



# MADISON WATER UTILITY

## UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT

2022

CITY PROJECT NO. 13939

INDEX OF SHEETS

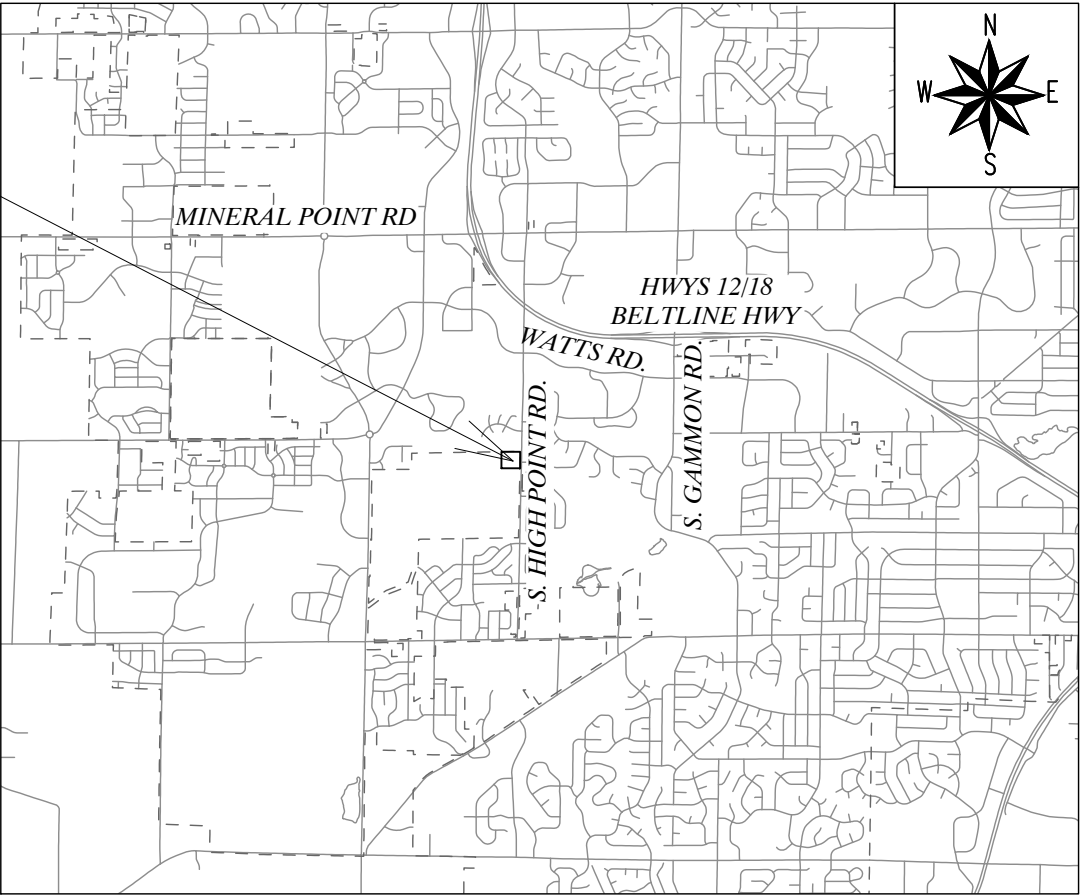
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APPROVED BY:



PETER E. HOLMGREN, PE  
MADISON WATER UTILITY

PROJECT  
LOCATION  
910 S. HIGH POINT RD.



GENERAL NOTES

- UNLESS OTHERWISE SPECIFIED, ALL CONSTRUCTION SHALL CONFORM TO CITY OF MADISON STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 2020 EDITION. SEE [HTTPS://WWW.CITYOFMADISON.COM/BUSINESS/PW/SPECS.CFM](https://www.cityofmadison.com/business/pw/specs.cfm)
- PIPE MATERIAL SHALL BE CLASS 52 DUCTILE IRON PIPE.
- SEE SEQUENCE OF DEMOLITION AND CONSTRUCTION ON SHEET W-5. WELL 26 SHALL NOT BE OFFLINE (DOWN) FOR MORE THAN SIX HOURS WITHOUT MADISON WATER UTILITY (MWU) WRITTEN APPROVAL.
- REMOVAL AND PROPER DISPOSAL OF THE OLD PUMP, AND INSTALLATION OF A NEW PUMP IS PART OF THIS CONTRACT. THE NEW PUMP AND UNIT ELECTRICAL WIRING ARE PROVIDED BY MWU. SEE SUGGESTED SEQUENCE OF DEMOLITION AND CONSTRUCTION ON SHEET W-5 FOR ADDITIONAL NOTES.
- NEW PUMP IS STORED AT THE UTILITY OPERATIONS CENTER AT 110 S. PATERSON ST. ARRANGE WITH UTILITY TO PICK UP PUMP AND TRANSPORT TO JOB SITE.
- ALL REQUIRED PERMITS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTRACTOR IS REQUIRED TO MAINTAIN A SAFE WORKSPACE THROUGHOUT THE PROJECT.
- WORK SHALL COMMENCE NO MORE THAN 30 DAYS AFTER EXECUTION OF THE CONTRACT AND RECEIPT OF THE START WORK LETTER.
- PROJECT DURATION IS 30 CALENDAR DAYS FROM START OF WORK.

PLOT SCALE: 1" = 1'

PLOT NAME: MWU SHEETS

REV. DATE: 12/29/2021 4:11 PM

ORIGINATOR: CITY\_OF\_MADISON

PLOT SCALE: 1" = 40'

PLOT NAME: \_\_\_\_\_

REV. DATE: ---

ORIGINATOR CITY\_OF\_MADISON\_WATER\_UTILITY

MADISON WATER UTILITY UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT 13939		SHEET NO. W-1/9
APPURTENANCE SCHEDULE		
INSPECTOR: MWU		DRAWN BY: PEH
CHECKED BY: DVH		DATE: 4/28/2022

