1,350
Office Space	1.1		300		330
Rest Rooms / Storage	0.6		150		90
Kitchen	1.6		250		400
Tech Lounge	1.2		500		600
Yoga / Fitness	1.0		1,495		1,495
Multi-Purpose Area	1.4		1,200		1,680
Sum of Additional Allowed Watts from Area Category Method – Part B (from table below)					
	TOTALS		5,312		6,005
			AREA		WATTS

AREA CATEGORY METHOD – Part B **Additional Wattage Allowance (from Table 146-F Footnotes)**

A	B	C [1]	D	E	F	G
Primary Function	Sq Ft	Additional Watts Per ft^2 Allowed	Wattage Allowance (B x C)	Description(s) and Quantity of Special Luminaire [2] Types in each Primary Function Area	Total Design Watts	ALLOWED WATTS *Smaller of D or F*

TOTALS – Enter into Area Category Method – Part A (table above)

1. Additional watts available only when allowed according to the footnotes on bottom of Table 146-F for chandelier or sconce; art, craft, assembly or manufacturing specialized task work; precision commercial/ industrial work; or lab specialized task work.
2. Special luminaires are light fixtures described in the Table 146-F Footnotes that are subject to an additional wattage allowance.

TAILORED METHOD

Total Allowed Watts using the Tailored Method taken from LTG-4C (Page 1 of 4) Row 3

The indoor lighting power allowance using the Tailored Method of compliance shall be determined using the LTG-4C set of forms. A separate set of LTG-4C forms shall be filled out for CONDITIONED and UNCONDITIONED spaces

CERTIFICATE OF COMPLIANCE (Page 4 of 4) LTG-1C

Project Name: Crown Cabot Leasing / Fitness
Date: 5/9/2013

Conditioned and Unconditioned space Lighting must not be combined for compliance

Indoor Lighting Power for Conditioned Spaces			Indoor Lighting Power for Unconditioned Spaces		
		Watts			Watts
Installed Lighting (from Conditioned LTG-1C Page 2)		5,975	**Installed** Lighting (from Unconditioned LTG-1C Page 2)		
Lighting Control Credit Conditioned Spaces (from LTG-2C)	-		Lighting Control Credit Unconditioned Spaces (from LTG-2C)	-	
Adjusted **Installed** Lighting Power	=		Adjusted **Installed** Lighting Power	=	
Complies if **Installed** ≤ **Allowed**		↕	Complies if **Installed** ≤ **Allowed**		↕
Allowed Lighting Power Conditioned Spaces (from LTG-3C)		6,005	**Allowed** Lighting Power Unconditioned Spaces (from LTG-3C)		

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, LTG-2A. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. ***Forms can be grouped by type of Luminaire controlled.***

Enforcement Agency:

Systems Acceptance. *Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements.*
The LTG-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the LTG-2A for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

Luminaires Controlled				LTG-2A
Equipment Requiring Testing	Description	Number of like Controls	Location	Controls and Sensors and Automatic Daylighting Controls Acceptance
Lighting Control Panels	LCP	2	Electrical Room	[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]
				[ ]

Certificate of Compliance (Page 3 of 4) OLTG-1C

Project Name: Crown Cabot Site Plan
Date: 07/15/2013

A. OUTDOOR LIGHTING ZONE

OUTDOOR LIGHTING ZONE: [ ] OLZ 1 [ ] OLZ 2 [x] OLZ 3 [ ] OLZ 4

Is the Outdoor Lighting Zone: [ ] Default in accordance with §10-114, or [ ] Amended by JHA

Complete the information below if the default Outdoor Lighting Zone has been amended by the local jurisdiction having authority (JHA):

- [ ] The site is a government designated park, recreation area, wildlife preserve, or portion thereof, and has been designated as LZ2 or LZ3, in accordance with Table 10-114-A, because the site is contained within such a zone.
- [ ] The local jurisdiction having authority has officially adopted a change to the State Default Lighting Zone and has notified the Energy Commission by providing the materials required in §10-114(d) to the Executive Director.
- [ ] The adopted change is posted on the Energy Commission website.

B. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Are additional lighting power allowances for ordinance in Table 147-C used? [ ] Yes [x] No

Complete the information below if additional lighting power allowances for ordinance requirements are used:

- [ ] The local jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.
- [ ] The local jurisdiction having authority which adopted specific outdoor light levels and has notified the Commission by providing the following materials required §10-114(f) to the Executive Director.

C. ACCEPTANCE FORMS

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, LTG-2A. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. ***Forms can be grouped by type of Luminaire controlled.***

Enforcement Agency:

Systems Acceptance. *Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements.*
The LTG-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the LTG-2A for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

				Certificate of Acceptance
	Luminaires Controlled			OLTG-2A[1]
Equipment Requiring Testing	Description	Number of Like Controls	Location	Outdoor Lighting Acceptance Tests
Lighting Control Panel	LCP	2	Electrical Room	

1. Insert: ***OMS*** *for Outdoor Motion Sensor;* ***OLSC*** *for Outdoor Lighting Shutoff Controls;* ***OP*** *for Outdoor Photocontrol;* ***ATS*** *for Astronomical Time Switch; and,* ***STS*** *for Standard (non-astronomical) Time Switch acceptance.*

CERTIFICATE OF COMPLIANCE (Page 2 of 4) LTG-1C

INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

Project Name: Crown Cabot Leasing
Date: 5/9/2013

Installation Certificate, LTG-1-INST (Retain a copy and verify form is completed and signed.) [ ] **Field Inspector**

Certificate of Acceptance, LTG-2A (Retain a copy and verify form is completed and signed.) [ ] **Field Inspector**

A separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces Installed Lighting Power listed on this Lighting Schedule is only for: [x] CONDITIONED SPACE [ ] UNCONDITIONED SPACE

[x] *The actual indoor lighting power listed below includes all installed permanent and portable lighting systems in accordance with §146(a)*

[ ] *Only for offices: Up to the first 0.2 watts per square foot of portable lighting shall not be required to be included in the calculation of actual indoor lighting power density in accordance with the Exception to §146(a). All portable lighting in excess of 0.2 watts per square foot is totaled below.*

	Luminaire Schedule (Type, Lamps, Ballasts)		Installed Watts						
A	B	C	D	E		F	G	H	
				How wattage was determined				Field Inspector [2]	
Name or Item Tag	Complete Luminaire Description (i.e, 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast)		Watts per Luminaire [1]	CEC Default from NA8	According to §130 (d or e)	Number of Luminaires	Installed Watts (D x F)	Pass	Fail
				[ ]	[ ]			[ ]	[ ]
LT-2a	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	[x]	[ ]	3	84	[ ]	[ ]
LT-2b	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	[x]	[ ]	1	28	[ ]	[ ]
LT-2c	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	[x]	[ ]	1	28	[ ]	[ ]
LT-2d	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	[x]	[ ]	1	28	[ ]	[ ]
LT-2e	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	[x]	[ ]	1	28	[ ]	[ ]
LT-3	(1) 28W., C.F. Pendant, Dimming, Electronic Ballast		28	[x]	[ ]	2	56	[ ]	[ ]
LT-5	T5HO, Pendant, Electronic Ballast		62	[x]	[ ]	1	62	[ ]	[ ]
LT-6	(1) 30W., Inc. Pendant, Dimming		30	[x]	[ ]	4	120	[ ]	[ ]
LT-7	(1) 75W., Inc. Pendant, Dimming		75	[x]	[ ]	1	75	[ ]	[ ]
LT-8	T5, Wall Wash, Electronic Ballast		30	[x]	[ ]	9	270	[ ]	[ ]
LT-9	45W, Per Linear Foot,Track Lighting,		180	[x]	[ ]	2	360	[ ]	[ ]
				[x]	[ ]			[ ]	[ ]
LT-14	(1) 30W Halogen, Wall Wash		30	[x]	[ ]	6	180	[ ]	[ ]
LT-16	(1) 32T8, Fluorescent, Electronic Ballast		36	[x]	[ ]	9	324	[ ]	[ ]
LT-15	(1) 28W., C.F. Down Light, Electronic Ballast		28	[x]	[ ]	144	4,032	[ ]	[ ]
LT-18	(4) 15W LED		60	[ ]	[ ]	5	300	[ ]	[ ]
					INSTALLED WATTS PAGE TOTAL:		5,975		

Building total number of pages: 1

Installed Watts Building Total (Sum of all pages): 5,975

Enter into LTG-1C Page 4 of 4

1. Wattage shall be determined according to Section 130(d and e). Wattage shall be rating of light fixture, not rating of bulb.
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CERTIFICATE OF COMPLIANCE (Page 1 of 4) LTG-1C

Project Name: Crown Cabot Leasing
Date: 5/9/2013

Project Address: Laguna Niguel, CA
Climate Zone:
Building CFA: 6,005
Unconditioned Floor Area:

General Information

Building Type:	[x] Nonresidential	[ ] High-Rise Residential	[ ] Hotel/Motel
[ ] Schools	[ ] Relocatable Public Schools	[x] Conditioned Spaces	[ ] Unconditioned Spaces
Phase of Construction:	[ ] New Construction	[ ] Addition	[x] Alteration
Method of Compliance:	[x] Complete Building	[ ] Area Category	[ ] Tailored

Documentation Author's Declaration Statement

- I certify that this Certificate of Compliance documentation is accurate and complete.

Name: Randall V. Moss, P.E. Signature:
Company: RVM Engineering, Inc. Date: 5/9/20136
Address: 1720 E. Garry Ave., Suite 114 If applicable: CEA # CEPE #
City/State/Zip: Santa Ana, California 92705 Phone: 949.756.0807

Principal Lighting Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name: Randall V. Moss, P.E. Signature:
Company: RVM Engineering, Inc. Phone: 949.756.0807
Address: 1720 E. Garry Ave., Suite 114 License #E13453
City/State/Zip: Santa Ana, California 92705 Date: 09/30/14

Lighting Mandatory Measures
Indicate location on building plans of Mandatory Measures Note Block: ____________

LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.

[x]	LTG-1C Pages 1 through 4	Certificate of Compliance. All Pages required on plans for all submittals.
[ ]	LTG-2C	Lighting Controls Credit Worksheet
[x]	LTG-3C	Indoor Lighting Power Allowance
[ ]	LTG-4C Pages 1 through 4	Tailored Method Worksheet
[ ]	LTG-5C Pages 1 and 2	Line Voltage Track Lighting Worksheet

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No. E13453
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ELECTRICAL
STATE OF CALIFORNIA

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DRAWING CONTENTS
Title 24 Leasing & Fitness Centers

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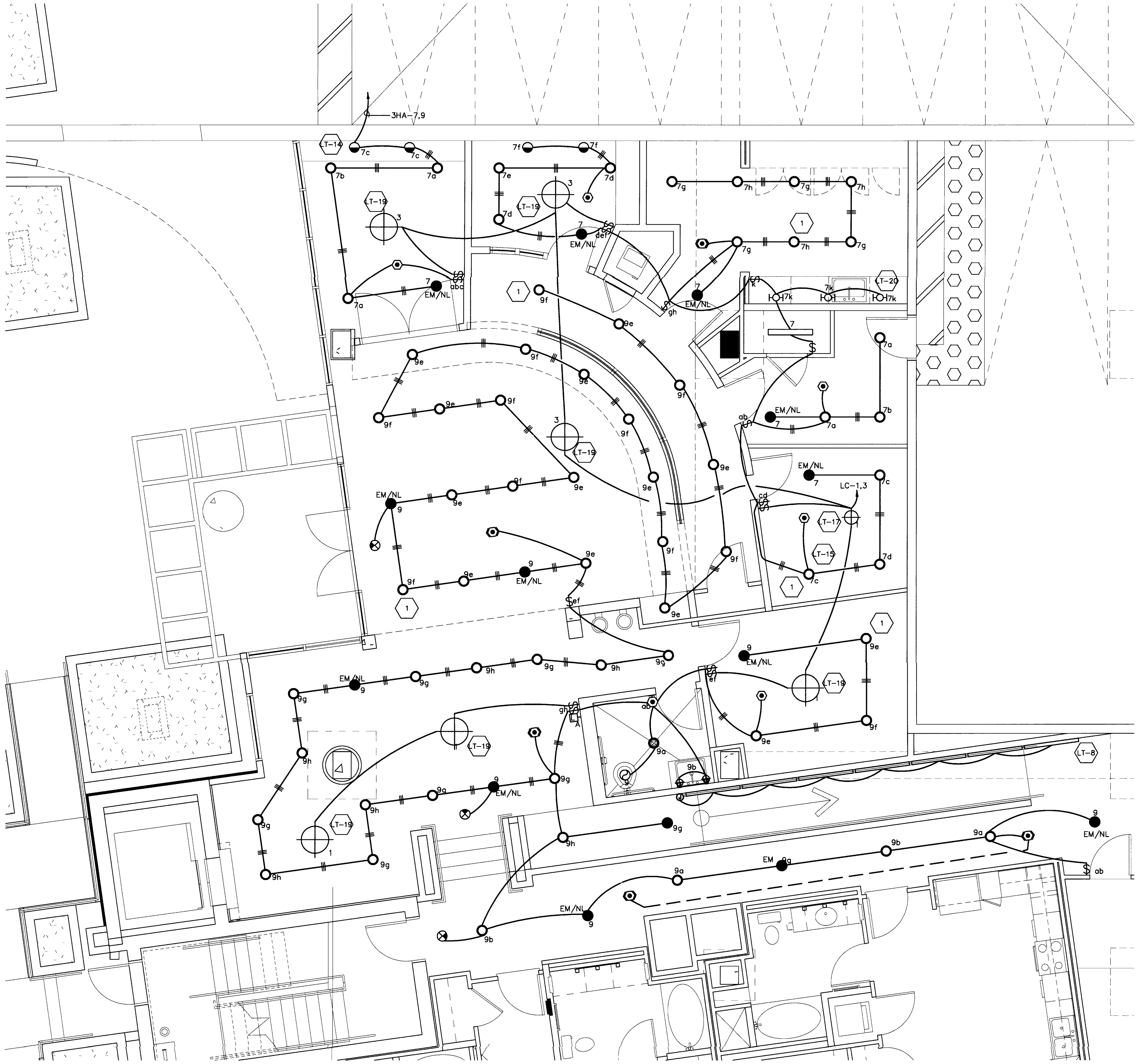

LEASING OFFICE LIGHTING PLAN - PODIUM LEVEL

1/4"=1'-0"

LIGHTING PLAN GENERAL NOTES:

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES.
2. VERIFY EXACT CEILING CONSTRUCTION WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE LIGHTING FIXTURES WITH ALL NECESSARY MOUNTING HARDWARE.
3. ALL LIGHTING FIXTURES DEVOTED AS "EM" AND/OR "NL" SHALL BE PROVIDED WITH A CONSTANT "HOT" CIRCUIT FOR CHARGING THE INTEGRAL BATTERY PACK. 12

LIGHTING PLAN SPECIFIC NOTES:

1. ROUTE THROUGHT LIGHTING CONTROL PNAEL.

THOMAS P. COX: ARCHITECTS, INC.

19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
SUITE 1020
LOS ANGELES, CA 90017
PHONE 213 553-1100

REVISION

1	1st Plan Check	01/30/2013
2	2nd Plan Check	02/28/2013
3	3rd Plan Check	04/15/2013
	A.S.I.#1 I.D. Coord.	07/11/2013
	A.S.I.#2 Site Coord.	07/12/2013
	Unit Coordination	03/14/2014
	A.S.I. #7	04/25/2014
	A.S.I. #9	05/07/2014
12	LEASING REVISION	05/08/2014

CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

LEASING OFFICE LIGHTING PLAN - PODIUM LEVEL

FOR CONSTRUCTION

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS
1720 EAST GARRY AVE., SUITE 114
SANTA ANA, CALIFORNIA 92705
(949) 756-0807 | FAX: (949) 756-0816

REGISTERED PROFESSIONAL ENGINEER
RANDALL V. MOSS
No. E13453
Exp. 09/30/14
ELECTRICAL
STATE OF CALIFORNIA

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3 1 12

E6.1

1125-00
JOB NUMBER

AS NOTED
SCALE

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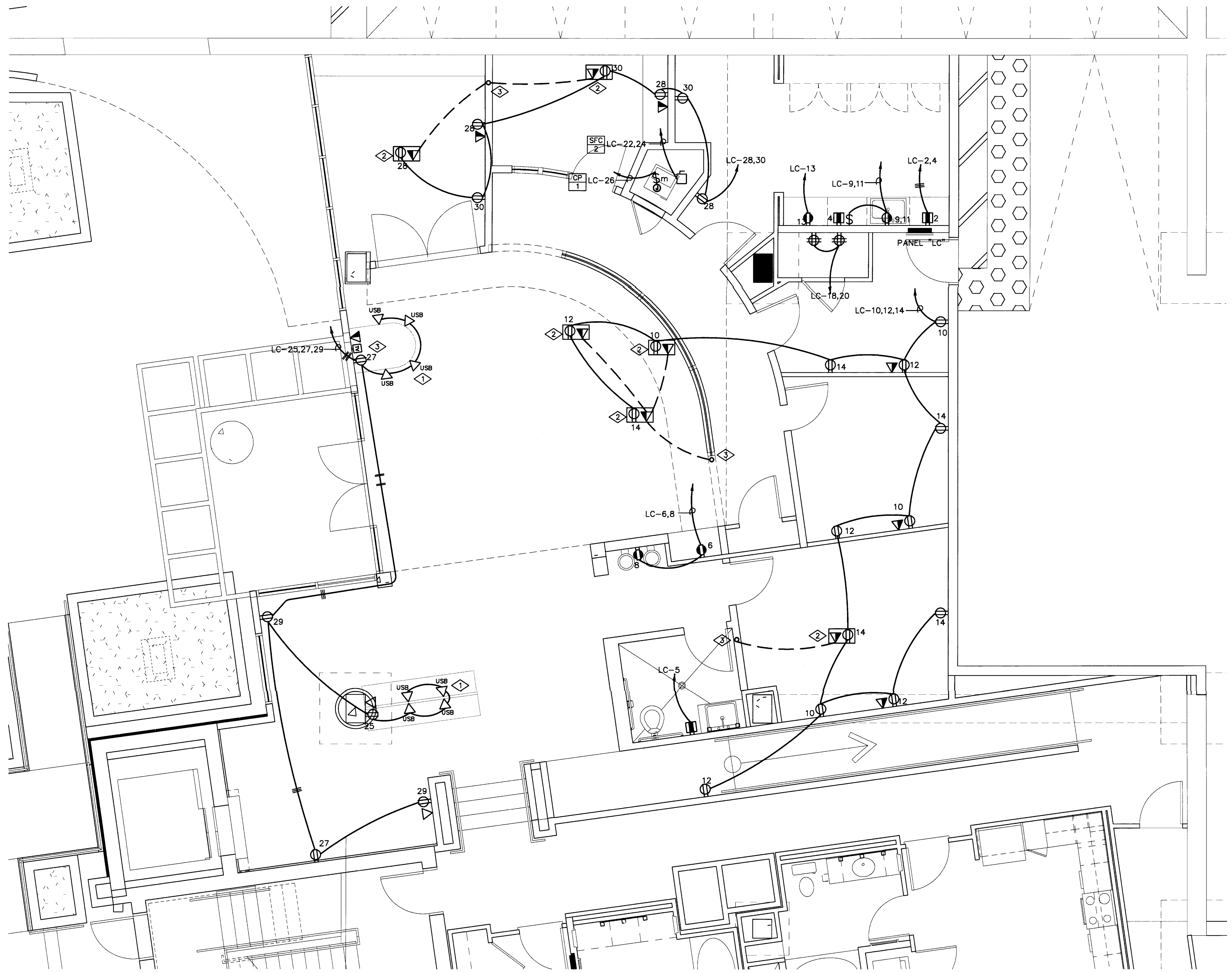
05.08.14
DATE



LEASING OFFICE POWER PLAN - PODIUM LEVEL

1/4"=1'-0"

POWER PLAN GENERAL NOTES:

1. ALL RECEPTALCES ON COMMON WALLS SHALL BE SEPRATE BOXES AND OFFSET 24" MINIMUM.
2. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE PROTECTED FROM THE SPREAD OF FIRE WITH AND APPROVED FIRESTOP SYSTEM EQUAL OR GREATER THAN THE FIRE RATING OF THE WALL.
3. HEIGHT OF ALL RECEPTACLES AT COUNTER SHELVES, ETC., SHALL BE CERTIFIED WITH OWNER PRIOR TO ROUGH IN. PROVIDE GFCI TYPE RECEPTACLES WITHIN 6 FT. OF ANY SINK.
4. GROUNDING FAULT PROTECTION SHALL BE PERFORMANCE TESTED PER NEC ARTICLE #210-9(c).
5. PUBLE TELEPHONE SHALL COMPLY WITH SECTION 11117B2.

POWER PLAN SPECIFIC NOTES:

1. PROVIDE PWER SOURCE FOR FOUR (4) USB PORTS TO BE LOCATED WITHIN TABLE. REFER TO ELEVATION PLANS. OWNER TO CONFIRM TECH EQUIPMENT BEING USED.
2. PROVIDE HUBBLE #PFBRG2, 2-GANG NON METALIC FLOOR BOX WITH 2-GANG CARPET FLANGE, 2-BRASS COVERS FOR ONE 20A DEDICATED RECEPTACLE, ONE INTERNET/CATV COMBINATION. REFER TO ARCHITECTURAL SHEET A2 FOR EXACT LOCATION.
3. 1-1/2" C. UP WALL TO NEAREST TELEPHONE BACKBOARD.

THOMAS P. COX: ARCHITECTS, INC.

19782 MacARTHUR BLVD.
SUITE 300
IRVINE, CA 92612
PHONE 949 862-0270

801 S. GRAND AVE.
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LOS ANGELES, CA 90017
PHONE 213 553-1100

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6	Unit Coordination	03/14/2014
7	A.S.I. #7	04/25/2014
8	A.S.I. #9	05/07/2014
9	LEASING REVISION	05/08/2014

CROWN CABOT
LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

LEASING OFFICE POWER PLAN - PODIUM LEVEL

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E6.2

1125-00
JOB NUMBER

AS NOTED
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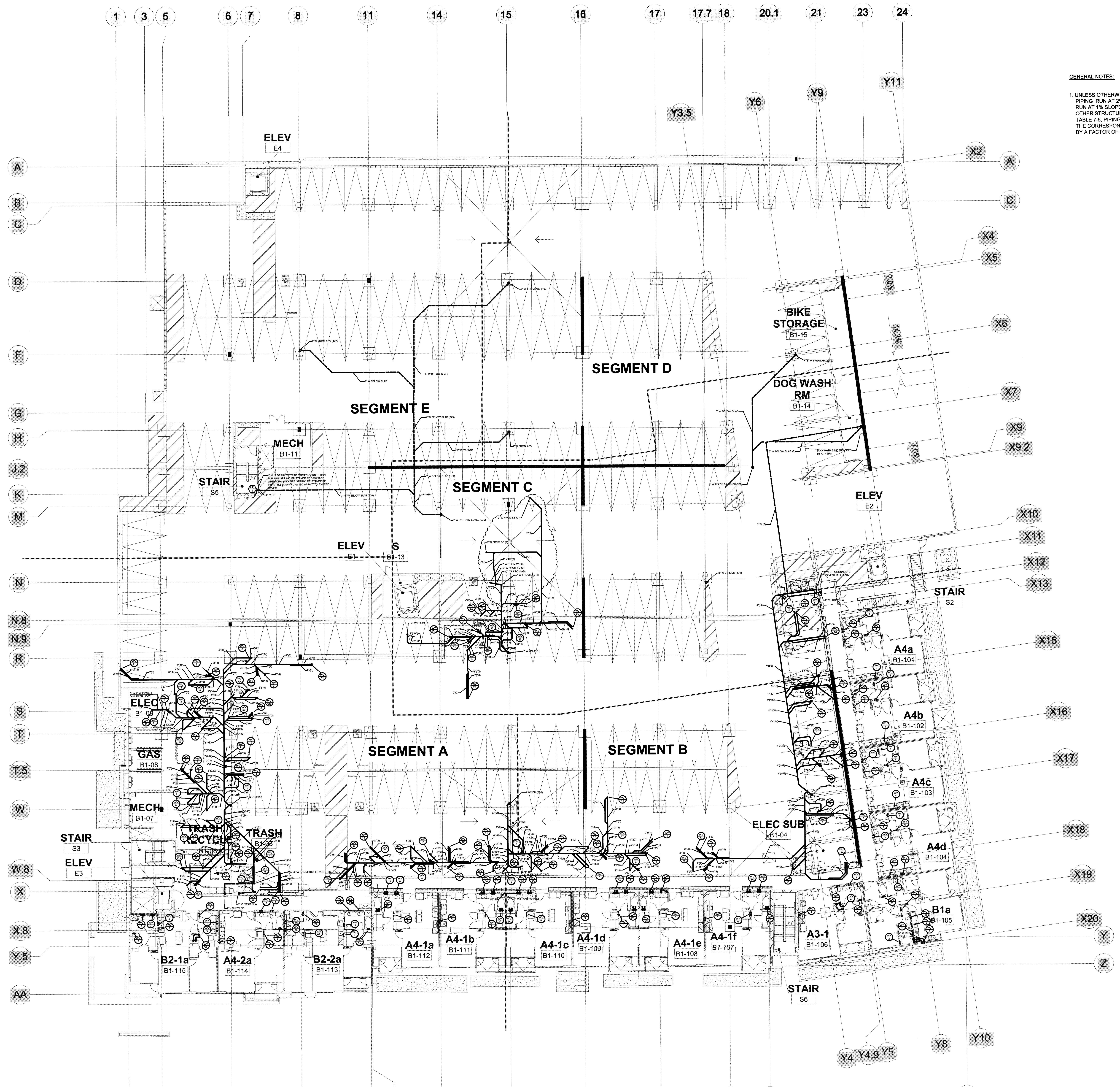
DATE

RVM ENGINEERING, INC.
PROFESSIONAL ENGINEERS & LIGHTING CONSULTANTS



1 PLUMBING: WASTE & VENT-GARAGE LEVEL B1
1/16" = 1'-0"

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, 3" AND SMALLER HORIZONTAL PIPING RUN AT 2% SLOPE, 4" AND LARGER HORIZONTAL PIPING RUN AT 1% SLOPE DUE TO THE MINIMUM HEADROOM REQUIRED AND OTHER STRUCTURE RESTRAINTS. ALL PIPING ARE SIZED PER 2010 CPC TABLE 7-5, PIPING WITH 1% SLOPE IS SIZED WITH ADJUSTMENT FOR THE CORRESPONDING MAX. FIXTURE UNITS IN TABLE 7-5 MULTIPLIED BY A FACTOR OF 0.8 ACCORDINGLY.

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WASTE & VENT GARAGE LEVEL B1

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P0.11

2010-089
JOB NUMBER

1/16"=1'-0"
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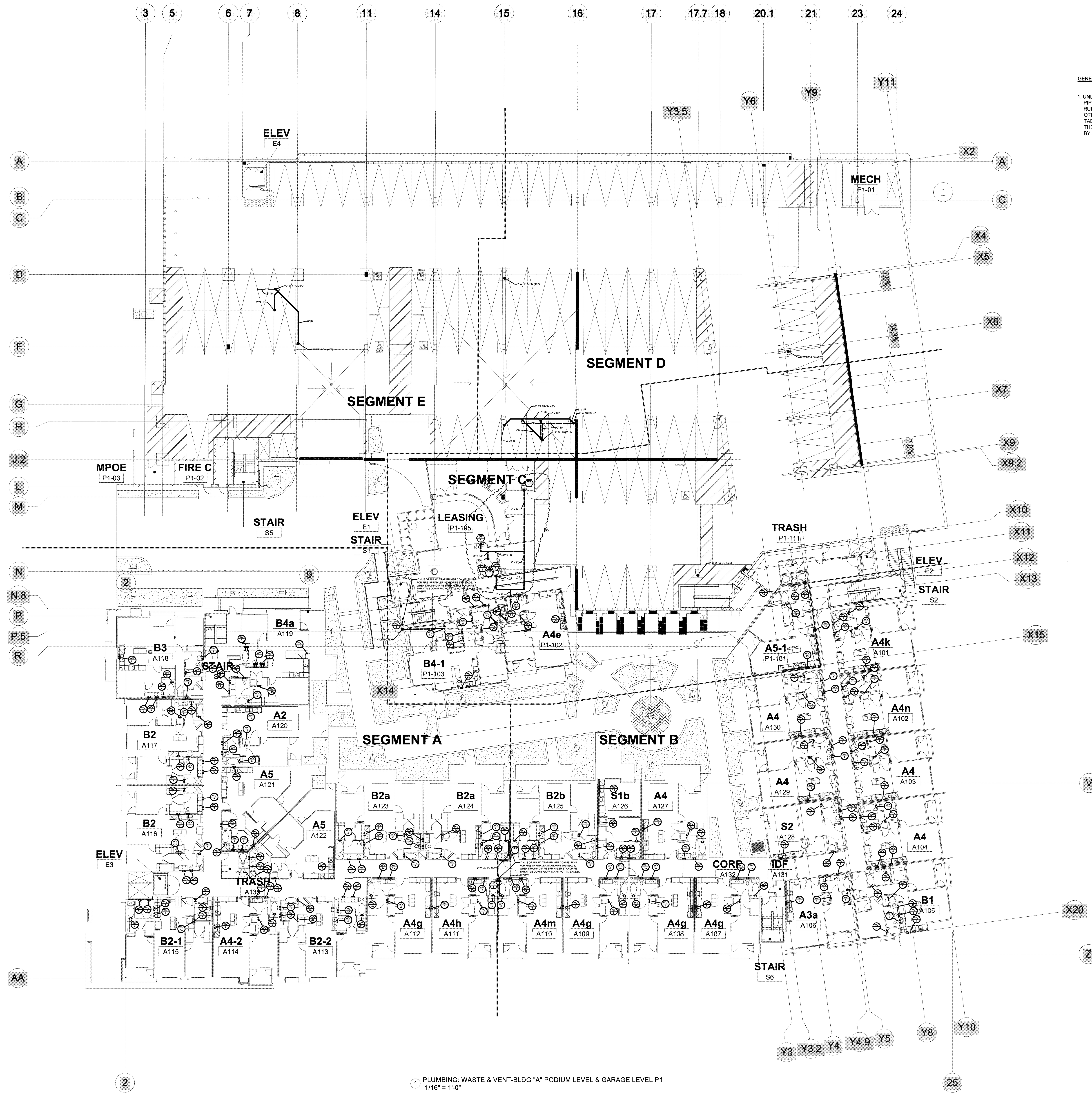

1 PLUMBING: WASTE & VENT-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1
1/16" = 1'-0"

GENERAL NOTES:

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CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd.
Wilmington, CA 90744
Phone: 310-835-1532
Lic. No C36-775747
Exp. 3-31-2014
Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WASTE & VENT
BLDG "A" PODIUM LEVEL &
GARAGE LEVEL P1

FOR CONSTRUCTION

P0.12

2010-089
JOB NUMBER
1/16"=1'-0"
SCALE

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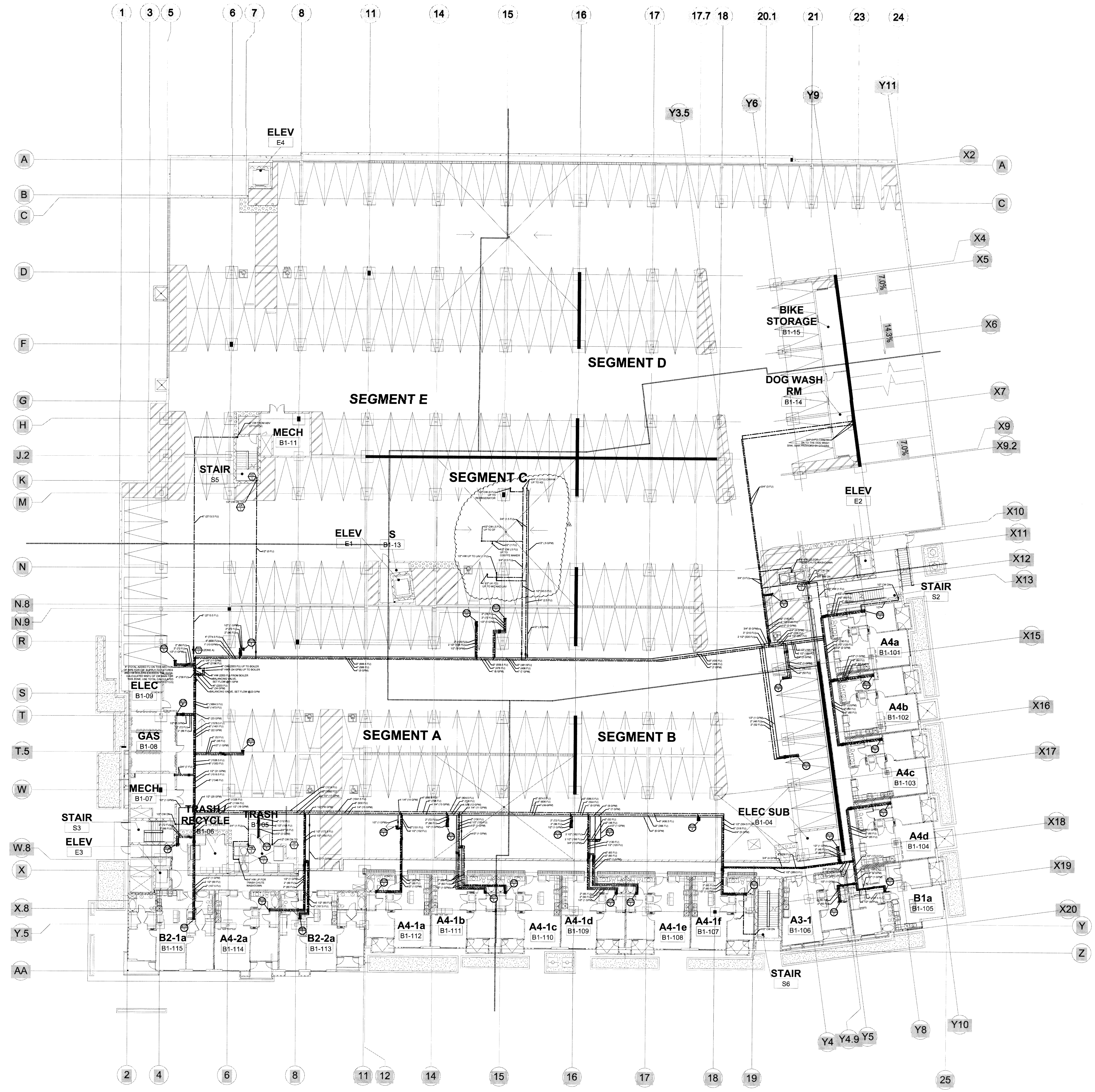

1 PLUMBING: WATER-GARAGE LEVEL B1
1/16" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

PLUMBING: WATER GARAGE LEVEL B1

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P0.21W

2010-089
JOB NUMBER

1/16"=1'-0"
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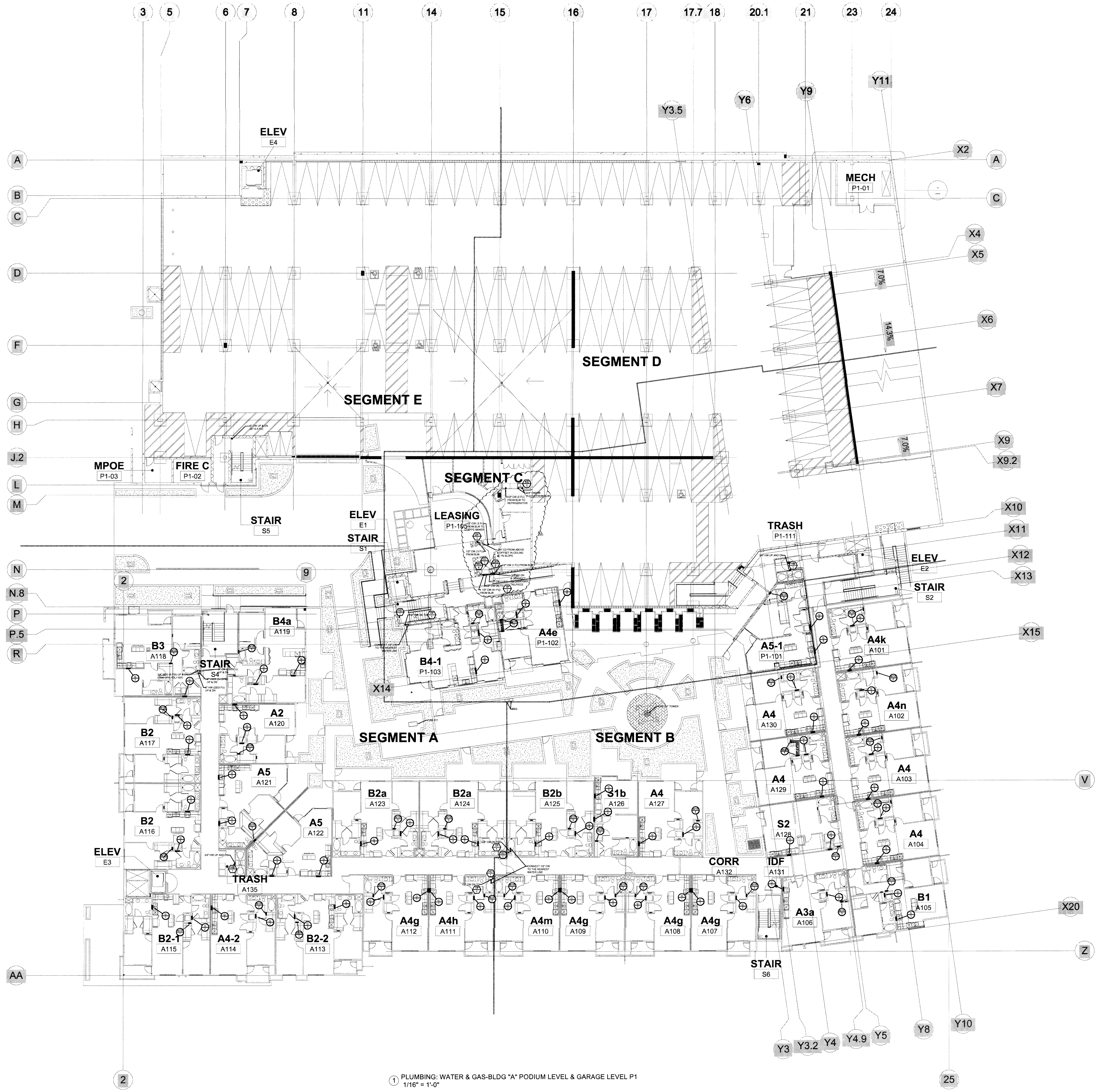

1 PLUMBING: WATER & GAS-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1
1/16" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAN Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER QIZHAO WANG M 32631 EXP. 12-31-15 MECHANICAL STATE OF CALIFORNIA

REVISION DATE
ASI #10 - CLIENT REVISIONS 02-01-2013
06-06-2014

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER & GAS
BLDG "A" PODIUM LEVEL &
GARAGE LEVEL P1

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P0.22

2010-089
JOB NUMBER
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SCALE
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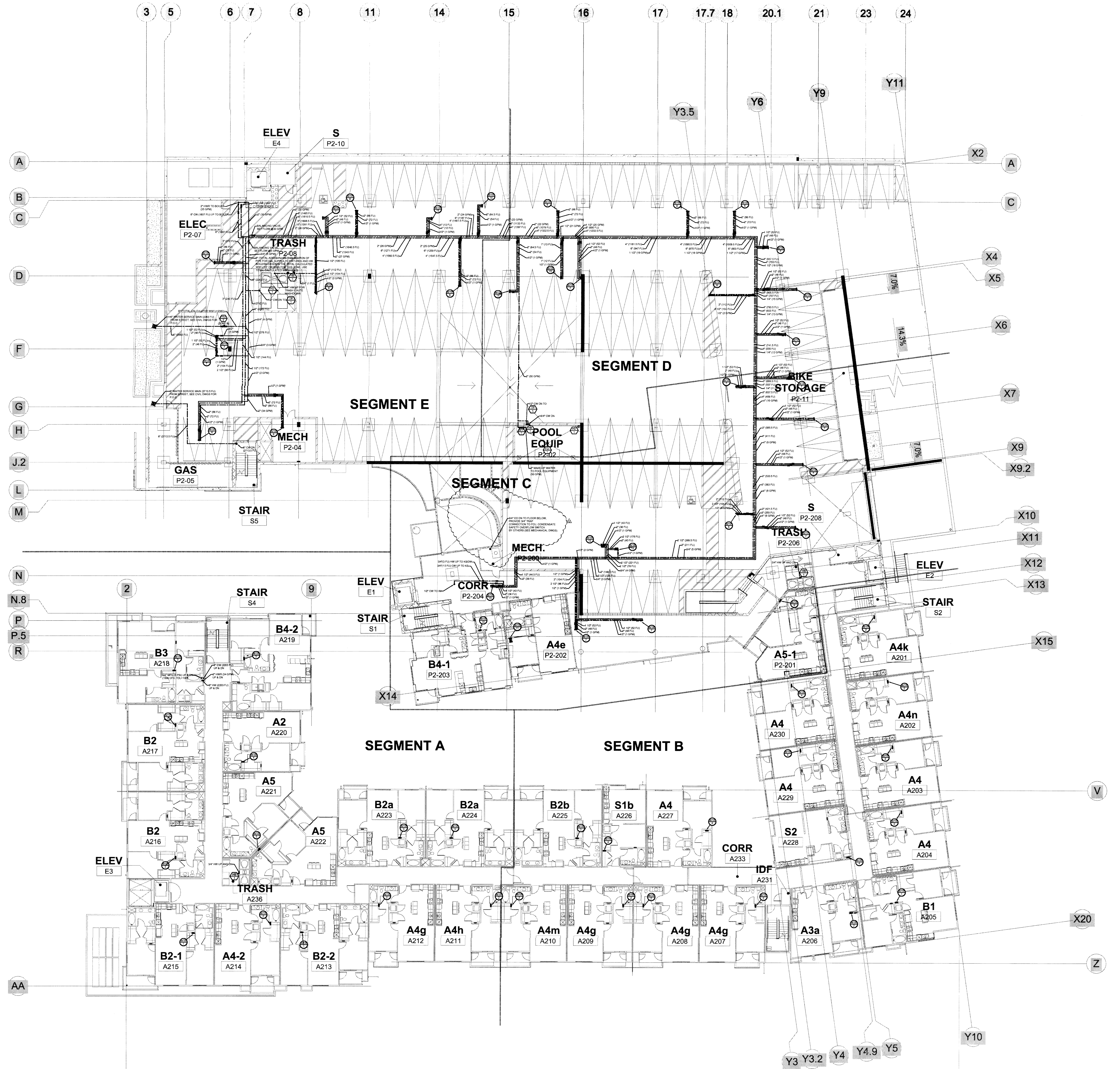
05/09/2014
DATE



1 PLUMBING: WATER-BLDG "A" LEVEL 2 & GARAGE LEVEL P2
1/16" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

CROWN CABOT LUXURY APARTMENTS

25691 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER
BLDG "A" LEVEL 2 & GARAGE
LEVEL P2

FOR CONSTRUCTION

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P0.23W

2010-089
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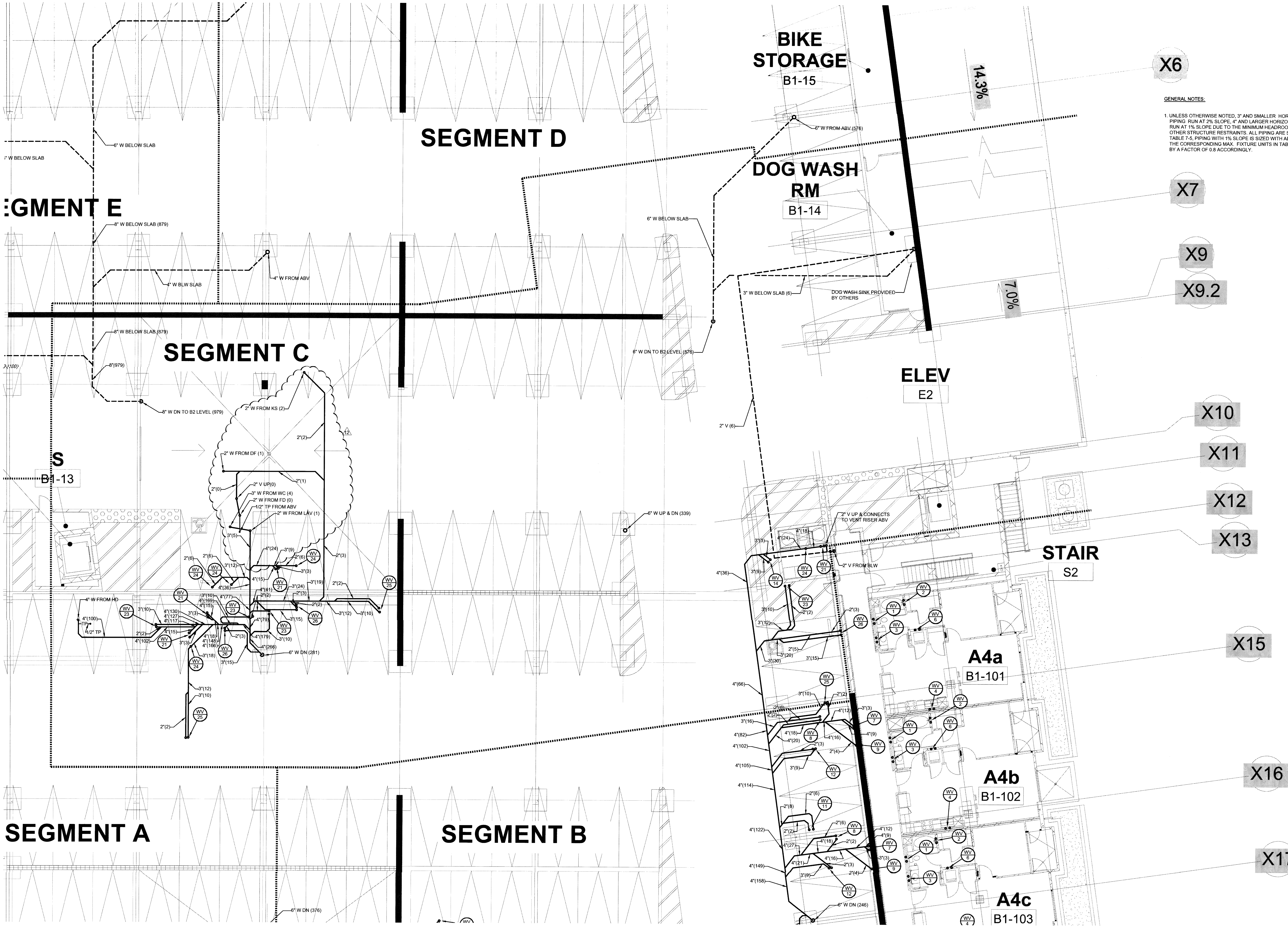

1 PLUMBING: WASTE & VENT-GARAGE LEVEL B1-SEGMENT C
1/8" = 1'-0"

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, 3" AND SMALLER HORIZONTAL PIPING RUN AT 2% SLOPE, 4" AND LARGER HORIZONTAL PIPING RUN AT 1% SLOPE DUE TO THE MINIMUM HEADROOM REQUIRED AND OTHER STRUCTURE RESTRAINTS. ALL PIPING ARE SIZED PER 2010 CPC TABLE 7-5, PIPING WITH 1% SLOPE IS SIZED WITH ADJUSTMENT FOR THE CORRESPONDING MAX. FIXTURE UNITS IN TABLE 7-5 MULTIPLIED BY A FACTOR OF 0.8 ACCORDINGLY.

Thomas P. Cox: Architects, Inc.

CONSULTANT
AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

REVISION		DATE
1		02-01-2013
12	ASI #10 - CLIENT REVISIONS	05-08-2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WASTE & VENT GARAGE LEVEL B1 SEGMENT C

FOR CONSTRUCTION

P1.11C

2010-089
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1/8"=1'-0"
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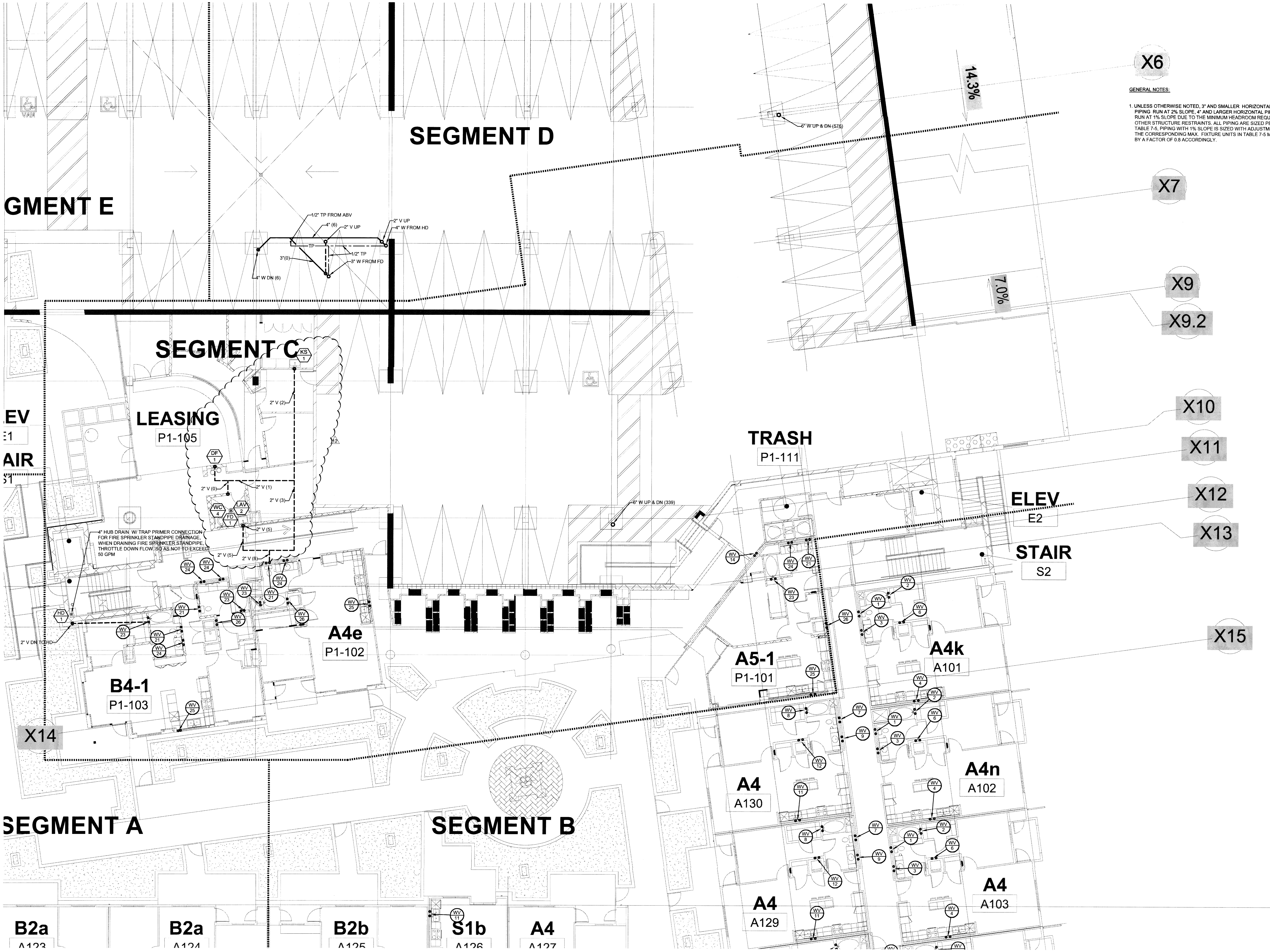

① PLUMBING: WASTE & VENT-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1-SEGMENT C
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AMPAM Parks Mechanical

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WASTE & VENT
BLDG "A" PODIUM LEVEL &
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P1.12C

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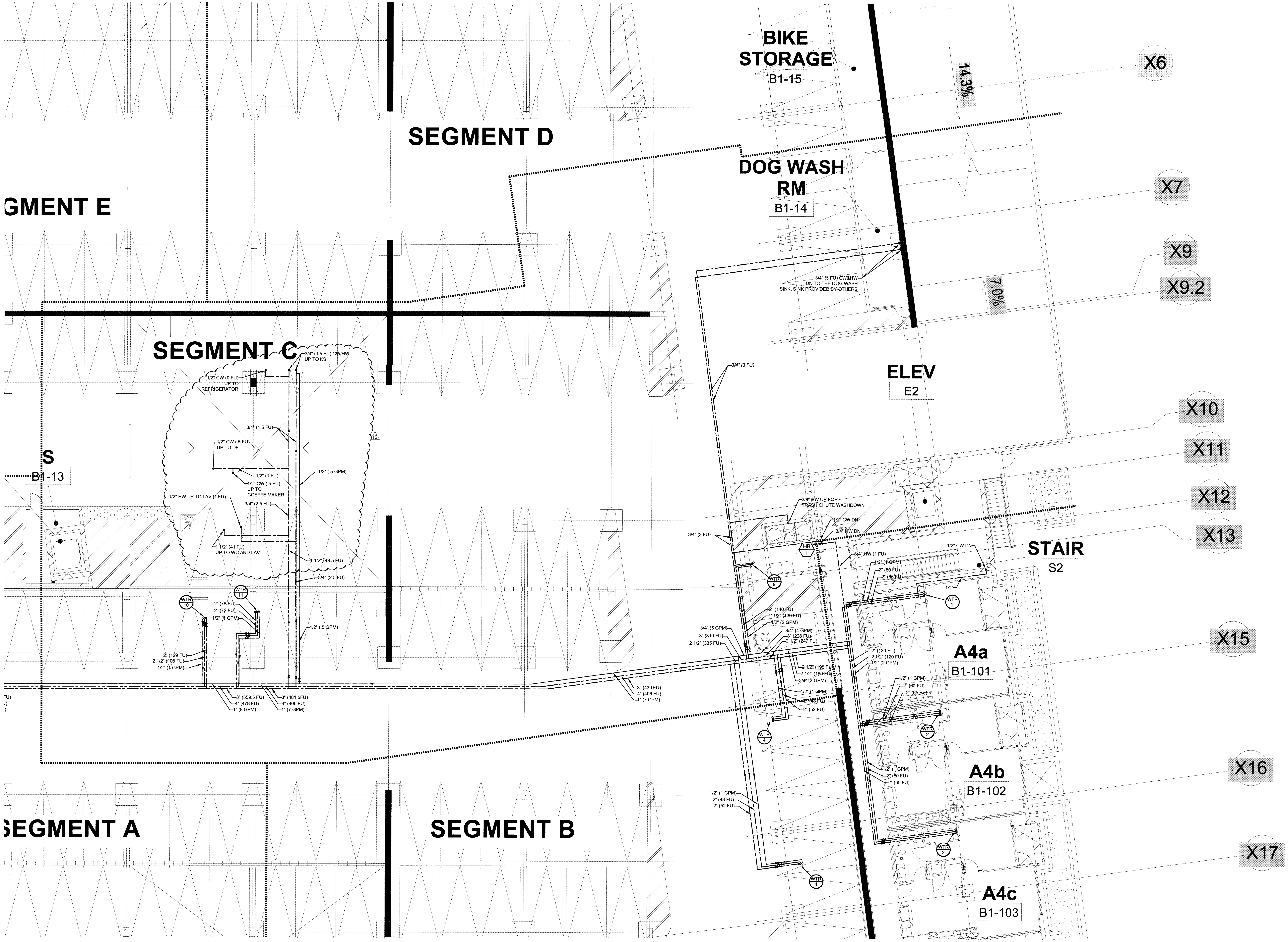

1 PLUMBING: WATER-GARAGE LEVEL B1-SEGMENT C
1/8" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER
QIZHAO WANG
M 32631
EXP. 12-31-15
MECHANICAL
STATE OF CALIFORNIA

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CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER
GARAGE LEVEL B1
SEGMENT C

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P1.21WC

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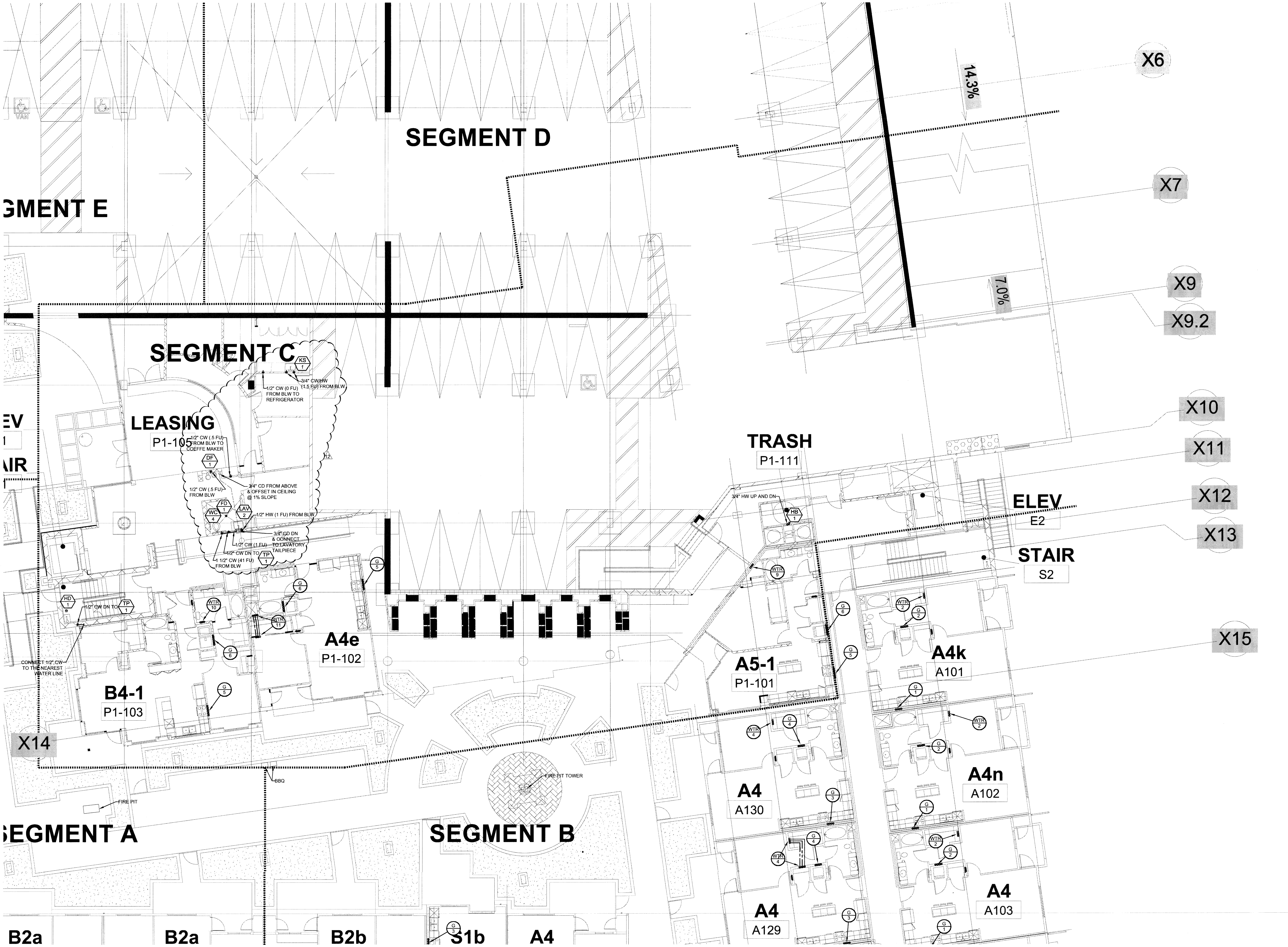

1 PLUMBING: WATER & GAS-BLDG "A" PODIUM LEVEL & GARAGE LEVEL P1-SEGMENT C
1/8" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical
1060 Wilmington Blvd. Wilmington, CA 90744 Phone: 310-835-1532
Lic. No C36-775747 Exp. 3-31-2014 Fax: 310-835-2913

DESIGN BY: C.W.
DRAFTED BY: C.W.

REGISTERED PROFESSIONAL ENGINEER QIZHAO WANG M 32631 EXP. 12-31-15 MECHANICAL STATE OF CALIFORNIA

REVISION		DATE
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CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER & GAS
BLDG "A" PODIUM LEVEL &
GARAGE LEVEL P1-SEGMENT C

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P1.22C

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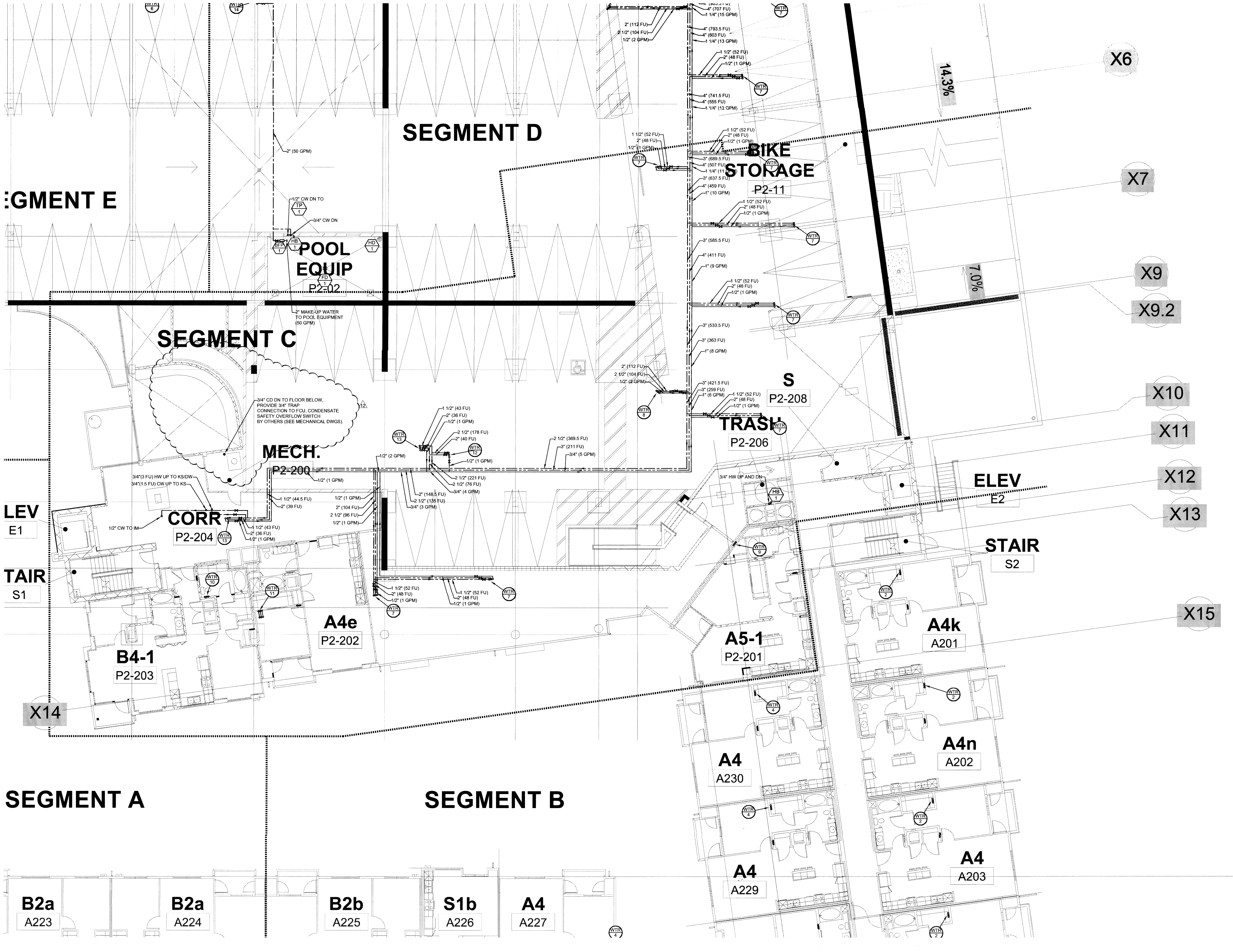

1 PLUMBING: WATER-BLDG "A" LEVEL 2 & GARAGE LEVEL P2-SEGMENT C
1/8" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT
AMPAM Parks Mechanical

DESIGN BY: C.W.
DRAFTED BY: C.W.

CROWN CABOT LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
PLUMBING: WATER
BLDG "A" LEVEL 2 & GARAGE
LEVEL P2-SEGMENT C

FOR CONSTRUCTION

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P1.23WC

2010-089
JOB NUMBER
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SCALE
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05-08-2014
DATE

Mill Creek

Corrections

PLN

25891 CROWN VALLEY PKWY
27960 CABOT RD

B12-2453-R1

B14-1392 - REVISION Expired 11/30/14

Leasing Office

10/21/15
Don't see stamped Approved Set
Keeping this set was in hold
bin

Equipotential Bonding Requirements for Swimming Pools per National Electrical Code Section 680.26

680.26 Equipotential Bonding.

(A) Performance. The equipotential bonding required by this section shall be installed to reduce voltage gradients in the pool area.

(B) Bonded Parts. The parts specified in 680.26(B)(1) through (B)(7) shall be bonded together using solid copper conductors, insulated covered, or bare, not smaller than 8 AWG or with rigid metal conduit of brass or other identified corrosion-resistant metal. Connections to bonded parts shall be made in accordance with 250.8. An 8 AWG or larger solid copper bonding conductor provided to reduce voltage gradients in the pool area shall not be required to be extended or attached to remote panelboards, service equipment, or electrodes.

(1) Conductive Pool Shells. Bonding to conductive pool shells shall be provided as specified in 680.26(B)(1)(a) or (B)(1)(b). Poured concrete, pneumatically applied or sprayed concrete, and concrete block with painted or plastered coatings shall all be considered conductive materials due to water permeability and porosity. Vinyl liners and fiberglass composite shells shall be considered to be nonconductive materials.

Specified acceptable means for bonding to shells of pools constructed of conductive material.

(a) Structural Reinforcing Steel. Unencapsulated structural reinforcing steel shall be bonded together by steel tie wires or the equivalent. Where structural reinforcing steel is encapsulated in a nonconductive compound, a copper conductor grid shall be installed in accordance with 680.26(B)(1)(b).

(b) Copper Conductor Grid. A copper conductor grid shall be provided and shall comply with (b)(1) through (b)(4).

(1) Be constructed of minimum 8 AWG bare solid copper conductors bonded to each other at all points of crossing

(2) Conform to the contour of the pool and the pool deck

(3) Be arranged in a 300-mm (12-in.) by 300-mm (12-in.) network of conductors in a uniformly spaced perpendicular grid pattern with a tolerance of 100 mm (4 in.)

(4) Be secured within or under the pool no more than 150 mm (6 in.) from the outer contour of the pool shell (2)

(2) Perimeter Surfaces. The perimeter surface shall extend for 1 m (3 ft) horizontally beyond the inside walls of the pool and shall include unpaved surfaces as well as poured concrete and other types of paving. Bonding to perimeter surfaces shall be provided as specified in 680.26(B)(2)(a) or (2)(b) and shall be attached to the pool reinforcing steel or copper conductor grid at a minimum of four (4) points uniformly spaced around the perimeter of the pool. For nonconductive pool shells, bonding at four points shall not be required.

(a) Structural Reinforcing Steel. Structural reinforcing steel shall be bonded in accordance with 680.26(B)(1)(a)

(b) Alternate Means. Where structural reinforcing steel is not available or is encapsulated in a nonconductive compound, a copper conductor(s) shall be utilized where the following requirements are met.

(1) At least one minimum 8 A WG bare solid copper conductor shall be provided.

(2) The conductors shall follow the contour of the perimeter surface.

(3) Only listed splices shall be permitted. See related UL

(4) The required conductor shall be 450 to 600 mm (18 to 24 in.) from the inside walls of the pool.

(5) The required conductor shall be secured within or under the perimeter surface 100 mm to 150 mm (4 in. to 6 in.) below the subgrade.

(3) Metallic Components. All metallic parts of the pool structure, including reinforcing metal not addressed in 680.26(B)(l)(a), shall be bonded. Where reinforcing steel is encapsulated with a nonconductive compound, the reinforcing steel shall not be required to be bonded. See related Illustration

(4) Underwater Lighting. All metal forming shells and mounting brackets of no-niche luminaires shall be bonded.

Exception: Listed low-voltage lighting systems with nonmetallic forming shells shall not require bonding.

(5) Metal Fittings. All metal fittings within or attached to the pool structure shall be bonded. Isolated parts that are not over 100 mm (4 in.) in any dimension and do not penetrate into the pool structure more than 25 mm (1 in.) shall not require bonding.

(6) Electrical Equipment. Metal parts of electrical equipment associated with the pool water circulating system, including pump motors and metal parts of equipment associated with pool covers, including electric motors, shall be bonded.

Exception: Metal parts of listed equipment incorporating an approved system of double insulation shall not be bonded

(a) Double-Insulated Water Pump Motors. Where a double-insulated water pump motor is installed under the provisions of this rule, a solid 8 AWG copper conductor of sufficient length to make a bonding connection to a replacement motor shall be extended from the bonding grid to an accessible point in the vicinity of the pool pump motor. Where there is no connection between the swimming pool bonding grid and the equipment grounding system for the premises, this bonding conductor shall be connected to the equipment grounding conductor of the motor circuit.

(b) Pool Water Heaters. For pool water heaters rated at more than 50 amperes and having specific instructions regarding bonding and grounding, only those parts designated to be bonded shall be bonded and only those parts designated to be grounded shall be grounded.

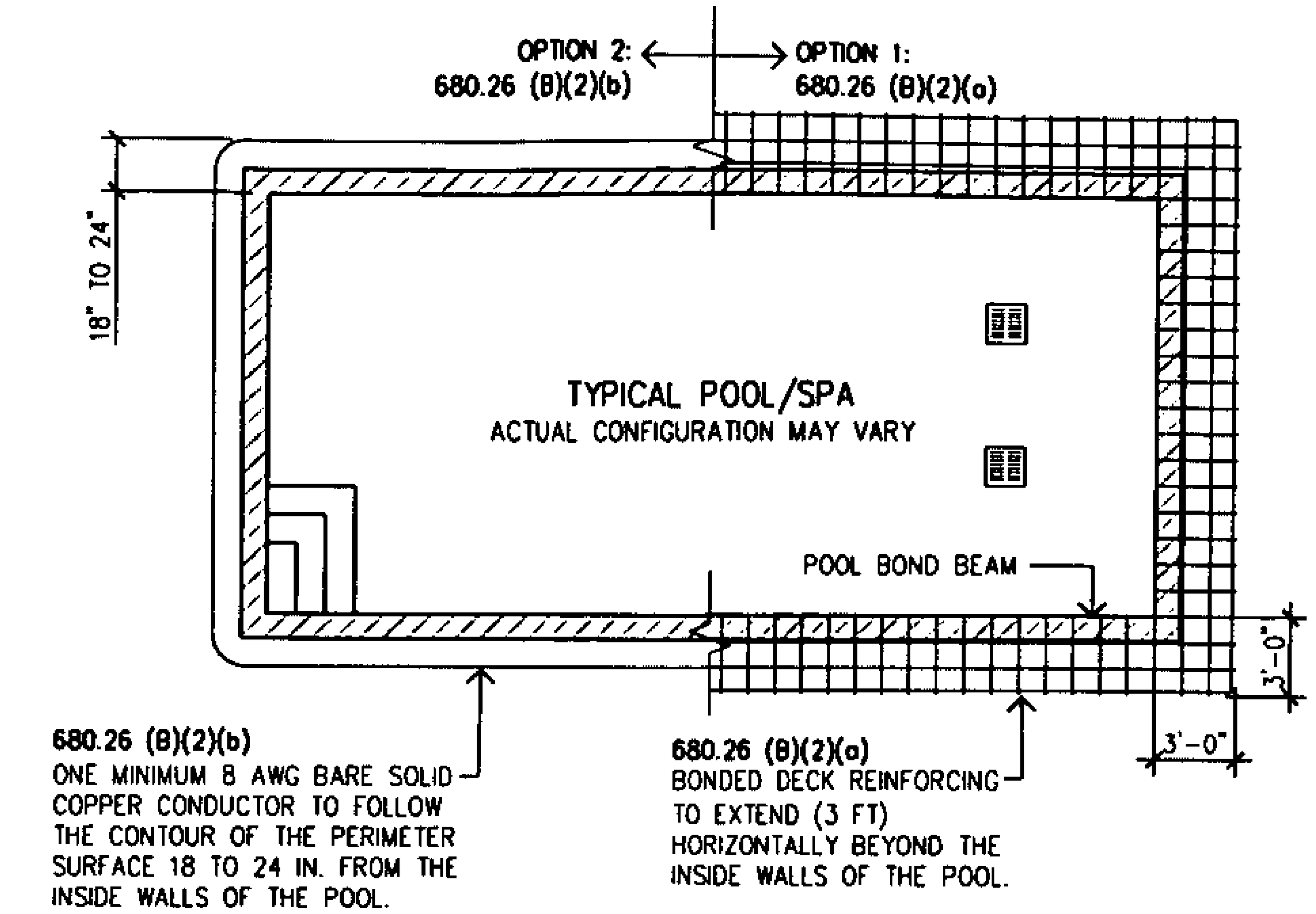
(7) Metal Wiring Methods and Equipment. Metal-sheathed cables and raceways, metal piping, and all fixed metal parts shall be bonded.

Exception No.1: Those separated from the pool by a permanent barrier shall not be required to be bonded

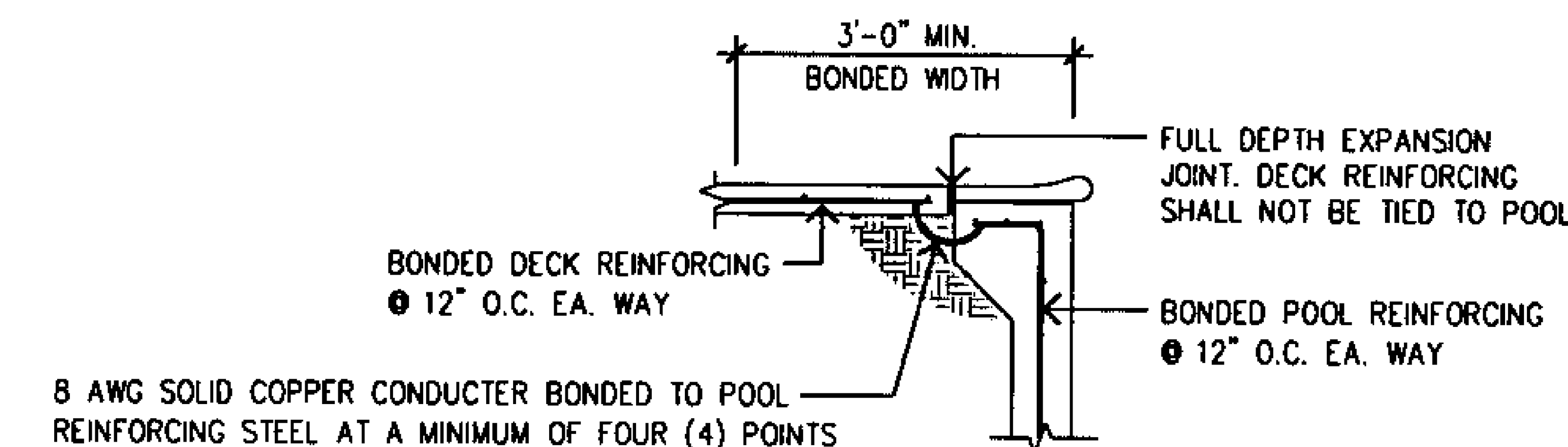
Exception No.2: Those greater than 1.5 m (5 ft) horizontally of the inside walls of the pool shall not be required to be bonded.

Exception No.3: Those greater than 3.7 m (12ft) measured vertically above the maximum water level of the pool, or as measured vertically above any observation stands, towers, or platforms, or any diving structures, shall not be required to be bonded

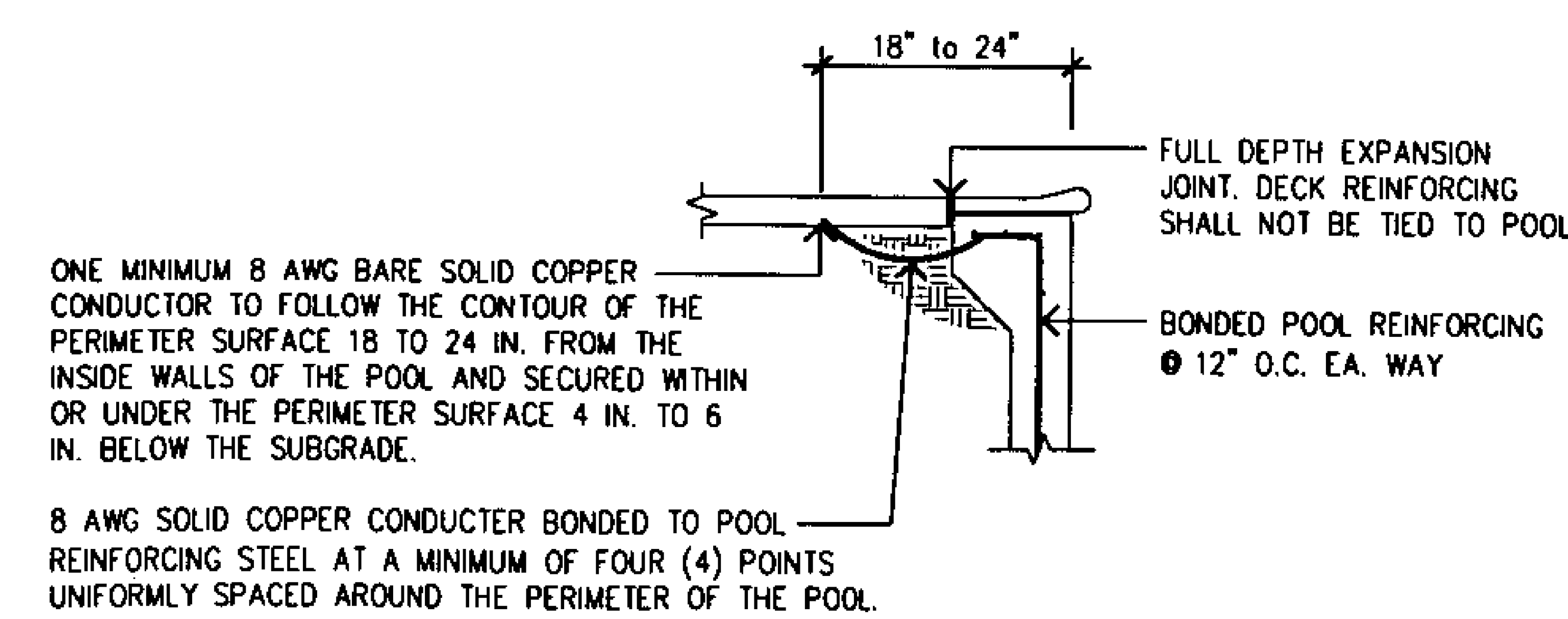
(C) Pool Water. An intentional bond of a minimum conductive surface area of 5806 mm2 (9 in.2) shall be installed in contact with the pool water. This bond shall be permitted to consist of parts that are required to be bonded in 680.26(B).



TYPICAL BONDING PERIMETER SURFACE BONDING



OPTION 1: BONDED DECK REINFORCING



OPTION 2: BONDED COPPER WIRE

pool engineering inc.

