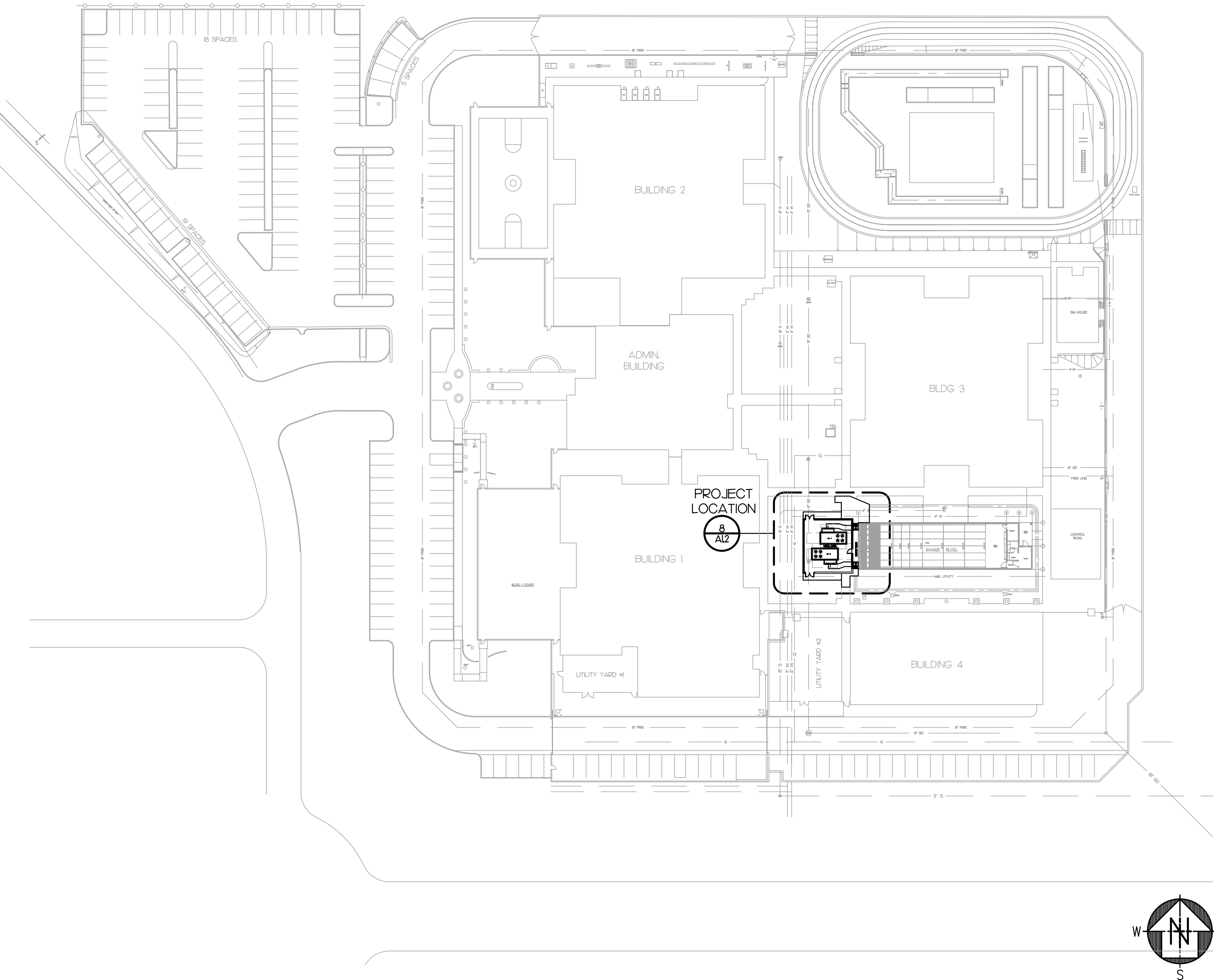


SAN BERNARDINO COUNTY  
PROBATION DEPARTMENT  
WEST VALLEY REGIONAL TRAINING CENTER  
INDOOR GUN RANGE AIR CONDITIONING AND  
HEATING INSTALLATION

PROJECT # 10.10.1151  
9478 ETIWANDA AVE.  
RANCHO CUCAMONGA, CA 91730



REFERENCE SITE PLAN

N.T.S.

LIST OF APPLICABLE CODES

ALL WORK SHALL COMPLY WITH CURRENTLY ADOPTED:

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.  
(2018 INTERNATIONAL BUILDING CODE)

2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.  
(2018 NATIONAL ELECTRICAL CODE)

2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.  
(2018 UNIFORM MECHANICAL CODE)

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.  
(2018 UNIFORM PLUMBING CODE)

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

2019 CALIFORNIA ENERGY CODE

AMERICANS WITH DISABILITIES ACT 1990 WITH 2010 ADA STANDARDS FOR ACCESSIBLE  
DESIGN AND 2010 REVISIONS TO TITLE II

CODE ANALYSIS

1. GENERAL CONTRACTOR SHALL PROVIDE SECURITY/TEMPORARY FENCING FOR DURATION OF THE PROJECT AS REQUIRED AT NO ADDITIONAL COST TO OWNER.
2. GENERAL CONTRACTOR SHALL PROVIDE AND PAY FOR ANY REQUIRED SURVEY WORK BY A LICENSED CALIFORNIA SURVEYOR.
3. GENERAL CONTRACTOR SHALL PROVIDE BUILDING ACCESS TO THE STAFF DURING NORMAL OPERATING HOURS DURING CONSTRUCTION - COORDINATE WITH OWNER.

NOTES TO GENERAL CONTRACTOR

OWNER  
SAN BERNARDINO COUNTY  
REAL ESTATE SERVICES DEPARTMENT  
PROJECT MANAGEMENT DIVISION  
MARION MICHAEL, PROJECT MANAGER  
385 N. ARROWHEAD AVE., THIRD FLOOR  
SAN BERNARDINO, CA 92415  
PHONE: (909) 531-1582  
EMAIL: Marion.Michael@res.sbcounty.gov

ARCHITECTURAL

STK ARCHITECTURE, INC.  
TONY FINALDI, ARCHITECT  
42095 ZEVO DR., SUITE A15  
TEMECULA, CA 92590  
PHONE: (951) 296-9100  
FAX: (951) 296-6079  
EMAIL: Tfinaldi@stkinc.com

CIVIL ENGINEER

A.J. FRICK CIVIL ENGINEERING  
ARNE FRICK  
42095 ZEVO DR., SUITE A15  
TEMECULA, CA 92590  
PHONE: (951) 296-9100  
FAX: (951) 296-6079  
EMAIL: Tfinaldi@stkinc.com

MPE ENGINEERING

SALAS O'BRIEN  
MISTY DUPRE, P.E.  
3220 EXECUTIVE RIDGE, STE. 210  
VISTA, CA 92081  
PHONE: (760) 560-0100  
EMAIL: Misty.dupre@salasobrien.com

PROJECT TEAM

TU - TITLE SHEET / REFERENCE SITE PLAN

CIVIL

C-1 - PRECISE GRADING PLAN

ARCHITECTURAL

A11 - SITE PLANS & DETAILS  
A12 - SITE DETAILS

STRUCTURAL

SCS - STRUCTURAL COVER SHEET  
SNI - STRUCTURAL NOTES  
SN2 - STRUCTURAL NOTES  
SI - FOUNDATION PLAN  
S2 - ROOF FRAMING PLAN  
SD1 - STRUCTURAL FOUNDATION DETAILS  
SD2 - STRUCTURAL FRAMING DETAILS

PLUMBING

P01 - PLUMBING LEGEND AND GENERAL NOTES  
P02 - PLUMBING CALCULATIONS AND SCHEDULES  
P11 - PLUMBING SITE PLAN  
P51 - PLUMBING DETAILS

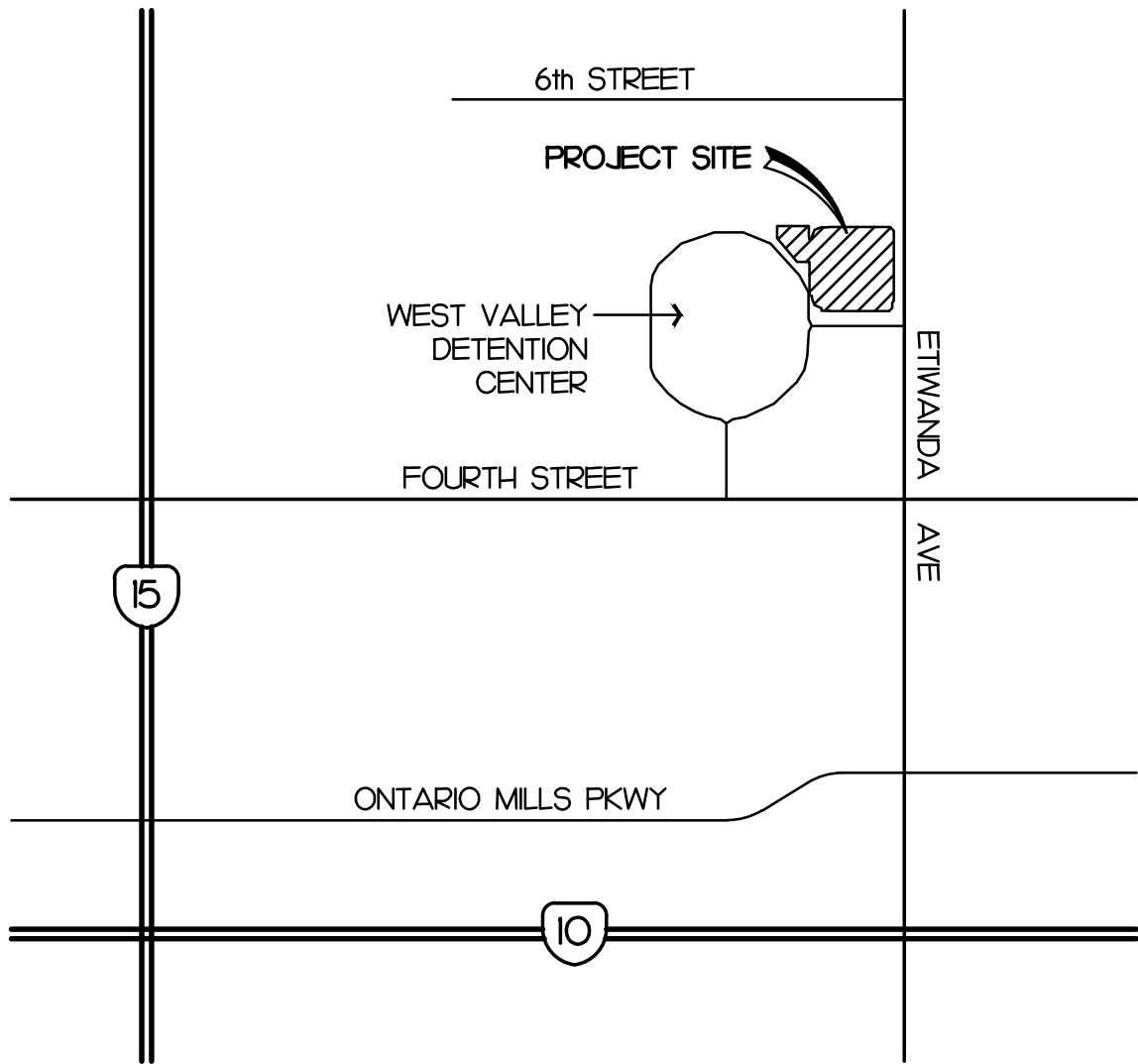
MECHANICAL

M01 - MECHANICAL LEGEND AND GENERAL NOTES  
M02 - MECHANICAL SCHEDULES  
M11 - MECHANICAL SITE PLAN  
M201 - MECHANICAL DEMOLITION FLOOR PLAN  
M202 - MECHANICAL DEMOLITION ROOF PLAN  
M21 - MECHANICAL FLOOR PLAN  
M22 - MECHANICAL ROOF PLAN  
M51 - MECHANICAL DETAILS

ELECTRICAL

E01 - ELECTRICAL LEGEND AND GENERAL NOTES  
E02 - INTERIOR TITLE 24  
E11 - ELECTRICAL SITE PLAN  
E201 - LIGHTING DEMOLITION FLOOR PLAN  
E21 - LIGHTING FLOOR PLAN  
E22 - POWER FLOOR PLAN  
E23 - ELECTRICAL ROOF PLAN  
E41 - SINGLE LINE DIAGRAM AND PANEL SCHEDULES

SHEET INDEX



VICINITY MAP

N.T.S.



CONSULTANT:

PROJECT FOR:  
SAN BERNARDINO  
COUNTY  
REAL ESTATE SERVICES -  
PROJECT MANAGEMENT  
DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:

PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 10.10.1151

ISSUE INFORMATION:

DATE:	INFORMATION:

SHEET INFORMATION:

STK PROJECT NO.: 374-147-21  
SCALE: AS NOTED  
DATE: JULY 2021  
PLOT DATE: -  
DRAWING NAME:

SEAL:



SHEET TITLE:

TITLE SHEET &  
REFERENCE  
SITE PLAN

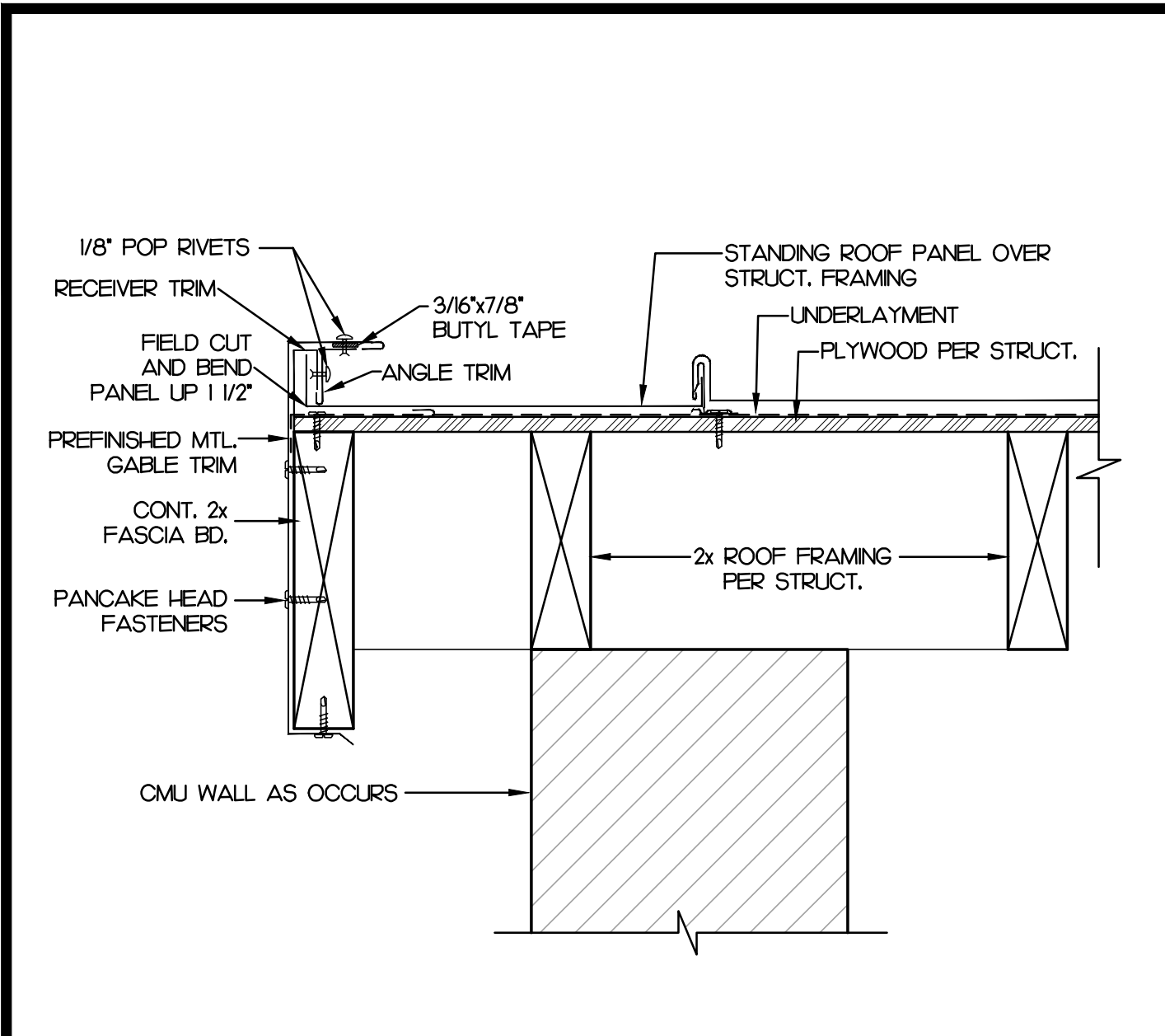
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T1.1

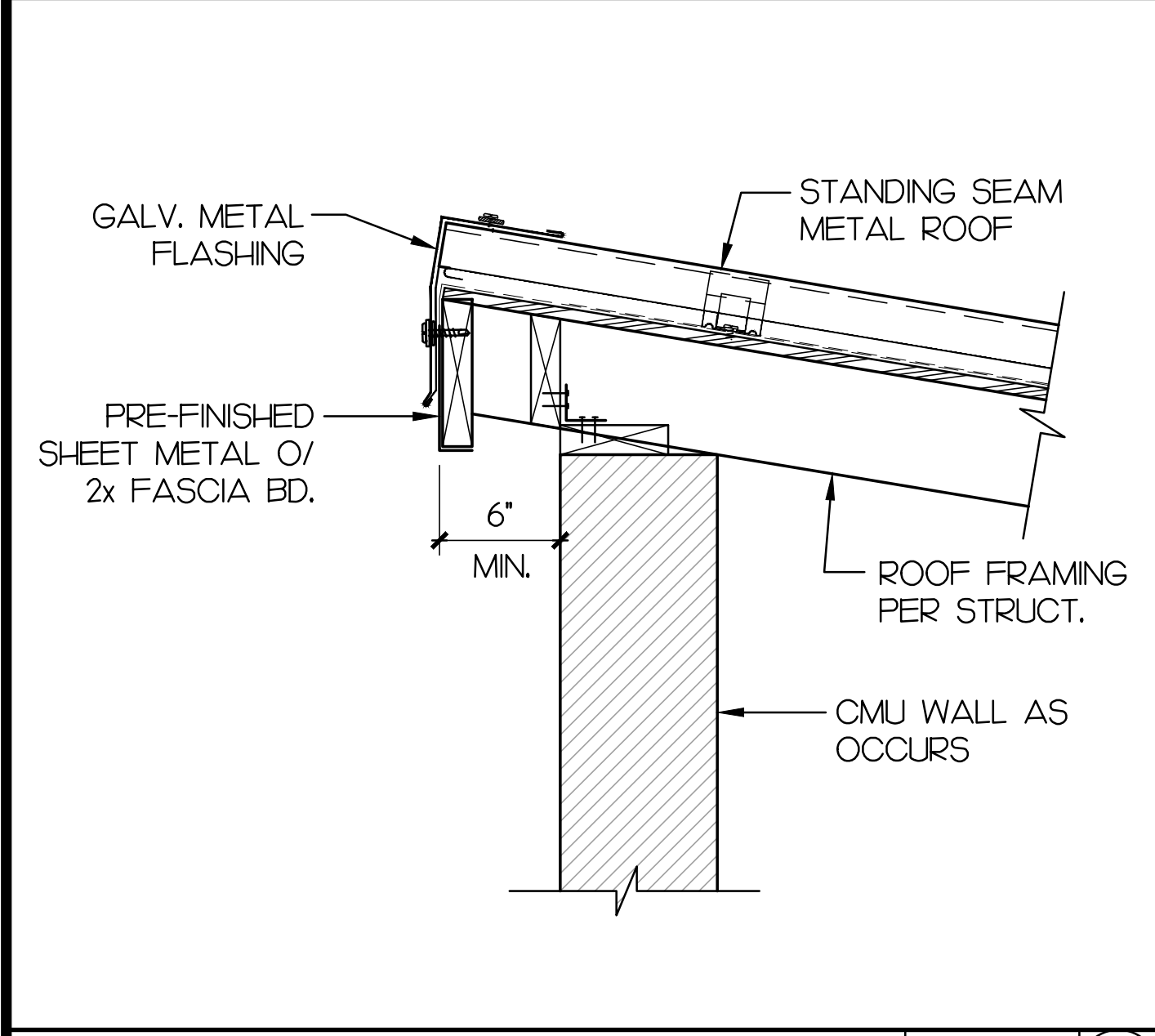




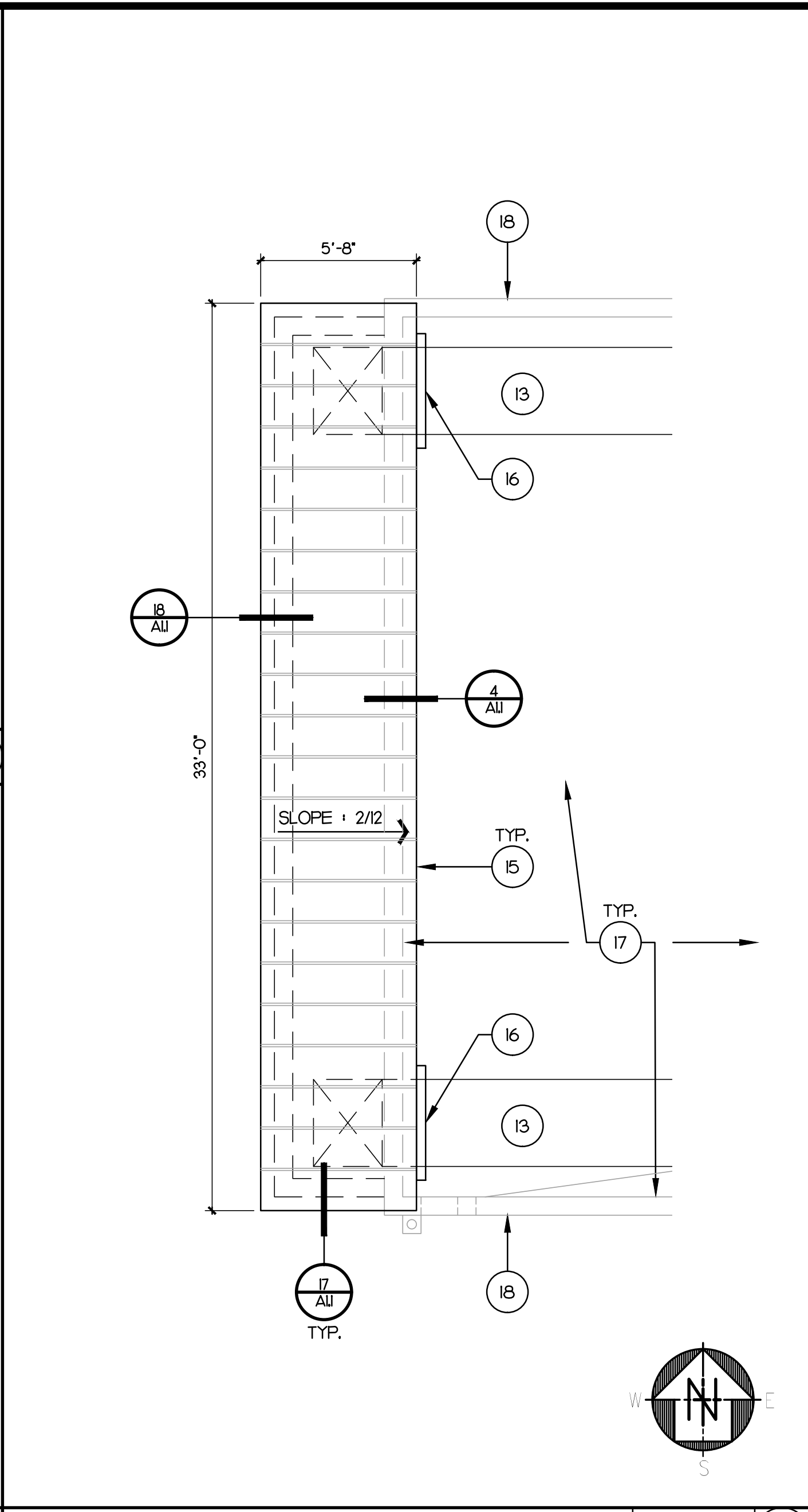




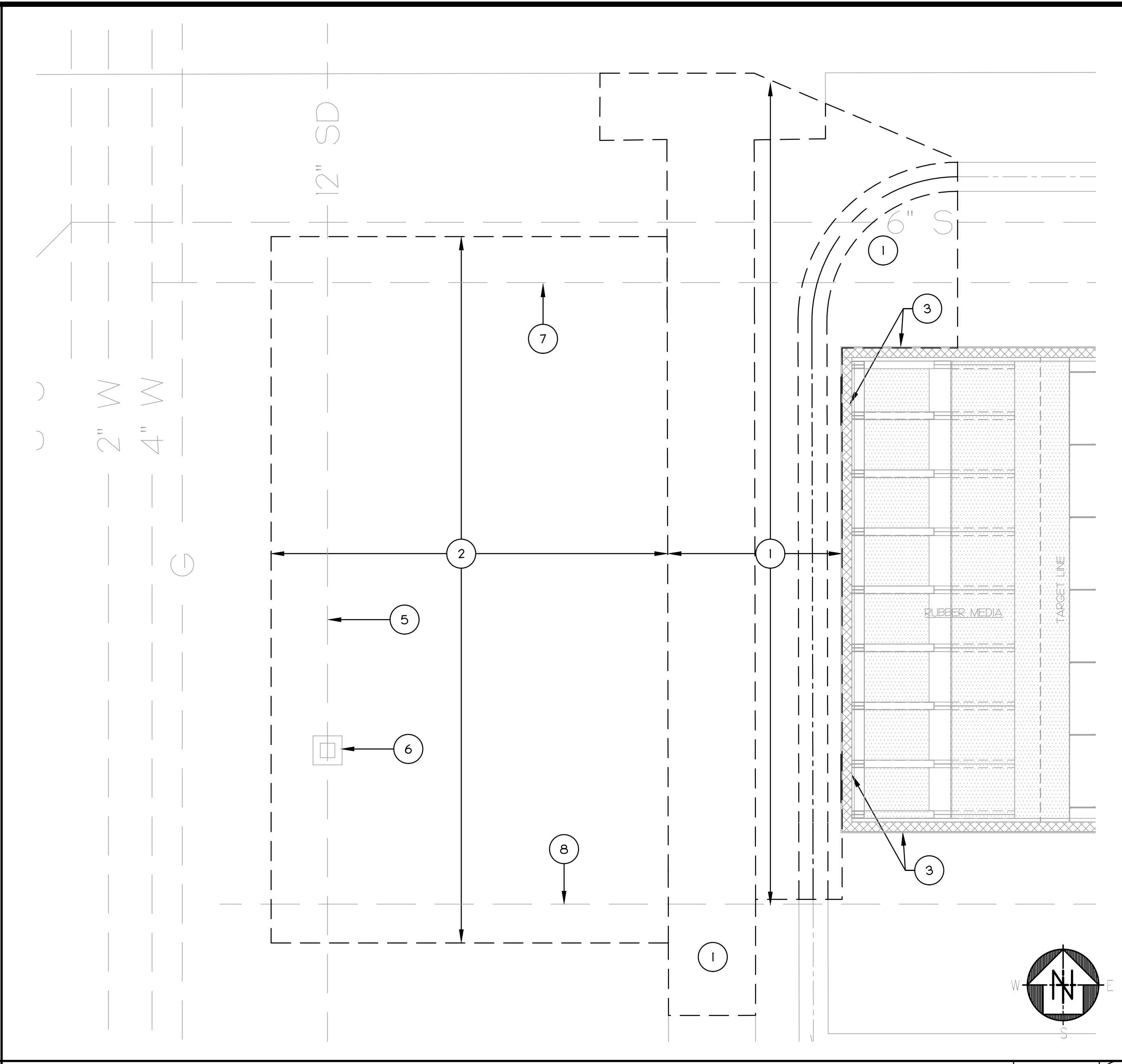
DETAIL SCALE: 3/4"=1'-0" 17



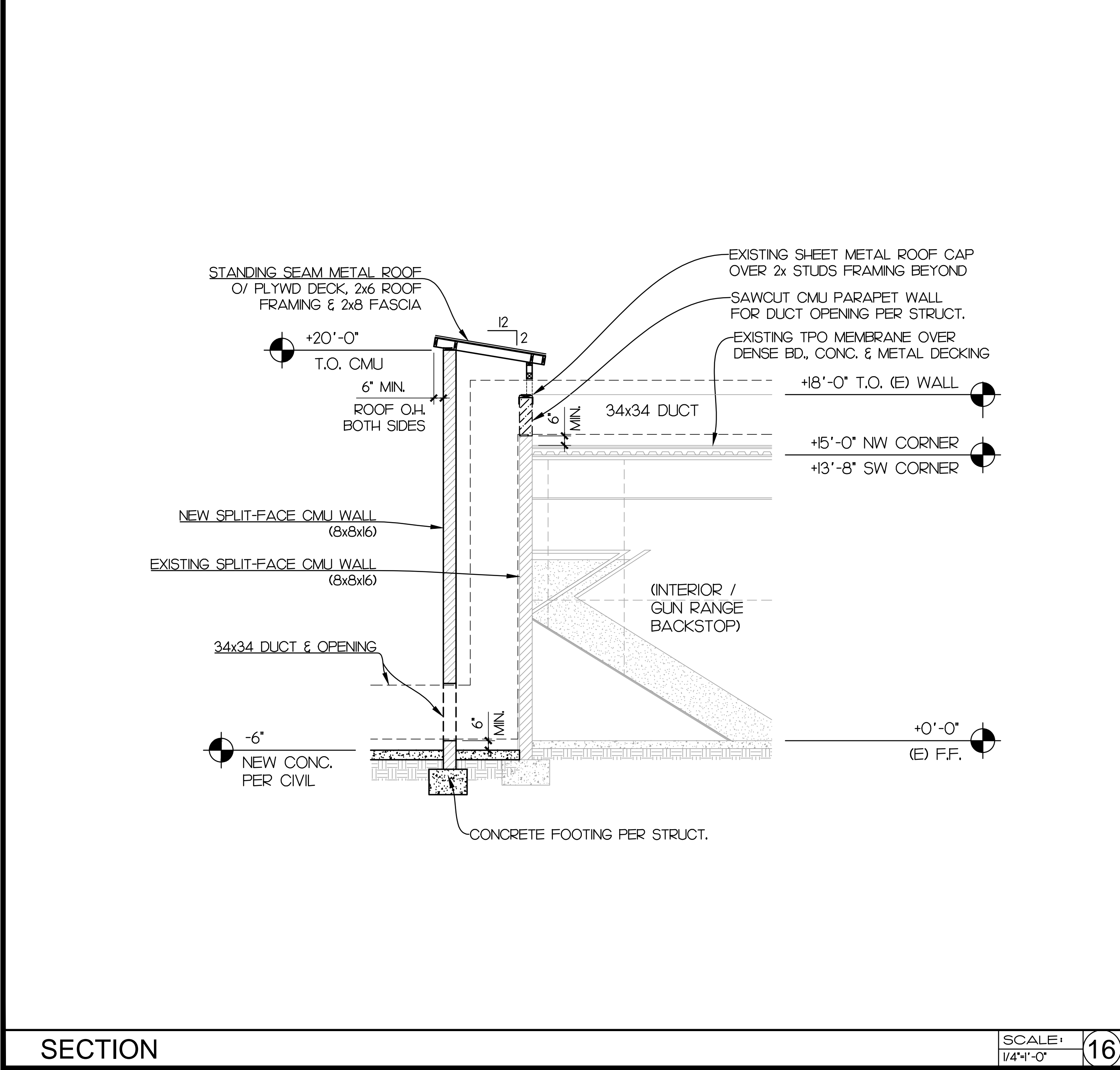
DETAIL SCALE: 1/4"=1'-0" 18



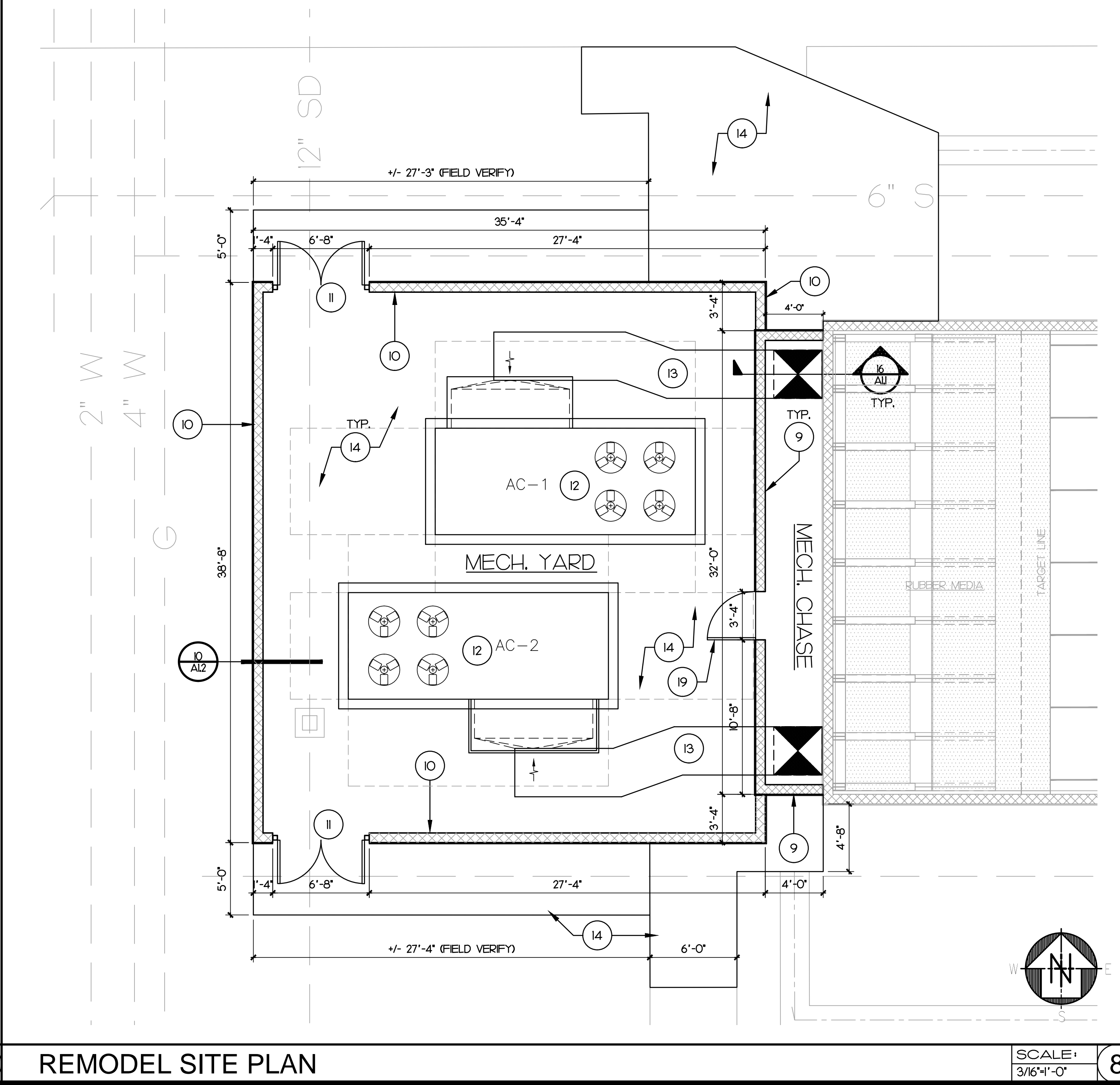
ROOF PLAN SCALE: 1/4"=1'-0" 13



DEMOLITION SITE PLAN SCALE: 3/16"=1'-0" 6

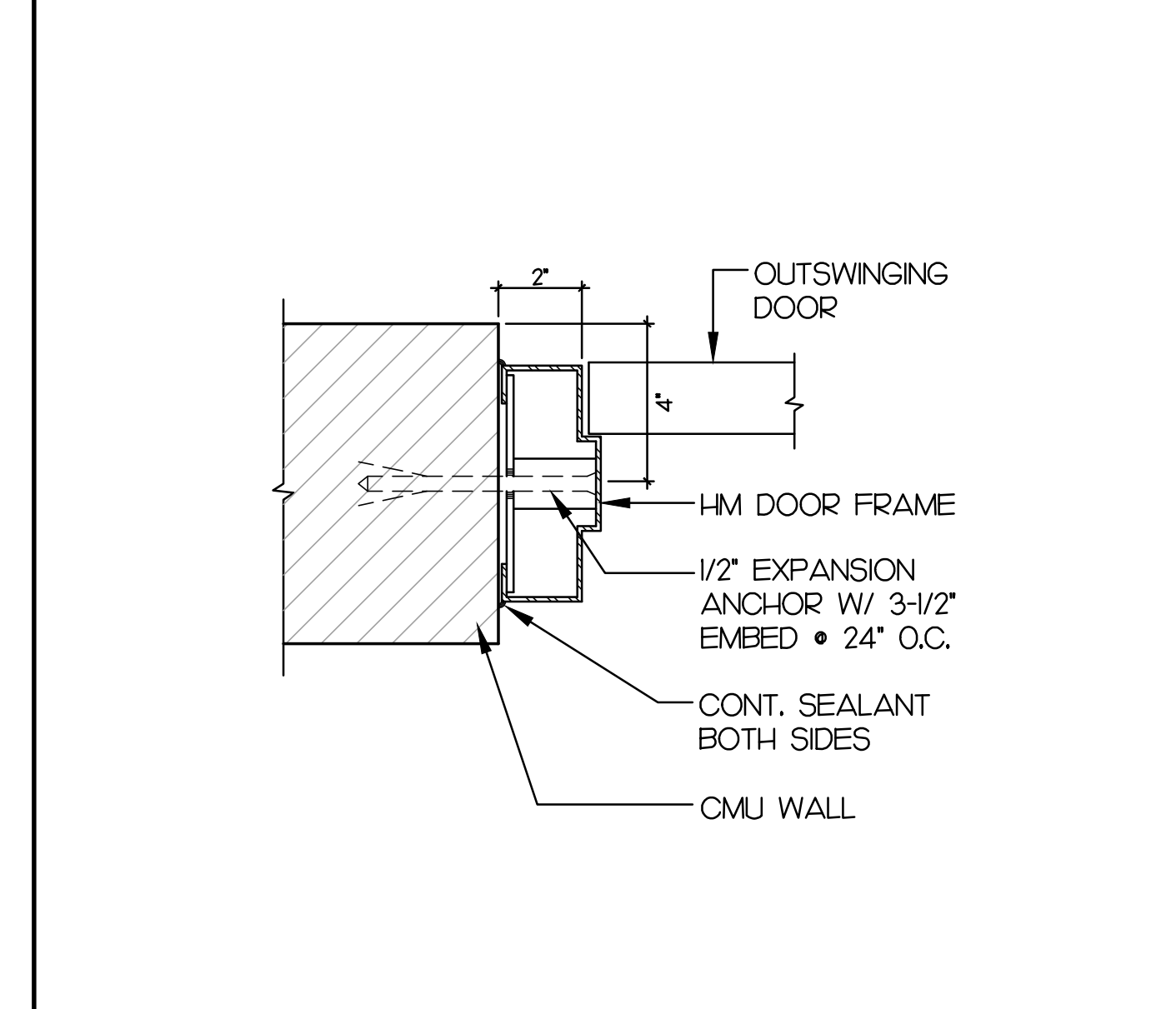


SECTION SCALE: 1/4"=1'-0" 16

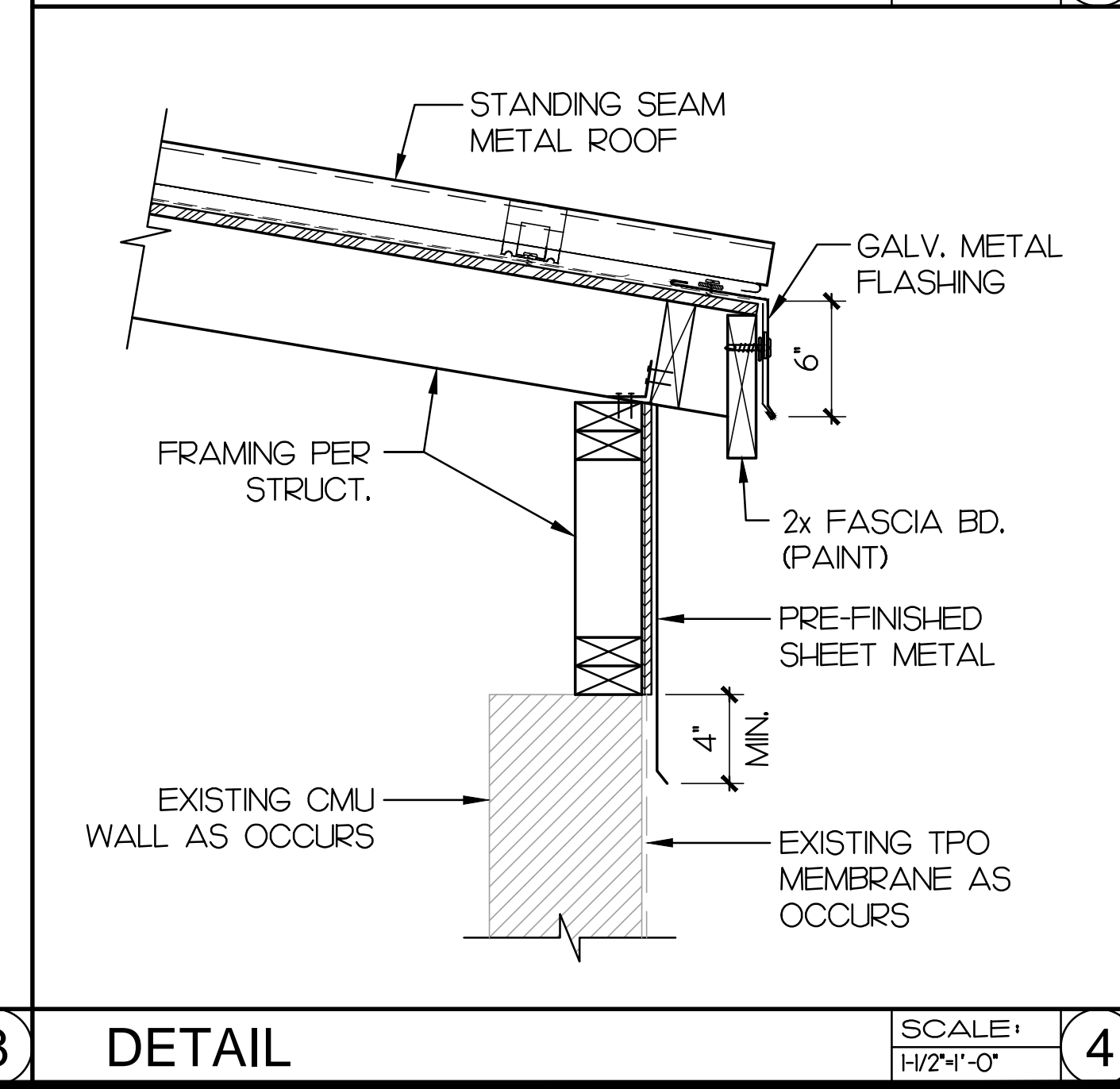


REMODEL SITE PLAN SCALE: 3/16"=1'-0" 8

- KEY NOTE**
1. SAW CUT / REMOVE EXISTING CONC. SIDEWALK, GUTTER, REBAR, ETC. PREP AREA TO ACCEPT NEW CONC. PAVING & SITE WALL. AS REQUIRED - FIELD VERIFY & SEE CIVIL.
  2. REMOVE EXISTING DG. ROCK RIPRAP, Boulders, TREES, ETC. PREP AREA TO ACCEPT NEW CONC. PAVING & SITE WALL. AS REQUIRED - FIELD VERIFY & SEE CIVIL.
  3. EXISTING CMU BUILDING/STRUCTURE TO REMAIN / PROTECT - FIELD VERIFY.
  4. EXISTING CONC. SIDEWALK TO REMAIN / PROTECT - FIELD VERIFY.
  5. EXISTING (APPROXIMATE LOCATION) UNDERGROUND STORM DRAIN PIPE TO REMAIN / PROTECT - FIELD VERIFY.
  6. EXISTING STORM DRAIN & COMPONENTS TO BE CAPPED AND/OR RECONSTRUCTED PER CIVIL - FIELD VERIFY.
  7. EXISTING (APPROXIMATE LOCATION) UNDERGROUND WATER & PIPE TO REMAIN / PROTECT - FIELD VERIFY.
  8. EXISTING (APPROXIMATE LOCATION) UNDERGROUND FIBER OPTIC LINE TO REMAIN / PROTECT - FIELD VERIFY.
  9. CMU WALL: 8x8x16, 8x8x16 & 8x8x16 (COMBINATION OF SPLIT-FACE, FLUTED & PRECISION) GROUT ALL CELLS. COLOR & BLOCK COMBINATION TO MATCH EXISTING.
  10. SITE CMU WALL: 8x8x16 (COMBINATION OF SPLIT-FACE & FLUTED). COLOR & BLOCK COMBINATION TO MATCH EXISTING - SEE 2 ALZ.
  11. ORNAMENTAL DOUBLE SWINGING GATE & COMPONENTS - SEE 7 ALZ.
  12. AC UNIT ON 4" MIN. RAISED CONC. PAD: 4,000 PSI, #4 REBAR @ 18" O.C. EA. WAY. PAD SIZE AS RECOMMENDED BY THE MANUFACTURER - SEE MECH.
  13. DUCTING & SUPPORTS - SEE MECH. PROVIDE A VERTICAL CROSSOVER PLATFORM BY DIVERSE SUPPLY, INC. (OR APPROVED EQUIV.) (688) 602-3451, MODEL # DS-COLV-5-56-44. EXACT LOCATION TO BE DETERMINED IN THE FIELD - COORDINATE WITH OWNER FOR PLATFORM SUPPORT / MOUNTING. SEE 16 ALZ.
  14. NEW CONC. PAVING (4,000 PSI MIN) WITH #4 REBAR @ 24" O.C. EA. WAY & CONTROL JOINTS - SEE CIVIL.
  15. STANDING SEAM METAL ROOFING OVER WEATHER BARRIER, PLYWOOD SHEATHING & FRAMING PER STRUCT.
  16. PROVIDE SHEET METAL GUTTER / DIVERTER OVER MECH. DUCT AS REQUIRED, TYP. AT 2 LOCATIONS - FIELD VERIFY.
  17. EXISTING TPO ROOFING SYSTEM & ROOF FRAMING TO REMAIN / PROTECT. REPAIR ONE PORTION OF DAMAGED ROOF AS REQUIRED DUE TO LEAKAGE - COORDINATE WITH OWNER & FIELD VERIFY. CONTRACTOR TO CONDUCT WATER TEST ON THE ROOF AFTER REPAIR TO ENSURE THAT LEAKAGE ISSUE HAS BEEN RESOLVED.
  18. EXISTING PARAPET WALL & METAL CORING TO REMAIN / PROTECT - FIELD VERIFY.
  19. HOLLOW METAL DOOR & FRAME (3'-0" W x 7'-0" H - FIELD VERIFY) - SEE 3 ALZ. SEE SPECIFICATIONS FOR DOOR HARDWARE.



