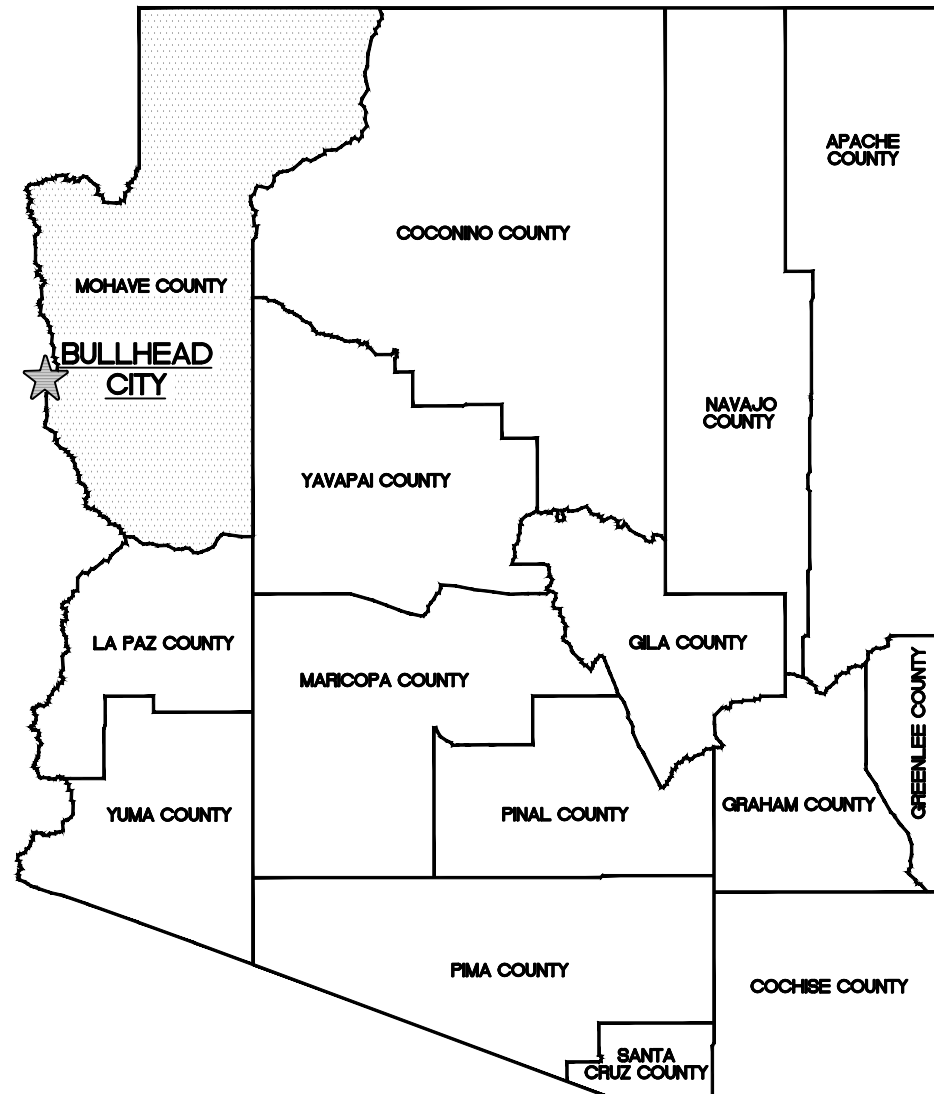
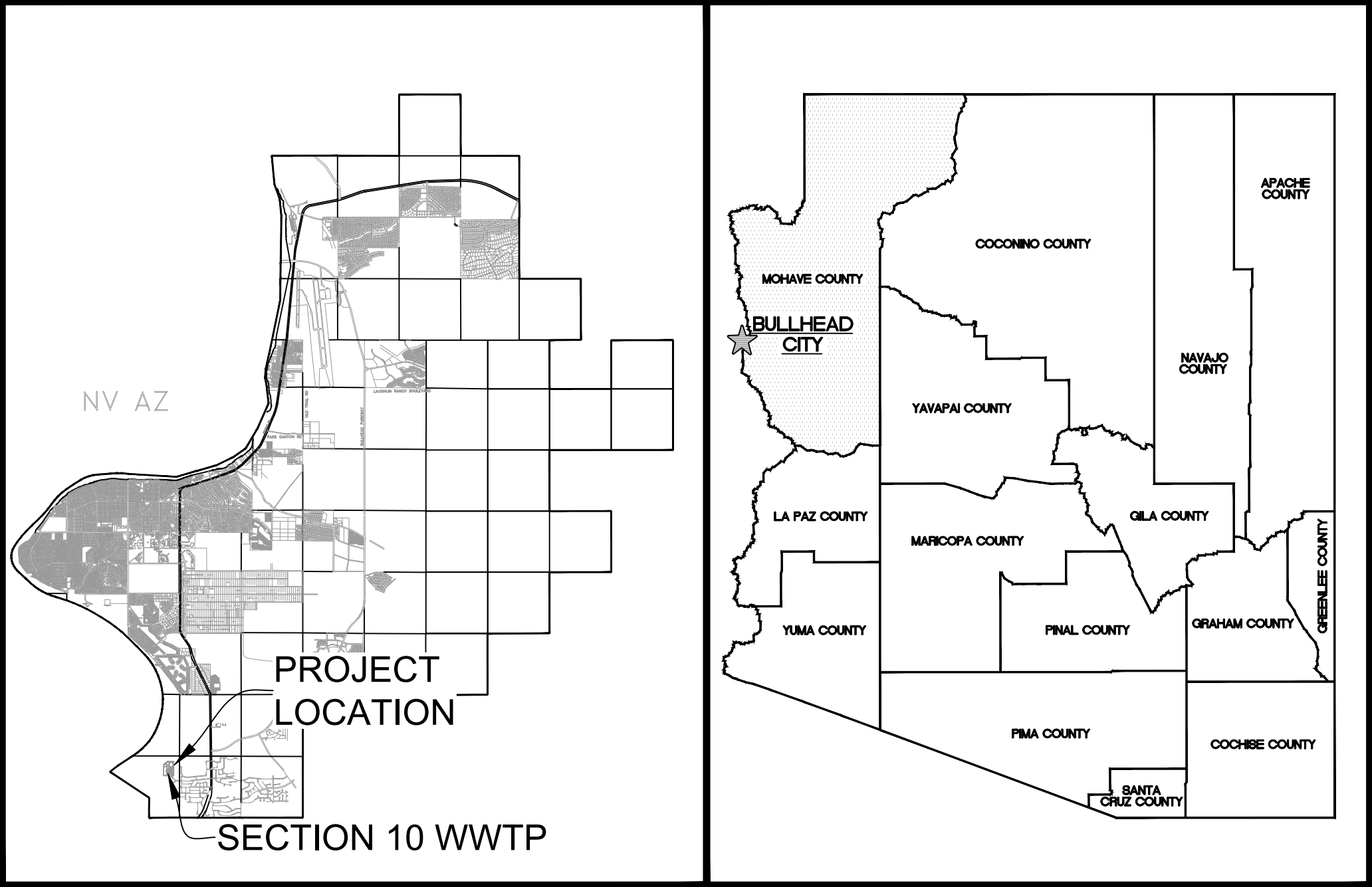


CITY OF BULLHEAD CITY
SECTION 10 WRP

BLOWER BUILDINGS IMPROVEMENTS

PROJECT NO. 27-U-001

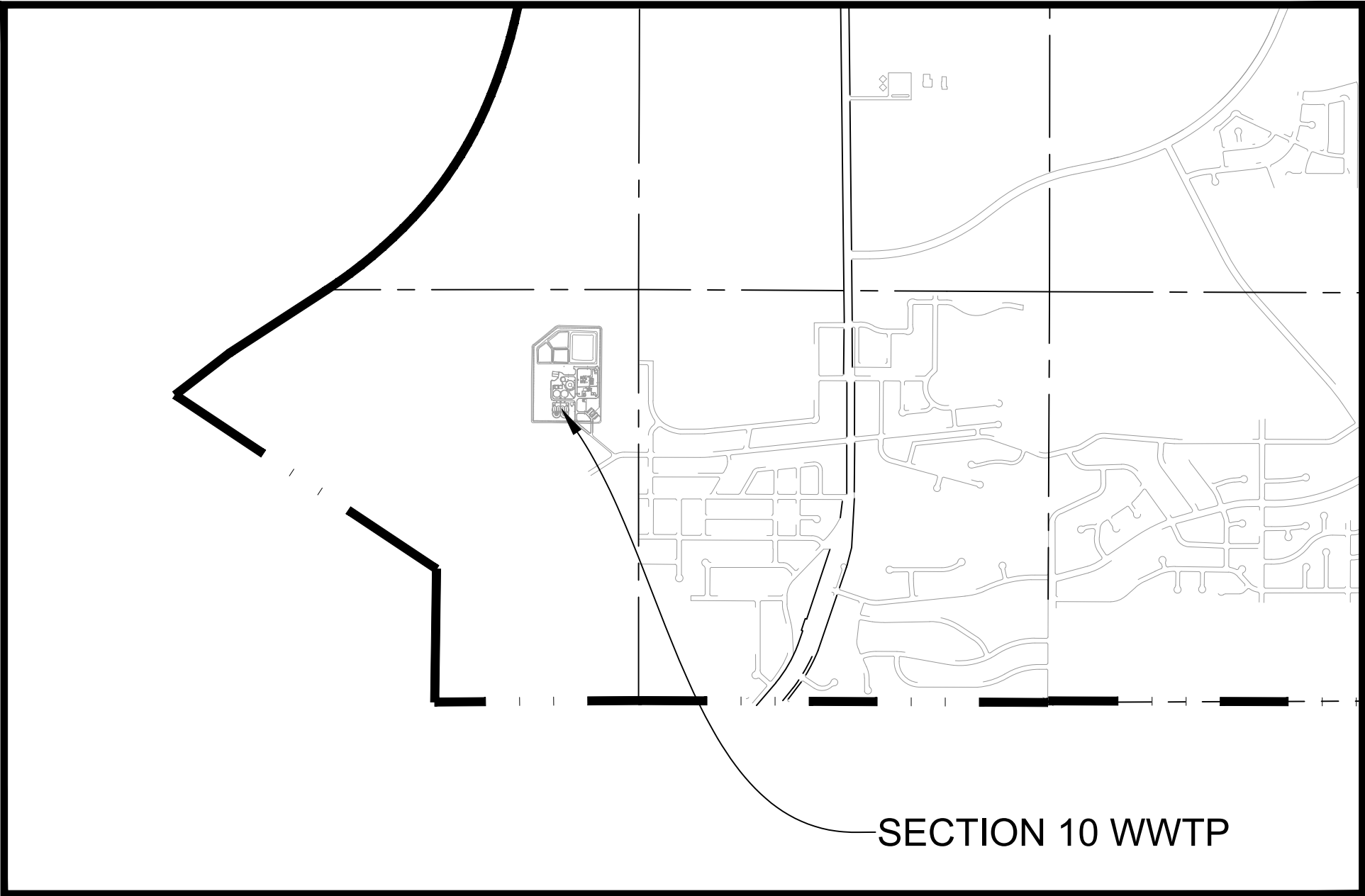
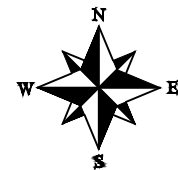
MAY 2026



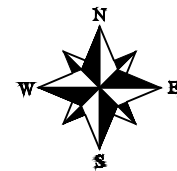
2355 TRANE ROAD
BULLHEAD CITY, ARIZONA 86442

PROJECT DESCRIPTION:

BHC VICINITY/AREA MAP
SCALE NTS



PROJECT SCOPE AREA MAP



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DESIGN: ECS
DATE: 05/2026

DRAWN: JAC

CHECKED: JCM

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

COVER



DWG. NO.

-

SHEET NO.

0 OF 68

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DRAWING INDEX			
DISCIPLINE	SHEET No.	DRAWING No.	SHEET TITLE
68		Total Number of Sheets	
GENERAL			
0	-	COVER	
1	G-1	INDEX OF SHEETS, LEGEND, GENERAL NOTES, AND DESIGN CRITERIA	
2	G-2	MISCELLANEOUS LEGENDS AND NOTES	
3	G-3	ABBREVIATIONS AND THRUST BLOCK DETAILS	
SITE/ CIVIL			
4	C-1	OVERALL SITE PLAN	
5	C-2	AERATION BLOWER BUILDING SITE PLAN & YARD PIPING PLAN & PROFILE	
6	C-3	DIGESTER BLOWER BUILDING SITE AND YARD PIPING PLAN - WEST	
7	C-4	DIGESTER BLOWER BUILDING SITE AND YARD PIPING PLAN - EAST	
8	C-5	DIGESTER BLOWER BUILDING YARD PIPING PLANS & PROFILES	
BUILDING			
9	C-6	AERATION BASIN BLOWER BUILDING MAIN FLOOR PLAN	
10	C-7	AERATION BASIN BLOWER BUILDING ELEVATIONS	
11	C-8	AERATION BASIN BLOWER BUILDING ELEVATIONS AND SECTIONS	
12	C-9	DIGESTER BLOWER BUILDING MAIN FLOOR PLAN	
13	C-10	DIGESTER BLOWER BUILDING ELEVATIONS	
14	C-11	DIGESTER BLOWER BUILDING ELEVATIONS AND SECTIONS	
15	C-12	BUILDING SECTIONS, DETAILS, AND SCHEDULES	
16	C-13	DOOR LEGEND AND DETAILS	
STRUCTURAL			
17	S-1	GENERAL STRUCTURAL NOTES	
18	S-2	GENERAL STRUCTURAL NOTES	
19	S-3	STATEMENT OF SPECIAL INSPECTIONS	
20	S-4	STRUCTURAL ABBREVIATIONS AND SYMBOLS	
21	S-5	AERATION BASIN BLOWER BUILDING FOUNDATION/ MAIN FLOOR PLAN	
22	S-6	AERATION BASIN BLOWER BUILDING ROOF PLAN	
23	S-7	AERATION BSIN BLOWER BUILDING STRUCTURAL SECTION	
24	S-8	AERATION BASIN BLOWER BUILDING STRUCTURAL SECTIONS	
25	S-9	DIGESTER BLOWER BUILDING FOUNDATION/ MAIN FLOOR PLAN	
26	S-10	DIGESTER BLOWER BUILDING ROOF PLAN	
27	S-11	DIGESTER BLOWER BUILDING STRUCTURAL SECTION	
28	S-12	DIGESTER BLOWER BUILDING STRUCTURAL SECTIONS	
29	S-13	STRUCTURAL DETAILS	
30	S-14	STRUCTURAL DETAILS	
31	S-15	STRUCTURAL DETAILS	
MECHANICAL			
32	M-1	AERATION BASIN BLOWER BUILDING PLAN	
33	M-2	AERATION BASIN BLOWER BUILDING SECTIONS	
34	M-3	AERATION BASIN BLOWER BUILDING SECTIONS	
35	M-4	DIGESTER BLOWER PLAN	
36	M-5	DIGESTER BLOWER SECTIONS	
HVAC			
37	H-1	HVAC LEGEND & NOTES	
38	H-2	HVAC SCHEDULES & DETAILS	
39	H-3	AERATION BLOWER BUILDING HVAC PLAN	
40	H-4	DIGESTER BLOWER BUILDING HVAC PLAN	
41	H-5	HVAC SECTIONS - DIGESTER BLOWER BUILDING	
42	H-6	HVAC SECTIONS - AERATION BLOWER BUILDING	
ELECTRICAL			
43	E-1	ELECTRICAL LEGENDS, SYMBOLS, & ABBREVIATIONS	
44	E-2	CABLE & CONDUIT, LUMINAIRE, & MEP COORDINATION SCHEDULES	
45	E-3	ELECTRICAL SITE PLAN	
46	E-4	EXISTING BLOWER BUILDING ELECTRICAL PLAN	
47	E-5	AERATION BASIN BLOWER BUILDING ONE-LINE DIAGRAM	
48	E-6	CONDUIT ROUTING SCHEMATIC	
49	E-7	AERATION BASIN BLOWER BUILDING POWER & CONTROLS PLAN	
50	E-8	AERATION BASIN BLOWER BUILDING RECEPTACLE & LIGHTING PLAN	
51	E-9	AERATION BASIN BLOWER BUILDING ONE-LINE DIAGRAM & DETAILS	
52	E-10	AERATION BASIN BLOWER BUILDING PANEL SCHEDULE	
53	E-11	DIGESTER BLOWER BUILDING POWER & CONTROLS PLAN	
54	E-12	DIGESTER BLOWER BUILDING RECEPTACLE & LIGHTING PLAN	
55	E-13	DIGESTER BLOWER BUILDING ONE-LINE DIAGRAM & DETAILS	
56	E-14	TYPICAL VFD MOTOR CONTROL SCHEMATIC	
57	E-15	DIGESTER BLOWER BUILDING PANEL SCHEDULE	
58	E-16	CONDUIT STUB-UP DETAIL & EXTERIOR LIGHTING CONTROL DIAGRAM	
59	E-17	ELECTRICAL DETAILS	
INSTRUMENTATION			
60	I-1	PROCESS INSTRUMENTATION LEGEND	
61	I-2	AERATION BLOWER BUILDING PID 1	
62	I-3	DIGESTER BLOWER BUILDING PID 1	
63	I-4	PROCESS & INSTRUMENTATION DIAGRAM	
64	I-5	PROCESS & INSTRUMENTATION DIAGRAM	
STANDARD DETAILS			
65	SD-1	STANDARD DETAILS	
66	SD-2	STANDARD DETAILS	
67	SD-3	STANDARD DETAILS	
68	SD-4	STANDARD DETAILS	

DESIGN CRITERIA:

AERATION BASIN BLOWERS

Type	Turbo
Quantity	3 (2 Duty, 1 Standby) & 1 Future
Capacity (each)	3552 cfm
Drive	Variable Frequency
Maximum Discharge Pressure	15 psi
Motor Size	200 HP

DIGESTER BLOWERS

Type	Hybrid Positive Displacement
Drive	Variable Frequency
Quantity	3 (2 Duty, 1 Standby), 2 Future
Capacity (2 Blowers)	1,940 scfm
Discharge Pressure	8.0 psi
Motor Size	125 hp
Capacity (1 Blower)	1,125 scfm
Discharge Pressure	6.7 psi
Motor Size	60 hp

GENERAL NOTES:

- ALL ITEMS OF WORK UNDER THIS CONTRACT WILL BE COMPLETED IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS CONTAINED IN THE PROJECT MANUAL.
- THE CONTRACTOR SHALL RESTORE ALL EXST ROADWAY AND SIDEWALK SURFACES TO EQUAL OR BETTER CONDITION THAN EXISTED PRIOR TO CONSTRUCTION ACTIVITIES, AS DETERMINED BY OWNER AND THE ENGINEER.
- THE CONTRACTOR SHALL NOTIFY ONE CALL 811 FOR ONSITE UTILITY LOCATION. ALL EXISTING UTILITIES SHALL BE MARKED BEFORE DIGGING.
- THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES AND MANHOLES TO FINAL GRADE UPON COMPLETION OF ALL CONSTRUCTION. ANY BOXES OR MANHOLES DAMAGED OR OTHERWISE DISTURBED BY THE CONTRACTOR OR ANY SUBCONTRACTOR SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR. THIS WORK SHALL BE INCIDENTAL TO THE PROJECT, SEPARATE PAYMENT WILL NOT BE MADE.
- THE CONTRACTOR SHALL TAKE APPROPRIATE EROSION CONTROL MEASURES PRIOR TO AND DURING CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN SERVICE OF ALL EXISTING UTILITIES. IF SAID SERVICE IS DAMAGED, THE CONTRACTOR SHALL IMMEDIATELY REPAIR THE DAMAGE AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL BACKFILL ALL EXCAVATED AREAS TO FINISHED GRADE AND PROVIDE POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES.
- THE CONTRACTOR SHALL NOTIFY THE OWNER A MINIMUM OF 48 HOURS PRIOR TO BEGINNING ANY WORK REQUIRING MODIFICATIONS OF AND/OR IN COORDINATION WITH THEIR FACILITIES.
- IN ADDITION TO A 21-DAY ADVANCE NOTICE PER SECTION 01 14 16, CONTRACTOR SHALL NOTIFY OWNER AT LEAST 72 HOURS BEFORE BEGINNING ANY WORK REQUIRING UTILITY SERVICE INTERRUPTIONS.
- ALL UTILITY CONDUITS FOR ELECTRICAL SHALL BE BURIED A MINIMUM 24" FROM FINISHED GRADE WITH BEDDING AND BACKFILL PER SECTION 31 23 33, TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANCT STRUCTURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE PERMITS REQUIRED FOR CONSTRUCTION AND COMPLYING WITH ALL TERMS OF THE PERMITS. NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK.
- THE LOCATION, DEPTH, AND SIZE OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS IS APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE, LOCATION, DEPTH, SIZE, LINE AND GRADE OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING FACILITIES DUE TO FAILURE TO LOCATE OR PROVIDE PROPER PROTECTION WHEN LOCATION IS KNOWN.
- CONTRACTOR SHALL COORDINATE EXACT LOCATION, SIZE, AND ACCESS TO STAGING AREAS WITH OWNER AND ENGINEER.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY UTILITIES, INCLUDING ELECTRICAL SERVICE DURING CONSTRUCTION.

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DATE: 05/2026		
REVISION	DATE	DESCRIPTION

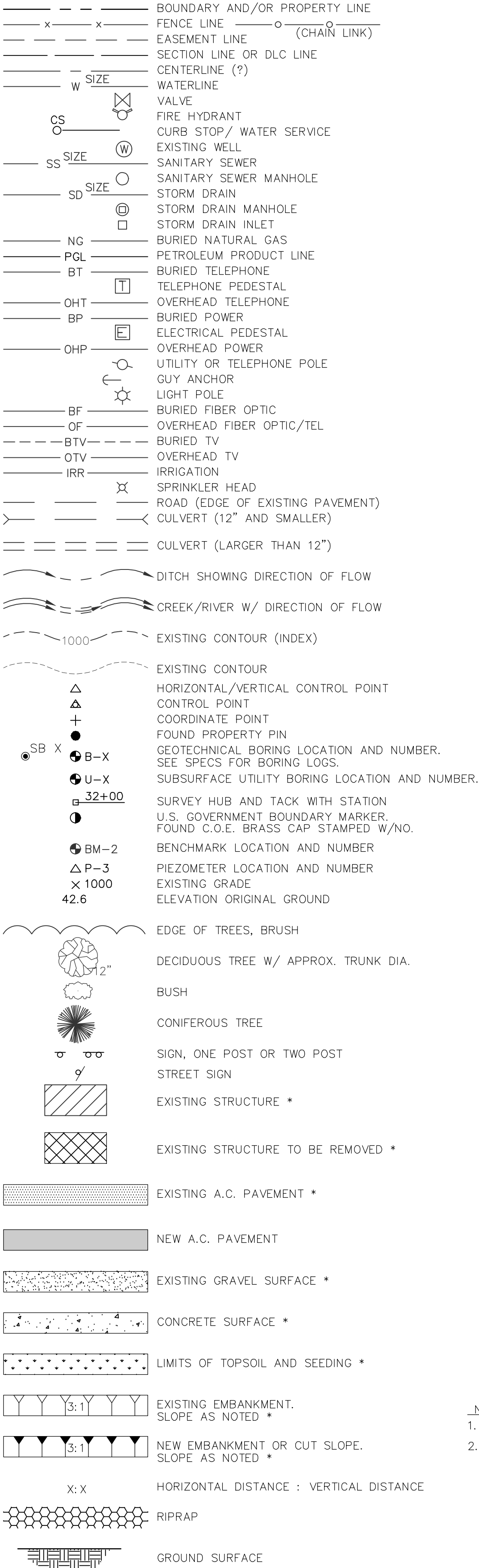
BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

INDEX OF SHEETS, LEGEND, GENERAL NOTES, AND DESIGN CRITERIA



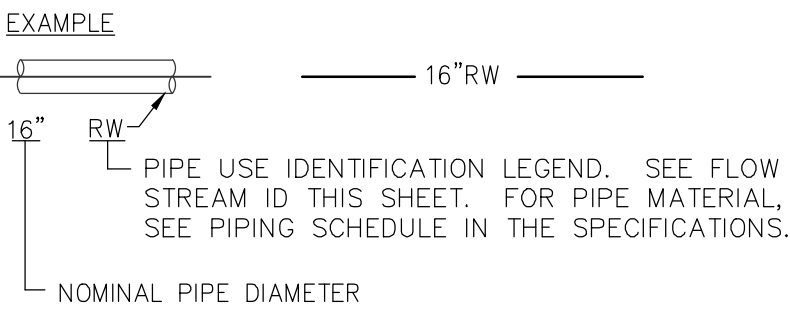
TOPOGRAPHIC LEGEND



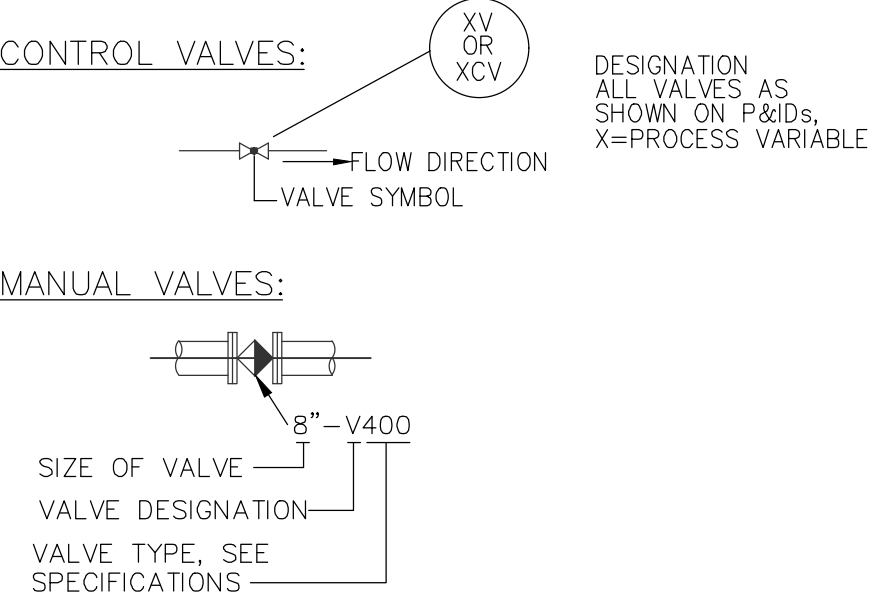
MECHANICAL LEGEND AND NOTES

- GENERAL PIPING NOTES
- LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS. MINIMUM COVER SHALL BE 3'-0" UNLESS OTHERWISE SHOWN.
 - SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
 - LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. FINAL SUPPORT REQUIREMENTS SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. COSTS ARE INCIDENTAL TO THE PROJECT. MAXIMUM SPACING SHALL BE AS SPECIFIED.
 - APPROPRIATE STANDARD WALL PIPE DETAIL SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL.
 - ALL FLEXIBLE CONNECTORS OR FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH RESTRAINED JOINTS AND THRUST TIES, BLOCKS, OR ANCHORS, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
 - SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE DRAWINGS, WHEREVER APPLICABLE. ALL OF THE VARIOUS APPLICATIONS ARE NOT NECESSARILY USED IN THE PROJECT.
 - ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED, EXCEPT WELDED, GROOVED END OR SCREWED PIPING, SHALL BE PROVIDED WITH RESTRAINED JOINTS AT ALL DIRECTION CHANGES, UNLESS OTHERWISE NOTED.
 - FLANGED COUPLING ADAPTOR IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE RESTRAINED COUPLING ADAPTOR.
 - VALVE BOXES REQUIRED FOR ALL VALVES IN A BURIED SERVICE.
 - NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS ARE ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
 - THE CONTRACTOR FOR THIS CONTRACT IS RESPONSIBLE FOR THE COORDINATING AND PERFORMING THE CONNECTION OF THE PIPING AND ASSOCIATED APPURTENANCES INSTALLED UNDER THIS CONTRACT TO BOTH THE EXISTING PIPING AND FACILITIES AND TO THE WORK OF OTHER CONTRACTORS, AS NOTED.
 - PRIOR TO SUBMITTING PIPING DRAWINGS FOR ANY NEW PIPE THAT IS TO CONNECT TO AN EXISTING PIPE OR STRUCTURE, THE CONTRACTOR SHALL EXPOSE THE EXISTING PIPE OR STRUCTURE TO VERIFY ITS EXACT LOCATION. SIZE, MATERIALS, AND INVERT ELEVATIONS.

PIPING DESIGNATION

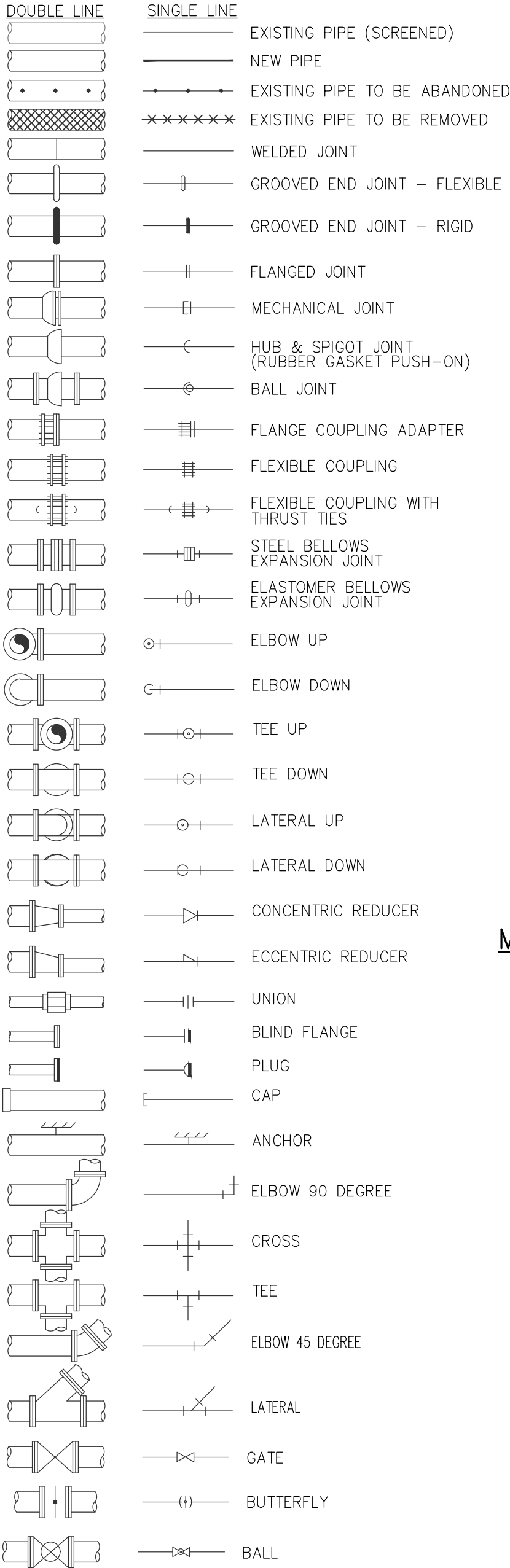


VALVE DESIGNATIONS



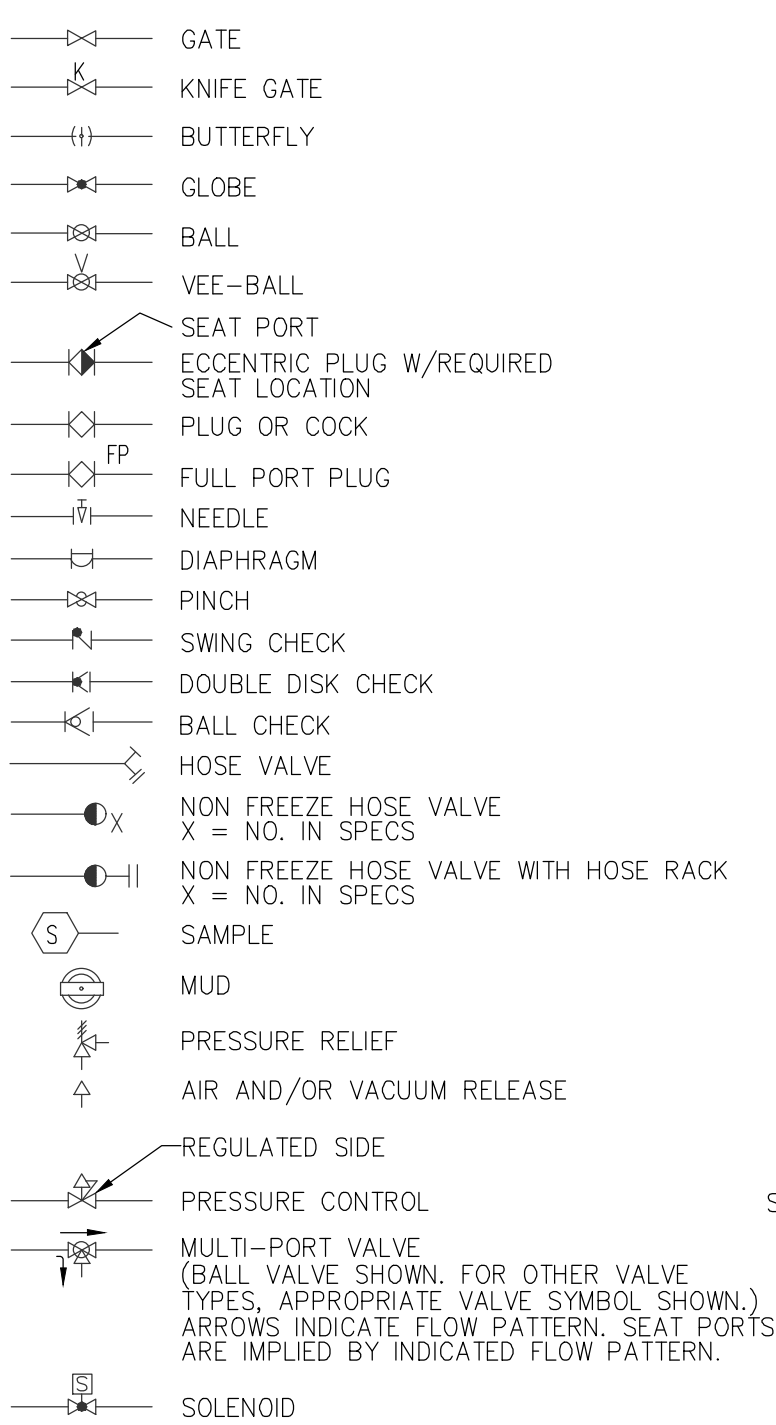
- NOTES:
- * SYMBOL USED ONLY WHERE REQUIRED FOR CLARITY.
 - IN GENERAL, EXISTING STRUCTURES AND FACILITIES ARE NOTED AS "EXISTING" AND ARE SHOWN IN LIGHT LINE WEIGHTS, OR AS SCREENED BACKGROUND. NEW STRUCTURES ARE SHOWN IN HEAVY LINE WEIGHTS.

PIPE AND FITTING SYMBOLS

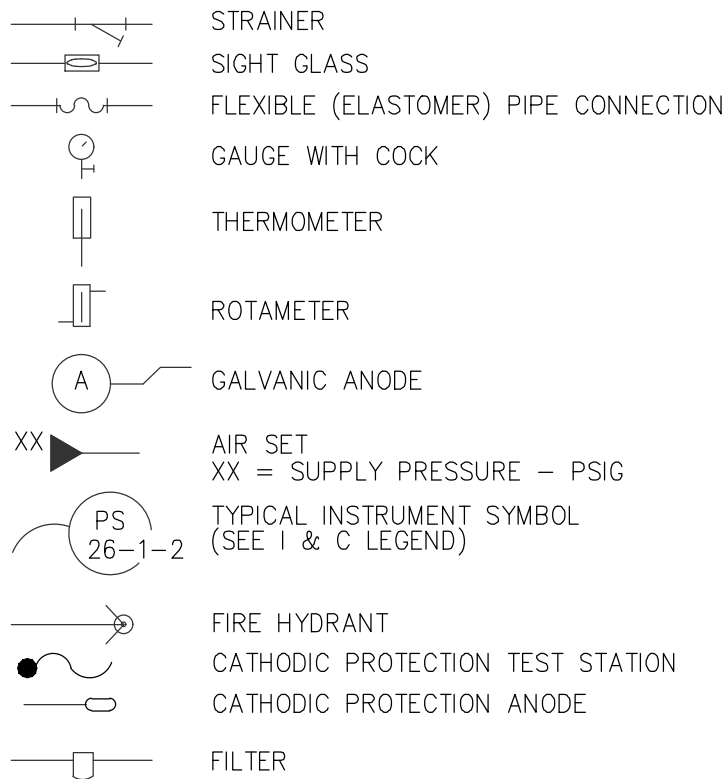


- NOTES:
- ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
 - SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
 - EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY LINED.
 - UNDERGROUND PIPING MAY BE SHOWN DASHED ON MECHANICAL DRAWINGS.

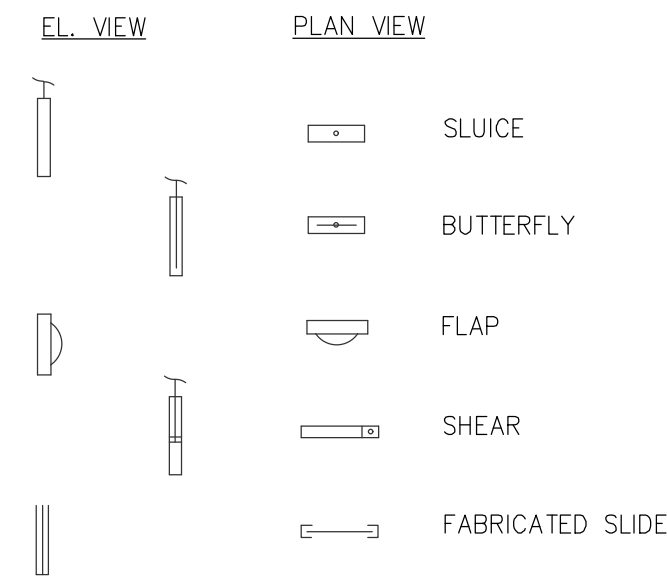
VALVE SYMBOLS



MISCELLANEOUS PIPING SYMBOLS

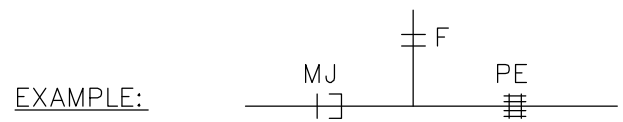


GATE SYMBOLS

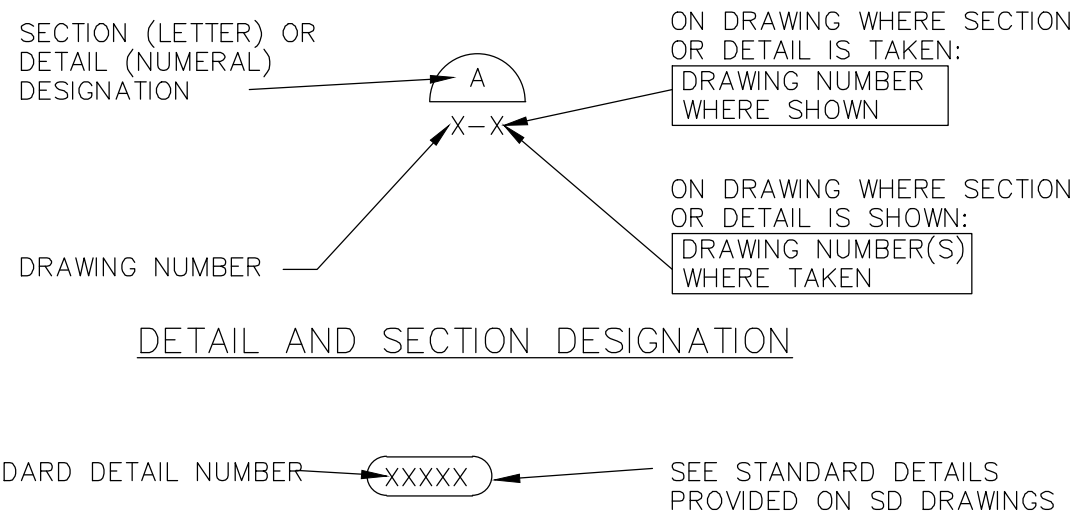


PIPE AND FITTING END PATTERNS

- B BELL
S SPIGOT
F FLANGE
PE PLAIN END
GE GROOVED END
MJ MECHANICAL JOINT
PO PUSH-ON



GENERAL DESIGN DESIGNATIONS



STANDARD DETAIL DESIGNATION

GENERAL NOTES

- STANDARD SYMBOLS AND ABBREVIATIONS ARE SHOWN ON STANDARD LEGEND SHEETS. THEREFORE, SOME SYMBOLS OR ABBREVIATIONS SHOWN ON THE STANDARD LEGENDS MAY NOT BE SHOWN ON THE PLANS.

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CHECKED: JCM

DRAWN: DAH

DESIGN: ECS

DATE: 05/20/26

DESCRIPTION

REVISION DATE

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

MISCELLANEOUS
LEGENDS AND NOTES



DWG. NO.
G-2

SHEET NO.
2 OF 68

ABBREVIATIONS

	ANCHOR BOLT	FAB	FABRICATE	P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
ABDN	ABANDON	FB	FLAT BAR, FACE BRICK	PC	POINT OF CURVE
ABV	ABOVE	FC	FLEXIBLE COUPLING	PCP	PLANT CONTROL PANEL
AC	ASPHALTIC CONCRETE, ALTERNATING CURRENT	FCA	FLANGE COUPLING ADAPTER	PE	PLAIN END
ADDL	ADDITIONAL	FD	FLOOR DRAIN	PEN	PENETRATION
ADJ	ADJACENT, ADJUST	FDN	FOUNDATION	PERP	PERPENDICULAR
ADPTR	ADAPTER	FE	FINAL EFFLUENT	PH	PIPE HANGER
AFF	ABOVE FINISHED FLOOR	FES	FLARED END SECTION	PI	PRESSURE INDICATOR, POINT OF INTERSECTION
AFG	ABOVE FINISHED GRADE	FET	FLARED END TERMINAL	PJF	PREMOLDED JOINT FILLER
AHR	ANCHOR	F, EXT	FIRE EXTINGUISHER	PL	PLATE, PROPERTY LINE
ALUM	ALUMINUM	FF	FINISHED FLOOR	PLYWD	PLYWOOD
ALT	ALTERNATE	FG	FINISH GRADE	PMP	PLANT MONITORING PANEL
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FIN.	FINISH	PNL	PANEL
APPROX	APPROXIMATE	FHYD	FIRE HYDRANT	PRCST	PRECAST
APVD	APPROVED	FL	FLOOR, FLOW	PREFAB	PREFABRICATED
ARCH	ARCHITECTURE, ARCHITECTURAL	FLEX	FLEXIBLE	PRELIM	PRELIMINARY
ASPH	ASPHALT	FLG	FLANGE	PREP	PREPARE, PREPARATION
AVG	AVERAGE	FLL	FLOW LINE	PROP	PROPERTY
Ⓐ	AT	FLR	FLOOR	PRV	PRESSURE REDUCING VALVE
BD	BOARD	FM	FORCE MAIN	PS	PRESSURE SWITCH, PIPE SUPPORT
BE	BOTTOM ELEVATION	FOC	FACE OF CONCRETE	PT	POINT, POINT OF TANGENCY
BFVLV	BUTTERFLY VALVE	FRP	FIBERGLASS REINFORCED PLASTIC	PVC	POLYVINYL CHLORIDE
BETW	BETWEEN	FSTL	FABRICATED STEEL	PVMT	PAVEMENT
BF	BOTTOM FACE	FT	FOOT, FEET	RAD	RADIUS
BLDG	BUILDING	FTG	FOOTING, FITTING	RC	REINFORCED CONCRETE
BLK	BLOCK	F TO F	FACE TO FACE	RCP	REINFORCED-CONCRETE PIPE
BLW	BELOW	FWD	FORWARD	RD	ROAD, ROOF DRAIN
BM	BEAM, BENCHMARK	GA	GAGE, GAUGE	RDCR	REDUCER
BOT	BOTTOM	GAL	GALLON	REBAR	REINFORCEMENT BAR
BRG	BEARING	GALV	GALVANIZED	REF	REFERENCE
BRKT	BRACKET	GALVS	GALVANIZED STEEL	REIN	REINFORCE
BYP	BYPASS	GRD	GROUND	RELOC	RELOCATE, RELOCATION
CHAN	CHANNEL	GRTG	GRATING	REQD	REQUIRED
CHK	CHECK	OSKT	GASKET	REV	REVERSE
CI	CAST IRON	OSP	GALVANIZED STEEL PIPE	RJ	RESTRAINED JOINT
CIWJ	CAST-IRON PIPE MECHANICAL JOINT	CVL	GRAVEL	RST	REINFORCING STEEL
CIP	CAST-IRON PIPE FLANGED JOINT	QWB	GYPSUM WALLBOARD	RT	RIGHT
CIPC	CAST-IN-PLACE CONCRETE	HAS	HEADED ANCHOR STUD	RTU	REMOTE TERMINAL UNIT
CIRC	CIRCULAR	HB	HOSE BIB	R/W	RIGHT-OF-WAY
CJ	CONSTRUCTION JOINT, CONTROL JOINT	HD	HUB DRAIN	SAN	SANITARY
CL	CENTER LINE	HDW	HARDWARE	SCHED	SCHEDULE
CLDI	CEMENT LINED DUCTILE IRON	HDR	HEADER	SDWK	SIDEWALK
CLG	CEILING	HK	HOOK	SECT	SECTION
CLR	CLEAR, CLEARANCE	HM	HOLLOW METAL	SHT	SHEET
CMP	CORRUGATED METAL PIPE	HORIZ	HORIZONTAL	SIM	SIMILAR
CMU	CONCRETE MASONRY UNITS	HP	HORSEPOWER	SLP	SLOPE
CO	CLEANOUT	HR	HOSE RACK, HOUR	SP	SPACE, SPACED
COH	CITY OF HELENA	HT	HEIGHT, HEAT TRACE	SPEC	SPECIFICATION
COL	COLUMN	HV	HOSE VALVE	SPG	SPACING
COMB	COMBINATION	HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	SPRT	SUPPORT
CONC	CONCRETE OR CONCENTRIC	HWL	HIGH WATER LEVEL	SQ	SQUARE
CONN	CONNECT, CONNECTION	HWY	HIGHWAY	SQ FT	SQUARE FOOT
CONSTR	CONSTRUCTION	HYD	HYDRANT	SQ IN	SQUARE INCH
CONT	CONTINUE, CONTINUED, CONTINUOUS	ID	INSIDE DIAMETER	SST	STAINLESS STEEL
CONTR	CONTRACTOR	IE	INVERT ELEVATION	STA	STATION
COORD	COORDINATE	IF	INSIDE FACE	SS	SANITARY SEWER
CORR	CORRUGATED	IN.	INCH	STD	STANDARD
CP	CONTROL PANEL	INFL	INFLUENT	STIF	STIFFENER
CPLG	COUPLING	INSTL	INSTALL, INSTALLATION	STL	STEEL
C TO C	CENTER TO CENTER	INSTR	INSTRUMENT	STRUCT	STRUCTURE
CTR	CENTER	INSUL	INSULATE	SYM	SYMMETRICAL
CTU	CENTRAL TERMINAL UNIT	INT	INTERIOR	T&B	TOP AND BOTTOM
CTSK	COUNTERSINK	JB	JUNCTION BOX	TB	THRUST BLOCK
CU	CUBIC	JST	JOIST	TBC	TOP BACK OF CURB
CU FT	CUBIC FEET	JT	JOINT	TF	TOP FACE
CU IN	CUBIC INCH	L	ANGLE	TEMP	TEMPORARY, TEMPERATURE
CULV	CULVERT	LBS	POUNDS	THK	THICK
CU YD	CUBIC YARD	LF	LINEAR FEET	THRU	THROUGH
D	DRAIN	LNTL	LINTEL	T.O.	TOP OF
d	PENNY (NAIL SIZE)	LONG	LONGITUDINAL	T.P.	OUTSIDE TOP OF PIPE
DBA	DEFORMED BAR ANCHOR	LP	LOCAL PANEL	TOC	TOP OF CONCRETE, TOP OF CURB
DBL	DOUBLE	LR	LONG RADIUS	TST	TOP OF STEEL
DET	DETAIL	LS	LIFT STATION	TW	TOP OF WALL
DI	DUCTILE IRON, DRAIN INLET	LT	LEFT	TYP	TYPICAL
DIA	DIAMETER	LVL	LEVEL	UBC	UNIFORM BUILDING CODE
DIAG	DIAGONAL	LVR	LOUVER	UG	UNDERGROUND
DIM	DIMENSION	MATL	MATERIAL	ULT	UTIMATE
DIMJ	DUCTILE-IRON MECHANICAL JOINT	MAX	MAXIMUM	UTIL	UTILITY
DIR	DIRECTION	MCC	MACHINE BOLT	VB	VALVE, VOLT
DN	DOWN	MCP	MOTOR CONTROL CENTER	VERT	VALVE BOX
DR	DOOR	MCP	MOTOR CONTROL PANEL	VOL	VOLUME
DWG	DRAWING	MDT	MONTANA DEPARTMENT OF TRANSPORTATION	VRFY	VERIFY
EA	EACH	MECH	MECHANICAL	VTR	VENT THROUGH ROOF
EF	EACH FACE, EXHAUST FAN	MFD	MANUFACTURED	W	WIDTH
EL, ELEV	ELEVATION	MFR	MANUFACTURE, MANUFACTURER	WD	WOOD
ELB	ELBOW	MH	MANHOLE	W/O	WITHOUT
ELEC	ELECTRIC, ELECTRICAL	MIN	MINIMUM	WM	WATERLINE
ENCL	ENCLOSE	MISC	MISCELLANEOUS	WM	WIRE MESH, WATER MAIN
ENGR	ENGINEER	MJ	MECHANICAL JOINT	WS	WATERSTOP, WATER SURFACE
EOR	ENGINEER OF RECORD	MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS	WSTL	WELDED STEEL, WROUGHT STEEL
EP	EDGE OF PAVEMENT	NIC	NOT IN CONTRACT	WT	WEIGHT
EQL	EQUAL, EQUALLY	NO	NUMBER	WTR	WATER
EQL SP	EQUALLY SPACED	NOM	NOMINAL	WV	WATER VALVE
EQUIP	EQUIPMENT	NTS	NOT TO SCALE	WWF	WELDED WIRE FABRIC
EQUIV	EQUIVALENT	OAE	OR APPROVED EQUAL	WWM	WELDED WIRE MESH
EW	EACH WAY	OC	ON CENTER	WWTP	WASTEWATER TREATMENT PLANT
EXC	EXCAVATE	OD	OUTSIDE DIAMETER	XFMR	TRANSFORMER
EXH	EXHAUST	OF	OUTSIDE FACE	YD	YARD
EXP	EXPANSION	OHP	OVERHEAD POWER		
EXP JT	EXPANSION JOINT	OPNG	OPENING		
EXST	EXISTING				
EXT	EXTENSION, EXTERIOR				
F	FLANGE				
FA	FOUL AIR				

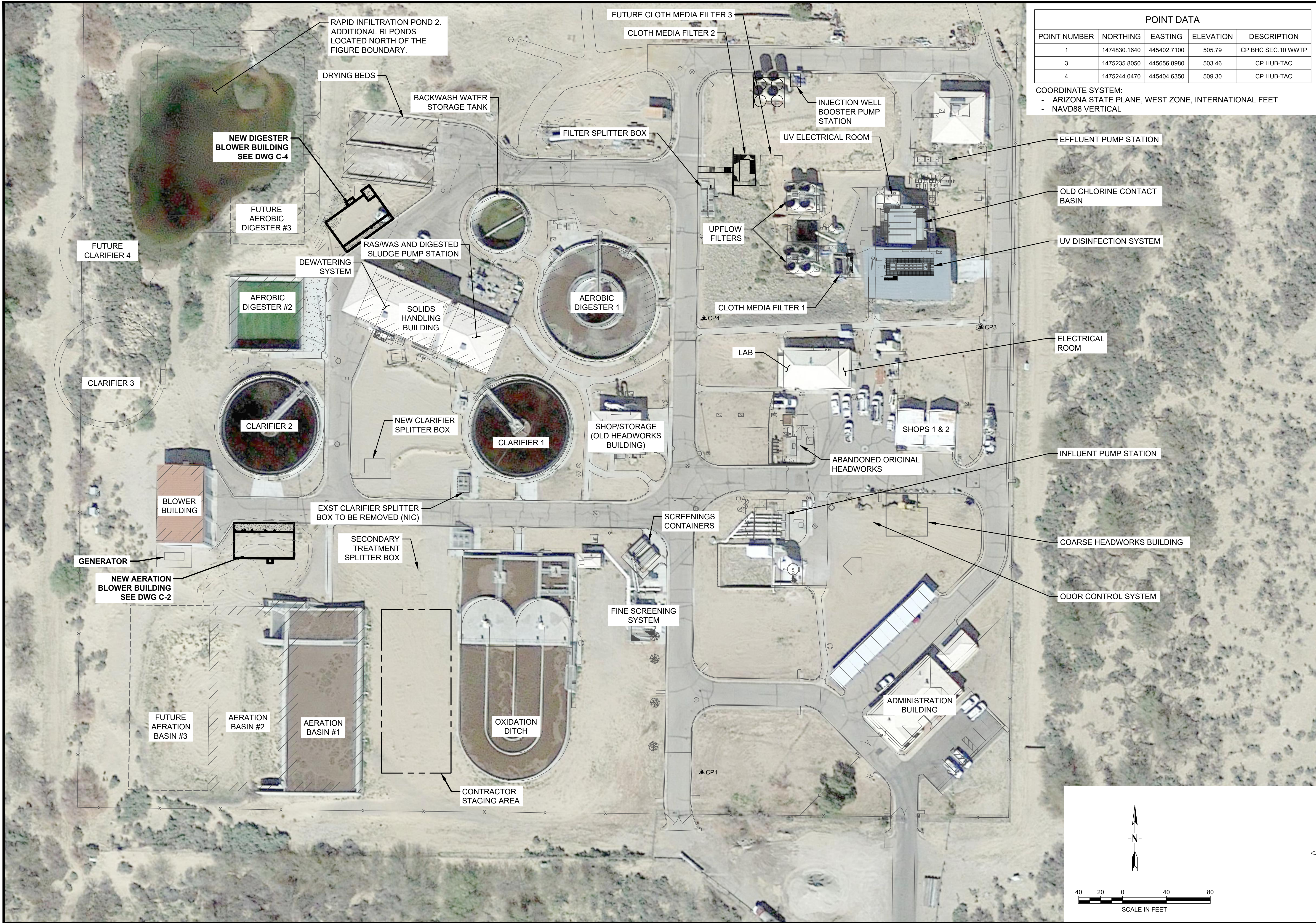
FLOW STREAM ID

BW	BACKWASH
DR	DRAIN
DS	DIGESTED SLUDGE
E	ELECTRICAL LINE
FA	FOUL AIR
IA	INSTRUMENT AIR
IRR	IRRIGATION WATER
MCL	MIXED LIQUOR
NaOCl	SODIUM HYPOCHLORITE
PA	PROCESS AIR
PE	PLANT EFFLUENT
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RS	RAW SEWAGE
RW	RECLAIMED WATER
SC	SCUM
SE	SECONDARY EFFLUENT
SS	SANITARY SEWER
TE	TERTIARY EFFLUENT
UW	UTILITY WATER (NON-POTABLE)
V	VENT
WAS	WASTE ACTIVATED SLUDGE

VALVE ABBREVIATIONS

CKV	CHECK VALVE
BFV	BUTTERFLY VALVE
BLV	BALL VALVE

R:\8519\017 00 - SECTION 10 BLOWER BUILDINGS\ACAD\SHEETS\C-1.DWG



POINT DATA				
POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1474830.1640	445402.7100	505.79	CP BHC SEC.10 WWTP
3	1475235.8050	445656.8980	503.46	CP HUB-TAC
4	1475244.0470	445404.6350	509.30	CP HUB-TAC

COORDINATE SYSTEM:
- ARIZONA STATE PLANE, WEST ZONE, INTERNATIONAL FEET
- NAVD88 VERTICAL

1 Engineering Place
Helena, MT 59602
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www.mh-m.net

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BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

OVERALL SITE PLAN

DESIGN: ECS
DATE: 05/2026

DRAWN: JAC

CHECKED: JCM

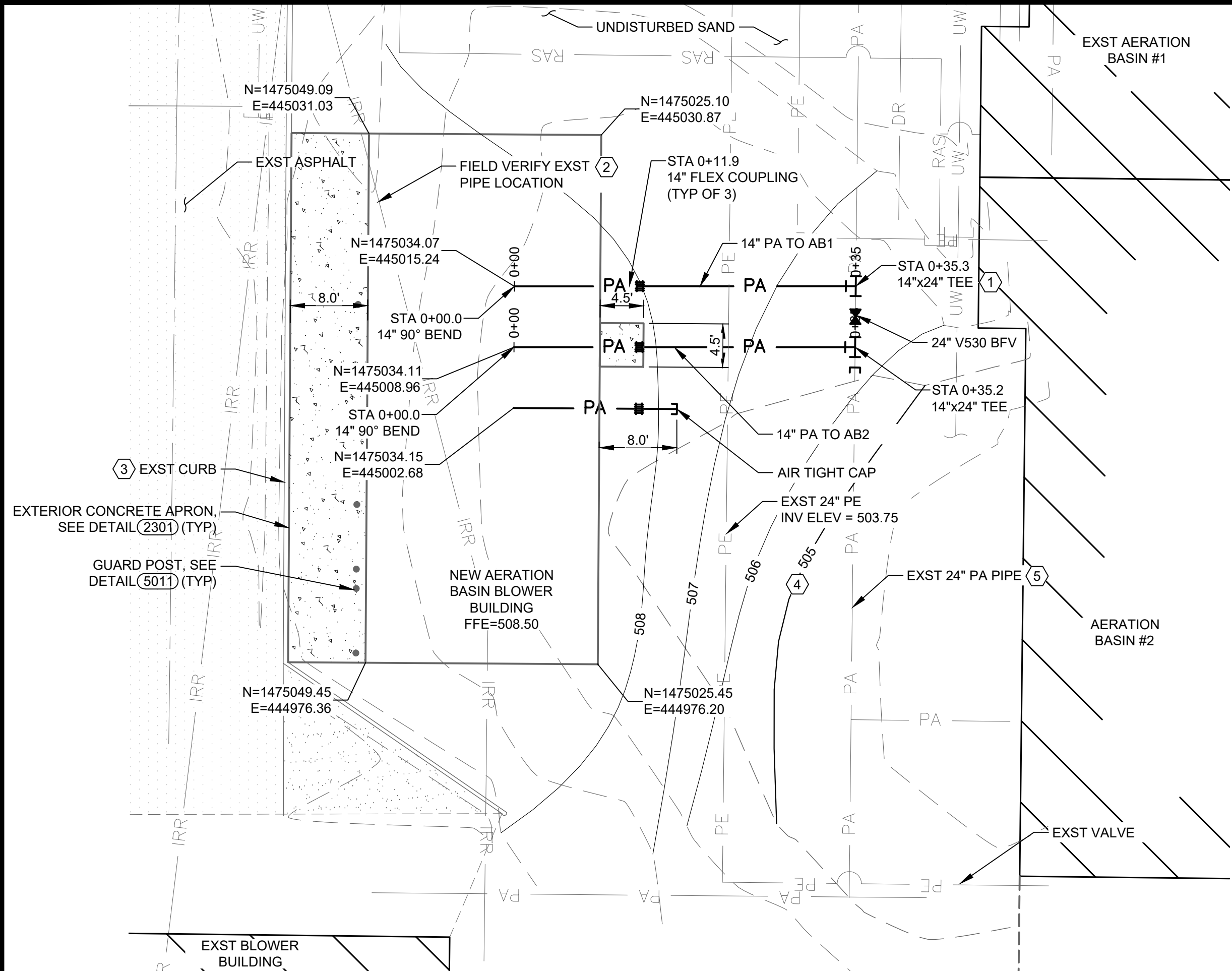
REVISION
DATE

DESCRIPTION

DWG. NO.
C-1

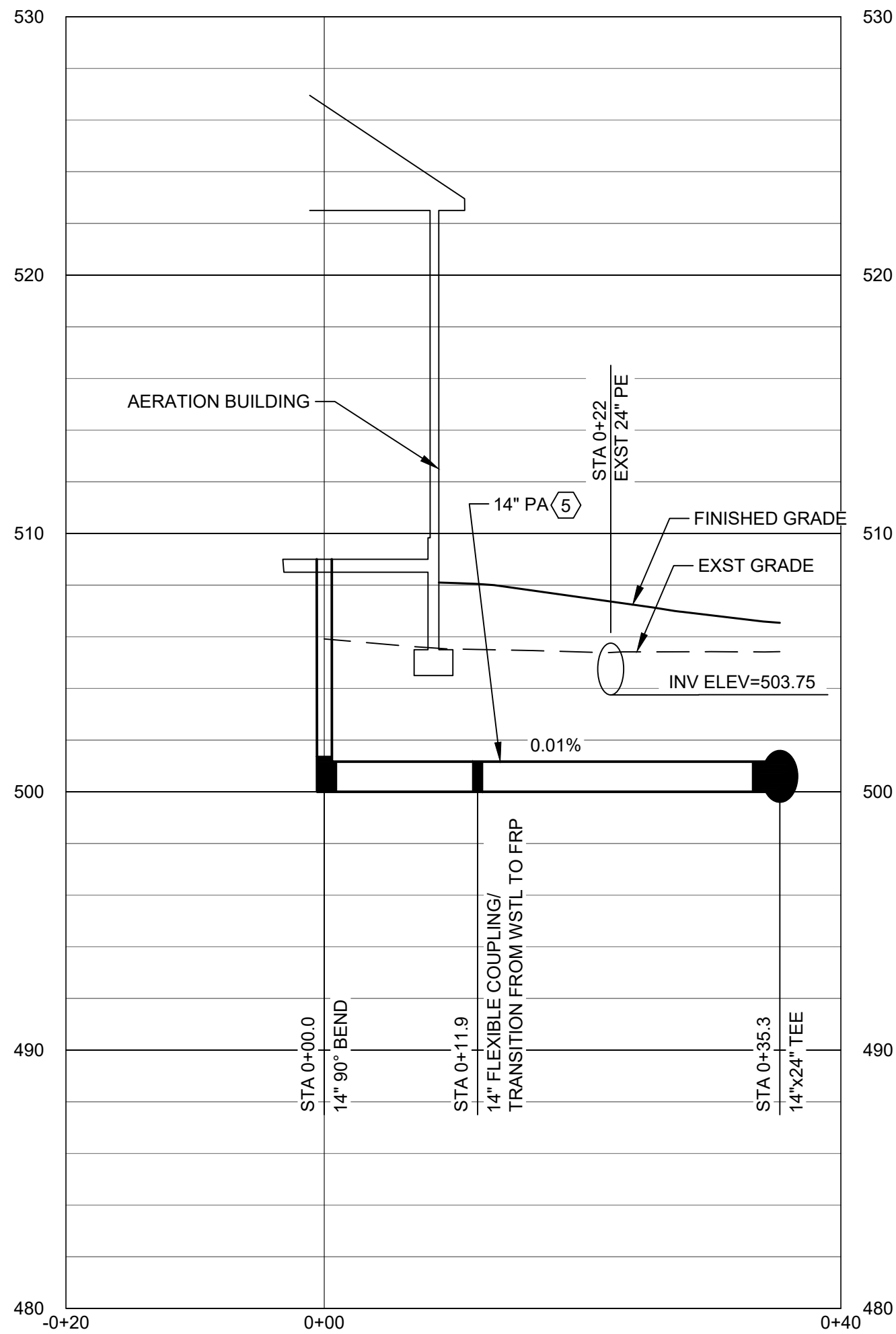
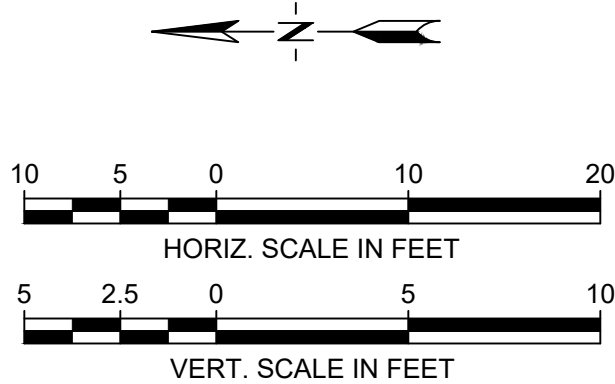
SHEET NO.
4 OF 68

R:\8519\017 00 - SECTION 10 BLOWER BUILDINGS\ACAD\SHEETS\C--2.DWG



KEY NOTES:

- 1 INSTALL 14"x24" TEE TO MAINTAIN PROCESS AIR TO AERATION BASIN #1 FROM THE EXISTING BLOWER BUILDING UNTIL BLOWERS ARE RELOCATED. CUT AND CAP PIPE TO EXISTING BLOWER BUILDING. INSTALL BLIND FLANGE ON TEE. PROVIDE COUPLINGS AS NECESSARY. EXT=ST PIPE IE=497.0 (FIELD VERIFY).
- 2 EXISTING PIPE ABANDONED. CUT, CAP, AND REMOVE AS NECESSARY.
- 3 CUT EXISTING CURB DOWN TO ACCOMMODATE DRAINAGE AND ACCESS TO APRON. CUTS AT EITHER END SHALL BE MADE AT 45 DEGREE ANGLES OR LESS. CONTRACTOR MAY REMOVE AND REPLACE CURB IN LIEU OF CUTTING.
- 4 GRADE SO NEW BUILDING FINISHED FLOOR IS 6 INCHES ABOVE EXISTING GRADE.
- 5 THE LOCATION AND ELEVATION OF THE EXISTING PA IS APPROXIMATE. CONTRACTOR SHALL ADJUST PIPE LENGTHS AND INVERT ELEVATIONS AFTER LOCATING THE EXISTING PIPE.



14" PA TO AB1 AND AB2



CHECKED: JCM

DRAWN: JAC

DESIGN: ECS

DATE: 05/2026

REVISION

DATE

DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATION BLOWER BUILDING SITE
PLAN & YARD PIPING PLAN & PROFILE



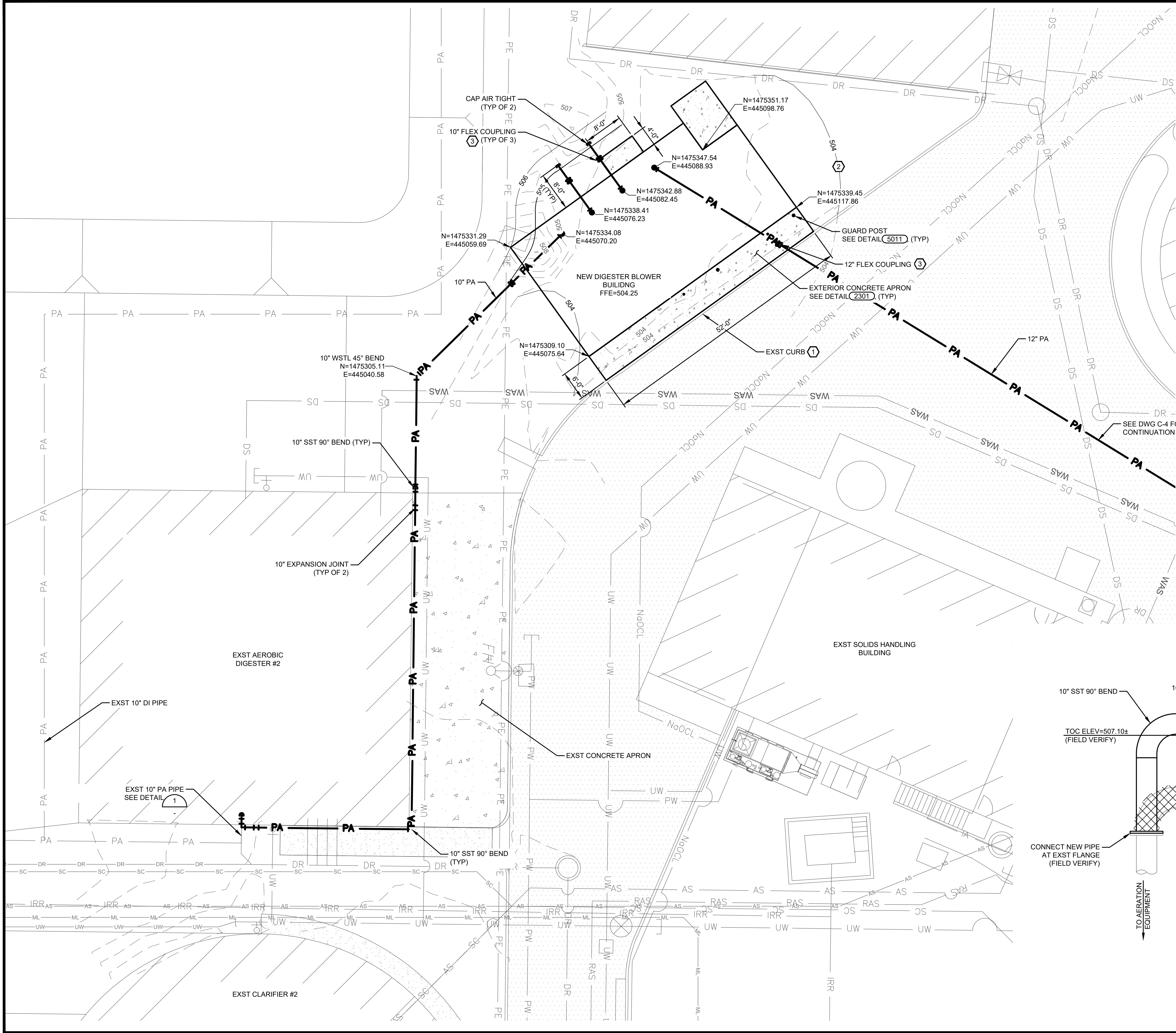
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SHEET NO.

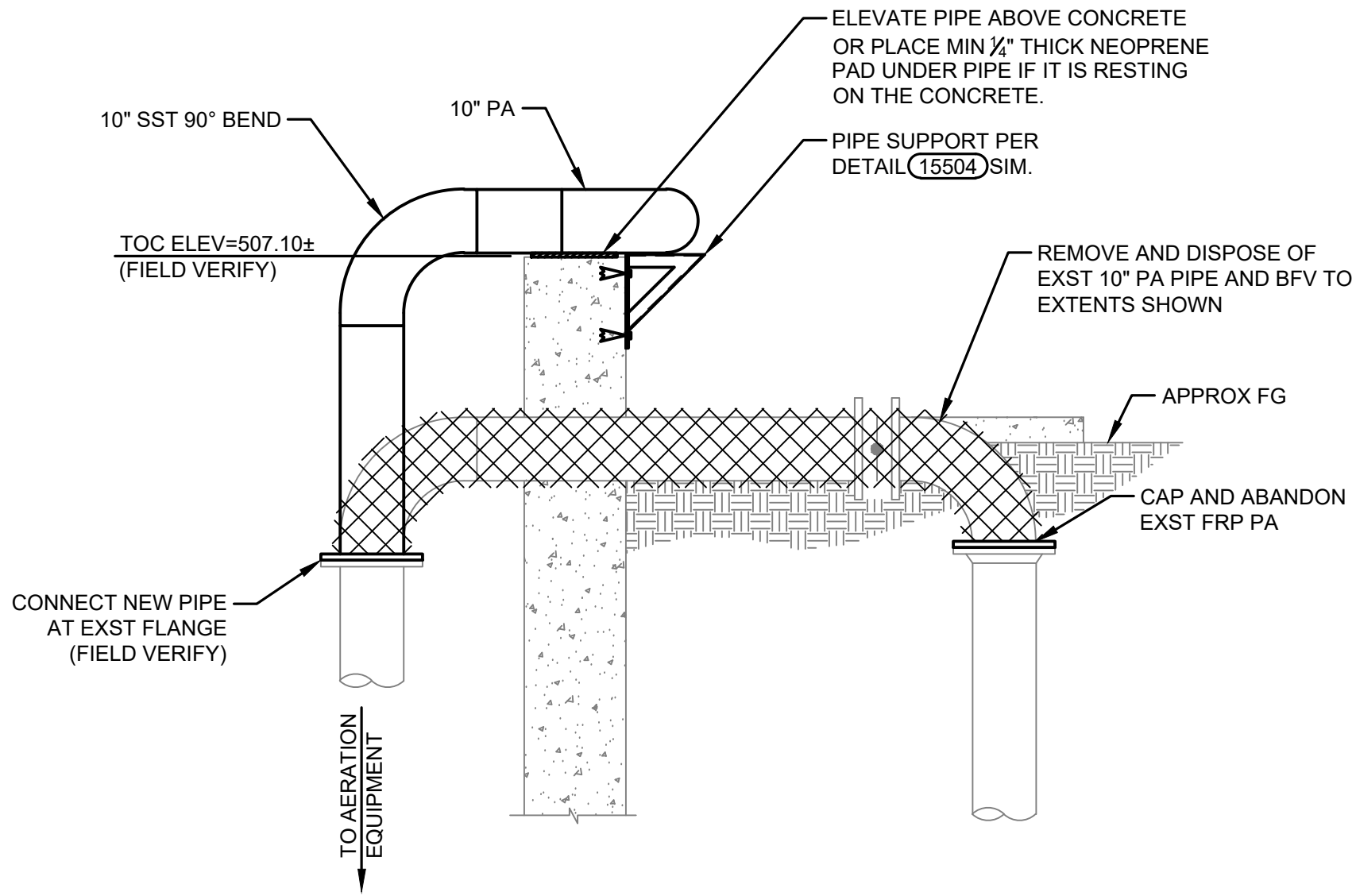
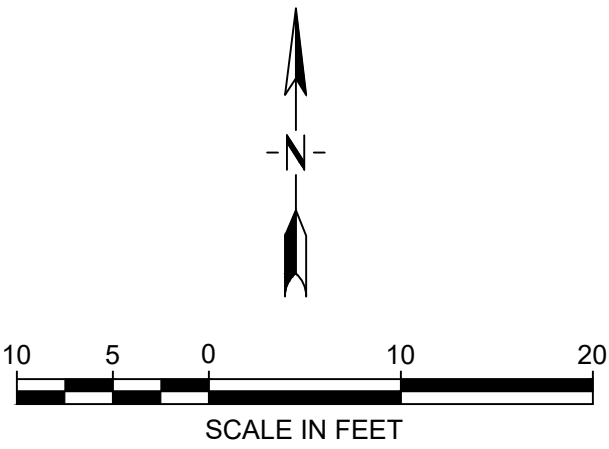
5 OF 68

R:\8519\017 00 - SECTION 10 BLOWER BUILDINGS\ACAD\ SHEETS\C-3.DWG

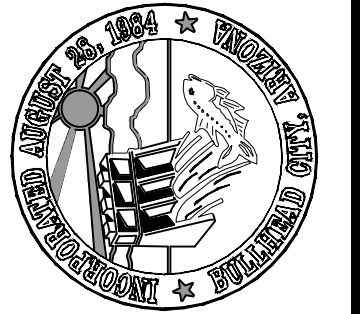


KEY NOTES

- 1 CUT EXISTING CURB DOWN TO ACCOMMODATE DRAINAGE AND ACCESS TO APRON. CUTS AT EITHER END SHALL BE MADE AT 45 DEGREE ANGLES OR LESS. CONTRACTOR MAY REMOVE AND REPLACE CURB IN LIEU OF CUTTING.
- 2 GRADE SO NEW BUILDING FINISHED FLOOR IS 6 INCHES ABOVE EXISTING GRADE.
- 3 INSTALL FLEX COUPLINGS 3'-0" OUTSIDE OF THE FOOTING.



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



DESIGN: ECS	DRAWN: JAC	CHECKED: JCM
DATE: 05/2026		
REVISION	DATE	DESCRIPTION

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
DIGESTER BLOWER BUILDING SITE
AND YARD PIPING PLAN - WEST



LOWER BUILDINGS IMPROVEMENTS

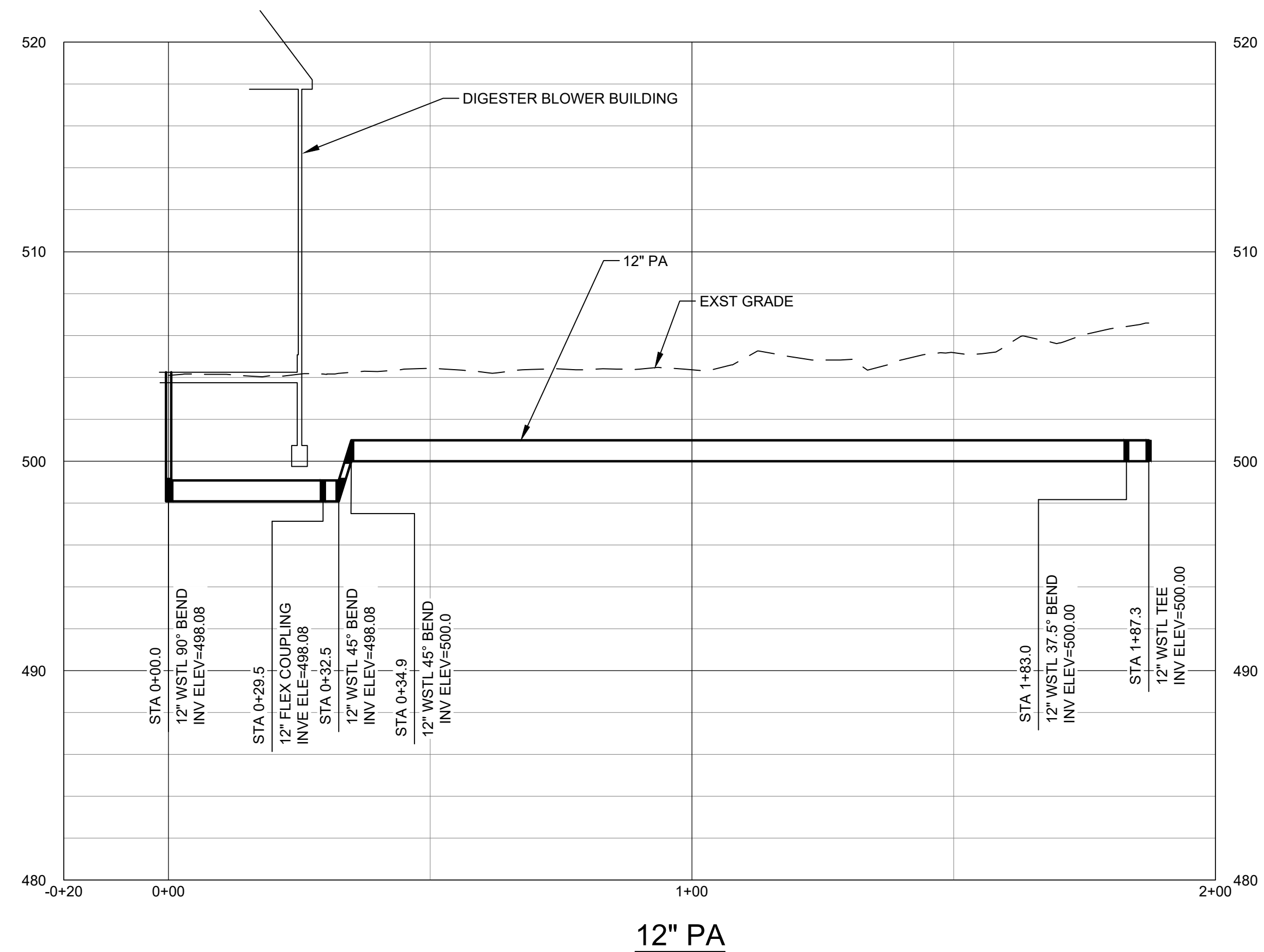
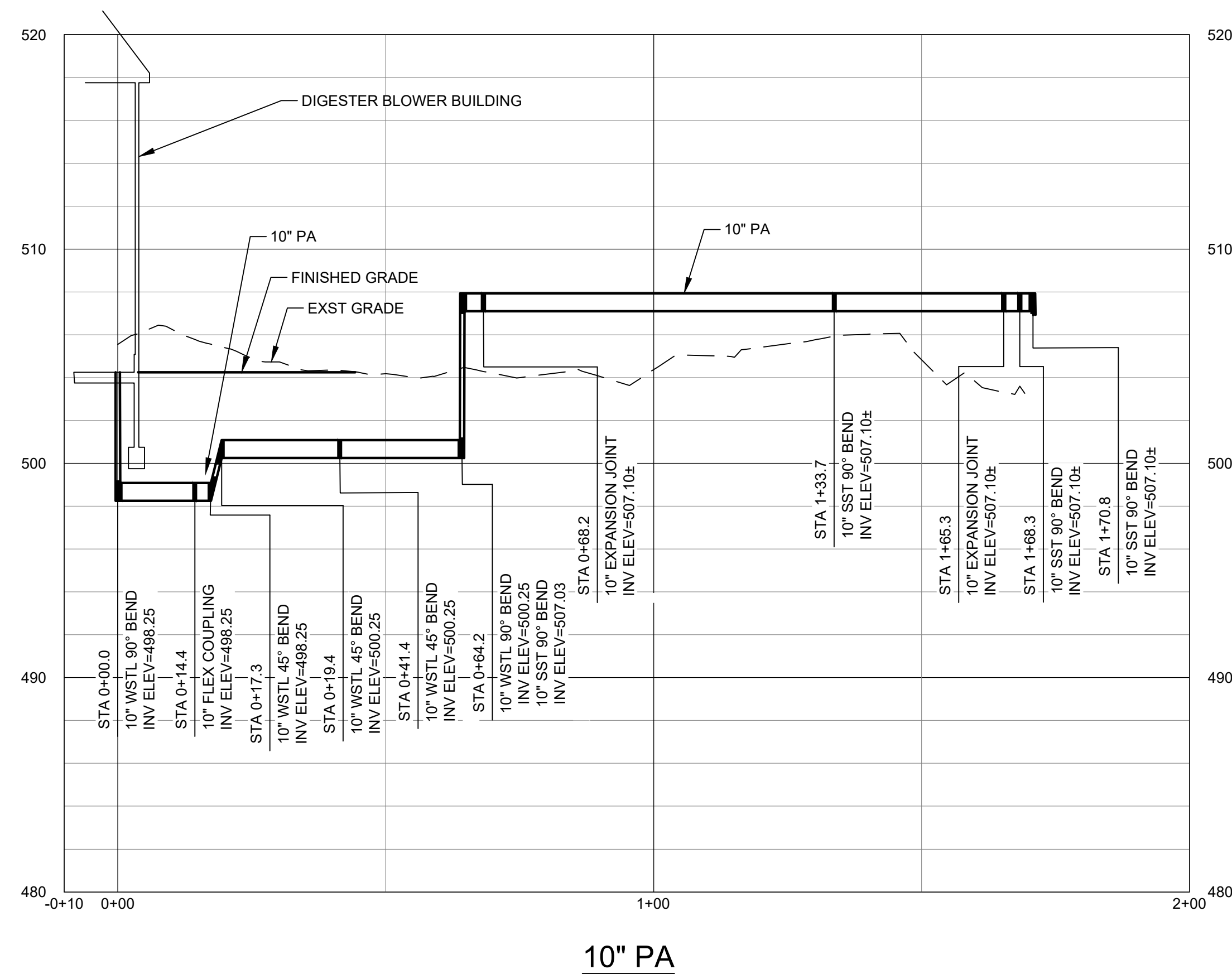
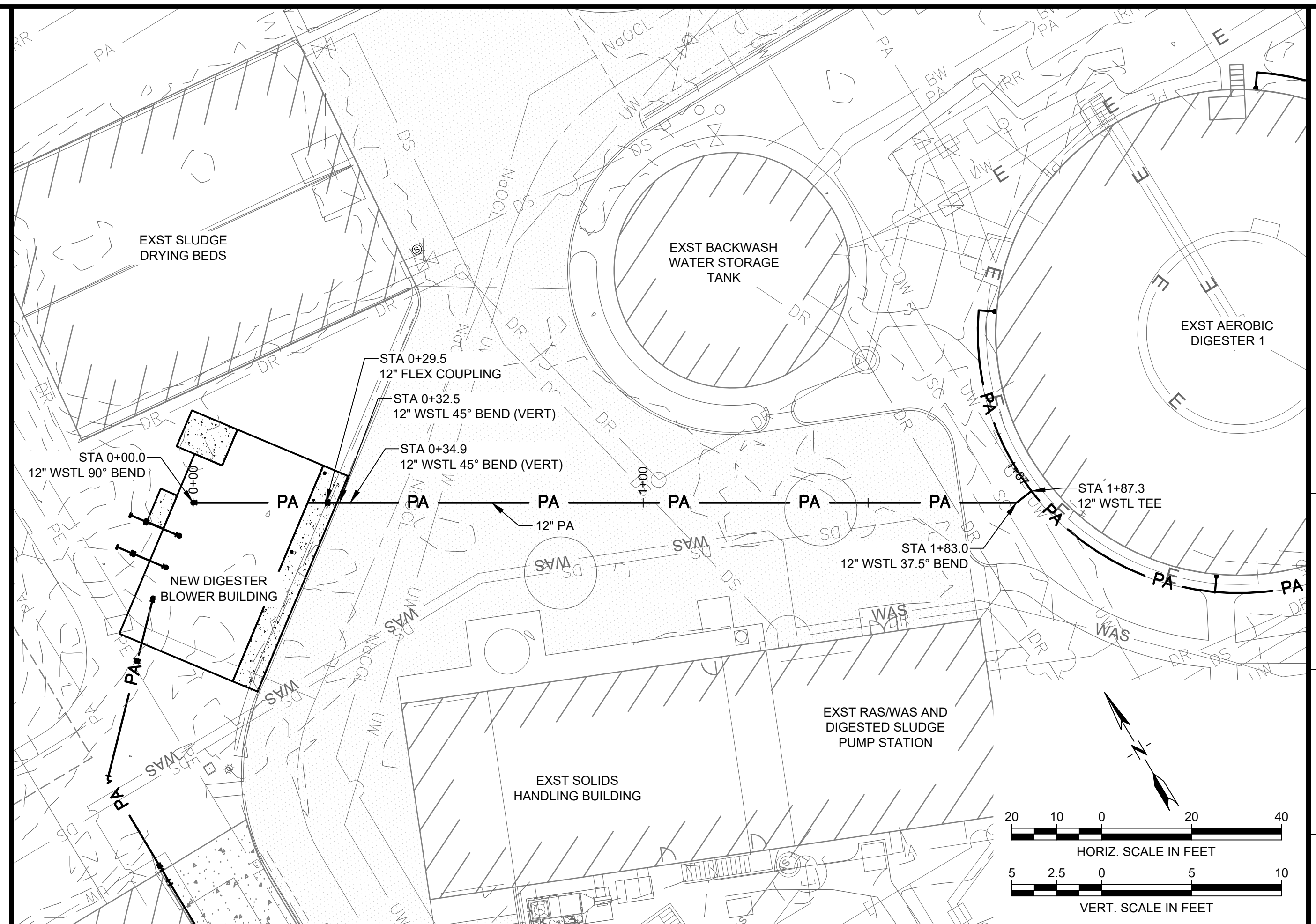
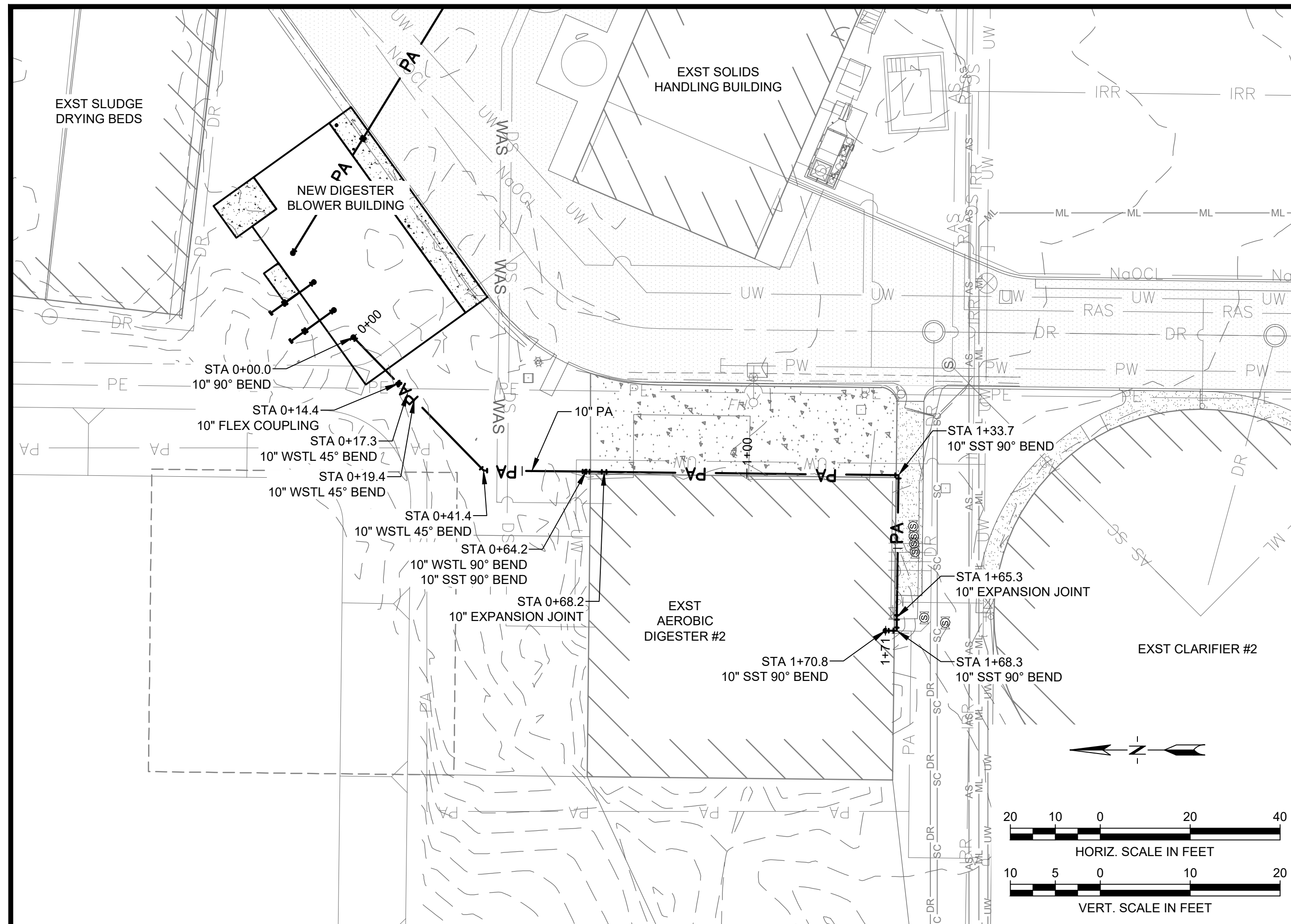
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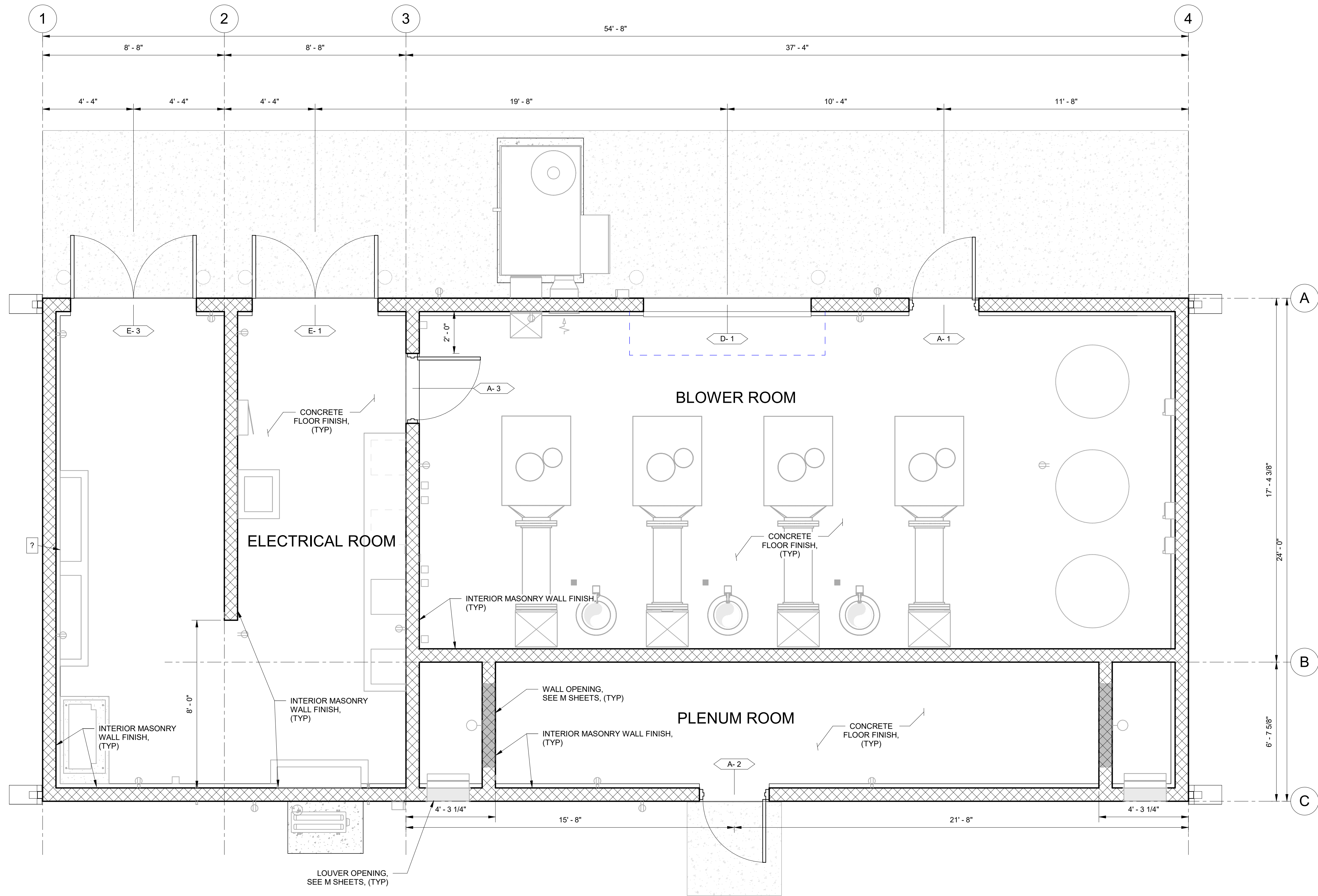


DESIGN: ECS	DRAWN: JAC	CHECKED: JCM
DATE: 05/2026		
REVISION	DATE	DESCRIPTION





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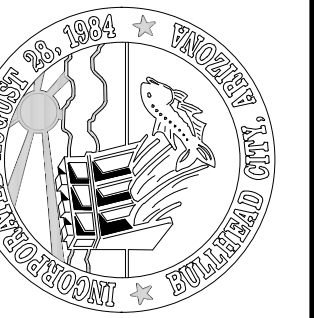


AERATION BASIN BLOWER BUILDING MAIN FLOOR PLAN

SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- A. COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:
1. COORDINATE LOCATION, SIZE, AND ANCHORAGE OF ELECTRICAL, MECHANICAL, AND PLUMBING EQUIPMENT: SEE ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
 2. SIZES AND LOCATIONS OF OPENINGS AND PENETRATIONS THROUGH WALLS AND FLOORS: SEE STRUCTURAL, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
- B. REFER TO THE S SERIES DRAWINGS FOR STRUCTURAL NOTES AND DETAILS. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS ON PLAN AND IT IS THE CONTRACTORS RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION WHICH THEY OCCUR.
- C. SEE DOOR SCHEDULE AND INFORMATION ON C-12 AND C-13.