Ron Lacher, R.C.E.
1201 N. Tustin Ave.
Anaheim, California 92807
Fax: (714) 630-6114
Phone: (714) 630-6100

THIS DRAWING IS ONLY VALID WHEN USED IN CONJUNCTION WITH WETSTAMPED POOL STRUCTURAL PLANS BY POOL ENGINEERING, INC.

Equipotential Bonding Requirements for Swimming Pools National Electrical Code Section 680.26

DATE: 01/15/14

DRAWN BY: T.L.L.

SPECIAL NOTES

CALCULATIONS

METHODOLOGY:

γ = EQUIVALENT FLUID PRESSURE

OTM = 1/6 γ H^3 WHERE γ = 62.4 pcf

NET MOM = OTM + RESISTING MOMENT

$$fs = \frac{M(12\ in/ft)}{As\ j\ d} = \frac{Mt\ (12)}{As\ (0.887)\ d}$$

$$fc = \frac{M(2)\ 12\ in/ft}{j\ k\ b\ d^2}$$

$$= \frac{Mt\ (2)(12)}{(0.887)(0.339)(12)\ d^2} < 900\ psi$$

$$\nu c = \frac{(1/2)\ \gamma\ ^2H}{(12\ in/ft)\ j\ d}$$

$$= \frac{\gamma\ H^2}{(2)(12)(0.887)\ d} < 49\ psi$$

f'c = 2,000 psi

Fs = 20,000 psi

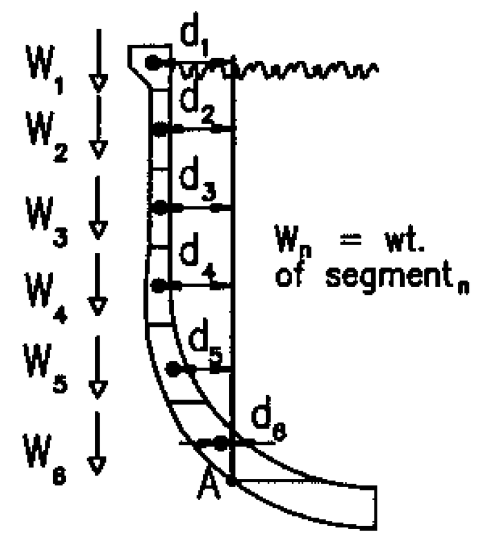
fc = 0.45 f'c = 900 psi

Vc = 1.1 $\sqrt{f'c}$ = 49 psi

RESISTING MOMENT:

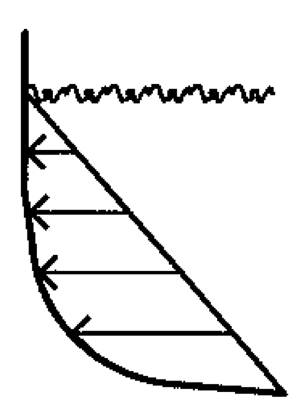
RESISTING MOMENT ABOUT POINT A

RM = $W_1d_1 + W_2d_2 + \dots W_nd_n$



LOADING DIAGRAM:

THIS DETAIL IS DESIGNED FOR EACH OF THE LOAD CASES DEFINED BELOW.



γ = 62.4 P.C.F.

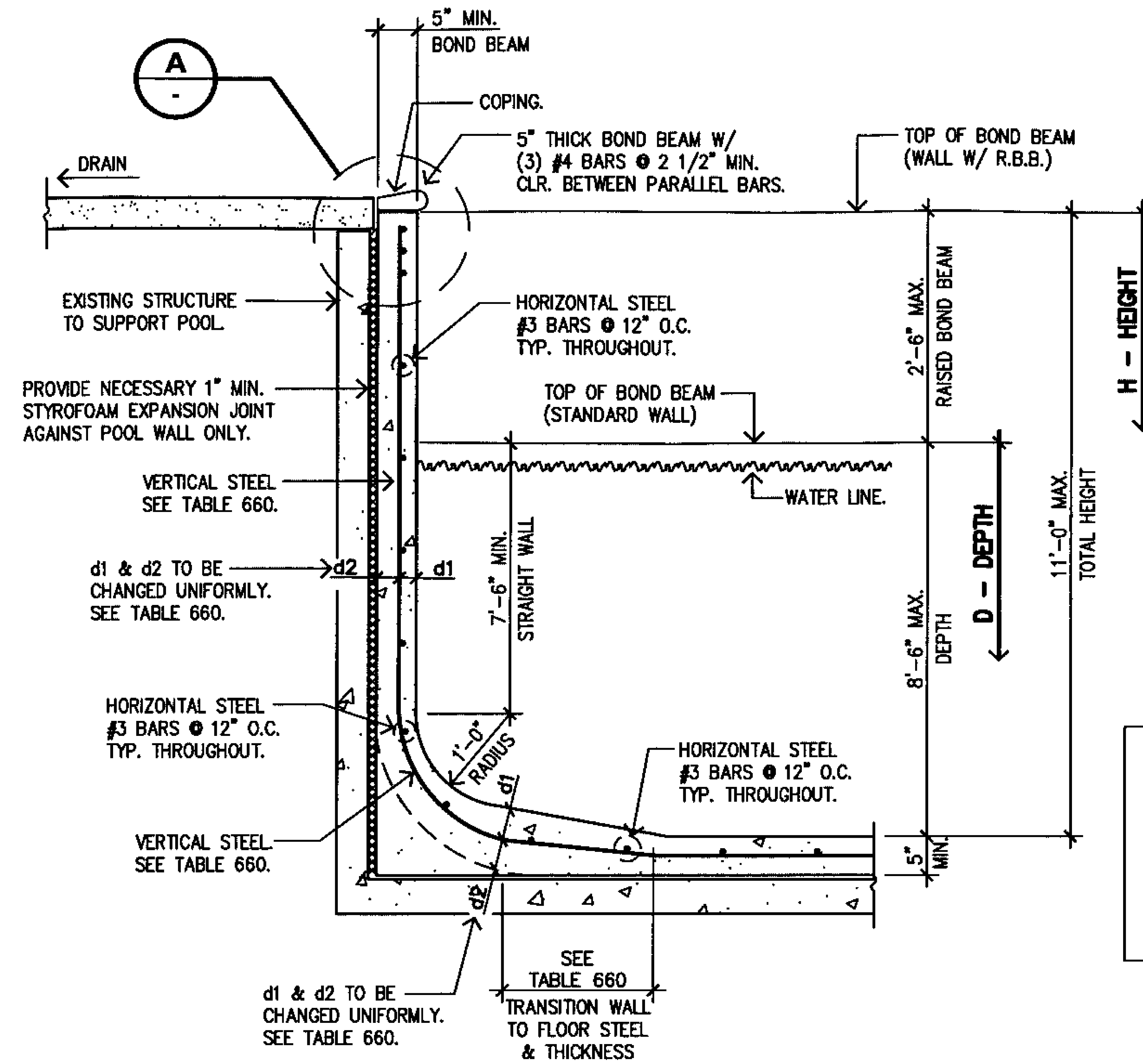
CALCULATION RESULTS:

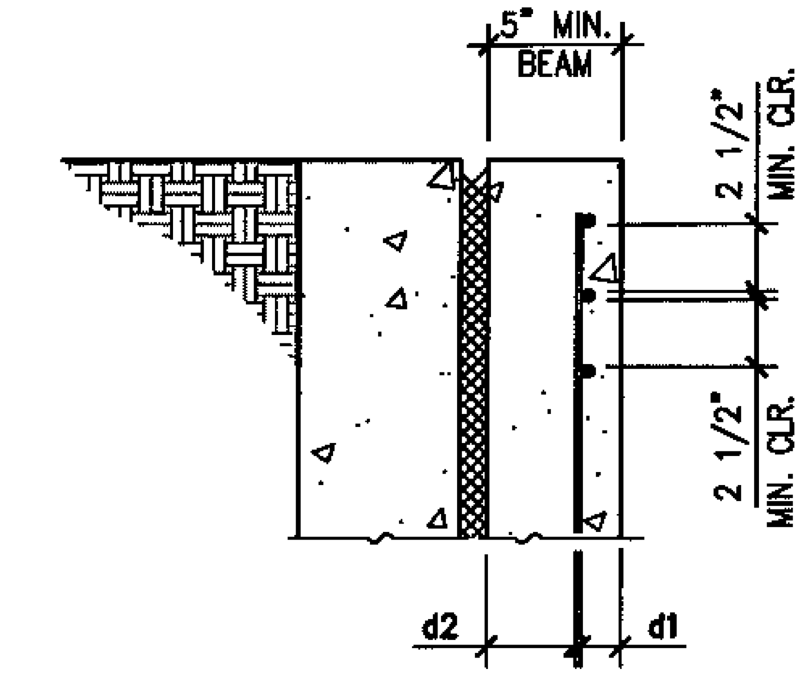
FREESTANDING WALL
EXPANSIVE SOIL ,
EQUIVALENT FLUID PRESSURE = 62.4 P.C.F.
RESULTS FOR NO RAISED BOND BEAM

DEPTH 'D'	SOIL OTM ft-#	WATER OTM ft-#	SOIL RM ft-#	WATER RM ft-#	NET Mom	CASE I d1 SOIL	CASE II d2 WATER	VERTICAL STEEL	fs p.s.i.	fc p.s.i.	νc p.s.i.
3'-0"	0	281	25	-25	298	1½"	2½"	#3 @ 12"	14125	415	9.4
4'-0"	0	666	43	-62	645	1½"	4½"	"	16636	351	9.2
5'-0"	0	1300	120	-61	1305	1½"	5½"	#3 @ 6"	14012	390	11.8
6'-0"	0	2246	304	27	2412	1½"	6½"	#3 @ 4"	14749	471	14.4
7'-0"	0	3567	704	186	3891	1½"	8½"	"	18002	493	15.0
8'-0"	0	5325	1675	540	5865	1½"	9½"	#3 @ 3"	18333	555	17.5
8'-6"	0	6387	3924	277	6664	1½"	10"	"	19751	580	18.8

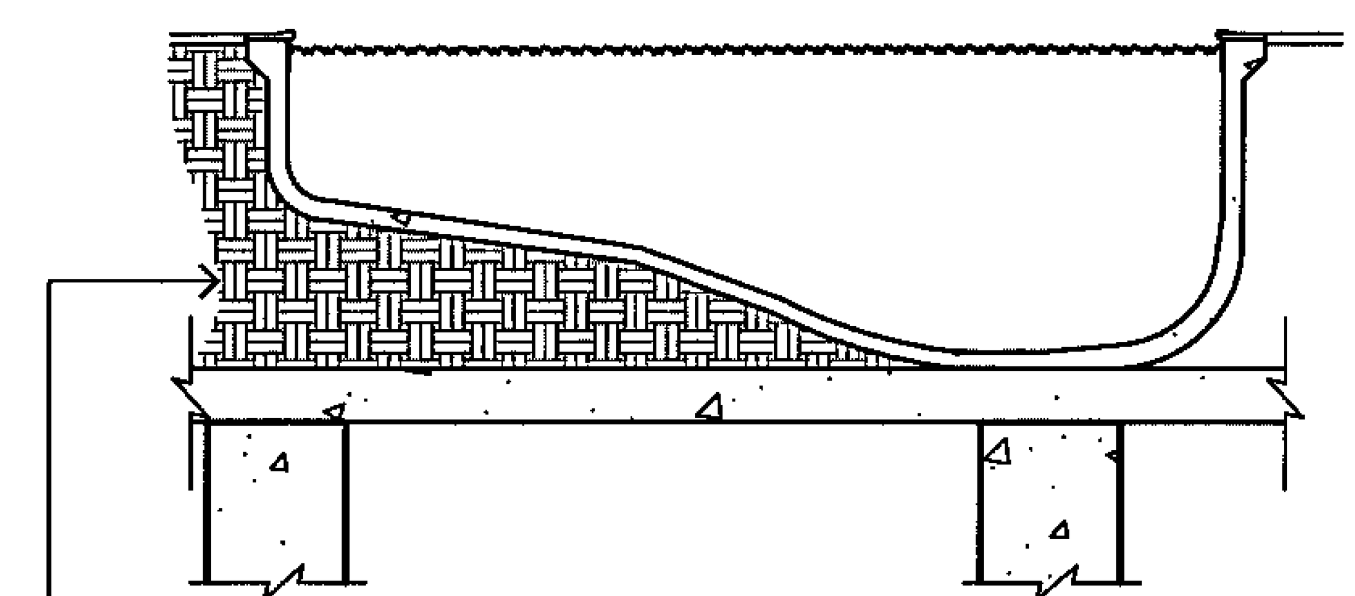
RESULTS FOR 2'-6" MAX. RAISED BOND BEAM

HEIGHT 'H'	SOIL OTM ft-#	WATER OTM ft-#	SOIL RM ft-#	WATER RM ft-#	NET Mom	CASE I d1 SOIL	CASE II d2 WATER	VERTICAL STEEL	fs p.s.i.	fc p.s.i.	νc p.s.i.
5'-6"	0	281	46	-46	333	1½"	2½"	#3 @ 12"	15813	465	9.4
6'-0"	0	446	51	-75	481	1½"	3½"	"	16099	391	9.1
7'-0"	0	948	104	-113	903	1½"	5½"	"	18961	358	9.6
7'-6"	0	1300	170	-87	1313	1½"	5½"	#3 @ 6"	14097	392	11.8
8'-0"	0	1730	268	-28	1847	1½"	5½"	"	19836	552	14.3
8'-6"	0	2246	408	66	2495	1½"	5½"	#3 @ 4"	18160	638	17.0
9'-0"	0	2856	605	183	3255	1½"	6½"	"	19902	635	16.9
9'-6"	0	3567	886	319	4081	1½"	7½"	#3 @ 3"	16319	566	17.0
10'-0"	0	4388	1304	512	5030	1½"	8½"	"	17652	570	17.2
10'-6"	0	5325	1981	786	6111	1½"	9½"	"	19102	578	17.5
11'-0"	0	6387	4414	560	6947	1½"	10½"	"	19571	559	17.9





BOND BEAM DETAIL (A)
SCALE: 1"=1'-0"



IN THE EVENT THAT EARTH OR OTHER COMPACTABLE AND OR COMPRESSIBLE FILL MATERIALS ARE PLACED UNDER PORTIONS OF THE POOL, A SOIL ENGINEER SHALL EXAMINE THE FILL MATERIALS AND CERTIFY THAT THE FILL MATERIALS WILL NOT [illegible] SWIMMING POOL TO EXPERIENCE DIFFERENTIAL MOV[illegible]

TABLE 660

'D' OR 'H' IS DISTANCE FROM TOP OF POOL WALL DOWNWARD.
BEGIN SPECIFIED STEEL & GUNITE THICKNESS AT INDICATED 'D' OR 'H' DEPTH.
(SEE STANDARD STRUCTURAL PLAN, DETAIL #2)

POOL DEPTH	NO RAISED BOND BEAM			REQ'D TRANS.
D	d1	d2	VERTICAL STEEL	
0 to 3'0"	1½"	2½"	#3 @ 12"	2'-0"
4'-0"	1½"	4½"	#3 @ 6"	2'-0"
4'-6"	1½"	5½"	"	2'-0"
5'-0"	1½"	5½"	#3 @ 4"	2'-0"
5'-6"	1½"	5½"	"	2'-0"
6'-6"	1½"	7½"	"	2'-0"
7'-0"	1½"	8½"	#3 @ 3"	2'-0"
7'-6"	1½"	9½"	"	2'-0"
8'-[illegible]	[illegible]	[illegible]	"	2'-0"
				2'-0"

TOTAL HEIGHT	2'-6" MAX. RAISED BOND BEAM			REQ'D TRANS.
H	d1	d2	VERTICAL STEEL	
0 to 5'6"	1½"	2½"	#3 @ 12"	2'-0"
6'-0"	1½"	3½"	"	2'-0"
6'-6"	1½"	4½"	#3 @ 6"	2'-0"
7'-0"	1½"	5½"	"	2'-0"
7'-6"	1½"	5½"	#3 @ 4"	2'-0"
8'-0"	1½"	5½"	"	2'-0"
8'-6"	1½"	5½"	#3 @ 3"	2'-0"
9'-0"	1½"	6½"	"	2'-0"
9'-6"	1½"	7½"	"	2'-0"
10'-0"	1½"	8½"	"	2'-0"
10'-6"	1½"	9½"	"	2'-0"
11'-0"	1½"	10½"	"	2'-0"

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
CAA
DATE

AS A CONDITION FOR THE USE OF THIS PLAN, THE FOLLOWING NOTES MUST BE COMPLIED WITH:

ENGINEER OF RECORD FOR VAULT STRUCTURE SUPPORTING THE POOL SHALL REVIEW THIS DETAIL AND BASED ON THE POOL'S DEPTH, CERTIFY THAT THE VAULT STRUCTURE WAS DESIGNED TO SUPPORT WEIGHT OF THE POOL WITHOUT EXCEEDING THE DEFLECTION CAPACITY OF THE POOL SHELL

IF THE SWIMMING POOL IS LOCATED SUCH THAT WATER LEAKAGE FROM THE POOL COULD CAUSE DAMAGE TO UNDERLYING OR ADJACENT FACILITIES, A SECONDARY LEAKAGE CONTAINMENT AND DISPOSAL SYSTEM IS RECOMMENDED AS A PART OF THE POOL INSTALLATION.

POOL ENGINEERING, INC. SHALL HAVE NO LIABILITY FOR DAMAGE TO THE SWIMMING POOL DUE TO FAILURE OF THE "VAULT STRUCTURE". THE "VAULT STRUCTURE" HAS BEEN DESIGNED BY OTHERS AND IS BEYOND THE SCOPE OF OUR RESPONSIBILTY.

Ron Lacher, R.C.E.
1201 N. Tustin Ave.
Anaheim, California 92807
Fax: (714) 630-6114
Phone: (714) 630-6100

pool engineering inc.

For Use Only @:
Crown Cabot Apt
25891 Crown Valley Pkwy
Laguna Niguel, CA

REGISTERED PROFESSIONAL ENGINEER
TODD V. LACHER
C 67656
EXP. 6/30/2015
CIVIL
STATE OF CALIFORNIA

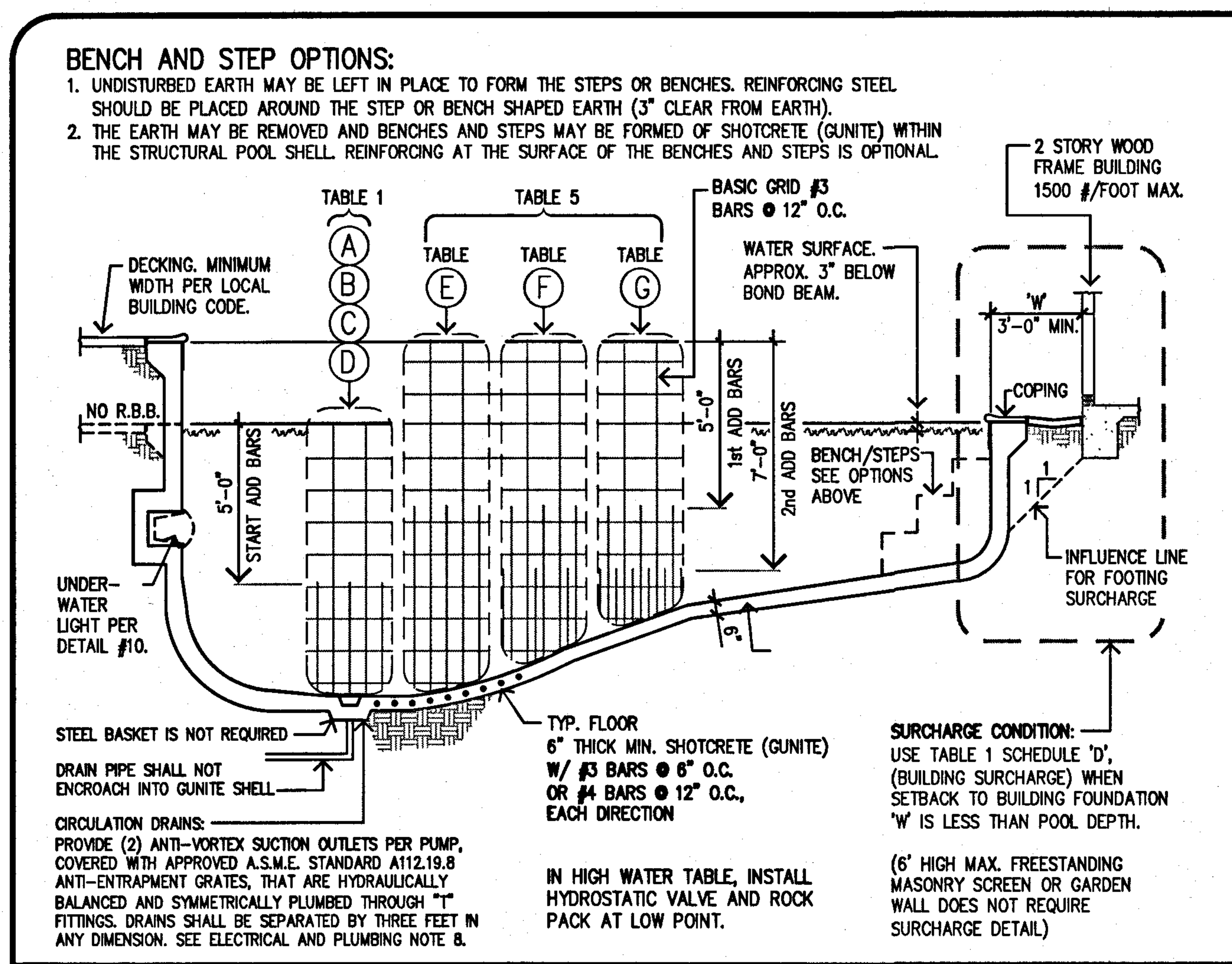
DATE:	11/13/12
CALCS BY:	J.K.
CHECKED BY:	R.L.L.

PLAN VALID ONLY WITH ENGINEER'S SIGNATURE IN RED INK ON PLAN.

THIS DETAIL TO BE USED IN CONJUNCTIO[N] WITH STANDARD POOL STRUCTURAL PLAN

VAULT SUPPORTED SWIMMING POOL WITH FREESTANDING WALL EQUIVALENT FLUID PRESSURE = 62.4 P.C.F.

DETAIL #660



TYPICAL LONGITUDINAL SECTION N.T.S. (2)

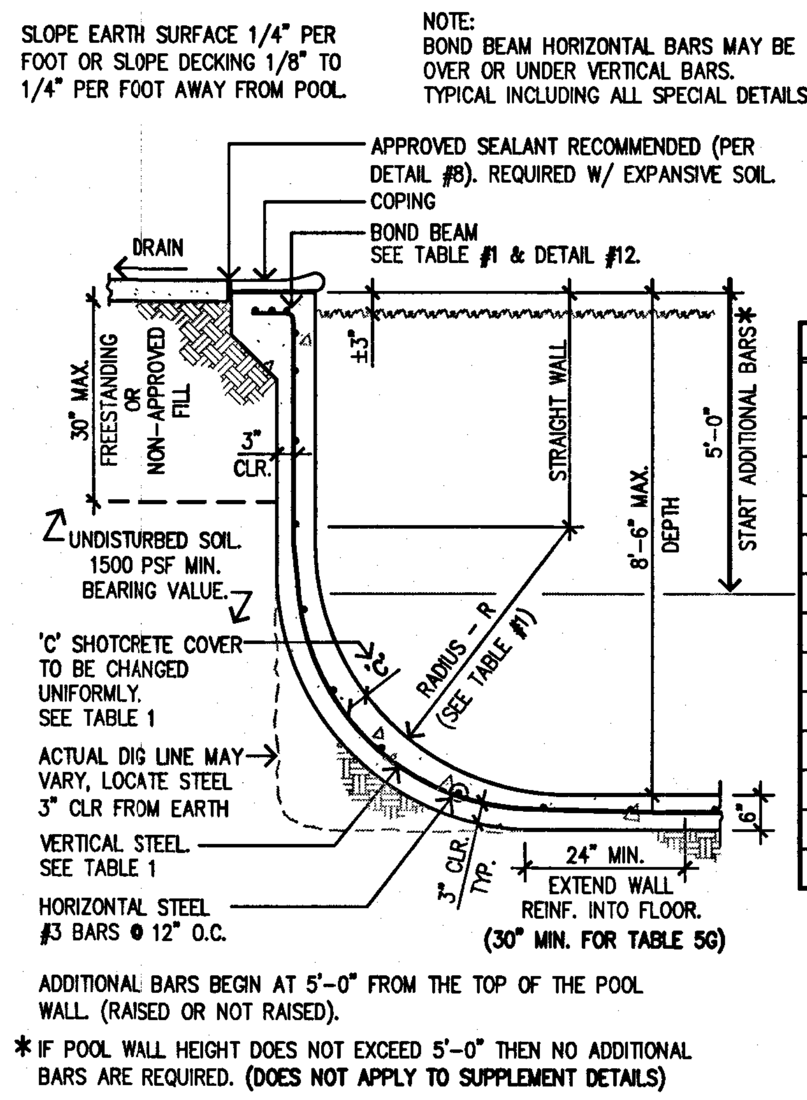


TABLE NO. 1

E.F.P.		NON–EXPANSIVE A (3) #3 BARS 30 P.C.F.		EXPANSIVE B (4) #3 BARS 45 P.C.F.		NO DECK/HIGH EXP. C (4) #3 BARS 62.4 P.C.F.		BUILD'G SURCHARGE D (4) #3 BARS 45 P.C.F.	
D	R	C	VERTICAL STEEL	C	VERTICAL STEEL	C	VERTICAL STEEL	C	VERTICAL STEEL
3'0"	1'–0"	3"	#3 @ 12"	3"	#3 @ 12"	3"	#3 @ 12"	3"	#3 @ 12"
3'6"	1'–0"	3"	↓	3"	↓	3"	↓	3"	↓
4'0"	1'–0"	3"	↓	3"	↓	4"	↓	4"	↓
4'6"	1'–0"	3"	↓	3½"	↓	5"	↓	5"	↓
5'0"	1'–6"	3"	#3 @ 6"	4"	#3 @ 6"	5"	#3 @ 6"	5"	#3 @ 6"
5'6"	2'–0"	3"	↓	4"	↓	5"	↓	5½"	↓
6'0"	2'–6"	3"	↓	4"	↓	6"	↓	5½"	↓
6'6"	3'–0"	3"	↓	4½"	↓	7"	↓	6½"	↓
7'0"	3'–6"	3"	↓	5"	↓	8"	↓	7½"	↓
7'6"	4'–0"	3"	↓	5½"	↓	8½"	↓	8½"	↓
8'0"	4'–6"	3"	↓	6"	↓	9"	↓	8½"	↓
8'6"	5'–0"	3"	↓	6"	↓	9"	↓	8½"	↓

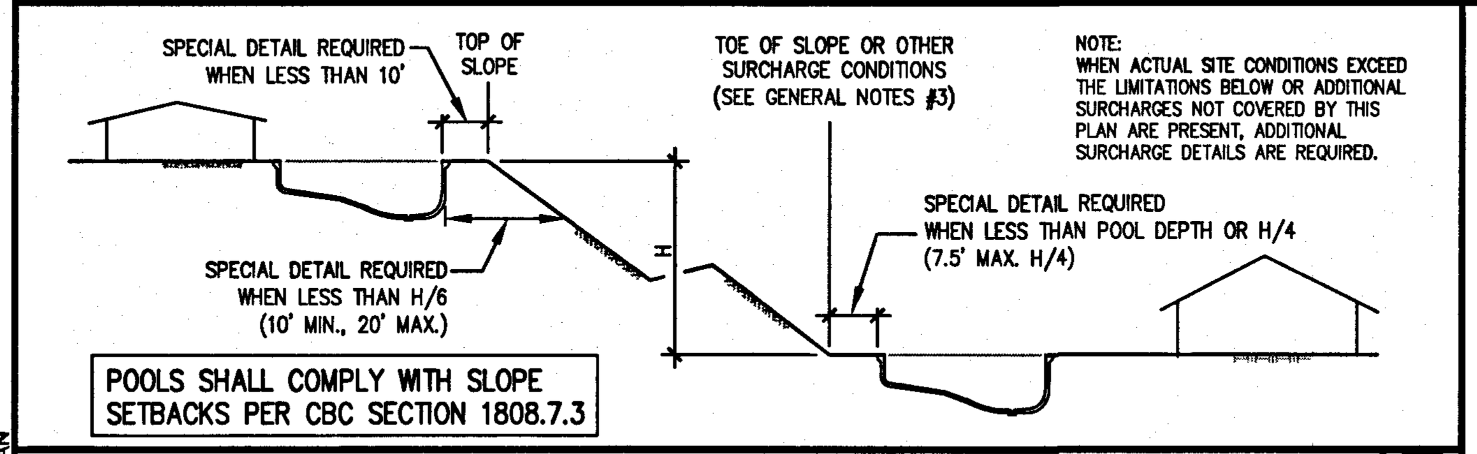
'D' IS DISTANCE DOWN FROM TOP OF POOL WALL.

R: INDICATES TYPICAL RADIUS (ACTUAL RADIUS MAY VARY, SEE STRUCTURAL NOTE #11)

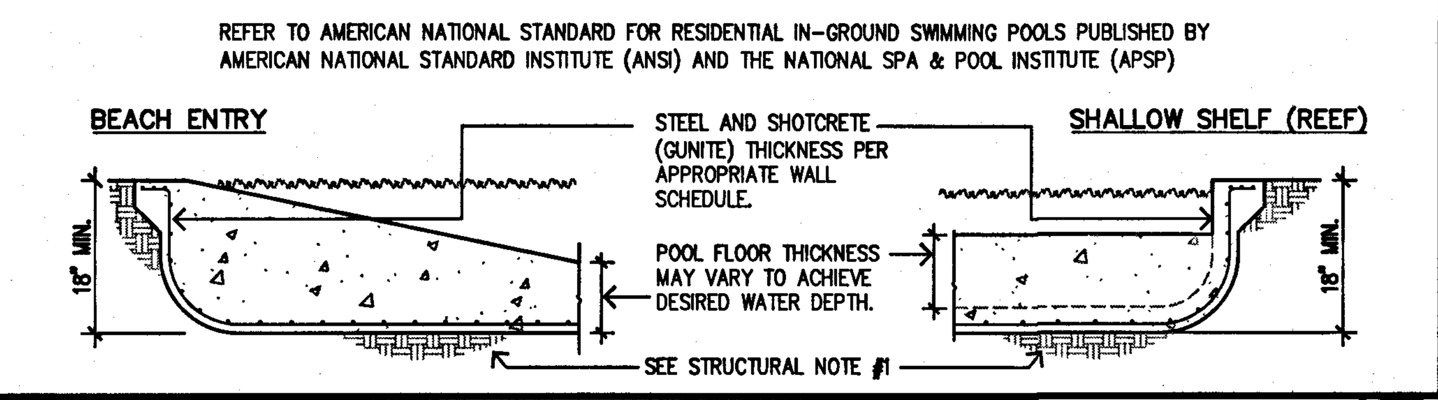
C: NO DECK OR HIGH EXPANSIVE SOIL

D: BUILDING FOOTING SURCHARGE (IN COUNTY OF L.A. USE DETAIL 271–60)

STANDARD WALL SECTION — IN THE COUNTY OF ORANGE REFER TO "UNINCOPORATED COUNTY OF ORANGE SPECIAL NOTES" REGARDING DESIGN E.F.P. FOR POOLS. N.T.S. (1)



SURCHARGE CONDITIONS — ADDITIONAL SPECIAL DETAILS REQUIRED FOR CONDITIONS ABOVE N.T.S. (3)



SHALLOW FEATURES — MAINTAIN 18" MIN. EMBEDMENT INTO UNDISTURBED OR 90% COMPACTED SOIL N.T.S. (4)

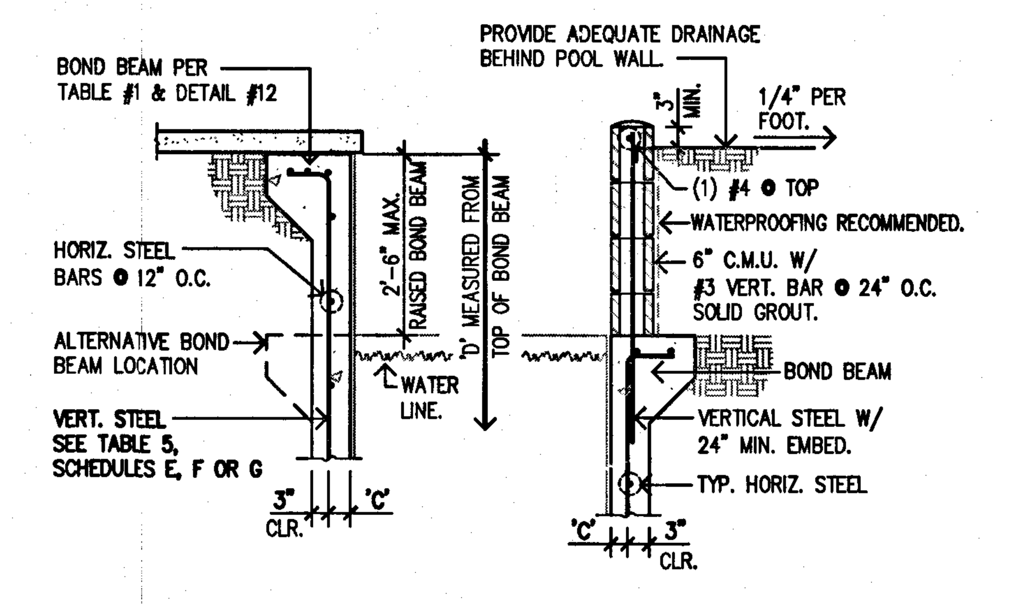


TABLE NO. 5 RAISED BOND BEAM

E.F.P.	NON–EXPANSIVE E 30 P.C.F.		EXPANSIVE F 45 P.C.F.		NO DECK/HIGH EXP. G 62.4 P.C.F.	
D	C	VERTICAL STEEL	C	VERTICAL STEEL	C	VERTICAL STEEL
3'6"	3"	#3 @ 12"	3"	#3 @ 12"	3"	#3 @ 12"
4'0"	3"	↓	3"	↓	4"	↓
4'6"	3"	↓	3½"	↓	5"	↓
5'0"	3"	#3 @ 6"	3½"	#3 @ 6"	5"	#3 @ 6"
5'6"	3"	↓	4"	↓	6"	↓
6'0"	3½"	↓	5"	↓	7"	↓
6'6"	4"	↓	6"	↓	8"	↓
7'0"	5"	↓	6"	#3 @ 4"	8"	#3 @ 3"
7'6"	5½"	↓	6"	↓	8"	↓
8'0"	6½"	↓	7"	↓	8½"	↓
8'6"	7½"	↓	8"	↓	9½"	↓
9'0"	8"	↓	9"	↓	10½"	↓
9'6"	9"	↓	10"	↓	11½"	↓
10'0"	9"	↓	11"	↓	12"	↓
11'0"	9"	↓	11"	↓	12½"	↓

MASONRY NOTES:
1. CONCRETE BLOCK SHALL BE GRADE N (EXPOSED TO WEATHER), TYPE II (NON-MOISTURE CONTROLLED), NORMAL WEIGHT UNITS (135 PCF), CONFORMING TO CBC/IBC SEC. 2103, AND ASTM C 90. ALL CONCRETE BLOCK SHALL HAVE A DESIGN STRENGTH OF f'm = 1500 psi.
2. GROUT SHALL CONFORM TO CBC/IBC SEC. 2103 & ASTM C 476 WITH f'c=2,000 PSI.
3. MORTAR SHALL BE TYPE M WITH f'c = 1800 psi AND SHALL CONFORM TO CBC/IBC SEC. 2103 & ASTM C 270.

RAISED BOND BEAM N.T.S. (5)

GENERAL NOTES
1. THIS STANDARD POOL STRUCTURAL PLAN MUST BE ACCOMPANIED BY A CLEAR PLOT PLAN SHOWING POOL & OR SPA SHAPE, DEPTH AND DISTANCE TO PROPERTY LINE, SLOPES AND STRUCTURES. IN SAN BERNARDINO COUNTY POOL APPROVED FOR PRIVATE USE ONLY, A SOILS REPORT MAY BE REQUIRED IN EXPANSIVE SOIL AREAS AND THE POOL LOCATION SHALL COMPLY WITH THE SAN BERNARDINO COUNTY ZONING CODE.
2. REPRESENTATIVES OF POOL ENGINEERING INC. HAVE NOT INSPECTED THE SITE & ARE RELYING ON INFORMATION PROVIDED BY THE CONTRACTOR OR OWNER TO DETERMINE THE ADEQUACY OF THIS STANDARD POOL STRUCTURAL PLAN FOR THE ACTUAL SITE CONDITIONS. SHOULD SITE CONDITIONS VARY FROM THAT COVERED BY THIS STANDARD POOL STRUCTURAL PLAN, IT IS THE RESPONSIBILITY OF THE CONTRACTOR OR THE OWNER TO NOTIFY POOL ENGINEERING INC. AND OBTAIN APPLICABLE SPECIAL ENGINEERING DETAILS PRIOR TO CONSTRUCTION. EXPANSIVE SOIL DETAILS ARE VALID ONLY FOR STATED EQUIVALENT FLUID PRESSURES AND POOL ENGINEERING INC. RECOMMENDS THAT THE OWNER OR CONTRACTOR OBTAIN A SOILS REPORT.
3. THIS PLAN IS NOT VALID WITHOUT ADDITIONAL SURCHARGE DETAILS WHEN THE CONDITIONS AS SHOWN IN DETAIL #3 APPLY (PER CBC SECTION 1808.7.3). ALL POOLS SHALL COMPLY WITH SLOPE SETBACKS PER CBC SECTION 1808.7.3.
4. THE STANDARD POOL STRUCTURAL PLAN IS NOT INTENDED TO BE APPLICABLE TO NON- STRUCTURAL ITEMS INCLUDING BUT NOT LIMITED TO PLUMBING, ELECTRICAL, FENCING, CONCRETE DECKING AND POOL GEOMETRICS.
5. DECKING CONSTRUCTION IS SHOWN AS RECOMMENDED MINIMUM CONSTRUCTION AND DOES NOT DEMONSTRATE A SYSTEM THAT WILL RESIST HEAVING DUE TO SOIL EXPANSION.
6. ALL CONSTRUCTION SHALL COMPLY WITH THE 2013 EDITIONS OF THE CALIFORNIA BUILDING CODE (CBC), CALIFORNIA ELECTRICAL CODE (CEC), CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), CALIFORNIA ENERGY CODE, 2013 BUILDING ENERGY EFFICIENCY STANDARDS, 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE, AND LOCAL ORDINANCES.
7. POOLS WITH DIVING BOARDS SHALL MEET DIVING BOARD MANUFACTURER'S POOL GEOMETRIC STANDARDS AND/OR LOCAL CODES.
8. SIGNS & SAFETY EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES.
9. PUBLIC POOLS REQUIRE COUNTY HEALTH DEPARTMENT APPROVAL AND PROVISIONS FOR ASSISTIVE DEVICES FOR THE DISABLED.
10. CONTRACTOR OR OWNER SHALL VERIFY ALL FIELD CONDITIONS & DIMENSIONS AT JOB SITE. POOL LENGTH, GRADE BREAK LOCATIONS & DEPTH DIMENSIONS AS NOTED ON THE PLOT PLAN SHALL COMPLY WITH APSP SUGGESTED MINIMUM STANDARDS FOR RESIDENTIAL POOLS OR APPLICABLE STATE AND LOCAL HEALTH DEPARTMENTS REGULATIONS AND MANUFACTURERS RECOMMENDATIONS.

ELECTRICAL AND PLUMBING
1. ALL ELECTRICAL SHALL BE IN CONFORMANCE WITH THE 2013 CEC.
2. POOL SHELL AND PERIMETER PAVED AND UNPAVED SURFACES SHALL BE BONDED IN ACCORDANCE WITH CEC 680.26(B). BONDING TO PERIMETER SURFACES SHALL BE PROVIDED AS SPECIFIED IN CEC 680.26(B)(2)(A) OR (2)(B) AND SHALL BE ATTACHED TO THE POOL REINFORCING STEEL OR COPPER CONDUCTOR GRID AT A MINIMUM OF FOUR (4) POINTS UNIFORMLY SPACED AROUND THE PERIMETER OF THE POOL.
3. OBTAIN ELECTRICAL AND PLUMBING PERMITS ALONG WITH POOL BUILDING PERMIT.
4. ALL EQUIPMENT SHALL BE LISTED AND INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE WITH LOCAL REGULATIONS.
5. POOLS SHALL BE EQUIPPED WITH A FILTERING SYSTEM & A DRAIN.
6. BACKWASH SHALL BE DISPOSED OF IN AN APPROVED MANNER.
7. POOL/SPA WATER HEATER AND GAS PIPING INSTALLATION TO BE IN CONFORMANCE WITH THE CPC.
8. CONTRACTOR IS ADVISED TO REFER TO SECTION 115928 OF THE CALIFORNIA HEALTH & SAFETY CODE FOR PROPER INSTALLATION OF THE POOL DRAIN SYSTEM.
9. A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER (RP DEVICE) IS REQUIRED ON ALL SWIMMING POOL AND SPA FILLERS PER CPC 603.4.22

STRUCTURAL NOTES
1. SOIL SHALL HAVE A MINIMUM BEARING VALUE OF 1500 PSF. CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL OR BUILDING DEPARTMENT APPROVED 90% COMPACT FILL. THIS PLAN IS NOT SUITABLE WHERE POTENTIAL EXISTS FOR DIFFERENTIAL MOVEMENT FROM DISSIMILAR SOIL CONDITIONS UNDER POOL, SUCH AS CUT-FILL TRANSITIONS.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS & CONFORM TO ASTM A615 GRADE 40 FOR #3 BARS AND #4 BARS. SPLICES TO BE LAPPED A MINIMUM OF 24". MINIMUM CLEARANCE BETWEEN PARALLEL BARS IS 2 1/2".
3. (1) #4 BAR IS EQUIVALENT TO AND MAY BE USED IN PLACE OF (2) #3 BARS, WITH THE EXCEPTION THAT IF #4 BARS ARE USED FOR THE BASIC GRID, THE MAXIMUM SPACING IS #4 BARS AT 18" O.C.
4. THE PLAN TABLES SPECIFY THE MINIMUM REQUIRED REINFORCEMENT. FOR CONVENIENCE OF THE INSTALLER, THERE MAY BE MORE REINFORCEMENT THAN SPECIFIED AT ANY GIVEN POINT IN THE POOL STRUCTURE.
5. BONDING/GROUNDING (PER THE CEC) OF THE STRUCTURAL REINFORCING MUST BE INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
6. SHOTCRETE (GUNITE) TO BE IN CONFORMANCE WITH CBC SECTION 1910 & SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. WHERE APPLICABLE, SHOTCRETE (GUNITE) TO BE IN CONFORMANCE WITH CBC SECTION 1904 DURABILITY REQUIREMENTS.
7. CEMENT SHALL CONFORM TO CBC SECTION 1903.1, ACI 318 SECTION 3.2, ASTM C 150.
8. SHOTCRETE/GUNITE IN CONTACT WITH SOIL SHALL BE IN ACCORDANCE WITH ACI 318 SECTION 4.3 FOR CONCRETE EXPOSURE TO SULFATE AND AS DIRECTED BY LOCAL BUILDING OFFICIAL.
9. KEEP CONCRETE DAMP CONTINUOUSLY FOR 14 DAYS.
10. ALL INTERIOR SURFACES OF POOL/SPA SHALL BE COATED WITH A WATER-TIGHT SURFACE.
11. FLOOR TO WALL TRANSITION RADIUS MAY VARY DEPENDING ON CONTRACTOR OR OWNER DESIGN INTENT. RADIUS SHALL NOT BE LESS THAN 1-FOOT AND SHALL NOT EXCEED 5-FEET.

OWNER
1. KEEP SHOTCRETE (GUNITE) DAMP CONTINUOUSLY FOR 14 DAYS AFTER INSTALLATION.
2. DO NOT TURN ON LIGHT WHEN POOL IS EMPTY.
3. DO NOT USE BLACK RUBBER HOSE WHEN FILLING POOL (IT MARKS THE PLASTER).

GLAZING IN HAZARDOUS LOCATIONS
WHEN REQUIRED BY THE BUILDING OFFICIAL, GLAZING SHALL COMPLY WITH THE CBC SECTION 2406.4, INCLUDING LOCALLY ADOPTED AMENDMENTS.
1. GLAZING IN WALLS AND FENCES USED AS A BARRIER SHALL BE SAFETY GLAZING WHEN ALL OF THE FOLLOWING CONDITIONS ARE PRESENT:
   A. THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60" ABOVE ANY STANDING OR WALKING SURFACE.
   B. THE GLAZING IS WITHIN 5 FEET OF A SWIMMING POOL OR SPA DECK AREA.

CONTINUOUS SHOTCRETE INSPECTION
WHERE REQUIRED ALL PNEUMATIC CONCRETE PLACEMENT SHALL BE INSPECTED BY A SPECIAL INSPECTOR IN CONFORMANCE WITH CBC SECTION 1704, WHO SHALL SUBMIT A STATEMENT INDICATING COMPLIANCE WITH THE PLANS AND SPECIFICATIONS. THE FOLLOWING AGENCIES AMONG OTHERS REQUIRE CONTINUOUS INSPECTION:
   A. THE CITIES OF: BEVERLY HILLS, COSTA MESA, CULVER CITY, CYPRESS, FULLERTON, HERMOSA BEACH, IRVINE, NEWPORT BEACH, LA HABRA, LA PALMA, LAGUNA HILLS, LAKE ELSINORE, LONG BEACH, LOS ALAMITOS, MISSION VIEJO, NORCO, SEAL BEACH, STANTON, TUSTIN, VILLA PARK, WESTMINSTER, MORENO VALLEY, BELLFLOWER, YORBA LINDA, SAN DIEGO & SOUTHGATE.

TITLE 24
1. PUMPS SHALL BE SIZED PER SECTION 150(p) OF THE 2013 BUILDING ENERGY EFFICIENCY STANDARDS.
2. MANDATORY REQUIREMENTS FOR POOL & SPA HEATING SYSTEMS & EQUIPMENT:
   1.1. SYSTEM IS CERTIFIED WITH: THERMAL EFFICIENCY THAT COMPLIES WITH THE APPLIANCE EFFICIENCY REGULATIONS, READILY ACCESSIBLE ON-OFF SWITCH, WEATHERPROOF OPERATING INSTRUCTIONS ON ENERGY EFFICIENT OPERATIONS, NO ELECTRIC RESISTANCE HEATING AND NO PILOT LIGHT.
   1.2. SYSTEM IS INSTALLED WITH:
   A) AT LEAST 36" PIPE BETWEEN FILTER & HEATER FOR FUTURE SOLAR HEATING.
   B) COVER FOR OUTDOOR POOLS OR OUTDOOR SPA.
   1.3. POOL SYSTEM HAS DIRECTIONAL INLETS & A CIRCULATION PUMP TIME SWITCH TO PERMIT OFF PEAK OPERATION.

FENCING AND BARRIERS
1. PRIOR TO FILLING, THE POOL AND OR SPA SHALL BE COMPLETELY ENCLOSED BY 5' MIN. HIGH FENCING & GATES WITH NO OPENINGS GREATER THAN 4". GATES TO BE SELF-CLOSING & SELF-LATCHING WITH LATCH A MIN. OF 5' HIGH. ACCESS GATES THROUGH FENCING SHALL OPEN AWAY FROM THE POOL. MAXIMUM VERTICAL CLEARANCE FROM GROUND TO POOL FENCING SHALL NOT EXCEED 2 INCHES. WHERE THIS VARIES FROM LOCAL CODES, THE LOCAL CODES SHALL PREVAIL.
2. WHEN REQUIRED BY THE BUILDING OFFICIAL, BARRIERS SHALL COMPLY WITH THE CBC SECTION 3109, INCLUDING LOCALLY ADOPTED AMENDMENTS.
   A. IN THE COUNTY OF LOS ANGELES, BARRIERS REQUIRED BY CHAPTER 11.50 OF THE LOS ANGELES COUNTY HEALTH AND SAFETY CODE AND ORDINANCE 95-0039 SHALL BE REQUIRED. THESE BARRIER REQUIREMENTS SHALL BE ATTACHED TO THE SWIMMING POOL SITE PLAN.
   B. IN THE CITY OF SAN DIEGO FENCES AND BARRIERS SHALL COMPLY WITH THE REQUIREMENTS FOUND IN THE CITY OF SAN DIEGO MUNICIPAL CODE, CHAPTER 14, ARTICLE 05, DIVISION 03.

SHOTCRETE MIX
DUE TO THE LENGTH OF THIS SWIMMING POOL AND OTHER SPECIFIC DESIGN ELEMENTS, THE USE OF A LOW SHRINKAGE SHOTCRETE MIX DESIGN IS REQUIRED. THE SHOTCRETE MIX SUPPLIER, THE SHOTCRETE APPLICATOR AND POOL ENGINEERING, INC. SHALL COLLABORATE ON THE DEVELOPMENT OF A SHOTCRETE MIX DESIGN THAT WILL RESULT IN THE LOWEST POSSIBLE DRYING SHRINKAGE. THE MIX SHALL BE DEVELOPED BASED ON BUT NOT LIMITED TO:
1. THE USE OF SHRINKAGE REDUCING ADMIXTURES
2. THE HARDEST AVAILABLE AGGREGATES. QUARTZ, LIMESTONE, DOLOMITE, GRANITE AND FELDSPAR ARE GENERALLY CLASSIFIED AS HIGHER MODULUS AGGREGATES AND RESULT IN LOWER CONCRETE SHRINKAGE. GRADATION SELECTED TO MINIMIZE CEMENT PASTE CONTENT AND WATER DEMAND.
3. MINIMIZING BOTH WATER CONTENT AND CEMENT PAST CONTENT.
4. CEMENT SUPPLIER SELECTED BASED ON CERTIFIED MILL REPORTS FOR THE LOWEST AVAILABLE SHRINKAGE CEMENT.
5. FLY ASH TO REDUCE INITIAL HYDRATION AND THERMAL DIFFERENTIALS.
6. WATER REDUCERS.
7. AIR ENTRAPMENT AS A WATER REDUCER AND PUMP ABILITY AID.

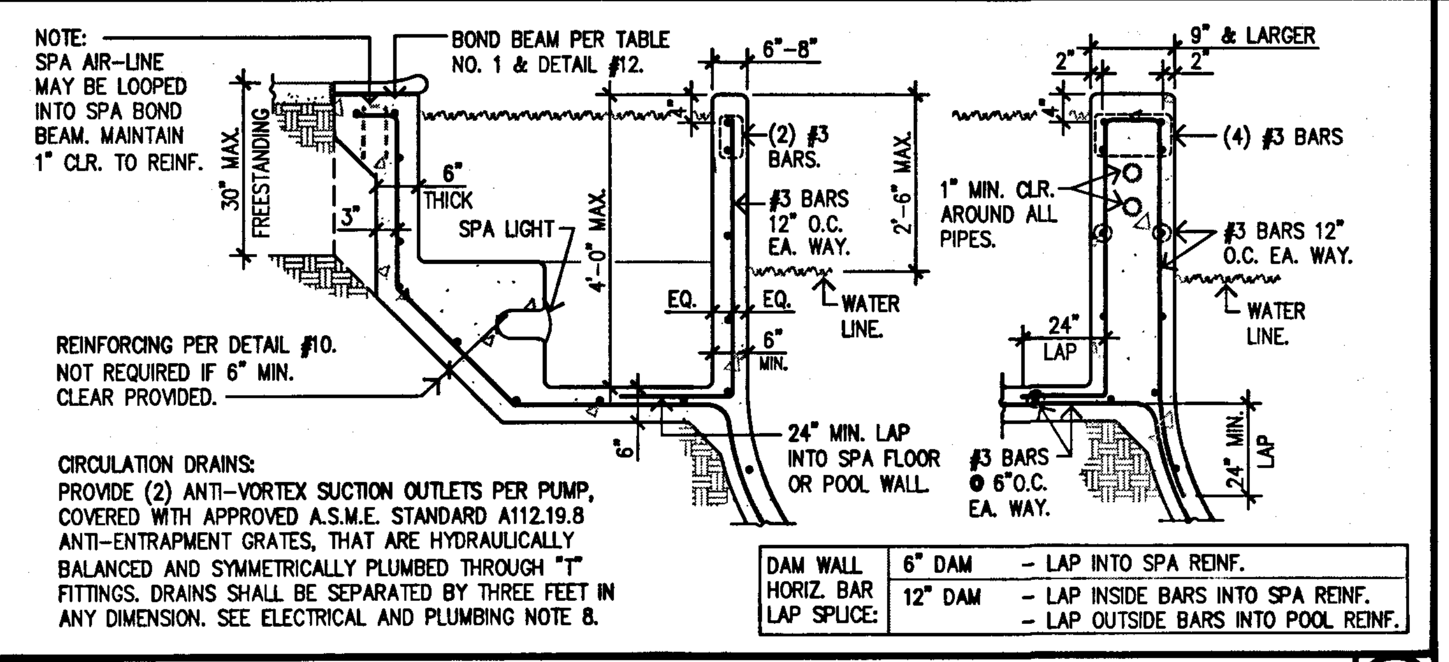
SHOTCRETE APPLICATION
ALL PNEUMATICALLY APPLIED CONCRETE SHELL BE PERFORMED BY AN AMERICAN CONCRETE INSTITUTE (ACI) CERTIFIED NOZZLEMAN.

CURING
AS SOON AS POSSIBLE AFTER INITIAL SET, BEGIN SHOTCRETE CURING BY MISTING, SOAKER HOSES, SPRINKLERS, WATER PONDING WHERE APPROPRIATE OR OTHER APPROVED MEANS. SHOTCRETE MUST BE MAINTAINED CONTINUOUSLY WET FOR A MINIMUM OF 14 DAYS AND PREFERABLY LONGER.

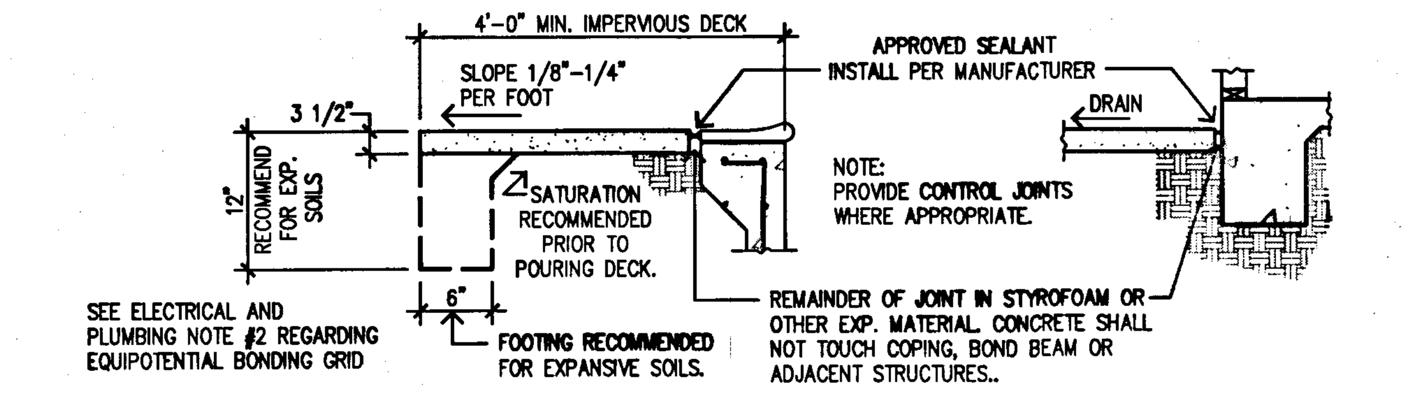
EXAMINATION FOR SHRINKAGE CRACKS
PRIOR TO THE APPLICATION OF THE POOLS WATERPROOF FINISH SURFACE COATING, THE SHOTCRETE SHELL SHALL BE CLOSELY EXAMINED TO LOCATE ANY SHRINKAGE CRACKS. THE SHRINKAGE CRACKS SHALL BE INJECTED WITH HIGH PRESSURE EPOXY TO THE GREATEST DEPTH POSSIBLE IN THE CRACK.

CERTIFICATION BY PROJECT GEOTECHNICAL ENGINEER
THE PROJECT GEOTECHNICAL CONSULTANT SHALL EXAMINE THE POOL SITE AND POOL SUBGRADE AFTER EXCAVATION. PRIOR TO REINFORCEMENT PLACEMENT THE PROJECT GEOTECHNICAL CONSULTANT SHALL CERTIFY THAT THE MODULUS OF SUBGRADE REACTION IS UNIFORM UNDER ALL AREAS OF THE POOL STRUCTURE AND THAT THE POOL SUBGRADE SOIL IS CAPABLE OF SUPPORTING THE POOL WITHOUT THE POTENTIAL FOR SIGNIFICANT DIFFERENTIAL SETTLEMENT. FURTHER, THE PROJECT GEOTECHNICAL CONSULTANT SHALL CERTIFY THAT ALL GEOTECHNICAL RELATED ISSUES, INCLUDING FOUNDATION SETBACK FROM THE FACE OF ANY DESCENDING SLOPES, ARE IN CONFORMANCE WITH APPLICABLE CODES AND GOOD ENGINEERING PRACTICE.

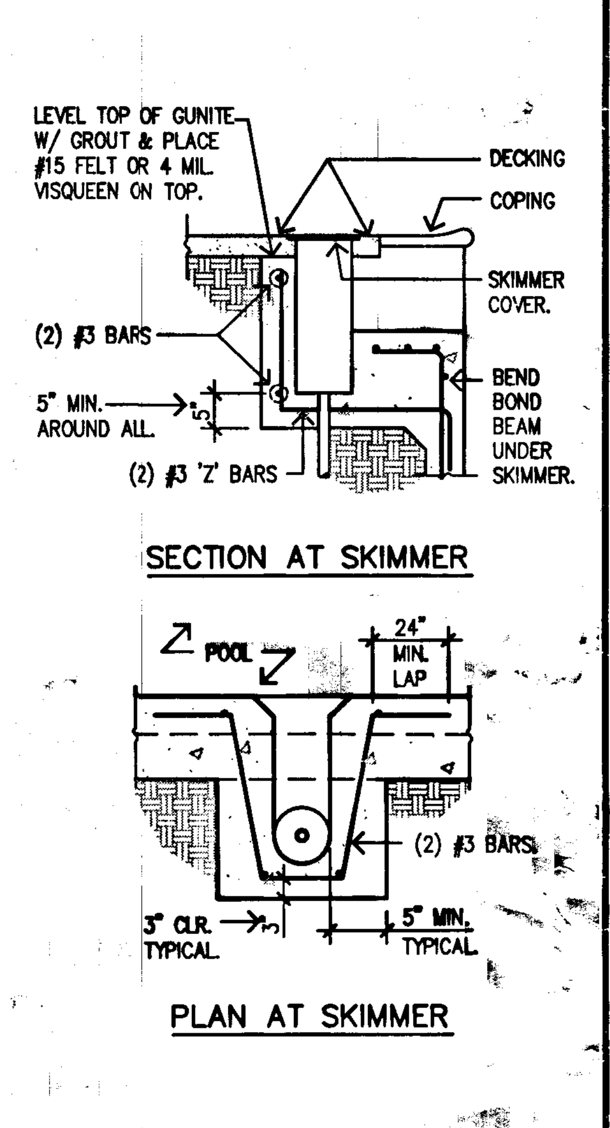
NOTES — BY THE USE OF THIS PLAN, THE USER ACKNOWLEDGES THAT HE HAS READ & UNDERSTANDS ALL OF THE NOTES INCLUDED HEREIN. (6)



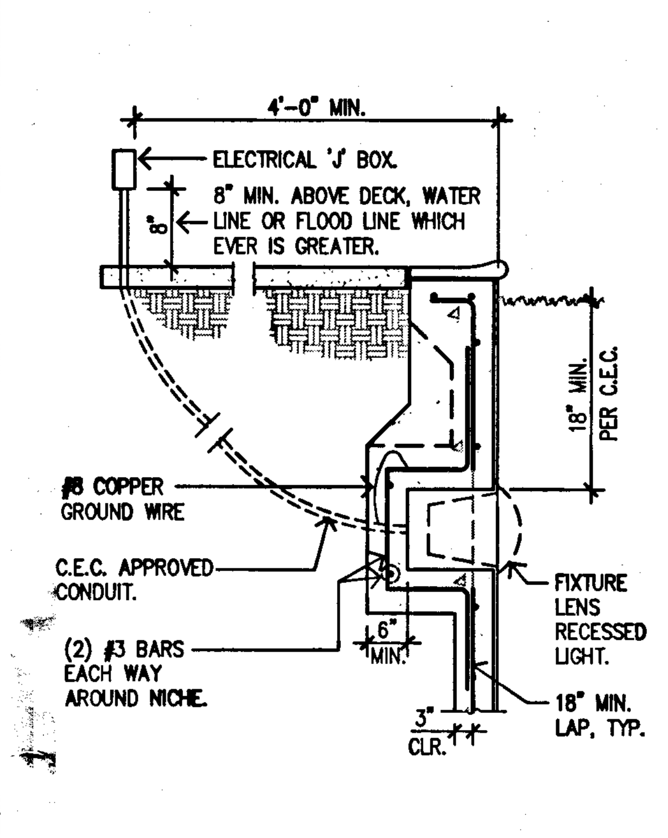
SPA DETAILS — SPA DETAILS MAY BE USED FOR SPAS WITHOUT POOLS. N.T.S. (7)



EXPANSIVE SOIL DETAILS — IN EXPANSIVE SOILS WHERE MIN DECK REQMTS ARE NOT MET USE TABLE 1, SCHEDULE 'C' N.T.S. (8)

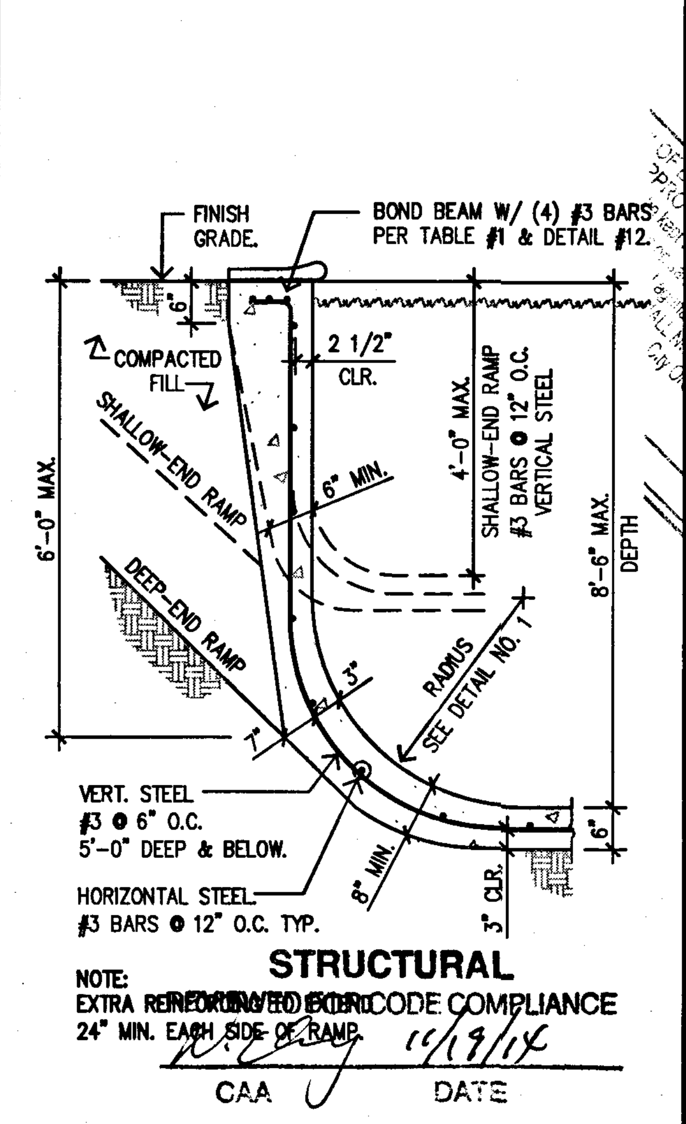


SKIMMER DETAIL N.T.S. (9)

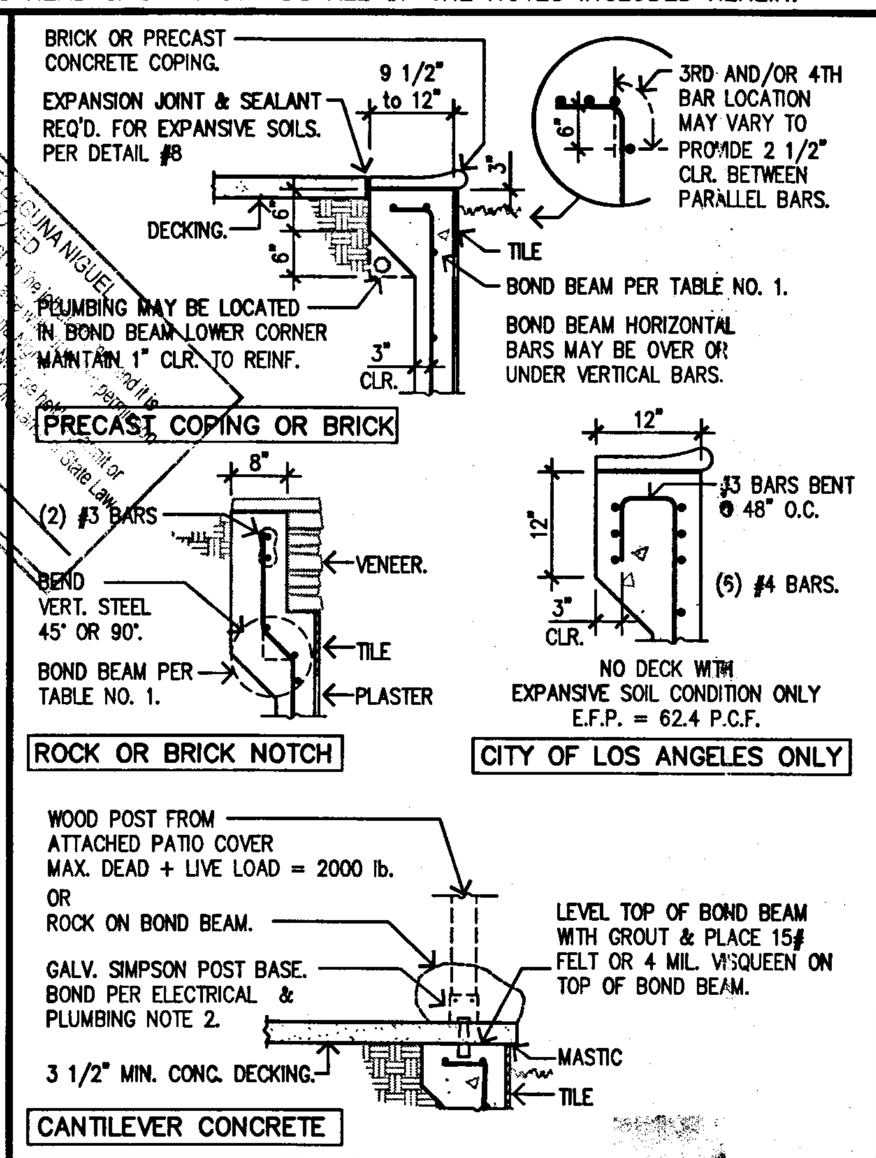


NOTES:
1. INSTALL NO. 8 COPPER GROUND WIRE FROM LIGHT NICHE TO BRASS CONDUIT TO POOL REBAR, OR NON-METALLIC CONDUIT CAN BE USED WITH INSULATED NO. 8 COPPER WIRE INTERIOR W/ APPROVED POTTING COMPOUND PER THE C.E.C.
2. SWIMMING POOL LIGHTING FIXTURES SHALL COMPLY WITH APPLICABLE UNDERWRITERS' LABORATORIES REQUIREMENTS FOR LIGHTING FIXTURES U.L. STANDARD 676.

SECTION AT LIGHT N.T.S. (10)



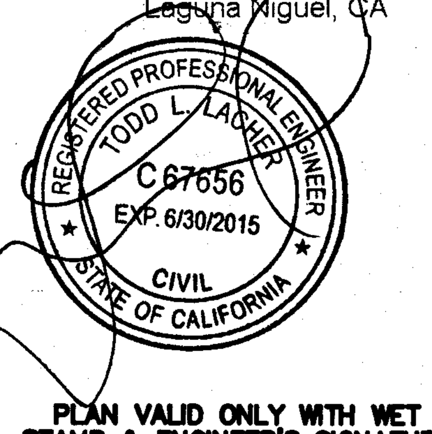
SHALLOW/DEEP END RAMP (11)



BOND BEAM DETAILS N.T.S. (12)

CALCS BY:	A.J.C.
DRAWN BY:	T.L.L.
CHECKED BY:	R.L.L.

For Use Only @:
Crown Cabot Apt
25891 Crown Valley Pkwy
Laguna Niguel, CA



PLAN VALID ONLY WITH WET STAMP & ENGINEER'S SIGNATURE IN RED INK ON PLAN.

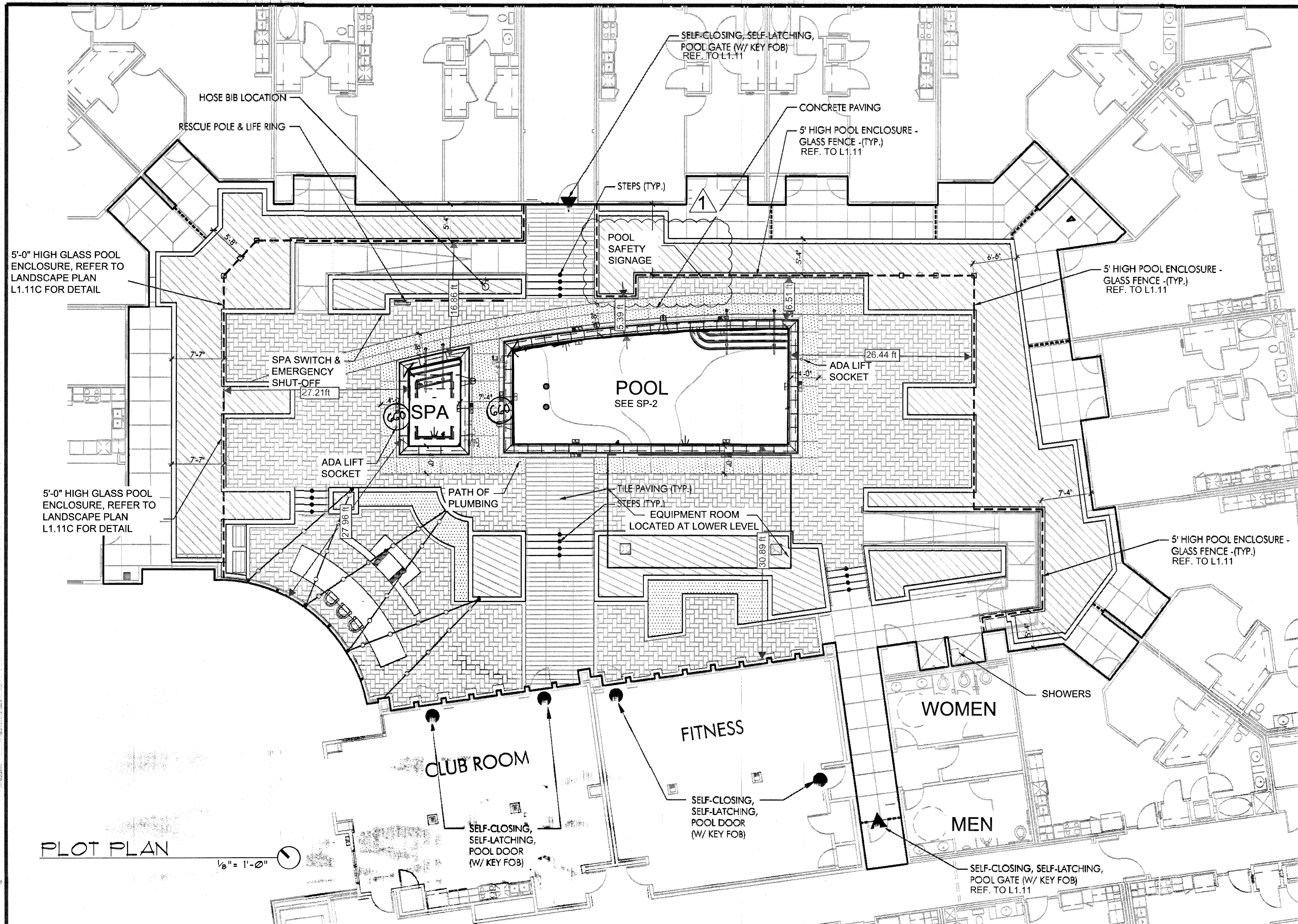
AUTHORIZED SIGNATURES:
RONALD L. LACHER, P.E.
TODD L. LACHER, P.E.
RYAN J. MCPHERSON, P.E.
JEFFERY COLLINS, P.E.

COMMERCIAL POOL STRUCTURAL PLAN

PREPARED IN ACCORDANCE WITH THE 2013 CALIFORNIA BUILDING CODE (2012 INTERNATIONAL BUILDING CODE)

pool engineering inc.
Ron Lacher, R.C.E.
1201 N. Tustin Ave.
Anaheim, California 92807
Fax: (714) 630-6114
Phone: (714) 630-6100

SHEET: 100-C



AREA NOTES

- Enclosure of pool area to be 5 ft. min. in height (fence). Enclosure to be childproof type with 2" max. opening between bottom rail and finished grade. Gates to be 3 ft. min. in width. Door hardware, handles, pulls, latches, locks and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching or twisting of the wrist to operate. Lever-operated or push-type mechanisms and U-shaped handles are acceptable designs. Hardware required for accessible door passage shall be mounted no higher than 46" and no lower than 42" above finished floor.
- Decks to be slip-resistant concrete extending a min. of 4 ft. beyond pool edge. Decks to slope 1/4" per ft. to a 4 sq. in. min. storm drain, and/or to planters.
- Emergency shut off switch for all spa pumps (both circulation and booster) shall be located 5 ft. min. from water and within enclosure. Emergency shut off sign shall be conspicuously posted.

SAFETY

- First aid kit with instructions.
- Cyanurate acid, free chlorine, and pH test kit.
- Thermometer
- Telescopic pole with leaf rake and 18" brush, 16 ft. (pool), 12 ft. (spa) straight pole with body hook.
- Safety length ring with 1/4" nylon rope min. length
- to width of pool.

ADA NOTES

The following shall be provided by the General Contractor and comply with the physically disabled accessibility requirements.

1. Ramps: Shall not exceed maximum slopes.
2. Decks: Shall not exceed maximum slopes.
3. Gates and Doors: Shall be 3'-0" min. width.
4. Pool and/or Spa:
   A) Shall be provided with ramp for handicap access OR
   B) Shall be provided with a sleeve and a handicap lift as specified by the manufacturer.

SIGNAGE

All signs shall have min. 4" high, legible letters or numbers - Unless otherwise required in this section.
All signs must meet requirements of California Building Code, CCR Title 24 effective September 1st 2012.

- Occupant capacity: Pool 1/20 Spa 1/10
- "NO DIVING"
- "WARNING: NO LIFEGUARD ON DUTY" The sign also shall state in letter at least 1" high "Children under the age of 14 shall not use pool without a parent or adult guardian in attendance".
- An illustrated diagram of artificial respiration and CPR procedures in ¼" high lettering.
- "DIAL 911 FOR EMERGENCIES". The pool facility name and address. The nearest emergency service phone number.
- "KEEP CLOSED" or "KEEP GATE CLOSED"
- "Persons having currently active diarrhea or who have had active diarrhea within 14 days shall not be allowed to enter the pool water" in letter at least 1 inch.

Additional requirement for Spa Signage

- "EMERGENCY SHUT-OFF SWITCH" in 1" high.
- "CAUTION" sign. This sign is followed by the following in 1" high lettering:
  a. Elderly persons, pregnant women, infants and those with health conditions requiring medical care should consult with a physician before entering the spa.
  b. Unsupervised use by children under the age of 14 is prohibited.
  c. Hot water immersion while under the influence of alcohol, narcotics, drugs, or medicines may lead to serious consequences and is not recommended.
  d. Do not use alone.
  e. Long exposure may result in hyperthermia, nausea, dizziness or fainting.

MAINTENANCE NOTE.

- Provide vacuum heads and vacuum hose.
- Equipotential bonding grid required

SHEET INDEX

This project shall comply with the 2012 international swimming pool and spa code, 2013 CBC, CRC, CMC, CPC, CEC, CFC, 2013 California energy code, and local building codes

PLANNING & ZONE CLEARANCE
This Plan was inspected on 12.17.14 and found to comply with applicable City land-use regulations.
This clearance is only valid for the life of the building permit.
The occupancy of this building shall not be changed from the use stated in the permit application except by issuance of a new Certificate of Use and Occupancy. Deviation from the approved plan shall be cause for stopping construction.
WARNING: This stamp indicates partial review only and does not constitute a building permit.
FOR JM.
Laguna Niguel Community Development Department

SYMBOL

ADA PATH OF TRAVEL

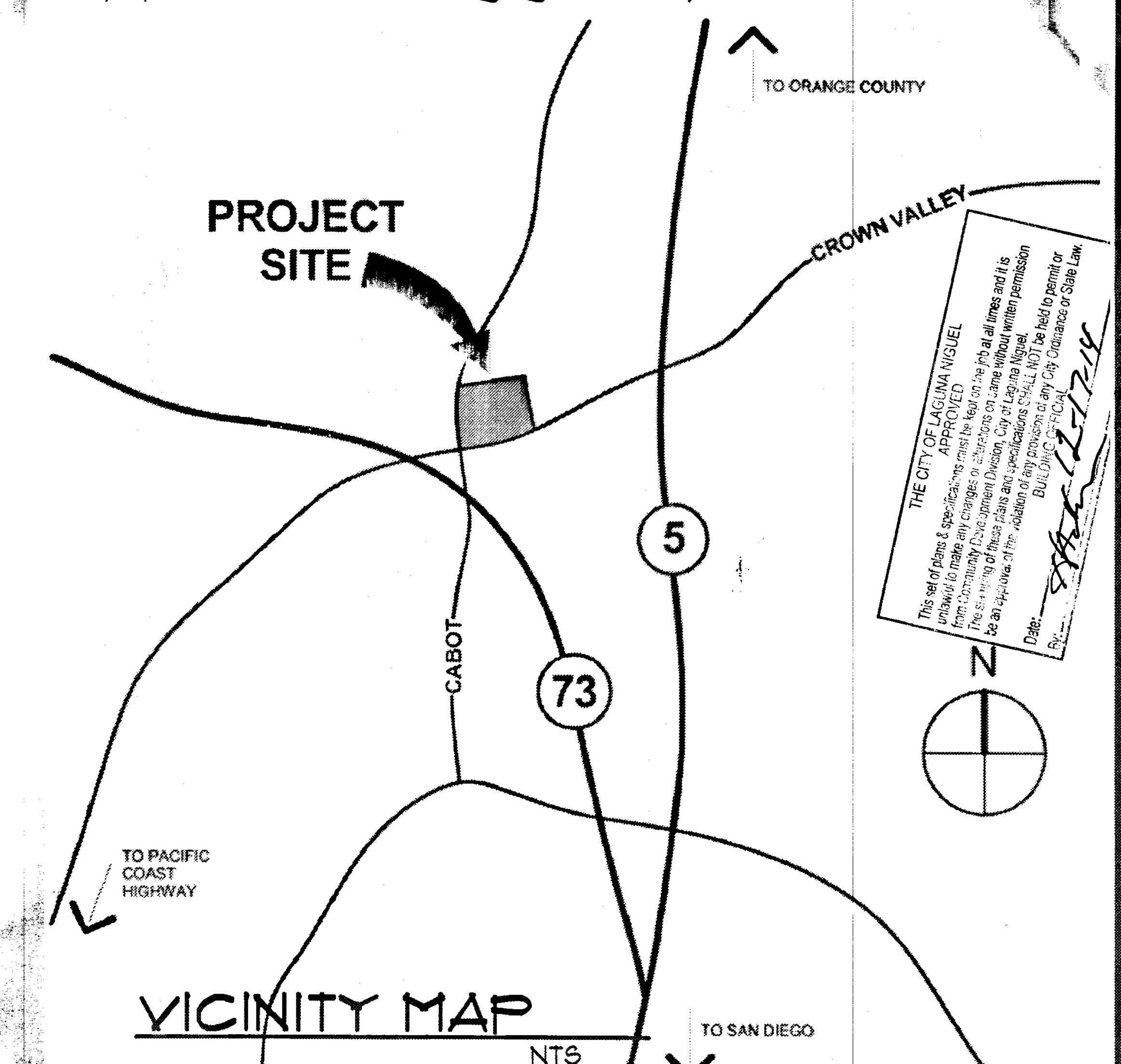
HOSE BIB LOCATION

SCOPE OF WORK
POOL, SPA AND POOL/SPA EQUIPMENT

SITE PLAN REVIEWED for conformance to structural details
Todd L. Lacher, R.C.E. 67656
Pool Engineering, Inc.
Structural details shall take precedence over conflicts with site plans.

