Date: July 26, 2016

To: Water Utility Board

From: Al Larson, PE, BCEE

Pete Holmgren, PE

Re: Request of Design Concept Approvals

Project: Unit Well 12 Conversion to a Two Zone Well

General Scope

Madison Water Utility (MWU) has been working alongside SEH, Inc. to produce plans and renderings for the upgrade of Unit Well 12. After working through several design options, MWU is recommending approval of the attached layouts to best address the goals and challenges of this project.

Background

The 2006 Water Master Plan recommended that Well 12 be converted to a two zone well. This conversion will provide operational flexibility and reliability to the west side supply system. Booster pumps and a pressure reducing valve will be added to the Well 12 facility to move water from Pressure Zone 7 to Pressure Zone 8 or from Pressure Zone 8 to Pressure Zone 7.

In addition to the pumps and piping, additional facility upgrades will include a new room each for chlorine storage, fluoride storage, and a restroom (Attachment A).

The facility work described here will coincide with a separate Public Works contract for the water main improvements, which will connect a pipeline from the facility to Pressure Zone 8 at the intersection of Whitney Way and Odana Road.

Project Description

The major components of the project will now include:

- Demolition of the existing building, followed by construction of a completely new facility.
- Installation of variable frequency drives on new booster pumps to allow them to pump to either Zone 7 or Zone 8.
- Associated piping and motor operated valving to allow the station operation to be remotely controlled.
- Metering for the deep well, Zone 7 and Zone 8 output.
- Addition of a pressure-reducing valve to allow water to flow from Zone 8 to Zone 7 if necessary.
- Construction of a new chemical feed room to bring the facility up to current code and DNR standards.
- Upgrade of the restroom facility.

- Replacement of the well discharge piping
- Miscellaneous Station upgrades related to security, lighting, electrical controls, etc.

Challenges

Adding new building space and increasing the existing facility's footprint to accommodate the upgrades was anticipated. The design of a building layout that was not excessive, yet allowed for easy access throughout, took several iterations between MWU and SEH.

The pump and piping layout has been discussed and analyzed several times in order to meet the goals set by MWU. Placement of valves, meters, and fittings in the appropriate areas to allow for maximum flexibility between the Pressure Zones and the pumps was looked at very closely.

The façade on the existing facility and reservoir is of a weathered stone that cannot be matched with the same materials on the new building. Therefore, MWU and SEH (with their architect, Potter Lawson) have explored options for the new materials and aesthetic styles that would similarly match both the existing reservoir and other recently built facilities (Attachment B).

Coordination between the work at the Well 12 site with the upcoming Whitney Way pipeline improvement project is required to ensure that both projects will result in minimal disruption to the area.

Preliminary Cost Estimate

Current construction estimates are broken down as follows:

Item	Cost
Piping	$150,000
Valves	$150,000
Civil	$250,000
Building	$250,000
Pumps	$150,000
Electrical & SCADA	$800,000
Chemical Feed	$50,000
Mechanical (HVAC & Plumbing)	$200,000
Subtotal	**$2,000,000**
Contractor Profit (Est. 12%)	$240,000
Insurance (Est. 3%)	$60,000
Contingency (10%)	$200,000
Total Estimate	**$2,500,000**

Schedule Update

Items that are completed or are in progress:

- Held one (1) public meeting
- Piping Layout Concept Drawings
- Architectural Concept Drawings
- Site Layout Concept

Items that are to be completed in the next month:

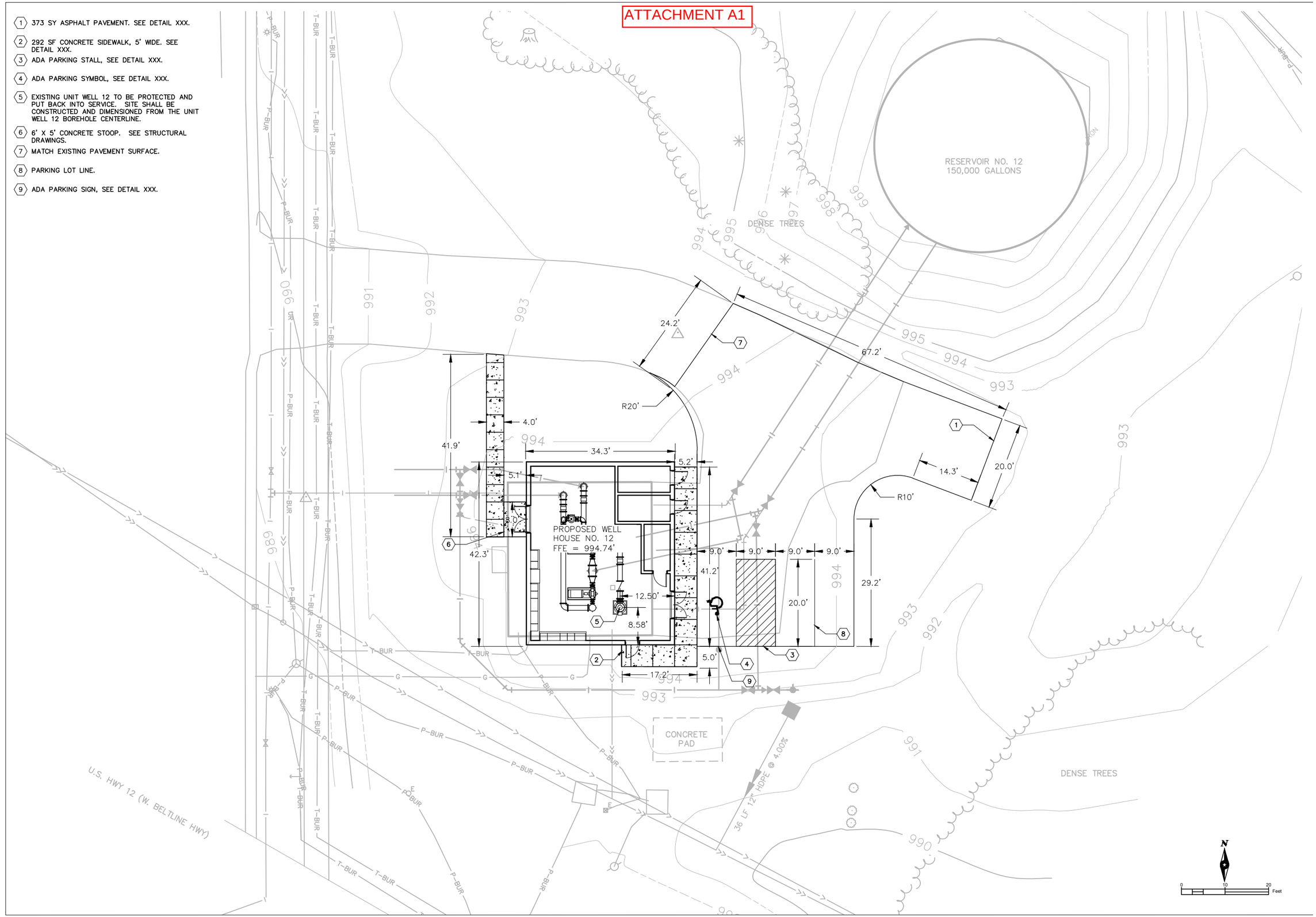
- Develop materials for submittal to UDC/Plan Commission
- Design review meeting with MWU and SEH
- Development of 75% plans

Recommendation

MWU is recommending the design and architectural concepts as presented in Attachments A and B.

ATTACHMENT A1

1. 373 SY ASPHALT PAVEMENT. SEE DETAIL XXX.
2. 292 SF CONCRETE SIDEWALK, 5' WIDE. SEE DETAIL XXX.
3. ADA PARKING STALL, SEE DETAIL XXX.
4. ADA PARKING SYMBOL, SEE DETAIL XXX.
5. EXISTING UNIT WELL 12 TO BE PROTECTED AND PUT BACK INTO SERVICE. SITE SHALL BE CONSTRUCTED AND DIMENSIONED FROM THE UNIT WELL 12 BOREHOLE CENTERLINE.
6. 6' X 5' CONCRETE STOOP. SEE STRUCTURAL DRAWINGS.
7. MATCH EXISTING PAVEMENT SURFACE.
8. PARKING LOT LINE.
9. ADA PARKING SIGN, SEE DETAIL XXX.



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Toll Free: 800.472.1362
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SEH

Madison Water Utility

UNIT WELL 12 UPGRADE & CONVERSION TO TWO ZONE WELL
MADISON WATER UTILITY
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