NUMBER	SIZE	TYPE	DISPOSITION	NORMAL POSITION	FUNCTION	NOTES
V-1	12"	BUTTERFLY	EXISTING	OPEN	DEEP WELL ISOLATION	
V-2	12"	BUTTERFLY	EXISTING	CLOSED	RESERVOIR BYPASS	
V-3	12"	BUTTERFLY	EXISTING	OPEN	RESERVOIR ISOLATION	
V-4	24"	BUTTERFLY	EXISTING	OPEN	RESERVOIR ISOLATION	
V-5	24"	BUTTERFLY	EXISTING	OPEN	SYSTEM ISOLATION	
V-6	10"	GATE	EXISTING	OPEN	PUMP ISOLATION	
V-8	14"	GATE	REPLACE	OPEN	PUMP ISOLATION	REPLACE WITH 14" FLANGED GATE VALVE; SEE GENERAL NOTE #2 BELOW
V-9	10"	BUTTERFLY	REMOVE	OPEN	PUMP ISOLATION	PROVIDE SPACER AS REQUIRED TO ALIGN WITH NEW PIPING
V-10	12"	BUTTERFLY	EXISTING	OPEN	PUMP ISOLATION	
V-11	12"	BUTTERFLY	EXISTING	OPEN	SYSTEM ISOLATION	
V-12	12"	BUTTERFLY	EXISTING	OPEN	RESERVOIR ISOLATION/PUMP SUCTION	
CV-1	12"	CHECK VALVE	EXISTING	-	BACKFLOW AT DEEP WELL PUMP	
CV-2	8"	CHECK VALVE	EXISTING	-	PREVENT BACKFLOW AT BOOSTER PUMP #1	
CV-3	10"	CHECK VALVE	REPLACE	-	PREVENT BACKFLOW AT BOOSTER PUMP #2	REPLACE WITH 6" CHECK VALVE; SEE GENERAL NOTE #1 BELOW
M-1	12"	METER	EXISTING	-	METERS DEEP WELL PUMP DISCHARGE	
M-2	12"	METER	EXSITING	-	METERS FLOW TO ELEVATED RESERVOIR	

- GENERAL NOTES
- CHECK VALVE SHALL BE A FLANGED SWING CHECK VALVE WITH OUTSIDE LEVER AND WEIGHT EQUIPPED WITH AN AIR-CUSHION CHAMBER TO CUSHION THE CLOSING OF THE VALVE DISC. THE VALVE SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA C508. CHECK VALVE SHALL BE MANUFACTURED BY GA INDUSTRIES OR APPROVED EQUIVALENT.
  - GATE VALVE SHALL BE RESILIENT WEDGE DESIGN PER AWWA C509, FLANGED AND EQUIPPED WITH HANDWHEEL OPERATOR. GATE VALVE SHALL BE MANUFACTURED BY KENNEDY, MUELLER OR CLOW.

PLOT SCALE: 1" = 40'

PLOT NAME: \_\_\_\_\_

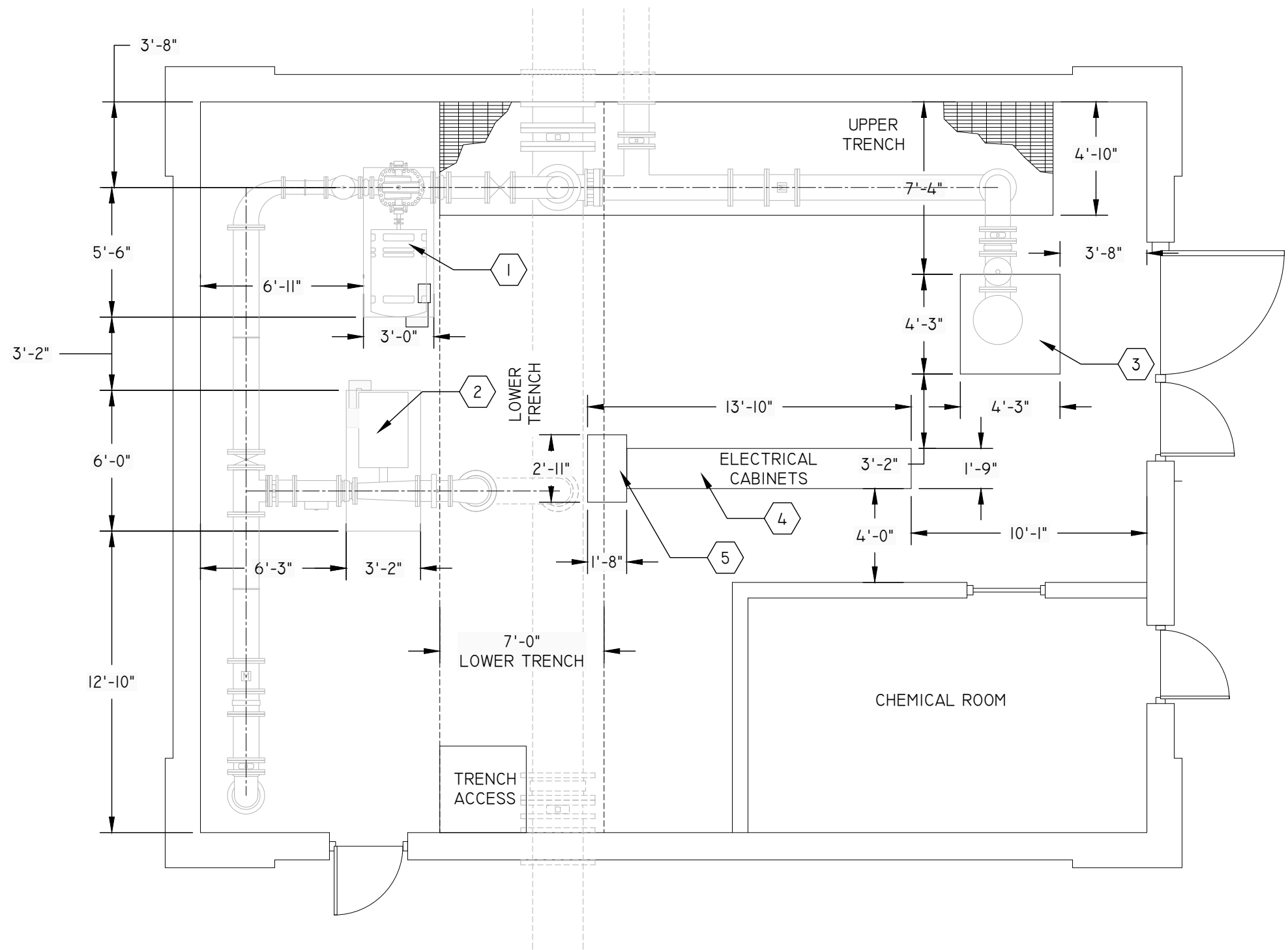
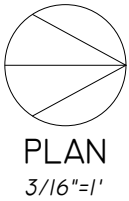
REV. DATE: ---

ORIGINATOR CITY\_OF\_MADISON\_WATER\_UTILITY

EXISTING FLOOR PLAN

INSPECTOR: MWU  
CHECKED BY: DVH

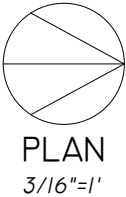
DRAWN BY: PEH  
DATE: 4/28/2022



KEYED NOTES

1. CONCRETE BASE FOR BOOSTER PUMP #1
2. CONCRETE BASE FOR BOOSTER PUMP #2
3. CONCRETE BASE FOR DEEP WELL PUMP, CENTERED OVER ROOF HATCH
4. ELECTRICAL CABINET
5. ELECTRICAL CABINET
6. VERIFY ALL DIMENSIONS

