CITY OF ANN ARBOR, MICHIGAN
Public Services Area/Water Treatment
919 Sunset Road
Ann Arbor, Michigan 48103

Web: www.a2gov.org *Printed on recycled paper*

May 18, 2012

To: All Contract Document Holders

RE: Addendum to the Contract Documents for the West High Service Pump Station
Bid No. ITB-4221

Attached is a copy of Addendum Number Two for the West High Service Pump Station Project. This Addendum supersedes and updates the Contract Document information for Bid No. ITB-4221. All Bidders shall acknowledge receipt and acceptance of this Addendum Number Two by so indicating on the Invitation to Bid Form located in the existing Contract Documents. Bids submitted without acknowledgment of receipt of this Addendum will be considered informal. If you have any questions regarding the Contract Documents or this Addendum, please contact Glen Wiczorek, PE, Stantec Consulting, Project Manager by email at glen.wiczorek@stantec.com.

Sincerely,

Brian Steglitz. P.E.
Sr. Utilities Engineer
City of Ann Arbor Water Treatment Plant

enc.

May 18, 2012

ADDENDUM NO. 2
TO
BID DOCUMENTS
FOR
WEST HIGH SERVICE PUMP STATION
FOR THE
CITY OF ANN ARBOR, MICHIGAN

The following changes, additions, and/or deletions shall be made to the Bid Documents for the West High Service Pump Station Project for the City of Ann Arbor, Michigan, Bid No. ITB – 4221 on which bids were to be received, on or before, 10:00 A.M. Thursday, May 31, 2012.

PROPOSALS SHALL NOW BE RECEIVED ON, OR BEFORE, 3:00 P.M., THURSDAY, MAY 31, 2012.

The information contained herein shall take precedence over the original documents and all previous addenda, and is appended thereto.

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 2, including all attachments, by so indicating on page ITB-1 of the Invitation to Bid Form. Bids submitted without acknowledgement of receipt of this addendum will be considered informal.

Changes in the Bid Documents which are outlined below are referenced to a page or drawing in which they appear conspicuously. The Bidder is to take note in its review of the documents and include these changes as they affect work or details in other areas not specifically referenced here. Changes to the original text are bolded, underlined and italicized.

GENERAL

Attached at the end of the addendum is the sign-in sheet for the Site Walkthrough held on Thursday, May 17, 2012.

DETAILED SPECIFICATIONS

SPECIFICATION SECTION 15400 – PLUMBING AND DRAINAGE

Add Paragraph 2.2.C, as follows:

A. Compressed Air Piping

1. Compressed air pipes shall be Schedule 40, black continuous weld steel pipe in accordance with ASTM A53 or ASTM A120.

2. Fittings 2" and smaller to be 150 lb. black malleable iron, screwed ends, in

accordance with ASTM A197. Unions to be 300 lb., malleable iron, ground joint with brass seat.

3. Provide and install shut-off valve on the main line and on the line to each outlet. Valve working pressure to be 150 psi, stainless steel ball and stem, steel lever-handle standard, blowout-proof stem, UL listed. Similar to Jenkins Brass Ball Valve Figure 201SJ or approved equal.

SPECIFICATION SECTION 03300 – CAST-IN-PLACE CONCRETE

Add Paragraph 3.9.C.2, as follows:

2. Crack Repair – Any structural cracks in the concrete that manifest themselves shall be repaired by pressure injection methods.

a. Pressure injection shall be performed per all manufacturer recommendations.

b. Injection grout shall be Sikadur 31 and 35; overlay patching materials shall be SikaTop 123 Plus. Equivalent products by Master Builders shall be acceptable.

SPECIFICATION SECTION 13200 – SURGE TANK

Add Paragraph 2.4, as follows:

2.4 MANUFACTURERS / SUPPLIERS

A. The surge tank and all related system components, including but not limited to the following: 5,000 gallon tank with fittings, air compressor, solenoid valves, air relief valve, safety relief valves, electrodes, sight glass assembly, pressure gauges, and control panel, shall be provided as a complete and operational transient mitigation system with single source responsibility. Single source responsibility shall specifically include shop drawing submittal, furnishing, startup, testing, commissioning, functionality, and warranty of the surge tank system.

B. The surge tank system shall be as supplied by Pulsco (represented by Dale Bentley, Peterson & Matz, 248-476-3204), or Approved Equal.

SPECIFICATION SECTION 17010 – INSTRUMENTATION GENERAL CONDITIONS

Revise Paragraph 1.5.K.1, as follows:

1. ***Existing*** SCADA Server located in the SCADA server cabinet in the main control room~~.~~ ***(not in contract).***

SPECIFICATION SECTION 17015 – I&C SCOPE OF WORK

Revise Paragraph 1.1.A.2.d, as follows:

d. ~~DeviceNet,~~ Fieldbus and Modbus wiring and communication equipment.

Delete Paragraph 1.3.A.6:

6. ~~Provide setup and commission DeviceNet networks. Terminate both ends of each DeviceNet bus.~~

SPECIFICATION SECTION 17330 – SPARE PARTS

Revise Paragraph 2.2.A, as follows:

A. Provide the following spare parts:

No.	Description	Qty.
1.	PLC Power Suppy ~~1756-PA75~~ ***CompactLogix***	1
2.	~~PLC DeviceNet Module 1756-DNB~~ **CompactLogix**	1
3.	PLC ~~Ethernet~~ ***Analog Out*** Module ~~1756-ENBT~~ ***CompactLogix***	1
4.	PLC Analog Input Module ~~1756-IA32~~ ***CompactLogix***	1
5.	PLC Analog Input Module ~~1756-IA16~~ ***CompactLogix***	1
6.	One Pressure Transducer	1
7.	One Float	1

SPECIFICATION SECTION 17440 – CONTROL PANEL - PLC

Revise Paragraph 2.9.I.1, as follows:

1. Programmable Controller shall provide high reliability in industrial applications. The internal wiring of the controller is to be fixed, with the logic functions it must perform in a given application to be programmed into its memory. The controller shall be supplied with the CPU, memory (program and data) input/output modules, ~~DeviceNet scanners,~~ Ethernet TCP/IP modules, power supply, and all power and interface cables necessary to function as a complete, reliable and operable system.

Revise Paragraph 2.9.I.10, as follows:

1. Programmable Controller shall have at least two ~~DeviceNet Scanner~~ ***Ethernet TCP/IP*** modules for connection to associated MCC.

SPECIFICATION SECTION 17701 – INSTRUMENT SPEC SHEETS

Revise Magnetic Flow Meter Instrument Data Sheet per attachment.

Revise Pressure Transmitter Instrument Data Sheet per attachment.

DRAWINGS

Revise Drawing C-104 to reflect an ADA compliant ramp on the south side of the pump station.

Revise Drawing C-105 to reflect grade changes for the ADA compliant ramp.

Revise Drawing P-102 to reflect the valve type change on the WHS discharge.

Revise Drawing P-107 to reflect a change in the surge tank manhole dimensions.

Revise Drawing E-120 to update conduit note.

Revise Drawing E-122 to show the homeruns for electrical feeders to the sump pumps and surge tank control panel.

Revise Drawing E-123 to show the location of power conduit P26.

Revise Drawing E-607 to reflect the feeder breakers for the sump pumps, air compressor, and surge tank control panel. Also updated the Power Conduit Schedule so P9 requires a total of 5 conduits and P10 will require a total of 2 conduits. Also updated to reflect additional conduit and conductors.

Revise Drawing I-105 to add a second PLC for the monitoring of medium voltage service breakers.

QUESTIONS AND ANSWERS

Q: On Drawing M-104 the CW to BFP-1 is shown as 1-1/2" down, and on Drawing M-105 the same CW is shown as 3/4" up. What is correct diameter of this CW pipe?

A. The CW pipe to BFP-1 shall be 1-1/2".

Q. On Drawing M-105 the FFD serving the Air Compressor is shown on Plan El. 978.25. Should this FFD be shown on Plan El. 963.0?

A. **The FFD serving the Air Compressor should be shown on Plan El. 963.0. The air compressor drain shall be piped directly to the FFD with copper piping and secured to the floor. The FFD shall tie into the 6-inch sanitary on the north end of the building shown on Plan El. 963.0.**

Q. In Detail 2 on Drawing S-100 there is a note on the north side of the building stating "New 6" dia. perforated drain connect to storm drain." On what drawing is this connection shown and what is the proposed invert?

A. The drain connects to the 2-foot diameter catch basin shown on Drawing C-107. The invert at the proposed catch basin shall be changed to 978.50'.

Q. On Drawing A-600, what is the size of the window in Door Type "A"?

A. Provide 6-inch clearance top and sides, and approximately 6-inch clearance above panic hardware.

Q. Are there any MDOT permits required?

A. There are no MDOT permits required on this project.

Q. Domestic 30" x 24" flange 90° bends and 30" x 30" x 36" flange tees are not available. Can these be imported?

A. Only the 30" x 24" flange 90° bends and the 30" x 30" x 36" flange tee can be imported. Imported fittings must be manufactured by American Cast Iron Pipe Company, Clow, or Tyler Union.

Q. On Drawing P-104, the suction header 30"x12" tees are drawn with 46" laying length. They are actually 36" face to face. Should a spool piece be included?

A. Contractors shall include a spool piece in their bid anywhere the drawn laying length does not meet the available fitting laying length.

Q. On Drawing P-104, the discharge piping shows an 18" dia. x 2'9" flg x flg spool piece between the 18"x16" reducer and the check valve. On Drawing P-103 this is shown as an 18" x 4" flange tee. Which drawing is correct?

A. Contractor shall provide an 18" diameter spool piece as shown on Drawing P-104 with a 1" tap per the pressure gauge detail on Drawing P-106.

Q. Tyler/Union does not shop prime their fittings with Tnemec F.C. Typoxy Series 27 primer. Is Tnemec Series 66 shop primer acceptable?

A. Yes, Tnemec Series 66 is an acceptable alternative shop primer on process piping.

Q. In the surge tank detail on Drawing P-107, the tank tangent length is shown as 17'-6" and the diameter is shown as 7'-0". Specification Section 13200-Surge Tank indicates that the nominal tank capacity should be 5,000 gallons. Is a tank with a 16'-0" tangent length, 7'-0" diameter, and a capacity of 5,195 gallons acceptable?

A. Tank diameter may not change. Length may change so long as the volume requirements in the specifications are met.

Q. Specification Section 13200, Paragraph 3.1.C. states "The Contractor and fabricator shall plan to have the tank delivered to the site in sections and welded together at the project site for installation at the location indicated in the drawings." Typically tanks of this type are built in a fabrication shop and delivered complete. Is it necessary to weld the tank in the field?

A. The Contractor, at his option, can either have the tank delivered complete and

installed before the placement of the floor slab above the tank, or can have the tank delivered in sections and assembled in place after the placement of the floor slab. In either case, protection of the equipment is critical. The means and methods used to provide a complete and working surge tank system at the location indicated in the plans is the responsibility of the Contractor.

Q. The surge tank detail on Drawing P-107 requires three (3) tank supports. Can the tank be installed with only two (2) supports?

A. The three (3) saddle supports were designed to resist the buoyant forces resulting from a station flood (to elev. 990.0) with the tank empty. Two (2) saddles are acceptable, provided that a new design and supporting calculations for the anchoring of the tank to the foundation slab are prepared and submitted by a Professional Engineer licensed in the State of Michigan.

Q. The profiles on Drawings C-201, C-202 and C-203 show butterfly valves on the yard piping and the plan on Drawing C-106 show gate valves. Which drawing is correct?

A. Where conflict exists, all valve types shall be per Drawing C-106.

Q. On Drawing I-122 the Conduit & Cable Schedule shows four vendor control panels for the Vertical Turbine Pumps with regard to the analog signals. The same schedule, as well as the other Contract Drawings show two vendor control panels total for the four pumps. Please address this discrepancy.

A. There are only two vendor control panels for the four pumps. Each vendor control panel will be for the vibration/temperature system monitoring. Each individual panel can monitor two pumps/motors.

Q. The vendor control panels for the vertical turbine pumps are not specified in Specification Section 11214. Where are these vendor control panels specified?

A. Please refer to Specification Sections 17325 and 17326 for the equipment related to the pump vibration and temperature monitoring systems.

Q. Based on Drawing Nos. E-105 and E-603, with regards to Circuit P3, the cables for the feeder from SB-Gen to Red SB1 will be spliced to existing conductors in manhole PHH2. Please verify that this is correct.

A. No splices will be allowed below grade. The Contractor will pull back the existing generator feed for reconnection to the RSB1. Please refer to Drawings E-103, E-106 and E-123 for further details.

Q. Drawing E-120, Note 26 identifies a 4" conduit with 12 strand multi-mode fiber going from the existing fiber termination point. Is it correct to assume that this is Circuit P25 as shown on Drawing E-123?

A. Yes.

Q. Is the existing fire alarm system simplex?

A. Yes.

Q. Specification Section 17010, Paragraph 1.5.K.1 indicates a server is to be provided; however, Drawing I-600 is not represented as such. Please Clarify.

A. The server is existing and is not part of this contact.

Q. Specification Section 17010, Paragraph 1.5.K.6 indicates only one (1) main PLC panel is to be provided by the system integrator; however, on Drawing I-105 a switchgear monitoring PLC panel is shown for monitoring purposes Furthermore, Specification Section 16245 does not indicate this panel is to be provided nor does it indicate that any communication protocol is required. Please clarify the intent of this control panel and further indicate if this control panel should be added to Section 17010, Paragraph 1.5.K.6.

A. A second PLC is required for the monitoring of medium voltage service breakers. Drawing I-105 is being updated in this addendum.

Q. Specification Section 17330 includes a list of ControlLogix spare parts to be provided; however, Drawings I-700 thru I-708 represent a CompactLogix platform. Please clarify if ControlLogix cards are indeed what are required.

A. The spare parts will be for the Allen-Bradley Compact Logic controllers. Specification 17330 has been updated for spare part requirements as part of this addendum.

Q. Specification Section 17440 describes at least two DeviceNet Scanner modules are required to communicate with the motor control center; however, Specification Section 16483 and Drawings I-601 thru I-603 do not describe or represent DeviceNet communications are required. Furthermore, it is mentioned in Specification Section 17015, Paragraph 1.1.D.4.e as a device for the system integrator to provide power monitoring for the motor control centers. Please clarify.

A. The references to DeviceNet are in error and will be removed from the contract documents. The power monitors will communicate via the Ethernet backbone system.