"I HAVE VERIFIED THE SUBJECT PROPERTY'S GRANT DEED AND TITLE REPORT AND HAVE FOUND NO EASEMENT IN THE AREA OF THE PROPOSED CONSTRUCTION. I ACKNOWLEDGE THAT I AM RESPONSIBLE AND ACCOUNTABLE FOR NOT CONSTRUCTING IN THE EASEMENTS"
SIGNATURE: Magsaac

*EXPOSED PVC PIPE MUST BE U.V. APPROVED OR PAINTED WITH WATER BASE PAINT.
*ALL METALLIC PARTS OF THE POOL STRUCTURE, REINFORCING STEEL, LIGHT FIXTURE HOUSING, METAL LADDERS, DIVING BOARDS, ADA LIFTS, AND ANY METAL STRUCTURES OR OBJECTS WITHIN 5 FEET FROM POOL OR SPA REQUIRE ELECTRICAL BONDING.
*PRIOR TO APPROVAL TO PLACING CONCRETE OR GUNITE, ELECTRICAL INSPECTION SHALL APPROVE GROUNDING OF REINFORCING STEEL, PLUMBING AND CONDUIT.
*ALL EXTERIOR RECEPTACLES MUST BE GFCI PROTECTED.
*THE DISCHARGE OF POLLUTANTS TO ANY STORM DRAINAGE SYSTEM IS PROHIBITED. NO SOLID WASTE, PETROLEUM BYPRODUCTS, SOIL PARTICULATE, CONSTRUCTION WASTE MATERIALS, OR WASTEWATER GENERATED ON CONSTRUCTION SITE OR BY CONSTRUCTION ACTIVITIES SHALL BE PLACED, CONVEYED OR DISCHARGED INTO THE STREET, GUTTER OR STORM DRAIN SYSTEM.
*GAS PIPING BELOW GRADE SHALL BE P.E. PIPE AND MUST BE BURIED MINIMUM OF 18".
*SPECIAL INSPECTION IS REQUIRED ON POOLS AND SPAS DURING GUNITE OR SHOTCRETE PLACEMENT IN ACCORDANCE WITH UBC SECTION 1701.5(12) AND 1924.11.
*SPECIAL INSPECTOR SHALL REGISTER WITH THE CITY OF LAGUNA NIGUEL
*TYPE V CEMENT IS REQUIRED. ALL CONCRETE AND SHOTCRETE SHALL BE f'c=4500 PSI AT 28 DAYS COMPRESSIVE STRENGTH WITH WATER/CEMENT RATIO = 0.45
*ALL POOL/SPAS SHALL DISPOSE OF SWIMMING POOL WASTE WATER INTO A MIN. 3" P-TRAP. CLEANOUTS ARE REQUIRED AND A STRAINER MUST BE PROVIDED ON THE INLET.
*PAVED AREAS MUST BE SLOPED TO DRAIN AT 1% MIN. AND UNPAVED AREAS MUST BE SLOPED AT LEAST 2%, SLOPE OF DRAIN LINES SHALL BE 0.5% MIN.
*WHEN CONSTRUCTING HARDSCAPE AND LANDSCAPE ADJACENT TO BUILDINGS THE REQUARIED MIN. DISTANCE BETWEEN FINISH GRADE AND BOTTOM OF STUCCO WEEP SCREEDS SHALL BE MAINTAINED AS FOLLOWS: 2" ABOVE SOLID SURFACE SUCH AS CONCRETE AND TILE. 4" ABOVE SOIL.



AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT AND CONTRACTOR
32232 PASEO ADELANTO, SUITE A
SAN JUAN CAPISTRANO, CA 92675
P(949)493-9548 F(949)493-8495
LICENSE# 744177 C53 & B

HART BROTHERS CONSTRUCTION, INC
DBA AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT & CONTRACTOR
LICENSE # 744177 C53 & B
EXPIRES: 12-31-15

SIGNATURE 12-17-14 DATE

PROJECT NAME:
CROWN CABOT LUXURY APARTMENTS
27960 CABOT
LAGUNA NIGUEL, CA
APN: 636-043-02

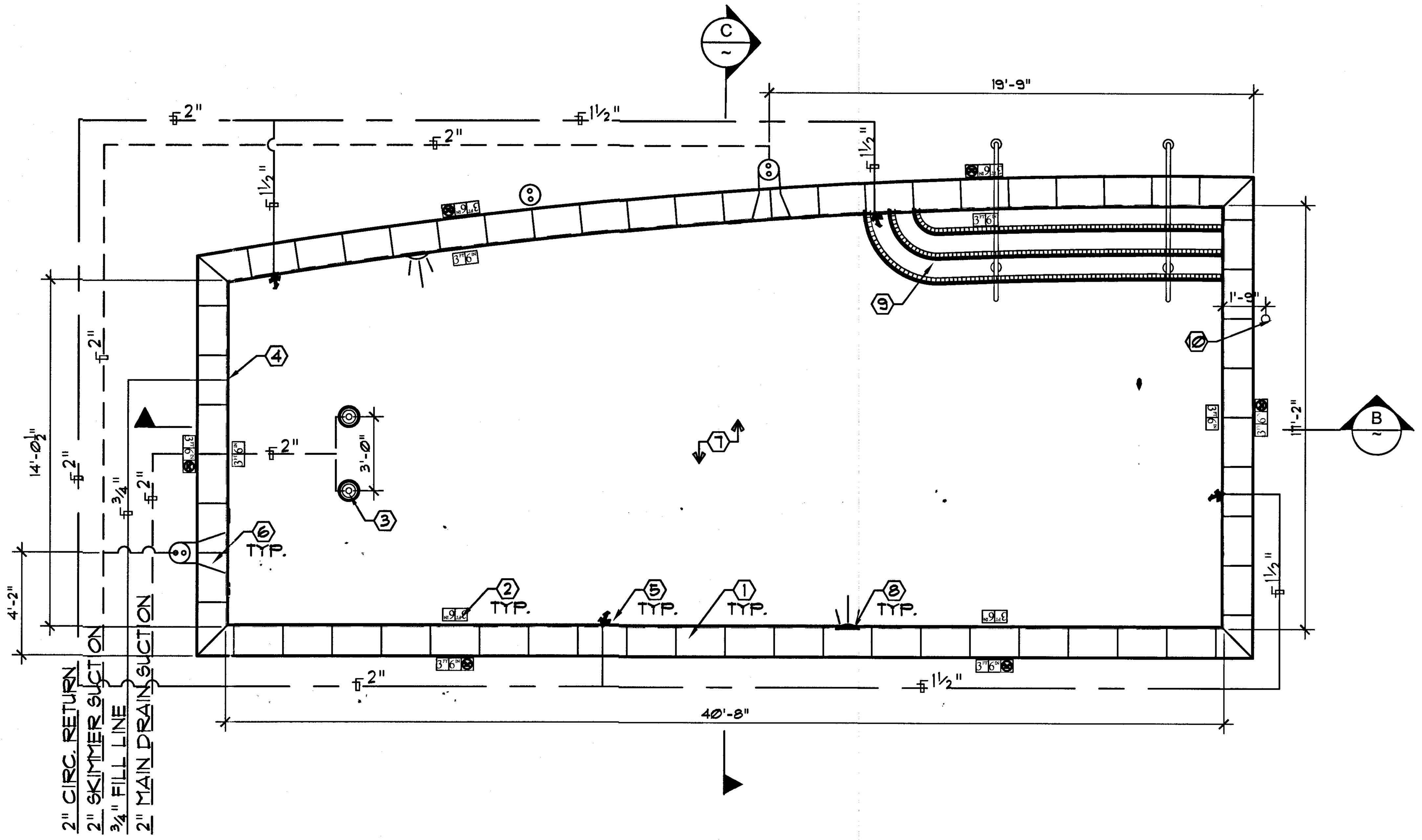
No.	Date	Revision
1	7/16/14	HD RESUBMITTAL
2	9/5/14	CHANGED SALT SYSTEM

OWNERS NAME:
MILL CREEK RESIDENTIAL TRUST LLC
949 SOUTH COAST DR., SUITE 400
COSTA MESA, CA 92626
PHONE: 714.800.1385
FAX:

Drawn:	QT
Checked:	-
Project Number	
Date:	09/5/2014
Scale:	SEE DRAWING

Sheet Title:
COVER SHEET, PLOT PLAN, NOTES, & VICINITY MAP

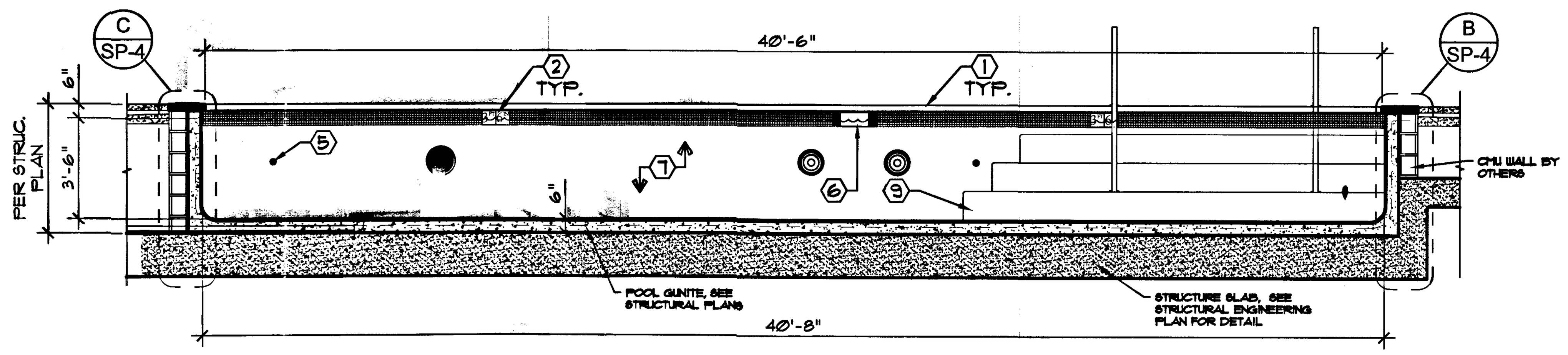
Sheet Number:
SP-1
1 OF 5



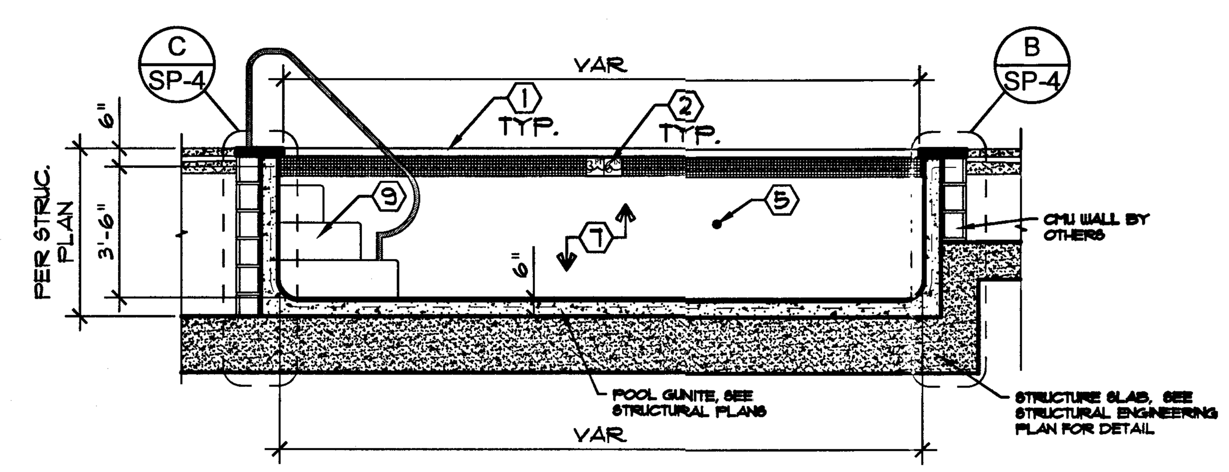
A ¼" POOL PLAN VIEW AND PLUMBING LAYOUT

SPECIAL INSPECTION IS REQUIRED ON POOLS AND SPAS DURING GUNITE OR SHOTCRETE PLACEMENT IN ACCORDANCE WITH UBC SECTION 1701.5(12) and 1924.11.

TYPE V CEMENT IS REQUIRED. ALL CONCRETE AND SHOTCRETE SHALL BE f'c=4500 PSI AT 28 DAYS COMPRESSIVE STRENGTH WITH WATER/CEMENT RATIO = 0.45



B ¼" POOL LONGITUDINAL SECTION



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C ¼" POOL CROSS SECTION

POOL PROJECT SPECIFICATIONS

SIZE	17'-2" x 40'-8"
AREA	659 S.F.
PERIMETER	112'-9"
WATER DEPTH	3'-6"
CAPACITY GAL.	17,253 GAL. (1)
TURNOVER REQ.	48 GPM
OCCUPANT LOAD	32

CONSTRUCTION NOTES

1. COPING to be 15" Cast-in-Place Custom Coping type with a full expansion joint and pliable mastic between deck and pool bond beam.
SEE DETAIL B & C/SP-4
2. DEPTH MARKERS to be contrasting color on all pool walls at 25'-0" max. spacing, with slip-resistant markers in deck where pool exceeds 20'-0" in width. "NO DIVING" markers shall be installed on the deck directly adjacent to the depth markers.
SEE DETAIL F/SP-4
3. DRAINS to be tamperproof type, 36" min. separation with a hydrostatic device installed if high ground water is encountered or anticipated.
SEE DETAIL D/SP-4
4. AUTOFILL LINE Automatic makeup water flow controls with a manual override control shall be provided to maintain the proper pool water leve at the overflow rim.
SEE DETAIL I/SP-4
5. WALL INLET with adjustable eyeball inlets located 18" below waterline in pool.
SEE DETAIL E/SP-4
6. SKIMMERS to be Waterway 540-6300, equalized thru wall with equalizer fitting or to main drain. Provide one skimmer for each 500 sq. ft. of pool surface area or fraction thereof.
SEE DETAIL G/SP-4
7. PLASTER to be white and smooth with 6" min. ceramic tile band at waterline.
8. LIGHTS to provide the equivalent of 1 watt per sq. ft. of pool surface area. Lights must be located with water depth over lens at least 18".
SEE DETAIL J/SP-4
9. POOL STEPS shall have the same dimensions with a tread not less than 12" in width, except if the top step is curved convexly. The top step tread shall not be less than 21" in width as measured at the point of maximum curvature. Risers shall be uniform and shall not exceed 12" in height.
SEE DETAIL A/SP-4
10. ADA Lift SOCKET
SEE DETAIL K/SP-4

AQUATIC TECHNOLOGIES
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SAN JUAN CAPISTRANO, CA 92675
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HART BROTHERS CONSTRUCTION, INC
DBA AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT & CONTRACTOR
LICENSE # 744177 C53 & B
EXPIRES: 12-31-15

SIGNATURE 11-14-14 DATE

PROJECT NAME:
CROWN CABOT LUXURY APARTMENTS
~~25891 CROWN VALLEY,~~ 27960 Cabot
LAGUNA NIGUEL, CA
APN: 636-043-02

No.	Date	Revision
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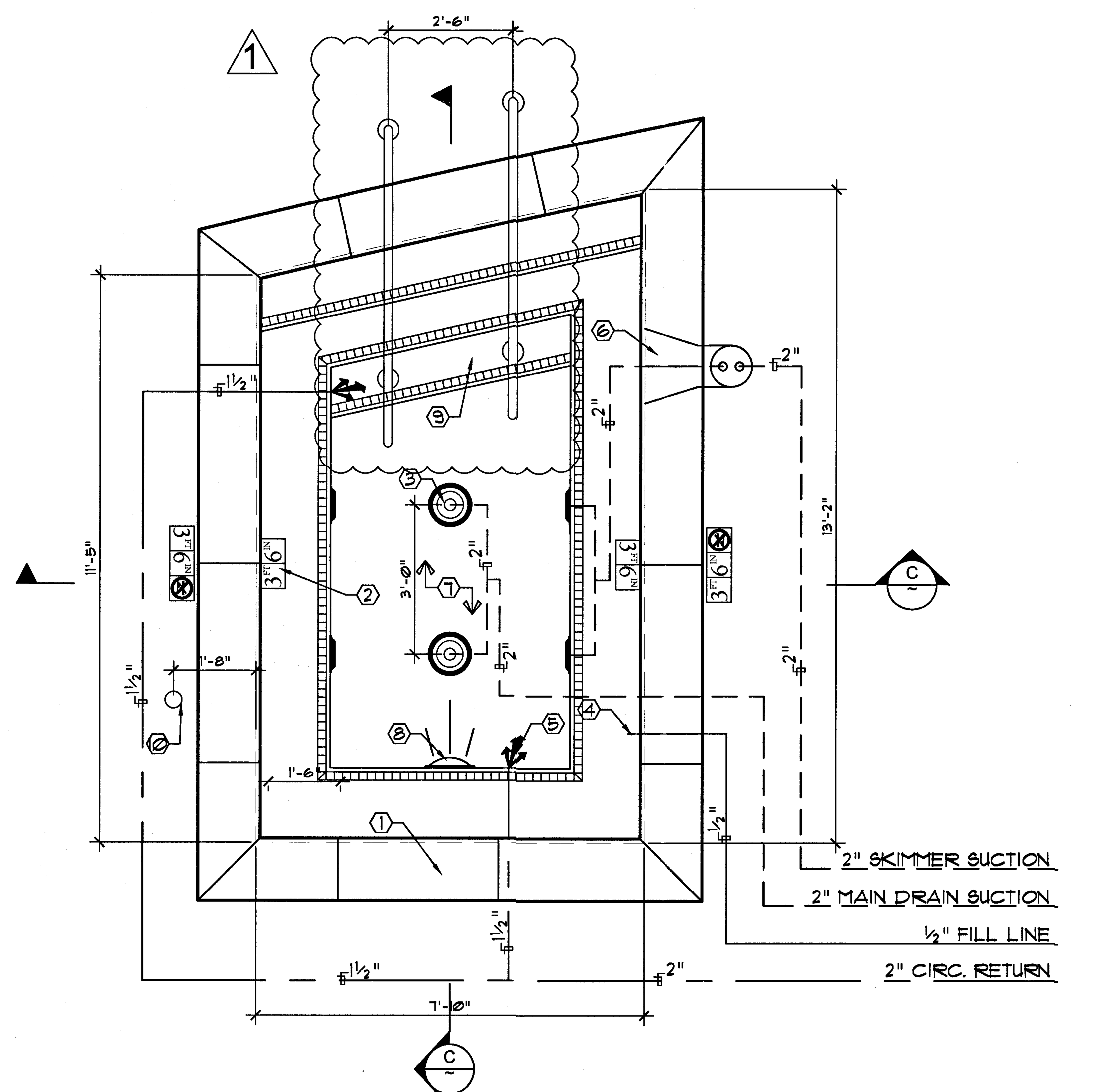
2	9/5/14	CHANGED SALT SYSTEM

OWNERS NAME:
MILL CREEK RESIDENTIAL TRUST LLC
949 SOUTH COAST DR., SUITE 400
COSTA MESA, CA 92626
PHONE: 714.800.1385
FAX:

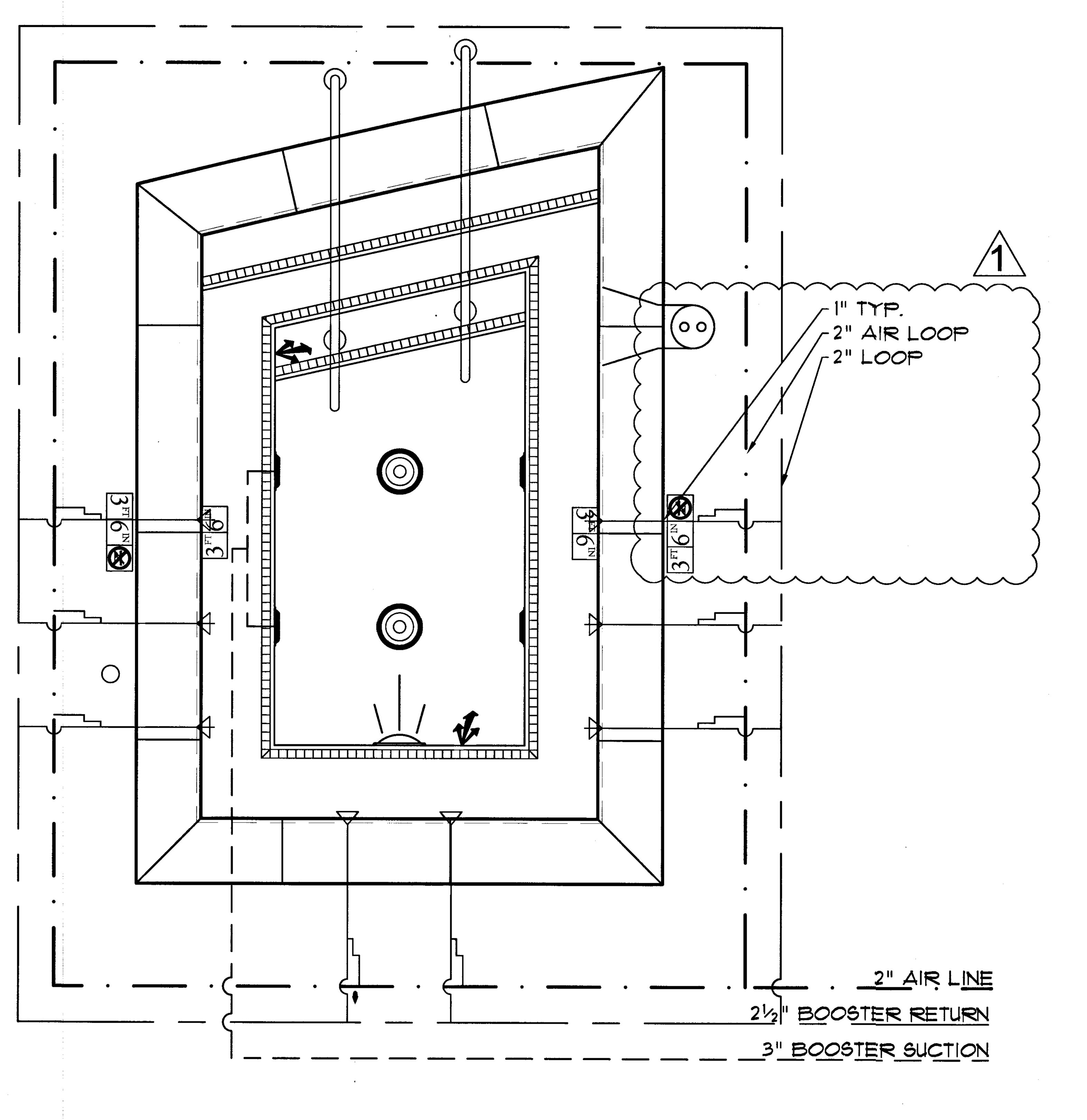
Drawn: QT
Checked: -
Project Number
Date: 09/5/2014
Scale: SEE DRAWING

Sheet Title:
POOL LAYOUT & SECTION VIEWS

Sheet Number:
SP-2
2 OF 5



A | 1/2" | SPA PLAN VIEW AND PLUMBING LAYOUT



B | 1/2" | SPA BOOSTER LAYOUT

SPA PROJECT SPECIFICATIONS

SIZE	7'-10" x 13'-2"
AREA	96 SF.
PERIMETER	40'-5"
WATER DEPTH	3'-6"
CAPACITY GAL.	1,597 GAL.
TURNOVER REQ.	53 GPM
OCCUPANT LOAD	9

CONSTRUCTION NOTES

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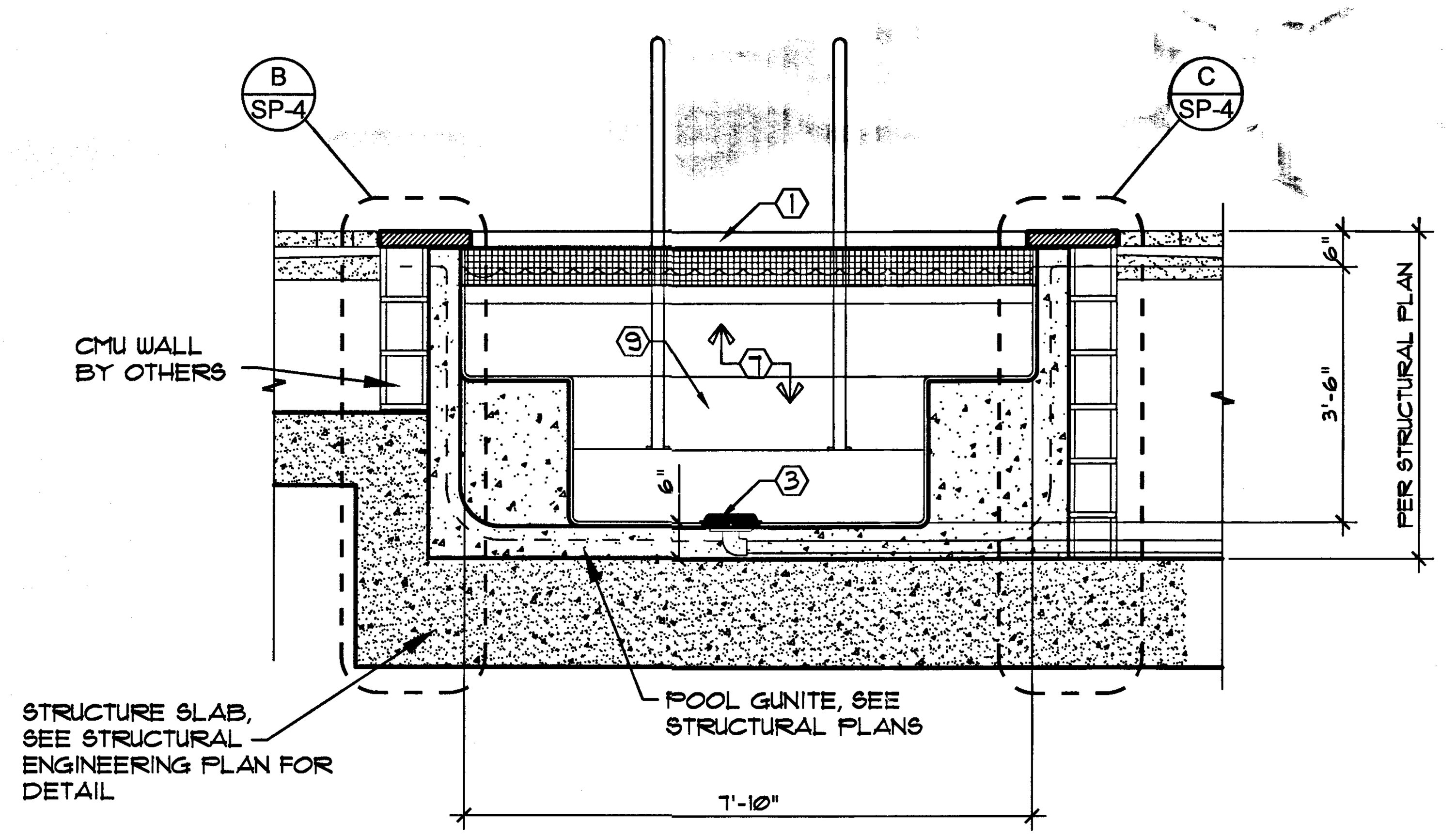
4. AUTOFILL LINE Automatic makeup water flow controls with a manual override control shall be provided to maintain the proper pool water leve at the overflow rim. SEE DETAIL I/SP-4
5. WALL INLET with adjustable eyeball inlets located 18" below waterline in pool. SEE DETAIL E/SP-4
6. SKIMMERS to be Waterway 540-6300, equalized thru wall with equalizer fitting or to main drain. Provide one skimmer for each 500 sq. ft. of pool surface area or fraction thereof. SEE DETAIL G/SP-4
7. PLASTER to be white and smooth with 6" min. ceramic tile band at waterline.
8. LIGHTS to provide the equivalent of 1 watt per sq. ft. of pool surface area. Lights must be located with water depth over lens at least 18". SEE DETAIL J/SP-4
9. SPA STEPS shall have the same dimensions with a tread not less than 12" in width, except if the top step is curved convexly. The top step tread shall not be less than 21" in width as measured at the point of maximum curvature. Risers shall be uniform and shall not exceed 12" in height. SEE DETAIL C/SP-3
10. ADA Lift SOCKET SEE DETAIL K/SP-4

SPECIAL INSPECTION IS REQUIRED ON POOLS AND SPAS DURING GUNITE OR SHOTCRETE PLACEMENT IN ACCORDANCE WITH UBC SECTION 1701.5(12) and 1924.11.

TYPE V CEMENT IS REQUIRED. ALL CONCRETE AND SHOTCRETE SHALL BE f'c=4500 PSI AT 28 DAYS COMPRESSIVE STRENGTH WITH WATER/CEMENT RATIO = 0.45



C | 1/2" | SPA SECTION

SPECIAL INSPECTION IS REQUIRED ON POOLS AND SPAS DURING GUNITE OR SHOTCRETE PLACEMENT IN ACCORDANCE WITH UBC SECTION 1701.5(12) and 1924.11.

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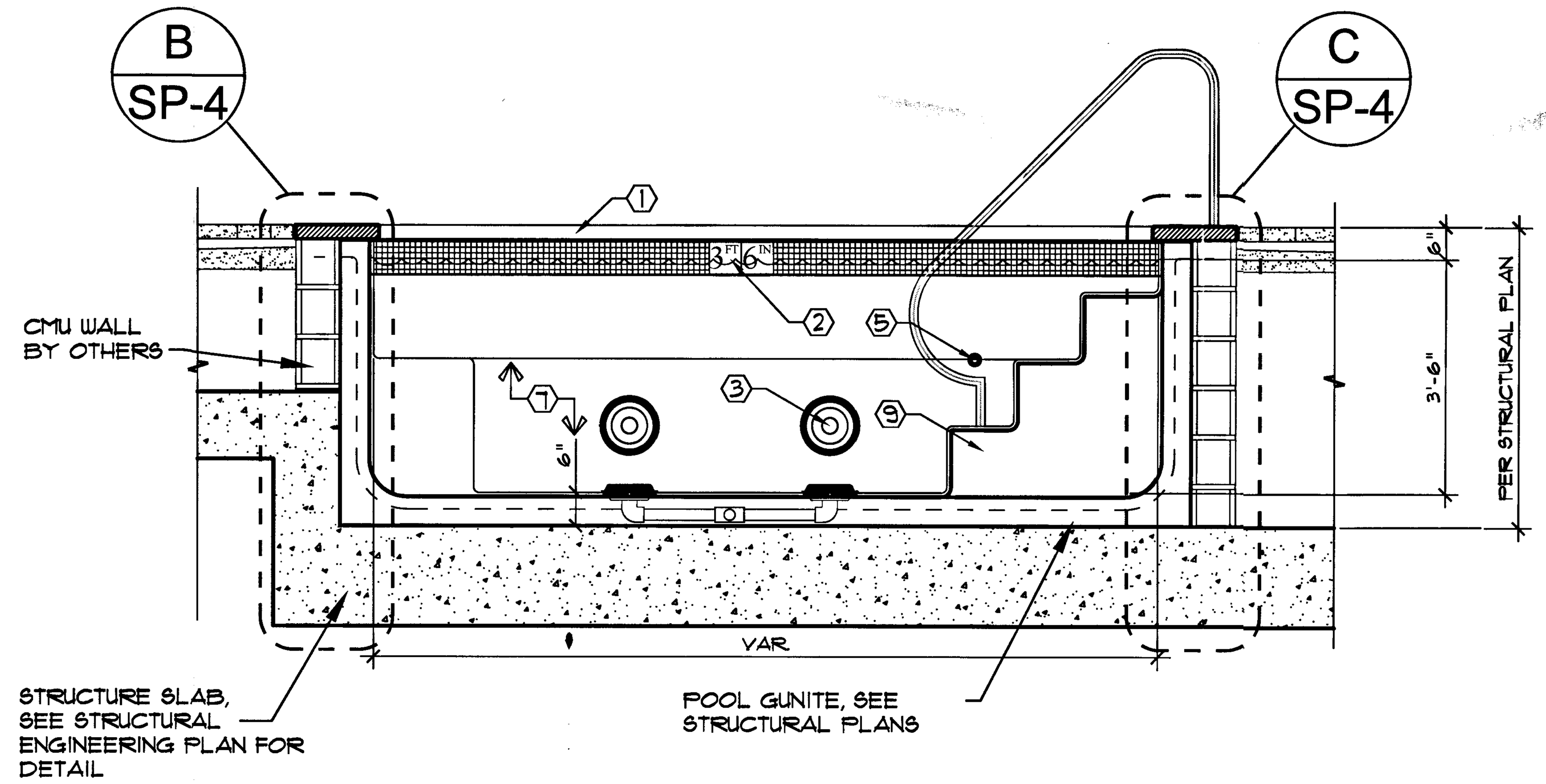


D | 1/2" | SPA SECTION

AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT AND CONTRACTOR
32232 PASEO ADELANTO, SUITE A
SAN JUAN CAPISTRANO, CA 92675
P(949)493-9548 F(949)493-8495
LICENSE# 744177 C53 & B

HART BROTHERS CONSTRUCTION, INC
DBA AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT & CONTRACTOR
LICENSE # 744177 C53 & B
EXPIRES: 12-31-15

SIGNATURE DATE 11-14-14

PROJECT NAME:
CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, 27960 Cabot
LAGUNA NIGUEL, CA
APN: 636-043-02

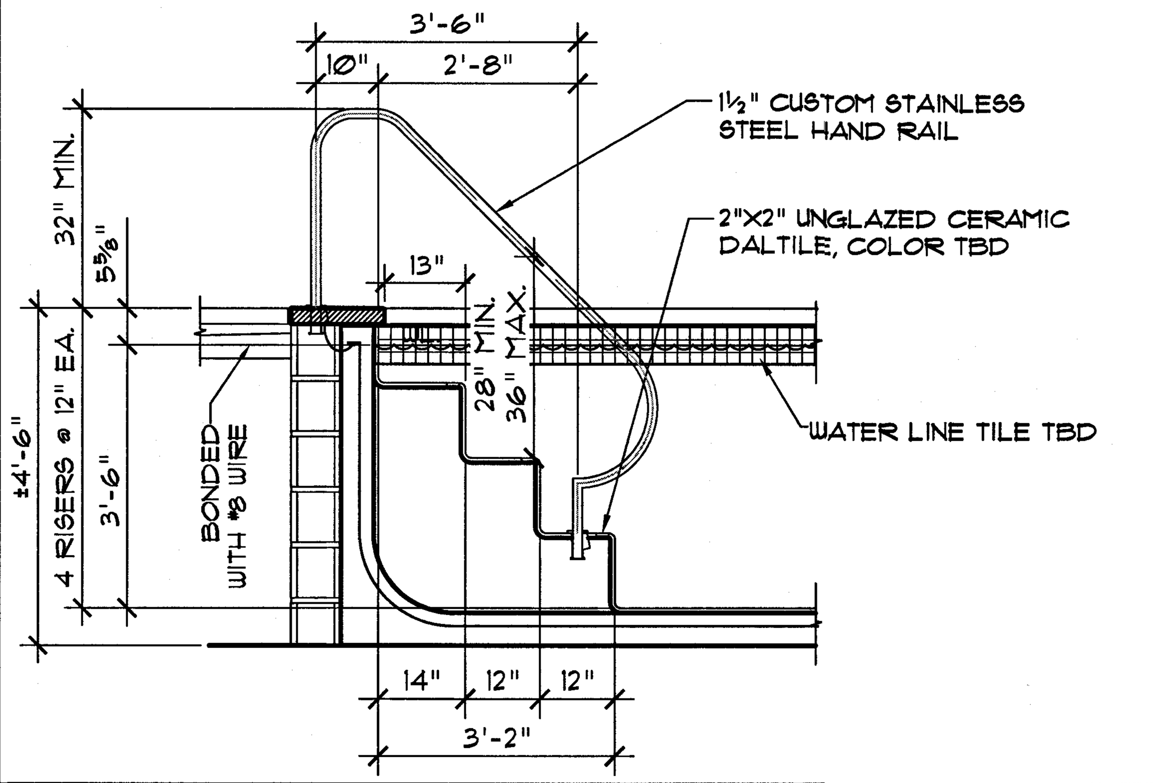
No.	Date	Revision
1	7/16/14	HD RESUBMITTAL
2	9/5/14	CHANGED SALT SYSTEM

OWNERS NAME:
MILL CREEK RESIDENTIAL TRUST LLC
949 SOUTH COAST DR., SUITE 400
COSTA MESA, CA 92626
PHONE: 714.800.1385
FAX:

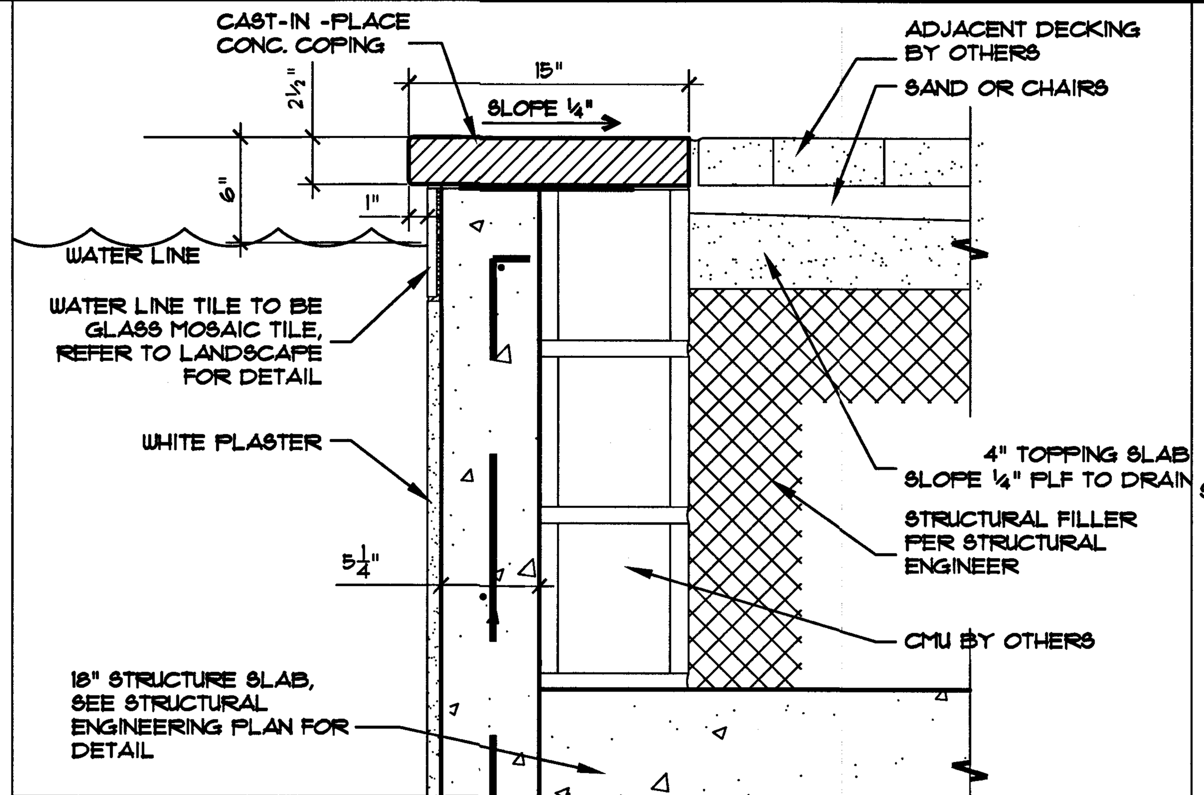
Drawn:	QT
Checked:	-
Project Number	
Date:	09/5/2014
Scale:	SEE DRAWING

Sheet Title:
SPA PLAN, PLUMBING, BOOSTER JET LAYOUT, & SECTION

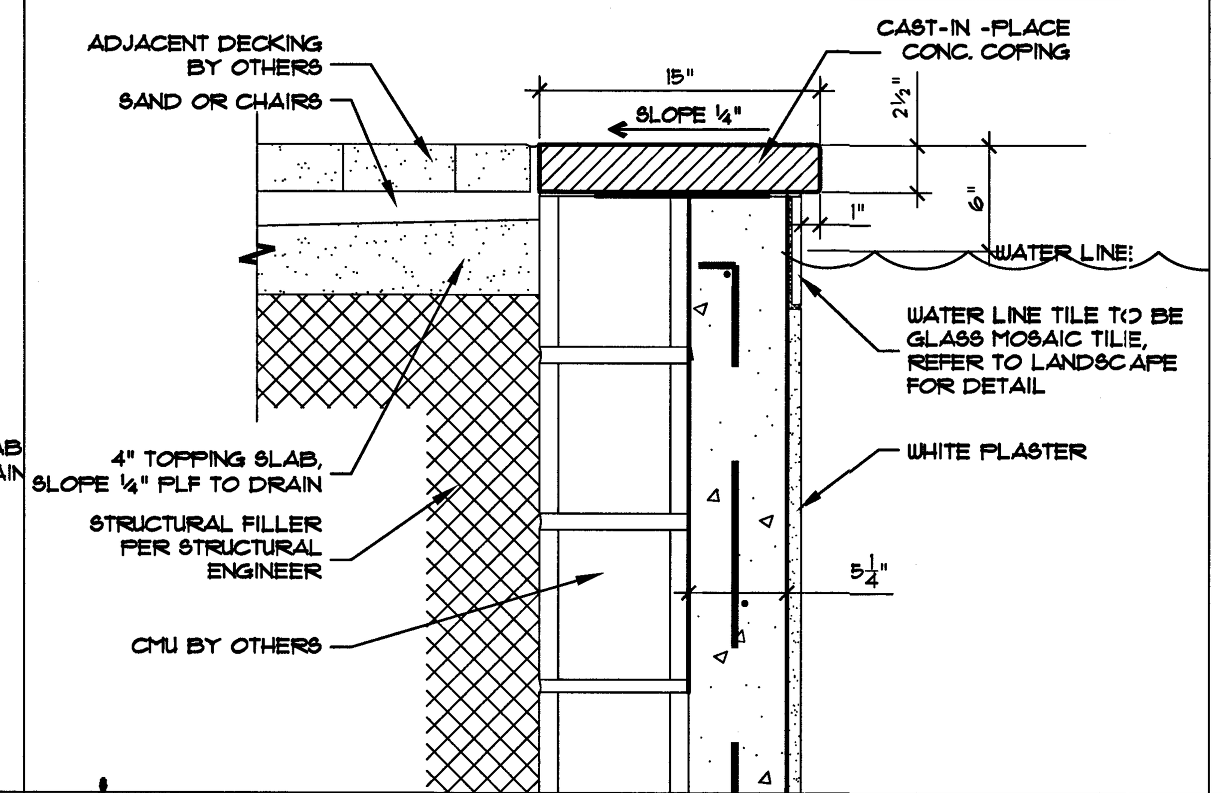
Sheet Number:
SP-3
3 OF 5



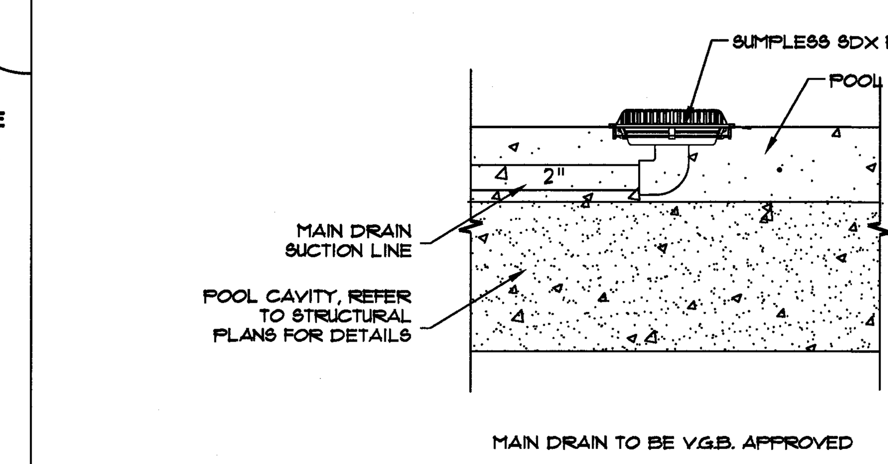
A ½" STEP SECTION



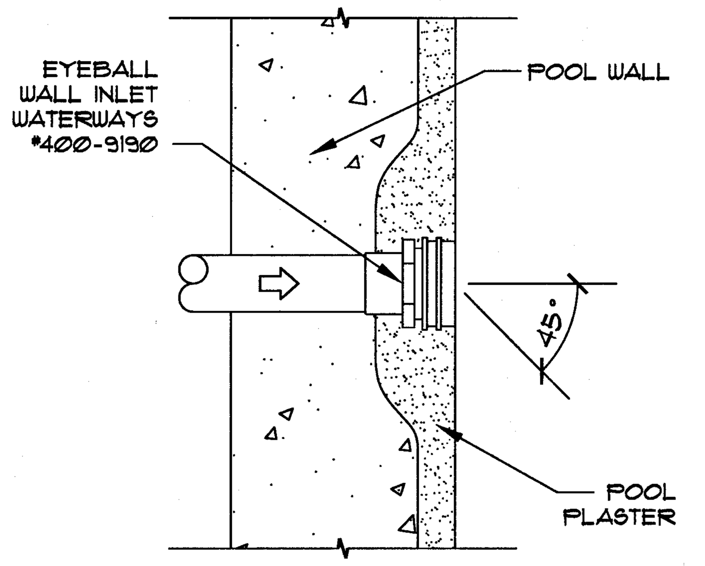
B 1½" COPING DETAIL



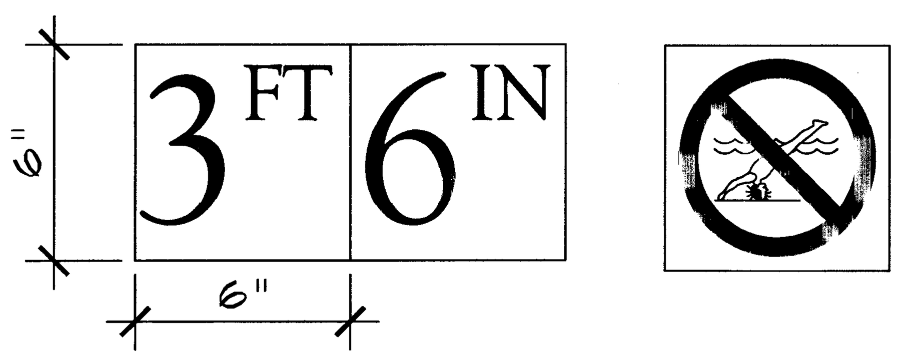
C 1½" COPING DETAIL



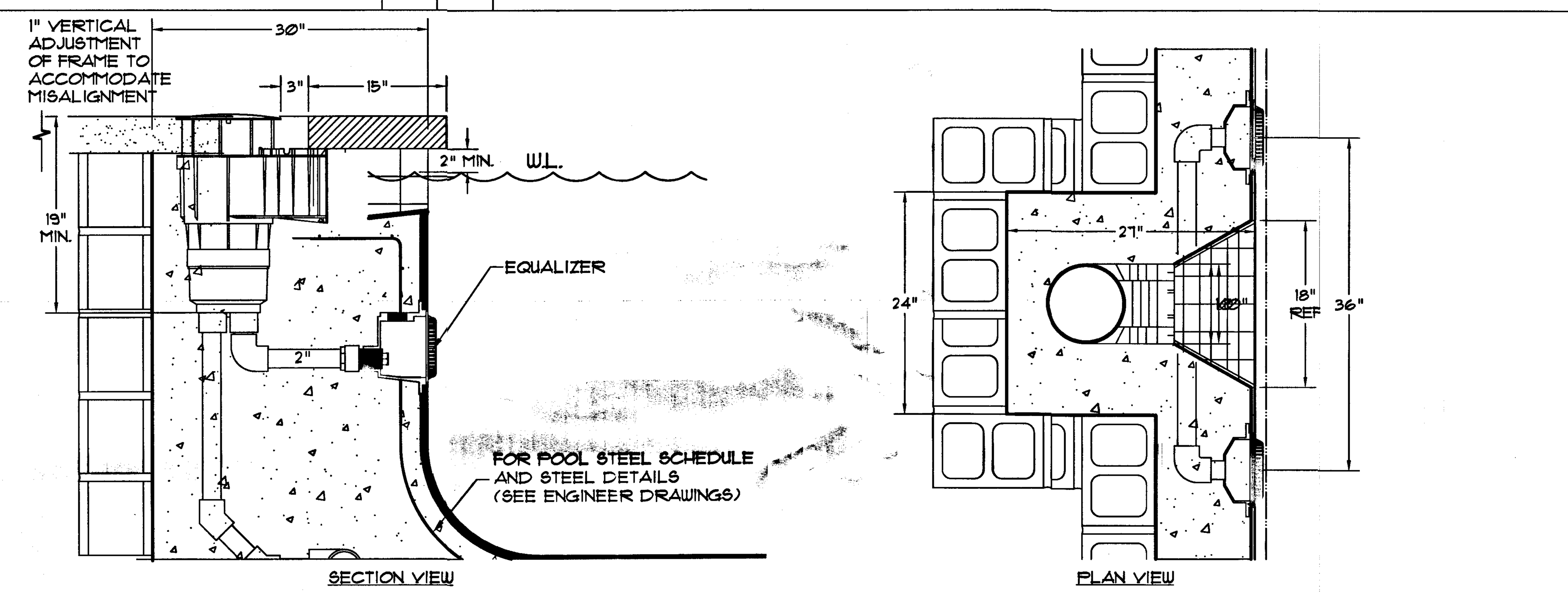
D 1" MAIN DRAIN DETAIL



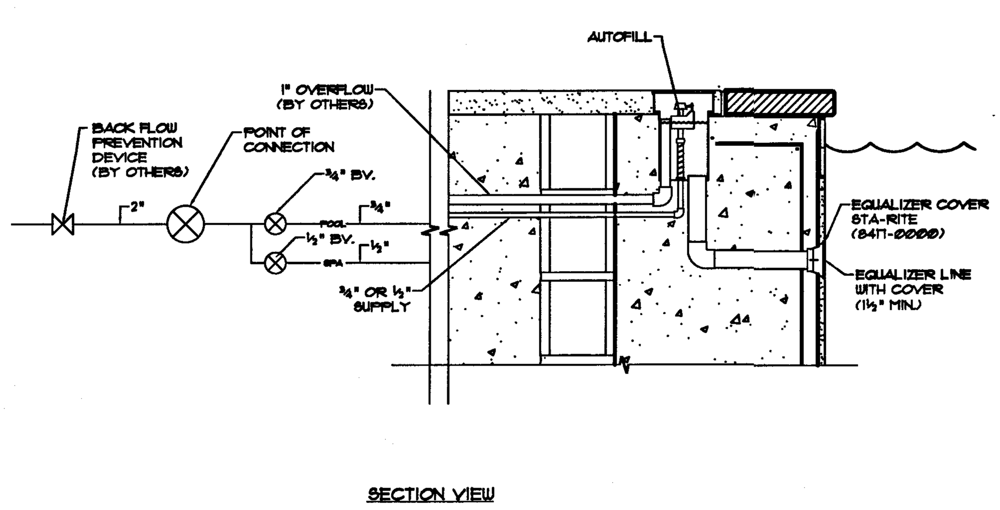
E 3" WALL INLET



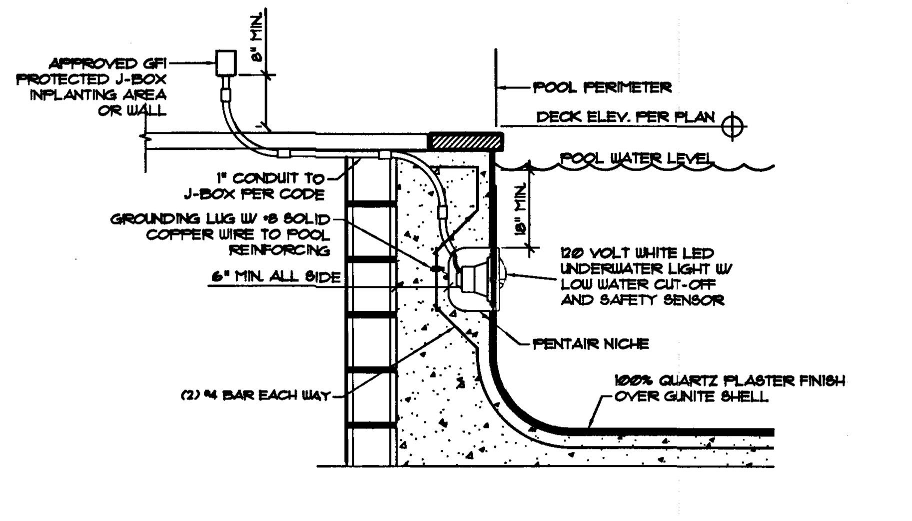
F 3" DEPTH/DECK MARKERS



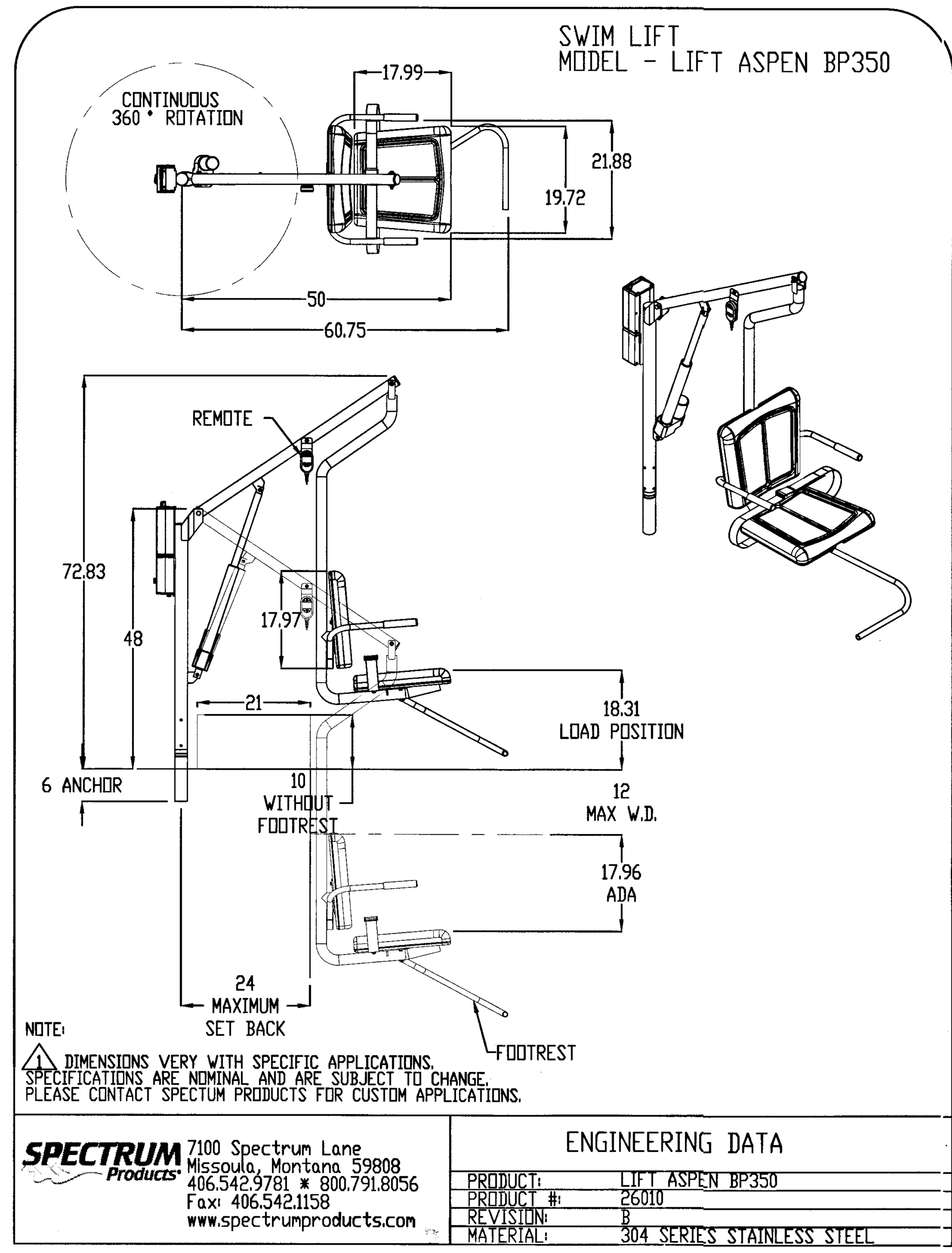
G 1" SKIMMER DETAIL



I ¾" AUTOMATIC FILL LINE DETAIL



J ½" UNDERWATER LIGHT



Swimming pool deck areas must be accessible, and mechanism to assist person with disabilities in gaining entry into the pool and exiting from the pool shall be provided. Such a mechanism may consist of a swimming pool lift device as long as the device meets all of the following criteria:

1 Have a seat that meets all of the following:
1.1 The seat must be rigid
1.2 The must be not less than 17 inches (423mm) and not more than 19 inches (483mm) inclusive of any cushioned surface that might be provided above the pool deck
1.3 The seat must have two armrests. The armrest on the side of the seat by which access is gained shall be either removable or fold clear of the seat
1.4 The seat must have a back support that is at least 12 inches (305mm) tall
1.5 The seat must have an occupant restraint for use by the occupant of the seat, and the restraint must meet the standards for operable controls in compliance with Section 1117B.6-4.

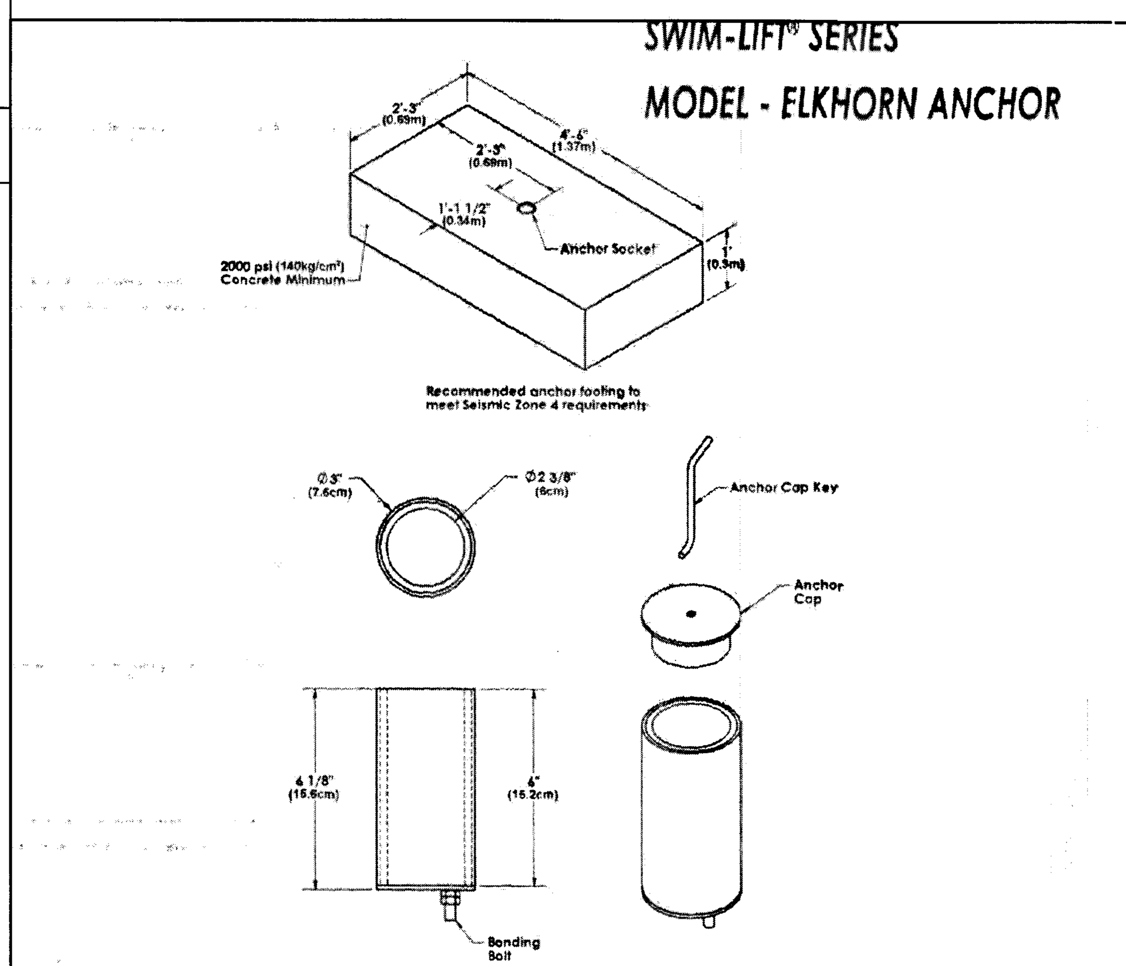
2 Be capable of unassisted operation from both the deck and water levels.

3 Be stable and not permit unintended movement when a person is getting into or out of the seat.

4 Be designed to have a live-load capacity of not less than 300 pounds.

5 Be positioned so that, if the pool has water of different depths, it will place the operator into water that is at least three feet (914mm) deep.

6 Lower the operator at least 18 inches (457mm) below the surface of the water.



Elkhorn Anchor Assembly shall be part number 28510-00

Anchor Body
The anchor shall be fabricated from 300 series stainless steel. It shall be six (6) - inches deep and have a UHMW sleeve insert. The welded portion of the anchor body shall be of the MIG type using type 300 series welding rod for corrosion resistance.

Cap
A stainless steel slip cap shall be provided. The welded portion of the cap shall be of the MIG type and applied using type 300 series welding rod for corrosion resistance. The cap will fill the anchor opening when the Assisted Access Lifting device is not in use.

Bonding
A bonding screw shall be provided. The bonding screw will be 18-8 stainless steel.

Warranty
Two year limited warranty.

K NTS HANDICAP LIFT AND NOTES

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Date:	09/5/2014
Scale:	SEE DRAWING

Sheet Title:
DETAILS

Sheet Number:
SP-4
4 OF 5

POOL EQUIPMENT LIST

PUMP (PENTAIR - WHISPERFLO) — (1) WFE-3 ¾HP = 60 GPM (6.0 AMPS-208 VOLTS)

FILTER (PENTAIR - SAND-FILTER) — (1) TR-100C = 4.9 S.F. = 98 GPM (WITH MULTI-PORT BACKWASH VALVE)

HEATER (JANDY) — (1) EHE350NC

FLOWMETER (BLUE & WHITE) — F300 (2")

CHLORINATOR (ROLA-CHEM) — RC25/53SC

SALT SYSTEM (PENTAIR) — COMSYS-6 (ITEM# 520972) 2

CHEMICAL CONTROLLER (ROLA-CHEM) — 554300

LIGHT (PENTAIR) — (2) AMERILITE 500W

SKIMMER (WATERWAY) — (2) 540-6300 (2")

MAIN DRAIN (PARAMOUNT) — (2) SDX 162-2212 (10" ROUND, COLOR WHITE)

EQUALIZER COVER (AQUASTAR) — (4) 6HP101

RETURNS (WATERWAYS B & S PLASTICS) — (4) 400-9190

CHLORINE TANK (CARBOYS) — (1) 50 GAL CARBOYS TANK

ACID PUMP (ROLA-CHEM) — RC25/53SC

ACID TANK (CARBOYS) — (1) 50 GAL CARBOYS TANK

ACID RECOVERY TANK (CHEMTAINER) — (1) 15GAL RECOVERY TANK (PART# TC1515KA)

SPA EQUIPMENT LIST

PUMP (PENTAIR - WHISPERFLO) — (1) WFE-3 ¾HP = 60 GPM (6.0 AMPS-208 VOLTS)

FILTER (PENTAIR - SAND-FILTER) — (1) TR-100C = 4.9 S.F. = 98GPM (WITH MULTI-PORT BACKWASH VALVE)

HEATER (JANDY) — (1) EHE350NC

FLOWMETER (BLUE & WHITE) — F-300 (2")

CHEMICAL CONTROLLER (ROLA-CHEM) — 554300

CHLORINATOR (ROLA-CHEM) — RC25/53SC

SALT SYSTEM (PENTAIR) — CIC-60 (ITEM# 521105) 2

~~LIGHT~~ (PENTAIR) — ~~(1) AMERIBRITE 500W~~

SKIMMER (WATERWAY) — (1) 540-6300 (2")

EQUALIZER COVER (AQUASTAR) — (2) 6HP101

MAIN DRAIN (PARAMOUNT) — (2) SDX (10" ROUND, COLOR WHITE)

RETURNS (WATERWAYS) — (2) 400-9190

BOOSTER PUMP (PENTAIR - WHISPERFLO) — (1) WFE-8 2HP = 113 GPM (11.0 AMPS-208 VOLTS)

BOOSTER MAIN DRAIN (AFRAS) — (2) ABF-64A (11½" ROUND)

CHLORINE TANK (CARBOYS) — SHARED WITH POOL

ACID PUMP (ROLA-CHEM) — RC25/53SC

ACID TANK (CARBOYS) — SHARED WITH POOL

EQUIPMENT NOTES

A. All equipment to be installed per manufacturer instructions.

B. All valves shall be tagged with waterproof operating card.

C. All pipe materials to be pvc. Sch. 40.

D. Filters backwash to sanitary sewer via legal air gap and sight glass.

E. Pressure gauges shall be mounted at the same elevation.

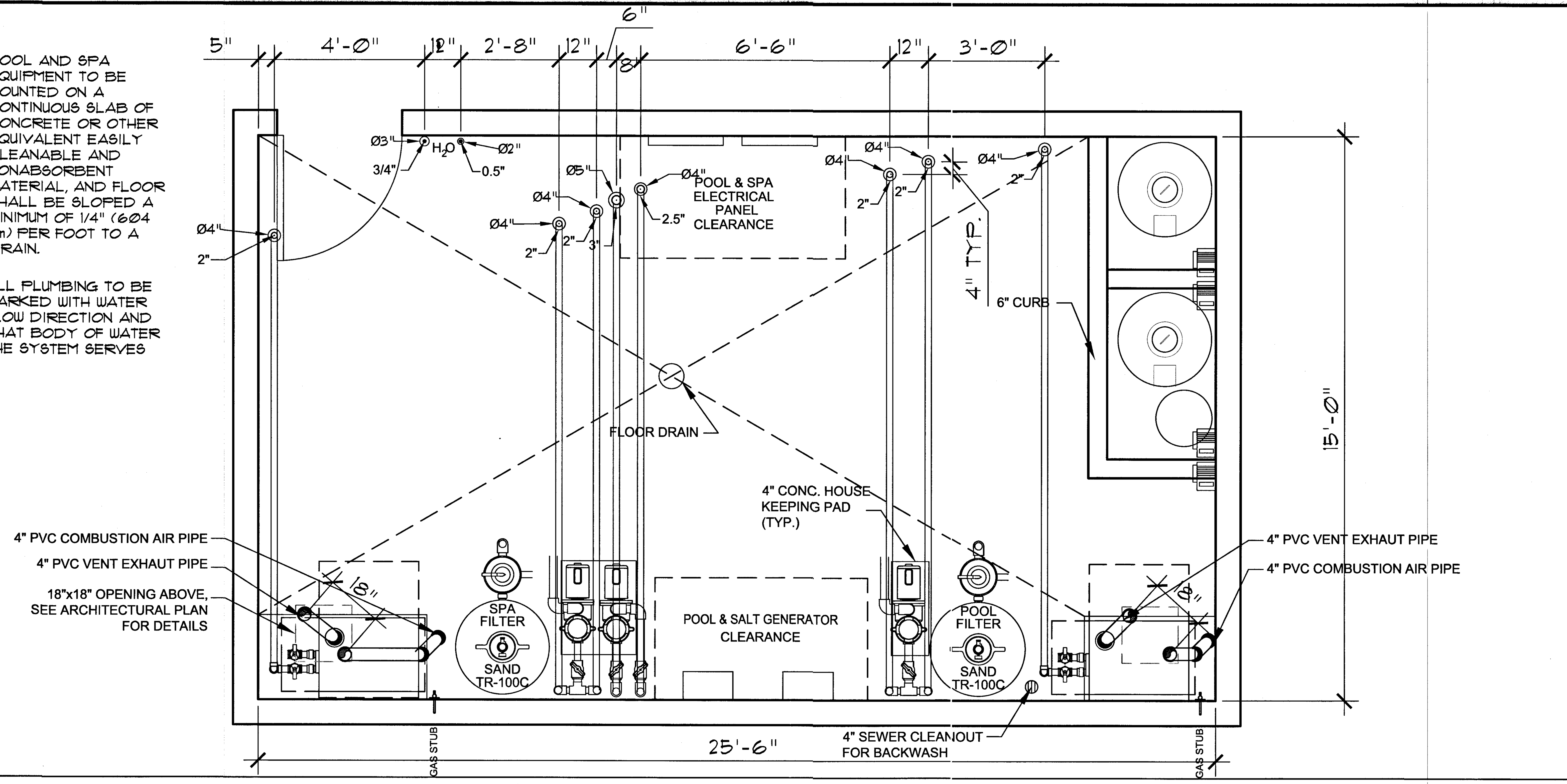
F. Flowmeter B&W F-300 x pipe diameter ahead & 4 x pipe dia. back on straight pipe.

G. Heaters with auto temperature control and internal by-pass.

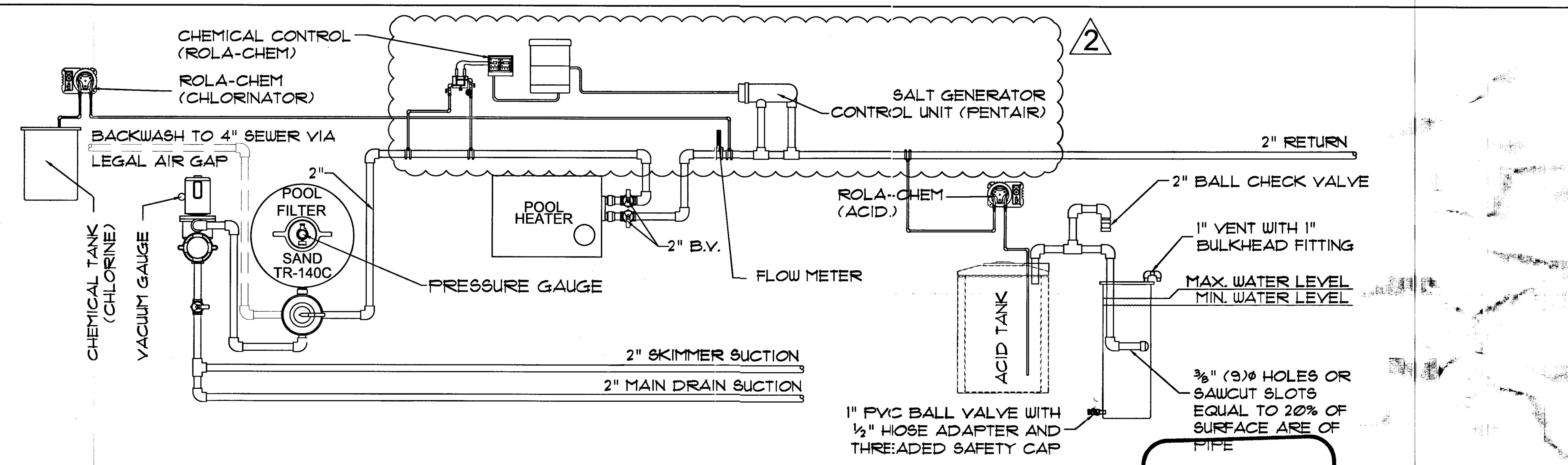
H. All equipment, construction and etc... shall meet title 22 & 24.

POOL AND SPA EQUIPMENT TO BE MOUNTED ON A CONTINUOUS SLAB OF CONCRETE OR OTHER EQUIVALENT EASILY CLEANABLE AND NONABSORBENT MATERIAL, AND FLOOR SHALL BE SLOPED A MINIMUM OF 1/4" (6.04 mm) PER FOOT TO A DRAIN.

