

Sioux Falls, South Dakota

Brandon Road Pump Station Dual Force Main Project

Technical Memorandum No. 4 –

Existing and Future Brandon Road Pump Station Force Main Tie-In

Task No. 340

HDR Project No. 135-235980

Prepared for:



**CITY OF SIOUX FALLS
PUBLIC WORKS**

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**Sioux Falls Department of Public Works
& Water Reclamation**

By:



HDR Engineering, Inc.

October, 2014



1.0 INTRODUCTION

A previous City of Sioux Falls collection system evaluation study identified the need to protect against system failure of the existing force main line installed in the 1970s and increase the capacity of the Brandon Road Pump Station (BRPS). The City of Sioux Falls has decided to proceed with constructing an additional force main line to use in conjunction with the current 36-inch force main to create a dual force main system. The new force main will be 42 inches in diameter and will connect to the future BRPS. This Technical Memorandum presents the recommended method of connecting the new 42-inch force main to the existing BRPS. This TM also presents the recommended method of connecting both force mains to the future pump station.

2.0 EXISTING BRANDON ROAD PUMP STATION FORCE MAIN CONNECTIONS

2.1 EXISTING 36-INCH FM CONNECTION

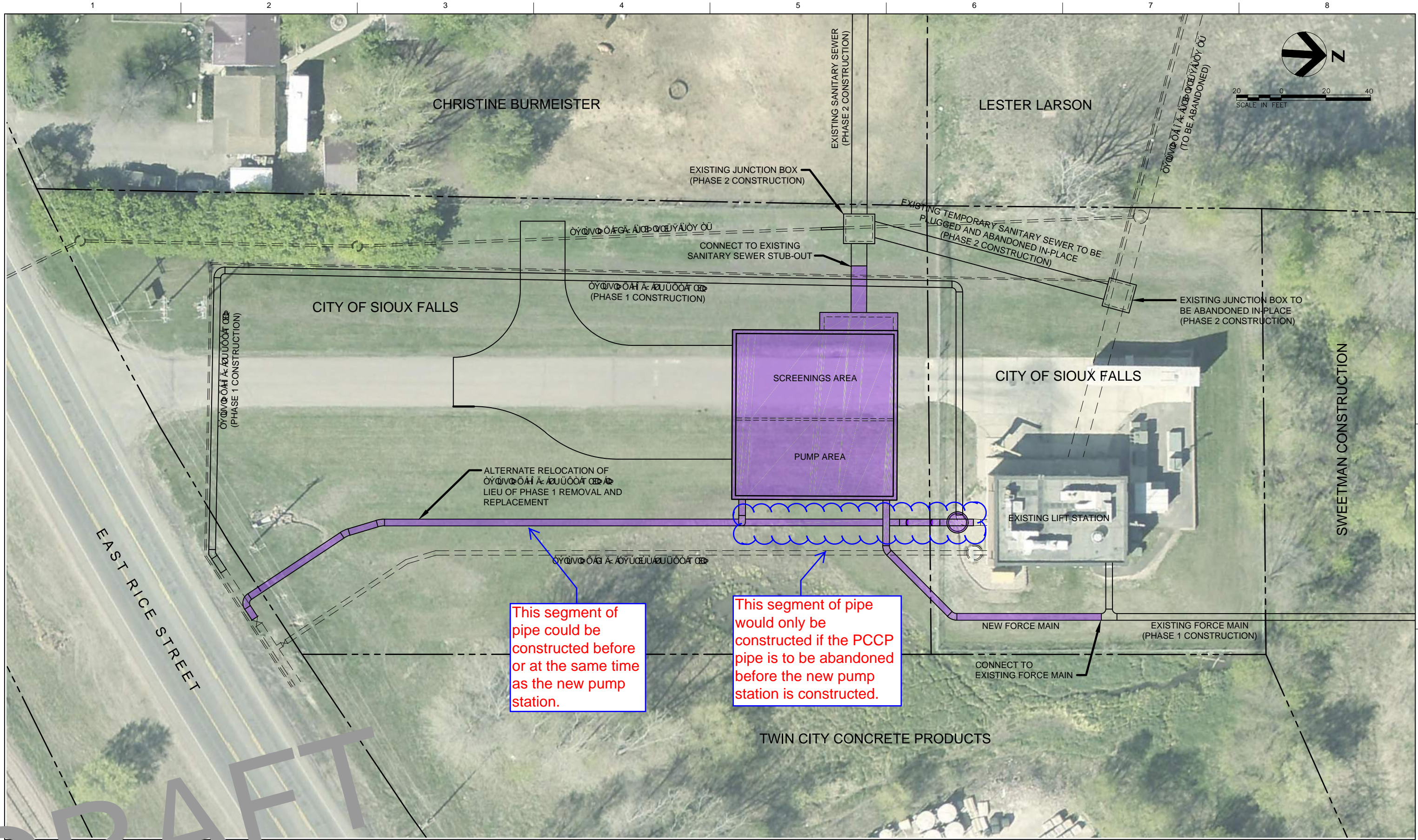
The existing 36-inch force main is precast concrete cylinder pipe (PCCP) between the pump station and Rice Street. At this point it transitions to ductile iron pipe (DIP). The condition of the PCCP section of pipe is unknown at this time because there has been no way to take this pipe out of service for inspection. The PCCP section of this pipe is scheduled to be replaced in the future. The PCCP could be replaced before or after the new pump station is constructed. The following are the recommended options for each time of replacement.