DETAIL SCALE: 1/2"=1'-0" 3



DETAIL SCALE: 1/2"=1'-0" 4

42055 ZEVO DR., TEMECULA, CALIFORNIA 92592-3780  
Phone: 951.296.9110 Fax: 951.296.6079 Email: sk@stkinc.com

**CONSULTANT:**

**PROJECT FOR:**  
SAN BERNARDINO COUNTY  
REAL ESTATE SERVICES - PROJECT MANAGEMENT DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

**PROJECT NAME:**  
PROBATION DEPT.  
WEST VALLEY REGIONAL  
TRAINING CENTER:  
INDOOR GUN RANGE AIR  
CONDITIONING AND HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 10.010151

ISSUE INFORMATION:	
DATE:	INFORMATION:

SHEET INFORMATION:	
STK PROJECT NO.:	374-147-21
SCALE:	AS NOTED
DATE:	JULY 2021
PLOT DATE:	
DRAWING NAME:	
SEAL:	

**SHEET TITLE:**  
PLANS & DETAILS

**SHEET NO.:**  
A1.1



CONSULTANT:

PROJECT FOR:  
SAN BERNARDINO  
COUNTY  
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PLOT DATE:	-
DRAWING NAME:	-



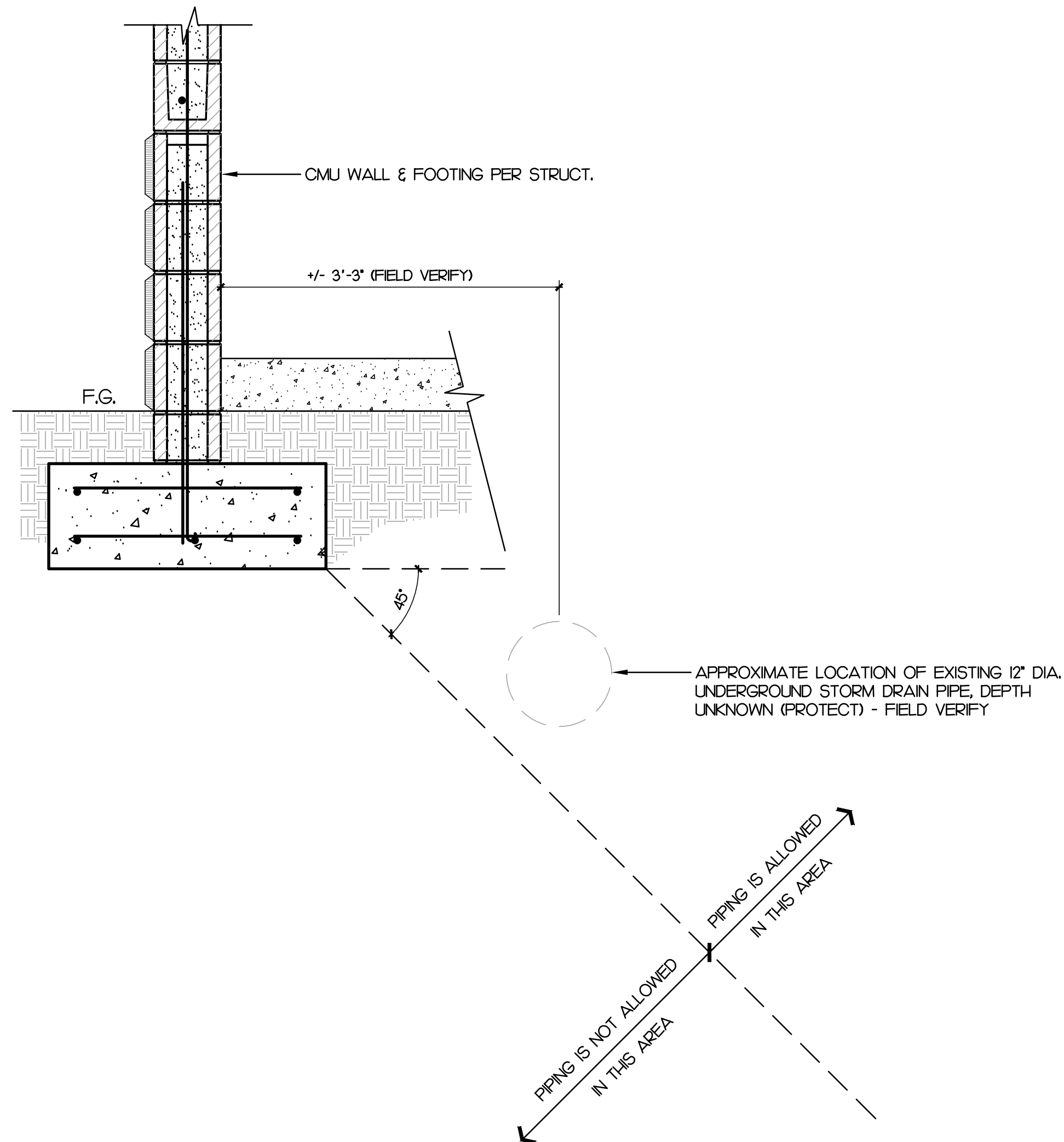
SHEET TITLE:

SITE DETAILS

SHEET NO.:

A1.2

NOT  
USED



CMU WALL SECTION AT EXISTING STORM DRAIN PIPE

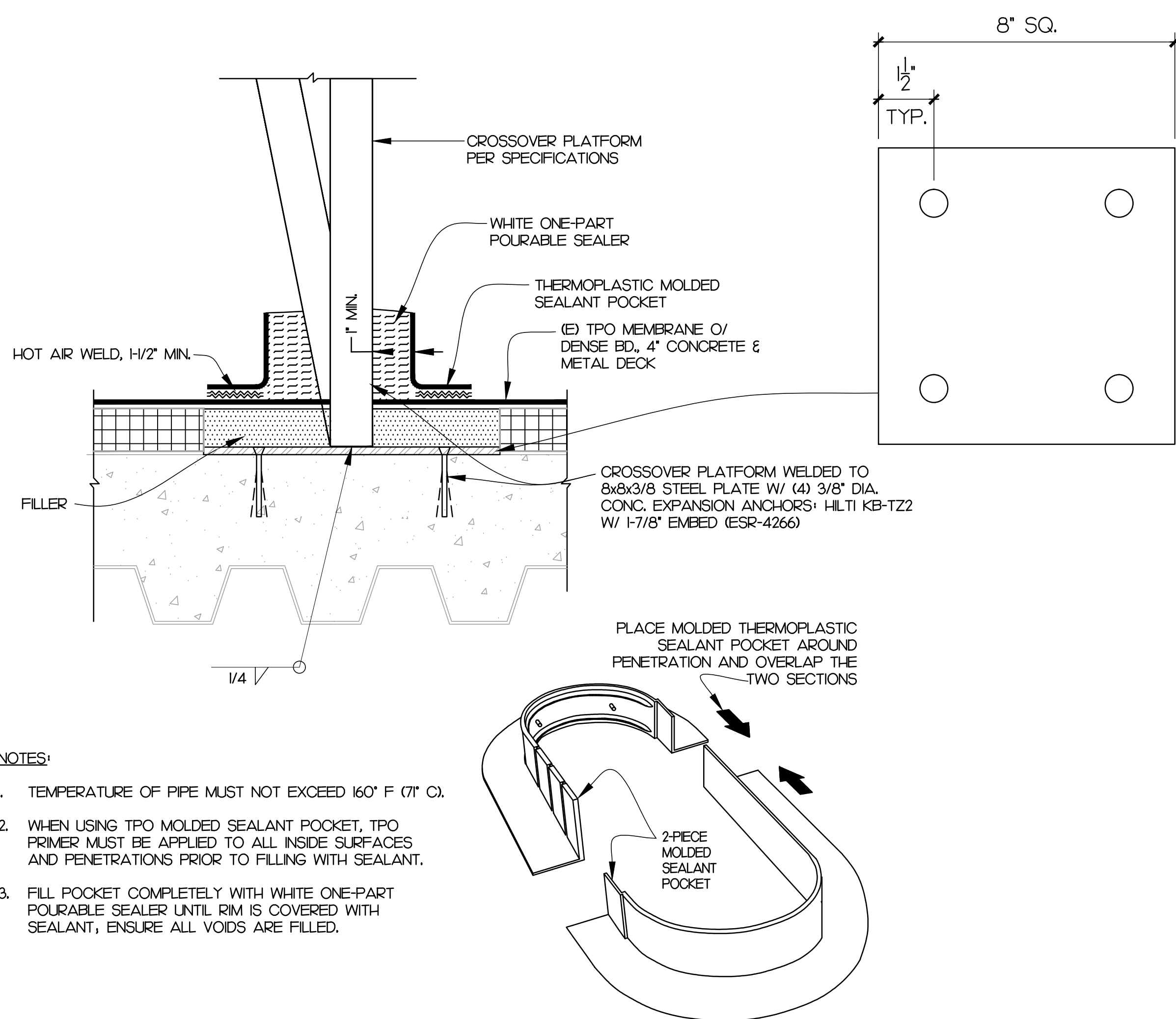
SCALE: 1/4"=1'-0"

10

CMU SITE WALL ELEVATION- TYP.

SCALE: 1/2"=1'-0"

2

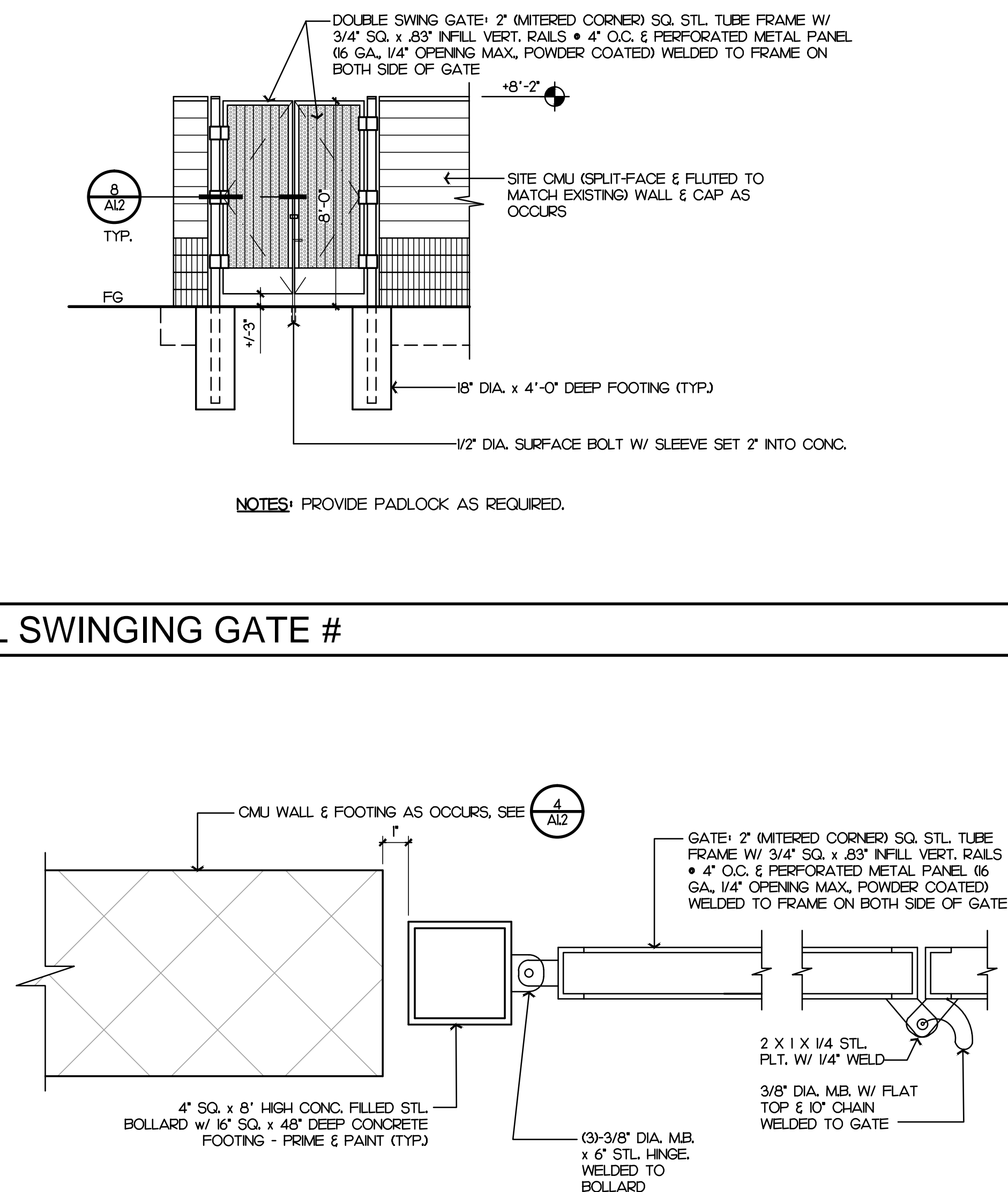


- NOTES:
- TEMPERATURE OF PIPE MUST NOT EXCEED 160° F (77° C).
  - WHEN USING TPO MOLDED SEALANT POCKET, TPO PRIMER MUST BE APPLIED TO ALL INSIDE SURFACES AND PENETRATIONS PRIOR TO FILLING WITH SEALANT.
  - FILL POCKET COMPLETELY WITH WHITE ONE-PART POURABLE SEALER UNTIL RIM IS COVERED WITH SEALANT, ENSURE ALL VOIDS ARE FILLED.

ORNAMENTAL SWINGING GATE #

SCALE: 1/4"=1'-0"

7



DETAIL

SCALE: N.T.S.

16

SCALE: 3/4"=1'-0"

8

CMU WALL SECTION

SCALE: 1/4"=1'-0"

4

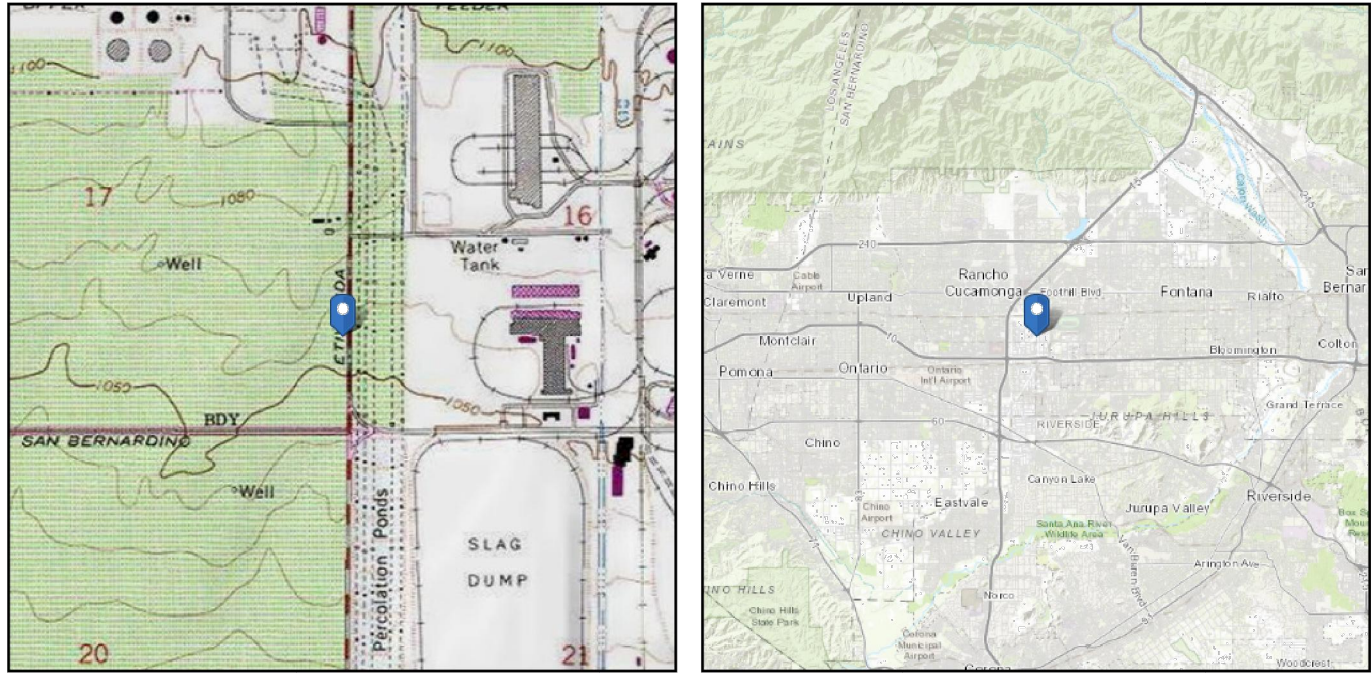


DESIGN PARAMETERS



ASCE 7 Hazards Report

Address: 9478 Etiwanda Ave  
Rancho Cucamonga, California 91739  
Standard: ASCE/SEI 7-16  
Risk Category: II  
Soil Class: D - Default (see Section 11.4.3)  
Elevation: 1058.52 ft (NAVD 88)  
Latitude: 34.079921  
Longitude: -117.524069



Wind

Results:  
Wind Speed: 96 Vmph  
10-year MRI: 66 Vmph  
25-year MRI: 72 Vmph  
50-year MRI: 77 Vmph  
100-year MRI: 82 Vmph  
Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1-CC.2-4, and Section 26.5.2  
Date Accessed: Mon Jun 28 2021  
Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).  
Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

<https://asce7hazardtool.online/>

Page 1 of 3

Mon Jun 28 2021



Seismic

Site Soil Class: D - Default (see Section 11.4.3)  
Results:  
S<sub>s</sub>: 1.743 S<sub>D1</sub>: N/A  
S<sub>1</sub>: 0.649 T<sub>L</sub>: 12  
F<sub>a</sub>: 1.2 PGA: 0.74  
F<sub>v</sub>: N/A PGA<sub>M</sub>: 0.888  
S<sub>MS</sub>: 2.092 F<sub>PGA</sub>: 1.2  
S<sub>M1</sub>: N/A I<sub>e</sub>: 1  
S<sub>DS</sub>: 1.394 C<sub>v</sub>: 1.449  
Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.  
Data Accessed: Mon Jun 28 2021  
Date Source: USGS Seismic Design Maps

<https://asce7hazardtool.online/>

Page 2 of 3

Mon Jun 28 2021

SHEET INDEX

GENERAL NOTES

- SCS STRUCTURAL COVER SHEET
- SN1 STRUCTURAL GENERAL NOTES
- SN2 STRUCTURAL GENERAL NOTES

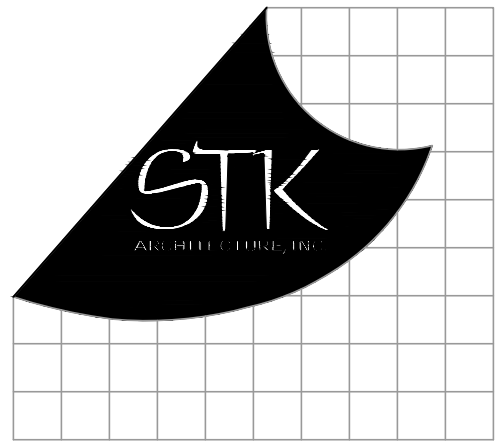
PLANS

- S1 FOUNDATION PLAN
- S2 ROOF FRAMING PLAN

STRUCTURAL DETAILS

- SD1 STRUCTURAL FOUNDATION DETAILS
- SD2 STRUCTURAL FRAMING DETAILS

PROJECT DESIGN CRITERIA					
BUILDING CODE:	2019 CBC				
LOCATION (LATITUDE / LONGITUDE):	34.079921, -117.524069				
GEOTECHNICAL PARAMETERS:					
SOILS ENGINEER:	NOT PROVIDED				
REPORT NUMBER:	--				
DATE:	--				
ALLOWABLE SOIL BEARING PRESSURE:	1,500PSF				
ALLOWABLE PASSIVE PRESSURE:	150PCF				
EXPANSION POTENTIAL:	NOT PROVIDED				
PLASTICITY INDEX:	NOT PROVIDED				
LIQUEFACTION POTENTIAL:	NOT-PROVIDED				
TOTAL SETTLEMENT:	NOT-PROVIDED				
DIFFERENTIAL SETTLEMENT POTENTIAL:	NOT-PROVIDED				
CORROSIVITY:	NOT-PROVIDED				
SULFATE CONTENT:	NOT-PROVIDED				
CHLORIDE CONTENT:	NOT-PROVIDED				
SEISMIC DESIGN PARAMETERS:					
RISK CATEGORY:	II				
SITE CLASS:	D (DEFAULT)				
SHORT PERIOD SPECTRAL ACCELERATION, S <sub>s</sub> :	1.743				
1s PERIOD SPECTRAL ACCELERATION, S <sub>1</sub> :	0.649				
SPECTRAL RESPONSE COEFFICIENT, S <sub>DS</sub> :	0.74				
SHORT PERIOD SPECTRAL RESPONSE, S <sub>SD1</sub> :	1.394				
SITE COEFFICIENT, F <sub>a</sub> :	1.2				
SITE COEFFICIENT, F <sub>v</sub> :	1.70				
SEISMIC DESIGN CATEGORY:	D				
SEISMIC IMPORTANCE FACTOR, I <sub>e</sub> :	1.00				
RESPONSE MODIFICATION, R & SEISMIC FORCE RESISTING SYSTEM:	5.0 - SPECIAL REINFORCED MASONRY SHEAR WALLS				
DESIGN BASE SHEAR:	0.279pW				
SEISMIC RESPONSE COEFFICIENT, C <sub>s</sub> :	0.279				
DESIGN PROCEDURE:	EQUIVALENT LATERAL FORCE				
REDUNDANCY FACTOR, ρ:	1.3				
SYSTEM OVERSTRENGTH FACTOR, Ω:	2.5				
DEFLECTION AMPLIFICATION FACTOR, C <sub>d</sub> :	3.5				
HORIZONTAL STRUCTURAL IRREGULARITIES:	NONE				
VERTICAL STRUCTURAL IRREGULARITIES:	NONE				
WIND DESIGN PARAMETERS:					
RISK CATEGORY:	II				
WIND EXPOSURE CATEGORY:	C				
ULTIMATE DESIGN WIND SPEED (3-SECOND GUST), V <sub>ULT</sub> :	110				
NOMINAL DESIGN WIND SPEED (3-SECOND GUST), V <sub>ASD</sub> :	85 MPH				
INTERNAL PRESSURE COEFFICIENT, GC <sub>p</sub> :	±0.18				
GRAVITY DESIGN PARAMETERS: (PSF, SERVICE LOADS)					
	DEAD	ROOF LIVE	SNOW	LIVE	TOTAL
ROOF:	11.7	20	-	-	31.7
CMU WALL:	84	-	-	-	84



4305 ZEVO DR. TEMECULA, CALIFORNIA 92593-3780  
Phone: 951.296.9110 Fax: 951.296.6079 Email: sh@stkinc.com

CONSULTANT:



INNOVATIVE  
STRUCTURAL ENGINEERING  
27389 VIA INDUSTRIAL  
TEMECULA, CA 92590  
TEL: 951.800.0322  
WWW.ISEENGINEERS.COM  
SOCAL | NORCAL | COLORADO

ISE PROJECT NO.: 21-7205

PROJECT FOR:

SAN BERNARDINO  
COUNTY  
REAL ESTATE SERVICES -  
PROJECT MANAGEMENT  
DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:

PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
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9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 10.10.1151

ISSUE INFORMATION:

DATE:	INFORMATION:

SHEET INFORMATION:

STK PROJECT NO.: 374-147-21  
SCALE: AS NOTED  
DATE: JULY 2021  
PLOT DATE: JULY 21, 2021  
DRAWING NAME:

SEAL:



SHEET TITLE:

STRUCTURAL  
COVER SHEET

SHEET NO.:

SCS







# REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION PER TABLE 1705.3

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
X	INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT		X
--	REINFORCING BAR WELDING: VERIFY WELDING OF REINFORCING BARS OTHER THAN ASTM A706	X	X
--	INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 1/8", AND	X	X
X	INSPECT ALL OTHER WELDS		
X	INSPECT ANCHORS CAST IN CONCRETE	X	X
X	INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS		
--	ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS	X	
--	MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED ABOVE	X	
X	VERIFY USE OF REQUIRED DESIGN MIX	X	
X	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	
--	INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	
X	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X
--	INSPECT PRESTRESSED CONCRETE FOR:		
--	• APPLICATION OF PRESTRESSING FORCES; AND	X	
--	• GROUTING OF BONDED PRESTRESSING TENDONS	X	
--	INSPECT ERECTION OF PRECAST CONCRETE MEMBERS		X
--	VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO DRESSING OF TENDONS IN POST-TENSIONING CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS		X
--	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X
EXCEPTIONS:			
1. ISOLATED SPREAD FOOTINGS OF BUILDINGS THREE STORIES OR LESS ABOVE GRADE PLANE THAT ARE FULLY SUPPORTED ON EARTH OR ROCK.			
2. CONTINUOUS CONCRETE FOOTINGS SUPPORTING WALLS OF BUILDINGS THREE STORIES OR LESS ABOVE GRADE PLANE THAT ARE FULLY SUPPORTED ON EARTH OR ROCK WHERE:			
2.1. THE FOOTINGS SUPPORT WALLS OF LIGHT FRAME CONSTRUCTION;			
2.2. THE FOOTINGS ARE DESIGNED IN ACCORDANCE WITH 1809.7; OR			
2.3. THE STRUCTURAL DESIGN OF THE FOOTING IS BASED ON $f'_{cr} \geq 3,000$ PSI OR LESS, REGARDLESS OF THE COMPRESSIVE STRENGTH SPECIFIED IN THE IN THE CONSTRUCTION DOCUMENTS OR USED IN THE FOOTING CONSTRUCTION.			
3. NON STRUCTURAL CONCRETE SLABS SUPPORTED DIRECTLY ON THE GROUND, INCLUDING PRESTRESSED SLABS ON GRADE, WHERE THE EFFECTIVE PRE-STRESS IS LESS THAN 150 PSI.			
4. CONCRETE FOUNDATION WALLS CONSTRUCTED WITH TABLE 1807.1.6.2			
5. CONCRETE PATIOS, DRIVEWAYS AND SIDEWALKS ON GRADE.			

MINIMUM VERIFICATION REQUIREMENTS OF MASONRY CONSTRUCTION PER TMS 602-TABLE 3			
MINIMUM VERIFICATION	REQUIRED FOR QUALITY ASSURANCE <sup>(1)</sup>		
	LEVEL 1	LEVEL 2	LEVEL 3
PRIOR TO CONSTRUCTION, VERIFICATION OF COMPLIANCE OF SUBMITTALS	R	R	R
PRIOR TO CONSTRUCTION, VERIFICATION OF $F_m$ AND $F_{m,adj}$ EXCEPT WHERE SPECIFICALLY EXEMPTED BY THE CODE.	NR	R	R
DURING CONSTRUCTION, VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDICES WHEN SELF-CONSOLIDATING GROUT IS DELIVERED TO THE PROJECT SITE.	NR	R	R
DURING CONSTRUCTION, VERIFICATION OF $F_m$ AND $F_{m,adj}$ FOR EVERY 5,000 SQ. FT. (465 SQ. YD).	NR	NR	R
DURING CONSTRUCTION, VERIFICATION OF PROPORTIONS OF MATERIALS AS DELIVERED TO THE PROJECT SITE FOR PREMIXED OR PRE-BLENDED MORTAR, PRESTRESSING GROUT, AND GROUT OTHER THAN SELF-CONSOLIDATING GROUT.	NR	NR	R

(1) R = REQUIRED, NR = NOT REQUIRED

# REQUIRED SPECIAL INSPECTIONS AND TESTS OF MASONRY CONSTRUCTION PER TABLE 1705.4 & TMS 602

MASONRY LEVEL-1 INSPECTION REQUIREMENTS			
CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
X	PRIOR TO CONSTRUCTION, VERIFICATION OF COMPLIANCE OF SUBMITTALS		
EXCEPTIONS: SPECIAL INSPECTIONS AND TESTS SHALL NOT BE REQUIRED FOR: 1. EMPIRICALLY DESIGNED MASONRY, GLASS UNIT MASONRY OR MASONRY VENEER DESIGNED IN ACCORDANCE WITH SECTION 2109, 2110 OR CHAPTER 14, RESPECTIVELY, WHERE THEY ARE PART OF A STRUCTURE CLASSIFIED AS RISK CATEGORY I, II OR III. 2. MASONRY FOUNDATION WALLS CONSTRUCTED IN ACCORDANCE WITH TABLE 1807.1.6.3(1), 1807.1.6.3(2), 1807.1.6.3(3) OR 1807.1.6.3(4). 3. MASONRY FIREPLACES, MASONRY HEATERS OR MASONRY CHIMNEYS INSTALLED OR CONSTRUCTED IN ACCORDANCE WITH SECTION 2111, 2112 OR 2113, RESPECTIVELY.			

# REQUIRED INSPECTION OF STEEL CONSTRUCTION - CONTINUED CBC - SECT. 1705.2 & ACI 308-10

# HIGH STRENGTH BOLTING PER AISI 309-14

- FOR SNUG-TIGHT JOINTS, PRE-INSTALLATION VERIFICATION TESTING AS SPECIFIED IN TABLE N5-6-1 AND MONITORING OF THE INSTALLATION PROCEDURES AS SPECIFIED IN TABLE N5-6-2 ARE NOT APPLICABLE. THE INSPECTOR NEED NOT BE PRESENT DURING THE INSTALLATION OF FASTENERS IN SNUG-TIGHT JOINTS.
- FOR PRE-TENSIONED JOINTS AND SLP-CRITICAL JOINTS, WHEN THE INSTALLER IS USING THE TURN-OF-NUT METHOD WITH MATCH-MARKING TECHNIQUES, THE DIRECT-TENSION-INDICATOR METHOD, OR THE TWIST-OFF-TYPE TENSION CONTROL BOLT METHOD, MONITORING OF BOLT PRE-TENSIONING PROCEDURES SHALL BE AS SPECIFIED IN TABLE N5-6-2. THE INSPECTOR NEED NOT BE PRESENT DURING THE INSTALLATION OF FASTENERS WHEN THESE METHODS ARE USED BY THE INSTALLER.
- FOR PRE-TENSIONED JOINTS AND SLP-CRITICAL JOINTS, WHEN THE INSTALLER IS USING THE CALIBRATED WRENCH METHOD OR THE TURN-OF-NUT METHOD WITHOUT MATCH-MARKING MONITORING OF BOLT PRE-TENSIONING PROCEDURES SHALL BE AS SPECIFIED IN TABLE N5-6-2. THE INSPECTOR SHALL BE ENGAGED IN THEIR ASSIGNED INSPECTION DUTIES DURING INSTALLATION OF FASTENERS WHEN THESE METHODS ARE USED BY THE INSTALLER.

CHECK IF REQUIRED	TASK	CONTINUOUS	PERIODIC
--	MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	X	
--	FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS		X
X	CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)		X
X	CORRECT BOLTING PROCEDURE SELECTED FOR JOINT DETAIL		X
--	CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS		X
--	PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	X	
--	PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS		X

# DURING BOLTING - TABLE N5-6-2

CHECK IF REQUIRED	TASK	CONTINUOUS	PERIODIC
--	FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED		X
--	JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRE-TENSIONING OPERATION		X
--	FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING		X
--	FASTENERS ARE PRE-TENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	X	

# AFTER BOLTING - TABLE N5-6-3

CHECK IF REQUIRED	TASK	CONTINUOUS	PERIODIC
--	DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	X	

# REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS PER TABLE 1705.6

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
X	VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X
X	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X
--	PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS		X
--	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X	
X	PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X

EXCEPTIONS: WHERE SECTION 1803 DOES NOT REQUIRE REPORTING OF MATERIALS AND PROCEDURES FOR SPECIAL INSPECTION, THE SPECIAL INSPECTOR SHALL VERIFY THAT THE IN-PLACE DRY DENSITY OF THE COMPACTED FILL IS NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT DETERMINED IN ACCORDANCE WITH ASTM D1557.

# REQUIRED SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE PER 1705.12

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
SPECIAL INSPECTIONS OF STRUCTURAL STEEL IN THE SEISMIC FORCE-RESISTING SYSTEMS IN BUILDINGS AND STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY B, C, D, E OR F SHALL BE PERFORMED IN ACCORDANCE WITH THE QUALITY ASSURANCE REQUIREMENTS OF AISI 341.			
EXCEPTIONS: 1. IN BUILDINGS AND STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY B OR C, SPECIAL INSPECTIONS ARE NOT REQUIRED FOR SEISMIC FORCE-RESISTING SYSTEMS WHERE THE RESPONSE MODIFICATION COEFFICIENT, R, IS DESIGNATED FOR STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE, EXCLUDING CANTILEVER COLUMN SYSTEMS; IN ASCE 7, TABLE 12.2-1, HAS BEEN USED FOR DESIGN AND DETAILING. 2. IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E, OR F, SPECIAL INSPECTIONS ARE NOT REQUIRED FOR STRUCTURAL STEEL SEISMIC FORCE-RESISTING SYSTEMS WHERE DESIGN AND DETAILING IN ACCORDANCE WITH AISI 360 IS PERMITTED BY ASCE 7, TABLE 15-4.1.			

# STRUCTURAL STEEL ELEMENTS PER 1705.12.2

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
--	INSPECTION OF STRUTS, COLLECTORS, CHORDS AND FOUNDATION ELEMENTS, SHALL BE PERFORMED IN ACCORDANCE WITH THE QUALITY ASSURANCE REQUIREMENTS OF AISI 341.		--
EXCEPTIONS: 1. IN BUILDINGS AND STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY B OR C, SPECIAL INSPECTIONS OF STRUCTURAL STEEL ELEMENTS ARE NOT REQUIRED FOR SEISMIC FORCE-RESISTING SYSTEMS WITH A RESPONSE MODIFICATION COEFFICIENT, R, OF 3 OR GREATER. 2. IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E, OR F, SPECIAL INSPECTIONS OF STRUCTURAL STEEL ELEMENTS ARE NOT REQUIRED FOR SEISMIC FORCE-RESISTING SYSTEMS WHERE DESIGN AND DETAILING OTHER THAN AISI 341 IS PERMITTED BY ASCE 7, TABLE 15-4.1. SPECIAL INSPECTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE REFERENCES LISTED IN SECTION 1705.12.2, TABLE 15-4.1.			

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
--	INSPECTION DURING FIELD GLUING OPERATIONS OF ELEMENTS OF THE SEISMIC FORCE-RESISTING SYSTEM	X	--
X	INSPECTION FOR NAILING, BOLTING, ANCHORING AND OTHER FASTENING TO COMPONENTS OF THE SEISMIC FORCE-RESISTING SYSTEM, INCLUDING WOOD SHEAR WALLS, WOOD DIAPHRAGMS, DRAG STRUTS, BRACES, SHEAR PANELS AND HOLD-DOWNS.		X
EXCEPTION: SPECIAL INSPECTIONS ARE NOT REQUIRED FOR WOOD SHEAR WALLS, SHEAR PANELS AND DIAPHRAGMS, INCLUDING NAILING, BOLTING, ANCHORING AND OTHER FASTENING TO OTHER ELEMENTS OF THE SEISMIC FORCE-RESISTING SYSTEM, WHERE THE FASTENER SPACING AT PANEL EDGES IS MORE THAN 4 INCHES ON CENTER.			

# COLD-FORMED STEEL LIGHT FRAME CONSTRUCTION PER 1705.11.2

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
--	INSPECTION FOR WELDING OPERATIONS OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM		X
--	INSPECTION FOR SCREW ATTACHMENT, BOLTING, ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE MAIN WINDFORCE-RESISTING SYSTEM, INCLUDING SHEAR WALLS, BRACES, DIAPHRAGMS, COLLECTORS (DRAG STRUTS) AND HOLD-DOWNS.		X
EXCEPTION: SPECIAL INSPECTIONS ARE NOT REQUIRED FOR COLD-FORMED STEEL LIGHT-FRAME SHEAR WALLS AND DIAPHRAGMS, INCLUDING SCREWING, BOLTING, ANCHORING AND OTHER FASTENING TO COMPONENTS OF THE WINDFORCE RESISTING SYSTEM, WHERE EITHER OF THE FOLLOWING APPLIES: 1. THE SHEATHING IS GYPSUM BOARD OR FIBERBOARD. 2. THE SHEATHING IS WOOD STRUCTURAL PANEL OR STEEL SHEETS ON ONLY ONE SIDE OF THE SHEAR WALL, SHEAR PANEL OR DIAPHRAGM ASSEMBLY AND THE FASTENER SPACING OF THE SHEATHING IS MORE THAN 4 INCHES ON CENTER.			

# REQUIRED SPECIAL INSPECTIONS FOR WIND RESISTANCE PER 1705.11

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
--	1. IN WIND EXPOSURE CATEGORY B, WHERE $V_{adj}$ AS DETERMINED IN ACCORDANCE WITH SECTION 1609.3.1 IS 120 MPH OR GREATER		X
X	2. IN WIND EXPOSURE CATEGORY C OR D, WHERE $V_{adj}$ AS DETERMINED IN ACCORDANCE WITH SECTION 1609.3.1 IS 110 MPH OR GREATER		X
SPECIAL INSPECTIONS ARE NOT REQUIRED FOR COLD-FORMED STEEL LIGHT-FRAME SHEAR WALLS AND DIAPHRAGMS, INCLUDING SCREWING, BOLTING, ANCHORING AND OTHER FASTENING TO COMPONENTS OF THE WINDFORCE RESISTING SYSTEM, WHERE EITHER OF THE FOLLOWING APPLIES: 1. THE SHEATHING IS GYPSUM BOARD OR FIBERBOARD. 2. THE SHEATHING IS WOOD STRUCTURAL PANEL OR STEEL SHEETS ON ONLY ONE SIDE OF THE SHEAR WALL, SHEAR PANEL OR DIAPHRAGM ASSEMBLY AND THE FASTENER SPACING OF THE SHEATHING IS MORE THAN 4 INCHES ON CENTER (O.C.).			

# WIND RESISTING COMPONENTS PER 1705.11.3

CHECK IF REQUIRED	TYPE	CONTINUOUS	PERIODIC
X	ROOF COVERING, ROOF DECK AND ROOF FRAMING CONNECTIONS.		X
X	EXTERIOR WALL COVERING AND WALL CONNECTIONS TO ROOF AND FLOOR DIAPHRAGMS AND FRAMING.		X

# QUALITY ASSURANCE (STRUCTURAL OBSERVATION, MATERIALS TESTING, AND SPECIAL INSPECTION)

- STRUCTURAL OBSERVATION:
  - COORDINATION RESPONSIBILITIES OF CONTRACTOR: NOTIFY ARCHITECT (STRUCTURAL ENGINEER) 48 HOURS IN ADVANCE OF CRITICAL STAGES OF CONSTRUCTION INDICATED BELOW. 50 VISITS MAY BE SCHEDULED BY STRUCTURAL OBSERVER. FAILURE BY CONTRACTOR TO MEET OBSERVATION SCHEDULE MAY REQUIRE REMOVAL OF SUBSEQUENT WORK FOR CORRECTION. CONTRACTOR TO BEAR COSTS OF REMOVAL AND REPLACEMENT OF FINISHED WORK OR FRAMING DAMAGED BY REMOVAL PROCESS OR AS REQUIRED FOR CORRECTION.
  - PRE-CONSTRUCTION MEETING: OWNER MAY COORDINATE AND CALL FOR MEETING BETWEEN ARCHITECT (STRUCTURAL ENGINEER) RESPONSIBLE FOR STRUCTURAL DESIGN, STRUCTURAL OBSERVER, CONTRACTOR, AFFECTED SUBCONTRACTORS AND SPECIAL INSPECTOR. STRUCTURAL OBSERVER WILL PRESE OVER THIS MEETING. PURPOSE OF MEETING IS TO IDENTIFY MAJOR STRUCTURAL ELEMENTS AND CONNECTIONS THAT AFFECT VERTICAL AND LATERAL LOAD RESISTING SYSTEMS OF STRUCTURE AND TO REVIEW SCHEDULE OF STRUCTURAL OBSERVATION, MATERIALS TESTING, AND SPECIAL INSPECTION OF PROJECT.
  - CRITICAL STAGES OF CONSTRUCTION REQUIRING STRUCTURAL OBSERVATION:
    - CASTING OF CONCRETE
    - COVERING OF FRAMING
- MILL TEST REPORTS CERTIFYING MATERIALS: CONTRACTOR TO SUBMIT MILL TEST REPORTS CERTIFYING REINFORCING STEEL, STRESSING TENDONS, AND STRUCTURAL STEEL. ARE IF IDENTIFIABLE. TESTED STOCK TO OWNER, SPECIAL INSPECTOR, ARCHITECT (STRUCTURAL ENGINEER) AND, UPON REQUEST, TO GOVERNING CODE AUTHORITY. ENSURE MATERIALS ARE PROPERLY TAGGED FOR IDENTIFICATION. IF MILL TEST REPORTS CANNOT BE MADE AVAILABLE OR IF MATERIAL CANNOT BE IDENTIFIED, TESTING LABORATORY WILL PERFORM TESTS AS DIRECTED BY ARCHITECT (STRUCTURAL ENGINEER). CONTRACTOR SHALL PAY TESTING RELATED TO TESTS AND INSPECTIONS OF UNIDENTIFIABLE MATERIALS FURNISHED WITHOUT MILL. LABORATORY FOR COSTS TEST REPORTS. MATERIALS QUALITY ASSURANCE REQUIREMENTS OF AISI 341.
  - ULTRASONIC EXAMINATION OF HEAVY ROLLED SHAPES AND THICK PLATES AT PROPOSED WELDED MOMENT CONNECTIONS: WHERE COMPLETE PENETRATION GROOVE WELDS OCCUR AT GROUPS 4 AND 5 STRUCTURAL STEEL SHAPES, AS DEFINED IN ASTM A6, AND PLATES EXCEEDING 2 INCHES THICK, SUBMIT MILL TEST REPORTS TO ARCHITECT (STRUCTURAL ENGINEER) AND, UPON REQUEST, TO GOVERNING CODE AUTHORITY. MILL TEST REPORTS SHALL CERTIFY THAT CHARTER V-NOTCH TESTING WAS CONDUCTED IN COMPLIANCE WITH ASTM A6, SUPPLEMENTARY REQUIREMENT S6, INCLUDING IMPACT TEST COMPLYING WITH ASTM A873 AT FREQUENCY P WITH MINIMUM AVERAGE VALUE OF 20 FT.-LBS. ABSORBED ENERGY AT 70 DEGREES FAHRENHEIT.
- CERTIFICATE OF COMPLIANCE FOR OFFSITE FABRICATION: SUBMIT FOR STRUCTURAL STEEL, GLU-LAMBS, AND PLYWOOD WEB JOISTS, PRECAST CONCRETE IN COMPLIANCE WITH APPLICABLE CODE SECTION 1701.7. SUBMIT TO OWNER, TESTING LABORATORY, ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY.
- WELD TESTING AND INSPECTION: TESTING LABORATORY WILL SUBMIT WELD TEST RESULTS TO OWNER, CONTRACTOR, ARCHITECT (STRUCTURAL ENGINEER) AND, UPON REQUEST, TO GOVERNING CODE AUTHORITY. SEE SPECIFICATIONS FOR TESTING REQUIREMENTS NOT INDICATED ON STRUCTURAL DRAWINGS.
  - STRUCTURAL STEEL WELDING NOT DESTRUCTIVE TESTING REQUIREMENTS: APART FROM VISUAL INSPECTION AND REVIEW OF FABRICATION AND ERECTION REPORTS OF FABRICATOR/ERECTOR'S OWN QUALITY CONTROL, TESTING AND INSPECTION, OWNERS TESTING LABORATORY WILL PERFORM INDICATED SHOP AND FIELD INSPECTION AND TESTING. TESTING LABORATORY WILL BE AWS CERTIFIED AND WILL PROVIDE INSPECTORS FOR CONTINUOUS INSPECTION OF STEEL FABRICATION AND ERECTION AND STRUCTURAL WELDING. SHOP AND FIELD TESTING OF MATERIALS AND WELDING SHALL BE AS FOLLOWS:
    - COMPLETE JOINT PENETRATION WELDS: FOR STRUCTURES IN RISK CATEGORY II OR III ULTRASONIC TESTING (UT) SHALL BE PERFORMED BY QA ON ALL CUT GROOVE WELDS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN BUTT, T- AND CORNER JOINTS. IN MATERIALS 5/16 IN. THICK OR GREATER, FOR STRUCTURES IN RISK CATEGORY I, UT SHALL BE PERFORMED BY QA ON 10% OF CJP GROOVE WELDS IN BUTT, T- AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING. IN MATERIALS 5/16 IN. THICK OR GREATER, FOR STRUCTURES IN RISK CATEGORY I, NOT OF CJP GROOVE WELDS IS NOT REQUIRED. FOR ALL STRUCTURES IN ALL RISK CATEGORIES, NOT OF CJP GROOVE WELDS IN MATERIALS LESS THAN 5/16 IN. THICK IS NOT REQUIRED.
    - ACCESS HOLES: THERMALLY CUT SURFACES OF ACCESS HOLES SHALL BE TESTED BY QA USING MT OR PT, WHEN THE FLANGE THICKNESS EXCEEDS 2 IN. (50 MM) FOR ROLLED SHAPES, OR WHEN THE WEB THICKNESS EXCEEDS 2 IN. FOR BUILT-UP SHAPES, ANY CRACK SHALL BE DEEMED UNACCEPTABLE REGARDLESS OF SIZE OR LOCATION.
- CONTINUOUS SPECIAL INSPECTION: UNLESS OTHERWISE INDICATED, CONTINUOUS SPECIAL INSPECTION WILL BE PERFORMED BY SPECIAL INSPECTOR COMPLYING WITH APPLICABLE CODE SECTION 1701 AND SPECIFICALLY APPROVED BY GOVERNING CODE AUTHORITY FOR EACH INSPECTION CATEGORY BELOW. PERIODIC INSPECTION IS NOT PERMITTED UNLESS INDICATED IN THE PROGRAM OR OTHERWISE ACCEPTED BY ARCHITECT (STRUCTURAL ENGINEER). SEE SPECIFICATIONS FOR ADDITIONAL SPECIAL INSPECTION REQUIREMENTS.

# ENGINEER OF RECORD - STRUCTURAL OBSERVATION PROGRAM

# STRUCTURAL OBSERVATIONS FOR SEISMIC & WIND RESISTANCE:

- THE OWNER SHALL EMPLOY THE ENGINEER OR ARCHITECT REGISTERED/LICENSED IN THE STATE OF CALIFORNIA WHO IS RESPONSIBLE FOR THE STRUCTURAL DESIGN TO PERFORM STRUCTURAL OBSERVATIONS.

