OXNARD COLLEGE FIRE ACADEMY
FIRE TECH APPARATUS BUILDING
CAMARILLO AIRPORT, CALIFORNIA

ABBREVIATIONS

A.F.F.	ABOVE FINISH FLOOR
A.F.S.	ABOVE FINISH SURFACE
ALT.	ALTERNATE
CBC	CALIF. BUILDING CODE
C.L.	CENTER LINE
CLG.	CEILING
COL.	COLUMN
CONC.	CONCRETE
CPT.	CARPET
CT	CERAMIC TILE
DN.	DOWN
D.S.	DOWNSPOUT
DTL.	DETAIL
(E)	EXISTING
ELEC.	ELECTRICAL
EQ.	EQUAL
E.W.	EACH WAY
EXT.	EXTERIOR
F.F.	FINISH FLOOR
FIN. CLG.	FINISH CEILING
FIN. FLR.	FINISH FLOOR
F.O.	FACE OF
F.O.C.	FACE OF CONCRETE
F.O. FIN.	FACE OF FINISH
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STUD
F.O. SHTG.	FACE OF SHEATHING
FRP	FIBER REINFORCED PLASTIC PANELS
F.S.	FINISH SURFACE
GA.	GAUGE
GYP. BD.	GYPSUM BOARD
HR.	HOUR
INT.	INTERIOR
LAV.	LAVATORY
MIN.	MINUTE
MFR.	MANUFACTURER
(N)	NEW
N.A.	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
O.C.	ON CENTER
O.F.C.I.	OWNER–FURNISHED, CONTRACTOR–INSTALLED
O.F.O.I.	OWNER–FURNISHED, OWNER–INSTALLED
OPP.	OPPOSITE
P.L.	PROPERTY LINE
REF.	REFRIGERATOR
REV.	REVERSE
R.O.W.	RIGHT–OF–WAY
R.T.S.	RUBBER TOP SET
SHT.	SHEET
SIM.	SIMILAR
SPECS.	SPECIFICATIONS
SV	SHEET VINYL
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.P.	TOP OF PARAPET
T.O.PL.	TOP OF PLATE
T.O. SHTG	TOP OF SHEATHING
T.O.W.	TOP OF WALL
TYP.	TYPICAL
U.N.O	UNLESS NOTED OTHERWISE
W/	WITH
WD	WOOD

PROJECT TEAM

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APPLICABLE CODES

2019 CALIFORNIA ADMINISTRATIVE CODE (CAC)
PART 1, TITLE 24 C.C.R.

2019 CALIFORNIA BUILDING CODE (CBC)
PART 2, TITLE 24 C.C.R.
(2018 IBC AND 2020 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA ELECTRICAL CODE (CEC)
PART 3, TITLE 24 C.C.R.
(2017 NEC AND 2020 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA MECHANICAL CODE (CMC)
PART 4, TITLE 24 C.C.R.

2019 CALIFORNIA PLUMBING CODE (CPC)
PART 5, TITLE 24 C.C.R.

2019 CALIFORNIA FIRE CODE (CFC)
PART 9, TITLE 24 C.C.R.
(2018 IFC AND 2020 CALIFORNIA AMENDMENTS)

2019 CALIFORNIA GREEN BUILDING CODE

STATEMENT OF GEN. CONFORM.

Statement of General Conformance
FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

(Application No. 03–120764 **File No.** 56–CI **)**

☒ The drawings or sheets listed on the cover or index sheet
☐ This drawing, page of specifications/calculations

have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:

1) design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2) coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.

The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1. *(Title 24, Part 1, Section 4-317 [b])*

I find that:
☐ All drawings or sheets listed on the cover or index sheet
☐ This drawing or page

☒ is/are in general conformance with the project design intent, and ☒ has/have been coordinated with the project plans and specifications.	☐ is/are in general conformance with the project design intent, and ☐ has/have been coordinated with the project plans and specifications.
Signature: 8/14/2020 Date	Signature: Date
Architect or Engineer designated to be in general responsible charge	**Architect or Engineer delegated responsibility for this portion of the work**
Print Name: LARRY RASMUSSEN	Print Name:
License Number: C4848 Expiration Date: 9/30/2021	License Number: Expiration Date:

GENERAL NOTES

1. THE GEOTECHNICAL ENGINEER SHALL SUBMIT A COMPREHENSIVE REPORT DOCUMENTING FINAL SOIL IMPROVEMENTS CONSTRUCTED, CONSTRUCTION OBSERVATION, AND THE RESULT OF THE CONFIRMATION TESTING AND ANALYSIS TO THE CALIFORNIA GEOLOGICAL SURVEY (CGS). THE PROJECT FOUNDATION CONSTRUCTION SHALL NOT COMMENCE UNTIL CGS ACCEPTANCE LETTER IS ISSUED AND PROCESSED BY DSA AS A DEFERRED SUBMITTAL.
2. ALL WORK SHALL CONFORM TO THE 2019, CALIFORNIA CODE OF REGULATIONS (CCR).
3. PATH OF TRAVEL AS INDICATED IS A BARRIER FREE ACCESSIBLE ROUTE AT LEAST 48" WIDE WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 42" @ 1:2 MAX SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL MAX. CROSS SLOPE 2% TYP. AND MAX. SLOPE IN DIRECTION OF TRAVEL IS 5% OR LESS, UNLESS NOTED OTHERWISE. PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHEAD OBSTRUCTIONS TO 80" MIN. AND SIDE OBJECTS PROTRUDING GREATER THAN 4" INTO PATH BETWEEN 27" AND 80" A.F.F.
4. ALL GRADING SHALL BE DONE UNIFORMLY BETWEEN CONTROL ELEVATIONS AND IN SUCH A WAY THAT THE AREA WILL DRAIN.
5. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATION SHALL BE MADE BY AN ADDENDUM OR A CONSTRUCTION CHANGED DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY THE SECTION 4–338, PART 1, TITLE 24, CCR.
6. A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4–342, PART 1, TITLE 24, CCR.
7. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
8. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON–COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH THE TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD) OR A SEPARATE SET OF PLANS AND SPECIFICATIONS DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4–317 (C), PART 1, TITLE 24 CCR).
9. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATION SHALL COMPLY WITH ALL LOCAL ORDINANCES.

SCOPE OF WORK

THE SCOPE OF THE PROJECT CONSISTS OF CONSTRUCTION OF A METAL BUILDING FOR INSTRUCTIONAL FIRE ACADEMY STORAGE AND PARKING FIRE ENGINES. ADJACENT SITE WORK INCLUDES FIVE PARKING SPACES.

FIRE TRUCKS HOUSED IN THIS FACILITY ARE NOT EMERGENCY VEHICLES AND ARE ONLY FOR INSTRUCTIONAL PURPOSE. ALL FIRE TRUCKS USED FOR INSTRUCTION ARE DECOMMISIONED AND NOT FOR EMERGENCY RESPONSE.

DEFERRED SUBMITTALS

1. SOIL IMPROVEMENT – CGS FINAL ACCEPTANCE OF GEOHAZARD REPORT. SEE SHEETS GI–1 THROUGH GI–3 FOR SOIL IMPROVEMENT DESIGN. SEE GENERAL NOTES BELOW LEFT.

GREEN BUILDING MEASURES

PROJECT SHALL COMPLY WITH ALL REQUIRED GREEN BUILDING CODE MEASURES, SEE SHEETS GBI & GB2.

CODE SUMMARY

APN#:	230–0–051–465
OCCUPANCY:	S2
CONSTRUCTION TYPE:	VB
FIRE SPRINKLERS PROVIDED:	YES
SITE AREA:	2.5 ACRES
BUILDING AREA:	11,367 S.F.
ALLOWABLE BUILDING AREA:	54,000 S.F.

CLASS 1 DSA INSPECTOR REQUIRED FOR CONSTRUCTION.

NUMBER OF STORIES:	ONE
BUILDING HEIGHT:	23'–4"

BUILDING IS GREATER THAN 20' FROM ALL PROPERTY LINES
NO FIRE RESISTIVE CONSTRUCTION REQUIRED

OCCUPANCY LOAD ROOM 101	3,957 SF ACCESSORY STORAGE AT 1/300 = 13 OCCUPANTS 7,243 SF PARKING GARAGE AT 1/200 = 36 OCCUPANTS 49 OCCUPANTS TOTAL
EXITS REQUIRED	1
EXITS PROVIDED	3
OCCUPANCY LOAD ROOM 102	167 SF ACCESSORY STORAGE AT 1/300 = 1 OCCUPANTS
EXITS REQUIRED	1
EXITS PROVIDED	1

VICINITY MAP

INDEX OF DRAWINGS
(57 SHEETS)

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648–1234

TITLE SHEET

Revisions	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	R&A
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

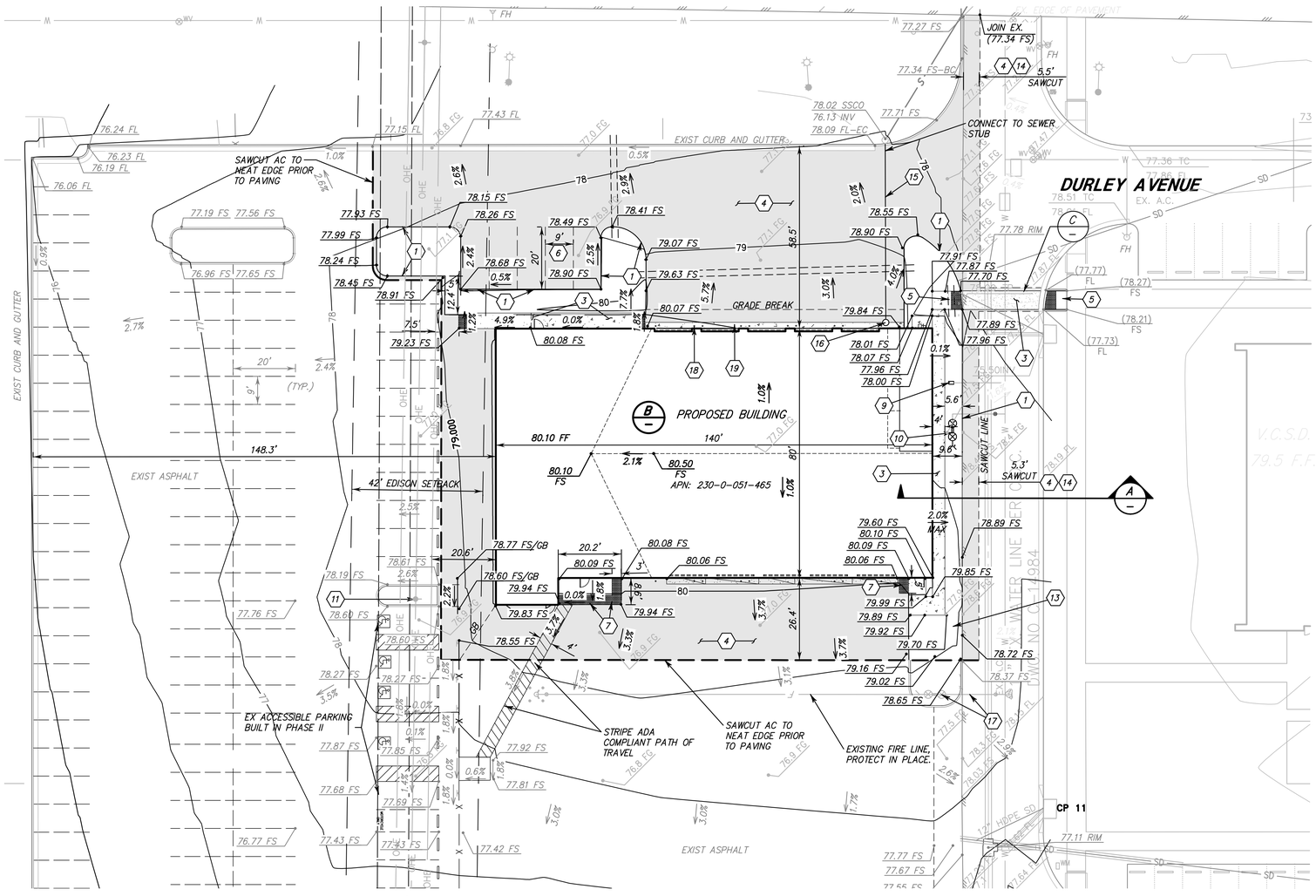
Sheet No.
T

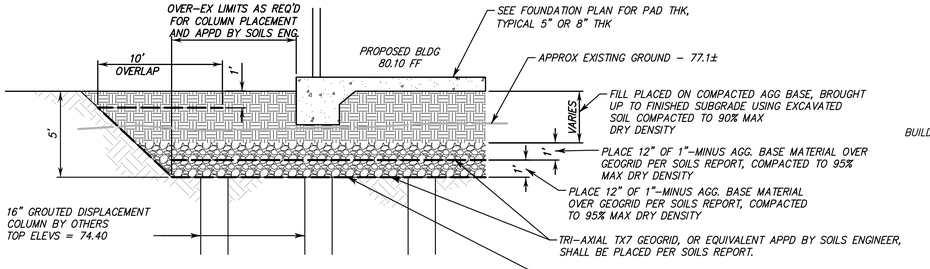
5 — WINDOW TYPE
6 — DOOR CONSECUTIVE NUMBER
106 — ROOM CONSECUTIVE NUMBER
3 / A8.1 — INDICATES DETAIL NUMBER; SHEET WHERE DETAIL IS DRAWN
2 / A5.1 — SECTION; SHEET WHERE DETAIL IS DRAWN
A / D 2 B / C / A5.1 — INTERIOR ELEVATION IDENTIFICATION; SHEET WHERE INTERIOR ELEVATION IS DRAWN
2 — NUMBER OF CIRCLE CORRESPONDS TO NUMBER ON NOTE LEGEND
A — LETTER IN OVAL CORRESPONDS TO WALL CONSTRUCTION TYPE
N — NORTH ARROW, ORIENTATION TO TRUE NORTH
2 — REVISION CLOUD INDICATES AREA REVISED
WORK POINT, CONTROL, ELEVATION OR DATUM POINT

LIST OF SYMBOLS

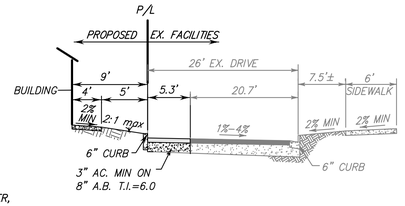
EARTH
GRAVEL OR CRUSHED ROCK BASE
ASPHALTIC CONCRETE PAVING
CONCRETE
MASONRY
PLYWOOD
WOOD, ROUGH OR DIM. LUMBER
INSULATION
PLASTER
GYPSUM WALL BOARD

MATERIALS LEGEND

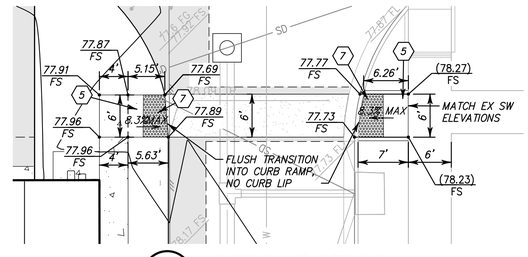




B — SOIL PREPARATION BELOW FOUNDATION (PER SOILS REPORT)
NOT TO SCALE



A — SECTION
NOT TO SCALE



C — CURB RAMP DETAILS
SCALE: 1" = 10'

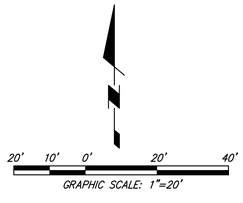
NOTICE TO THE CONTRACTOR

THE EARTHWORK SUMMARY IS PROVIDED AS A COURTESY AND CONVENIENCE TO THE CONTRACTOR. QUANTITIES SHOWN ARE APPROXIMATE, BASED ON THE DIFFERENCES BETWEEN EXISTING GROUND ELEVATIONS AND ROUGH GRADE ELEVATIONS. QUANTITIES PROVIDED MAKE NO PROVISIONS FOR STRIPPING, OR OVEREXCAVATION. VARIABLES SUCH AS COMPACTION, SHRINKAGE AND THE CONTRACTORS METHOD OF OPERATION, WILL CAUSE THE VOLUME OF DIRT MOVED IN THE FIELD TO DEVIATE FROM THE CALCULATED QUANTITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EARTHWORK REQUIREMENTS TO ROUGH GRADE THIS JOB.

CAUTION:

EXISTING UTILITIES WERE LOCATED FROM BEST AVAILABLE INFORMATION. CONTRACTOR SHALL POTHOLE AND LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

** CONTRACTOR SHALL VERIFY BUILDING SLAB SECTIONS WITH SOILS REPORT AND STRUCTURAL DRAWINGS AND NOTIFY CIVIL ENGINEER IMMEDIATELY IF THERE IS A DISCREPANCY.



GRAPHIC SCALE: 1"=20'

CONSTRUCTION NOTES:

1. CONSTRUCT 6" CONCRETE CURB ONLY PER DETAIL J, TYPE A-1, SHEET C-2.
2. CONSTRUCT 6" CURB & 18" GUTTER PER DETAIL J, TYPE A-2, SHEET C-2.
3. CONSTRUCT 4" THICK P.C.C. SIDEWALK PER K, SHEET C-2, WIDTH PER PLAN. SCORING & COLORING PER APPROVED LANDSCAPE ARCHITECT'S PLANS. 2% MAX CROSS SLOPE ON ALL EXTERIOR WALKWAYS.
4. CONSTRUCT 4" A.C. (PG 64-10) OVER 11" CLASS II A.B. MIN. PER FINAL GEOTECHNICAL REPORT, BASED ON APPROVED R-VALUES, MIN T.I.=6.0.
5. CONSTRUCT RAMP PER DETAIL C HEREON. CONCRETE SHALL BE CLASS 520-C-2500, CONFORMING TO SPPWC 201-1.1.2, AND SHALL BE 4-INCHES THICK. THE RAMP SURFACE SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE CONFORMING TO SSPWC 303-1.9.
6. PAINT STANDARD 4" WIDE WHITE PARKING STALL DESIGNATION PER DETAIL L, SHEET C-2.
7. INSTALL DETECTABLE WARNING DOMES AS SHOWN ON PLANS, PER CBC2019 11B-705.1.
8. INSTALL CONCRETE WHEEL STOP PER DETAIL X, SHEET C-3.
9. INSTALL 1-INCH WATER METER PER CITY OF CAMARILLO DRAWING C-17713. METER TO BE SET BY CITY FORCES AT CONTRACTOR'S EXPENSE.
10. INSTALL 3-INCH DOUBLE CHECK VALVE FLOW PREVENTER PER CITY OF CAMARILLO DRAWING C-17713.
11. EXISTING POWER POLE TO REMAIN (PROTECT IN PLACE).
12. EXISTING SIGN TO BE REMOVED OR RELOCATED PER DETAIL Y, SHEET C-3.
13. EXISTING IRRIGATION CONTROL BOXES TO BE REMOVED.
14. SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT.
15. INSTALL 6-INCH PVC, SDR-35 SEWER LATERAL, S=0.02, PER VENTURA COUNTY WATERWORKS STD DETAIL S-2, BACKFILL PER COUNTY OF VENTURA WATERWORKS STD DETAIL S-3.
16. INSTALL SANITARY CLEANOUT PER COUNTY OF VENTURA WATERWORKS STD DETAIL S-5.
17. EXISTING 6-INCH BFP AND FDC PER CITY OF CAMARILLO DRAWING C-17713
18. BOLLARD (TYP) PER ARCH PLANS
19. 6-INCH CONCRETE SLAB, 3000 PSI

GENERAL NOTES

- SEE PLUMBING AND MECHANICAL PLANS FOR BUILDING P.O.C.
- ALL FILL AREAS TO BE SCARIFIED AT SURFACE PER SOILS REPORT RECOMMENDATIONS
- COMPACTION OF SUBGRADE TO MEET SOILS ENGINEER RECOMMENDATIONS SET FORTH IN SOILS REPORT

SOILS NOTES: PER SOILS REPORT 19-6-39 BY EARTH SYSTEMS

- ALL FILL AREAS TO BE SCARIFIED AT SURFACE PER SOILS REPORT RECOMMENDATIONS.
- OVER-EXCAVATION TO BE 2 FEET OUTSIDE PAVEMENT IMPROVEMENTS AND 5 FEET OUTSIDE BUILDING LIMITS PER SOILS REPORT RECOMMENDATIONS.
- COMPACTION OF SUBGRADE TO MEET SOILS ENGINEER RECOMMENDATIONS SET FORTH IN SOILS REPORT.
- THE NEAR SURFACE SOILS ARE EXPECTED TO BE AT HIGH MOISTURE CONTENTS (12 PERCENT OR HIGHER ABOVE THE OPTIMUM MOISTURE CONTENT), AS A RESULT SIGNIFICANT DRYING WILL BE NECESSARY IF THE EXCAVATED SOILS ARE TO BE USED AS STRUCTURAL FILL.
- BECAUSE OF THE ANTICIPATED WET SOIL CONDITIONS, ANY REMEDIAL EXCAVATIONS OR UTILITY TRENCH EXCAVATIONS, STABILIZATION OF THE EXCAVATION BOTTOMS WILL BE REQUIRED PRIOR TO PLACING FILL.
- NO COMPACTED FILL SHOULD BE PLACED UNLESS THE UNDERLYING SOIL HAS BEEN OBSERVED BY THE GEOTECHNICAL ENGINEER.
- ON-SITE SOILS MAY BE USED FOR FILL ONCE THEY ARE CLEANED OF ALL ORGANIC MATERIAL, ROCK, DEBRIS, AND IRREDUCIBLE MATERIAL LARGER THAN 6 INCHES. EXCAVATED SOILS ARE EXPECTED TO BE AT A HIGH MOISTURE CONTENT AND DRYING WILL BE NECESSARY BEFORE REPLACING AS COMPACTED BACKFILL.
- BACKFILL AROUND OR ADJACENT TO CONFINED AREAS MAY BE PERFORMED WITH A LEAN SAND/CEMENT SLURRY (MAXIMUM 28-DAY COMPRESSIVE STRENGTH OF 200 PSI) OR "FLOWABLE FILL" MATERIAL (A MIXTURE OF SAND/CEMENT/FLY ASH). THE FLUIDITY AND LIFT PLACEMENT THICKNESS OF ANY SUCH MATERIAL SHOULD BE CONTROLLED IN ORDER TO PREVENT "FLOATING" OF ANY "SUBMERGED" STRUCTURE. ALTERNATIVELY, A GRAVEL BACKFILL COULD BE USED, SUBJECT TO APPROVAL BY THE GEOTECHNICAL ENGINEER.
- IF PUMPING SOILS OR OTHERWISE UNSTABLE SOILS ARE ENCOUNTERED DURING THE OVER-EXCAVATION, STABILIZATION OF THE EXCAVATION BOTTOM WILL BE REQUIRED PRIOR TO PLACING FILL USING METHODS SET FORTH IN THE SOILS REPORT AND UNDER SUPERVISION OF THE GEOTECHNICAL ENGINEER.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

REGISTERED PROFESSIONAL ENGINEER
FREDERICK T. C. RASMUSSEN
No. C 057289
CIVIL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Ventura, California 93001
(805) 643-1234

BUILDING GRADING & UTILITIES

R&A No:	A181901
Date:	8/26/2020
Drawn:	
Checked:	CW
Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
C-1

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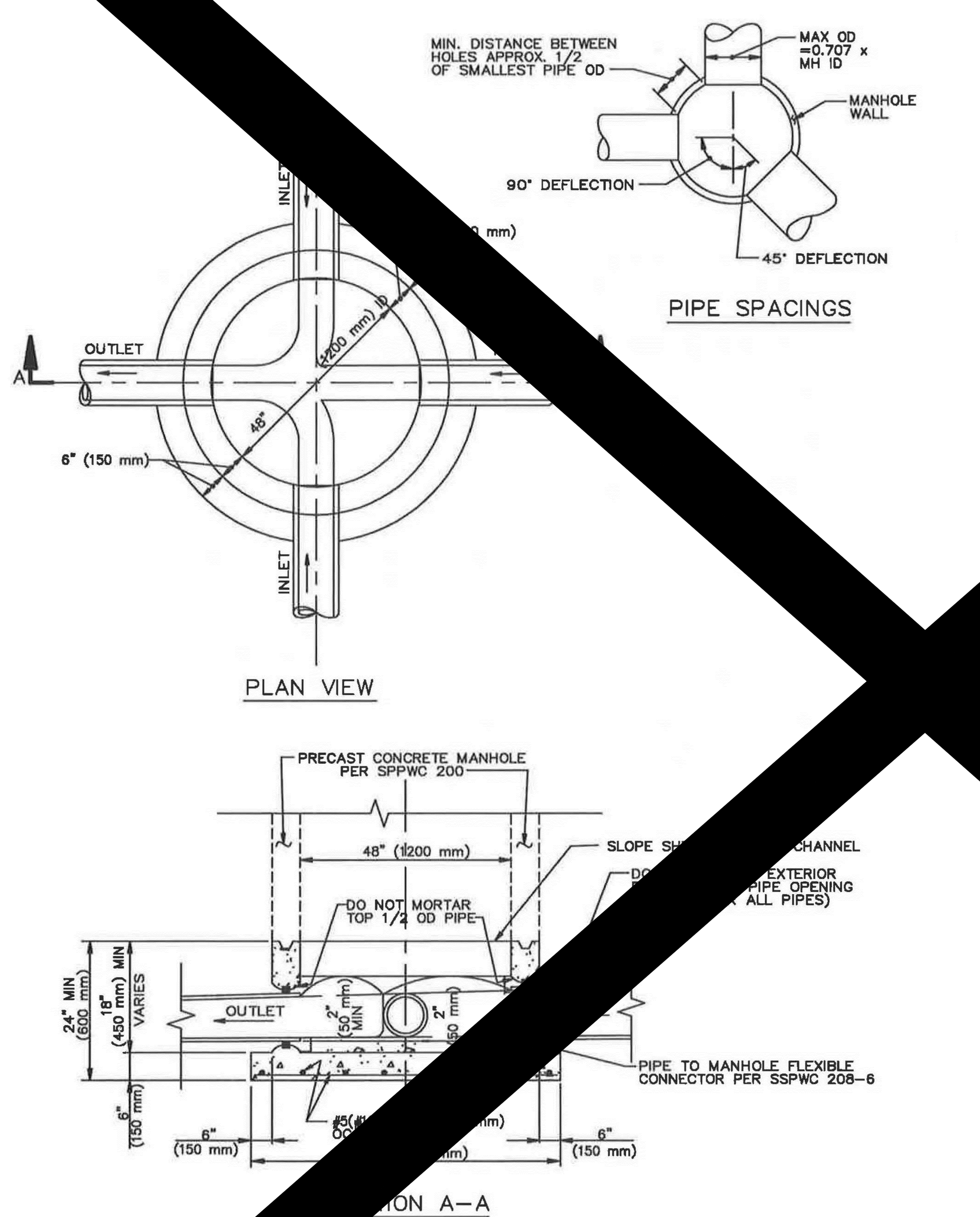
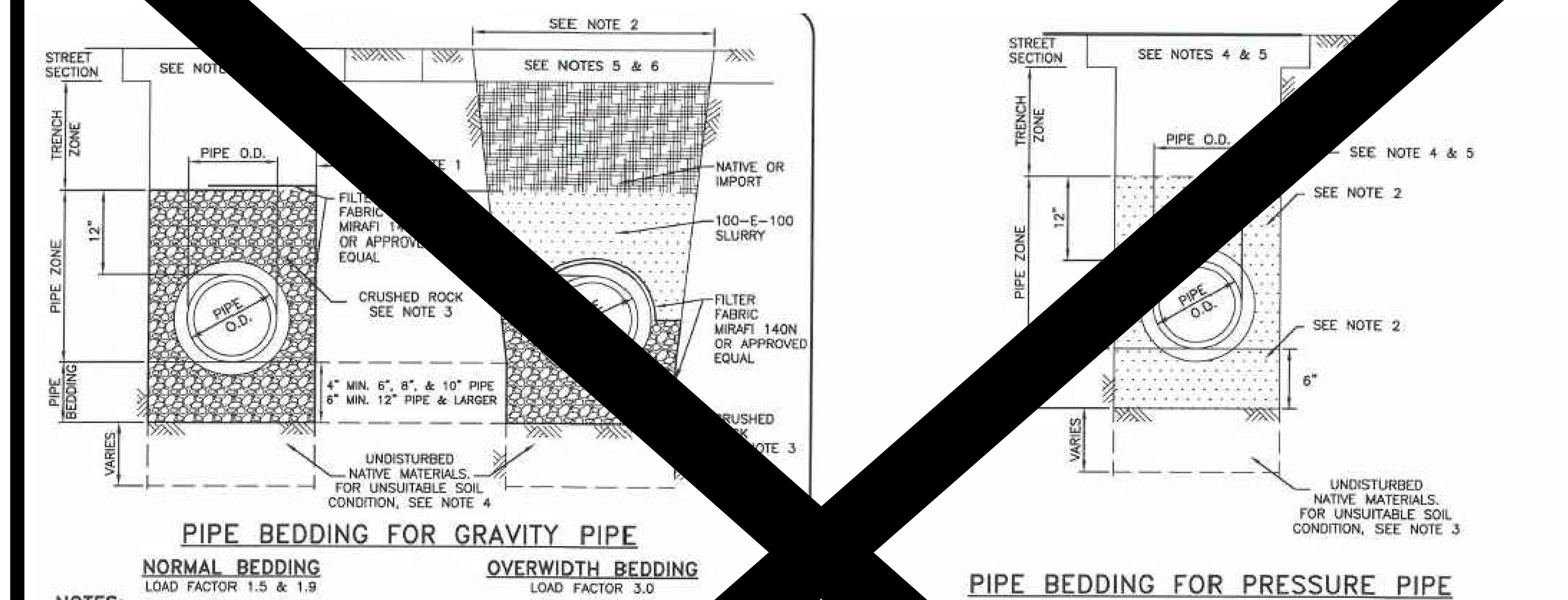


NOTES

1. CONCRETE BASE AND ... SHALL BE POURED IN ONE OPERATION.
2. CONCRETE FOR ... CAST UNITS SHALL BE COMPACTLY VIBRATED IN ... IT SHALL BE CURED ACCORDING TO APPROVED ... EITHER BY STEAM, SPRINKLING, MEMBRANE SOLUTION ... COMBINATION OF THESE. IT SHALL DEVELOP 3500 ... OR GREATER STRENGTH IN 28 DAYS.
3. ... OF CHANNEL SHALL EQUAL THE PIPE DIAMETER FOR ... OF PIPE. FOR SPECIAL CHANNELS IN TRAP OR GAUGING ... SEE SPECIAL PLANS.
... CEMENT MORTAR INSIDE JOINTS SHALL BE NEATLY STRUCK AND POINTED AND SHALL NOT EXCEED 3/8" (10 mm) IN THICKNESS.
... STUB WALLS AND BASE SHALL CONFORM TO ASTM C 478 AND SHALL HAVE A MINIMUM OF 2" (50 mm) COVER THE STEEL ON THE INSIDE FACE.
... INVERT CHANNELS AND SHELF MAY BE POURED AT THE FACTORY OR IN THE FIELD AT THE OPTION OF THE CONTRACTOR.
... BEDDING FOR PRECAST BASE SHALL BE EQUAL TO BEDDING FOR ... PIPE IS PLACED ON NATIVE MATERIAL USE 6" (150 mm) ... CRUSHED ROCK UNDER BASE.

VCP AND CONCRETE BASE CONNECTION
NOT TO SCALE

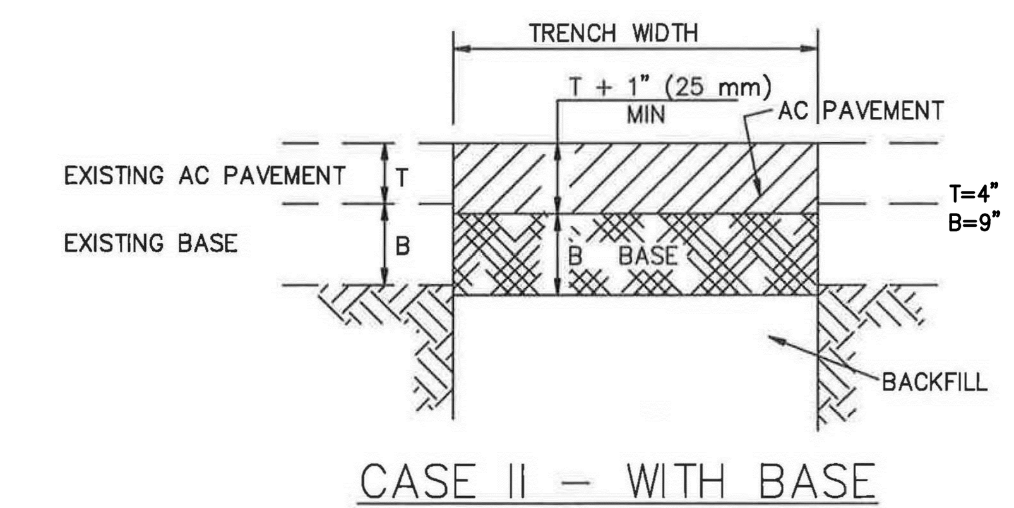


NOTES:
1. TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE SHALL BE WITHIN THE FOLLOWING LIMITS FOR TYPICAL NORMAL BEDDING.
(A) MAXIMUM TRENCH WIDTH—O.D. PIPE OR BELL PLUS 8-INCHES MAX. EACH SIDE OF PIPE.
(B) MINIMUM TRENCH WIDTH—O.D. PIPE OR BELL PLUS 6-INCHES MIN. EACH SIDE OF PIPE.
2. OVERWIDTH BEDDING TO BE UTILIZED WHERE THE TRENCH WIDTH AT THE ... THE PIPE ZONE EXCEEDS THE MAXIMUM WIDTH SPECIFIED ABOVE; MAXIMUM OVERWIDTH ... TO BE DETERMINED BY THE CAMARILLO SANITARY DISTRICT REPRESENTATIVE.
3. CRUSHED ROCK PER SSPWC 306.1.2.1 BEDDING.
4. IF UNSUITABLE SUBGRADE SOIL CONDITIONS ARE ENCOUNTERED, A REGISTERED GEOTECHNICAL ENGINEER SHALL DETERMINE DEPTH OF REMOVAL AND SIZE OF FOUNDATION ROCK REFILL MATERIAL. MINIMUM DEPTH OF REMOVAL SHALL BE 12-INCHES.
5. IN EXISTING PAVED AREA, TRENCH ZONE AND STREET SECTION SHALL PER STD. PLATE 23.
6. IN UNPAVED AREAS, TRENCH ZONE BACKFILL SHALL BE NATIVE OR IMPORT PLACED AT 90% RELATIVE COMPACTION, IN 1 FOOT LIFTS.
7. SECURE PIPE TO PREVENT FLOTATION ... SANITARY DISTRICT REPRESENTATIVE.

NOTES:
1. TRENCH WIDTH AT THE UPPER LIMIT OF THE PIPE ZONE SHALL BE WITHIN THE FOLLOWING LIMITS.
(A) MAXIMUM TRENCH WIDTH—O.D. PIPE OR BELL PLUS 8-INCHES MAX. EACH SIDE OF PIPE.
(B) MINIMUM TRENCH WIDTH—O.D. PIPE OR BELL PLUS 6-INCHES MIN. EACH SIDE OF PIPE.
2. SE 35 ... MINIMUM OF 95% OF MAXIMUM DENSITY.
3. IF UNSUITABLE ... CONDITIONS ARE ENCOUNTERED, A REGISTERED GEOTECHNICAL ENGINEER SHALL ... OF REMOVAL AND SIZE OF FOUNDATION ROCK REFILL MATERIAL. MINIMUM DEPTH ... BE 12-INCHES.
4. IN EXISTING PAVED AREA ... AND STREET SECTION SHALL PER STD. PLATE 23.
5. IN UNPAVED AREAS TRENCH ... SHALL BE NATIVE OR IMPORT PLACED AT 90% RELATIVE COMPACTION.
6. WHERE CONTRACTOR FAILS TO MAINTAIN ... TRENCH WIDTH, SPECIAL BACKFILL AND BEDDING, SUCH AS ONE SACK SLURRY, SHALL BE ... DIRECTED BY DISTRICT REPRESENTATIVE.
7. SECURE PIPE TO PREVENT FLOTATION PER ... SANITARY DISTRICT REPRESENTATIVE.

G

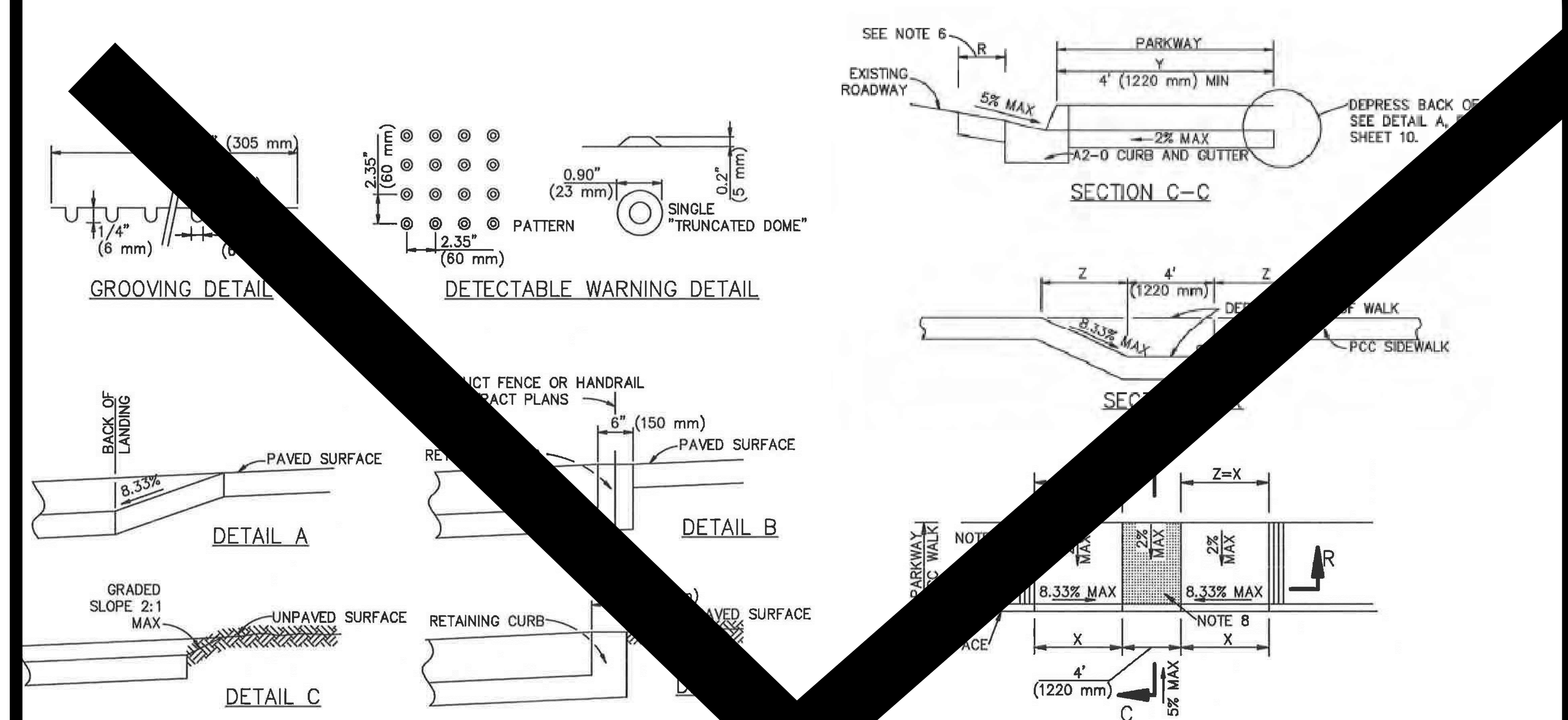
PIPE BEDDING DETAIL
NOT TO SCALE



NOTES:
1. BACKFILL AND DENSIFICATION SHALL CONFORM TO SSPWC 306-1.3.
3. TEMPORARY RESURFACING SHALL BE PLACED PER SSPWC 306-1.5.1.

H

ASPHALT CONCRETE PAVEMENT REPLACEMENT
NOT TO SCALE



GENERAL NOTES:
1. CONCRETE SHALL BE CLASS 520-C-2500 (310-C-17) CONFORMING TO SSPWC 201-1.1.2 AND SHALL BE 4" (100 mm) THICK.
2. THE RAMP SHALL HAVE A 12" (305 mm) WIDE BORDER WITH 1/4" (6 mm) GROOVES APPROXIMATELY 3/4" (19 mm) OC. SEE GROOVING DETAIL.
3. THE RAMP SURFACE SHALL HAVE A TRANSVERSE BROOMED SURFACE CONFORMING TO SSPWC 303-1.9.
4. USE DETAIL "A" OR "B" IF EXISTING SURFACE BEHIND LAND...
5. USE DETAIL "C" OR "D" IF EXISTING SURFACE BEHIND ... UNPAVED.
6. R = 3' (900 mm) UNLESS OTHERWISE SHOWN ON ...
7. ANGLE = $\Delta/2$ UNLESS OTHERWISE SHOWN ...
8. CONSTRUCT DETECTABLE WARNING SURF... THIS SHEET. MATERIALS SHALL BE PER CONTRACT DOCUMENT...

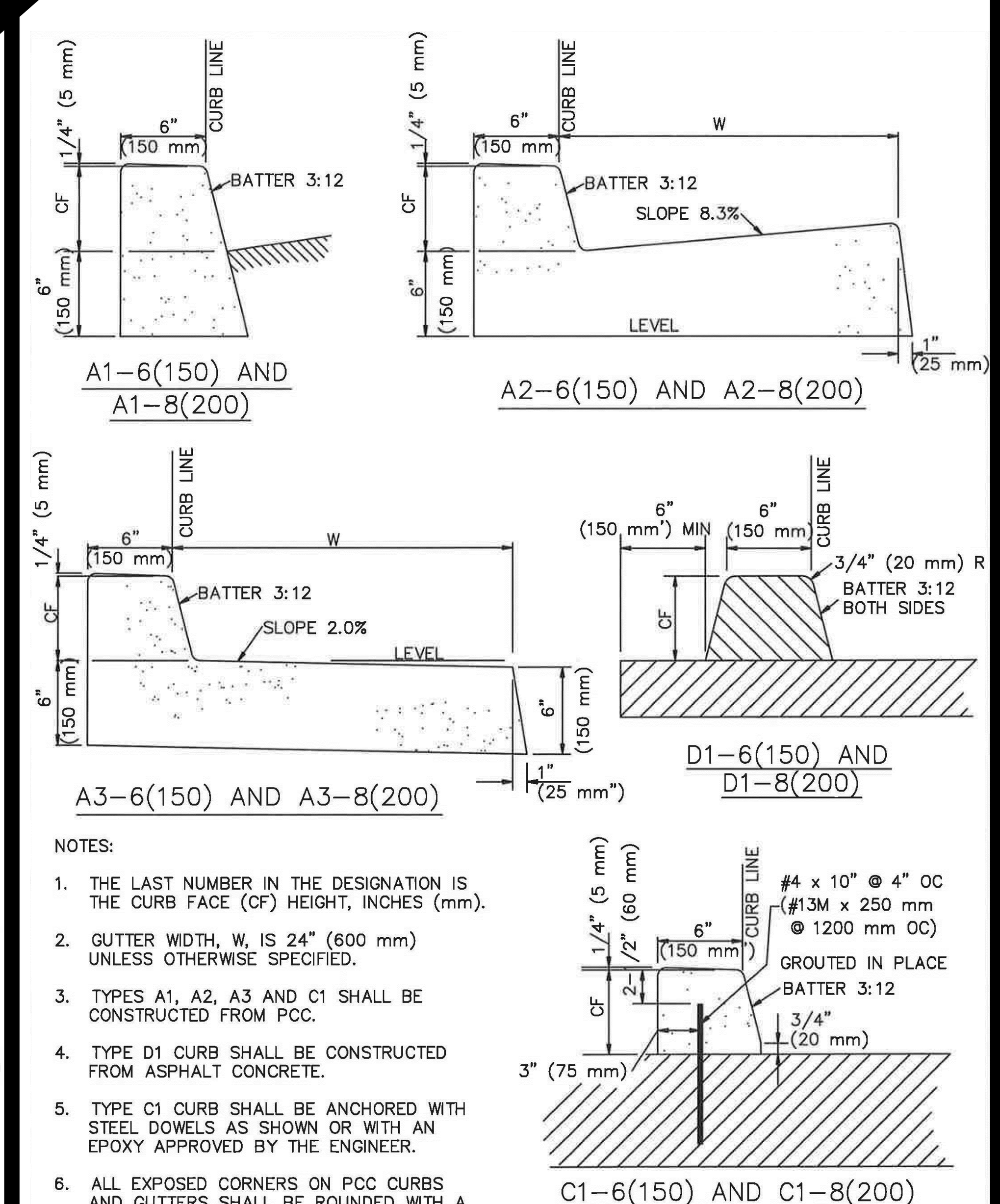
* CONCRETE MIX DESIG... SOILS REPORT RECOMMENDATIONS.

TABLE 1 – X AND Y VALUES

NORMAL CURB FACE, INCHES (mm)	X, FT (mm)	SECTION Y-Y FT (mm)
2" (50)	4.00' (1220)	(790)
3" (75)	4.00' (1220) MIN	
4" (100)	4.00' (1220) MIN	
5" (125)	4.17' (1275)	6.58'
6" (150)	5.00' (1525)	7.90'
7" (175)	5.83' (1775)	9.21' (2765)
8" (200)	6.67' (2035)	10.53' (3160)
9" (225)	7.50' (2285)	11.84' (3555)
10" (250)	8.33' (2540)	13.16' (3950)
11" (275)	9.17' (2795)	14.47' (4340)
12" (300)	10.00' (3050)	15.79' (4735)

TABLE 1 REFERENCE FORMULAS:
... CF / 8.333%
... CF / (8.333% – 2% WALK CROSS SLOPE)

CURB RAMP (MODIFIED)
NOT TO SCALE

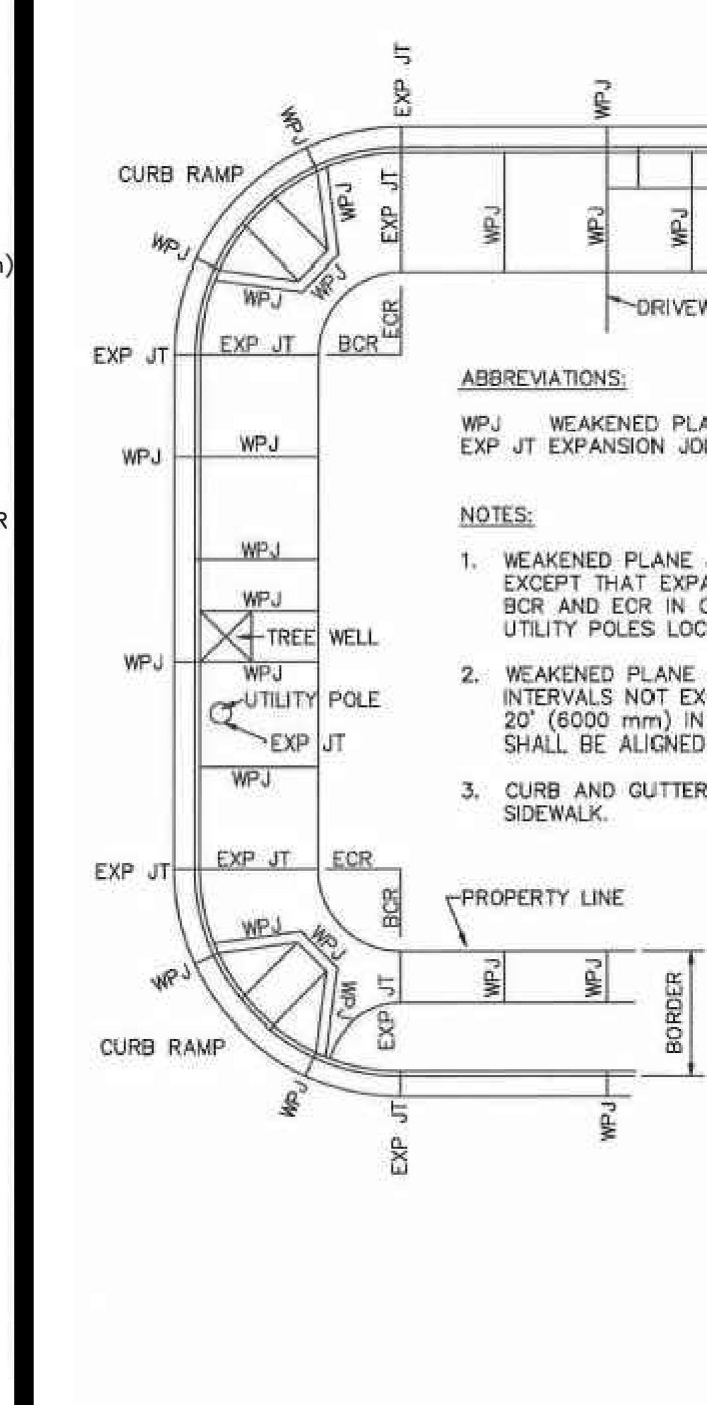


NOTES:
1. THE LAST NUMBER IN THE DESIGNATION IS THE CURB FACE (CF) HEIGHT, INCHES (mm).
2. GUTTER WIDTH, W, IS 24" (600 mm) UNLESS OTHERWISE SPECIFIED.
3. TYPES A1, A2, A3 AND C1 SHALL BE CONSTRUCTED FROM PCC.
4. TYPE D1 CURB SHALL BE CONSTRUCTED FROM ASPHALT CONCRETE.
5. TYPE C1 CURB SHALL BE ANCHORED WITH STEEL DOWELS AS SHOWN OR WITH AN EPOXY APPROVED BY THE ENGINEER.
6. ALL EXPOSED CORNERS ON PCC CURBS AND GUTTERS SHALL BE ROUNDED WITH A 1/2" (15 mm) RADIUS.

* CONCRETE MIX DESIGN TO BE PER SOILS REPORT RECOMMENDATIONS.

J

CURB & GUTTER
NOT TO SCALE

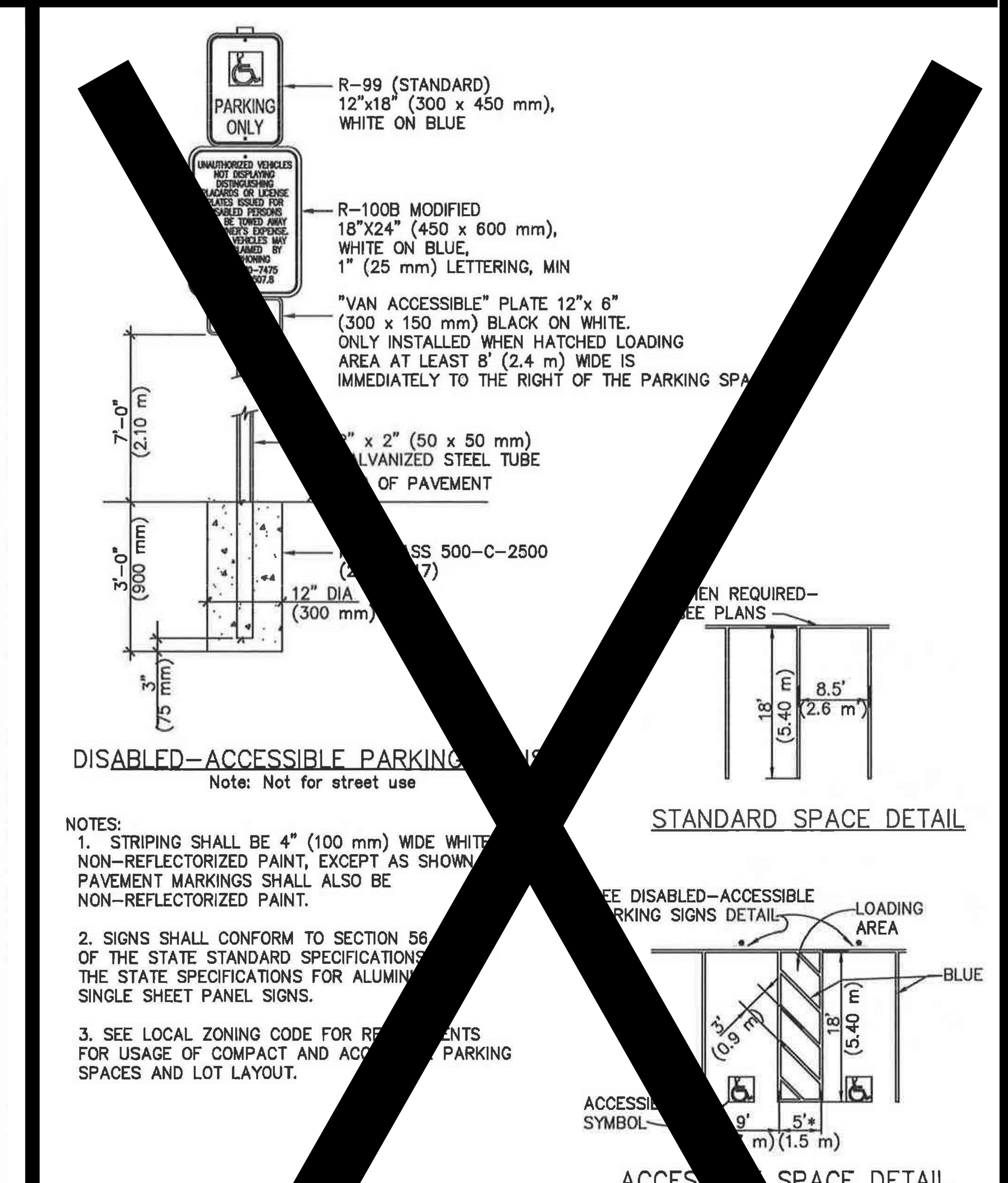


ABBREVIATIONS:
WPJ WEAKENED PLANE JOINT
EXP JT EXPANSION JOINT
BCR BEGINNING OF CURB RETURN
ECR END OF CURB RETURN

NOTES:
1. WEAKENED PLANE JOINTS SHALL BE USED FOR ALL JOINTS, EXCEPT THAT EXPANSION JOINTS SHALL BE PLACED AT THE BCR AND ECR IN CURB, GUTTER AND SIDEWALK, AND AROUND UTILITY POLES LOCATED IN SIDEWALK AREAS.
2. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT REGULAR INTERVALS NOT EXCEEDING 10' (3000 mm) IN WALKS AND 20' (6000 mm) IN GUTTERS. JOINTS IN CURB AND WALK SHALL BE ALIGNED.
3. CURB AND GUTTER SHALL BE CONSTRUCTED SEPARATELY FROM SIDEWALK.

K

CURB & SIDEWALK JOINTS
NOT TO SCALE



NOTES:
1. STRIPING SHALL BE 4" (100 mm) WIDE WHITE NON-REFLECTORIZED PAINT, EXCEPT AS SHOWN ... PAVEMENT MARKINGS SHALL ALSO BE NON-REFLECTORIZED PAINT.
2. SIGNS SHALL CONFORM TO SECTION 56 ... OF THE STATE STANDARD SPECIFICATIONS ... THE STATE SPECIFICATIONS FOR ALUMINUM ... SINGLE SHEET PANEL SIGNS.
3. SEE LOCAL ZONING CODE FOR REQUIREMENTS FOR USAGE OF COMPACT AND ACCESSIBLE PARKING SPACES AND LOT LAYOUT.

* LOADING AREA SHALL BE 8' (2.40 m) WIDE ADJACENT TO VAN ACCESSIBLE PARKING SPACES – SEE PLANS.

L

PARKING STRIPING & SIGNING
NOT TO SCALE

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

FILE PATH & NAME: J:\RAS25923\ENG\IMPROVEMENT PLANS\5923-09_13-DET.DWG PLOTTED: 2:20 PM

PREPARED BY: JENSEN DESIGN & SURVEY, INC.

REGISTERED PROFESSIONAL ENGINEER
FREDERICK T. GIROUX
No. C 057269
Exp. 12-31-21
CIVIL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

DETAILS

Revisions	R&A No: A181901
	Date: 7/15/2020
	Drawn:
	Checked:
	Consult. No:

PHASE II PARKING LOT
FOR THE APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
C-2

SUGGESTED TRENCH WIDTHS FOR DUCTILE-IRON MAINS			
NOMINAL PIPE SIZE IN.	TRENCH WIDTH IN.	NOMINAL PIPE SIZE IN.	TRENCH WIDTH IN.
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

SUGGESTED TRENCH WIDTHS FOR PVC PIPE		
PIPE DIAMETER IN.	TRENCH WIDTH	
	MINIMUM IN.	MAXIMUM IN.
4	18	29
6	18	31
8	21	33
10 AND ABOVE	1 FT GREATER THAN OUTSIDE DIAMETER OF PIPE	2 FT GREATER THAN OUTSIDE DIAMETER OF PIPE

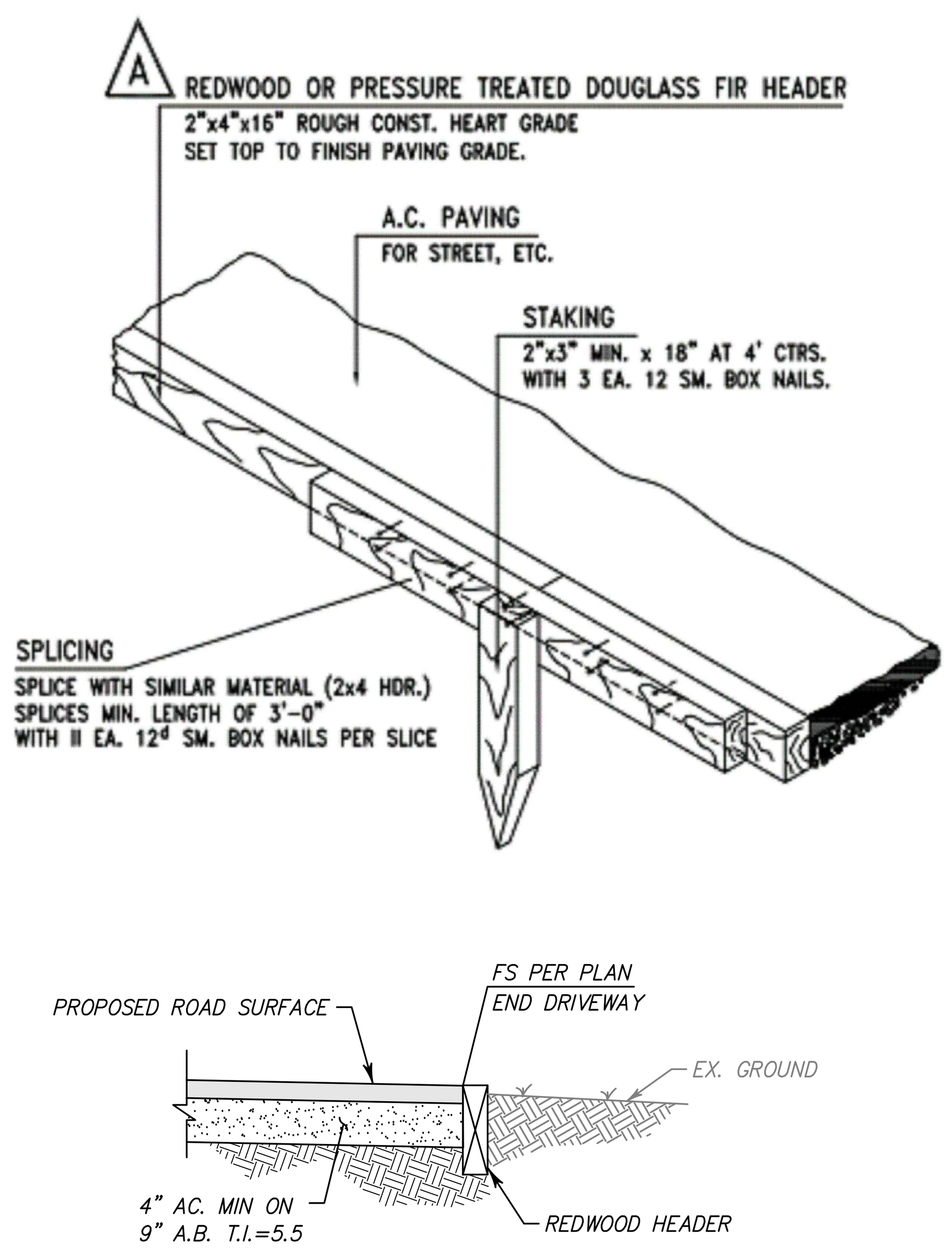
SUGGESTED TRENCH WIDTHS FOR AC PIPE		
PIPE DIAMETER IN.	TRENCH WIDTH	
	MINIMUM IN.	MAXIMUM IN.
4	18	28
6 OR 8	20	32
10 OR 12	24	36
14 OR 16	30	42

* ALL TRENCH REPAIR SHALL CONFORM TO CITY OF CAMARILLO STANDARD PLATE NO. E-10.1 (REV. C)

V

SUGGESTED TRENCH WIDTH'S FOR PVC & AC PIPES

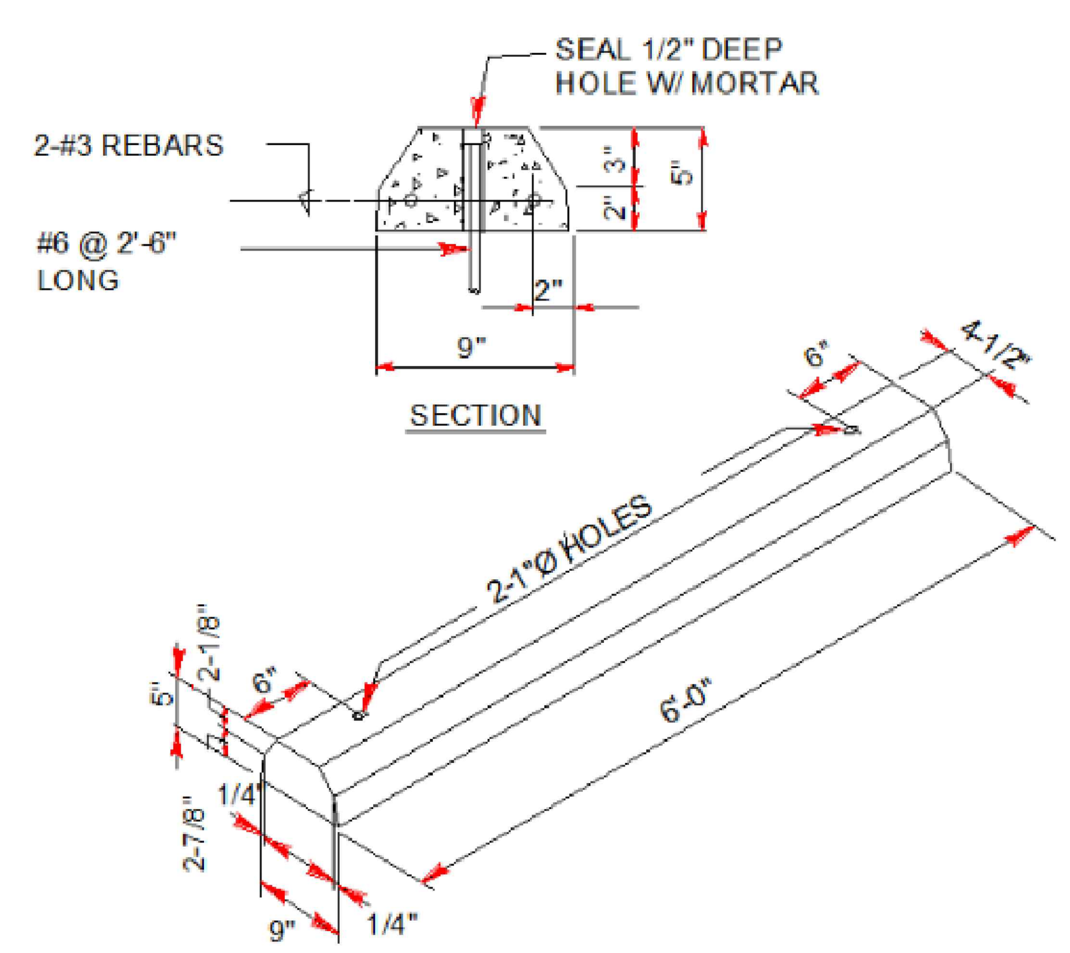
NOT TO SCALE



W

REDWOOD HEADER

NOT TO SCALE



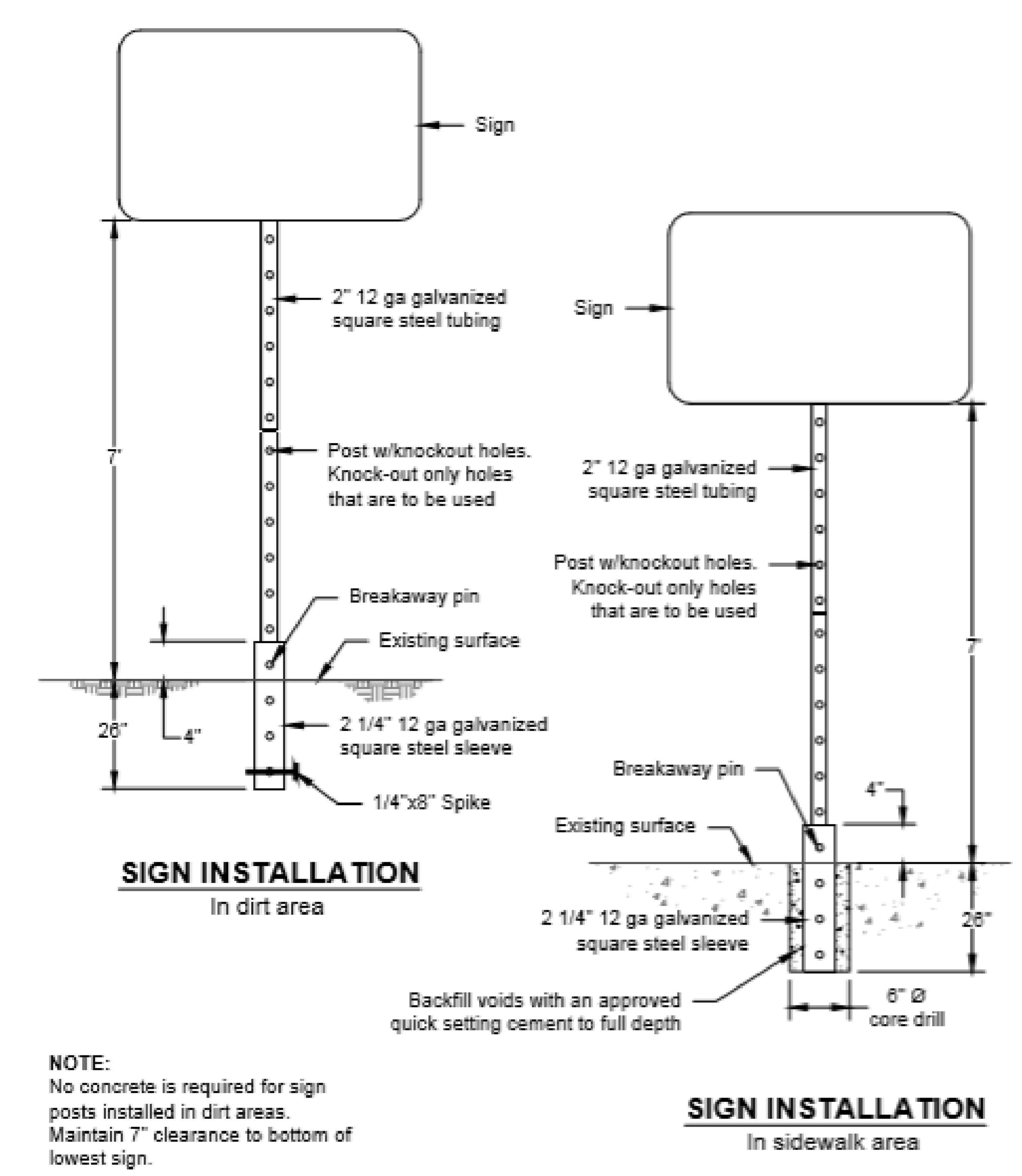
PRECAST CONCRETE WHEEL STOP

- CONCRETE MIX DESIGN PER SOILS REPORT RECOMMENDATIONS

X

CONCRETE WHEEL STOP

NOT TO SCALE



NOTE:
No concrete is required for sign posts installed in dirt areas. Maintain 7' clearance to bottom of lowest sign.

Y

SIGN INSTALLATION

NOT TO SCALE

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

PREPARED BY: JENSEN DESIGN & SURVEY, INC. www.jdscivil.com
FREDERICK T. GIROUX RCE

REGISTERED PROFESSIONAL ENGINEER FREDERICK T. GIROUX No. C 057289 Exp. 12-31-21 CIVIL STATE OF CALIFORNIA

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DETAILS

Revisions

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PHASE II PARKING LOT FOR THE APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
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Sheet No.
C-3

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OXNARD COLLEGE FIRE ACADEMY
FIRE APPARATUS BUILDING
GROUND IMPROVEMENT
CAMARILLO, CALIFORNIA

811 Know what's **below.** **Call** before you dig.

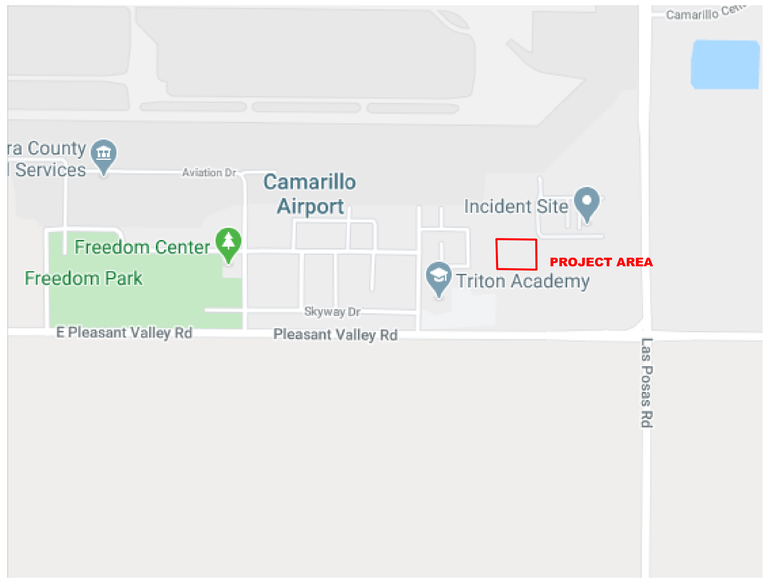
TICKET NUMBER: _
CALL BACK NUMBER: _

SHEET INDEX

VICINITY MAP

MAP DATA: GOOGLE 2020

LOCATION MAP



MAP DATA: GOOGLE 2020

AGI
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GENERAL NOTES AND DETAILS

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FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
GI-1

GENERAL

1. ADVANCED GEOSOLUTIONS, INC. (AGI) SCOPE OF WORK INVOLVES CONSTRUCTION OF THE GROUND IMPROVEMENT BY DISPLACEMENT GROUTED COLUMNS (DGC) INSTALLATION AS SHOWN ON THESE PLANS.

2. A STABLE AND LEVEL (< 2%) WORKING PAD SHALL BE PROVIDED BY OTHERS. THE WORKING SURFACE MUST BE FREE OF STANDING WATER AND BE CAPABLE OF SUPPORTING A 150+ TON DRILL RIG/ CRANE IN ALL WEATHER CONDITIONS.

3. A LICENSED SURVEYOR, PROVIDED BY OTHERS, WILL STAKE AND IDENTIFY EACH DGC LOCATION AS SHOWN ON THESE PLANS.

REFERENCE DOCUMENTS:

4. ENGINEERING GEOLOGY AND GEOTECHNICAL ENGINEERING REPORT, PREPARED BY EARTH SYSTEMS PACIFIC AND DATED 4/22/2020.

DGC INSTALLATION

1. THE GROUT USED TO CONSTRUCT THE DGC WILL MEET THE DESIGN STRENGTH OF 2,000 PSI AT 28 DAYS.

2. THE DGC WILL EXTEND TO THE DEPTH INDICATED ON THE PLAN OR TO PRACTICAL REFUSAL, WHICHERVER OCCURS FIRST.

3. CONSTRUCTION TOLERANCE ARE:
   HORIZONTAL TOLERANCE = ±6 INCHES FROM STAKED LOCATION
   VERTICAL TOLERANCE = ±2 DEGREES

4. THE VOLUME OF INJECTED GROUT SHALL BE RECORDED PER LINEAR FOOT. THIS VOLUME SHALL NOT BE LESS THAN THE NEAT VOLUME. ALL VOLUME MEASUREMENT SHALL BE RECORDED USING A DATA ACQUISITION SYSTEM.

5. ADJACENT DGCS LESS THAN 6 FEET CENTER-TO-CENTER SHALL NOT BE INSTALLED WITHIN 3 HOURS OF EACH OTHER.

6. GROUT MIX SHALL BE CONTINUOUSLY PLACED AGAINST UNDISTURBED SOIL UNDER PRESSURE UNLESS OTHERWISE APPROVED BY THE ENGINEER.

7. SHOULD ANY OBSTRUCTION BE ENCOUNTERED DURING INSTALLATION, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING SUCH OBSTRUCTION OR THE DGC SHALL BE RELOCATED OR ABANDONED AS DIRECTED BY THE GEOR.

8. THE FINISHED DGC ELEMENT WILL BE POST-EXCAVATED BY OTHERS, WHERE REQUIRED, TO ESTABLISH THE FINAL TOP ELEVATION OF THE DGC.

9. DGC INSTALLATION DATA LOGS WILL BE COMPILED BY AGI AND SUBMITTED TO OWNER'S REPRESENTATIVE WITHIN ONE WEEK AFTER INSTALLATION.

10. INSTALLATION RECORD OF EACH DGC WILL INCLUDE THE FOLLOWING:
    IDENTIFICATION NUMBER AND DATE OF INSTALLATION
    DGC TOOL DIAMETER
    TOTAL DRILLED DEPTH
    VOLUME OF GROUT MIX PLACED
    DGC PUMPING PRESSURE (WHERE APPLICABLE)
    CONCRETE TRUCK TICKET ID ASSOCIATED WITH THE DGC
    DOCUMENTATION OF OBSTRUCTION, PLACEMENT DELAYS, UNUSUAL GROUND CONDITIONS, OR UNUSUAL OCCURRENCES OBSERVED DURING DGC INSTALLATION.

GROUND IMPROVEMENT TESTING

1. GROUT MIX SAMPLE WILL BE COLLECTED AND PROVIDED TO THE OWNER'S THIRD PARTY LAB TO CONFIRM DESIGN STRENGTH.

2. THE FREQUENCY OF GROUT MIX SAMPLING WILL BE ONE SET OF FOUR 3"X6" CYLINDERS FOR EVERY 50 CUBIC YARDS PLACED. A MINIMUM OF ONE SET WILL BE COLLECTED PER SHIFT.

3. ONE (1) COMPRESSIVE LOAD TEST, IN GENERAL ACCORDANCE WITH ASTM D1143 PROCEDURE A, WILL BE CONDUCTED ON A REPRESENTATIVE 34' DEEP DGC ELEMENT TO VERIFY THE TEST LOAD (DESIGN LOAD + 50%).

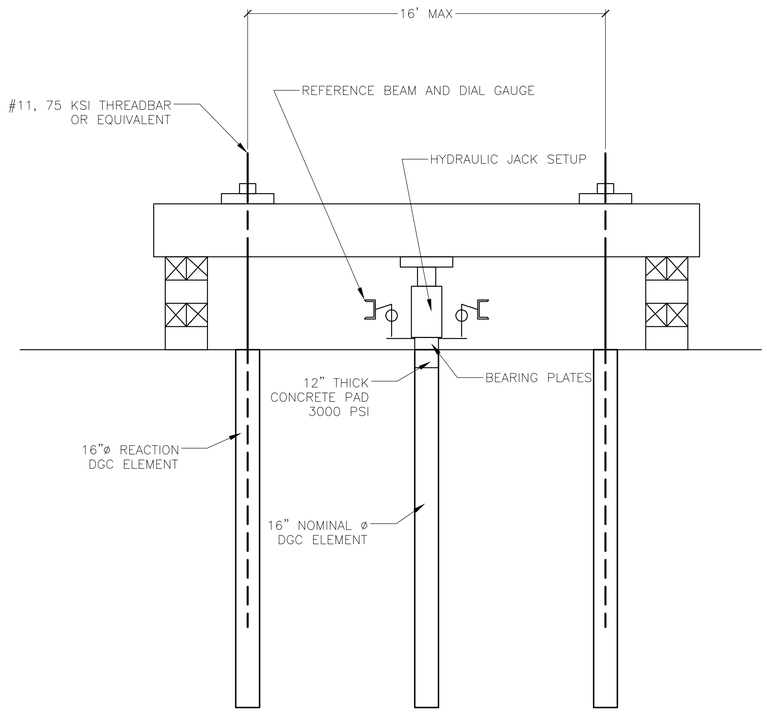
4. A SEATING LOAD EQUAL TO 5% OF THE DESIGN LOAD SHALL BE APPLIED PRIOR TO APPLICATION OF LOAD INCREMENTS

5. THE LOAD TEST RESULTS SHALL BE EVALUATED BY THE 90% HANSEN CRITERIA.

6. SEE LOAD TEST SETUP AND TEST SCHEDULE ON THIS SHEET.

COMPRESSION TEST LOADING SCHEDULE

DESIGN LOAD	**70**	KIPS
PERCENT OF DL	LOAD VALUE	HOLD DURATION
[%]	[KIP]	[MIN]
5%	3.5	ALIGNMENT LOAD
10%	7.0	4
15%	10.5	4
20%	14.0	4
25%	17.5	4
30%	21.0	4
35%	24.5	4
40%	28.0	4
45%	31.5	4
50%	35.0	4
55%	38.5	4
60%	42.0	4
65%	45.5	4
70%	49.0	4
75%	52.5	4
80%	56.0	4
85%	59.5	4
90%	63.0	4
95%	66.5	4
100%	70.0	4
105%	73.5	4
110%	77.0	4
115%	80.5	4
120%	84.0	4
125%	87.5	4
130%	91.0	4
135%	94.5	4
140%	98.0	4
145%	101.5	4
150%	105.0	4
125%	87.5	4
100%	70.0	4
75%	52.5	4
50%	35.0	4
25%	17.5	4
5%	3.5	4
0%	0.0	-



LOAD TEST SETUP
NOT TO SCALE

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

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GENERAL NOTES AND DETAILS

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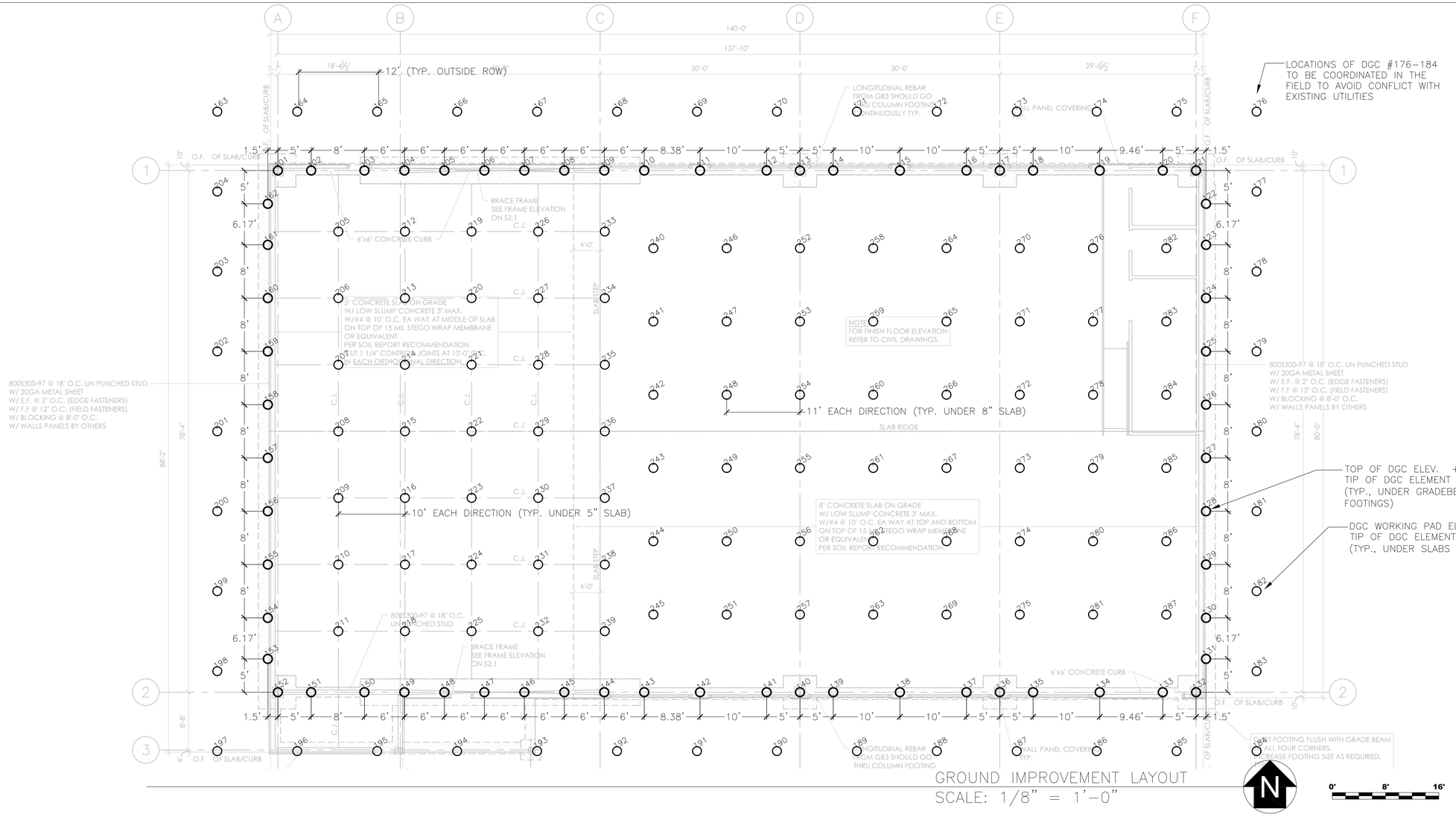
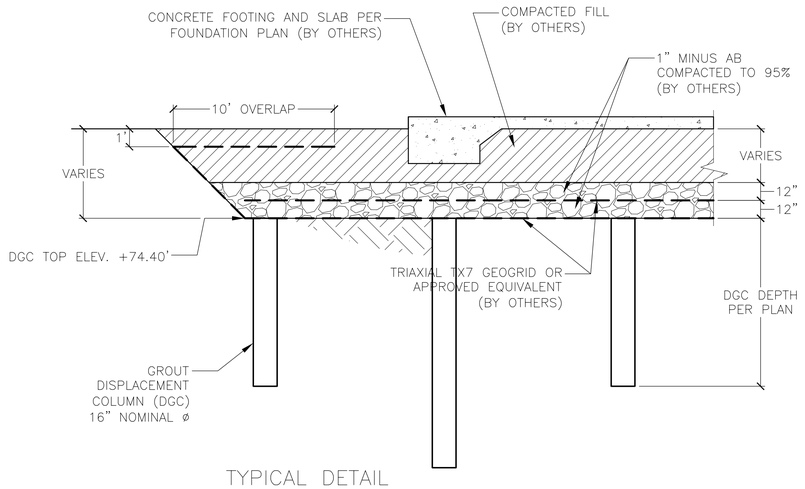
FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
GI-2

LOCATIONS OF DGC #176–184 TO BE COORDINATED IN THE FIELD TO AVOID CONFLICT WITH EXISTING UTILITIES



GROUND IMPROVEMENT LAYOUT
SCALE: 1/8" = 1'-0"



TYPICAL DETAIL
NOT TO SCALE

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GROUND IMPROVEMENT LAYOUT

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FIRE TECHNOLOGY
APPARATUS BUILDING
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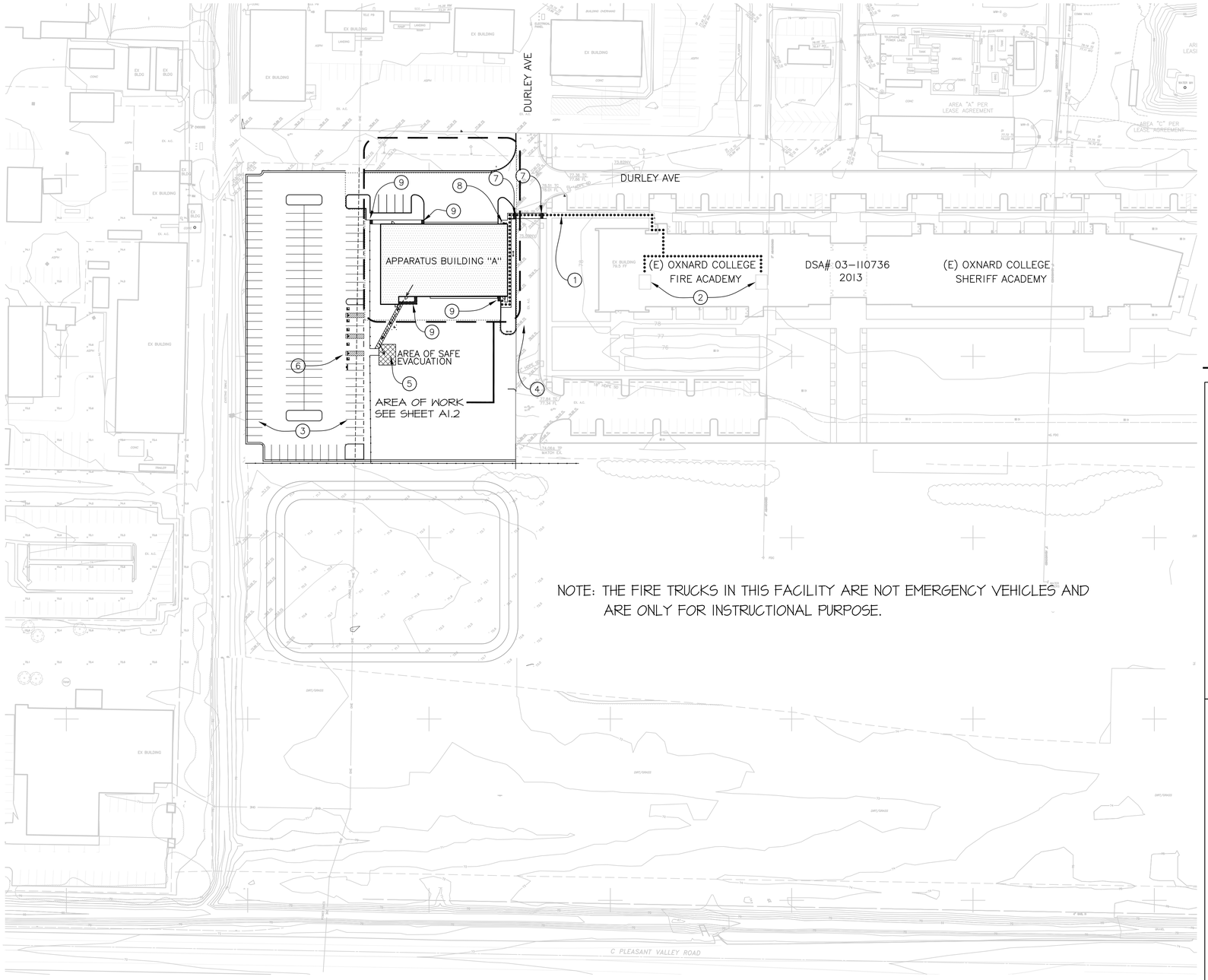
Sheet No.
GI-3



NOTE: THE FIRE TRUCKS IN THIS FACILITY ARE NOT EMERGENCY VEHICLES AND ARE ONLY FOR INSTRUCTIONAL PURPOSE.

MASTER SITE PLAN

SCALE 1" : 60'-0"

0 20 40 60 80 100 200

N

NOTE LEGEND

1. ACCESSIBLE PATH OF TRAVEL TO EXISTING RESTROOMS. SEE PATH OF TRAVEL NOTE ON T-SHEET, GENERAL NOTE #3.
2. ACCESSIBLE DSA CERTIFIED MENS AND WOMENS ROOMS, DSA A#03-110736, 2013.
3. EXISTING AC PAVED PARKING AREA WITH 26' MINIMUM WIDTH DRIVE AISLES.
4. EXISTING 26' WIDE AC PAVED ROAD.
5. AREA OF SAFE EVACUATION ON THE ACS PATH OF TRAVEL.
6. ACCESSIBLE PARKING. SEE 1/A1.2.
7. CURB RAMP WITH 36" BAND OF YELLOW DETECTABLE WARNINGS DOMES, SEE C/C-1.
8. HI/LOW DRINKING FOUNTAIN, SEE 3/A2.1.
9. 36" BAND OF YELLOW DETECTABLE WARNING DOMES, SEE C/C-1, SIMILAR.

SEE TITLE SHEET "T" FOR PROJECT SCOPE AND DEFERRED SUBMITTALS.

PARKING CALCULATION

1. EXISTING PARKING AT ADJACENT WESTERN LOT = 119 SPACES.
2. PROPOSED PARKING ADJACENT TO NORTH WALL = 5 SPACES.
3. TOTAL PARKING AT BUILDING = 124 SPACES.
4. 5 ACCESSIBLE SPACES REQUIRED.
5. 5 ACCESSIBLE SPACES PROVIDED, SEE SHEET A1.2.

DSA FORM 810

DSA 810

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

To facilitate the Division of the State Architect's (DSA) fire and life safety plan review of project site conditions, DSA requires the design professional to provide the following information at time of project submittal for projects consisting of construction of a new campus, construction of new building(s), additions to existing buildings, and for site alternate design means for fire department emergency vehicle access, and fire suppression water supply.

Information associated with compliance items 1 through 3 below is to be provided for all project types indicated above. Information associated with items 4 through 7 is to be completed when an alternate means is utilized. Acknowledgement by the school district and signature from the Local Fire Authority (LFA) is only required when an alternate design means is being requested.

The Project Information and Fire & Life Safety information sections are to be completed for all projects and imaged onto the fire access site plan. When an alternate design/means is proposed, all sections on pages 1 and 2 are to be completed and imaged on the fire access site plan.

For additional information refer to the instructions at the end of this form and DSA Policy *PL 09-01: Fire Flow for Buildings*.

PROJECT INFORMATION	
School District/Owner:	Ventura County Community College District
Project Name/School:	Fire Technology Apparatus Building/Oxnard College Fire Academy
Project Address:	104 Durley Avenue, Camarillo, CA 93010

FIRE & LIFE SAFETY INFORMATION			
1.	Has a fire hydrant flow test been performed within the past 12 months? *(If yes, provide a copy of the test data.)*	Yes ☑	No ☐
2.	Was the fire hydrant water flow test performed as part of this LFA review?	Yes ☐	No ☑
3.	Is the project located within a designated fire hazard severity zone (FHSZ) as established by Cal-Fire? *(If yes, indicate FHSZ classification below.)*	Yes ☐	No ☑
	Refer to the following website for FHSZ locations: http://egis.fire.ca.gov/FHSZ/	Moderate ☐ / High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*		WIFA ☐

DSA 810
FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

CONDITION MEANS AND METHODS RESOLUTION		ALTERNATE ACCEPTED			
		Yes	No	N/A	N/R
4.	Emergency vehicle access roadways do not meet CFC requirements.			✔	
4a.	**Acceptable Alternate:** Emergency vehicle and personnel access as proposed by the project architect is acceptable for providing fire suppression and protection of life and property.				
5.	**Fire Hydrants:** Number and spacing does not meet CFC requirements.			✔	
5a.	**Acceptable Alternate:** Number of fire hydrants and spacing as proposed by the project architect is acceptable for fire suppression and protection of life and property.				
6.	**Fire Hydrants:** Water flow and pressure are less than CFC minimum.			✔	
6a.	**Acceptable Alternate:** The available flow and pressure is acceptable for providing fire suppression and protection of life and property.				
7.	Location of fire department connection(s) serving fire sprinkler systems or standpipe systems does not meet CFC requirements.			✔	
7a.	**Acceptable Alternate:** The location of fire department connection serving the fire sprinkler system and/or standpipe system is acceptable for providing fire suppression and protection of life and property.				

School District Acceptance of Acceptable Design Alternates

By signing this form, the school district acknowledges and accepts the proposed design as an alternative to California Building Code (CBC) and California Fire Code (CFC) minimum requirements, as indicated by one or more of the conditions indicated at items 4a, 5a, 6a or 7a, for providing fire and life safety protection of life and property.

Accepted by: _____ Title: _____

Signature: _____ Date: _____

LOCAL FIRE AUTHORITY (LFA) INFORMATION		
LFA Agency Name:	Ventura County Fire Dept	
LFA Review Official:	Lori Ross	
Title:	Senior Fire Inspector	Work Phone: (805) 947-8535
Work Email:	Lori.ross@ventura.org	

LFA Reviewer's Signature: Lori Ross Digitally signed by Lori Ross Date: 2020.05.21 14:30:33 -07'00' Date: 05/21/20

DSA 810
FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

DSA 810 INSTRUCTIONS

GENERAL INFORMATION

This form is required to be completed by the design professional for projects that include construction of a new school campus, construction of new buildings, additions to existing buildings, or utilization of alternate design means for fire department emergency vehicle access and fire suppression water supply. The information requested in items 1 through 3 may be obtained by calling the local fire authority and water purveyor, and reviewing the fire area hazard maps on the Cal-Fire website.

For application of proposed acceptable alternate design/means indicated in items 4 through 7, the design professional must schedule an in-person meeting with the Local Fire Authority (LFA) for evaluation and acceptance. Acceptance of the proposed alternate means must be individually indicated by the LFA, by checking the "yes" or "no" box as appropriate.

The LFA has the option to accept or not accept any or all of items 4 through 7. If the LFA chooses not to review a specific item, they shall indicate such by checking the "N/R" box. Items indicated as "N/R" by the LFA shall be reviewed by DSA.

SPECIFIC DIRECTIONS

Identify the Project: Design professional to provide the school district name and project address.

Completing #1 through #3: Responses shall relate to the project scope of work only.

 # 1: Indicate if a water flow test at the project site has been performed within 12 months prior to project submittal by checking 'yes' or 'no'. If 'no' is checked, then current fire flow data is required, and may be determined by computer model or performance of an actual flow test.

 # 2: Indicate if water flow test information was included with the project submittal by checking 'yes' or 'no'.

 # 3: Identify if the project site is located in a fire hazard severity zone by checking "yes" or "no". If 'yes' is checked, indicate the classification of fire hazard severity zone on the corresponding line by placing a check mark at the appropriate classification.

ALTERNATE DESIGN MEANS (Items #4 through #7)

 # 4: The design professional indicates that emergency vehicle access roadways with a 20-foot minimum clear width, 13'-6" vertical clearance, and capable of supporting fire apparatus loads are not provided.

N/A. Placement of a check mark in the N/A box indicates that the fire apparatus access roadway complies with CFC Section 503.

N/R. Placement of a check mark in the N/R box indicates that the condition was not reviewed by LFA.

 # 4a: Alternate Means

Yes. Placement of a check mark in the 'Yes' box by the LFA indicates that the alternate means reflected on the drawings provides sufficient vehicle access to conduct fire suppression or other emergency activities.

No. Placement of a check mark in the 'No' box indicates the reflected alternate design does not provide sufficient emergency vehicle access to conduct fire suppression or other emergency activities.

 # 5: The design professional indicates that required fire hydrants are insufficient in number and spacing to conduct fire suppression activities.

DSA 810
FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

N/A. Placement of a check mark in the N/A box indicates that the number and spacing of fire hydrants facilitates fire suppression activities.

N/R. Placement of a check mark in the N/R box indicates that the condition was not reviewed by LFA.

 # 5a: Alternate Design

Yes. Placement of a check mark in the 'Yes' box by the LFA indicates that they are capable of conducting fire suppression activities based on fire hydrant locations and spacing proposed by the project architect.

No. Placement of a check mark in the 'No' box indicates the reflected alternate design does not provide adequate resources to conduct effective fire suppression activities.

 # 6: The design professional indicates that water supply from area fire hydrants is insufficient to conduct fire suppression activities.

N/A. Placement of a check mark in the N/A box indicates that the water supply (gpm) and pressure comply with CFC Section 507 requirements.

N/R. Placement of a check mark in the N/R box indicates that the condition was not reviewed by LFA.

 # 6a: Alternate Design

Yes. Placement of a check mark in the 'Yes' box by the LFA indicates that the available flow in gpm and pressure from area fire hydrants is acceptable to conduct fire suppression activities with available resources.

No. Placement of a check mark in the 'No' box indicates the reflected alternate design does not provide the adequate resources to conduct effective fire suppression activities.

 # 7: The design professional indicates that location of Fire Department Connections (FDC) serving fire sprinklers, standpipe and/or private fire hydrant systems, does not comply with CFC Section 912 requirements.

N/A. Placement of a check mark in the N/A box indicates that the FDC location complies with CFC Section 912 requirements.

N/R. Placement of a check mark in the N/R box indicates that the condition was not reviewed by LFA.

 # 7a: Alternate Design

Yes. Placement of a check mark in the 'Yes' box by the LFA indicates that the FDC location is acceptable to conduct fire suppression activities with available resources.

No. Placement of a check mark in the 'No' box indicates the reflected alternate design does not provide adequate resources to conduct effective fire suppression activities.

School District Acceptance of Acceptable Design Alternates: Where alternate means of achieving compliance are proposed, the school district must acknowledge their awareness and acceptance of the proposed alternate design means by completing and signing the acknowledgement.

Local Fire Authority Information: When an alternate design means is proposed and reviewed by the local fire authority, the LFA is to complete the information block and sign the form.

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Architecture
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21 S. California Street
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(805) 648-1234

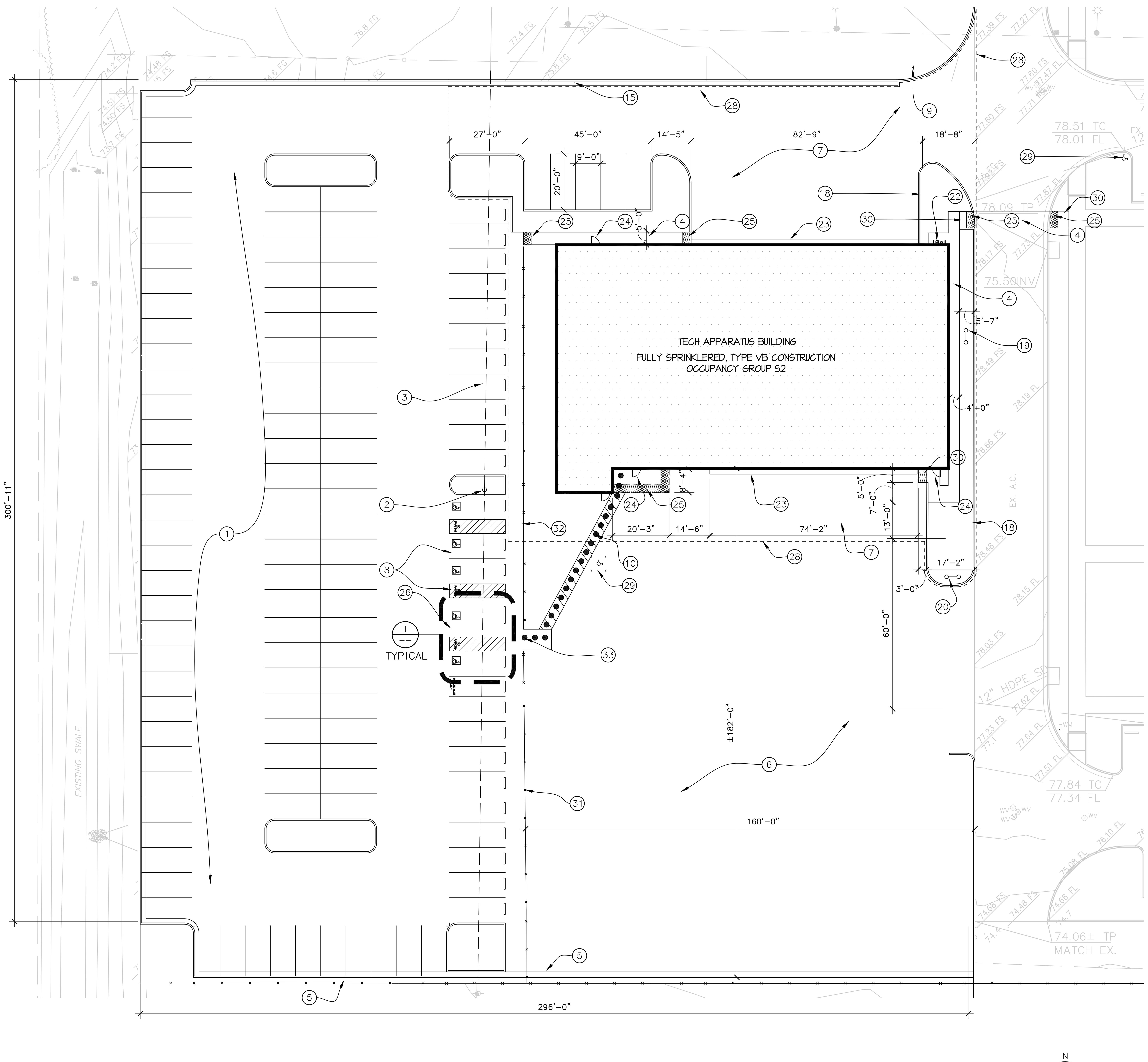
MASTER SITE PLAN

Revisions	
R&A No:	A181901
Date:	8/26/2020
Drawn:	R&A
Checked:	CW
Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A1.1

NOTE: SEE TITLE SHEET "T" FOR PROJECT SCOPE AND DEFERRED SUBMITTALS.

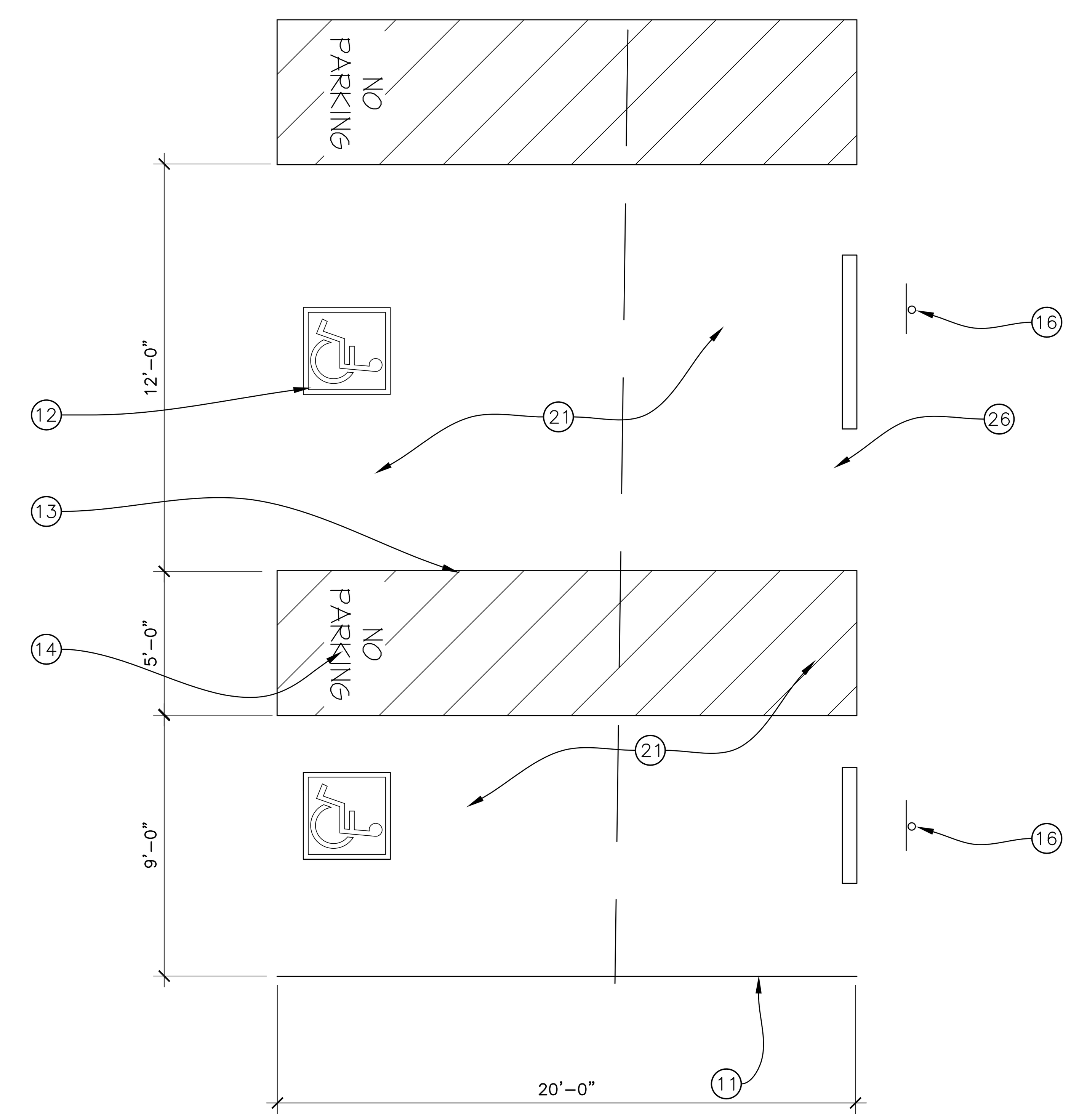


ENLARGED SITE PLAN

SCALE 1" : 20'-0"

NOTE LEGEND

1. EXISTING AC PAVED PARKING LOT.
2. EXISTING POWER POLE.
3. EXISTING POWER LINE ABOVE.
4. CONCRETE WALKWAY. SEE SHEET CI.
5. EXISTING CONCRETE CURB AND GUTTER.
6. EXISTING AC PAVED TRAINING AREA.
7. AC PAVING, SEE SHEET CI.
8. EXISTING ACCESSIBLE PARKING SPACES, SIGNAGE, AND ACCESS AISLE. SEE DETAIL 1/A1.1. TYPICAL OF FIVE.
9. EXISTING PARKING LOT ACCESSIBLE PARKING SIGN SEE 1/A3.1
10. ACCESSIBLE PATH OF TRAVEL. 4'-0" WIDE WHITE STRIPED WALK, SEE GENERAL NOTE #3 ON T SHEET.
11. PAINTED PARKING LINES. COLOR SHALL BE WHITE. TWO COATS MINIMUM.
12. 3'-0" SQUARE INTERNATIONAL ACCESSIBILITY SYMBOL. PAINT WHITE STENCIL SYMBOL OVER BLUE PAINTED BACKGROUND.
13. PAINTED ACCESSIBLE LOADING/UNLOADING AISLE AS SHOWN. 4" THICK STRIPES. COLOR SHALL BE WHITE ON AC PAVING.
14. "NO PARKING" PAINTED WHITE, 12" HIGH LETTERS.
15. CONCRETE CURB AND GUTTER.
16. ACCESSIBLE PARKING SIGN CENTERED AT END OF STALL. SEE DETAIL 2/A3.1.
17. NOT USED.
18. 6" CONCRETE CURB.
19. BACK FLOW PREVENTER. SEE CIVIL SHEET C-1.
20. EXISTING BACK FLOW PREVENTER, SEE CIVIL SHEET C-1.
21. PAVED ACCESSIB LE PARKING STALLS AND ACCESS AISLES TO HAVE MAXIMUM 2% SLOPE AND MAXIMUM 2% CROSS SLOPE.
22. HI-LOW DRINKING FOUNTAIN. SEE 3/A2.1.
23. 18" CONCRETE APRON CONTINUOUS AT OVERHEAD DOORS.
24. LEVEL LANDING AT DOOR, 5'-0" X 5'-0".
25. FEDERAL YELLOW COLOR TRUNCATED DOMES, TYPICAL. SEE CIVIL DRAWINGS, 36" WIDE BAND.
26. VAN SPACE, EXISTING. SEE DETAIL 2/A3.1.
27. NOT USED.
28. COLD JOINT OF AC PAVING AND ADJACENT EXISTING AC PAVING. DASHED LINE INDICATED LIMITS OF WORK.
29. EXISTING FIRE HYDRANT TO REMAIN.
30. CURB RAMP, 8.33% SLOPE, 4'-0" WIDE. SEE C-C-1.
31. EXISTING 5' HIGH CHAIN LINK FENCE.
32. EXTEND EXISTING 5' HIGH CHAIN LINK FENCE AFTER INSTALLING AC PAVING.
33. 4'-0" WIDE OPENING IN EXISTING FENCE.



1 ACCESSIBLE PARKING

SCALE 1/4" : 1'-0"

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(805) 648-1234

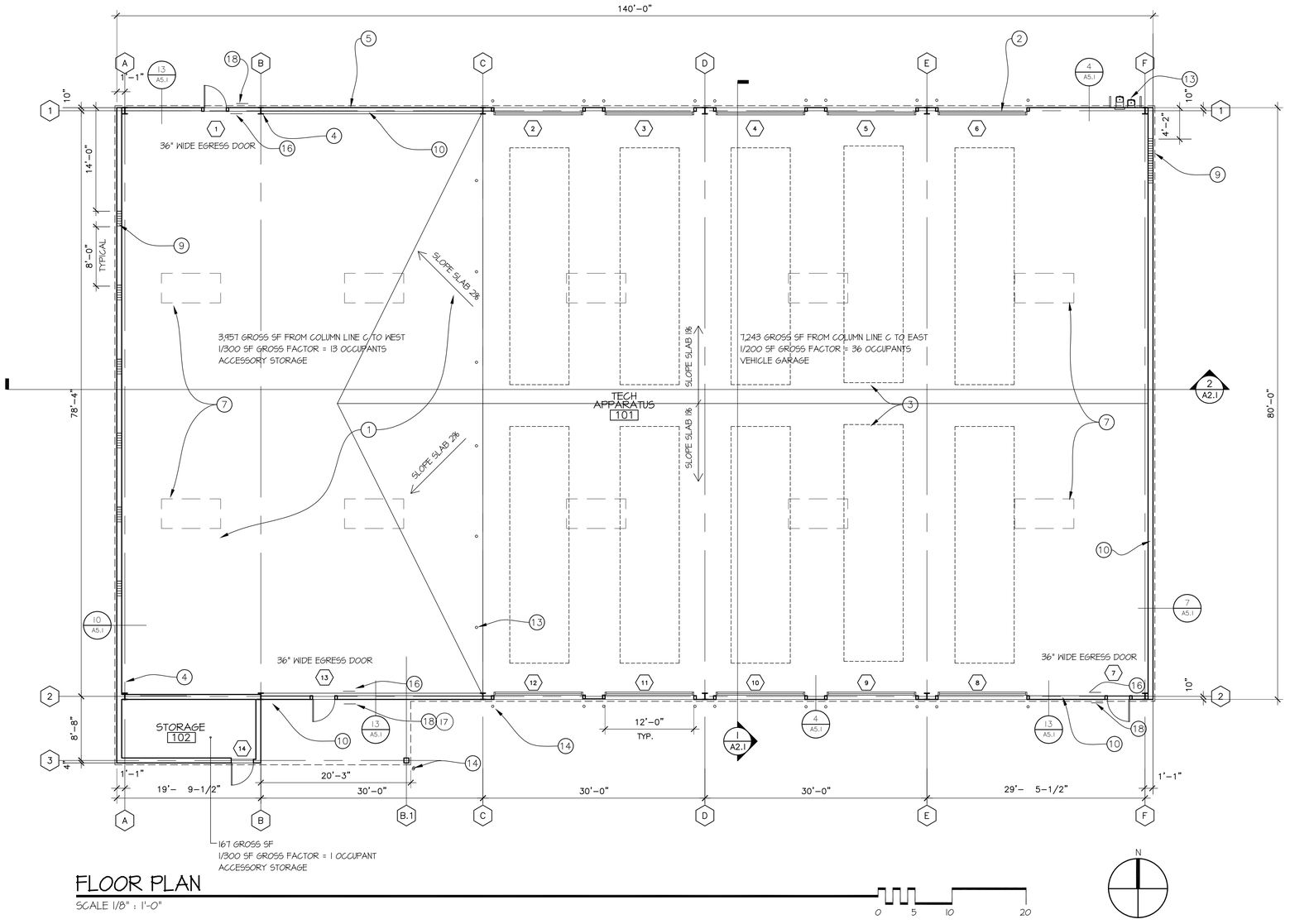
ENLARGED SITE PLAN

Revisions		
	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	R&A
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

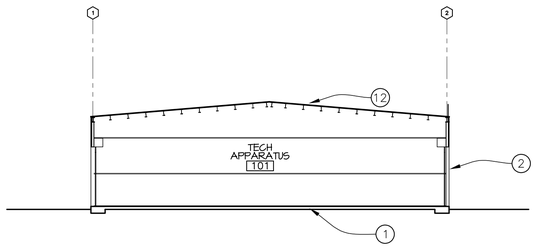
Sheet No.
A1.2

FILE PATH & NAME: P:\A181901 OXNARD COLLEGE FIRE ACADEMY WAREHOUSE\DRAWINGS\CONST DOCS\OXNARD FIRE APPARATUS CONDOCS (PHASING).DWG PLOTTED
THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.