CHECKED:JCM

DRAWN: DAH

DESIGN: JCM

DATE: 05/20/26

REVISION

DATE

DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATION BASIN BLOWER BUILDING
MAIN FLOOR PLAN



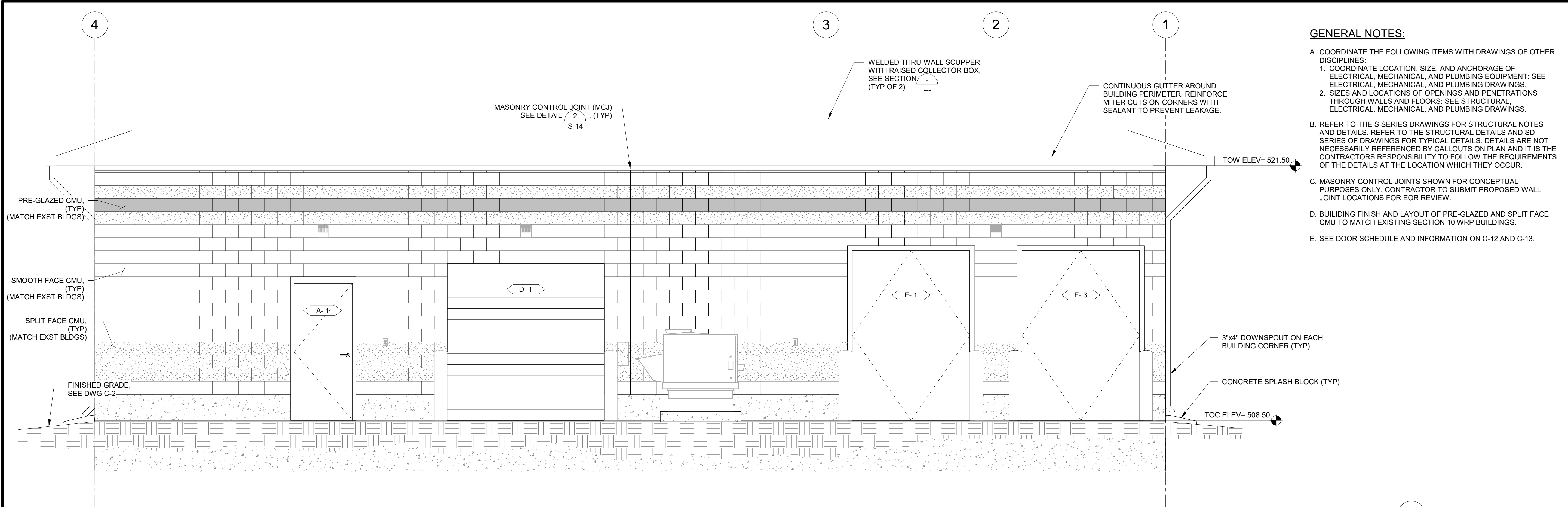
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C-6

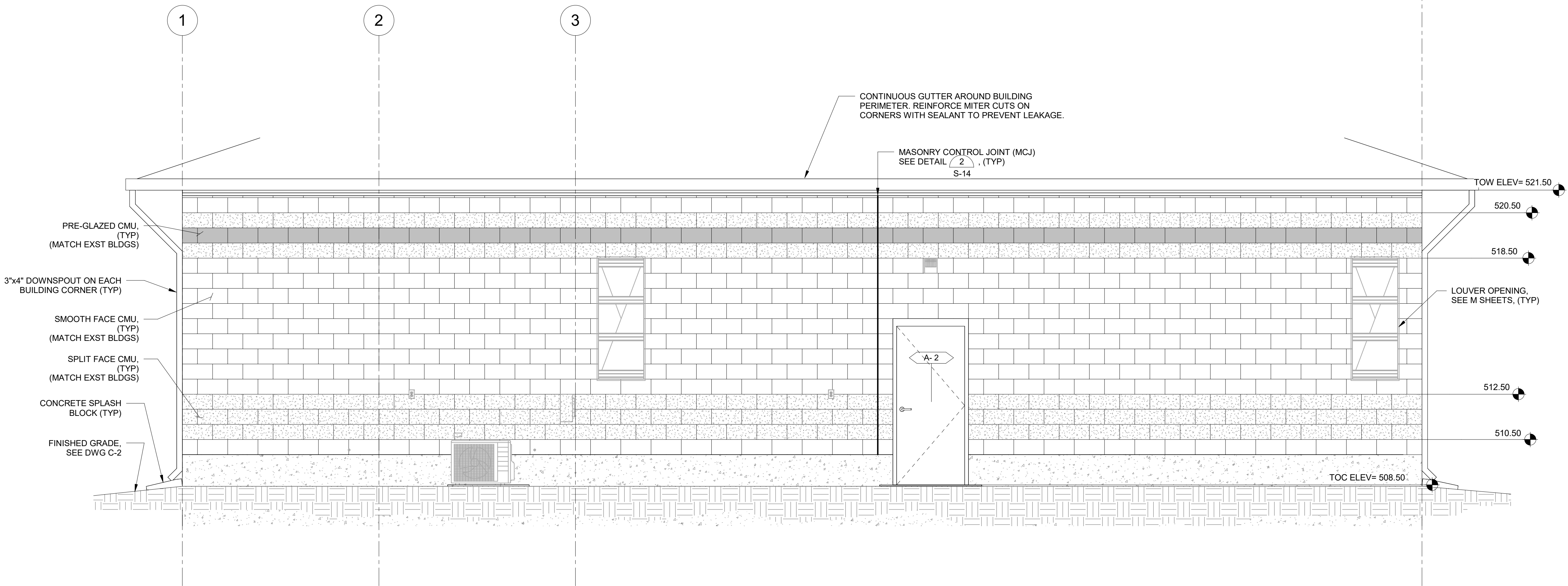
SHEET NO.

9 OF 68

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AERATION BASIN BLOWER BUILDING ELEVATION - NORTH
SCALE: 3/8" = 1'-0"



AERATION BASIN BLOWER BUILDING ELEVATION - SOUTH
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- A. COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:
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- C. MASONRY CONTROL JOINTS SHOWN FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO SUBMIT PROPOSED WALL JOINT LOCATIONS FOR EOR REVIEW.
- D. BUILDING FINISH AND LAYOUT OF PRE-GLAZED AND SPLIT FACE CMU TO MATCH EXISTING SECTION 10 WRP BUILDINGS.
- E. SEE DOOR SCHEDULE AND INFORMATION ON C-12 AND C-13.

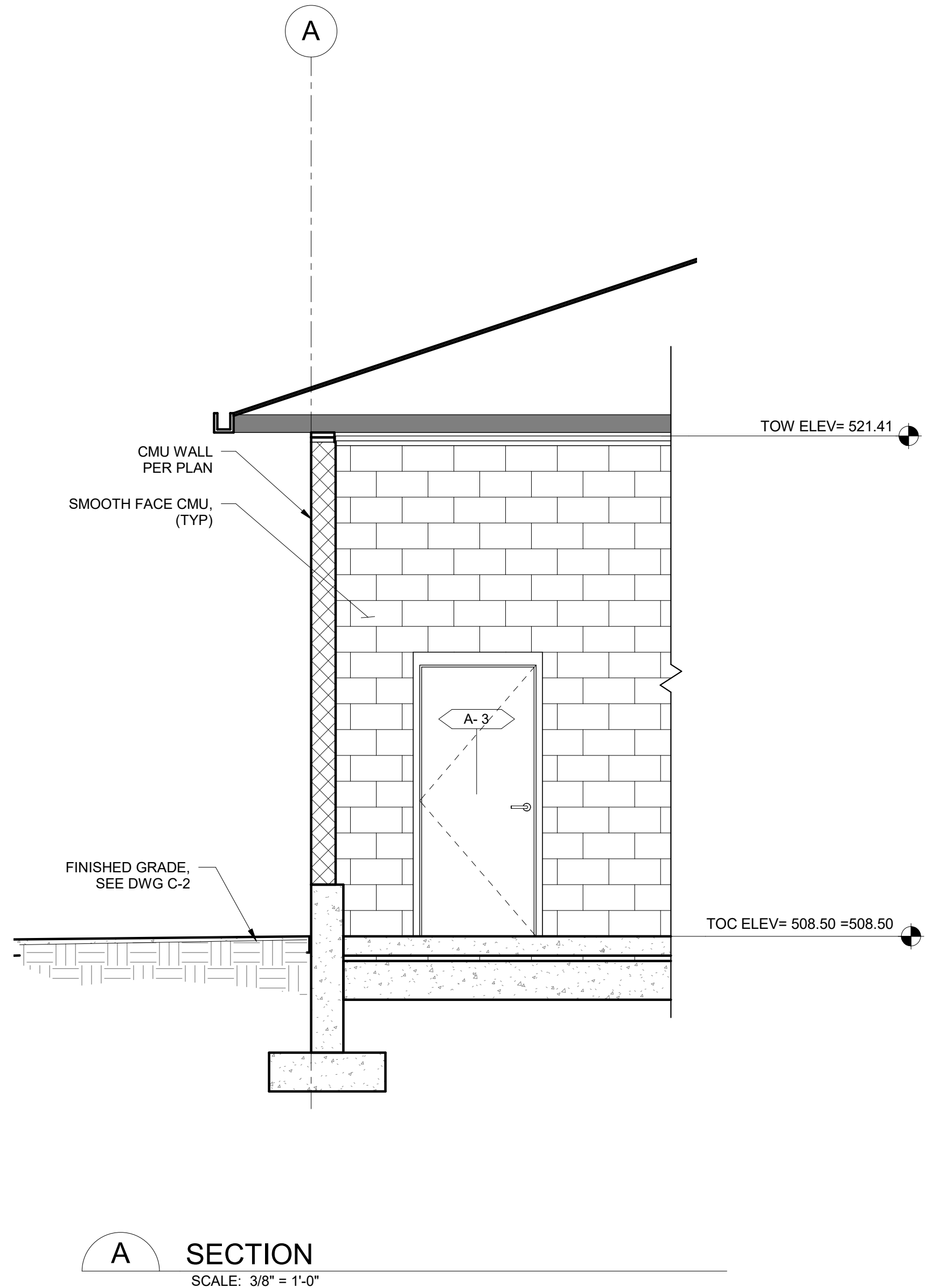
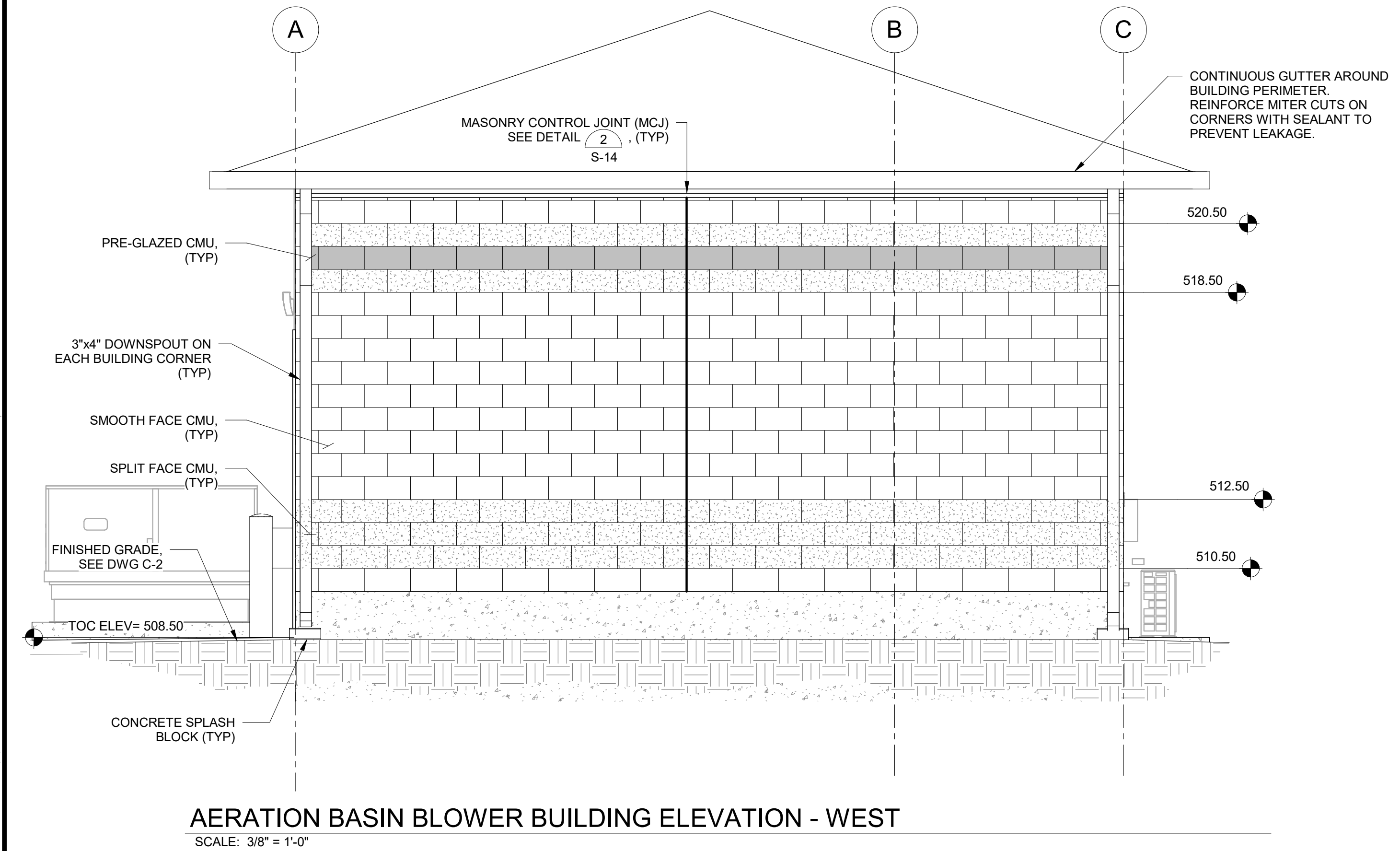
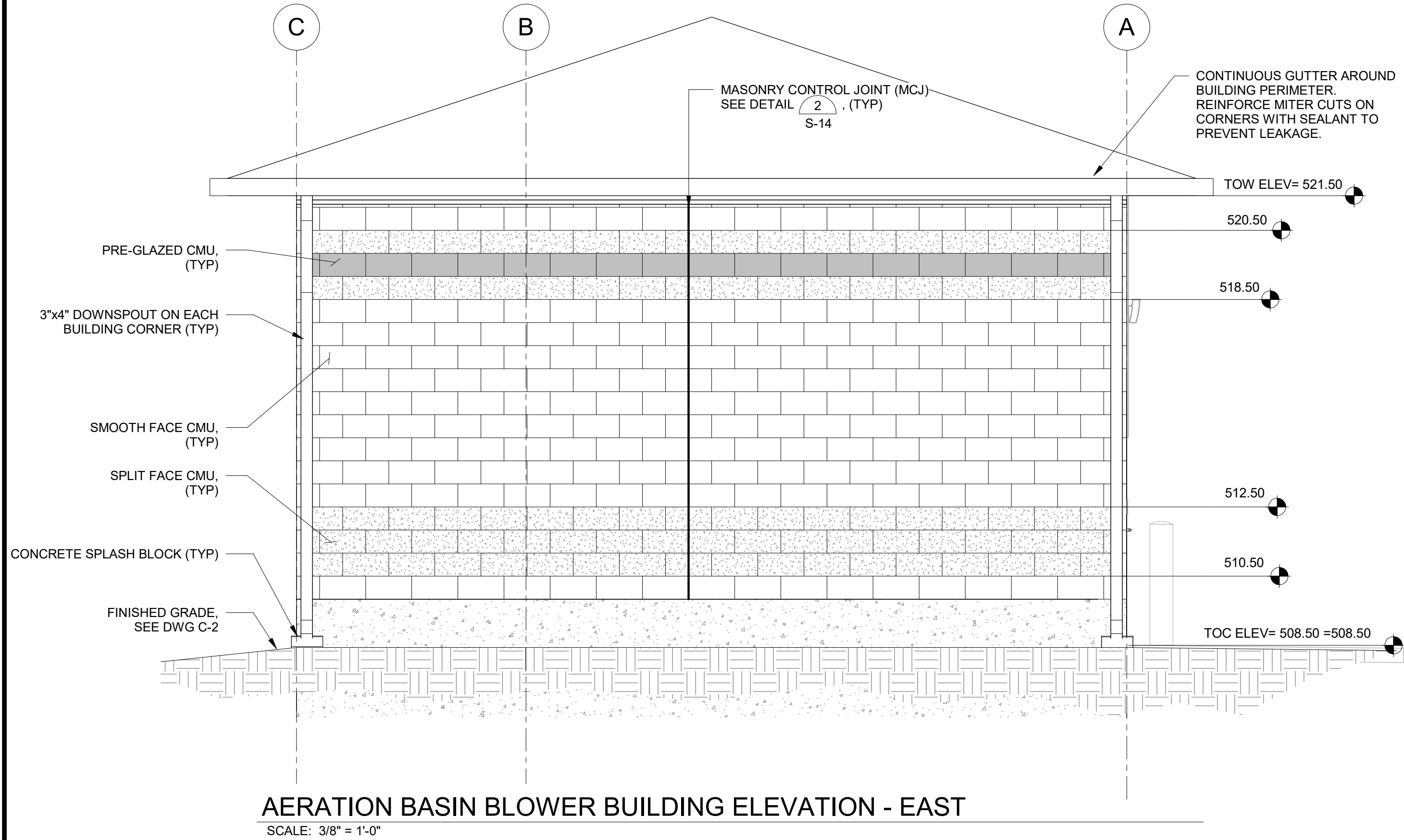
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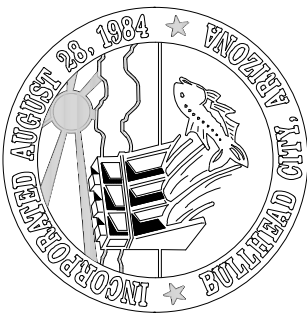
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DATE: 05/20/26	REVISION	DATE
	DESCRIPTION	
BULLHEAD CITY SECTION 10		
BLOWER BUILDINGS IMPROVEMENTS		
AERATION BASIN BLOWER BUILDING ELEVATIONS		
DWG. NO.	SHEET NO.	
C-7	10 OF 68	

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GENERAL NOTES:

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- E. SEE DOOR SCHEDULE AND INFORMATION ON C-12 AND C-13.



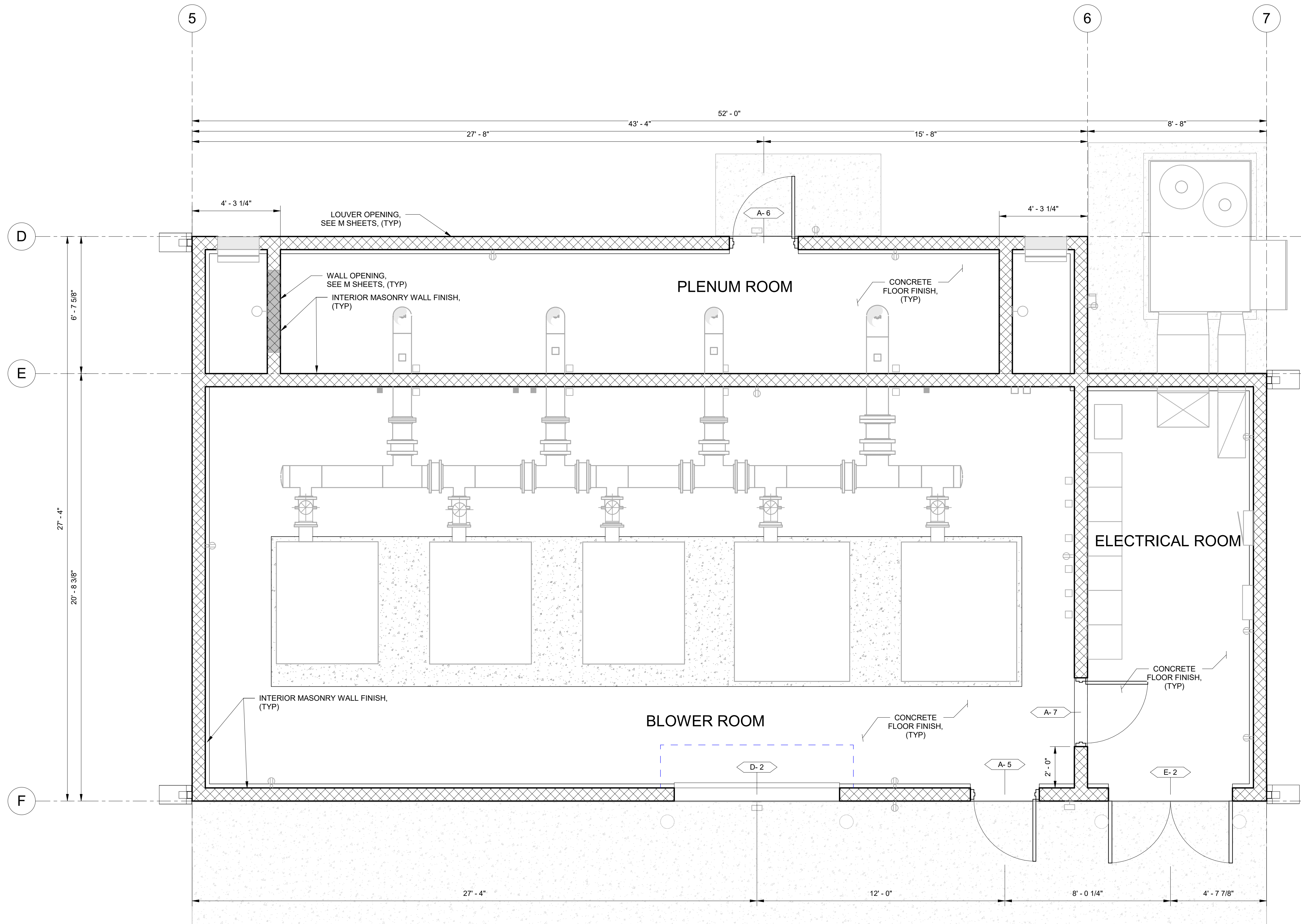
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DATE: 05/20/26			
REVISION	DATE	DESCRIPTION	

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATION BASIN BLOWER BUILDING ELEVATIONS AND SECTIONS





DIGESTER BLOWER BUILDING MAIN FLOOR PLAN

GENERAL NOTES:

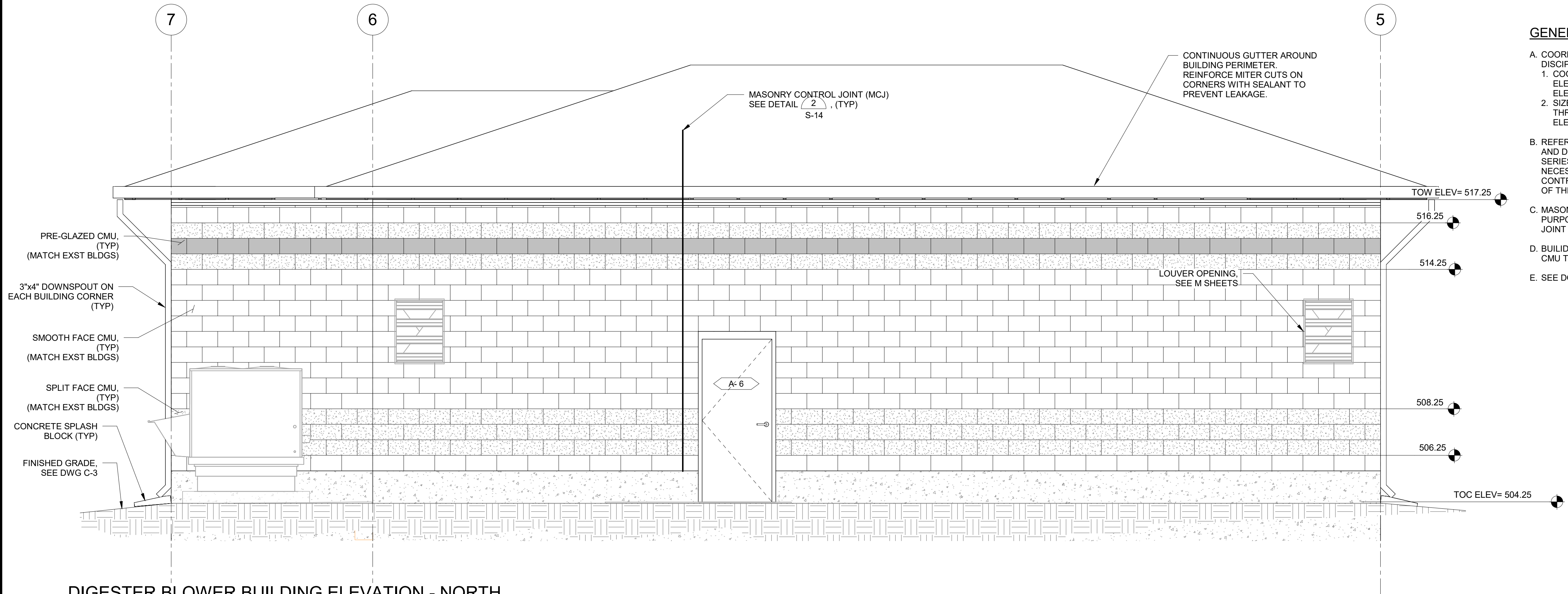
A. COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:

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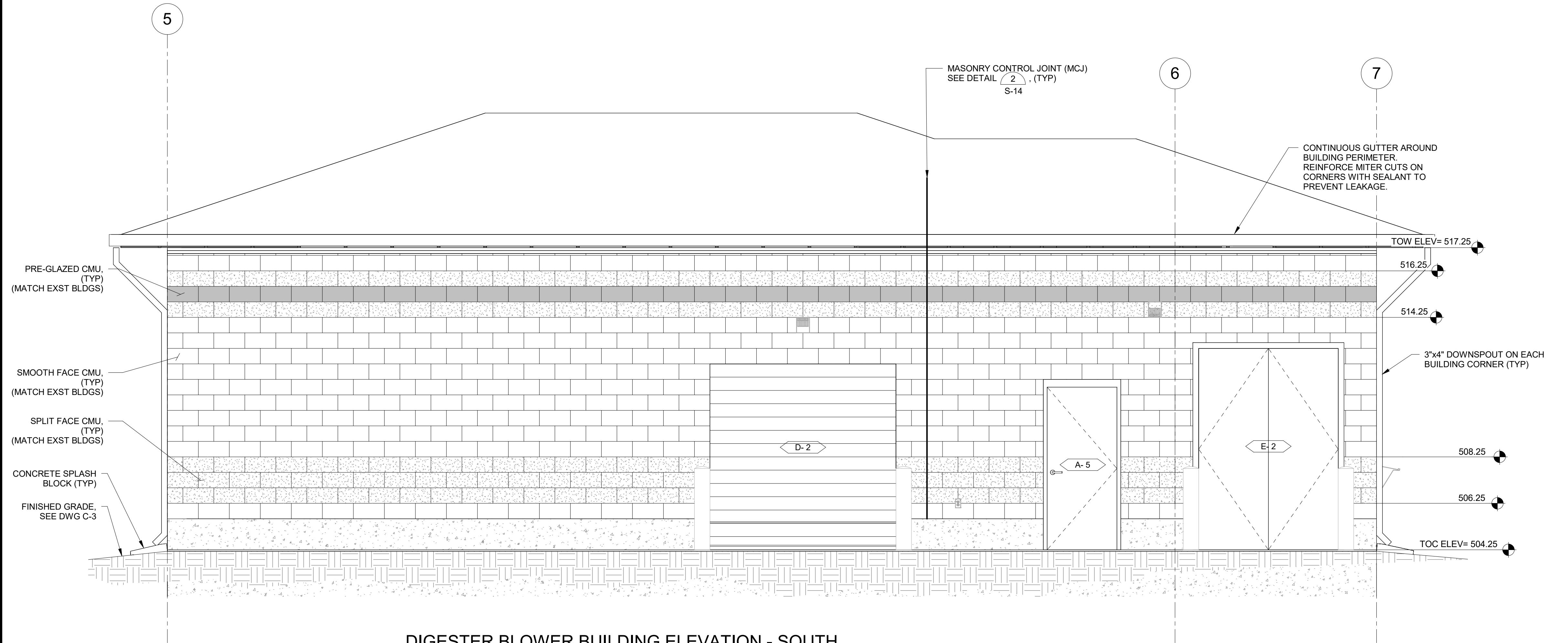
C. SEE DOOR SCHEDULE AND INFORMATION ON C-12 AND C-13.

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DIGESTER BLOWER BUILDING ELEVATION - NORTH

SCALE: 3/8" = 1'-0"



DIGESTER BLOWER BUILDING ELEVATION - SOUTH

SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- A. COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:
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- E. SEE DOOR SCHEDULE AND INFORMATION ON C-12 AND C-13.



CHECKED:JCM

DRAWN: DAH

DESIGN: JCM

DATE: 05/20/26

REVISION

DATE

DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

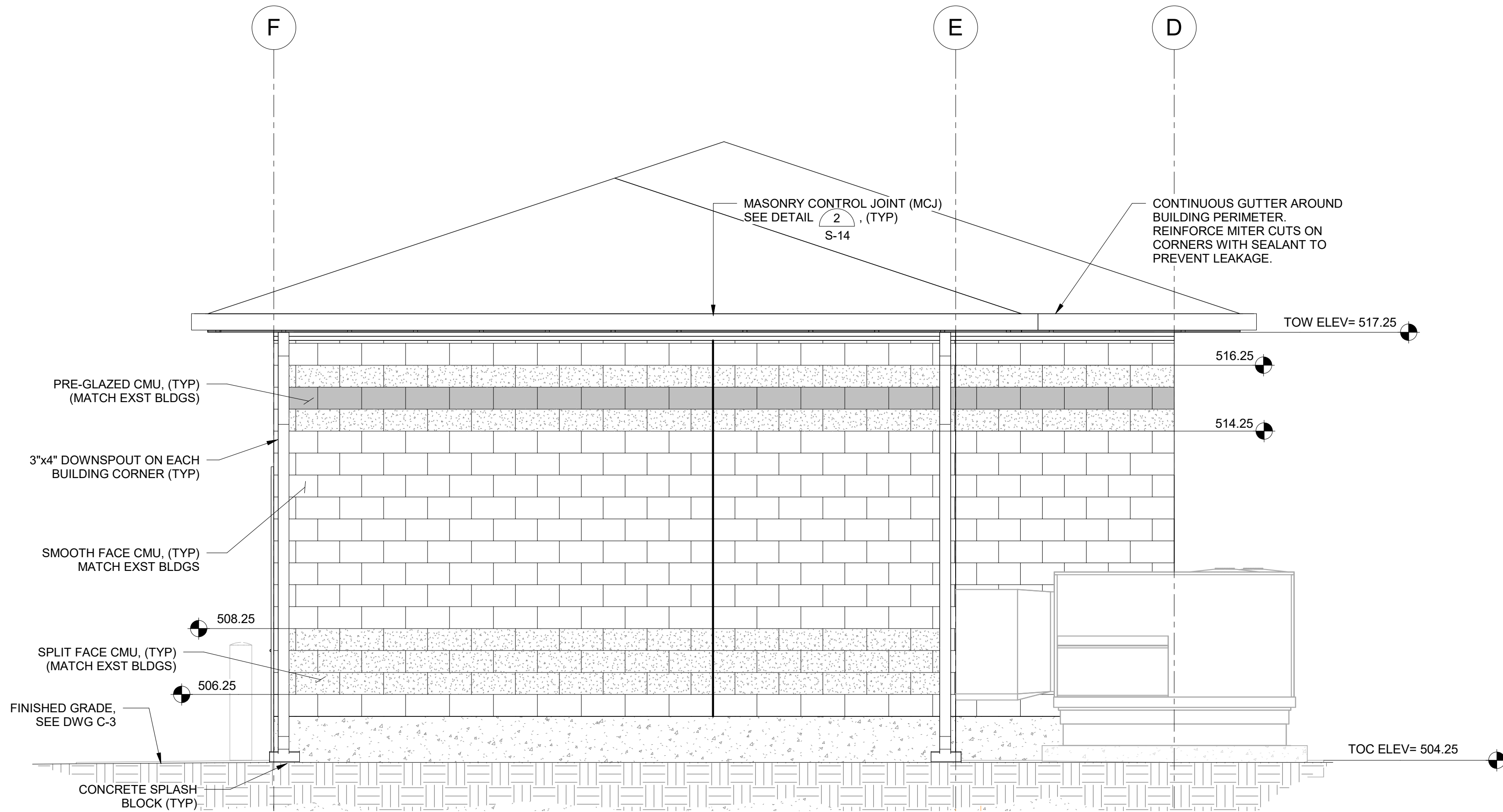
DIGESTER BLOWER BUILDING
ELEVATIONS



DWG. NO.
C-10

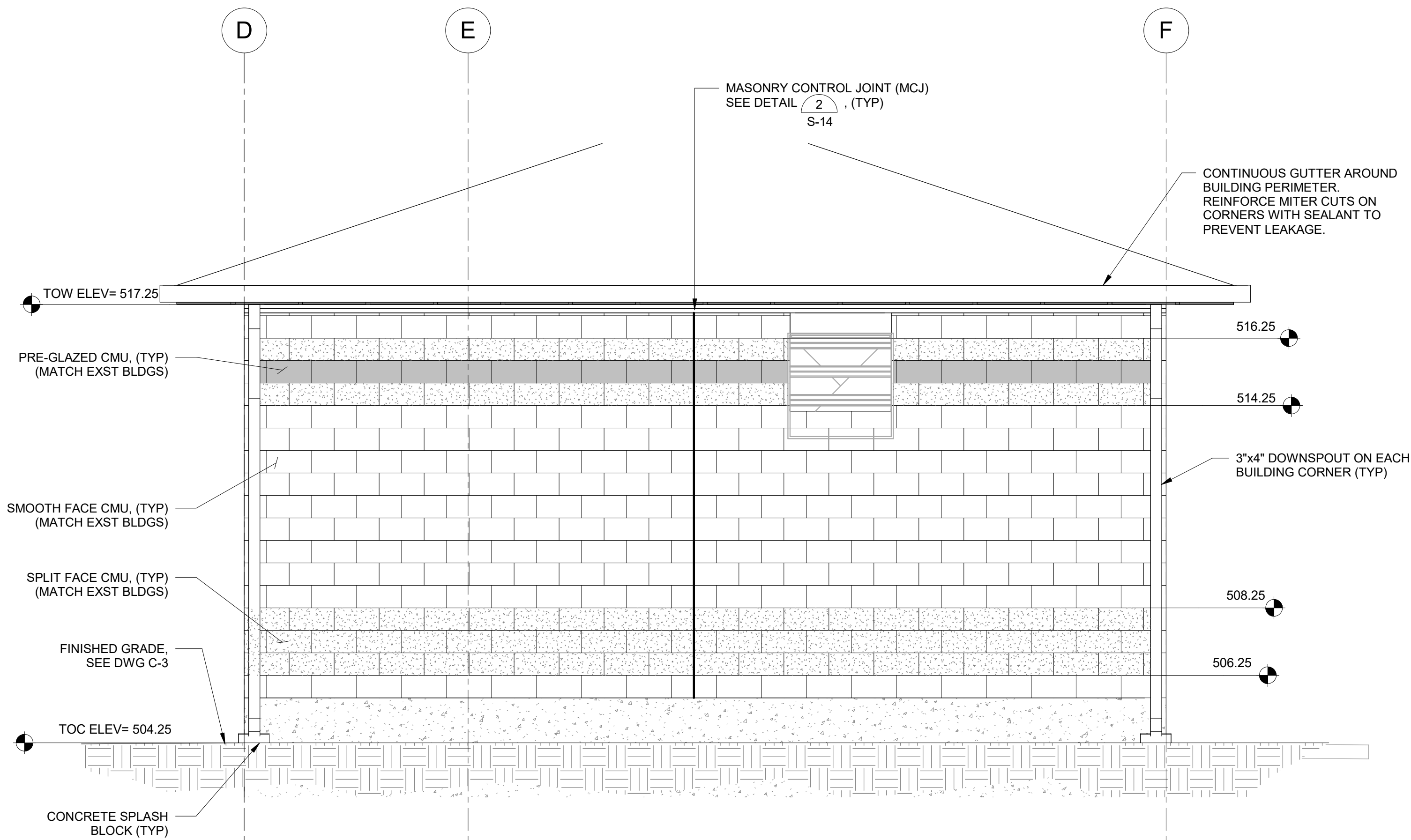
SHEET NO.
13 OF 68

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DIGESTER BLOWER BUILDING ELEVATION - EAST

SCALE: 3/8" = 1'-0"

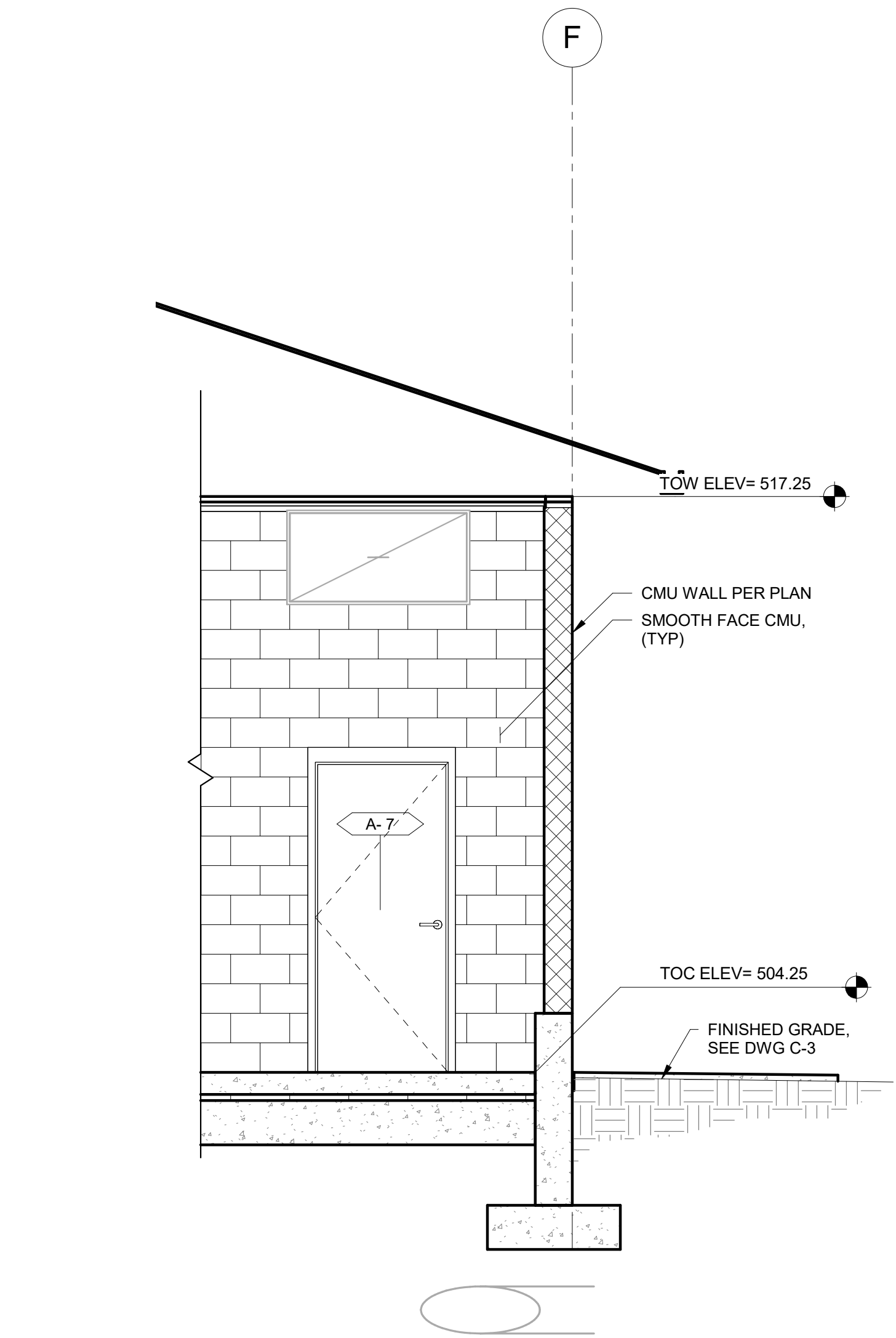


DIGESTER BLOWER BUILDING ELEVATION - WEST

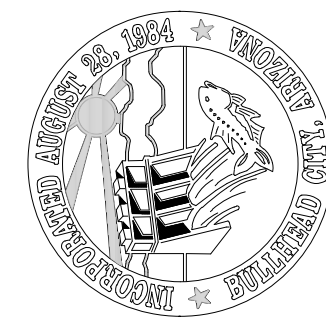
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

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- SEE DOOR SCHEDULE AND INFORMATION ON C-12 AND C-13.



A SECTION
SCALE: 3/8" = 1'-0"



CHECKED: JCM

DRAWN: DAH

DESIGN: JCM

DATE: 05/20/26

REVISION

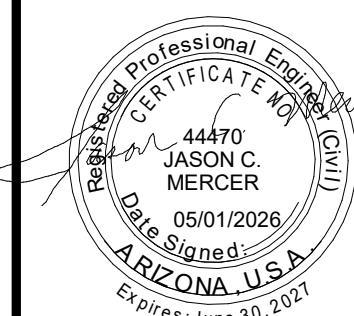
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DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

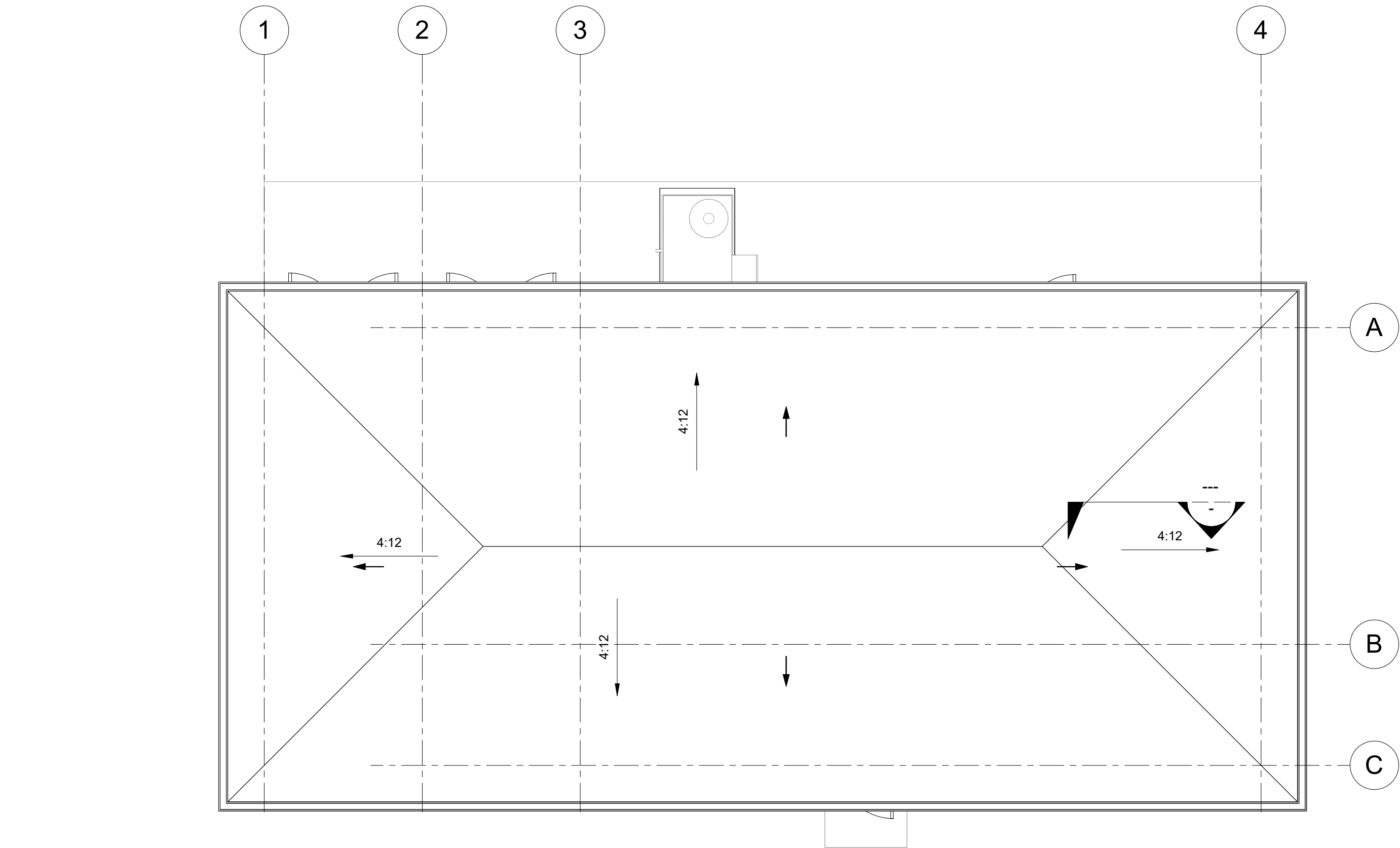
DIGESTER BLOWER BUILDING
ELEVATIONS AND SECTIONS



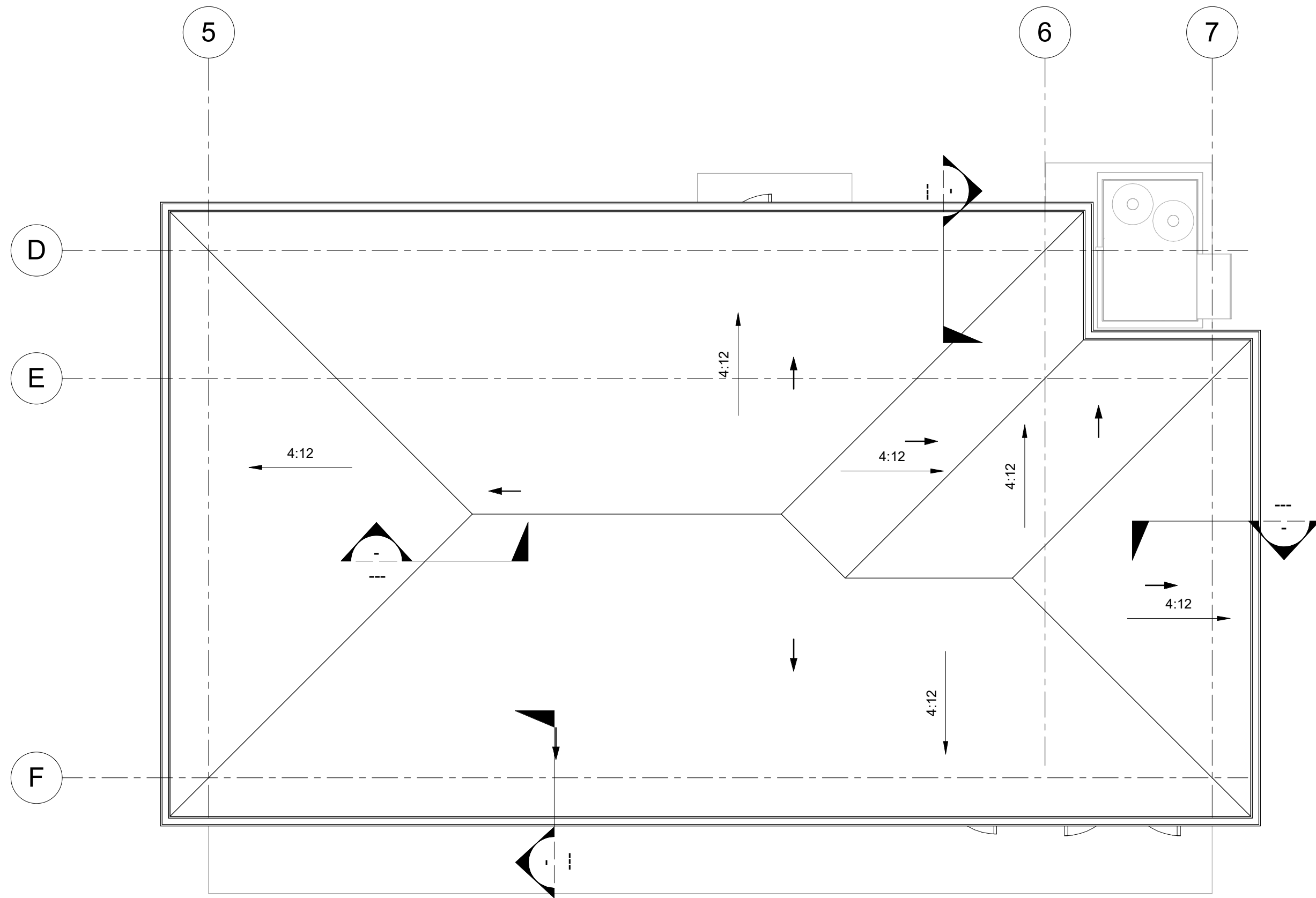
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C-11

SHEET NO.
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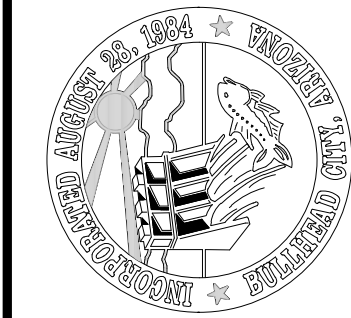


AERATION BLOWER BUILDING ROOF DRAINAGE PLAN
SCALE: 3/16" = 1'-0"



DIGESTER BLOWER BUILDING ROOF DRAINAGE PLAN
SCALE: 3/16" = 1'-0"

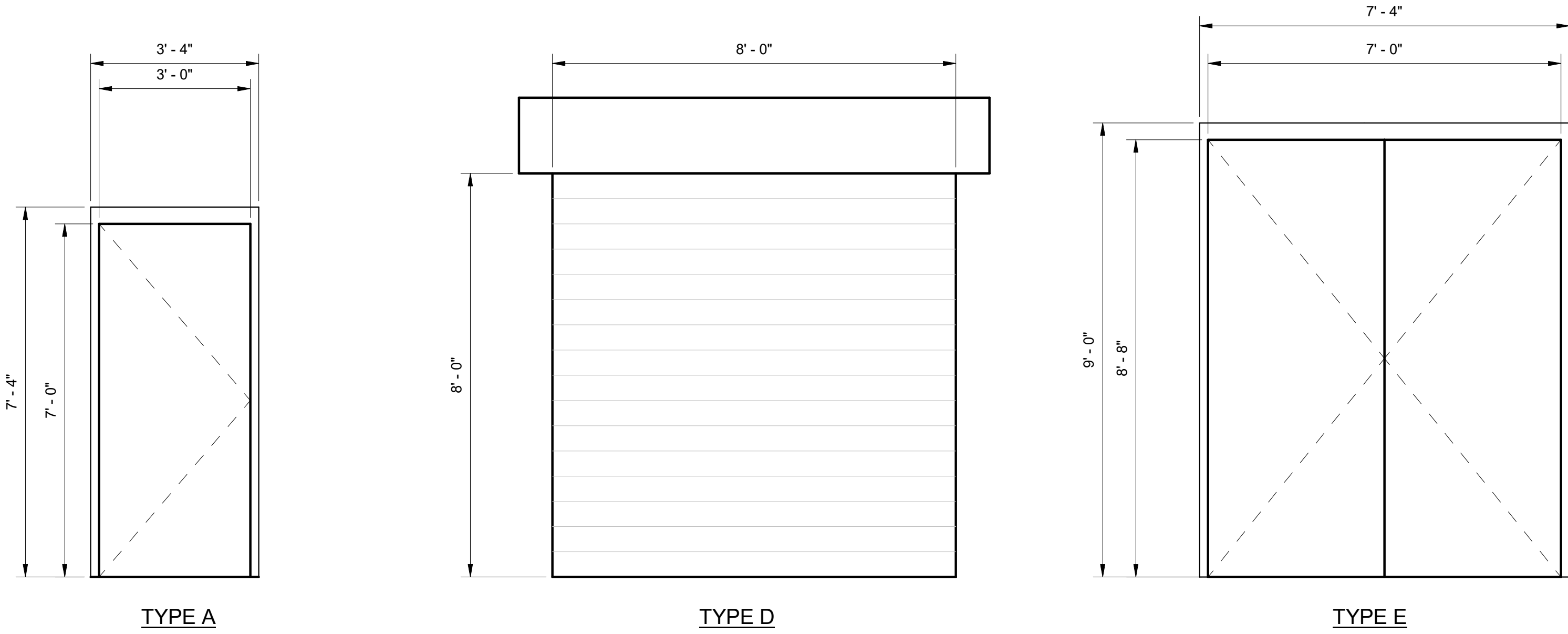
DOOR SCHEDULE										
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A	2	Exterior	3' - 0"	7' - 0"	STEEL	PAINT	H2	EXTERIOR	NONE	1
A	3	Interior	3' - 0"	7' - 0"	STEEL	PAINT	H3	INTERIOR	2'-0"Wx3'-0"H TEMPERED w/ SECURITY MESH	1
A	5	Exterior	3' - 0"	7' - 0"	STEEL	PAINT	H2	EXTERIOR	NONE	1
A	6	Exterior	3' - 0"	7' - 0"	STEEL	PAINT	H2	EXTERIOR	NONE	1
A	7	Interior	3' - 0"	7' - 0"	STEEL	PAINT	H2	INTERIOR	2'-0"Wx3'-0"H TEMPERED w/ SECURITY MESH	1
D	1	Exterior	8' - 0"	8' - 0"	STEEL	PAINT	H4	EXTERIOR	NONE	1
D	2	Exterior	8' - 0"	8' - 0"	STEEL	PAINT	H4	EXTERIOR	NONE	1
E	1	Exterior	6' - 0"	8' - 8"	STEEL	PAINT	H1	EXTERIOR	NONE	1
E	2	Exterior	6' - 0"	8' - 8"	STEEL	PAINT	H1	EXTERIOR	NONE	1
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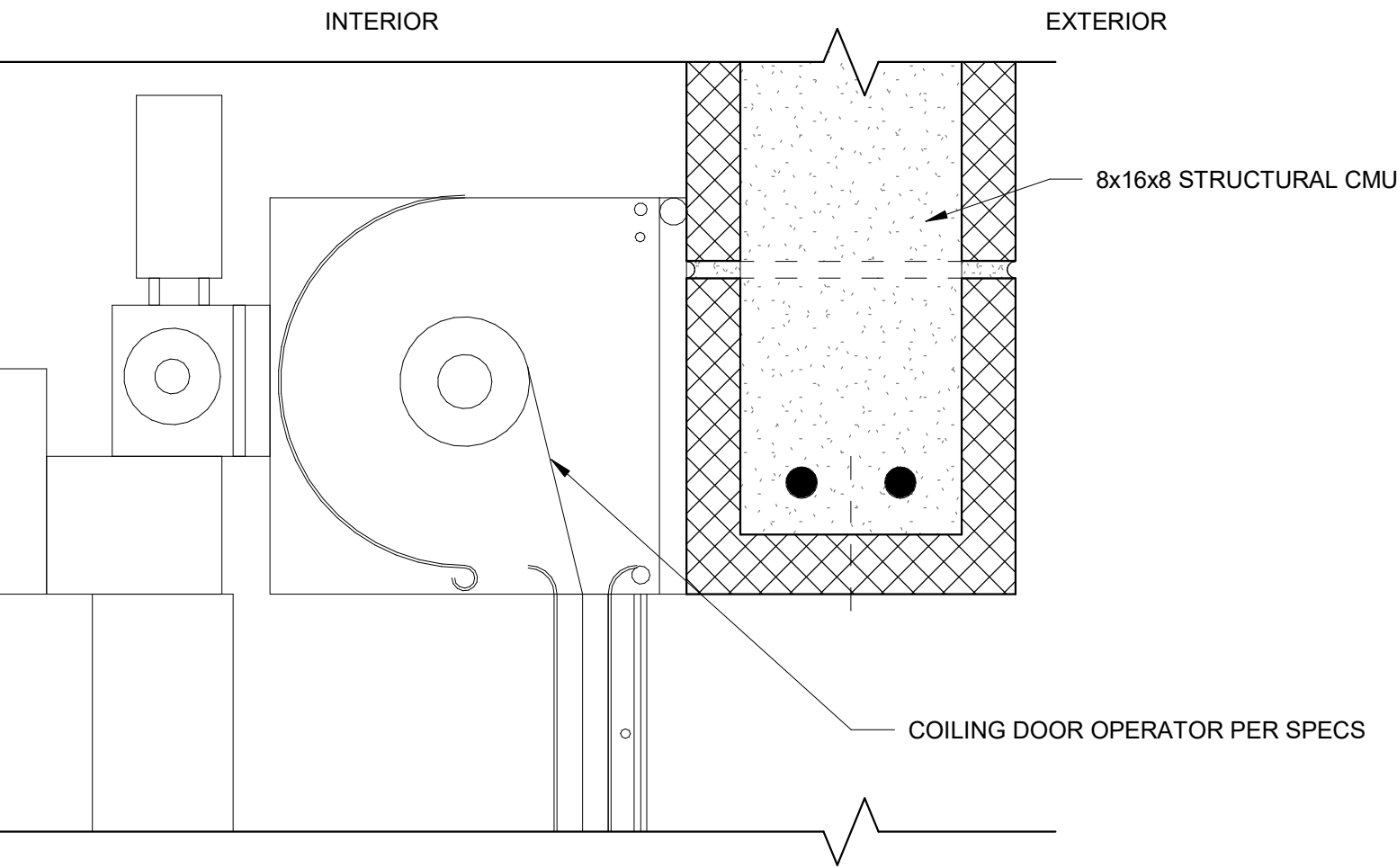
DESIGN: JCM	DRAWN: DAH	CHECKED: JCM
DATE: 05/2026		
REVISION	DATE	DESCRIPTION

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
BUILDING SECTIONS, DETAILS, AND SCHEDULES

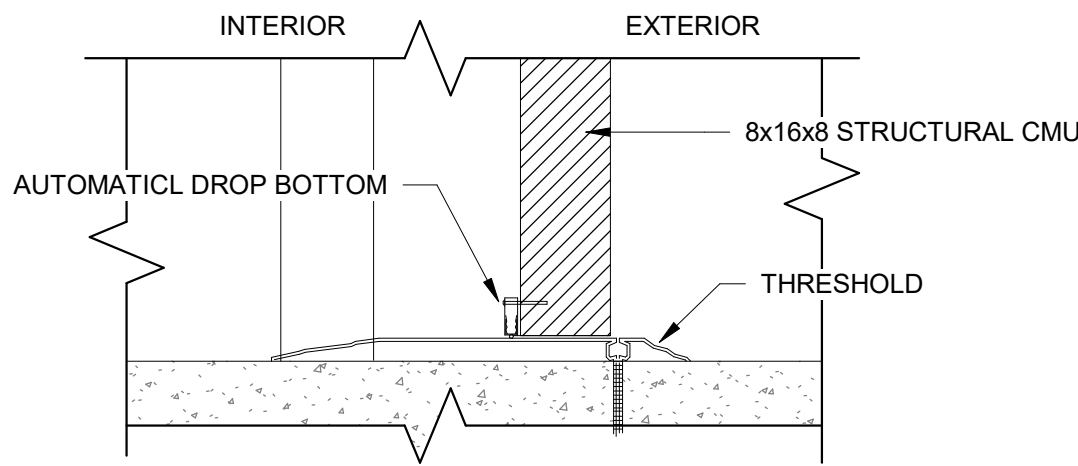




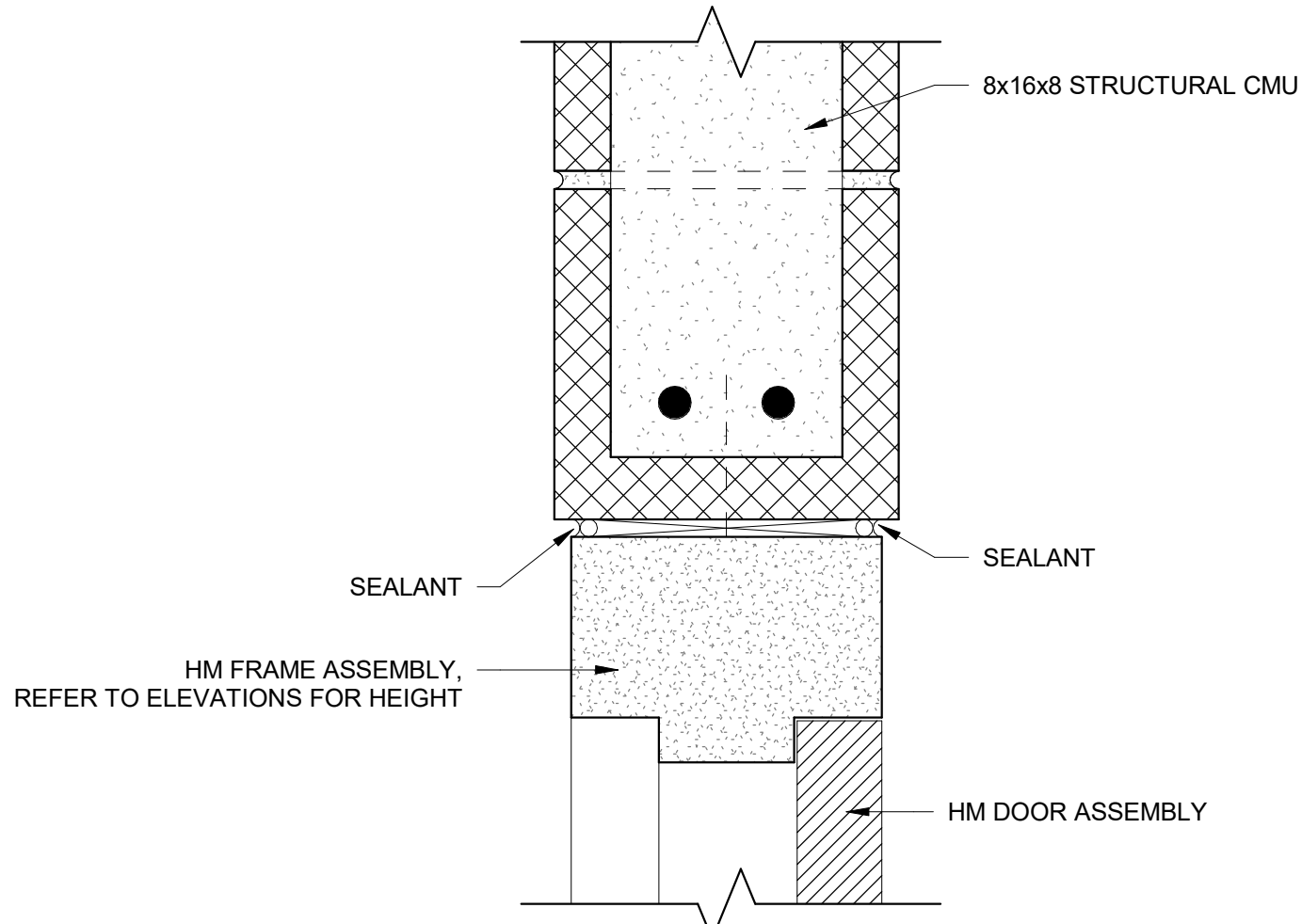
DOOR LEGEND
SCALE: 1/2" = 1'-0"



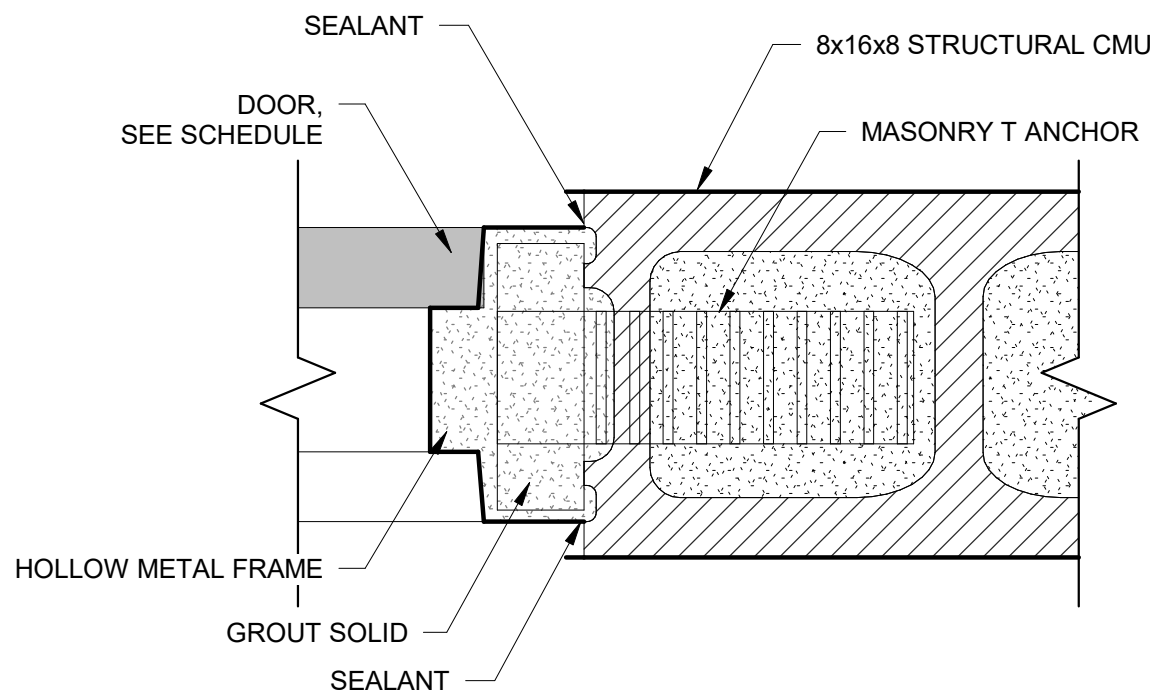
2 OH DOOR HEAD DETAIL
SCALE: 3" = 1'-0"



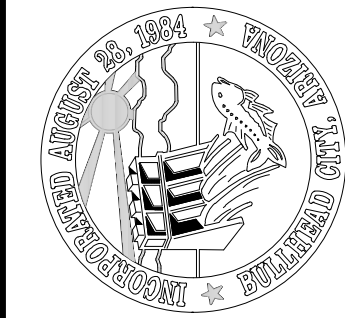
3 HM DOOR SILL DETAIL
SCALE: 3" = 1'-0"



1 HM DOOR HEAD DETAIL
SCALE: 3" = 1'-0"



4 HM DOOR JAMB DETAIL
SCALE: 3" = 1'-0"



DESIGN: JCM	DRAWN: DAH	CHECKED: JCM
DATE: 05/2026		
REVISION	DATE	DESCRIPTION

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
DOOR LEGEND AND DETAILS



GENERAL STRUCTURAL NOTES:

THESE DRAWINGS HAVE BEEN PREPARED SOLELY FOR USE IN THE CONSTRUCTION OF AERATION BLOWER AND DIGESTER BLOWER BUILDINGS AT THE LOCATION OF BULLHEAD CITY, ARIZONA. POSSESSION OF THESE DRAWINGS DOES NOT GRANT A LICENSE TO CONSTRUCT OR FABRICATE THE WHOLE, OR PARTS OF THIS PROJECT IN OTHER LOCATIONS.

STRUCTURAL DRAWINGS ARE A PORTION OF THE CONTRACT DOCUMENTS AND ARE INTENDED TO BE USED WITH PROCESS, MECHANICAL, ELECTRICAL, AND SITE CIVIL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS FROM THESE DRAWINGS INCLUDING BUT NOT LIMITED TO DIMENSIONS, BLOCKOUTS, OPENINGS, SLEEVES, EMBEDDED ITEMS, ETC. INTO THEIR SHOP DRAWINGS AND WORK. NOTIFY THE STRUCTURAL ENGINEER OF RECORD OF ANY DISCREPANCIES OR IF ACTUAL CONDITIONS DIFFER FROM THOSE SHOWN OR NOTED.

THESE GENERAL NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.

THE CONTRACTOR SHALL FURNISH THE PRODUCTS SPECIFIED ON THE DRAWINGS. SUBSTITUTIONS WILL BE CONSIDERED ONLY IF THE CONTRACTOR PROVIDES DOCUMENTATION TO PROVE THE ALTERNATIVE EQUALS OR EXCEEDS THE STRUCTURAL PERFORMANCE CHARACTERISTICS OF THE SPECIFIED PRODUCT.

CODE REQUIREMENTS:

- ALL WORK SHALL BE IN STRICT COMPLIANCE WITH:
- A. 2018 INTERNATIONAL BUILDING CODE (IBC) (INTERNATIONAL BUILDING CODE, 2018 EDITION)
 - B. ALL OTHER STATE AND LOCAL BUILDING REQUIREMENTS THAT APPLY.

TEMPORARY CONDITIONS:

CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY SUPPORT PRIOR TO COMPLETION OF VERTICAL AND LATERAL LOAD SYSTEMS. MORRISON-MAIERLE HAS NOT BEEN RETAINED TO PROVIDE ANY SERVICES RELATED TO JOB SITE SAFETY PRECAUTIONS, OR TO REVIEW THE MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES FOR THE CONTRACTOR TO PERFORM WORK. UNLESS WE ARE SPECIFICALLY RETAINED AND COMPENSATED TO DO OTHERWISE, OUR WORK IS LIMITED TO THE FINAL DESIGN OF THE WORK DESCRIBED ON OUR DRAWINGS FOR THIS PROJECT.

CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.

EXISTING CONDITIONS:

EXISTING SITE DIMENSIONS AND ASSUMED CONDITIONS ARE TO BE VERIFIED IN THE FIELD AND ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER OF RECORD OF ALL DISCREPANCIES WHICH REQUIRE A SIGNIFICANT CHANGE IN THE DESIGN AND/OR CONSTRUCTION FROM THAT SHOWN ON THE DRAWINGS.

ASSUMED FUTURE CONSTRUCTION:

- VERTICAL: NONE
HORIZONTAL: NONE

DESIGN CRITERIA:

DESIGN IS BASED ON THE FOLLOWING LOADING FOR THE BASIS OF STRENGTH, PERFORMANCE, AND SERVICEABILITY OF THE STRUCTURE:

DESIGN CRITERIA		
ROOF DEAD LOAD CRITERIA (IBC 1603.1.1)		
ROOF DEAD LOADS	UNIFORM LOAD	CONCENTRATED LOAD
ROOF	25 PSF	250 LBS
LIVE LOAD CRITERIA (IBC 1603.1.1)		
FLOOR LIVE LOADS:	UNIFORM LOAD	CONCENTRATED LOAD
SLAB-ON-GRADE	250 PSF	2000 LBS
MECHANICAL/ EQUIPMENT	(SEE MEP DRAWINGS)	(SEE MEP DRAWINGS)
ROOF LIVE LOAD CRITERIA (IBC 1603.1.2)		
ORDINARY FLAT, PITCHED, CURVED	20 PSF	N/A
SNOW LOAD CRITERIA (IBC 1603.1.2)		
DESIGN ROOF SNOW LOAD	20 PSF MINIMUM (SEE ROOF LIVE LOAD)	
GROUND SNOW LOAD	Pg = 0 PSF	
RAIN LOAD CRITERIA (IBC 1603.1.7)		
DESIGN ROOF RAIN LOAD	42 PSF	
WIND LOAD CRITERIA (IBC 1603.1.3)		
BASIC DESIGN WIND SPEED	V = 105 MPH	
RISK CATEGORY	III	
WIND EXPOSURE	C	
INTERNAL PRESSURE COEFFICIENT	GCpi = +/- 0.18	
SEISMIC LOAD CRITERIA (IBC 1603.1.4)		
RISK CATEGORY	III	
SEISMIC IMPORTANCE FACTOR	Ie = 1.25	
MAPPED SPECTRAL RESPONSE	Ss = 0.238	S1 = 0.118
SITE CLASS	C	
DESIGN SPECTRAL RESPONSE	Sds = 0.207	Sd1 = 0.118
SEISMIC DESIGN CATEGORY	B	
BASIC SEISMIC FORCE RESISTING SYSTEM (SFRS)	X DIRECTION (E/W)	Z DIRECTION (N/S)
	ORDINARY REINFORCED MASONRY SHEAR WALLS	ORDINARY REINFORCED MASONRY SHEAR WALLS
DESIGN BASE SHEAR	20.5 KIP (AERATION BLDG)	20.5 KIP (AERATION BLDG)
	20.8 KIP (DIGESTER BLDG)	20.8 KIP (DIGESTER BLDG)
SEISMIC RESPONSE COEFFICIENT	0.129	0.129
RESPONSE MODIFICATION FACTOR	2.0	2.0
ANALYSIS PROCEDURE USED	EQUIVALENT LATERAL FORCE	EQUIVALENT LATERAL FORCE
GEOTECHNICAL CRITERIA (IBC 1603.1.6)		
DESIGN BASED ON REPORT BY	DMJM HARRIS DATED 08/07/2002	
DESIGN SOIL BEARING PRESSURE	1500 PSF (DL + LL)	2000 PSF (EL / WL INCLUDED)
RETAINING WALLS EQ. FLUID PRESSURE	35 PCF (ACTIVE)	55 PCF (AT REST)
PASSIVE BEARING PRESSURE	300 PSF/FT	
COEFFICIENT OF SLIDING FRICTION	0.40	

STRUCTURAL OBSERVATIONS:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE ENGINEER OF RECORD A MINIMUM OF 84 HOURS IN ADVANCE OF REQUIRED OBSERVATION(S). CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE AND ACCESS FOR THE OBSERVER. APPROVAL BY THE MUNICIPAL INSPECTOR DOES NOT PRECLUDE OBSERVATIONS BY THE ENGINEER OF RECORD AND APPROVAL BY THE ENGINEER OF RECORD DOES NOT PRECLUDE THE INSPECTION PROCESS BY THE MUNICIPAL INSPECTOR AND ANY OTHER CODE REQUIREMENTS FOR INSPECTION. INSPECTIONS MAY BE PERFORMED BY A LICENSED AND APPROVED THIRD PARTY IN LEU OF THE EOR. TO BE APPROVED BY ENGINEER.

UPON COMPLETION OF WORK THE STRUCTURAL OBSERVER SHALL SUBMIT A REPORT TO THE OWNER AND BUILDING OFFICIAL ATTESTING TO THE VISUAL OBSERVATION MADE. THE REPORT SHALL IDENTIFY ANY REPORTED DEFICIENCIES WHICH HAVE NOT BEEN RESOLVED.

STRUCTURAL OBSERVATIONS SHALL BE PERFORMED TO DOCUMENT GENERAL CONFORMANCE OF THE STRUCTURAL DRAWINGS AND SPECIFICATIONS AT THE FOLLOWING STAGES:

- FOOTING & STEM WALL REINFORCING
- PRIOR TO MASONRY SHEARWALL POUR
- AT COMPLETION OF ROOF DIAPHRAGM FASTENING
- SUBSTANTIAL COMPLETION OF CONSTRUCTION
- AS REQUIRED TO ADDRESS STRUCTURAL ISSUES

EARTHWORK:

GENERAL:

GEOTECHNICAL INFORMATION HAS BEEN PROVIDED AS NOTED IN THE 'DESIGN CRITERIA'. IF ON-SITE CONDITIONS VARY FROM WHAT IS DESCRIBED IN THE PROVIDED GEOTECHNICAL INFORMATION, CONTRACTOR SHALL NOTIFY ENGINEER AND CONSULT GEOTECHNICAL ENGINEER.

STABILITY OF CONSTRUCTION EXCAVATION AND WORKER SAFETY ARE THE RESPONSIBILITY OF THE CONTRACTOR. TEMPORARY CONSTRUCTION EXCAVATIONS, ABOVE GROUNDWATER, TO BE PLANNED IN ACCORDANCE WITH OSHA PROVISIONS SHOULD ASSUME TYPE B MATERIAL FOR STIFF CLAY, AND TYPE C MATERIAL FOR SAND.

DO NOT EXCAVATE CLOSER THAN 2:1 SLOPE BELOW FOOTING EXCAVATIONS.

PROPER DRAINAGE SHALL BE MAINTAINED DURING CONSTRUCTION TO KEEP SURFACE RUNOFF FROM ENTERING THE EXCAVATIONS AND DIRECTED AWAY FROM THE STRUCTURE.

EXISTING SUBGRADE REQUIRES OVER EXCAVATION AND SPECIAL PREPARATION BELOW ALL FOUNDATIONS, FOOTINGS, SLABS, SIDEWALKS, AND OTHER CONCRETE FACILITIES AND APSHALT PAVING. SEE SPECIFICATIONS FOR REQUIREMENTS.

IMPORTED STRUCTURAL FILL IS REQUIRED BELOW ALL FOUNDATIONS, FOOTINGS, SLABS, SIDEWALKS, AND OTHER CONCRETE FACILITIES AND ASPHALT PAVING UNLESS SPECIFIED IN GEOTECHNICAL INFORMATION. SEE SPECIFICATIONS FOR REQUIREMENTS FOR IMPORTED ENGINEERED STUCTURAL FILL THICKNESSES, LOCATION AND COMPACTION.

DO NOT PLACE BACKFILL UNTIL CONCRETE WALLS HAVE ACHIEVED THE SPECIFIED 28-DAY COMPRESSIVE STRENGTH AND MINIMUM OF 7 DAY CURE TIME.

ALL MOISTURE SENSITIVE SLABS-ON-GRADE OR THOSE SUBJECT TO RECEIVE MOISTURE SENSITIVE COATINGS OR COVERINGS SHALL BE PROVIDED WITH AN APPROPRIATE CAPILLARY BREAK AND VAPOR BARRIER OR RETARDANT OVER THE SUBGRADE PREPARED AND INSTALLED AS NOTED IN THE GEOTECHNICAL INFORMATION, BARRIER MANUFACTURER'S WRITTEN RECOMMENDATIONS AND COORDINATED WITH THE FINISHES SPECIFIED IN THE PLANS.

CONCRETE:

CAST-IN-PLACE CONCRETE:

CONCRETE SHALL BE IN ACCORDANCE WITH ACI 301, SPECIFICATION FOR STRUCTURAL CONCRETE, AND ACI 117, SPECIFICATION FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS, UNLESS NOTED OTHERWISE.

AVERAGE CONCRETE STRENGTH DETERMINED BY JOB CAST LAB CURED CYLINDER TO BE AS INDICATED BELOW PLUS INCREASE DEPENDING ON THE PLANT'S STANDARD DEVIATION AS SPECIFIED IN ACI 318. MINIMUM CONCRETE PROPERTIES SHALL BE AS FOLLOWS:

CONCRETE PROPERTIES						
USE	EXPOSURE	MIN COMPRESSIVE STRENGTH	TEST AGE DAYS	AIR CONTENT	MAX WATER TO CEMENT RATIO	MAX AGGERGATE SIZE
FOUNDATIONS AND WALLS	F2	4,500 PSI	28	6% +/- 1.5%	0.45	1"
EXTERIOR SLABS ON GRADE	F1	4,500 PSI	28	4.5% +/- 1.5%	0.55	1"
INTERIOR SLABS	F0	4,500 PSI	28	NO LIMIT	0.50	3/4"

THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS ALONG WITH TEST DATA A MINIMUM OF TWO WEEKS PRIOR TO PLACING CONCRETE.

CONDUITS EMBEDDED IN SLABS SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN ONE THIRD OF THE THICKNESS OF THE SLAB AND SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS ON CENTER.

CURING OF CONCRETE SHALL COMPLY WITH ACI 308, UNLESS NOTED OTHERWISE.

WHERE CONCRETE IS PLACED AGAINST EXISTING CONCRETE, THE EXISTING CONCRETE SURFACE SHALL BE CLEANED AND ROUGHENED TO A MINIMUM 1/4" AMPLITUDE.

PROVIDE 3/4" CHAMFERS ON ALL EXPOSED CONCRETE CORNERS UNLESS NOTED OTHERWISE.

SHORING DESIGN, IF REQUIRED, IS THE CONTRACTOR'S RESPONSIBILITY.

PROVIDE TOOLED OR SAW-CUT CONTROL JOINTS IN SLABS ON GRADE COMPLYING WITH THE FOLLOWING CRITERIA. THE CONTRACTOR SHALL SUBMIT CONTROL JOINT PLAN PRIOR TO POURING THE SLABS.