Q. Process and Instrumentation Drawings do not show PI/PIT-101B; however, in Specification Section 17701 the instrument data sheets provided for Specification Section 17322 indicate a “redundant” pressure transmitter & gauge is required for the West High Service Pump Station discharge header. Please clarify if this will be added to the Drawings or if the unit is not required.

A. PI/PIT-101B will be removed from the data sheets.

Q. In Specification Section 17701 the instrument data sheets provided for Specification Section 17324 indicate that FIT/Fe-105 is for “EHPS Effluent” flow; however, with the drawings this tag ID corresponds to the WHPS effluent flow. Please clarify.

A. The Instrument Data sheet will be updated to reflect West High Service Pump Station effluent flow.

Q. Speciation Section17720 describes acceptable process automation equipment as Allen-Bradley ControlLogix for Control; however, the Drawings are represented as a CompactLogix platform. Please clarify.

A. All controls will be CompactLogix.

Q. On Drawing I-701, the I/O card description indicates a part number for an analog input module. Please confirm if the part number should actually be 1769-OF4CI.

A. The correct part number for analog card is 1769-OF4CI.

Q. Specification Section 16700- Low Voltage Cabling is included in the Contract Documents; however, there are no drawings related to this section.

A. Drawings E-123, E-124, E-153 and E-800 show the various requirements for the low voltage cabling. Drawing E-607 has been updated as part of this addendum to reflect additional requirements to related to Section 16700.

Q. On Drawing AD-100, the drawing note indicates that the two openings (32 x 32 and 92 x 38) shall be primed and painted. Is that correct?

A. The two openings shall be wallpapered (vinyl) to match existing.

Q. What is the size of the existing gas line downstream of the gas meter where the point of connection is being made?

A. The size is 4-inch diameter.

Q. On Drawing P-102 in the Valve Schedule, please clarify the comment in the Valve ID column.

A. All valves and tags shall be provided by the Contractor. Only the number scheme for identification shall be provided by the Owner/Engineer.

END OF ADDENDUM

Stantec

CITY OF ANN ARBOR WATER TREATMENT PLANT
WEST HIGH SERVICE PUMP STATION
ITB #4221
SITE WALKTHROUGH ATTENDANCE
THURSDAY, MAY 17, 2012; 9:00 AM to 2:00 PM

Name/Representing	Address	e-mail address	Phone/Fax	
Brian Steglitz, PE City of Ann Arbor	919 Sunset Rd. Ann Arbor, MI 48103		p	
			f	
Glen Wiczorek, PE Stantec Consulting	3754 Ranchero Drive Ann Arbor, MI 48108	Glen.Wiczorek@Stantec.com	p	
			f	(734) 761-1200
Chris Elenbaas and Greg Schofer Stantec Consulting	3754 Ranchero Drive Ann Arbor, MI 48108	Chris.Elenbaas@stantec.com Greg.Schofer@stantec.com	p	
			f	
Steve Warnock Lake Erie Electric	20800 Chesley Dr Farmington, MI 48336	Swarnock eleeinc.com	p	248 473 0222
			f	
Tim Hall 3LK Coatings	18401 Weaver Detroit, 48228	thall@3lkconstruction.com	p	313 999-0251
			f	313 493-9091
Ben Rosenberg Roton Electrico	9522 Grinnell Detroit, 48213	brosenberge rotorelectric.com	p	313 891-0331
			f	(313) 891-0511
Maurice P Montpas Sorensen Gross Construction Service	3407 Torrey Rd Flint MI 48507	MPMontpas@SGCS.net	p	810-235-3200
			f	810 238-6222

Stantec

CITY OF ANN ARBOR WATER TREATMENT PLANT
WEST HIGH SERVICE PUMP STATION
ITB #4221
SITE WALKTHROUGH ATTENDANCE
THURSDAY, MAY 17, 2012; 9:00 AM to 2:00 PM

Name/Representing	Address	e-mail address		Phone/Fax #
MIKE NASH WALSH CONSTRUCTION	3011 West Grand Blvd. Detroit, MI. 48202	mnash@walshgroup.com	p	313-873-6600
			f	313-873-6633
JAY NAULT Otis Elevator	25365 Interchange Ct. Farmington Hills	jerome.nault@ otis.com	p	248-755-2623
			f	
Christine Pierceson Otis Elevator	" "	Christine.pierceson @ otis.com	p	248-867-8749
			f	
DARREL BOELEMA F.H.C	~~2355~~ Wyoming MI	DBOELEMA@ FRANKLINHOLLEMA.com	p	616-538-3231
			f	616-538-2797
MIKE CARLYON E.L	2830 LAPEER COTT BLVD. FLINT, MI 48501	mikec@eandlgroup.com	p	810-744-4300
			f	810-~~577~~ 744-1735
CHRIS KOLITO DYNALECTRIC	MADISON HTS	CKOLITO@Shambaugh.com	p	~~248~~ 248-556-7200
			f	
KEN PERKO BRENCAL	26079 SCHOENHERR WARREN, MI 48089	~~BRENCAL~~ COMCAST.NET	p	586-758 6000
			f	6006

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CITY OF ANN ARBOR WATER TREATMENT PLANT
WEST HIGH SERVICE PUMP STATION
ITB #4221
SITE WALKTHROUGH ATTENDANCE
THURSDAY, MAY 17, 2012; 9:00 AM to 2:00 PM

Name/Representing	Address	e-mail address		Phone/Fax #
MATT MELLEN E&L CONSTRUCTION	FLINT, MI	mattm@eandlgroup.com	p f	517.744.4300
~~MIKE CARLY~~ ANDREW SMITH PPEE	435 UNION MILFORD, MI	processpiping@comcast.net	p f	248.684.5330 5526
Darrell Rush PPEE	"	"	p f	419-704-2481
Kevin Brickel Brencal Contractors	26079 Schoenherr Rd Warren, MI 48089	brencal@comcast.net	p f	586-758-6000 586-758-6006
Ken Perks Brencal	" "	" "	p f	" " " "
STEVE LIEBRECHT Rockwell Automation			p f	
Don Timmer Timmer Constr			p f	

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CITY OF ANN ARBOR WATER TREATMENT PLANT
WEST HIGH SERVICE PUMP STATION
ITB #4221
SITE WALKTHROUGH ATTENDANCE
THURSDAY, MAY 17, 2012; 9:00 AM to 2:00 PM

Name/Representing	Address	e-mail address		Phone/Fax #
Bel Hossain	7310 Woodward Ave. Detroit, MI 48202	belayet.hossain@lakeshoretoltest.com	p	313-304-2415
			f	
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			f	989 496 0840
Colt ODEH/ LAKESHORE TOLTEST CORP.	7310 WOODWARD AVE Detroit, MI 48202	COLT.ODEH@LAKESHORETOLTEST.com	p	313) 887-5771
			f	
Mike Ford LakeshoreToltest	7310 Woodward Detroit, MI 48202	Michael.Ford@lakeshoretoltest.com	p	313 215 1518
			f	
ERIC DOVAS BLUE STAR DEMolition	23894 Amber WARREN, MI	EdovasBLUESTARDEMO.com	p	586-427-9933
			f	427-9934
			p	
			f	

INSTRUMENT DATA SHEET

MAGNETIC FLOW METER

Client: City of Ann Arbor
Location: West High Service Pump Station

Project No. 2075117301
Instrument Spec. 17324
Revision A

GEN	**Tag Number**		**FIT/FE 105**		**FIT/FE 151**				
	Service		~~EHPS~~ ***WHSPS DISCHARGE***		PLANT WATER				
	P&ID No.		I-603		N/A				
	Line/Equipment								
	Line Size	**Line Spec**	24		6				
PROCESS	**Fluid**								
	Oper. Press Norm/Max (kPa)								
	Oper. Temp Norm/Max (°C)								
	Ambient Temperature (°C)								
	S.G .@ Oper. Temp.								
	Viscosity @ Oper. Temp.								
	Measurement Function								
TRANSMITTER	**Tag No.**		FIT-105		FIT-151				
	Transmitter type		Remote		Remote				
	Power Requirement		120 Vac		120 Vac				
	Electrical Connection								
	Contact Type								
	Display Type		LCD		LCD				
	Instrument Range on Solid								
	Operating Range								
	Output Signal		4 - 20 mA		4 - 20 mA				
	Accuracy		±0.25 % of range		±0.25 % of range				
	Enclosure Rating		NEMA 4X		NEMA 4X				
	Enclosure Material								
	Mounting		Wall Mount		Wall Mount				
ELEMENT	**Tag No.**		FE-105		FE-151				
	Sensor Type		DC MAG		DC MAG				
	Operating range		100 - 15,000 GPM		50 - 2,000 GPM				
	Measurement Range								
	Lining Material		PFA		PFA				
	Electrode material		SS 316 Ti		SS 316 Ti				
	Tube Size		100 mm		100 mm				
	Enclosure Material								
	Process Connection								
ACCESS	**Cable Length**		As Required		As Required				
	Nameplate		Yes		Yes				
	Grounding Rings		SS 316 Ti		SS 316 Ti				
	Mounting Straps								
Approval / Enclosure			CSA	NEMA 4X	CSA	NEMA 4X			
Class / Division / Group			General		General				
Manufacturer			ABB		ABB				
Model Number			Magmaster Loflo		Magmaster Loflo				
Alternates			E&H Promag 50W		E&H Promag 50W				

NOTES:

1. Vendor is to supply Stainless Steel Tag with Instrument Tags Number clearly Stamped on it.
2. Vendor is to fill missing data in this specification sheet relevant to the device (i.e. model #).
3. Minimum straight pipe required: 5 dia. upstream of flowmeter and 3 dia. Downstream
4. Contractor is to supply mounting hardware appropriate for the application

No	Date	By	Chkd	Appd	Revision

Stantec

INSTRUMENT DATA SHEET

PRESSURE TRANSMITTER

Client: City of Ann Arbor
Location: West High Service Pump Station

Project No. 2075117301
Instrument Spec. 17322
Revision A

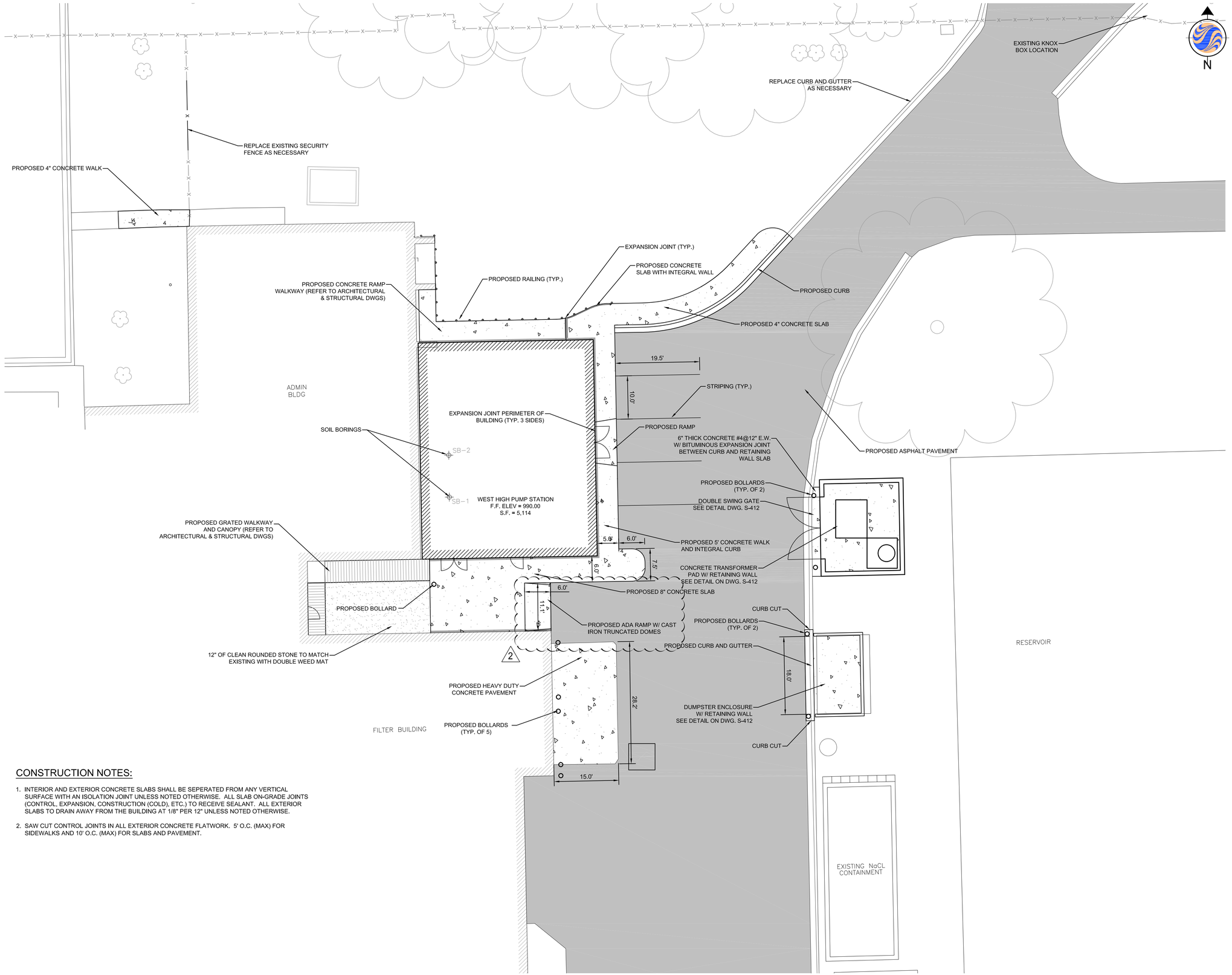
GEN	**Tag Number**		**PIT/PE 101A**		~~**PIT/PE 101B**~~		**PIT/PE 105**		
	Service		INFLUENT HEADER		~~INFLUENT HEADER~~		EFFLUENT HEADER		
	P&ID No.		I-601		~~I-601~~		I-603		
	Line/Equipment								
	Line Size(mm)	**Line Spec**							
PROCESS	**Fluid**		POTABLE WATER		~~POTABLE WATER~~		POTABLE WATER		
	Oper. Press Norm/Max (PSI)		0	100	~~0~~	~~100~~	0	100	
	Oper. Temp Norm/Max (°F)		40	90	~~40~~	~~90~~	40	90	
	Ambient Temperature		32.0	110	~~32.0~~	~~110~~	32.0	110	
	S.G .@ Oper. Temp.		N/A		~~N/A~~		N/A		
	Viscosity @ Oper. Temp.		N/A		~~N/A~~		N/A		
	Measurement Function		Pressure		~~Pressure~~		Pressure		
TRANSMITTER	**Tag No.**		PIT-101A		~~PIT-101B~~		PIT-105		
	Transmitter type		Loop Powered		~~Loop Powered~~		Loop Powered		
	Power Requirement		24VDC		~~24VDC~~		24VDC		
	Electrical Connection								
	Contact Type								
	Display Type		Digital LCD integral display		~~Digital LCD integral display~~		Digital LCD integral display		
	Instrument Range on Solid								
	Operating Range		0 - 300 PSI		~~0 - 300 PSI~~		0 - 300 PSI		
	Output Signal		4 - 20 mA c/w Hart		~~4 - 20 mA c/w Hart~~		4 - 20 mA c/w Hart		
	Accuracy		±0.075%		~~±0.075%~~		±0.075%		
	Enclosure Rating		NEMA 4X		~~NEMA 4X~~		NEMA 4X		
	Enclosure Material		Aluminum Alloy		~~Aluminum Alloy~~		Aluminum Alloy		
	Mounting								
ELEMENT	**Element Type**		Integral Sensor		~~Integral Sensor~~		Integral Sensor		
	Material of Element		SS		~~SS~~		SS		
	Enclosure Material		AISI 316L SS		~~AISI 316L SS~~		AISI 316L SS		
	Measurement Range		0 - 300 PSI		~~0 - 300 PSI~~		0 - 300 PSI		
	Process Range		0 - 300 PSI		~~0 - 300 PSI~~		0 - 300 PSI		
	Process Connection		1/2 - 14 NPT male		~~1/2 - 14 NPT male~~		1/2 - 14 NPT male		
ACCESS	**Nameplate**		Yes		~~Yes~~		Yes		
	Connection Plug		Yes		~~Yes~~		Yes		
	Mounting Bracket		Yes		~~Yes~~		Yes		
	Isolation Valve and/or Manifold		Isolation Valve		~~Isolation Valve~~		Isolation Valve		
Approval / Enclosure			CSA	NEMA 4X	~~CSA~~	~~NEMA 4X~~	CSA	NEMA 4X	
Class / Division / Group			General		~~General~~		General		
Manufacturer			ABB		~~ABB~~		ABB		
Model Number			E&H		~~E&H~~		E&H		
Alternates									

