



# MADISON WATER UTILITY

## UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT

2022

CITY PROJECT NO. 13939

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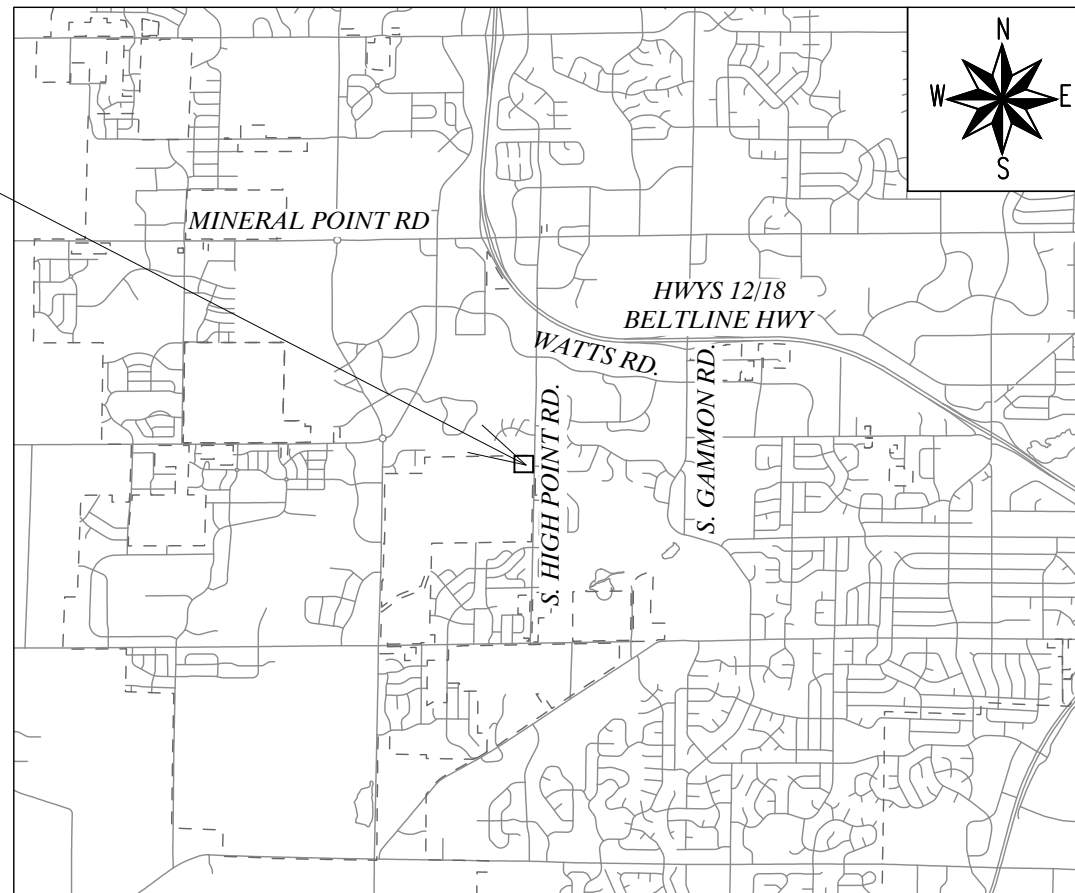
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APPROVED BY:



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.

### 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.

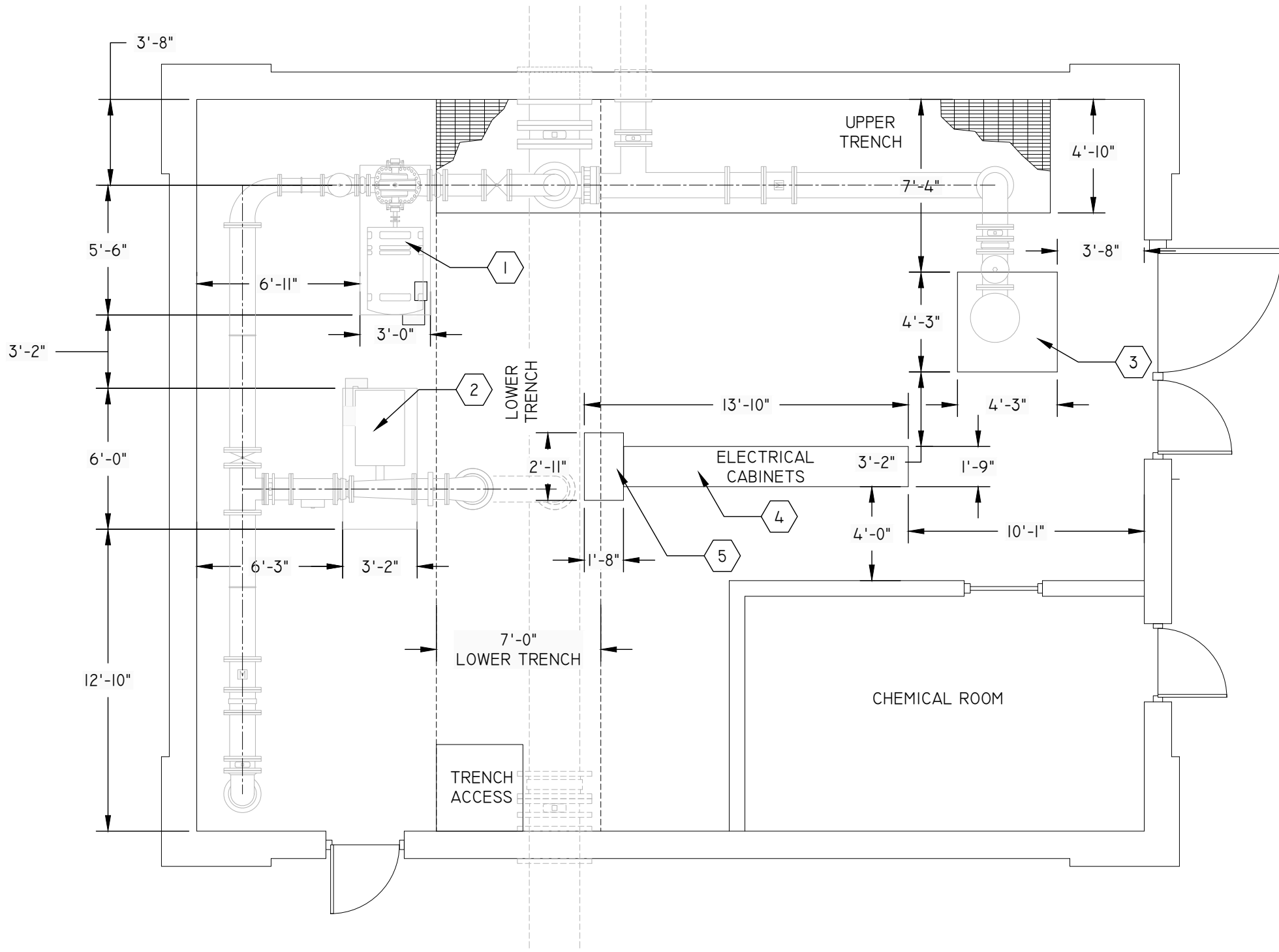
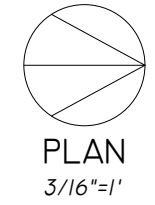
PLOT SCALE: 1" = 40'