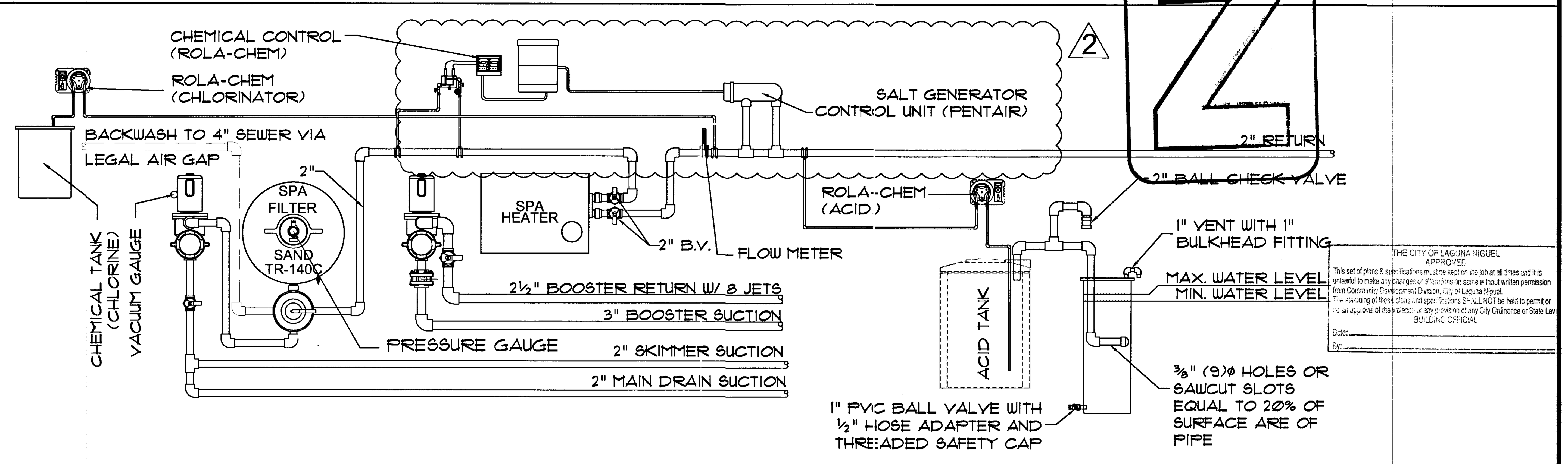
ALL PLUMBING TO BE MARKED WITH WATER FLOW DIRECTION AND WHAT BODY OF WATER THE SYSTEM SERVES



A ½" EQUIPMENT ENCLOSURE LAYOUT



B ½" POOL EQUIPMENT SCHEMATIC



C ½" SPA EQUIPMENT SCHEMATIC

Z

THE CITY OF LAGUNA NIGUEL APPROVED

AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT AND CONTRACTOR
32232 PASEO ADELANTO, SUITE A
SAN JUAN CAPISTRANO, CA 92675
P(949)493-9548 F(949)493-8495
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HART BROTHERS CONSTRUCTION, INC
DBA AQUATIC TECHNOLOGIES
SWIMMING POOL CONSULTANT & CONTRACTOR
LICENSE # 744177 C53 & B
EXPIRES: 12-01-15

SIGNATURE 11-14-14 DATE

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25891 CROWN VALLEY, 27960 Cabot
LAGUNA NIGUEL, CA
APN: 636-043-02

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2	9/5/14	CHANGED SALT SYSTEM

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MILL CREEK RESIDENTIAL TRUST LLC
949 SOUTH COAST DR., SUITE 400
COSTA MESA, CA 92626
PHONE: 714.800.1385
FAX:

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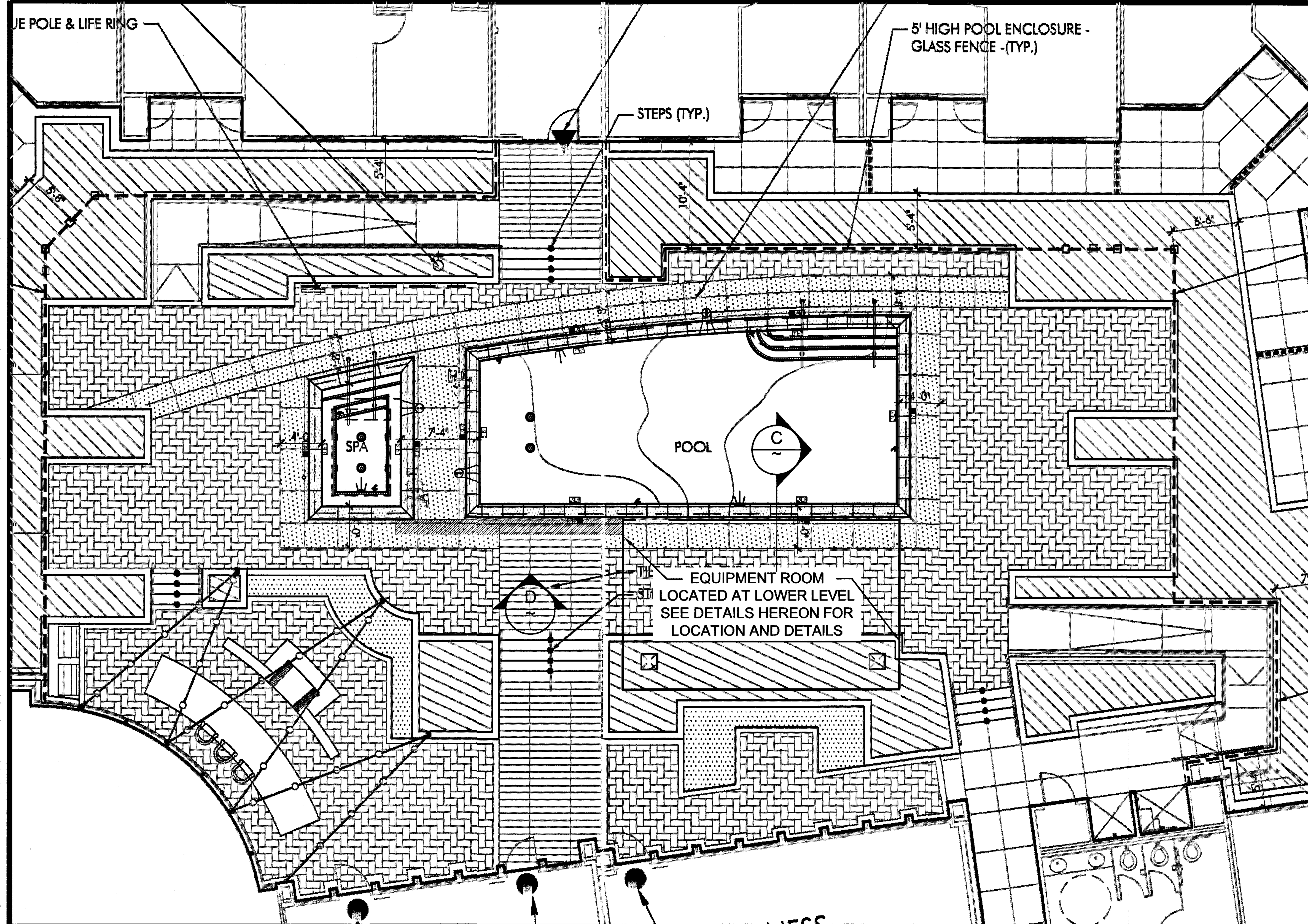
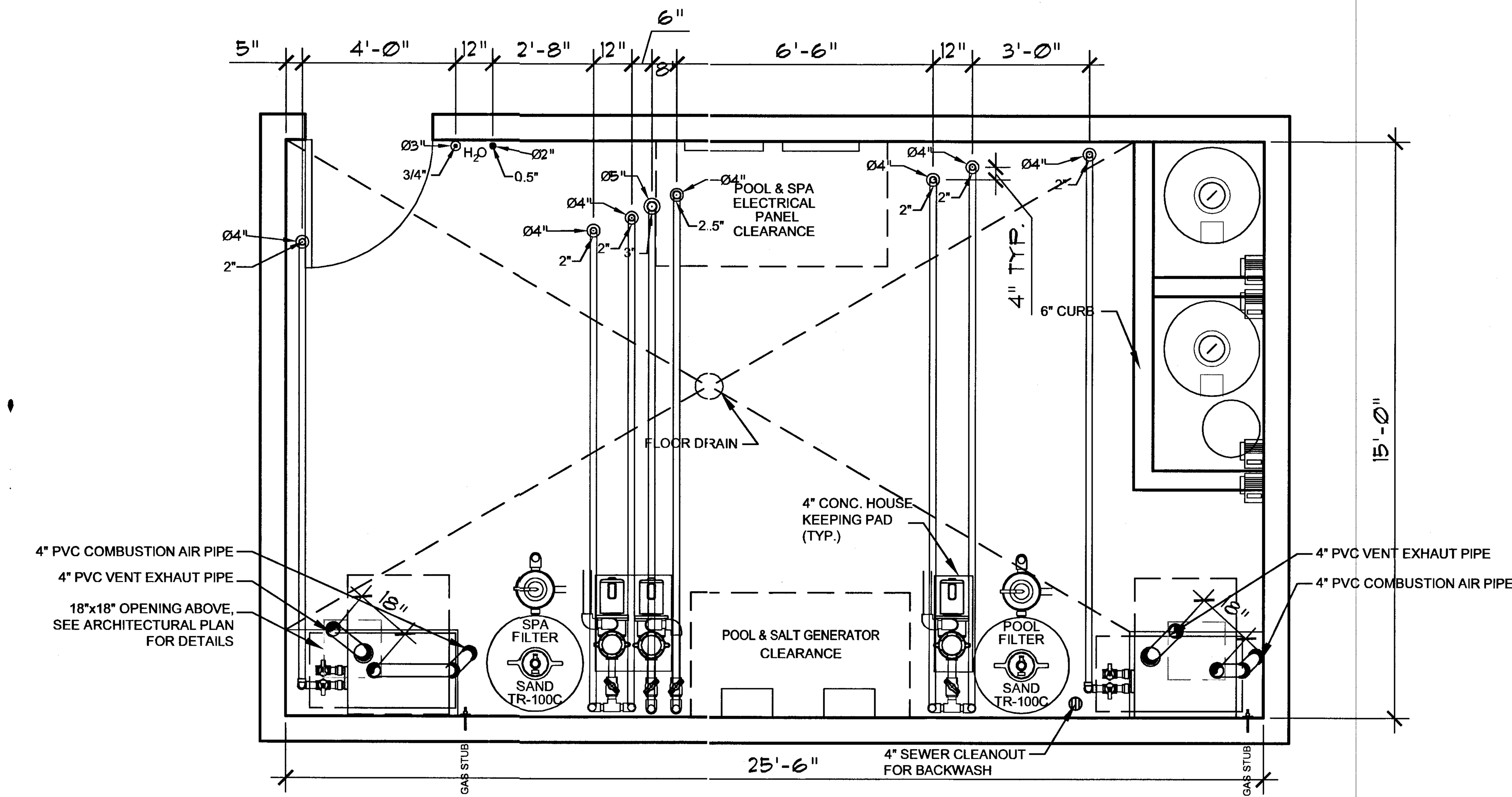
Sheet Title:
EQUIPMENT ROOM LAYOUT, LIST, & SCHEMATIC

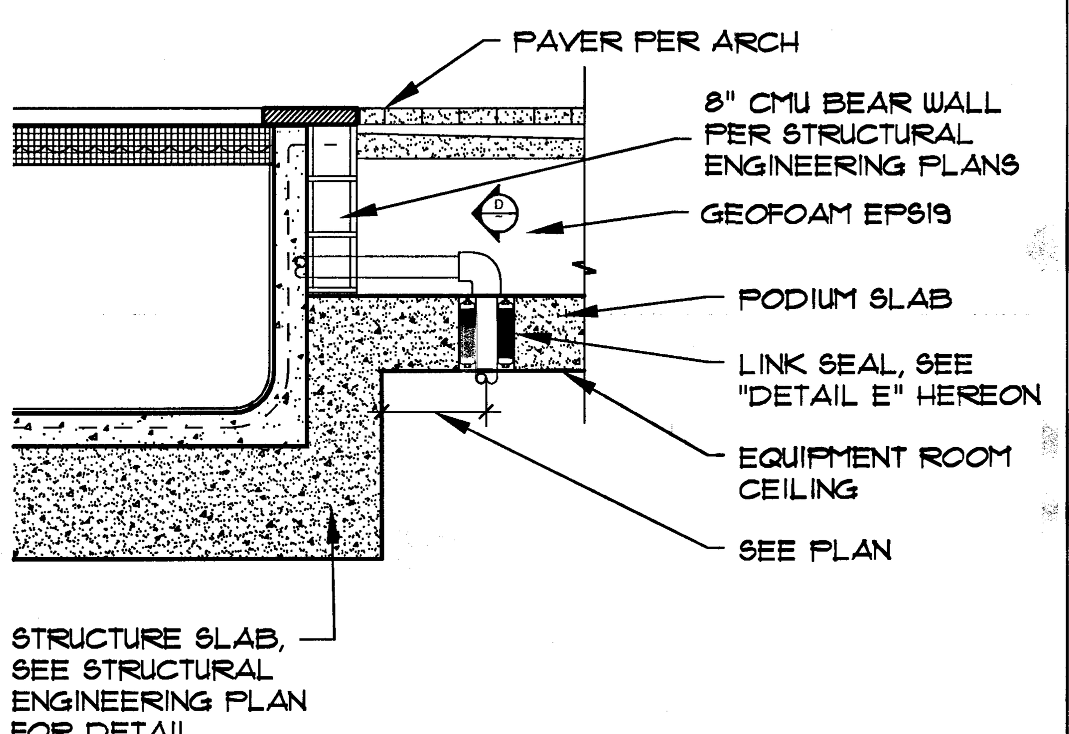
Sheet Number:
SP-5
5 OF 5



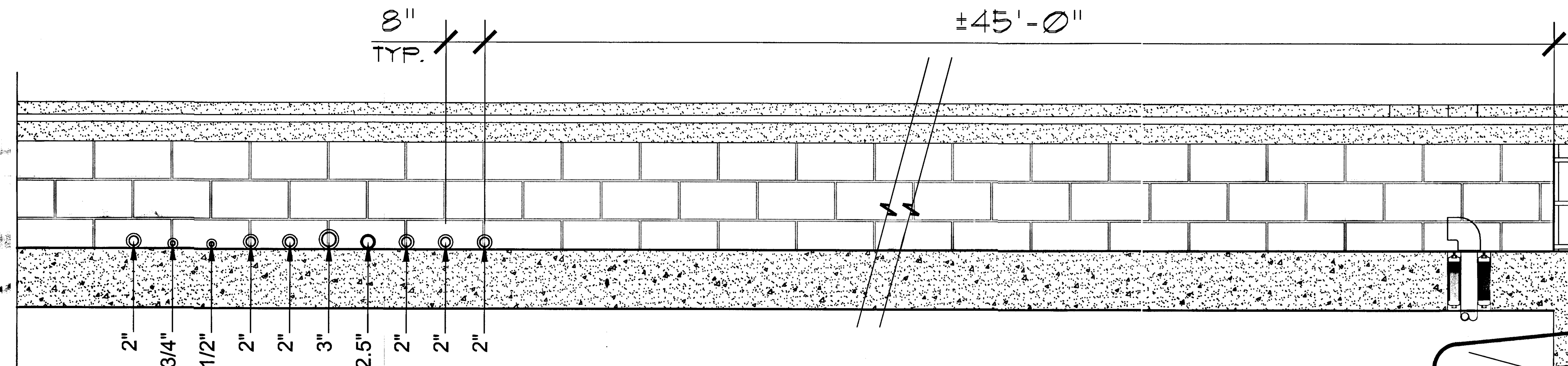
A | 1/8" | UPPER PODIUM @ POOL



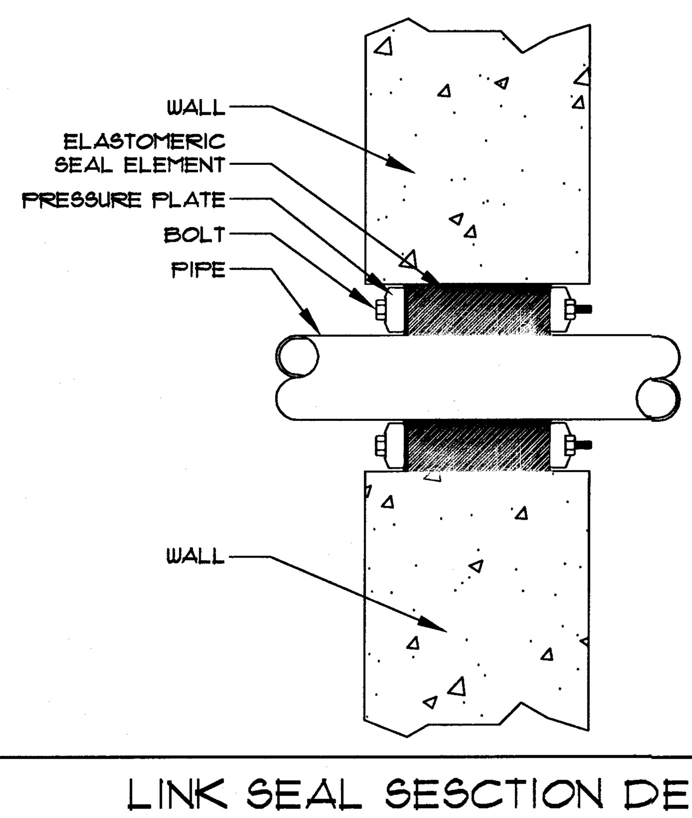
B | 3/8" | PENETRATION PLAN @ EQUIPMENT ROOM



C | 1/2" | PENETRATION @ PODIUM



D | 3/4" | PENETRATION VIEW @ CMU BEARING WALL



E | 1 1/2" | LINK SEAL SESCTION DETAIL

Steel and Plastic Pipe with Same Outside Diameter (IPS)

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	CS MODEL NON-METALLIC SLEEVE MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL	WS MODEL STEEL SLEEVE MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL	CAST OR CORE BIT DRILLED HOLE HOLE I.D.	LINK-SEAL® SIZE	LINKS PER SEAL
1/2	0.840	CS-2-*	LS-200-***	4	WS-2-15-S-*	LS-275-***	5	2.000	LS-200-***	4
3/4	1.050	CS-3-*	LS-315-***	4	WS-2-1/2-20-S-*	LS-275-***	6	3.000	LS-315-***	4
1	1.315	CS-3-*	LS-300-***	4	WS-2-1/2-20-S-*	LS-200-***	5	3.000	LS-300-***	4
1-1/4	1.660	CS-3-*	LS-275-***	7	WS-3-21-S-*	LS-275-***	8	3.000	LS-275-***	8
1-1/2	1.900	CS-3-1/2-*	LS-300-***	5	WS-3-21-S-*	LS-200-***	7	4.000	LS-315-***	6
2	2.375	CS-4-*	LS-300-***	6	WS-3-1/2-22-S-*	LS-200-***	8	4.000	LS-300-***	6
2-1/2	2.875	CS-4-*	LS-200-***	9	WS-4-23-S-*	LS-200-***	9	4.000	LS-200-***	9
3	3.500	CS-5-*	LS-300-***	8	WS-6-28-S-*	LS-360-***	7	5.000	LS-300-***	8
3-1/2	4.000	CS-6-*	LS-340-***	10	WS-6-28-S-*	LS-340-***	9	6.000	LS-315-***	10
4	4.500	CS-6-*	LS-300-***	10	WS-6-28-S-*	LS-300-***	10	6.000	LS-300-***	10
5	5.563	CS-8-*	LS-360-***	10	WS-8-32-S-*	LS-340-***	13	8.000	LS-340-***	13
6	6.625	CS-10-*	LS-475-***	10	WS-10-36-S-*	LS-475-***	10	10.000	LS-475-***	10

F | 1/2" | PENETRATION SIZING CHART FOR EITHER SLEEVED OR CORED HOLE

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Sheet Title:
EQUIPMENT ROOM LAYOUT, LIST, & SCHEMATIC

Sheet Number:
SP-5.1

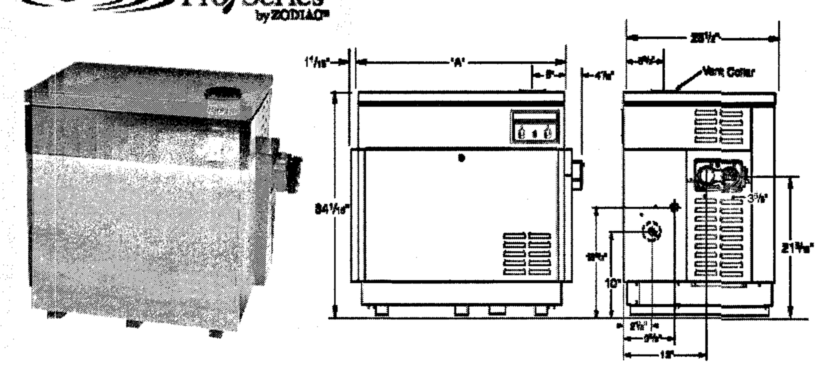
HD RESUBMITTAL - 6/24/2014

A

Jandy Pro Series by ZODIAC

Technical Specifications

Hi-E2® Gas Heater



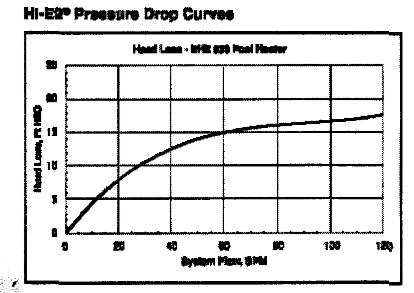
- An impressive 95% heating efficiency rating — the most efficient available without costly add-ons.
- A unique forced-air system makes this the ideal heater for use in extreme weather and in difficult or unusual locations.
- Dual thermostat controls make this an excellent choice for pool/spa combinations.
- Safe and easy to maintain, the Hi-E2 employs our hot surface ignition system, completely eliminating the pilot light.
- High-tech composite materials and quality construction make this a very durable unit.

Part No.	Description
EHE350NC	HIE2, 350K BTU, NAT, ASME Certified
EHE350PC	HIE2, 350K BTU, LP, ASME Certified
EHE350NS	HIE2, 350K BTU, NAT, ASME/Salt Water
EHE350PS	HIE2, 350K BTU, LP, ASME/Salt Water

Specifications and Dimensions

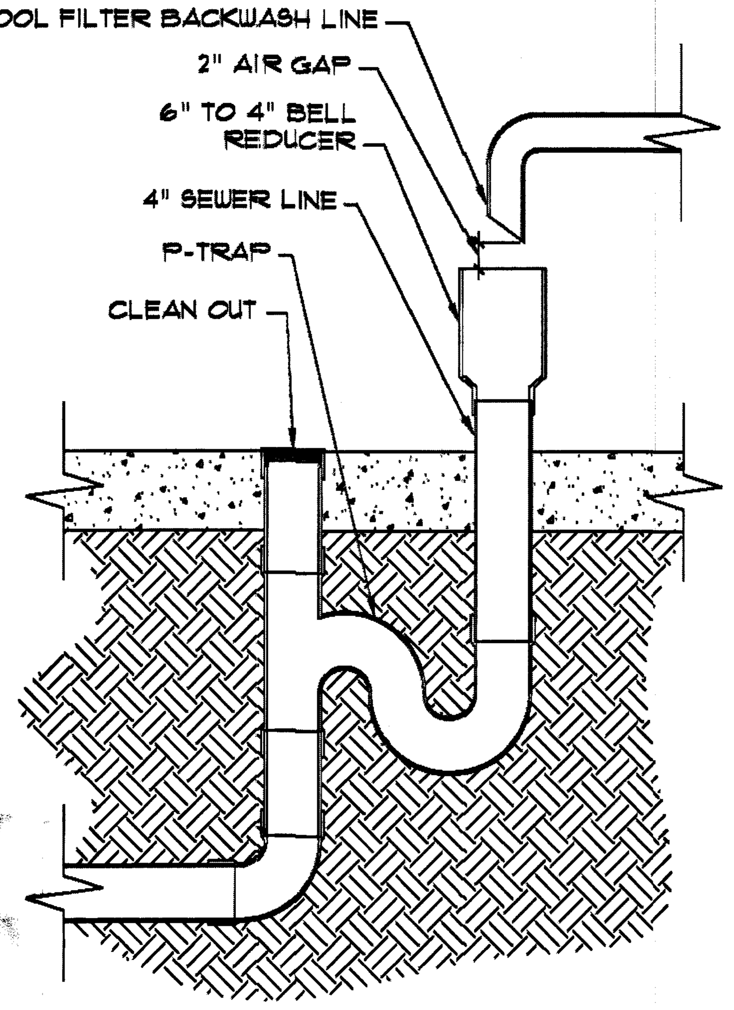
Model No.	Width 'A'	Input	Shipping Weight
350	31⅞	350,000	252 lbs.

Hi-E2® Pressure Drop Curves



www.ZodiacPoolSystems.com

E



SCALE ¼" = 1'-0"

F

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HEATER, P-TRAP DETAIL

THE CITY OF LAGUNA NIGUEL APPROVED

Sheet Number:
SP-6

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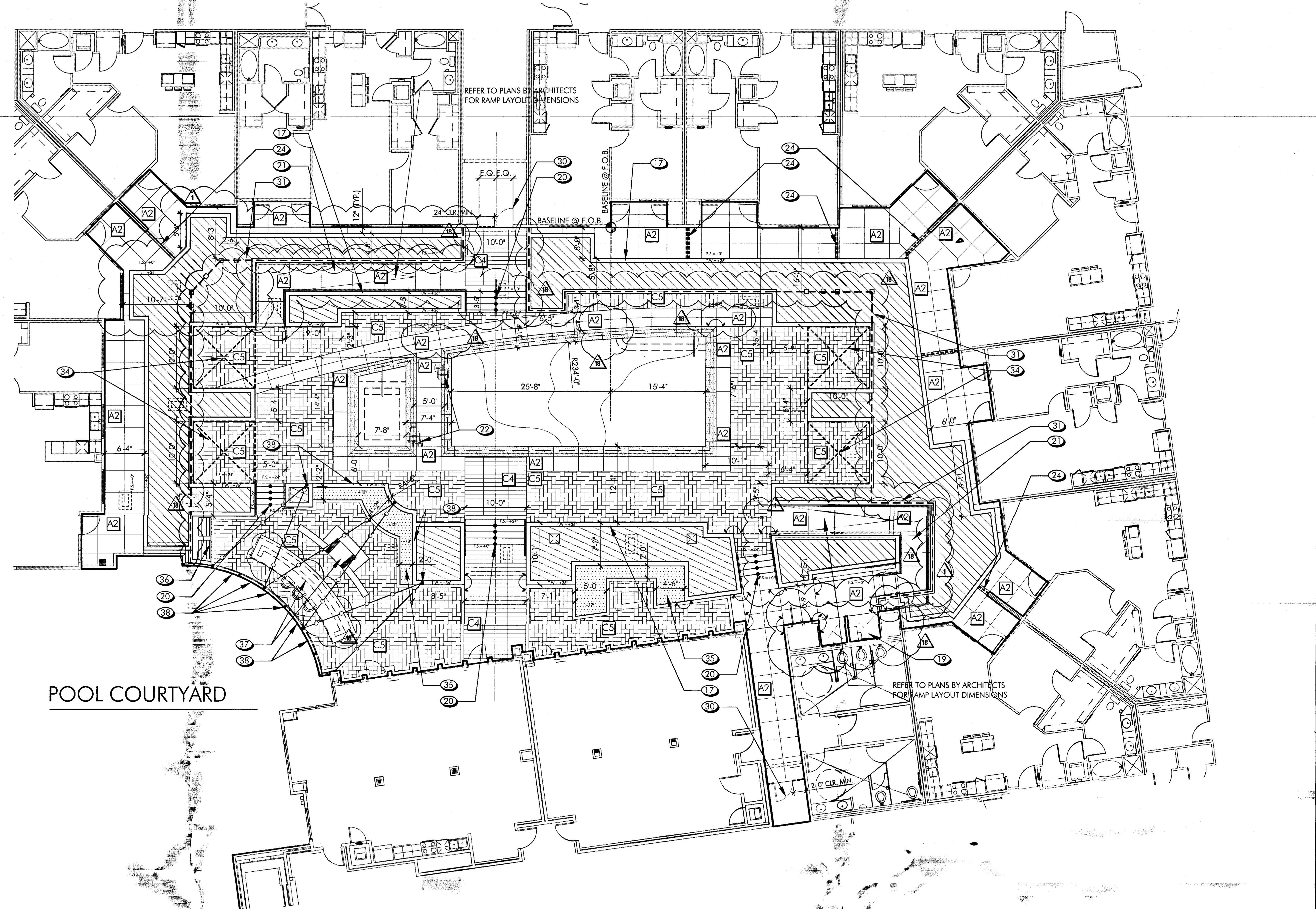


PAVING SCHEDULE

SYM.	DESCRIPTION	MATERIAL	COLOR	FINISH	MNFCTR.	AVAIL.	MATERIAL NOTES
A	ON-GRADE - R.O.W. CONCRETE SIDEWALK	CONCRETE	CITY STANDARD	CITY STANDARD	---	---	PER STREET IMPROVEMENT PLANS BY CIVIL ENGINEER
A1	ON-GRADE - P.I.P. CONCRETE SIDEWALK	CONCRETE	PEBBLE	TOP-CAST (LIGHT WASH)	DAVIS	---	REFER TO DETAILS A&B, SHEET L1.11
A2	ON-PODIUM - P.I.P. CONCRETE SIDEWALK	CONCRETE	PEBBLE	TOP-CAST (LIGHT WASH)	DAVIS	---	REFER TO DETAIL D, SHEET L1.11
B	ON-GRADE - STABILIZED DECOMPOSED GRANITE PATH	D.G.	BAJA BROWN	STABILIZED D.G.		KRC	REFER TO DETAIL I, SHEET L1.11
C1	ON-PODIUM - VEHICULAR PAVERS AT MAIN ENTRY DRIVE	VEHICULAR CONC. INTERLOCKING PAVERS W/ PAVERS BAND	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	FIELD PAVERS TO BE HOLLANDSTONE1 - HERRINGBONE PATTERN WITH HOLLANDSTONE 1 4X8 PIECES AS EDGE BORDER. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL F, SHEET L1.11
C2	ON-GRAGE - VEHICULAR PAVERS AT SECONDARY ENTRY	VEHICULAR CONC. INTERLOCKING PAVERS W/ PAVERS BAND	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	FIELD PAVERS TO BE HOLLANDSTONE1 - HERRINGBONE PATTERN WITH HOLLANDSTONE 1 4X8 PIECES AS EDGE BORDER. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL G, SHEET L1.11
C3	ON-PODIUM - VEHICULAR PAVERS AT ENTRY DRIVE (ACCENT CIRCLE)	VEHICULAR CONC. INTERLOCKING PAVERS W/ PAVERS BAND	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	KOBBLE CIRCLE KIT WITH 5X5 KOBBLE SQUARE. CIRCLE PATTERN. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL F, SHEET L1.11
C4	ON-PODIUM - TILE ON CONCRETE BASE	PEDESTRIAN TILE ON CONCRETE	COLOR: MILK	--	CASA DOLCE CASA	CASA DOLCE CASA	TILE STYLE TO BE BELGIQUE TILE SIZE TO BE 8"X48"X3/8"- GROUT SPACING AND COLOR TO MATCH TILE AT LEASING OFFICE PER INTERIOR DESIGNER (REFER TO INTERIOR DESIGNER PLANS) - REFER TO DETAIL I, SHEET L1.13 1
C5	ON-PODIUM - PAVERS AT POOL DECK	PEDESTRIAN CONC. INTERLOCKING PAVERS	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	FIELD PAVERS TO BE HOLLANDSTONE1 - HERRINGBONE PATTERN WITH HOLLANDSTONE 1 4X8 PIECES AS EDGE BORDER. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL F, SHEET L1.11
C6	ON-PODIUM - PAVERS AT 4-SIDES FIREPLACE AREA	PEDESTRIAN CONC. INTERLOCKING PAVERS	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	5X5 KOBBLE SQUARE TO FORM CIRCLE PATTERN. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL F, SHEET L1.11
C7	TRUNCATED DOME PAVERS	12X12 TRUNCATED DOME PAVERS	ONYX	NO SHOT BLAST	ACKER-STONE	ACKER-STONE	12X12 TRUNCATED DOME PAVERS. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL F, SHEET L1.11
C8	ON-PODIUM - ACCENT PAVER BAND AT POOL DECK	PEDESTRIAN CONC. INTERLOCKING PAVERS	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	FIELD PAVERS TO BE HOLLANDSTONE1 -RUNNING BOND PATTERN. POLYMERIC JOINT SAND & CHEM SELECT PRO SEALER-NATURAL FINISH. REFER TO DETAIL F, SHEET L1.11 - ALL PAVERS WITHIN 4' OF POOL COPING TO BE SET ON CONCRETE MORTAR BASE. 1
C9	ON-GRAGE - VEHICULAR PERMEABLE PAVERS AT FIRE ROAD ENTRY	AQUA-VIA PERMEABLE PAVERS W/ CONCRETE BAND	DESERT BLEND	SHOTBLAST FACE MIX	ACKER-STONE	ACKER-STONE	REFER TO PLANS BY CIVIL ENGINEER FOR DETAIL. HERRINGBONE PATTERN WITH CONCRETE BAND COLOR TO MATCH ADJACENT PAVING.
D1	ROOF DECK PAVERS	CONCRETE PAVERS (24" SQUARE)	UF-20	UNIFACE	WAUSAU	WAUSAU	WAUSAU PEDESTAL SYSTEM - INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
D2	ROOF DECK PAVERS	CONCRETE PAVERS (24" SQUARE)	UF-10	UNIFACE	WAUSAU	WAUSAU	WAUSAU PEDESTAL SYSTEM - INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
E	DOG RUN AREA	ARTIFICIAL TURF		SYNTIPEDE 354	SYNLAWN	SYNLAWN	INSTALL PER MANUFACTURER'S RECOMMENDATION

NOTES

- CONTRACTOR SHALL NOT MAKE FIELD ADJUSTMENTS WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT. ALL CHANGES MADE WITHOUT THE APPROVAL OF THE LANDSCAPE ARCHITECT SHALL BE CORRECTED TO CONFORM WITH THE PLANS WITH NO COST INCURRED TO THE OWNER.
- ALL SCORELINES, SAWCUTS, AND EXPANSION JOINTS ARE TO OCCUR WHERE INDICATED ON PLAN.

MANUFACTURER & AVAILABILITY LIST

K.R.C. - K.R.C. ROCK - 1-800-572-7625

A.S. - ACKER-STONE - CONTACT MIKE MILLARD (951) 674-0047

WAUSAU - CONTACT FRANCIS HAMELE (562) 716-8677

CONSTRUCTION LEGEND

SYMBOL	DESCRIPTION	DETAIL REFERENCE
	ALIGN	
E.Q.	EQUAL	
P.A.	PLANTING AREA	
R	RADIUS	
C.L.	CENTERLINE	
1	FILTERA SYSTEM	REFER TO PLANS BY CIVIL ENGINEER
2	FLOW THROUGH PLANTER WALL	REFER TO PLANS BY CIVIL ENGINEER
3	C.M.U. SITE RETAINING WALL	REFER TO PLANS BY CIVIL ENGINEER
4	VERDURA RETAINING WALL	REFER TO PLANS BY CIVIL ENGINEER
5	CONCRETE STEP	REFER TO DETAIL B, SHEET L1.13
6	NOT ASSIGNED	
7	ARCHITECTURAL POP-OUTS/COLUMN	REFER TO PLANS BY ARCHITECT
8	GARAGE VENTILATION METAL GRATE	REFER TO PLANS BY ARCHITECT
9	OUTLINE OF GARAGE WALL BELOW	
10	CORNER MONUMENTATION	REFER TO PLANS BY SIGNAGE CONSULTANT
11	~~GUARDRAIL ON TOP OF PLANTED RETAINING WALL~~	~~REFER TO STREET IMPROVEMENT~~ PLANS BY CIVIL ENGINEER FOR FINAL GUARDRAIL LAYOUT AND CONSTRUCTION DETAILS
12	LOW BLOCK WALL/PLANTER - CROWN CABOT WALL ON RIGHT OF WAY - VENEER ON FRONT FACE OF WALL TO BE EL DORADO MONTECITO CLIFFSTONE. WALL CAP TO BE EL DORADO CHISELED EDGE 12" WIDE BY 2.25" THICK - COLOR TO BE 'SMOKE'.	**FOR REFERENCE ONLY.** REFER TO SEPARATE GREENBELT PLANS AND CIVIL ENGINEER'S STREET IMPROVEMENT PLANS FOR FINAL LAYOUT AND CONSTRUCTION DETAILS. 1
13	6' STEEL BENCH, CITY SERIES MODEL # CY72-ST, COLOR TO BE TEXTURED BLACK. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	AVAILABLE FROM D.M. BRAUN - CONTACT 714.674.0855 1
14	ON-GRADE RAISED PLANTER	REFER TO DETAIL N, SHEET L1.11
15	VEHICULAR GATE	REFER TO DETAIL A, SHEET L1.12
16	PEDESTRIAN GATE ON PODIUM	REFER TO DETAIL B, SHEET L1.12
17	PODIUM PLANTER	REFER TO PLANS BY ARCHITECT
18	PRECAST PLANTER WITH PLANTING COMBINATIONS	REFER TO PLANTING PLANS
19	OUTDOOR SHOWER AREA	REFER TO PLANS BY ARCHITECT
20	CONCRETE STEPS & HANDRAILS ON PODIUM	REFER TO DETAIL K SHEET L1.11
21	CONCRETE RAMP & HANDRAILS ON PODIUM	REFER TO PLANS BY ARCHITECT
22	'SPLASH!' POOL LIFT (2 TOTAL) MODEL NUMBER 300-0000. ADDITIONAL ACCESSORIES 400-0000 CADDY, 170-1000 ARM REST ASSEMBLY AND 940-1000 TOTAL COVER. TO BE SELECTED BY OWNER. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	SPLASH! POOL LIFT RECOMMENDATION ONLY. POOL LIFT TO BE SELECTED BY OWNER. 1
23	T.S. PATIO GATE ON STRUCTURE (AT LOWER COURTYARD)	REFER TO DETAIL N, SHEET L1.12
24	PRIVACY PATIO GLASS WALL	REFER TO PLANS BY ARCHITECTS
25	BUILT-IN SEATWALL ON STRUCTURE (AT LOWER COURTYARD)	REFER TO DETAIL P, SHEET L1.11
26	BUILT-IN FIRE-PIT ON STRUCTURE (AT LOWER COURTYARD)	REFER TO DETAIL E, SHEET L1.12
27	BBQ AREA WITH OVERHEAD TRELLIS (AT LOWER COURTYARD)	REFER TO DETAIL C, SHEET L1.12
28	OVERHEAD TRELLIS - (10 TOTAL)	REFER TO DETAIL G, SHEET L1.12
29	4-SIDES FIREPLACE (LOWER COURTYARD)	REFER TO DETAIL C, SHEET L1.13
30	POOL GATE ON STRUCTURE (AT POOL COURTYARD)	REFER TO DETAIL O SHEET L1.11
31	POOL GLASS FENCE	REFER TO DETAIL L, SHEET L1.11
32	POOL COPING / POOL WATER LINE TILE	REFER TO DETAIL J, SHEET L1.11
33	STUCCO PILASTER ON PODIUM (6 TOTAL)	REFER TO DETAIL D, SHEET L1.13
34	POOL CABANA - CABANA TO BE CANCUN 10'X10', WITH ROOF-TOP AIR VENT, T.V. MOUNTING PLATE, POWDER COAT FRAME, SUNBRELLA TUSCAN #4677 FABRIC COLOR W/ FLAT-SCREEN MOUNTING BRACKET OPTION. AVAILABLE FROM RESORT CABANA	SEPARATE BUILDING PERMIT REQUIRED
35	BUILT-IN DAY BED	REFER TO DETAIL E, SHEET L1.13
36	BBQ AREA (AT POOL DECK)	REFER TO DETAIL D, SHEET L1.12
37	OUTDOOR BAR AND FIREPLACE AREA (AT POOL DECK)	REFER TO DETAIL A, SHEET L1.13
38	$1\frac{1}{2}$" X 3" T.S. STRING LIGHT POST (8' HIGH FROM FINISH GRADE) - EMBED TO PLANTER WALL OR WELD TO T.S. PERIMETER WALL WHERE APPLICABLE.	REFER TO DETAIL G, SHEET L1.13
39	1 TIDY UP TRASH RECEPTACLE - TBARK-PR32 - COLOR: GREEN - INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	AVAILABLE FROM D.M. BRAUN - CONTACT 714.674.0855
40	OUTLINE OF ARCHITECTURAL ABOVE	REFER TO PLANS BY ARCHITECTS
41	TUBULAR STEEL FENCE	REFER TO DETAIL H, SHEET L1.13
42	TUBULAR STEEL FENCE AND GATE AT DOG PARK	REFER TO DETAIL E, SHEET L1.14
43	OVERHEAD TRELLIS AT DOG PARK	REFER TO DETAIL D, SHEET L1.14
44	DOG SENTRY STATION - MODEL DD-006-GREEN WITH SIGN, 10 GALLON ALUMINUM CAN WITH LID, BAG DISPENSER-	AVAILABLE FROM TERRA BOUND SOLUTIONS: 877-857-2915
45	DOG PLAY EQUIPMENT TO BE "STEPPING PAWS" (5 TOTAL). 1 AT 16" HIGH AND 4 AT 12" HIGH. POWDER COLOR TO BE NATURAL GREEN. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	AVAILABLE FROM TERRA BOUND SOLUTIONS: 877-857-2915
46	DOG PLAY EQUIPMENT TO BE "DOGGIE CRAWL". POWDER COLOR TO BE NATURAL TAN. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	AVAILABLE FROM TERRA BOUND SOLUTIONS: 877-857-2915
47	TRASH RECEPTACLE AT DOG PARK TO BE DM BRAUN CITY LITTER - MODEL # CLR32-AL WITH RAIN SHIELD (2 TOTAL AT DOG PARK). COLOR TO BE TEXTURED BLACK. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	AVAILABLE FROM D.M. BRAUN - CONTACT 714.674.0855

NORTH

SCALE: 1" = 10'-0"

0 5 10 20 30

CITY LAGUNA NIGUEL
RECEIVED
NOV 17 2014
COMMUNITY DEVELOPMENT

For ref only

URBAN ARENA
3195 Red Hill Avenue - Loft F
Costa Mesa, California 92626
T. 714.754.4500 F. 714.754.4545
Orange County - San Diego

LICENSES

CALIFORNIA	#4192
CALIFORNIA	#3905
ARIZONA	#32522
UTAH	#379520-5301
NEVADA	#539

LICENSED LANDSCAPE ARCHITECT
STATE OF CALIFORNIA
06/17/2014

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

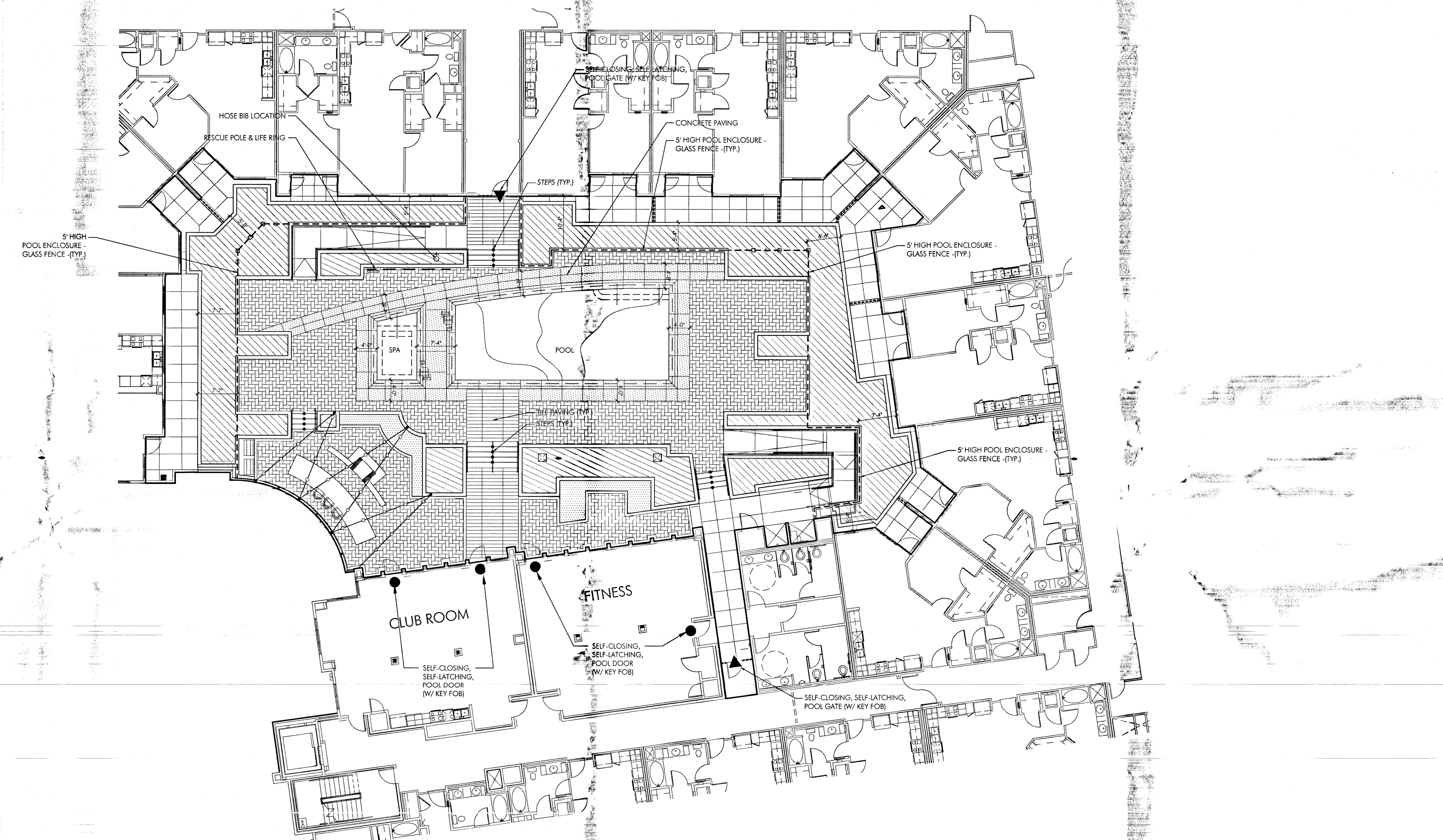
MILL CREEK RESIDENTIAL TRUST LLC

CONSTRUCTION PLAN - PODIUM B - (UPPER PODIUM)

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

L1.03

2011-014
JOB NUMBER
1"=10'-0"
SCALE
ISSUED AS
06/17/2014
DATE



POOL COURTYARD

SYMBOL	DESCRIPTION
●	SELF-CLOSING, SELF-LATCHING, POOL DOOR (W/ KEY FOB)
▼	SELF-CLOSING, SELF-LATCHING, POOL GATE (W/ KEY FOB)

SCALE: 1" = 10'-0"

0 5 10 20 30

NORTH

URBAN ARENA LLC

3195 Red Hill Avenue - Loft F
Costa Mesa, California 92626
T. 714.754.4500 F. 714.754.4545

Orange County · San Diego

LICENSES

CALIFORNIA	#4192
CALIFORNIA	#3905
ARIZONA	#32522
UTAH	#379520-5301
NEVADA	#539

LICENSED LANDSCAPE ARCHITECT
MICHAEL LEVI SCHROCK LICENSE NO. 4192
SIGNATURE
1-31-15
RENEWAL DATE
06/17/2014
DATE
STATE OF CALIFORNIA

REVISION	DATE
1 REVISIONS PER CITY COMMENTS, RFI AND BASE CHANGES - 03/31/2014	
18 REVISIONS PER ASI #16 - 05/28/2014	
27 REVISIONS PER ASI #25 - 06/17/2014	

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

POOL ENCLOSURE EXHIBIT

For ref only

THE CITY OF LAGUNA NIGUEL APPROVED

BUILDING OFFICIAL

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2011-014
JOB NUMBER

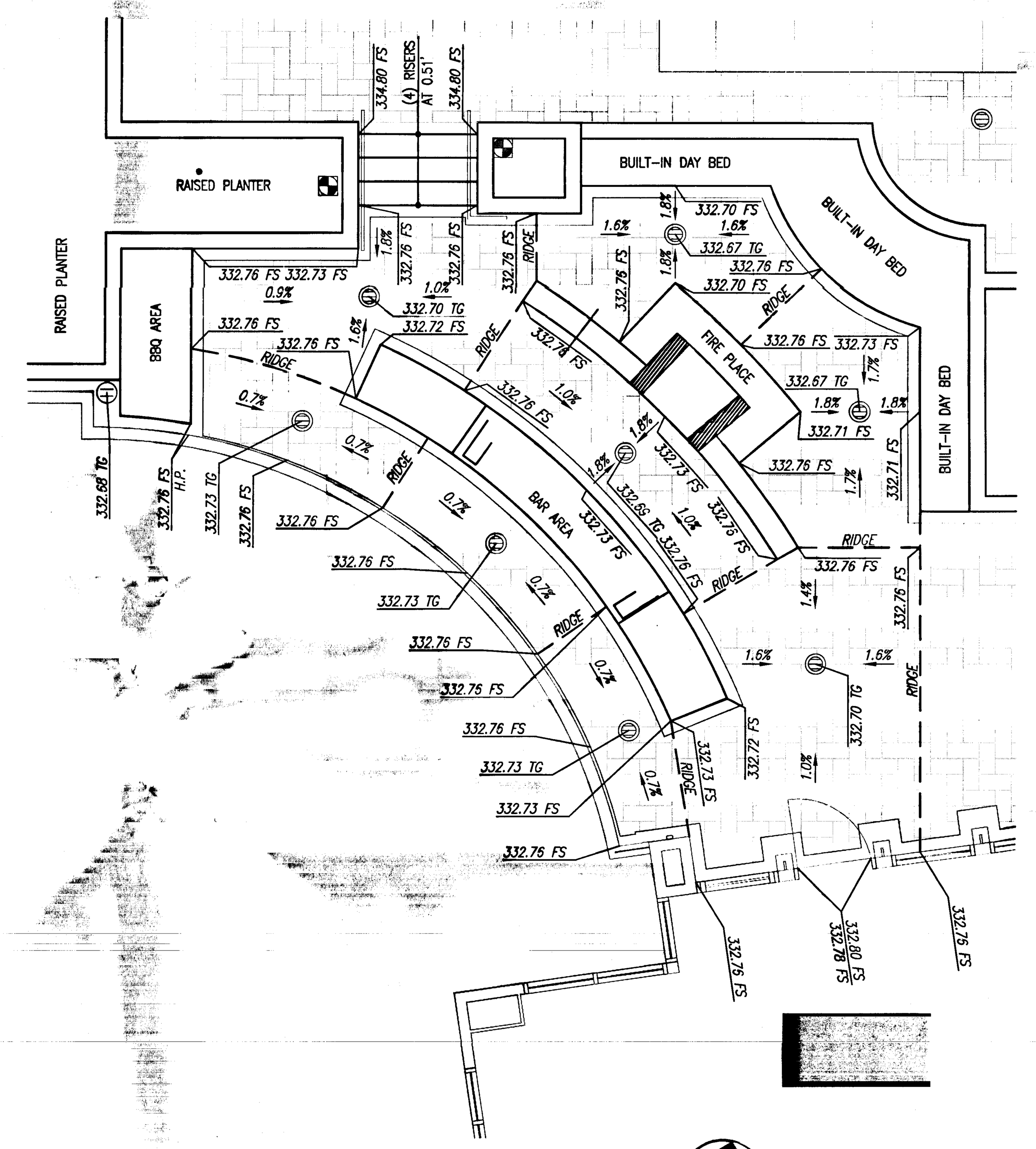
1"=10'-0"
SCALE

ISSUED AS

06/17/2014
DATE

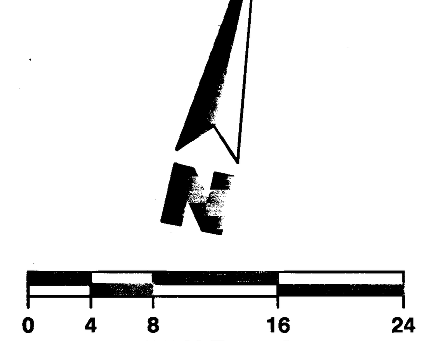
DATE / TIME OF PLOT (PST): 6/24/2014 2:20 PM

FILE NAME: S:\2011 Projects\11-014 Crown Valley and Cabot\LANDSCAPE\CDs\Pending Submittal\11-014 SP-1_Pool Deck Exhibit.dwg



ENLARGED DETAIL
SCALE: 1"=4'

For ref only



SCALE: 1"=8'

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specifications must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from the Building Department of the City of Laguna Niguel. The stamping of this plan shall not be held to permit or to be an approval of the violation of any City Ordinance or State Law.
BUILDING OFFICIAL
Date:
By:

LEGEND:

- 2 STAGE DRAIN AT STRUCTURAL DECK/FINISH SURFACE, SEE PLUMBING PLANS FOR DRAIN DETAILS AND CONNECTIONS
- 2 STAGE ATRIUM DRAIN AT STRUCTURAL DECK/FINISH SURFACE, SEE PLUMBING PLANS FOR DRAIN DETAILS AND CONNECTIONS
- 2 STAGE PLANTER DRAIN AT STRUCTURE SLAB & ATRIUM DRAIN AT FINISH GRADE OF PLANTER (6" MIN. BELOW PLANTER WALL), SEE LANDSCAPE/PLUMBING PLANS FOR DRAIN DETAIL AND CONNECTIONS

R:\MCRT\MCRT-Laguna Niguel\CD\Precise Grading\MCRLN-PG-PODM-1.dwg March 14, 2014 - 3:25pm Cesar

811
Know what's below. Call before you dig.

NOTICE TO CONTRACTOR

CONTRACTOR HEREBY AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF PERSONS AND PROPERTIES; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER AND ENGINEER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

REVISIONS

NO.	DATE:	DESCRIPTION	APPROVAL

PREPARED BY:
KHR ASSOCIATES
CONSULTING ENGINEERS/SURVEYORS/PLANNERS
4100 Newport Place Drive - Suite 200
Newport Beach, California 92660
(949) 756-6440 Fax (949) 756-6444
UNDER THE SUPERVISION OF: JAMES H. KAWAMURA (R.C.E. 30560)

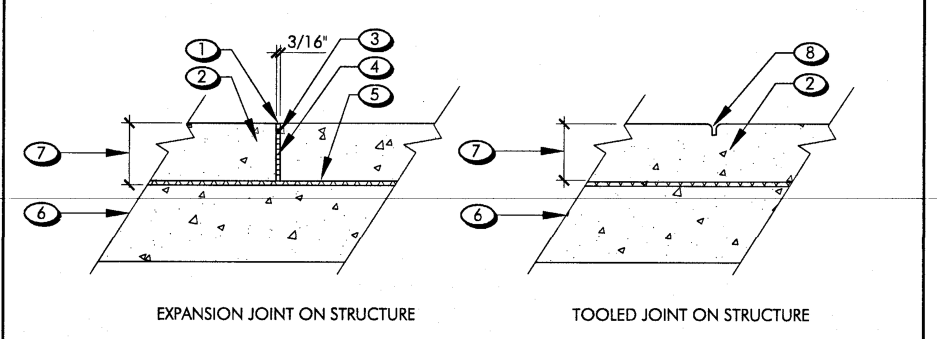
REGISTERED PROFESSIONAL ENGINEER
JAMES H. KAWAMURA
No. 30560
Expiration: 03/31/14
CIVIL
STATE OF CALIFORNIA

SHEET DESCRIPTION:
PODIUM DRAINAGE PLAN

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY
LAGUNA NIGUEL, CALIFORNIA

PROJECT NUMBER
5376001

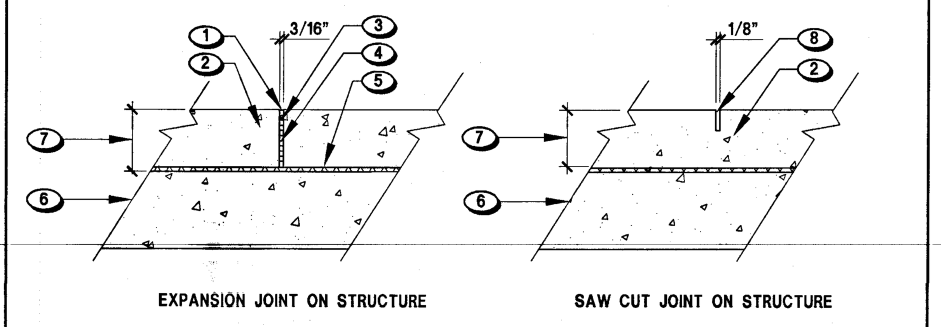
SHEET NO.
C-1



① 3/4" DEEP JOINT SEALANT OVER BACKER ROD
② CONCRETE PAVING - SEE CONSTRUCTION PLANS FOR CONCRETE FINISH. SEE PLANS BY STRUCTURAL ENGINEER FOR REINFORCEMENT. SLOPE TOP TO DRAIN - SEE CIVIL PLANS
③ BACKER ROD (DIRECTLY BELOW SEALANT)
④ EXPANSION JOINT - USE "KOLD SEAL ZIPPER STRIP" OR EQUAL
⑤ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT
⑥ STRUCTURAL SLAB (TOP SLOPED TO DRAIN) PER PLANS BY STRUCTURAL ENGINEER
⑦ DEPTH VARIES BASED ON SLOPE OF STRUCTURAL SLAB AND FINISH SURFACE OF CONCRETE PAVING. SEE CIVIL AND STRUCTURAL PLANS. MINIMUM DEPTH PER STRUCTURAL PLANS
⑧ 1/8" RADIUS TOOLED JOINT - DEPTH TO BE 1/4 OVERALL DEPTH OF CONCRETE, WIDTH TO BE 3/16" MAX.

E) CONTROL JOINT - TOOLED (PODIUM)

SCALE 1" = 1'



① 3/4" DEEP JOINT SEALANT OVER BACKER ROD
② CONCRETE PAVING - SEE CONSTRUCTION PLANS FOR CONCRETE FINISH. SEE PLANS BY STRUCTURAL ENGINEER FOR REINFORCEMENT. SLOPE TOP TO DRAIN - SEE CIVIL PLANS
③ BACKER ROD (DIRECTLY BELOW SEALANT)
④ EXPANSION JOINT - USE "KOLD SEAL ZIPPER STRIP" OR EQUAL
⑤ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT
⑥ STRUCTURAL SLAB (TOP SLOPED TO DRAIN) PER PLANS BY STRUCTURAL ENGINEER
⑦ DEPTH VARIES BASED ON SLOPE OF STRUCTURAL SLAB AND FINISH SURFACE OF CONCRETE PAVING. SEE CIVIL AND STRUCTURAL PLANS. MINIMUM DEPTH PER STRUCTURAL PLANS
⑧ SAW CUT - JOINT DEPTH TO BE 1/3 OF OVERALL DEPTH OF CONCRETE.

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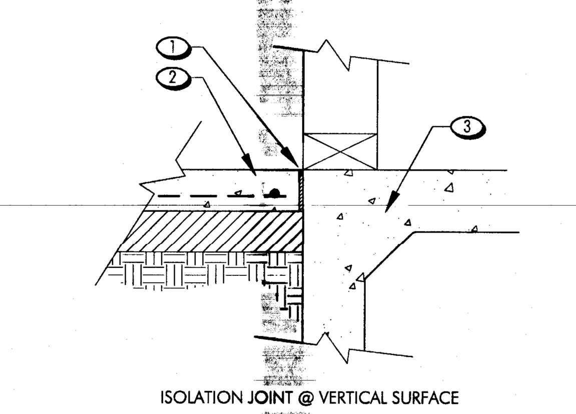
D) CONTROL JOINT - SAW CUT (PODIUM)

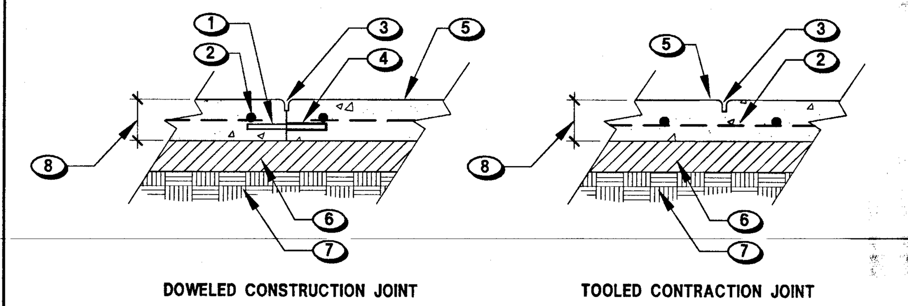
SCALE 1" = 1'



① 1/4" POLYSTYRENE FOAM SET 1" BELOW FINISH SURFACE, FILL WITH APPROVED ELASTOMERIC JOINT SEALANT. COLOR TO MATCH ADJACENT CONCRETE COLOR
② PAVING - SEE CONCRETE PAVING DETAIL , THIS SHEET
③ VERTICAL SURFACE (BLDG, CURB, STEP RISER, EQUIPMENT FOUNDATION ETC.)

C) CONTROL JOINT - ISOLATION (ON-GRADE)

SCALE 1" = 1'



① 1/4" DIAMOND DOWEL - ENCASE 50% OF DOWEL IN "DIAMOND DOWEL" SLEEVE.
② #3 REBAR @ 18" O.C. BOTH WAYS IN PEDESTRIAN USE AREAS, #4 REBAR @ 18" O.C. BOTH WAYS IN VEHICULAR USE AREAS - REBAR MUST BE PROPERLY BLOCKED OR CHAIRED TO INSURE THAT REBAR IS CENTERED IN SLAB DURING CONSTRUCTION - NO MANUAL STABILIZATION OF STEEL DURING POUR SHALL BE PERMITTED
③ 1/8" RADIUS TOOLED JOINT - DEPTH TO BE 3/4", WIDTH TO BE 3/16" MAX.
④ "DIAMOND DOWEL" SLEEVE @ 18" O.C. CENTERED IN SLAB - PHONE (858) 558-1800 FOR "DIAMOND DOWEL" INFORMATION
⑤ CONCRETE PAVING - SEE PAVING LEGEND FOR COLOR AND FINISH
⑥ GRADED SUB-BASE IF REQUIRED (SEE STRUCTURAL SOILS REPORT FOR MATERIAL, DEPTH, AND COMPACTION RECOMMENDATIONS)
⑦ COMPACTED SUB GRADE PER STRUCTURAL SOILS REPORT RECOMMENDATIONS
⑧ DEPTH VARIES, 6" VEHICULAR USE AREAS, 4" PEDESTRIAN USE AREAS

NOTE: THE REINFORCEMENT, CONCRETE DEPTH, AND SUBGRADE RECOMMENDATIONS NOTED IN THIS DETAIL ARE MINIMUMS. SHOULD STRUCTURAL SOILS REPORT RECOMMENDATIONS EXCEED THOSE STATED ABOVE, THE STRUCTURAL SOILS REPORT SHALL SUPERSEDE THIS DETAIL.

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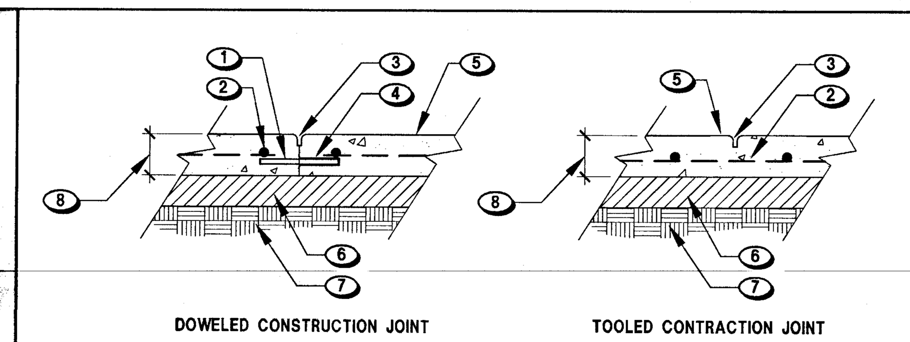
B) CONTROL JOINT - TOOLED (ON-GRADE)

SCALE 1" = 1'



① 1/4" DIAMOND DOWEL - ENCASE 50% OF DOWEL IN "DIAMOND DOWEL" SLEEVE.
② #3 REBAR @ 18" O.C. BOTH WAYS IN PEDESTRIAN USE AREAS, #4 REBAR @ 18" O.C. BOTH WAYS IN VEHICULAR USE AREAS - REBAR MUST BE PROPERLY BLOCKED OR CHAIRED TO INSURE THAT REBAR IS CENTERED IN SLAB DURING CONSTRUCTION - NO MANUAL STABILIZATION OF STEEL DURING POUR SHALL BE PERMITTED
③ 1/8" RADIUS TOOLED JOINT - DEPTH TO BE 3/4", WIDTH TO BE 3/16" MAX.
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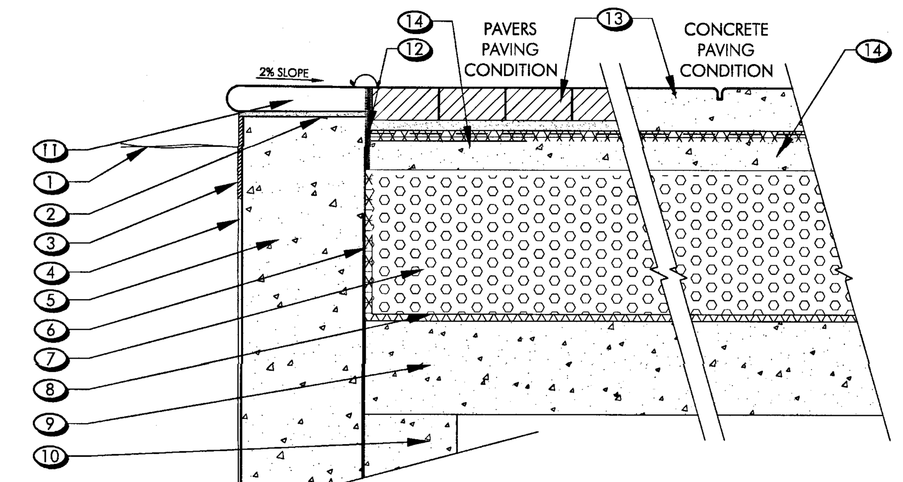
⑥ GRADED SUB-BASE IF REQUIRED (SEE STRUCTURAL SOILS REPORT FOR MATERIAL, DEPTH, AND COMPACTION RECOMMENDATIONS)
⑦ COMPACTED SUB GRADE PER STRUCTURAL SOILS REPORT RECOMMENDATIONS
⑧ DEPTH VARIES, 6" VEHICULAR USE AREAS, 4" PEDESTRIAN USE AREAS

NOTE: THE REINFORCEMENT, CONCRETE DEPTH, AND SUBGRADE RECOMMENDATIONS NOTED IN THIS DETAIL ARE MINIMUMS. SHOULD STRUCTURAL SOILS REPORT RECOMMENDATIONS EXCEED THOSE STATED ABOVE, THE STRUCTURAL SOILS REPORT SHALL SUPERSEDE THIS DETAIL.

ConcJointsDiamondTooled(12).dwg

A) CONTROL JOINT - SAW CUT (ON-GRADE)

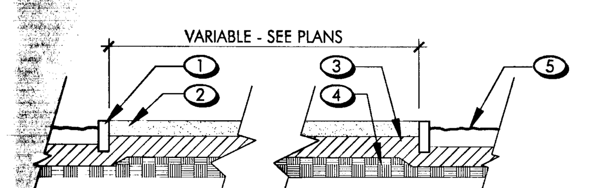
SCALE 1" = 1'



① WATER LEVEL
② MORTAR SETTING BED (SEE CONSTRUCTION SPECIFICATIONS)
③ WATERLINE TILE, MOSAIC GLASS TILE VENEER. TILES TO BE SELECTED
④ POOL PLASTER BY POOL CONTRACTOR
⑤ GUNITE BOND BEAM WITH STEEL REINFORCEMENT AND WATERPROOFING BY POOL CONTRACTOR
⑥ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT
⑦ CONSTRUCTION FOAM PER STRUCTURAL ENGINEER
⑧ FILTER FABRIC
⑨ STRUCTURAL SLAB (TOP SLOPED TO DRAIN) PER PLANS BY STRUCTURAL ENGINEER
⑩ POOL CAVITY PER PLANS BY ARCHITECT
⑪ POURED-IN-PLACE CONCRETE POOL/SPA COPING, DAVIS COLOR DARK GRAY WITH SANDBLAST FINISH
⑫ CONCRETE ISOLATION JOINT - SEE DETAIL
⑬ ADJACENT PAVING ON STRUCTURE (POOL & SPA DECK) - SEE DETAIL
⑭ STRUCTURAL TOPPING SLAB PER PLANS BY STRUCTURAL ENGINEER.

J) POOL/SPA COPING

SCALE 1" = 1'

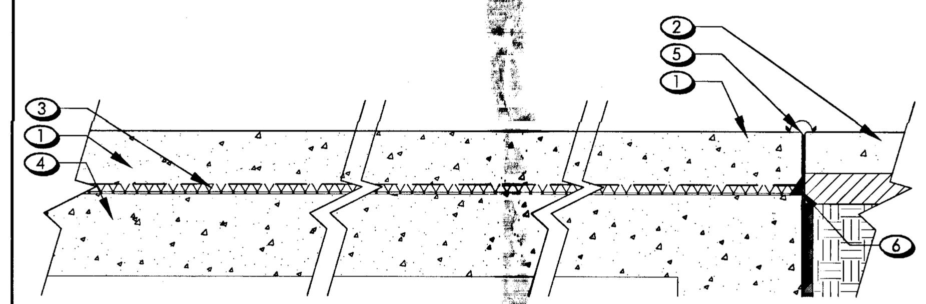


① 2" X 6" BROWN COLORED BEND-A-BOARD AVAILABLE FROM EPIC PLASTICS. (510) 235-9339 - INSTALL PER MANUFACTURERS RECOMMENDATIONS
② 3" DEEP LAYER OF STABILIZED DECOMPOSED GRANITE, COMPACTED PER MANUFACTURER'S SPECS. SURFACE OF DECOMPOSED GRANITE TO BE FLUSH WITH TOP OF BEND-A-BOARD.
③ GRADED SUB-BASE IF REQUIRED (SEE STRUCTURAL SOILS REPORT FOR MATERIAL, DEPTH, AND COMPACTION RECOMMENDATIONS)
④ COMPACTED SUBGRADE TO 90% RELATIVE COMPACTION
⑤ ADJACENT PLANTING AREA TO BE 1" BELOW TOP OF BEND-A-BOARD

DGpath.dwg

I) D.G. PATH

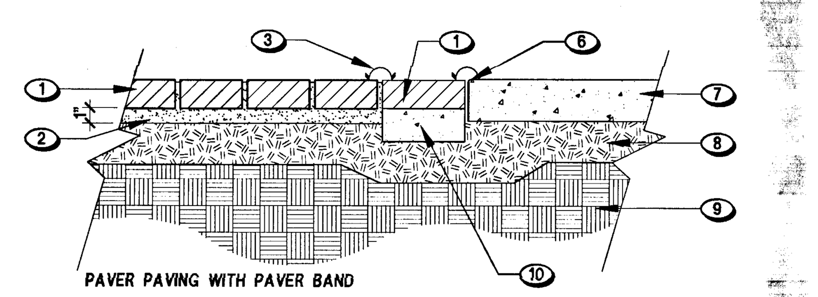
SCALE 1/2" = 1'



① PODIUM PAVING, SEE CONSTRUCTION LEGEND AND CONSTRUCTION SPECIFICATIONS. SLOPE TOP TO DRAIN - SEE CIVIL PLANS
② ON GRADE PAVING, SEE CONSTRUCTION LEGEND AND CONSTRUCTION SPECIFICATIONS. SLOPE TOP TO DRAIN - SEE CIVIL PLANS
③ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT
④ STRUCTURAL SLAB PER PLANS BY STRUCTURAL ENGINEER (TOP SLOPED TO DRAIN)
⑤ 1/4" RADIUS EDGE
⑥ PODIUM TO BELOW GRADE WATERPROOFING PER PLANS BY ARCHITECT

H) PODIUM TO ON-GRADE PAVING

SCALE 1" = 1'

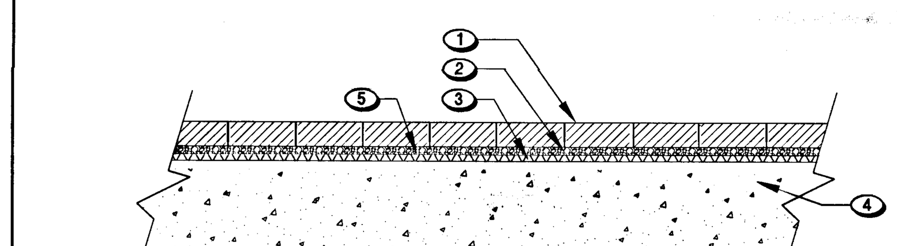


① PAVERS, SEE PAVING LEGEND
② SAND LEVELING COARSE
③ INSTALL PAVERS FLUSH W/ TOP OF BAND
④ OMIT
⑤ #4 REBAR CONTINUOUS, CENTER IN BAND
⑥ 1/4" TOOLED RAD. (TYP.)
⑦ ADJACENT PAVING TO BE FLUSH WITH TOP OF BAND. ADJACENT PLANTER AREA TO BE 1-1/2" BELOW BAND
⑧ AGGREGATE BASE, IF REQUIRED PER SOILS REPORT - TYPE, DEPTH, AND COMPACTION PER SOILS REPORT RECOMMENDATIONS
⑨ COMPACT SUBGRADE PER SOILS REPORT RECOMMENDATIONS
⑩ 3" MORTAR SUB-BASE

PaversInter.dwg

G) INTERLOCKING PAVERS (ON-GRADE)

SCALE 1" = 1'



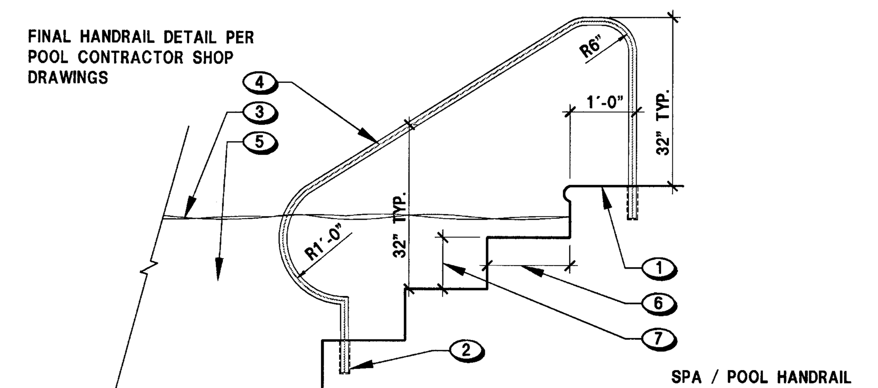
① INTERLOCKING PAVERS, SEE CONSTRUCTION LEGEND AND CONSTRUCTION SPECIFICATIONS
② AGGREGATE SETTING BED
③ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT
④ STRUCTURAL SLAB (TOP SLOPED TO DRAIN) PER PLANS BY STRUCTURAL ENGINEER
⑤ FILTER FABRIC

PaversInterlockingOnStructure(60mm).dwg

F) INTERLOCKING PAVERS (PODIUM)

SCALE 1" = 1'

FINAL HANDRAIL DETAIL PER POOL CONTRACTOR SHOP DRAWINGS



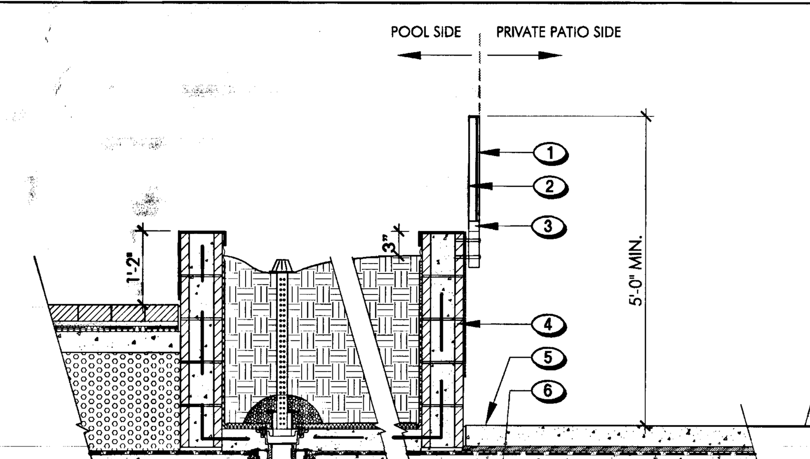
① ADJACENT CONCRETE PAVING ON STRUCTURE AND POOL COPING - SEE DETAILS
② 2" DIAMETER HOLE TO RECEIVE POST, DEPTH OF EMBEDMENT PER CONTRACTOR, POST SHALL BE GROUTED IN PLACE USING NON-SHRINK GROUT, COLOR TO MATCH ADJACENT CONCRETE.
③ WATER LEVEL
④ 1-1/2" OUTER DIA. MAX. STAINLESS STEEL ALLOY 316 HANDRAIL BENT TO RADIUS SHOWN
⑤ POOL/SPA PLASTER FINISH, COLOR, AND TEXTURE PER POOL CONTRACTOR.
⑥ SPA TREAD TO BE 12" WIDE. POOL TREAD TO BE 16" WIDE.
⑦ SPA RISER TO BE 8 ½" HIGH. POOL RISER TO BE 10" HIGH.

NOTES:
1. ALL POINTS OF HANDRAIL MUST RESIST A 250 LB. POINT LOAD.
2. ALL CONNECTIONS TO BE CONTINUOUS WELDED. REMOVE ALL SLAG AND SPLATTER AND GRIND ALL WELDS SMOOTH. ALL TUBING TO HAVE ENDS WELDED CLOSED.
3. CONTRACTOR TO VERIFY AND INSTALL HANDRAILS PER LOCAL AND STATE CODES.

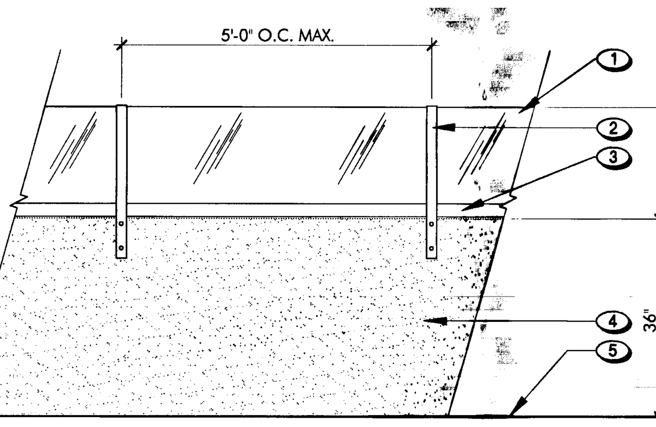
Pool&SpaHandrail11-014.dwg

L) POOL/SPA HANDRAIL

SCALE 1/2" = 1'



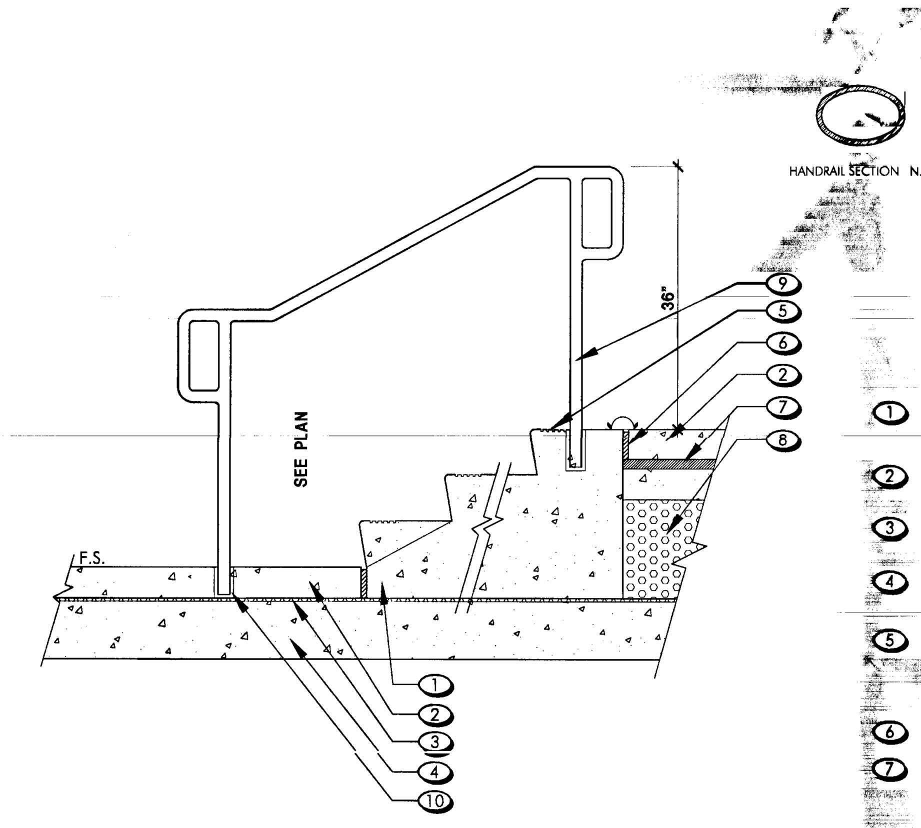
① 5' x 2'-6"' x 1/4" CLEAR TEMPERED GLASS POOL FENCE PANEL - GLASS TO BE FLUSH WITH FACE OF POST - INSTALL PER KINSLO'S SPECIFICATIONS
② ALUMINUM POST BY KINSLO (714) 568-1598. MOUNT PANEL CUSHION, SEAL, AND POST CAP PER MANUFACTURER'S SPECIFICATIONS. GROUT AND SEAL POST. ATTACH POST TO OUTSIDE EDGE OF PLANTER WALL PER PLANS BY STRUCTURAL ENGINEER
③ ALUMINUM BASE BY KINSLO (714) 568-1598. MOUNT PANEL CUSHION, SEAL, SETTING BLOCK, AND ATTACHMENT TO POST PER MANUFACTURER'S SPECIFICATIONS.
④ PLANTER WALL ON STRUCTURE. REFER TO PLANTER WALL AT POOL AREA DETAIL.
⑤ ADJACENT PAVING ON STRUCTURE - SEE CONSTRUCTION PLAN FOR TYPE
⑥ STRUCTURAL SLAB PER PLANS BY STRUCTURAL ENG

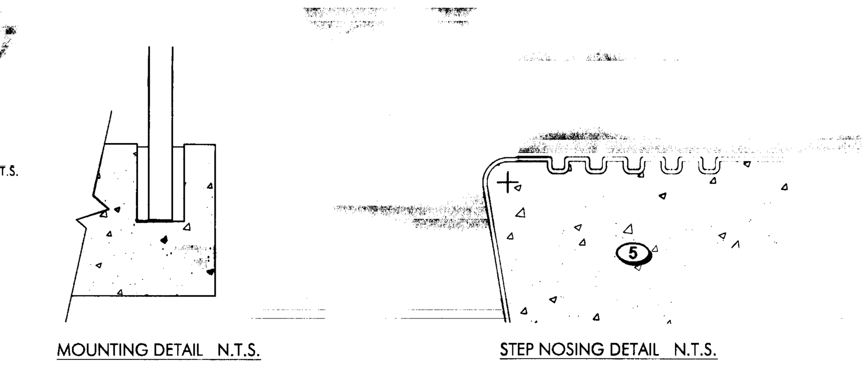


NOTES:
- ALL METAL INCLUDING FASTENERS AND HARDWARE TO BE GALVANIZED.
- ALL CONNECTIONS TO BE CONTINUOUS WELDED. REMOVE ALL SLAG & SPATTER. ALL TUBING TO HAVE ENDS WELDED CLOSED.
- PAINT ALL METAL MEMBERS AND SCREEN PER CONSTRUCTION SPECIFICATIONS. COLOR TO BE APPROVED BY OWNER.