# ENGINEER IN RESPONSIBLE CHARGE/ENGINEER OF RECORD:

NAME:	SHAWN LOTHROP, SE
LIC #:	58627
OBSERVER DESIGNATED BY E.O.R. RESPONSIBLE FOR STRUCTURAL OBSERVATIONS:	
NAME:	SHAWN LOTHROP, SE
LIC #:	58627

- STRUCTURAL OBSERVATIONS SHALL BE PROVIDED BY THE DESIGNATED STRUCTURAL OBSERVER FOR ALL BUILDINGS AT THE FOLLOWING STAGES OF CONSTRUCTION, UNLESS OTHERWISE AUTHORIZED OR REQUESTED IN WRITING BY THE BUILDING OFFICIAL:
  - PRE-CONCRETE POUR REBAR OBSERVATION
  - WOOD FRAMING OBSERVATION PRIOR TO COVERING W/ FINISH & AFTER ROOF LOAD
- PRIOR TO COMMENCEMENT OF OBSERVATION, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING DEPARTMENT A WRITTEN STATEMENT IDENTIFYING THE FREQUENCY AND EXTENT OF THE STRUCTURAL OBSERVATION.
- AT THE CONCLUSION OF WORK, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING DEPARTMENT A WRITTEN STATEMENT THAT THE STRUCTURAL OBSERVATION VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES WHICH, TO THE BEST OF THE STRUCTURAL OBSERVERS KNOWLEDGE, HAVE NOT BEEN RESOLVED.

# DEPUTY SPECIAL INSPECTOR

- DEPUTY SPECIAL INSPECTIONS SHALL BE PROVIDED BY:
  - NAME:
  - PHONE NUMBER:
- SPECIAL INSPECTOR SHALL BE HIRED BY THE OWNER TO PROVIDE SPECIAL INSPECTIONS AS REQUIRED PER THE PLANS.
- SPECIAL INSPECTOR: A QUALIFIED PERSON, EMPLOYED BY THE OWNER, WHO HAS DEMONSTRATED COMPETENCE TO THE SATISFACTION OF THE BUILDING OFFICIAL FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION. DUTIES INCLUDE VISUAL INSPECTIONS AND FIELD MEASUREMENTS OF MATERIALS, OBTAINING SPECIMENS FOR TESTS AND RELATED ACTIONS INCLUDING PREPARATION OF REPORTS.
- CONTINUOUS INSPECTION: ON SITE INSPECTION BY THE SPECIAL INSPECTOR ON A CONTINUOUS BASIS OBSERVING ALL WORK REQUIRING SPECIAL INSPECTION.
- PERIODIC INSPECTION: INTERMITTENT INSPECTION AS PERMITTED BY THE PLAN, SPECIFIED AT PRE-DETERMINED INTERVALS OR MORE FREQUENTLY AS WORK PROGRESSES. NO SIGNIFICANT ELEMENTS OR AREAS SHALL BE COVERED BY ADDITIONAL WORK UNTIL APPROVED BY THE BUILDING OFFICIAL AND/OR SPECIAL INSPECTOR.
- REPORTS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL IN A TIMELY MANNER AS DETERMINED BY THE BUILDING OFFICIAL.

# STRUCTURAL STEEL NOTES

- FABRICATION & ERECTION: ALL FABRICATION & ERECTION SHALL CONFORM TO THE LATEST STANDARDS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS.
- ASTM SPECIFICATIONS: STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:

TABLE 1 - STEEL MATERIAL SPECIFICATIONS	
STEEL SHAPE	ASTM SPECIFICATION
W	A992 OR A572 GRADE 50
M, S, HP	A36 OR A572 GRADE 50
C - CHANNEL	A572 GRADE 50
L - ANGLE	A36
PLATES & BAR	A36
STEEL PIPE	A53 GRADE B
ROUND HSS	A500 GRADE B OR C
SQ. & RECT. HSS	A500 GRADE B OR C
MACHINE BOLTS	A325, A490, F1552, F2280
NUTS	A305, A194
WASHERS	F436
ANCHOR RODS	F1554-A36
SHEAR STUDS	A108

- STEEL EXPOSED TO WEATHER OR CORROSIVE ENVIRONMENT: ALL STEEL EXPOSED TO WEATHER OR CORROSIVE ENVIRONMENT SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN COMPLIANCE WITH ASTM A123. ALL FIELD WELDS ON GALVANIZED STEEL SHALL BE TREATED WITH ZINC-RICH PAINT IN COMPLIANCE WITH ASTM A780.
- STEEL FABRICATION: ALL STEEL FABRICATION SHALL BE PERFORMED IN A SHOP APPROVED BY THE GOVERNING JURISDICTION DEPARTMENT OF BUILDING & SAFETY.
- STEEL FABRICATOR: THE STRUCTURAL STEEL FABRICATOR SHALL PROVIDE A SET OF SHOP FABRICATION DRAWINGS FOR APPROVAL TO THE ENGINEER OF RECORD. THE FABRICATOR SHALL NOT FABRICATE THE STEEL UNTIL THE ENGINEER OF RECORD HAS APPROVED THE SHOP DRAWINGS.
- WELDING: ALL WELDING SHALL BE IN COMPLIANCE WITH THE LATEST AISI & AMERICAN WELDING SOCIETY (AWS) STANDARDS. ALL WELDING SHALL BE PERFORMED USING A SHIELDED ARC PROCESS USING APPROVED ELECTRODES CONFORMING TO ANGLES, LIFT HOLES AND OTHER AIDS. WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS AND UNEQUAL PARTS.
- WELDING PROCEDURES: A WRITTEN WELDING PROCEDURE SPECIFICATIONS (WPS) PER AWS D1.1 SHALL BE DEVELOPED BY THE FABRICATOR/RECTOR AND REVIEWED BY THE ENGINEER OF RECORD AND THE BUILDING DEPARTMENT.
- ERECTION AIDS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDS AND JOINT PREPARATIONS THAT INCLUDE, BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES AND OTHER AIDS. WELDING PROCEDURES, REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, COPES, SURFACE ROUGHNESS AND UNEQUAL PARTS.
- FIELD WELDING: FIELD WELDING SHALL BE PERFORMED BY A BUILDING DEPARTMENT CERTIFIED WELDER. FIELD WELDING REQUIRES CONTINUOUS SPECIAL INSPECTION. PERIODIC FIELD SPECIAL INSPECTION IS ACCEPTABLE FOR FLOOR AND ROOF DECK WELDING, STUD WELDING & WELDING OF STAIR-HANDRAIL SYSTEMS.
- BOLTING: BOLTING OF STRUCTURAL STEEL SHALL MEET THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) 2000 EDITION SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 & A490 BOLTS FOR TYPES X, N & S.
- CAMBER: ALL STEEL BEAMS SHALL HAVE STANDARD MILL CAMBER UNLESS NOTED OTHERWISE ON THE STRUCTURAL PLANS.

# MASONRY

- SPECIFIED COMPRESSIVE STRENGTH OF MASONRY ( $f_m$ ): 1,500 PSI TYPICAL UNLESS NOTED OTHERWISE.
- VERIFYING SPECIFIED COMPRESSIVE STRENGTH OF MASONRY ( $f_m$ ): USE MASONRY PRISM TESTING METHODS UNLESS OTHERWISE ACCEPTABLE TO ARCHITECT (STRUCTURAL ENGINEER). FULL-SCALE STRENGTH TESTS ARE NOT IN DESIGN. SUBMIT MASONRY PRISM DATA FOR EACH TYPE AND COMPRESSIVE STRENGTH OF MASONRY REQUIRED, WITH A PROFESSIONAL ENGINEER'S SIGNATURE AND STATE OF CALIFORNIA SEAL. TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW. MINIMUM REQUIRED COMPRESSIVE STRENGTH SHALL BE BASED ON APPLICABLE CODE SECTION 2105.3.
- CONCRETE BLOCK: ASTM C90, MEDIUM WEIGHT, GRADE N-1 AND APPLICABLE CODE STANDARD 21-4 ATTAINING A MINIMUM COMPRESSIVE STRENGTH AS REQUIRED TO MEET SPECIFIED COMPRESSIVE STRENGTH OF MASONRY ( $f_m$ ).
- FACE BRICK: ASTM C216 AND APPLICABLE CODE STANDARD 21-1.
- PORTLAND CEMENT FOR MORTAR AND GROUT: ASTM C150, TYPE I OR II. USE OF MASONRY CEMENT OR PLASTIC CEMENT IS NOT PERMITTED.
- AGGREGATES FOR MORTAR AND GROUT:
  - AGGREGATES FOR MORTAR: ASTM C344.
  - AGGREGATES FOR GROUT: C404, COARSE TYPE.
- MORTAR: ASTM C270, TYPE S, MIX IN PROPORTIONS ACCORDING TO APPLICABLE CODE TABLE 21-4 TYPE S. (2,000 PSI MINIMUM).
- GROUT: ASTM C476, COARSE TYPE, ATTAINING A MINIMUM COMPRESSIVE STRENGTH AS REQUIRED TO MEET SPECIFIED COMPRESSIVE STRENGTH OF MASONRY ( $f_m$ ). HOWEVER, IN NO CASE SHALL GROUT COMPRESSIVE STRENGTH BE LESS THAN 2,000 PSI AT 28 DAYS.
- REINFORCING STEEL: REINFORCING STEEL SECTION OF GENERAL NOTES UNLESS INDICATED OTHERWISE.
  - COMPOSITE MASONRY WALL PENETRATION SUBMITTAL: SUBMIT FOR EACH WALL INDICATING: SIZE AND LOCATION OF EACH WALL PENETRATION AND OPENING AS NECESSARY BY AFFECTED TRADES. SUBMIT TOGETHER WITH APPROPRIATE REINFORCING STEEL SHOP DRAWINGS. SUBMIT WRITTEN STATEMENT FROM SPECIAL INSPECTOR THAT NO ADDITIONAL PENETRATION OR OPENINGS WERE ADDED TO THOSE SHOWN IN PENETRATION SUBMITTAL.
- REINFORCING STEEL SPLICES: LAP REINFORCING STEEL AT SPLICES A MINIMUM OF 48 BAR DIAMETERS, EXCEPT DOWELS IN FOOTINGS AT BASE OF WALLS SHALL SPLICE A MINIMUM OF 72 BAR DIAMETERS, UNLESS NOTED OTHERWISE. WHERE MINIMUM CLEAR DISTANCE BETWEEN BARS AT ADJACENT SPLICES IS 8 INCHES OR LESS, INCREASE LAP LENGTH 30 PERCENT UNLESS SPLICES ARE STAGGERED AT LEAST 24 BAR DIAMETERS.
- DOWELS FOR WALLS, COLUMNS, PILASTERS, AND PIERS: MATCH SIZE AND SPACING OF VERTICAL REINFORCING STEEL, UNLESS NOTED OTHERWISE. SET DOWELS TO ALIGN WITH CELLS CONTAINING REINFORCING STEEL.
- MINIMUM REINFORCING STEEL CLEARANCES:
  - MINIMUM CLEARANCES BETWEEN REINFORCING AND OUTSIDE FACE OF MASONRY: 2" EXCEPT IN NO CASE SHALL CLEARANCE BE LESS THAN 1" db.
  - MINIMUM CLEARANCE BETWEEN REINFORCING AND INSIDE FACE OF GROUT CELL: 1" db.
  - MINIMUM CLEARANCE DISTANCE BETWEEN PARALLEL REINFORCING: 1" OR db, WHICHEVER IS LESS. INCREASE TO 1 1/2" OR 1 1/2 db, WHICHEVER IS LESS, AT CORNERS AND END JOINTS.
- PLACEMENT: SET COURSES IN RUNNING BOND PATTERN UNLESS INDICATE OTHERWISE. SET CELLS IN VERTICAL ALIGNMENT. PROVIDE FLUSH MORTAR JOINTS AT SURFACES TO RECEIVE WATERPROOFING OR DAMP-PROOFING.
- GROUTING: GROUT SOULD ALL CEL





CONSULTANT:



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SOCAL | NORCAL | COLORADO

ISE PROJECT NO.: 21-7205

PROJECT FOR:

SAN BERNARDINO  
COUNTY  
REAL ESTATE SERVICES -  
PROJECT MANAGEMENT  
DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:

PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 10.10.1151

ISSUE INFORMATION:

DATE:	INFORMATION:

SHEET INFORMATION:

STK PROJECT NO.: 374-147-21  
SCALE: AS NOTED  
DATE: JULY 2021  
PLOT DATE: JULY 21, 2021  
DRAWING NAME:

SEAL:



SHEET TITLE:

FOUNDATION PLAN

SHEET NO.:

S1

## GEOTECHNICAL INFORMATION

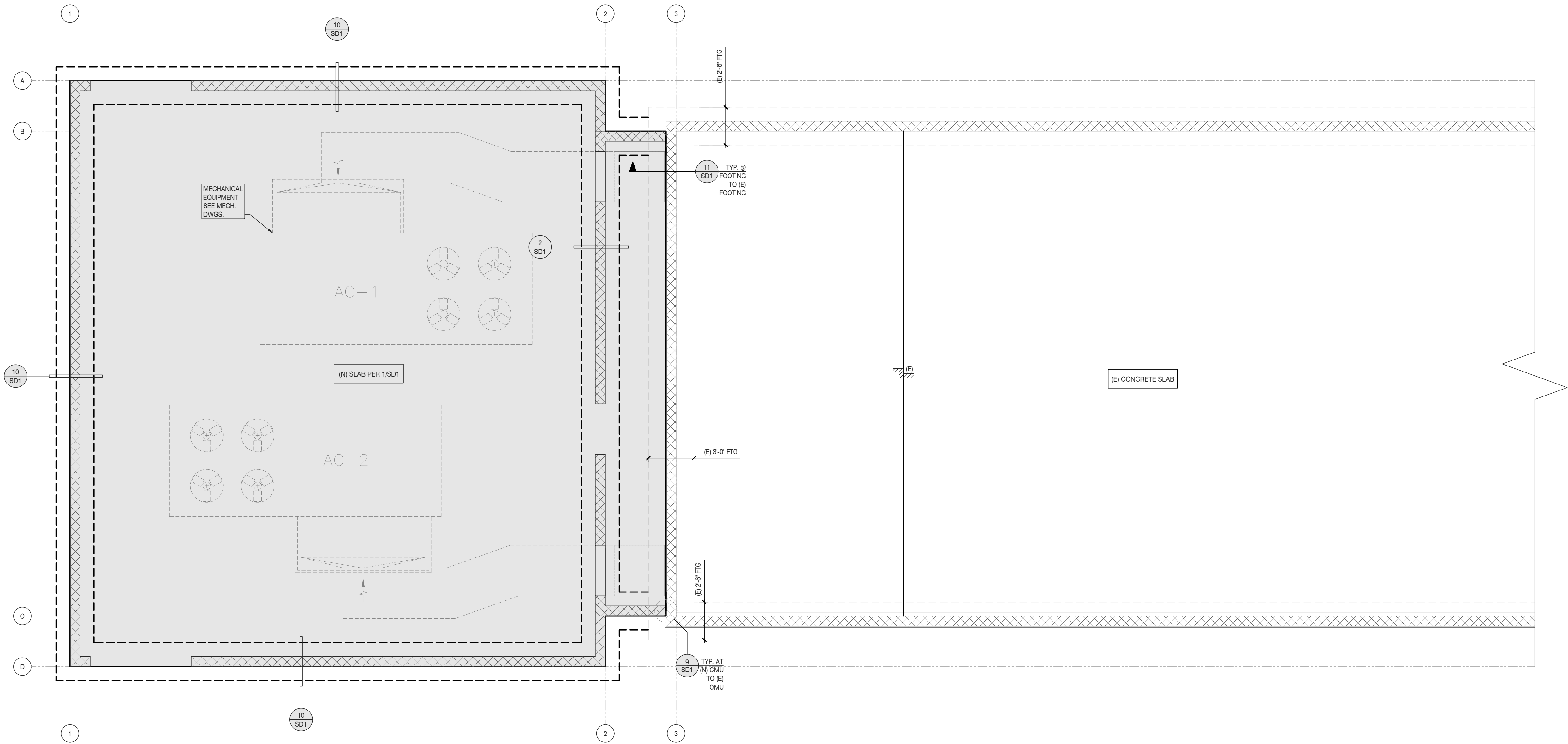
1. REFER TO STRUCTURAL COVER SHEET (SCS) FOR ASSUMED SOIL VALUES OR VALUES BASED ON THE PROVIDED GEOTECHNICAL (GOLS) REPORT.
2. THE OWNER/DEVELOPER AND SUBCONTRACTORS ARE TO REVIEW THE SOILS REPORT PRIOR TO COMMENCING CONSTRUCTION AND VERIFY THE PLANS COMPLY WITH THE CURRENT SOILS REPORT RECOMMENDATIONS. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED IF THE SOILS REPORT DATE SHOWN ON SHEET (SCS) DOES NOT MATCH THE CURRENT REPORT DATE. THE OWNER/DEVELOPER IS RESPONSIBLE FOR UPDATING THE STRUCTURAL ENGINEER WITH CURRENT GEOTECHNICAL ENGINEERING REQUIREMENTS.

## FOUNDATION NOTES

1. FOR GENERAL NOTES & DETAILS REFER TO THE SN & SD SHEETS.
2. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR TOP OF STRUCTURAL CONCRETE SLAB ELEVATIONS, DEPRESSIONS, SLOPES, CURBS, DRAINS, PADS, DECK EDGE LOCATIONS, ALL OVERALL DIMENSIONS, AND LOCATIONS OF OPENINGS IN WALLS AND SLABS NOT INDICATED ON STRUCTURAL DRAWINGS.
3. CENTER CONTINUOUS FOOTINGS UNDER WALLS U.N.O. CENTER SPREAD FOOTINGS UNDER COLUMNS U.N.O.
4. BUILDING SLAB-ON-GRADE: MINIMUM 6" THICK SLAB W/ #4 AT 18" O.C. EACH WAY AT CENTER OF SLAB.
5. CONSTRUCT CONTINUOUS FOOTINGS AT CORNERS AND INTERSECTIONS PER DETAIL 13/SD1.
6. DIMENSIONS TO CMU WALLS ARE TO FACE OF MASONRY UNLESS NOTED OTHERWISE.
7. IN NO CASE SHALL PIPES, CONDUITS, OR SLEEVES BE EMBEDDED IN SPREAD FOOTINGS UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS.

## FOUNDATION LEGEND & SYMBOLS

	CONCRETE SLAB & FOOTING. FOOTING SIZE AND REINFORCING PER DETAIL SHEET SD1
	INDICATES: EXISTING CONCRETE SLAB & FOOTING.
	INDICATES: 8" CMU (fm = 1500 psi) WALL WITH #5 AT 18" O.C. VERTICAL & #5 AT 18" O.C. HORIZONTAL WITH SOLID GROUT. REFER TO PLANS & DETAILS .
	INDICATES: EXISTING 8" CMU (fm = 1500 psi) WALL
	AT XX' O.C. ANCHOR /SPACING
	DETAIL #
	SHEET #
	INDICATES: DETAIL CUT LOCATION. REFER TO DETAIL # AND STRUCTURAL SHEET NUMBER FOR MORE INFORMATION. TEXT ABOVE BUBBLE INDICATES REVISED HARDWARE OTHER THAN NOTED IN DETAIL



## FOUNDATION PLAN

SCALE : 1/4" = 1'-0"

DO NOT SCALE PLANS FOR CONSTRUCTION DIMENSIONS. ALL CONSTRUCTION DIMENSIONS SHOULD BE VERIFIED WITH THE ARCHITECTURAL SET OF PLANS





CONSULTANT:



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PROJECT FOR:  
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385 N. ARROWHEAD AVE.  
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PROJECT NAME:

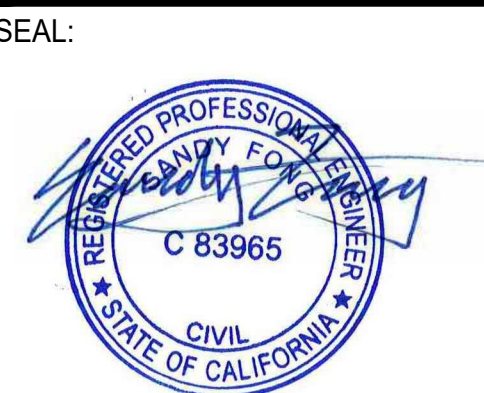
PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
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CALIFORNIA 91739

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STK PROJECT NO.:	374-147-21
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DATE:	JULY 2021
PLOT DATE:	JULY 21, 2021
DRAWING NAME:	



SHEET TITLE:

ROOF FRAMING  
PLAN

SHEET NO.:

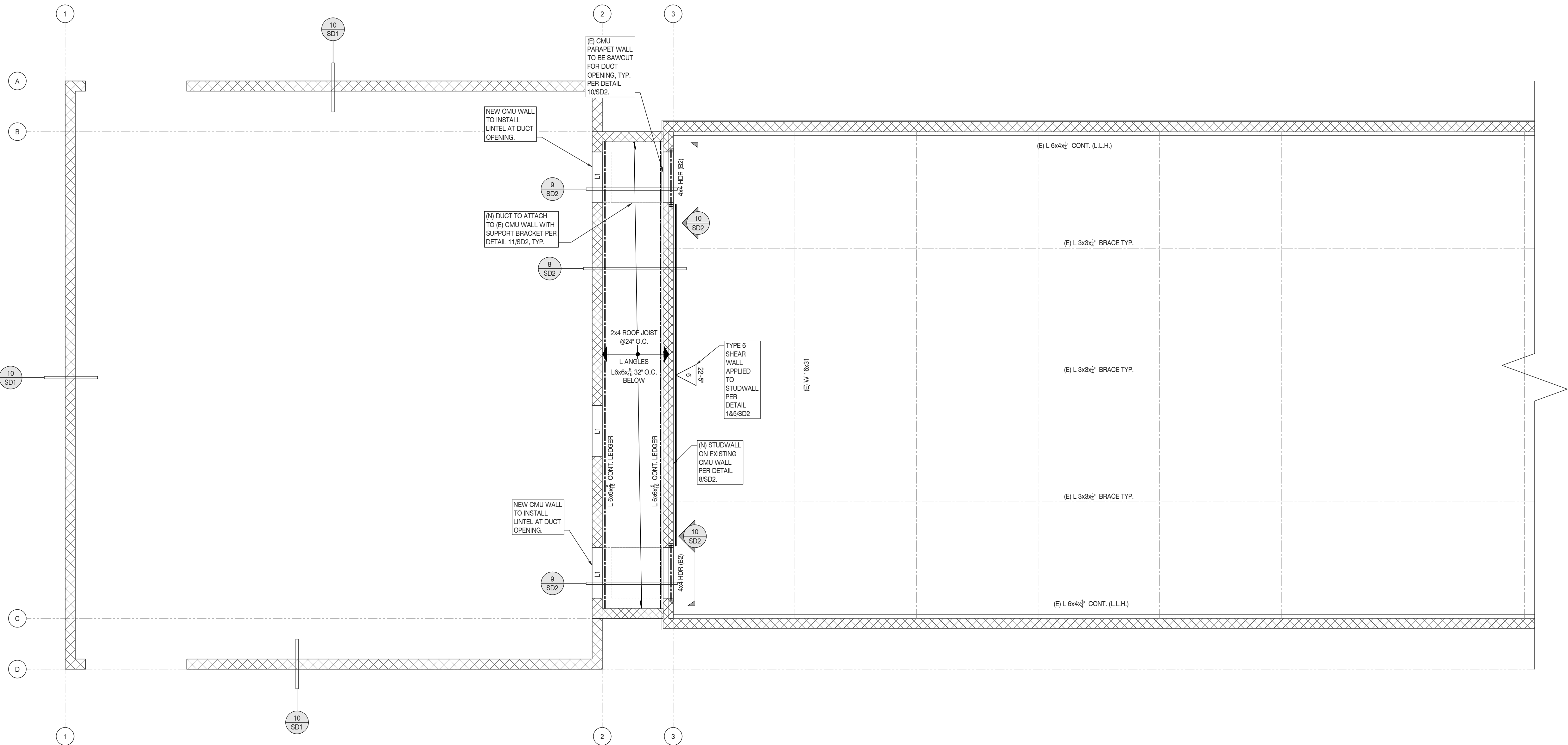
S2

FRAMING NOTES

1. REFER TO STRUCTURAL GENERAL NOTE SHEET (SN SERIES) AND DETAILS (SD SERIES) FOR INFORMATION NOT SHOWN ON THE MAIN FRAMING PLANS.
2. REFER TO MAIN FRAMING PLAN FOR ALL INFORMATION NOT SHOWN ON THE ALTERNATE ELEVATIONS AND OPTIONS.
3. FRAMER TO COORDINATE JOIST SPACING WITH M.E.P. DESIGNS. FRAMER TO REVIEW MECH. AND ELECTRIC PLANS BEFORE FINAL PLACEMENT OF JOISTS. WHERE ALIGNED JOIST INTERFERES W/ FUTURE INSTALLATION OF M.E.P. INSTALLATION, CONTACT STRUCTURAL ENGINEER.
4. ROOF SHOULD BE FULLY LOADED PRIOR TO NAILING THE TOP PLATE HARDWARE TO ROOF TRUSS BOTTOM CHORD.
5. CONTRACTOR TO FIELD VERIFY EXISTING FRAMING PRIOR TO THE START OF CONSTRUCTION. EXISTING FRAMING INFORMATION BASED ON PROVIDED AS-BUILT STRUCTURAL PLANS DATED 12/12/2019. CONTRACTOR TO IMMEDIATELY NOTIFY STRUCTURAL EOR/ ARCHITECT IF ANY DISCREPANCIES OCCUR BETWEEN THE STRUCTURAL PLANS AND AS-BUILT CONDITIONS, PRIOR TO THE START OF CONSTRUCTION.

FRAMING LEGEND & SYMBOLS

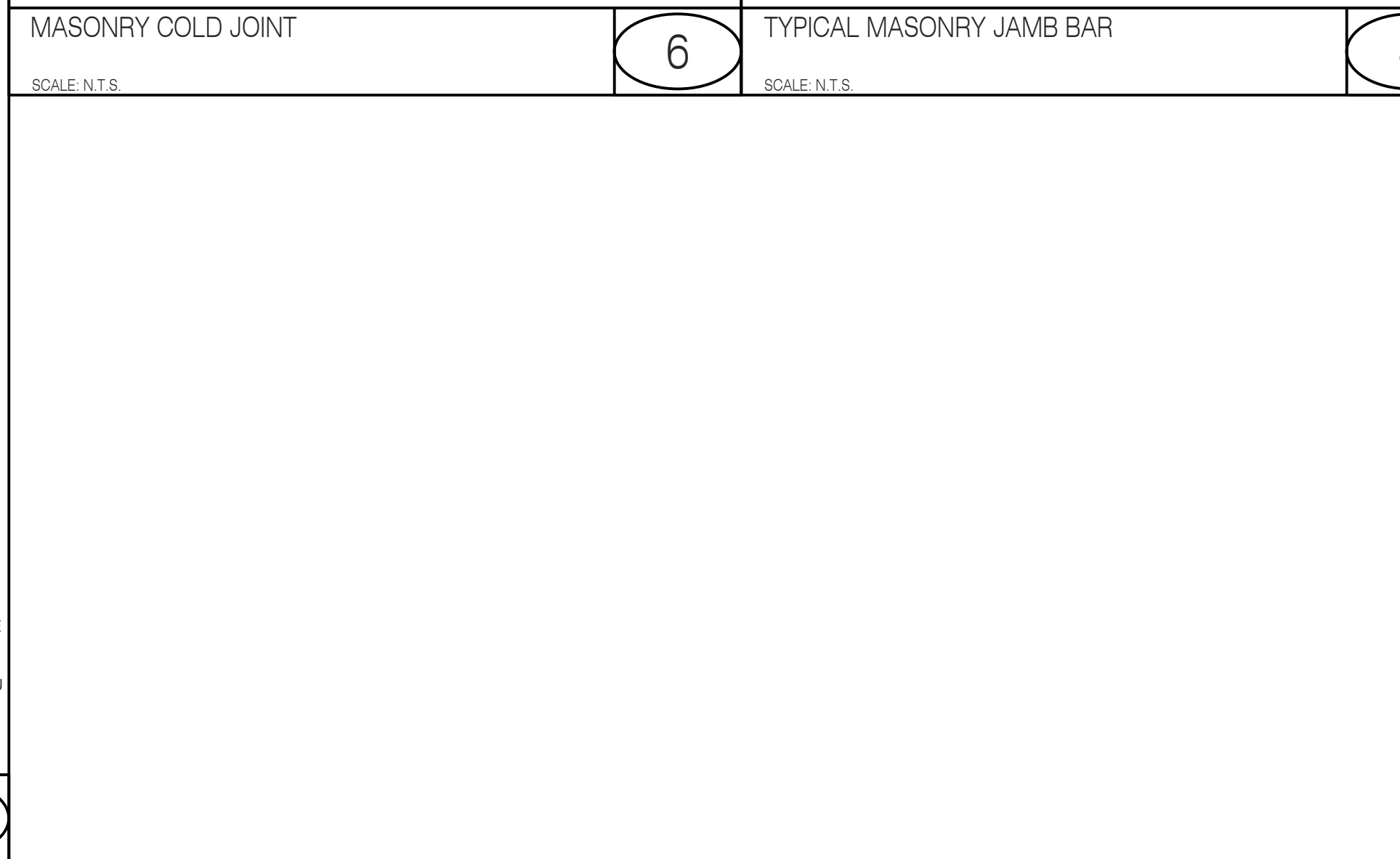
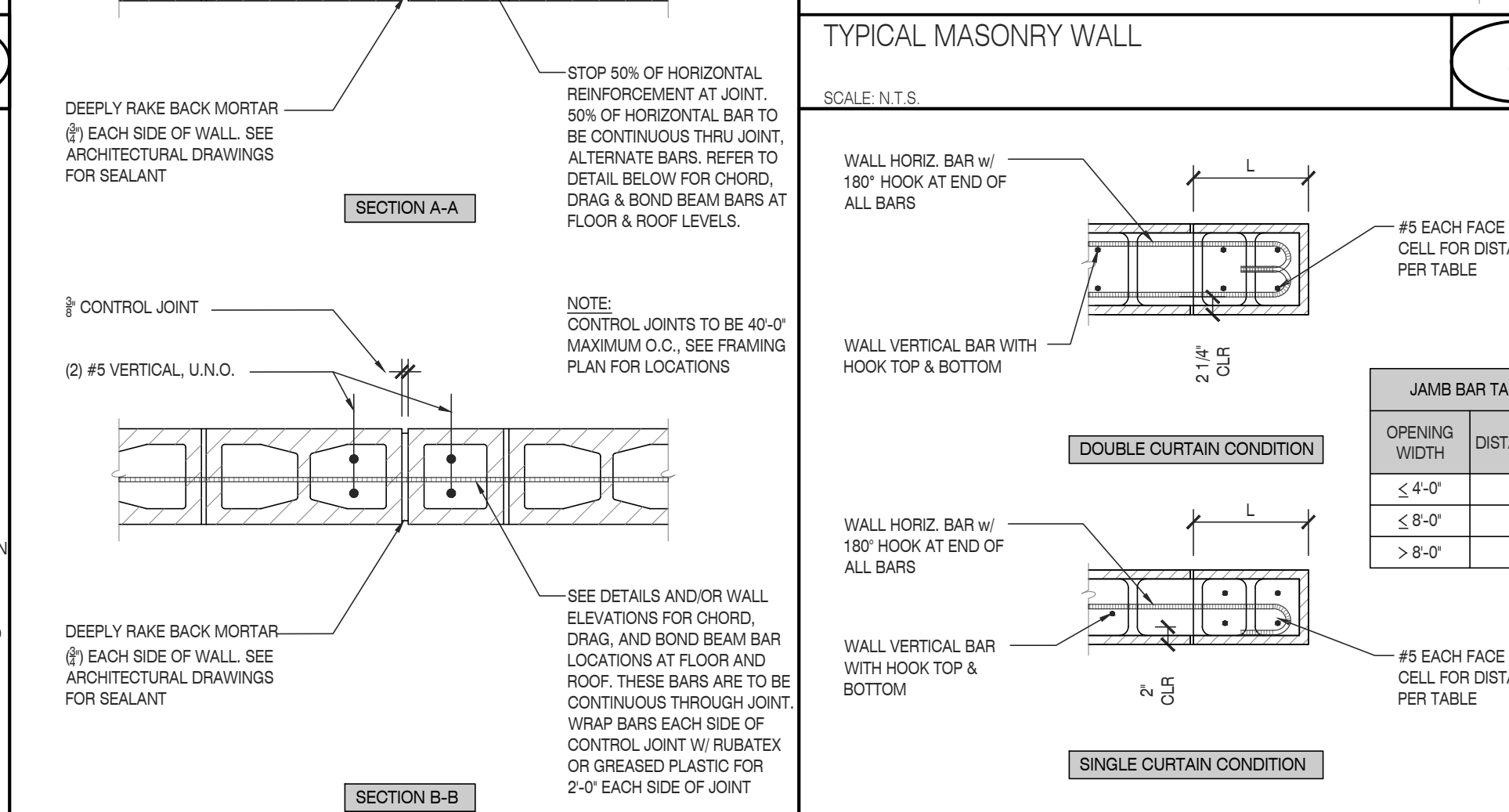
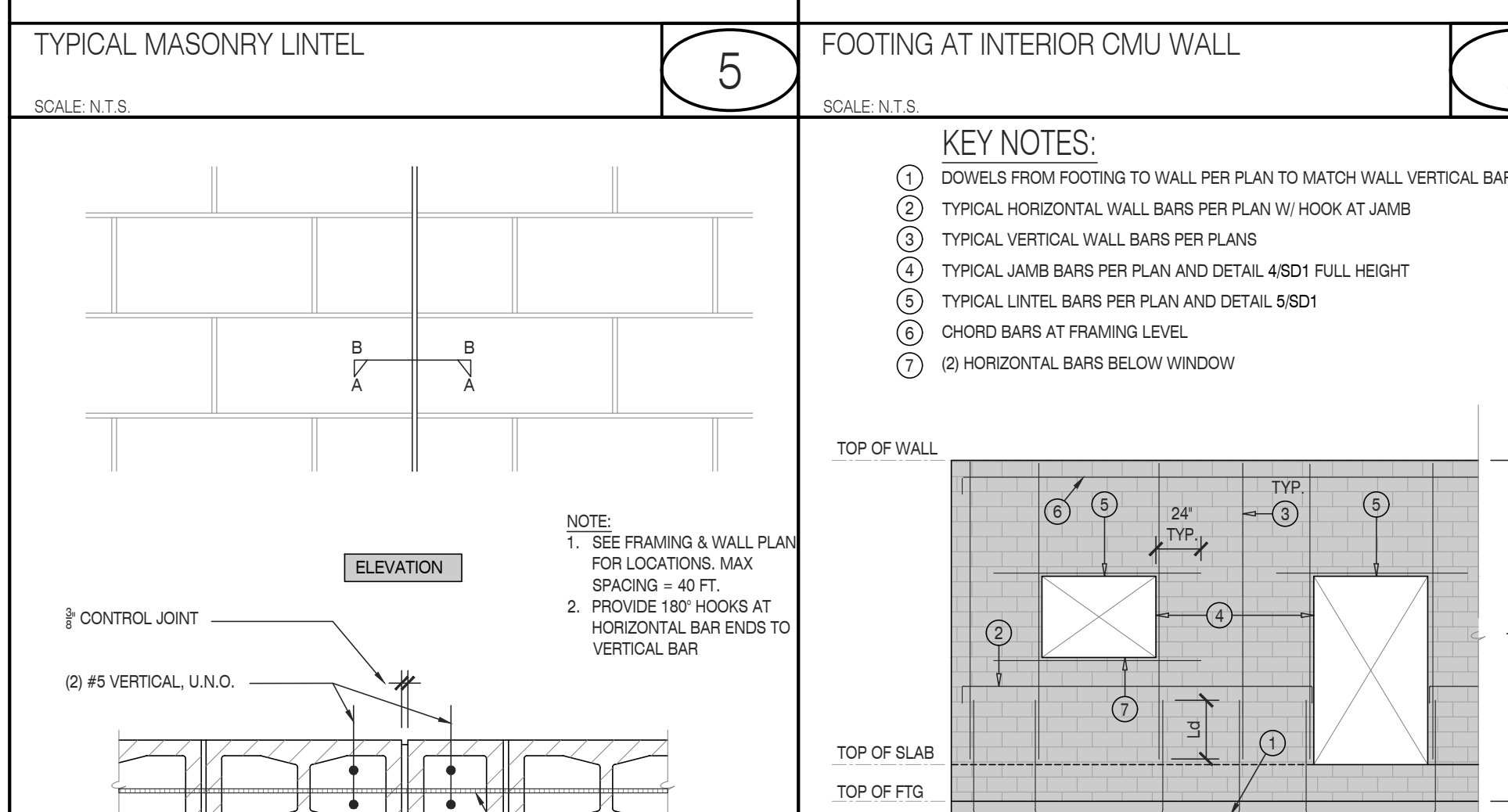
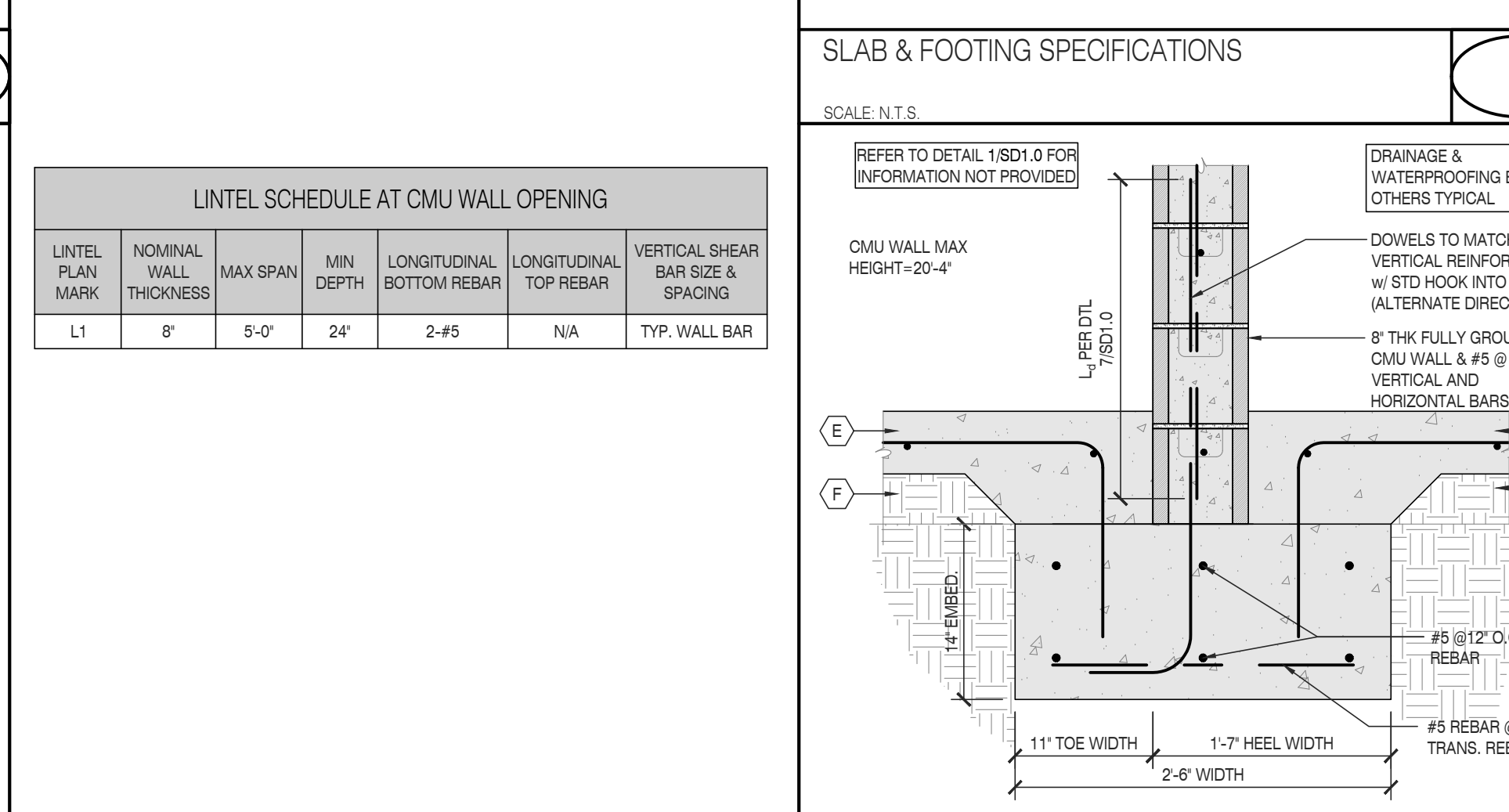
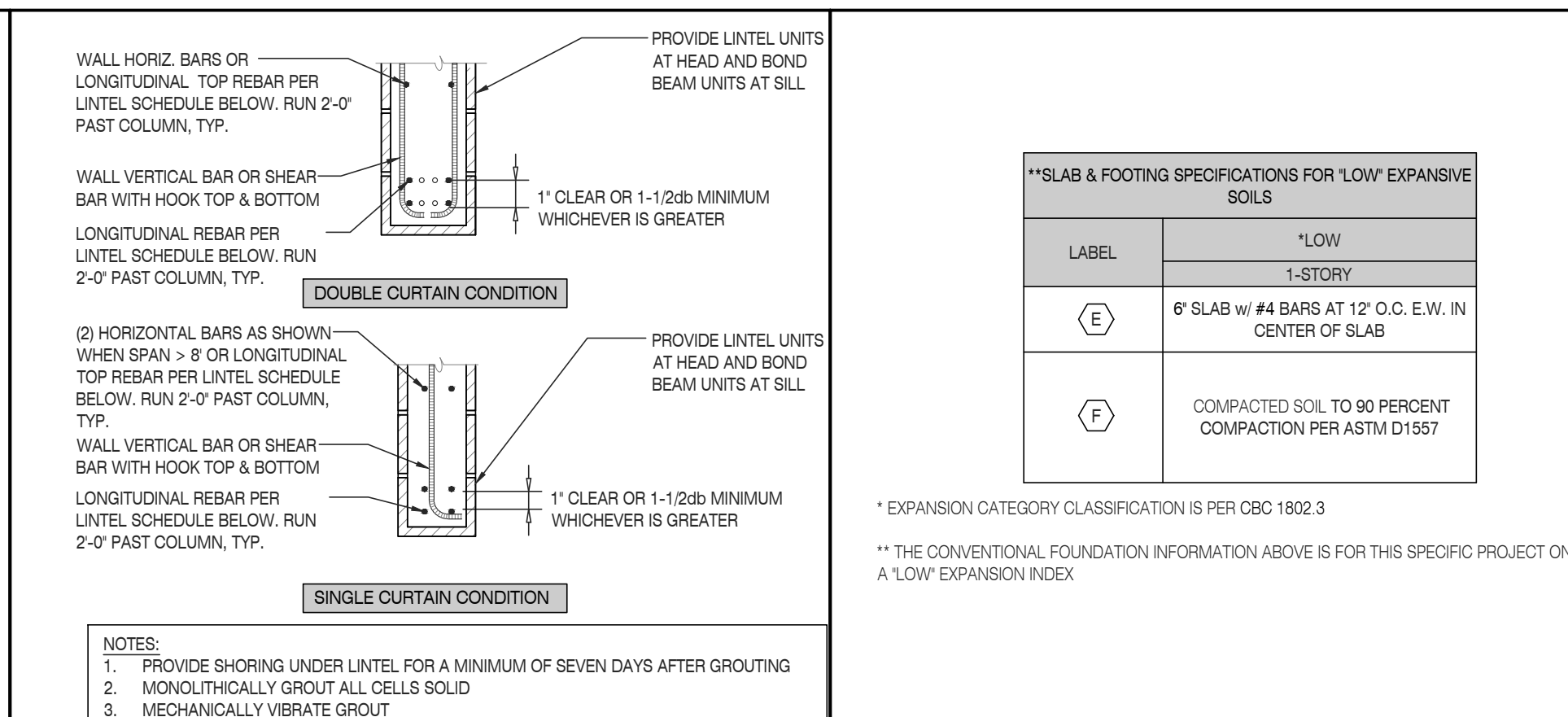
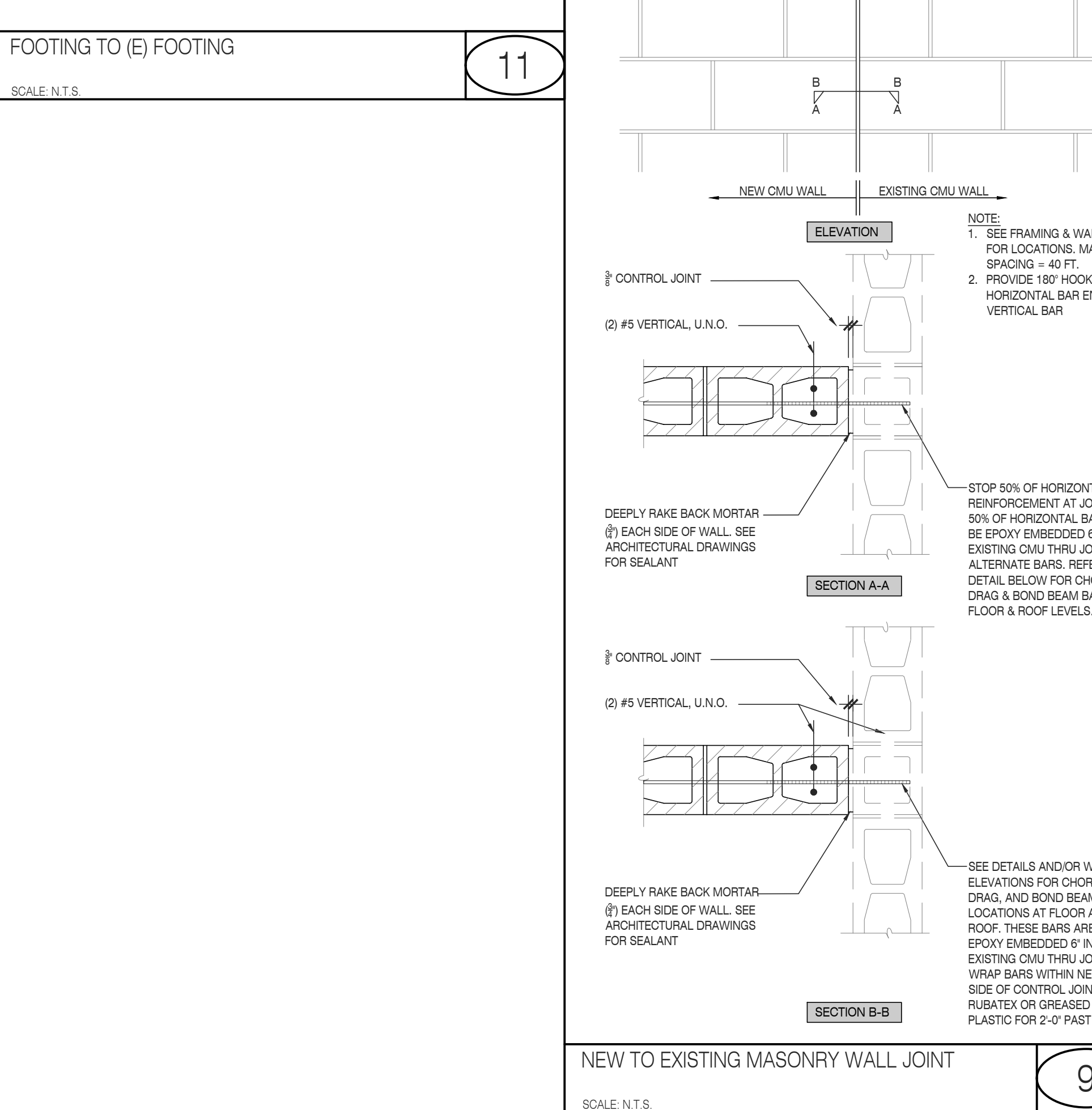
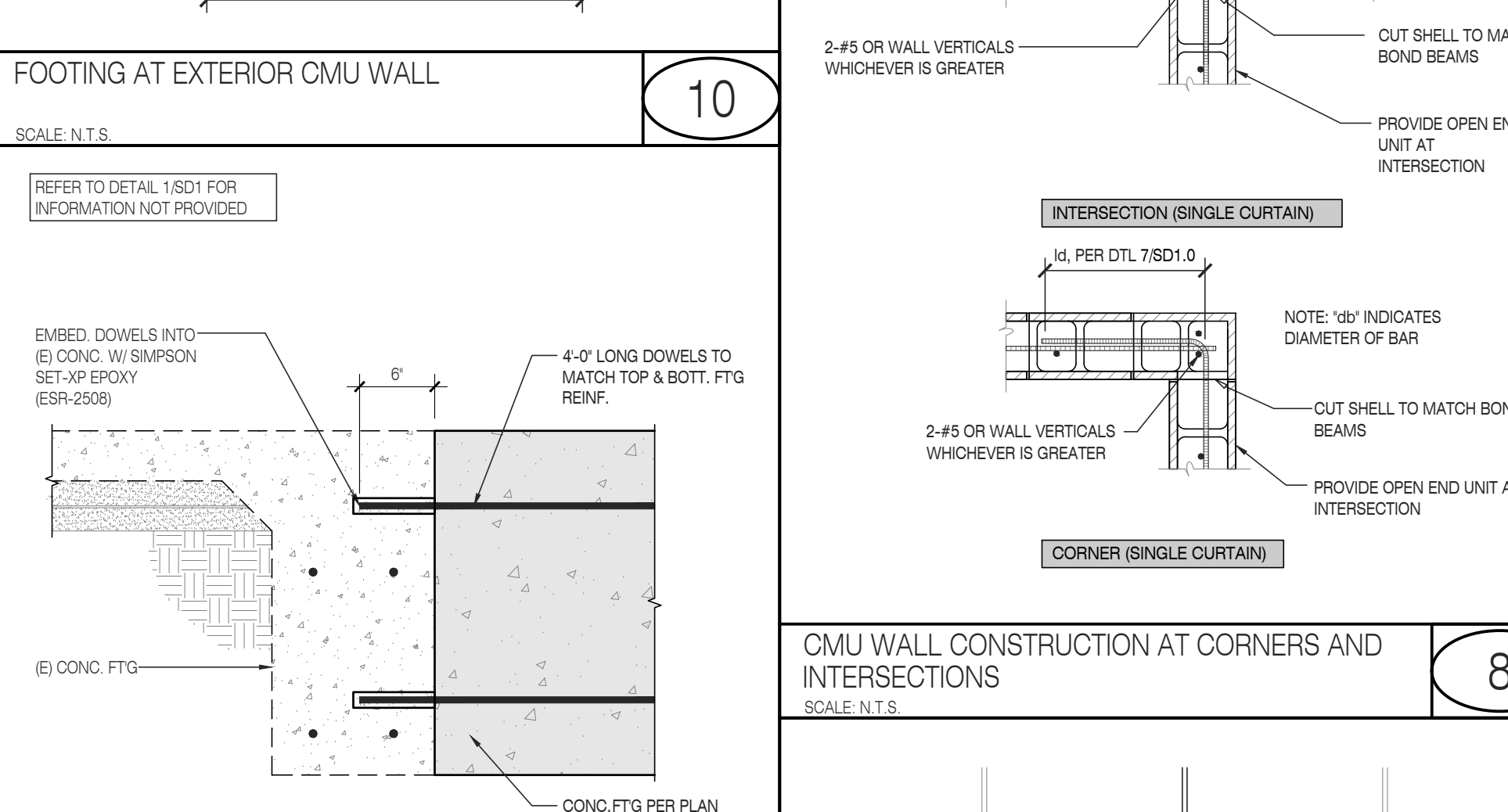
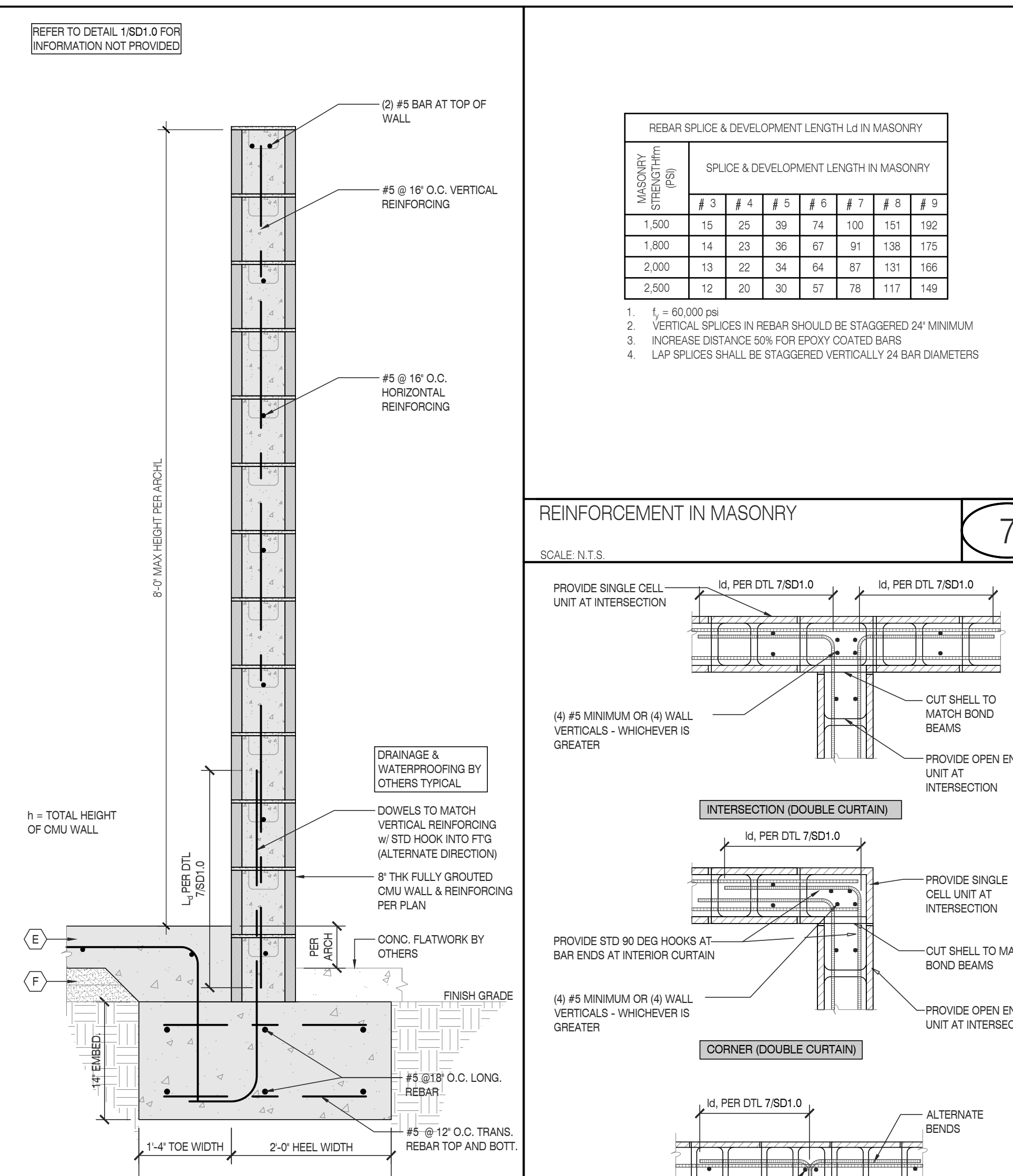
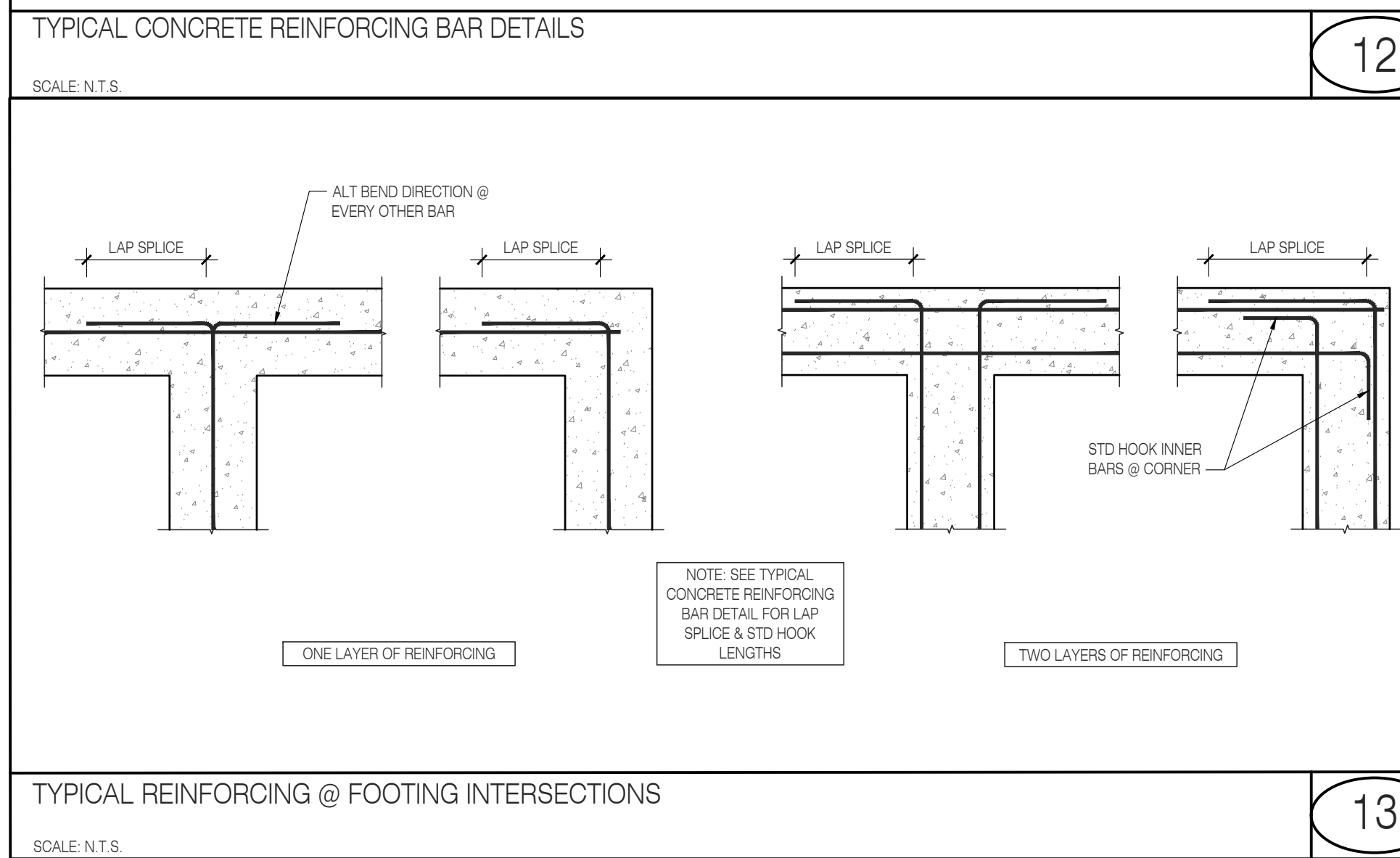
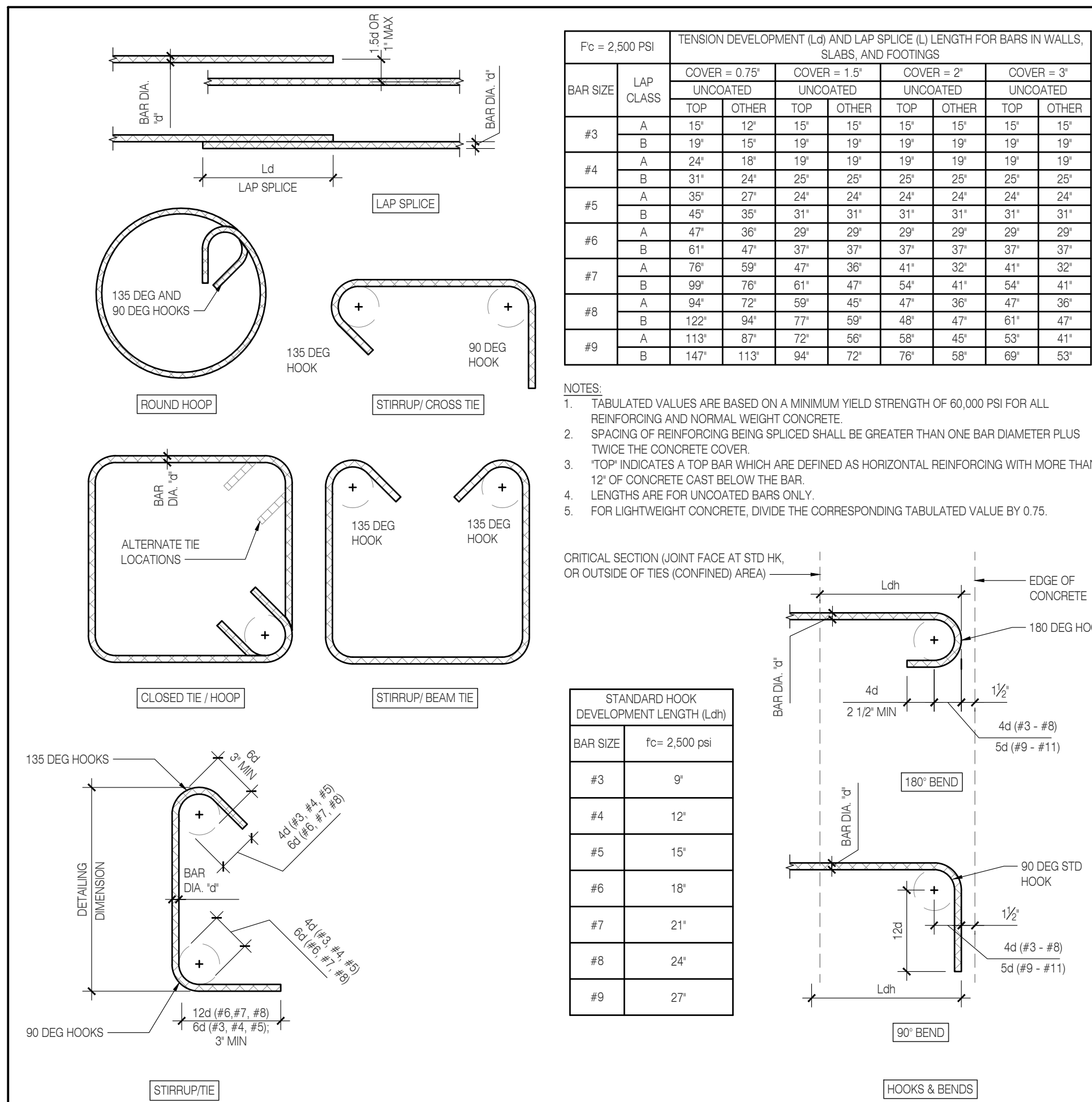
AT XX' O.C. REQUIRED ANCHOR SPACING DETAIL # SHEET #	INDICATES DETAIL CUT LOCATION. REFER TO DETAIL # AND STRUCTURAL SHEET NUMBER FOR MORE INFORMATION. TEXT ABOVE BUBBLE INDICATES REVISED HARDWARE OTHER THAN NOTED IN DETAIL.
INDICATES: NEW 8" CMU (f'm = 1500 psi) WALL WITH #5 AT 16" O.C. VERTICAL & #5 AT 16" O.C. HORIZONTAL WITH SOLID GROUT. REFER TO PLANS & DETAILS.	INDICATES: EXISTING 8" CMU (f'm = 1500 psi) WALL.
INDICATES: NEW CMU LINTEL ABOVE WALL OPENING PER DETAIL 5/SD1 U.N.O. ON PLAN.	INDICATES: 1. WALL OPENING HEADER PER FRAMING SCHEDULE BELOW 2. PROVIDE (1) 2x TRIMMER EACH SIDE U.N.O. ON PLAN 3. PROVIDE KING STUDS PER PLAN.
INDICATES: 1. EXISTING BEAM AS NOTED ON PLANS	INDICATES SPAN AND DIRECTION OF NEW ROOF RAFTERS PER PLAN
INDICATES: DRAG TIE STRAP PER PLAN OR DETAIL SHOWN ON PLANS.	