PLOT NAME:

REV. DATE:

ORIGINATOR: CITY\_OF\_MADISON\_WATER\_UTILITY

MADISON WATER UTILITY UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT 13939		SHEET NO. W-2/9
<b>EXISTING FLOOR PLAN</b>		
INSPECTOR: MWU	DRAWN BY: PEH	
CHECKED BY: DVH	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

PLOT SCALE: 1" = 40'

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

REV. DATE: ---

ORIGINATOR: CITY\_OF\_MADISON\_WATER\_UTILITY

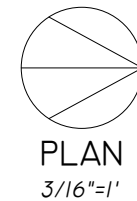
**EXISTING PIPING PLAN**

INSPECTOR: MWU  
 CHECKED BY: DVH

DRAWN BY: PEH  
 DATE: 4/28/2022

KEYED NOTES

1. 10-IN X 14-IN FLANGED 90° REDUCING BEND (VERTICAL DOWN)
2. 10-IN X 10-IN 90° BEND (VERTICAL DOWN) INTO 10-IN X 16-IN REDUCER (VERTICAL)
3. 12-IN X 12-IN VERTICAL BEND
4. DEEP WELL PUMP

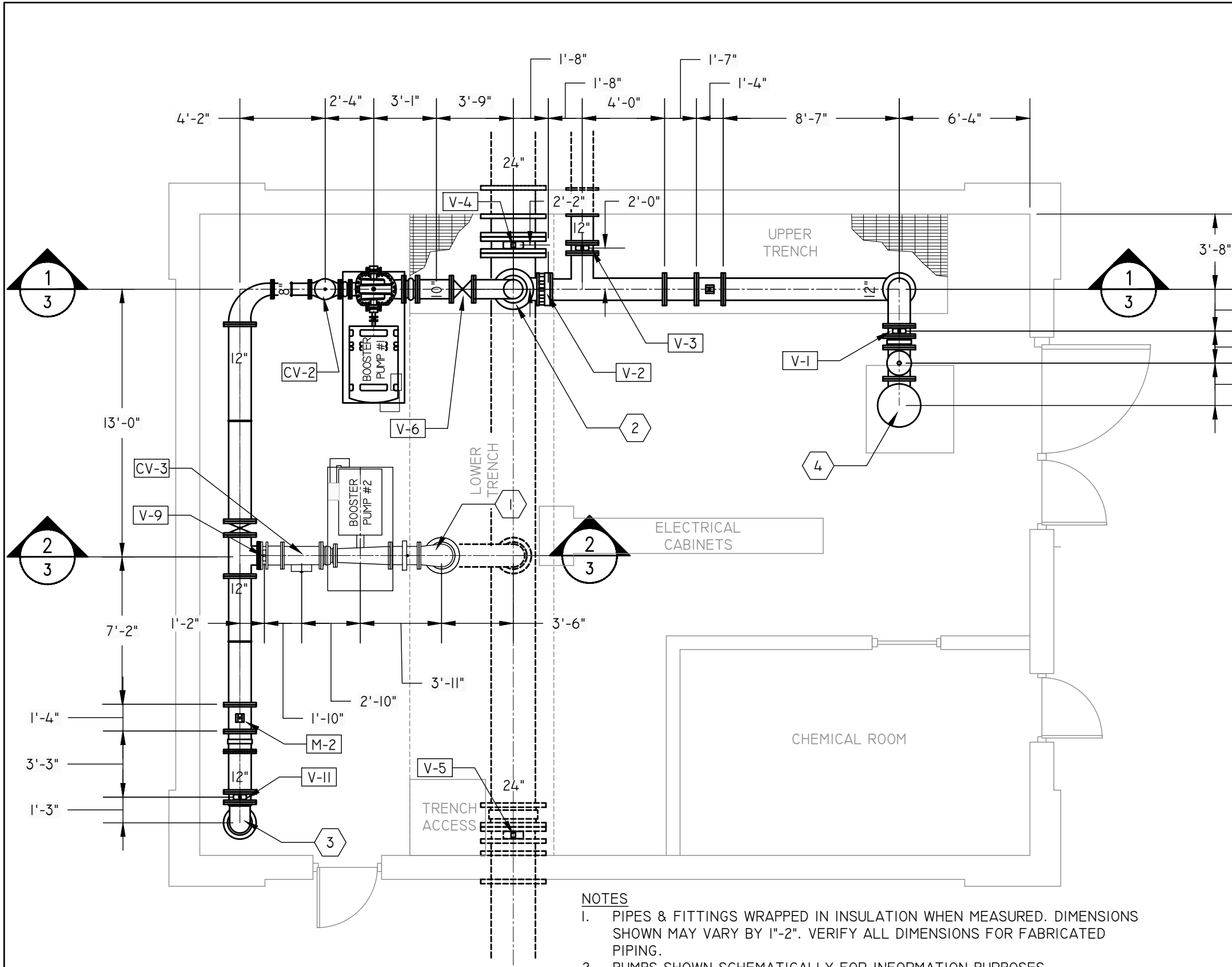


**LEGEND**

	- BUTTERFLY VALVE
	- CHECK VALVE
	- EXPANSION JOINT, FLEXIBLE COUPLING
	- METER
	- FLANGED PIPE SECTION, PIPE DIAMETER
	- REDUCER
<b>V-4</b> - VALVE NUMBER, REFER TO SEQUENCE OF DEMOLITION AND CONSTRUCTION, SHEET W-4	