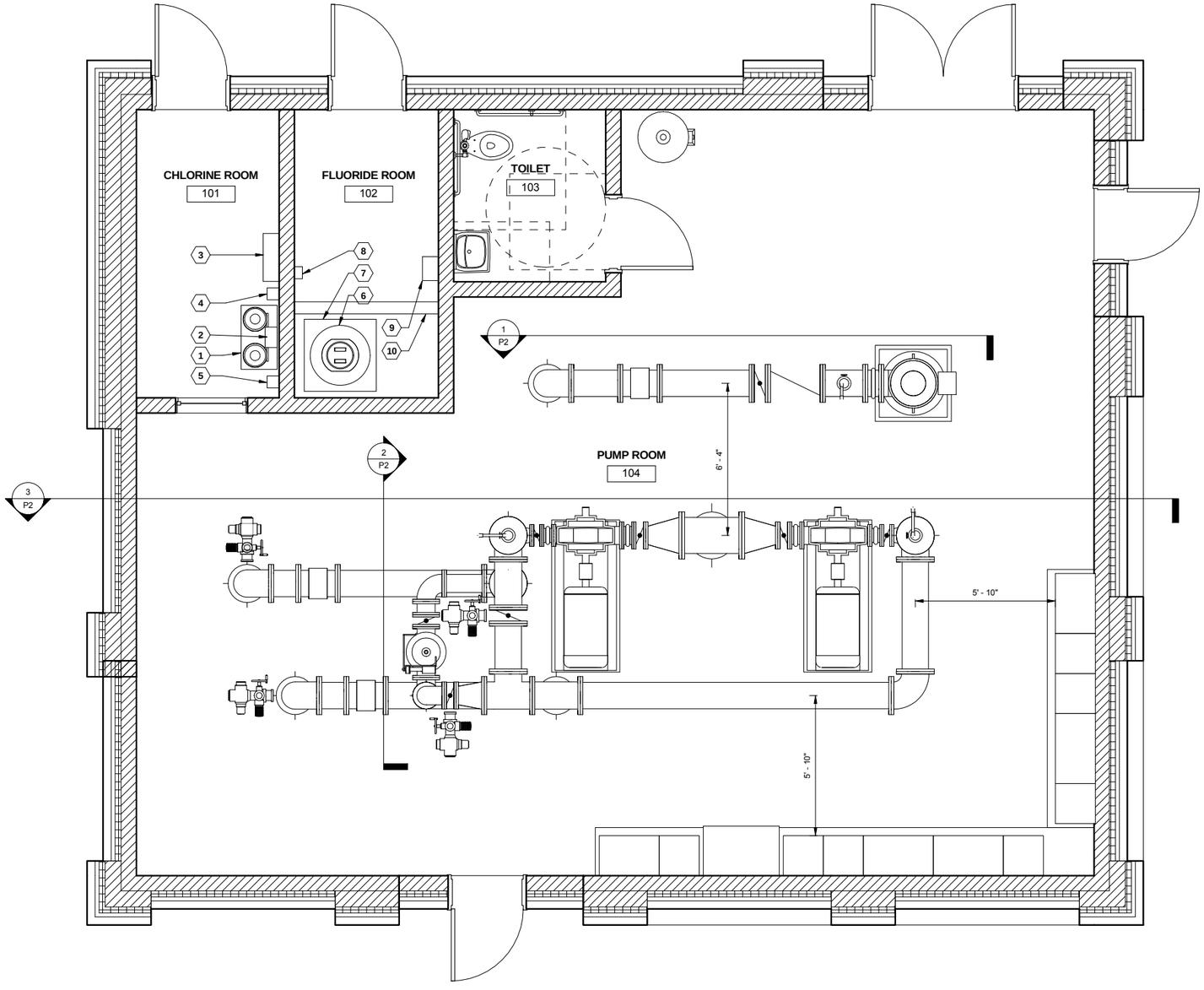
SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-14-16
DESIGNED BY JJB
DRAWN BY JJB
Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE
SITE PLAN

SHEET
C1.1

C:\PROJECTS\VKO\M\MADWU\130564\S-DESIGN\SECOND DESIGN\51-DRAWINGS\10-CIVIL\SHEETS\C1.1_SITEPLAN.DWG
SAVED: 7-13-2016 3:59 PM
USER: JOSH BOHNERT
MA130564_BaseMap; OLD-Madison Unit Well 12 TOPO; MA130564_Utilities; MA130564_Geometrics; MA130564_Contours; MA130564_ContourPaving; MA130564_Aerial; MA130564_Border
PLOTTED: 7-13-2016 4:03 PM
PLOT SCALE: 1:2

ATTACHMENT A2



KEYNOTES

1. DUAL CYLINDER PLATFORM WITH INDICATOR
2. GAS CHLORINE FEED SYSTEM - SEE DETAIL XXX
3. EMERGENCY CHLORINE SHUTOFF PANEL
4. CHLORINE GAS DETECTOR
5. LOSS OF VACCUM DETECTOR
6. 160 GALON FLUORIDE TANK
7. 36" x 36" SCALE PLATFORM
8. DIGITAL SCALE INDICATOR
9. FLUORIDE METERING PUMP - SEE DETAIL XXX
10. 16" HIGH CHEMICAL CONTAINMENT WALL

N

1 / P1 FIRST FLOOR PROCESS PLAN

0 4' 8' 12'

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MADISON, WI 53719
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Madison Water Utility

