

GENERAL NOTES

STRUCTURAL TESTS AND SPECIAL INSPECTION

- THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR TO PROVIDE INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THIS SECTION.
- THE FOLLOWING TERMS AND PHRASES SHALL HAVE THE MEANINGS SHOWN BELOW AS IT PERTAINS TO THIS SECTION.
 - APPROVED AGENCY - AN ESTABLISHED AND RECOGNIZED AGENCY REGULARLY ENGAGED IN CONDUCTING AND FURNISHING SPECIAL INSPECTION SERVICES.
 - APPROVED FABRICATOR - AN ESTABLISHED AND QUALIFIED FIRM APPROVED BY BUILDING OFFICIAL. SPECIAL INSPECTIONS ARE NOT REQUIRED WHEN WORK IS PERFORMED ON THE PREMISES OF AN APPROVED FABRICATOR.
 - SPECIAL INSPECTION, CONTINUOUS - THE FULL TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION.
 - SPECIAL INSPECTION, PERIODIC - THE PART TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION.
- SPECIAL INSPECTORS SHALL KEEP RECORDS OF ALL INSPECTIONS AND SHALL FURNISH REPORTS TO THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED THEY SHALL BE BROUGHT TO THE ATTENTION OF THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.
- THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION.
- SPECIAL INSPECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360.

**TABLE 1705.3
REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION**

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD ^a	IBC REFERENCE
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT.	—	X	ACI 318: 3.5, 7.1-7.7	1910.4
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2, ITEM 2b.	—	—	AWS D1.4 ACI 318: 3.5.2	—
3. INSPECTION OF ANCHORS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED.	—	X	ACI 318: 8.1.3, 21.2.8	1908.5, 1909.1
4. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.	—	X	ACI 318: 3.86, 8.1.3, 21.2.8	1909.1
5. VERIFYING USE OF REQUIRED DESIGN MIX.	—	X	ACI 318: Ch. 4, 5.2-5.4	1904.2, 1910.2, 1910.3
6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	—	ASTM C 172 ASTM C 31 ACI 318: 5.6, 5.8	1910.10
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	—	ACI 318: 5.9, 5.10	1910.6, 1910.7, 1910.8
8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	—	X	ACI 318: 5.11-5.13	1910.9
9. INSPECTION OF PRESTRESSED CONCRETE: a. APPLICATION OF PRESTRESSING FORCES. b. GROUTING OF BONDED PRESTRESSING TENDONS IN THE SEISMIC-FORCE-RESISTING SYSTEM.	X X	—	ACI 318: 18.20 ACI 318: 18.18.4	—
10. ERECTION OF PRECAST CONCRETE MEMBERS.	—	X	ACI 318: Ch.16	—
11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POSTTENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	—	X	ACI 318: 6.2	—
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	—	X	ACI 318: 6.1.1	—

**TABLE 1705.6
REQUIRED VERIFICATION AND INSPECTION OF SOILS**

VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	—	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	—	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	—	X
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	—
5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	—	X

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION

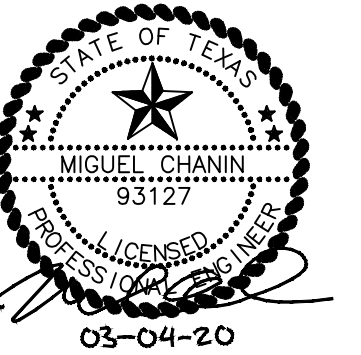
VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCED STANDARD ^a	IBC REFERENCE
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS: a. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. b. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	—	X	APPLICABLE ASTM MATERIAL SPECIFICATIONS; AISC 360, SECTION A3.3	—
2. INSPECTION OF HIGH-STRENGTH BOLTING: a. BEARING-TYPE CONNECTIONS. b. SLIP-CRITICAL CONNECTIONS.	—	X	AISC 360, SECTION M2.5	—
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL: a. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. b. MANUFACTURERS' CERTIFIED MILL TEST REPORTS.	—	—	ASTM A 6 OR ASTM A 568	—
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS: a. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS. b. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	—	—	AISC 360, SECTION A3.5	—
5. INSPECTION OF WELDING: a. STRUCTURAL STEEL: 1) COMPLETE AND PARTIAL PENETRATION GROOVE WELDS. 2) MULTIPASS FILLET WELDS. 3) SINGLE-PASS FILLET WELDS > 5/16" 4) SINGLE-PASS FILLET WELDS ≤ 5/16" 5) FLOOR AND ROOF DECK WELDS.	X	—	AWS D1.1	—
b. REINFORCING STEEL: 1) VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A 706. 2) REINFORCING STEEL-RESISTING FLEXURAL AND AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS AND SHEAR REINFORCEMENT. 3) SHEAR REINFORCEMENT. 4) OTHER REINFORCING STEEL.	—	X	AWS D1.4 ACI 318: 3.5.2	—
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS: a. DETAILS SUCH AS BRACING AND STIFFENING. b. MEMBER LOCATIONS. c. APPLICATION OF JOINT DETAILS AT EACH CONNECTION.	—	—	—	—

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TOWER INSTALLATION

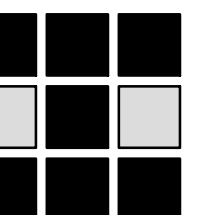
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Sheet Title

GENERAL NOTES

S1.02

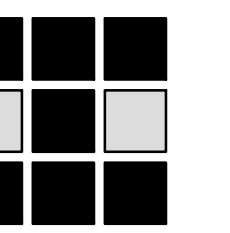
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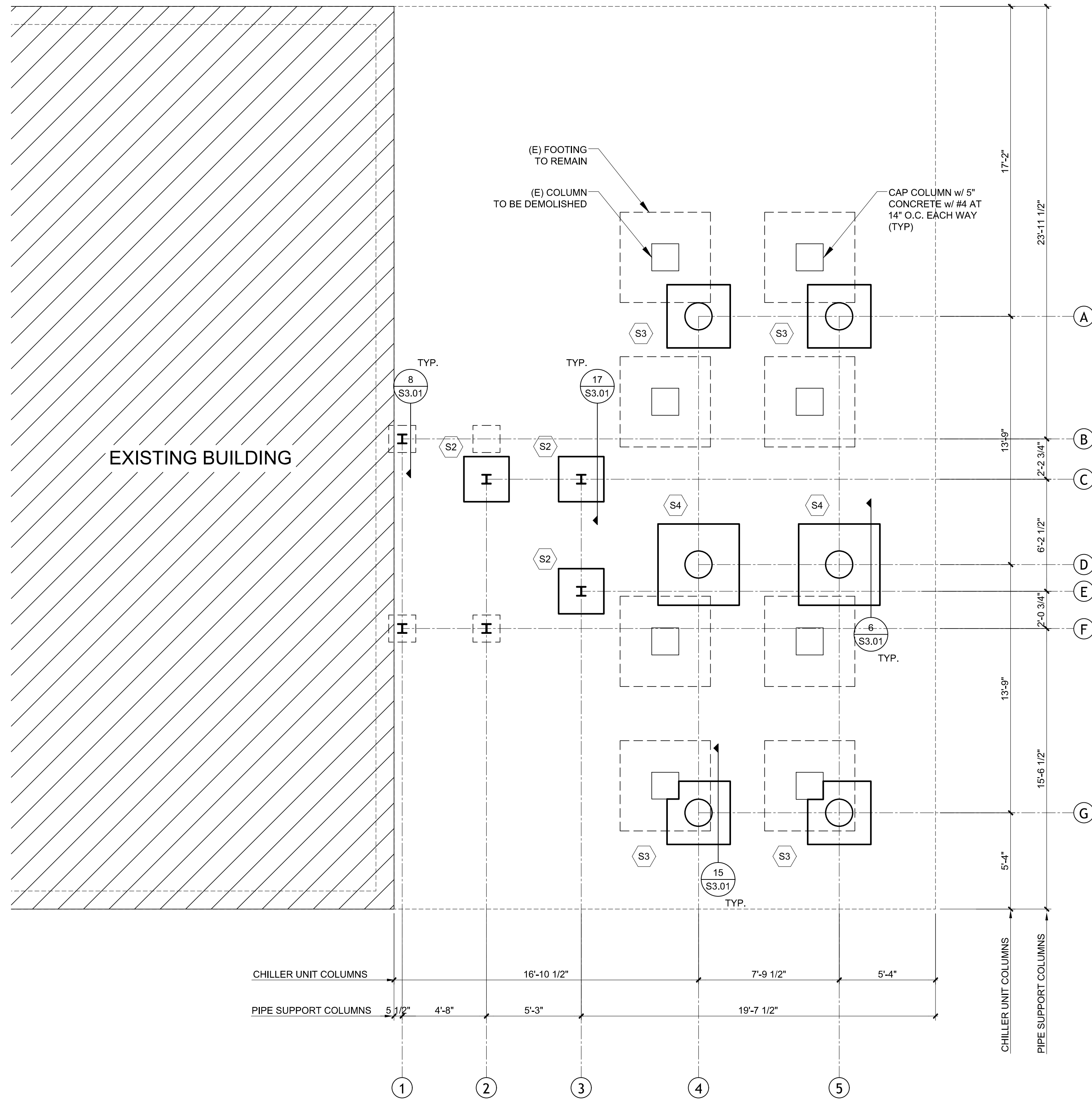
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**FOUNDATION/FRAMING
PLAN**

S2.01

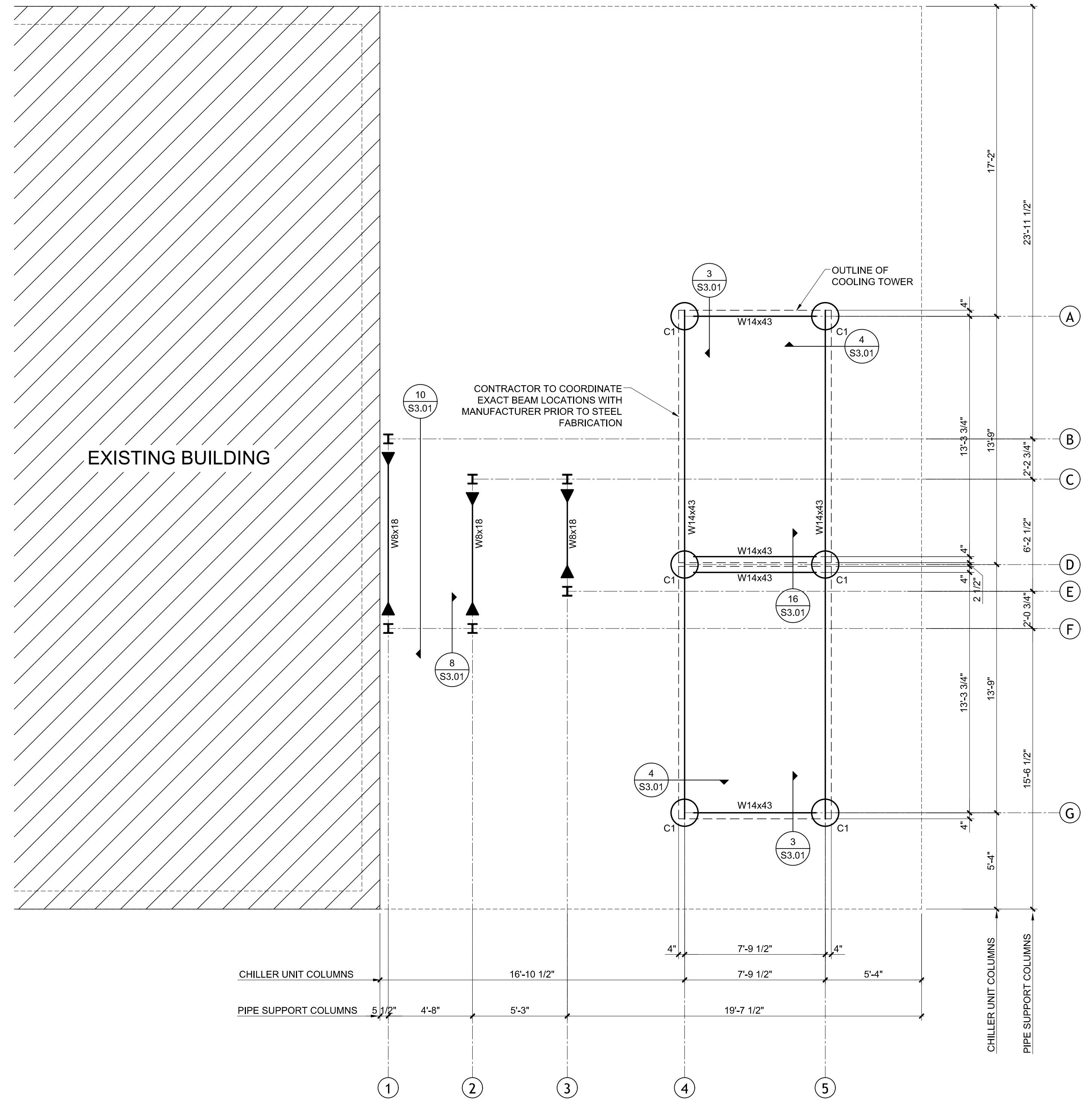
Sheet Number



FOUNDATION NOTES:

1. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH M.E.P. PLANS BEFORE COMMENCING WORK.
2. CONTRACTOR TO VERIFY REQUIRED F.F.E. WITH EXISTING CONDITIONS.
3. REFER TO FOOTING SCHEDULE FOR FOOTING SIZE AND REINFORCEMENT. SEE DETAIL 2/S3.01
4. ALL COLUMNS TO BE W6x20
5. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS

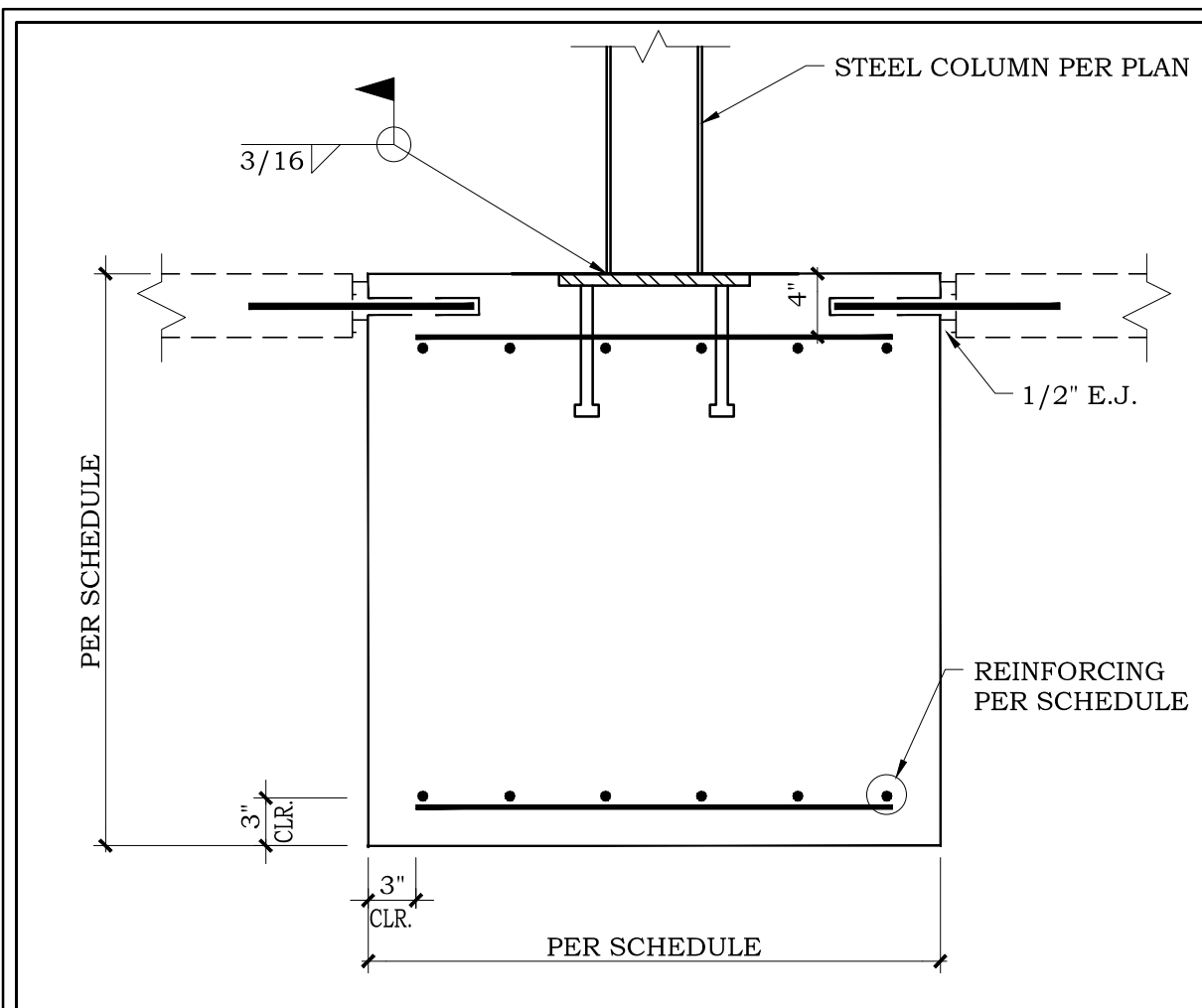
1 FOUNDATION PLAN
1/4" = 1'-0"