- KEYED NOTES
- 10-IN X 14-IN FLANGED 90° REDUCING BEND (VERTICAL DOWN)
  - 10-IN X 10-IN 90° BEND (VERTICAL DOWN) INTO 10-IN X 16-IN REDUCER (VERTICAL)
  - 12-IN X 12-IN VERTICAL BEND
  - DEEP WELL PUMP



LEGEND

- BUTTERFLY VALVE

- CHECK VALVE

- EXPANSION JOINT, FLEXIBLE COUPLING

- METER

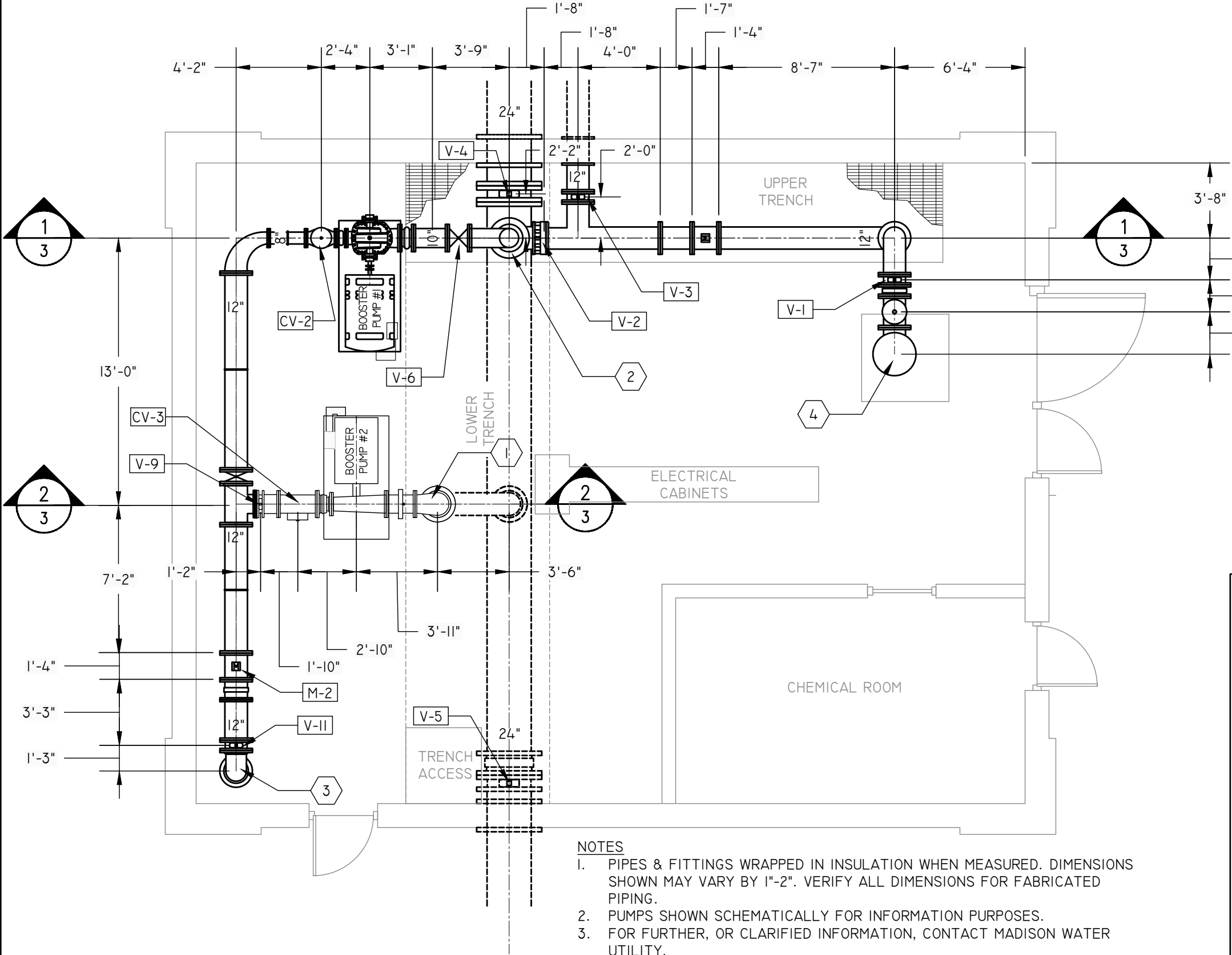
- FLANGED PIPE SECTION, PIPE DIAMETER

- REDUCER

V-4

- VALVE NUMBER, REFER TO SEQUENCE OF DEMOLITION AND CONSTRUCTION, SHEET W-4

- NOTES
- PIPES & FITTINGS WRAPPED IN INSULATION WHEN MEASURED. DIMENSIONS SHOWN MAY VARY BY 1"-2". VERIFY ALL DIMENSIONS FOR FABRICATED PIPING.
  - PUMPS SHOWN SCHEMATICALLY FOR INFORMATION PURPOSES.
  - FOR FURTHER, OR CLARIFIED INFORMATION, CONTACT MADISON WATER UTILITY.
  - EXISTING PIPE TO BE REMOVED IS FABRICATED WELDED STEEL
  - SEE PHOTOS ON SHEETS 7 AND 8 FOR ADDITIONAL DETAIL.