- JOINT SPACING SHALL NOT EXCEED 30 TIMES THE SLAB THICKNESS
- ASPECT RATIO OF SLAB PANELS SHALL BE MAXIMUM OF 1.5 TO 1.0; HOWEVER A RATIO OF 1.0 TO 1.0 IS PREFERRED
- JOINTS SHALL BE CONTINUOUS ACROSS INTERSECTING JOINTS, NOT STAGGERED OR OFFSET
- JOINTS SHALL EXTEND FROM ISOLATION JOINT AROUND COLUMNS AND WALLS

REINFORCING STEEL:

REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING PROPERTIES:

REINFORCEMENT STEEL PROPERTIES		
USE	REINFORCEMENT SIZE	SPECIFICATION
ALL	ALL SIZES	ASTM A615, GRADE 60

REINFORCING STEEL CONTINUED:

WELDING OR TACK WELDING OF REINFORCEMENT BARS TO OTHER BARS OR STEEL COMPONENTS IS PROHIBITED.

REINFORCING STEEL IN SLABS SHALL BE SUPPORTED ON CONCRETE DOBBIES, OR APPROVED CHAIRS IN SUFFICIENT NUMBERS TO SUPPORT THE BARS WITHOUT SETTLEMENT. FABRICATE AND INSTALL REINFORCING STEEL ACCORDING TO THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES - ACI STANDARD 315.

CONTACT LAP ALL REINFORCING BARS PER THE TYPICAL LAP SPLICE LENGTH SCHEDULE, EXCEPT AS NOTED ON DRAWINGS.

GRADE 60 REINFORCING STEEL LAP SPLICE LENGTH AND DEVELOPMENT LENGTH													
BAR SIZE	f'c = 3,000 PSI					f'c = 4,000 PSI					f'c = 5,000 PSI		
	MISC BARS		TOP BARS (SEE NOTE 3)		HOOK BARS	MISC BARS		TOP BARS (SEE NOTE 3)		HOOK BARS	MISC BARS		HOOK BARS
	Ld	LAP	Ld	LAP	Ldh	Ld	LAP	Ld	LAP	Ldh	Ld	LAP	Ldh
#3	17	22	22	28	9	15	19	29	25	8	13	17	7
#4	22	29	29	38	11	19	25	25	33	10	17	23	9
#5	28	36	36	47	14	24	31	31	41	12	22	28	11
#6	33	43	43	56	17	29	37	37	49	15	26	34	13

- ALL TABULATED VALUES ARE IN INCHES. FOR GRADE 60, UNCOATED REINFORING, NORMAL WEIGHT CONCRETE WITH CLEAR SPACING AND CLEAR COVER GREATER THAN THE BAR DIAMETER.
- IT SHALL BE PERMITTED TO INTERPOLATE BETWEEN CONCRETE STRENGTHS OR USE THE NEXT LOWER CONCRETE STRENGTH.
- TOP BARS ARE ANY HORIZ BAR PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZ WALL BARS ARE CONSIDERED TOP BARS.
- LAP SPLICES ARE FOR NON-LATERAL LOAD RESISTING ELEMENTS. FOR REBAR LAPS SPLICES AT LATERAL LOAD RESISTING ELEMENTS, REFERENCE PLANS AND ELEVATIONS.
- Ld = DEVELOPMENT LENGTH IN TENSION OF DEFORMED BAR
Ldh = DEVELOPMENT LENGTH IN TENSION OF DEFORMED WIRE WITH A STANDARD HOOK
LAP = LAP SPLICE LENGTH OF DEFORMED BAR OR DEFORMED WIRE

REINFORCING STEEL SHALL BE PROTECTED BY PLACING BARS WITH A MINIMUM COVER, UNLESS NOTED OTHERWISE.

REINFORCING STEEL CONCRETE COVER	
USE	CLEAR COVER
SLABS	3/4"
WALLS (INTERIOR FACES)	3/4"
CONCRETE CAST AGAINST EARTH	3"
CONCRETE EXPOSED TO WEATHER OR EARTH	1-1/2" (FOR #5 OR SMALLER), 2" (FOR #6 AND LARGER)

PROVIDE DOWELS FROM FOOTINGS TO MATCH ALL VERTICAL WALL REINFORCING. PROVIDE CORNER BARS TO MATCH HORIZONTAL REINFORCING IN WALLS AND FOOTINGS AT ALL CORNERS AND INTERSECTIONS. CONTINUE HORIZONTAL WALL BARS THROUGH INTERSECTING WALLS.

ALL ANCHOR BOLTS, HOLDDOWNS AND OTHER REQUIRED ACCESSORIES SHALL BE SECURED IN PLACE PRIOR TO INSPECTION AND CONCRETE PLACEMENT. DO NOT STAB THE ABOVE LISTED ITEMS INTO FRESH CONCRETE AFTER PLACEMENT. PROPERLY VIBRATE AROUND INSTALLED ITEMS TO ENSURE PROPER CONSOLIDATION OF CONCRETE.

CONCRETE CONNECTORS:

UNLESS A SPECIFIC ANCHOR PRODUCT IS NOTED IN THE DRAWINGS, POST-INSTALLED ANCHORS MAY USE ONE OF THE ANCHORS LISTED BELOW FOR THE REQUIRED TYPE.

POST INSTALLED CONCRETE ANCHORS		
TYPE	PRODUCT	REPORT #
ADHESIVE ANCHORS & DOWELS	SIMPSON SET-XP	ICC-ES ESR-2508
	SIMPSON AT-XP	IAPMO-UES ER-263
	HILTI HIT-HY 200	ICC-ES ESR-3187
SCREW ANCHOR	SIMPSON TITEN HD	ICC-ES ESR-2713

ALL ANCHORS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND PRODUCT EVALUATION REPORTS.

EMBEDMENTS SPECIFIED ON DRAWINGS ARE "EFFECTIVE" EMBEDMENTS. REFERENCE MANUFACTURER LITERATURE FOR CORRESPONDING ACTUAL EMBEDMENT DEPTHS.

ANCHORS RODS EXPOSED TO EARTH OR WEATHER SHALL BE PROTECTED FROM CORROSION BY HOT-DIP GALVANIZING OR USE OF STAINLESS STEEL. POST INSTALLED EXPANSION AND SCREW ANCHORS EXPOSED TO EARTH OR WEATHER SHALL BE STAINLESS STEEL.

FOR POST-INSTALLED ANCHORS, LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED.

IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON AND SHIFT THE HOLE LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF (2) ANCHOR DIAMETERS OR 1 INCH, WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE ANCHOR AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT. IF THE ANCHOR OR DOWEL MANY NOT BE SHIFTED AS NOTED ABOVE, SEEK GUIDANCE FROM THE STRUCTURAL ENGINEER OF RECORD.

SPECIAL INSPECTION OF ANCHOR INSTALLATION IS REQUIRED UNLESS SPECIFICALLY NOTED OTHERWISE IN DRAWINGS. SEE SPECIAL INSPECTION AND MATERIALS TESTING PROGRAM AND NOTES.



BULLHEAD CITY SECTION 10	DESIGN: AJM	DRAWN: DAH	CHECKED: MJB
	DATE: 05/20/26		
	REVISION	DATE	DESCRIPTION
BLOWER BUILDINGS IMPROVEMENTS			
GENERAL STRUCTURAL NOTES			



MASONRY:

REINFORCED CONCRETE MASONRY:

CONCRETE MASONRY UNITS TO BE MEDIUM WEIGHT UNITS AND SHALL COMPLY WITH ASTM C90, SAMPLED AND TESTED IN ACCORDANCE WITH ASTM C140. LINEAL SHRINKAGE FOR UNITS SHALL NOT EXCEED 0.065%. BLOCK COMPRESSIVE STRENGTH SHALL BE AS INDICATED IN THE 'CONCRETE MASONRY ASSEMBLY STRENGTH' TABLE. ASSEMBLIES SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'm) AS INDICATED IN THE TABLE AS VERIFIED BY THE UNIT STRENGTH METHOD.

CONCRETE MASONRY ASSEMBLY STRENGTH			
f'm [PSI]	BLOCK UNIT STRENGTH [PSI]	MORTAR	GROUT STRENGTH [PSI]
2,000	2,800	TYPE M OR S	2,500

WALLS SHALL BE REINFORCED AS SHOWN ON THE PLANS AND DETAILS AND, IF NOT SHOWN, SHALL BE AS NOTED UNDER "MASONRY REINFORCING STEEL".

PROVIDE VERTICAL CONTROL JOINTS IN CONTINUOUS MASONRY SUCH THAT THE DISTANCE BETWEEN JOINTS DOES NOT EXCEED THE LESSER OF A LENGTH-TO-HEIGHT RATIO OF 1.5 OR 25 FEET. CONTROL JOINTS SHALL BE LOCATED NO CLOSER THAN 2'-0" FROM EDGE OF OPENINGS. EXCEPT WHERE OFFSETS ARE SHOWN, MASONRY CONTROL JOINTS SHALL BE A CONTINUOUS VERTICAL LINE FROM TOP OF FOUNDATION TO TOP OF MASONRY WALL. REFERENCE ARCHITECTURAL DRAWINGS FOR LOCATIONS.

CONCRETE SURFACES ABUTTING STRUCTURAL MASONRY STARTER COURSES SHALL BE CLEANED AND ROUGHENED TO A FULL 1/4" AMPLITUDE.

MORTAR:

MORTAR SHALL BE OF THE TYPE INDICATED IN THE 'CONCRETE MASONRY ASSEMBLY STRENGTH' TABLE AND SHALL CONFORM TO ASTM C270 USING THE 'PROPERTY METHOD'. THE MORTAR MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE 1,800 PSI FOR TYPE S AND 2,500 PSI FOR TYPE M. MORTAR PROJECTIONS INTO CELLS TO BE GROUTED SHALL BE LIMITED TO 3/8" MAXIMUM.

MASONRY GROUT:

GROUT SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH AS INDICATED IN THE 'CONCRETE MASONRY ASSEMBLY STRENGTH' TABLE AND CONFORM TO ASTM C476. GROUT SHALL CONSIST OF A MIXTURE OF CEMENTITIOUS MATERIALS, AGGREGATE AND A FLUIDIFIER ADMIXTURE. INTRUSION AID BY SPECRETE-IP OR APPROVED EQUAL. ADMIXTURE DOSAGE TO BE IN STRICT COMPLIANCE WITH MANUFACTURERS RECOMMENDATIONS.

FULLY GROUT ALL STRUCTURAL MASONRY WALLS AND MASONRY PARTITION WALLS.

THE MAXIMUM GROUT POUR HEIGHT SHALL BE 12'-8". CLEAN-OUTS AND BAR POSITIONERS ARE REQUIRED FOR ANY POUR HEIGHT GREATER THAN 5'-0" UNLESS A GROUT DEMONSTRATION PANEL IS CONSTRUCTED. WHERE CLEAN-OUTS ARE REQUIRED, CLEAN-OUTS SHALL BE LOCATED AT ALL CORES CONTAINING VERTICAL REINFORCEMENT AND AT A MAXIMUM OF 32" O.C. GROUT LIFTS GREATER THAN 5'-0" ARE PERMITTED PROVIDED THAT THE FOLLOWING CONDITIONS ARE MET:

- THE MASONRY HAS CURED FOR AT LEAST 4 HOURS.
- THE GROUT SLUMP IS MAINTAINED BETWEEN 10 AND 11 INCHES.
- NO INTERMEDIATE REINFORCED BOND BEAMS ARE PLACED BETWEEN THE TOP AND THE BOTTOM OF THE POUR HEIGHT.

MASONRY REINFORCING STEEL:

REINFORCING FOR MASONRY SHALL CONFORM TO ASTM A615, GRADE 60. REINFORCING SHALL BE SECURELY PLACED IN ACCORDANCE WITH ACI 530 SECTION 3.4.

PROVIDE DOWELS FROM FOOTINGS AND STEM WALLS TO MATCH ALL VERTICAL WALL REINFORCING SIZE AND SPACING. DEVELOP DOWELS IN THE CONCRETE AND MASONRY. PROVIDE CORNER BARS TO MATCH HORIZONTAL REINFORCING IN WALLS AT ALL CORNER INTERSECTIONS. CONTINUE HORIZONTAL BARS THROUGH INTERSECTING WALLS.

FABRICATE AND INSTALL REINFORCING STEEL IN ACCORDANCE WITH CONCRETE REINFORCING STEEL INSTITUTE MANUAL OF STANDARD PRACTICE. SHOP DRAWINGS SHALL INCLUDE ELEVATIONS OF ALL STRUCTURAL CONCRETE MASONRY WALLS SHOWING LOCATIONS OF BOND BEAMS, REINFORCING BARS, AND OTHER SPECIAL REINFORCEMENT.

SPLICES IN VERTICAL WALL REINFORCING CONTAINING (2) OR MORE BARS SHALL BE LAPPED 62 BAR DIAMETERS. FOR OTHER SPLICES A 52 BAR DIAMETER LAP MAY BE USED.

BOND BEAMS WITH TWO #5 BARS HORIZONTALLY SHALL OCCUR AT EACH INTERMEDIATE FLOOR OR ROOF LEVEL AND AT TOP OF WALLS WHERE WALLS EXTEND ABOVE THE ROOF. STEP BOND BEAMS AS REQUIRED TO MATCH ROOF SLOPES. PROVIDE A BOND BEAM WITH TWO #5 BARS HORIZONTALLY ABOVE AND BELOW ALL OPENINGS, AND EXTEND 2'-6" PAST THE OPENING AT EACH SIDE. PROVIDE (2) #5 EXTENDING THE FULL LEVEL HEIGHT AT EACH SIDE OF OPENINGS AND AT WALL ENDS UNLESS NOTED OTHERWISE. SEE STRUCTURAL DETAILS FOR ADDITIONAL REQUIREMENTS.

MINIMUM GROUT COVER BETWEEN REINFORCEMENT AND THE INSIDE FACE OF CELLS SHALL BE 1/4" FOR FINE GROUT AND 1/2" FOR COURSE GROUT.

MASONRY CONNECTORS:

HEADED STEEL STUD CONNECTORS SHALL BE NELSON GRANULAR FLUX-FILLED HEADED STUDS OR PRIOR APPROVED EQUAL AND BE MANUFACTURED FROM ASTM A29-12 / A108, GRADES 1010-1020 COLD ROLLED CARBON STEEL WITH A MINIMUM TENSILE STRENGTH OF 60,000 PSI. DEFORMED BAR ANCHORS SHALL BE NELSON, TYPE D2L OR APPROVED EQUAL. STUDS AND DEFORMED BAR TO BE AUTOMATICALLY END WELDED WITH A STUD WELDING GUN. ALTERNATE WELDING PROCEDURES MAY BE USED ONLY WITH PRIOR WRITTEN APPROVAL FROM THE ENGINEER.

UNLESS A SPECIFIC ANCHOR PRODUCT IS NOTED IN THE DRAWINGS, POST-INSTALLED ANCHORS MAY USE ONE OF THE ANCHORS LISTED BELOW FOR THE REQUIRED TYPE.

POST INSTALLED MASONRY ANCHORS		
TYPE	PRODUCT	REPORT #
ADHESIVE ANCHORS & DOWELS	SIMPSON SET-XP	IAPMO ER-265
	SIMPSON AT-XP	IAPMO ER-281
SCREW ANCHOR	SIMPSON TITEN HD	ICC ESR-1056

ALL ANCHORS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND PRODUCT EVALUATION REPORTS. EMBEDMENTS SPECIFIED ON DRAWINGS ARE "EFFECTIVE" EMBEDMENTS. REFERENCE MANUFACTURER LITERATURE FOR CORRESPONDING ACTUAL EMBEDMENT DEPTHS.

ANCHORS EXPOSED TO EARTH, WEATHER, OR IN A ROOM WITH CORROSIVE MATERIAL, SHALL BE PROTECTED FROM CORROSION BY HOT-DIP GALVANIZING OR USE OF STAINLESS STEEL.

FOR POST-INSTALLED ANCHORS, LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED.

IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON AND SHIFT THE HOLE LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF (2) ANCHOR DIAMETERS OR 1 INCH, WHICHEVER IS LARGER, OF SOUND MASONRY BETWEEN THE ANCHOR AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT. IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, SEEK GUIDANCE FROM THE STRUCTURAL ENGINEER OF RECORD.

SPECIAL INSPECTION OF ANCHOR INSTALLATION IS REQUIRED UNLESS SPECIFICALLY NOTED OTHERWISE IN DRAWINGS. SEE SPECIAL INSPECTION AND MATERIAL TESTING PROGRAM AND NOTES.

WOOD AND WOOD PRODUCTS:

SAWN LUMBER:

1. SAWN LUMBER SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE NATIONAL DESIGN SPECIFICATION (NDS) DESIGN VALUES FOR WOOD CONSTRUCTION AND CONFORM TO THE WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION GRADING RULES OR APPROVED EQUIVALENT. ALL LUMBER SHALL BE MARKED BY THE GRADING AGENCY EXCEPT FOR ARCHITECTURAL/ EXPOSED MEMBERS. A CERTIFICATE OF COMPLIANCE BY THE MANUFACTURER SHALL BE PROVIDED IN LIEU OF MARKING. LUMBER SHALL BE THE SPECIES, AND GRADE NOTED BELOW UNLESS NOTED OTHERWISE ON DRAWINGS:

SAWN LUMBER	
USE	SPECIES AND GRADE
JOISTS, RAFTERS, & STRINGERS (2x THRU 4x)	DOUGLAS FIR LARCH #2 OR BETTER
BUCKS, BLOCKING, BRIDGING AND MISCELLANEOUS	DOUGLAS FIR LARCH OR HEM FIR #3
STUDS (2x THRU 4x)	DOUGLAS FIR LARCH #2 OR BETTER
SILLS, LEDGERS, ETC. IN CONTACT WITH CONCRETE	PRESSURE TREATED HEM FIR #2
HORIZONTAL PLATES, AND HEADERS	KILN DRIED DOUGLAS FIR LARCH #2 OR BETTER

2. DIMENSIONAL LUMBER SHALL BE DELIVERED WITH MOISTURE CONTENT LESS THAN 19% AND SURFACED S4S. TIMBERS SHALL BE DELIVERED WITH MOISTURE CONTENT LESS THAN 15%. ALL LUMBER DELIVERED TO THE SITE SHALL BE STACKED OR STORED OFF THE GROUND AND PROPERLY PROTECTED AGAINST WEATHER.

3. ALL LUMBER IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE TREATED, UNLESS AN APPROVED MOISTURE BARRIER IS PROVIDED.

4. PRIOR TO ERECTION OF ROOF FRAMIN SUPPORTED BY A WOOD STUD BEARING WALL. EACH SUPPORTING BEARING WALL SHALL HAVE ONE OF THE FOLLOWING STUD BRACING ELEMENTS INSTALLED.
A. ONE FACE OF WALL FULLY SHEATHED WITH WOOD STRUCTURAL PANELS.
B. ONE FACE OF WALL FULLY SHEATHED WITH GYPSUM BOARD PANELS.
C. BLOCKING INSTALLED BETWEEN EACH STUD AT 4'-0" ON CENTER.

5. FASTEN BUILT-UP STUDS COLUMNS AND JAMBS WITH (1) ROW OF 10D NAILS AT 6" ON CENTER, STAGGERED, BETWEEN EACH LAMINATION FOR 2x4 STUDS AND (2) ROWS OF 10D NAILS AT 8" ON CENTER, BETWEEN EACH LAMINATION FOR 2x6 STUDS.

6. ALL NON-BEARING PARTITION WALLS SHALL BE INSTALLED WITH A GAP BETWEEN THE TOP PLATE OF THE WALL AND FLOOR OR ROOF FRAMING. THE PARTITIONS SHALL BE ANCHORED TO THE FRAMING WITH A CONNECTOR THAT BRACES THE WALL WHILE PERMITTING THE FRAMING TO FREELY DEFLECT.

7. UNLESS NOTED OTHERWISE PROVIDE SOLID SAWN OR BUILT-UP POSTS UNDER BEAMS WITH A MINIMUM WIDTH EQUAL TO THE BEAM WIDTH AND A DEPTH EQUAL TO THE WALL THICKNESS. PROVIDE SIMPSON 'LPC' POST CAP.

WOOD CONNECTIONS:

1. FRAMING ACCESSORIES SHALL BE MANUFACTURED BY SIMPSON STRONG TIE (OR APPROVED EQUAL) AND OF THE TYPE AND SIZE SHOWN ON THE DRAWINGS. FULLY FASTEN ACCORDING TO MANUFACTURER'S SCHEDULE USING LARGEST SIZE SHOWN AND INSTALL FOLLOWING ALL MANUFACTURES REQUIREMENTS, UNLESS NOTED OTHERWISE.

2. ALL FRAMING NAILS SHALL BE 'COMMON' NAILS OF THE SIZE AND QUANTITY INDICATED ON THE DRAWINGS. USE OF SMALLER DIAMETER "BOX" NAILS FREQUENTLY USED IN NAIL GUNS REQUIRES USE OF LARGER PENNY WEIGHT TO PROVIDE AN EQUIVALENT DIAMETER/LENGTH NAIL. ALL NAILING SHALL COMPLY WITH IBC FASTENING SCHEDULE PER CHAPTER 23. OBTAIN ENGINEERS APPROVAL OF ALL PROPRIETARY NAILING SYSTEMS.

3. BOLTS AND LAG SCREWS SHALL BE ASTM A307 AND CONFORM TO ANSI/ASME STANDARD B18.2.1. ALL BOLTS AND LAG SCREWS BEARING ON WOOD SHALL BE INSTALLED WITH STANDARD CUT WASHERS. BOLT HOLES IN WOOD MEMBERS SHALL NOT EXCEED 1/16" LARGER THAN THE BOLT DIAMETER. AT EXPOSED CONNECTIONS CUT OFF EXTENDED BOLT AND 'KNICK' THREADS TO PRECLUDE LOOSENING. LAG SCREWS HOLE CLEARANCE SHALL BE THE SAME DIAMETER AS THE SHANK AND THE SAME DEPTH AS THE UNTHREADED SHANK. THE LEAD HOLE SHALL BE 60 PERCENT OF THE SHANK DIAMETER AND A LENGTH EQUAL TO THE THREADED PORTION.

4. ANCHOR RODS SHALL CONFORM TO ASTM F1554, GRADE 36 UNLESS NOTED OTHERWISE. ANCHOR RODS TO BE WELDED SHALL CONFORM TO ASTM F1554, GRADE 55. THREADED RODS SHALL CONFORM TO ASTM A36 UNLESS NOTED OTHERWISE.

5. CUTTING AND NOTCHING OF JOISTS AND STUDS SHALL CONFORM TO THE TYPICAL WOOD DETAILS PROVIDED.

6. CONFIRM REQUIRED CORROSION PROTECTION FOR HARDWARE AND FASTENERS WITH SPECIFIC RECOMMENDATIONS FROM PRESSURE TREATING MANUFACTURER OR HANGER MANUFACTURER (USE MOST CONSERVATIVE) FOR SPECIFIC WOOD TREATMENTS USED. MINIMUM CORROSION PROTECTION ON METAL CONNECTORS EXPOSED TO THE ENVIRONMENT OR PRESSURE TREATED LUMBER TO BE PER ASTM A653 CLASS 185 (SIMPSON ZMAX) OR ASTM A123. FINISH FOR EXPOSED CONNECTION HARDWARE SHALL BE EPOXY-BASED CORROSION RESISTANT PAINT WITH COLOR AS CHOSEN BY ARCHITECT.

7. FASTENERS FOR PRESSURE TREATED LUMBER MUST BE HOT-DIP GALVANIZED, STAINLESS STEEL, SILICON BRONZE OR COPPER. HOT-DIP GALVANIZED HARDWARE AND FASTENERS MUST COMPLY WITH ASTM A153, STAINLESS STEEL FASTENERS TO BE TYPE 304 OR TYPE 316. HARDWARE AND FASTENERS USED TOGETHER MUST BE THE SAME TYPE (E.G. HOT-DIP GALVANIZED NAILS WITH HOT-DIP GALVANIZED HANGERS).

WOOD STRUCTURAL PANELS:

1. WOOD STRUCTURAL PANELS SHALL BE IN ACCORDANCE PS 1, STRUCTURAL PLYWOOD, AND/OR PS 2, PERFORMANCE STANDARD FOR WOOD-BASED STRUCTURAL USE PANELS. ALL WOOD STRUCTURAL PANELS SHALL BE APA RATED SHEATHING, EXPOSURE 1, PLYWOOD OR OSB, WITH SPAN RATINGS, THICKNESS & NAILING FOR SHEATHING AS SHOWN ON THE DRAWINGS. PANELS SHALL BE STAMPED WITH THE APA TRADEMARK.

2. ALL SHEATHING DELIVERED TO THE SITE SHALL BE STACKED OR STORED OFF THE GROUND AND PROPERLY PROTECTED AGAINST WEATHER.

3. WOOD STRUCTURAL PANEL INSTALLATION SHALL BE IN CONFORMANCE WITH APA RECOMMENDATIONS. ALLOW 1/8" SPACING AT PANEL ENDS AND EDGES, UNLESS OTHERWISE RECOMMENDED BY THE PANEL MANUFACTURER.

4. ALL ROOF SHEATHING AND FLOOR SHEATHING SHALL BE INSTALLED WITH FACE GRAIN OR STRENGTH AXIS PERPENDICULAR TO SUPPORTS AND STAGGERED 48". EXCEPT AS INDICATED ON THE DRAWINGS, ROOF SHEATHING SHALL EITHER BE BLOCKED, TONGUE-AND-GROOVE, OR HAVE EDGES SUPPORTED BY PLYCLIPS. WHERE BLOCKING IS SPECIFICALLY INDICATED ON THE DRAWINGS, T&G EDGES OR PLYCLIPS MAY NOT BE SUBSTITUTED. SHEATHING SHALL BE UNBLOCKED, EXCEPT AS INDICATED ON DRAWINGS. FLOOR SHEATHING SHALL BE FIELD GLUED TO THE FRAMING USING ADHESIVES MEETING APA SPECIFICATION AFG-01 OR ASTM D3498. TONGUE AND GROOVE PANELS SHALL ALSO BE GLUED AT THE T&G JOINT.

5. SHEAR WALL SHEATHING SHALL BE INSTALLED EITHER HORIZONTALLY OR VERTICALLY AND BE BLOCKED AT ALL PANEL EDGES. NO INDIVIDUAL PIECE OF SHEATHING SHALL BE SMALLER THAN 2'-0" x 2'-0".

6. DRIVE SHEATHING NAILS (OR OTHER SPECIFIED ATTACHMENTS) FLUSH WITH BUT NOT FRACTURING, THE WOOD PANEL SURFACE.

PRE-ENGINEERED WOOD OPEN-WEB TRUSSES:

1. ALL WOOD OPEN-WEB TRUSSES SHALL BE MANUFACTURED AND DESIGNED BY REDBUILT OR A PRIOR APPROVED TRUSS MANUFACTURER WITH ICC APPROVAL. SHOP DRAWINGS AND CALCULATIONS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. WOOD OPEN-WEB TRUSSES SHALL BE OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. WOOD OPEN WEB TRUSSES SHALL BE DESIGNED FOR THE LOADS SHOWN ON THE PLANS.

2. EACH TRUSS SHALL BE LEGIBLY BRANDED, MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE FOLLOWING INFORMATION LOCATED WITHIN 2 FEET OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD: A) IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS, B) THE DESIGN LOAD, AND C) THE SPACING OF THE TRUSS.

3. ALL BRIDGING, BEARING HARDWARE, BLOCKING, HANGERS, ETC., THAT CONNECT TO THE WOOD OPEN-WEB TRUSSES SHALL BE PER THE MANUFACTURERS STANDARD DETAILS. ERECTOR TO INSTALL WOOD OPEN-WEB TRUSSES IN ACCORDANCE WITH THE MANUFACTURERS DRAWINGS AND INSTALLATION GUIDELINES.

4. TRUSS MANUFACTURER TO INSPECT ALL TRUSSES AFTER THEY HAVE BEEN ERECTED AND FLOOR AND/OR ROOF SHEATHING, BRIDGING, BLOCKING, ETC., HAS BEEN INSTALLED. MANUFACTURER TO SUBMIT CERTIFICATE TO THE STRUCTURAL ENGINEER OF RECORD THAT THE INSPECTION WAS MADE AND THAT TRUSSES ARE IN ACCEPTABLE CONDITION AND MEET THE MANUFACTURER'S DESIGN AND INSTALLATION REQUIREMENTS.

METAL PLATE CONNECTED WOOD TRUSS SYSTEM:

1. ALL METAL PLATE-CONNECTED WOOD TRUSSES SHALL BE DESIGNED FOR THE LOADS SHOWN ON THE PLANS. SHOP DRAWINGS AND CALCULATIONS SHALL BE SEALED AND SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.

2. EACH TRUSS SHALL BE LEGIBLY BRANDED, MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE FOLLOWING INFORMATION LOCATED WITHIN 2 FEET OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD: A) IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS, B) THE DESIGN LOAD, AND C) THE SPACING OF THE TRUSS.

3. ALL BRIDGING, BEARING HARDWARE, BLOCKING, HANGERS, ETC., THAT CONNECT TO THE METAL PLATE-CONNECTED WOOD TRUSSES SHALL BE PER THE MANUFACTURERS STANDARD DETAILS. ERECTOR TO INSTALL METAL PLATE-CONNECTED WOOD TRUSSES IN ACCORDANCE WITH THE MANUFACTURERS DRAWINGS AND INSTALLATION GUIDELINES.

4. TRUSS MANUFACTURER TO INSPECT ALL TRUSSES AFTER THEY HAVE BEEN ERECTED AND FLOOR AND/OR ROOF SHEATHING, BRIDGING, BLOCKING, ETC., HAS BEEN INSTALLED. MANUFACTURER TO SUBMIT CERTIFICATE TO THE STRUCTURAL ENGINEER OF RECORD THAT THE INSPECTION WAS MADE AND THAT TRUSSES ARE IN ACCEPTABLE CONDITION AND MEET THE MANUFACTURER'S DESIGN AND INSTALLATION REQUIREMENTS.

5. TRUSSES SHALL BE DESIGNED FOR THE FOLLOWING:

METAL PLATE CONNECTED WOOD TRUSS DESIGN CRITERIA:	
ROOF TRUSSES	
DEAD LOAD	20 PSF TOP CHORD, 5 PSF BOTTOM CHORD
ROOF LIVE/SNOW LOAD	AS NOTED IN THE "DESIGN CRITERIA
ATTIC LIVE LOAD	20 PSF
TOTAL LOAD DEFLECTION LIMIT	L/240
ROOF LIVE/SNOW LOAD DEFLECTION LIMIT	L/360

METALS:

STRUCTURAL STEEL:

DESIGN FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF AISC SPECIFICATIONS AND AISC CODE OF STANDARD PRACTICE. STRUCTURAL STEEL SHALL BE:

STRUCTURAL STEEL	
SHAPE	MATERIAL SPECIFICATION AND GRADE
CHANNELS (C-SHAPES)	ASTM A36, GRADE 36
ANGLES (L-SHAPES)	ASTM A36, GRADE 36
STRUCTURAL PIPES	ASTM A53, GRADE B
PLATES	ASTM A36, GRADE 36

BOLTS SHALL CONFORM TO THE ASTM AND RCSC SPECIFICATIONS FOR JOINTS USING GROUP A OR GROUP B HIGH STRENGTH BOLTS. BOLTS SHALL BE INSTALLED SNUG-TIGHT UNLESS NOTED OTHERWISE.

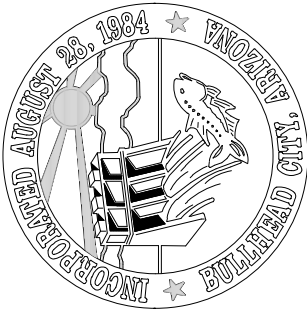
WELDING SHALL CONFORM TO AWS D1.1, *STRUCTURAL WELDING CODE - STEEL* WITH PREQUALIFIED WELDING PROCESSES EXCEPT AS MODIFIED BY AISC 360 SECTION J2. WELDING SHALL BE COMPLETED BY AWS-CERTIFIED WELDERS.

WELDS SHALL BE MADE USING E70XX ELECTRODES FOR SHIELDED METAL ARC WELDING (SMAW) AND E71TX WIRE FOR FLUX-CORED ARC WELDING (FCAW) PROCESSES. FOR COMPLETE JOINT PENETRATION WELDS ASSOCIATED WITH MEMBER SPLICES AND CONNECTIONS NOT PART OF THE SEISMIC FORCE RESISTING SYSTEM, WELDS SHALL BE MADE WITH FILLER METAL THAT HAS A MINIMUM CVN TOUGHNESS OF 20 FT-LBS AT 40°F.

FIELD WELDING SYMBOLS HAVE NOT NECESSARILY BEEN INDICATED ON THE DRAWING. WHERE SHOWN, PROPER FIELD WELDING PER AWS SHALL BE USED. WHERE NO FIELD WELDING SYMBOLS ARE SHOWN, IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE USE OF SHOP AND FIELD WELDS.

ERECTION AIDS ARE TO BE DETERMINED AND PROVIDED BY THE CONTRACTOR. THE CONTRACTOR'S ERECTOR AND FABRICATOR SHALL COORDINATE THE TYPE AND QUANTITY OF ERECTION AIDS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ERECTION SEQUENCING, TEMPORARY BRACING, SAFETY OF WORKERS, AND OVERALL COMPLIANCE WITH APPLICABLE OSHA REQUIREMENTS.

INTERIOR FRAMING THAT IS TO BE PAINTED SHALL HAVE A SHOP APPLIED PRIMER. EXTERIOR FRAMING OR FRAMING IN A ROOM WITH CORROSIVE MATERIAL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 AND FASTENERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153. REPAIR GALVANIZING AFTER ERECTION IS COMPLETE IN ACCORDANCE WITH ASTM A780.



CHECKED: MJB

DRAWN: DAH

DESIGN: AJM

DATE: 05/20/26

DESCRIPTION

REVISION DATE

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

GENERAL STRUCTURAL NOTES



DWG. NO.
S-2

SHEET NO.
18 of 68

Autodesk Docs://8519.017_BH_CITY_AERATION_BLOWERS_R22/8519017_BHCITY_BLOWER_BLDGS-STR_V2022.rvt

STATEMENT OF SPECIAL INSPECTION AND TESTING NOTES:

SPECIAL INSPECTIONS SHALL CONFORM TO CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE (IBC), CONTRACT DOCUMENTS, AND APPROVED SUBMITTALS. THE OWNER SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS AND TESTING DESCRIBED HEREIN.

SPECIAL INSPECTIONS AND ASSOCIATED TESTING SHALL BE PERFORMED BY AN APPROVED AND ACCREDITED INDEPENDENT AGENCY MEETING THE REQUIREMENTS OF ASTM E329 (GENERAL), ASTM D3740 (SOILS), ASTM C1077 (CONCRETE), ASTM A880 (STEEL), AND ASTM E543 (NON-DESTRUCTIVE). THE INSPECTION AND TESTING AGENCY SHALL FURNISH TO THE ENGINEER A COPY OF THEIR SCOPE OF ACCREDITATION. SPECIAL INSPECTORS SHALL BE APPROVED BY THE BUILDING OFFICIAL. WELDING INSPECTORS SHALL BE QUALIFIED PER AWS D1.1.

THE CONSTRUCTION OR WORK FOR WHICH SPECIAL INSPECTION IS REQUIRED SHALL REMAIN ACCESSIBLE AND EXPOSED FOR SPECIAL INSPECTION PURPOSES UNTIL COMPLETION OF THE REQUIRED SPECIAL INSPECTIONS.

THE SPECIAL INSPECTOR SHALL OBSERVE THE INDICATED WORK FOR COMPLIANCE WITH THE APPROVED CONTRACT DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION AND NOTED IN THE INSPECTION REPORTS. ISSUES REQUIRING IMMEDIATE CORRECTIVE ACTIONS OR ENGINEERING INPUT ARE TO BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY UPON DISCOVERY.

THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS FOR EACH INSPECTION TO THE BUILDING OFFICIAL, ENGINEER, CONTRACTOR, AND OWNER. THE SPECIAL INSPECTION AGENCY SHALL SUBMIT A FINAL REPORT STATING THAT THE WORK REQUIRING SPECIAL INSPECTION WAS INSPECTED, IS IN CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS, AND THAT ALL DISCREPANCIES NOTED IN THE REPORTS HAVE BEEN CORRECTED.

EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND- OR SEISMIC FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM, OR A WIND- OR SEISMIC-RESISTING COMPONENT LISTED SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO COMMENCEMENT OF WORK ON THE SYSTEM OF COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED HEREIN.

- INSPECTION FREQUENCY:
- A. CONTINUOUS INSPECTION: THE SPECIAL INSPECTOR SHALL BE PRESENT WHEN AND WHERE THE WORK IS BEING PERFORMED AT ALL TIMES.
 - B. PERIODIC INSPECTION: THE SPECIAL INSPECTOR SHALL BE INTERMITTENTLY PRESENT WHEN AND WHERE THE WORK IS BEING PERFORMED. THE INSPECTOR SHALL OBSERVE THE WORK AT ITS COMMENCEMENT, AT PERIODIC INTERVALS THEREAFTER, AND WHEN THE WORK IS COMPLETED.
 - C. OBSERVE: THE INSPECTOR SHALL OBSERVE THESE FUNCTIONS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING OBSERVATIONS (REFERENCE AISC 360 AND AISC 341 FOR ADDITIONAL INFORMATION).
 - D. PERFORM: THESE INSPECTIONS SHALL BE PERFORMED PRIOR TO FINAL ACCEPTANCE OF THE ITEM (REFERENCE AISC 360 AND AISC 341 FOR ADDITIONAL INFORMATION).
 - E. DOCUMENT: THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS (REFERENCE AISC 360 AND AISC 341 FOR ADDITIONAL INFORMATION).

SPECIAL INSPECTIONS ARE NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED SPECIAL INSPECTION AGENCY. AT COMPLETION OF FABRICATION, THE APPROVED FABRICATOR SHALL SUBMIT A CERTIFICATE OF COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

- A. STEEL FABRICATORS AND INSTALLERS CERTIFIED THROUGH AISC COMPLY WITH THIS PROVISION. THE FABRICATOR AND/OR INSTALLER MUST STILL COMPLETE AND DOCUMENT THE QUALITY CONTROL TASKS AND NON-DESTRUCTIVE TESTING OUTLINED IN AISC 360 AND AISC 341, AS APPLICABLE.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS				
TASK	IBC REFERENCE	REFERENCE STANDARD	FREQUENCY	REMARKS
VERIFY MATERIALS BELOW SHALLOW FOUNDATION ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	TABLE 1705.6	GEOTECHNICAL REPORT	PERIODIC	BY THE GEOTECHNICAL ENGINEER
			PERIODIC	
VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL			CONTINUOUS	
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT THE SITE HAS BEEN PREPARED PROPERLY			PERIODIC	

REQUIRED SPECIAL INSPECTIONS OF CONCRETE CONSTRUCTION				
TASK	IBC REFEREN...	REFERENCE STANDARD	FREQUENCY	REMARKS
INSPECTION OF REINFORCING STEEL AND PLACEMENT	TABLE 1705.3	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	PERIODIC	
INSPECTION OF ANCHORS CAST-IN CONCRETE		ACI 318: 17.8.2	PERIODIC	
INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE: VERIFY ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, PRODUCT EXPIRATION DATE (IF APPLICABLE), COMPLIANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE (IF APPLICABLE) FOR: a) ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS	TABLE 1705.3	ACI 318: 17.8.2.4 PRODUCT EVALUATION REPORT	CONTINUOUS	
INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE: VERIFY ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, PRODUCT EXPIRATION DATE (IF APPLICABLE), COMPLIANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE (IF APPLICABLE) FOR: b) MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN a)		ACI 318: 17.8.2 PRODUCT EVALUATION REPORT	PERIODIC	
VERIFY USE OF REQUIRED MIX DESIGN		ACI 318: CH. 19, 26.4.3, 26.4.4	PERIODIC	
INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES		ACI 318: 26.5, 26.12	CONTINUOUS	
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		ACI 318: 26.5.3-25.5.5	PERIODIC	
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		ACI 318: 26.11.1,2(b)	PERIODIC	

SPECIAL INSPECTION OF MASONRY CONSTRUCTION MINIMUM QUALITY ASSURANCE LEVEL					
DESIGNED IN ACCORDANCE WITH	RISK CATEGORY I, II OR III			RISK CATEGORY IV	REMARKS
TMS 402-16 PART 3 OR APPENDIX B OR APPENDIX C	LEVEL 2			LEVEL 3	THE QUALITY ASSURANCE PROGRAM SHALL COMPLY WITH THE LEVEL DEFINED IN TABLE 3.1, DEPENDING ON HOW THE MASONRY WAS DESIGNED AND THE RISK CATEGORY, AS DEFINED IN ASCE 7 OR THE LEGALLY ADOPTED BUILDING CODE
SPECIAL INSPECTION OF MASONRY CONSTRUCTION MINIMUM VERIFICATION REQUIREMENTS					
MINIMUM VERIFICATION	REQUIRED FOR QA			REFERENCE FOR CRITERIA	REMARKS
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 602	
PRIOR TO CONSTRUCTION, VERIFICATION OF COMPLIANCE OF SUBMITTALS	R	R	R	ART. 1.5	
PRIOR TO CONSTRUCTION, VERIFICATION OF f _m AND f _{acc} , EXCEPT WHERE SPECIFICALLY EXEMPTED BY THE CODE	NR	R	R	ART 1.4B	
DURING CONSTRUCTION, VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) WHEN SELF-CONSOLIDATION GROUT IS DELIVERED TO THE PROJECT SITE	NR	R	R	ART 1.5, 1.6.3	
DURING CONSTRUCTION, VERIFICATION OF f _m AND f _{acc} , FOR EVERY 5,000 SQ. FT. (465 SQ. M)	NR	NR	R	ART. 1.4B	
DURING CONSTRUCTION, VERIFICATION OF PROPORTIONS OF MATERIALS AS DELIVERED TO THE PROJECT SITE FOR PREMIXED OR PREBLENDED MORTAR, PRESTRESSING GROUT, AND GROUT OTHER THAN SELF-CONSOLIDATING GROUT	NR	NR	R	ART. 1.4B	
INSPECTION OF ANCHORS POST-INSTALLED IN MASONRY CONSTRUCTION. VERIFY ANCHOR PRODUCT NAME, TYPE, AND DIMENSIONS, HOLE DIMENSIONS, COMPLIANCE WITH DRILL BIT REQUIREMENTS, CLEANLINESS OF THE HOLE AND ANCHOR, PRODUCT EXPIRATION DATE (IF APPLICABLE), COMPLIANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, ANCHOR EMBEDMENT, AND TIGHTENING TORQUE (IF APPLICABLE)	R	R	R		PERIODIC INSPECTION

SPECIAL INSPECTION TASKS AS MASONRY CONSTRUCTION BEGINS						
INSPECTION TASK	FREQUENCY			REFERENCE FOR CRITERIA		REMARKS
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 402	TMS 602	
PROPORTIONS OF SITE-PREPARED MORTAR	NR	P	P		ART. 2.1, 2.6 A, & 2.6C	
GRADE, TYPE AND SIZE OF REINFORCEMENT, CONNECTORS, ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	NR	P	P		ART. 3.4 & 3.6 A	
SAMPLE PANEL CONSTRUCTION	NR	P	C		ART. 1.6 D	

SPECIAL INSPECTION OF MASONRY CONSTRUCTION PRIOR TO GROUTING						
INSPECTION TASK	FREQUENCY			REFERENCE FOR CRITERIA		REMARKS
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 402	TMS 602	
GROUT SPACE	NR	P	C		ART. 3.2 D & 3.2 F	
PLACEMENT OF REINFORCEMENT CONNECTORS, AND ANCHOR BOLTS	NR	P	C	SEC 6.1, 6.3.1, 6.3.6, & 6.3.7	ART 3.2E & 3.4	

SPECIAL INSPECTION TASKS DURING MASONRY CONSTRUCTION						
INSPECTION TASK	FREQUENCY			REFERENCE FOR CRITERIA		REMARKS
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 402	TMS 602	
MATERIALS AND PROCEDURES WITH THE APPROVED SUBMITTALS	NR	P	P		ART. 1.5	
PLACEMENT OF MASONRY UNITS AND MORTAR JOINT CONSTRUCTION	NR	P	P		ART. 3.3B	
SIZE AND LOCATION OF STRUCTURAL MEMBERS	NR	P	P		ART. 3.3F	
TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	NR	P	C	SEC. 1.2.1(E), 6.2.1, & 6.3.1		
WELDING OF REINFORCEMENT	NR	C	C	SEC. 6.1.6.1.2		
PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40 DEGREES FAHRENHEIT (4.4 DEGREES CELSIUS)) OR HOT WEATHER (TEMPERATURE ABOVE 90 DEGREES FAHRENHEIT (32.2 DEGREES CELSIUS))	NR	P	P		ART. 1.8C & 1.8D	
CONSTRUCTION OF THIN-BED MORTAR JOINTS	NR	C / P	C		ART. 3.3 B.9 & 3.3 F.1.B	

SPECIAL INSPECTION TASKS DURING MASONRY TESTING						
INSPECTION TASK	FREQUENCY			REFERENCE FOR CRITERIA		REMARKS
	LEVEL 1	LEVEL 2	LEVEL 3	TMS 402	TMS 602	
OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	NR	P	C		ART. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, & 1.4 B.4	

TESTING OF MASONRY CONSTRUCTION LEVEL 2 QUALITY ASSURANCE			
TASK	IBC REFERENCE	REFERENCE STANDARD	FREQUENCY
VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX AS DELIVERED TO THE PROJECT SITE FOR SELF CONSOLIDATING GROUT	1705.4	TMS TABLE 1.19.2	
VERIFICATION OF f _m PRIOR TO CONSTRUCTION BY THE UNIT STRENGTH METHOD			

TESTING OF SOILS AND FOUNDATIONS			
TASK	IBC REFERENCE	REFERENCE STANDARD	FREQUENCY
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	TABLE 1705.6	PROJECT GEOTECHNICAL REPORT	PERIODIC

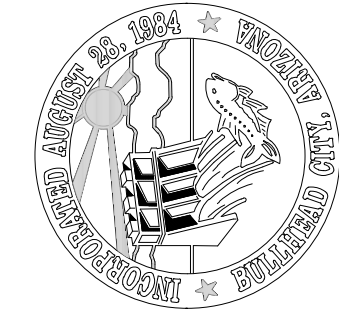
TESTING OF CONCRETE CONSTRUCTION			
TASK	IBC REFERENCE	REFERENCE STANDARD	FREQUENCY
CONCRETE STRENGTH TEST SPECIMENS	TABLE 1705.3	ASTM C31 AND C39	FOR EACH CLASS OF CONCRETE (E.G. FOOTINGS, WALLS, OR SLAB ON GRADE), ONE SET OF SPECIMENS EACH DAY OR LESSER OF: ONE SET FOR EACH 150 YDS OF CONCRETE OR ONE SET FOR EACH 5,000 SQUARE FEET OF SLABS OR WALL
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF CONCRETE		ASTM C172 ACI 318-14: 26.4 AND 26.12	FOR EACH SPECIMEN

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			DESCRIPTION			

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
STATEMENT OF SPECIAL INSPECTIONS



SYMBOL/ANNOTATION	DESCRIPTION
	EARTH/SOIL HATCH
	GRANULAR FILL/GRAVEL HATCH
	CONCRETE HATCH
	GROUT HATCH
	MASONRY HATCH
	STEEL HATCH
	RIGID INSULATION HATCH
	BARE STEEL DECK
	NORTH ARROW
	DETAIL CALLOUT (90 DEGREE ORIENTATION TO CURRENT VIEW) VIEW ORIENTED TOWARD ARROW
	DETAIL CALLOUT (MATCHES ORIENTATION OF CURRENT VIEW) ENLARGED VIEW
	ELEVATION CALLOUT
	SECTION CALLOUT
	COMPONENT ELEVATION
	SLAB/DECK/WALL OPENING
	TOP OF WALL ELEVATION STEP
	BLOCKOUT AT TOP OF WALL OR DOOR OPENING

SYMBOLS & ANNOTATIONS

ABV	ABOVE	J	JOIST
ADDL	ADDITIONAL		
AA	ADHESIVE ANCHOR	LAM	LAMINATED
AD	ADHESIVE DOWEL	LVL	LAMINATED VENEER LUMBER
ALT	ALTERNATE	LF	LINEAR FEET
ACI	AMERICAN CONCRETE INSTITUTE	LL	LONG LEG
ANSC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	LLH	LONG LEG HORIZONTAL
		LLV	LONG LEG VERTICAL
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE		
APA	AMERICAN PLYWOOD ASSOCIATION	MFR	MANUFACTURER
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS	M	MASONRY
		ML	MASONRY LINTEL
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS	MATL	MATERIAL
AB	ANCHOR BOLT	MAX	MAXIMUM
AR	ANCHOR ROD	MECH	MECHANICAL
L	ANGLE	MBR	MEMBER
ARCH	ARCHITECT	MTL	METAL
		MD	METAL DECK
B PL	BASE PLATE	MEZZ	MEZZANINE
BSMT	BASEMENT	MIN	MINIMUM
BM	BEAM	MISC	MISCELLANEOUS
BRG	BEARING		
BLW	BELOW	NLB	NONLOAD BEARING
BTWN	BETWEEN	N	NORTH
BLKG	BLOCKING	NA	NOT APPLICABLE
DOT	BOTTOM	NTS	NOT TO SCALE
BC	BOTTOM CHORD	NO	NUMBER
BLDG	BUILDING		
BU	BUILT UP	OC	ON CENTER
		OPNG	OPENING
CANTIL	CANTILEVER	OWJ	OPEN WEB JOIST
CB	CARRIAGE BOLT	OPP	OPPOSITE
CP	CAST IN PLACE		
CTR	CENTER	PAR	PARALLEL
CTRD	CENTERED	PERP	PERPENDICULAR
CL	CENTERLINE	PREFAB	PREFABRICATE
C	CHANNEL	PH	PHASE
CLR	CLEAR	PC	PIER CAP/CONCRETE PILE
CLRMF	COLD FORMED METAL FRAMING	PL	PLATE
COL	COLUMN	PLYWD	PLYWOOD
CONC	CONCRETE	LBS	POUND
CC	CONCRETE COLUMN	PLF	POUNDS PER LINEAR FOOT
CMU	CONCRETE MASONRY UNIT	PSF	POUNDS PER SQUARE FOOT
CONN	CONNECTION	PSI	POUNDS PER SQUARE INCH
CD	CONSTRUCTION DOCUMENTS	PAF	POWER-ACTUATED FASTENERS
CJ	CONSTRUCTION JOINT	PT	PRESSURE TREATED
CONT	CONTINUOUS/CONTINUED		
CF	CONTINUOUS CONCRETE FOOTING	QA	QUALITY ASSURANCE
CONTR	CONTRACTOR		
CJ	CONTROL JOINT	R	RADIUS
COORD	COORDINATE	REF	REFERENCE
X BRACE	CROSS BRACE	REINF	REINFORCE, REINFORCING
		REBAR	REINFORCING STEEL BARS
D	PENNY (NAIL) OR DEPTH	REQT	REQUIREMENT
DL	DEAD LOAD	REV	REVISION
DEG	DEGREE	RT	RIGHT
DEMO	DEMOLITION	RGD INS	RIGID INSULATION
DET	DETAIL	RD	ROUND
DIM	DIMENSION		
DIST	DISTANCE	SCHED	SCHEDULE
DOUG FIR	DOUGLASS FIR	SA	SCREW ANCHOR
DWL	DOWEL	SHTHG	SHEDDING
DWG	DRAWING	SIM	SIMILAR
		SCJ	SLAB CONTRACTION JOINT
EA	EACH	SQ	SQUARE
EW	EACH WAY	SF	SQUARE FEET
ELEV	ELEVATOR	SI	SQUARE INCH
ENGR	ENGINEER	SPEC	SPECIFICATION
EQ	EQUAL/ EQUALLY	STD	STANDARD
EQUIP	EQUIPMENT	STL	STEEL
EXST	EXISTING	SD	STEEL DECK
EXP	EXPANSION	STL JST	STEEL JOIST
EXP BT	EXPANSION BOLT	STIF	STIFFENER
EXT	EXTERIOR	STRUCT	STRUCTURAL
		SIP	STRUCTURAL INSULATED PANEL
FO	FACE OF	SUB FLR	SUBFLOOR
FSTNR	FASTENER	SUB	SUBSTITUTE
FT	FEET		
FLR	FLOOR	KIP	THOUSAND POUNDS
FDTN	FOUNDATION	TB	THROUGH BOLT
FTNG	FOOTING	TMBR	TIMBER
FS	FOOTING STEP	T&G	TONGUE AND GROOVE
		T&B	TOP AND BOTTOM
GALV	GALVANIZED	TOB	TOP OF BEAM
GA	GAUGE	TOC	TOP OF CONCRETE
GC	GENERAL CONTRACTOR	TOD	TOP OF DECK/ SHEATHING
GL	GLUE LAMINATED	TOF	TOP OF FOOTING
GLB	GLUE LAMINATED BEAM	TOM	TOP OF MASONRY
GR	GRADE	TOS	TOP OF STEEL
GR BM	GRADE BEAM	TOW	TOP OF WALL
GT	GROUT	TJ	TRUSS JOIST
GYP	GYPSUM	TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
HGR	HANGER		
HSA	HEADED STUD ANCHOR	VIF	VERIFY IN FIELD
HDR	HEADER	VERT	VERTICAL
HT	HEIGHT		
H	HIGH	WLD	WELD/WELDED
HD	HOLD-DOWN	WWF	WELDED WIRE FABRIC
HSS	HOLLOW STRUCTURAL SECTION	W	WIDE
HK	HOOK	WF	WIDE FLANGE
HORIZ	HORIZONTAL	WL	WIND LOAD
		W/	WITH
INFO	INFORMATION	W/O	WITHOUT
INT	INTERIOR	WD	WOOD
IBC	INTERNATIONAL BUILDING CODE	HG	WOOD BEAM HANGER
		WP	WORKING POINT

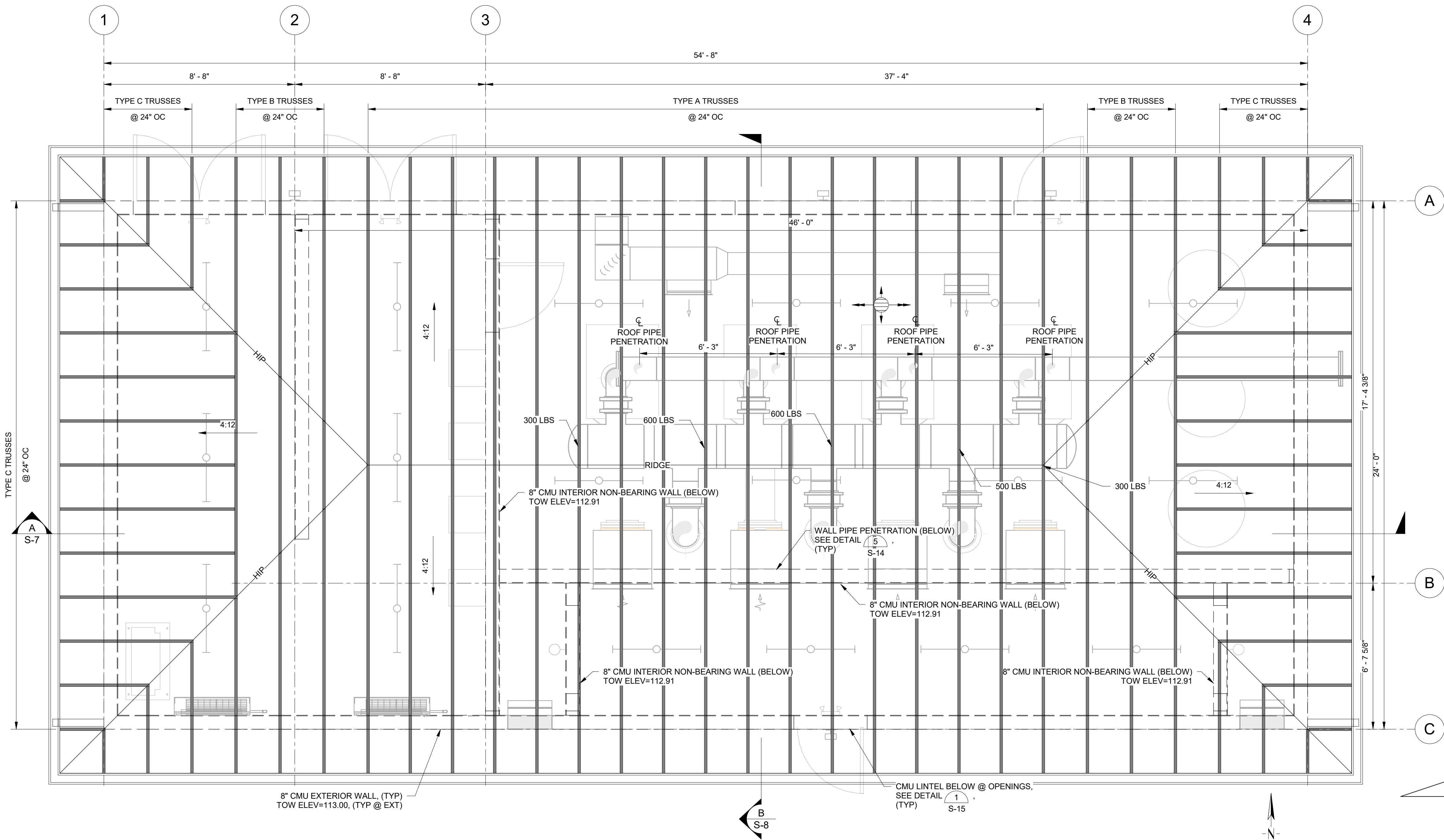
STRUCTURAL ABBREVIATIONS

[illegible]



DWG. NO. S-5	SHEET NO. 21 OF 6
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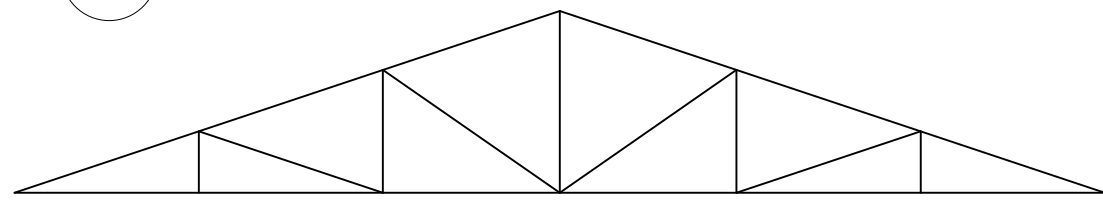


AERATION BASIN BLOWER BUILDING ROOF PLAN
SCALE: 3/8" = 1'-0"

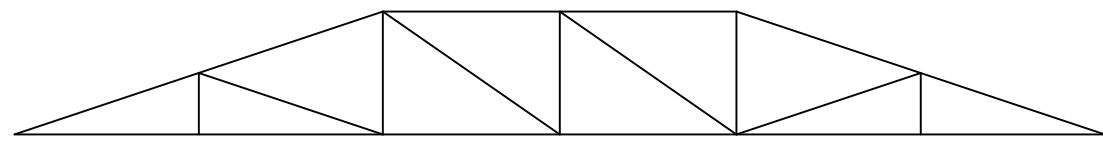
GENERAL NOTES:

- A. STRUCTURAL DATUM ELEVATION = 100'-0" AT TOP OF FINISHED FLOOR (CIVIL ELEVATION 508.50). ALL SPOT ELEVATIONS ARE IN REFERENCE TO THE STRUCTURAL DATUM.
- B. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
- C. REFER TO THE DRAWING ANNOTATIONS & SYMBOLS FOR EXPLANATION OF DRAWING CONVENTIONS.
- D. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS ON PLAN; IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.
- E. COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:
- a. SIZES AND LOCATIONS OF OPENINGS AND PENETRATIONS THROUGH WALLS; SEE PROCESS, CIVIL, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
 - b. ALL OPENINGS IN ROOF DECK ARE NOT SPECIFICALLY SHOWN ON PLAN. ALL OPENINGS SHALL BE COORDINATED WITH PROCESS, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS. REFER TO TYPICAL DETAILS FOR DECK REINFORCEMENT.
 - c. LOCATION SIZE, AND ANCHORAGE OF ELECTRICAL, MECHANICAL, AND PLUMBING EQUIPMENT; SEE ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
- F. WOOD TRUSSES TO BE DESIGNED FOR ADDITIONAL GRAVITY LOADS SHOWN ON PLAN FROM PROCESS EQUIPMENT IN ADDITION TO LOADS AND CRITERIA STATED IN THE GENERAL STRUCTURAL NOTES. CONTRACTOR TO COORDINATE FINAL EQUIPMENT WEIGHT, LOCATION, AND SUPPORT ATTACHMENT TO TRUSS PER MANUFACTURER.
- G. CONTRACTOR TO PROVIDE AND COORDINATE HVAC LOADING AND CONNECTION REQUIREMENTS TO TRUSSES PER MANUFACTURER.
- H. ALL CONCRETE WALL AND SLAB PENETRATIONS SEE DETAIL (3305)

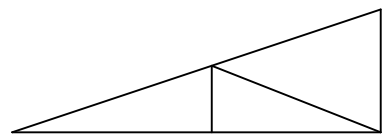
'X' LBS
'X' DENOTES ADDITIONAL CONCENTRATED POINT DEAD LOAD FOR TRUSS DESIGN. COORDINATE EXACT LOCATION WITH PROCESS DRAWINGS.



TYPE A TRUSS



TYPE B TRUSS



TYPE C TRUSS

TRUSS TYPES
SCALE: N.T.S.



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DRAWN: DAH

DESIGN: AJM

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BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATION BASIN BLOWER BUILDING
ROOF PLAN



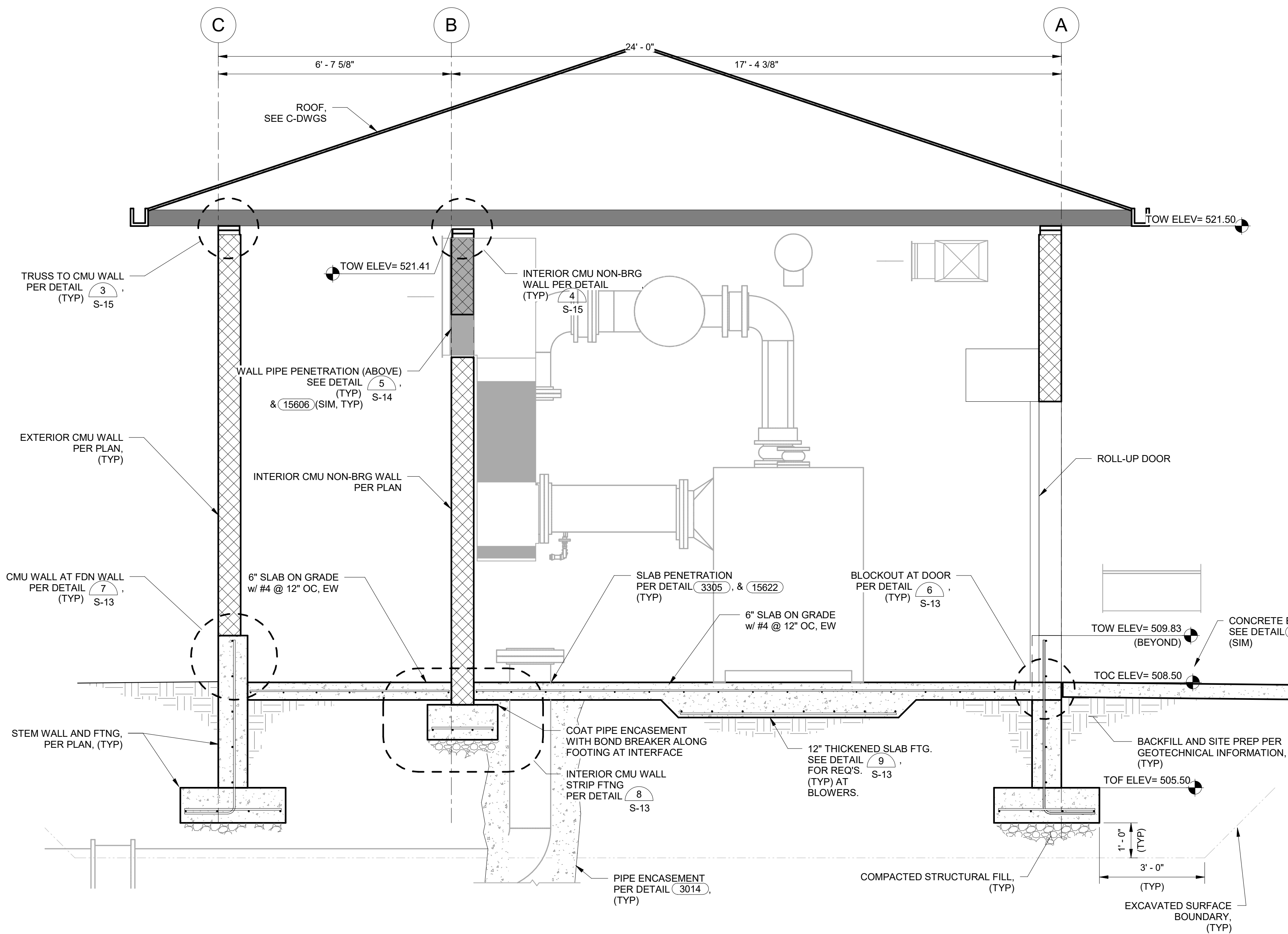
DWG. NO.
S-6

SHEET NO.
22 OF 68

- A. TOP 1'-0" OF EXCAVATED SURFACE BELOW EXTENT OF COMPACTED STRUCTURAL FILL TO BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- B. FREE DRAINING CRUSHED AGGREGATE SHALL HAVE LESS THAN 5% PASSING # 200 SIEVE AND BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- C. SEE S-1 FOR ADDITIONAL SUBGRADE PREP REQUIREMENTS.
- D. SEE GEOTECHNICAL INFORMATION FOR ADDITIONAL SITE GRADING AND BACKFILL REQUIREMENTS.
- E. CONCRETE BELOW GRADE SHALL BE PROTECTED WITH BITUMINOUS DAMPPROOFING. SEE SPECIFICATIONS.
- F. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. ALL TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS IN SECTION VIEW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.



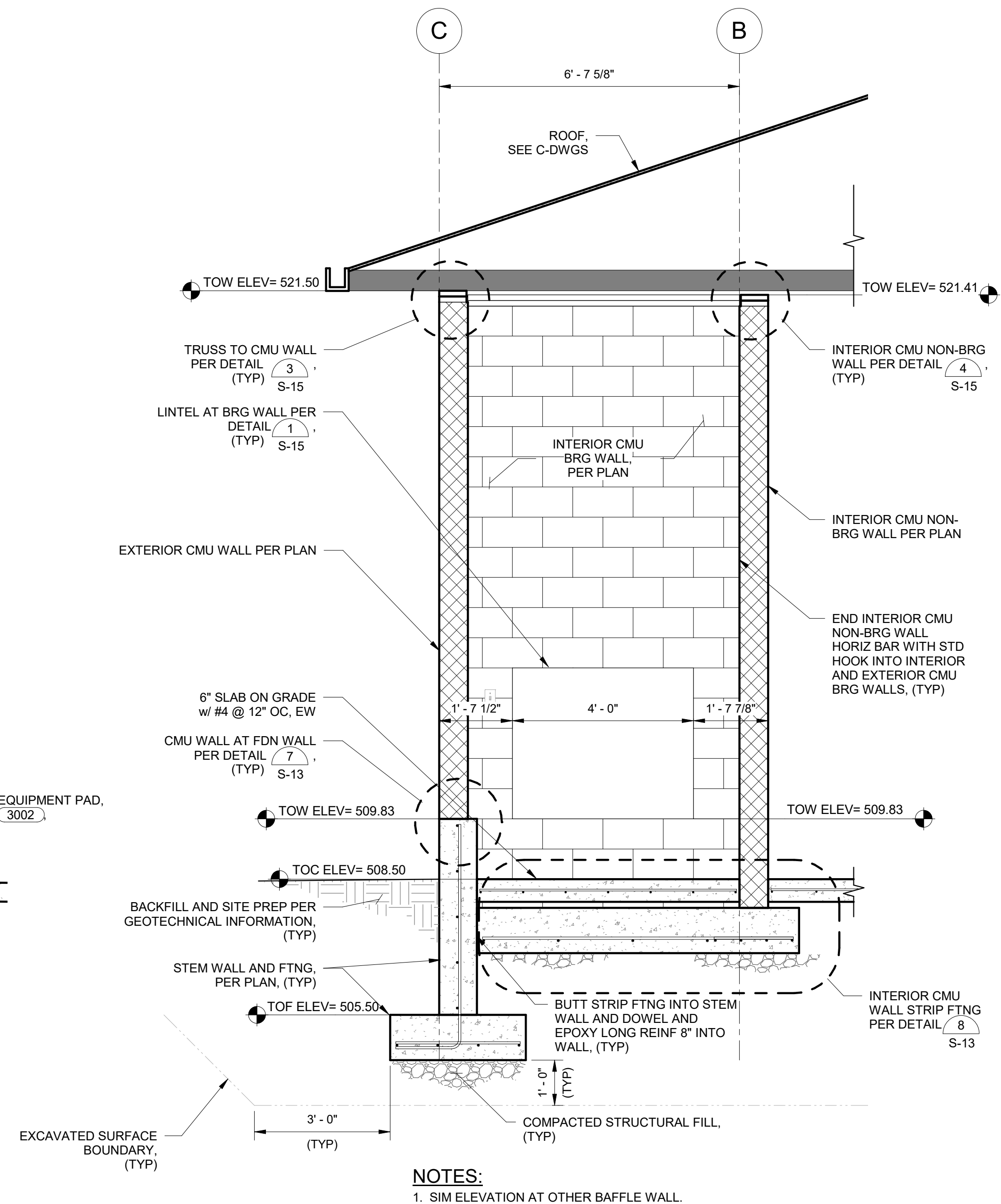
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B **AERATION BASIN BLOWER BUILDING SECTION**
S-5 SCALE: 1/2" = 1'-0"

GENERAL NOTES:

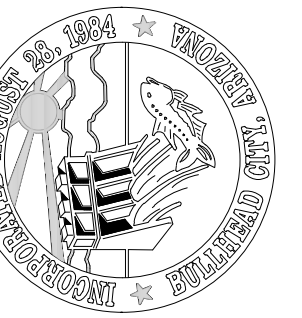
- A. TOP 1'-0" OF EXCAVATED SURFACE BELOW EXTENT OF COMPACTED STRUCTURAL FILL TO BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- B. FREE DRAINING CRUSHED AGGREGATE SHALL HAVE LESS THAN 5% PASSING #200 SIEVE AND BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- C. SEE S-1 FOR ADDITIONAL SUBGRADE PREP REQUIREMENTS.
- D. SEE GEOTECHNICAL INFORMATION FOR ADDITIONAL SITE GRADING AND BACKFILL REQUIREMENTS.
- E. CONCRETE BELOW GRADE SHALL BE PROTECTED WITH BITUMINOUS DAMPPROOFING. SEE SPECIFICATIONS.
- F. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. ALL TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS IN SECTION VIEW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.



C AERATION BASIN BLOWER BUILDING SECTION
SCALE: 1/2" = 1'-0"

NOTES:

1. SIM ELEVATION AT OTHER BAFFLE WALL.



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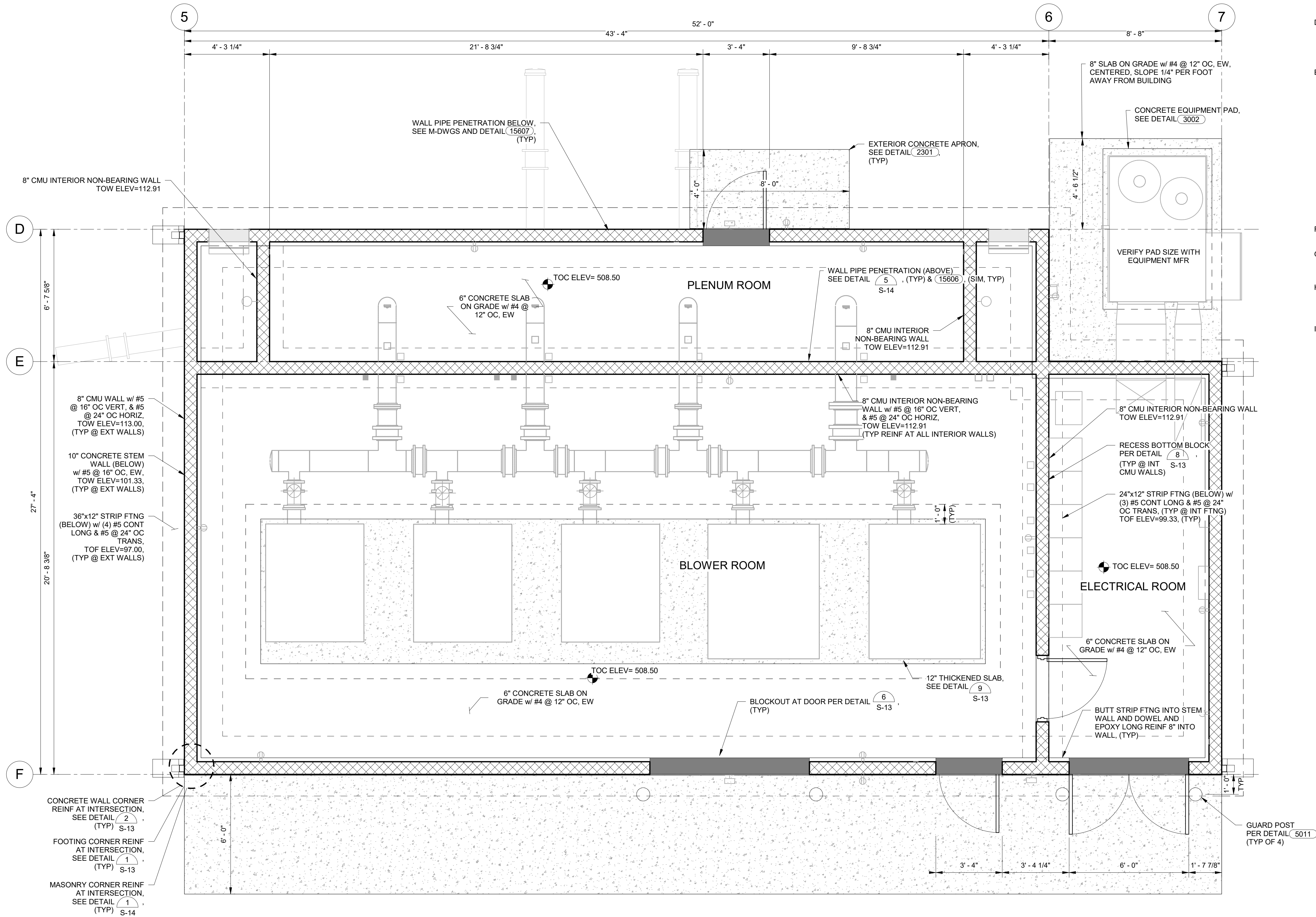
BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

**AERATION BASIN BLOWER BUILDING
STRUCTURAL SECTIONS**



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DIGESTER BLOWER BUILDING FOUNDATION/MAIN FLOOR PLAN

SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- STRUCTURAL DATUM ELEVATION = 100'-0" AT TOP OF FINISHED FLOOR (CIVIL ELEVATION 504.25). ALL SPOT ELEVATIONS ARE IN REFERENCE TO THE STRUCTURAL DATUM.
- REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS
- REFER TO THE DRAWING ANNOTATIONS & SYMBOLS FOR EXPLANATION OF DRAWING CONVENTIONS.
- REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS ON PLAN; IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.
- COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:
 - SUBGRADE PREPARATION REQUIREMENTS BELOW FOOTINGS AND SLABS ON GRADE AND BACKFILL REQUIREMENTS BEHIND FOUNDATION WALLS; SEE THE PROJECT GEOTECHNICAL INFORMATION.
 - SIZES AND LOCATIONS OF EQUIPMENT OPENINGS AND PENETRATIONS THROUGH WALLS AND FLOORS; SEE PROCESS, CIVIL, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
 - EXTERIOR CONCRETE, INCLUDING SLABS AND SITE RETAINING WALLS; SEE CIVIL DRAWINGS.
 - LOCATION SIZE, AND ANCHORAGE OF ELECTRICAL MECHANICAL, AND PLUMBING EQUIPMENT; SEE ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS. COORDINATE WITH EQUIPMENT MFR PRIOR TO PLACING CONCRETE TO VERIFY ANCHORAGE EMBEDMENT.
 - WINDOW AND DOOR LOCATIONS AND ROUGH OPENING SIZES IN WALLS. SEE CIVIL DRAWINGS.
- GRIDLINES ARE ALIGNED TO THE OUTSIDE FACE OF FOUNDATION AND CMU WALL, UNLESS NOTED OTHERWISE.
- CONSTRUCTION JOINT LOCATIONS FOR CONCRETE WORK ARE NOT SHOWN. THE CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR REVIEW AND APPROVAL.
- LOCATIONS OF SLAB ON GRADE CONTROL JOINTS ARE NOT SHOWN. THE CONTRACTOR SHALL SUBMIT A DETAILED LAYOUT OF PROPOSED JOINT LOCATIONS AT LEAST (7) DAYS PRIOR TO SLAB PLACEMENT FOR REVIEW AND APPROVAL.
- ALL CONCRETE WALL AND SLAB PENETRATIONS SEE DETAIL (3305)

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DESIGNED BY
MICHAEL J. BRENNAN
05/01/2026
ARIZONA U.S.A.
Expires: June 30, 2027

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DATE: 05/20/26

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DESCRIPTION

DATE

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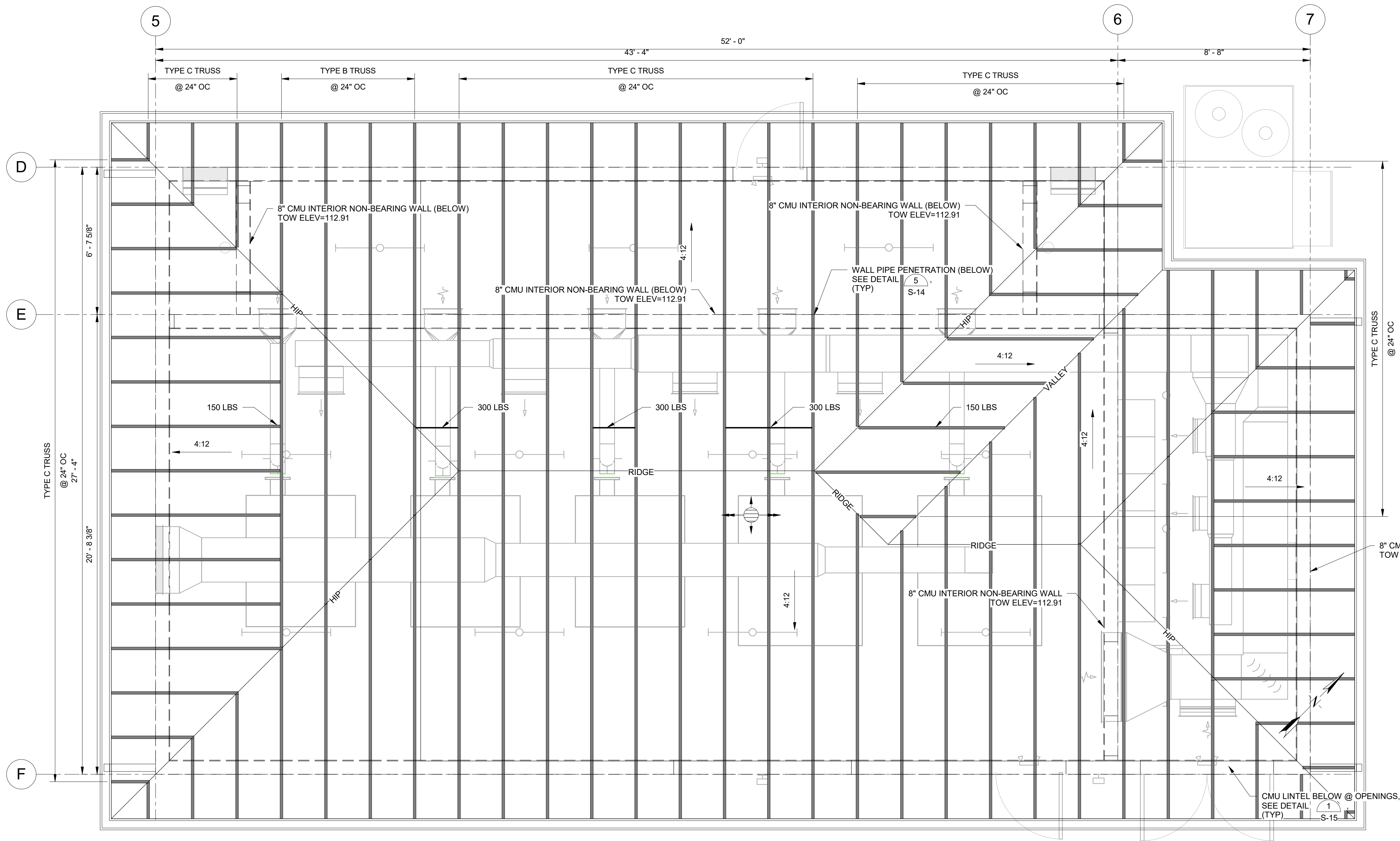
BLOWER BUILDINGS IMPROVEMENTS

DIGESTER BLOWER BUILDING
FOUNDATION/ MAIN FLOOR PLAN

DWG. NO.
S-9

SHEET NO.
25 OF 68

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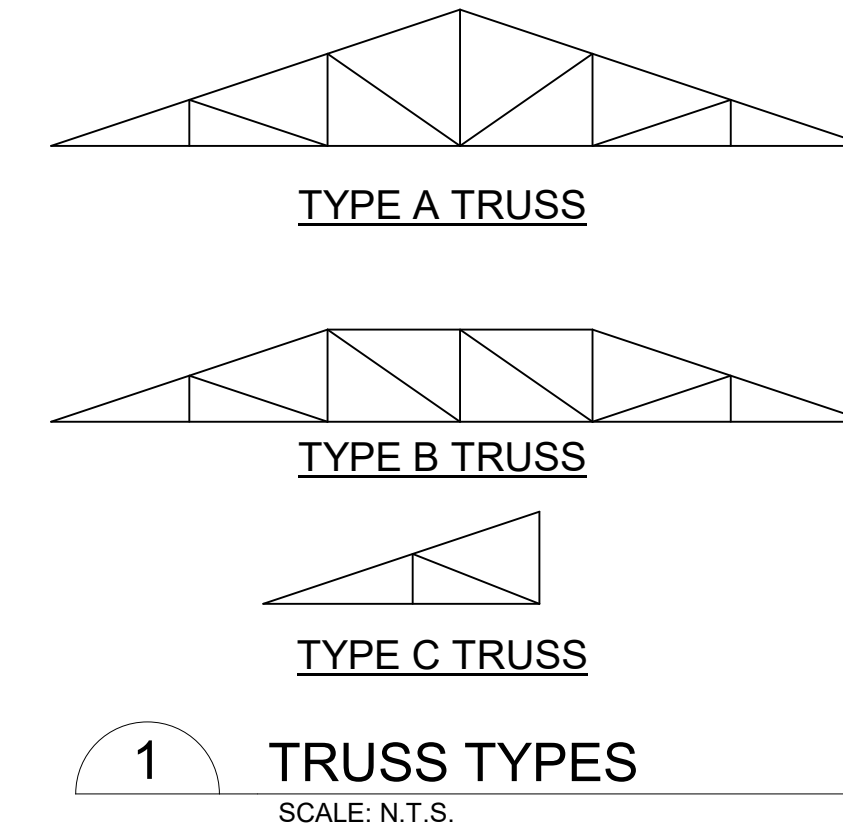


DIGESTER BLOWER BUILDING ROOF PLAN
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- A. STRUCTURAL DATUM ELEVATION = 100'-0" AT TOP OF FINISHED FLOOR (CIVIL ELEVATION 504.25). ALL SPOT ELEVATIONS ARE IN REFERENCE TO THE STRUCTURAL DATUM.
- B. REFER TO THE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
- C. REFER TO THE DRAWING ANNOTATIONS & SYMBOLS FOR EXPLANATION OF DRAWING CONVENTIONS.
- D. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS ON PLAN; IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.
- E. COORDINATE THE FOLLOWING ITEMS WITH DRAWINGS OF OTHER DISCIPLINES:
- a. SIZES AND LOCATIONS OF OPENINGS AND PENETRATIONS THROUGH WALLS; SEE PROCESS, CIVIL, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
 - b. ALL OPENINGS IN ROOF DECK ARE NOT SPECIFICALLY SHOWN ON PLAN. ALL OPENINGS SHALL BE COORDINATED WITH PROCESS, ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS. REFER TO TYPICAL DETAILS FOR DECK REINFORCEMENT.
 - c. LOCATION SIZE, AND ANCHORAGE OF ELECTRICAL, MECHANICAL, AND PLUMBING EQUIPMENT; SEE ELECTRICAL, MECHANICAL, AND PLUMBING DRAWINGS.
- F. WOOD TRUSSES TO BE DESIGNED FOR ADDITIONAL GRAVITY LOADS SHOWN ON PLAN FROM PROCESS EQUIPMENT IN ADDITION TO LOADS AND CRITERIA STATED IN THE GENERAL STRUCTURAL NOTES. CONTRACTOR TO COORDINATE FINAL EQUIPMENT WEIGHT, LOCATION, AND SUPPORT ATTACHMENT TO TRUSSES PER MANUFACTURER.