NOTES

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

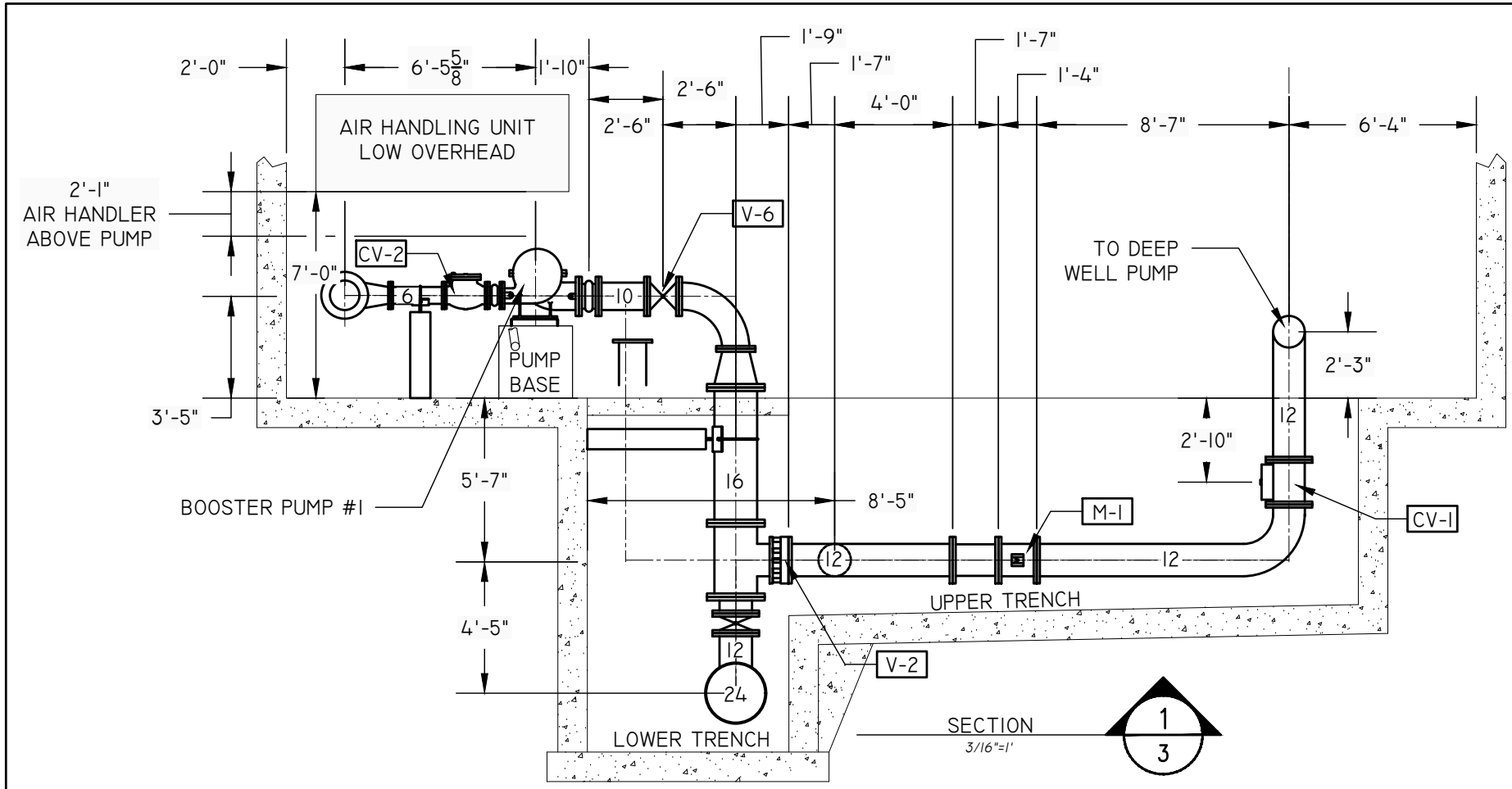


PLOT SCALE: 1" = 40'

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

REV. DATE: ---

ORIGINATOR: CITY\_OF\_MADISON\_WATER\_UTILITY

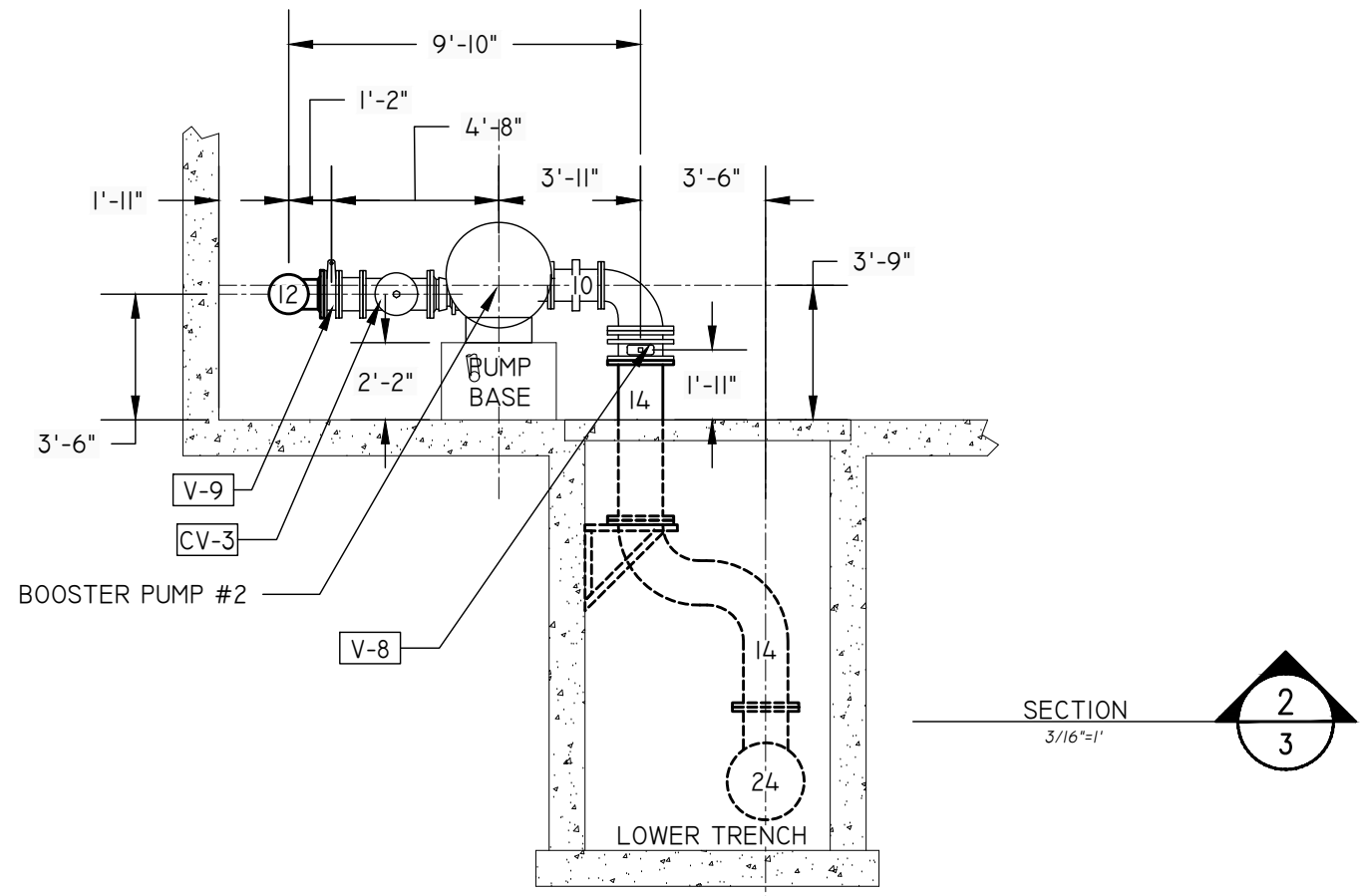


NOTES  
I. VERIFY ALL DIMENSIONS

**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



PLOT SCALE: 1" = 40'