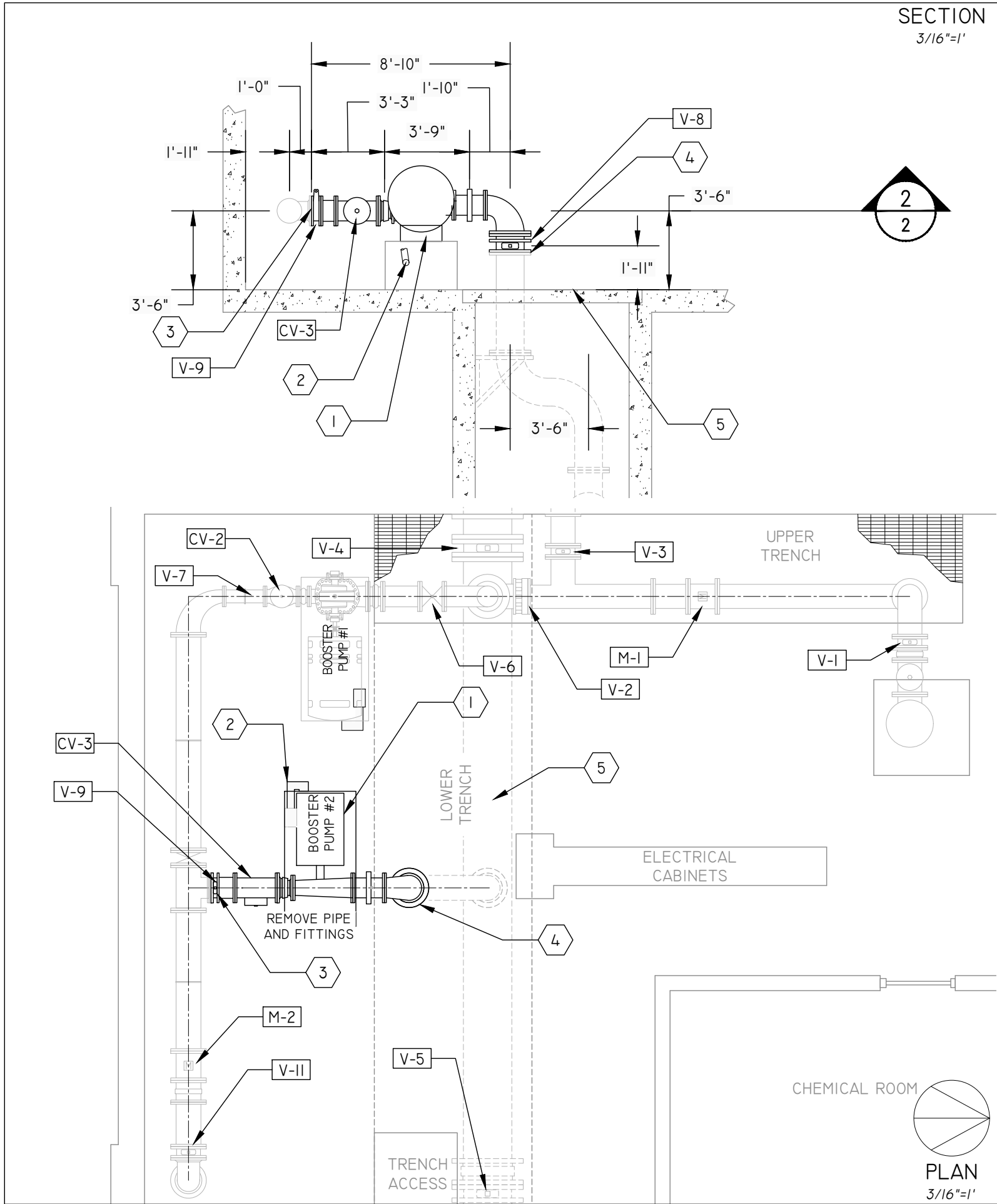


PLOT SCALE: 1" = 40'

PLOT NAME: \_\_\_\_\_

REV. DATE: ---

ORIGINATOR CITY\_OF\_MADISON\_WATER\_UTILITY



MADISON WATER UTILITY UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT 13939		SHEET NO. W-5/9
DEMOLITION & SEQUENCING PLAN		
INSPECTOR: MWU	DRAWN BY: PEH	
CHECKED BY: DVH	DATE: 4/28/2022	

- GENERAL DEMOLITION AND CONSTRUCTION NOTES
1. PLANNED SHUTDOWN SHALL NOT EXCEED 6 HRS. - DURING THE HOURS FROM 6:00 A.M. TO 6:00 P.M. LONGER SHUTDOWNS MAY BE POSSIBLE DURING THE HOURS FROM 6:00 P.M. TO 6:00 A.M. - COORDINATE WITH MWU.
  2. CONTRACTOR TO REVIEW AND PLAN WORK TO ENSURE WORKER SAFETY WHILE KEEPING THE PUMP STATION IN OPERATION
  3. PRESENT PROPOSED DEMOLITION PLAN AND CONSTRUCTION SEQUENCE FOR REVIEW BY MWU.
  4. REFER TO VALVE SCHEDULE, SHEET W-1, EXISTING FLOOR PLAN, SHEET W-2, PROPOSED PIPING PLAN, SHEET W-6 AND PROPOSED PIPING SECTION, SHEET W-7.
  5. WORK SHALL NOT START WITHOUT AN AGREED UPON SEQUENCE OF DEMOLITION AND CONSTRUCTION.

- SUGGESTED SEQUENCE OF DEMOLITION AND CONSTRUCTION
1. COORDINATE WITH MWU A MINIMUM OF 2 WORKING DAYS PRIOR TO ANY SHUT DOWN OF THE FACILITY.
  2. THE ELEVATED TANK SHALL REMAIN IN SERVICE AT ALL TIMES.
  3. MWU SHALL CLOSE VALVES V-1, V-3, V-4, V-5 & V-II AND ANY APPROPRIATE YARD VALVES.
  4. DEMOLISH AND REMOVE EXISTING PUMP NO. 2 SUCTION AND DISCHARGE PIPING.
  5. INSTALL VALVES V-8 AND CV-3. ALL VALVES TO REMAIN CLOSED. NOTIFY MWU TO RE-OPEN VALVES V-4, V-5 & V-II AND ANY APPROPRIATE YARD VALVES TO RETURN TO SERVICE.
  6. REMOVE BOOSTER PUMP #2 AND INSTALL NEW PUMP AND REMAINING PIPING PER PROPOSED PIPING SHEETS (W-6 & W-7).
  7. PRESSURE TEST ALL NEW PIPING AND NEW PUMP.
  8. DISINFECT ALL NEW PIPING AND PUMP.
  9. FOLLOWING INSTALLATION OF THE PUMP, MWU WILL INSTALL WIRING AND CONTROLS
  10. ASSIST MWU IN TESTING AND STARTUP OF THE PUMP. MWU WILL PROVIDE PUMP VENDOR INSPECTION OF THE INSTALLATION PRIOR TO STARTUP.
  - II. PUMP OPERATION, INCLUDING, BUT NOT LIMITED TO, PUMPING CAPACITY, VIBRATION, AND VFD OPERATION WILL BE TESTED PRIOR TO ACCEPTANCE OF THE WORK.

- KEYED NOTES
1. REMOVE PUMP, MOTOR, MOUNTING BRACKETS, AND CONCRETE BASE.
  2. ELECTRIC POWER SUPPLY CONDUIT TO BE PRESERVED AND RE-ROUTED AFTER REMOVAL OF CONCRETE BASE.
  3. CONNECT NEW PIPING TO 10-IN BRANCH OF EXISTING 12-IN X 10-IN TEE..
  4. CONNECT NEW PIPING TO EXISTING 14-IN PIPING.
  5. REINFORCED CONCRETE SLAB OVER LOWER TRENCH, EXCEPT IN GRATE AREA.