K) POOL GLASS FENCE AT PRIVATE PATIO

SCALE 1/2" = 1'





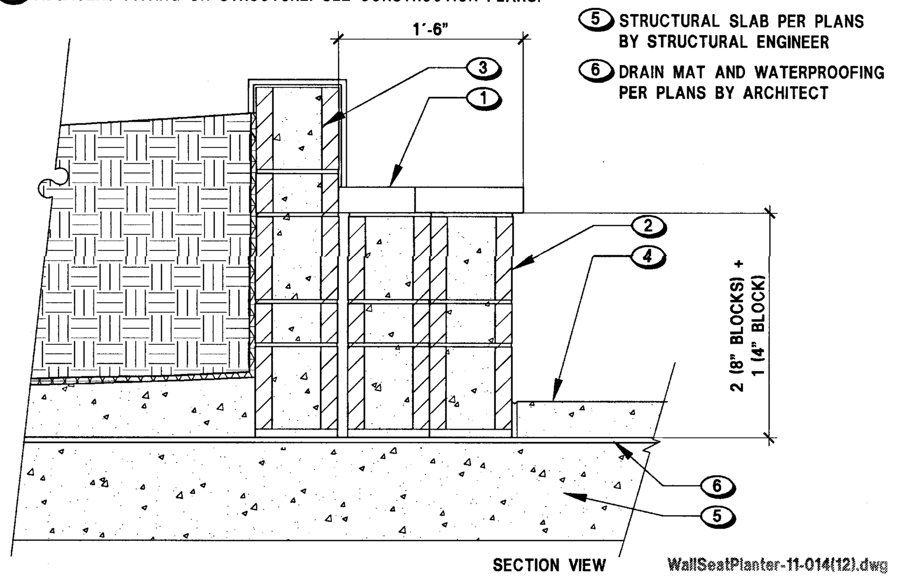
① CONCRETE FOOTING - SIZE, DEPTH, AND STEEL REINFORCEMENT PER STURCTURAL ENGINEER
② ADJACENT CONCRETE PAVING ON STRUCTURE - SEE DETAIL
③ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT
④ STRUCTURAL SLAB (TOP SLOPED TO DRAIN) PER PLANS BY STRUCTURAL ENGINEER
⑤ STEP NOSING - SEE DETAIL ABOVE. GROOVED AREA TO BE STAINED WITH LITHOCROME CHEMSTAIN CS-1 BLACK COLOR AVAILABLE FROM SCOFIELD.
⑥ CONCRETE ISOLATION JOINT - SEE DETAIL
⑦ AGGREGATE SETTING BED PER PLANS BY ARCHITECT
⑧ HIGH DENSITY CONSTRUCTION FOAM PER STRUCTURAL ENGINEER
⑨ HANDRAIL - 1-1/2" OUTER DIA. MAX.- PIPE SHALL BE SEAMLESS STEEL ASTM A53 GRADE B - SEE HANDRAIL SECTION ABOVE.
⑩ MOUNTING DETAIL - POST SHALL BE GROUTED IN PLACE USING NON-SHRINK GROUT - SEE DETAIL ABOVE

NOTES:
1. 1/4" PER 1' SLOPE ON TREAD FOR DRAINAGE.
2. SEE CONSTRUCTION PLAN FOR CONCRETE COLOR AND FINISH.
3. ALL REBAR AND REINFORCEMENT PER STRUCTURAL ENGINEER.
4. ALL RAILING TO BE HOT DIP GALVANIZED AFTER FABRICATION & PAINTED TO MATCH ARCHITECTURAL RAILINGS.

J) CONCRETE STEPS ON STRUCTURE W/ HANDRAIL

SCALE 3/4" = 1'

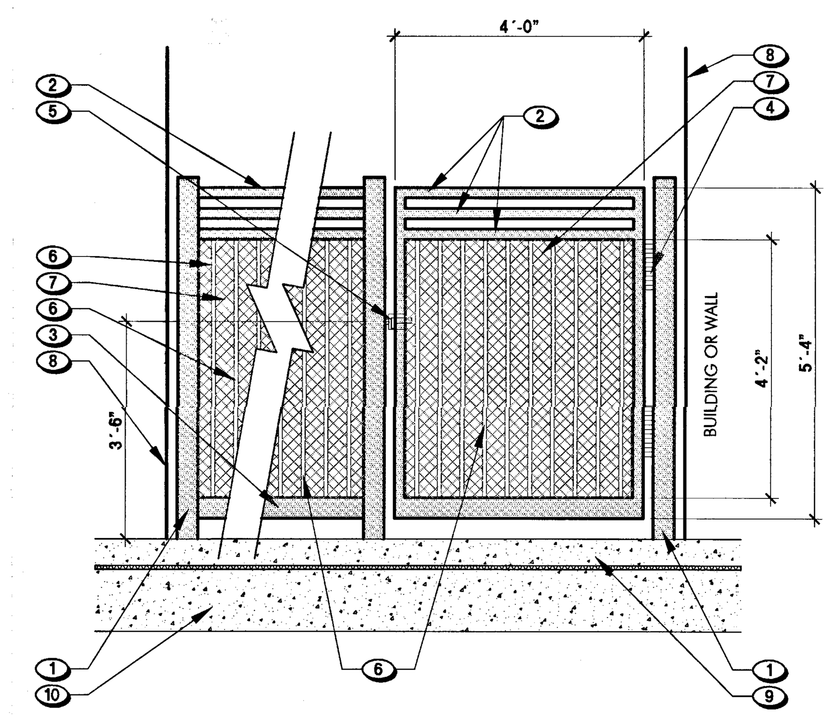
① POURED-IN-PLACE CONCRETE SEAT. COLOR TO MATCH ADJACENT PAVING. SEAT TO RECEIVE CONCRETE SEALER, NATURAL FINISH.
② PRECISION BLOCK WITH STUCCO FINISH. STUCCO TO MATCH BUILDING. GROUT AND REINFORCEMENT PER STRUCTURAL ENGINEER.
③ ADJACENT PLANTER WALL AS BACKREST - SEE PODIUM PLANTER WALL.
④ ADJACENT PAVING ON STRUCTURE. SEE CONSTRUCTION PLANS.
⑤ STRUCTURAL SLAB PER PLANS BY STRUCTURAL ENGINEER
⑥ DRAIN MAT AND WATERPROOFING PER PLANS BY ARCHITECT



WallSeatPlanter-11-014(12).dwg

O) BUILT-IN SEATWALL

SCALE 1" = 1'



① 4X4 TUBULAR STEEL PICKET WITH CAP. POST ATTACHMENT TO PODIUM SLAB PER STRUCTURAL ENGINEER.
② 2X2 TUBULAR STEEL TOP RAILS (3)
③ 2X4 TUBULAR STEEL BOTTOM RAIL
④ SELF-CLOSING GATE HINGES (LOCATION AND TYPE BY CONTRACTOR)
⑤ FAB KEY GATE LOCK AND LEVEL (TO MEET ADA REQUIREMENTS). GATE TO HAVE PANIC HARDWARE ON INTERIOR SIDE OF GATE. PROVIDE SAMPLE TO OWNER FOR APPROVAL PRIOR TO INSTALLATION.
⑥ 1X1 TUBULAR STEEL PICKETS
⑦ 11 GA. STAINLESS STEEL PANEL W/ 3/8" DIA. HOLES (1/2" STAGGERED CENTERS) WELDED TO POOL SIDE OF GATE & ADJACENT FENCING, PAINT TO MATCH RAILS AND PICKETS
⑧ FACE OF BUILDING/WALL
⑨ TOPPING SLAB - REFER TO CONSTRUCTION PLANS
⑩ STRUCTURAL SLAB - REFER TO PLANS BY STRUCTURAL ENGINEER

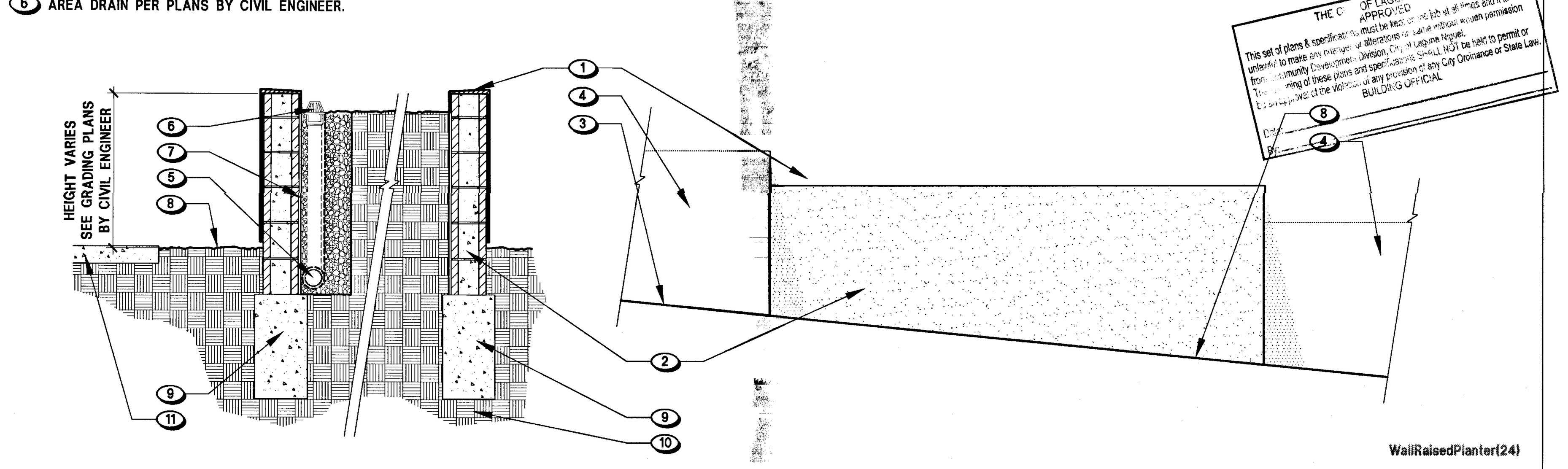
NOTES:
- ALL METAL INCLUDING FASTENERS AND HARDWARE TO BE GALVANIZED.
- ALL CONNECTIONS TO BE CONTINUOUS WELDED. REMOVE ALL SLAG & SPATTER. ALL TUBING TO HAVE ENDS WELDED CLOSED.
- PAINT ALL METAL MEMBERS AND SCREEN PER CONSTRUCTION SPECIFICATIONS. COLOR TO BE APPROVED BY OWNER.

FencePool-11-014.dwg

N) POOL GATE AND FENCE

SCALE 1/2" = 1'

① STUCCO CAP - SLOPE TO DRAIN TO BACK
② PRECISION BLOCKS WITH STUCCO FINISH - COLOR AND FINISH TO MATCH ARCHITECTURE. GROUT AND REINFORCEMENT PER PLANS BY STRUCTURAL ENGINEER.
③ FINISHED GRADE
④ ADJACENT FLOW THROUGH PLANTER WALL PER PLANS BY CIVIL ENGINEER. WALL TO HAVE PRECISION BLOCKS WITH STUCCO FINISH - COLOR AND FINISH TO MATCH ARCHITECTURE.
⑤ 4" PERFORATED DRAIN PIPE WITH FILTER FABRIC AND AGGREGATE BACKFILL, CONNECT TO STORM DRAIN, REFER TO CIVIL PLAN
⑥ AREA DRAIN PER PLANS BY CIVIL ENGINEER.
⑦ WATERPROOFING WHERE REQUIRED, REFER TO CIVIL ENGINEER'S PLANS.
⑧ FINISH GRADE
⑨ CONCRETE FOOTING - SIZE AND REINFORCEMENT PER STRUCTURAL ENGINEER. FOOTING TO BE DEEPENED TO ALLOW ROOM FOR PLANT TO GROW.
⑩ COMPACT SUBGRADE PER GEOTECHINICAL SOIL ENGINEER'S RECOMMENDATION
⑪ ADJACENT SIDEWALK - REFER TO CONSTRUCTION PLANS



WallRaisedPlanter(24)

M) RAISED PLANTER WALL ON CABOT (Between the FlowThrough Planters)

SCALE 1/2" = 1'

DATE / TIME OF PLOT (PST): 4/17/2013 6:27 PM FILE NAME: S:\2011 Projects\11-014 Crown Valley and Cabot\LANDSCAPE\CDs\Pending Submittal\11-014 L1.11 Construction Details.dwg

URBAN ARENA LLC
3195 Red Hill Avenue - Loft F
Costa Mesa, California 92626
T. 714.754.4500 F. 714.754.4545
Orange County · San Diego

LICENSES

CALIFORNIA	#4192
CALIFORNIA	#3905
ARIZONA	#32522
UTAH	#379520-5301
NEVADA	#539

LICENSED LANDSCAPE ARCHITECT MICHAEL LEVI SCHROCK LICENSE NO. 4192 SIGNATURE 1-31-15 RENEWAL DATE DATE STATE OF CALIFORNIA

DATE

REVISION

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

CONSTRUCTION DETAILS

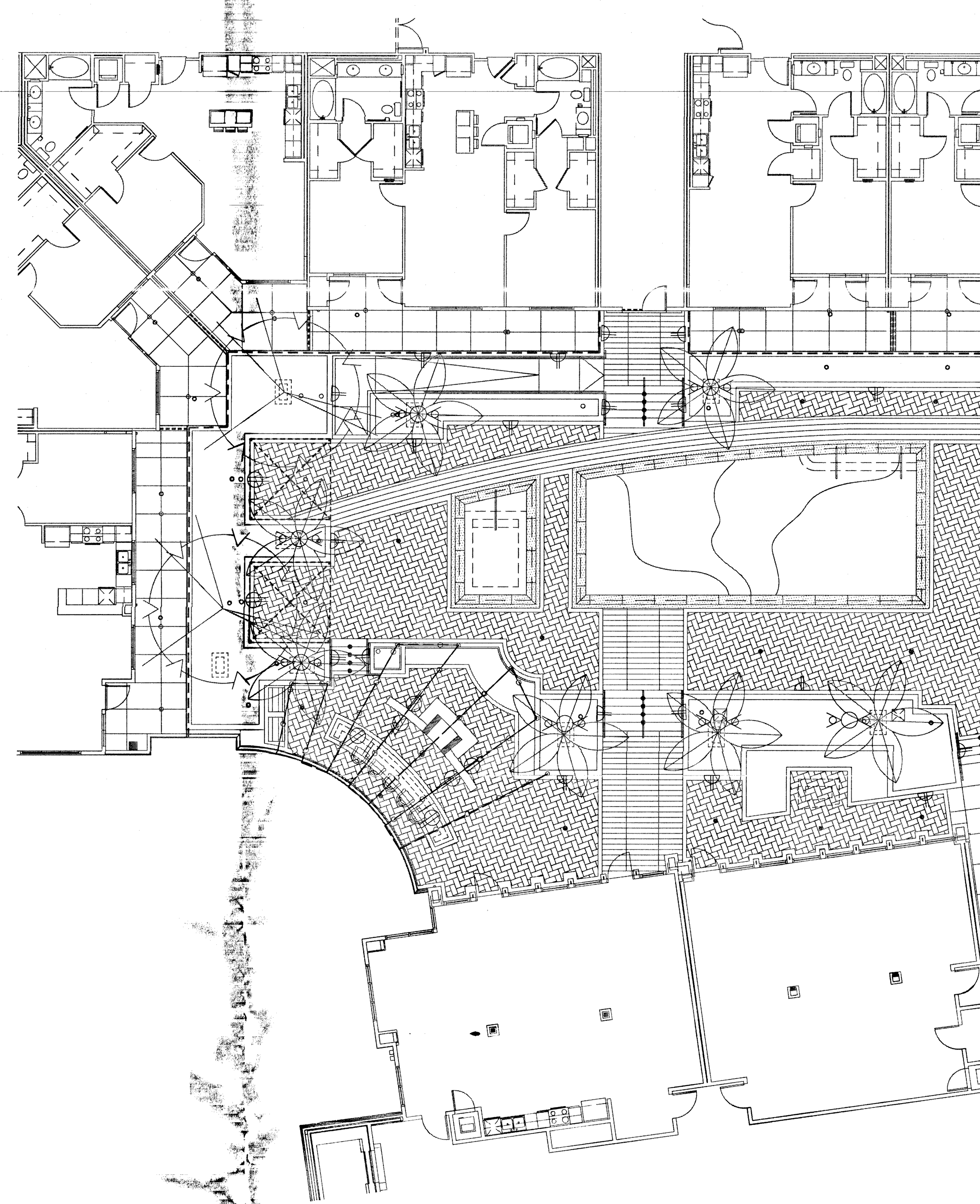
FOR REF ONLY

NOT FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

L1.11

2011-014
JOB NUMBER
NO SCALE
SCALE
1ST SUBMITTAL
ISSUED AS
04/15/2013
DATE



LIGHTING LEGEND

SYMBOL	MANUFACTURER AND MODEL NUMBER	FIXTURE VA/WATTS	LAMP/LAMP OPTION	DESCRIPTION
⊜				120 VOLT GFI OUTLET
	DESIGNPLAN LIGHTING MINI ALFIA U816400.2 EQUAL BY: ---	6W	LED	WARM WHITE LED PATHWAY LIGHT WITH ALUMINUM FINISH. RECESSED IN PLANTER.
- - - - - - - - - -	TUBE LIGHTING PRODUCTS STRINGER GLOBES BPS-307 - LED/WW - F - BK/18 - B EQUAL BY: ---	1W/LF	LED	WARM WHITE LED STRING LIGHTING WITH FROSTED GLOBE AND BLACK CABLE
	B-K LIGHTING DENALI SERIES FLOODLIGHT DE-LED-x21-FL-SAP-9-A PM2 DUAL TREE STRAP PM2D-TS-30-D15/D15-MT-SC	15W	LED	(2) ALUMINUM LED TREE UPLIGHT FIXTURES AND (2) ALUMINUM LED TREE DOWNLIGHT FIXTURES HOUSED IN (2) PM2D DRIVERS AND ATTACHED TO ADJUSTABLE NYLON TREE STRAP W/ STAINLESS STEEL SAFETY CABLE.
	B-K LIGHTING DENALI SERIES FLOODLIGHT DE-LED-x21-FL-BLP-9-A HP2 DRIVER HOUSING HP2-D15-MT	15W	LED	ALUMINUM UPLIGHT FIXTURE WITH SUB-GRADE HP2 DRIVER HOUSING.
⌖	MANUFACTURER AND STYLE TO BE SELECTED LAMP: F42TBXSPX30	42W	FLUORESCENT	LIGHT BOLLARD MOUNTED WITH CONCRETE BASE

NOTES

- REFER TO PLANS PREPARED BY ELECTRICAL ENGINEER FOR CONDUIT, SLEEVING, POWER SOURCE, AND PODIUM PENETRATION INFORMATION.
- CONTRACTOR TO SIZE LAMPS AS INDICATED ON PLAN

MANUFACTURER & AVAILABILITY LIST

BK LIGHTING, CONTACT: ANNIE MITCHELL 858.514.4000

TUBE LIGHTING PRODUCTS

DESIGNPLAN LIGHTING

THE CITY OF LAGUNA NIGUEL
APPROVED

SCALE: 1" = 10'-0"

0 5 10 20 30

NORTH

URBAN ARENA LLC

3195 Red Hill Avenue - Loft F
Costa Mesa, California 92626
T. 714.754.4500 F. 714.754.4545

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LICENSES

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UTAH #379520-5301
NEVADA #539

LICENSED LANDSCAPE ARCHITECT
MICHAEL LEVI SCHROCK LICENSE NO. 4192
SIGNATURE
1-31-15
RENEWAL DATE
DATE
STATE OF CALIFORNIA

DATE

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CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

LIGHTING PLAN - PODIUM B - (UPPER PODIUM)

NOT FOR CONSTRUCTION

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L4.03

2011-014
JOB NUMBER

1"=10'-0"
SCALE

1ST SUBMITTAL
ISSUED AS

04/15/2013
DATE

PLAN GENERAL NOTES

1. DIVERT 50% OF ALL CONSTRUCTION DEBRIS FROM LANDFILLS. IN ADDITION, FOR PROJECTS THAT REQUIRE DEMOLITION THE PROJECT SHALL RE-USE AT LEAST 50% OF THE SALVAGEABLE MATERIALS IN THE EXISTING BUILDINGS ON-SITE. THIS CAN TAKE THE FORM OF RE-USE OF ENTIRE STRUCTURES, RE-USE OR REPURPOSING OF SIGNIFICANT ELEMENTS, SUCH AS BEAMS OR TRUSSES, AND RECYCLING MATERIALS WITHIN THE NEW PROJECT SUCH AS GRINDING PAVING AND ASPHALT FOR USE AS BASE MATERIAL AT THE PROJECT SITE.

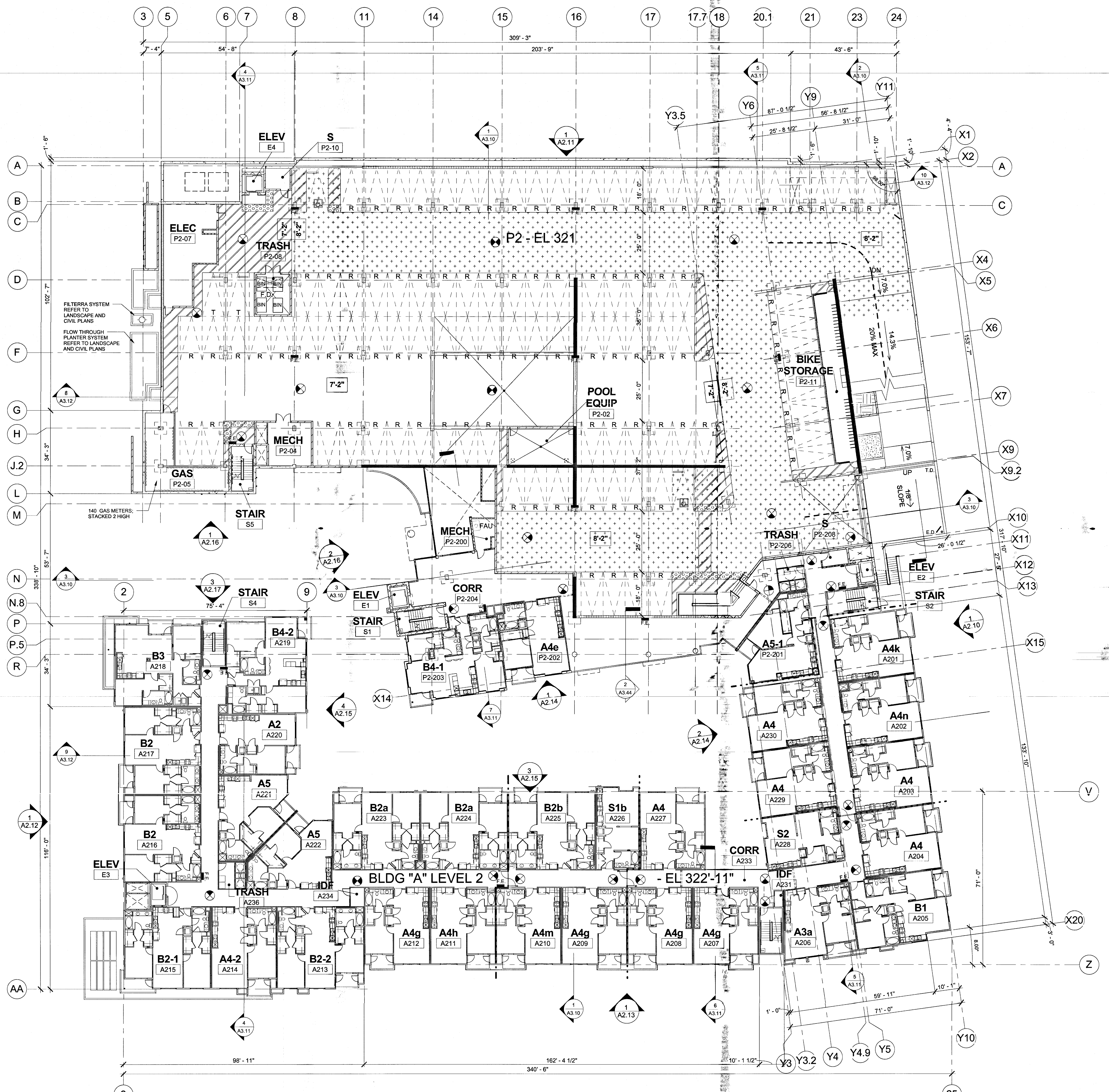
WATERPROOF GENERAL NOTES

1. BELOW GRADE - TREMCO PARASEAL BENTONITE WITH TRENCH DRAIN MAT

2. PODIUM DECK - TREMCO 250GC 90 MIL COLD FLUID APPLIED WITH TRENCH DRAIN MAT

SHOTCRETE GENERAL NOTES

1. SHOTCRETE WALLS SHALL HAVE A FLOAT FINISH



1 BLDG. "A" LEVEL 2 & GARAGE LEVEL P2

1/16" = 1'-0"

TCA ARCHITECTS

LOS ANGELES | IRVINE | OAKLAND

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

BLDG. "A" LEVEL 2 & GARAGE LEVEL P2

FOR CONSTRUCTION

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THE CITY OF LAGUNA NIGUEL APPROVED

A0.13

2010-089

JOB NUMBER

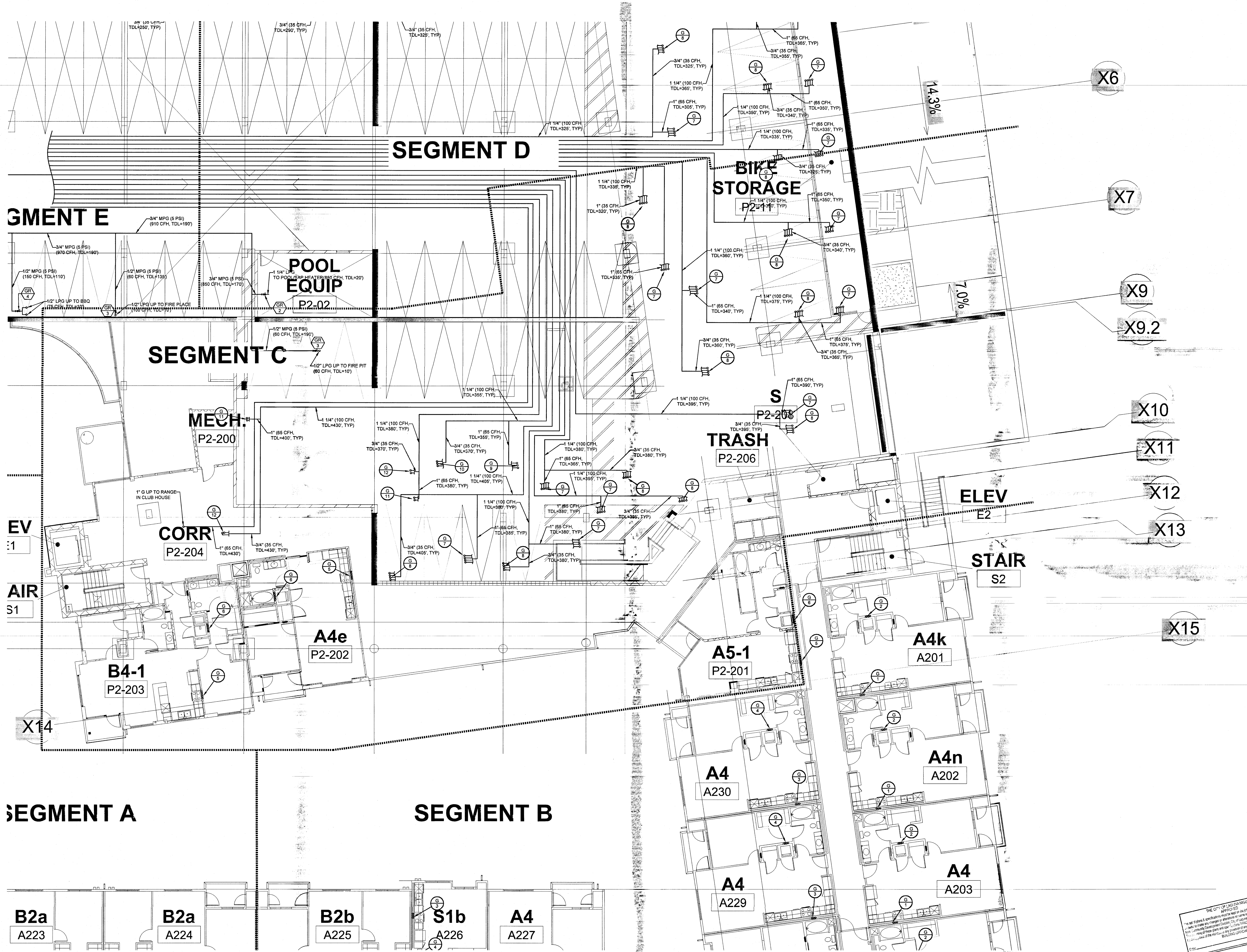
1/16" = 1'-0"

SCALE

ISSUED AS

4/15/2013

DATE



1 PLUMBING: GAS-BLDG "A" LEVEL 2 & GARAGE LEVEL P2-SEGMENT C
1/8" = 1'-0"

Thomas P. Cox: Architects, Inc.

CONSULTANT

AMPAM Parks Mechanical

CROWN CABOT LUXURY APARTMENTS

25691 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

PLUMBING: GAS BLDG "A" LEVEL 2 & GARAGE LEVEL P2-SEGMENT C

FOR CONSTRUCTION

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THE CITY OF LAGUNA NIGUEL APPROVED

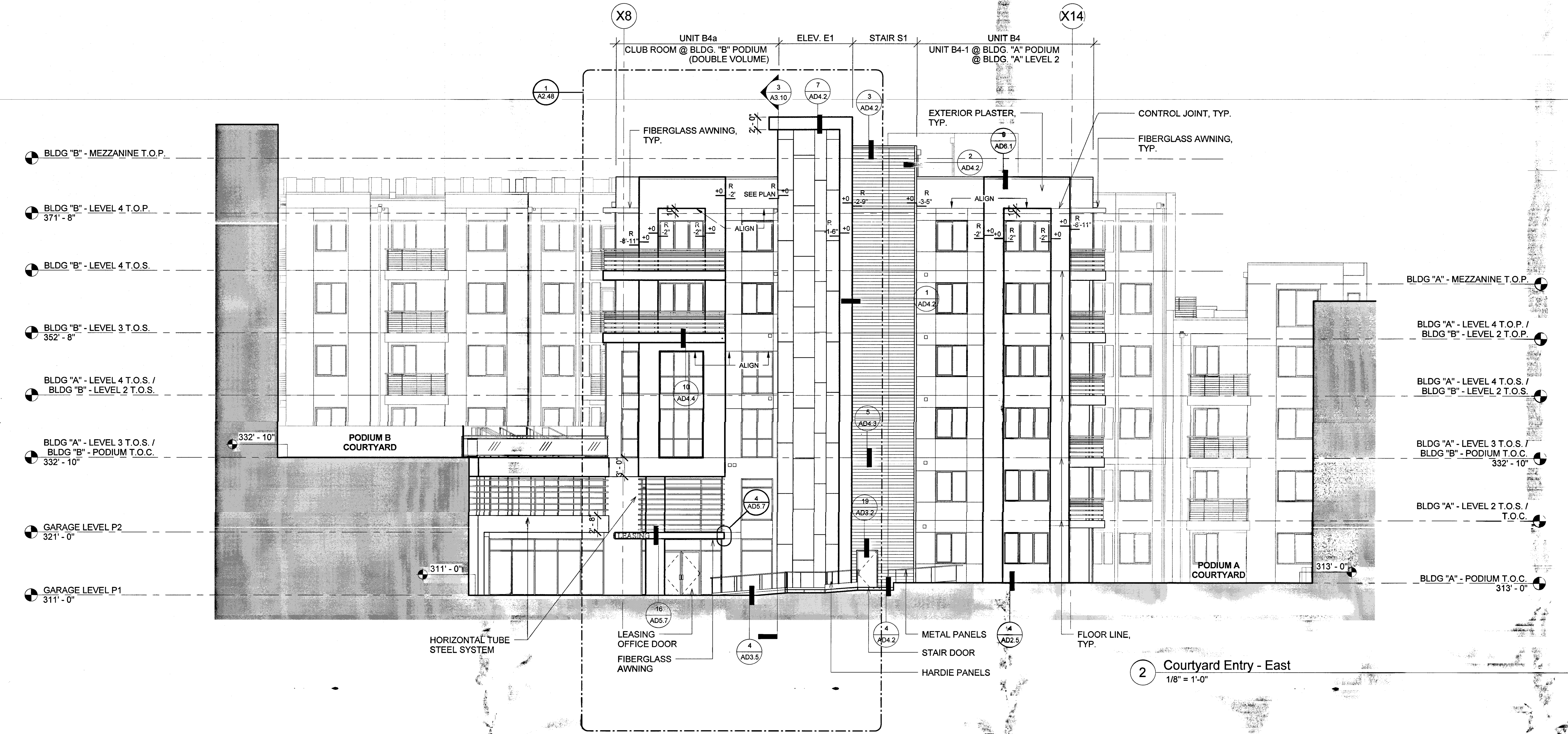
P1.23GC

2010-089
JOB NUMBER

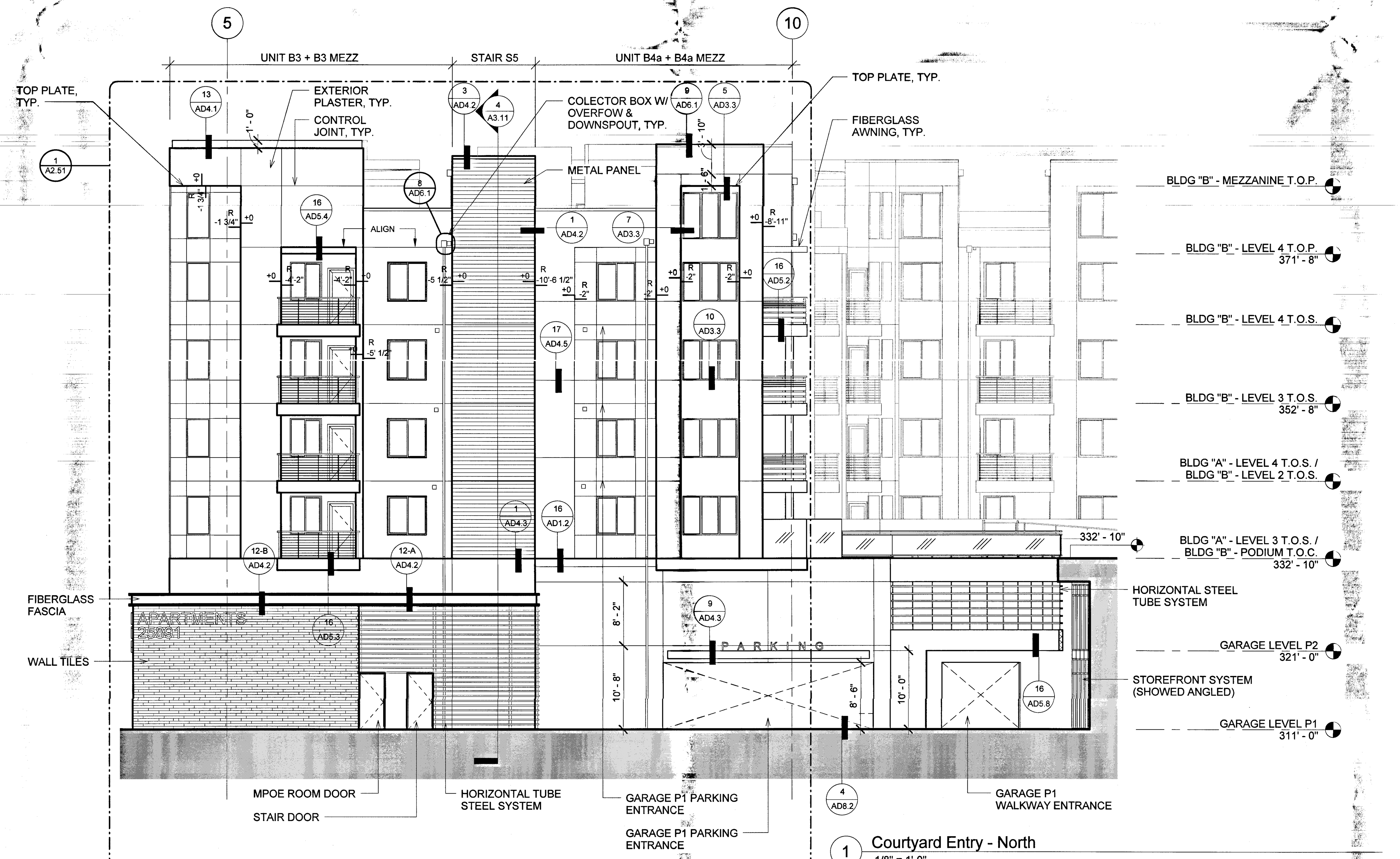
1/8"=1'-0"
SCALE

ISSUED AS

04-15-2013
DATE



2 Courtyard Entry - East
1/8" = 1'-0"



1 Courtyard Entry - North
1/8" = 1'-0"

GENERAL ELEVATION NOTES

1. ALL PLASTER IS 3-COAT, 7/8" THICK OVER LATH & MOISTURE BARRIER.

2. PROVIDE 2 LAYERS OF GRADE D PAPER OVER ALL WOOD BASE SHEATHING PER CBC 2510.6

3. ALL WEEP SCREED LINES SHALL BE LEVEL AND STEP WITH ADJACENT GRADE. SCREEDS ARE TO BE PLACED 2" MAX ABOVE HARD SURFACES & 6" ABOVE FINISH GRADE. STEPS IN WEEP SCREEDS ARE TO OCCUR AT INSIDE CORNERS.

4. EXTERIOR PLASTER CONTROL JOINTS PER CBC 2512 AND ASTM C 1063. CONTROL JOINTS TO BE INSTALLED IN CEILINGS OR WALLS EXCEEDING 144 S.F. IN AREA WITH THE DISTANCE BETWEEN JOINTS NOT EXCEEDING 18 FT IN ANY DIRECTION. JOINTS TO OCCUR AT WINDOW CENTERLINES AND T.O. PLYWOOD.

5. PROVIDE SPLASH BLOCK OR GRAVEL BED AT ALL DOWN SPOUTS WITHIN LANDSCAPED AREAS. REFER TO LANDSCAPE DRAWINGS.

6. PER CONDITIONS OF APPROVAL ITEM 28, FACADE MATERIALS AND DETAILS ARE TO MAXIMIZE USE OF NON-REFLECTIVE FACADE TREATMENTS.

7. PROVIDE EXTERIOR GRADE PLYWOOD SHEATHING FOR ENTIRE BUILDING. THICKNESS TO MATCH ADJACENT SHEAR PANELS.

EXTERIOR LIGHTING NOTES

1. FRAMING CONTRACTOR SHALL REVIEW & COORDINATE WITH EXTERIOR LIGHTING CONSULTANT DRAWINGS AND SHALL PROVIDE SOLID BLOCKING BEHIND ALL EXTERIOR LIGHT FIXTURES.

EXTERIOR MATERIAL SPECIFICATIONS

1. EXTERIOR PLASTER SYSTEM: OMEGA PRODUCTS 20/30 SAND FINISH

2. EXTERIOR WALL TILE SYSTEM: DALTILE SLIM PANELS. SEE SHEET A2.53 FOR TILE SELECTION.

3. HARDIE PANEL SYSTEM: JAMES HARDIE. SEE SHEET A2.53 FOR PANEL SELECTION.

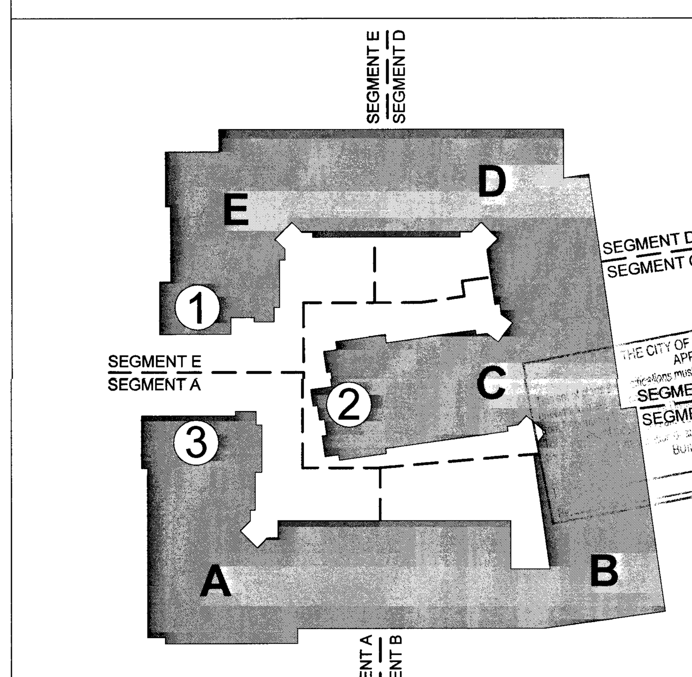
4. METAL PANEL SYSTEM: MORIN METAL SYSTEM INTEGRITY SERIES PANEL -X12-FACTORY FINISH

AS DIRECTED BY THE CLIENT
ALL EXTERIOR BALCONY RAILS SHALL FOLLOW THE DESCRIPTION BELOW:

1. WE INCLUDE 125 EXTERIOR STEEL BALCONY RAILS AS FOLLOWS: FULL HEIGHT BALCONY GUARDRAIL (3'-6" HIGH), USING PLATE MOUNTED. APPROX. USING TUBULAR FRAMING WITH HORIZONTAL FIBERGLASS STRIPS. GUARDRAIL FRAMING TS2x2 TOP RAILS, 2x1 MID, BOTTOM & 2x1-1/2 POST RAILS, TS 5/8" HORIZONTAL PICKETS AT 4" O/C. WELDED CONNECTIONS IN LIEU OF BOLTED CONNECTIONS. RED OXIDE PRIMER AND FIELD PAINTED.

2. WE INCLUDE 315 EXTERIOR STEEL BALCONY RAILS AS FOLLOWS: FULL HEIGHT BALCONY GUARDRAIL (3'-6" HIGH), USING PLATE MOUNTED. GUARDRAIL FRAMING TS2x2 TOP RAIL, 2x1 MID, BOTTOM & 2x1-1/2 POST RAILS, TS 5/8" HORIZONTAL PICKETS AT 4" O/C. WELDED CONNECTIONS IN LIEU OF BOLTED CONNECTIONS. RED OXIDE PRIMER AND FIELD PAINTED.

KEYPLAN



TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

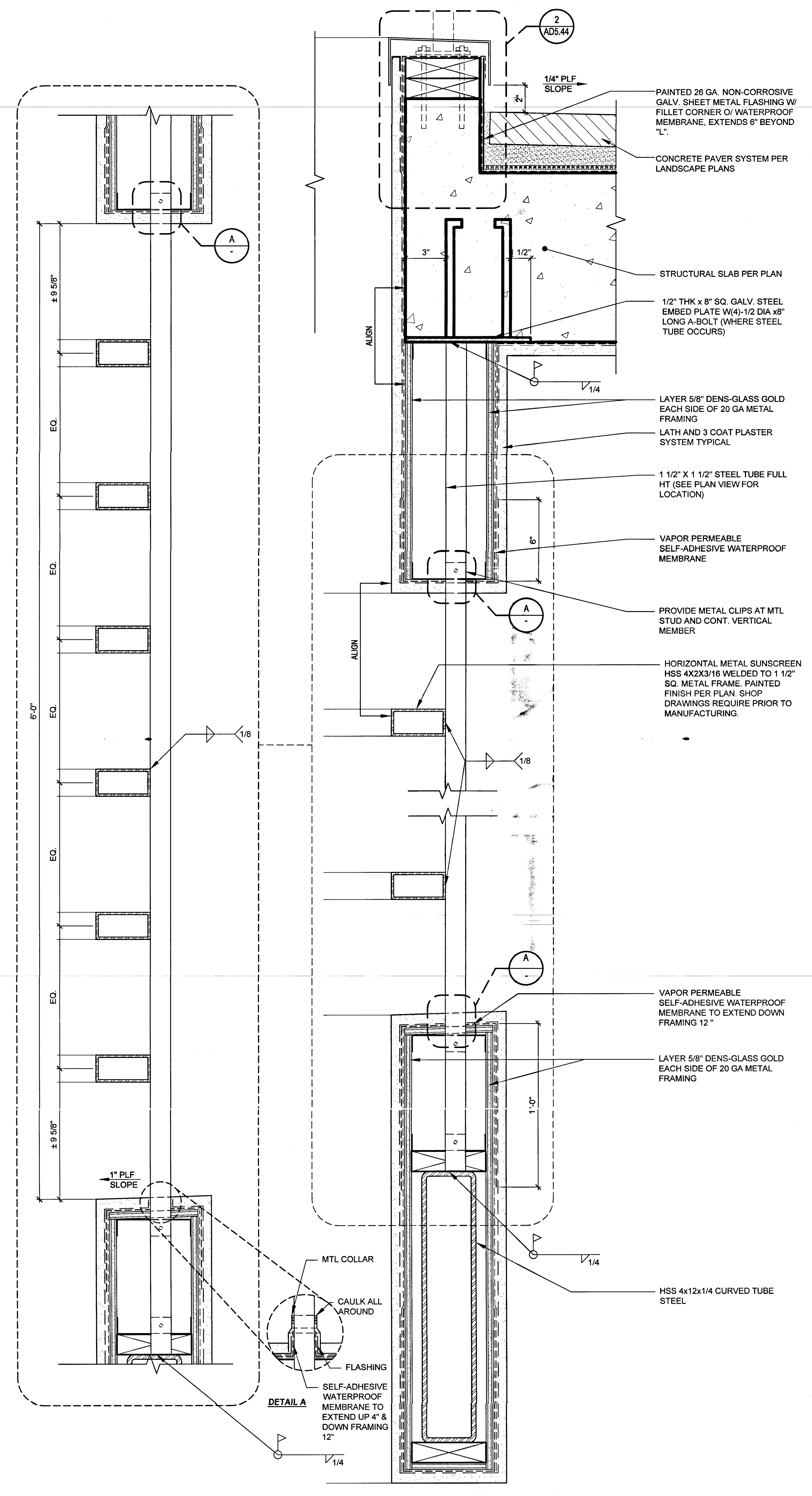
DRAWING CONTENTS
EXTERIOR ELEVATIONS
FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

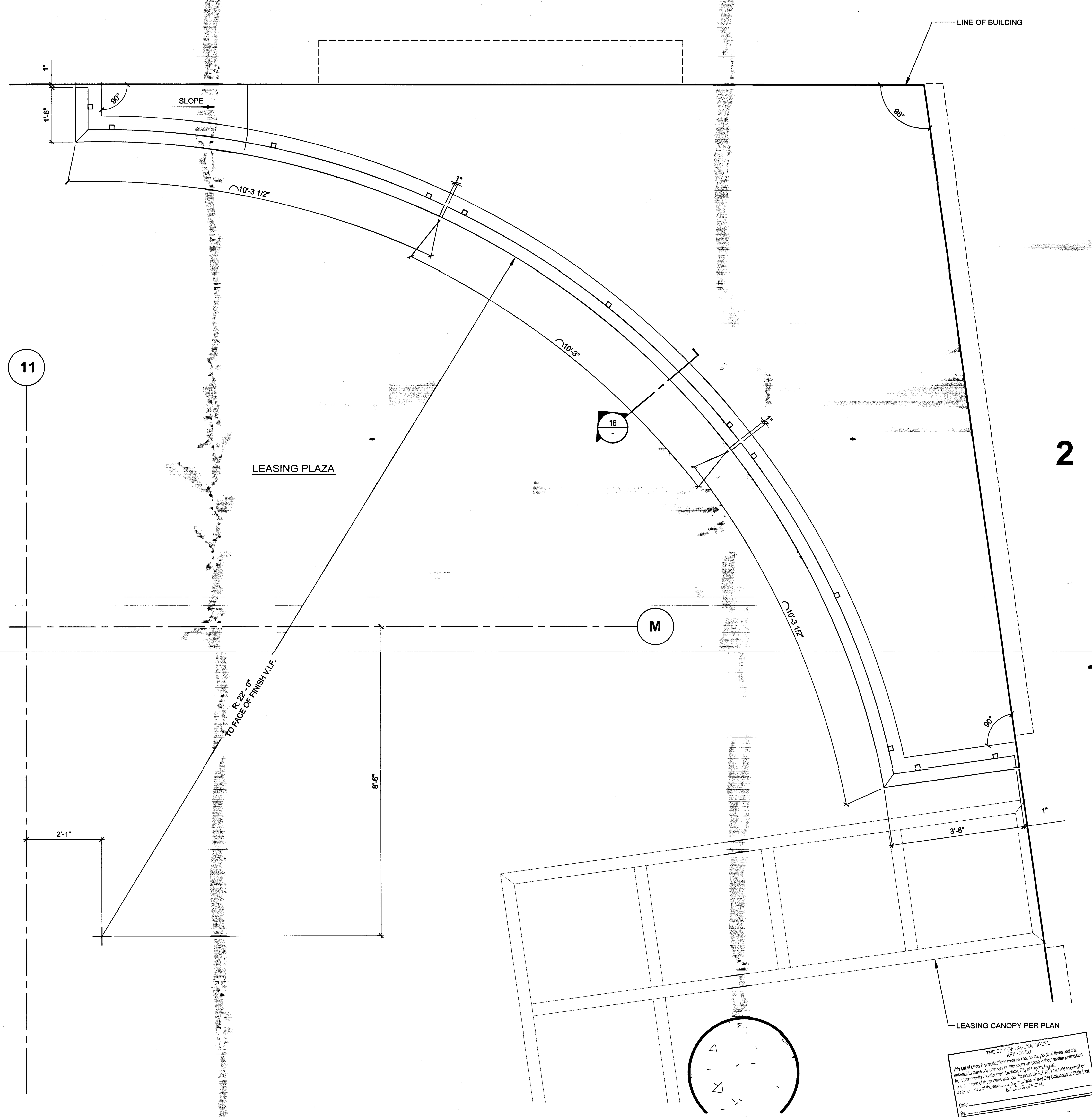
THE CITY OF LAGUNA NIGUEL APPROVED

A2.16

2010-089
JOB NUMBER
1/8" = 1'-0"
SCALE
ISSUED AS
4/15/2013
DATE



LEASING SUNSCREEN SECTION 3" = 1'-0" **16**



LEASING CANOPY KEY PLAN NTS **4**

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CROWN CABOT LUXURY APARTMENTS
25591 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LEASING SUNSCREEN WALL KEY PLAN AND DETAILS
FOR CONSTRUCTION

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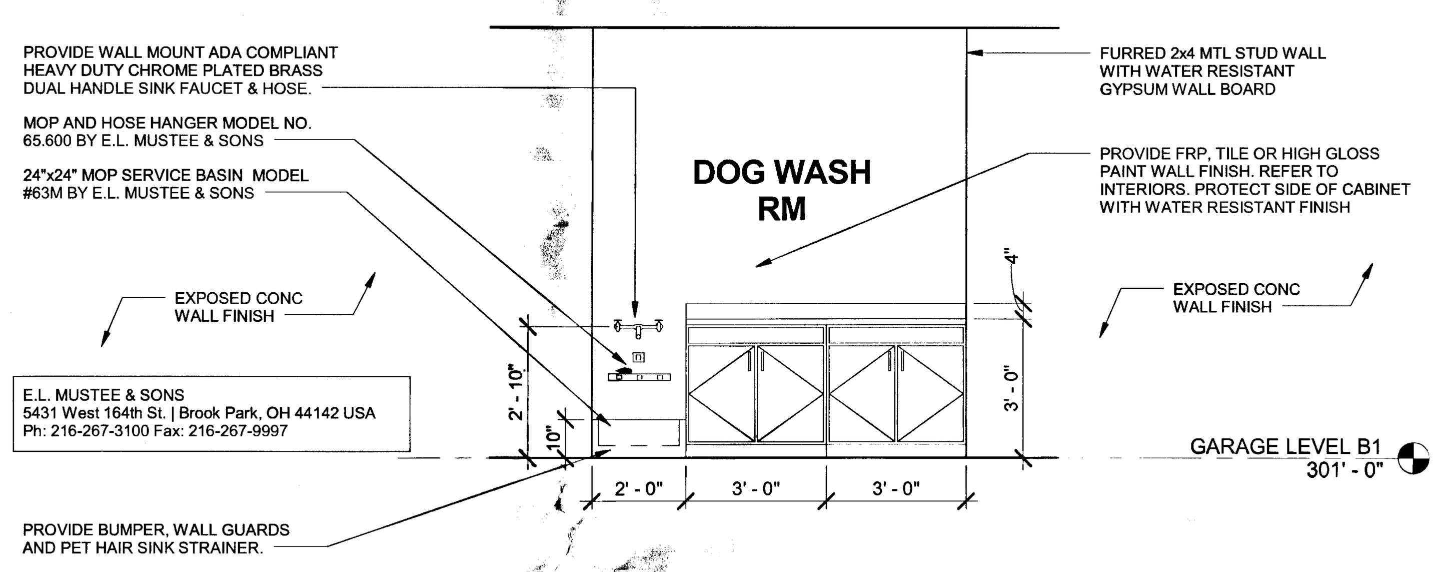
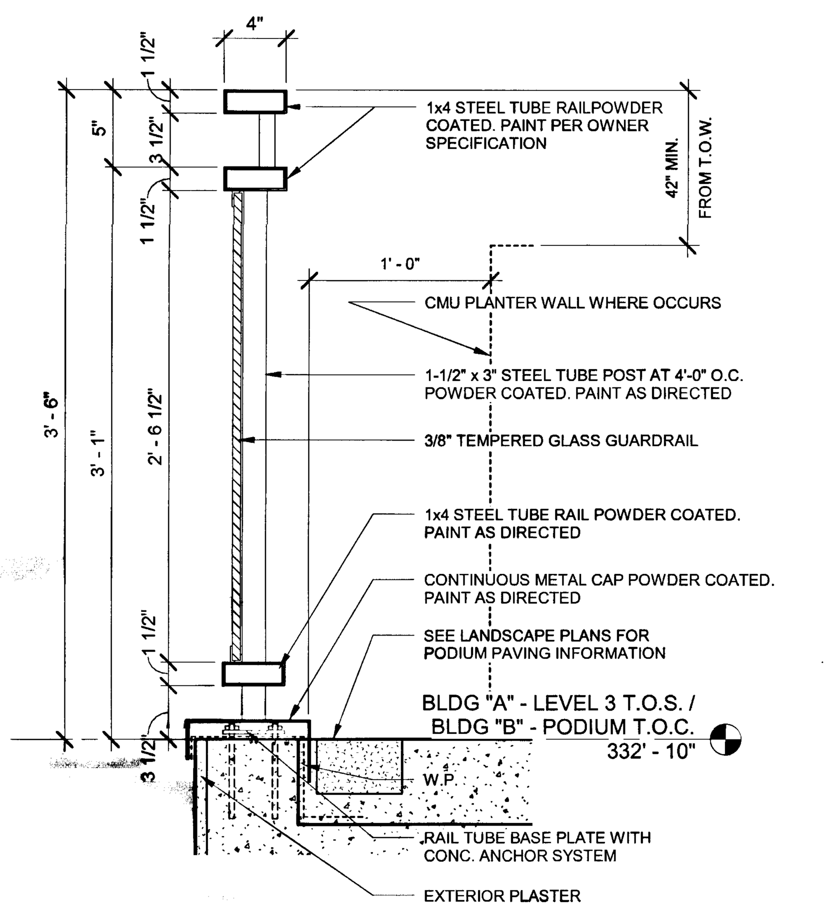
THE CITY OF LAGUNA NIGUEL APPROVED

AD5.8

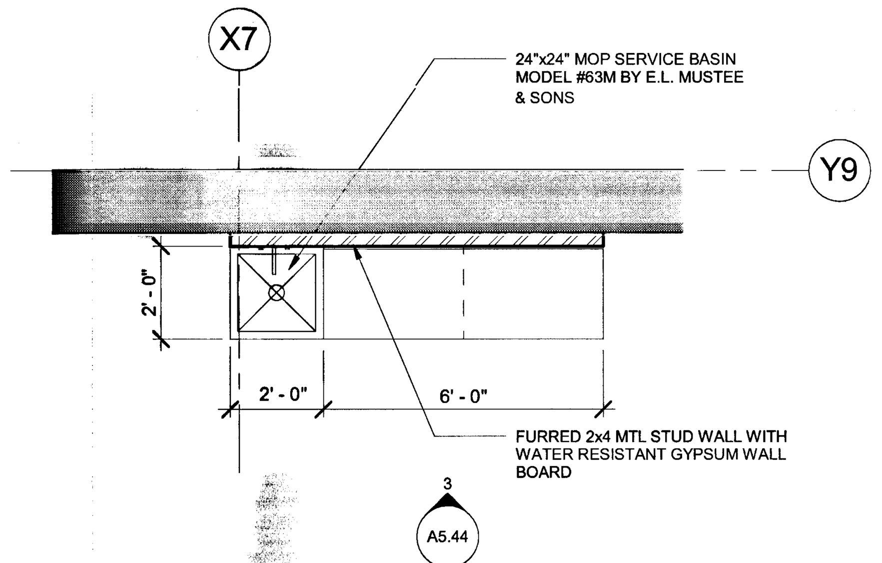
2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
4 / 15 / 2013
DATE



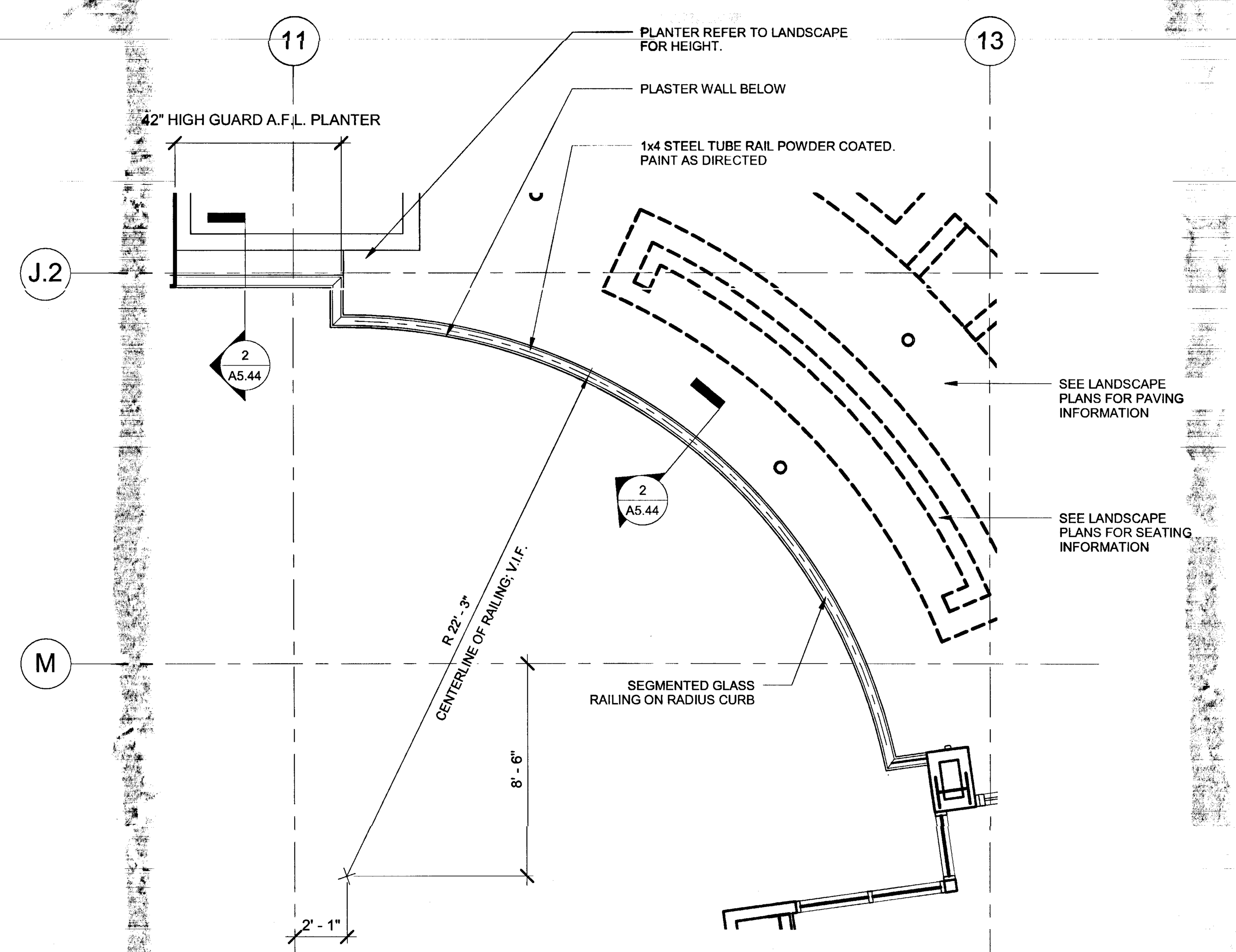
3 DOG WASH ROOM ELEVATION
3/8" = 1'-0"



2 GLASS RAILING SECTION
1 1/2" = 1'-0"



4 DOG WAS ROOM COUNTER
3/8" = 1'-0"



1 PODIUM "B" - GLASS RAILING
1/4" = 1'-0"

TCA ARCHITECTS
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LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
GLASS RAILING @ PODIUM "B" DECK

FOR CONSTRUCTION

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A5.44

2010-089
JOB NUMBER

As indicated
SCALE

ISSUED AS

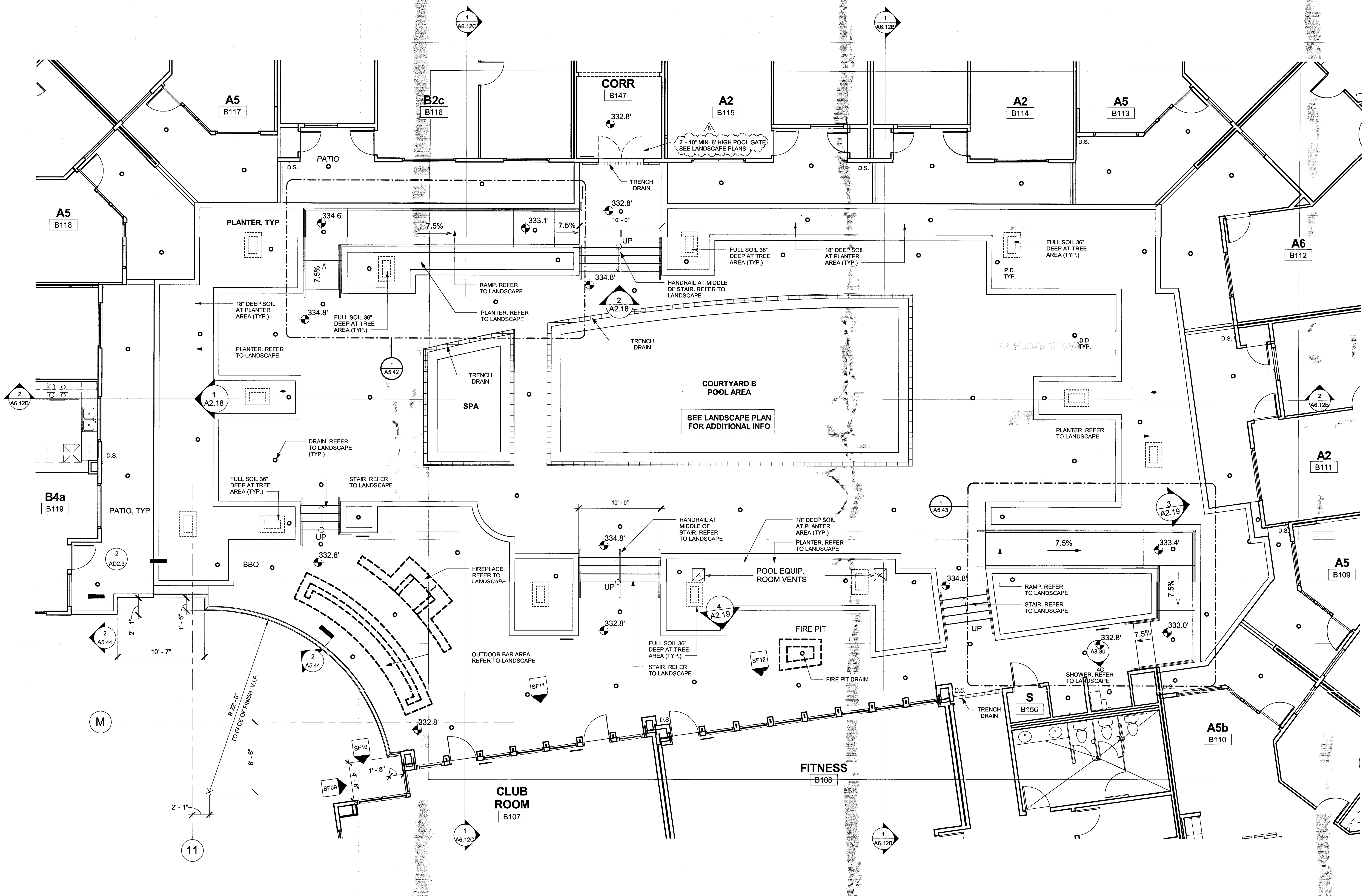
4/15/2013
DATE

ABBREVIATIONS:

E.D.	EMERGENCY DRAIN. DISCHARGE TO FILTERRA OR FLOW THROUGH PLANTER SYSTEM PER MOULTON NIGUEL WATER DISTRICT. E.D. TO CONNECT TO STORM DRAIN SYSTEM.
F.D.	FLOOR DRAIN
P.D.	PLANTER DRAIN
P.H.	PANIC HARDWARE
S.P.D.	STAND PIPE DRAIN
D.D.	DECK DRAIN
D.S.	DOWN SPOUT
O.F.	OVERFLOW
	EXIT SIGN PER SECTION 1011 2010 CFC. SIGNS SHALL BE PERMANENTLY ILLUMINATED. FACE OF EXIT SIGN SHALL BE ILLUMINATED FROM AN EXTERNAL SOURCE AND SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT-CANDLES (54 lux). EXIT SIGN PLACEMENT SHALL BE SUCH THAT NO POINT IN AN ACCESS CORRIDOR OR EXIT PASSAGEWAY IS MORE THAN 100 FT OR THE LISTED VIEWING DISTANCE FOR THE SIGN, WHICHEVER IS LESS, FROM THE NEAREST VISIBLE EXIT SIGN. SHADED REGION INDICATES THE DIRECTION OF TRAVEL TO THE EXIT.
F.E.	FIRE EXT. PER SECTION 906 & TABLE 906.3(1) 2010 CFC. MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER 75 FT. MOUNT FIRE EXTINGUISHER TO NEAREST COL OR WALL 3/AD8.2
H.B.	HOT WATER HOSE BIB AT TRASH ROOM

FLOOR PLAN LEGEND

- 1½" WOOD FURRING WALL
- 2½" WOOD FURRING WALL
- 2x4 WOOD STUD
- 2x6 WOOD STUD
- 2x4 WOOD STUDS LOW WALL
- 1½" METAL FURRING WALL
- 2½" METAL FURRING WALL
- 2x4 METAL STUD WALL
- 2x6 METAL STUD WALL
- CMU BLOCK WALL
- CONCRETE WALL
- SHEAR CONCRETE WALL
- SHAFT WALL



1 Courtyard "B" Enlarged Plan
3/16" = 1'-0"

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REVISION: 5 Miscellaneous Architectural / Third Party Plan Check / ASI #3

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
COURTYARD "B" ENLARGED PLANS

FOR CONSTRUCTION

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THE CITY OF LAGUNA NIGUEL APPROVED

A6.12A

2010-089
JOB NUMBER

As indicated
SCALE

ISSUED AS

7/30/2013
DATE

NOTE:

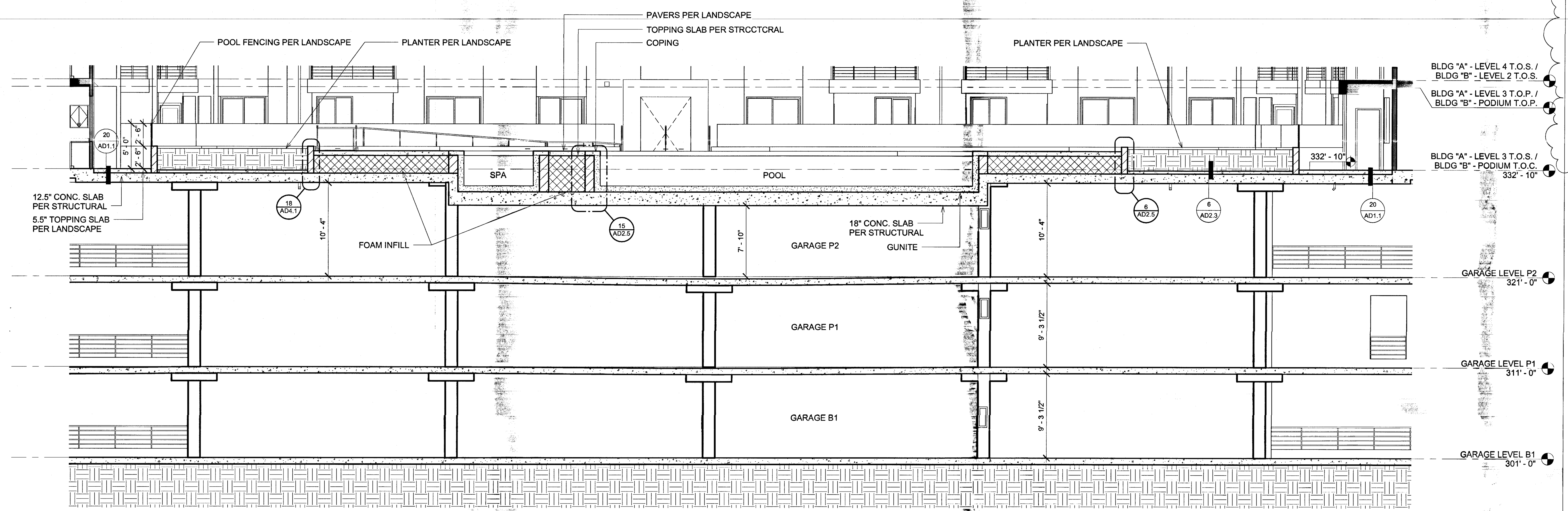
THE CLEAR HEIGHT OF EACH FLOOR LEVEL IN VEHICLE AND PEDESTRIAN TRAFFIC AREAS SHALL NOT BE LESS THAN 7 FEET. **(CBC 2010 SECTION 406.2.2(**

ALL ENTRANCES, EXITS AND VEHICULAR PASSAGEWAYS TO AND FROM REQCIRED ACCESSIBLE PARKING SPACES WITHIN PARKING FACILITIES, SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 8'-2" FROM THE FLOOR TO THE LOWEST PROJECTION OF THE CEILING. **(CBC 2010 SECTION 1109A.8.1)**

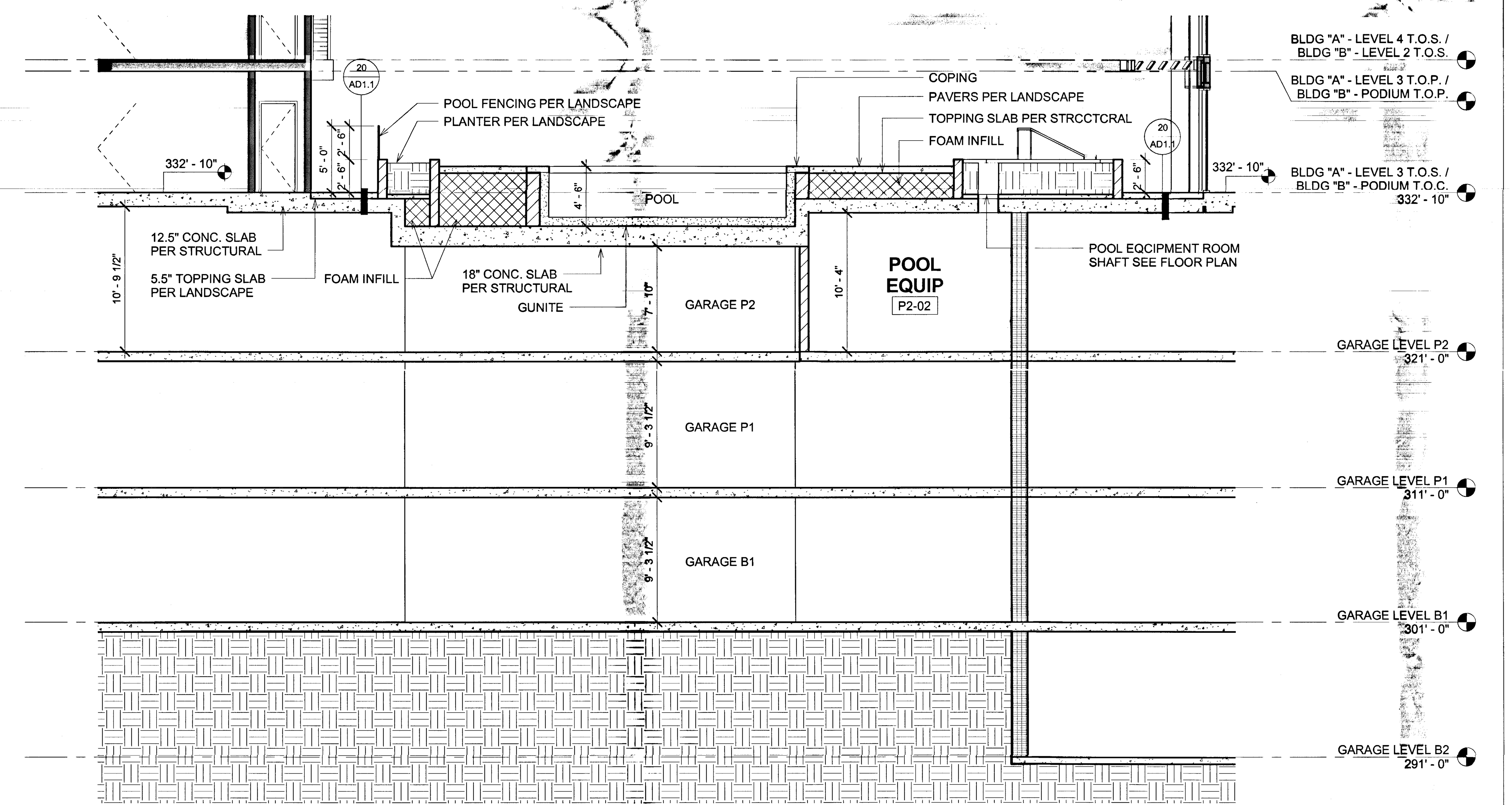
MAINTAIN MAXIMCM HEIGHT AT ALL AREAS:

MAINTAIN 7'-6" MINIMUM HEADROOM CLEARANCE IN ALL GARAGE AREAS FROM ALL STRUCTURAL MEMBERS, MECHANICAL DCCTS, PLCMBING LINES, SPRINKLERS AND ELECTRICAL FIXTCRES, U.N.O.

MAINTAIN 8'-6" MINIMUM HEADROOM CLEARANCE IN ALL GARAGE AREAS FROM ALL STRUCTURAL MEMBERS, MECHANICAL DCCTS, PLCMBING LINES, SPRINKLERS AND ELECTRICAL FIXTCRES AT ALL ACCESSIBLE PATHS OF TRAVEL.



2 Pool Section 2
3/16" = 1'-0"



1 Pool Section 1
3/16" = 1'-0"

TCA ARCHITECTS
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REVISION		DATE
1	1st PLAN CHECK CORRECTIONS	02.01.2013

CROWN CABOT
LUXCRY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRCST LLC

DRAWING CONTENTS
COURTYARD ENLARGED SECTIONS

FOR CONSTRCCTION

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THE CITY OF LAGUNA NIGUEL APPROVED

A6.12B

2010-089
JOB NUMBER

3/16" = 1'-0"
SCALE

ISSUED AS
4/15/2013
DATE

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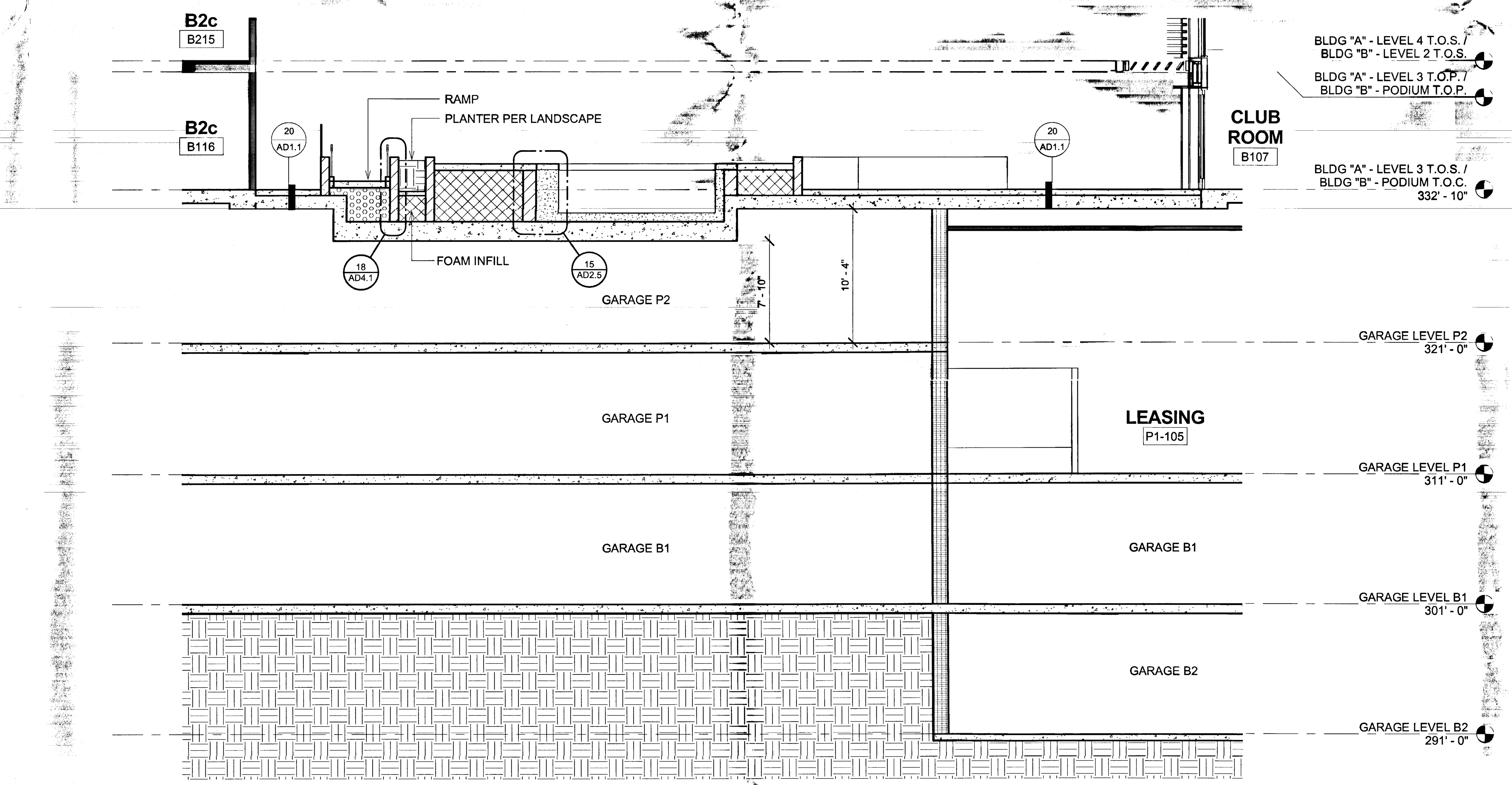
MAINTAIN MAXIMUM HEIGHT AT ALL AREAS:

MAINTAIN 7'-6" MINIMUM HEADROOM CLEARANCE IN ALL GARAGE AREAS FROM ALL STRUCTURAL MEMBERS, MECHANICAL DUCTS, PLUMBING LINES, SPRINKLERS AND ELECTRICAL FIXTURES, U.N.O.

