



LAKE HAVASU CITY, ARIZONA ADDENDUM NO. 2

Booster Sta 4 Improvements Project
Project 108029

DATED: NOVEMBER 15, 2023

This Addendum No. 2 forms a part of the contract described above.

Item No. 1:

Changes have been made to the scope of the project in that the planned installation of the PRV station on Cherry Tree Blvd has been removed. Please replace all of the project plans with the revised plan set attached to this addendum that reflects those changes.

Item No. 2:

With the removal of the scope of work for installation of the PRV Station on Cherry Tree Blvd, Bid Item 5 description changes so it only relates to the connection work on Cherry Tree Lane. Please replace project specifications page 00310-02 of the original bid package with the page 00310-02 attached to this addendum.

Item No. 3:

The bid opening date of November 29th, 2023, as stated on the NIB and where appropriate in the specs, has been changed to December 13th, 2023. Contractor is notified of this change via this addendum.

Item No. 4:

There is now a **non-mandatory pre-bid meeting** to be held onsite on Thursday, November 30th at 1:30 pm. Contractor is notified of this change via this addendum.

Item No. 5:

The deadline for questions of November 17th, 2023, by 3:00 pm, as stated on the NIB and where appropriate in the specs, has been changed to December 1st, 2023. Contractor is notified of this change via this addendum.

LAKE HAVASU CITY, ARIZONA

PROJECT NO. 108029

BOOSTER STATION 4 IMPROVEMENTS

FINAL DESIGN DRAWINGS

NOVEMBER 2023

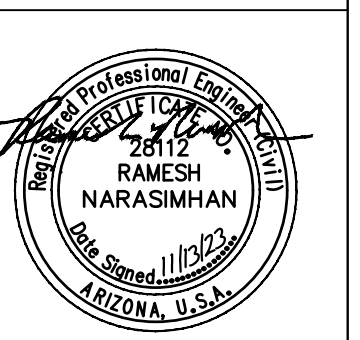


NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

Designed by: GB	Drawn by: KWB	Checked by: RN	Date: 07-07-23	Dwg scale: AS NOTED
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COVER SHEET

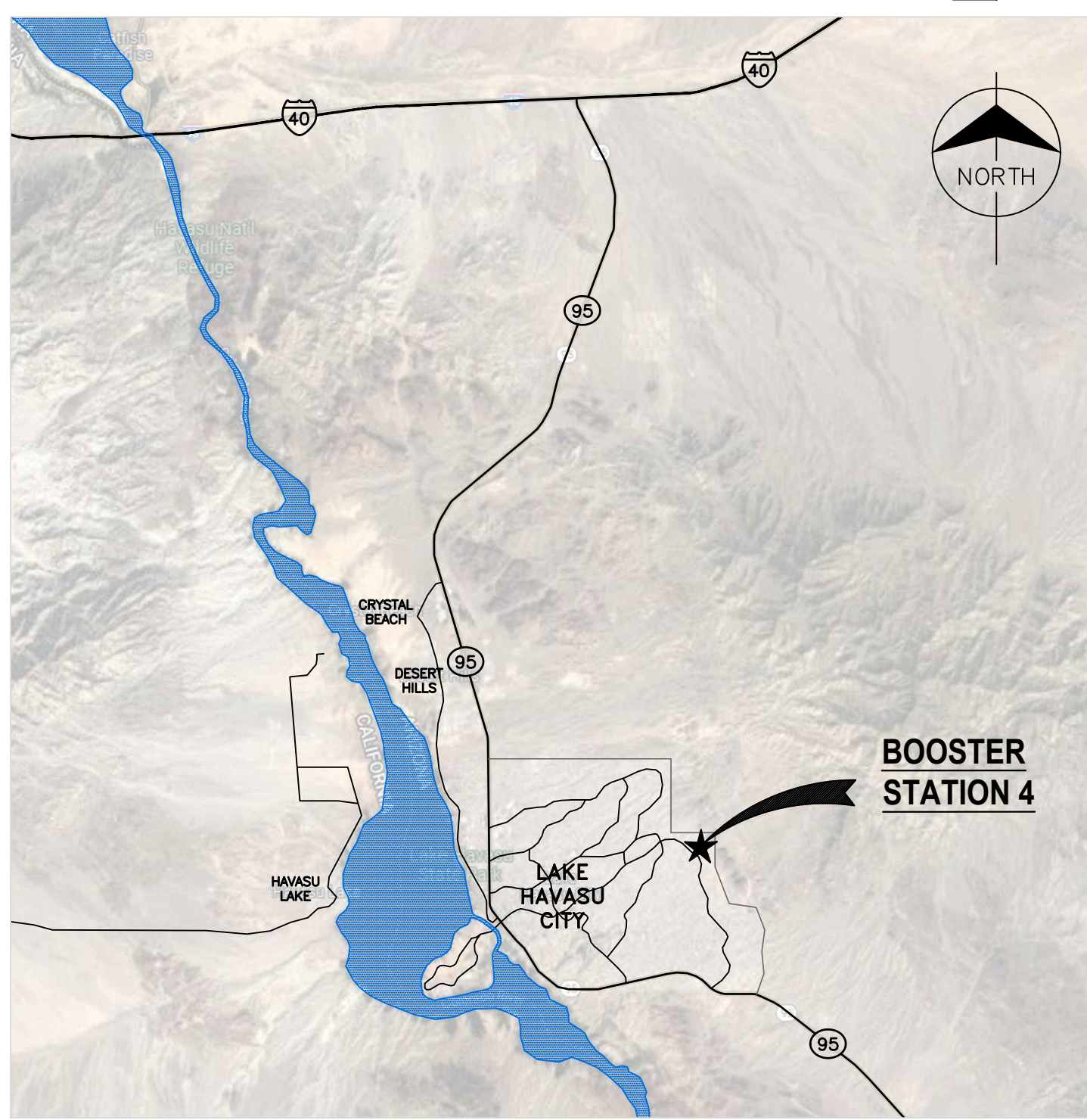


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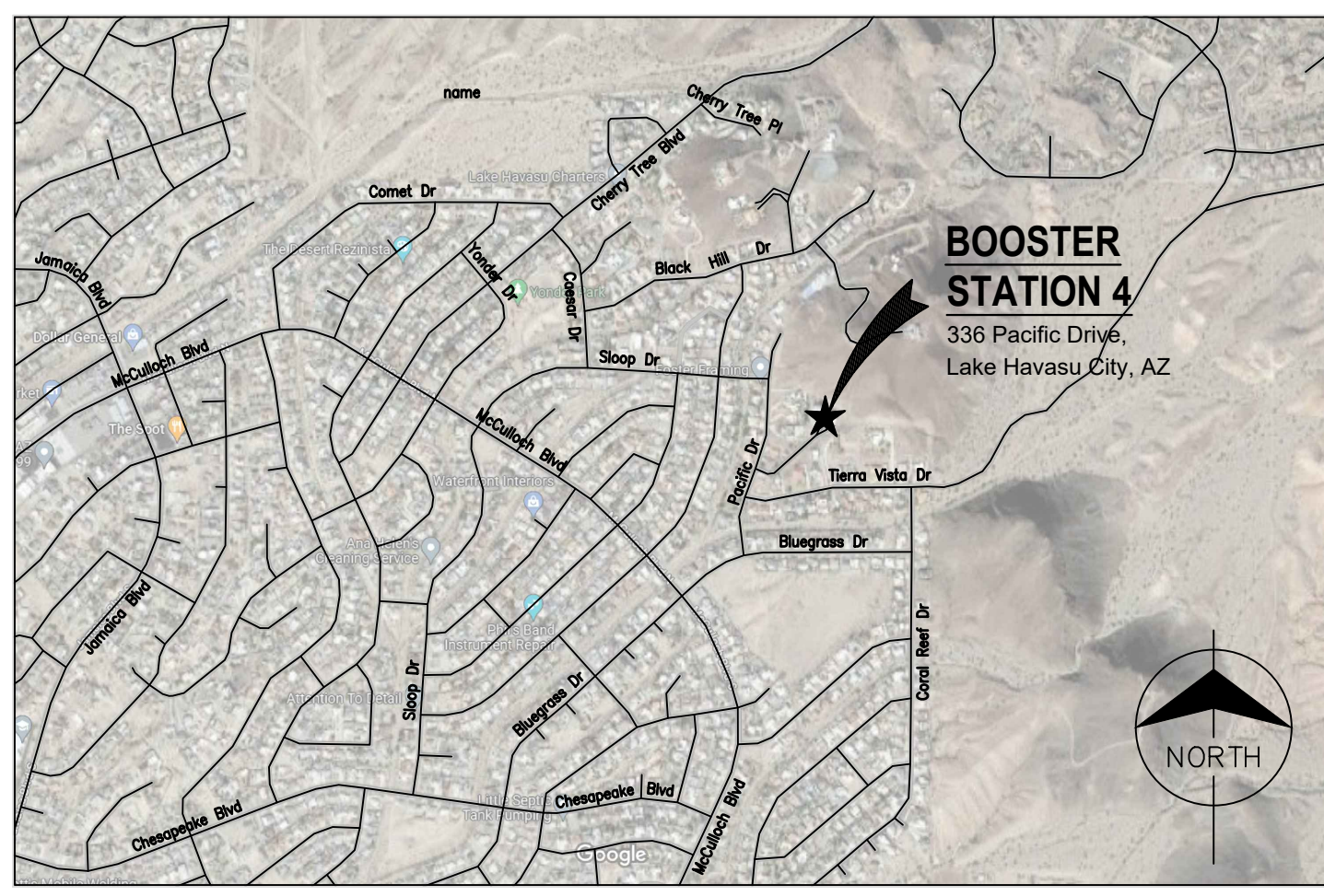
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LOCATION MAP



VICINITY MAP

CITY COUNCIL

CAL SHEEHY	MAYOR
DAVID LANE	VICE MAYOR
JIM DOLAN	COUNCIL MEMBER
JENI COKE	COUNCIL MEMBER
NANCY CAMPBELL	COUNCIL MEMBER
MICHELE LIN	COUNCIL MEMBER
CAMERON MOSES	COUNCIL MEMBER

CITY MANAGER

JESS KNUDSON

CITY ENGINEER

GREG FROSLIE, P.E.

PROJECT MANAGER

JASON HART

UTILITY CONTACTS

LAKE HAVASU CITY (WASTEWATER)	(928) 855-3999
LAKE HAVASU CITY (WATER)	(928) 855-2618
SUDDEN LINK	(928) 855-9855
FRONTIER COMMUNICATION	(928) 453-0541
UNISOURCE ENERGY SERVICES (GAS)	(928) 505-7025
UNISOURCE ENERGY SERVICES (ELECTRIC)	(928) 505-7031



202 E. Earll Drive Suite 110
Phoenix, AZ 85012
Phone (602) 629-0006
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GENERAL NOTES

GENERAL

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL IMPROVEMENTS ARE BUILT, CONSTRUCTED, AND/OR INSTALLED IN ACCORDANCE WITH THESE PROJECT PLANS AND THE TECHNICAL SPECIFICATIONS FOR THE WORK.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE SURVEY, LAYOUT, AND STAKING OF THE PROPOSED IMPROVEMENTS FOR CONSTRUCTION PURPOSES.
3. IF THERE ARE ANY QUESTIONS REGARDING THE PLANS OR THE INTENT OF THE DESIGN, THE CONTRACTOR SHALL CONTACT THE ENGINEER AND DISCUSS THE ISSUE SO THAT IT IS CLARIFIED OR RESOLVED PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL TAKE THE NECESSARY STEPS AND PRECAUTIONS TO PROTECT AND SAFEGUARD ADJACENT IMPROVEMENTS AND PROPERTY FROM DAMAGE DUE TO CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND OBTAINING ANY PERMITS NEEDED TO COMPLETE THE PROJECT, POTENTIALLY INCLUDING AN AGENCY BUSINESS LICENSE, RIGHT OF WAY WORK PERMIT, WATER USAGE AGREEMENT, ETC., AND INCLUDE THE COSTS FOR THE SAME, IF ANY, IN THE PROJECT BID PRICES.
6. ALL PROJECT IMPROVEMENTS INCLUDING BUT NOT LIMITED TO MANHOLE FRAMES, VALVE BOXES, VAULTS, HANDHOLES, FIRE HYDRANTS, ETC., SHALL BE SET OR RESET TO FINISHED GRADE OF THE SURROUNDING GROUND OR PAVEMENT SURFACE WHETHER OR NOT SPECIFICALLY CALLED OUT ON THE PLANS OR IN THE SPECIFICATIONS.

UTILITIES

1. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES OR UTILITY STRUCTURES SHOWN ON THESE PLANS SHOULD BE VERIFIED BASED ON AN AZ 811 UTILITY MAPPING REQUEST.
2. THE LOCATION OF THE UTILITIES MAY OR MAY NOT BE ACCURATELY SHOWN ON THE UTILITY MAPPING PROVIDED AND ON THE PROJECT PLANS.
3. THERE MAY BE OTHER UTILITY LINES AND FACILITIES PRESENT THAT ARE IN SERVICE OR HAVE BEEN ABANDONED WITHIN THE PROJECT CORRIDOR OR AREA THAT ARE NOT SHOWN ON THE MAPPING AND ON THE PLANS.
4. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AZ811 (BLUE STAKE) PRIOR TO COMMENCING ANY DIGGING ACTIVITIES TO HAVE THE LOCATIONS OF THE UTILITIES MARKED IN THE FIELD AT THE PROJECT SITE. EXISTING PIPING, ELECTRICAL, AND UTILITIES ARE BASED ON EXISTING RECORDS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL EXISTING PIPING, ELECTRICAL, AND UTILITIES AND AVOIDING DAMAGE TO THE SAME.
5. THE CONTRACTOR IS ALSO RESPONSIBLE FOR VISUALLY INSPECTING THE MARKED UTILITIES AT THE PROJECT SITE TO ASCERTAIN IF ANY POTENTIAL CONFLICTS EXIST BETWEEN THE PROPOSED IMPROVEMENTS UNDER THIS PROJECT AND THE EXISTING UTILITY FACILITIES.
6. THE CONTRACTOR SHALL 'POTHOLE' TO DETERMINE THE EXACT LOCATION AND DEPTH OF EXISTING UTILITY FACILITIES TO IDENTIFY ANY POTENTIAL CONFLICTS BETWEEN UTILITY FACILITIES AND THE PROPOSED IMPROVEMENTS AND, IF NEEDED, REVIEW THE INFORMATION WITH THE OWNER AND THE ENGINEER TO RESOLVE ANY POTENTIAL CONFLICT PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR SHALL OBSERVE ALL POSSIBLE PRECAUTIONS WHEN WORKING IN CLOSE PROXIMITY TO EXISTING UTILITY LINES AND/OR STRUCTURES TO PROTECT THE SAME AND AVOID ANY DAMAGE TO THE UTILITY FACILITIES.
8. SHOULD ANY UTILITY FACILITY BE DAMAGED BY THE CONTRACTOR'S ACTIVITIES, THE CONTRACTOR SHALL CONTACT AND COORDINATE WITH THE UTILITY OWNER FOR THE REPAIR OF THE FACILITY AT NO ADDITIONAL COST TO THE PROJECT.

CONSTRUCTION JOBSITE SAFETY

1. THE CONTRACTOR ASSUMES SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.
2. THIS SAFETY REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. NEITHER THE OWNER NOR THE ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS.
4. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, CONSTRUCTION, AND MAINTENANCE OF ALL SAFETY DEVICES INCLUDING SHORING.
5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS.
6. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES AND REGULATIONS AS SET FORTH BY OSHA CONCERNING THE PROJECT WORK AND JOBSITE ACTIVITIES.
7. CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL PLANS FOR DEMOLITION ITEMS.
8. PROVIDE TEMPORARY THRUST RESTRAINT FOR EXISTING PIPING WHENEVER THE WORK REQUIRES. CONTRACTOR SHALL REPLACE OR RESTORE THE EXISTING RESTRAINT SYSTEM TO LIKE-NEW CONDITION.
9. DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATION TO BE DETERMINED BASED UPON EQUIPMENT MANUFACTURER SELECTED.
10. WHERE INDICATED, DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED.
11. EXISTING EQUIPMENT TO BE REMOVED AND SALVAGED SHALL BE MARKED BY ENGINEER OR OWNER PRIOR TO WORK, UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS.
12. ALTHOUGH SUCH WORK MAY NOT BE SPECIFICALLY INDICATED, FURNISH AND INSTALL SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES AND DEVICES INCIDENTAL TO, OR NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.
13. CONTRACTOR TO MAINTAIN ACCESS FOR EMERGENCY RESPONSE VEHICLES DURING CONSTRUCTION.
14. CONTRACTOR SHALL PROVIDE TEMPORARY SAFETY AND SECURITY FENCING AND SITE IMPROVEMENTS AS NEEDED AT NO EXTRA COST.
15. CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT LEAST WEEKLY BY THE CONTRACTOR. KEEP SITE AREA CLEAN.
16. EXCAVATED SOIL IS TO BE USED TO FILL IN LOW SPOTS PRIOR TO BEING HAULED OFF SITE. CONTRACTOR SHALL ESTABLISH A SUITABLE STAGING AREA FOR STORAGE OF EXCAVATED SOIL.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY AT THE SITE WHILE CONSTRUCTION IS IN PROGRESS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE PUBLIC FROM ANY HAZARDS ARISING FROM CONSTRUCTION OPERATIONS AND PROTECTING EXISTING AND NEW IMPROVEMENTS FROM DAMAGE DUE TO ACCIDENT OR VANDALISM.
18. ALL MATERIALS WHICH MAY COME IN CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF INTERNATIONAL STANDARD 60 AND 61.
19. REFER TO PROJECT SPECIFICATION FOR ANY SUPPLEMENT DETAILS REFERRED TO IN THE DRAWINGS.
20. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
21. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.

22. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
23. UNLESS SHOWN ON THE DRAWINGS, ALL DISTURBED AREAS NOT RECEIVING A HARD SURFACE OR GRAVEL SURFACE SHALL BE GRADED SMOOTH AND COMPACTED AS SPECIFIED.
24. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES, SILT FENCING, RUNOFF CONTAINMENT BERMS, AND STRAW BALES ARE THE MINIMUM REQUIRED.
25. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE.
26. WHERE ALUMINUM IS TO BE EMBEDDED IN CONCRETE, THE ALUMINUM SHALL FIRST BE COATED WITH COAL TAR EPOXY.
27. BACKFILLING OF PIPING AND STRUCTURES SHALL NOT BE STARTED UNTIL INSTALLATION IS APPROVED BY THE OWNER.
28. UNLESS OTHERWISE NOTED, ALL PVC INSTALLED ABOVE GROUND SHALL BE PAINTED PER SPECIFICATION SECTION 09800.
29. THE CONTRACTOR SHALL ADJUST ALL EXISTING MANHOLES, VALVE BOXES, CLEANOUTS, BLIND FLANGED PIPING, AND FIRE HYDRANTS WITHIN WORK LIMITS REQUIRED TO MATCH PROPOSED FINAL GRADE.

GOVERNING BUILDING CODES:
 2018 INTERNATIONAL BUILDING CODE
 2017 NATIONAL ELECTRICAL CODE
 2018 INTERNATIONAL PLUMBING CODE
 2018 INTERNATIONAL FIRE CODE

ADEQ NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR DISINFECTION PER THE REQUIREMENTS OF BULLETIN NO. 10, CHAPTER 7.L.3 CONTRACTOR SHALL PROVIDE COPIES OF DISINFECTION TESTING RESULTS FROM AN ARIZONA STATE ACCREDITED LABORATORY TO SHOW THAT DISINFECTION HAS BEEN COMPLETED IN COMPLIANCE WITH ADEQ REQUIREMENTS.
2. NEW WATER SYSTEM COMPONENTS, INCLUDING PIPE, VALVES, FITTINGS, AND EQUIPMENT SHALL NOT BE PUT INTO SERVICE UNTIL DISINFECTION HAS BEEN COMPLETED IN ACCORDANCE WITH ENGINEERING BULLETIN NO. 8, AAC R9-8-266.B OR AWWA C652-92.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PRESSURE AND LEAKAGE TESTING PER THE REQUIREMENTS OF BULLETIN NO. 10, CHAPTER 7.L.2, PRESSURE AND LEAKAGE TESTING. TESTS SHALL BE WITNESSED BY THE ENGINEER AND/OR OWNER AND COPIES OF THE TESTING RESULTS SHALL BE PROVIDED TO THE ENGINEER.
4. IN ACCORDANCE WITH ARIZONA ADMINISTRATIVE CODE 0618 (A.A.C). R18-5-504, ALL CONSTRUCTION MATERIALS SHALL BE LEAD FREE.

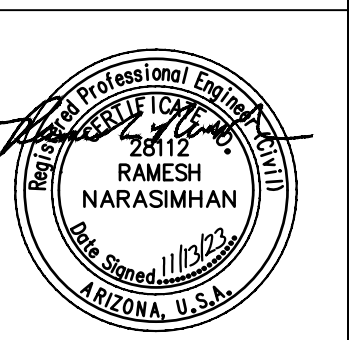


								DATE
								REVISIONS / SUBMISSIONS
								NO.

LAKE HAVASU CITY
 BOOSTER STATION 4 IMPROVEMENTS

Designed by: GB	Drawn by: KWB	Checked by: RN	Date: 02-10-23	Dwg scale: AS NOTED
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GENERAL NOTES



EXPIRATION DATE: 09/30/24

Sheet Number:

G-02

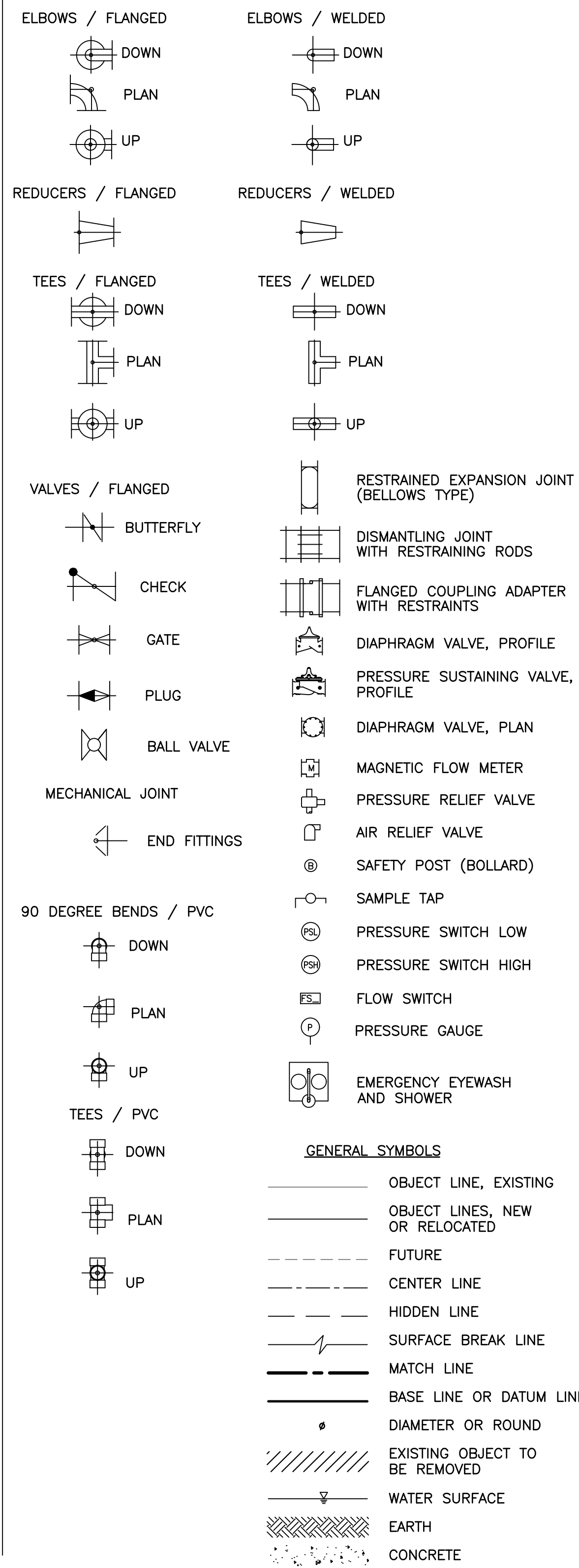
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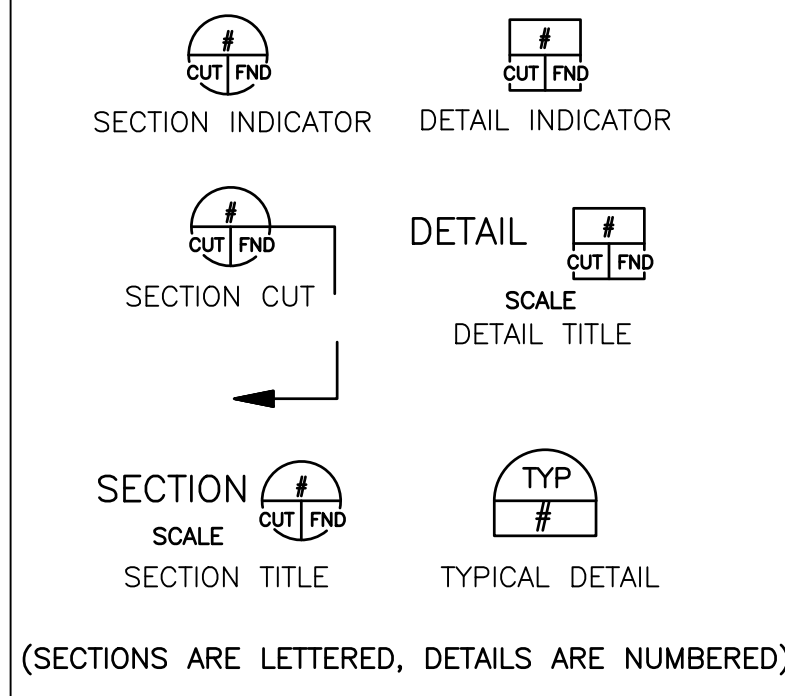
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ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
&	AND	LCP	LOCAL CONTROL PANEL
⊙	AT	LF	LINEAR FEET
⊘	CENTERLINE	LHC	LAKE HAVASU CITY
∅	DIAMETER	LL	LOW LEVEL
ABC	AGGREGATE BASE COURSE	LLV	LONG LEG VERTICAL
AC	ASBESTOS CEMENT	LOC	LOCATION (S)
ADD	ADDITION OR ADDITIONAL	LP	LEVEL PROBE HIGH HIGH
ADEQ	ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY	LS	LAND SURVEYOR
ADJ	ADJUST OR ADJUSTABLE	LT	LEFT OR LEVEL TRANSMITTER
AE	ANALYZER ELEMENT	MAX	MAXIMUM
AGGR	AGGREGATE	MCJ	MASONRY CONTROL JOINT
AL	ALIGNMENT	MFR	MANUFACTURER
ALUM	ALUMINUM	MG	MILLION GALLONS
ARV	AIR/VACUUM RELEASE VALVE	MGD	MILLION GALLONS PER DAY
ASL	AIR SUPPLY LINE	MH	MANHOLE
ASPH	ASPHALT	MIN	MINIMUM
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS	MILS	MILLIMETER
AUTO	AUTOMATIC	MCF	MANUAL CLEANING FILTER
AUX	AUXILIARY	MJ	MECHANICAL JOINT
AVG	AVERAGE	MOV	MOTOR OPERATED VALVE
AWS	AMERICAN WELDING SOCIETY	MS	MECHANICAL STRAINER
		MSD	MECHANICAL STRAINER DRAIN
BDL	BOOSTER PUMP DISCHARGE LINE		
BF	BLIND FLANGE	NG	NATURAL GRADE
BFP	BACKFLOW PREVENTER	NO.	NUMBER
BFV	BUTTERFLY VALVE	NTS	NOT TO SCALE
BLV	BALL CHECK VALVE		
BM	BENCH MARK	OC	ON CENTER
BOF	BOTTOM OF FOOTING	OD	OUTSIDE DIAMETER
BP	BOOSTER PUMP	OF	OVERFLOW
BSL	BOOSTER PUMP SUCTION LINE	OS&Y	OUTSIDE SCREW & YOKE
CCP	CONSTRUCTION CONTROL POINT	PE	POLYETHYLENE
CFM	CUBIC FEET PER MINUTE	PDL	PREFILTER DRAIN LINE
CFS	CUBIC FEET PER SECOND	PF	PREFILTER
CJ	CONSTRUCTION JOINT	PI	PRESSURE INDICATOR
CL	CENTER LINE	PIL	PREFILTER INLET LINE
CLR	CLEAR	PLC	PROCESS LOGIC CONTROLLER
CLSM	CONCRETE LOW STRENGTH MATERIAL	PLT	PRESSURE LEVEL TRANSMITTER
CMU	CONCRETE MASONRY UNIT	PMP	PUMP
CND	CONDUIT	PR	PIPE RESTRAINT
CONC	CONCRETE	PRLV	PRESSURE RELIEF VALVE
CONT	CONTINUOUS	PRV	PRESSURE REDUCING VALVE
CONST	CONSTRUCTION	PSH	HIGH PRESSURE SWITCH
CU	CUBIC	PSI	POUNDS PER SQUARE INCH
CV	CHECK VALVE	PSV	PRESSURE SUSTAINING VALVE
CY	CUBIC YARD	PUE	PUBLIC UTILITY EASEMENT
		PVC	POLYVINYL CHLORIDE
		PWS	POTABLE WATER SUPPLY
D	DEEP		
DET	DETAIL	RCP	REINFORCED CONCRETE PIPE
DIA	DIAMETER	RED	REDUCER
DIM	DIMENSION	REINF	REINFORCEMENT
DI	DUCTILE IRON	RIO	REMOTE INPUT OUTPUT
DIP	DUCTILE IRON PIPE	RMJ	RESTRAINED MECHANICAL JOINT
DISCH	DISCHARGE	RMJ	RESTRAINED MECHANICAL JOINT
DPS	DIFFERENTIAL PRESSURE SWITCH	RPP	REDUCED PRESSURE PRINCIPLE
D/S	DOWNSTREAM	REQD	REQUIRED
		RRP	REGENERATION AND RINSE PUMP
EA	EACH	RT	RIGHT
EF	EACH FACE	RW	RIGHT-OF-WAY
EJ	EXPANSION JOINT		
EL	ELEVATION	S	SLOPE
ELEC	ELECTRONIC	SCH	SCHEDULE
EP	EDGE OF PAVEMENT	SD	SANITARY DRAIN
EQ	EQUALIZATION	SHT	SHEET
EST	ESTIMATE	SJ	SHRINKAGE JOINT
EW	EACH WAY	SP	SPECIFICATIONS
EXST	EXISTING	SQ	SQUARE
		SS	STAINLESS STEEL
F	EDGE OF FILL AREA	ST	STREET
FAB	FABRICATED	STA	STATION
FCA	FLANGED COUPLING ADAPTER	STD	STANDARD
FCV	FLOW CONTROL VALVE	STL	STEEL
FD	FLOOR DRAIN	SV	SOLENOID VALVE
FE	FLOW ELEMENT	SWL	SERVICE WATER LINE
FF	FINISH FLOOR		
FG	FINISH GRADE	T	THICKNESS
FIN	FINISH	T&B	TOP AND BOTTOM
FL	FLANGED	TBD	TO BE DETERMINED
FRP	FIBERGLASS REINFORCED PLASTIC	TBM	TEMPORARY BENCH MARK
FT	FEET	TCE	TEMPORARY CONSTRUCTION EASEMENT
FTG	FOOTING	THRU	THROUGH
		TOC	TOP OF CURB
GAL	GALLON	TOCS	TOP OF CONCRETE SLAB
GALV	GALVANIZED	TOF	TOP OF FOOTING
GND EL	GROUND ELEVATION	TOP	TOP OF PIPE
GPM	GALLONS PER MINUTE		
GSN	GENERAL STRUCTURAL NOTES	TOS	TOP OF SLAB
GV	GATE VALVE	TOW	TOP OF WALL
		TS	TUBE STEEL
H	HEIGHT	TYP	TYPICAL
HDPE	HIGH DENSITY POLYETHYLENE		
HORIZ	HORIZONTAL	UGND	UNDERGROUND
HP	HORSE POWER	UNO	UNLESS NOTED OTHERWISE
HPT	HYDROPNEUMATIC TANK	U/S	UPSTREAM
HWL	HIGH WATER LEVEL	UV	ULTRAVIOLET
I	MOMENT OF INERTIA	YD	YARDS
IBC	INTERNATIONAL BUILDING CODE		
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS		
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION		
IOP	INDEPENDENT OPERATING PRESSURE		
INV	INVERT		
IV	ISOLATION VALVE		
KW	KILOWATT		