PLOT SCALE: 1" = 40'

PLOT NAME: \_\_\_\_\_

REV. DATE: ---

ORIGINATOR: CITY\_OF\_MADISON\_WATER\_UTILITY

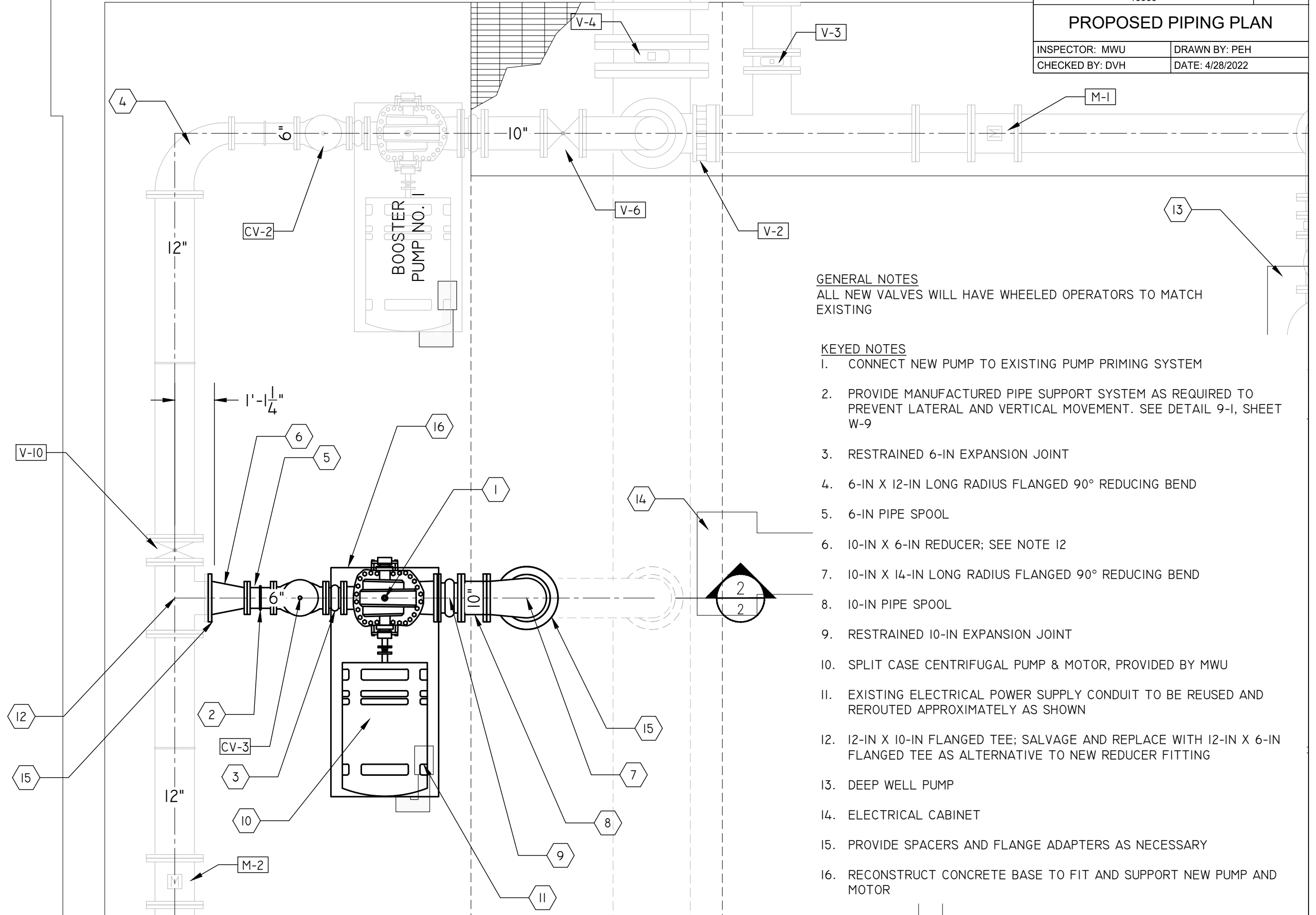
MADISON WATER UTILITY  
UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT  
13939

SHEET NO.  
W-6/9

## PROPOSED PIPING PLAN

INSPECTOR: MWU  
CHECKED BY: DVH

DRAWN BY: PEH  
DATE: 4/28/2022

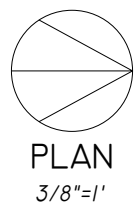
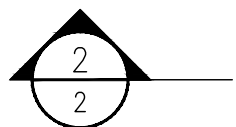


### GENERAL NOTES

ALL NEW VALVES WILL HAVE WHEELED OPERATORS TO MATCH EXISTING

### KEYED NOTES

1. CONNECT NEW PUMP TO EXISTING PUMP PRIMING SYSTEM
2. PROVIDE MANUFACTURED PIPE SUPPORT SYSTEM AS REQUIRED TO PREVENT LATERAL AND VERTICAL MOVEMENT. SEE DETAIL 9-1, SHEET W-9
3. RESTRAINED 6-IN EXPANSION JOINT
4. 6-IN X 12-IN LONG RADIUS FLANGED 90° REDUCING BEND
5. 6-IN PIPE SPOOL
6. 10-IN X 6-IN REDUCER; SEE NOTE 12
7. 10-IN X 14-IN LONG RADIUS FLANGED 90° REDUCING BEND
8. 10-IN PIPE SPOOL
9. RESTRAINED 10-IN EXPANSION JOINT
10. SPLIT CASE CENTRIFUGAL PUMP & MOTOR, PROVIDED BY MWU
11. EXISTING ELECTRICAL POWER SUPPLY CONDUIT TO BE REUSED AND REROUTED APPROXIMATELY AS SHOWN
12. 12-IN X 10-IN FLANGED TEE; SALVAGE AND REPLACE WITH 12-IN X 6-IN FLANGED TEE AS ALTERNATIVE TO NEW REDUCER FITTING
13. DEEP WELL PUMP
14. ELECTRICAL CABINET
15. PROVIDE SPACERS AND FLANGE ADAPTERS AS NECESSARY
16. RECONSTRUCT CONCRETE BASE TO FIT AND SUPPORT NEW PUMP AND MOTOR