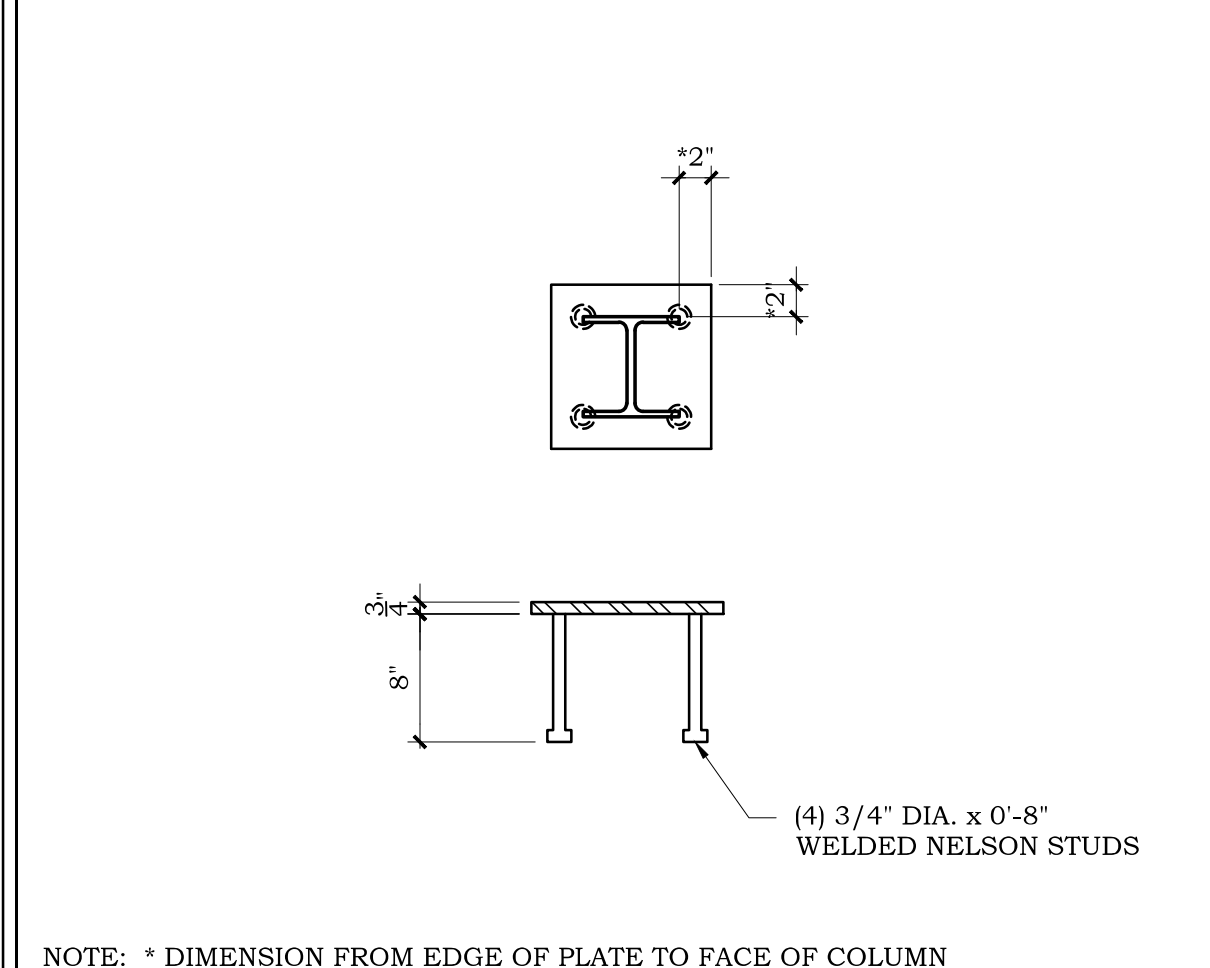
FRAMING NOTES:

1. CONTRACTOR TO VERIFY ALL DIMENSIONS WITH M.E.P. PLANS BEFORE COMMENCING WORK.
2. REFER TO M.E.P. DRAWINGS FOR ANY ADDITIONAL DIMENSIONS.
3. CONTRACTOR TO COORDINATE ALL MECHANICAL COMPONENTS SUPPORTED BY THE STRUCTURE WITH THE STRUCTURE MANUFACTURER.
4. ALL COLUMNS TO BE W6x20
5. ◀ INDICATES MOMENT CONNECTION SEE DETAIL 11/S3.01
6. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS
7. C1 INDICATES CONCRETE COLUMN, SEE DETAIL 12/S3.01

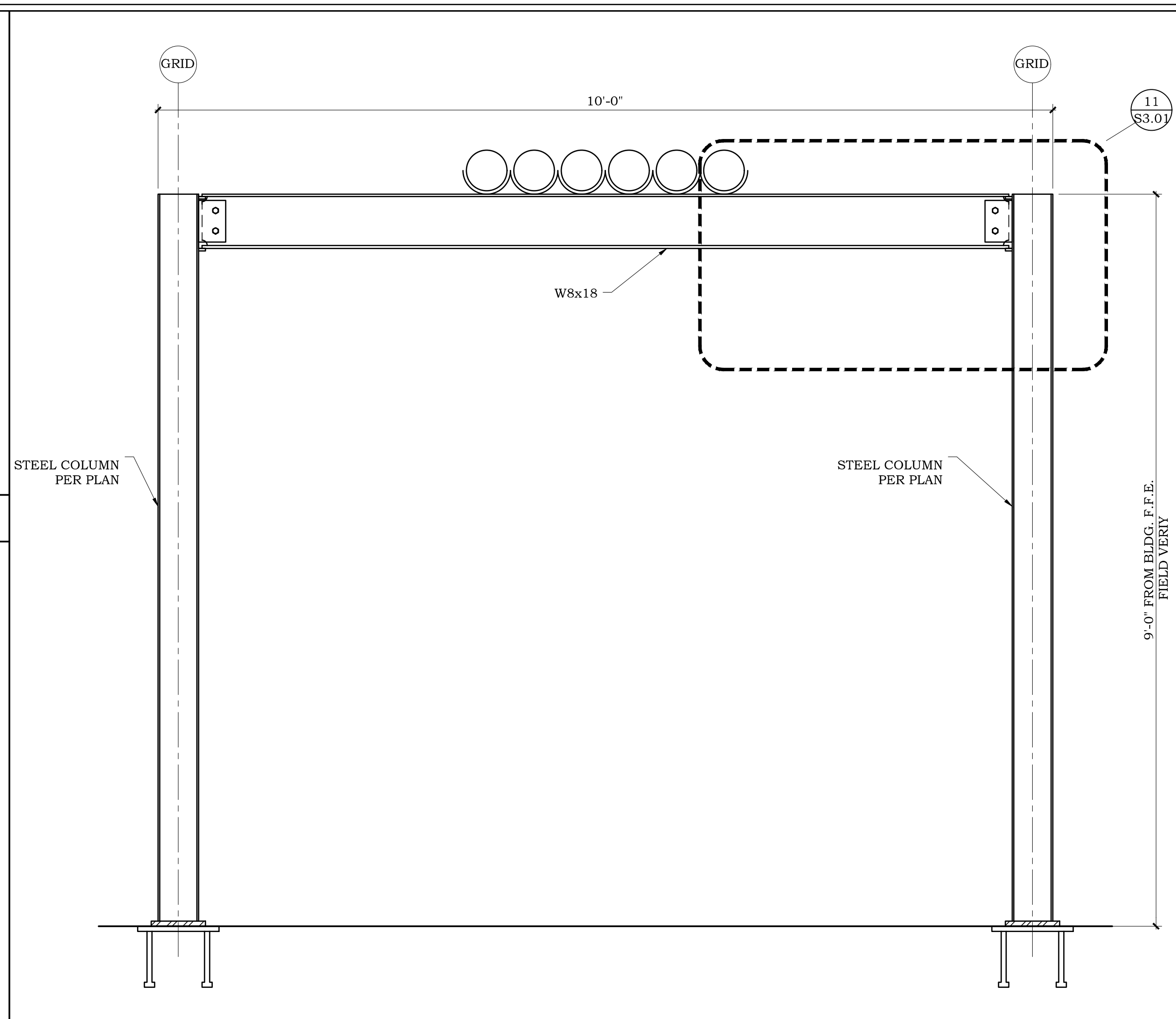
2 FRAMING PLAN
1/4" = 1'-0"