MAINTAIN 8'-6" MINIMUM HEADROOM CLEARANCE IN ALL GARAGE AREAS FROM ALL STRUCTURAL MEMBERS, MECHANICAL DUCTS, PLUMBING LINES, SPRINKLERS AND ELECTRICAL FIXTURES AT ALL ACCESSIBLE PATHS OF TRAVEL.



1 Pool Section 3
3/16" = 1'-0"

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

REVISION | DATE
1 1st PLAN CHECK CORRECTIONS 02.01.2013

CROWN CABOT LUXURY APARTMENTS

25891 CROWN VALLEY, LAGUNA NIGUEL, CA

MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS

COURTYARD ENLARGED SECTIONS

FOR CONSTRCCTION

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THE CITY OF LAGUNA NIGUEL APPROVED

A6.12C

2010-089
JOB NUMBER

3/16" = 1'-0"
SCALE

ISSUED AS
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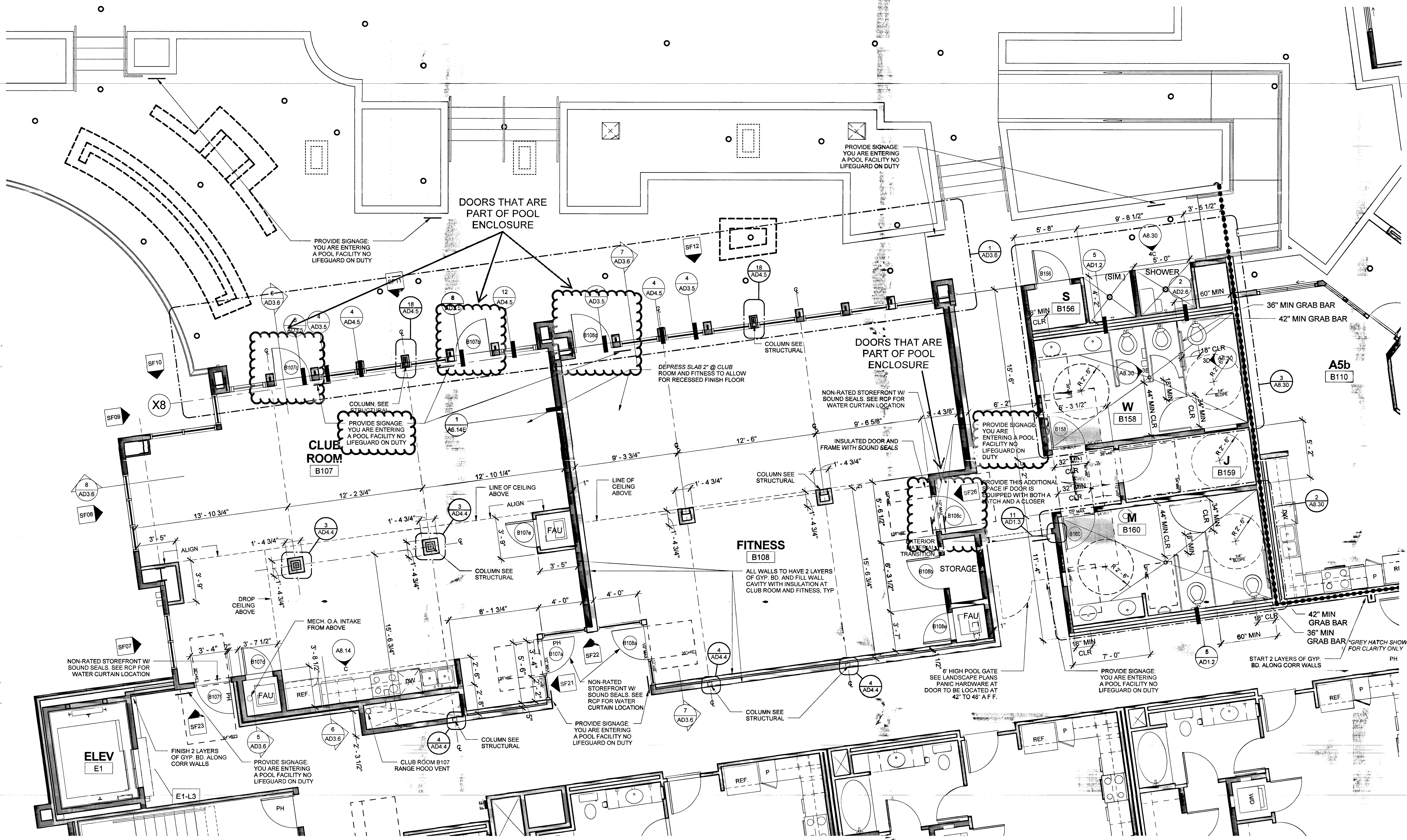
DATE



1 Club Room and Fitness Enlarged Plans
1/4" = 1'-0"

ABBREVIATIONS:

- E.D. EMERGENCY DRAIN. DISCHARGE TO FILTERRA OR FLOW THROUGH PLANTER SYSTEM PER MOULTON NIGUEL WATER DISTRICT. E.D. TO CONNECT TO STORM DRAIN SYSTEM.
- F.D. FLOOR DRAIN
- P.D. PLANTER DRAIN
- P.H. PANIC HARDWARE
- S.P.D. STAND PIPE DRAIN
- D.D. DECK DRAIN
- D.S. DOWN SPOUT
- O.F. OVERFLOW
- EXIT SIGN PER SECTION 1011 2010 CFC. SIGNS SHALL BE PERMANENTLY ILLUMINATED. FACE OF EXIT SIGN SHALL BE ILLUMINATED FROM AN EXTERNAL SOURCE AND SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT-CANDLES (54 lux). EXIT SIGN PLACEMENT SHALL BE SUCH THAT NO POINT IN AN ACCESS CORRIDOR OR EXIT PASSAGEWAY IS MORE THAN 100 FT OR THE LISTED VIEWING DISTANCE FOR THE SIGN, WHICHEVER IS LESS, FROM THE NEAREST VISIBLE EXIT SIGN. SHADED REGION INDICATES THE DIRECTION OF TRAVEL TO THE EXIT.
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- H.B. HOT WATER HOSE BIB AT TRASH ROOM

FLOOR PLAN LEGEND

- 1½" WOOD FURRING WALL
- 2½" WOOD FURRING WALL
- 2x4 WOOD STUD
- 2x6 WOOD STUD
- 2x4 WOOD STUDS LOW WALL
- 1½" METAL FURRING WALL
- 2½" METAL FURRING WALL
- 2x4 METAL STUD WALL
- 2x6 METAL STUD WALL
- CMU BLOCK WALL
- CONCRETE WALL
- SHEAR CONCRETE WALL
- SHAFT WALL

GENERAL NOTES:

1. THE WATER CLOSET COMPARTMENT SHALL BE EQUIPPED WITH A DOOR THAT HAS AN AUTOMATIC-CLOSING DEVICE, AND SHALL HAVE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 32" WHEN LOCATED AT THE END AND 34" WHEN LOCATED AT THE SIDE WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. (CBC 1127A.2.1)

2. THE INSIDE AND OUTSIDE OF THE COMPARTMENT DOOR SHALL BE EQUIPPED WITH A LOOP OR U-SHAPED HANDLE IMMEDIATELY BELOW THE LATCH. THE LATCH SHALL BE FLIP-OVER STYLE, SLIDING OR OTHER HARDWARE NOT REQUIRING THE USER TO GRASP OR TWIST. (CBC 1127A.2.1)

TYPICAL ACCESSIBILITY NOTES

DOORS
1. ALL FIRST FLOOR DOORS SHALL COMPLY WITH 2010 CBC SECTION 1133B.
SUB-SECTION 1133B.2 DOORS:
A. REQUIRED EXIT DOORWAYS SHALL PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET AND NOT LESS THAN 6 FEET – 8 INCHES IN HEIGHT.
B. SWINGING DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES.
C. PASSAGE SWINGING DOOR SHALL PROVIDE A NET CLEAR OPENING WIDTH OF NOT LESS THAN 32", MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM THE CLOSED POSITION.
SUB-SECTION 1133B.2.4.1 THRESHOLDS:
A. THRESHOLDS SHALL BE NO HIGHER THAN 1/2" AND A SLOPE LESS THAN 50%.
SUB-SECTION 1133B.2.4.2 MANEUVERING CLEARANCES:
A. A LEVEL AREA OF 60" IN LENGTH IN THE DIRECTION OF THE DOOR SWING AND A LEVEL AREA OF 48" IN LENGTH IN THE DIRECTION OPPOSITE THE DOOR SWING SHALL BE PROVIDED AT RIGHT ANGLES TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION.
B. 18" CLEAR ON STRIKE SIDE OF DOOR ON INTERIOR – 24" CLEAR ON STRIKE SIDE OF DOOR ON EXTERIOR.
C. PROVIDE 12" CLEAR PAST THE STRIKE EDGE OF THE DOOR IF IT HAS BOTH A LATCH AND A CLOSER.
SUB-SECTION 1133B.2.5 DOOR OPENING FORCE:
A. MAXIMUM EFFORT SHALL NOT EXCEED 5 LBS FOR DOORS.
SUB-SECTION 1133B.2.1 LOCKS OR LATCH:
A. SHALL COMPLY WITH CHAPTER 10 SECTION 1008.
SUB-SECTION 1133B.2.5.2 DOOR HARDWARE:
A. HARDWARE SHALL BE CENTERED BETWEEN 30" AND 44" ABOVE THE FLOOR AND OPERATED BY A SINGLE EFFORT BY LEVER HARDWARE.
SUB-SECTION 1133B.2.6 SMOOTH SURFACE:
A. THE BOTTOM 10" OF THE DOOR SHALL HAVE A SMOOTH SURFACE.

BATHROOMS
1. ALL BATHING / TOILET FACILITIES SHALL COMPLY WITH 2010 CBC SECTION 1115B.
SUB-SECTION 1115B.3.1 MULTIPLE-ACCOMMODATION FACILITIES:
A. 60" DIAMETER CLEAR SPACE MEASURED TO A HEIGHT OF 27" FROM THE FLOOR IS REQUIRED WITHIN THE ROOM. EXCEPT FOR THE DOOR TO THE ACCESSIBLE WATER CLOSET COMPARTMENT, A DOOR IN ANY POSITION MAY NOT ENCROACH INTO THIS CLEAR SPACE BY MORE THAN 12".
B. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED FOR ANY FIXTURE. (PER CBC 1127A.2.1)
C. WATER CLOSET COMPARTMENT:
i. SHALL BE A MINIMUM OF 60" WIDE.
ii. A COMPARTMENT WITH A SIDE-OPENING DOOR REQUIRES A MINIMUM OF 60" WIDE AND 60" DEEP MANEUVERING SPACE IN FRONT OF THE WATER CLOSET.
iii. THE COMPARTMENT DOOR SHALL HAVE A CLEAR, UNOBSTRUCTED OPENING WIDTH OF 34" WITH THE DOOR AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION.
iv. A LEVEL AREA OF 60" IN LENGTH IN THE DIRECTION OF THE DOOR SWING, EXTENDED 18" PAST THE STRIKE EDGE OF THE DOOR, SHALL BE PROVIDED. A LEVEL AREA OF 48" IN LENGTH IN THE DIRECTION OPPOSITE THE DOOR SWING, EXTENDED 12" PAST THE STRIKE EDGE OF THE DOOR, SHALL BE PROVIDED.
v. A CLEAR, UNOBSTRUCTED ACCESS OF NOT LESS THAN 44" SHALL BE PROVIDED TO THE COMPARTMENT.
vi. COMPARTMENT DOOR SHALL BE EQUIPPED WITH WITH A SELF-CLOSING DEVICE (CBC SECTION 1127A.2.1).
D. TOILET ROOM FLOORS SHALL HAVE A SLIP RESISTANT SURFACE PER SECTION 1124B.
SUB-SECTION 1115B.3.2 SINGLE-ACCOMMODATION FACILITIES:
A. THERE SHALL BE IN THE ROOM A CLEAR FLOOR SPACE OF AT LEAST 60 INCHES IN DIAMETER, OR A T-SHAPED SPACE COMPLYING WITH FIGURE 11B-12 (A) AND (B) CBC.
B. DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE REQUIRED FOR ANY FIXTURE.
C. A MINIMUM 60 INCHES WIDE AND 48 INCHES DEEP MANEUVERING SPACE SHALL BE PROVIDED IN FRONT OF THE WATER CLOSET.
D. ALL DOORS, FIXTURES, AND CONTROLS SHALL BE ON AN ACCESSIBLE ROUTE. THE MINIMUM CLEAR WIDTH OF AN ACCESSIBLE ROUTE SHALL BE 36 INCHES EXCEPT AT DOORS.
SUB-SECTION 1115B.4.1 ACCESSIBLE WATER CLOSETS:
A. THE CENTERLINE OF THE WATER CLOSET SHALL BE 18" FROM THE SIDE WALL OR PARTITION. ON THE OTHER SIDE, PROVIDE A MINIMUM OF 28" WIDE CLEAR FLOOR SPACE TO A FIXTURE OR 32" WIDE CLEAR FLOOR SPACE TO A WALL OR PARTITION. CLEAR FLOOR SPACE SHALL EXTEND FROM THE REAR WALL TO THE FRONT OF THE WATER CLOSET.
B. WATER CLOSET REQUIRES A CLEAR FLOOR SPACE OF 60" MINIMUM PERPENDICULAR FROM THE SIDE WALL CLOSEST TO THE WATER CLOSET AND 56" MINIMUM PERPENDICULAR FROM THE REAR WALL. IN ADDITION, A MINIMUM 60" WIDE BY 36" DEEP MANEUVERING SPACE TO BE PROVIDED IN FRONT OF THE CLEAR FLOOR SPACE AT THE COMPARTMENT DOOR.
C. GRAB BARS SHALL BE CENTERED 33" ABOVE THE FLOOR. SIDE WALL GRAB BAR SHALL BE 42" LONG MINIMUM, LOCATED 12" MAXIMUM FROM THE REAR WALL AND EXTEND 54" MINIMUM FROM THE REAR WALL. THE FRONT END SHALL BE 24" MINIMUM IN FRONT OF THE WATER CLOSET. REAR WALL GRAB BAR SHALL BE 36" LONG MINIMUM AND EXTEND FROM THE CENTERLINE OF THE WATER CLOSET 12" MINIMUM ON ONE SIDE AND 24" MINIMUM OF THE OTHER SIDE.
D. THE HEIGHT OF ACCESSIBLE WATER CLOSETS SHALL BE A MINIMUM OF 17" AND A MAXIMUM OF 19" MEASURED TO THE TOP OF A MAXIMUM 2" HIGH TOILET SEAT.
E. WATER CLOSET CONTROLS SHALL BE MOUNTED ON THE SIDE OF THE TOILET AREA AND NO MORE THE 44" ABOVE THE FLOOR. THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE.
SUB-SECTION 1115B.4.2 ACCESSIBLE URINALS:
A. AT LEAST ONE URINAL SHALL HAVE A 30" x 48" CLEAR FLOOR SPACE IN FRONT OF THE URINAL TO ALLOW FORWARD APPROACH.
B. THE CONTROL MECHANISM IS TO BE LOCATED SO AS TO NOT EXCEED 44" ABOVE THE FLOOR.
SUB-SECTION 1115B.4.3 ACCESSIBLE LAVATORIES:
A. LAVATORIES SHALL BE INSTALLED 18" HORIZONTALLY FROM AN ADJOINING WALL OR PARTITION. THE TOP OF THE FIXTURE RIM OR COUNTER SHALL BE A MAXIMUM OF 34" ABOVE THE FINISH FLOOR AND WITH VERTICAL CLEARANCE MEASURED FROM THE BOTTOM OF THE APRON OR OUTSIDE BOTTOM EDGE OF THE LAVATORY OF 29" REDUCING TO 27" AT A POINT LOCATED 8" BACK FROM THE FRONT EDGE. A MINIMUM 9" HIGH TOE CLEARANCE EXTENDING BACK TOWARD THE BACK WALL TO A DISTANCE OF NO MORE THAN 6" SC. SHOWER CONTROLS SHALL BE OPERATED WITH ONE HAND, THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. THE CENTERLINE OF THE CONTROLS SHALL BE 39" TO 41" ABOVE THE SHOWER FLOOR. CONTROLS SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THE CENTERLINE OF THE CONTROLS IS WITHIN 19" AND 27" FROM THE SEAT WALL.
B. A CLEAR FLOOR SPACE OF AT LEAST 30" x 48" SHALL BE CENTERED ON LAVATORIES.
C. HOT WATER AND DRAIN PIPES EXPOSED UNDER THE LAVATORY SHALL BE INSULATED OR COVERED.
D. LAVATORY CONTROLS SHALL BE OPERATED WITH ONE HAND, AND THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. LEVER OR PUSH OPERATED ARE EXAMPLES OF ACCEPTABLE DESIGNS.
SUB-SECTION 1115B.4.4 ACCESSIBLE SHOWERS:
A. ROLL-IN SHOWER 60" MINIMUM CLEAR WIDTH AND 30" MINIMUM CLEAR DEPTH. FULL OPENING WIDTH TO BE ON THE LONG SIDE.
B. THRESHOLDS IN ROLL-IN TYPE SHOWERS SHALL BE 1/2" MAXIMUM.
C. SHOWER CONTROLS SHALL BE OPERATED WITH ONE HAND; THE FORCE REQUIREMENT SHALL BE NO GREATER THAN 5 LBS OF FORCE. THE CENTERLINE OF THE CONTROLS SHALL BE 39" TO 41" ABOVE THE SHOWER FLOOR. CONTROLS SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THE CENTERLINE OF THE CONTROLS IS WITHIN 19" AND 27" FROM THE SEAT WALL.
D. A FLEXIBLE HAND-HELD SHOWER 60" MINIMUM HOSE LENGTH OF 60" THAT CAN BE USED AS A FIXED SHOWER OR HAND-HELD SHOWER SHALL BE PROVIDED. THE TOP OF THE MOUNTING BRACKET SHALL BE AT A MAXIMUM HEIGHT OF 48" ABOVE THE SHOWER FLOOR. THE UNIT SHALL BE LOCATED ON THE BACK WALL ADJACENT TO THE SEAT SO THAT THE CENTERLINE SHALL BE NO MORE THAN 27" FROM THE SEAT WALL.
E. THE MAXIMUM SLOPE OF THE FLOOR SHALL NOT EXCEED 2% IN ANY DIRECTION. DRAIN GRATE OPENINGS SHALL BE A MAXIMUM OF 1/4" AND BE FLUSH WITH THE FLOOR SURFACE.
F. A FOLDING SEAT IS TO BE MOUNTED 18" ABOVE THE FLOOR, WITH A MINIMUM SPACE OF 1" AND A MAXIMUM SPACE OF 1-1/2" BETWEEN THE EDGE OF THE SEAT AND ANY WALL. WHEN FOLDED, THE SEAT SHALL NOT EXTEND MORE THAN 6" FROM THE MOUNTING WALL.
G. AN L-SHAPED GRAB BAR SHALL BE MOUNTED A MINIMUM OF 33" AND A MAXIMUM OF 36" ABOVE THE SHOWER FLOOR ON WALLS ADJACENT AND OPPOSITE THE SEAT. GRAB BAR SHALL NOT EXTEND INTO THAT PORTION OF THE WALL OVER THE SEAT.
H. GRAB BARS SHALL BE NOT LESS THAN 1-1/4" AND NOT MORE THAN 1-1/2" IN DIAMETER. STRUCTURAL STRENGTH ACCORDING TO CBC SECTION 1127.A.4.4.
SUB-SECTION 1115B.8 ACCESSORIES:
A. MIRRORS SHALL BE MOUNTED WITH THE BOTTOM EDGE OF THE REFLECTIVE SURFACE NO HIGHER THAN 40" FROM THE FINISH FLOOR.
B. TOWEL, SANITARY NAPKINS, WASTE RECEPTACLES, DISPENSERS, AND OTHER EQUIPMENT AND CONTROLS SHALL BE MOUNTED WITH OPERABLE PARTS WITHIN 40" OF THE FINISHED FLOOR AND ON AN ACCESSIBLE ROUTE.
C. TOILET TISSUE DISPENSERS SHALL BE LOCATED ON THE WALL WITHIN 12" OF THE FRONT EDGE OF THE TOILET SEAT, MOUNTED AT A MINIMUM HEIGHT OF 19", AND 36" MAXIMUM TO THE FAR EDGE FROM THE REAR WALL.
SUB-SECTION 1117B.1 ACCESSIBLE DRINKING FOUNTAINS:
A. PROVIDE A "HI-LOW" DRINKING FOUNTAINS. CENTER A 30" x 48" CLEAR FLOOR SPACE ON THE "LOW" FOUNTAIN FIXTURE TO ALLOW FORWARD APPROACH.

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

REVISION	DATE	REMARKS
20	06/11/2014	ASI #18: COMMON AREA FAU & STOREFRONT
10	05/05/2014	ASI #9: ACCESSIBILITY REVISIONS
5		Miscellaneous Architectural / Third Party Plan Check / ASI #3

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
CLUB ROOM AND FITNESS ENLARGED PLANS

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

A6.15A

2010-089
JOB NUMBER
As indicated
SCALE
ISSUED AS
6/23/2014
DATE

COMMON AREA DOOR SCHEDULES AS1						
	DOOR	SIZE				
Mark	TYPE	Width	Height	Thickness	Fire Rating	Type Comments
GARAGE LEVEL B2						
B2-02	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-03	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-04	D	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	
B2-06	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-07a	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-07b	G	9' - 0"	7' - 0"	0' - 1 3/4"		ROLL-UP DOOR
B2-08	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-09	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-10	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-11	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-12	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-13	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-14	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-15	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B2-16	D	8' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	TRASH ROOM DOOR
S2-B2	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S3-B2	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S6-B2a	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S6-B2b	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
GARAGE LEVEL B1						
B1-03	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-04	A	3' - 0"	7' - 0"	0' - 1 3/4"		
B1-05	D	8' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	TRASH ROOM DOOR
B1-06	D	8' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	TRASH ROOM DOOR
B1-07	D	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	
B1-08	H	3' - 0"	5' - 0"	0' - 1 3/4"		5' HIGH GATE
B1-09a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-09b	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-11	D	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	
B1-13	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
B1-14a	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR
B1-14b	A	3' - 0"	7' - 0"	0' - 1 3/4"		
B1-15	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR
B1-117a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	DOOR TO EXTERIOR
B1-117b	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-117c	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-117d	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-117e	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-117f	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
E3-B1	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD
S2-B1a	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-B1b	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-B1c	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-B1d	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S3-B1	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S5-B1	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S6-B1	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
GARAGE LEVEL P1						
P1-01	D	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	
P1-02	A	3' - 0"	7' - 0"	0' - 1 3/4"		DOOR TO EXTERIOR
P1-03	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-05	N	3' - 0"	7' - 0"	0' - 1 3/4"		GATE WITH CLOSER
P1-105a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105b	E	6' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR
P1-105h	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105j	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105k	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105m	I	2' - 6"	4' - 0"	0' - 1 3/8"	20 MIN	
P1-G01	F	31' - 0"				CUSTOM GARAGE GATE; PER OWNER
P1-G02	F	24' - 8"	8' - 6"	0' - 2"		CUSTOM GARAGE GATE; PER OWNER
S1-P1a	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S5-P1a	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S5-P1b	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
BLDG "A" - PODIUM T.O.C.						
A131	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A132a	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A132b	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A132c	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A132d	B	5' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A134	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A135	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
E2-P1	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD
E3-P1	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD
P1-105c	E	7' - 0"	8' - 8"	0' - 1 3/4"		STOREFRONT DOOR
P1-105d	C	3' - 0"	8' - 0"	0' - 1 3/4"		STOREFRONT DOOR
P1-105e	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105f	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105g	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-105n	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P1-111	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-115	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-116	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P1-117	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
S1-P1b	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-P1	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-P11	A	3' - 0"	7' - 0"	0' - 1 3/4"	180 MIN	LOCATED IN 3HR WALL
S4-01a	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S4-01b	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S6-01	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
GARAGE LEVEL P2						
P2-02	A	3' - 0"	7' - 0"	0' - 1 3/4"		
P2-06	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P2-07a	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P2-08	D	6' - 0"	7' - 0"	0' - 1 3/4"		
P2-10	L	3' - 0"	7' - 0"	0' - 2"		LOUVERED STORAGE DOOR
S2-01c	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S5-P2	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
BLDG "A" - LEVEL 2 T.O.S. / T.O.C.						
A231	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A233a	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A233b	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A233c	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A233d	B	5' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A234	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A236	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B1-05e	F	24' - 8"	8' - 6"	0' - 2"		CUSTOM GARAGE GATE; PER OWNER
E2-P2	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD

COMMON AREA DOOR SCHEDULES AS1						
	DOOR	SIZE				
Mark	TYPE	Width	Height	Thickness	Fire Rating	Type Comments
E3-L2	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD
P2-04	D	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	
P2-05	H	3' - 0"	5' - 0"	0' - 1 3/4"		5' HIGH GATE
P2-11a	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR
P2-11b	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR
P2-200	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P2-206	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
P2-208	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
S1-P2	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-P2	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-P12	A	3' - 0"	7' - 0"	0' - 1 3/4"	180 MIN	LOCATED IN 3HR WALL
S4-P2	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S6-02	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
BLDG "A" - LEVEL 3 T.O.S. / BLDG "B" - PODIUM T.O.C.						
A331	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A333	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A335	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
A337a	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A337b	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A337c	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
A337d	B	5' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
B107a	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR, 1" INSULATED GLASS
B107b	C	3' - 1"	7' - 8"	0' - 1 3/4"		STOREFRONT DOOR, SELF-CLOSING, SELF-LATCHING, SELF-LOCKING
B107c	C	3' - 1"	7' - 8"	0' - 1 3/4"		STOREFRONT DOOR, SELF-CLOSING, SELF-LATCHING, SELF-LOCKING
B107d	I	2' - 6"	4' - 6"	0' - 1 3/4"		
B107e	I	2' - 6"	4' - 6"	0' - 1 3/4"		
B107f	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR, 1" INSULATED GLASS
B108a	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR, 1" INSULATED GLASS
B108b	A	3' - 0"	7' - 0"	0' - 1 3/4"		
B108c	C	3' - 0"	7' - 0"	0' - 1 3/4"		STOREFRONT DOOR, SELF-CLOSING, SELF-LATCHING, SELF-LOCKING, 1" INSULATED GLASS
B108d	C	3' - 2"	7' - 6"	0' - 1 3/4"		STOREFRONT DOOR, SELF-CLOSING, SELF-LATCHING, SELF-LOCKING
B108e	I	2' - 6"	4' - 6"	0' - 1 3/4"		
B138	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B140	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B141	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B142	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B143	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B144	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B145	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B146		6' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B147a	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
B147b	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
B147c	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
B147d	B	6' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	FIRE DOOR ON MAGNETIC HOLD OPEN
B148	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B149	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B150	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B151	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B152	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B153	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B154	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B156	A	3' - 0"	7' - 0"	0' - 1 3/4"		DOOR TO EXTERIOR
B158	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B159	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
B160	A	3' - 0"	7' - 0"	0' - 1 3/4"	20 MIN	
E2-L3	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD
E3-L3	J	4' - 0"	7' - 0"	0' - 1 3/4"		ELEVATOR SMOKE DOOR ON MAGNETIC HOLD
S1-01	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S2-01	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S4-01	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S5-01	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S6-03	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN
S7-01	A	3' - 0"	7' - 0"	0' - 1 3/4"	90 MIN	STAIR DOOR PER PLAN

ELEVATOR ROLL DOWN SMOKE DOOR SCHEDULE		
Mark	Width	Type Comments
BLDG "A" - PODIUM T.O.C.		
E1-P1	4'-0"	SMOKE DOOR
BLDG "A" - LEVEL 2 T.O.S. / T.O.C.		
E1-L2	4'-0"	SMOKE DOOR
BLDG "A" - LEVEL 3 T.O.S. / BLDG "B" - PODIUM T.O.C.		
E1-L3	4'-0"	SMOKE DOOR
E4-L3	4'-0"	SMOKE DOOR
BLDG "A" - LEVEL 4 T.O.S. / BLDG "B" - LEVEL 2 T.O.S.		
E1-L4	4'-0"	SMOKE DOOR
E4-L4	4'-0"	SMOKE DOOR
BLDG "B" - LEVEL 3 T.O.S.		
E1-L5	4'-0"	SMOKE DOOR
E4-L5	4'-0"	SMOKE DOOR
BLDG "B" - LEVEL 4 T.O.S.		
E1-L6	4'-0"	SMOKE DOOR
E4-L6	4'-0"	SMOKE DOOR

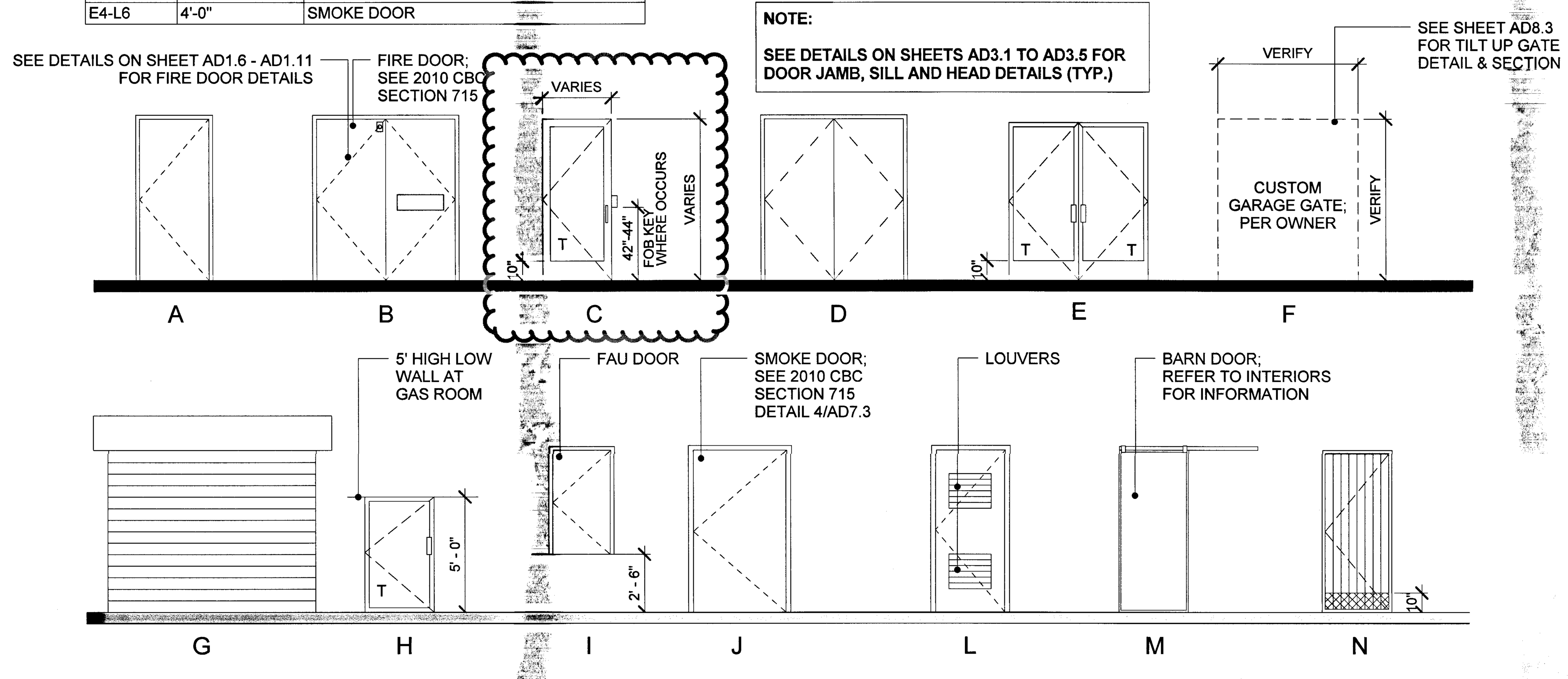
NOTE:

ELEVATOR SMOKE DOORS SHALL COMPLY WITH ALL LOCAL CITY CODES, FIRE DEPARTMENT STANDARDS AND PER 2010 CBC SECTION 708.14.1 ELEVATOR LOBBY. INSTALL ROLL DOWN SMOKE DOOR PER MANUFACTURER'S *SPECIFICATIONS, VERIFY DOOR HEIGHT AT ALL CONDITIONS.* COORDINATE WITH LIGHTING FOR HEADROOM CLEARANCES.

REFER TO DETAIL 4/AD7.3 FOR SMOKE DOOR DETAILS

NOTE:

SEE DETAILS ON SHEETS AD3.1 TO AD3.5 FOR DOOR JAMB, SILL AND HEAD DETAILS (TYP.)



COMMON AREA DOOR LEGEND
1/4" = 1'-0"

DOOR NOTES:

1. ALL DOORS AND HARDWARE SHALL COMPLY WITH ACCESSIBILITY REQUIREMENTS AND LOCAL SECURITY ORDINANCES.

2. ALL EXTERIOR EXIT DOORS SHALL COMPLY WITH ALL LOCAL SECURITY AND FIRE DEPARTMENT STANDARDS. ALL EXTERIOR SWINGING DOORS SHALL HAVE NON-REMOVABLE PIN PER CALIFORNIA BUILDING CODE SECTION 1003.3.3.9.

3. ALL RATED DOOR CONSTRUCTION AND HARDWARE SHALL CONFORM TO THE REQUIREMENTS OF N.F.P.A. 80 AND 101, CALIFORNIA BUILDING CODE STANDARD NUMBER 7-2, AND CALIFORNIA BUILDING CODE SECTION 1004.3.4.3.2.1.

4. THE USE OF A LOCKING SYSTEM WHICH CONSISTS OF A DEADLOCKING LATCH OPERATED BY A DOOR KNOB AND A DEADBOLT OPERATED BY A NON-REMOVABLE THUMB TURN WHICH IS INDEPENDENT OF THE DEADLOCKING LATCH AND WHICH MUST BE SEPARATELY OPERATED, SHALL NOT BE CONSIDERED AS A SYSTEM WHICH REQUIRES SPECIAL KNOWLEDGE OR EFFORT WHEN USED IN DWELLING UNITS. THE DOOR KNOB AND THE THUMB TURN WHICH OPERATES DEADBOLTS SHALL NOT BE SEPARATED BY MORE THAN 8 INCHES.

5. ALL CYLINDER LOCKS SHALL BE PROVIDED WITH CYLINDER GUARDS.

6. ALL EXTERIOR DOORS AT UTILITY ROOMS SHALL HAVE A CHAIN STOP.

7. CONTRACTOR, DOOR SUPPLIER, GLASS MANUFACTURER, AND INSTALLER WILL PROVIDE SAFETY GLAZING AS REQUIRED BY CALIFORNIA BUILDING CODE SECTION 2406 AND ALL OTHER FEDERAL, STATE, AND LOCAL LAWS, CODES, ORDINANCES, AND REGULATIONS, WHETHER OR NOT INDICATED ON THE PLANS.

8. ALL RATED DOORS SHALL BE SELF-CLOSING AND PROVIDED WITH SMOKE GASKETS, PER CALIFORNIA BUILDING CODE SECTION 715.

9. ALL DOOR JAMB SHALL BE 4", UNLESS NOTED OTHERWISE.

10. UNDERCUT ALL BEDROOM & BONUS ROOM DOORS PER MECHANICAL PLANS.

11. ALL MECHANICAL ROOM DOORS TO BE GASKETED.

12. SEE BUILDING PLAN SHEETS A1 SERIES FOR PANIC HARDWARE.

13. UNITS WITH GARAGE ACCESS. THE DOOR BETWEEN THE GARAGE AND THE UNITS HAVING ACCESS (i.e. THE DOOR AT THE GARAGE) SHOULD HAVE A MINIMUM DOOR ASSEMBLY RATING (DOOR, SEALS & HARDWARE) OF STC 33.

WINDOWS & TERRACE DOORS STC SCHEDULE

*ACOUSTICAL INFORMATION WAS PROVIDED BY VENEKLASEN ASSOCIATES AS REQUESTED BY MILL CREEK RESIDENTIAL TRUST LLC.

1. WINDOWS AND UNITS THAT OVERLOOK SITE ACTIVITIES (RECREATION AREAS) ARE SUGGESTED TO HAVE A MINIMUM STC RATING OF 31. THIS WOULD INCLUDE UNITS SURROUNDING THE POOL AREA AT ALL LEVELS AND UNITS OVERLOOKING THE DRIVE ENTRY COURTYARD AT ALL LEVELS. VA WOULD ALSO SUGGEST THIS RATING BE USED FOR ANY WINDOWS THAT MAY BE AT THE MEZZANINE LEVEL THAT FACE THE ROOFTOP EQUIPMENT.

2. MINIMUM STC RATING. THE MINIMUM STC RATING OF THE EXTERIOR WINDOWS AND DOOR ASSEMBLIES IS SUGGESTED TO BE STC 29 FOR ALL REMAINING AREAS.

Veneklasen Associates

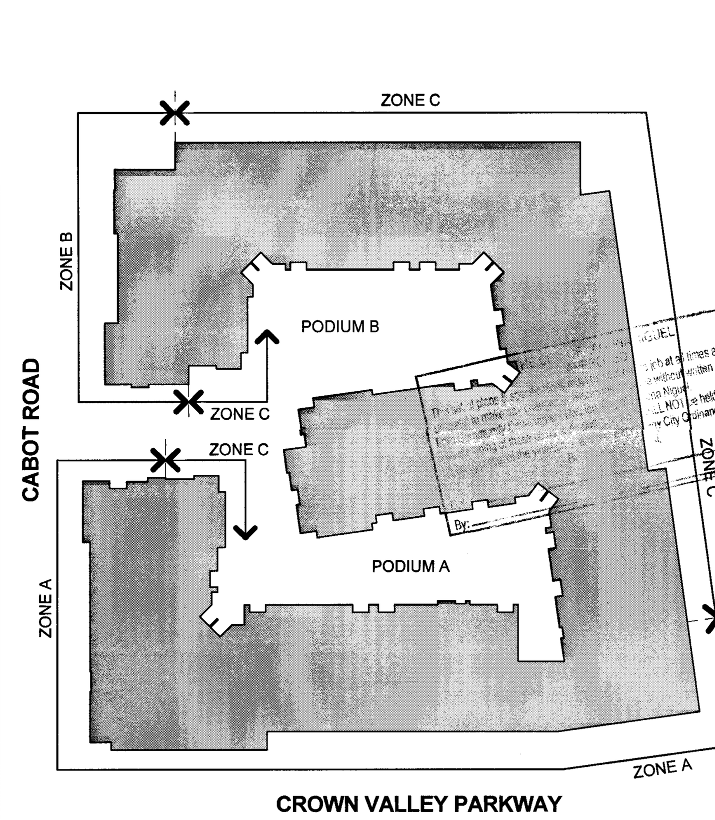
Mill Creek Apartments - Exterior Envelope Acoustical Design
January 10, 2012
Page 7

Table 4 – Example Glazing Assembly Descriptions

Assembly	Assembly Rating	Thickness	Typical Glazing Construction*
Window	STC 31	1" dual	1/8" lite, 3/4" airspace, 1/8" lite
	STC 33	1" dual	3/16" lite, 11/16" airspace, 1/8" lite

Table 5 – Calculated Future Interior and Exterior CNEL Noise Levels and Their Acceptability

Location	Future Exterior Noise Level, CNEL	Window	Balcony Door	Interior Noise Level, CNEL	Interior Noise Level Criteria, CNEL	Conclusion
Zone A	72	STC 33	STC 33	45	≤ 45	Acceptable
Zone B	65-70	STC 31	STC 31	45	≤ 45	Acceptable
Zone C	60-64	Typical construction practices are sufficient to satisfy interior noise criterion. STC 29, minimum, recommended, not required				
Remaining Units	< 60	Typical construction practices are sufficient to satisfy interior noise criterion. STC 29, minimum, recommended, not required				



TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

REVISION	REMARKS
20	ASI #18 : COMMON AREA FAU & STOREFRONT 06/11/2014
10	ASI #8 : ACCESSIBILITY REVISIONS 05/05/2014
5	Miscellaneous Architectural / Third Party Plan Check / ASI #3

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
DOOR SCHEDULES

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

AS1.10

2010-089
JOB NUMBER
1/4" = 1'-0"
SCALE

ISSUED AS
6/23/2014
DATE

RESTROOMS:

Floors shall have a hard nonabsorbent surface: Ceramic Tile
Floors shall be slip-resistant and shall be sloped not less than one quarter (1/4) inch per foot to floor drains. The floor shall be continuously coved up the wall at least five (5) inches; the cove to be an integral part of the floor. (3/8" cove radius)

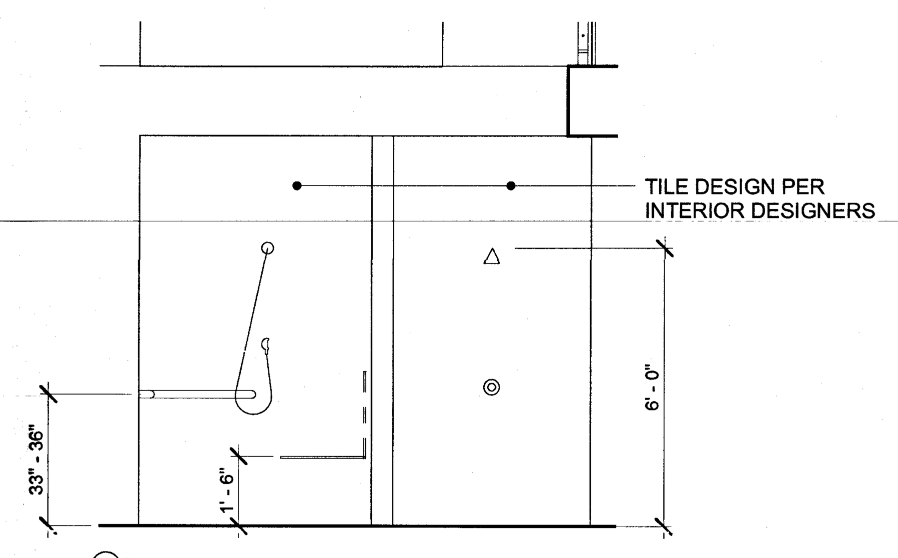
Walls will be smooth, nonabsorbent and readily cleanable: Ceramic Tile/Wainscot and/or eggshell/semi-gloss paint to ceiling.

Ceiling will be smooth, moisture resistant.

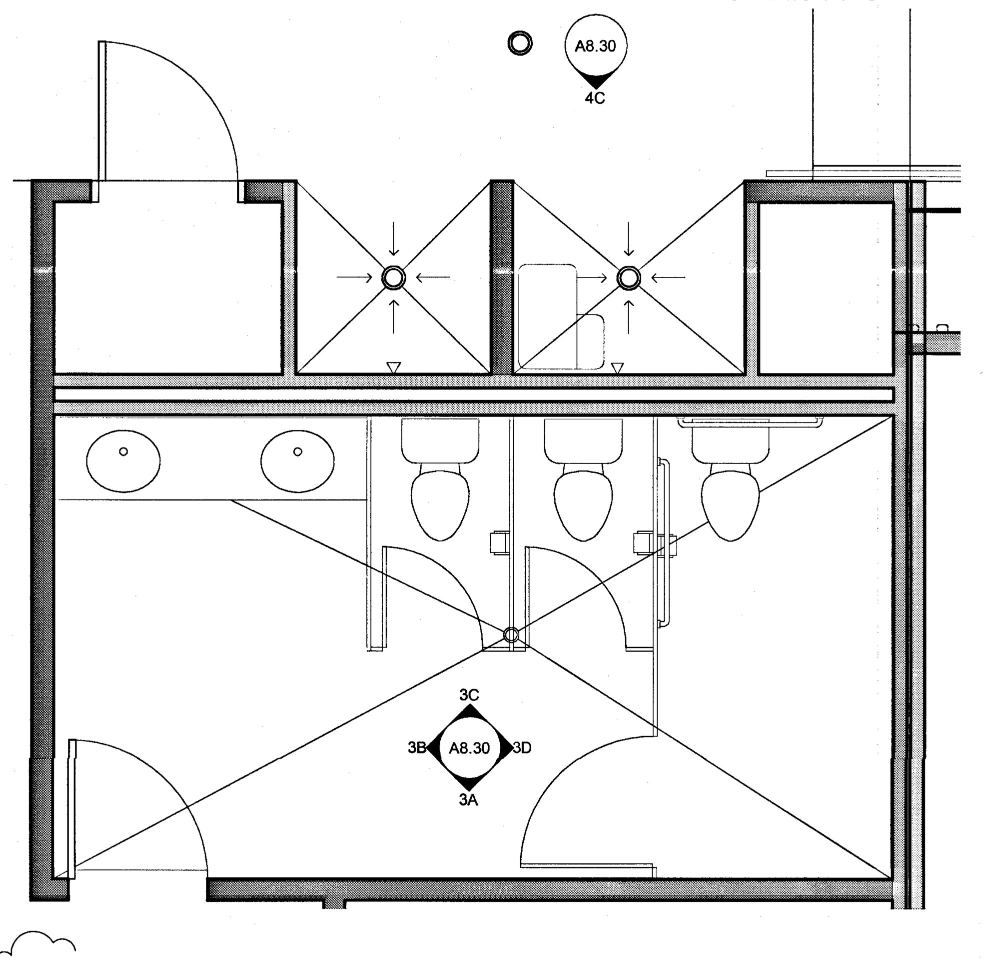
SHOWERS

Shower floors shall be slip-resistant and shall be sloped not less than one quarter (1/4) inch per foot to floor drains. The floor shall be continuously coved up the wall at least five (5) inches; the cove to be an integral part of the floor. (3/8" cove radius)

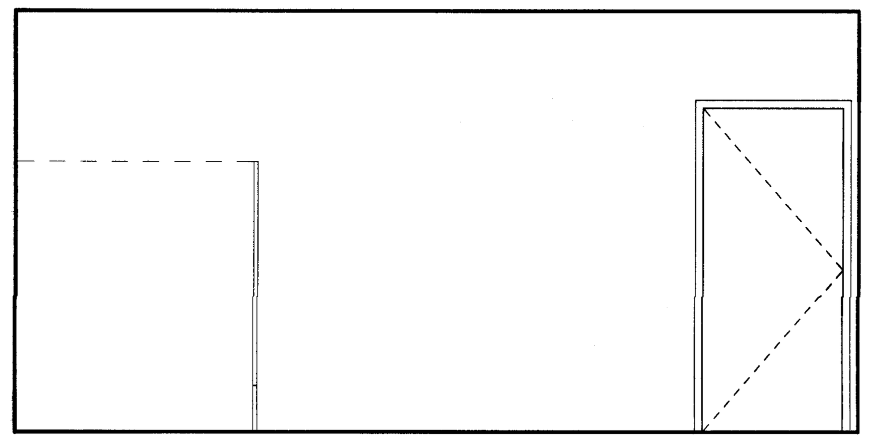
Bather showers and lavatories are to be provided with hot and cold running water. Hot water shall be provided by a tank type water heater and limited to 110° maximum not adjustable by bather. Soap is to be provided in a permanently installed dispenser.



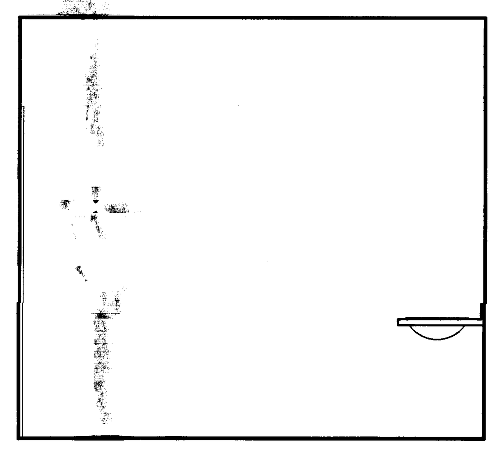
4C SHOWER ELEVATION
3/8" = 1'-0"
*SEE SHEET AD10.1 FOR INFORMATION NOT SHOWN



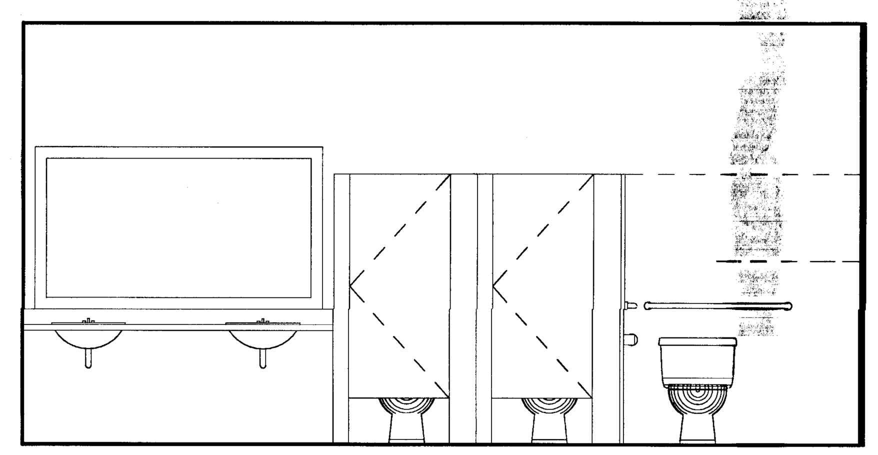
3 POOL RESTROOM - WOMENS + PUBLIC SHOWER
3/8" = 1'-0"
SEE SHEET A6.15A & 1/-- FOR INFORMATION NOT SHOWN



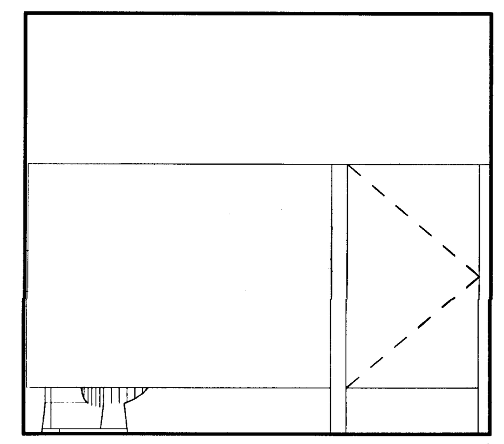
3A INTERIOR ELEVATION
3/8" = 1'-0"



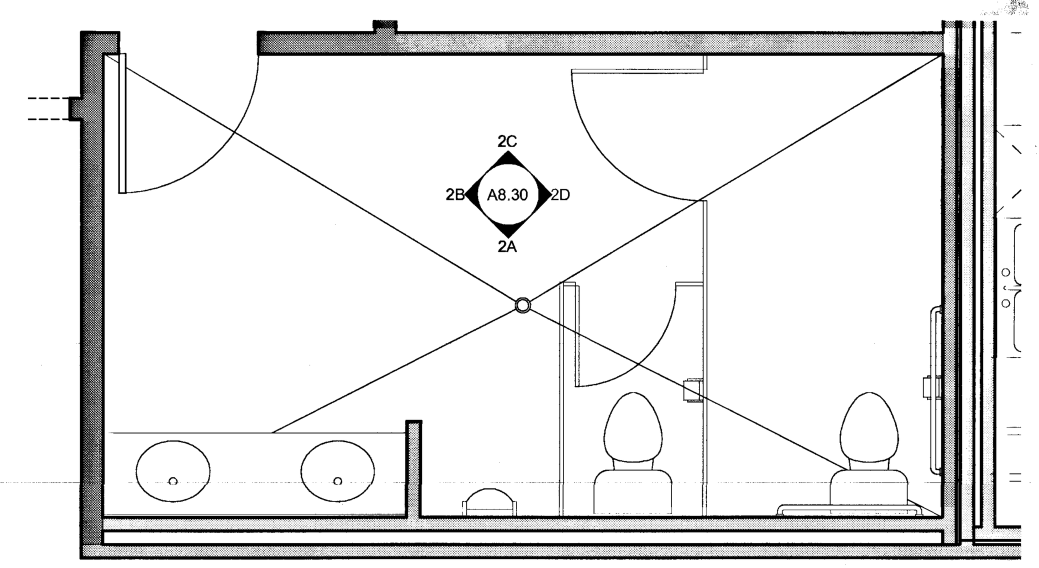
3B INTERIOR ELEVATION
3/8" = 1'-0"



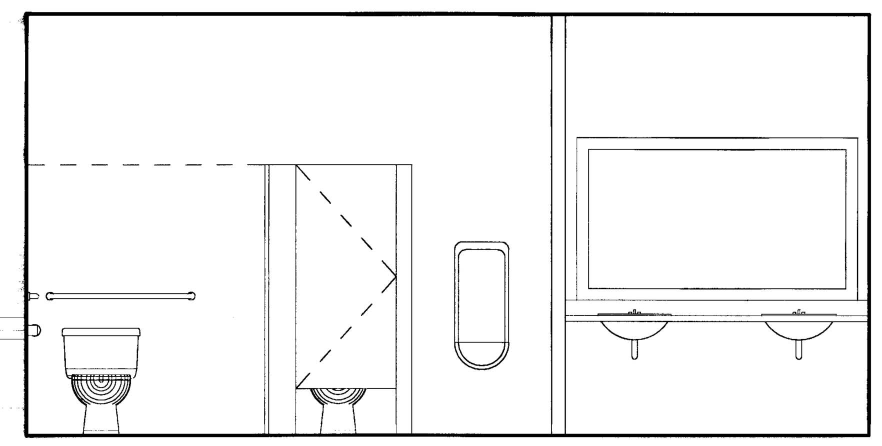
3C INTERIOR ELEVATION
3/8" = 1'-0"



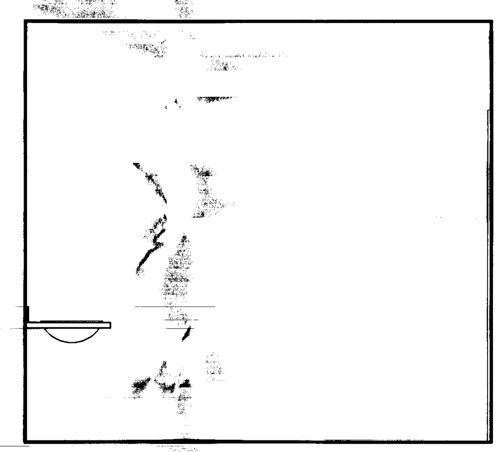
3D INTERIOR ELEVATION
3/8" = 1'-0"



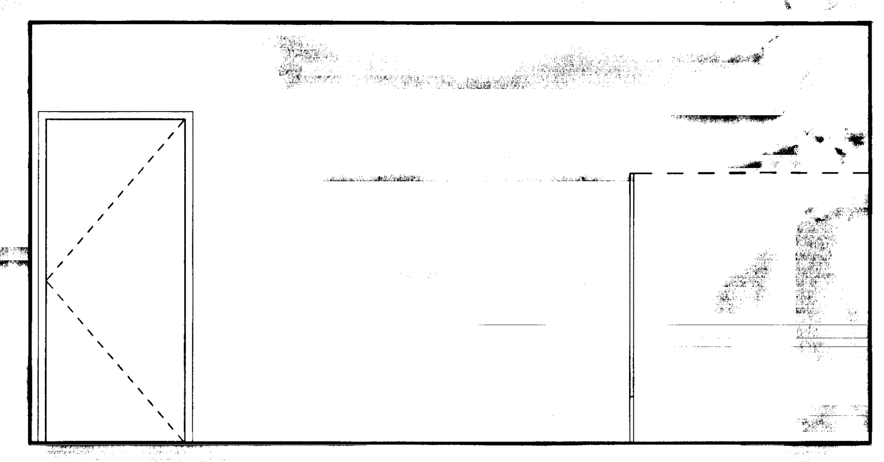
2 POOL RESTROOM - MENS
3/8" = 1'-0"
SEE SHEET A6.15A & 1/-- FOR INFORMATION NOT SHOWN



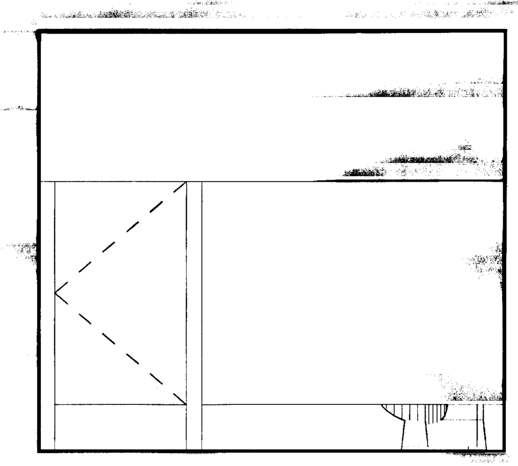
2A INTERIOR ELEVATION
3/8" = 1'-0"



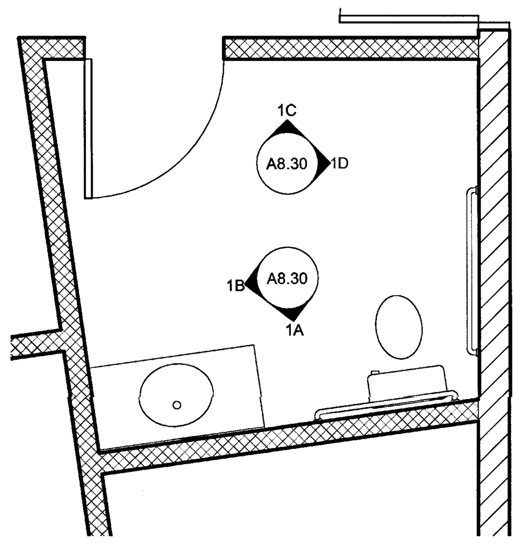
2B INTERIOR ELEVATION
3/8" = 1'-0"



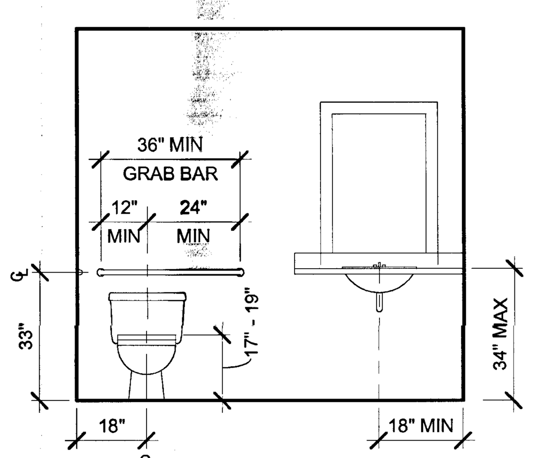
2C INTERIOR ELEVATION
3/8" = 1'-0"



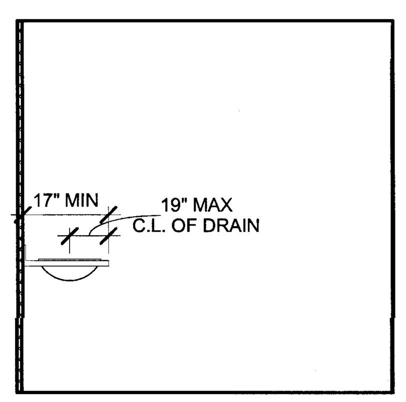
2D INTERIOR ELEVATION
3/8" = 1'-0"



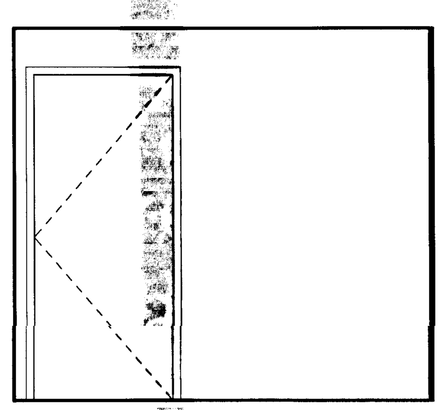
1 LEASING RESTROOM
3/8" = 1'-0"
SEE SHEET A6.14A FOR INFORMATION NOT SHOWN



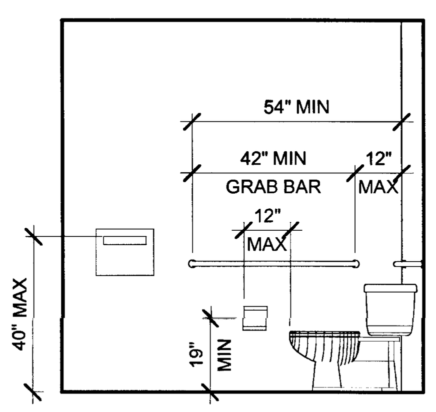
1A INTERIOR ELEVATION
3/8" = 1'-0"



1B INTERIOR ELEVATION
3/8" = 1'-0"



1C INTERIOR ELEVATION
3/8" = 1'-0"



1D INTERIOR ELEVATION
3/8" = 1'-0"

TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

REVISION | DATE
Miscellaneous Architectural / Third Party Plan Check / ASI #3

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
INTERIOR ELEVATIONS - RESTROOMS

FOR CONSTRUCTION

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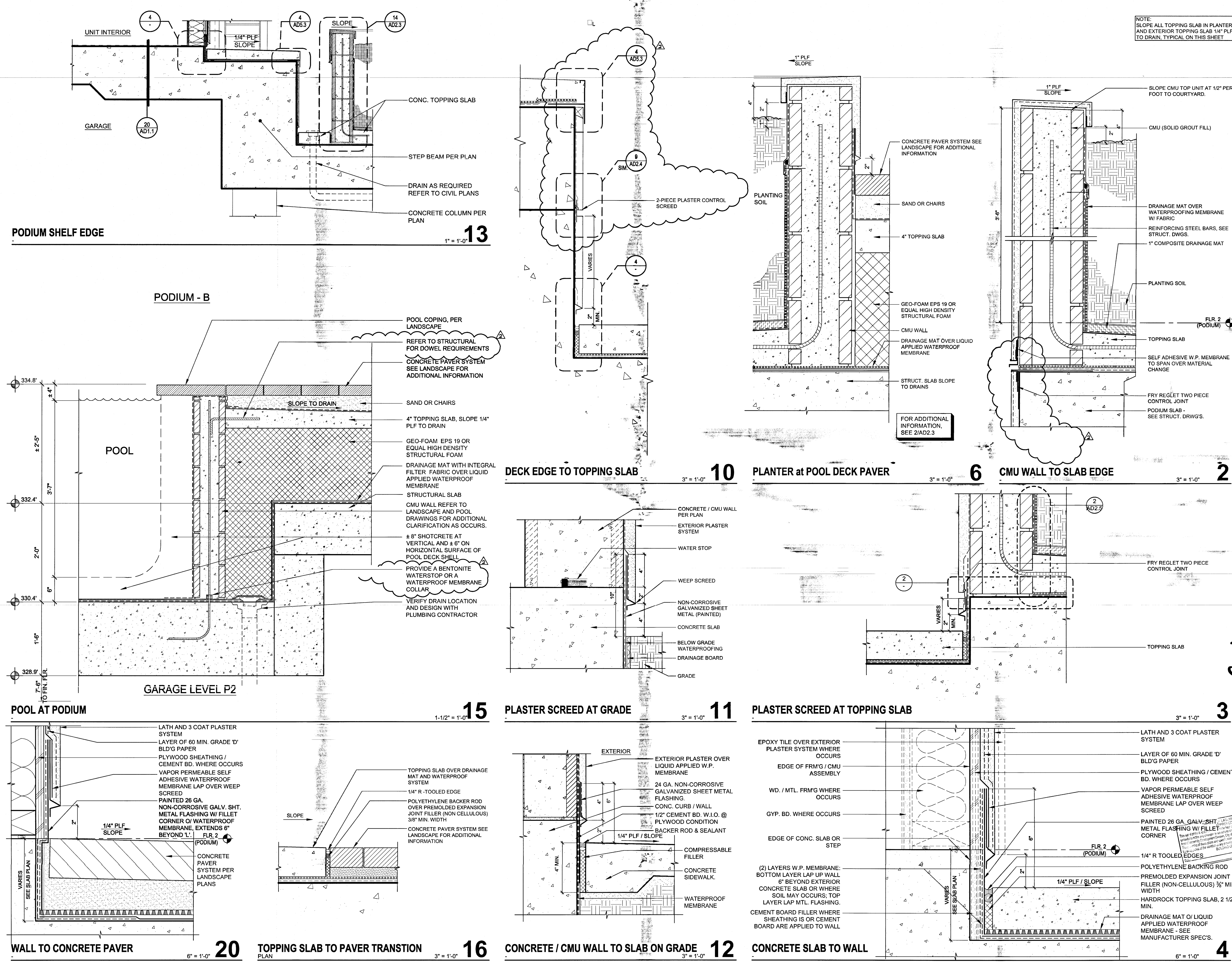
A8.30

2010-089
JOB NUMBER
3/8" = 1'-0"
SCALE
ISSUED AS
7/30/2013
DATE



TCA ARCHITECTS
LOS ANGELES | IRVINE | OAKLAND

THIRD PARTY WATERPROOF CONSULTANT

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

PODIUM WATERPROOFING

FOR CONSTRUCTION

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AD2.5

2010-089
JOB NUMBER
AS NOTED
SCALE
ISSUED AS
4 / 15 / 2013
DATE

EQUIPMENT SCHEDULES (4)

HORIZONTAL ¢ VERTICAL FAN COILS (HEAT PUMP)

UNIT NO.	MANUFACTURER ¢ MODEL NO.	CFM	E.S.P. (INCHES)	ELECTRICAL DATA: VOLTAGE: VOLTS	FLA	MCA	MOCP	FAN HP	ELECTRIC STRIP HEAT (KW)	FILTER SIZE (IN.)	OPER. WT. (LBS.)	REMARKS
SFC 1	CARRIER FB4C 018	600	0.5	208V/1Ø	2.8	3.5	15	1/3	-	-	120	FITNESS (LVL 4); YOGA (LVL 4) ①②③④
SFC 2	CARRIER FB4C 024	800	0.5	208V/1Ø	4.1	5.1	15	1/2	-	-	120	COMP/LOUNGE (LVL 4) ①②③④
SFC 3	CARRIER FB4C 030	1,000	0.5	208V/1Ø	2.8	3.5	15	1/3	-	-	130	- ①②③④
SFC 4	CARRIER FB4C 036	1,200	0.5	208V/1Ø	4.1	5.1	15	1/2	-	-	130	LEASING (P2);CLUBROOM (LVL 4) ①②③④
SFC 5	CARRIER FB4C 042	1,400	0.5	208V/1Ø	4.1	5.1	15	1/2	-	-	160	- ①②③④
SFC 6	CARRIER FB4C 048	1,600	0.5	208V/1Ø	6.0	7.5	15	3/4	-	-	160	FITNESS (LVL 3) ①②③④
SFC 7	CARRIER FB4C 060	2,000	0.6	208V/1Ø	6.0	7.5	15	3/4	-	-	180	LEASING/OFFICES (P1); CLUBROOM (LVL 3) ①②③④

① CONDENSATE PUMP (IF REQUIRED) PIPING BY OTHERS, SEE PLBG. DWG'S.
② PROVIDE W/TXV (R410A).
③ INSTALL CONDENSATE OVERFLOW SWITCH IN LIEU OF SECONDARY CONDENSATE DRAIN ON VERTICAL UNITS.
④ PROVIDE W/ CARRIER FNCCAB FILTER CABINET ¢ FLANDERS PRE-PLEAT 40 LPD HIGH CAPACITY 4-INCH DEEP MERV 8 FILTER.

SPLIT-SYSTEM OUTDOOR HEAT PUMPS

UNIT NO.	MAUNFACTURER ¢ MODEL NO.	NOM. COOLING CAPACITY @ 95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @ 47°F AMB (BTU/HR)	VOLTAGE: VOLTS	MCA	MOCP	COMPRESSOR: RLA	LRA	FAN: FLA	HP	SEER	HSPF	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.)	REMARKS
SHP 1	CARRIER 25HBC3 018	17,100	18,000	208V/1Ø	11.8	20	9.0	48.0	0.5	1/12	13.0	7.7	3/8	5/8	130	SFC-1 ②
SHP 2	CARRIER 25HBC3 024	22,800	24,000	208V/1Ø	16.8	25	12.8	58.3	0.5	1/10	13.0	8.2	3/8	5/8	140	SFC-2 ②
SHP 3	CARRIER 25HBC3 030	28,400	29,000	208V/1Ø	21.1	30	16.0	77.0	1.1	1/5	13.0	8.0	3/8	3/4	150	②
SHP 4	CARRIER 25HBC3 036	34,200	35,000	208V/1Ø	22.0	35	16.7	79.0	1.1	1/5	13.0	7.8	3/8	3/4	160	SFC-4 ②
SHP 5	CARRIER 25HBC3 042	40,000	41,000	208V/1Ø	25.7	40	19.9	109.0	0.8	1/10	13.0	8.1	3/8	7/8	200	②
SHP 6	CARRIER 25HBC3 048	46,000	46,500	208V/1Ø	28.7	50	21.8	117.0	1.4	1/4	13.0	8.0	3/8	7/8	220	SFC-6 ②
SHP 7	CARRIER 25HBC3 060	57,000	59,000	208V/1Ø	34.1	50	26.3	134.0	1.2	1/4	13.0	7.7	3/8	1-1/8	260	SFC-7 ②

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES ¢ INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.

EXHAUST FANS

UNIT NO.	MANUFACTURER ¢ MODEL NO.	LOCATION	TYPE	CFM	S.P. (INCHES)	ELECTRICAL: VOLTS	WATTS	AMPS	SONES	OPER. WT. (LBS.)	REMARKS
EF 1	BROAN QTRE080	BATHROOMS	CLG.	80	0.10	120V/1Ø	57	0.30	0.8	20	LO-SONE FAN. FURNISH W/ SWITCH AND INSTALL WITH BACKDRAFT DAMPER.
EF 2	BROAN L150	BATHROOMS	CLG.	150	0.10	120V/1Ø	100	1.3	1.5	30	FURNISH W/ SWITCH AND INSTALL WITH BACKDRAFT DAMPER.

HORIZONTAL CASSETTE FAN COILS (HEAT PUMP)

UNIT NO.	MANUFACTURER ¢ MODEL NO.	CFM	E.S.P. (INCHES)	VOLTAGE: VOLTS	MCA	MOCP	FAN: FLA	WATTS	CONDENSATE PUMP: FLA	ELECTRIC STRIP HEAT (KW)	OPER. WT. (LBS.)	REMARKS
FC 1	CARRIER 40KMQ 018	690	-	208V/1Ø	16.3	20	0.5	110.0	0.06	3	100	SERVER (LVL P1) ①②③

① PROVIDE W/TXV (R410A).
② PROVIDE W/ELECTRONIC PROGRAMMABLE THERMOSTAT.
③ PROVIDE W/CONDENSATE PUMP.

SPLIT-SYSTEM OUTDOOR HEAT PUMPS

UNIT NO.	MAUNFACTURER ¢ MODEL NO.	NOM. COOLING CAPACITY @ 95°F AMB (BTU/HR)	NOM. HEATING CAPACITY @ 47°F AMB (BTU/HR)	VOLTAGE: VOLTS	MCA	MOCP	COMPRESSOR: RLA	LRA	FAN: FLA	HP	SEER	HSPF	LIQUID LINE SIZE ① (INCHES)	VAPOR LINE SIZE ① (INCHES)	OPER. WT. (LBS.)	REMARKS ②③④
HP 1	CARRIER 38 QRF 018	17,900	16,800	208V/1Ø	12.1	20	9.0	48.0	0.8	1/8	13.0	7.7	3/8	5/8	170	FC-1

① CONTRACTOR SHALL VERIFY REFRIGERANT LINE SIZES, ACCESSORIES ¢ INSTALLATION WITH EQUIPMENT MANUFACTURER FOR ACTUAL CONDITIONS.
② R410A REFRIGERANT.
③ PROVIDE WITH LOW AMBIENT KIT.
④ PROVIDE WITH CRANKCASE HEATER.

AIR DISTRIBUTION SCHEDULE

MANUFACTURER	MODEL NO.	DEFLECTION	COLOR	TYPE	REMARKS
TRU-AIRE	303-O	3-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY REGISTER, PROVIDE W/ O.B.D.
TRU-AIRE	302-O	2-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY REGISTER, PROVIDE W/ O.B.D.
TRU-AIRE	304-O	4-WAY	WHITE	CURVED BLADE	TYP. CEILING SUPPLY DIFFUSER, PROVIDE W/ O.B.D.
TRU-AIRE	210-VO	1-WAY	WHITE	ADJUSTABLE BAR	TYP. CEILING / SIDEWALL SUPPLY REGISTER, PROVIDE W/ O.B.D.
TITUS	355 RL	-	WHITE	BAR	TYP. SIDEWALL RETURN / TRANSFER GRILLE, PROVIDE W/ O.B.D.
TITUS	PAR	-	WHITE	PERFORATED FACE	TYP. CEILING RETURN / TRANSFER GRILLE, PROVIDE W/ O.B.D.
TITUS	ML (SUPPLY) MLR (RETURN)	-	WHITE	LINEAR SLOT	LINEAR DIFFUSER, PROVIDE W/ POTTORFF RD-10R ELECTRONIC VOLUME DAMPER.

CONDENSATE PUMPS

UNIT NO.	MANUFACTURER ¢ MODEL NO.	SERVICE	ELECTRICAL: VOLTS	WATTS	AMPS	OPER. WT. (LBS.)	REMARKS
CP 1	BECKETT CB201UL	SFC -	120V/1Ø	85	2.2	5	ALL CONDENSATE PIPING TO BE PROVIDED/INSTALLED BY PLBG.

GENERAL NOTES (2)

1. GENERAL: THIS WORK IS SUBJECT TO THE PROVISIONS OF DIVISION 1 OF THE SPECIFICATIONS AND THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS THEREUNDER AFFECTING HIS WORK IN ANY WAY.

2. SCOPE: THE WORK COVERED BY THIS SECTION INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION AND OTHER ITEMS NECESSARY FOR AND REASONABLE INCIDENTAL TO THE PROPER AND SATISFACTORY INSTALLATION OF THE HEATING, AIR CONDITIONING, AND VENTILATING SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

3. CODES: ALL HEATING, AIR CONDITIONING, AND VENTILATING WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE N.F.P.A.,LATEST BUILDING ¢ MECHANICAL CODES AND ANY OTHER LEGALLY CONSTITUTED BODY HAVING JURISDICTION THEREOF.

4. PERMITS: THE OWNER SHALL OBTAIN AND PAY FOR ALL FEES, PERMITS, AND LICENSES REQUIRED FOR THE INSTALLATION OF THE WORK.

5. SUBMITTALS: WITHIN 30 DAYS AFTER THE AWARD OF THE CONTRACT AND BEFORE THEIR PURCHASE, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT SIX BOUND BOOKLETS CONTAINING A COMPLETE LIST OF MATERIALS AND EQUIPMENT BEING FURNISHED, TOGETHER WITH ALL CATALOG DATA, MANUFACTURER'S NAMES AND ADDRESSES AND OTHER DATA NECESSARY TO EVALUATE THE MATERIAL AND EQUIPMENT.

6. SHEET METAL DUCTWORK: SUPPLY RETURN AND OUTSIDE AIR DUCTWORK PENETRATING RATED CONSTRUCTION SHALL BE MINIMUM 26 GA. GALVANIZED SHEET METAL. SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED PER ENERGY CODE HAVING JURISDICTION. DRYER VENTS ¢ ALL OTHER EXHAUST SHALL BE GALVANIZED SHEET METAL MIN. 26 GAGE. DUCTWORK SHALL BE CONSTRUCTED ¢ INSTALLED IN CONFORMANCE WITH THE LATEST SMACNA DUCT MANUAL, AND LOCAL CODES.

7. FLEXIBLE DUCTWORK: INSULATED LOW PRESSURE FLEXIBLE DUCT SHALL BE A FACTORY ASSEMBLY CONSISTING OF A GALVANIZED SPRING STEEL WIRE HELIX, A CONTINUOUS INNER LINER WRAPPED WITH A NOMINAL 1 IN. THICK BY 1 LB/CU. FT. DENSITY GLASS FIBER INSULATION. THE ASSEMBLY SHALL BE ENCLOSED IN A CLASS 1 VAPOR BARRIER JACKET. THE FLEXIBLE DUCT SHALL BE LISTED BY U.L. AND SHALL CONFORM TO THE 90-A AND 90-B CLASS 1 REQUIREMENTS OF THE N.F.P.A. FLEXIBLE DUCT SHALL BE INSTALLED IN A FULLY EXTENDED CONDITION FREE OF SAGS AND KINKS AS FAR AS PRACTICAL. FLEXIBLE DUCT SHALL BE BY GOODMAN QUIETFLEX (RIP-STOP) OR APPROVED EQUAL.

8. EQUIPMENT: SHALL BE OF MODEL, TYPE AND CAPACITIES AS INDICATED ON THE DRAWINGS AND SHALL MEET OR EXCEED THE MINIMUM EFFICIENCY AS LISTED IN THE BUILDING ENERGY EFFICIENCY STANDARDS.

9. CONTROLS: SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE DRAWINGS. ALL OFFICE, RECREATION AND CORRIDOR THERMOSTATS TO BE HONEYWELL TH2110D1009 ENERGY STAR PROGRAMMABLE WITH DIGITAL NIGHT SET BACK.

10. ACCESS PANELS: WHERE SHOWN, AIR HANDLERS ¢ FAN COILS SHALL INCLUDE A FACTORY FURNISHED CEILING ACCESS DOOR OR WALL PANEL. ALL OTHER MECHANICAL EQUIPMENT REQUIRING ACCESS MUST BE PROVIDED WITH ADEQUATE PANELS.

11. GUARANTEE: THE SYSTEM AS INSTALLED INCLUDING ALL EQUIPMENT AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE THE INSTALLATION IS ACCEPTED AND PLACED INTO OPERATION.

12. MATERIALS (INCLUDING INSULATION) EXPOSED WITHIN DUCTS OR PLENUMS SHALL HAVE A FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF NOT MORE THAN 50.

13. ONLY APPROVED MATERIALS SHALL BE INSTALLED WITHIN DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD HUMIDITY AND RESISTANT SURFACE THAT MEET THE REQUIREMENTS OF UL181.

14. FOR EQUIPMENT IN ATTIC, GENERAL CONTRACTOR (G.C.) TO PROVIDE ACCESS, LIGHT AND CAT WALK AS REQUIRED BY MECHANICAL CODE HAVING JURISDICTION.

15. CORRIDORS SHALL BE NATURALLY VENTILATED,SEE ARCHITECTURAL DRAWINGS.

16. FUSIBLE LINK FIRE DAMPERS SHALL BE UL LISTED AND STATE FIRE MARSHALL APPROVED. MANUFACTURED BY POTTORFF, INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO PROVIDE ACCESS PANELS. CEILING RADIATION FIRE DAMPERS SHALL BE MODEL CFD-15 OR APPROVED EQUAL.

17. COMBINATION SMOKE ¢ FIRE DAMPERS SHALL BE UL LISTED AND STATE FIRE MARSHALL APPROVED. MANUFACTURED BY POTTORFF WITH ELECTRIC ACTUATOR, INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO PROVIDE ACCESS PANELS.

18. CONTRACTOR SHALL COORDINATE ALL DUCT, PIPE ¢ EQUIPMENT LOCATIONS WITH ELECTRICAL, STRUCTURAL, PLUMBING AND ALL OTHER TRADES PRIOR TO WORK.

19. DO NOT SCALE DRAWINGS. ALL DIMENSIONS ¢ JOB SITE CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION AND / OR FABRICATION OF MATERIALS. IF DISCREPANCIES ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.