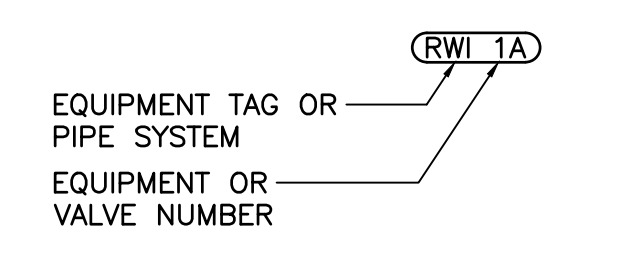
SYMBOLS



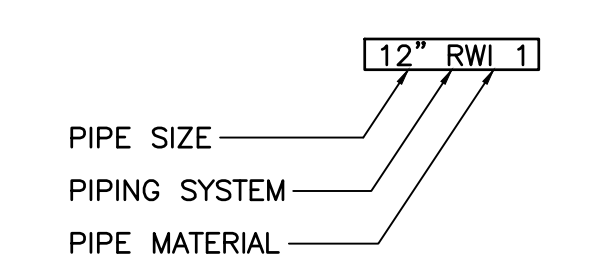
MARKERS



EQUIPMENT TAG



PIPE TAG

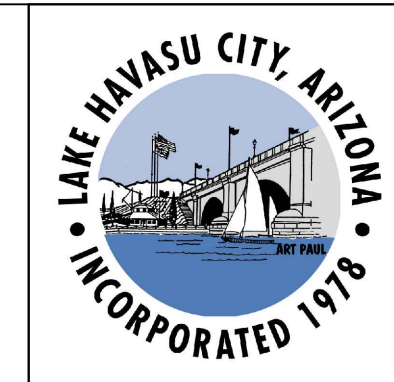


PIPE MATERIAL

- 1 - DUCTILE IRON
- 2 - STEEL
- 3 - C-900 PVC
- 4 - SCHEDULE 80 PVC
- 5 - SCHEDULE 80 CPVC
- 6 - COPPER
- 7 - STAINLESS STEEL
- 8 - SCH 80 BLACK STEEL
- 9 - CAST IRON
- 10 - PVC-SEWER PIPE

SHEET CATEGORY

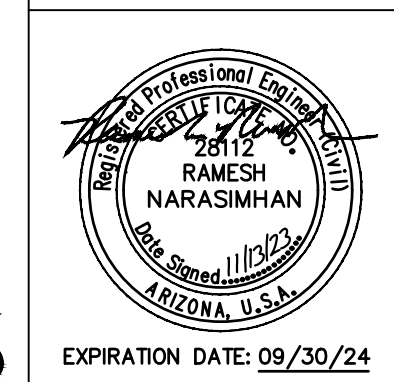
- G - GENERAL
- C - CIVIL
- S - STRUCTURAL
- M - MECHANICAL PROCESS
- E - ELECTRICAL
- I - INSTRUMENTATION



LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

Designed by: GB
 Drawn by: KWB
 Checked by: RN
 Date: 02-10-23
 Dwg scale: AS NOTED

ABBREVIATIONS AND SYMBOLS



EXPIRATION DATE: 09/30/24

Sheet Number:

G-03
Sheet 3 of 26



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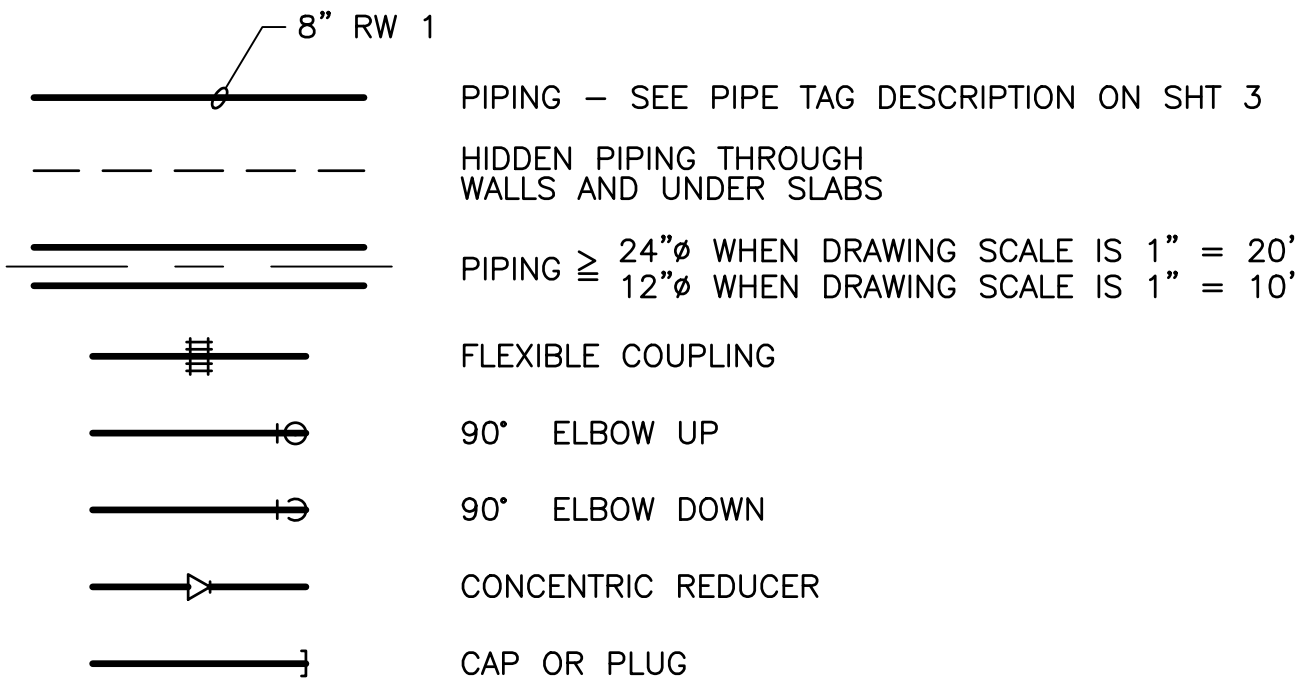
GENERAL SITE NOTES:

- SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS IS A BASE MAP FROM RECORD DRAWINGS. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
- EXISTING TOPOGRAPHY, STRUCTURES, AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
- HORIZONTAL DATUM: NAD 83, ARIZONA CENTRAL ZONE
VERTICAL DATUM: NGVD 29
- MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
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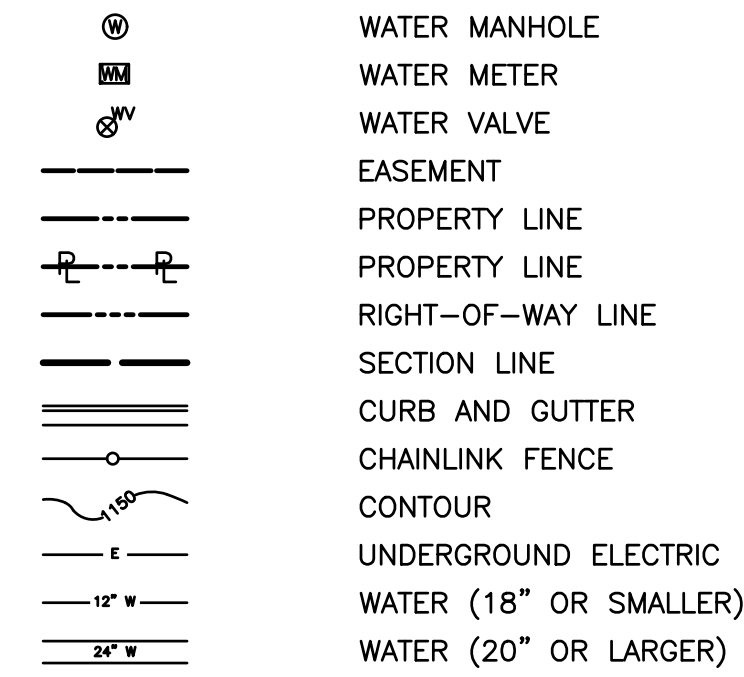
GENERAL YARD PIPING AND UTILITIES NOTES:

- EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND DRAWINGS PROVIDED BY CITY, UTILITIES MAPS, AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
- FOR PIPING FLOW STREAM IDENTIFICATION, SEE PIPING SCHEDULE.
- EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
- UNLESS OTHERWISE SHOWN, ALL PIPING SHALL HAVE A MINIMUM OF 4' COVER.
- ALL PIPES SHALL HAVE A CONSTANT SLOPE BETWEEN INVERT ELEVATIONS UNLESS A FITTING IS SHOWN.
- ALL NEW WATER PIPES MUST BE PROPERLY FLUSHED, PRESSURE TESTED, CHLORINATED AND BACTERIOLOGICALLY TESTED, AS SPECIFIED.
- RESTORE DIRT AND/OR GRAVEL ROADS TO CONDITIONS THAT EXISTED BEFORE START OF CONSTRUCTION.
- CONTRACTOR TO PROVIDE PIPE WARNING TAPE AND TRACER WIRE ON PVC PIPING ON THE SITE. SEE SPECS. TRACER WIRE SHALL BE TERMINATED IN THREADED PVC PIPE ADJACENT TO STRUCTURES. SEE TYPICAL DETAIL.

YARD PIPING LEGEND



CIVIL LEGEND

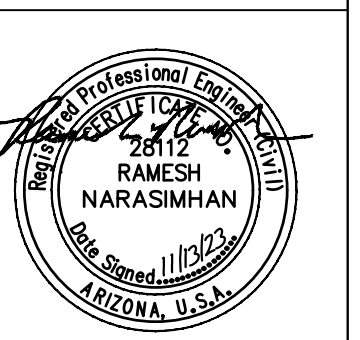


									DATE
									REVISIONS / SUBMISSIONS
									NO.

LAKELAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

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CIVIL NOTES AND LEGEND

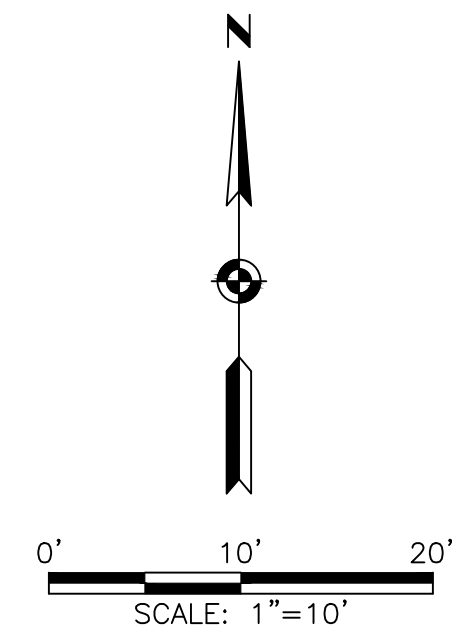
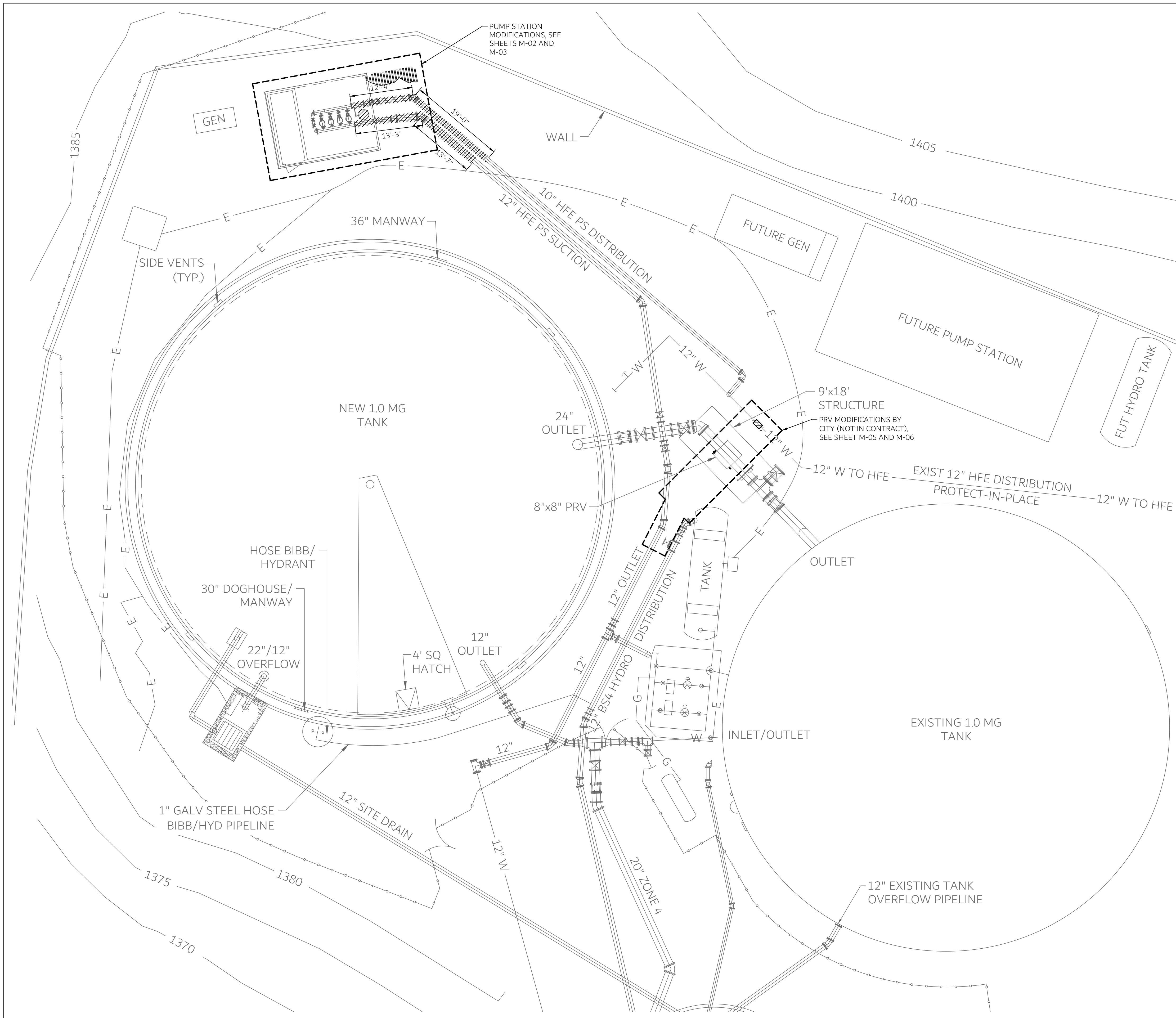


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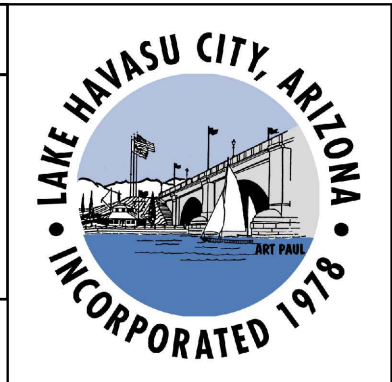


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NOTES:

1. WHEN NEW FACILITIES ARE OPERATING, DEMOLITION OF EXISTING EQUIPMENT CAN COMMENCE, IN COORDINATION WITH OWNER.
2. REMOVE EXISTING PIPE TO NEXT JOINT FOR CONNECTION.

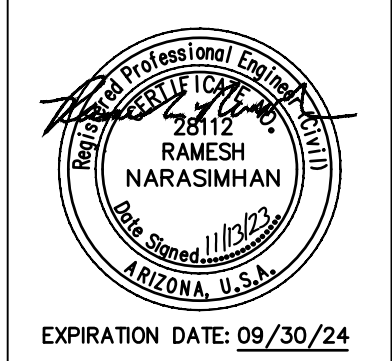


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DEMOLITION SITE PLAN

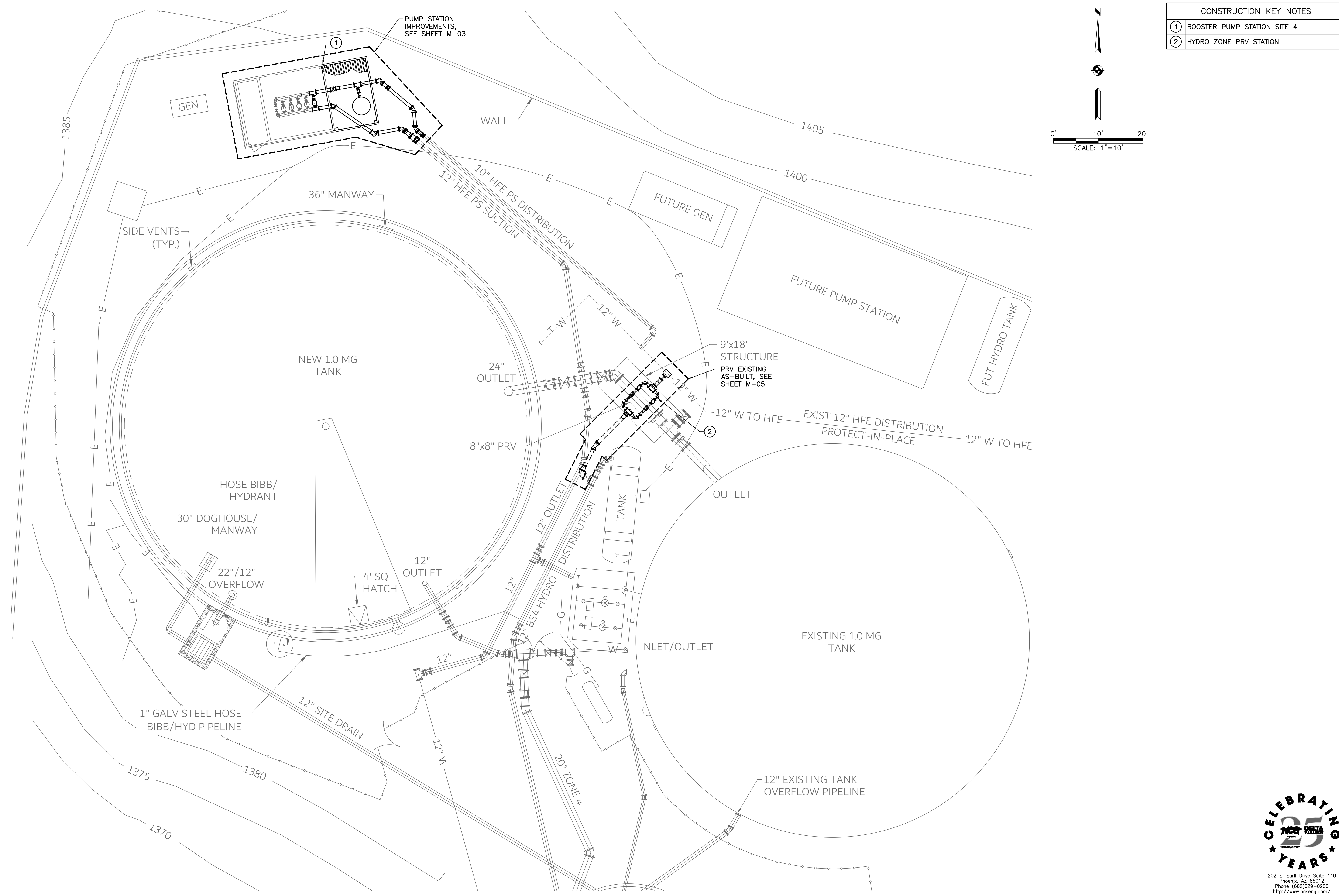


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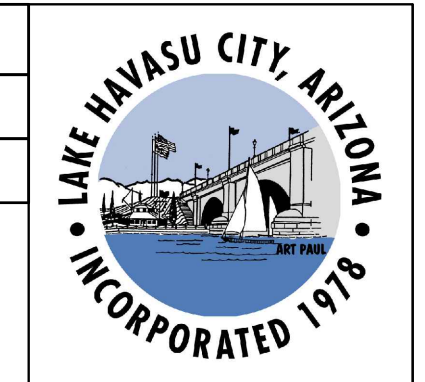
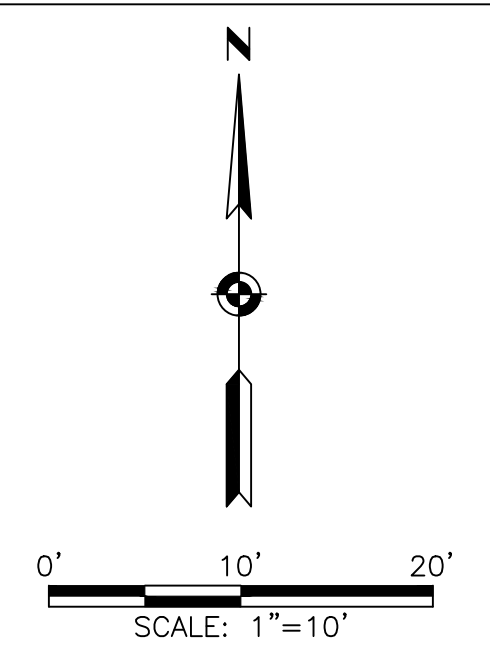