The first option is to replace the PCCP before the new pump station is constructed. 36-inch ductile iron pipe would be installed from the pump station to the PCCP/DIP transition point in the existing force main, bypassing the PCCP segment. A tee would be installed in the new segment to allow for a future connection to the new pump station. Once the new pump station is constructed, the 36-inch force main would be connected to the new pump discharge header, and the segment of pipe between the new and old pump stations would be demolished.

The other option is to replace the PCCP section of pipe after the new pump station is built. A new 36-inch ductile iron pipe would be routed from the discharge header in the new pump station to the PCCP/DIP transition point in the existing 36-inch force main.

For both options, fill and/or a retaining wall may be required to achieve sufficient cover over the pipe.

Figure 4-1 and 4-2 show the proposed routing of each option.



This segment of pipe could be constructed before or at the same time as the new pump station.

This segment of pipe would only be constructed if the PCCP pipe is to be abandoned before the new pump station is constructed.

DRAFT

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
CIVIL	
STRUCTURAL	
ARCHITECTURAL	
PROCESS	
MECHANICAL	
ELECTRICAL	
INSTRUMENTATION	
PROJECT NUMBER	

**WATER RECLAMATION COLLECTION SYSTEM PLANNING
CITY OF SIOUX FALLS, SOUTH DAKOTA 2014**

**PHASE 3
LIFT STATION CONSTRUCTION**

0 1" 2"

FILENAME: AS NOTED
SCALE: AS NOTED

FIGURE 4-2



2.2 NEW 42-INCH FM CONNECTION

The existing BRPS pumps discharge to a 30-inch diameter header pipe and the existing 36-inch force main connects to the south side of this header pipe. As shown in Figure 4-2, it is recommended that the new 42-inch force main be connected to the north end of the existing header pipe.

To make the new force main connection work, the Pump No. 1 discharge piping will need to be reconfigured. Also, to allow the City to select one force main or another, control valves need to be added to each force main. Piping to the existing surge relief valve will need to be modified to accommodate the installation of the control valve for the existing force main connection.

The new force main will interfere with the existing air compressors, dryers and access ladder on the north side of the pump station. These items will need to be relocated to avoid the new pipe.

It is proposed that new force main transition from 30 inches in diameter to 42 inches in diameter at a buried tee fitting on the east side of the pump station. The tee fitting will allow for the force main to be extended to the new pump station in the future.

Figure 4-3 shows the demolition that will need to occur to make the new force main tie-in.