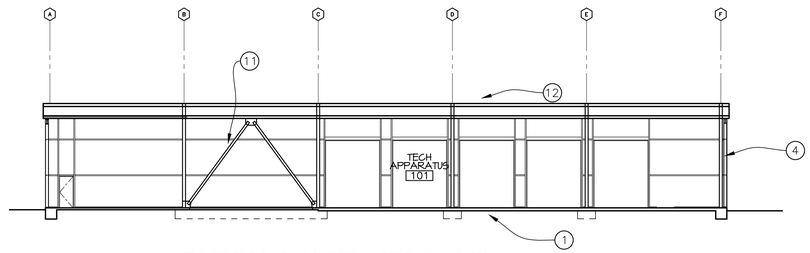
FLOOR PLAN

SCALE 1/8" : 1'-0"



1 SECTION

SCALE 1/16" : 1'-0"



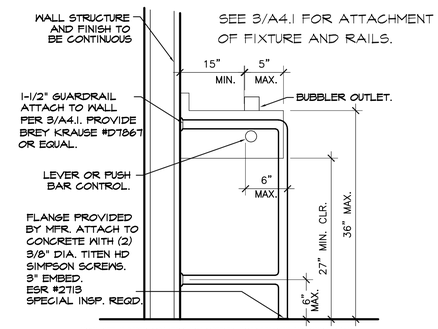
2 SECTION

SCALE 1/16" : 1'-0"

NOTE LEGEND

1. SEALED CONCRETE SLAB.
2. 12' x 15' STEEL ROLL-UP DOORS, TYPICAL.
3. DASHED OUTLINE SHOWS PARKED LOCATION OF FIRE ENGINE.
4. STEEL WIDE FLANGE COLUMNS, TYPICAL.
5. STEEL SIDING.
6. STEEL AWNING ABOVE MAIN ENTRY DOOR.
7. 4' x 8' SKYLIGHT. ABOVE
8. EXPOSED STRUCTURE ABOVE, NO CEILING.
9. LOUVERS, SEE MECHANICAL SHEETS.
10. CONCRETE CURB, SEE STRUCTURAL.
11. STEEL BRACE FRAME, SEE STRUCTURAL.
12. STEEL ROOF DECKING, SEE 3/A5.1.
13. 3" STEEL PIPE BOLLARD, 36" HIGH, IN 3.5" STEEL PIPE SLEEVE. TYPICAL OF SIX. BOLLARD TO BE REMOVABLE AND LOCKABLE. SEE DETAIL 3/A3.1 FOR INTERIOR BOLLARD. CAST IN SLAB, 12" WEST OF GRID LINE C.
14. 4" STEEL PIPE COLUMN, 36" HIGH, CONCRETE FILLED, EMBEDDED INTO CONCRETE FOOTING. LOCATE ONE AT COLUMN AND ONE AT EACH JAMB OF OVERHEAD DOORS. SEE DETAIL 3/A3.1 FOR EXTERIOR BOLLARD.
15. HI/LO ACCESSIBLE DRINKING FOUNTAIN, SEE DETAIL 3 THIS SHEET.
16. EXIT SIGN ON WALL. 1" HIGH LETTERS, TACTILE TEXT "EXIT" WITH GRADE 2 BRAILLE BENEATH. SIGN TO BE MOUNTED WITH TOP OF SIGN AT 60" AFF.
17. BUILDING NAME SIGN. 1" HIGH LETTERS, TACTILE TEXT "APPARATUS BUILDING" WITH GRADE 2 BRAILLE BENEATH. SIGN TO BE MOUNTED WITH TOP OF SIGN AT 60" AFF.
18. 6 INCH SQUARE ACCESSIBLE ENTRANCE SIGN. BLUE BACKGROUND WITH WHITE SYMBOL OF ACCESSIBILITY. SIGN TO BE MOUNTED WITH BOTTOM OF SIGN AT 48" AFF.

THE FIRE TRUCKS HOUSED IN THIS FACILITY ARE NOT EMERGENCY VEHICLES AND ARE ONLY FOR INSTRUCTIONAL PURPOSE.



3 ACCESSIBLE HI/LO DRINKING FOUNTAIN

SCALE 1" : 1'-0"

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FLOOR PLAN AND SECTIONS

Revisions	R&A No:	A181901
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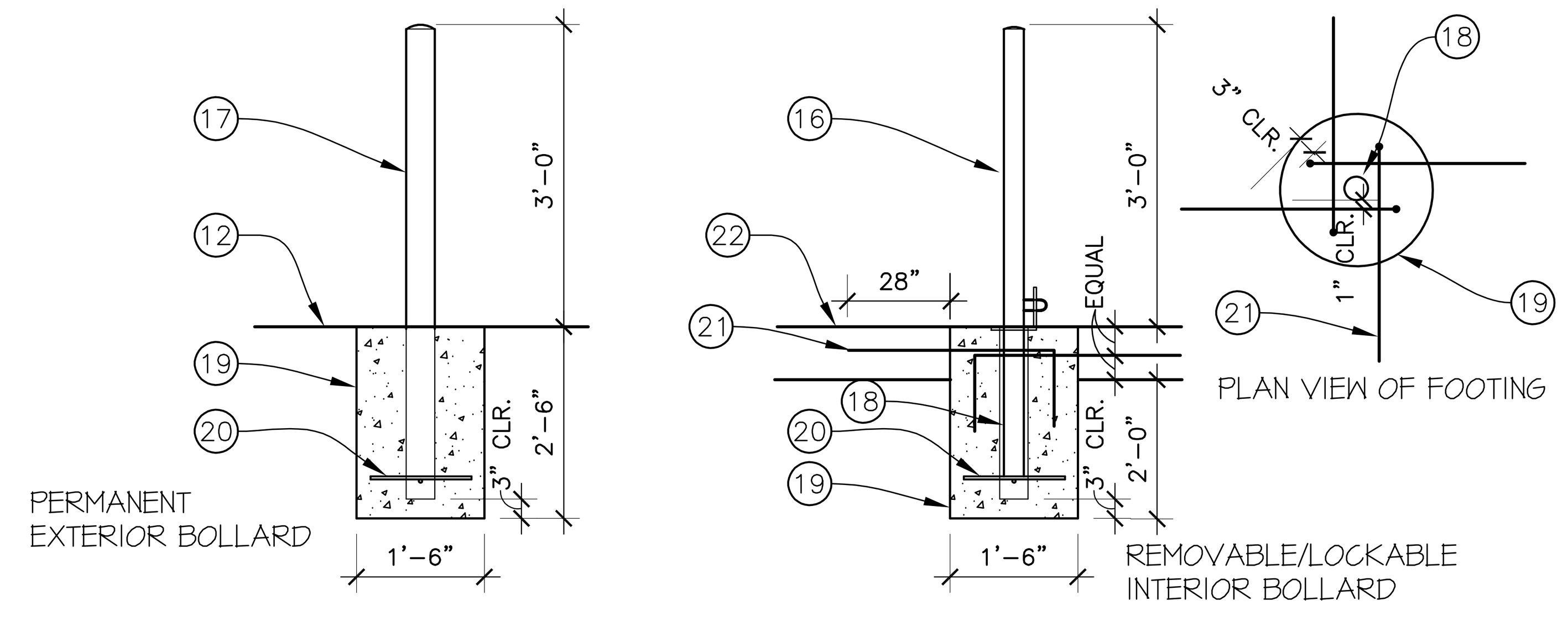
FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A2.1



3 STEEL PIPE BOLLARD
SCALE 3" : 1'-0"

NOTE LEGEND

1. RIBBED STEEL WALL PANELS, SEE 1/A5.1.
2. LOUVERS, SEE MECHANICAL SHEETS , TYPICAL.
3. LIGHTING FIXTURE, SEE ELECTRICAL SHEETS, TYPICAL.
4. STEEL ROOF DECKING, CLASS A. SEE 3/A5.1
5. SKYLIGHT, TYPICAL. SEE 5/A5.1.
6. COILING OVERHEAD DOOR , TYPICAL. SEE FRAMING DETAILS 1,2/S2.1, 10/SD2 AND 1,2/SD3.
7. STEEL SWINGING DOOR.
8. STEEL COLUMN.
9. ALUMINUM SIGN DISPLAYING MINIMUM 70 SQ.INCH INTERNATIONAL ACCESSIBLE SYMBOL AND 1" HIGH TEXT WITH BLUE PORCELAIN ENAMEL AND REFLECTIVE SYMBOLS AND LETTERS.
10. WHERE REQUIRED AT VAN SPACES (SEE SITE PLAN ON A1.2)PROVIDE ADDITIONAL ALUMINUM SIGN WITH 1" HIGH TEXT TO MATCH WIDTH AND COLOR OF SYMBOL SIGN.
11. GALVANIZED "U" CHANNEL POST.
12. FINAL GRADE.
13. CONCRETE FOOTING AS NOTED.
14. TEXT TO READ, IN LETTERS 1" HIGH MINIMUM: "UNAUTHORIZED VEHICLES PARKED IN DESIGNATED ACCESSIBLE SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR SPECIAL LICENSE PLATES ISSUED FOR PERSONS WITH DISABILITIES WILL BE TOWED AWAY AT OWNER'S EXPENSE. TOWED VEHICLE MAY BE RECLAIMED AT COLLEGE POLICE DEPT. OR BY TELEPHONING 805-678-5805."
15. 6" DOWNSPOUT FROM 6" GUTTER. SEE DETAILS 6,9,14/A5.1.
16. 3" DIAM. X 36" HIGH PIPE BOLLARD. PIPE TO BE STANDARD STEEL PIPE. PROVIDE PLASTIC DOME CAP ON TOP. PRIME AND PAINT WITH RUSTOLEUM YELLOW. PIPE WILL INSERT INTO SLEEVE. PROVIDE LOOP FOR PADLOCK TO LINE UP WITH LOCKING MOUNT.
17. 4" DIAM. X 36 HIGH PIPE BOLLARD. PIPE TO BE STANDARD STEEL PIPE. FILL PIPE WITH CONCRETE. DOME CONCRETE AT TOP. PRIME AND PAINT WITH RUSTOLEUM YELLOW.
18. 4" STEEL PIPE SLEEVE EMBEDDED IN FOOTING. INSTALL FLIP-UP LOCKING MOUNT THAT IS FLUSH WITH SLAB WHEN BOLLARD IS REMOVED FOR MAINTENANCE. MOUNT TO HAVE SLOT TO SLIP OVER LOOP ON BOLLARD. COLLEGE TO PROVIDE PADLOCKS.
19. CONCRETE FOOTING, 18" DIAMETER.
20. TWO #4 BARS, 12" LONG, THROUGH PIPE, EACH WAY.
21. FOUR #5 DOWELS WITH 90 DEGREE BENDS.
22. STRUCTURAL SLAB ON GRADE PER SHEET S1.1.

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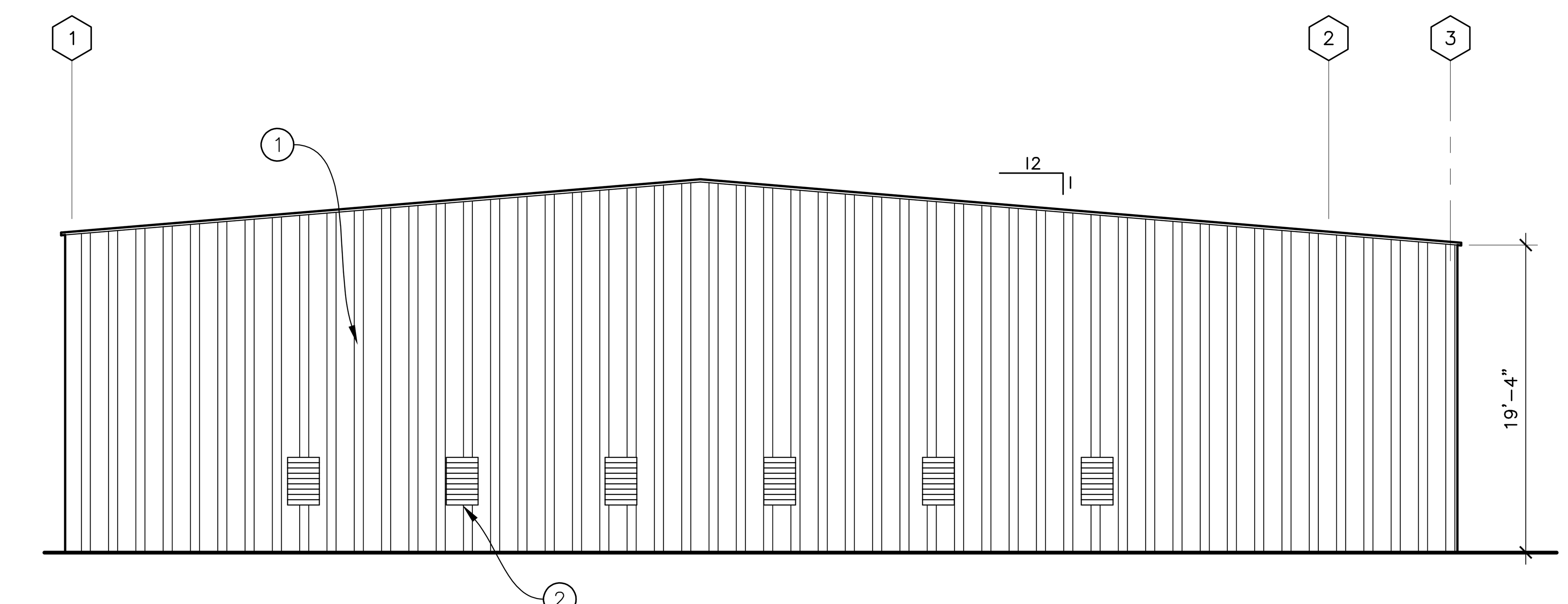
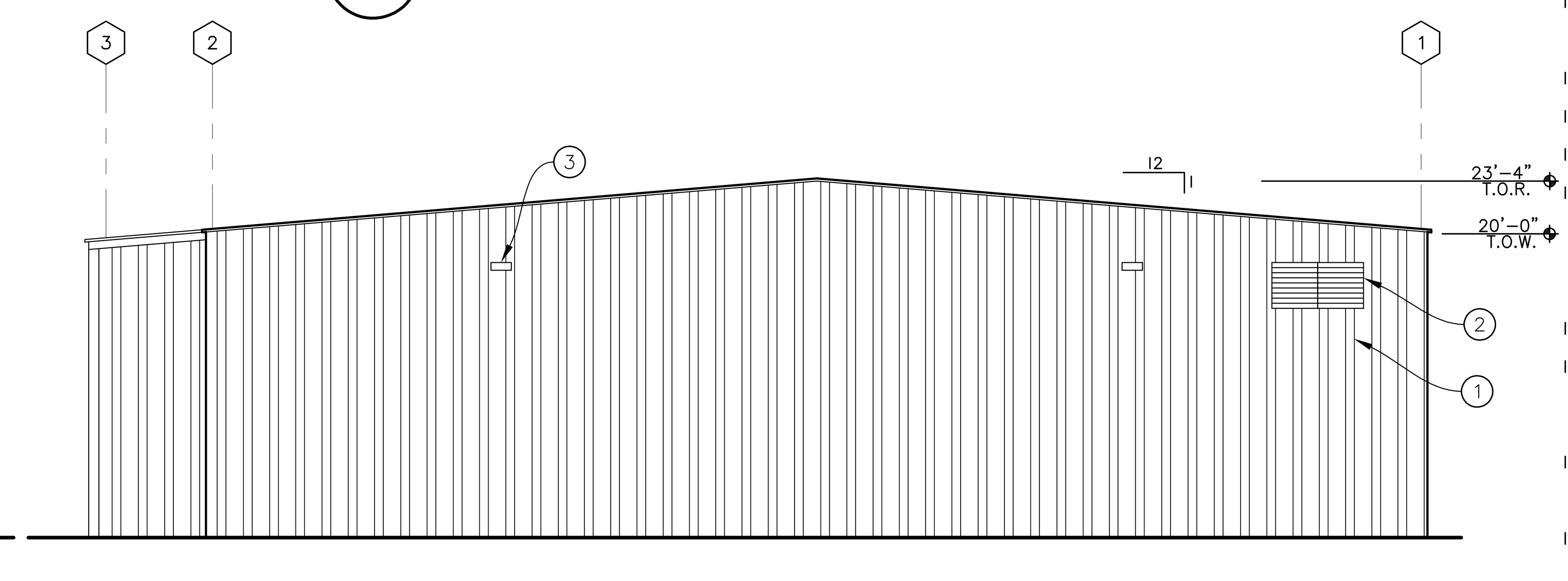
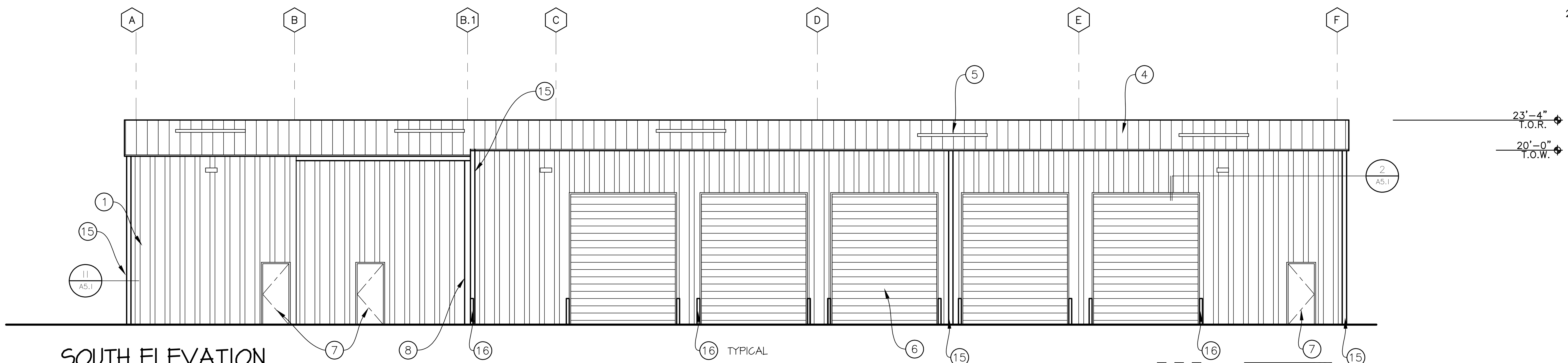


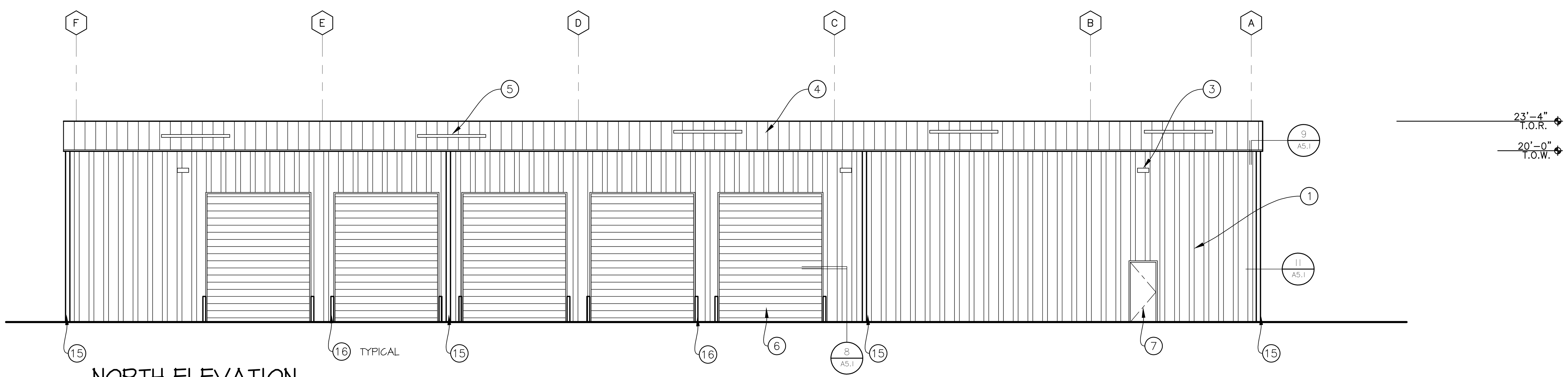
WEST ELEVATION
SCALE 1/8" : 1'-0"



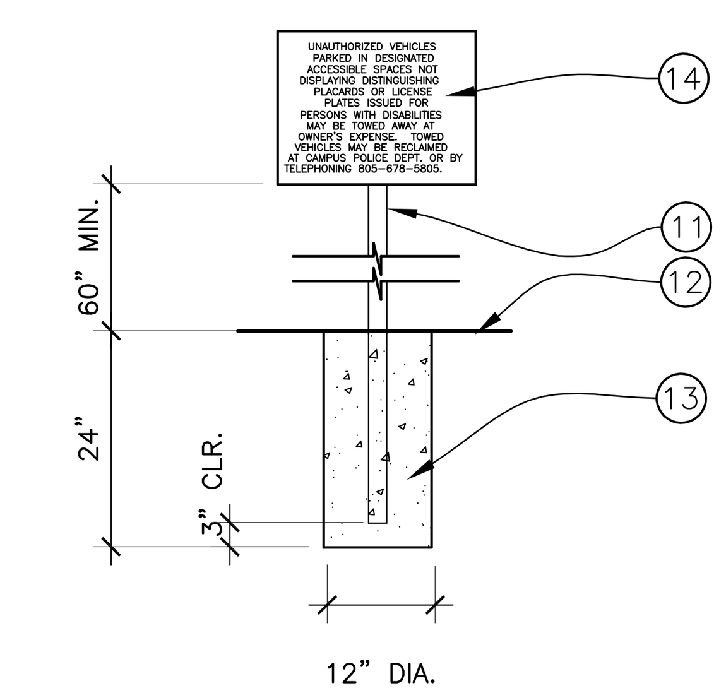
EAST ELEVATION
SCALE 1/8" : 1'-0"



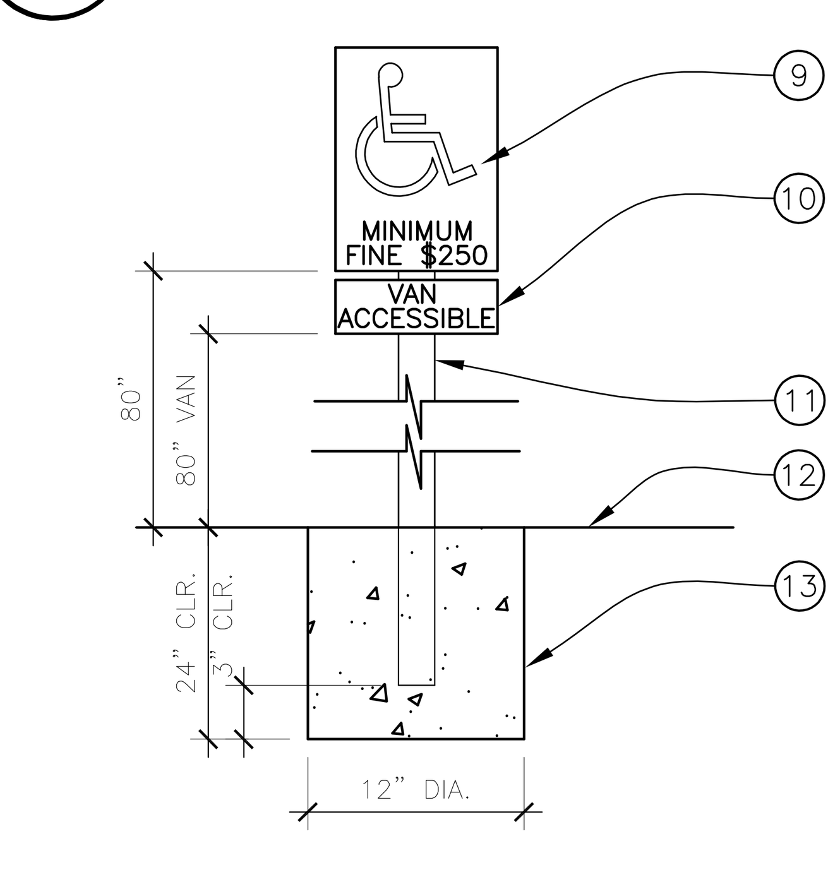
SOUTH ELEVATION
SCALE 1/8" : 1'-0"



NORTH ELEVATION
SCALE 1/8" : 1'-0"



1 ACCESSIBLE ENTRY SIGN
SCALE N.T.S.



2 ACCESSIBLE STALL SIGN
NOT TO SCALE

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EXTERIOR ELEVATIONS

Revisions	
R&A No:	A181901
Date:	8/26/2020
Drawn:	R&A
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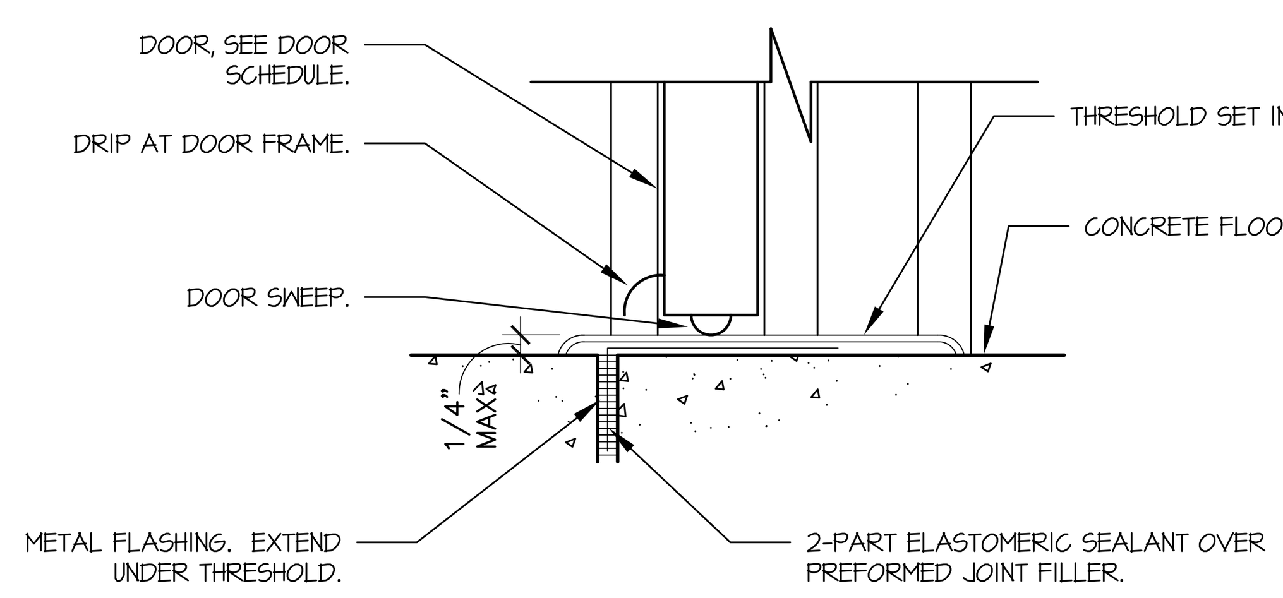
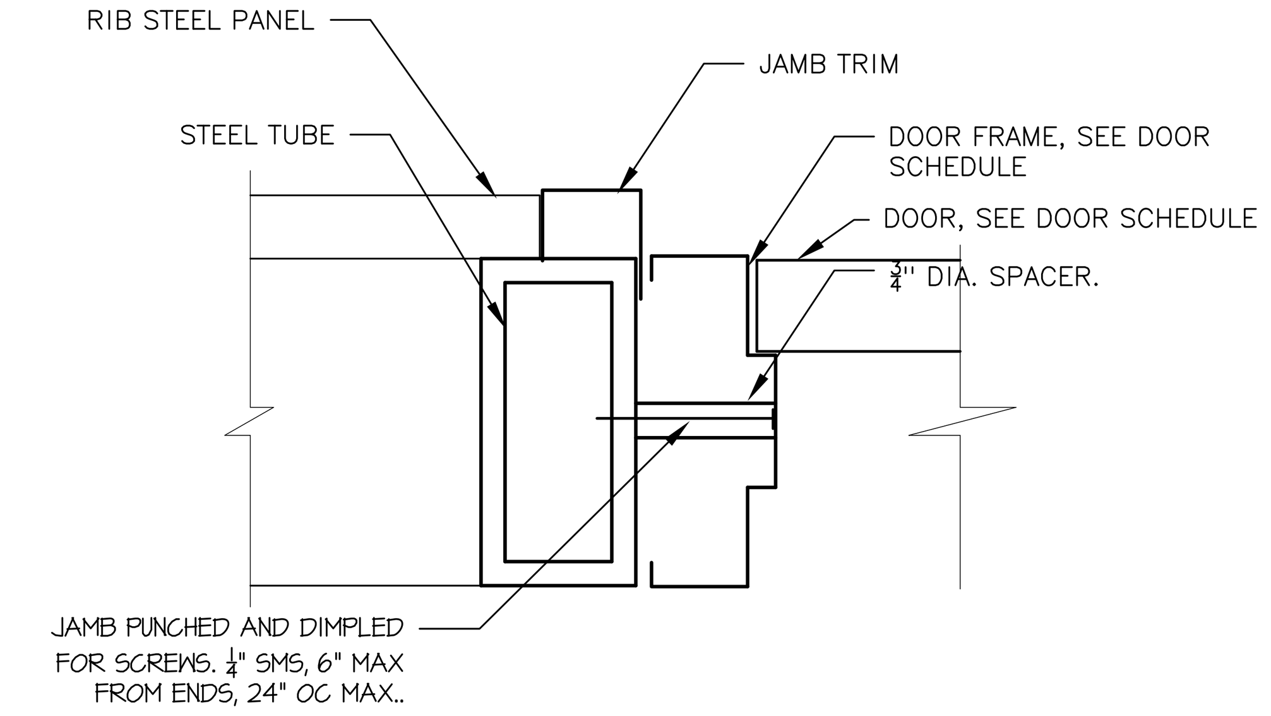
FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A3.1

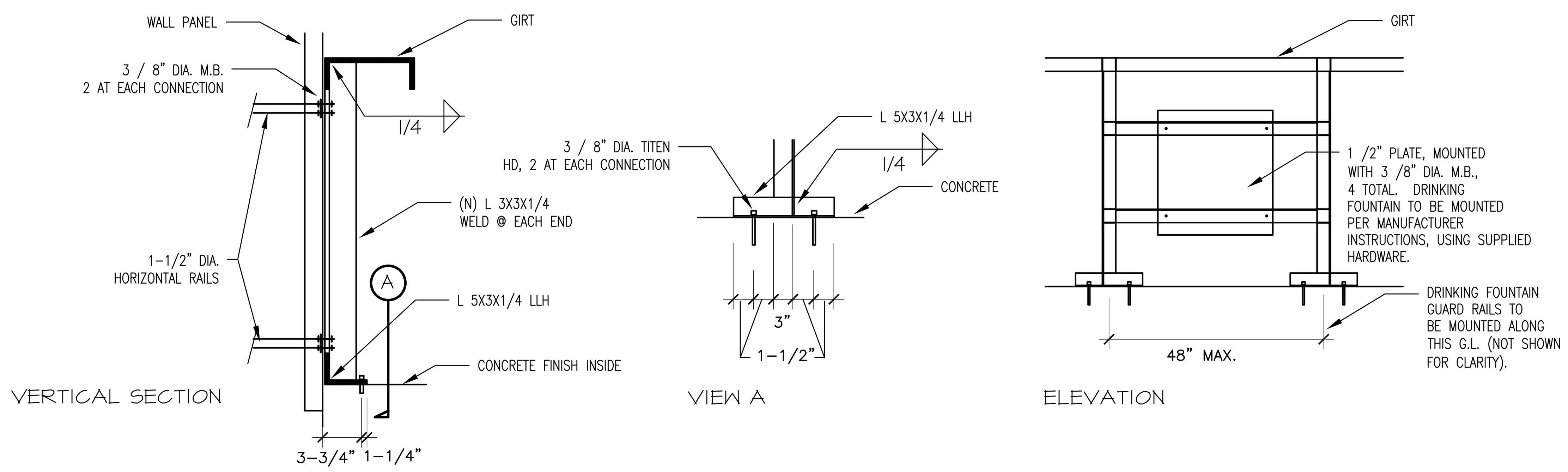
FILE PATH & NAME: P:\A181901 OXNARD COLLEGE FIRE ACADEMY WAREHOUSE\DRAWINGS\CONST DOCS\OXNARD FIRE APPARATUS CONDOCS (PHASING).DWG PLOTTED: ... THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.



2 EXTERIOR THRESHOLD
SCALE 3" : 1'-0"



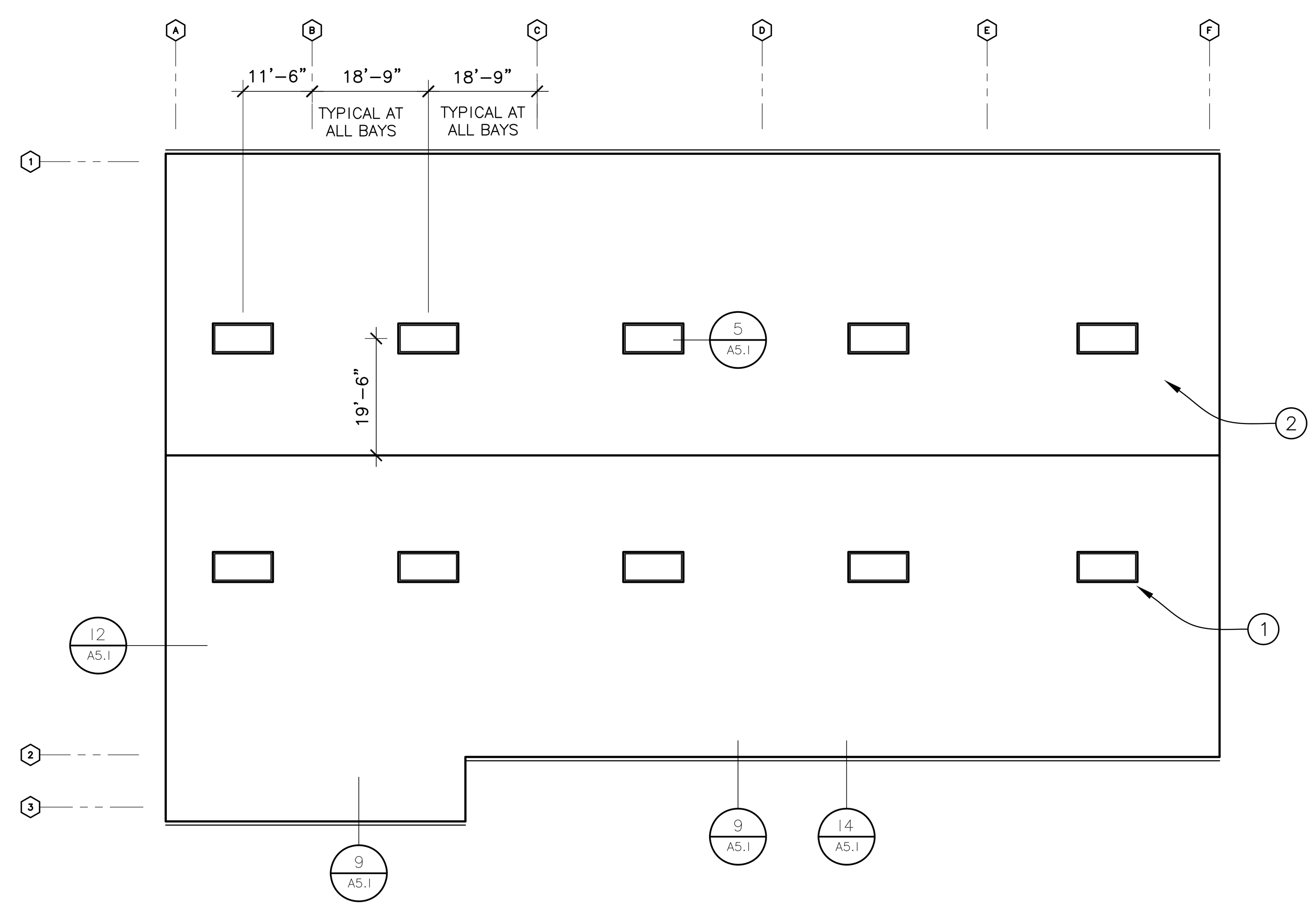
1 HOLLOW METAL DOOR JAMB (HEAD SIM.)
NOT TO SCALE

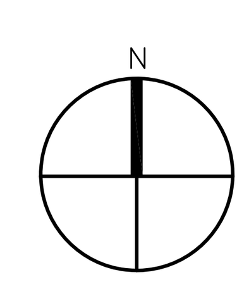


3 WALL ATTACHMENT FOR DRINKING FOUNTAIN AND RAILS
NOT TO SCALE

ROOF NOTE LEGEND

1. 4'X8' SKYLIGHT, TYPICAL. SEE DETAIL 5/A5.1
2. STEEL ROOF DECKING, 1/A5.1.



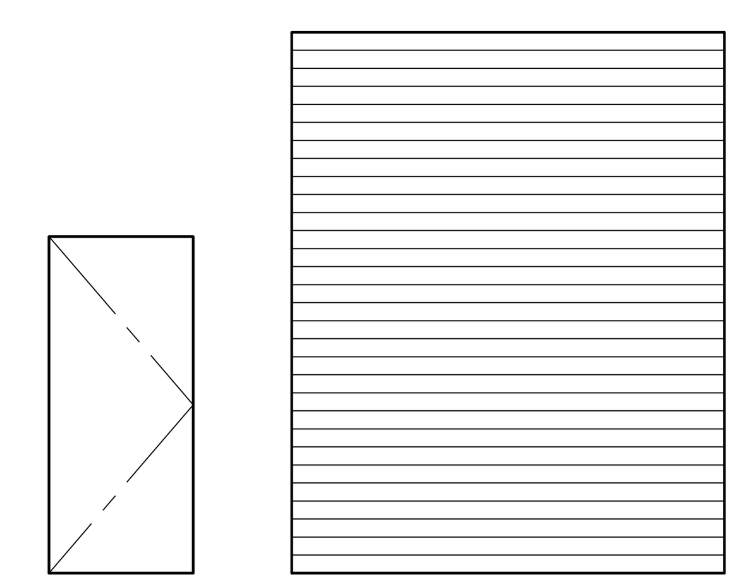


ROOF PLAN
SCALE 1/16" : 1'-0"
0 10 20

BUILDING DOOR SCHEDULE

DOOR NO.	TYPE	SIZE: WIDTH	SIZE: HEIGHT	FINISH	DETAIL: HEAD	DETAIL: JAMB	DETAIL: THRESHOLD	FRAME: MATERIAL	FRAME: FINISH	HARDWARE SET	LABEL	HARDWARE TYPE	CLOSER	SIGNAGE	REMARKS
1	A	3'-0"	7'-0"	MFR	1/A4.1	1/A4.1	2/A4.1	ST	MFR	1	N	L	Y	E,A	SEE FLOOR PLAN FOR SIGNAGE NOTES
2	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
3	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
4	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
5	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
6	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
7	A	3'-0"	7'-0"	MFR	1/A4.1	1/A4.1	2/A4.1	ST	MFR	1	N	L	Y	E,A	SEE FLOOR PLAN FOR SIGNAGE NOTES
8	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
9	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
10	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
11	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
12	B	12'-0"	15'-0"	MFR	2/A5.1	8/A5.1	--	ST	MFR	--	N	L	Y	--	HARDWARE BY MANUFACTURER
13	A	3'-0"	7'-0"	MFR	1/A4.1	1/A4.1	2/A4.1	ST	MFR	1	N	L	Y	E,A,B	SEE FLOOR PLAN FOR SIGNAGE NOTES
14	A	3'-0"	7'-0"	MFR	1/A4.1	1/A4.1	2/A4.1	ST	MFR	1	N	L	Y	--	--

DOOR TYPES



A — HOLLOW METAL
B — OVERHEAD ROLLUP

DOOR SCHEDULE ABBREVIATIONS

- A — ACCESSIBL ENTRANCE SIGNAGE (TACTILE WITH GRADE 2 BRAILLE) SEE NOTES 17, 18 ON A2.1
- B — BUILDING NAME SIGNAGE (TACTILE WITH GRADE 2 BRAILLE). SEE NOTES 17, 18 ON A2.1
- E — EXIT SIGNAGE (TACTILE WITH GRADE 2 BRAILLE) SEE NOTE 16 ON A2.1
- HM — HOLLOW METAL
- L — LEVER LOCKSET
- MFR — MANUFACTURER'S STANDARD FINISH
- N — NO OR NONE
- ST — STEEL
- Y — YES

GENERAL FINISH & DOOR NOTES

1. DOOR HARDWARE:
   - A. ALL DOOR AND LATCHES SHALL BE LEVER TYPE AND SHALL BE LOCATED 34"-44" ABOVE FINISH FLOOR.
   - B. DOOR HARDWARE SHALL NOT REQUIRE MORE THAN 5 LBS. OF PRESSURE TO OPERATE EXTERIOR DOOR AND NO MORE THAN 5 LBS. OF PRESSURE TO OPERATE INTERIOR DOORS. FIRE RATED DOORS MAY REQUIRE 15 LBS. OF PRESSURE TO OPERATE. PRESSURE TO OPERATE DOORS SHALL BE MEASURED AT RIGHT ANGLES TO THE HINGED DOORS.
   - C. THRESHOLDS MAY NOT BE MORE THAN 1/2" HIGH AND EXPOSED EDGES SHALL BE BEVELED, WITH A SLOPE NO GREATER THAN 45 DEGREES. MAXIMUM ALLOWED SINGLE VERTICAL CHANGE IN ELEVATION SHALL BE 1/4".
   - D. ALL EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
   - E. SWINGING DOOR AND GATE SURFACES WITHIN 10 INCHES OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS IN THESE SURFACES SHALL BE WITHIN $\frac{1}{16}$ INCH OF THE SAME PLANE AS THE OTHER AND BE FREE OF SHARP OR ABRASIVE EDGES. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED. <u>EXCEPTION</u> FOR SLIDING DOORS.
   - F. ALL FIRE DOOR ASSEMBLIES SHALL BE LABELED BY AN APPROVED AGENCY. THE LABELS SHALL COMPLY WITH NFPA 80, AND SHALL BE PERMANENTLY AFFIXED TO THE DOOR.
   - G. WHERE DOOR SWINGS OVER THE LANDINGS, LANDING DEPTH SHALL BE 60" MEASURED AT RIGHT ANGLES TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION AND THE WIDTH OF LEVEL AREA SHALL EXTEND 24" PAST THE STRIKE EDGE OF THE EXTERIOR DOOR AND 18" PAST THE STRIKE EDGE OF THE INTERIOR DOOR.

     WHERE DOOR DOES NOT SWING OVER THE LANDINGS, LANDING DEPTH SHALL BE 48" MEASURED AT RIGHT ANGLES TO THE PLANE OF THE DOOR IN ITS CLOSED POSITION.
2. WALL, FLOOR AND CEILING MATERIALS SHALL NOT EXCEED THE FLAME SPREAD CLASSIFICATIONS IN C.B.C. 803.5.
3. INTERIOR FLOOR FINISH AND FLOOR COVERING MATERIALS SHALL COMPLY WITH C.B.C. 804.2 THROUGH 804.4.1 CARPET SHALL COMPLY WITH C.B.C. 11B-302.2.
4. EACH EXIT ACCESS FROM AN INTERIOR ROOM OR AREA TO A CORRIDOR OR HALLWAY THAT IS REQUIRED TO HAVE A VISUAL EXIT SIGN, SHALL BE IDENTIFIED BY A TACTILE EXIT SIGN WITH THE WORDS. "EXIT ROUTE" PER C.B.C. 1011.3 &11B-703. TACTILE (RAISED CHARACTERS AND BRAILLE) EXIT SIGNS ARE PLACED ON THE WALL ADJACENT TO THE LATCH SIDE AT 60" ABOVE THE FINISH FLOOR TO THE CENTERLINE OF THE SIGN.
5. ACCESSIBILITY AND SIGNAGE:

   ALL BUILDING ENTRANCES SHALL BE IDENTIFIED BY A STANDARD SIGN WITH THE INTERNATIONAL SYMBOL OF ACCESSIBILITY WITH ADDITIONAL SIGNS AT JUNCTIONS., TO BE VISIBLE TO PERSONS ALONG APPROACHING PEDESTRIAN WAYS. THE SYMBOL SHALL BE A WHITE FIGURE ON A BLUE BACKGROUND. BRAILLE, RAISED CHARACTERS, AND PICTORIAL SYMBOLS SIGNS SHALL BE USED WHENEVER SPECIALLY REQUIRED, AND SHALL CONFORM TO THE STANDARDS SET FORTH IN THE CODE. SEE FLOOR PLAN FOR SIGNAGE LOCATIONS.
6. DOORS WITHIN THE ACCESSIBLE PATH OF TRAVEL:
   - A. ALL LATCHING AND LOCKING HAND ACTIVATED DOORS SHALL OPERATE WITH A SINGLE EFFORT WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE. LOCKED EXIT DOORS SHALL OPERATE AS ABOVE IN EGRESS DIRECTION.
   - B. DOOR SHALL BE OF A SIZE TO PERMIT INSTALLATION OF A DOOR NOT LESS THAN 3' IN WIDTH AND NOT LESS THAN 6'-8" IN HEIGHT.WHEN INSTALLED EXIT DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES AND SHALL BE MOUNTED SO THAT THE CLEAR WIDTH OF THE EXIT DOOR IS NOT LESS THAN 32". MEASURED BETWEEN THE FACE OF THE DOOR AND THE OPPOSITES TOP. THE BOTTOM 10" OF DOORS SHALL BE A SMOOTH SURFACE.

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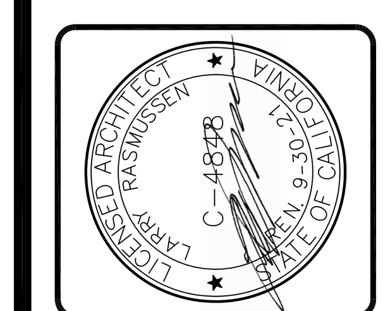

DOOR SCHEDULE AND DETAILS & ROOF PLAN

Revisions

R&A No:	A181901
Date:	8/26/2020
Drawn:	R&A
Checked:	CW
Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
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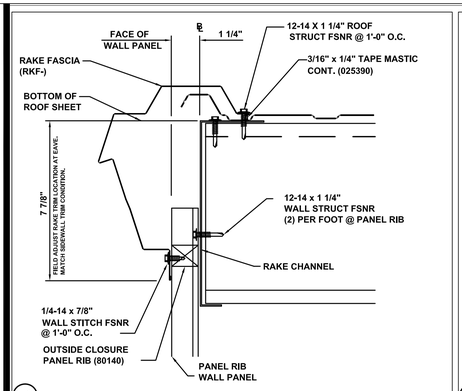
CAMARILLO, CALIFORNIA 93010

Sheet No.
A4.1

FILE PATH & NAME: P:\A181901 OXNARD COLLEGE FIRE ACADEMY WAREHOUSE\DRAWINGS\CONST DOCS\OXNARD FIRE APPARATUS CONDOCS (PHASING).DWG



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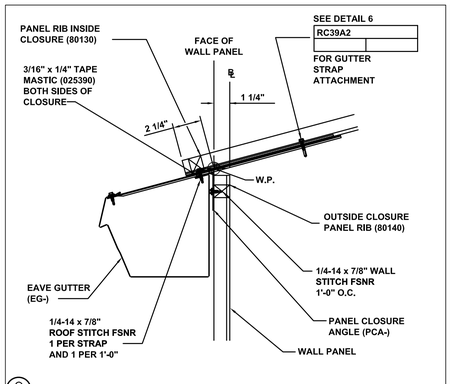
REV. DATE:	05/09/18	REV. NO.	04

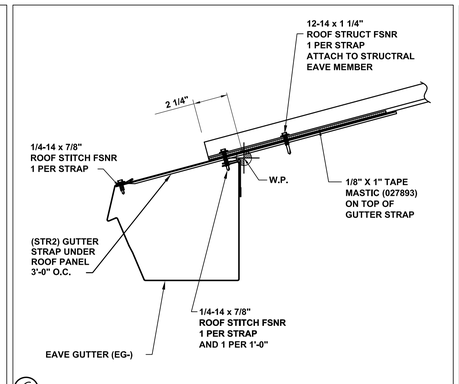
RC30B1 — **PANEL RIB ROOF RAKE TRIM**



9

REV. DATE:	02/03/15	REV. NO.	04

RC32B1 — **PANEL RIB W/ EAVE GUTTER**



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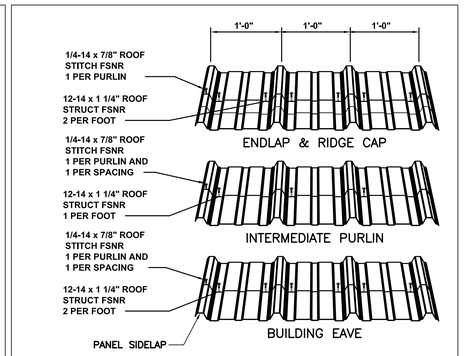
REV. DATE:	09/18/19	REV. NO.	04

RC39A2 — **PANEL RIB GUTTER STRAP ATTACHMENT**



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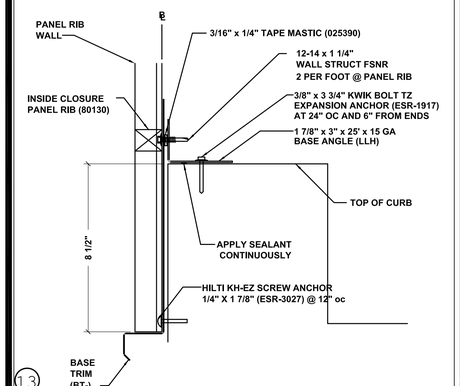
REV. DATE:	11/13/13	REV. NO.	01

RC04B1 — **PANEL RIB ROOF FASTENER PATTERNS**



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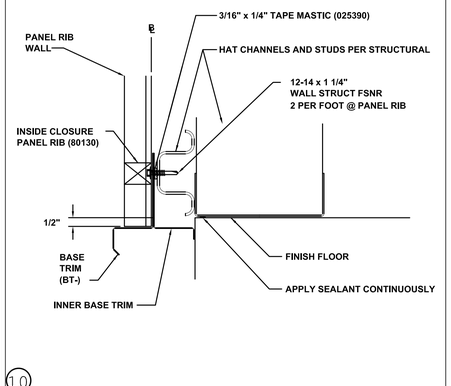
REV. DATE:	05/09/18	REV. NO.	05

WC01AB — **BASE OF WALL TRIM AT NORTH AND SOUTH WALLS**



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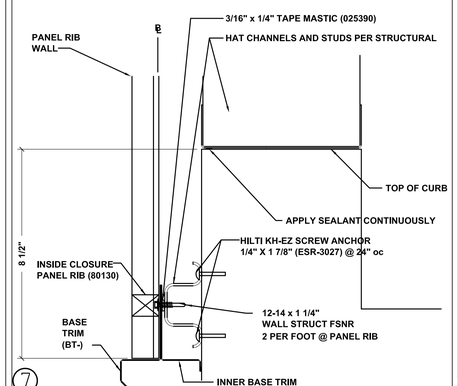
REV. DATE:	05/09/18	REV. NO.	05

WC01AB — **BASE OF WALL TRIM AT WEST WALL**



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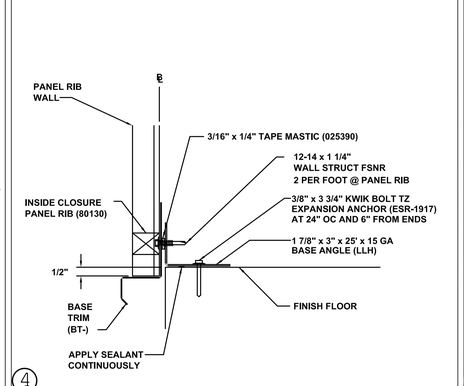
REV. DATE:	05/09/18	REV. NO.	05

WC01AB — **BASE OF WALL TRIM AT EAST WALL**



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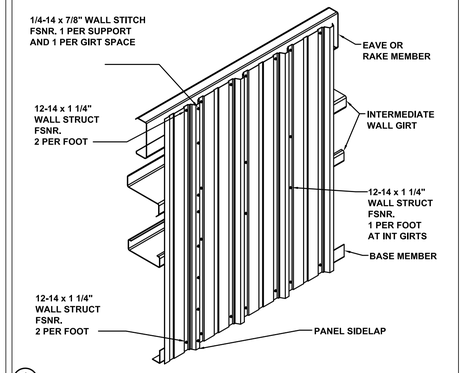
REV. DATE:	05/09/18	REV. NO.	05

WC01AB — **BASE OF WALL TRIM AT NORTH AND SOUTH WALLS**



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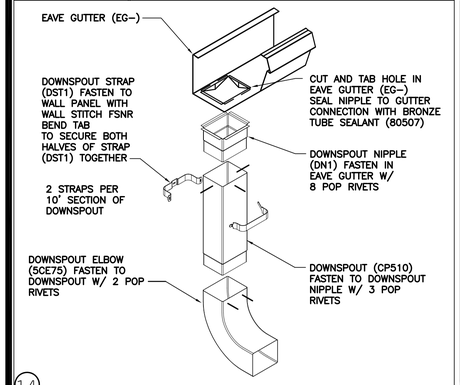
REV. DATE:	05/09/18	REV. NO.	03

WC04G1 — **PANEL RIB WALL FASTENER PATTERNS**



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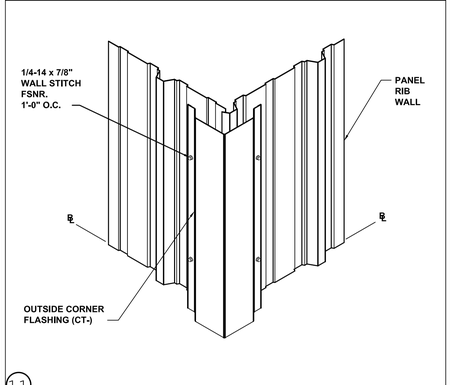
REV. DATE:	10/22/12	REV. NO.	03

RC38P1 — **DOWNSPOUT ASSEMBLY**



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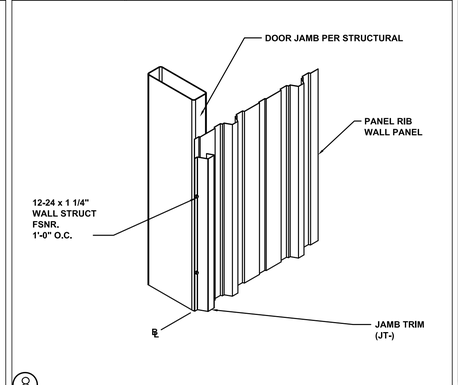
REV. DATE:	07/01/09	REV. NO.	00

WC20A1 — **OUTSIDE CORNER TRIM PANEL RIB WALL**



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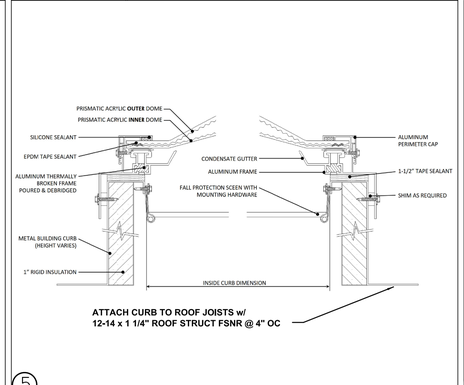
REV. DATE:	05/21/18	REV. NO.	01

WC24A1 — **JAMB TRIM AT OVERHEAD DOOR PANEL RIB WALL**



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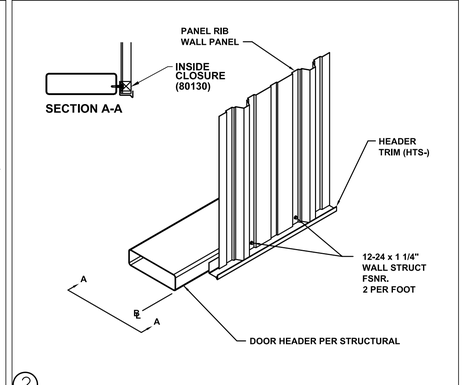
REV. DATE:	05/21/18	REV. NO.	01

RCSK — **PRISMATIC DOME SKYLIGHT**



2

REV. DATE:	05/09/18	REV. NO.	03

WC24A2 — **WALL TRIM AT DOOR HEAD OVERHEAD DOOR OPENING**

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DETAILS

Revisions	R&A No:	A181901
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Sheet No.
A5.1

SECTION 02200
EARTHWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavation, filling, compacting and grading operations both inside and outside building limits as required for below-grade improvements and to achieve grades and elevations indicated. Provide trenching and backfill for mechanical and electrical work, dry utilities (natural gas service) and utilities.
B. Subbase materials, drainage fill, common fill, and structural fill materials for slabs, pavements, and improvements.
C. Suitable fill from off-site if on-site quantities are insufficient or unacceptable, and legal disposal of excess fill off-site.
D. Rock excavation without blasting unless blasting is specifically authorized.

1.3 SUBMITTALS

A. Product Data: Supplier's data sheets on each product to be used, including:
1. Gradation curves
2. Specifications
B. Test Reports: Submit for approval test reports, list of materials and gradations proposed for use.

1.4 PRE-CONSTRUCTION MEETINGS

A. Convene meeting with VCCCD Inspector minimum two weeks prior to starting work of this section.

PART 2 PRODUCTS

2.1 MATERIALS

A. Earthwork:
1. Subbase Material: Graded gravel, recycled aggregate base or crushed stone.
2. Bedding Course: Graded crushed gravel or clean sand.
3. Borrow Soil: Off-site soil for fill or backfill, supply sample for testing for similarity in soil properties for approval by Geotechnical Engineer.
4. Drainage Fill: Crushed gravel or crushed stone, or as specified in Geotechnical Report.
5. Common Fill: Mineral soil free from unsuitable materials.
6. Structural Fill: Graded gravel.
7. Impervious Fill: Gravel and sand mixture.
8. Chemically treated soil: See Geotechnical Report for material requirements.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare surfaces using the methods recommended by the geotechnical engineer in the Geotechnical Report for achieving the best result for the substrate under the project conditions.
B. All vegetation, trash debris, or other deleterious material should be stripped from the area to be graded and wasted from the site.

3.2 INSTALLATION

A. Maintain stability of excavations; coordinate shoring and bracing as required by authorities having jurisdiction. Prevent surface and subsurface water from accumulating in excavations. Stockpile satisfactory materials for reuse, allow for proper drainage and do not stockpile materials within drip line of trees to remain.
B. Compact materials at the optimum moisture content as determined by ASTM D 1557 by aeration or wetting to the following percentages of maximum dry density:
1. Structure, Pavement, Walkways: Subgrade and each fill layer to 95 percent of maximum dry density to suitable depth.
2. Unpaved Areas: Top 6 inches of subgrade and each fill layer to 90 percent maximum dry density.
C. Place acceptable materials in layers not more than 8 inches loose depth for materials compacted by heavy equipment and not more than 4 inches loose depth for materials compacted by hand equipment to subgrades indicated as follows:
1. Structural Fill: Use under foundations, slabs on grade in layers as indicated.
2. Drainage Fill: Use under designated building slabs, at foundation drainage and elsewhere as indicated.
3. Common Fill: Use under unpaved areas.
4. Subbase Material: Use under pavement, walks, steps, piping and conduit.
D. Removals and Fill Caps.
1. See Geotechnical Report. Remove and recompact soils to a depth of 3 feet below proposed footings elevations and to a distance of 5 feet beyond the outer perimeter of the footing line. Additional excavation and recompaction may be warranted to improve locally disturbed soils.
E. Expansive Soils.
1. Pre-saturation of the supporting subgrade soils is required for conventional foundations. See Geotechnical Report for required pre-saturation depths.
F. Utility Trench Backfill.
1. Backfill for utility trench excavations shall be compacted to the appropriate relative compaction. Where installed in sloping areas, the backfill should be properly keyed and benched.
G. Grading Tolerances Outside Building Lines:
1. Lawns, unpaved areas, and walks, as noted on the Grading Plans.
2. Pavements, as noted on the Grading Plans.
H. Grading Tolerance for Fill Under Building Slabs: as noted on the Grading Plans.
I. Protect newly graded areas from traffic and erosion. Recompact and regrade settled, disturbed and damaged areas as necessary to restore quality, appearance, and condition of work.
J. Control erosion to prevent runoff into sewers or damage to sloped or surfaced areas.
K. Control dust to prevent hazards to adjacent properties and vehicles. Immediately repair or remedy damage caused by dust including air filters in equipment and vehicles. Clean soiled surfaces.
L. Dispose of waste and unsuitable materials off-site in a legal manner and provide waste and recycle reports to Owner's Representative.

SECTION 02580

PARKING ACCESSORIES - PAVEMENT MARKING AND SIGNS

PART 1 - GENERAL

1.01 REFERENCES

A. Standard Plans and Specifications for Public Works Construction, Latest Edition.
B. Grading Plan Cover Sheet General Notes
C. California Code of Regulations (CCR) Title 24, Part 2, 1127B.5

1.02 SUMMARY

A. Principal Work Items Are:
1. Painted lines, lettering, and symbols at parking areas.
2. Painted stripes at exterior stairs, to conform to Accessibility Requirements.
3. Curb marking and red curbs.
4. Parking lot signage

1.03 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with General Requirements, and the Standard Specifications for Public Works Construction ("Green Book").

PART 2 - PRODUCTS

2.01 CONSTRUCTION MATERIALS

Materials shall be in conformance with the County of Ventura Standard Construction Details, Latest Edition.

2.02 PARKING/INFORMATION SIGNAGE

A. Signs to be aluminum by Hawkings Traffic Safety Supply or Western Highway Products.

2.03 CONCRETE FOOTING MATERIALS

A. Cement, CBC Standard 19-1, Type II, low alkali.
B. Fine and coarse aggregated: ASTM C-33 including Appendix A1.
1. 1-inch maximum size coarse aggregate.
2. Pea gravel aggregate in not allowed.
C. Water to be clean, potable and not detrimental to concrete.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Layout: Accurately measure and layout work. Use stencils for all work; snap lines for straight work.
B. Prior to application of paint, allow the pavement to properly cure. Clean and prepare in accordance with paint manufacturer's written recommendations.
C. Provide mechanical equipment to install paint in a uniform, straight or curved pattern, without holidays and other defects.
D. Do not permit traffic until paint has completely cured.
E. Install 2 coats in thickness recommended by manufacturer.

3.02 APPLICATION:

A. Painted Lines, Lettering, and Symbols At Parking Areas:
1. Parking Stall Lines: 4 inches wide, color white.
2. Handicapped Stall, Stripes and Letters: As indicated.
3. Color: White, for all work except blue at Handicapped parking stalls and red to indicate "No Parking".
4. Painted lines and markings on pavement at accessible parking stalls shall be 4 inches wide (blue in color) equal of Color No. 15090 per Federal Standard 595B.
5. Parking spaces for persons with disabilities shall be marked according to CBC Section 1129B.5.
6. Tactile warning lines shall be in conformance to CBC Section 1133B.8.3 and 1133B.8.4.
7. Traffic Directional Arrows: Paint directional traffic flow arrows in all aisles, and at parking lot entrances and exits.

3.03 SIGNAGE

A. Signs to be mounted on galvanized 2" steel tube posts with attachment hardware provided by sign manufacturer.
B. Post to be embedded in 12" diameter concrete footing, 24" deep. Provide 3" of concrete coverage at bottom of pole. Pole to be set plumb.

SECTION 02741
ASPHALT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work to be performed under this Section shall consist of all labor, materials, tools, equipment, transportation, and incidentals necessary to furnish and install, complete in place, asphalt concrete pavement improvements including backfill, saw cutting, asphalt concrete, and tack coat.
B. Asphalt concrete pavement shall be performed in accordance with the Plans, District Standards, the SSPWC Section 302-5, "Asphalt Concrete Pavement", and these specifications. Follow the encroachment permit requirements where applicable.

1.2 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted
1. Certificates
a. Twenty days prior to the delivery of aggregates, asphalt materials, and paving mixes to the project site, the Contractor shall submit to the Engineer certificates and test results of compliance of such materials with these Specifications.
b. Where laboratory testing is specified herein, the Contractor shall employ an independent testing laboratory to conduct such tests and submit certificates of the test results.
B. The Contractor shall formulate a job-mix formula conforming to County of Ventura Standards and requirements of the encroachment permit.

PART 2 - PRODUCTS

2.1 ASPHALT CONCRETE MIX DESIGN

A. Asphalt concrete to be installed in areas where it was previously removed to facilitate the Work, will be PG 64-10 per SSPWC Section 203-1 or as required by the Encroachment Permit. Replacement thickness will be existing plus one inch. T- section replacement may be required.
B. Materials and installation of pavement within the County right-of-way shall comply with Ventura County Standard Specifications and Details and Caltrans Specifications. This includes all T-sections, structural sections, fog seals, slurry seals, seal coats, etc.

2.2 ASPHALT CONCRETE PAVEMENT

A. Asphalt concrete pavement shall be placed and compacted in accordance with SSPWC Section 302-5 Asphalt Concrete Pavement.

2.3 TACK COAT

A. Where asphalt concrete is placed directly on or against an existing hard surface, an asphalt tack coat of PG 64-10 shall be applied to the existing surfaces preceding the placement of the new asphalt concrete. The applied surfaces shall be clean and free from dirt and loose materials prior to application of the asphalt tack coat.

PART 3 - EXECUTION

3.1 PAVEMENT REMOVAL

A. Pavement within the treatment plant shall be removed within the limits of all construction excavations prior to excavation. Surplus material shall be removed and disposed of legally at an approved location offsite.
B. Prior to removing existing surfacing, pavement cuts shall be made parallel with the proposed trench limits. All pavement cuts shall be neat and straight along both sides of the trench or excavation and parallel to its alignment. The strip of existing AC pavement between an excavation and a gutter face or edge of pavement shall be removed and replaced if less than 3 feet in width. Where large irregular surfaces are removed, such trimming or cutting shall be parallel to the roadway centerline or at right angles to the same.
C. After backfilling and compaction, final pavement cuts shall be made by saw cutting (unless permit requirements supersede) to a minimum depth of 2 inches at a point not less than 12 inches outside the limits of excavation.
D. The pavement cut operation shall be in accordance with SSPWC Section 300-1.3
"Removal and Disposal of Materials", and the Plans.
E. The Contractor shall conduct operations so as not to damage the integrity of the edge of the pavement cut surface. Any damage to the pavement cut edge shall be corrected by the Contractor, as directed by the District, by additional pavement cutting around the damaged area prior to the start of paving operations. Any additional pavement cutting required to correct the damaged edge shall be at the Contractor's expense.

3.2 TACK COAT

A. All vertical or horizontal hard surfaces, which will be in contact with new pavement, shall be tack coated in accordance with SSPWC Section 302-5.4 "Tack Coat", and at an approximate rate of 0.05 to 0.10 gallons per square yard.

3.3 DISTRIBUTION AND SPREADING

A. The asphalt concrete shall be placed in accordance with SSPWC 302-5.5 "Distribution and Spreading."
B. Asphalt course thickness shall match the existing pavement thickness plus one additional inch of thickness.

3.4 ROLLING

A. The asphalt concrete shall be compacted in accordance with SSPWC 302-5.6 "Rolling."

3.5 REPAIRS

A. Areas of new or existing asphalt concrete requiring repair shall be dellineated by saw cutting and the asphalt concrete removed, then prime or tack coated, and paved with hot asphalt as specified herein.

3.6 CLEANUP

A. Clean all debris and unused materials from the paving operation. Clean all surfaces that have been spattered or defaced as a result of the paving operation. Asphalt or asphalt stains which are noticeable upon surfaces of concrete or materials which will be exposed to view shall be promptly and completely removed. Cleaning shall be done in a manner that will not result in the discharge of contaminated materials into any catch basin or storm drain system.

SECTION 02750

CONCRETE PAVING

PART 1 - GENERAL

1.1 SECTIONS INCLUDES
A. Concrete walks, stairs, ramps and courtyard and parking area concrete paving and finishing; related form work, reinforcing and accessories.
B. Sand base course, material, placement and compaction.
C. Fibrous concrete reinforcement (all concrete paving).
D. Integral coloring (paving as shown).
E. Finish samples, job site mock-ups.

1.2 SYSTEM DESCRIPTION
A. Paving and Base: Designed for pedestrian and light duty commercial vehicle traffic.

1.3 QUALITY ASSURANCE
A. Perform work in accordance with 2019 California Building Code.
B. Perform work in accordance with applicable portions of the Standard Specifications for Public Works Construction (SSPWD "Greenbook"), 2006 Edition (delete reference to measurement and payment).
C. Concrete Paving Work shall conform to the requirements of ACI Standard Specification for Cast-In-Place Architectural Concrete, ACI 303.1, published by the American Concrete Institute, Farmington Hills, Michigan, except as modified by the requirements of these Contract Documents.

1.4 SUBMITTALS
A. Concrete Mix Design: Submit one design for each strength of concrete specified.
B. Product Data: Provide data on specified admixtures, describing physical and performance characteristics.
C. Finish Samples:
1. Submit surface finish samples, with the specified color sealer, approximately 12 x 12 inches in size, for each selected colored concrete paving finish. Verify exact finish color with Engineer prior to preparation of samples.
2. Submit 12 x 12 inch samples and obtain Engineer's approval prior to constructing job site mock-up.

1.5 QUALIFICATIONS
A. Installer: Company currently specializing in performing the work of this section with a minimum five years current continuous documented experience and approved and authorized by the integral color materials manufacturer. A California Contractor's State License Board Class B or Class C-8 license is required.

1.6 PRE-INSTALLATION CONFERENCE
A. Convene a conference two weeks prior to commencing work of this Section.
B. Require attendance of parties directly affecting the work of this Section.
C. Review fibrous concrete reinforcement. Review concrete mix design.
D. Review requirements for concrete Installation and preparation for Installation; review recommended location of control and construction joints. Review color requirements and surface finishes.
E. Review submittal requirements.

1.7 JOB SITE MOCKUPS
A. Provide mockups of each concrete paving system with specified color curing / sealer treatment and accessories.
B. Construct job site mockups, approximately 20 x 20 feet in size illustrating each color, scoring, surface finish, and sealer / treatment and accessories. Mockup will establish the minimum standard of quality for the work of this section and shall remain in place until acceptance of the concrete paving work.
C. Obtain approval of 12 x 12 inch finish samples specified herein prior to construction of mockup.
D. Locate where directed.
E. Mockups, if location and workmanship are approved by the Engineer, may remain as part of the work.
F. Mockups not approved by the Engineer or which are not intended to remain as a part of the work shall be removed from the site and legally disposed.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS
A. All products offered as equivalent to the specified manufacturer's products listed herein shall be equivalent to all the properties, specifications, appearance, conformance to standards, finish and function of the specified manufacturer's product.

2.2 FORM MATERIALS
A. Lumber: Smooth surfaces, clear wood boards, single width.
B. Slab Edge and Expansion Joint Filler: ASTM D1751, premolded asphaltic board, 1/2 Inch thick.

2.3 STEEL REINFORCEMENT MATERIALS
A. Reinforcing Steel: ASTM A 615, Grade 40: deformed billet steel bars, plain finish.
B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for support of reinforcing, as shown on drawings or as required or specified.

2.4 CONCRETE MATERIALS
A. Cement: CBC Standard 19-1, Type II, low alkali.
B. Fine and Coarse Aggregates: SSPWC "Greenbook" class as shown on drawings A1.2 and A1.4.
C. Water: Clean potable and not detrimental to concrete.

2.5 CONCRETE MIX
A. Mix and deliver concrete in accordance with CBC Standard 19-3.
B. Provide concrete with the following characteristic:
1. Compressive Strength at 28 days and slump shall be in accordance with the SSPWC "Greenbook" class shown on drawings A1.2 and A1.4.
C. Mix Designs: After acceptance of aggregate and whenever character or source of materials is changed, the concrete supplier shall furnish mix design in accordance with ACI-211-1 and CBC Sec. 1905-3, based on the specified design strength and the specified requirements for placement and finish.
1. Mix designs shall indicate source of aggregate and brands of cement and admixtures used. Mixes designed for pump placement shall be identified as such.
2. Mix designs must be approved in writing by the Engineer prior to delivery of concrete to the site.

2.6 BASE MATERIALS
A. Sand Base: Sand shall be washed and conform to Standard Specifications for Public Works Construction (SSPW "Greenbook"), 200- 1.5, Sand for Portland Cement Concrete. Use for all pedestrian traffic concrete paving. Thickness as shown on drawings A1.2 and A1.4.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL
A. Install paving for handicapped access path of travel in accordance with requirements of the 2019 California Building Code, The Americans With Disabilities Act (ADA) and ANSI A117.1.

3.2 SLIP RESISTANCE
A. Conform to applicable requirements of the Americans With Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (and Appendix) for slip resistance and static coefficient of friction for walking surfaces.
B. The installed dry surface static coefficient of friction for finish surface materials shall be not less than 0.60 for level walking surfaces and 0.80 for ramps when tested in accordance with procedures outlines in ASTM Test Method D-2-47-82.

3.3 INSTALLATION - WALKS, PAVING AND BASE
A. Concrete walks and paving shall be the thickness shown on drawings and shall have a uniform finish as shown on the drawings. Place concrete over a uniform layer of washed course sand, thickness as shown on drawings.
B. Provide expansion joints as shown on drawings or if not shown, at maximum 20 foot intervals in any direction, with locations and alignments approved by the Engineer prior to placing concrete. Provide control joints and scoring as shown on drawings.

3.4 TOLERANCES
A. Maximum Variation of Surface Flatness: 1/4 inch.
B. Maximum Variation from True Position: 1/4 inch.

3.5 EXAMINATION AND PREPARATION
A. Verify that all underground utilities have been installed, tested and approved and that trench backfill has been tested and approved prior to start of concrete paving and base installation.
B. Verify that underground irrigation and drainage lines to plant areas and underground electrical lines to plant areas are properly stubbed up and protected prior to start of concrete paving and base installation.
C. Verify gradients and elevations of subgrade. Grade stakes, set with instrument, shall be set at grid intervals of 25 feet for gradients of 2 percent or more, and at 10 feet for gradients of less than 2 percent. Stake flow lines at 25 foot intervals.
D. Verify that subgrade has been prepared and tested as specified in Section 02200 for exterior walks and paving and is ready to support paving and base.
E. Verify compacted subgrade is dry and ready to support paving and imposed loads.

3.6 FORMING
A. Place and secure forms to correct location, dimension, and profile. Forms shall be constructed to slopes as shown. Forms shall be plumb, straight, and sufficiently tight to prevent leakage. Do not coat form with material that will stain or injure the concrete.
B. Place joint filler in joints, vertical in position, in straight lines. Secure to formwork.
C. Place expansion joints as indicated. Align joints.
D. Place joint filler between paving components and other appurtenances.
E. Inserts, sleeves and other such items shall be accurately, properly and securely installed in cooperation with the work of other sections. Ample notice and opportunity to introduce and furnish embedded items shall be given to work of other sections.

3.7 INSERTS, EMBEDDED COMPONENTS, AND OPENINGS
A. Provide formed openings where required for work to be embedded in and passing through concrete paving.
B. Coordinate work of other Sections in forming and setting openings, slots, recesses, sleeves, bolts, anchors, and other inserts.
C. Install concrete accessories straight, level, and plumb.
D. Place joint filler at perimeter of concrete paving.

3.8 REINFORCEMENT PLACEMENT
A. Place reinforcement, supported and secured against displacement.
B. Ensure reinforcing is clean, free of loose scale, dirt, or other foreign coatings.

3.9 PLACING CONCRETE
A. Notify Engineer 48 hours prior to placing concrete to allow for inspection of base, forms, and reinforcing. All form work and reinforcing shall be complete and in place, including inserts, sleeves, anchors, and other embedded items.
B. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet.
C. Remove debris, clods, rocks, loose earth, and water from all places to be occupied by concrete and thoroughly dampen all forms and base material just prior to pouring concrete. Concrete shall not be placed in water, on unstable soil, or during periods of precipitation.
D. Do not disturb reinforcement or formwork components during concrete placement.
E. Place concrete continuously between predetermined expansion, control and construction joints. Place concrete as near as practicable and as soon as possible in final position in forms. Care shall be taken to avoid segregation of aggregate or displacing reinforcement, inserts, or forms. All forms and subgrades shall be damp, and without free-standing water, when concrete is placed.
F. Compact and consolidate concrete into contact with all surface of forms, reinforcing, and inserts by tamping, spading, and settling by heavy leveling straight edge.
G. Provide construction and contraction joints as shown on drawings, maximum 20 foot intervals in any direction. Location and alignment of joints to be approved by Engineer prior to placing concrete.
H. Remove forms only when concrete has developed sufficient strength to safely sustain its own weight and any superimposed loads.

3.10 FINISHING
A. Concrete Paving: Finish as indicated on drawings, 1/8 inch radius and trowel all joint and paving edges. Slope walks and paving to shed water.
B. Concrete mix control shall be maintained to provide consistent batch to batch uniformity. All fine and coarse aggregate shall be totally non-reactive.
C. Do not cover colored concrete paving with plastic, burlap, waterproof paper, or other such materials except as specified in the referenced manufacturer's published application recommendations.

3.11 CURING
A. Apply specified color sealer to colored paving surfaces in accordance with manufacturer's published instructions.

3.12 PROTECTION
A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
B. Protect colored concrete paving from damage or staining during plastering or ceramic tile operations by covering as specified in the referenced color additive manufacturer's bulletins.
C. Do not permit pedestrian or vehicular traffic over payment for 7 days minimum after finishing.

3.13 DEFECTIVE CONCRETE
A. Modify or replace concrete not conforming to specified lines, details and finishes, as directed by the Engineer.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

RASMUSSEN & ASSOCIATES
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21 S. California Street
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REGISTERED ARCHITECT RASMUSSEN C-4455 CALIFORNIA

SPECIFICATIONS

Revisions	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	R&A
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A6.1

SECTION 08111
STEEL DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Non_rated steel doors.

1.02 REFERENCES

A. ANSI A117.1 _ Standard for Accessible and Usable Buildings and Facilities
B. ANSI/SDI_100 _ Standard Steel Doors and Frames.
C. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
D. Door Hardware Institute (DHI) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
E. SDI-100 - Recommended Specifications, Standard Steel Doors & Frames.

1.03 SUBMITTALS

A. Shop Drawings: Indicate door elevations, internal reinforcement, closure method and finish.
B. Product Data: Indicate door configurations, location of cut-outs for hardware reinforcement.
C. Manufacturer's Installation Instructions: Indicate special installation instructions.

1.04 QUALITY ASSURANCE

A. Conform to requirements of ANSI/SDI_100 and ANSI A117.1.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
B. Installer: Company specializing in performing the work of this section with minimum five years documented experience and approved by door manufacturer. A California Contractor's State License Board Class D-24 license is required.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect doors with resilient packaging sealed with heat shrunk plastic.
B. Break seal on_site to permit ventilation.

1.07 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on approved shop drawings.

1.08 COORDINATION

A. Coordinate the work with door opening construction, door frame and door hardware installation.

PART 2 - PRODUCTS

2.01 DOOR MANUFACTURERS

A. Ceco Door Products.
B. Curries/Essex Industries.
C. Steelcraft.
D. All products offered as equivalent to the specified manufacturer's products listed herein shall be equivalent to all the properties, specifications, appearance, conformance to standards, finish and functions of the specified manufacturer's product.

2.02 DOORS

A. Exterior Doors: SDI-100 Grade III, Model 3 (seamless, 16 gage face sheets, 22 gage vertical stiffeners, non-visible seams at vertical door edge only).

2.03 DOOR CONSTRUCTION

A. Face: Steel sheet in accordance with ANSI/SDI-100.
B. Core: Vertical steel stiffeners.

2.04 FABRICATION

A. Fabricate doors with hardware reinforcement welded in place.

2.05 FINISH

A. Steel Sheet: Galvanized to ASTM A525 G60.
B. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities. Doors shall then be chemical treated to insure maximum paint adhesion and shall be coated, on all exposed surfaces, with a rust-inhibitive primer.
C. Primer: Baked.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that opening sizes and tolerances are acceptable.

3.02 INSTALLATION

A. Install doors in accordance with ANSI/SDI_100 and DHI and NFPA 80.
B. Coordinate installation of doors with installation of frames specified in Section 08112 - Steel Door Frames and hardware specified in Section 08710 - Finish Hardware.
C. Coordinate installation of glass and glazing.

3.03 ERECTION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.04 ADJUSTING

A. Adjust door for smooth and balanced door movement.

SECTION 08112

STEEL DOOR FRAMES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Non_rated steel door frames.

1.02 REFERENCES

A. ANSI A117.1 _ Standard for Accessible and Usable Buildings and Facilities
B. ANSI A224.1 - Steel Surfaces for Steel Doors and Frames, Test Procedure and Acceptance Criteria for Prime Painted
C. ANSI/SDI_100 _ Standard Steel Doors and Frames
D. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
E. DHI _ Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware
F. NFPA 80 _ Fire Doors and Windows
G. UBC Standard 7-2, Part III - Fire Tests of Door Assemblies

1.03 SUBMITTALS

A. Shop Drawings: Indicate frame elevations, reinforcement, and finish.
B. Product Data: Indicate frame configuration, anchor types and spacing, location of cut-outs for hardware, reinforcement.
C. Manufacturer's Installation Instructions: Indicate special installation instructions.
D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

A. Conform to requirements of ANSI/SDI_100 and ANSI A117.1.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this Section with minimum five years documented experience.
B. Installer: Company specializing in performing this type of work with a minimum five years documented experience and approved by door manufacturer. A California Contractor's State License Board Class D-24 license is required.

1.06 REGULATORY REQUIREMENTS

A. Fire-Rated Frame Construction: Conform to CBC Standard 7-2, Part III.
B. Installed Frame Assembly: Conform to NFPA 80 for fire-rated class same as fire door.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products at site as specified in Section 01610.
B. Accept frames on site in manufacturer's packaging. Inspect for damage.
C. Provide temporary steel spreaders fastened across bottom of frames for shipment. In place of spreaders, frames may be strapped together in pairs with heads inverted for bracing during shipment. Before shipping, label each frame with metal or plastic tags to show their locations, size, door swing, and other pertinent information.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.r.

1.09 COORDINATION

A. Coordinate the work with frame opening construction, door, and hardware installation.

PART 2 - PRODUCTS

2.01 FRAME MANUFACTURERS

A. Ceco Door Products
B. Curries/Essex Industries
C. Fenestra Corporation

2.02 FRAMES

A. Exterior Frames: 16 gage thick material, base metal thickness.
B. Interior Frames: 16 gage thick material, base metal thickness.

2.03 ACCESSORIES

A. Silencers: Resilient rubber, fitted into drilled hole.
B. Bituminous Coating: Fibered asphalt emulsion.
C. Primer: Zinc-chromate type.

2.04 FABRICATION

A. Fabricate frames as welded unit.
B. Joints shall be mitered or butted and continuously arc welded for full depth and width of frame and trim. All contact edges shall be closed tight and all welds on exposed surfaces dressed smooth and flush.
C. Fabricate frames with concealed hardware reinforcement plates welded in place. Provide mortar guard boxes.
D. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
E. Prepare frame for silencers. Provide three single silencers for single doors on strike side. Provide two single silencers on frame head at double doors without mullions. Lock strike shall be set out and adjusted to provide clearance for silencers.
F. Where interior frames are shown to be set in masonry, metal frames shall be constructed to allow sufficient space between back of trim and masonry to receive caulking.

2.05 FINISH

A. Steel Sheet: Galvanized to ASTM A525 G60 or lower. prime painted to ANSI A 224.1 as indicated.
1. Galvanize finish all exterior frames.
2. Galvanize finish all other frames as shown on the drawings.
3. Prime paint finish all other frames.
B. Primer: Air dried or baked.
C. Coat inside of frame profile with bituminous coating to a thickness of 1/16 inch.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that opening sizes and tolerances are acceptable.

3.02 INSTALLATION

A. Install frames in accordance with final shop drawings and manufacturer's literature and ANSI/SDI_100 and DHI.
B. Coordinate with adjacent wall construction for anchor placement. Provide metal anchors of shapes and sizes required for the adjoining type of wall construction. Fabricate jamb anchors of steel, not lighter than the gauge used for the frame. Locate anchors on jambs near the top and bottom of each frame and at intermediate points not over 24 inches apart.
C. Coordinate installation of glass and glazing.
D. Coordinate installation of frames with installation of hardware specified in Section 08710 and doors in Sections 08111 and 08210.
E. Set frames, in position, plumb, aligned and braced securely until permanent anchors are set. Where frames require ceiling struts or other structural overhead bracing, they shall be temporarily anchored securely to ceilings, or other structural framing above. After wall construction is complete, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
F. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
G. Protect frames from damage during subsequent construction activity. Upon completion, metal surfaces of frames shall be thoroughly cleaned and touched up.

3.03 ERECTION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

SECTION 08330
OVERHEAD COILING DOORS

PART 1 - PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead coiling service doors.

1.02 REFERENCES

A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
B. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
C. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.03 DESIGN / PERFORMANCE REQUIREMENTS

A. Overhead coiling service doors:
1. Wind Loads: Design door assembly to withstand wind/suction load of 20 psf (958 Pa) without damage to door or assembly components in conformance with ASTM E 330.
2. Operation: Design door assembly, including operator, to operate for not less than 20,000 cycles.

B. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.04 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Details of construction and fabrication.
4. Installation instructions.

B. Shop Drawings: Include detailed plans, elevations, details of framing members, anchoring methods, required clearances, hardware, and accessories. Include relationship with adjacent construction.
C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
D. Operation and Maintenance Data: Submit lubrication requirements and frequency, and periodic adjustments required.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in performing Work of this section with a minimum of five years experience in the fabrication and installation of security closures.
B. Installer Qualifications: Installer Qualifications: Company specializing in performing Work of this section with minimum three years and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.
B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
C. Store materials in a dry, warm, ventilated weathertight location.

1.07 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 COORDINATION

Coordinate Work with other operations and installation of adjacent materials to avoid damage to installed materials.

1.09 WARRANTY

Warranty: Manufacturer's limited door warranty for 2 years for all parts and components.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: info@overheaddoor.com or approved equivalent.

2.02 OVERHEAD COILING SERVICE DOORS

A. Heavy Duty Industrial Doors: Overhead Door Corporation, 620 Series Stormtite Service Doors.
1. Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.
a. Flat profile type F-265 for doors up to 18 feet 4 inches (5.59 m) wide, fabricated of:
1. 20 gauge galvanized steel.
2. Finish:
a. Galvanized Steel: Slats and hood galvanized in accordance with ASTM A 653 and receive rust-inhibitive, roll coating process, including 0.2 mils thick baked-on prime paint, and 0.6 mils thick baked-on polyester top coat.
1. Powder coat: PowderGuard
b. Non-galvanized exposed ferrous surfaces shall receive one coat of rust-inhibitive primer.
2. Weatherseals:
a. Vinyl bottom seal, exterior guide and internal hood seals.
4. Bottom Bar:
a. Extruded aluminum for doors up to 15 feet 4 inches (4.67 m) wide.
b. Two primed steel angles for doors over 15 feet 4 inches (4.67 m) wide.
5. Guides: Three structural steel angles.
a. Finish: PowderGuard Zinc Finish for guides, bottom bar and head plate.
6. Brackets:
a. Hot rolled prime painted steel to support counterbalance, curtain and hood.
7. Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with deflection limited to 0.03 inch per foot of span. Counterbalance is adjustable by means of an adjusting tension wheel.
8. Hood: Provide with internal hood baffle weatherseal.
a. 24 gauge galvanized steel with intermediate supports as required.
9. Manual Operation:
a. Chain hoist for doors over 96 SF.
10. Windload Design:
a. Standard windload shall be 20 PSF.
11. Locking:
a. Interior bottom bar slide bolt with chain hoist operation.
b. Chain keeper locks for chain hoist operation.
12. Wall Mounting Condition:
a. Face-of-wall mounting.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify opening sizes, tolerances and conditions are acceptable.
B. Examine conditions of substrates, supports, and other conditions under which this work is to be performed.
C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
E. Coordinate installation of sealants and backing materials at frame perimeter.
F. Install perimeter trim and closures.
G. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.04 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion.
B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.05 FIELD QUALITY CONTROL

A. Functional testing of fire door and window assemblies shall be performed by IDEA Certified personnel with knowledge and understanding of the operating components of the type of door being subject to testing.

3.06 CLEANING

A. Clean curtain and components using non-abrasive materials and methods recommended by manufacturer.
B. Remove labels and visible markings.
C. Touch-up, repair or replace damaged products before Substantial Completion.

3.07 PROTECTION

A. Protect installed products until completion of project.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

RASMUSSEN & ASSOCIATES
Architecture
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SPECIFICATIONS

Revisions	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	R&A
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A6.2

SECTION 08710

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Door Hardware, including electric hardware.
   2. Storefront and entrance door hardware.
   3. Power supplies for electric hardware.
   4. Key cabinets.

B. Specific Omissions: Hardware for the following is specified or indicated elsewhere.
   1. Rough hardware.
   2. Conduit, junction boxes & wiring.

1.02 REFERENCES:

A. Use date of standard in effect as of Bid date.

B. American National Standards Institute - ANSI 156.18 - Materials and Finishes.

C. BHMA - Builders Hardware Manufacturers Association

D. DHI - Door and Hardware Institute

E. NFPA - National Fire Protection Association: NFPA 80 - Fire Doors and Windows, NFPA 105 - Smoke and Draft Control Door Assemblies, NFPA 252 - Fire Tests of Door Assemblies

F. UL - Underwriters Laboratories
   1. UL10C - Positive Pressure Fire Tests of Door Assemblies. AND UL 305 - Panic Hardware

G. WHI - Warnock Hersey Incorporated

H. 2019 State of California Building Code

I. Local applicable codes

J. SDI - Steel Door Institute

K. WI - Woodwork Institute

L. AWI - Architectural Woodwork Institute

M. NAAMM - National Association of Architectural Metal Manufacturers

1.03 SUBMITTALS & SUBSTITUTIONS

A. SUBMITTALS: Submit six copies of schedule. Only submittals printed one sided will be accepted and reviewed. Organize vertically formatted schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
   1. Type, style, function, size, quantity and finish of hardware items.
   2. Use BHMA Finish codes per ANSI A156.18.
   3. Name, part number and manufacturer of each item.
   4. Fastenings and other pertinent information.
   5. Description of door location using space names and numbers as published in the drawings.
   6. Explanation of abbreviations, symbols, and codes contained in schedule.
   7. Mounting locations for hardware.
   8. Door and frame sizes, handing, materials, fire-rating and degrees of swing.
   9. List of manufacturers used and their nearest representative with address and phone number.
   10. Catalog cuts.
   11. Wiring Diagrams.
   12. Manufacturer's technical data and installation instructions for electronic hardware.
   13. Date of jobsite visit.

B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.

C. Deviations: Highlight, encircle or otherwise identify deviations from "Schedule of Finish Hardware" on submittal with notations clearly designating those portions as deviating from this section.

D. If discrepancy between drawings and scheduled material in this section, bid the more expensive of the two choices, note the discrepancy in the submittal and request direction from Architect for resolution.

E. Substitutions: Include product data and indicate benefit to the Project. Furnish operating samples on request.

F. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.04 QUALITY ASSURANCE:

A. Qualifications:
   1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course of work for project hardware consultation to District, Architect and Contractor.
      a. Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.

B. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / California State Fire Marshal Standard 12-7-4 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.
   1. Note: scheduled resilient seals may exceed selected door manufacturer's requirements. See 2.6.E for added information regarding resilient and intumescent seals.

E. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.

F. Pre-Installation Meetings: Initiate and conduct with supplier, installer and related trades, coordinate materials and techniques, and sequence complex hardware items and systems installation. Include manufacturers' representatives of locks, panic hardware and door closers in the meetings. Convene prior to commencement of related work.

1.05 DELIVERY, STORAGE AND HANDLING:

A. Delivery: coordinate delivery to appropriate locations (shop or field). Permanent keys and cores: secured delivery direct to District's representative.

B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.06 PROJECT CONDITIONS AND COORDINATION:

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.

B. Coordination: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:
   1. Location of embedded and attached items to concrete.
   2. Location of wall-mounted hardware, including wall stops.
   3. Location of finish floor materials and floor-mounted hardware.
   4. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
   5. Manufacturer templates to door and frame fabricators.

C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation. Do not order hardware until the submittal has been reviewed by the frame and door suppliers for compatibility with their products.

D. Prior to submittal, carefully inspect existing conditions at each opening to verify finish hardware required to complete Work, including sizes, quantities, existing hardware scheduled for re-use, and sill condition material. If conflict or incompatibility between the specified/scheduled hardware and existing conditions, submit request for direction from Architect. Include date of jobsite visit in the submittal.
   1. Submittals prepared without thorough jobsite visit by qualified hardware expert will be rejected as non-compliant.

1.07 WARRANTY:

A. A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties:

1. Locksets:Three years2. Extra Heavy Duty Cylindrical Lock:Seven Years3. Exit Devices:Three years mechanical

One year electrical4. Closers:Ten years mechanical

Two years electrical5. Hinges:One year6. Other HardwareTwo years

1.08 COMMISSIONING:

A. Conduct these tests prior to request for certificate of substantial completion:
   1. With installer present, test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.

2. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.

3. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A.Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

ITEM:MANUFACTURER:ACCEPTABLE SUB:Hinges(IVE) IvesBommerContinuous Hinges(IVE) IvesZeroKey System(SCH) SchlageLocks(SCH) SchlageExit Devices(VON) Von DuprinClosers(LCN) LCNAuto Flush Bolts(IVE) IvesDCICoordinators(IVE) IvesDCISilencers(IVE) IvesHiawathaPush & Pull Plates(IVE) IvesHiawathaKickplates(IVE) IvesHiawathaStops & Holders(IVE) IvesHiawathaOverhead Stops(GLY) Glynn-JohnsonNone availableThresholds(NGP) NGPZeroSeals & Bottoms(NGP) NGPZeroKey Cabinets(LUN) LundTelKee

2.02 HINGING METHODS:

A. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.

B. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.

C. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
   1. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins and security studs.

2. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.

D. Continuous Hinges:
   1. Geared-type aluminum.
      a. Use wide-throw units where needed for maximum degree of swing, advise architect if commonly available hinges are insufficient.
   2. Pinned steel/stainless steel type: continuous stainless steel, 0.25-inch diameter stainless-steel hinge pin.
      a. Use engineered application-specific wide-throw units as needed to provide maximum swing degree of swing, advise architect if required width exceeds 8 inches.

2.03 LOCKSETS, LATCHSETS, DEADBOLTS:

A. Mortise Locksets and Latchsets: as scheduled.
   1. Chassis: cold-rolled steel, handing field-changeable without disassembly.

2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.

3. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.
   a. Spindles: security design independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.
   4. Furnish solid cylinder collars with wave springs. Wall of collar to cover rim of mortise cylinder.

5. Thumbturns: accessible design not requiring pinching or twisting motions to operate.

6. Deadbolts: stainless steel 1-inch throw.

7. Electric operation: Manufacturer-installed continuous duty solenoid.

8. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.

9. Scheduled Lock Series and Design: Schlage L series, 17A design.

10. Certifications:
   a. ANSI A156.13, Grade 1 Operational, Grade 1 Security.

b. ANSI/ASTM F476-14 Grade 31 UL Listed.

B. Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.
   1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.

2. Locking Spindle: stainless steel, integrated spring and spindle design.

3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.

4. Latchbolt: solid steel.

5. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.

6. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to door face.

7. Electric operation: Manufacturer-installed continuous duty solenoid.

8. Strikes: 16 gage curved steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.

9. Lock Series and Design: Schlage ND series, "Sparta" design.

10. Certifications:
   a. ANSI A156.2, 1994, Series 4000, Grade 1.

b. UL listed for A label and lesser class single doors up to 4ft x 8ft.

2.04 CLOSERS

A. Surface Closers:
   1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.

2. ISO 2000 certified. Units stamped with date-of-manufacture code.

3. Independent lab-tested 10,000,000 cycles.

4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.

5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.

6. Adjustable to open with not more than 5.0lbs pressure to open at exterior doors and 5.0lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15lbs.

7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.

8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.

9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.

10. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to -30 degrees F, furnish checking fluid data on request.

11. Non-flaming fluid, will not fuel door or floor covering fires.

12. Pressure Relief Valves (PRV) not permitted.

2.05 OTHER HARDWARE

A. Automatic Flush Bolts: Low operating force design.

B. Overhead Stops: Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

C. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

D. Door Stops: Provide stops to protect walls, casework or other hardware.
   1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.
   2. Locate overhead stops for maximum possible opening. Consult with District for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.

E. Seals: Finished to match adjacent frame color. Resilient seal material: polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Do not furnish vinyl seal material. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability.
   1. Proposed substitutions: submit for approval.
   2. Solid neoprene: MIL-R6855-CL II, Grade 40.
   3. Non-corroding fasteners at in-swinging exterior doors.
   4. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Fasten applied seals over bead of sealant.
   5. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.
   6. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required

F. Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.

G. Thresholds: As scheduled and per details. Comply with CBC Section 1133B.2.4.1. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
   1. Exteriors: Seal perimeter to exclude water and vermin. Use sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
   2. Fire-rated openings, 90min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
   3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.
   4. Acoustic openings: Set units in full bed of Division-7-compliant, leave no air space between threshold and substrate.
   5. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.
   6. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

H. Exposed Through-Bolts: Do not use SNB, grommet nuts, sleeve nuts or other such clamping type fasteners, intent is for minimal exposed hardware. Coordinate with wood doors; ensure provision of proper blocking to support wood screws for mounting panic hardware and door closers. Coordinate with metal doors and frames; ensure provision of proper reinforcement to support machine screws for mounting panic hardware and door closers.

I. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.06 FINISH:

A. Generally BHMA 626 Satin Chromium.
   1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.

B. Door closers: factory powder coated to match other hardware, unless otherwise noted.

C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.07 KEYING REQUIREMENTS:

A. Key System: Schlage Everest Primus 29XP high-security utility-patented keyway, interchangeable core throughout. Utility patent protection to extend at least until 2029. Key blanks available only from factory-direct sources, not available from after-market keyblank manufacturers. For estimate use factory GMK charge. Initiate and conduct meeting(s) with District to determine system keyway(s), keybow styles, structure, degree of physical security and degree of geographic exclusivity. Furnish District's written approval of the system.
   1. New factory-registered master key system.
   2. Primus Level 29XP
   3. Construction keying: furnish temporary keyed-alike cores. At substantial completion District to remove cores and install permanent cylinders/cores.
   4. Temporary cylinders/cores remain supplier's property.
   5. Furnish 10 construction keys.
   6. Furnish 2 construction control keys.
   7. Key Cylinders: furnish 6-pin solid brass construction.

B. Cylinders/cores: keyed at factory of lock manufacturer where permanent records are maintained. Locksets and cylinders same manufacturer.

C. Permanent keys: use secured shipment direct from point of origination to District.
   1. For estimate: 3 keys per change combination, 5 master keys per group, 5 grand-master keys, 3 control keys.
   2. For estimate: VKC stamping plus "Do Not Duplicate".

D. Bitting List: use secured shipment direct from point of origination to District at completion.

E. Key Control software: Include one Sitemaster 200 key control system with new key system.

PART 3 - EXECUTION

3.01 ACCEPTABLE INSTALLERS:

A. Can read and understand manufacturers' templates, suppliers' hardware schedules and printed installation instructions. Can readily distinguish drywall screws from manufacturers' furnished fasteners. Available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

3.02 PREPARATION:

A. Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation.

B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
   1. Notify Architect of code conflicts before ordering material.
   2. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.

D. Existing frames and doors to be retrofitted with new hardware:
   1. Field-verify conditions and dimensions prior to ordering hardware. Fill existing hardware cut outs not being reused by the new hardware. Remove existing hardware not being reused, return to District unless directed otherwise.
   2. Remove existing floor closers not scheduled for reuse, fill cavities with concrete and finish smooth
   3. Cut and weld existing steel frames currently prepared with 2-¾" height strikes. Cut an approx. 8" section from the strike jamb and weld in a reinforced section to accommodate specified hardware's strike.
   4. Patch and weld flush filler pieces into existing door hardware preparations in steel doors and frames, leave surfaces smooth.
   5. Glue in solid wood block fillers to fill cut outs in existing wood doors, sand surfaces smooth. Alternatively, use an approved epoxy-based wood filler product, submit product data for approval.

3.03 INSTALLATION

A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
   1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
   2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
   3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
   4. Replace fasteners damaged by power-driven tools.

B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.

C. Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.

D. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.

E. Drill pilot holes for fasteners in wood doors and/or frames. Centerpunch hole locations before using self-drilling type screws to prevent skating. Replace screws that are not centered in their holes.

F. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to District items not scheduled for reuse.

G. Field verify existing conditions and measurements prior to ordering hardware. Fill existing hardware cut outs not being used by the new hardware. Remove existing hardware not being reused.

H. Disable or remove existing floor closers where they exist. If disabled cut or remove spindle.

I. Where existing wall conditions will not allow door to swing using the scheduled hinges, provide wide-throw hinges and if needed extended arms on closers.

J. Provide proper brackets to accommodate the mounting of closers on doors with flush transoms.

3.04 ADJUSTING

A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
   1. Hardware damaged by improper installation or adjustment methods: repair or replace to District's satisfaction.
   2. Adjust doors to fully latch with no more than 1 pound of pressure.
   3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
   4. Adjust door closers per 1.08, this section.

B. Inspection: Use hardware supplier's consultant or consultant's agent. Include supplier's report with closeout documents.

C. Final inspection: Installer to provide letter to District that upon completion installer has visited the Project and has accomplished the following:
   1. Re-adjust hardware.
   2. Evaluate maintenance procedures and recommend changes or additions, and instruct District's personnel.
   3. Identify items that have deteriorated or failed.
   4. Submit written report identifying problems

3.05 DEMONSTRATION:

A. Demonstrate mechanical hardware and electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.06 PROTECTION/CLEANING:

A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.07 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

B. No hardware shall be ordered until Finished Hardware has been reviewed and approved by Architect's hardware consultant.

C. Provide Factory order numbers for all products supplied on this project as part of close out documents for District's warranty records.

D. Miscellaneous Material:

Hardware Group No. 01

For use on mark/door #(s):

001 007 013 014

3	EA	HINGE	3CB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM	LOCKL9070T 06A	626	SCH
1	EA	PRIMUS CORE	20-740-XP	626	SCH
1	EA	OH STOP	450S	630	GLY
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	SET	SEALS	5050B	BRN	NGP
1	EA	DOOR BOTTOM	320N	AL	NGP
1	EA	THRESHOLD	411 MS/LA	AL	NGP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

RASMUSSEN & ASSOCIATES
Architecture
Planning
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21 S. California Street
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SPECIFICATIONS

Revisions

R&A No:	A181901
Date:	8/26/2020
Drawn:	R&A
Checked:	CW
Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A6.3

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

SECTION 13121
PRE-ENGINEERED BUILDING COMPONENTS

** PART 1 GENERAL

1.1 SECTION INCLUDES

A. Pre-engineered building components including the following:

1. Roof covering system including exterior roof panels, panel attachments, sealants, mastics, trim and flashings.

2. Exterior panels including wall panels.

1.2 REFERENCES

** American Iron and Steel Institute (AISI):

1. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.

B. ASTM International (ASTM):

1. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

2. ASTM A 653 / A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM A 792 / A 792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

4. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.

5. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

6. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.

7. ASTM D 522 - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.

8. ASTM D 523 - Standard Test Method for Specular Gloss.

9. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.

10. ASTM D 1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.

11. ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.

12. ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

13. ASTM D 2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

14. ASTM D 3361 - Standard Practice for Unfiltered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

15. ASTM D 4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

16. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

17. ASTM E 96 / E 96M - Standard Test Methods for Water Vapor Transmission of Materials.

18. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.

19. ASTM G 87 - Standard Practice for Conducting Moist SO2 Tests.

C. Metal Building Manufacturers Association (MBMA):

1. MBMA Metal Building Systems Manual.

2. Seismic Design Guide for Metal Building Systems.

D. Underwriters Laboratories (UL):

1. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies.

2. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Not less than 5 years experience in the actual production of specified products.

1. Member of the Metal Building Manufacturer's Association (MBMA).

2. Primary manufacturer of frames, secondary steel, roof and wall sheeting, and trim.

B. Installer Qualifications - Firm experienced in application or installation of systems similar in complexity to those required for this project, plus the following:

1. Acceptable to or licensed by manufacturer.

2. 3 years experience with systems.

3. Successfully completed not less than 5 comparable scale projects using this system.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Varco Pruden Buildings, which is located at: 3200 Players Club Circle; Memphis, TN 38125; Tel: 901-748-8000; Fax: 901-748-9323; Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 ROOF COVERING SYSTEM

A. Roof Panels: Panel Rib; 36 inch wide net coverage, with 1-3/16 inch high major ribs at 12 inches on center with (2) minor ribs spaced between the major ribs.

1. Material (Painted): AZ50 Galvalume coated steel.

2. Thickness: 26 gage.

3. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.

4. Length: Continuous from eave to ridge up to 43 feet (13.1 m) in length.

5. End laps, where required: minimum 4 inches (102 mm) wide, located at a support member.

6. The KXL paint system is a PVDF finish applied to the zinc aluminum coated steel to give a long life color that resists fading and chalking. KXL is a 1 mil nom. PVDF finish with 70 percent Kynar 500 or Hylar 5000 standard.

2.3 EXTERIOR PANELS

A. Wall Panels: Panel Rib; 36 inch wide net coverage, with 1-3/16 inch high major ribs at 12 inches on center with (2) minor ribs spaced between the major ribs.

1. Material (Painted): AZ50 Galvalume coated steel.

2. Thickness: 26 gage.

3. Side laps: Two fully overlapping major ribs secured together with Stainless Steel capped 1/4 inch diameter color-matched carbon steel fasteners.

4. Length: Continuous from sill to eave up to 43 feet in length.

5. End laps, where required: 4 inches wide, located at a support member.

6. Cut panels square at each end; provide base trim at sill and closure plugs.

7. The KXL paint system is a PVDF finish applied to the zinc aluminum coated steel to give a long life color that resists fading and chalking. KXL is a 1 mil nom. PVDF finish with 70 percent Kynar 500 or Hylar 5000 standard.

2.4 MATERIALS

A. Galvalume Steel Sheet Used in Roll Formed or Press Broken Roof Covering: Aluminum-zinc alloy-coated steel sheet, ASTM A 792/A 792M, with minimum yield strength of 50,000 psi (345 MPa); nominal coating weight of 0.5 oz per sq ft both sides, equivalent to an approximate coating thickness of 0.0018 inch both sides.

B. Panel Fasteners:

1. For Galvalume and KXL finished roof and wall panels: Stainless Steel-capped carbon steel fasteners with integral sealing washer.

2. Color of exposed fastener heads to match the roof or wall panel finish.

3. Concealed Fasteners: Self-drilling type, of size as required.

4. Provide fasteners in quantities and location as required by the manufacturer.

C. Flashing and Trim: Match material, finish, and color of adjacent components. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weather tightness and a finished appearance.

D. Sealants, Mastics and Closures: Manufacturer's standard type.

1. Provide at roof panel end laps, side laps, rake, eave, transitions and accessories as required to provide a weather resistant roof system; use tape mastic or gun grade sealant at side laps and end laps.

** Provide at wall panel rakes, eaves, transitions and accessories.

2. Closures: Formed to match panel profiles; closed cell elastic material, manufacturer's standard color.

3. Tape mastic: Pre-formed butyl rubber-based, non-hardening, non-corrosive to metal; white or light gray.

4. Gun grade sealant: Non-skinning synthetic Elastomeric based material; gray or bronze.

2.5 FINISH

** KXL Pre-Painted Finish: 0.9 mil minimum dry film thickness 70 percent Kynar 500, Hylar 5000 coating on exterior surface.

** Color: Interior Finish: Off White 0.5 mil minimum dry film thickness wash coat.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in compliance with manufacturer's instructions and approved submittals.

1. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.

2. Fasten cladding system to structural supports, aligned level and plumb.

3. Locate end laps over supports. End lap panels according to manufacturer's recommendations. Place side laps over adjacent panel and mechanically seam or stitch fastener per erection guidelines.

4. Provide expansion joints where indicated.

5. Use concealed fasteners.

6. Install sealant and gaskets to prevent weather penetration.

7. Install system free of rattles, noise due to thermal movement, and wind whistles.

8. Seal wall and roof accessories watertight and weather tight with sealant in compliance with building manufacturer's standard procedures.

9. Rigidly support and secure gutters and downspouts. Joint lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.

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SPECIFICATIONS

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FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
A6.4

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2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1

CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES

Division 5.1 – PLANNING AND DESIGN

SECTION 5.101
GENERAL

5.101.1 Scope. The provisions of this chapter outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore and enhance the environmental quality of the site and respect the integrity of adjacent properties.

SECTION 5.102
DEFINITIONS

5.102.1 Definitions. The following terms are defined in Chapter 2.

CUTOFF LUMINAIRES.

LOW-EMITTING AND FUEL EFFICIENT VEHICLES.

NEIGHBORHOOD ELECTRIC VEHICLE (NEV).

TENANT-OCCUPANTS.

VANPOOL VEHICLE.

ZEV.

SECTION 5.103
SITE SELECTION
(Reserved)

SECTION 5.104
SITE PRESERVATION
(Reserved)

SECTION 5.105
DECONSTRUCTION AND REUSE
OF EXISTING STRUCTURES
(Reserved)

SECTION 5.106
SITE DEVELOPMENT

5.106.1 Storm water pollution prevention. Newly constructed projects and additions which disturb less than one acre of land shall prevent the pollution of stormwater runoff from the construction activities through one or more of the following measures:

5.106.1.1 Local ordinance. Comply with a lawfully enacted stormwater management and/or erosion control ordinance.

5.106.1.2 Best management practices (BMP). Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMP.

1. Soil loss BMP that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
   a. Scheduling construction activity.
   b. Preservation of natural features, vegetation and soil.
   c. Drainage swales or lined ditches to control stormwater flow.
   d. Mulching or hydroseeding to stabilize disturbed soils.
   e. Erosion control to protect slopes.
   f. Protection of storm drain inlets (gravel bags or catch basin inserts).
   g. Perimeter sediment control (perimeter silt fence, fiber rolls).
   h. Sediment trap or sediment basin to retain sediment on site.
   i. Stabilized construction exits.
   j. Wind erosion control.
   k. Other soil loss BMP acceptable to the enforcing agency.
2. Good housekeeping BMP to manage construction equipment, materials and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
   a. Material handling and waste management.
   b. Building materials stockpile management.
   c. Management of washout areas (concrete, paints, stucco, etc.).
   d. Control of vehicle/equipment fueling to contractor's staging area.
   e. Vehicle and equipment cleaning performed off site.
   f. Spill prevention and control.
   g. Other housekeeping BMP acceptable to the enforcing agency.

5.106.4 Bicycle parking. For buildings within the authority of California Building Standards Commission as specified in Section 103, comply with Section 5.106.4.1. For buildings within the authority of the Division of the State Architect pursuant to Section 105, comply with Section 5.106.4.2.

5.106.4.1 Bicycle parking. [BSC-CG] Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet the applicable local ordinance, whichever is stricter.

5.106.4.1.1 Short-term bicycle parking. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.

Exception: Additions or alterations which add one or less visitor vehicular parking space.

5.106.4.1.2 Long-term bicycle parking. For new buildings with 10 or more tenant-occupants or for additions or alterations that add 10 or more tenant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicular parking spaces being added, with a minimum of one space. Acceptable bicycle parking facilities shall be convenient from the street and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.

5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2.