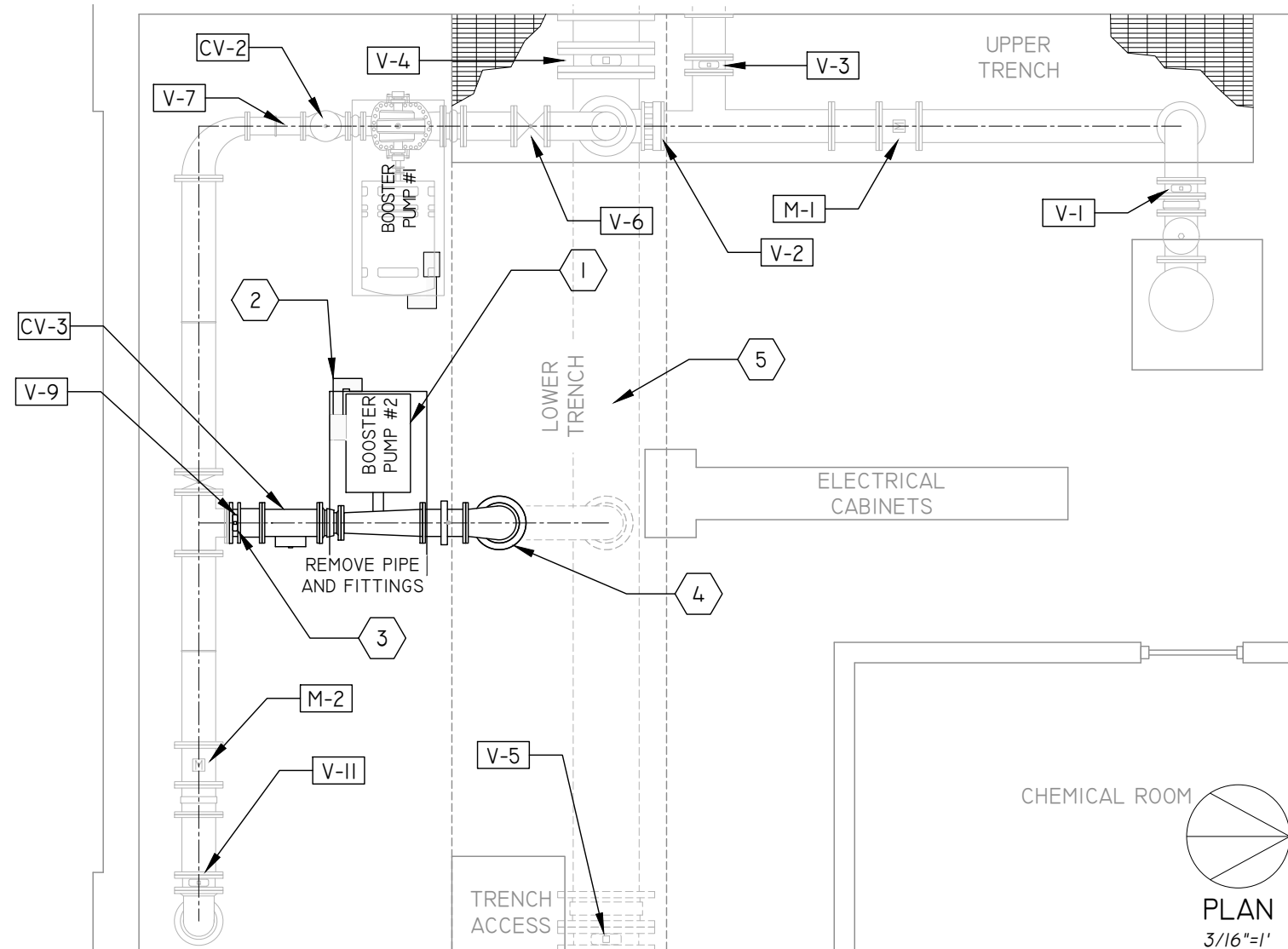
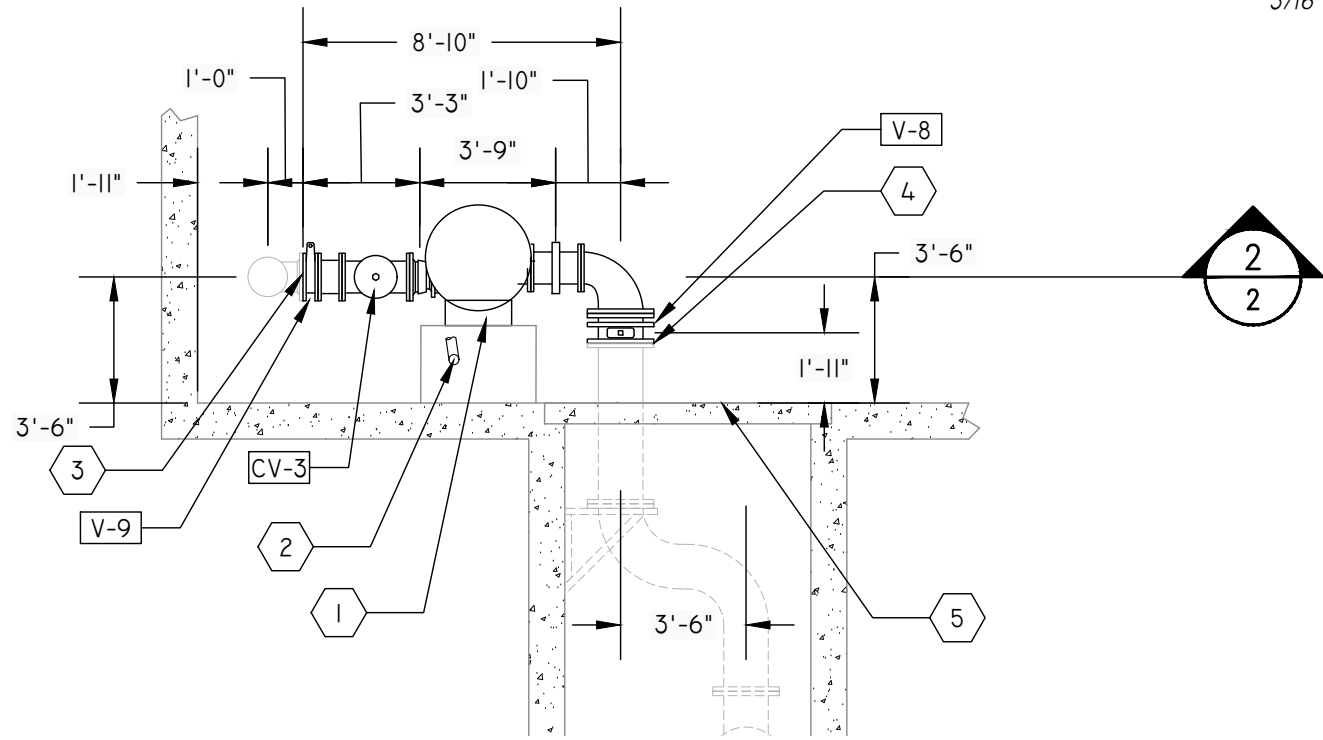
PLOT NAME:

REV. DATE:

ORIGINATOR: CITY\_OF\_MADISON\_WATER\_UTILITY

SECTION  
3/16"=1'

MADISON WATER UTILITY UNIT WELL 26 BOOSTER PUMP #2 REPLACEMENT 13939		SHEET NO. W-5/9
<b>DEMOLITION &amp; SEQUENCING PLAN</b>		
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

- I. 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

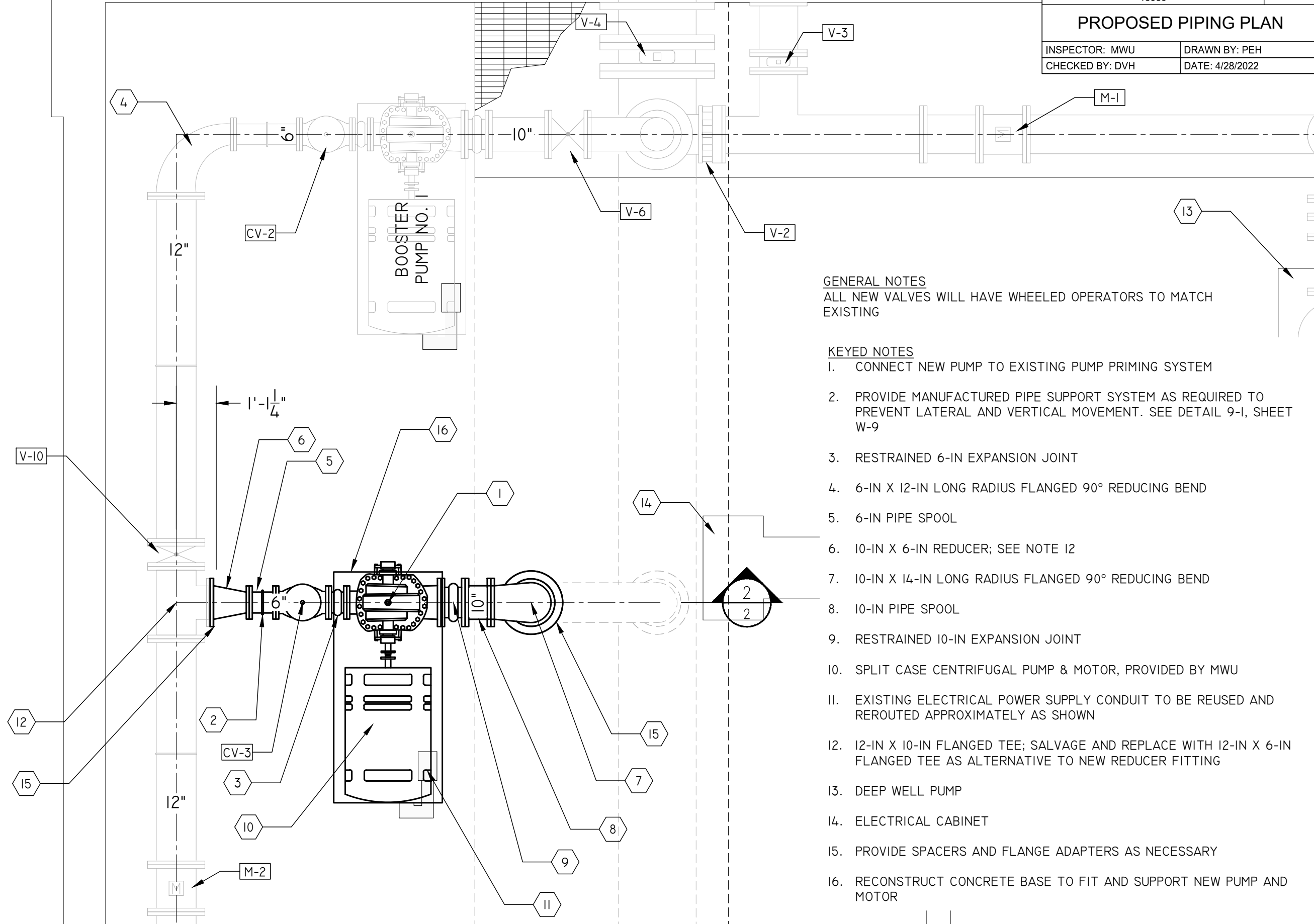
1. REMOVE PUMP, MOTOR, MOUNTING BRACKETS, AND CONCRETE BASE.
2. ELECTRIC POWER SUPPLY CONDUIT TO BE PRESERVED AND RE-ROUTED AFTER REMOVAL OF CONCRETE BASE.
3. CONNECT NEW PIPING TO 10-IN BRANCH OF EXISTING 12-IN X 10-IN TEE..
4. CONNECT NEW PIPING TO EXISTING 14-IN PIPING.
5. REINFORCED CONCRETE SLAB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

PLOT SCALE: 1" = 40'

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

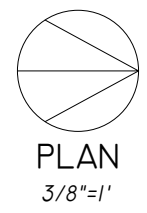
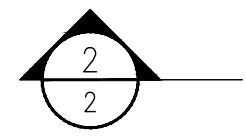
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ORIGINATOR: CITY\_OF\_MADISON\_WATER\_UTILITY