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CONSTRUCTION KEY NOTES

①	BOOSTER PUMP STATION SITE 4
②	HYDRO ZONE PRV STATION

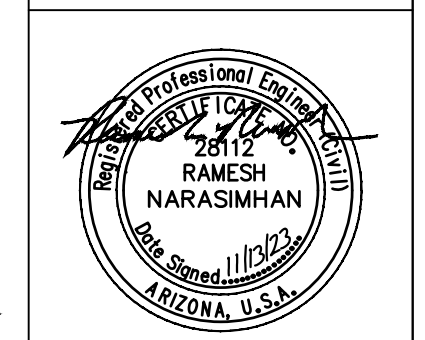


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NEW FACILITIES
SITE PLAN

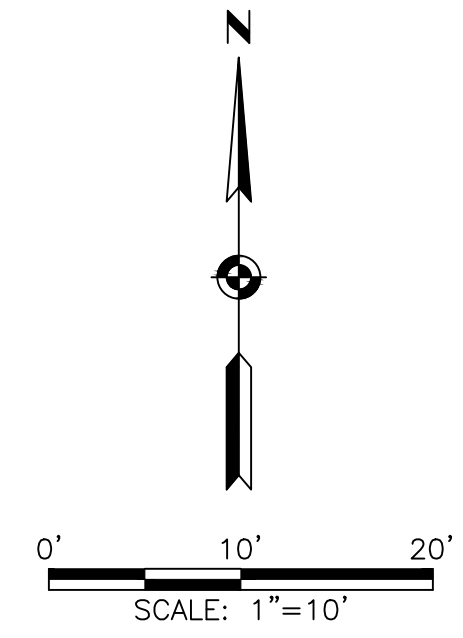
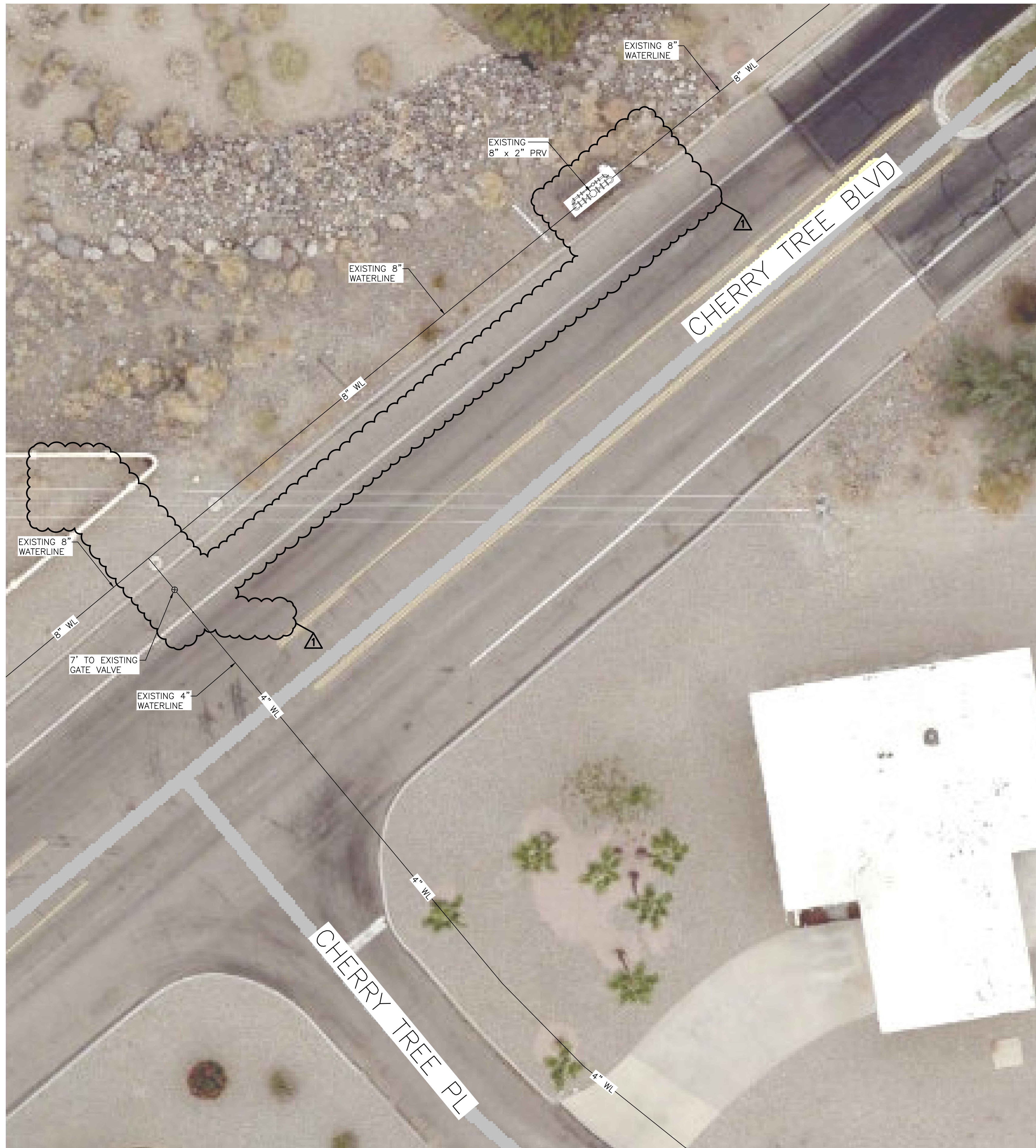


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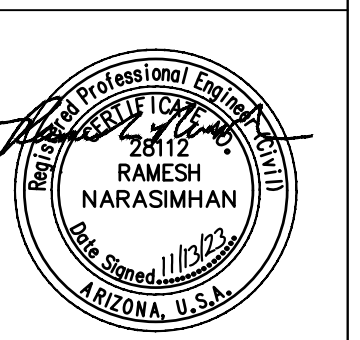


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**CHERRY TREE
 BLVD PRV
 ADDITION**

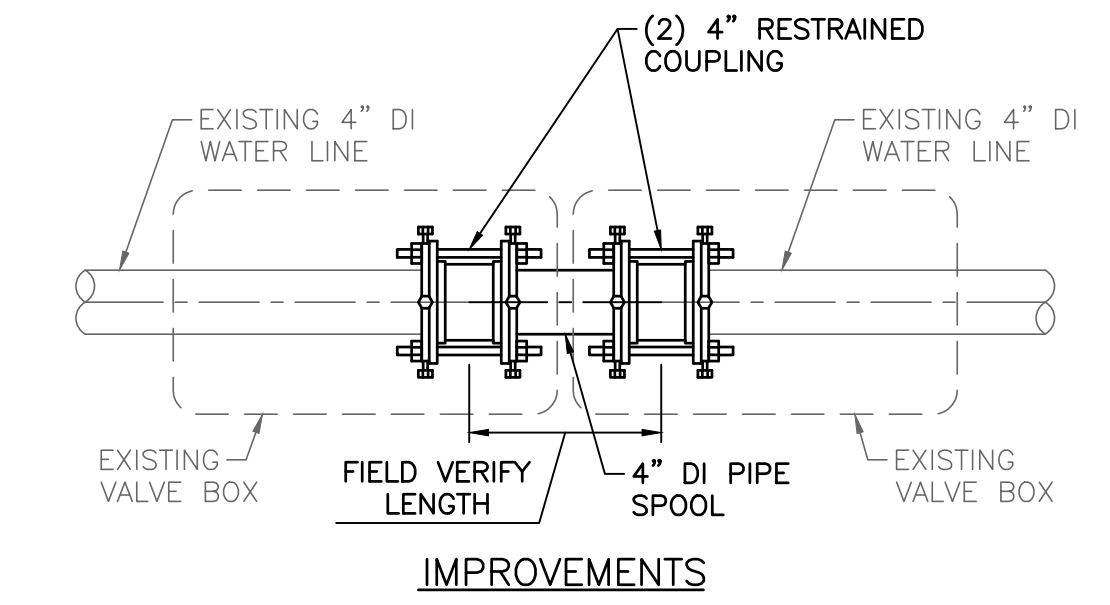
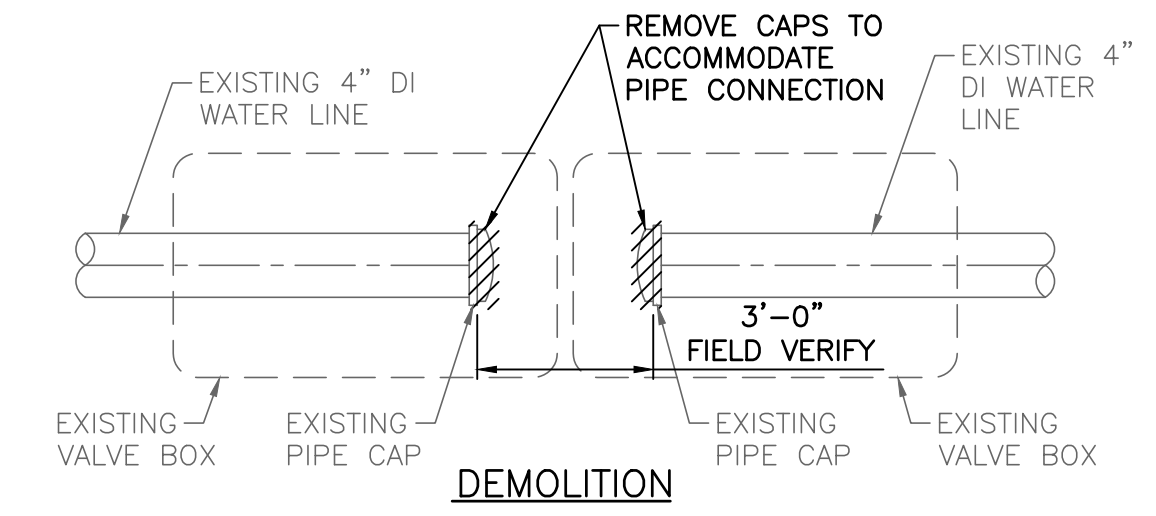
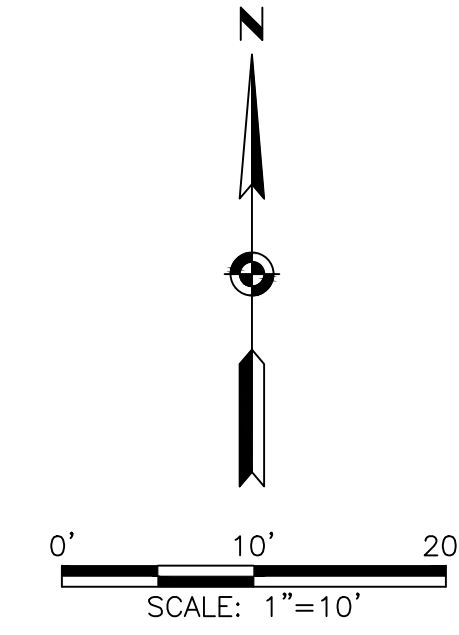


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DETAIL
SCALE: 1"=1'-0"
C-05 C-05



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CHERRY TREE PL
PIPING
MODIFICATION
PLAN AND DETAIL

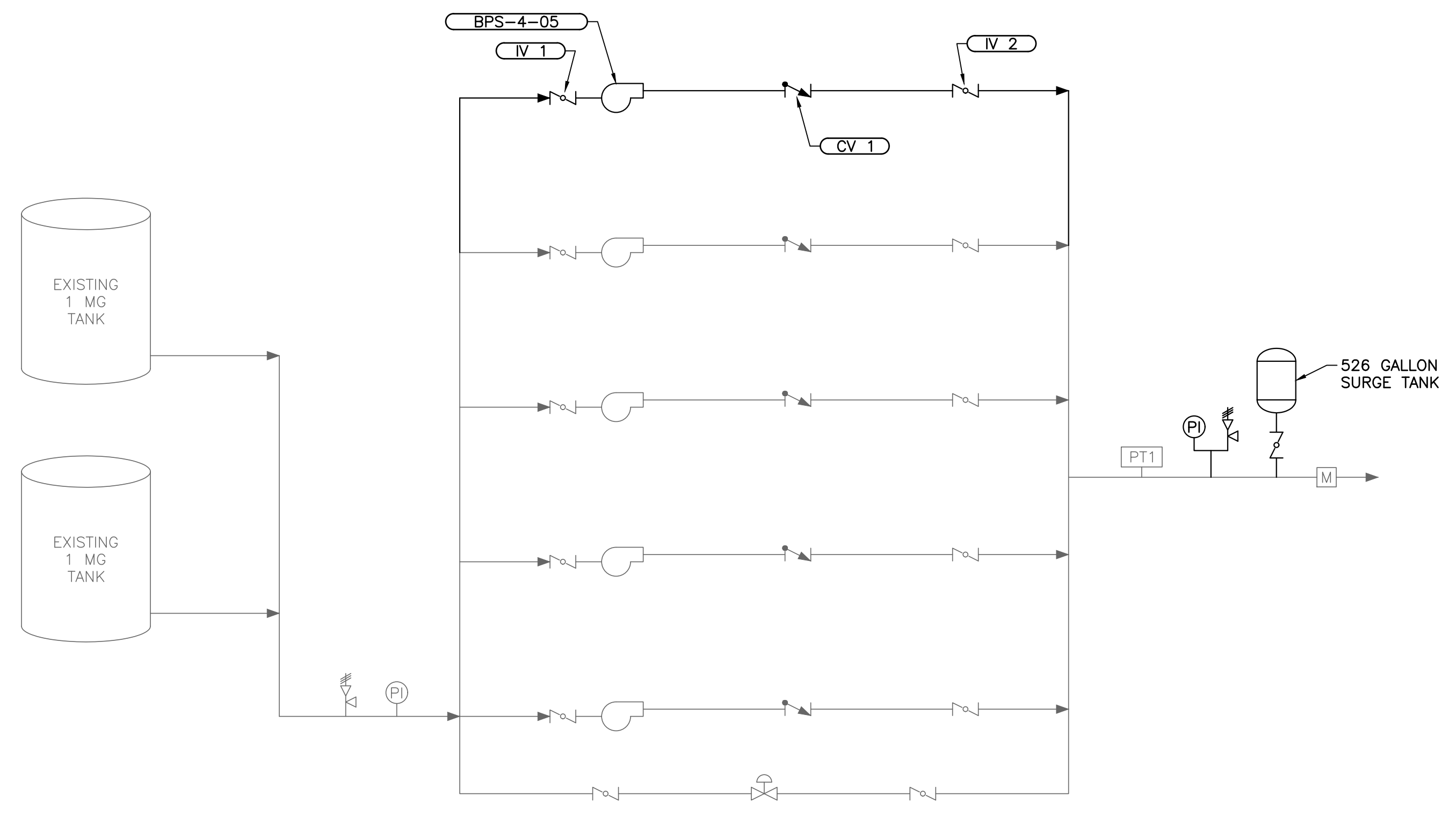


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FACILITY SCHEMATIC

SCHEMATIC SYMBOL LEGEND:

	AIR COMPRESSOR
	AIR/VAC VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	EQUIPMENT TAG NUMBER
	MAGNETIC FLOW METER
	PRESSURE GAUGE
	PRESSURE REDUCING VALVE
	PRESSURE SWITCH HIGH
	PRESSURE SWITCH LOW LOW
	PRESSURE TRANSMITTER
	PUMP
	TANK LEVEL TRANSMITTER

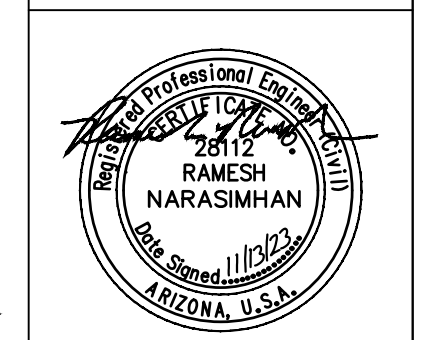


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FACILITY SCHEMATIC



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DEMOLITION KEY NOTES	
1	REMOVE AND REPLACE 8" FLOW METER
2	REMOVE 1 SEGMENT OF 8" PIPING
3	REMOVE EXISTING 300 GALLON SURGE TANK AND PIPING
4	REMOVE 90° DI BEND
5	REMOVE 45° MJ BEND
6	REMOVE 45° MJ BEND
7	REMOVE 45° MJ BEND
8	REMOVE PRESSURE GAUGE
9	REMOVE AIR RELEASE VALVE
NOTES:	
1.	----

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BOOSTER STATION 4 IMPROVEMENTS

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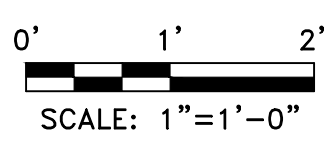
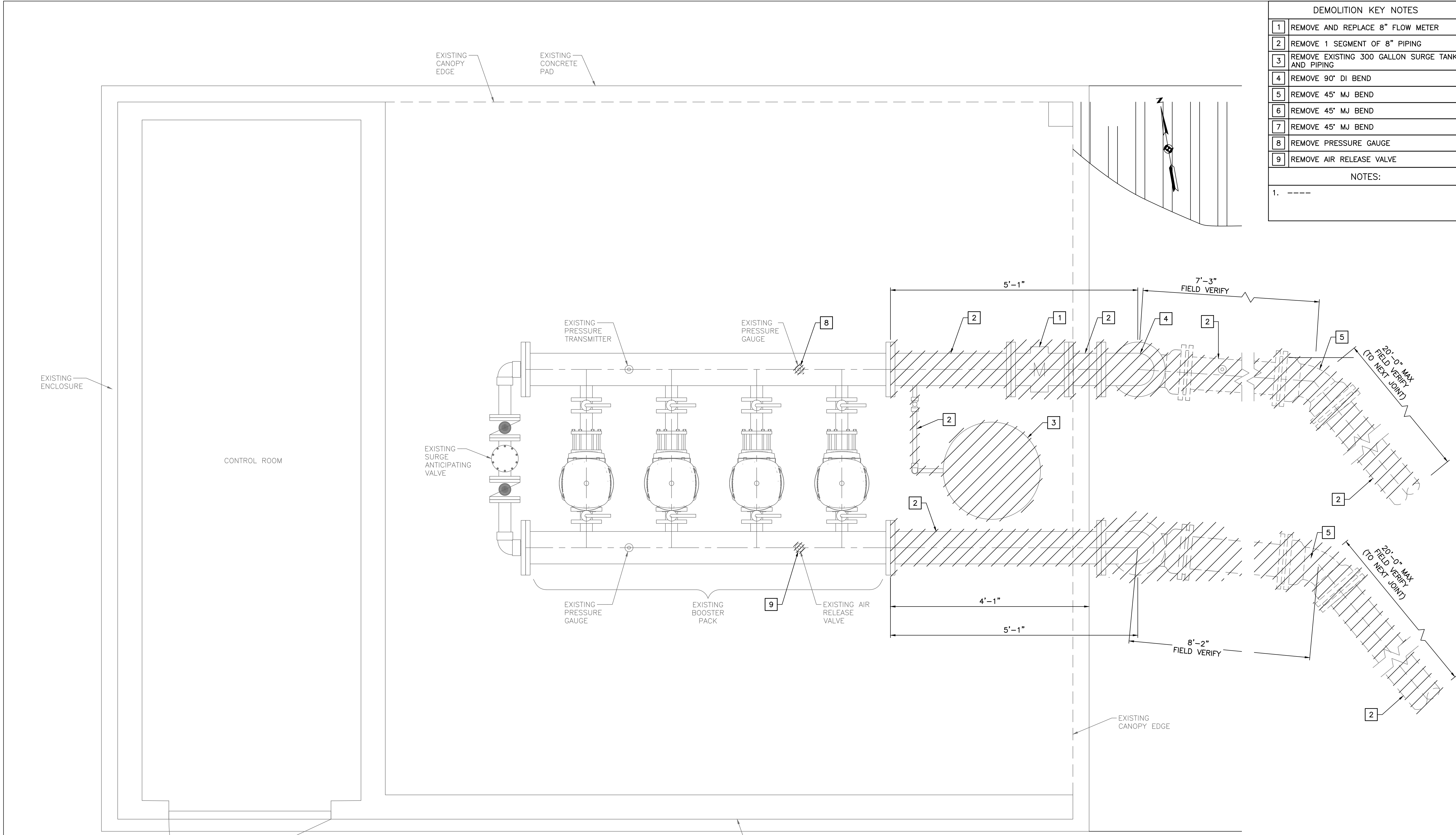
BOOSTER PUMP STATION DEMOLITION PLAN

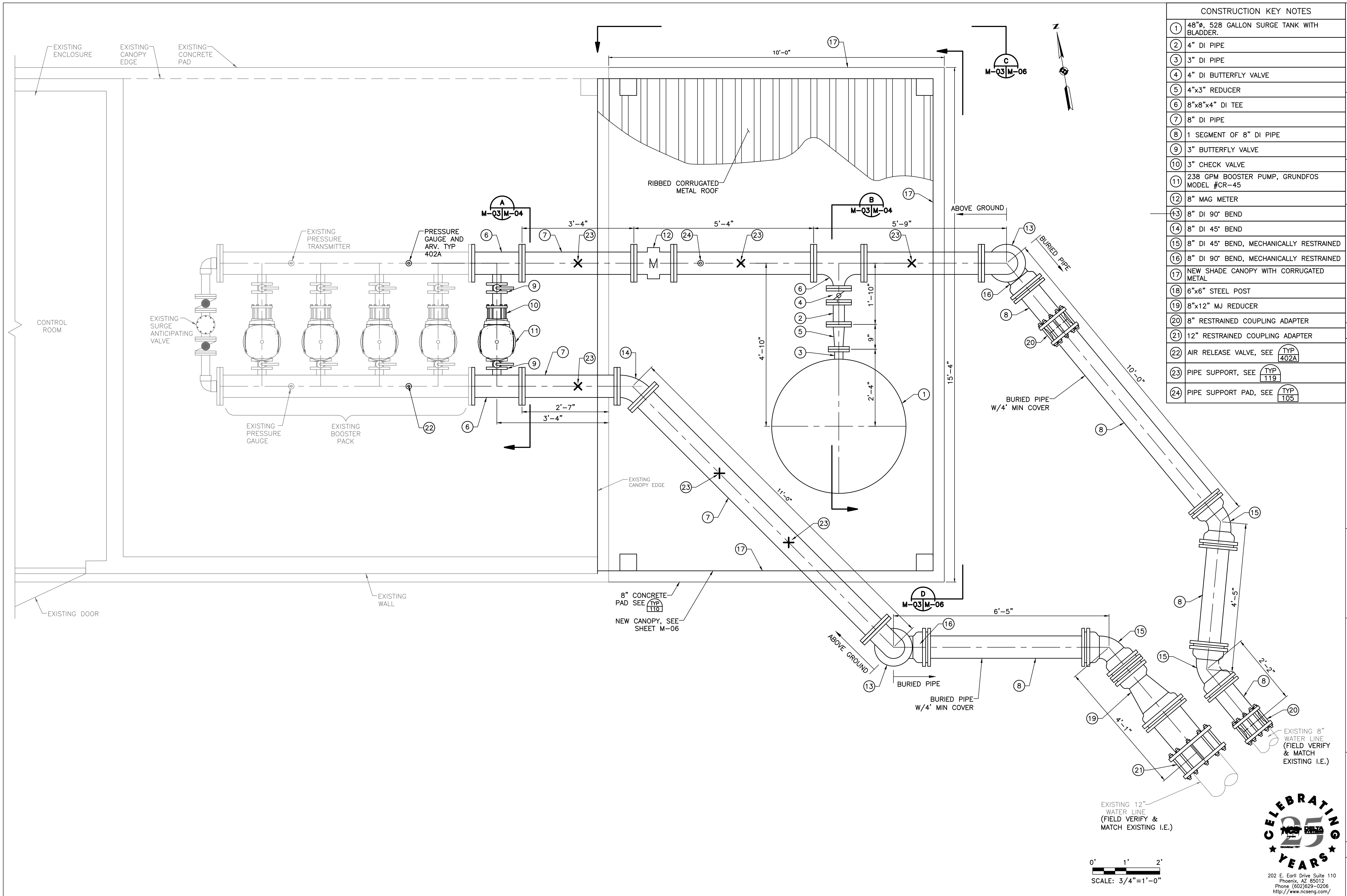
	EXPIRATION DATE: 09/30/24 Sheet Number:
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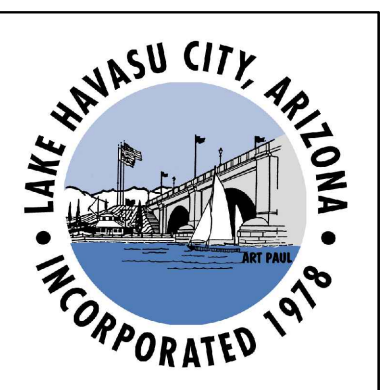


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CONSTRUCTION KEY NOTES	
1	48" Ø, 528 GALLON SURGE TANK WITH BLADDER.
2	4" DI PIPE
3	3" DI PIPE
4	4" DI BUTTERFLY VALVE
5	4"x3" REDUCER
6	8"x8"x4" DI TEE
7	8" DI PIPE
8	1 SEGMENT OF 8" DI PIPE
9	3" BUTTERFLY VALVE
10	3" CHECK VALVE
11	238 GPM BOOSTER PUMP, GRUNDFOS MODEL #CR-45
12	8" MAG METER
13	8" DI 90° BEND
14	8" DI 45° BEND
15	8" DI 45° BEND, MECHANICALLY RESTRAINED
16	8" DI 90° BEND, MECHANICALLY RESTRAINED
17	NEW SHADE CANOPY WITH CORRUGATED METAL
18	6"x6" STEEL POST
19	8"x12" MJ REDUCER
20	8" RESTRAINED COUPLING ADAPTER
21	12" RESTRAINED COUPLING ADAPTER
22	AIR RELEASE VALVE, SEE <small>TYP 402A</small>
23	PIPE SUPPORT, SEE <small>TYP 119</small>
24	PIPE SUPPORT PAD, SEE <small>TYP 105</small>



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BOOSTER PUMP STATION IMPROVEMENTS PLAN

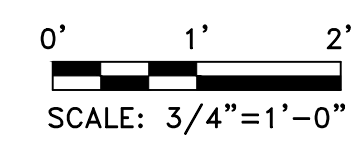


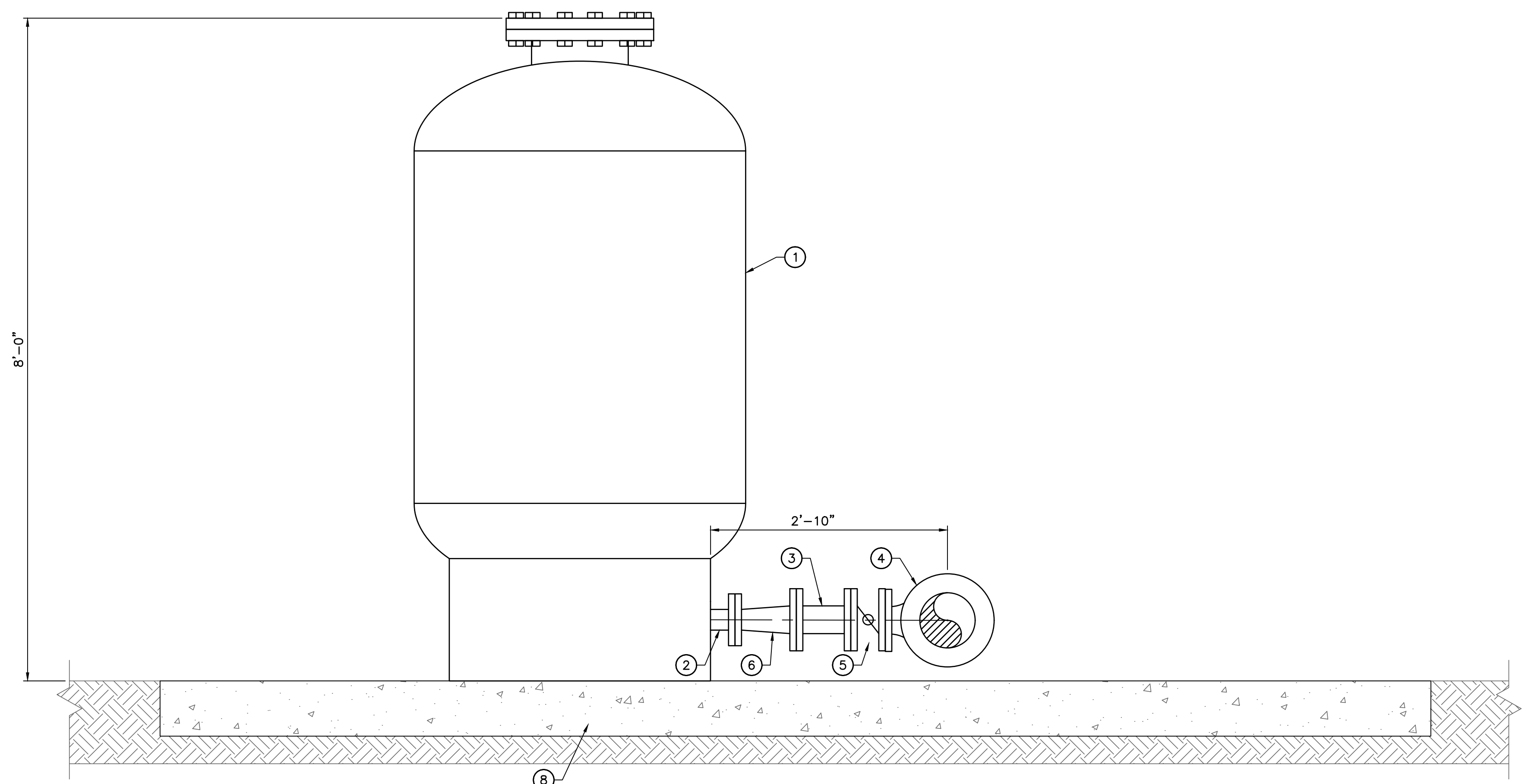
Expiration Date: 09/30/24

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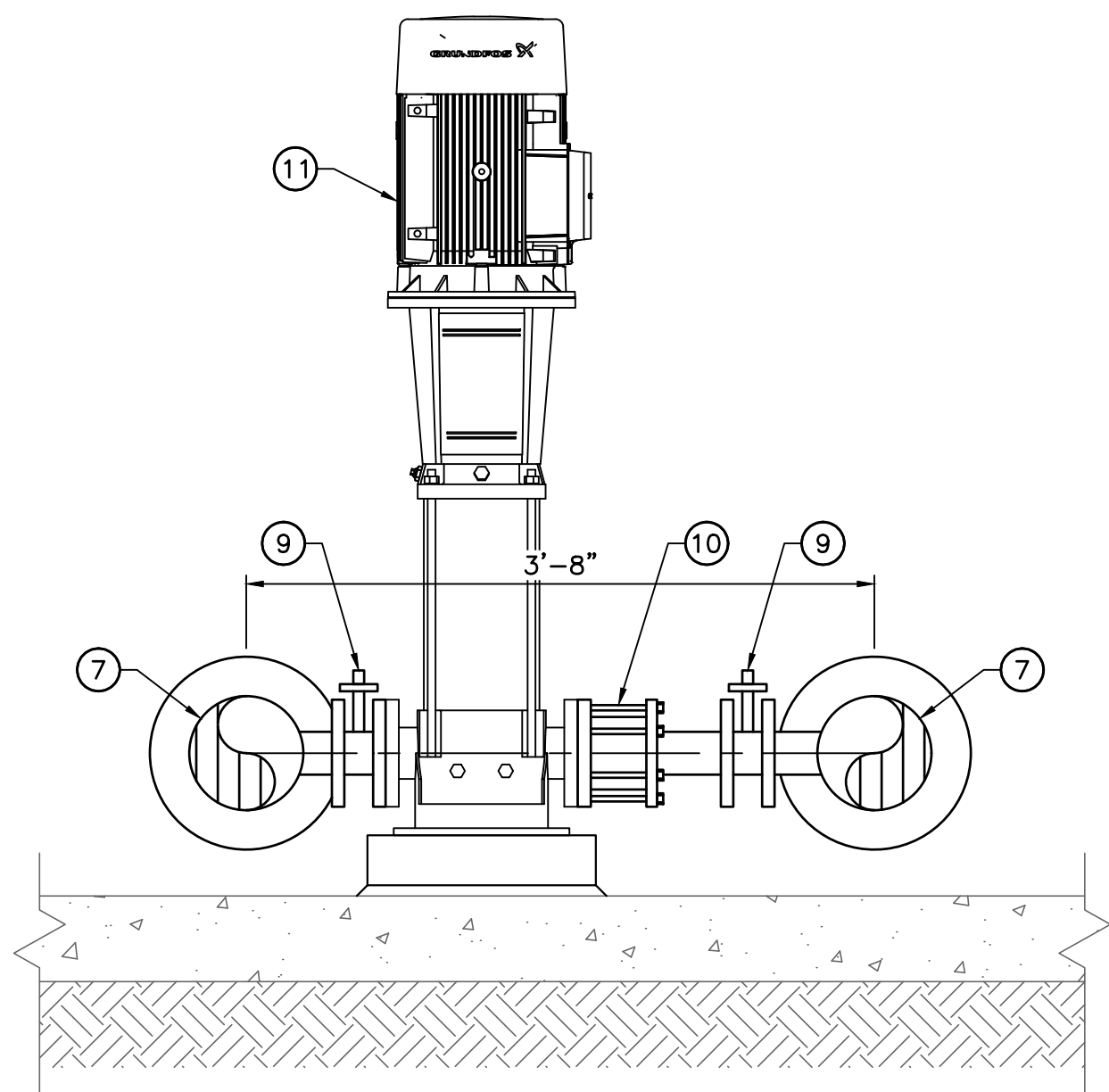