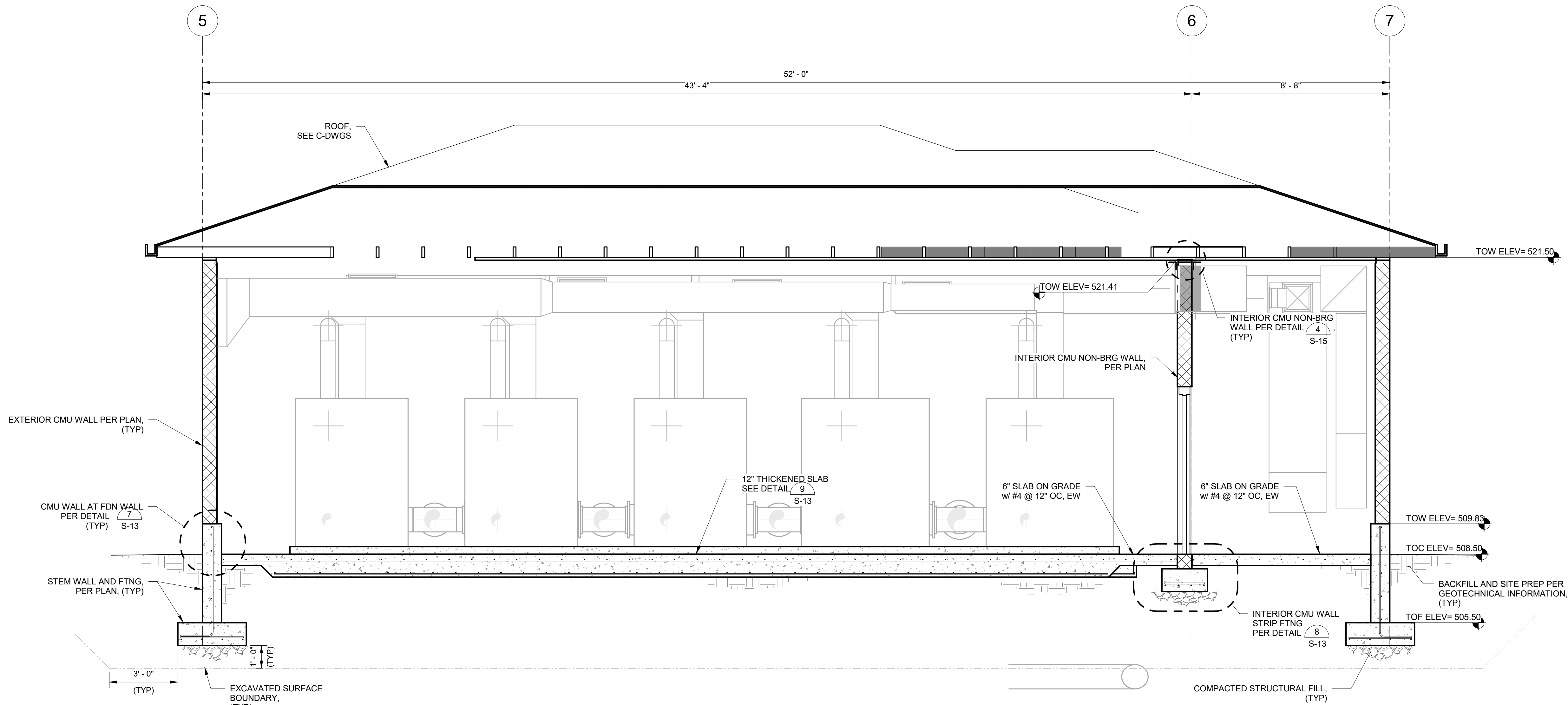
- 'X' LBS 'X' DENOTES ADDITIONAL CONCENTRATED POINT DEAD LOAD FOR TRUSS DESIGN. COORDINATE EXACT LOCATION WITH PROCESS DRAWINGS.
- G. CONTRACTOR TO PROVIDE AND COORDINATE HVAC LOADING AND CONNECTION REQUIREMENTS TO TRUSSES PER MANUFACTURER.
- H. ALL CONCRETE WALL AND SLAB PENETRATIONS SEE DETAIL 3305



BULLHEAD CITY SECTION 10					
BLOWER BUILDINGS IMPROVEMENTS					
DIGESTER BLOWER BUILDING ROOF PLAN					
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DATE: 05/20/26					
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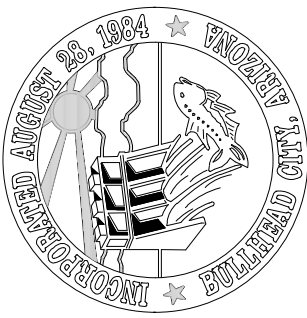
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D DIGESTER BLOWER BUILDING SECTION
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- A. TOP 1'-0" OF EXCAVATED SURFACE BELOW EXTENT OF COMPACTED STRUCTURAL FILL TO BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- B. FREE DRAINING CRUSHED AGGREGATE SHALL HAVE LESS THAN 5% PASSING # 200 SIEVE AND BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- C. SEE S-1 FOR ADDITIONAL SUBGRADE PREP REQUIREMENTS.
- D. SEE GEOTECHNICAL INFORMATION FOR ADDITIONAL SITE GRADING AND BACKFILL REQUIREMENTS.
- E. CONCRETE BELOW GRADE SHALL BE PROTECTED WITH BITUMINOUS DAMPPROOFING. SEE SPECIFICATIONS.
- F. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. ALL TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS IN SECTION VIEW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.



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BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

DIGESTER BLOWER BUILDING

STRUCTURAL SECTION



DWG. NO.
S-11

SHEET NO.
27 OF 68



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BULLHEAD CITY SECTION 10

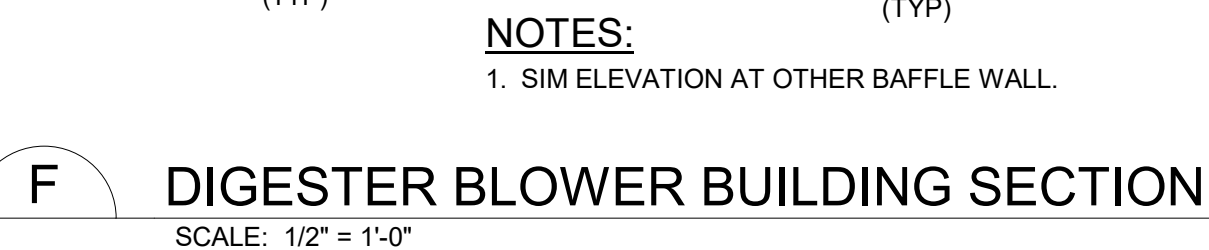
BLOWER BUILDINGS IMPROVEMENTS

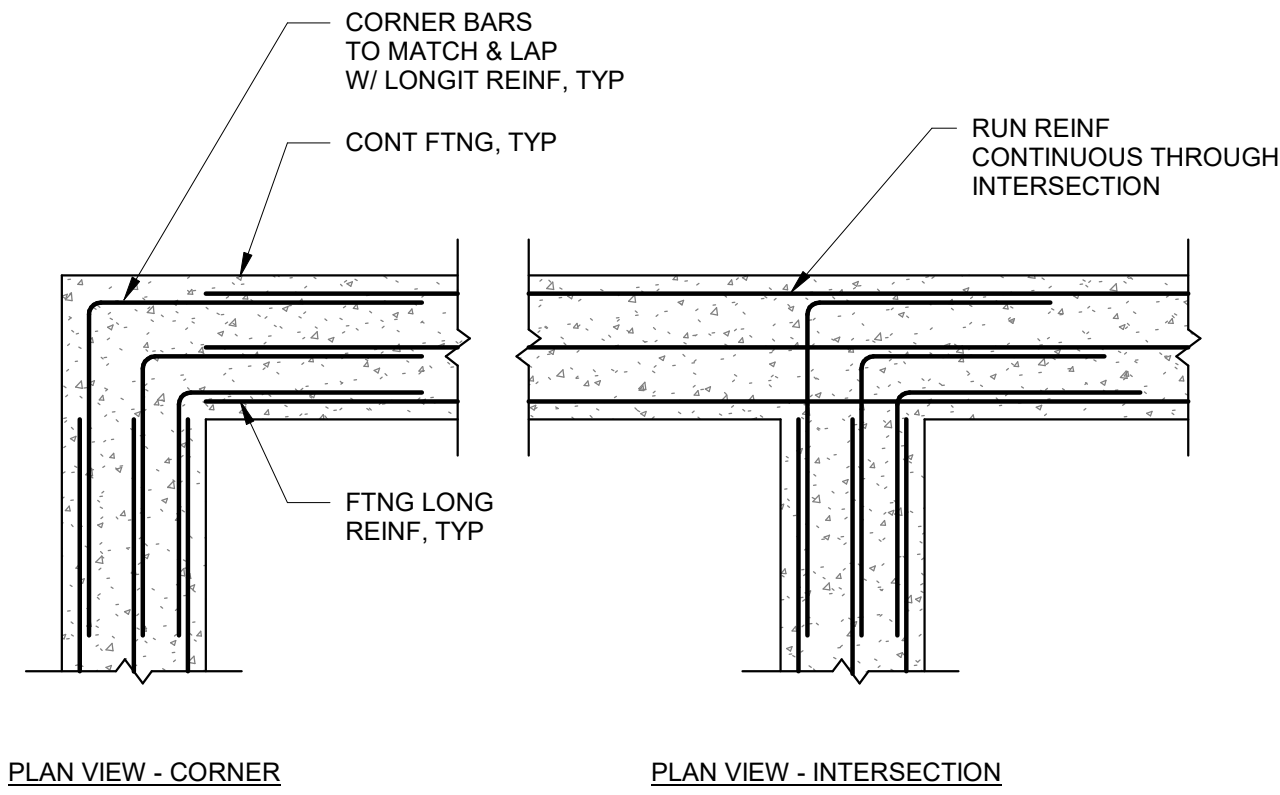
**DIGESTER BLOWER BUILDING
STRUCTURAL SECTIONS**



DWG. NO. S-12	SHEET NO. 28 OF 68
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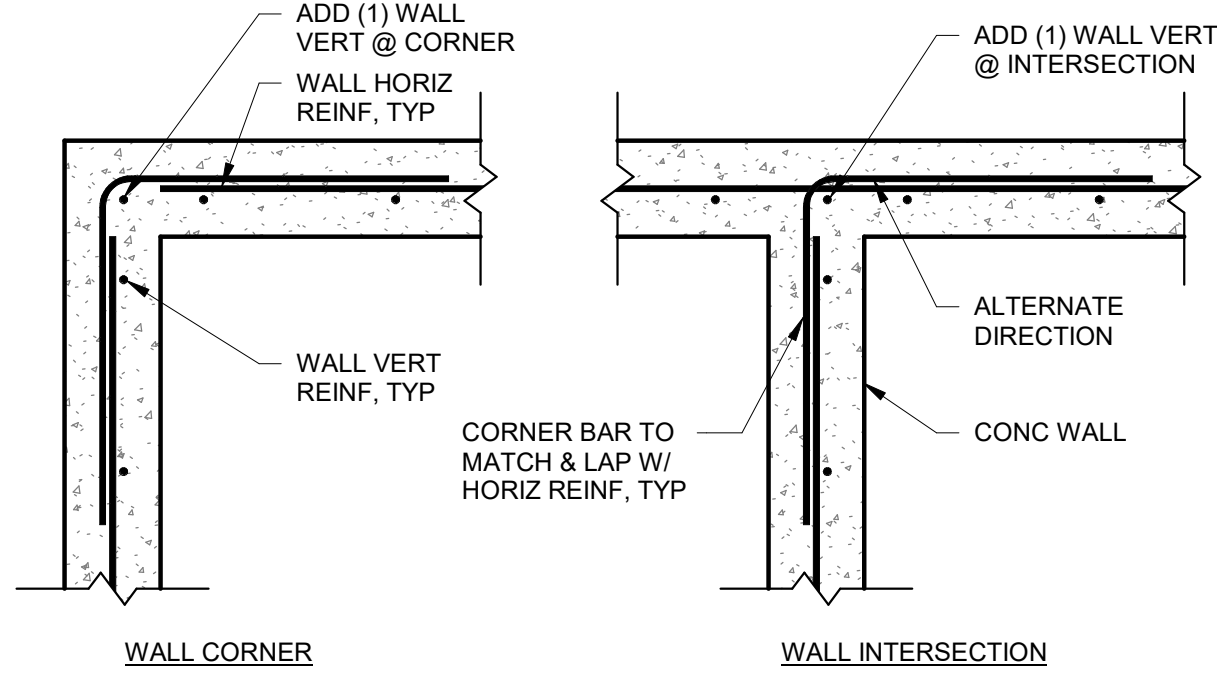
- A. TOP 1'-0" OF EXCAVATED SURFACE BELOW EXTENT OF COMPACTED STRUCTURAL FILL TO BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- B. FINE DRAINING CRUSHED AGGREGATE SHALL HAVE LESS THAN 5% PASSING #200 SIEVE AND BE COMPACTED TO 98% OF MAXIMUM DRY DENSITY PER ASTM D698. REFER TO GEOTECHNICAL INFORMATION.
- C. SEE S-1 FOR ADDITIONAL SUBGRADE PREP REQUIREMENTS.
- D. SEE GEOTECHNICAL INFORMATION FOR ADDITIONAL SITE GRADING AND BACKFILL REQUIREMENTS.
- E. CONCRETE BELOW GRADE SHALL BE PROTECTED WITH BITUMINOUS DAMPROOFING. SEE SPECIFICATIONS.
- F. REFER TO THE STRUCTURAL DETAILS AND SD SERIES OF DRAWINGS FOR TYPICAL DETAILS. ALL TYPICAL DETAILS ARE NOT NECESSARILY REFERENCED BY CALLOUTS IN SECTION VIEW. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW THE REQUIREMENTS OF THE DETAILS AT THE LOCATION AT WHICH THEY OCCUR.



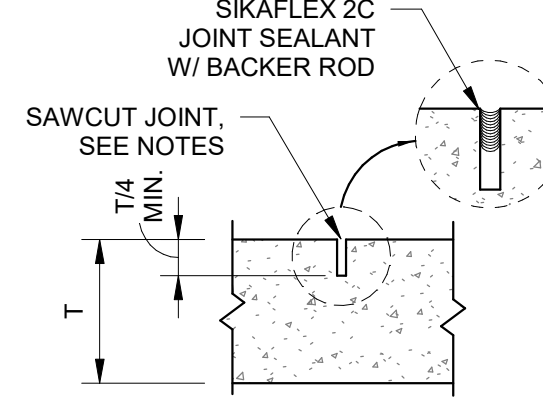


NOTE:
TRANSVERSE REINFORCING (IF PRESENT) AND VERTICAL DOWELS NOT SHOWN.

1 WALL FTNG CORNER / INTERSECTION REINFORCING
SCALE: N.T.S.

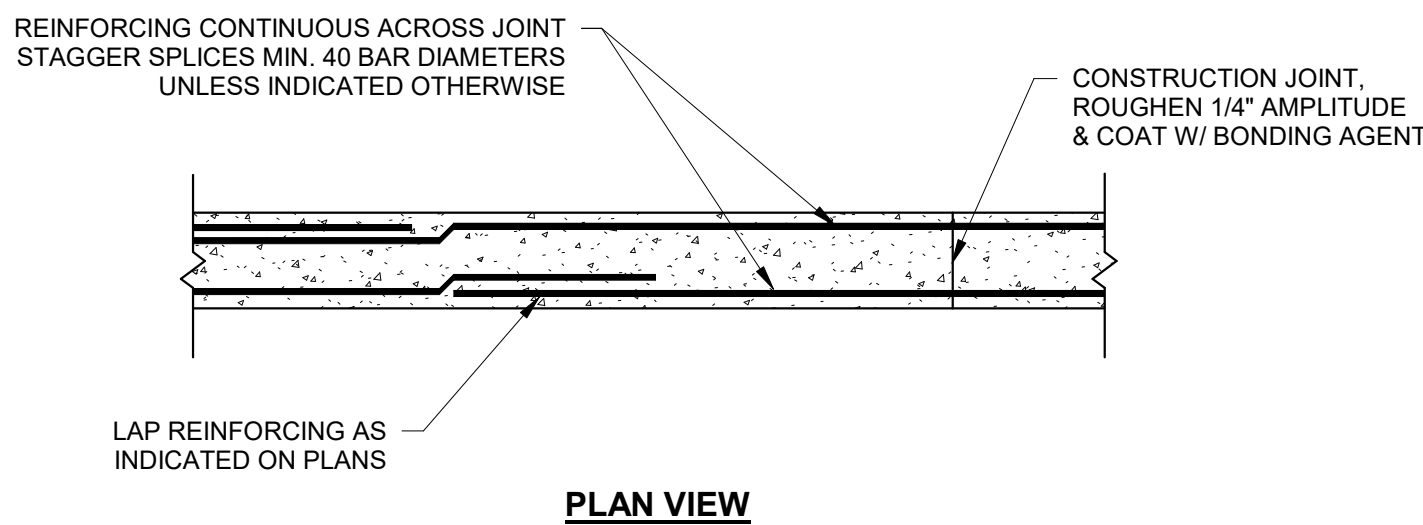


2 TYPICAL CONC WALL REINF @ CORNERS/ INTERSECTIONS
SCALE: N.T.S.

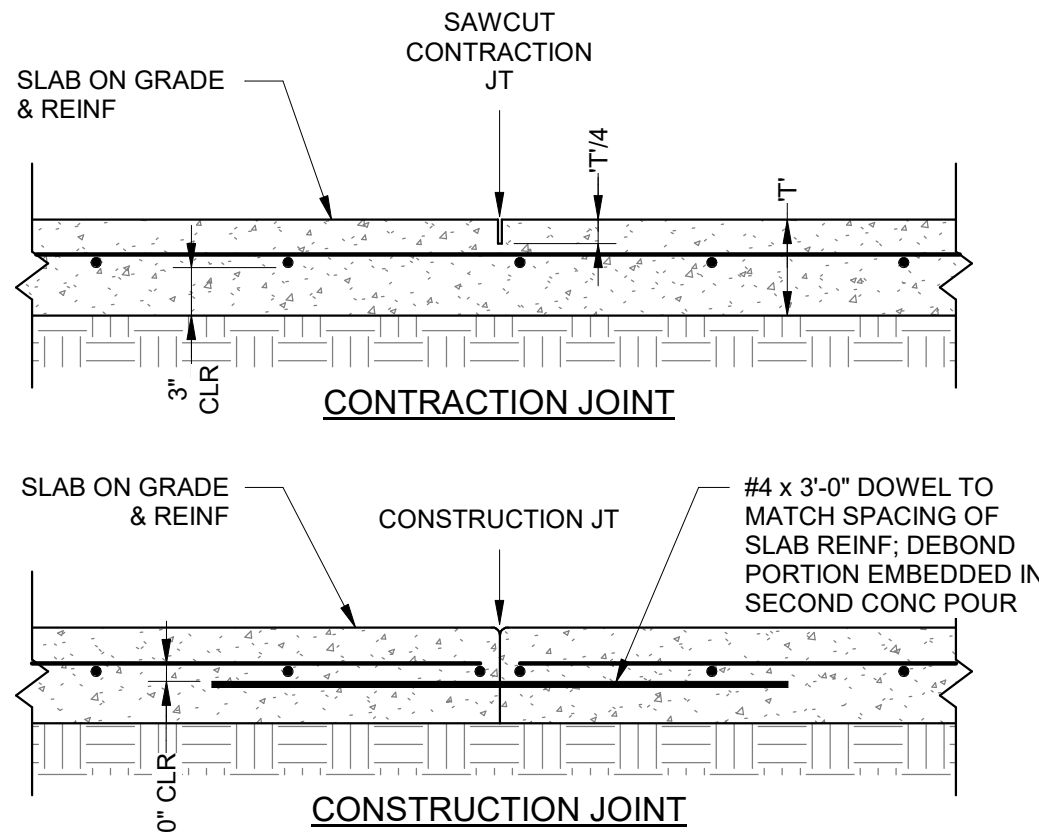


NOTES:
1. SEE GENERAL STRUCTURAL NOTES FOR JOINT SPACING REQUIREMENTS.
2. SAWCUT SLAB WITHIN 12 HOURS OF FINAL FLOATING.
3. SEE SPECIFICATIONS FOR ADDITIONAL MINIMUM SPACING REQUIREMENTS.

3 SLAB ON GRADE CONTRACTION JOINT
SCALE: N.T.S.

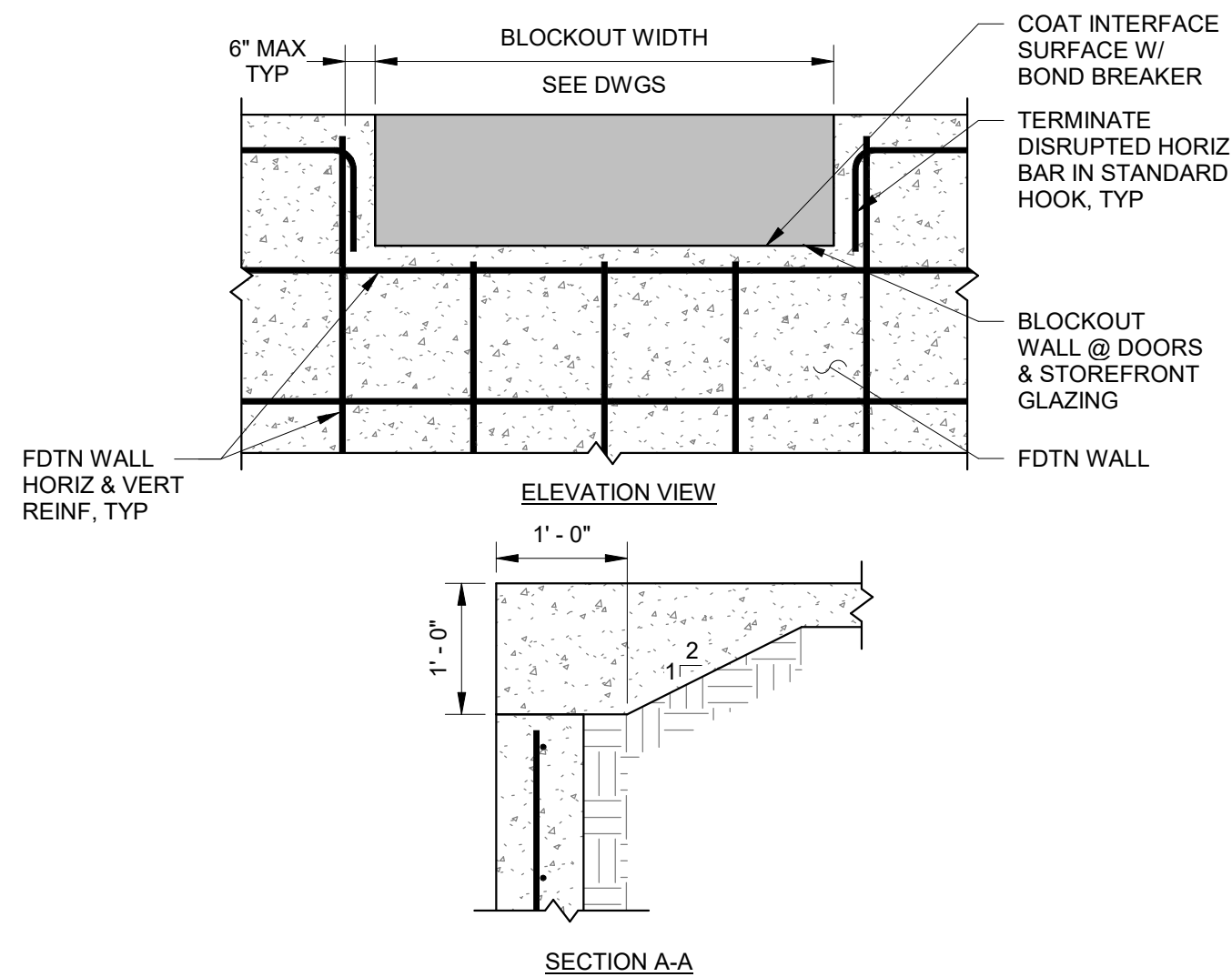


4 FOOTING/FOUNDATION WALL CONST. JOINT
SCALE: N.T.S.

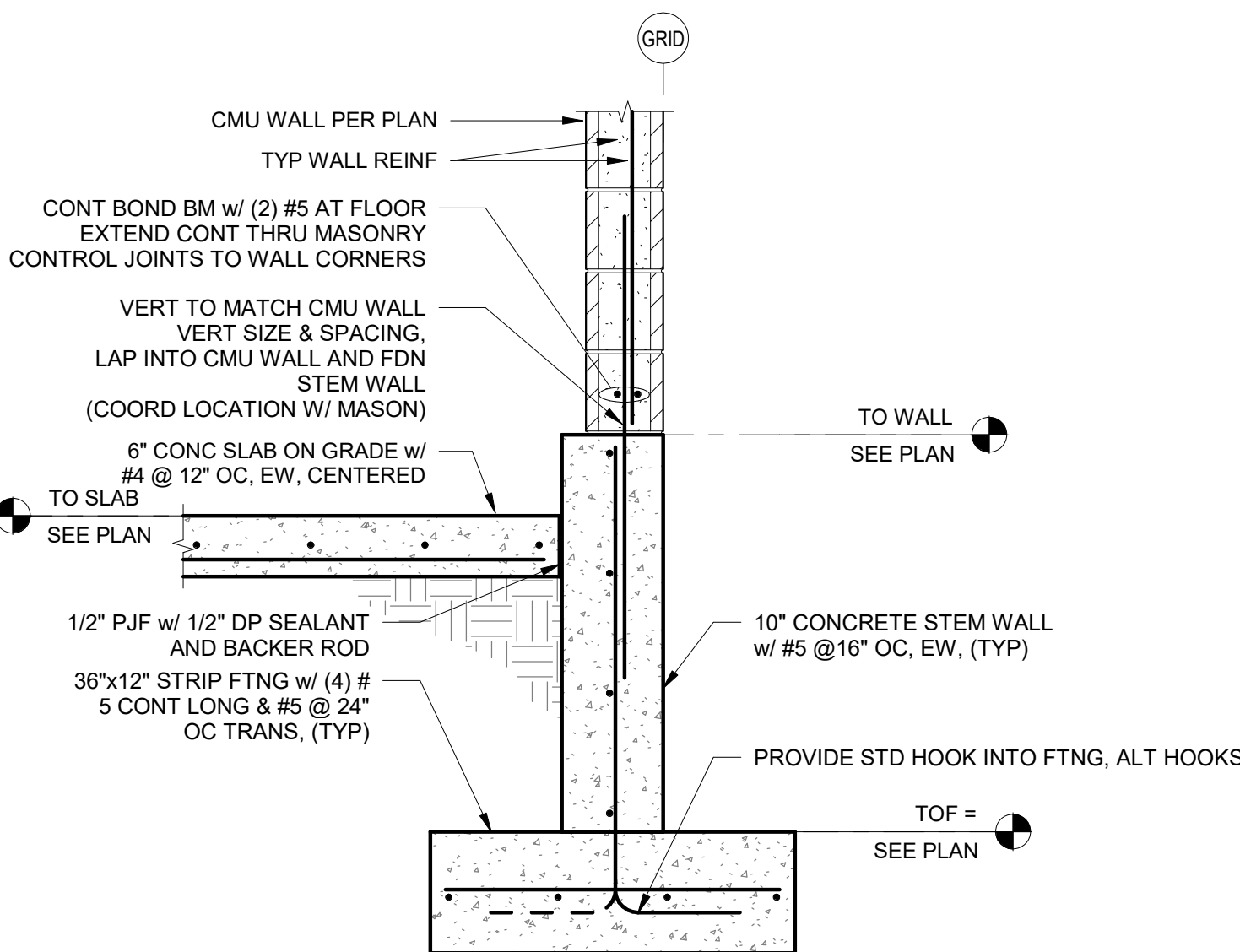


NOTES:
1. LAYOUT AND LOCATION OF CONSTRUCTION JOINTS IS AT THE DISCRETION OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL LAYOUT CONTRACTION JOINTS TO COMPLY WITH THE REQUIREMENTS GIVEN IN GENERAL NOTES.
3. CONTRACTION JOINTS SHALL BE INSTALLED WITHIN 12 HOURS OF FINAL FLOATING.

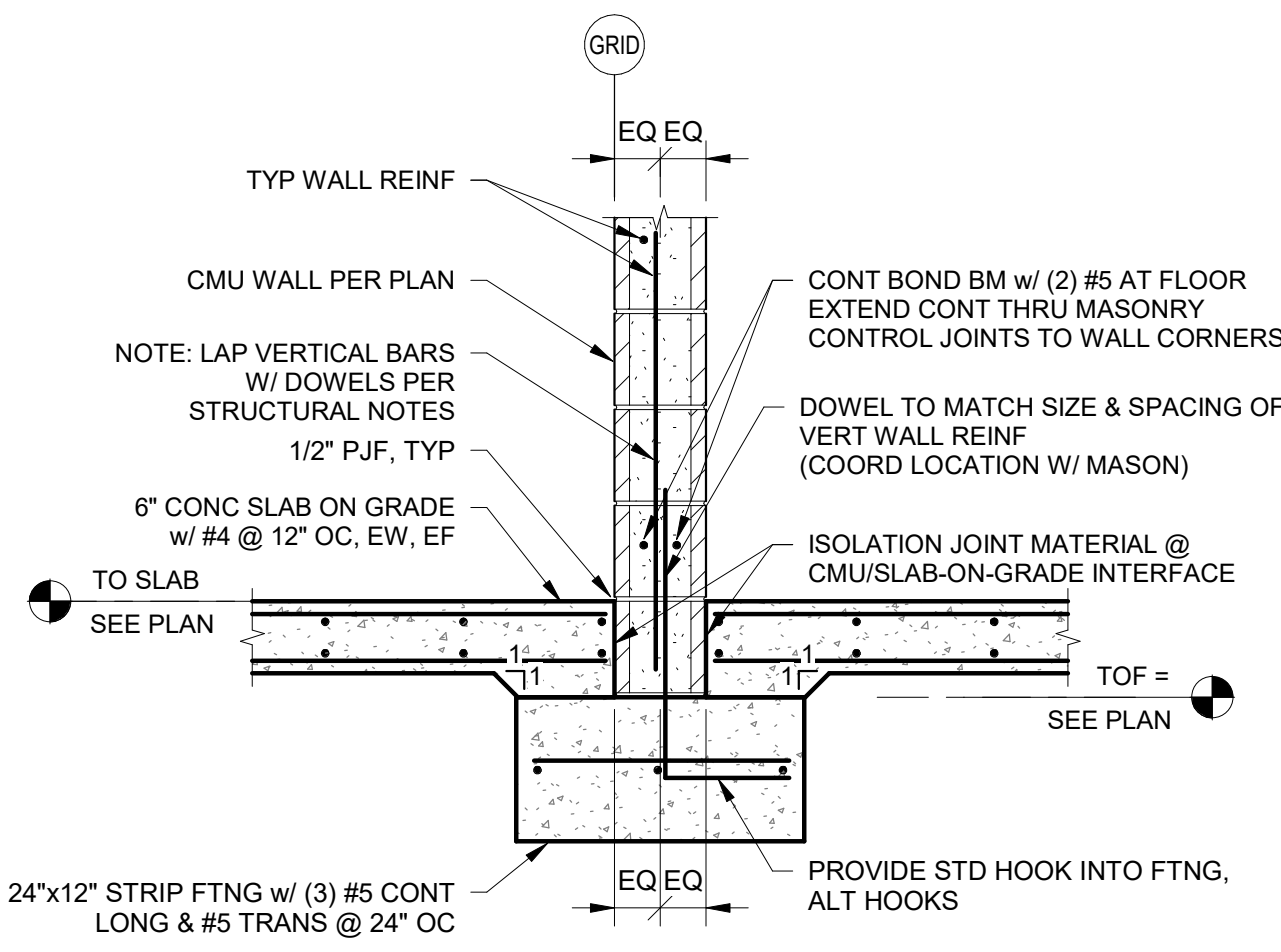
5 SLAB ON GRADE REINF & JOINTS
SCALE: 1" = 1'-0"



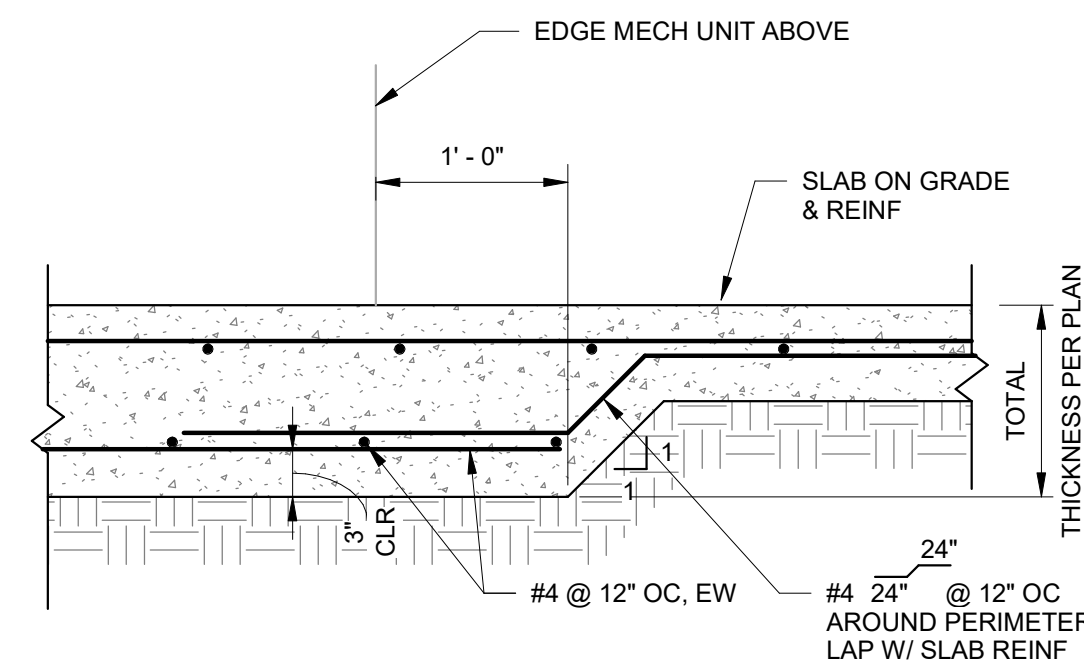
6 TYPICAL SLAB/ FDTN WALL @ WALL OPNG
SCALE: 3/4" = 1'-0"



7 CMU AT EXTERIOR STEM WALL DETAIL
SCALE: 3/4" = 1'-0"



8 CMU INTERIOR BEARING WALL FOOTING
SCALE: 3/4" = 1'-0"



9 THICKENED EDGE FOOTING
SCALE: 1" = 1'-0"



CHECKED: MJB

DRAWN: DAH

DESIGN: AJM
DATE: 05/20/26

REVISION

DATE

DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

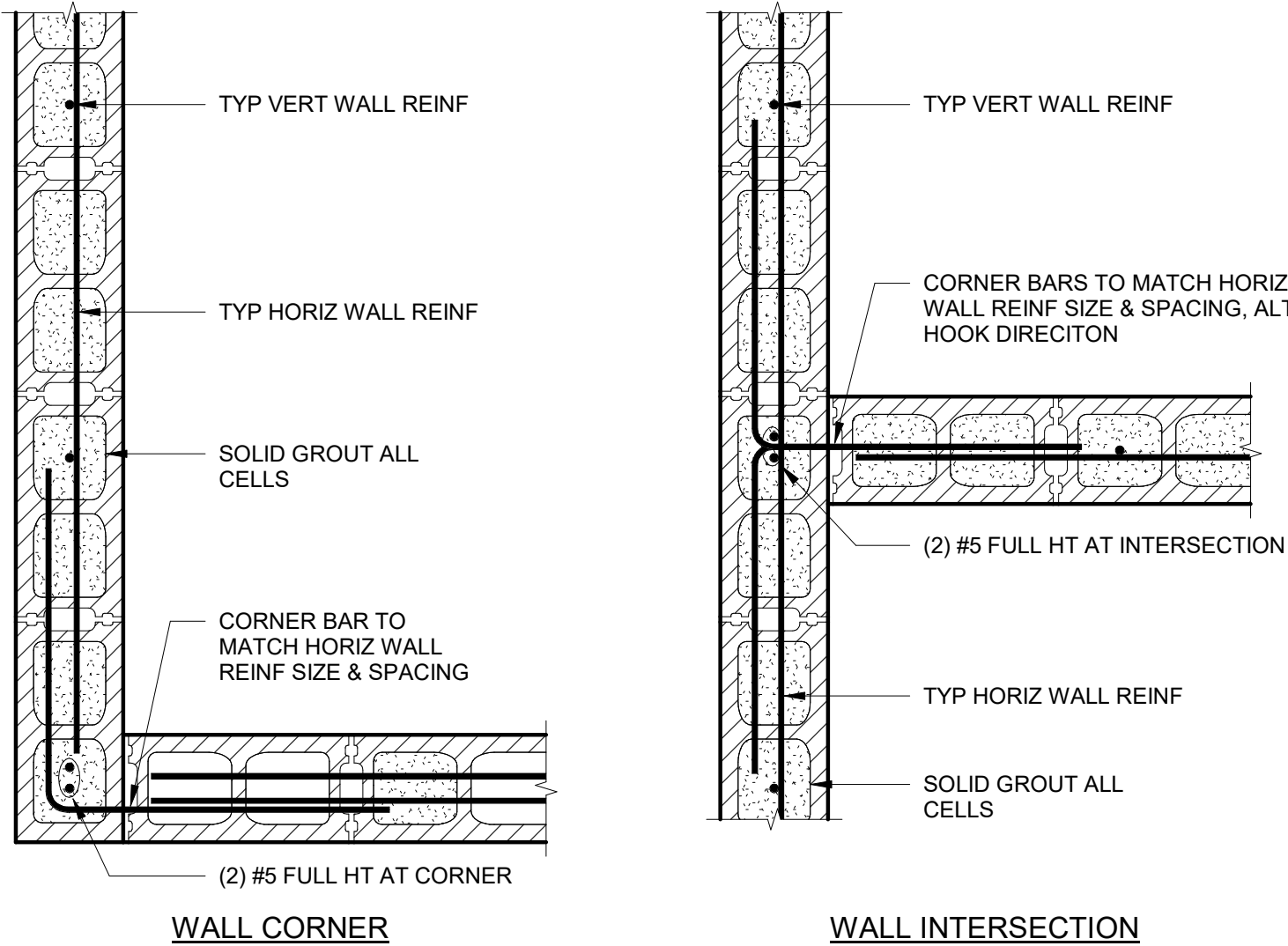
STRUCTURAL DETAILS



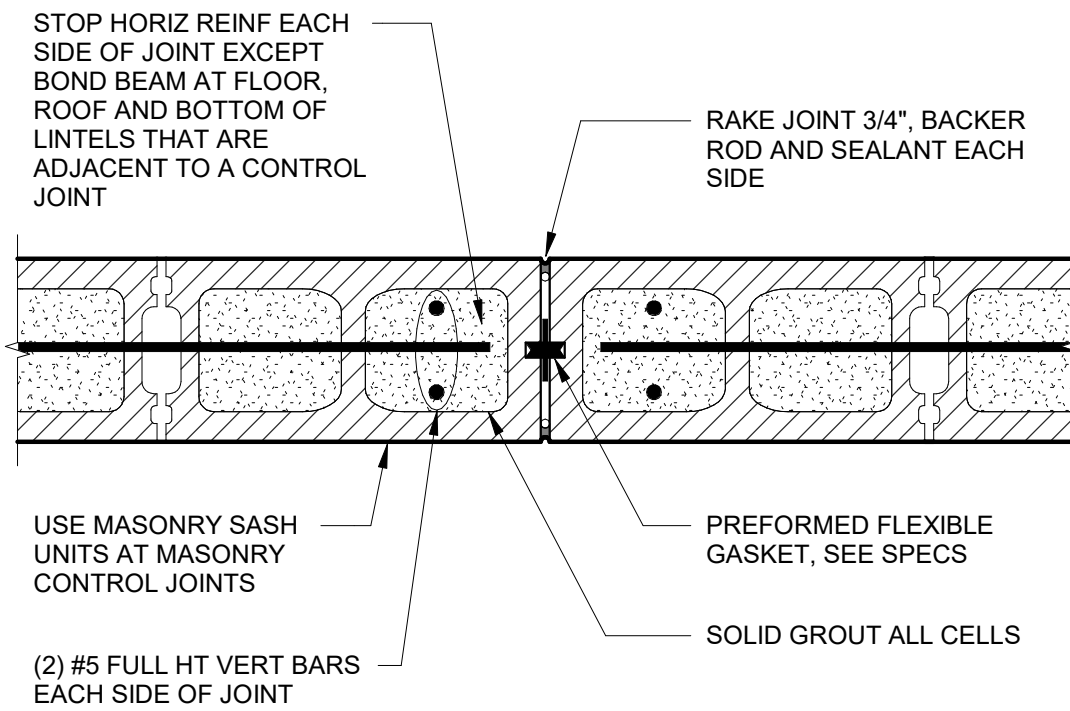
DWG. NO.
S-13

SHEET NO.
29 OF 68

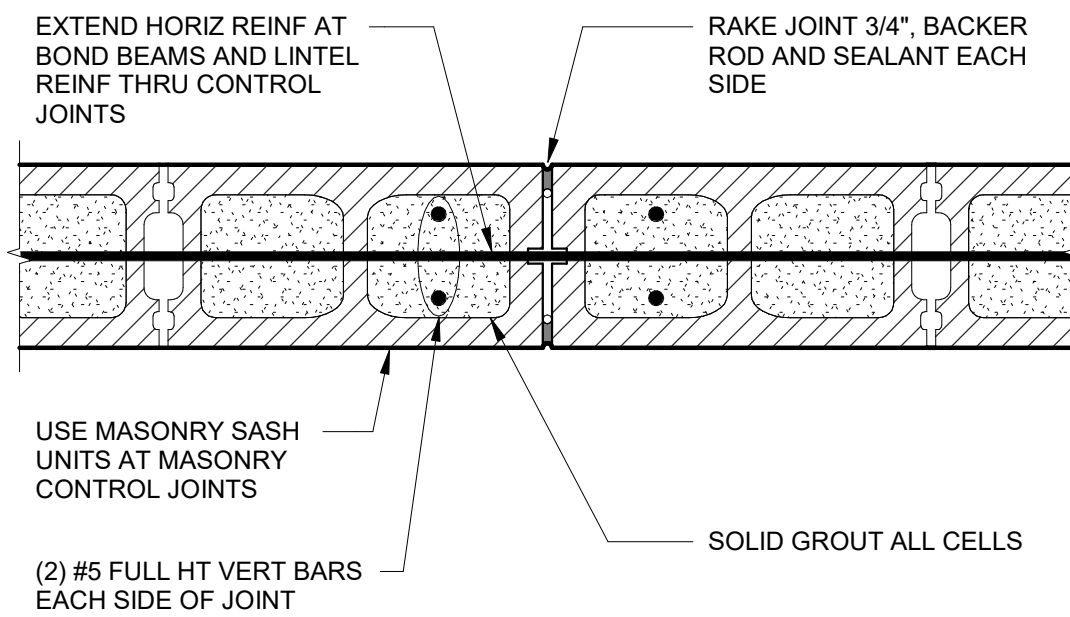
Autodesk Docs://8519.017 BH CITY AERATION BLOWERS R22/8519017 BHCTY BLOWER BLDGS-STR V2022.rvt



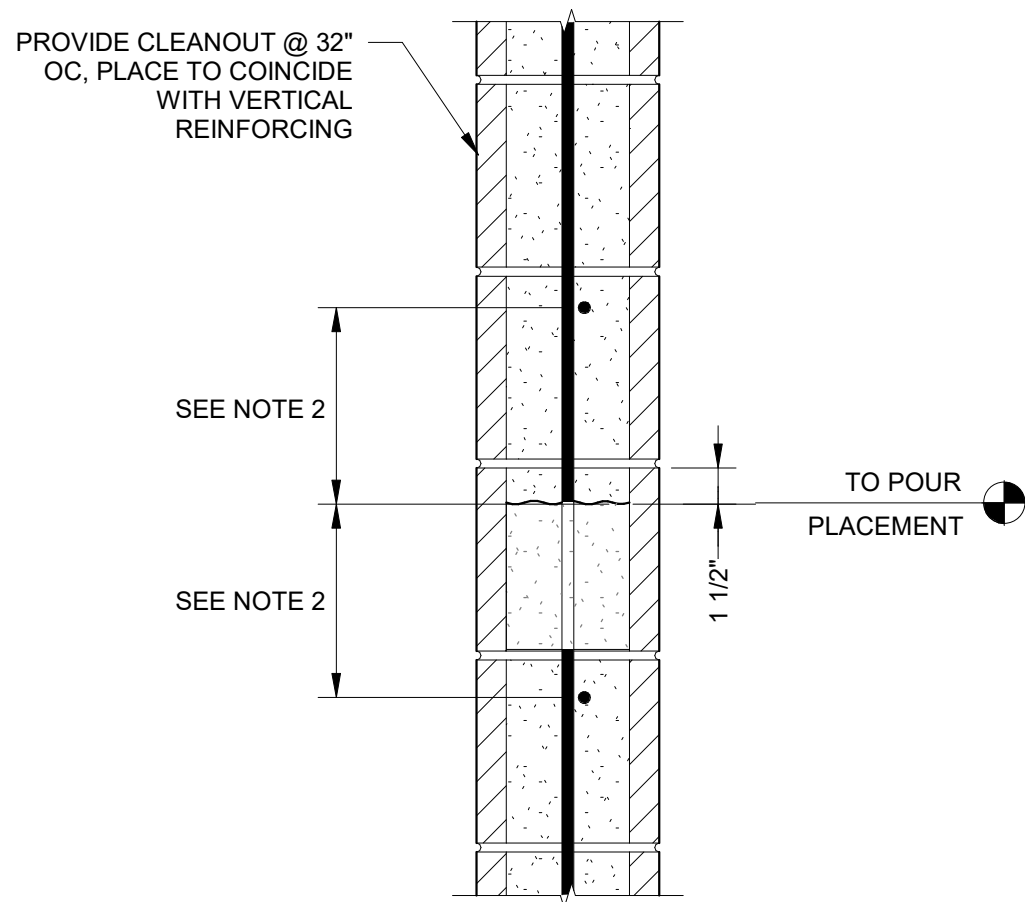
1 MASONRY WALL ENDS DETAILS
SCALE: N.T.S.



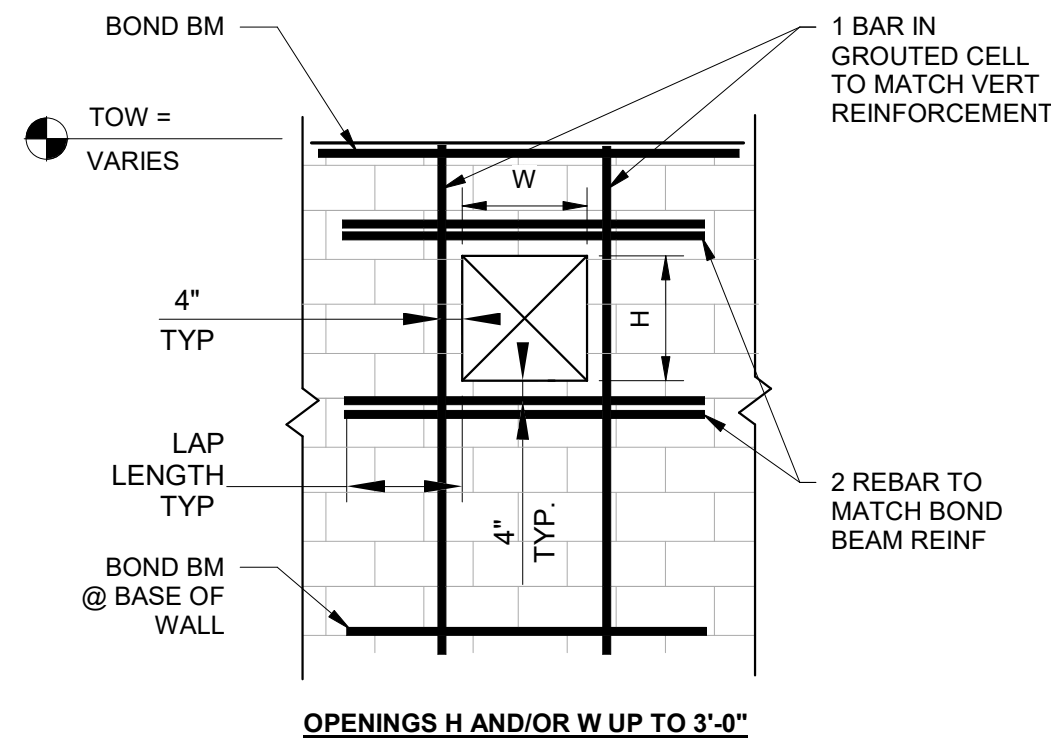
2 MASONRY CONTROL JOINT
SCALE: N.T.S.



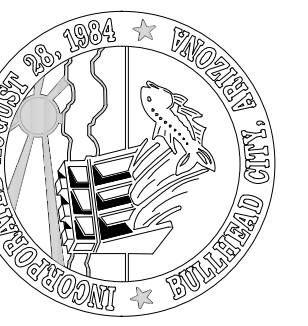
3 CONTROL JOINT AT BOND BM/LINTEL
SCALE: N.T.S.



4 HORIZONTAL CMU CONSTRUCTION JOINTS
SCALE: N.T.S.



5 MISC SMALL CMU WALL OPENING
SCALE: N.T.S.



DESIGN: AJM
DATE: 05/2026

DRAWN: DAH

CHECKED: MJB

BULLHEAD CITY SECTION 10

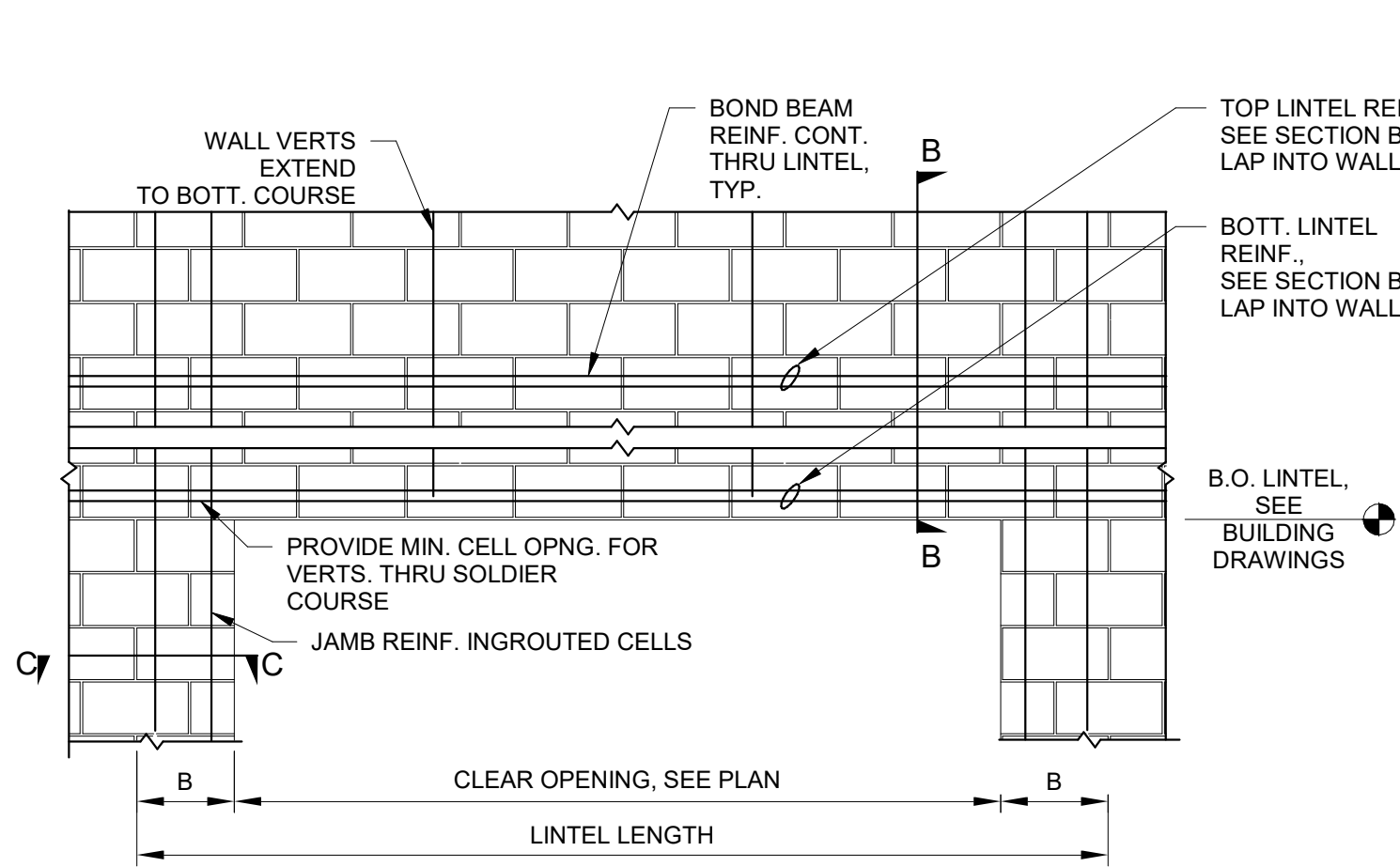
BLOWER BUILDINGS IMPROVEMENTS

STRUCTURAL DETAILS



DWG. NO.
S-14

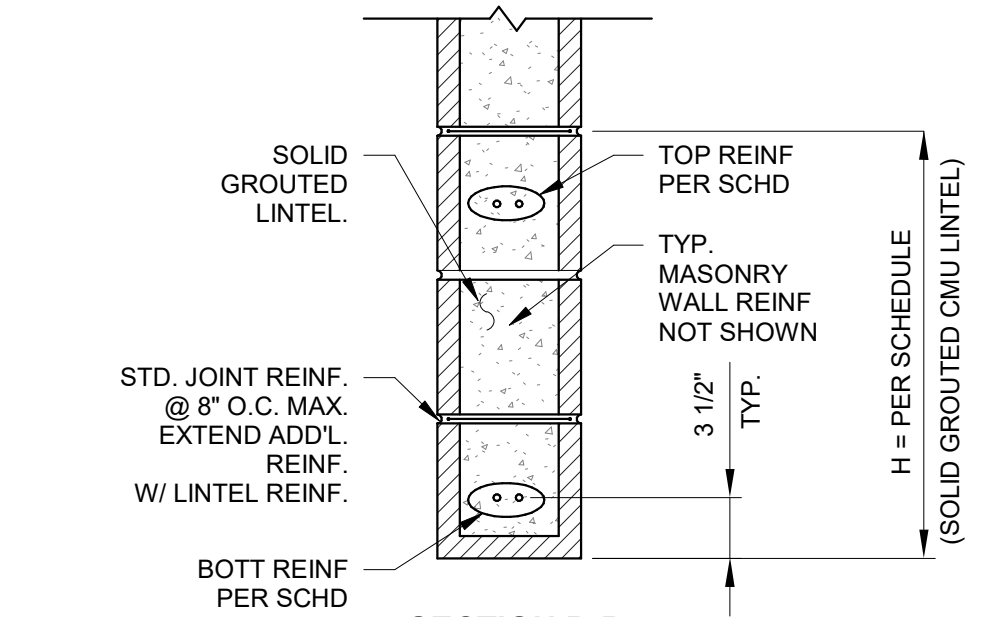
SHEET NO.
30 OF 68



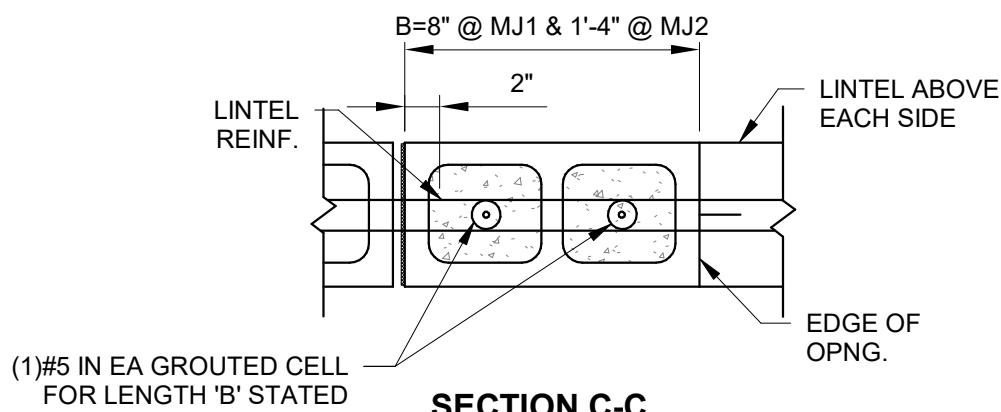
NOTES:
1. EXTEND JAMB REINF. FROM BOTTOM OF WALL TO BOND BEAM @ ROOF.

MASONRY HEADER SCHEDULE

SPAN (FT)	THICKNESS (T)	LINTEL DEPTH (H)	TOP REINFORCING	BOTTOM REINFORCING	STIRRUP SPACING	LINTEL ELEV	JAMBS	'B'	JAMBS REINF
SPAN <= 4'-0"	MATCH WALL	1'-4"	(2) #5	(2) #5	NONE	SEE C-DWGS	MJ1	SEE SECTION	SEE SECTION
4'-0" < SPAN <= 8'-0"	MATCH WALL	2'-0"	(2) #5	(2) #5	NONE	SEE C-DWGS	MJ2	SEE SECTION	SEE SECTION

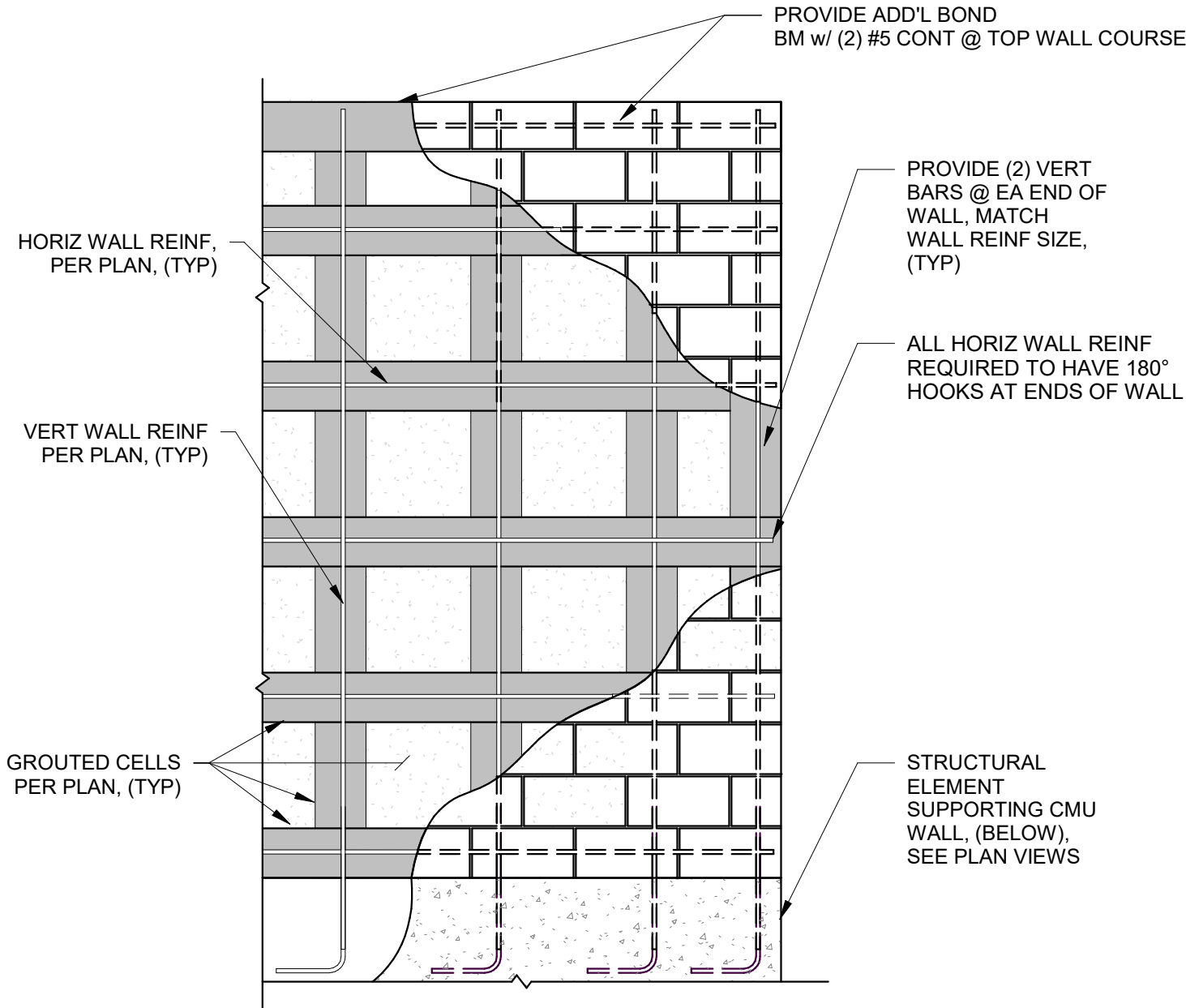


SECTION B-B



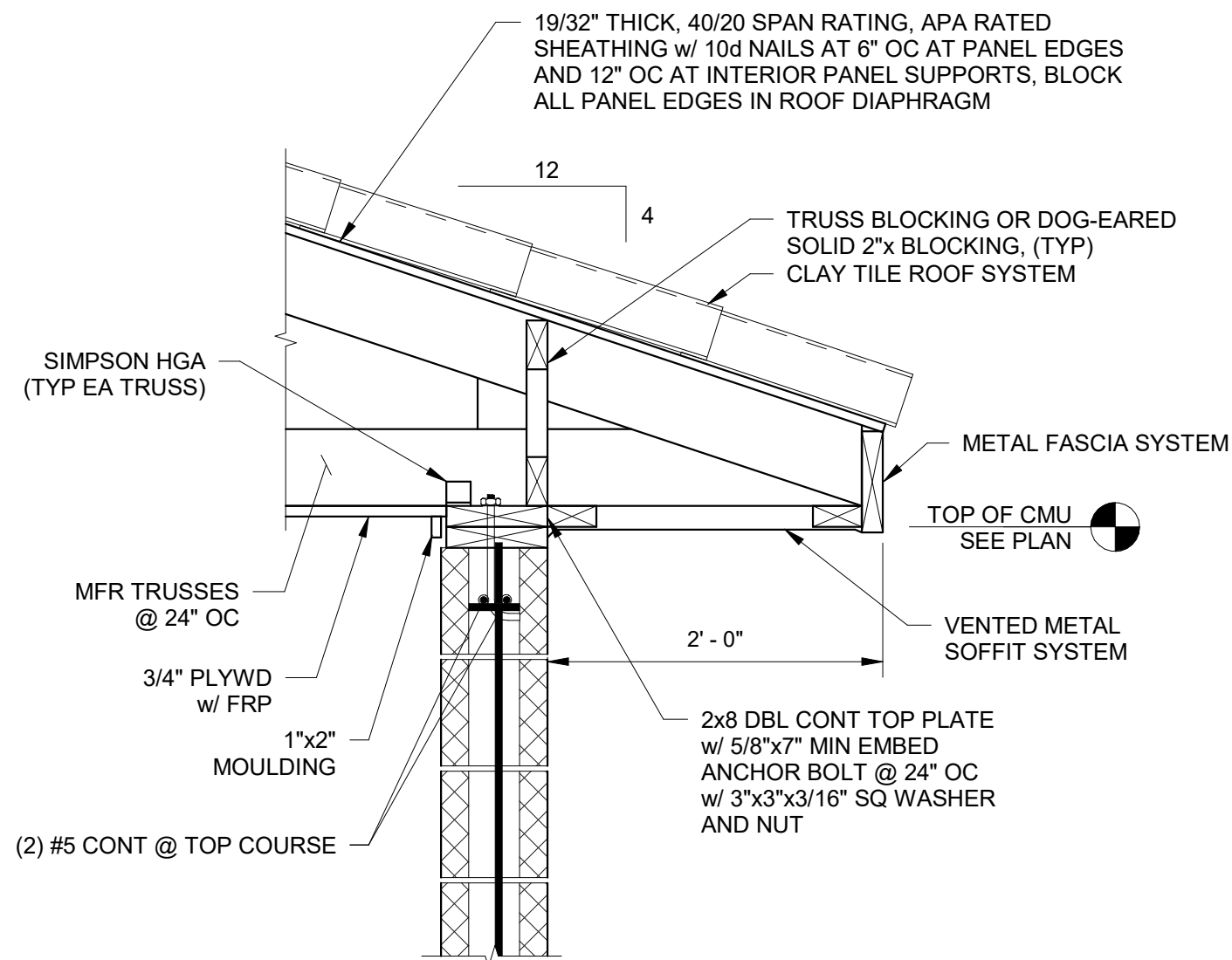
SECTION C-C

JAMB MJ1 & MJ2



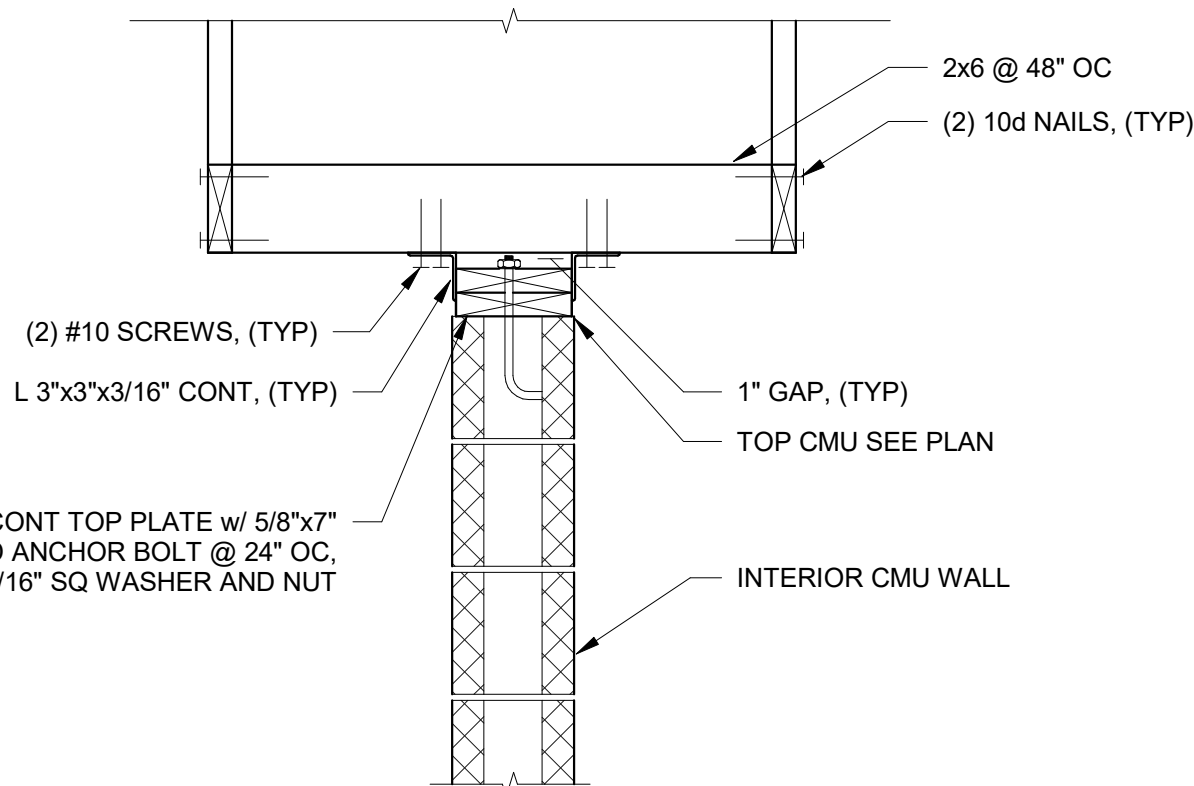
2 TYP. CMU WALL ELEVATION

SCALE: N.T.S.



3 TRUSS BRG DETAIL

SCALE: N.T.S.



4 NON-BRG TRUSS DETAIL

SCALE: N.T.S.



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DRAWN: DAH

DESIGN: AJM

DATE: 05/20/2026

REVISION

DATE

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

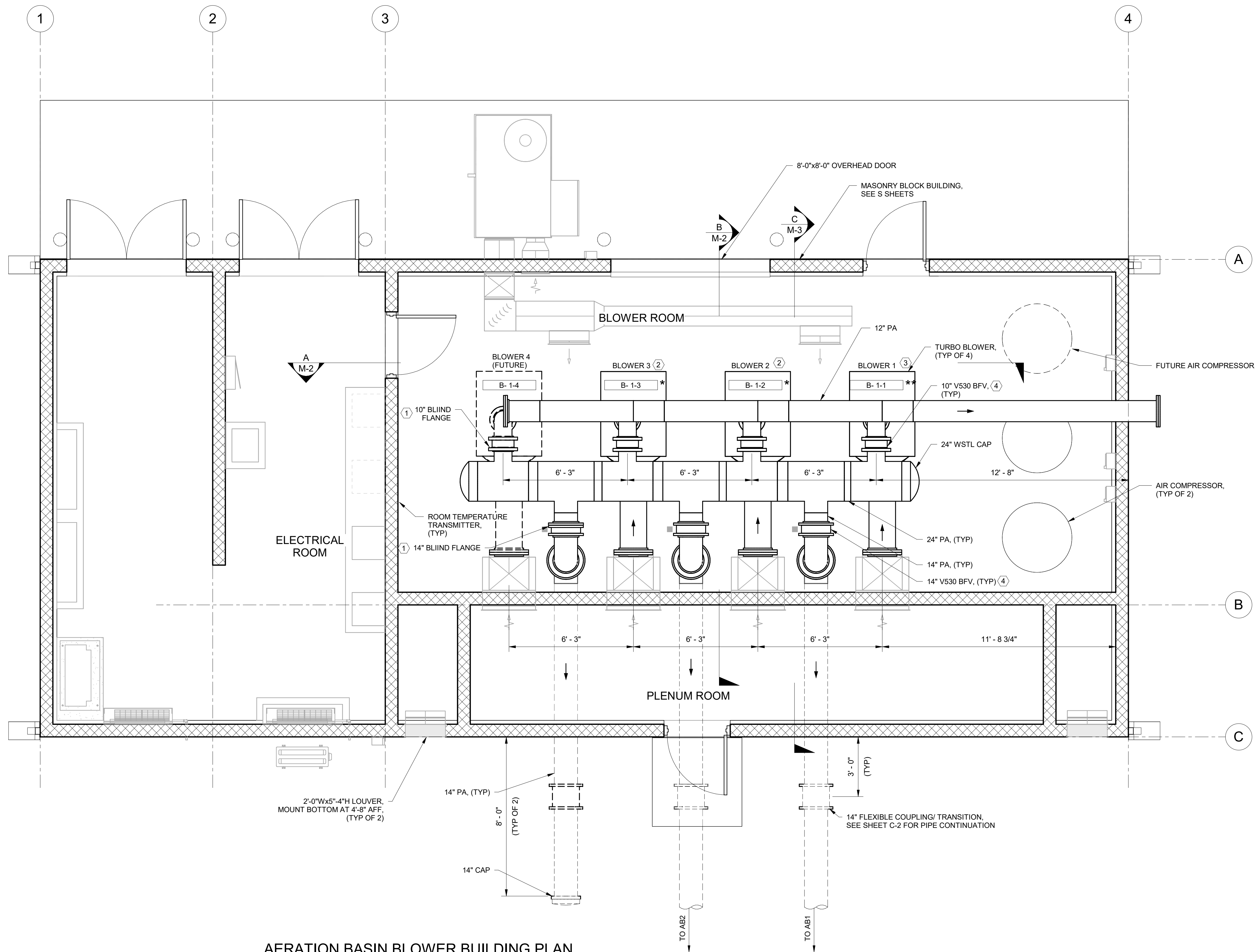
STRUCTURAL DETAILS



DWG. NO.
S-15

SHEET NO.
31 OF 68

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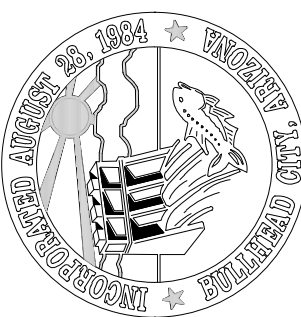
AERATION BASIN BLOWER BUILDING PLAN
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- SUPPORT PIPE PER DETAIL (15510) OR (15550), (TYP).
 - INSULATE ALL PA PIPING PER SECTION 40 05 10.
 - COAT ALL PA PIPING PER SECTION 09 90 00.
- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES:

- PROVIDE FLANGE AND BLIND FLANGE TO ALLOW FOR FUTURE EXPANSION.
- BLOWER CURRENTLY INSTALLED IN EXISTING BLOWER BUILDING TO BE RELOCATED.
- BLOWER TO BE PROVIDED BY OWNER. STORED ON SITE.
- AT CONTRACTOR'S OPTION, BUTTERFLY VALVES INSTALLED WITH THE EXISTING TURBO BLOWERS MAY BE REUSED. NEW VALVES SHALL THEN MATCH THE EXISTING VALVES.



CHECKED:JCM

DRAWN: JAC

DESIGN: ECS
DATE: 05/2026

REVISION

DATE

DESCRIPTION

SECTION 10 WWTP

BLOWER BUILDINGS IMPROVEMENTS

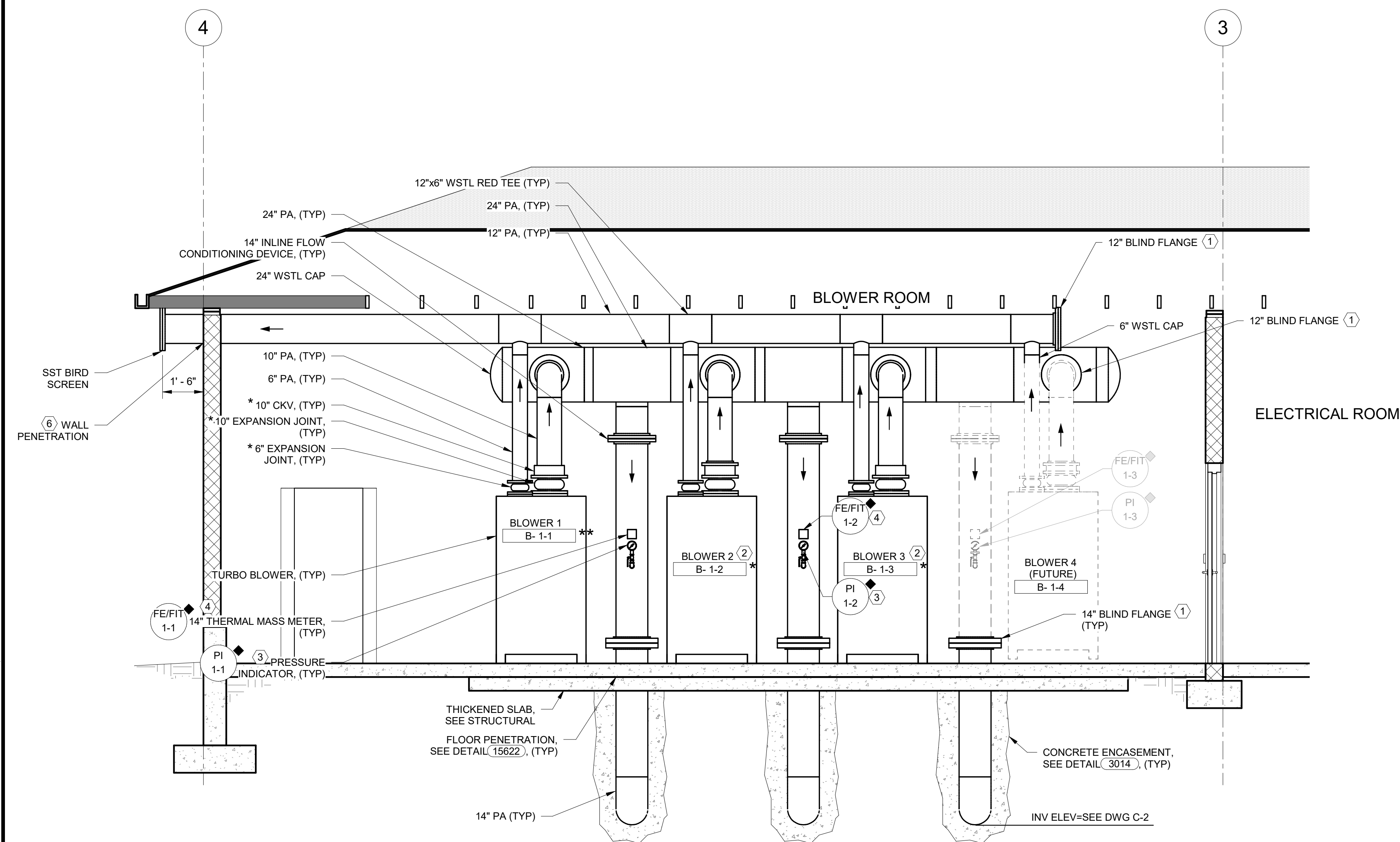
AERATION BASIN BLOWER BUILDING
PLAN



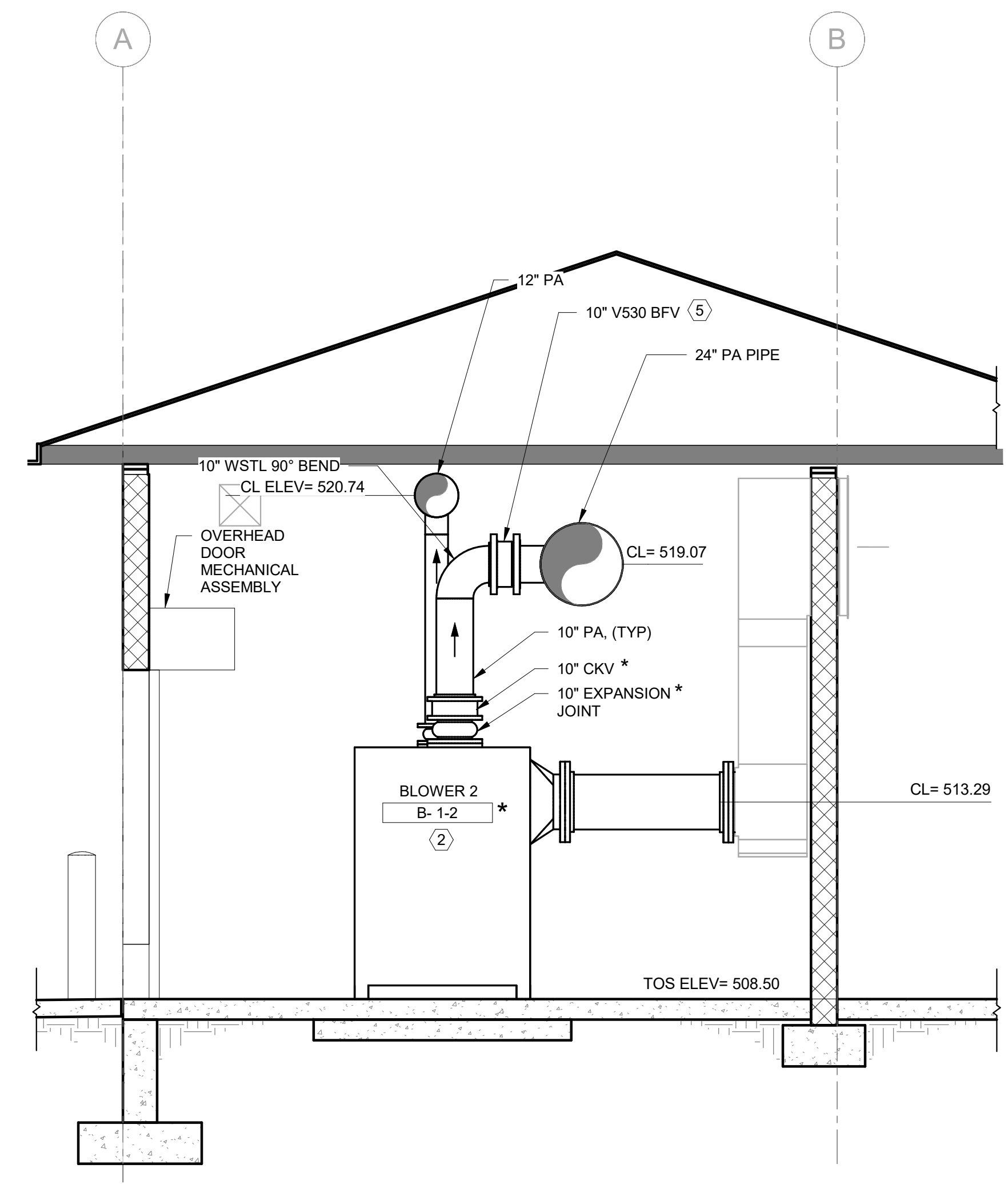
DWG. NO.
M-1

SHEET NO.
32 OF 68

 SECTION
M-1 SCALE: 3/8" = 1'-0"



B
M-1



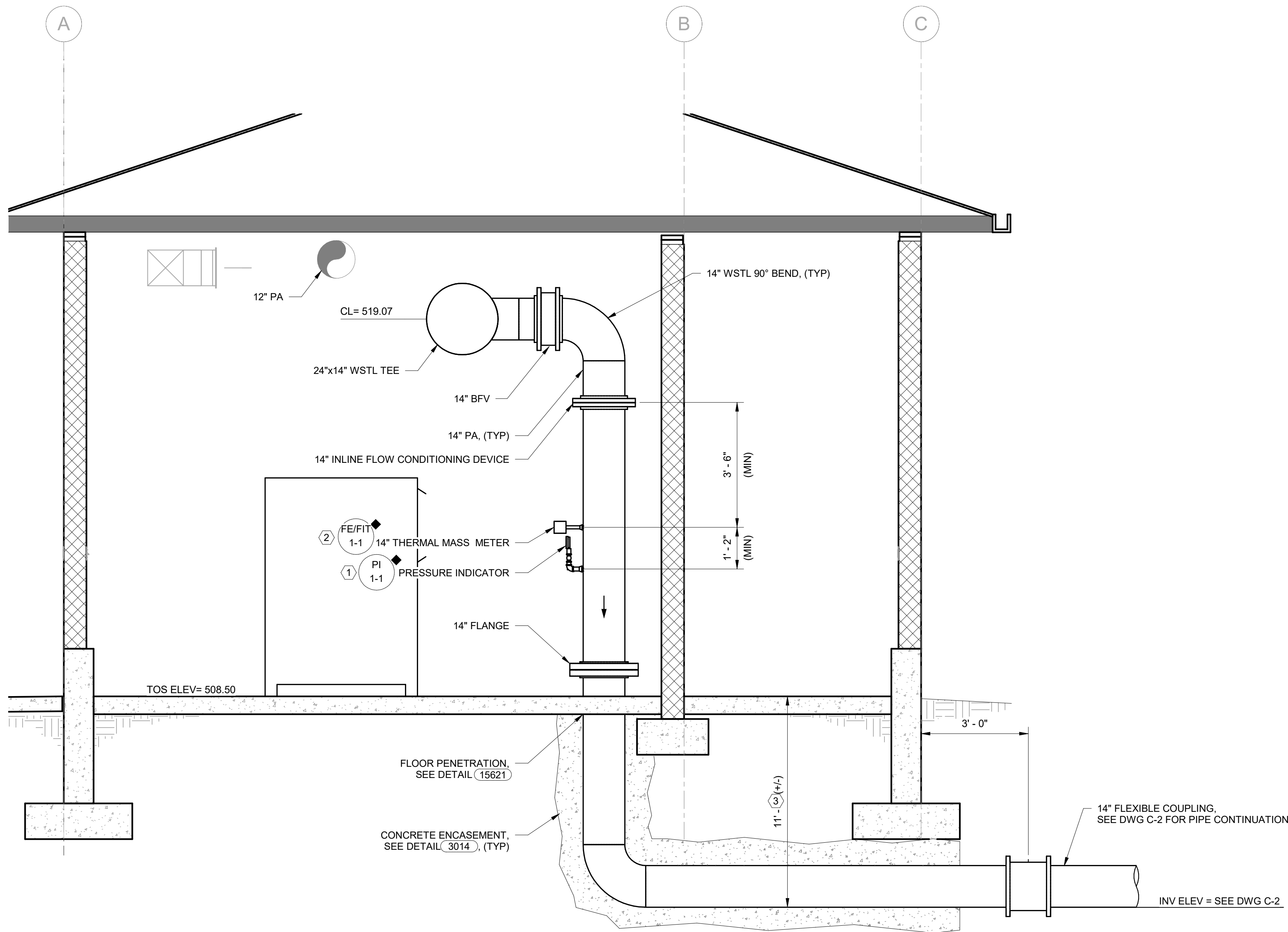
GENERAL NOTES:

1. SUPPORT PIPE PER DETAIL 15510 OR 15550, (TYP)
 2. INSULATE ALL PA PIPING PER SECTION 40 05 10.
 3. COAT ALL PA PIPING PER SECTION 09 90 00.
- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.
FOR EXISTING BLOWERS, CHECK VALVES AND EXPANSION JOINTS MAY BE REUSED.

KEY NOTES:

- ① PROVIDE FLANGE AND BLIND FLANGE TO ALLOW FOR FUTURE EXPANSION.
- ② BLOWER CURRENTLY INSTALLED IN EXISTING BLOWER BUILDING TO BE RELOCATED.
- ③ INSTALL PER DETAIL (15680) .
- ④ INSTALL 3/4" PIPE TAP PER DETAIL (15680) , (SIM).
- ⑤ AT CONTRACTOR'S OPTION, BUTTERFLY VALVES INSTALLED WITH THE EXISTING TURBO BLOWERS MAY BE REUSED. NEW VALVES SHALL THEN MATCH THE EXISTING VALVES.
- ⑥ CONTRACTOR HAS OPTION TO BLOCK OUT OR CORE DRILL PENETRATION. FILL VOID WITH WATER PROOF EXPANDING SEALANT TO PROVIDE WATER TIGHT SEAL. PROVIDE GALVANIZED STEEL ESCUTCHEON ON EACH SIDE OF THE WALL.

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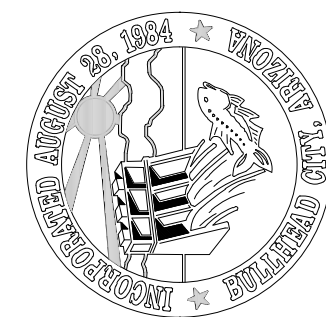
C
M-1
SECTION
SCALE: 1/2" = 1'-0"

GENERAL NOTES:

1. SUPPORT PIPE PER DETAIL (15510) OR (15550), (TYP)
 2. INSULATE ALL PA PIPING PER SECTION 40 05 10.
 3. COAT ALL PA PIPING PER SECTION 09 90 00.
- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES:

- ① INSTALL PER DETAIL (15680) .
- ② INSTALL 3/4" PIPE TAP PER DETAIL (15680) .
- ③ FIELD VERIFY DEPTH OF EXST 24" PA. COORDINATE WITH DWG C-2.