UNIT WELL 12 IMPROVEMENTS AND CONVERSION TO A TWO ZONE WELL
MADISION WATER UTILITY
MADISON, WISCONSIN

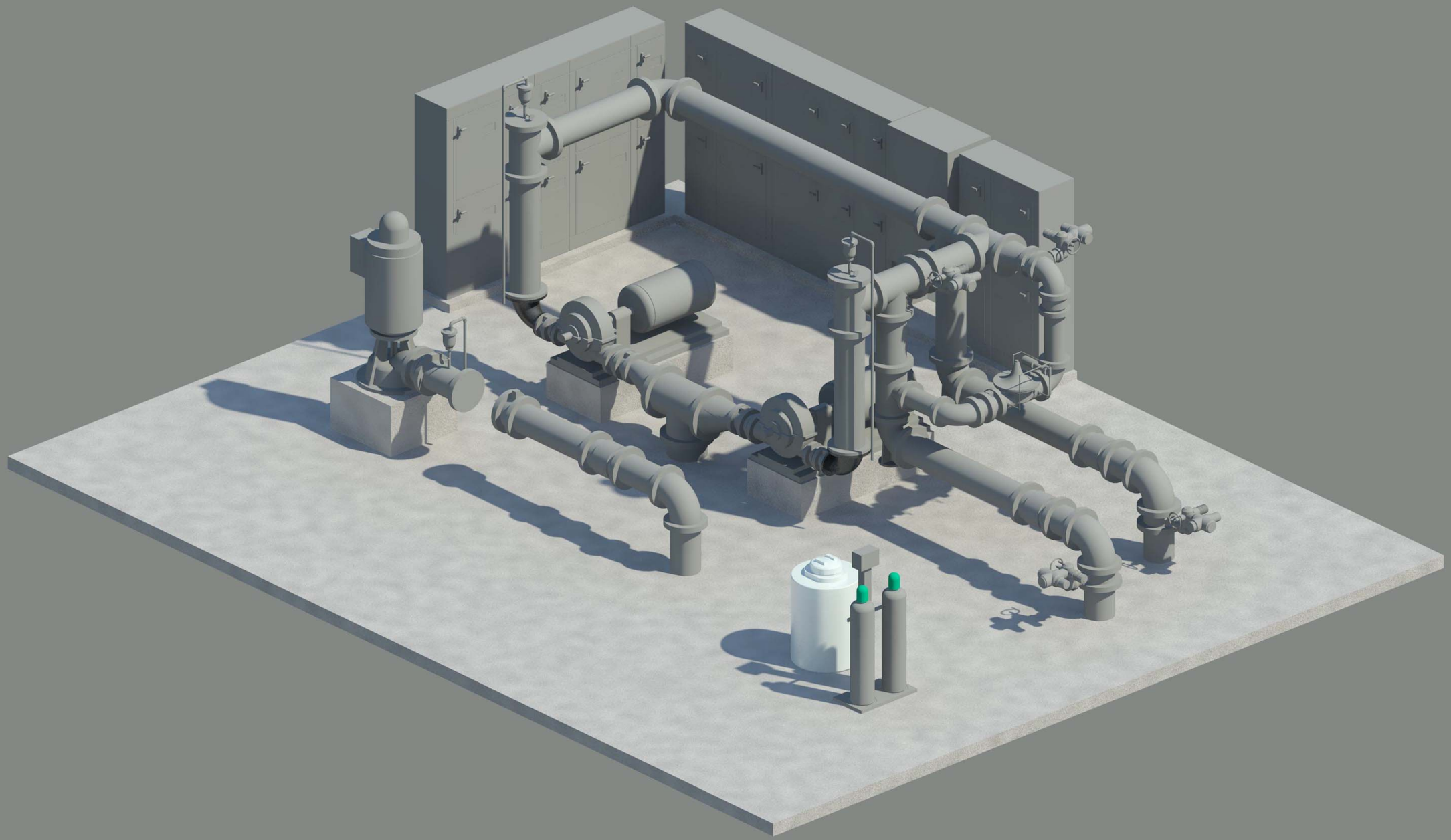
MARK	DATE	DESCRIPTION
		REVISIONS

FILE NO. MADWU 1305564
CITY PROJECT NO.
ISSUE DATE JUNE, 2016
DESIGNED BY Designer
DRAWN BY Author

SHEET TITLE
PROCESS DRAWINGS
FLOOR PLAN

SHEET
P1

ATTACHMENT A3



Attachment B1

Madison Water Utility - Well 12
Whitney Way - 2014.52.01
June 09, 2016

Potter Lawson
Success by Design

Attachment B2

Madison Water Utility - Well 12
Whitney Way - 2014.52.01
June 09, 2016

Potter Lawson
Success by Design

Attachment B3

Madison Water Utility - Well 12
Whitney Way - 2014.52.01
June 09, 2016

Potter Lawson
Success by Design

Attachment B4

Madison Water Utility - Well 12
Whitney Way - 2014.52.01
June 09, 2016

Potter Lawson
Success by Design