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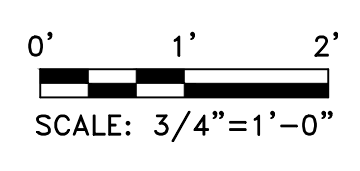




SECTION B
SCALE: 1/2"=1'-0" M-03 M-04



SECTION A
SCALE: 1/2"=1'-0" M-03 M-04



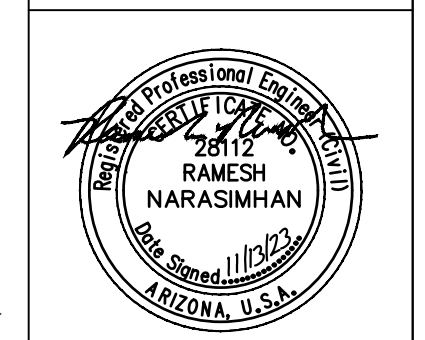
CONSTRUCTION KEY NOTES	
①	48"ø, 528 GALLON SURGE TANK WITH BLADDER.
②	3" DI PIPE
③	4" DI PIPE
④	8"x8"x4" DI TEE
⑤	4" DI BUTTERFLY VALVE
⑥	4"x3" REDUCER
⑦	8"x4" DI TEE
⑧	10'x15'-4"x8" CONCRETE PAD, SEE TYP 110
⑨	3" BUTTERFLY VALVE
⑩	3" CHECK VALVE
⑪	238 GPM BOOSTER PUMP, GRUNDFOS MODEL #CR-45
NOTES:	
1. ----	

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BOOSTER PUMP
STATION SECTIONS

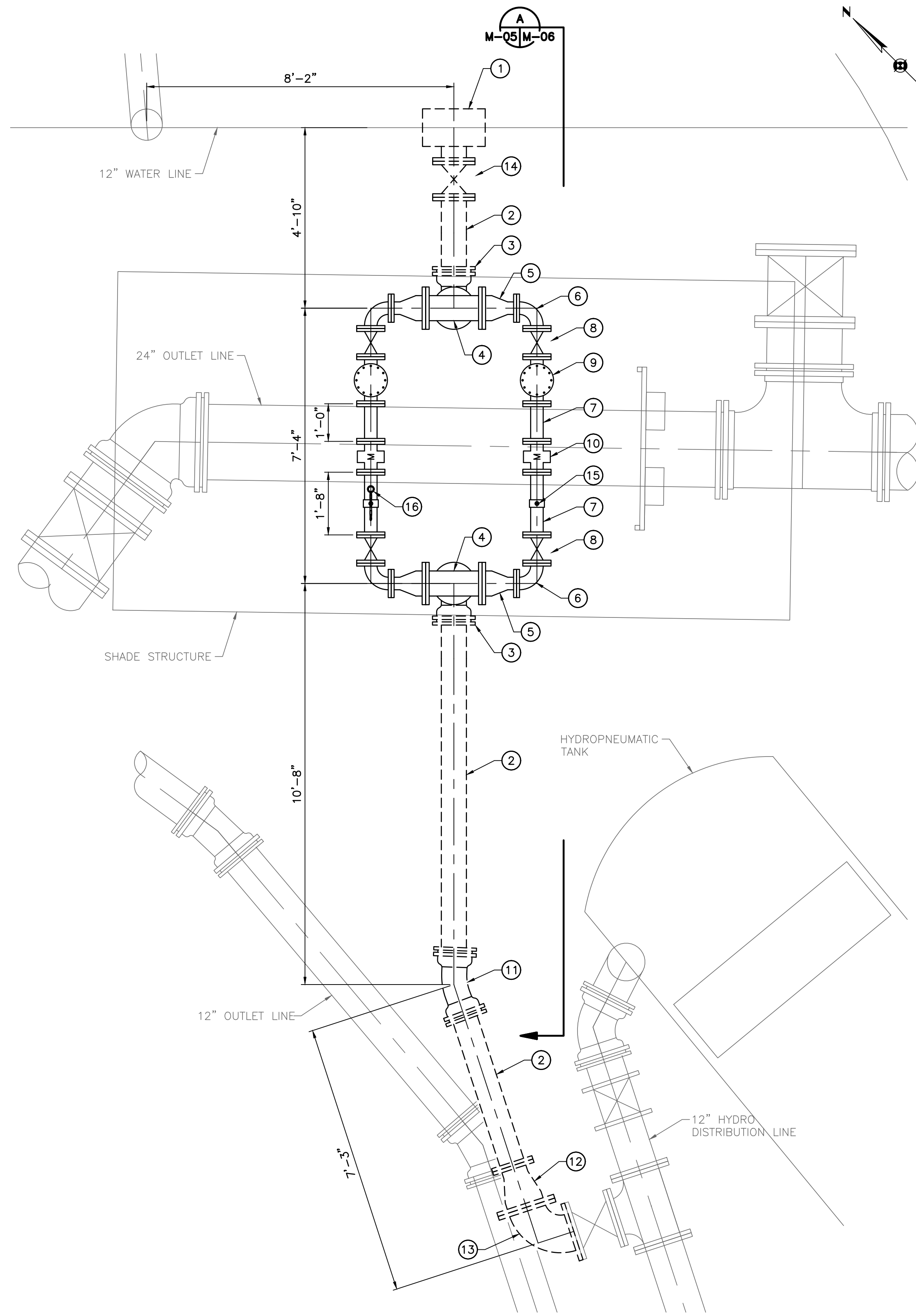


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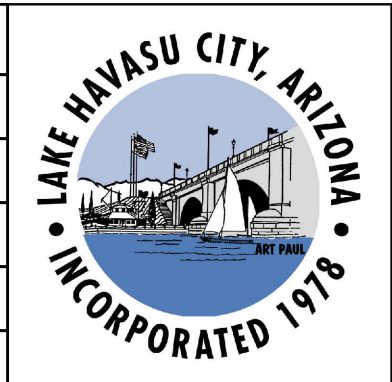


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HYDRO ZONE PRV PLAN
SCALE: 1/2"=1'-0"

KEY NOTES	
①	12"x8" HOT TAP SLEEVE
②	8" DI PIPE
③	8" DI 90° BEND, MECHANICALLY RESTRAINED
④	8" DI TEE
⑤	8"x4" DI REDUCER
⑥	4" DI 90° ELBOW
⑦	4" DI PIPE
⑧	4" DI GATE VALVE
⑨	4" DI PRESSURE REDUCING VALVE
⑩	4" DI FLOW METER
⑪	8" 22.5° BEND, MECHANICALLY RESTRAINED
⑫	12"x8" REDUCER, MECHANICALLY RESTRAINED
⑬	12" 90° BEND, MECHANICALLY RESTRAINED
⑭	8" DI GATE VALVE
⑮	4" PRESSURE TRANSDUCER WITH GAUGE
⑯	PRESSURE GAUGE



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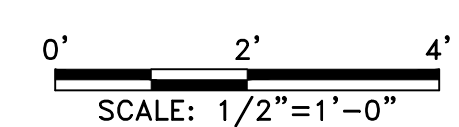
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BOOSTER STATION 4 IMPROVEMENTS

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PRV STATION
PLANS

FOR RECORD
DRAWING PURPOSES

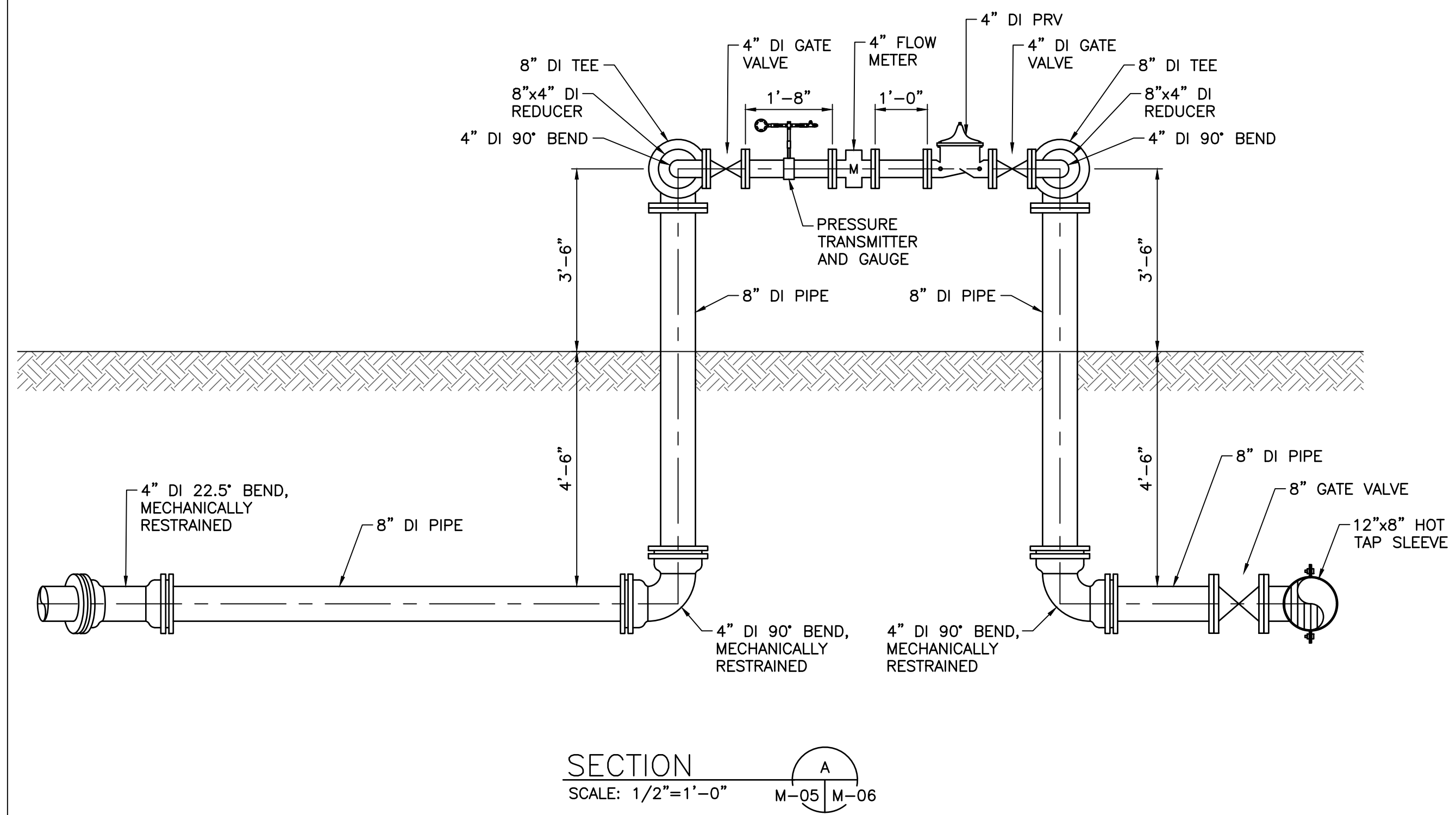
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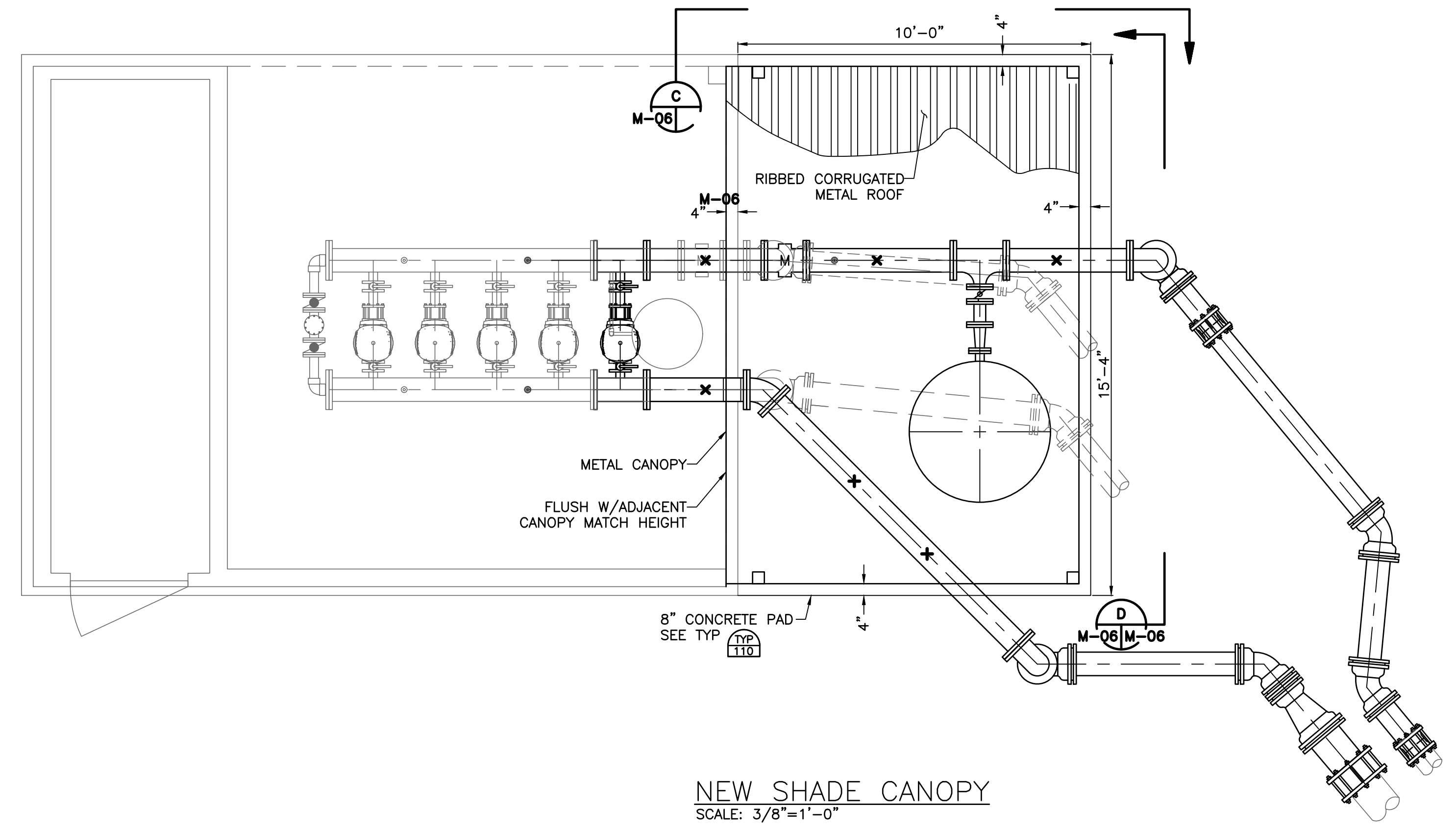
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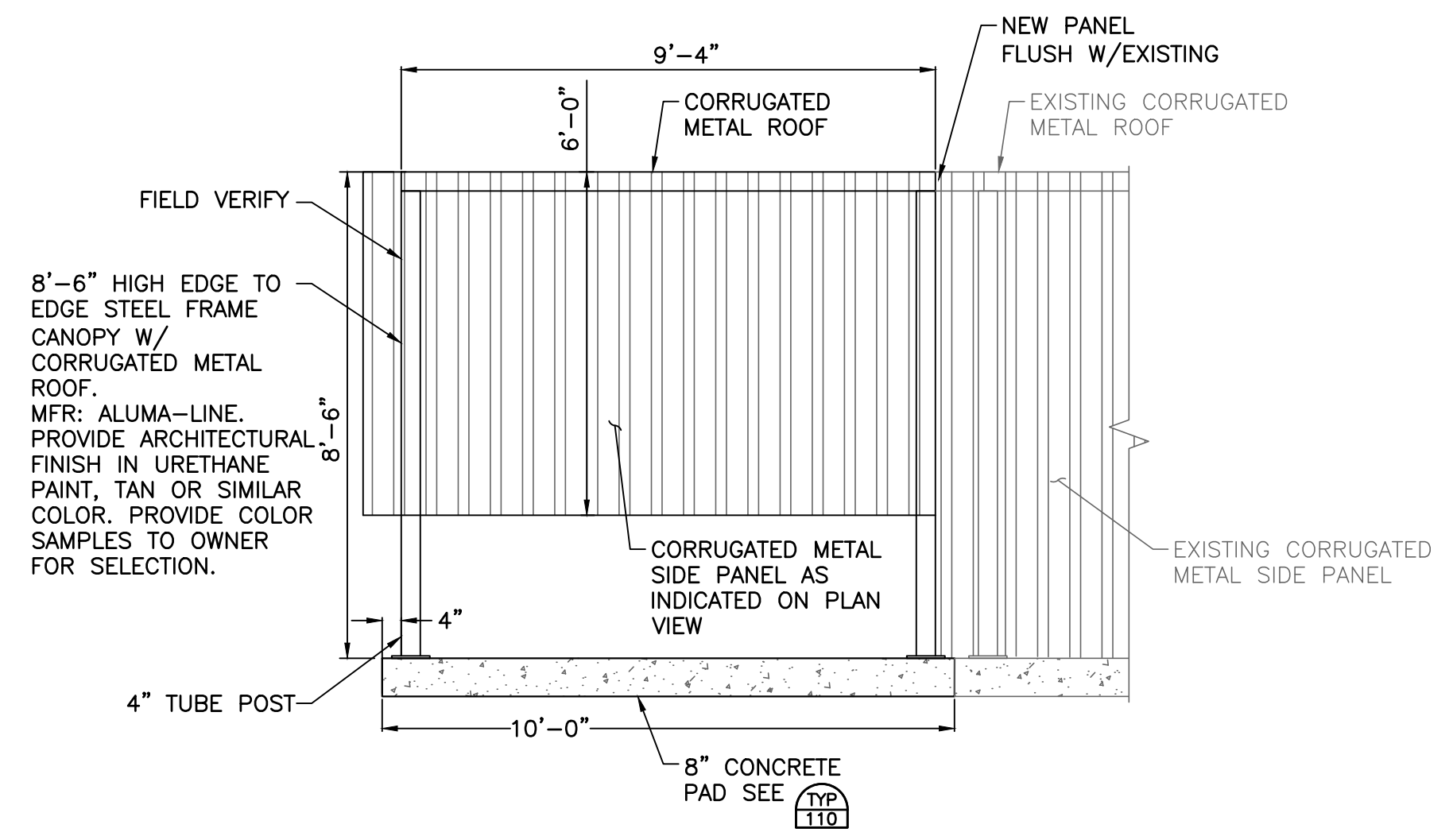
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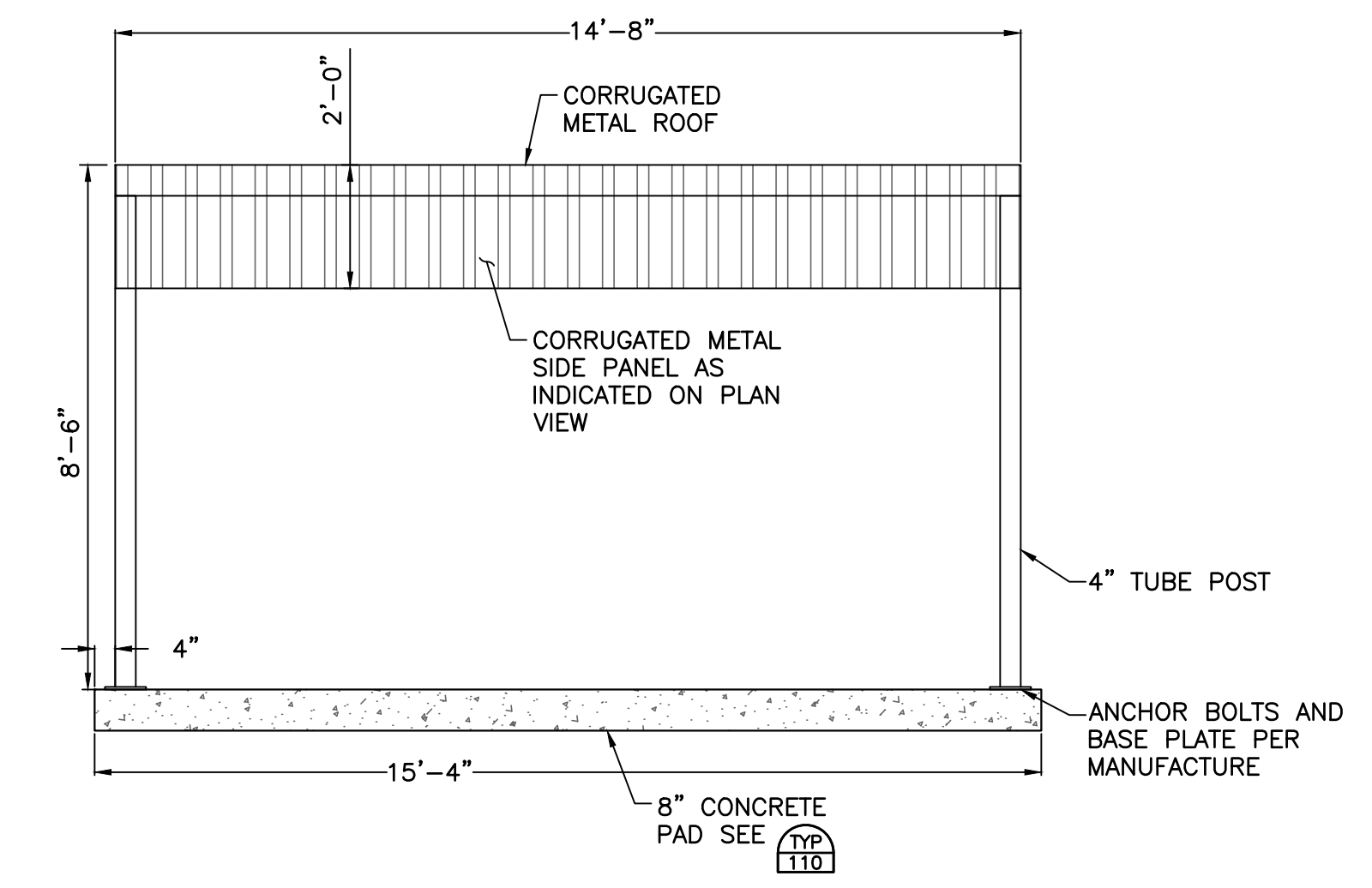
SECTION A
SCALE: 1/2"=1'-0"
M-05 M-06



NEW SHADE CANOPY
SCALE: 3/8"=1'-0"



SECTION C
SCALE: 3/8"=1'-0"
M-06 M-06



SECTION D
SCALE: 3/8"=1'-0"
M-06 M-06

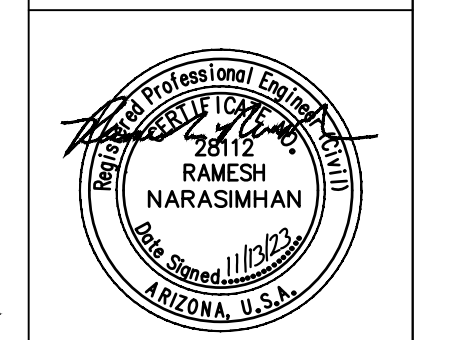
FOR RECORD
DRAWING PURPOSES

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PRV STATION
SECTION AND
DETAILS