CHECKED:JCM

DRAWN: JAC

DESIGN: ECS

DATE: 05/2026

REVISION

DATE

DESCRIPTION

SECTION 10 WWTP

BLOWER BUILDINGS IMPROVEMENTS

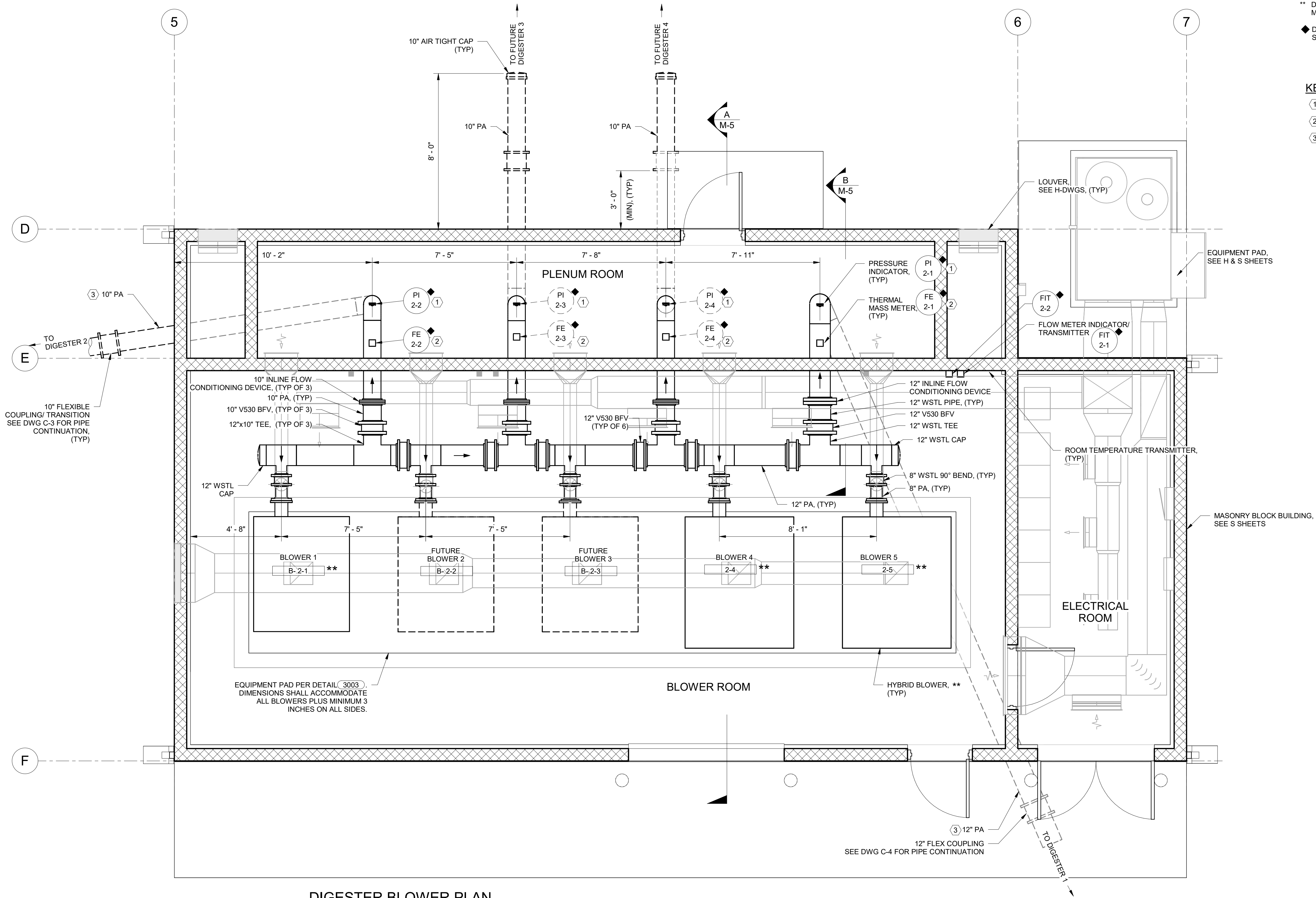
AERATION BASIN BLOWER BUILDING
SECTIONS



DWG. NO.
M-3

SHEET NO.
34 OF 68

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DIGESTER BLOWER PLAN
SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- SUPPORT PIPE PER DETAIL (15510) OR (15550), (TYP)
 - INSULATE ALL PA DISCHARGE PIPING PER SECTION 40 05 10.
 - COAT ALL PA PIPING PER SECTION 09 90 00.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES:

- INSTALL PER DETAIL (15680) .
- INSTALL 3/4" PIPE TAP PER DETAIL (15680) . (SIM).
- CONCRETE ENCASE BELOW SLAB PER DETAIL (3014)



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DESIGN: ECS
DATE: 05/2026

DESCRIPTION

REVISION DATE

SECTION 10 WWTP

BLOWER BUILDINGS IMPROVEMENTS

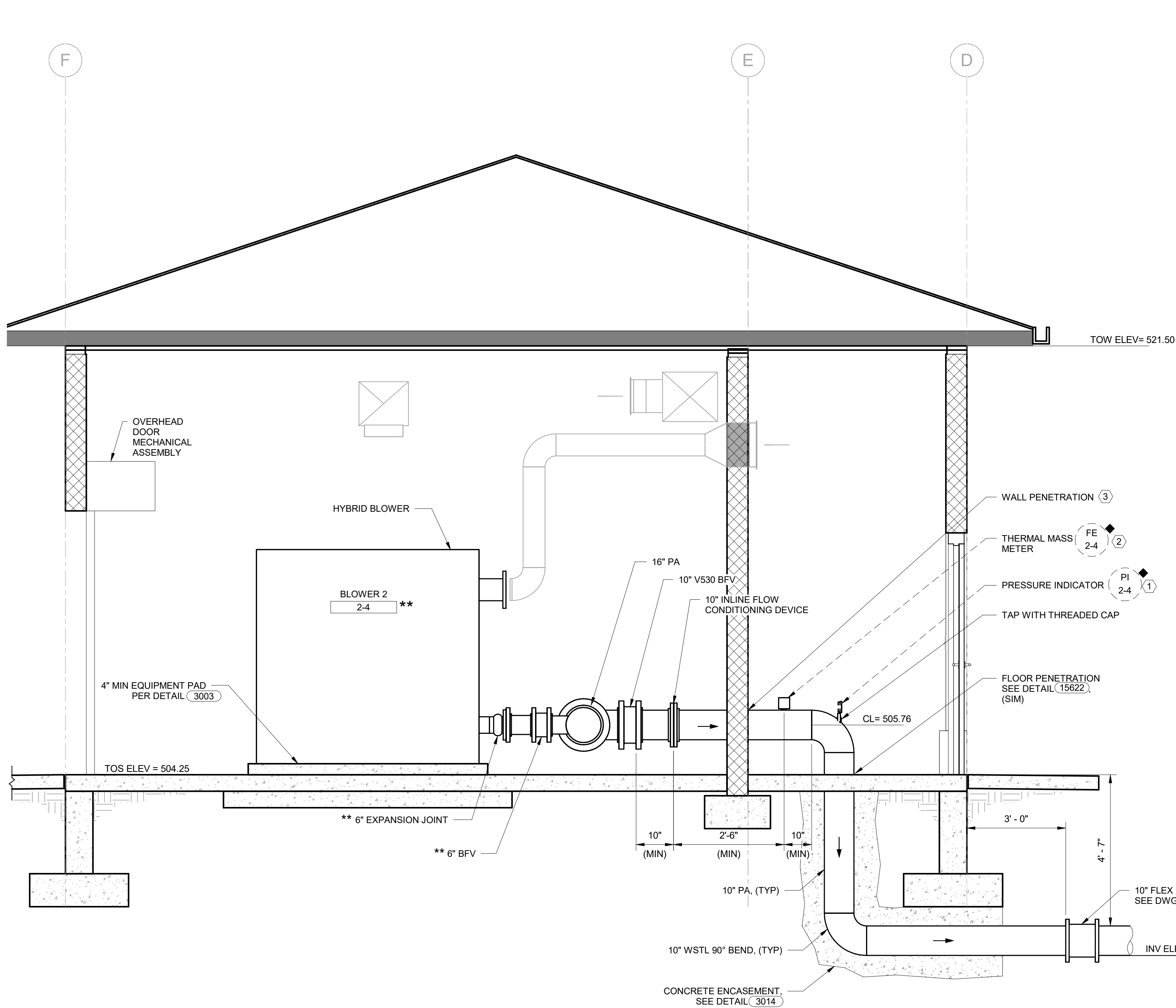
DIGESTER BLOWER PLAN



DWG. NO.
M-4

SHEET NO.
35 OF 68

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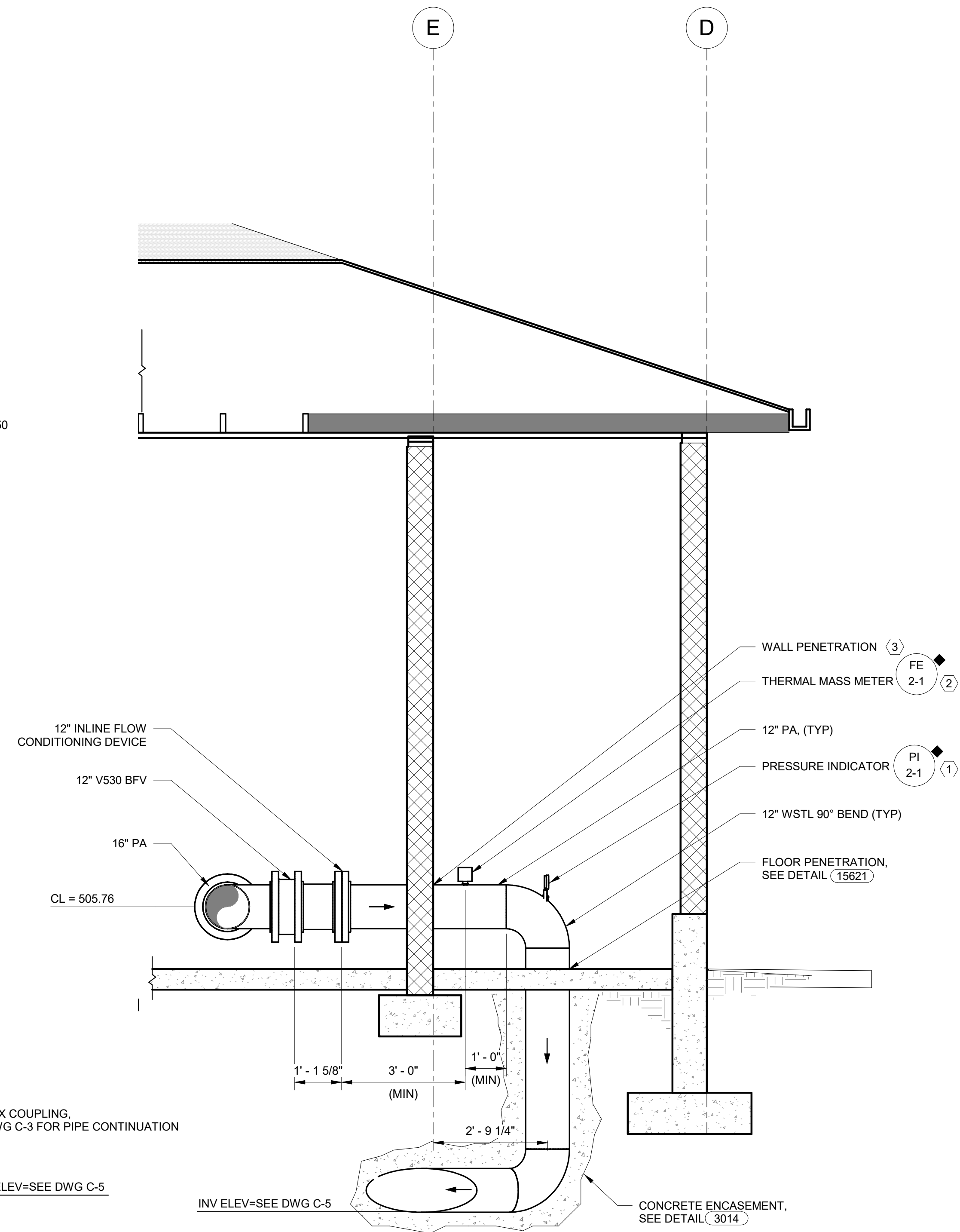
A
SECTION
M-4
SCALE: 1/2" = 1'-0"

GENERAL NOTES:

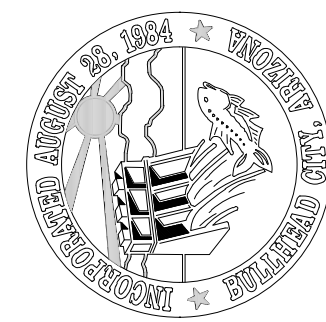
1. SUPPORT PIPE PER DETAIL (15510) OR (15550), (TYP)
 2. INSULATE ALL PA PIPING PER SECTION 40 05 10.
 3. COAT ALL PA PIPING PER SECTION 09 90 00.
- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES:

- ① INSTALL PER DETAIL (15680)
- ② INSTALL 3/4" PIPE TAP PER DETAIL (15680)
- ③ CONTRACTOR HAS OPTION TO BLOCK OUT OR CORE DRILL PENETRATION. FILL VOID WITH WATER PROOF EXPANDING SEALANT TO PROVIDE WATER TIGHT SEAL. PROVIDE GALVANIZED STEEL ESCUTCHEON ON EACH SIDE OF THE WALL.



B
SECTION
M-4
SCALE: 1/2" = 1'-0"



DESIGN: ECS	CHECKED: JCM
DATE: 05/20/26	
REVISION	DATE

SECTION 10 WWTP
BLOWER BUILDINGS IMPROVEMENTS
DIGESTER BLOWER SECTIONS



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PACKAGED, COOLING-ONLY AIR HANDLING UNIT SCHEDULE

REQUIREMENTS:				HEATING DATA:				FAN DATA:				CONTROLS DATA:				ELECTRICAL DATA:			
1. PROVIDE QTY. (1) 2" MERV-8 FILTER INTEGRAL TO UNIT. INCLUDE (2) SPARE SETS OF FILTERS FOR EACH UNIT. 2. PROVIDE DOUBLE WALL CABINET WITH R-13 FOAM INSULATION. 3. PROVIDE WITH 14" HIGH CURB. 4. CONFIGURATION: SIDE DISCHARGE/ RETURN				1. NO HEATING REQ'D COOLING DATA: 1. REFRIGERANT: R-410A 2. PROVIDE TWO-STAGED SCROLL COMPRESSOR. 3. PROVIDE ECM CONDENSER FAN. 4. STAINLESS STEEL DRAIN PAN. 5. IEER / EER 17.1 / 12.1				1. SUPPLY FAN TO BE DIRECT-DRIVE WITH ECM MOTOR. 2. HAND-OFF-AUTO DISCONNECT. 3. PREMIUM EFFICIENCY MOTOR. 2. PROVIDE PRESSURE SENSOR(S) IN EACH BLOWER ROOM TO MODULATE UNITS' OUTDOOR AIR DAMPER TO MAINTAIN NEUTRAL PRESSURE WITHIN THE BLOWER ROOMS.				1. SEE MEP COORDINTAION SCHEDULE FOR STARTER/DISCONNECT AND ALL OTHER ELEC. DATA. 2. PROVIDE FACTORY WIRE, SINGLEPOINT ELECTRICAL CONNECTION.							
MARK	MANUF.	MODEL	DESCRIPTION	SUPPLY FAN				COOLING COIL (ARHI STANDARD)				PHYSICAL DATA							
				AIRFLOW (CFM)	ESP	RPM	HP	COOLING CAPACITY (MBH)	COMPRESSOR	IEER / EER	SEER2 / EER2	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	WEIGHT (LBS)				
AC-1	DAIKIN	DHC 150	PACKAGED COOLING ONLY	3,800	STANDARD	1,600	5.0	138.0	2-STAGE SCROLL	16.0 / 12.0	--	94	60	55	1,218				
AC-2	DAIKIN	DHC 048	PACKAGED COOLING ONLY	1,460	STANDARD	1,500	1.2	46.0	2-STAGE SCROLL	--	16.4 / 12.2	74	48	44	590				

AIR-SOURCE HEAT PUMP SCHEDULE (R-32)

ACCESSORIES:					REMARKS:			RATING TEMPERATURE DATA:				ELECTRICAL DATA:			
1. ELEVATED MOUNTING SUPPORTS					1. INDOOR UNIT REFRIGERANT PIPING TO DIRECTLY CONNECT TO HEAT PUMP. NO BRANCH BOX REQUIRED.			1. COOLING: 80°F DB / 67°F WB INDOOR RETURN AIR, 95°F / 75°F WB OUTDOOR AIR 2. HEATING: 70°F DB / 60°F WB INDOOR RETURN AIR, 47°F DB / 43°F WB OUTDOOR AIR				SEE MEP COORDINATION SCHEDULE FOR STARTER/DISCONNECT AND ALL OTHER ELEC. DATA			
MARK	MANUF.	MODEL	COMPRESSOR TYPE	A-WEIGHTED SOUND POWER (dBA)	COOLING INFORMATION			HEATING INFORMATION			PHYSICAL DATA				
					CAPACITY (MBH)	SEER2	EER2	CAPACITY (MBH)	HSPF2	COP @ 5F	HEIGHT (IN)	WIDTH (IN)	DEPHT (IN)	WEIGHT (LBS)	
HP-1	DAIKIN	3MXM24AVJU9	SWING	52	23.0	21.0	12.0	24.0	10.0	1.8	29.5	34	12.5	127	

FAN COIL SCHEDULE (R-32)

ACCESSORIES:

1. WIRED REMOTE CONTROLLER

2. INLINE CONDENSATE PUMP.

REMARKS:

1. FAN COIL REFRIGERANT PIPING TO DIRECTLY CONNECT TO OUTDOOR UNIT. NO BRANCH BOX REQUIRED.

RATING TEMPERATURE DATA:

1. COOLING: 80°F DB / 67°F WB INDOOR RETURN AIR, 95°F / 75°F WB OUTDOOR AIR

2. HEATING: 70°F DB / 60°F WB INDOOR RETURN AIR, 47°F DB / 43°F WB OUTDOOR AIR

ELECTRICAL DATA:

SEE MEP COORDINATION SCHEDULE FOR STARTER/DISCONNECT AND ALL OTHER ELEC. DATA.

CONTROLS:

1. 7-DAY PROGRAMMABLE THERMOSTAT

MARK	MANUF.	MODEL	TYPE	AIRFLOW DATA		COOLING INFORMATION			HEATING INFORMATION			BACKUP ELECTRIC HEAT (KW)	PHYSICAL DATA			
				MAX AIRFLOW (CFM)	A-WEIGHTED SOUND POWER (dBA)	COOLING CAPACITY (BTU/HR)	SEER2	EER2	HEATING CAPACITY (BTU/HR)	COP @ 5F	HSPF2		HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)
FC-1B	DAIKIN	FTXV12AVJU9	WALL	392	45	11.5	21.0	12.0	12.0	1.8	10.0	NONE	11.5	30.5	9.0	19.0
FC-1A	DAIKIN	FTXV12AVJU9	WALL	392	45	11.5	21.0	12.0	12.0	1.8	10.0	NONE	11.5	30.5	9.0	19.0

LOUVER SCHEDULE

REMARKS:															
1. VERIFY ROUGH OPENING DIMENSIONS W/ GEN. CONTR. PRIOR TO ORDERING. 2. 6" DEEP DRAINABLE LOUVER WITH BIRDSCREEN. 3. PROVIDE WITH PRIME COAT READY FOR PAINT.				4. PROVIDE WITH SHOP-FABRICATED FILTER RACK W/ PIANO-HINGE ACCESS 5. PROVIDE 2" MERV 8 PLEATED FILTERS 6. PROVIDE (2) SETS OF SPARE FILTERS FOR EACH LOUVER											
MARK	MANUF.	MODEL	WIDTH (IN)	HEIGHT (IN)	TYPE	MATERIAL	FUNCTION	AIRFLOW (CFM)	FREE AREA (%)	PRESSURE DROP (IN WC)	AIR VELOCITY (FPM)				
LV-1	RUSKIN	ELF 6375DX	24	64	STATIONARY	ALUMINUM	INTAKE	5,328	56	0.13	897				
LV-2	RUSKIN	ELF 6375DX	24	64	STATIONARY	ALUMINUM	INTAKE	5,328	56	0.13	897				
LV-3	RUSKIN	ELF 6375DX	24	32	STATIONARY	ALUMINUM	INTAKE	1,943	52	0.08	708				
LV-4	RUSKIN	ELF 6375DX	24	32	STATIONARY	ALUMINUM	INTAKE	1,943	52	0.08	708				
LV-5	RUSKIN	ELF 6375DX	36	36	STATIONARY	ALUMINUM	INTAKE	4,000	54	0.1	831				

GRILLE, REGISTER AND DIFFUSER SCHEDULE

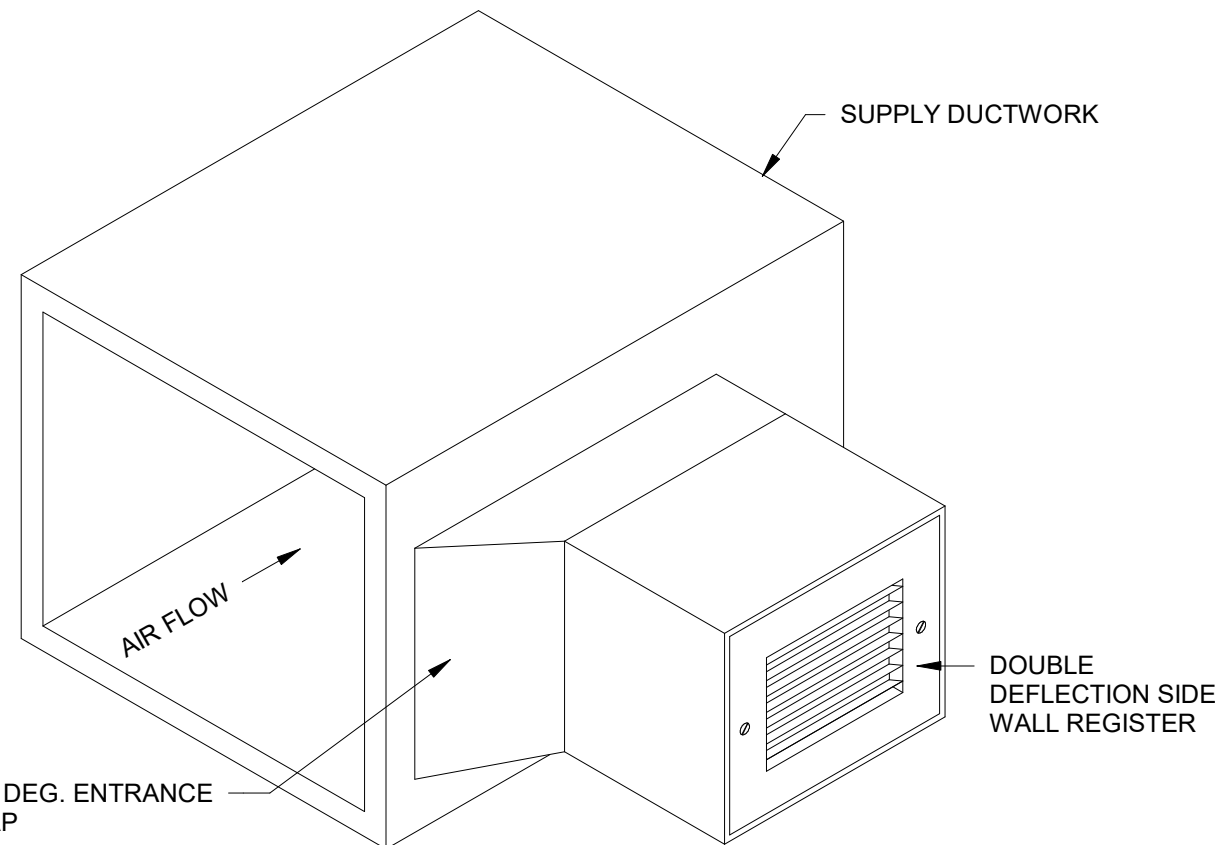
MARK	MFGR	MODEL	DESCRIPTION	FUNCTION	MAX CFM	NC AT MAX CFM	THROW AT MAX CFM (50 FT)	PRESS. DROP AT MAX CFM (in. W.C.) * INCLUDES OBD	NECK SIZE (W"xH")	DAMPER TYPE	MATERIAL	FINISH	REMARKS
SD-1	KRUEGER	580	DUCT-MTD, 3/4" SINGLE-DEFLECTION SUPPLY	SUPPLY	650	18	54	0.04	24 X 12	OBD	ALL ALUMINUM	ALUM.	SEE NOTES
SD-2	KRUEGER	580	DUCT-MTD, 3/4" SINGLE-DEFLECTION SUPPLY	SUPPLY	533	15	41	0.03	18 X 10	OBD	ALL ALUMINUM	ALUM.	SEE NOTES
SD-3	KRUEGER	580	DUCT-MTD, 3/4" SINGLE-DEFLECTION SUPPLY	SUPPLY	800	16	52	0.03	24 X 12	OBD	ALL ALUMINUM	ALUM.	SEE NOTES
RG-1	KRUEGER	AF S580Z	SIDEWALL-MTD GRILL, 3/4" FIXED=BLADE, 0-DEG.	RETURN	3,400	22	-	0.03	48 X 24	OBD	ALL ALUMINUM	ALUM.	SEE NOTES
RG-2	KRUEGER	AF S580Z	SIDEWALL-MTD GRILL, 3/4" FIXED=BLADE, 0-DEG.	RETURN	1,600	19	-	0.03	30 X 18	OBD	ALL ALUMINUM	ALUM.	SEE NOTES
RG-3	KRUEGER	AF S580Z	SIDEWALL-MTD GRILL, 3/4" FIXED=BLADE, 0-DEG.	RETURN	1,600	20	-	0.04	16 X 32	NONE	ALL ALUMINUM	ALUM.	SEE NOTES

NOTES: PROVIDE MANUAL BALANCING DAMPER AT LOCATIONS WHERE A SPECIFIED AIR VOLUME IS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL FITTINGS AND ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION. SCHEDULES N.C. VALUES ARE VALID FOR SCHEDULE AIR FLOW ONLY AND REPRESENT A MAXIMUM ACCEPTABLE N.C. VALUE. SUBSTITUTED EQUIPMENT SHALL HAVE N.C. VALUE EQUAL TO OR BELOW THE SCHEDULES N.C. AT THE AIR FLOW LISTED ON THE PLANS.

MEP COORDINATION SCHEDULE

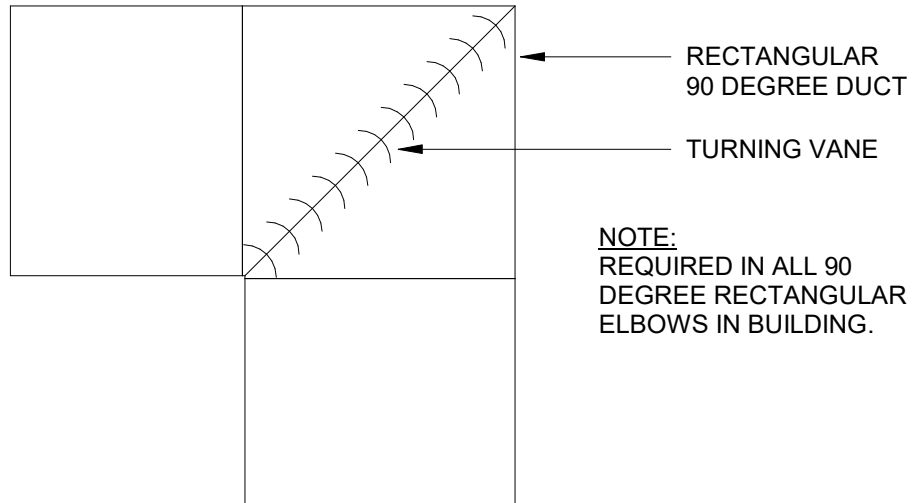
CONTROL TYPE:		DISCONNECT/STARTER TYPE:		DIVISION OF RESPONSIBILITIES:										
BAS	BUILDING AUTOMATION SYSTEM	CB	PANELBOARD CIRCUIT BREAKER WITHIN SIGHT OF EQUIPMENT	22/22	FURNISHED AND INSTALLED BY DIV. 22, WIRED BY DIV. 22									
CO	CARBON MONOXIDE DETECTOR	CSFD	COMBINATION STARTER/DISCONNECT - HOA	22/26	FURNISHED AND INSTALLED BY DIV. 22, WIRED BY DIV. 26									
CONT	CONTINUOUS OPERATION	FD	FUSED DISCONNECT	23/23	FURNISHED AND INSTALLED BY DIV. 23, WIRED BY DIV. 23									
EF	INTERLOCK WITH EXHAUST FAN	FST	FUSTAT	23/26	FURNISHED AND INSTALLED BY DIV. 23, WIRED BY DIV. 26									
HCP	HOOD CONTROL PANEL	FW	FACTORY-WIRED SINGLE POINT CONNECTION	26/26	FURNISHED AND INSTALLED BY DIV. 26, WIRED BY DIV. 26									
INT	INTEGRAL	MOC	MOTOR OVER-CURRENT PROTECTION	NOTES: 1. INTEGRAL DISCONNECTS AND OVERLOADS 2. INTEGRAL OVERLOADS 3. SINGLE POINT CONNECTION 4. PROVIDE RECEPTACLE AND DATA CONNECTION FOR PANEL 5. MOUNT ON UNI-STRUT IN FRONT OF UNIT 6. SIZE FUSES IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES FOR INSTALLED EQUIPMENT 7. INTEGRAL VARIABLE FREQUENCY DRIVE 8. FAN COIL IS POWERED OFF CORRESPONDING CONDENSING UNIT. EC SHALL PROVIDE ELECTRICAL CONNECTION BETWEEN UNITS PER MANUFACTURERS REQUIREMENTS										
L	LIGHT SWITCH	MSS	MANUAL STARTER SWITCH WITH THERMAL OVERLOADS (1-, 2- OR 3-POLE AS REQUIRED)											
MS	MANUAL SWITCH	NFD	NON-FUSED DISCONNECT											
OS	OCCUPANCY SENSOR	RCPT	20A DUPLEX RECEPTACLE (GFCI PROTECTED AS REQUIRED), CORD AND PLUG											
PS	PRESSURE SWITCH	RVSS	REDUCED VOLTAGE SOLID-STATE											
T	THERMOSTAT	VFD	VARIABLE FREQUENCY DRIVE - HOA											
TC	TIME CLOCK	N/A	NOT APPLICABLE											
UC	UNIT CONTROLLER													
VE	VEHICLE EXHAUST DETECTION SYSTEM													
N/A	NOT APPLICABLE													

MARK	DESCRIPTION	ELECTRICAL DATA		CONTROL		NOTES	DISCONNECT / STARTER		DISCONNECT			ENCLOSURE (NEMA)	COPPER WIRE (AWG)	FEEDER CONDUIT (INCHES)
		LOAD	VOLT-PHASE	TYPE	DIV		TYPE	DIV	SIZE (NEMA)	SWITCH (AMPS)	FUSE (AMPS)			
AC-1	PACKAGED COOLING ONLY	34.0 MCA	460V-3-60	T	23 / 23	1,3	NFD	26 / 26	N/A		N/A	NEMA 3R		
AC-2	PACKAGED COOLING ONLY	10.7 MCA	460V-3-60	T	23 / 23	1,3	NFD	26 / 26	N/A		N/A	NEMA 3R		
FC-1A	SPLIT SYSTEM FAN COIL, INDOOR UNIT	--	--	T	23 / 23	8	MSS	26 / 26	N/A	N/A	N/A	NEMA 1	PER MANUF.	PER MANUF.
FC-1B	SPLIT SYSTEM FAN COIL, INDOOR UNIT	--	--	T	23 / 23	8	MSS	26 / 26	N/A	N/A	N/A	NEMA 1	PER MANUF.	PER MANUF.
HP-1	SPLIT SYSTEM HEAT PUMP, OUTDOOR UNIT	19.9 MCA	208V-1-60	UC	23 / 23	3	NFD	26 / 26	N/A		N/A	NEMA 3R		



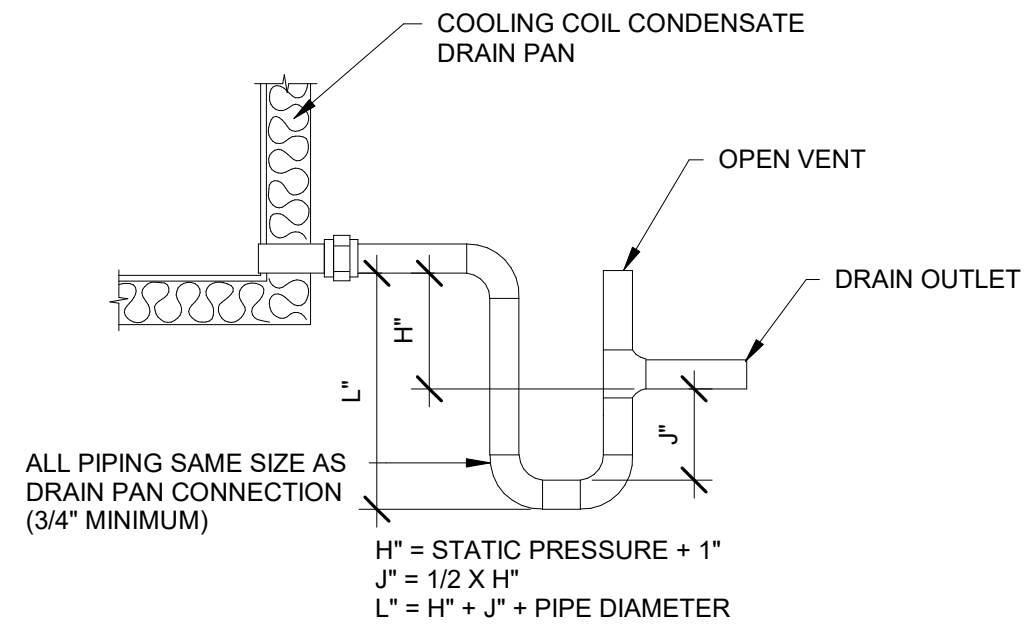
RECTANGULAR DUCT MOUNTED GRILLE DETAIL

SCALE: N.T.S.



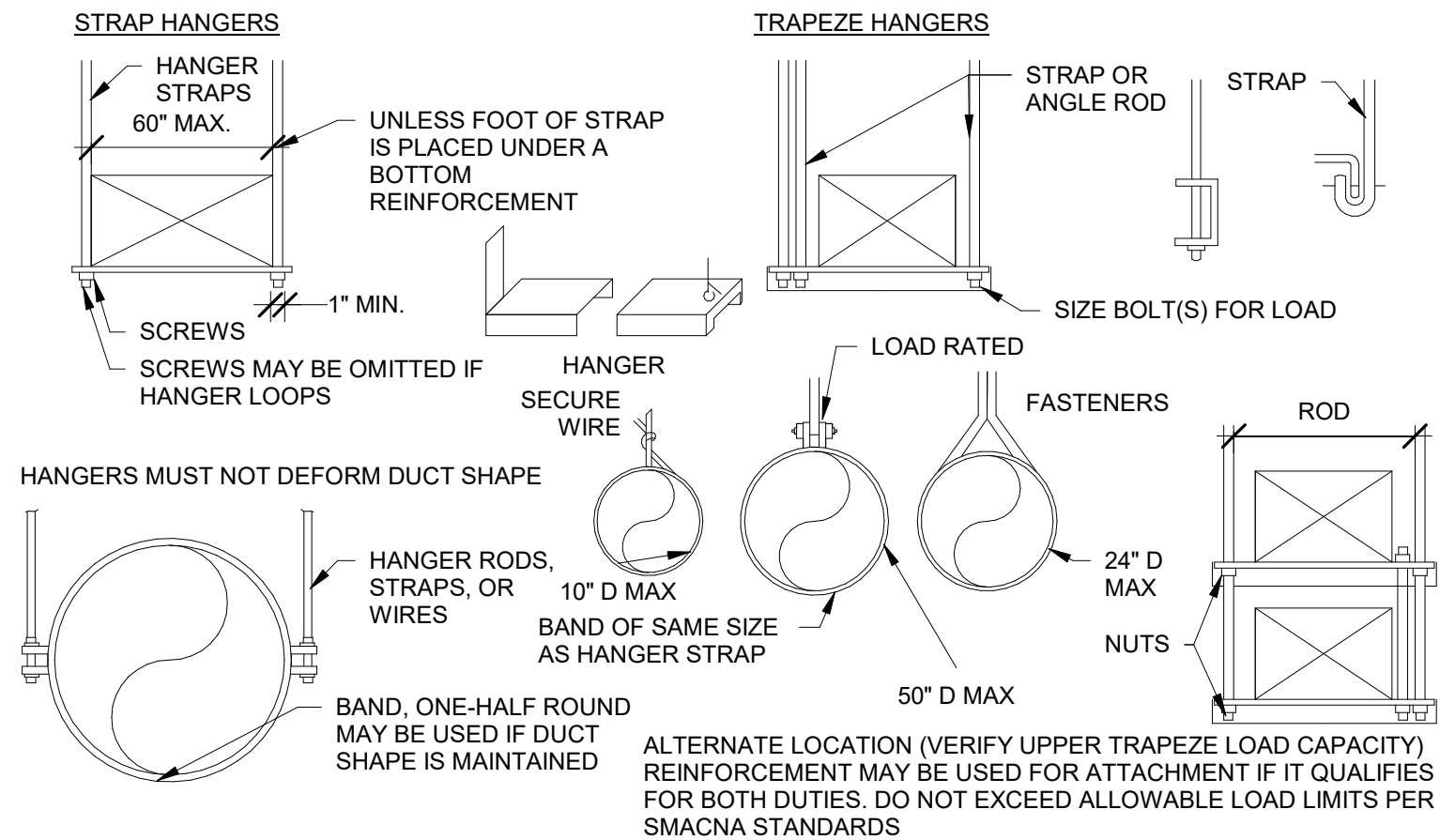
DUCT TURNING VANE DETAIL

SCALE: N.T.S.



CONDENSATE DETAIL

SCALE: N.T.S.



DUCT SUPPORT DETAIL

SCALE: N.T.S.



CHECKED: MWC

DRAWN: JW

DESIGN: JW
DATE: 05/20/26

DESCRIPTION

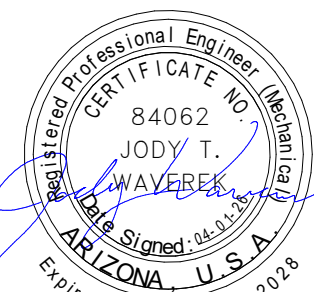
REVISION

DATE

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

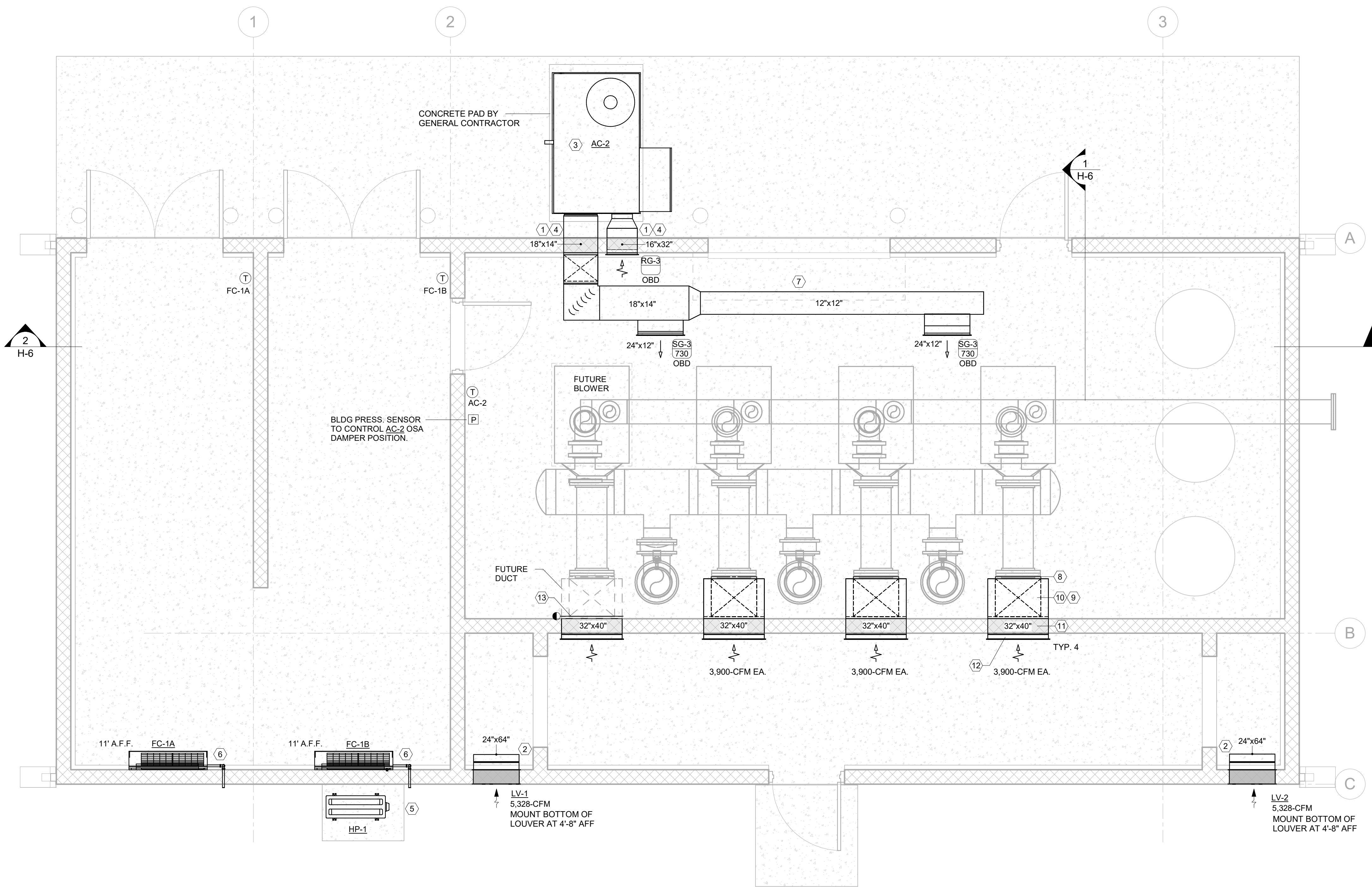
HVAC SCHEDULES & DETAILS



DWG. NO.
H-2

SHEET NO.
38 OF 68

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AERATION BASIN BLOWER BUILDING HVAC PLAN
SCALE: 3/8" = 1'-0"

KEY NOTES:

- COORDINATE HEIGHT AND DIMENSIONS OF WALL PENETRATIONS WITH AC SUPPLIER AND GENERAL CONTRACTOR.
- PROVIDE 24"-WIDE x 64"-HIGH (2" PLEATED, MERV-8) FILTER RACK FOR INTAKE LOUVER.
- PACKAGED AIR-HANDLING UNIT (COOLING-ONLY), MOUNTED ON 14"-HIGH FACTORY-FABRICATED ROOF CURB. SECURE CURB TO CONCRETE PAD PROVIDED BY GEN. CONTR.
- EXTERIOR DUCTWORK TO BE CONSTRUCTED OF MATERIALS SUITABLE FOR EXTERIOR APPLICATION IN ACCORDANCE WITH SMACNA. SEE ALSO SPECIFICATIONS FOR "METAL DUCTS" AND "DUCT INSULATION". SEAL WEATHER-TIGHT.
- DUCTLESS MINI-SPLIT SYSTEM FOR ELECTRICAL ROOM COOLING. MOUNT OUTDOOR UNIT ON LIGHTWEIGH CONC. PAD.
- ROUTE CONDENSATE DRAIN THROUGH EXTERIOR WALL TO SUITABLE LOCATION.
- MOUNT DUCTWORK TIGHT TO BOTTOM OF STRUCTURE. COORDINATE PLACEMENT OF GRILLES TO AVOID LIGHTS.
- CONNECT 24"x20" LOW-PRESSURE DUCT TO ROUND STEEL BLOWER INTAKE FLANGE. SEAL AIR-TIGHT.
- SAND COLLECTION TEE WITH HINGED ACCESS CLEANOUT AT BOTTOM OF DUCT. REFER TO SECTIONS.
- 24"x20" DUCT RISE UP TO CEILING LEVEL. REFER TO SECTIONS.
- COORD. CMU WALL PENETRATION WITH GEN. CONTR. PROVIDE DUCT FLANGE AND GASKET AT WALL PENETRATION TO CREATE AIR-TIGHT SEAL BETWEEN PLENUM ROOM AND BLOWER ROOM.
- 32"x40" FILTER BOX W/ PIANO HINGE ACCESS. PROVIDE RACK FOR ARRAY OF (4) 16"x20 1" PLEATED FILTERS.
- FUTURE BLOWER: CONSTRUCT FILTER BOX AND CAP-OFF DUCT COLLAR AT WALL WITH FLANGE. READY FOR FUTURE DUCT CONNECTION.

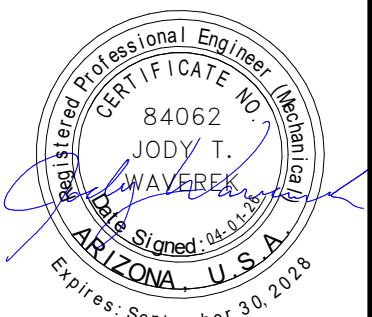
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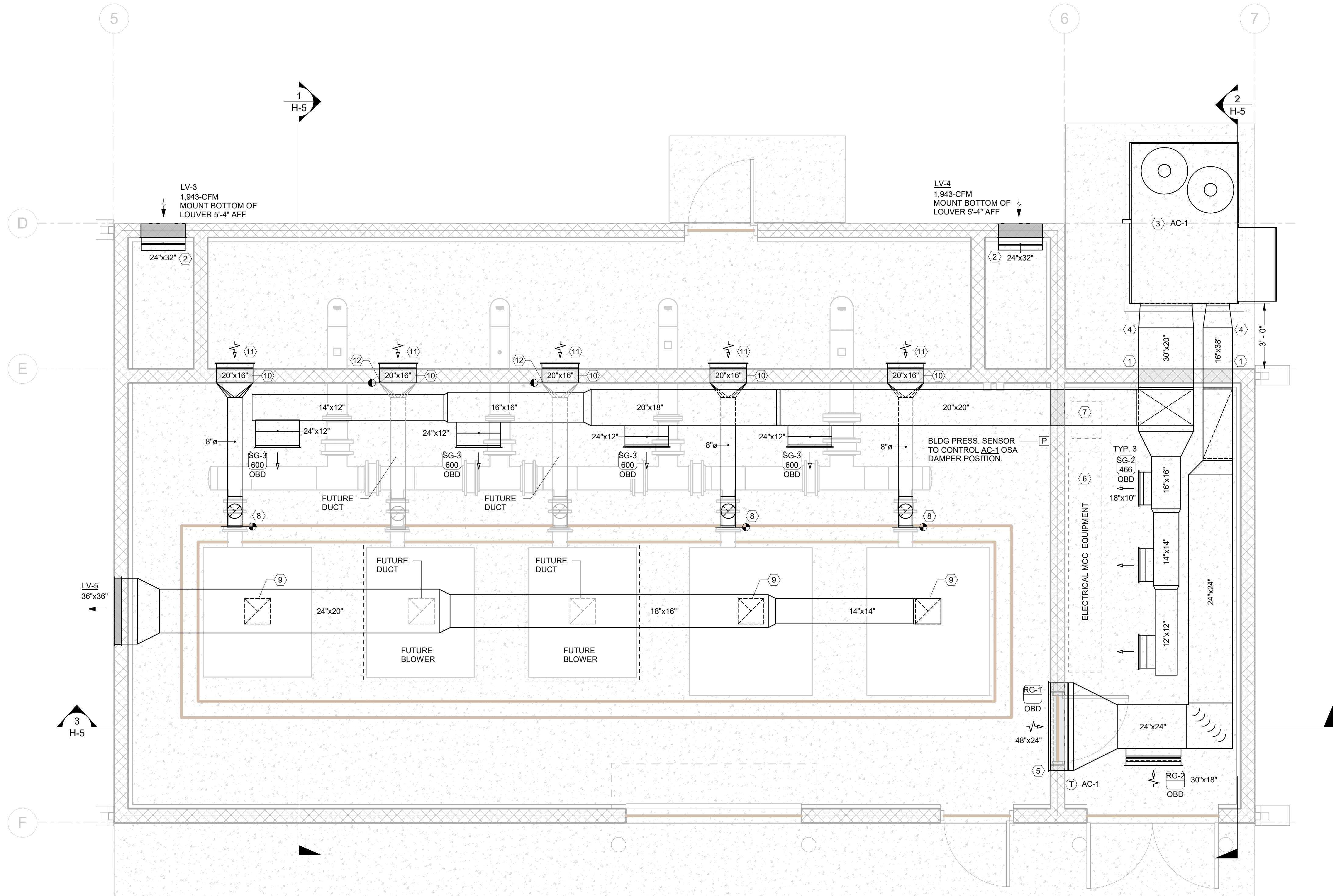


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DATE: 05/20/26	DRAWN: JW
REVISION	DATE
DESCRIPTION	

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
AERATION BASIN BLOWER BUILDING
HVAC PLAN



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DIGESTER BLOWER BUILDING HVAC PLAN
SCALE: 3/8" = 1'-0"

KEY NOTES:

- COORDINATE HEIGHT AND DIMENSIONS OF WALL PENETRATIONS WITH AC SUPPLIER AND GENERAL CONTRACTOR.
- PROVIDE 24"-WIDE x 32"-HIGH (2" PLEATED, MERV-8) FILTER RACK FOR INTAKE LOUVER.
- PACKAGED AIR-HANDLING UNIT (COOLING-ONLY), MOUNTED ON 14"-HIGH FACTORY-FABRICATED ROOF CURB. SECURE CURB TO CONCRETE PAD PROVIDED BY GEN. CONTR.
- EXTERIOR DUCTWORK TO BE CONSTRUCTED OF MATERIALS SUITABLE FOR EXTERIOR APPLICATION IN ACCORDANCE WITH SMACNA. SEE ALSO SPECIFICATIONS FOR "METAL DUCTS" AND "DUCT INSULATION". SEAL WEATHER-TIGHT.
- CENTER RETURN GRILLE ABOVE DOOR. COORD. ALL CMU BLOCK PENETRATIONS W/ GEN. CONTR.
- FLOOR-MOUNTED ELECTRICAL MCC'S. NO DUCTWORK ABOVE PER CODE.
- FLOOR-MOUNTED ELECTRICAL TRANSFORMER. DUCTWORK MUST BE MOUNTED AT LEAST 6-FT CLEAR FROM TOP OF EQUIPMENT.
- DUCT CONNECTION TO BLOWER FLANGE. COORDINATE W/ GEN. CONTR.
- DUCT CONNECTION TO BLOWER ENCLOSURE. FIELD COORDINATE LOCATION OF BLOWER VENT CONNECTION POINT.
- COORD. CMU WALL PENETRATION WITH GEN. CONTR. PROVIDE DUCT FLANGE AND GASKET AT WALL PENETRATION TO CREATE AIR-TIGHT SEAL BETWEEN PLENUM ROOM AND BLOWER ROOM.
- FILTER BOX W/ PIANO HINGE ACCESS. PROVIDE RACK FOR (1) 20"x216" 1" PLEATED FILTERS.
- FUTURE BLOWER: CONSTRUCT FILTER BOX AND CAP-OFF DUCT COLLAR AT WALL WITH FLANGE. READY FOR FUTURE DUCT CONNECTION.



CHECKED:MWC

DRAWN: JW

DESIGN: JW
DATE: 05/20/26

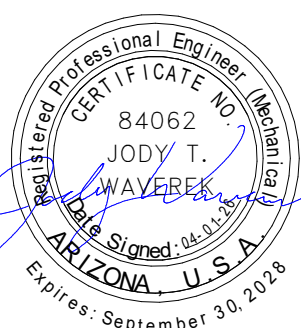
REVISION
DATE

DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

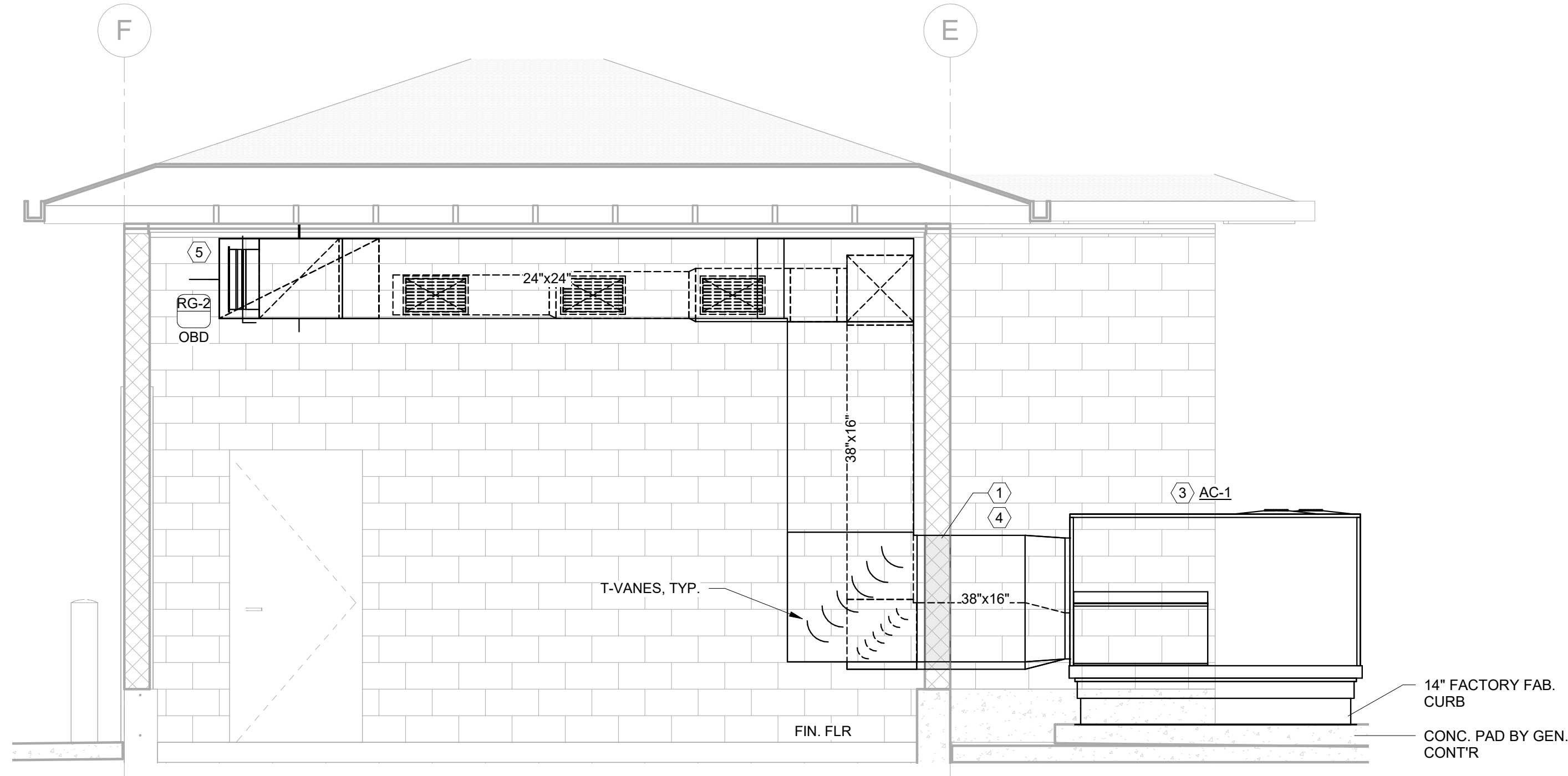
DIGESTER BLOWER BUILDING HVAC
PLAN



DWG. NO.
H-4

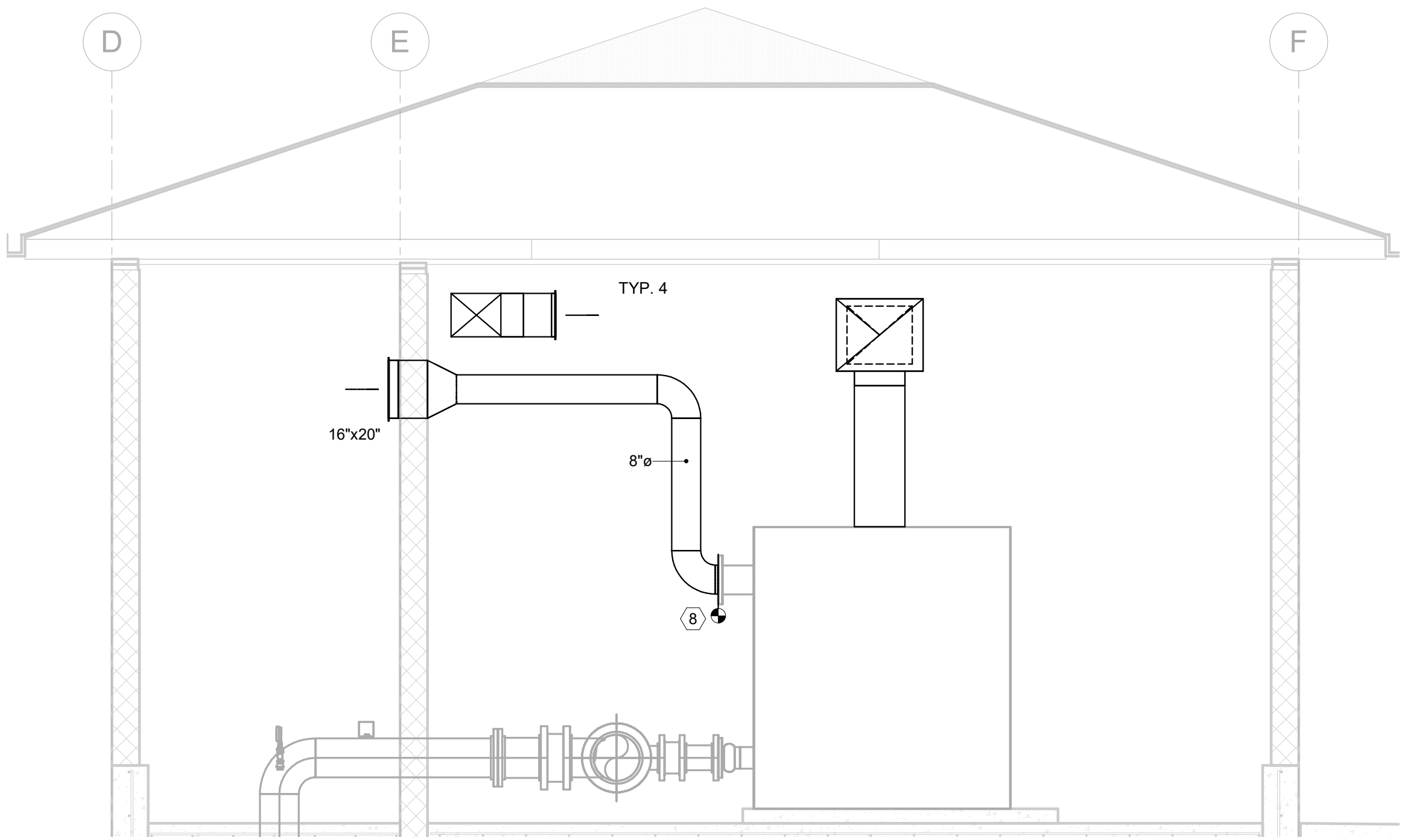
SHEET NO.
40 OF 68

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SECTION 1 - DIGESTER BLOWER BUILDING

SCALE: 3/8" = 1'-0"

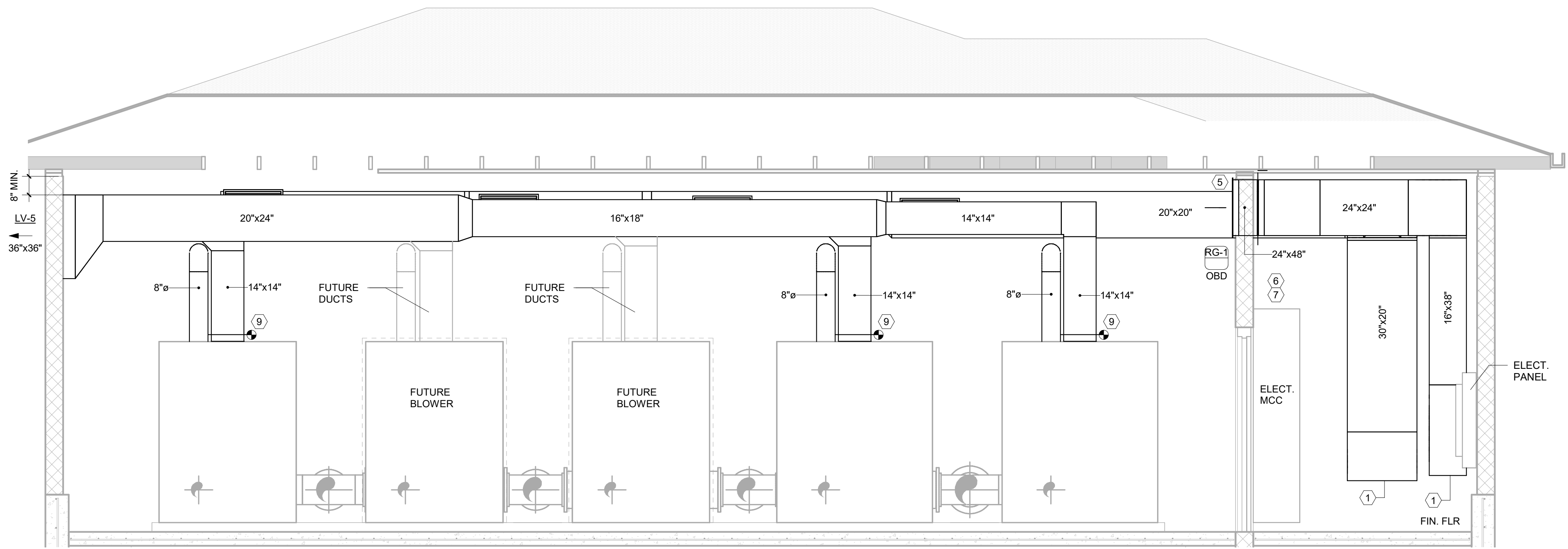


SECTION 2 - DIGESTER BLOWER BUILDING

SCALE: 3/8" = 1'-0"

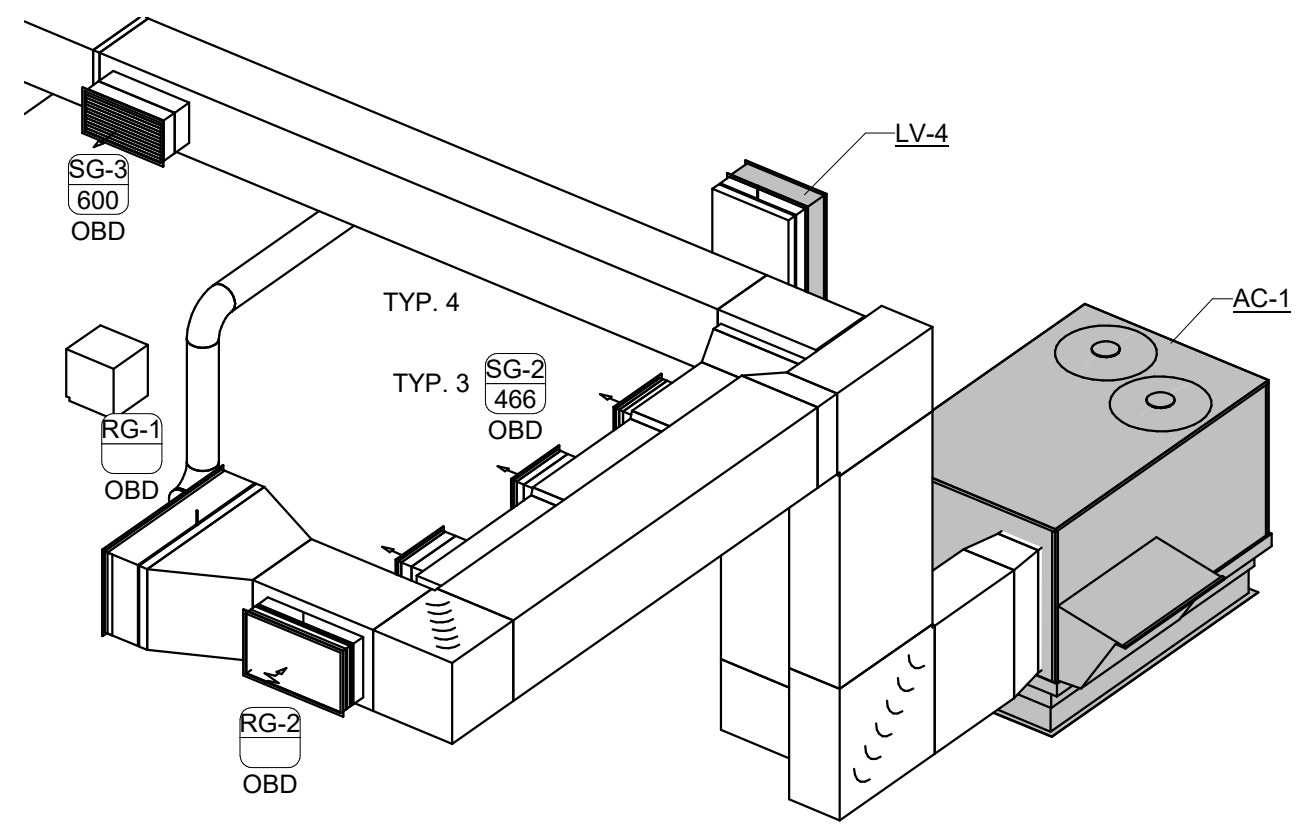
KEY NOTES:

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- PROVIDE 24"-WIDE x 32"-HIGH (2" PLEATED, MERV-8) FILTER RACK FOR INTAKE LOUVER.
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- FLOOR-MOUNTED ELECTRICAL MCC'S. NO DUCTWORK ABOVE PER CODE.
- FLOOR-MOUNTED ELECTRICAL TRANSFORMER, DUCTWORK MUST BE MOUNTED AT LEAST 6-FT CLEAR FROM TOP OF EQUIPMENT.
- DUCT CONNECTION TO BLOWER FLANGE. COORDINATE W/ GEN. CONTR.
- DUCT CONNECTION TO BLOWER ENCLOSURE. FIELD COORDINATE LOCATION OF BLOWER VENT CONNECTION POINT.



SECTION 3 -DIGESTER BLOWER BUILDING

SCALE: 3/8" = 1'-0"



AXONOMETRIC VIEW - DIGESTER BLOWER BUILDING

SCALE: N.T.S.



CHECKED:MWC

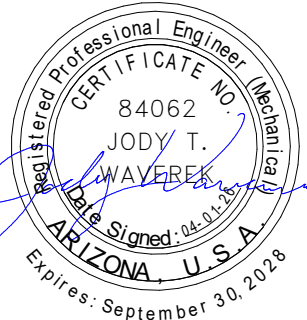
DRAWN: Author

DESIGN: Designer
DATE: 05/20/26

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

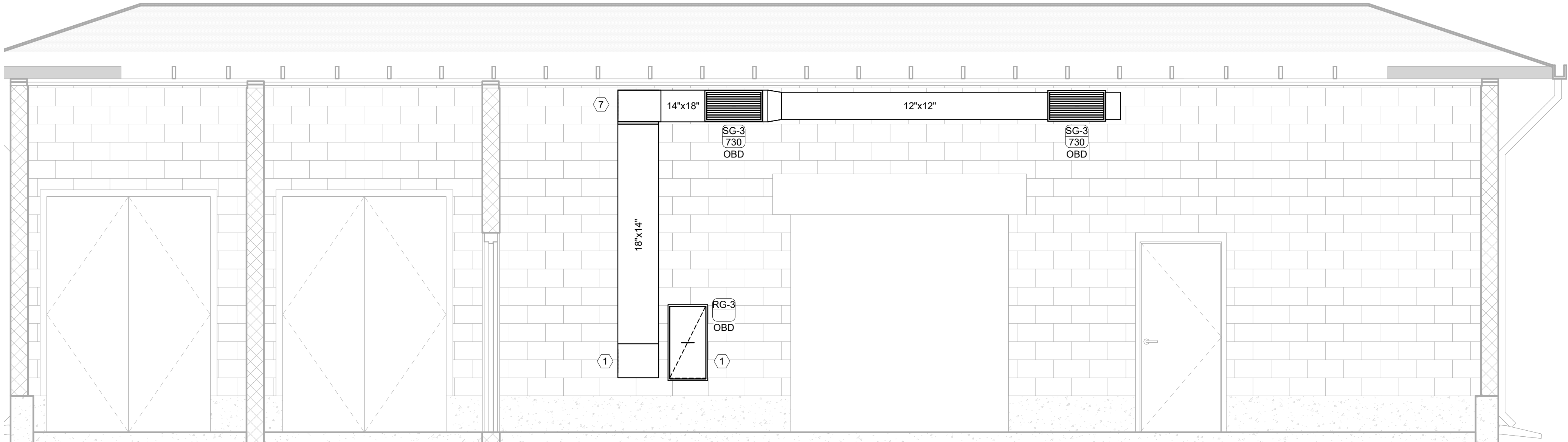
HVAC SECTIONS - DIGESTER BLOWER BUILDING



DWG. NO.
H-5

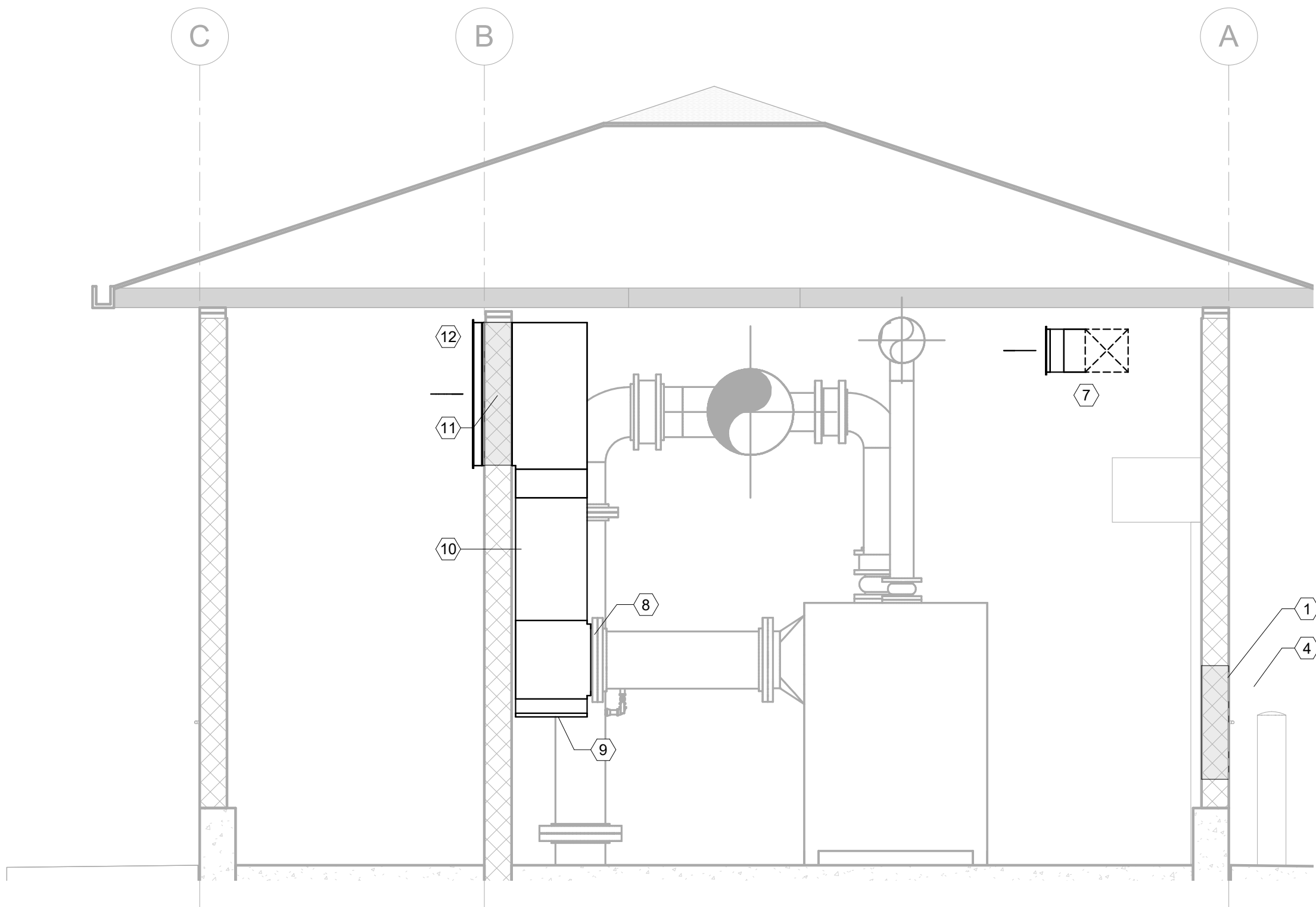
SHEET NO.
41 OF 68

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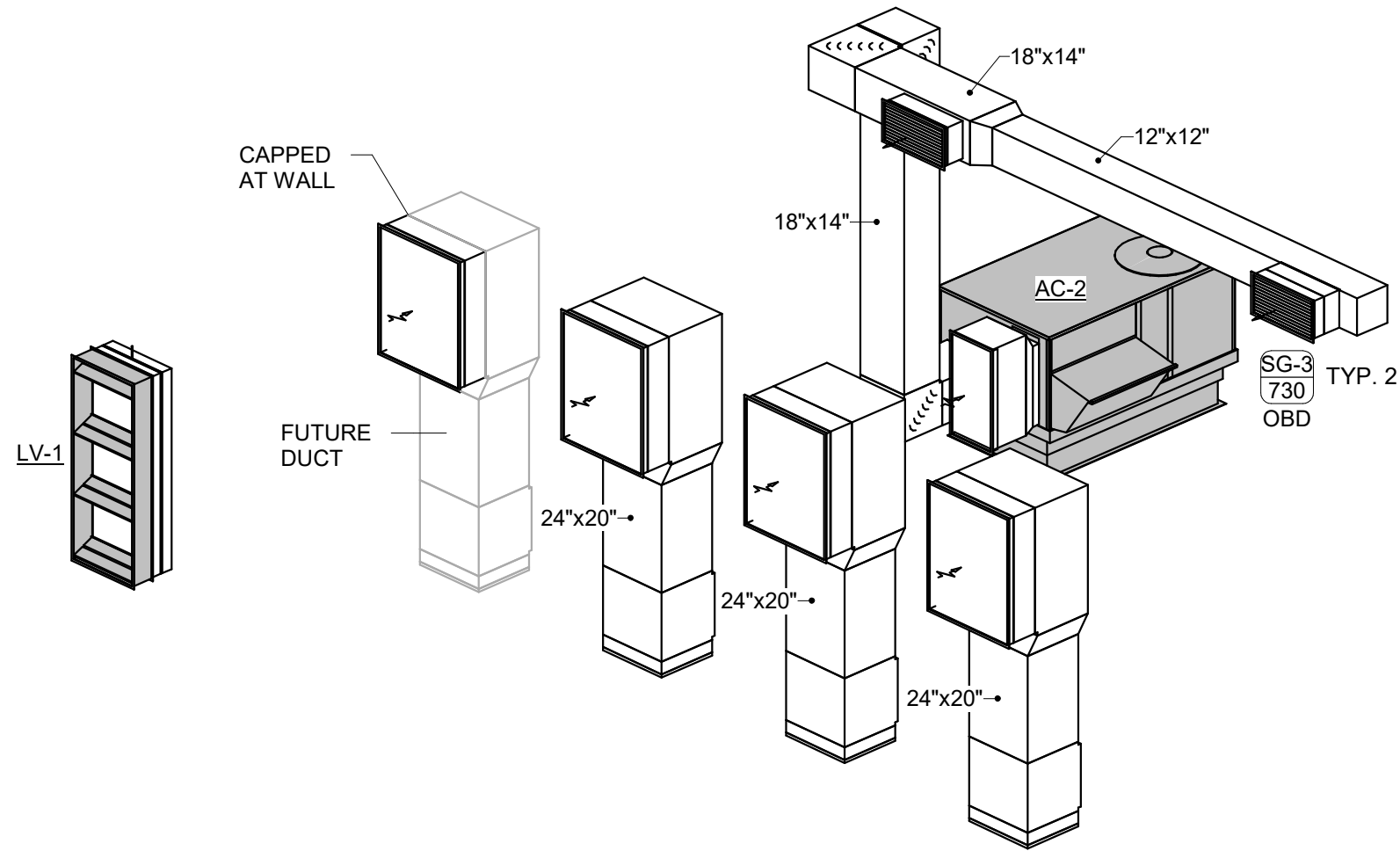
SECTION 2 - AERATION BASIN BLOWER BUILDING

SCALE: 3/8" = 1'-0"



SECTION 1 - AERATION BASIN BLOWER BUILDING

SCALE: 3/8" = 1'-0"

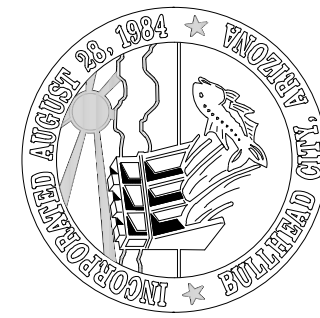


AXONOMETRIC VIEW - AERATION BASIN BLOWER BUILDING

SCALE: N.T.S.

KEY NOTES:

- 1 COORDINATE HEIGHT AND DIMENSIONS OF WALL PENETRATIONS WITH AC SUPPLIER AND GENERAL CONTRACTOR.
- 2 PROVIDE 24"-WIDE x 64"-HIGH (2" PLEATED, MERV-8) FILTER RACK FOR INTAKE LOUVER.
- 3 PACKAGED AIR-HANDLING UNIT (COOLING-ONLY), MOUNTED ON 14"-HIGH FACTORY-FABRICATED ROOF CURB. SECURE CURB TO CONCRETE PAD PROVIDED BY GEN. CONTR.
- 4 EXTERIOR DUCTWORK TO BE CONSTRUCTED OF MATERIALS SUITABLE FOR EXTERIOR APPLICATION IN ACCORDANCE WITH SMACNA. SEE ALSO SPECIFICATIONS FOR "METAL DUCTS" AND "DUCT INSULATION". SEAL WEATHER-TIGHT.
- 5 DUCTLESS MINI-SPLIT SYSTEM FOR ELECTRICAL ROOM COOLING. MOUNT OUTDOOR UNIT ON LIGHTWEIGH CONC. PAD.
- 6 ROUTE CONDENSATE DRAIN THROUGH EXTERIOR WALL TO SUITABLE LOCATION.
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- 9 SAND COLLECTION TEE WITH HINGED ACCESS CLEANOUT AT BOTTOM OF DUCT. REFER TO SECTIONS.
- 10 24"x20" DUCT RISE UP TO CEILING LEVEL. REFER TO SECTIONS.
- 11 COORD. CMU WALL PENETRATION WITH GEN. CONTR. PROVIDE DUCT FLANGE AND GASKET AT WALL PENETRATION TO CREATE AIR-TIGHT SEAL BETWEEN PLENUM ROOM AND BLOWER ROOM.
- 12 32"x40" FILTER BOX W/ PIANO HINGE ACCESS. PROVIDE RACK FOR ARRAY OF (4) 16"x20 1" PLEATED FILTERS.



CHECKED:MWC

DRAWN: Author

DESIGN: Designer

DATE: 05/20/26

REVISION

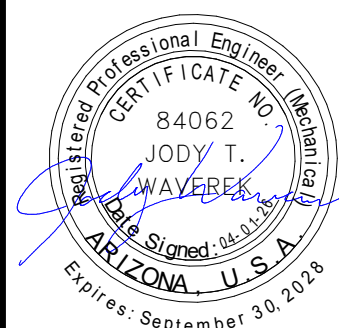
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DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

HVAC SECTIONS - AERATION BASIN
BLOWER BUILDING



DWG. NO.

H-6

SHEET NO.

42 OF 68

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ELECTRICAL ABBREVIATIONS LEGEND

A, AMP	AMPERES	MAG	MAGNETIC STARTER
AC	ALTERNATING CURRENT	MAN	MANUAL
A/C	AIR CONDITIONING	MAX	MAXIMUM
AF	AMP FUSE	MC	MECHANICAL CONTRACTOR
AFC	AVAILABLE FAULT CURRENT	MCA	MINIMUM CIRCUIT AMPACITY
AFCI	ARC FAULT CIRCUIT INTERRUPTER	MCC	MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MDP	MAIN DISTRIBUTION PANEL
AFG	ABOVE FINISHED GRADE	MECH	MECHANICAL
AHU	AIR HANDLING UNIT	MEP	MECHANICAL, ELECTRICAL, PLUMBING
AL	ALUMINUM	MH	METAL HALIDE
AS	AMP SWITCH	MIN	MINIMUM
ATS	AUTOMATIC TRANSFER SWITCH	MSS	MOTOR STARTER SWITCH WITH THERMAL OVERLOADS
BAS	BUILDING AUTOMATION SYSTEM	N	NEUTRAL
BKR	BREAKER	NC	NORMALLY CLOSED
BOF	BOTTOM OF FIXTURE	NEC	NATIONAL ELECTRIC CODE
C	RACEWAY/CONDUIT	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CB	CIRCUIT BREAKER	NFD	NON-FUSED DISCONNECT
CCT	COLOR RENDERING TEMPERATURE	NL	NIGHT LIGHT, UN-SWITCHED 24/7 OPERATION
CCTV	CLOSED CIRCUIT TELEVISION	NIC	NOT IN CONTRACT
CKT	CIRCUIT	NO	NORMALLY OPEN
CLG	CEILING	#	NUMBER
C.O.	RACEWAY/CONDUIT ONLY, WITH PULL STRING	OAE	OR APPROVED EQUAL
COD	CENTER OF DEVICE	OC	ON CENTER
CNTRL	CONTROL	OCPD	OVERCURRENT PROTECTIVE DEVICE
CU	COPPER	OH	OVERHEAD
(D)	EXISTING TO BE DEMOLISHED	P	POLE
DISC	DISCONNECT	PB	PUSHBUTTON
DIST	DISTRIBUTION	PC	PLUMBING CONTRACTOR
DPDT	DOUBLE POLE DOUBLE THROW	PH	PHASE
DWG	DRAWING	PNL	PANEL
EA	EACH	PVC	POLYVINYL CHLORIDE CONDUIT
EC	ELECTRICAL CONTRACTOR	PWR	POWER
EF	EXHAUST FAN	(R)	EXISTING TO REMAIN
ELEC	ELECTRIC	RCPT	RECEPTACLE
EMT	ELECTRICAL METALLIC TUBING	RECEPT	RECEPTACLE
EQUIP	EQUIPMENT	RGS	RIGID GALVANIZED STEEL
EX, EXIST	EXISTING	RM	ROOM
FA	FIRE ALARM	RVNR	REDUCED VOLTAGE NON-REVERSING
FAA	FIRE ALARM ANNUNCIATOR	RVR	REDUCED VOLTAGE REVERSING
FACP	FIRE ALARM CONTROL PANEL	SP	SINGLE POLE TOGGLE SWITCH
FD	FUSED DISCONNECT	SPD	SURGE PROTECTIVE DEVICE (TVSS)
FLR	FLOOR	SPEC	SPECIFICATION
FO	FIBER OPTIC	SPST	SINGLE POLE SINGLE THROW
FSD	FIRE SMOKE DAMPER RELAY, CONTROLLED BY ASSOCIATED SMOKE DETECTOR AND CIRCUITED BACK TO FACP	SSPB	START-STOP PUSHBUTTON
		SW	SWITCH
FVNR	FULL VOLTAGE NON-REVERSING	SWBD	SWITCHBOARD
FVR	FULL VOLTAGE REVERSING	SWGR	SWITCHGEAR
GEC	GROUND ELECTRODE CONDUCTOR	TB	TELEPHONE BOARD
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TC	TIME CLOCK
GFI	GROUND FAULT INTERRUPTER	TD	TIME DELAY
GFP	GROUND FAULT PROTECTION	TEL	TELEPHONE
GND	GROUND	TR	TAMPER RESISTANT
GRC	GALVANIZED RIGID CONDUIT	TSP	TWISTED SHIELDED PAIR
HID	HIGH INTENSITY DISCHARGE	TTB	TELEPHONE TERMINAL BOARD
HOA	HAND-OFF-AUTOMATIC	TYP	TYPICAL
HP	HORSEPOWER	UG	UNDERGROUND
HPS	HIGH PRESSURE SODIUM	UH	UNIT HEATER
HTR	HEATER	UNO	UNLESS NOTED OTHERWISE
HVAC	HEATING, VENTILATION & AIR CONDITIONING	V	VOLT
HZ	HERTZ	VA	VOLT-AMPERES
J-BOX	JUNCTION BOX	VFD	VARIABLE FREQUENCY DRIVE
KVA	KILOVOLT-AMPERES	W	WATTS
KW	KILOWATTS	WAO	WORK AREA OUTLET
LCP	LIGHTING CONTROL PANEL	WP	WEATHERPROOF
LPW	LUMENS PER WATT	W/O	WITHOUT
LTG	LIGHTING	XFMR	TRANSFORMER
LM	LUMENS	WYE-CONNECTED	WYE-CONNECTED
LV	LOW VOLTAGE	Δ	DELTA-CONNECTED
		ø	PHASE

ELECTRICAL LIGHTING FIXTURE LEGEND

	RECESSED LED FIXTURE - "a" & "b" DESIGNATES SWITCH		EXIT SIGN - WALL MOUNT, CEILING MOUNT. ARROW INDICATES DIRECTION OF TRAVEL, SHADING INDICATES LIGHTED FACE.
	RECESSED EMERGENCY LED FIXTURE - "a" & "b" DESIGNATES SWITCH		COMBINATION EXIT SIGN/ EGRESS LIGHTING UNIT - WALL MOUNT, CEILING MOUNT. ARROW INDICATES DIRECTION OF TRAVEL, SHADING INDICATES LIGHTED FACE.
	SURFACE LED FIXTURE - "a" & "b" DESIGNATES SWITCH		DUAL HEAD EMERGENCY EGRESS BATTERY PACK, WALL MOUNT OR CEILING MOUNT
	SURFACE EMERGENCY LED FIXTURE - "a" & "b" DESIGNATES SWITCH		WALL MOUNTED SCNCE
	SURFACE WALL MOUNT LED FIXTURE		SURFACE DOWNLIGHT
	LED STRIP OR INDUSTRIAL, SURFACE OR CHAIN HUNG		SURFACE EMERGENCY DOWNLIGHT
	EMERGENCY LED STRIP OR INDUSTRIAL, SURFACE OR CHAIN HUNG		RECESSED CAN DOWNLIGHT
	POLE MOUNTED FIXTURE		RECESSED CAN EMERGENCY DOWNLIGHT
	LIGHTED BOLLARD		RECESSED CAN WALL WASHER
	PENDANT FIXTURE; HIGH BAY, LOW BAY, DECORATIVE		TRACK LIGHTING. SEE FIXTURE SCHEDULE AND LIGHTING PLANS.