5.106.4.2.1 Student bicycle parking. Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.

5.106.4.2.2 Staff bicycle parking. Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

5.106.5.2 Designated parking for clean air vehicles. In new projects or additions or alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel efficient and carpool/van pool vehicles as follows:

TABLE 5.106.5.2

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0–9	0
10–25	1
26–50	3
51–75	6
76–100	8
101–150	12
151–200	16
201 and over	At least 8 percent of total

5.106.5.2.1 Parking stall marking. Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle:

CLEAN AIR/
VANPOOL/EV

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.

5.106.5.3 Electric vehicle (EV) charging. [N] Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the *California Building Code*, the *California Electrical Code* and as follows:

5.106.5.3.1 Single charging space requirements. [N] When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code*. Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. A listed raceway capable of accommodating a 208/240-volt dedicated branch circuit.
3. The raceway shall not be less than trade size 1."
4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into a listed, suitable cabinet, box, enclosure or equivalent.
5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE.

5.106.5.3.2 Multiple charging space requirements. [N] When multiple charging spaces are required per Table 5.106.5.3.3, raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code*. Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent.
3. Plan design shall be based upon 40-ampere minimum branch circuits.
4. Electrical calculations shall substantiate the design of the electrical system, to include the ratings of equipment and any on-site distribution transformers, and have sufficient capacity to simultaneously charge all required EVSEs at its full rated amperage.
5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE(s).

5.106.5.3.3 EV charging space calculation. [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.

Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions:

1. Where there is insufficient electrical supply.
2. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.

TABLE 5.106.5.3.3

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CHARGING SPACES
0–9	0
10–25	1
26–50	2
51–75	4
76–100	5
101–150	7
151–200	10
201 and over	6 percent of total[1]

1. Calculation for spaces shall be rounded up to the nearest whole number.

5.106.5.3.4 ID Identification. The service panel or subpanel(s) circuit directory shall identify the reserved overcurrent protective device space(s) for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE"

5.106.5.3.5 [N] Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.

Notes:

1. The California Department of Transportation adopts and publishes the California Manual on Uniform Traffic Control Devices (California MUTCD) to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives Number 13–01, www.dot.ca.gov/hq/traffops/policy/13-01.pdf.
2. See Vehicle Code Section 22511 for EV charging spaces signage information. Street parking facilities and for use of EV charging spaces.
3. The Governor's Office of Planning and Research published a Zero-Emission Vehicle Community Readiness Guidebook which provides helpful information for local governments, residents and businesses. www.opr.ca.gov/docs/ZEV_Guidebook.pdf.

5.106.8 Light pollution reduction. [N] Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the *California Energy Code* for Lighting Zones 1-4 as defined in Chapter 10 of the *California Administrative Code*; and
2. Backlight, Uplight and Glare (BUG) ratings as defined in IES TM-15-11; and
3. Allowable BUG ratings not exceeding those shown in Table 5.106.8, or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Exceptions: [N]

1. Luminaires that qualify as exceptions in Section 140.7 of the *California Energy Code*.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the *California Energy Code*, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.

Note: [N] See also *California Building Code*, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways.

5.106.10 Grading and paving. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales.
2. Water collection and disposal systems.
3. French drains.
4. Water retention gardens.
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Exception: Additions and alterations not altering the drainage path.

TABLE 5.106.8 [N]
MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS[1,2]

ALLOWABLE RATING	LIGHTING ZONE 1	LIGHTING ZONE 2	LIGHTING ZONE 3	LIGHTING ZONE 4
Maximum Allowable Backlight Rating[3]				
Luminaire greater than 2 mounting heights (MH) from property line	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1 – 2 MH from property line	B2	B3	B4	B4
Luminaire back hemisphere is 0.5 – 1 MH from property line	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	B0	B0	B1	B2
Maximum Allowable Uplight Rating				
For area lighting[3]	U0	U0	U0	U0
For all other outdoor lighting, including decorative luminaires	U1	U2	U3	U4
Maximum Allowable Glare Rating[3]				
Luminaire greater than 2 MH from property line	G1	G2	G3	G4
Luminaire front hemisphere is 1 – 2 MH from property line	G0	G1	G1	G2
Luminaire front hemisphere is 0.5 – 1 MH from property line	G0	G0	G1	G1
Luminaire back hemisphere is less than 0.5 MH from property line	G0	G0	G0	G1

1. IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the *California Energy Code* and Chapter 10 of the *California Administrative Code*.
2. For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.
3. If the nearest property line is less than or equal to two mounting heights from the back hemisphere of the luminaire distribution, the applicable reduced Backlight rating shall be met.
4. General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet *U*-value limits for "all other outdoor lighting."
5. If the nearest property line is less than or equal to two mounting heights from the front hemisphere of the luminaire distribution, the applicable reduced Glare rating shall be met.

CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES

Division 5.2 – ENERGY EFFICIENCY

SECTION 5.201
GENERAL

5.201.1 Scope [BSC-CG]. *California Energy Code* **[DSASS].** For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.

CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES

Division 5.3 – WATER EFFICIENCY AND CONSERVATION SECTION

5.301
GENERAL

5.301.1 Scope. The provisions of this chapter shall establish the means of conserving water used indoors, outdoors and in wastewater conveyance.

SECTION 5.302
DEFINITIONS

5.302.1 Definitions. The following terms are defined in Chapter 2.

EVAPOTRANSPIRATION ADJUSTMENT FACTOR

(ETAF) [DSA-SS]

FOOTPRINT AREA [DSA-SS]

GRAYWATER.

METERING FAUCET

MODEL WATER EFFICIENT LANDSCAPE

ORDINANCE (MWELO).

POTABLE WATER.

RECYCLED WATER.

SPECIAL LANDSCAPE AREA (SLA). [DSA-SS]

SUBMETER.

SECTION 5.303
INDOOR WATER USE

5.303.1 Meters. Separate submeters or metering devices shall be installed for the buildings described in Sections 5.303.1.1 and 5.303.1.2.

5.303.1.1 New buildings or additions in excess of 50,000 square feet. Separate submeters shall be installed as follows:

1. For each individual leased, rented, or other tenant space within the building projected to consume more than 1,000 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.
2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems:
   a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s).
   b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s).
   c. Steam and hot-water boilers with energy input more than 500,000 Btu/h (150 kW).

5.303.1.2 Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.

5.303.2 Reserved.

5.303.3 Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:

5.303.3.1 Water closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type Toilets.

Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

5.303.3.2 Urinals.

5.303.3.2.1 Wall-mounted urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush.

5.303.3.2.2 Floor-mounted urinals. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush.

5.303.3.3 Showerheads.

5.303.3.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 2.0 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

5.303.3.3.2 Multiple showerheads serving one shower. When a shower is served by more than oneshowerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 2.0 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.

Note: A hand-held shower shall be considered a showerhead.

5.303.3.4 Faucets and fountains.

5.303.3.4.1 Nonresidential lavatory faucets. Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.

5.303.3.4.2 Kitchen faucets. Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

5.303.3.4.3 Wash fountains. Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute/20 (rim space (inches) at 60 psi).

5.303.3.4.4 Metering faucets. Metering faucets shall not deliver more than 0.20 gallons per cycle.

5.303.3.4.5 Metering faucets for wash fountains. Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per cycle/20 (rim space (inches) at 60 psi).

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

5.303.4 Commercial kitchen equipment.

5.303.4.1 Food waste disposers. Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (actively grinding food waste/reload) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water.

Note: This code section does not affect any jurisdiction authority to prohibit or require disposer installation.

5.303.5 Areas of addition or alteration. Only those occupancies within the authority of the California Plumbing Standards Commission as specified in Section 103, the provisions of Sections 5.303.3 and 5.303.4 shall apply to new fixtures in additions or areas of alteration to the building.

5.303.6 Standards for plumbing fixtures and fittings. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code* and in Chapter 6 of this code.

SECTION 5.304
OUTDOOR WATER USE

5.304.1 Scope. The provisions of Section 5.304, Outdoor Water Use reference the mandatory Model Water Efficiency Landscape Ordinance (MWELO) contained within Chapter 2.7, Division 2, Title 23, *California Code of Regulations*.

5.304.2 Outdoor water use in landscape areas equal to or greater than 500 square feet. When water is used for outdoor irrigation for new construction projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check or design review, one of the following shall apply:

1. A local water efficient landscape ordinance that is, based on evidence in the record, at least as effective in conserving water as the updated model ordinance adopted by the Department of Water Resources (DWR) per Government Code Section 65595 (c).
2. The California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) complying with Section 490 of Chapter 2.7, Division 2, Title 23, *California Code of Regulations*.

5.304.3 Outdoor water use in rehabilitated landscape projects equal to or greater than 2,500 square feet. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review shall comply with Section 5.304.2, Item 1 or 2.

5.304.4 Outdoor water use in landscape areas of 2,500 square feet or less. Any project with an aggregate landscape area of 2,500 square feet or less may comply with the performance requirements of MWELO or conform to the prescriptive compliance measures contained in MWELO's Appendix D.

5.304.5 Graywater or rainwater use in landscape areas. For projects using treated or untreated graywater or rainwater captured on site, any lot or parcel within the project that has a total landscape area of more than 2,500 square feet of landscape and meets the lot or parcel's landscape water requirement (Estimated Total Water Use) entirely with treated or untreated graywater or through stored rainwater captured on site is subject to Appendix D Section (5).

Notes:

1. DWR's Model Water Efficient Landscape Ordinance, definitions and supporting documents are available at the following link: http://water.ca.gov/wateruseefficiency/landscapeordinance/
2. A water budget calculator is available at the following link: http://water.ca.gov/wateruseefficiency/landscapeordinance/
3. The MWELO prescriptive compliance measure Appendix D may be found at the following link: http://water.ca.gov/wateruseefficiency/landscapeordinance/ In addition, a copy of MWELO Appendix D may be found in Chapter 3 of this code.

5.304.6 Outdoor potable water use in landscape areas [DSA-SS]. For public schools and community colleges, landscape projects as described in Sections 5.304.2 and 5.304.6.2 shall comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, *California Code of Regulations*, except that the evapotranspiration adjustment factor (ETAF) shall be 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35.

Exception: Any project with an aggregate landscape area of 2,500 square feet or less may comply with the prescriptive measures contained in Appendix D of the MWELO.

5.304.6.1 Newly constructed landscapes. [DSA-SS] New construction projects with an aggregate landscape area equal to or greater than 500 square feet.

5.304.6.2 Rehabilitated landscapes. [DSA-SS] Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 1,200 square feet.

SECTION 5.305
WATER REUSE SYSTEMS
(Reserved)

CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES

Division 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION 5.401
GENERAL

5.401.1 Scope. The provisions of this chapter shall outline means of achieving material conservation and resource efficiency through protection of buildings from exterior moisture, construction waste diversion, employment of techniques to reduce pollution through recycling of materials, and building commissioning or testing and adjusting.

SECTION 5.402
DEFINITIONS

5.402.1 Definitions. The following terms are defined in Chapter 2.

ADJUST.

BALANCE.

BUILDING COMMISSIONING.

ORGANIC WASTE.

TEST.

SECTION 5.403
FOUNDATION SYSTEMS
(Reserved)

SECTION 5.404
EFFICIENT FRAMING TECHNIQUES
(Reserved)

SECTION 5.405
MATERIAL SOURCES
(Reserved)

SECTION 5.406
ENHANCED DURABILITY
AND REDUCED MAINTENANCE
(Reserved)

SECTION 5.407
WATER RESISTANCE AND
MOISTURE MANAGEMENT

5.407.1 Weather protection. Provide a weather-resistant exterior wall and foundation envelope as required by *California Building Code* Section 1403.2 (Weather Protection) and *California Energy Code* Section 150, (Mandatory Features and Devices), manufacturer's installation instructions or local ordinance, whichever is more stringent.

5.407.2 Moisture control. Employ moisture control measures by the following methods.

5.407.2.1 Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.

5.407.2.2 Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:

5.407.2.2.1 Exterior door protection. Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:

1. An installed awning at least 4 feet in depth.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods which provide equivalent protection.

5.407.2.2.2 Flashing. Install flashings integrated with a drainage plane.

SECTION 5.408
CONSTRUCTION WASTE REDUCTION,
DISPOSAL AND RECYCLING

5.408.1 Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.

5.408.1.1 Construction waste management plan. Where a local jurisdiction does not have a construction and demolitionwaste management ordinance that is more stringent, submit a construction waste management plan that:

1. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
2. Determines the construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
3. Identifies diversion facilities where construction and demolition waste material collected will be taken.
4. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

5.408.1.2 Waste management company. Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.

Note: The owner or contractor shall make the determination if the construction and demolition waste material will be diverted by a waste management company.

Exceptions to Sections 5.408.1.1 and 5.408.1.2:

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.
3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.

5.408.1.3 Waste stream reduction alternative. The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.

5.408.1.4 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 5.408.1.1 through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

Notes:

1. Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located at http://www.bsc.ca.gov/Home/CALGreen.aspx may be used to assist in documenting compliance with the waste management plan.
2. Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

5.408.2 Universal waste. [A] Additions and alterations to a building or tenant space that meet the scoping provisions in Section 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.

Note: Refer to the Universal Waste Rule link at: http://www.dtsc.ca.gov/LawsRegsPolicies/Regs/upload/OEARA_REGS_UWR_FinalText.pdf

5.408.3 Excavated soil and land clearing debris. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Exception: Reuse, either on- or off-site, of vegetation or soil contaminated by disease or pest infestation.

Notes:

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material. (www.cdfa.ca.gov/exec/county/county_contacts.html)
2. For a map of known pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdfa.ca.gov)

SECTION 5.409
LIFE CYCLE ASSESSMENT
(Reserved)

SECTION 5.410
BUILDING MAINTENANCE AND OPERATION

5.410.1 Recycling by occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code 42649.82 (a)(2)(A) et seq. shall also be exempt from the organic waste portion of this section.

5.410.1.1 Additions. All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30 percent or more in floor area, shall provide recycling areas on site.

Exception: Additions within a tenant space resulting in less than a 30-percent increase in the tenant space floor area.

5.410.1.2 Sample ordinance. Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the *Public Resources Code*. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).

Note: A sample ordinance for use by local agencies may be found in Appendix A of the document at the CalRecycle's web site.

5.410.2 Commissioning. [N] For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel with experience on projects of comparable size and complexity. All occupancies other than I-occupancies and L-occupancies shall comply with the *California Energy Code* as prescribed in *California Energy Code* Section 120.8. For I-occupancies that are not regulated by OSHPD or for I-occupancies and Loccupancies that are not regulated by the *California Energy Code* Section 100.0 Scope, all requirements in Sections 5.410.2 through 5.410.2.6 shall apply. Commissioning requirements shall include:

1. Owner's or owner representative's project requirements.
2. Basis of design.
3. Commissioning measures shown in the construction documents.
4. Commissioning plan.
5. Functional performance testing.
6. Documentation and training.
7. Commissioning report.

Exceptions:

1. Unconditioned warehouses of any size.
2. Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses.
3. Tenant improvements less than 10,000 square feet as described in Section 303.1.1.
4. Open parking garages of any size, or open parking garage areas, of any size, within a structure.

Note: For the purposes of this section, unconditioned shall mean a building, area, or room which does not provide heating and or air conditioning.

Informational Notes:

1. IAS AC 476 is an accreditation criteria for organizations providing training and/or certification of commissioning personnel. AC 476 is available to the Authority Having Jurisdiction as a reference for qualifications of commissioning personnel. AC 476 does not certify individuals to conduct functional performance tests or to adjust and balance systems.
2. Functional performance testing for heating, ventilation, air conditioning systems and lighting controls must be performed in compliance with the *California Energy Code*.

5.410.2.1 Owner's or Owner representative's Project Requirements (OPR). [N] The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. This documentation shall include the following:

1. Environmental and sustainability goals.
2. Energy efficiency goals.
3. Indoor environmental quality requirements.
4. Project program, including facility functions and hours of operation, and need for after hours operation.
5. Equipment and systems expectations.
6. Building occupant and operation and maintenance (O&M) personnel expectations.

5.410.2.2 Basis of Design (BOD). [N] A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project. The Basis of Design document shall cover the following systems:

1. Heating, ventilation, air conditioning [HVAC) systems and controls.
2. Indoor lighting system and controls.
3. Water heating system.
4. Renewable energy systems.
5. Landscape irrigation systems.
6. Water reuse systems.

5.410.2.3 Commissioning plan. [N] Prior to permit issuance a commissioning plan shall be completed to document how the project will be commissioned. The commissioning plan shall include the following:

1. General project information.
2. Commissioning goals.
3. Systems to be commissioned. Plans to test systems and components shall include:
   a. An explanation of the original design intent.
   b. Equipment and systems to be tested, including the extent of tests.
   c. Functions to be tested.
   d. Conditions under which the test shall be performed.
   e. Measurable criteria for acceptable performance.
4. Commissioning team information.
5. Commissioning process activities, schedules and responsibilities. Plans for the completion of commissioning shall be included.

5.410.2.4 Functional performance testing. [N] Functional performance tests shall demonstrate the correct installation and operation of each component, system and system- tosystem interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.

5.410.2.5 Documentation and training. [N] A systems manual and systems operations training are required, including Occupational Safety and Health Act (OSHA) requirements in *California Code of Regulations* (CCR), Title 8, Section 5142, and other related regulations.

5.410.2.5.1 Systems manual. [N] Documentation of the operational aspects of the building shall be completed within the systems manual and delivered to the building owner or representative. The systems manual shall include the following:

1. Site information, including facility description, history and current requirements.
2. Site contact information.
3. Basic operations and maintenance, including general site operating

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GREEN BUILDING
CODE MEASURES

Revisions	R&A No:	A181901
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FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
GB1

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 2

procedures, basic troubleshooting, recommended maintenance requirements, site events log.
4. Major systems.
5. Site equipment inventory and maintenance notes.
6. A copy of verifications required by the enforcing agency or this code.
7. Other resources and documentation, if applicable.

5.410.2.5.2 Systems operations training. [N] A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report and shall include the following:
1. System/equipment overview (what it is, what it does and with what other systems and/or equipment it interfaces).
2. Review and demonstration of servicing/preventive maintenance.
3. Review of the information in the systems manual.
4. Review of the record drawings on the system/equipment.

5.410.2.6 Commissioning report. [N] A report of commissioning process activities undertaken through the design and construction phases of the building project shall be completed and provided to the owner or representative.

5.410.4 Testing and adjusting. Testing and adjusting of systems shall be required for new buildings less than 10,000 square feet or new systems to serve an addition or alteration subject to Section 303.1.

5.410.4.1 (Reserved)

5.410.4.2 Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include, as applicable to the project:
1. HVAC systems and controls.
2. Indoor and outdoor lighting and controls.
3. Water heating systems.
4. Renewable energy systems.
5. Landscape irrigation systems.
6. Water reuse systems.

5.410.4.3 Procedures. Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system.

5.410.4.3.1 HVAC balancing. In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, balance the system in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural Standards; Associated Air Balance Council National Standards or as approved by the enforcing agency.

5.410.4.4 Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.

5.410.4.5 Operation and maintenance (O & M) manual. Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system. O & M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142, and other related regulations.

5.410.4.5.1 Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.

CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES

Division 5.5 – ENVIRONMENTAL QUALITY

SECTION 5.501
GENERAL

5.501.1 Scope. The provisions of this chapter shall outline means of reducing the quantity of air contaminants that are odorous, irritating, and/or harmful to the comfort and wellbeing of a building's installers, occupants and neighbors.

SECTION 5.502
DEFINITIONS

5.502.1 Definitions. The following terms are defined in Chapter 2.

ARTERIAL HIGHWAY.

A-WEIGHTED SOUND LEVEL (dBA).

1 BTU/HOUR.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL).

COMPOSITE WOOD PRODUCTS.

DAY-NIGHT AVERAGE SOUND LEVEL (L_{dn}).

DECIBEL (dB).

ENERGY EQUIVALENT (NOISE) LEVEL (L_{eq}).

EXPRESSWAY.

FREEWAY.

GLOBAL WARMING POTENTIAL (GWP).

GLOBAL WARMING POTENTIAL VALUE (GWP VALUE).

HIGH-GWP REFRIGERANT.

LONG RADIUS ELBOW.

LOW-GWP REFRIGERANT.

MERV.

MAXIMUM INCREMENTAL REACTIVITY (MIR).

PRODUCT-WEIGHTED MIR (PWMIR).

PSIG.

REACTIVE ORGANIC COMPOUND (ROC).

SCHRADER ACCESS VALVES.

SHORT RADIUS ELBOW.

SUPERMARKET.

VOC.

SECTION 5.503
FIREPLACES

5.503.1 Fireplaces. Install only a direct-vent sealed-combustion gas, sealed wood-burning fireplace, or a sealed woodstove or pellet stove, and refer to residential requirements in the *California Energy Code*, Title 24, Part 6, Subchapter 7, Section 150. Woodstoves, pellet stoves and fireplaces shall comply with applicable local ordinances.

5.503.1.1 Woodstoves. Woodstove and pellet stoves shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits.

SECTION 5.504
POLLUTANT CONTROL

5.504.1 Temporary ventilation. The permanent HVAC system shall only be used during construction if necessary to condition the building or areas of addition or alteration within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30 percent based on ASHRAE 52,1-1992. Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction.

5.504.3 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.

5.504.4 Finish material pollutant control. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:
1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.
2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with Section 94507.

TABLE 5.504.4.1
ADHESIVE VOC LIMIT[1,2]
Less Water and Less Exempt Compounds in Grams Per Liter

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesive not specifically listed	50
SPECIALTY APPLICATIONS	
PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140
Top and trim adhesive	250
SUBSTRATE SPECIFIC APPLICATIONS	
Metal to metal	30
Plastic foams	50
Porous material (except wood)	50
Wood	30
Fiberglass	80

1. If an adhesive is used to bond dissimilar substrates together the adhesive with the highest VOC content shall be allowed.
2. For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168, http://www.arb.ca.gov/DRDB/SC/CURHTML/R1168.PDF.

TABLE 5.504.4.2
SEALANT VOC LIMIT
Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	CURRENT VOC LIMIT
Architectural	250
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420
SEALANT PRIMERS	
Architectural Nonporous Porous	 250 775
Modified bituminous	500
Marine deck	760
Other	750

Note: For additional information regarding methods to measure the VOC content specified in these tables, see South Coast Air Quality Management District Rule 1168.

5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of *California Code of Regulations*, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers

TABLE 5.504.4.3
VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2, 3]
Grams of VOC per Liter of Coating,
Less Water and Less Exempt Compounds

COATING CATEGORY	CURRENT LIMIT
Flat coatings	50
Nonflat coatings	100
Nonflat-high gloss coatings	150
SPECIALTY COATINGS	
Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings[1]	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Rust preventative coatings	250
Shellacs Clear Opaque	 730 550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

1. Grams of VOC per liter of coating, including water and including exempt compounds.
2. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
3. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.

5.504.4.4 Carpet systems. All carpet installed in the building interior shall meet at least one of the following testing and product requirements:
1. Carpet and Rug Institute's Green Label Plus Program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.2, February 2010 (also known as CDPH Standard Method V1.2, *Specification 01350*);
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (CA-CHPS) criteria Interpretation for EQ 7.0 and EQ 7.1 (formerly EQ 2.2) dated July 2012 and listed in the CHPS High Performance Product Database.

5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.

5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.

5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.) Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.

5.504.4.5.1 Early compliance. Reserved.

5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:
1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.

TABLE 5.504.4.5
FORMALDEHYDE LIMITS[1]
Maximum Formaldehyde Emissions in Parts per Million

PRODUCT	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard[2]	0.13

1. Values in this table are derived from those specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E1333. For additional information, see California *Code of Regulations*, Title 17, Sections 93120 through 93120.12.
2. Thin medium density fiberboard has a maximum thickness of 5/16 inch (8 mm).

5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:
1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (CA-CHPS) Criteria Interpretation for EQ 7.0 and EQ 7.1 (formerly EQ 2.2) dated July 2012 and listed in the CHPS High Performance Product Database; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 8. MERV 8 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions:
1. An ASHRAE 10-percent to 15-percent efficiency filter shall be permitted for an HVAC unit meeting the 2013 *California Energy Code* having 60,000 Btu/h or less capacity per fan coil, if the energy use of the air delivery system is 0.4 W/cfm or less at design air flow.
2. Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.

5.504.7 Environmental tobacco smoke (ETS) control. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.

SECTION 5.505
INDOOR MOISTURE CONTROL

5.505.1 Indoor moisture control. Buildings shall meet or exceed the provisions of *California Building Code*, CCR, Title 24, Part 2, Sections 1203 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures not applicable to low-rise residential occupancies, see Section 5.407.2 of this code.

SECTION 5.506
INDOOR AIR QUALITY

5.506.1 Outside air delivery. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the 2013 *California Energy Code*, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 Carbon dioxide (CO2) monitoring. For buildings or additions equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the 2013 *California Energy Code*, Section 120(c)(4).

SECTION 5.507
ENVIRONMENTAL COMFORT

5.507.4 Acoustical control. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

   Exceptions:

   1. L_{dn} or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
   2. L_{dn} or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_{eq}-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roofceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (L_{eq}-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floorceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: http://www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf.

SECTION 5.508
OUTDOOR AIR QUALITY

5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO2), and potentially other refrigerants.

5.508.2.1 Refrigerant piping. Piping compliant with the *California Mechanical Code* shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves and fittings shall comply with the *California Mechanical Code* and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device that indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-234

GREEN BUILDING CODE MEASURES

Revisions	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	R&A
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
GB2

GENERAL NOTES

1. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER THESE STANDARD STRUCTURAL NOTES. TYPICAL DETAILS SHALL BE USED WHENEVER APPLICABLE. REFER TO SPECIFICATIONS FOR INFORMATION NOT COVERED BY THESE NOTES OR DRAWINGS. THESE NOTES TAKE PRECEDENCE OVER ANY OTHER BOOK SPECIFICATIONS.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS BEFORE STARTING WORK, AND THE ENGINEER/ ARCHITECT SHALL BE IMMEDIATELY NOTIFIED, IN WRITING, OF ANY DISCREPANCIES. IN NO CASE SHALL DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON THE STRUCTURAL DRAWINGS.
3. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED, TO BRACING AND SHORING FOR LOADS DUE TO HYDROSTATIC, EARTH, WIND OR SEISMIC FORCES, CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
4. ALL OMISSIONS AND CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF, AND RESOLVED WITH, THE ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
5. DETAILS LABELED "TYPICAL" SHALL APPLY TO ALL SITUATIONS THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SEE DETAIL TITLES FOR APPLICABILITY OF A PARTICULAR DETAIL. TYPICAL DETAILS SHALL APPLY WHETHER OR NOT THEY ARE SPECIFICALLY KEYED AT EACH LOCATION. THE ENGINEER SHALL HAVE FINAL AUTHORITY TO DETERMINE APPLICABILITY OF TYPICAL DETAILS.
6. CONTRACTOR SHALL INVESTIGATE THE SITE DURING CLEARING AND EARTH WORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, UTILITIES, ETC. IF ANY SUCH STRUCTURES ARE FOUND, THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
7. NO PIPES, DUCTS, SLEEVES, CHASES, ETC. SHALL BE PLACED IN SLABS, BEAMS, OR WALLS, NOR SHALL ANY STRUCTURAL MEMBER BE CUT FOR PIPES, DUCTS, ETC. THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FOR INSTALLATION OF ANY ADDITIONAL PIPES, DUCTS, ETC.
8. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST IBC EDITION.
9. THE CONTRACTOR 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. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE ENGINEER FREE AND HARMLESS FROM ALL CLAIMS, DEMANDS AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
10. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR, AND HAVE CONTROL OVER, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT, INCLUDING PARTIAL OR FULL DEMOLITION OF THE EXISTING STRUCTURE. ALSO, SITE VISITS DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSIDERED AS SUPERVISION OF CONSTRUCTION.
11. RETAIN A CALIFORNIA REGISTERED CIVIL ENGINEER TO DESIGN ALL TEMPORARY BRACING, SHORING, AND SUPPORT REQUIRED DURING CONSTRUCTION.
12. INCLUDE ENGINEERING FEES, ENGINEERING DESIGN TIME AND BUILDING DEPARTMENT APPROVAL TIME IN THE COST OF PROPOSED MATERIAL ALTERNATES. CONTACT ENGINEER FOR FEE AMOUNT. SUBMIT MATERIAL ALTERNATE FOR REVIEW BEFORE CONSTRUCTION.
13. STRUCTURAL CAD DRAWINGS SHALL NOT BE USED FOR SHOP DRAWINGS UNLESS AN AGREEMENT BETWEEN THE STRUCTURAL ENGINEER AND CONTRACTOR HAS BEEN ESTABLISHED.

DESIGN CRITERIA

GOVERNING CODE ATHORITY: CALIFORNIA BUILDING CODE 2019

1. EARTHQUAKE DESIGN DATA

SEISMIC IMPORTANCE FACTOR, I, AND RISK CATEGORY: ....1.0, II
NOTE: THE FIRE TRUCKS HOUSED IN THIS FACILITY ARE NOT EMERGENCY VEHICLES AND ARE ONLY FOR INSTRUCTIONAL PURPOSES.

MAPPED SPECTRAL RESPONSE ACCELERATIONS, SS AND S1: 1.682, 0.623
DESIGN SPECTRAL RESPONSE COEFFICIENTS, SDS AND SD1: 1.110, 1.615
SITE CLASS: ....E
SEISMIC DESIGN CATEGORY: ....D
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE ANALYSIS
BASIC SEISMIC FORCE RESISTING SYSTEM(S):
LIGHT FRAME (COLD FORMED STEEL) SHEATHED WITH STEEL SHEET FOR SHEAR RESISTENCE
SEISMIC RESPONSE COEFFICIENT(S), Cs: 0.171
RESPONSE MODIFICATION FACTOR(S), R: 6 1/2
REDUNDANCY FACTOR USED: 1.0
DESIGN BASE SHEAR, V:....0.171W = 51 KIPS

BASIC SEISMIC FORCE RESISTING SYSTEM(S): STEEL ORDINARY CONCENTRICAL BRACED FRAME
SEISMIC RESPONSE COEFFICIENT(S), Cs: 0.342
RESPONSE MODIFICATION FACTOR(S), R: 3 1/4
REDUNDANCY FACTOR USED: 1.3
DESIGN BASE SHEAR, V:....0.342W = 102 Kips

2. WIND DESIGN DATA

BASIC DESIGN WIND SPEED: 100mph
RISK CATEGORY: II
WIND EXPOSURE CATEGORY: C
APPLICABLE INTERNAL PRESSURE COEFFICIENT: ....±0.18
VELOCITY WIND PRESSURE, qz: ....20.7 psf

3. GRAVITY DESIGN DATA

ROOF LIVE LOAD: .... 20 PSF
ROOF DEAD LOAD: ....28 PSF

4. WALL DESIGN DATA

EXTERIOR WALLS.......... 15 PSF
NON BEARING PARTITION LOAD - GRAVITY: ....15 PSF
- LATERAL: ....10 PSF

CONTRACTOR RESPONSABILITY

1. EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN THE FOLLOWING:
--- ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENT CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.
--- ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL.
--- PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS.
--- IDENTIFICATION AND QUALIFICATION OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
2. THE ARCHITECTURAL DRAWINGS MAY SHOW VARIOUS PLATES, ANGLES, BEAMS, STUD FRAMING, THAT ARE ARCHITECTURAL IN NATURE. NOT OF ALL THE ARCHITECTURAL ELEMENTS SHOW UP IN THE STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDRESSING SUCH ITEMS THAT ARE NOT SHOWN HEREIN.

CONCRETE FORMWORK

1. ALL FORMWORK SHALL BE DESIGNED, ERECTED, SUPPORTED, BRACED, AND MAINTAINED ACCORDING TO ACI 347, RECOMMENDED STANDARD PRACTICE FOR CONCRETE FORMWORK.
2. RESPONSIBILITY: THE DESIGN, CONSTRUCTION, AND SAFETY OF ALL FORMWORK SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. ALL FORMS, SHORES, BACKSHORES, FALSEWORK, BRACING, AND OTHER TEMPORARY SUPPORTS SHALL BE ENGINEERED TO SUPPORT ALL LOADS IMPOSED INCLUDING THE WET WEIGHT OF CONCRETE, CONSTRUCTION EQUIPMENT, LIVE LOADS, LATERAL LOADS DUE TO WIND AND WET CONCRETE IMBALANCE. SEE SPECIFICATIONS FOR DETAILED REQUIREMENTS.
3. TOLERANCES: UNLESS SPECIFIED OTHERWISE, ALL TOLERANCES FOR CONCRETE FORMWORK SHALL CONFORM TO ACI STANDARD 117, STANDARD TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS. THE CONTRACTOR SHALL ENGAGE A LICENSED SURVEYOR TO VERIFY THAT WORK IS WITHIN SPECIFIED TOLERANCES UNLESS WRITTEN AUTHORIZATION IS OBTAINED FROM THE ARCHITECT TO PROVIDE TOLERANCE CONTROL USING THE CONTRACTOR'S OWN FORCES PRIOR TO BEGINNING WORK.
4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED WHERE SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS.
5. PLUMBING SLEEVE SPACING SHALL BE THE LARGER OF THREE (3) DIAMETERS CENTER TO CENTER OF THE LARGER SLEEVE, OR 6" CLEAR BETWEEN SLEEVES. SUBMIT SLEEVE LOCATIONS AND SIZES TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
6. PENETRATIONS SHALL NOT BE PERMITTED IN ANY STRUCTURAL MEMBERS OTHER THAN THOSE SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS WITHOUT THE WRITTEN REVIEW OF THE STRUCTURAL ENGINEER OF RECORD. THE CONTRACTOR SHALL SUBMIT DRAWINGS TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW INDICATING ANY CONCENTRATION OF PIPES, OPENINGS OR PENETRATIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS PRIOR TO CONCRETE POURS.

DRY PACK / NON-SHRINK GROUT

1. DRYPACK / NON-SHRINK GROUT RECOMMENDED BY MANUFACTURER SHOULD COMPLY WITH ASTM C1107 WITH 28 DAY STRENGTH OF 6000 PSI MINIMUM.
2. USES FOR STRUCTURAL GROUTING AND GENERAL PURPOSE STRUCTURAL GROUTING INCLUDES: FOR USE ABOVE, AT OR BELOW GRADE, COLUMN BASES, ANCHOR BOLTS, EQUIPMENT BASES, TILT-UP PANELS, COMPRESSORS, GENERATORS AND PUMPS, STEEL BEARING PLATES, STRUCTURAL COLUMNS, REBAR ANCHORING, BASE PLATES, CRANE RAILS
3. SURFACES TO RECEIVE THE GROUT MUST BE CLEAN AND FREE OF ANY TYPE OF FOREIGN MATTER, GREASE, PAINT, OIL, DUST OR EFFLORESCENCE. IN SOME CASES IT MAY BE NECESSARY TO ROUGHEN SMOOTH SURFACES OR ETCH OLD ONES WITH ACID. THE AREA SHOULD BE FLUSHED AND SOAKED WITH CLEAN WATER PRIOR TO GROUTING LEAVING NO STANDING WATER.
4. PLACE THE GROUT QUICKLY AND CONTINUOUSLY USING LIGHT RODDING TO ELIMINATE AIR BUBBLES.
5. FOR FORMED GROUTING APPLICATIONS, BUILD WATERTIGHT NON-ABSORBENT FORMS LEAVING SUFFICIENT ROOM TO POUR THE GROUT.

FOUNDATION

1. ATTACH ONE COPY OF SOIL REPORT TO THE APPROVED SET. CONTRACTOR SHALL REVIEW SOIL REPORT AS PART OF BID DOCUMENT AND SHALL VERIFY THAT MINIMUM FOOTING WIDTH, DEPTH AND REINFORCING ARE MAINTAINED.
2. FOUNDATION DESIGN IS BASED ON THE INFORMATION PROVIDED IN THE SOILS REPORT
BY EARTH SYSTEM PACIFIC
1731, WALTER STREET SUITE A
VENTURA, CA 93003
TEL 805-642-6727, www.eartsystems.com
PROJECT NUMBER: 302245-001
APRIL 22, 2020.

ALLOWABLE FOUNDATION BEARING PRESSURE: 2800 psf
PASSIVE LATERAL PRESSURE: 310 psf
COEFFICIENT OF SLIDING FRICTION: 0.53
3. CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW THE GEOTECHNICAL REPORT AND SHALL FOLLOW THE RECOMMENDATIONS SPECIFIED THEREIN INCLUDING, BUT NOT LIMITED TO, SUB-GRADE PREPARATIONS, PILE INSTALLATION PROCEDURES, GROUND WATER MANAGEMENT AND STEEP SLOPE BEST MANAGEMENT PRACTICES.
4. THE GEOTECHNICAL ENGINEER SHALL INSPECT ALL SUB-GRADES AND PREPARED SOIL BEARING SURFACES, PRIOR TO PLACEMENT OF FOUNDATION REINFORCING STEEL AND CONCRETE. GEOTECHNICAL ENGINEER SHALL PROVIDE A LETTER TO THE OWNER STATING THAT SOILS ARE ADEQUATE TO SUPPORT THE "ALLOWABLE BEARING PRESSURES (S)" SHOWN IN THE GEOTECHNICAL REPORT.
5. FOUNDATION EXCAVATIONS SHALL BE KEPT FREE OF LOOSE MATERIAL AND STANDING WATER AND SHALL BE CHECKED AND APPROVED BY THE SOILS ENGINEER BEFORE THE PLACEMENT OF ANY CONCRETE.
6. THE TESTING LAB SHALL SUBMIT COMPACTION REPORTS FOR ALL FILL TO THE ENGINEER BEFORE REQUESTING FOUNDATION INSPECTION. ALL LOOSE SOIL AND FILL DIRT, INCLUDING BACKFILL BEHIND RETAINING WALLS, SHALL BE COMPACTED TO AT LEAST 90 PERCENT OF MAXIMUM DENSITY, OR GREATER AS REQUIRED BY THE SOILS REPORT.
7. BACKFILL FOR ALL RETAINING WALLS SHALL BE NON-EXPANSIVE PERVIOUS MATERIAL APPROVED BY THE SOILS ENGINEER AND SHALL NOT BE PLACED UNTIL MASONRY OR CONCRETE RETAINING MEMBERS HAVE BEEN IN PLACE A MINIMUM OF 14 DAYS AND HAVE OBTAINED 75 PERCENT OF THE DESIGN STRENGTH.
8. BACKFILL SHALL NOT BE PLACED AGAINST THE FOUNDATION WALL UNTIL THE WALL HAS SUFFICIENT STRENGTH AND HAS BEEN ANCHORED TO THE FLOOR ABOVE, OR HAS BEEN SUFFICIENTLY BRACED TO PREVENT DAMAGE BY THE BACKFILL. EXCEPTION: BRACING IS NOT REQUIRED FOR WALLS SUPPORTING LESS THAN 4 FEET OF UNBALANCED BACKFILL.
9. ALL VEGETATION, TOP SOILS, ROOTS AND ORGANIC ZONES SHALL BE STRIPPED AND REMOVED FROM THE CONSTRUCTION AREA FOR A DISTANCE OF AT LEAST 5 FEET BEYOND THE EXTERIOR OF BUILDING FOUNDATION LIMITS. THE DEPTH OF STRIPPING SHALL BE THAT REQUIRED TO REMOVE SIGNIFICANT ROOT ZONES, SMALL TREE STUMPS AND OTHER UNACCEPTABLE MATERIALS, BUT IN NO CASE LESS THAN 6 INCHES.
10. BOTTOM OF EXTERIOR FOOTINGS SHALL BE AT LEAST 24 INCHES BELOW LOWEST ADJACENT GRADE.
11. UNLESS NOTED, ALL FOOTINGS SHALL BE CENTERED UNDER COLUMNS, PIERS AND WALLS.
12. SLAB-ON-GRADE CONSTRUCTION SHALL BE SUPPORTED ON SUBGRADE COMPACTED TO A DENSITY OF NO LESS THAN 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557) TO A DEPTH OF AT LEAST 12 INCHES. INTERIOR SLABS-ON-GRADE SHALL BE CAST OVER A VAPOR RETARDER. SEE SPECIFICATIONS.
13. FOR ALL DIMENSIONS, CURBS, SLAB DEPRESSIONS, STOOP, FLOOR DRAINS, SINKS, TRENCHES UNDER FLOOR DUCTS AND CONDUITS, SEE ARCHITECTURAL, MECHANICAL, REFRIGERATION, AIR CONDITIONING, PLUMBING AND ELECTRICAL DRAWINGS. TRENCH BACKFILL PER SOILS REPORT REQUIREMENTS.
14. ALL PLANTERS IN CLOSE PROXIMITY TO THE STRUCTURE SHALL HAVE ADEQUATE DRAINAGE OF SURFACE WATER TO PREVENT SATURATION OF SOIL UNDER FOUNDATION.

REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DETAILED AND PLACED IN CONFORMANCE WITH THE `BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE' (ACI 318) AND THE `MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION' BY CRSI AND WCRSI (LATEST EDITION), AS MODIFIED BY THE PROJECT DRAWINGS AND SPECIFICATIONS.
2. DEFORMED REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60, U.N.O. USE A706 WHERE WELDED, AND IN GRADE BEAMS. WIRE MESH REINFORCING SHALL BE 6X6 - W4 X W4 U.N.O. CONFORMING TO ASTM SPECIFICATION A185. MINIMUM LAP SHALL BE 9 INCHES.
3. WELDING OF REINFORCING SHALL BE WITH E70XX LOW HYDROGEN ELECTRODES IN CONFORMANCE WITH 'RECOMMENDED PRACTICES FOR WELDING REINFORCING STEEL, ETC.', AMERICAN WELDING SOCIETY, AWS D1.4.
4. ALL REINFORCING BAR BENDS SHALL BE MADE COLD. FIELD BENDING SHOULD NOT BE DONE WITHOUT AUTHORIZATION OF THE LICENSED DESIGN PROFESSIONAL.
5. ALL BARS ARE CONTINUOUS AND TERMINATED WITH A STANDARD HOOK UNLESS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS.
6. DOWELS BETWEEN FOOTINGS AND WALLS OR COLUMNS SHALL BE THE SAME GRADE, SIZE, SPACING AND NUMBER AS THE SPECIFIED VERTICAL REINFORCING, U.N.O.
7. ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION OCCURS.
8. PROVIDE SPACER BARS, SPREADERS, CHAIRS, BLOCKS, ETC, AS REQUIRED TO SECURELY HOLD STEEL IN PLACE PRIOR TO POURING CONCRETE OR PLACING MASONRY.
9. REINFORCING STEEL SHOP DRAWINGS FOR STRU CTURAL CONCRETE SUCH AS SLAB, BEAMS, COLUMNS, FOOTINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER THROUGH ARCHITECT FOR REVIEW PRIOR TO FABRICATION.
10. DETAILS OF REINFORCEMENT SHALL BE IN ACCORDANCE WITH CHAPTER 7 OF AMERICAN CONCRETE INSTITUTE 318 U.N.O.
11. PROVIDE CLEAR COVER PROTECTION FOR REINFORCEMENT IN CONCRETE AS FOLLOWS:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH .... 3 INCH
CONCRETE EXPOSED TO EARTH OR WEATHER
(#6 AND LARGER) .... 2 INCH
(#5 AND SMALLER) .... 1 ½ INCH
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND
SLAB, WALLS, JOISTS (#11 AND SMALLER) .... ¾ INCH
BEAMS, COLUMNS .... 1 ½ INCH
12. PROVIDE CLEAR COVER PROTECTION FOR REINFORCEMENT IN MASONRY AS FOLLOWS:
MASONRY BELOW GRADE .... 2 INCH
MASONRY ABOVE GRADE .... 1 ½" INCH
13. THE MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS IN ONE OR MULTIPLE LAYERS SHALL BE EQUAL TO ONE BAR DIAMETER, BUT NOT LESS THAN 1 INCH.
14. WHERE SPLICE LENGTHS ARE NOT SPECIFIED, USE 50 BAR DIAMETER IN MASONRY AND CAST CONCRETE WITH A MINIMUM OF 24 INCHES SPLICE. WHERE CLEAR DISTANCE BETWEEN BARS AT ADJACENT SPLICES IS 3 INCHES OR LESS, INCREASE LAP LENGTH 30 PERCENT UNLESS SPLICES ARE STAGGERED AT LEAST 24 BAR DIAMETER. LAP ALL HORIZONTAL BARS AT CORNERS AND INTERSECTIONS.
15. REINFORCING RESISTING EARTHQUAKE-INDUCED FLEXURAL AND AXIAL FORCES SHALL COMPLY WITH DEFORMED REBAR PER ASTM A706 GRADE 60.
16. SUBMIT REINFORCING SHOP DRAWINGS INDICATING REINFORCING PLACEMENT, INCLUDING SPLICE LOCATIONS AND LENGTHS, TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND ACCEPTANCE. PROMPTLY NOTIFY ARCHITECT (STRUCTURAL ENGINEER) PRIOR TO DEVELOPING REINFORCING STEEL SHOP DRAWINGS IF INSUFFICIENT CLEAR DISTANCE BETWEEN REINFORCING STEEL OR OTHER CONGESTION IS ENCOUNTERED. PREPARE SHOP DRAWINGS IN COMPLIANCE WITH ACI, PART B.

COLD FORMED STEEL FRAMING

1. ALL COLD FORMED METAL FRAMING CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS AND PUBLICATIONS:
STEEL STUD MANUFACTURERS ASSOCIATION (SSMA), ICC-ESR 4943P
LATEST EDITION OF CALIFORNIA BUILDING CODE CHAPTER 22.
LATEST EDITION OF NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS.
2. ALL COLD FORMED STEEL FRAMING SHALL CONFORM TO THE FOLLOWING:
43 MIL (18 GAGE) AND LIGHTER - 33KSI MINIMUM YIELD, ASTM A653
54 MIL (16 GAGE) AND HEAVIER - 50KSI MINIMUM YIELD, ASTM A653
3. ALL WELDING SHALL BE IN CONFORMANCE WITH AWS D1.3 AND SHALL BE PERFORMED BY CERTIFIED WELDERS AS REQUIRED BY GOVERNING CODE AUTHORITY. WELDING RODS SHALL CONFORM TO THE FOLLOWING:
E60XX FOR 43 MIL AND LIGHTER
E70XX OR E6013 FOR 54 MIL AND HEAVIER
E70XX LOW HYDROGEN FOR COLD FORMED FRAMING TO STRUCTURAL STEEL
4. SCREWS SHALL BE #10 MINIMUM, SELF-DRILLING, SELF-TAPPING, UNO
5. MINIMUM REQUIRED SCREW LENGTH SHALL BE THE GREATER OF ¾ INCH AND THE MINIMUM LENGTH REQUIRED FOR THE SCREW TO EXTEND THROUGH THE LAST MATERIAL JOINED OF A MINIMUM OF 3 EXPOSED THREADS. THERE SHALL BE NO SPACE BETWEEN JOINING MEMBERS AT THE SCREW LOCATION.
6. STEEL TRACK SHALL BE OF THE SAME GAGE AT THE TOP AND BOTTOM OF ALL STUDS, UNO AND TO ENSURE PROPER FIT OF STUDS.
7. TOP AND BOTTOM TRACK SHALL BE MADE CONTINUOUS BY MEANS OF SPLICING THE TRACK.
8. SPLICING OF STUDS, JOISTS OR OTHER LOAD CARRYING MEMBERS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD.
9. STUDS SHALL BE SPACED AT 16 INCHES OC, PLACED DIRECTLY UNDER THE JOISTS, UNO.
10. ATTACH STUDS USING PLUG, BUTT OR SEAM WELDS, UNO. WHERE STUDS ARE BURNED THROUGH BY WELDING, PROVIDE SUITABLE STITCH PLATE OF THE SAME GAGE. WIRE TYING OF FRAMING COMPONENTS IS NOT PERMITTED.
11. LATERAL BRIDGING FOR STEEL STUDS IS REQUIRED AND INSTALLED PER MANUFACTURER SPECIFICATION WHEN WALL BOARD DOES NOT CONTINUE FULL HEIGHT ON BOTH SIDES.
12. JOISTS WITH SPANS GREATER THAN 8 FEET SHALL HAVE THE BOTTOM FLANGES LATERALLY BRACED BY CONTINUOUS STEEL STRAPPING AND BLOCKING.
13. FASTEN SHEATHING TO DRAG MEMBERS AND RIM TRACKS WITH FASTENERS AT 3" OC, UNO.
14. PUNCHOUTS AND PENETRATIONS IN WALL STUDS SHALL NOT BE CLOSER THAN 24 INCHES OC NOR LOCATED CLOSER THAN 10 INCHES FROM THE END. THE SIZE OF PUNCHOUTS SHALL NOT BE LARGER THAN ½ OF THE WEB DEPTH OR 2½ INCHES MAXIMUM IN THE WEB DIRECTION AND NOT MORE THAN 4½ INCHES LONG IN THE MEMBER DIRECTION.
15. FIELD CUTS THROUGH FLANGES OF LOAD CARRYING MEMBERS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD.
16. MEMBERS OF BUILT-UP BEAMS OR COLUMNS SHALL BE BACK TO BACK, UNO AND ATTACHED TO EACH OTHER WITH A MINIMUM OF 2 #10 SCREWS AT 16 INCHES OC AND 8 INCHES MAXIMUM FROM EACH END. THE SCREWS MUST BE WITHIN 1 INCH OF EACH FLANGE.
17. WHERE DOUBLE OR TRIPLE STUD ARE REQUIRED AT ANY FLOOR ABOVE TO SUPPORT JOIST, BEAM, HEADER OR GIRDER,LIKE STUDS SHALL BE PROVIDED IN THE WALL BELOW FOR CONTINUOUS SUPPORT TO FOUNDATION, UNO.
18. TEMPORARY BRACING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
19. SUBMIT SHOP DRAWINGS TO ARCHITECT / ENGINEER OF RECORD FOR REVIEW.

DEFERRED ITEMS

1. CONTRACTOR SHALL SUBMIT ALL ITEMS LISTED BELOW TO THE ARCHITECT OR ENGINEER OF RECORD FOR REVIEW AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING.
2. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.
3. THE DEFERRED SUBMITTAL ITEMS SHALL INCLUDE DRAWINGS AND CALCULATIONS STAMPED AND SIGNED BY AN REGISTERED ENGINEER.
4. NON-STRUCTURAL DEFERRED SUBMITTALS SUCH AS ARCHITECTURAL, MECHANICAL, SPRINKLER AND FIRE ALARM SHALL BE PER PROGRAM SHOWN ON ARCHITECTURAL DRAWINGS.
5. ITEMS TO BE DEFERRED: GROUND IMPROVEMENT SYSTEM (RIGID INCLUSIONS)
SEE SHEETS GI-1 TO GI-3

SHOP DRAWINGS

1. ALL SHOP DRAWINGS MUST BE REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL. SUBMITTAL WITHOUT CONTRACTOR REVIEW WILL RESULT IN DELAYS. THE CONTRACTOR SHALL CONFIRM THAT SHOP DRAWINGS HAVE BEEN COMPLETED AND CHECKED BY THE SUPPLIER PRIOR TO SUBMISSION.
2. SHOP DRAWING SUBMITTAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL SPECIFICATIONS. CHANGES OR ADDITIONS MADE ON RESUBMITTED SHOP DRAWINGS SHALL BE CLEARLY INDICATED AND THE PURPOSE OF THE RE-SUBMITTAL SHALL BE NOTED ON THE TRANSMITTAL. REVIEW OF RESUBMITTED SHOP DRAWINGS SHALL BE LIMITED SPECIFICALLY TO THE ITEMS NOTED FOR CORRECTION ON THE PREVIOUS SUBMITTAL. IF ANY DEVIATIONS, DISCREPANCIES OR CONFLICTS BETWEEN SHOP DRAWINGS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWINGS SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.
3. THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS FOR GENERAL CONFORMANCE OF THE DESIGN CONCEPT ONLY. REVIEW OF SUCH SUBMITTALS IS NOT CONDUCTED FOR THE PURPOSE OF DETERMINING THE ACCURACY AND COMPLETENESS OF OTHER DETAILS SUCH AS DIMENSIONS AND QUANTITIES, OR FOR SUBSTANTIATING INSTRUCTIONS FOR INSTALLATION. CONTRACTOR SHALL SUBMIT A SCHEDULE OF SHOP DRAWINGS SUBMITTALS THAT IS ACCEPTABLE TO BOTH CONTRACTOR AND ENGINEER.
4. MANUFACTURER'S LITERATURE: SUBMIT TWO COPIES OF MANUFACTURER'S LITERATURE FOR ALL MATERIALS AND PRODUCTS USED IN CONSTRUCTION ON THE PROJECT.

CONCRETE

1. ALL PHASES OF WORK PERTAINING TO THE CONCRETE CONSTRUCTION SHALL CONFORM TO THE 'BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE', ACI 318, AND THE 'SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS', ACI 301, LATEST EDITIONS, WITH MODIFICATIONS AS NOTED ON THE DESIGN DRAWINGS OR SPECIFICATIONS.
2. CONTRACTOR SHALL SUBMIT MIX DESIGNS FOR EACH TYPE AND COMPRESSIVE STRENGTH OF CONCRETE. CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND SHALL BEAR THE WET SEAL OF A CIVIL ENGINEER LICENSED IN THE STATE OF CALIFORNIA FOR REVIEW BY THE STRUCTURAL ENGINEER. THE MIX DESIGNS SHALL STATE THE PROJECT NAME AND THE INTENDED USAGE OF THE CONCRETE.
3. PORTLAND CEMENT SHALL BE TYPE II/V CONFORMING TO ASTM SPECIFICATION C 150, UNLESS NOTED OTHERWISE. AGGREGATES SHALL BE NORMAL WEIGHT CONFORMING TO ASTM SPECIFICATION C 33 WITH PROVEN SHRINKAGE CHARACTERISTICS OF LESS THAN 0.04 PERCENT.
4. SLUMP NOT TO EXCEED 4 ± 1/2 INCH.
5. THE MAXIMUM WATER-CEMENT RATIO SHALL NOT EXCEED **0.45**, UNO.
6. CONCRETE SHALL BE STANDARD WEIGHT CONCRETE (145 POUNDS PER CUBIC FOOT) AND HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS:
FOOTINGS, RETAINING WALLS, SLABS ON GRADE, GRADE BEAMS .... **4500 PSI**
7. CONTINUOUS SPECIAL INSPECTION IS REQUIRED FOR CONCRETE DESIGN STRENGTHS 3000 PSI OR ABOVE.
8. CONCRETE SHALL BE PROPORTIONED SUCH THAT THE 7 DAY STRENGTHS ARE A MINIMUM OF SEVENTY PERCENT OF THE SPECIFIED 28 DAY STRENGTH FOR ANY CONCRETE CONSTRUCTION REQUIRING SHORING, BRACING OR TO RECEIVE CONSTRUCTION LOADS. ALSO, SLABS ON GRADE SHALL HAVE A COMPRESSION STRENGTH OF 1800 PSI MINIMUM AT 3 DAYS IF SUBJECT TO CONSTRUCTION TRAFFIC.
9. ADMIXTURES MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER. ADMIXTURES SHALL COMPLY WITH ASTM C494 & C1017 AND BE OF A TYPE THAT INCREASES THE WORKABILITY OF THE CONCRETE, BUT SHALL NOT BE CONSIDERED TO REDUCE THE SPECIFIED MINIMUM CEMENT CONTENT (CALCIUM CHLORIDE SHALL NOT BE USED).
10. ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS, HOLD-DOWN ANCHORS AND INSERTS SHALL BE WELL SECURED IN POSITION WITH WIRE POSITIONERS PRIOR TO FOUNDATION INSPECTION AND BEFORE PLACING CONCRETE.
11. CONCRETE CURING: SEE SPECIFICATIONS.
12. NO CONDUIT PLACED IN A CONCRETE SLAB SHALL HAVE AN OUTSIDE DIAMETER GREATER THAN 1/3 THE THICKNESS OF THE SLAB. NO CONDUIT SHALL BE EMBEDDED IN A SLAB THAT IS LESS THAN 3 1/2 INCHES THICK. EXCEPT FOR LOCAL OFFSETS, MINIMUM CLEAR DISTANCE BETWEEN CONDUITS SHALL BE THREE DIAMETERS ON CENTER.
13. NO CONDUIT SHALL BE PLACED IN THE CONCRETE TOPPING OVER THE STEEL DECKING.
14. OPENINGS IN CONCRETE IS NOT PERMITTED. NOTIFY THE STRUCTURAL ENGINEER IN ADVANCE OF CONDITIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
15. PROJECTING CORNERS OF SLABS, BEAMS, WALLS, COLUMNS, ETC., SHALL BE FORMED WITH A 3/4 INCH CHAMFER.
16. REFER TO DRAWINGS OF OTHER DISCIPLINES FOR MOLDS, GROOVES, CLIPS, ORNAMENTS, OR GROUNDS REQUIRED TO BE CAST INTO CONCRETE.
17. CONSTRUCTION JOINTS IN ALL FOUNDATIONS, WALLS, SUPPORTED SLABS AND CONCRETE FRAMING BEAMS SHALL NOT BE SPACED FURTHER APART THAN 60 FEET IN LENGTH.
18. LOCATION OF ALL CONSTRUCTION, CONTROL AND WEAKENED PLANE JOINTS NOT SPECIFICALLY INDICATED ON THE DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO REINFORCEMENT PLACEMENT. CONTACT ENGINEER OF RECORD IF THEY ARE NOT SHOWN IN THE CONSTRUCTION DOCUMENTS.
19. ALL CONSTRUCTION JOINTS IN WALLS OR OTHER ELEMENTS NOT HAVING PREFORMED KEYS, SHALL BE WIRE BRUSHED, AND ROUGHENED TO A MINIMUM AMPLITUDE OF 1/4 INCH, CLEANED AND MOISTENED IMMEDIATELY PRIOR TO PLACEMENT OF NEW CONCRETE.
20. FOUNDATIONS TO RECEIVE CONCRETE OR MASONRY WALLS: ROUGHEN TOPS OF FOOTINGS TO A MINIMUM AMPLITUDE OF 1/4 INCH AND ABRASIVELY CLEAN.
21. PROVIDE CLEAR COVER PROTECTION FOR REINFORCEMENT IN CONCRETE AS SPECIFIED IN REINFORCING STEEL NOTES.

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Sheet No.
S0.1

GENERAL NOTES

STRUCTURAL STEEL AND MISCELLANEOUS IRON

1. STRUCTURAL STEEL SHALL BE DESIGNED, DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC 'SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS' , AISC 341 (LATEST EDITION), CBC CHAPTER 22 AND 'CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES' (LATEST EDITION AND SUPPLEMENTS),
2. ALL STRUCTURAL STEEL SHALL BE FABRICATED IN THE SHOP OF A LICENSED FABRICATOR AND SHOP DRAWINGS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER THROUGH THE ARCHITECT FOR APPROVAL PRIOR TO FABRICATION.
3. STRUCTURAL STEEL SHALL CONFORM TO THE ASTM DESIGNATION:

W-SHAPES & WT-SHAPES	ASTM A992	Fy = 50KSI
S-SHAPES & M-SHAPES	ASTM A36	Fy = 36KSI
C-SHAPES & MC-SHAPES	ASTM A36	Fy = 36KSI
ANGLES, BARS & PLATES	ASTM A36	Fy = 36KSI
HSS SHAPES	ASTM A1085,	Fy = 50KSI
STEEL PIPE	ASTM A53, GRADE B	Fy = 36KSI
HIGH STRENGTH BOLTS	ASTM A325 / ASTM A490	
MACHINE BOLTS	ASTM A307	
NUTS	ASTM A563	
WASHERS	ASTM F436	
ANCHOR BOLTS	ASTM ASTM F1554	Fy = 36KSI
THREADED RODS	ASTM A36	Fy = 36KSI
DEFORMED BAR ANCHORS	ASTM A496	
WELDED HEADED STUDS	ASTM A108	Fu = 65KSI
WELDING ELECTRODES	AWS D1.1, E70XX LOW HYDROGEN U.N.O.	

4. ALL STEEL EXPOSED TO ATMOSPHERIC CONDITIONS SHALL BE GALVANIZED PER ASTM A123 OR PER SPECIFICATIONS AND ARCHITECTURAL DRAWINGS.
5. APPLY SPRAYED FIREPROOFING OVER STRUCTURAL STEEL WITH MONOKOTE MK-6. HOURLY FIRE RESISTIVE REQUIREMENTS SHALL BE DETERMINED USING CBC AND BUILDING TYPES OF CONSTRUCTION AS INDICATED ON ARCHITECTURAL DRAWINGS.
6. ALL STRUCTURAL STEEL SURFACES THAT ARE ENCASED IN CONCRETE OR MASONRY, SPRAY ON FIREPROOFING, OR ARE ENCASED BY BUILDING FINISH SHALL BE LEFT UNPAINTED.
7. MEMBERS NOTED AS "CONTINUOUS" SHALL BE FULLY WELDED AT ALL BUTT SPLICES OR CONNECTIONS SHALL BE DETAILED TO PROVIDE CONTINUITY.
8. BOLT HOLES IN STEEL SHALL BE 1/16 INCH LARGER THAN NOMINAL SIZE OF BOLT USED, ANCHOR BOLT HOLES SHALL BE 3/16 INCH LARGER THAN NOMINAL SIZE OF BOLT USED.
9. ALL BOLT SPACING IN STRUCTURAL STEEL CONNECTIONS TO BE 3 INCHES MINIMUM BETWEEN BOLTS AND $1\frac{1}{2}$ INCH MINIMUM EDGE DISTANCE, U.N.O.
10. ALL NUTS FOR STRUCTURAL STEEL CONNECTIONS SHALL BE HEAVY HEXAGONAL NUTS.
11. NON-SHRINK GROUT SHALL BE INSTALLED IMMEDIATELY AFTER COLUMN IS PLUMBED. CONTRACTOR SHALL NOT LOAD COLUMN ANCHOR BOLTS BEFORE PLACEMENT OF NON-SHRINK GROUT WITHOUT TAKING MEASURES TO PREVENT BUCKLING OF ANCHORS BOLTS UNDER CONSTRUCTION LOADS.

HIGH STRENGTH BOLTS
12. PROVIDE HIGH STRENGTH BOLTS, NUTS AND WASHERS COMPLYING WITH ASTM A325-N (THREADS INCLUDED IN SHEAR PLAN), UNO.
13. ASSEMBLE HIGH STRENGTH BOLTS IN COMPLIANCE WITH SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS.
14. ALL BRACED FRAME, MOMENT FRAME, CHORDS AND DRAG LINE CONNECTIONS SHALL BE 'SLIP CRITICAL' WITH SPECIAL INSPECTION.

WELDING
15. WELDING SHALL CONFORM TO THE LATEST EDITION OF AWSD1.1 AND AWS D1.4 AND SHALL BE PERFORMED BY CERTIFIED WELDERS CERTIFIED AS REQUIRED BY GOVERNING CODE AUTHORITY.
16. ALL WELDS SHALL BE UNIFORM IN SIZE AND APPEARANCE, AND FREE OF PINHOLES, POROSITY,UNDERCUTTING OR OTHER DEFECTS. ALL BUTT WELDS SHALL BE FULL PENETRATION.
17. WELD LENGTHS CALLED FOR ON PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE WELD LENGTH IS NOT SHOWN, IT SHALL BE THE FULL LENGTH OF THE JOINT.
18. WELD SIZE SHALL BE AISC MINIMUM UNLESS A LARGER SIZE IS NOTED.
19. ALL FIELD AND SHOP WELDING SHALL BE PERFORMED BY AN AISC QUALITY CERTIFIED FABRICATOR AND CONTINUOUSLY INSPECTED BY APPROVED SPECIAL INSPECTOR, ALSO SHALL COMPLY WITH LATEST EDITION OF CBC, CHAPTER 17.
20. ALL FULL PENETRATION WELDS IN FIELD & SHOP SHALL BE ULTRASONICALLY TESTED AND APPROVED.
21. ALL WELDS USED IN MEMBERS AND CONNECTIONS, INCLUDING WELDS DESIGNATED AS DEMAND CRITICAL IN THE SFRS SHALL BE MADE WITH FILLER METALS MEETING THE REQUIREMENTS SPECIFIED IN THE STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT (AWS D1.8/D1.8M).
22. AWS D1.8/D1.8M REQUIRES THAT ALL SEISMIC FORCE RESISTING SYSTEM WELDS ARE TO BE MADE USING FILLER METALS CLASSIFIED USING AWS A5 STANDARDS FOR CVN TOUGHNESS, PROVIDE A MINIMUM 20 FT-LB AT 0°F, AND 40 FT-LB AT 70°F FOR DEMAND CRITICAL WELDS.

METAL DECKING

1. METAL DECKING SHALL BE OF THE TYPES AND GAUGES INDICATED ON THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE CLOSURE ANGLES AT OPENINGS FOR MECHANICAL EQUIPMENT, DUCTS, PIPING, VENTS, CONDUITS, ETC., INCLUDING THOSE NOT SHOWN ON STRUCTURAL DRAWINGS. CLOSURE ANGLES SHALL BE 18 GAUGE AND BE WELDED TO DECKING, UNLESS DETAILED OTHERWISE.
3. BEAR DECKING AT LEAST 2 INCHES AT SUPPORTS. LAP DECKING AT ENDS AT LEAST 2 INCHES AND CENTER LAPS OVER SUPPORTS.
4. WELD METAL DECKING IN COMPLIANCE WITH ANS/AWS D1.3 AND CBC CHAPTER22, DIVISION VI USING A MINIMUM OF E60XX ELECTRODES. WELDERS SHALL E CERTIFIED AS REQUIRED BY THE GOVERNING CODE AUTHORITY. SPECIAL INSPECTION IS REQUIRED FOR ALL WELDING OF METAL DECK.
5. SCREED CONCRETE PARALLEL TO METAL DECKING TO THICKNESS INDICATED ON DRAWINGS.
6. SUBMIT COMPLETE METAL DECKING SHOP DRAWINGS TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW.
7. DECKING SHALL BE CONTINUOUS OVER TWO (2) SPANS MINIMUM AND THREE (3) OR MORE SPANS WHEREVER POSSIBLE.

11. ROOF DECKING:
A. PROVIDE METAL ROOF DECKING AND CLOSURE ANGLES COMPLYING WITH ASTM 653 SS GRADE 33, WITH A MINIMUM YIELD OF 38,000 psi AND GALVANIZED WITH G60 COMMERCIAL COATING COMPLYING WITH ASTM A525.
B. PROVIDE PERFORATIONS OR SLOTS IN ROOF DECKING, 1.5 PERCENT MAXIMUM OPEN AREA, FOR VENTILATION OF INSULATION OR STRUCTURAL CONCRETE.
C. ROOF DECKING IS DEIGNED FOR UNSHORED CONSTRUCTION.
D. DO NOT SUSPEND PIPING, DUCTS, WORK UTILITIES OR OTHER LOADS WITH EXCEPTION OF SUSPENDED ACOUSTICAL CEILINGS WITH INTEGRALLY SUPPORTED LIGHT FIXTURES FROM ROOF FRAMING FOR LOADS OTHER THAN ACOUSTICAL CEILINGS TO ARCHITECT (STRUCTURAL ENGINEER)

SPECIAL INSPECTION

1. REFERENCE DSA FORM 103 FOR REQUIRED TEST AND INSPECTIONS.
2. ALL FIELD AND SHOP WELDING OF REINFORCING SNA STRUCTURAL STEEL SHALL BE CONTINUOUSLY INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR.
3. THE GEOTECHNICAL ENGINEER SHALL INSPECT THE PLACING AND PREPARING OF ALL FILL BELOW BUILDING AND PAVING.
4. AN INSPECTOR EMPLOYED BY THE OWNER, IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE OF CALIFORNIA CODE OF REGILATIONS TITLE 24 PART 1 WILL BE ASSIGNED TO THE WORK. HIS DUTIES ARE SPECIFICALLY DEFINED BY THE CALIFORNIA ADMINISTRATIVE CODE, SECTION 4-333 (c) AND THE 2019 CALIFORNIA BUILDING CODE SECTION 17A.
5. ALL TENANT IMPROVEMENT (T.I.) SHALL COMPLY WITH DSA FORM 103 AND THE MORE STRINGENT REQUIREMENTS SHALL APPLY WHEN THERE IS A DISCREPANCY WITH THE DRAWINGS.

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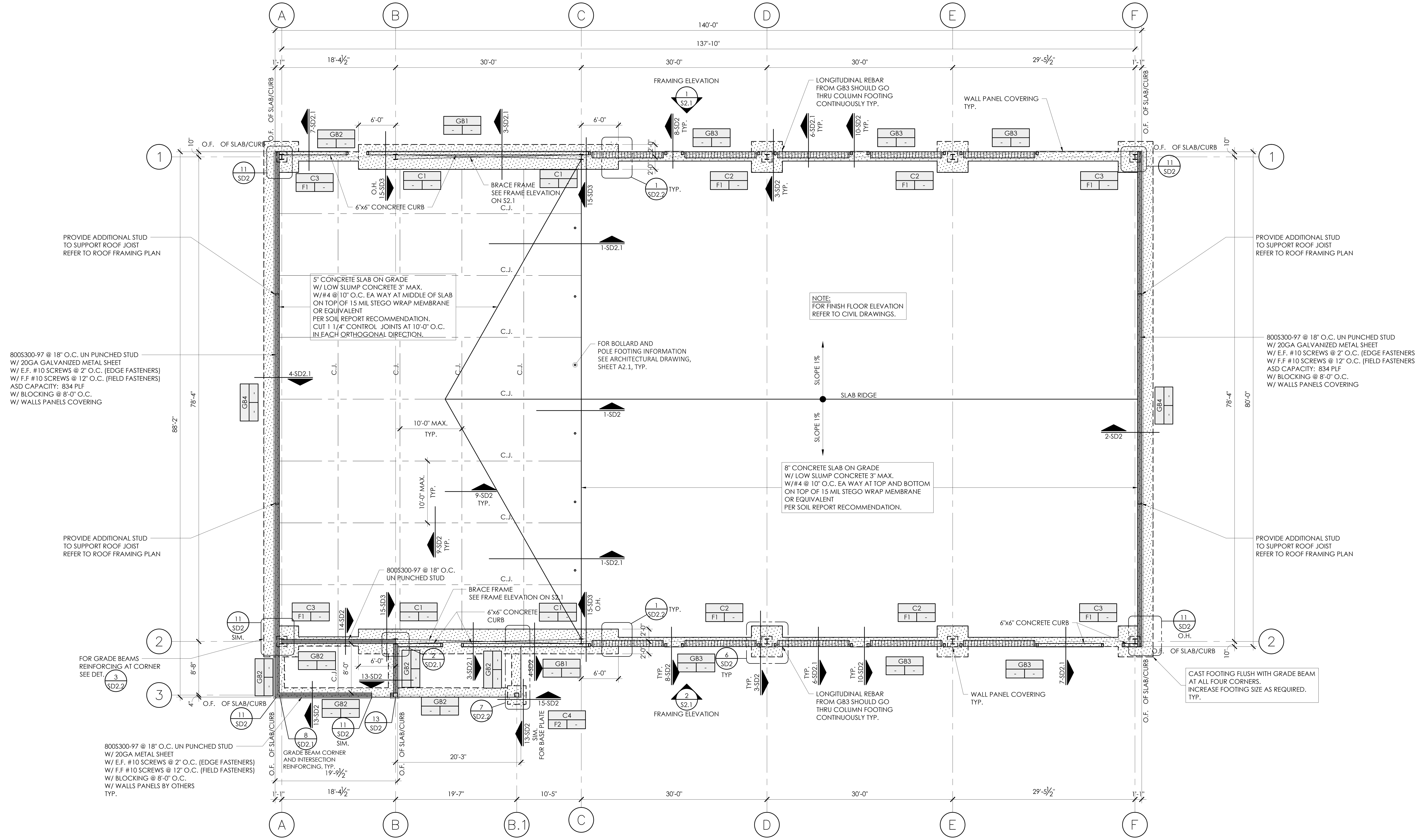
GENERAL NOTES

FILE PATH & NAME: U:\19-168 KNIGHT OXNARD COLLEGE - NEW PREFAB STEEL BUILDING\1. STRUCTURAL DRAWINGS\24X36 TB-CD-LS.DWG PLOTTED: 1:10 PM THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.



FOUNDATION PLAN

SCALE 1/8"=1'-0"

COLUMN SCHEDULE				
MARK	COLUMN SIZE	BASE PLATE SIZE	ANCHOR BOLTSxEMBED	CONCRETE PEDESTAL
C1	W10x45	1 5/8"x20"x28"	9-1"Ø HEAVY HEX HEAD ANCHOR BOLTS ASTM F1554 GRADE 55 x 18" EMBED.	NONE
C2	W10x45	7/8"x16"x16"	4-7/8"Ø HEAVY HEX HEAD ANCHOR BOLTS ASTM F1554 GRADE 36 x 12" EMBED. INTO FOOTING	20" SQ. x 8" (H) SEE DETAIL 3-SD2
C3	W10x45	7/8"x16"x16"	4-7/8"Ø HEAVY HEX HEAD ANCHOR BOLTS ASTM F1554 GRADE 36 x 12" EMBED.	20" SQ. x 4" (H) SEE DETAIL 3-SD2
C4	HSS8x8x1/4	SEE DETAIL 15-SD2	SEE DETAIL 15-SD2	

FOOTING SCHEDULE			
MARK	SIZE	REINFORCING	DETAIL
F1	5'-0" SQ. x 2'-6"	6-#7 EA WAY AT TOP HOOKED 6-#7 EA WAY AT BOTTOM	3-SD2
F2	3'-0" SQ. x 2'-6"	4-#7 EA WAY AT TOP AND BOTTOM	
GB1	4'-0" (W) x 2'-6" (H)	6-#8 AT TOP AND BOTTOM W/ #4 @ 6" O.C. CLOSED HOOPS AND CROSS TIES AT EACH END OF GRADE BEAM W/ #4 @ 12" O.C. CLOSED HOOPS AND CROSS TIES AT MIDDLE OF GRADE BEAM	4-SD2 12-SD2
GB2	1'-6" (W) x 3'-6" (H)	3-#4 AT TOP AND 3-#7 AT BOTTOM W/ #4 @ 9" O.C. TIES	8-SD2
GB3	1'-6" (W) x 3'-2" (H)	3-#4 AT TOP AND 3-#6 AT BOTTOM W/ #4 @ 9" O.C. TIES	8-SD2
GB4	2'-6" (W) x 2'-6" (H)	3-#4 AT TOP AND 3-#7 AT BOTTOM W/ #4 @ 9" O.C. TIES	2-SD2

LEGEND:

4 / ST1 — DETAIL NO. / SHEET NO. } DETAIL SYMBOL

........INDICATES (N) FOOTING

C1 / F1 -1'-0" ....INDICATES STEEL COLUMN, FOOTING PER SCHEDULE T.O.F. ELEVATION FROM FINISH FLOOR, SEE PLAN

........INDICATES SHEAR WALL WITH LIGHT GAGE SHEATHING

........INDICATES STEEL ORDINARY CONCENTRIC BRACED FRAME

0 5 10 20

N

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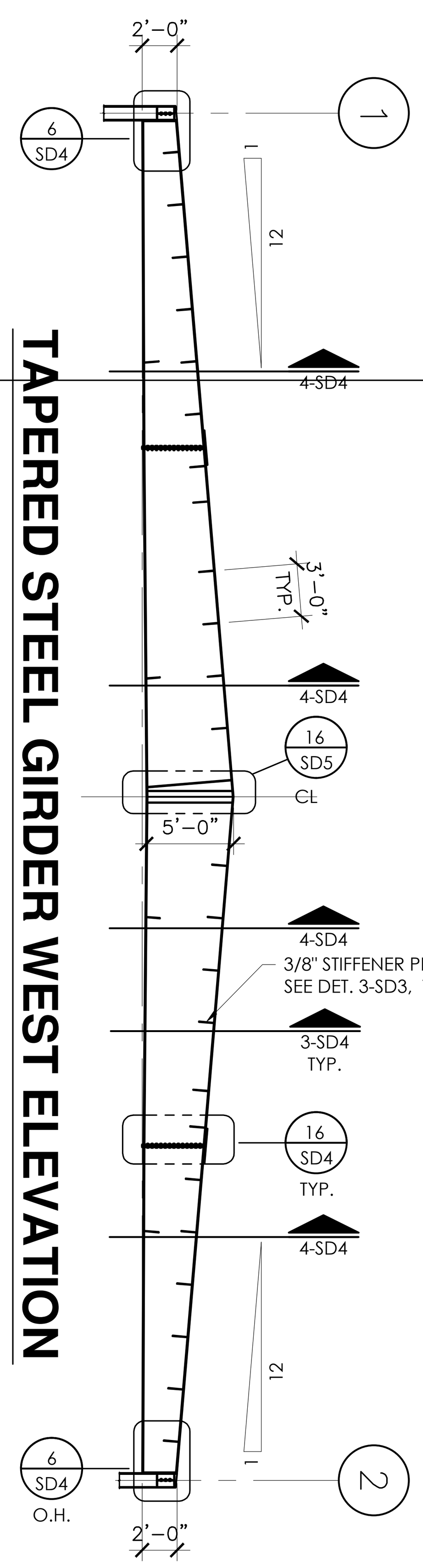
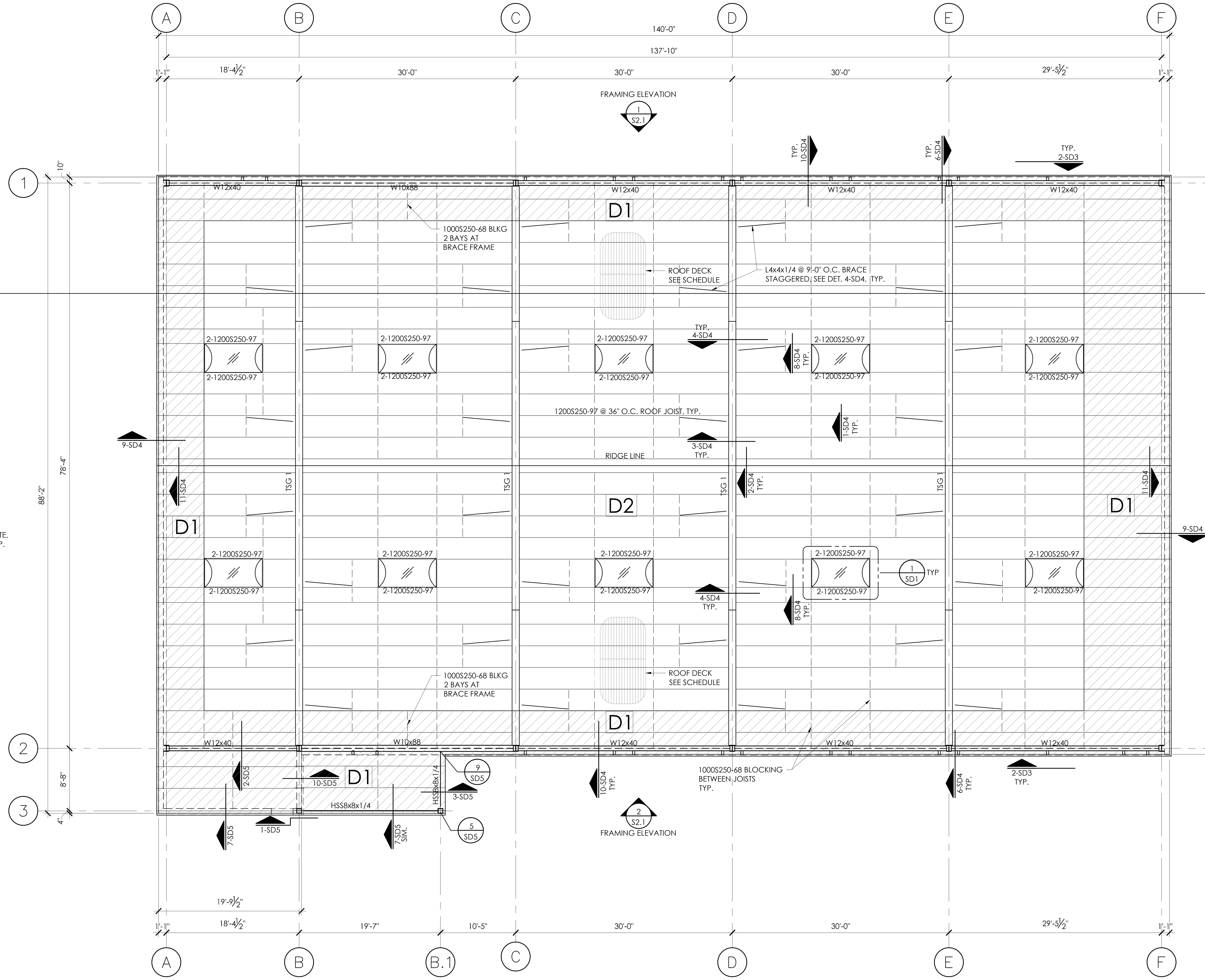
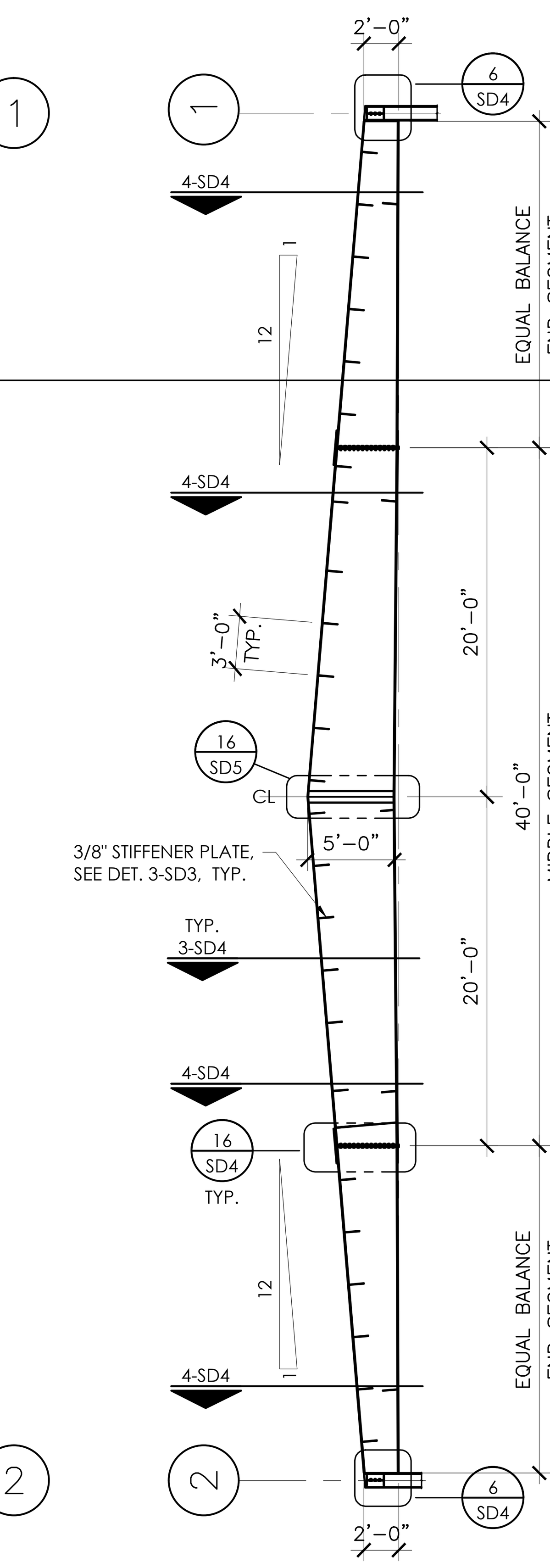


TAPERED STEEL GIRDER WEST ELEVATION



ROOF FRAMING PLAN

SCALE 1/8"=1'-0"



TAPERED STEEL GIRDER EAST ELEVATION

STEEL DECK SCHEDULE

STEEL DECK MARK	STEEL DECK TYPE	STEEL DECK GAGE	STEEL DECK THICKNESS (IN)	STEEL DECK FASTENING ATTACHMENT PATTERN					LRFD DIAPHRAGM SHEAR (PLF)	ALLOWABLE SUPERIMPOSED DISTRIBUTED LOAD (PSF)	REMARKS
				PERPENDICULAR TO SUPPORTS		PARALLEL TO SUPPORTS		SIDE SEAM			
				ENDS/TRANSFER	INTERMEDIATE	ENDS/TRANSFER					
D1	DGB36	20	1 1/2	7-#12 SCREWS	4-#12 SCREWS	#12 @ 6" O.C. SCREWS		DELTA GRIP PUNCH @ 12" O.C.	1752	149 PSF FOR L/360 DEFLECTION SPAN = 4'-0" MAX.	ER 0161 ESR 1414
D2	DGB36	20	1 1/2	4-#12 SCREWS	4-#12 SCREWS	#12 @ 6" O.C. SCREWS		DELTA GRIP PUNCH @ 18" O.C.	695	149 PSF FOR L/360 DEFLECTION SPAN = 4'-0" MAX.	ER 0161 ESR 1414

1. ALL STEEL DECK SHALL BE 50 KSI.
2. SPECIAL INSPECTION IS REQUIRED FOR ANY WELDING TO METAL DECK.
3. DECK SHEETS SHALL BE CONTINUOUS OVER 2 OR MORE SPANS.

ROOF FRAMING PLAN

SCALE 1/8"=1'-0"

0 5 10 20

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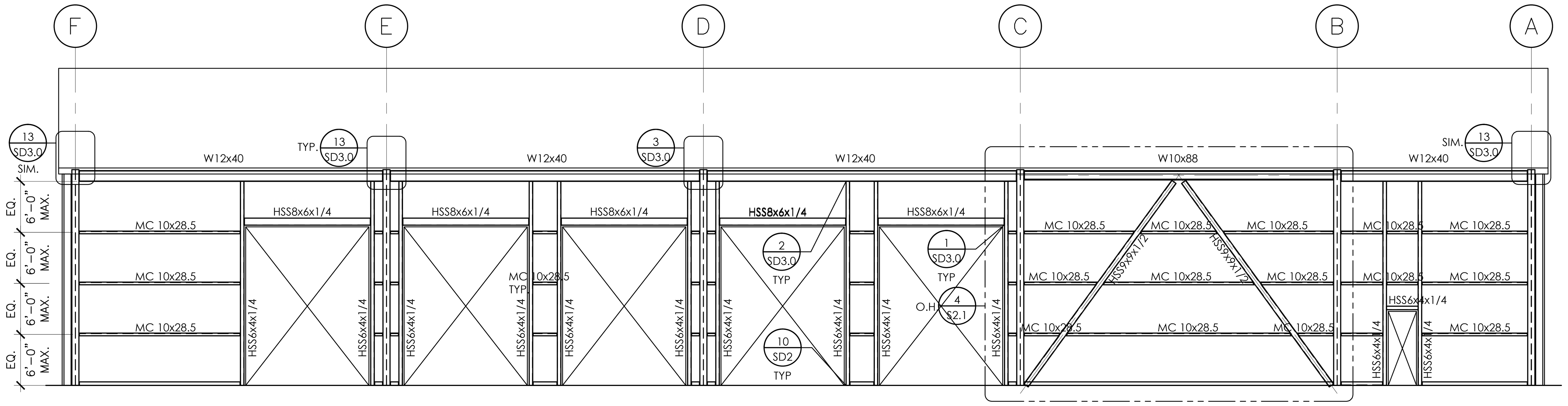
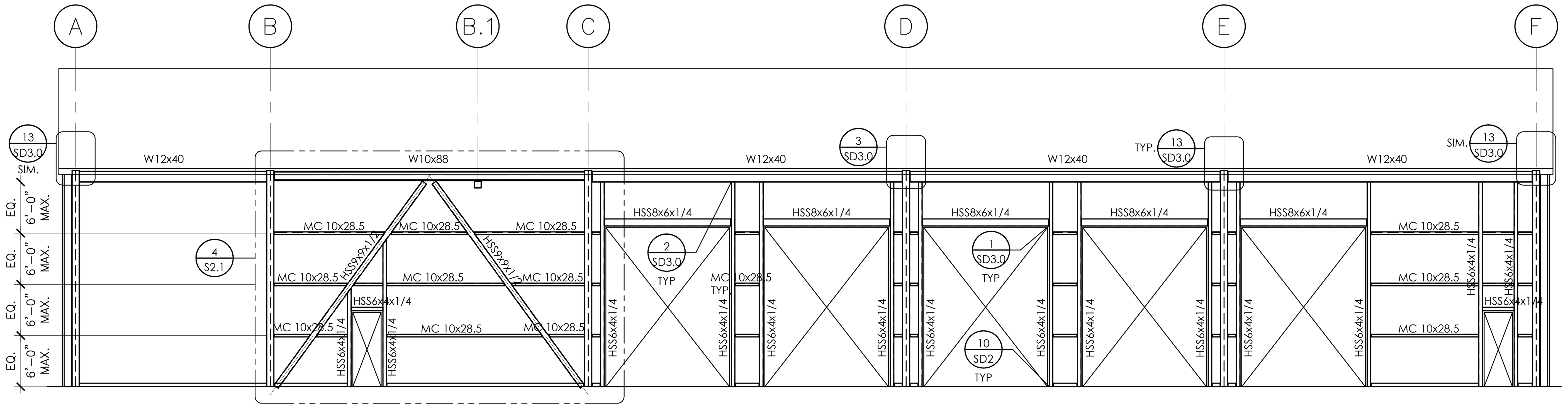


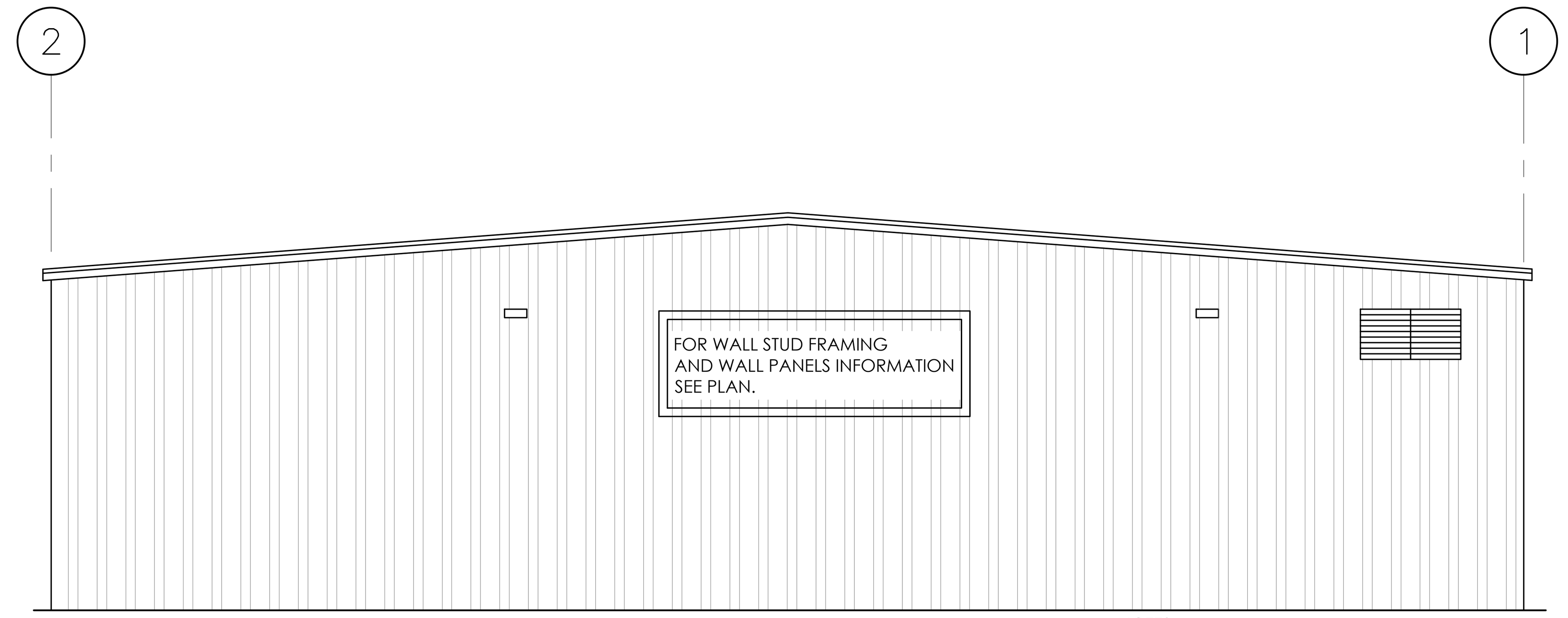
1 NORTH FRAMING ELEVATION AT GRID 1

SCALE 1/8"=1'-0"



2 SOUTH FRAMING ELEVATION AT GRID 2

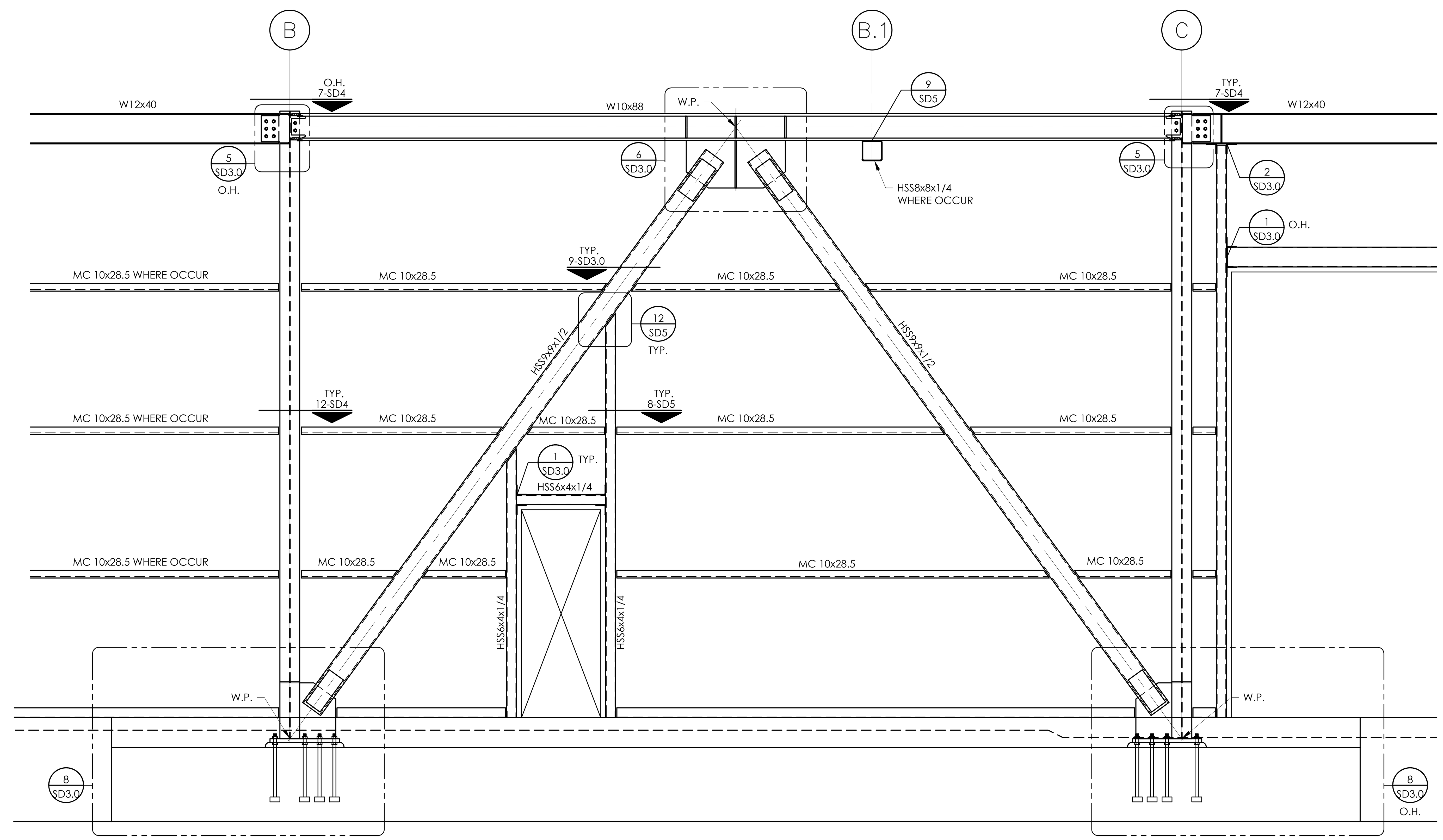
SCALE 1/8"=1'-0"



NOTES:
1. FOR LOUVER LOCATIONS SEE ARCH. DWG.
2. FOR OPENING SEE DET. 3-SD1.0
3. WEST ELEVATION SYMILAR.

3 EAST FRAMING ELEVATION AT GRID F

SCALE 1/8"=1'-0"



4 BRACE FRAME ELEVATION

SCALE 3/8"=1'-0"

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LICENSED PROFESSIONAL ENGINEER ARMEN BAROONIAN S 4227 EXP. 06/30/2021 STRUCTURAL STATE OF CALIFORNIA

10.14.20

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21 S. California Street
Fourth Floor
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(805) 648-1234

FRAMING ELEVATIONS

Revisions

R&A No: A181901
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Consult. No:

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
S2.1

FILE PATH & NAME: U:\19-168 KNIGHT OXNARD COLLEGE - NEW PREFAB STEEL BUILDING\1. STRUCTURAL DRAWINGS\24X36 TB-CD-LS.DWG PLOTTED: 1:10 PM

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

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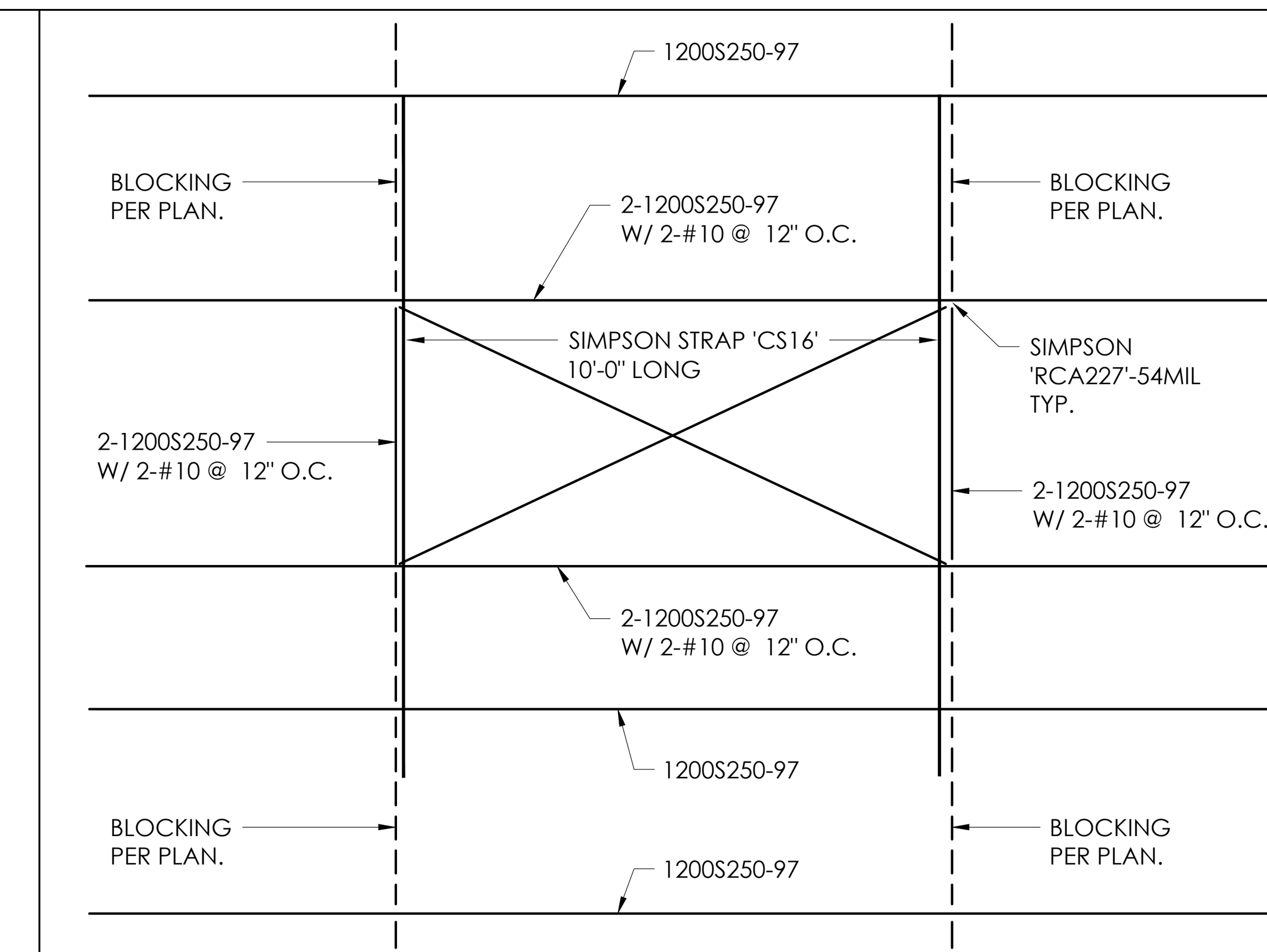
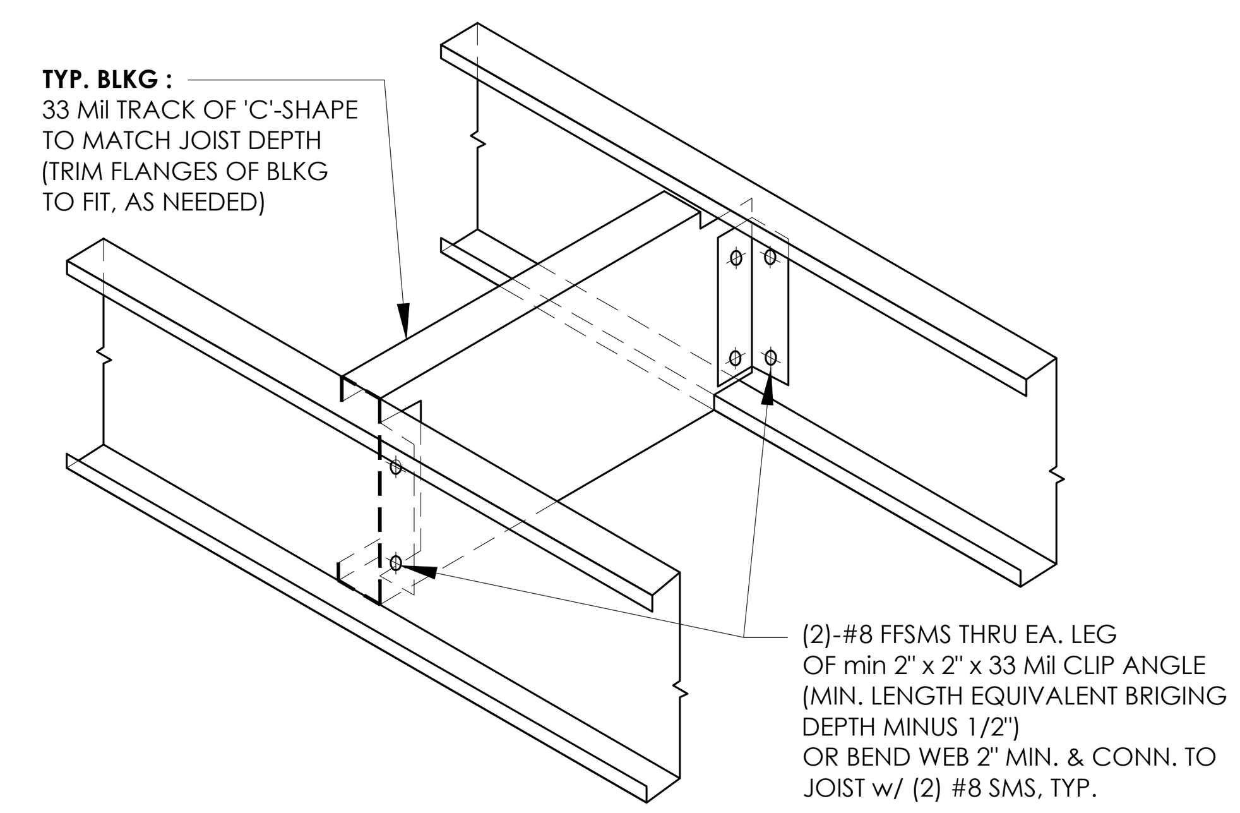
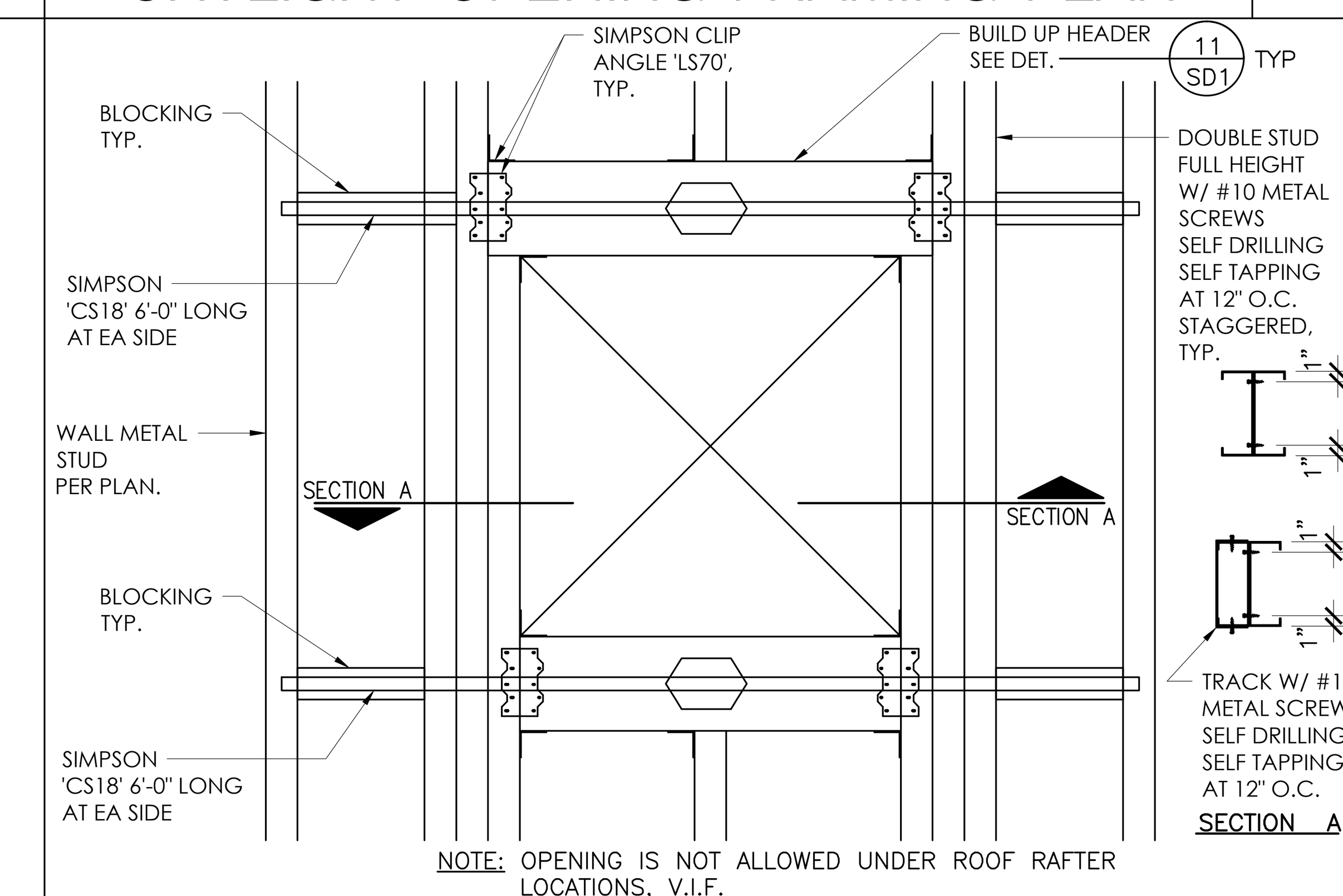


SKYLIGHT OPENING FRAMING PLAN 1



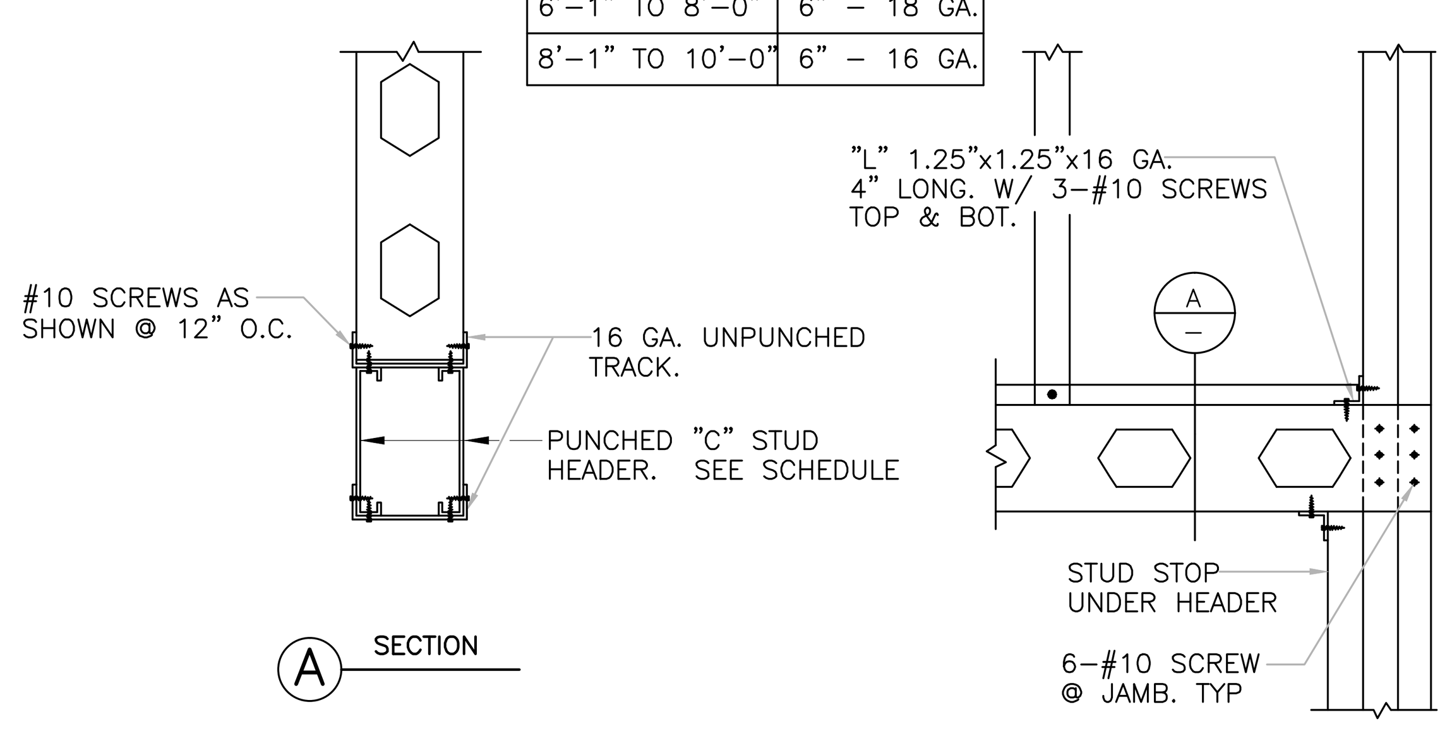
BLOCKING TYPICAL DETAIL 6



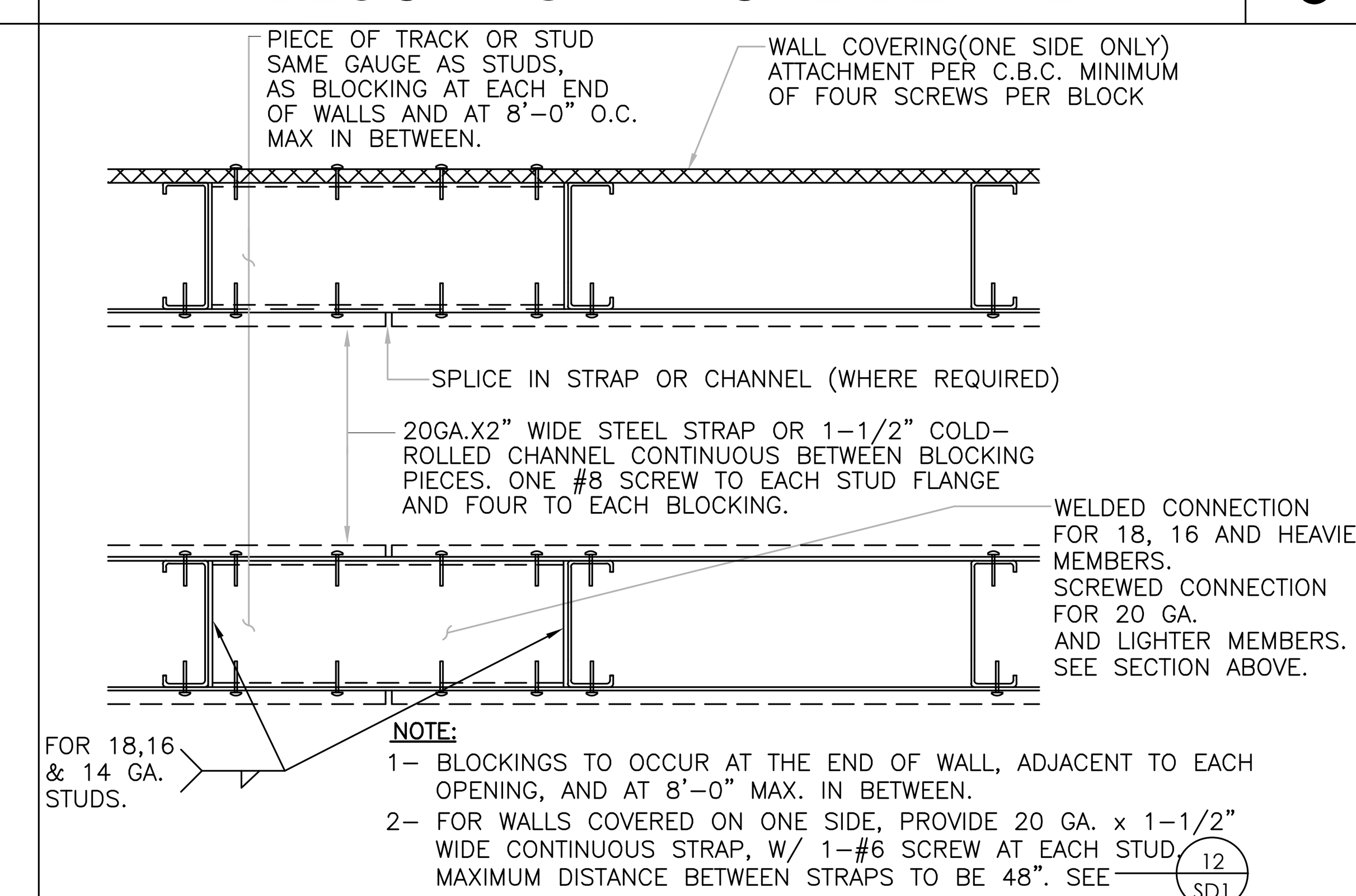
OPENING IN STUD WALL 36" (W)x36" (H) 2

HEADER SCHEDULE

OPENING WIDTH	MINIMUM HEADER SIZE
UP TO 6'-0"	4" - 18 GA.
6'-1" TO 8'-0"	6" - 18 GA.
8'-1" TO 10'-0"	6" - 16 GA.