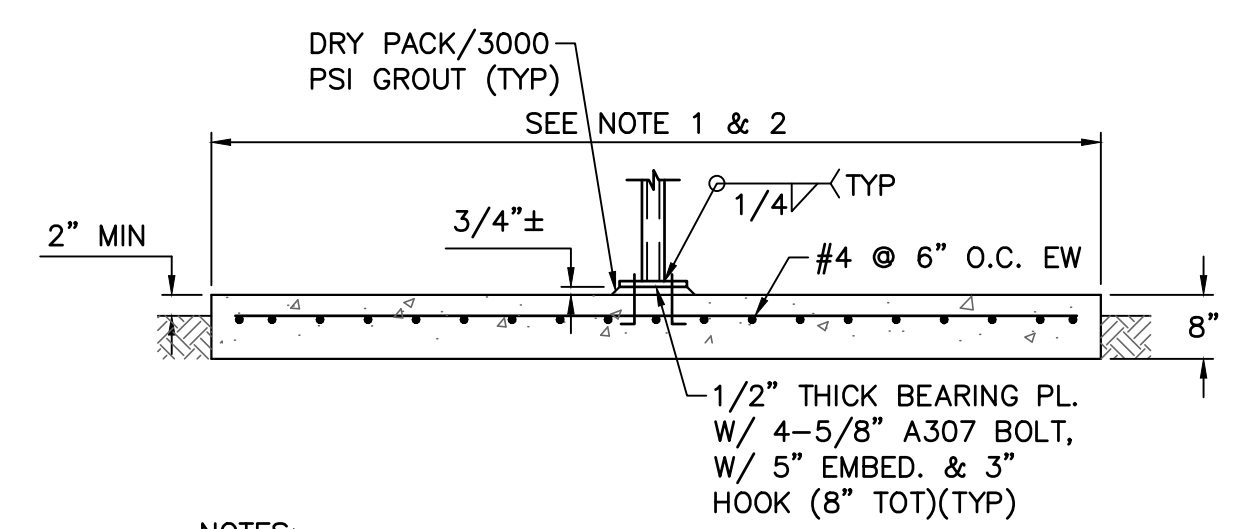


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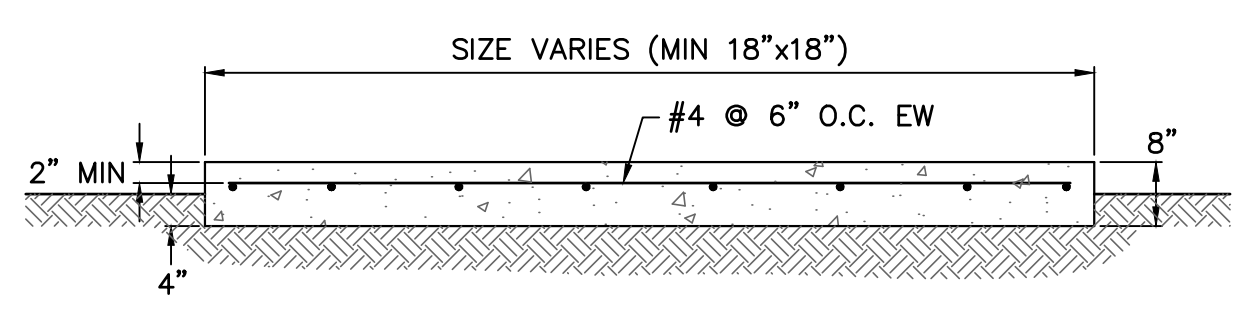


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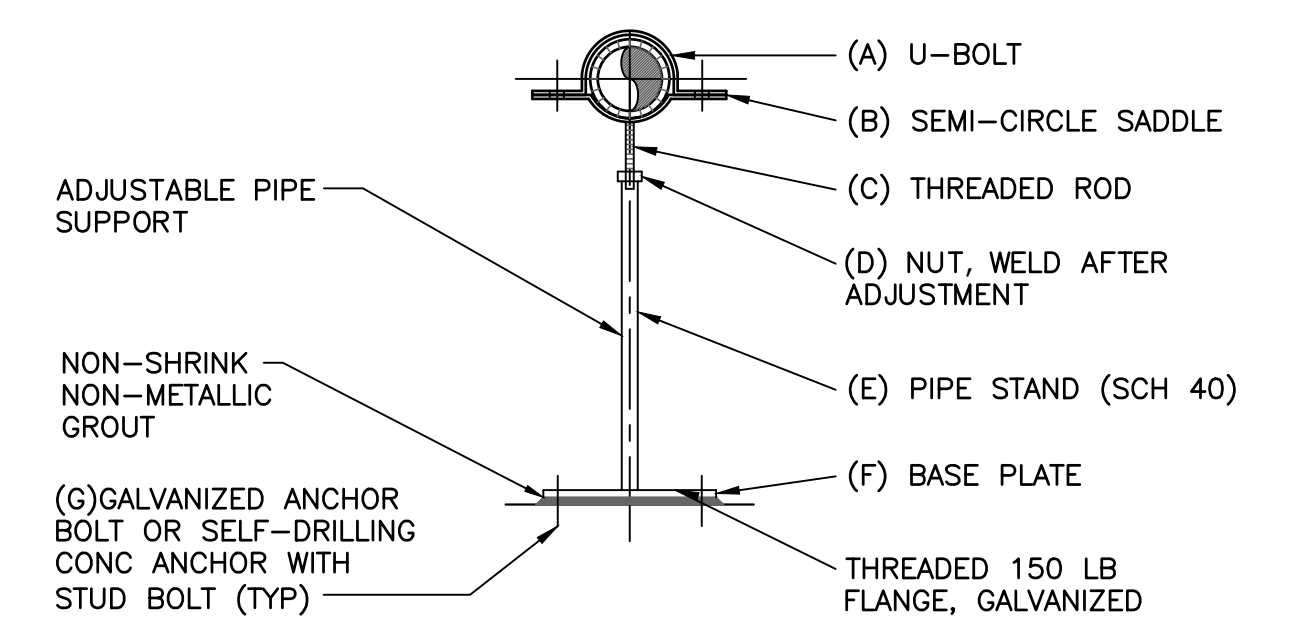


NOTES:
1. WIDTH=PIPE DIAMETER +6" (MIN 18") UNLESS NOTED
2. OTHERWISE. LENGTH=MIN 18" UNLESS NOTED OTHERWISE.

PIPE SUPPORT PAD (TYP 105)
SCALE: NTS



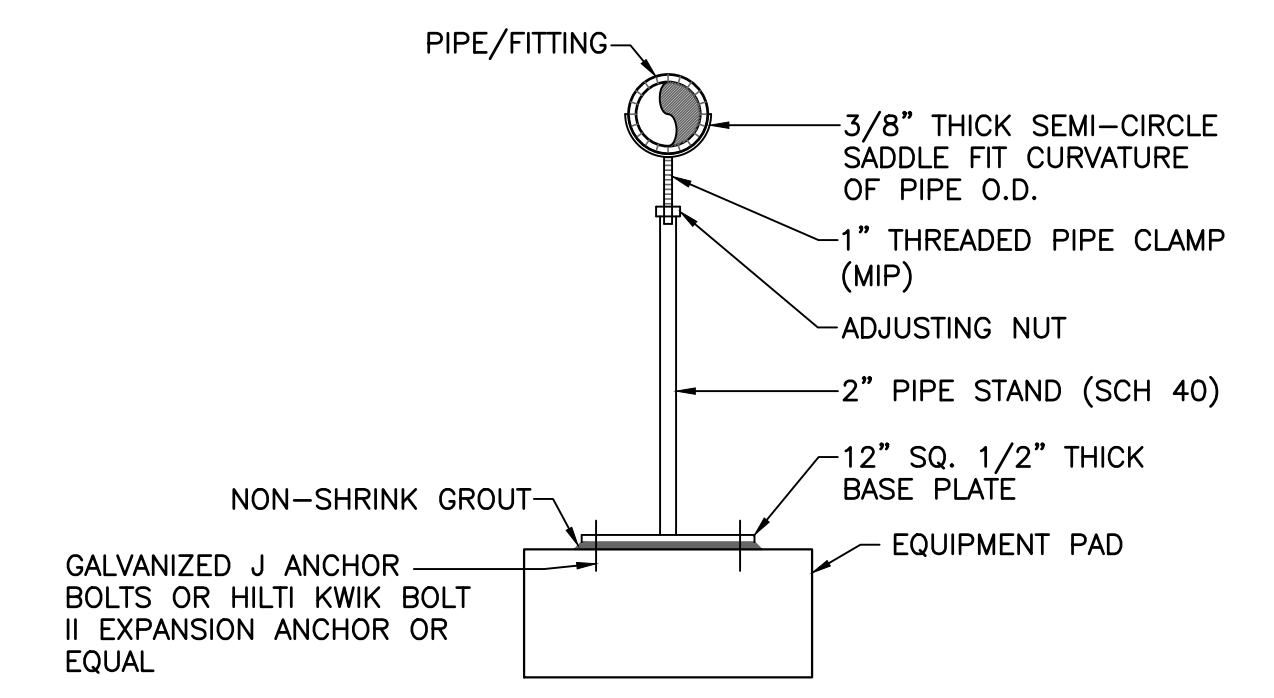
EQUIPMENT PAD (TYP 110)
SCALE: NTS



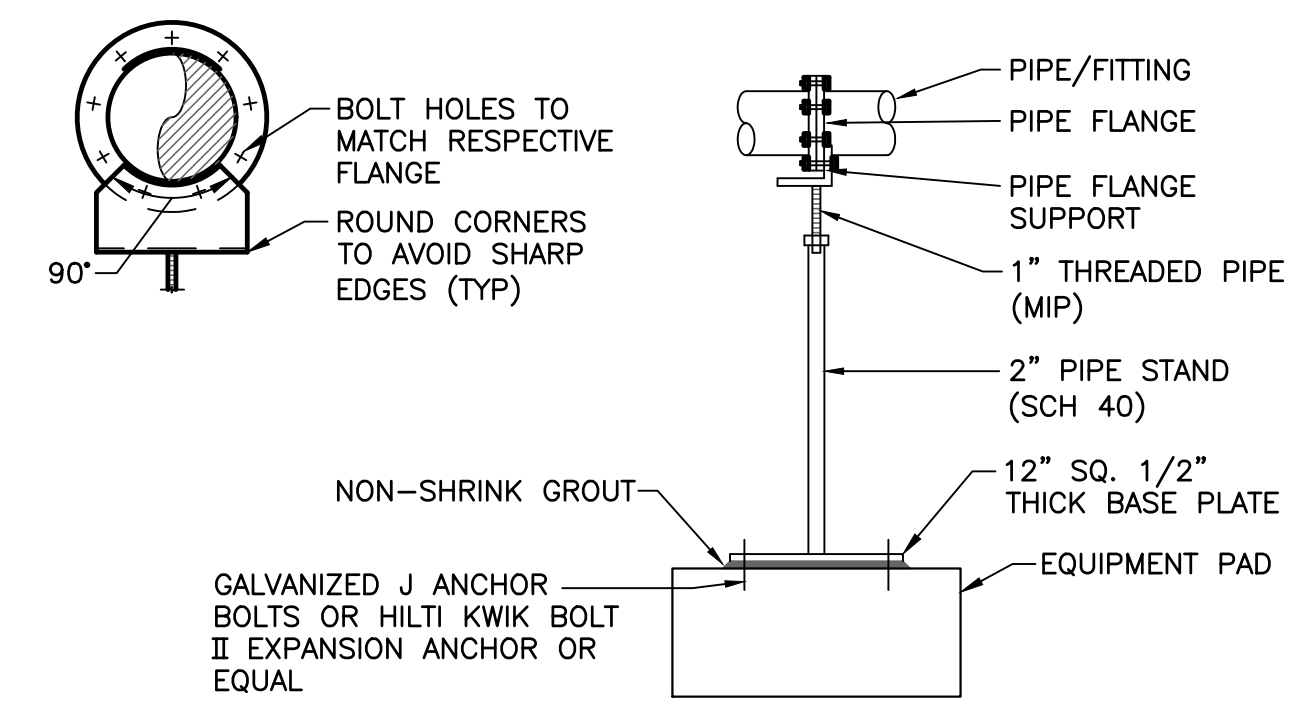
PIPE SIZE	A	B	C, D	E	F	G
2"-4"	1/2"	2"x1/4"	1"	1 1/2" ϕ	6"x6"x3/8"	4-1/2" DIA
6"-10"	5/8"	2"x1/4"	1 1/2"	2" ϕ	6"x6"x3/4"	4-1/2" DIA
12"-18"	3/4"	3"x3/8"	2"	3" ϕ	10"x10"x3/8"	4-5/8" DIA

NOTE:
1. ALL ADJUSTABLE PIPE SUPPORTS SHALL BE CARBON STEEL.
2. PROVIDE 5" EMBEDMENT FOR ALL ANCHOR BOLTS AND ANCHORS INTO CONCRETE SLAB.

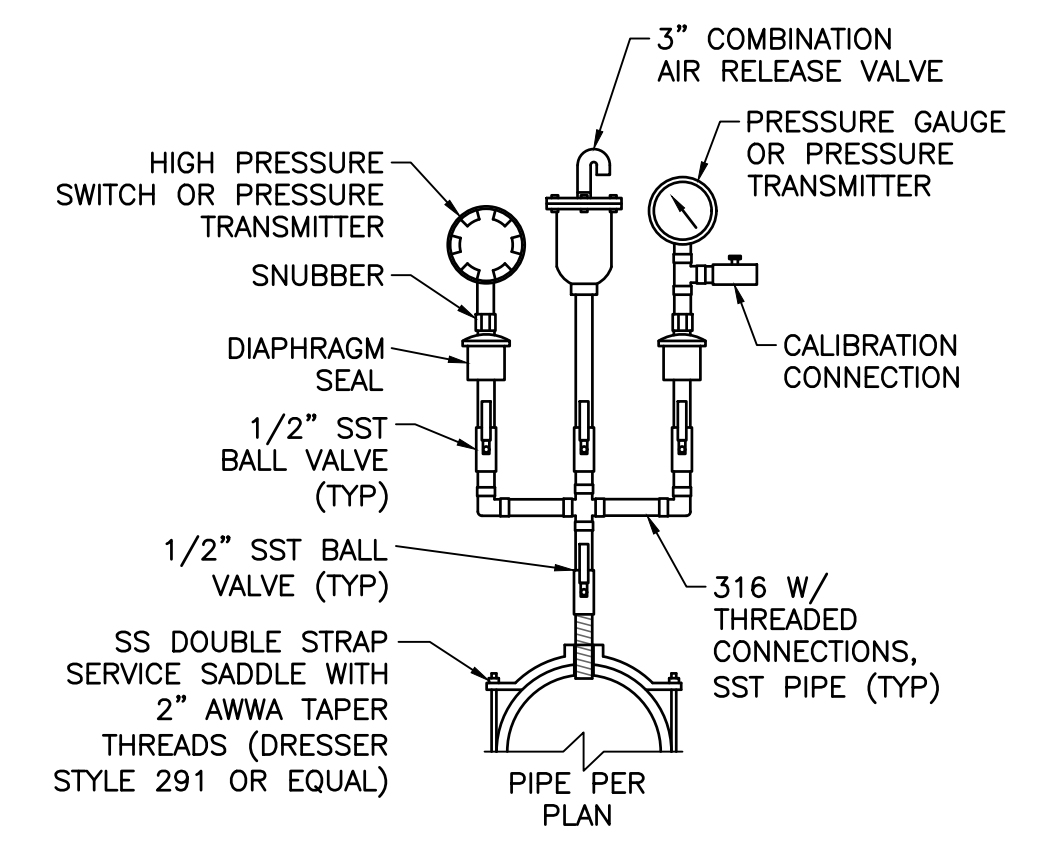
ADJUSTABLE PIPE SUPPORT (TYP 118)
SCALE: 1"=1'-0"



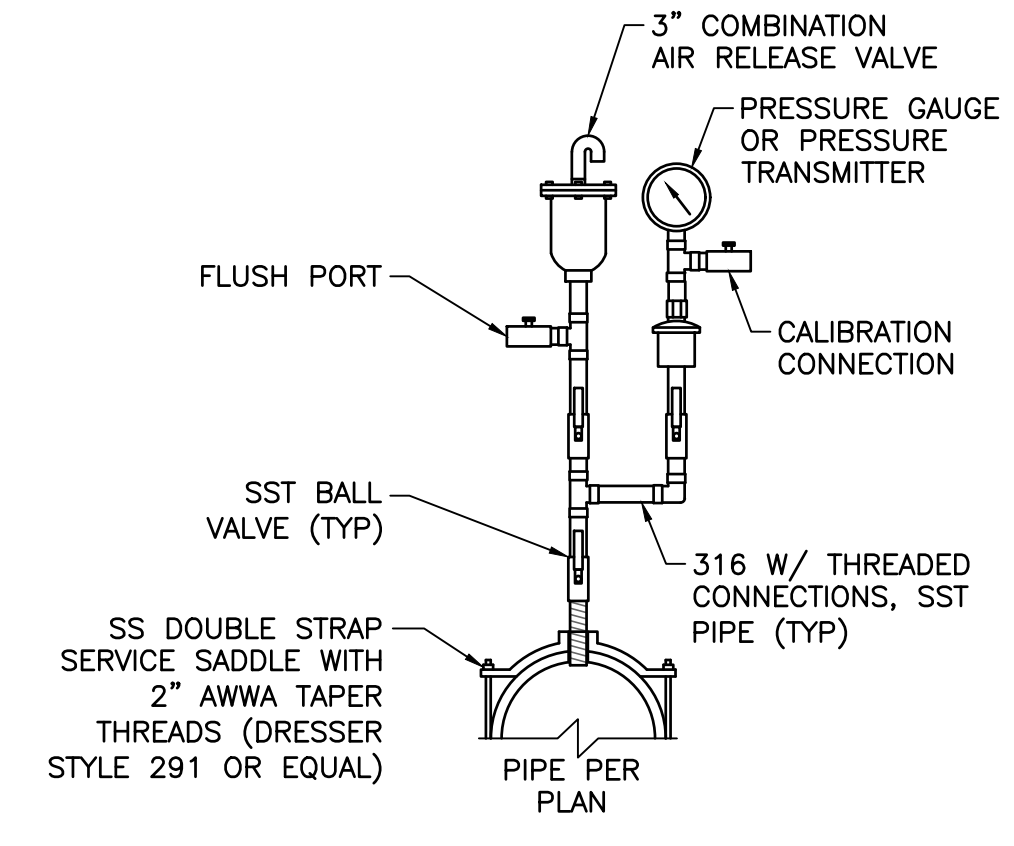
ADJUSTABLE PIPE SADDLE SUPPORT (TYP 119)
SCALE: NTS



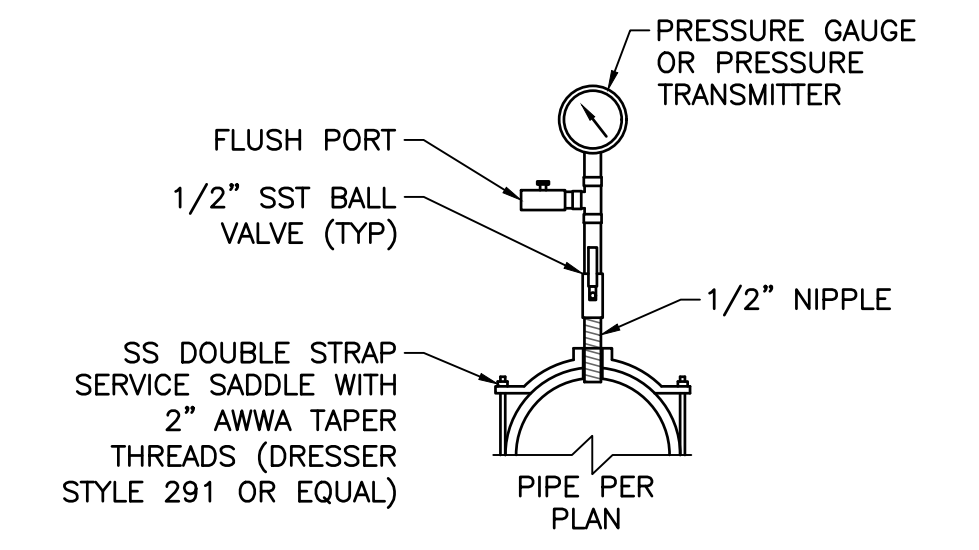
ADJUSTABLE PIPE FLANGE SUPPORT BOLTED TO FLANGE (TYP 120)
SCALE: 1"=1'-0"



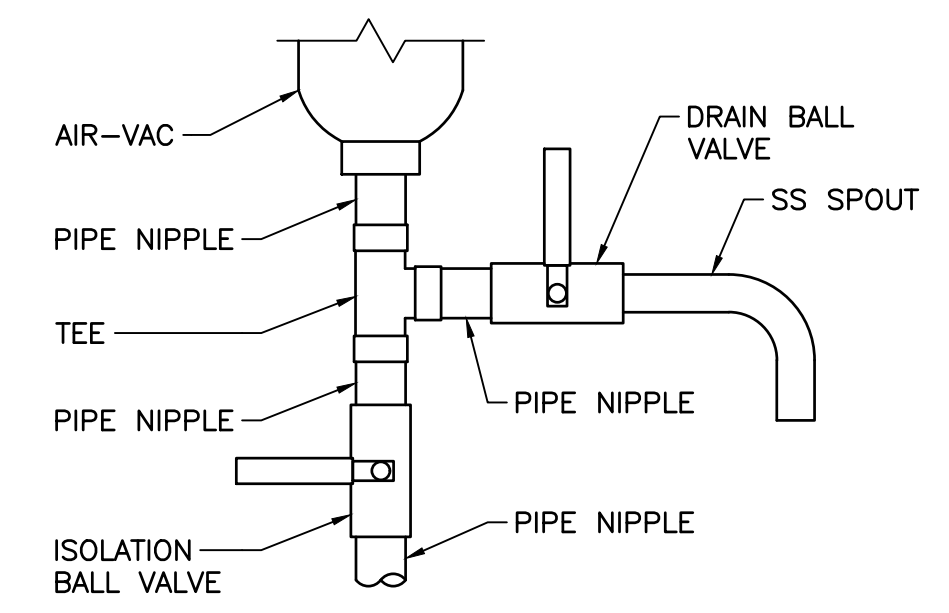
HIGH PRESSURE SWITCH-AIR RELEASE VALVE-PRESSURE GAUGE, TAP (TYP 402)
SCALE: NTS



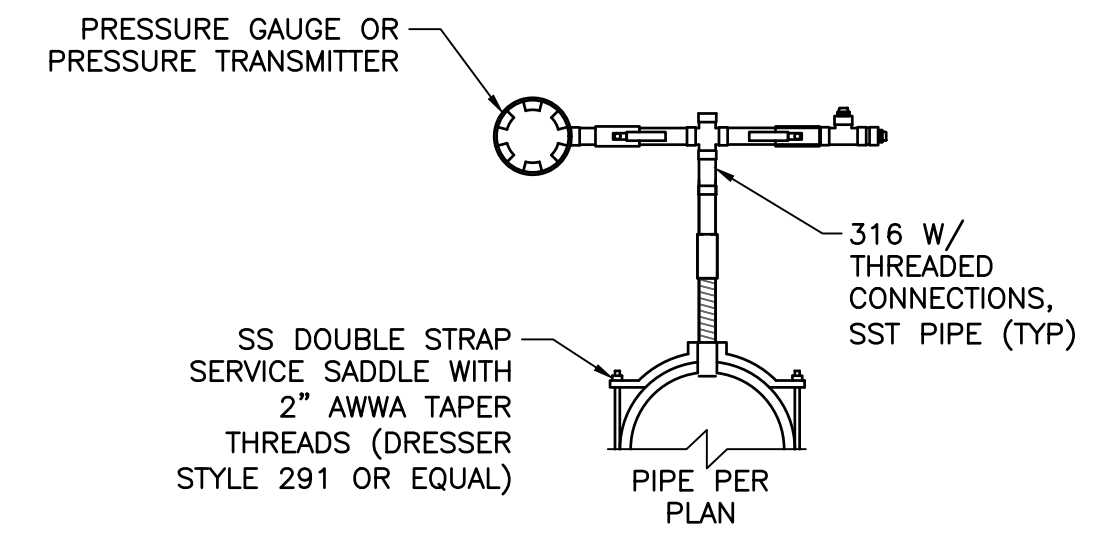
AIR RELEASE VALVE PRESSURE GAUGE, TAP (TYP 402A)
SCALE: NTS



PRESSURE GAUGE (TYP 402B)
SCALE: NTS



AIR-VAC CONNECTION DETAIL (TYP 403)
SCALE: NTS



PRESSURE GAUGE AND TRANSMITTER SCALENTS

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BOOSTER STATION 4 IMPROVEMENTS

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TYPICAL MECHANICAL DETAILS-1

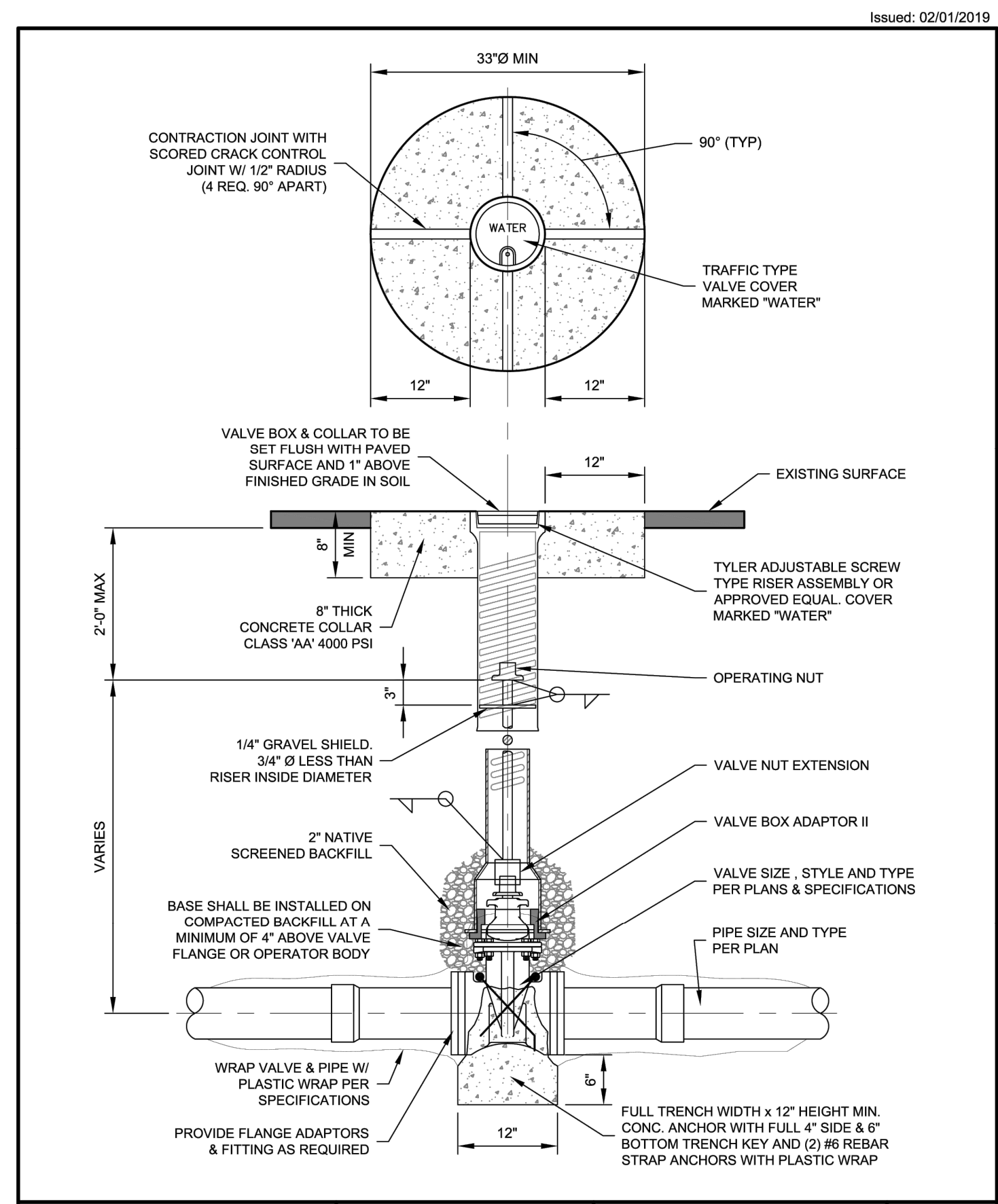


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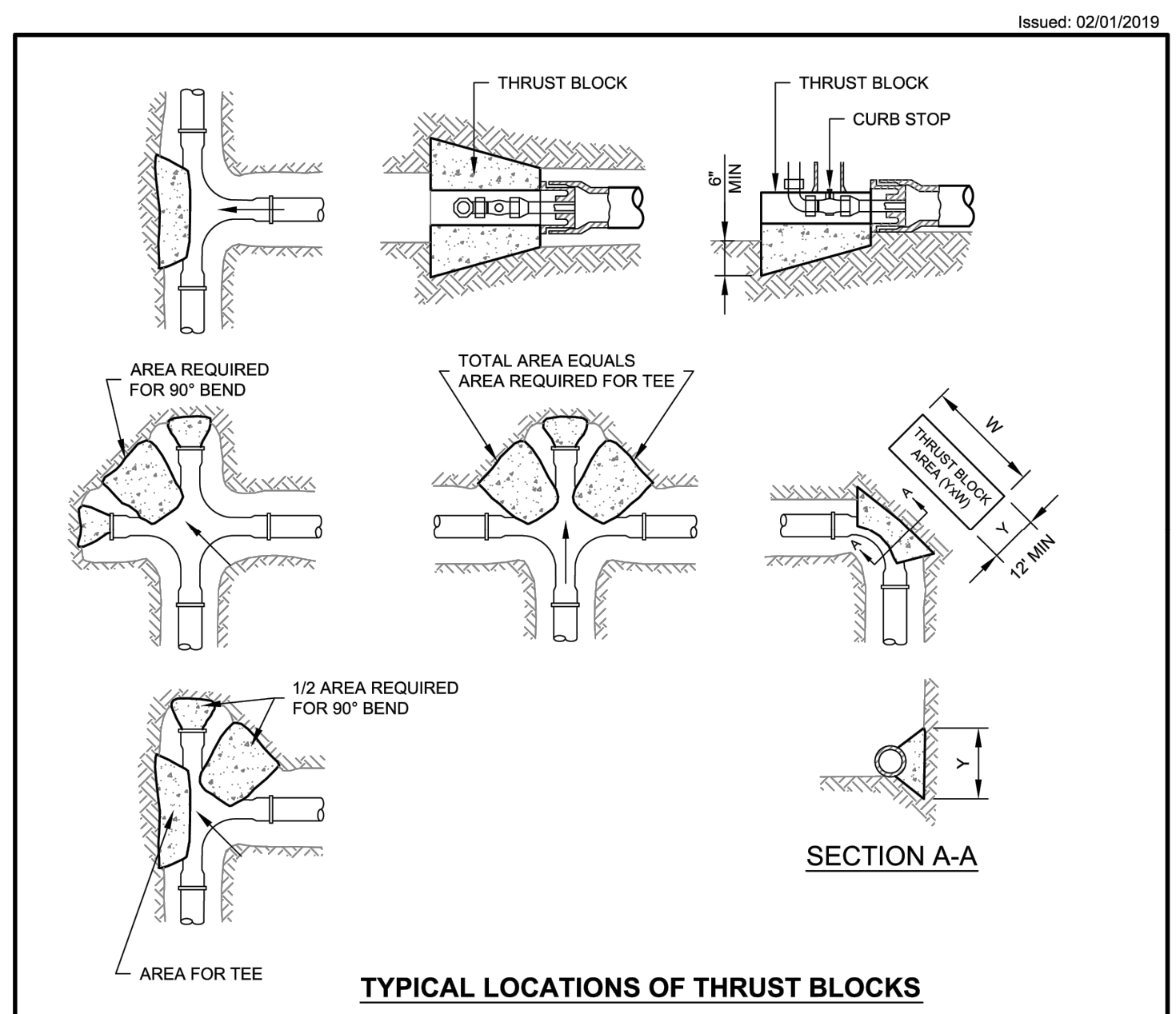


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Phone (602)629-0006
http://www.ncseng.com/



	Standard Details	Valve / Valve Riser	Scale: N.T.S.
	Water Improvements		Detail No. 300

A:\City Operations and Development\Engineering\Programs\Standards\Developing Public Works Standards\LHC Standard Details\LHC Series 300 Water\DWG\DETAIL 300.dwg



TYPICAL LOCATIONS OF THRUST BLOCKS

NOTES:

- TABLE IS BASED ON 2,000 P.S.I. TEST PRESSURE AND 3,000 LBS/SQ. FT. SOIL. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
- AREAS FOR PIPES LARGER THAN 16" SHALL BE CALCULATED FOR EACH PROJECT.
- FORM ALL NON-BEARING VERTICAL SURFACES.
- THRUST BLOCKS ARE TO EXTEND TO UNDISTURBED GROUND. CONCRETE TO BE CLASS "AA" 4000 PSI. FORM AS REQUIRED TO KEEP CLEAR OF JOINTS.
- ALL DI PIPE AND FITTINGS TO BE DOUBLE POLY WRAPPED BEFORE THRUST BLOCK INSTALLATION.

PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° & 22 1/2° BENDS
4" OR LESS	3	3
6"	4	3
8"	6	3
10"	10	5
12"	14	7
16"	24	12

	Standard Details	Thrust Blocks For Water Lines	Scale: N.T.S.
	Water Improvements		Detail No. 317

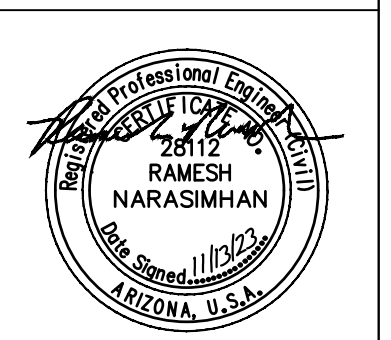
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NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

Designed by: GB	Drawn by: KWB	Checked by: RN	Date: 02-10-23	Dwg scale: NOT TO SCALE
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TYPICAL MECHANICAL DETAILS-2



EXPIRATION DATE: 09/30/24
 Sheet Number:

M-08
 Sheet 16 of 26



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LAKE HAVASU CITY

BOOSTER STATION 4 IMPROVEMENTS

Designed by: DJN
Drawn by: JHA
Checked by: AGA
Date: 11/13/23
Dwg scale: AS NOTED

ELECTRICAL
NOTES,
SYMBOLS,
AND
LEGEND



EXPIRATION DATE: 12/31/24

Sheet Number:

E-01

Sheet 17 of 24



SCHEMATIC DIAGRAM SYMBOLS			POWER SINGLE LINE DIAGRAM SYMBOLS			ELECTRICAL ABBREVIATIONS		
CONTROL RELAY TIME DELAY RELAY ALARM RELAY ELAPSED TIME METER MOTOR STARTER OR CONTACTOR COIL PHOTO CELL BEACON ALARM LIGHT PILOT LIGHT OUTPUT DV/DT FILTER HEATING ELEMENT TRANSFORMER CURRENT TRANSFORMER GROUND CONNECTION GENERATOR HORN FULL VOLTAGE NON-REVERSING (FVNR) MOTOR STARTER OR CONTACTOR NUMBER DESIGNATES NEMA SIZE NORMALLY OPEN CONTACT NORMALLY CLOSED CONTACT RTU OR PLC CONTACT	2 POSITION SELECTOR SWITCH POSITION LEGEND: X=CLOSED O=OPEN 3 POSITION SELECTOR SWITCH HAND - OFF - AUTO POSITION LEGEND: X=CLOSED O=OPEN NORMALLY CLOSED PUSH BUTTON LOCKOUT STOP PUSH BUTTON NORMALLY OPEN PUSH BUTTON EMERGENCY STOP PUSH BUTTON (MAINTAINED) DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES LIMIT OR POSITION SWITCH PRESSURE SWITCH HIGH PRESSURE SWITCH LOW FLOW SWITCH LEVEL FLOAT SWITCH TIMER RELAY CONTACT INSTANTANEOUS CLOSE TIME DELAY OPEN TIMER RELAY CONTACT NORMALLY OPEN TIME DELAY CLOSE TEMPERATURE SWITCH FUSE FUSEHOLDER OR FUSEBLOCK THERMAL OVERLOAD RELAY TERMINAL BLOCK DEVICE LOCATED AT REMOTE LOCATION CONDUIT SEALOFF	JUNCTION BOX WITH POWER DISTRIBUTION BLOCK OR LUGS CONDUIT SEALOFF LTC CONNECTION MC CONNECTION BOND TO METALLIC WATER PIPE UTILITY METER MOTOR, NUMBER DESIGNATES NEMA HORSEPOWER SIZE FUSE FUSEHOLDER OR FUSEBLOCK GENERATOR CIRCUIT BREAKER, SHOWN WITH TRIP RATING AND NUMBER OF POLES MOTOR CIRCUIT PROTECTOR WITH TRIP RATING AND NUMBER OF POLES DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES MOTOR MANAGEMENT RELAY SURGE PROTECTIVE DEVICE SOLID STATE STARTER VARIABLE FREQUENCY DRIVE HARMONIC FILTER ELECTRONIC OVERLOAD RELAY GROUND CONNECTION TRANSFORMER CONTACTOR	A AMPERE AFD ADJUSTABLE FREQUENCY DRIVE AFF ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE AI ANALOG INPUT AIC AMPS INTERRUPTING CAPACITY AO ANALOG OUTPUT AS AIR SUPPLY ATS AUTOMATIC TRANSFER SWITCH BC BYPASS CONTACTOR CB CIRCUIT BREAKER CCW COUNTER CLOCKWISE CL2 CHLORINE CON CONTACTOR CPB CONTROL PULLBOX CU COPPER, BARE CV CONTROL VALVE CW CLOCKWISE DCS DISTRIBUTED CONTROL SYSTEM DI DISCRETE INPUT DO DISCRETE OUTPUT DP DISTRIBUTION PANEL DV/DT DIFFERENTIAL VOLTAGE/TIME DRAWING ETM ELAPSED TIME METER EOL ELECTRONIC OVERLOAD EXIST EXISTING FA FOUL AIR FC FAIL CLOSED FE FLOW ELEMENT FLA FULL LOAD AMPS FS FLOW SWITCH FVNR FULL VOLTAGE NON-REVERSING FW FINISHED WATER GFCI GROUND FAULT CIRCUIT INTERRUPTER GFP GROUND FAULT PROTECTION GND GROUND GPD GALLONS PER DAY GPH GALLONS PER HOUR GPM GALLONS PER MINUTE GRS GALVANIZED RIGID STEEL H, HI HIGH H2S HYDROGEN SULFIDE HMI HUMAN MACHINE INTERFACE HOA HAND-OFF-AUTO HOR HAND-OFF-REMOTE CURRENT IC INSTRUMENTATION CABLE ICR INTERMITTENT CYCLE REACTOR IO INPUT/OUTPUT ISC SHORT CIRCUIT CURRENT JB JUNCTION BOX L, LO LOW LAN LOCAL AREA NETWORK LC LOOP CONTROLLER LCL LEVEL CONTROL LOW LCP LOCAL CONTROL PANEL LOS LOCK-OUT-STOP LOR LOCAL/OFF/REMOTE LS LEVEL (i.e., FLOAT) SWITCH LTC LIQUIDTIGHT FLEXIBLE METAL CONDUIT M MOTOR MA MANUFACTURER/AUTO mA MILLIAMPS MAX MAXIMUM MC MANUFACTURER'S CABLE MCB MAIN CIRCUIT BREAKER MCC MOTOR CONTROL CENTER MCP MOTOR CIRCUIT PROTECTOR MFR(S) MANUFACTURER(S) MGD MILLION GALLONS PER DAY MGL MILLIGRAMS PER LITER MH MANHOLE MIN MINIMUM MOV MOTOR OPERATED VALVE MMR MOTOR MANAGEMENT RELAY MTU MASTER TELEMETRY UNIT NIC NOT IN CONTRACT NOTC NORMALLY OPEN TIMED CLOSED NPW NON-POTABLE WATER NS NITROGEN SUPPLY NTS NOT TO SCALE NTU TURBIDITY OF OVERFLOW OIT OPERATOR INTERFACE TERMINAL OL OVERLOAD OLR OVERLOAD RELAY OO ON/OFF (MAINTAINED) OR OFF-REMOTE OSC OPEN/STOP/CLOSE P PHASE PB PULL BOX PCP PROCESS CONTROL PANEL PCV PRESSURE CONTROL VALVE PFR PHASE/POWER FAILURE RELAY PI PULSE INPUT PLC PROGRAMMABLE LOGIC CONTROLLER PLI PLANT INFLUENT PMP PUMP PNL PANEL PO PULSE OUTPUT PPB POWER PULLBOX PPG POUNDS PER GALLON PPH POUNDS PER HOUR PPM PARTS PER MILLION PR PAIR PRES PRESSURE PS PRESSURE SWITCH PSH PRESSURE SWITCH, HIGH PSI POUNDS PER SQUARE INCH PV PROCESS VARIABLE RAS RETURN ACTIVATED SLUDGE RW RAW WATER RF RADIO FREQUENCY RIO REMOTE INPUT OUTPUT RS RAW SEWAGE RSP RAW SEWAGE PUMP RST RESET RTD RESISTANCE TEMPERATURE DETECTOR RTU REMOTE TELEMETRY UNIT RWT REFLECTED WAVE TRAP SCA SHORT CIRCUIT AMPS SCCR SHORT CIRCUIT CURRENT RATING SEQ SERVICE ENTRANCE EQUIPMENT SEQ SERVICE ENTRANCE SECTION SLC SINGLE LOOP CONTROLLER SLOS START-LOCK-OUT-STOP SMC SUBMERSIBLE MANUFACTURER CABLE SO2 SULFUR DIOXIDE SP SET POINT SPC SPARE CONDUIT SPFR SPARE SS START/STOP SSS SOLID STATE STARTER (SOFT START) ST SHUNT TRIP TC TELEPHONE CABLE TS TEMPERATURE SWITCH TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR TYP TYPICAL UG UNDERGROUND UL UNDERWRITERS LABORATORIES UM UTILITY METER UNO UNLESS NOTED OTHERWISE V VOLT VFD VARIABLE FREQUENCY DRIVE WATT, WIRE WATT, WIRE WAS WASTE ACTIVATED SLUDGE WP WEATHERPROOF XFMR TRANSFORMER XMR TRANSFORMER XMTR TRANSMITTER ZS POSITION (i.e., LIMIT) SWITCH					
		SITE PLAN SYMBOLS TELEPHONE OUTLET FIELD DEVICE SINGLE POLE SWITCH GROUND ROD 3 WAY SWITCH DUPLEX RECEPTACLE 4-WAY SWITCH ANTENNA MAST MANUAL MOTOR STARTER CONDUIT SEALOFF SPECIAL PURPOSE OR WELDING OUTLET DISCONNECT SWITCH SMOKE DETECTOR MOTOR CONDUIT TURN UP THERMOSTAT CONDUIT TURN DOWN	ELECTRICAL LINETYPES EXPOSED CONDUIT EXISTING EXPOSED CONDUIT UNDERGROUND CONDUIT EXISTING UNDERGROUND CONDUIT BARE COPPER GROUND CONDUCTOR EXISTING OR FUTURE NEW ELECTRICAL EQUIPMENT DEMOLITION DETAIL VIEW OR MATCHING CAPPED CONDUIT STUB OUT GROUPED CONDUIT AND CIRCUIT IDENTIFICATION TAGS. REFER TO THE POWER SINGLE-LINE, SCHEMATIC CONNECTION DIAGRAMS AND CIRCUIT SCHEDULE FOR CONDUIT SIZES AND CONTENTS. P=POWER C=CONTROL	GENERAL NOTES 1. THE COMPLETED INSTALLATION SHALL COMPLY WITH LATEST REVISION OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES, AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. ALL WORK SHALL BE COMPLETED IN A NEAT, WORKMANLIKE MANNER IN ACCORDANCE WITH THE LATEST NECA STANDARDS OF INSTALLATION UNDER COMPETENT SUPERVISION. INSTALL GROUNDING PER NEC. 2. VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OTHER FACTORS, WHICH MAY AFFECT THE EXECUTION OF THE WORK. INCLUDE ALL RELATED COSTS IN THE INITIAL BID PROPOSAL. 3. THE CONTRACTOR SHALL COORDINATE WORK WITH THE UTILITIES PROVIDING SERVICES ON THIS PROJECT, AND SHALL COMPLY WITH ALL THEIR INSTALLATION REQUIREMENTS. 4. ALL MATERIALS SHALL BE NEW AND OF THE BEST QUALITY, MANUFACTURED IN ACCORDANCE WITH THE LATEST REVISION OF NEMA, ANSI, UL, OR OTHER APPLICABLE STANDARDS. THE USE OF MANUFACTURERS' NAMES, MODELS, AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, USEFULNESS, AND BID PRICE. 5. PROTECT ALL ELECTRICAL MATERIAL AND EQUIPMENT INSTALLED AGAINST DAMAGE BY OTHER TRADES, WEATHER CONDITIONS, OR ANY OTHER PREVENTABLE CAUSES. EQUIPMENT DAMAGED DURING SHIPPING OR CONSTRUCTION, PRIOR TO ACCEPTANCE BY THE ENGINEER OR THE OWNER, WILL BE REJECTED AS DEFECTIVE. 6. LEAVE THE SITE CLEAN. REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS AND ALL MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THE WORK DURING CONSTRUCTION. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS, LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK. DAMAGED PAINT AND FINISHES SHALL BE TOUCHED UP OR REPAINTED WITH MATCHING COLOR PAINT AND FINISH. 7. CIRCUIT CONDUCTORS #6 AWG OR SMALLER SHALL BE THWN STRANDED COPPER. #4 AWG THROUGH #2 AWG SHALL BE XHHW STRANDED COPPER. #1 AWG OR LARGER SHALL BE XHHW-2 STRANDED COPPER. MINIMUM POWER CONDUCTOR SIZE SHALL BE #12 AWG WITH #12 AWG GROUND. 8. UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC. MINIMUM CONDUIT DEPTH SHALL BE 24 INCHES. MINIMUM UNDERGROUND CONDUIT SIZE SHALL BE 1 INCH. 9. CONDUITS SHALL BE MARKED AT EACH END WITH MATCHING NUMBERED BRASS TAGS. SPARE CONDUITS SHALL HAVE A PULL STRING INSTALLED, SECURED, AND CAPPED. 10. EXPOSED CONDUITS SHALL BE GALVANIZED RIGID STEEL (GRS). MINIMUM SIZE 3/4 INCH, UNLESS OTHERWISE NOTED ON THE PLANS. 11. SAFETY SWITCHES, ELECTRICAL DISTRIBUTION EQUIPMENT, CONTROL PANELS, AND OTHER ELECTRICAL DEVICES SHALL BE UL LISTED, AND RATED FOR HEAVY DUTY SERVICE. 12. WIRING DEVICES SHALL BE SPECIFICATION GRADE. 13. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING, SCHEDULING, DOCUMENTING, AND PERFORMING THE WORK SO THAT A COMPLETE ELECTRICAL, INSTRUMENTATION AND CONTROL SYSTEM FOR THE FACILITY IS PROVIDED. ACCURATE SHOP AND RECORD DRAWINGS, AND O&M MANUALS SHALL BE SUBMITTED PRIOR TO FINAL ACCEPTANCE OF THE WORK. 14. TYPICAL DETAILS SHALL APPLY IN ALL CASES, WHETHER SPECIFICALLY REFERRED TO OR NOT.				
		CIRCUIT SCHEDULE LEGEND AAA-BC SEQUENCE NUMBER TYPE C=CONTROL P=POWER DEVICE SERVED						

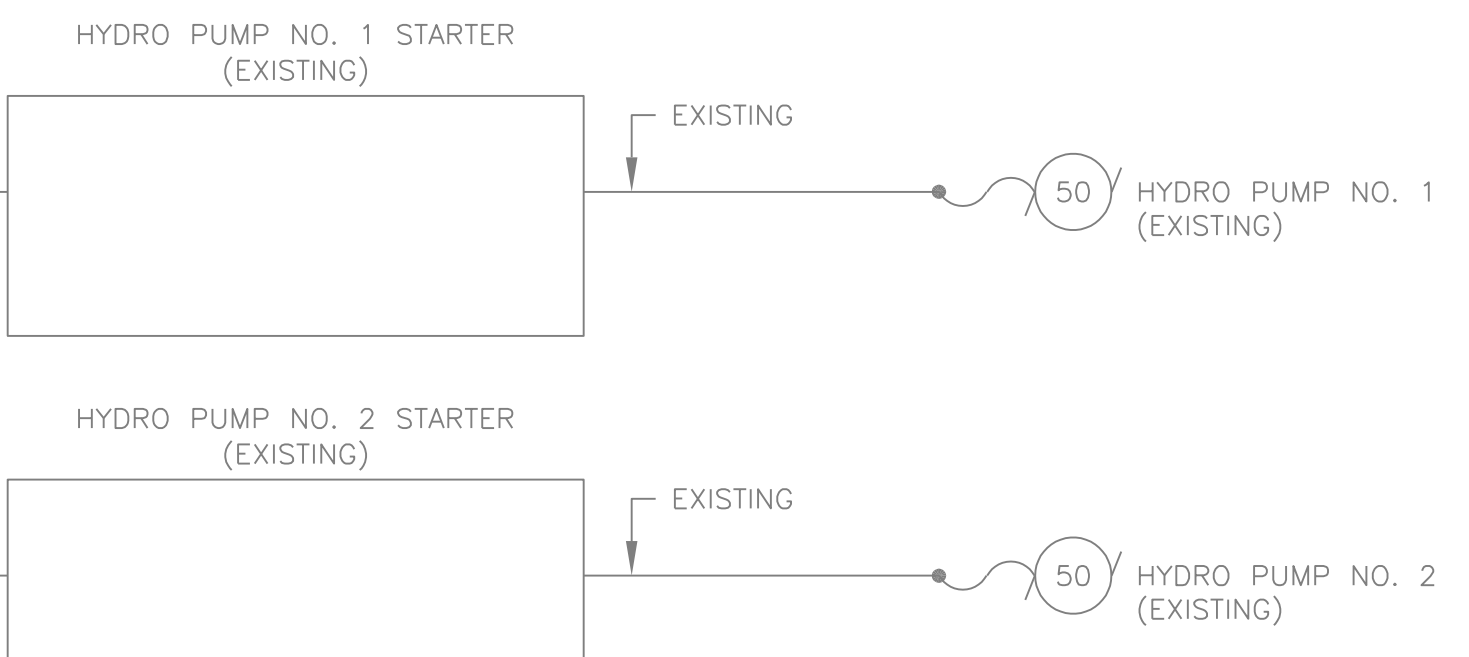


CIRCUIT/DESCRIPTION	KVA	HP	FLA
MOTOR LOADS			
BOOSTER PUMP NO. 1 (EXISTING)		40.0	52.0
BOOSTER PUMP NO. 2 (EXISTING)		40.0	52.0
BOOSTER PUMP NO. 3 (EXISTING)		40.0	52.0
BOOSTER PUMP NO. 4 (EXISTING)		40.0	52.0
BOOSTER PUMP NO. 5		40.0	52.0
HYDRO PUMP NO. 1 (ABANDONED)			
HYDRO PUMP NO. 2 (ABANDONED)			
NON-MOTOR LOADS			
SINGLE PHASE TRANSFORMER (EXISTING)	15.0		31.3
SUBTOTAL			291.3
+ 25% OF LARGEST MOTOR			13.0
TOTAL AMPS @ 480V/3PHASE			304.3
SERVICE SIZE (AMPS)			600.0

NOTES:

- ALL SHORT CIRCUIT INTERRUPTING AND PROTECTING DEVICES SHALL HAVE A SHORT CIRCUIT INTERRUPTING RATING EQUAL TO OR GREATER THAN THE ASSOCIATED AVAILABLE FAULT CURRENT.
- OVERCURRENT PROTECTIVE DEVICES ARE TO BE COORDINATED SUCH THAT FAULTS ARE LOCALIZED/ISOLATED TO THEIR NEAREST RESPECTIVE OCPD.
- INSTALL 80A CIRCUIT BREAKER IN EXISTING DISTRIBUTION PANEL. NEW CIRCUIT BREAKER SHALL MATCH EXISTING.
- NEW VARIABLE FREQUENCY DRIVE SHALL MATCH EXISTING (ALLEN-BRADLEY POWER FLEX 753 WITH ETHERNET/IP COMMUNICATIONS MODULE).
- PER ALLEN-BRADLEY, SPECIFIED VARIABLE FREQUENCY DRIVE IN CONJUNCTION WITH CLASS J FUSES PROVIDE AN SCCR RATED COMBINATION OF 65KA.

B LOAD CALCULATIONS

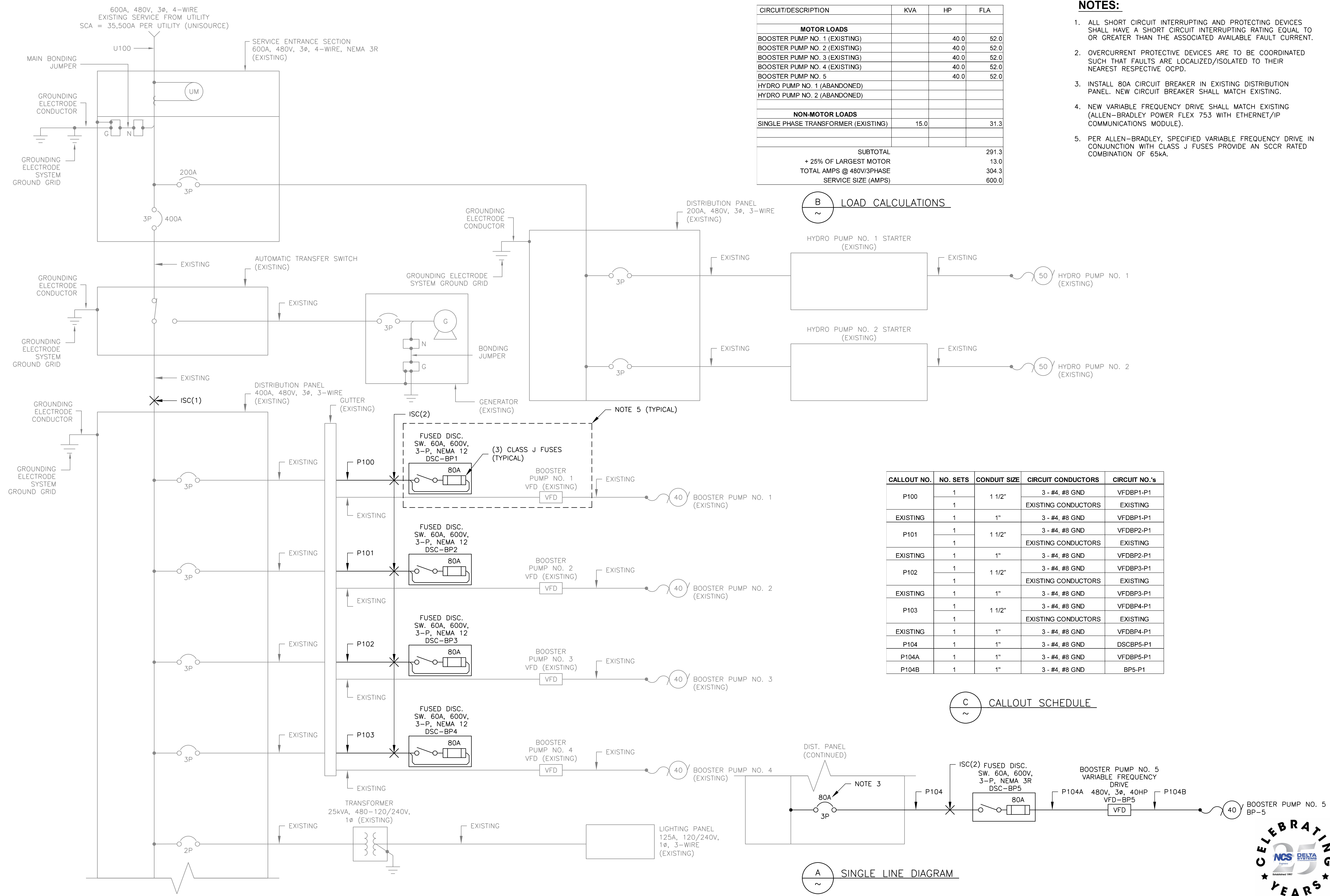


C CALLOUT SCHEDULE

CALLOUT NO.	NO. SETS	CONDUIT SIZE	CIRCUIT CONDUCTORS	CIRCUIT NO.'s
P100	1	1 1/2"	3 - #4, #8 GND	VFDBP1-P1
	1		EXISTING CONDUCTORS	EXISTING
EXISTING	1	1"	3 - #4, #8 GND	VFDBP1-P1
	1	1 1/2"	3 - #4, #8 GND	VFDBP2-P1
P101	1	1 1/2"	3 - #4, #8 GND	VFDBP2-P1
	1		EXISTING CONDUCTORS	EXISTING
EXISTING	1	1"	3 - #4, #8 GND	VFDBP2-P1
	1	1 1/2"	3 - #4, #8 GND	VFDBP3-P1
P102	1	1 1/2"	3 - #4, #8 GND	VFDBP3-P1
	1		EXISTING CONDUCTORS	EXISTING
EXISTING	1	1"	3 - #4, #8 GND	VFDBP3-P1
	1	1 1/2"	3 - #4, #8 GND	VFDBP4-P1
P103	1	1 1/2"	3 - #4, #8 GND	VFDBP4-P1
	1		EXISTING CONDUCTORS	EXISTING
EXISTING	1	1"	3 - #4, #8 GND	VFDBP4-P1
	1	1"	3 - #4, #8 GND	DSCBP5-P1
P104A	1	1"	3 - #4, #8 GND	VFDBP5-P1
P104B	1	1"	3 - #4, #8 GND	BP5-P1