ELECTRICAL POWER LEGEND

	PANEL AND CIRCUIT DESIGNATION ARE SHOWN NEXT TO EACH DEVICE (PANEL NAME - CIRCUIT NUMBER). BRANCH CIRCUIT WIRE SIZE IS #12, UNO. A SINGLE INSULATED GREEN GROUND CONDUCTOR SHALL BE PROVIDED WITH EACH HOME RUN. PROVIDE A SEPARATE NEUTRAL FOR EACH CIRCUIT. HOME RUNS SHALL HAVE NO MORE THAN THREE CIRCUITS. LINE VOLTAGE AND LOW VOLTAGE WIRING IS NOT SHOWN ON PLANS. FOR EQUIPMENT CIRCUITING, SEE MEP COORDINATION SCHEDULE. *X* INDICATES TYPE: C - AUTOMATIC CONTROL GFI - GROUND FAULT INTERRUPTER WP - WEATHERPROOF WHILE-IN-USE COVER U - PROVIDE WITH (2) USB PORTS TR - TAMPER RESISTANT		PANELBOARD OR LOAD CENTER SPECIAL PURPOSE RECEPTACLE (MOUNT AT +18", UNO) *X* INDICATES TYPE: A - NEMA 5-20R, #12 CU; 10 CU; C - NEMA 5-50R, #6 CU; 12 CU; E - NEMA 6-30R, #10 CU; 6 CU; G - NEMA 14-20R, #12 CU; #10 CU; I - NEMA 14-50R, #6 CU* * +4" AFF FOR RANGE PUSHBUTTON (MOUNT AT +48", UNO) *X* INDICATES TYPE: EPO - EMERGENCY POWER OFF ADA - HANDICAPPED ACCESSIBLE DOOR (DEVICE BY OTHERS) ODO - OVERHEAD DOOR OPERATOR (DEVICE BY OTHERS)
	SIMPLEX RECEPTACLE - CEILING MOUNT, WALL MOUNT (+18", UNO)		DUPLEX RECEPTACLE - CEILING MOUNT, WALL MOUNT (+18", UNO)
	QUADRUPLEX RECEPTACLE - CEILING MOUNT, WALL MOUNT (+18", UNO)		ABOVE COUNTER RECEPTACLE - MOUNT AT +4" ABOVE BACKSPLASH
	FLOOR BOX WITH (2) DUPLEX RECEPTACLES - FURNISH WITH (1) 3/4" MIN. CONDUIT FOR POWER FROM BOX. *X* INDICATES TYPE: A - 4-GANG FLOOR BOX, CORROSION RESISTANT COATING FOR CONCRETE* FLOORS (3" MIN. POUR DEPTH). (HUBBELL NO. CFB4G30CR, OAE) B - 4-GANG FLOOR BOX FOR RAISED ACCESS FLOORS, (HUBBELL NO. AFB4G50, OAE) C - FIRE RATED POKE-THROUGH FLOOR BOX FOR ELEVATED CONCRETE* SLABS, 3" DIA. CORE (HUBBELL NO. PT7FSD, OAE) D - 8" DIA., FIRE RATED POKE-THROUGH FLOOR BOX FOR ELEVATED CONCRETE* SLABS, (HUBBELL NO. S1R0PTFT3, OAE) E - FLUSH, ROUND SINGLE SERVICE FLOOR BOX FOR CONCRETE* FLOORS, UP TO 1" CONDUIT FEED (HUBBELL NO. B2506, OAE) F - TOMBSTONE PEDESTAL FLOOR BOX, 1" CONDUIT FEED (HUBBELL NO. 6301, OAE) * NOTE: INCLUDE ALL HARDWARE/ACCESSORIES AS REQUIRED FOR COMPLETE INSTALLATION. PROVIDE COVER (COORDINATE WITH ARCHITECT FOR FLOORING TYPE AND FINISH). POKE-THROUGH FLOOR BOXES CAN ALSO BE USED FOR TILE, CARPET, OR WOOD FLOORS. FLOOR BOX WITH ROUGHED-IN DATA CONDUIT AS WELL AS TYPICAL CONDUIT FOR POWER - FURNISH (1) 1-1/4" DEDICATED CONDUIT FROM EACH DATA COMPARTMENT, COMPLETE WITH PULL STRINGS OVER TO AND UP WALL INTO ACCESSIBLE CEILING SPACE, UNO.		JUNCTION BOX
	DROP-DOWN RECEPTACLE		SURFACE MOUNTED PLUGSTRIP *X* INDICATES TYPE: A - PLUGSTRIP, POWER ONLY, OUTLET EVERY 3' OC B - WIREMOLD SERIES 4000 POWER AND DATA C - WIREMOLD SERIES 5000 POWER AND DATA
	SURFACE MOUNTED RACEWAY		RACEWAY CONCEALED IN WALL, FLOOR, OR CEILING IN FINISHED SPACES, EXPOSED IN UNFINISHED SPACES
	RACEWAY BELOW FLOOR OR BELOW GRADE		RACEWAY STUB-OUT WITH CAPPED END
	RACEWAY STUB-OUT WITH BRUSHED END		GROUNDING BUS

ELECTRICAL LIGHTING CONTROL LEGEND

STANDARD LIGHTING CONTROLS: SWITCHES AND LINE VOLTAGE DIMMERS	DIGITAL LIGHTING CONTROLS: ROOM CONTROLLERS AND LOW VOLTAGE DEVICES
TOGGLE SWITCH (MOUNT AT +48", UNO) *X* INDICATES TYPE: BLANK - SINGLE POLE 3 - INDICATES THREE-WAY 4 - INDICATES FOUR-WAY P - PHILIPS SUNRISE - ON/OFF K - INDICATES KEYPED SWITCH T - INDICATES TIMER P - INDICATES PILOT LIGHT OS - INDICATES WALL SWITCH OCC SENSOR WATTSTOPPER DW100 (SINGLE OR DW-200 SWITCH) OSD - INDICATES WALL SWITCH OCC SENSOR WITH 0-10V DIMMING - WATTSTOPPER	
DUAL	PHOTOCELL - CEILING MOUNT WATTSTOPPER LMLS-400, OR EQUAL
OSD - INDICATES WALL SWITCH OCC SENSOR WITH 0-10V DIMMING - WATTSTOPPER	ON/OFF ROOM CONTROLLER WITH (1) RELAY WATTSTOPPER DLM LMRC-101, OR EQUAL
a - INDICATES SINGLE POLE LIGHTING SWITCH ZONE FOR ZONE a	ON/OFF ROOM CONTROLLER WITH (2) RELAYS WATTSTOPPER DLM LMRC-102, OR EQUAL
b - INDICATES SINGLE POLE LIGHTING SWITCH ZONE FOR ZONE b	ON/OFF/0-10V ROOM CONTROLLER WITH (3) RELAYS WATTSTOPPER DLM LMRC-213, OR EQUAL
ab - INDICATES LIGHTING SWITCHES WITH MULTIPLE ZONES	LOW VOLTAGE DIMMING SWITCH WATTSTOPPER DLM LMDM-101, OR EQUAL
OCCUPANCY SENSOR - DUAL TECHNOLOGY CEILING MOUNT: WATTSTOPPER DT-300, OR EQUAL WALL MOUNT: WATTSTOPPER DT-200, OR EQUAL WALL MOUNTED SHALL BE AT +96", UNO PROVIDE WITH BZ-50 POWER PACKS AS NEEDED.	LOW VOLTAGE SWITCH, # INDICATES NUMBER OF BUTTONS. NO "#" IS A 2 BUTTON SWITCH. WATTSTOPPER DLM LMSW-10#, OR EQUAL
PHOTOCELL - CEILING MOUNT, WATTSTOPPER LS-301, OR EQUAL	

ELECTRICAL ONE-LINE LEGEND

	CT AND CUSTOMER POWER METER		AUTOMATIC TRANSFER SWITCH
	MOTOR		VARIABLE FREQUENCY DRIVE
	UTILITY ELECTRIC METER AND BASE (BASE BY CUSTOMER)		FIXED MOUNT LV BREAKER
	SURGE PROTECTION DEVICE		FUSED SWITCH ("XXAS/XXAF" - SW AND FUSE AMP RATING)
	LIGHTNING ARRESTER, TYPE 1 SPD, MOUNTED ON EXTERIOR OF MAIN SWITCHGEAR (SQUARE D. SDSA SERIES, OAE)		GENERATOR
	STRESS RELIEF CONE		WALL MOUNTED BREAKER
	POWER FACTOR CORRECTION CAPACITOR		THERMAL OVERLOAD ELEMENT
	EQUIPMENT TOGGLE DISCONNECT SWITCH *X* INDICATES TYPE: F - FUSTAT M - MOTOR STARTER SWITCH W/ THERMAL OVERLOADS		DISCONNECT SWITCH ("XXAS" = SWITCH AMP RATING)
	CONTACTOR NORMALLY OPEN, NORMALLY CLOSED		FUSED DISCONNECT SWITCH ("XXAS/XXAF" = SW AND FUSE AMP RATING)
	TRANSFORMER, 3-PH, 3-WIRE DELTA CONNECTION		COMBINATION MOTOR STARTER (STR SIZE, TYP, AS, AF, SEE MEP COORDINATION SCHEDULE)
	TRANSFORMER, 3-PH, 4-WIRE GROUNDED WYE CONNECTION		SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED

ABBREVIATIONS AND SYMBOLS GENERAL NOTES

- A. THE ABBREVIATIONS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL ABBREVIATIONS APPEAR ON THIS PROJECT.
B. THE SYMBOLS ON THIS SHEET COMPRISE A STANDARD LIST; NOT ALL SYMBOLS APPEAR ON THIS PROJECT.
C. ALL MOUNTING HEIGHTS ARE TO CENTER OF DEVICE ABOVE FINISHED FLOOR, UNLESS NOTED OTHERWISE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS, MAKING ADJUSTMENTS AS REQUIRED TO AVOID INTERFERENCE WITH EQUIPMENT SUCH AS BASEBOARD FIN-TUBE, CABINET UNIT HEATERS, ETC. ARCHITECT/ENGINEER SHALL BE NOTIFIED OF ALL SUCH HEIGHT ADJUSTMENTS. MOUNTING HEIGHTS INDICATED ON ARCHITECTURAL WALL ELEVATIONS OR AS NOTED SPECIFICALLY ON THE DRAWINGS OR IN THE SPECIFICATIONS SHALL TAKE PRECEDENCE OVER MOUNTING HEIGHTS LISTED.

ELECTRICAL PROJECT GENERAL NOTES

- A. PRIOR TO BID CONTRACTOR SHALL VISIT THE SITE. NOT ALL WORK REQUIRED TO COMPLETE THE PROJECT IS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH ALL THE WORK REQUIRED TO COMPLETE THE PROJECT IN ADDITION TO THE LOCAL CONDITIONS AND INCLUDE SAID WORK IN THE BID.
B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL ELECTRICAL SERVICE WORK WITH UTILITY. OWNER PAYS ALL FEES. CONTRACTOR DOES ALL SCHEDULING AND COORDINATION OF WORK. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ALL SCHEDULES ARE MET.
C. GENERAL WORK PRACTICES FOR ELECTRICAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH NECA 1, "STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING." THIS PUBLICATION IS AVAILABLE FROM NECA BY TELEPHONE AT 301-657-3110 OR ON-LINE AT WWW.NECANET.ORG.
D. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH MECHANICAL FOR PLENUM SPACES AND PROVIDE PLENUM RATED CABLES WHERE REQUIRED FOR LIGHTING CONTROL, DATA, FIRE ALARM AND ALL OTHER L.V. SYSTEMS NOT INSTALLED IN CONDUIT. VERIFY CONDUIT REQUIREMENTS ON DRAWINGS AND SPECIFICATIONS.
E. FIRE-RESISTANCE: PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 24" BETWEEN OUTLET BOXES LOCATED ON OPPOSITE SIDES OF FIRE-RESISTANCE RATED WALLS. WHERE THIS IS NOT POSSIBLE INSTALL UL LISTED PUTTY PADS ON ALL OUTLET BOXES NOT MEETING THE 24" SEPARATION. PROVIDE A UL LISTED THROUGH -PENETRATION FIRESTOP FOR PENETRATIONS OF FIRE-RESISTANCE RATED ASSEMBLIES.
F. CONDUCTORS ARE SIZED PER THE 75 DEGREE C RATING COLUMN OF NEC TABLE 310.16. IF THE TERMINAL USED FOR A TERMINATION OF A PARTICULAR CONDUCTOR IS NOT MARKED, OR THE TERMINAL IS MARKED FOR 60 DEGREE C CONDUCTORS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EITHER ADJUST THE AMPACITY OF THE CONDUCTOR TO MATCH THE 60 DEGREE COLUMN OF TABLE 310.16, OR REPLACE THE TERMINAL WITH ONE RATED FOR AT LEAST 75 DEGREES C.
G. BASED ON ACTUAL HOMERUN LENGTHS REQUIRED IN THE FIELD, THE CONTRACTOR SHALL CALCULATE AND INCREASE THE WIRE SIZES AS REQUIRED TO LIMIT BRANCH CIRCUIT VOLTAGE DROP TO 3%. FOR 20A BRANCH CIRCUITS THE MINIMUM CONDUCTOR SIZES SHALL BE AS FOLLOWS: #10 AWG CU FOR RUNS BETWEEN 100 AND 200 LINEAR FEET, #8 AWG CU FOR RUNS BETWEEN 200 AND 325 LINEAR FEET, AND AS CALCULATED BY THE CONTRACTOR FOR CIRCUITS EXTENDING BEYOND 325 LINEAR FEET. IN ALL CASES WHERE WIRE SIZES INCREASE, THE CONTRACTOR SHALL PROVIDE LARGER CONDUITS AS REQUIRED.
H. PROVIDE A DEDICATED NEUTRAL CONDUCTOR FOR EACH 120V BRANCH CIRCUIT.

ELECTRICAL SHEET INDEX

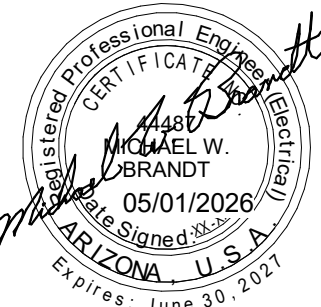
NUMBER	SHEET NAME
E-1	ELECTRICAL LEGENDS, SYMBOLS, & ABBREVIATIONS
E-2	CABLE & CONDUIT, LUMINAIRE, & MEP COORDINATION SCHEDULES
E-3	ELECTRICAL SITE PLAN
E-5	AERATION BASIN BLOWER BUILDING ONE-LINE DIAGRAM
E-6	CONDUIT ROUTING SCHEMATIC
E-7	AERATION BASIN BLOWER BUILDING POWER & CONTROLS PLAN
E-8	AERATION BASIN BLOWER BUILDING RECEPTACLE & LIGHTING PLAN
E-9	AERATION BASIN BLOWER BUILDING ONE-LINE DIAGRAM & DETAILS
E-10	AERATION BASIN BLOWER BUILDING PANEL SCHEDULE
E-11	DIGESTER BLOWER BUILDING POWER & CONTROLS PLAN
E-12	DIGESTER BLOWER BUILDING RECEPTACLE & LIGHTING PLAN
E-13	DIGESTER BLOWER BUILDING ONE-LINE DIAGRAM & DETAILS
E-14	ELECTRICAL DETAILS
E-15	DIGESTER BLOWER BUILDING PANEL SCHEDULE
E-16	CONDUIT SUB-UP DETAIL & EXTERIOR LIGHTING CONTROL DIAGRAM
E- 14	TYPICAL VFD MOTOR CONTROL SCHEMATIC

DESIGN: MWB
DATE: 05/2026
DRAWN: MH
CHECKED: BCL

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

ELECTRICAL LEGENDS, SYMBOLS, & ABBREVIATIONS



DWG. NO.

E-1

SHEET NO.

43 of 68



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NO.	POWER CONDUCTORS	GROUND CONDUCTOR	CONDUIT SIZE
P1	2#12	1#12	3/4"
P2	3#12	1#12	3/4"
P3	4#12	1#12	3/4"
P4	2#10	1#10	3/4"
P5	3#10	1#10	3/4"
P6	4#10	1#10	3/4"
P7	2#8	1#10	1"
P8	3#8	1#10	1"
P9	4#8	1#10	1"
P10	2#6	1#8	1"
P11	3#6	1#8	1-1/2"
P12	4#6	1#8	1-1/2"
P13	3#4	1#8	1-1/2"
P14	4#4	1#8	1-1/2"
P15	3#2	1#6	2"
P16	4#2	1#6	2"
P17	3#1	1#6	2"
P18	4#1	1#6	2"
P19	3#1/0	1#4	2"
P20	4#1/0	1#4	2-1/2"
P21	3#2/0	1#4	2-1/2"
P22	4#2/0	1#4	2-1/2"
P23	3#3/0	1#4	2-1/2"
P24	4#3/0	1#4	2-1/2"
P25	3#4/0	1#2	3"
P26	4#4/0	1#2	3"
P27	3#250	1#2	3"
P28	4#250	1#2	3"
P29	3#350	1#2	3"
P30	4#350	1#2	3-1/2"
P31	3#400	1#1/0	3-1/2"
P32	4#400	1#1/0	3-1/2"
P33	3#500	1#1/0	3-1/2"
P34	4#500	1#1/0	4"
P35	3#600	1#1/0	4"
P36	4#600	1#1/0	4"
P37	3#700	1#2/0	4"
P38	4#700	1#2/0	4"
P39	3#750	1#2/0	4"
P40	4#750	1#2/0	4"

NO.	SHLD VFD PWR CONDUCTORS	GROUND CONDUCTOR	CONDUIT SIZE
V1	3#12	1#12	3/4"
V2	3#10	1#10	1"
V3	3#8	1#8	1.5"
V4	3#6	1#6	2"
V5	3#4	1#4	2"
V6	3#2	1#2	3"
V7	3#1/0	3#8	3"
V8	3#2/0	3#8	3"
V9	3#3/0	3#8	3.5"
V10	3#4/0	3#8	4.5"

CABLE AND CONDUIT SCHEDULE

NO.	UNSHIELDED CNTRL CABLES SINGLE COND. OR TRAY CABLE	CONDUIT SIZE
C1	2#14	3/4"
C2	3#14	3/4"
C3	4#14	3/4"
C4	5#14	3/4"
C5	6#14	3/4"
C6	7#14	3/4"
C7	8#14	3/4"
C8	9#14	3/4"
C9	10#14	3/4"
C10	12#14	1"
C11	16#14	1"
C12	24#14	1"
C13	36#14	1-1/2"
C14	72#14	2-1/2"
C15	VENDOR SUPPLIED CABLE	AS REQ'D
C16	PLC REMOTE I/O COMM CABLE	2"
C17	ANTENNA COAXIAL CABLE	2"
C18	RS485 NETWORK CABLE	2"
C19	TELEPHONE CABLE	2"
C20	FIBER OPTIC	2"
C21	CATEGORY 5e ETHERNET CABLE	2"
C22	RESERVED	
C23	RESERVED	
C24	RESERVED	
C25	RESERVED	

NO.	INSTRUMENTATION CABLES	CONDUIT SIZE
J1	1 CABLE TSP #16	3/4"
J2	2 CABLES TSP #16	3/4"
J3	3 CABLES TSP #16	1"
J4	4 CABLES TSP #16	1"
J5	5 CABLES TSP #16	1"
J6	6 CABLES TSP #16	1-1/2"
J7	1 CABLE TST #16	3/4"
J8	2 CABLES TST #16	3/4"
J9	3 CABLES TST #16	1"
J10	4 CABLES TST #16	1"
J11	1 CABLE STSP, 4 PAIR, #18	3/4"
J12	1 CABLE STSP, 6 PAIR, #18	1"
J13	1 CABLE STSP, 8 PAIR, #18	1"
J14	1 CABLE STSP, 12 PAIR, #18	1-1/2"
J15	1 CABLE STSP, 24 PAIR, #18	2"
J16	1 CABLE STSP, 36 PAIR, #18	2"
J17	1 CABLE STST, 4 TRIADS, #18	1"
J18	1 CABLE STST, 8 TRIADS, #18	1-1/2"
J19	1 CABLE STST, 12 TRIADS, #18	2"
J20	1 CABLE STST, 24 TRIADS, #18	2"
J21	1 CABLE STST, 36 TRIADS, #18	2"
J22	VENDOR SUPPLIED CABLE	AS REQ'D
J23	RESERVED	
J24	RESERVED	
J25	RESERVED	

CABLE & CONDUIT NOTES

- FOR CIRCUITS WITH PARALLEL CONDUCTORS, INCREASE THE EQUIPMENT GROUNDING CONDUCTOR SIZE AS REQUIRED IN NEC 250-122.
- (DISCRETE) CONTROL CONDUCTORS ARE ALLOWED TO ROUTE IN SAME CONDUIT WITH POWER CONDUCTORS OR CABLE WHERE THE POWER CONDUCTORS ARE LESS THAN OR EQUAL TO #8 AWG AND BOTH MUST HOMERUN TO THE SAME PANEL, UNLESS OTHERWISE NOTED ON THE DRAWINGS. MAXIMUM NUMBER OF COMBINED CONDUCTORS IN SAME CONDUIT - (8) CONTROL CONDUCTORS AND (4) POWER CONDUCTORS #8 AWG OR LESS. OTHERWISE, PROVIDE A SEPARATE CONDUIT FOR CONTROL CONDUCTORS ONLY. SIZE CONDUIT PER NATIONAL ELECTRICAL CODE REQUIREMENTS.
- WHERE ONLY CONTROL OR INSTRUMENTATION WIRING AND NO POWER IS INDICATED, PROVIDE CONDUIT.
- ANY CIRCUIT NOT IDENTIFIED WITH A MARK NUMBER OR DESCRIPTIVE NOTE IS A BRANCH CIRCUIT REQUIRING 2 OR 3#12, 1#12 GND, 3/4" CONDUIT.
- CIRCUIT SCHEDULES ARE STANDARD SCHEDULES. SOME NUMBERS MAY NOT BE USED.
- INCREASING THE SIZE OF CONDUIT IS ACCEPTABLE TO ALLOW FOR INCREASED DIAMETER AND EASE OF INSTALLATION. DECREASING THE SIZE OF CONDUIT FROM THIS TABLE IS NOT ACCEPTABLE.
- SIZING IN THESE TABLES IS BASED ON TABLE 1, CHAPTER 9 OF THE NEC AND IS FOR THHN/THWN CONDUCTORS IN SCHEDULE 80 PVC CONDUIT.
- PROVIDE SHIELDED VFD POWER CONDUCTORS PER SPECIFICATION SECTION 26 0519 PARAGRAPH 2.3.

NO. NUMBER IN CIRCLE CORRESPONDS TO CONDUIT AND CABLE SCHEDULE THIS SHEET.

CABLE & CONDUIT LEGEND

CNTRL	CONTROL
COND	CONDUCTOR
GND	GROUND
PWR	POWER
SHLD	SHIELDED
VFD	VARIABLE FREQUENCY DRIVE
TC	TRAY CABLE
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD

LUMINAIRE SCHEDULE

TYPE	LAMPS	LOAD (W)	OUTPUT (LM, NOMINAL)	CCT (K)	DESCRIPTION	MFR	CATALOG NO. OR SERIES	MOUNTING	VOLTAGE	NOTES
E1	LED	26 W	2751	5000K	LED WALL PACK SMALL ALUMINUM HOUSING	LUMARK	XTOR3B-WT	WALL, +108" AFF	120 V	1
V1	LED	48 W	7047	4500K	LED 4FT LINEAR WET RATED	ATLAS	ILW-48LED-4-D-4500K	SUSPEND 1'6" BELOW CEILING	120 V	1
V2	LED	15 W	600	4000K	OLVTWM WALL MT	LITHONIA LIGHTING	OLVTWM-4000K-MVOLT	WALL +120" AFF	120 V	1
X1	LED	3 W	180	4000K	LHQM LED	LITHONIA LIGHTING	LHQM-LED-R-SD		120 V	1

- NOTES:
1. PRIOR SUBMITTAL NOT REQUIRED. ALL ALTERNATE FIXTURE SHOP DRAWINGS WILL BE REVIEWED AFTER THE PROJECT IS AWARDED.
2. PRIOR SUBMITTAL IS REQUIRED.
3. ALTERNATE FIXTURE IS NOT ACCEPTED FOR SUBSTITUTIONS.
4. PROVIDE 0-10V DIMMING, DOWN TO 10% LUMEN OUTPUT, MINIMUM.
5. PROVIDE FUSING.
6. VERIFY FINISH WITH ARCHITECT.
7. PROVIDE WITH REMOTE 12V STEP-DOWN TRANSFORMER.
8. CIRCUIT VIA TYPE EM INVERTER.
9. LAMP DATA IS FOR 4' CROSS-SECTION OF FIXTURE.
10.MOUNT BOTTOM OF FIXTURE CENTERED AT 6" ABOVE TOP OF MIRROR. SEE ARCHITECT ELEVATIONS.
- GENERAL NOTE:
THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL CEILING TYPES AND PROVIDE ALL MOUNTING, FIRE-RATED, AND IC-RATED ACCESSORIES AS REQUIRED. FOR FIRE-RATED CEILING ASSEMBLIES AND FOR CEILINGS WITH INSULATION, VERIFY ALL RECESSED LUMINAIRE HOUSINGS ARE RATED APPROPRIATELY OR PROVIDE DROP-OVER ENCLOSURES OR TENTS FOR LUMINAIRES. VERIFY THAT DROP-OVER ENCLOSURES OR TENTS ALLOW FOR AIR SPACE AROUND LUMINAIRE PER MANUFACTURER'S RECOMMENDATIONS.

MEP COORDINATION SCHEDULE

CONTROL TYPE:		DISCONNECT/STARTER TYPE:		DIVISION OF RESPONSIBILITIES:	
BAS	BUILDING AUTOMATION SYSTEM	CB	PANELBOARD CIRCUIT BREAKER WITHIN SIGHT OF EQUIPMENT	22/22	FURNISHED AND INSTALLED BY DIV. 22, WIRED BY DIV. 22
CO	CARBON MONOXIDE DETECTOR	CSFD	COMBINATION STARTER/DISCONNECT - HOA	22/26	FURNISHED AND INSTALLED BY DIV. 22, WIRED BY DIV. 26
CONT	CONTINUOUS OPERATION	FD	FUSED DISCONNECT	23/23	FURNISHED AND INSTALLED BY DIV. 23, WIRED BY DIV. 23
EF	INTERLOCK WITH EXHAUST FAN	FST	FUSTAT	23/26	FURNISHED AND INSTALLED BY DIV. 23, WIRED BY DIV. 26
HCP	HOOD CONTROL PANEL	FW	FACTORY-WIRED SINGLE POINT CONNECTION	26/26	FURNISHED AND INSTALLED BY DIV. 26, WIRED BY DIV. 26
INT	INTEGRAL	MOCP	MOTOR OVER-CURRENT PROTECTION		
L	LIGHT SWITCH	MSS	MANUAL STARTER SWITCH WITH THERMAL OVERLOADS (1-, 2- OR 3-POLE AS REQUIRED)	NOTES: 1. INTEGRAL DISCONNECTS AND OVERLOADS 2. INTEGRAL OVERLOADS 3. SINGLE POINT CONNECTION 4. PROVIDE RECEPTACLE AND DATA CONNECTION FOR PANEL 5. MOUNT ON UNI-STRUT IN FRONT OF UNIT 6. SIZE FUSES IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES FOR INSTALLED EQUIPMENT 7. INTEGRAL VARIABLE FREQUENCY DRIVE 8. FAN COIL IS POWERED OFF CORRESPONDING CONDENSING UNIT. EC SHALL PROVIDE ELECTRICAL CONNECTION BETWEEN UNITS PER MANUFACTURERS REQUIREMENTS	
MS	MANUAL SWITCH	NFD	NON-FUSED DISCONNECT		
OS	OCCUPANCY SENSOR	RCPT	20A DUPLEX RECEPTACLE (GFCI PROTECTED AS REQUIRED), CORD AND PLUG		
PS	PRESSURE SWITCH	RVSS	REDUCED VOLTAGE SOLID-STATE		
T	THERMOSTAT	VFD	VARIABLE FREQUENCY DRIVE - HOA		
TC	TIME CLOCK	N/A	NOT APPLICABLE		
UC	UNIT CONTROLLER				
VE	VEHICLE EXHAUST DETECTION SYSTEM				
N/A	NOT APPLICABLE				

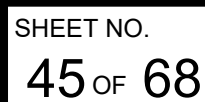
MARK	DESCRIPTION	ELECTRICAL DATA		CONTROL		NOTES	DISCONNECT / STARTER		DISCONNECT			FEEDER		
		LOAD	VOLT-PHASE	TYPE	DIV		TYPE	DIV	SIZE (NEMA)	SWITCH (AMPS)	FUSE (AMPS)	ENCLOSURE (NEMA)	COPPER WIRE (AWG)	CONDUIT (INCHES)
AC-1	PACKAGED COOLING ONLY	34.0 MCA	460V-3-60	T	23 / 23	1,3	NFD	26 / 26	N/A		N/A	NEMA 3R		
AC-2	PACKAGED COOLING ONLY	10.7 MCA	460V-3-60	T	23 / 23	1,3	NFD	26 / 26	N/A		N/A	NEMA 3R		
FC-1A	SPLIT SYSTEM FAN COIL, INDOOR UNIT	--	--	T	23 / 23	8	MSS	26 / 26	N/A	N/A	N/A	NEMA 1	PER MANUF.	PER MANUF.
FC-1B	SPLIT SYSTEM FAN COIL, INDOOR UNIT	--	--	T	23 / 23	8	MSS	26 / 26	N/A	N/A	N/A	NEMA 1	PER MANUF.	PER MANUF.
HP-1	SPLIT SYSTEM HEAT PUMP, OUTDOOR UNIT	19.9 MCA	208V-1-60	UC	23 / 23	3	NFD	26 / 26	N/A		N/A	NEMA 3R		



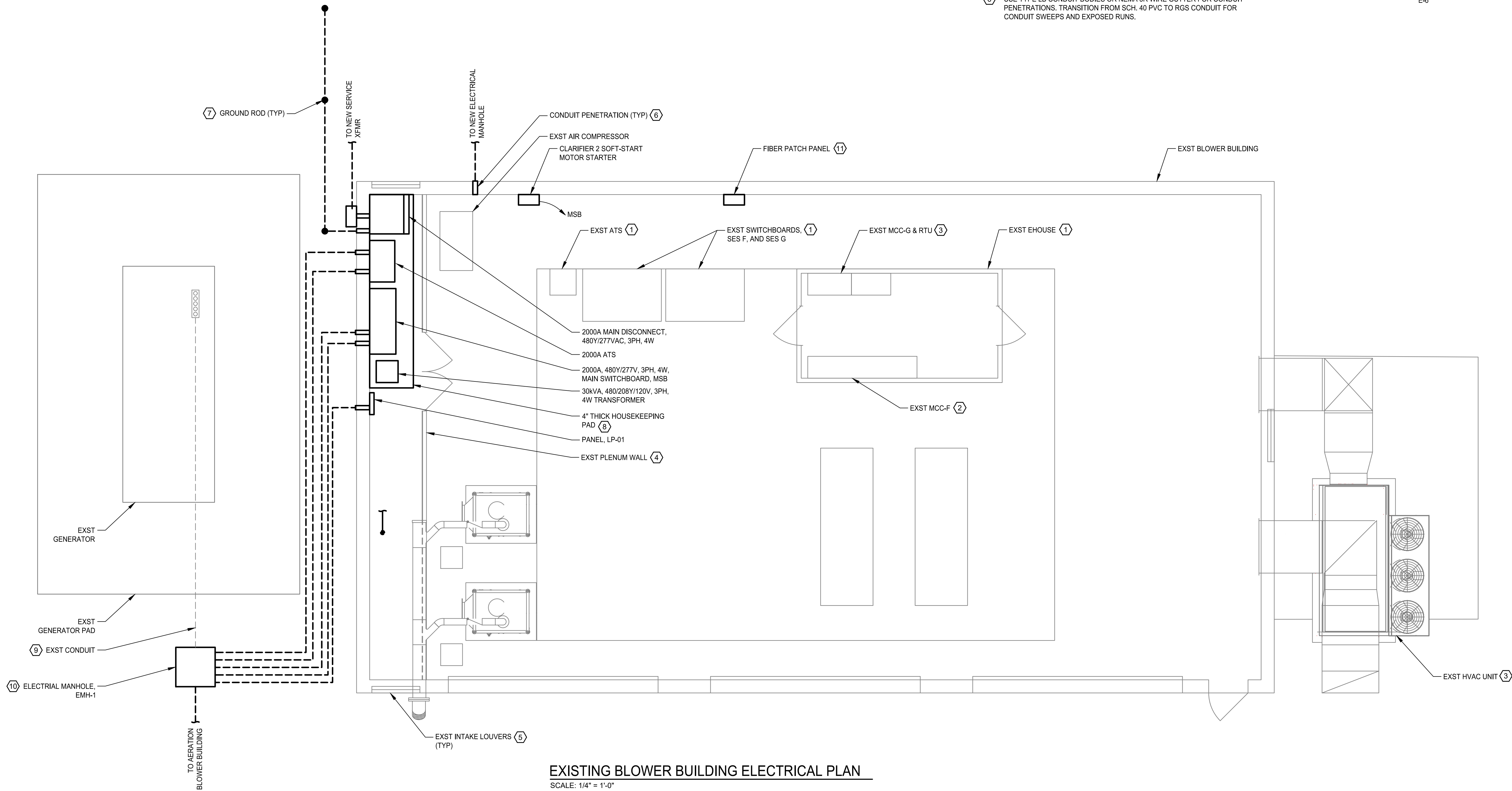
BULLHEAD CITY SECTION 10	BLOWER BUILDINGS IMPROVEMENTS	CABLE & CONDUIT, LUMINAIRE, & MEP COORDINATION SCHEDULES	DESIGN: MWB	DRAWN: MH	CHECKED: BCL
			DATE: 05/20/26		
			REVISION	DATE	DESCRIPTION



5 ELECTRICAL HANDHOLE INSTALLED DURING THE AERATION BASIN IMPROVEMENTS PROJECT. ROUTE CONDUITS FROM AERATION BLOWER BUILDING TO HANDHOLE.



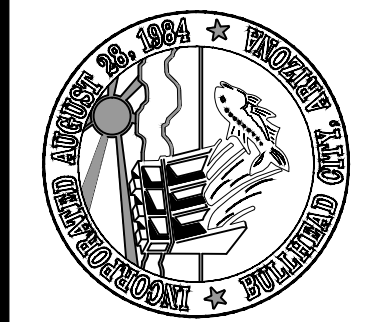
R:\8519\017 00 - SECTION 10 BLOWER BUILDINGS\ACAD\SHEETS\E-4.DWG



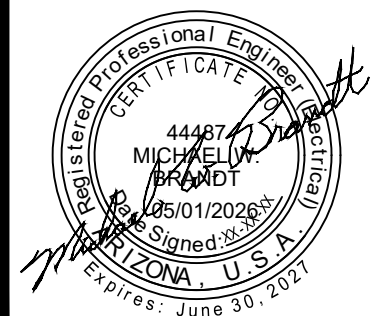
EXISTING BLOWER BUILDING ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

KEY NOTES

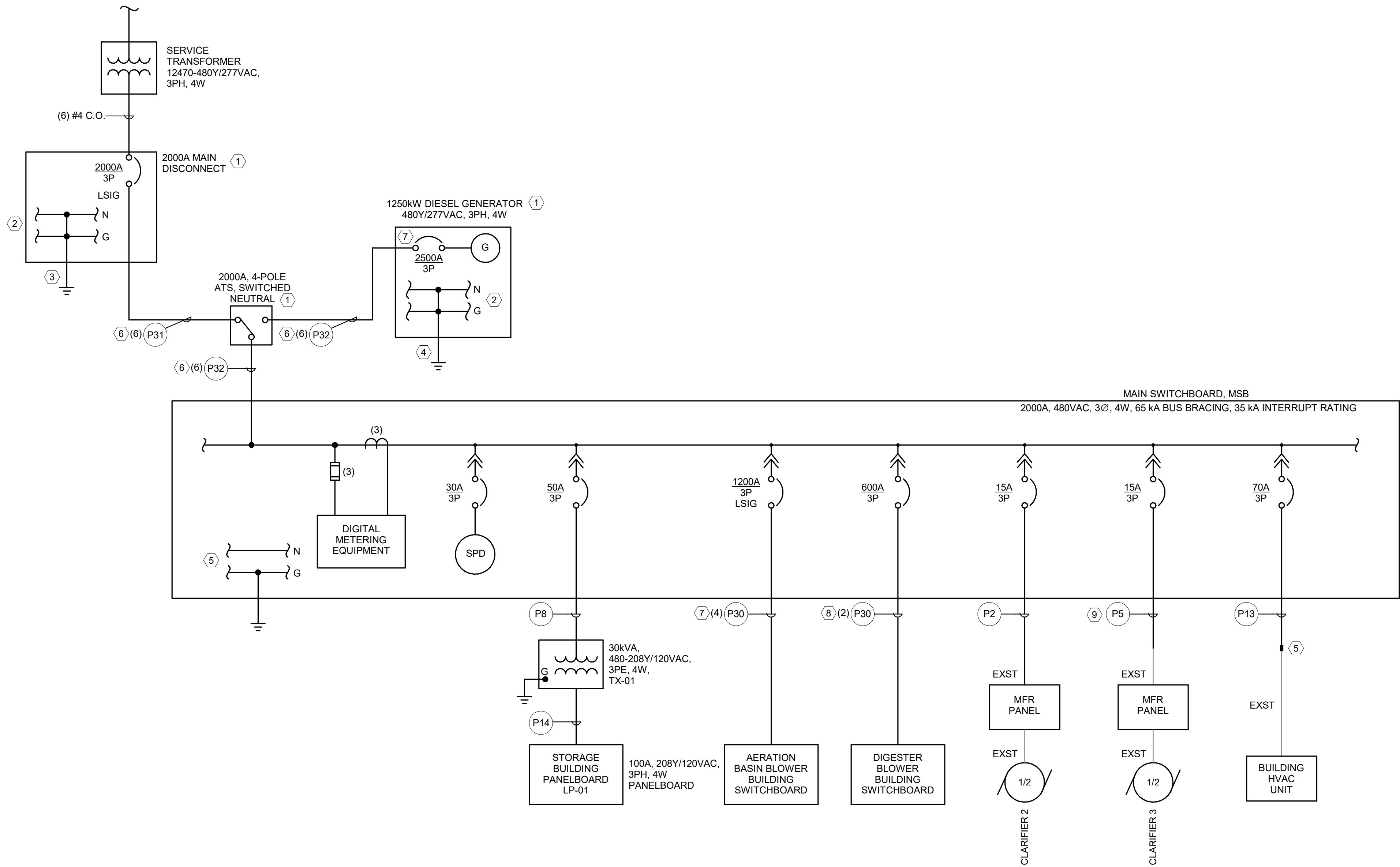
- 1 AFTER NEW ELECTRICAL SERVICE IS IN SERVICE THE CONTRACTOR SHALL REMOVE THE EHUSE, SWITCHBOARDS, AND ATS. ALL CONDUIT AND CONDUCTORS SHALL BE REMOVED BETWEEN THE UNITS AND FIELD CONNECTIONS. ANY CONDUITS PENETRATING THE FLOOR WILL BE CUT FLUSH TO THE FLOOR AND GROUT FILLED.
- 2 REMOVE ANY FEEDERS FROM PANELBOARD PP-AB, BACK TO OUTSIDE THE EHUSE AND EXTEND TO THE NEW PANELBOARD, LP-01. REMOVE FEEDERS FOR CLARIFIERS 2 AND 3 BACK TO OUTSIDE THE EHUSE AND EXTEND TO THE NEW MAIN SWITCHBOARD.
- 3 REMOVE FEEDER FROM MCC BUCKET FEEDING THE EXISTING HVAC UNIT TO OUTSIDE THE EHUSE AND EXTEND CONDUIT AND CONDUCTORS TO NEW MAIN SWITCHBOARD, MSB. SEE ONE-LINE DIAGRAM DWG E-5 FOR CONDUIT AND CONDUCTOR SIZING.
- 4 REMOVE EXISTING PLENUM WALL STRUCTURE TO OPEN UP AREA FOR THE NEW ELECTRICAL DISTRIBUTION EQUIPMENT.
- 5 INSULATE AND SEAL THE EXISTING INTAKE LOUVER ON THE INTERIOR OF THE BUILDING. USE TWO LAYERS OF 2" THICK REIGID INSULATION. SEAL ALL AIR GAPS, TWO LOCATIONS.
- 6 USE TYPE LB CONDUIT BODIES OR NEMA 3R WIRE GUTTER FOR CONDUIT PENETRATIONS. TRANSITION FROM SCH. 40 PVC TO RGS CONDUIT FOR CONDUIT SWEEPS AND EXPOSED RUNS.
- 7 PROVIDE 3/4" - 10' GROUND RODS, FULLY DRIVEN, SPACED A MINIMUM 10' APART. CONNECT RODS WITH A #4/0 AWG BARE COPPER CONDUCTOR USING AN EXOTHERMIC WELD. ROUTE THE #4/0 AWG CONDUCTOR IN A 1" TO THE 2000A MAIN DISCONNECT INSIDE THE BUILDING.
- 8 PROVIDE A HOUSEKEEPING PAD FOR ALL THE ELECTRICAL EQUIPMENT. EXTEND A MIN. OF 2" BEYOND THE FACE OF THE DEEPEST UNIT. SPACE TRANSFORMER AWAY FROM WALL FOR VENTILATION, PER MFR'S RECOMMENDATIONS. SEE (3002) FOR PAD DETAILS.
- 9 EXISTING CONDUITS STUBBED UP IN PAD AND ROUTED OUT APPROXIMATELY 6' BEYOND THE PAD. THERE ARE (6) 4"C AND (2) 2"C INSTALLED.
- 10 INSTALL MANHOLE AT THE END OF THE STUBBED CONDUIT. EXTEND CONDUITS INTO MANHOLE. INSTALL BELL ENDS ON ALL CONDUIT. EXTEND CONDUITS INTO EXISTING BUILDING. PROVIDE CONDUCTORS FROM ELECTRICAL EQUIPMENT TO GENERATOR. SEE ONE-LINE DIAGRAM, DWG E-5 FOR CONDUCTOR SIZING. DUCT SEAL ALL CONDUIT AFTER CONDUCTOR INSTALLATION.
- 11 REMOVE PATCH PANEL FROM RTU, PULL BACK CABLE AND INSTALL NEW PATCH PANEL ON WALL. SEE DETAIL (1) E-6



BULLHEAD CITY SECTION 10	DESIGN:	DRAWN:	CHECKED:
	DATE: 05/2026		
	REVISION	DATE	DESCRIPTION
BLOWER BUILDINGS IMPROVEMENTS			
EXISTING BLOWER BUILDING ELECTRICAL PLAN			



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EXST BLOWER BUILDING ONE-LINE DIAGRAM
SCALE: N.T.S.

KEY NOTES:

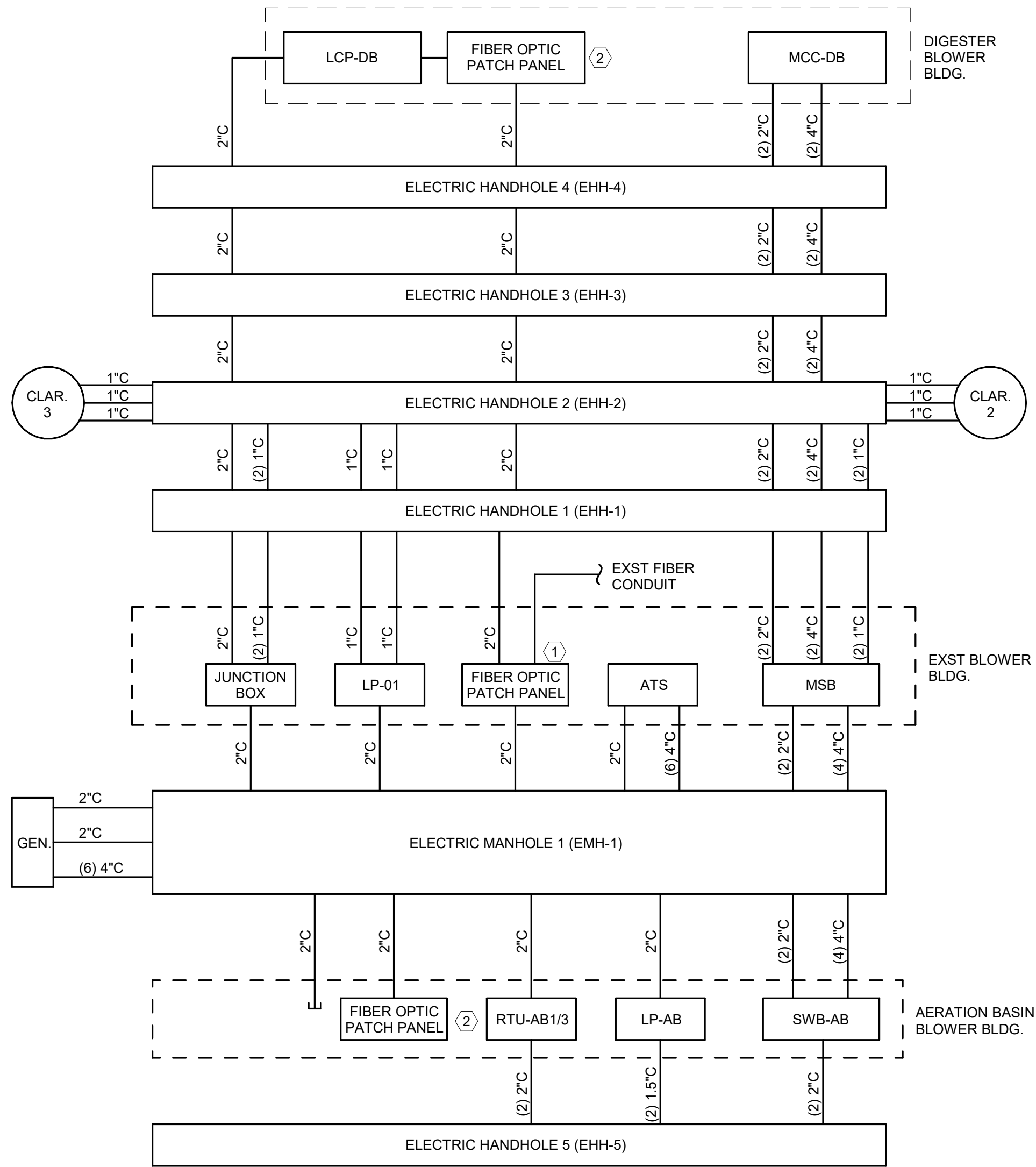
- 1 OWNER PROVIDED, CONTRACTOR INSTALLED EQUIPMENT.
- 2 CONNECT NEUTRAL TO GROUND AT THESE TWO LOCATIONS. THE GENERATOR IS A SEPARATELY DERIVED SYSTEM.
- 3 TIE TO NEW SERVICE GROUNDING SYSTEM. SEE DWG E-4 FOR DETAILS. ALSO, CONNECT A #4/0 AWG CONDUCTOR FROM GROUNDING BAR IN UNIT TO BUILDING STEEL.
- 4 CONNECT EQUIPMENT GROUNDING CONDUCTORS FROM GENERATOR TO THE NEW SERVICE GROUNDING SYSTEM.
- 5 DO NOT CONNECT NEUTRAL TO GROUND AT THIS LOCATION.
- 6 PROVIDE UPSIZED #350 MCM CU EQUIPMENT GROUND CONDUCTOR IN EACH CONDUIT. UP SIZE CONDUITS TO 4".
- 7 PROVIDE UP SIZED #3/0 AWG CU EQUIPMENT GROUND CONDUCTOR IN EACH CONDUIT. UP SIZE CONDUITS TO 4".
- 8 PROVIDE UP SIZED #1 AWG CU EQUIPMENT GROUND CONDUCTOR IN EACH CONDUIT UP SIZE CONDUITS TO 4".
- 9 UP SIZE CONDUIT TO 1"Ø.



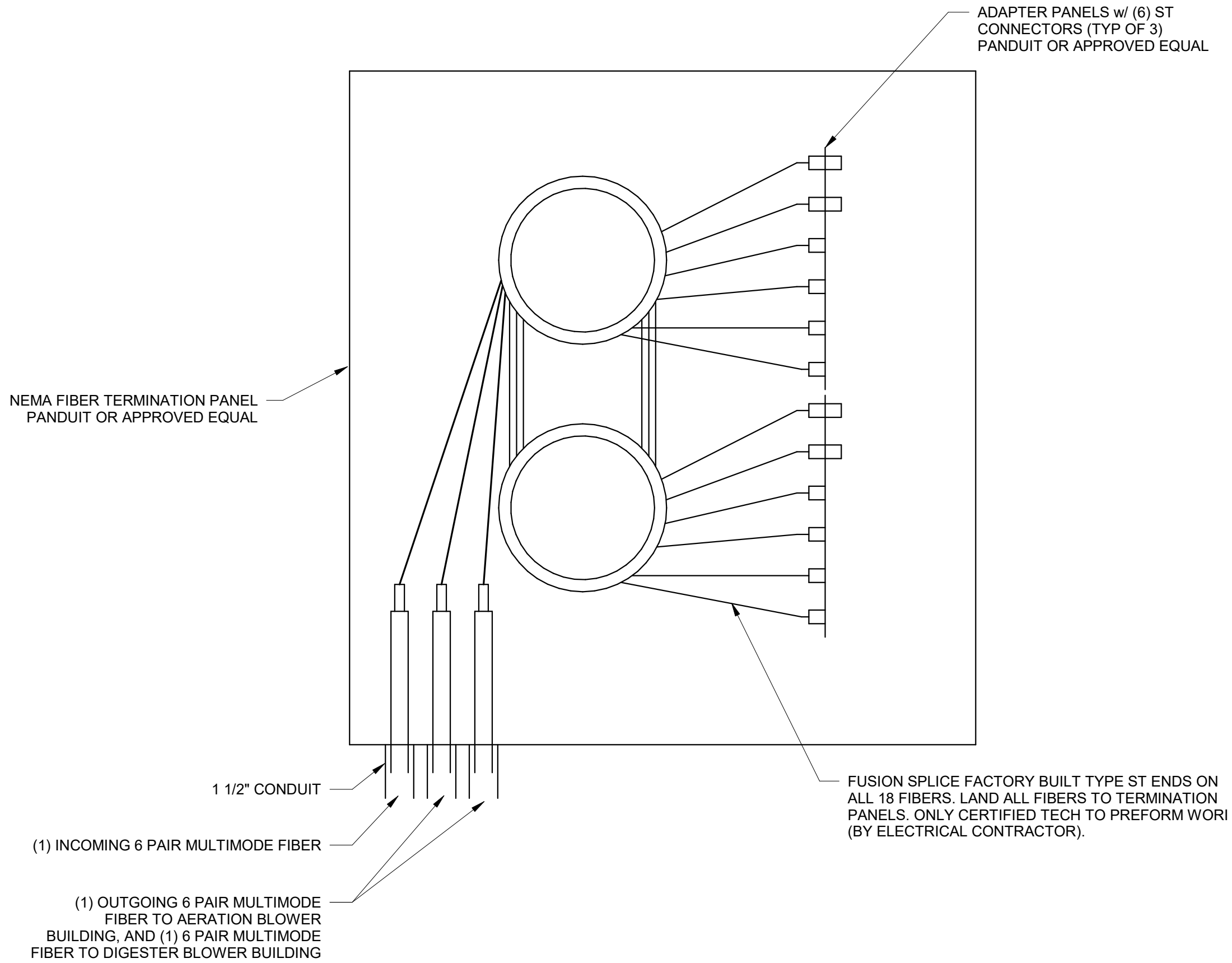
BULLHEAD CITY SECTION 10	DESIGN: MWB		DRAWN: MH	CHECKED: BCL
	DATE: 05/20/26			
	REVISION	DATE	DESCRIPTION	
BLOWER BUILDINGS IMPROVEMENTS				
AERATION BASIN BLOWER BUILDING				
ONE-LINE DIAGRAM				



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SITE CONDUIT ROUTING SCHEMATIC



1 FIBER OPTIC TERMINATION PANEL
SCALE: N.T.S.

KEY NOTES:

- NEW FIBER OPTIC TERMINATION PATCH PANEL WILL CONNECT THE EXISTING PLANT SCADA NETWORK TO THE AERATION BASIN BLOWER BUILDING.
- NEW FIBER PATCH PANEL WILL BE CONFIGURED TO ACCEPT ONE 6-STRAND MULTIMODE FIBER CABLE, TERMINATED TO TYPE ST CONNECTORS.



**Morrison
Maierle**
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BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

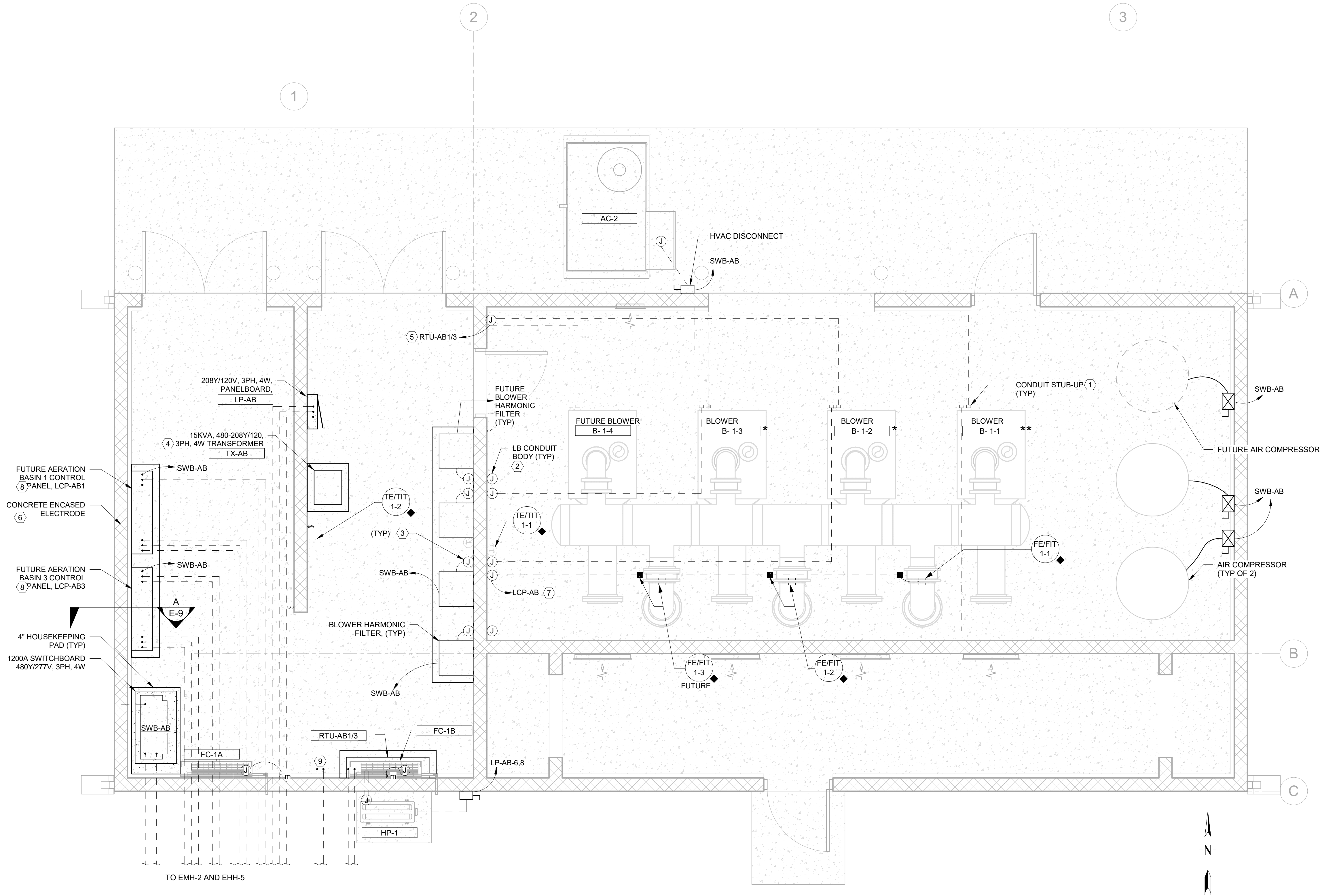
CONDUIT ROUTING SCHEMATIC



DWG. NO.
E-6

SHEET NO.
48 OF 68

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AERATION BASIN BLOWER BUILDING PWR/CTL

SCALE: 3/8" = 1'-0"

GENERAL NOTES:

- A. SWB-AB ONE-LINE DIAGRAM IS SHOWN ON DWG E-9.
- B. SEE "H" DRAWINGS FOR MECHANICAL SYSTEMS INFORMATION.
- C. SWITCHBOARD LAYOUT IS BASED ON A SQUARE D, 1200A UNIT. CONTRACTOR TO MOVE LOCATION OF SWITCHBOARD AND EXPAND HOUSEKEEPING PAD AS NEEDED TO ACCOMMODATE UNIT PROVIDED.
- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES:

- ① SEE CONDUIT STUB-UP DETAIL ON DWG E-16. VERIFY LOCATION WITH THE CONDUIT ENTRY ON THE BLOWER ENCLOSURE.
- ② TRANSITION TO RGS CONDUIT THROUGH SLAB AND UP WALL TO A TYPE LB CONDUIT BODY LOCATED AT 24" AFF. PENETRATE WALL TO JUNCTION BOX IN ELECTRICAL ROOM.
- ③ MOUNT JUNCTION BOX ON CONDUIT PENETRATION. PROVIDE LFMC TO HARMONIC FILTER ENCLOSURE. SEE FILTER DRAWING FOR CONDUIT ENTRY LOCATION ON SIDE OF ENCLOSURE.
- ④ SPACE TRANSFORMER AWAY FROM WALL PER MANUFACTURERS REQUIREMENTS FOR VENTILATION.
- ⑤ CONTINUE ETHERNET CABLES FROM EACH BLOWER INTO ONE 2" CONDUIT TO RTU-AB1/3.
- ⑥ ELECTRICAL CONTRACTOR MUST MAKE FOUNDATION CONCRETE CONTRACTOR AWARE OF UFER GROUND REQUIREMENTS.
- ⑦ COMBINE TSP CABLES FROM EACH FLOWMETER INTO ONE 1-1/2" CONDUIT TO RTU-AB1/3.
- ⑧ STUB UP AND CAP CONDUIT INSIDE ROOM. CONDUIT TO EXTEND 6" AFF.
- ⑨ STUB UP AND CAP THE (2) 1 1/2" CONDUITS FROM EHH-5. CONDUIT TO EXTEND 6" AFF.



DESIGN: MWB
DATE: 05/20/26

BULLHEAD CITY SECTION 10

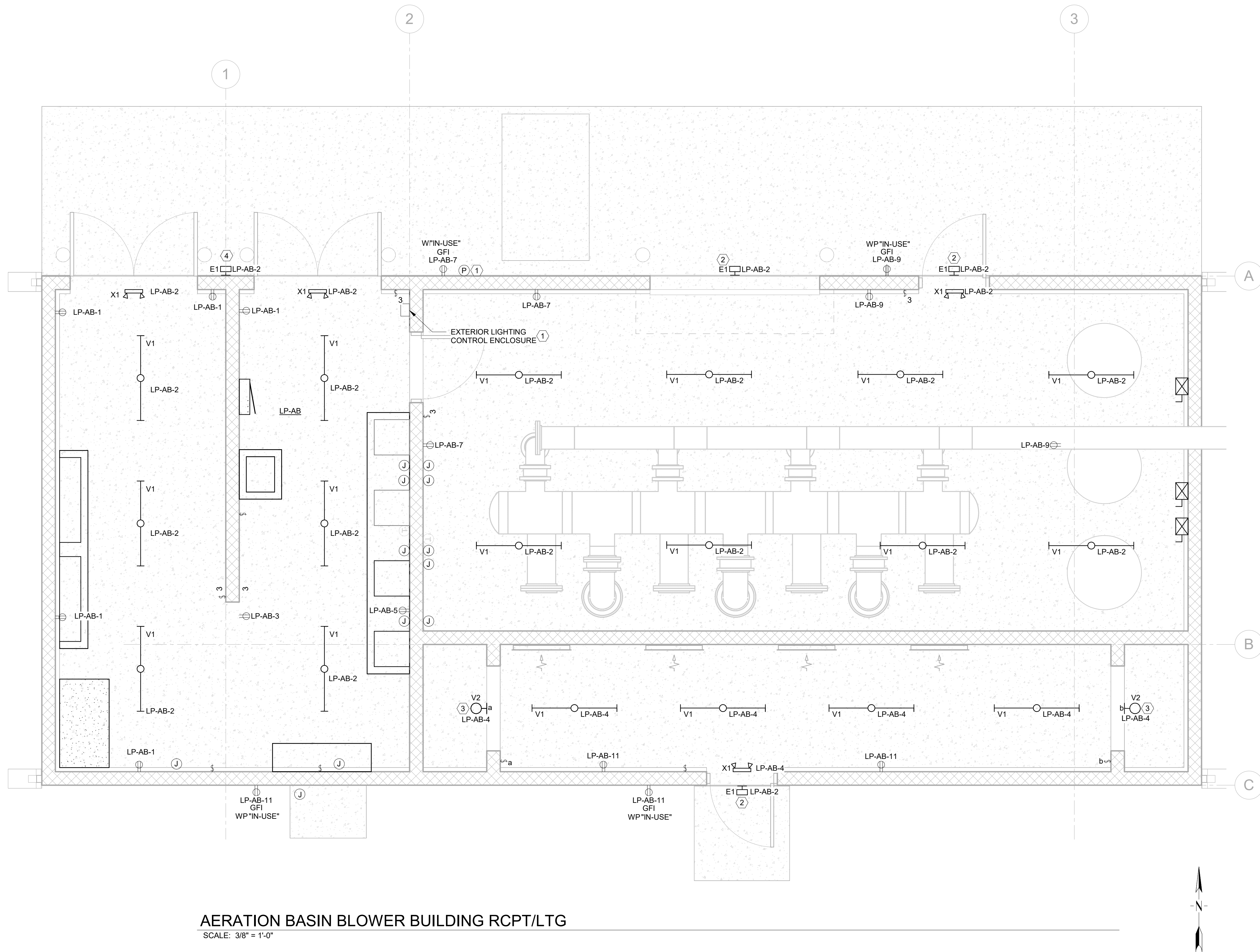
BLOWER BUILDINGS IMPROVEMENTS

AERATION BASIN BLOWER BUILDING
POWER & CONTROLS PLAN



DWG. NO.
E-7

SHEET NO.
49 OF 68



GENERAL ELECTRICAL NOTES:

A. IT IS ABSOLUTELY NECESSARY FOR ALL TRADES INVOLVED TO COORDINATE WITH EACH OTHER AND VERIFY THAT THERE ARE NO CONFLICTS IN LOCATION OF DUCTS, CONDUITS, DIFFUSERS, BOXES, AND OTHER ITEMS THROUGHOUT THIS PROJECT BEFORE FINAL PLACEMENT OF MATERIALS.

B. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING OF FLOORS, WALLS, CEILINGS, AND ROOFS TO PERFORM THE REQUIRED WORK DEPICTED IN THESE DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR ALL PATCHING OF HOLES TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.

C. LUMINAIRE SCHEDULE IS SHOWN ON DWG E-2.

D. MOUNT X1 FIXTURES CENTERED ON DOOR OPENING AND 12" ABOVE TOP OF JAMB.

E. PANELBOARD SCHEDULE IS SHOWN ON DWG E-10.

F. ALL INTERIOR RECEPTACLES TO BE MOUNTED AT 48" AFF, ALL EXTERIOR FIXTURES TO BE MOUNTED AT 24" AFF. ALL RECEPTACLES TO BE GFI.

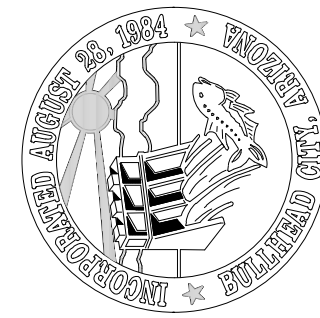
KEY NOTES:

- 1 ALL EXTERIOR LIGHT FIXTURES TO BE CONTROLLED BY PHOTOCELL. MOUNT PHOTOCELL IN A BOX SET FLUSH WITH THE WALL SURFACE AT 108" AFF. SEE EXTERIOR LIGHTING CONTROL DIAGRAM, DETAIL 2, DWG E-16.

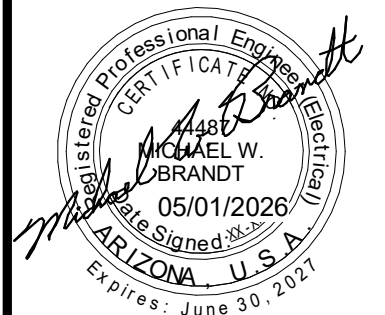
- 2 MOUNT FIXTURE CENTERED IN OPENING AT 120" AFF.

- 3 WALL MOUNT FIXTURE AT 72" AFF.

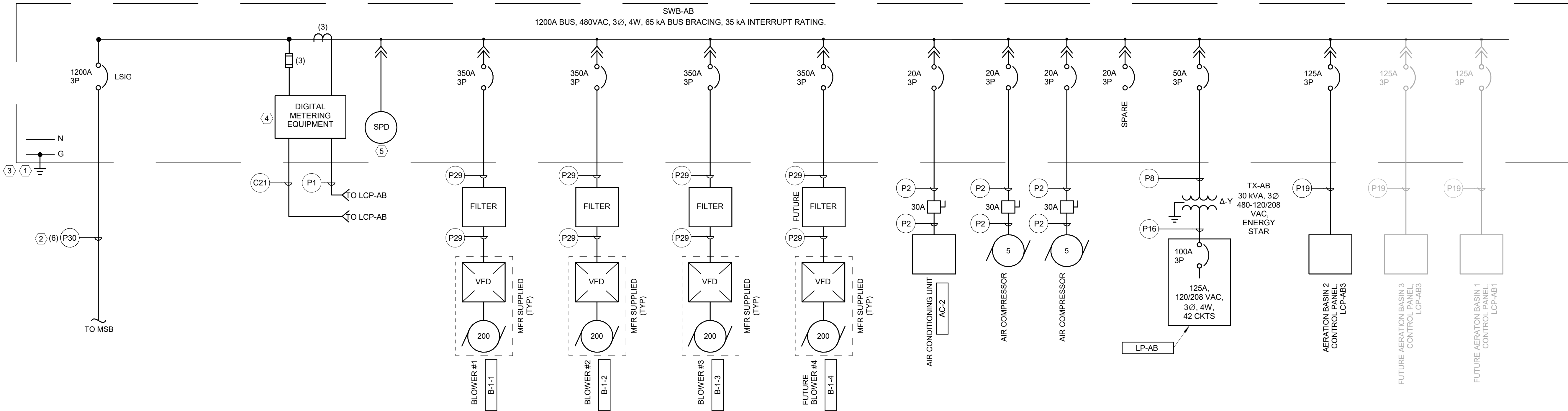
- 4 MOUNT FIXTURE CENTERED BETWEEN THE DOUBLE DOOR OPENINGS.



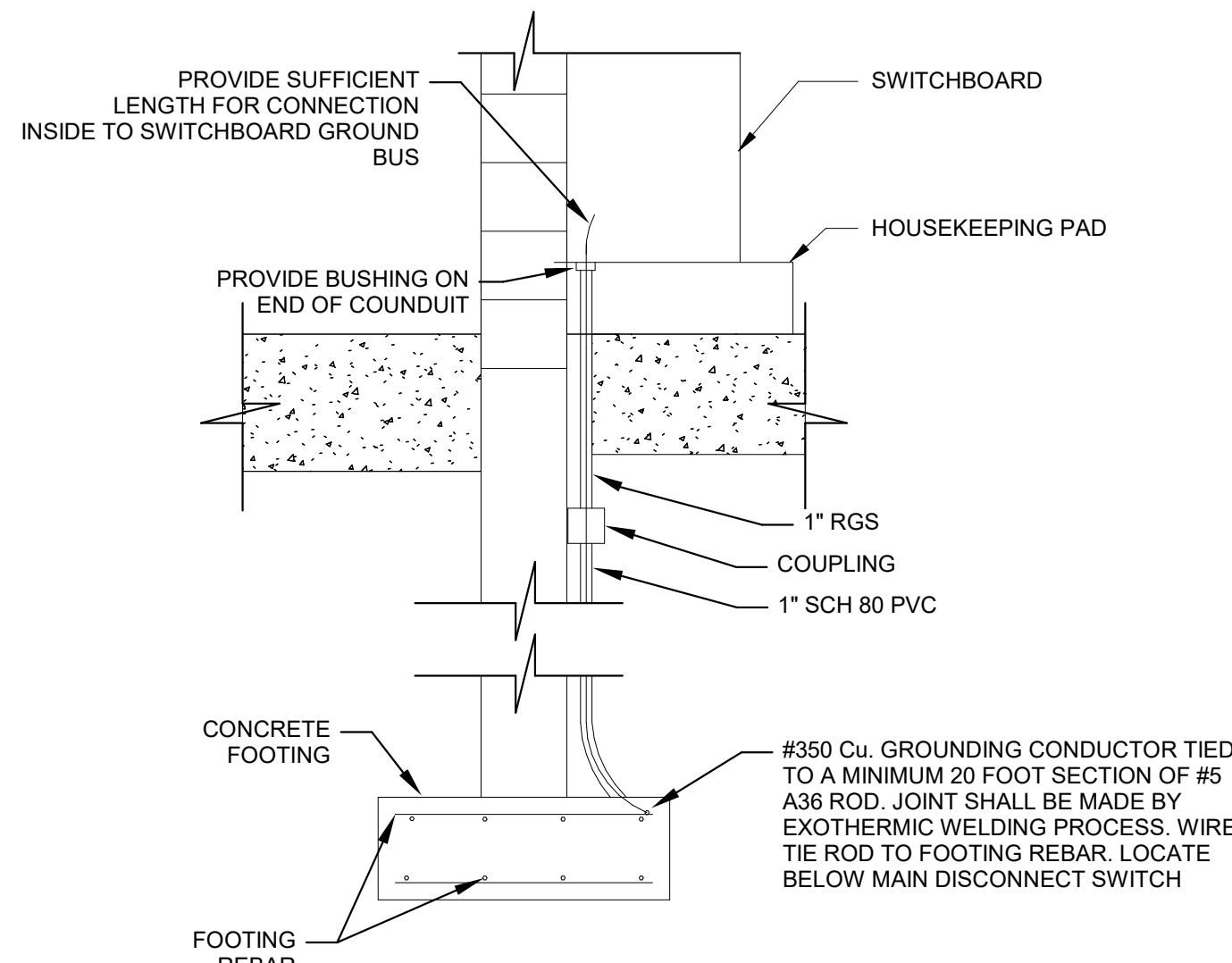
BULLHEAD CITY SECTION 10	DESIGN: MWB	DRAWN: MH	CHECKED: BCL
	DATE: 05/2026		
	REVISION	DATE	DESCRIPTION
BLOWER BUILDINGS IMPROVEMENTS			
AERATION BASIN BLOWER BUILDING RECEPTACLE & LIGHTING PLAN			



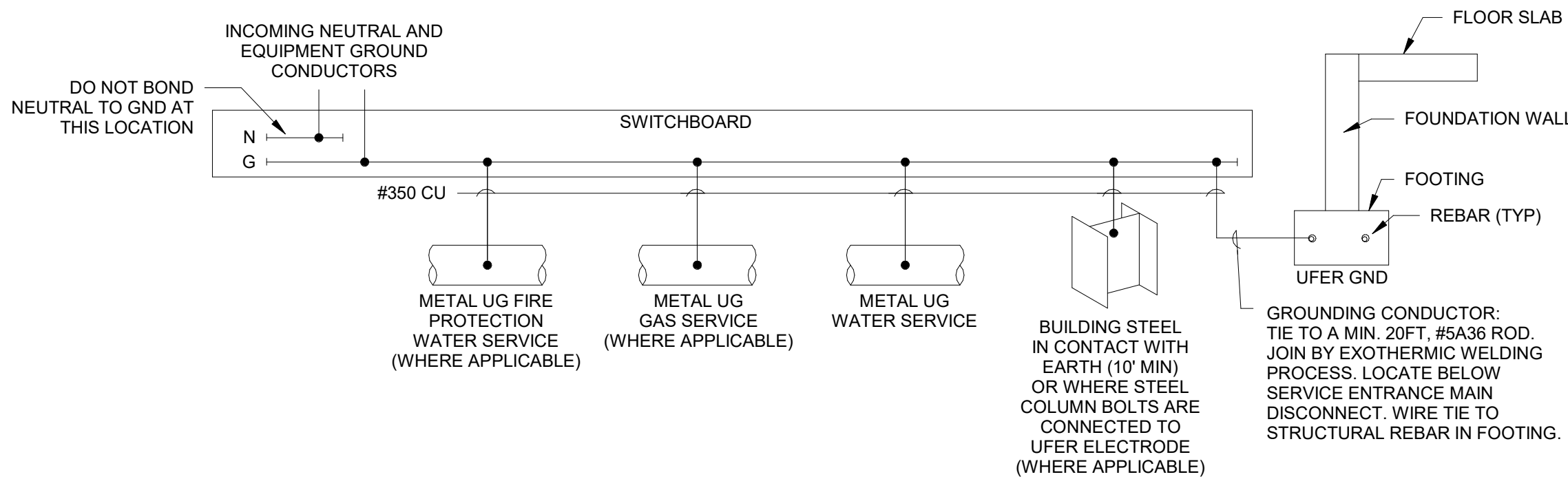
Autodesk Docs://8519.017 BH CITY AERATION BLOWERS R22/8519017 BH CITY BLOWER BLDGS MFR_V2022.rvt



ONE LINE DIAGRAM AERATION BASIN BLOWER BUILDING
SCALE: N.T.S.



A
E-7 GROUNDING DETAIL SECTION A AERATION BUILDING
SCALE: N.T.S.



1
GROUNDING AND BONDING RISER DIAGRAM
SCALE: N.T.S.

GENERAL NOTES:

- A. SWITCHBOARD WILL BE ARRANGED IN ELECTRICAL ROOM WITH 36" SECTIONS ALONG THE WALL AS SHOWN ON THE PLAN SHEETS. THE SWITCHBOARD LAYOUT WAS BASED ON A SQUARE D UNIT. CONTRACTOR SHALL VERIFY SPACE FOR OTHER MANUFACTURERS SUPPLIED. SUBMIT LAYOUT PLAN IF DIMENSIONS VARY.
- B. REFERENCE DIVISION 26 SPECIFICATIONS FOR EQUIPMENT REQUIREMENTS.
- C. IT IS ABSOLUTELY NECESSARY FOR CONTRACTOR TO VERIFY AND PROVIDE ALL POWER AND CONTROL CONDUCTORS FOR EQUIPMENT SUPPLIED.

(NO.) (NO) NUMBER IN CIRCLE CORRESPONDS TO CONDUIT AND CABLE SCHEDULE. DWG E-2. NUMBER OUTSIDE CIRCLE DESIGNATES NUMBER OF PARALLEL CONDUITS AND CONDUCTORS. SEE CABLE AND CONDUIT SCHEDULE ON E-2.

KEY NOTES:

- ① GROUND PER THE NEC USING #350 CU GND. DO NOT BOND NEUTRAL TO GROUND AT SWITCHBOARD. BOND ALL BUILDING STEEL AND PIPING TO GROUND PER NEC. SEE DETAIL 1, THIS SHEET.
- ② PROVIDE UP SIZED #3/0 CU GROUND CONDUCTOR IN EACH CONDUIT. UPSIZE THE CONDUIT TO 4".
- ③ SEE GROUNDING DIAGRAM AND SECTION A, THIS SHEET.
- ④ PROVIDE POWER METERING/PHASE MONITORING EQUIPMENT WITH ETHERNET/IP COMPATIBLE COMMUNICATIONS. PROVIDE A UPS FEED FROM LCP-AB TO PROVIDE BACK-UP POWER TO DIGITAL METER.
- ⑤ MFR PROVIDED SPD IN SWITCHBOARD. PROVIDE A N.C. CONTACT THAT WILL FAIL OPEN WHEN A FAILURE IN THE SPD IS DETECTED.
- ⑥ UPSIZE GROUND CONDUCTOR IN EACH CONDUIT TO A #2/0 AWG, AND UPSIZE THE CONDUIT TO 4".



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DATE: 05/20/26		
REVISION	DATE	DESCRIPTION

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATION BASIN BLOWER BUILDING

ONE-LINE DIAGRAM & DETAILS



Autodesk Docs://8519.017_BH_CITY_AERATION_BLOWERS_R22/8519017_BHCITY_BLOWER_BLDGS_MEP_V2022.rvt

Branch Panel: LP-AB

Location: ELECTRICAL ROOM

Supply From:

Mounting: Surface

Enclosure: Type 1

Volts: 120/208 Wye

Phases: 3

Wires: 4

A.I.C. Rating: 22K

Mains Type: 100 A

Mains Rating: 100 A

MCB Rating: 100 A

Notes:

CKT	Circuit Description	Load Classification	Trip	Poles	A	B	C	Poles	Trip	Load Classification	Circuit Description	CKT		
1	RCPT - ELECTRICAL ROOM	Receptacle	20 A	1	900	681			1	20 A	Lighting	LTG - BLOWER, ELECTRICAL & EXTERIOR	2	
3	RCPT - ELECTRICAL ROOM	Receptacle	20 A	1		180	222		1	20 A	Lighting	LTG - PLENUM ROOM	4	
5	RCPT - ELECTRICAL ROOM	Receptacle	20 A	1				180	1267				6	
7	RCPT - BLOWER ROOM & OUTDOOR	Receptacle	20 A	1	540	1267			2	20 A	HVAC	MINI SPLIT, MS-1B	8	
9	RCPT - BLOWER ROOM & OUTDOOR	Receptacle	20 A	1		540	180		1	20 A	Receptacle	RCPT - AB-1	10	
11	RCPT - PLENUM ROOM & OUTDOOR	Receptacle	20 A	1				720	180	1	20 A	Receptacle	RCPT - AB-02	12
13	SPARE	--	20 A	1	0	180				1	20 A	Receptacle	RCPT - AB-03	14
15	SPARE	--	20 A	1		0	0			1	20 A	--	SPARE	16
17	SPARE	--	20 A	1				0	0	1	20 A	--	SPARE	18
19	SPARE	--	20 A	1	0	0				1	20 A	--	SPARE	20
21	SPARE	--	20 A	1		0	0			1	20 A	--	SPARE	22
23	SPARE	--	20 A	1				0	0	1	20 A	--	SPARE	24
25	SPARE	--	20 A	1	0	0				1	20 A	--	SPARE	26
27	SPARE	--	20 A	1		0	0			1	20 A	--	SPARE	28
29	SPARE	--	20 A	1				0	0	1	20 A	--	SPARE	30
Total Load:					3074 VA	930 VA	2347 VA							
Total Amps:					27 A	8 A	21 A							

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	2534 VA	100.00%	2534 VA	
Lighting	901 VA	125.00%	1127 VA	Total Conn. Load: 6314 VA
Receptacle	3600 VA	100.00%	3600 VA	Total Est. Demand: 6378 VA
				Total Conn.: 18 A
				Total Est. Demand: 18 A
Notes:				



BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATION BASIN BLOWER BUILDING
PANEL SCHEDULE

DESIGN: MWB	DRAWN: MH	CHECKED:BCL
DATE: 05/2026	REVISION	DATE
	DESCRIPTION	



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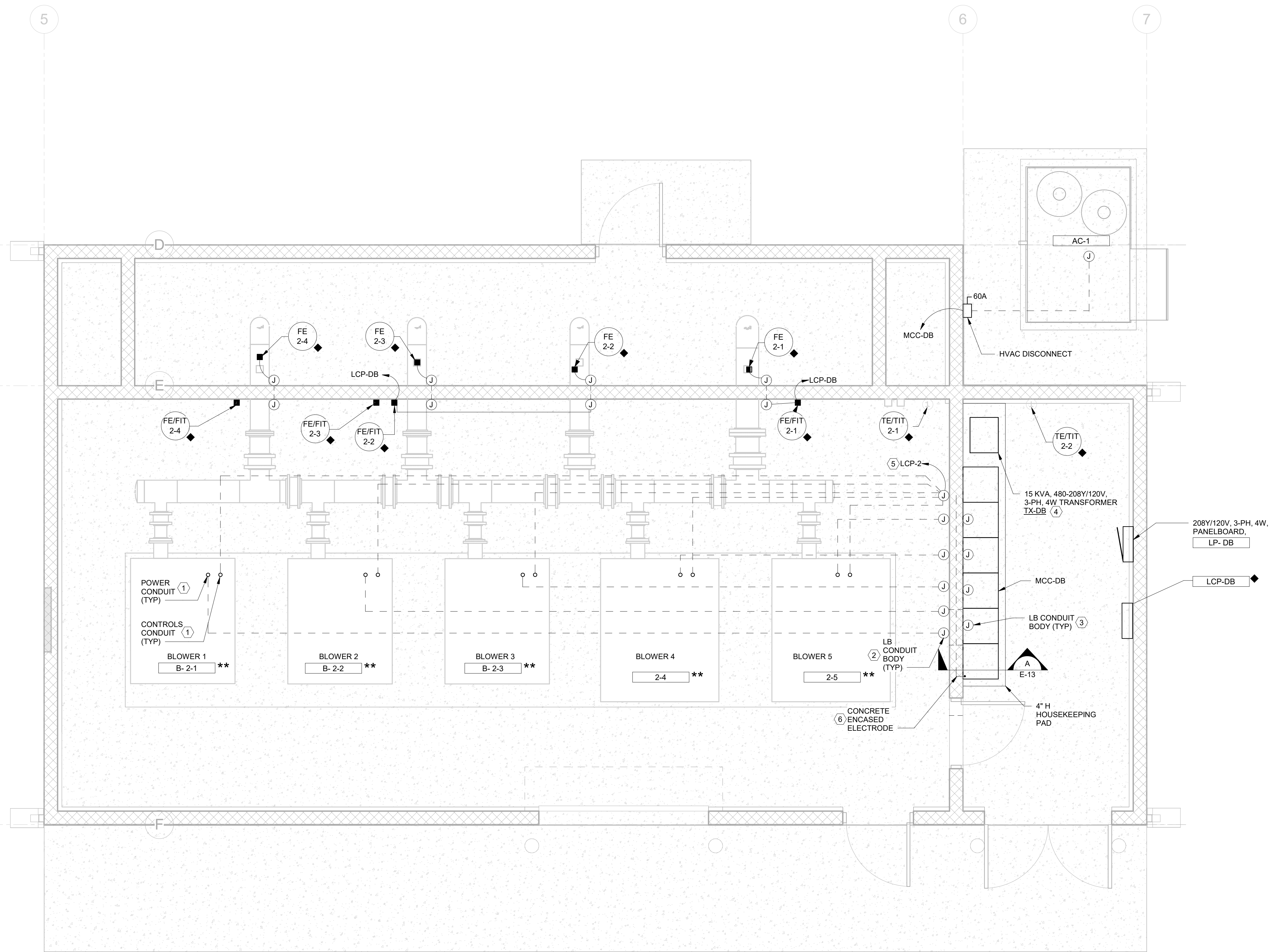
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DIGESTER BLOWER BUILDING PWR/CTL

SCALE: 3/8" = 1'-0"

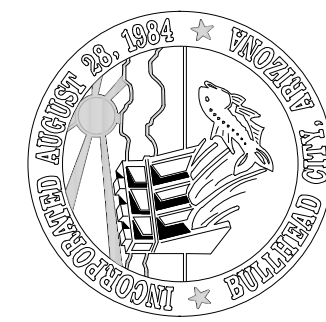


GENERAL ELECTRICAL NOTES:

- A. MCC-DB ONE-LINE DIAGRAM IS SHOWN ON DWG E-13.
- B. SEE "H" DRAWINGS FOR MECHANICAL SYSTEMS INFORMATION.
- C. MCC LAYOUT IS TYPICAL FOR EQUIPMENT IN THE BUILDING. CONTRACTOR TO MOVE LOCATION OF MCC AS NEEDED TO ACCOMMODATE UNIT PROVIDED.
- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONRTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 61 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES:

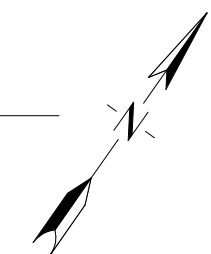
- ① VERIFY STUB UP LOCATION OF THE BLOWER PROVIDED. USE RGS CONDUIT FOR PENETRATION THROUGH SLAB. TRANSITION TO LFMC TO MOTOR OR CONTROLS CONNECTION. SEE DETAIL 1 ON DWG E-16.
- ② TRANSITION TO RGS CONDUIT THROUGH SLAB AND UP WALL TO A TYPE LB CONDUIT BODY LOCATED ABOVE MCC HEIGHT. PENETRATE WALL TO OTHER TYPE LB CONDUIT BODY.
- ③ CONNECT TO CONDUIT AT WALL PENETRATION. ROUTE CONDUIT DOWN FROM CONDUIT BODY FOR A TOP ENTRY INTO MCC-DB.
- ④ SPACE TRANSFORMER AWAY FROM WALL PER MANUFACTURER'S REQUIREMENTS FOR VENTILATION.
- ⑤ COMBINE ETHERNET CABLES FORM EACH BLOWER INTO ONE 2" CONDUIT TO LCP-2
- ⑥ ELECTRICAL CONTRACTOR MUST MAKE FOUNDATION CONCRETE CONTRACTOR AWARE OF UFER GROUND REQUIREMENTS



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REVISION	DATE
DESCRIPTION	

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
DIGESTER BLOWER BUILDING POWER &
CONTROLS PLAN





F. ALL INTERIOR RECEPTACLES TO BE MOUNTED AT 48" AFF, ALL EXTERIOR FIXTURES TO BE MOUNTED AT 24" AFF. ALL RECEPTACLES TO BE GFI.

5 SUSPEND FIXTURES 36" BELOW CEILING SURFACE TO HANG LOWER THAN THE HVAC DUCTING. FIXTURES SHIFTED FROM CENTER TO ACCOMMODATE THE HVAC DUCTING.



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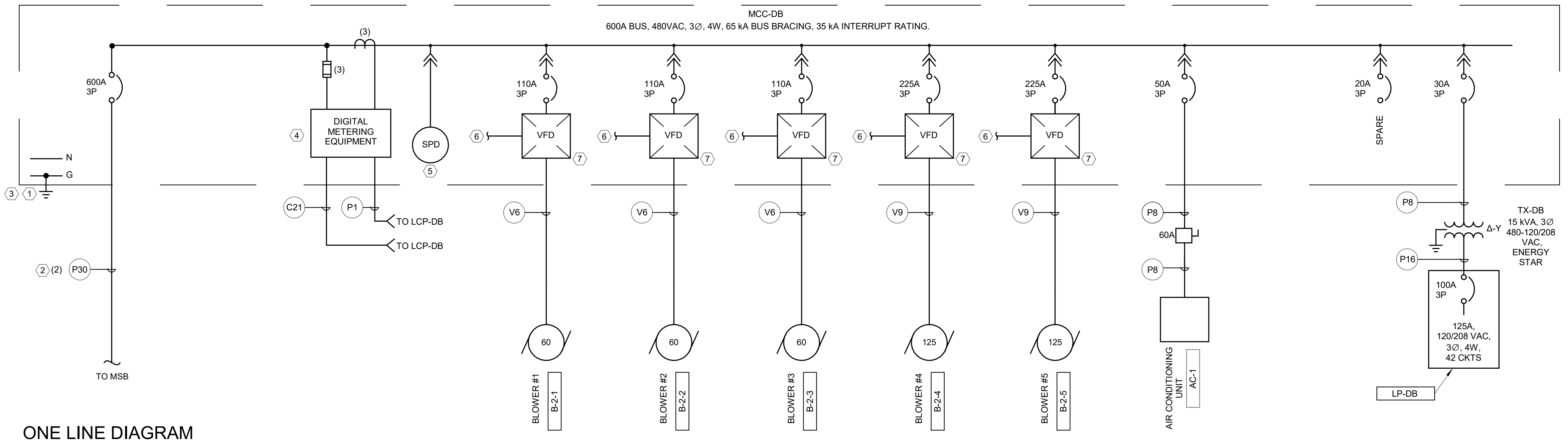
GENERAL NOTES:

- A. ALL VFD CONDUCTORS WILL MEET THE REQUIREMENTS OF SECTION 26 0519 PARAGRAPH 2.3.
- B. MCC WILL BE ARRANGED IN ELECTRICAL ROOM WITH 20" SECTIONS ALONG THE WALL AS SHOWN ON THE PLAN SHEETS. CONTRACTOR SHALL VERIFY SPACE REQUIREMENTS FOR MCC PROVIDED.
- C. REFERENCE DIVISION 26 SPECIFICATIONS FOR EQUIPMENT REQUIREMENTS.
- D. IT IS ABSOLUTELY NECESSARY FOR CONTRACTOR TO VERIFY AND PROVIDE ALL POWER AND CONTROL CONDUCTORS FOR EQUIPMENT SUPPLIED.
- E. PROVIDE VFD LINE AND LOAD REACTOR PER SPECIFICATION 26 2419.
- F. PROVIDE FULLY RATED NEUTRAL INSIDE OF MCC-DB.
- G. MCC MANUFACTURER TO PROVIDE BUCKETS THAT WILL ALLOW LOCKOUT TAG OUT OF EACH STARTER OR BREAKER INSIDE OF MCC-DB.

(NO.) (NO.) NUMBER IN CIRCLE CORRESPONDS TO CONDUIT AND CABLE SCHEDULE, DWG E-2. NUMBER OUTSIDE CIRCLE DESIGNATES NUMBER OF PARALLEL CONDUITS AND CONDUCTORS. SEE CABLE AND CONDUIT SCHEDULE ON E-2.