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

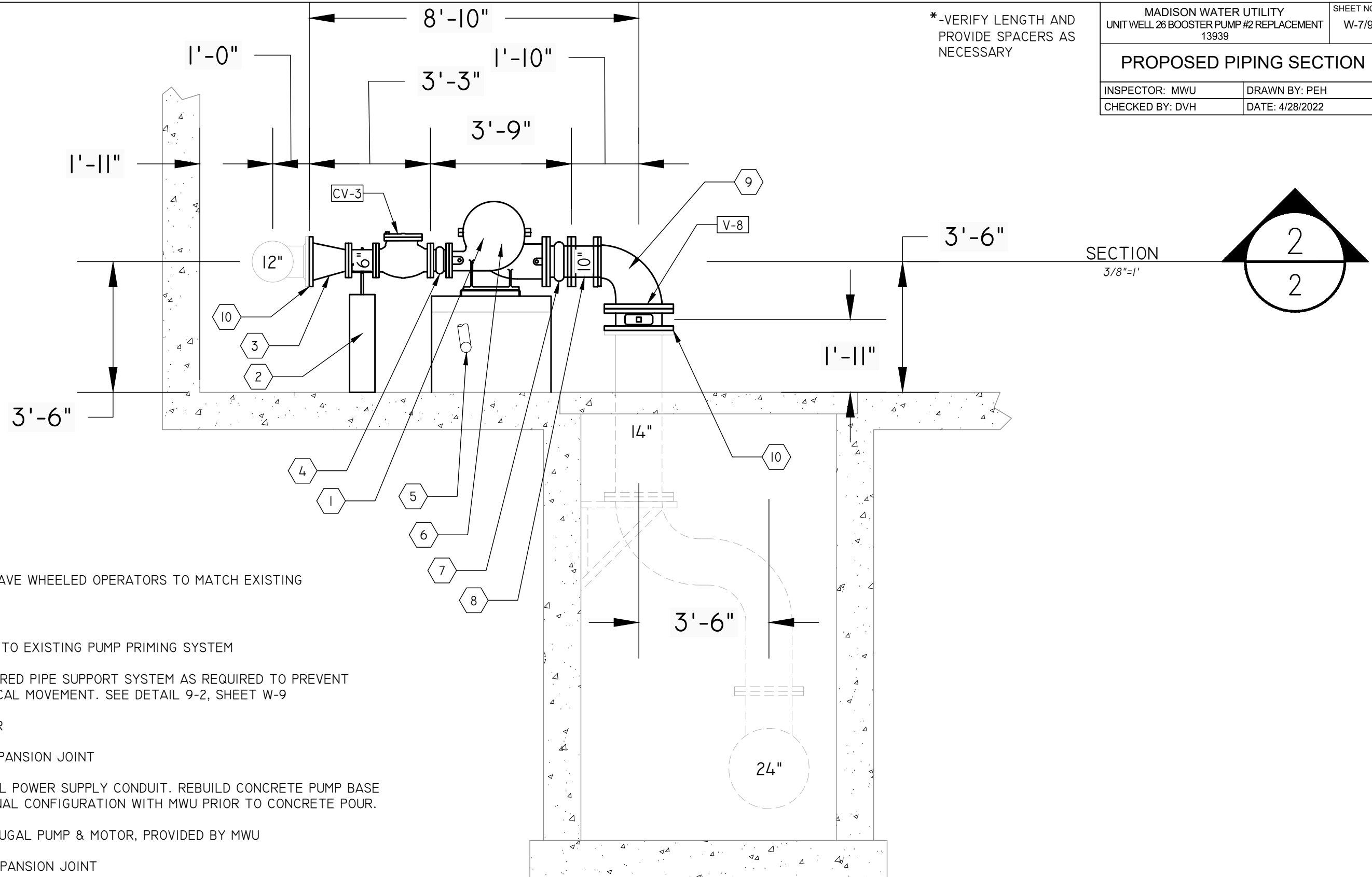
- KEYED NOTES**
- CONNECT NEW PUMP TO EXISTING PUMP PRIMING SYSTEM
  - PROVIDE MANUFACTURED PIPE SUPPORT SYSTEM AS REQUIRED TO PREVENT LATERAL AND VERTICAL MOVEMENT. SEE DETAIL 9-I, SHEET W-9
  - RESTRAINED 6-IN EXPANSION JOINT
  - 6-IN X 12-IN LONG RADIUS FLANGED 90° REDUCING BEND
  - 6-IN PIPE SPOOL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

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

\*-VERIFY LENGTH AND PROVIDE SPACERS AS NECESSARY



**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 9-2, SHEET W-9
3. 6-IN X 12-IN REDUCER
4. 6-IN RESTRAINED EXPANSION JOINT
5. EXISTING ELECTRICAL POWER SUPPLY CONDUIT. REBUILD CONCRETE PUMP BASE AND COORDINATE FINAL CONFIGURATION WITH MWU PRIOR TO CONCRETE POUR.
6. SPLIT CASE CENTRIFUGAL PUMP & MOTOR, PROVIDED BY MWU
7. 10-IN RESTRAINED EXPANSION JOINT
8. 10-IN SPOOL PIECE
9. 10-IN X 14-IN LONG RADIUS FLANGED 90° REDUCING BEND
10. PROVIDE SPACERS AND FLANGE ADAPTERS AS NECESSARY.

PLOT SCALE: 1" = 40'

PLOT NAME:

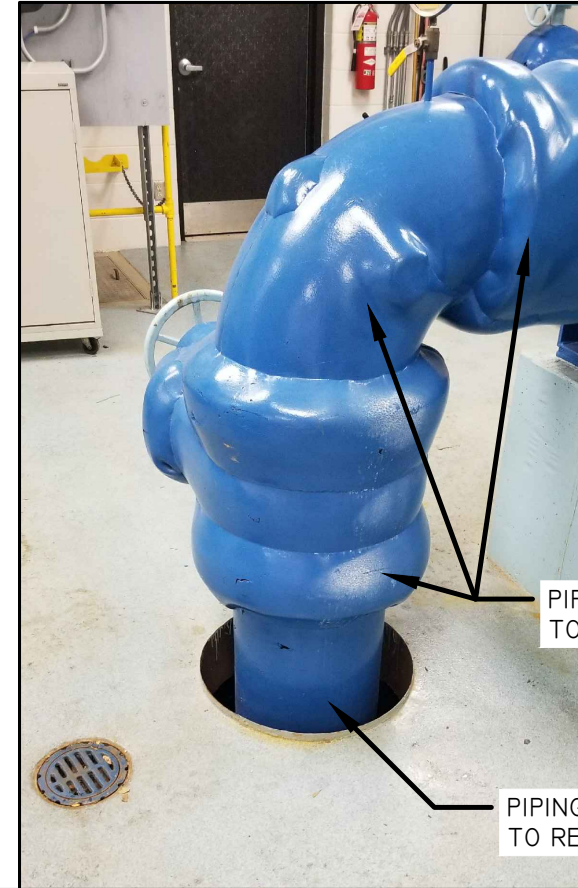
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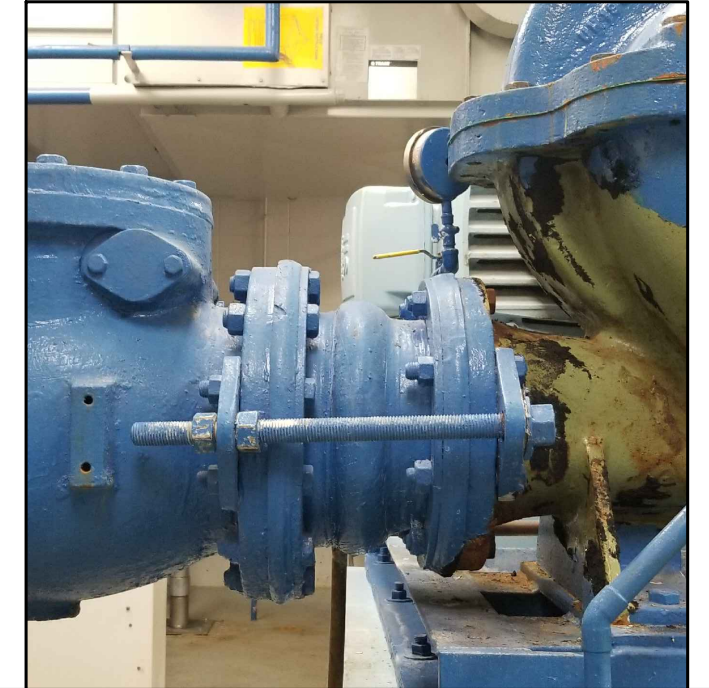