20. SEE ARCHITECTURAL DRAWINGS FOR ROOF / ATTIC ACCESS.

21. VERIFY FINAL LOCATION OF THERMOSTATS WITH ARCHITECT AND / OR OWNER PRIOR TO START OF WORK.

22. CONTRACTOR SHALL PROVIDE APPROVED FIRE-STOP AT PENETRATIONS THRU RATED CONSTRUCTION ASSEMBLIES.

23. REFER TO ELECTRICAL PLANS FOR MECHANICAL EQUIPMENT DISCONNECT SWITCH LOCATIONS.

24. DRYER VENT CLEAN OUTS (IF APPLICABLE), SHALL BE REGULARLY INSPECTED / CLEANED FOR LINT ACCUMULATION.

SHEET INDEX (3)

LEGEND AND SYMBOLS (1)

SYMBOL	ABBREVIATION	DESCRIPTION
	S.A.	FLEXIBLE SUPPLY AIR DUCT
	R.A.	FLEXIBLE RETURN AIR DUCT
		SPIRAL SHEET METAL AIR DUCT
		RECTANGULAR DUCT
		WALL LOUVER
	EF	CEILING / WALL EXHAUST FAN
		COMBUSTION AIR LOUVER
		DUCT DOWN
		DUCT UP
		SIDEWALL SUPPLY REGISTER
		SIDEWALL SUPPLY REGISTER W/ BOOT
		CEILING SUPPLY REGISTER
		CEILING RETURN GRILLE
		DUCT SECTION - SUPPLY
		DUCT SECTION - RETURN
	RAG	RETURN AIR GRILLE
	RAFG	RETURN AIR FILTER GRILLE
		DIRECTION OF AIR FLOW
	MVD	MANUAL VOLUME DAMPER
	CFM	CUBIC FEET PER MINUTE
EXH		EXHAUST AIR DUCT
OSA	OSA	OUTSIDE SUPPLY AIR DUCT
T	T-STAT	THERMOSTAT
0"Ø		FLEX SIZE
	RED	REDUCER
	TRI	TRIANGLE
	FD	FIRE DAMPER
SD	SD	SMOKE DETECTOR
	SFD	COMBINATION SMOKE ¢ FIRE DAMPER
	E.A.	EXHAUST AIR DUCT
	VTR	VENT THRU ROOF
	D.B.	DUCT BOARD
	S.M.	SHEET METAL
	OBD	OPPOSED BLADE DAMPER
	F.J.	FLOOR JOIST DIRECTION
		SUPPLY, RETURN ¢ EXHAUST GRILLE CALL OUT CFM GRILLE SIZE GRILLE STYLE
		HEAT PUMP / CONDENSING UNIT CALL OUT HEAT PUMP / CONDENSER MODEL HEAT PUMP / CONDENSER NUMBER
		FAN COIL / FORCED AIR UNIT CALL OUT FAN COIL / FORCED AIR UNIT MODEL FAN COIL / FORCED AIR UNIT NUMBER
		EXHAUST FAN CALL OUT EXHAUST FAN MODEL EXHAUST FAN NUMBER
S R		HORIZONTAL FAN COIL / FORCED AIR UNIT
		CONDENSING UNIT / HEAT PUMP
		VERTICAL FAN COIL / FORCED AIR UNIT

Thomas P. Cox: Architects, Inc.

LDI Mechanical, Inc.
California Nevada Colorado Maryland

1ST PLAN CHECK SUBMITTAL - 01/25/13

CROWN CABOT LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

LEGEND, SYMBOLS & EQUIPMENT SCHEDULES

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
LUIS A. GARCIA
Exp date Jun 30 2014
No. M30574
MECHANICAL
STATE OF CALIFORNIA

THE CITY OF LAGUNA NIGUEL APPROVED

MR-1

2010-089
JOB NUMBER
NONE
SCALE
ISSUED AS
4/15/2013
DATE

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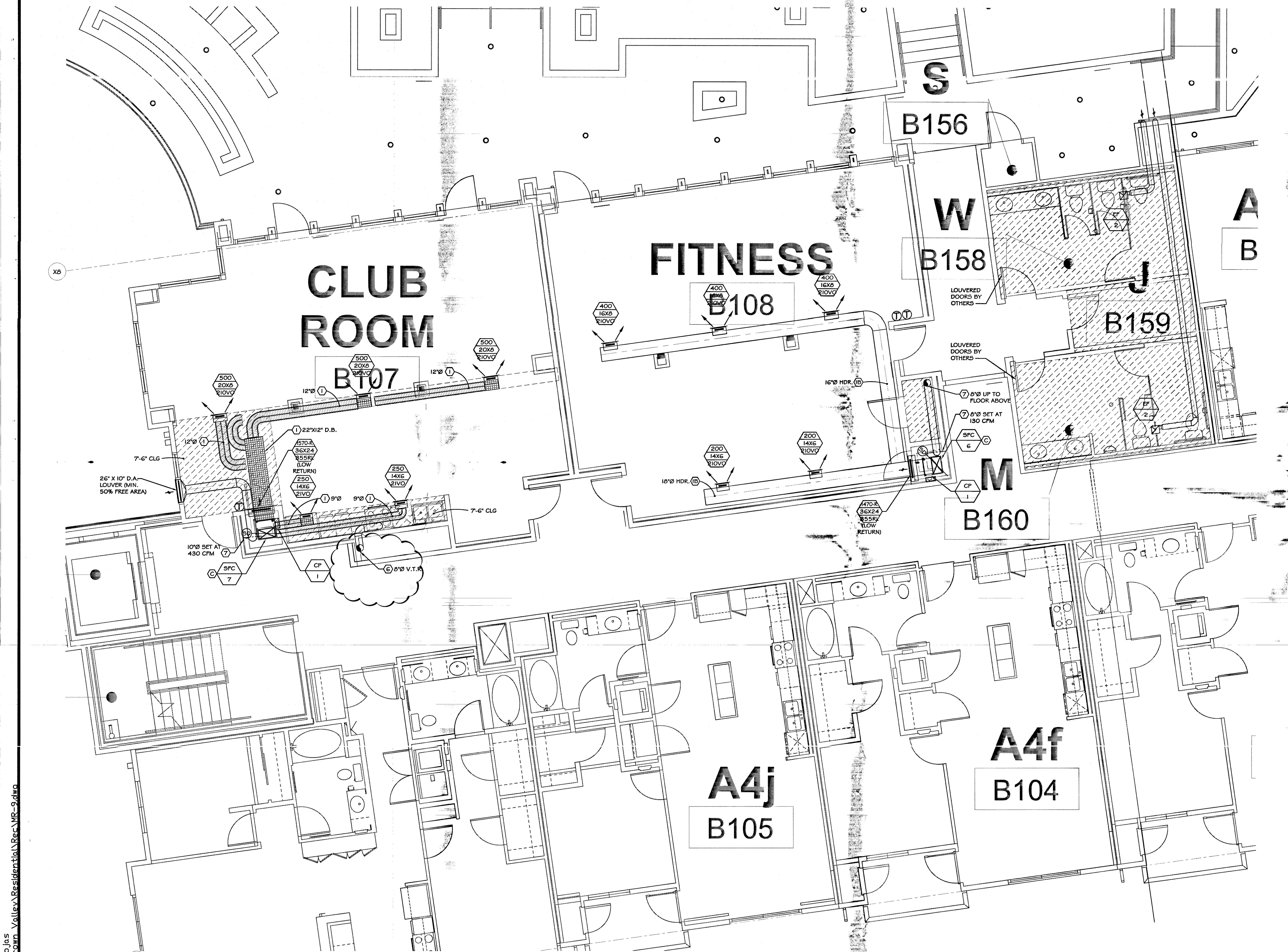

ENLARGED CLUB ROOM / FITNESS (LEVEL 3)

SCALE 1/4" = 1'-0" (1)

(A) HORIZONTAL (CASED) FAN COIL WITH SOLID ACCESS PANEL.

(B) HORIZONTAL FAU/FAN COIL IN ATTIC. EQUIPMENT IN ATTIC TO COMPLY WITH 2007 CALIFORNIA MECHANICAL CODE.

EQUIPMENT IN ATTIC REQUIRING ACCESS SHALL BE PROVIDED WITH:

1. AN ACCESS OPENING LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT, BUT NOT LESS THAN 30 INCHES BY 22 INCHES.

2. AN UNOBSTRUCTED PASSAGE WAY WHICH:

2.1 IS LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT BUT NOT LESS THAN 30 INCHES HIGH BY 30 INCHES WIDE,

2.2 IS NO MORE THAN 20 FEET IN LENGTH WHEN MEASURED ALONG THE CENTER LINE OF THE PASSAGEWAY FROM THE ACCESS OPENING TO THE EQUIPMENT, AND

2.3 HAS CONTINUOUS SOLID FLOORING NOT LESS THAN 24 INCHES WIDE THROUGHOUT ITS LENGTH: AND

3. A LEVEL SERVICE SPACE AT LEAST 30 INCHES DEEP AND 30 INCHES WIDE LOCATED AT THE FRONT OR SERVICE SIDE OF THE EQUIPMENT.

(C) VERTICAL AIR HANDLER IN MECHANICAL CLOSET. GENERAL CONTRACTOR TO PROVIDE PLATFORM & ACCESS DOORS.

(1) SUPPLY/RETURN DUCT IN FURRED SPACE BELOW (NON-RATED) CEILING.

(1A) SUPPLY / RETURN DUCT IN ATTIC SPACE ABOVE THE (NON-RATED) CEILING.

(1B) EXPOSED S.M. SPIRAL DUCT. REFER TO CMC CHAPTER 6 FOR SUPPORT AND INSTALLATION.

(2) EXHAUST AIR DUCT TO WALL/CEILING CAP OR ROOF JACK. EXHAUST DUCT SHALL BE 26 GAUGE SHEET METAL. POSITIVELY PRESSURIZED DUCTS/FANS SHALL BE ISOLATED FROM REST OF RETURN AIR PLENUM WITH GYPSUM BOARD, BY GENERAL CONTRACTOR.

(3) WALL/CEILING/ROOF S.M. JACK MINIMUM 3'-0" AWAY FROM OPENINGS INTO BUILDING & 10' - 0" AWAY FROM O.A. INLETS

(4) DOMESTIC WATER HEATER BY OTHERS, REFER TO PLUMBING PLANS FOR SIZE & SPECIFICATIONS.

(5) MIN. 20 SQ. IN. FREE AREA HI/LO OPENING FOR COMBUSTION AIR BY GENERAL CONTACTOR (OPENINGS TO BE WITHIN 12 INCHES OF CEILING & FLOOR).

(6) VENTLESS KITCHEN RANGE HOOD (BY OTHERS).

(6) KITCHEN RANGE HOOD EXHAUST DUCT TO WALL/CEILING CAP OR ROOF JACK. EXHAUST DUCT SHALL BE 26 GAUGE SHEET METAL WITH SMOOTH INTERIOR SURFACE & ISOLATED FROM REST OF RETURN AIR PLENUM WITH GYPSUM BOARD, BY GENERAL CONTRACTOR. INSTALL PER RANGE HOOD (BY OTHERS) MANUFACTURER'S RECOMMENDATIONS.

(7) OUTSIDE AIR DUCT MIN. 10 FT. IN LENGTH OR SIX FEET WITH ONE ELBOW. MAINTAIN MIN. 10 FT. OF SEPARATION FROM EXHAUST/ VENTS. DUCT CONSTRUCTION SHALL BE MIN. 26 GAUGE SHEET METAL WITHIN RATED ASSEMBLIES OR FLEX DUCT WITHIN NON-RATED CAVITIES.

(8) VENTING DESIGN/INSTALL BY OTHERS.

(9) REFRIGERANT LINES, SIZE & INSTALL PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO COORDINATE EXACT ROUTING OF REFRIGERANT LINES IN FIELD.

(10) FAU TYPE B FLUE VENT.

KEY NOTES

DENOTES LINED JOIST BAY

DENOTES 9'-1" CEILING UNLESS NOTED OTHERWISE

DENOTES 7'-8" DROP CEILING UNLESS NOTED OTHERWISE

CEILING LEGEND

Thomas P. Cox: Architects, Inc

LDI Mechanical, Inc.
California Nevada Colorado Maryland
1587 Bentley Drive Corona, CA 92879 (951) 340-9685 • (951) 340-9689 FX
CA Lic. #784662 • NV Lic. #51319 HVAC • NV Lic. #51268 PLUMB

REVISION | DATE
1ST PLAN CHECK SUBMITTAL - 01/30/13

CROWN CABOT
LUXURY APARTMENTS
25891 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
ENLARGED FLOOR PLANS

FOR CONSTRUCTION

REGISTERED PROFESSIONAL ENGINEER
LUIS A. GARCIA
Exp date Jun 30 2014
No. M30874
MECHANICAL
STATE OF CALIFORNIA

MR-9

2010-089
JOB NUMBER

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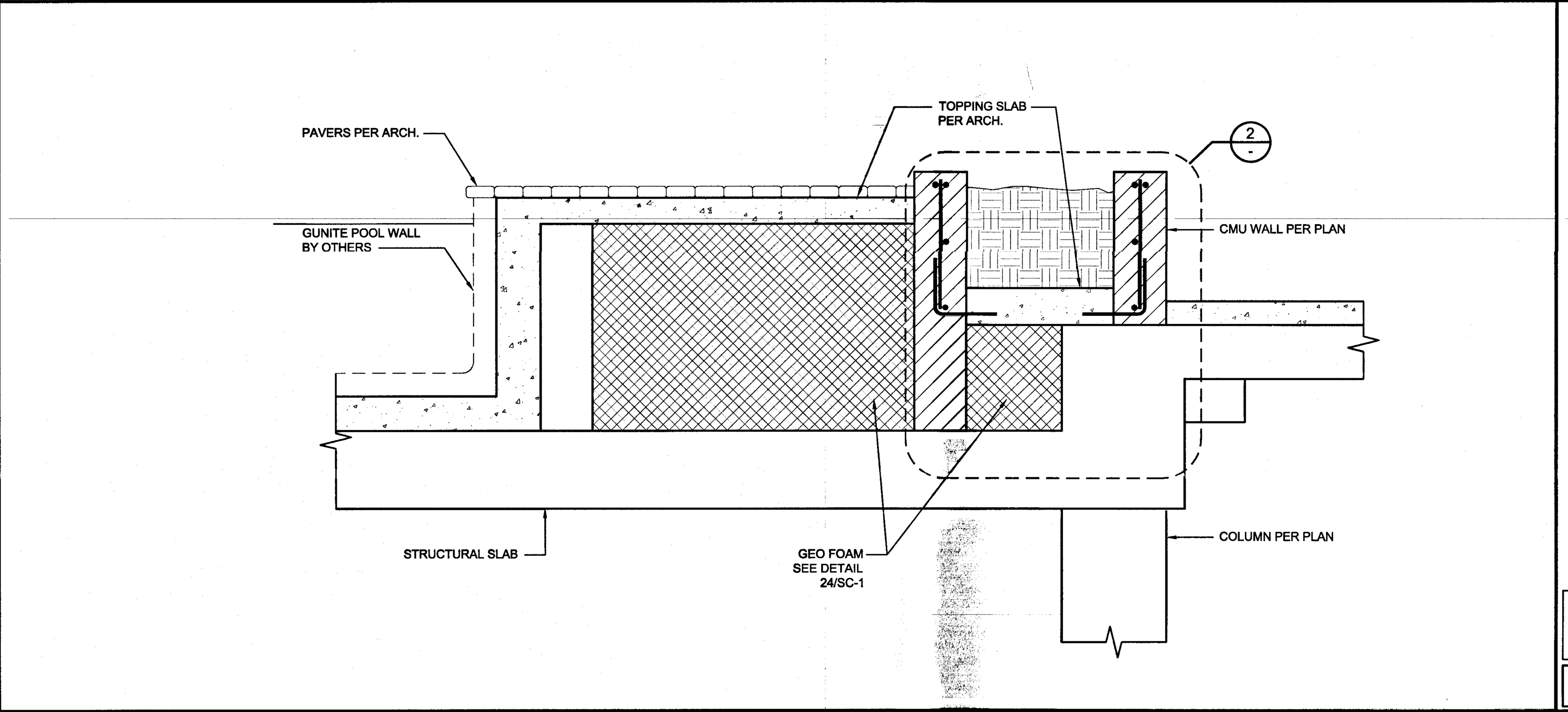
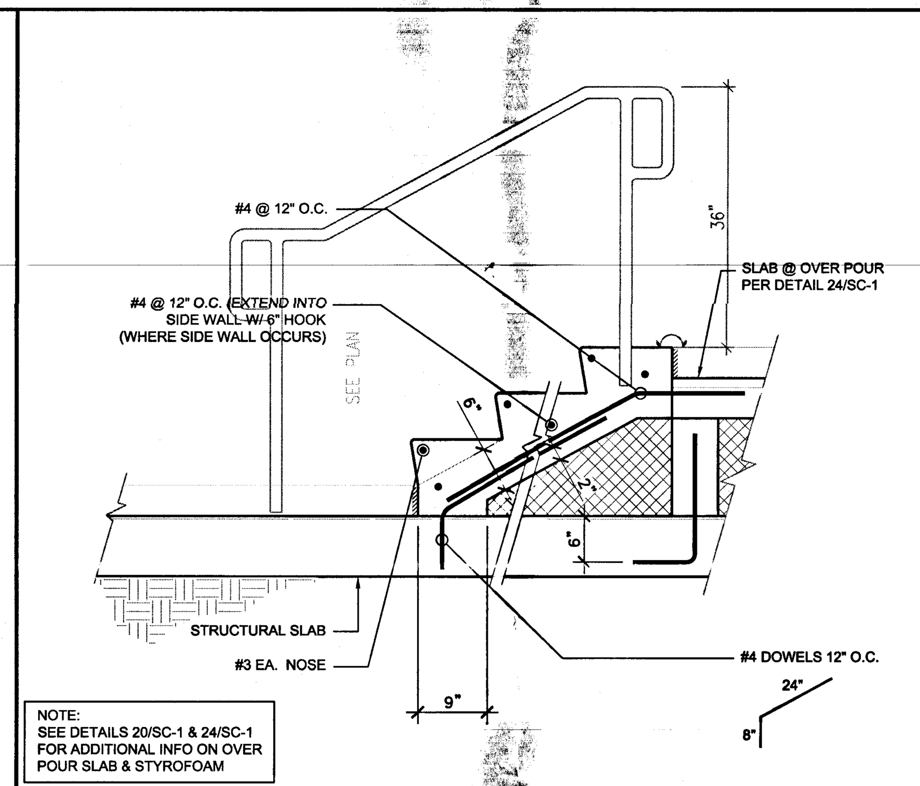
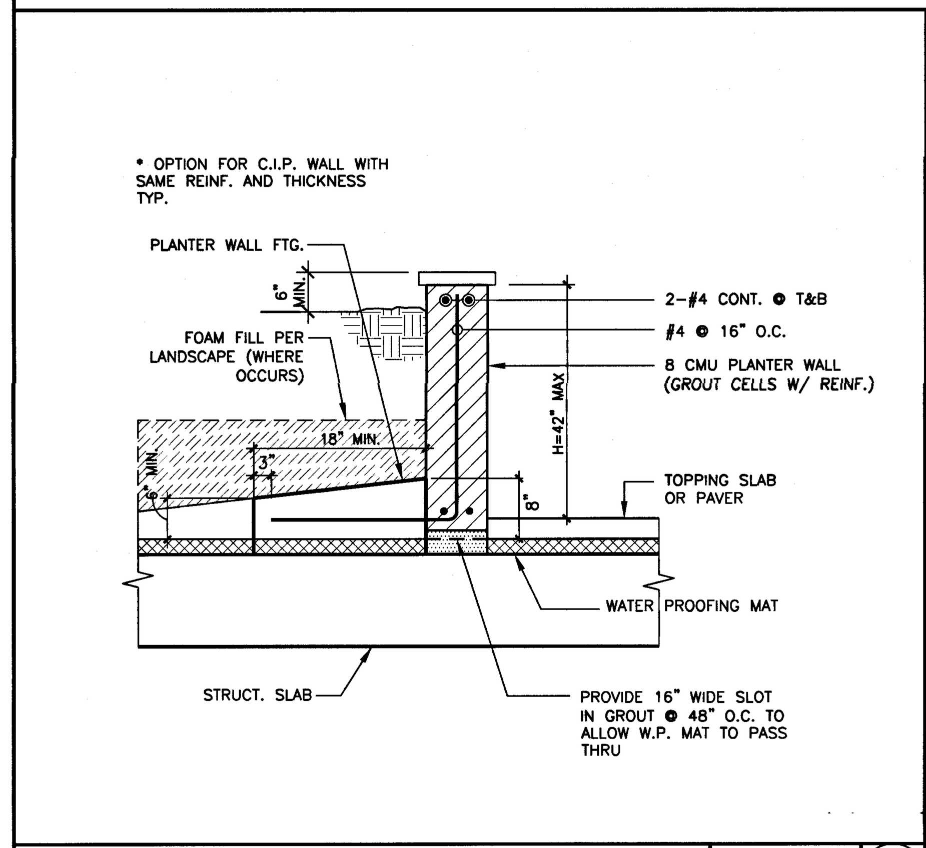


PLANTER AT POOL AREA — SCALE: N.T.S. — 5

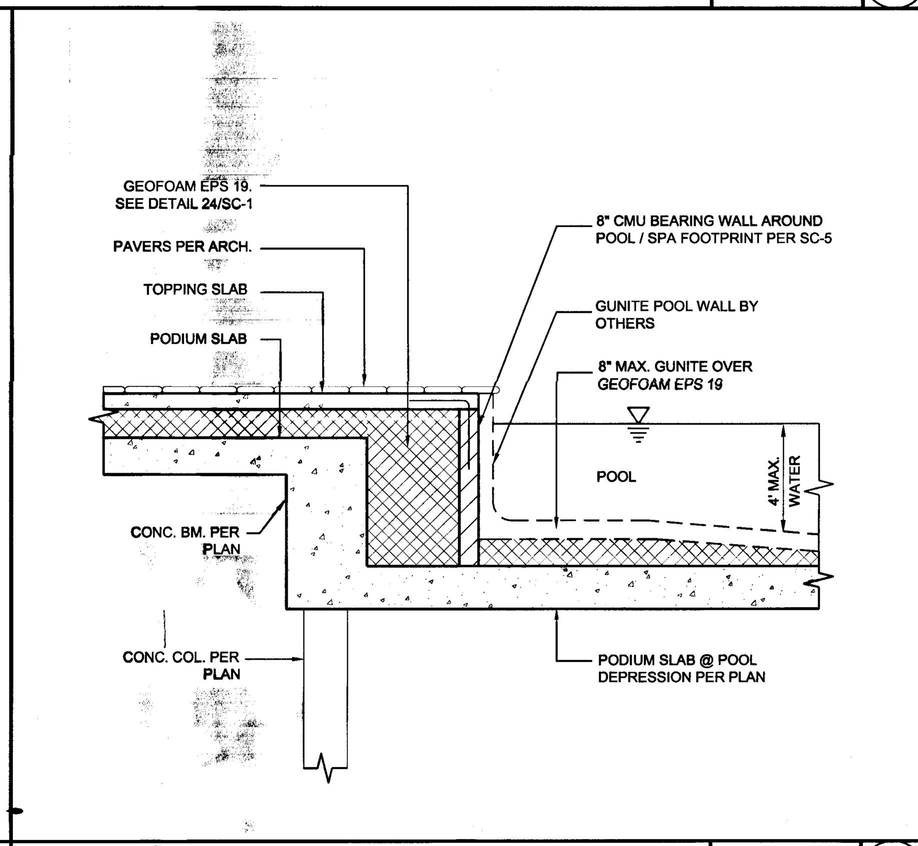


REFERENCE: J / L1.11

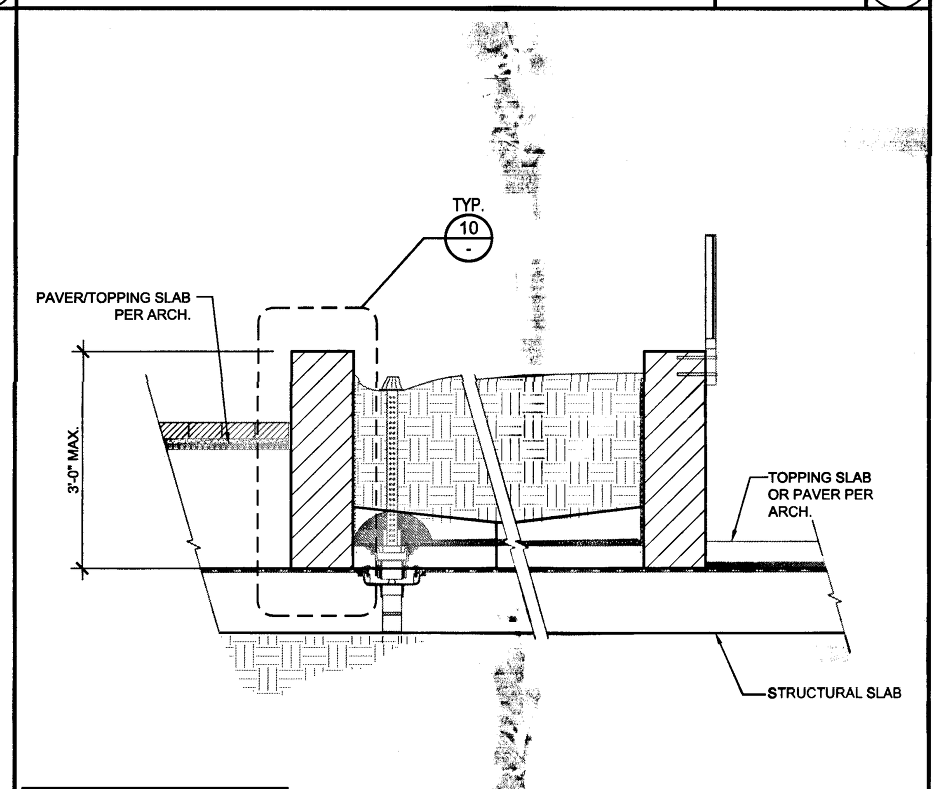
CONCRETE STEPS ON STRUCTURE — SCALE: N.T.S. — 1



TYPICAL CMU WALL DETAIL — SCALE: N.T.S. — 10

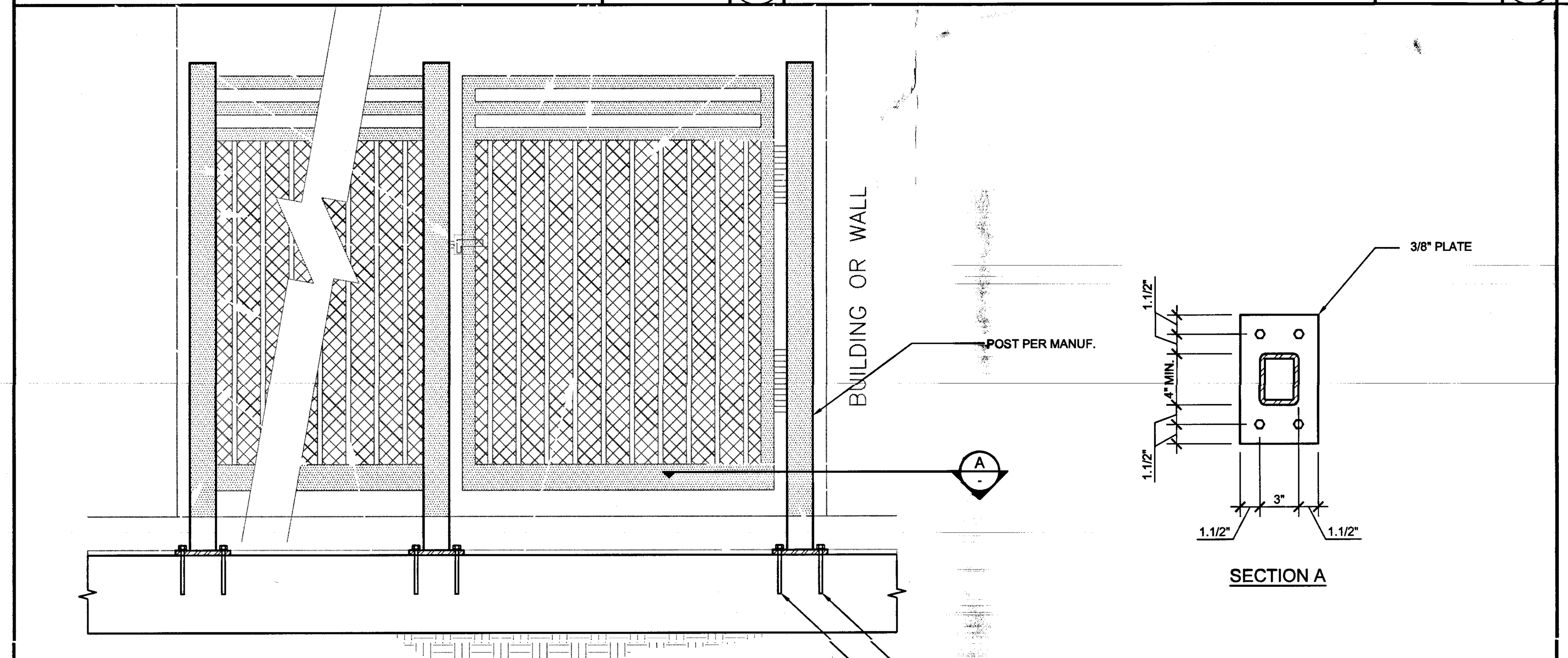


POOL SECTION DETAIL — SCALE: N.T.S. — 6



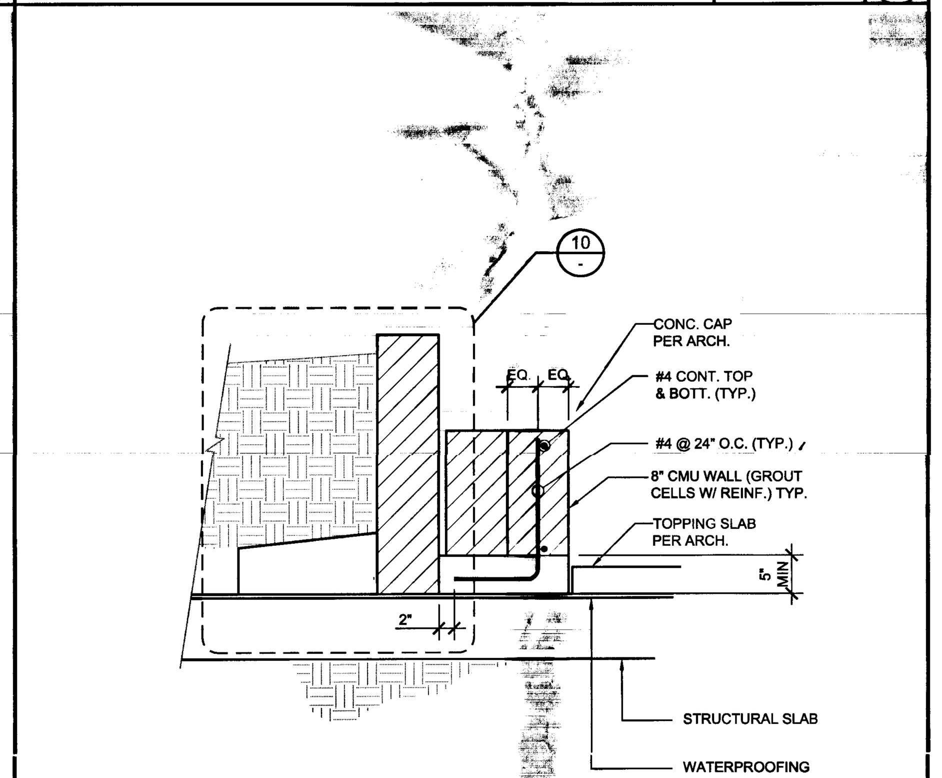
REFERENCE: K / L1.11

POOL GLASS FENCE @ PRIVATE PATIO — SCALE: N.T.S. — 2



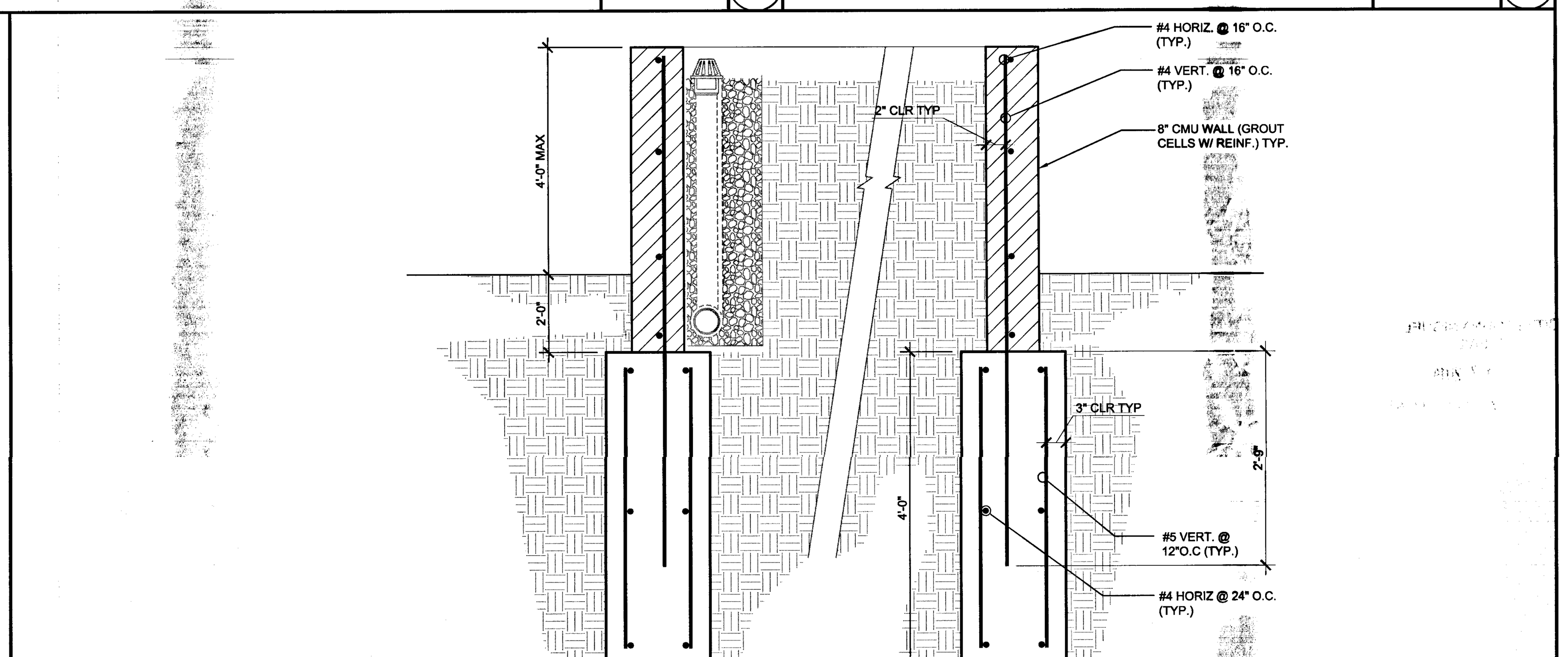
REFERENCE: N / L1.11 & B / L1.12

POST BASE CONNECTION @ GATE — SCALE: N.T.S. — 7



REFERENCE: O / L1.11

BUILT-IN SEATWALL — SCALE: N.T.S. — 3



REFERENCE: M / L1.11

RAISED PLANTER WALL ON CABOT (Between the FlowThrough Planters) — SCALE: N.T.S. — 4

STRUCTURAL STEEL AND METAL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS AND THE CODE OF STANDARD PRACTICE.
2. W-SHAPE BEAM & COLUMN — ASTM A992 OR A572
3. PIPE — ASTM A-53, TYPE E OR S, GRADE B
   TUBE — ASTM A-500, GRADE B
   MISC. CHANNEL & PLATE — A-36
4. BOLTS
   HIGH-STRENGTH BOLTS — ASTM A-325
   ALL OTHER BOLTS — ASTM A-307
5. BOLT HOLES
   MINIMUM EDGE DISTANCE — AISC TABLE J3.5
   MINIMUM SPACING — 3 BOLT DIAMETER
   HIGH STRENGTH BOLTS — FRICTION TYPE W/CLASS A FAYING SURFACE
6. MINIMUM FILLET WELD — AISC TABLE J2.4
7. PROVIDE SPECIAL INSPECTION FOR HIGH-STRENGTH BOLTED CONNECTIONS WITH A 325 & A 490 BOLTS. INSPECTIONS SHALL BE DONE PER APPROVED NATIONALLY RECOGNIZED STANDARDS AND THE REQUIREMENTS OF SEC. 1701.5.6 & BUILDING NEWSLETTER 17-4. WHILE THE WORK IS IN PROGRESS, THE SPECIAL INSPECTOR SHALL DETERMINE THE BOLTS, NUTS, WASHERS AND PAINT; BOLTED PARTS; AND INSTALLATION AND TIGHTENING MEET THE STANDARDS REQUIREMENTS. PERIODIC INSPECTIONS MAY BE PERFORMED FOR " SNUG-TIGHTENDED" CONNECTION.
8. HIGH-STRENGTH BOLTS, NUTS AND WASHER MAY BE REQUIRED TO BE SAMPLE, TESTED AND APPROVED BY THE CITY, PRIOR TO THE INSTALLATION.
9. ALL UNEXPOSED STEEL — STEEL STRUCTURES PAINTING COUNCIL SPECIFICATION 15-687
10. EXPOSED STEEL — GALVANIZED
11. EXPANSION BOLTS (RED HEAD) OR APPROVED EQUAL — ICC RESEARCH RECOMMENDATION #1821
12. SELF-DRILLING ANCHORS — ICC RESEARCH RECOMMENDATION #1372
13. SHEAR CONNECTOR STUDS
14. POWER ACTIVATED FASTENERS — 0.145 DIAM. X 3 INCHES LONG PER ICC 1290 (HILTI), OR APPROVED EQ. ALL WALLS SHALL HAVE FASTNERS PLACED AT 6" FROM ENDS OF SILL PLATES. INSTALL PER ICC REPORT AND MANUFACTURER'S RECOMMENDATIONS.
15. LIGHT GAGE COLD FORMED STEEL MEMBERS SHALL CONFORM TO ASTM- A-441, U.N.O.
16. WHERE HIGH-STRENGTH (H.S) BOLTS ARE SPECIFIED ON THE PLANS, THEY SHALL BE FRICTION TYPE CONFORMING TO ASTM A325 (SC) WITH A CLASS A FAYING SURFACE. THERE SHALL BE NO PAINT, OIL, LACQUER OR GALVANIZING ON THE CONTACT SURFACES.
17. ALL GROUT UNDER STEEL BEARING PLATES SHALL BE SOLID DRYPACK OR NON-SHRINK GROUT. f'c = 4,000 PSI.

CONCRETE:

1. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150 - TYPE II (USE TYPE V CEMENT WITH APRROPRIATE WATER TO CEMENT RATIO PER SECTION 4.3 TABLE 4.3.1 OF ACI 318-05 FOR SOILS WITH SEVERE OR VERY SEVERE SULFATE EXPOSURE)
2. MINIMUM 28-DAY ULTIMATE COMPRESSIVE STRENGTH 4,000 psi., U.N.O. CONTINUOUS INSPECTION BY A DEPUTY INSPECTION IS REQUIRED. MAX. WATER / CEMENT RATIO TO BE 0.55 WHERE CONCRETE MAY BE IN CONTACT W/SOIL.
3. AGGREGATES:
   LIGHTWEIGHT — ASTM C-330
   HARDROCK — ASTM C-33
4. CONCRETE COVERAGE OF REINFORCING STEEL:
   UNFORMED SURFACES CAST DIRECTLY AGAINST EARTH.
   SLABS-ON-EARTH — AT C.L. SLAB
   ALL OTHER CONCRETE — 3 INCHES
   FORMED AND/OR FINISHED SURFACES EXPOSED TO EARTH OR WEATHER.
   #5 BAR AND SMALLER — 1-1/2 INCHES
   #6 BAR AND LARGER — 2 INCHES
5. FORMS AND SHORING SHALL REMAIN UNDISTURBED AS FOLLOWS:
   VERTICAL SURFACES — 7 DAYS
   STRUCTURAL SLAB — 10 DAYS
6. ALL REINFORCING STEEL, DOWEL, EMBEDDED HARDWARE, HOLD DOWN BOLTS, STRAPS, AND POST BASES MUST BE WELL SECURED IN PROPER LOCATIONS PRIOR TO PLACING CONCRETE.
7. MAXIMUM IN-PLACE DENSITY OF NONSTRUCTURAL LIGHTWEIGHT CONCRETE FLOOR TOPPING IS TO BE 100#/CU. FT.
8. REFER TO SLAB PLAN NOTES FOR ADDITIONAL INFORMATION, U.N.O.

REINFORCING STEEL:

1. ALL REINFORCING STEEL:
   NOTE: #5 AND SMALLER — ASTM A-615, GRADE 40
   #6 AND LARGER — ASTM A-615, GRADE 60
2. WELDED WIRE FABRIC — ASTM A-185
3. REINFORCING MARKED CONT. (CONTINUOUS) MAY BE SPLICED WITH LAPS AS SPECIFIED IN THE CODE, UNLESS OTHERWISE SPECIFIED.

SOILS AND FOUNDATION

1. THE FOUNDATION DESIGN IS BASED UPON THE SOILS REPORT BY GEOCON WEST, INC., PROJECT NO. A8803-06-01A, FEBRUARY 17, 2011. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIREMENTS THEREIN AND MAINTAIN A COPY ON THE JOBSITE AT ALL TIMES.
2. THE ENGINEER OF RECORD MUST BE INFORMED OF ANY CHANGES IN DESIGN CRITERIA MADE BY THE SOILS ENGINEER IN THE COURSE OF CONSTRUCTION.
3. ALL FOOTINGS AND SLABS SHALL BE FOUNDED ON FIRM UNDISTURBED NATURAL SOILS OR COMPACTED FILL. (PROVIDE BY SOILS ENGINEER)
4. ALL COMPACTED FILL SHALL BE PLACED IN AN APPROVED MANNER WITH A MINIMUM DENSITY OF 90% OF THE MAXIMUM OBTAINABLE IN ACCORDANCE WITH ASTM D 1557.
5. THE SOILS ENGINEER SHALL INSPECT AND APPROVE ALL FOUNDATION ALL RETAINING WALLS SHALL BE PROVIDED WITH STANDARD SURFACE BACKDRAIN TRENCH PRIOR TO PLACING REINFORCING AND/OR CONCRETE.
6. SYSTEM AND ALL DRAINAGE SHALL BE CONDUCTED TO THE STREET IN AN ACCEPTABLE MANNER AND IN A NON-EROSIVE DEVICE.
7. REFER TO SLAB PLANS, NOTES & DETAILS FOR ADDITIONAL INFORMATION.
8. ALLOWABLE SOIL BEARING PRESSURE: 1,500 psf

STRUCTURAL
REVIEWED FOR CODE COMPLIANCE
11/18/14
CAA DATE

GENERAL

ALL WORK TO CONFORM TO THE 2010 CBC.

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS, CONDITIONS AT THE JOBSITE, AND TO CROSS CHECK ALL DETAILS AND DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH RELATED REQUIREMENTS ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND/OR CIVIL DRAWINGS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.
2. FLOOR AND WALL OPENINGS, SLEEVES, VARIATIONS IN STRUCTURAL SLAB ELEVATIONS, DEPRESSED AREAS AND ALL OTHER ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND/OR CIVIL REQUIREMENTS MUST BE COORDINATED BEFORE THE CONTRACTOR PROCEEDS WITH CONSTRUCTION.
3. IN ALL CASES WHERE A CONFLICT MAY OCCUR SUCH AS BETWEEN ITEMS INCLUDED IN THE SPECIFICATIONS AND NOTES ON THE DRAWINGS OR BETWEEN GENERAL NOTES AND SPECIFIC DETAILS, THE ENGINEER SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENT.
4. DETAIL MARKED "TYPICAL" SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY INDICATED OTHERWISE.
5. WHERE NO SPECIFIC DETAIL IS SHOWN, THE FRAMING OR CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION.
6. EXCEPT WHERE MORE STRINGENT REQUIREMENTS ARE NOTED OR SHOWN IN THE PLANS OR SPECIFICATIONS, ALL PHASES OF WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE UNIFORM BUILDING CODE, LATEST EDITION, AS WELL AS ALL APPLICABLE STATE AND LOCAL ORDINANCES.
7. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
8. THE PRECISE DIMENSIONS AND LOCATIONS OF ALL DOOR AND WINDOW OPENINGS SHALL BE DETERMINED FROM THE ARCHITECTURAL DRAWINGS; OTHER FLOOR, WALL AND ROOF OPENINGS AS REQUIRED BY MECHANICAL ELECTRICAL OR SIMILAR REQUIREMENTS SHALL BE VERIFIED FROM SHOP DRAWINGS, EQUIPMENT DATA, ETC., AS REQUIRED.
9. THE CONSTRUCTION DOCUMENT REPRESENTS A FINISHED PRODUCT. UNLESS NOTED OTHERWISE, IT DOES NOT INDICATE THE METHOD OF CONSTRUCTION, TEMPORARY BRACING, SHORING AND TEMPORARY SUPPORT FOR ANY STRUCTURAL COMPONENTS AND FOR CONSTRUCTION LOAD IMPOSED BY CONSTRUCTION EQUIPMENT AND / OR ARISEN DUE TO THE WEIGHT OF THE STORED CONTRUCTION MATERIALS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS AND PROCEDURES.
10. VIBRATIONAL ANALYSIS OF ANY MECHANICAL EQUIPMENT HAS NOT BEEN CONSIDERED BY ENGINEER OF RECORD.
11. IN OTHER THAN POST-TENTIONED CONSTRUCTION, THE SLAB-ON-GRADE IS CONSIDERED A NON-STRUCTURAL COMPONENT AND IS THEREFORE NOT DESIGNED BY THE ENGINEER, EXCEPT FOR THOSE PORTIONS OF THE SLAB -ON-GRADE OCCURRING DIRECTLY ABOVE A FOOTING.
12. CONTRACTOR TO ENSURE THAT ALL DRAINAGE IS DIRECTED AWAY FROM THE EXTERIOR FOOTINGS (MIN. 2 % SLOPE). REFER TO SOIL REPORT FOR ADDITIONAL RECOMMENDATIONS.
13. THE USE OF THESE PLANS, DRAWINGS, SPECIFICATIONS, AND/OR ELEVATIONS IS RESTRICTED TO THE ORIGINAL USE FOR WHICH THEY WERE PREPARED AND FURNISHED TO THE HOLDER. PUBLICATION THEREOF IS EXPRESSLY LIMITED TO SUCH USE. REUSE, REPRODUCTION OR OTHER PUBLICATION BY ANY METHOD IS PROHIBITED AND MAY RESULT IN LIABILITY FOR DAMAGES. VANDORPE CHOU ASSOCIATES, INC. ASSUMES NO LIABILTY FOR THE UNAUTH- ORIZED USE OF THESE PLANS.
14. THESE PLANS AND SPECIFICATIONS ARE TO SHOW THE PRIMARY STUCTURAL SYSTEM AND ARE SOLELY FOR THE USE OF A BUILDER KNOWLEDGEABLE AND EXPERIENCED IN THIS TYPE OF WORK. STRUCTURAL COMPONENTS WHICH ARE NOT A PART OF THE PRIMARY STRUCTURAL SYSTEM: SUCH AS GLAZING WINDOW WALLS, GUARDRAILS, TEMPORARY SHORING, MANUFACTURED STRUCTURAL ELEMENTS, SITE IMPROVEMENTS, PAVING, DRAINAGE STRUCTURES, FREE STANDING SIGNS AND POLES, AND LANDSCAPE IMPROVEMENTS ARE NOT A PART OF THIS WORK.
15. ALL WORK OF THE CONTRACTOR, SUB-CONTACTORS, AND BUILDER SHALL CONFORM TO CURRENT GOOD PRACTICES. NOT ALL ASPECTS OF GOOD PRACTICES ARE SHOWN ON THE CONTRACT DRAWINGS.
16. DURING THE COURSE OF CONSTRUCTION CHANGES MAY OCCUR, THEREFORE THE ENGINEER OF RECORD MAKES NO REPRESENTATIONS REGARDING THE ACCURACY OF THESE PLANS TO THE "AS-BUILT" PRODUCT.
17. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR LOCATION AND CONSTRUCTION OF DRAFTSTOPS, FIRE BLOCKING, DAMPERS AND OTHERS ITEMS NECESSARY FOR FIRE PROTECTION. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR LOCATION AND CONSTRUCTION OF FLASHING, BLOCKING, EXTERIOR FINISHES, TREATMENTS OR OTHER MATERIAL REQUIRED FOR DAMPPROOFING OR MOISTURE CONTROL.
18. FOR ANY PRE-MANUFACTURED PRODUCTS OR MATERIALS OF CONSTRUCTION, CONTRACTOR SHALL BE RESPONSIBLE FOR BEING FAMILIAR WITH AND FOR PROPER EXECUTION OF MANUFACTURER'S INSTRUCTIONS, REQUIREMENTS AND CONDITIONS OF APPROVAL PRIOR TO INSTALLATION AND/OR USE.
19. SOME STRUCTURAL COMPONENTS ARE REQUIRED BY CODE TO BE PROTECTED FROM WATER/MOISTURE PENETRATION OR FROM FIRE DAMAGE. THE METHODS OF PROTECTION OF THESE STRUCTURAL COMPONENTS ARE NOT THE RESPONSIBILITY OF THE ENGINEER OF RECORD AND NOT DETAILED. REFER TO THE ARCHITECTURAL DOCUMENTS AND THE BUILDING CODE FOR WATER / MOISTURE PROOFING METHODS AND FIRE PROOFING DETAILS.
20. THERE SHALL BE NO TRENCHES OR EXCAVATIONS 5 FEET OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND: OR OBTAIN NECESSARY PERMIT FROM STATE OF CALIFORNIA, DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE ISSUANCE OF A BUILDING OR GRADING PERMIT.
21. ANY ASTM DESIGNATIONS SHALL BE AS AMENDED TO DATE.

WIND LOAD:

BASIC WIND SPEED:	85 MPH
EXPOSURE:	C
WIND IMPORTANCE FACTOR:	1.0

EARTHQUAKE DESIGN DATA:

I	=	1.0			
SS	=	1.395	Sds	=	0.930
S1	=	0.494	Sd1	=	0.430
SITE CLASS	=	C			
SDC	=	D			
Fa	=	1.0			
Fv	=	1.306			
PROCEDURE	=	ELF			
R	=	3			

MASONRY

1. ALL BLOCKS SHALL CONFORM TO ASTM C90, LATEST EDITION . MASONRY UNITS SHALL HAVE CURED FOR NOT LESS THAN TWENTY-EIGHT (28) DAYS WHEN PLACED IN THE STRUCTURE. PROVIDE ALL BOND BEAM UNITS, LINTELS, ETC., AS REQUIRED.

   STRENGTH (f'm) SHALL BE 1,500 PSI MINIMUM.
2. DO NOT USE CHIPPED OR CRACKED BLOCKS. IF ANY SUCH BLOCKS ARE DISCOVERED IN ANY FINISHING WALL, THEY SHALL BE PROMPTLY REMOVED AND REPLACED WITH NEW BLOCKS TO THE APPROVAL OF THE ENGINEER.
3. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150, TYPE 1 OR TYPE II, AND SHALL BE ENTIRELY OF ONE MANUFACTURER.
4. WATER USED FOR MORTAR AND GROUT SHALL BE CLEAN AND FREE FROM DELETERIOUS AMOUNTS OF ACIDS, SALTS, ALKALI, AND ORGANIC MATERIALS.
5. SAND FOR MORTAR SHALL CONFORM TO ASTM C144 EXCEPT THAT NOT LESS THAN 3% OF THE SAND SHALL PASS THE NUMBER 100 SIEVE. SAND AND PEA GRAVEL FOR GROUT SHALL CONFORM TO ASTM C404, TABLE 1, COARSE AGGREGATE, EXCEPT WHEN OTHER GRADINGS ARE SPECIFICALLY APPROVED BY THE ENGINEER.
6. LIME SHALL BE TYPE S PER CBC TABLE 2103.6.
7. MORTAR SHALL BE TYPE S UNLESS OTHERWISE NOTED.
8. GROUT FOR PUMPING SHALL BE FLUID CONSISTENCY AND SHALL BE PROPORTIONED AS NECESSARY TO ACHIEVE THE SPECIFIED STRENGTH f'm. THE MIX SHALL BE REVIEWED BY THE ENGINEER. FLUID CONSISTENCY SHALL MEAN A CONSISTENCY AS FLUID AS POSSIBLE FOR POURING WITHOUT SEGREGATION OF THE CONSTITUENT PARTS.
9. THE USE OF ADMIXTURES SHALL NOT BE PERMITTED IN MORTAR OR GROUT UNLESS SUBSTANTIATING DATA HAS BEEN SUBMITTED TO AND REVIEWED BY THE ENGINEER. THE USE OF ADMIXTURES IN MORTAR SHALL NOT BE PERMITTED WITHOUT REDUCING THE LIME CONTENT. THE USE OF UNCONTROLLED FIRE CLAY, DIRT, AND OTHER DELETERIOUS MATERIALS IS PROHIBITED.
10. RETEMPER MORTAR ONLY BY ADDING WATER INTO A BATCH MADE WITH THE MORTAR AND THEN CAREFULLY WORKING THE WATER INTO THE MORTAR. RETEMPERING THE MORTAR BY DASHING WATER OVER THE MORTAR SHALL NOT BE PERMITTED. ANY MORTAR OR GROUT WHICH IS UNUSED WITHIN ONE HOUR AFTER INITIAL MIXING SHALL BE REMOVED FROM THE WORK.
11. WHEN GROUTING IS STOPPED FOR A PERIOD OF ONE HOUR OR LONGER, FORM HORIZONTAL CONSTRUCTION JOINTS BY STOPPING THE GROUT POUR 1-1/2 INCHES MINIMUM BELOW THE UPPER-MOST UNIT.
12. MAXIMUM HEIGHT OF ANY GROUT POUR SHALL NOT BE GREATER THAN 5 FEET UNLESS PROPER HIGH-LIFT PROCEDURES ARE USED.
13. ALL VERTICAL WALL REINFORCEMENT SHALL HAVE DOWELS EQUAL IN SIZE EMBEDDED INTO FOOTING UNLESS NOTED OTHERWISE ON THESE PLANS.
14. PROVIDE MINIMUM 2-#5 BARS AT ALL CORNERS, JOINTS, JAMBS AND INTERSECTIONS U.N.O.
15. MASONRY VENEER SHALL BE PER CHAPTER 14 OF THE CBC. SEE ARCHITECTURAL PLANS.
16. PROVIDE MIN. GROUT SPACE PER CBC 2103.12. PROVIDE 1/2" MIN. GROUT BETWEEN REINFORCING BARS AND MASONRY.
17. ALL EMBEDDED ITEMS SHALL BE WITHIN ACI 307 TOLERANCES AND SUITABLE FOR THE PROPOSED FUNCTION. NO PIPES OR DUCTS SHALL BE PLACED IN MASONARY WALLS UNLESS SPECIFICALLY SHOWN BY ENGINEER.
18. REINFORCING SHALL BE HELD SECURELY IN PLACE PRIOR TO GROUTING.
19. LAP SPLICES IN MASONRY REINFORCING SHALL BE 48 BAR DIAMETERS U.N.O.
20. ALL MASONARY UNITS SHALL BE LAID IN RUNNING BOND WITH FULL MORTAR HEAD JOINTS. COLUMNS, PIERS, AND ARCHES SHALL BE BONDED INTO ADJACENT WALLS WITH HORIZONTAL JOINT REINFORCING AND BOND BEAM STEEL SHALL BE CONTINUOUS.
21. ALL STRUCTURAL BRICK SHALL CONFORM TO ASTM C62, GRADE MW. REFER TO ARCH. DRAWINGS.
22. GROUT ALL CELLS WITH REINFORCEMENT.

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans and specifications must be kept on the job at all times. It is unlawful to make any changes or alterations on same without written permission from the Community Development Division, City of Laguna Niguel. The stamping of these plans and specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date:
By:

I 2nd REV 2

Thomas P. Cox: Architects, Inc.

VCA ENGINEERS
2200 W. ORANGEWOOD AVE.
SUITE 150
ORANGE, CA 92868
Tel: (714) 978-9780

REGISTERED PROFESSIONAL ENGINEER
ROBERT SHEUNG-CHI CHOU
S 003518
STRUCTURAL
STATE OF CALIFORNIA

DATE

REVISION

CROWN CABOT
LUXURY APARTMENTS
25691 CROWN VALLEY, LAGUNA NIGUEL, CA
MILL CREEK RESIDENTIAL TRUST LLC

DRAWING CONTENTS
LANDSCAPE DETAILS

FOR CONSTRUCTION

THIS SET OF CONSTRUCTION DOCUMENTS HAS BEEN PREPARED FOR THE CONSTRUCTION OF AN APARTMENT PROJECT. THEREFORE, THE BUILDINGS PRODUCED FROM THESE DOCUMENTS ARE NOT SUITABLE FOR USE AS OR CONVERSION TO A CONDOMINIUM PROJECT.

SL1.11

11-2730L
JOB NUMBER

NO SCALE
SCALE

ISSUED AS
4/15/2013
DATE

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BUILDING OFFICIAL

Date: 12-17-14
By:

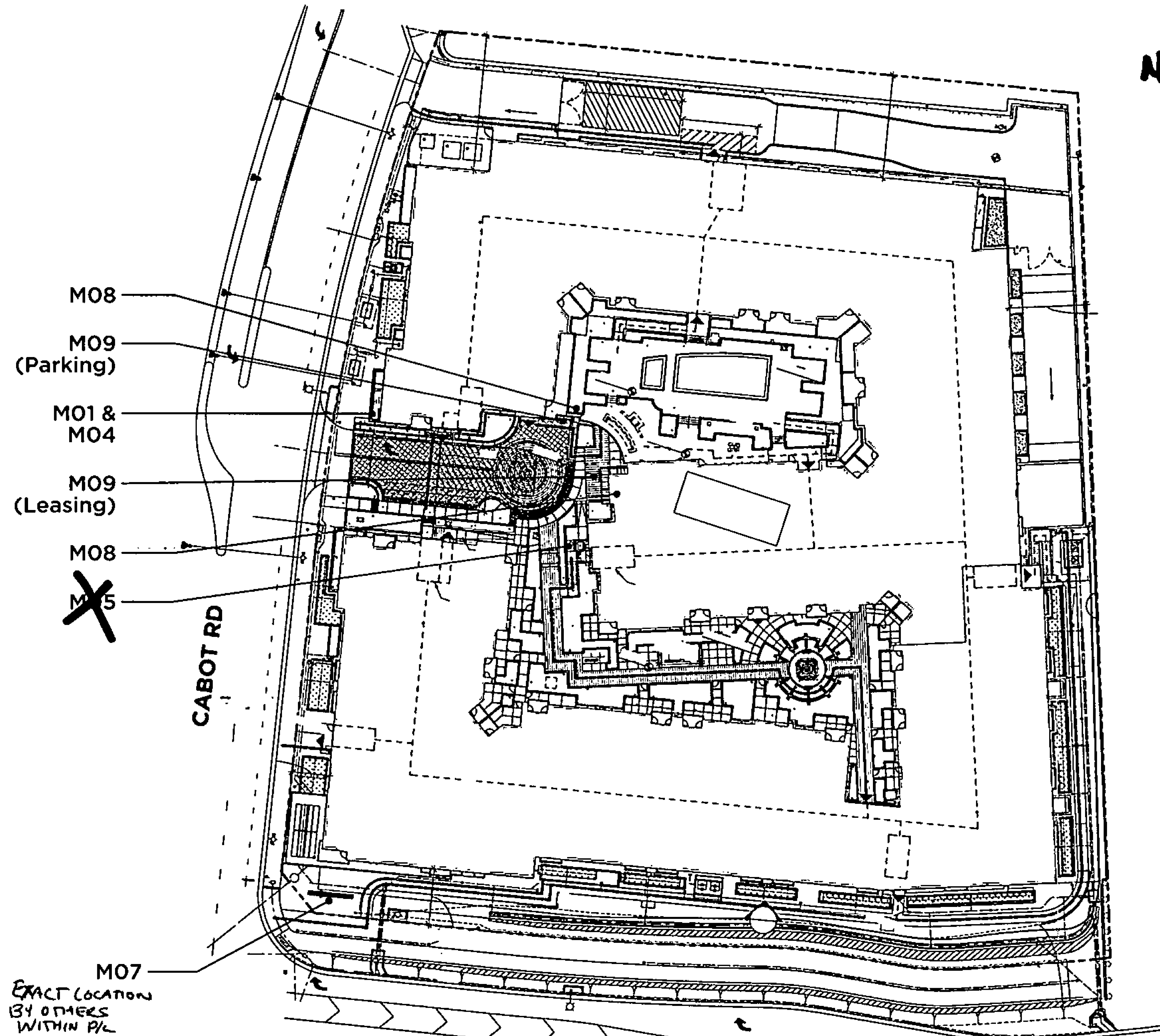
City
Set

CITY LAGUNA NIGUEL
RECEIVED
NOV 1 7 2014
COMMUNITY DEVELOPMENT

BLD

CAA OK
Gary OK

27960 CABOT RD
Pool/Spa Mill Creek
B14-2752



SITE PLAN
Scale: Not to Scale

NAP

Sign Type	Sign Footage	Description
M01	3.10 sq. ft.	Address Sign
M04	13.3 sq. ft.	Wall ID Sign (Ground Level APEX Letters)
~~M05~~	~~62.6 sq. ft.~~	~~Wall ID Sign (Vertical APEX Letters)~~
M07	14.5 sq. ft. (each)	Monument Sign / Double Faced
M08	6.0 sq. ft. (each)	Light Box Sign (2x)
M09	5.7 sq. ft.	Leasing Sign
M09	5.7 sq.ft.	Parking Sign

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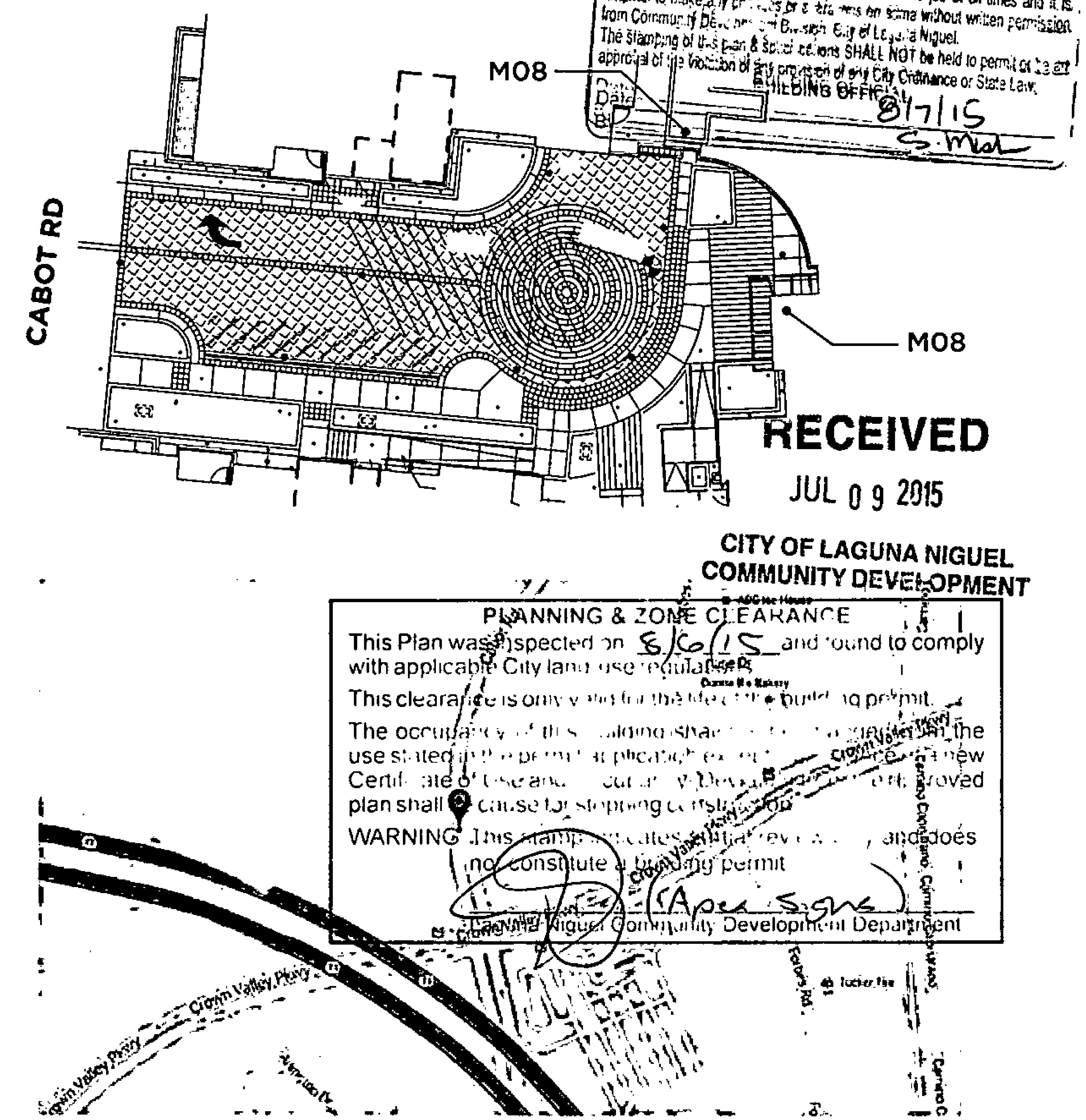
BUILDING OFFICIAL
Date: 8/7/15
S. Mal



RECEIVED
JUL 0 9 2015
CITY OF LAGUNA NIGUEL
COMMUNITY DEVELOPMENT

PLANNING & ZONE CLEARANCE
This Plan was inspected on 8/6/15 and found to comply with applicable City land use regulations.
This clearance is only valid for the life of the building permit.
The occupancy of this building shall ... the use stated in the permit application ... new Certificate of Use and Occupancy ... approved plan shall be cause for stopping construction.
WARNING: This stamp indicates ... and does not constitute a building permit
(Apex Signs)
Laguna Niguel Community Development Department

PLAN VIEW
Scale: Not to Scale

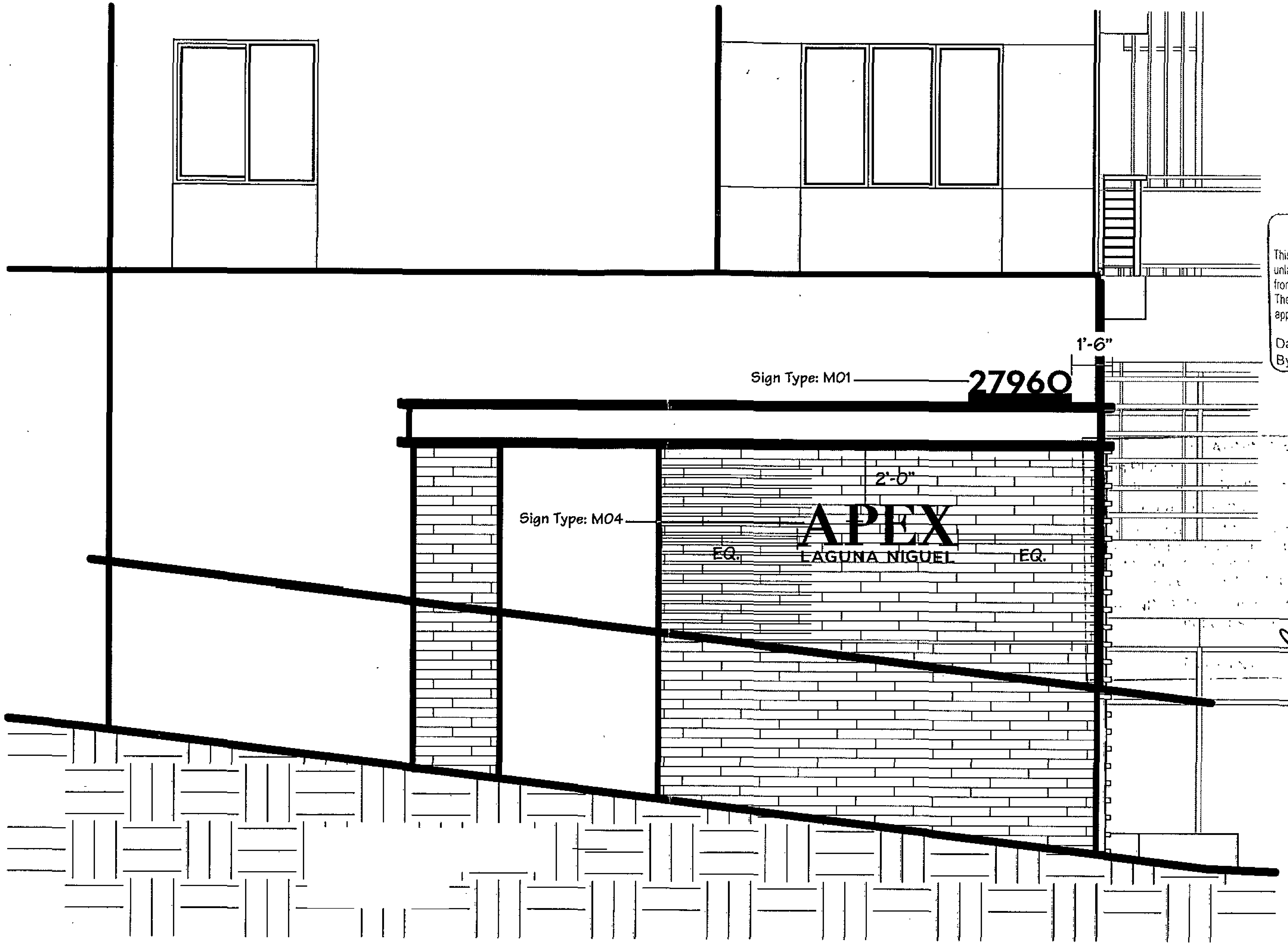
ADDRESS:
27960 Cabot Rd. Laguna Niguel, CA 92677

Client Approval:
☐ as submitted
☐ as noted
☐ resubmit
By:
Date:

Date: 05/12/15
Revision: △1 Date: 07/02/15
Drawn by: Martin
Review by:

CASigns
10280 Glenoaks Boulevard
Pacoima, CA 91331-1604
FAX: 818·899·4499
www.CASigns.com
Telephone: 818·899·1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 1
Scale: As Noted



THE CITY OF LAGUNA NIGUEL
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The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date ____
By ____

...ARANCE
...and to comply
...m the
...new
...roved
...and does
...epartment

Elevation View - Address Number & Ground Level Wall ID Sign
Scale: Not to Scale
Sign Types: M01 & M04

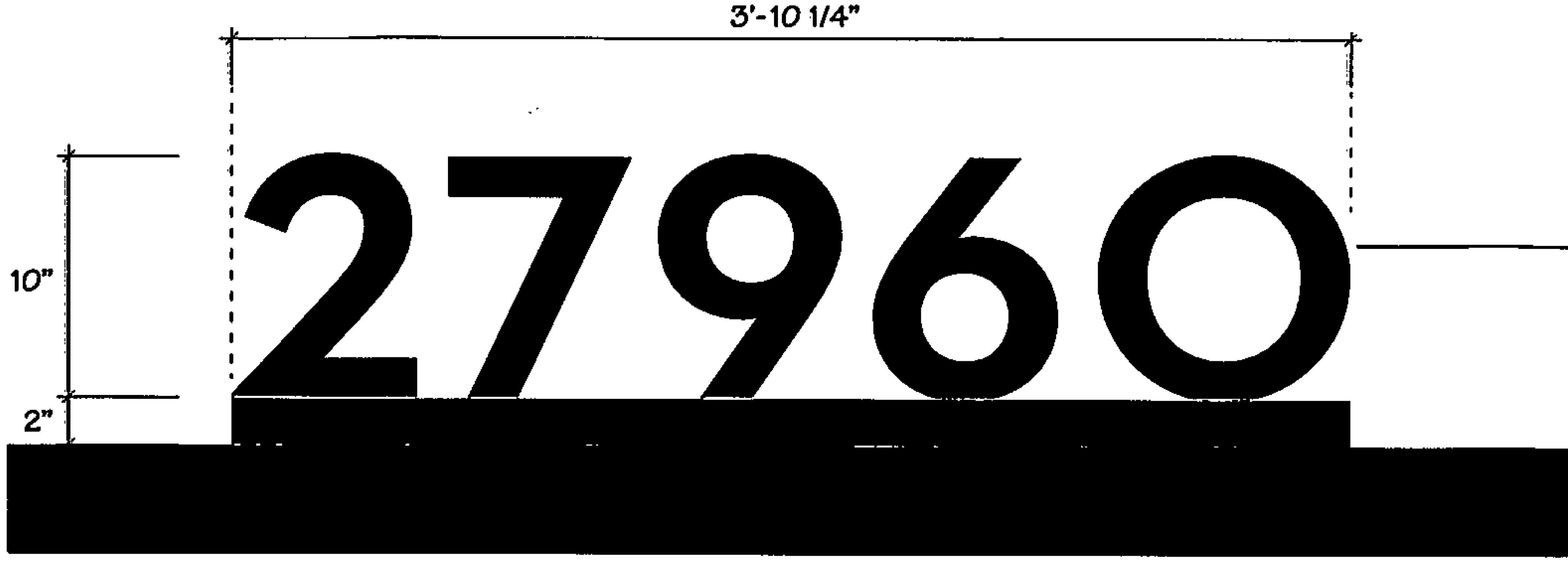
Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: ____
Date: ____

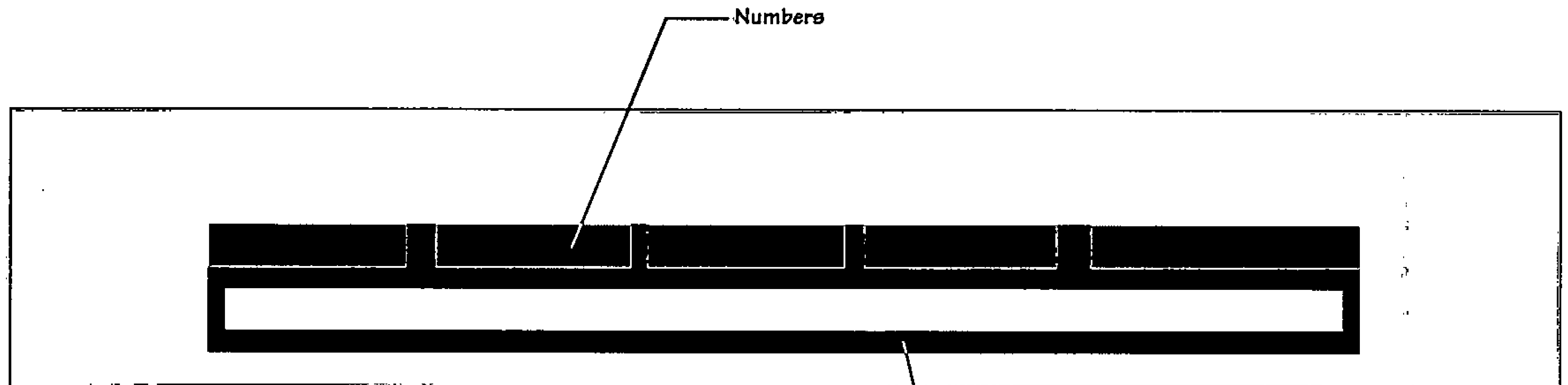
Date: 05/12/15
Revision: ⚠1 Date: 07/02/15
Drawn by: Martin
Review by:

CASigns
10280 Glenoaks Boulevard
Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

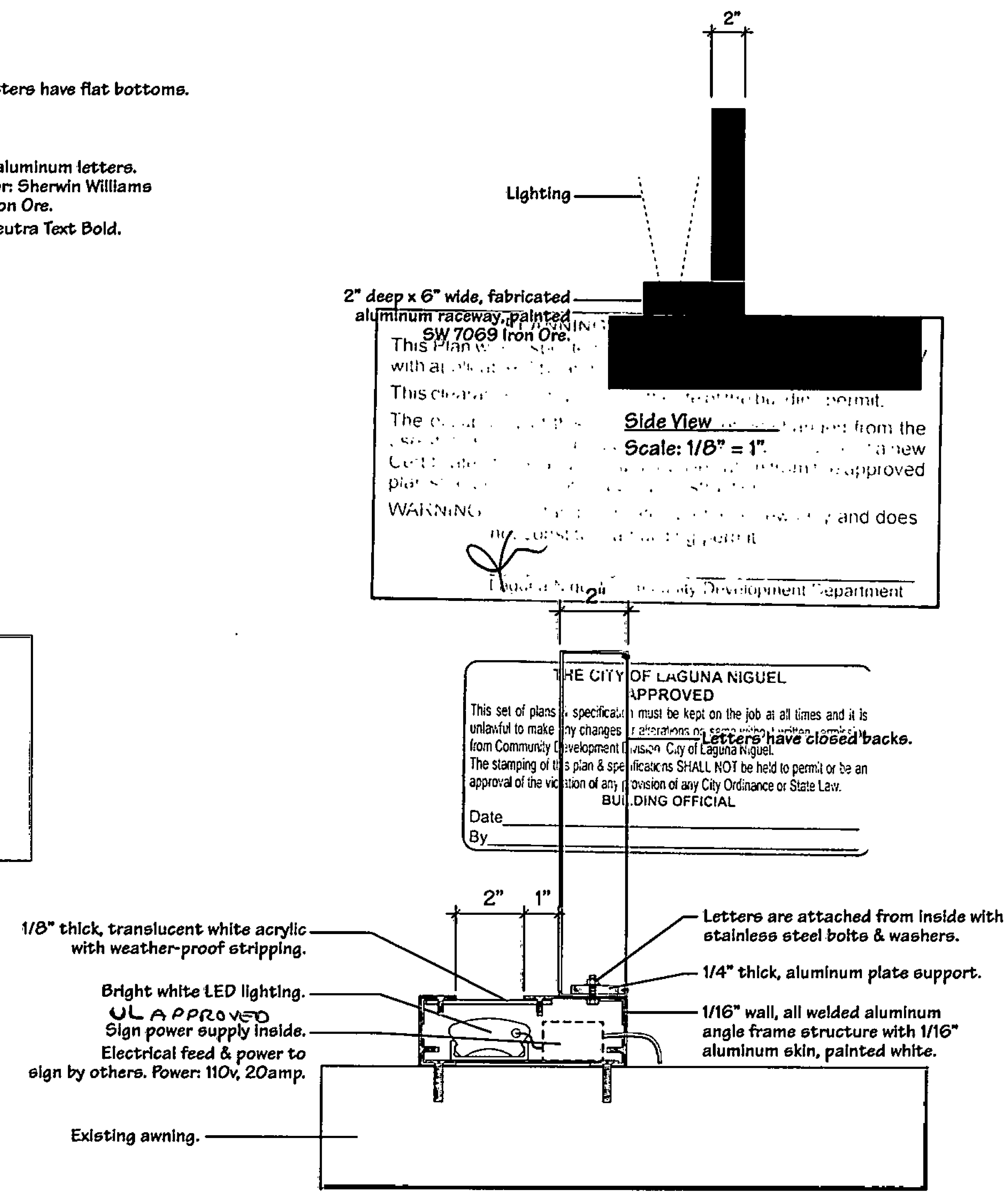
Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 2
Scale: As Noted