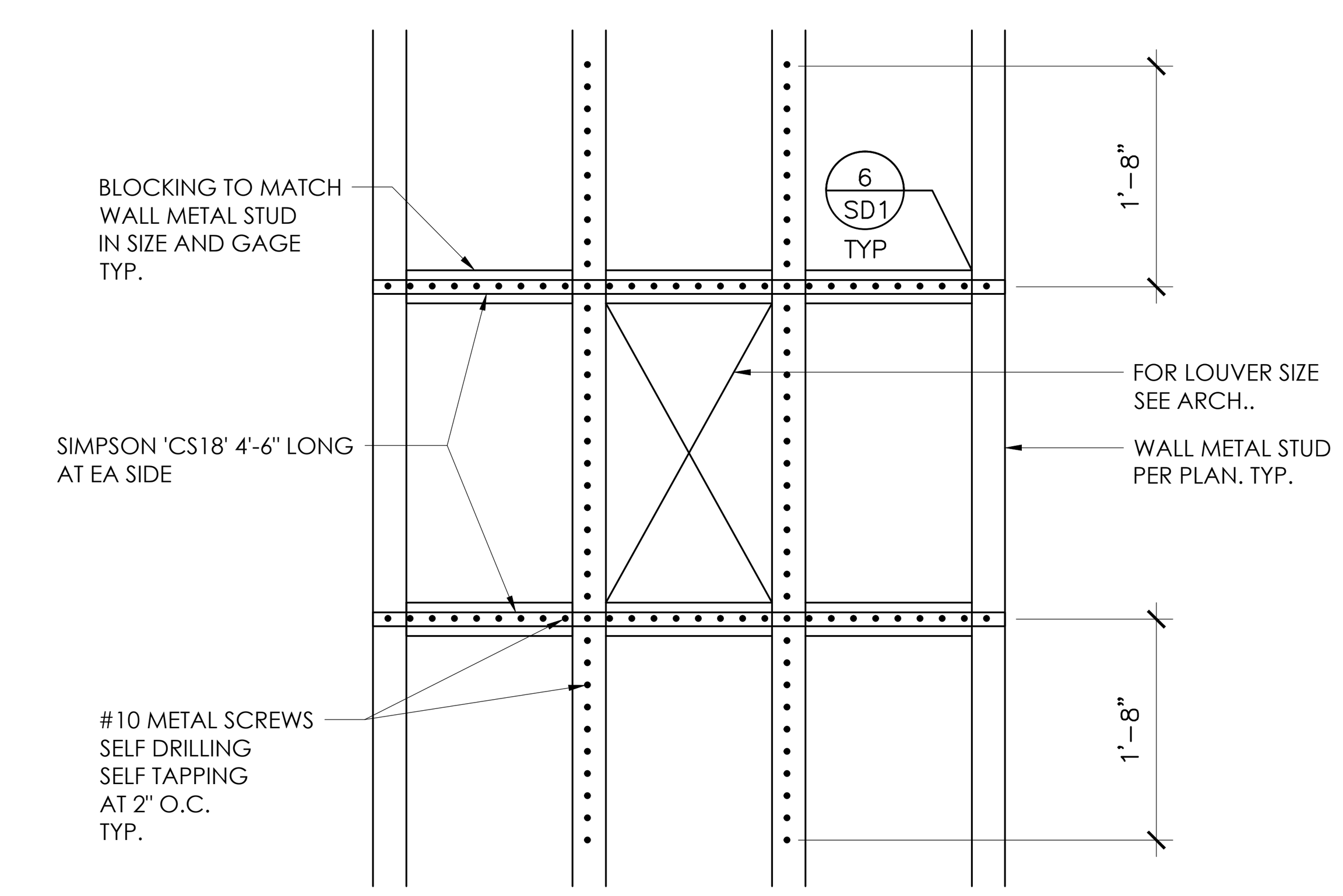


TYPICAL HEADER CONN. TO STUD 11

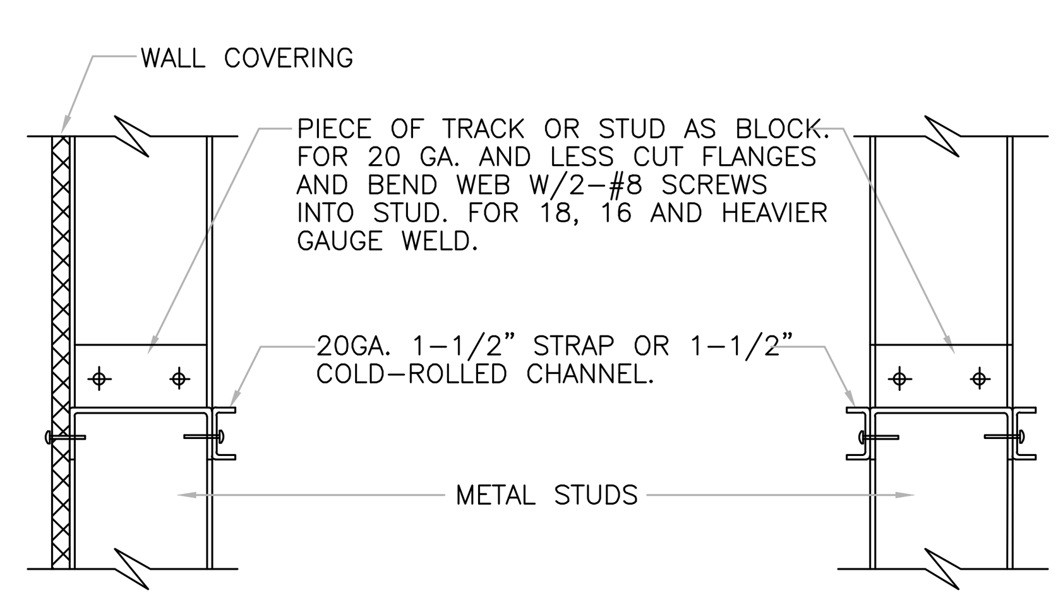


NOTE:
1- BLOCKINGS TO OCCUR AT THE END OF WALL, ADJACENT TO EACH OPENING, AND AT 8'-0" MAX. IN BETWEEN.
2- FOR WALLS COVERED ON ONE SIDE, PROVIDE 20 GA. x 1-1/2" WIDE CONTINUOUS STRAP, W/ 1-#6 SCREW AT EACH STUD. MAXIMUM DISTANCE BETWEEN STRAPS TO BE 48". SEE 12/SD1

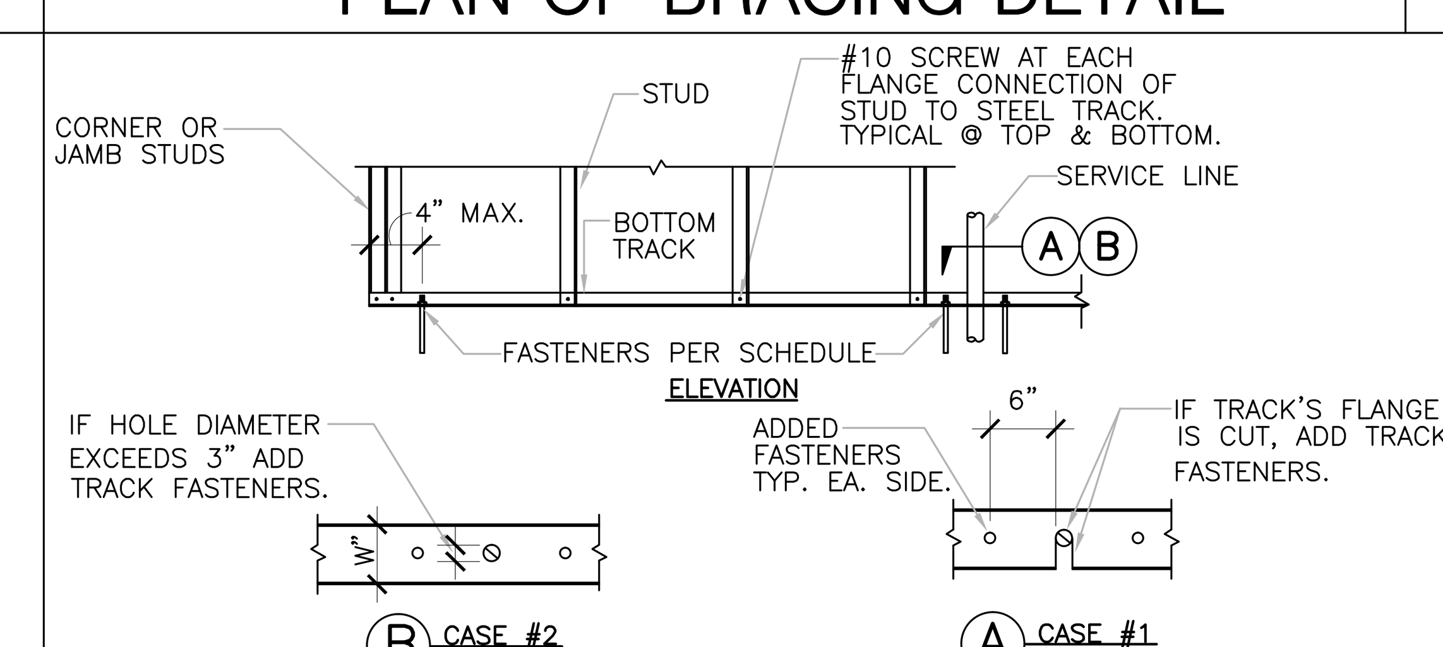
PLAN OF BRACING DETAIL 7



LOUVER OPENING IN STUD WALL 3



SECTION THROUGH BRACING 12



BOTTOM TRACK FASTENERS SCHEDULE

INTERIOR PARTITIONS TYPICALLY	0.157"øx1 1/4" SHOT PINS @ 12" O.C. OR 3/8"ø WEDGE ANCHORS @ 48" O.C. WITH 3" EMBEDMENT. ICC ESR-2269, LARR 25675
INTERIOR PARTITIONS ADJACENT TO DEPRESSIONS OR ON CURBS.	3/8"ø WEDGE ANCHORS @ 48" O.C. WITH 3" EMBEDMENT OR 5/8"ø ANCHOR BOLTS @ 48" O.C. SIMPSON STRONG BOLT ICC# ESR 1771, LARR 25560.

NON BEARING WALL BOTTOM TRACK ATTACH. 8

4

5

9

10

13

14

15

16

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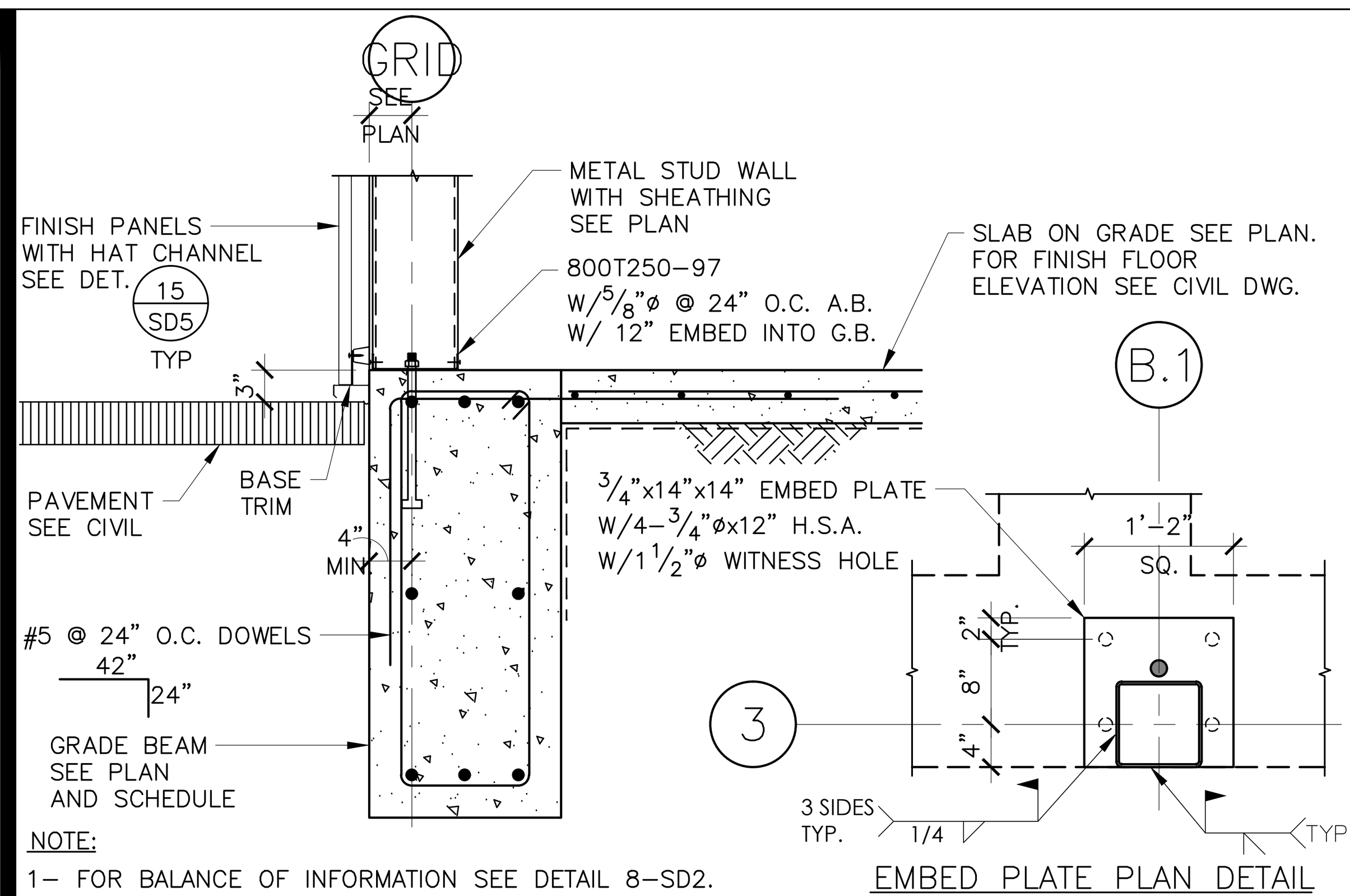
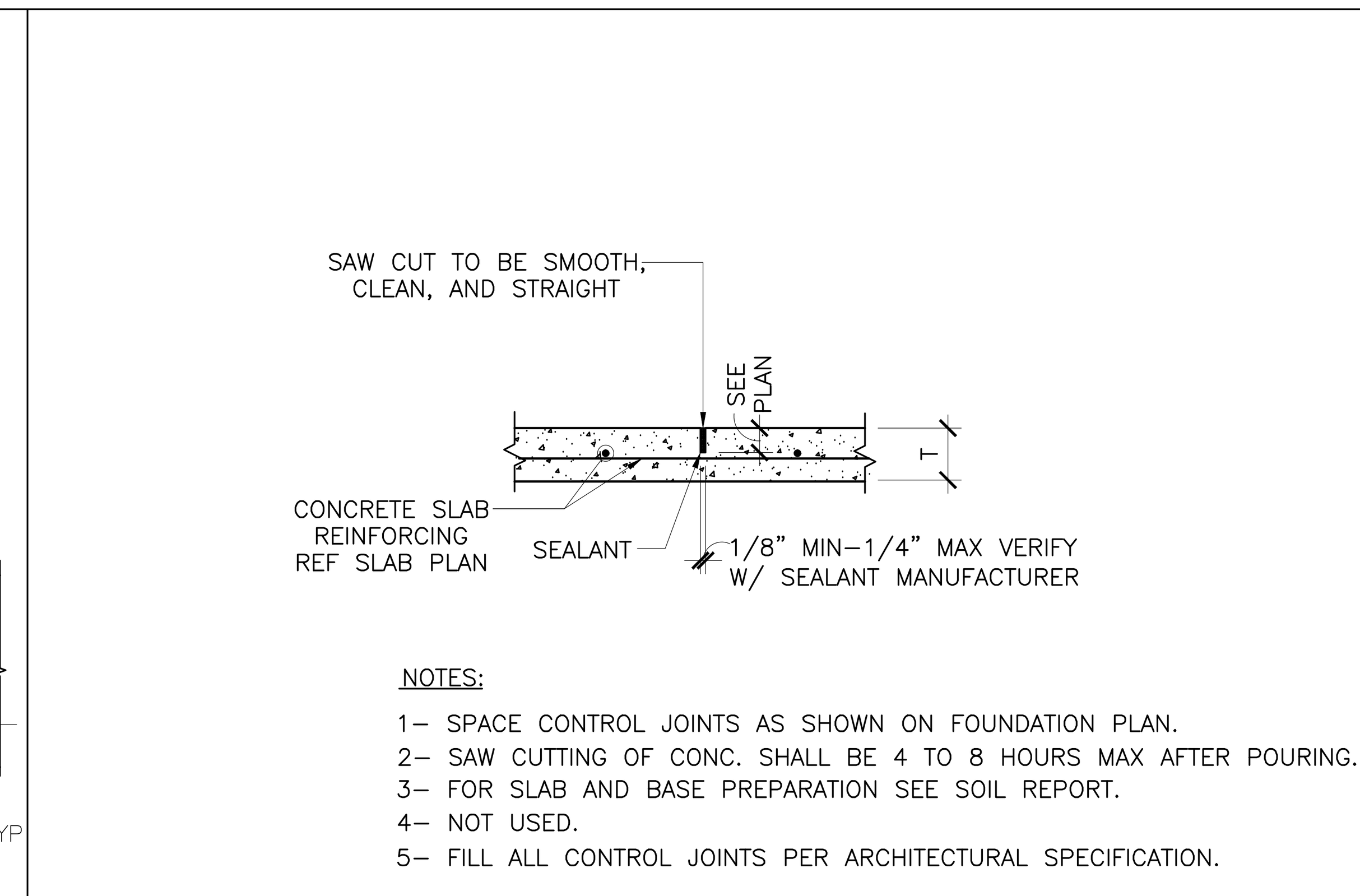
Sheet No.
SD1

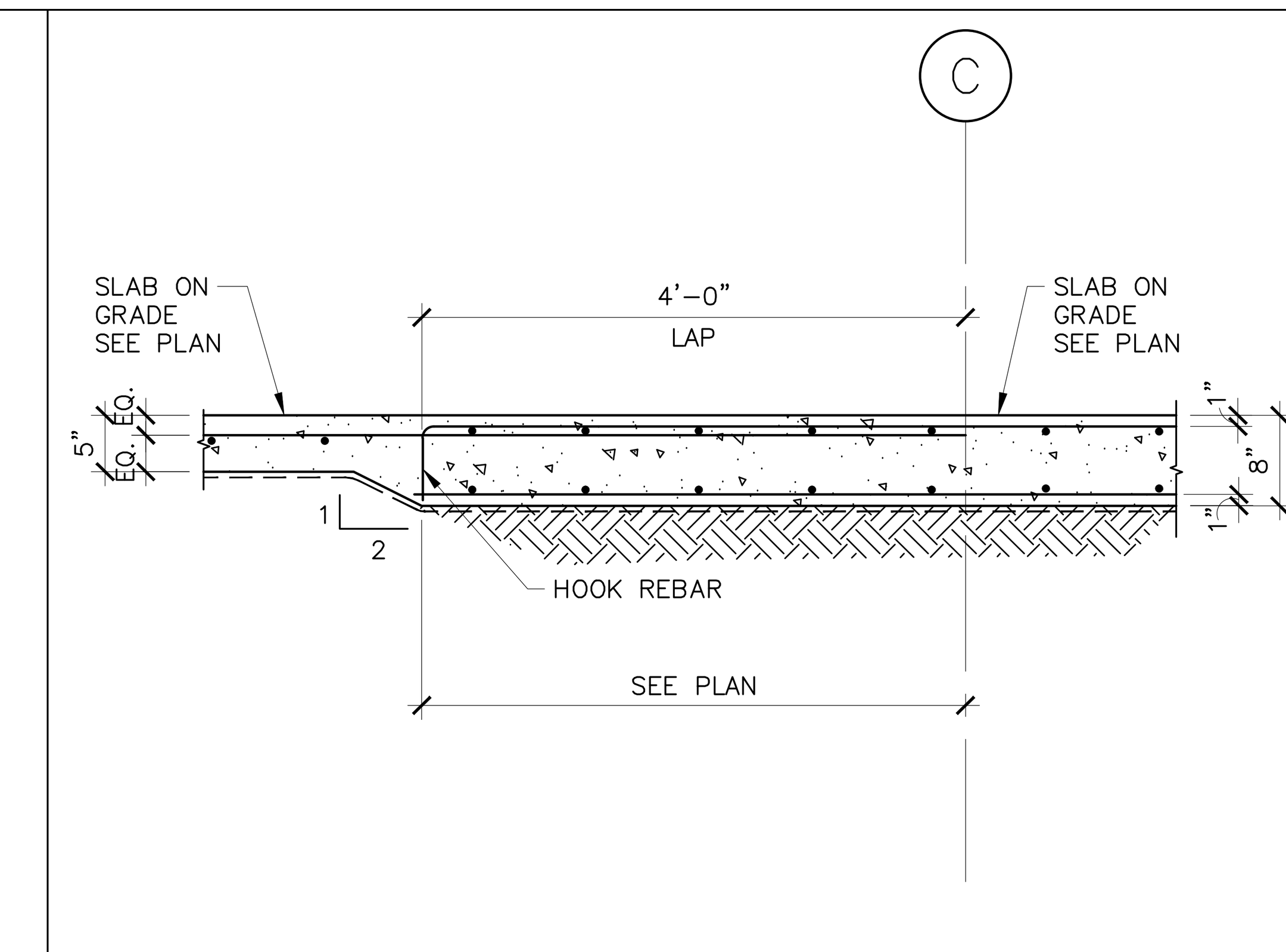


DETAIL 13

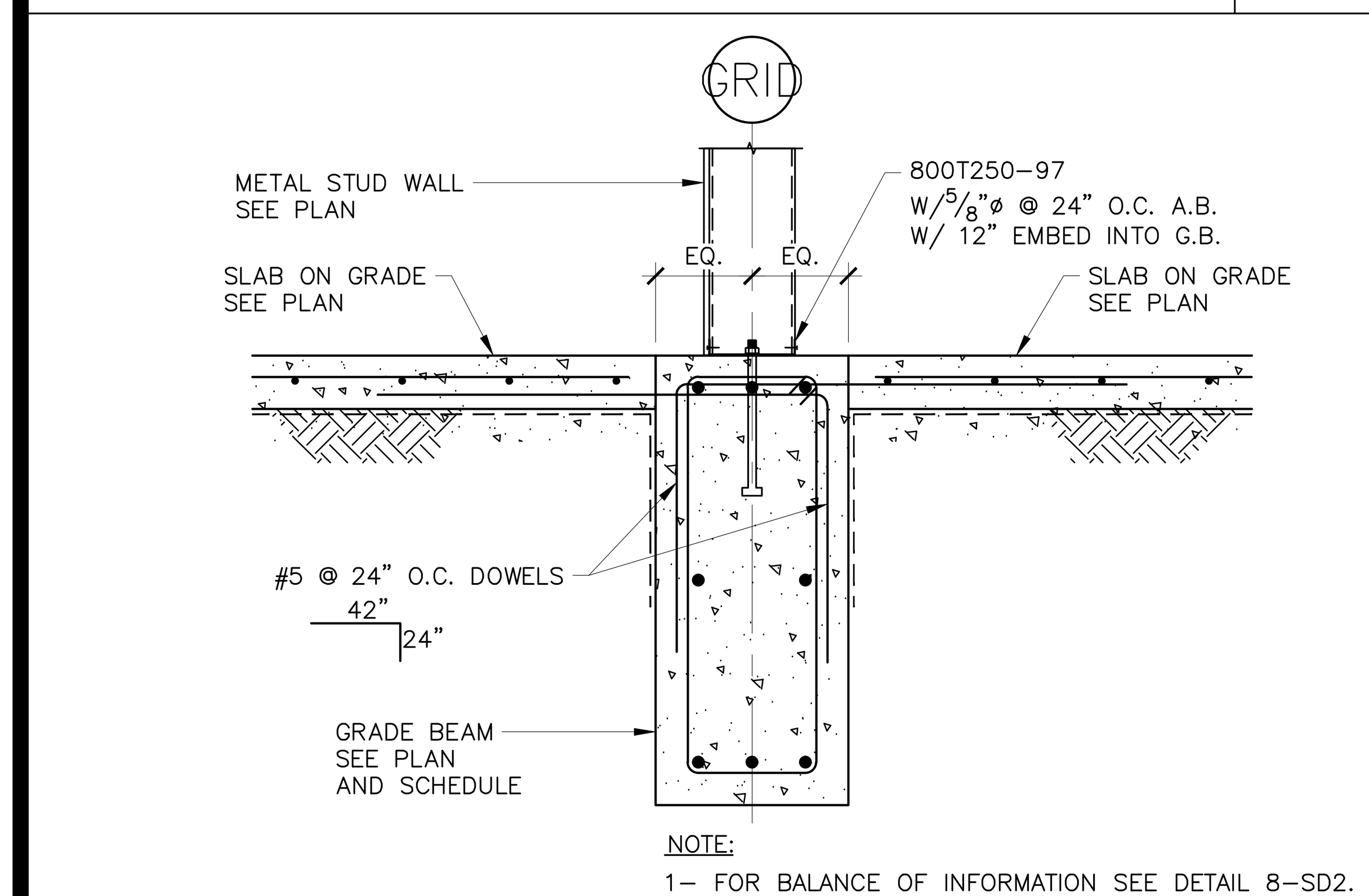


SLAB CONTROL JOINTS 9

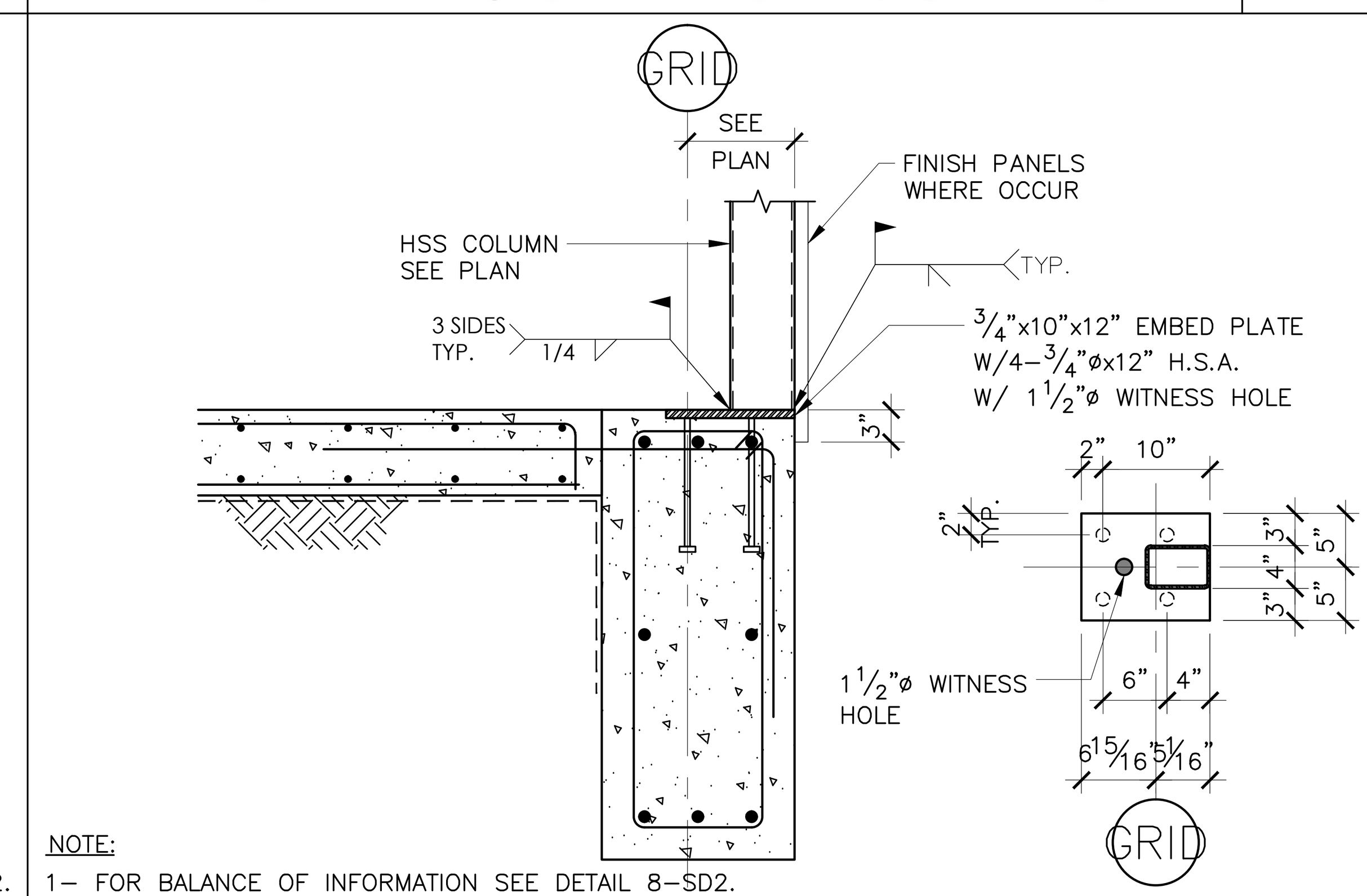
5



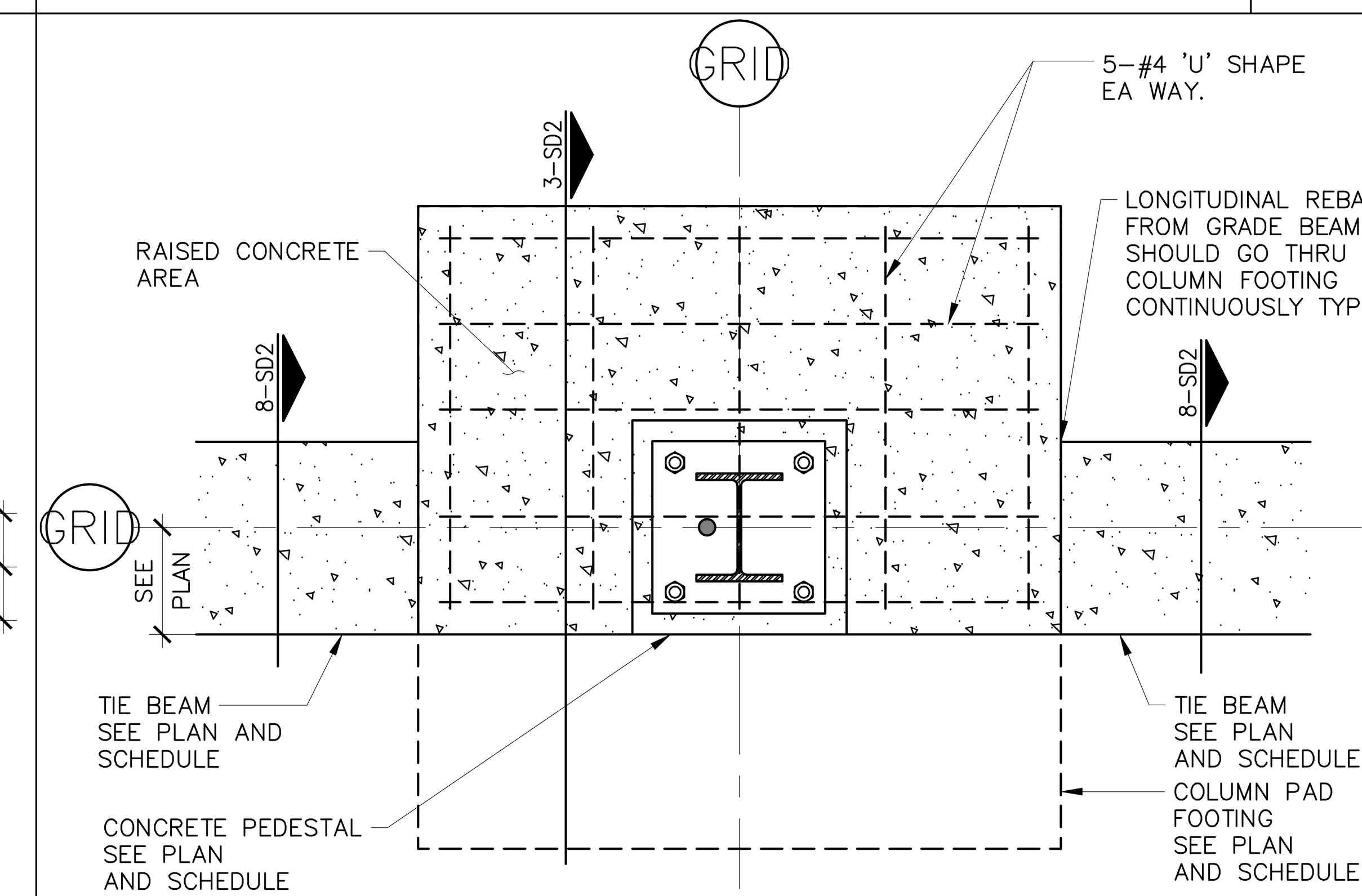
SLAB DETAIL 1



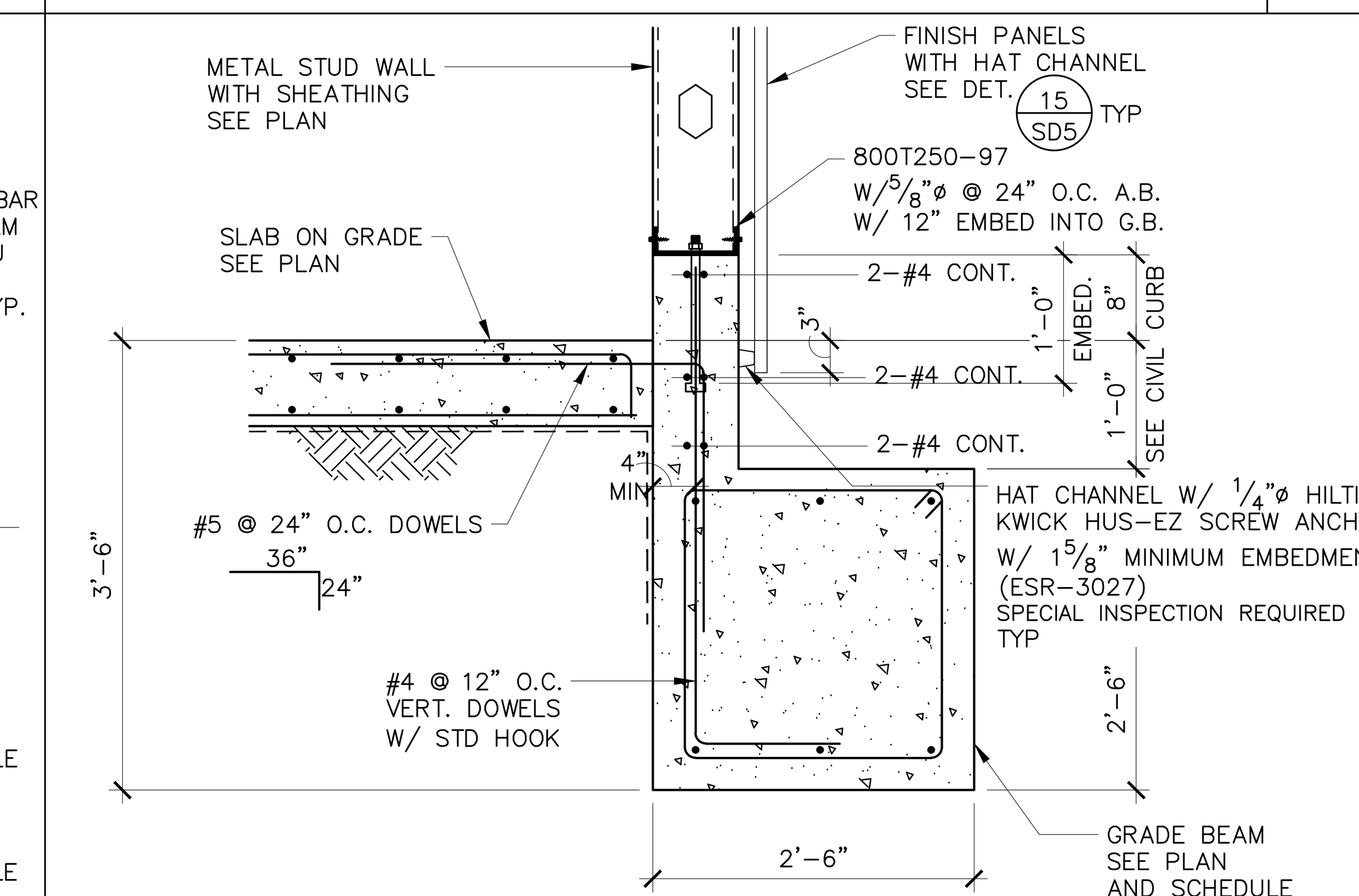
DETAIL 14



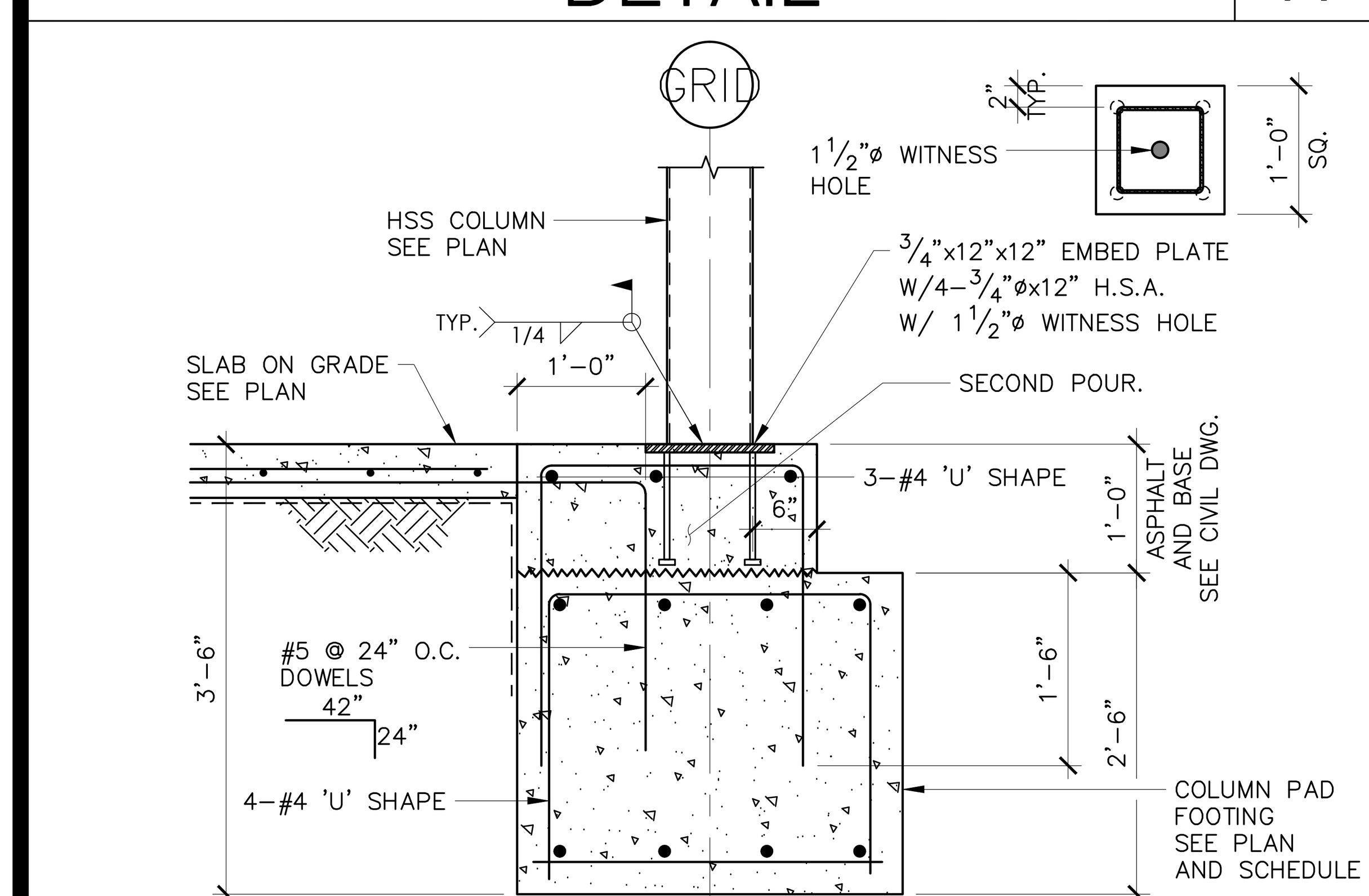
DETAIL 10



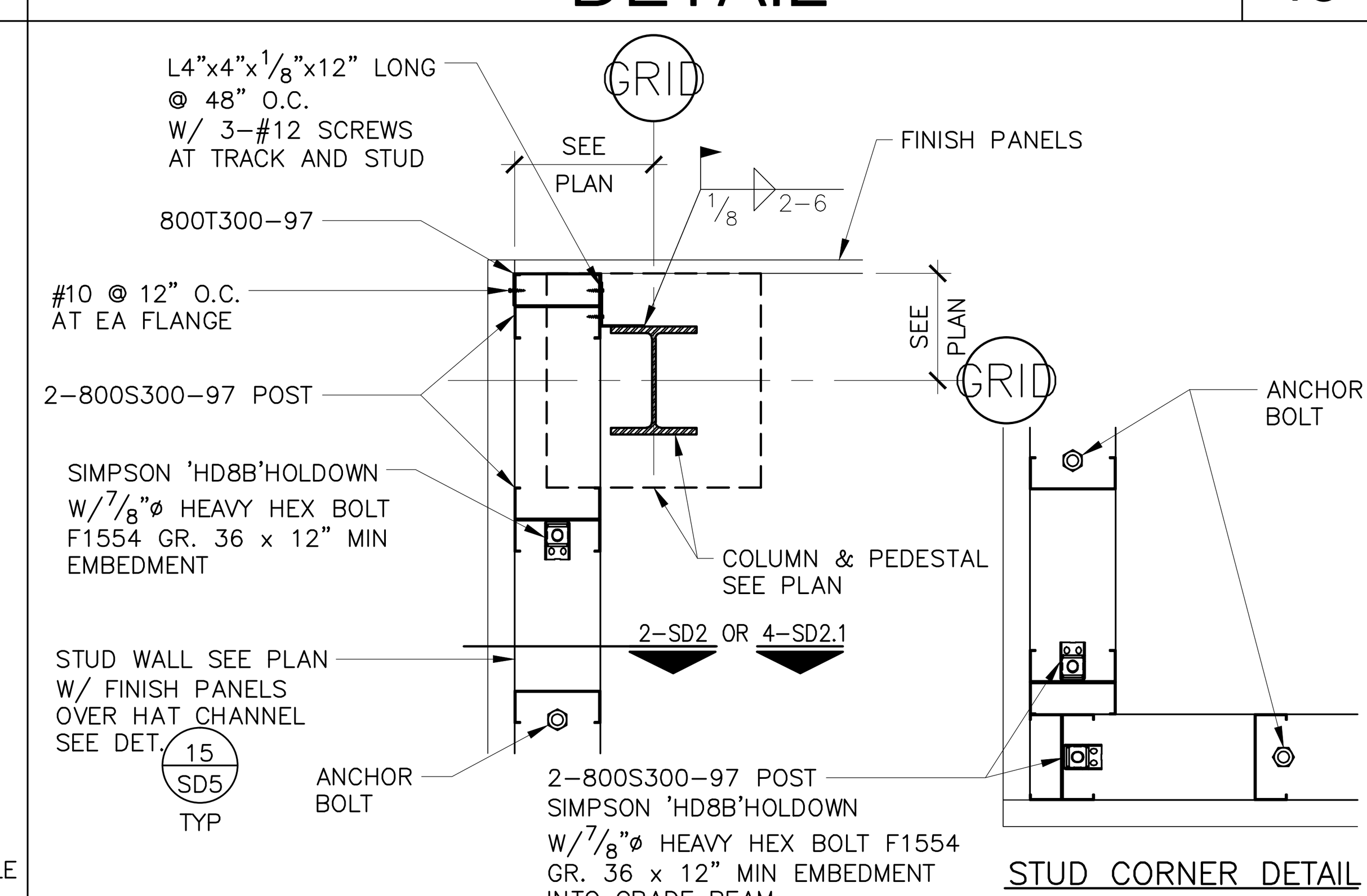
PLAN DETAIL 6



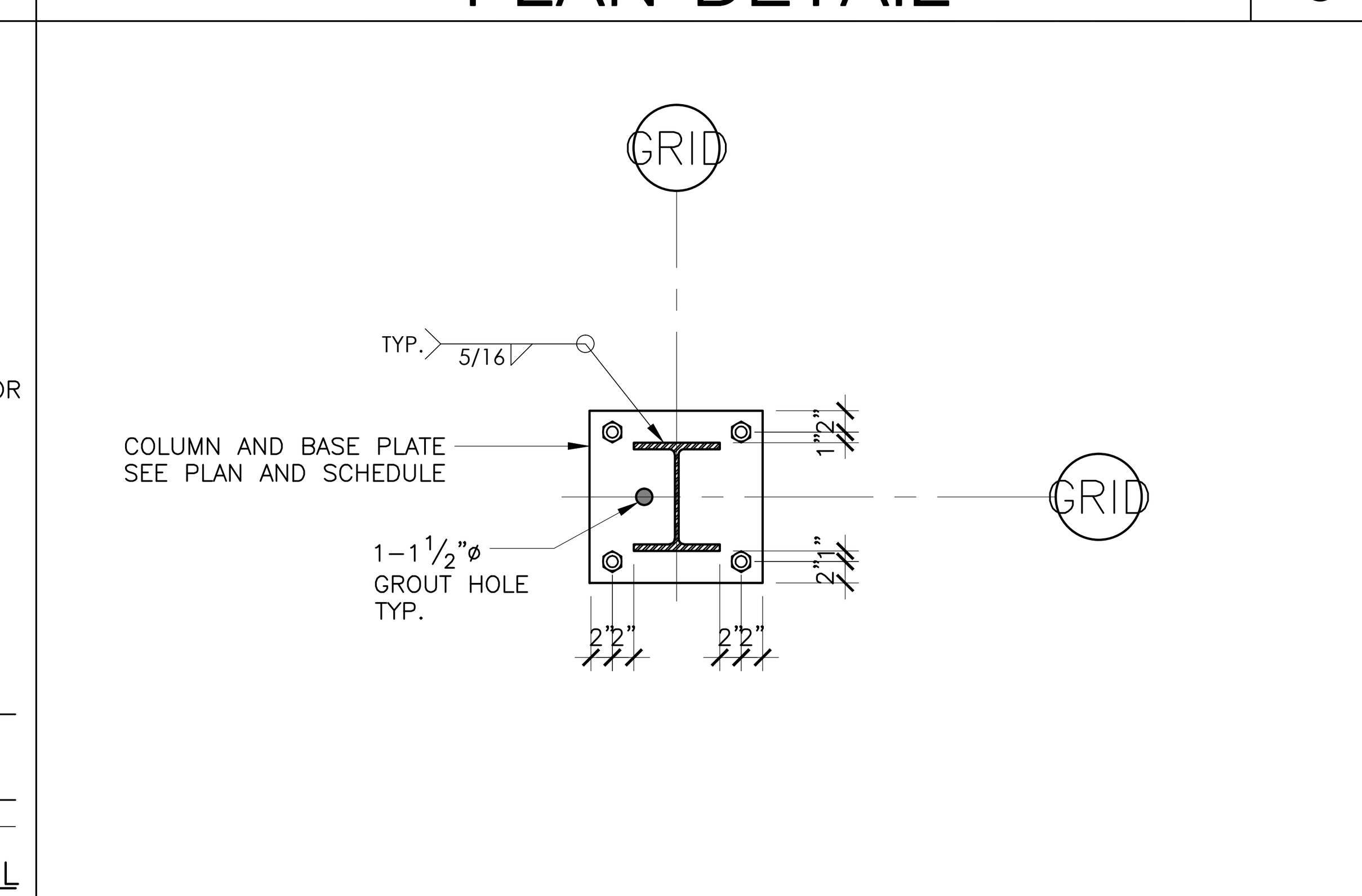
WALL GRADE BEAM SECTION 2



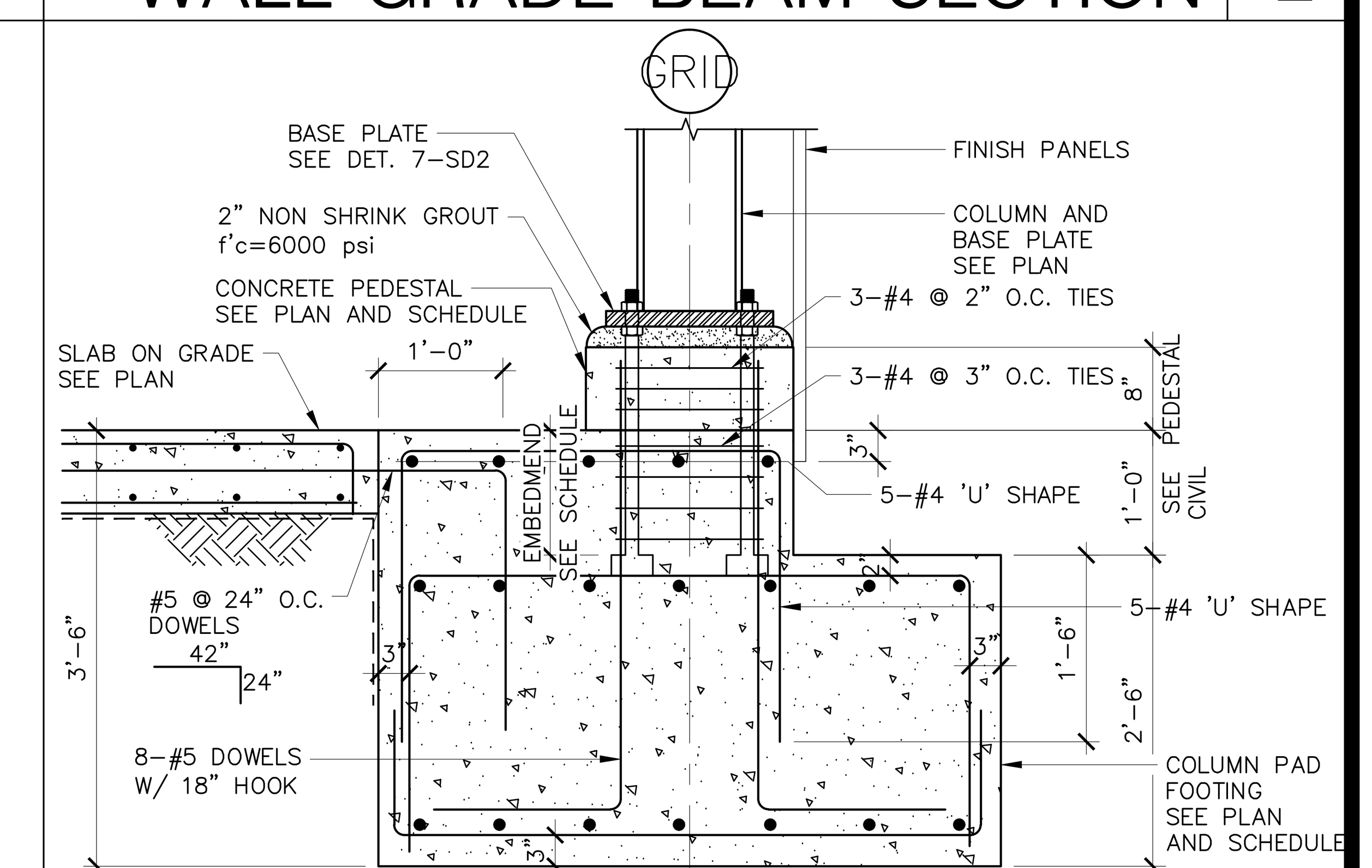
DETAIL 15



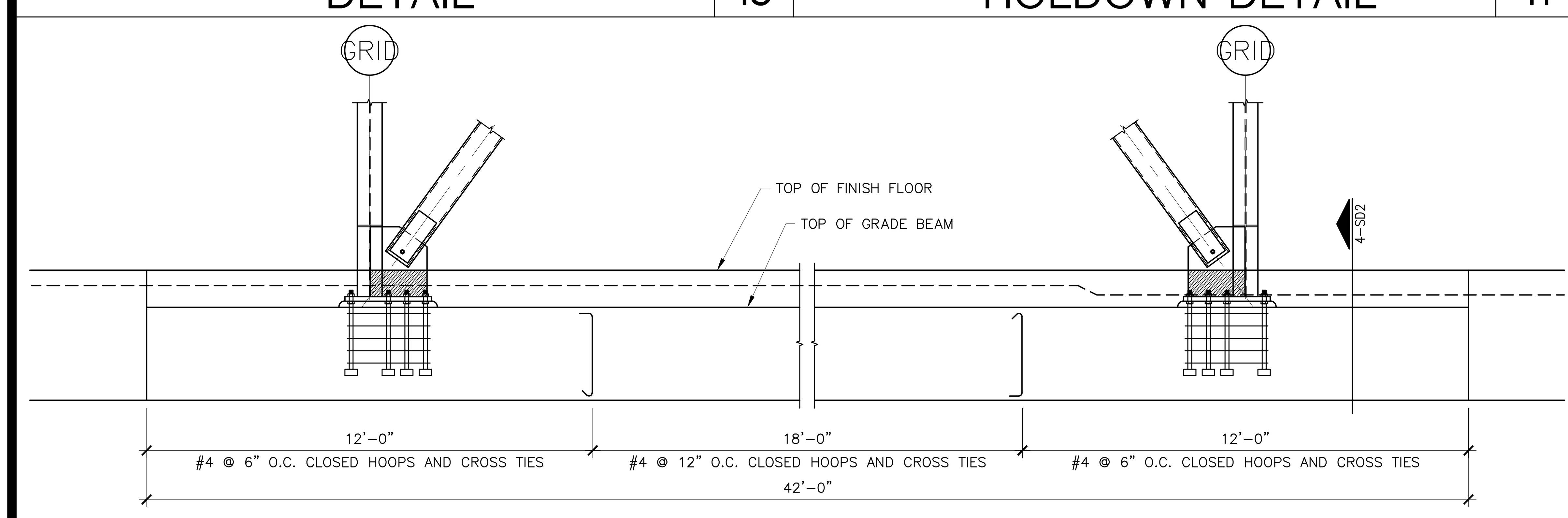
HOLDOWN DETAIL 11



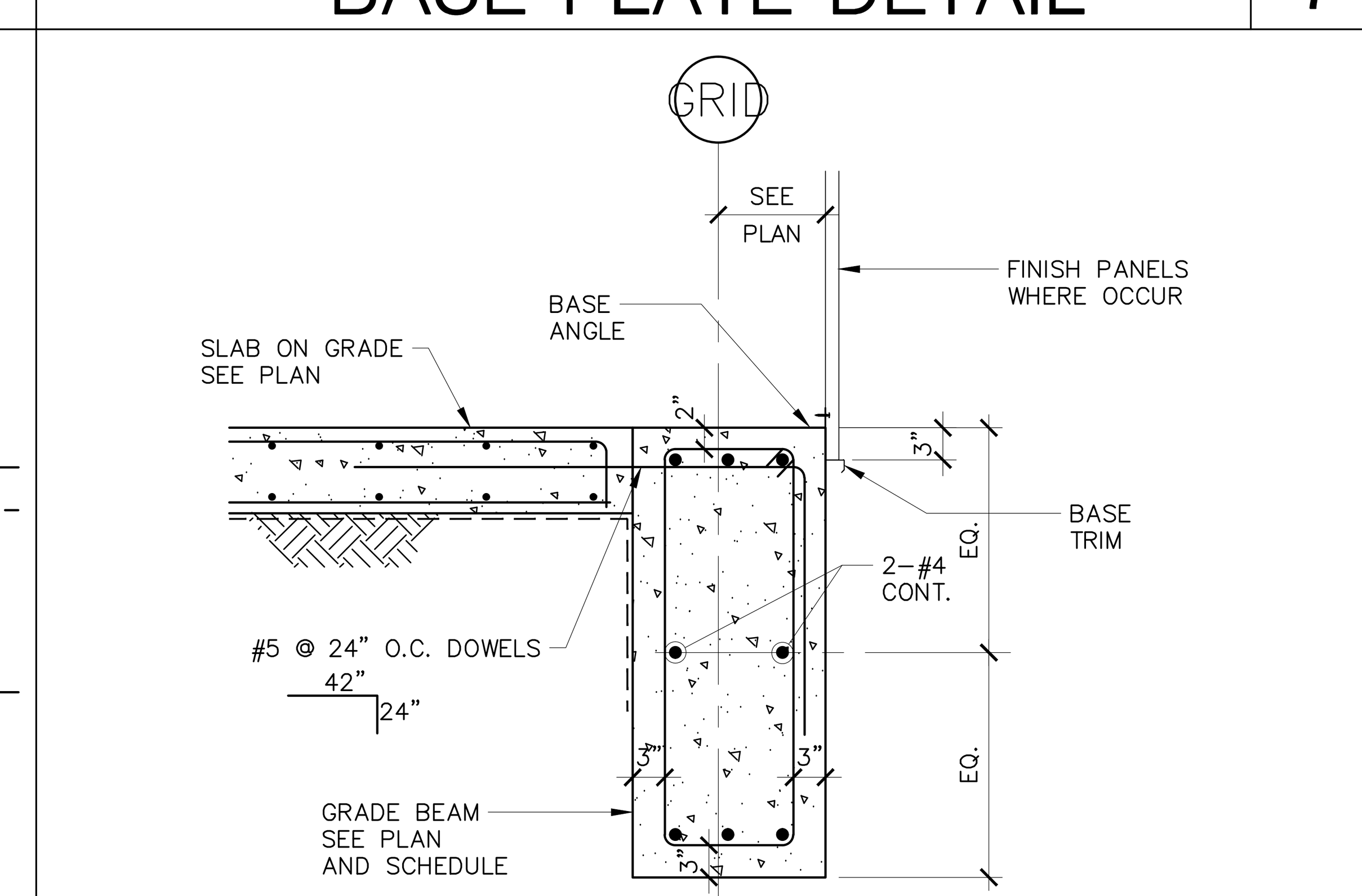
BASE PLATE DETAIL 7



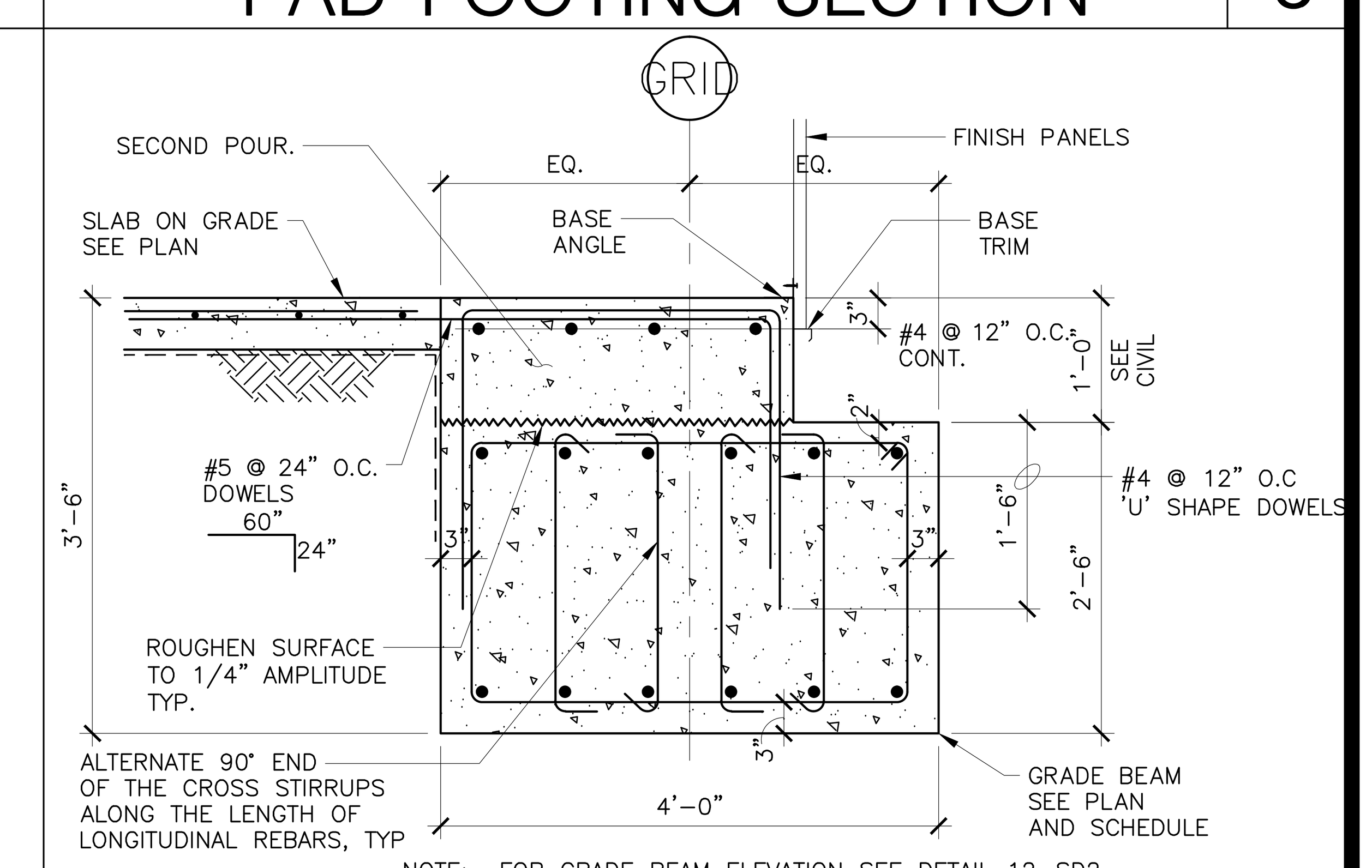
PAD FOOTING SECTION 3



GRADE BEAM ELEVATION 12



TIE BEAM SECTION 8



GRADE BEAM SECTION 4

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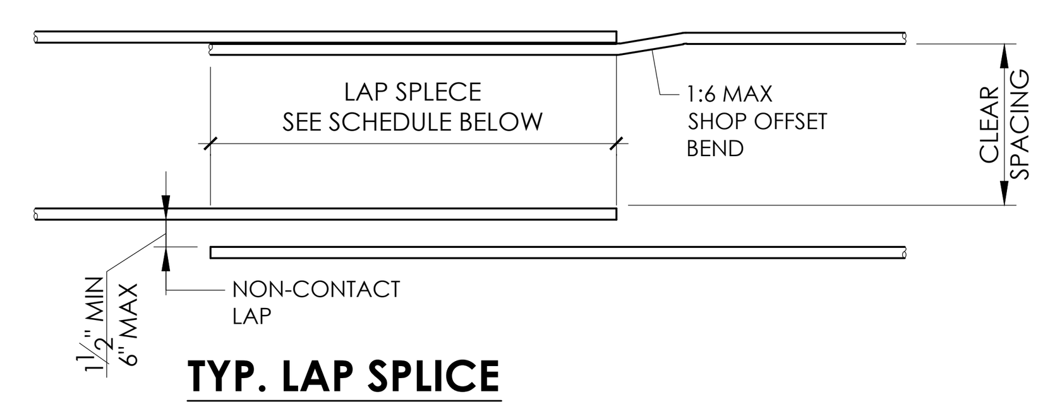
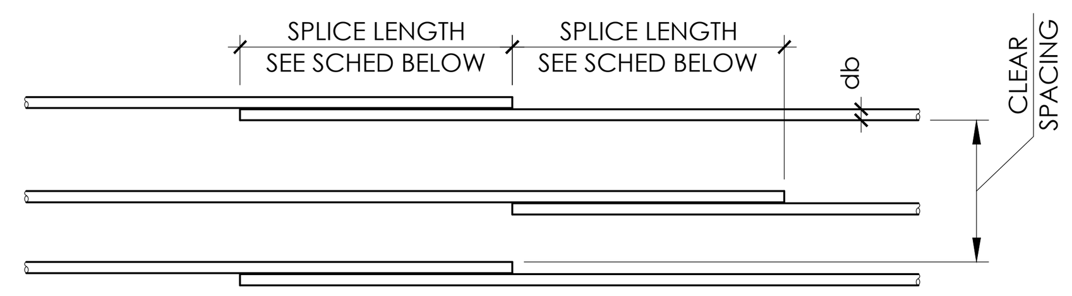
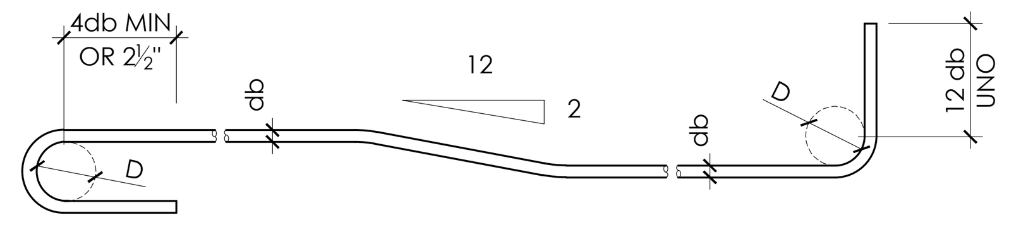
Sheet No.
SD2



TYP. LAP SPLICE



TYP. STAGGERED SPLICE

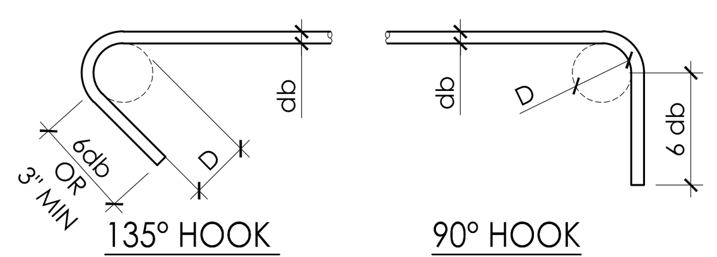


BAR SIZE	D
#3 THRU #8	6d
#9 THRU #11	8d
#14 THRU #18	10d

180° HOOK

90° HOOK

STANDARD HOOKS

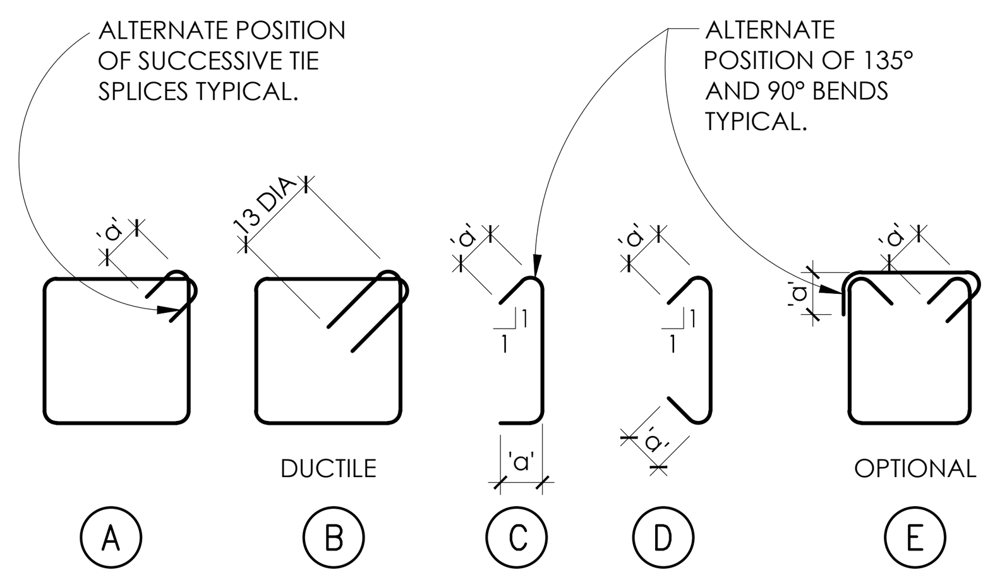


BAR SIZE	D
#3	1½"
#4	2"
#5	2½"

135° HOOK

90° HOOK

TIES & STIRRUPS HOOKS ONLY

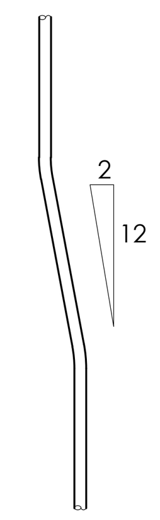


TYPICAL COLUMN TIES

BEAM STIRRUPS

TIE SIZE	a
#3	5"
#4	5½"
#5	6"

TYPICAL COLUMN TIES AND BEAM STIRRUPS



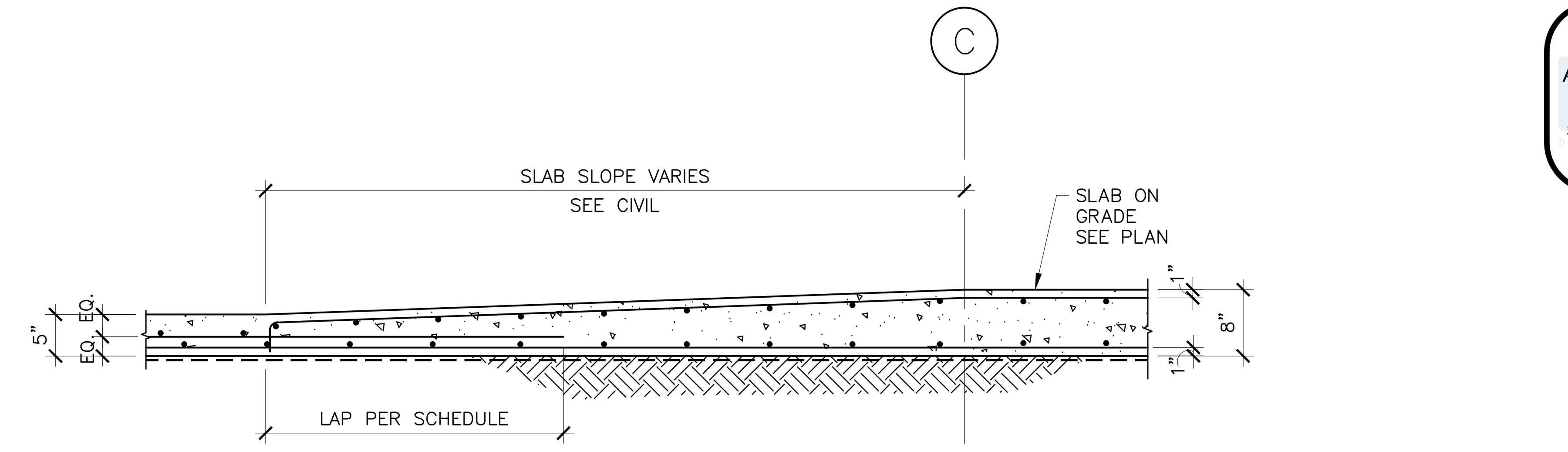
TYPICAL COLUMN BAR OFFSET

EMBEDMENT AND SPLICE LENGTH SCHEDULE (CONCRETE)

BAR SIZE DESIGNATION	TOP REINFORCING		OTHER REINFORCING		STANDARD HOOKED EMBEDMENT
	DEVELOPMENT LENGTH	LAP SPLICE LENGTH	DEVELOPMENT LENGTH	LAP SPLICE LENGTH	
#3	22	29	17	23	6
#4	29	38	22	29	8
#5	36	47	28	37	10
#6	43	56	33	43	12
#7	63	82	48	63	14
#8	72	94	55	72	16
#9	81	106	62	81	18
#10	91	119	70	91	20
#11	101	132	78	102	22

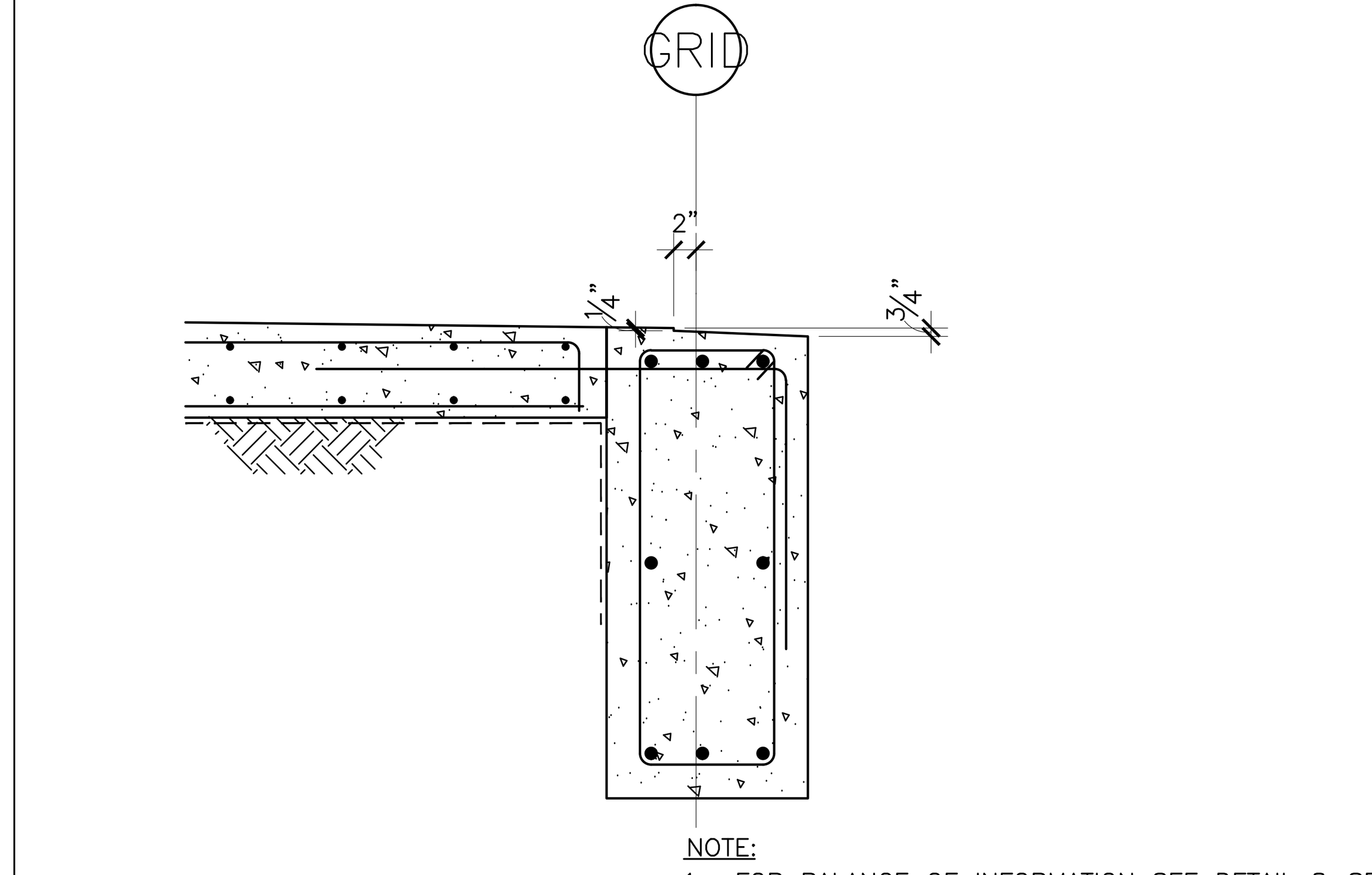
1. DEVELOPMENT LENGTHS AND LAP SPLICE LENGTHS SHOWN IN THE SCHEDULE ABOVE ARE IN ACCORDANCE WITH ACI 318 AND CORRESPOND TO GRADE 60 UNCOATED REINFORCING BARS EMBEDDED IN NORMAL WEIGHT CONCRETE **(f'c=3000 PSI)**.
2. FOR CONCRETE WITH f'c=4000 PS MULTIPLY VALUES IN TABLE BY 0.86.
3. FOR LIGHTWEIGHT CONCRETE MULTIPLY THE LENGTHS IN THE SCHEDULE BY 1.3.
4. FOR GRADE 75 REINFORCING MULTIPLY THE LENGTHS IN THE SCHEDULE BY 1.25.
5. ALL TABULATED VALUES ARE IN INCHES.
6. THIS SCHEDULE SHALL BE USED WHERE DEVELOPMENT AND SPLICE LENGTHS ARE NOT SPECIFICALLY DETAILED AND DIMENSIONED ON THE DRAWINGS.
7. THE SCHEDULE ABOVE IS APPLICABLE FOR THE FOLLOWING CONDITIONS:
   A. CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN db, CLEAR COVER NOT LESS THAN db AND MINIMUM STIRRUPS OR TIES THROUGHOUT DEVELOPMENT LENGTH NOT LESS THAN THE CODE MINIMUM.
   B. CLEAR SPACING OF BARS BEING DEVELOPED OR SPLICED NOT LESS THAN 2db AND CLEAR COVER NOT LESS THAN db.
8. TOP REINFORCING IS DEFINED AS HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS.
9. OTHER REINFORCEMENT INCLUDES ALL VERTICAL BARS AND HORIZONTAL BARS WITH LESS THAN 12" OF CONCRETE CAST BELOW BARS.
10. WHERE BARS DIFFERENT SIZE ARE LAP SPLICED, SPLICE LENGTH SHALL BE THE LARGER OF DEVELOPMENT LENGTH OF LARGER BAR, OR SPLICE LENGTH IF SMALLER BAR.
11. LAP SPLICE LENGTH IN THE TABLE ARE CLASS 'B'. FOR REDUCED LAP SPLICE LENGTH CLASS 'A', CONTACT ENGINEER OF RECORD.

BAR BEND & SPLICE DETAIL 11



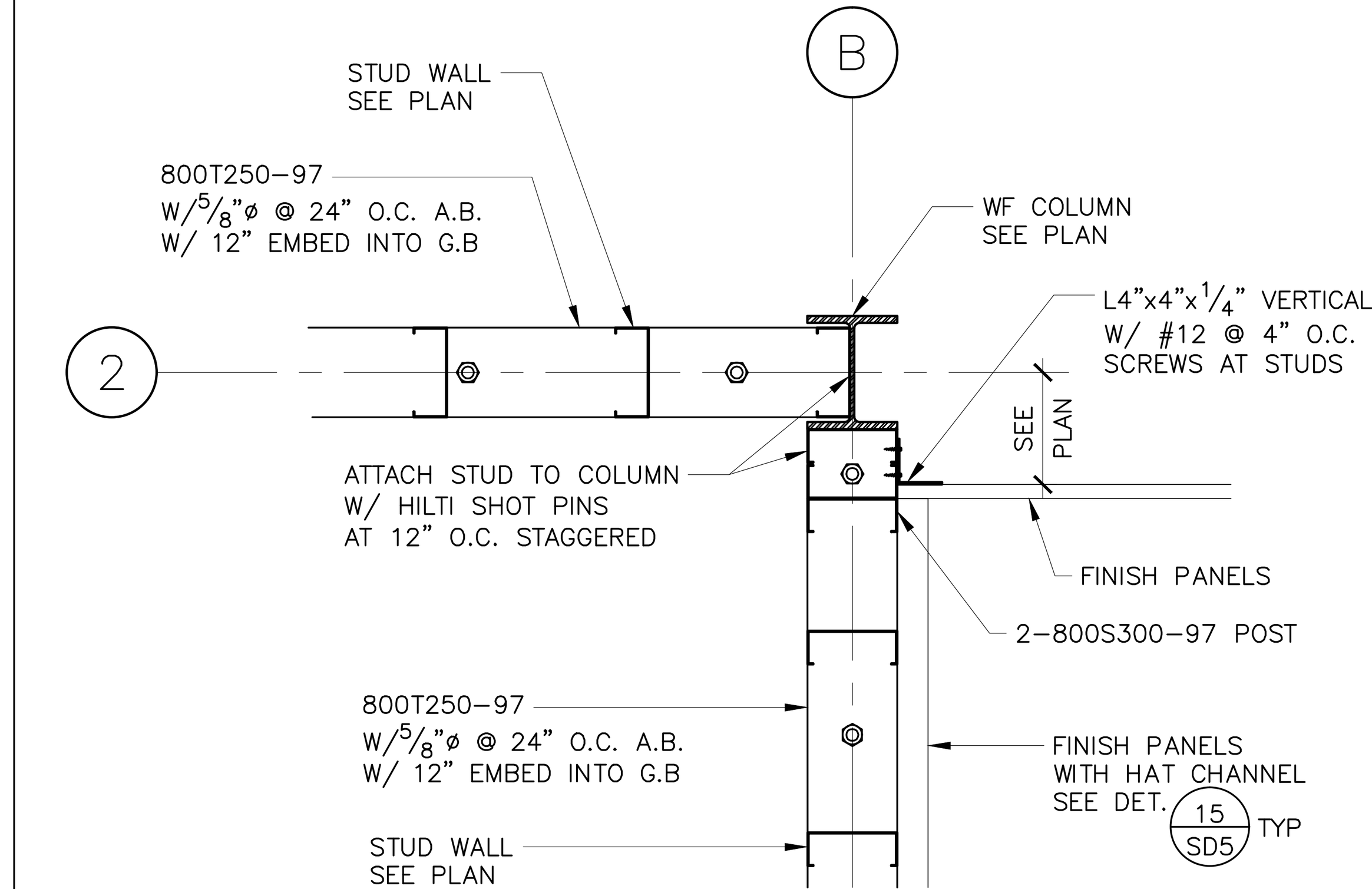
NOTE: FOR BALANCE OF INFORMATION SEE PLAN AND DETAIL 1–SD2.

SLAB DETAIL 1

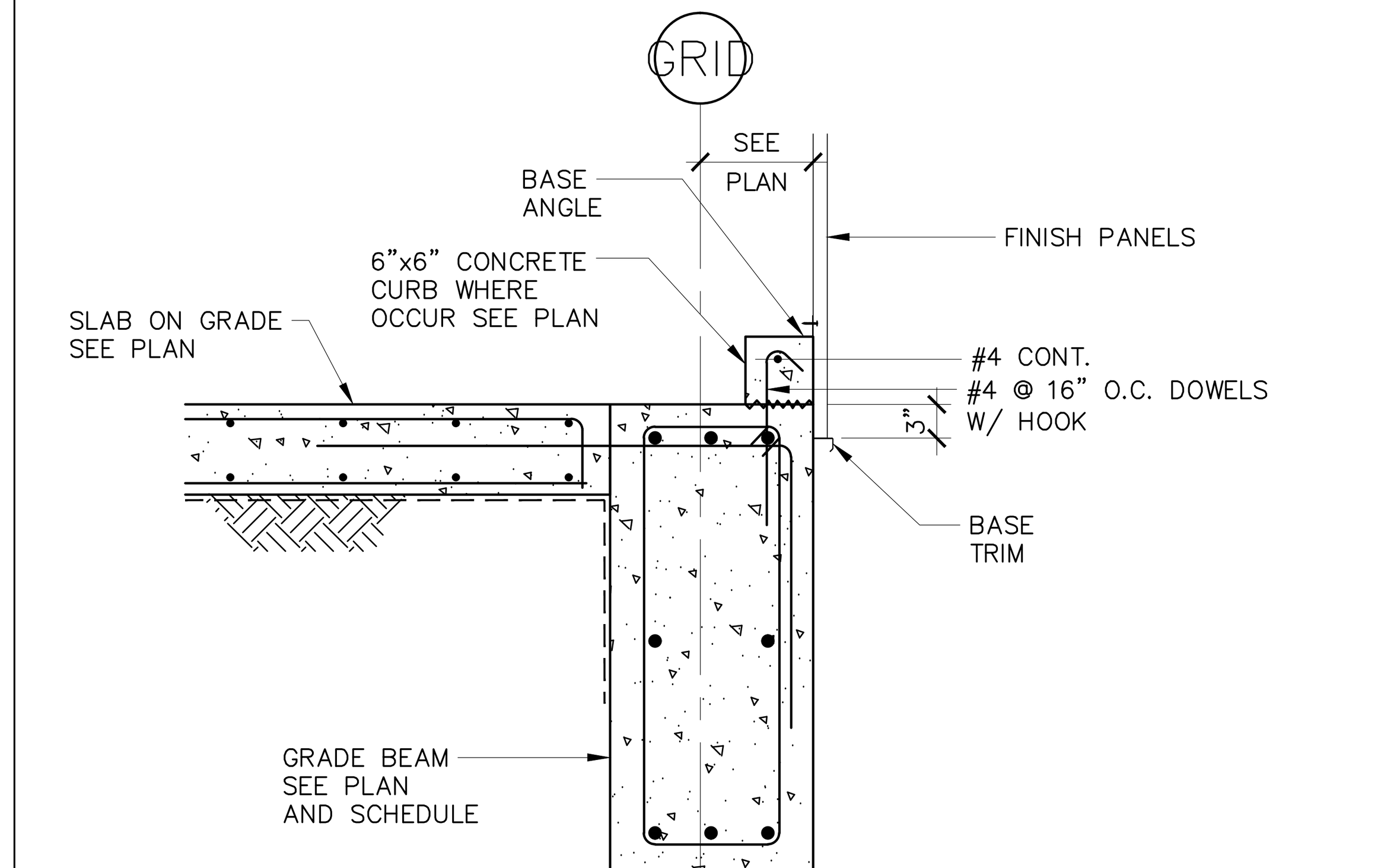


NOTE:
1– FOR BALANCE OF INFORMATION SEE DETAIL 8–SD2.

SLOPE DETAIL AT OVERHEAD DOOR 6

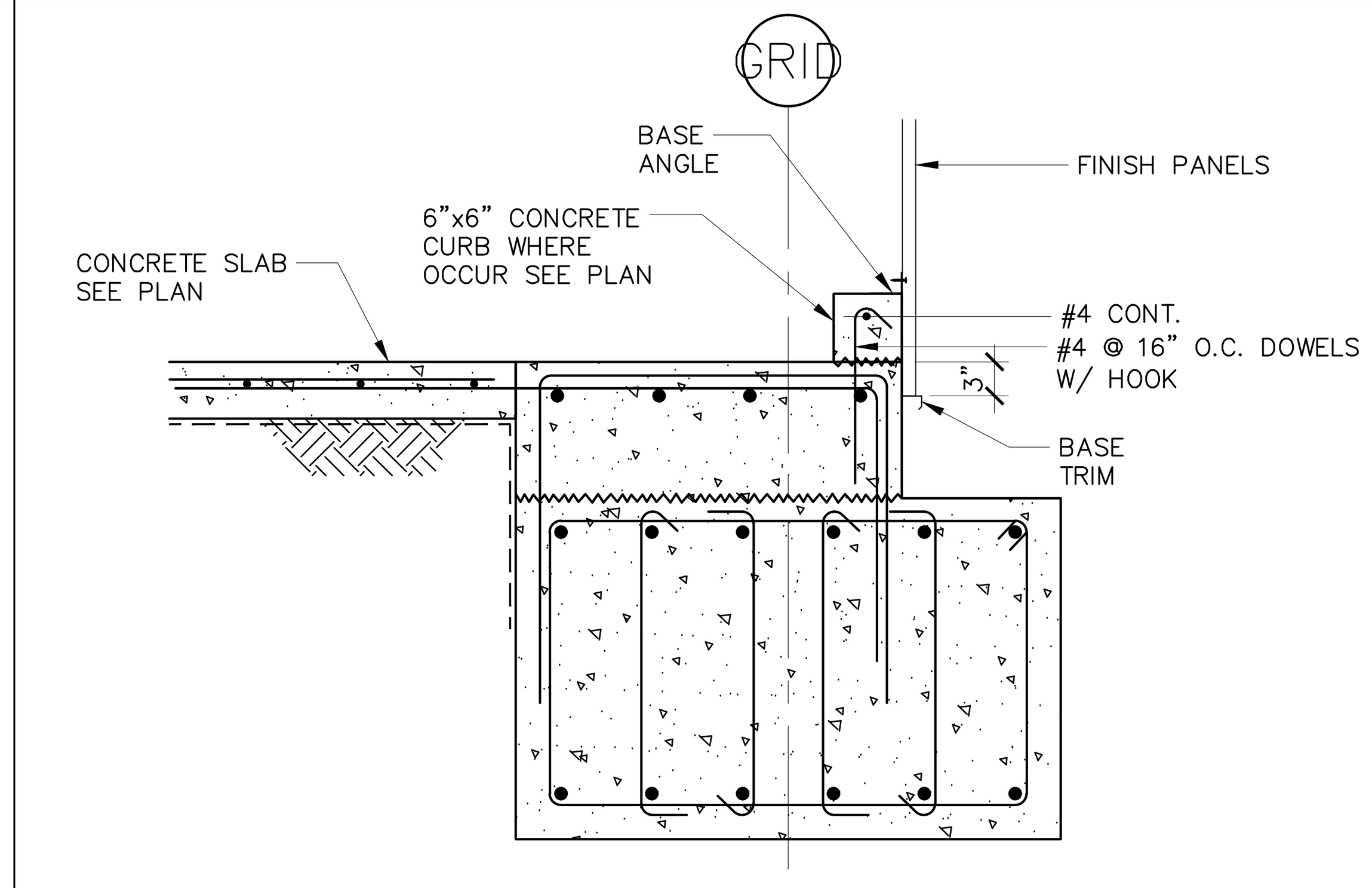


PLAN DETAIL 2



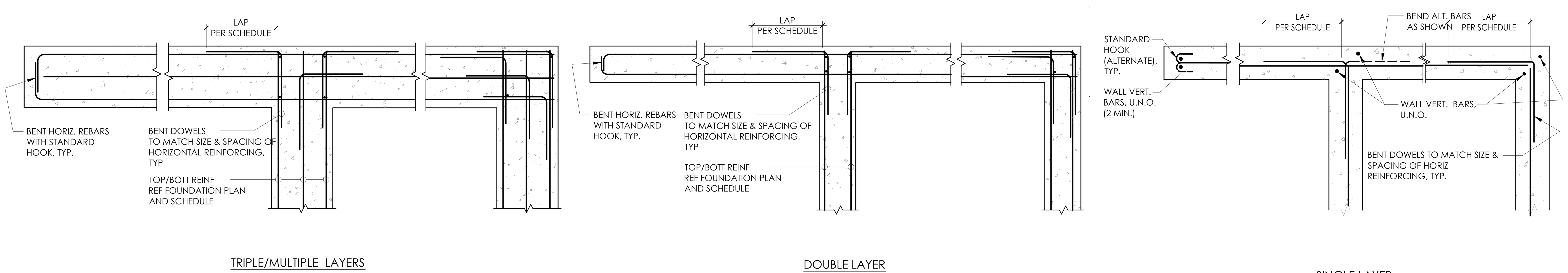
NOTE: FOR GRADE BEAM ELEVATION SEE DETAIL 8–SD2.

TIE BEAM SECTION 7

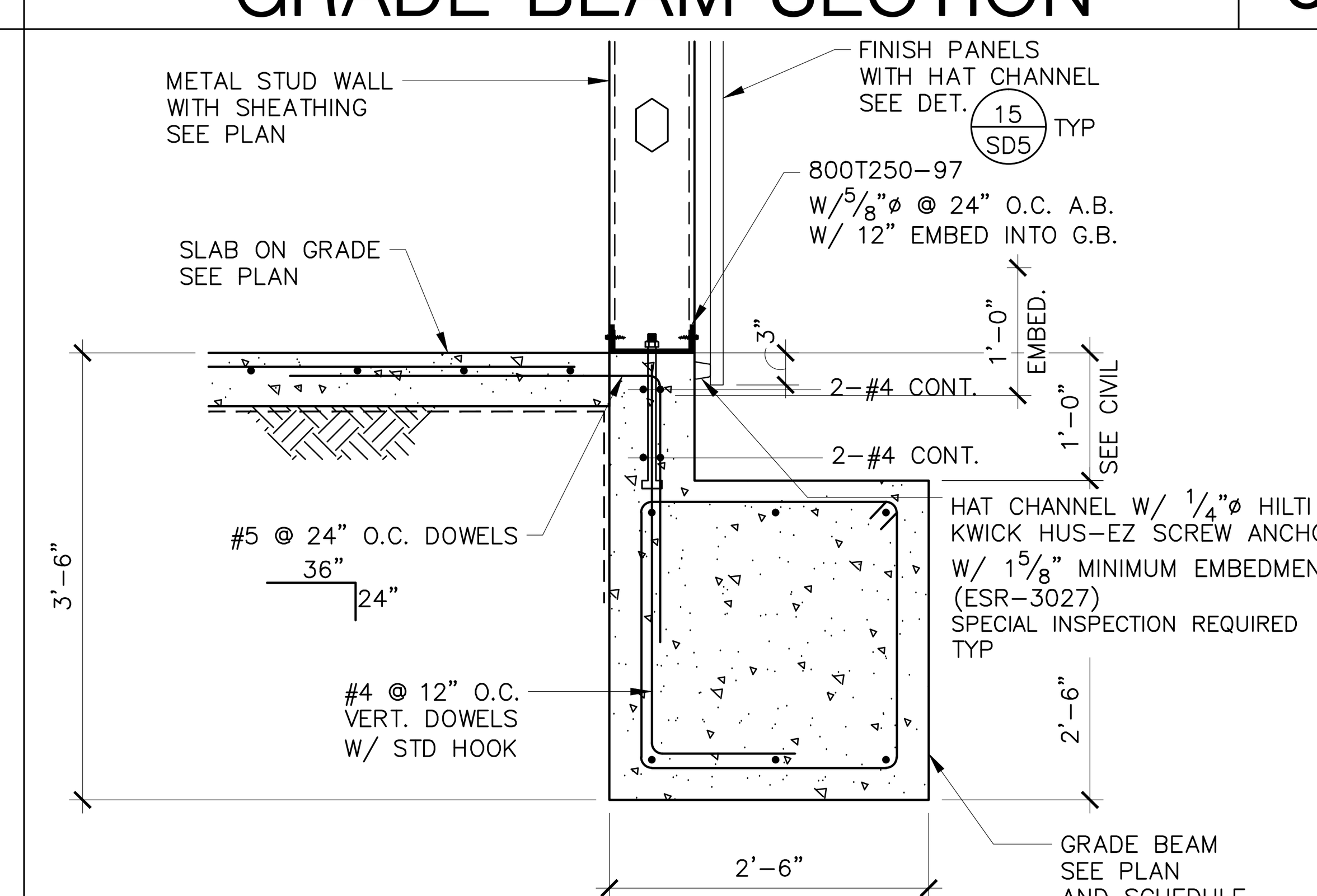


NOTE: FOR GRADE BEAM ELEVATION SEE DETAIL 4–SD2 & 12–SD2.