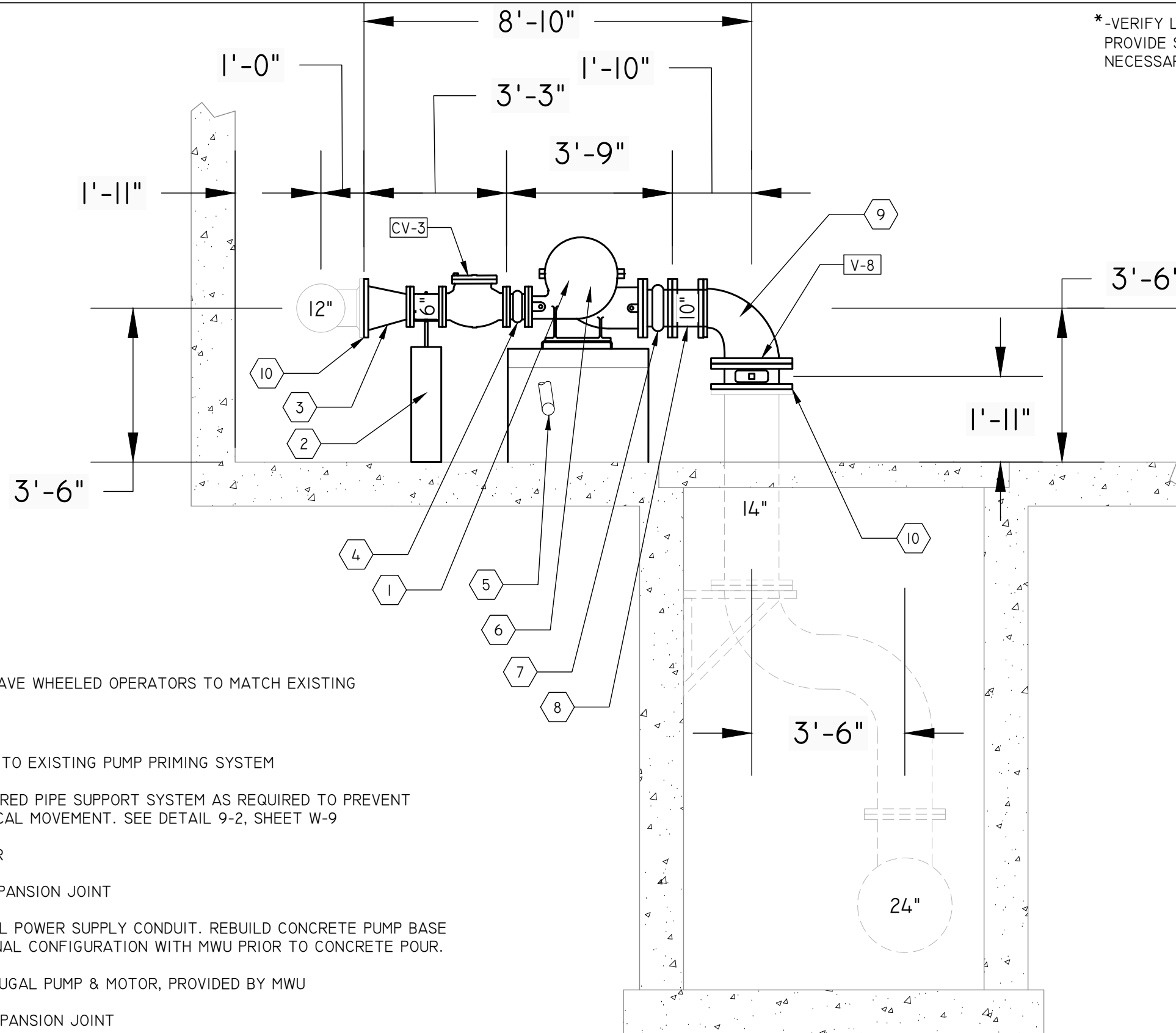


PLOT SCALE: 1" = 40'

PLOT NAME: \_\_\_\_\_

REV. DATE: ---

ORIGINATOR CITY\_OF\_MADISON\_WATER\_UTILITY



\*-VERIFY LENGTH AND  
PROVIDE SPACERS AS  
NECESSARY

MADISON WATER UTILITY UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT 13939		SHEET NO. W-7/9
PROPOSED PIPING SECTION		
INSPECTOR: MWU	DRAWN BY: PEH	
CHECKED BY: DVH	DATE: 4/28/2022	

GENERAL NOTES  
ALL NEW VALVES WILL HAVE WHEELED OPERATORS TO MATCH EXISTING

- KEYED NOTES
- CONNECT NEW PUMP TO EXISTING PUMP PRIMING SYSTEM
  - PROVIDE MANUFACTURED PIPE SUPPORT SYSTEM AS REQUIRED TO PREVENT LATERAL AND VERTICAL MOVEMENT. SEE DETAIL 9-2, SHEET W-9
  - 6-IN X 12-IN REDUCER
  - 6-IN RESTRAINED EXPANSION JOINT
  - EXISTING ELECTRICAL POWER SUPPLY CONDUIT. REBUILD CONCRETE PUMP BASE AND COORDINATE FINAL CONFIGURATION WITH MWU PRIOR TO CONCRETE POUR.
  - SPLIT CASE CENTRIFUGAL PUMP & MOTOR, PROVIDED BY MWU
  - 10-IN RESTRAINED EXPANSION JOINT
  - 10-IN SPOOL PIECE
  - 10-IN X 14-IN LONG RADIUS FLANGED 90° REDUCING BEND
  - PROVIDE SPACERS AND FLANGE ADAPTERS AS NECESSARY.



PLOT SCALE: 1" = 40'

PLOT NAME: \_\_\_\_\_

REV. DATE: ---

ORIGINATOR CITY OF MADISON WATER UTILITY

PHOTOS

INSPECTOR: MWU

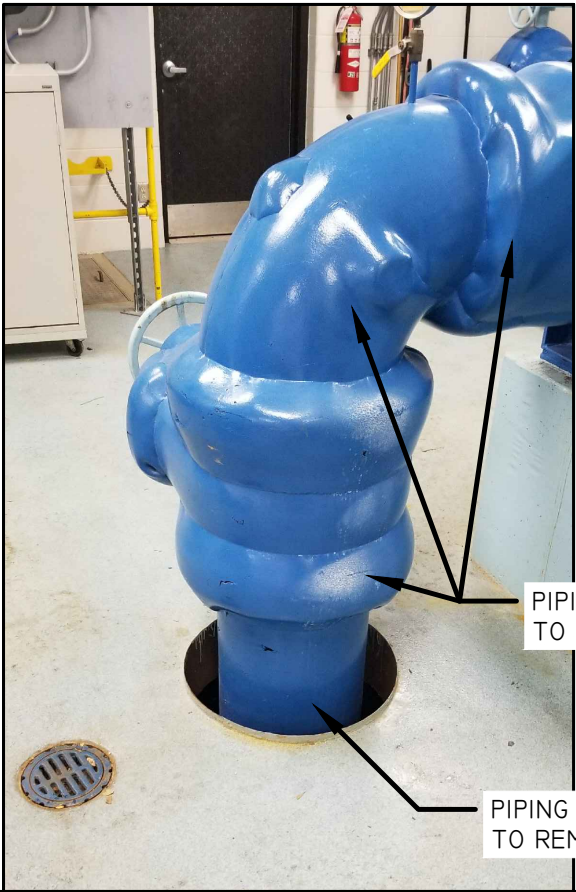
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CHECKED BY: DVH