NOTES:

1. Vendor is to supply Stainless Steel Tag with Instrument Tags Number clearly Stamped on it.
2. Vendor is to fill missing data in this specification sheet relevant to the device (i.e. model #).
3. Contractor is to supply mounting hardware appropriate for the application.

No	Date	By	Chkd	Appd	Revision

Stantec



CONSTRUCTION NOTES:

1. INTERIOR AND EXTERIOR CONCRETE SLABS SHALL BE SEPERATED FROM ANY VERTICAL SURFACE WITH AN ISOLATION JOINT UNLESS NOTED OTHERWISE. ALL SLAB ON-GRADE JOINTS (CONTROL, EXPANSION, CONSTRUCTION (COLD), ETC.) TO RECEIVE SEALANT. ALL EXTERIOR SLABS TO DRAIN AWAY FROM THE BUILDING AT 1/8" PER 12" UNLESS NOTED OTHERWISE.

2. SAW CUT CONTROL JOINTS IN ALL EXTERIOR CONCRETE FLATWORK. 5' O.C. (MAX) FOR SIDEWALKS AND 10' O.C. (MAX) FOR SLABS AND PAVEMENT.

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Legend

Notes

Revision		By	Appd.	YY.MM.DD
F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISSION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
A	30% REVIEW	GRW	GRW	11.12.15
Issued		By	Appd.	YY.MM.DD

File Name: 17301-C-104.DWG	Dwn.	Chkd.	Dsgn.	11.12.15 YY.MM.DD

Permit-Seal

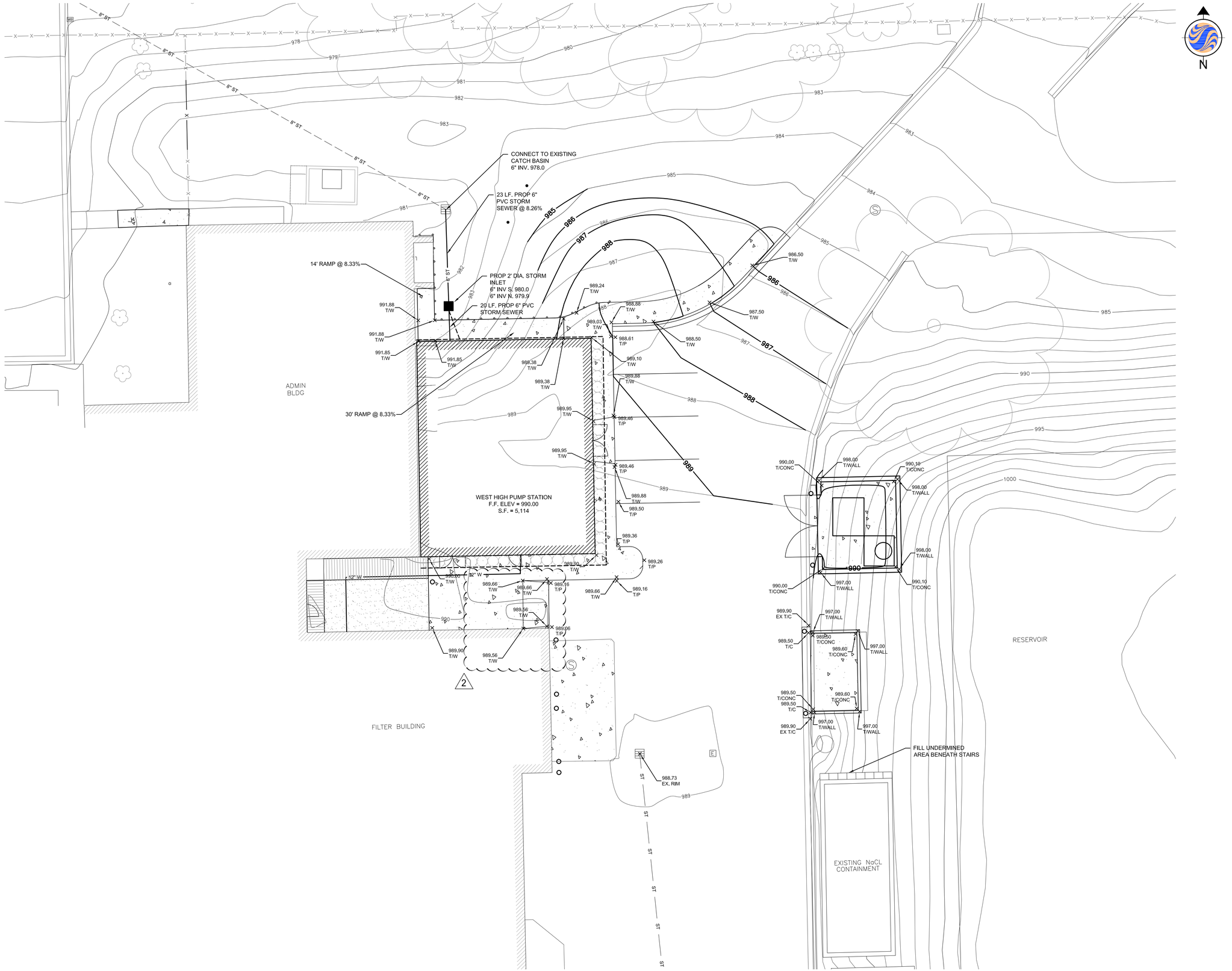
Client/Project
CITY OF ANN ARBOR

WEST HIGH SERVICE PUMP STATION
Ann Arbor, Michigan

Title
CIVIL SITE PLAN

Project No.	Scale	
2075117301	1:10	0 10 15 20

Drawing No.	Sheet	Revision
C-104	08 of 144	0



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Notes

Revision		By	Appd.	YY.MM.DD
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B	90% REVIEW	GRW	GRW	12.01.13
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Issued		By	Appd.	YY.MM.DD

File Name: 17301-C-105.DWG	Dwn.	Chkd.	Dsgn.	11.12.15 YY.MM.DD

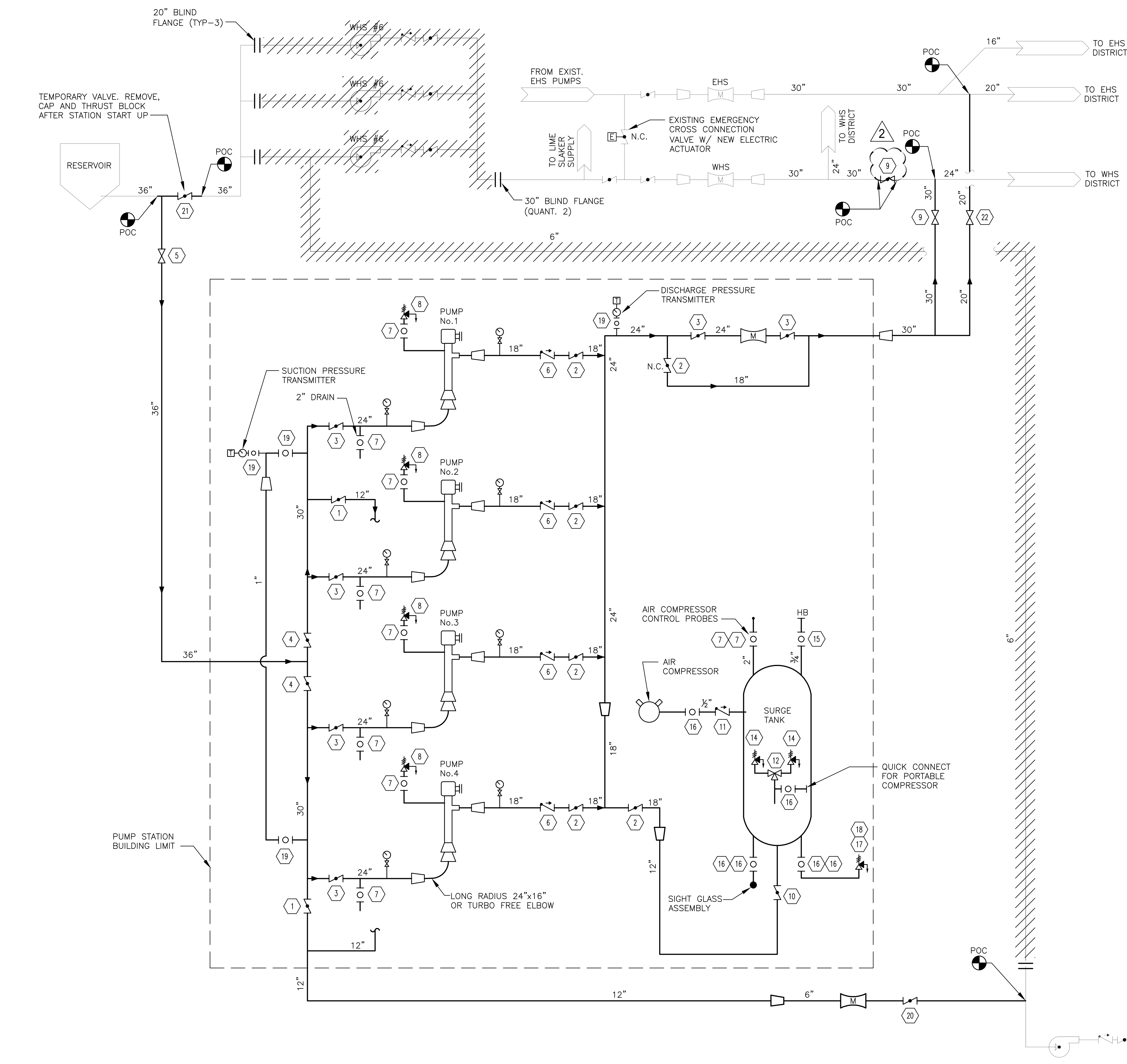
Permit-Seal

Client/Project
CITY OF ANN ARBOR

WEST HIGH SERVICE PUMP STATION
Ann Arbor, Michigan

Title
CIVIL
SITE GRADING AND STORM SEWER PLAN

Project No.	Scale	Revision
2075117301	1:10 (0, 10, 15, 20)	
Drawing No.	Sheet	
C-105	09 of 144	0



1 P-102 PROCESS FLOW DIAGRAM
N.T.S.

VALVE SCHEDULE						
MARK	VALVE I.D.	TYPE	SIZE	JOINT	RATING (PSI)	OPERATOR
1	TO BE PROVIDED BY OWNER / ENGINEER	BUTTERFLY VALVE	12"	FLANGE	150	GEAR W/ HANDWHEEL
2		BUTTERFLY VALVE	18"	FLANGE	150	GEAR W/ HANDWHEEL, NOTE 3
3		BUTTERFLY VALVE	24"	FLANGE	150	GEAR W/ HANDWHEEL
4		BUTTERFLY VALVE	30"	FLANGE	150	GEAR W/ HANDWHEEL
5		RESILIENT WEDGE GATE VALVE	36"	M.J.	150	GEAR W/ 2" OPERATING NUT
6		CHECK VALVE	18"	FLANGE	150	CUSHIONED
7		BALL VALVE (SS)	2"	THREADED	150	LEVER
8		AIR/VACUUM VALVE	2"	THREADED	150	–
9		RESILIENT WEDGE GATE VALVE	30"	M.J.	150	GEAR W/ 2" OPERATING NUT
10		BUTTERFLY VALVE	12"	FLANGE	150	GEAR W/ HANDWHEEL
11		CHECK VALVE (SS)	½"	THREADED	250	–
12		3-WAY BALL VALVE (SS)	1"	THREADED	250	LEVER
13		BUTTERFLY VALVE	4"	FLANGE	150	LEVER
14		POPPET AIR RELIEF VALVE (SS)	1"	THREADED	250	–
15		BALL VALVE (SS)	¾"	THREADED	250	LEVER
16		BALL VALVE (SS)	½"	THREADED	250	LEVER
17		AIR RELIEF VALVE	¾"	THREADED	250	–
18		PRESSURE RELIEF VALVE	½"	THREADED	250	–
19		BALL VALVE (SS)	NOTE 2	THREADED	250	LEVER
20		BUTTERFLY VALVE	6"	FLANGE	150	GEAR W/ HANDWHEEL
21		BUTTERFLY VALVE	36"	M.J.	150	GEAR W/ 2" OPERATING NUT
22		RESILIENT WEDGE GATE VALVE	20"	M.J.	150	GEAR W/ 2" OPERATING NUT

NOTES:

1. NOT ALL YARD PIPING SHOWN.
2. COORDINATE VALVE & REDUCER SIZE WITH PRESSURE TRANSMITTERS.
3. PROVIDE WITH CHAIN FALL FOR VALVES 6' AND GREATER ABOVE FLOOR.