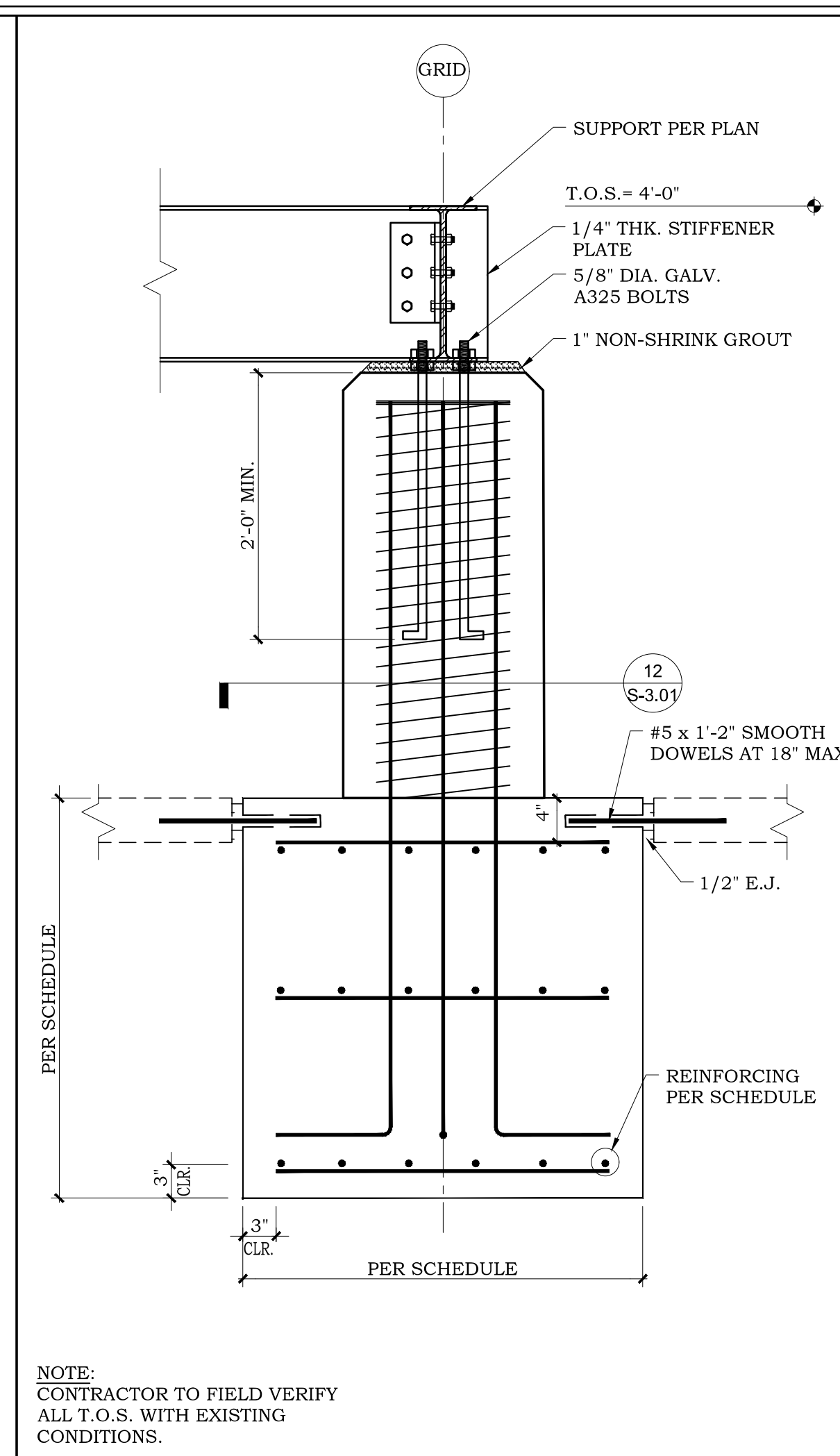
STEEL COLUMN TO FOOTING 17



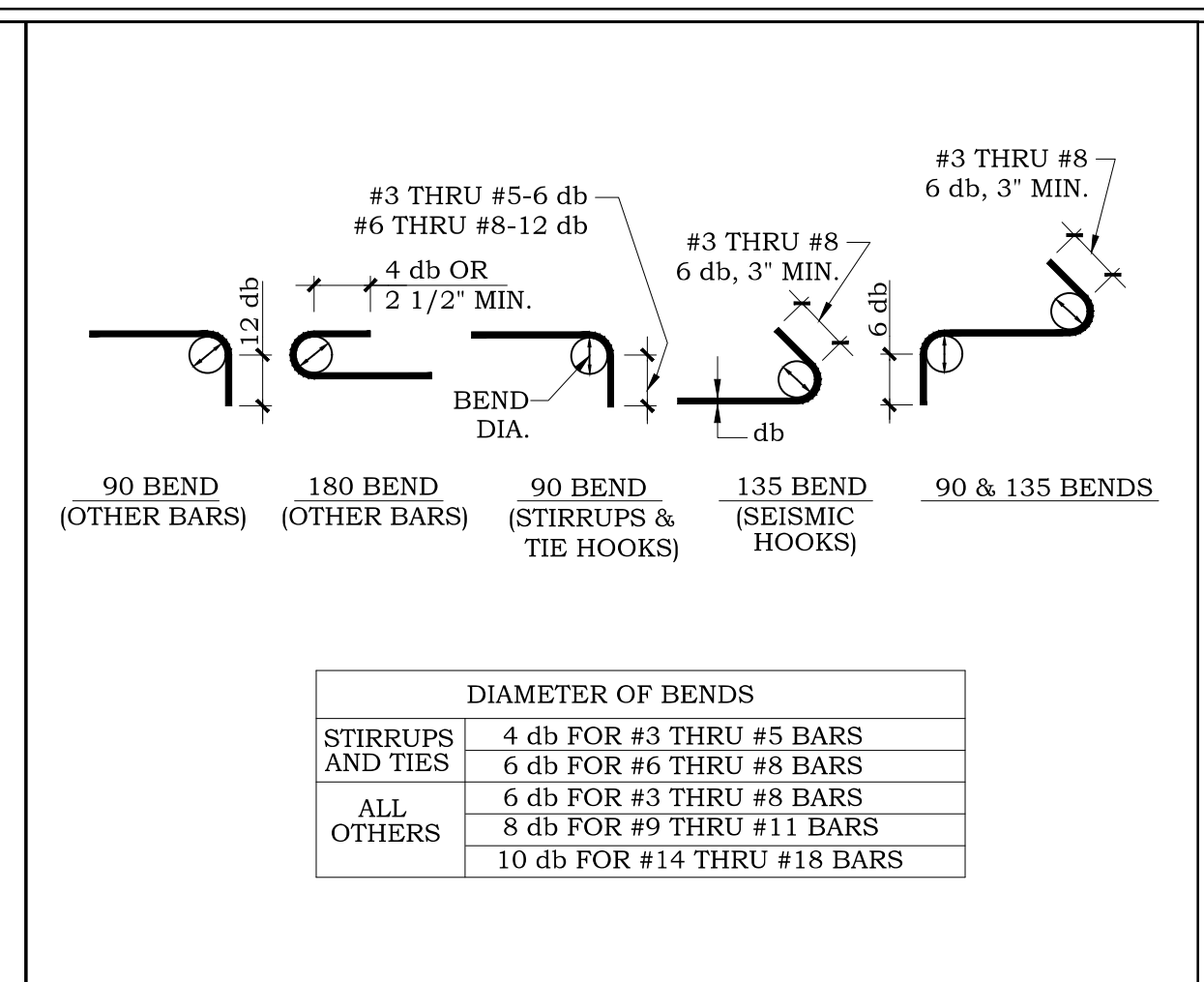
BASE PLATE DETAIL 18



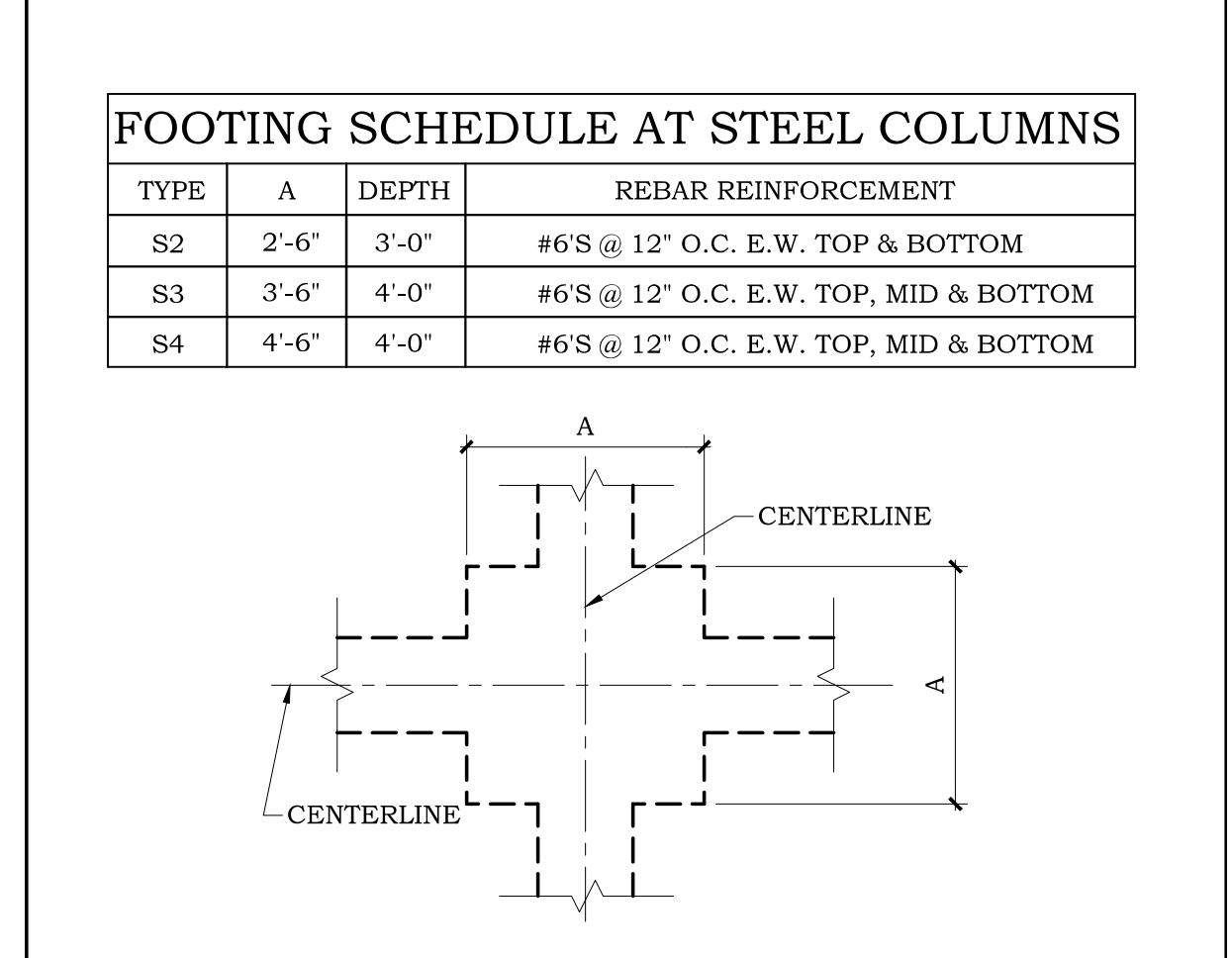
PIPE SUPPORT ELEVATION 10



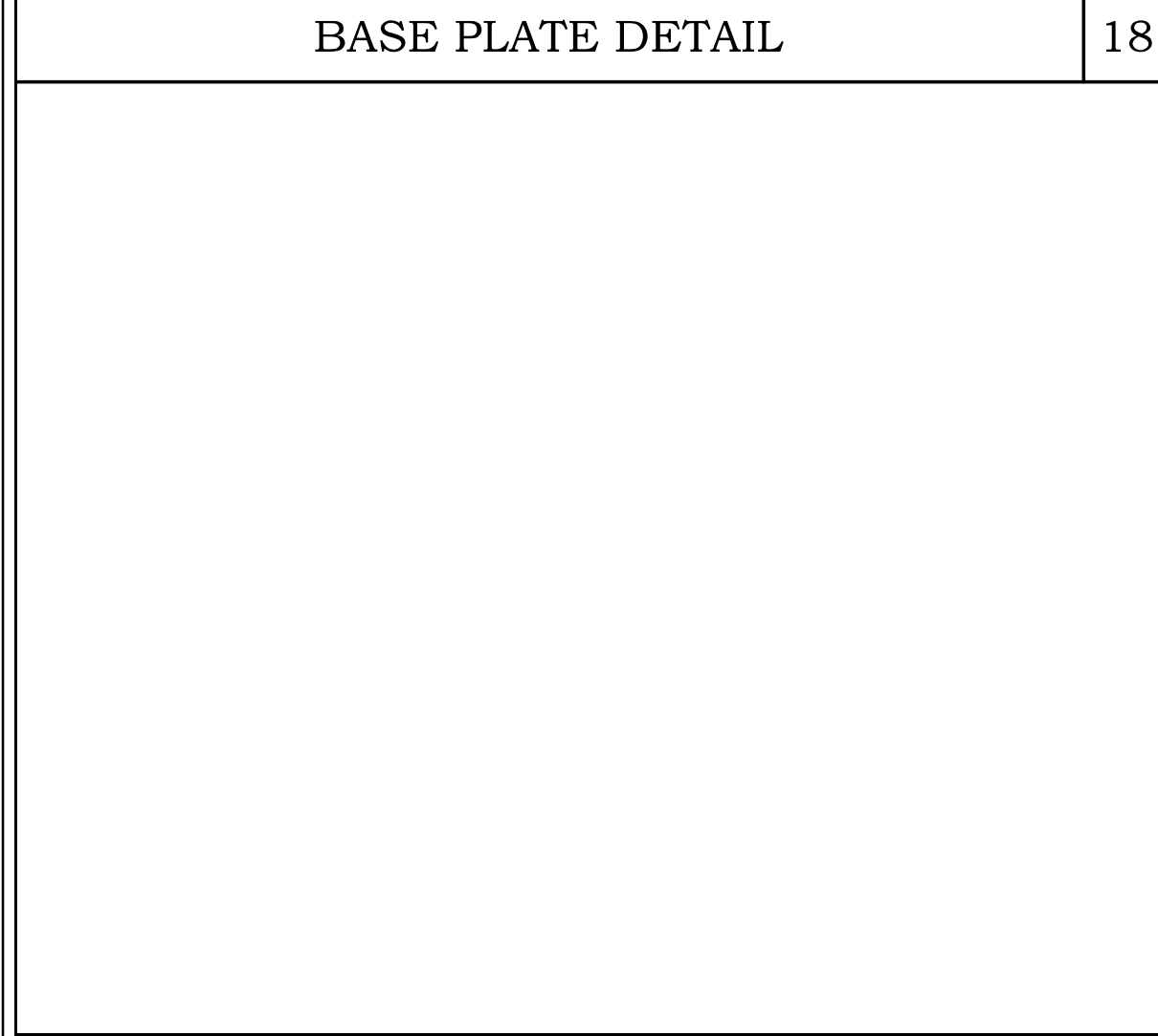
FOOTING AT CONCRETE COLUMN 6



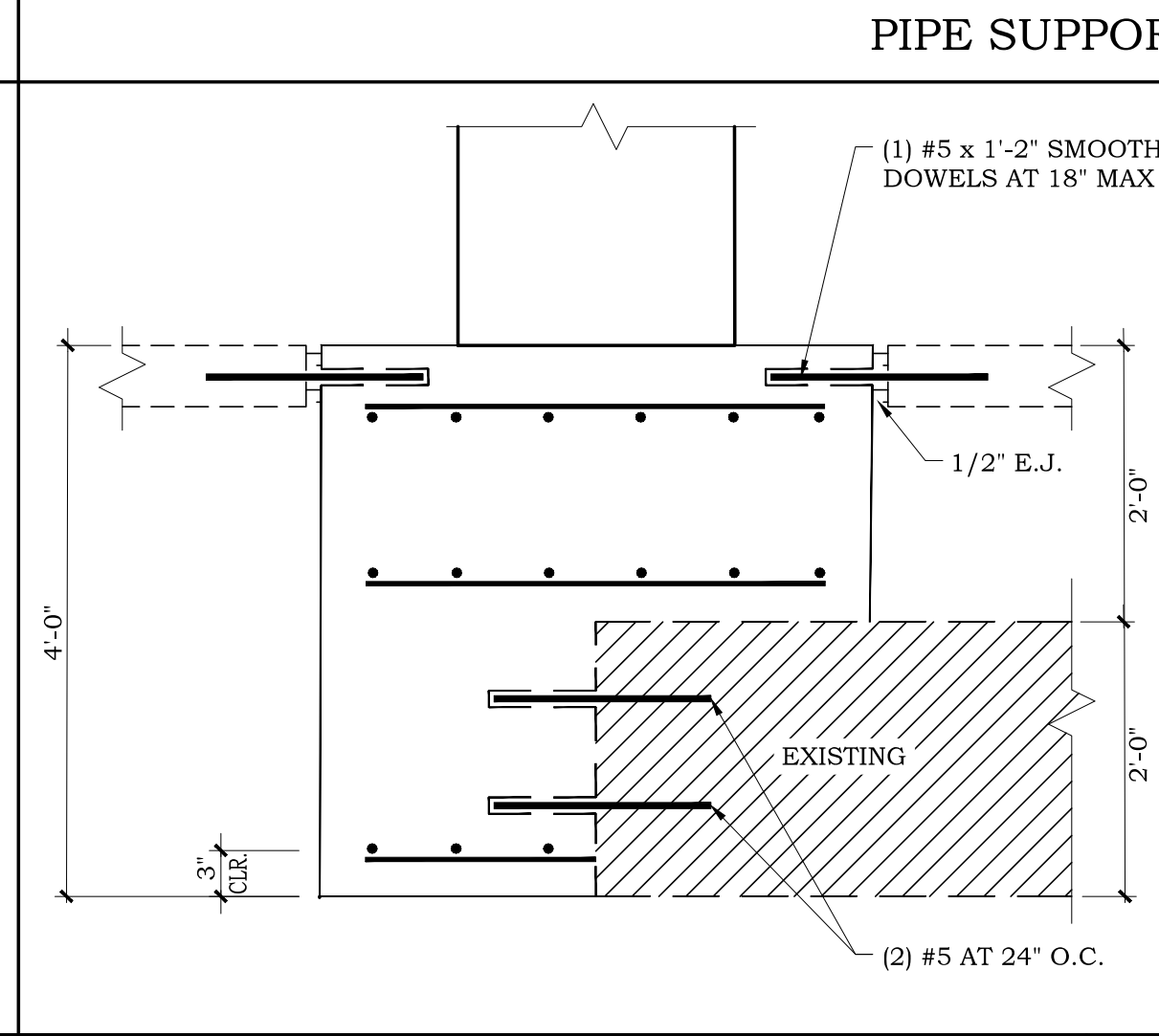
STANDARD HOOKS 1



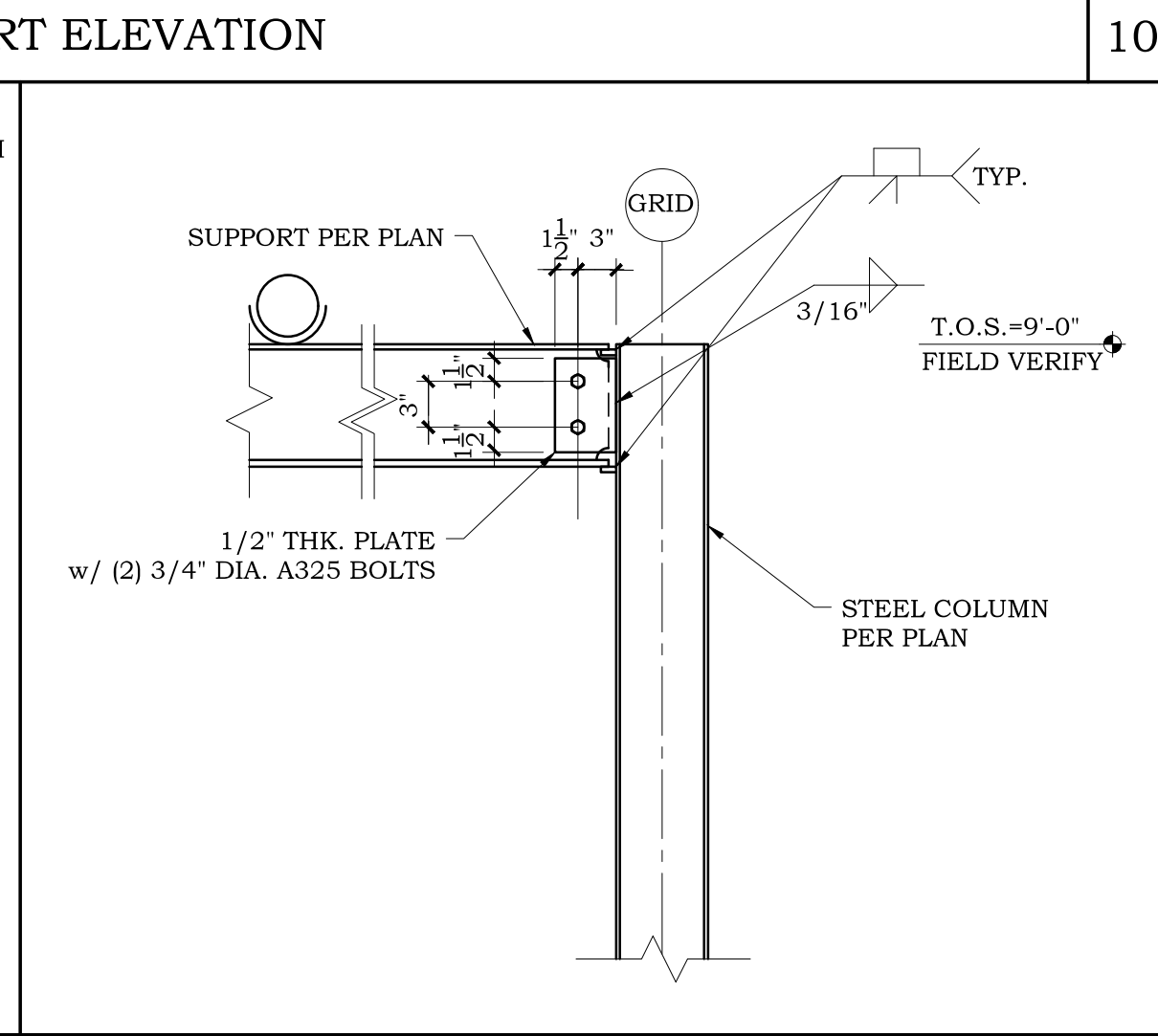
FOOTING SCHEDULE 2



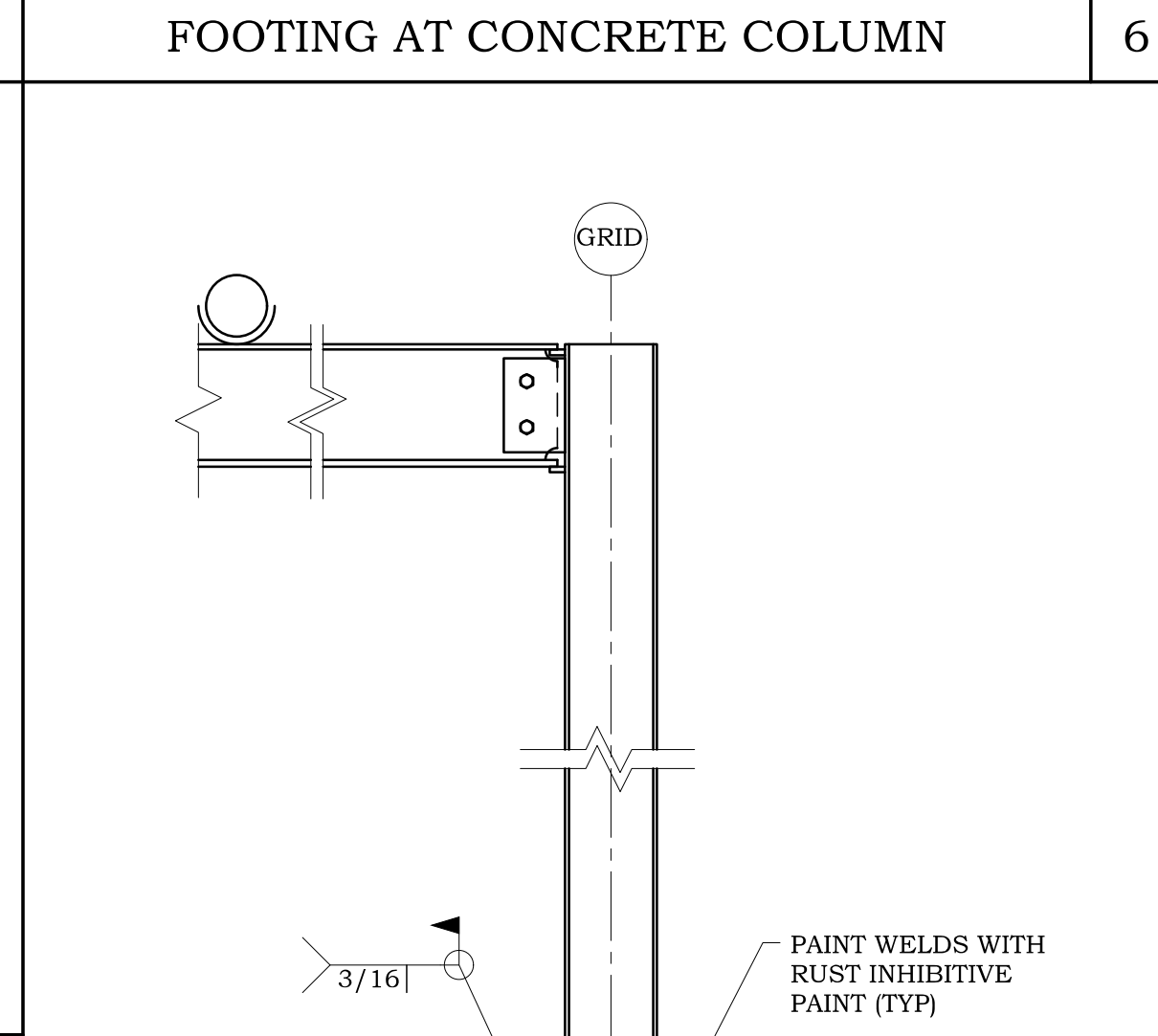
NOT USED 19



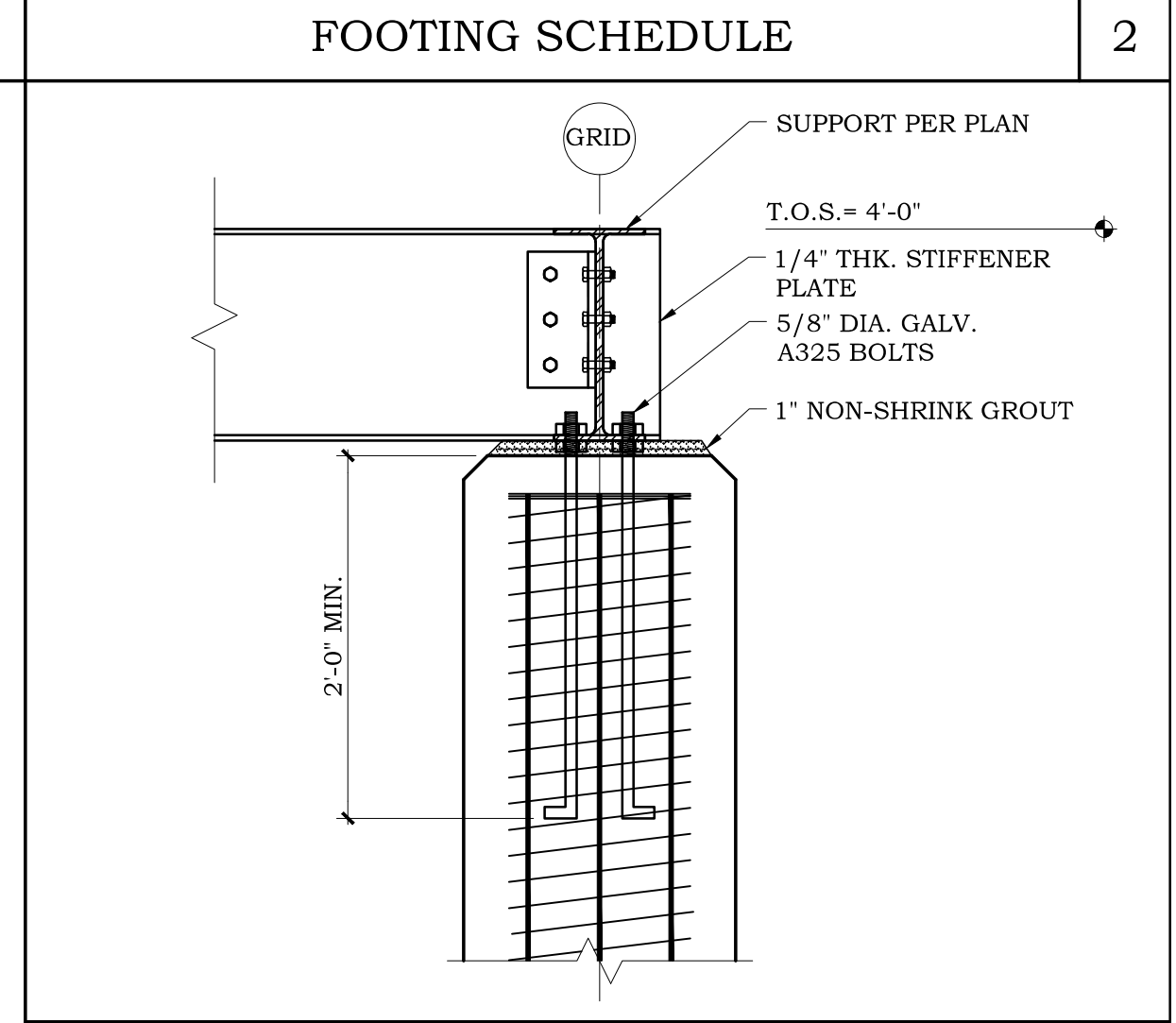
FOOTING AT CONCRETE COLUMN 15



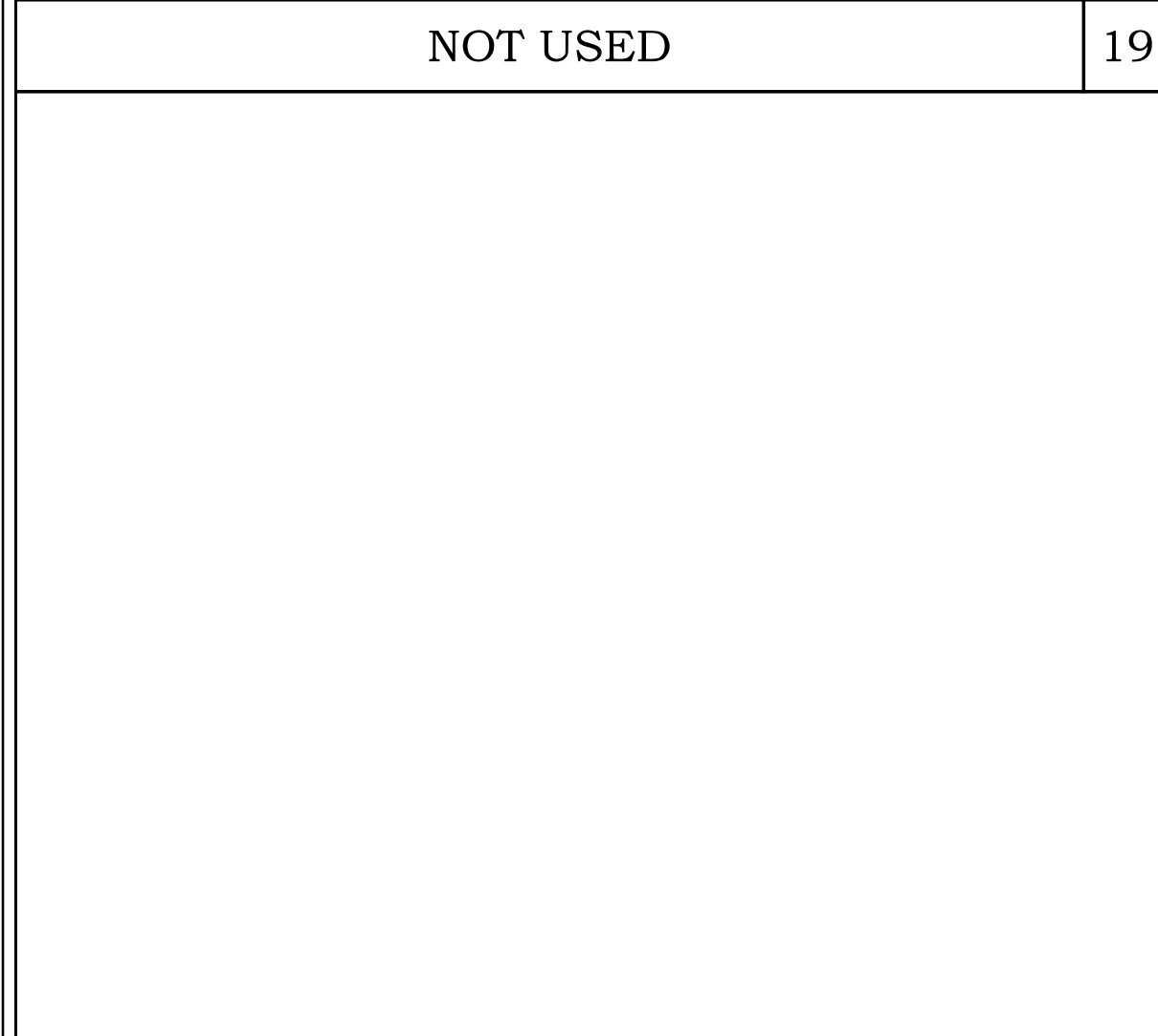
STEEL BEAM TO STEEL COLUMN 11



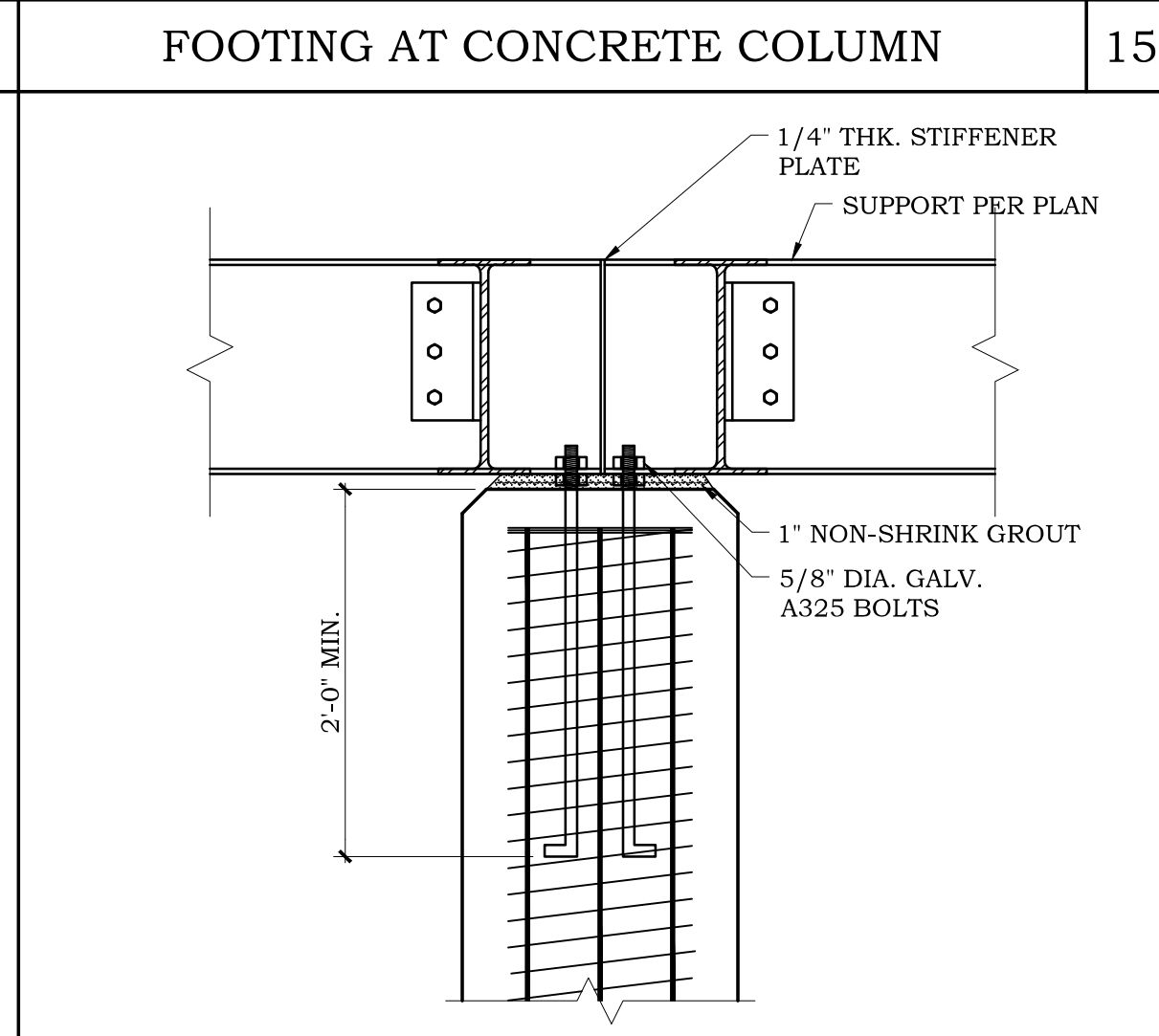
FOOTING AT CONCRETE COLUMN 8



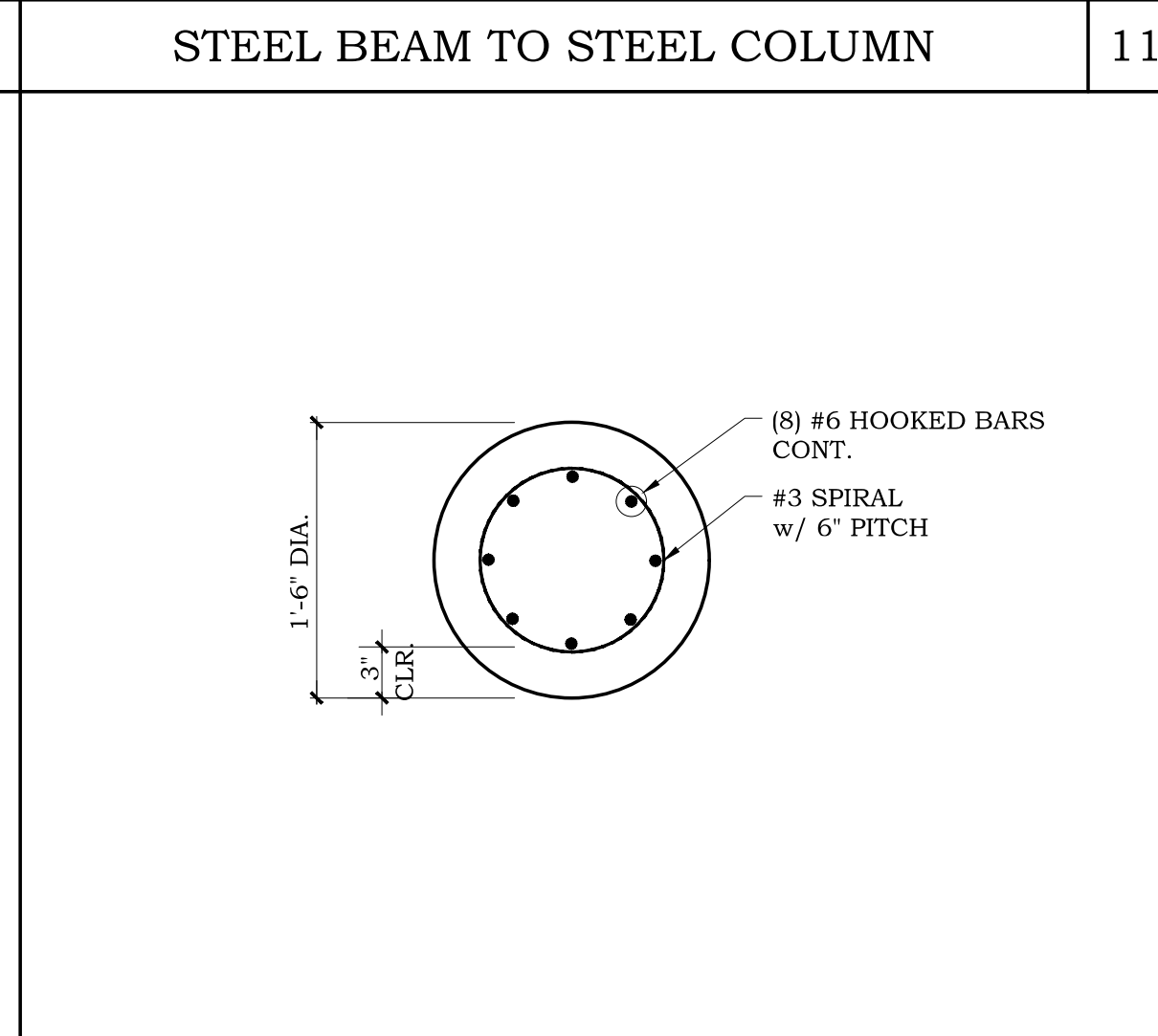
STEEL BEAM TO STEEL BEAM CONNECTION 3



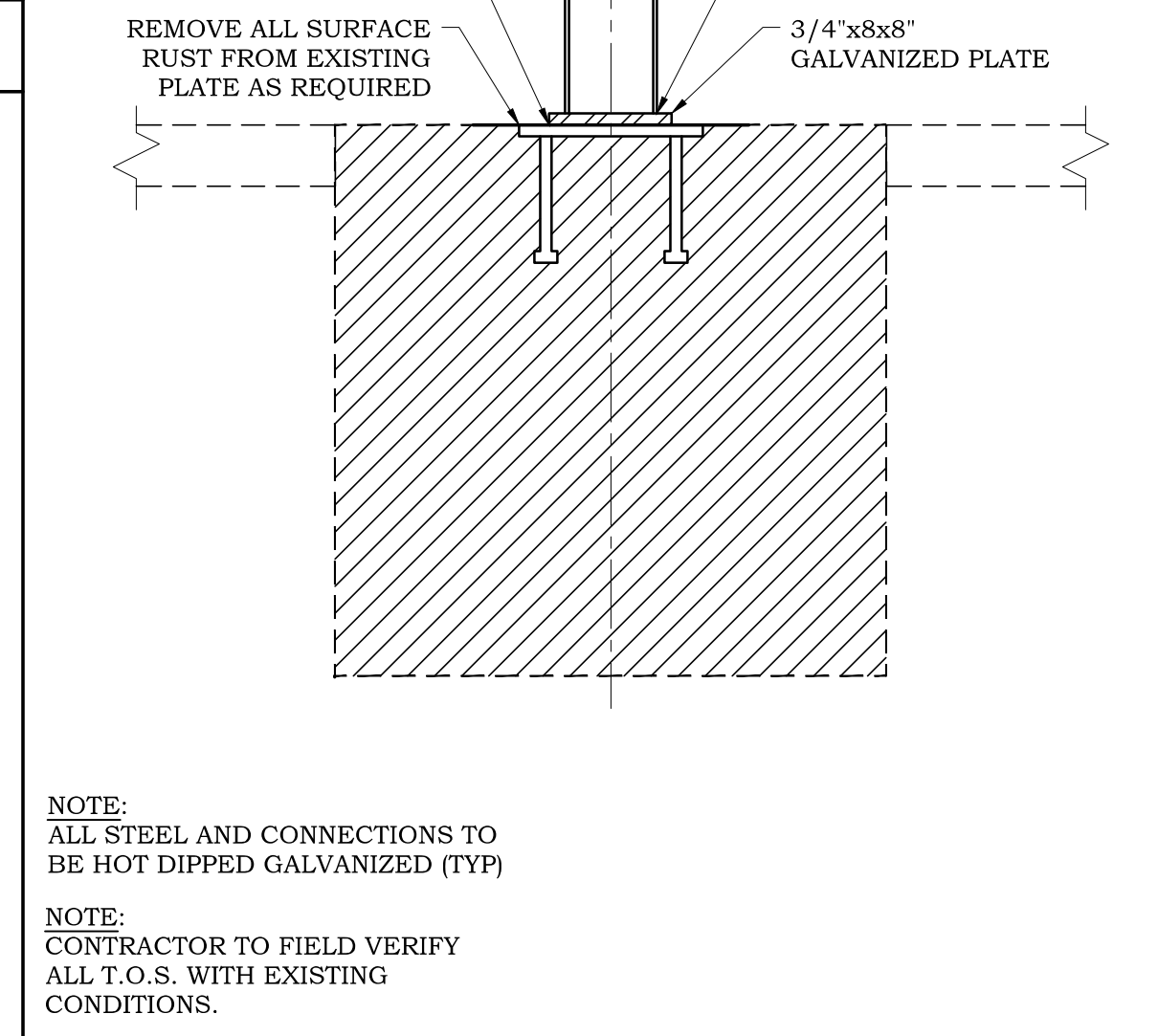
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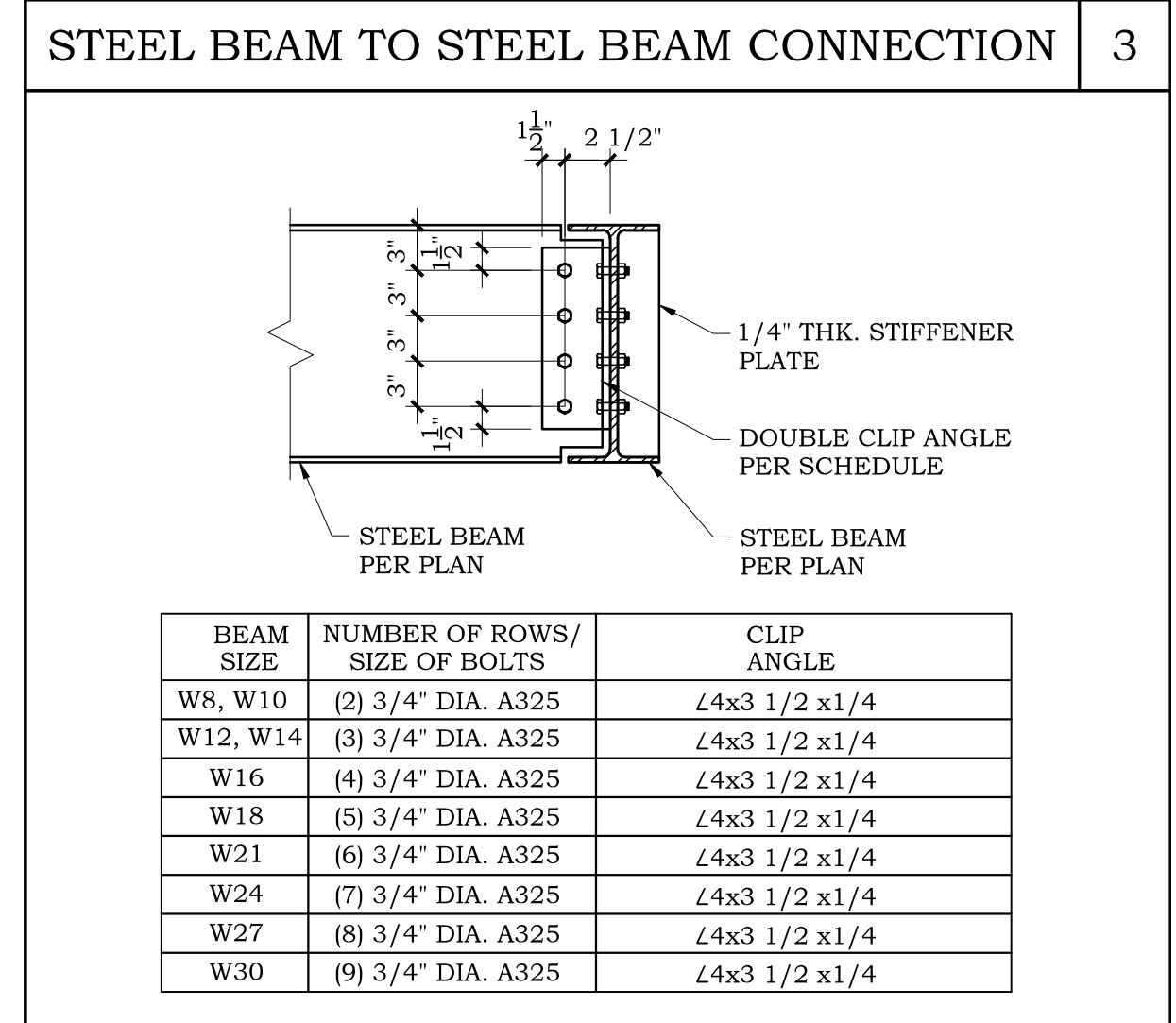
STEEL BEAM TO STEEL BEAM CONNECTION 16



C1 CONCRETE COLUMN 12



FOOTING AT CONCRETE COLUMN 8



STEEL BEAM TO STEEL BEAM CONNECTION 4

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Project No: 19125
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Sheet Title: DETAILS

HVAC PIPING MATERIALS SCHEDULE

SERVICE	SIZE	PIPE	FITTINGS	JOINTS	HANGERS	INSULATION			NOTE
						CONDITIONED SPACES	UNCONDITIONED SPACES	OUTDOORS	
CONDENSER WATER ABOVE GRADE (EXTERIOR)	ALL	PVC SCH 80	PVC (SOCKET)	SOLVENT WELD	GALVANIZED	N/A	N/A	NONE	

COOLING TOWER SCHEDULE

DESCRIPTION			PERFORMANCE								ELECTRICAL			NOTES
TAG	MFGR.	MODEL	WET BULB DESIGN (°F)	WATER FLOW RATE (GPM)	CELL EWT (°F)	BASIN LWT (°F)	WETBULB WB (°F)	STATIC LIFT (FT)	ASHRAE 90.1 PERFORMANCE (GPM/HP)	AIRFLOW PERCELL (CFM)	MOTOR RPM	HP	V/PHz	