ROOF FRAMING PLAN  
DO NOT SCALE PLANS FOR CONSTRUCTION DIMENSIONS. ALL CONSTRUCTION DIMENSIONS SHOULD BE VERIFIED WITH THE ARCHITECTURAL SET OF PLANS

SCALE : 1/4" = 1'-0"





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ISE PROJECT NO.: 21-7205

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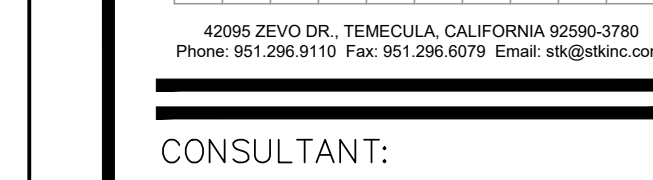
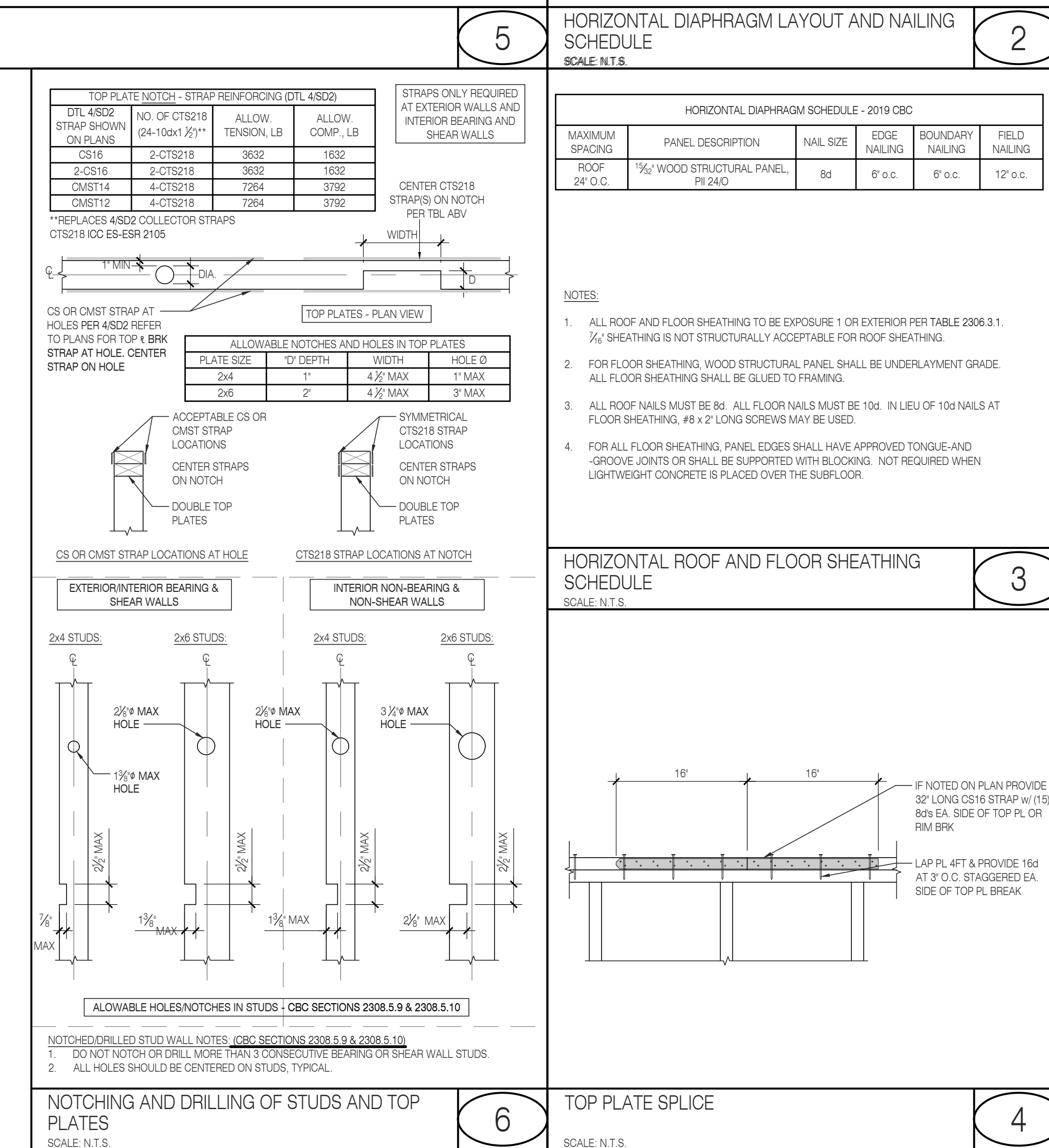
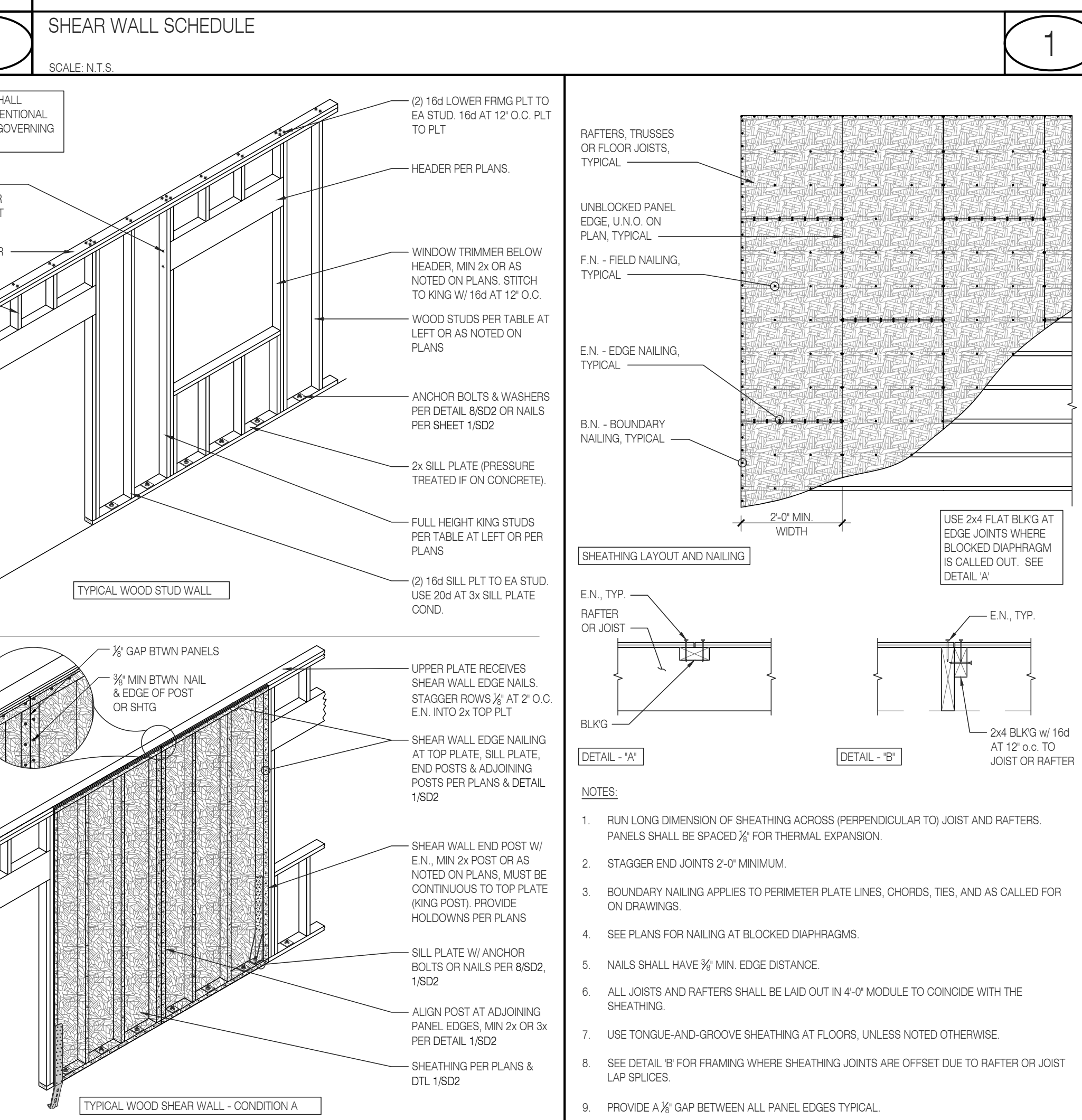
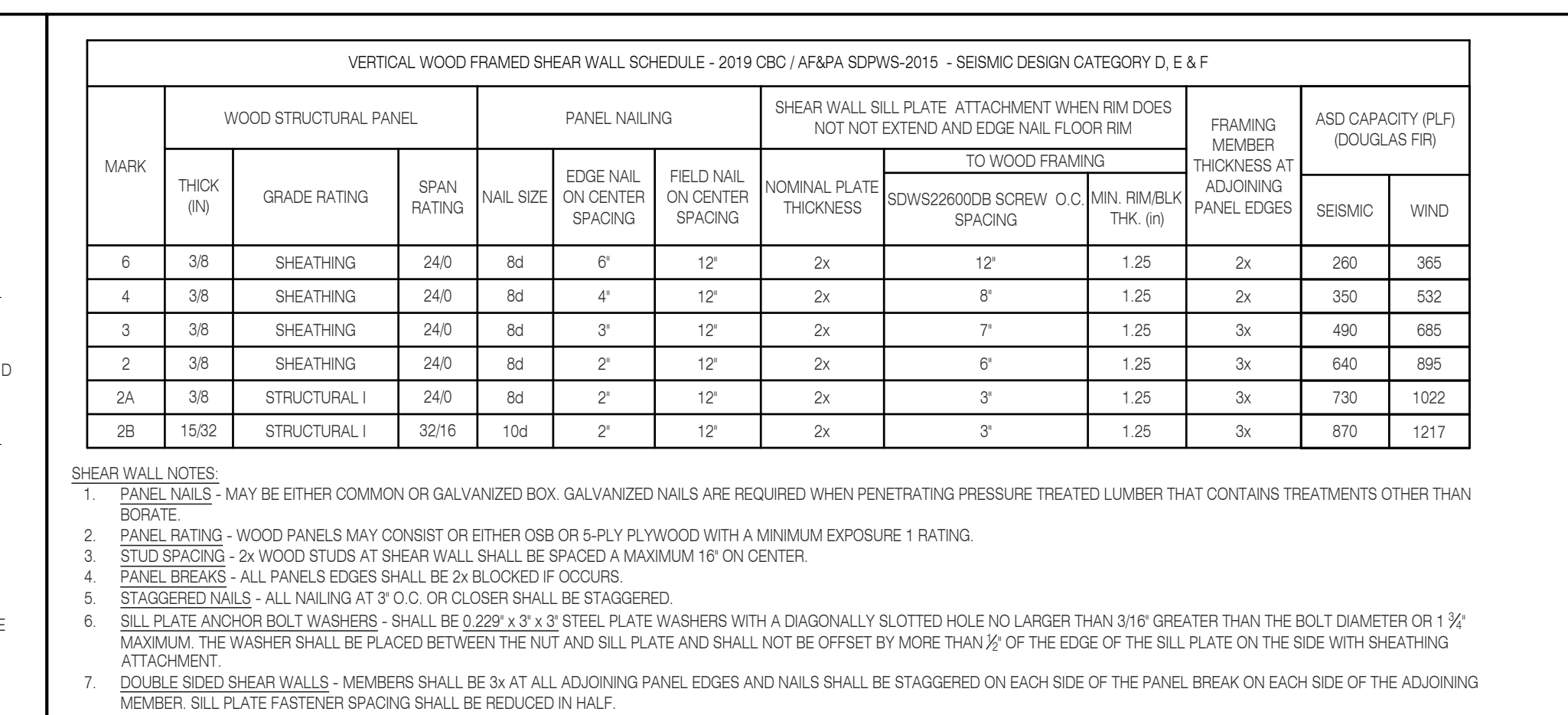
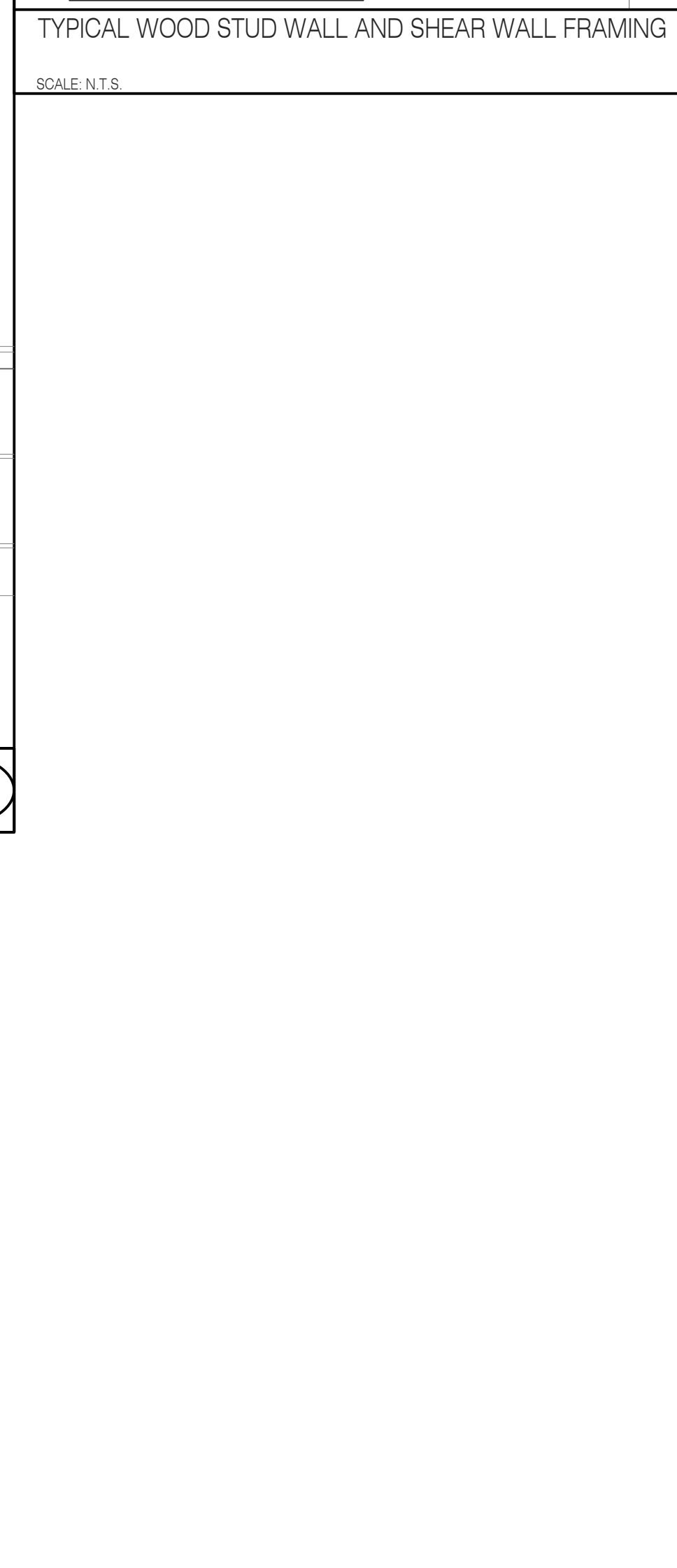
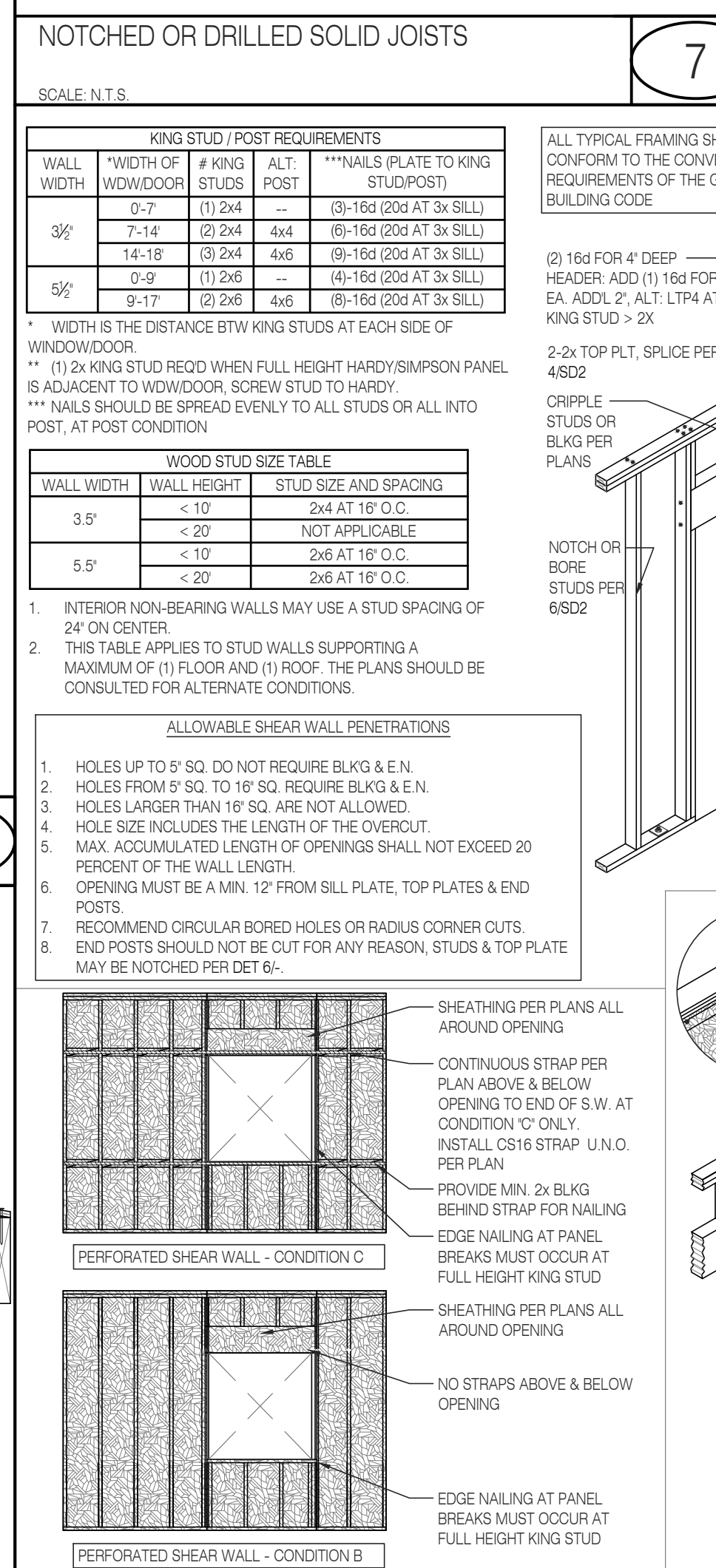
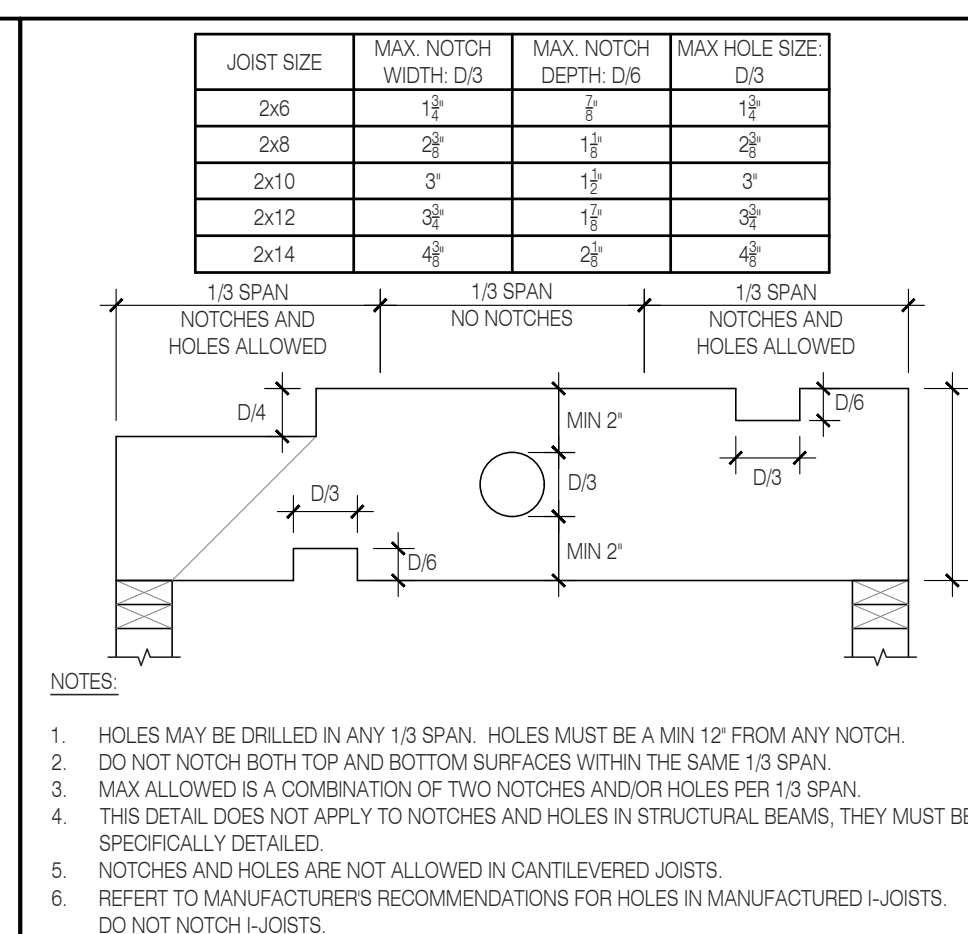
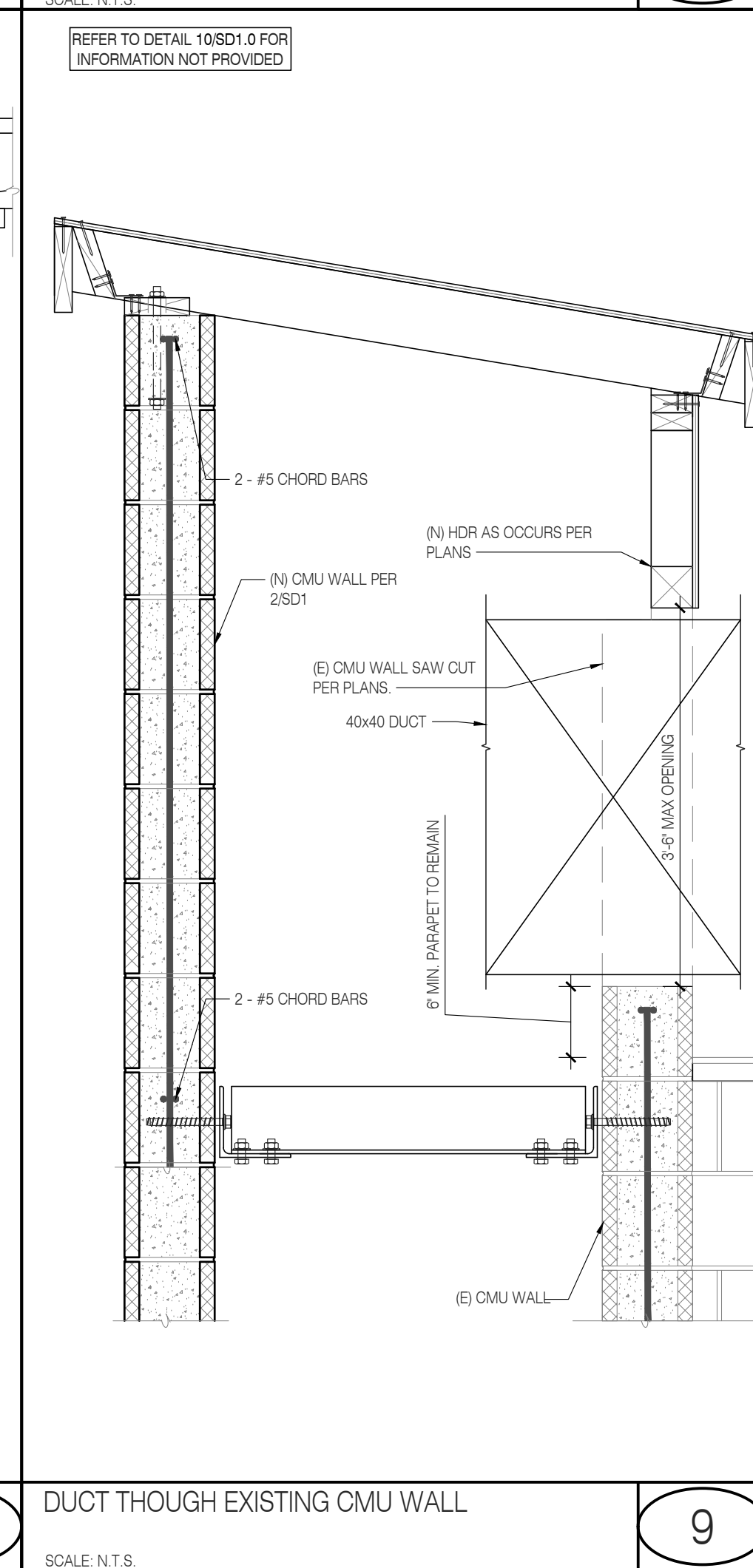
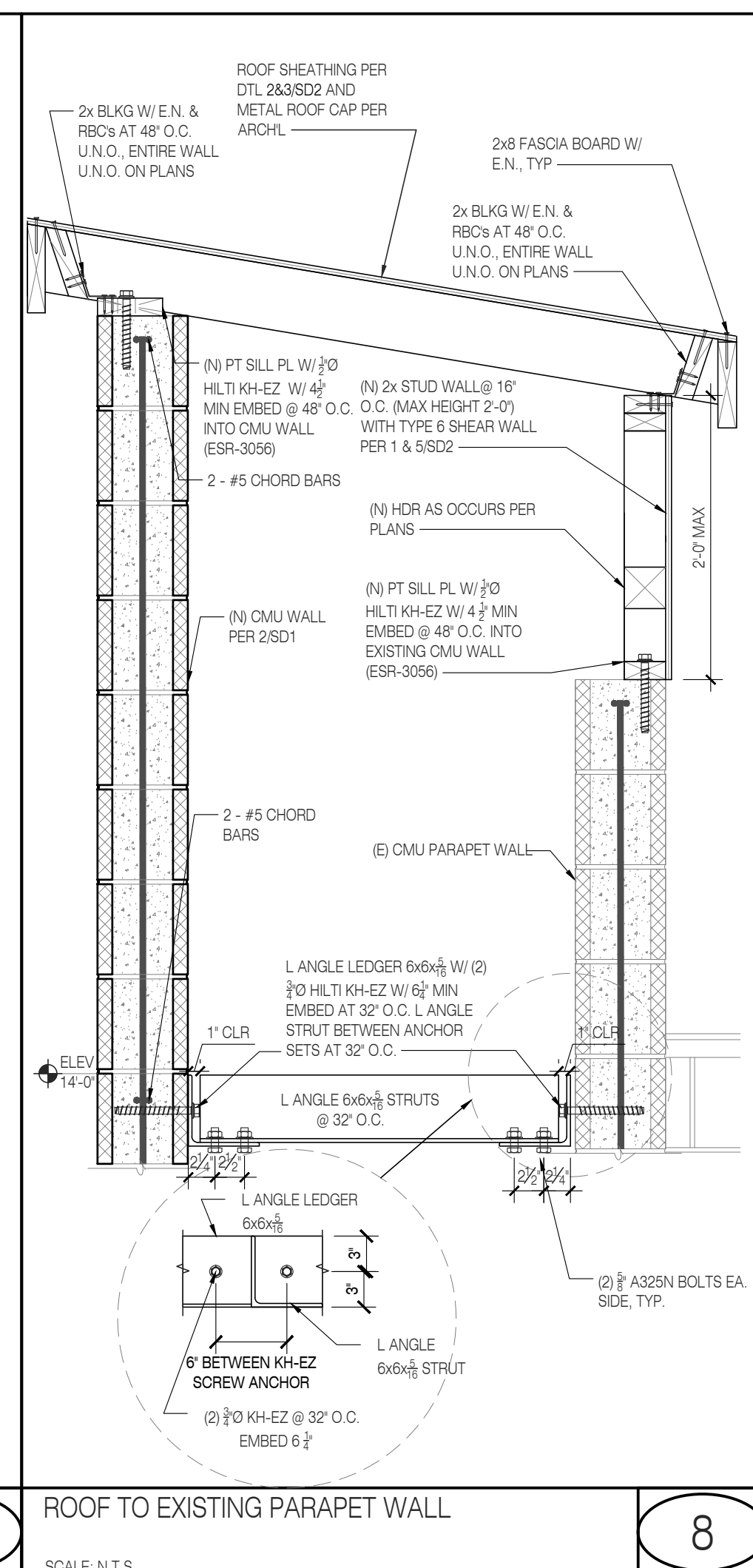
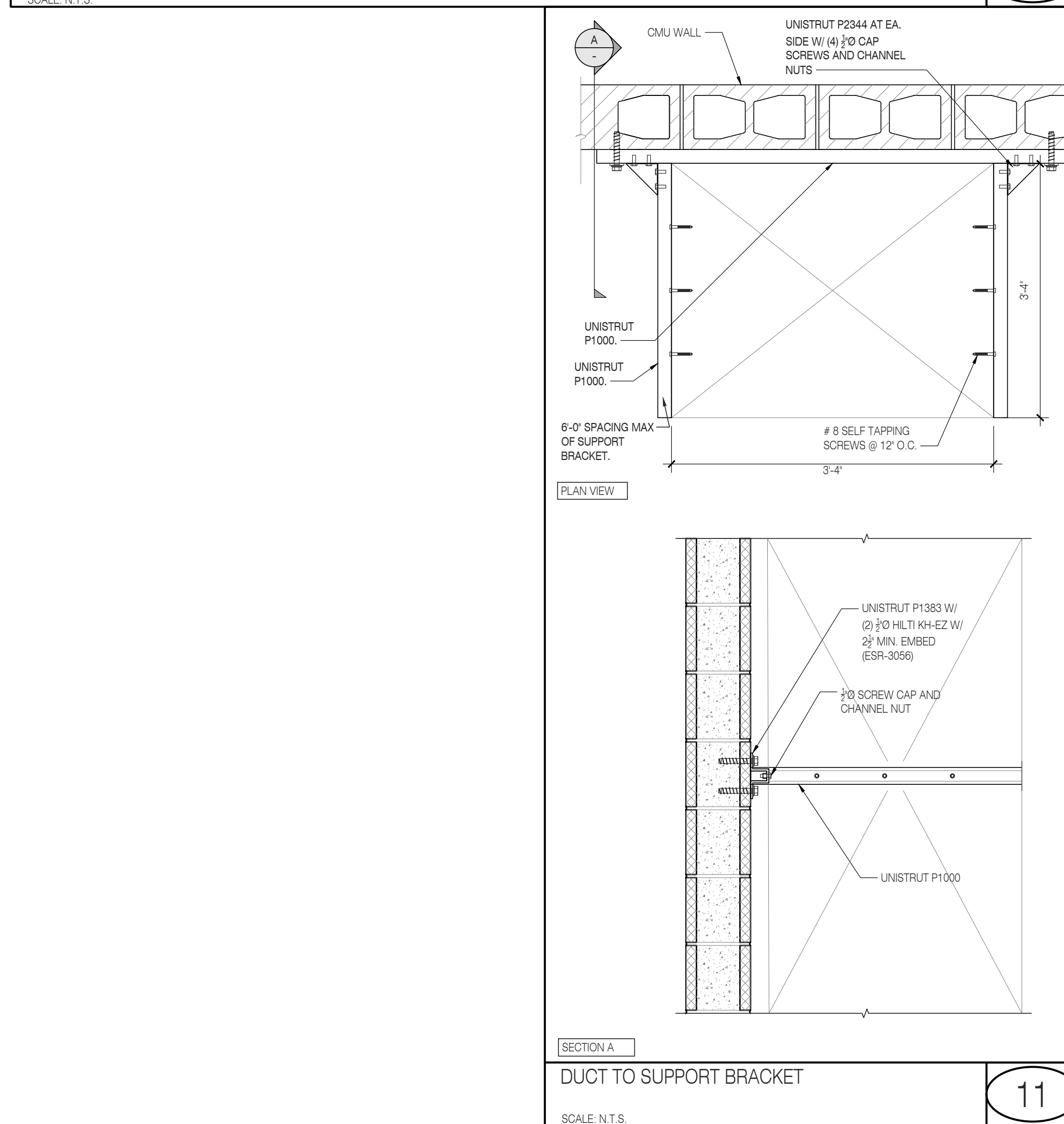
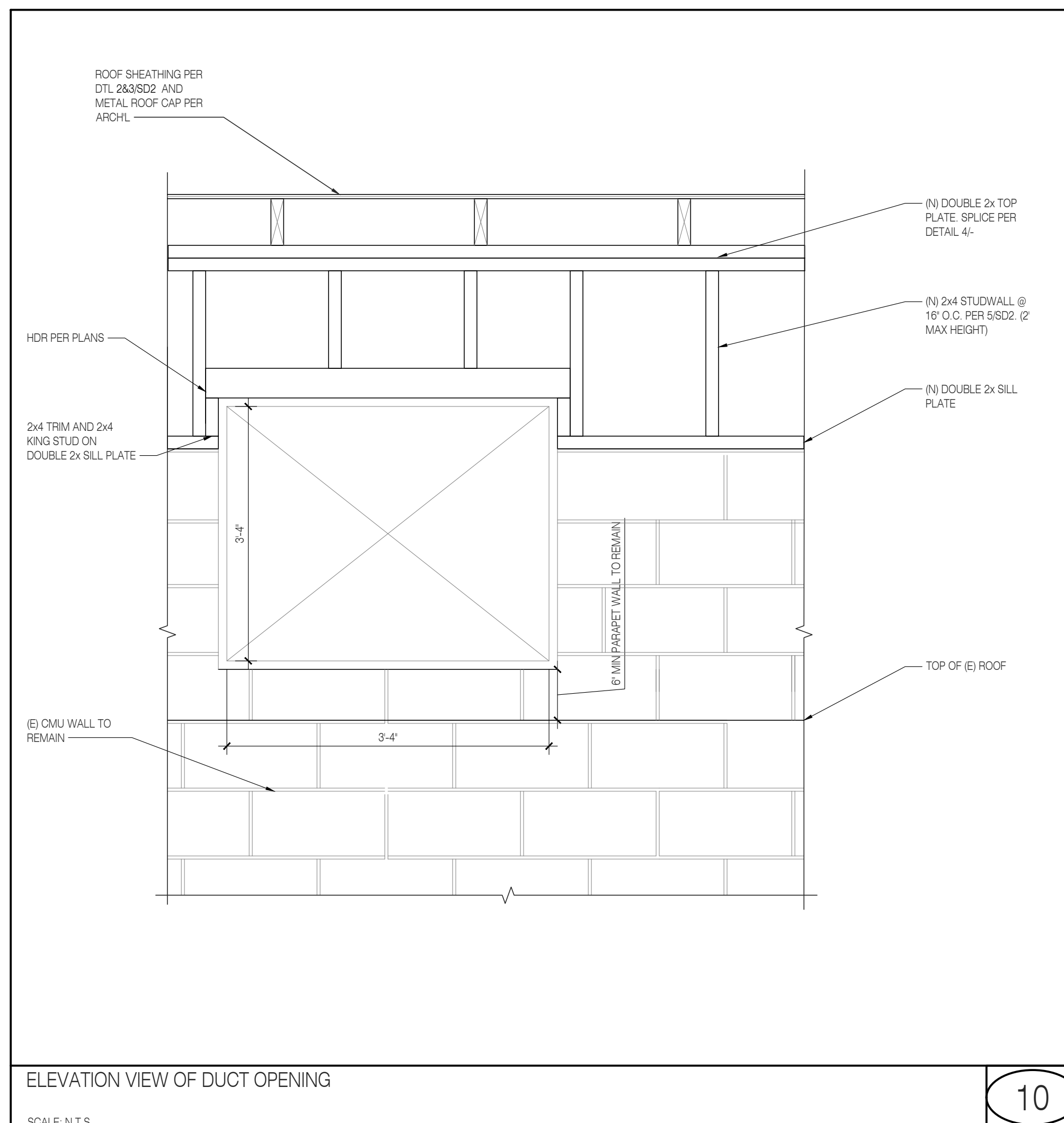
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STRUCTURAL  
FOUNDATION  
DETAILS