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Notes

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F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
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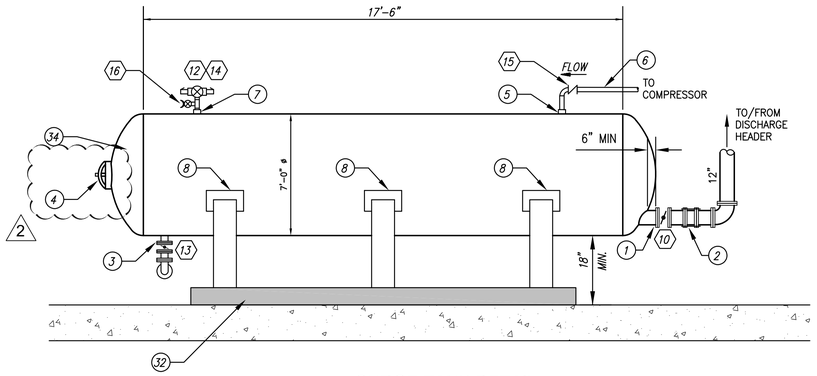
Permit-Seal

Client/Project
CITY OF ANN ARBOR

WEST HIGH SERVICE PUMP STATION
Ann Arbor, Michigan

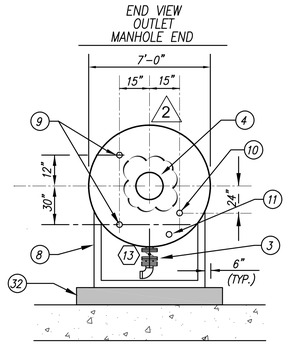
Title
PROCESS FLOW DIAGRAM

Project No. 20075117301
Scale AS NOTED
Drawing No. P-102
Sheet 47 of 144
Revision 0

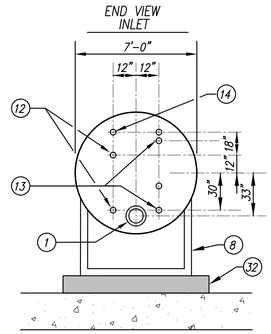


SURGE TANK DETAIL

N.T.S.



OUTLET END



INLET END

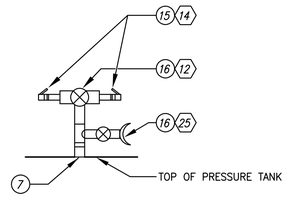
NOTE:
ALL PRESSURE TANK FITTINGS AND VALVES SHALL BE RATED FOR 150 PSI WORKING PRESSURE, MINIMUM. ALL HALF COUPLINGS SHALL BE EXTRA HEAVY SERIES, 3,000# RATED.

SURGE TANK END ELEVATION DETAILS

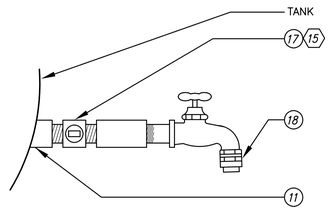
N.T.S.

SHEET NOTES

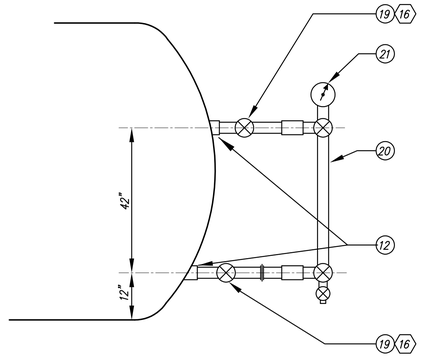
1. 12" FLANGED INLET WITH ISOLATION BUTTERFLY VALVE – PROVIDE 6" MINIMUM CLEARANCE BETWEEN FLANGE AND HEAD.
2. 12" DISMANTLING JOINT WITH TIE RODS.
3. 4" FLANGED DRAIN OUTLET WITH ISOLATION BUTTERFLY VALVE, 90 DEG. ELBOW REDUCER AND QUICK CONNECT FITTING TO A FIRE HOSE CONNECTION.
4. 24" DIA. A.S.M.E. MANHOLE.
5. ¾" EXTRA HEAVY HALF COUPLING FOR AIR COMPRESSOR LINE.
6. ¾" 10S STAINLESS STEEL AIR LINE.
7. 1" EXTRA HEAVY HALF COUPLING FOR SAFETY AIR RELIEF – SEE DETAIL 1 THIS SHEET.
8. STEEL TANK SUPPORTS (TYPICAL OF 3) – SEE STRUCTURAL DRAWINGS FOR TANK ANCHORING DETAILS.
9. 2" EXTRA HEAVY HALF COUPLINGS (2) FOR AIR COMPRESSOR CONTROL PROBES – SEE DETAIL 5 THIS SHEET.
10. 2" EXTRA HEAVY HALF COUPLING W/ PLUG.
11. ¾" EXTRA HEAVY HALF COUPLING FOR HOSE BIB – SEE DETAIL 2 THIS SHEET.
12. ½" EXTRA HEAVY HALF COUPLINGS (2) FOR SIGHT GLASS ASSEMBLY – SEE DETAIL 3 THIS SHEET.
13. ¾" EXTRA HEAVY HALF COUPLINGS (2) FOR AIR RELEASE VALVE ASSEMBLY – SEE DETAIL 4 THIS SHEET.
14. 1" EXTRA HEAVY HALF COUPLING WITH PLUG.
15. STAINLESS STEEL POPPET SAFETY AIR RELIEF VALVES (2) SET AT 120 PSI.
16. 1" STAINLESS STEEL 3-WAY BALL VALVE FOR SAFETY AIR VALVE ISOLATION.
17. ¾" STAINLESS STEEL BALL VALVE FOR HOSE BIB ISOLATION.
18. ¾" STAINLESS STEEL HOSE BIB W/ VACUUM BREAKER.
19. ½ STAINLESS STEEL BALL VALVES (2) FOR SIGHT GLASS ISOLATION.
20. STAINLESS STEEL SIGHT GLASS ASSEMBLY WITH GLASS PROTECTOR AND INTEGRAL DRAIN VALVE.
21. 0-200 PSI PRESSURE GAUGE.
22. ¾" STAINLESS STEEL BALL VALVES (2) FOR AIR RELIEF VALVE ISOLATION.
23. ¾" AIR RELEASE VALVE (APCO 55).
24. PRESSURE RELIEF VALVE (APCO 54).
25. ½" BALL VALVE AND QUICK CONNECT FITTING FOR PORTABLE AIR COMPRESSOR.
26. 2" BALL VALVES(2) FOR CONTROL PROBE ISOLATION.
27. WARRICK SERIES 3E3A ELECTRODE FITTING.
28. 2" SCHEDULE 40 STAINLESS STEEL PIPE.
29. 2 PVC COATED ELECTRODES FOR COMPRESSOR ON & OFF.
30. STAINLESS STEEL PLUG.
31. BASE MOUNTED AIR COMPRESSOR.
32. HOUSEKEEPING PAD.
33. 4" x ¾" ANCHOR BOLT (TYP. OF 4) FOR ATTACHING COMPRESSOR.
34. ENTIRE SURGE TANK SHALL BE INSULATED AND PVC JACKET AFTER PAINTING.
35. PIPE AIR RELEASE DISCHARGE TO FLOOR DRAIN.
36. SOUND ATTENUATING ENCLOSURE. HINGES FOR ACCESS. COORDINATE VENTING DETAILS WITH THE MECHANICAL DRAWINGS.

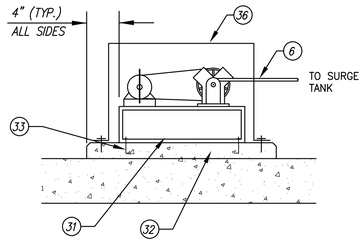


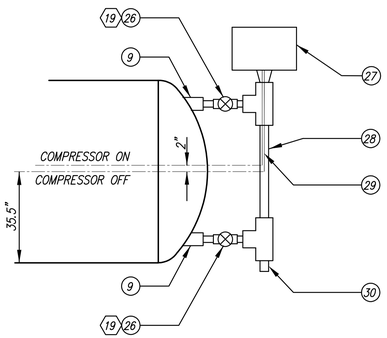
NOTE:
1. ENTIRE ASSEMBLY TO BE 316 STAINLESS STEEL.

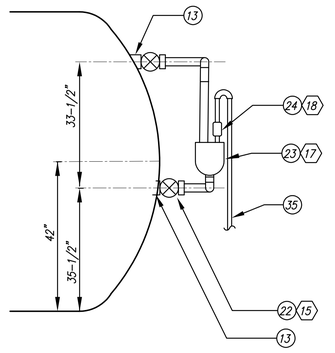


NOTE:
1. ENTIRE ASSEMBLY TO BE 316 STAINLESS STEEL.









NOTE:
1. SECURE DISCHARGE PIPE AS NECESSARY WITH SS UNISTRUT.

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Notes

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F	ADDENDUM NO. 2 2	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
A	30% REVIEW	GRW	GRW	11.12.15
Issued		By	Appd.	YY.MM.DD