CT-1	EVAPCO	USS 29-4K28	80	750	100	85	80	18	37.5	74,150	1800	20	460/3/60	ALL
CT-2	EVAPCO	USS 29-4K28	80	750	100	85	80	18	37.5	74,150	1800	20	460/3/60	ALL

NOTES:

1. PROVIDE WITH INVERTER DUTY MOTORS WITH SHAFT GROUNDING RINGS.
2. PROVIDE WITH FAN VIBRATION SHUT-OFF SWITCH. INSTALLING CONTRACTOR TO HARDWIRE TO DRY CONTACT AT VFD FOR SHUTDOWN.
3. PROVIDE COMPLETE TYPE 304 STAINLESS STEEL CONSTRUCTION AND STAINLESS STEEL HARDWARE, INCLUDING WELDED COLD WATER BASIN, MECHANICAL SUPPORTS, CASUING PANELS, AND FAN SCREENS
4. PROVIDE WITH FAN MOTORS LOCATED OUTSIDE OF TOWER AIRSTREAM.
5. PROVIDE WITH BELT DRIVEN FAN.
6. COOLING TOWER MANUFACTURER SHALL ASSEMBLE COOLING TOWER ON SITE AND MOUNT ACCESSORIES. PIPING AND WIRING BY INSTALLING CONTACTOR.
7. PROVIDE BOTTOM BFW/GROOVED OUTLET. SINGLE SIDE INLET CONNECTION
8. PROVIDE EQUALIZER LINE CONNECTION FOR EACH CELL, 8" BFW/GROOVED CONNECTIONS. INSTALLING CONTRACTOR TO PROVIDE 8" EQUALIZER PIPING WITH LUG TYPE BUTTERFLY ISOLATION VALVE.
9. PROVIDE LADDERS WITH SAFETY CAGES, SAFETY GATES, AND EXTERNAL SERVICE PLATFORMS TO ACCESS FAN, INTERNAL PLENUM WALKWAY, AND MECHANICAL. LADDERS SHALL EXTEND TO GRADE.
10. COOLING TOWER HOT WATER DISTRIBUTION SYSTEM SHALL BE CAPABLE OF OPERATING AT 750 GPM WHILE MAINTAINING A UNIFORM AIR-SIDE PRESSURE DROP THROUGH THE FILL TO MAXIMIZE COOLING TOWER EFFICIENCY AND MINIMIZE SCALE FORMATION IN THE FILL. SPRAY NOZZLES SHALL BE CAPABLE OF A MINIMUM FLOW OF 35% OF DESIGN WATER FLOW WITHOUT DRY AREAS OF FILL MATERIAL.
11. TOWER SHALL BE CONSTRUCTED TO MEET THE FOLLOWING BUILDING CODE CONSTRAINTS:
 - A. IBC 2018
 - B. LFRD: 138 MPH, ASD 107 MPH
 - C. BUILDING IMPORTANCE FACTOR: 1.0
 - D. BUILDING CATEGORY: III
 - E. BUILDING EXPOSURE: 6

