

Section 00 9113 Addendum No. 2

SECONDARY WATER SUPPLY CITY OF FLINT, MICHIGAN

To all prospective bidders and others concerned, YOU ARE HEREBY ADVISED THAT the Contract Documents for the above referenced Project are revised in the following particulars:

Bidder Questions

Q - At the pre-bid meeting a statement was made that the chemical feed system "may" be in the way and this contract will be responsible to set up a temporary system and to reinstall the existing feed system. Based on the documents, we believe that the feed system is not in place at this time and if it is present before we do the improvements required on this contract that any temporary and reinstallation work will be added to this contract as a bulletin with accompanying Contract Change Order. Please clarify.

A - There is a proposed "**Chemical Feed Building**" that is shown on Sheet 27 of the Contract Drawings that is currently not constructed; this building will be constructed by a separate contractor (who will be onsite during work under this contract at the Water Treatment Plant). The statement made during the pre-bid meeting, however, was referring to an existing **chemical feed system** that is located in the adjacent building/garage next to Control Station No. 2 that currently feeds chemicals into the 36" water supply line in the basement of Control Station No. 2. This existing chemical feed system will eventually be replaced by the Chemical Feed Building.

However, the Chemical Feed Building will not be complete and operational until after the work specified for the Secondary Water Supply project. Therefore, it is anticipated that during the proposed work at Control Station No. 2 (e.g., to replace first the 60" and then the 36" PCCP in the basement), the Contractor may need to temporarily relocate the existing chemical feed system, depending on his/her means and methods, in order to safely and effectively excavate down to the pipes entering/exiting Control Station No. 2 in order to replace the pipes at a joint, ensuring that the chemical feed system continues to feed the necessary chemicals to the 36" line (then the 60" line once it is replaced).

The Contractor will need to coordinate and work with City staff to disconnect, relocate, and then reconnect the chemical feed system. This work will be considered part of the Work for Control Station No. 2 and will be written into the description for Item 20 in Section 01 2200 as part of Addendum No. 2.

Q - Do we need to quote the 36" polypig for this project specified in Section 33 1100, Article 3.33?

A - No, this will not be a required item at this time. However, during the construction process, it may be required depending on conditions, but will be a field-directed item.

Q - Can an allowance be added for the "dead end" roads which will be open cut, yet require local access at all times?

A - Based on the anticipated amount of traffic (which is limited to only a few homes in any of the areas) and the road crossings themselves, we are anticipating that each crossing would take less than a day and the Contractor should coordinate with the impacted homeowners to provide temporary access at all times.

Bidder Questions

Q – Can a pay item be added for temporary haul roads which will be required to import materials such as sand, stone, pipe, etc.?

A – Based on the existing soil conditions (refer to Exhibit 2) and the existing wetland areas (refer to Exhibit 3), we anticipate that the Contractor will have to construct temporary haul roads along the transmission main route and the cost for this should be included in the cost of the transmission main (refer to the pay item descriptions for Item 6 and Item 7 in Section 01 2200 that accompanies this Addendum). Any haul roads constructed will need to be removed following construction to comply with an easement agreement and environmental permitting.

Q – From Sta. 289+00 to Sta. 300+00, the easement is only 20' wide and this is through wetlands where it appears the drill rig for soil borings was stuck – are there any soil borings available for this location?

A – Refer to the soil borings that were completed at 286+72 and 300+47 (Exhibit 2).

Q – When dewatering the standing water through much of the project, can the water be discharged to properties adjacent to the easement?

A – Water from dewatering efforts may be discharged onto the Consumers Energy properties only; water from dewatering efforts cannot be discharged to adjacent properties unless the Contractor obtains written permission from the adjacent property owner. If discharge water goes onto Consumers' properties, water shall not negatively affect Consumers' or ITC's infrastructure (i.e., electrical poles and towers). Contractor should locate dewatering discharge points such as natural water courses, ditches, or existing wetlands.

Q – Will there be any provisions for dewatering contaminated soil?

A – Contractor shall refer to the Due Care Plan in Exhibit 5.

Q – What is the voltage of the overhead wires in the easement, their current height and what vertical/lateral clearance is required to be maintained?