GRADE BEAM SECTION 3



TYPYCAL CONCRETE WALL/FOOTING HORIZONTAL REINFORCING AT CORNER, INTERSECTION 8



WALL GRADE BEAM SECTION 4

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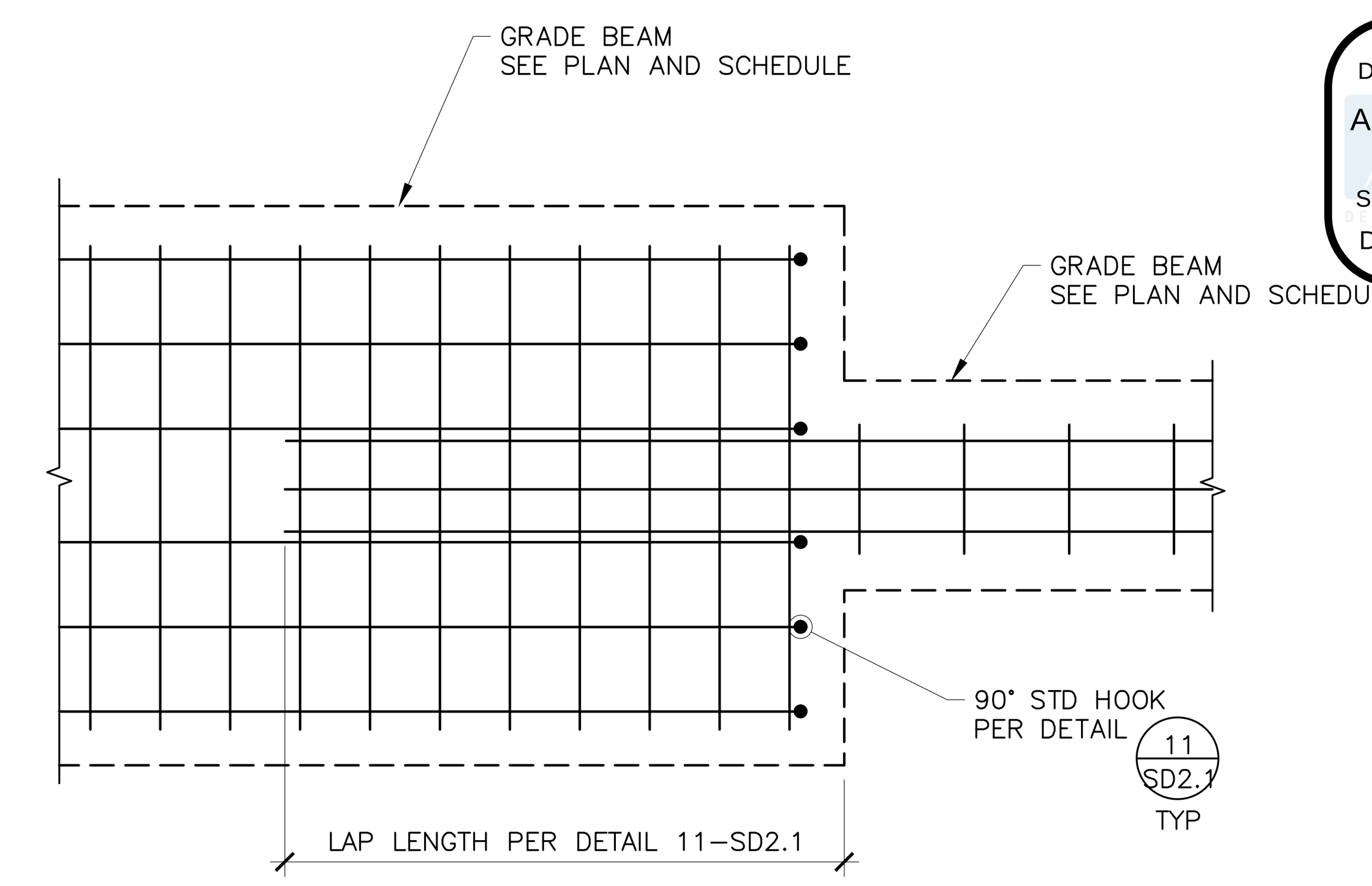
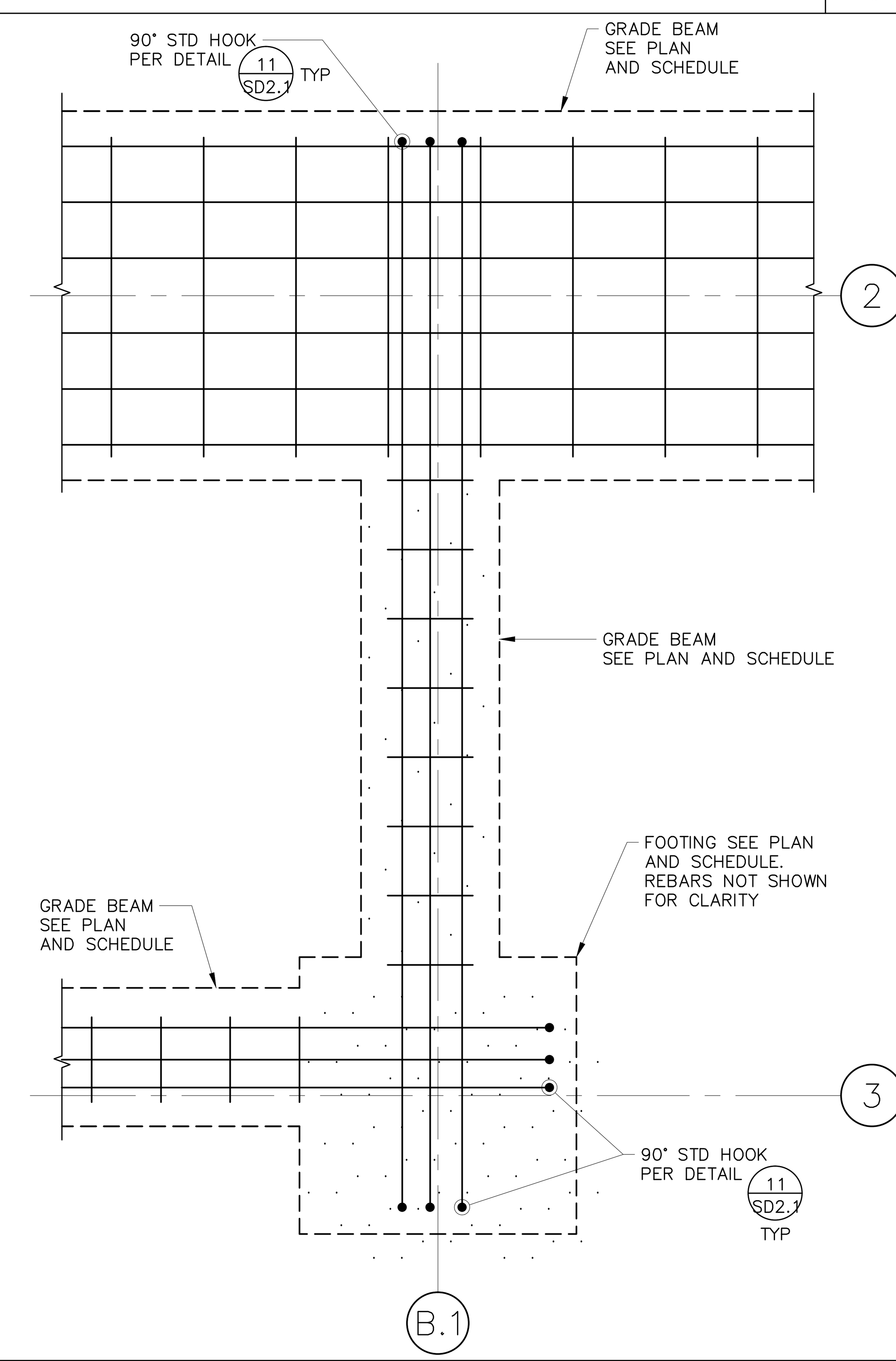
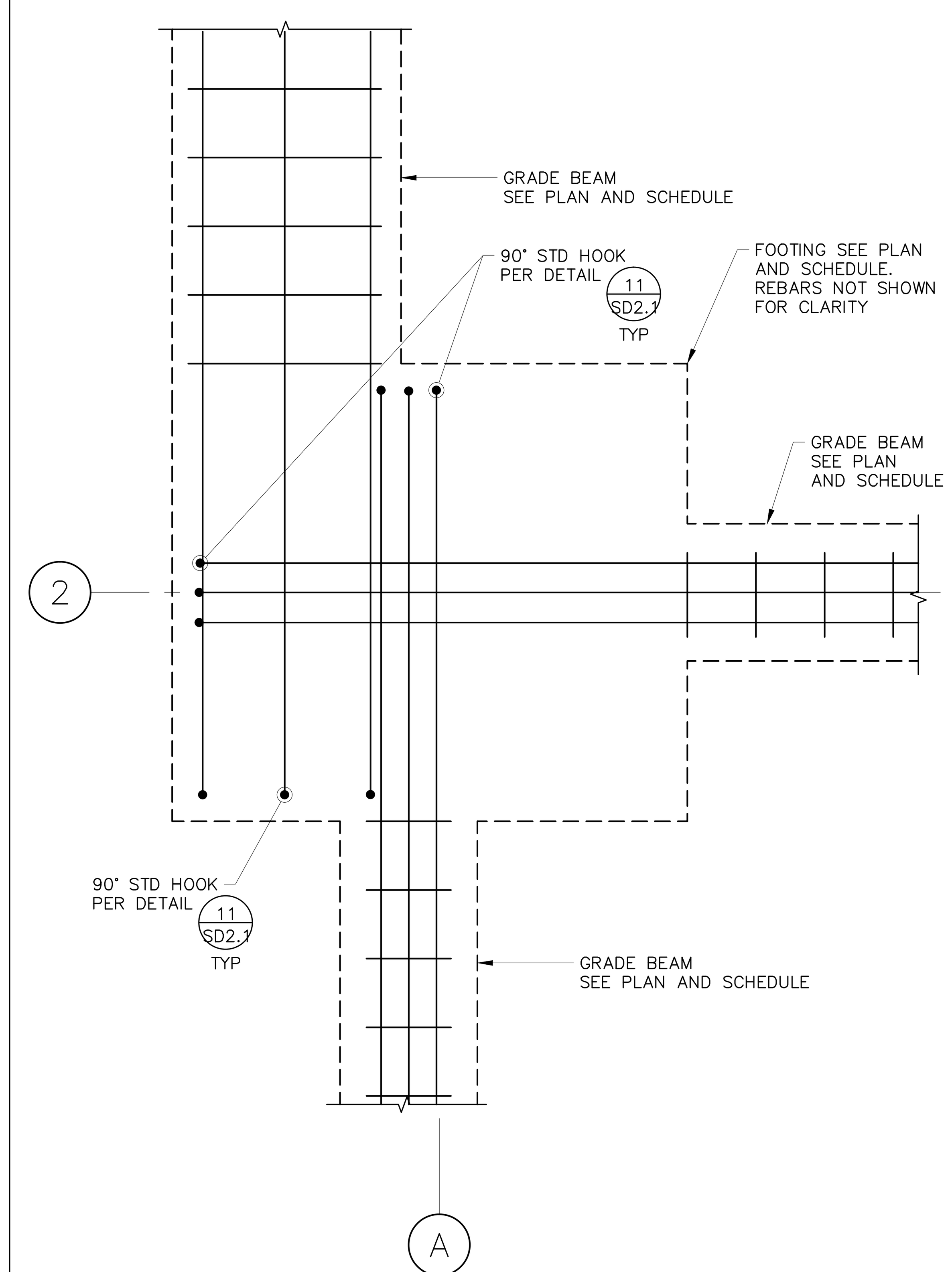


GRADE BEAM PLAN DETAIL 1



GRADE BEAM PLAN DETAIL 7



GRADE BEAM PLAN DETAIL 3

2 4 5 6 8 9 10 11 12 13 14 15 16

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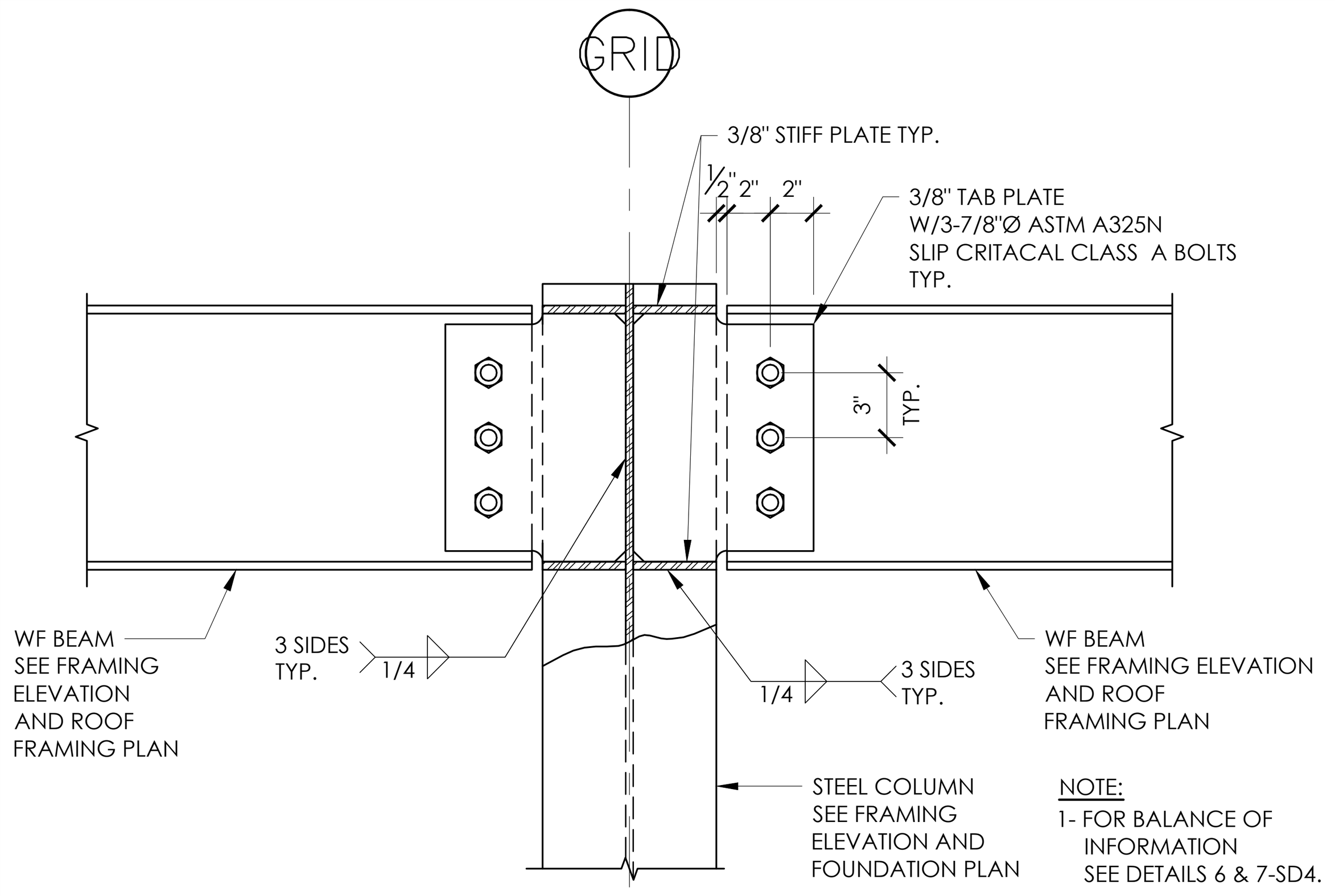
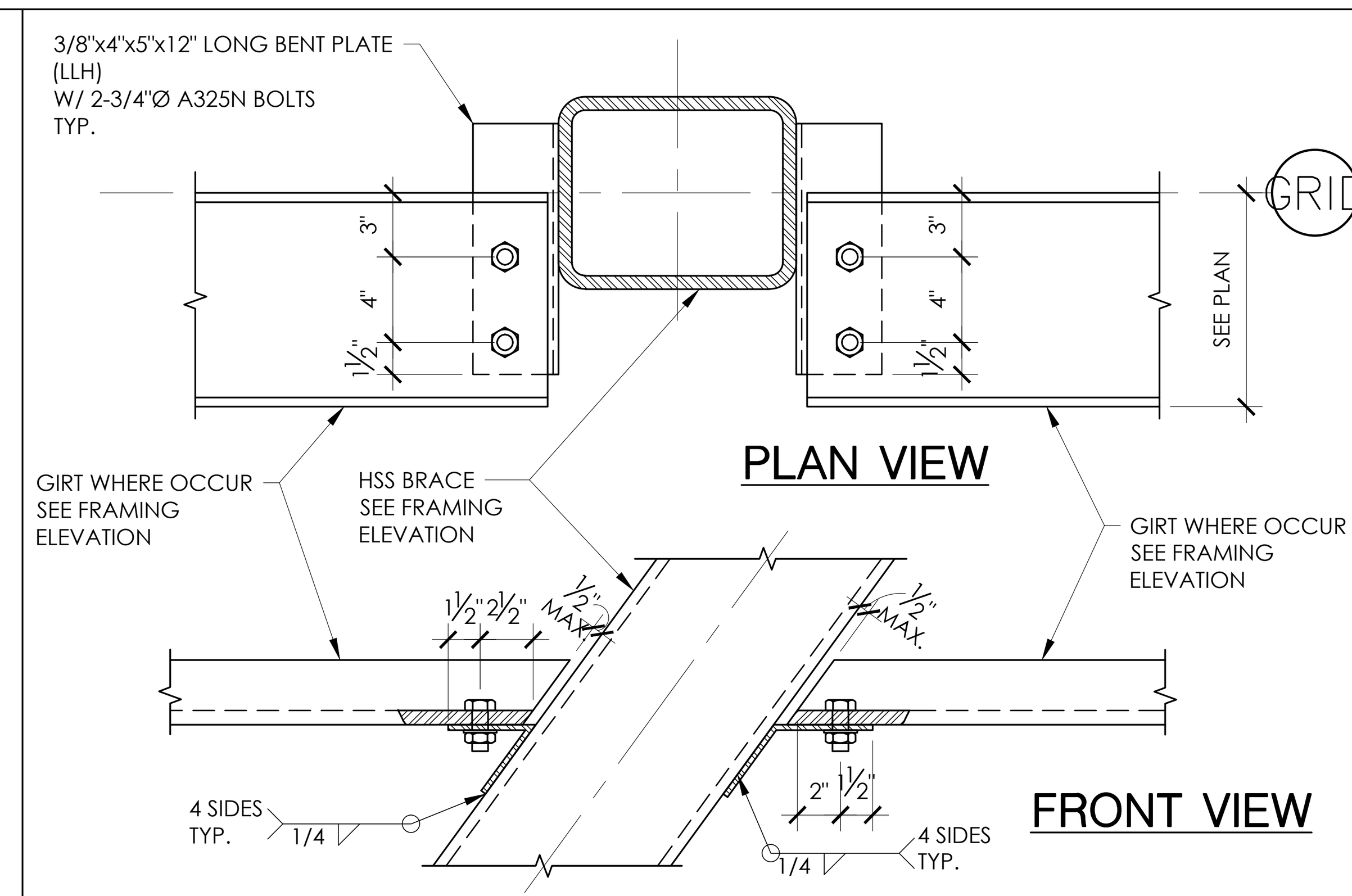
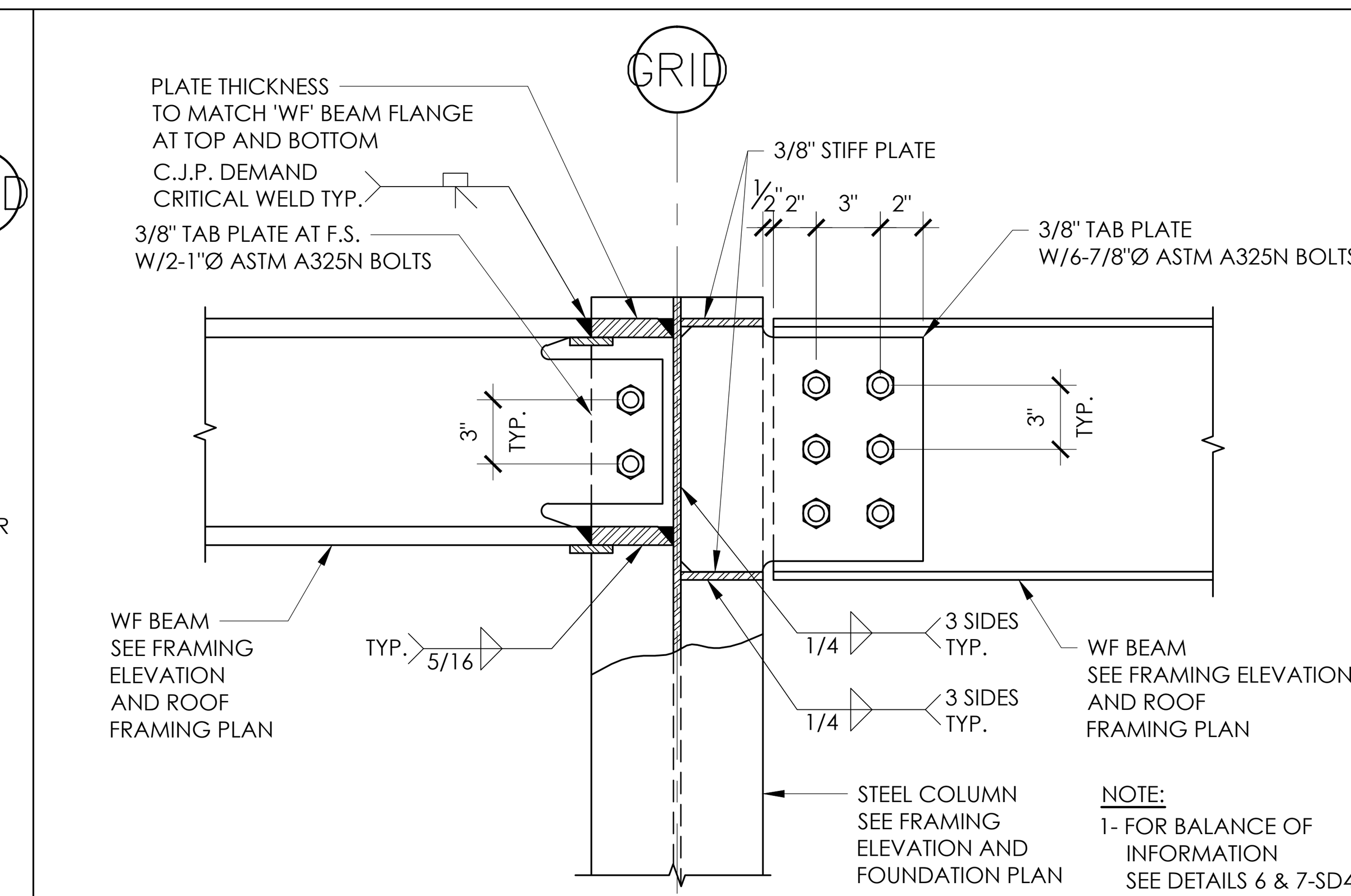


BEAM/ COLUMN DETAIL 13



GIRT TO BRACE DETAIL 9



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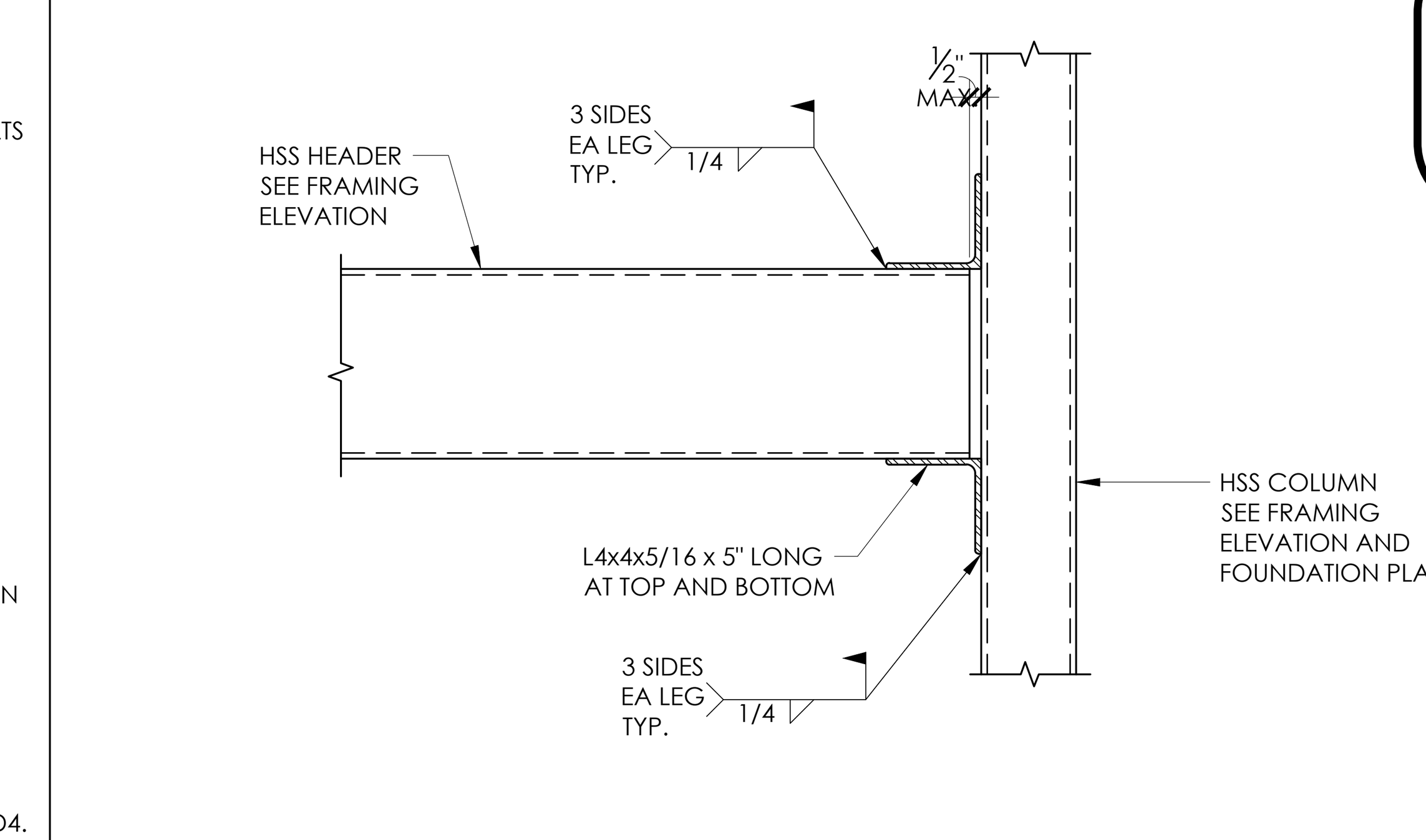

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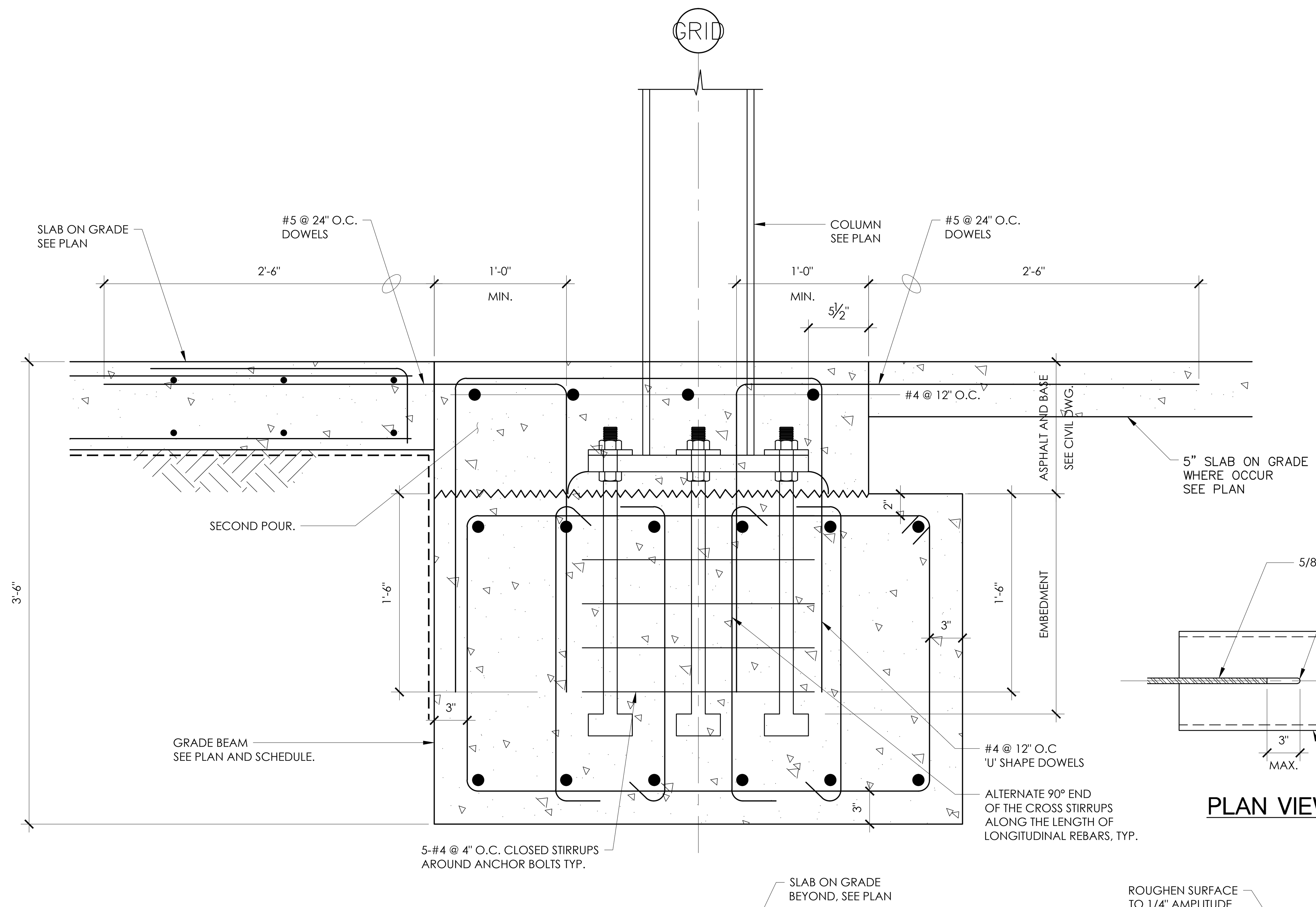
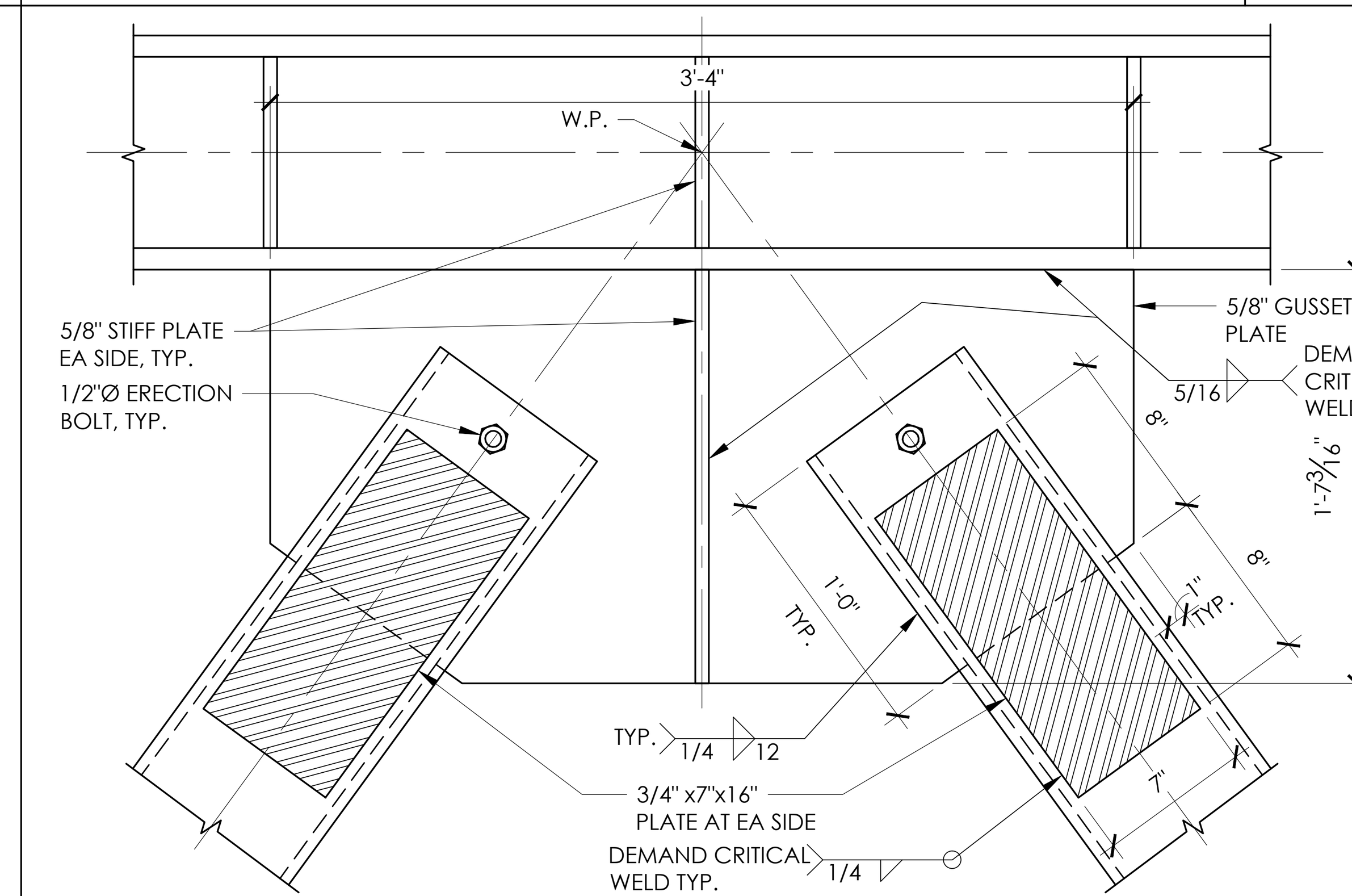


GRADE BEAM SECTION 15



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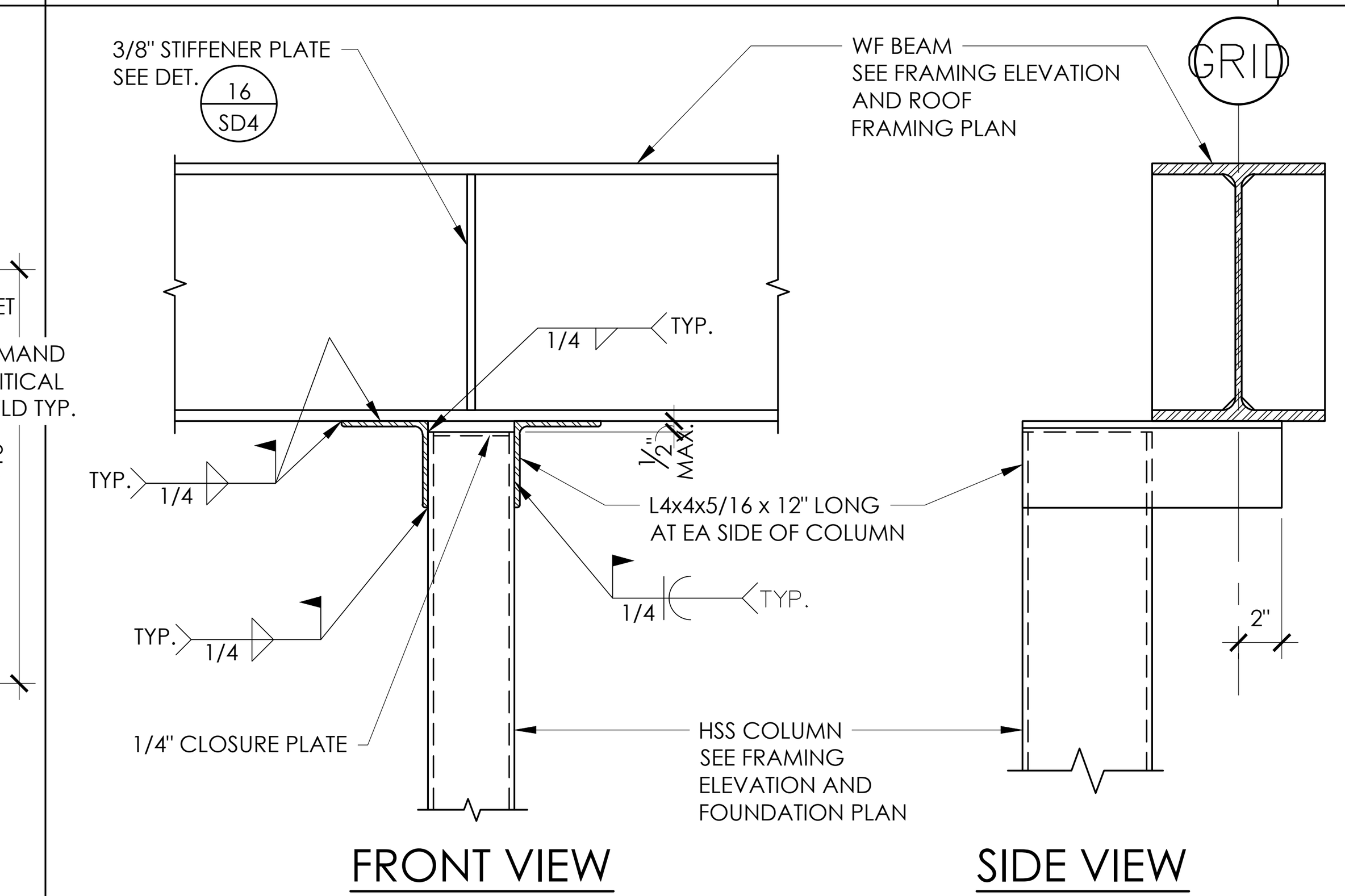

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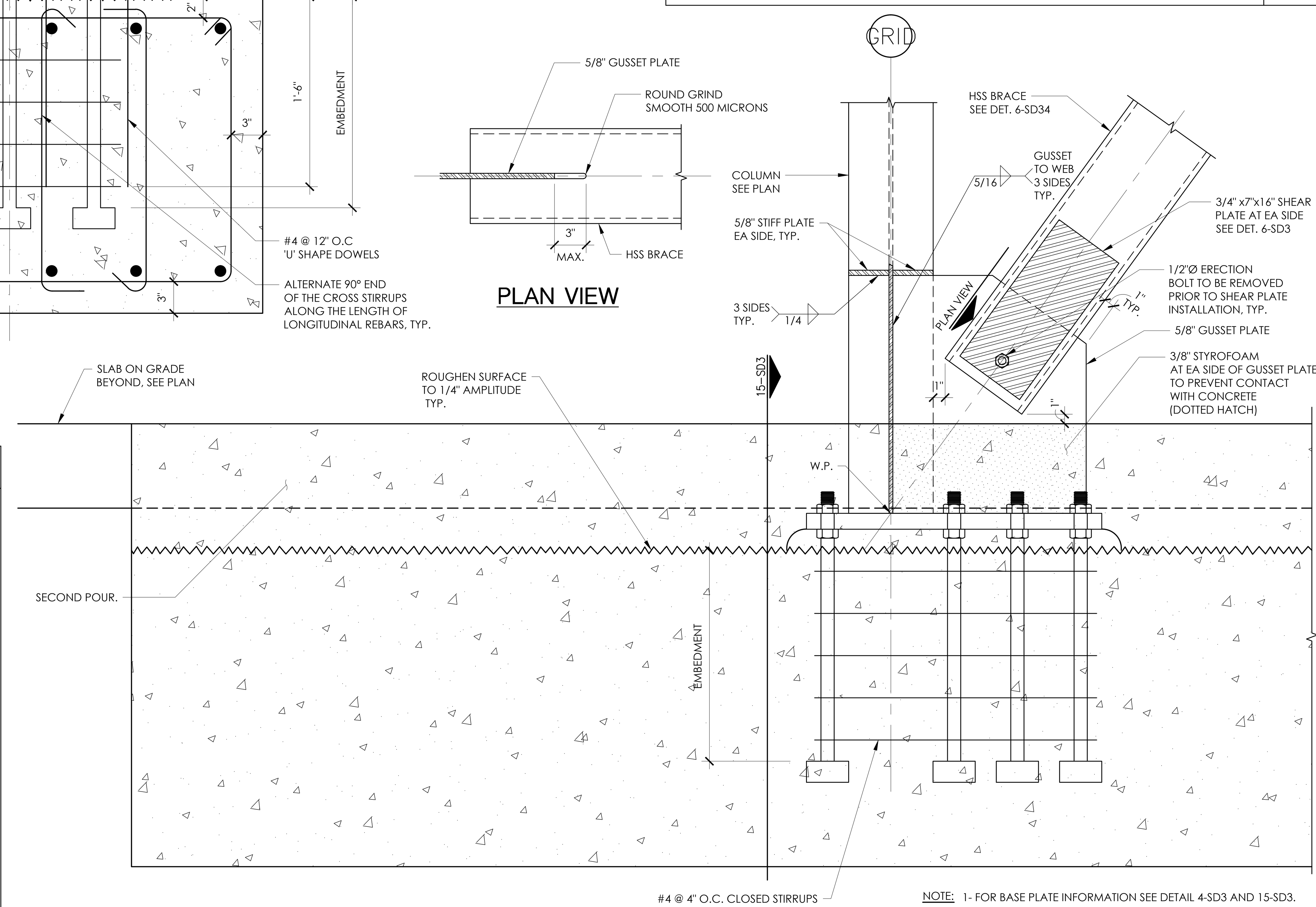
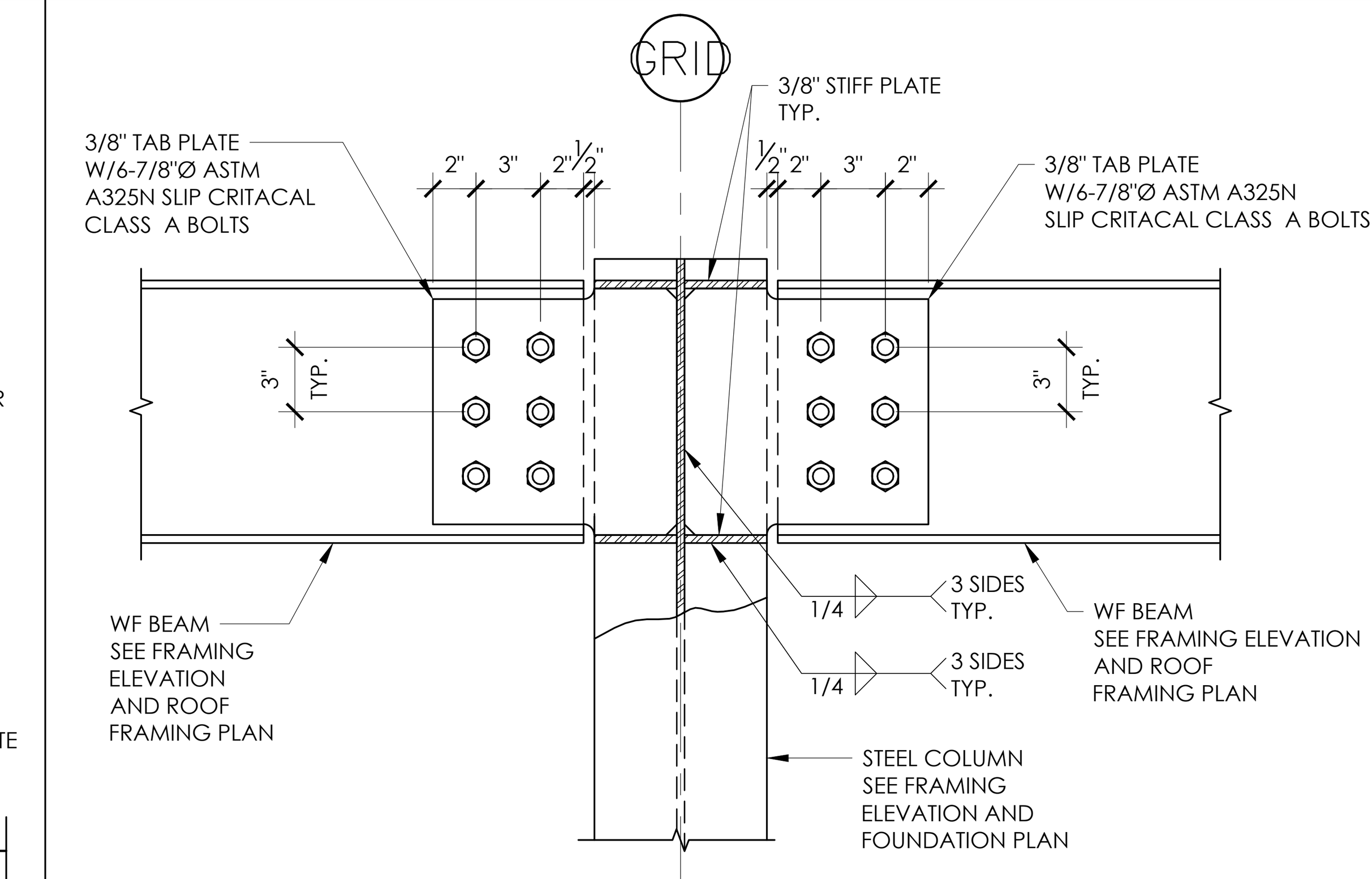


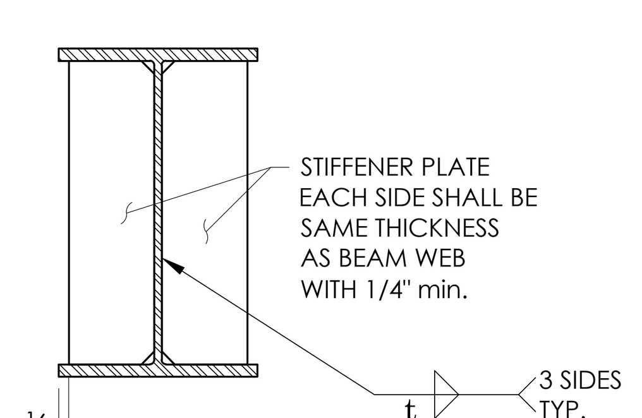
GRADE BEAM ELEVATION 8



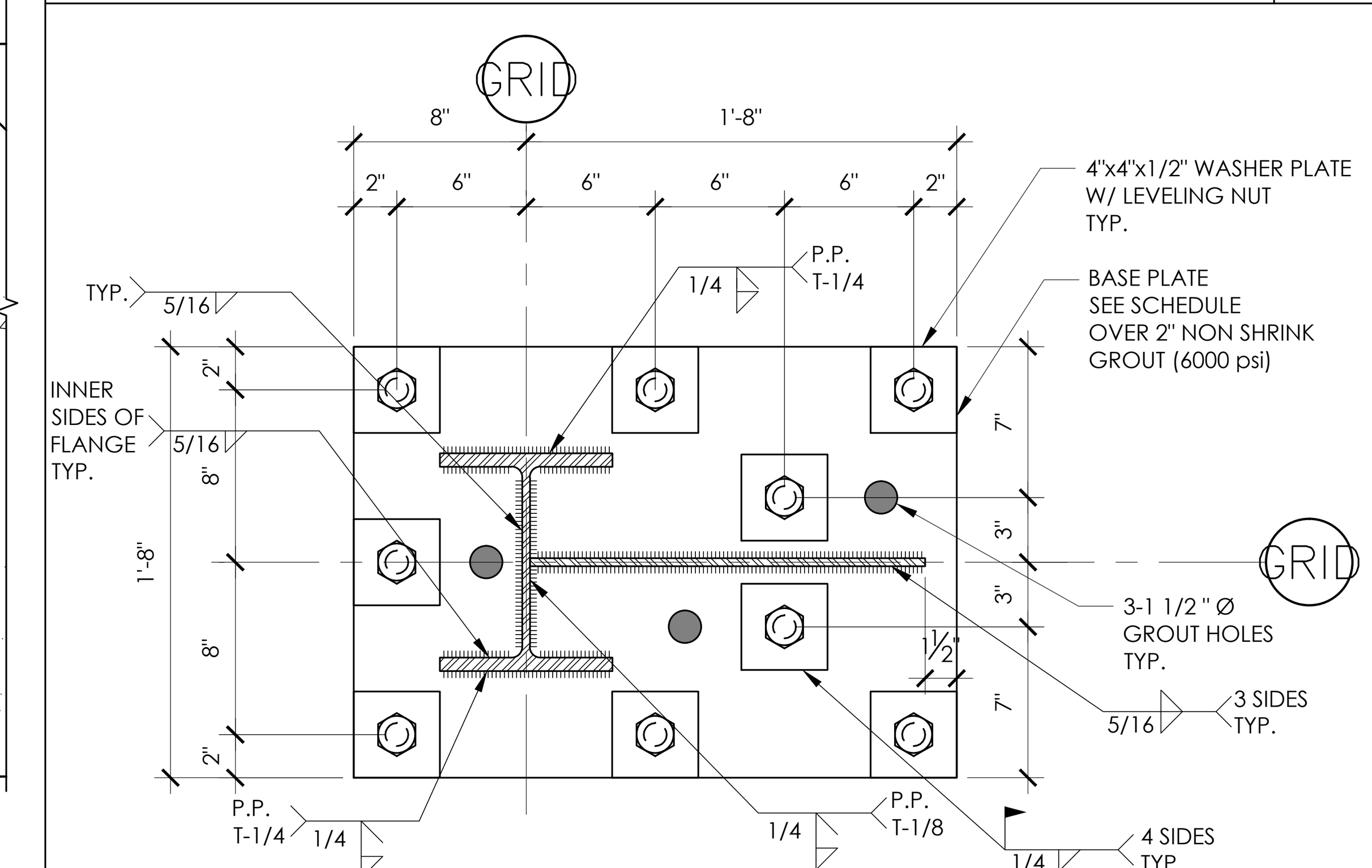
DETAIL 3

STIFFENER PLATE SCEDULE

PLATE THICKNESS	WELDING THICKNESS 't'
1/4"	3/16"
3/8"	3/16"
1/2"	1/4"
3/4"	1/4"
OVER 3/4"	5/16"



TYPICAL STIFFENER DETAIL 16



BASE PLATE DETAIL 4

B & B ASSOCIATES
STRUCTURAL ENGINEERS

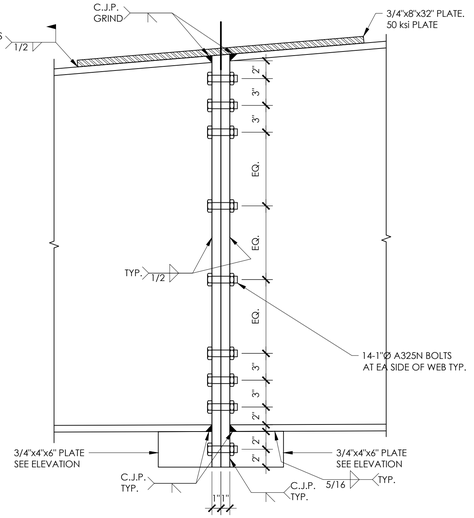
RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

DETAILS

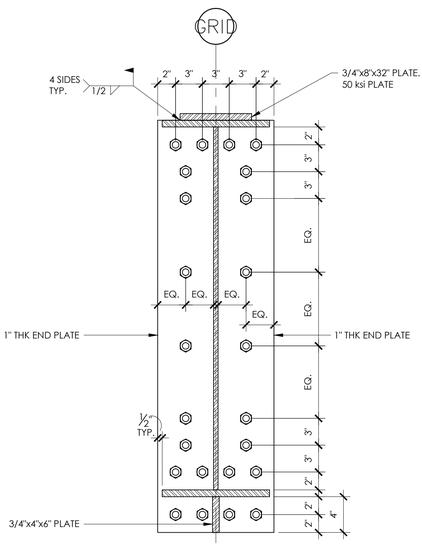
Revisions
R&A No: A181901
Date: 8/26/2020
Drawn: GB
Checked: CW
Consult. No:

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

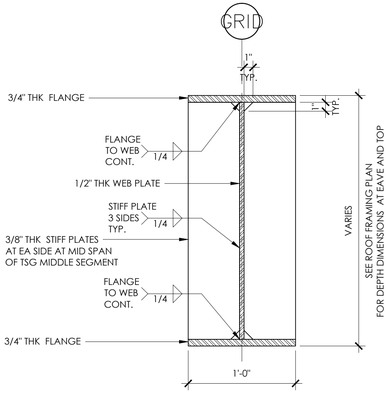
Sheet No.
SD3



TSG 1 SPLICE DETAIL

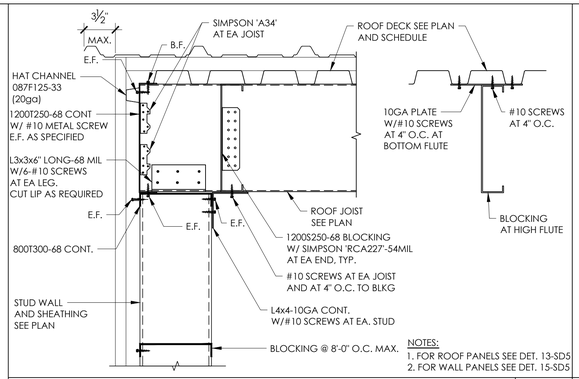


TSG 1 SPLICE ELEVATION



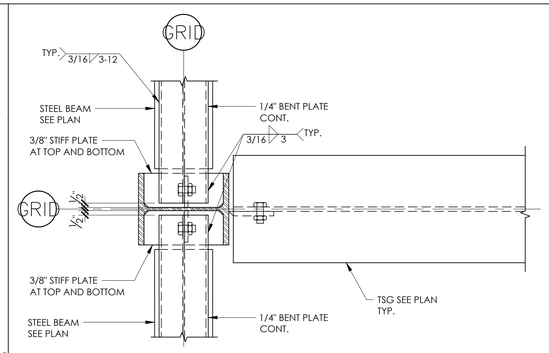
TSG 1 TYPICAL SECTION

TSG 1 DETAILS | 16

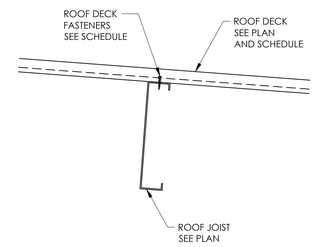


NOTES:
1. FOR ROOF PANELS SEE DET. 13-SD5
2. FOR WALL PANELS SEE DET. 15-SD5

SECTION | 9

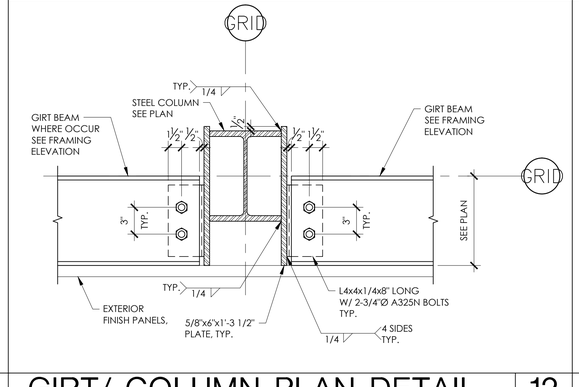


PLAN VIEW | 5



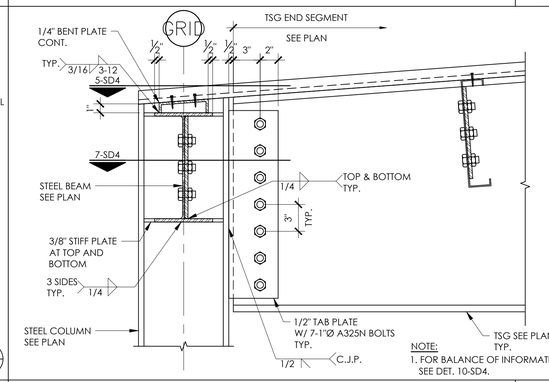
NOTE:
1. FOR ROOF PANELS SEE DET. 13/SD5

ROOF JOIST DETAIL | 1



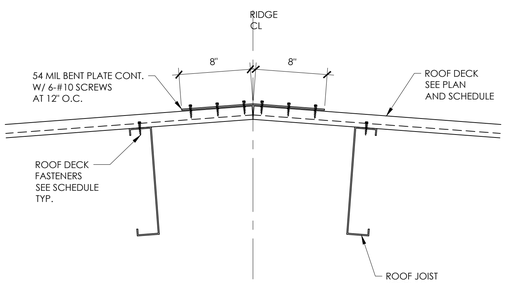
NOTE:
1. FOR ROOF PANELS SEE DET. 13/SD5

SECTION | 10



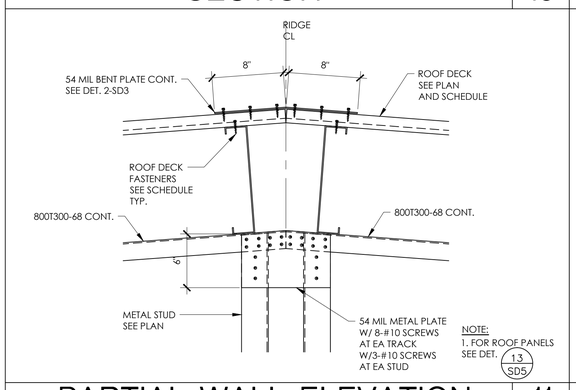
NOTE:
1. FOR BALANCE OF INFORMATION SEE DET. 10-SD4.

TSG/ COLUMN DETAIL | 6



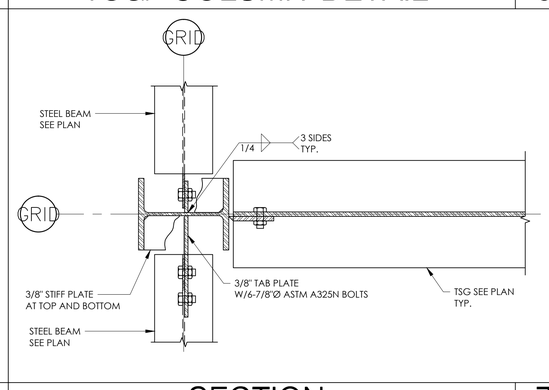
NOTE:
1. FOR ROOF PANELS SEE DET. 13/SD5

ROOF RIDGE DETAIL | 2

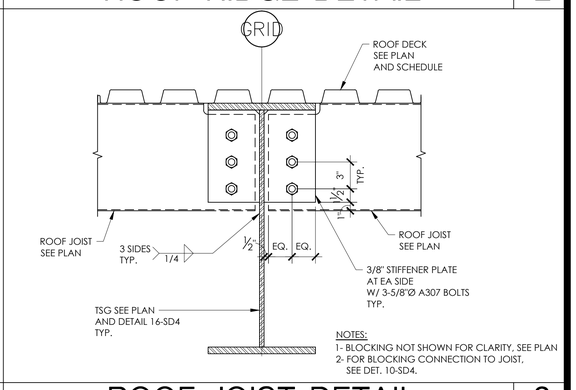


NOTE:
1. FOR ROOF PANELS SEE DET. 13/SD5

PARTIAL WALL ELEVATION | 11



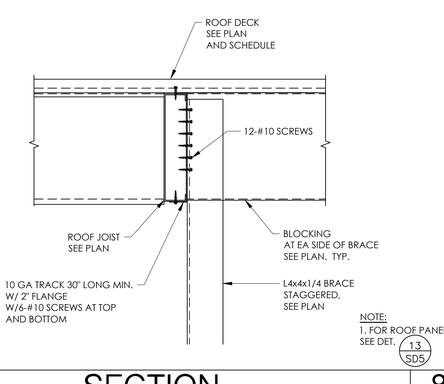
SECTION | 7



NOTES:
1- BLOCKING NOT SHOWN FOR CLARITY, SEE PLAN
2- FOR BLOCKING CONNECTION TO JOIST, SEE DET. 10-SD4.

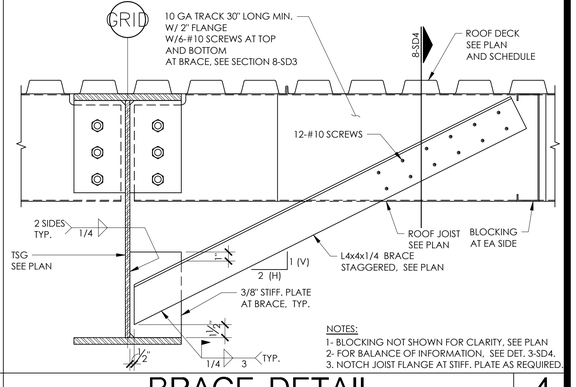
ROOF JOIST DETAIL | 3

GIRT/ COLUMN PLAN DETAIL | 12



NOTE:
1. FOR ROOF PANELS SEE DET. 13/SD5

SECTION | 8



NOTES:
1- BLOCKING NOT SHOWN FOR CLARITY, SEE PLAN
2- FOR BALANCE OF INFORMATION, SEE DET. 3-SD4.
3. NOTCH JOIST FLANGE AT STIFF. PLATE AS REQUIRED.

BRACE DETAIL | 4

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

B & B ASSOCIATES
STRUCTURAL ENGINEERS
80 N. Euclid Ave., Ste. 101, Pasadena, CA 91101
Tel: (626) 204-1088, Fax: (626) 204-1099
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LICENSED PROFESSIONAL ENGINEER
ARMEN BARODIAN
S 4227
EXP. 06/30/2021
STRUCTURAL
STATE OF CALIFORNIA

10.14.20

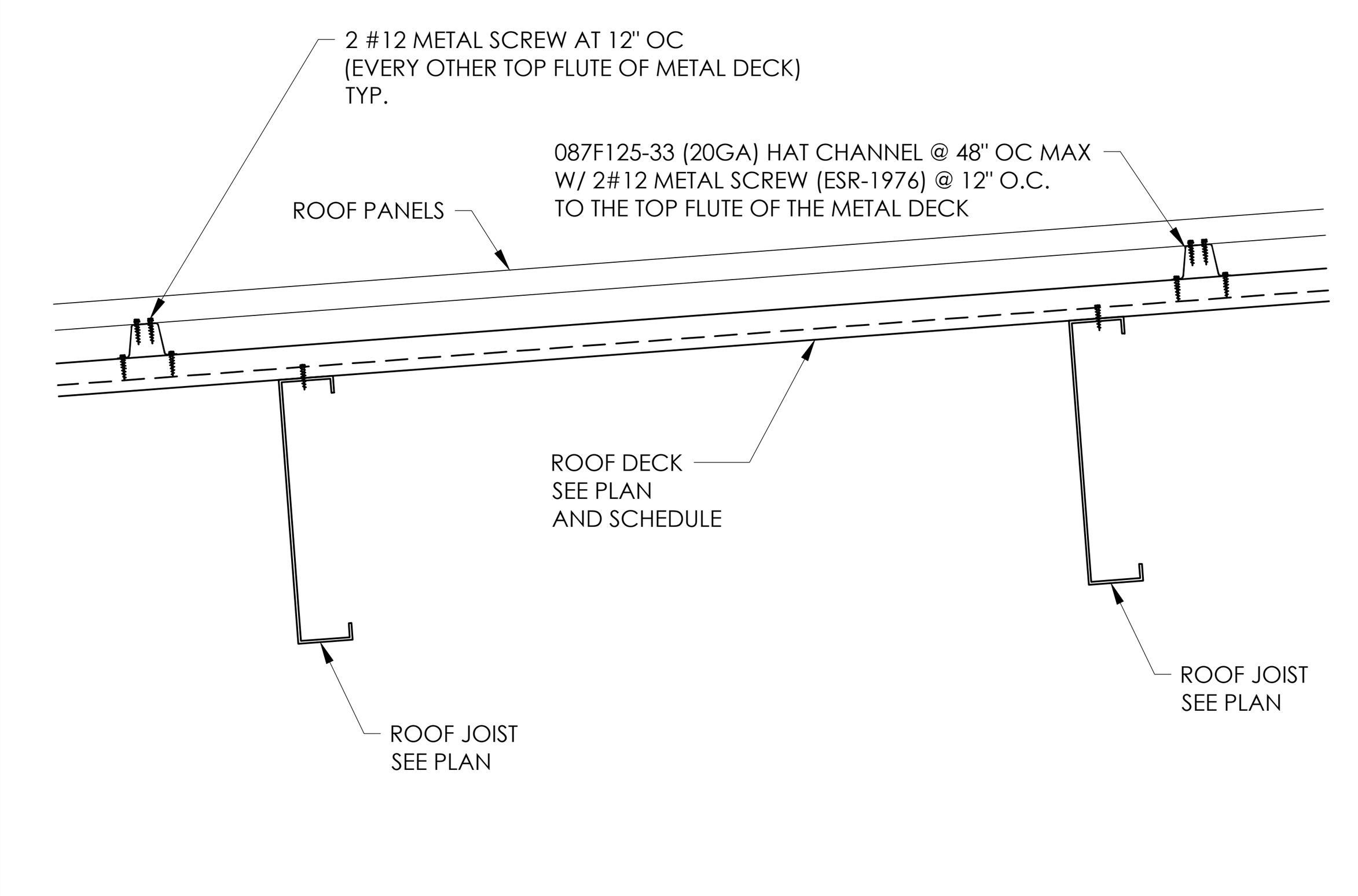
RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

DETAILS

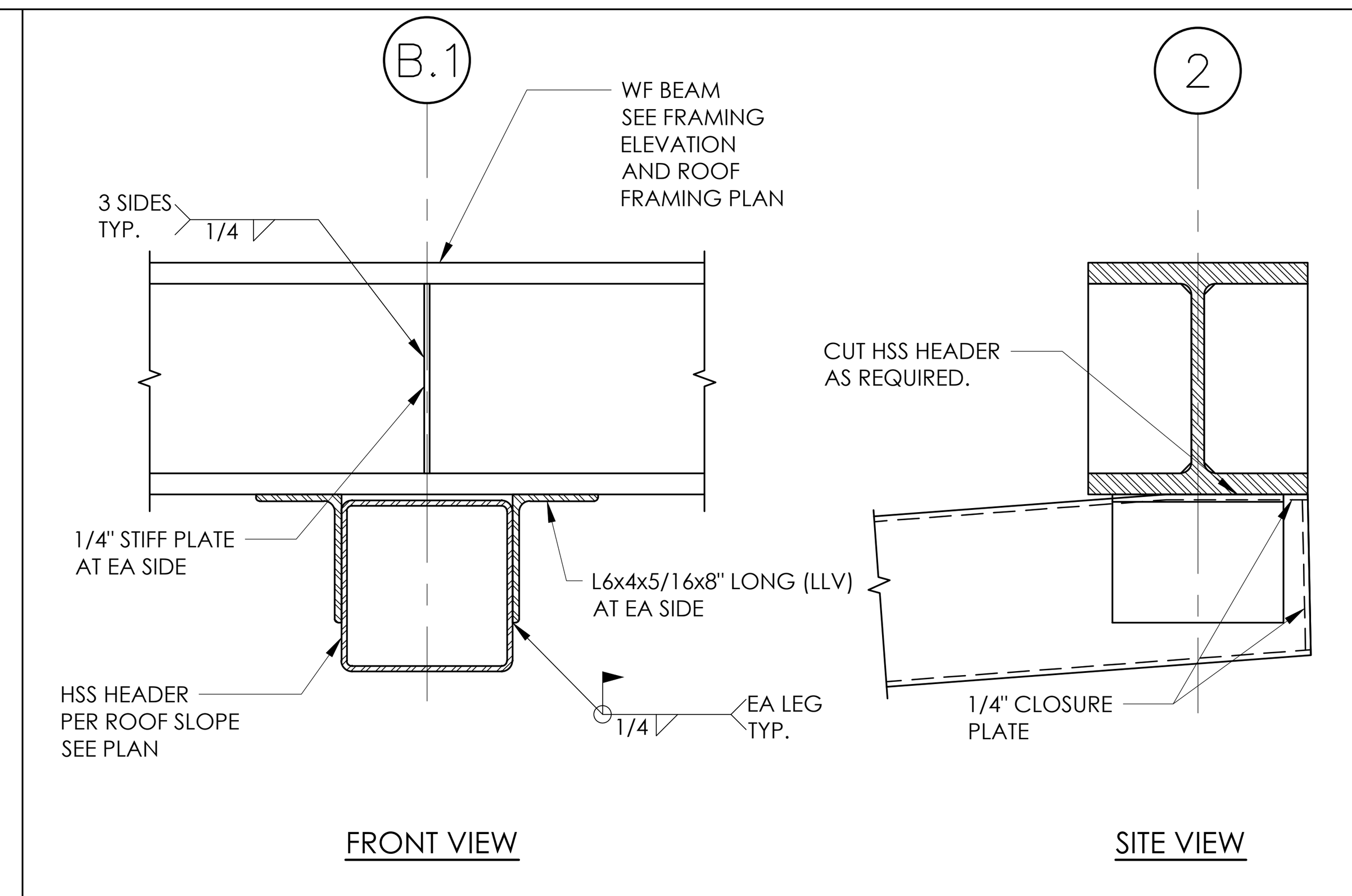
Revisions	R&A No: 418190
	Date: 8/28/2020
	Drawn:
	Checked: CW
	Consult. No:

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

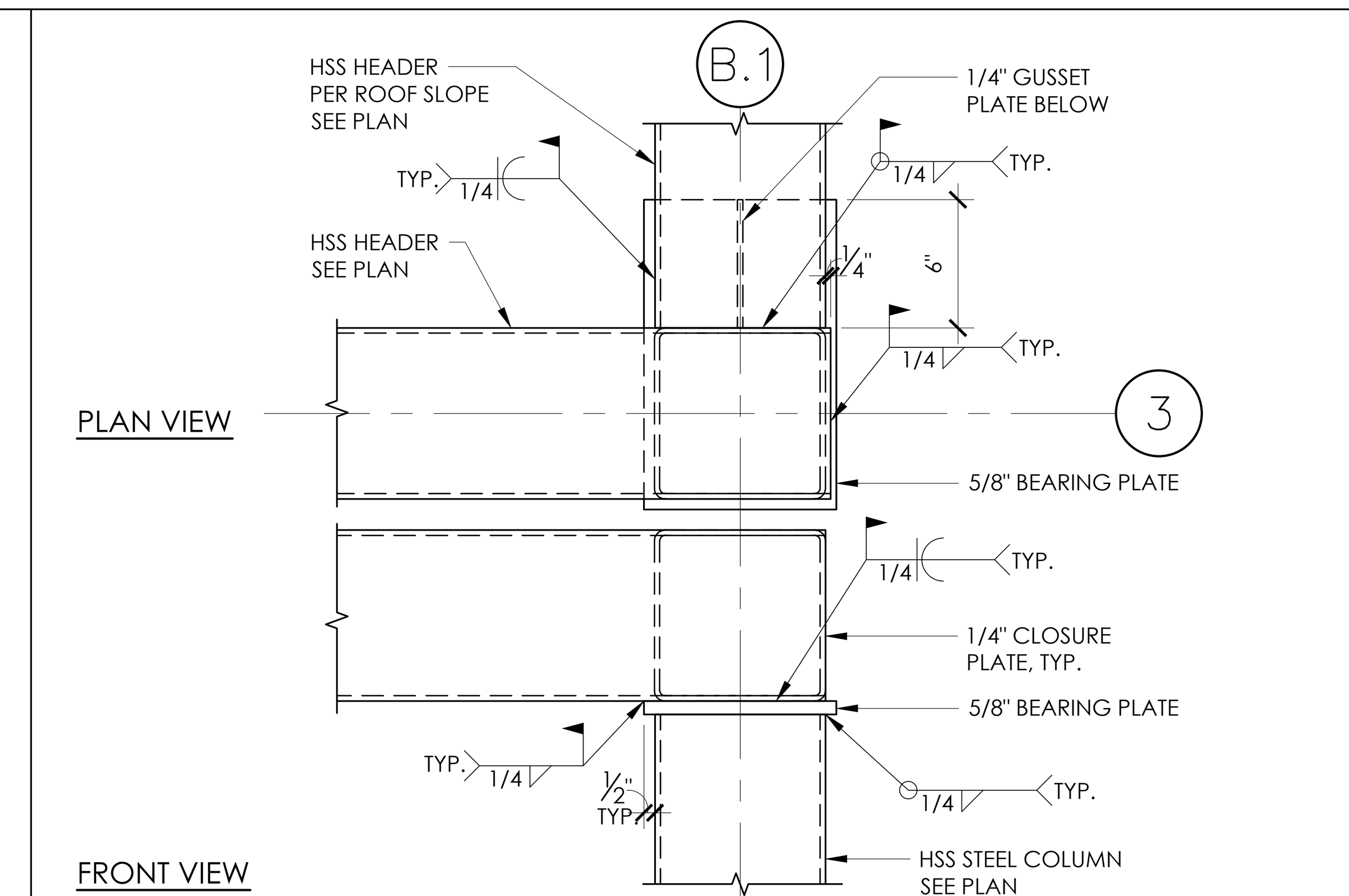
Sheet No.
SD4



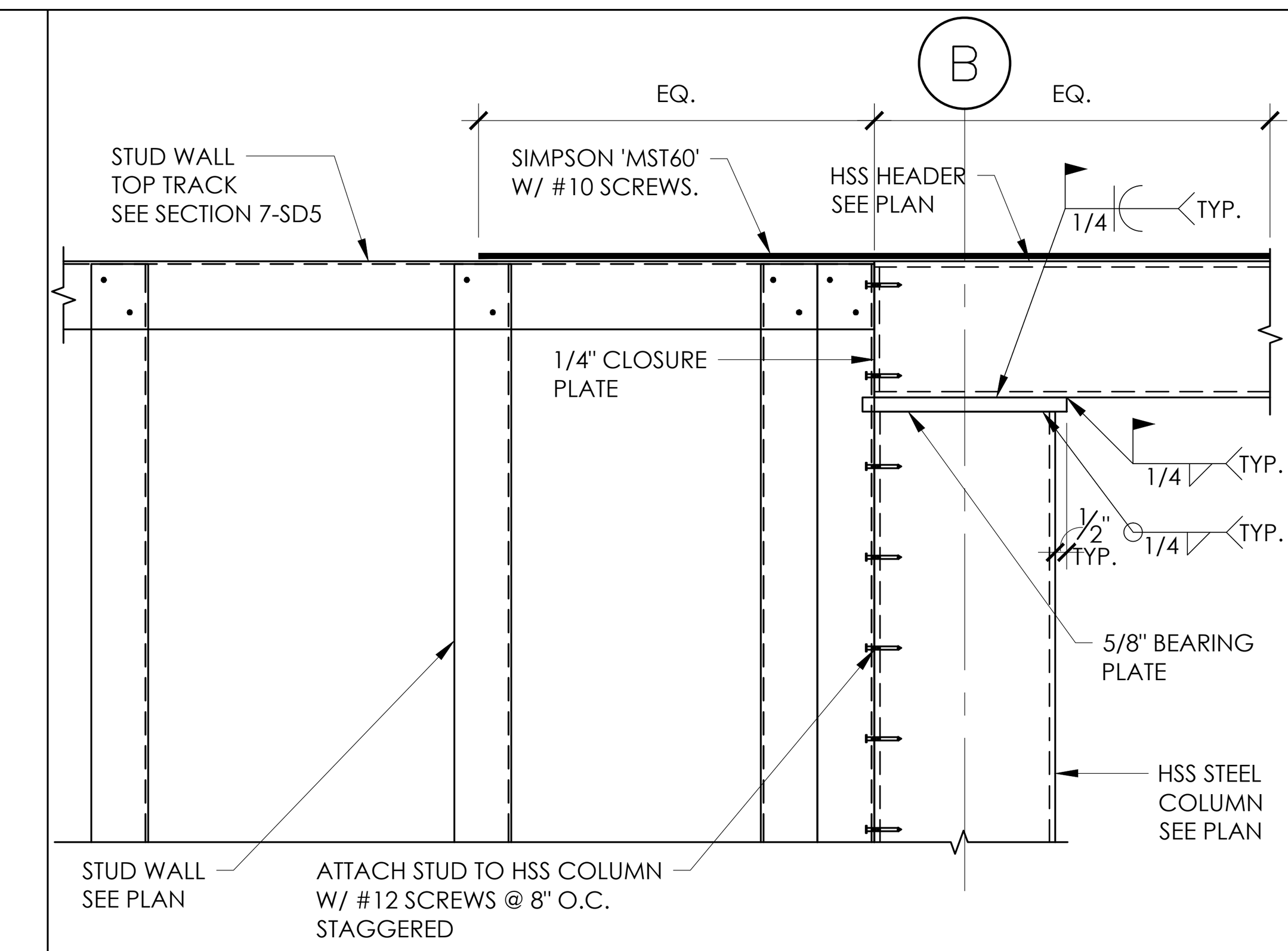
ROOF PANEL DETAIL 13



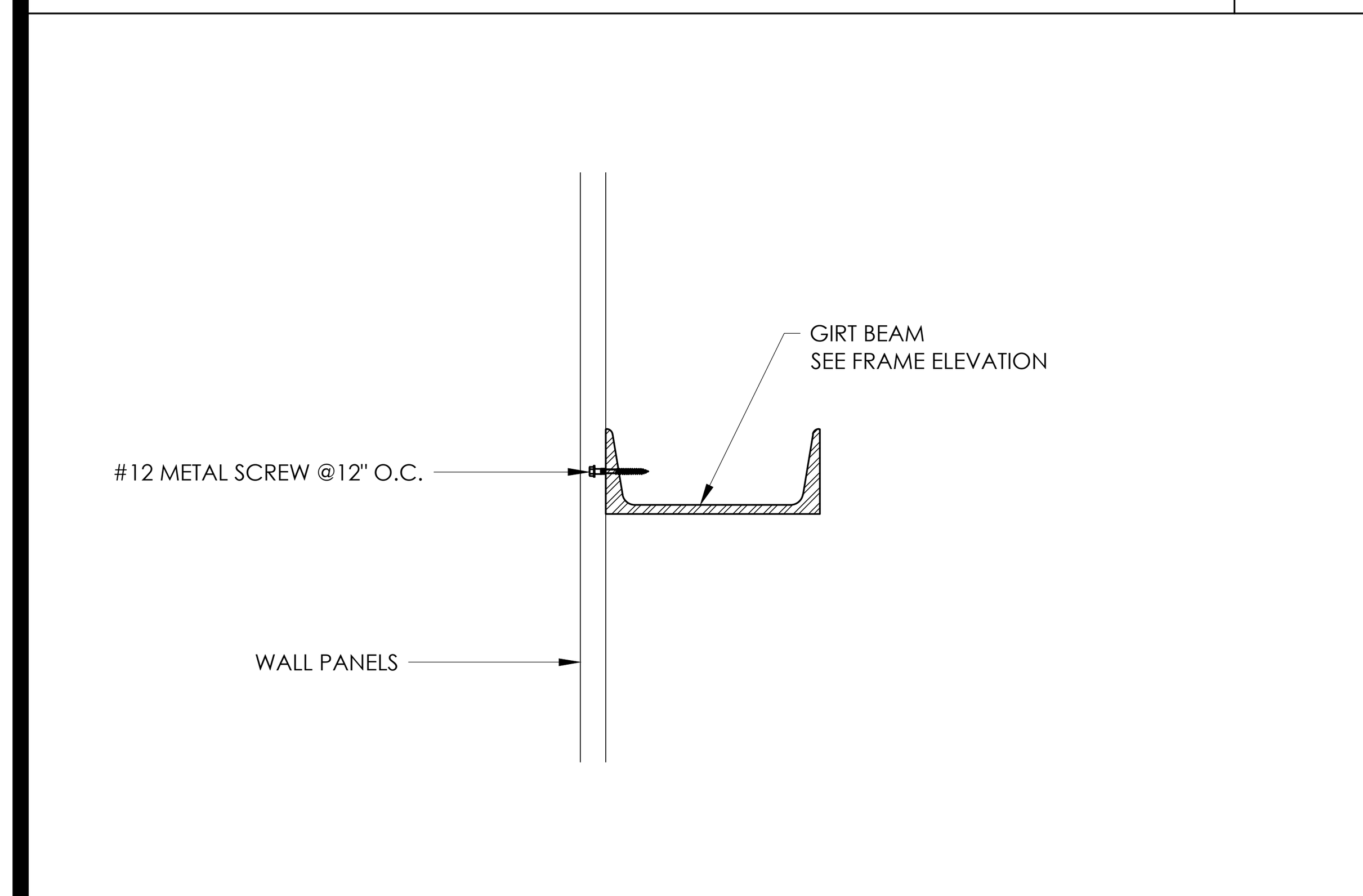
DETAIL 9



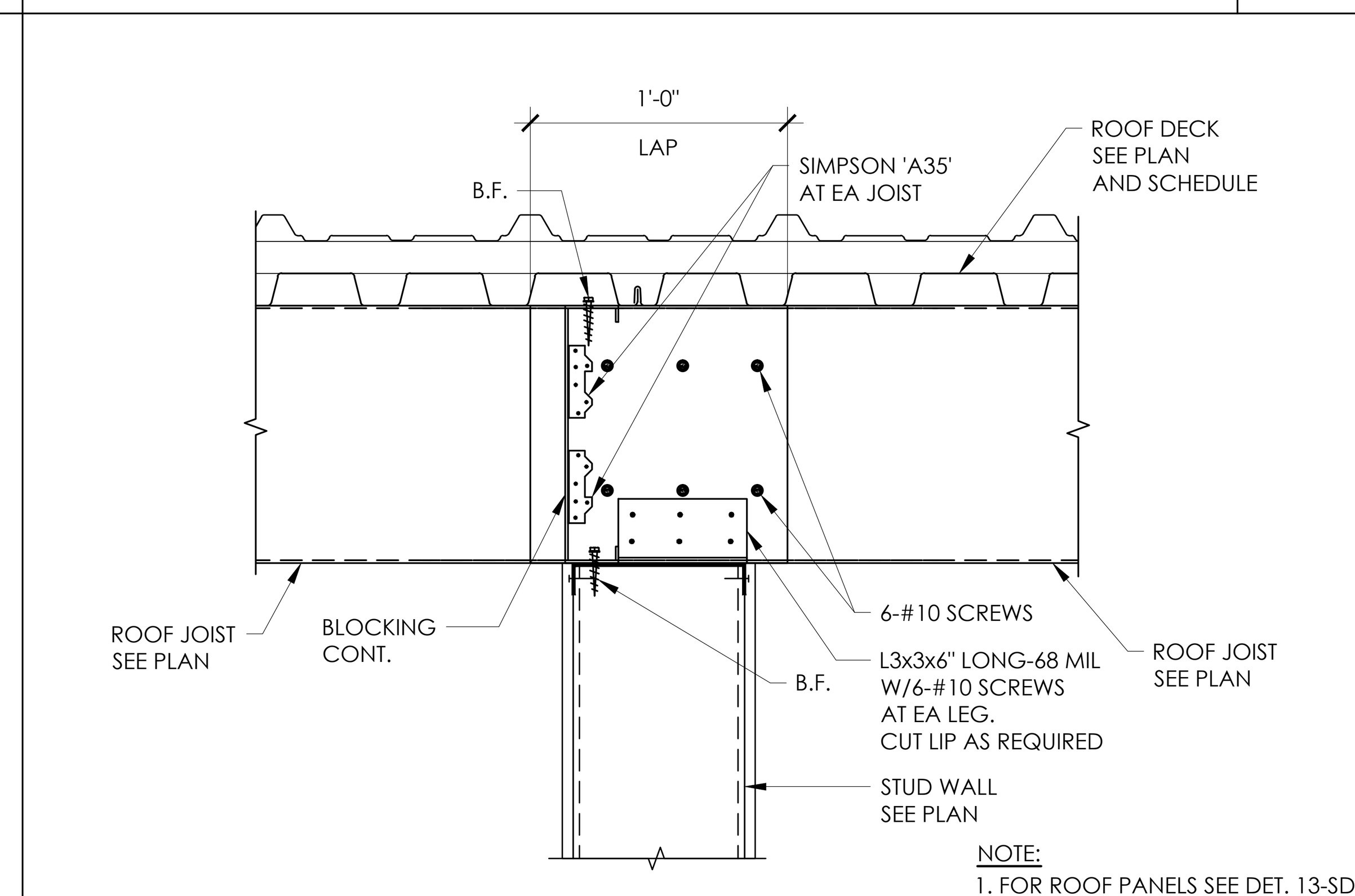
DETAIL 5



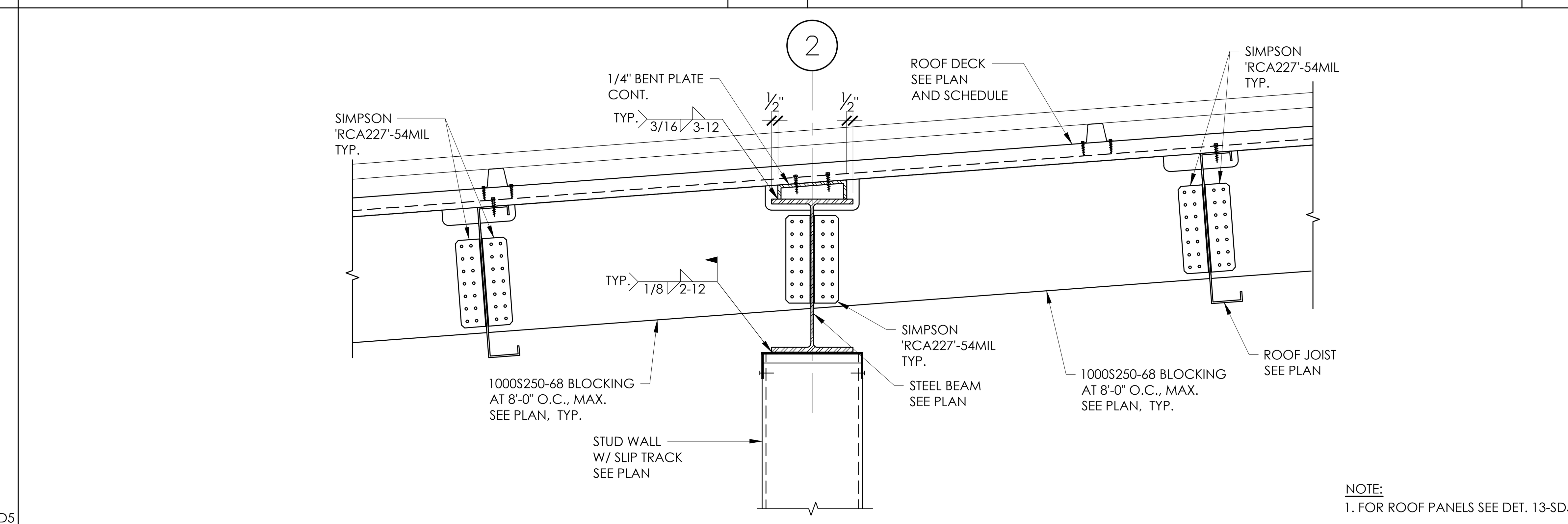
DETAIL 1



WALL PANEL DETAIL 14



DETAIL 10



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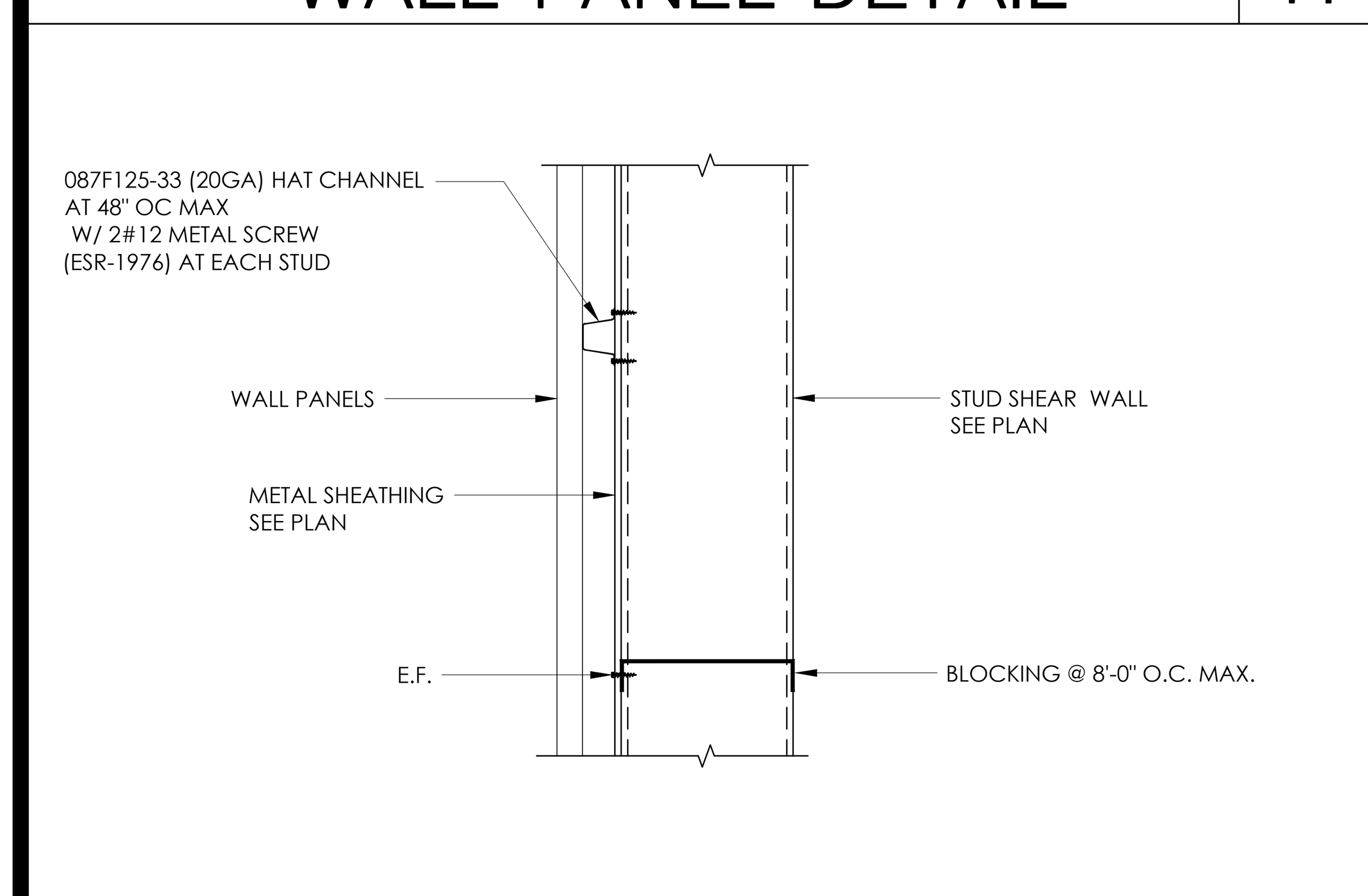
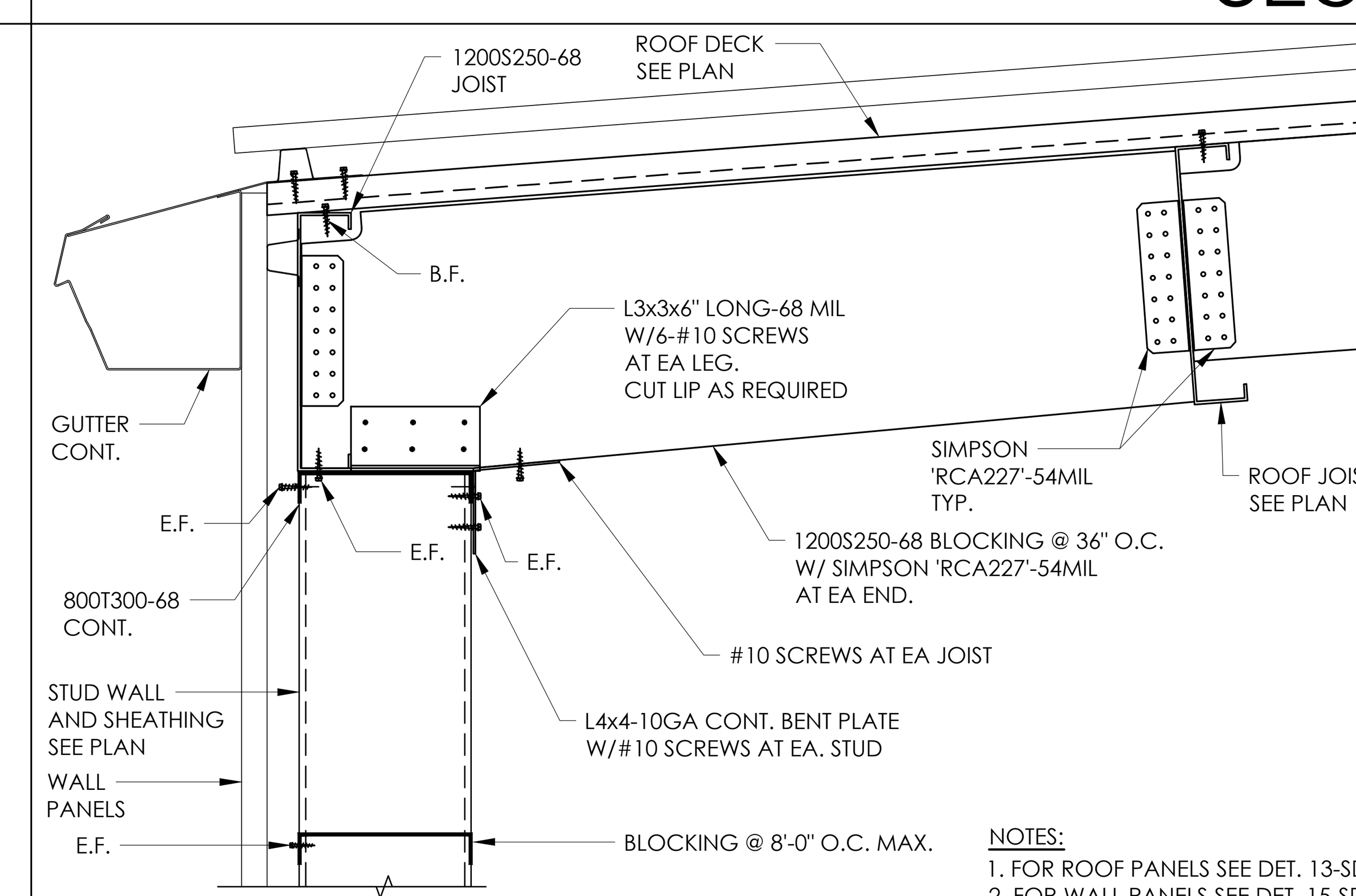


STUD WALL PANEL DETAIL 15

11



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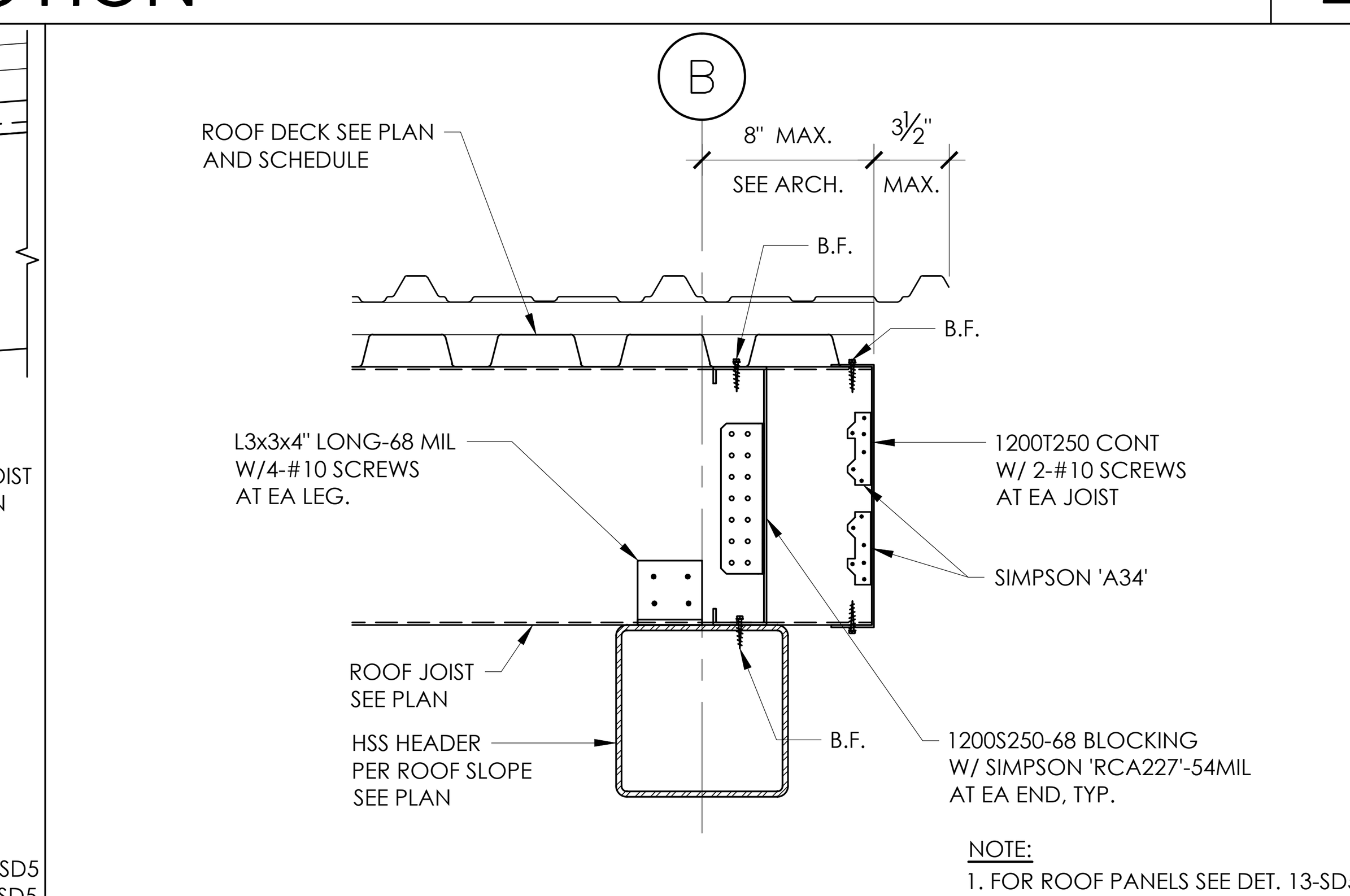
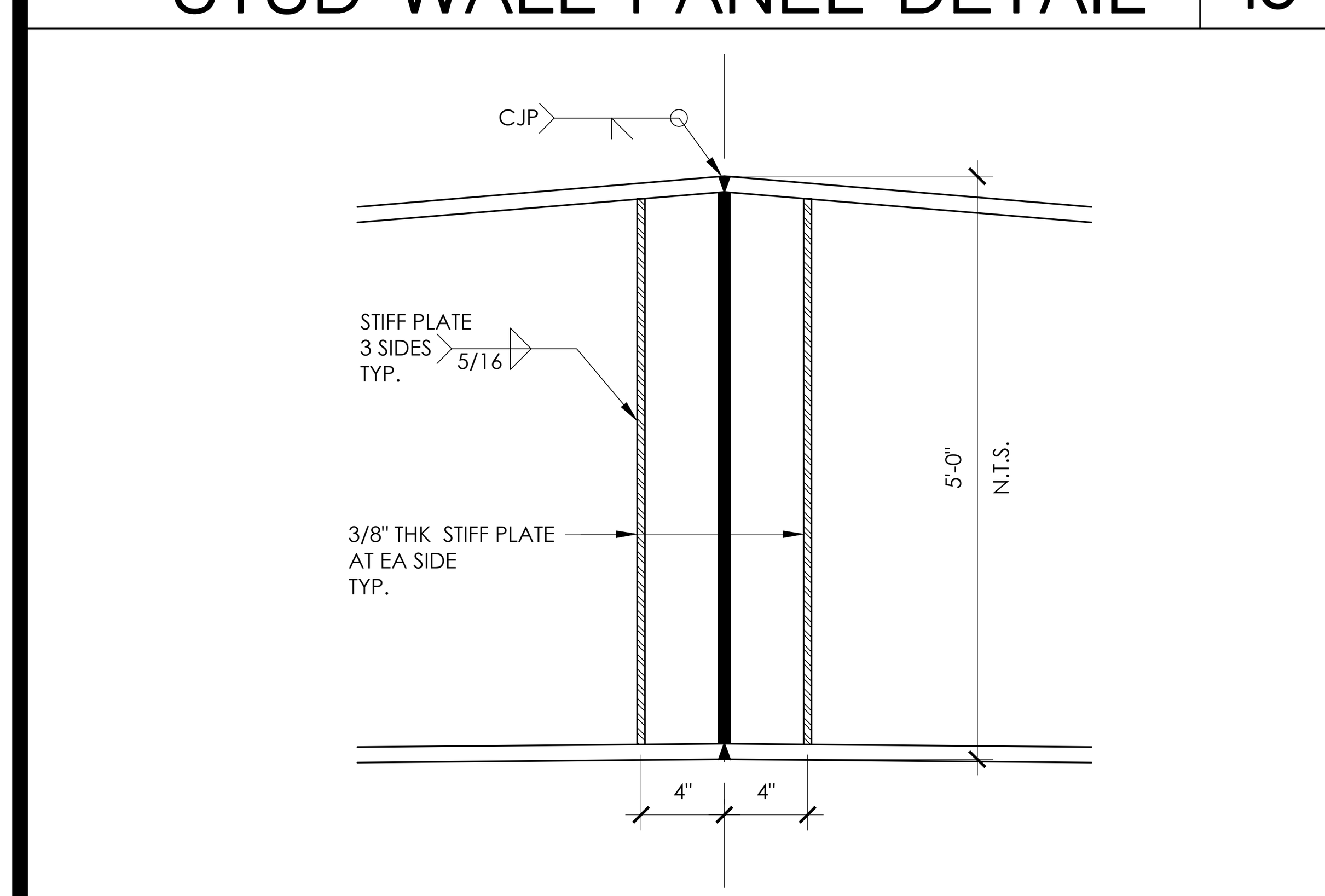
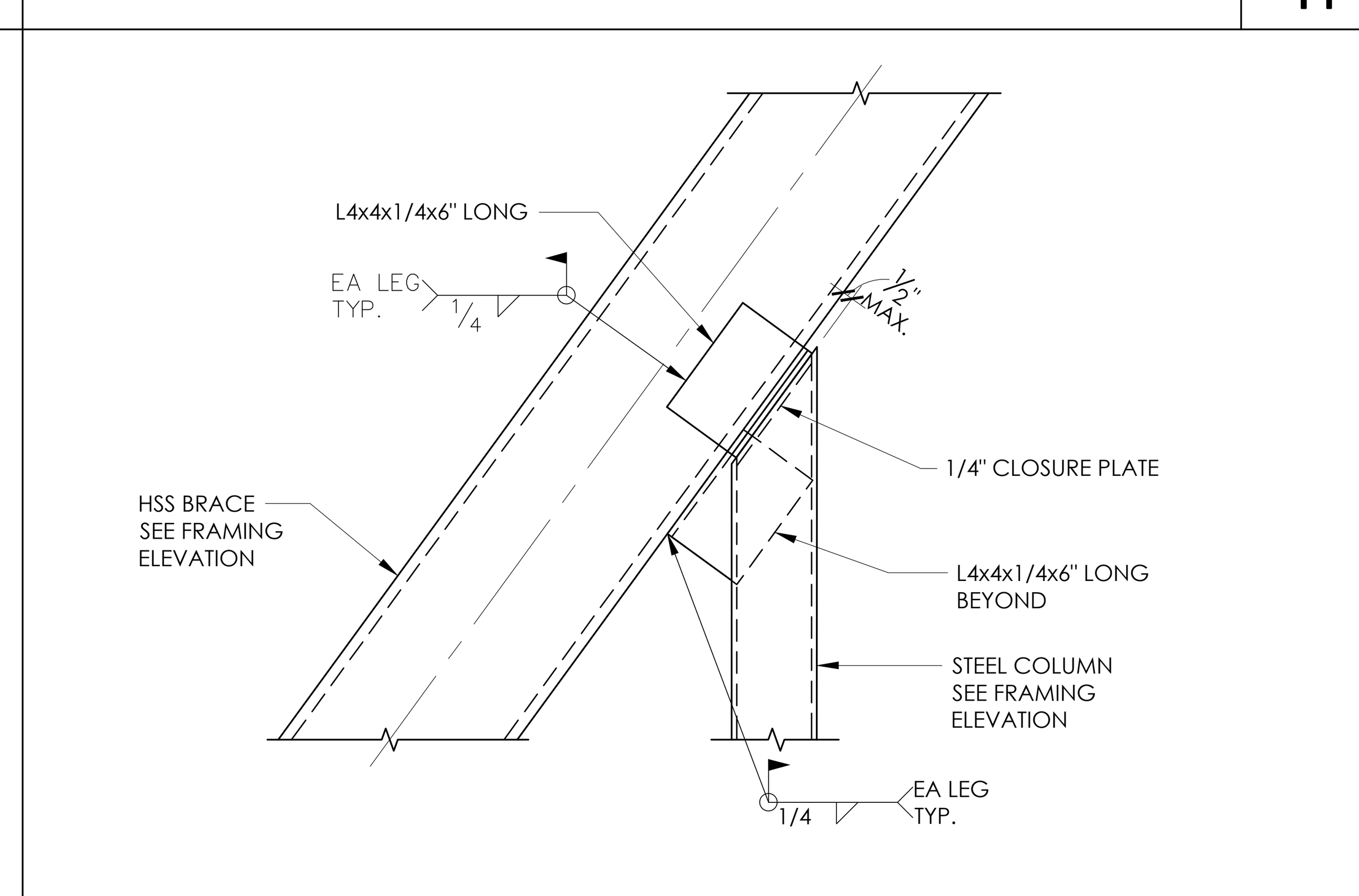


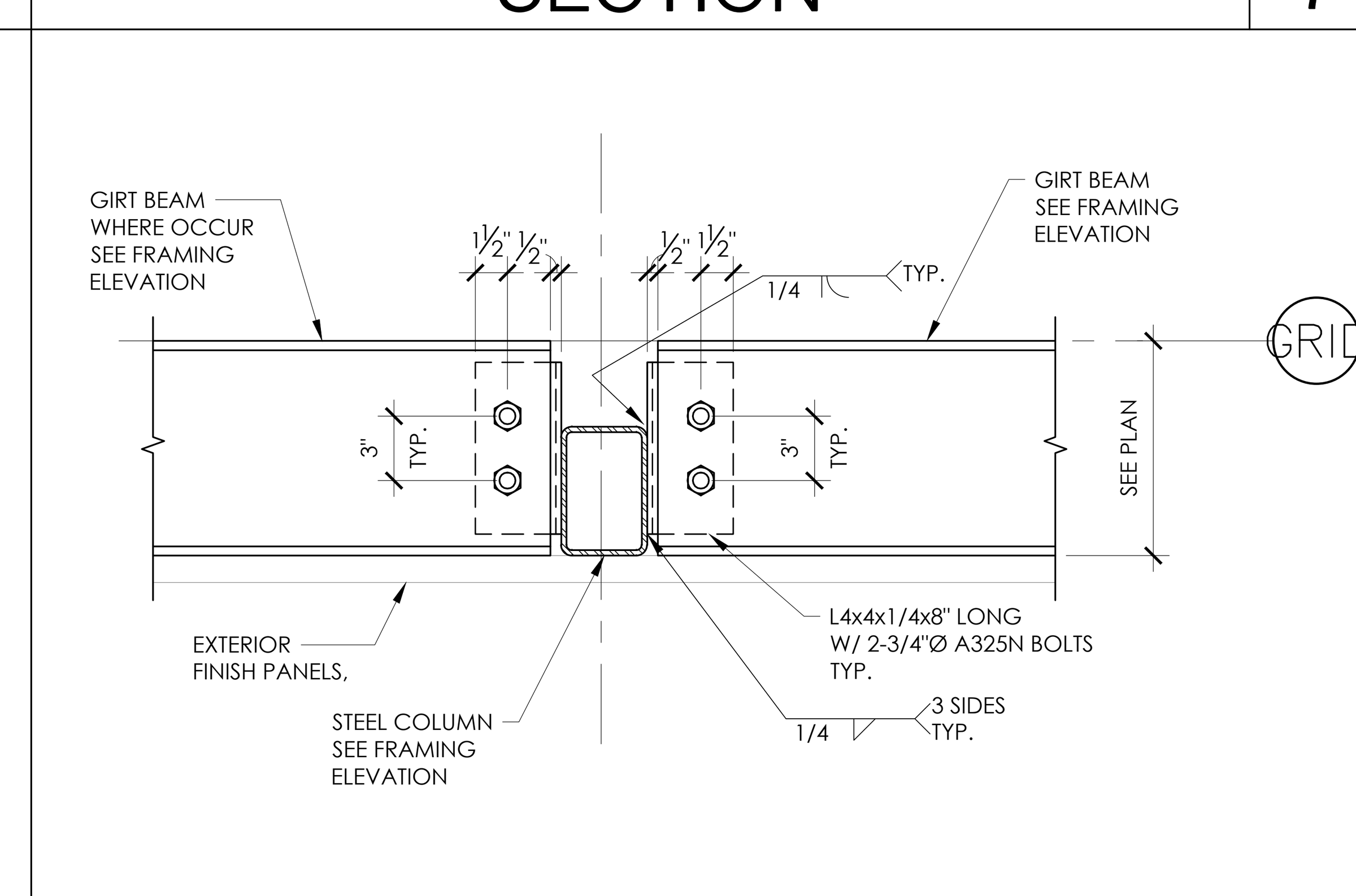
SECTION 3



TSG PARTIAL ELEVATION 16



BRACE/ COLUMN DETAIL 12



GIRT/ COLUMN PLAN DETAIL 8

4

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

B & B ASSOCIATES
STRUCTURAL ENGINEERS

LICENSED PROFESSIONAL ENGINEER ARMEN BAROONIAN S 4227 EXP. 06/30/2021 STRUCTURAL STATE OF CALIFORNIA
10.14.20

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
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(805) 648-1234

DETAILS

R&A No:	A181901
Date:	8/26/2020
Drawn:	GB
Checked:	CW
Consult. No:	

Revisions

FIRE TECHNOLOGY APPARATUS BUILDING

OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
SD5

FILE PATH & NAME: U:\19-168 KNIGHT OXNARD COLLEGE - NEW PREFAB STEEL BUILDING\1. STRUCTURAL DRAWINGS\24X36 TB-CD-LS.DWG PLOTTED: 1:1 THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

GENERAL NOTES

1. CONTRACTOR SHALL VISIT JOB SITE, VERIFY FIELD CONDITIONS, REVIEW PLAN AND SPECIFICATIONS AND SHALL INCLUDE IN HIS PRICE THE NECESSARY COST TO CONSTRUCT THIS PROJECT IN ACCORDANCE WITH THE MECHANICAL DRAWING AND SHALL MEET ALL APPLICABLE CODES.
2. ALL MATERIAL AND EQUIPMENT FURNISHED AND INSTALLED SHALL BE NEW, FREE FROM DEFECTS AND SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. SHOULD ANY TROUBLE DEVELOP DURING THE PERIOD DUE TO FAULTY WORKMANSHIP OR MATERIAL, THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIAL AND LABOR TO CORRECT THE TROUBLE WITHOUT COST TO THE OWNER.
3. CONTRACTOR IS TO REVIEW THE PLANS OF OTHER DISCIPLINES AND COORDINATE WITH THE WORK OF OTHER TRADES PRIOR TO INSTALLATION TO AVOID ANY CONFLICT BETWEEN DUCTS, CONDUITS, SPRINKLERS, PIPING, LIGHTING FIXTURES, ETC. NO EXTRAS WILL BE ALLOWED FOR CORRECTION OF CONFLICTS DUE TO LACK OF COORDINATION.
4. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION OF PIPING, DUCT WORK OR DIFFUSERS.
5. THE CONTRACTOR SHALL BRING TO THE ARCHITECT'S ATTENTION OF ANY DISCREPANCY OR CONFLICTS IN THE PLANS OR THE SITE CONDITIONS. ALL NECESSARY CHANGES MUST BE APPROVED IN WRITING BY THE ARCHITECT BEFORE START OR WORK.
6. CONTRACTOR TO SUBMIT CATALOG CUT SHEETS OF ALL THE MATERIAL AND EQUIPMENT TO BE USED AND WORKING SHOP DRAWINGS FOR APPROVAL BEFORE START OF WORK.
7. SUPPORTS FOR ALL PIPING AND DUCTWORK SHALL BE IN ACCORDANCE WITH LATEST SMACNA "GUIDELINES FOR SEISMIC RESTRAINTS OR MECHANICAL SYSTEMS AND PLUMBING SYSTEMS".
8. PRIOR TO THE ISSUANCE OF C OF O AN AIR BALANCE CERTIFICATION SHALL BE PERFORMED.

HVAC GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS.
2. ALL NEW DUCT SHALL BE SUPPORTED PER THE MINIMUM REQUIREMENT OF LATEST SMACMA GUIDELINE, AND SHALL BE BRACED AND GUYED TO PREVENT LATERAL OR HORIZONTAL SWING; THE USE OF SEISMIC RESTRAINT GUIDELINES PER SMACNA IS ALSO APPLICABLE (604.2 and 604.5). FASTEN ALL DUCT WORK JOINTS AND SEAMS WITH SHEET METAL SCREW AND CAULK AIR TIGHT TO AVOID AIR STREAK.
3. CONTRACTOR IS DIRECTED TO VISIT SITE AND BE FULLY COGNIZANT OF ALL CONDITIONS PRIOR TO PROPOSAL. VERIFY EXACT LOCATION, ELEVATIONS, SIZES AND CONDITIONS OF EXISTING UTILITIES, DUCTS AND PIPING ASSOCIATED WITH THE PROJECT ANY EXTRA EXPENSE DUE TO FAILURE TO MAKE SUCH EXAMINATION. SHALL NOT BE MADE. WHERE CHANGES IN THE EXISTING WORK ARE NECESSARY TO PERMIT THE INSTALLATION OF NEW WORK, THEY SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.
4. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED UTILITY SERVICES, INSPECTIONS AND PERMITS.
5. ALL MECHANICAL WORK SHALL BE CONCEALED, UNLESS OTHERWISE NOTED.
6. CLEAN THE PREMISES ON A DAILY BASIS TO LEAVE WORK AREA IN AN UNCLUTTERED CONDITION.
7. INSTALL THE ENTIRE MECHANICAL SYSTEM TO ELIMINATE ANY OBJECTIONABLE VIBRATION AND NOISE.
8. NOTIFY OWNER'S REPRESENTATIVE IMMEDIATELY IF A DISCREPANCY BETWEEN THE DRAWING AND THE ACTUAL SITE CONDITION OCCURS. STOP THE WORK THAT IS AFFECTED AND OBTAIN INSTRUCTION FROM THE OWNER'S REPRESENTATIVE BEFORE THE WORK CAN BE RESTARTED.
9. THE DRAWING INDICATES THE GENERAL ARRANGEMENT AND LOCATION OF PIPING, DUCTWORK, AND EQUIPMENT. MAKE DEVIATIONS SUCH AS OFFSETS IN DUCTS AND PIPES THAT ARE NECESSARY TO MEET SITE CONDITIONS AND TO COORDINATE WORK WITH OTHER TRADES. ALL DEVIATIONS TO THE CONTRACT DOCUMENT, WHETHER SHOWN OR NOT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MADE AT NO EXTRA EXPENSE TO THE OWNER.
10. OBTAIN AND FOLLOW MANUFACTURER'S DIRECTIONS WHEN INSTALLING NEW EQUIPMENT. SUBMIT OPERATING AND MAINTENANCE MANUALS.
11. COORDINATE ALL CUTTING AND PATCHING WITH GENERAL CONTRACTOR, INDIVIDUAL SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING TO THEIR WORK.
12. COORDINATE ALL WORK WITH ARCHITECTURAL, ELECTRICAL AND STRUCTURAL, AND PLUMBING DRAWINGS, INSTALL ALL WORK TO CLEAR NEW AND EXISTING ARCHITECTURAL AND STRUCTURAL MEMBERS.
13. FURNISH AND INSTALL COMPLETE ALL MATERIALS, EQUIPMENT AND LABOR AS SHOWN AND AS NECESSARY FOR COMPLETE WORKABLE SYSTEM.
14. CONTRACTOR SHALL GUARANTEE THAT THE WORK DONE UNDER THIS SPECIFICATION WILL BE FREE FROM FAULTY MATERIALS OR WORKMANSHIP AND HEREBY AGREES, UPON RECEIVING NOTIFICATION FROM THE OWNER, AND TO ITS ENTIRE SATISFACTION, ALL DEFECTS, DAMAGES OR IMPERFECTIONS APPEARING IN SAID WORK WITHIN A PERIOD OF ONE (1) YEAR FROM DATE OF FILING NOTICE OF COMPLETIONS.
15. ALL SUPPLY AIR DUCTWORK WITHIN UN-CONDITIONAL SPACE SHALL BE EXTERNALLY OR INTERNALLY INSULATED WITH MINIMUM R-8 INSULATION.
16. RESTORE ALL DAMAGE AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK.
17. PROVIDE TO THE OWNER TWO SETS OF AS-BUILT DRAWINGS AND TWO BOUND SETS OF ALL OPERATING MANUALS, DIAGRAMS SERVICE CONTRACTS, GUARANTEES, ETC.
18. TEST AND BALANCE ALL EQUIPMENT AND DEVICES TO PERFORM AND DELIVER SPECIFIED QUANTITIES ON THE DRAWING. AIR BALANCING SHALL BE PERFORMED BY 3RD PARTY. SUBMIT 4 SET OF AIR BALANCE REPORT TO THE ENGINEER PRIOR FINAL.

HVAC GENERAL NOTES CON'T.

19. THE MATERIAL OF THE DUCTS SHALL BE AS FOLLOWING; a) RECTANGULAR DUCTS AND ANY EXPOSED DUCTS : GALVANIZED SHEET METAL WITH GAUGE PER LATEST SMACNA STANDARD. b) ROUND DUCTS IN CEILING SPACE : GALVANIZED SHEET METAL WITH GAUGE PER LATEST SMACNA STANDARDS. CLASS 1 FLEXIBLE DUCT SHALL BE USED NOT MORE THAN 5 FT. FROM THE AIR IN/OUTLET. c) BATHROOM & KITCHEN EXHAUST DUCTS AND DRYER VENTS : GALVANIZED SHEET METAL INSTALL IN ACCORDANCE WITH METHODS AND STANDARDS OF ASHRAE AND SMACNA FOR LOW PRESSURE CONSTRUCTION.
20. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITER'S LABORATORIES.
21. DUCTWORK SHALL BE SUPPORTED PER SMACNA STANDARDS.
22. SHEET METAL DUCTWORKS SHALL BE CONSTRUCTED PER SMACNA STANDARDS.
23. SEAL ALL TRANSVERSE JOINTS OF AIR DUCTS WITH DUCT SEALANT PER SMACNA STANDARD.
24. SUPPLY AND RETURN AIR DUCTS AND PLENUMS OF A HEATING OR COOLING SYSTEM SHALL BE INSULATED TO ACHIEVE THE MINIMUM THERMAL (R) VALUE AS SET FORTH IN 2019 CMC TABLE E 503.7.2(2) AND 503.7.3(1). APPROVED MATERIALS SHALL BE INSTALLED ON DUCTS AND PLENUMS FOR INSULATING, SOUND DEADENING, OR OTHER PURPOSES. MATERIALS SHALL HAVE A MOLD, HUMIDITY, AND EROSION-RESISTANT SURFACE THAT MEETS THE REQUIREMENTS OF THE REFERENCED STANDARD FOR AIR DUCTS IN CHAPTER 17. INSULATION APPLIED TO THE SURFACE OF DUCTS, INCLUDING DUCT COVERINGS, LININGS, TAPES, AND ADHESIVES, LOCATED IN BUILDINGS SHALL HAVE A FLAME-SPREAD INDEX NOT GREATER THAN TWENTY-FIVE (25) AND A SMOKE DEVELOPED INDEX NOT GREATER THAN FIFTY (50), WHEN TESTED AS A COMPOSITE INSTALLATION.
25. RECTANGULAR DUCT AND PLENUMS SHALL BE FABRICATED OF GALVANIZED STEEL. INSULATE PLENUMS AND RECTANGULAR DUCTING AS INDICATED. DUCT SHALL HAVE THE MINIMUM GAUGE PER SMACNA. FOR PRODUCT CONVEY DUCT, MINIMUM GAUGE OF SHEET METAL SHALL MEET REQUIREMENTS LISTED ON 2019 CMC TABLE 506.2(1) AND TABLE 506.2(2).
26. CONTRACTOR SHALL COORDINATE WITH ARCHITECT BEFORE PURCHASING DIFFUSERS AND REGISTERS FOR APPROPRIATE SIZE, TYPE, FINISH, AND INSTALLATION LOCATION.
27. FLEXIBLE DUCTS MAY BE USED IN BETWEEN JOISTS AND AT CONNECTION TO DIFFUSERS WITHIN A MAXIMUM 5 FEET LENGTH. FLEXIBLE DUCT SHALL BE LISTED AND LABELED UMC 10-1 (UL181).
28. VERIFY THERMOSTAT/SWITCH LOCATIONS W/ARCHITECT PRIOR TO INSTALLATION.
29. MECHANICAL CONTRACTOR SHALL PROVIDE ALL APPURTENANCES WHICH SHALL INCLUDE BUT NOT LIMITED TO WIRING IN CONDUIT AS REQUIRED BY CODE, CONTROL DEVICES, DAMPER, ACTUATORS, MOTORS, LINKAGES, CONTROLLERS, RELAYS, CONTRACTORS, REDUCED VOLTAGE TRANSFORMERS, PNEUMATIC TUBES, PNEUMATIC CONTROL VALVES, ETC. AS REQUIRED TO AUTOMATICALLY PERFORMED ALL FUNCTIONS.
30. DUCT TESTING AND SEALING SHALL BE PERFORMED BY HERS RATER AND THE CERTIFICATE & FORMS SHALL BE SUBMITTED TO THE CITY.
31. PROVIDE ACCESS PANELS FOR ALL FIRE DAMPERS, FIRE/SMOKE DAMPERS AND ACCESS FOR SHUT-OFF AND CONTROL VALVES. COORDINATE ALL CEILING AND WALL ACCESS WITH GENERAL CONTRACTOR.
32. FIRE DAMPER AND FIRE/SMOKE COMBINATION DAMPERS SHALL BE LABELED BY AN APPROVED TESTING AND LISTING AGENCY.

CALIFORNIA GREEN BUILDING CODE NOTES

- 5.504.1.3 TEMPORARY VENTILATION THE PERMANENT HVAC SYSTEM SHALL ONLY BE USED DURING CONSTRUCTION IF NECESSARY TO CONDITION THE BUILDING OR AREAS OF ADDITION OR ALTERATION WITHIN THE REQUIRED TEMPERATURE RANGE FOR MATERIAL AND EQUIPMENT INSTALLATION. IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY, OR, IF THE BUILDING IS OCCUPIED DURING ALTERATION, AT THE CONCLUSION OF CONSTRUCTION.
- 5.504.3 COVERING OF DUCT OPENING AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.
- 5.504.5.3 FILTERS IN MECHANICALLY VENTILATED BUILDINGS,PROVIDE REGULARLY OCCUPIED AREAS OF THE BUILDING WITH AIR FILTRATION MEDIA FOR OUTSIDE AND RETURN AIR THAT PROVIDES AT LEAST A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8. MERV8 FILTER SHALL BE INSTALLED PRIOR TO OCCUPANCY, AND RECOMMENDATION FOR MAINTENANCE WITH FILTERS OF THE SAME SHALL BE INCLUDED IN THE OPERATION AND MAINTENANCE MANUAL.

APPLICABLE CODE

2019 CALIFORNIA BUILDING CODE
2019 CALIFORNIA MECHANICAL CODE
2019 CALIFORNIA PLUMBING CODE
2019 CALIFORNIA ENERGY CODE
2019 CALIFORNIA FIRE CODE
2019 CALIFORNIA GREEN BUILDING CODE
2016 NFPA 13
ALL AMENDMENTS AND SUPPLEMENTS TO ABOVE CODES
ALL CITY OF CAMARILLO ORDINANCES AND AMENDMENTS TO ABOVE CODES

SCOPE OF WORK

- FURNISH AND INSTALL VENTILATION SYSTEM WITH ALL OTHER REQUIRED COMPONENTS FOR PROPER SYSTEM FUNCTIONALITY.
- PROVIDE MATERIAL AND LABOR FOR VENTILATION SYSTEM BALANCING, TESTING, AND SCHEDULING.

DRAWING INDEX

MECHANICAL SEISMIC ANCHORAGE BRACING AND SUPPORT NOTES

ALL MECHANICAL EQUIPMENT AND DUCTWORK SHALL BE INSTALLED PER SEISMIC ANCHORAGE BRACING AND SUPPORT DETAILS SHOWN ON THIS CONSTRUCTION DOCUMENTS. ALSO SEE STRUCTURAL PLAN FOR CALCULATION AND DETAILED REQUIREMENTS.

MECHANICAL SEISMIC ANCHORAGE BRACING AND SUPPORT NOTES

MEP EQUIPMENT ANCHOARAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS DESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CORD.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRAVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ACHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.126.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP☑ MD☐ PP☐ E☐ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP☐ MD☐ PP☐ E☐ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #________________.

LEGENDS, SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
UP / LO	EQUIPMENT TYPE EQUIPMENT NUMBER
0 / M-7	DETAIL DRAWING NUMBER DETAIL DRAWING PAGE
UP / DN	SUPPLY / EXHAUST / RETURN — RECTANGULAR DUCT SECTION/UP (OR PENETRATION THROUGH FLOOR/ROOF).
-200 20x10 (B)	CEILING EXHAUST REGISTER
-200 20x10 (B)	CEILING RETURN REGISTER
200 20x10x3 (A)	CEILING SUPPLY DIFFUSER WITH FLEXIBLE DUCT AND AIRFLOW PATTERN
-200 20x10 (B)	SIDEWALL EXHAUST OR RETURN REGISTER

TOP FIGURE INDICATES CFM. BOTTOM FIGURES INDICATES NECK SIZE, DIRECTION AND NUMBER OF THROWS ON SUPPLY DIFFUSER. DUCT SIZE IS FULL SIZE OF DIFFUSER/ REGISTER CONNECTION. LETTER INSIDE CIRCLE INDICATES DIFFUSER TYPE. SEE DIFFUSER SCHEDULE FOR DIFFUSER TYPES.