COOLING TOWERS HAVE BEEN PRE-PURCHASED BY OWNER FROM H.A. GRAY & ASSOCIATES TO ASSEMBLE TOWERS AND SET ON STRUCTURE. CONTRACTOR TO PIPE AND POWER TO PROVIDE COMPLETE OPERATION SYSTEM.

VARIABLE FREQUENCY DRIVE SCHEDULE

PACKAGE	MARK	SERVES	EQUIP	HP	INPUT VOLT	OUTPUT VOLT	MOUNTING	ENCLOSURE	MANUF.	MODEL	HxWxD (IN.)	NOTES
UNDER BASE BID	VFD-P-3	P-3	PUMP	15	460/3	460/3	WALL	NEMA 1	YASKAWA	Z1000	11.8 x 7.9 x 7.9	1,3,4,5,6
UNDER BASE BID	VFD-P-4	P-4	PUMP	15	460/3	460/3	WALL	NEMA 1	YASKAWA	Z1000	11.8 x 7.9 x 7.9	1,3,4,5,6
UNDER ALTERNATE #1	VFD-CT-1	CT-1	COOLING TOWER	20	460/3	460/3	WALL	NEMA 1	YASKAWA	Z1000	11.8 x 7.9 x 7.9	1,3,4,5,6
UNDER ALTERNATE #1	VFD-CT-2	CT-2	COOLING TOWER	20	460/3	460/3	WALL	NEMA 1	YASKAWA	Z1000	11.8 x 7.9 x 7.9	1,3,4,5,6

NOTES:

1. VFD SHALL BE PROVIDED AND MOUNTED BY MECHANICAL CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR.
2. PROVIDE VFD WITH FUSED DISCONNECT.
3. PROVIDE VFD WITH NON-FUSED DISCONNECT.
4. PROVIDE BACNET FOR INTERFACE WITH DDC SYSTEM.
5. PROVIDE AUTOMATIC BYPASS.
6. PROVIDE AUXILIARY CONTACT IN VFD TO INTERFACE WITH DISCONNECT FOR SHUTDOWN PROCESS.

PUMP SCHEDULE

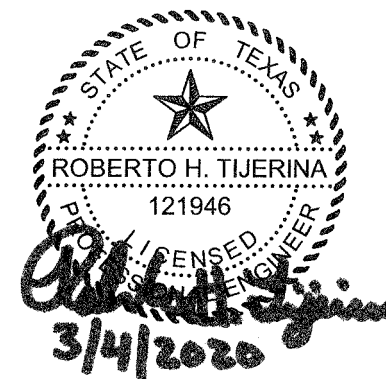
MARK	SERVICE	TYPE	GPM	DYNAMIC HEAD-FT	RPM	MIN. EFF%	NPSH MAX. REQ	MOTOR DATA			MANUFACTURER	MODEL	NOTES
								HP	VOLT	PHASE			
P-3	COND. WATER	END SUCTION	750	58	1800	83.7%	10.5	15	460	3	Bell & Gossett	1510	ALL
P-4	COND. WATER	END SUCTION	750	58	1800	83.7%	10.5	15	460	3	Bell & Gossett	1510	ALL

NOTES:

1. VARIABLE VOLUME PUMP POWERED THROUGH VARIABLE FREQUENCY DRIVE. PROVIDE SHAFT GROUNDING KIT.
2. PUMP BASE AND MOTOR SADDLE SHALL BE HOT DIPPED GALVANIZED. PUMP AND COUPLING GUARD SHALL HAVE TWO COATS OF EPOXY PAINT.
3. TEFC PREMIUM EFFICIENCY, SEVERE DUTY MOTOR.