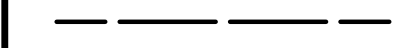
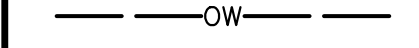
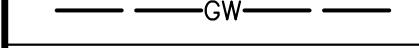
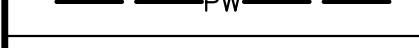
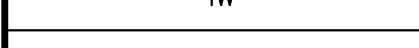
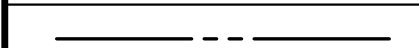
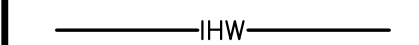
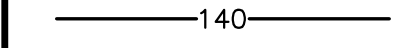
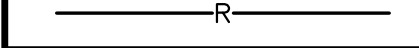
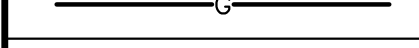
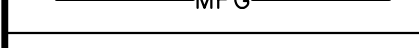
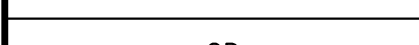
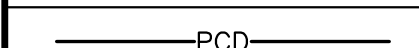
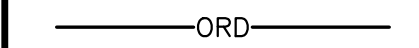
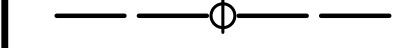
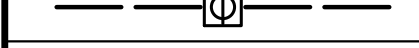
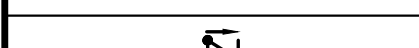
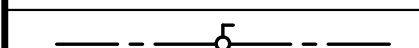
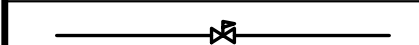

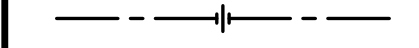
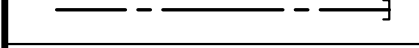
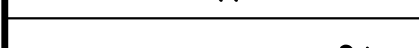
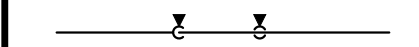
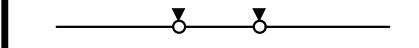
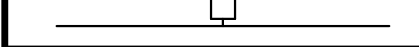

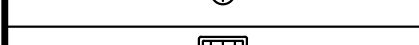
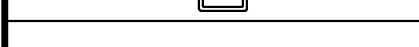
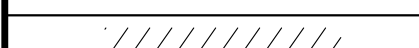
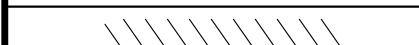

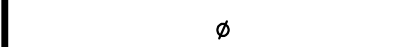





SHEET NO.:

SD1







PLUMBING LEGEND				
SYMBOL	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
	S	SEWER PIPE	ABV	ABOVE CEILING
	OW	OILY WASTE PIPE	AGA	AMERICAN GAS ASSOCIATION
	GW	GREASE WASTE PIPE	ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
	PW	PUMPED (FORCED) WASTE PIPE	ASME	AMERICAN SOCIETY FOR MECHANICAL ENGINEERS
	IW	INDIRECT WASTE PIPE	ASSE	AMERICAN SOCIETY FOR SANITARY ENGINEERS
	V	VENT PIPE	ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
	CW	COLD WATER PIPE	ADA	AMERICANS WITH DISABILITIES ACT
	ICW	INDUSTRIAL COLD WATER PIPE	AFF	ABOVE FINISHED FLOOR
	SCW	SOFT COLD WATER PIPE	AFG	ABOVE FINISHED GRADE
	HW	HOT WATER PIPE	A/G	ABOVE GRADE
	IHW	INDUSTRIAL HOT WATER PIPE	ARCH	ARCHITECT
	HWR	HOT WATER RETURN PIPE	BT	BATH TUB
	140	140°F HOT WATER PIPE	BE	BELOW
	R	RECLAIMED WATER PIPE	B/F	BELOW FLOOR
	G	LOW PRESSURE NATURAL GAS PIPE	B/G	BELOW GRADE
	MPG	MEDIUM PRESSURE NATURAL GAS PIPE	BOP	BOTTOM OF PIPE
	HPG	HIGH PRESSURE NATURAL GAS PIPE	B/S	BELOW SLAB
	LPG	LIQUEFIED PETROLEUM GAS PIPE	BTU	BRITISH THERMAL UNIT
	CD	CONDENSATE DRAIN PIPE	BTUH	BRITISH THERMAL UNITS PER HOUR
	SCD	SECONDARY CONDENSATE DRAIN PIPE	CBC	CALIFORNIA BUILDING CODE
	PCD	PUMPED CONDENSATE DRAIN PIPE	CEC	CALIFORNIA ELECTRICAL CODE
	RD	ROOF DRAIN PIPE	CFB	CALIFORNIA FIRE CODE
	ORD	OVERFLOW ROOF DRAIN PIPE	CMC	CALIFORNIA MECHANICAL CODE
	CA	COMPRESSED AIR PIPE	CPC	CALIFORNIA PLUMBING CODE
	FCO	FLOOR CLEAN OUT	CI	CAST IRON
	GCO	GRADE CLEAN OUT	CISPI	CAST IRON SOIL PIPE INSTITUTE
	WCO	WALL CLEAN OUT	CL	CLEAR
	FC	FLEXIBLE CONNECTION	CLR	CONCRETE
	SOV	SHUT OFF VALVE	CONN	CONNECT OR CONNECTION
	GC	GAS COCK	CONTR	CONTRACTOR
	CV	CHECK VALVE	CFM	CUBIC FEET PER MINUTE
	BV	BALL VALVE	°C	DEGREES CELSIUS
	PRV	PRESSURE REDUCING VALVE	°F	DEGREES FAHRENHEIT
	BLV	BALANCING VALVE	FF	FINISHED FLOOR
	PTR	PRESSURE AND TEMPERATURE RELIEF VALVE	FPM	FEET PER MINUTE
	U	UNION	FLR	FLOOR
		CAPPED PIPE	FT	FEET OR FOOT
	CONT	CONTINUED OR CONTINUATION	FU	FIXTURE UNIT
	TP	TRAP PRIMER LINE	GA	GALLONS PER CYCLE
	WHA	WATER HAMMER ARRESTOR	GPH	GALLONS PER HOUR
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER	GPM	GALLONS PER MINUTE
	HB	HOSE BIBB	GD	GARBAGE DISPOSAL
		PIPE DOWN OR DROP	HD	HEAD
		PIPE UP OR RISE	HR	GREASE INTERCEPTOR
		VALVE ON DROP	HR	HEADER
		VALVE ON RISE	HR	HOUR
	T	THERMOMETER	HR	ICE MAKER SUPPLY BOX
	AS	AQUASTAT	IES	ILLUMINATING ENGINEERS SOCIETY
	P.O.D.	POINT OF DISCONNECT	IND	INDIRECT
	POC	POINT OF CONNECTION	IPMSO	INTERNATIONAL ASSOCIATION OF PLUMBERS AND MECHANICAL OFFICIALS
	AD, FD	AREA DRAIN OR FLOOR DRAIN	IBC	INTERNATIONAL BUILDING CODE
	FS, RR	FLOOR SINK OR ROOF RECEPTOR	IMC	INTERNATIONAL MECHANICAL CODE
	VTR	VENT THROUGH ROOF	IPC	INTERNATIONAL PLUMBING CODE
	DEMO	DEMOLITION OR DEMOLISH	INV	INVERT
	RELO	RELOCATE	KEC	KITCHEN EQUIPMENT CONTRACTOR
	CIRC PUMP	CIRCULATING PUMP	KG	KILOGRAMS
	DIA, DIAM	DIAMETER	KPO	KILOPASCALS
			KS	KITCHEN SINK
			LS	LAUNDRY SINK
			LAV	LAUNDRY
			L/S	LITERS PER SECOND
			L/P	LITERS PER FLUSH
			MH	MANHOLE
			MFR	MANUFACTURER
			MSS	MANUFACTURERS STANDARDIZATION SOCIETY
			MAX	MAXIMUM
			MECH	MECHANICAL
			MIL	MILLIMETER
			MM	MILLIMETER
			MIN	MINIMUM
			MS	MOP SINK
			MTD	MOUNTED
			NSF	NATIONAL SANITATION FOUNDATION
			NET	NET POSITIVE SUCTION HEAD
			NOM	NOMINAL
			NIC	NOT IN CONTRACT
			NTS	NOT TO SCALE
			NO	NUMBER
			PLBG	PLUMBING
			PDI	PLUMBING AND DRAINAGE INSTITUTE
			PE	POLYETHYLENE
			LBS	POUNDS
			PSIG	POUNDS PER SQUARE INCH GAUGE
			PD	PRESSURE DROP
			QTY	QUANTITY
			REQ'D	REQUIRED
			RI	ROUGH-IN
			SCH	SCHEDULE
			SH	SHOWER
			SOV	SHUT-OFF VALVE
			SPEC	SPECIFICATION
			SF	SQUARE FEET
			SS	STAINLESS STEEL
			STRUC	STRUCTURAL
			TEMP	TEMPERATURE
			THU	THROUGH
			TOL	TOTAL DEVELOPED LENGTH
			TEL	TOTAL EQUIVALENT LENGTH
			TYP	TYPICAL
			UNO	UNLESS NOTED OTHERWISE
			UL	UNDERWRITERS LABORATORIES
			UBC	UNIFORM BUILDING CODE
			UMC	UNIFORM MECHANICAL CODE
			UPC	UNIFORM PLUMBING CODE
			UR	URINAL
			VCP	VITRIFIED CLAY PIPE
			V/PH/Hz	VOLTS/PHASE/HERTZ
			WB, WSB	WASHING MACHINE SUPPLY BOX
			WC	WATER CLOSET
			WHA	WATER HAMMER ARRESTOR
			WH	WATER HEATER
			YB	YARD BOX

## PLUMBING GENERAL NOTES:

- THESE DOCUMENTS MAY NOT BE USED FOR ANY REPRODUCTION, BIDDING, OR CONSTRUCTION UNLESS AUTHORIZED, IN WRITING, BY SALAS O'BRIEN AND THE ENGINEER OF RECORD RESPONSIBLE FOR THEIR PREPARATION.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF ALL EXISTING UTILITY PIPES PRIOR TO START OF WORK. NECESSARY ADJUSTMENTS TO THE PLUMBING LAYOUT SHALL BE DONE AT NO EXTRA COST.
- CONTRACTOR SHALL NOTIFY ALL LOCAL UTILITY COMPANIES INCLUDING BUT NOT LIMITED TO THE GAS COMPANY, ELECTRIC COMPANY, TELEPHONE COMPANY, AND THE WATER DEPARTMENT, ABOUT THE EXTENT OF PLUMBING WORK. ALL EXCAVATION WORK SHALL BE APPROVED BY ALL UTILITY COMPANIES TO ASSURE PREVENTION OF INTERRUPTION OF EXISTING SERVICES PRIOR TO START OF WORK.
- ALL PLUMBING WORK SHALL MEET OR EXCEED THE REQUIREMENTS OF THE CALIFORNIA PLUMBING CODE, CALIFORNIA BUILDING CODE, CALIFORNIA MECHANICAL CODE, CALIFORNIA ADMINISTRATIVE CODE, TITLE 24, AMERICANS WITH DISABILITIES ACT (ADA), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), THE LOCAL CITY AND COUNTY CODES, AND ALL OTHER CODES HAVING JURISDICTION. IN CASE OF CONFLICT, THE MORE STRICT REGULATIONS SHALL GOVERN.
- ALL PLUMBING WORK SHALL BE COORDINATED WITH THE WORKS OF OTHER TRADES PRIOR TO START OF WORK. NECESSARY ADJUSTMENTS SHALL BE MADE AT NO EXTRA COST.
- FOR MINIMUM PIPE SIZE CONNECTIONS TO EACH PLUMBING FIXTURE SEE PLUMBING FIXTURE SCHEDULE. THESE VALUES ARE MINIMUM; LARGER CONNECTIONS MAY RESULT BASED ON THE DIFFERENT MANUFACTURER'S RECOMMENDATIONS.
- MANUFACTURER'S NAMES AND MODEL NUMBERS SHOWN FOR PLUMBING FIXTURES AND EQUIPMENT ARE FOR REFERENCE ONLY. OTHER MANUFACTURERS WHICH CAN MEET THE DESIGN REQUIREMENTS OF THE PLUMBING SYSTEM MAY BE SUBSTITUTED UPON APPROVAL FROM THE ARCHITECT AND THE OWNER.
- PROVIDE DIELECTRIC FITTINGS FOR DISSIMILAR METALS IN CONTACT.
- PROVIDE HANGERS AND SUPPORTS FOR PIPING IN ACCORDANCE WITH THE RECOMMENDATIONS OF MSS SP-69-2003.
- PROVIDE VALVES AT THE FOLLOWING LOCATIONS:
  - WATER MAIN SHUT-OFF VALVE IN VALVE BOX.
  - VALVE WITH HOSE CONNECTION ON DOWNSTREAM SIDE OF THE MAIN SHUT-OFF VALVE.
  - SHUT-OFF VALVE ON EACH SUPPLY TO EACH FIXTURE AND EQUIPMENT ITEM NOT PROVIDED WITH CONTROL STOP OR OTHER AUXILIARY SHUT-OFF VALVE. INSTALL SHUT-OFF VALVES SO THAT STEMS EITHER ARE VERTICAL WITH HANDWHEELS OR OPERATORS ON TOP OR ARE HORIZONTAL AND SO THAT VALVES ARE EASILY ACCESSIBLE FOR OPERATION, SERVICE, REMOVAL AND REPLACEMENT.
- PROVIDE SLEEVES FOR ALL PIPE AND TUBING PASSING THROUGH FLOORS, ROOFS, AND WALLS. PACK CAULK INTO THE SPACE AROUND THE PIPE OR TUBING. PROVIDE FLASHING FOR ALL PIPES EXTENDING THROUGH THE ROOF.
- ALL VENT TERMINATIONS AT ROOF SHALL BE AT LEAST 10 FEET AWAY FROM OUTSIDE AIR INTAKES, OPERABLE WINDOWS, AND BUILDING OPENINGS.
- FILL CRACKS BETWEEN FIXTURES AND WALL/FLOORS WITH SILICONE RUBBER SEALANT.
- LOCATE, SIZE, AND INSTALL WATER HAMMER ARRESTERS IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD NO. WH-201.
- INSTALL FIXTURES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ALL APPLICABLE CODES. SECURE FLOOR OUTLET OF FLOOR-MOUNTED FIXTURES TO DRAINAGE CONNECTIONS AND FLOOR IN A RIGID MANNER. RIGIDLY SUPPORT WALL-HUNG FIXTURES BY MEANS OF METAL SUPPORTING MEMBERS. USE CHROMIUM-PLATED BRASS BOLTS, NUTS, AND WASHERS WHERE EXPOSED. ALL CONNECTIONS SHALL BE MADE GAS-TIGHT AND WATER-TIGHT. USE OF PUTTY AND PLASTICS FOR GASKETS WILL NOT BE PERMITTED.
- PROVIDE ALL FIXTURE COMPONENTS AS INDICATED ON DRAWINGS. PROVIDE ADDITIONAL COMPONENTS AS PER MANUFACTURER'S RECOMMENDATIONS FOR PROPER OPERATION OF THE FIXTURES.
- PROVIDE EACH PLUMBING FIXTURE (INCLUDING HOSE BIBBS) WITH AN INDIVIDUAL STOP OR COMPRESSION VALVE OF POLISHED CHROME-PLATED GLOSS KEY TYPE.
  - ANY PIPING UNDER SLAB (TOP OF PIPE TO UNDERSIDE OF SLAB): 18 INCHES.
  - CAST IRON AND COPPER PIPES IN OTHER LOCATIONS: 18 INCHES.
  - EXCAVATE TO UNDISTURBED EARTH; CUT LEVEL AND FORM TRUE. REMOVE DEBRIS, RUBBISH AND SOFT MATERIAL (SUCH AS MUD). WHERE ROCK IS ENCOUNTERED, UNDERCUT TRENCHES 6-INCHES AND FILL WITH WELL TAMPED NEUTRAL SAND AND PEA GRAVEL TO PROPER PIPE ELEVATION. DURING EXCAVATION FREE OF STANDING WATER. UNDERCUT TRENCH 6-INCHES AND INSTALL PIPING IN A 6-INCH NEUTRAL SAND ENVELOPE.
- BACKFILL TO A POINT 12-INCHES ABOVE TOP OF PIPING WITH EARTH (EXCAVATED MATERIAL MAY BE USED) FREE OF CLAY, DEBRIS, RUBBISH, ROCKS, OR CLODS OVER 4-INCHES IN THE GREATEST DIMENSION. BACKFILL ABOVE 12-INCHES FROM TOP OF PIPING MAY BE WITH EXCAVATED MATERIAL. APPLY BACKFILL BY HAND IN 6-INCH DEEP LAYERS THE FULL WIDTH OF THE TRENCH. MOISTEN EACH LAYER (DO NOT FLOOD OR PUDDLE), AND HAND TAMP TO A MINIMUM 90 PERCENT COMPACTION BEFORE PROCEEDING WITH THE NEXT LAYER OF BACKFILL.
- DO NOT EXCAVATE UNDER FOUNDATIONS OR FOOTINGS EXCEPT IN MANNER PERMITTED BY THE ARCHITECT. DO NOT BACKFILL UNTIL INSTALLED PIPING HAS BEEN SUCCESSFULLY TESTED.
- VERIFICATION OF WATER AGENCY APPROVAL SHALL BE SUBMITTED TO THE BUILDING AND SAFETY DIVISION PRIOR TO ISSUANCE OF A PLUMBING PERMIT FOR THIS PROJECT.
- ALL PENETRATIONS THRU FIRE RATED ASSEMBLIES SHALL BE PACKED WITH APPROVED FIRE PROOFING. FOR LOCATIONS OF FIRE RATED ASSEMBLIES, SEE ARCHITECTURAL PLANS.
- ROUTE ALL PIPES AS HIGH AS POSSIBLE IN EXPOSED LOCATIONS. COORDINATE ROUTING WITH ALL OTHER TRADES PRIOR TO START OF WORK.
- NO SPRAY FOAM INSULATION SHALL BE APPLIED TO AREAS CONTAINING PEX PIPING.

## PLUMBING MANDATORY MEASURES

- ALL PLUMBING SYSTEM COMPONENTS SHALL MEET OR EXCEED THE REQUIREMENTS OF CURRENT CBC, CMC, CPC, NEC, NFPA, ASTM, ANSI, AND ALL LOCAL AND STATE CODE REQUIREMENTS. (SEE BELOW)
- ALL PLUMBING EQUIPMENT LISTED IN OF THE 2019 CALIFORNIA CODE OF REGULATIONS (CCR), TITLE-24, PART 6, SECTION 110.3 ENERGY EFFICIENCY STANDARDS MUST BE CERTIFIED BY THE MANUFACTURER TO MEET OR EXCEED SPECIFICATIONS OR EFFICIENCIES ADOPTED BY THE CEC.
- ALL HEATERS FOR DOMESTIC HOT WATER MUST BE CERTIFIED BY THE MANUFACTURER TO MEET THE SPECIFICATIONS OR EFFICIENCIES AS ADOPTED BY THE CEC IN ACCORDANCE WITH THE 2019 CALIFORNIA CODE OF REGULATIONS (CCR), TITLE-24, PART 6, SECTION 110.3 RESIDENTIAL NON-RESIDENTIAL.
- ALL GAS APPLIANCES MUST HAVE PILOTLESS IGNITION SYSTEM IN ACCORDANCE WITH SECTION 110.5 OF THE 2019 CALIFORNIA CODE OF REGULATIONS, TITLE-24, PART 6, ENERGY EFFICIENCY STANDARDS, TABLE 4-4.
- ALL INSULATING MATERIALS INSTALLED MUST BE CERTIFIED BY CALIFORNIA ENERGY COMMISSION TO MEET 2019 CALIFORNIA CODE OF REGULATIONS, TITLE-24, PART 6, ENERGY EFFICIENCY STANDARDS, SECTION 120.3 AND TABLE 4-15.
- ALL INSULATION INSTALLED SHALL MEET THE FLAME SPREAD AND SMOKE DENSITY REQUIREMENTS OF 2019 CBC, PART 1, SECTION 720 AND 2019 CMC, SECTION 602.2.
- ALL PIPING EXPOSED TO WEATHER SHALL BE METALLIC.
- ALL FERROUS PIPING EXPOSED TO WEATHER SHALL BE GALVANIZED AND PAINTED.
- ALL PIPES, FITTINGS AND FIXTURES USED TO CONVEY POTABLE WATER SHALL BE LEAD FREE IN COMPLIANCE WITH CPC SECTION 604.2.
- ALL FIXTURES REQUIRED TO BE ACCESSIBLE SHALL BE INSTALLED AS PER THE LATEST REQUIREMENTS OF TITLE 24 AND ADA (AMERICANS WITH DISABILITIES ACT).
- CROSS CONNECTION PROTECTION SHALL BE PROVIDED AT ALL POTABLE WATER SUPPLIED APPLIANCES AND EQUIPMENT (OTHER THAN THOSE LISTED IN INFORMATION BULLETIN 103).

## PLUMBING PIPE MATERIAL SCHEDULE


SERVICE	LOCATION	PIPE MATERIAL	SLOPE
WATER	ABOVE GRADE	ASTM B88 TYPE "L" HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS.	1/32" PER 1'
	BELOW GRADE	ASTM B88 TYPE "K" HARD DRAWN COPPER, FACTORY INSULATED, WITH WROUGHT COPPER FITTINGS.	1/32" PER 1'
SEWER AND VENT	ABOVE GRADE	ASTM A888 SERVICE WEIGHT CAST IRON PIPE AND DWV FITTINGS SHALL CONFORM TO CPC AND BEAR THE COLLECTIVE TRADEMARK OF CISPI AND NSF.	1/4" PER 1'
	BELOW GRADE	ABS SCHEDULE 40 PIPE AND DWV FITTINGS SHALL CONFORM TO ASTM D2321-2000 AND CPC.	1/4" PER 1'
NATURAL GAS	ABOVE GRADE	ASTM A53 SCHEDULE 40 GALVANIZED STEEL "BLACK" PIPE AND FITTINGS SHALL CONFORM TO CPC. EXPOSED PIPING SHALL BE PAINTED.	1/4" PER 15'
	BELOW FLOOR (INTERIOR)	ASTM A53 SCHEDULE 40 GALVANIZED STEEL "BLACK" PIPE AND FITTINGS SHALL CONFORM TO CPC. PIPING INSTALLED UNDERGROUND BENEATH BUILDING SHALL CONFORM TO CPC 1210.1.6.	1/4" PER 15'
	BELOW GRADE (EXTERIOR)	ASTM D2513-16g POLYETHYLENE "PE" PIPE. ALL FITTINGS SHALL BE AS PER CPC.	1/4" PER 15'
CONDENSATE	ABOVE GRADE	ASTM B88 TYPE "L" HARD DRAWN COPPER WITH WROUGHT COPPER FITTINGS.	1/4" PER 1'

## PIPE INSULATION THICKNESS


PER 2019 CALIFORNIA ENERGY CODE TABLE 120.3-4

FLUID OPERATING TEMPERATURE RANGE (°F)	INSULATION CONDUCTIVITY			NOMINAL PIPE DIAMETER(INCHES)							
	CONDUCTIVITY (IN BTU-IN/H PER SQ. FT² °F)	MEAN RATING TEMPERATURE (°F)		<1	1 - < 1.5		1.5 - < 4		4 - < 8		8 AND LARGER
					INSULATION THICKNESS REQUIRED (IN INCHES)						
SPACE HEATING, SERVICE WATER HEATING SYSTEMS (STEAM, STEAM CONDENSATE, REFRIGERANT, SPACE HEATING, SERVICE HOT WATER)				MINIMUM PIPE INSULATION REQUIRED (THICKNESS IN INCHES OR R-VALUE)							
ABOVE 350	0.32 - 0.34	250	INCHES	4.5	5.0	5.0	5.0	5.0	5.0		
			R-VALUE	R37	R41	R37	R27	R23	R23		
251-350	0.29 - 0.31	200	INCHES	3.0	4.0	4.5	4.5	4.5	4.5		
			R-VALUE	R24	R34	R35	R26	R22	R22		
201-250	0.27 - 0.30	150	INCHES	2.5	2.5	2.5	3.0	3.0	3.0		
			R-VALUE	R21	R20	R17.5	R17	R17	R14.5		
141-200	0.25 - 0.29	125	INCHES	1.5	1.5	2.0	2.0	2.0	2.0		
			R-VALUE	R11.5	R11	R14	R11	R11	R10		
105-140	0.22 - 0.28	100	INCHES	1.0	1.5	1.5	1.5	1.5	1.5		
			R-VALUE	R7.7	R12.5	R11	R9	R9	R8		
SPACE COOLING SYSTEMS (CHILLED WATER, REFRIGERANT AND BRINE)				NOMINAL PIPE DIAMETER(INCHES)							
				<=1	1 - < 1.5	1.5 - < 4	4 - < 8	8 <			
				MINIMUM PIPE INSULATION REQUIRED (THICKNESS IN INCHES OR R-VALUE)							
40-60	0.21 - 0.27	75	INCHES	NONRES 0.5	RES 0.5	NONRES 0.5	RES 0.5	1.0	1.0	1.0	
			R-VALUE	R3	R6	R3	R5	1.0	1.0	1.0	
			INCHES	1.0	1.5	1.5	1.5	1.5	1.5	1.5	
BELOW 40	0.20 - 0.26	50	INCHES	1.0	1.5	1.5	1.5	1.5	1.5	1.5	
			R-VALUE	R8.5	R14	R12	R10	R10	R9		

## PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE	MIN. PIPE SIZE				REMARKS
		CW	HW	V	S	
	FLOOR SINK	-	-	2"	3"	ZURN MODEL# Z-1900 12"x12", 6" DEEP WITH DOME STRAINER, COATED CAST IRON BODY, ACID RESISTANT INTERIOR. PROVIDE WITH TOP, CAST IRON P-TRAP.

## PLUMBING EQUIPMENT SCHEDULE

TAG	EQUIPMENT	LOCATION	MANUFACTURER	MODEL	REMARKS
	TRAP PRIMER	VARIES	PPP	P1	PRESSURE DROP ACTIVATED, BRASS CONSTRUCTION. PROVIDE WITH DISTRIBUTION UNIT (IF APPLICABLE). PROVIDE WITH APPROVED ACCESS PANEL. SEE DETAIL 4/P5.1.

## GAS PLUMBING EQUIPMENT SCHEDULE

TAG	EQUIPMENT	LOCATION	MANUFACTURER	MODEL	REMARKS
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## MANDATORY CALGREEN CHECKLIST

WATER EFFICIENCY AND CONSERVATION INDOOR WATER USE	MANDATORY
5.303.1 METERS. SEPARATE METERS SHALL BE INSTALLED FOR THE USES DESCRIBED IN SECTIONS 5.303.1.1 AND 5.303.1.2. 5.303.1.1 BUILDINGS 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 100GAL/DAY. 2. WHERE SEPARATE SUBMETERS FOR INDIVIDUAL BUILDINGS TENANTS ARE UNFEASIBLE, FOR WATER SUPPLIED TO THE FOLLOWING SUBSYSTEMS: a. MAKEUP WATER FOR COOLING TOWERS WHERE FLOW THROUGH IS GREATER THAN 500 GPM (30L/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 (147 kW) 5.303.1.2 EXCESS CONSUMPTION. ANY BUILDING OR A SPACE WITHIN A BUILDING THAT IS PROJECTED TO CONSUME MORE THAN 1,000 GAL/DAY (3800 L/DAY). 5.303.2 20 PERCENT SAVINGS. A SCHEDULE OF PLUMBING FIXTURES AND FIXTURE FITTINGS THAT WILL REDUCE THE OVERALL USE OF POTABLE WATER WITHIN THE BUILDING BY 20 PERCENT SHALL BE PROVIDED. (CALCULATE SAVINGS BY WATER USE WORKSHEETS) 5.303.2.1 MULTIPLE SHOWERHEADS SERVING ONE SHOWER. WHEN A SHOWER IS SERVED BY MORE THAN ONE SHOWERHEAD, THE COMBINED FLOW RATE OF ALL THE SHOWERHEADS CONTROLLED BY A SINGLE VALVE SHALL NOT EXCEED THE MAXIMUM FLOW RATE AT ≥ 20 PERCENT REDUCTION CONTAINED IN TABLE 5.303.2.3 OR THE SHOWER SHALL BE DESIGNED TO ONLY ALLOW ONE SHOWERHEAD TO BE IN OPERATION AT A TIME. 5.303.4 WASTEWATER REDUCTION. EACH BUILDING SHALL REDUCE THE GENERATION OF WASTEWATER BY ONE OF THE FOLLOWING METHODS: 1. THE INSTALLATION OF WATER-CONSERVING FIXTURES OR 2. UTILIZING NONPOTABLE WATER SYSTEMS. 5.303.6 PLUMBING FIXTURES AND FITTINGS. PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH THE REQUIREMENTS LISTED FOR EACH TYPE IN ITEMS LISTED IN TABLE 5.303.6. 1. WATER CLOSETS (TOILETS) – FLUSHOMETER TYPE 2. WATER CLOSETS (TOILETS) – TANK TYPE 3. URINALS 4. PUBLIC LAVATORY FAUCETS 5. PUBLIC METERING SELF-CLOSING FAUCETS 6. RESIDENTIAL BATHROOM LAVATORY SINK FAUCETS 7. RESIDENTIAL KITCHEN FAUCETS 8. RESIDENTIAL SHOWER HEADS 9. SINGLE SHOWER FIXTURES SERVED BY MORE THAN ONE SHOWERHEAD	

## WATER REDUCTION FIXTURE FLOW RATES

PER 2019 CALIFORNIA GREEN BUILDING CODE – TABLE AS.303.2.3.1

FIXTURE TYPE	MAXIMUM FLOW RATE
KITCHEN FAUCETS	1.8 GPM AT 60 PSI
WASH FOUNTAINS	1.8 [RIM SPACE (IN.)/20 GPM AT 60 PSI]
METERING FAUCETS	0.20 GALLONS/CYCLE
METERING FAUCETS FOR WASH FOUNTAINS	0.20 GALLONS/CYCLE/20 [RIM SPACE (IN.)@ 60 PSI]

EACH PLUMBING FIXTURE AND FITTING SHALL MEET THE FLOW RATE SPECIFIED IN 2019 CAL GREEN TABLE AS.303.2.3.1.

## WATER CONSERVATION FIXTURE FLOW RATES

PER 2019 CALIFORNIA GREEN BUILDING CODE SECTION 5.303.3

FIXTURE TYPE	MAXIMUM BASELINE FLOW RATE
WATER CLOSETS	1.28 GALLONS PER FLUSH
URINALS (FLOOR-MOUNT/WALL-MOUNT)	0.5/0.125 GALLONS PER FLUSH
SHOWERHEADS	1.8 GPM AT 80 PSI

PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL COMPLY WITH 5.303.3.

## PLUMBING FIXTURES AND FIXTURE FITTINGS

PER 2019 CALIFORNIA PLUMBING CODE – TABLE 1701.1

REQUIRED STANDARDS	
WATER CLOSETS (TOILETS) – FLUSHOMETER VALVE TYPE SINGLE FLUSH, MAXIMUM FLUSH VOLUME	ASME A 112.19.2/CSA B45.1 – 1.28 GPF (4.8 L)
WATER CLOSETS (TOILETS) – FLUSHOMETER VALVE TYPE DUAL FLUSH, MAXIMUM FLUSH VOLUME	ASME A 112.19.2 AND USEPA WATERSENSE TANK-TYPE HIGH-EFFICIENCY TOILET SPECIFICATION – 1.28 GPF (4.8 L)
WATER CLOSETS (TOILETS) – TANK TYPE	U.S. EPA WATERSENSE TANK-TYPE HIGH EFFICIENCY TOILET SPECIFICATION
URINALS, MAXIMUM FLUSH VOLUME	ASME A 112.19.2/CSA B45.1 – 0.5 GPF (1.9 L)
URINALS, NONWATER URINALS	ASME A 112.19.19 (VITREOUS CHINA) ANSI Z124.9-2004 OR IAPMO Z124.9 (PLASTIC)
PUBLIC LAVATORY FAUCETS: MAXIMUM FLOW RATE – 0.5 GPM (1.9 L/MIN.)	ASME A 112.18.1/CSA B125.1
PUBLIC METERING SELF-CLOSING FAUCETS: MAXIMUM FLOW RATE – 0.25 (1.0 L) METERING CYCLE	ASME A 112.18.1/CSA B125.1
RESIDENTIAL BATHROOM LAVATORY SINK FAUCETS: MAXIMUM FLOW RATE – 1.5 GPM (5.7L/MIN)	ASME A 112.18.1/CSA B125.1

PLUMBING FIXTURES (WATER CLOSETS AND URINALS) AND FITTINGS (FAUCETS AND SHOWERHEADS) SHALL MEET THE STANDARDS REFERENCED IN TABLE 5.303.6.

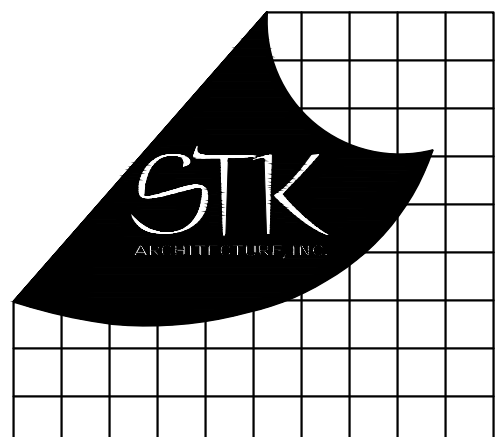
## FIXTURE DATA

SYMBOL	DESCRIPTION	NO. OF UNITS	DOMESTIC WATER		NO. OF UNITS	SEWER	
			F.U. PER UNIT ①	TOTAL FIXTURE UNITS		F.U. PER UNIT ②	TOTAL FIXTURE UNITS
BT 1	BATHTUB	0	4.0	0.0	0	2.0	0.0
WB 1	CLOTHES WASHER SUPPLY BOX	0	4.0	0.0	0	3.0	0.0
DW 1	DISHWASHER	0	1.5	0.0	0	2.0	0.0
DF 1	DRINKING FOUNTAIN	0	0.5	0.0	—	0	0.5
HB 1	HOSE BIBB	0	2.5	0.0	—	0	—
HB 1	ADDITIONAL HOSE BIBB	0	1.0	0.0	—	—	—
L 1	LAVATORY	0	1.0	0.0	0	1.0	0.0
BS 1	BAR SINK	0	2.0	0.0	0	2.0	0.0
KS 1	KITCHEN SINK	0	1.5	0.0	0	2.0	0.0
LS 1	LAUNDRY SINK	0	1.5	0.0	0	2.0	0.0
MS 1	SERVICE/MOP BASIN SINK	0	3.0	0.0	0	3.0	0.0
W 1	WASHUP	0	2.0	0.0	0	2.0	0.0
SH 1	SHOWER	0	2.0	0.0	0	2.0	0.0
UR 1	URINAL	0	4.0	0.0	—	0	2.0
WC 1	WATER CLOSET (TANK)	0	2.5	0.0	—	0	4.0
WC 1	WATER CLOSET (VALVE)	0	5.0	0.0	—	0	4.0
FD 1	FLOOR DRAIN	0	—	—	—	0	0.0
FS 1	FLOOR SINK	0	—	—	—	0	2.0
	TOTAL			0.0			0.0
	GREASE INTERCEPTOR TOTAL						0.0

① WATER FIXTURE UNITS PER CPC TABLE A 103.1 ② SEWER FIXTURE UNITS PER CPC TABLE 702.1 ③ FIXTURE UNITS TO GREASE INTERCEPTOR

## WATER CALCULATIONS

DOMESTIC COLD WATER PRESSURE CALCULATION (AVG PSI / 100 FT)				DOMESTIC COLD WATER SIZING			
RESIDUAL PRESSURE PER CONVERSATION WITH [CONTACT] AT [DISTRICT], (###)###-#### ON [MM/DD/YYYY], AVAILABLE WATER PRESSURE IS [HI-LO] PSI. CONTRACTOR TO FIELD VERIFY STREET WATER PRESSURE PRIOR TO START OF WORK. IN CASE OF ANY DISCREPANCIES NOTIFY ARCHITECT/ENGINEER PRIOR TO START OF WORK.				FRICTION LOSS 3.4 PSI PER 100 FT AVG. AT 8 FPS MAX. VELOCITY			
MAX. SYSTEM INLET PRESSURE [AT WATER METER INLET]				PIPE SIZE			
MIN. SYSTEM INLET PRESSURE [AT PRESSURE REDUCING VALVE INLET]				WSFU			
				FLUSH TANK			
				FLUSH VALVE			
				GPM			
				FPS			
2" WATER METER @ 38 GPM (EXISTING)				1/2"	1	—	2
2" BACKFLOW PREVENTER @ 38 GPM (EXISTING)				3/4"	6	—	5
2" PRESSURE REDUCING VALVE @ 38 GPM				1"	15	—	11
TOTAL OF SYSTEM PRESSURE LOSSES				1-1/4"	28	—	19
RESIDUAL PRESSURE AT PRV				1-1/2"	54	13	30
PRESSURE REDUCING VALVE SETPOINT				2"	195	88	64
STATIC HEIGHT PRESSURE LOSS (15' x .433)				2-1/2"	455	329	115
RESIDUAL PRESSURE REQUIRED AT GOVERNING FIXTURE [WATER CLOSET 25 PSI]				3"	748	700	170
TOTAL SYSTEM PRESSURE LOSSES (DOWNSTREAM OF PRV)							
PRESSURE AVAILABLE FOR PIPE SIZING (PRV SETPOINT – TOTAL SYSTEM PRESSURE LOSSES DOWNSTREAM OF PRV)							
ACTUAL LENGTH OF SYSTEM							
DEVELOPED LENGTH OF SYSTEM (165' X 1.5)							
AVERAGE PRESSURE DROP (PRESSURE AVAILABLE FOR PIPE SIZING) X 100 FT / (DEVELOPED LENGTH OF SYSTEM)							
SUMMARY PIPE SIZING BASED UPON 3.4 PSI LOSS PER 100' AVG							



CONSULTANT:  
MECHANICAL PLUMBING & ELECTRICAL



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PROJECT NAME:  
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WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 1010151

CIP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN#: 0229-28-370-0000

### ISSUE INFORMATION:

DATE:	INFORMATION:

### SHEET INFORMATION:

STK PROJECT NO.: 374-147-21  
SCALE: AS NOTED  
DATE: JULY 2021  
PLOT DATE: \_\_\_\_\_  
DRAWING NAME: \_\_\_\_\_

SEAL:



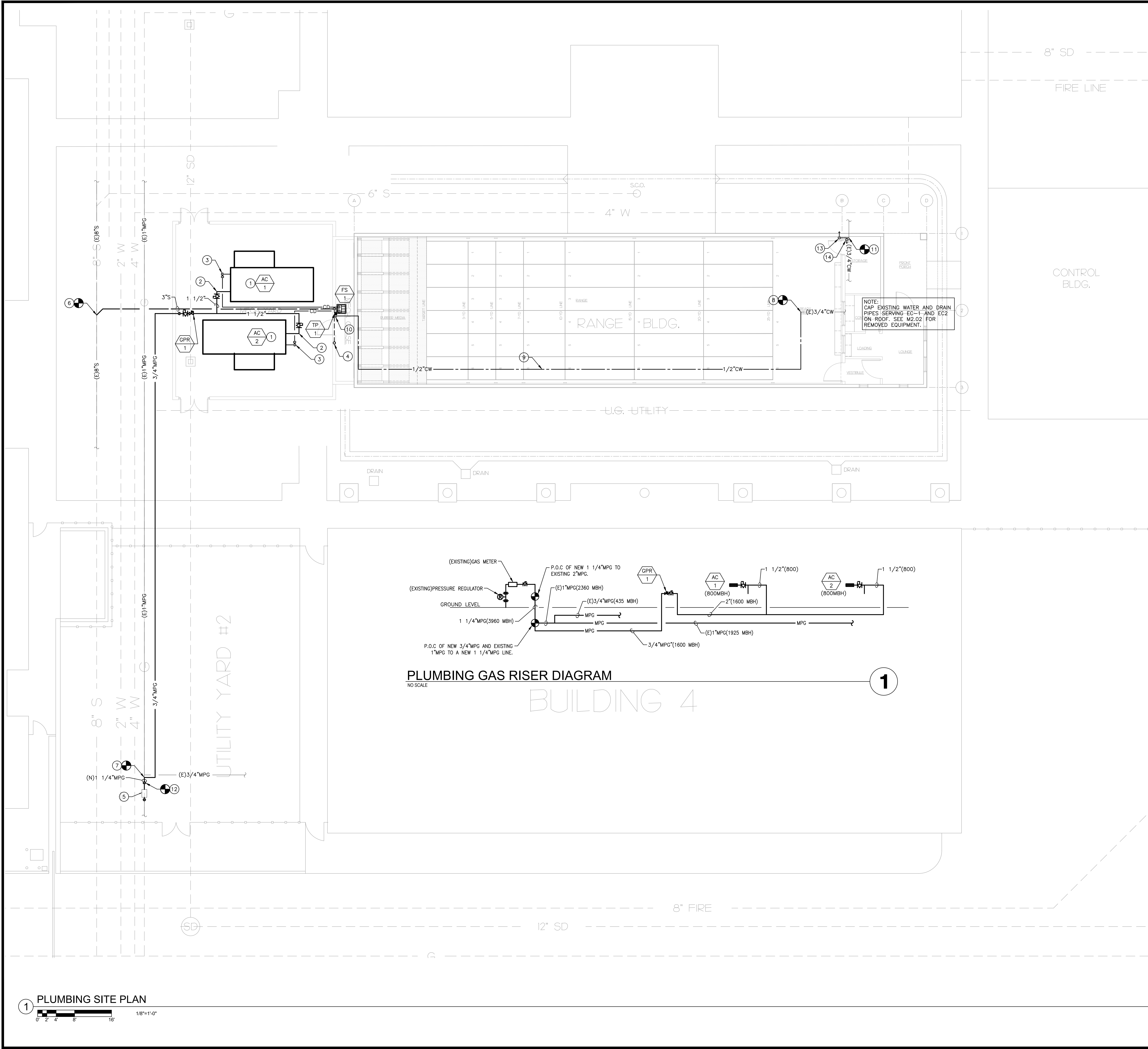
SHEET TITLE:

PLUMBING  
CALCULATIONS  
AND SCHEDULES

SHEET NO.:

P0.2





GENERAL NOTES

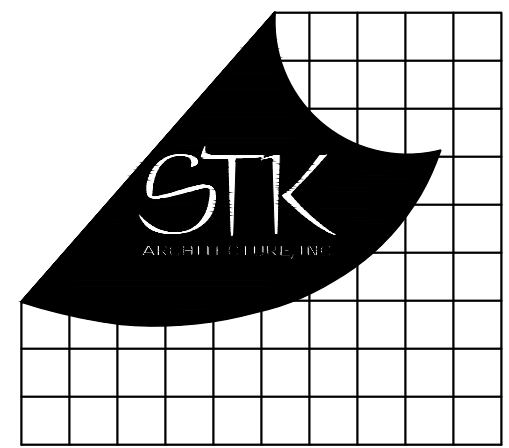
- A. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL PIPING AND UTILITIES PRIOR TO START OF WORK. IN THE EVENT OF ANY DISCREPANCIES OR POTENTIAL CONFLICTS, NOTIFY THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- B. ALL PIPING LOCATIONS ARE DIAGRAMMATIC. CONTRACTOR SHALL COORDINATE WITH ALL TRADES AND OWNER'S REPRESENTATIVE AND VERIFY EXACT ROUTING PRIOR TO START OF WORK.
- C. VERIFY EXACT SIZE AND LOCATION OF ALL PLUMBING CONNECTIONS TO MECHANICAL EQUIPMENT PRIOR TO START OF WORK. IN NO CASE SHALL THE CONNECTION SIZE BE LARGER THAN THE BRANCH PIPING SIZE.