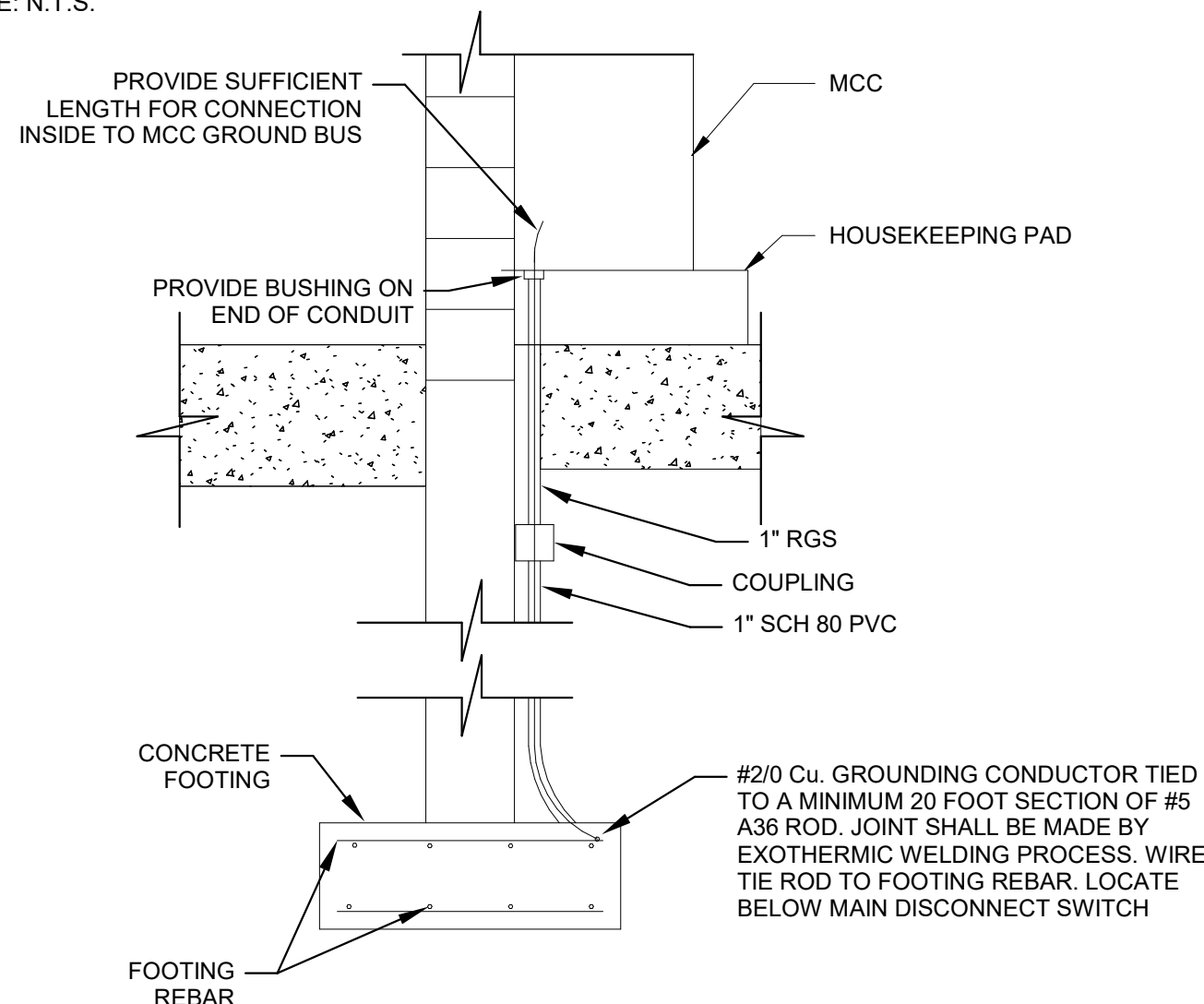
KEY NOTES:

- ① GROUND PER THE NEC USING #2/0 CU GND. DO NOT BOND NEUTRAL TO GROUND AT MCC. BOND ALL BUILDING STEEL AND PIPING TO GROUND PER NEC. SEE DETAIL 1, THIS SHEET.
- ② PROVIDE UP SIZED #1 AWG CU GROUND CONDUCTOR IN EACH CONDUIT. UPSIZE THE CONDUIT TO 4".
- ③ SEE GROUNDING DIAGRAM AND SECTION A, THIS SHEET.
- ④ PROVIDE POWER METERING/PHASE MONITORING EQUIPMENT WITH ETHERNET/IP COMPATIBLE COMMUNICATIONS. PROVIDE A UPS FEED FROM LCP-DB TO PROVIDE BACK-UP POWER TO DIGITAL METER.
- ⑤ MFR PROVIDED SPD IN MCC. PROVIDE A N.C. CONTACT THAT WILL FAIL OPEN WHEN A FAILURE IN THE SPD IS DETECTED.
- ⑥ ALL VFD'S TO HAVE AN ETHERNET COMM MODULE THAT SUPPORTS ETHERNET/IP COMM PROTOCOL. CONNECT A CAT5e CABLE FROM EACH DRIVE AND ROUTE IT TO A NETWORK SWITCH IN LCP-DB.
- ⑦ BLOWER IS A POSITIVE DISPLACEMENT UNIT AND REQUIRES A CONSTANT TORQUE VFD.

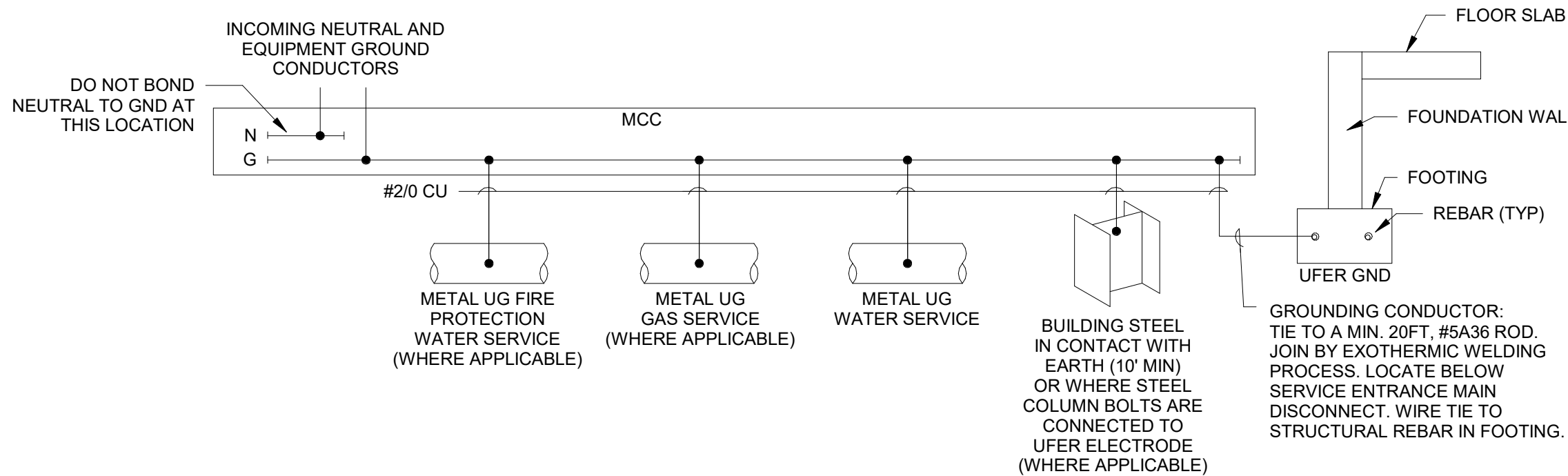


ONE LINE DIAGRAM

SCALE: N.T.S.



A
E-11 GROUNDING DETAIL SECTION A DIGESTER BUILDING
SCALE: N.T.S.



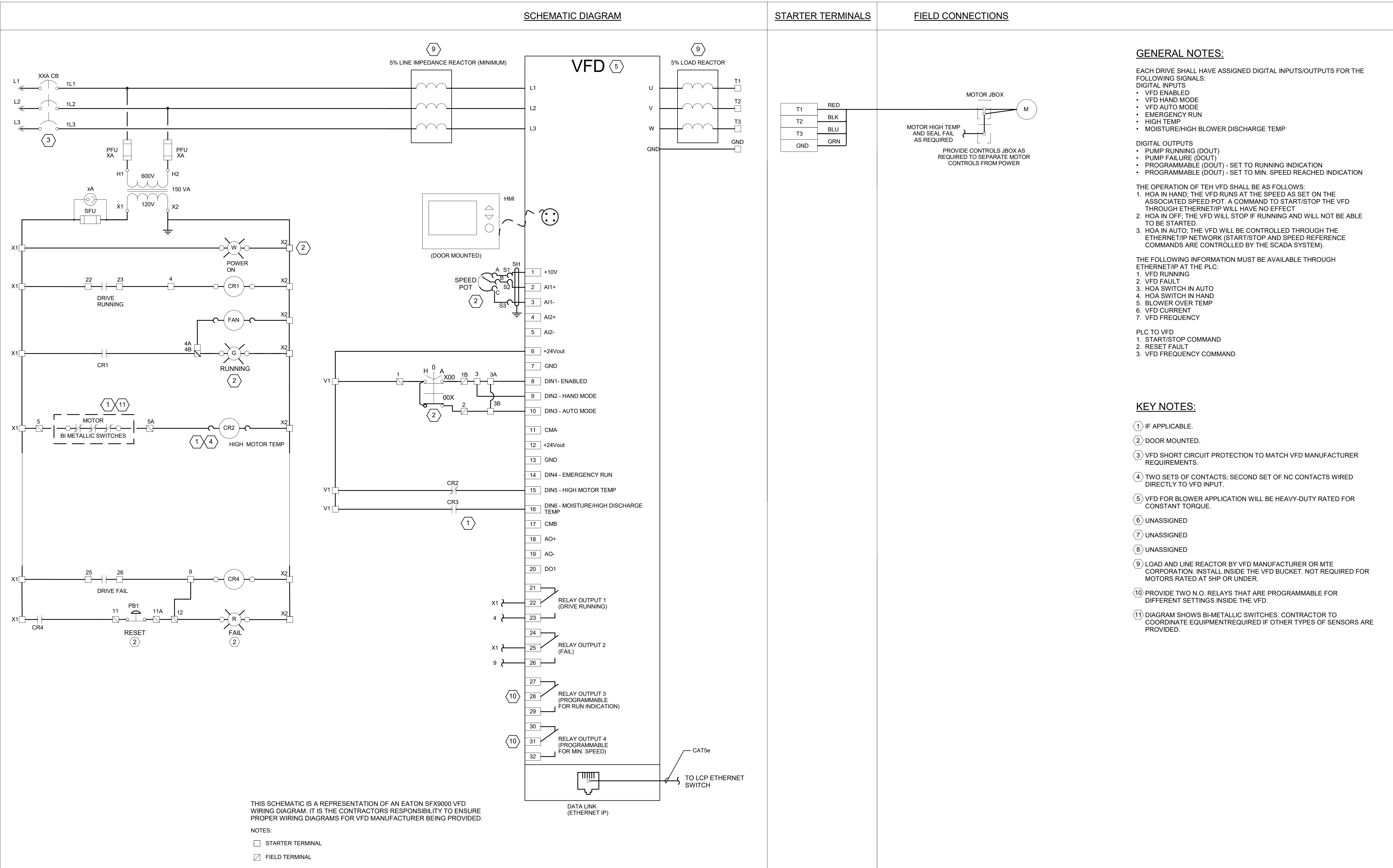
1
- GROUNDING AND BONDING RISER DIAGRAM
SCALE: N.T.S.



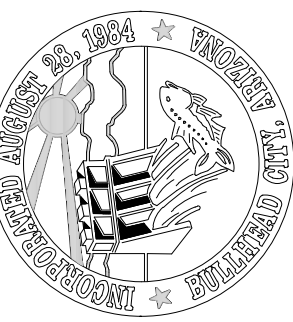
BULLHEAD CITY SECTION 10	DESIGN: MWB		DRAWN: MH	CHECKED: BCL
	DATE: 05/20/26			
	REVISION	DATE	DESCRIPTION	
BLOWER BUILDINGS IMPROVEMENTS				
DIGESTER BLOWER BUILDING ONE-LINE DIAGRAM & DETAILS				



Autodesk Docs://8519.017 BH CITY AERATION BLOWERS R22/8519.017 BH CITY BLOWER BLDGS-MEP_V2022.rvt



VFD SCHEMATIC
SCALE: N.T.S.



BULLHEAD CITY SECTION 10				DESIGN: MWB	DRAWN: MH	CHECKED: BCL
				DATE: 05/20/26		
				REVISION	DATE	DESCRIPTION
BLOWER BUILDINGS IMPROVEMENTS						
TYPICAL VFD MOTOR CONTROL SCHEMATIC						



Autodesk Docs://8519.017 BH CITY AERATION BLOWERS R22/8519.017 BHCTY BLOWER BLDGS-MEP_V2022.rvt

Branch Panel: LP-DB

Location: ELECTRICAL ROOM

Supply From: TX-DB

Mounting: Surface

Enclosure: Type 1

Volts: 120/208 Wye

Phases: 3

Wires: 4

A.I.C. Rating: 22K

Mains Type: 100 A

Mains Rating: 100 A

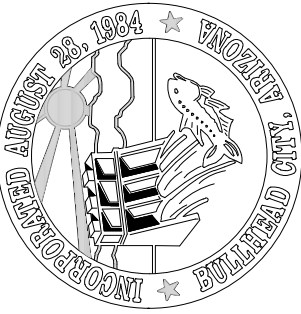
Notes:

CKT	Circuit Description	Load Classification	Trip	Poles	A	B	C	Poles	Trip	Load Classification	Circuit Description	CKT		
1	RCPT - ELECTRICAL ROOM	Receptacle	20 A	1	180	535		1	20 A	Lighting	LTG - BLOWER, ELECTRICAL & EXTERIOR	2		
3	RCPT - ELECTRICAL ROOM	Receptacle	20 A	1			180	174	1	20 A	Lighting	LTG - PLENUM ROOM	4	
5	RCPT - ELECTRICAL ROOM	Receptacle	20 A	1					1	20 A	--	SPARE	6	
7	RCPT - BLOWER ROOM & OUTDOOR	Receptacle	20 A	1	540	0			1	20 A	--	SPARE	8	
9	RCPT - BLOWER ROOM	Receptacle	20 A	1			540	0	1	20 A	--	SPARE	10	
11	RCPT - PLENUM ROOM & OUTDOOR	Receptacle	20 A	1				540	0	1	20 A	--	SPARE	12
13	RCPT - ELECTRICAL ROOM OUTDOOR	Receptacle	20 A	1	180	0			1	20 A	--	SPARE	14	
15	SPARE	--	20 A	1			0	0	1	20 A	--	SPARE	16	
17	SPARE	--	20 A	1					1	20 A	--	SPARE	18	
19	SPARE	--	20 A	1	0	0			1	20 A	--	SPARE	20	
21	SPARE	--	20 A	1			0	0	1	20 A	--	SPARE	22	
23	SPARE	--	20 A	1					1	20 A	--	SPARE	24	
25	SPARE	--	20 A	1	0	0			1	20 A	--	SPARE	26	
27	SPARE	--	20 A	1			0	0	1	20 A	--	SPARE	28	
29	SPARE	--	20 A	1					1	20 A	--	SPARE	30	
Total Load:					1117 VA	744 VA	720 VA							
Total Amps:					9 A	6 A	6 A							

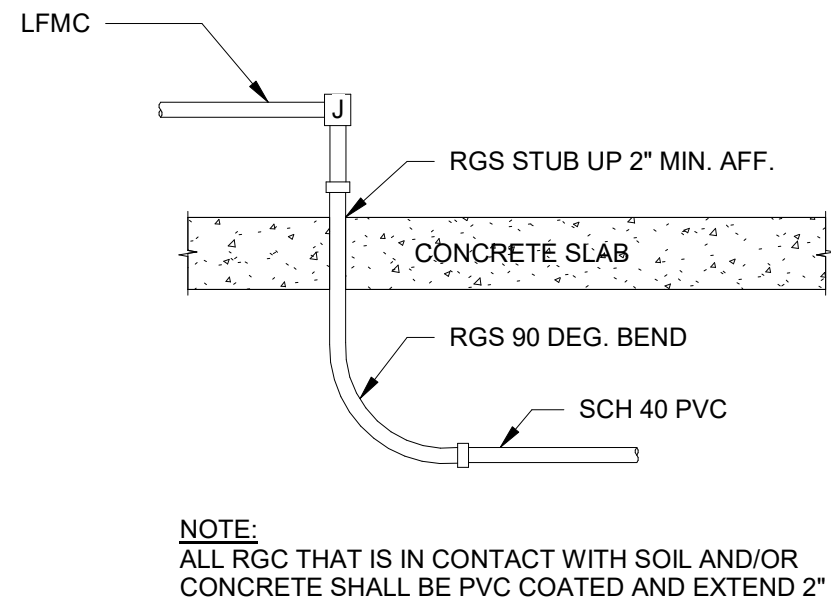
Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	707 VA	125.00%	884 VA	
Receptacle	2340 VA	100.00%	2340 VA	
				Total Conn. Load: 2526 VA
				Total Est. Demand: 2601 VA
				Total Conn.: 7 A
				Total Est. Demand: 7 A

Notes:



Autodesk Docs://8519.017 BH CITY AERATION BLOWERS R22/8519.017 BH CITY BLOWER BLDGS-MEP_V2022.rvt

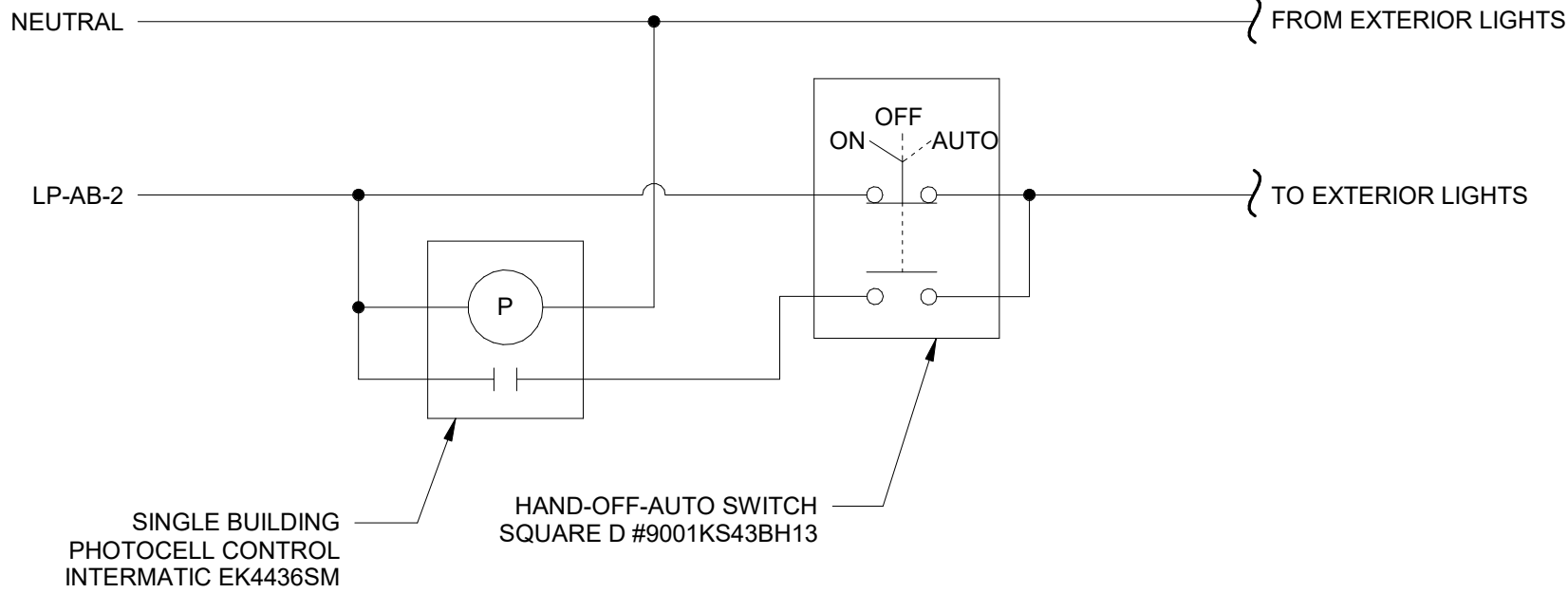


NOTE:
ALL RGC THAT IS IN CONTACT WITH SOIL AND/OR
CONCRETE SHALL BE PVC COATED AND EXTEND 2" AFG.

1

CONDUIT RISER DETAIL

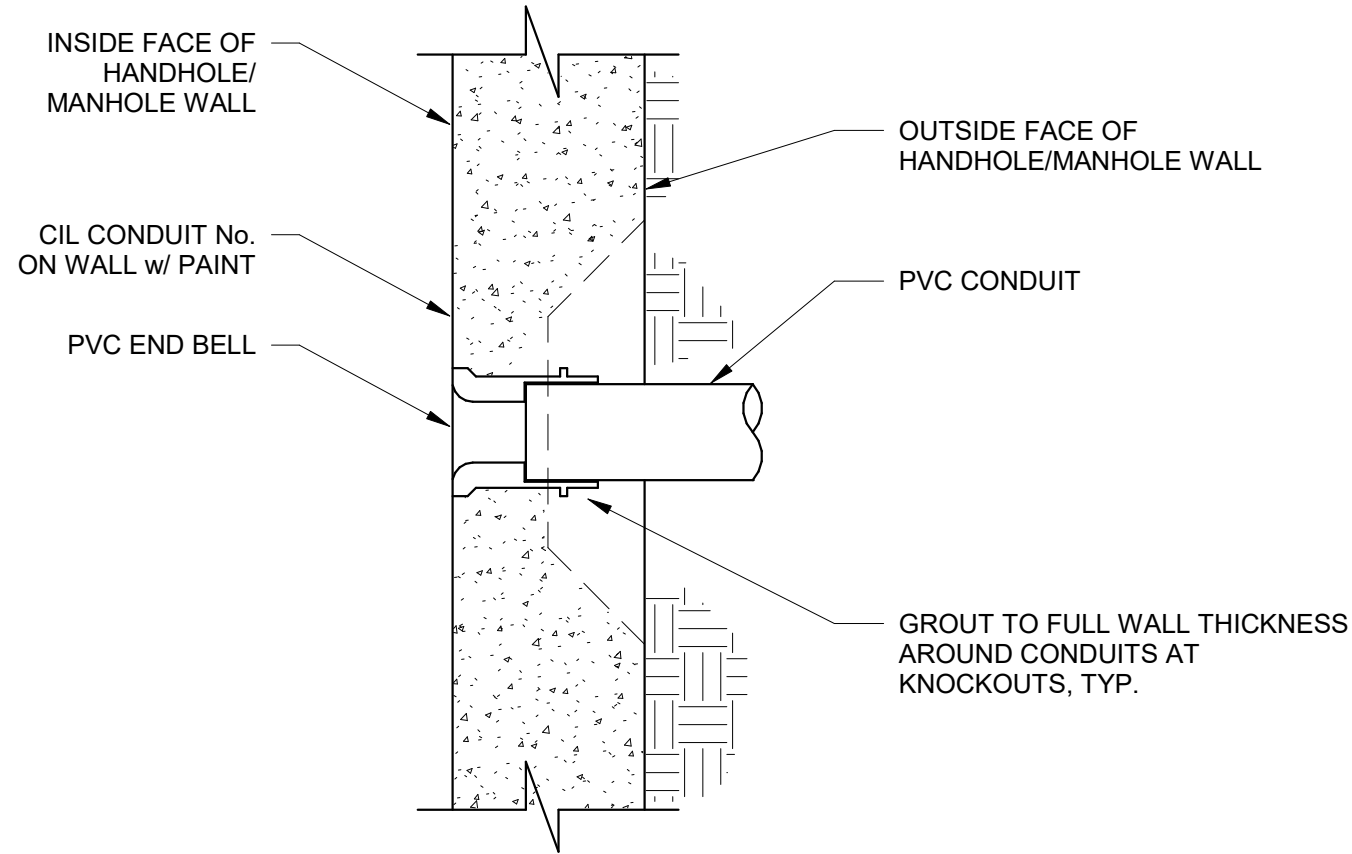
SCALE: N.T.S.



2

EXTERIOR LIGHTING CONTROL DIAGRAM (PHOTOCELL)

SCALE: N.T.S.



3

CONDUIT MANHOLE ENTRANCE

SCALE: 3" = 1'-0"

BULLHEAD CITY SECTION 10 BLOWER BUILDINGS IMPROVEMENTS CONDUIT STUB-UP DETAIL & EXTERIOR LIGHTING CONTROL DIAGRAM



DWG. NO.
E-16

SHEET NO.
58 OF 68

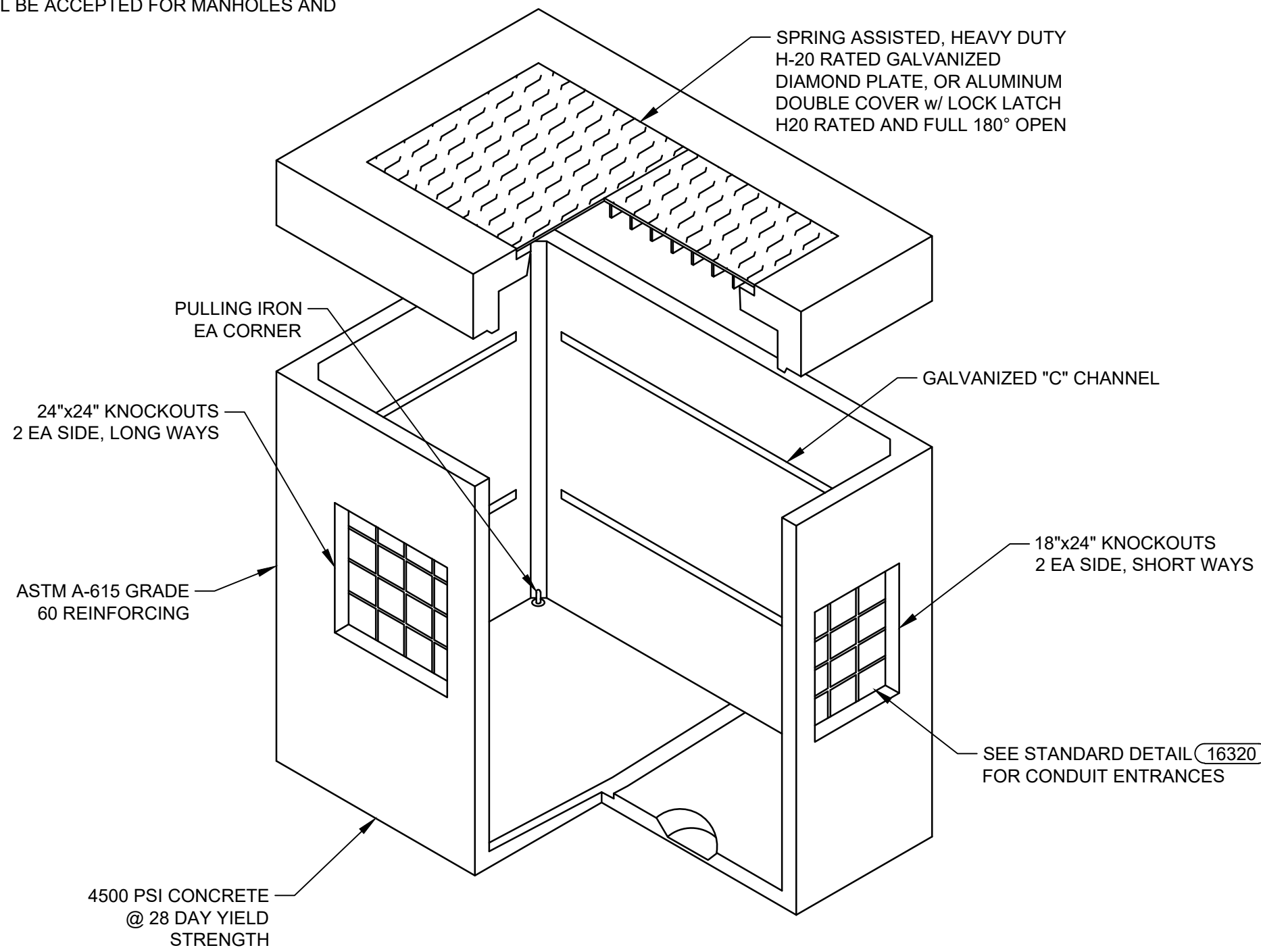
DESIGN: MWB	DRAWN: MH	CHECKED: BCL
DATE: 05/20/26		
REVISION	DATE	DESCRIPTION



R:\8519\017 00 - SECTION 10 BLOWER BUILDINGS\ACAD\ SHEETS\ E-17.DWG

KEY NOTES:

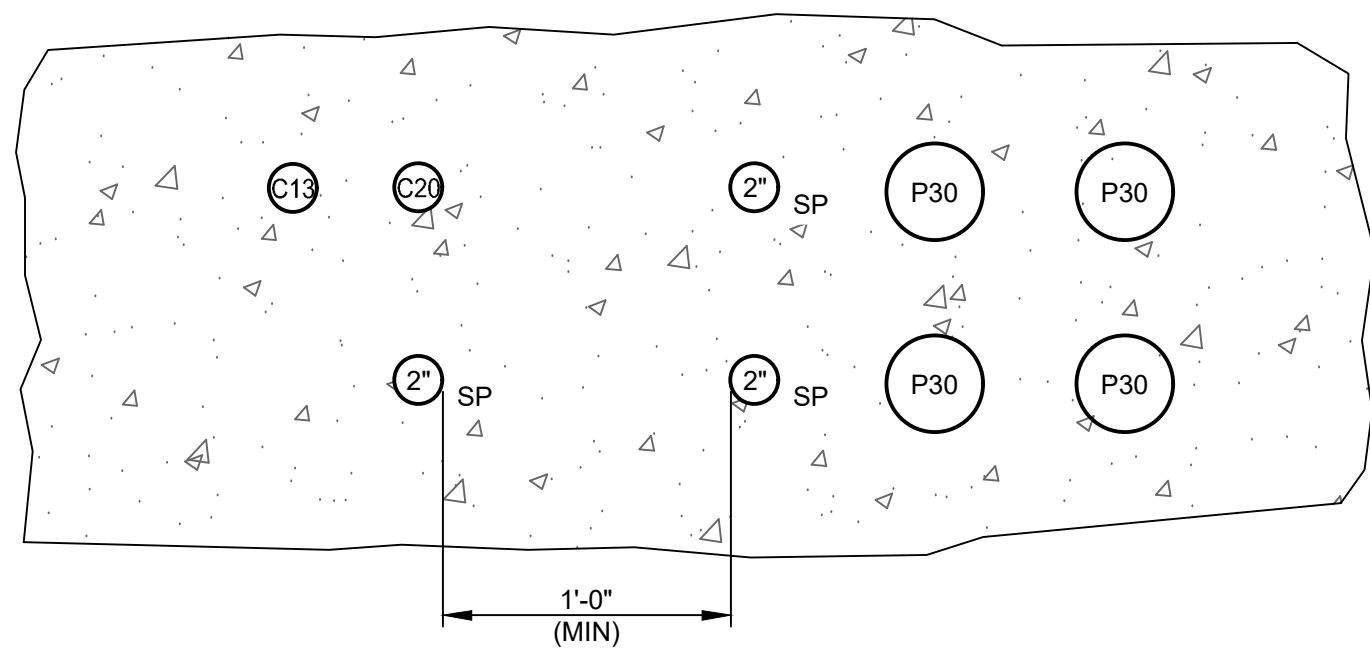
- 1 DETAIL IS SHOWN TO ESTABLISH MINIMUM REQUIREMENTS OR EQUAL PRODUCTS THAT WILL BE ACCEPTED FOR MANHOLES AND HAND HOLES.



NOTES:

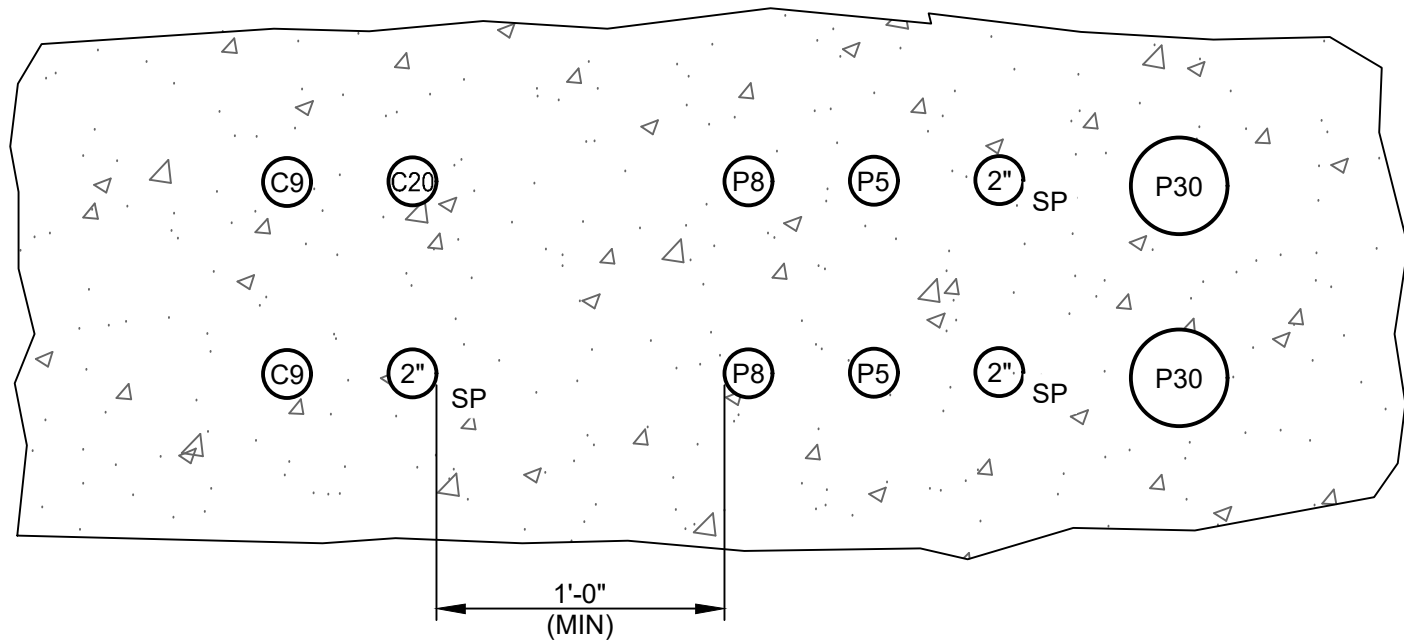
1. MANHOLES: OLD CASTLE 575-LA OR APPROVED EQUAL.
2. HAND HOLES: OLD CASTLE 444-LA OR APPROVED EQUAL. HAND HOLES SHALL HAVE SIMILAR CONSTRUCTION AS MANHOLES WITH SINGLE COVER ONLY.

1 ELECTRIC MANHOLE & HANDHOLE DETAIL
E-3 SCALE: NTS



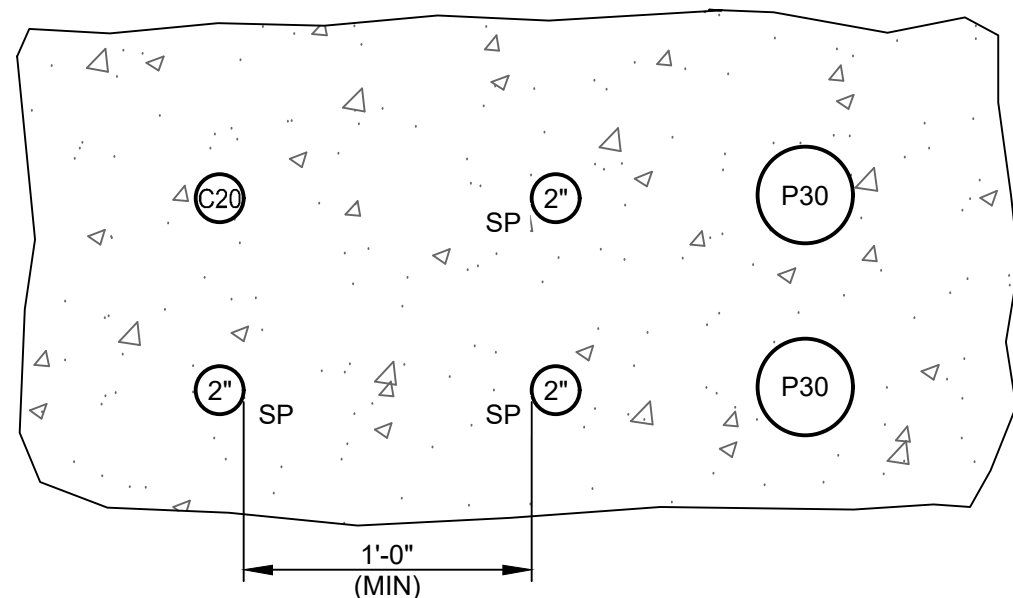
SECTION C				
FROM	TO	QTY	TYPE	NOTES
MBS	SWB-AB	4	P30, 4\"C	FEEDER TO SWB-AB
MBS	SWB-AB	2	2"	SPARE w/ PULL STRING; STUB UP AND CAP INSIDE SWBs
F.O. PATCH PANEL	F.O. PATCH PANEL	1	C20	COMMUNICATIONS CONDUIT - FIBER OPTIC
EXST BLOWER BLDG.	AERATION BASIN BLR. BLDG.	1	2"	SPARE; STUB UP AND CAP INSIDE ELECTRICAL ROOM
EXST BLOWER BLDG.	RTU-AB1/3	1	C13, 2\"C	ATS, GENERATOR, CLARIFIERS 2 & 3 CONTROL SIGNALS

C SECTION
E-3 SCALE: NTS



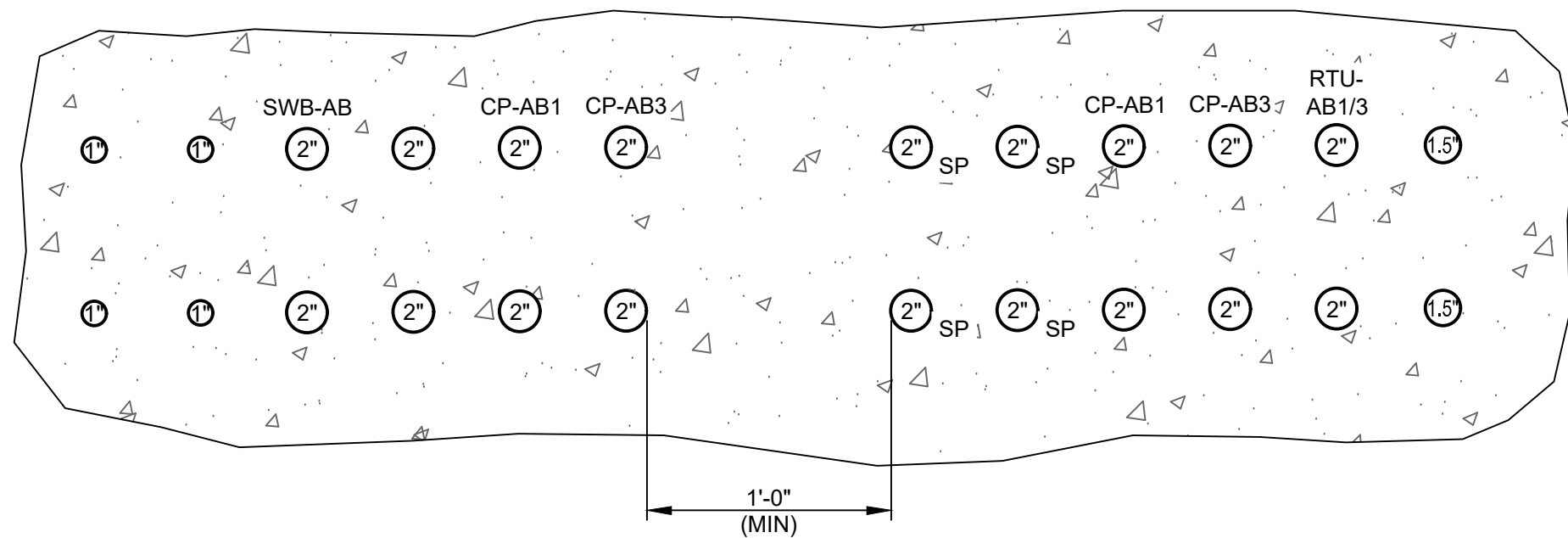
SECTION A				
FROM	TO	QTY	TYPE	NOTES
MBS	MCC-DB	2	P30, 4\"C	FEEDER TO MCC-DB
MBS	MCC-DB	2	2"	SPARE w/ PULL STRING; STUB UP AND CAP INSIDE SWB & MCC
SOFT START	CLARIFIER 2	1	P8	CLARIFIER 2 MOTOR FEEDER
MSB	CLARIFIER 3	1	P8	CLARIFIER 3 MOTOR FEEDER
LP-01	CLARIFIER 2	1	P9	CLARIFIER 2 LIGHTING AND RECEPTACLE FEEDERS
LP-01	CLARIFIER 3	1	P9	CLARIFIER 3 LIGHTING AND RECEPTACLE FEEDERS
F.O. PATCH PANEL	F.O. PATCH PANEL	1	C20	COMMUNICATIONS CONDUIT - FIBER OPTIC
EXST BLOWER BLDG.	RTU-DB	1	2"	SPARE; STUB UP INSIDE RTU-DB
LCP-AB	CLARIFIER 2	1	C9, 1\"C	CLARIFIER 3 CONTROL SIGNALS
LCP-AB	CLARIFIER 3	1	C9, 1\"C	CLARIFIER 2 CONTROL SIGNALS

A SECTION
E-3 SCALE: NTS



SECTION B				
FROM	TO	QTY	TYPE	NOTES
MBS	MCC-DB	2	P30, 4\"C	FEEDER TO MCC-DB
MBS	MCC-DB	2	2"	SPARE w/ PULL STRING; STUB UP AND CAP INSIDE SWB & MCC
F.O. PATCH PANEL	F.O. PATCH PANEL	1	C20	COMMUNICATIONS CONDUIT - FIBER OPTIC
EXST BLOWER BLDG.	RTU-DB	1	2"	SPARE; STUB UP INSIDE RTU-DB

B SECTION
E-3 SCALE: NTS



SECTION D				
FROM	TO	QTY	TYPE	NOTES
SWB-AB	EHH-5	2	2"	SPARE w/ PULL STRING; STUB UP AND CAP INSIDE SWB-AB
AERATION BASIN BLR. BLDG.	EHH-5	2	1.5"	SPARE w/ PULL STRING; STUB UP next to RTU-AB1/3
RTU-AB1/3	EHH-5	2	2"	SPARE; STUB UP AND CAP INSIDE RTU-AB1/3
LP-AB	EHH-5	2	1"	SPARE POWER; STUB UP INSIDE LP-AB
RTU-AB1/3	EMH-2	4	2"	SPARE; STUB UP AND CAP INSIDE RTU-AB1/3
FUTURE CP-AB1	EMH-2	3	2"	SPARE POWER; STUB UP AND CAP AT CP-AB1
FUTURE CP-AB1	EMH-2	2	2"	SPARE CONTROL; STUB UP AND CAP AT CP-AB1
FUTURE CP-AB3	EMH-2	3	2"	SPARE POWER; STUB UP AND CAP AT CP-AB3
FUTURE CP-AB3	EMH-2	2	2"	SPARE CONTROL; STUB UP AND CAP AT CP-AB3
LP-AB	EMH-2	2	1"	SPARE POWER; STUB UP INSIDE LP-AB

D SECTION
E-3 SCALE: NTS

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CHECKED: MWB

DRAWN: DAH

DESIGN: MWB

DATE: 05/20/26

DESCRIPTION

REVISION DATE

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

ELECTRICAL DETAILS

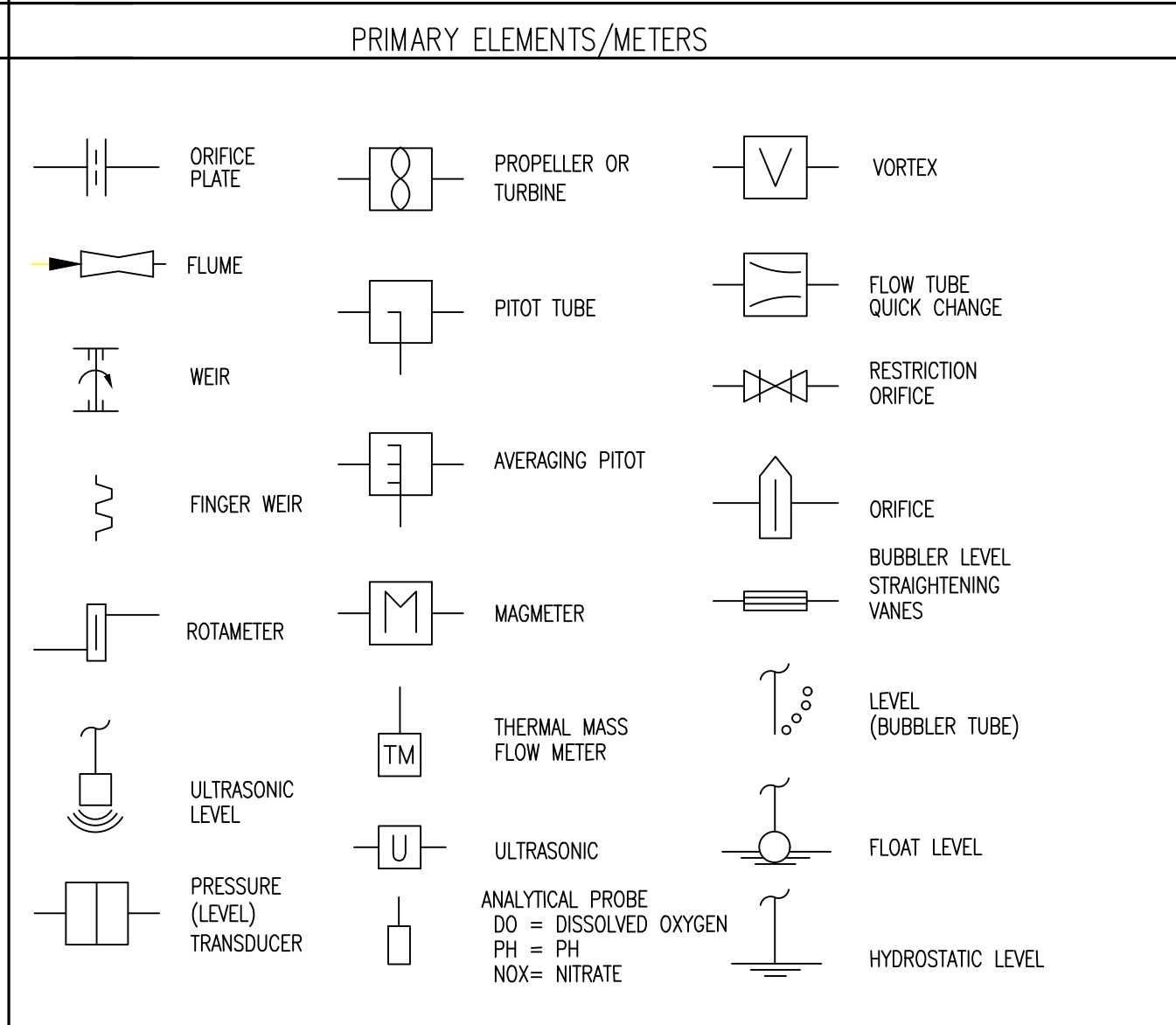
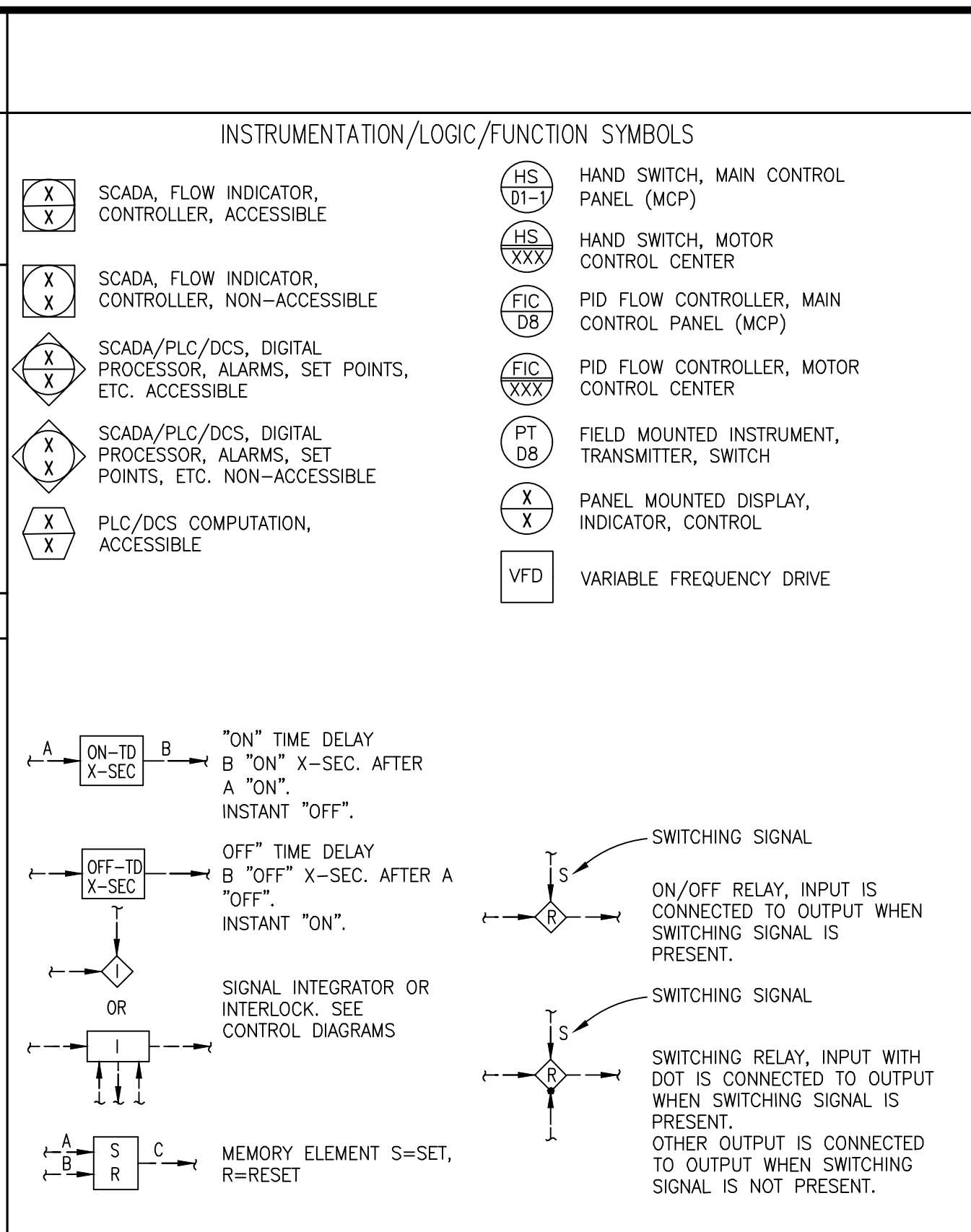
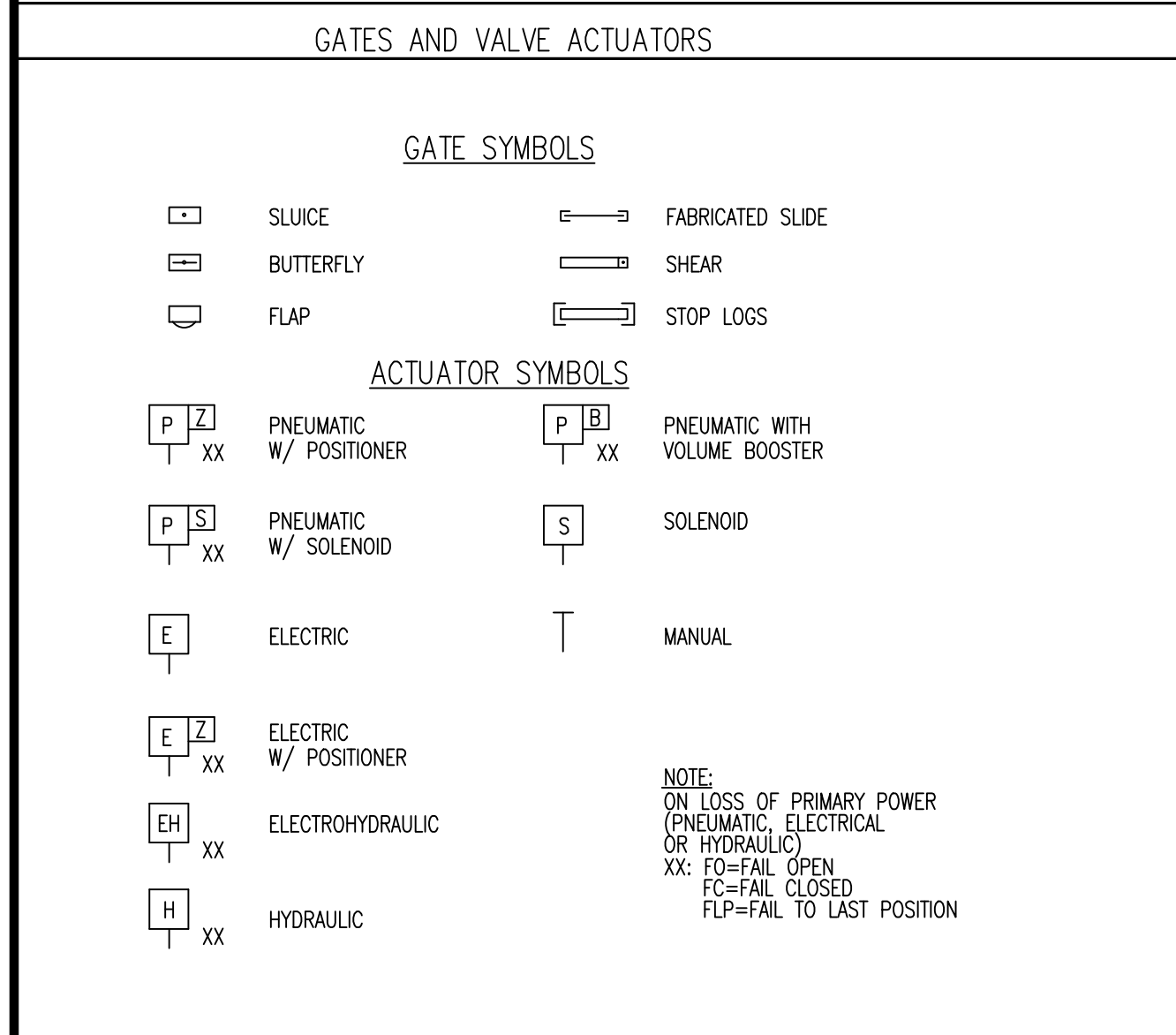
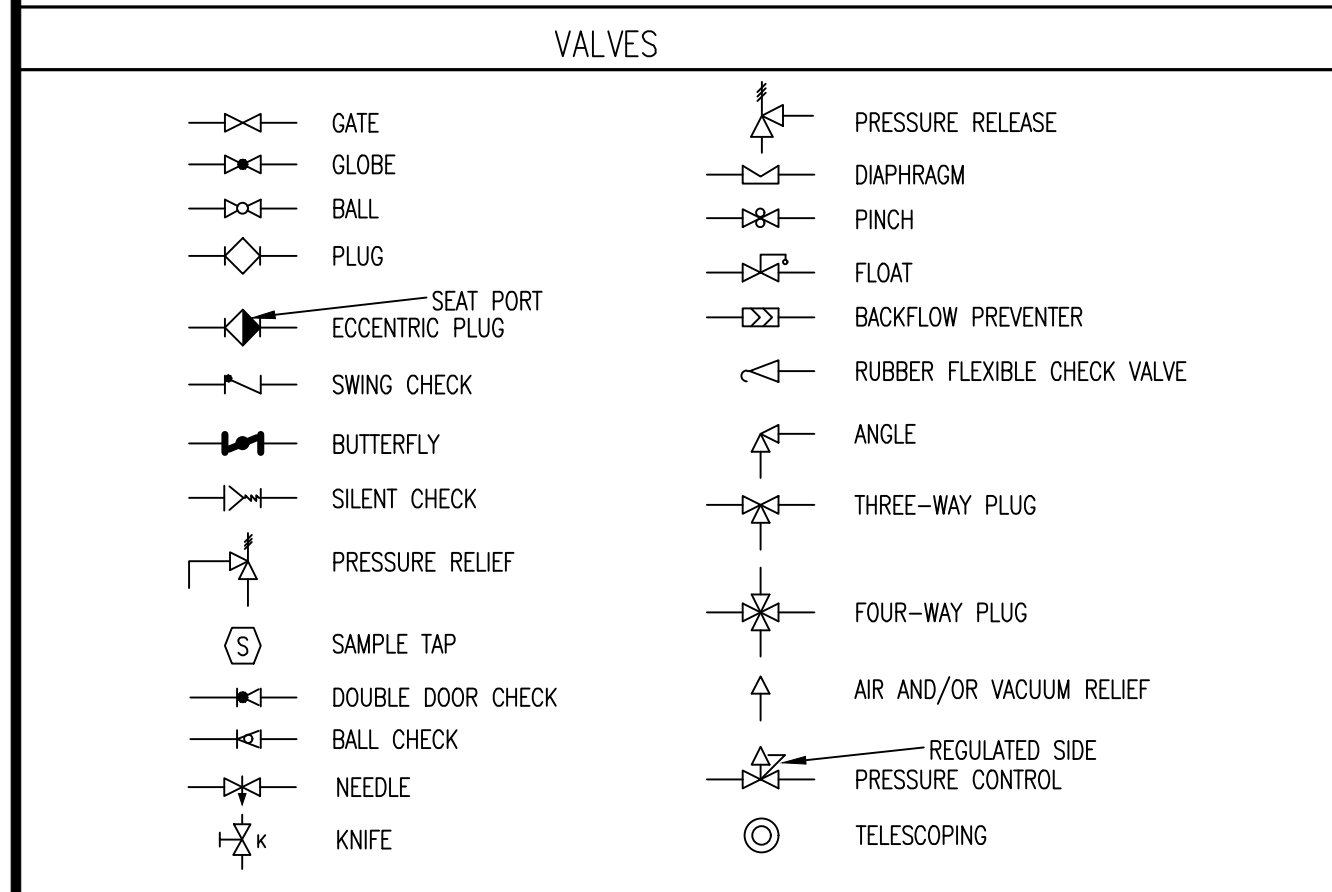
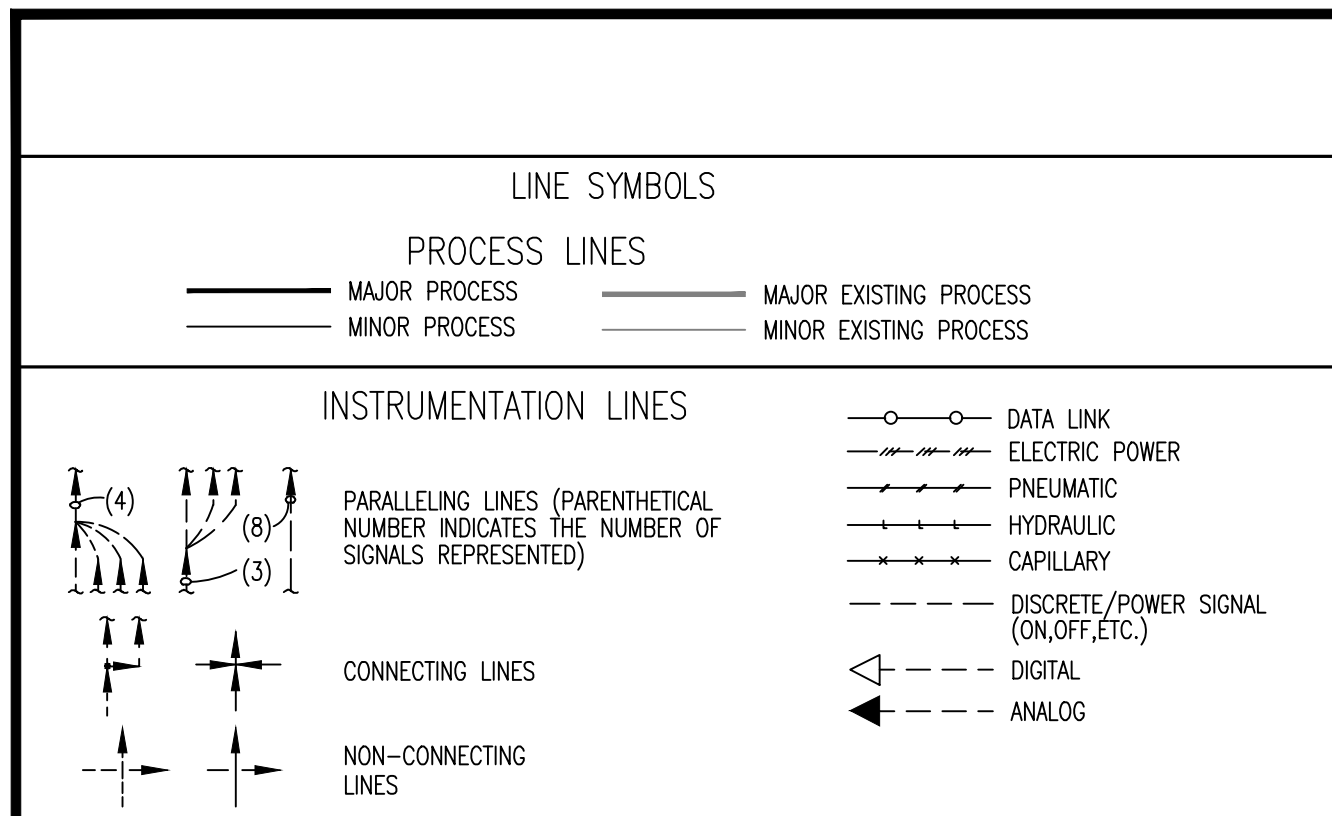


DWG. NO.

E-17

SHEET NO.

59 OF 68



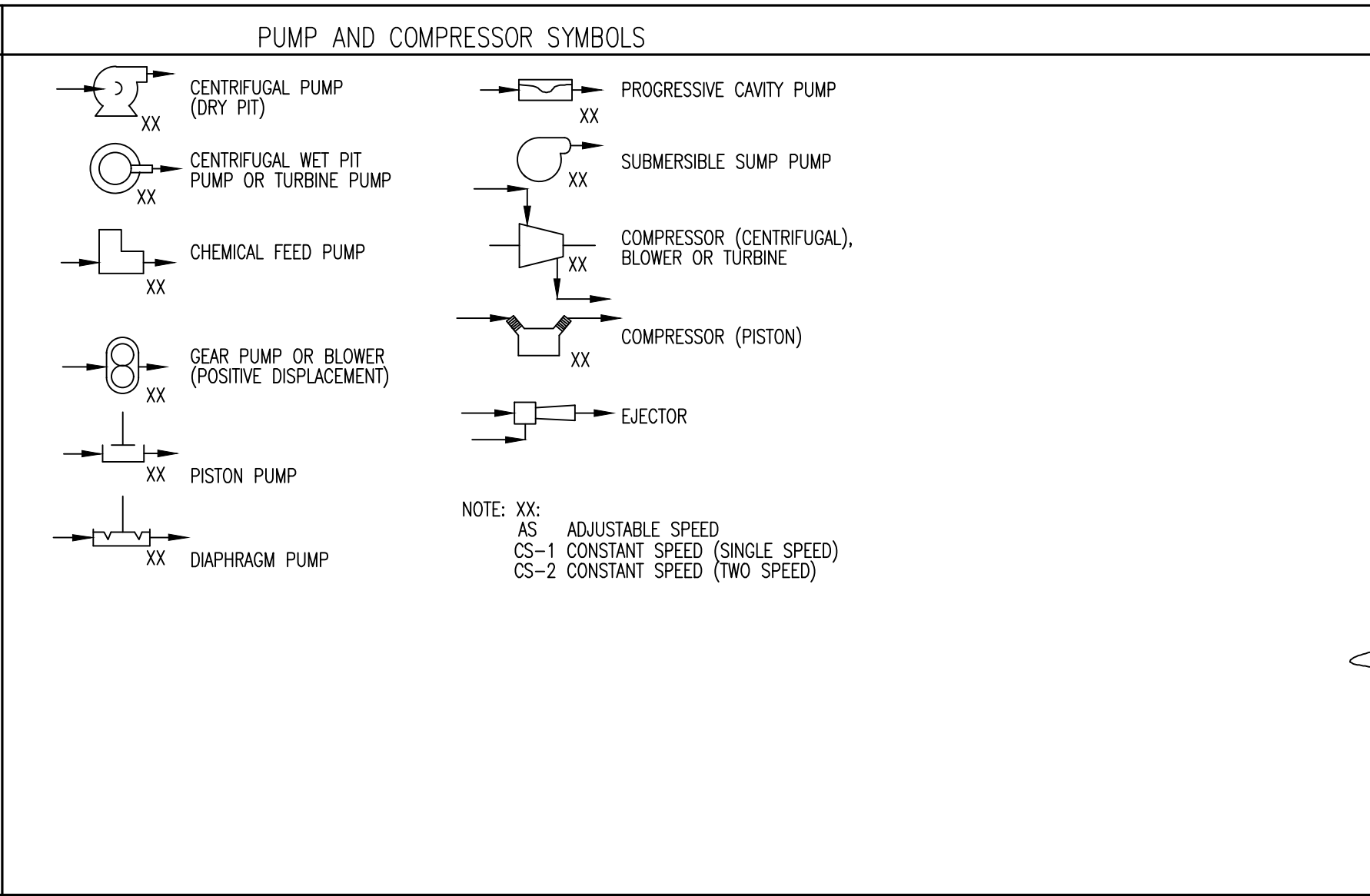
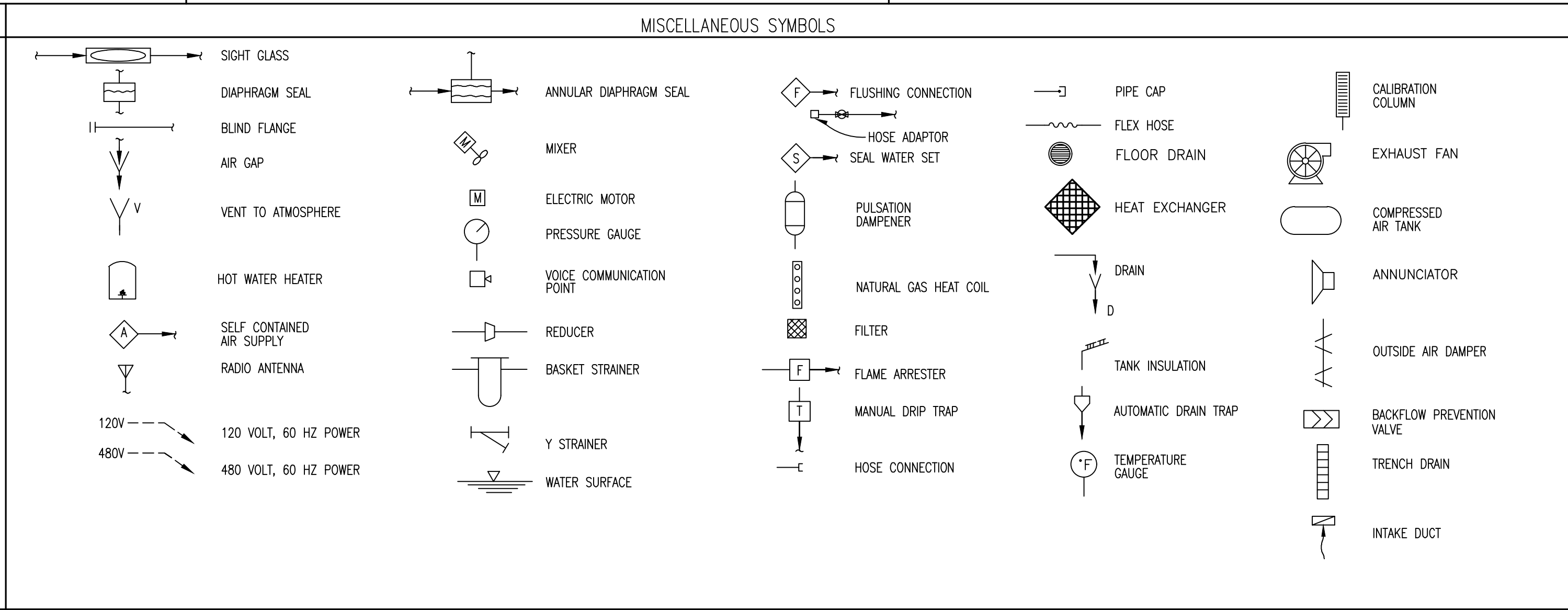
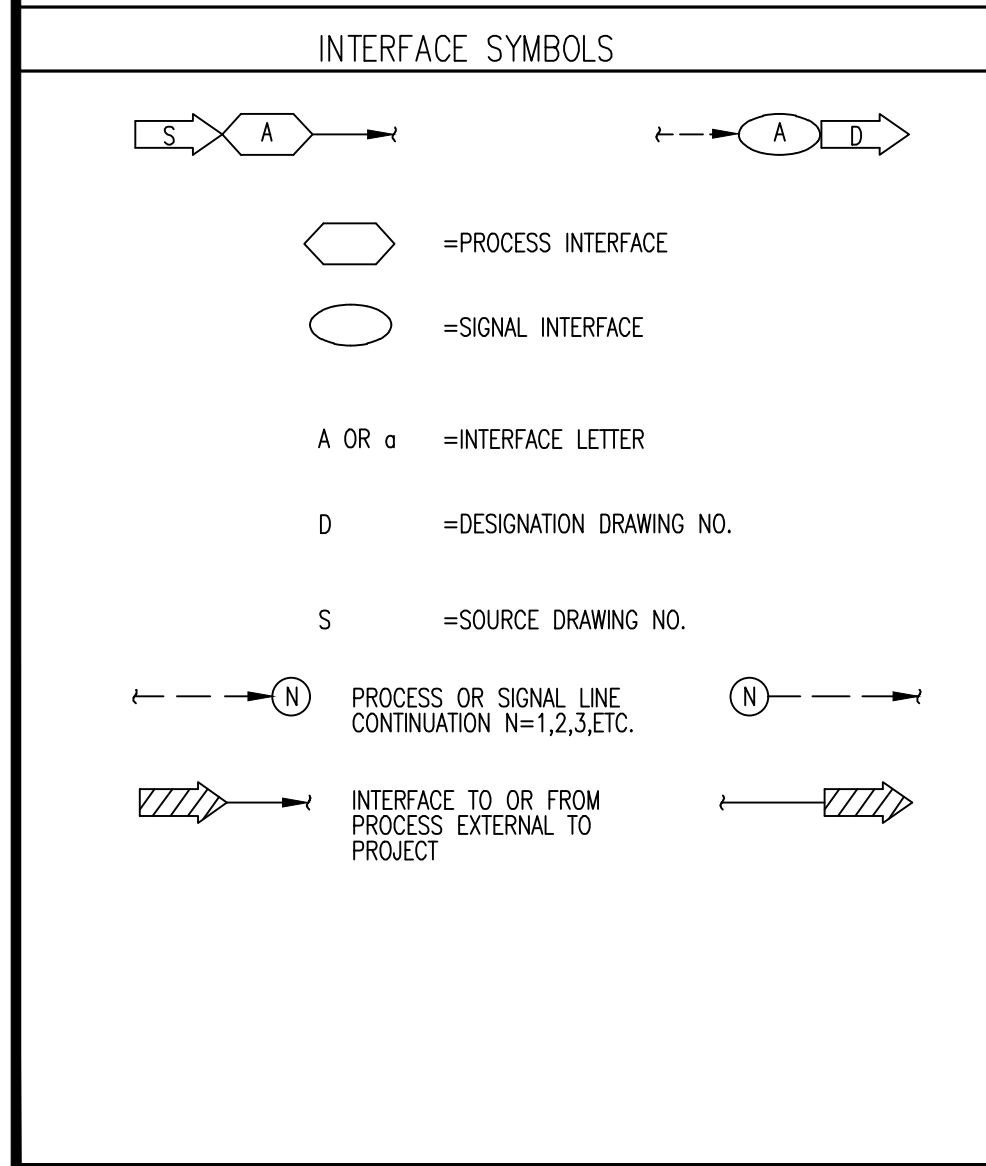
INSTRUMENT SOCIETY OF AMERICA TABLE						
	FIRST LETTER (S)	SUCCEEDING LETTERS				I/O TYPES
ID	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER	ASSOCIATED DEVICES
A	ANALYSIS (+)		ALARM			DI
B	BURNER, COMBUSTION			CLOSE-STOP-DECREASE		DO
C	CONDUCTIVITY		CLOSE	CONTROL OR CONTROLLER		DI/AO
D	DENSITY	DIFFERENTIAL		OPEN-START-INCREASE		DO
E	VOLTAGE		SENSOR, PRIMARY ELEMENT			
F	FLOW RATE	RATIO/FRACTION			FAIL	DI
G	GAS		GLASS VIEWING DEVICE			
H	HAND				H-HIGH ALARM HH-HIGH HIGH	DI
I	CURRENT (ELECTRICAL)		INDICATE			AI
J	POWER	SCAN				DO/AI
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION		DO/AO
L	LEVEL		LIGHT		L-LOW ALARM LL-LOW LOW	DI
M	MOTION	MOMENTARY	OPEN OR OPERATE		MIDDLE, INTERMEDIATE	DI
N	MOISTURE			START		DO
O	UNCLASSIFIED		OPEN ORIFICE, TEST RESTRICTION	STOP	OVERLOAD	DO
P	PRESSURE, VACUUM			PNEUMATIC		
Q	QUANTITY	INTEGRATE, TOTALIZE		INTEGRATE OR TOTALIZE		DI/AI
R	RADIATION		RECORD			AI
S	SPEED, FREQUENCY, SOLENOID	SAFETY		SWITCH OR SAFETY		DI/DO
T	TEMPERATURE			TRANSMIT		AI
TO	TORQUE					
U	MULTIVARIABLE (+)		MULTIFUNCTION (+)	MULTIFUNCTION (+)	MULTIFUNCTION (+)	DI
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER		
W	WEIGHT, FORCE, TORQUE		WELL			
X	ON/OFF	X-AXIS	UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)	DI/DO
Y	EVENT, STATE OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT		
Z	POSITION, DIMENSION	Z-AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT		

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

EQUIPMENT/VALVE DESIGNATION					
AC	ADSORPTION CLARIFIER			ARV	AIR RELEASE VALVE
ACF	AUTOMATIC CLEANING FILTER			ACV	AIR/VACUUM COMBINATION VALVE
ATS	AUTOMATIC TRANSFER SWITCH			BFV	BUTTERFLY VALVE
B	BLOWER			BLV	BALL VALVE
CFS	CHEMICAL FEED PUMP SKID			BPV	BACKFLOW PREVENTION VALVE
CP	CONTROL PANEL			CKV	CHECK VALVE
CT	CHEMICAL TOTE			DIV	DIAPHRAGM VALVE
EME	EMERGENCY EYEWASH PRESS			GLV	GLOBE VALVE
EMS	EMERGENCY SHOWER			GTV	GATE VALVE
EXF	EXHAUST FAN			HSV	HOSE VALVE
GEN	STANDBY GENERATOR			KGW	KNIFE GATE VALVE
H	HEATER			OC	ODOR CONTROL SYSTEM
LCP	LOCAL CONTROL PANEL			PCV	PRESSURE CONTROL VALVE
LOS	LOCAL OPERATOR STATION			PLV	PLUG VALVE
M	MIXER			PRV	PRESSURE RELIEF VALVE
MCC	MOTOR CONTROL CENTER			PSV	PRESSURE SUSTAINING VALVE
MH	MANHOLE			SCR	SCREEN
P	PUMP			SCV	SCREW CONVEYOR
PDC	POWER DISTRIBUTION CENTER			SOV	SOLENOID VALVE
RTU	REMOTE TERMINAL UNIT			WAP	WASH PRESS PRESS
SDG	SLIDE GATE			WAPG	WASH PRESS PRESS GATE
SM	SUBMERSIBLE MIXER			YH	YARD HYDRANT
T	TANK (PLASTIC/METAL)				
VFD	VARIABLE FREQUENCY DRIVE				
WG	WEIR GATE				
WW	WET WELL				

GENERAL NOTES

1. THIS IS A STANDARD LEGEND, THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.
2. SEE ELECTRICAL LEGEND FOR CONTROL DIAGRAM LEGEND.
3. OWNER WILL ESTABLISH TAG NUMBERING SYSTEM.



INSTRUMENT/CONTROLS IDENTIFICATION

	ANALYTICAL ELEMENT (PROBE) - DO/NOX/PH/LEL/H2S		MOISTURE SWITCH
	ANALYTICAL INDICATOR AND TRANSMITTER		PRESSURE DIFFERENTIAL -ELEMENT/INDICATE/SWITCH (HIGH/LOW)
	ALARM LIGHT		PRESSURE ELEMENT
	EMERGENCY SWITCH		PRESSURE INDICATOR AND TRANSMITTER
	FLOW ELEMENT		PRESSURE SWITCH - HIGH/LOW
	FLOW INDICATOR AND TRANSMITTER		VFD SPEED CONTROL -VARIABLE FREQUENCY DRIVE
	FLOW SWITCH		DCD SPEED CONTROL -DIRECT CURRENT DRIVE
	HAND SWITCH		SPEED ELEMENT
	POWER INDICATE		SPEED SWITCH
	LEVEL ALARM - HIGH/LOW		TEMPERATURE ELEMENT
	LEVEL ELEMENT		TEMPERATURE INDICATOR AND TRANSMITTER
	LEVEL INDICATOR AND TRANSMITTER		TORQUE SWITCH - HIGH/LOW
	LOCAL OPERATOR STATION		TEMPERATURE SWITCH - HIGH/LOW
	LEVEL SWITCH - HIGH/LOW		EQUIPMENT FAIL
	FVNR MOTOR CONTROL -FULL VOLTAGE NON REVERSING		ALARM POWER
	FVR MOTOR CONTROL -FULL VOLTAGE REVERSING		EVENT LIGHT
	EQUIPMENT RUN		POSITION SWITCH

GENERAL NOTES

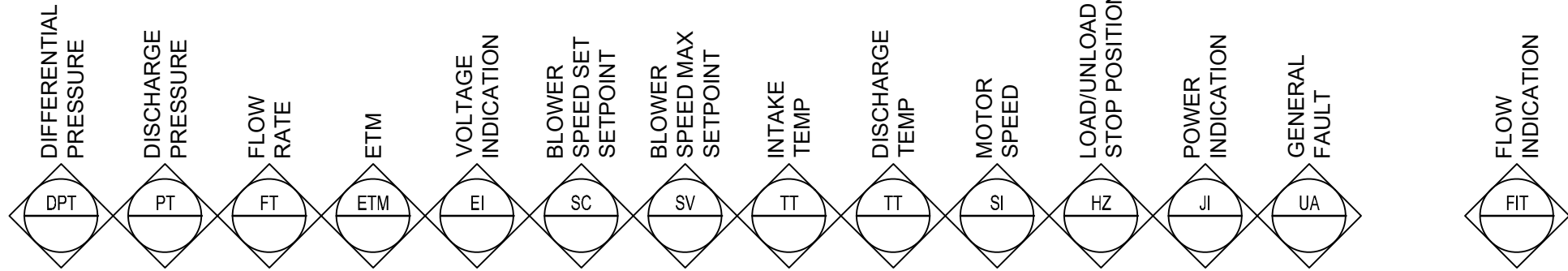
1. COMPONENTS AND PANELS SHOWN WITH A (◆) ARE SPECIFIED UNDER DIVISION 40.
2. SEE DWG G-4 FOR FLOW STREAM IDENTIFICATION.

ABBREVIATIONS & LETTER SYMBOLS

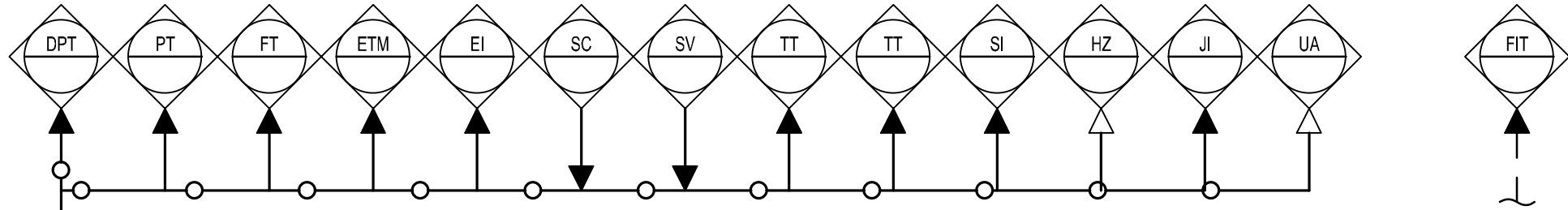
A	ANALOG DATA CABLE
C	CONTROL CABLE
D	DIGITAL CABLE i.e. DATA HIGH
ETM	ELAPSED TIME METER
F	FEEDER CABLE
FVNR	FULL VOLT NON-REVERSING
H	HAND SWITCH
HOA	HAND-OFF-AUTO
JB	JUNCTION BOX
M	MOTOR CABLE
N	NETWORK CABLE
O	FIBER OPTIC CABLE
T	TEMPERATURE CABLE i.e. RTD
TS	TERMINAL STRIP
ZL	LIMIT SWITCH STATUS LIGHT

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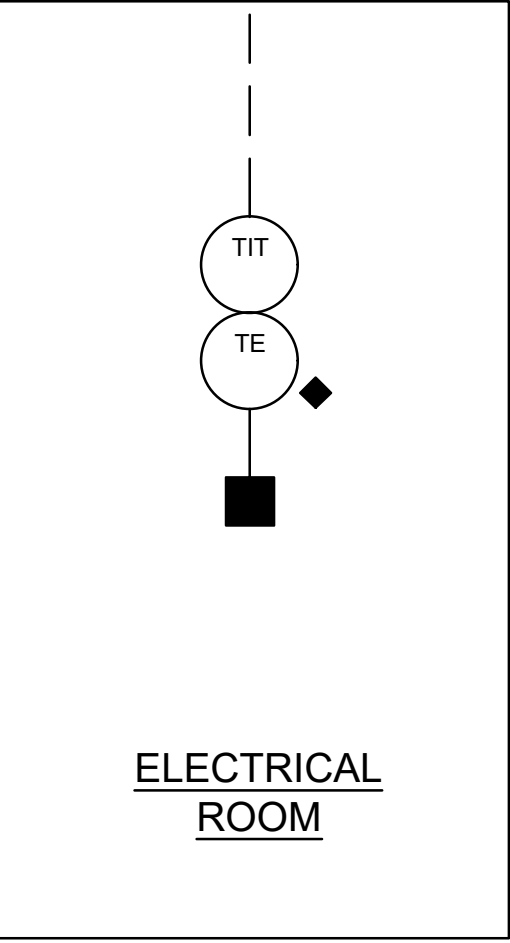
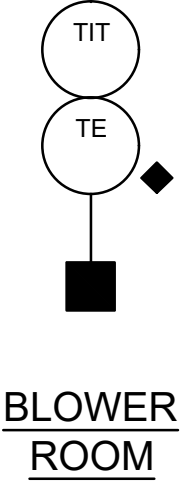
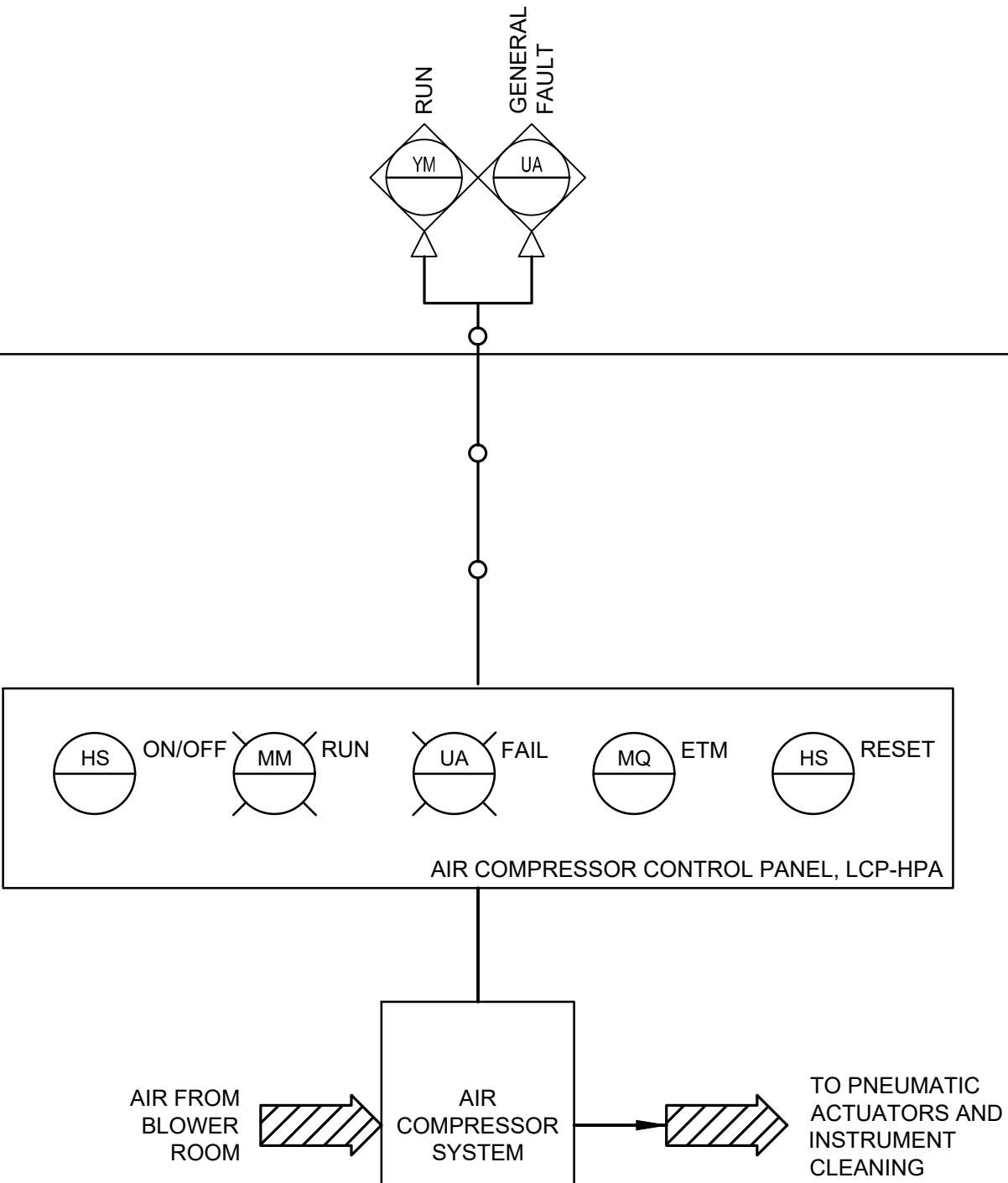
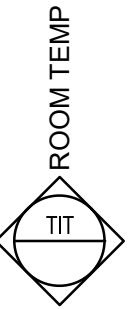
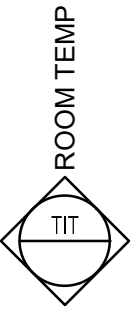
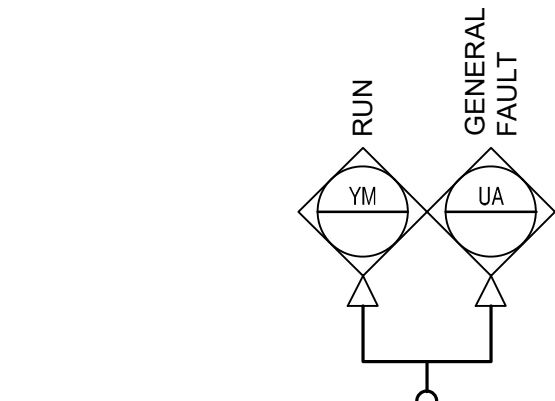
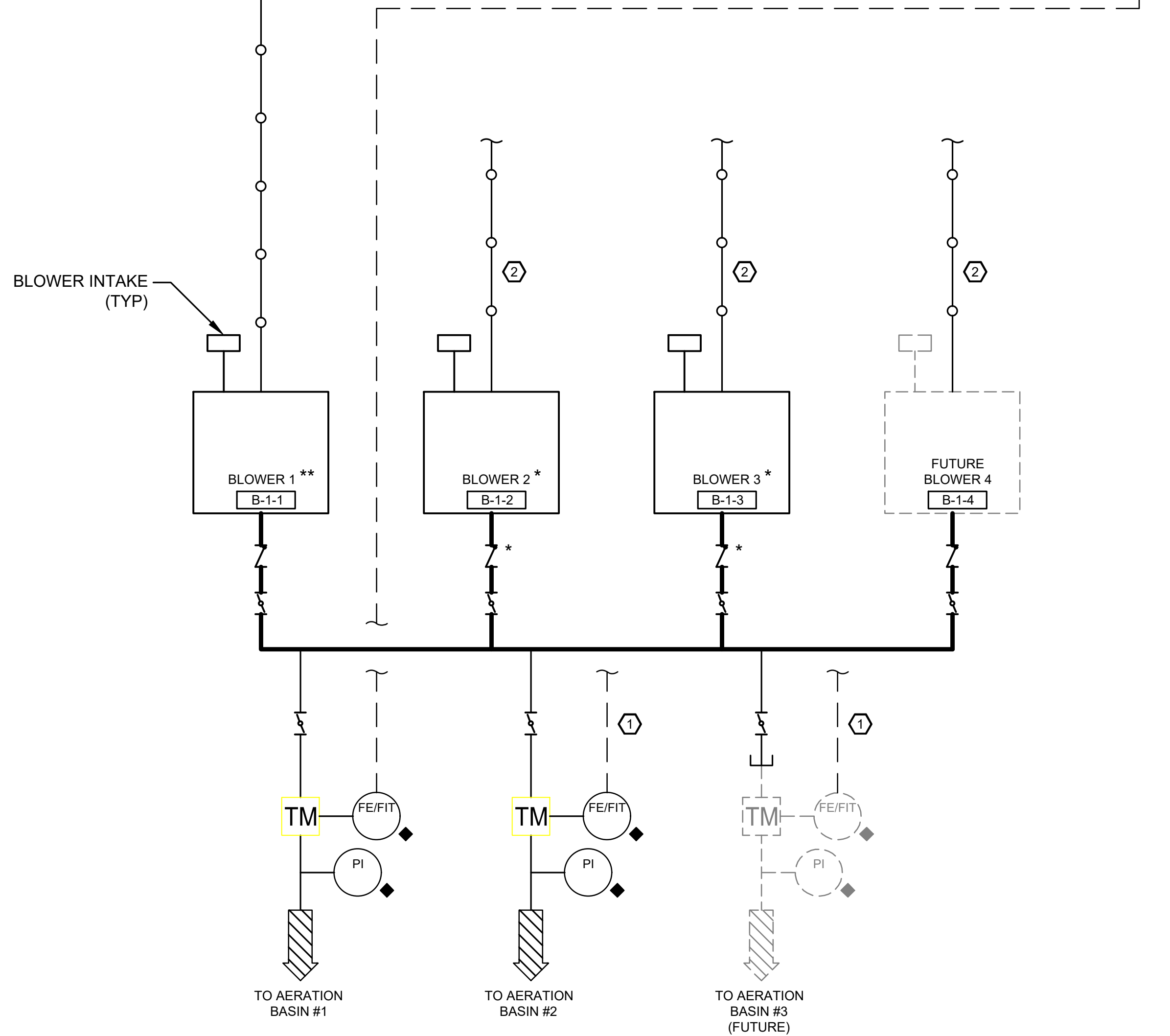
PLANT SCADA
(EXISTING)



RTU-AB1/3



PROCESS



GENERAL NOTES:

- * DENOTES EQUIPMENT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR.
- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ◆ DENOTES EQUIPMENT PROVIDED BY SECTION 40 60 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES

- ① SEE SIGNALS FOR AERATION BASIN #1 FE/FIT.
- ② SEE SIGNALS FOR B-1-1.