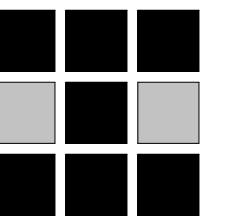
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 ROBERTO H. TUERINA
 PE# 121946
 03-04-2020
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 TBPE FIRM #F-312

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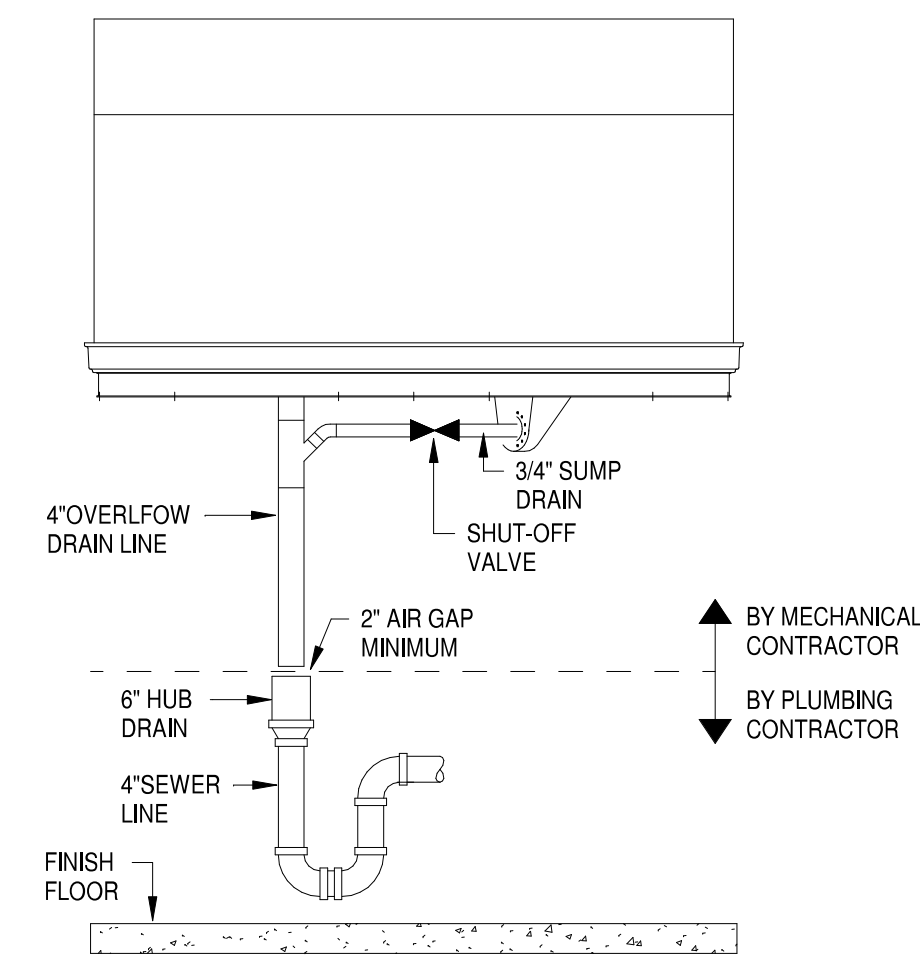
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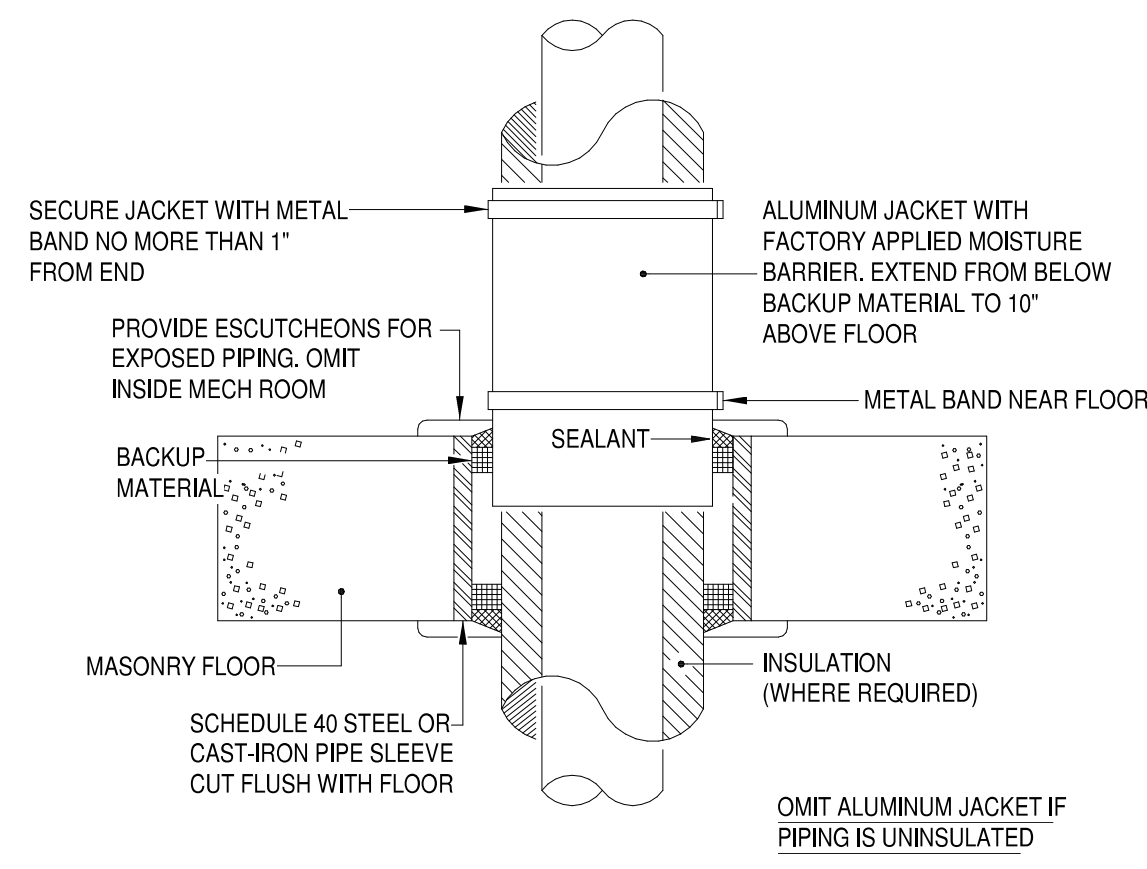
MECHANICAL SCHEDULES I

M2.01

Sheet Number



9 TOWER DRAIN CONNECTION
N.T.S.



6 PIPE THRU FLOOR PENETRATION
N.T.S.

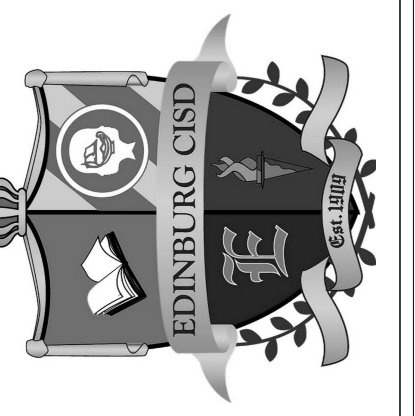
- MATERIAL NOTES**
- 1.) MATERIAL, UNLESS OTHERWISE NOTED, SHALL BE A.S.T.M. A-36 OR A-285C FABRICATED IN ACCORDANCE WITH THE A.I.S.C. CODE OF STANDARD PRACTICE.
 - 2.) SURFACE PREPARATION OR PAINTING WILL BE REQUIRED ONLY IF NOTED BELOW. GALVANIZING IF REQUIRED SHALL BE 2 OZ. MINIMUM COAT IN ACCORDANCE WITH A.S.T.M. A-123.
 - 3.) GALVANIZED MATERIAL THAT IS FIELD CUT, DRILLED OR WELDED, SHALL BE COATED WITH GALVAON OR EQUAL ON EXPOSED SURFACES.
 - 4.) ALL BOLTING MATERIAL SHALL CONFORM TO A.S.T.M. SPEC. A-307. NUTS SHALL BE HEAVY HEX. TYPE.
 - 5.) VENDOR TO FABRICATE & ASSEMBLE AS REQUIRED, AND TAG ASSEMBLY WITH MARK NUMBERS.

- GENERAL NOTES**
AS APPLIED TO ANCHORS, GUIDES, AND MISCELLANEOUS SUPPORTS.
- 1.) THIS DRAWING SPECIFIED TYPE AND APPLICATION OF NORMAL SUPPORT, GUIDE, & ANCHOR REQUIREMENTS FOR PIPING ON PLEWAYS, IN STRUCTURES, & AT GRADE.
 - 2.) SELECTION AND APPLICATION OF TYPE SHALL BE MADE AFTER CONSIDERATION HAS BEEN GIVEN TO EFFECTS FROM TEMPERATURE EXPANSION AND REACTION FORCES ON EQUIPMENT OR SUPPORTS.
- PIPE GUIDES SHALL NOT BE PLACED CLOSER THAN 40 PIPE DIAMETERS FROM A DIRECTIONAL CHANGE OF PIPE, EXCEPT WHERE REQUIRED BY STRESS ANALYSIS.

PIPE GUIDE SPACING TABLE

LINE SIZE	VERTICAL RUN	HORIZONTAL RUN
3/4" THRU 3"	25 FT. CENTERS	APPROX. 50 FT. CENTERS (SEE GENERAL NOTE 4)
4" THRU 6"		
8" THRU 10"	35 FT. CENTERS	
12" THRU 16"	50 FT. CENTERS	APPROX. 150 FT. CENTERS
18" THRU 24"	60 FT. CENTERS	

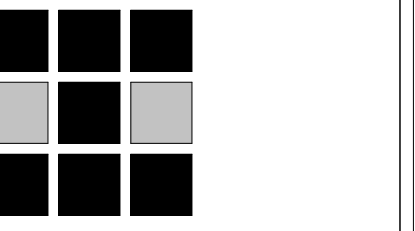
3 GENERAL NOTES-PIPE SUPPORTS
N.T.S.



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121946
03-04-2020

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Project No: 37841.001
Revised: 02/26/20

Revisions:	No.	Date	Description

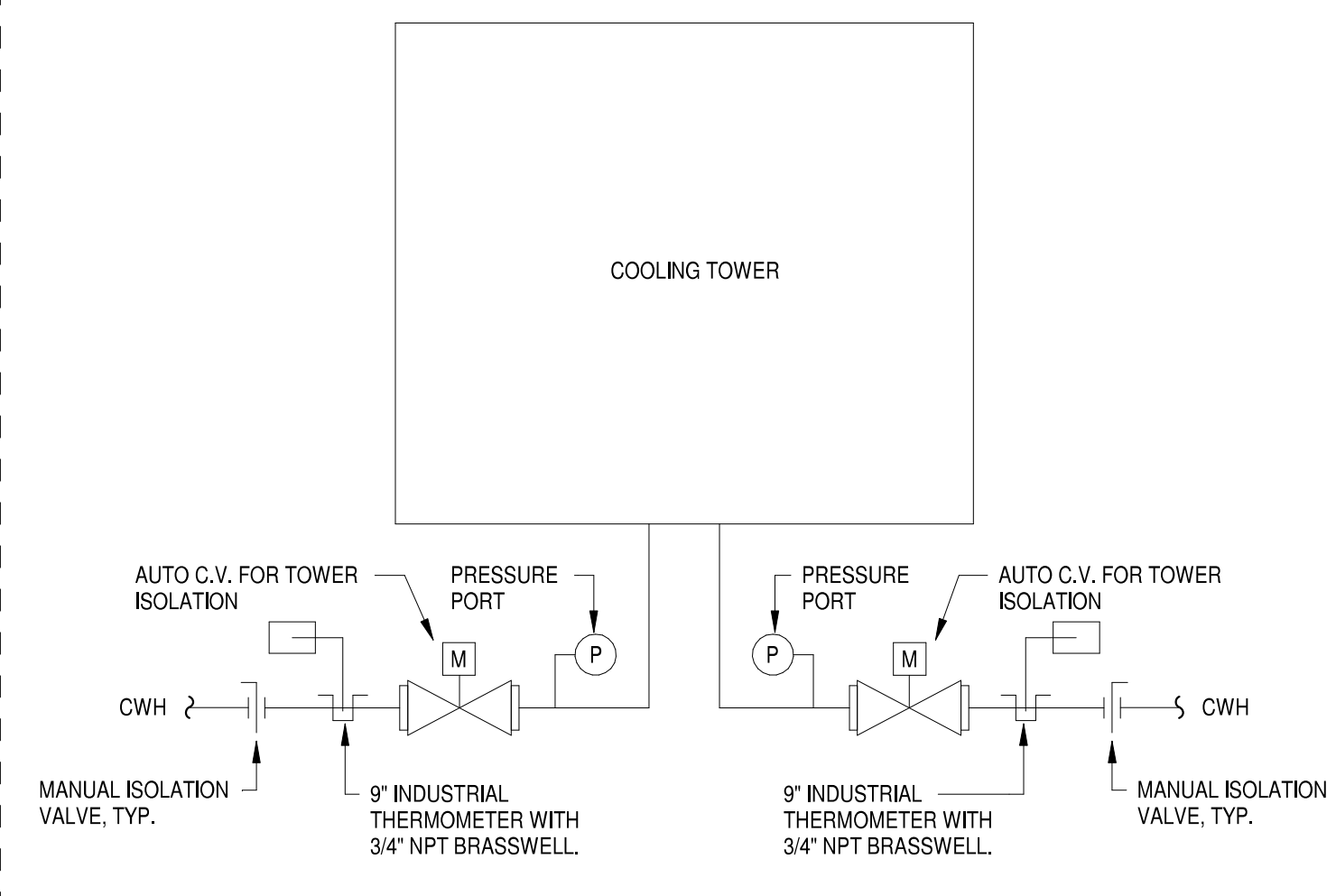
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Checked by: RT
Sheet Title:

MECHANICAL DETAILS I

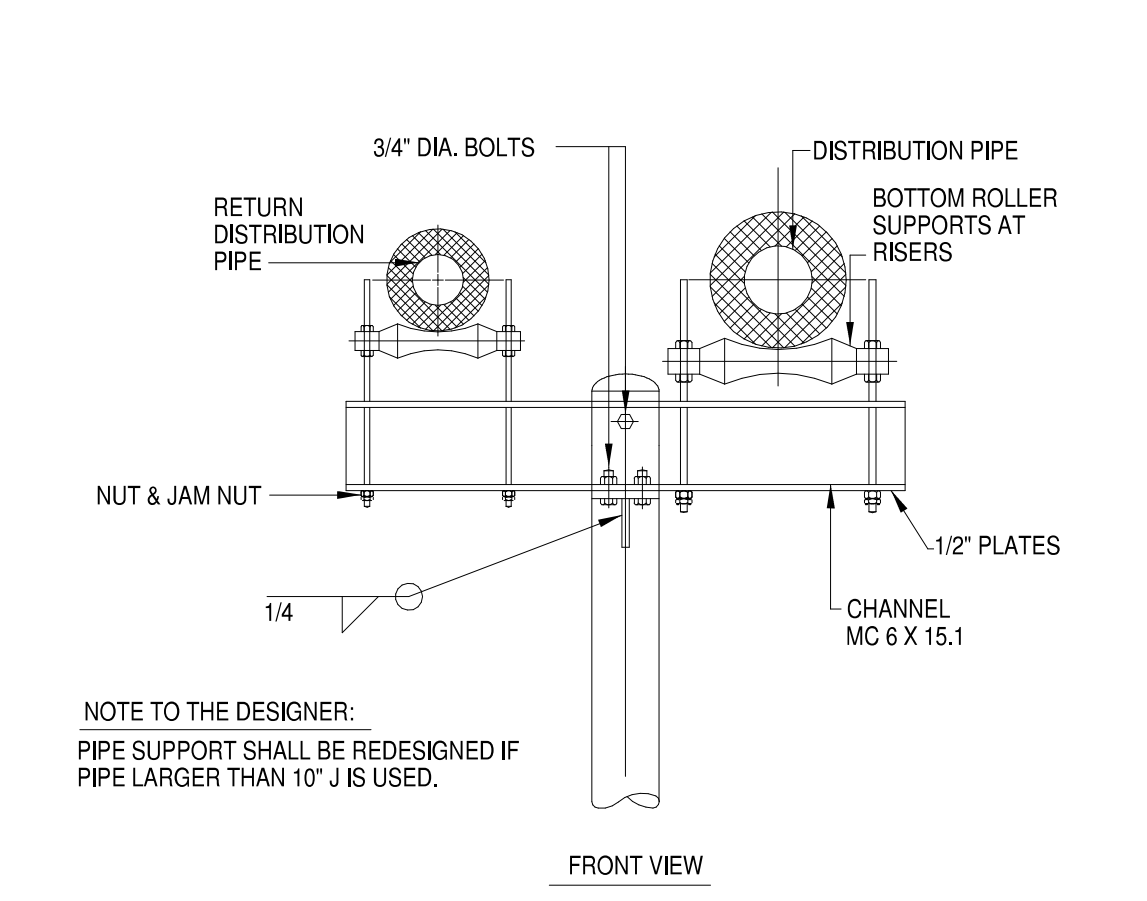
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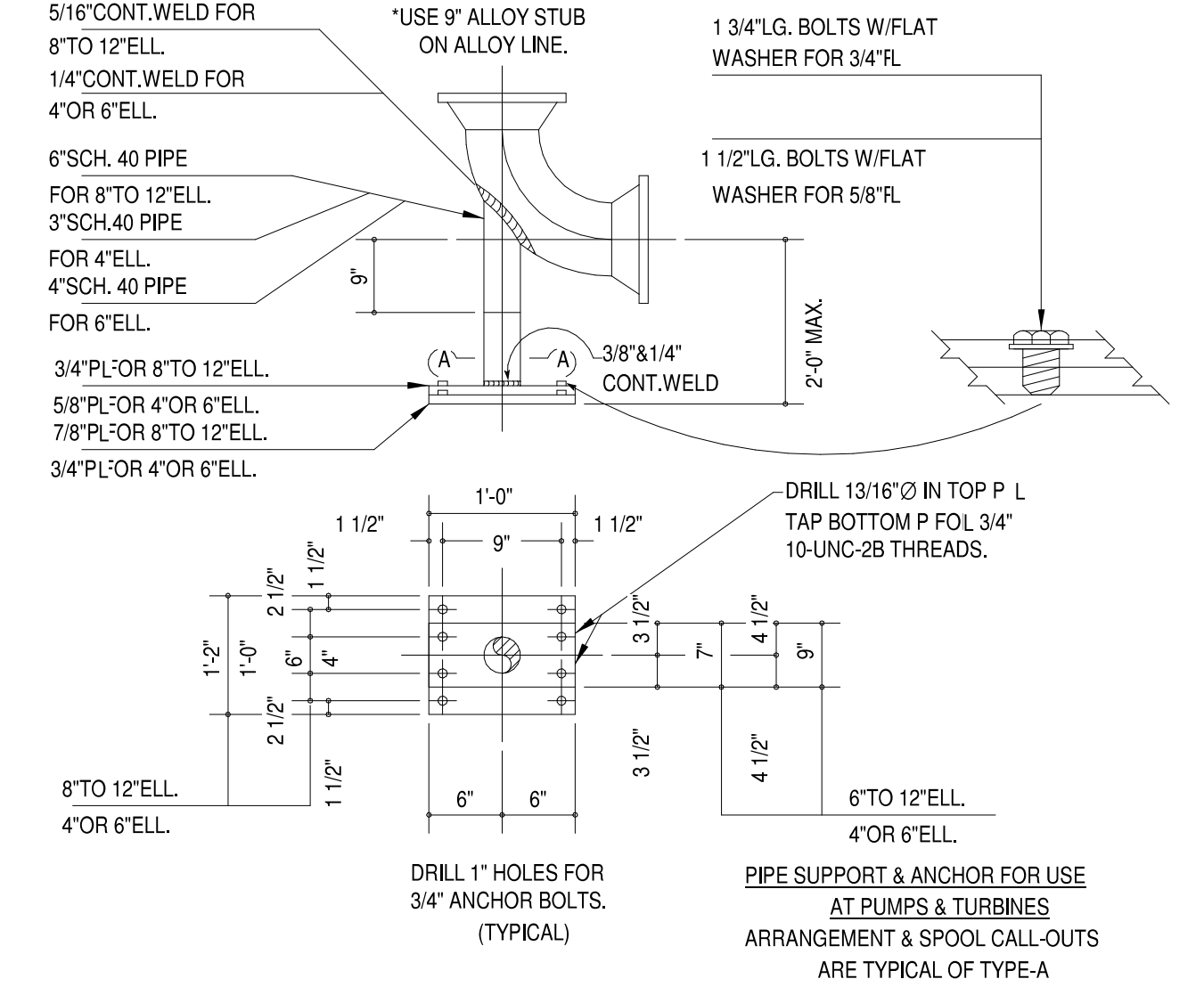
NOTE:
STRUCTURAL DETAILS ARE TO BE USED WHEN THE PIPING SUPPORTS ARE NOT SPECIFIED BY STRUCTURAL ENGINEER.



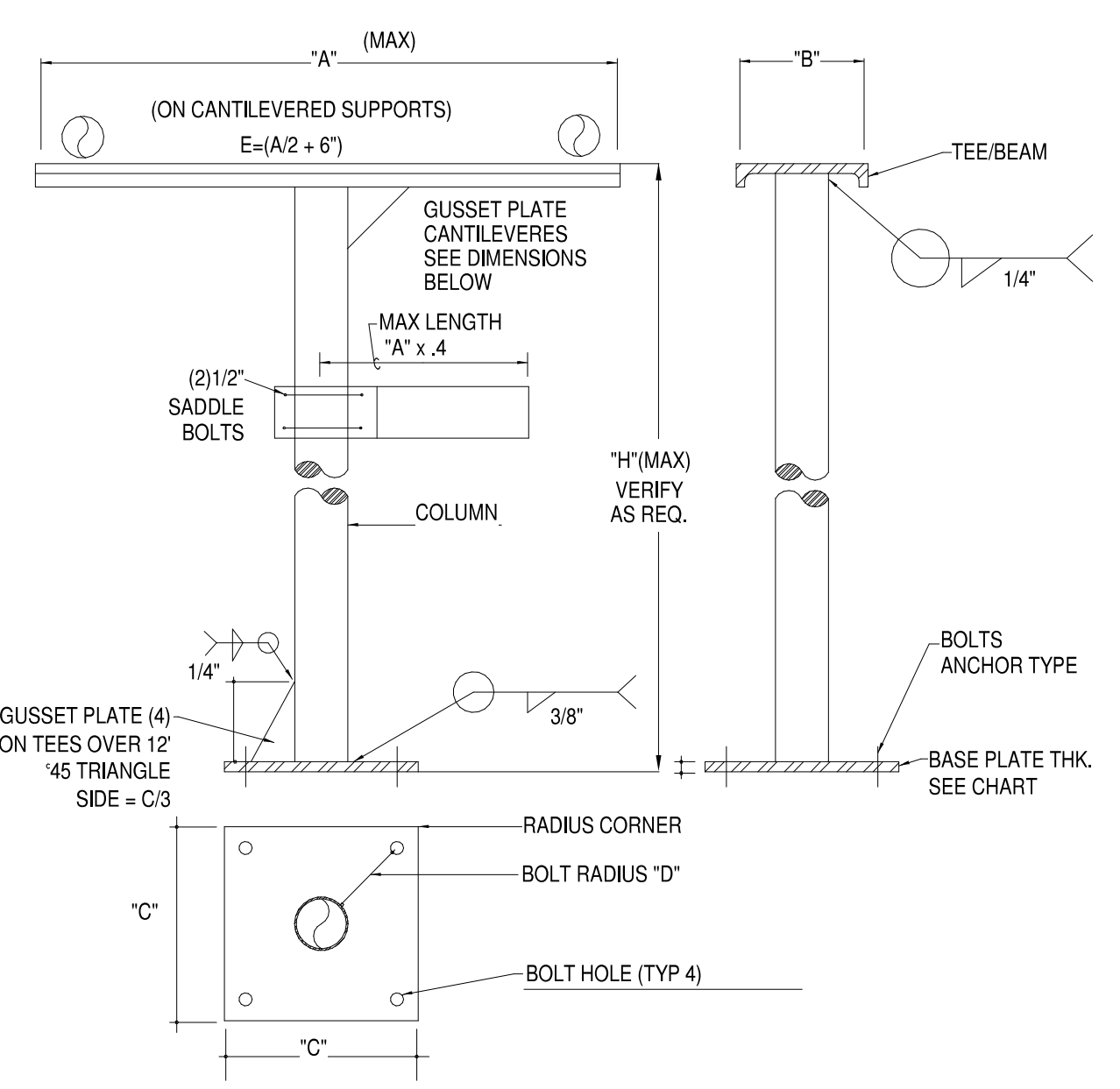
8 TOWER CONNECTION
N.T.S.



5 PIPE GUIDE
N.T.S.



2 TYPE D 4" THRU 12"
N.T.S.



7 TEE SUPPORT
N.T.S.

TEE SUPPORT CHART

MARK	H" MAX	MAX-LOAD LBS.	COLUMN	TEE-BEAM	SIDE ARM	BASE PLATE	BOLTS SIZE	A	B	C	D	E
T1	8'-0"	3500	3"SCH.40	C7x9.8	C4x5.4	10x10x3/8"	4 1/2"	24"	7"	10"	5 1/2"	18"
T2	8'-0"	5200		C8x11.5				36"	8"			24"
T3	8'-0"	7000		C10x15.3				48"	10"			30"
T4	8'-0"	8600		C10x15.3				60"	10"			36"
T5	12'-0"	3500	3"SCH.40	C7x9.8	C4x5.4	10x10x3/8"	4 1/2"	24"	7"	10"	5 1/2"	18"
T6	12'-0"	5200		C8x11.5				36"	8"			24"
T7	12'-0"	7000		C10x15.3				48"	10"			30"
T8	12'-0"	8600		C10x15.3				60"	10"			36"
T9	16'-0"	3500	4"SCH.40	C7x9.8	C4x5.4	12x12x5/8"	4 1/2"	24"	7"	12"	7"	18"
T10	16'-0"	5200		C8x11.5				36"	8"			24"
T11	16'-0"	7000		C10x15.3				48"	10"			30"
T12	16'-0"	8600		C10x15.3				60"	10"			36"
T13	20'-0"	3500	6"SCH.40	C7x9.8	C4x5.4	14x14x3/4"	4 1/2"	24"	7"	14"	7 7/8"	18"
T14	20'-0"	5200		C8x11.5				36"	8"			24"
T15	20'-0"	7000		C10x15.3				48"	10"			30"
T16	20'-0"	8600		C10x15.3				60"	10"			36"

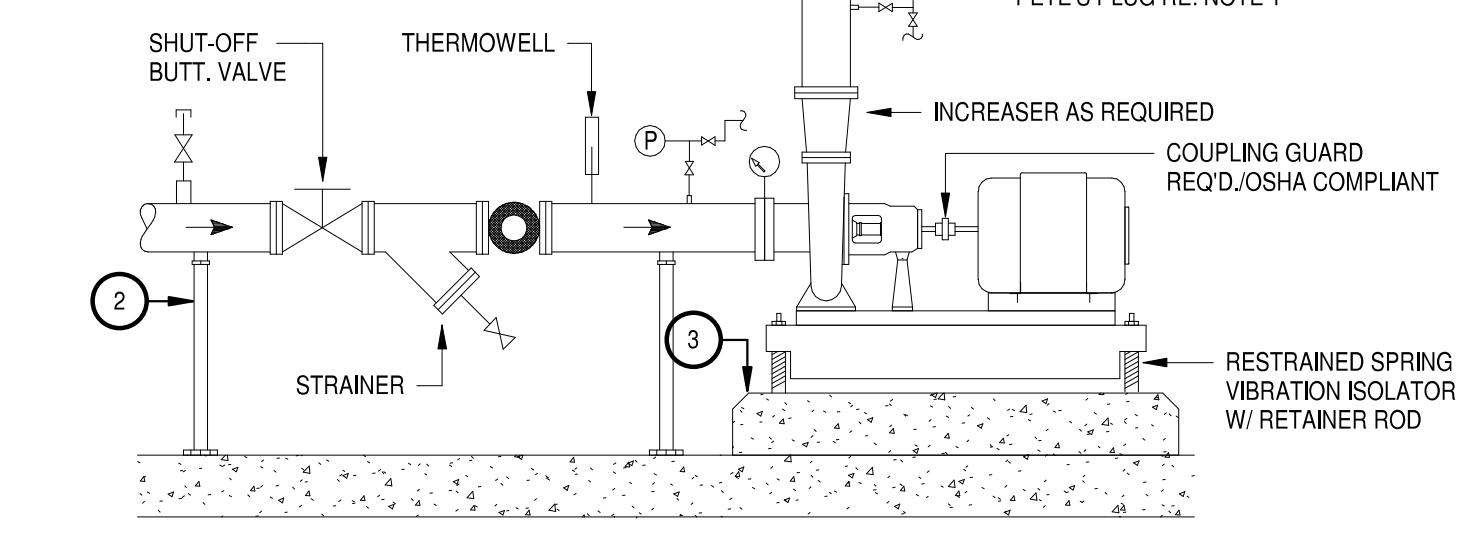
- NOTES:**
1. CARRYING CAPACITY BASED ON ONE (1) 10" DIA PIPE PER FOOT, 20' JOINT, STD WEIGHT W/WATERFILL.
 2. CANTILEVER & SINGLE SIDE LOADS SHALL NOT EXCEED 1/2 THE RATE "MAX-LOAD".
 3. SIDE ARM LOADS SHALL BE 1/3 TH "MAX-LOAD" AND THE HEIGHT OF THE SIDE ARM SHALL BE LESS THAN B/2.
 4. USE 36 KSI ASTM A36 STEEL.

VIBRATION ISOLATION REQUIREMENTS

EQUIPMENT	MIN. STATIC DEFLECTION OF VIBRATION ISOLATOR
(N)CHWP-3,4	(N)CHWP-3,4

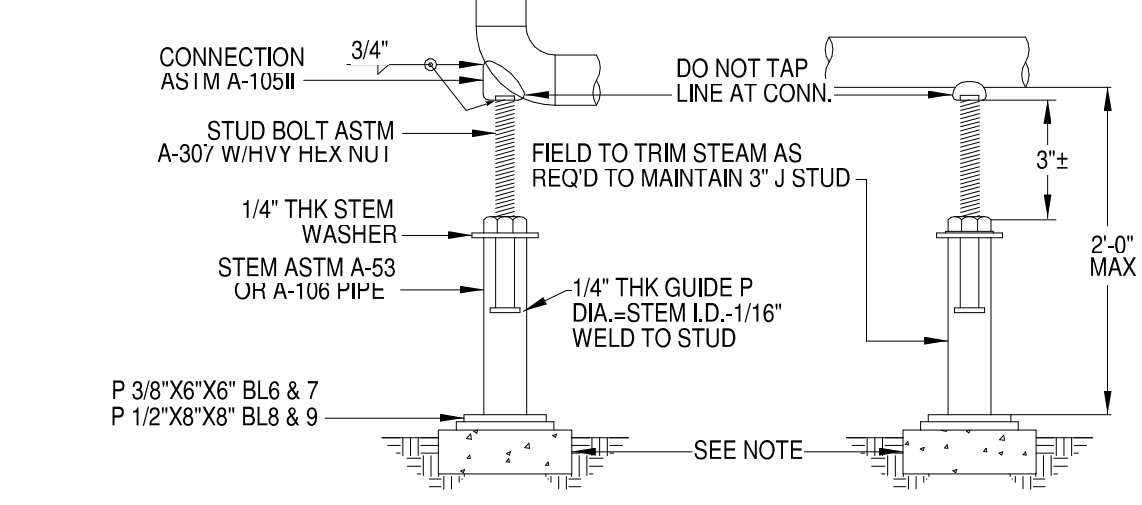
NOTES:

1. REFER TO PUMP PIPING & GAUGE SPECIFICATIONS
2. STANCHION SUPPORT ON SUCTION END.
3. HOUSEKEEPING PAD THICKNESS 4"; CHAMFER EDGES 1".
4. 3/4" HOSE BIBB DRAIN W/CAIP
5. GROUT PUMP BASE AS REQ'D