File Name: 17301-P-107.DWG	Dwn.	Chkd.	Dsgn.	11.12.15 YY.MM.DD

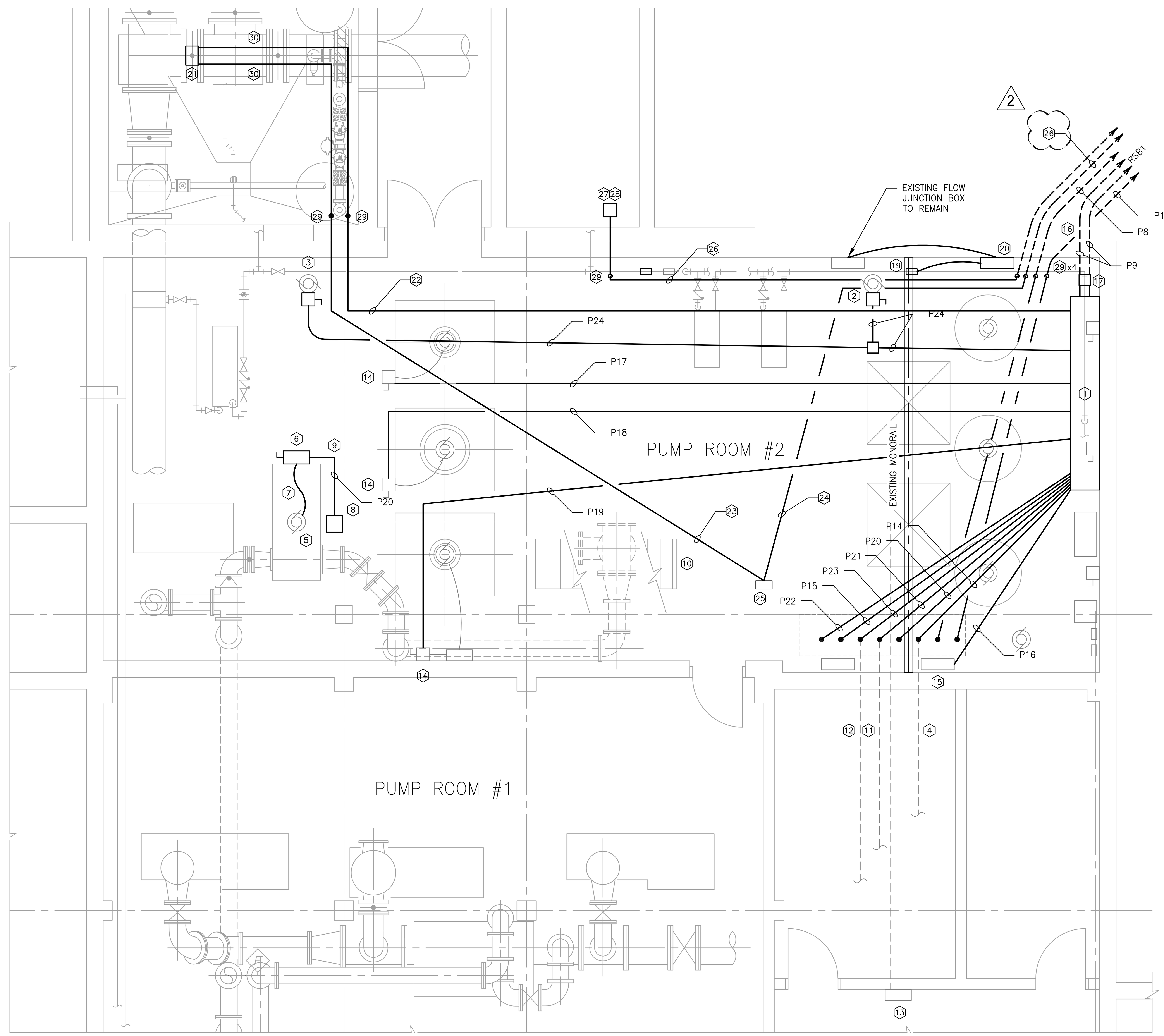
Permit-Seal

Client/Project
CITY OF ANN ARBOR

WEST HIGH SERVICE PUMP STATION
Ann Arbor, Michigan

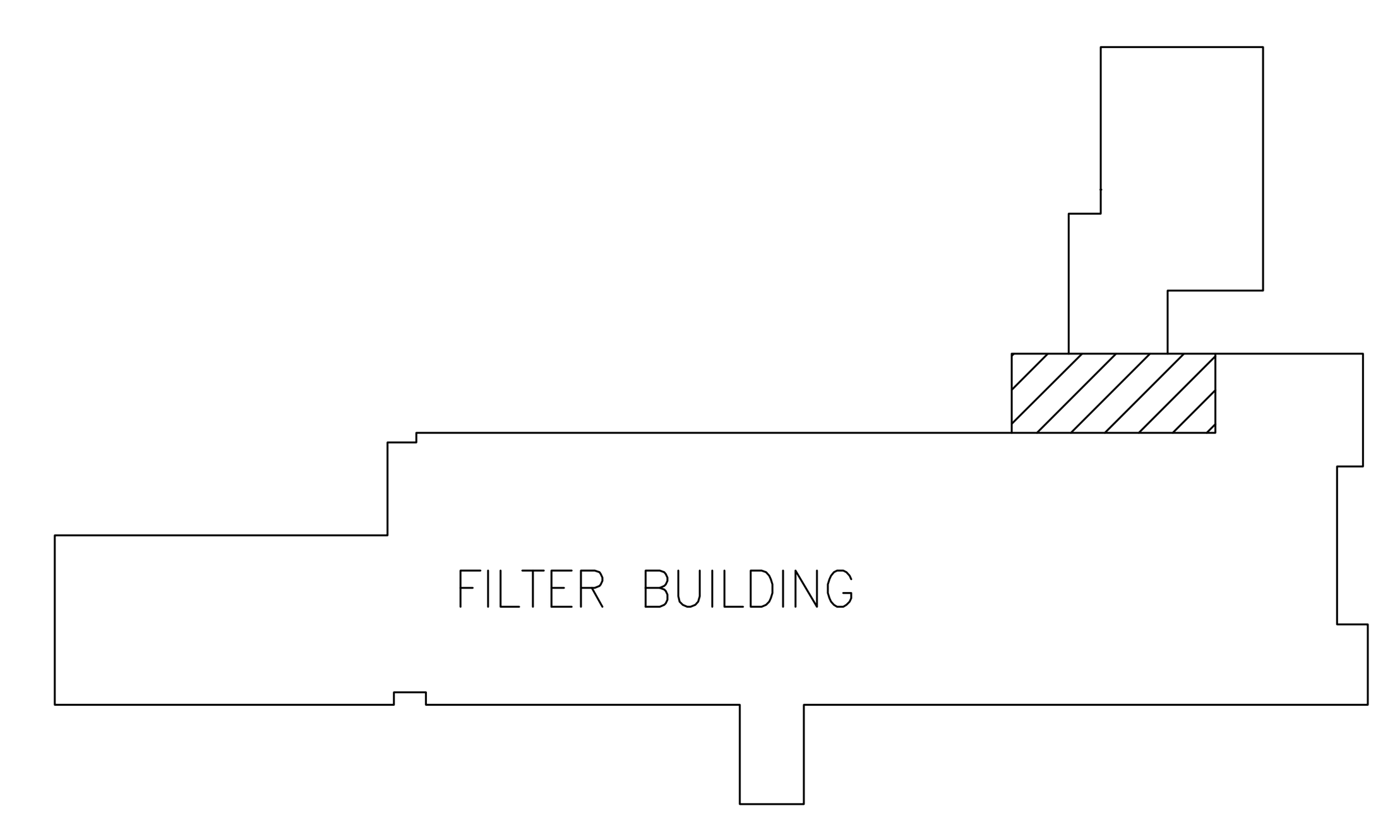
Title
PROCESS SURGE TANK DETAILS

Project No.	Scale	
2075117301	AS NOTED	
Drawing No.	Sheet	Revision
P-107	52 of 144	0



KEY NOTES

1. PROVIDE NEMA 3R MOTOR CONTROL CENTER, RED MCC1.
2. EXISTING EF-5, PROVIDE NEMA 3R, 2HP COMBINATION STARTER.
3. EXISTING EF-6, PROVIDE NEMA 3R, 2HP COMBINATION STARTER.
4. EXISTING CONDUIT TO PP-1A/1B. PROVIDE PULL BOX AND EXTEND FEEDER TO RED MCC1, AS REQUIRED.
5. EXISTING WASH WATER PUMP #2.
6. PROVIDE 400A NON-FUSED DISCONNECT, NEMA 3R.
7. PROVIDE SEAL-TIGHT FROM MOTOR TO DISCONNECT.
8. PROVIDE PULL BOX/J-BOX.
9. PROVIDE FEEDER FROM PULL BOX TO DISCONNECT.
10. EXISTING CONDUIT/CONDUCTORS.
11. EXISTING CONDUIT TO T-13. PROVIDE PULL BOX AND EXTEND FEEDER TO RED MCC1.
12. EXISTING CONDUIT TO FIRST FLOOR LOADING DOCK. PROVIDE PULL BOX AND EXTEND FEEDER TO RED MCC1.
13. EXISTING WASH WATER #2 COMBINATION STARTER. PROVIDE PULL BOX AND EXTEND FEEDER TO RED MCC1.
14. EXISTING DISCONNECT, PROVIDE FEEDER TO RED MCC1.
15. POWER PANEL #4, PROVIDE FEEDER FROM RED MCC1.
16. CORE EXISTING WALL, ROUTE CONDUIT UNDERGROUND. PROVIDE SS LINK-SEAL AND GROUT.
17. PROVIDE JUNCTION BOX w/ DRAIN HOLE, SLOPE CONDUITS TO PREVENT WATER FROM FLOWING INTO RED MCC1.
18. EXISTING INTERCOM SYSTEM. PROVIDE FEEDER TO NEW INTERCOM SYSTEM ON SHEET E-153.
19. NEW MAGNETIC FLOW METER.
20. NEW FLOW METER CONTROL PANEL, EXTEND EXISTING FEEDER FROM LP-E AS REQUIRED.
21. NEW 480V 3ϕ ROTORK ACTUATOR.
22. 1" RGS w/ 3#12, 1#12G.
23. 1" RGS w/ 12#14, 1#14G.
24. 4" RGS w/ 2#18 PAIR GAI-TRONIC 60029-101 (INTERCOM) AND 4#14 (FIRE ALARM STATION).
25. EXISTING ALLEN-BRADLEY SLC-5 ON UPPER FLOOR.
26. 4" RGS w/ 12 STRAND MULIT-MODE FIBER.
27. EXISTING FIBER TERMINATION.
28. CONTRACTOR TERMINATION AND CONNECT FIBER OPTIC CABLES AS REQUIRED.
29. CORE THROUGH BLOCK WALLS, ADD LINK SEALS AS REQUIRED, TYP. ALL PENETRATIONS.
30. ROUTE CONDUIT DOWN ALONG STRUCTURAL STEEL.



KEY PLAN

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Legend

1. SEE SHEET E-001.

Notes

A. ALL WORK SHALL COMPLY WITH PROJECT SPECIFICATIONS.
B. CONTRACTOR TO REFEED EXISTING LP-E LOADS. APPROXIMATELY 24 LOADS TO BE TRACED AND RECONNECTED TO THE NEW PANELBOARD.
C. ALL CONDUITS TO BE ROUTED OVER THE TOP OF THE MONORAIL.
D. ALL SUPPORTS/HANGERS SHALL BE THREADED ROD/UNISTRUT STAINLESS STEEL AND EPOXY ANCHORED TO CONCRETE CEILING.

Revision		By	Appd.	YY.MM.DD
F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISSION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
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Client/Project

CITY OF ANN ARBOR

WEST HIGH SERVICE PUMP STATION

Ann Arbor, Michigan

Title

ELECTRICAL POWER PLAN PUMP ROOM #2

Project No. 2075117301

Scale 1/4"=1'-0" 0' 2' 4' 6' 8'

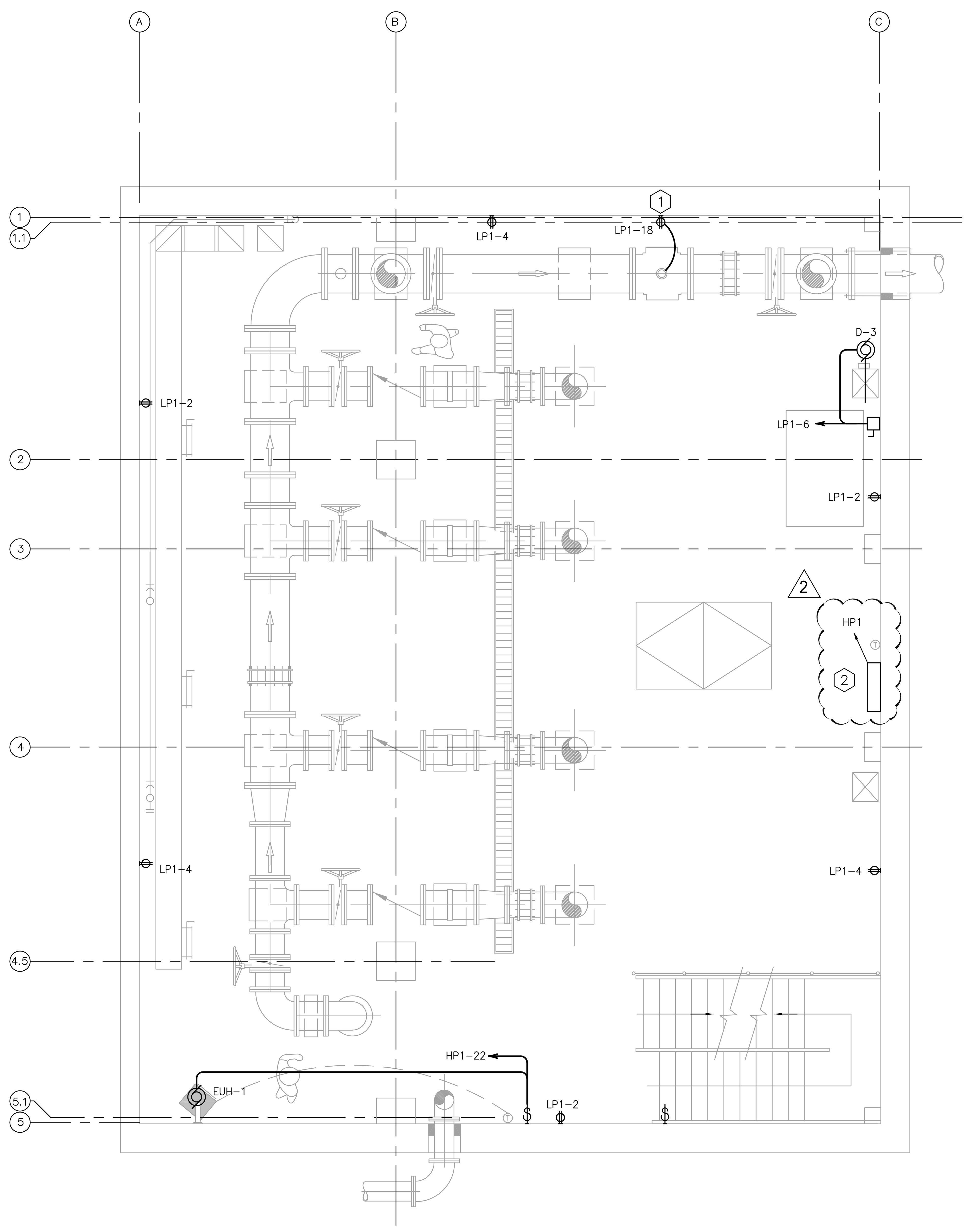
Drawing No. E-120

Sheet 73 of 144

Revision 0

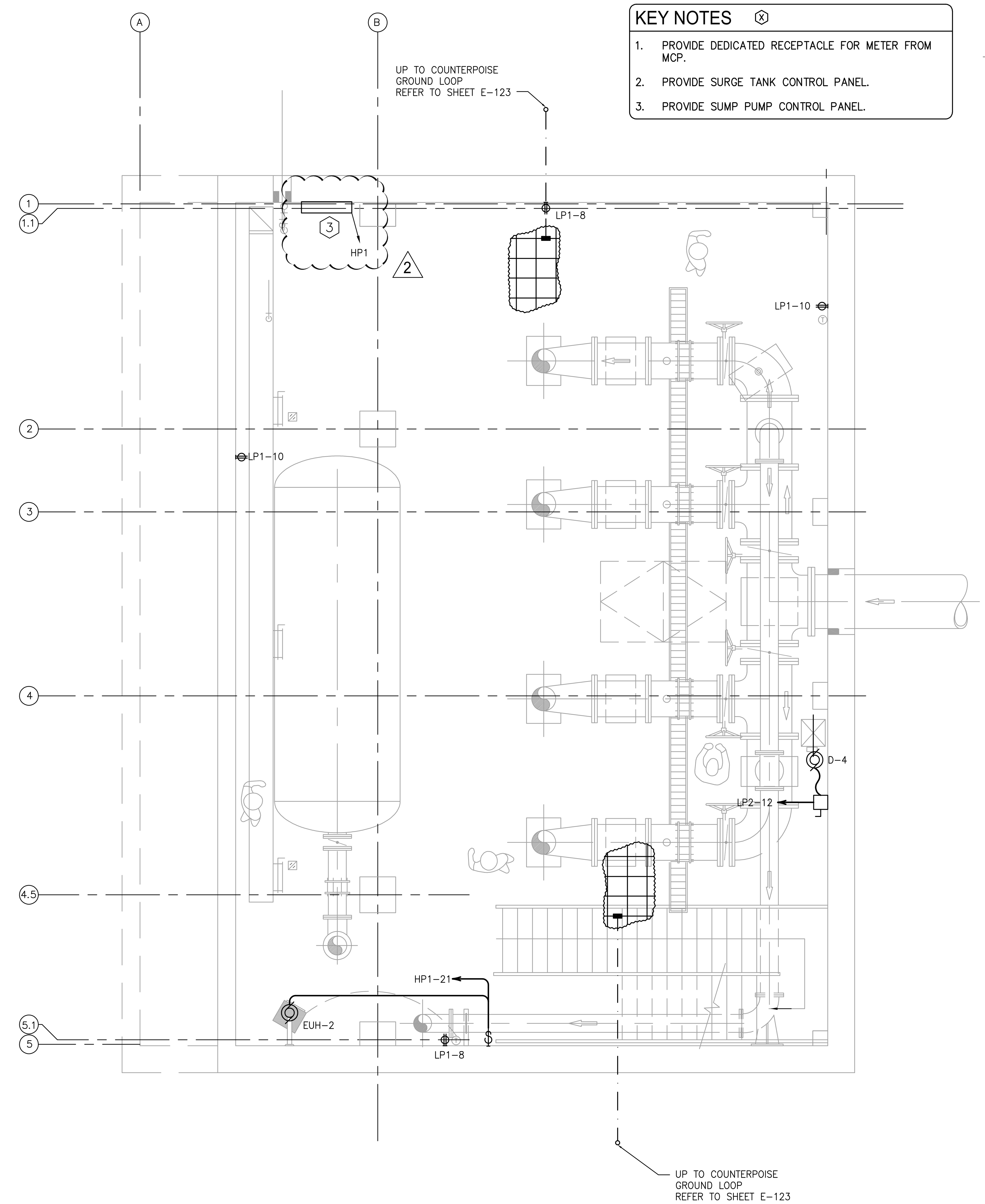
KEY NOTES (X)

1. PROVIDE DEDICATED RECEPTACLE FOR METER FROM MCP.
2. PROVIDE SURGE TANK CONTROL PANEL.
3. PROVIDE SUMP PUMP CONTROL PANEL.