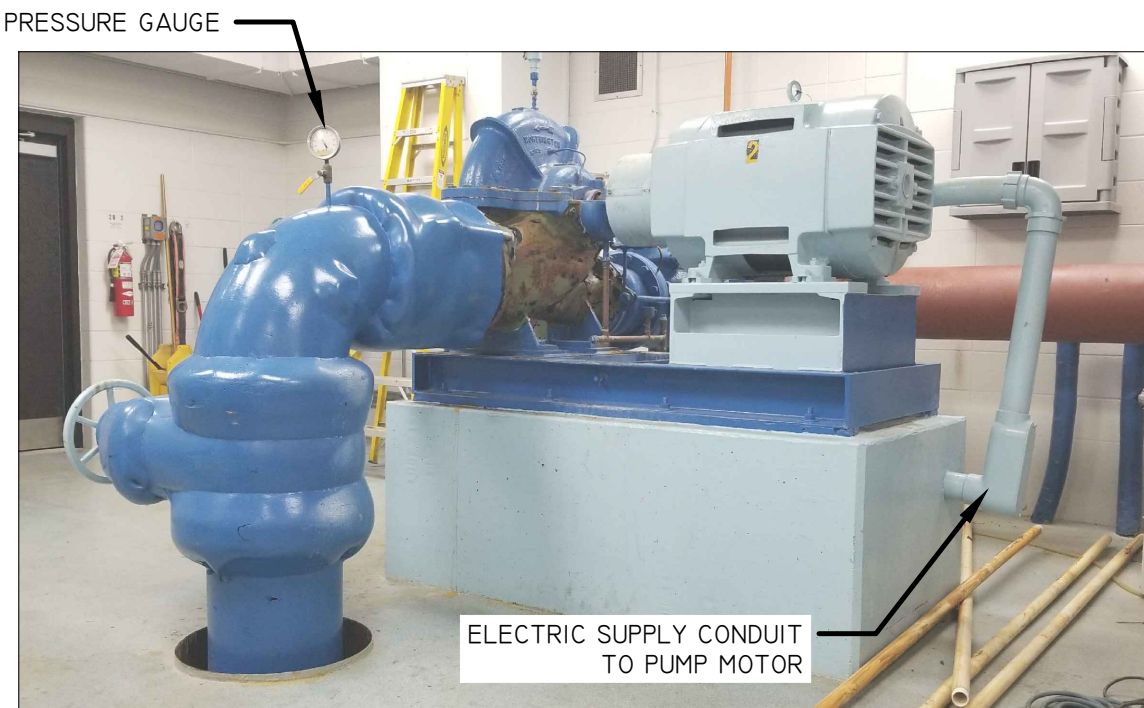
**BOOSTER PUMP #2**  
SIDE VIEW / PUMP SIDE