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BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

AERATON BLOWER BUILDING PID 1

DESIGN: ECS
DATE: 05/2026

DRAWN: JAC

CHECKED: JCM

REVISION
DATE

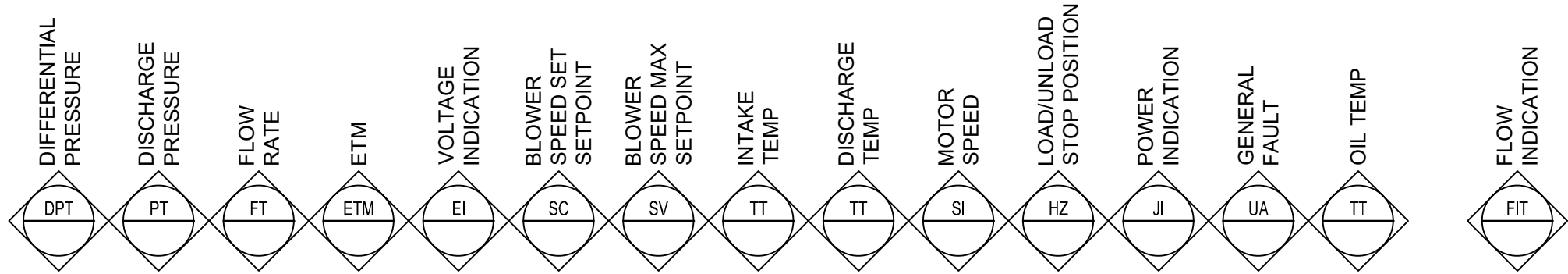
DESCRIPTION

DWG. NO.
I-2

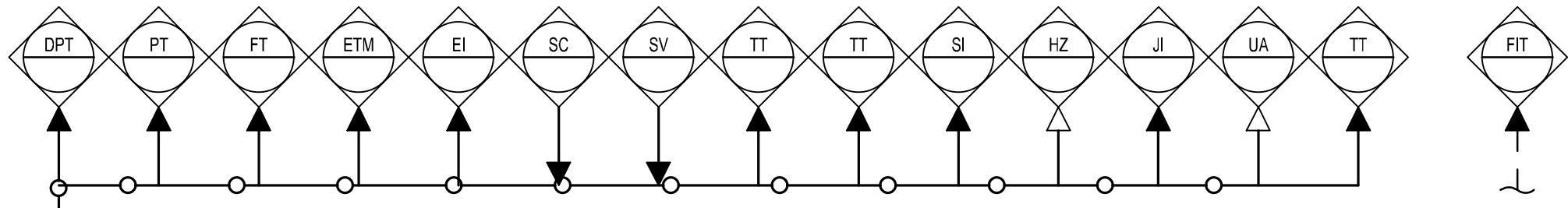
SHEET NO.
61 OF 68

R:\8519\017 00 - SECTION 10 BLOWER BUILDINGS\ACAD\SHEETS\I-3.DWG

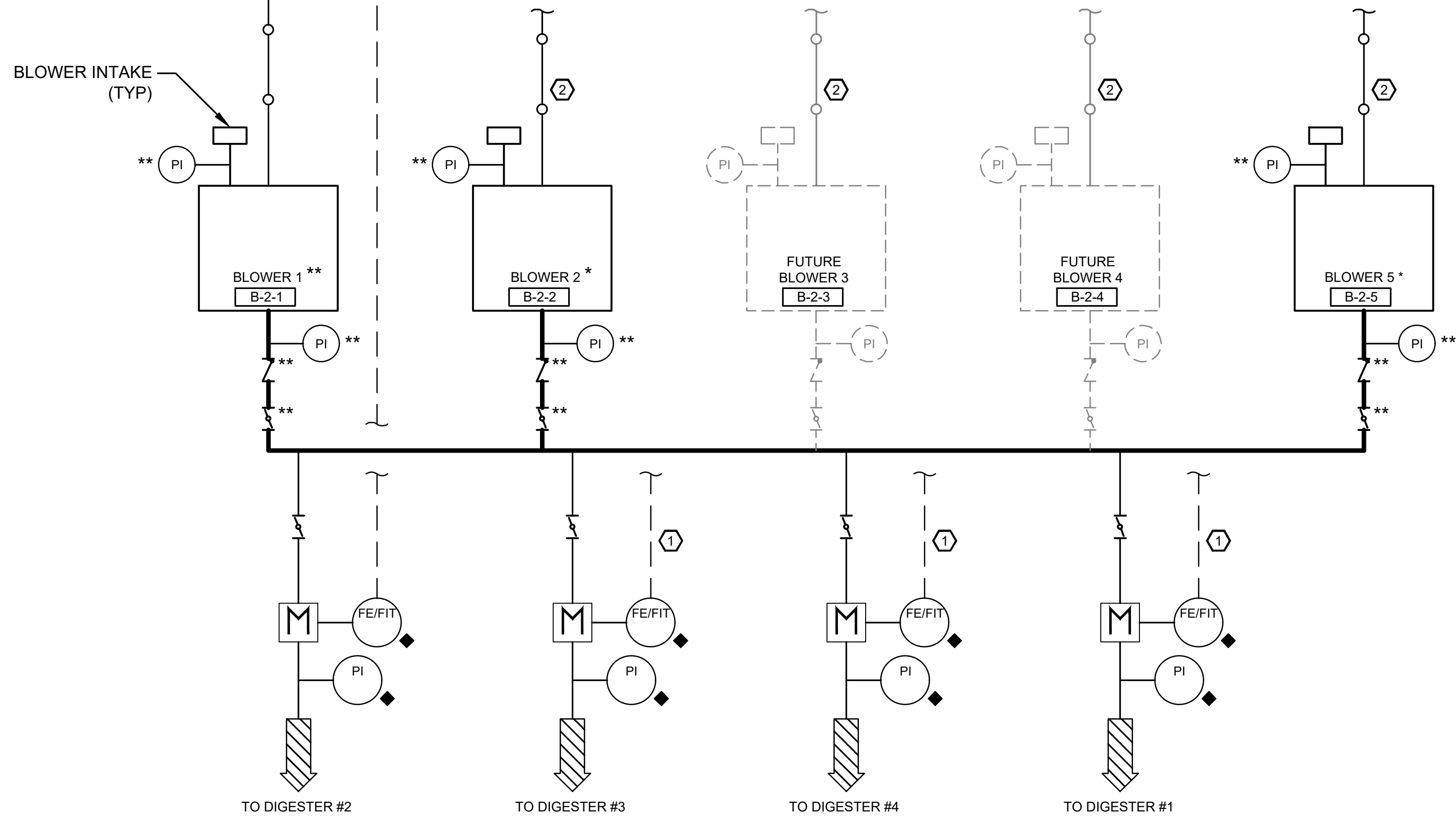
PLANT SCADA
(EXISTING)



RTU-DB ♦



PROCESS

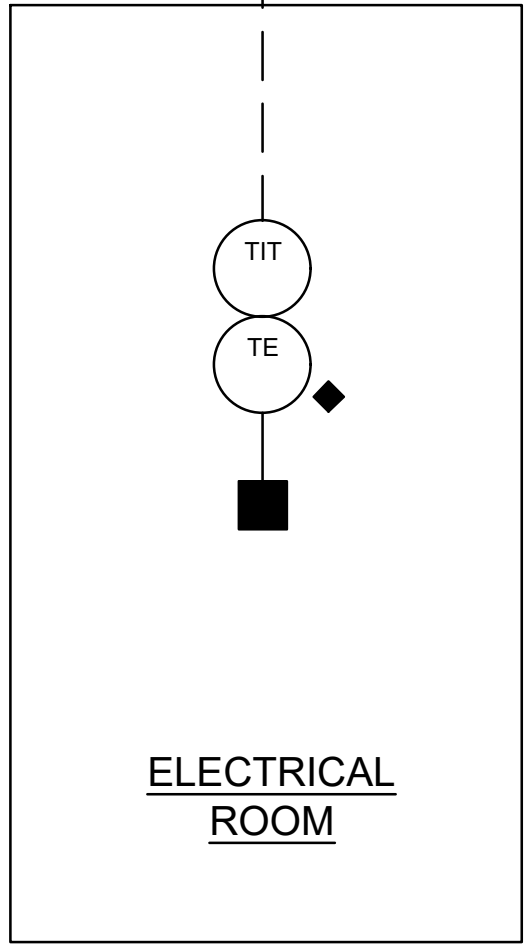
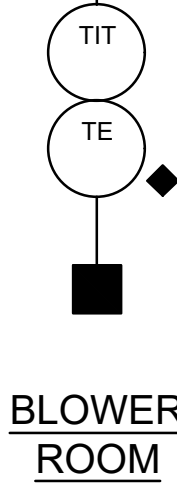


GENERAL NOTES:

- ** DENOTES EQUIPMENT PROVIDED BY DIVISION 43 MANUFACTURERS AND INSTALLED BY CONTRACTOR.
- ♦ DENOTES EQUIPMENT PROVIDED BY SECTION 40 60 10 SUPPLIER AND INSTALLED BY CONTRACTOR.

KEY NOTES

- ① SEE SIGNALS FOR DIGESTER 2 FE/FIT.
- ② SEE SIGNALS FOR B-2-1.



DESIGN: ECS
DATE: 05/2026

DRAWN: JAC

CHECKED: JCM

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

DIGESTER BLOWER BUILDING PID 1



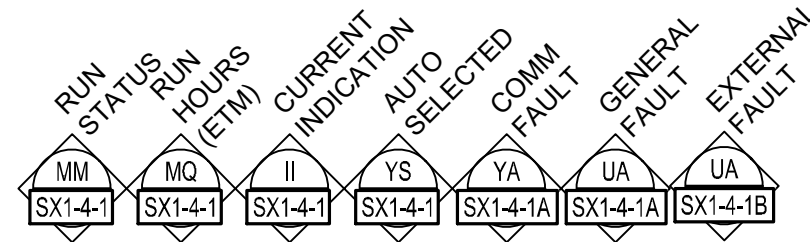
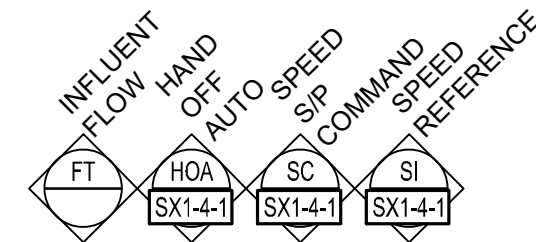
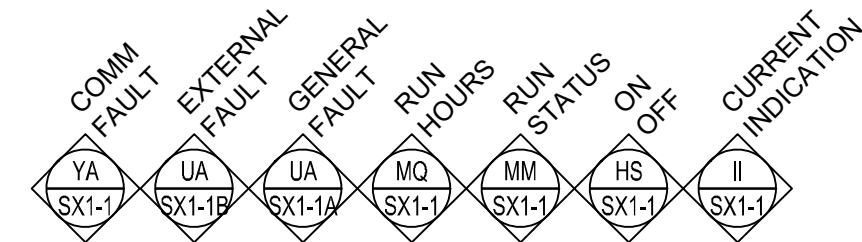
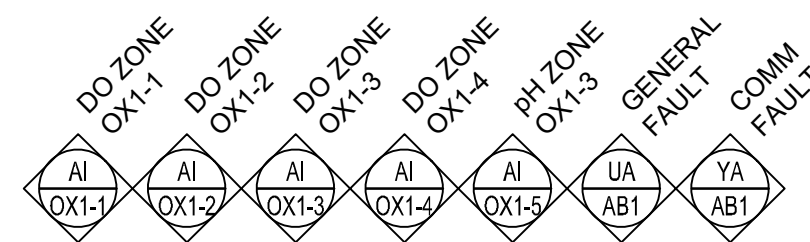
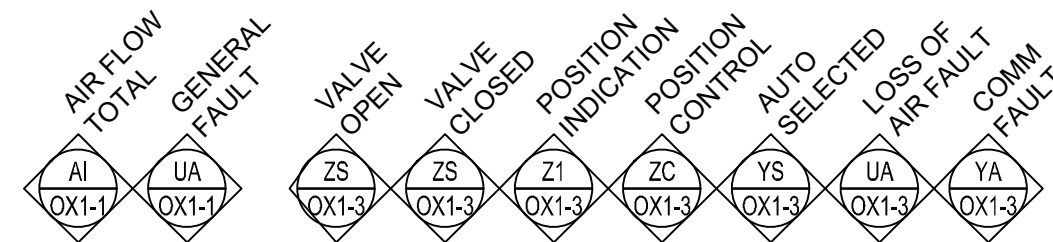
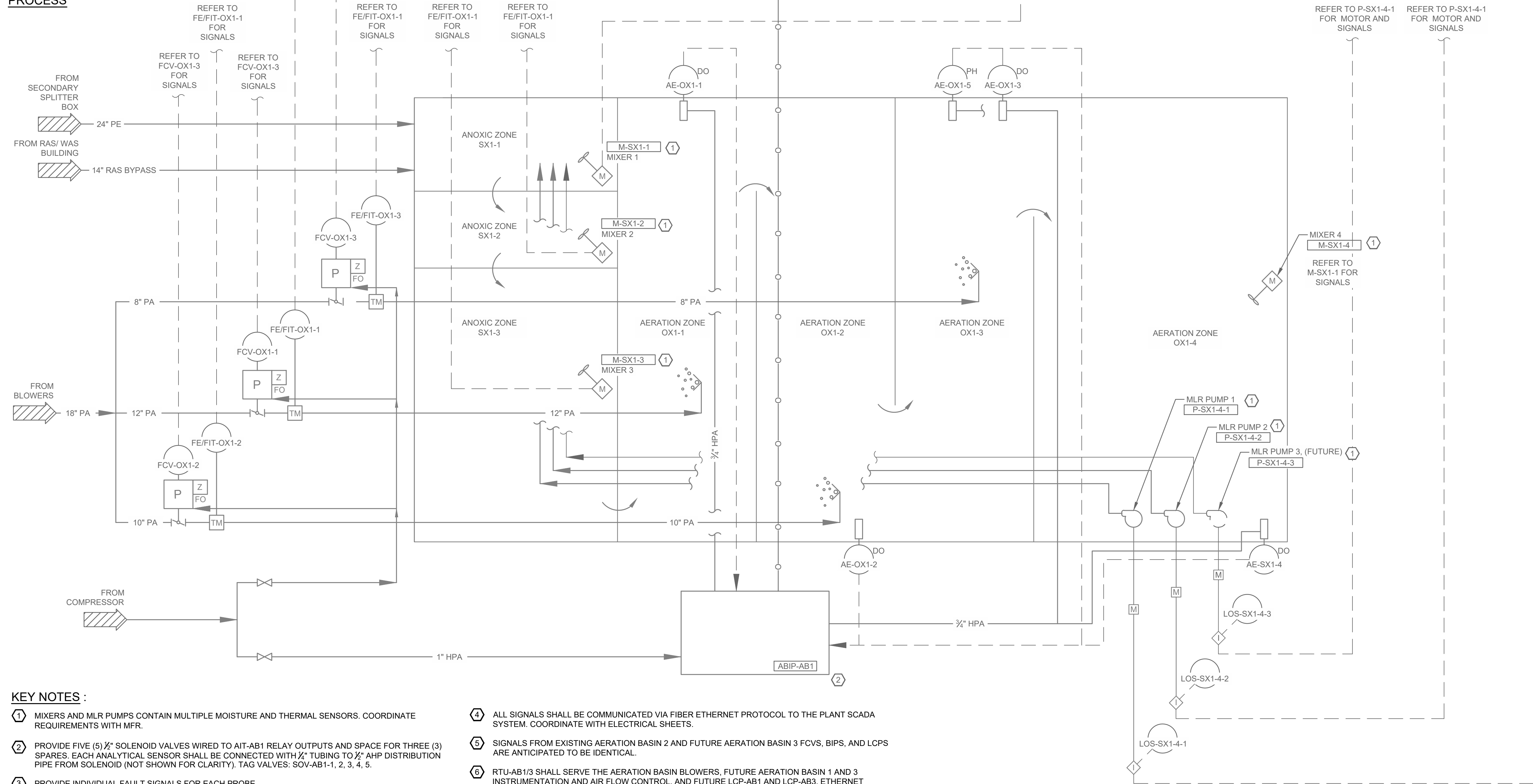
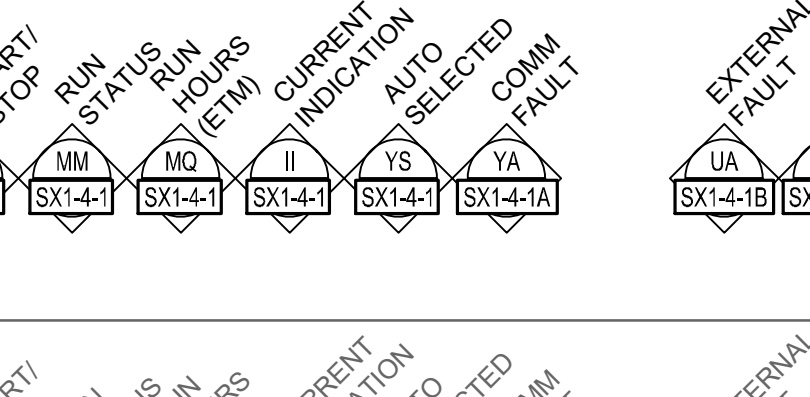
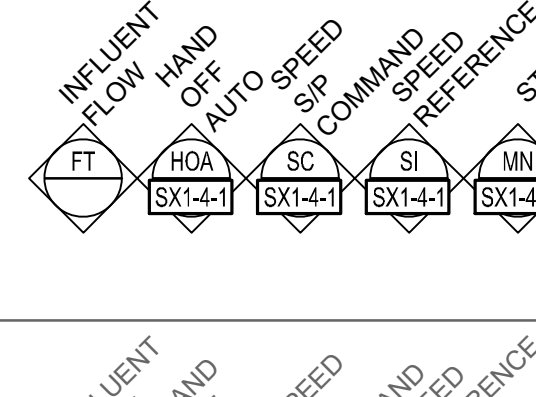
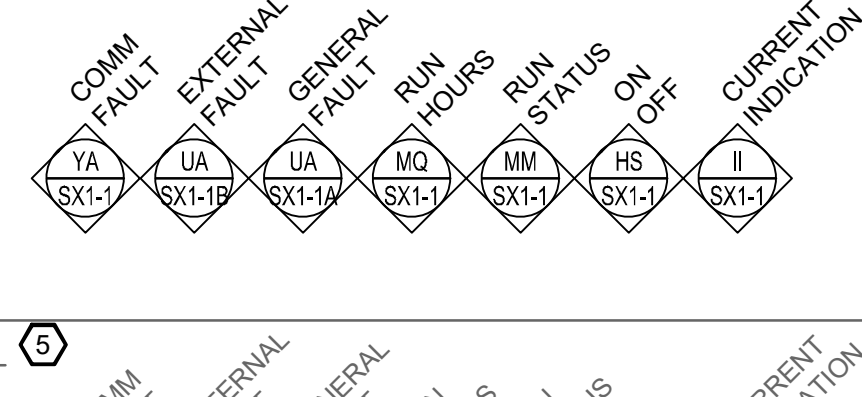
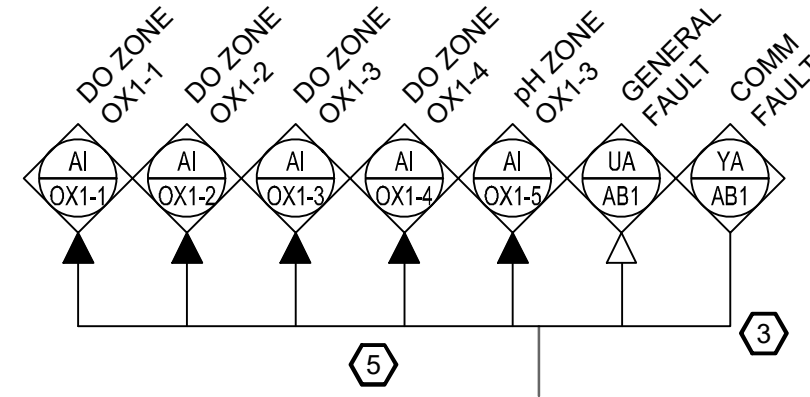
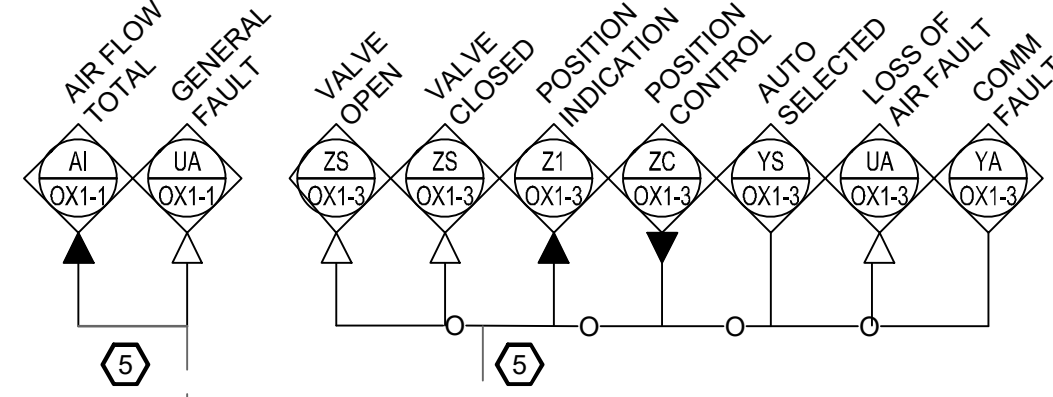
DWG. NO.
I-3

SHEET NO.
62 OF 68



1 Engineering Place
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RTU-AB1/3 

KEY NOTES :

- | | | | |
|---|---|---|--|
| ① | MIXERS AND MLR PUMPS CONTAIN MULTIPLE MOISTURE AND THERMAL SENSORS. COORDINATE REQUIREMENTS WITH MFR. | ④ | ALL SIGNALS SHALL BE COMMUNICATED VIA FIBER ETHERNET PROTOCOL TO THE PLANT SCADA SYSTEM. COORDINATE WITH ELECTRICAL SHEETS. |
| ② | PROVIDE FIVE (5) ½" SOLENOID VALVES WIRED TO AIT-AB1 RELAY OUTPUTS AND SPACE FOR THREE (3) SPARES. EACH ANALYTICAL SENSOR SHALL BE CONNECTED WITH ½" TUBING TO ½" AHP DISTRIBUTION PIPE FROM SOLENOID (NOT SHOWN FOR CLARITY). TAG VALVES: SOV-AB1-1, 2, 3, 4, 5. | ⑤ | SIGNALS FROM EXISTING AERATION BASIN 2 AND FUTURE AERATION BASIN 3 FCVS, BIPS, AND LCPs ARE ANTICIPATED TO BE IDENTICAL. |
| ③ | PROVIDE INDIVIDUAL FAULT SIGNALS FOR EACH PROBE. | ⑥ | RTU-AB1/3 SHALL SERVE THE AERATION BASIN BLOWERS, FUTURE AERATION BASIN 1 AND 3 INSTRUMENTATION AND AIR FLOW CONTROL, AND FUTURE LCP-AB1 AND LCP-AB3. ETHERNET COMMUNICATION WITH EXISTING RTU-AB2 SHALL BE INSTALLED. |



DESIGNER: RL	DRAWN: JAC	CHECKED: JCM
DATE: 05/2026		
REVISION	DATE	DESCRIPTION

**BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
PROCESS & INSTRUMENTATION
DIAGRAM**



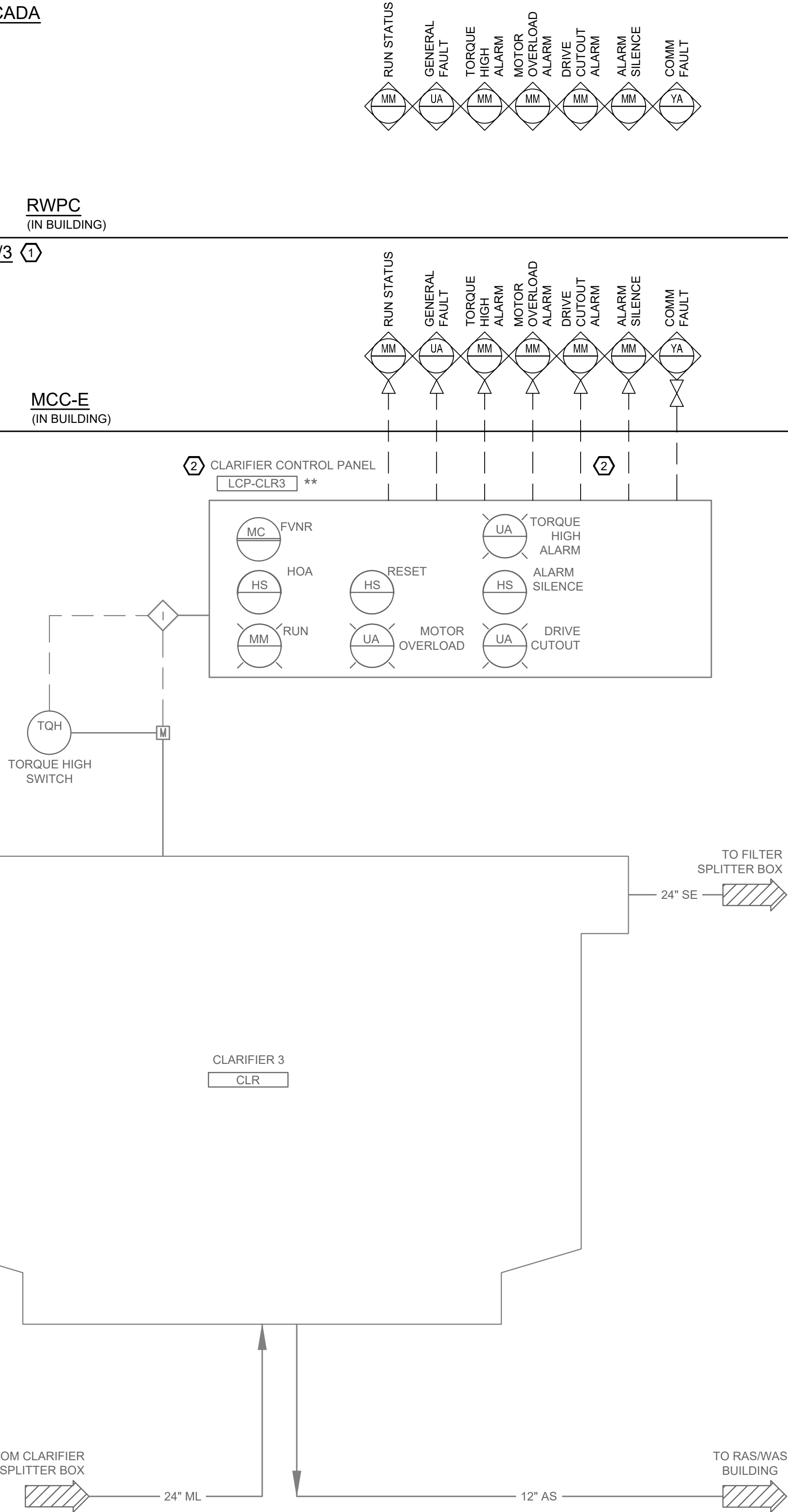
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PLANT SCADA

RWPC
(IN BUILDING)

RTU-AB1/3 ①

MCC-E
(IN BUILDING)



KEY NOTES :

- ① RTU-AB1/3 SHALL ACCOMMODATE ALL SIGNALS FROM THE EXISTING WESTECH LOCAL CONTROL PANELS FOR CLARIFIERS 2 AND 3, AND FUTURE CLARIFIER 4. COORDINATE AVAILABLE SIGNALS WITH EXISTING CONTROL PANELS.
- ② EXISTING LOCAL CONTROL PANELS FOR CLARIFIERS 1 AND 2 ARE IDENTICAL AND SEND IDENTICAL SIGNALS. FUTURE LCPCLR4 IS ALSO ASSUMED TO BE IDENTICAL.

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DESIGN: RL
DATE: 05/2026

DRAWN: JAC

CHECKED: JCM

BULLHEAD CITY SECTION 10
BLOWER BUILDINGS IMPROVEMENTS
PROCESS & INSTRUMENTATION
DIAGRAM

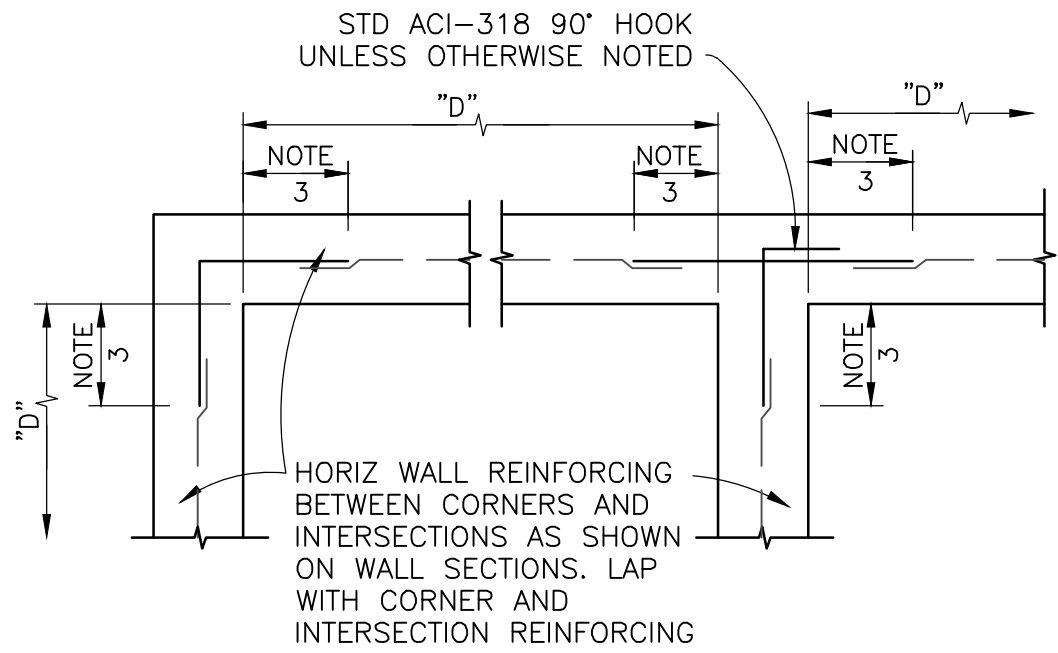
REVISION
DATE

DESCRIPTION

DWG. NO.
I-5

SHEET NO.
64 OF 68

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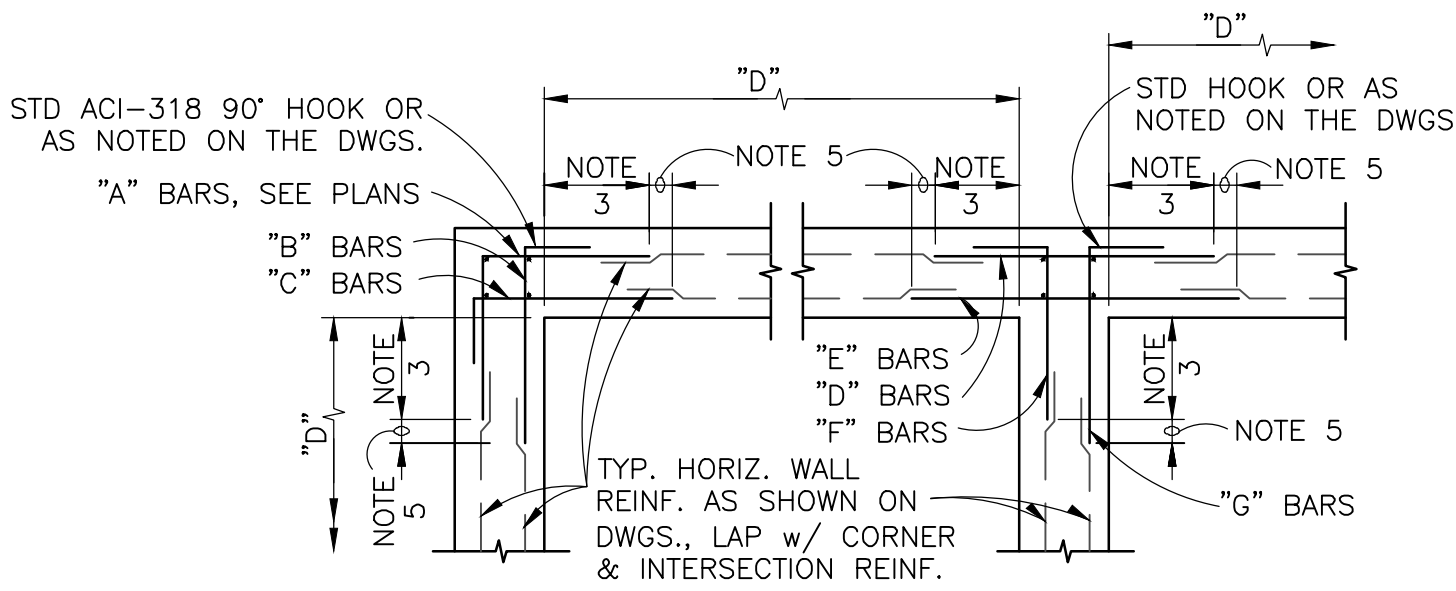


CORNER AND INTERSECTION REINFORCING NOTES:

1. TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCING LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT. FOR SIZE AND SPACING SEE PLANS. ALL HORIZONTAL REINFORCING AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING.
2. WHERE THE CORNER OR INTERSECTION REINFORCING SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCING SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCING BETWEEN THE CORNERS OR INTERSECTIONS.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF D/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2.0 FEET.
4. D = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION

TYPICAL SINGLE MAT CORNER AND INTERSECTION REINFORCING
N.T.S.

3306

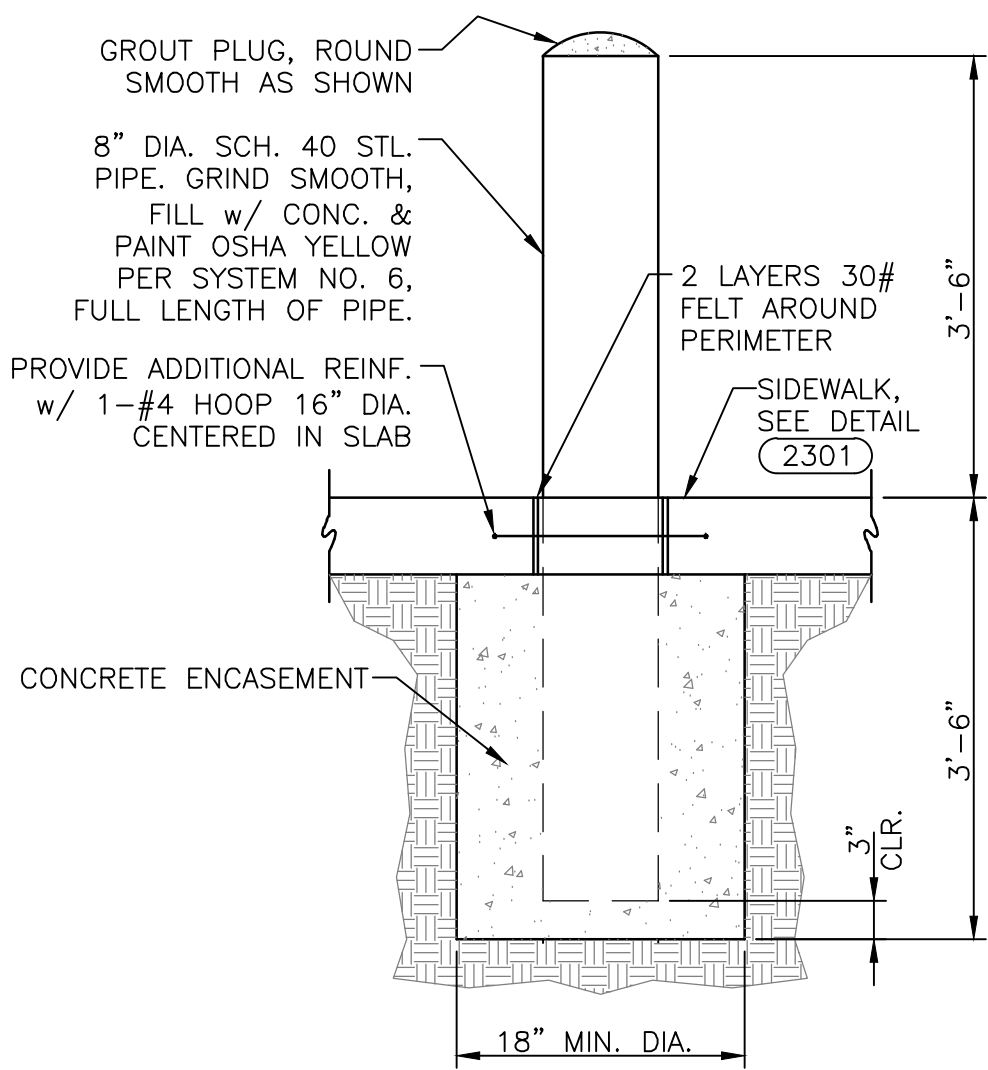


CORNER AND INTERSECTION REINFORCING NOTES:

1. TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCING LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT. FOR SIZE AND SPACING SEE PLANS. ALL HORIZONTAL REINFORCING AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING.
2. WHERE THE CORNER OR INTERSECTION REINFORCING SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCING SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCING BETWEEN THE CORNERS OR INTERSECTIONS.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF D/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2.0 FEET.
4. D = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION
5. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 5" SHALL BE EQUAL TO ONE "LAP LENGTH" AS REQUIRED BY THE GENERAL STRUCTURAL NOTES. USE THE LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO REINFORCING BARS BEING SPLICED.
6. UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND, "F" AND "G" BARS ARE THE SAME SIZE AND SPACING.

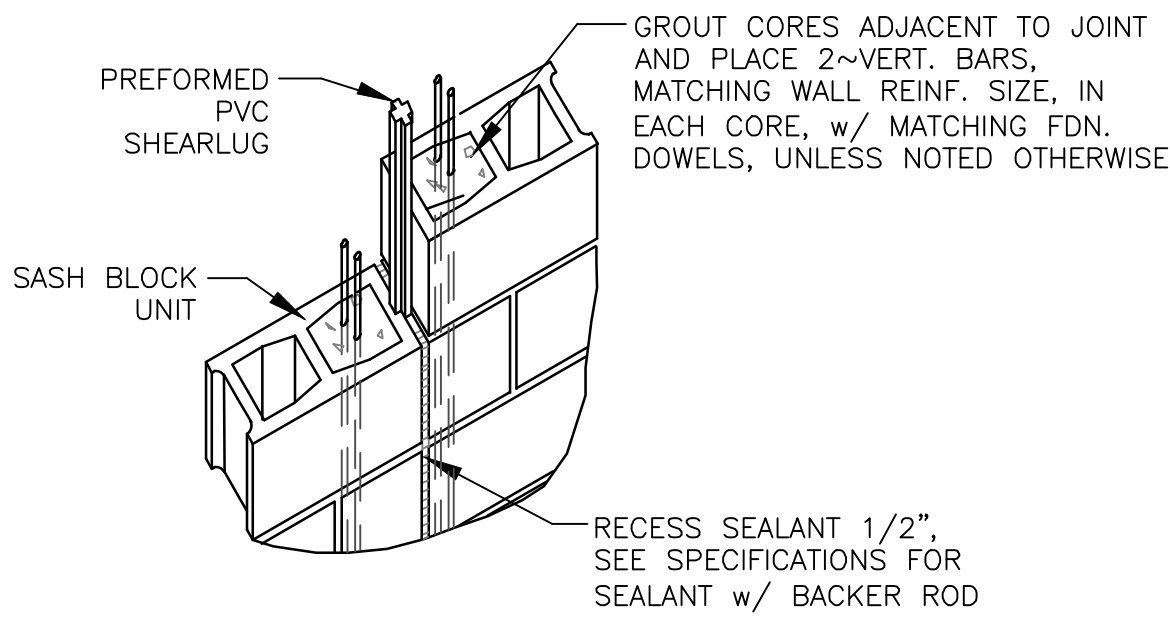
TYPICAL DOUBLE MAT CORNER & INTERSECTION REINFORCING
N.T.S. (SEE PLANS FOR SIZE AND SPACING)

3307



GUARD POST DETAIL
N.T.S.

5011

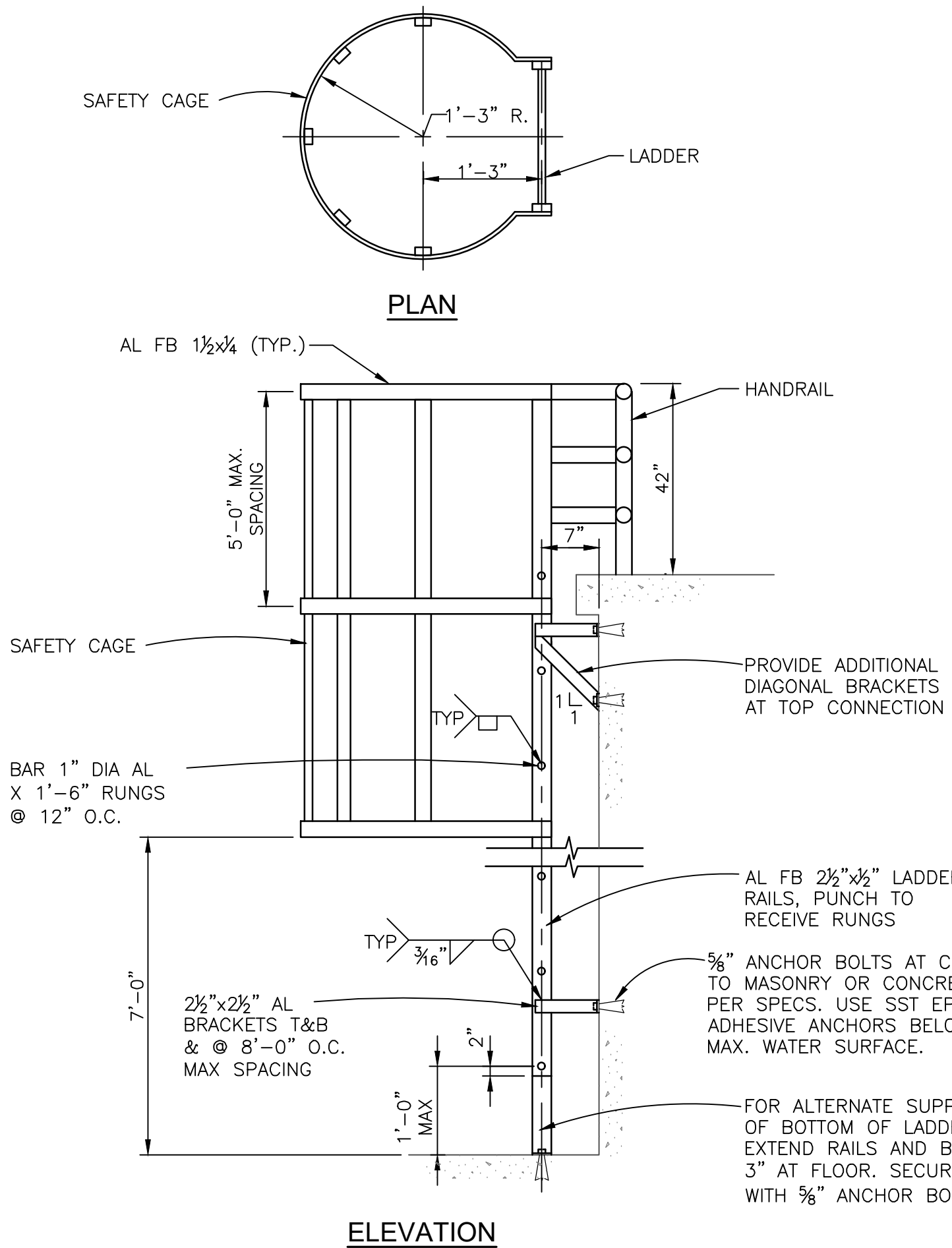


NOTES:

1. BOND BEAM REINFORCING BARS & JOINT REINF. ARE TO STOP AT THE CONTROL JOINTS EXCEPT FOR THE BOND BEAMS WITH CONTINUOUS REINFORCING LOCATED AT THE ROOF AND TOP OF WALLS AS NOTED ON THE DWGS.
2. BRICK VENEER NOT SHOWN, SEE ARCHITECTURAL
3. BOND BEAMS WITH CONTINUOUS REINFORCING SHALL HAVE DUMMY JOINTS PROVIDED IN LINE WITH THE CONTROL JOINTS.

MCJ-C.M.U. WALL CONTROL JOINT
N.T.S.

4120



NOTES:

1. USE ALL ALUMINUM CONSTRUCTION.
2. PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE PER SPECS.
3. LADDER AND CAGE AS MANUFACTURED BY WASHINGTON ALUMINUM COMPANY OR EQUAL.

LADDER
N.T.S.

5030



CHECKED: JCM

DRAWN: JAC

DESIGN: ECS

DATE: 05/2026

DESCRIPTION

REVISION DATE

BULLHEAD CITY SECTION 10

BLOWER BUILDINGS IMPROVEMENTS

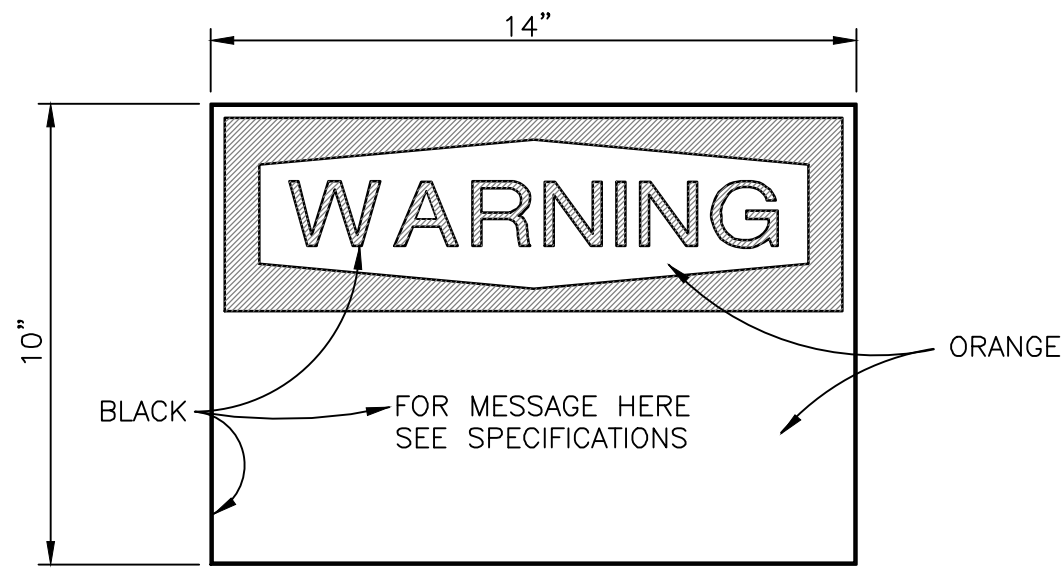
STANDARD DETAILS



DWG. NO.
SD-2

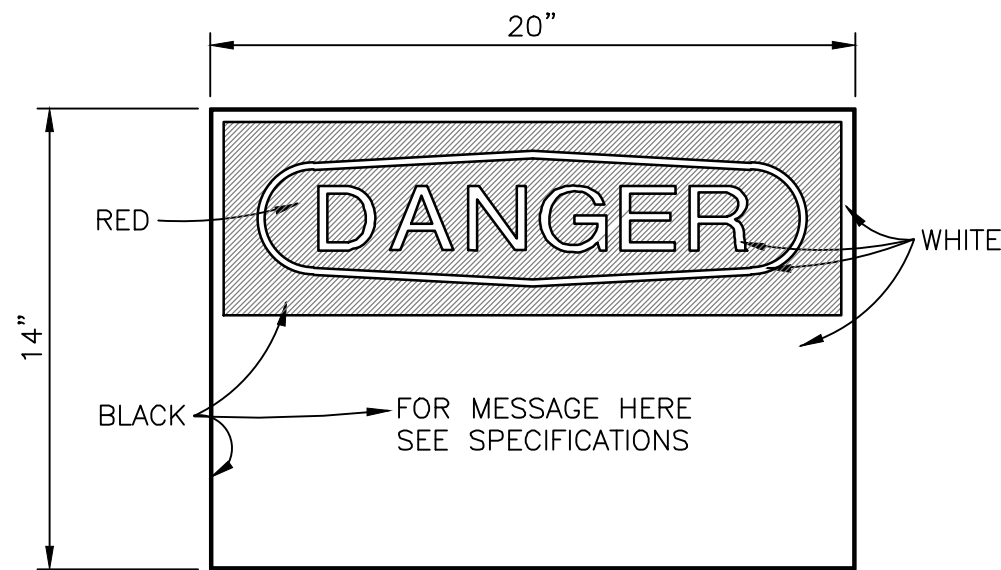
SHEET NO.
66 OF 68

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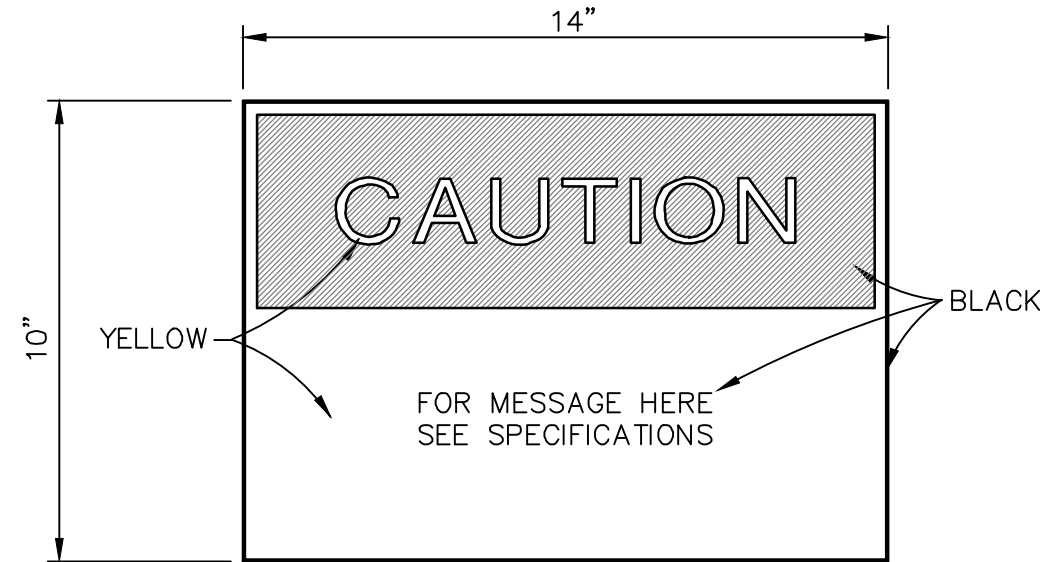
SIGN DETAIL
N.T.S.

10134



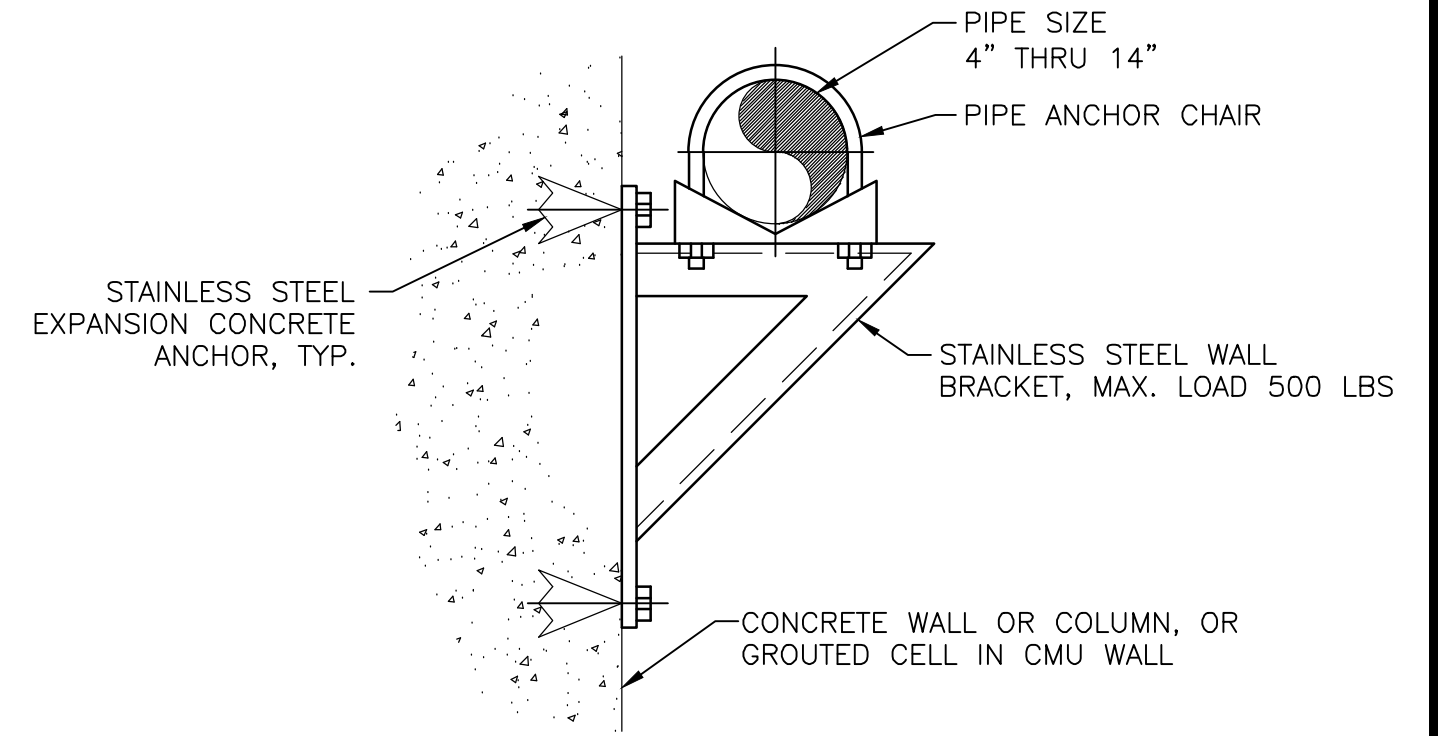
SIGN DETAIL
N.T.S.

10135



SIGN DETAIL
N.T.S.

10136

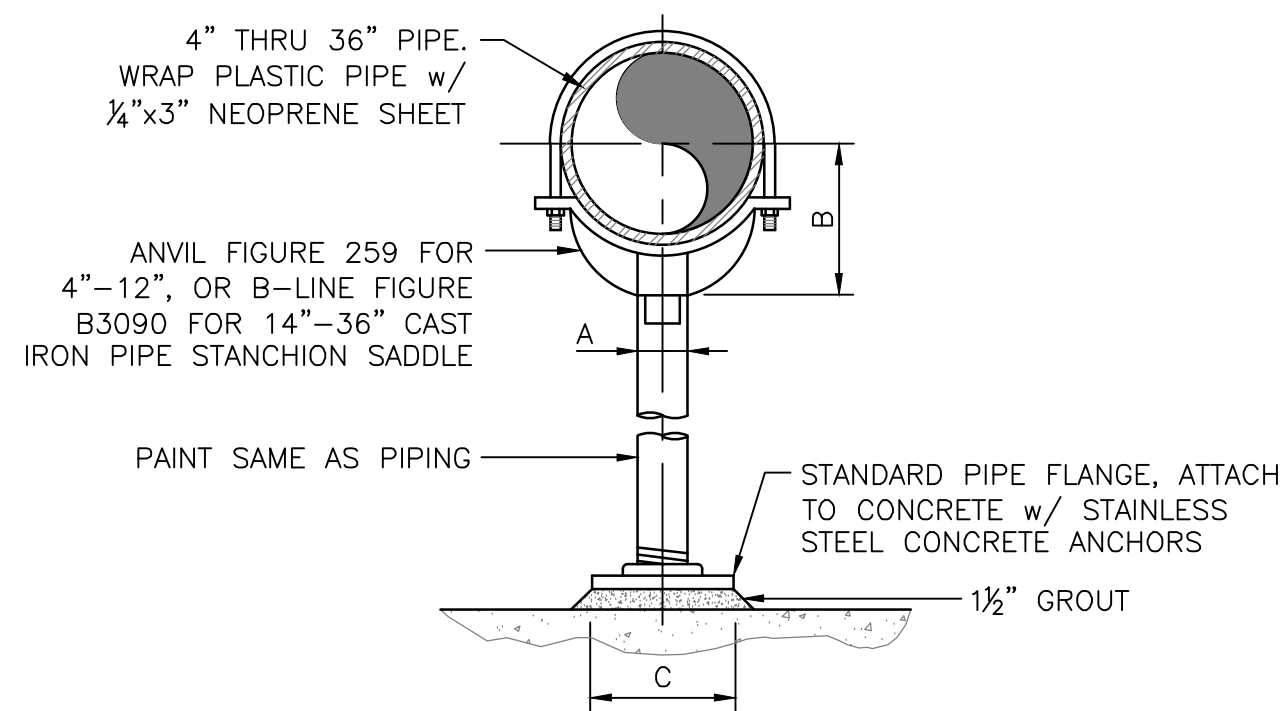


PIPE SUPPORT - MEDIUM
N.T.S.

15504

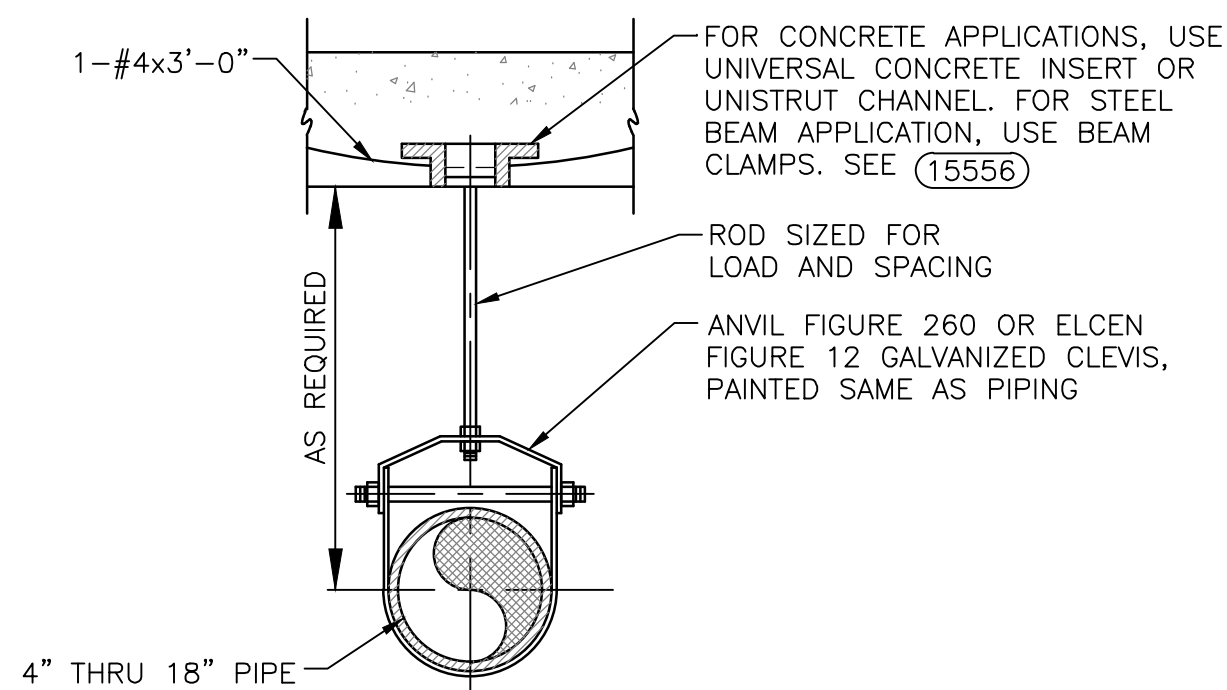
DIMENSION TABLE			
PIPE SIZE	A	B	C
4"	3"	4 $\frac{3}{16}$ "	7 $\frac{1}{2}$ "
5"	3"	4 $\frac{1}{4}$ "	7 $\frac{1}{2}$ "
6"	3"	5 $\frac{1}{16}$ "	7 $\frac{1}{2}$ "
8"	3"	6 $\frac{1}{16}$ "	7 $\frac{1}{2}$ "
10"	3"	8 $\frac{1}{16}$ "	7 $\frac{1}{2}$ "
12"	3"	8 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "
14"	4"	10 $\frac{1}{4}$ "	9"
16"	4"	12 $\frac{3}{8}$ "	9"
18"	4"	13 $\frac{7}{8}$ "	9"
20"	6"	15 $\frac{3}{8}$ "	11"
22"	6"	16 $\frac{3}{8}$ "	11"
24"	6"	17 $\frac{3}{8}$ "	11"
26"	6"	19 $\frac{1}{8}$ "	11"
30"	6"	21 $\frac{1}{8}$ "	11"
32"	6"	22 $\frac{1}{2}$ "	11"
36"	8"	24 $\frac{1}{2}$ "	13 $\frac{1}{2}$ "

- NOTES:
1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO ANVIL FIGURE 167 OR B-LINE FIG. B3154, WHERE PIPING IS INSULATED.
 2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE 'W' OR KORFUND KORPAD 40, UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
 3. FOR BASE, HEIGHT AND FLANGE DIMENSIONS SEE TABLE.



PIPE SUPPORT
N.T.S.

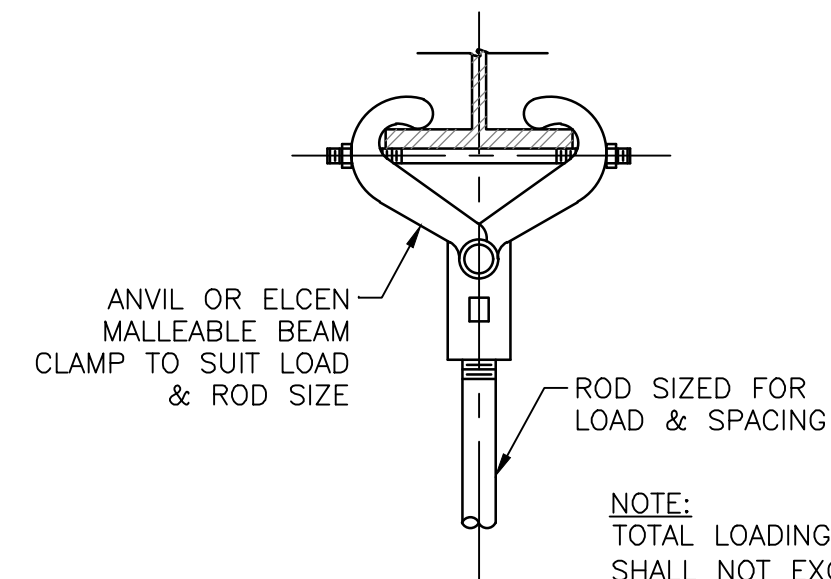
15510



- NOTES:
1. FOR INSULATED PIPES, USE ANVIL FIGURE 167 OR ELCEN FIGURE 219 INSULATION PROTECTION SHIELD.
 2. TOTAL LOADING ON EACH CONCRETE INSERT OR OTHER TYPE HANGER ROD ANCHOR SHALL NOT EXCEED MANUFACTURER'S RECOMMENDED LOADINGS.

PIPE HANGER
N.T.S.

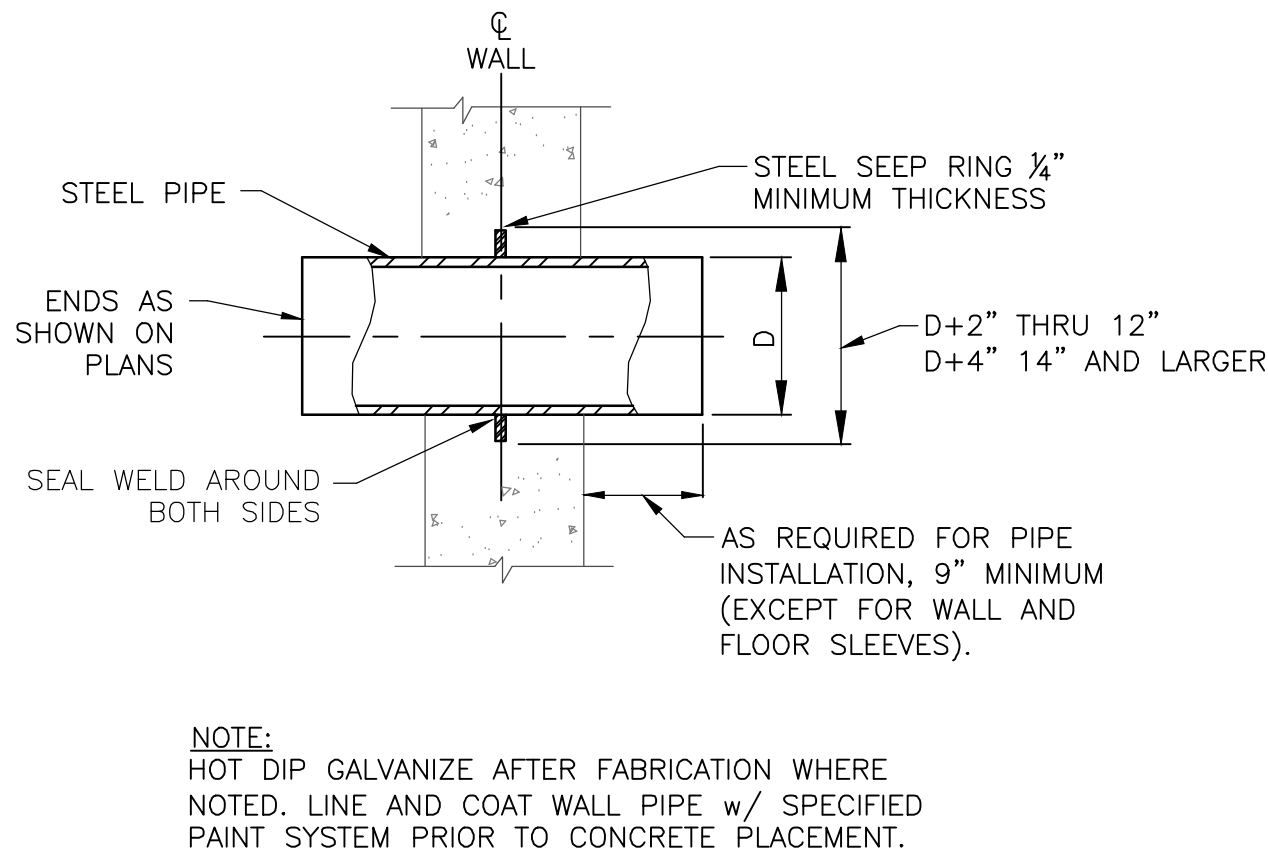
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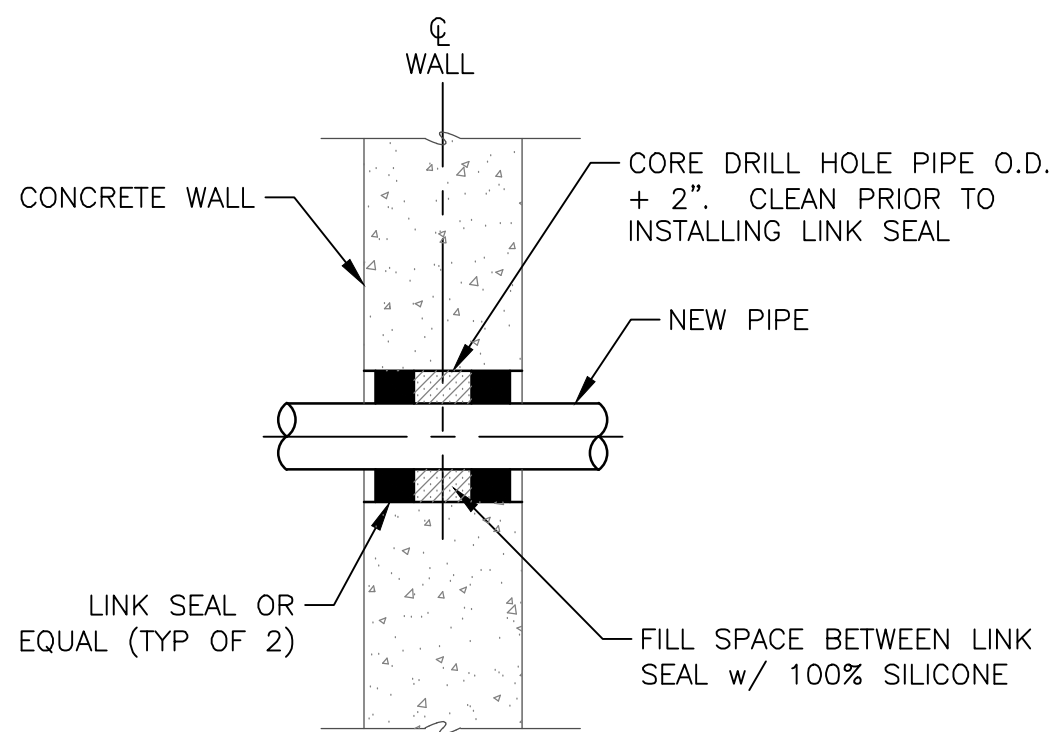
BEAM CLAMP
N.T.S.

15556

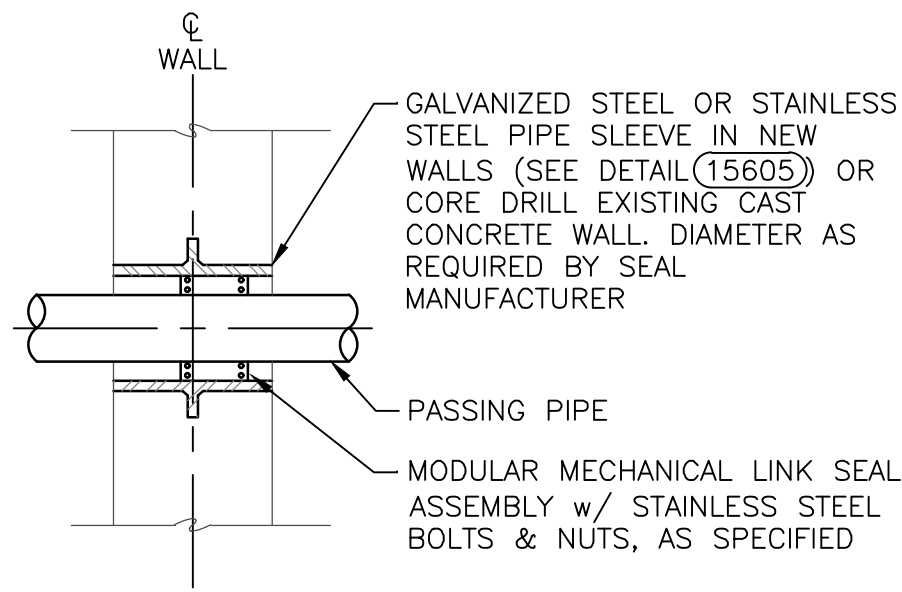
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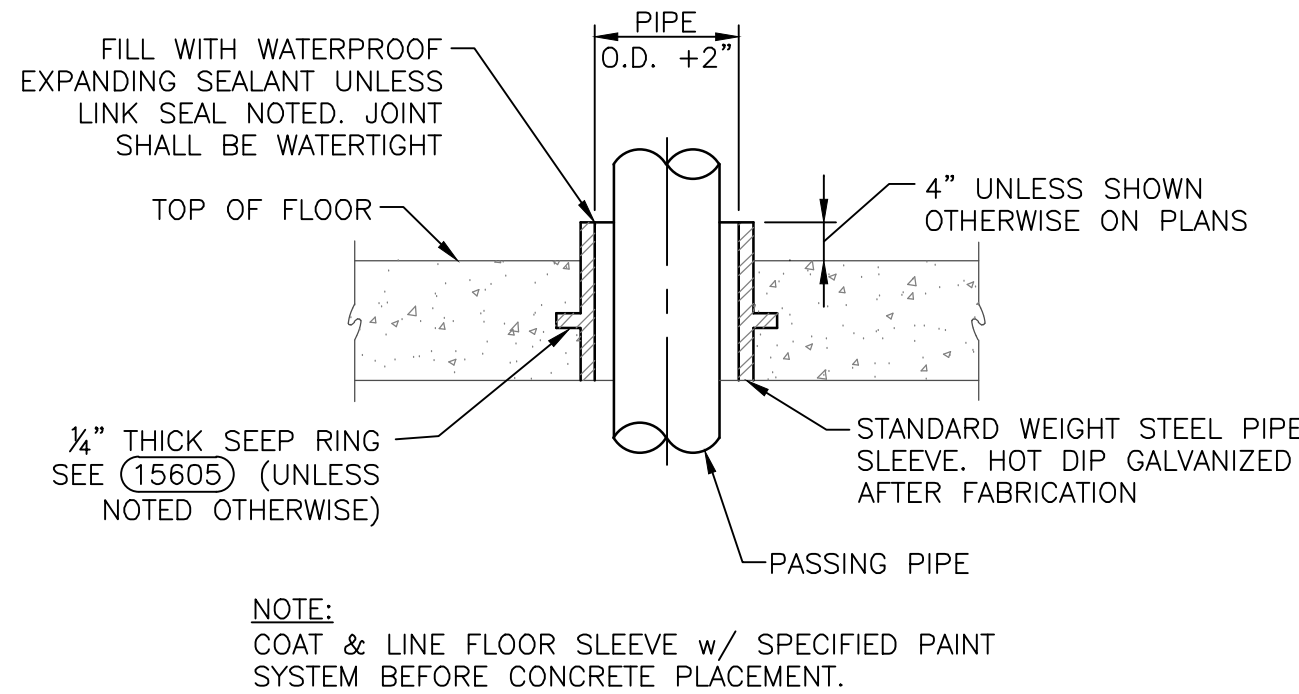
STEEL WALL PIPE 15605
N.T.S.



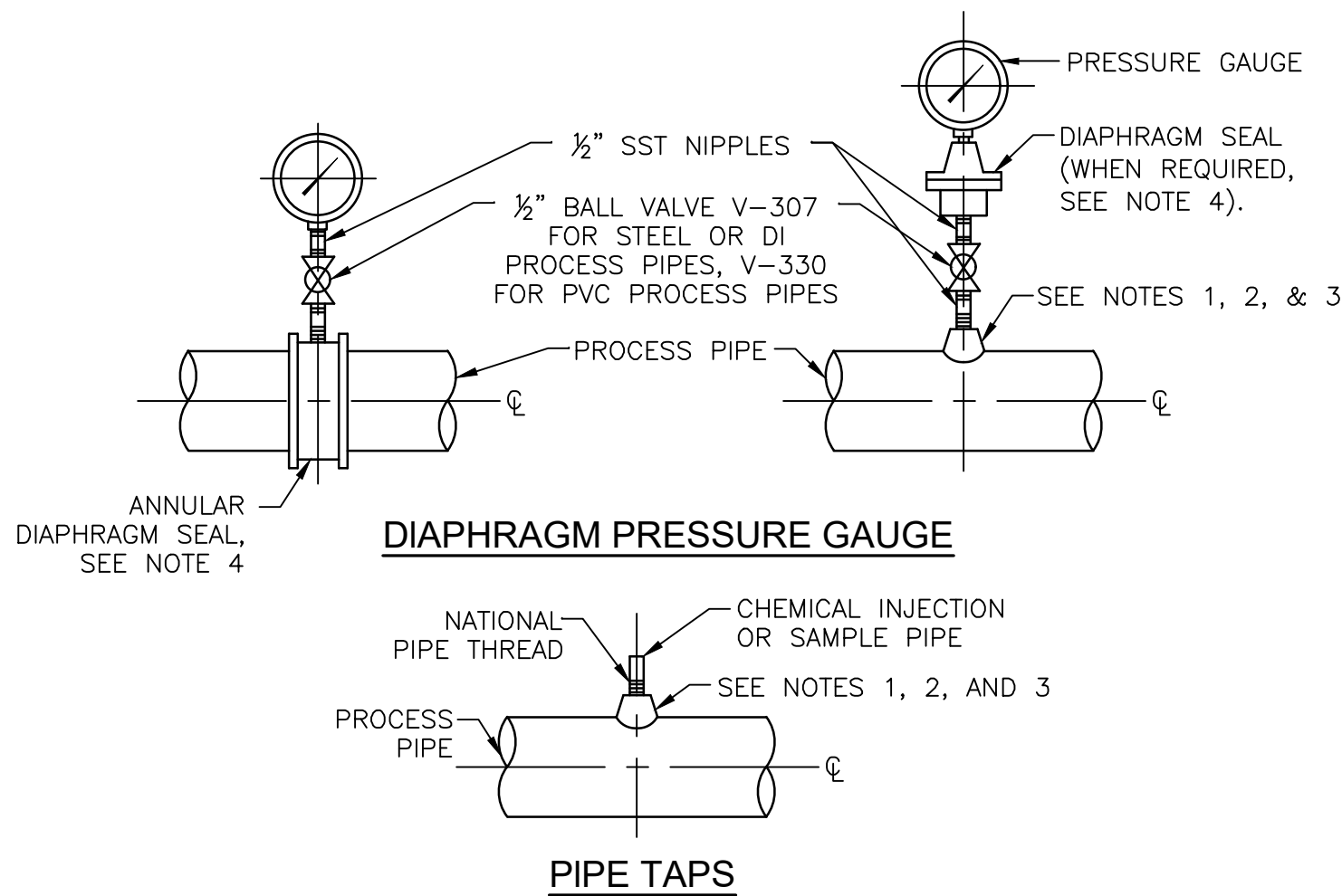
WALL PENETRATION SEAL DETAIL 15606
N.T.S.



**TYPE "A" WALL
PENETRATION SEAL DETAIL** 15607
N.T.S.

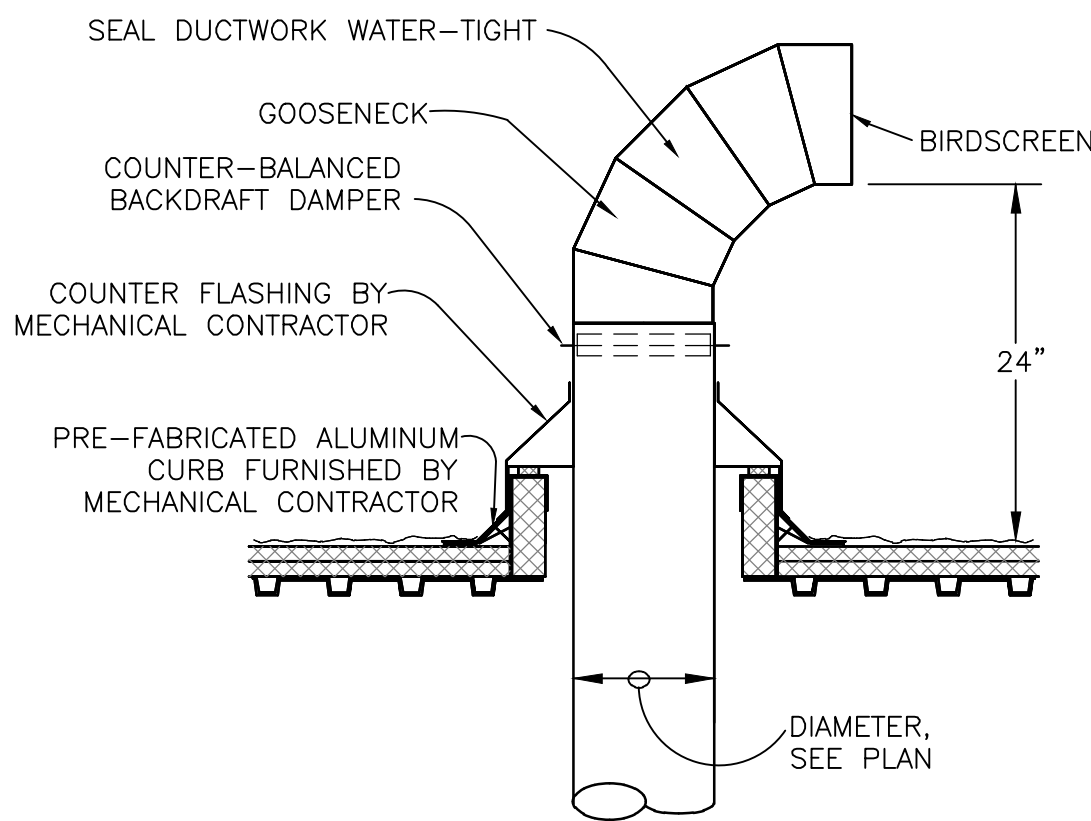


FLOOR SLEEVE DETAIL 15621
N.T.S.

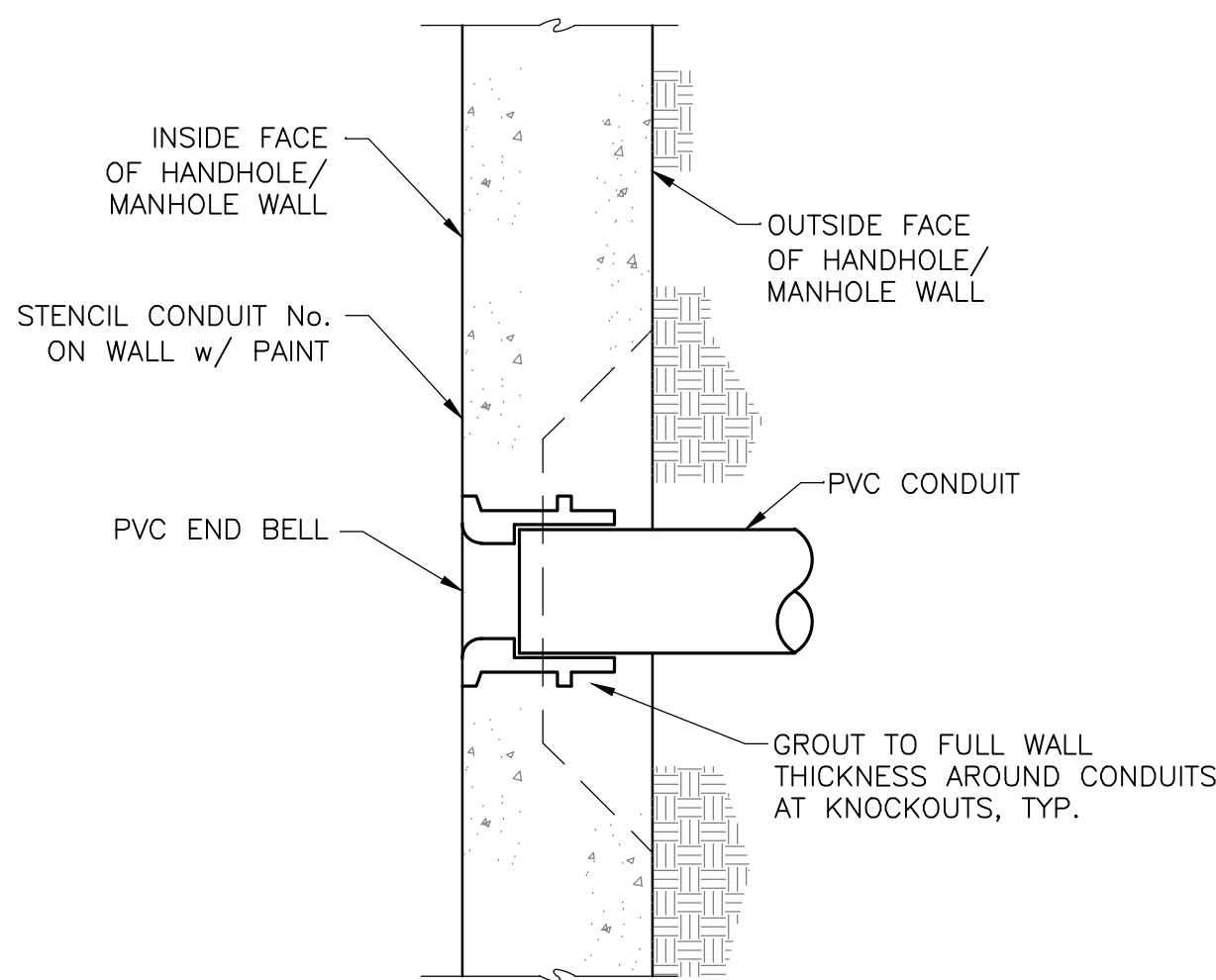


- NOTES:**
1. FOR STEEL, GALVANIZED STEEL AND PVC 2 1/2" AND SMALLER USE A BUSHING IN A TEE.
 2. FOR DUCTILE IRON, ALL SIZES, USE PIPE SADDLE WITH BUSHING.
 3. FOR STEEL AND STAINLESS STEEL PIPES 3" AND LARGER, AND PRESSURE VESSELS, USE THRED-O-LET AS SHOWN.
 4. USE DIAPHRAGM SEAL ON ALL SERVICES EXCEPT AIR, POTABLE WATER, & NONPOTABLE WATER. USE ANNULAR DIAPHRAGM FOR SLUDGE SERVICES.
 5. PROVIDE SNUBBER FOR POSITIVE DISPLACEMENT PUMP APPLICATIONS.

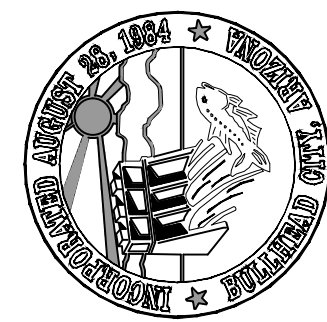
PRESSURE GAUGE OR PIPE TAP DETAILS 15680
N.T.S.



VENT UP THRU ROOF 15865
N.T.S.



CONDUIT HANDHOLE/MANHOLE ENTRANCE 16320
N.T.S.



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