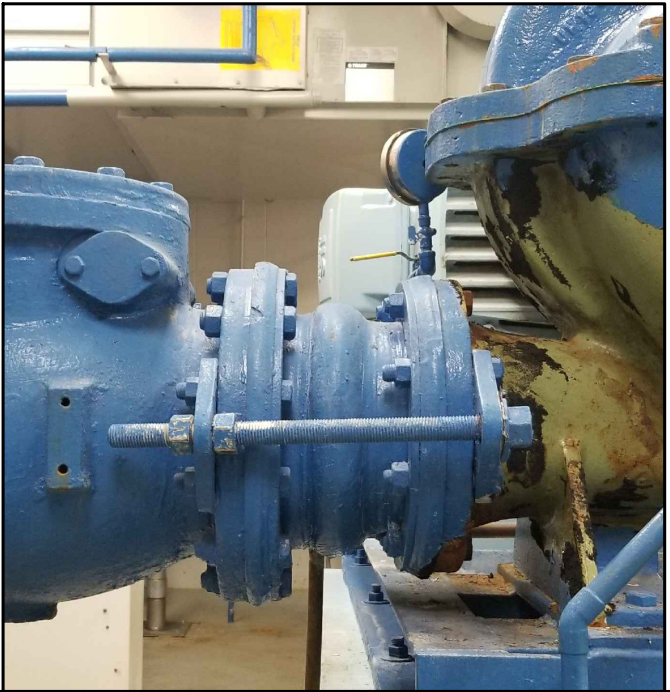
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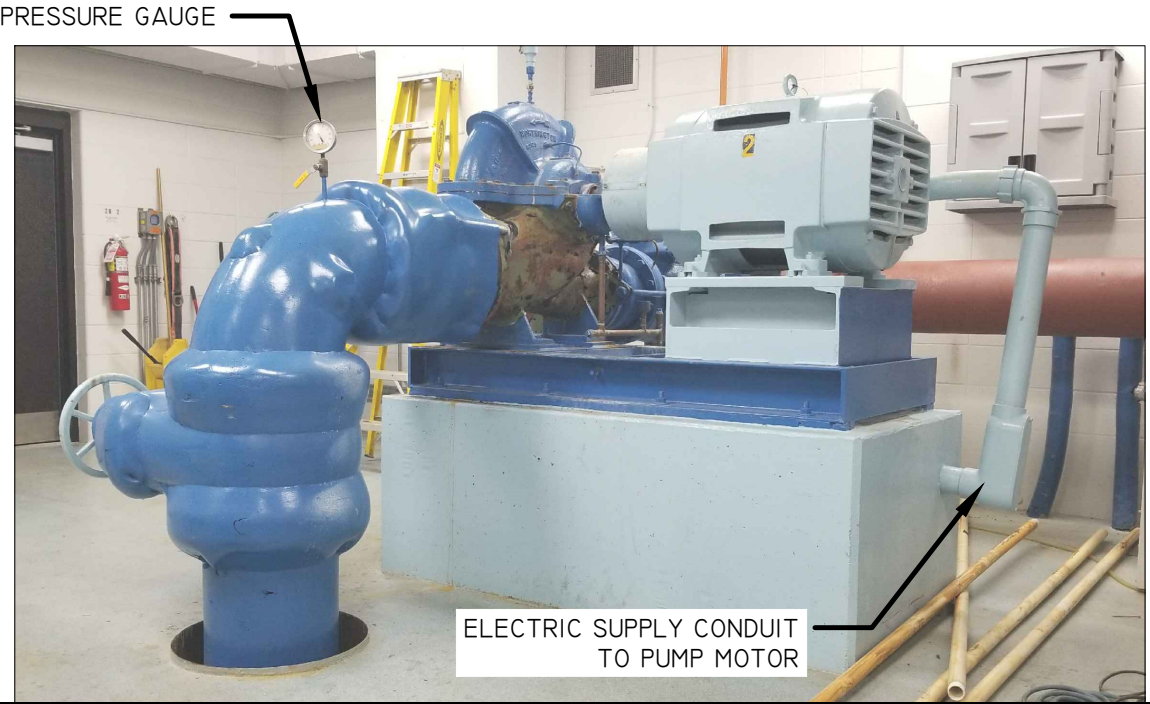
BOOSTER PUMP #2  
SIDE VIEW / PUMP SIDE



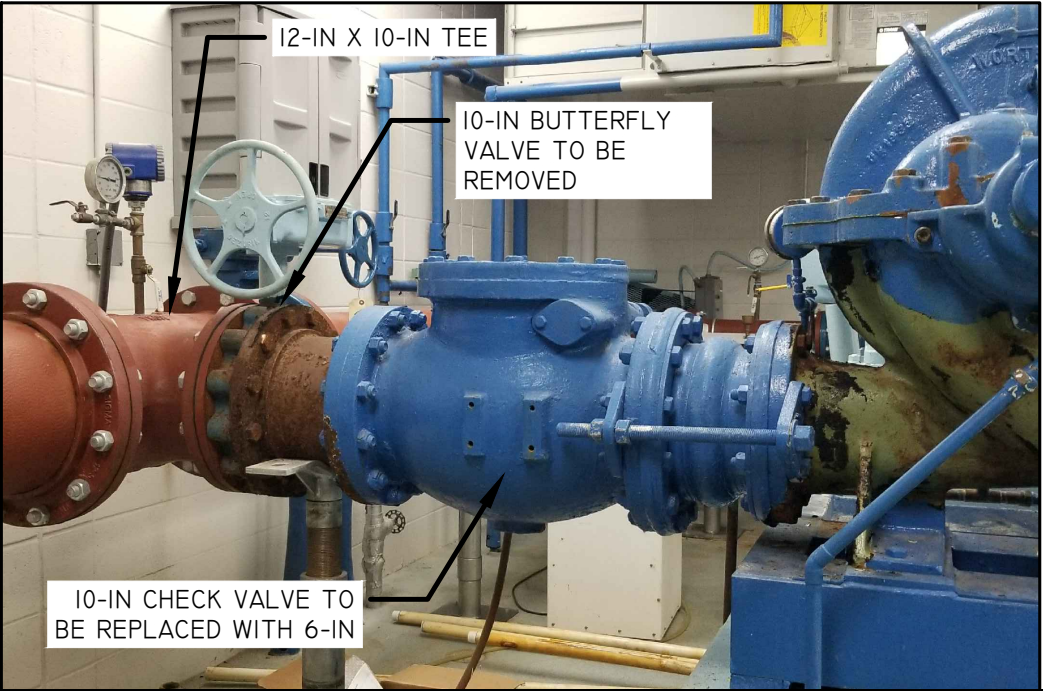
BOOSTER PUMP #2  
SUCTION PIPE / FLOOR SLAB PENETRATION