LEGENDS, SYMBOLS AND ABBREVIATIONS CON'T

SYMBOL	DESCRIPTION
250 (B) 48"Lx1x2"	LINEAR SLOT DIFFUSER — TOP FIGURE INDICATES CFM. BOTTOM FIGURE INDICATES LENGTH OF SLOT/NUMBER OF SLOTS/SLOT WIDTH
12x8	RECTANGULAR DUCT WITH NET INSIDE DIMENSIONS SHOWN IN INCHES.
12x8	DUCT WITH INTERNAL ACOUSTICAL INSULATION. DIMENSIONS SHOWN ARE NET INSIDE IN INCHES.
12"Ø	ROUND DUCT WITH NET INSIDE DIMENSION SHOWN
12"Ø SS	316L WELDED STAINLESS STEEL DUCT
	SQUARE ELBOW W/ TURNING VANES IN SUPPLY DUCT ONLY
	R/D =1.5, 90° / 45° RADIUS ELBOW
12x8	ROUND DUCT TAP ON RECTANGULAR DUCT TAP ENTRY AREA EQUALS 150% OF BRANCH AREA
12x8	RECT. DUCT TAP ON RECTANGULAR DUCT TAP ENTRY AREA EQUALS 150% OF BRANCH AREA
12"Ø	ROUND DUCT WITH 45° TAKE-OFF
	CONCENTRIC / ECCENTRIC DUCT REDUCER RECTANGULAR TO RECTANGULAR, ROUND TO ROUND OR DUCT TO FILTER HOUSING TRANSFORMATION. MAX. 15° INCLUDED ANGLE EXCEPT WHERE SHOWN OTHERWISE.
	RECTANGULAR TO ROUND DUCT TRANSFORMATION
	MANUAL SINGLE BLADE OR MULTIPLE BLADE VOLUME DAMPER
FSD	FIRE/SMOKE DAMPER W/ DUCT ACCESS PANEL
	FLEXIBLE CONNECTION IN DUCT

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	FR	FROM
BLDG	BUILDING	GE	GREASE EXHAUST
BSMT	BASEMENT		
BDD	BACKDRAFT DAMPER	ICS	IN CEILING SPACE
		INS	INSULATION (THERMAL)
CFF	CAP FOR FUTURE	NIC	NOT IN CONTRACT
CLG	CEILING		
CSD	CEILING SUPPLY DIFFUSER	OSA	OUTSIDE AIR (FRESH AIR)
EA	EXHAUST AIR	SA	SUPPLY AIR
DN	DOWN	SAD	SEE ARCHITECTURAL DRAWING
		SOV	SHUT-OFF VALVE
FA	FRESH AIR	SRR	SIDEWALL RETURN REGISTER
FL	FLOOR	UTR	UP THROUGH ROOF
FR	FROM		
		VTF	VENT THROUGH ROOF

SYMBOL	ABBREV.	DESCRIPTION
TAG(T)#	--	DIGITAL PROGRAMMABLE THERMOSTAT
	CSD	CEILING SUPPLY DIFFUSER W/ MANUAL VOLUME DAMPER
	CRR	CEILING RETURN REGISTER W/ MANUAL VOLUME DAMPER
	CRR	CEILING EXHAUST GRILLE W/ MANUAL VOLUME DAMPER
	MVD/OBD	MANUAL VOLUME / OPPOSED-BLADE BALANCING DAMPER
	UP	DUCT UP WITH SMOOTH 90° ELBOW
	DN.	DUCT DOWN WITH SMOOTH 90° ELBOW
	AP	ACCESS PANEL
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
FD	FD	FIRE DAMPER

LINE TYPE	ABBREV.	DESCRIPTION
(E)12x8 / (E)12x8	(E)	EXISTING DUCT TO REMAIN WITH EXISTING DIMENSIONS SHOWN
12x8 / 12x8	(N)	EXISTING DUCT TO REMAIN WITH EXISTING DIMENSIONS SHOWN

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Sheet No.
M0.1

MECHANICAL EQUIPMENT SCHEDULE AND DETAILS

EXHAUST FAN SCHEDULE

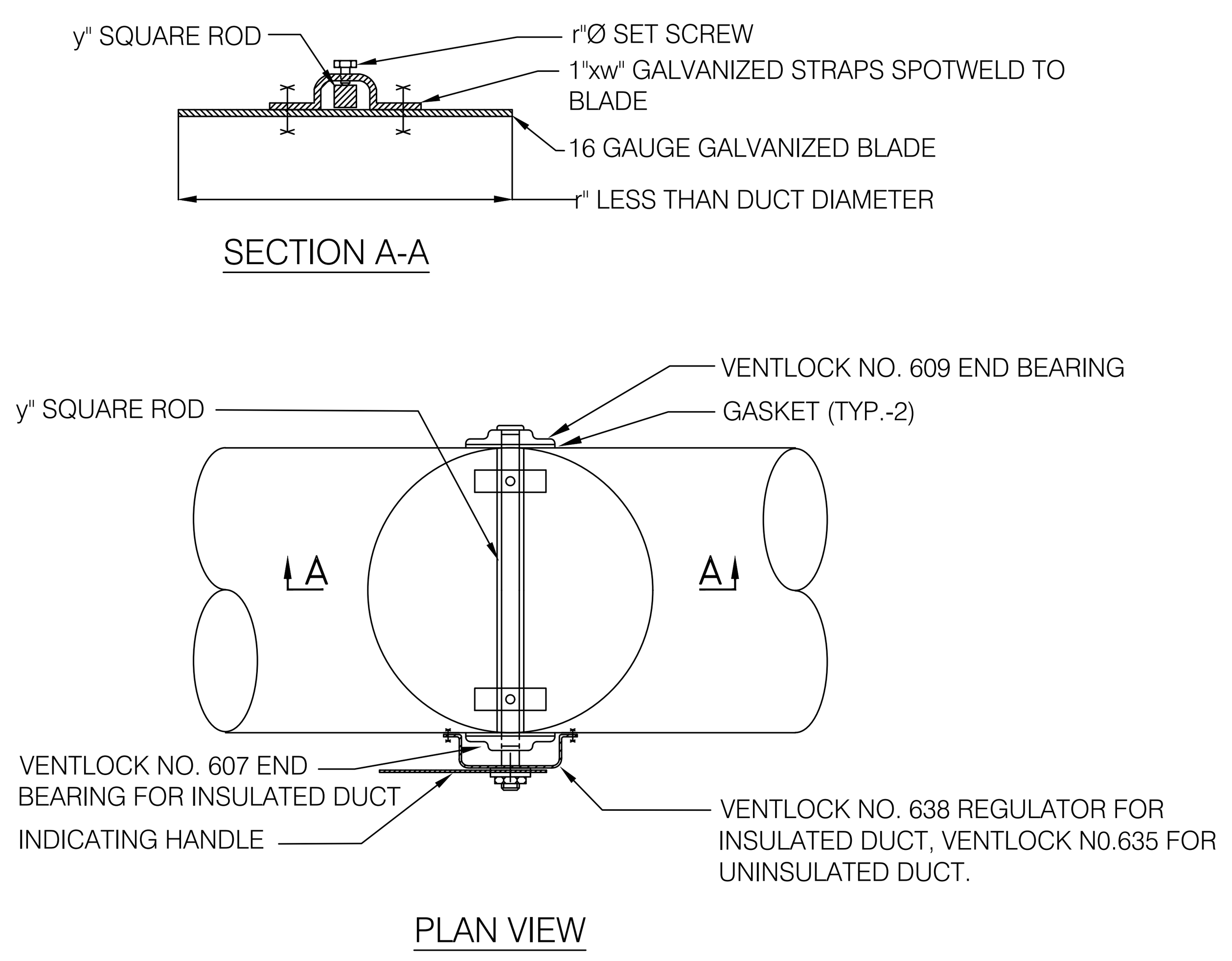
TAG	AREA SERVED	MAKE/MODEL	CFM	ESP	FRPM	ELECTRICAL VOLTS	Ø	BHP/WATT	ENCLOSURE	FLA	HP	WEIGHT	REMARK
EF-01	TRAINING AREA	GREENHECK / QEID-24-85-B50	8,625	1.25"	1,170	208	3	3.13	TEFC	--	5.0	684	1, 2, 3, 4

REMARK:
1. FURNISH AND INSTALL UNIT WITH DISCONNECT SWITCH.
2. EXHAUST FAN SHALL BE CONTROLLED BY 24/7 PROGRAMMABLE TIME CLOCK.
3. PROVIDE MINIMUM 36" IN FRONT OF UNIT FOR MAINTENANCE.
4. FURNISH AND INSTALL FAN WITH FOLLOW FACTORY OPTIONS/ ACCESSORIES.
   A. MANUFACTURE BACK-DRAFT DAMPER AT DISCHARGE.
   B. FACTORY 1 INCH RESTRAINED DIRECT MOUNT SPRING VIBRATION ISOLATORS.
   C. BOLTED ACCESS DOOR.
   D. SLIP FIT OUTLET INLET FLANGE.
   E. THRUST RESTRAINTS.

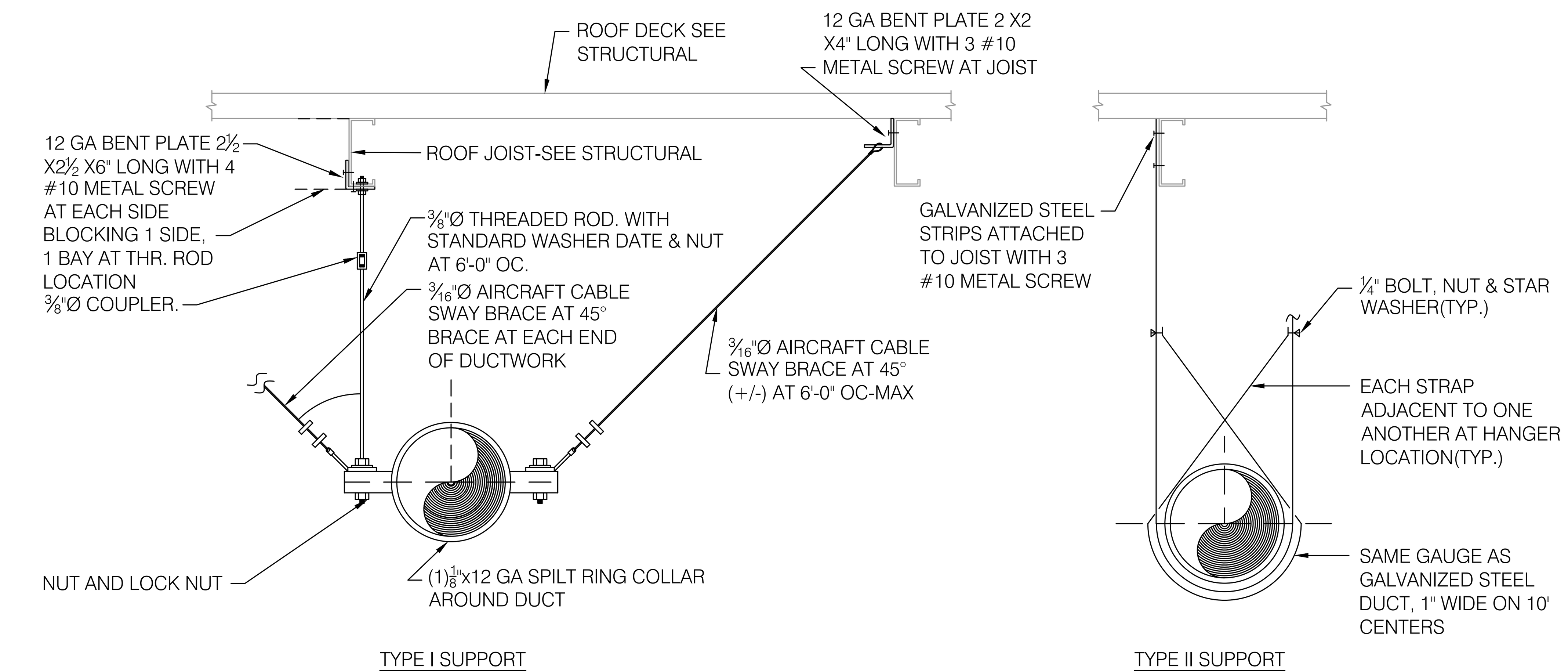
AIR DIFFUSER / GRILLE/ REGISTER SCHEDULE

TAG	LOCATION	TYPE	BRAND / MODEL	MODULE SIZE	NECK SIZE	REMARK
A	SEE PLAN	SIDEWALL EXHAUST GRILLE	TITUS / 350FL	SEE PLAN	SEE PLAN	①②

REMARKS:
① CONTRACTOR TO VERIFY EXACT BORDER TYPE WITH ACTURAL CEILING/WALL CONSTRUCTION PRIOR TO ORDER.
② CONTRACTOR TO PROVIDE MATCH NECK SIZE TAB BOX WITH 45° TAKE OFF INSTALLATION OF MANUAL VOLUME DAMPER.

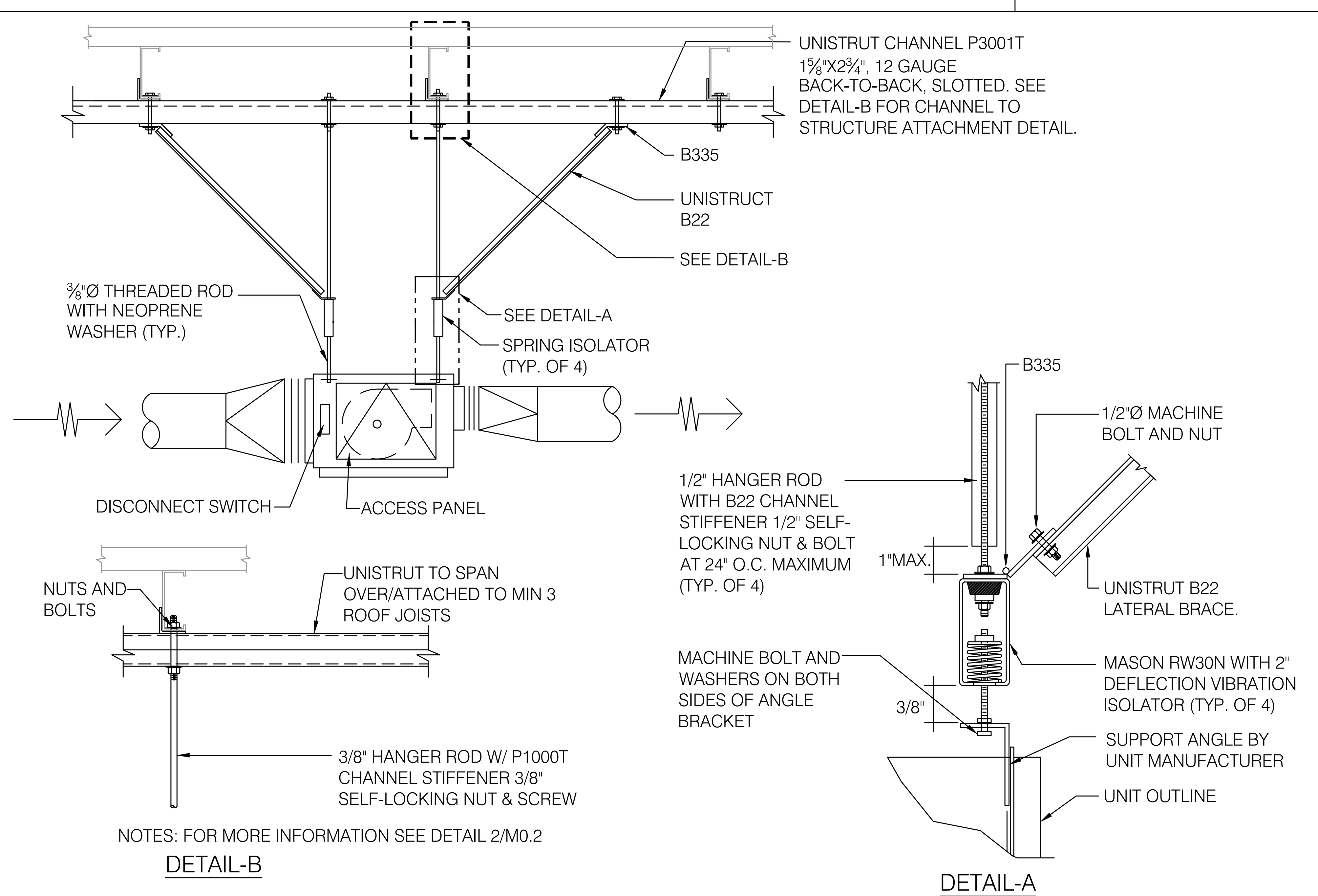


1 ROUND VOLUME DAMPER UP TO 14" DIAMETER, LOW PRESSURE
SCALE: N.T.S.



NOTES:
1. APPLY TYPE I DUCT SUPPORT AT EACH END OF SUPPLY AIR MAIN.
2. APPLY TYPE II DUCT SUPPORT AT 10' INTERVAL.
3. REFER TO LATEST SMACNA HVAC STANDARD FOR HANGING SPACING REQUIREMENT FOR DUCTWORK LARGER THAN 30"Ø.
4. PROVIDE SWAY & SEISMIC BRACING PER SMACNA SEISMIC GUIDELINES.
5. HANGER MATERIAL SUPPORTING FLEXIBLE DUCT SHALL IN NO CASE BE LESS THAN 1½" WIDE. FLEXIBLE DUCT SHALL BE SUPPORTED PER MANUFACTURER RECOMMENDED MATERIALS AND AT INTERVAL NO GREATER THAN 4FT. PERMISSIBLE SAG IS MAX. ½" PER FOOT OF SPACING BETWEEN SUPPORTS.

2 DUCT SUPPORT DETAIL
SCALE: N.T.S.



3 IN-LINE EXHAUST FAN MOUNTING DETAILS
SCALE: N.T.S.

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Sheet No.
M0.2

1 MECHANICAL REFLECTED CEILING PLAN

SCALE: 3/16" = 1'-0"

N

SHEET NOTES:

1. 36"X24" DRAINABLE OSA LOUVER WITH MIN 50% OF EFFECTIVE AREA INSTALLED AT 3 FEET ABOVE FINISHED FLOOR. TYPICAL OF 6 COORDINATE STUD SPACING WITH SHEET METAL SHOP DRAWING TO AVOID CUTTING INTO STRUCTURAL MEMBERS.
2. (2)36"X36" DRAINABLE EA LOUVER WITH MIN 50% OF EFFECTIVE AREA INSTALLED AT MIN 15 FEET ABOVE FINISHED FLOOR. COORDINATE STUD SPACING WITH SHEET METAL SHOP DRAWING TO AVOID CUTTING INTO STRUCTURAL MEMBERS.
3. PROVIDE 36" W EA PLENUM BEHIND 72X36 LOUVER FOR CONNECTION OF 32"Ø EA.
4. INLINE EXHAUST FAN SUSPENDED FROM BLD. STRUCTURAL WITH VIBRATION ISOLATORS HANGERS. SEE DWG. 3/M-0.2 FOR DETAILS. ALSO SEE EQUIPMENT SCHEDULE FOR DETAILED REQUIREMENTS.
5. MAINTAIN BOTTOM OF DUCT AT MIN. 17' ABOVE FINISHED FL. SEE DWG.2/M0.2 FOR DUCT SUPPORT DETAILS.TYPICAL OF ALL.
6. PROVIDE BALANCING DAMPER TO ALL EXHAUST OUTLETS. SEE DWG.1/M0.2 FOR DETAIL.

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FILE PATH & NAME: P:\MYE PROJECT FILES\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 MECH DWGS\2177 MECH_DSA_CORRECTIONS.DWG PLOTTED: 5:44 PM

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

GENERAL NOTES

1. CONTRACTOR SHALL VISIT JOB SITE, VERIFY FIELD CONDITIONS, REVIEW PLAN AND SPECIFICATIONS AND SHALL INCLUDE IN HIS PRICE THE NECESSARY COST TO CONSTRUCT THIS PROJECT IN ACCORDANCE WITH THE MECHANICAL DRAWING AND SHALL MEET ALL APPLICABLE CODES.
2. ALL MATERIAL AND EQUIPMENT FURNISHED AND INSTALLED SHALL BE NEW, FREE FROM DEFECTS AND SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. SHOULD ANY TROUBLE DEVELOP DURING THE PERIOD DUE TO FAULTY WORKMANSHIP OR MATERIAL, THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIAL AND LABOR TO CORRECT THE TROUBLE WITHOUT COST TO THE OWNER.
3. CONTRACTOR IS TO REVIEW THE PLANS OF OTHER DISCIPLINES AND COORDINATE WITH THE WORK OF OTHER TRADES PRIOR TO INSTALLATION TO AVOID ANY CONFLICT BETWEEN DUCTS, CONDUITS, SPRINKLERS, PIPING, LIGHTING FIXTURES, ETC. NO EXTRAS WILL BE ALLOWED FOR CORRECTION OF CONFLICTS DUE TO LACK OF COORDINATION.
4. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION OF PIPING, DUCT WORK OR DIFFUSERS.
5. THE CONTRACTOR SHALL BRING TO THE ARCHITECT'S ATTENTION OF ANY DISCREPANCY OR CONFLICTS IN THE PLANS OR THE SITE CONDITIONS. ALL NECESSARY CHANGES MUST BE APPROVED IN WRITING BY THE ARCHITECT BEFORE START OR WORK.
6. CONTRACTOR TO SUBMIT CATALOG CUT SHEETS OF ALL THE MATERIAL AND EQUIPMENT TO BE USED AND WORKING SHOP DRAWINGS FOR APPROVAL BEFORE START OF WORK.
7. SUPPORTS FOR ALL PIPING AND DUCTWORK SHALL BE IN ACCORDANCE WITH LATEST SMACNA "GUIDELINES FOR SEISMIC RESTRAINTS OR MECHANICAL SYSTEMS AND PLUMBING SYSTEMS".

PLUMBING GENERAL NOTES

1. PROVIDE ISOLATED COUPLINGS AND/OR UNIONS AT POINTS OF CONNECTION BETWEEN COPPER, STEEL AND BRASS PIPING.
2. ALL WATER PIPING SYSTEMS AND DRAINAGE PIPING SYSTEMS, INCLUDING SUPPLY, WASTE AND DRAIN SHALL BE INSTALLED WITH VIBRATION ISOLATORS AND SHALL BE ISOLATED FROM ANY STRUCTURAL MEMBERS, WALL SECTIONS OR OTHER MATERIALS THAT COULD TRANSMIT SOUND TO THE OCCUPIED AREAS. ALL HANGERS, STRAPS, BRACKETS, AND SUPPORTS SHALL HAVE ACOUSTICAL COMPONENTS OR COMBINED NEOPRENE AND PLASTIC FOAM BY TECH SPECIALTIES, DIVISION OF SPECIALTY PRODUCTS CO. TO ISOLATE COMPLETE PIPE CONTACT AREA. ALL ISOLATION MATERIAL SHALL HAVE A MINIMUM THICKNESS OF 1/2". INSTALL ALL COMPONENTS AS PER MANUFACTURER'S INSTRUCTIONS.
3. INSTALL ALL CLEAN-OUTS WHERE REQUIRED BY ORDINANCES, AT ENDS OF HOUSE DRAINS, AT ALL CHANGES IN DIRECTIONS, IN ALL STRAIGHT RUNS AT 100 FOOT INTERVALS, WHERE HORIZONTAL MAINS CHANGE SIZE, AND AT ALL ENDS OF ALL BRANCH PIPES WHICH ARE 5' OR OVER IN LENGTH.
4. PLUMBING FIXTURES SHALL BE COMPLETED WITH ALL ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
5. SELECTION OF FAUCETS AND FITTINGS SHALL AVOID THE TYPE WITH POTENTIAL FOR LEAD CONTAMINATION.
6. INSTALL STOP VALVES ON HOT AND COLD WATER SUPPLIES TO EACH FIXTURE.
7. ALL FLOOR DRAIN MUST HAVE 1/2" COLD WATER LINE CONNECTED TO TRAP PRIMER. ALL UNDERGROUND COLD WATER LINE SHALL BE ASTM TYPE-K HARD DRAWN COOPER INSTALLED WITH CONTINUOUS SLOPE TOWARD FLOOR DRAIN.
8. MATERIALS, METHODS AND LOCATIONS OF SERVICE MAINS CONNECTING THE NEW CONSTRUCTION TO ALL NEW AND EXISTING SERVICES SHALL BE IN STRICT ACCORDANCE WITH RULES, REGULATIONS, CODES AND REQUIREMENTS OF ALL AGENCIES HAVING JURISDICTION OVER THIS INSTALLATION. LOCATE ALL EXISTING STUBS TO BE CONNECTED TO IN THIS CONTRACT BEFORE WORK IS STARTED. COORDINATE LOCATION OF WATER AND SEWER CONNECTIONS WITH BUILDING ENGINEER.
9. CAULK AIRTIGHT ALL PLUMBING PENETRATIONS IN SOUND RATED WALLS AND FLOOR/CEILINGS. SEAL PENETRATIONS OF CONCRETE FLOORS WITH CEMENT GROUT. MINIMIZE PENETRATIONS THROUGH SOUND RATED CONSTRUCTION.
10. CONTRACTOR SHALL INSTALL ALL PLUMBING FIXTURES AND TRIM AS SHOWN ON THE ARCHITECTURAL PLANS. ROUGH-IN FOR ALL FIXTURES SHALL BE EXACTLY TO MEASUREMENTS FURNISHED BY FIXTURE MANUFACTURER. ALL EXPOSED PARTS TO BE CHROMIUM PLATED UNLESS SPECIFIED OTHERWISE.
11. KEEP ROUGH-IN CUTS WITHIN THE PLATE LINES AND DO NOT CUT COMPLETELY THROUGH PLATES IN SOUND-RATED WALLS. DRILL OR SAW NEAT ROUND HOLES FOR ALL PIPING. SIZE APPROXIMATELY ½ INCH LARGER THAN THE PIPE DIAMETER.
12. PIPE LINES SHALL BE INSTALLED FREE FROM TRAPS AND AIR POCKETS AND TRUE TO LINE AND GRADE WITH SUITABLE SUPPORTS PROPERLY SPACED. PIPING SHALL BE INSTALLED WITHOUT UNDUE STRESSES AND WITH PROVISION FOR EXPANSION AND CONTRACTIONS.
13. HORIZONTAL LINES SHALL HAVE HANGERS OR SUPPORTS SPACED AS FOLLOWS:
    - A. CAST IRON PIPE - 5' CENTERS
    - B. STEEL PIPE - 10' CENTERS
    - C. COOPER TUBING - 5' CENTERS FOR 1-1/2" AND SMALLER, 10' CENTERS FOR 2" AND LARGER
14. PIPING SHALL BE NEW AND FREE FROM FOREIGN SUBSTANCES. REAM OUT ALL BURRS FORMED IN CUTTING PIPE. THREADS SHALL BE CUT ACCURATELY AND NOT OVER TWO THREADS SHALL SHOW BEYOND THE FITTING. FRICTION WRENCHES SHALL BE USED WITH PLATED PIPING, OR SOFT METAL PIPING.
15. CHANGES IN PIPE SIZE SHALL BE MADE WITH REDUCING FITTINGS, AND BUSHING WILL NOT BE PERMITTED.
16. UNION CONNECTION SHALL BE INSTALLED DOWNSTREAM OF ALL VALVES, AT ALL EQUIPMENT CONNECTIONS AND AT OTHER POINTS AS REQUIRED.
17. CUTTING OR BORING OF HOLES THROUGH STRUCTURAL MEMBERS SHALL BE DONE ONLY WHEN IT IS IMPOSSIBLE TO ROUTE PIPING IN ANOTHER MANNER. IF CUTTING OR BORING IS NECESSARY IT SHALL BE ACCOMPLISHED ONLY BY WRITTEN APPROVAL FROM THE ARCHITECT, STRUCTURAL AND BUILDING ENGINEER, AND INCLUDED IN HIS BIDS. WORK SHALL COMPLY WITH CBC SECTIONS 2320A.8.3 AND 2320A.11.10.
18. DO NOT ALLOW THE PIPING, VALVES OR CONNECTORS TO FORM A RIGID CONNECTION WITH THE STRUCTURE OR OTHER PIPES. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT.
19. PROVIDE SIOUX CHIEF WATER HAMMER ARRESTER FOR EACH PLUMBING FIXTURE BANK OR 18" HIGH AIR CHAMBER FOR EACH PLUMBING FIXTURE. SIZE OF WATER HAMMER ARRESTER SHALL BE SUFFICIENT TO HANDLE THE REQUIRED FIXTURE UNIT AT EACH BANK.
20. THE DOMESTIC WATER SUPPLY AND DISTRIBUTION SYSTEM WITHIN THE AREA OF WORK SHALL BE STERILIZED WITH CHLORINE IN SOLUTION IN ACCORDANCE WITH AMERICAN WATER WORKS ASSOCIATION PUBLICATION C-601-1954.
21. PRESSURE TEST INTENT FOR HOT AND COLD PIPING AND DRAINAGE SYSTEM FROM CAPPED CONNECTIONS, TO AND INCLUDING VENTS.
22. HOT WATER PIPING TO BE INSULATED PER CODE.
23. PROVIDE ACCESS PANEL FOR ALL STUB OUTS ENDED INSIDE CEILING OR WALL.
24. THREADED FITTINGS: ANSI/ASME B16.3 BLACK MALLEABLE IRON.
25. SOCKET-WELDING FITTINGS: ANSI B16.11 FORGED STEEL.
26. BUTT-WELDING FITTINGS: ANSI/ASME B16.9 WROUGHT STEEL WITH BACKING RINGS OF COMPATIBLE MATERIAL.
27. UNIONS: ASME/ANSI B16.39 BLACK MALLEABLE IRON.
28. FLANGES AND FLANGED FITTINGS: ASME/ANSI B16.5 STEEL FLANGES OR CONVOLUTED STEEL FLANGES. FLANGE FACES SHALL HAVE INTEGRAL GROOVES OF RECTANGULAR CROSS SECTION WHICH AFFORD CONTAINMENT FOR SELF-ENERGIZING GASKET MATERIAL.
29. THREADED JOINTS: WHERE POSSIBLE USE PIPE WITH FACTORY-CUT THREADS, OTHERWISE CUT PIPE LENGTHS ACCORDINGLY WITH ANSI/ASME B1.20.1. PROVIDE THREADS SMOOTH, CLEAN, AND FULL-CUT. APPLY ANTI-SEIZE PASTE OR TAPE TO MALE THREADS PORTION. WORK PIPING INTO PLACE WITHOUT SPRINGING OR FORCING. BACKING OFF TO PERMIT ALIGNMENT OF THREADED JOINTS WILL NOT BE PERMITTED. ENGAGE THREADS SO THAT NOT MORE THAN TWO THREADS REMAIN EXPOSED. USE UNIONS FOR CONNECTIONS TO VALVES, METERS FOR WHICH A MEANS OF DISCONNECTION IS NOT OTHERWISE PROVIDED.
30. WELDED JOINTS: WELD BY THE SHIELDED METAL-ARC PROCESS, USING COVERED ELECTRODES AND IN ACCORDANCE WITH PROCEDURES ESTABLISHED AND QUALIFIED IN ACCORDANCE WITH ASME B31.8.
31. FLANGED JOINTS: USE FLANGED JOINTS FOR CONNECTING WELDED JOINT PIPE AND FITTINGS TO VALVES TO PROVIDE FOR DISCONNECTION. INSTALL JOINTS SO THAT FLANGE FACES BEAR UNIFORMLY ON GASKETS. ENGAGE BOLTS SO THAT THERE IF COMPLETE THREADING THROUGH THE NUTS AND TIGHTEN SO THAT BOLTS ARE UNIFORMLY STRESSED AND EQUALLY TORQUE.
32. USE TEST PRESSURE OF 50 PSIG. DO NOT TEST UNTIL EVERY JOINT HAS SET AND COOLED AT LEAST 8 HOURS AT TEMPERATURES ABOVE 50 DEGREES F. TEST PIPING SYSTEM FOR AT LEAST 4 HOURS WITHOUT PRESSURE LOSS OR VISIBLE LEAKS.

PLUMBING GENERAL NOTES CONT.

33. PLUMBING FIXTURE CONNECTION SIZE: SEE PLAN.
34. ALL HOT WATER PIPE SHALL BE INSULATED WITH INSULATION PER 2019 TITLE 24 STANDARD. MINIMUM 1"-THICK INSULATION FOR PIPE LESS THAN 1"Ø AND MINIMUM 1½"-THICK INSULATION FOR PIPE LARGER THAN OR EQUAL TO 1"Ø.
35. PRESSURE PIPING AND FITTING:
    - A. DOMESTIC COLD AND HOT WATER (ABOVE GRADE): HARD DRAWN DEOXIDIZED WATER SERVICE TUBING CONFORMING TO ASTM B88, TYPE "L". PROVIDE 125 PSI FLANGE AT CHANGE OF MATERIAL LOCATIONS.
    - B. DOMESTIC COLD AND HOT WATER (BELOW GRADE): HARD DRAWN DEOXIDIZED WATER SERVICE TUBING CONFORMING TO ASTM B88, TYPE TYPE "K".
    - C. FITTINGS FOR COPPER WATER TUBING: ANSI B16.22 WROUGHT COPPER SOLDER-JOINT FITTING.
    - D. TRAP PRIMER PIPING (UNDERGROUND): HARD DRAWN DEOXIDIZED WATER SERVICE TUBING CONFORMING TO ASTM B88, TYPE "K", WROUGHT COPPER FITTING AND BRAZED JOINT.
    - E. HARRIS, ENGELHARD, OR EQUAL, BCUP FILLER MATERIAL FOR BRAZING OF COPPER FITTING JOINTS. BRAZE JOINTS FOR COLD WATER PIPING 2-1/2" AND LARGER. BRAZE JOINTS FOR HOT WATER PIPING 2-1/2" AND LARGER.
36. SANITARY DRAINAGE PIPING AND FITTING:
    - A. CAST IRON SOIL PIPE AND FITTINGS (ABOVE FLOOR): REQUIRED CISPI 301 & 310 WHICH COMPLIANCE WITH HUD UM 77A CAST IRON HUBLESS SOIL PIPE AND FITTING. ALL PIPE AND FITTINGS SHALL BE MARKED WITH CISPI'S COLLECTIVE TRADEMARK OR RECEIVE PRIOR APPROVAL BE THE ENGINEER OF RECORD. JOINTS FOR HUBLESS PIPE AND FITTINGS: CISPI 310 AND SHALL CONFORM TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND LOCAL CODE REQUIREMENTS. ANACO "HUSKY SD 4000, CLAMP-ALL 125, TYLER WB, MG COUPLINGS, OR EQUAL, COMPLY WITH FM 1680, CLASS 1.
    - B. CAST IRON SOIL PIPE AND FITTINGS (BELOW SLAB): ASTM A74 STANDARD WEIGHT HUB AND SPIGOT PIPING AND FITTING. ALL PIPE AND FITTINGS SHALL BE MARKED WITH CISPI'S COLLECTIVE TRADEMARK OR RECEIVE PRIOR APPROVAL BE THE ENGINEER OF RECORD. JOINT FOR HUB AND SPIGOT PIPE AND FITTINGS: ASTM C-564 COMPRESSION GASKETS OR SHALL BE INSTALLED WITH LEAD AND OAKUM.
    - C. COPPER DRAINAGE PIPING AND FITTINGS (ABOVE FLOOR): ASTM B306 DWV TYPE COPPER TUBING AND ANSI B16.23 CAST BRONZE SOLDER-JOINT DRAINAGE TYPE FITTING. PROVIDE MISSION, OR EQUAL, CISPI 310 ADAPTOR COUPLING WITH NEOPRENE GASKET AND STAINLESS STEEL SHIELD WITH TWO BANDS.
    - D. CONDENSATE PIPING AND FITTINGS: ASTM B88 HARD DRAWN DEOXIDIZED, TYPE M COPPER TUBING WITH ANSI B16.22 WROUGHT COPPER WYES AND LONG RADIUS SOLDER-JOINT FITTINGS.
37. NATURAL GAS PIPING AND FITTING:
    - A. BELOW GRADE PIPING: SCHEDULE 40 STEEL PIPE WITH DRESSER TYPE AND STEEL WELDING FITTINGS. PRE-WRAP WITH MILL-WRAPPED CORROSION PROTECTION EXTRUDED POLYOLEFIN COATING IN ACCORDANCE WITH GAS COMPANY REQUIREMENTS, OR HIGH DENSITY POLYETHYLENE PIPING CONFORMING WITH ASTM D 2513, WITH SOCKET TYPE FITTINGS CONFORMING WITH ASTM D 2683, AND MINIMUM SDR 11. FOR 6" SIZE OR LARGER NATURAL GAS MAIN, USE BUTT FITTINGS WITH SDR 11. PROVIDE POLYETHYLENE TO SCH. 40 STEEL PIPE TRANSITION FITTING AND RISER AT EACH BUILDING PRIOR TO EXTENDING GAS PIPING ABOVE GROUND. PROVIDE 16 AWG COPPER TRACE WIRE OVER ENTIRE RUN OF PE PIPING AT 12 INCHES ABOVE PIPE.
    - B. FOR ABOVE GRADE PIPING: ASTM A-53, SCHEDULE 40 BLACK STEEL PIPING WITH MALLEABLE IRON THREADED FITTING CONFORMING TO ANSI B16.3, AND SCHEDULE 40 STEEL FITTING FOR BUTT WELDING CONFORMING TO ASTM A234, OR ASME B16.9
38. ALL FIXTURES, EQUIPMENT, PIPING AND MATERIALS SHALL BE LISTED.
39. ALL FAUCETS IN PUBLIC RESTROOMS SHALL BE SELF-CLOSING OR SELF-CLOSING METERING FAUCETS.
40. PUBLIC LAVATORIES SHALL HAVE CONTROLS TO LIMIT THE WATER TEMPERATURE TO 105°F.
41. WATER PIPE AND FITTINGS WITH A LEAD CONTENT WITH EXCEEDS 8% SHALL BE PROHIBITED IN SYSTEMS CONVEYING POTABLE WATER.
42. PLUMBING SEISMIC ANCHORAGE BRACING AND SUPPORT NOTES
    - A. ALL PLUMBING EQUIPMENT AND PIPE SHALL BE SUPPORTED PER SESMIC ANCHORAGE BRACING DETAILS SHOWN ON THIS CONSTRUCTION DUCUMENTS. ALSO SEE STRUCTURAL PLAN FOR CALCULATION AND DETAILED REQUIREMENTS.

PLUMBING SEISMIC ANCHORAGE BARCING AND SUPPORT NOTES

MEP EQUIPMENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS DESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CORD.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRAVERSE AND LONGITUDINAL DIRECTIONS:

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ACHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.126.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP☑ MD☐ PP☐ E☐ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP☐ MD☐ PP☐ E☐ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) ________ .

DRAWING INDEX

SCOPE OF WORK

1. PROVIDE NEW WATER MAIN AND METER CALCULATION FOR FUTURE PLUMBING FIXTURE PER PLAN.
2. INSTALL NEW DOMESTIC COLD WATER PIPING SYSTEM PER PLAN, PROVIDE STUD OUT HEIGHT FOR FUTURE CONNECTION.
3. PROVIDE NEW WASTE AND VENT PIPING STUD DOWN AND SECURE

APPLICABLE CODE

2019 CALIFORNIA BUILDING CODE
2019 CALIFORNIA MECHANICAL CODE
2019 CALIFORNIA PLUMBING CODE
2019 CALIFORNIA ENERGY CODE
2019 CALIFORNIA FIRE CODE
2019 CALIFORNIA GREEN BUILDING CODE
2016 NFPA 13
ALL AMENDMENTS AND SUPPLEMENTS TO ABOVE CODES
ALL CITY OF CAMARILLO ORDINANCES AND AMENDMENTS TO ABOVE CODES

LEGENDS, SYMBOLS

SYMBOL		DESCRIPTION
UP / LO		EQUIPMENT TYPE EQUIPMENT NUMBER
0 / M-?		DETAIL DRAWING NUMBER DETAIL DRAWING PAGE
WV / --		TYPE OF RISER(WV,CH,G,RD,OD...) RISER NUMBER(0,1,2...)
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
	---	PLUMBING FIXTURE CONNECTION
	CO	CLEAN OUT
	DN.	PIPE DOWN
	UP	PIPE UP
	--	FLOW DIRECTION
	TP	TRAP PRIMER W/ WALL ACCESS PANEL
	SOV	SHUT-OFF VALVE
	CKV	CHECK VALVE
	GCK	GAS COCK
	FD	FLOOR DRAIN
	PR	PIPE REDUCER
	WCO	WALL CLEAN-OUT
	FCO	FLOOR CLEAN-OUT
	BDV	STRAINER WITH BLOWDOWN VALVE
	SMV	SEISMIC SHUT-OFF VALVE
	TMR	WATER TEMPERATURE THERMOMETER

LINE TYPE	ABBREV.	DESCRIPTION
	(D)	PIPE TO BE REMOVED
	(E)	EXISTING PIPE TO REMAIN
— G —	G.	NATURAL GAS
—HWS —	HWS	HOT WATER SUPPLY
—HWR —	HWR	HOT WATER RETURN
—CW —	CW	COLD WATER SUPPLY
— W —	W	SANITARY WASTE
— — —	V	VENT PIPE
—CA —	CA	COMPRESSED AIR
—CD —	CD	CONDENSATE DRAIN
—SD —	SD	STORM DRAIN
	BFP	BACK-FLOW PREVENTER
WM	WM	WATER METER
—RD —	RD	ROOF DRAIN
—OD —	OD	ROOF OVERFLOW DRAIN

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR	GE	GREASE EXHAUST
BLDG BSMT	BUILDING BASEMENT	ICS INS	IN CEILING SPACE INSULATION (THERMAL)
CFF CLG CSD	CAP FOR FUTURE CEILING CEILING SUPPLY DIFFUSER	NIC	NOT IN CONTRACT
		OSA	OUTSIDE AIR (FRESH AIR)
EA	EXHAUST AIR	SA SAD SOV SRR	SUPPLY AIR SEE ARCHITECTURAL DWG. SHUT-OFF VALVE SIDEWALL RETURN REGISTER
DN	DOWN		
FA	FRESH AIR	UTR	UP THROUGH ROOF
FL FR	FLOOR FROM	VTF	VENT THROUGH ROOF

IDENTIFICATION STAMP
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GENERAL NOTES AND GENERAL INFORMATION

Revisions	
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Date:	8/26/2020
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Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
P0.1

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 PLUMB DWGS\2177PLUM-DSA-JIA-REV1.DWGPLOTTED: 3:16 PM THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

PLUMBING EQUIPMENT SCHEDULES, CALCULATION, AND TABLES

PLUMBING EQUIPMENT SCHEDULE

HB	HOSE BIBB	N/A	WOODFORD #MB30BX-K OR EQUAL, EQUIPMENT WITH FREEZELESS WALL FAUCET, COMPOSITE BOX, DOOR & FASCIA, KEY CYLINDER LOCK, CONTRACTOR VERIFY OVERALL LENGTH ON FIELD.
FS	FLOOR SINK	N/A	ZURN MODEL FD2376 12"x12"X8"DEEP, 3" NO-HUB OUTLET FLOOR SINK WITH HALF GRATE AND BOTTOM DOME STRAINER.
TP	TRAP PRIMER	N/A	PRECISION PLUMBING PRODUCTS (PPP) MODEL MP-500-12V TRAP PRIMER WITH BATTERY OPERATED SOLENOID VALVE AND KEY OPERATED LOCKABLE RECESSED WALL BOX, PROVIDE DISTRIBUTION UNIT FOR VALVE SERVING MORE THAN ONE FLOOR DRAIN.
DF	DRINKING FOUNTAIN	N/A	HAWS, MODEL: 1119FR HI-LO OUTDOOR WALL MOUNTED BARRIER-FREE FREEZE-RESISTANT DRINKING FOUNTAIN, SHALL INCLUDE STAINLESS STEEL WITH A SATIN FINISH, LEAD-FREE DESIGN CERTIFIED TO NSF/ANSI 61 & 372.

MINIMUM PLUMBING FIXTURE BRANCH PIPE SIZE

TAG	FIXTURE	WASTE	TRAP	VENT	CW	HW	REMARK
HB	HOSS BIBB	--	--	--	¾"Ø	--	①
FS	FLOOR SINK	2"Ø	1½"Ø	1½"Ø	--	--	①②
DF	DRINKING FOUNTAIN	2"Ø	1½"Ø	1½"Ø	½"Ø	--	①②

GENERAL NOTES

1. PIPE SIZES SHOWN MAY NOT BE NECESSARY THE FIXTURE CONNECTION SIZE. SEE FINAL PRODUCT MANUFACTURER RECOMMENDED PIPING CONNECTION SIZES PRIOR TO INSTALL. PROVIDE REDUCER BETWEEN BRANCH LINE AND CONNECTION AS REQUIRED.
2. UNDERGROUND VENT PIPE SHALL BE 1"Ø LARGER THAN SCHEDULED SIZE.
3. UNDERGROUND COLD WATER PIPE SHALL BE TYPE-K LEAD FREE COPPER PIPE.

REMARKS

① PROVIDE ISOLATION VALVE AND WATER HAMMER ARRESTER FOR EACH FIXTURE BANK AND MIN. 18" AIR CHAMBER AT EACH PLUMBING FIXTURE.
② PROVIDE THERMAL MIXING VALVE AND SET HOT WATER TEMPERATURE NO HIGHER THAN 110°F.
③ FLUSH VALVE FIXTURE

HYDRONIC PIPE MATERIAL SCHEDULE*

ITEM	LOCATION	SPECIFICATIONS
DOMESTIC COLD WATER PIPE	ABOVE GRADE	TYPE L COPPER
DOMESTIC COLD WATER PIPE	BELOW GRADE	TYPE K COPPER
SANITARY/GREASE WASTE AND VENT PIPE	ABOVE GRADE	CAST IRON NO-HUB
SANITARY/GREASE WASTE AND VENT PIPE	BELOW GRADE	CAST IRON NO-HUB **

* SCHEDULE SHOWN FOR QUICK REFERENCE ONLY. SEE COMPLETE MATERIAL SPECIFICATIONS ON P-0.1.

** SCH. 40 ABS IS SUBJECTED TO CITY'S APPROVAL, CONTRACTOR TO CONFIRM PRIOR TO USE.

PLUMBING FIXTURE UNIT (FU) CALCULATION (FOR FUTURE)

FUTURE FIXTURE	WATER			SANITARY WASTE		
	QTY	EACH	TOTAL	QTY	EACH	TOTAL
FLOOR SINK	2	--	--	2	2.0	4.0
HOSE BIBB	9	2.5+1	10.5	9	--	---
DRINKING FOUNTAIN	1	1	1	--	1.0	1.0
TOTAL FU			11.5			4.0

COLD WATER MAIN AND METER CALCULATIONS*

1. PROPOSED FUTURE FIXTURE UNIT: 11.5 F.U.

2. TOTAL ESTIMATED DEVELOPED PIPE LENGTH: 200 FT

3. ESTIMATION OF AVAILABLE PRESSURE FOR DISTRIBUTION
   A. AVAILABLE STREET PRESSURE:(60~70PSI) 60 PSI
   B. 1" WATER METER PRESSURE DROP: 2.0 PSI
   C. 1½"Ø WILKINS 375 LEAD-FREE BACKFLOW PREVENTER PRESSURE DROP: 12 PSI

TOTAL AVAILABLE PRESSURE FOR DISTRIBUTION: 46 PSI

4. ESTIMATION OF AVAILABLE PRESSURE FOR PIPING
   A. BUILDING STATIC PRESSURE DROP: 6.0 PSI (14FH)
   B. MINIMUM REQUIRED RESIDUAL PRESSURE: 20.0 PSI
   TOTAL AVAILABLE PRESSURE FOR PIPING: 20.0 PSI

5. MAXIMUM ALLOWABLE PRESSURE DROP (PSI/100 FT)
   A. (20.0 PSI / 200 FT) X 100 FT = 10.0 PSI / 100 FT

6. ESTIMATE MINIMUM REQUIRED WATER MAIN TO SATISFY ALL OF THE FOLLOWING DESIGN CONDITIONS:
   A. CARRY TOTAL ESTIMATED GPM: 9 GPM OR (11.5 F.U)
   B. WATER VELOCITY <= 8 FT/S
   MINIMUM REQUIRED WATER MAIN 1"Ø (PROPOSE 1½"Ø)

7. ESTIMATE MINIMUM REQUIRED WATER METER TO SATISFY ALL OF THE FOLLOWING DESIGN CONDITIONS:
   A. PRESSURE RANGE: 30~45 PSI
   B. GIVEN WATER MAIN SIZE: 1½"Ø
   C. DEVELOPED PIPE LENGTH: 200 FT
   D. CARRY TOTAL FLOW: 9 GPM OR (10.5 F.U)
   MINIMUM REQUIRED WATER METER SIZE: 1"Ø(PROPOSE)

WATER PIPE SIZE

PIPE SIZE	½"	¾"	1"	1¼"	1½"	2"	2½"
FU	1	6	17	28	48	--	--

* ESTIMATIONS ARE BASED ON 2019 CPC TABLE 610.4 AND APPENDIX A

IDENTIFICATION STAMP
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PLUMBING SCHEDULES, CALCULATION AND TABLES

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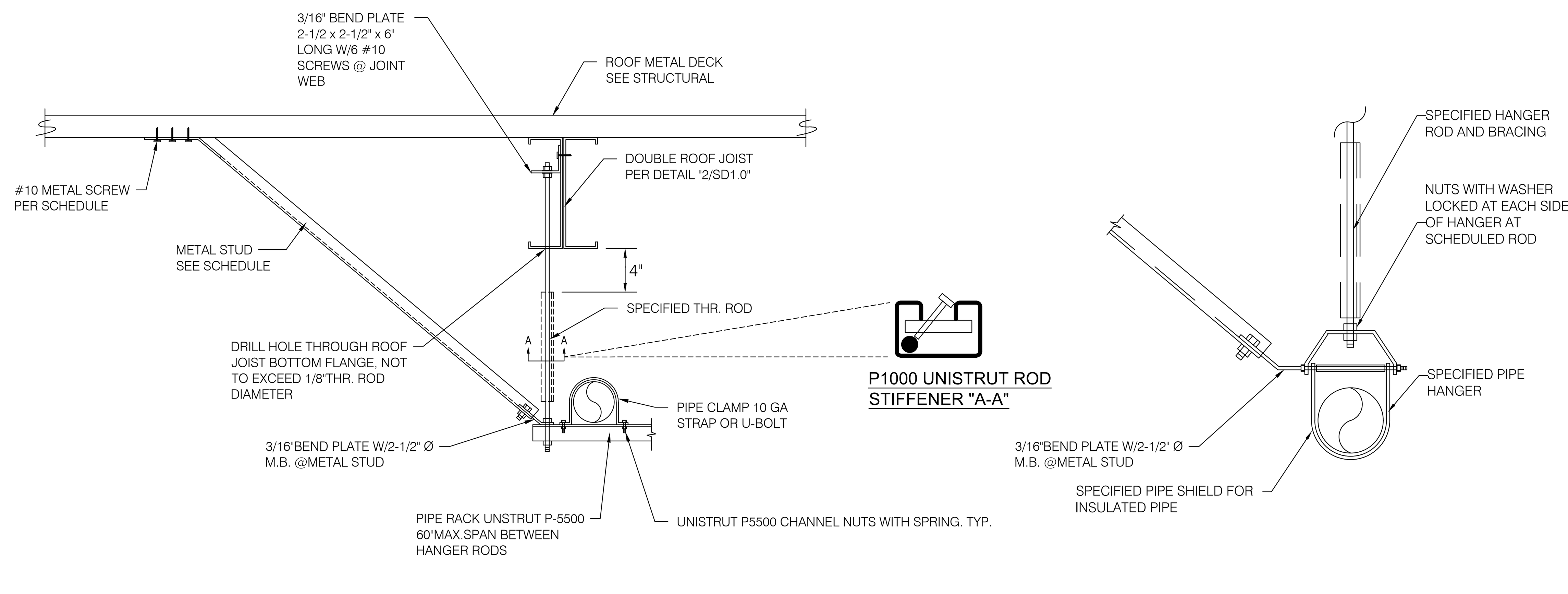
FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
P0.2

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 PLUMB DWGS\2177PLUM-DSA-JIA-REV1.DWGPLOTTED: 3:16 PM THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

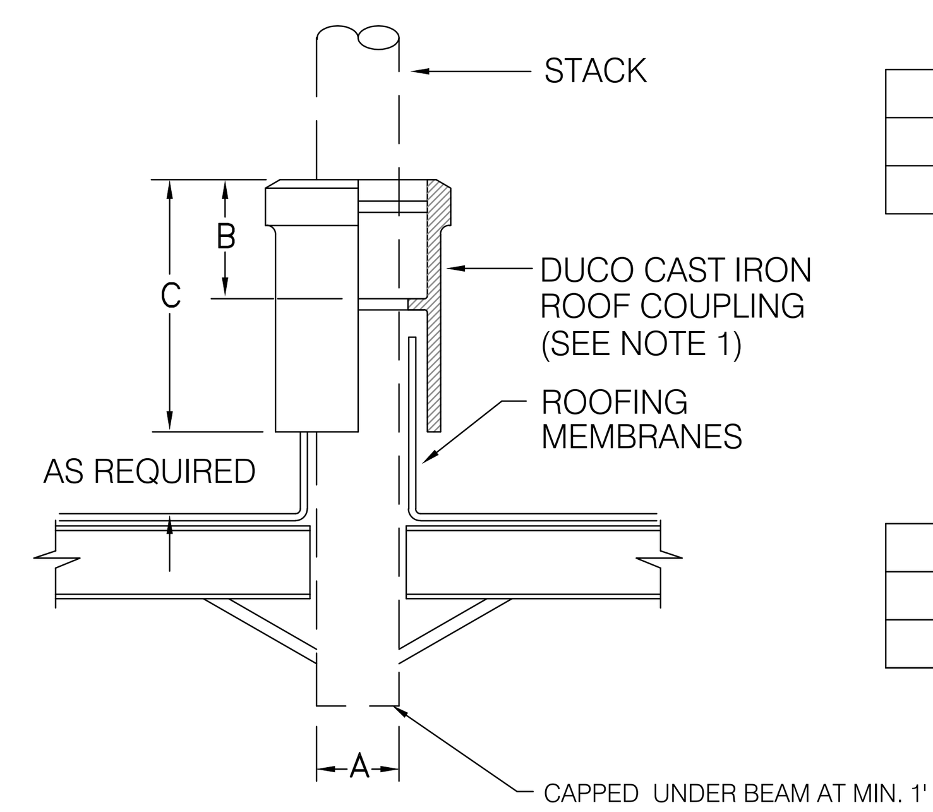


PIPE SIZE	HANGER ROD SIZE	MAX. WEIGHT PER HANGER LOAD	MAXIMUM PIPE SUPPORT SPACING		
			COPPER TUBE OR PIPE	STEEL PIPE	CAST-IRON
½"-1½"	⅜"	610 LBS	6'-0"	6'-0"	EVERY OTHER JOINT, UNLESS OVER 4' THEN SUPPORT EACH JOINT
2'-3"	½"	730 LBS	10'-0"	10'-0"	
>= 4"	⅝"	810 LBS	10'-0"	10'-0"	

NOTES:
1. SUPPORT PIPES AT INTERVALS INDICATED AND AT EACH CHANGE OF DIRECTION.
2. MULTIPLE PIPES MAY BE SUPPORTED ON A COMMON TRAPEZE SIZE AND SPACING TRAPEZE SIZE AND SUPPORT SPACING SHALL BE GOVERNED BY CUMULATIVE WEIGHT OF SUPPORTED PIPING.
3. BRACE PIPING LONGITUDINALLY AND TRANSVERSELY ACCORDING TO SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEM AND PLUMBING PIPING SYSTEM
4. ALL PIPE HANGER AND SUPPORT SHALL CONFORM TO 2019 CPC TABLE 313.6 AND 313.1
5. SCREW SCHEDULE AS BELOW

NO. OF #10 SCREW	STUD HEIGHT	STUD SIZE
4	<=6'	400 S 162-33
6	<=8', >6'	400 S 162-43
8	<=14', >8'	400 S 162-43X2

1 PIPE SUPPORT DETAIL
SCALE: N.T.S.

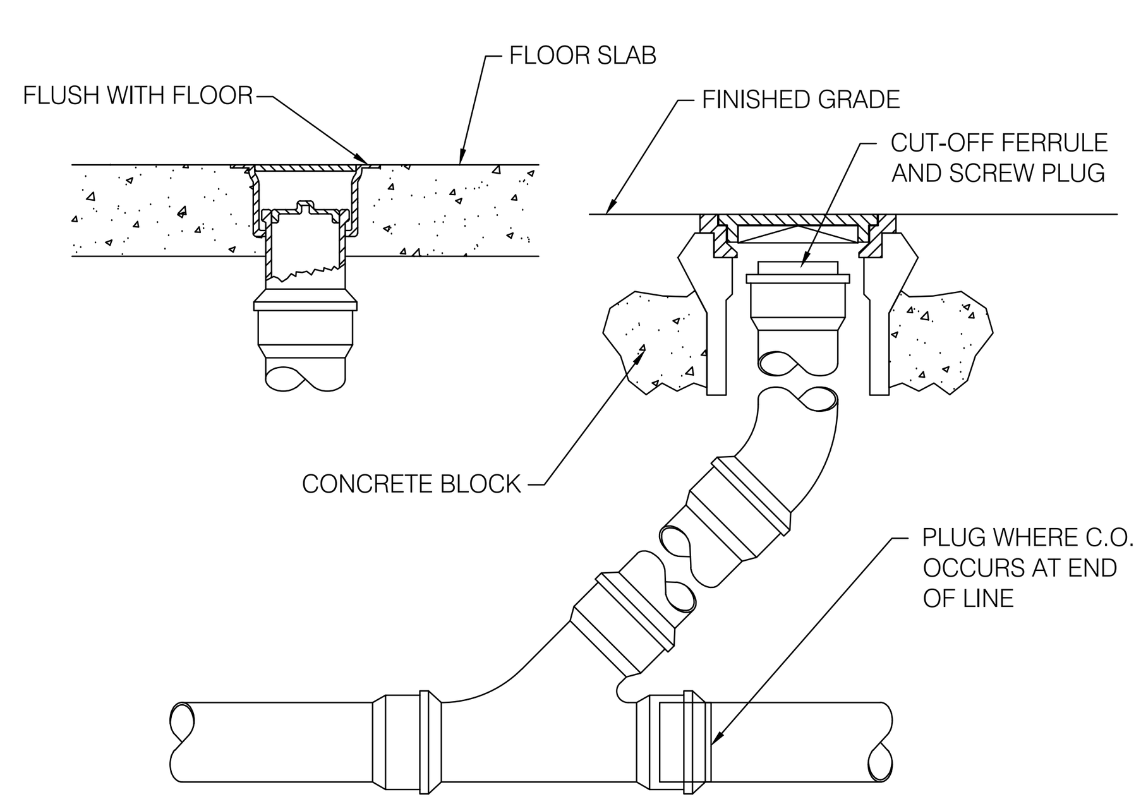


A SIZE	"B"
2,3,4,5 & 6	1 3/4
8	2 1/2

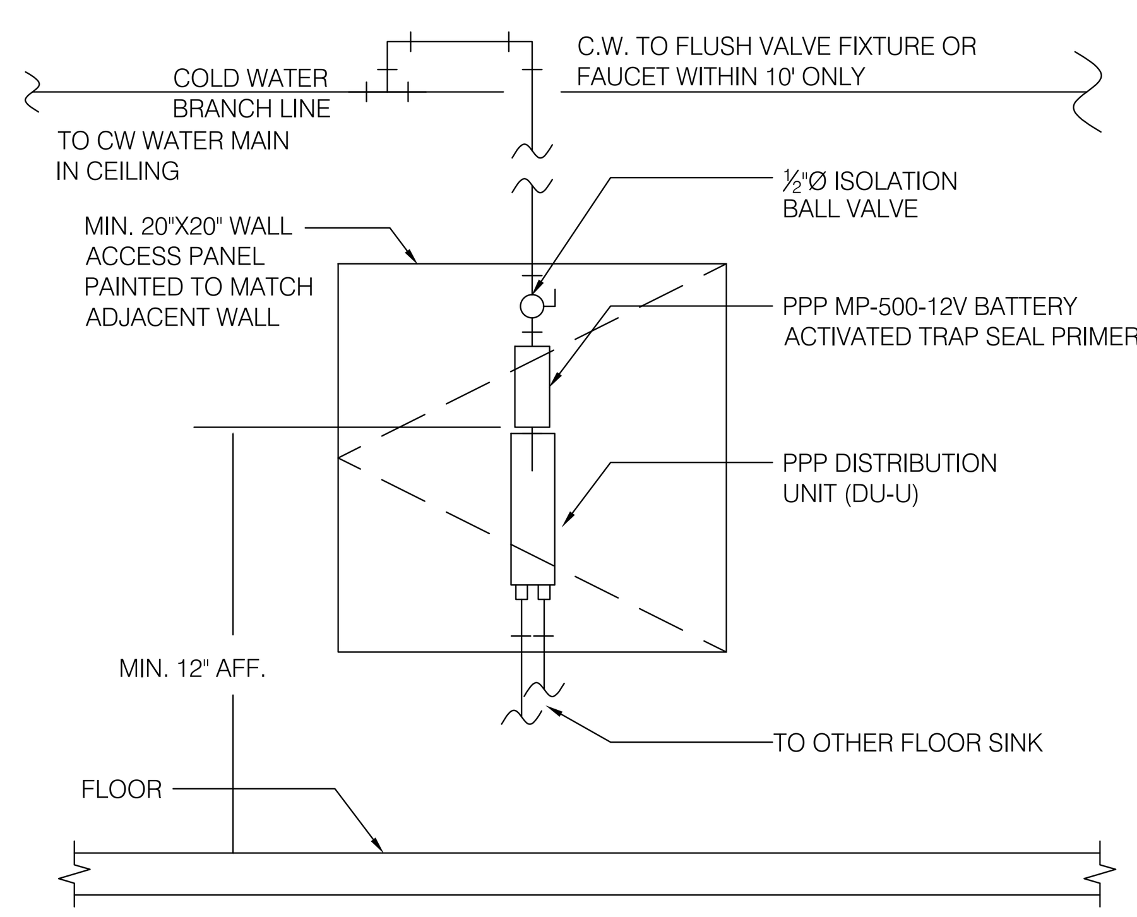
A SIZE	"C"
2 & 4	3 1/2
3,5 & 6	3 3/4

NOTES:
1. USED AS A COUNTERFLASHING SLEEVE WHERE ROOFING MEMBRANES ARE TERMINATED AT THE STACK, WHICH PROTRUDES THROUGH THE ROOF. CAULK JOINT IS MADE BETWEEN UPPER HUB OF SLEEVE AND STACK, EFFECTIVELY WATERPROOFING THE ENTIRE ASSEMBLY.
2. LOCATE VENT PIPE MIN. 10 FEET FROM ALL AIR INTAKE LOUVER.

2 PIPE THROUGH ROOF DETAIL
SCALE: N.T.S.



3 FLOOR CLEAN OUT DETAIL
SCALE: N.T.S.



4 TRAP PRIMER PIPING DETAIL
SCALE: N.T.S.

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PLUMBING DETAILS

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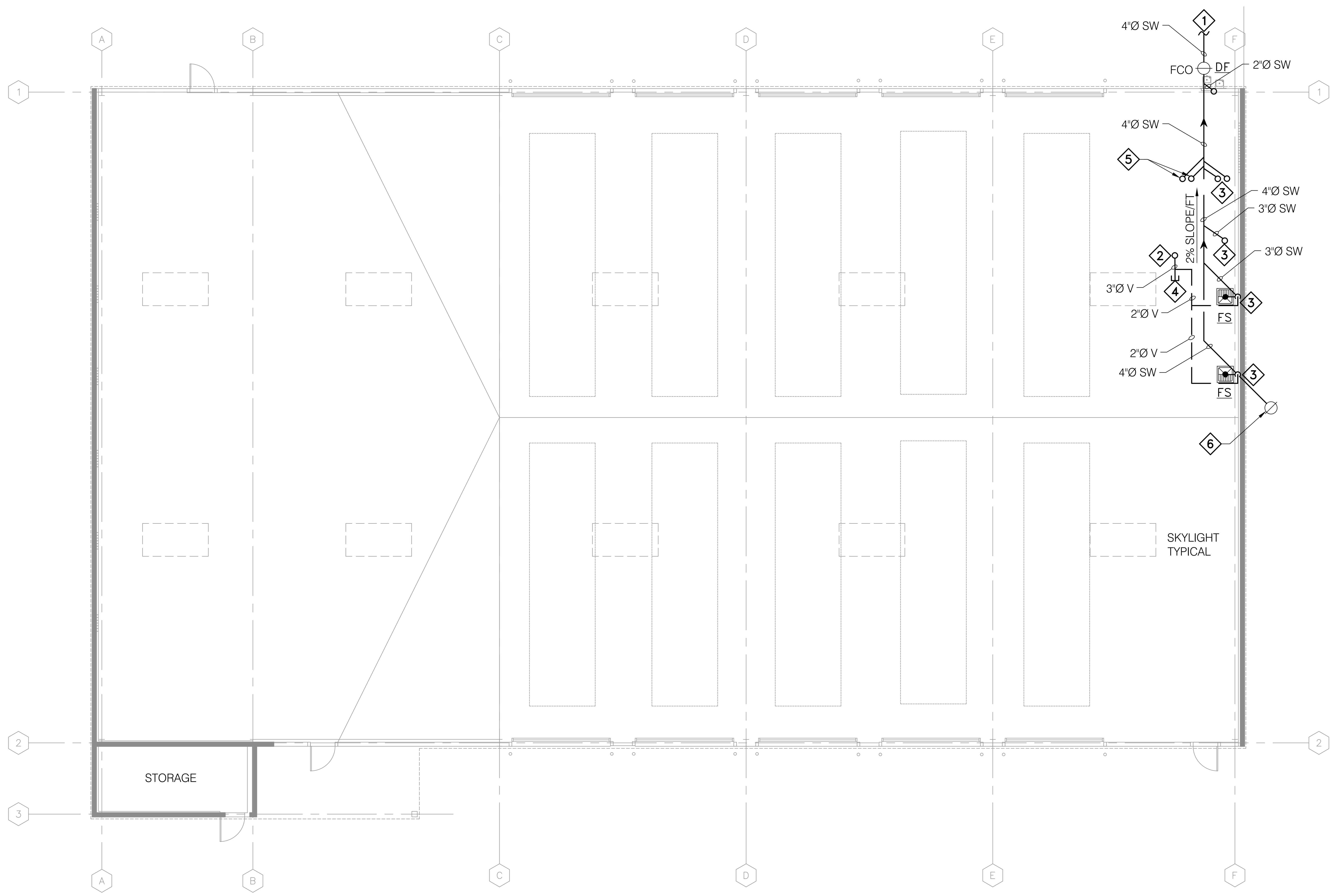
FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
P0.3

SHEET NOTES:

1. CONNECT (N) 4"Ø SANITARY WASTE TO (N) 8"Ø SANITARY WASTE. CONTRACTOR IS RESPONSIBLE TO VERIFY EXACT LOCATION, SIZE, AVAILABLE INVERT, SEE CIVIL DRAWING FOR CONT.
2. 3"Ø VTR, , SEE DWG. 2/P0.3 FOR DETAILS
3. PROVIDE MIN. 3"Ø WASTE AND 2"Ø VENT FOR FUTURE PLUMBING FIXTURE CONNECTION.
4. 3"Ø V CAPPED FOR FUTURE
5. PROVIDE MIN. 2"Ø WASTE AND 2"Ø VENT FOR FUTURE PLUMBING FIXTURE CONNECTION.
6. PROVIDE LINE SIZED FLOOR CLEAN-OUT. SEE DWG.3/P-0.3 FOR DETAILS



1 WASTE AND VENT PIPING PLAN
SCALE: 1/8" = 1'-0"

N

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WASTE AND VENT PIPING PLAN

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FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
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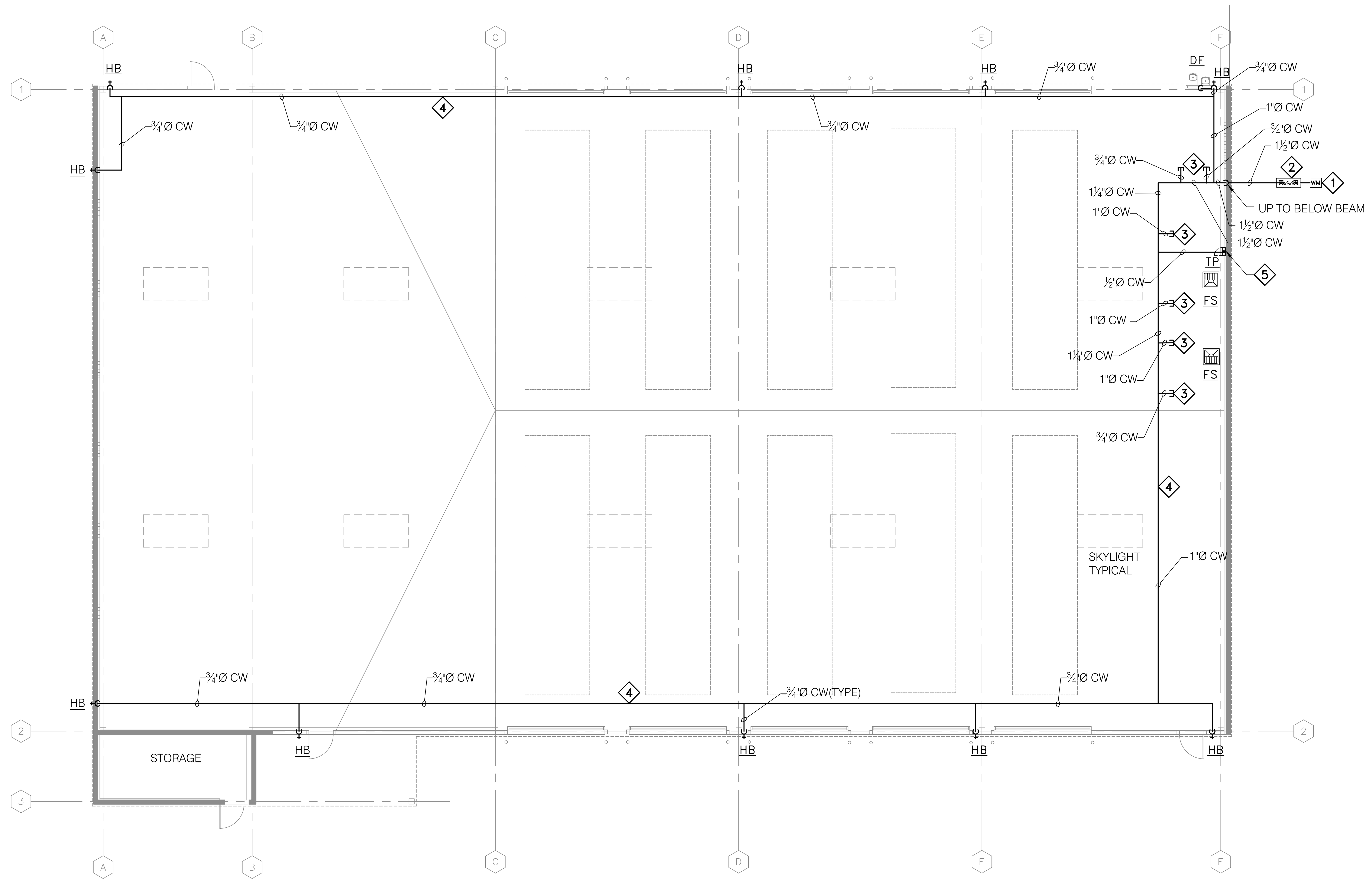
Sheet No.
P1.1

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 PLUMB DWGS\2177PLUM-DSA-JIA-REV1.DWGPLOTTED: 3:16 PM THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

SHEET NOTES:

1. 1" WATER METER FOR BUILDING BY CIVIL
2. PLUMBING CONTRACTOR TO FURNISH AND INSTALL (N) 1½"Ø REDUCED PRESSURE PRINCIPAL TYPE BACKFLOW-PREVENTOR ABOVE GRADE. CONFIRM WITH WATER DEPARTMENT AND OTHER REQUIREMENTS.
3. COLD WATER BRANCH PIPE CAPPED FOR FUTURE.
4. INSTALL CW PIPE BELOW STRUCTURAL BEAMS. SEE DWG.1/P0.3 FOR MOUNTING DETAILS.
5. PROVIDE TRAP PRIMER FOR FLOOR SINK. SEE EQUIPMENT SCHEDULE FOR DETAIL. ALSO SEE DWG.4/P0.3 FOR DETAILS



1 DOMESTIC WATER PIPING PLAN
SCALE: 1/8" = 1'-0"

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DOMESTIC WATER PIPING PLAN

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Revisions

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
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Sheet No.
P1.2

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 PLUMB DWGS\2177PLUM-DSA-JIA-REV1.DWGPLOTTED: 3:16 PM THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

APPLICABLE CODES

1. APPLICABLE CODES: (CURRENT EDITIONS UNLESS OTHERWISE NOTED)

a. 2019 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
b. 2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24, CCR.
c. 2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24, CCR.
d. 2019 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24, CCR.
e. 2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24, CCR.
f. 2019 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 CCR.
g. 2019 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR.
h. 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN CODE), PART 11, TITLE 24 (CCR)
i. 2019 CALIFORNIA REFERENCE STANDARDS CODES, PART 12, TITLE 24, CCR.
j. ALL LOCAL CODES, ORDINANCE AND AMENDMENTS; CITY AND/OR COUNTY AS APPLICABLE.
k. CAL/OSHA REQUIREMENTS.
l. REGULATIONS OF ALL OTHER AUTHORITIES HAVING JURISDICTION.
m. APPLICABLE STANDARDS: (CURRENT EDITIONS UNLESS OTHERWISE NOTED)
n. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS. REFERENCE CODE SECTION FOR NFPA STANDARDS- 2019 CBC (SFM) CHAPTER 35. SEE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS:

1.	NFPA 13	AUTOMATIC FIRE SPRINKLER SYSTEMS 2016 EDITION (CA AMENDED)
2.	NFPA 14	STANDPIPE AND HOSE SYSTEMS 2016 EDITION (CA AMENDED)
3.	NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS 2017 EDITION
4.	NFPA 17A	WET CHEMICAL EXTINGUISHING SYSTEMS 2017 EDITION
5.	NFPA 20	STATIONARY FIRE PUMPS FOR FIRE PROTECTION 2016 EDITION
6.	NFPA 24	PRIVATE FIRE SERVICE MAINS 2016 EDITION (CA AMENDED)
7.	NFPA 25	INSPECTION, TESTING AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS 2013 CALIFORNIA EDITION
8.	NFPA 37	INSTALLATION AND USE OF STATIONARY COMBUSTION ENGINES AND GAS TURBINES 2015 EDITION
9.	NFPA 72	NATIONAL FIRE ALARM & SIGNALING CODE 2016 EDITION (CA AMENDED)
10.	NFPA 80	FIRE DOORS AND OTHER OPENING PROTECTIVES 2016 EDITION
11.	NFPA 101	LIFE SAFETY CODE 2018 EDITION
12.	NFPA 110	EMERGENCY AND STANDBY POWER SYSTEMS 2016 EDITION
13.	NFPA 170	STANDARD FOR FIRE SAFETY AND EMERGENCY SYMBOLS 2018 EDITION
14.	NFPA 221	STANDARD FOR HIGH CHALLENGE FORE WALLS, FIRE WALLS, AND FIRE BARRIER WALLS 2018 EDITION
15.	NFPA 2001	CLEAN AGENT FIRE EXTINGUISHING SYSTEMS 015 EDITION
16.	ICC-ES AC77	ACCEPTANCE CRITERIA FOR SMOKE CONTAINMENT SYSTEMS USED WITH FIRE-RESISTANCE-RATED ELEVATOR HOISTWAY DOORS AND FRAMES
17.	UL 268	SMOKE DETECTORS FOR PROTECTIVE SIGNALING SYSTEMS 2009 EDITION
18.	UL 294	STANDARD FOR ACCESS CONTROL SYSTEM UNITS 1999 EDITION (2015 REVISION)
19.	UL 464	AUDIBLE SIGNAL APPLIANCES 2003 EDITION
20.	UL 521	HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS 1999 EDITION (2005 REVISION)
21.	UL 864	CONTROL UNITS FOR FIRE PROTECTIVE SIGNALING SYSTEMS 2003 EDITION (2014 REVISION)

ELECTRICAL SEISMIC ANCHORAGE BRACING AND SUPPORT NOTES

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS DESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CORD.
3. TEMPORARY, MOVABLE OR MOBILEea EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRAVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ACHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRUBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.126.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☐ E ☑ - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP ☐ MD ☐ PP ☐ E ☐ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #________.

DRAWING INDEX

PROJECT NOTES

1. MINIMUM WIRE SIZE FOR LINE VOLTAGE WIRING SHALL BE #12, UNLESS NOTED AS LARGER.
2. ALL CONDUIT SIZES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE (CEC) 2019 EDITION. MINIMUM SIZE CONDUIT SHALL BE 3/4".
3. SUBSCRIPTS, a,b,c ETC., AT SWITCH SYMBOLS, ARE TO DISTINGUISH BETWEEN SWITCHES.
4. 15" MIN. AND +48" INDICATES THE HIGH REACH MOUNTING HEIGHT FROM FINISHED FLOOR TO THE TOP OF SWITCH, OUTLET PLATE OR CONTROL BOX. THE LOW REACH +15" MEASURED FROM FINISHED FLOOR TO THE BOTTOM OF SWITCH, OUTLET PLATE OR CONTROL BOX. CBC 2016, SECTION 11B-308.1.1 AND 11B-308.1.2.
5. M.H. INDICATES HEIGHT FROM FINISHED FLOOR TO BOTTOM OF FIXTURE.
6. REFER TO WIRING DIAGRAMS ON MECHANICAL DRAWINGS.
7. NOT ALL SYMBOLS SHOWN IN THE SYMBOL LIST ARE USED ON THIS PROJECT.
8. EVERY OUTLET HEIGHT SHALL BE VERIFIED ON EACH WALL WITH THE ARCHITECTURAL DRAWINGS AND CABINET SHOP DRAWINGS TO INSURE THE PROPER HEIGHT AND LOCATION WITH RESPECT TO CABINETS, EQUIPMENT, CHALKBOARDS, TACKBOARDS, ETC.
9. COORDINATE WITH ALL OTHER TRADES, IN ADVANCE OF CONSTRUCTION, THE CEILING AREAS IN WHICH RECESSED LIGHTING FIXTURES OCCURS. THIS SHALL INCLUDE PLUMBING, HEATING, AND VENTILATING, AIR CONDITIONING AND CARPENTRY. IN THE EVENT OF ANY CONFLICT, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY FOR INSTRUCTIONS.
10. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF LIGHTING FIXTURES.
11. A GREEN INSULATED COPPER GROUNDING CONDUCTOR SHALL BE INSTALLED IN EACH AND EVERY CONDUIT AND SHALL BE CONNECTED TO EACH OUTLET, ENCLOSURE, DEVICE, FIXTURE, ETC. THROUGHOUT THE ENTIRE PROJECT. THE RACEWAYS SHALL NOT BE RELIED UPON FOR "EQUIPMENT GROUNDING".
12. PANEL HOMERUN DESIGNATIONS:

BA 1&3&5 =	ONE THREE PHASE, 3-WIRE CIRCUIT, NO NEUTRAL TO A 3-POLE CIRCUIT BREAKER IN PANEL "BA".
BA 1&3 =	ONE SINGLE PHASE, 2-WIRE CIRCUIT, NO NEUTRAL TO A 2-POLE CIRCUIT BREAKER IN PANEL "BA".
BA 1-3-5 =	THREE SINGLE PHASE CIRCUITS WITH COMMON NEUTRAL TO A 3-POLE CIRCUIT BREAKER IN PANEL "BA" PER CEC 210.4.
BA 1-3 =	TWO SINGLE PHASE CIRCUITS WITH COMMON NEUTRAL TO 2-POLE CIRCUIT BREAKER IN PANEL "BA" PER CEC 210.4.
BA 2,4,6 =	THREE SINGLE PHASE CIRCUITS WITH SEPARATE NEUTRAL FOR EACH CIRCUIT TO 1-POLE CIRCUIT BREAKER IN PANEL "BA".

SEE DRAWINGS FOR ADDITIONAL VARIATIONS AND REQUIREMENTS

13. ALL MULTI-WIRE BRANCH CIRCUITS: PROVIDE A SEPARATE NEUTRAL FOR EACH PHASE CIRCUIT IN ALL MULTI-WIRE BRANCH CONDUIT RUNS BACK TO THE PANELBOARD. CIRCUIT BREAKERS WITH COMMON TIE HANDLE ARE NOT ALLOWED.
14. THE FACE PLATES OR DEVICE PLATES ON ALL POWER OUTLETS, RECEPTACLES, SWITCHES, DIMMERS, CIRCUIT BREAKERS AND JUNCTION BOXES. ENGRAVE COVER PLATE WITH 1/4" HIGH LETTERS WITH BLACK FILL TO INDICATE CIRCUIT NUMBER AND PANELBOARD. e.g.: "1LL1 2" INDICATES PANEL "1LL1" CIRCUIT NUMBER 2. CIRCUITS ON EMERGENCY POWER SHALL BE RED FILL.

SCOPE OF WORK

THIS PROJECT SHALL CONSIST OF BUT IS NOT LIMITED TO THE FOLLOWING ITEMS OF WORK

1. EXTENSION OF EXISTING POWER AND COMMUNICATION UTILITIES ONTO THE NEW BUILDING, INCLUDING CONDUITS, CONDUCTORS, CABLE AS REQUIRED TO NEW PANELBOARD AND IDF RACK AS SHOWN.
2. COMPLETE LIGHTING AND POWER SYSTEM AS SHOWN ON DRAWINGS.
3. COMPLETE FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS.
4. LIGHTING CONTROLS AND CONNECTION TO MECHANICAL AND PLUMBING EQUIPMENT AS SHOWN

ELECTRICAL SYMBOL LIST

- 1'X4' LED LIGHT FIXTURE, SURFACE MOUNTED ON CEILING.
- 1X8' LED LIGHT FIXTURE, CHAIN HUNG ON CEILING.
- EMERGENCY 1'X8' LED LIGHTING FIXTURE CHAIN HUNG ON CEILING
- LIGHT FIXTURE WALL MOUNTED.
- ab — WALL SWITCH / OCCUPANCY LIGHT SENSOR ab INDICATES WITH BY-LEVEL WALL SWITCHES WHERE INDICATED, +46"
- S — TOGGLE SWITCH, +46". SUFFIXES ON SWITCH SYMBOLS SHALL INDICATE THE FOLLOWING: NO SUFFIX = SINGLE POLE, 2 = 2 POLE, 3 = 3 WAY, 4 = 4 WAY, M = MOMENTARY CONTACT, LV = LOW VOLTAGE LIGHTING CONTROL., K = LOCK TYPE SWITCH. P = PILOT LIGHT.
- SELF-LUMINOUS WALL MOUNTED EXIT SIGN
- SINGLE RECEPTACLE 20A. FOR RETRACTABLE DROP CORD OUTLET, TYPE AS NOTED.
- GFI — GROUND FAULT INTERRUPTING DUPLEX RECEPTACLE, +42" OR AS NOTED.
- DOUBLE DUPLEX RECEPTACLE, +18" OR AS NOTED.
- SPECIAL POWER RECEPTACLE, SINGLE PHASE. SEE DRAWINGS FOR SIZE AND DESCRIPTION.
- J — JUNCTION BOX, CEILING MOUNTED.
- SURFACE MOUNTED PANELBOARD, +6'-6" TO TOP.
- SURFACE MOUNTED CABINET OR EQUIPMENT AS NOTED, +6'-6" TO TOP.
- CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALL.
- CONDUIT RUN CONCEALED UNDER FLOOR OR BELOW GRADE.
- CONDUIT RUN EXPOSED PARALLEL OR PERPENDICULAR TO STRUCTURE, ALIGN WITH STRUCTURE.
- FLEXIBLE STEEL CONDUIT.
- CONDUIT "HOME RUN," CONNECT TO PANEL, TERMINAL CABINET OR TERMINAL BOARD.
- CONDUIT RISING UP FROM BELOW.
- CONDUIT DROPPING DOWN FROM ABOVE.
- CONDUIT ONLY STUB OUT WITH CAP AND MARKER.
- X — EXISTING CONDUIT AND CONDUCTORS TO REMAIN UNLESS OTHERWISE NOTED.
- XR — EXISTING CONDUIT AND CONDUCTORS. REMOVE ALL CONDUCTORS OR CABLES. IF CONDUIT IS EXPOSE TO VIEW, REMOVE CONDUIT AND SUPPORTS.
- XA — EXISTING CONDUIT TO BE ABANDON IN PLACE. REMOVE ALL CONDUCTORS OR CABLES.
- XX — EXISTING CONDUIT REWIRED AS NOTED ON THE DRAWINGS.

3/4"C-2#12	3/4"C-3#12.
3/4"C-4#12	3/4"C-5#10.
1"C-6#10	1"C-7#10
1"C-8#10	1"C-9#10.
1"C-10#10	1"C-11#10

WIRE SIZE OTHER THAN #12 OR #10 IS NOTED ON EACH CONDUIT RUN WITH SIZE OF CONDUIT (e.g.: 3/4"C-3#8) INCLUDE A GREEN GROUND CONDUCTOR IN EACH CONDUIT. (GREEN GROUND CONDUCTOR NOT SHOWN).

- FIRE ALARM PULL STATION, +46".
- F — COMBINATION FIRE ALARM HORN AND STROBE LIGHT UNIT, +80". 15cd MINIMUM UNLESS OTHERWISE NOTED. NUMBER ADJACENT TO UNIT INDICATES HIGHER CANDELA RATING.
- FIRE ALARM HORN, +90" OR AS NOTED.
- WEATHERPROOF FIRE SPRINKLER ALARM BELL, +10'-0" OR AS NOTED.
- F — FIRE ALARM STROBE LIGHT, +80". 15cd MINIMUM UNLESS OTHERWISE NOTED. NUMBER ADJACENT TO UNIT INDICATES HIGHER CANDELA RATING.
- J — JUNCTION BOX, FLUSH IN WALL, +18" OR AS NOTED.
- PHOTO-ELECTRIC SMOKE DETECTOR, CEILING MOUNTED.
- D — WALL DIMMER SWITCH, +46".
- P — PHOTODIODE/ PHOTOCELL FLUSH IN CEILING FOR DAYLIGHT HARVESTING.
- F — FIRE ALARM SYSTEM CONDUIT WITH CONDUCTORS/CABLE AS NOTED, 3/4" CONDUIT MINIMUM.
- XF — EXISTING FIRE ALARM SYSTEM CONDUIT WITH CONDUCTORS/CABLE
- M — FIRE ALARM MONITOR MODULE.
- T — TAMPER SWITCH.
- FL — FLOW SWITCH.
- TS — TIME SWITCH CONTROLLER.
- EXISTING PULL BOX.
- LA — EXISTING PANELBOARD DESIGNATION.
- MSA — FEEDER DESIGNATION (SEE FEEDER SCHEDULE OR SINGLE LINE DIAGRAM).

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SYMBOL LIST, PROJECT NOTES, SCOPE OF WORK AND DRAWINGS INDEX

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FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E0.1

ELECTRICAL SPECIFICATIONS

SCOPE OF WORK

IT IS THE INTENT AND PURPOSE OF THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS THAT THE CONTRACTOR PROVIDE THE NECESSARY MATERIALS, LABOR, WORKMANSHIP, TOOLS, EQUIPMENT, TRANSPORTATION, ETC., FOR THE COMPLETE AND PROPER INSTALLATION AND OPERATION OF THE VARIOUS ELECTRICAL SYSTEMS SPECIFIED HEREIN.

VISIT THE PREMISES TO BECOME ACQUAINTED WITH THE CONDITIONS TO BE ENCOUNTERED. NO EXTRA PAYMENTS WILL BE ALLOWED FOR ANY EXTRA WORK WHICH MAY BE REQUIRED DUE TO FAILURE OF THE CONTRACTOR TO THOROUGHLY EXAMINE THE PREMISES PRIOR TO BID.

WORK INCLUDED IN THIS SECTION

DEMOLITION AND MODIFICATIONS OF THE EXISTING ELECTRICAL SYSTEMS AS SHOWN AND DESCRIBE ON THE DRAWINGS AND AS REQUIRED TO CONNECT THE NEW ELECTRICAL WORK TO THE EXISTING FOR A COMPLETE AND OPERATION ELECTRICAL SYSTEM.

A COMPLETE AND OPERABLE EXTENSION OF THE EXISTING 208/120V, 3-PHASE, 4-WIRE AND 480/277V, 3-PHASE, 4-WIRE LIGHTING AND POWER SYSTEMS INCLUDING CONDUIT, WIRE, FITTINGS, FIXTURES, RECEPTACLES, SWITCHES, ETC.

LIGHTING FIXTURES, LAMPS AND ACCESSORIES INCLUDING REPLACING LAMPS, BALLASTS AND LENS IN EXISTING LIGHT FIXTURES FOR A COMPLETE AND OPERABLE LIGHTING SYSTEM.

APPLICABLE CODES AND REGULATIONS

2019 CALIFORNIA ELECTRICAL CODE.

REGULATIONS OF ALL OTHER AUTHORITIES HAVING JURISDICTION.

PERMITS AND APPROVALS

AS REQUIRED BY CITY ORDINANCES TO BE OBTAINED AND PAID FOR BY THE CONTRACTOR.

LOCATIONS

THE DRAWINGS INDICATE DIAGRAMMATICALLY THE DESIRED LOCATION OR ARRANGEMENT OF CONDUIT RUNS, OUTLETS, EQUIPMENT, ETC., AND ARE TO BE FOLLOWED AS CLOSELY AS POSSIBLE. PROPER JUDGMENT MUST BE EXERCISED IN EXECUTING THE WORK SO AS TO SECURE THE BEST POSSIBLE INSTALLATION IN THE AVAILABLE SPACE AND TO OVERCOME DIFFICULTIES OWING TO SPACE LIMITATIONS OR INTERFERENCE OF STRUCTURAL CONDITIONS WHEREVER ENCOUNTERED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY AND COORDINATE THE LOCATION OF ALL OUTLETS AND LIGHTING FIXTURES WITH THE ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND WITH ALL SHOP DRAWINGS.

SHOP DRAWINGS

PROVIDE FIVE COPIES OF CATALOG CUTS FOR EACH OF THE FOLLOWING ITEMS:
1. PANELBOARDS.
2. MATERIAL LIST.
3. LIGHT FIXTURE.
4. LIGHT CONTROLS
5. FIRE ALARM SYSTEM.

STRUCTURAL CONDITIONS

PENETRATE NO STRUCTURAL ELEMENTS INCLUDING SHEAR WALLS, WITHOUT WRITTEN CONSENT OF ARCHITECT.

COORDINATION

REFER TO MECHANICAL DRAWINGS AND SPECIFICATIONS FOR WIRING, DIAGRAMS, EXACT EQUIPMENT LOCATION, AND OTHER INFORMATION REGARDING THE EXTENT OF ELECTRICAL WORK REQUIRED BUT NOT INDICATED ON ELECTRICAL DRAWINGS.

EXCAVATIONS

DO ALL EXCAVATING NECESSARY FOR THE PROPER INSTALLATION OF THE ELECTRICAL WORK WHETHER OR NOT INDICATED ON THE DRAWINGS OR SPECIFIED. WHEN ON THE OWNER'S PROPERTY, UNDERGROUND FEEDERS SHALL BE BURIED NOT LESS THAN 24" BELOW FINISHED GRADE; AND OTHER CONDUIT RUNS CONTAINING CIRCUITS OF 600 VOLTS OR LESS SHALL BE NOT LESS THAN 18" BELOW FINISH GRADE

AFTER THE INSTALLATION OF WORK REQUIRING EXCAVATIONS HAS BEEN INSPECTED AND APPROVED, ALL EXCAVATIONS SHALL BE FILLED WITH CLEAN EARTH AND TAMPED TO A CONSISTENCY SO THAT NO SETTLEMENT WILL OCCUR, AND THE GROUND LEFT FIRM AT NATURAL GRADE. ALL EXCAVATED EARTH WHICH IS NOT USED FOR BACKFILL SHALL BE REMOVED FROM THE PREMISES OR OTHERWISE DISPOSED OF AS DIRECTED.

CONDUITS

INSTALL ALL CONDUIT CONCEALED EXCEPT AS NOTED ON DRAWINGS.

GALVANIZED OR SHERARDIZED RIGID STEEL CONDUIT FOR EXPOSED CONDUIT BELOW 8 FT. WHEN USED EXPOSED ON EXTERIOR OR WHEN INSTALLED IN MASONRY OR CONCRETE. USE GALVANIZED COUPLINGS, LOCKNUTS, BUSHINGS AND CONNECTORS.

ELECTRICAL METALLIC TUBING: THIN WALL, GALVANIZED STEEL WITH COMPRESSION FITTINGS ONLY: FOR ALL CONCEALED WORK OR WHEN EXPOSED ABOVE 8FT.

FLEXIBLE METALLIC CONDUIT: SPIRAL INTERLOCKED, GALVANIZED STEEL, FOR CONDUIT CONCEALED ABOVE GROUND, NOT ENCASED IN MASONRY OR CONCRETE AND PROHIBITED IN WET OR DAMP LOCATIONS; SEAL-TITE OIL RESISTANT FLEXIBLE CONDUIT WITH PROPER FITTINGS FOR WET OR DAMP LOCATIONS. WHERE FLEXIBLE METALLIC CONDUIT IS PERMITTED, THE TOTAL LENGTH OF THE CONDUIT IN ANYONE RUN SHALL NOT EXCEED 6 FEET.

INSTALL METALLIC CONDUIT AS A COMPLETE SYSTEM, CONTINUOUS FROM OUTLET TO OUTLET, CABINET, BOX OR FITTINGS, AND SO MECHANICALLY AND ELECTRICALLY CONNECTED THAT ADEQUATE ELECTRICAL CONTINUITY FROM ONE CONDUIT TO ANOTHER IS SECURED. HOWEVER THIS SHALL NOT CONSTITUTE THE MECHANICAL GROUND FOR THE CIRCUIT.

INSTALL CONDUIT AS INDICATED ON PLANS AND FIRMLY SECURED AT LEAST 6" FROM ANY HOT WATER PIPE, HOT AIR DUCT, FLUE OR VENT.

FLASH AND COUNTER FLASH ALL CONDUIT PENETRATING SLOPED ROOFS WITH GALVANIZED SHEET STEEL ROOF JACKS. ALL PENETRATIONS THROUGH FLAT ROOF SURFACES BY ELECTRICAL CONDUIT SHALL BE THROUGH PITCH POCKET PANS A MINIMUM OF 6" LARGER THAN THE CONDUIT. PAN SHALL BE FILLED WITH HOT COAL TAR PITCH.

NON-METALLIC: RIGID PVC ELECTRICAL CONDUIT EXTRUDED TO SCHEDULE 40 DIMENSIONS OF HIGH IMPACT, VIRGIN POLYVINYL CHLORIDE AND SHALL BEAR U.L. LABEL. PVC, SCHEDULE 40 CONDUIT SHALL BE USED FOR ALL UNDERGROUND RUNS. ENCASE IN CONCRETE OF 3" MINIMUM THICKNESS ON ALL SIDES. USE STANDARD STEEL CONDUIT ELLS WHEREVER A RUN TURNS UP ABOVE GROUND OR CONCRETE SLABS. WHERE CONDUIT SIZE IS INCREASED FOR GROUND CONDUCTOR BY A CHANGE TO PVC, INCREASE THE SIZE OF THE ENTIRE LENGTH OF THE CONDUIT RUN TO MATCH.

CONDUCTORS

98% CONDUCTIVITY, SOFT DRAWN COPPER, TYPE "THW" WIRE, 600V. INSULATION FOR GENERAL WIRING; TYPE "THHN" 600V. INSULATION FOR USE WHERE AMBIENT EXCEEDS 30 DEGREES C. COPPER WIRE FOR ALL CONDUCTORS. MANUFACTURED BY ANACONDA, GENERAL CABLE, GENERAL ELECTRIC, OR EQUAL. CONDUCTORS #8 AND LARGER SHALL BE STRANDED, CONDUCTORS #10 AND SMALLER SHALL BE SOLID.

DO NOT USE ANY MECHANICAL DEVICE TO PULL WIRE UNLESS SPECIFICALLY APPROVED BY ELECTRICAL ENGINEER.

IDEAL YELLOW #77 OR EQUAL PULLING COMPOUND IS THE ONLY LUBRICANT PERMITTED FOR PULLING WIRE.

USE SPLIT BOLT OR HI-PRESS COMPRESSION CONNECTORS FOR #6 AWG AND LARGER CONDUCTORS. WRAP JOINTS WITH A MINIMUM OF THREE (3) LAYERS OF SCOTCH TAPE #33 WHERE SPLICES ARE TO BE WATERPROOFED. ADD PROPER HEAT-SHRINK OR COLD-SHRINK TUBES OR WITH A 3M SCOTCHCAST EPOXY RESIN.

USE 3M SCOTCHLOK OR IDEAL WING-NUT CONNECTIONS FOR #8 AWG AND SMALLER CONDUCTORS.

OUTLET BOXES

GALVANIZED PRESSED STEEL, KNOCKOUT TYPE FOR GENERAL INTERIOR WIRING. PROPER SIZE FOR NUMBER OF WIRES BUT NOT LESS THAN 4" SQUARE. WATERPROOF CAST BOXES FOR EXTERIOR WIRING AND IN WET OR DAMP LOCATIONS. MANUFACTURED BY CROUSE HINDS OR APPLETON.

PANELBOARDS

BOLT-ON TYPE , AMBIENT COMPENSATED, THERMAL MAGNETIC TYPE CIRCUIT BREAKERS RATED 10,000 AIC, SINGLE HANDLE, COMMON TRIP FOR 2 AND 3 POLE BREAKERS. BUSSING SHALL BE COPPER. INSTALL A TYPEWRITTEN DIRECTORY ON INSIDE OF DOOR TO DESIGNATE OUTLETS OR EQUIPMENT SERVED BY CIRCUIT. FLUSH OR SURFACE MOUNTED AS INDICATED WITH HAMMERTONE GRAY FINISH AS MANUFACTURED BY SQUARE "D" CO. PANELBOARDS MANUFACTURER BY SQUARE D, EATON OR SIEMENS. FLUSH PANEL TRIM SHALL BE A ON PIECE ASSEMBLY WITH HINGED LOCKABLE DOOR. "EZ-TRIM" ASSEMBLY WILL NOT BE ACCEPTABLE.

ALL PANELBOARDS SHALL HAVE BUS BRACING AND CIRCUIT BREAKER FAULT INTERRUPTING CAPABILITY TO WITHSTAND AND INTERRUPT THE AVAILABLE RMS SYMMETRICAL FAULT CURRENTS INDICATED ON THE DRAWINGS. IN NO CASE, HOWEVER, SHALL THIS CAPABILITY BE LESS THAN FOR 10,000 AMPERES AT 208/240 VOLTS AND 14,000 AMPERES AT 480 VOLTS.

ALL PANELS SERVED BY THE EMERGENCY POWER SYSTEM SHALL BE EQUIPPED WITH A FACTORY INSTALLED UL LISTED SURGE PROTECTION DEVICE (SPD) PER CEC 700.8

MOTOR STARTERS

MOTOR SWITCHES: PROVIDE FOR FRACTIONAL HORSEPOWER MOTORS WHERE NO REMOTE CONTROL IS REQUIRED. FOR CONTROLLING SINGLE PHASE MOTORS OF 3/4 HORSEPOWER OR LESS RATING EQUIPPED WITH INTEGRAL THERMAL PROTECTION. PROVIDE SQUARE D, CLASS 2510 OR GENERAL ELECTRIC TYPE CR101.

MAGNETIC MOTOR STARTERS: UNLESS OTHERWISE INDICATED, PROVIDE NON_REVERSING, FULL VOLTAGE, ACROSS THE LINE MECHANISMS, CLOSED BY COIL ACTION AND OPENED BY GRAVITY. EQUIP STARTERS WITH 120 VOLT COILS AND SELF CONTAINED CONTROL TRANSFORMER UNLESS OTHERWISE INDICATED. RESET BUTTON TO BE ACCESSIBLE WITHOUT OPENING ENCLOSURES. PROVIDE STARTER SIZES AS INDICATED OR REQUIRED BUT NOT SMALLER THAN NEMA SIZE 1. GENERAL ELECTRIC CR106 OR SQUARE D, CLASS 8536.

COMBINATION STARTERS: PROVIDE A CIRCUIT BREAKER OR SWITCH IN COMMON ENCLOSURE WITH MAGNETIC STARTER WHERE INDICATED TO FORM A COMBINATION_STARTER MECHANISM. FACTORY CONNECT LINE SIDE OF STARTER TO BREAKER OR SWITCH. EQUIP SWITCH WITH FUSES WHERE INDICATED. SIZE BREAKERS, SWITCHES AND FUSES AS INDICATED OR AS REQUIRED FOR THE LOAD CONTROLLED IF NOT INDICATED. PROVIDE DUAL ELEMENT FUSES FOR MOTOR LOADS AND FEEDERS SERVING "PACKAGED EQUIPMENT" WHICH IS LABELED BY U.L. LABS FOR USE ONLY ON FUSED CIRCUITS.

PROVIDE ENCLOSURES FOR MOTOR STARTERS, MOTOR SWITCHES, AND COMBINATION STARTERS UNLESS INDICATED OR SPECIFIED TO MOUNT WITHIN THE ENCLOSURE SPECIFIED FOR ANOTHER PRODUCT. PROVIDE NEMA 1 ENCLOSURES FOR INDOOR USE AND NEMA 3R ENCLOSURES FOR OUT OF DOORS AND AREAS SUBJECT TO MOISTURE.

PROVIDE PILOT LIGHTS AND CONTROL DEVICES AS INDICATED, OPERABLE AT FRONT OF ENCLOSURE WITHOUT OPENING ENCLOSURE. WHERE NOT OTHERWISE INDICATED, EQUIP MAGNETIC STARTERS WITH STOP START PUSH BUTTON STATIONS WHERE NO REMOTE AUTOMATIC CONTROL IS INDICATED, AND WITH HAND OFF AUTO SELECTOR SWITCHES WHERE CONTROLLED BY AUTOMATIC DEVICE.

DISCONNECT SWITCHES

DISCONNECT SWITCHES SHALL BE 250 VOLT OR 600 VOLT A.C., COMPLYING WITH SOURCE VOLTAGE, HEAVY DUTY NEMA TYPE HD, QUICK MAKE, QUICK BREAK, HORSEPOWER RATED, NON-FUSIBLE OR FUSIBLE SWITCHES IN NEMA TYPE 1 ENCLOSURE WITH NUMBER OF POLES AND AMPERAGE AS INDICATED ON THE DRAWINGS. FUSIBLE SWITCHES SHALL BE EQUIPPED WITH REJECTION CLIPS TO PREVENT THE USE OF ONE-TIME AND RENEWABLE FUSES. WHERE ENCLOSURE IS INDICATED WEATHERPROOF, AND FOR OUTDOOR USE, SWITCHES SHALL BE IN RAINTIGHT NEMA TYPE 3R ENCLOSURE.

WHERE FUSES ARE REQUIRED, PROVIDE DUAL ELEMENT "BUSS" "FUSETRON" FUSES UNLESS OTHERWISE INDICATED ON DRAWING.

DEVICES

CIRCUIT SWITCHES

1. CIRCUIT SWITCHES SHALL BE WHITE, TOTALLY ENCLOSED, BAKELITE, OR COMPOSITION BASE, TOGGLE TYPE WITH 277 VOLT, A.C. RATING FOR FULL CAPACITY OF CONTACTS FOR INCANDESCENT OR FLUORESCENT LAMP LOADS. SWITCH RATINGS SHALL BE 20 AMPERE ONLY. SWITCHES SHALL BE BACK AND SIDE WIRED.
2. SWITCHES SHALL BE WHITE COLOR FOR NORMAL POWER.

DIMMERS AND DAYLIGHT CONTROLS

1. 0-10 VOLT LED WALL BOX DIMMERS IN OPEN OFFICE AREAS SHALL BE LEVITION #AWSMT-7DW (WHITE) OR APPROVED EQUAL. DIMMER SHALL BE RATED 1920/3680/4432 VA, 120/230/277 VOLTS.
2. 0-10 VOLT LED WALL BOX DIMMER OCCUPANCY SENSORS SHALL BE LUTRON #MS-Z101-V-WH (WHITE) OR APPROVED EQUAL. DIMMER SHALL BE RATED 8.0 AMPS AT 120-277 VOLTS.
3. STAND ALONE PHOTODIODE / PHOTOCELL FOR DAYLIGHT HARVESTING SHALL BE GREENGATE #DLC-PD-DIM.

OCCUPANCY LIGHT SENSOR CONTROL

1. WALL SWITCH SENSORS SHALL BE CAPABLE OF DETECTION OF OCCUPANCY AT DESKTOP LEVEL UP TO 300 SQUARE FEET, AND GROSS MOTION UP TO 1000 SQUARE FEET.
2. WALL SWITCH SENSORS SHALL BE DUAL TECHNOLOGY ACCOMMODATING LOADS FROM 0 TO 800 WATTS AT 120 VOLTS; 0 TO 1200 WATTS AT 277 VOLTS AND SHALL HAVE 180° COVERAGE CAPABILITY.
3. WALL SWITCH PRODUCTS SHALL UTILIZE ZERO CROSSING CIRCUITRY WHICH INCREASES RELAY LIFE, PROTECTS FROM THE EFFECTS OF INRUSH CURRENT, AND INCREASES SENSOR'S LONGEVITY. WALL SWITCH SENSORS SHALL HAVE NO LEAKAGE CURRENT TO LOAD, IN MANUAL OR IN AUTO/OFF MODE FOR SAFETY PURPOSES AND SHALL HAVE VOLTAGE DROP PROTECTION.
4. WALL SWITCH SENSORS SHALL PROVIDE A FIELD SELECTABLE OPTION TO CONVERT SENSOR OPERATION FROM AUTOMATIC-ON TO MANUAL-ON AND HAVE VANDAL RESISTANT CONSTRUCTION AND UTILIZE A HARD LENS WITH A MINIMUM 1.0MM THICKNESS. PRODUCTS UTILIZING A SOFT LENS WILL NOT BE CONSIDERED.
5. ALL SENSORS SHALL CONSIST OF PASSIVE INFRARED AND ULTRASONIC TECHNOLOGIES FOR OCCUPANCY DETECTION. PRODUCTS THAT REACT TO NOISE OR AMBIENT SOUND SHALL NOT BE CONSIDERED.
6. WALL SWITCH/OCCUPANT LIGHT SENSOR SHALL BE GREENGATE #ONW-1001-MV-W WITH A SINGLE SWITCH AND #ONW-D-1001-DMV-W (WHITE) WHERE BI-LEVEL LIGHT CONTROL IS INDICATED.

DUPLEX RECEPTACLES

1. DUPLEX RECEPTACLES SHALL BE WHITE, GROUNDING TYPE, 125 VOLT, 20 AMPERE AND SHALL HAVE TWO CURRENT CARRYING CONTACTS AND ONE GROUNDING CONTACT WHICH IS INTERNALLY CONNECTED TO THE FRAME. OUTLET SHALL ACCOMMODATE STANDARD PARALLEL BLADE CAP AND SHALL BE SIDE WIRED ONLY. RECEPTACLES SHALL HAVE SELF-GROUNDING STRAPS, WHICH ARE U.L. APPROVED FOR INSTALLATION WITHOUT A BONDING JUMPER.
2. RECEPTACLES SHALL BE INSTALLED WITH THE "U" GROUNDING CONTACT AT THE TOP, EXCEPT FOR RECEPTACLES INSTALLED FOR FIXED APPLIANCES. WHERE RECEPTACLES NEED TO BE MOUNTED HORIZONTALLY, THEY SHALL BE INSTALLED WITH THE NEUTRAL CONTACT AT THE TOP.
3. DUPLEX G.F.I. RECEPTACLE: GROUNDING TYPE DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER SHALL CONFORM TO NEMA CONFIGURATION 5-20R, 20-AMP RECEPTACLE AND A CIRCUIT CAPACITY OF 20 AMPERES. RECEPTACLE SHALL BE SELF TESTING TO PROVIDE CONTINUOUS ELECTRONIC SENSING & TESTING, UTILIZING DIAGNOSTIC SOFTWARE - IMMEDIATE INDICATION IF UNIT HAS LOST THE ABILITY TO PROTECT. RECEPTACLE SHALL TRADITIONAL TESTING MODE BY MANUALLY OPERATING THE "TEST AND RESET" BUTTONS. WHEN LEAKAGE EXCEEDS 5 M.A., THE INTERRUPTER SHALL OPEN THE CIRCUIT AT THE RECEPTACLE WITHIN 1/30 OF A SECOND. INTERRUPTER SHALL ONLY PROTECT THE RECEPTACLE INDICATED UNLESS INDICATED ON THE DRAWINGS AS FEED-THRU TYPE. RECEPTACLE SHALL BE COMPLETE WITH TEST AND RESET BUTTONS. RECEPTACLE SHALL BE INSTALLED IN A 4" SQUARE BY 2_1/8" DEEP BOX WITH SINGLE GANG PLASTER RING COMPLETE WITH STAINLESS STEEL PLATE AT DRY LOCATIONS AND WITH WEATHERPROOF HINGED DOOR COVER WHERE INDICATED AS WEATHERPROOF (W.P.). ON EXPOSED CONDUIT RUNS USE FD CONDULET WITH HINGED COVER. RECEPTACLE SHALL BE WHITE, HUBBELL #GFR5352IST OR APPROVAL EQUAL WITH SELF TEST DIAGNOSTIC DESIGN.
4. OTHER DEVICES: WHITE COLOR, SPECIFICATION GRADE, OF TYPE NOTED IN SYMBOL LIST AND PLANS.
5. MANUFACTURED BY PASS & SEYMOUR, LEVITON, BRYANT, GENERAL ELECTRIC OR ARROW-HART.

DEVICE PLATES

1. REQUIRED FOR ALL WIRING DEVICES, TELEPHONE AND DATA OUTLETS AND SIMILAR APPLICATIONS.
2. WALL PLATES: (0.040" TYPE 302 ALLOY STAINLESS STEEL), SPECIFICATION GRADE, STANDARD SIZE, SMOOTH AND SHALL BE LISTED BY UNDERWRITERS' LABORATORIES. ALL WALL PLATES SHALL BE OF ONE MAKE AND DESIGN, EQUAL TO PASS & SEYMOUR (STAINLESS STEEL LINE). ENGRAVE ALL PLATES AS NOTED ON PLANS OR OF 3 GANG OR MORE. ALLOW 15 CHARACTERS PER GANG.
3. GANG COVERS FOR GANG BOXES.

DEVICE ENGRAVING

1. ALL CIRCUIT SWITCH, RECEPTACLE AND POWER OUTLET BOX DEVICE PLATE SHALL BE ENGRAVED WITH THE 1/4" HIGH LETTERS WITH BLACK FILL TO INDICATE THE CIRCUIT NUMBER AND PANEL BOARD SERVING OR BEING CONTROLLED BY THE DEVICES, E.G. "1LCL 2" INDICATES PANEL "1LCL" CIRCUIT "2". DEVICES ON EMERGENCY POWER SHALL RED FILL LETTERS.

NAMEPLATES

PROVIDE BLACK-ON-WHITE NAMEPLATES FOR EACH SWITCHBOARD, PANEL, TERMINAL CABINET, CONTROL CENTER, PULL BOX, DISCONNECT SWITCH AND MAGNETIC MOTOR STARTER TO CORRESPOND WITH DESIGNATIONS ON THE DRAWINGS. NAMEPLATES SHALL BE SECURED WITH SCREWS, BOLTS OR RIVETS. OTHER MEANS OF ATTACHMENT SHALL NOT BE ACCEPTED. "DYMO" TYPE LABELS WILL NOT BE ACCEPTED. NAMEPLATES FOR DEVICES OR EQUIPMENT SUPPLIED BY EMERGENCY POWER SHALL BE RED-ON-WHITE.

LIGHTING FIXTURES

FURNISH AND INSTALL U.L. APPROVED LIGHTING FIXTURES AT ALL LIGHTING OUTLETS INDICATED ON THE DRAWINGS.

FIXTURES ARE LISTED AND DESCRIBED IN THE FIXTURE SCHEDULE ON THE DRAWINGS.

INSTALL FIXTURES AT HEIGHTS INDICATED ON THE DRAWINGS OR AS DIRECTED. FURNISH AND INSTALL ALL SUPPORTS REQUIRED FOR THE INSTALLATION OF THE FIXTURES.

LED LUMINAIRE REQUIREMENTS

1. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION.
2. NRTL COMPLIANCE: LUMINAIRES FOR HAZARDOUS LOCATIONS SHALL BE LISTED AND LABELED FOR INDICATED CLASS AND DIVISION OF HAZARD BY AN NRTL.
3. FM GLOBAL COMPLIANCE: LUMINAIRES FOR HAZARDOUS LOCATIONS SHALL BE LISTED AND LABELED FOR INDICATED CLASS AND DIVISION OF HAZARD BY FM GLOBAL.
4. RECESSED FIXTURES: COMPLY WITH NEMA LE 4.
5. BULB SHAPE COMPLYING WITH ANSI C79.1.
6. LAMP BASE COMPLYING WITH ANSI C81.61 OR IEC 60061-1.
7. CRI OF MINIMUM 80, CCT AT 4100 K.
8. RATED LAMP LIFE OF 50,000 HOURS MINIMUM.
9. LAMPS DIMMABLE FROM 100 PERCENT TO 0 PERCENT OF MAXIMUM LIGHT OUTPUT.
10. INTERNAL DRIVER WITH 0-10 VOLT DIMMING CONTROLLER AS INDICATED ON THE DRAWINGS.
11. LED DRIVER SHALL BE OPTICALLY ISOLATED
12. NOMINAL INPUT OPERATING VOLTAGE: 120/277 V AC.
13. LED DRIVER AND LEDS SHALL HAVE A 10 YEAR LIMITED WARRANTY. THE WARRANTY INFORMATION SHALL BE SUBMITTED WITH THE SHOP DRAWINGS.
14. LENS THICKNESS: AT LEAST 0.01875 INCH MINIMUM UNLESS OTHERWISE INDICATED.