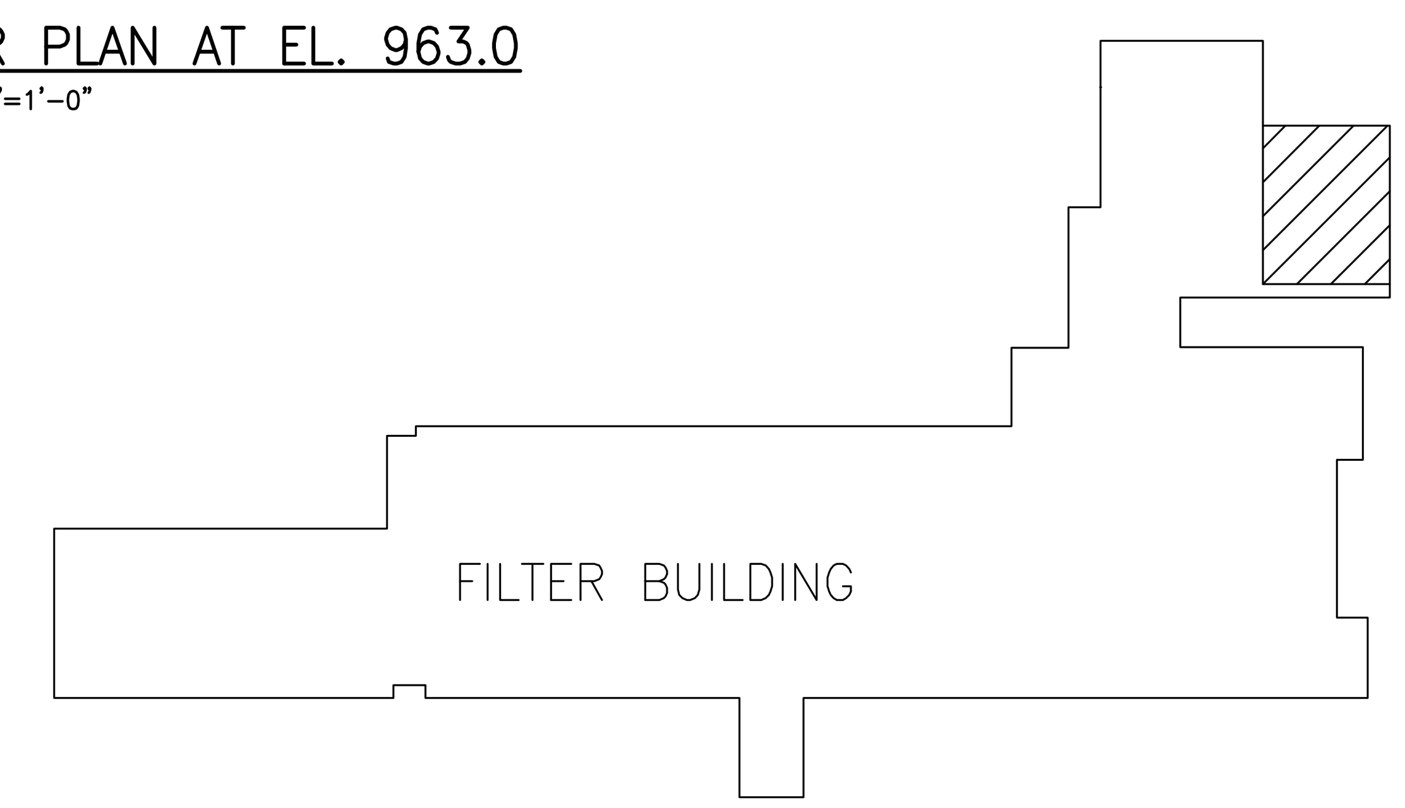
POWER PLAN AT EL. 978.25

SCALE: 1/4"=1'-0"



POWER PLAN AT EL. 963.0

SCALE: 1/4"=1'-0"



KEY PLAN

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Legend

1. SEE SHEET E-001.

Notes

A. ALL WORK SHALL COMPLY WITH PROJECT SPECIFICATIONS.
B. GROUND REBAR IN TWO PERPENDICULAR DIRECTIONS OR AT LEAST FOUR POINTS AT OPPOSITE SIDES OF THE BUILDING
C. REFER TO SHEET E-503 FOR GROUNDING INFORMATION.

Revision		By	Appd.	YY.MM.DD
F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISSION SUBMITTAL	GRW	GRW	12.01.27
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				11.12.15

Permit-Seal

Client/Project

CITY OF ANN ARBOR

WEST HIGH SERVICE
PUMP STATION

Ann Arbor, Michigan

Title

ELECTRICAL
POWER PLAN
EL. 963.0 AND 978.25

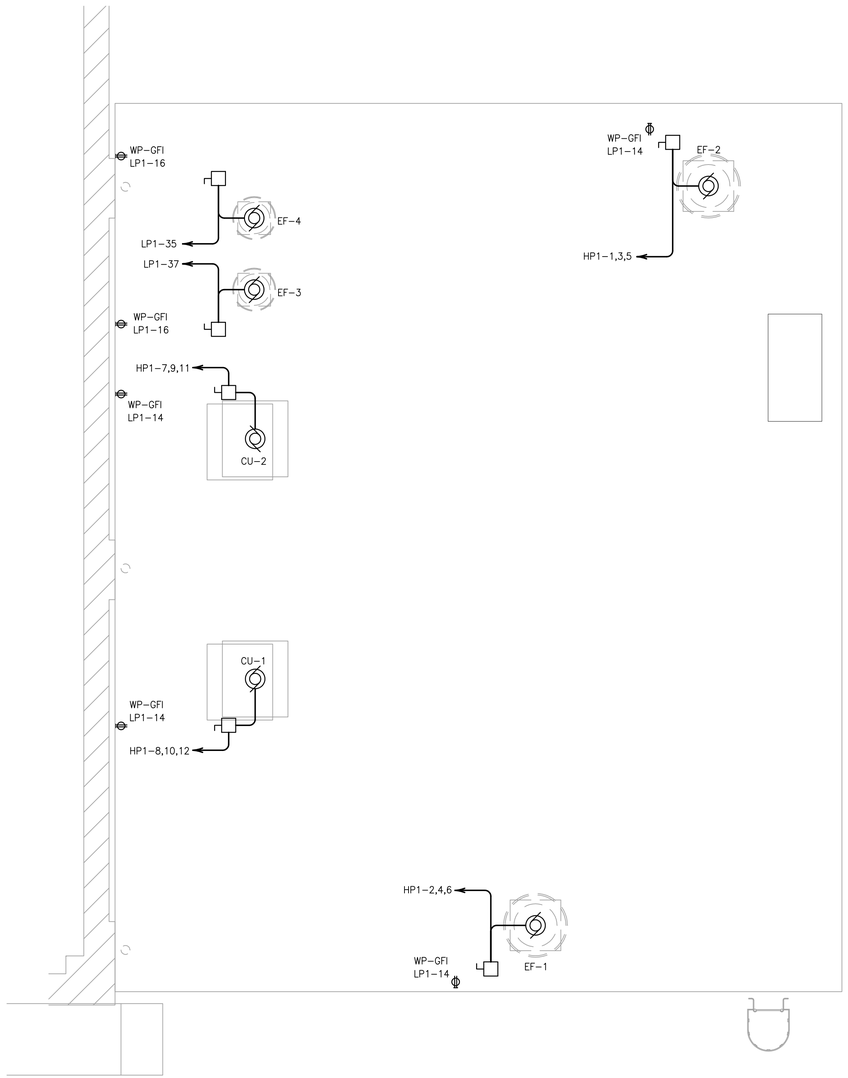
Project No. 2075117301

Scale 1/4"=1'-0" 0' 2' 4' 6' 8'

Drawing No. E-122

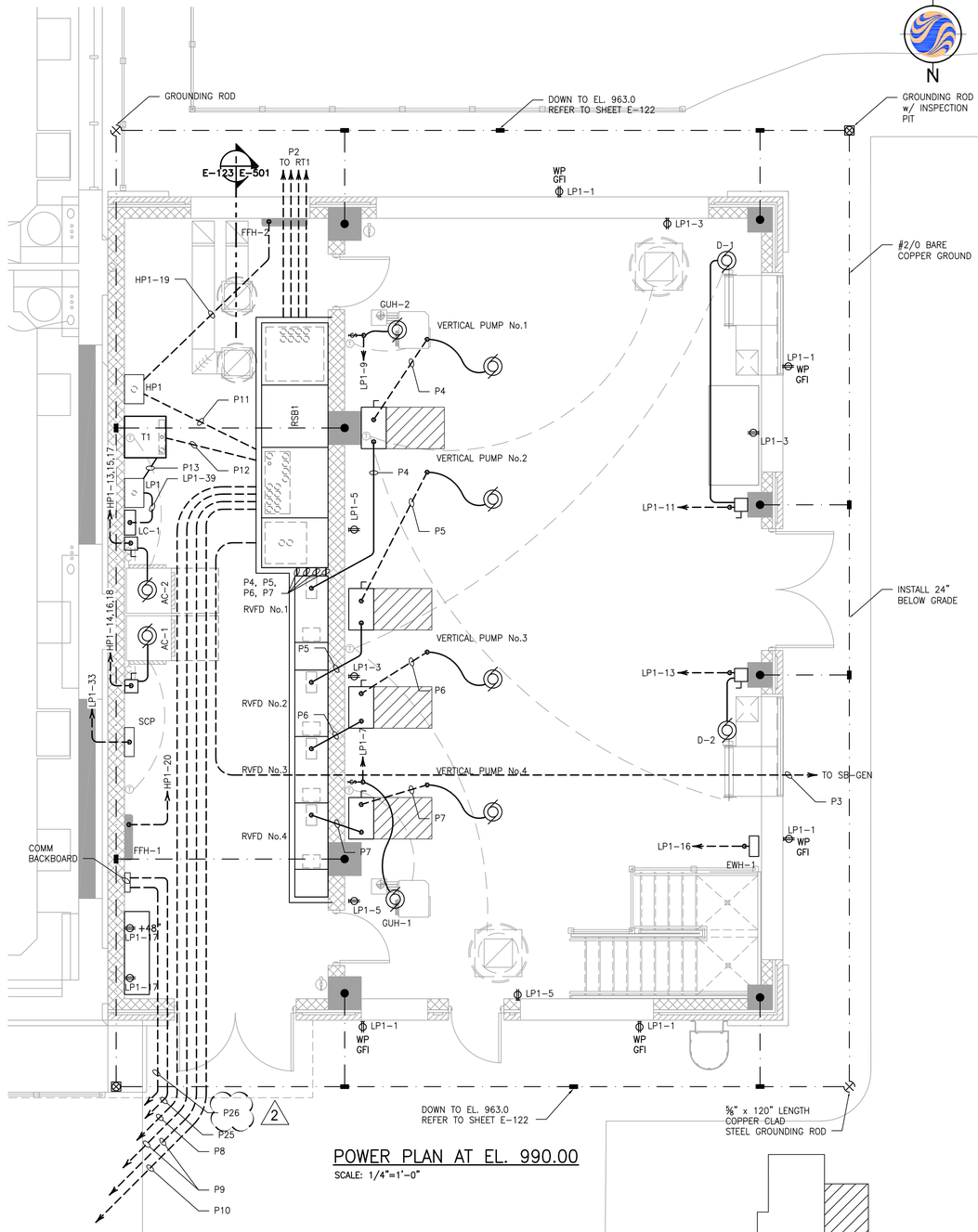
Sheet 75 of 144

Revision 0



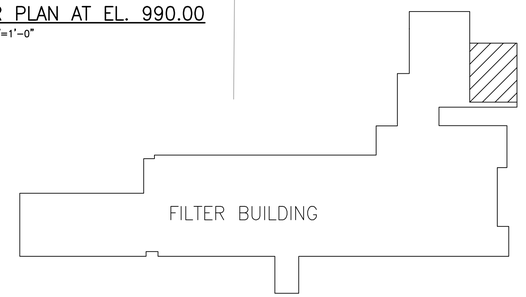
POWER PLAN AT EL. 1004.83

SCALE: 1/4"=1'-0"



POWER PLAN AT EL. 990.00

SCALE: 1/4"=1'-0"



KEY PLAN

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Legend

1. SEE SHEET E-001.

Notes

A. ALL WORK SHALL COMPLY WITH PROJECT SPECIFICATIONS.

B. REPAIR AND RESEAL ROOFING INSTALLATION OF ALL ELECTRICAL EQUIPMENT AND MATERIALS.

C. ALL EXTERIOR FASTENERS SHALL BE STAINLESS STEEL.

D. GROUND REBAR IN TWO PERPENDICULAR DIRECTIONS OR AT LEAST FOUR POINTS AT OPPOSITE SIDES OF THE BUILDING.

E. REFER TO SHEET E-503 FOR GROUNDING INFORMATION.

Revision		By	Appd.	YY.MM.DD
F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISSION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
A	30% REVIEW	GRW	GRW	11.12.15

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File Name: 17301E-123.DWG	Dwn.	Chkd.	Dsgn.
			11.12.15

Permit-Seal

Client/Project

CITY OF ANN ARBOR

WEST HIGH SERVICE
PUMP STATION
Ann Arbor, Michigan

Title

ELECTRICAL
POWER PLAN
EL. 990.00 AND 1004.83

Project No. 2075117301

Scale 1/4"=1'-0" (0' 2' 4' 6' 8')