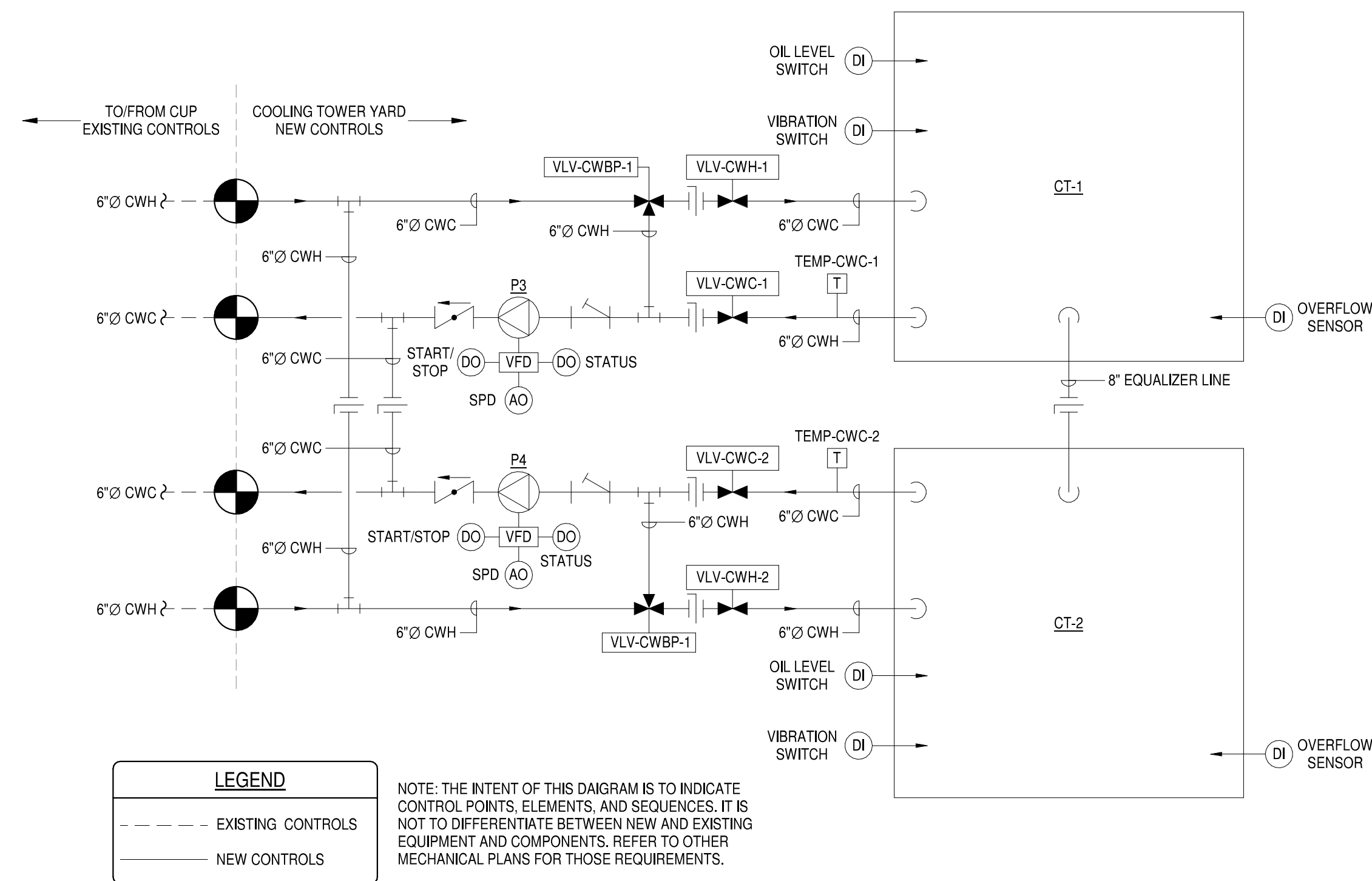
4 END SUCTION PUMP
N.T.S.

MK	CONNECTION SOCKET OR S.W. ELBOLET	STUD W/ 1 HEX NUT DIA.	LGTH.	STEM WASHER		STEM	
				O.D.	I.D.	SIZE	WT.
BL-6	3/4"	7/8"	8"	2 1/4"	1"	1 1/2"	X-HVY 18"
BL-7	1"	1 1/4"	8"	2 3/4"	1 3/8"	2"	X-HVY 18"
BL-8	1 1/2"	1 1/8"	8"	4"	1 7/8"	3"	STD 18"
BL-9	1 1/2"	1 3/4"	8"	5"	1 7/8"	4"	STD 18"



- NOTES:**
- 1) FIELD TO FOUR 4" MIN. THICKNESS PAD UNDER ALL BASE LEGS WHEN USED IN UNPAVED AREAS.
 - 2) FIELD TO PROVIDE GROUT WHERE REQUIRED.
- *STEM LENGTH MAY BE INCREASE TO 36" BY USING THE NEXT LARGER CATEGORY OF BASE LEG IE: USE A BL-8 OR 6" OR 8" PIPING.

1 TYPE BL BASE LEG SUPPORT-ADJUSTABLE
N.T.S.



MECHANICAL CHILLED WATER FLOW

1 **DIAGRAM**
N.T.S.

INPUT/OUTPUT SUMMARY

POINT NAME	AI	AO	DI	DO	SP	SENSOR TYPE	COMMENT
COOLING TOWER (CT-1) FAN START/STOP, STATUS, SPEED, AND ALARM		X	X	X		BACNET COMM	VFD-CT-1, DO-START/STOP, AO-SPD, DI-STATUS, ALARM
COOLING TOWER (CT-1) CONDENSER WATER COLD CONTROL VALVE			X	X		ELECTRONICALLY ACTUATED VALVE	DO(2)-OPEN AND CLOSE, DI-POSITION
COOLING TOWER (CT-1) CONDENSER WATER HOT CONTROL VALVE			X	X		ELECTRONICALLY ACTUATED VALVE	DO(2)-OPEN AND CLOSE, DI-POSITION
COOLING TOWER (CT-1) VIBRATION SWITCH			X			BACNET COMM	DI - STATUS, ALARM
COOLING TOWER (CT-1) OIL LEVEL SWITCH			X			BACNET COMM	DI - STATUS, ALARM
COOLING TOWER (CT-2) VIBRATION SWITCH			X			BACNET COMM	DI - STATUS, ALARM
COOLING TOWER (CT-2) OIL LEVEL SWITCH			X			BACNET COMM	DI - STATUS, ALARM
COOLING TOWER (CT-2) FAN START/STOP, STATUS, SPEED, AND ALARM		X	X	X		BACNET COMM	1 DEVICE: VFD-CT-2, DO-START/STOP, AO-SPD, DI-STATUS, ALARM
COOLING TOWER (CT-2) CONDENSER WATER COLD CONTROL VALVE			X	X		ELECTRONICALLY ACTUATED VALVE	DO(2)-OPEN AND CLOSE, DI-POSITION
COOLING TOWER (CT-2) CONDENSER WATER HOT CONTROL VALVE			X	X		ELECTRONICALLY ACTUATED VALVE	DO(2)-OPEN AND CLOSE, DI-POSITION
CONDENSER WATER PUMP (P-3) START/STOP, STATUS, SPEED, AND ALARM		X	X	X		BACNET COMM	1 DEVICE: VFD-P-3, DO-START/STOP, AO-SPD, DI-STATUS, ALARM
CONDENSER WATER PUMP (P-4) START/STOP, STATUS, SPEED, AND ALARM		X	X	X		BACNET COMM	1 DEVICE: VFD-P-4, DO-START/STOP, AO-SPD, DI-STATUS, ALARM
CONDENSER WATER FLOW (FLOW-CW)	X					FLOW METER	
CONDENSER WATER BYPASS VALVE (VLV-CWB-1)	X	X	X			ELECTRONICALLY ACTUATED VALVE	AO-OPEN AND CLOSE, AI-POSITION
CONDENSER WATER BYPASS VALVE (VLV-CWB-2)	X	X	X			ELECTRONICALLY ACTUATED VALVE	AO-OPEN AND CLOSE, AI-POSITION
OUTSIDE AIR DRY BULB TEMPERATURE	X					TEMPERATURE SENSOR	
OUTSIDE AIR WET BULB TEMPERATURE	X					TEMPERATURE SENSOR	
MAKEUP WATER METER	X					SUB METER	
OVERFLOW SENSOR			X			FLOAT SWITCH	OVERFLOW SENSOR FOR EACH TOWER

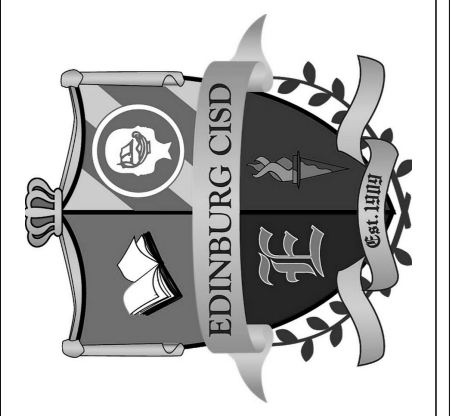
START/STOP:
 THE CURRENT/EXISTING LEAD/LAG CHILLER, PRIMARY CHILLED WATER PUMP, AND CONDENSER WATER PUMP SHALL REMAIN. THE CONTROL SEQUENCES SHALL BE UNALTERED EXCEPT AS NOTED HEREIN FOR TOWER CONTROL.

COOLING TOWER CONTROL:
 TWO TOWERS SHALL ENABLE DURING PLANT OPERATION EXCEPT AS FOLLOWS:

1. A FAILURE OF EITHER TOWER
2. A LOW LOAD CONDITION IN WHICH BOTH TOWERS AT LOW SPEED PROVIDE A CONDENSER WATER SUPPLY BELOW 50°F (SEE TOWER SEQUENCE BELOW).

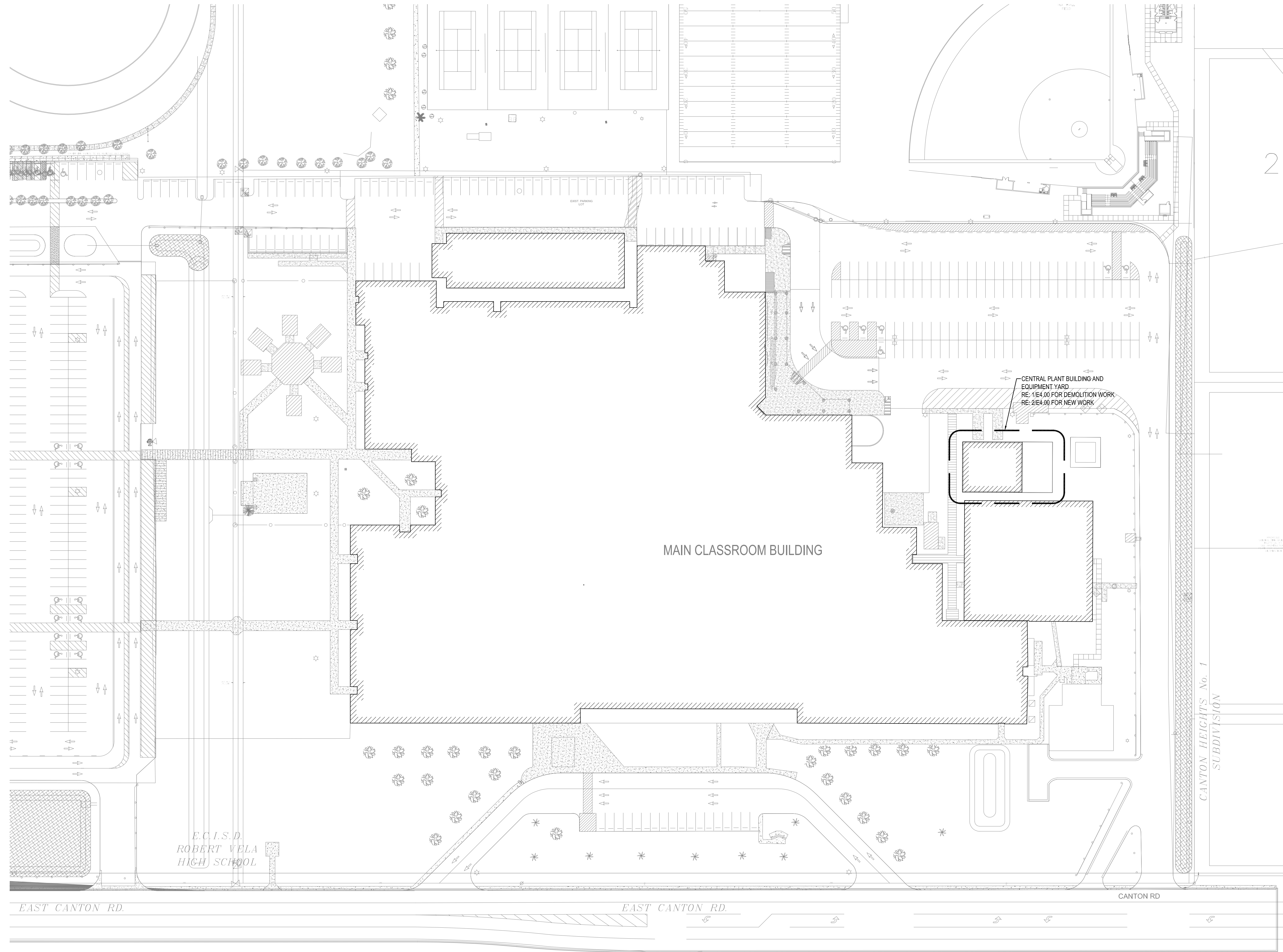
BOTH TOWERS SHALL OPERATE IN PARALLEL TO MAINTAIN A CONDENSER WATER SUPPLY TEMPERATURE EQUAL TO THE LESSER OF 85°F OR 5°F ABOVE AMBIENT WET BULB TEMPERATURE. IF BOTH TOWERS IN OPERATION PROVIDE A CONDENSER WATER SUPPLY THAT REACHES 55°F (OR AS RECOMMENDED BY CHILLER MANUFACTURER), AND BOTH TOWERS ARE OPERATING AT MINIMUM FAN SPEED, THE LAG TOWER SHALL BE DISABLED AND THE LEAD TOWER'S AUTO ISOLATION VALVES SHALL CLOSE. SINGLE TOWER OPERATION SHALL CONTINUE TO MAINTAIN 50°F. IF LEAD TOWER VFD IS AT MINIMUM AND CWS FALLS BELOW 50°F, CONDENSER WATER BYPASS VALVE SHALL MODULATE OPEN TO MAINTAIN 50°F. AS CONDENSER WATER TEMPERATURE INCREASES, SEQUENCE SHALL BE REVERSED UNIL BOTH TOWERS ARE AGAIN OPERATIONAL. IF CONDENSOR WATER BYPASS-VALVE IS OPEN AT TIME OF LEAD CHILLER SHUTDOWN, BYPASS VALVE CLOSURE SHALL BE PART OF SHUTDOWN SEQUENCE PRIOR TO SHUTDOWN OF PUMPS.

CONDENSER WATER PUMPS SHALL BE OPERATED AND HAVE SPEED CONTROL BASED UPON TESTING, ADJUSTING, AND BALANCING. WHEN A SINGLE CHILLER AND CONDENSER WATER PUMP ARE OPERATING, VFD ON LEAD PUMP SHALL MODULATE TO FREQUENCY TO PROVIDE 750 GPM. WHEN BOTH CHILLERS AND CONDENSER WATER PUMPS ARE OPERATING, CONDENSER WATER PUMP VFD'S SHALL MODULATE TOGETHER TO A FREQUENCY TO PROVIDE 750 GPM. NOTE THAT WHEN CONDENSOR WATER BYPASS IS ACTIVE AND VFD SHALL OPERATE AT FREQUENCY PRIOR TO BYPASS SEQUENCE START. DURING SINGLE CHILLER DUAL TOWER OPERATION, SET EACH PUMP VFD SPEED AT 375 GPM.



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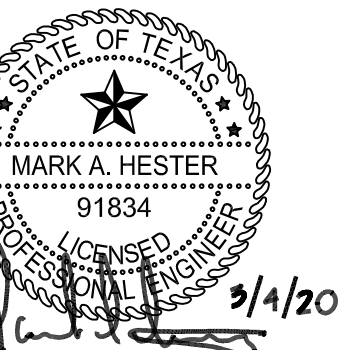


GENERAL NOTES:

1. SEE SHEET E0.00 FOR ADDITIONAL GENERAL NOTES AND REQUIREMENTS.
2. CONTACT EISD MAINTENANCE DEPARTMENT FOR REVIEW AND INSPECTION OF REMOVED EQUIPMENT FOR POSSIBLE SALVAGE. CONTRACTOR TO DISPOSE OF ALL EQUIPMENT AND MATERIALS NOT RETAINED BY OWNER.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND PROJECT REQUIREMENTS.

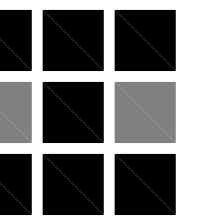
E.C.I.S.D. ROBERT VELA COOLING TOWER INSTALLATION

801 E Canton Rd, Edinburg, TX 78539



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Project No: 37841.001
 Issued: 03/04/20

Revisions:

No.	Date	Description

Drawn by: MH
 Checked by: MH
 Sheet Title:

ELECTRICAL SITE PLAN

E1.00

Sheet Number

⊕ 01 ELECTRICAL SITE PLAN
 1" = 50'-0"