A – The height of overhead wires (at approximate low points) has been measured and noted on the Contract Drawings within the Consumers' properties and at some road crossings. Voltage of the overhead lines is unknown and could vary, based on the type of powerline (i.e., distribution vs. transmission). Contractor should contact Consumers Energy to verify voltage(s) of overhead lines.

Q – Can the high voltage wires be deenergized to provide safe working conditions while working near them?

A – No, the wires will not be deenergized during construction activities.

Q – On Sheet 65 of the plans, there is 24" ductile iron water main shown, but no corresponding Pay Item for 24" water main – is this incidental to the GCDC Meter Pit?

A – Refer to Pay Item 18 in Section 01 2200 that accompanies this Addendum.

Q – Are the 6" ball valves in Control Station 2 included in this project's scope of work, or part of the Chemical Feed Building project?

A – The ball valves are in this scope of work. Refer to Pay Item 20 in Section 01 2200 that accompanies this Addendum.

<u>Section</u>	<u>Description of Change</u>
00 4243	Section 00 4243, Proposal, is being reissued in its entirety due to revisions to Item 8 (increasing the number of 36" butterfly valves from 2 to 3) and adding in a line for the Bidder to provide the name of the Transmission Main Pipe Manufacturer/Vendor.
01 2200	Section 01 2200, Unit Prices, shall be deleted from the Contract Documents in its entirety and replaced with Section 01 2200 accompanying this Addendum.
05 5000	Delete Article 2.10.D in its entirety from Section 05 5000, Metal Fabrications, and renumber subsequent Articles accordingly.
08 3113	Section 08 3113, Access Hatches, shall be incorporated into the Contract Documents. A copy of the Section is included with this Addendum.
33 1100	Modify Article 2.08.H.1 of Section 33 1100, Water Utility Distribution Piping, such that the following sentence is added to the end of the Article: "Valves shall open in a clockwise direction with an exterior indication of the disc position."
33 1100	Modify Article 2.08.I.9 of Section 33 1100, Water Utility Distribution Piping, to read as follows, "Gate valves shall be designed to turn open clockwise (right), unless otherwise specified, to open with two-inch square operating nut or handwheel with the word "Open" and an arrow cast in the metal to indicate direction of opening."
33 1100	Delete Article 2.08.K.4 of Section 33 1100, Water Utility Distribution Piping, in its entirety, and renumber subsequent articles accordingly.
33 1100	Delete Article 3.29 (Flushing) of Section 33 1100, Water Utility Distribution Piping, in its entirety, and renumber subsequent articles accordingly.
33 1100	Modify Article 3.30.A.1 of Section 33 1100, Water Utility Distribution Piping, in its entirety to read as follows: <ol style="list-style-type: none"> 1. New potable water pipelines, except those appurtenant to hydraulic structures, shall be disinfected in accordance with the requirements of AWWA C651-14 using the Slug Method of Chlorination for large diameter pipe. When cutting into an existing pipe, disinfection shall also be in accordance with AWWA C651-14.
33 1100	Delete Article 3.30.B of Section 33 1100, Water Utility Distribution Piping, in its entirety, and renumber subsequent Articles accordingly.
40 0513	Modify Article 2.06.D.1 of Section 40 0513, Process Piping and Valves, such that the following sentence is added to the end of the Article: "Valves shall open in a clockwise direction with an exterior indication of the disc position."