Drawing No. E-123

Sheet 76 of 144

Revision 0

LUMINAIRE SCHEDULE

No.	DESCRIPTION	MANUFACTURER	MODEL No.	LAMP No.	LAMP TYPE	MOUNTING	REMARKS	WATTS
A	PETROLUX 98 LED, HIGH ANGLE, 5000K, SURFACE MOUNTED FIXTURE	LITHONIA	–	98	98 NICHIA 119 LED ARRAY, 5000K	SURFACE	–	113.6
		THOMAS	–					
		HOLOPHANE	PLED 98 35 5K AS CE NA G L5H					
B	PETROLUX 98 LED, LOW ANGLE, 4000K, SURFACE MOUNTED FIXTURE	LITHONIA	–	98	98 NICHIA 119 LED ARRAY, 4000K	SURFACE	–	114.3
		THOMAS	–					
		HOLOPHANE	PLED 98 35 4K AS CE NA G L5					
C	PETROLUX 70 LED, LOW ANGLE, 4000K, SURFACE MOUNTED FIXTURE	LITHONIA		70	70 NICHIA 119 LED ARRAY, 4000K	SURFACE	–	82.5
		THOMAS						
		HOLOPHANE	PLED 70 35 4K AS CE NA G L5					
D	13 LED, WALL MOUNT FIXTURE	LITHONIA	–	13	LED	WALL	MOTION SENSOR	23.3
		THOMAS	–					
		HUBBELL	QSPC–13LU–5K					
E1	QUANTUM THERMOPLASTIC, WHITE LOW PROFILE CORROSION–PROOF EMERGENCY WALL PACK FIXTURE	LITHONIA	ELM2	2	WEDGE–BASED KYPTON	WALL	–	12
		THOMAS	–					
		–	–					
E2	QUANTUM DIE–CAST ALUMINUM WITH, MATTE BLACK HOUSING AND BRUSHED ALUMINUM FACE, EMERGENCY EXIT FIXTURE	LITHONIA	LQC 1 R EL N	–	LED	WALL/CEILING	12" PENDANT–MOUNT KIT: ELA B US12	0.6
		THOMAS	–					
		–	–					
E3	QUANTUM THERMOPLASTIC, BLACK HOUSING, EMERGENCY EXIT FIXTURE w/ SIDE–MOUNT LAMP HEADS	LITHONIA	LHQM S 3 R HO	–	LED	WALL	–	5.4
		THOMAS	–					
		–	–					
F	HT24, RECESSED IN GRID, WHITE	HOLOPHANE	HT24 G 2 32 A12 120 GEB10IS	2	32W T8 FLUOR.	RECESSED	–	54
		LITHONIA						
		THOMAS						

POWER CONDUIT SCHEDULE

ITEM	FROM	TO	FEEDER	NOTES
P1	SWG1	RT1	3#750kCMIL, 1#1G – 4"C	MV–105 CABLE
P2	RT1	RSB1	8[3#750kCMIL, 1#750kCMIL G] – 8[4"C]	
P3	SB–GEN	RSB1	2[3#500kCMIL, 1#2/0G] – 2[4"C]	
P4	RSB1	VP#1	3#350kCMIL, 1#4G – 4"C	
P5	RSB1	VP#2	3#350kCMIL, 1#4G – 4"C	
P6	RSB1	VP#3	3#350kCMIL, 1#4G – 4"C	
P7	RSB1	VP#4	3#350kCMIL, 1#4G – 4"C	
P8	RSB1	GMCC3	3#500kCMIL, 1#3G – 4"C	
P9	RSB1	RMCC1	5[3#500kCMIL, 1#250kCMIL G] – 5[4"C]	
P10	RSB1	RMCC2	2[3#500kCMIL, 1#3/0G] – 2[4"C]	
P11	RSB1	HP1	2[3#500kCMIL, 1#2G] – 4"C	
P12	RSB1	TI	3#2, 1#6G – 2"C	
P13	T1	LP1	3#300kCMIL, 1#4G – 3"C	
P14	RMCC1	PP–1A/PP–1B	3#400kCMIL, 1#3G – 4"C	
P15	RMCC1	PP#3	2[3#500kCMIL, 1#2G] – 4"C	
P16	RMCC1	PP#4	2[3#500kCMIL, 1#2G] – 4"C	
P17	RMCC1	TP#4	3#1, 1#6G – 2"C	
P18	RMCC1	TP#5	3#1, 1#6G – 2"C	
P19	RMCC1	TP#6	3#1, 1#6G – 2"C	
P20	RMCC1	WWP#2	3#2/0, 1#6G – 2"C	
P21	RMCC1	T–13	3#8, 1#10G – 1"C	
P22	RMCC1	LP–G	3#3, 1#8G – 1½"C	
P23	RMCC1	T–25kVA	3#3, 1#8G – 1½"C	
P24	RMCC1	EF 5 & 6	3#12, 1#10G – ¾"C	
P25	COMM	COMM	FIBER OPTICS	FIBER CABLE
P26	COMM	FYC/INTERCOMM	2#18,4#14–4"	

2

PANEL SCHEDULE

PANEL: HP1 — AMPERE RATING: 400A — MOUNTING: SURFACE
VOLTS: 480 — BUS MATERIAL: COPPER — ENCLOSURE: NEMA 1
PHASE: 3 — MAIN DEVICE: 400A MCB — BREAKERS: PLUG-IN
WIRE: 4 — SHORT CIRCUIT RATING: 10kAIC

LOAD DESCRIPTION	CON. SIZE	WIRE SIZE	BKR	*	#	PHASE LOAD-KVA A	B	C	#	*	BKR	WIRE SIZE	CON. SIZE	LOAD DESCRIPTION
EXHAUST FAN - EF-2	3/4"	#12	20	M	1	0.44					20	#12	3/4"	EXHAUST FAN - EF-1
						0.44			2	M				
				M	3		0.44							
							0.44		4	M				
				M	5			0.44						
			3					0.44	6	M	3			
CONDENSING UNIT - CU-2	3/4"	#8	40	M	7	7.38					40	#8	3/4"	CONDENSING UNIT - CU-1
						7.38			8	M				
				M	9		7.38							
							7.38		10	M				
				M	11			7.38						
			3					7.38	12	M	3			
AIR CONDITIONER - AC-2	3/4"	#8	40	M	13	7.38					40	#8	3/4"	AIR CONDITIONER - AC-1
						7.38			14	M				
				M	15		7.38							
							7.38		16	M				
				M	17			7.38						
			3					7.38	18	M	3			
FORCED FAN HEATER - FFH-2	3/4"	#10	30	M	19	10					30	#10	3/4"	FORCED FAN HEATER - FFH-1
						10			20	M				
ELECTRIC UNIT HEATER - EUH-2	3/4"	#8	40	M	21		9.375				40	#8	3/4"	ELECTRIC UNIT HEATER - EUH-1
							9.375		22	M				
SPARE			20		23			0			20			SPARE
								0	24					
SUMP PUMP CONTROL PANEL #1	3/4"	#12	20		25	2.1					20			SPARE
						2.1			26					
					27		2.1				20			SPARE
							2.1		28					
					29			2.1			20			SPARE
								2.1	30					
SUMP PUMP CONTROL PANEL #2	3/4"	#12	20		25	2.1					20			SPARE
						2.1			32					
					27		2.1				20			SPARE
							2.1		34					
					29			2.1			20			SPARE
								2.1	36					
SURGE TANK CONTROL PANEL	3/4"	#12	20		25	4.8					20			SPARE
						4.8			38					
					27		4.8				20			SPARE
							7.8		40					
					29			4.8			20			SPARE
								4.8	42					

	A	B	C
TOTAL CONNECTED LOAD	68.4	70.15	48.4
C=CONTINUOUS X 125% (NEC 210.20a)	0.00	0.00	0.00
N=NON-CONTINUOUS	0.00	0.00	0.00
M=LARGEST MOTOR X 125% (NEC 220-14)	52.90	51.49	32.25
TOTAL CALCULATED NEC LOAD	52.90	51.49	32.25

HIGH LEG LOAD:

52.90 KVA / 0.48 KV = 110.21 AMPERES

2

PANEL SCHEDULE – HP1

NO SCALE

PANEL SCHEDULE

PANEL: LP1 — AMPERE RATING: 225A — MOUNTING: SURFACE
VOLTS: 120 208 — BUS MATERIAL: COPPER — ENCLOSURE: NEMA 1
PHASE: 3 — MAIN DEVICE: 225A MCB — BREAKERS: PLUG-IN
WIRE: 4 — SHORT CIRCUIT RATING: 10kAIC

LOAD DESCRIPTION	CON. SIZE	WIRE SIZE	BKR	*	#	PHASE LOAD-KVA A	B	C	#	*	BKR	WIRE SIZE	CON. SIZE	LOAD DESCRIPTION
RECEPTS - EXTERIOR PUMP BUILDING	3/4"	#12	20	N	1	0.9					20	#12	3/4"	RECEPTS - EL. 978.25
						0.54			2	N				
RECEPTS - PUMP ROOM	3/4"	#12	20	N	3		0.54				20	#12	3/4"	RECEPTS - EL. 978.25
							0.54		4	N				
RECEPTS - PUMP ROOM	3/4"	#12	20	N	5			0.54			20	#12	3/4"	DAMPER - D-3
								0.01	6	M				
GAS UNIT HEATER - GUH-1	3/4"	#12	20	M	7	0.03					20	#12	3/4"	RECEPTS - EL. 963
						0.36			8	N				
GAS UNIT HEATER - GUH-2	3/4"	#12	20	M	9		0.03				20	#12	3/4"	RECEPTS - EL. 963
							0.36		10	N				
DAMPER - D-1	3/4'	#12	20	M	11			0.01			20	#12	3/4"	DAMPER - D-4
								0.01	12	M				
DAMPER - D-2	3/4"	#12	20	M	13	0.01					20	#12	3/4"	RECEPTS - EL. 1004.83
						1.08			14	N				
SPARE			20		15		0				40	#12	3/4"	WATER HEATER - EWH-1
							3		16	N				
RECEPTS - ELECTRICAL ROOM	3/4"	#12	20	N	17			0.36			20	#12	3/4"	RECEPT - EL 978.25 DEDICATED METER
								0.18	18	N				
SPARE			20		19	0					20			SPARE
						0			20					
SPARE			20		21		0				20			SPARE
							0		22					
SPARE			20		23			0			20			SPARE
								0	24					
SPARE			20		25	0					20			SPARE
						0			26					
SPARE			20		27		0				20	#12	3/4"	LIGHTING - PUMP ROOM
							1.2		28	C				
SPARE			20		29			0			20	#12	3/4"	EMERGENCY LIGHTING - PUMP ROOM
								0.21	30	C				
SPARE			20		31	0					20	#12	3/4"	LIGHTING - ELECTRICAL ROOM
						0.6			32	C				
SECURITY CONTROL PANEL	3/4"	#12	20	N	33		1.92				20	#12	3/4"	EMERGENCY LIGHTING - ELECTRICAL ROOM
							0.12		34	C				
EXHAUST FAN - EF-3	3/4"	#12	20	M	35			0.53			20	#12	3/4"	LIGHTING - EL. 963.0
								0.84	36	C				
EXHAUST FAN - EF-4	3/4"	#12	20	M	37	0.53					20	#12	3/4"	EMERGENCY LIGHTING - EL. 963.0
						0.12			38	C				
LIGHTING CONTROLLER - LC1	3/4"	#12	20	C	39		0				20	#12	3/4"	LIGHTING - EL. 978.25
							1.44		40	C				
SPACE					41			0			20	#12	3/4"	EMERGENCY LIGHTING - EL. 978.25
								0.12	42	C				

	A	B	C
TOTAL CONNECTED LOAD	4.17	9.15	2.81
C=CONTINUOUS X 125% (NEC 210.20a)	0.90	3.45	1.46
N=NON-CONTINUOUS	2.88	6.36	1.08
M=LARGEST MOTOR X 125% (NEC 220-14)	0.70	0.04	0.69
TOTAL CALCULATED NEC LOAD	4.48	9.85	3.24

HIGH LEG LOAD:

9.85 KVA / 0.12 KV = 82.06 AMPERES

PANEL SCHEDULE – LP1

NO SCALE

Stantec

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Legend

1. SEE SHEET E–001.

Notes

A. ALL WORK SHALL COMPLY WITH PROJECT SPECIFICATIONS.

Revision		By	Appd.	YY.MM.DD
F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
A	30% REVIEW	GRW	GRW	11.12.15

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File Name: 17301E-607.DWG — 11.12.15

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Permit-Seal

Client/Project

CITY OF ANN ARBOR

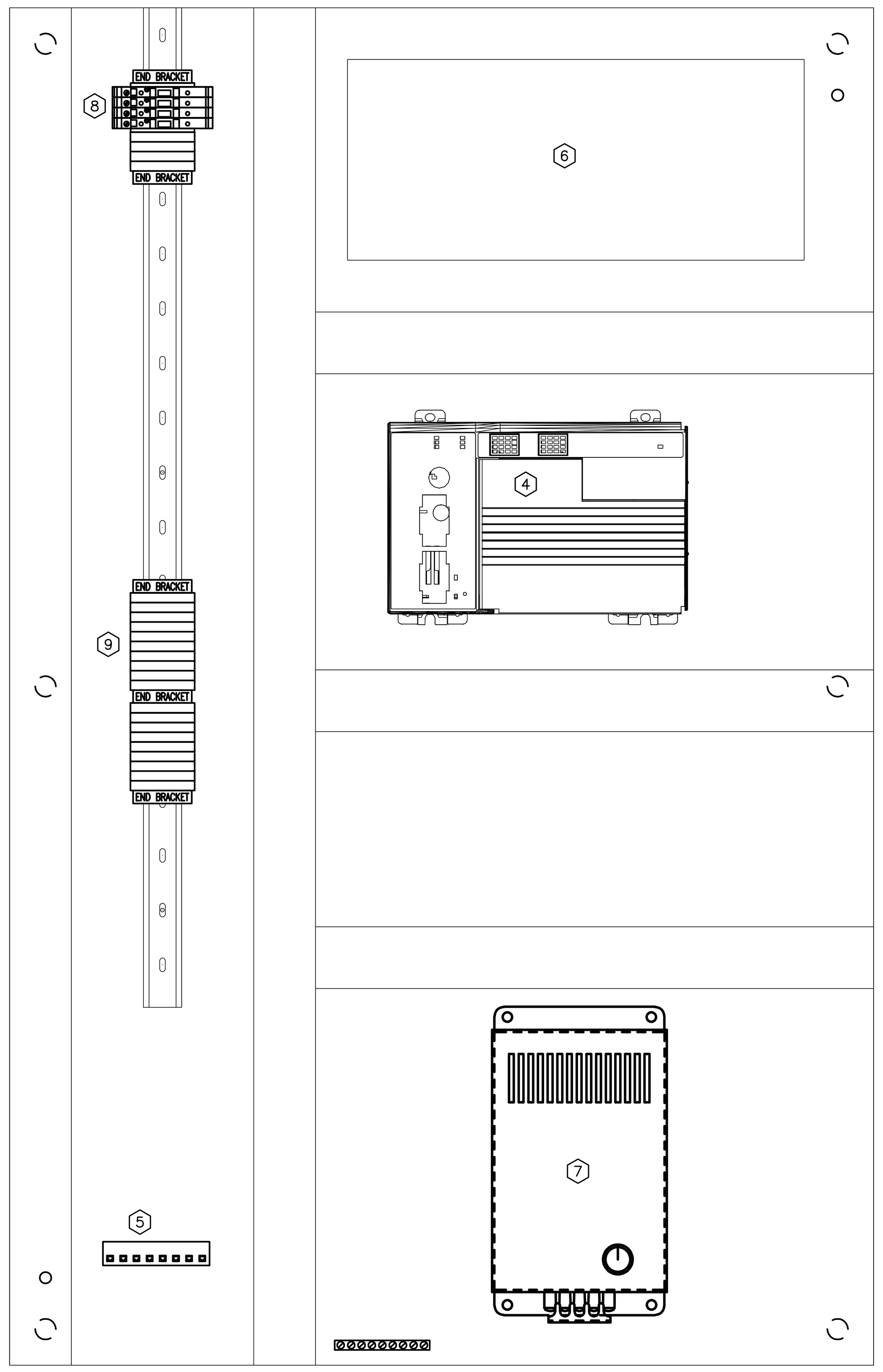
WEST HIGH SERVICE
PUMP STATION
Ann Arbor, Michigan