KEY NOTES

1. MECHANICAL EQUIPMENT SHOWN FOR REFERENCE ONLY.
2. GAS TO MECHANICAL UNIT. SEE DETAIL 2/P5.1 FOR CONNECTION DETAIL.
3. 2" CONDENSATE DRAIN TO FLOOR SINK WITH APPROVED AIRGAP.
4. 2" VENT UP THRU ROOF. SEE DETAIL 6/P5.1.
5. EXISTING GAS METER AND PRESSURE REGULATOR.
6. CONNECT NEW 3" SEWER TO EXISTING 8" SEWER LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION.
7. CONNECT NEW 3/4" MPG AND EXISTING 1" MPG TO A NEW 1 1/4" MPG LINE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION.
8. CONNECT NEW 1/2" CW FOR TRAP PRIMER TO EXISTING 3/4" CW LINE ON ROOF. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION.
9. 1/2" CW LINE ON ROOF. SEE DETAIL 4/P5.1.
10. 1/2" CW LINE DOWN IN WALL TO TRAP PRIMER.
11. CONNECT NEW 3/4" CW TO EXISTING 3/4" CW LINE ABOVE CEILING. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION.
12. CONNECT NEW 1 1/4" MPG TO EXISTING 2" MPG PIPE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION.
13. RELOCATED EXISTING HOSE BIBB. PROVIDE LOCKING BOX.
14. REMOVE EXISTING 3/4" CW PIPE FROM FLOOR UP TO CEILING.

TOTAL LENGTH: 200' BASED ON TABLE 1215.2(6) CPC. SCH.40 METALLIC PIPE [NFA 54:TABLE 6.2(G)]		GAS		NATURAL	
		INLET PRESSURE		5 PSI	
		PRESSURE DROP		3.5 PSI	
		SPECIFIC GRAVITY		0.60	
		PIPE SIZE			
NOMINAL	1/2"	3/4"	1"	1-1/4"	1-1/2"
LENGTH(FT)	CAPACITY IN CUBIC FEET		GAS PER HOUR (CFH)		
125	876	1770	3240	6640	9950

TOTAL LENGTH: 10' BASED ON TABLE 1215.1(1) CPC: SCH.40 METALLIC PIPE NFA 54:TABLE 6.2(B)]		GAS		NATURAL			
		INLET PRESSURE		<2 PSI			
		PRESSURE DROP		0.5 IN.W.C.			
		SPECIFIC GRAVITY		0.60			
		PIPE SIZE					
NOMINAL	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	
LENGTH(FT)	CAPACITY IN CUBIC FEET OF GAS PER HOUR (CFH)						
40	81	170	320	657	985	1900	



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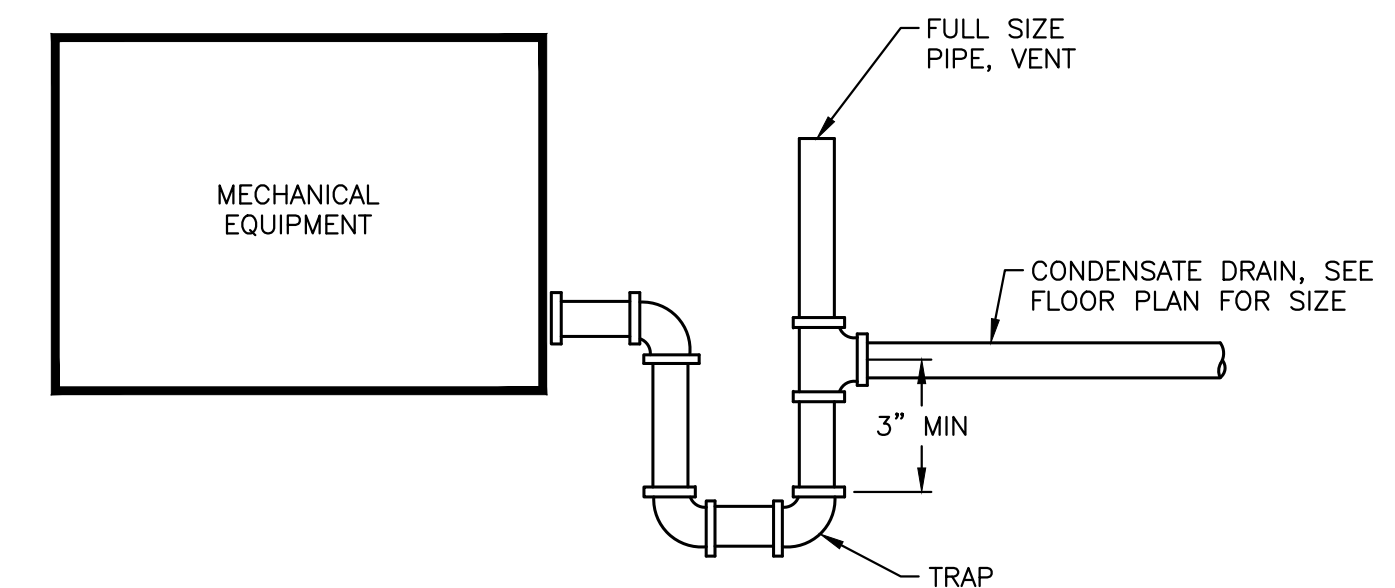
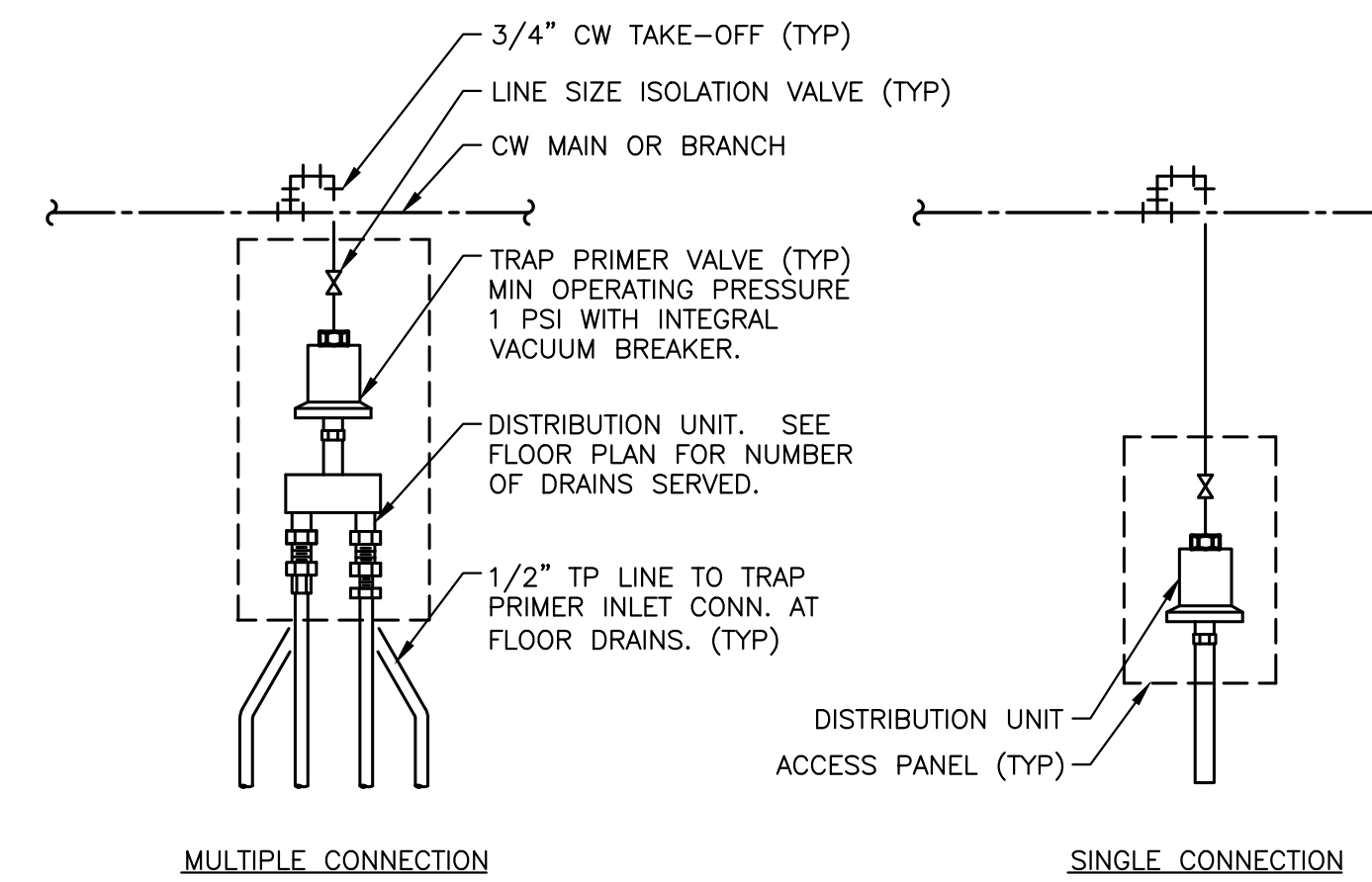
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PLUMBING  
SITE PLAN

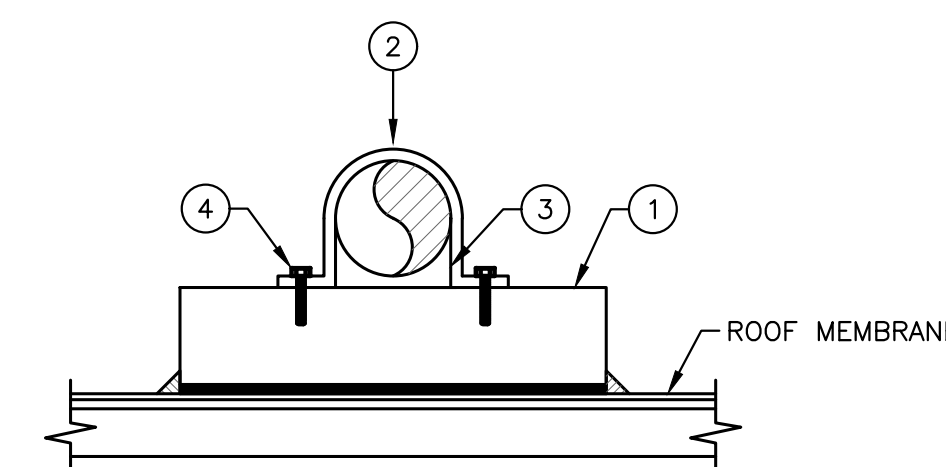
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P1.1

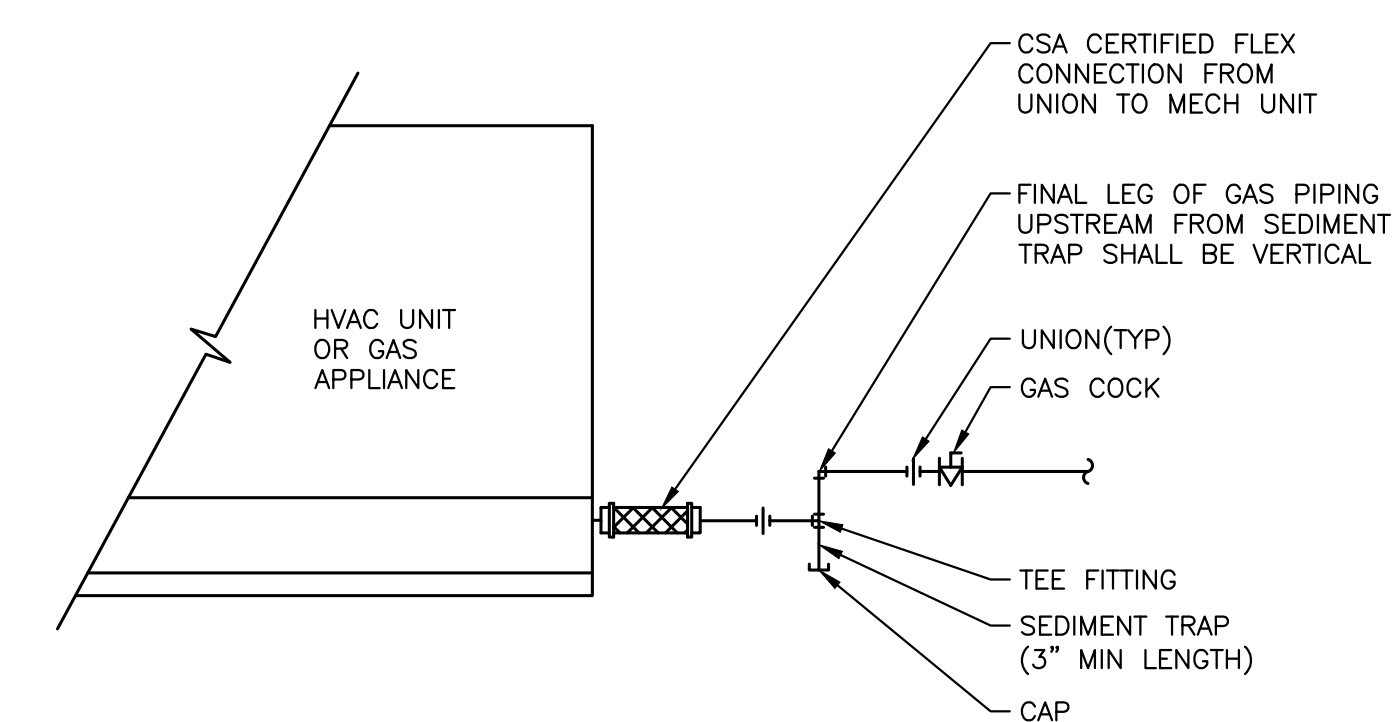




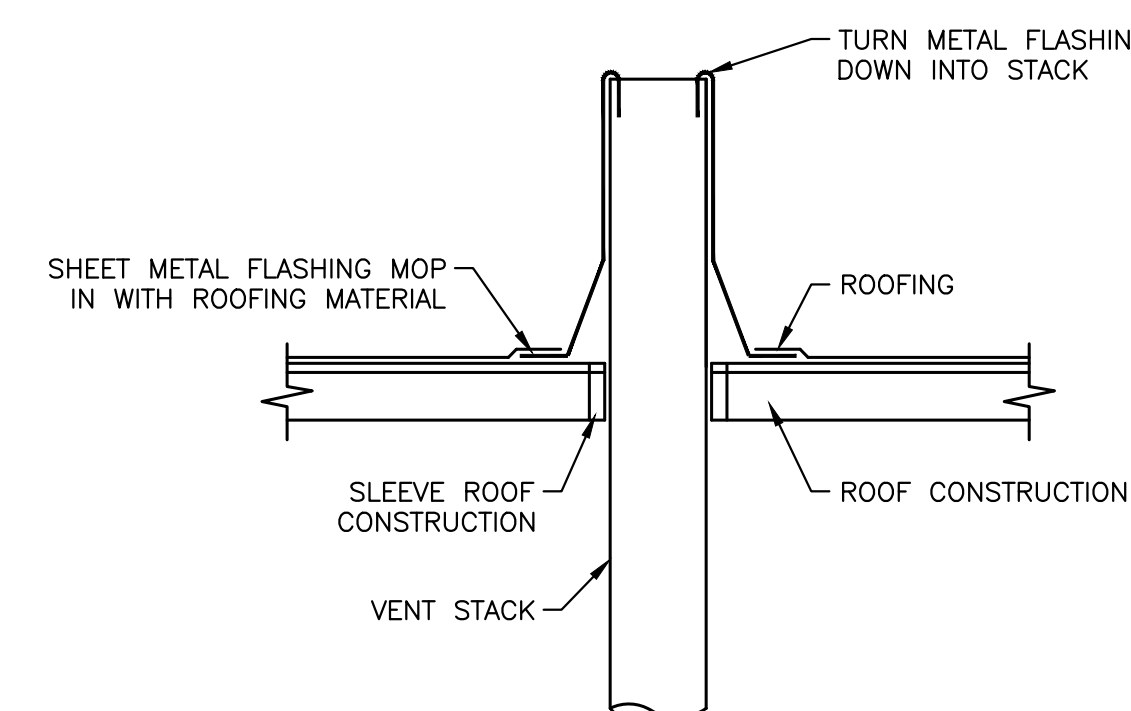
NOTE: CONTRACTOR SHALL VERIFY EXACT SIZE AND LOCATION OF ALL PLUMBING CONNECTIONS INTO MECHANICAL UNITS PRIOR TO START OF WORK. BRANCH PIPE SIZE SHALL NOT BE LESS THAN THE CONNECTION SIZE.



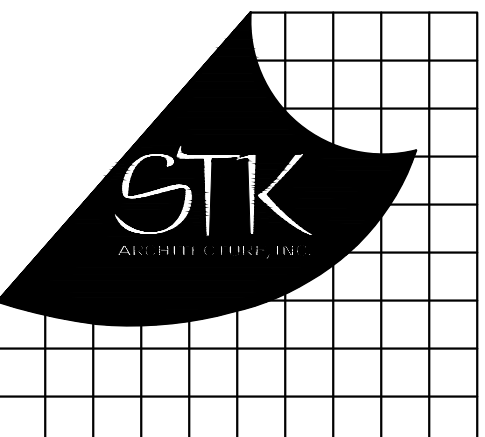
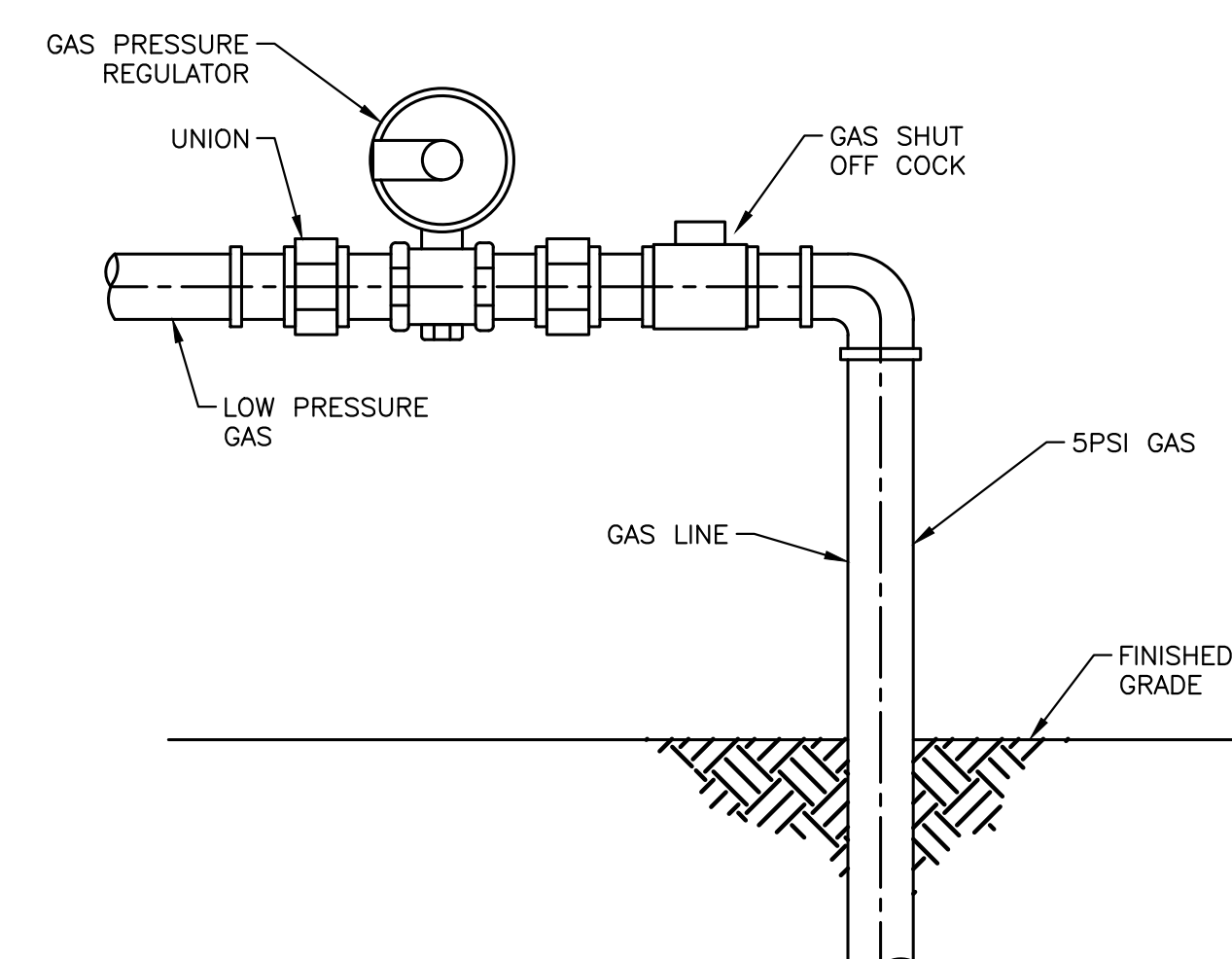
- ① 4"x4" REDWOOD SLEEPER SET IN ROOFING MASTIC
- ② PIPE
- ③ 2-HOLE PIPE CLAMP
- ④ LAG BOLT (TYP)



NOTE: SEDIMENT TRAP NOT REQUIRED FOR APPLIANCES WITH INTERNAL SEDIMENT TRAP, RANGES, CLOTHES DRYERS, FIREPLACES OR OUTDOOR GRILLES.



NOTE: EXTEND VENT PIPING A MINIMUM OF 6" ABOVE ROOFING.



42095 ZEVO DR., TEMECULA, CALIFORNIA 92590-3780  
Phone: 951.295.9110 Fax: 951.295.6079 Email: [stk@stkinc.com](mailto:stk@stkinc.com)

CONSULTANT:  
MECHANICAL, PLUMBING & ELECTRICAL

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PROJECT NO.: 10.10.1151

CIP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

**ISSUE INFORMATION:**

DATE:	INFORMATION:
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SHEET INFORMATION:

STK PROJECT NO.: 374-147-2  
SCALE: AS NOTED

SCALE: AS NOTED  
DATE: JULY 202

LOT DATE: -

DRAWING NAME:

FEAI :



SHEET TITLE:

## PLUMBING DETAILS

SHEET NO.:

DE 1

### P5.1



GENERAL NOTES

1. THESE DOCUMENTS MAY NOT BE USED FOR ANY REPRODUCTION, BIDDING, OR CONSTRUCTION UNLESS AUTHORIZED, IN WRITING, BY SALAS O'BRIEN AND THE ENGINEER OF RECORD RESPONSIBLE FOR THEIR PREPARATION.
2. ALL BRANCH DUCTS SHALL HAVE BALANCE DAMPERS WITH QUADRANT LOCKS.
3. ALL DUCT SIZES SHOWN ARE NET INSIDE DIMENSIONS.
4. DUCTWORK SHALL BE GALVANIZED SHEET METAL IN COMPLETE CONFORMANCE WITH C.M.C., AND SMACNA HVAC DUCT CONSTRUCTION STANDARDS. FLEXIBLE DUCTS MAY BE USED TO CONNECT INTO AIR OUTLETS AND INLETS. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL BE 5'-0".
- DUCTWORK ON ROOF SHALL BE INTERNALLY LINED AND PAINTED. ALL JOINTS AND SEAMS SHALL BE WEATHERPROOF.
- ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES.
- DUCTS SERVING TYPE 1 KITCHEN HOODS SHALL BE CONSTRUCTED OF MINIMUM 16 GAUGE CARBON STEEL OR MINIMUM 18 GAUGE STAINLESS STEEL WITH FULLY WELDED JOINTS. DISHWASHER EXHAUST SHALL BE MINIMUM 18 GAUGE STAINLESS STEEL.
5. ALL FLEXIBLE DUCTS SHALL BE INSULATED. MINIMUM BEND RADIUS SHALL BE TWICE THE DUCT DIAMETER.
6. SUPPLY AND RETURN DROPS SHALL BE LINED SHEET METAL PLENUMS.
7. DUCT AND PLENUM INSULATION SHALL BE IN ACCORDANCE WITH THE 2019 CALIFORNIA CODE OF REGULATIONS, TITLE-24, PART 6, ENERGY EFFICIENCY STANDARDS (E.E.S.), TABLE 150.1-A AND THE 2019 CALIFORNIA MECHANICAL CODE (C.M.C.) SECTION 604.0.
8. ALL SHEET METAL DUCTS SHALL BE INSULATED BY MEANS OF FOIL WRAP, 3/4 LB. DENSITY FIBERGLASS INSULATION. INSULATION SHALL BE UL LISTED. DUCT LINERS SHALL BE NON-FIBERGLASS TYPE WITH THICKNESS AS REQUIRED TO MEET T-24 REQUIREMENTS.
9. THERMOSTATS SHALL BE LOCATED AT 4" - 0" ABOVE FINISHED FLOOR (46" MAX. IF MOUNTED OVER CASEWORK OR OTHER OBSTRUCTION) IN ACCORDANCE WITH A.D.A. REQUIREMENTS, UNLESS NOTED OTHERWISE.
10. CONDENSATE DRAIN PIPING SHALL BE COPPER TYPE "L", AND SHALL BE ROUTED TO AN APPROVED RECEPTOR.
11. PROVIDE FLEXIBLE CONNECTIONS AT THE INLET AND OUTLET OF ALL FANS.
12. COORDINATE FINAL LOCATIONS OF AIR DISTRIBUTION DEVICES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS, I.E. LIGHTS, SPEAKERS, TILES AND SPRINKLER HEADS.
13. ALL SUPPLY CEILING DIFFUSERS SHALL HAVE 4-WAY AIR FLOW DISTRIBUTION PATTERNS, UNLESS INDICATED OTHERWISE.
14. COORDINATE FINAL LOCATIONS OF THERMOSTATS WITH ARCHITECT AND OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. FIELD COORDINATE LOCATIONS WITH OTHER TRADES INCLUDING ELECTRICAL, TELEPHONE, ETC.
15. FIRE/SMOKE DAMPERS SHALL BE INSTALLED ON ALL DUCTWORK PASSING THROUGH FIRE SEPARATING WALLS, AND SHALL BE INSTALLED AS PER 2019 CMC SECTION 605.0, 2019 CBC SECTION 717, AND U.L., LOCAL, STATE, AND N.F.P.A. FIRE CODES.
16. ALL ROOF PENETRATIONS, CUTTING, PATCHING, BLOCKOUTS, STRUCTURAL SUPPORT, ROOF OPENINGS, LEVELING OF PRE-FAB CURBS SHALL BE BY GENERAL CONTRACTOR. CONTRACTOR SHALL VERIFY EXACT ROOF OPENING SIZES WITH UNIT MANUFACTURER PRIOR TO START OF WORK AND SHALL MAKE ALL NECESSARY ADJUSTMENTS AT NO EXTRA COST TO OWNER.
17. LOCATION OF ALL MECHANICAL EQUIPMENT SHOWN ARE SCHEMATIC. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATIONS AND REQUIRED SERVICE/MAINTENANCE CLEARANCES PRIOR TO START OF WORK.
18. CONTRACTOR SHALL VERIFY WEIGHTS OF ALL MECHANICAL EQUIPMENT WITH THEIR MANUFACTURER PRIOR TO START OF WORK. IF DIFFERENT THAN THE WEIGHTS INDICATED ON DRAWINGS, CONTRACTOR SHALL INFORM THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO START OF WORK.
19. CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS W/MFR. AND COORDINATE WITH THE ELECTRICAL CONTRACTOR AND THE MANUFACTURER PRIOR TO START OF WORK. NOTIFY THE ARCHITECT, IN WRITING, IN CASE OF ANY DISCREPANCIES, PRIOR TO START OF WORK.
20. ALL HVAC EQUIPMENT, APPLIANCES, AND DUCTWORK SHALL CONFORM TO THE LATEST GUIDELINES OF U.L., A.G.A., N.F.P.A., C.M.C., C.P.C., AND ALL OTHER LOCAL CODES HAVING JURISDICTION.
21. TEST AND BALANCE THE HVAC SYSTEM AS PER REQUIREMENTS OF THE MANDATORY HVAC MEASURES INDICATED ON THIS SHEET.
22. CONTRACTOR SHALL FIELD VERIFY EXACT CEILING SPACE AVAILABLE FOR ROUTING OF DUCT, PRIOR TO START OF WORK, INFORM ARCHITECT, IN WRITING, IN CASE OF ANY DISCREPANCY OR POTENTIAL CONFLICTS PRIOR TO FABRICATING AND/OR PURCHASE OF ANY DUCTWORK.
23. ALL HVAC UNITS SYSTEMS WITH 2000 CFM OR MORE OR SERVING A COMMON AIR SPACE MUST BE INTERCONNECTED TO SHUT DOWN IMMEDIATELY UPON ALARM CONDITION FROM DUCT DETECTORS (OR FIRE ALARM SYSTEM WHEN USING AREA SMOKE DETECTORS IN LIEU OF DUCT DETECTORS) WITHOUT INTERFACE FROM EMS OR ANY OTHER SYSTEMS. ALL CONTROL RELAYS USED FOR SHUT DOWN MUST BE CALIFORNIA STATE FIRE MARSHAL LISTED FOR RELEASING SERVICE.
24. ACCESS PANELS SHALL BE PROVIDED TO ALL EQUIPMENT, MANUAL VOLUME DAMPERS, ETC. LOCATED IN INACCESSIBLE AREAS.
25. MAINTAIN MINIMUM 10'-0" BETWEEN ALL OA INTAKES AND EXHAUST AIR DISCHARGES OR VENTS.

LEGEND

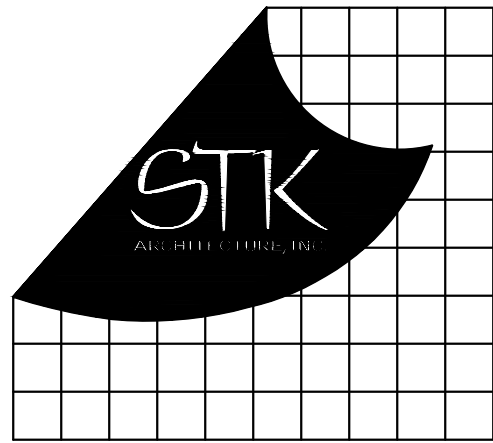
SYMBOL	ABBREV.	DESCRIPTION
		DEMOLITION
		ITEM TO BE RELOCATED
		FLEXIBLE CONNECTION, DUCTWORK
	10x6	DUCT SIZE (1ST NUMBER INDICATES SIDE SHOWN)
	(L)	INTERNALLY LINED DUCTWORK
	TV	SQUARE ELBOW WITH TURNING VANES
		ROUND ELBOW
	MVD	MANUAL VOLUME DAMPER
	BD	BACKDRAFT DAMPER
		FLEXIBLE DUCTWORK
	FSD	FIRE SMOKE DAMPER
	OA	OUTSIDE AIR
		ROUND DUCT UP
		CEILING SUPPLY AIR DIFFUSER (4-WAY THROW UNLESS NOTED OTHERWISE)
	SA	SUPPLY AIR
	RR/RG	RETURN AIR REGISTER/GRILLE
	RA	RETURN AIR
	ER/EG	EXHAUST AIR REGISTER/GRILLE
	EA	EXHAUST AIR
	AP	CEILING ACCESS PANEL
		RECTANGULAR SUPPLY DUCT UP
		RECTANGULAR RETURN DUCT UP
		RECTANGULAR EXHAUST DUCT UP
	TSTAT	THERMOSTAT
	HSTAT	HUMIDISTAT
		WALL SWITCH/WALL STAT
	CO	CARBON MONOXIDE SENSOR
	CO2	CARBON DIOXIDE SENSOR
	SD	DUCT MOUNTED SMOKE DETECTOR INTERLOCK WITH FIRE ALARM. SEE ELECT. DWGS.
	TC	TIME CLOCK (ELECTRONIC PROGRAMMABLE)
	TS	TIMER SWITCH
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
	CFM	CUBIC FEET PER MINUTE
	ACI	AMERICAN CONCRETE INSTITUTE
	A.D.A.	AMERICANS WITH DISABILITIES ACT
	A.F.F.	ABOVE FINISH FLOOR
	A.G.A.	AMERICAN GAS ASSOCIATION
	AL	ALUMINUM
	AMB.	AMBIENT
	APRX.	APPROXIMATE(LY)
	ARCH.	ARCHITECT OR ARCHITECTURAL
	ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
	BHP	BRAKE HORSEPOWER
	BLDG	BUILDING
	BTU(H)	BRITISH THERMAL UNIT (PER HOUR)
	B.U.R.	BUILT-UP ROOFING
	CAP.	CAPACITY
	C.B.C.	CALIFORNIA BUILDING CODE
	C.E.C.	CALIFORNIA ENERGY COMMISSION
	C.M.C.	CALIFORNIA MECHANICAL CODE
	C.P.C.	CALIFORNIA PLUMBING CODE
	CD	CONDENSATE DRAIN
	CGBSC	CALIFORNIA GREEN BUILDING STANDARDS COMMISSION
	CHW	CHILLED WATER
	CONC.	CONCRETE
	COND.	CONDITIONS
	CONN.	CONNECTIONS
	COORD.	COORDINATE
	C.O.P.	COEFFICIENT OF PERFORMANCE
	CORR.	CORRIDOR
	CU	COPPER
	CW	COLD WATER
	DB	DRY BULB
	DET.	DETAIL
	DIM.	DIMENSIONS
	DN.	DOWN
	DWG(S).	DRAWING(S)

LEGEND (CONT.)

SYMBOL	ABBREV.	DESCRIPTION
	DX	DIRECT EXPANSION
	(E)	EXISTING
	EAT	ENTERING AIR TEMPERATURE
	EDB.	ENTERING DRY BULB
	ENT.	ENTERING
	EQ.	EQUAL
	EWT	ENTERING WATER TEMPERATURE
	EER	ENERGY EFFICIENCY RATIO
	E.E.S.	ENERGY EFFICIENCY STANDARDS
	EFF.	EFFICIENCY
	ELEC.	ELECTRICAL
	ESP	EXTERNAL STATIC PRESSURE (INCHES OF WATER)
	FAB	FABRICATED
	F.A.R.	FREE AREA REQUIRED
	FLA	FULL LOAD AMPS
	FPM	FEET PER MINUTE
	FT.	FEET
	GA.	GAUGE
	GALV.	GALVANIZED
	GPM	GALLONS PER MINUTE
	GSM	GALVANIZED SHEET METAL
	HERS	HOME ENERGY RATING SYSTEM
	HHW	HEATING HOT WATER
	HP	HORSEPOWER
	HSPF	HEATING SEASONAL PERFORMANCE FACTOR
	HVAC	HEATING, VENTILATION AND AIR CONDITIONING
	I.B.C.	INTERNATIONAL BUILDING CODE
	I.M.C.	INTERNATIONAL MECHANICAL CODE
	I.P.C.	INTERNATIONAL PLUMBING CODE
	IN.	INCHES
	IPLV	INTEGRATED PART-LOAD VALUE
	KW	KILOWATT
	LAT	LEAVING AIR TEMPERATURE
	LBS.	POUNDS
	LVG.	LEAVING
	LWT	LEAVING WATER TEMPERATURE
	MECH.	MECHANICAL
	MAX.	MAXIMUM
	MB	MACHINE BOLT
	MBH	1000 BTUH
	MCA	MINIMUM CIRCUIT AMPACITY
	MFR	MANUFACTURER
	MIN.	MINIMUM
	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MTG.	MOUNTING
	MVD	MANUAL VOLUME DAMPER
	NA	NOT APPLICABLE
	N.F.P.A.	NATIONAL FIRE PROTECTION ASSOCIATION
	NIC	NOT IN CONTRACT
	NC	NOISE CRITERIA
	NO.	NUMBER
	OBD	OPPOSED BLADE DAMPER
	OPER.	OPERATING
	OSHPD	OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
	PH	PHASE
	QTY.	QUANTITY
	RECT.	RECTANGLE/RECTANGULAR
	RPM	REVOLUTIONS PER MINUTE
	SEER	SEASONAL ENERGY EFFICIENCY RATIO
	SF	SQUARE FEET
	SQ.	SQUARE
	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
	S.M.S.	SHEET METAL SCREW
	S.O.V.	SHUT-OFF VALVE
	SPD	STATIC PRESSURE DROP
	SQFT	SQUARE FEET
	STRUC.	STRUCTURAL
	STL.	STEEL
	TEMP.	TEMPERATURE
	THRU	THROUGH
	TSP	TOTAL STATIC PRESSURE
	TYP.	TYPICAL
	U/C	UNDERCUT DOOR
	U.L.	UNDERWRITER'S LABORATORIES
	U.F.C.	UNIFIED FACILITIES CRITERIA
	V	VOLTAGE/VOLTS
	VEL.	VELOCITY
	VAV	VARIABLE AIR VOLUME
	VFD	VARIABLE FREQUENCY DRIVE
	WB	WET BULB
	WT.	WEIGHT

MANDATORY HVAC SYSTEM MEASURES

1. ALL WORK INDICATED ON DRAWINGS AND/OR SPECIFICATIONS SHALL BE COORDINATED WITH WORKS OF OTHER TRADES PRIOR TO START OF WORK.
2. ALL HVAC EQUIPMENT LISTED IN SECTION 100(H) OF THE E.E.S. MUST BE C.E.C. CERTIFIED.
3. ALL PIPING INSULATION SHALL BE CONSISTENT WITH THE REQUIREMENTS OF C.M.C. SECTIONS 1201.2 AND TABLE E 502.5, AND E.E.S. SECTION 120.3-A.
4. ALL DUCTWORK INSULATION SHALL BE CONSISTENT WITH THE REQUIREMENTS OF SECTIONS C.M.C. SECTION 604.0 TITLE 24 E.E.S. TABLE 150.1-A.
5. ALL HVAC EQUIPMENT AND APPLIANCE SHALL MEET THE REQUIREMENTS PER SECTIONS 110.1-110.2, 110.5 AND 120.1-120.7 E.E.S.
6. ALL HVAC SYSTEMS SHALL MEET THE CONTROL REQUIREMENTS PER SECTION 110.2 AND 120.2 E.E.S.
7. ALL VENTILATION SYSTEMS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE C.M.C.
8. THE CONTRACTOR SHALL PROVIDE THE BUILDING OWNER, MANAGER, AND THE ORIGINAL OCCUPANTS A LIST OF THE HEATING, VENTILATION, AND AIR CONDITIONING FEATURES, MATERIALS, AND COMPONENTS INSTALLED IN THE BUILDING AND OPERATING INSTRUCTIONS.
9. INSULATION MATERIAL SHALL MEET THE CALIFORNIA QUALITY STANDARD PER SECTION 120.3 AND 120.4 E.E.S.
10. ALL SPACE CONDITIONING AND VENTILATION SYSTEMS SHALL BE BALANCED TO THE QUANTITIES SPECIFIED IN THESE PLANS, IN ACCORDANCE WITH THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) PROCEDURAL STANDARDS, OR ASSOCIATED AIR BALANCE COUNCIL (ABC) NATIONAL STANDARDS. TESTING AND BALANCING SHALL BE DONE BY AN INDEPENDENT QUALIFIED AGENCY.
11. ALL SYSTEMS SHALL PROVIDE THE MINIMUM OUTSIDE AIR AS SHOWN ON THE MECHANICAL DRAWINGS, AND SHALL BE MEASURED AND CERTIFIED BY AN INDEPENDENT QUALIFIED TESTING AGENCY.
12. DUCT INSULATION SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 8.0.
13. DURING CONSTRUCTION, ENDS OF DUCT OPENINGS SHALL BE SEALED AND MECHANICAL EQUIPMENT SHALL BE COVERED TO PROTECT INTEGRITY OF SYSTEM CLEANLINESS.
14. PRIOR TO FINAL APPROVAL OF THE BUILDING, THE LICENSED CONTRACTOR, ARCHITECT, OR ENGINEER IN RESPONSIBLE CHARGE OF THE OVERALL CONSTRUCTION MUST COMPLETE AND SIGN THE GREEN BUILDING STANDARDS CERTIFICATION FORM AND GIVE TO THE BUILDING DEPARTMENT OFFICIAL TO BE FILED WITH THE APPROVED PLANS.
15. PROVIDE TEMPORARY MEANS OF BUILDING VENTILATION DURING CONSTRUCTION IN ACCORDANCE WITH CGBSC SECTION 5.504.1.1.
16. BUILDING FLUSH-OUT SHALL BE PERFORMED AND MONITORED UPON CONSTRUCTION COMPLETION IN ACCORDANCE WITH CGBSC SECTION 5.504.2.
17. ALL ENVELOPE AND MECHANICAL CERTIFICATE OF ACCEPTANCE FORMS AND ALL RELATED ACCEPTANCE DOCUMENTS SHALL BE SUBMITTED TO THE FIELD INSPECTOR DURING CONSTRUCTION. CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED UNTIL THESE FORMS ARE REVIEWED AND APPROVED.
18. THERMOSTATIC CONTROLS FOR ALL SINGLE ZONE AIR CONDITIONERS AND HEAT PUMPS SHALL COMPLY WITH THE REQUIREMENTS OF EES SECTION 110.2(C) AND REFERENCE JOINT APPENDIX JAS. THERMOSTAT SHALL BE CAPABLE OF COMMUNICATING THROUGH EITHER (1) AT LEAST ONE EXPANSION PORT WITH A REMOVABLE MODULE TO ENABLE COMMUNICATION; OR (2) ON BOARD COMMUNICATION DEVICE.
19. DUCTWORK SHALL BE LEAK TESTED IN ACCORDANCE WITH SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL FOR A REPRESENTATIVE TOTAL NOT LESS THAN 10% OF INSTALLED DUCTWORK IN ACCORDANCE WITH THE REQUIREMENTS OF CMC 603.10.



CONSULTANT:  
MECHANICAL PLUMBING & ELECTRICAL



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385 N. ARROW-HEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:

PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 1010161

CP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

ISSUE INFORMATION:

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STK PROJECT NO.: 374-147-21  
SCALE: AS NOTED  
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SHEET TITLE:

MECHANICAL  
LEGEND, NOTES &  
SCHEDULES

SHEET NO.:

M0.1



ROOFTOP GAS/ELEC. AIR CONDITIONING UNIT SCHEDULE																																							
TAG	MANUFACTURER & MODEL NO.	SERVES	NOMINAL CAP. ARI COND. (TONS)	IEER (EER)	SUPPLY FAN						COMPRESSOR			CONDENSER FAN			POWER EXH. V/PH			COMB. FAN			UNIT POWER SUPPLY				COOLING					HEATING		FILTERS		OPER. WEIGHT (LBS.)	REMARKS		
					CFM	ESP (IN. W.G.)	OA CFM	NO.	HP	FLA	NO.	RLA	LRA	NO.	HP	FLA	CFM	ESP	HP	NO.	FLA	MCA	MOCF	V	PH	TOTAL CAP (MBH)	SENS. CAP (MBH)	EAT (°F) DB	(°F) WB	AMB. TEMP (°F)	INPUT (MBH)	MIN. AFUE (%)	QTY	SIZE (IN.)					
AC 1	CARRIER 48ABW040	SHOOTING RANGE	40	14.5 (9.8)	11000	1.0	11000	1	15	21	3	14.8 130 14.8 130 14.8 130	4	1.0 3.3 1.0 3.3 1.0 3.3	-	-	-	2	1.1 1.1 1.1	99	110	460	3	498.0	498.0	100	70	100	800	81	8 4	16x25x2 20x25x2	6500	①②③④⑤⑦⑧⑨⑩					
AC 2	CARRIER 48ABW040	SHOOTING RANGE	40	14.5 (9.8)	11000	1.0	11000	1	15	21	3	14.8 130 14.8 130 14.8 130	4	1.0 3.3 1.0 3.3 1.0 3.3	-	-	-	2	1.1 1.1 1.1	99	110	460	3	498.0	498.0	100	70	100	800	81	8 4	16x25x2 20x25x2	6500	①②③④⑤⑦⑧⑨⑩					

- 1 MOUNT UNIT ON HOUSEKEEPING PAD ON GRADE PER DETAIL 2/M5.1.