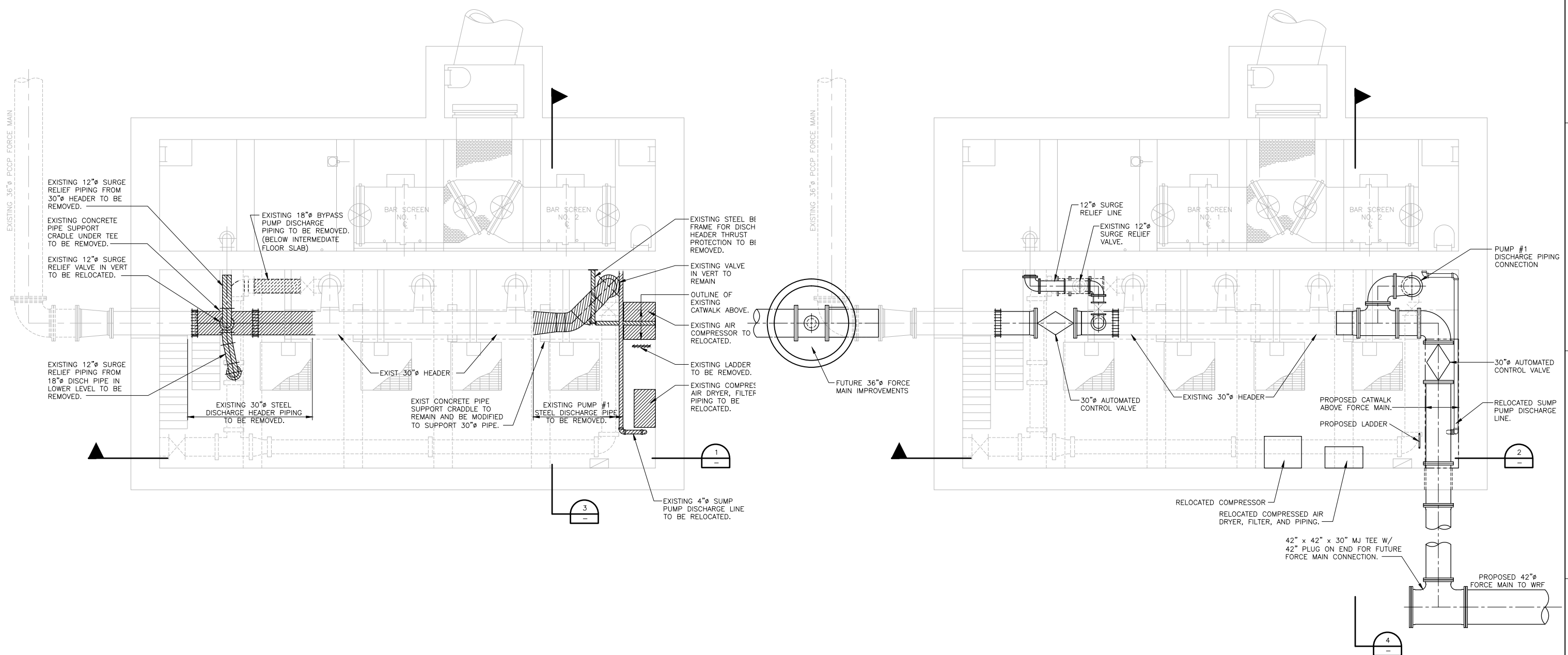
3.0 FUTURE PUMP STATION FORCE MAIN CONNECTIONS

3.1 NEW 42-INCH FORCE MAIN CONNECTION

In the future, when a new pump station is built to replace the BRPS, a 42-inch pipe will be installed from the 42-inch force main tee fitting outside of the pump station to the new pump station. The piping from the tee to the BRPS will be removed and a blind flange will be installed on the corresponding tee connection.

3.2 36-INCH FORCE MAIN CONNECTION

The existing 36-inch force main will connect to the south side of the future pump station discharge header pipe. The connection point will depend on whether the PCCP segment of pipe is taken out of service.



INTERMEDIATE LEVEL DEMOLITION PLAN
3/16" = 1'-0"

INTERMEDIATE LEVEL PIPING PLAN
3/16" = 1'-0"

DRAFT

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	
CIVIL	
STRUCTURAL	
ARCHITECTURAL	
PROCESS	
MECHANICAL	
ELECTRICAL	
INSTRUMENTATION	
PROJECT NUMBER	

**PRELIMINARY
NOT FOR
CONSTRUCTION**

**WATER RECLAMATION COLLECTION
SYSTEM PLANNING
CITY OF SIOUX FALLS, SOUTH DAKOTA 2014**

**BRANDON ROAD LIFT STATION
PIPING MODIFICATION PLANS**



FILENAME | Brandon Road LS Piping Modifications.dwg
SCALE | AS NOTED

FIGURE 4-3