Title

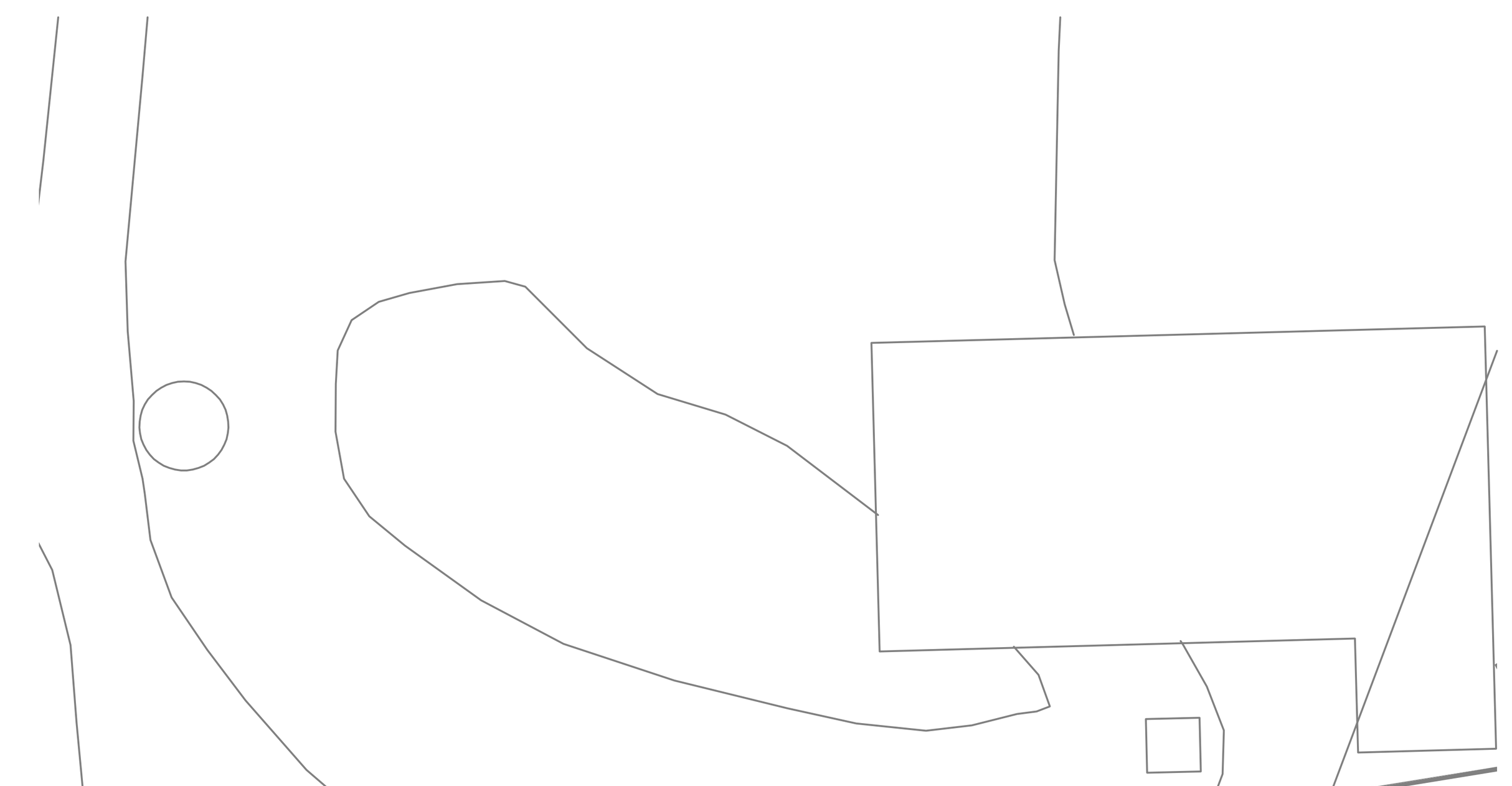
ELECTRICAL
SCHEDULES

Project No. 2075117301 — Scale AS NOTED

Drawing No. E-607 — Sheet 94 of 144 — Revision 0

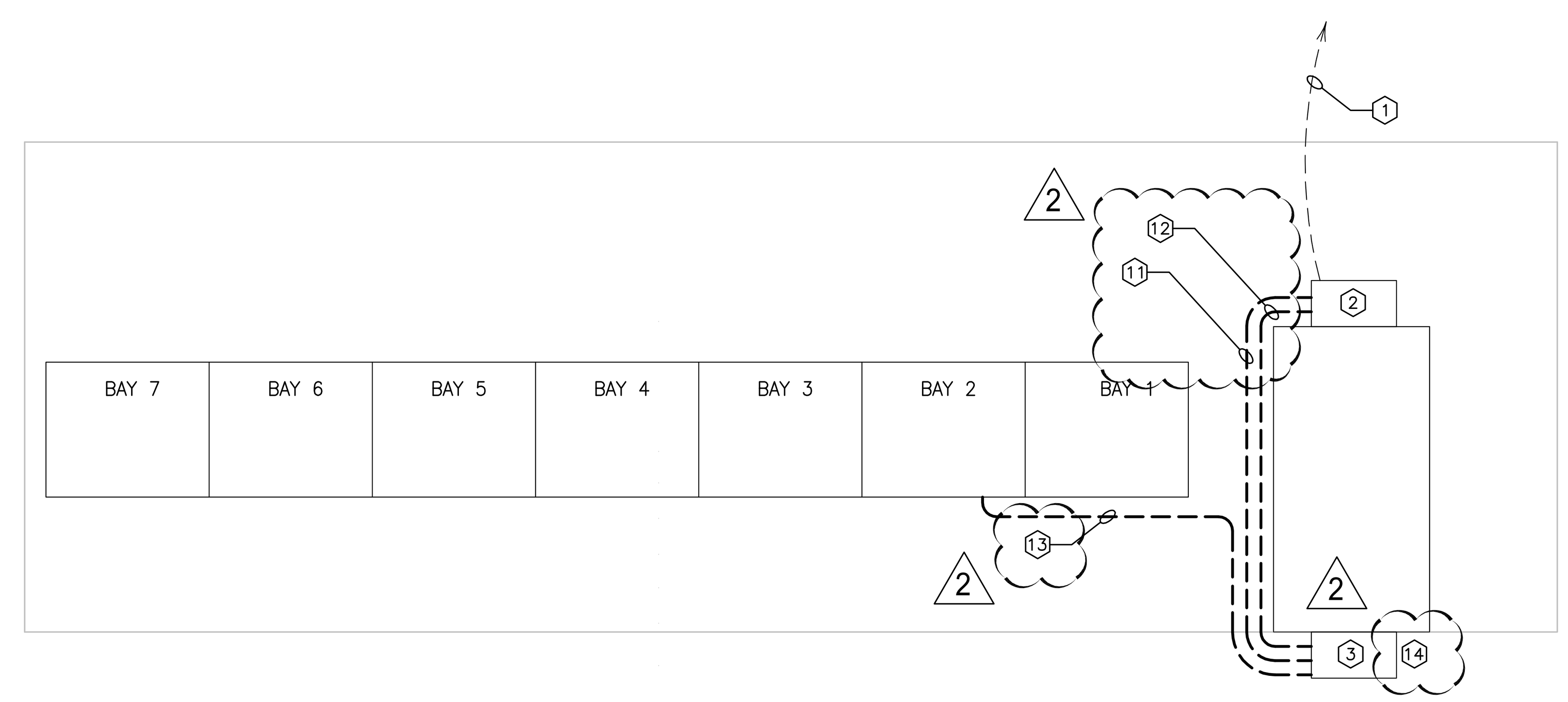


PLC PLAN
NO SCALE

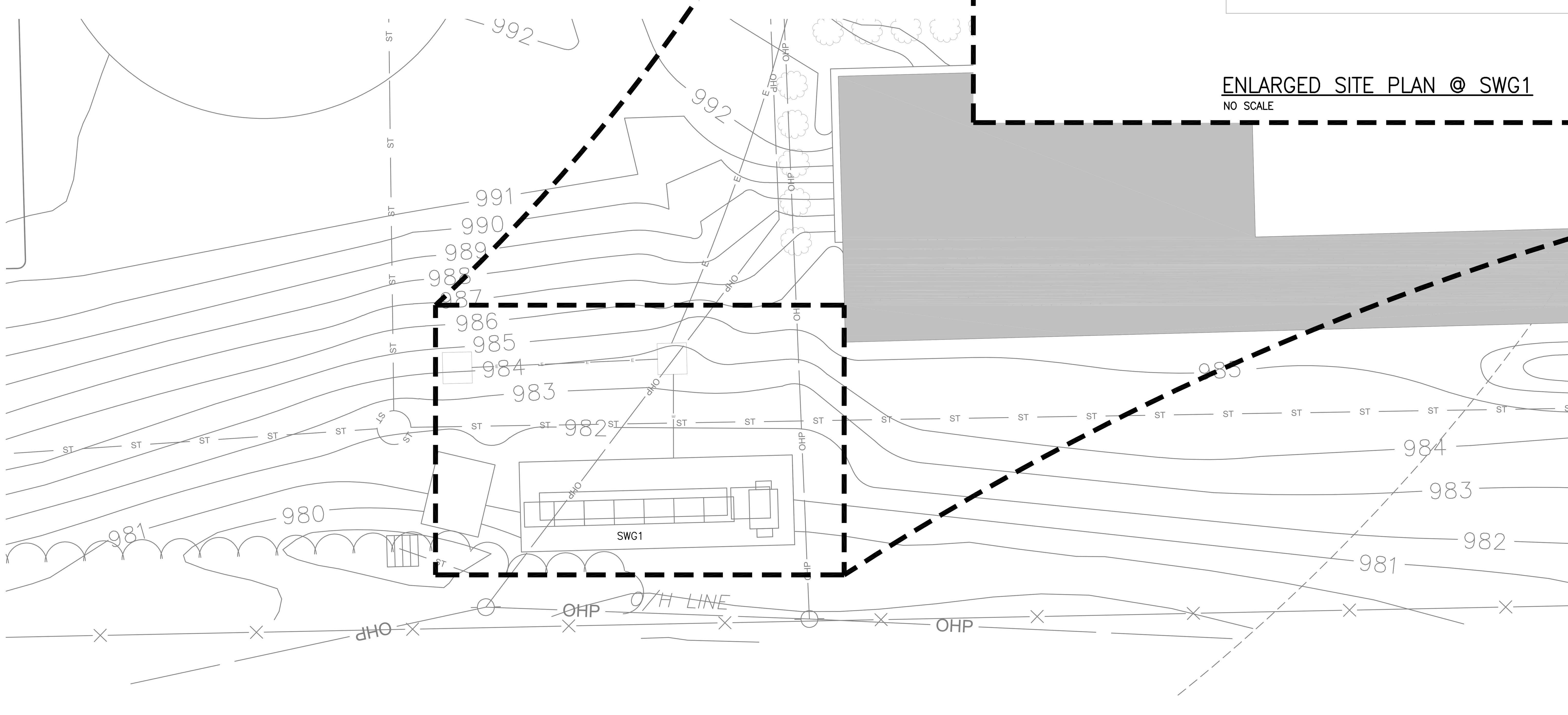


KEY NOTES

1. EXISTING 1" CONDUIT WITH ETHERNET COMMUNICATIONS.
2. EXISTING CONTROL ENCLOSURE WITH SPARE 10/100 ETHERNET SWITCH AND 120VAC POWER.
3. NEW ALUMINUM NEMA 3R 24"W X 36"H X 24"D ENCLOSURE, PAINTED GREEN TO MATCH EXISTING PANELS. REFER TO PLC PLAN THIS SHEET
4.
5. ALLEN-BRADLEY PLC 1769-L23E-QB1B
6. 8 PORT 10/100 ETHERNET SWITCH
7. 100VA UPS
8. 500W HEATER
9. FUSES AND BREAKERS AS REQUIRED TERMINAL BLOCKS.
10. TERMINAL BLOCKS AS REQUIRED.
11. ¾" RGS CONDUIT WITH 2-#12 AWG AND #12 AWG GROUND
12. 1" RGS CONDUIT WITH 2-CAT6 ETHERNET COMMUNICATION CABLES
13. ¾" RGS CONDUIT WITH 4-#14 AWG AND #14 AWG GROUND. TWO CONDUCTORS FOR HOBART BREAKER OPEN/CLOSE STATUS. TWO CONDUCTORS FOR ARGO BREAKER OPEN/CLOSE STATUS.
14. STAINLESS STEEL UNISTRUT.



ENLARGED SITE PLAN @ SWG1
NO SCALE



1"=10' 0' 5' 10' 15' 20'

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Legend
1. SEE SHEETS I-001, I-002 AND I-003.

Notes
A. ALL WORK SHALL COMPLY WITH PROJECT SPECIFICATIONS.

Revision		By	Appd.	YY.MM.DD
F	ADDENDUM NO. 2 (2)	GRW	GRW	12.05.18
E	BID SET	GRW	GRW	12.05.01
D	MDEQ DRAFT SUBMITTAL	GRW	GRW	12.03.14
C	PLANNING COMMISION SUBMITTAL	GRW	GRW	12.01.27
B	90% REVIEW	GRW	GRW	12.01.13
A	30% REVIEW	GRW	GRW	11.12.15
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File Name: 17301-I-105.DWG	Dwn.	Chkd.	Dsgn.	YY.MM.DD
				11.12.15

Permit-Seal

Client/Project
CITY OF ANN ARBOR

WEST HIGH SERVICE PUMP STATION
Ann Arbor, Michigan

Title
INSTRUMENTATION ENLARGED AREA PLAN - NEW NEW SWG1 PLC CABINET

Project No. 20751173 01 | Scale AS NOTED

Drawing No. I-105 | Sheet 99 of 144 | Revision 0