2 PROVIDE BELT DRIVEN INDOOR FAN MOTOR.

3 PROVIDE 100% OA HOOD WITH MANUAL DAMPER.
- 4 PROVIDE WITH PROGRAMMABLE THERMOSTAT 33CONNECTSTAT43 WITH REMOTE PROGRAMMING CAPABILITY AND LOCAL OVERRIDE. SEE DETAIL 1/M5.1.

5 PROVIDE UL900 (CLASS 1 OR 2) (MERV 13) DISPOSABLE PLEATED FILTERS.

6 PROVIDE STAINLESS STEEL DRAIN PAN AND STAINLESS STEEL HEAT EXCHANGER WITH FLUE DISCHARGE DEFLECTOR.


7 PROVIDE WITH FUSED DISCONNECT SWITCH. FOR CONTROL DIAGRAM, SEE 4/M5.1, SEE ELECTRICAL DRAWINGS.
- 8 PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR A COMPLETE AND OPERATIONAL SYSTEM.

9 FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

10 PROVIDE WITH NON-CFC REFRIGERANT BASED SYSTEM.

AIR DEVICE SCHEDULE					
TAG	MANUFACTURER & MODEL NO.	TYPE	FRAME STYLE	OBD (YES/NO)	REMARKS
A	TITUS 300RL	LOUVER FACE RETURN/EXHAUST REGISTER	DUCT MOUNTED	Y	1234


- 1 STEEL CONSTRUCTION.
- 2 DOUBLE DEFLECTION.
- 3 SEE DETAIL 3/M5.1.
- 4 ARRANGE FACE BLADES TO DIRECT AIR FLOW DOWN RANGE.



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PROJECT FOR:

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PROJECT NAME:

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9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739


PROJECT NO.: 1010151  
CIP NO.: \_\_\_\_\_  
CAFM NO.: \_\_\_\_\_  
APN: 0229-28-370-0000

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SHEET TITLE:

MECHANICAL  
SCHEDULES

SHEET NO.:

M0.2

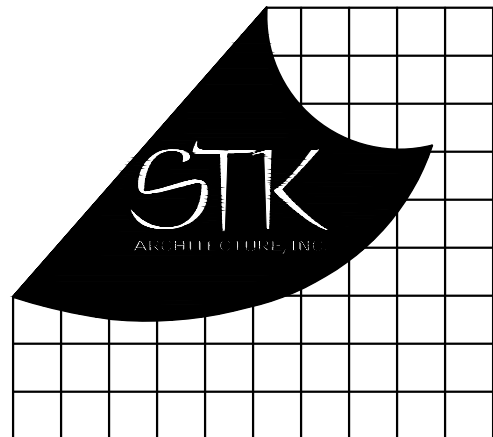


GENERAL NOTES

- A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS, DETERMINING EXTENT OF DEMOLITION, AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- B. ALL EXISTING EQUIPMENT, DUCTWORK AND AIR DISTRIBUTION DEVICES, WHICH ARE TO REMAIN, SHALL BE CLEANED AND REFURBISHED TO ORIGINAL WORKING CONDITION.
- C. ALL WORK TO BE DEMOLISHED OR REMOVED SHALL NOT BE RE-INSTALLED UNLESS NOTED OTHERWISE.

KEY NOTES

- 1 MINIMUM MANUFACTURER'S MAINTENANCE CLEARANCE. KEEP FREE OF OBSTRUCTIONS. VERIFY DIMENSIONS WITH MANUFACTURER PRIOR TO START OF WORK, TYPICAL.
- 2 34x34 SA DUCT UP TO ROOF. SEE M2.2 FOR CONTINUATION.
- 3 SECURE UNIT TO HOUSEKEEPING PAD. SEE DETAIL 2/M5.1.
- 4 DUCT THROUGH WALL. SEE DETAIL 9/M5.1.



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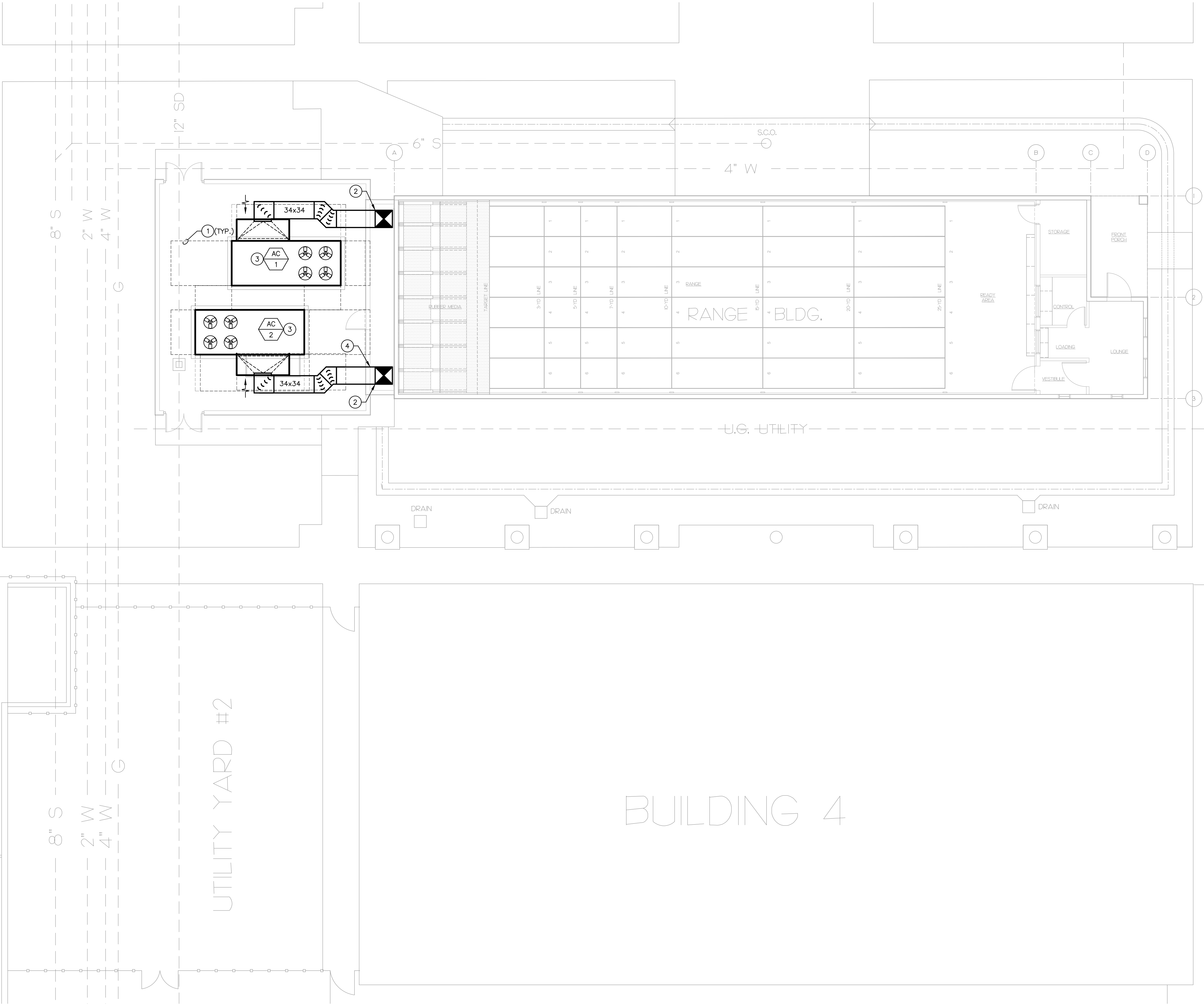


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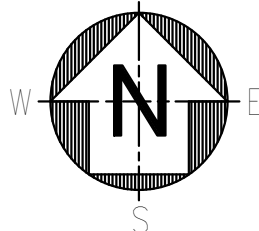
MECHANICAL  
SITE PLAN

SHEET NO.:

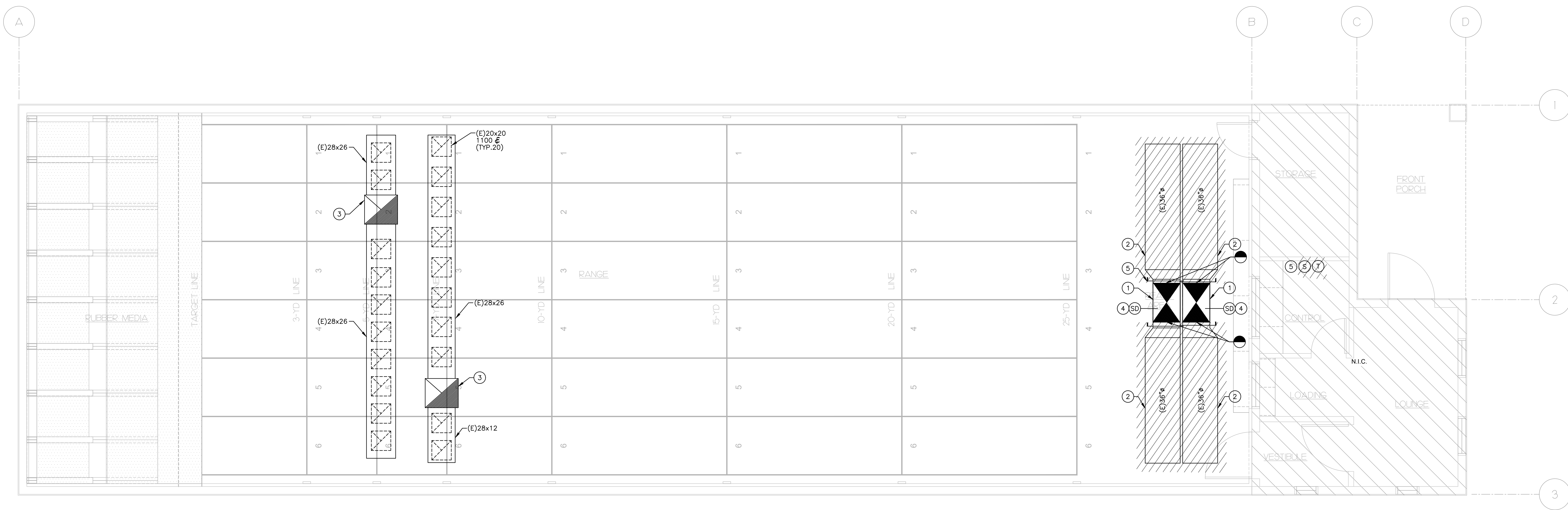
M1.1



1 MECHANICAL SITE PLAN  
0 2 4 8 16' 1/8"=1'-0"







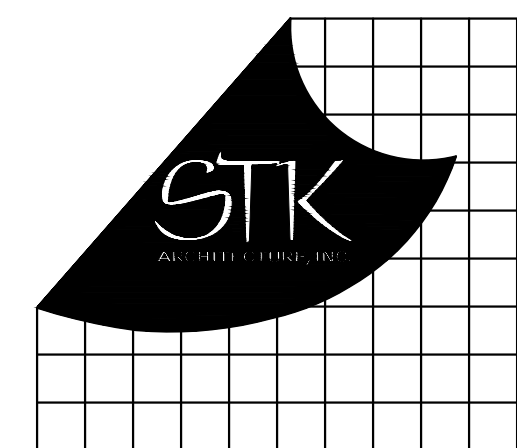
1 MECHANICAL DEMOLITION FLOOR PLAN

### GENERAL NOTES

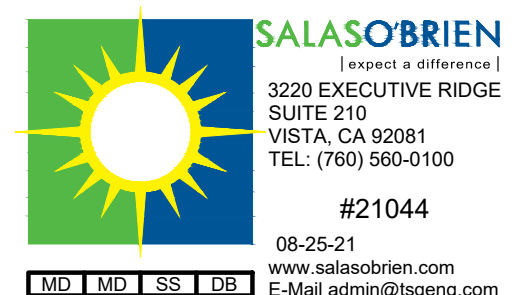
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- ALL EXISTING EQUIPMENT, DUCTWORK AND AIR DISTRIBUTION DEVICES, WHICH ARE TO REMAIN, SHALL BE CLEANED AND REFURBISHED TO ORIGINAL WORKING CONDITION.
- ALL WORK TO BE DEMOLISHED OR REMOVED SHALL NOT BE RE-INSTALLED UNLESS NOTED OTHERWISE.

### KEY NOTES

- EXISTING 40x28 SUPPLY AIR DUCT THRU ROOF TO REMAIN.
- REMOVE EXISTING HATCHED 36" DUCT SOX FLEXIBLE FABRIC DUCTWORK UP TO POINT OF DISCONNECT.
- EXISTING 34x30 UP TO EXHAUST FAN ON ROOF.
- EXISTING DUCT SMOKE DETECTOR IN SUPPLY AIR TO REMAIN.
- REMOVE EXISTING EC UNIT CONTROLS SHOWN HATCHED.



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SHEET TITLE:

MECHANICAL  
DEMOLITION  
FLOOR PLAN

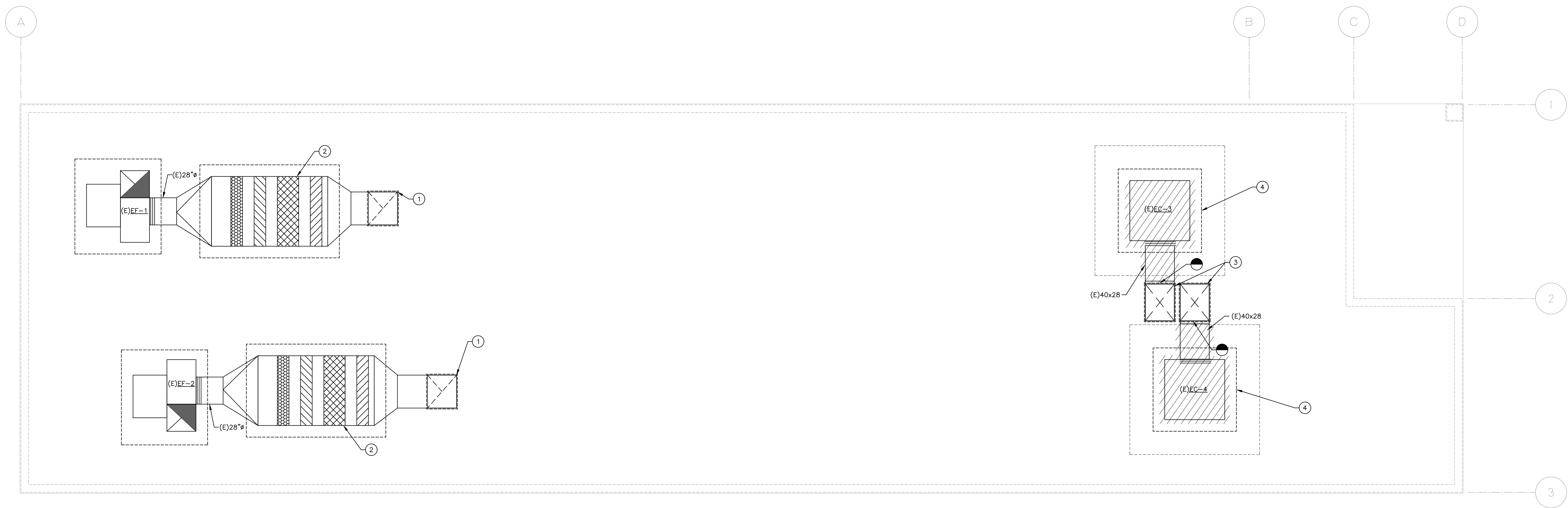
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M2.01

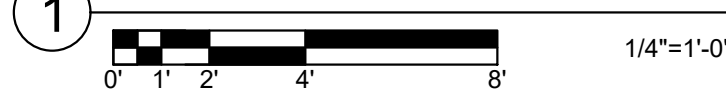


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MECHANICAL DEMOLITION ROOF PLAN



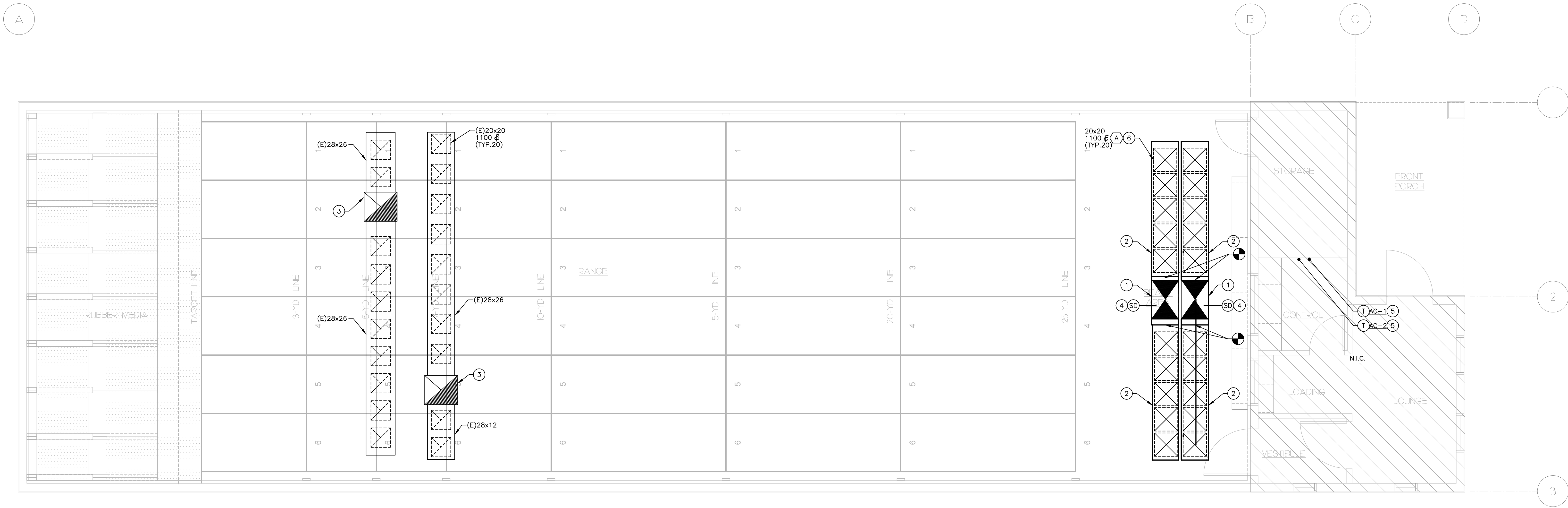
GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS, DETERMINING EXTENT OF DEMOLITION, AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- ALL EXISTING EQUIPMENT, DUCTWORK AND AIR DISTRIBUTION DEVICES, WHICH ARE TO REMAIN, SHALL BE CLEANED AND REFURBISHED TO ORIGINAL WORKING CONDITION.
- ALL WORK TO BE DEMOLISHED OR REMOVED SHALL NOT BE RE-INSTALLED UNLESS NOTED OTHERWISE.

KEY NOTES

- EXISTING 34x30 EXHAUST AIR DOWN THRU ROOF.
- EXISTING 72x48 FILTER BANK.
- EXISTING 38x30 SUPPLY AIR DOWN THRU ROOF TO REMAIN.
- REMOVE EXISTING EVAPORATIVE COOLER, DUCTWORK AND ALL RELATED MECHANICAL APPURTENANCES UP TO POINT OF DISCONNECT.

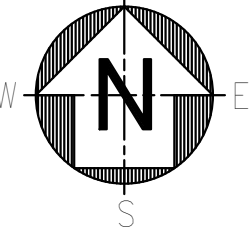




1 MECHANICAL FLOOR PLAN



1/4"=1'-0"

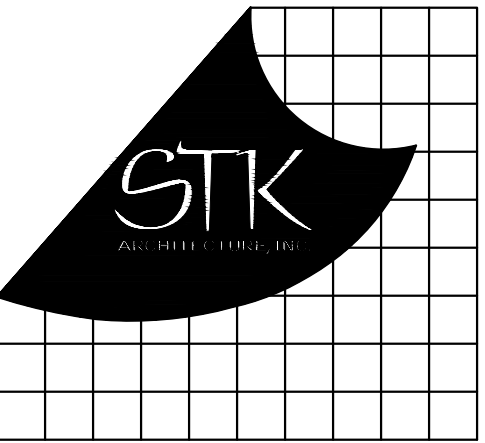


### GENERAL NOTES

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- ALL EXISTING EQUIPMENT, DUCTWORK AND AIR DISTRIBUTION DEVICES, WHICH ARE TO REMAIN, SHALL BE CLEANED AND REFURBISHED TO ORIGINAL WORKING CONDITION.
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- FOR DUCT TAKE-OFFS, SEE DETAIL 5/M5.1.

### KEY NOTES

- EXISTING 40x28 SUPPLY AIR UP THRU ROOF.
- 28"ø SA DUCT.
- EXISTING 34x30 UP TO EXHAUST FAN ON ROOF.
- EXISTING DUCT SMOKE DETECTOR IN SUPPLY AIR.
- PROVIDE PROGRAMMABLE THERMOSTAT WITH REMOTE CAPABILITY AND 4 HOUR OVERRIDE. COORDINATE WITH ARCHITECT FOR FINAL LOCATION PRIOR TO START OF WORK. MOUNT PER DETAIL 1/M5.1.
- EXTEND 20x20 DUCT BRANCH DOWN TO ALIGN DIFFUSER FACE FLUSH WITH BOTTOM OF CEILING BAFFLE. PROVIDE MVD. ARRANGE FACE BLADES TO DIRECT AIRFLOW DOWN RANGE.



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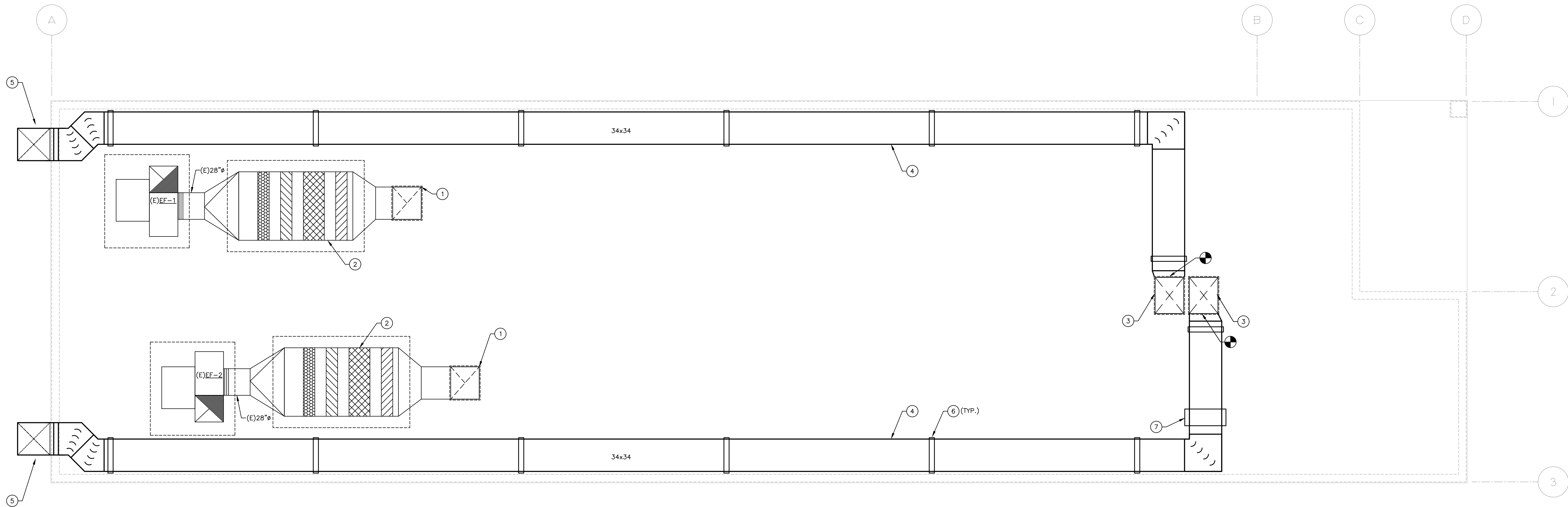
SHEET TITLE:

MECHANICAL  
FLOOR PLAN

SHEET NO.:

M2.1

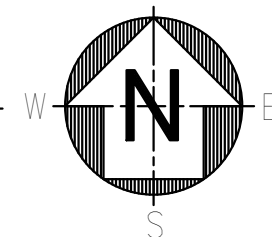




1 MECHANICAL ROOF PLAN



1/4"=1'-0"

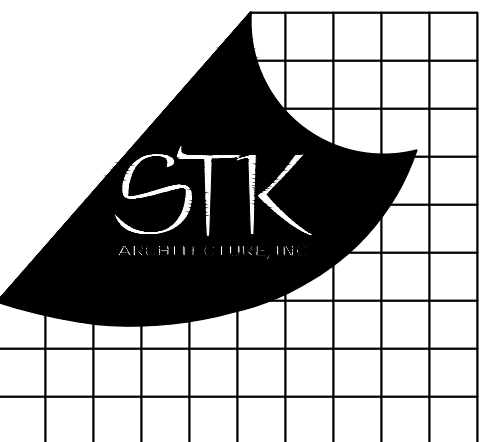


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- ALL WORK TO BE DEMOLISHED OR REMOVED SHALL NOT BE RE-INSTALLED UNLESS NOTED OTHERWISE.

### KEY NOTES

- EXISTING 34x30 EXHAUST AIR DOWN THRU ROOF.
- EXISTING 72x48 FILTER BANK.
- EXISTING 38x30 SUPPLY AIR DOWN THRU ROOF.
- 34x34 SA DUCT ON ROOF, TRANSITION TO EXISTING ROOF PENETRATION AT POINT OF CONNECTION. SEE DETAIL 8/M5.1.
- 34x34 DUCT DOWN TO GRADE. SEE M1.1 FOR CONTINUATION.
- DUCT SUPPORT, TYPICAL.
- CROSSOVER PLATFORM PER ARCHITECTURAL DRAWINGS.



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SEAL:



SHEET TITLE:

MECHANICAL  
ROOF PLAN

SHEET NO.:

M2.2







ELECTRICAL SYMBOL LEGEND		SOME SYMBOLS IN THIS LEGEND MAY OR MAY NOT BE USED IN THIS PROJECT. FLOOR PLANS SHALL DICTATE WHICH SYMBOLS ARE APPLICABLE.		PROJECT NOTES		ABBREVIATIONS		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	1. THESE DOCUMENTS MAY NOT BE USED FOR ANY REPRODUCTION, BIDDING, OR CONSTRUCTION UNLESS AUTHORIZED, IN WRITING, BY SALAS O'BRIEN AND THE ENGINEER OF RECORD RESPONSIBLE FOR THEIR PREPARATION.	21. ALL BROCHURES, OPERATING MANUALS, CATALOGS, ETC. SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION.	A	AMPS	
	CONDUIT HOMERUN WITH PANEL DESIGNATION AND CIRCUITS INDICATED.		DUCT MOUNTED SMOKE DETECTOR			AF	AMP FUSE (SIZE), AMP FRAME (SIZE)	
	CONDUIT/WIRING, INSTALLED IN OR BELOW FLOOR SLAB.		SOLID STATE, ELECTRONIC, ADJUSTABLE TRIP CIRCUIT BREAKER WITH LSIG.	2. VERIFY EXISTING SITE CONDITIONS, ELECTRICAL SERVICE REQUIREMENTS, DIMENSIONS, ELEVATIONS, POINTS OF CONNECTION AND PROJECT CONSTRUCTION LIMITS BEFORE SUBMITTING BID. SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED. ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE.	22. ALL SUBSTITUTIONS SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT TEN (10) DAYS PRIOR TO BID. SUBMITTAL SHALL INCLUDE, BUT NOT BE LIMITED TO, COST SAVINGS, WRITTEN REASON FOR SUBSTITUTION AND A WRITTEN STATEMENT THAT IF THE SUBSTITUTION IS APPROVED, THERE WILL BE NO DELAY IN DELIVERY, CONSTRUCTION TIME OR COST TO OTHER TRADES.	AFCI	ARC FAULT CURRENT INTERRUPT	
	CONDUIT/WIRING, EXPOSED.		DAYLIGHT SENSOR			AFF	ABOVE FINISH FLOOR	
	CONDUIT/WIRING CONCEALED IN WALL OR CEILING SPACE.		SMOKE DETECTOR	3. THESE DRAWINGS ARE DIAGRAMMATIC AND ONLY INDICATE THE INTENT OF OUTLETS, DEVICES, ETC., TO BE CONNECTED AND THE CIRCUIT NUMBERS TO WHICH THEY ARE TO BE CONNECTED TO. CONTRACTOR SHALL INSTALL ALL REQUIRED JUNCTION BOXES ETC., AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM WHICH COMPLIES WITH ALL LOCAL AND NATIONAL GOVERNING CODES.	23. PROVIDE ENGRAVED PLASTIC NAMEPLATES FOR ALL MAJOR PIECES OF EQUIPMENT. PLATES SHALL BE 3 PLY, BLACK FACE, WHITE CORE WITH 1/4" HIGH CONDENSED GOTHIC LETTERING. SCREW-ON ATTACHMENT ONLY. NO CEMENT.	BC	BARE COPPER	
	CONDUIT, FLEXIBLE CONNECTION DRY LOCATIONS – FLEXIBLE STEEL CONDUIT WET LOCATIONS – LIQUIDTIGHT FLEXIBLE STEEL CONDUIT	Signal Systems				C	CONDUIT	
	LIGHT FIXTURE DESIGNATION		TELEPHONE OR TERMINAL BACKBOARD	4. ALL EXTERIOR EQUIPMENT SHALL BE WEATHERPROOF.	24. PROVIDE THE OWNER WITH ONE (1) SET OF COMPLETE ELECTRICAL "AS-BUILTS" AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DEPTHS AND LOCATIONS.	CB	CIRCUIT BREAKER	
	LED LIGHTING FIXTURE UPPER CASE LETTER(S) = FIXTURE TYPE NUMBER = CIRCUIT NUMBER LOWER CASE LETTER(S) = ROOM SWITCHING CIRCUITS AND NUMBER OF SWITCHES NOTE: THIS LABELING SCHEME IS TYPICAL FOR ALL LIGHT FIXTURES.		TELEPHONE OR TERMINAL CABINET, WITH PLYWOOD BACKBOARD			CO	CONDUIT ONLY, WITH PULL LINE	
	LED, WALL MOUNTED LIGHT FIXTURE.		PAGING SPEAKER, WALL MOUNT	5. LOCATIONS OF ALL EQUIPMENT SHALL BE VERIFIED PRIOR TO ROUGH-IN.	25. WHERE A CONFLICT OCCURS BETWEEN THESE DRAWINGS AND THE SPECIFICATIONS ISSUED AS PART OF THESE DOCUMENTS, THE MORE STRINGENT REQUIREMENTS SHALL PREVAIL.	CU	COPPER	
	LED STRIP OR UNDERCABINET TASK LIGHT		PAGING SPEAKER, CEILING MOUNT WITH BACKBOX			EDF	ELECTRIC DRINKING FOUNTAIN	
	LED LIGHTING FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY POWER SYSTEM.		INTRUSION INFRARED SENSOR.	6. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN COMPLIANCE WITH OSHA.	26. COORDINATE ALL ELECTRICAL WORK WITH OTHER TRADES. THE OWNER WILL MAKE NO SUBSEQUENT ALLOWANCE FOR ELECTRICAL WORK REQUIRED BY OTHER TRADES. OBTAIN ALL OTHER PERTINENT INFORMATION REQUIRED TO MEET ACTUAL BUILDING OR FIELD CONDITIONS.	EM	EMERGENCY POWER	
	POLE MOUNTED LIGHT FIXTURE WITH POLE AND FOUNDATION. NUMBER AND ORIENTATION OF LUMINAIRES AS SHOWN ON DRAWINGS.		TIME-OFF-DAY CLOCK OUTLET AND CLOCK, AT +96" AFF, U.O.N.			EXT	ELECTRICAL METALLIC TUBING	
	LIGHTING FIXTURE, WALL OR BRACKET MOUNTED.		CABLE TELEVISION OUTLET, AT +18" AFF, U.O.N.	7. PVC CONDUIT, WITH CODE SIZED GROUND, SHALL BE USED UNDERGROUND ONLY, IF APPROVED BY LOCAL CODE. INSTALL PER LOCAL CODE REQUIREMENTS. CONDUIT RISERS AND STUBS ABOVE GRADE SHALL BE I.M.C. WITH HALF-LAPPED TAPE COVERING OR PVC COATING.	27. ALL FINAL CONNECTIONS TO OWNER-FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR. CONNECTIONS TO ALL EQUIPMENT FURNISHED BY OTHERS SHALL BE COORDINATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH EQUIPMENT MANUFACTURER PRIOR TO ROUGHING IN ALL CONDUIT TO THIS EQUIPMENT.	EXP	EXPLOSION PROOF	
	LIGHTING FIXTURE, SURFACE OR RECESSED MOUNTED.		CLOCK AND SPEAKER COMBINATION			F	FUSE	
	LIGHTING FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY POWER SYSTEM.		DATA JUNCTION BOX, AT +18" AFF U.O.N., WITH 1-1/4" CONDUIT ONLY WITH PULLSTRING UP TO NEAREST ACCESSIBLE TO CEILING SPACE.	8. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC. FOR A COMPLETE AND PROPERLY OPERATING ELECTRICAL SYSTEM.	28. NOTIFY THE OWNER'S REPRESENTATIVE WHEREVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, TRANSFORMERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS) THAT ARISE ON THE DRAWINGS AND/OR SPECIFICATIONS. PROVIDE AND INSTALL ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON DRAWINGS AND/OR IN THE SPECIFICATIONS TO INSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE OWNER AND ENGINEER.	G	GROUND CONDUCTOR	
	TRACK LIGHTING WITH FIXTURES.		TELEPHONE JUNCTION BOX, AT +18" AFF U.O.N., WITH 1-1/4" CONDUIT ONLY WITH PULLSTRING UP TO NEAREST ACCESSIBLE TO CEILING SPACE.			GFI	GROUND FAULT INTERRUPT PROTECTION	
	MOTION SENSOR, DUAL TECHNOLOGY, CEILING MOUNTED NOT TO BE LOCATED WITHIN 48" OF ANY HVAC DIFFUSER.		TELE/DATA JUNCTION BOX AT +18" AFF, U.O.N., WITH (2)1-1/4" CONDUIT ONLY WITH PULLSTRING UP TO NEAREST CABLE TRAY OR ACCESSIBLE CEILING SPACE. W = WALL MOUNT AT +42" AFF, U.O.N.	9. ALL MATERIALS SHALL BE NEW, AND OF THE SAME MANUFACTURER FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED AND APPROVED BY THE UNDERWRITER'S LABORATORIES, AND SHALL BEAR THE INSPECTION LABEL WHERE SUBJECT TO SUCH APPROVAL. MATERIAL SHALL MEET WITH THE APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY, AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY A.N.S.I., U.L., N.E.M.A. AND N.B.F.U. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	29. ALL FEEDER AND BRANCH CIRCUITS SHALL BE PROVIDED WITH AN EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC, AND RUN IN THE SAME RACEWAY OR CONDUIT SUPPLYING SUCH FEEDER OR BRANCH CIRCUIT.	I	ISOLATED GROUND	
	EXIT LIGHT FIXTURE. DARKENED AREA INDICATES FIXTURE FACE. ARROW INDICATES DIRECTION OF FACE ARROW. LL = LOW LEVEL		CEILING MOUNTED DATA AT T-BAR CEILING NOT TO BE MOUNTED IN CEILING SPACE, WITH 1" CONDUIT AND (1) CAT 6 CABLE TO INTERMEDIATE DISTRIBUTION FRAME AS INDICATED ON DWGS.			IMC	INTERMEDIATE METALLIC CONDUIT	
	LIGHT SWITCH, WALL MOUNTED AT +42" AFF, U.O.N. 2 = TWO POLE, 3 = THREE WAY, 4 = FOUR WAY o,b = INDICATES ROOM SWITCHING CIRCUITS AND NUMBER OF SWITCHES d = DIMMER K = KEYS OC = OCCUPANCY SENSOR, DUAL TECHNOLOGY VS = VACANCY SENSOR, MANUAL ON, WHERE REQUIRED BY CODE P = PILOT LIGHT, LIGHTED IN THE OFF POSITION, BP = BYPASS TIMER WP = WEATHERPROOF WR = WEATHER RESISTANT F = FAN SWITCH S = SOLAUIBUE CONTROL T = TIMER SWITCH LV = LOW VOLTAGE		PROJECTOR SHOWN FOR REFERENCE ONLY	10. ALL CONDUIT SHALL BE INSTALLED CONCEALED WHERE PHYSICALLY POSSIBLE. ALL EXPOSED CONDUIT SHALL BE INTERMEDIATE METAL CONDUIT AND INSTALLED PARALLEL TO OR AT RIGHT ANGLES WITH THE BUILDING WALLS, IF VIEWED BY THE PUBLIC, PAINT TO MATCH SURFACE TO WHICH IT IS ATTACHED.	30. TRENCH AND BACKFILL AS REQUIRED TO PERFORM UNDERGROUND WORK. USE EXTREME CAUTION WHEN TRENCHING SO AS NOT TO INTERFERE WITH EXISTING UNDERGROUND UTILITIES. REPAIR ANY DAMAGE CAUSED BY UNDERGROUND TRENCHING.	ISC	INTERRUPTING SHORT CIRCUIT	
	JUNCTION BOX, HANDHOLE OR PULLBOX WITH COVER, SIZE PER NEC, ART. 314.28.		DATA OUTLET, FLUSH FLOOR MOUNTED, WITH HINGED COVER, U.O.N.			LCL	LONG CONTINUOUS LOAD	
	GROUND	DEMOLITION NOTES				MAX	MAXIMUM	
	FUSE	1. THE CONTRACTOR SHALL VISIT THE SITE SPECIFICALLY INCLUDING ALL AREAS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH THESE EXISTING CONDITIONS, AND BY SUBMITTING A BID ACCEPTS CONDITIONS UNDER WHICH THEY WILL BE REQUIRED TO PERFORM THEIR WORK.	2. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO DISCONNECT AND REMOVE ALL EXISTING LIGHTING FIXTURES, RECEPTACLES, ELECTRICAL EQUIPMENT, ETC., AFFECTED BY THE REMODELED AREA. THIS WILL INCLUDE REROUTING, OR THE EXTENSION OF, EXISTING CONDUIT AND FEEDERS WHERE NECESSARY TO MAINTAIN THE CONTINUITY OF EXISTING EQUIPMENT REMAINING.	11. CONTRACTOR SHALL CARRY OUT HIS WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY, LOCAL CODES, O.S.H.A. AND THE CURRENTLY ADOPTED NATIONAL ELECTRICAL CODE (N.E.C.).	31. PATCH AND REPAIR WALLS OR CEILINGS WHICH HAVE BEEN DAMAGED BECAUSE OF ELECTRICAL WORK.	MCB	MAIN CIRCUIT BREAKER	
	UTILITY COMPANY APPROVED CT/METER PROVISIONS					3. ALL CIRCUIT NUMBERS AND EXISTING CONDUIT HOMERUNS SHOWN ON THESE DRAWINGS WERE TAKEN FROM EXISTING RECORD DRAWINGS. IT IS THIS CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS OF HOMERUNS, AND ADJUST CIRCUIT NUMBERS ACCORDING TO EXISTING CONDITIONS IF REQUIRED.	4. WHERE EXISTING WALLS HAVE BEEN REMOVED, AND THERE ARE EXISTING CONDUIT FEEDS WHICH HAVE BEEN CUT-OFF AND CAPPED FLUSH WITH FLOOR, IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND DIMENSION ALL SUCH CONDUITS ON THE "AS-BUILT" DRAWINGS UNLESS NOTED OTHERWISE.	12. THE COMPLETE ELECTRICAL SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH THE CURRENTLY ADOPTED EDITION OF THE NEC, ARTICLE 250.
	FUSED SWITCH	5. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS, EQUIPMENT, ETC., REMAINING IN OPERATION WHICH ARE BEING FED BY AN ABANDONED OUTLET, MAINTAINING CONTINUITY SHALL CONSIST OF REROUTING CONDUIT, WIRING, ETC., AS REQUIRED.	6. WHERE NEW CIRCUITS ARE SHOWN TO EXISTING PANELS, INSTALL NEW BREAKERS OF SAME TYPE, STYLE AND RATING (MINIMUM 20 AMP, SINGLE POLE) AS CALLED FOR ON DRAWINGS. IDENTIFY EACH NEW CIRCUIT ON PANEL SCHEDULE.	13. ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED AREA SEPARATION AND CORRIDOR ASSEMBLIES INCLUDING CONDUITS AND PIPING SHALL BE TIGHTLY AND SOLIDLY SEALED WITH FIRESTOPPING WALLBOARD COMPOUND AND SHALL BE AN APPROVED MATERIAL AS REQUIRED BY LOCAL ENFORCING AGENCY.	33. FOR ADDITIONAL ROUGH-IN AND WIRING REQUIREMENTS SEE MANUFACTURER'S INSTALLATION PLANS, WHICH ARE SUPPLEMENTAL TO AND PART OF THE ELECTRICAL WORK.			
	CIRCUIT BREAKER					7. EXISTING CONDUIT MAY BE REUSED IF ADEQUATELY SIZED, BUT IN NO CASE SHALL ANY EXISTING CONDUITORS BE REUSED.	8. ALL ABANDONED OUTLETS INCLUDING LIGHT, RECEPTACLES, TELEPHONE, ETC., SHALL BE COVERED AND PATCHED TO MATCH THE FINISH OF SURROUNDING WALL OR CEILING TO THE SATISFACTION OF THE OWNER.	14. ELECTRICAL CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS, UTILITY CHARGES AND PAY FOR SAME, COORDINATE AND PAY FOR ALL ELECTRICAL SERVICE CHARGES WITH THE BUILDING DEPARTMENT, SERVING UTILITY AND OWNER.
	TIME CLOCK	9. ALL LIGHTING FIXTURES REMOVED TO ACCOMPLISH DEMOLITION WORK SHALL BE REINSTALLED SIMILAR TO NEW WORK	10. ALL LIGHTING FIXTURES REMOVED TO ACCOMPLISH DEMOLITION WORK SHALL BE REINSTALLED SIMILAR TO NEW WORK	15. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.	35. REFER TO ARCHITECTURAL PLANS FOR LOCATIONS OF RECESSED, SURFACE OR PENDANT MOUNTED LIGHT FIXTURES.			
	LIGHTING OR POWER PANEL – FLUSH MOUNT UNLESS INDICATED OTHERWISE					16. CONDUCTORS SHALL BE CODE GRADE, 600 VOLT CLASS, COPPER (UNLESS NOTED OTHERWISE) MARKED EVERY 24" ALONG ITS LENGTH SHOWING MANUFACTURER'S NAME, MAXIMUM ALLOWABLE VOLTAGE AND SIZE. GENERAL PURPOSE WIRING SHALL BE SOLID COPPER CONDUCTORS #10 AND SMALLER, STRANDED COPPER CONDUCTORS FOR #8 AND LARGER, TYPE THWN(WET) OR THHN(DRY), FOR SPECIAL PURPOSE WIRE TYPES REFER TO EQUIPMENT MANUFACTURER'S PLANS.	17. ALL CONDUIT ONLY (C.O.) SHALL HAVE A PULL WIRE OR ROPE.	18. USE ONLY COMPETENT AND SKILLED PERSONNEL AND PERFORM ALL WORK, INCLUDING AESTHETIC AS WELL AS ELECTRICAL AND MECHANICAL ASPECTS TO STANDARDS CONSISTENT WITH THE BEST PRACTICES OF THE TRADE.
	DISTRIBUTION BOARD, LIGHTING OR POWER PANEL DESIGNATION	19. ALL ELECTRICAL SYSTEM CONDUCTORS SHALL BE INSTALLED IN APPROVED RACEWAYS. NON-METALLIC SHEATHED CABLE IS NOT APPROVED.		20. WHERE IT BECOMES NECESSARY TO DRILL INTO OR CUT THROUGH ANY EXISTING SLABS, WALKWAYS OR DRIVES TO PERMIT THE INSTALLATION OF ANY WORK UNDER THIS CONTRACT, OR TO REPAIR ANY DEFECTS THAT MAY APPEAR TO THE EXPIRATION OF THE WARRANTY, SUCH CUTTING AND PATCHING SHALL PERFORMED BY TRADESMAN EXPERIENCED IN THE WORK REQUIRED. CONTRACTOR SHALL PAY FOR ALL COSTS REQUIRED FOR CUTTING OR REPAIRING. ALL FINISHES SHALL MATCH EXISTING OR NEW ADJACENT SURFACES.	37. CONTRACTOR SHALL VERIFY EXACT LOADS OF HVAC EQUIP. WITH MECHANICAL ENGINEER AND HVAC UNIT MANUFACTURER PRIOR TO START OF WORK. IN CASE OF ANY DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM ARCHITECT AND ELECTRICAL ENGINEER IN WRITING PRIOR TO PROCEEDING ANY FURTHER.			
	MOTOR OR MECHANICAL EQUIPMENT, WITH FLEXIBLE CONNECTION		1. FOR RECEPTACLE CIRCUITS AND 120 VOLT BRANCH CIRCUITS, UNLESS NOTED OTHERWISE, PROVIDE THE FOLLOWING CONDUCTORS: (1) #12 CONDUCTOR FOR EACH PHASE (I.E. CIRCUIT NUMBER) AND (1) SEPARATE DEDICATED #12 NEUTRAL CONDUCTOR FOR EACH SINGLE 120 VOLT CIRCUIT OR FOR 2 TO 3 CIRCUITS PROVIDED THEY ARE OF DIFFERENT PHASES. (1) EQUIPMENT GROUNDING CONDUCTOR, SIZED PER CEC. FOR CIRCUITS TO COMPUTER/DATA EQUIPMENT, PROVIDE DEDICATED NEUTRAL FOR EACH CIRCUIT.			2. FOR LIGHTING BRANCH CIRCUITS, PROVIDE THE FOLLOWING CONDUCTORS: (1) #12 CONDUCTOR FOR EACH PHASE (I.E. CIRCUIT NUMBER); (1) #12 NEUTRAL CONDUCTOR FOR A SINGLE 120 OR 277 VOLT CIRCUIT, OR (1) #12 NEUTRAL CONDUCTOR FOR 2 TO 3 CIRCUITS WHERE EACH CIRCUIT IS ON A DIFFERENT PHASE; (1) EQUIPMENT GROUNDING CONDUCTOR, SIZED PER CEC ARTICLE 250 (DO NOT USE A COMMON NEUTRAL FOR MULTIPLE CIRCUITS ON SAME PHASE) (1) INTERCONNECTING CONDUCTOR BETWEEN EACH 3-WAY AND/OR 4-WAY SWITCH	39. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA: A. EQUIPMENT ON GRADE – 20% OF OPERATING WEIGHT B. EQUIPMENT ON STRUCTURE – 30% OF OPERATING WEIGHT C. FOR FLEXIBLY MOUNTED EQUIPMENT USE FOUR (4) TIMES THE ABOVE VALUES, AND FOR SIMULTANEOUS VERTICAL FORCE USE ONE-THIRD (1/3) TIMES THE HORIZONTAL FORCE. D. THE ABOVE VALUES ARE FOR AN IMPORTANCE FACTOR I = 1.0 AND SEISMIC ZONE Z = 0.4 E. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE FIELD INSPECTOR.	40. ALL OUTLET RATINGS SHALL BE 20 AMPS, UNLESS NOTED OTHERWISE.
	MECHANICAL EQUIPMENT DESIGNATION	BRANCH CIRCUIT WIRING NOTE:						
	DISCONNECT SWITCH (30=AMPS 3=POLES) NEMA 1 INDOORS NEMA 3R IN WET LOCATIONS F = FUSED	1. FOR RECEPTACLE CIRCUITS, PROVIDE THE FOLLOWING CONDUCTORS: (1) #12 CONDUCTOR FOR EACH PHASE (I.E. CIRCUIT NUMBER); (1) #12 NEUTRAL CONDUCTOR FOR A SINGLE 120 OR 277 VOLT CIRCUIT, OR (1) #12 NEUTRAL CONDUCTOR FOR 2 TO 3 CIRCUITS WHERE EACH CIRCUIT IS ON A DIFFERENT PHASE; (1) EQUIPMENT GROUNDING CONDUCTOR, SIZED PER CEC. FOR CIRCUITS TO COMPUTER/DATA EQUIPMENT, PROVIDE DEDICATED NEUTRAL FOR EACH CIRCUIT.	2. FOR LIGHTING BRANCH CIRCUITS, PROVIDE THE FOLLOWING CONDUCTORS: (1) #12 CONDUCTOR FOR EACH PHASE (I.E. CIRCUIT NUMBER); (1) #12 NEUTRAL CONDUCTOR FOR A SINGLE 120 OR 277 VOLT CIRCUIT, OR (1) #12 NEUTRAL CONDUCTOR FOR 2 TO 3 CIRCUITS WHERE EACH CIRCUIT IS ON A DIFFERENT PHASE; (1) EQUIPMENT GROUNDING CONDUCTOR, SIZED PER CEC ARTICLE 250 (DO NOT USE A COMMON NEUTRAL FOR MULTIPLE CIRCUITS ON SAME PHASE) (1) INTERCONNECTING CONDUCTOR BETWEEN EACH 3-WAY AND/OR 4-WAY SWITCH	19. ALL ELECTRICAL SYSTEM CONDUCTORS SHALL BE INSTALLED IN APPROVED RACEWAYS. NON-METALLIC SHEATHED CABLE IS NOT APPROVED.	41. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA: A. EQUIPMENT ON GRADE – 20% OF OPERATING WEIGHT B. EQUIPMENT ON STRUCTURE – 30% OF OPERATING WEIGHT C. FOR FLEXIBLY MOUNTED EQUIPMENT USE FOUR (4) TIMES THE ABOVE VALUES, AND FOR SIMULTANEOUS VERTICAL FORCE USE ONE-THIRD (1/3) TIMES THE HORIZONTAL FORCE. D. THE ABOVE VALUES ARE FOR AN IMPORTANCE FACTOR I = 1.0 AND SEISMIC ZONE Z = 0.4 E. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE FIELD INSPECTOR.	PNL	PANEL	
	MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOAD PROTECTOR					APPLICABLE CODES		
	MAGNETIC MOTOR STARTER WITH THERMAL OVERLOAD PROTECTOR	• 2019 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR	• 2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR (2018 EDITION INTERNATIONAL BUILDING CODE, VOL. 1 & 2)	20. WHERE IT BECOMES NECESSARY TO DRILL INTO OR CUT THROUGH ANY EXISTING SLABS, WALKWAYS OR DRIVES TO PERMIT THE INSTALLATION OF ANY WORK UNDER THIS CONTRACT, OR TO REPAIR ANY DEFECTS THAT MAY APPEAR TO THE EXPIRATION OF THE WARRANTY, SUCH CUTTING AND PATCHING SHALL PERFORMED BY TRADESMAN EXPERIENCED IN THE WORK REQUIRED. CONTRACTOR SHALL PAY FOR ALL COSTS REQUIRED FOR CUTTING OR REPAIRING. ALL FINISHES SHALL MATCH EXISTING OR NEW ADJACENT SURFACES.	42. ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA: A. EQUIPMENT ON GRADE – 20% OF OPERATING WEIGHT B. EQUIPMENT ON STRUCTURE – 30% OF OPERATING WEIGHT C. FOR FLEXIBLY MOUNTED EQUIPMENT USE FOUR (4) TIMES THE ABOVE VALUES, AND FOR SIMULTANEOUS VERTICAL FORCE USE ONE-THIRD (1/3) TIMES THE HORIZONTAL FORCE. D. THE ABOVE VALUES ARE FOR AN IMPORTANCE FACTOR I = 1.0 AND SEISMIC ZONE Z = 0.4 E. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE FIELD INSPECTOR.	REQ'D	REQUIRED	
	COMBINATION MOTOR STARTER WITH FUSED SWITCH, WITH THERMAL OVERLOAD PROTECTOR AND DUAL ELEMENT FUSES. (30=AMPS, 3=POLES 0=STARTER SIZE).					• 2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 CCR (2017 EDITION NATIONAL ELECTRICAL CODE)	• 2019 CAL	



STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 7 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

Documentation Author Name: Ed David

Signature Date: 2021-07-06

Signature: Eduardo G. Brien

Company: Salas O'Brien Engineers

Address: 3220 Executive Ridge Suite 210

City/State/Zip: Vista CA 92081

Phone: (760)560,0100

RESPONSIBLE PERSON'S DECLARATION STATEMENT

Identify 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: Ed David

Signature Date: 2021-07-06

Signature: Eduardo G. Brien

Company: Salas O'Brien

Address: 3220 Executive Ridge Suite 210

City/State/Zip: Vista CA 92081

Phone: (760)560,0100

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

Report Generated: 2021-07-06 10:47:16

STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 4 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per §140.6(b) are included in this table. Column 06 indicates 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 Allowance / Adjustment Area Category PAF
Range Ready Area	Classroom, Lecture, or Training Vocational Area	0.7	465	325.5	No
TOTALS:			465	325.5	See Tables J, or P for detail

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

Report Generated: 2021-07-06 10:47:16

STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

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CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 5 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included 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/titles24/2019standards/2019\_compliance\_documents/Nonresidential\_Documents/NRCC/

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	○	NRCC-LTI-01-E - Must be submitted for all buildings	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-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.	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	<input type="checkbox"/>	<input type="checkbox"/>

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

Report Generated: 2021-07-06 10:47:16

STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 6 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection have been changed by the permit applicant, an explanation should be included 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/titles24/attcp/providers.html

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	○	NRCC-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-LTI-03-A - Must be submitted for automatic daylight controls.	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-LTI-04-A - Must be submitted for demand responsive lighting controls.	<input type="checkbox"/>	<input type="checkbox"/>
○	●	NRCC-LTI-05-A - Must be submitted for institutional tuning power adjustment factor (PAF)	<input type="checkbox"/>	<input type="checkbox"/>

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

Report Generated: 2021-07-06 10:47:16

STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 1 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

A. GENERAL INFORMATION

01	02	03	04	05	06
Project Location (city)	Climate Zone	Occupancy Types Within Project (select all that apply)	Total Conditioned Floor Area (ft²)	Total Unconditioned Floor Area (ft²)	# of Stories (Habitable Above Grade)
Rancho Cucamonga	10	<input type="checkbox"/> Office <input type="checkbox"/> Parking Garage <input type="checkbox"/> Retail <input type="checkbox"/> High-Rise Residential <input type="checkbox"/> Warehouse <input type="checkbox"/> Relocatable <input type="checkbox"/> Healthcare	465	0	1

B. PROJECT SCOPE

This table includes 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) for alterations.

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)
<input type="checkbox"/> New Lighting System	Area Category Method	465	Area Category Method	0
<input type="checkbox"/> New Lighting System - Parking Garage				
<input checked="" type="checkbox"/> Altered Lighting System				
Total Area of Work (ft²)	465		0	

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

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STATE OF CALIFORNIA

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NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 2 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

C. COMPLIANCE RESULTS

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)1	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	
	Complete Building Category §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 Lighting Control Credits §140.6(a)2 (-)	Total Adjusted (Watts) *Includes Adjustments	
(See Table I)	(See Table I)	(See Table J)	(See Table K)	(+)	325.5	270	0	270	05 must be >= 08 §140.6
Conditioned	0	325.5	0	0	=	270	0	270	COMPLIES
Unconditioned	0	0	0	0	=	0	0	0	COMPLIES

Controls Compliance (See Table H for Details)

COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes 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 Change¹	Watts per luminaire¹	How is Wattage determined	Total Number of Luminaires	Exempt per §140.6(a)3	Design Watts	Field Inspector
F1/F1E	4' SUSPENDED LED FIXTURE	No	No	45	Mfr. Spec¹	6	No	270	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Total Designed Watts: CONDITIONED SPACES								270	

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Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

Report Generated: 2021-07-06 10:47:16

STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name: West Valley Probation Dept Gun Range AC

Report Page: NRCC-LTI-E (Page 3 of 7)

Project Address: 9478 Etiwanda Avenue

Date Prepared: 7/6/2021

F. INDOOR LIGHTING FIXTURE SCHEDULE

¹FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)48 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.

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces. When an control having a \* is shown, the notes section of this table provides more detail on how compliance is achieved. 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	
Not Required 10,000 SF	See Area/Space Level Controls	Pass	Fail
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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/Sky lit Daylighting §130.1(d)	Secondary Daylighting Systems §140.6(d)	Interlocked Systems §140.6(a)1	Field Inspector
Range Ready Area	All Other Space Types	Manual ON/OFF	Dimmer	Automatic Timer Switch	N/A	N/A	No	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

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:

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Registration Date/Time: Report Version: 2019.0.001

Registration Provider: EnergySoft

Report Generated: 2021-07-06 10:47:16

4050 2020 DR. TEMECULA, CALIFORNIA 92590-3700  
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08-25-21  
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PROJECT FOR:  
SAN BERNARDINO COUNTY  
REAL ESTATE SERVICES -  
PROJECT MANAGEMENT  
DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:

PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 1010161

CP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

ISSUE INFORMATION:

DATE: INFORMATION:

SHEET INFORMATION:

STK PROJECT NO.: 374-147-21

SCALE: AS NOTED

DATE: JULY 2021

PLOT DATE: -

DRAWING NAME:

SEAL:

SHEET TITLE:

INTERIOR  
TITLE 24

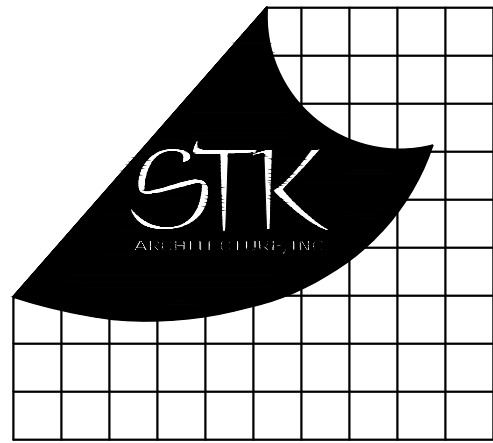
SHEET NO.:

E0.2



GENERAL NOTES

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.



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CONSULTANT:  
MECHANICAL PLUMBING & ELECTRICAL



PROJECT FOR:  
SAN BERNARDINO  
COUNTY  
REAL ESTATE SERVICES-  
PROJECT MANAGEMENT  
DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

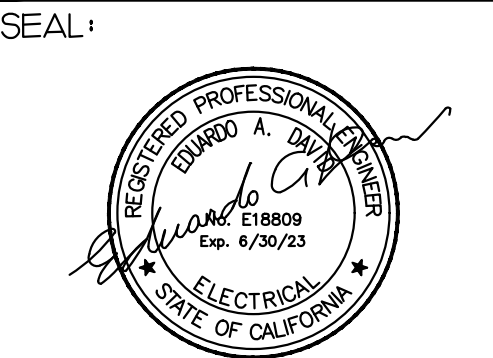
PROJECT NAME:  
PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
TRAINING CENTER:  
INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 1010151  
CIP NO.: \_\_\_\_\_  
CAFV NO.: \_\_\_\_\_  
APN: 0229-28-370-0000

ISSUE INFORMATION:	
DATE:	INFORMATION:

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SCALE: AS NOTED  
DATE: JULY 2021  
PLOT DATE: -  
DRAWING NAME:

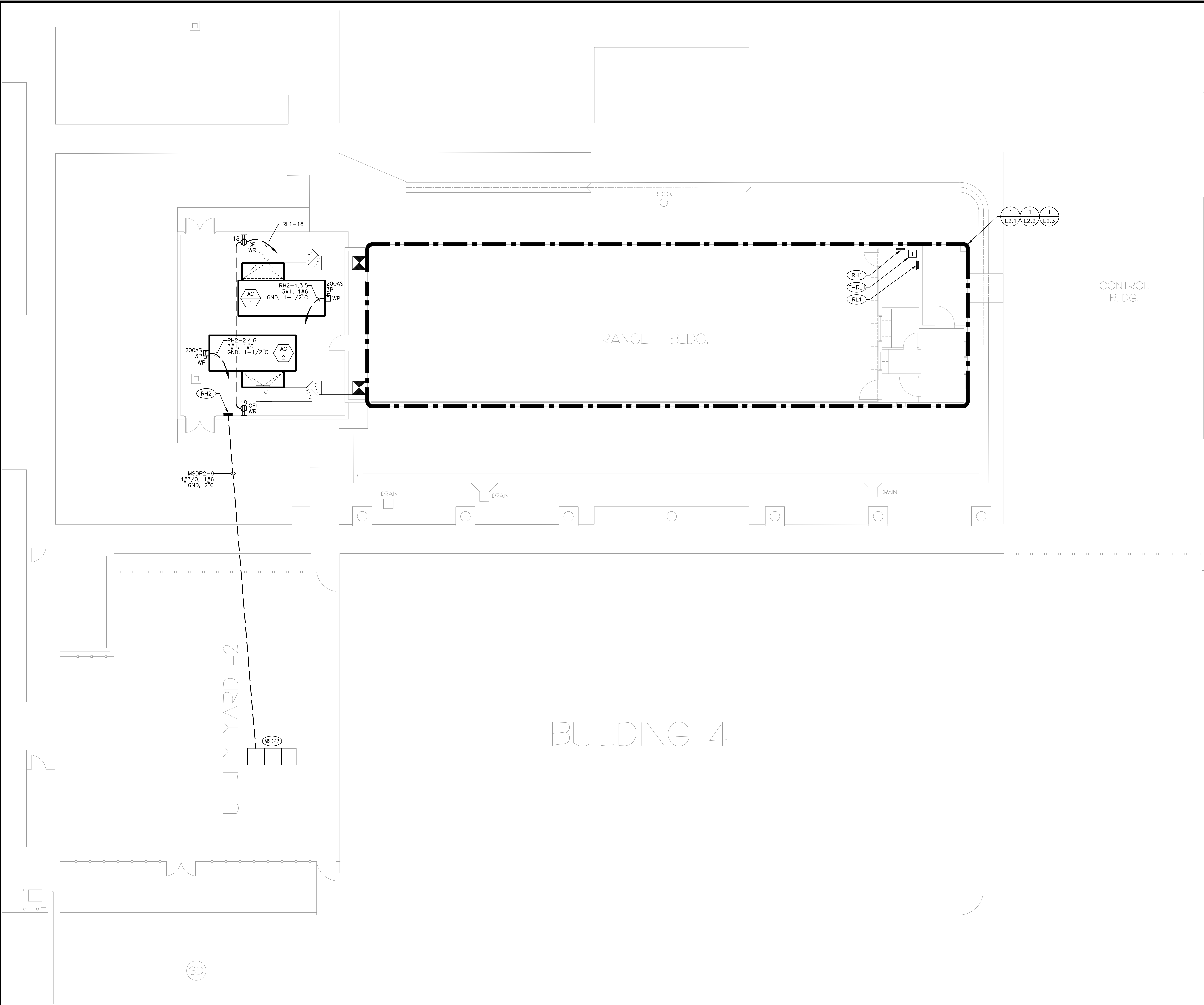


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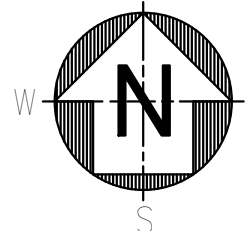
ELECTRICAL  
SITE PLAN

SHEET NO.:

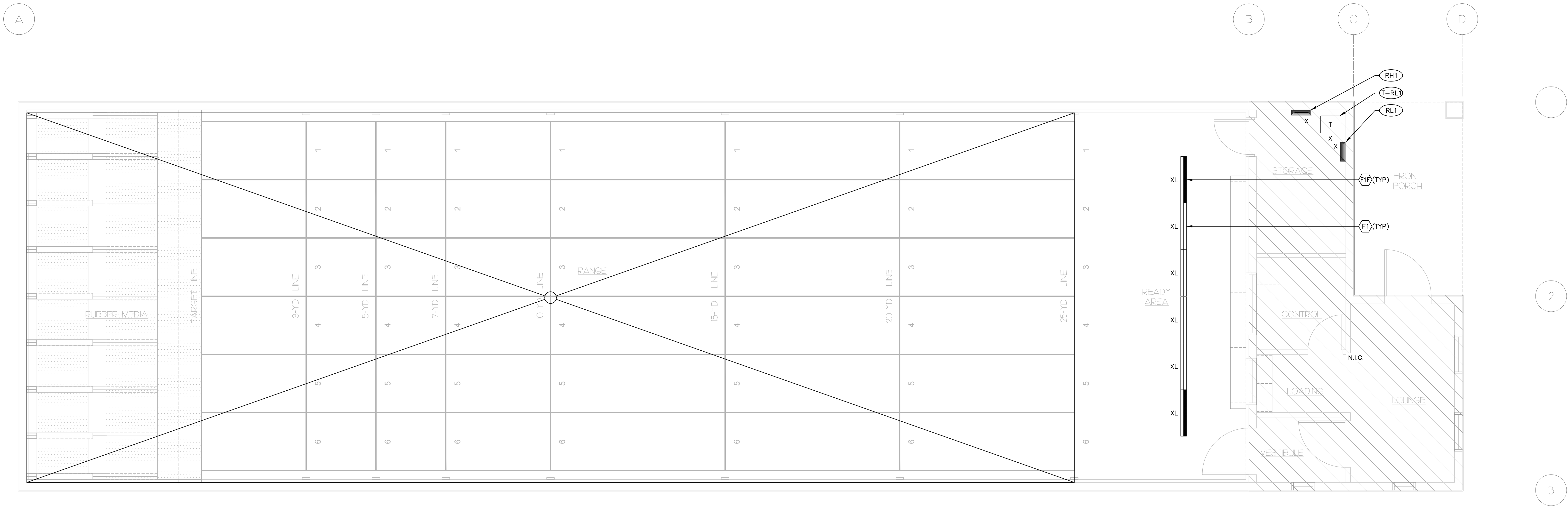
E1.1



1 ELECTRICAL SITE PLAN  
0 2 4 8 16  
1/8"=1'-0"







1 LIGHTING DEMOLITION FLOOR PLAN



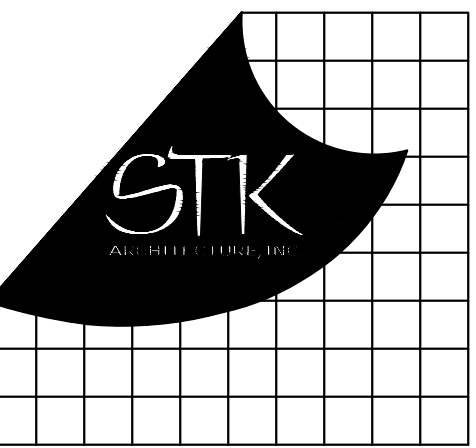
1/4"=1'-0"

### GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- REFER TO DEMOLITION NOTES ON 'ELECTRICAL NOTES AND LEGEND' SHEET PRIOR TO START OF WORK.

### KEY NOTES

- ALL LIGHTING AND CONTROLS ARE EXISTING TO REMAIN.



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SAN BERNARDINO  
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REAL ESTATE SERVICES-  
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385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:  
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PROJECT NO.: 1010151

CIP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

### ISSUE INFORMATION:

DATE:	INFORMATION:

### SHEET INFORMATION:

STK PROJECT NO.: 374-147-21

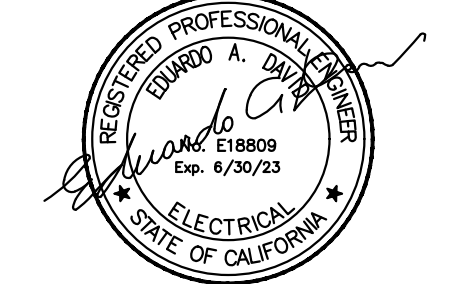
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DATE: JULY 2021

PLOT DATE: -

DRAWING NAME:

SEAL:



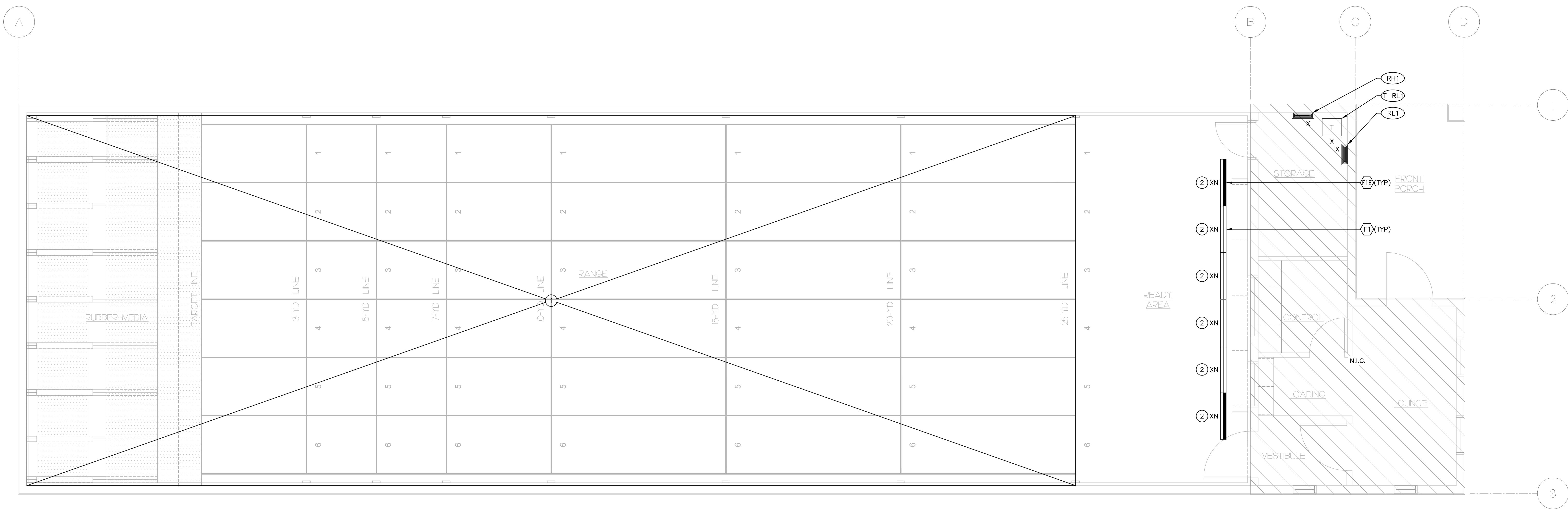
SHEET TITLE:

LIGHTING  
DEMOLITION  
FLOOR PLAN

SHEET NO.:

E2.01





1 LIGHTING FLOOR PLAN

0 1 2 4 8  
1/4"=1'-0"

### GENERAL NOTES

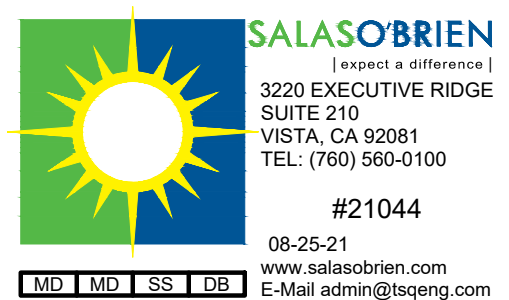
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- REFER TO DEMOLITION NOTES ON 'ELECTRICAL NOTES AND LEGEND' SHEET PRIOR TO START OF WORK.

### KEY NOTES

- ALL LIGHTING AND CONTROLS ARE EXISTING TO REMAIN.
- EXISTING LIGHT FIXTURES TO MAINTAIN EXISTING CIRCUITING AND CODE COMPLIANT CONTROLS. EXTEND FEEDERS AS NECESSARY FOR RECONNECTION TO RELOCATED LIGHT FIXTURES. LOCATE RELOCATED LIGHT FIXTURES AT 8'-0" ABOVE FINISHED FLOOR.



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385 N. ARROWHEAD AVE.  
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RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 10/0151

CIP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

ISSUE INFORMATION:

DATE:	INFORMATION:

SHEET INFORMATION:

STK PROJECT NO.: 374-147-21

SCALE: AS NOTED

DATE: JULY 2021

PLOT DATE: -

DRAWING NAME:



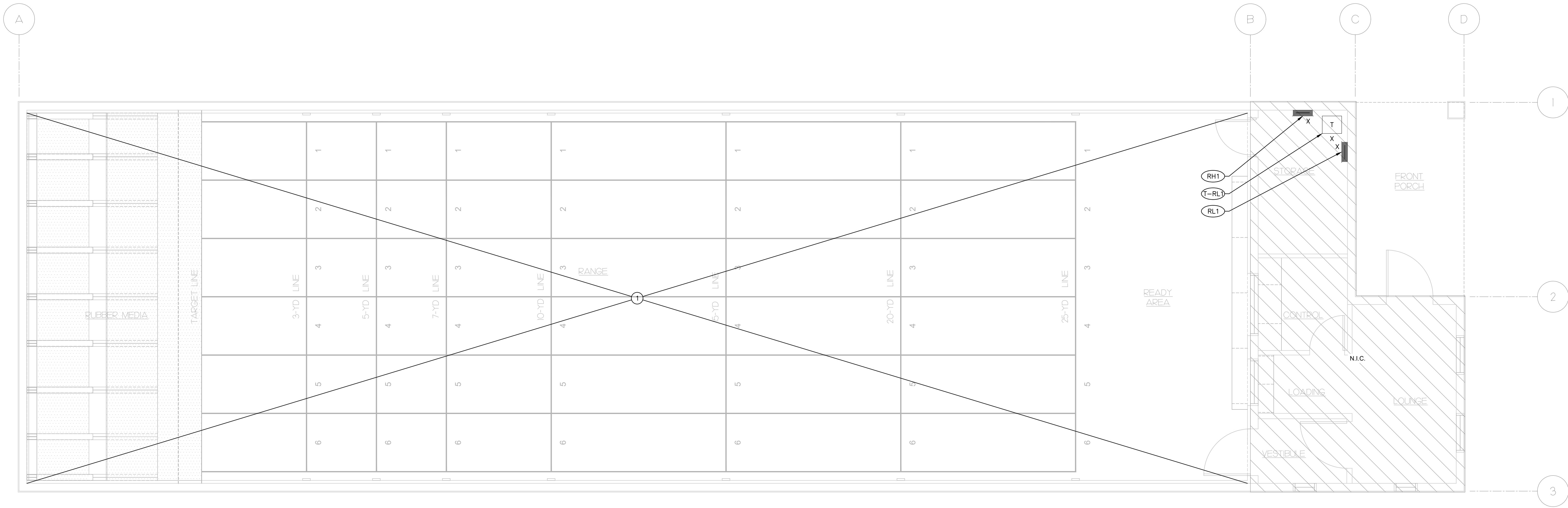
SHEET TITLE:

LIGHTING  
FLOOR PLAN

SHEET NO.:

E2.1





1 POWER FLOOR PLAN

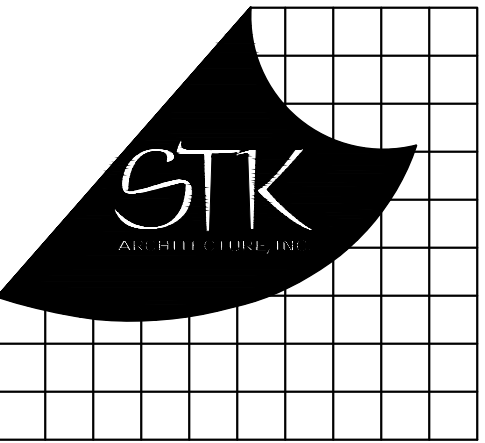
0 1 2 4 8  
1/4"=1'-0"

### GENERAL NOTES

- A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- B. REFER TO DEMOLITION NOTES ON 'ELECTRICAL NOTES AND LEGEND' SHEET PRIOR TO START OF WORK.

### KEY NOTES

- 1 ALL DATA AND POWER RECEPTACLES ARE EXISTING TO REMAIN.



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CALIFORNIA 91739

PROJECT NO.: 1010151

CIP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

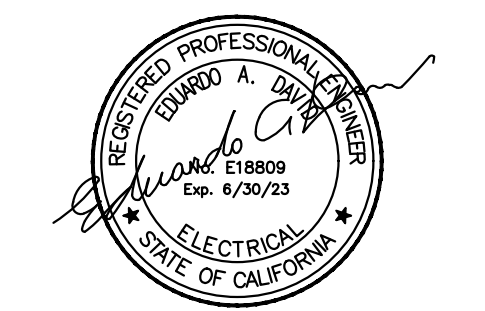
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DATE:	INFORMATION:

### SHEET INFORMATION:

STK PROJECT NO.: 374-147-21  
SCALE: AS NOTED  
DATE: JULY 2021  
PLOT DATE: -  
DRAWING NAME:

### SEAL:



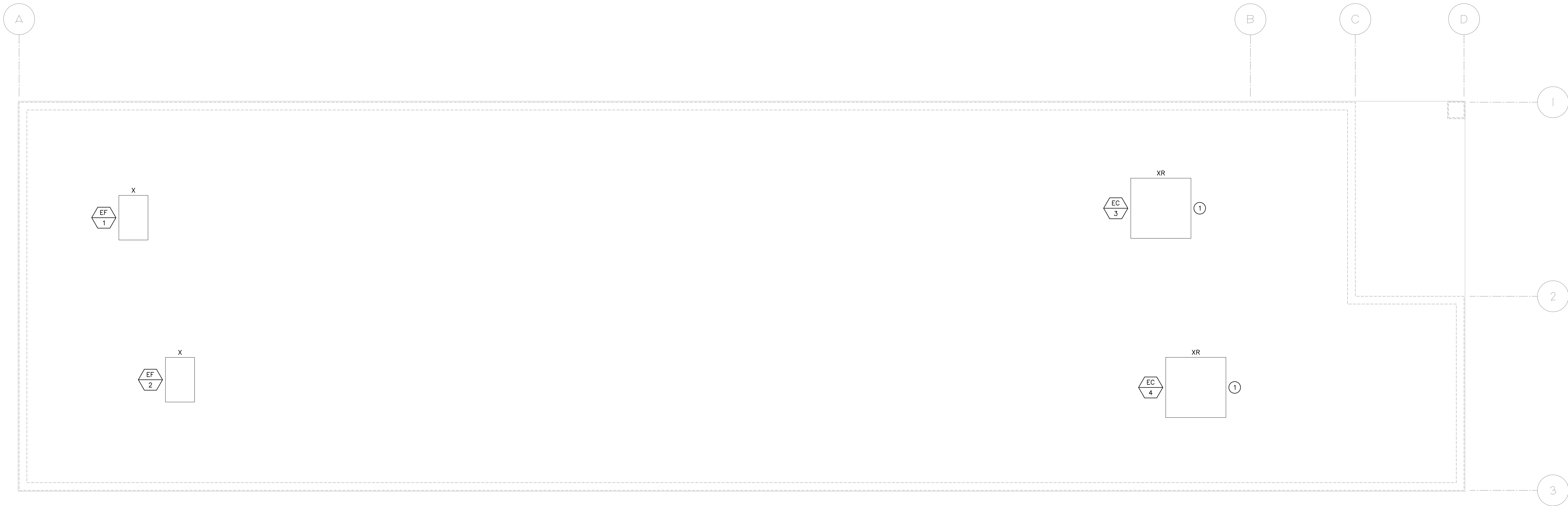
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POWER  
FLOOR PLAN

### SHEET NO.:

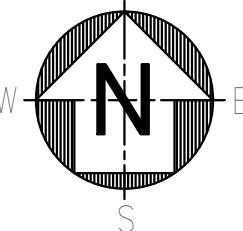
E2.2





1 ELECTRICAL ROOF PLAN

0 1 2 4 8' 1/4"=1'-0"

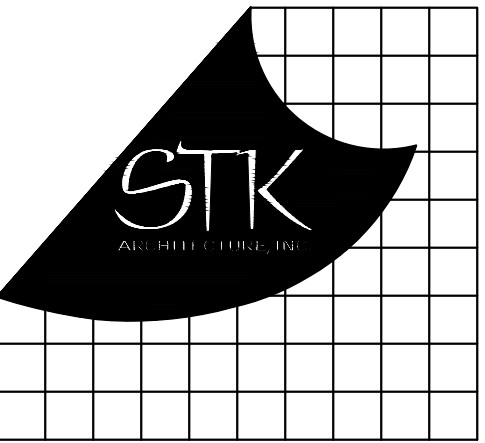


### GENERAL NOTES

- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.
- CONTRACTOR SHALL FIELD VERIFY AND COORDINATE WITH MECHANICAL DRAWINGS FOR EXACT EQUIPMENT LOCATIONS AND REQUIREMENTS PRIOR TO START OF WORK.
- REFER TO DEMOLITION NOTES ON 'ELECTRICAL NOTES AND LEGEND' SHEET PRIOR TO START OF WORK.

### KEY NOTES

- DISCONNECT AND REMOVE EXISTING EVAPORATIVE COOLER DISCONNECT AND ASSOCIATED CONDUCTORS BACK TO SOURCE.



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PROJECT FOR:  
SAN BERNARDINO  
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REAL ESTATE SERVICES -  
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DIVISION

385 N. ARROWHEAD AVE.  
SAN BERNARDINO, CA 92415

PROJECT NAME:  
PROBATION DEPT.  
WEST VALLEY  
REGIONAL  
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INDOOR GUN  
RANGE AIR  
CONDITIONING AND  
HEATING

9478 ETIWANDA AVENUE  
RANCHO CUCAMONGA,  
CALIFORNIA 91739

PROJECT NO.: 1010151

CIP NO.: \_\_\_\_\_

CAFM NO.: \_\_\_\_\_

APN: 0229-28-370-0000

### ISSUE INFORMATION:

DATE:	INFORMATION:

### SHEET INFORMATION:

STK PROJECT NO.: 374-147-21

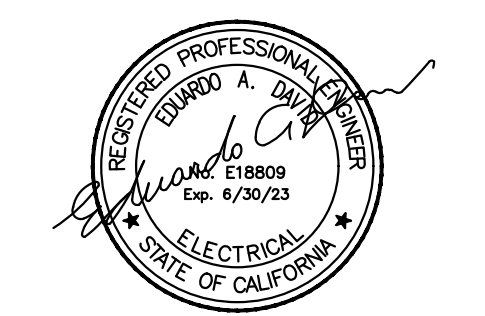
SCALE: AS NOTED

DATE: JULY 2021

PLOT DATE: -

DRAWING NAME:

SEAL:



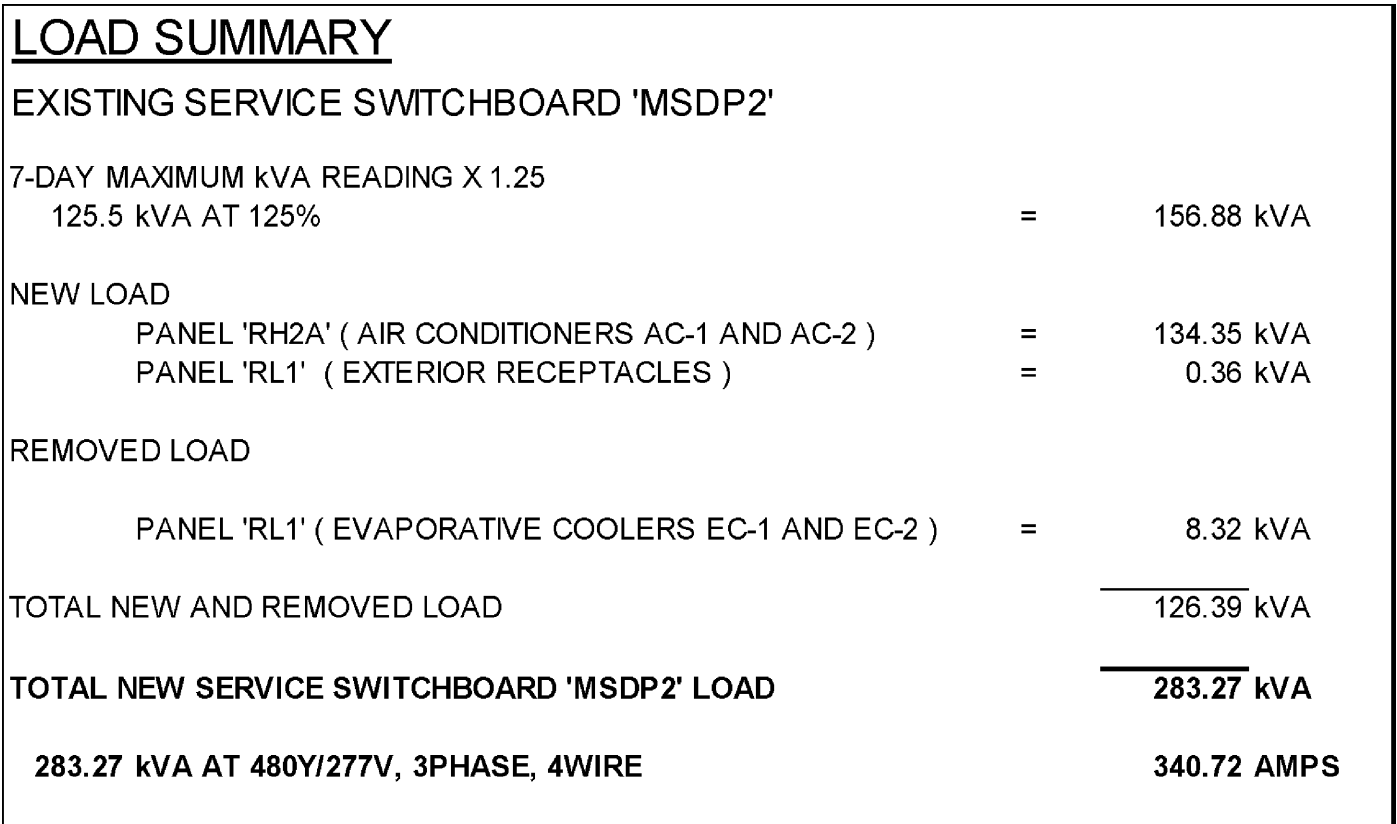
SHEET TITLE:

ELECTRICAL  
ROOF PLAN

SHEET NO.:

E2.3





A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND COORDINATE WITH ALL OTHER TRADES. IN CASE OF DISCREPANCIES OR ANY POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

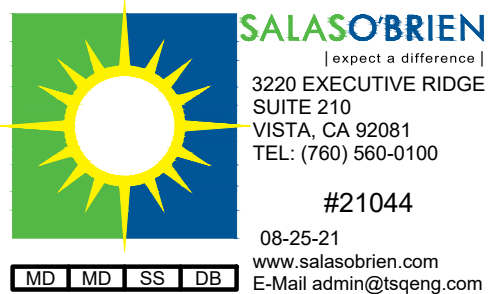
B. ALL WORK SHOWN IS EXISTING UNLESS NOTED OTHERWISE.

- ① EXISTING FEEDER.
- ② PROVIDE NEW CIRCUIT BREAKER OF SAME TYPE, STYLE AND RATING AS EXISTING CIRCUIT BREAKERS IN EXISTING SPACE.

NO SCALE

<b>PANEL:</b> RL1 ( EXISTING )		<b>LOCATION:</b> SEE PLANS		<b>MAIN:</b> 125A/3P		<b>BUS:</b> 125A		<b>NEMA 1</b>						
<b>VOLTAGE:</b> 208 / 120		<b>AIC RATING:</b> 10000		<b>FEED:</b> BOTTOM		<b>MTG:</b> SURFACE								
<b>PHASE:</b> 3		<b>CIRCUIT CODE:</b>												
<b>WIRE:</b> 4		blank=NON-CONTINUOUS, N=NON-COINCIDENTAL, L=LONG CONTINUOUS, R=RECEPT (NEC ART. 220-44), K=k(10CHEN												
NOTE	DESCRIPTION	CODE	BKR	P	#	VA	PHASE	VA	#	P	BKR	CODE	DESCRIPTION	NOTE
1	READY AREA/LOUNGE RECEPT	R	20	1	1	720	A		2	2	40		SPARE	2
1	READY AREA/LOUNGE RECEPT	R	20	1	3	720	B						-	2
1	CONTROL RECEPTACLES	R	20	1	5	720	A	C	2000	6	2	30	L	HEAT PUMP - HP-1
1	ROOF RECEPTACLES	R	20	1	7	360	A		2000	8			L	-
1	STROBE LIGHT	L	20	1	9	300	B		1500	10	2	20		FAN COIL - FC-1
1	GUN CLEANER	L	20	1	11	900	C		1500	12			-	1
1	DUCT DETECTOR	L	20	1	13	200	A			14	2	40		SPARE
1	CEILING RECEPTACLES	R	20	1	15	720	B			16			-	2
1	CONTROL ROOM RECEPTACLES	R	20	1	17	900	C	B	360	18	1	20	R	MECHANICAL YARD RECEPT
1	TARGET CONTROLS		20	1	19	600	A		2500	20	1	40		TARGET CONTROLLER
1	MECH CONTROLS		20	1	21	600	B		600	22	1	20		TARGET CONTROLLER
	SPACE				23		C			24				SPACE
	SPACE				25		A			26				SPACE
	SPACE				27		B			28				SPACE
	SPACE				29		C			30				SPACE
	SPACE				31		A			32				SPACE
	SPACE				33		B			34				SPACE
	SPACE				35		C			36				SPACE
	SPACE				37		A			38				SPACE
	SPACE				39		B			40				SPACE
	SPACE				41		C			42				SPACE
	CONNECTED VA @ A	6380			CONNECTED VA ( I )	8200		PANEL CONN. AMPS WITH LCL	50.87			PANEL DEMAND KVA WITH LCL	18.33	
	CONNECTED VA @ B	4440			CONNECTED VA ( L )	4500		CONNECTED VA WITH LCL ( L )	5625			PANEL DEMAND AMPS WITH LCL	50.87	
	CONNECTED VA @ C	6380			CONNECTED VA ( R )	4500		DEMAND VA ( R )	4500			PANEL CONNECTED AMPS	47.74	
	TOTAL VA	17200			CONNECTED VA ( K )	0		DEMAND VA ( K )	0			DEMAND HIGH 2 AMPS WITH LCL	57.71	
1 EXISTING LOAD TO REMAIN 2 EXISTING LOAD REMOVED, BREAKER TO BECOME SPARE 3 PROVIDE NEW CIRCUIT BREAKER IN EXISTING SPACE OF SAME TYPE, STYLE AND AIC RATING AS EXISTING 4														
5 6 7 8 9														
SPECIAL NOTES.														

<b>PANEL:</b> RH1 ( EXISTING )				<b>LOCATION:</b> SEE PLANS				<b>MAIN:</b> 225A/3P				<b>BUS:</b> 225A				<b>NEMA 1</b>			
<b>VOLTAGE:</b> 480 / 277				<b>AIC RATING:</b> 22000				<b>FEED:</b> BOTTOM				<b>MTG:</b> SURFACE							
<b>PHASE:</b> 3				<b>CIRCUIT CODE:</b>															
<b>WIRE:</b> 4				blank=NON-CONTINUOUS, N=NON-COINCIDENTAL, L=LONG CONTINUOUS, R=RECEPT (NEC ART. 220-44), K=KITCHEN															
NOTE	DESCRIPTION			CODE	BKR	P	#	VA	PHASE	VA	#	P	BKR	CODE	DESCRIPTION			NOTE	
1	PANEL RL1				70	3	1	6380	A	600	2	1	20	L	RANGE LIGHTING			1	
1	-						3	4440	B	600	4	1	20	L	EXTERIOR LIGHTING			1	
1	-						5	6380	A		6	1	20		SPARE				
1	EXHAUST FAN - EF-1				20	3	7	2770	A	2770	8	3	20		EXHAUST FAN EF-2			1	
1	-						9	2770	B	2770	10				-				
1	-						11	2770	C	2770	12				-			1	
	SPACE						13		A		14				SPACE				
	SPACE						15		B		16				SPACE				
	SPACE						17		C		18				SPACE				
	SPACE						19		A		20				SPACE				
	SPACE						21		B		22				SPACE				
	SPACE						23		C		24				SPACE				
	SPACE						25		A		26				SPACE				
	SPACE						27		B		28				SPACE				
	SPACE						29		C		30				SPACE				
	SPACE						31		A		32				SPACE				
	SPACE						33		B		34				SPACE				
	SPACE						35		C		36				SPACE				
	SPACE						37		A		38				SPACE				
	SPACE						39		B		40				SPACE				
	SPACE						41		C		42				SPACE				
CONNECTED VA Ø A				12520	CONNECTED VA ( )				24820	PANEL CONN. AMPS WITH LCL				43.84	PANEL DEMAND KVA WITH LCL				31.95
CONNECTED VA Ø B				10580	CONNECTED VA (L)				5700	CONNECTED VA WITH LCL (L)				7125	PANEL DEMAND AMPS WITH LCL				38.42
CONNECTED VA Ø C				11920	CONNECTED VA (R)				0	DEMAND VA (R)				0	PANEL CONNECTED AMPS				42.12
TOTAL VA				35020	CONNECTED VA (K)				0	DEMAND VA (K)				0	DEMAND HIGH Ø AMPS WITH LCL				47.70
1 EXISTING LOAD TO REMAIN																			
2 6																			
3 7																			
4 8																			
5 9																			
10 10																			
SPECIAL NOTES:																			



## E4.1