C CALLOUT SCHEDULE

A SINGLE LINE DIAGRAM



LAKE HAVASU CITY

BOOSTER STATION 4 IMPROVEMENTS

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 Drawn by: JHA
 Checked by: AGA
 Date: 11/13/23
 Dwg scale: AS NOTED

SINGLE LINE
 DIAGRAM



EXPIRATION DATE: 12/31/24

Sheet Number:

E-02

Sheet 18 of 24





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LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

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ELECTRICAL SCHEDULES



EXPIRATION DATE: 12/31/24

Sheet Number:

E-03
 Sheet 19 of 24



SHORT CIRCUIT CALCULATIONS	
DEFINITIONS	FORMULAS
ISC = SHORT CIRCUIT CURRENT (AMPS)	3 PH: $f = \frac{1.732 \times L \times I_{sc}}{N \times C \times V_{L-L}}$
N = NUMBER OF CONDUCTORS/PHASE	
L = LENGTH OF CONDUCTOR (FEET)	
C = CONSTANT FROM TABLE OF "C"	1 PH: $f = \frac{2 \times L \times I_{sc}}{N \times C \times V_{L-L}}$
I _{sc} = AVAILABLE SHORT-CIRCUIT AMPS	
V _{L-L} = LINE TO LINE VOLTAGE (VOLTS)	
V _P = PRIMARY VOLTAGE	1 PH XFMR: $f = \frac{I_{sc} \times V_p \times \% Z}{100,000 \times KVA}$
V _S = SECONDARY VOLTAGE	
% Z = TRANSFORMER % IMPEDANCE	

ISC(1)

$$f1 = \frac{1.732 \times 50 \times 35,500}{2 \times 16673 \times 480} = 0.1921$$

$$M = \frac{1}{1 + 0.1921} = 0.8389$$

$$ISC(1) = 35,500 \times 0.8389 = 29,781 \text{ A}$$

ISC(2)

$$f2 = \frac{1.732 \times 20 \times 29,781}{1 \times 3825 \times 480} = 0.5619$$

$$M = \frac{1}{1 + 0.5619} = 0.6402$$

$$ISC(2) = 29,781 \times 0.6402 = 19,066 \text{ A}$$

SHEET NO.	CIRCUIT	CONDUCTORS
E-05	VFDBP5-C1	CAT6 ETHERNET CABLE

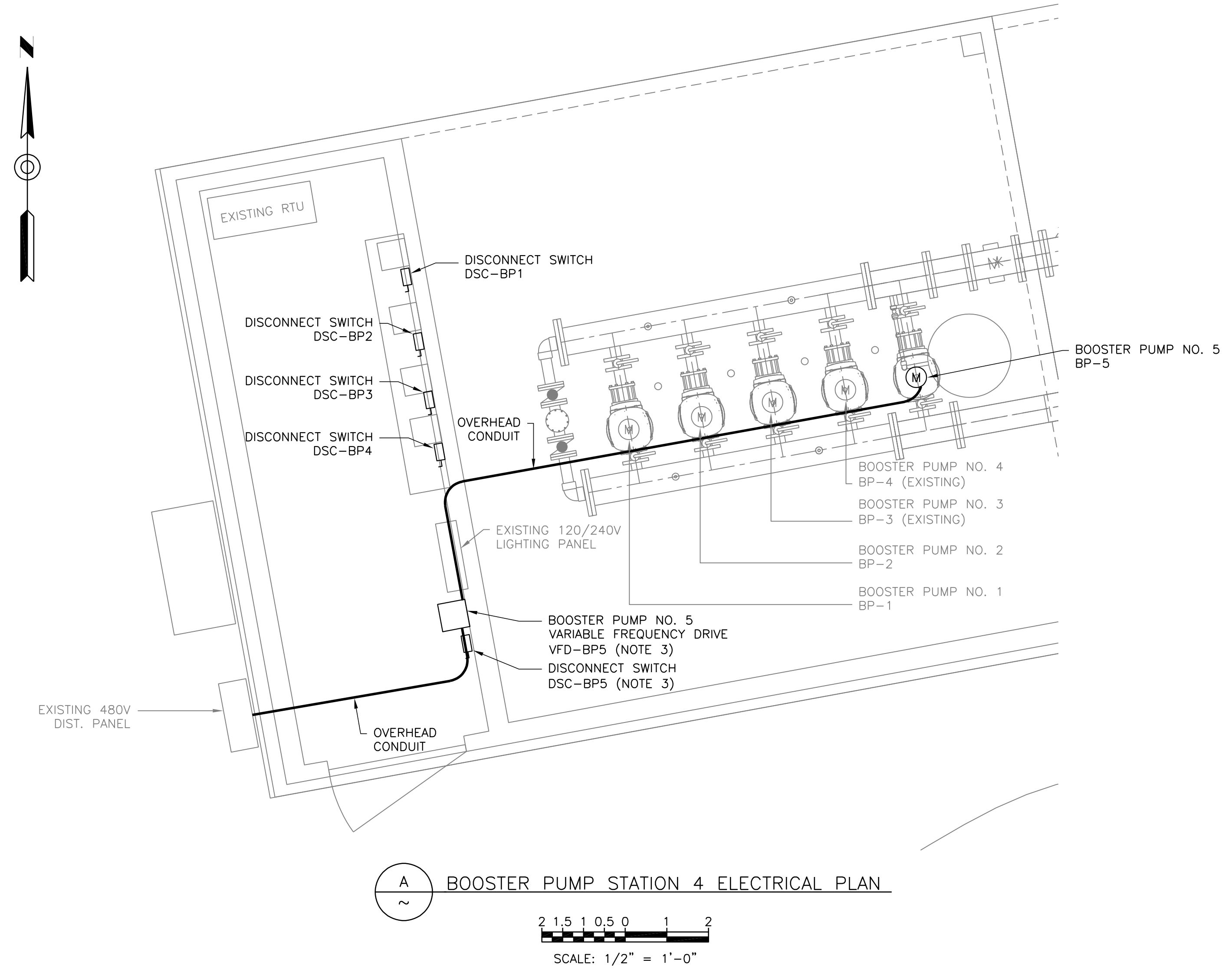
A
 ~
 MASTER CIRCUIT SCHEDULE

B
 ~
 SHORT CIRCUIT CALCULATIONS

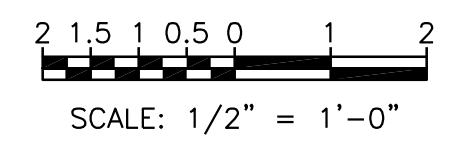


NOTES:

1. CONDUIT ROUTING SHOWN IS SCHEMATIC IN NATURE ACTUAL CONDUIT ROUTING SHALL BE FIELD DETERMINED. REFER TO CONDUIT BLOCK DIAGRAM FOR CONDUIT INFORMATION/REQUIREMENTS INCLUDING TO/FROM INFO, CONTENTS, TAG #'S, SIZES ETC.
2. ETHERNET COMMUNICATION CABLES BETWEEN VARIABLE FREQUENCY DRIVE AND RTU SHALL BE ROUTED THROUGH WIREWAYS (I.E. PANDUIT; NOT SHOWN) MOUNTED ON PLYWOOD WALLS. REFER TO CONDUIT BLOCK DIAGRAM FOR ADDITIONAL DETAILS.
3. EXISTING SWITCH AND RECEPTACLE SHALL BE RELOCATED AS DIRECTED BY OWNER TO PROVIDE ADEQUATE SPACE FOR NEW VARIABLE FREQUENCY DRIVE AND ASSOCIATED DISCONNECT SWITCH.



A BOOSTER PUMP STATION 4 ELECTRICAL PLAN



NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

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ELECTRICAL
SITE PLAN



EXPIRATION DATE: 12/31/24

Sheet Number:

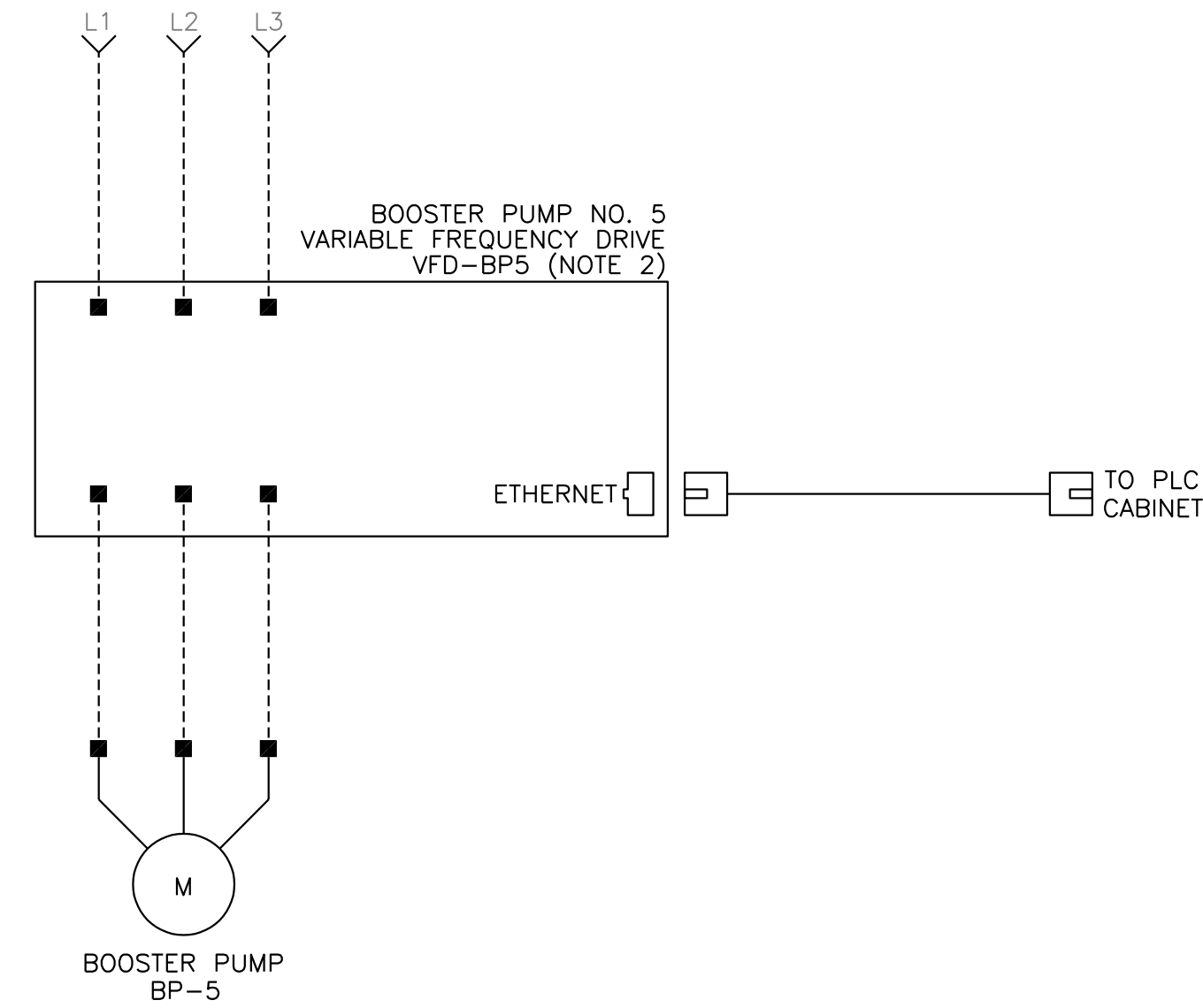
E-04
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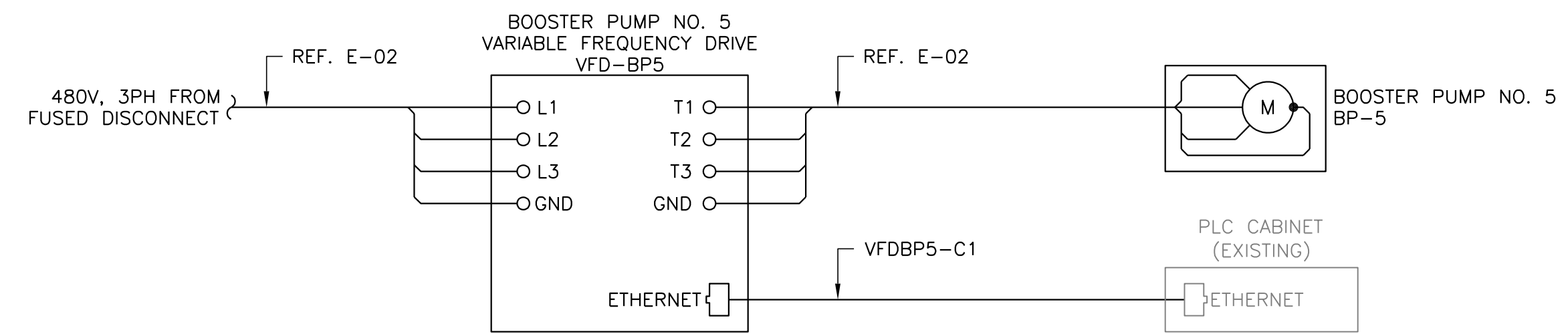


NOTES:

1. REFER TO SHEET E-03 FOR MASTER CIRCUIT SCHEDULE.
2. ENSURE ALL ELECTRICAL CONNECTIONS ON VARIABLE FREQUENCY DRIVES ARE PROPERLY COVERED TO PREVENT SHOCK HAZARD.



A BOOSTER PUMP VARIABLE FREQUENCY DRIVE (VFD-BP5) SCHEMATIC DIAGRAM
SCHEMATIC



B BOOSTER PUMP VARIABLE FREQUENCY DRIVE (VFD-BP5) CONNECTION DIAGRAM
CONNECTION

NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

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SCHEMATIC & CONNECTION DIAGRAMS



EXPIRATION DATE: 12/31/24

Sheet Number:

E-05
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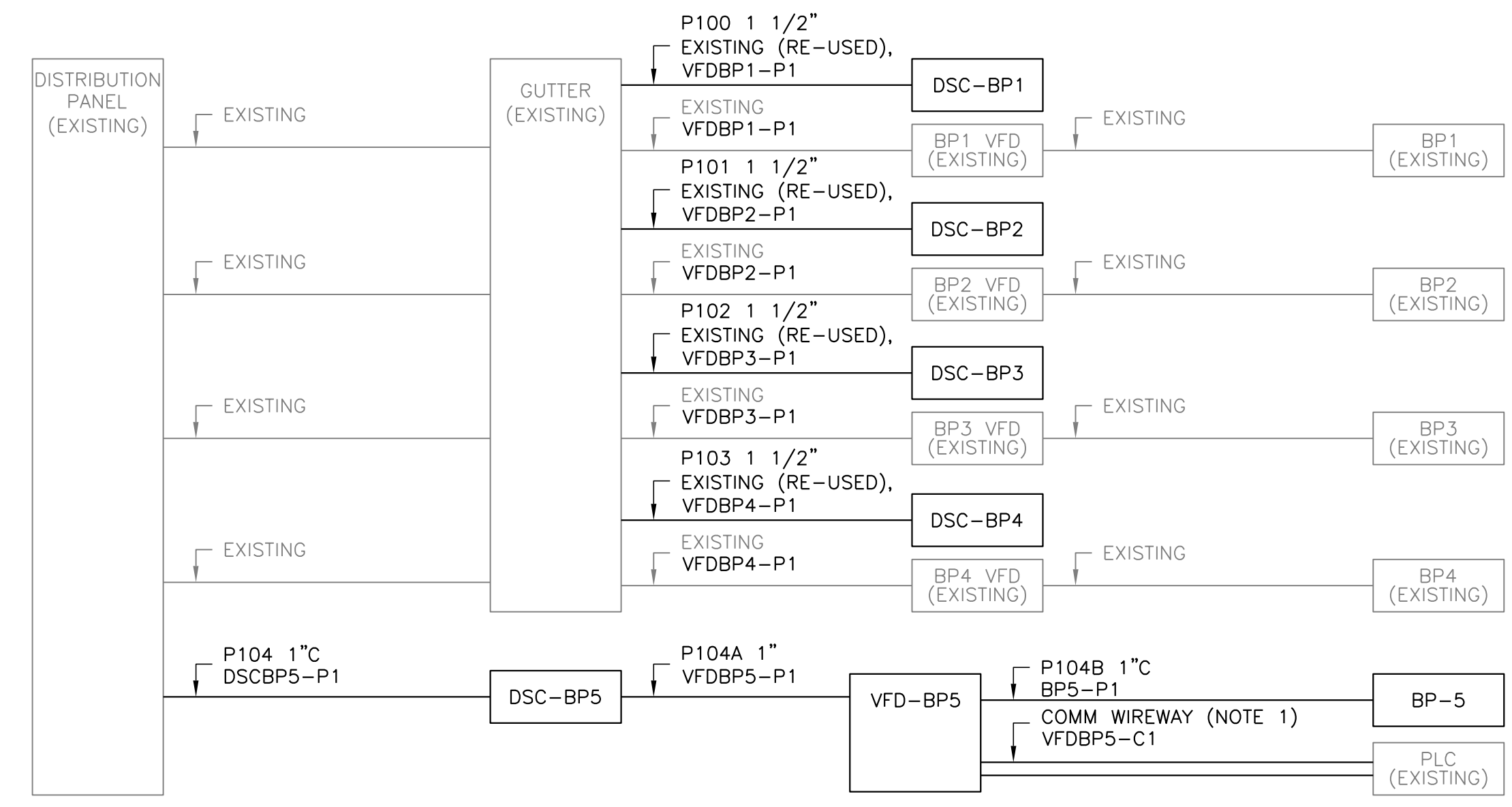
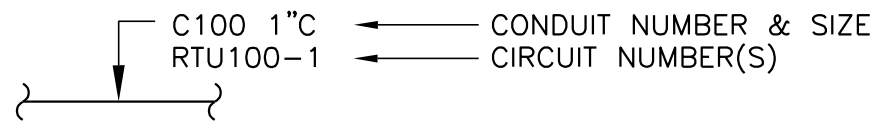


NOTES:

- ETHERNET WIRING BETWEEN NEW VFD AND RTU PANEL SHALL BE ROUTED IN WIREWAY (I.E. PANDUIT) WHERE POSSIBLE.

NO.	REVISIONS / SUBMISSIONS	DATE

LEGEND:



A BOOSTER STATION 4 CONDUIT BLOCK DIAGRAM

LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

Designed by: DLN	Drawn by: JHA	Checked by: AGA	Date: 11/13/23	Dwg scale: AS NOTED
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CONDUIT BLOCK DIAGRAM



EXPIRATION DATE: 12/31/24

Sheet Number:

E-06
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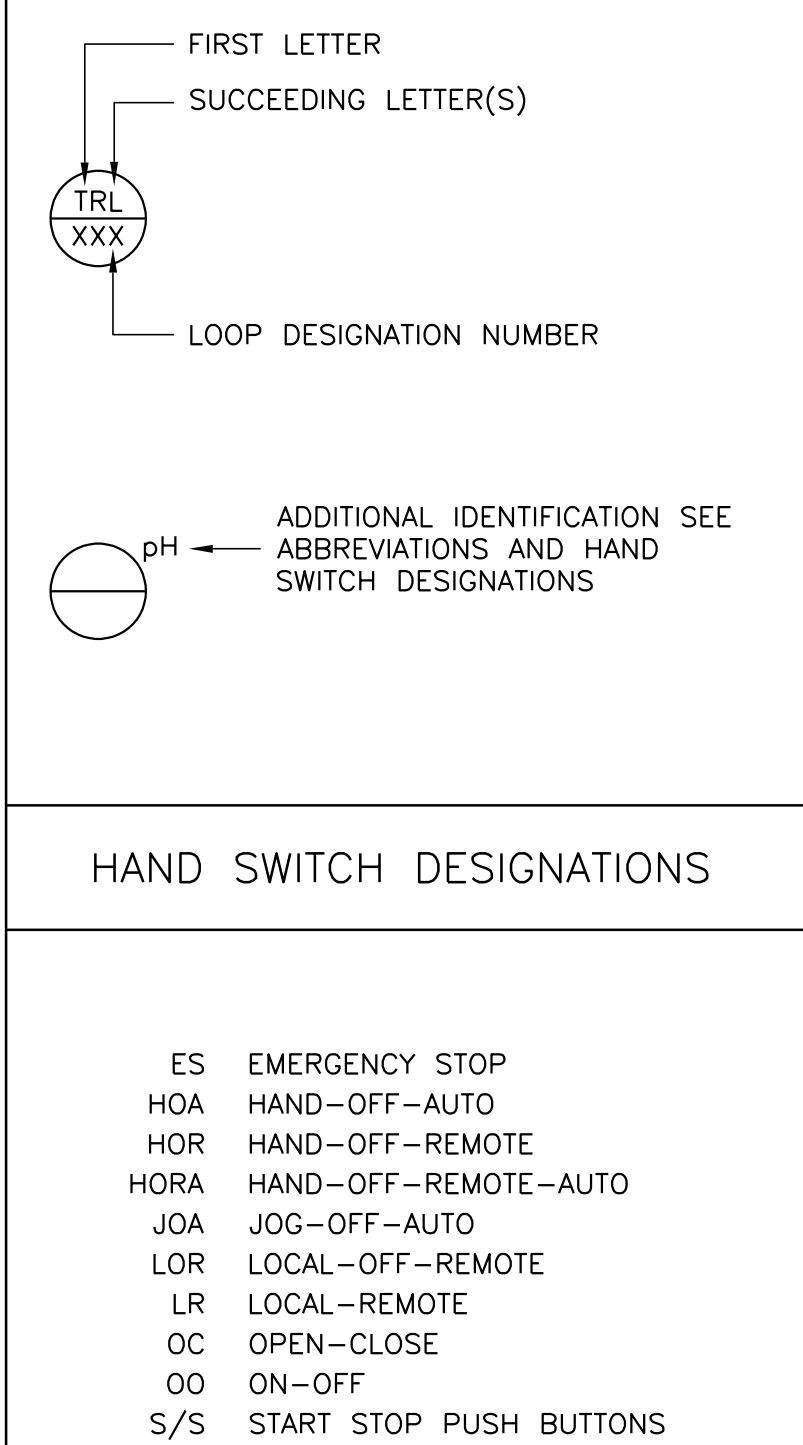
ISA INSTRUMENT IDENTIFICATION TABLE

FIRST LETTERS		SUCCEEDING LETTERS		
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A ANALYZER		ALARM		AUTO
B BURNER, COMBUSTION				
C CONDUCTIVITY			CONTROL	CLOSED
D DENSITY	DIFFERENTIAL			
E VOLTAGE		ELEMENT		
F FLOW	RATIO			
G GAUGE		GLASS, VIEWING DEVICE		
H HAND				HIGH
I CURRENT		INDICATE		
J POWER	SCAN			
K TIME, TIME SCHED.	TIME RATE OF CHANGE		CONTROL STATION	
L LEVEL		LIGHT		LOW
M MOTION				MIDDLE
N INTRUSION				NORMAL
O TORQUE		ORIFICE, RESTRICTION		OPEN
P PRESSURE		POINT CONNECTION		STOP
Q QUANTITY	INTEGRATE, TOTALIZE			
R RADIATION		RECORD, OR PRINT		RUN OR REMOTE
S SPEED, FREQUENCY	SAFETY		SWITCH	START
T TEMPERATURE			TRANSMIT	
U MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V VIBRATION			VALVE, LOUVER	
W WEIGHT		WELL		
X MOTOR	X-AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y EVENT, STATE, OR PRESENCE	Y-AXIS		RELAY, COMPUTE, CONVERT	
Z POSITION	Z-AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

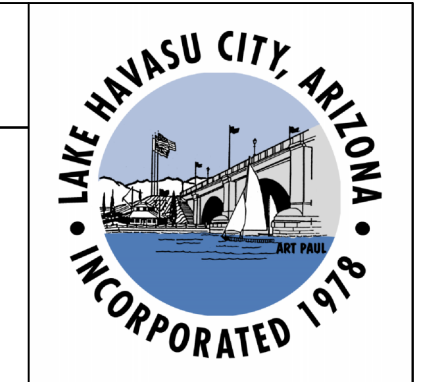
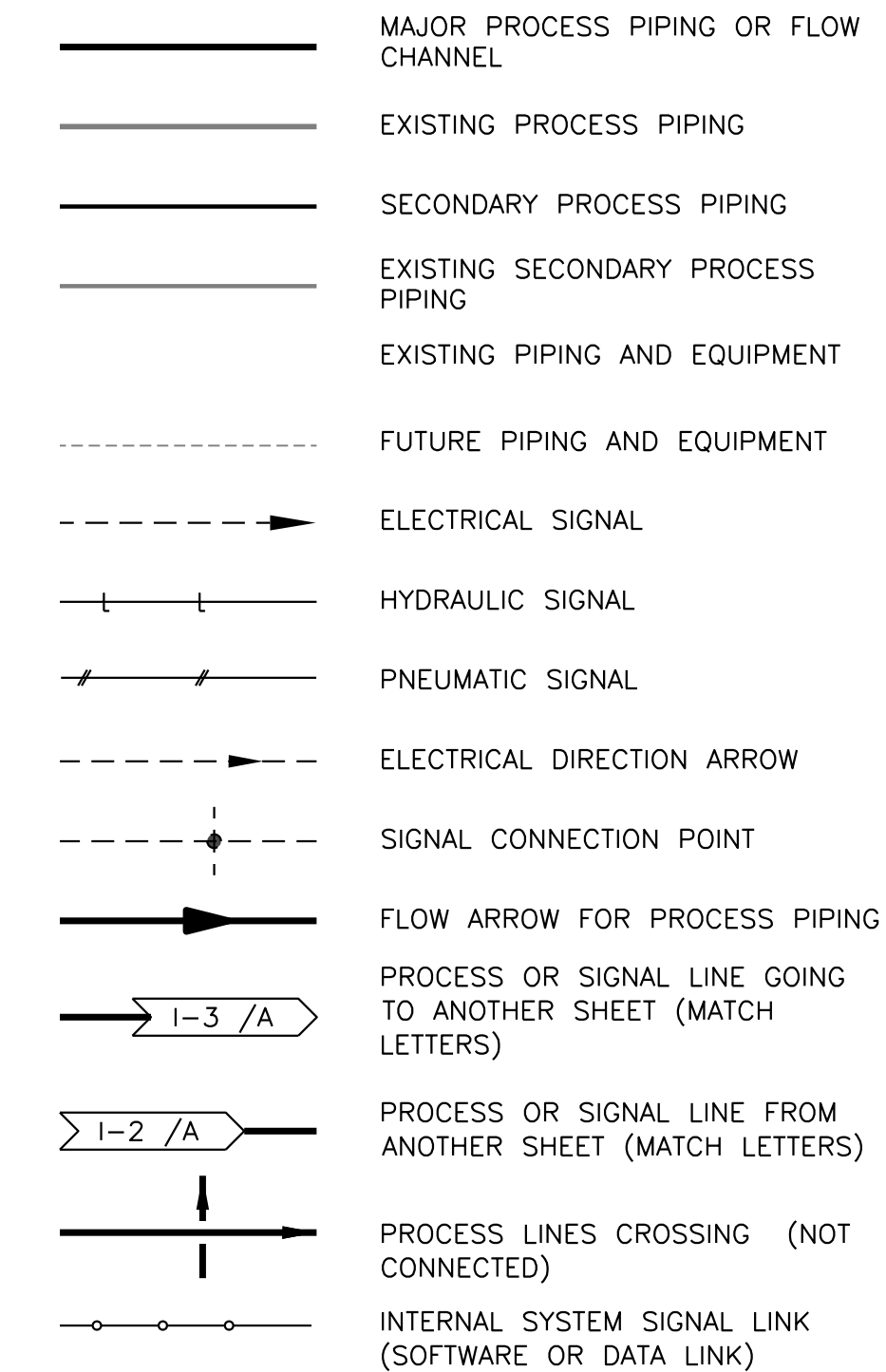
P&ID ABBREVIATIONS