WARRANTY

PROVIDE A WARRANTY FOR ALL LABOR AND EQUIPMENT FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE PROJECT. ANY ELECTRICAL TROUBLE DEVELOPING DURING THIS PERIOD DUE TO FAULTY WORKMANSHIP OR MANUFACTURE SHALL BE COVERED UNDER THE WARRANTY AND IMMEDIATELY CORRECTED AT NO COST TO THE OWNER.

TESTS

TEST ALL WIRE FOR SHORTS, OPENS, GROUNDS, OR OTHER DEFECTS; CORRECT ANY DEFECTIVE WORK. DEMONSTRATE CONTINUOUS SATISFACTORY OPERATION OF ALL ELECTRICAL WORK WITH THE OWNER BY RUNNING THROUGH MANUAL OPERATIONS.

NETWORKED FIRE ALARM SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. SMALL ADDRESSABLE FIRE ALARM SYSTEM.

1.3 REFERENCES

A. ELECTRICAL INDUSTRIES ASSOCIATION (EIA):
1. EIA-232-D - INTERFACE BETWEEN DATA TERMINAL EQUIPMENT AND DATA CIRCUIT-TERMINATING EQUIPMENT EMPLOYING SERIAL BINARY DATA INTERCHANGE
2. RS-485 - ELECTRICAL CHARACTERISTICS OF GENERATORS AND RECEIVERS FOR USE IN BALANCED MULTIPOINT SYSTEMS.

B. FIRE ALARM CONTROL PANEL EQUIPMENT: SYSTEM SHALL COMPLY WITH APPLICABLE PROVISIONS OF THE FOLLOWING UL STANDARDS AND CLASSIFICATIONS:
1. UL 864 9TH EDITION.
2. UOJZ, CONTROL UNITS, SYSTEM.
3. SYZV CONTROL UNITS, RELEASING DEVICE.
4. UOXX, CONTROL UNIT ACCESSORIES, SYSTEM.

1.4 SYSTEM DESCRIPTION

A. A NEW INTELLIGENT REPORTING, STYLE 7 NETWORKED, FULLY PEER-TO-PEER, MICROPROCESSOR-CONTROLLED FIRE DETECTION AND NOTIFICATION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS INDICATED ON THE DRAWINGS.

B. EACH SIGNALING LINE CIRCUIT (SLC) AND NOTIFICATION APPLIANCE CIRCUIT (NAC): LIMITED TO ONLY 80 PERCENT OF ITS TOTAL CAPACITY DURING INITIAL INSTALLATION.

C. BASIC PERFORMANCE:
1. NETWORK COMMUNICATIONS CIRCUIT SERVING NETWORK NODES: WIRED USING SINGLE TWISTED NON-SHIELDED 2-CONDUCTOR CABLE OR CONNECTED USING APPROVED FIBER OPTIC CABLE BETWEEN NODES IN CLASS B OR CLASS A CONFIGURATION.
2. SIGNALING LINE CIRCUITS (SLC) SERVING ADDRESSABLE DEVICES: WIRED CLASS A.
3. INITIATION DEVICE CIRCUITS (IDC) SERVING NON-ADDRESSABLE DEVICES CONNECTED TO ADDRESSABLE MONITOR MODULES: WIRED CLASS A.
4. NOTIFICATION APPLIANCE CIRCUITS (NAC) SERVING STROBES AND HORNS: WIRED CLASS A (NFPA STYLE Z).
5. ON STYLE 6 OR 7 (CLASS A) CONFIGURATIONS: SINGLE GROUND FAULT OR OPEN CIRCUIT ON SIGNALING LINE CIRCUIT SHALL NOT CAUSE SYSTEM MALFUNCTION, LOSS OF OPERATING POWER, OR ABILITY TO REPORT ALARM.
6. ALARM SIGNALS ARRIVING AT CONTROL PANEL: NOT LOST FOLLOWING PRIMARY POWER FAILURE UNTIL ALARM SIGNAL IS PROCESSED AND RECORDED.
7. NETWORK NODE COMMUNICATIONS:

A. COMMUNICATED BETWEEN PANELS ON SINGLE PAIR OF COPPER WIRES OR FIBER OPTIC CABLES.
B. TO ENHANCE SYSTEM SURVIVABILITY, ABILITY TO OPERATE ON LOSS OF ONE NETWORK NODE, SHORT OR OPEN OF NETWORK RISER SHALL BE DEMONSTRATED AT TIME OF SYSTEM ACCEPTANCE TESTING.
C. SYSTEMS THAT ARE NOT CAPABLE OF PROVIDING TRUE STYLE 7 RISER PERFORMANCE SHALL NOT BE ACCEPTABLE.

8. SIGNALING LINE CIRCUITS (SLC):

A. SLC MODULES SHALL OPERATE IN PEER-TO-PEER FASHION WITH ALL SLC MODULES IN THE CONTROL PANEL.
B. ON LOSS OF AN SLC MODULE, EACH REMAINING PANEL SHALL CONTINUE TO COMMUNICATE WITH REMAINDER OF SYSTEM, INCLUDING ALL SLC AND CONTROL FUNCTIONS. SYSTEMS THAT PROVIDE A "DEGRADED" MODE OF OPERATION UPON LOSS OF ONE NETWORKED NODE OR SHORT IN NETWORK RISER SHALL NOT BE ACCEPTABLE.

9. NAC CIRCUITS: ARRANGED SUCH THAT THERE IS A MINIMUM OF 1 AUDIBLE DEVICE PER FIRE ALARM ZONE.
10. NOTIFICATION APPLIANCE CIRCUITS (NAC), AND CONTROL EQUIPMENT: ARRANGED SUCH THAT LOSS OF ANY 1 NAC CIRCUIT WILL NOT CAUSE LOSS OF ANY OTHER NAC CIRCUIT IN SYSTEM.
11. NAC CIRCUITS:

A. ELECTRICALLY SUPERVISED FOR OPEN AND SHORT CIRCUIT CONDITIONS.
B. IF SHORT CIRCUIT EXISTS ON NAC CIRCUIT, IT SHALL NOT BE POSSIBLE TO ACTIVATE THAT CIRCUIT.

D. FIRE ALARM SYSTEM FUNCTIONALITY:
1. PROVIDE COMPLETE, ELECTRICALLY SUPERVISED DISTRIBUTED, STYLE 7 NETWORKED ANALOG/ADDRESSABLE FIRE ALARM AND CONTROL SYSTEM, WITH ANALOG INITIATING DEVICES.
2. FIRE ALARM SYSTEM:

A. INCORPORATE S3 SERIES MULTIPROCESSOR-BASED CONTROL PANEL SLP MOTHERBOARD WITH 4.3 INCH COLOR TOUCHSCREEN ANNUNCIATOR (SLP) AND UP TO 2 LOOP MODULES (SLC-PM OR SLC95-PM).

3. EACH SLC-PM MODULE: INCORPORATE 1 SIGNALING LINE CIRCUITS (SLC), WITH CAPACITY TO SUPPORT UP TO 159 ANALOG ADDRESSABLE DETECTORS AND 159 ADDRESSABLE MODULES PER SLC.
4. EACH SLC95-PM MODULE: INCORPORATE 1 SIGNALING LINE CIRCUITS (SLC), WITH CAPACITY TO SUPPORT UP TO 126 ANALOG ADDRESSABLE DETECTORS AND ADDRESSABLE MODULES PER SLC.
5. ALL DATA TRANSMITS OVER SINGLE PAIR OF WIRES OR FIBER OPTIC CABLE.
6. EACH NETWORK NODE: INCORPORATE BOOLEAN CONTROL-BY-EVENT PROGRAMMING, INCLUDING AS A MINIMUM AND, OR, NOT, AND TIMER FUNCTIONS.
7. CONTROL PANELS: CAPABILITY TO ACCEPT FIRMWARE UPGRADES VIA CONNECTION WITH LAPTOP COMPUTER, WITHOUT REQUIREMENT OF REPLACING MICROCHIPS.
8. NETWORK:

A. BASED ON PEER-TO-PEER TOKEN RING TECHNOLOGY OPERATING AT 625 K BAUD, USING STYLE 7 CONFIGURATION.
B. CAPABILITY OF USING TWISTED-PAIR WIRING, PAIR OF FIBER OPTIC CABLE STRANDS UP TO 200 MICRONS, OR BOTH, TO MAXIMIZE FLEXIBILITY IN SYSTEM CONFIGURATION.

9. EACH NETWORK NODE:

A. CAPABILITY OF BEING PROGRAMMED OFF-LINE USING WINDOWS-BASED SOFTWARE UTILIZED BY FIRE ALARM SYSTEM MANUFACTURER. CAPABILITY OF BEING DOWNLOADED BY CONNECTING LAPTOP COMPUTER INTO ANY OTHER NODE IN SYSTEM. SYSTEMS THAT REQUIRE SYSTEM SOFTWARE TO BE DOWNLOADED TO EACH TRANSPONDER AT EACH TRANSPONDER LOCATION SHALL NOT BE ACCEPTABLE.
B. CAPABILITY OF BEING GROUPED WITH ANY NUMBER OF ADDITIONAL NODES TO PRODUCE A "REGION", ALLOWING THAT GROUP OF NODES TO ACT AS 1, WHILE RETAINING PEER-TO-PEER FUNCTIONALITY. SYSTEMS UTILIZING "MASTER/SLAVE" CONFIGURATIONS SHALL NOT BE ACCEPTABLE.
C. CAPABILITY OF ANNUNCIATING ALL EVENTS WITHIN ITS "REGION" OR ANNUNCIATING ALL EVENTS FROM ENTIRE NETWORK, ON FRONT PANEL LCD WITHOUT ADDITIONAL EQUIPMENT.

10.. EACH SLC NETWORK NODE: CAPABILITY OF HAVING INTEGRAL DACT (DIGITAL ALARM COMMUNICATOR TRANSMITTER) THAT CAN REPORT EVENTS IN EITHER ITS REGION, OR ENTIRE NETWORK TO SINGLE CENTRAL STATION MONITORING ACCOUNT.
11. EACH CONTROL PANEL: CAPABILITY OF STORING ITS ENTIRE PROGRAM, AND ALLOW INSTALLER TO ACTIVATE ONLY DEVICES THAT ARE INSTALLED DURING CONSTRUCTION, WITHOUT FURTHER DOWNLOADING OF SYSTEM.
12. EACH CONTROL PANEL: CAPABILITY OF HAVING AN OPTIONAL DACT (DIGITAL ALARM COMMUNICATOR TRANSMITTER) THAT CAN REPORT EVENTS FROM ALL NETWORKED CONTROL PANELS TO SINGLE CENTRAL STATION MONITORING ACCOUNT.
13. PASSWORD PROTECTION: EACH SYSTEM SHALL BE PROVIDED WITH 4 LEVELS OF PASSWORD PROTECTION WITH UP TO 16 PASSWORDS USING 6 DIGITS.
14. CONTROL PANEL SHALL HAVE AN ETHERNET PORT (RJ-45) LOCATED ON THE MAIN CONTROL BOARD, WHICH CAN BE USED FOR UPLOADING AND DOWNLOADING PROGRAMS FROM A LAPTOP OR DESKTOP COMPUTER. THE ETHERNET PORT CAN ALSO BE USED FOR INTERFACE TO A GRAPHIC CONTROL SYSTEM WHEN SUCH A SYSTEM IS SPECIFIED.

1.5 SUBMITTALS

B. INCLUDE SUFFICIENT INFORMATION, CLEARLY PRESENTED, TO DETERMINE COMPLIANCE WITH THE SPECIFICATIONS AND THE DRAWINGS.

C. EQUIPMENT SUBMITTALS:
1. COVER PAGE: INDICATE THE FOLLOWING:

A. PROJECT NAME AND ADDRESS.
B. ENGINEERED SYSTEMS DISTRIBUTOR'S NAME AND OTHER CONTACT INFORMATION.
C. INSTALLING CONTRACTOR'S NAME AND OTHER CONTACT INFORMATION.
D. DATE OF EQUIPMENT SUBMITTALS. INDICATE ON REVISED SUBMITTALS THE ORIGINAL SUBMITTAL DATE AND REVISED SUBMITTAL DATE.

2. TABLE OF CONTENTS: LISTS EACH SECTION OF EQUIPMENT SUBMITTAL.
3. SCOPE OF WORK NARRATIVE: DETAIL INDENTED SCOPE OF WORK.
4. SEQUENCE OF OPERATIONS: USE MATRIX OR WRITTEN TEXT FORMAT, DETAILING ACTIVATION OF EACH TYPE OF DEVICE AND ASSOCIATED RESULTING ACTIVATION OF THE FOLLOWING:

A. CONTROL PANEL.
B. NOTIFICATION APPLIANCES.
C. BUILDING FIRE SAFETY FUNCTIONS, INCLUDING ELEVATOR RECALL, ELEVATOR POWER SHUTDOWN, DOOR LOCK RELEASE, DOOR HOLDER RELEASE, HVAC UNIT SHUTDOWN, SMOKE EVACUATION SYSTEM ACTIVATION, AND STAIR PRESSURIZATION FAN ACTIVATION.

5. BILL OF MATERIAL: INDICATE FOR EACH COMPONENT OF SYSTEM THE FOLLOWING:

A. QUANTITY.
B. MODEL NUMBER.
C. DESCRIPTION.

6. SLC CIRCUIT SCHEDULE: DETAIL ADDRESS AND ASSOCIATED DESCRIPTION OF EACH ADDRESSABLE DEVICE. CLEARLY PROVIDE INFORMATION THAT INDICATES NUMBER OF BOTH ACTIVE AND SPARE ADDRESSES.
7. BATTERY CALCULATIONS: SHOW LOAD OF EACH OF, AND TOTAL OF, COMPONENTS OF SYSTEM ALONG WITH STANDBY AND ALARM TIMES THAT CALCULATIONS ARE BASED ON. SHOW CALCULATED SPARE CAPACITY AND SIZE OF INTENDED BATTERY.

D. SHOP DRAWINGS:
1. COVER PAGE: INDICATE THE FOLLOWING:

A. PROJECT NAME AND ADDRESS.
B. ENGINEERED SYSTEMS DISTRIBUTOR'S NAME AND OTHER CONTACT INFORMATION.
C. INSTALLING CONTRACTOR'S NAME AND OTHER CONTACT INFORMATION.
D. DATE OF EQUIPMENT SUBMITTALS. INDICATE ON REVISED SUBMITTALS THE ORIGINAL SUBMITTAL DATE AND REVISED SUBMITTAL DATE.

2. FLOOR PLANS:

A. PROVIDE SEPARATE FLOOR PLAN FOR EACH FLOOR.
B. IF A FLOOR PLAN MUST BE SPLIT USING MATCH LINES TO FIT ON THE PAGE, PROVIDE MATCH LINES AND MATCH LINE REFERENCES THAT REFER TO SHEET NUMBER THAT SHOWS AREA ON OPPOSITE SIDE OF MATCH LINE.
C. PREPARE USING AUTOCAD.
D. PREPARE TO SCALE 1/8 INCH = 1'-0", UNLESS OTHERWISE REQUIRED BY THE ARCHITECT OR ENGINEER.
E. SHOW EQUIPMENT AND DEVICE LOCATIONS.
F. SHOW WIRING INFORMATION IN POINT-TO-POINT FORMAT.
G. SHOW CONDUIT ROUTING, IF REQUIRED BY THE AHJ.

3. TITLE BLOCK: PROVIDE ON EACH SHEET AND INCLUDE, AT A MINIMUM, THE FOLLOWING:

A. PROJECT NAME.
B. PROJECT ADDRESS.
C. SHEET NAME.
D. SHEET NUMBER.
E. SCALE OF DRAWING.
F. DATE OF DRAWING.
G. REVISION DATES, IF APPLICABLE.

4. CONTROL PANEL: PROVIDE SHEET THAT DETAILS EXTERIOR AND INTERIOR VIEWS OF CONTROL PANEL AND CLEARLY SHOWS ASSOCIATED WIRING INFORMATION.
5. ANNUNCIATOR PANELS: PROVIDE SHEET THAT DETAILS EXTERIOR AND INTERIOR VIEWS OF ANNUNCIATOR PANELS AND CLEARLY SHOWS ASSOCIATED WIRING INFORMATION.

E. CERTIFICATION: SUBMIT WITH EQUIPMENT SUBMITTALS AND SHOP DRAWINGS, LETTER OF CERTIFICATION FROM MAJOR EQUIPMENT MANUFACTURER, INDICATING PROPOSED ENGINEERED SYSTEM DISTRIBUTOR IS AN AUTHORIZED REPRESENTATIVE OF MAJOR EQUIPMENT MANUFACTURER.

G. OPERATION AND MAINTENANCE MANUALS:
1. SUBMIT COMPLETE OPERATION AND MAINTENANCE MANUALS WITHIN 14 CALENDAR DAYS AFTER ACCEPTANCE TEST.
2. OPERATION AND MAINTENANCE MANUALS SHALL BE SIMILAR TO EQUIPMENT SUBMITTALS, BUT REVISED TO REFLECT CHANGES MADE DURING CONSTRUCTION.
3. INCLUDE FACTORY'S STANDARD INSTALLATION AND OPERATING INSTRUCTIONS.

1.6 QUALITY ASSURANCE

A. EQUIPMENT, PROGRAMMING, AND INSTALLATION SUPERVISION:
1. PROVIDE SERVICES OF APPROVED ENGINEERED SYSTEMS DISTRIBUTOR OF GAMEWELL-FCI FOR EQUIPMENT, PROGRAMMING, AND INSTALLATION SUPERVISION.
2. PROVIDE PROOF OF FACTORY TRAINING WITHIN 14 CALENDAR DAYS OF AWARD OF THE CONTRACT.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

MY Engineering, Inc.
Mechanical, Electrical and Plumbing (MEP) Consulting Engineers
1543 W. Garvey Ave. North, Ste. 210
West Covina, California 91790-2140
(626) 337-1965 / JOB #20-2177

REGISTERED PROFESSIONAL ENGINEER
JESSICA M. YUEH
No. E15221
Exp. 6/30/2022
ELECTRICAL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

ELECTRICAL SPECIFICATIONS

Revisions		
	R&A No:	A18901
	Date:	8/26/2020
	Drawn:	
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E0.2

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 ELEC DWGS\E0.2.DWG PLOTTED: 2:06 PM

ELECTRICAL SPECIFICATIONS

B. SOFTWARE MODIFICATIONS:
1. PROVIDE SERVICES OF GAMEWELL-FCI FACTORY-TRAINED AND AUTHORIZED TECHNICIAN TO PERFORM SYSTEM SOFTWARE MODIFICATIONS, UPGRADES, OR CHANGES.
2. PROVIDE USE OF ALL HARDWARE, SOFTWARE, PROGRAMMING TOOLS, AND DOCUMENTATION NECESSARY TO MODIFY FIRE ALARM SYSTEM SOFTWARE ON-SITE.
3. MODIFICATION INCLUDES ADDITION AND DELETION OF DEVICES, CIRCUITS, ZONES, AND CHANGES TO SYSTEM OPERATION AND CUSTOM LABEL CHANGES FOR DEVICES OR ZONES.
4. SYSTEM STRUCTURE AND SOFTWARE SHALL PLACE NO LIMIT ON TYPE OR EXTENT OF SOFTWARE MODIFICATIONS ON-SITE.
5. MODIFICATION OF SOFTWARE SHALL NOT REQUIRE POWER-DOWN OF SYSTEM OR LOSS OF SYSTEM FIRE PROTECTION WHILE MODIFICATIONS ARE BEING MADE.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. GAMEWELL-FCI, HONEYWELL FIRE SYSTEMS, 12 CLINTONVILLE ROAD, NORTHFORD, CONNECTICUT 06472. PHONE (203) 484-7161. FAX (203) 484-7118. WEBSITE: WWW.GAMEWELL-FCI.COM <HTTP://WWW.GAMEWELL-FCI.COM>.

B. REFERENCES TO MANUFACTURER'S MODEL NUMBERS AND OTHER INFORMATION IS INTENDED TO ESTABLISH MINIMUM STANDARDS OF PERFORMANCE, FUNCTION, AND QUALITY. EQUIVALENT EQUIPMENT FROM GAMEWELL MAY BE SUBSTITUTED FOR THE SPECIFIED EQUIPMENT, AS LONG AS MINIMUM STANDARDS ARE MET. NO OTHER MANUFACTURERS, OTHER THAN GAMEWELL-FCI, FCI, AND GAMEWELL WILL BE CONSIDERED FOR USE ON THIS PROJECT.

C. SUBSTITUTE EQUIPMENT PROPOSED AS EQUAL TO EQUIPMENT SPECIFIED SHALL MEET OR EXCEED REQUIREMENTS OF THIS SECTION. FOR EQUIPMENT OTHER THAN GAMEWELL-FCI S3 SERIES EXPANDABLE EMERGENCY EVACUATION FIRE ALARM SYSTEM, PROVIDE PROOF THAT SUCH SUBSTITUTE EQUIPMENT EQUALS OR EXCEEDS FEATURES, FUNCTIONS, PERFORMANCE, AND QUALITY OF SPECIFIED EQUIPMENT. THIS PROOF SHALL BE PROVIDED BY SUBMISSION OF A COPY OF SPECIFICATION WITH EACH COPY OF THE SUBMITTALS THAT HAS HAD EACH PARAGRAPH MARKED AS EITHER COMPLIANT OR NON-COMPLIANT ALONG WITH A LETTER FROM ENGINEERING MANAGER OR PRODUCT MANAGER AT FACTORY THAT CERTIFIES INFORMATION PRESENTED AS EITHER COMPLIANT OR NON-COMPLIANT INCLUDING A DETAILED EXPLANATION OF EACH PARAGRAPH IDENTIFIED AS NON-COMPLIANT. IN ORDER TO ENSURE THAT THE OWNER IS PROVIDED WITH A SYSTEM THAT INCORPORATES REQUIRED SURVIVABILITY FEATURES, THIS LETTER SHALL ALSO SPECIFICALLY CERTIFY THAT THE SYSTEM IS CAPABLE OF COMPLYING WITH THE TEST REQUIREMENTS OF THIS SECTION.

2.2 DISTRIBUTED NETWORKED FIRE ALARM SYSTEM

A. DISTRIBUTED NETWORKED FIRE ALARM SYSTEM: GAMEWELL-FCI S3 SERIES SMALL ADDRESSABLE FIRE ALARM SYSTEM

2.3 CONTROL PANEL HARDWARE

A. INTELLIGENT SMALL ADDRESSABLE PANEL (SLP): SUPPLY USER INTERFACE, INCLUDING 4.3INCH TOUCH-SCREEN DISPLAY. CONTROL PANEL SHALL CONSIST OF THE FOLLOWING UNITS AND COMPONENTS:
1. SYSTEM CABINET (SLP-BB) OR CABINET WITH ASSOCIATED INNER DOOR (S3BB-BB/S3BB-RB).
2. POWER SUPPLY MODULE (FLPS-7) WITH BATTERIES.
3. SLP MOTHERBOARD (SLP-MB).
4. 4.3 INCH COLOR TOUCH SCREEN DISPLAY (LCD-SLP).
5. SLC MODULES (SLC-PM OR SLC95-PM) UP TO 2 PER CONTROL PANEL.
6. OPTIONAL DACT (DACT-E3).
7. OPTIONAL ARCNET REPEATER (RPT-E3) WITH FIBER OPTIC MODULES (FSL-E3 OR FML-E3).
8. OPTIONAL 1/4 VGA TOUCH-SCREEN DISPLAY (NGA).
9. OPTIONAL AUXILIARY SWITCH MODULE (ASM-16).
10. OPTIONAL LED DRIVER MODULE (ANU-48)

B. SYSTEM CABINET:
1. SURFACE OR SEMI-FLUSH MOUNTED WITH TEXTURE FINISH.
2. CONSIST OF BACK BOX AND BLACK DOOR (SLP-BB) OR BACK BOX, INNER DOOR, RED OR BLACK OUTER DOOR (S3BB-BB/S3BB-RB)
3. HOUSES 1 FLPS-7 POWER SUPPLY MODULE, 1 SLP-MB ASSEMBLIES, 1 OR 2 SLC-PM/SLC95-PM SLC MODULES AND OTHER OPTIONAL MODULES AS SPECIFIED.
4. CONSTRUCTION: DISPLAY-FRONT STEEL CONSTRUCTION WITH LOCKOUT (SLP-BB) OR DEAD-FRONT STEEL CONSTRUCTION WITH INNER DOOR TO CONCEAL INTERNAL CIRCUITRY AND WIRING (S3BB-BB/S3BB-RB).
5. WIRING: TERMINATED ON REMOVABLE TERMINAL BLOCKS TO ALLOW FIELD SERVICING OF MODULES WITHOUT DISRUPTING SYSTEM WIRING.

C. POWER SUPPLY MODULE (FLPS-7): USE LATEST TECHNOLOGIES TO PROVIDE POWER TO THE CONTROL PANEL AND INCORPORATE THE FOLLOWING FEATURES:
1. POWER-SAVING SWITCHING TECHNOLOGY USING NO STEP-DOWN TRANSFORMERS.
2. 7-AMP CONTINUOUS-RATED OUTPUT TO SUPPLY UP TO ALL POWER NECESSARY UNDER NORMAL AND EMERGENCY CONDITIONS.
3. INTEGRAL BATTERY CHARGER WITH CAPACITY TO CHARGE UP TO 55 AMP-HOUR BATTERIES WHILE UNDER FULL LOAD.

D. BATTERIES:
1. SUFFICIENT CAPACITY TO PROVIDE POWER FOR ENTIRE SYSTEM UPON LOSS OF NORMAL AC POWER FOR A PERIOD OF 24 HOURS WITH 15 MINUTES OF ALARM SIGNALING AT END OF THIS 24-HOUR PERIOD, AS REQUIRED BY NFPA 72, LOCAL SYSTEMS.

E. 4.3 INCH COLOR TOUCH SCREEN DISPLAY MODULE (LCD-SLP):
1. COLOR TOUCH SCREEN DISPLAY: RS-485 BASED TEXTUAL ANNUNCIATOR WITH CAPABILITY OF BEING MOUNTED LOCALLY OR REMOTELY. PROVIDES AUDIBLE AND VISUAL ANNUNCIATION OF ALL ALARMS AND TROUBLE SIGNALS. PROVIDE DEDICATED LEDS FOR:

A. AC: GREEN.
B. FIRE ALARM: RED.
C. HAZARD: BLUE.
D. SUPERVISORY: YELLOW.
E. TROUBLE: YELLOW.
F. SILENCED: YELLOW.

2. 4.3 INCH COLOR TOUCH SCREEN DISPLAY: PROVIDE STATUS OF ALL ANALOG/ADDRESSABLE SENSORS, MONITOR AND CONTROL MODULES. DISPLAY SHALL BE LIQUID CRYSTAL TYPE (LCD), CLEARLY VISIBLE IN DARK AND UNDER ALL LIGHT CONDITIONS.
3. PANEL SHALL CONTAIN 3 FUNCTIONAL KEYS:

A. MENU.
B. FIRE DRILL.
C. SYSTEM RESET.

4. PANEL SHALL CONTAIN 5 CUSTOM PROGRAMMABLE FUNCTION BUTTONS FOR:

A. ALARM ACKNOWLEDGE.
B. TROUBLE ACKNOWLEDGE.
C. SYSTEM SILENCE.
D. FAN RESET.
E. LAMP TEST.
F. OTHER FUNCTIONS LIKE OUTPUT BYPASS, DEVICE ENABLE/DISABLE, DEVICE ON/OFF.

5. SYSTEMS THAT DO NOT HAVE A MINIMUM OF 200 CHARACTERS (4 LINES OF 40 CHARACTERS) ARE NOT ACCEPTABLE.

G. INTELLIGENT SMALL ADDRESSABLE PANEL (SLP): SYSTEM SHALL BE OF MULTIPROCESSOR DESIGN TO ALLOW MAXIMUM FLEXIBILITY OF CAPABILITIES AND OPERATION. SHALL BE CAPABLE OF MOUNTING IN STAND-ALONE ENCLOSURE AS SPECIFIED.
1. FIELD PROGRAMMABLE: SYSTEM SHALL BE CAPABLE OF BEING PROGRAMMED BY FIELD CONFIGURATION PROGRAM (FCP), ALLOWING PROGRAMMING TO BE DOWNLOADED VIA PORTABLE COMPUTER FROM ANY NODE ON NETWORK.
2. ETHERNET OUTPUT: ETHERNET PORT SHALL BE PROVIDED TO ACCEPT DOWNLOADED PROGRAM FROM PORTABLE COMPUTER, CONNECT TO FOCALPOINT GRAPHICAL WORKSTATION, OR PROVIDE 80-COLUMN READOUT OF ALL ALARMS, TROUBLES, LOCATION DESCRIPTIONS, TIME, AND DATE. COMMUNICATION SHALL OPERATE AT 10/100 SPEEDS.
3. RS-232C SERIAL OUTPUT: SUPERVISED RS-232C SERIAL PORT SHALL BE PROVIDED TO OPERATE REMOTE PRINTERS AND/OR VIDEO TERMINALS, ACCEPT DOWNLOADED PROGRAM FROM PORTABLE COMPUTER, OR PROVIDE 80-COLUMN READOUT OF ALL ALARMS, TROUBLES, LOCATION DESCRIPTIONS, TIME, AND DATE. COMMUNICATION SHALL BE STANDARD ASCII CODE OPERATING FROM 1,200 TO 115,200 BAUD RATE.
4. RS-485 SERIAL OUTPUT: EACH SLP SHALL INCORPORATE RS-485 BUS VIA RIBBON HARNESS FOR CONNECTION OF MODULES INSIDE SAME CABINET, AND VIA 4-WIRE QUICK CONNECTOR FOR CONNECTION OF MODULES UP TO 3,000 FEET FROM CABINET. EACH SLP'S RS-485 BUS SHALL SUPPORT UP TO 16 ASM-16 AUXILIARY SWITCH MODULES, 16 LCD-SLP MAIN ANNUNCIATORS, 6 LCD-E3 REMOTE ANNUNCIATORS, AND 5 LCD-7100 REMOTE ANNUNCIATORS.
5. PEER-TO-PEER PANEL CONFIGURATION: ALL INTELLIGENT SMALL ADDRESSABLE PANELS SHALL INCORPORATE OWN PROGRAMMING, LOG FUNCTIONS, CENTRAL PROCESSOR UNIT, AND CONTROL-BY-EVENT (CBE) PROGRAMMING. IF ANY LOOP DRIVER BECOMES DISABLED, EACH REMAINING LOOP DRIVER SHALL CONTINUE TO COMMUNICATE WITH REMAINDER OF NETWORK AND MAINTAIN NORMAL OPERATION.
6. CONTROL-BY-EVENT (CBE) PROGRAM: SLP SHALL BE CAPABLE OF PROGRAMMING USING BOOLEAN LOGIC INCLUDING AND, OR, NOT, AND TIMING FUNCTIONS TO PROVIDE COMPLETE PROGRAMMING FLEXIBILITY.
7. ALARM VERIFICATION: SMOKE DETECTOR ALARM VERIFICATION SHALL BE STANDARD OPTION WHILE ALLOWING OTHER DEVICES SUCH AS MANUAL STATIONS AND SPRINKLER FLOW TO CREATE IMMEDIATE ALARM. THIS FEATURE SHALL BE SELECTABLE FOR SMOKE SENSORS THAT ARE INSTALLED IN ENVIRONMENTS PRONE TO NUISANCE OR UNWANTED ALARMS.
8. ALARM SIGNALS: ALL ALARM SIGNALS SHALL BE AUTOMATICALLY LATCHED OR "LOCKED IN" AT CONTROL PANEL UNTIL OPERATED DEVICE IS RETURNED TO NORMAL AND CONTROL PANEL IS MANUALLY RESET. WHEN USED FOR SPRINKLER FLOW, "SLNC" BUTTON MAY BE BYPASSED, IF REQUIRED BY AHJ.
9. ELECTRICALLY SUPERVISED:

A. EACH SLC AND NAC CIRCUIT SHALL BE ELECTRICALLY SUPERVISED FOR OPENS, SHORTS, AND GROUND FAULTS. OCCURRENCE OF FAULT SHALL ACTIVATE SYSTEM TROUBLE CIRCUITRY, BUT SHALL NOT INTERFERE WITH PROPER OPERATION OF OTHER CIRCUITS.
B. YELLOW "TROUBLE" LED SHALL LIGHT AND SYSTEM AUDIBLE SOUNDER SHALL STEADILY SOUND WHEN TROUBLE IS DETECTED IN SYSTEM. FAILURE OF POWER, OPEN OR SHORT CIRCUITS ON SLC OR NAC CIRCUITS, DISARRANGEMENT IN SYSTEM WIRING, FAILURE OF MICROPROCESSOR OR ANY IDENTIFICATION MODULE, OR SYSTEM GROUND FAULTS SHALL ACTIVATE THIS TROUBLE CIRCUIT. TROUBLE SIGNAL SHALL BE ACKNOWLEDGED BY OPERATING "TRBL ACK" BUTTON. THIS SHALL SILENCE SOUNDER. IF SUBSEQUENT TROUBLE CONDITIONS OCCUR, TROUBLE CIRCUITRY SHALL RESOUND. DURING ALARM, ALL TROUBLE SIGNALS SHALL BE SUPPRESSED WITH EXCEPTION OF LIGHTING YELLOW "TROUBLE" LED.

10. DRIFT COMPENSATION - ANALOG SMOKE SENSORS: SYSTEM SOFTWARE SHALL AUTOMATICALLY ADJUST EACH ANALOG SMOKE SENSOR APPROXIMATELY ONCE EACH WEEK FOR CHANGES IN SENSITIVITY DUE TO EFFECTS OF COMPONENT AGING OR ENVIRONMENT, INCLUDING DUST. EACH SENSOR SHALL MAINTAIN ITS ACTUAL SENSITIVITY UNDER ADVERSE CONDITIONS TO RESPOND TO ALARM CONDITIONS WHILE IGNORING FACTORS WHICH GENERALLY CONTRIBUTE TO NUISANCE ALARMS. SYSTEM TROUBLE CIRCUITRY SHALL ACTIVATE, DISPLAY UNITS THAT REQUIRES MAINTENANCE.
11. ANALOG SMOKE SENSOR TEST: SYSTEM SOFTWARE SHALL AUTOMATICALLY TEST EACH ANALOG SMOKE SENSOR A MINIMUM OF 3 TIMES DAILY. TEST SHALL BE RECOGNIZED FUNCTIONAL TEST OF EACH PHOTOCELL (ANALOG PHOTOELECTRIC SENSORS) AND IONIZATION CHAMBER (ANALOG IONIZATION SENSORS) AS REQUIRED ANNUALLY BY NFPA 72. FAILURE OF SENSOR SHALL ACTIVATE SYSTEM TROUBLE CIRCUITRY, DISPLAY "TEST FAILED" INDICATION, AND IDENTIFY INDIVIDUAL DEVICE THAT FAILED.
12. OFF-PREMISES CONNECTION:

A. FIRE ALARM SYSTEM: CONNECT VIA DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT) AND TELEPHONE LINES TO CENTRAL STATION OR REMOTE STATION. PANEL SHALL CONTAIN DISCONNECT SWITCH TO ALLOW TESTING OF SYSTEM WITHOUT NOTIFYING FIRE DEPARTMENT.

13. CENTRAL STATION OPTION: FIRE ALARM CONTROL PANEL SHALL PROVIDE INTEGRAL DIGITAL ALARM COMMUNICATOR TRANSMITTER (DACT) FOR SIGNALING TO CENTRAL STATION. DACT SHALL CONTAIN "DIALER-RUNAWAY" FEATURE PREVENTING UNNECESSARY TRANSMISSIONS AS RESULT OF INTERMITTENT FAULTS IN SYSTEM AND SHALL BE CARRIER ACCESS CODE (CAC) COMPLIANT, ACCEPTING UP TO 20-DIGIT CENTRAL STATION TELEPHONE NUMBERS. FIRE DEPARTMENT SHALL BE CONSULTED AS TO AUTHORIZED CENTRAL STATION COMPANIES SERVING MUNICIPALITY. FIRE ALARM SYSTEM SHALL TRANSMIT BOTH ALARM AND TROUBLE SIGNALS, WITH ALARM HAVING PRIORITY OVER TROUBLE SIGNAL. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSTALLATION CHARGES AND OWNER WILL BE RESPONSIBLE FOR LINE LEASE CHARGES.
14. NETWORK ANNUNCIATOR OPTION: EACH LCD-SLP AND ASSOCIATED DISPLAY SHALL PROVIDE OPTION OF BEING CONFIGURED AS NETWORK ANNUNCIATOR. OPTIONS FOR ANNUNCIATION SHALL DEFAULT AS REGIONAL ANNUNCIATOR WITH CAPABILITY OF SELECTING GLOBAL ANNUNCIATION TO PROVIDE SYSTEM-WIDE PROTECTION AND ACKNOWLEDGE, SILENCE, AND RESET CAPABILITIES.
15. REDUNDANT HISTORY LOG: EACH SLP SHALL CONTAIN FULL 4100 EVENT HISTORY LOG SUPPORTING LOCAL AND NETWORK FUNCTIONS. IF A MAIN PROCESSOR OR NETWORK NODE IS LOST THE ENTIRE LOG SHALL BE ACCESSIBLE AT ANY OTHER LOOP INTERFACE BOARD. THIS SHALL BE DEMONSTRATED BY REMOVING POWER FROM COMMAND CENTER FOLLOWED BY EXTRACTION OF HISTORY LOG FROM ANY LOOP DRIVER LOCATION, INCLUDING COMMAND CENTER OR TRANSPONDER.
16. LEDS INDICATOR AND OUTPUTS: EACH SLP INTELLIGENT SMALL ADDRESSABLE PANEL SHALL INCORPORATE AS A MINIMUM THE FOLLOWING DIAGNOSTIC LED INDICATORS:

A. POWER: GREEN.
B. ALARM: RED.
C. SUPERVISORY: YELLOW.
D. GENERAL TROUBLE: YELLOW.
E. GROUND FAULT: YELLOW.
F. HAZARD: BLUE.
G. MUNICIPAL: YELLOW.
H. NAC1: YELLOW.
I. NAC2: YELLOW.
J. NAC3: YELLOW.
K. NAC4: YELLOW.

17. AUXILIARY POWER OUTPUTS: EACH SLP INTELLIGENT SMALL ADDRESSABLE PANEL SHALL PROVIDE THE FOLLOWING SUPPLY OUTPUTS:

A. 24 VDC NON-RESETTABLE, 1 AMP. MAXIMUM, POWER LIMITED.
B. 24 VDC RESETTABLE, 1 AMP. MAXIMUM, POWER LIMITED.

18. MICROPROCESSOR: LOOP INTERFACE SHALL INCORPORATE 32-BIT RISC PROCESSOR. ISOLATED "WATCHDOG" CIRCUIT SHALL MONITOR MICROPROCESSOR AND UPON FAILURE SHALL ACTIVATE SYSTEM TROUBLE CIRCUITS ON DISPLAY. MICROPROCESSOR SHALL ACCESS SYSTEM PROGRAM FOR ALL CONTROL-BY-EVENT (CBE) FUNCTIONS. SYSTEM PROGRAM SHALL NOT BE LOST UPON FAILURE OF BOTH PRIMARY AND SECONDARY POWER. PROGRAMMING SHALL SUPPORT BOOLEAN LOGIC INCLUDING AND, OR, NOT, TIME DELAY FUNCTIONS FOR MAXIMUM FLEXIBILITY.
19. AUTO PROGRAMMING: SYSTEM SHALL PROVIDE FOR ALL SLC DEVICES ON ANY SLC LOOP TO BE PRE-PROGRAMMED INTO SYSTEM. UPON ACTIVATION OF AUTO PROGRAMMING, ONLY DEVICES THAT ARE PRESENT SHALL ACTIVATE. THIS ALLOWS FOR SYSTEM TO BE COMMISSIONED IN PHASES WITHOUT NEED OF ADDITIONAL DOWNLOADS.
20. ENVIRONMENTAL DRIFT COMPENSATION: SYSTEM SHALL PROVIDE FOR SETTING ENVIRONMENTAL DRIFT COMPENSATION BY DEVICE. WHEN DETECTOR ACCUMULATES DUST IN CHAMBER AND REACHES UNACCEPTABLE LEVEL BUT YET STILL BELOW ALLOWED LIMIT, CONTROL PANEL SHALL INDICATE MAINTENANCE ALERT WARNING. WHEN DETECTOR ACCUMULATES DUST IN CHAMBER ABOVE ALLOWED LIMIT, CONTROL PANEL SHALL INDICATE MAINTENANCE URGENT WARNING.
21. NON-FIRE ALARM MODULE REPORTING: NON-REPORTING TYPE ID SHALL BE AVAILABLE FOR USE FOR ENERGY MANAGEMENT OR OTHER NON-FIRE SITUATIONS. NON-FIRE POINT OPERATION SHALL NOT AFFECT CONTROL PANEL OPERATION NOR SHALL IT DISPLAY MESSAGE AT PANEL LDC. ACTIVATION OF NON-FIRE POINT SHALL ACTIVATE CONTROL BY EVENT LOGIC, BUT SHALL NOT CAUSE INDICATION ON CONTROL PANEL.
22. 1-MAN WALK TEST:

A. SYSTEM SHALL PROVIDE BOTH BASIC AND ADVANCED WALK TEST FOR TESTING ENTIRE FIRE ALARM SYSTEM. BASIC WALK TEST SHALL ALLOW SINGLE OPERATOR TO RUN AUDIBLE TESTS ON PANEL. ALL LOGIC EQUATION AUTOMATION SHALL BE SUSPENDED DURING TEST AND WHILE ANNUNCIATORS CAN BE ENABLED FOR TEST, ALL SHALL DEFAULT TO DISABLED STATE. DURING ADVANCED WALK TEST, FIELD-SUPPLIED OUTPUT POINT PROGRAMMING SHALL REACT TO INPUT STIMULI, SUCH AS CBE AND LOGIC EQUATIONS. WHEN POINTS ARE ACTIVATED IN ADVANCED TEST MODE, EACH INITIATING EVENT SHALL LATCH INPUT. ADVANCED TEST SHALL BE AUDIBLE AND SHALL BE USED FOR PULL STATION VERIFICATION, MAGNET ACTIVATED TESTS ON INPUT DEVICES, INPUT AND OUTPUT DEVICE, AND WIRING OPERATION/VERIFICATION.
B. TEST FEATURE IS INTENDED TO PROVIDE FOR CERTAIN RANDOM SPOT TESTING OF SYSTEM AND IS NOT INTENDED TO COMPLY WITH REQUIREMENTS OF TESTING FIRE ALARM SYSTEMS IN ACCORDANCE WITH NFPA 72, AS IT IS IMPOSSIBLE TO TEST ALL FUNCTIONS AND VERIFY ITEMS SUCH AS ANNUNCIATION WITH ONLY 1 PERSON.

23. SIGNALING LINE CIRCUITS: EACH SLC-PM MODULE SHALL PROVIDE COMMUNICATION WITH ANALOG/ADDRESSABLE (INITIATION/CONTROL) DEVICES VIA 2 SIGNALING LINE CIRCUITS. EACH SIGNALING LINE CIRCUIT SHALL BE CAPABLE OF BEING WIRED CLASS B, STYLE 4 OR CLASS A, STYLE 6. CIRCUITS SHALL BE CAPABLE OF OPERATING IN NFPA STYLE 7 CONFIGURATION WHEN EQUIPPED WITH ISOLATOR MODULES BETWEEN EACH MODULE TYPE DEVICE AND ISOLATOR SENSOR BASES. UNIQUE 40-CHARACTER IDENTIFIER SHALL BE AVAILABLE FOR EACH DEVICE.

A. SLC-PM SHALL COMMUNICATE WITH A MAXIMUM OF 159 ANALOG SENSORS AND 159 ADDRESSABLE MONITOR/CONTROL DEVICES. DEVICES SHALL BE OF THE VELOCITI SERIES WITH CAPABILITY TO POLL 10 DEVICES AT A TIME WITH A MAXIMUM POLLING TIME OF 2 SECONDS WHEN BOTH SLCS ARE FULLY LOADED.
B. SLC95-PM SHALL COMMUNICATE WITH A MAXIMUM OF 126 ANALOG SENSORS AND ADDRESSABLE MONITOR/CONTROL DEVICES. DEVICES SHALL BE OF THE APOLLO SERIES WITH CAPABILITY TO POLL 1 DEVICE AT A TIME WITH A MAXIMUM POLLING TIME OF 3 SECONDS WHEN BOTH SLCS ARE FULLY LOADED.

24. NOTIFICATION APPLIANCE CIRCUITS: 4 CLASS B OR 2 CLASS A INDEPENDENT NAC CIRCUITS SHALL BE PROVIDED ON THE SLP PANEL, POLARIZED AND RATED AT 2 AMPERES DC PER CIRCUIT, 4 AMPERES MAX FROM ALL CIRCUITS. EACH NAC INDIVIDUALLY OVER-CURRENT PROTECTED AND SUPERVISED FOR OPENS, GROUNDS, AND SHORT CIRCUITS. THEY SHALL BE CAPABLE OF BEING WIRED CLASS B, STYLE Y OR CLASS A, STYLE Z.
25. ALARM DRY CONTACTS: PROVIDE ALARM DRY CONTACTS (FORM C) RATED 2 AMPS AT 30 VDC (RESISTIVE) AND TRANSFER WHENEVER SYSTEM ALARM OCCURS.
26. SUPERVISORY DRY CONTACTS: PROVIDE SUPERVISORY DRY CONTACTS (FORM C) RATED 2 AMPS AT 30 VDC (RESISTIVE) AND TRANSFER WHENEVER SYSTEM SUPERVISORY CONDITION OCCURS.
27. TROUBLE DRY CONTACTS: PROVIDE TROUBLE DRY CONTACTS (FORM C) RATED 2 AMPS AT 30 VDC (RESISTIVE) AND TRANSFER WHENEVER SYSTEM TROUBLE OCCURS.
28. POSITIVE ALARM SEQUENCE (PAS): THE SYSTEM CONTROL PANEL SHALL BE CAPABLE OF SETTING ANY DETECTOR OR SENSOR INTO POSITIVE ALARM SEQUENCE MODE. POSITIVE ALARM SEQUENCE WILL OPERATE IN THE FOLLOWING MANNER. ANY ALARMS RECEIVED FROM A DEVICE WILL ACTIVATE AN ALARM AT THE CONTROL PANEL BUT WILL NOT EXECUTE ANY OUTPUT FUNCTIONS (E.G. TURNING ON THE STROBES OR FIRE HORNS). THE OPERATOR HAS 30 SECONDS TO "ACKNOWLEDGE" THE EVENT OR THE SYSTEM WILL ACTIVATE A GENERAL ALARM AND SOUND ALL THE FIRE HORN AND STROBES. IF THE OPERATOR DOES ACKNOWLEDGE THE VENT WITHIN THIRTY (3) SECONDS, THE PANEL WILL START A TIMER FOR 180 SECONDS (3 MINUTES) IN WHICH TIME THE OPERATOR MUST FIND THE DEVICE IN ALARM AND RESET THE DEVICE. IF THE OPERATOR HAS NOT PERFORMED A RESET WITHIN 180 SECONDS OR A SECOND DEVICE REPORTS AN ALARM, THE SYSTEM WILL IMMEDIATELY SOUND THE GENERAL ALARM.

2.5 SYSTEM PERIPHERALS - SYSTEM SENSOR VELOCITI

A. ADDRESSABLE DEVICES - GENERAL:
1. PROVIDE ADDRESS-SETTING MEANS USING ROTARY-DECIMAL SWITCHES.
2. USE SIMPLE TO INSTALL AND MAINTAIN DECADE-TYPE (NUMBERED 0 TO 15) ADDRESS SWITCHES BY USING STANDARD SCREWDRIVER TO ROTATE 2 DIALS ON DEVICE TO SET ADDRESS. DEVICES WHICH USE BINARY ADDRESS SET VIA DIPSWITCH PACKAGES, HANDHELD DEVICE PROGRAMMER, OR OTHER SPECIAL TOOLS FOR SETTING DEVICE ADDRESS SHALL NOT BE ACCEPTABLE.
3. DETECTORS: ANALOG AND ADDRESSABLE. CONNECT TO FIRE ALARM CONTROL PANEL'S SIGNALING LINE CIRCUITS.
4. ADDRESSABLE THERMAL AND SMOKE DETECTORS: PROVIDE 2 STATUS LEDS. BOTH LEDS SHALL FLASH UNDER NORMAL CONDITIONS, INDICATING DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH CONTROL PANEL, AND BOTH LEDS SHALL BE PLACED INTO STEADY ILLUMINATION BY CONTROL PANEL, INDICATING ALARM CONDITION HAS BEEN DETECTED. IF REQUIRED, FLASHING MODE OPERATION OF DETECTOR LEDS CAN BE PROGRAMMED OFF VIA FIRE CONTROL PANEL PROGRAM.
5. FIRE ALARM CONTROL PANEL: PERMIT DETECTOR SENSITIVITY ADJUSTMENT THROUGH FIELD PROGRAMMING OF SYSTEM. SENSITIVITY CAN BE AUTOMATICALLY ADJUSTED BY PANEL ON TIME-OF-DAY BASIS.
6. USING SOFTWARE, DETECTORS SHALL AUTOMATICALLY COMPENSATE FOR DUST ACCUMULATION AND OTHER SLOW ENVIRONMENTAL CHANGES THAT MAY AFFECT THEIR PERFORMANCE. DETECTORS SHALL BE LISTED BY UL AS MEETING CALIBRATED SENSITIVITY TEST REQUIREMENTS OF NFPA 72, CHAPTER 7.
7. DETECTORS SHALL BE CEILING-MOUNTED AND SHALL INCLUDE SEPARATE TWIST-LOCK BASE WITH TAMPER-PROOF FEATURE.
8. FOLLOWING BASES AND AUXILIARY FUNCTIONS SHALL BE AVAILABLE:

A. STANDARD BASE WITH REMOTE LED OUTPUT.
B. SOUNDER BASE RATED AT 85 DBA MINIMUM.
C. INTELLIGENT ADDRESSABLE SOUNDER BASE RATED AT 75 DBA MINIMUM.
D. FORM-C RELAY BASE RATED 30 VDC, 2.0 A.
E. ISOLATOR BASE.

9. DETECTORS SHALL PROVIDE TEST MEANS WHEREBY THEY WILL SIMULATE ALARM CONDITION AND REPORT THAT CONDITION TO CONTROL PANEL. SUCH TEST SHALL BE INITIATED AT DETECTOR ITSELF BY ACTIVATING MAGNETIC SWITCH OR INITIATED REMOTELY ON COMMAND FROM CONTROL PANEL.
10. DETECTORS SHALL STORE INTERNAL IDENTIFYING TYPE CODE THAT CONTROL PANEL SHALL USE TO IDENTIFY TYPE OF DEVICE (ION, PHOTO, THERMAL).

B. ADDRESSABLE MANUAL STATIONS (MS-7AF):
1. MANUAL FIRE ALARM STATIONS: NON-CODE, NON-BREAK GLASS TYPE, EQUIPPED WITH KEY LOCK SO THEY MAY BE TESTED WITHOUT OPERATING HANDLE.
2. OPERATED STATION: VISUALLY APPARENT, AS OPERATED, AT A MINIMUM DISTANCE OF 100 FEET (30.5 M) FROM FRONT OR SIDE.
3. STATIONS SHALL BE DESIGNED SO AFTER ACTUAL ACTIVATION, THEY CANNOT BE RESTORED TO NORMAL EXCEPT BY KEY RESET.
4. MANUAL STATIONS SHALL BE CONSTRUCTED OF LEXAN WITH CLEARLY VISIBLE OPERATING INSTRUCTIONS PROVIDED ON COVER. THE WORD FIRE SHALL APPEAR ON FRONT OF STATIONS IN RAISED LETTERS, 1.75 INCHES (44 MM) OR LARGER.
5. ADDRESSABLE MANUAL STATIONS SHALL, ON COMMAND FROM CONTROL PANEL, SEND DATA TO PANEL REPRESENTING STATE OF MANUAL SWITCH AND ADDRESSABLE COMMUNICATION MODULE STATUS.

C. INTELLIGENT PHOTOELECTRIC SMOKE DETECTORS (ASD-PL2F): USE PHOTOELECTRIC (LIGHT-SCATTERING) PRINCIPAL TO MEASURE SMOKE DENSITY AND SHALL, ON COMMAND FROM CONTROL PANEL, SEND DATA TO PANEL REPRESENTING ANALOG LEVEL OF SMOKE DENSITY.

D. ADDRESSABLE DRY CONTACT MONITOR MODULES (AMM-2F):
1. PROVIDE TO CONNECT 1 SUPERVISED IDC ZONE OF CONVENTIONAL ALARM INITIATING DEVICES (ANY N.O. DRY CONTACT DEVICE) TO 1 OF THE FIRE ALARM CONTROL PANEL SLCS.
2. MOUNT IN STANDARD DEEP ELECTRICAL BOX.
3. IDC ZONE: SUITABLE FOR STYLE B OPERATION.

E. ISOLATOR MODULES (M500X):
1. PROVIDE TO AUTOMATICALLY ISOLATE WIRE-TO-WIRE SHORT CIRCUITS ON SLC CLASS A OR CLASS B BRANCH. ISOLATOR MODULE SHALL LIMIT NUMBER OF MODULES OR DETECTORS THAT MAY BE RENDERED INOPERATIVE BY SHORT-CIRCUIT FAULT ON SLC LOOP SEGMENT OR BRANCH. AT LEAST 1 ISOLATOR MODULE SHALL BE PROVIDED FOR EACH FLOOR OR PROTECTED ZONE OF BUILDING. NO MORE THAN 25 DEVICES SHALL BE CONNECTED TO 1 ISOLATOR MODULE.
2. IF WIRE-TO-WIRE SHORT OCCURS, ISOLATOR MODULE SHALL AUTOMATICALLY OPEN-CIRCUIT (DISCONNECT) SLC. WHEN SHORT-CIRCUIT CONDITION IS CORRECTED, ISOLATOR MODULE SHALL AUTOMATICALLY RECONNECT ISOLATED SECTION.
3. DOES NOT REQUIRE ADDRESS-SETTING, AND ITS OPERATIONS SHALL BE TOTALLY AUTOMATIC. NOT NECESSARY TO REPLACE OR RESET ISOLATOR MODULE AFTER NORMAL OPERATION.
4. MOUNT IN STANDARD 4-INCH (101.6-MM) DEEP ELECTRICAL BOX OR IN SURFACE-MOUNTED BACK BOX.
5. SINGLE LED: FLASH TO INDICATE ISOLATOR IS OPERATIONAL AND ILLUMINATE STEADILY TO INDICATE SHORT-CIRCUIT CONDITION HAS BEEN DETECTED AND ISOLATED.

2.6 SYSTEM PERIPHERALS - APOLLO XP95

A. XP95 ADDRESSABLE DEVICES - GENERAL:
1. PROVIDE ADDRESS-SETTING MEANS USING CARD INSERTS WHICH ARE BUILT INTO THE BASE OR MODULE.
2. USE SIMPLE TO INSTALL AND MAINTAIN BINARY-TYPE (NUMBERED 1 TO 64) ADDRESS SWITCHES BY USING BREAKING THE TABS TO SET ADDRESS.
3. DETECTORS: ANALOG AND ADDRESSABLE. CONNECT TO FIRE ALARM CONTROL PANEL'S SIGNALING LINE CIRCUITS.
4. ADDRESSABLE THERMAL AND SMOKE DETECTORS: PROVIDE 1 STATUS LED. THE LED SHALL FLASH UNDER NORMAL CONDITIONS, INDICATING DETECTOR IS OPERATIONAL AND IN REGULAR COMMUNICATION WITH CONTROL PANEL, AND THE LED SHALL BE PLACED INTO STEADY ILLUMINATION BY CONTROL PANEL, INDICATING ALARM CONDITION HAS BEEN DETECTED. IF REQUIRED, FLASHING MODE OPERATION OF DETECTOR LED CAN BE PROGRAMMED OFF VIA FIRE CONTROL PANEL PROGRAM.
5. FIRE ALARM CONTROL PANEL: PERMIT DETECTOR SENSITIVITY ADJUSTMENT THROUGH FIELD PROGRAMMING OF SYSTEM. SENSITIVITY CAN BE AUTOMATICALLY ADJUSTED BY PANEL ON TIME-OF-DAY BASIS.
6. USING SOFTWARE, DETECTORS SHALL AUTOMATICALLY COMPENSATE FOR DUST ACCUMULATION AND OTHER SLOW ENVIRONMENTAL CHANGES THAT MAY AFFECT THEIR PERFORMANCE. DETECTORS SHALL BE LISTED BY UL AS MEETING CALIBRATED SENSITIVITY TEST REQUIREMENTS OF NFPA 72, CHAPTER 7.
7. DETECTORS SHALL BE CEILING-MOUNTED AND SHALL INCLUDE SEPARATE TWIST-LOCK BASE WITH TAMPER-PROOF FEATURE.
8. FOLLOWING BASES AND AUXILIARY FUNCTIONS SHALL BE AVAILABLE:

A. STANDARD BASE WITH REMOTE LED OUTPUT.
B. SOUNDER BASE RATED AT 85 DBA MINIMUM.
C. FORM-C RELAY BASE RATED 30 VDC, 2.0 A.
D. ISOLATOR BASE.

9. DETECTORS SHALL PROVIDE TEST MEANS WHEREBY THEY WILL SIMULATE ALARM CONDITION AND REPORT THAT CONDITION TO CONTROL PANEL. SUCH TEST SHALL BE INITIATED AT DETECTOR ITSELF BY CANNED SMOKE OR INITIATED REMOTELY ON COMMAND FROM CONTROL PANEL.
10. DETECTORS SHALL STORE INTERNAL IDENTIFYING TYPE CODE THAT CONTROL PANEL SHALL USE TO IDENTIFY TYPE OF DEVICE (ION, PHOTO, THERMAL).

B. ADDRESSABLE MANUAL STATIONS (MS95-L):
1. MANUAL FIRE ALARM STATIONS: NON-CODE, NON-BREAK GLASS TYPE, EQUIPPED WITH KEY LOCK SO THEY MAY BE TESTED WITHOUT OPERATING HANDLE.
2. OPERATED STATION: VISUALLY APPARENT, AS OPERATED, AT A MINIMUM DISTANCE OF 100 FEET (30.5 M) FROM FRONT OR SIDE.
3. STATIONS SHALL BE DESIGNED SO AFTER ACTUAL ACTIVATION, THEY CANNOT BE RESTORED TO NORMAL EXCEPT BY KEY RESET.
4. MANUAL STATIONS SHALL BE CONSTRUCTED OF LEXAN WITH CLEARLY VISIBLE OPERATING INSTRUCTIONS PROVIDED ON COVER. THE WORD FIRE SHALL APPEAR ON FRONT OF STATIONS I N RAISED LETTERS, 1.75 INCHES (44 MM) OR LARGER.
5. ADDRESSABLE MANUAL STATIONS SHALL, ON COMMAND FROM CONTROL PANEL, SEND DATA TO PANEL REPRESENTING STATE OF MANUAL SWITCH AND ADDRESSABLE COMMUNICATION MODULE STATUS.

C. INTELLIGENT PHOTOELECTRIC SMOKE DETECTORS (XP95-P): USE PHOTOELECTRIC (LIGHT-SCATTERING) PRINCIPAL TO MEASURE SMOKE DENSITY AND SHALL, ON COMMAND FROM CONTROL PANEL, SEND DATA TO PANEL REPRESENTING ANALOG LEVEL OF SMOKE DENSITY.

D. SPRINKLER WATERFLOW SWITCHES (PROVIDED AND INSTALLED BY THE SPRINKLER CONTRACTOR):
1. INTEGRAL, MECHANICAL, NON-CODED, NON-ACCUMULATIVE RETARD TYPE.
2. ALARM TRANSMISSION DELAY TIME CONVENIENTLY ADJUSTABLE FROM 0 TO 60 SECONDS. INITIAL SETTINGS SHALL BE 30 TO 45 SECONDS.
3. SINGLE MANUFACTURER AND SERIES.
4. WHERE POSSIBLE, LOCATE WATERFLOW SWITCHES A MINIMUM OF 1 FOOT FROM FITTING WHICH CHANGES DIRECTION OF FLOW AND A MINIMUM OF 3 FEET FROM VALVE.
5. WATERFLOW SWITCHES SHALL BE PROVIDED AND CONNECTED UNDER THIS SECTION BUT INSTALLED BY THE MECHANICAL CONTRACTOR.

E. SPRINKLER AND STANDPIPE VALVE SUPERVISORY SWITCHES (PROVIDED AND INSTALLED BY THE SPRINKLER CONTRACTOR):
1. EACH SPRINKLER SYSTEM WATER SUPPLY CONTROL VALVE RISER, ZONE CONTROL VALVE, AND STANDPIPE SYSTEM RISER CONTROL VALVE SHALL BE EQUIPPED WITH SUPERVISORY SWITCH. STANDPIPE HOSE VALVES, TEST VALVES, AND DRAIN VALVES SHALL NOT BE EQUIPPED WITH SUPERVISORY SWITCHES.
2. PIV (POST INDICATOR VALVE) OR MAIN GATE VALVES: EQUIP WITH SUPERVISORY SWITCH.
3. MOUNT NOT TO INTERFERE WITH NORMAL OPERATION OF VALVE AND ADJUST TO OPERATE WITHIN 2 REVOLUTIONS TOWARD CLOSED POSITION OF VALVE CONTROL, OR WHEN STEM HAS MOVED NO MORE THAN ONE-FIFTH OF DISTANCE FROM NORMAL POSITION.
4. CONTAIN IN WEATHERPROOF ALUMINUM HOUSING, WHICH SHALL PROVIDE 3/4-INCH (19-MM) CONDUIT ENTRANCE AND INCORPORATE NECESSARY FACILITIES FOR ATTACHMENT TO VALVES.
5. SWITCH HOUSING FINISH: RED BAKED ENAMEL.
6. ENTIRE INSTALLED ASSEMBLY: TAMPER PROOF AND ARRANGED TO CAUSE SWITCH OPERATION IF HOUSING COVER IS REMOVED OR IF UNIT IS REMOVED FROM MOUNTING.
7. VALVE SUPERVISORY SWITCHES SHALL BE PROVIDED AND CONNECTED UNDER THIS SECTION AND INSTALLED BY MECHANICAL CONTRACTOR.

2.7 SYSTEM PERIPHERALS - E3 SERIES

A. HORNS:
1. OPERATE ON 24 VDC OR WITH FIELD-SELECTABLE OUTPUTS.
2. HAVE TWO SELECTABLE TONE OPTIONS OF TEMPORAL 3 AND NON-TEMPORAL CONTINUOUS PATTERN.
3. HAVE AT LEAST 2 AUDIBILITY OPTIONS.

B. STROBES:
1. COMPLIANCE: ADA AND UL 1971.
2. MAXIMUM PULSE DURATION: 0.2 SECOND.
3. STROBE INTENSITY: UL 1971.
4. FLASH RATE: UL 1971.
5. STROBE CANDELA RATING: DETERMINE BY POSITIONING SELECTOR SWITCH ON BACK OF DEVICE.

C. HORN/STROBES:
1. OPERATE ON 24 VDC
2. HAVE TWO SELECTABLE TONE OPTIONS OF TEMPORAL 3 AND NON-TEMPORAL CONTINUOUS PATTERN.
3. HAVE AT LEAST 2 AUDIBILITY OPTIONS
4. MAXIMUM PULSE DURATION: 0.2 SECOND.
5. STROBE INTENSITY: UL 1971.
6. FLASH RATE: UL 1971.
7. STROBE CANDELA RATING: DETERMINE BY POSITIONING SELECTOR SWITCH ON BACK OF DEVICE.

PART 3 EXECUTION

3.1 EXAMINATION

L2. EXAMINE AREAS AND SURFACES TO RECEIVE FIRE ALARM SYSTEM.
8. NOTIFY ARCHITECT OF CONDITIONS THAT WOULD ADVERSELY AFFECT INSTALLATION OR SUBSEQUENT USE.
9. DO NOT BEGIN INSTALLATION UNTIL UNACCEPTABLE CONDITIONS ARE CORRECTED.

3.2 INSTALLATION

A. INSTALL FIRE ALARM SYSTEM IN ACCORDANCE WITH NFPA 72, NFPA 70, STATE AND LOCAL CODES, MANUFACTURER'S INSTRUCTIONS, AND AS INDICATED ON THE DRAWINGS.

B. CONCEAL CONDUIT, JUNCTION BOXES, AND CONDUIT SUPPORTS AND HANGERS IN FINISHED AREAS. CONCEAL OR EXPOSE CONDUIT, JUNCTION BOXES, AND CONDUIT SUPPORTS AND HANGERS IN UNFINISHED AREAS.

C. DO NOT INSTALL SMOKE DETECTORS BEFORE SYSTEM PROGRAMMING AND TEST PERIOD. IF CONSTRUCTION IS ONGOING DURING THIS PERIOD, TAKE MEASURES TO PROTECT SMOKE DETECTORS FROM CONTAMINATION AND PHYSICAL DAMAGE.

D. FLUSH-MOUNT FIRE DETECTION AND ALARM SYSTEM DEVICES, CONTROL PANELS, AND REMOTE ANNUNCIATORS IN FINISHED AREAS. FLUSH-MOUNT OR SURFACE-MOUNT FIRE DETECTION AND ALARM SYSTEM DEVICES, CONTROL PANELS, AND REMOTE ANNUNCIATORS IN UNFINISHED AREAS.

E. ENSURE MANUAL STATIONS ARE SUITABLE FOR SURFACE MOUNTING OR SEMI-FLUSH MOUNTING AS INDICATED ON THE DRAWINGS. INSTALL NOT LESS THAN 42 INCHES, NOR MORE THAN 48 INCHES, ABOVE FINISHED FLOOR MEASURED TO OPERATING HANDLE.

3.3 FIELD QUALITY CONTROL

A. MANUFACTURER'S FIELD SERVICES: PROVIDE SERVICE OF COMPETENT, FACTORY-TRAINED TECHNICIAN AUTHORIZED BY MANUFACTURER TO TECHNICALLY SUPERVISE AND PARTICIPATE DURING PRE-TESTING AND ACCEPTANCE TESTING OF SYSTEM.

B. TESTING:
1. CONDUCT COMPLETE VISUAL INSPECTION OF CONTROL PANEL CONNECTIONS AND TEST WIRING FOR SHORT CIRCUITS, GROUND FAULTS, CONTINUITY, AND INSULATION BEFORE ENERGIZING CABLES AND WIRES.
2. CLOSE EACH SPRINKLER SYSTEM CONTROL VALVE AND VERIFY PROPER SUPERVISORY ALARM AT CONTROL PANEL.
3. VERIFY ACTIVATION OF FLOW SWITCHES.
4. OPEN INITIATING DEVICE CIRCUITS AND VERIFY THAT TROUBLE SIGNAL ACTUATES.
5. OPEN SIGNALING LINE CIRCUITS AND VERIFY THAT TROUBLE SIGNAL ACTUATES.
6. OPEN AND SHORT NOTIFICATION APPLIANCE CIRCUITS AND VERIFY THAT TROUBLE SIGNAL ACTUATES.
7. GROUND INITIATING DEVICE CIRCUITS AND VERIFY RESPONSE OF TROUBLE SIGNALS.
8. GROUND SIGNALING LINE CIRCUITS AND VERIFY RESPONSE OF TROUBLE SIGNALS.
9. GROUND NOTIFICATION APPLIANCE CIRCUITS AND VERIFY RESPONSE OF TROUBLE SIGNALS.
10. CHECK INSTALLATION, SUPERVISION, AND OPERATION OF INTELLIGENT SMOKE DETECTORS.
11. INTRODUCE ON SYSTEM EACH OF THE ALARM CONDITIONS THAT SYSTEM IS REQUIRED TO DETECT. VERIFY PROPER RECEIPT AND PROPER PROCESSING OF SIGNAL AT CONTROL PANEL AND CORRECT ACTIVATION OF CONTROL POINTS.
12. CONSULT MANUFACTURER'S MANUAL TO DETERMINE PROPER TESTING PROCEDURES WHEN SYSTEM IS EQUIPPED WITH OPTIONAL FEATURES. THIS IS INTENDED TO ADDRESS SUCH ITEMS AS VERIFYING CONTROLS PERFORMED BY INDIVIDUALLY ADDRESSED OR GROUPED DEVICES, SENSITIVITY MONITORING, VERIFICATION FUNCTIONALITY, AND SIMILAR.

C. ACCEPTANCE TESTING:
1. BEFORE INSTALLATION SHALL BE CONSIDERED COMPLETED AND ACCEPTABLE BY AHJ, A COMPLETE TEST USING AS A MINIMUM, THE FOLLOWING SCENARIOS SHALL BE PERFORMED AND WITNESSED BY REPRESENTATIVE APPROVED BY ENGINEER. MONITORING COMPANY AND/OR FIRE DEPARTMENT SHALL BE NOTIFIED BEFORE FINAL TEST IN ACCORDANCE WITH LOCAL REQUIREMENTS.
2. CONTRACTOR'S JOB FOREMAN, IN PRESENCE OF REPRESENTATIVE OF MANUFACTURER, REPRESENTATIVE OF OWNER, AND FIRE DEPARTMENT SHALL OPERATE EVERY INSTALLED DEVICE TO VERIFY PROPER OPERATION AND CORRECT ANNUNCIATION AT CONTROL PANEL.
3. OPEN SIGNALING LINE CIRCUITS AND NOTIFICATION APPLIANCE CIRCUITS IN AT LEAST 2 LOCATIONS TO VERIFY PRESENCE OF SUPERVISION.
4. COMPLETELY DISCONNECT MAIN CONTROL PANEL FROM REST OF NETWORK. ACTIVATE INITIATING DEVICE. ALL CONTROL OUTPUTS SUPPORTED BY TRANSPONDER SLC CIRCUITS SHALL OPERATE UNDER PROJECT PROGRAMMING MODE. DEFAULT OR DEGRADE MODE PROGRAMMING SHALL NOT BE ACCEPTABLE.
5. WHEN TESTING HAS BEEN COMPLETED TO SATISFACTION OF BOTH CONTRACTOR'S JOB FOREMAN AND REPRESENTATIVES OF MANUFACTURER AND OWNER, A NOTARIZED LETTER CO-SIGNED BY EACH ATTESTING TO SATISFACTORY COMPLETION OF SAID TESTING SHALL BE FORWARDED TO OWNER AND FIRE DEPARTMENT.
6. LEAVE FIRE ALARM SYSTEM IN PROPER WORKING ORDER AND, WITHOUT ADDITIONAL EXPENSE TO OWNER, REPLACE DEFECTIVE MATERIALS AND EQUIPMENT PROVIDED WITHIN 1 YEAR (365 DAYS) FROM DATE OF FINAL ACCEPTANCE BY THE OWNER.

3.4 DEMONSTRATION

A. PROVIDE INSTRUCTION AS REQUIRED FOR OPERATING FIRE ALARM SYSTEM.

B. PROVIDE HANDS-ON DEMONSTRATIONS OF OPERATION OF FIRE ALARM SYSTEM COMPONENTS AND FUNCTIONS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

MY Engineering, Inc.
Mechanical, Electrical and Plumbing (MEP) Consulting Engineers
1543 W. Garvey Ave. North, Ste. 210
West Covina, California 91790-2140
(626) 337-1965 / JOB #20-2177

REGISTERED PROFESSIONAL ENGINEER
JESSICA M. YUEH
No. E15221
Exp. 6/30/2022
ELECTRICAL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

ELECTRICAL SPECIFICATIONS

Revisions	
R&A No:	AI8901
Date:	8/26/2020
Drawn:	
Checked:	CW
Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E0.3

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 ELEC DWGS\E0.3.DWG PLOTTED: 2:07 PM

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

A. GENERAL INFORMATION

01	Project Location (city)	Camarillo, CA	04	Total Conditioned Floor Area (ft²)	12,346.67
02	Climate Zone	10	05	Total Unconditioned Floor Area (ft²)	
03	Occupancy Types Within Project (select all that apply):		06	# of Stories (Habitable Above Grade)	1

☐ Office ☐ Retail ☑ Warehouse ☐ Hotel/Motel ☑ School ☐ Support Areas
☑ Parking Garage ☐ High-Rise Residential ☐ Relocatable ☐ Healthcare ☐ Other (write in):

B. PROJECT SCOPE

Table Instructions: Include any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.6 or §141.0(b)2 for alterations. WARNING: Changing the Calculation Method in this table will result in the deletion of data previously input. If you need to change the calculation method, please open a new form or use "Save As".

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☑ New Lighting System	Area Category	12,346.67		
☐ Altered Lighting System				
Total Area of Work (ft²)	**12,346.67**			

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b).	Allowed Lighting Power per §140.6(b) (Watts)						Adjusted Lighting Power per §140.6(a) (Watts)				Compliance Results
	01	02	03	04		05	06	07		08	09
	Complete Building §140.6(c)1	Area Category §140.6(c)2	Area Category Additional §140.6(c)2G (+)	Tailored §140.6(c)3 (+)	=	**Total Allowed** (Watts)	Total Designed (Watts)	Adjustments PAF Control Credits §140.6(a)2 (-)	=	**Total Adjusted** (Watts) *Includes Adjustments	**05 Must be ≥08** §140.6
	(See Table I)	(See Table I)	(See Table J)	(See Table K)			(See Table F)	(See Table P)			
Conditioned:		7,764.81			=	**7,764.81**	≥ 3,320		=	**3,320**	**COMPLIES**
Unconditioned:					=		≥		=		

Table Continued

Controls Compliance (See Table H for Details)	**DOES NOT COMPLY**
Rated Power Reduction Compliance (See Table Q for Details)	**Not Applicable**

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

No exceptional conditions apply to this project.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. INDOOR LIGHTING FIXTURE SCHEDULE

Table Instructions: Include all permanent designed lighting and all portable lighting in offices.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How Wattage is determined	Total number luminaires	Exempt per §140.6(a)3	Design Watts	Field Inspector Pass	Fail
A	1X8 CHAIN HUNG LED	☐	☐	120	Mfr. Spec²	21	☐	2,520	☐	☐
AE	1X8 CHAIN HUNG EM LED	☐	☐	120	Mfr. Spec²	6	☐	720	☐	☐
B	1X4 LED	☐	☐	40	Mfr. Spec²	2	☐	80	☐	☐
					Total Designed Watts CONDITIONED SPACES:			**3,320**		

[1] *FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)4B is adjusted to be 75% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.*
[2] *Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c) Wattage used must be the maximum rated for the luminaire, not the lamp.*

G. MODULAR LIGHTING SYSTEMS

This Section Does Not Apply

H. INDOOR LIGHTING CONTROLS (Not Including PAFs)

*Table Instructions: Please include lighting controls for conditioned and unconditioned spaces in this table. When an option having a * is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Building Level Controls

01	02	03	
Mandatory Demand Response §110.12(c)	Shut-Off Controls §130.1(c)	Field Inspector	
		Pass	Fail
Required > 10,000 SF	See Area/Space Level Controls	☐	☐

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Area Controls §130.1(a)	Multi-Level Controls §130.1(b)	Shut-Off Controls §130.1(c)	Primary/Skylit Daylighting §130.1(d)	Secondary Daylighting §140.6(d)	Interlocked Systems §140.6(a)1	Field Inspector Pass	Fail
APPARATUS ROOM	General Commercial and Industrial Work - High Bay	Manual ON/ OFF	Dimmer	Occ. Sensor	Included	Included	☐	☐	☐
							☐	☐	☐
STORAGE ROOM	Commercial and Industrial Storage	Manual ON/ OFF	Dimmer	Occ. Sensor	NA	NA	☐	☐	☐

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.
EX: Conference 1: Primary/Skylight Daylighting: Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)2

13
Plan Sheet Showing Daylit Zones:

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Table Instructions: Complete the table for each area complying using the Complete Building or Area Category Methods per §140.6(b). Indicate if additional lighting power allowances per §140.6(c) or adjustments per §140.6(a) are being used.

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowances / Adjustment Area Category	PAF
APPARATUS ROOM	General Commercial and Industrial Work - High Bay	0.65	11,798.17	7,668.81	☐	☐
				0	☐	☐

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowances / Adjustments Area Category	PAF
				0	☐	☐
STORAGE ROOM	Commercial and Industrial Storage	0.6	160	96	☐	☐
			TOTAL:	**11,958.17**	**7,764.81**	See Tables J or P for detail

J. ADDITIONAL LIGHTING ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This Section Does Not Apply

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This Section Does Not Apply

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This Section Does Not Apply

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This Section Does Not Apply

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS

This Section Does Not Apply

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This Section Does Not Apply

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This Section Does Not Apply

Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS

This Section Does Not Apply

R. 80% LIGHTING POWER FOR ALTERATIONS - CONTROLS EXCEPTIONS

This Section Does Not Apply

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This Section Does Not Apply

T. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://ww2.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

YES	NO	Form/Title	Field Inspector Pass	Fail
◉	○	NRCI-LTI-01-E - Must be submitted for all buildings	☐	☐
○	◉	NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐
○	◉	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room, or a theater to be recognized for compliance.	☐	☐
○	◉	NRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	☐	☐
○	◉	NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	☐	☐

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

YES	NO	Form/Title	Field Inspector Pass	Fail
◉	○	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐	☐
◉	○	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	☐	☐
◉	○	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	☐	☐
○	◉	NRCA-LTI-05-A - Must be submitted for institutional tuning power adjustment factor (PAF).	☐	☐
○	◉	NRCA-ENV-03-F - Must be submitted for daylighting design power adjustment factors (PAF).	☐	☐

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete

Documentation Author Name:	Joseph McDowell	Documentation Author Signature:	Joseph F McDowell
Company:	MY Engineering	Signature Date:	03/02/2020
Address:	1543 W. Garvey Ave N	CEA/ HERS Certification Identification (if applicable):	
City/State/Zip:	West Covina, CA, 91790	Phone:	626-337-1965

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. **The information provided on this Certificate of Compliance is true and correct.**
2. **I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)**
3. **The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.**
4. **The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.**
5. **I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.**

Responsible Designer Name:	JESSICA YUEH	Responsible Designer Signature:	Jessica Yueh
Company :	MY Engineering	Date Signed:	03/02/2020
Address:	1543 W. Garvey Ave N	License:	E15221
City/State/Zip:	West Covina, CA, 91790	Phone:	626-337-1965

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

MY Engineering, Inc.
Mechanical, Electrical and Plumbing (MEP) Consulting Engineers
1543 W. Garvey Ave. North, Ste. 210
West Covina, California 91790-1440
(626) 337-1965 / JOB #20-2177

REGISTERED PROFESSIONAL ENGINEER
JESSICA M YUEH
No. E15221
Exp. 6/30/2022
ELECTRICAL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 848-1234

INDOOR TITLE 24 COMPLIANCE FORMS

Revisions	
R&A No:	A18901
Date:	8/26/2020
Drawn:	
Checked:	CW
Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E0.4

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
This document is used to demonstrate compliance with requirements in §110.9, §130.0, §130.2, §140.7, and §141.0(b)2L for outdoor lighting scopes using the prescriptive path.		
Project Name: Oxnard Fire Academy	Report Page:	Page 1 of 6
Project Address: Tech Apparatus Building Durley Ave. Camarillo, CA 93010	Date Prepared:	03/02/2020

A. GENERAL INFORMATION

01	Project Location (city)	Camarillo, CA	04 Total Illuminated Hardscape Area (ft²)
02	Climate Zone	10	
03	Outdoor Lighting Zone per Title 24, Part 1 §10-114 or as designated by Authority Having Jurisdiction (AHJ):		
☐ LZ-0: Very Low - Undeveloped Parkland	☐ LZ-2: Moderate - Rural Areas	☐ LZ-4: High - Must be reviewed by CA Energy Commission for Approval	
☐ LZ-1: Low - Developed Parkland	☑ LZ-3: Moderately High - Urban Areas		

B. PROJECT SCOPE

Table Instructions: Include any outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.7 or §141.0(b)2L for alterations.

My project consists of:

01	02
☑ New Lighting System	Must Comply with Allowances from §140.7.
☐ Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)? ○ Yes ○ No

03	04	05
% of Existing Luminaires Being Altered[1]	Sum Total of Luminaires Being Added or Altered	Calculation Method

[1] *FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100*

C. COMPLIANCE RESULTS

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D_for guidance.

Calculation of Total Allowed Lighting Power (Watts) §140.7 or §141.0(b)2L										Compliance Results
01		02		03	04		05	OR	06	07		08	09
General Hardscape Allowance §140.7(d)1	+	Per Application §140.7(d)2	+	Sales Frontage §140.7(d)2	Ornamental §140.7(d)2	+	Per Specific Area §140.7(d)2		Existing Power §141.0(b)2L	=	**Total Allowed** (Watts)	≥	**Total Actual** (Watts)	**07 Must be ≥ 08**
(See Table I)		(See Table J)		(See Table K)	(See Table L)		(See Table M)		(See Table N)				(See Table F)	
	+		+			+		OR		=		≥	553	
Cutoff Compliance (See Table G for Details)											**COMPLIES**			
Controls Compliance (See Table H for Details)											**COMPLIES**			

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Oxnard Fire Academy	Report Page:	Page 2 of 6
Project Address: Tech Apparatus Building Durley Ave. Camarillo, CA 93010	Date Prepared:	03/02/2020

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

Table F. indicates a dropdown selection with a * requiring a note describing the compliance approach, but no notes have been entered.
Table F. Outdoor Lighting Fixture Schedule Permit Applicant Notes:
null: null

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

Table Instructions: For new or altered lighting systems demonstrating compliance with §140.7 (ie Table I has expanded for input), include all luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application in the Table below. For altered lighting systems using the Existing Power method per §141.0(b)2L (ie Table N has expanded for input), include only new luminaires being installed and replacement luminaires being installed as part of the project scope (ie, do not include existing luminaires remaining or existing luminaires being moved).

Designed Wattage:

01	02		03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description		Watts per luminaire[1,2]	How Wattage is determined	Total number luminaires[2]	Luminaire Status[3]	Excluded per §140.7(a)	Design Watts	Cutoff Req. ≥ 6,200 initial lumen output §130.2(b)[4]	Field Inspector	
										Pass	Fail
C	Wall LED	☐ Linear	66	Mfr. Spec[1]	8	New	☐	528	Yes	☐	☐
D	11" Round LED	☐ Linear	25	Mfr. Spec[1]	1	New	☐	25	NA: <6,200 lumens	☐	☐
						Total Designed Watts		**553**			

* NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
EX: Luminaire is lighting a statue; EXCEPTION 2 to §130.2(b).

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Oxnard Fire Academy	Report Page:	Page 3 of 6
Project Address: Tech Apparatus Building Durley Ave. Camarillo, CA 93010	Date Prepared:	03/02/2020

[1] *FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c)*
[2] *For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet for the luminaire should be indicated in column 05 instead of number of luminaires.*
[3] *Select "New" for new luminaires in a new outdoor lighting project or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of the project scope*
[4] *Compliance with mandatory cutoff requirements is required for luminaires with initial lumen output ≥ 6,200 unless exempted by §130.2(b).*

G. CUTOFF REQUIREMENTS (BUG)

Table Instructions: Complete this table for fixtures of ≥ 6,200 initial luminaire lumens indicated on Table F as needing to comply with Cutoff Requirements. Maximum lumens can be found in Title 24, Part 11, Section 5.106.8.

01	02	03		04	05	06	07	08	09		10	11	12	
Name or Item Tag	Complete Luminaire Description	Backlight Rating[2]				Uplight Rating[2]			Glare Rating[2]				Field Inspector	
		Mounting Height from Property Line[1]		Max Allowable Backlight Rating[4]	Backlight Rating Per Design	Lighting Type	Max Allowable Backlight Rating[4]	Uplight Rating Per Design	Mounting Height from Property Line[1]		Max Allowable Glare Rating[4]	Glare Rating Per Design	Pass	Fail
C	Wall LED	Back hemisphere < 0.5 MH from prop line		B1	B1	Area Lighting	U0	U0	> 2 MH from property line		G3	G2	☐	☐

[1] *FOOTNOTES: Mounting Height is labeled MH in this table*
[2] *Authority having jurisdiction may ask for luminaire cut sheets or other documentation to confirm luminaire type, uplight ratings and glare ratings used for compliance per §130.2(b).*
[3] *BUG ratings with a lower number than the 'Max Allowable' are compliant. Ex. if Max Allowable is Bug Rating is B4, then B0, B1, B2, B3 and B4 are all compliant.*

H. OUTDOOR LIGHTING CONTROLS

Table Instructions: Complete this table demonstrating compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
*When an option having a * is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank. For each requirement in columns 02 through 04, do not leave the field blank, instead select NA or Exempt* from the dropdown list to indicate not applicable or an exemption.*

Mandatory Controls
Table Continued

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Oxnard Fire Academy	Report Page:	Page 4 of 6
Project Address: Tech Apparatus Building Durley Ave. Camarillo, CA 93010	Date Prepared:	03/02/2020

01	02	03	04	05	
Area Description	Shut-Off §130.2(c)1	Auto-Schedule §130.2(c)2	Motion Sensor §130.2(c)3	Field Inspector	
				Pass	Fail
Campus Area	Photocontrol	Yes	Yes	☐	☐

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.
EX: Not permitted by health & safety to be turned off; EXCEPTION 1 to §130.2(c).

I. LIGHTING POWER ALLOWANCE (per §140.7)

Table Instructions: Please complete this table for areas using the allowance calculations per §140.7. General Hardscape Allowance is per Table 140.7-A while "Use it or lost it" Allowances are per Table 140.7-B. Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.

	01				
	"Use it or lose it" Allowances (select all that apply)				
☐ General Hardscape Allowance	☐ Per Application	☐ Sales Frontage	☐ Ornamental	☐ Per Specific Area	
Table I (below)	Table J	Table K	Table L	Table M	

J. LIGHTING ALLOWANCE: PER APPLICATION
This Section Does Not Apply

K. LIGHTING ALLOWANCE: SALES FRONTAGE
This Section Does Not Apply

L. LIGHTING ALLOWANCE: ORNAMENTAL
This Section Does Not Apply

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA
This Section Does Not Apply

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)
This Section Does Not Apply

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Oxnard Fire Academy	Report Page:	Page 5 of 6
Project Address: Tech Apparatus Building Durley Ave. Camarillo, CA 93010	Date Prepared:	03/02/2020

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

YES	NO	Form/Title	Field Inspector	
			Pass	Fail
◉	○	NRCI-LTO-01-E - Must be submitted for all buildings.	☐	☐
◉	○	NRCI-LTO-02-E - Must be submitted for a lighting control system; or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

YES	NO	Form/Title	Field Inspector	
			Pass	Fail
◉	○	NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls area added to ≤ 20 luminaires.	☐	☐

STATE OF CALIFORNIA
Indoor Lighting
NRCC-LTI-E (Created 11/19) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Oxnard College Fire Academy	Report Page:	Page 6 of 7
Project Address: Tech Apparatus Building Durley Ave. Camarillo, CA 93010	Date Prepared:	03/02/2020

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

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YES	NO	Form/Title	Field Inspector	
			Pass	Fail
◉	○	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐	☐
◉	○	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	☐	☐
◉	○	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	☐	☐
○	◉	NRCA-LTI-05-A - Must be submitted for institutional tuning power adjustment factor (PAF).	☐	☐
○	◉	NRCA-ENV-03-F - Must be submitted for daylighting design power adjustment factors (PAF).	☐	☐

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

NT Engineering, Inc.
Mechanical, Electrical and Plumbing
(MEP) Consulting Engineers
1043 W. Gainsay Ave. North, Ste. 210
Ventura, California 93003-7460
(626) 337-1965 / JOB #20-2177

REGISTERED PROFESSIONAL ENGINEER
JESSICA N. TYE
No. E15221
Exp. 6/30/2022
ELECTRICAL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
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Ventura, California 93001
(805) 648-1234

OUTDOOR TITLE 24 COMPLIANCE FORMS

Revisions	R&A No:	A18190I
	Date:	8/26/2020
	Drawn:	
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E0.5

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

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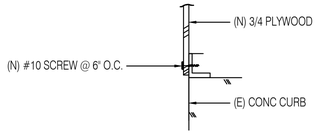

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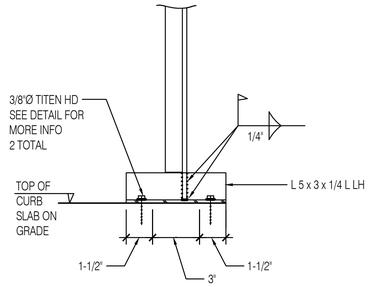

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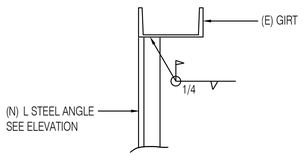

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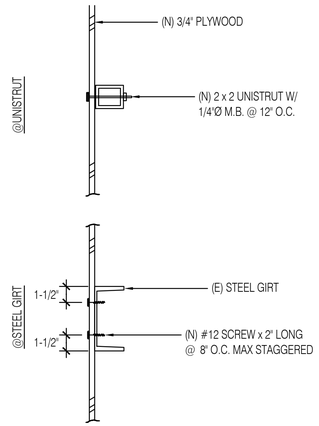

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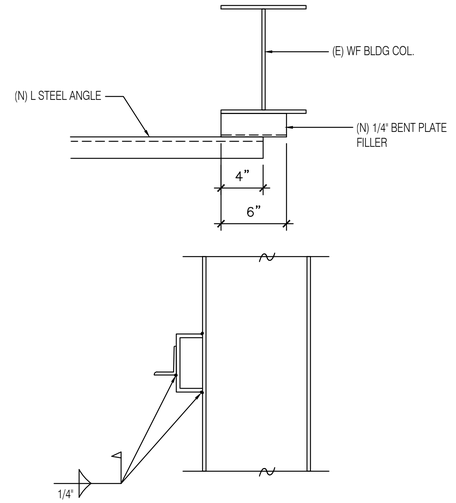

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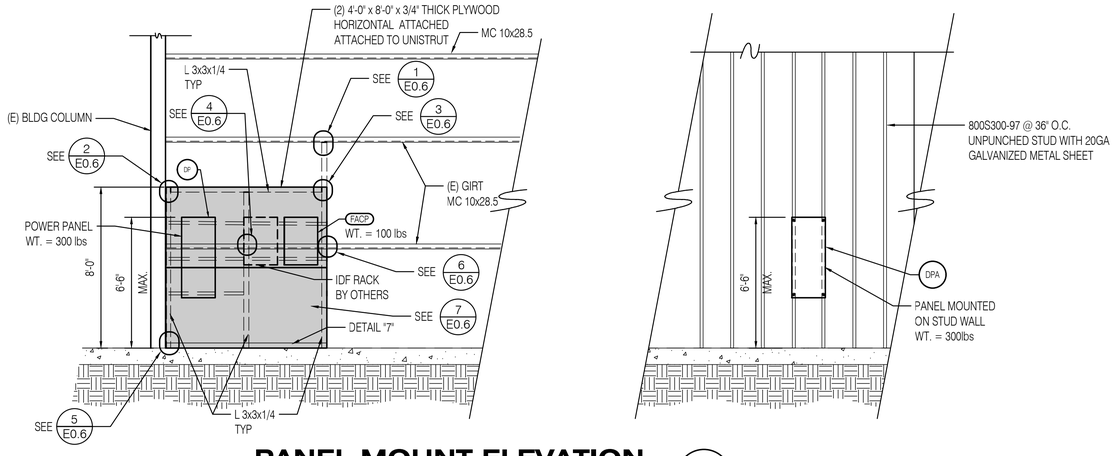
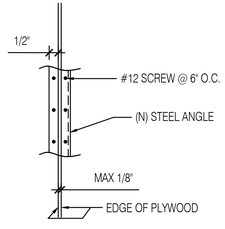


PANEL MOUNT ELEVATION

SCALE: NONE

1 / E0.6



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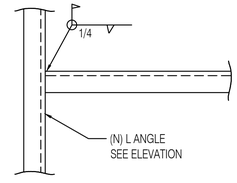

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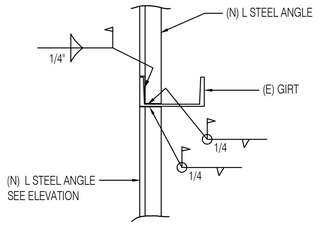

DETAIL "4"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

M-E Engineering, Inc.
Mechanical Electrical and Plumbing
(MEP) Consulting Engineers
1043 W. Gainsway Ave. North, Ste. 210
Westlake Village, California 91362
(626) 337-1865 / JOB #20-2177

PROFESSIONAL ENGINEER
REGISTERED
JESSICA M. SYER
No. E15221
Exp. 6/30/2022
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STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
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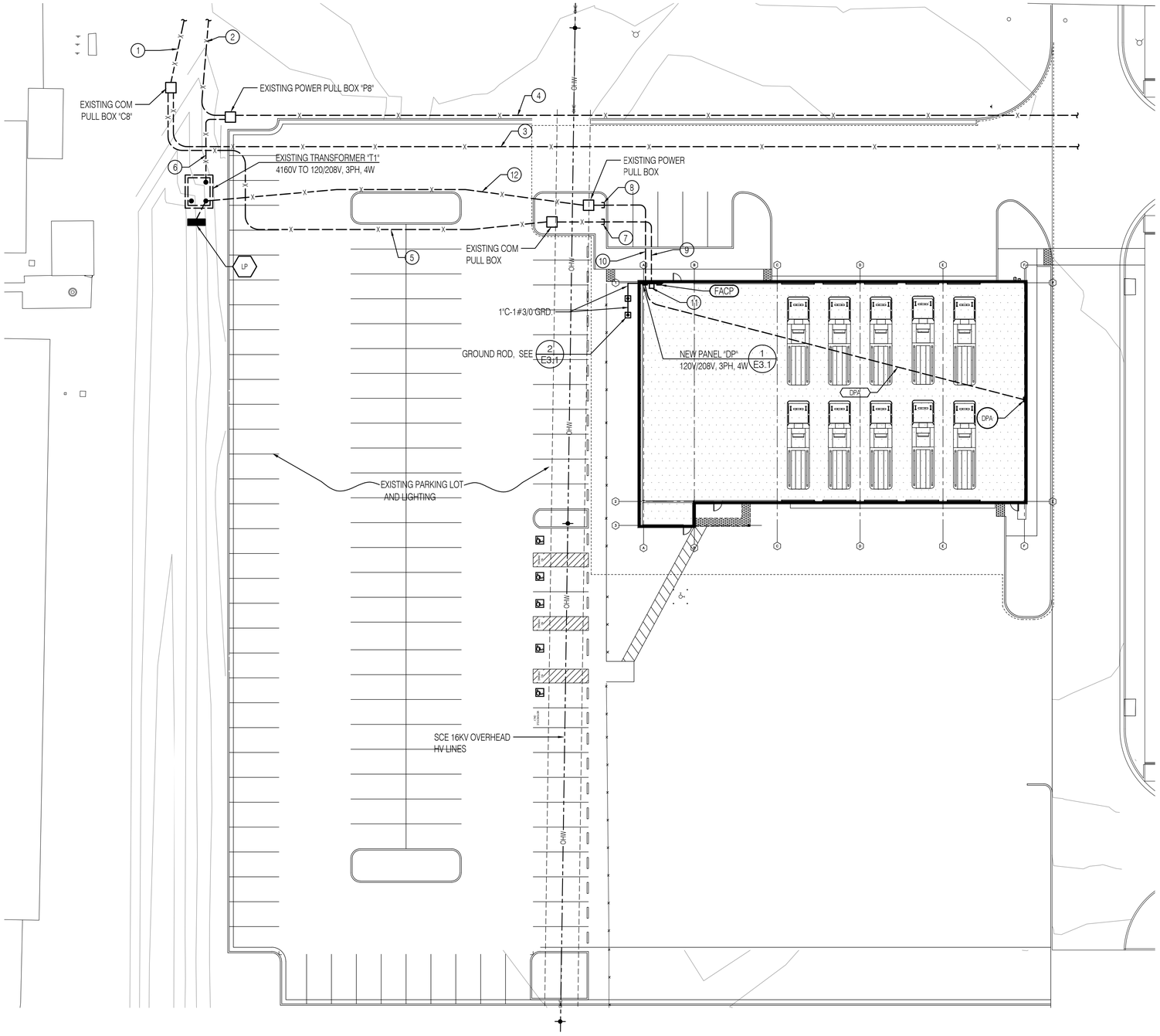
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

PANEL MOUNT ELEVATION AND DETAILS

Revisions	R&A No:	A18190I
	Date:	8/26/2020
	Drawn:	
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E0.6



ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

0 12'-6" 25' 50'

N

REFERENCE NOTES

1. EXISTING (4) 4" C.O. COMM TO EXISTING PULL BOX "C13".
2. EXISTING (3) 4" C.O. POWER AND 3#2, 5/8KV, & 1#2 GROUND TO EXISTING PULL BOX "P13".
3. EXISTING (4) 4" C.O. COMM TO EXISTING PULL BOX "C7".
4. EXISTING (3) 4" C.O. POWER AND 3#2, 5/8KV, & 1#2 GROUND TO EXISTING PULL BOX "P7".
5. EXISTING 4" C.O. COMM NEW FIBER OPTIC CABLES PROVIDED UNDER SEPARATE FUTURE PROJECT.
6. EXISTING 4"C-3#2, 5/8KV AND 1 #2 GROUND.
7. INTERCEPT EXISTING 4" C.O. COMM AND EXTEND TO NEW IDF WITH NEW COMMUNICATION BACKBOARD. TERMINATE CONDUIT 6" ABOVE SLAB WITH A INSULATED BUSHING.
8. EXISTING (2) 3" C.O. STUB-OUTS. INTERCEPT THE LOWEST 3" C.O. AND EXTEND WITH NEW 3"C-4#500Kcmil & 1#2 GROUND. CONDUCTOR SHALL BE COPPER TYPE 'XHHW-2", 90° RATED. PROTECT REMAIN CONDUIT FOR FUTURE USE.
9. NEW 4" CONDUIT ONLY. FIBER OPTIC CABLES PROVIDED UNDER SEPARATE FUTURE PROJECT.
10. NEW 3"C-4#3/0 AND 1#2 GROUND OR 4"C-4#500Kcmil & 1#2 GROUND TO NEW PANEL "DP".
11. FUTURE IDF RACK BY THE COLLEGE MOUNTED ON THE 3/4" THICK PLYWOOD BACKBOARD.
12. EXISTING (2) 3" C.O. POWER. PULL IN ONE OF SPARE CONDUIT NEW 3"C-4#500Kcmil & 1#2 GROUND.

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APP: 03-120764 INC:
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NV5 Engineering, Inc.
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ELECTRICAL SITE PLAN

Revisions	R&A No:	A18901
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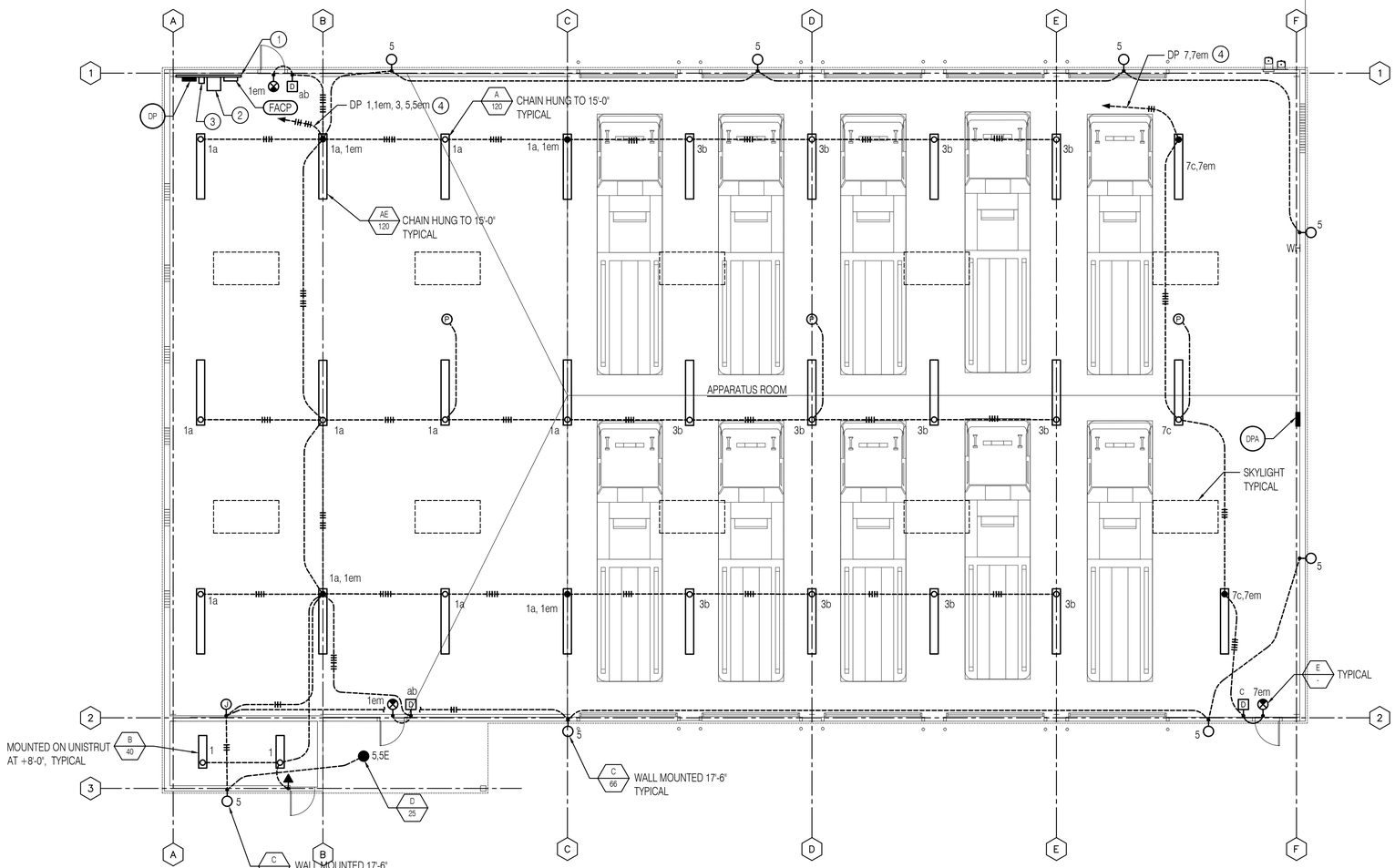
FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E1.1



LIGHTING FLOOR PLAN

SCALE 1/8" : 1'-0"

0 5' 10' 20'

REFERENCE NOTES

1. 8'-0" x 8'-0" x 3/4" THICK PLYWOOD, TREATED WITH A FIRE-RESISTANT CHEMICAL AND PAINTED ON BOTH SIDES AND EDGES TO TWO COATS OF FLAT WHITE PAINT. MOUNT PLYWOOD TO 6" ABOVE FLOOR FOR MOUNTED OF PANEL "NP", THE IDF RACK AND FACP.
2. FUTURE IDF RACK BY THE COLLEGE MOUNTED ON THE 3/4" THICK PLYWOOD BACKBOARD.
3. 24-HR ELECTRONIC TIME SWITCH TO CONTROL CIRCUITS 1a,3b,5c,7c.
4. HOMERUN VIA TIME SWITCH.

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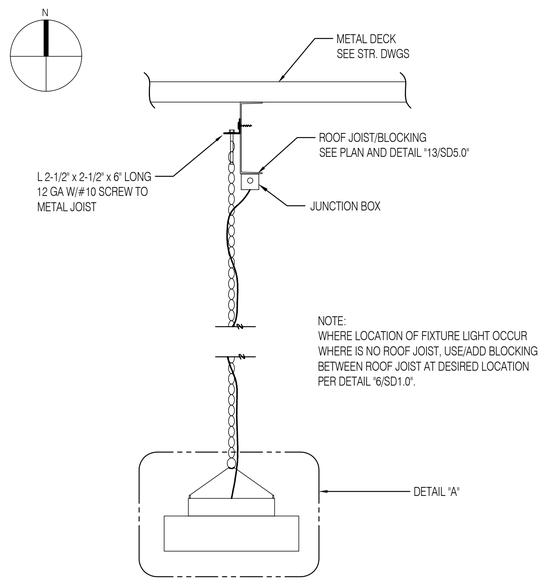
LUMINAIRE SCHEDULE

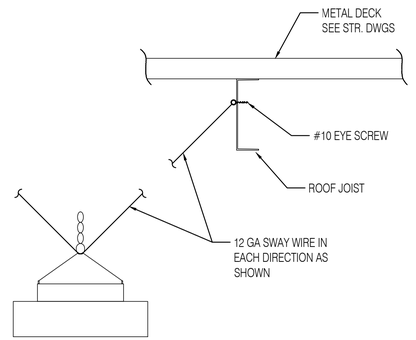
DESIG/V A	AREA	SOURCE	MOUNTING	MANUFACTURER	CATALOGUE NUMBER	DESCRIPTION
A/120	INTERIOR APPARATUS	120W LED, 4000K	PENDANT, (CHAIN-HUNG)	METALUX	8ILED-R-LD5-18-W-FL-WG-UNV-L840-CD2-AYC/CHAIN SET	8' CHAIN HUNG LED FIXTURE WITH 0-10V DIMMABLE DRIVER. SEE DETAIL "2/E2.1".
AE/120	INTERIOR APPARATUS	120W LED, 4000K	PENDANT, (CHAIN-HUNG)	METALUX	8ILED-R-LD5-18-W-FL-WG-UNV-L840-CD2-	8' CHAIN HUNG LED FIXTURE WITH 0-10V DIMMABLE DRIVER AND INTEGRAL EMERGENCY BATTERY PACKS. SEE DETAIL "2/E2.1".
B/40	INTERIOR RESTROOMS	40W LED, 4000K	SURFACE	METALUX	4WSNLED-LD4-40SL-F-UNV-L840-CD1-U	4' SURFACE MOUNTED LED WRAPAROUND FIXTURE WITH FROSTED ACRYLIC LENS AND 0-10V DIMMABLE DRIVER
C/66	EXTERIOR WALL	66W LED, 4000K	WALL	MCGRAW EDISON	GWC-AF-02-LED-E1-T4FT-BZ-600-MS/DIM-L20	EXTERIOR WALL MOUNTED LED FIXTURE WITH INTEGRAL MOTION SENSOR LENS AND 0-10V DIMMABLE DRIVER
D/25	CANOPY	25WLED, 4000k	CEILING	FAIL SAFE	TRO-11-LD4-25-40-OPL-BZ-UNV-ED-C1-PB120V/CSTG-EL5W-VRSD	11-3/8" DIA. X 4" DEEP LED FIXTURE WITH OPAL LENS, AND ELECTRONIC DRIVER AND PHOTOCELL
E/1	EXIT SIGN	1W LED	WALL +8'-0"	SURE-LITES	EUX7-1G-SD	EDGE-LIT EXIT SIGN, SINGLE FACE WITH GREEN LETTERS AND 90 MINUTES BATTERY PACK



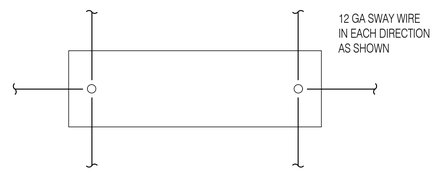
LIGHT FIXTURE SUPPORT DETAIL

SCALE: NONE

2 / E2.1



DETAIL "A"



PLAN VIEW "A"

LIGHT FIXTURE

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LIGHTING FLOOR PLAN

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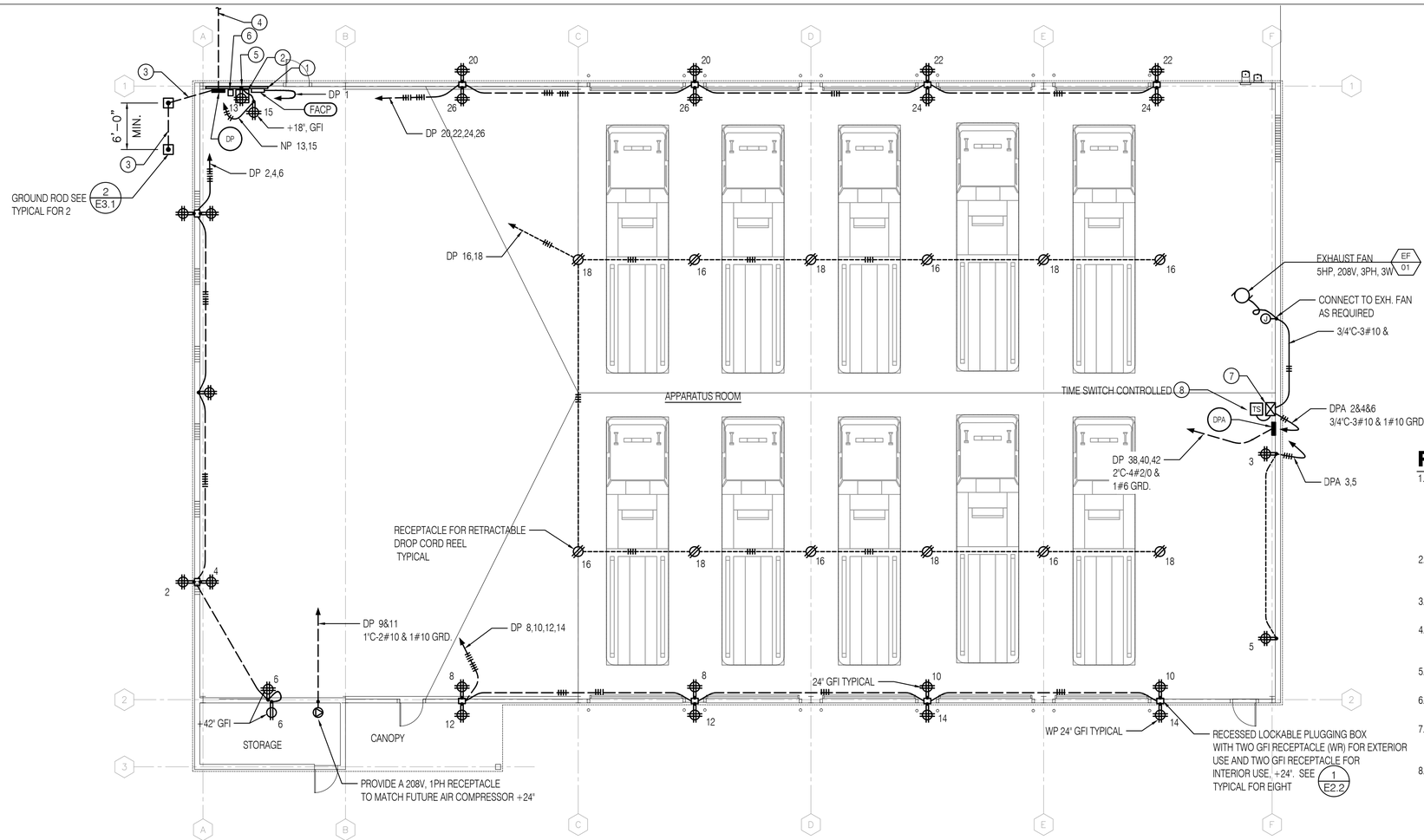
FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E2.1



POWER FLOOR PLAN

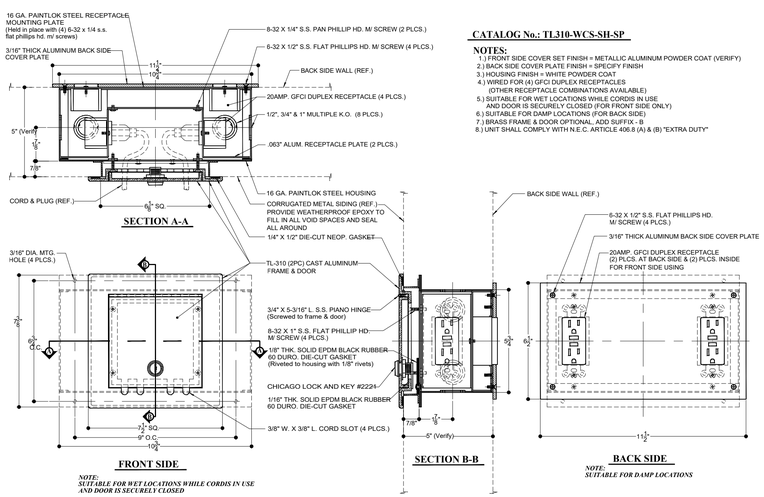
SCALE 1/8" : 1'-0"

0 5' 10' 20'

N

REFERENCE NOTES

1. 8'-0" x 8'-0" x 3/4" THICK PLYWOOD, TREATED WITH A FIRE-RESISTANT CHEMICAL AND PAINTED ON BOTH SIDES AND EDGES TO TWO COATS OF FLAT WHITE PAINT. MOUNT PLYWOOD TO 6" ABOVE FLOOR FOR MOUNTED OF PANEL "DP", THE IDF RACK, FACP AND TIME SWITCH. SECURE PLYWOOD TO VERTICAL UNISTRUT 16" O.C. UNISTRUT SHALL BE ATTACHED TO FLOOR AND STRUCTURAL CHANNEL ABOVE.
2. FUTURE IDF RACK BY THE COLLEGE MOUNTED ON THE 3/4" THICK PLYWOOD BACKBOARD.
3. 1"C-1#3/0 GROUND.
4. 4"C-4#500Kcmil & 1#2 GROUND TO TRANSFORMER "T1". SEE DRAWING E1.1 FOR CONTINUATION.
5. MOUNT RECEPTACLE INSIDE IDF RACK AS DIRECTED BY THE OWNER.
6. ELECTRONIC TIME SWITCH FOR INTERIOR AND EXTERIOR LIGHTING.
7. ENCLOSURE SIZE 1 STARTER WITH OVERLOADS, H.O.A. SWITCH AND CONTROL TRANSFORMER.
8. 24-HR ELECTRONIC 2-POLE TO CONTROL EXHAUST FAN EF-01 AND FUTURE EXHAUST FAN EF-02.