RESTRAINED EXPANSION JOINT



BOOSTER PUMP #2  
END VIEW / SUCTION PIPE MOTOR & ELEC. CONDUIT



BOOSTER PUMP #2  
DISCHARGE PIPING / CHECK VALVE



ELECTRIC SUPPLY CONDUIT



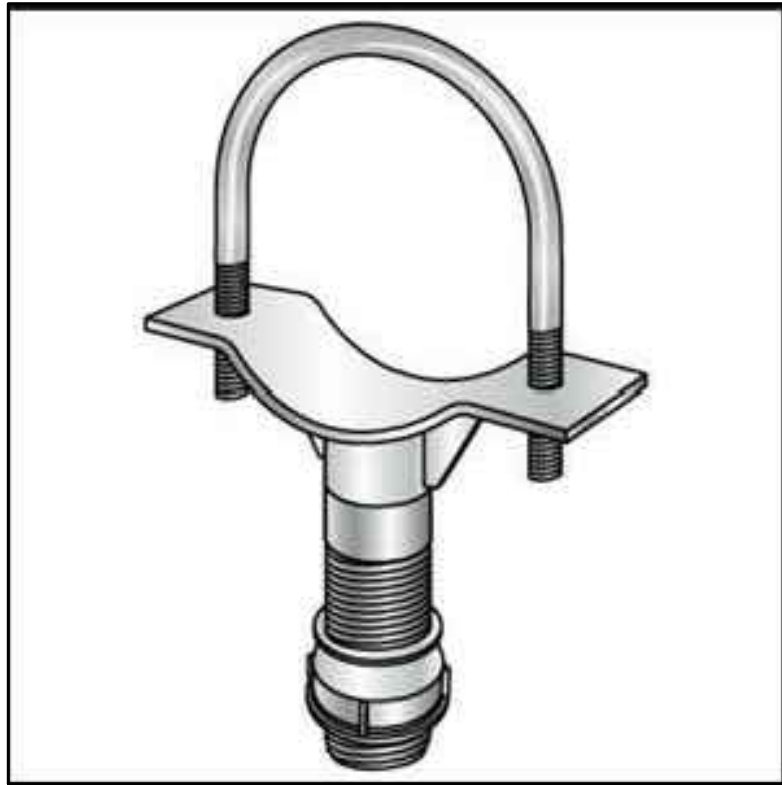
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REV. DATE: ---

ORIGINATOR CITY OF MADISON WATER UTILITY

MADISON WATER UTILITY UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT 13939		SHEET NO. W-9/9
PHOTOS & DETAILS		
INSPECTOR: MWU	DRAWN BY: PEH	
CHECKED BY: DVH	DATE: 4/28/2022	



DETAIL 9-I: TYPICAL MANUFACTURED PIPE  
SUPPORT COMPONENT

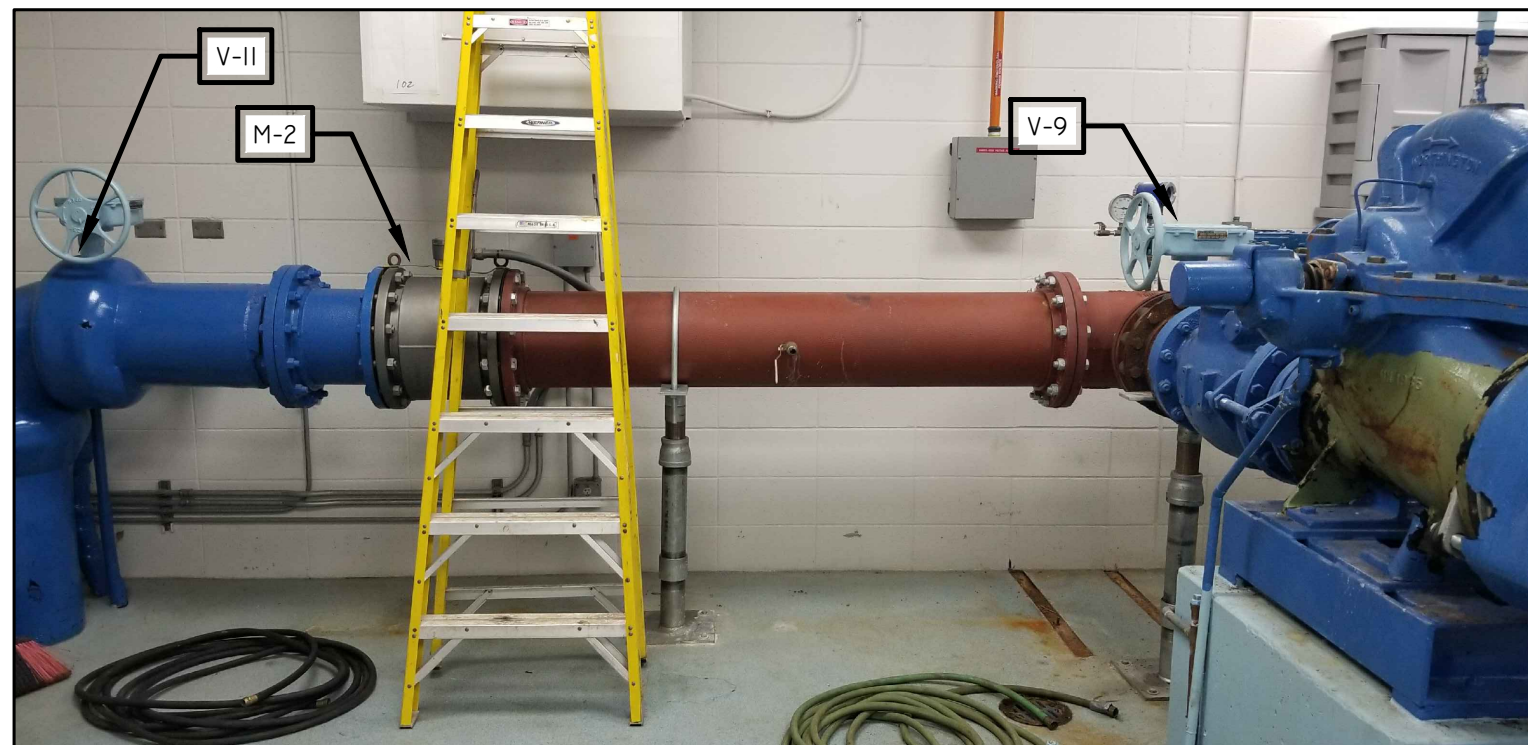
MANUFACTURED PIPE SUPPORT SYSTEM REQUIRED TO PREVENT  
LATERAL AND VERTICAL PIPE MOVEMENT (AS APPROPRIATE).  
SUBMIT SHOP DRAWINGS OF PIPE SUPPORT SYSTEMS TO MWU FOR  
REVIEW AND APPROVAL PRIOR TO INSTALLATION.



VIEW OF PUMPS FROM DEEP WELL



ELECTRICAL CABINETS  
TOWARD DEEP WELL (OBSCURED)



ELEVATED RESERVOIR SUPPLY PIPE  
DOWNSTREAM OF BOOSTER PUMP #2  
DISCHARGE PIPE