Front View - Address Numbers on Existing Awning
Scale: 1/8" = 1"
Sign Type: M01



Top View - Address Numbers on Existing Awning
Scale: 1/8" = 1"



Section View - Mounting Details
Scale: 3" = 1'-0"

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: ______________

Date: ______________

Date: 05/12/15
Revision: ⚠ Date: 07/02/15
Drawn by: Martin
Review by:

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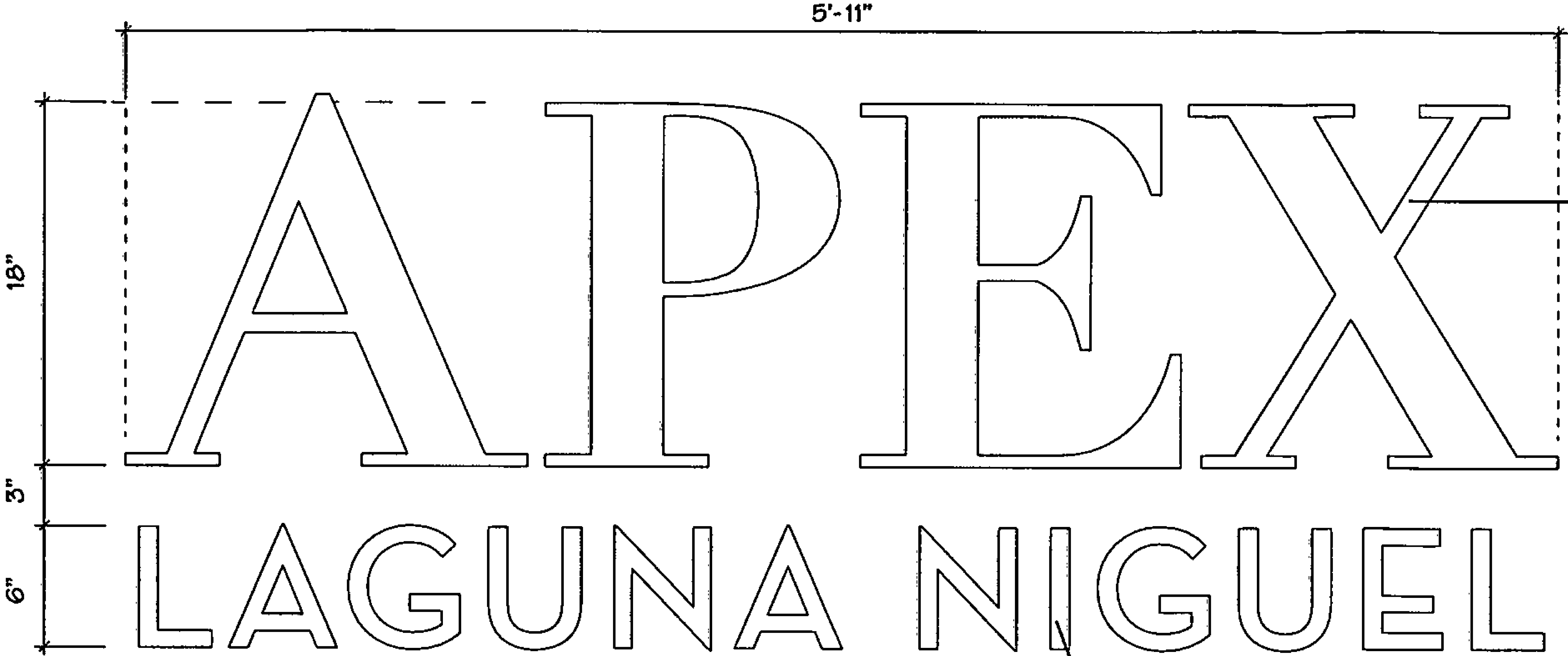
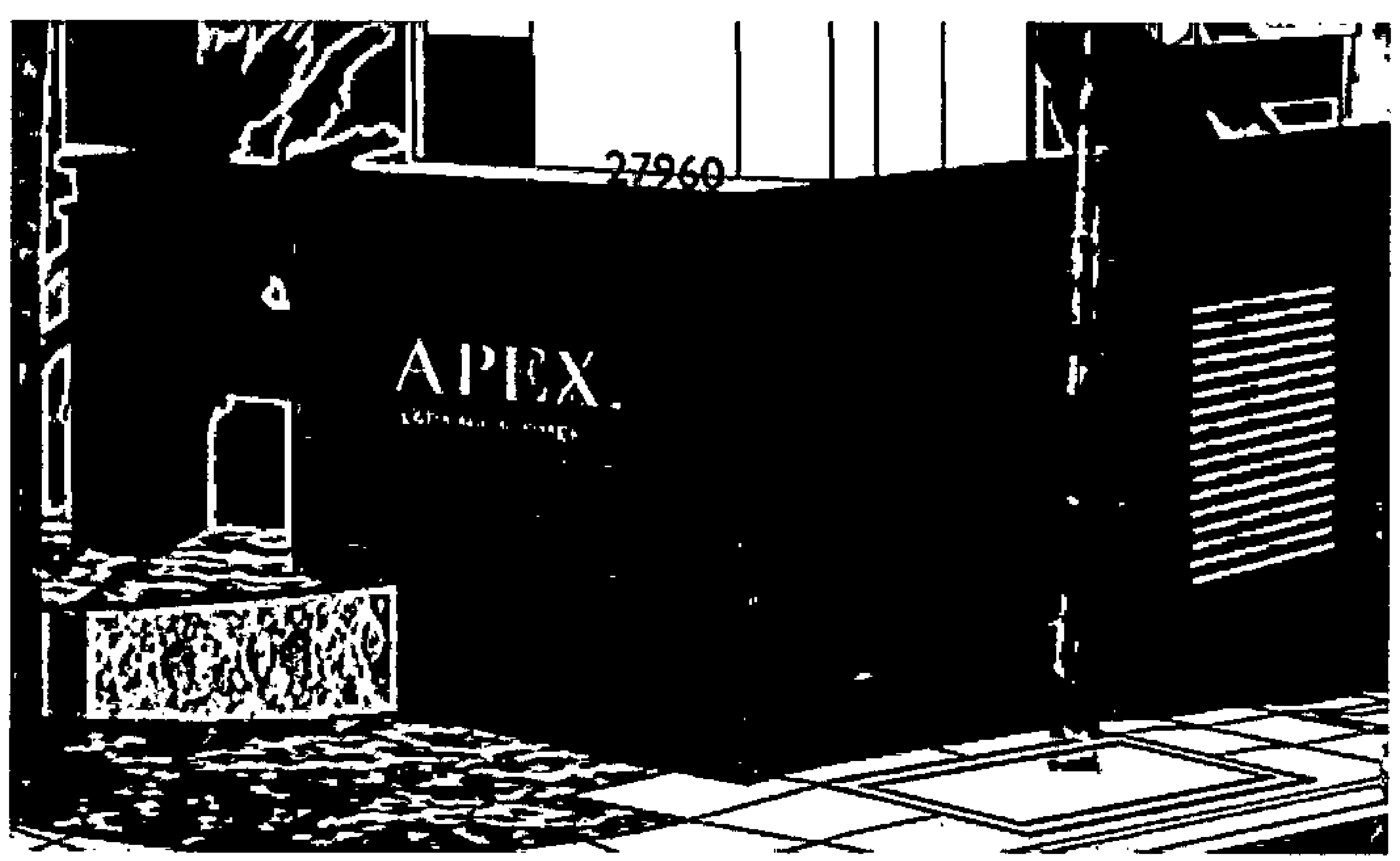
Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

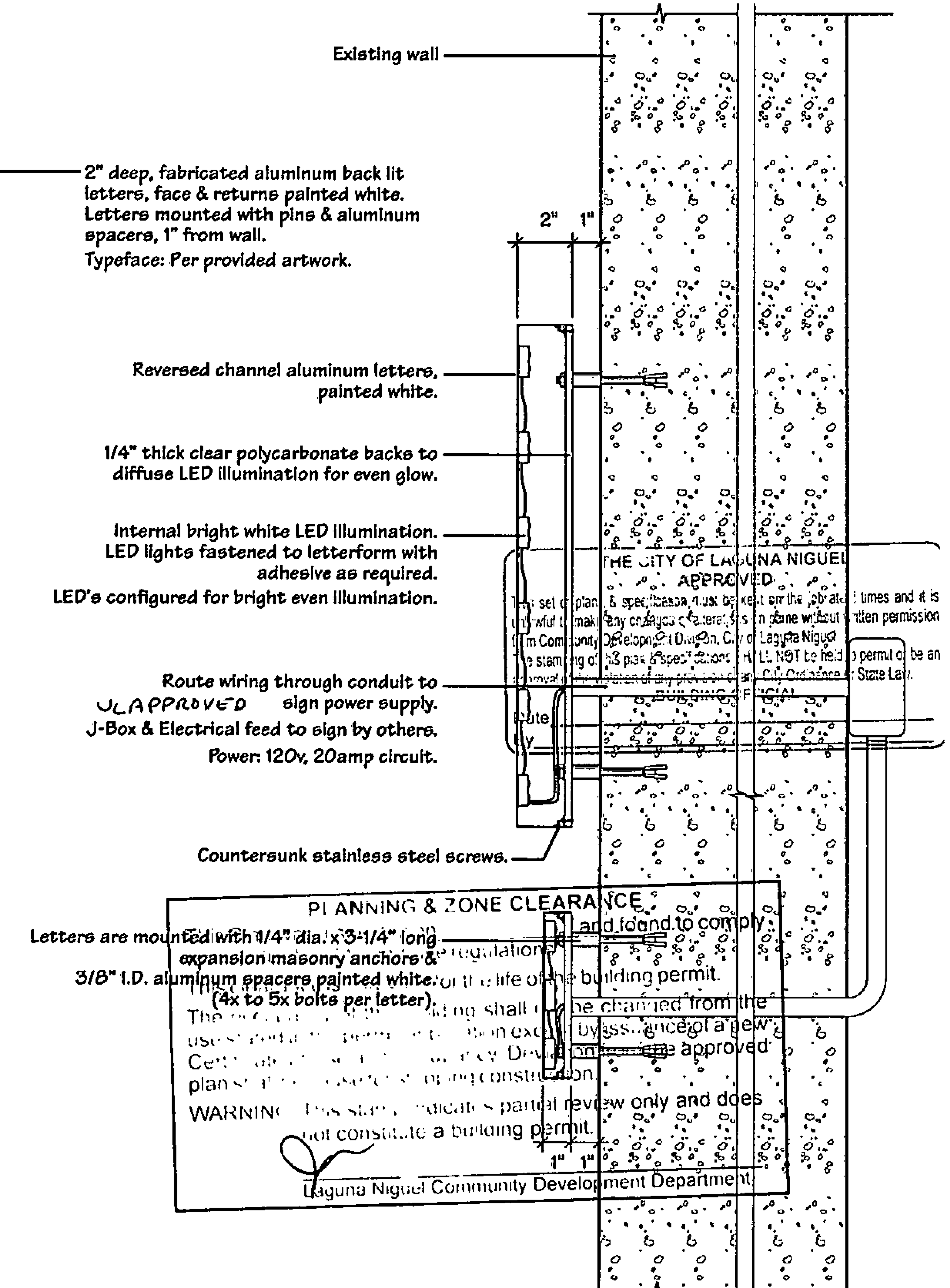
Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 3
Scale: As Noted



Front View - Ground Level Wall ID Sign
Scale: 1/8" = 1"
Sign Type: M04



Elevation - Address Number & Ground Level Wall ID Sign
Scale: Not to Scale
Sign Types: M01 & M04



Section View - Halo Letters
Scale: 3/16" = 1"

Client Approval:
☐ as submitted
☐ as noted
☐ resubmit

By: ____________
Date: ____________

Date: 05/12/15
Revision: △1 Date: 07/02/15
Drawn by: Martin
Review by:

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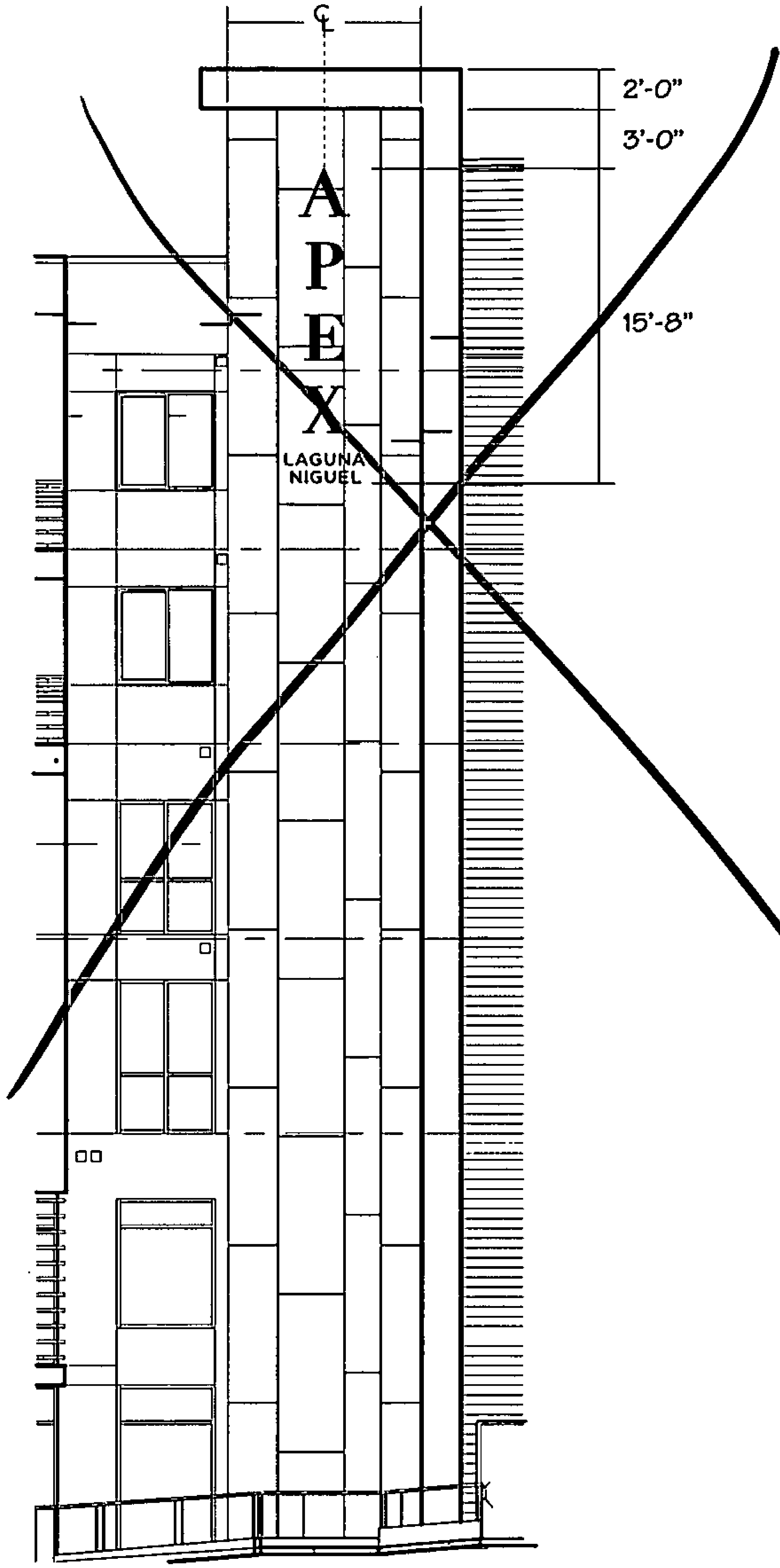
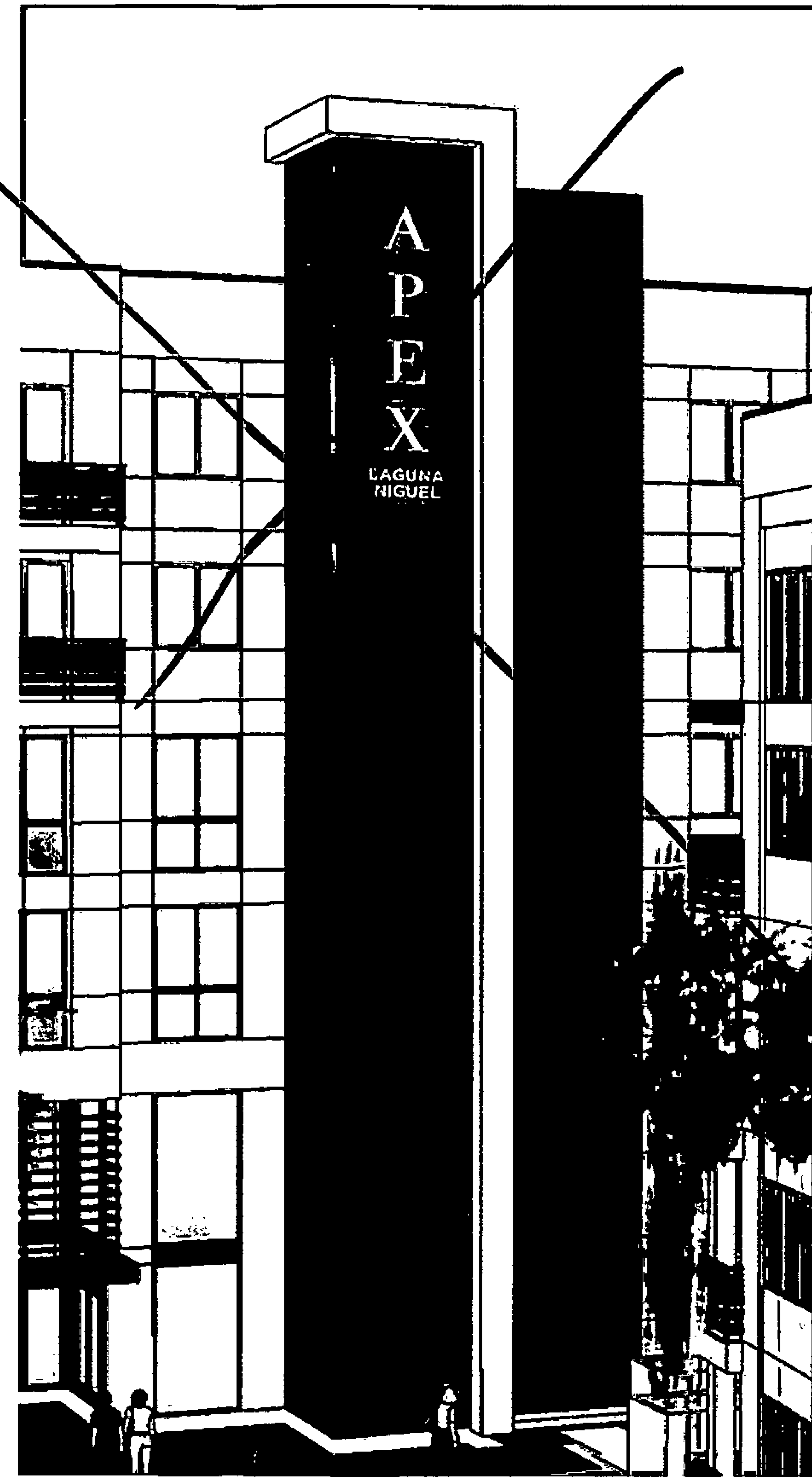
Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 4
Scale: As Noted



Elevation View - Wall ID Sign (Vertical)
Scale: Not to Scale
Sign Types: M05



Elevation - Wall ID Sign (Vertical)
Scale: Not to Scale
Sign Types: M05

UNDER SEPARATE PERMIT

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By:

Date:

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THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specification must be kept on the job a... unlawful to make any changes or alterations on same without ... from Community Development Division, City of Laguna Niguel. The stamping of this plan & specifications SHALL NOT be held ... approval of the violation of any provision of any City Ordinance ...
BUILDING OFFICIAL
Date
By

Project: MILL CREEK

Ref: APEX Laguna Niguel
Exterior Illuminated Signage

PLANNING & ZONE CLEARANCE
...and found to comply ... of the building permit ... shall not ... from the ... of a new ... the approved ... only and does not ... permit.
Laguna Niguel Community Development Department

Date: 05/12/15

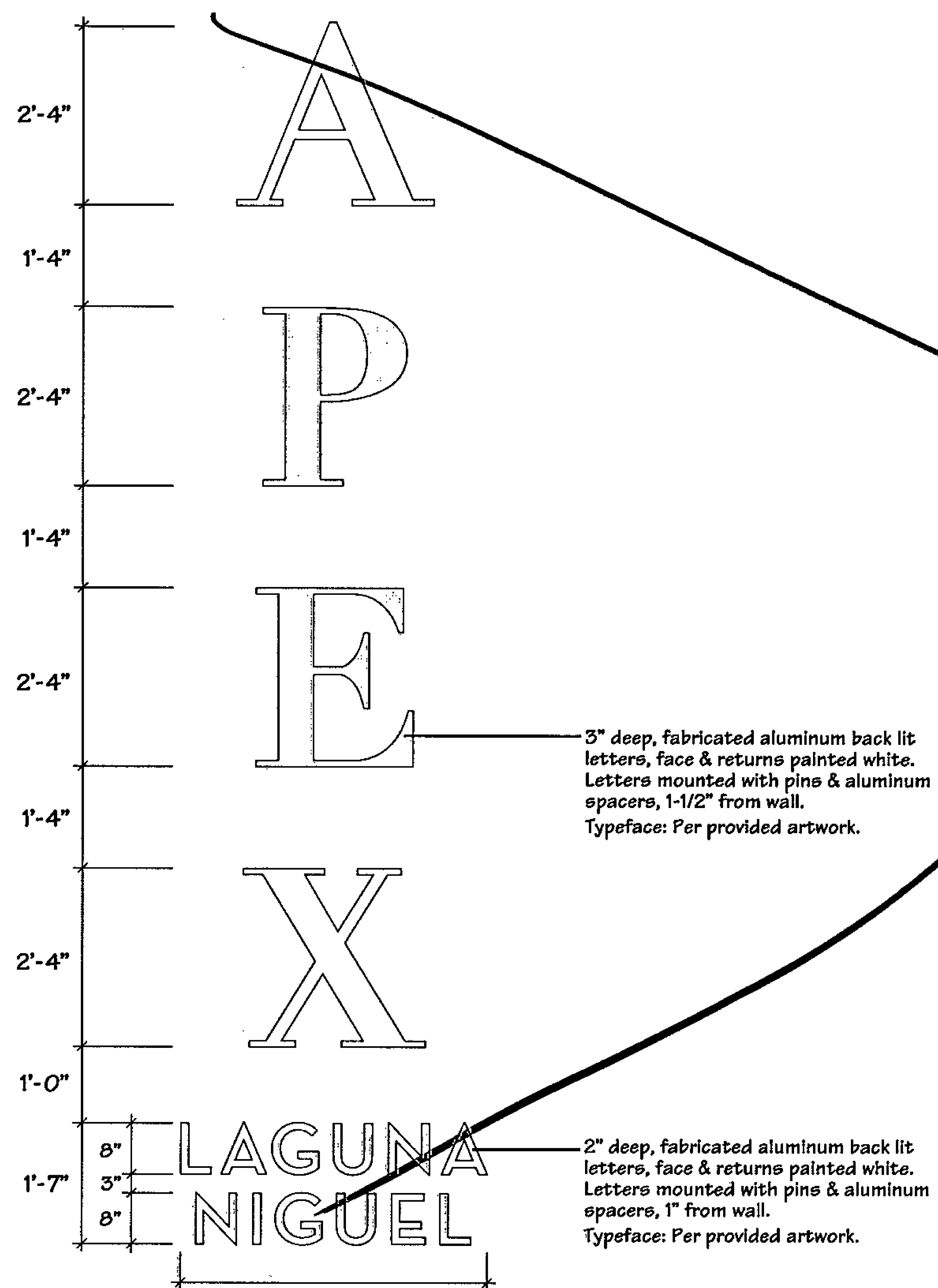
Rev : △ Date:

Schematic 5

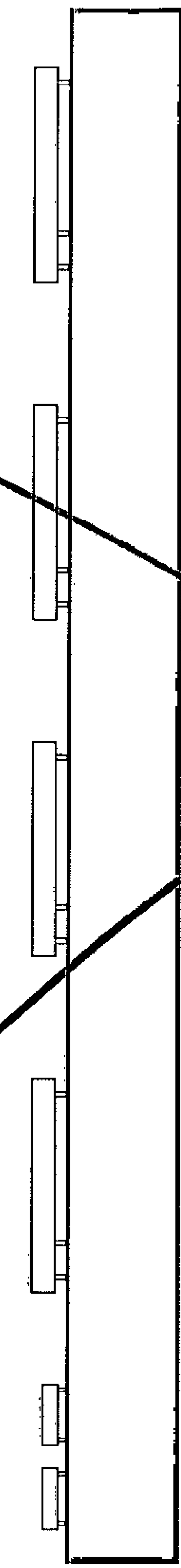
Scale : AS Noted

Drawn By : Martin

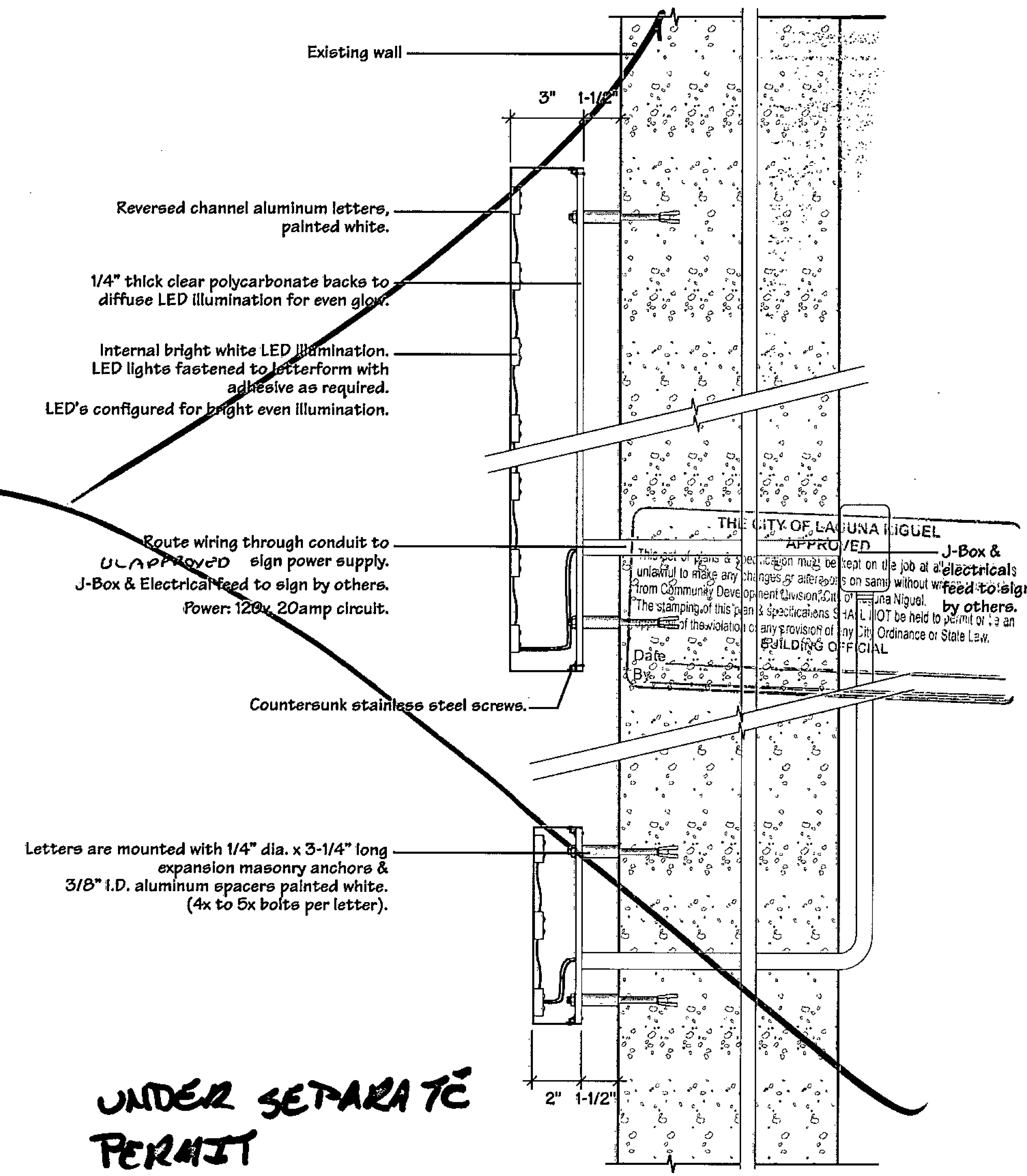
Review By :



Front View - Illuminated Identity Sign
Scale: 1/2" = 1'-0"
Sign Type: M05



Side View:
Scale: 1/2" = 1'-0"



UNDER SEPARATE PERMIT

Section View - Halo Letters
Scale: 3/16" = 1"

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: ____________

Date: ____________

Date: 05/12/15
Revision: △ Date: 07/02/15
Drawn by: Martin
Review by:

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Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 6
Scale: As Noted

Elevation - Monument Sign (Vertical)
Scale: Not to Scale
Sign Types: M07

PLANNING & ZONE CLEARANCE
and found to comply
ing permit.
from the
of a new
the approved
only and does
Department

LAGUNA NIGUEL
ROVED
be kept on the job at all times and it is
on same without written permission
City of Laguna Niguel.
SHALL NOT be held to permit or be an
of any City Ordinance or State Law.
G OFFICIAL

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: ______
Date: ______

Date: 05/12/15
Revision: △ Date:
Drawn by: Martin
Review by:

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Pacoima, CA 91331-1604
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www.CASigns.com
Telephone: 818-899-1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 7
Scale: As Noted

THE CITY OF LAGUNA NIGUEL
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BUILDING OFFICIAL

Date

By

PLANNING & ZONE CLEARANCE

This Plan was inspected on __________ and found to comply with applicable City and use regulations.

This clearance is only valid for the life of the building permit.

The occupancy of this building shall not be changed from the use stated in ... except by ... of a new Certificate of Use and Occupancy. Deviation from the approved plan shall ... construction.

WARNING This stamp indicates partial review only and does not constitute a building permit.

Laguna Niguel Community Development Department

Front View - Exterior Monument Sign
Scale: 1/2" = 1'-0"
Sign Type: M07

End View
Scale: 1/2" = 1'-0"

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: __________
Date: __________

Date: 05/12/15
Revision: △1 Date: 07/02/15
Drawn by: Martin
Review by:

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Pacoima, CA 91331-1604
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www.CASigns.com
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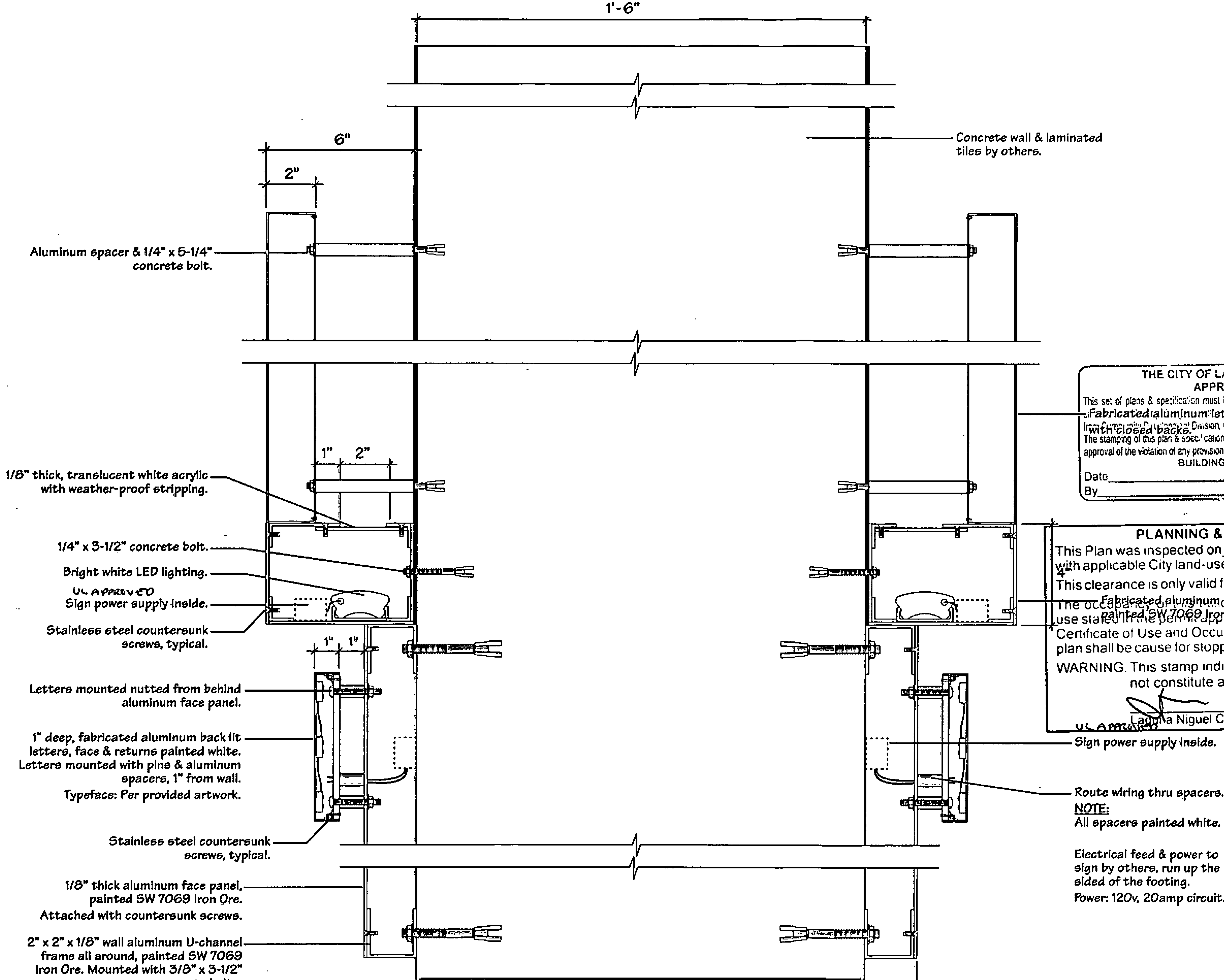
Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 8
Scale: As Noted



Section View - Cabinet, Fabricated Letters & Shelf
Scale: 1/4" = 1"

Client Approval:
☐ as submitted
☐ as noted
☐ resubmit

By:

Date:

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Project: MILL CREEK

Ref: APEX Laguna Niguel Exterior Illuminated Signage

Date: 05/12/15

Rev : 1 | Date: 07/02/15

Schematic 9

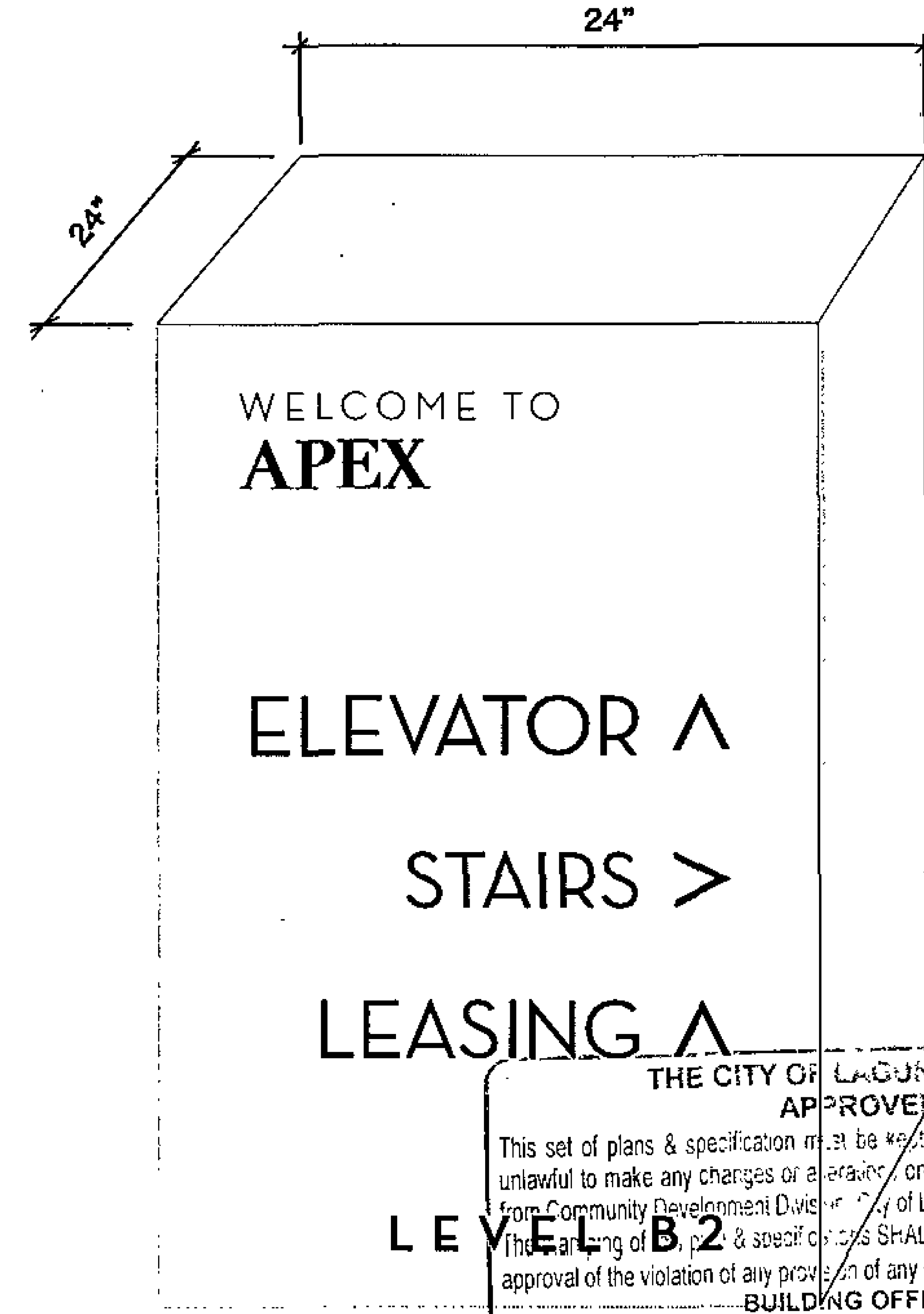
Scale : As Noted

Drawn By : Martin

Review By :

Front View - Light Box Sign
Scale: 1/4" = 1"
Sign Type: M08

Applied black vinyl text & graphics.
Typeface: Neutra Display Bold & Medium & Light.



Isometric View
Scale: NTS

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BUILDING OFFICIAL
Date
By

PLANNING & ZONE CLEARANCE
This Plan was inspected on ________ and found to comply with applicable City land use regulations.
This clearance is only valid for the life of the building ... shall not be changed from the use ... Deviation from the approved plan ... stopping construction.
WARNING: This stamp indicates partial review only and does not constitute a building permit.
Laguna Niguel Community Development Department

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By:
Date:

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FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

Project: MILL CREEK

Ref: APEX Laguna Niguel
Exterior Illuminated Signage

Date: 05/12/15

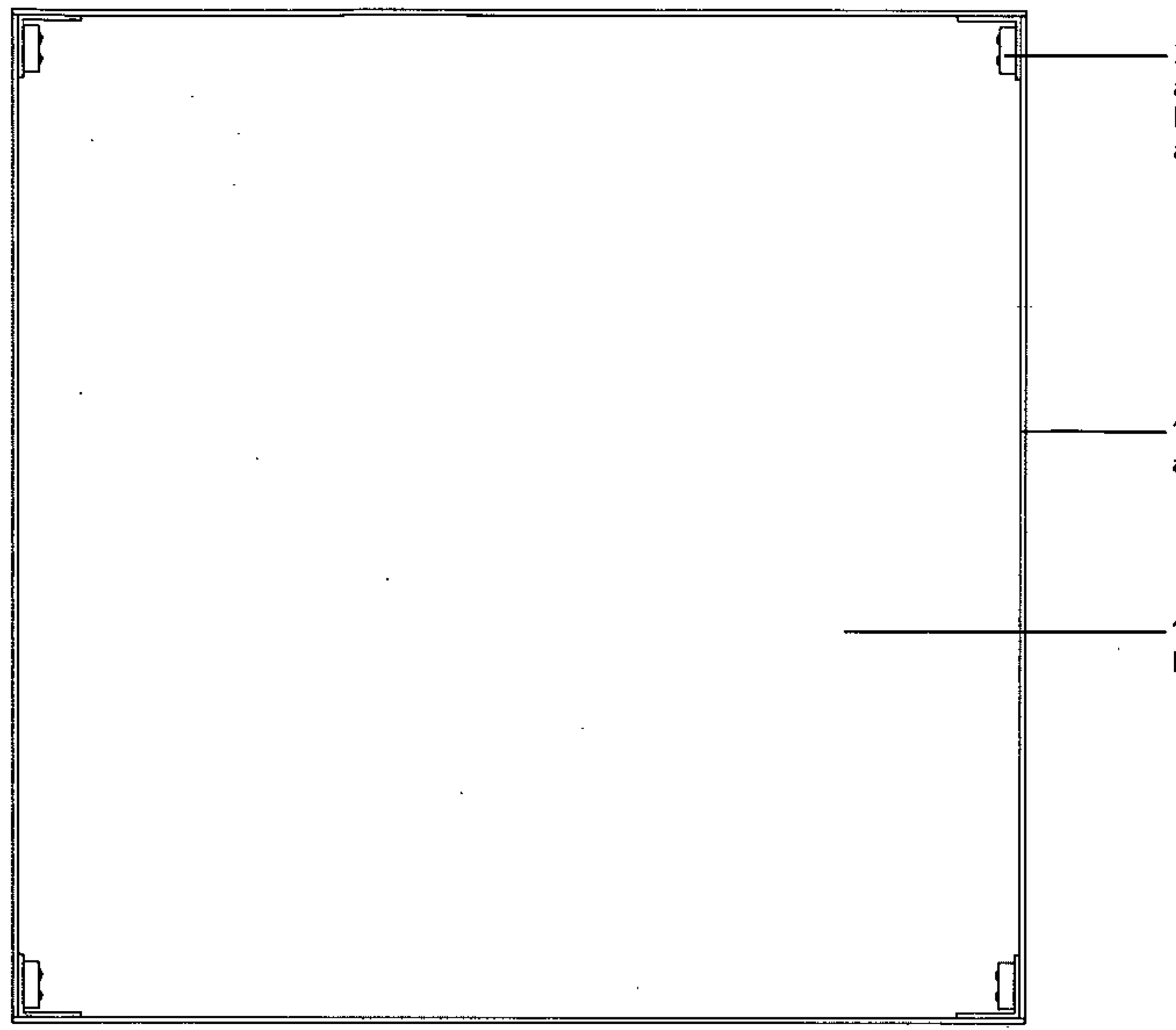
Rev : △ | Date:

Schematic 10

Scale : As Noted

Drawn By : Martin

Review By :



Bright white LED illumination at each corner.
LED lights fastened with adhesive as required.

1/8" thick, translucent white acrylic faces.

1/8" thick aluminum at bottom, painted white.

Top Section View - Illuminated Box
Scale: 3/16" = 1"

1/8" thick, translucent white acrylic panel at top.

1/8" thick, translucent white acrylic face panels.

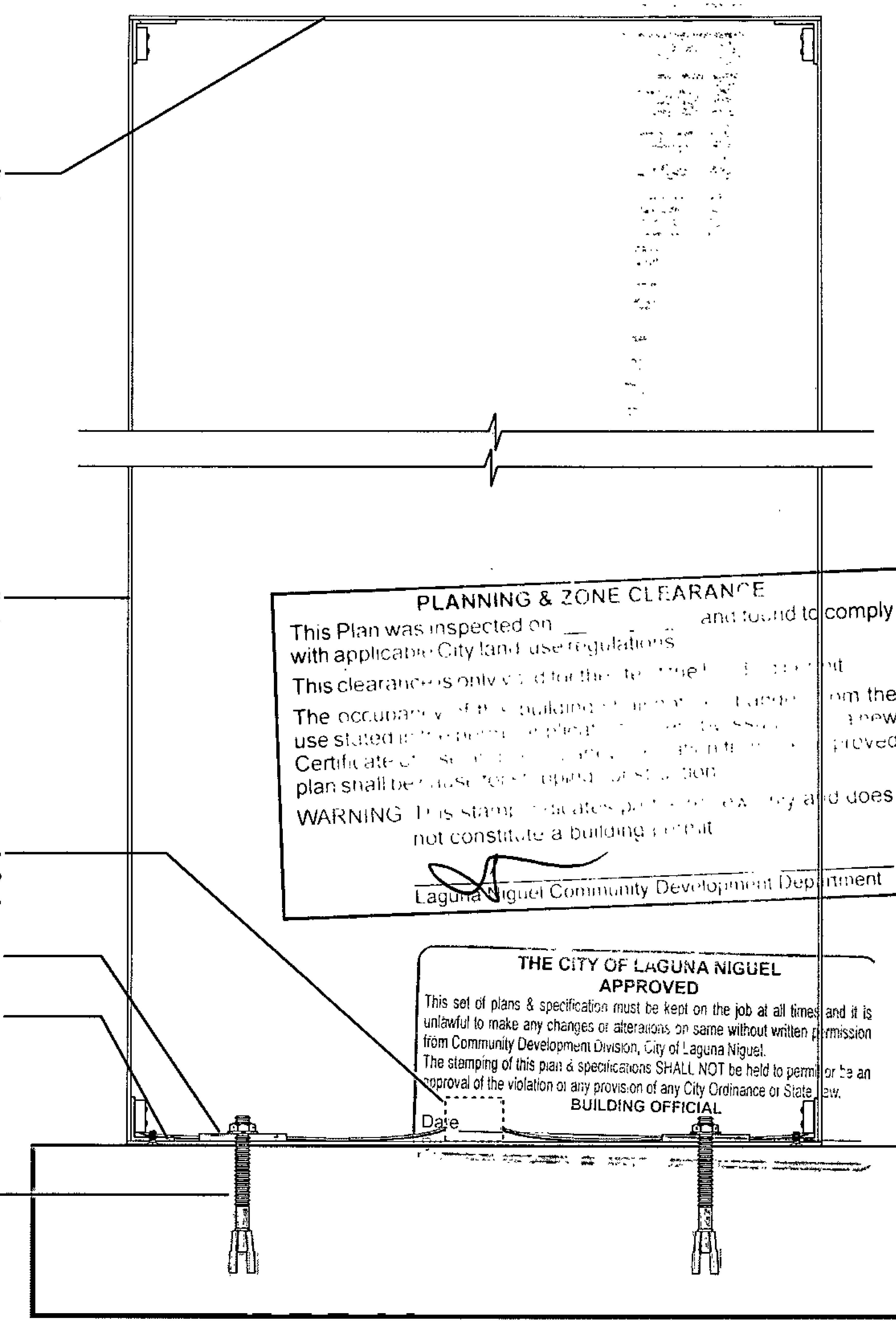
UL APPROVED
Power supply inside.
Electrical feed & power to sign by others. Power: 110v, 20amp.

1/4" thick aluminum plate support.

1-1/2" x 1-1/2" x 1/8" wall aluminum angle structure with 1/8" aluminum panel at bottom, all painted white.
Panel attached with countersunk stainless steel screws.

3/8" x 3-3/4" expansion concrete anchors, 4x required.

NOTE: Mounting method TBY.



Section View - Cabinet / Mounting
Scale: 3/16" = 1"

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

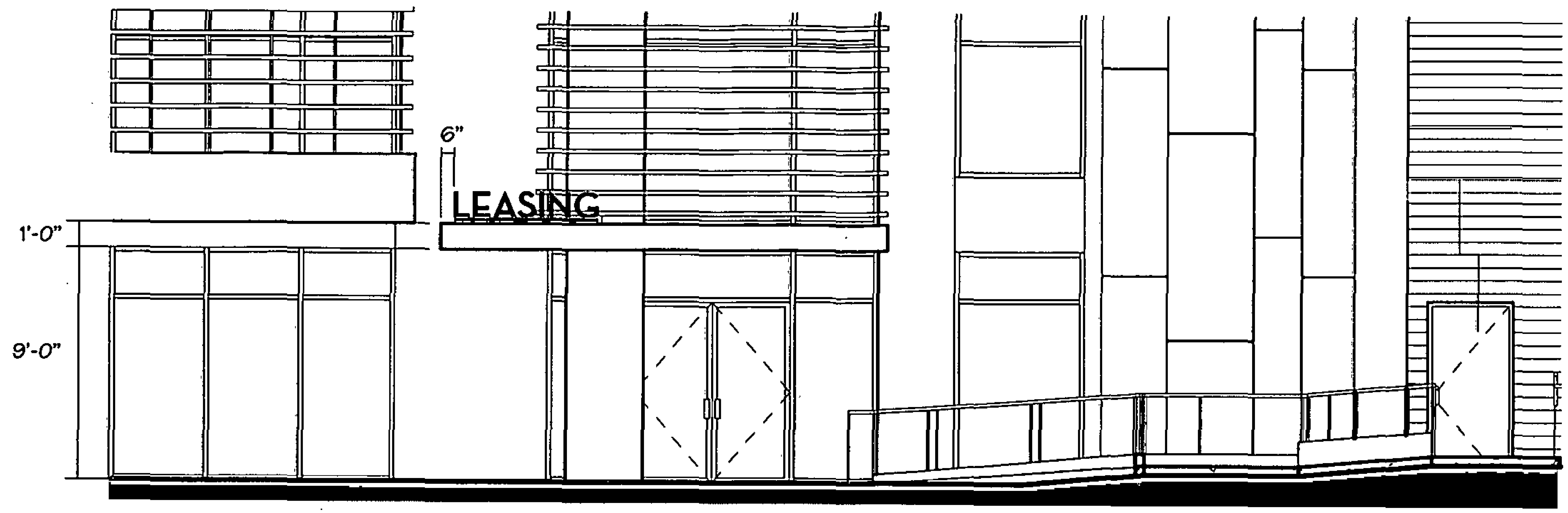
By: ______________

Date: ______________

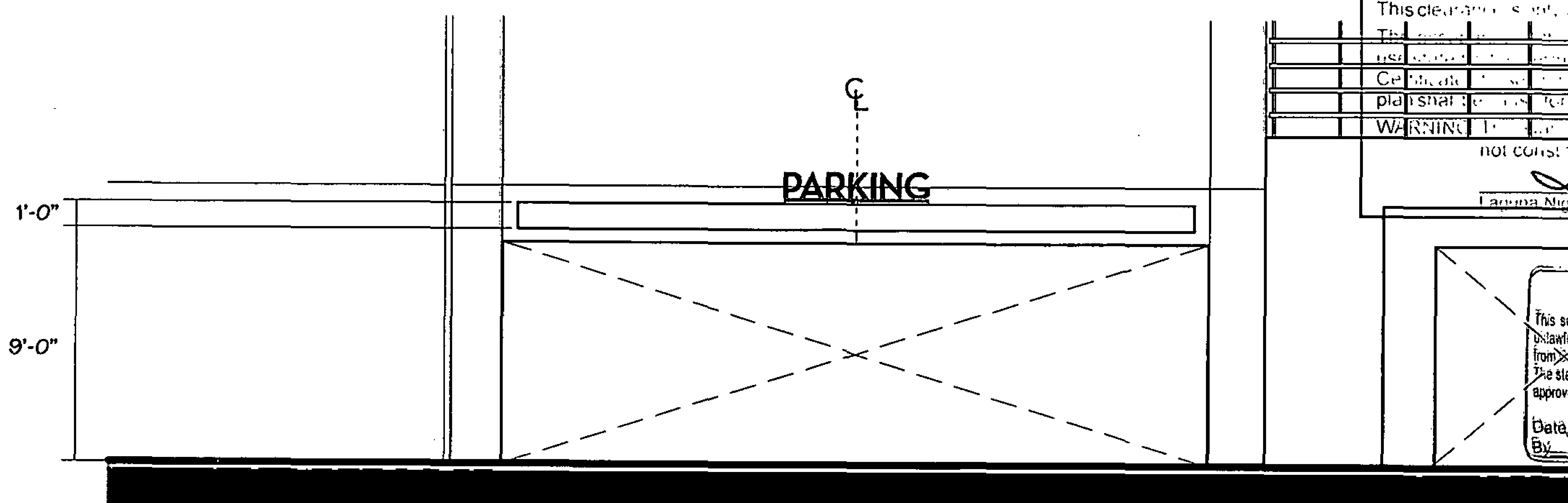
Date: 05/12/15
Revision: △ Date:
Drawn by: Martin
Review by:

CASigns
10280 Glenoaks Boulevard
Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 11
Scale: As Noted



Courtyard Elevation / East - Leasing Sign
Scale: 3/16" = 1'-0"
Sign Types: M09



Courtyard Elevation / North - Parking Sign
Scale: 3/16" = 1'-0"
Sign Types: M09

PLANNING & ZONE CLEARANCE

This Plan was inspected on ____________ and found to comply with applicable City land use regulations.

This clearance is valid for the life of the building permit.

... shall not be changed from the ... except by issuance of a new ... Deviation from the approved plan shall ... during construction

WARNING ... indicates partial review only and does not constitute a building permit.

Laguna Niguel Community Development Department

THE CITY OF LAGUNA NIGUEL
APPROVED

This set of plans & specification must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from Community Development Division, City of Laguna Niguel.
The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL

Date ____________
By ____________

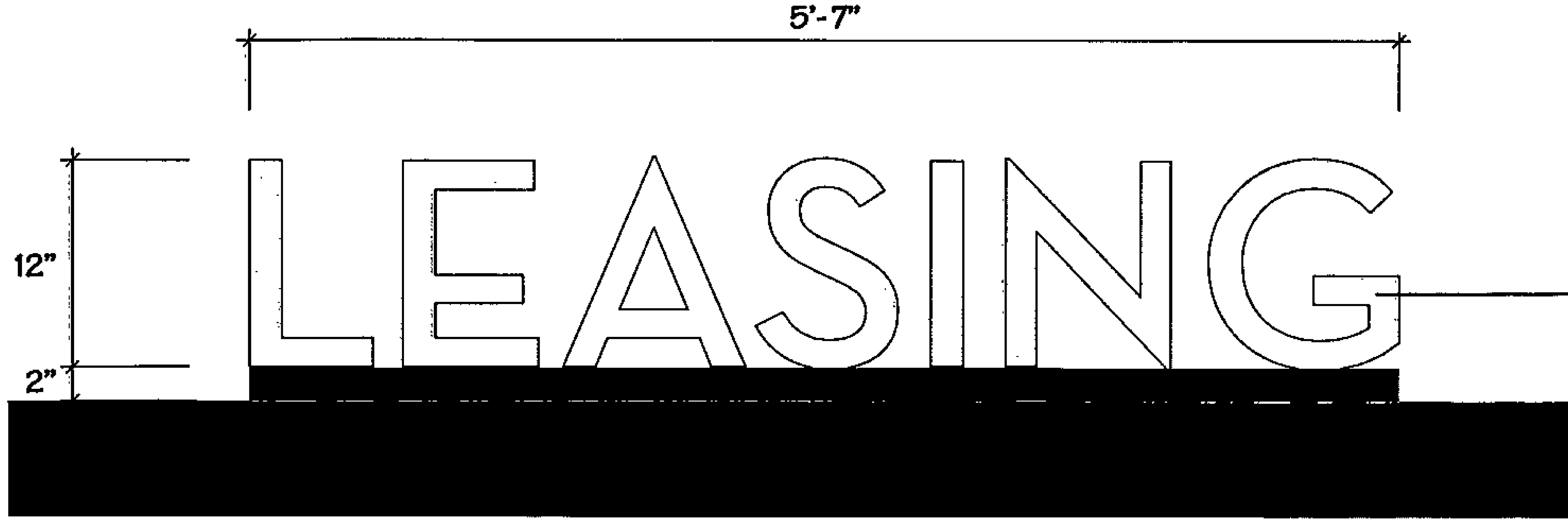
Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: ____________
Date: ____________

Date: 05/12/15
Revision: △ Date:
Drawn by: Martin
Review by:

CASigns
10280 Glenoaks Boulevard
Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

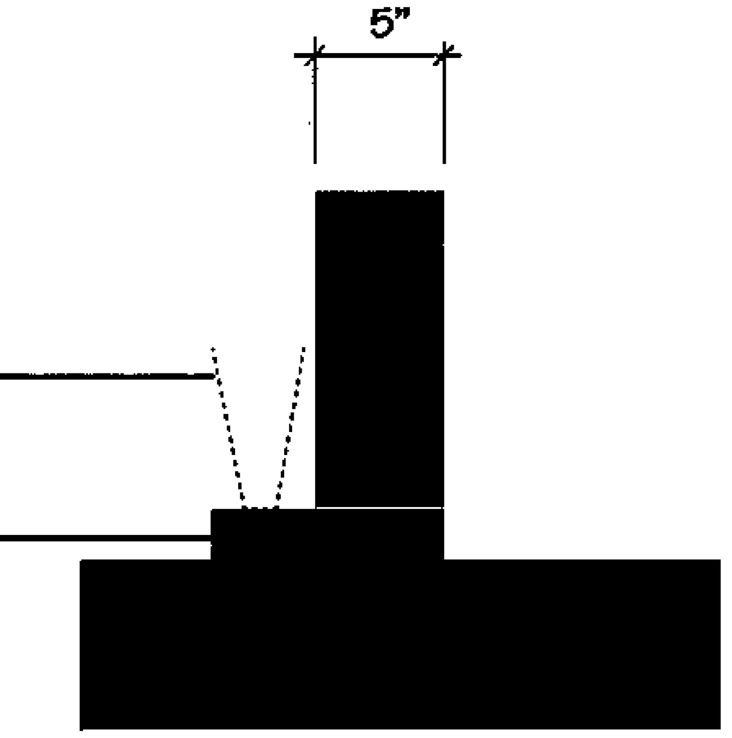
Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 12
Scale: As Noted



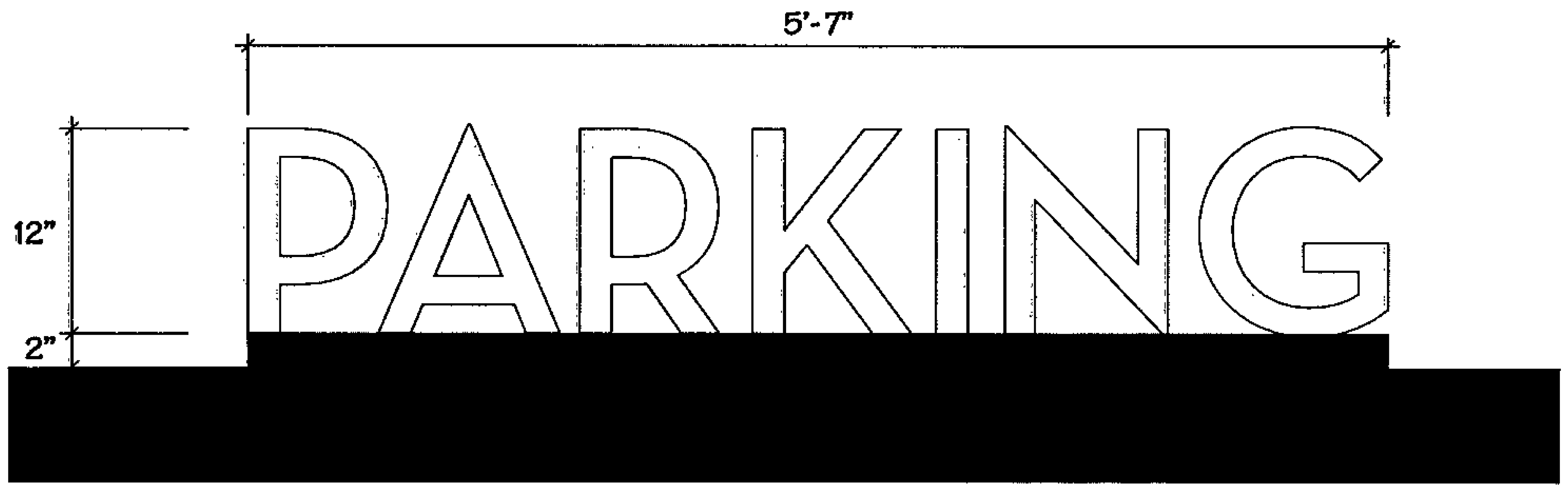
NOTE:
All letters have flat bottoms.

Fabricated aluminum letters.
Painted colors: White face with back & returns Sherwin Williams SW 7069 Iron Ore.
Typeface: Neutra Text Bold.

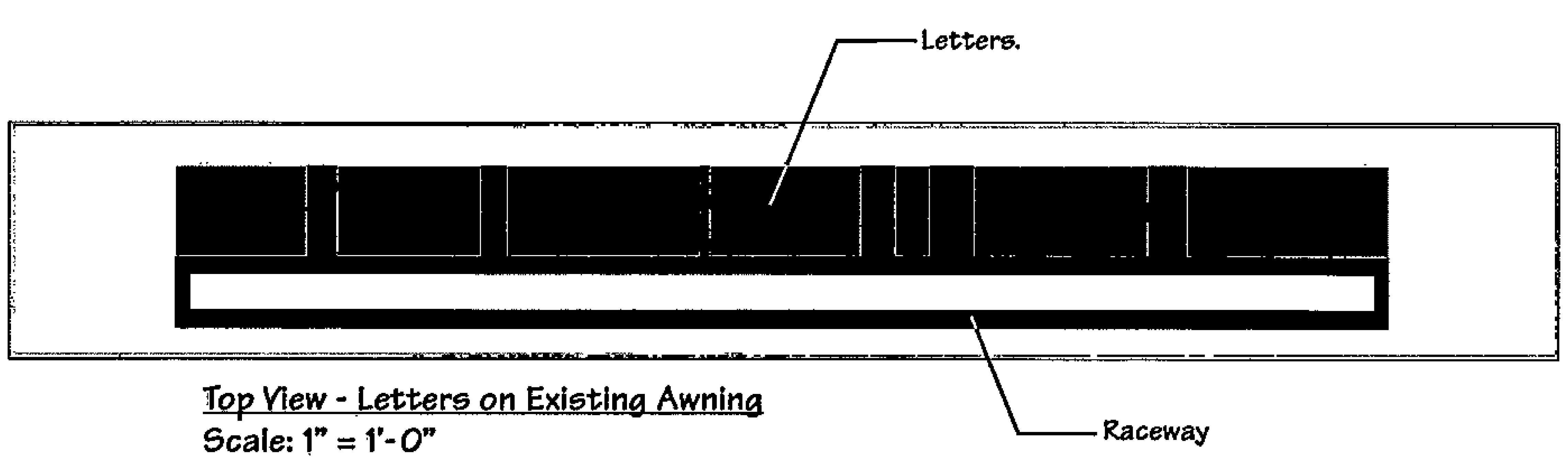
Front View - Letters on Existing Awning
Scale: 1" = 1'-0"
Sign Type: M09



Side View
Scale: 1" = 1'-0"



Front View - Letters on Existing Awning
Scale: 1" = 1'-0"
Sign Type: M09



Top View - Letters on Existing Awning
Scale: 1" = 1'-0"

PLANNING & ZONE CLEARANCE
This Plan was inspected on ________ and found to comply with applicable City land-use regulations.
This clearance is only valid for the life of the building permit.
The occupancy of this building shall not be changed from the use stated in the permit application except by issuance of a new Certificate of Use and Occupancy. Deviation from the approved plan shall be cause for stopping construction.
WARNING: This stamp indicates partial review only and does not constitute a building permit.
Laguna Niguel Community Development Department

THE CITY OF LAGUNA NIGUEL
APPROVED
This set of plans & specification must be kept on the job at all times and it is unlawful to make any changes or alterations on same without written permission from Community Development Division, City of Laguna Niguel.
The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date ________
By ________

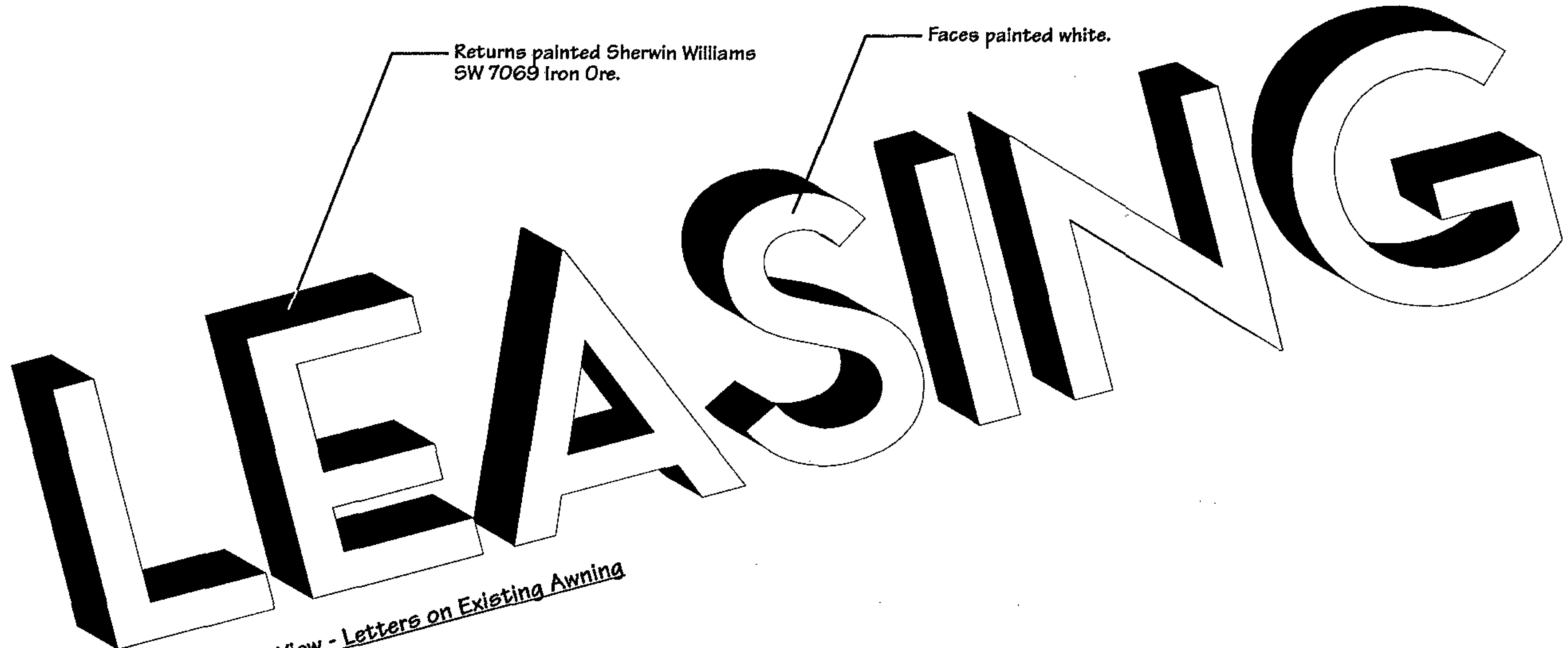
Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By: ________
Date: ________

Date: 05/12/15
Revision: 1 Date: 07/02/15
Drawn by: Martin
Review by:

CASigns
10280 Glenoaks Boulevard
Pacoima, CA 91331-1604
FAX: 818-899-4499
www.CASigns.com
Telephone: 818-899-1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 13
Scale: As Noted



Isometric View - Letters on Existing Awning
Scale: NTS
Sign Type: M09

PLANNING & ZONE CLEARANCE
This Plan ... 5" ... and found to comply with applicable ...ations
This ... life of the building permit.
... shall not be changed from the ... except by issuance of a new ... Deviation from the approved plans ... construction
WARNING ... partial review only and does ... building permit.

... Niguel Community Development Department

THE CITY OF LAGUNA NIGUEL
APPROVED
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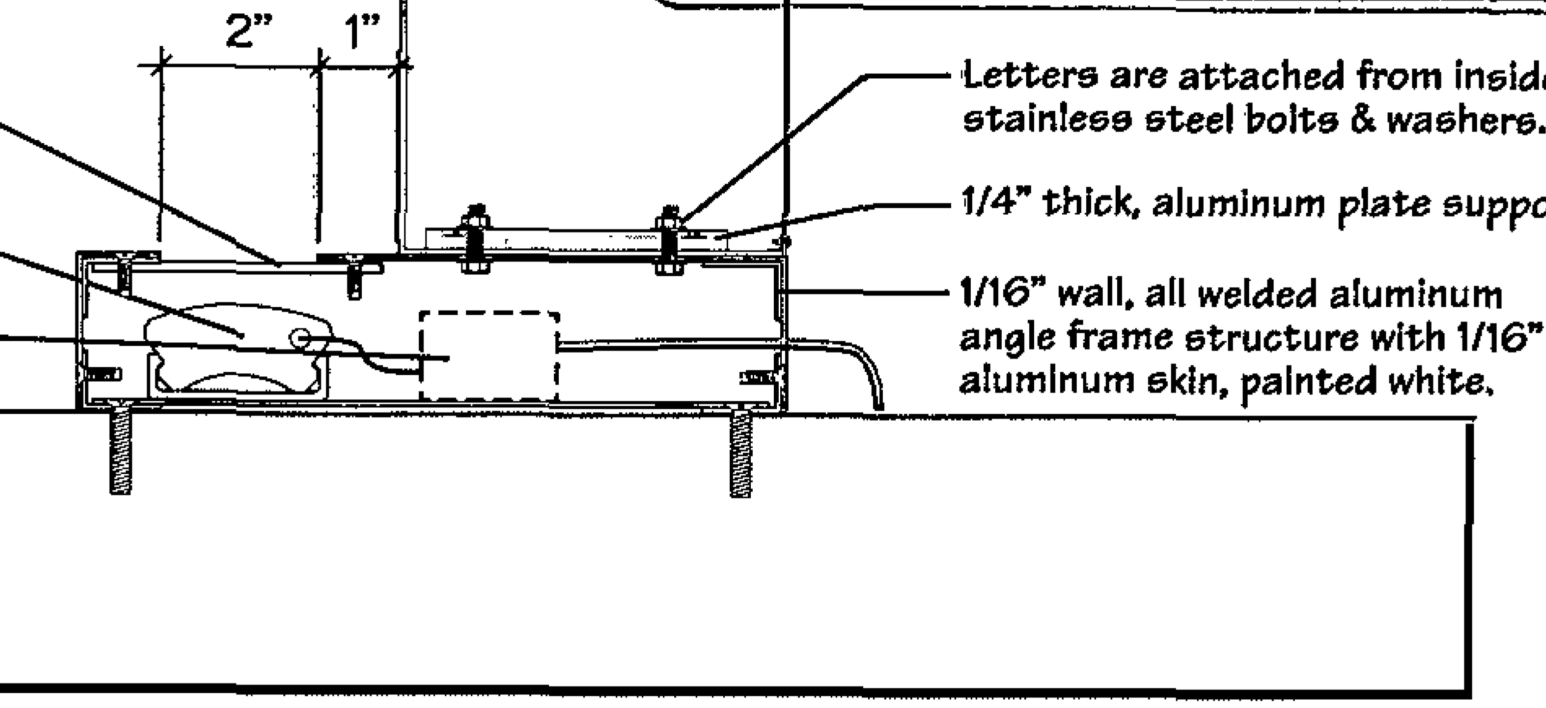
BUILDING OFFICIAL
Date________________
By________________



Section View - Mounting Details
Scale: 3" = 1'-0"

Client Approval:
- ☐ as submitted
- ☐ as noted
- ☐ resubmit

By:________________
Date:________________

Date: 05/12/15
Revision: △ Date:
Drawn by: Martin
Review by:

CASigns
10280 Glenoaks Boulevard
Pacoima, CA 91331-1604
FAX: 818·899·4499
www.CASigns.com
Telephone: 818·899·1888

Project: MILL CREEK
Ref: APEX Laguna Niguel / Exterior Illuminated Signage
Schematic 14
Scale: As Noted

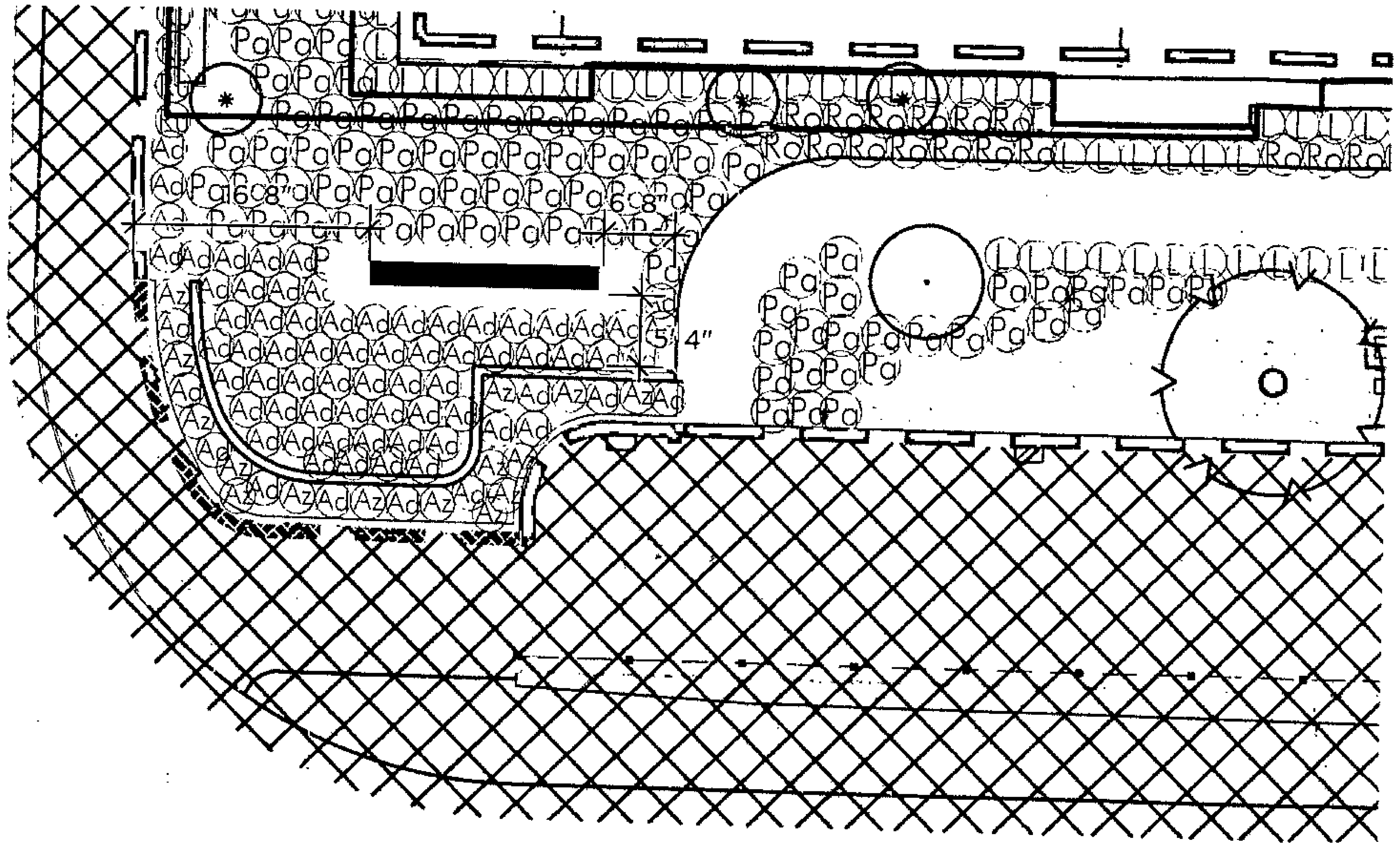
RECEIVED
JUL 09 2015
CITY OF LAGUNA NIGUEL
[illegible]

BLD

Gary ok
pend
planning

27960 CABOT RD
Signage "Mill Creek/Apex"

B15-1729

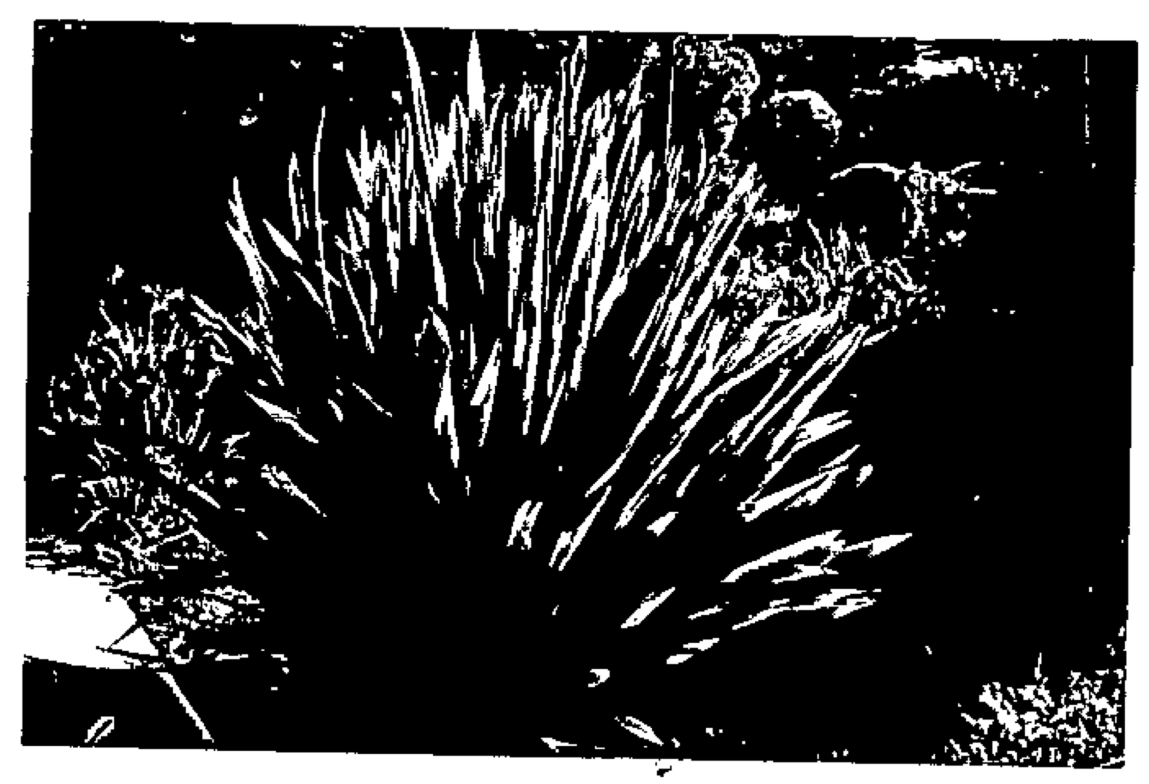


1 MONUMENT SIGN con't

LANDSCAPE PLANS

Freestanding community identification sign sitting at the corner of Crown Valley and Cabot.

Ad AGAVE DESMETIANA SMOOTH AGAVE



Pa PHORMIUM 'AMAZING RED' NEW ZEALAND FLAX

PLANNING & ZONE CLEARANCE
This Plan was [illegible] and found to comply with [illegible]
This [illegible] building permit.
[illegible] the [illegible] a new [illegible] proved [illegible]
[illegible] and does [illegible]
Laguna Niguel Community Development Department

THE CITY OF LAGUNA NIGUEL
APPROVED
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The stamping of this plan & specifications SHALL NOT be held to permit or be an approval of the violation of any provision of any City Ordinance or State Law.
BUILDING OFFICIAL
Date________
By________

MILL CREEK
RESIDENTIAL TRUST LLC

Graphic Design Studio

TCA ARCHITECTS