A AMPERE	AFD ADJUSTABLE FREQUENCY DRIVE	AI ANALOG INPUT	AIC AMPS INTERRUPTING CAPACITY	ARV AIR RELIEF VALVE	AO ANALOG OUTPUT	AS AIR SUPPLY	ATS AUTOMATIC TRANSFER SWITCH	AUTO AUTOMATIC	CB CIRCUIT BREAKER	CL2 CHLORINE	CON CONTACTOR	CJ COPPER	CV CONTROL VALVE	DCS DISTRIBUTED CONTROL SYSTEM	DI DISCRETE INPUT	DO DISSOLVED OXYGEN, DISCRETE OUTPUT	DP DIFFERENTIAL PRESSURE	DWG DRAWING	EGO EMERGENCY GAS OFF	ETM ELAPSED TIME METER	ETMF ELAPSED TIME METER (FAST SPEED)	ETMS ELAPSED TIME METER (SLOW SPEED)	EOL ELECTRONIC OVERLOAD	EXIST EXISTING	FA FOUL AIR	FC FAIL CLOSED	FE FINAL EFFLUENT	FR FORWARD-REVERSE	FS FLOAT SWITCH	FVNR FULL VOLTAGE NON-REVERSING	FW FINISHED WATER	GND GROUND	GAL GALLONS	GPD GALLONS PER DAY	GPH GALLONS PER HOUR	GPM GALLONS PER MINUTE	H, HI HIGH	H2S HYDROGEN SULFIDE	HMI HUMAN MACHINE INTERFACE	HOA HAND-OFF-AUTO	IO INPUT/OUTPUT	IOE INTERNAL-OFF-EXTERNAL	JB JUNCTION BOX	L, LO LOW	LAN LOCAL AREA NETWORK	LC LOOP CONTROLLER	LCP LOCAL CONTROL PANEL	LOS LOCK-OFF-STOP	LR LOCAL/REMOTE	LS LEVEL (i.e., FLOAT) SWITCH	M MOTOR	MA MANUAL/AUTO	mA MILLIAMPS	MC MANUFACTURE CABLE	MCC MOTOR CONTROL CENTER	MCP MOTOR CIRCUIT PROTECTOR	MFR(S) MANUFACTURER(S)	MGD MILLION GALLONS PER DAY	MGL MILLIGRAMS PER LITER	MH MANHOLE	MLR MIXED LIQUOR RETURN	MO MOISTURE	MOD MODULATED	MTU MASTER TELEMETRY UNIT	NPW NON-POTABLE WATER	NS NITROGEN SUPPLY	NTU TURBIDITY	O/C OPEN / CLOSE	OCA OPEN-CLOSE-AUTO	OQR OPEN-CLOSE-REMOTE	OIT OPERATOR INTERFACE TERMINAL	OL OVERLOAD	OO ON/OFF (MAINTAINED)	OOA ON-OFF-AUTO	OOR ON-OFF-REMOTE	OSC OPEN-STOP-CLOSE	PAH PRESSURE ALARM HIGH	PER PERMISSIVE	PLC PROGRAMMABLE LOGIC CONTROLLER	PNL PANEL	PO PULSE OUTPUT	POS POSITION	POT POTENTIOMETER	PPG POUNDS PER GALLON	PPH POUNDS PER HOUR	PPM PARTS PER MILLION	PR PAIR	PRES PRESSURE	PS PRESSURE SWITCH	PSI POUNDS PER SQUARE INCH	PV PROCESS VARIABLE	RAS RETURN ACTIVATED SLUDGE	RAW RAW WATER	REM REMOTE	RF RADIO FREQUENCY	RIO REMOTE INPUT OUTPUT	RS RAW SEWAGE	RSP RAW SEWAGE PUMP	RST RESET	RTD RESISTANCE TEMPERATURE DETECTOR	RTU REMOTE TELEMETRY UNIT	RUNF RUN (FAST SPEED)	RUNS RUN (SLOW SPEED)	SB SLUDGE BLANKET	SEQ SERVICE ENTRANCE EQUIPMENT	SES SERVICE ENTRANCE SECTION	SLC SINGLE LOOP CONTROLLER	SLS START-LOCK-OFF-STOP	SO2 SULFUR DIOXIDE	SOV SOLENOID OPERATED VALVE	SP SET POINT	SPD SPEED	SPR SPARE	SS START/STOP (MAINTAINED)	SSS SOLID STATE STARTER (SOFT START)	STR MOTOR STARTER	TAH TEMPERATURE ALARM HIGH	T/M TEMPERATURE AND/OR MOISTURE	TEMP TEMPERATURE	TS TEMPERATURE SWITCH	TSS TOTAL SUSPENDED SOLIDS	UG UNDERGROUND	USD UP/STOP/DOWN	V VOLT	VFD VARIABLE FREQUENCY DRIVE	W WATER	WAS WASTE ACTIVATED SLUDGE	WW WASTEWATER	WMTR TRANSMITTER	ZS POSITION (i.e., LIMIT) SWITCH
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TAG NUMBERS AND DESIGNATIONS



LINE SYMBOLS

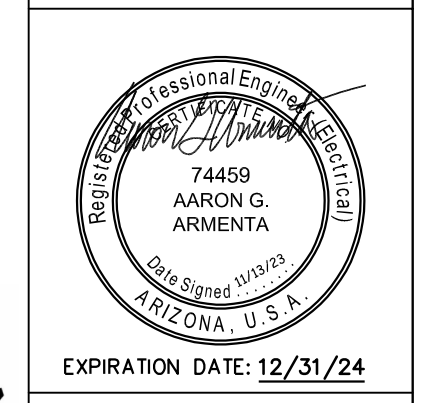


NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
 BOOSTER STATION 4 IMPROVEMENTS

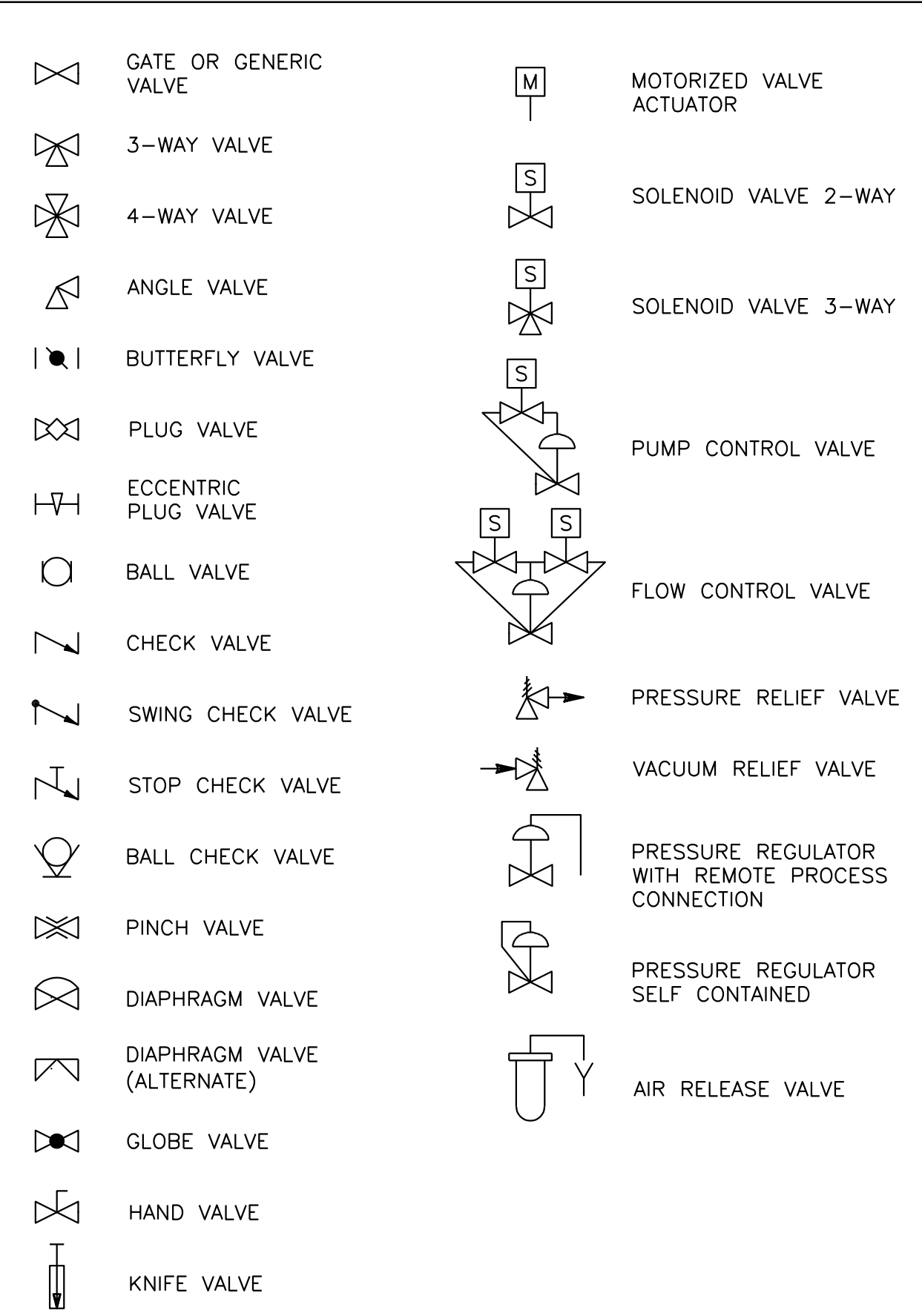
Designed by: DLN	Drawn by: JHA	Checked by: AGA	Date: 11/13/23	Dwg scale: AS NOTED
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P&ID SYMBOLS AND LEGEND

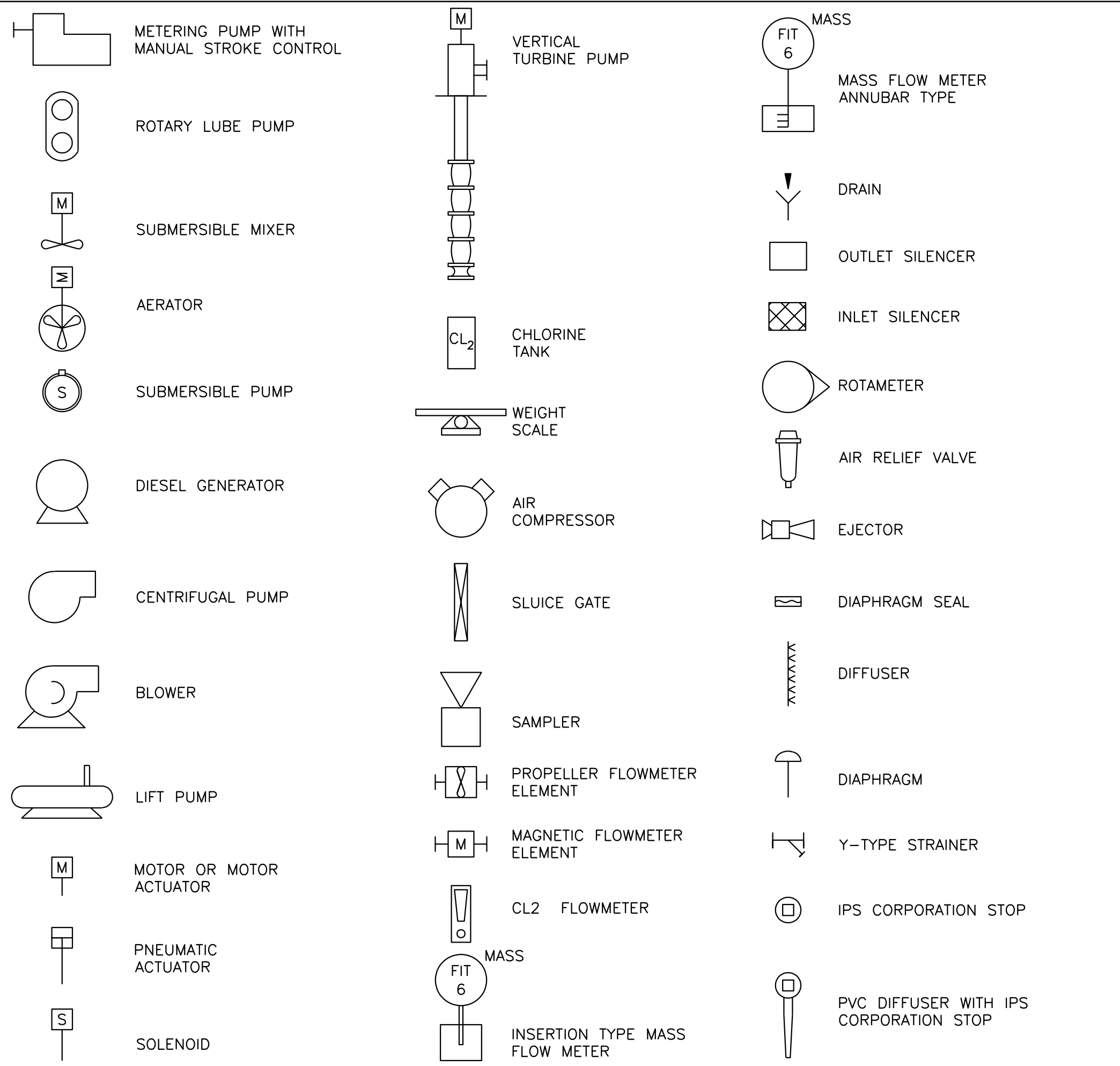


EXPIRATION DATE: 12/31/24
 Sheet Number:
I-01
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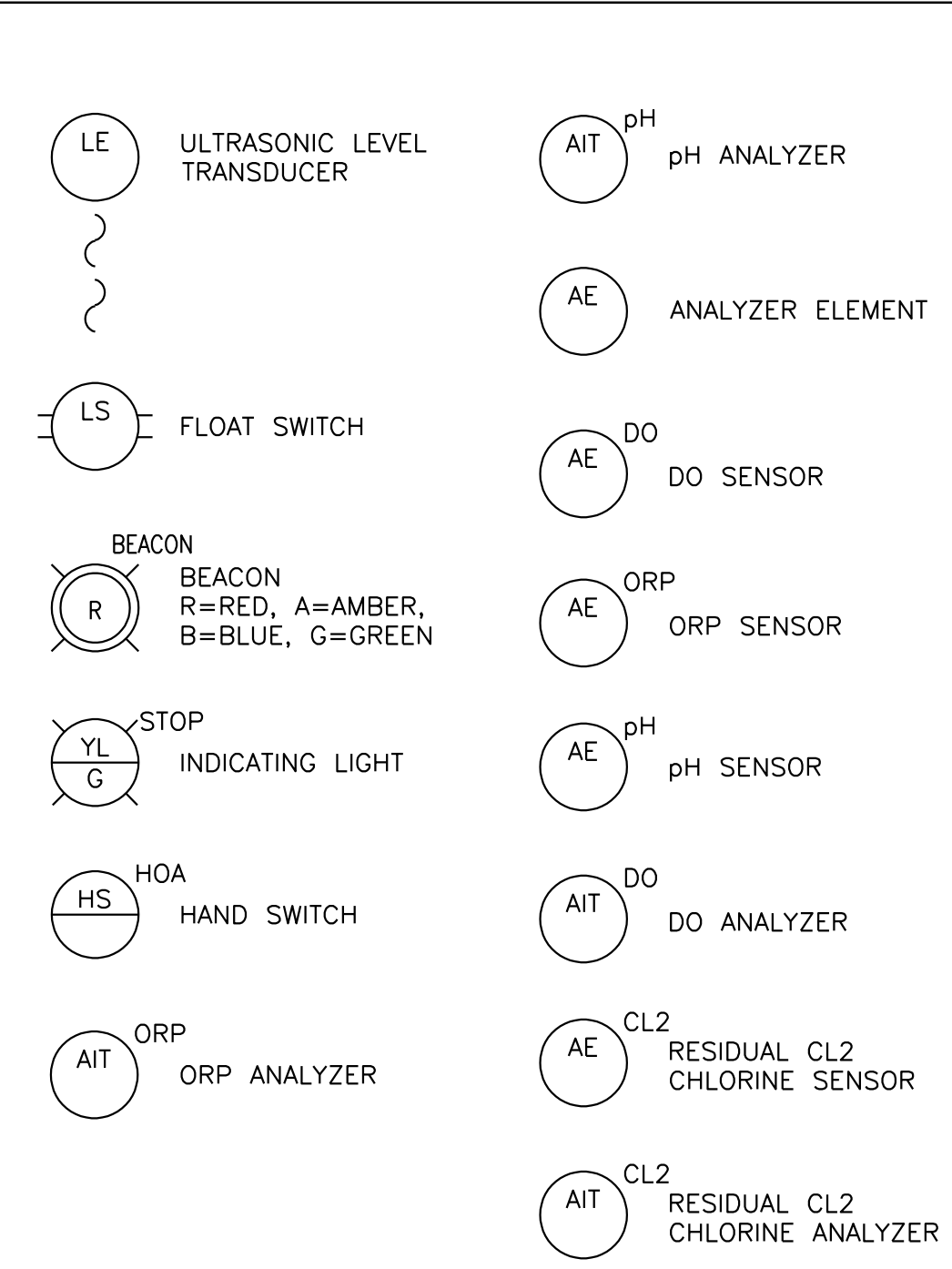
P&ID VALVE SYMBOLS



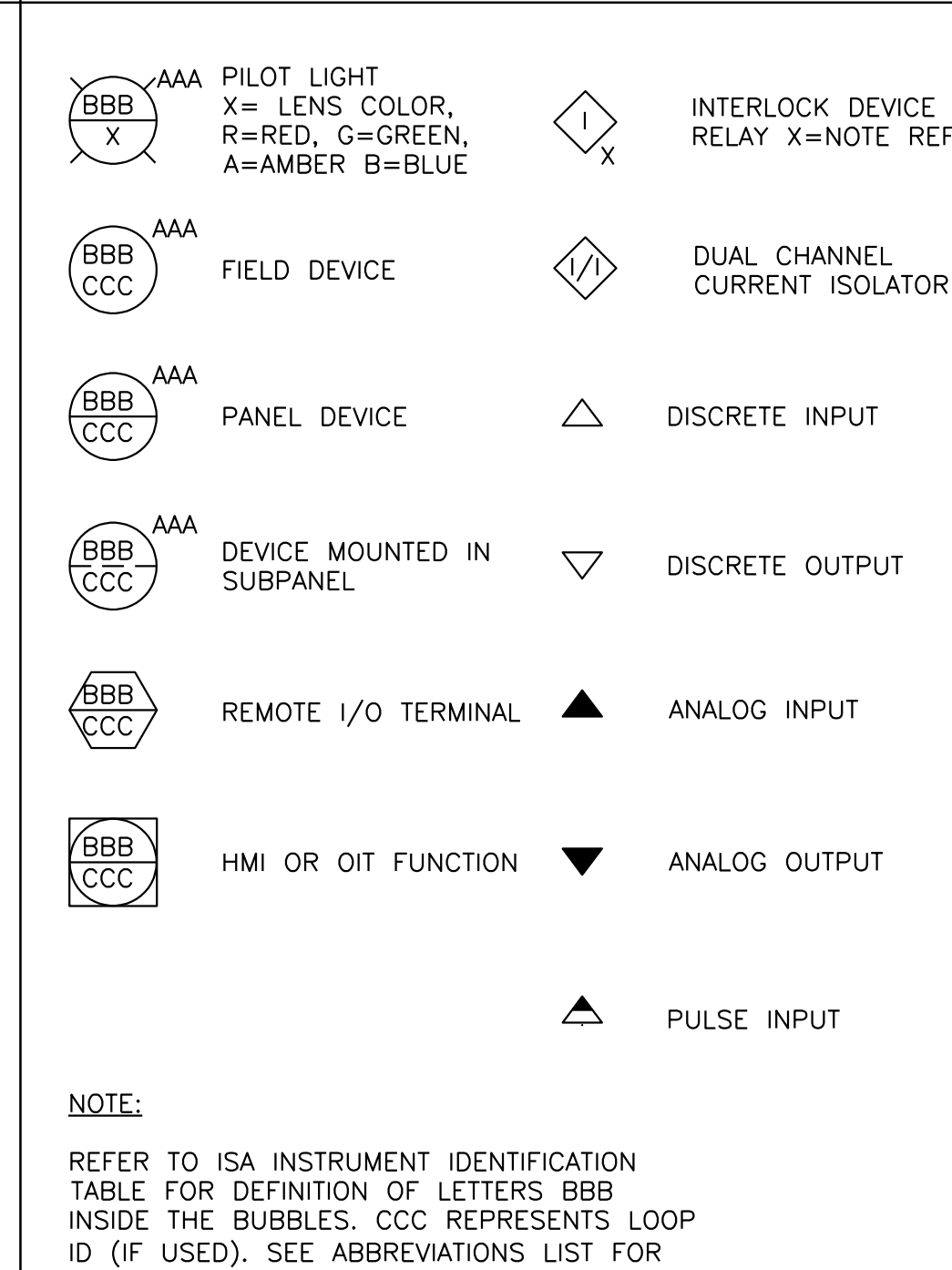
P&ID EQUIPMENT AND PROCESS SYMBOLS



SENSING, INDICATION, AND CONTROL SYMBOLS

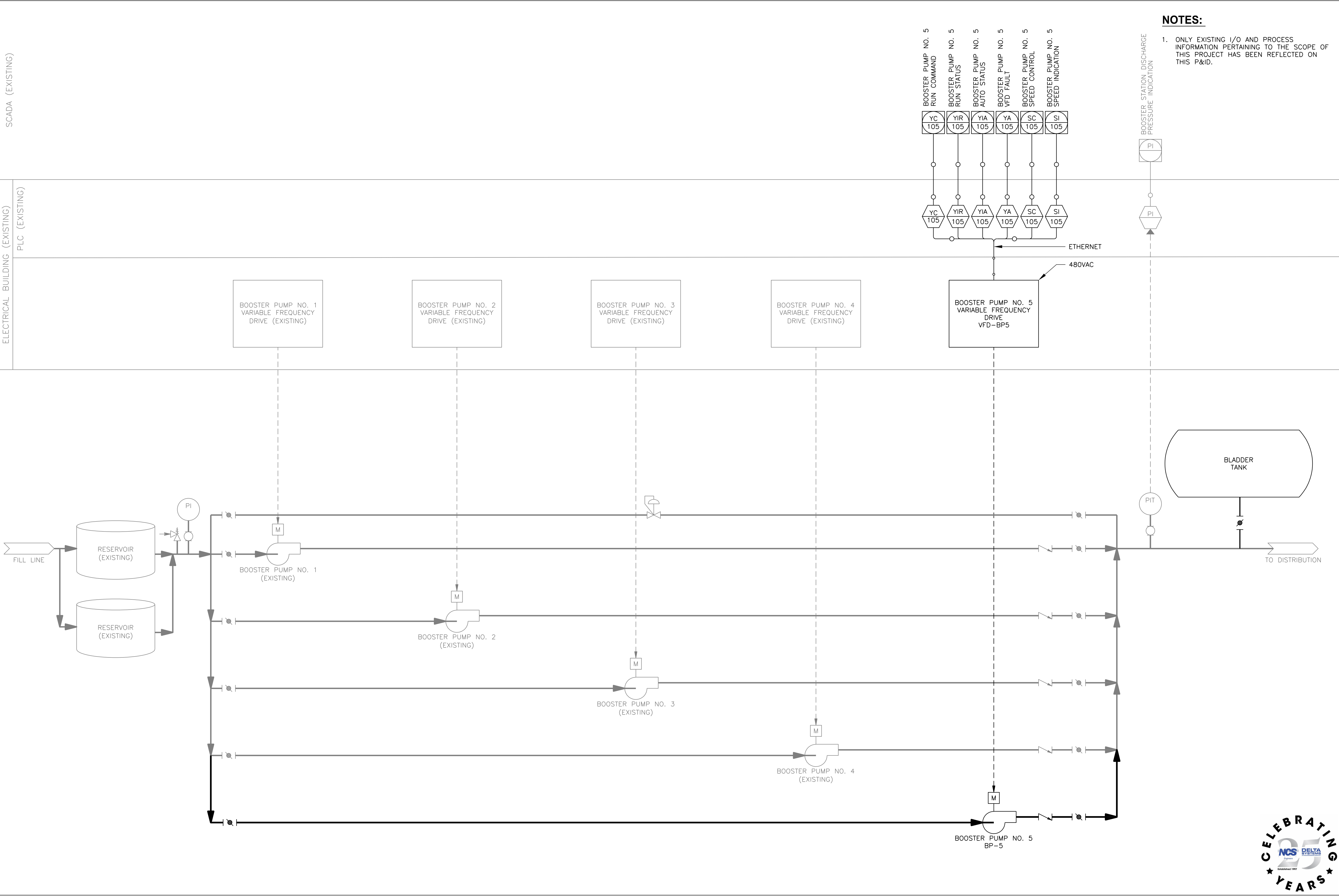


P&ID INTERFACE SYMBOLS



NOTE:
 REFER TO ISA INSTRUMENT IDENTIFICATION TABLE FOR DEFINITION OF LETTERS BBB INSIDE THE BUBBLES. CCC REPRESENTS LOOP ID (IF USED). SEE ABBREVIATIONS LIST FOR SUPERScript AAA.





SCADA (EXISTING)

ELECTRICAL BUILDING (EXISTING)
PLC (EXISTING)

NOTES:

1. ONLY EXISTING I/O AND PROCESS INFORMATION PERTAINING TO THE SCOPE OF THIS PROJECT HAS BEEN REFLECTED ON THIS P&ID.



NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
BOOSTER STATION 4 IMPROVEMENTS

Designed by: DLN
Drawn by: JHA
Checked by: AGA
Date: 11/13/23
Dwg scale: AS NOTED

P&ID



EXPIRATION DATE: 12/31/24

Sheet Number:

I-02
Sheet 24 of 24



SECTION 0310

BID SCHEDULE - BOOSTER STATION 4 IMPROVEMENTS, B24-PW-108029-500433

ITEM NO.	DESCRIPTION	EST QTY	UNIT OF MEASURE	UNIT PRICE (*1) (WORD)	UNIT PRICE (FIGURE)	ITEM TOTAL (*2) COSTS
<u>BASE BID</u>						
1	Mobilization/Demobilization, Bonds, Permitting and Insurance	1	L.S.	_____	\$ _____	\$ _____
2	All demolition work including piping, mechanical, electrical and civil work at BPS 4	1	L.S.	_____	\$ _____	\$ _____
3	All mechanical work including piping, pumps, valves, meters, tanks, and appurtenances at BPS 4	1	L.S.	_____	\$ _____	\$ _____
4	All civil/site, fencing, grading and concrete works at BPS 4	1	L.S.	_____	\$ _____	\$ _____
5	All work associated with Cherry Tree Lane Connection	1	L.S.	_____	\$ _____	\$ _____
6	Metal Shade Canopy	1	L.S.	_____	\$ _____	\$ _____
7	Painting and Coating	1	L.S.	_____	\$ _____	\$ _____
8	All electrical and instrumentation work	1	L.S.	_____	\$ _____	\$ _____
9	Force Account	1	L.S.	<u>Fifty Thousand Dollars</u>	<u>\$50,000.00</u>	<u>\$50,000.00</u>
TOTAL BID(*3) + FORCE ACCOUNT				_____	\$ _____	\$ _____

Above line items and totals shall include all work shown on the plans and specified herein, including taxes, insurance and bonding.

*1 The "Unit Price" column shall indicate unit or lump sum prices for each bid item and shall be indicated in written and numerical form.

*2 The "Item Total Costs" column shall indicate the extension of the unit prices, which is obtained by multiplying the "Estimated Quantity" column by the "Unit Price" column.

*3 The "Bid Total" amount shall be the sum of all costs listed in the "Item Total Costs" column.