CATALOG No.: TL310-WCS-SH-SP

NOTES:
1.) FRONT SIDE COVER SET FINISH = METALLIC ALUMINUM POWDER COAT (VERIFY)
2.) BACK SIDE COVER PLATE FINISH = SPECIFY FINISH
3.) HOUSING FINISH = WHITE POWDER COAT
4.) WIRED FOR (4) GFCI DUPLEX RECEPTACLES (OTHER RECEPTACLE COMBINATIONS AVAILABLE)
5.) SUITABLE FOR WET LOCATIONS WHILE CORDIS IN USE AND DOOR IS SECURELY CLOSED (FOR FRONT SIDE ONLY)
6.) SUITABLE FOR DAMP LOCATIONS (FOR BACK SIDE)
7.) BRASS FRAME & DOOR OPTIONAL, ADD SUFFIX - B
8.) UNIT SHALL COMPLY WITH N.E.C. ARTICLE 406.8 (A) & (B) "EXTRA DUTY"

RECESSED WALL PLUGGING BOX

SCALE: NONE

1 E2.2

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POWER FLOOR PLAN

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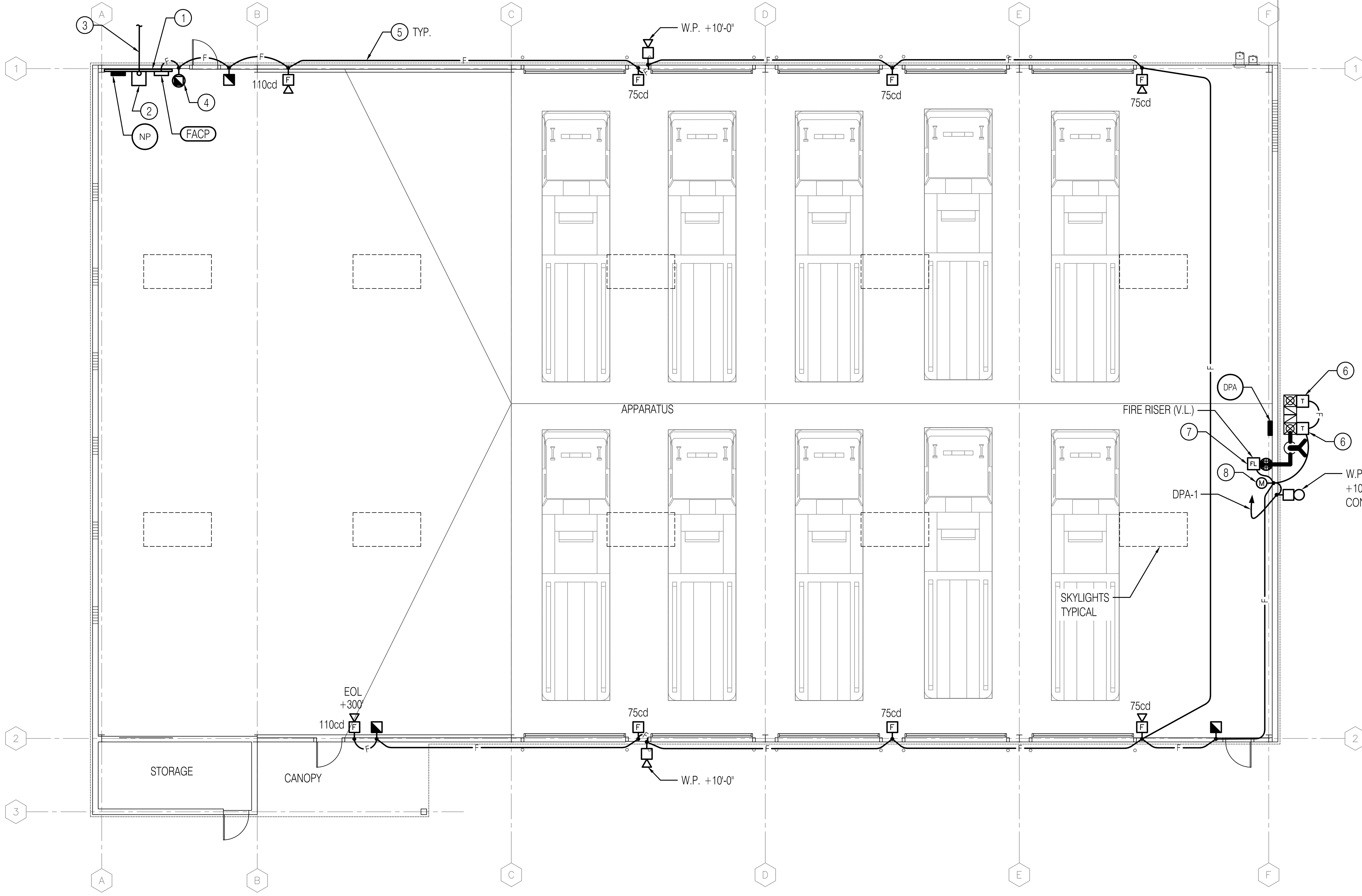
Sheet No.
E2.2

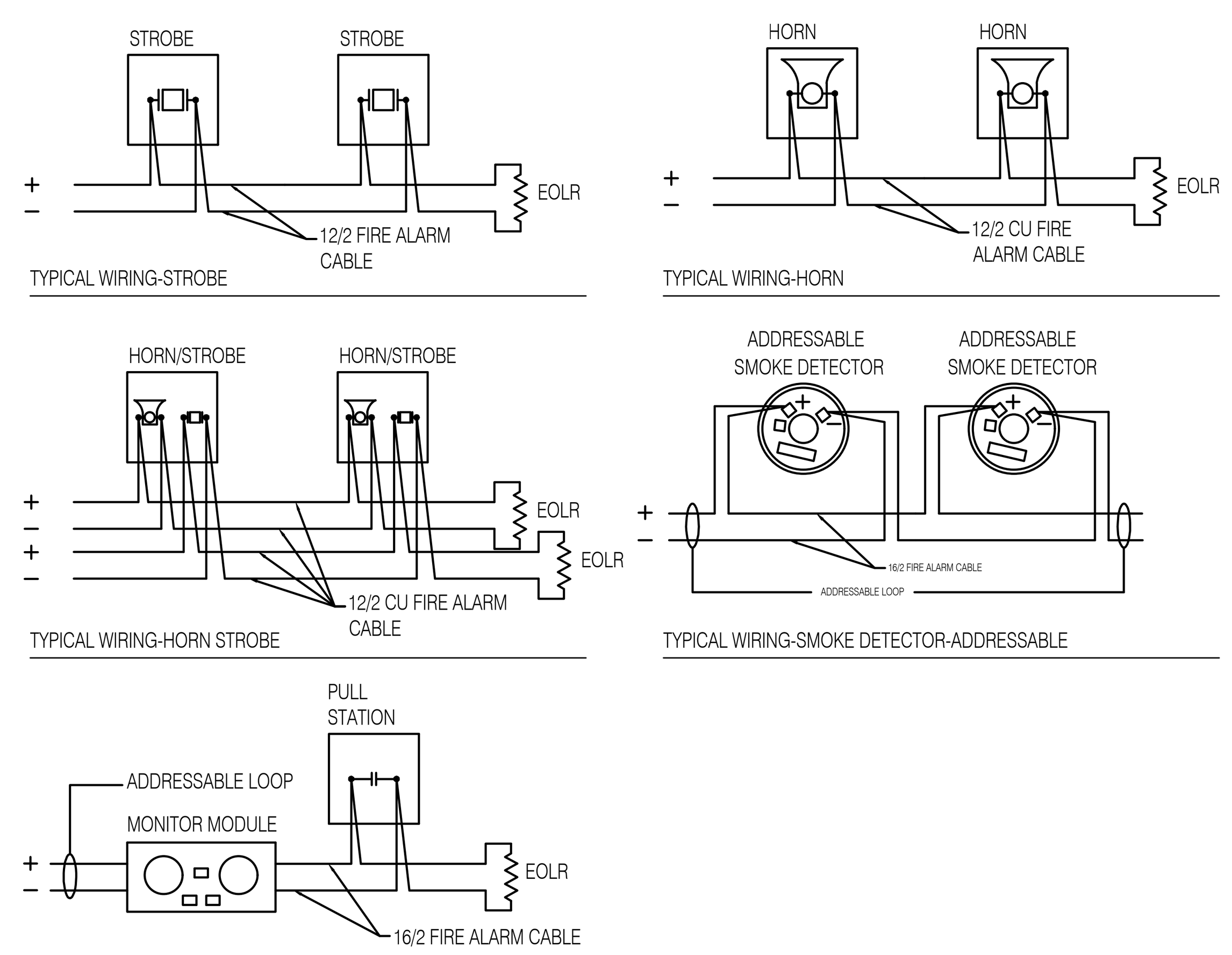


FIRE ALARM FLOOR PLAN
SCALE 1/8" : 1'-0"

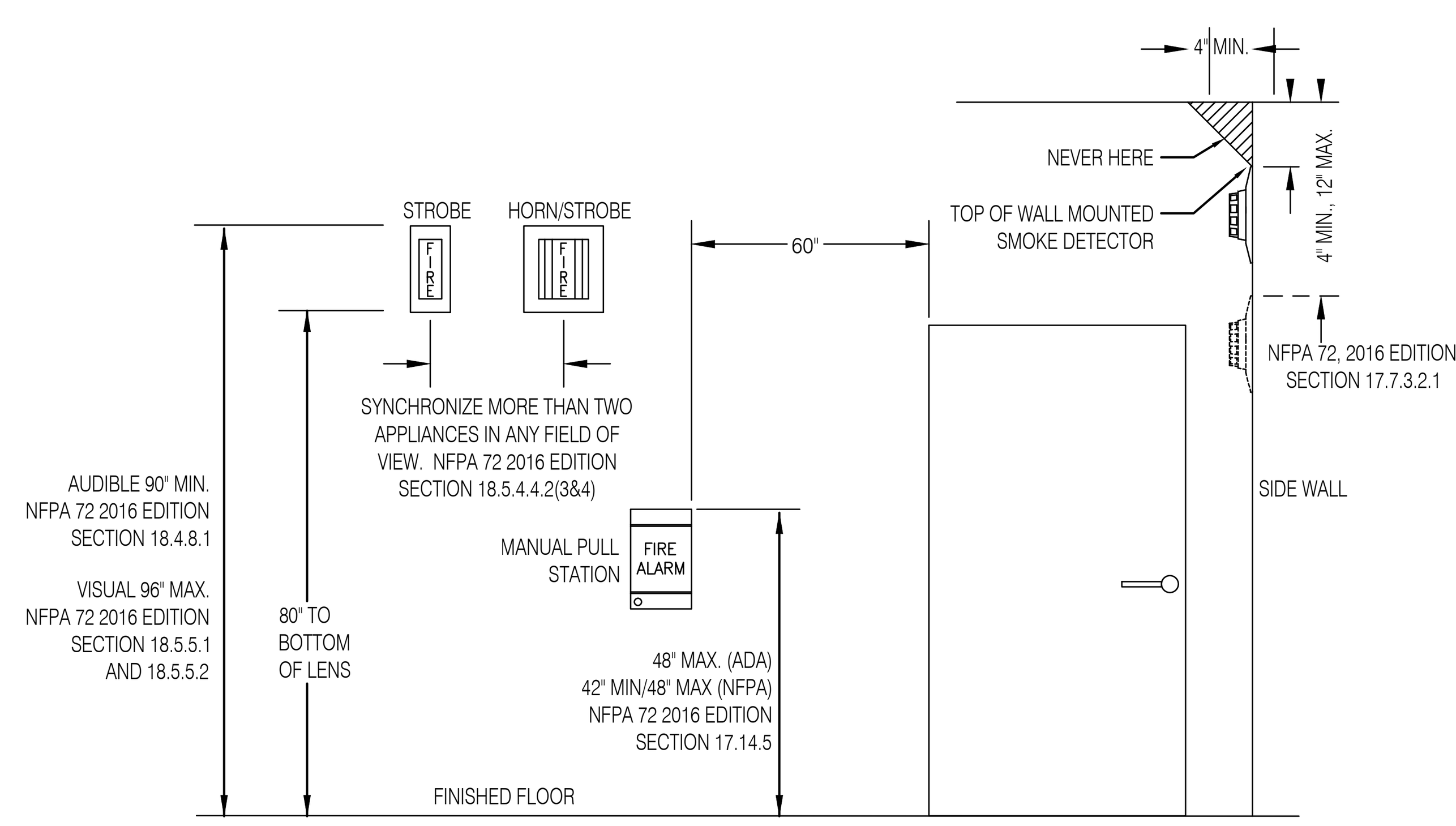
REFERENCE NOTES

1. 8'-0" x 8'-0" X $\frac{3}{4}$" THICK PLYWOOD, TREATED WITH A FIRE-RESISTANT CHEMICAL AND PAINTED ON BOTH SIDES AND EDGES TO TWO COATS OF FLAT WHITE PAINT. MOUNT PLYWOOD TO 6" ABOVE FLOOR FOR MOUNTED OF PANEL "NP", THE IDF RACK AND FACP.
2. FUTURE IDF RACK BY THE COLLEGE MOUNTED ON THE 3/4" THICK PLYWOOD BACKBOARD.
3. 4" CONDUIT WITH FIBER OPTIC CABLE PER THE COLLEGE REQUIREMENTS. SEE DRAWING E1.1 FOR CONTINUATION.
4. MOUNT SMOKE DETECTOR ON WALL ABOVE FACP AT +8'-0" AFF
5. 3/4" MINIMUM CONDUIT WITH FIRE ALARM CABLES; SEE FIRE ALARM WIRING DIAGRAM THIS SHEET:
   - 16/2 STRANDED BARE COPPER CONDUCTORS, OVERALL UNSHIELDED WITH AQUASEAL AND OVERALL JACKET FOR UNDERGROUND INSTALLATION BY WEST PENN #AQ225.
   - 16/2 SOLID BARE COPPER CONDUCTORS, UNSHIELDED AND OVERALL JACKET FOR INDOOR INSTALLATION BY WEST PENN #D990.
   - 16/2 SOLID BARE COPPER CONDUCTORS, SHIELDED AND OVERALL JACKET FOR INDOOR INSTALLATION BY WEST PENN #D991.
   - 12/2 COPPER FPLR BY WINDY CITY WIRE #THHN-2.
6. WEATHERPROOF TAMPER SWITCH ON THE DOUBLE CHECK DETECTOR ASSEMBLY.
7. WATER FLOW SWITCH ON FIRE RISER.
8. JUNCTION BOX WITH MONITOR MODULES.

UL CERTIFIED FIRE ALARM MONITORING COMPANY:
Emergency 24
999 East Toughy
Des Plaines, IL 60018
UL ID#257826-001



A
E2.3
FIRE ALARM WIRING DIAGRAM
SCALE: NTS



B
E2.3
FIRE ALARM ELEVATIONS
SCALE: NTS

VOLTAGE DROP - FIRE ALARM CONTROL PANEL			
DEVICE DESCRIPTION	DRAW	LOOP 1	
		QTY	TOTAL
75cd STROBE	0.148	4	0.592
75cd HORN/STROBE	0.148	2	0.296
110cd HORN/STROBE	0.162	2	0.324
WEATHERPROOF HORN	0.044	2	0.088
TOTAL CURRENT DRAW			1.3
CM (#12 WIRE USED)			6530
TOTAL DISTANCE (ft.)			300
MULTIPLIER			21.6
VOLTAGE			20.4
PERCENTAGE DROP			6.32%

BATTERY CALCULATION - FIRE ALARM CONTROL PANEL "FACP" (FCI S3 SERIES)							
DESCRIPTION	CSFM	MODEL	CURRENT PER UNT (AMPS)		QTY.	TOTAL CURRENT (AMPS)	
			STAND BY	ALARM		STAND BY	ALARM
Fire Alarm Panel Components							
Base Panel	7165-1703:0176	S3	0.111000	0.243000	1	0.111000	0.243000
LCD Touchscreen Annunciator Display	7165-1703:0176	LCD-SLP	0.030000	0.065000	1	0.030000	0.065000
SLC Personality Loop Modules	7165-1703:0176	SLC-PM	0.014000	0.014000	1	0.014000	0.014000
Initiation Devices							
Laser Smoke Sensor	7272-1703:0114	ASD-LS	0.000330	0.006500	1	0.000330	0.006500
Manual Fire Alarm Pull Stations	7150-1703:0119	MS-7AF	0.000300	0.003000	3	0.000900	0.009000
Notification Devices							
75cd Strobe	7125-1653:0504	SRL	0.000000	0.107000	4	0.000000	0.428000
75cd Horn/Strobe	7135-1653:0503	P2RL	0.000000	0.148000	2	0.000000	0.296000
110cd Horn/Strobe	7135-1653:0503	P2RL	0.000000	0.162000	2	0.000000	0.324000
Weatherproof Horn	7135-1653:0503	HRL	0.000000	0.044000	2	0.000000	0.088000
Relays and Modules							
Addressable Input/Output Module	7300-1703:0174	AMM-2RIF	0.001300	0.024000	5	0.006500	0.120000
				SUB-TOTAL		0.162730	1.593500
						X 24 HOURS	X .25 HOURS
				TOTALS		3.905520	0.398375
				TOTAL AMP HOURS		4.303895	
				DERATING (x1.2)		5.164674	
				BATTERY USED		12.000000	
				SPARE		6.835326	

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NV Engineering, Inc.

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ELECTRICAL
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FIRE ALARM FLOOR PLAN

Revisions

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FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E2.3

FIRE ALARM RECORD DOCUMENT CABINET NFPA 72, 7.7.2

- EVERY NEW FIRE ALARM SYSTEM SHALL PROVIDE A DOCUMENTATION CABINET, INSTALLED AT THE SYSTEM CONTROL PANEL OR OTHER APPROVED LOCATION.
- THE DOCUMENTATION CABINET SHALL BE PROMINENTLY LABELED, "SYSTEM RECORD DOCUMENTS".
- ALL RECORD AND TESTING DOCUMENTATION SHALL BE STORED IN THE CABINET.
- CONTENTS SHALL BE ACCESSIBLE BY AUTHORIZED PERSONNEL ONLY.
- WHERE CABINET IS INSTALLED IN A LOCATION OTHER THAN THE SYSTEM CONTROL UNIT, ITS LOCATION SHALL BE IDENTIFIED AT THE SYSTEM CONTROL UNIT.

SYSTEM DOCUMENTS AS APPLICABLE:

- RECORD DRAWINGS/AS-BUILTS.
- EQUIPMENT CUT SHEETS & CA SFM LISTINGS.
- ALTERNATIVE MEANS AND METHODS.
- PERFORMANCE BASED DESIGN DOCUMENTATION (NFPA 72, 7.3.7)
- SYSTEM RECORD OF COMPLETION & ANY SUPPLEMENTAL INSPECTION AND TESTING DOCUMENTATION (NFPA 72, 7.8.2)
- EMERGENCY RESPONSE PLAN (NFPA 72, 7.3.8)
- EVALUATION DOCUMENTATION (NFPA 72, 7.3.9)
- RISK ANALYSIS DOCUMENTATION (NFPA 72, 7.3.6)
- SOFTWARE & FIRMWARE CONTROL DOCUMENTATION (NFPA 72, 23.2.2)

SEQUENCE OF OPERATION

ACTION \ DEVICE	120 VOLT POWER FAILURE	SYSTEM TROUBLE/ WIRING FAULT or OPEN	MANUAL PULL STATION	SMOKE DETECTOR	SPRINKLER WATER FLOW SWITCH	SPRINKLER DOUBLE CHECK VALVE TAMPER SWITCHES
SOUND CONTROL PANEL TROUBLE BUZZER	YES	YES	NO	NO	NO	NO
SOUND CONTROL PANEL SUPERVISORY BUZZER	NO	NO	NO	NO	NO	YES
SOUND CONTROL PANEL ALARM BUZZER	NO	NO	YES	YES	YES	NO
ACTIVATE RELAY FOR CENTRAL STATION MONITORING	YES	YES	YES	YES	YES	YES
ANNUNCIATE AT FIRE ALARM CONTROL PANEL (ALARM or TROUBLE)	YES	YES	YES	YES	YES	YES
ACTIVATE NOTIFICATION (AUDIBLE/VISUAL) ALARM SIGNAL THROUGHOUT BLDG	NO	NO	YES	YES	YES	NO
SOUND SPRINKLER BELL ALARM -	NO	NO	NO	NO	YES	NO
NOTIFY FIRE DEPARTMENT VIA MONITORING STATION -	NO	NO	YES	YES	YES	NO

GAMEWELL FCI FIRE ALARM EQUIPMENT LIST

SYMBOL	MODEL NO.	DESCRIPTION	MOUNTING	C.S.F.M#	REMARKS
	S3	S3 SERIES CONTROL PANEL (FACP)	WALL		
	LCD-SLP	LCD TOUCHSCREEN ANNUNCIATOR DISPLAY	IN FACP	7165-1703:0176	
	SLC-PM	SLC PERSONALITY LOOP MODULES			
	ASD-LS	ADDRESSABLE LASER SMOKE SENSOR	OUTLET BOX ABOVE FACP	7272-1703:0114	
	MS-7AF	MANUAL DOUBLE ACTION FIRE ALARM PULL STATION	OUTLET BOX	7150-1703:0119	
F	SRL	INDOOR, WALL-MOUNT STROBE	OUTLET BOX	7125-1653:0504	
F	P2RL	INDOOR, WALL-MOUNT HORN/STROBE	OUTLET BOX	7135-1653:0503	
	HRL	WEATHERPROOF, WALL-MOUNT HORN	WEATHERPROOF OUTLET BOX	7125-1653:0504	
M	AMM-2RIF	ADDRESSABLE INPUT/OUTPUT MODULE	OUTLET BOX	7300-1703:0174	PROVIDE A CONTROL FOR EACH TAMPER SWITCH AND FLOW SWITCH
FL	VSR-4-	FIRE SPRINKLER WATER FLOW SWITCH POTTER #VSR-4-	ON FIRE RISER	7770-0328-001	
	----------	FIRE SPRINKLER ALARM BELL	WEATHERPROOF OUTLET BOX	----------	BY OTHERS
T	OSYSU-CRH	TAMPER SWITCH POTTER #OSYSU-CRH	WEATHERPROOF OUTLET BOX	7770-0328-0010	
F	AQ225	16/2 STRANDED BARE COPPER CONDUCTORS, OVERALL UNSHIELDED WITH AQUASEAL	IN CONDUIT	7161-0859:0101	
F	D990	16/2 SOLD BARE COPPER CONDUCTORS, UNSHIELDED AND OVERALL JACKET FOR INDOOR	IN CONDUIT	7161-0859:0101	
F	D991	16/2 SOLID BARE COPPER CONDUCTORS, SHIELDED AND OVERALL JACKET FOR INDOOR	IN CONDUIT	7161-0859:0101	
F	THHN-2	12/2 COPPER FPLR	IN CONDUIT	7161-1727:0100	

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FIRE ALARM EQUIPMENT
LIST AND SEQUENCE OF OPERATION

Revisions	
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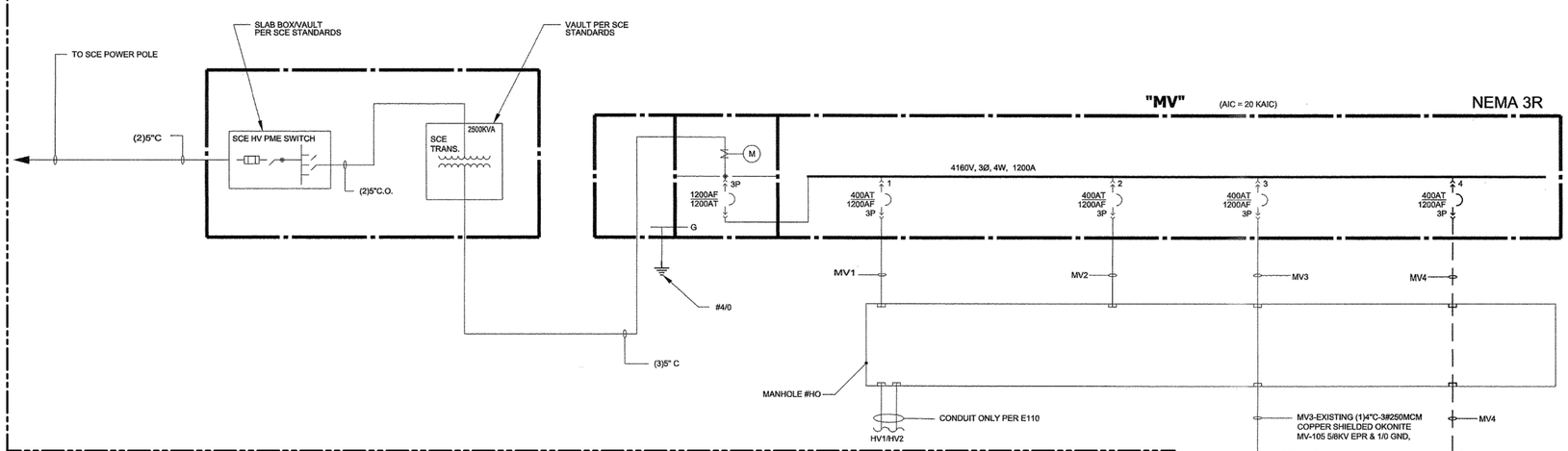
Sheet No.
E2.4

THIS SHEET WAS ORIGINALLY PRINTED ON A 24"x36" SHEET.

FILE PATH & NAME: P:\DRAWINGS\19-2177 OXNARD COLLEGE FIRE ACADEMY\19-2177 ELEC DWGS\E2.4DSA.DWG PLOTTED: 2:14 PM

EXISTING SCE SUBSTATION



REFERENCE NOTES

1. NEW 1"C-1#3/0 GROUND.
2. EXISTING (2) 3" C.O. PULL IN ONE CONDUIT 4#500Kcmil & 1#2 GROUND FOR FEEDER TO NEW PANEL "NP". CONDUCTORS SHALL BE COPPER TYPE "XHHW-2", 90° RATED.
3. EXISTING 3" C.O. POWER INTERCEPT THE LOWEST 3" CONDUIT AND PULL IN NEW 4#500Kcmil & 1#2 GROUND, COPPER TYPE "XHHW-2", 90° RATED. PROTECT THE OTHER 3" C.O. FOR FUTURE EXTENSION.

INDICATES AREA OF EXISTING ELECTRICAL SYSTEMS N.I.C.

MV3-EXISTING (1)4"C-3#250MCM COPPER SHIELDED OKONITE MV-105 5/8KV EPR & 1/0 GND,

EXISTING 500KVA 4160VAC - 480/277VAC 3Ø 4W

#1/0

EXISTING

FIRE & SHERIFF TRAINING BLDG 350KVA LOAD

EXISTING MANHOLE P6

EXISTING MANHOLE P7

EXISTING MANHOLE P7

EXISTING MANHOLE P8

EXISTING GROUND BUS

EXISTING 4"C-3#2, 5/8KV & 1#2 GRD.

EXISTING 150KVA TRANSFORMER "T1" 4160V TO 120/208V, 3PH, 4W

1/0

EXISTING UNDERGROUND PULL BOX

NEW 3"C - 4#500Kcmil AND 1#2 GROUND CONDUCTORS SHALL BE COPPER TYPE "XHHW-2", 90° RATED, L = ±180' VD% = 0.32%

NEW GROUND ROD, SEE 2/E3.1

NEW PANEL "DP"

NEW 2"C-4#2/0 & 1#6 GRD. DP. 38,40,42

DPA

NEW PANEL "DPA"

PANEL 'DP' — MAIN BKR: 400A-3P

208/120 VOLTS; 3 PHASE; 4 WIRE

LOCATION FIRE TECH APPARATUS BLDG — 400 A. BUSSING

FEEDER SEE 1-LINE DIAGRAM — ENTER CAB'T. AT BOTTOM SURFACE MTG.

	LOCATION	VOLT AMPS ϕA	ϕB	ϕC	LTG	REC	MIS	CIR	BKR		BKR	CIR	MIS	REC	LTG	VOLT AMPS ϕA	ϕB	ϕC	LOCATION
1	APPARATUS ROOM	1540			14	·	3	1	20-1		20-1	2	·	4		720			EXTERIOR - WEST
	APPARATUS ROOM		1440		12	·	·	3	20-1		20-1	4	·	6			1080		APPARAUS RM - EAST
	EXTERIOR LIGHTS			900	9	·	·	5	20-1		20-1	6	·	3				540	APPARATUS RM -EAST, STOR.
	APPARATUS ROOM	360			3	·	·	7	20-1		20-1	8	·	4	·	720			APPARATUS RM - SOUTH
	FUTURE AIR COMPRESSOR		1320		·	1	·	9	30-2		20-1	10	·	4	·		720		APPARATUS RM - SOUTH
	·			1320	·	·	·	11	·		20-1	12	·	4	·			720	EXTERIOR - SOUTH
	IDF RACK	360			·	2	·	13	20-1		20-1	14	·	4	·	720			EXTERIOR - SOUTH
	BACKBOARD		360		·	2	·	15	20-1		20-1	16	·	6			1080		APPARATUS RM. PWR CORD
2	FIRE ALARM CONTROL PANEL "FACP"			500	·	·	1	17	20-1		20-1	18	·	6				1080	APPARATUS RM. PWR CORD
	SPARE	·	·	·	·	·	·	19	20-1		20-1	20	·	4	·	720			EXTERIOR - NORTH
	SPARE	·	·	·	·	·	·	21	20-1		20-1	22	·	4	·		720		EXTERIOR - NORTH
	SPARE	·	·	·	·	·	·	23	20-1		20-1	24	·	4	·	720			APPARATUS RM - NORTH
	SPACE	·	·	·	·	·	·	25	20-1		20-1	26	·	4	·	720			APPARATUS RM - NORTH
	SPACE	·	·	·	·	·	·	27	20-1		20-1	28	·	·	·	·	·	·	SPARE
	SPACE	·	·	·	·	·	·	29	20-1		20-1	30	·	·	·	·	·	·	SPARE
	SPACE	·	·	·	·	·	·	31	20-1		20-1	32	·	·	·	·	·	·	SPARE
	SPACE	·	·	·	·	·	·	33	20-1		20-1	34	·	·	·	·	·	·	SPARE
	SPACE	·	·	·	·	·	·	35	20-1		20-1	36	·	·	·	·	·	·	SPARE
	SPACE	·	·	·	·	·	·	37	20-1		·	38	·	·	·	13520			
	SPACE	·	·	·	·	·	·	39	20-1		175-3	40	1	·	·		15060		PANEL "DPA"
	SPACE	·	·	·	·	·	·	41	20-1		·	42	·	·	·			15060	
	SPARE LOAD	·	·	·												·	·	·	SPARE LOAD

ϕA = 19380W; ϕB = 21780W; ϕC = 20840W

TOTAL CONNECTED LOAD: 21780 VA x 3 = 65340 VA OR 181.5 AMPS AT 208 VOLTS, 3 PHASE

LCL: 4240 VA x 25% = 1060 VA

FDL: 65340 VA + 1060 VA (LCL) = 66400 VA OR 184.4 AMPS

(1) LIGHT CIRCUITS, EXCEPT THE "EM" HOT CIRCUITS SHALL BE CONTROLLED FOR A 4-POLE ELECTRONIC TIME SWITCH.

(2) PROVIDE A RED CIRCUIT BREAKER HANDLE LOCK-ON DEVICE.

PANEL "DPA" — MAIN BKR: MLO

208/120 VOLTS; 3 PHASE; 4 WIRE

LOCATION APPARATUS ROOM — 225 A. BUSSING

FEEDER SEE 1-LINE DIAGRAM — ENTER CAB'T. AT BOTTOM SURFACE MTG.

	LOCATION	VOLT AMPS ϕA	ϕB	ϕC	LTG	REC	MIS	CIR	BKR		BKR	CIR	MIS	REC	LTG	VOLT AMPS ϕA	ϕB	ϕC	LOCATION
1	SPRINKLER FLOW ALARM BELL	180			·	·	1	1	20-1		·	2	·	·	·	2100			
	APPARATUS RM - WEST	·	360		·	2	·	3	20-1		35-3	4	1	·	·		2100		EXH FAN EF-01, 5HP
	APPARATUS RM - WEST			360	·	2	·	5	20-1		·	6	·	·	·			2100	
2	·	6000			·	·	·	7	·		·	8	·	·	·	1600			
	FUTURE WATER HEATER		6000		·	·	1	9	60-3		20-3	10	1	·	·		1600		FUTURE WASHER EXTRACTOR
	·			6000	·	·	·	11	·		·	12	·	·	·			1600	
	FUTURE WASHER	1500			·	1	·	13	20-1		·	14	·	·	·	1600			
	FUTURE DRYER		2500		·	1	·	15	30-2		20-3	16	1	·	·		1600		FUTURE WASHER EXTRACTOR
	·			2500	·	·	·	17	·		·	18	·	·	·			1600	
	FUTURE RECEPTACLE	360			·	·	2	19	20-1		15-1	20	1	·	·	180			FUTURE EXH FAN EF-02
	FUTURE RECEPTACLE		900		·	·	1	21	20-1		20-1	22	·	·	·		·	·	SPARE
	FUTURE RECEPTACLE			900	·	·	1	23	20-1		20-1	24	·	·	·		·	·	SPARE
	SPARE	·	·	·	·	·	·	25	20-1		20-1	26	·	·	·		·	·	SPARE
	SPARE	·	·	·	·	·	·	27	20-1		20-1	28	·	·	·		·	·	SPARE
	SPARE	·	·	·	·	·	·	29	20-1		20-1	30	·	·	·		·	·	SPARE
	SPACE	·	·	·	·	·	·	31	20-1		20-1	32	·	·	·		·	·	SPACE
	SPACE	·	·	·	·	·	·	33	20-1		20-1	34	·	·	·		·	·	SPACE
	SPACE	·	·	·	·	·	·	35	20-1		20-1	36	·	·	·		·	·	SPACE
	SPACE	·	·	·	·	·	·	37	20-1		20-1	38	·	·	·		·	·	SPACE
	SPACE	·	·	·	·	·	·	39	20-1		20-1	40	·	·	·		·	·	SPACE
	SPACE	·	·	·	·	·	·	41	20-1		20-1	42	·	·	·		·	·	SPACE
	SPARE LOAD	·	·	·												·	·	·	SPARE LOAD

ϕA = 13520W; ϕB = 15060W; ϕC = 15060W

TOTAL CONNECTED LOAD: 15060 VA x 3 = 45180 VA OR 125.5 AMPS AT 208 VOLTS, 3 PHASE

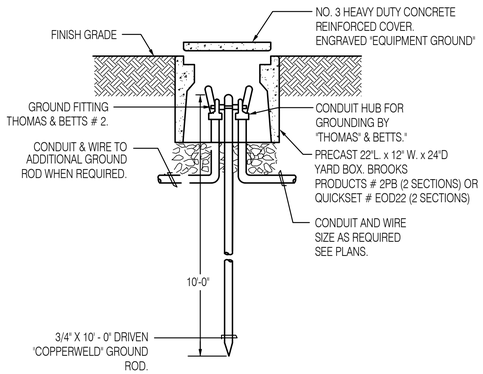
LCL: 0 VA

FDL: 45180 VA + 0 VA (LCL) = 45180 VA OR 125.5 AMPS

(1) PROVIDE A RED CIRCUIT BREAKER HANDLE LOCK-ON DEVICE

(2) PROVIDE A CIRCUIT BREAKER HANDLE LOCK-OFF DEVICE

(3) EXHAUST FANS SHALL BE CONTROLLER BY A 2-POLE 24 HOUR TIME SWITCH



GROUND ROD DETAIL

SCALE: NONE — 2 / E3.1

SINGLE LINE DIAGRAM

SCALE: NONE — 1 / E3.1

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

M-E Engineering, Inc.
Mechanical, Electrical and Plumbing (MEP) Consulting Engineers
1043 W. Gainsley Ave. North, Ste. 210
Westlake Village, California 91362
(626) 337-1905 / JOB #20-2177

REGISTERED PROFESSIONAL ENGINEER — JESSICA M. TYLER — No. E15221 — Exp. 6/30/2022 — ELECTRICAL — STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

SINGLE LINE DIAGRAM, PANEL SCHEDULE AND DETAIL

Revisions	R&A No:	A1B190I
	Date:	8/26/2020
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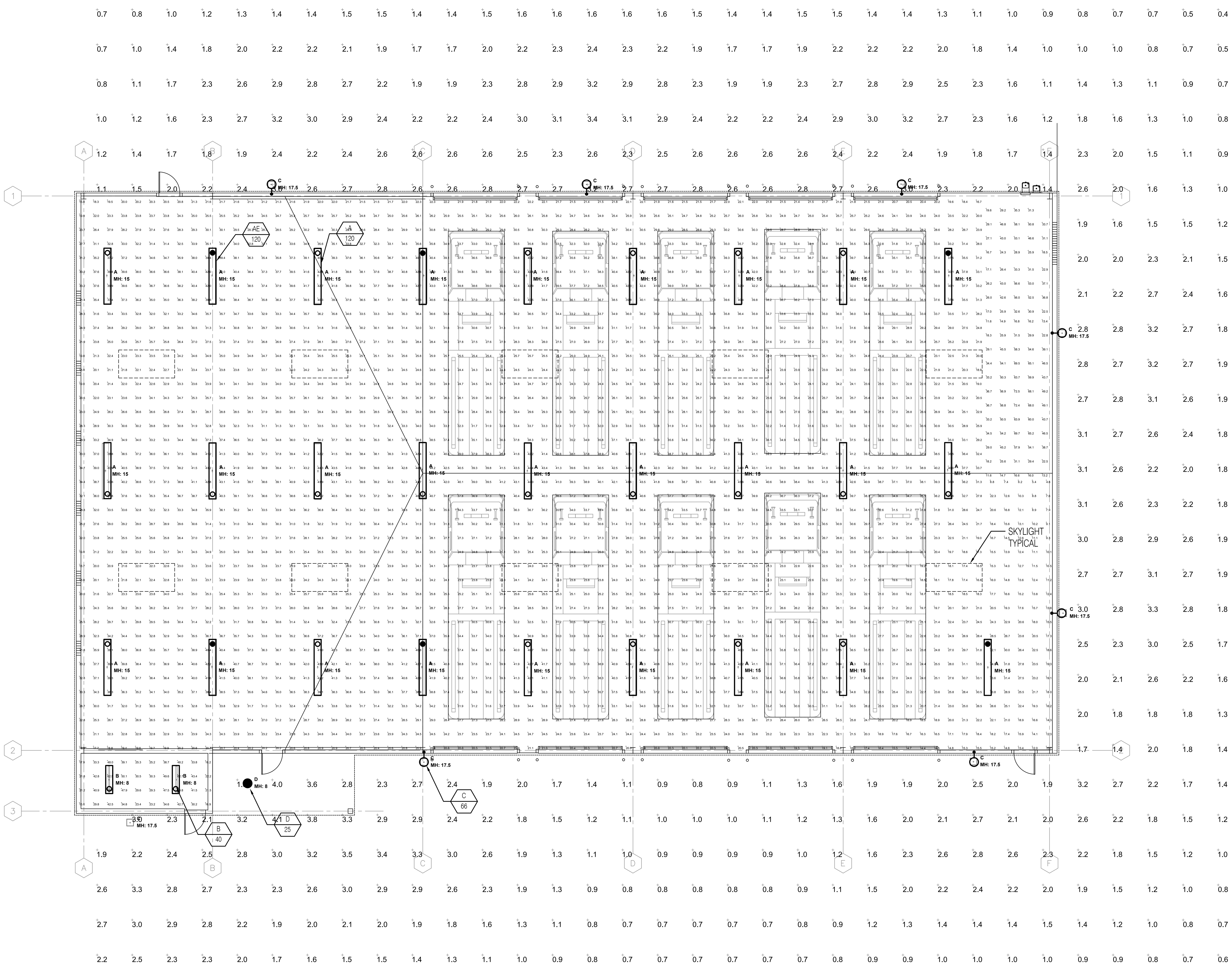
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E3.1



Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description
	27	A	SINGLE	Metalux - 8ILED-LD5-18-W-FL-UNV-L840-CD2-U
	2	B	SINGLE	Metalux - 4SNLED-LD5-41SL-LN-UNV-L840-CD1-U
	8	C	SINGLE	McGraw Edison - IST-AF-1000-LED-E1-T4FT-7050
	1	D	SINGLE	Fail-Safe - TRO-11-LD4-25-40-OPL-BZ-UNV-EDC1-PB120V-CSTG-EL5W-VRSD

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Exterior	Illuminance	Fc	1.94	4.1	0.4	4.85	10.25
Restroom 1_Workplane	Illuminance	Fc	34.16	58.1	16.7	2.05	3.48
Restroom 2_Workplane	Illuminance	Fc	34.50	56.6	17.0	2.03	3.33
Room 1_Workplane	Illuminance	Fc	41.00	72.5	11.6	3.53	6.25
Room 2_Workplane	Illuminance	Fc	35.93	62.7	16.6	2.16	3.78
Room 3_Workplane	Illuminance	Fc	30.17	44.4	4.6	6.56	9.65

LIGHTING PHOTOMETRIC PLAN

SCALE 1/8" : 1'-0"

0 5' 10' 20'

N

RASMUSSEN & ASSOCIATES
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LIGHTING PHOTOMETRIC PLAN

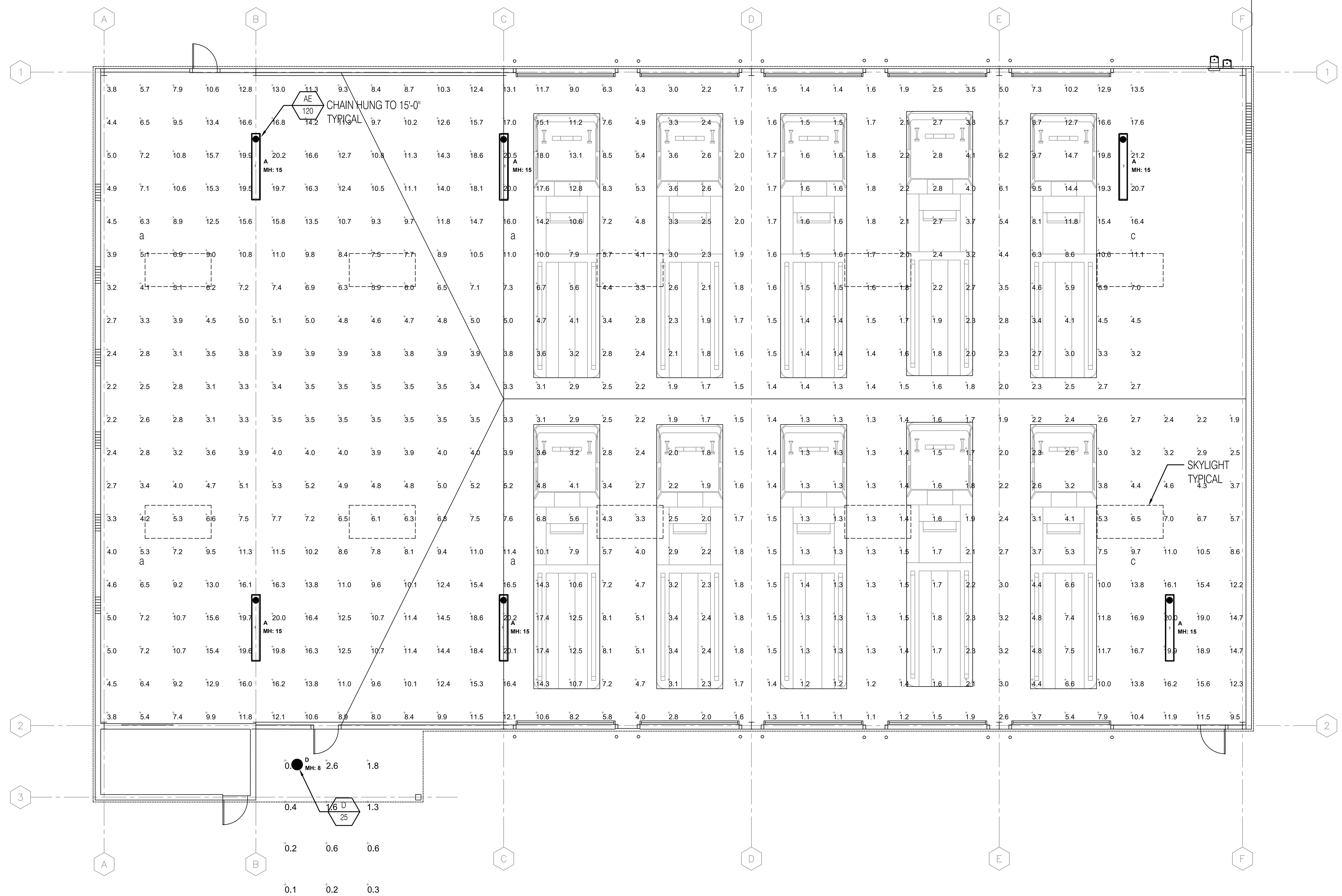
Revisions

R&A No: A18901
Date: 8/26/2020
Drawn:
Checked: CW
Consult. No:

FIRE TECHNOLOGY APPARATUS BUILDING

OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E4.1



EMERGENCY LIGHTING PHOTOMETRIC PLAN

SCALE 1/8" : 1'-0"

0 5' 10' 20'

N

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description
	6	A	SINGLE	Metalux - 8ILED-LD5-18-W-FL-UNV-L840-CD2-U
	1	D	SINGLE	Fail-Safe - TRO-11-LD4-25-40-OPL-BZ-UNV-EDC1-PB120V-CSTG-EL5W-VRSD

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Exterior	Illuminance	Fc	0.86	2.6	0.1	8.60	26.00
Room 3_Floor	Illuminance	Fc	6.29	21.2	1.1	5.72	19.27

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

MV Engineering, Inc.
Mechanical, Electrical and Plumbing (MEP) Consulting Engineers
1543 W. Garvey Ave. North, Ste. 210
West Covina, California 91790-2140
(626) 337-1965 / JOB #20-2177

REGISTERED PROFESSIONAL ENGINEER
No. E15221
Exp. 6/30/2022
ELECTRICAL
STATE OF CALIFORNIA

RASMUSSEN & ASSOCIATES
Architecture
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Interiors
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Fourth Floor
Ventura, California 93001
(805) 648-1234

EMERGENCY LIGHTING PHOTOMETRIC PLAN

Revisions		
	R&A No:	AI8I9OI
	Date:	8/26/2020
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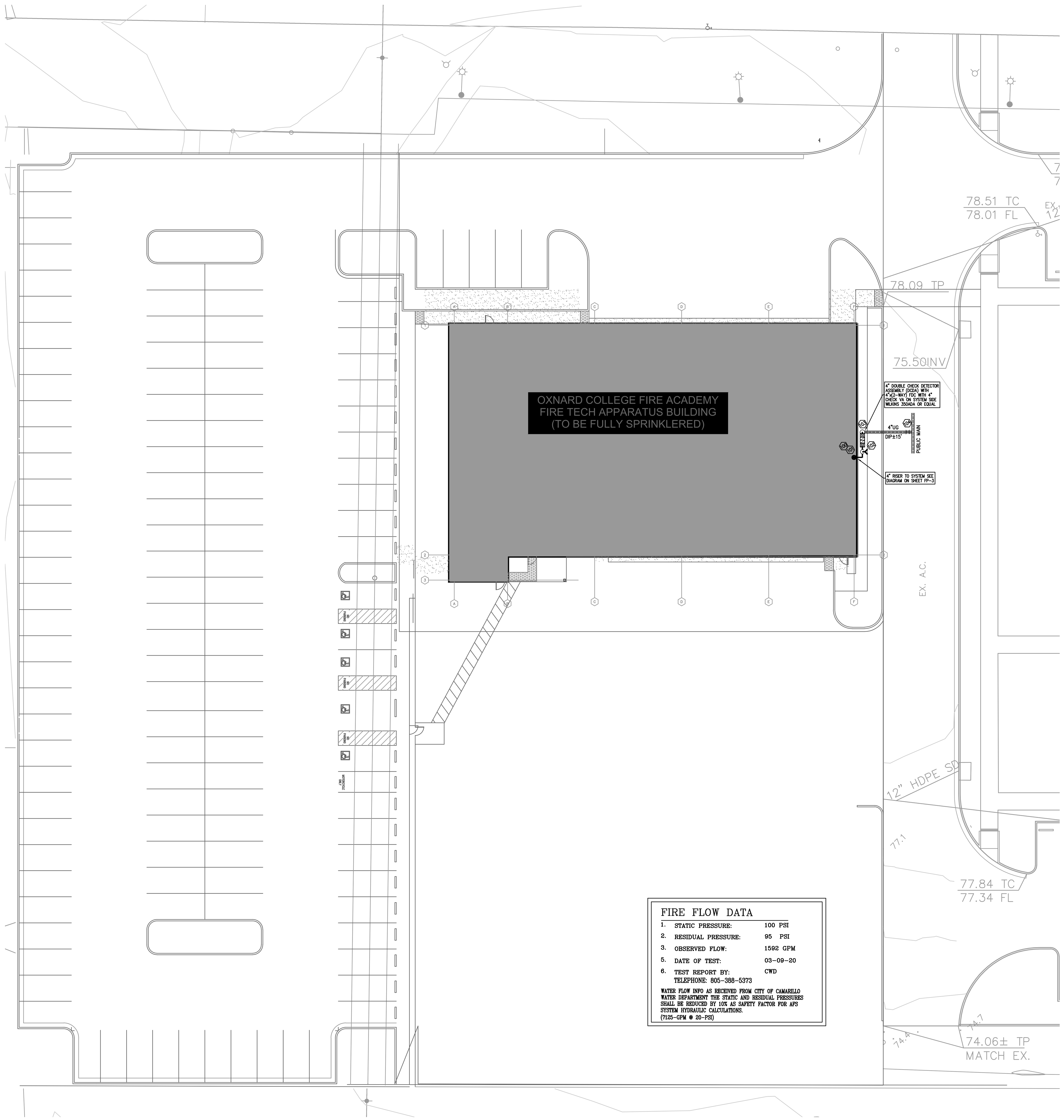
	Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
E4.2



FIRE FLOW DATA

1. STATIC PRESSURE: 100 PSI
2. RESIDUAL PRESSURE: 95 PSI
3. OBSERVED FLOW: 1592 GPM
5. DATE OF TEST: 03-09-20
6. TEST REPORT BY: CWD
TELEPHONE: 805-388-5373

WATER FLOW INFO AS RECEIVED FROM CITY OF CAMARILLO WATER DEPARTMENT THE STATIC AND RESIDUAL PRESSURES SHALL BE REDUCED BY 10% AS SAFETY FACTOR FOR AFS SYSTEM HYDRAULIC CALCULATIONS.
(7125-GPM @ 20-PSI)

ENLARGED SITE PLAN
Scale: 1" = 20'-0"

APPLICABLE CODES

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHALL FIRE REGULATIONS
TITLE 24 CCR, PART 1 – 2019 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
TITLE 24 CCR, PART 2 – 2019 CALIFORNIA BUILDING CODE, VOL.1&2 (CBC) (2018 IBC, AS AMENDED BY CA)
TITLE 24 CCR, PART 3 – 2019 CALIFORNIA ELECTRICAL CODE, (CEC) (2017 NEC, AS AMENDED BY CA)
TITLE 24 CCR, PART 4 – 2019 CALIFORNIA MECHANICAL CODE, (CMC)(2018 IAMPO UMC, AS AMENDED BY CA)
TITLE 24 CCR, PART 5 – 2019 CALIFORNIA PLUMBING CODE, (CPC) (2018 IAMPO UMC, AS AMENDED BY CA)
TITLE 24 CCR, PART 6 – 2019 CALIFORNIA ENERGY CODE
TITLE 24 CCR, PART 7 – NOT USED
TITLE 24 CCR, PART 8 – 2019 CALIFORNIA HISTORICAL CODE
TITLE 24 CCR, PART 9 – 2019 CALIFORNIA FIRE CODE, (CFC) (2018 IFC, AS AMENDED BY CA)
TITLE 24 CCR, PART 10 – 2019 CALIFORNIA EXISTING BUILDING CODE, (2018 IEBC), AS AMENDED BY CA)
TITLE 24 CCR, PART 11 – 2019 CALIFORNIA GREEN BUILDING CODE STANDARDS, (CALGreen CODE)
TITLE 24 CCR, PART 12 – 2019 CALIFORNIA REFERENCED STANDARDS

PARTIAL LIST OF APPLICABLE CODES

2019 CALIFORNIA BUILDING CODE (FOR SFM) REFERENCED STANDARDS CHAPTER 35
2019 CALIFORNIA FIRE CODE REFERENCED STANDARDS CHAPTER 80
2016 NFPA 13, AUTOMATIC SPRINKLER SYSTEMS (AS AMENDED BY CA)
2016 NFPA 72, NATIONAL FIRE ALARM CODE (AS AMENDED BY CA) SEE UL STD 1971 FOR "VISUAL DEVICES" 2016 NFPA 80, FIRE DOOR AND OTHER OPENING PROTECTIVES
2006 NFPA 253 CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS

CAL GREEN CODE

PROJECT MUST MEET THE MANDATORY MEASURES OF THE 2019 CALIFORNIA GREEN X BUILDING STANDARDS (CALGREEN) CODE (TITLE 24, PART 11 – EFFECTIVE 1/1/2020)

LEGEND

AFS	AUTO FIRE SPRINKLER	G-G	GROOVED-GROOVED ENDS
AFF	ABOVE FINISH FLOOR	GBR	GROOVED BOTH ENDS
BBD	BELOW BOT. OF DECK	GRC	GROOVED REDUCING CPLG
BFV	BUTTERFLY VALVE	GV	GATE VALVE
B.L.	BRANCH LINE	HGR	HANGER
BTS	BELOW TOP OF STEEL	(N)	NEW
CI	CAST IRON (PIPE)	NRS	NON-RISING STEM (VALVE)
CM	CROSS MAIN	OS&Y	OUTSIDE SCREW & YOKE
CPLG	COUPLING	O.H.	OVER-HEAD
CSP	COMBINED STANDPIPE	RPDA	REDUCED PRESS DETECT ASSY
CV	CHECK VALVE	PIV	POST INDICATOR VALVE
DCDA	DBLE CHECK DETECTOR ASSY	POC	POINT OF CONNECTION
DI	DUCTILE IRON PIPE	PRV	PRES. REGULATING VALVE
DSP	DRY STANDPIPE	S.B.	SWAY BRACE
(E)	EXISTING	SCH-	SCHEDULE (-10,-40, etc.)
E.T.R.	EXISTING TO REMAIN	SPRK	SPRINKLER
EX.H.	EXTRA HEAVY	SSP	PENDENT SPRINKLER
FDC	FIRE DEPT CONNECTION	SSU	UPRIGHT SPRINKLER
FH	FIRE HYDRANT	STD	STANDARD (WEIGHT)
FHV	FIRE HOSE VALVE	T.B.R.	TO BE REMOVED
FHVC	FIRE HOSE VA CABINET	TS	TAMPER SWITCH
FIT	FITTING	UG	UNDERGROUND
FS	FIRE SERVICE	VA	VALVE
GC	GENERAL CONTRACTOR	WSP	WET STANDPIPE
GR	GROOVED		
GRVD	GROOVED		

STOCK OF SPARE SPRINKLER:

THERE SHALL BE MAINTAINED ON THE PREMISES A SUPPLY OF SPARE SPRINKLERS (NEVER LESS THAN 6) SO THAT ANY SPRINKLERS THAT HAVE OPERATED OR BEEN DAMAGED IN ANY WAY MAY BE PROMPTLY REPLACED. THESE SPRINKLERS SHALL CORRESPOND TO THE TYPES AND TEMPERATURE RATINGS OF THE SPRINKLERS IN THE PROPERTY. THE SPRINKLERS SHALL BE KEPT IN A CABINET LOCATED WHERE THE TEMPERATURE TO WHICH THEY ARE SUBJECTED WILL AT NO TIME EXCEED 100 F (38 C).

A SPECIAL SPRINKLER WRENCH SHALL ALSO BE PROVIDED AND KEPT IN THE CABINET, TO BE USED IN THE REMOVAL AND INSTALLATION OF SPRINKLERS.

THE STOCK OF SPARE SPRINKLERS SHALL BE FOLLOWS:

1) FOR EQUIPMENTS NOT OVER 300 SPRINKLERS, NOT LESS THAN 6 SPRINKLERS.

2) FOR EQUIPMENTS 300 TO 1000 SPRINKLERS, NOT LESS THAN 12 SPRINKLERS.

3) FOR EQUIPMENTS ABOVE 1000 SPRINKLERS, NOT LESS THAN 24 SPRINKLERS.

4) STOCK OF SPARE SPRINKLERS SHALL INCLUDE ALL TYPES AND RATINGS INSTALLED.

SCOPE OF WORK:

DESIGN AND INSTALLATION OF COMPLETE AUTOMATIC FIRE SPRINKLER (AFS) SYSTEM WITHIN ALL AREAS OF NEW OXNARD COLLEGE FIRE ACADEMY, FIRE TECHNOLOGY APPARATUS BUILDING. WORK TO INCLUDE EXTERIOR FIRE SERVICE WITH ALL APPURTENANCES AND EQUIPMENT INCLUDING AFS RISER SYSTEM.

GENERAL NOTES:

1- SYSTEM DESIGN AND INSTALLATION SHALL BE PER: NFPA-13, 2016 ED., CALIFORNIA DSA AND ALL OTHER APPLICABLE STATE & LOCAL CODES AND STANDARDS.

2- ALL O.H. PIPE 2" & SMALLER SHALL BE SCHEDULE-40 BLACK STEEL PIPE WITH CAST OR DUCTILE IRON SCREWED FITTING.

3- ALL O.H. PIPE 2.5" & LARGER SHALL BE SCHEDULE-10 STEEL PIPE WITH ROLLED GROOVED ENDS, GROOVED FITTINGS AND MECHANICAL OR WELDED OUTLETS.

4- ALL VALVES CONTROLLING WATER SUPPLY SHALL BE SUPERVISED (BY GC & ALARM CONTRACTOR).

5- BUILDING SPRINKLER SYSTEM SHALL BE SUPERVISED CONTINUOUSLY BY A CENTRAL MONITORING STATION (BY GC & ALARM CONTRACTOR).

6- ALL MATERIAL SHALL BE UL-LISTED AND/OR APPROVED BY ONE OF THE DSA REQUIRED LISTING ORGANIZATIONS SUCH AS ICC, OSHPD, CITY OF LA, AND ISO GUIDE 65.

7- O.H. PIPING SHALL BE TESTED AT 200 PSI MIN. OR 50 PSI ABOVE MAX. SYSTEM PRESS. (WHICHEVER IS GREATER) FOR 2 HOURS PER NFPA-13, AND LOCAL CODES AND STANDARDS.

8- ALL VALVES OR SERVICEABLE COUPLERS SHALL REQUIRE ACCESS PANELS (BY GC)

UNDERGROUND (UG) SYSTEM (BY GC):

1- ALL DUCTILE IRON (DI) PIPE SHALL BE CLASS 51

2- ALL UG PVC PIPE SHALL BE CLASS 150 (C-900)

3- ALL UG FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT (MJ) CLASS 350 TYPE.

4- MINIMUM DEPTH OF BURRY FOR UNDERGROUND FIRE LINE PIPING SHALL BE 36-IN.

5- ALL UG JOINTS SHALL BE THRUST BLOCKED OR RESTRAINED WITH APPROVED RESTRAINING DEVICES SUCH AS RETAINING GLANDS AND "MEGA-LUGS" PER NFPA 24 AND STATE AND LOCAL STANDARDS.

6- ALL UG VALVES, MATERIALS AND FIRE PROTECTION SPECIALTIES SHALL BE OF LISTED TYPE PER NFPA, STATE AND LOCAL CODES AND STANDARDS.

7- ALL UG PIPING SYSTEM SHALL BE FLUSHED AND HYDROSTATICALLY TESTED @ 200 PSIG MINIMUM, OR 50 PSI ABOVE MAX SYSTEM PRESSURE (WHICHEVER IS GREATER) FOR AT LEAST 2 HOURS PER NFPA-13, STATE AND LOCAL CODES AND STANDARDS BEFORE CONNECTION TO OVERHEAD PIPING SYSTEM.

FIRE PROTECTION GENERAL NOTES:

1 - THE AUTOMATIC FIRE SPRINKLER (AFS) SYSTEM AS SHOWN ON THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW EXACT LOCATION OF PIPE AND SPRINKLER HEADS. PROSPECTIVE CONTRACTOR BEFORE SUBMITTING HIS BID, SHALL INSPECT THE PROJECT AND CONTRACT DOCUMENTS TO VERIFY ACCURACY OF PLANS AND INFORM THE OWNER OR THE OWNERS REPRESENTATIVE OF ALL DISCREPANCIES, SPRINKLER HEAD OMISSIONS, OR NEEDED ADDITIONAL WORK DUE TO STRUCTURAL, MECHANICAL OR OTHER OBSTRUCTIONS AND SHALL INCLUDE THE COST OF SUCH WORK IN HIS BID.

2- ALL PIPE LOCATION AND ELEVATIONS ARE FOR REFERENCE ONLY. AFS CONTRACTOR SHALL PREPARE NEW ELECTRONIC PLANS AND PROPERLY COORDINATE AFS PIPING WITH THE WORK OF OTHER TRADES SUCH AS MECHANICAL & HVAC EQUIPMENTS, DUCTS, PIPES, PLUMBING PIPING AND ELECTRICAL CONDUITS AND OTHER OBSTRUCTION. AFS CONTRACTOR SHALL INCLUDE THE COST OF SUCH COORDINATION, REDESIGN, HYDRAULIC CALCULATIONS AND THE COST OF ADDITIONAL MATERIALS AND LABOR ARISING FROM SUCH COORDINATION IN HIS BID.

3- UPON COMPLETION OF INSTALLATION AND BEFORE FINAL INSPECTION THE CONTRACTOR SHALL SUBMIT TO THE OWNER, (2) ELECTRONIC MEDIA CONTAINING ALL AS-BUILT PLAN FILES IN CAD FORMAT AND (3) SET OF REPRODUCIBLE VELLUM ACCURATELY DEPICTING AS-BUILT CONDITION OF THE INSTALLED SYSTEM.

LIST OF DRAWINGS:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

SEVAN ENGINEERING INC.
DESIGN & CALCULATION OF FIRE PROTECTION SYSTEMS
3909 OCEAN VIEW BL., STE A TEL.: 818 - 248-3366
MONTROSE, CA 91020 FAX : 818 - 248-3365
e-mail: sevaneng@pacbell.net CELL: 818 - 399-1707

REGISTERED PROFESSIONAL ENGINEER ★ STATE OF CALIFORNIA
ERICK MORADKHANIAN
No. 028703
Exp. 9.30.21
MECHANICAL

RASMUSSEN & ASSOCIATES
Architecture
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21 S. California Street
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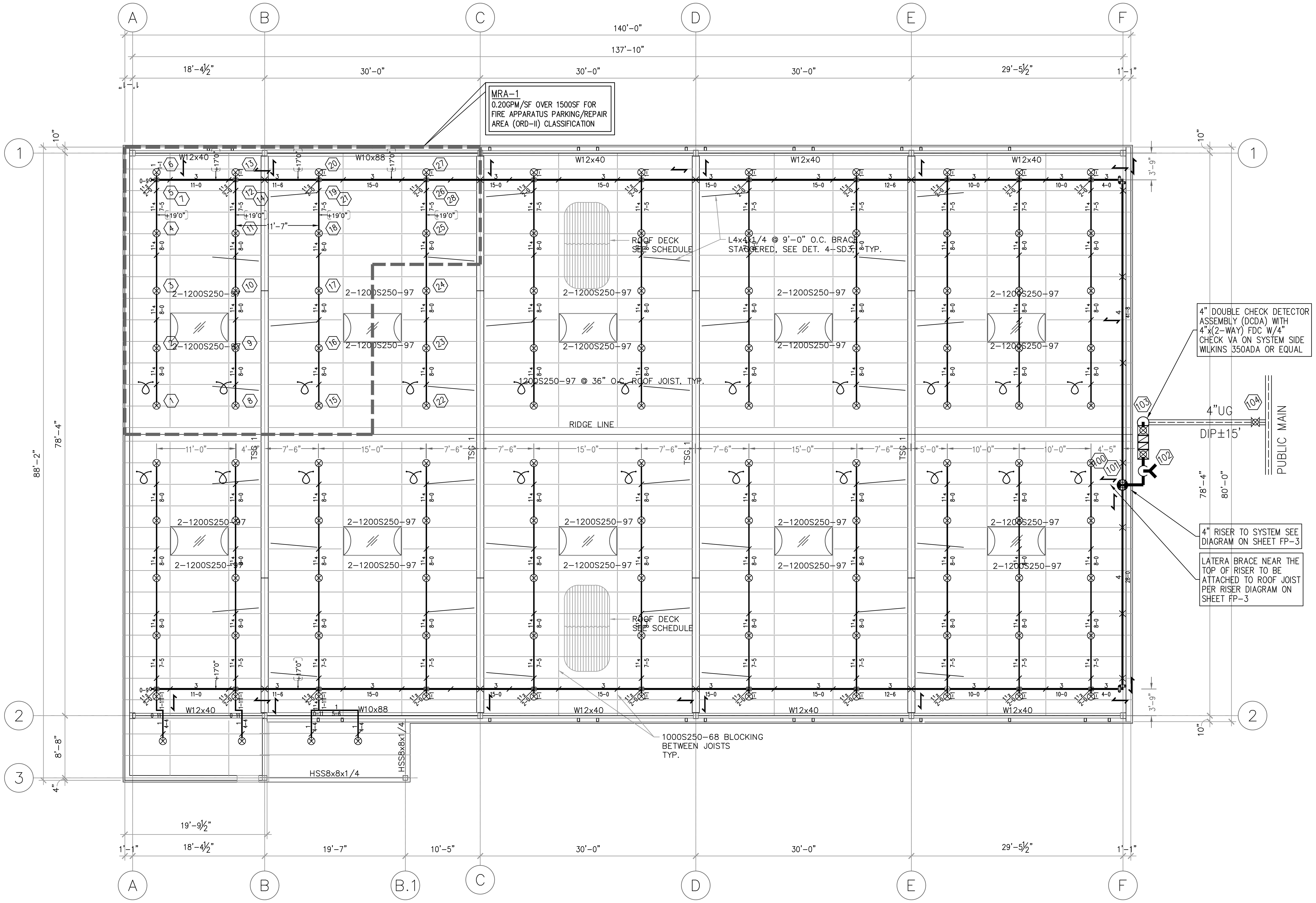
Ventura, California 93001
(805) 648-1234

SITE PLAN & NOTES

Revisions		
	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	EDICK M.
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY
APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
FP-1



SYMBOL LEGEND

- +9'9 — DENOTES ℄ ELEVATION OF PIPE AFF
- DENOTES HYDRAULIC CALCULATION NODE POINT
- DENOTES RIGID TYPE GROOVED COUPLING
- DENOTES FLEXIBLE GROOVED COUPLING
- DENOTES HANGER, SEE HANGER DETAILS ON SHEET FP-04
- DENOTES END OF BRANCH LINE RESTRAINT (EOL) SEE DETAIL-R1 & -R2 ON SHEET FP-04
- DENOTES LATERAL OR LONGITUDINAL SWAY BRACE, PER DETAILS ON SHEET FP-04
- DENOTES 4-WAY BRACE AT THE TOP OF RISERS, COMPRISED OF A LATERAL AND A LONGITUDINAL SWAY BRACE PER DETAILS ON SHEET FP-04

END-OF-LINE (EOL) NOTE:

1- PROVIDE (EOL) FOR ALL BRANCH LINES PER DETAIL R1 ON SHEET FP-4.
2- THE HANGER IN THE VICINITY OF (EOL) SHALL BE CAPABLE OF RESISTING UPWARD MOVEMENT OF THE BRANCH LINE.
2- (EOL) MAY BE OMITTED IF PIPE IS SUPPORTED BY HANGER RODS LESS THAN 6" LONG AS MEASURED FROM TOP OF PIPE TO THE POINT OF CONNECTION TO THE STRUCTURE.

OBSTRUCTION NOTE:

1- OBSTRUCTIONS TO SPRINKLERS DISCHARGE SHALL BE DEALT WITH IN COMPLIANCE WITH NFPA-13, SECTION 8.6.5.
2- SPRINKLERS SHALL BE INSTALLED UNDER ALL DROP CEILINGS, DUCTS, CATWALKS ETC., WIDER THAN 48" PER SECTION 8.6.5.3.3

FIRST FLOOR PLAN

Scale: 1/8" = 1'-0"

HYDRAULIC-SYSTEM

This building is protected by a Hydraulically Designed Automatic Sprinkler System.

Date Installed: xx/xx/xx

Location: FIRE TECHNOLOGY APPARATUS BUILDING

No. of Sprinklers: (17)

Basis of Design
1. DENSITY: 0.15 GPM/SQ. FT.
2. DESIGNED AREA OF DISCHARGE: 1500 SQ.FT.

System Demand
1. GPM DISCHARGE: 468 GPM
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER: 72.8 PSI

Installed By:

TO BE DETERMINED

NOTE:
THIS CALC PLATE SHALL BE PERMANENTLY ATTACHED TO THE RISER

HYDRAULIC DESIGN DATA MRA-1
Density 0.20 GPM/sq.ft, Area of appl. 1500 sq.ft
Max area/Sprk 130 sq.ft , System Area 11300 sq.ft
Sprk flow 468 GPM Res. Press 72.8 PSI @ Base of Riser
Total System Flow 718 GPM @ 83.8 PSI at CITY MAIN
Water Supply Static 100 PSI, Resid. 95 PSI at 1592 GPM
Fire Pump N/A GPM at PSI & PSI @ Churn
(17 SPRK CALC'ED) SYSTEM TYPE
WET ☒ DRY ☐ DELUGE ☐ PREACTION ☐

HEAD LEGEND		SYM	N.P.T.	ORIF.	K-FAC	FIN.	TEMP.	QUAN.
TYCO TY-B, QR, UPRIGHT SSU	(TY315)	⊗	1/2	1/2	5.6	BRZ	200	114
TYCO TY-B, QR, PENDENT SSP	(TY325)	⊠	1/2	1/2	5.6	BRZ	200	0
TYCO TY-B, SR, RECESSED PENDENT	(TY3225)	◉	1/2	1/2	5.6	CHR	155	0
TOTAL HEADS THIS SHEET								114

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-120764 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

SEVAN ENGINEERING INC.
DESIGN & CALCULATION OF FIRE PROTECTION SYSTEMS
3909 OCEAN VIEW BL., STE A TEL.: 818 - 248-3366
MONTROSE, CA 91020 FAX: 818 - 248-3365
e-mail: sevaneng@pacbell.net CELL: 818 - 399-1707

REGISTERED PROFESSIONAL ENGINEER EDICK MORADKHANIAN No. 028703 Exp. 9.30.21 MECHANICAL STATE OF CALIFORNIA

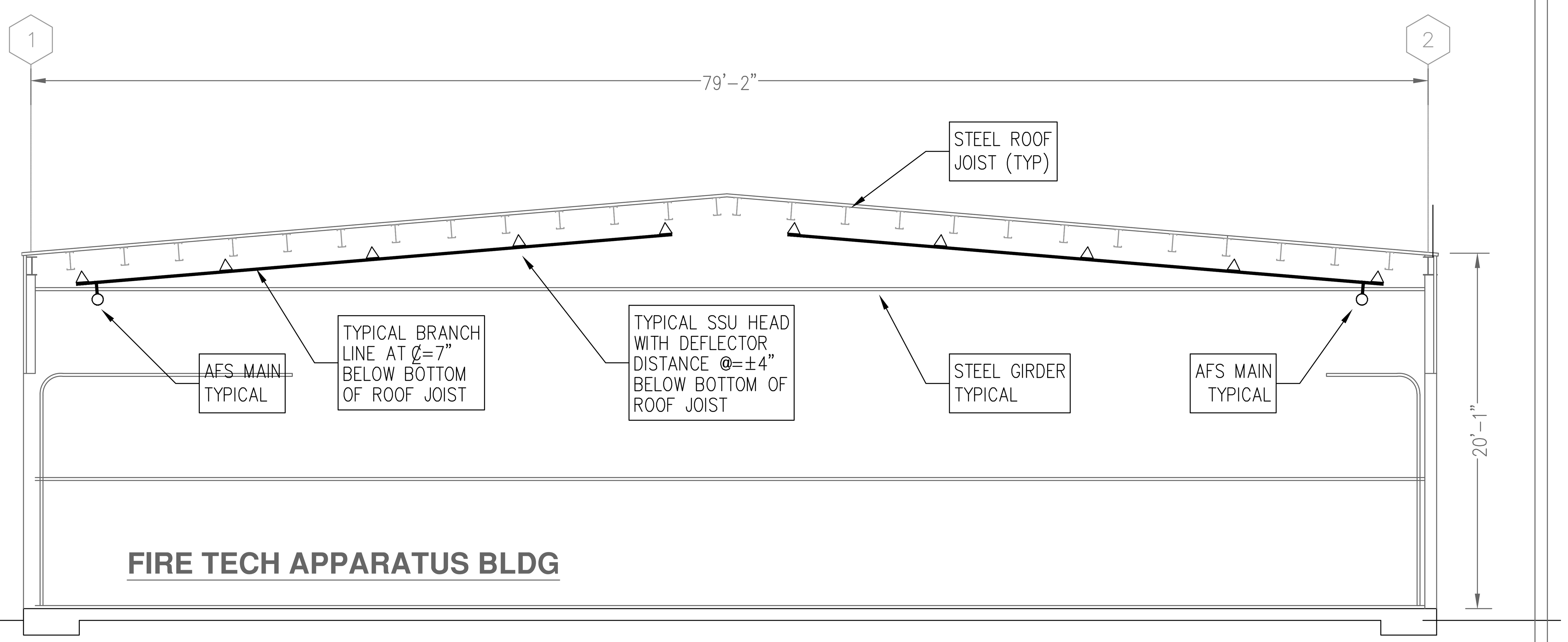
RASMUSSEN & ASSOCIATES
Architecture
Planning
Interiors
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

FIRST FLOOR PLAN

Revisions	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	EDICK M.
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
FP-2



BUILDING SECTION A-A

SC: 1/8"=1'-0"

FIRE SERVICE NOTES:

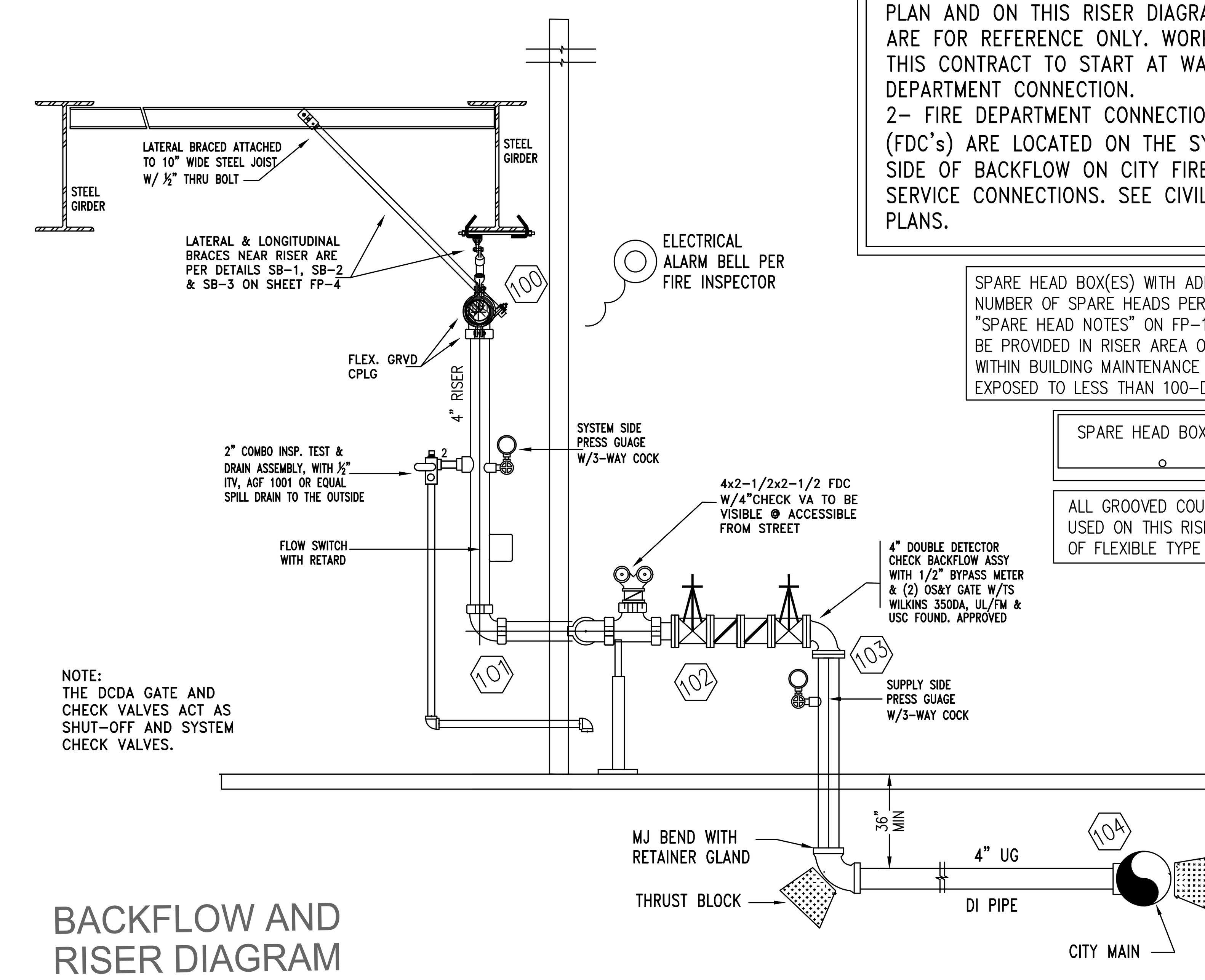
1- SITE UNDERGROUND PIPING AND APPURTENANCES AS SHOWN ON SITE PLAN AND ON THIS RISER DIAGRAM ARE FOR REFERENCE ONLY. WORK IN THIS CONTRACT TO START AT WATER DEPARTMENT CONNECTION.

2- FIRE DEPARTMENT CONNECTION (FDC's) ARE LOCATED ON THE SYSTEM SIDE OF BACKFLOW ON CITY FIRE SERVICE CONNECTIONS. SEE CIVIL PLANS.

SPARE HEAD BOX(ES) WITH ADEQUATE NUMBER OF SPARE HEADS PER NOTE "SPARE HEAD NOTES" ON FP-1 SHALL BE PROVIDED IN RISER AREA OR WITHIN BUILDING MAINTENANCE OFFICE EXPOSED TO LESS THAN 100-DEG-F.

SPARE HEAD BOX

ALL GROOVED COUPLINGS USED ON THIS RISER ARE OF FLEXIBLE TYPE



BACKFLOW AND RISER DIAGRAM

SC: NONE

SEVAN ENGINEERING INC.
DESIGN & CALCULATION OF FIRE PROTECTION SYSTEMS
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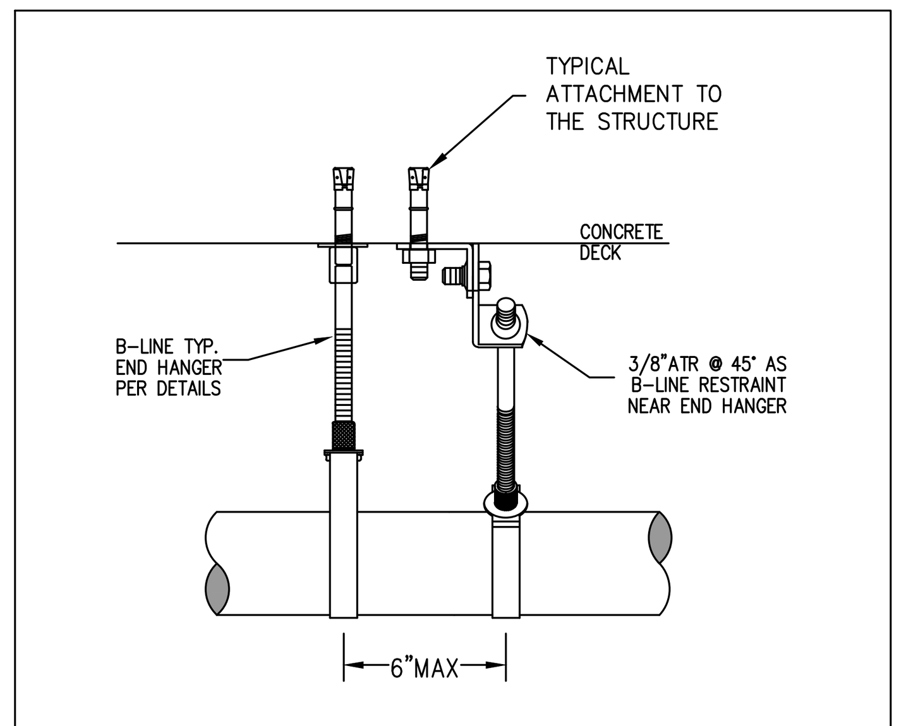
21 S. California Street
Fourth Floor
Ventura, California 93001
(805) 648-1234

RISER DETAIL & SECTION

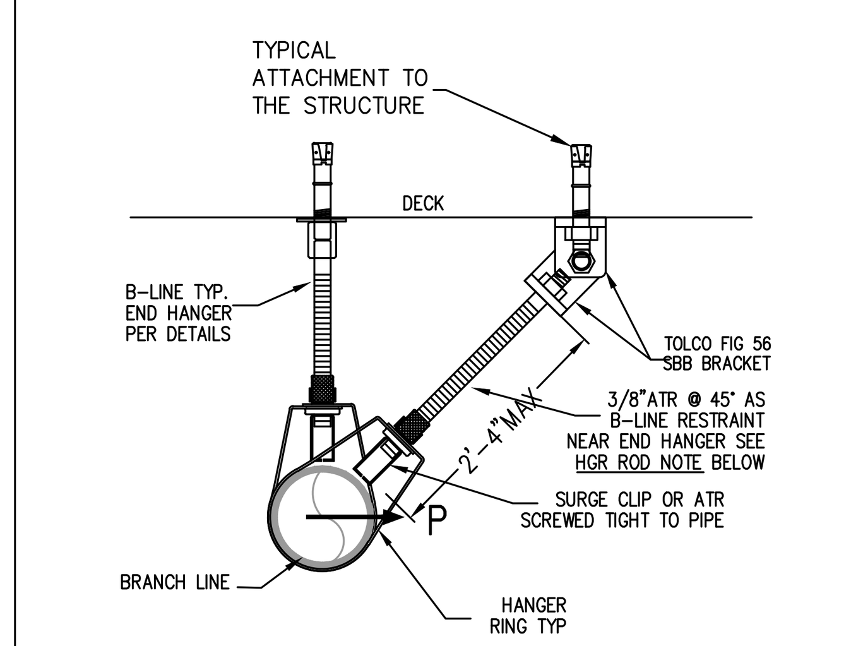
Revisions		
	R&A No:	A181901
	Date:	8/26/2020
	Drawn:	EDICK M.
	Checked:	CW
	Consult. No:	

FIRE TECHNOLOGY APPARATUS BUILDING
OXNARD COLLEGE FIRE ACADEMY
104 DURLEY AVENUE
CAMARILLO, CALIFORNIA 93010

Sheet No.
FP-3



SIDE ELEV. CONNECT TO DECK

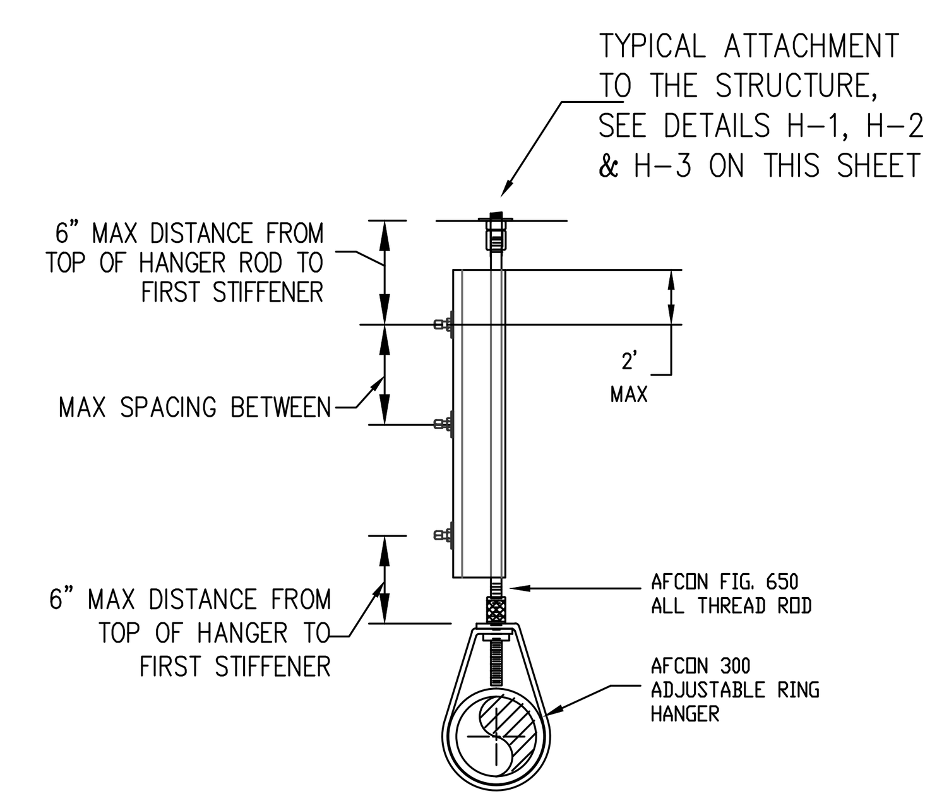


FRONT ELEV.

NOTE:
IN ADDITION TO STANDARD SPLAY WIRE OR LATERAL BRACE DETAIL, THE ABOVE DETAIL MAY BE USED FOR RESTRINING OF BRANCH LINES PER NFPA13, 2016 ED PARA 9.3.6.1(5)

R-1 — END-OF-LINE (EOL) DETAIL
SCALE: NONE

END-OF-LINE (EOL) NOTE:
1- PROVIDE (EOL) FOR ALL BRANCH LINES PER DETAIL R1 ON SHEET FP-4.
2- THE HANGER IN THE VICINITY OF (EOL) SHALL BE CAPABLE OF RESISTING UPWARD MOVEMENT OF THE BRANCH LINE PIPE.
2- (EOL) MAY BE OMITTED IF PIPE IS SUPPORTED BY HANGER RODS LESS THAN 6" LONG AS MEASURED FROM TOP OF PIPE TO THE POINT OF CONNECTION TO THE STRUCTURE.



ROD STIFFENERS ARE REQUIRED ONLY ON HANGER THAT HAVE SEISMIC BRACING ATTACHED AT OR WITHIN 4" OF THE ROD. A MIN OF (2) STIFFENERS MUST BE INSTALLED

AFCON PART #650 ROD STIFFENER

ROD SIZE	MAX ROD LENGTH W/OUT STIFFENER	MAX SPACING BETWEEN AFCON # 650
3/8"	14'	14'
1/2"	20'	20'
5/8"	30'	30'

RS-1 — HANGER ROD STIFFENER DETAIL
SCALE: NONE (OSHPD OPA-0601)

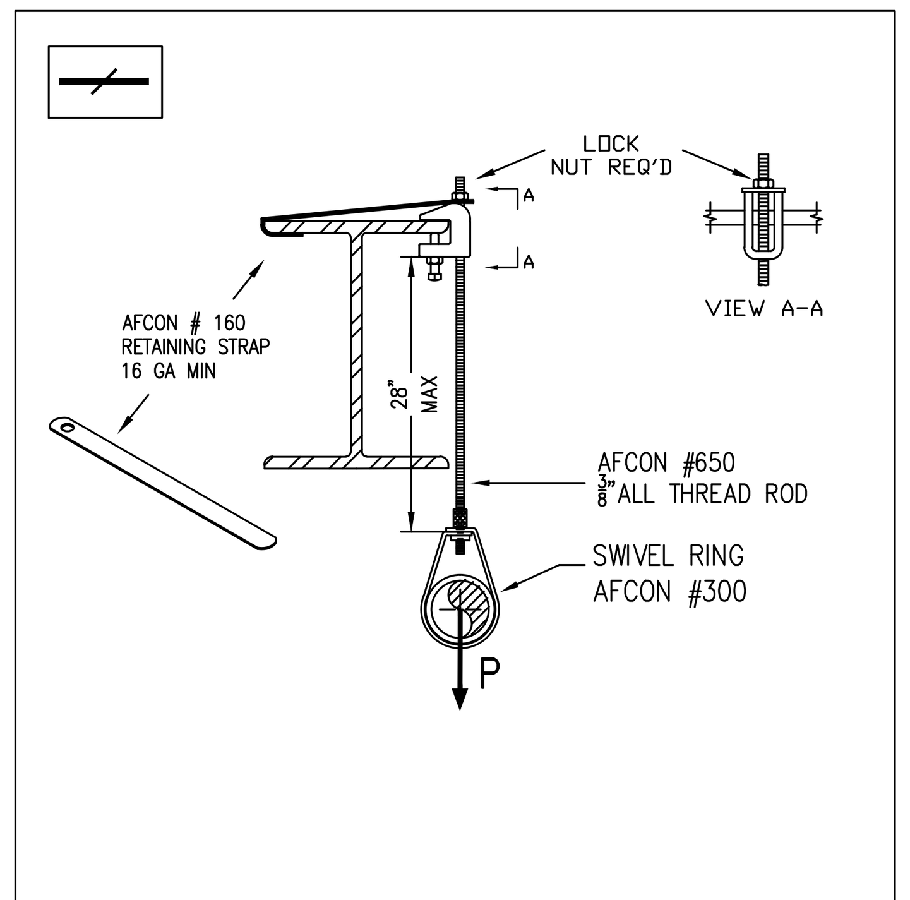
HANGER ROD/ SWAY BRACE NOTE:
1- SWAY BRACES SHALL BE LOCATED WITHIN 4-IN OF A HANGER.
2- HANGER NEAR SWAY BRACE SHALL BE PROVIDED W/ AFCON 650 ROD STIFFER IF:
A)- 3/8" ROD IS LONGER THAN 14-IN
B)- 1/2" ROD IS LONGER THAN 20-IN

PIPE SUPPORT SWAY BRACE NOTES:
1- ALL PIPE SUPPORT HANGERS AND SWAY BRACE MATERIALS SHALL BE UL/LISTED AND/OR FM APPROVED AS MANUFACTURED BY AFCON.
2- ALL SWAY BRACE AND ANCHORAGE ARE PREAPPROVED BY OSHPD PER OPA-0601

MAXIMUM HANGER SPACING TABLE

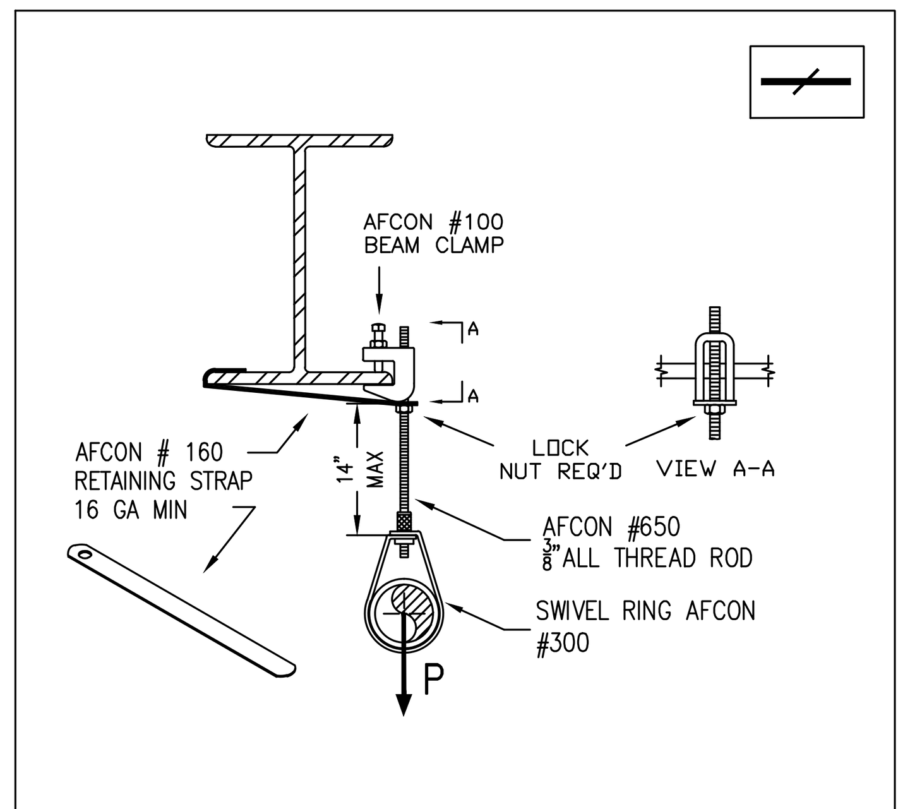
PIPE SIZE	MAX SPACING	LOAD/HGR
1" UP TO 1 1/4" (S40)	12'-0"	35+250 LB
1 1/2" UP TO 2" (S40)	15'-0"	77+250 LB
2 1/2" UP TO 3" (S10)	15'-0"	147+250 LB
4" (S10)	15'-0"	177+250 LB

W-1 — PIPE LOADS PER HANGER
SCALE: NONE



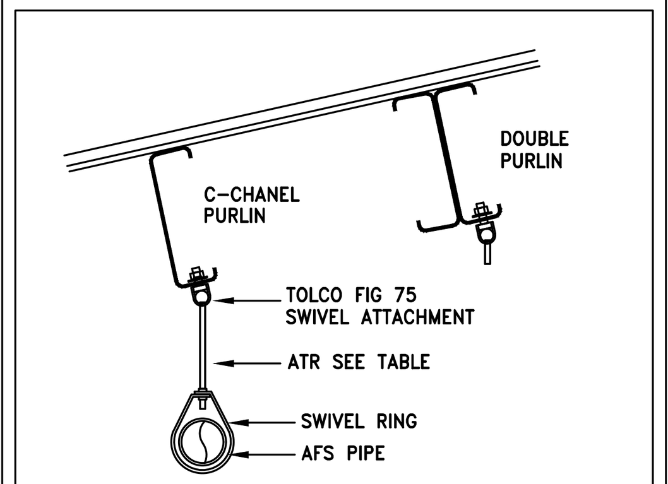
TOP BEAM CLAMP, ROD AND RING

H-1 — BEAM CLAMP HANGER DETAIL
SCALE: NONE



BOTTOM BEAM CLAMP, ROD AND RING

H-2 — BEAM CLAMP HANGER DETAIL
SCALE: NONE

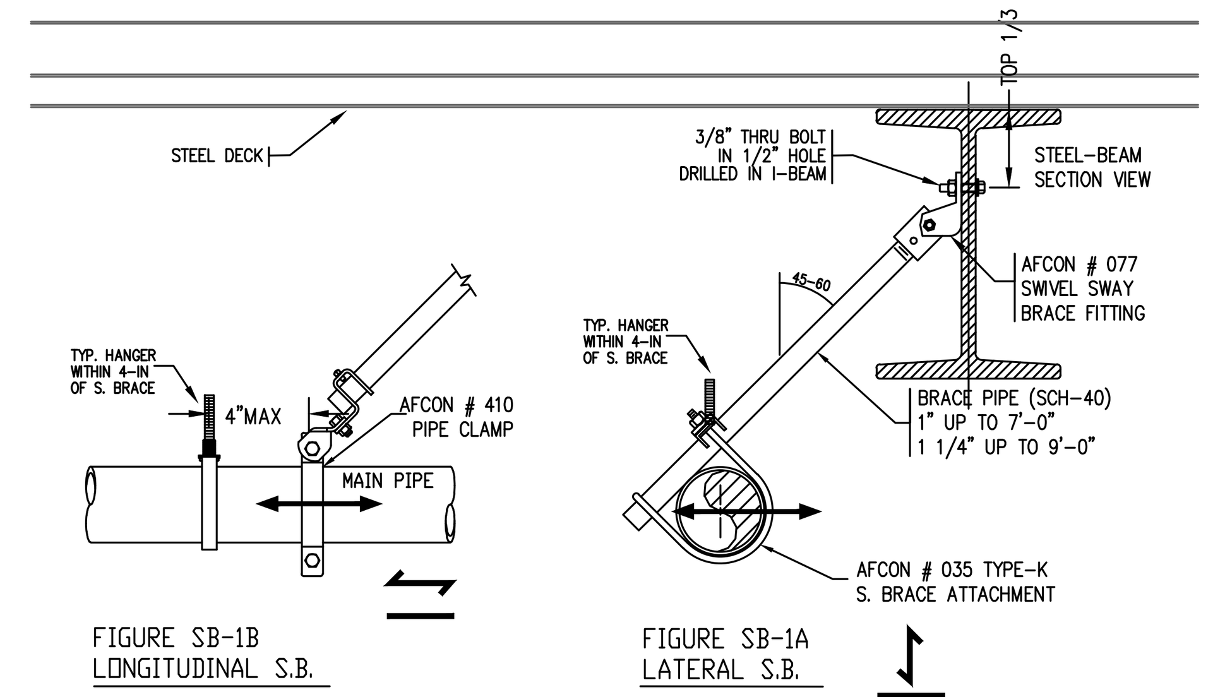


HANGER TABLE

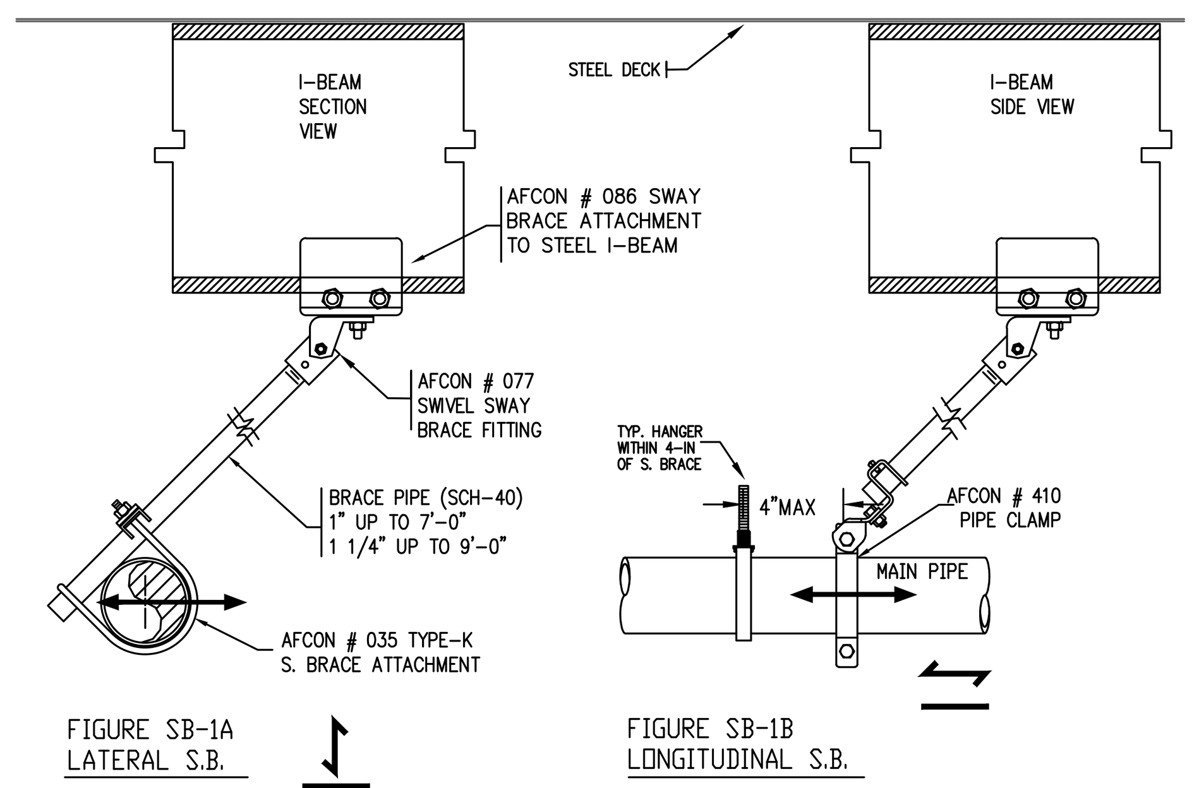
PIPE SIZE		UP TO 2"	2 1/2"-4"	5", 6"	8"
FASTENER	LAG SCREW	N/A	N/A	N/A	N/A
	THRU BOLT	3/8"	3/8"	N/A	N/A
ATR		3/8"	3/8"	N/A	N/A

HANGER CONNECTION TO STEEL PURLINS

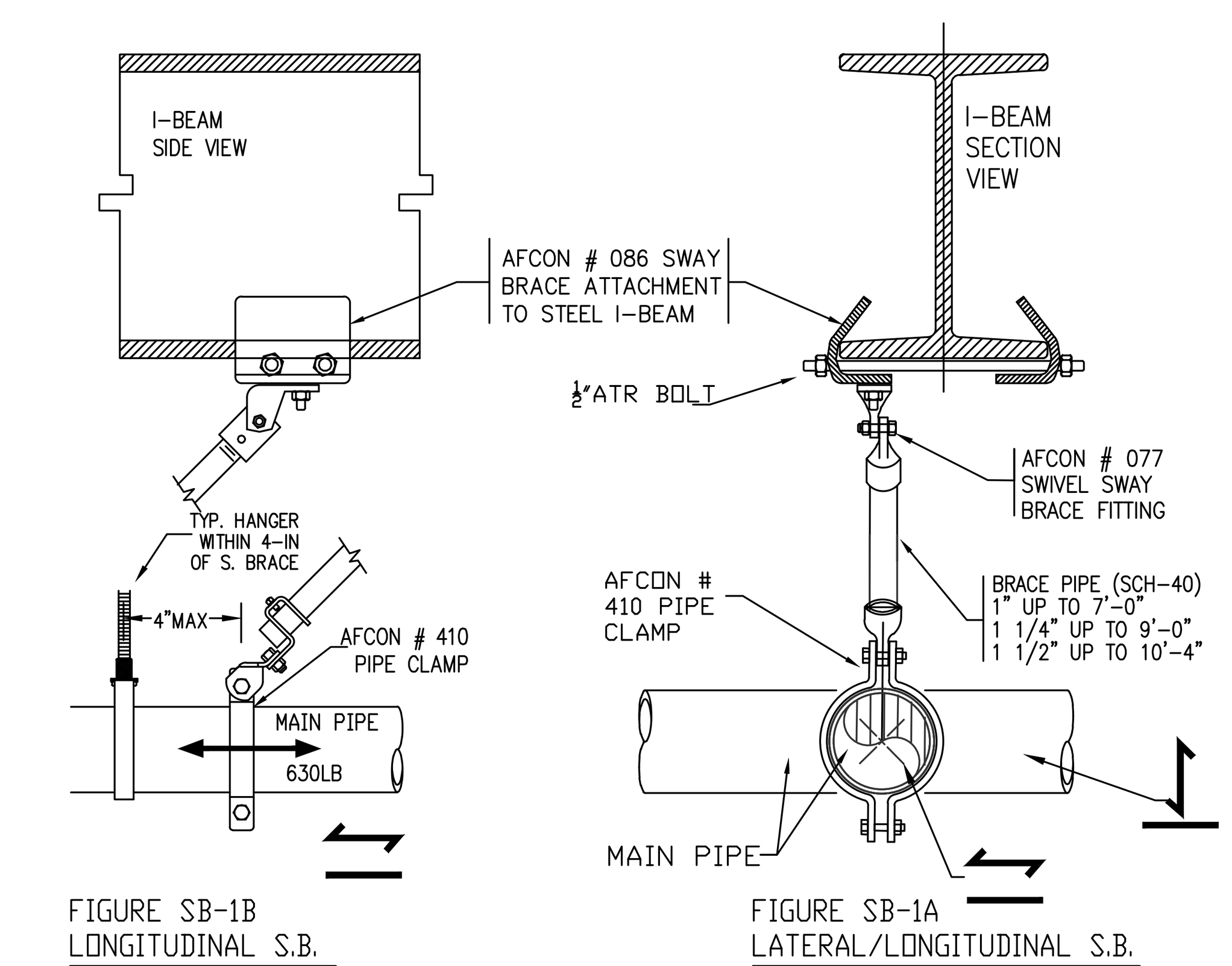
H-3 — STEEL JOIST HANGER
SCALE: NONE



SB-1 — SWAY BRACE ATTACHMENT TO STEEL I-BEAM DETAIL
SCALE: NONE (OSHPD OPA-0601)



SB-2 — SWAY BRACE ATTACHMENT TO STEEL I-BEAM DETAIL
SCALE: NONE (OSHPD OPA-0601)



SB-3 — SWAY BRACE ATTACHMENT TO STEEL I-BEAM WITH LOADS PARALLEL TO STEEL I-BEAM
SCALE: NONE (OSHPD OPA-0601)

PIPE SUPPORT SWAY BRACE NOTES:
1- ALL PIPE SUPPORT HANGERS AND SWAY BRACE MATERIALS SHALL BE UL/LISTED AND/OR FM APPROVED AS MANUFACTURED BY AFCON.
2- ALL SWAY BRACE AND ANCHORAGE ARE PREAPPROVED BY OSHPD PER OPA-0601

ANGLE FROM VERT.	AFCON #086 DESIGN LOADS (LB) ALONG BEAMS	ACROSS BEAMS
90°	1265	2015
60°	1096	1745
45°	894	1425
30°	633	1008

SEISMIC BRACING CALCULATIONS

PROJECT: OCFA FIRE TECH APPARATUS BLDG
ADDRESS: DURLEY AVE
CAMARILLO, CALIFORNIA

CONTRACTOR: TBD
ADDRESS:
TELEPHONE:
FAX:

BRACE INFORMATION

LENGTH OF BRACE: 7'-0"
DIAMETER OF BRACE: 1"
TYPE OF BRACE: SCH. 40
ANGLE OF BRACE: 60° TO 90°
LEAST RADIUS OF GYRATION: .42
L/R VALUE: 200
MAXUMUM HORIZONTAL LOAD: 1604

SEISMIC BRACE ATTACHMENTS

STRUCTURE ATTACHMENT FITTING OR TENSION-ONLY BRACING SYSTEM:
MAKE: AFCON MODEL: #086 I-BEAM ATTACHMENT
LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745

SWAY BRACE (PIPE ATTACHMENT FITTING):
MAKE: AFCON MODEL: #035 MODEL-K
LISTED LOAD RATING: 2765 ADJUSTED LOAD RATING PER 9.3.5.10.3: 2394

FASTENER INFORMATION

ORIENTATION OF CONNECTING SURFACE: "E"
FASTENER:
TYPE: THROUGH BOLT #086 I-BEAM ATTACHMENT
DIAMETER: 1/2"
EMBEDMENT: N/A
MAXIMUM LOAD: 1096 LB
USE 633-LB PER TBL 9.3.5.5.2(a)

SEISMIC BRACE ASSEMBLY SEE DETAIL SB-1 FOR LATERAL

BRACE IDENTIFICATION NO. (TO BE USED ON PLANS)
☒ LATERAL BRACE ☐ LONGITUDINAL BRACE

SPRINKLER SYSTEM LOAD CALCULATIONS [Fpw=CpxWp] FOR Cp=0.80

DIAMETER	SCHEDULE	LENGTH (ft)	TOTAL LENGTH (ft)	Cp x Wp (WEIGHT/ft)	TOTAL WEIGHT
1 in.	SCH. 40	4	4 ft	0.80 x1.81 lb/ft	6 lb
1.25 in.	SCH. 40	2x32	64 ft	0.80 x2.93 lb/ft	150 lb
1.5 in.	SCH. 40	4	4 ft	0.80 x3.61 lb/ft	12 lb
2 in.	SCH. 40	0	0 ft	0.80 x5.13 lb/ft	0 lb
2.5 in.	SCH. 10	0	0 ft	0.80 x5.89 lb/ft	0 lb
3 in.	SCH. 10	30	30 ft	0.80 x7.94 lb/ft	220 lb
4 in.	SCH. 10	0	0 ft	0.80 x11.78 lb/ft	0 lb
6 in.	SCH. 10	0	0 ft	0.80 x23.03 lb/ft	0 lb
8 in.	SCH. 10	0	0 ft	0.80 x40.08 lb/ft	0 lb
CALC AREA "A" ON SHEET FP-2: 446 LB < 633 LB THUS OK.				SUB TOTAL:	388 lb
				ADD 15% FOR FITTINGS:	58 lb
				TOTAL LOAD (Fpw):	446 lb

LONGITUDINAL SWAY BRACE HORIZONTAL LOAD CALCULATIONS (SB-1B)

DIAMETER	SCHEDULE	LENGTH (ft)	TOTAL LENGTH (ft)	Cp x Wp (WEIGHT/ft)	TOTAL WEIGHT
3 in.	SCH. 10	80	80 ft	0.80 x7.94 lb/ft	508 lb
CALC AREA BASED ON DETAIL SB-1 A 80-FT LENGTH OF 3" MAIN 587 LB < 1200 LB THUS OK ("F" ORIENTATION)				SUB TOTAL:	508 lb
				ADD 15% FOR FITTINGS:	79 lb
				TOTAL LOAD (Fpw):	587 lb

CALC AREA: 3" MAIN ON SHEET FP-2

SWAY BRACE DESIGN BASIS PER ASCE 7.10 STANDARDS.:

FOR THE PROJECT OXNARD COLLEGE FIRE ACADEMY LOCATED AT 104 DURLEY AVE, CAMARILLO, CA 93010 LATITUDE= 34.209, LONGITUDE= -119.074. FROM USGS.GOV WEB SITE USING "JAVA GROUND MOTION PARAMETER CALCULATE" PER ASCE 7.10 STANDARDS, SEISMIC DESIGN PARAMETER Ss (SHORT PERIOD RESPONSE PARAMETER) IS CALCULATED TO BE: Ss= 1.692
SEISMIC COEFFICIENT TABLE 9.3.5.9.3, OF NFPA-13, 2016 EDITION, INDICATES A "SEISMIC COEFFICIENT VALUE" OF Cp=0.79 (USE CP=0.80) FOR USE IN CALCULATING THE "HORIZONTAL FORCE" Fpw=CpWp, USED IN SEISMIC BRACING CALCULATIONS FORM AS SHOWN ON THIS SHEET. A 15% SAFETY FACTOR IS INCLUDED IN THE CALCULATION.

IDENTIFICATION STAMP
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APP: 03-120764 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 11/19/2020

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REGISTERED PROFESSIONAL ENGINEER · STATE OF CALIFORNIA · EDICK MORADKHANIAN · No. 028703 · Exp. 9.30.21 · MECHANICAL

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MISCELLANEOUS DETAILS
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Sheet No.
FP-4