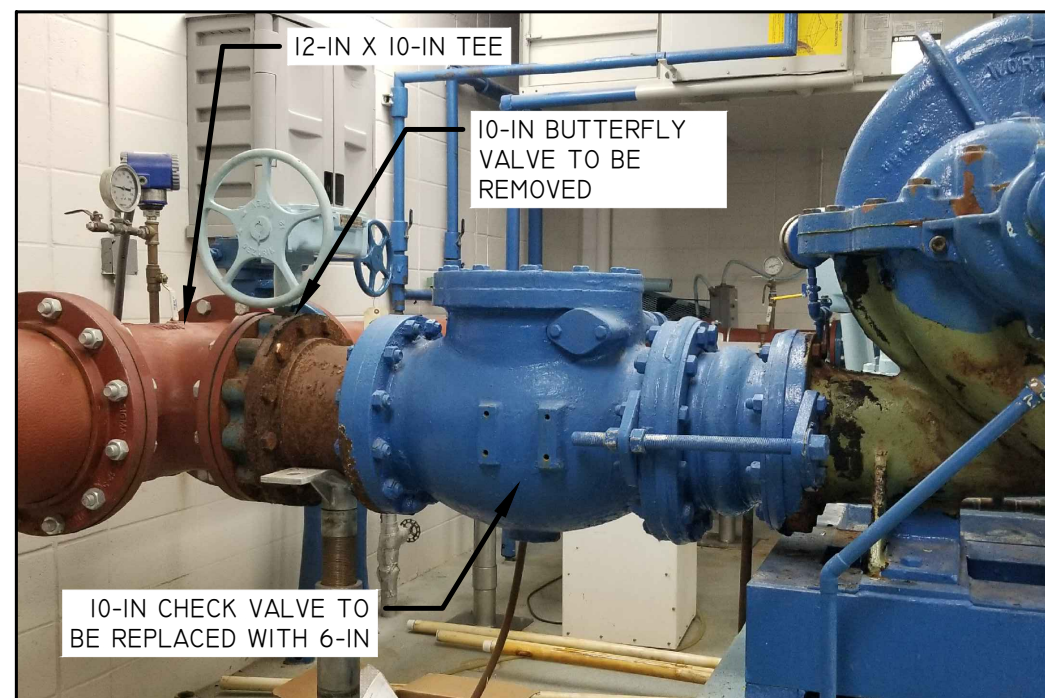
**BOOSTER PUMP #2**  
SUCTION PIPE / FLOOR SLAB PENETRATION



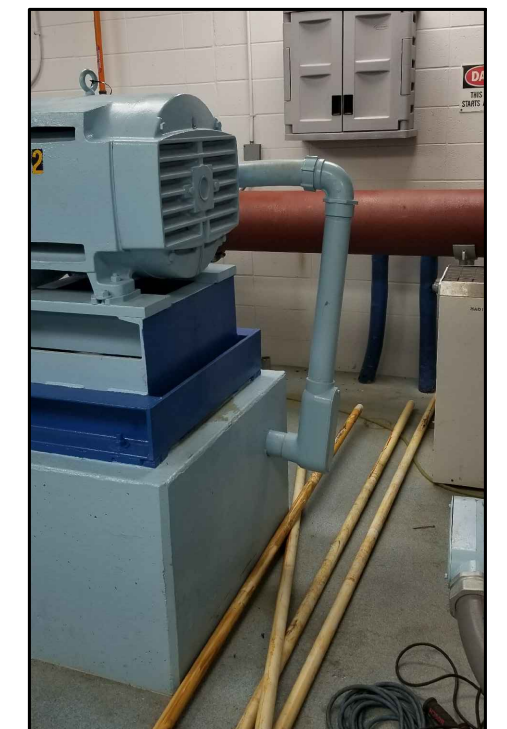
**RESTRAINED EXPANSION JOINT**



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



**BOOSTER PUMP #2**  
DISCHARGE PIPING / CHECK VALVE



**ELECTRIC SUPPLY CONDUIT**

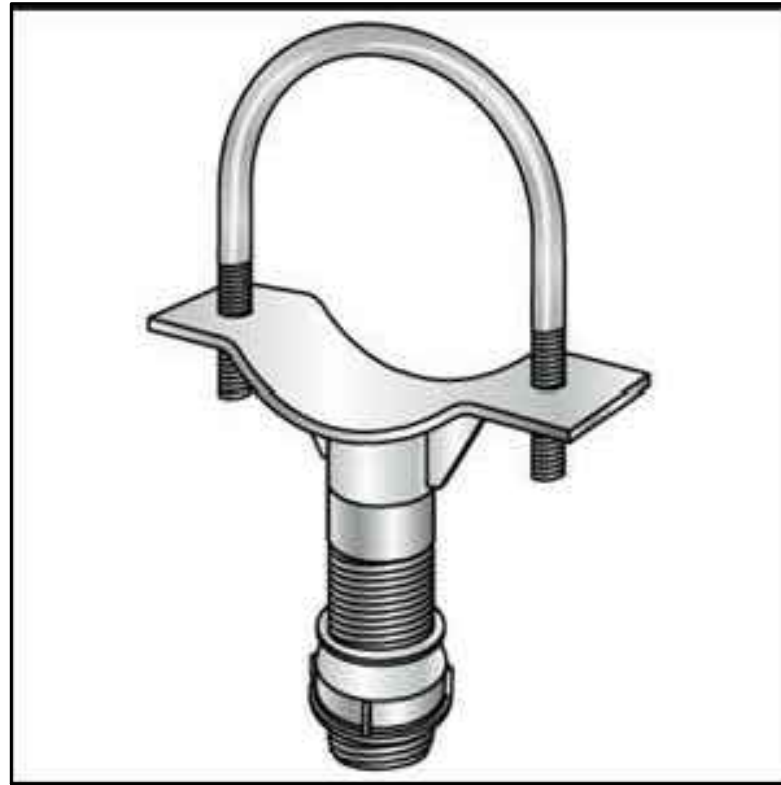
PLOT SCALE: 1" = 40'

PLOT NAME:

REV. DATE:

ORIGINATOR: CITY OF MADISON, WATER UTILITY





**DETAIL 9-1: TYPICAL MANUFACTURED PIPE SUPPORT COMPONENT**

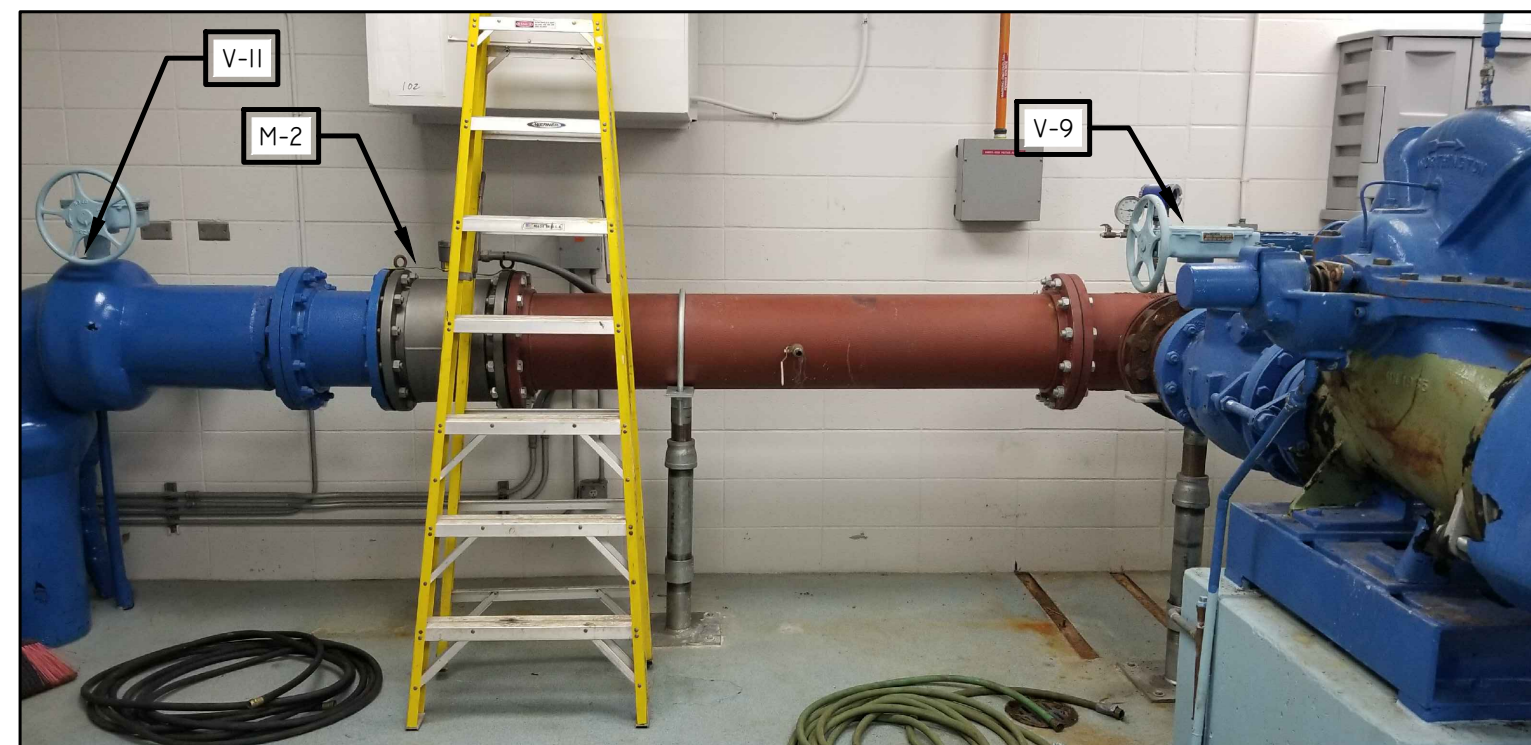
MANUFACTURED PIPE SUPPORT SYSTEM REQUIRED TO PREVENT LATERAL AND VERTICAL PIPE MOVEMENT (AS APPROPRIATE).  
SUBMIT SHOP DRAWINGS OF PIPE SUPPORT SYSTEMS TO MWU FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.



**VIEW OF PUMPS FROM DEEP WELL**



**ELECTRICAL CABINETS TOWARD DEEP WELL (OBSCURED)**



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

PLOT SCALE: 1" = 40'

PLOT NAME:

REV. DATE:

ORIGINATOR: CITY OF MADISON, WATER UTILITY