<u>Section</u>	<u>Description of Change</u>
40 7123.13	<p>Delete 1.02.B of Section 40 7123.13, Venturi Flow Meters, and add Article 2.01 as follows:</p> <p>2.01 Differential Pressure Transmitters</p> <p>A. General:</p> <ol style="list-style-type: none"> 1. Differential pressure transmitter shall provide up to ± 0.04 percent of reading and 14:1 flow turndown, 15-year stability, and manufacturer's 15-year limited warranty. 2. The transmitter shall be equipped with 316L stainless steel body and isolating diaphragm, 4-20 mA output with HART, stainless steel flange bracket, 316 stainless steel bolts, LCD display, transient protection, NSF drinking water approval, NEMA 4X aluminum housing, and 316 stainless steel 3-valve instrument manifold. <p>B. Acceptable Manufacturer:</p> <ol style="list-style-type: none"> 1. Rosemount 3051S3CD Ultra-For-Flow 2. ENGINEER-approved equal.
40 9000	<p>Modify Article 2.04.A.1.b of Section 40 9000, Process Instrumentation, Control and Monitoring Equipment, to read as follows:</p> <p>a. For work related to the City of Flint Water Treatment Plant, work shall be completed by:</p> <ol style="list-style-type: none"> (1) MAK Controls (2) Outbound Technologies (3) Progressive Controls and Instrumentation (4) Commerce Controls (5) ENGINEER-approved equal
<u>Sheet</u>	<u>Description of Change</u>
6	Delete Standard Detail SD-11W its entirety.
8	Sheet 8 is to be replaced in its entirety with Sheet 8 that accompanies this Addendum.
14	Delete the Soil Erosion/Sedimentation Control Operation Time Schedule. Contractor shall refer to the table provided as part of the SESC Permit.
15	<p>Delete the following Soil Erosion and Sedimentation Control details in their entirety from Sheet 15:</p> <p>10 – “Mulching”</p> <p>11 – “Roughend Surface”</p>

<u>Sheet</u>	<u>Description of Change</u>
16	<p>Delete the following Soil Erosion and Sedimentation Control details in their entirety from Sheet 16:</p> <p>21 – “Gravity Filter Berm” 27 – “Slope Drain – Subsurface Pipe” 34 – “Sediment Basin”</p>
17	<p>Delete the following Soil Erosion and Sedimentation Control details in their entirety from Sheet 17:</p> <p>40 – “Inlet Sediment Trap” 43 – “Culvert Sediment Trap” 47 – “Cofferdam”</p>
18	Sheet 18 is to be replaced in its entirety with Sheet 18 that accompanies this Addendum.
30	Sheet 30 is to be replaced in its entirety with Sheet 30 that accompanies this Addendum.
36	Sheet 36 is to be replaced in its entirety with Sheet 36 that accompanies this Addendum.
37	Sheet 37 is to be replaced in its entirety with Sheet 37 that accompanies this Addendum.
39	Sheet 39 is to be replaced in its entirety with Sheet 39 that accompanies this Addendum.
41	Sheet 41 is to be replaced in its entirety with Sheet 41 that accompanies this Addendum.
42	Sheet 42 is to be replaced in its entirety with Sheet 42 that accompanies this Addendum.
43	Sheet 43 is to be replaced in its entirety with Sheet 43 that accompanies this Addendum.
45	Add Soil Erosion and Sedimentation Control detail callout “6” to the toe of the slope at each end of the bore under Coldwater Road.
47	Sheet 47 is to be replaced in its entirety with Sheet 47 that accompanies this Addendum.
48	Sheet 48 is to be replaced in its entirety with Sheet 48 that accompanies this Addendum.
52	Sheet 52 is to be replaced in its entirety with Sheet 52 that accompanies this Addendum.

<u>Sheet</u>	<u>Description of Change</u>
54	The following note shall be added to Sheet 54: 8. CONTRACTOR TO PROVIDE TEMPORARY CULVERT (AND AGGREGATE MATERIAL AROUND CULVERT) AT DRAIN CROSSING TO ALLOW FOR ACCESS DURING CONSTRUCTION ACTIVITIES. CONTRACTOR TO REMOVE CULVERT AND AGGREGATE MATERIAL AT COMPLETION OF PROJECT. COST FOR THIS CULVERT IS INCIDENTAL TO THE PROJECT.
61	Sheet 61 is to be replaced in its entirety with Sheet 61 that accompanies this Addendum.
63	The following note shall be added to Sheet 63: 8. CONTRACTOR TO PROVIDE TEMPORARY CULVERT (AND AGGREGATE MATERIAL AROUND CULVERT) AT DRAIN CROSSING TO ALLOW FOR ACCESS DURING CONSTRUCTION ACTIVITIES. CONTRACTOR TO REMOVE CULVERT AND AGGREGATE MATERIAL AT COMPLETION OF PROJECT. COST FOR THIS CULVERT IS INCIDENTAL TO THE PROJECT.
65	Sheet 65 is to be replaced in its entirety with Sheet 65 that accompanies this Addendum.
P-1	Sheet P-1 is to be replaced in its entirety with Sheet P-1 that accompanies this Addendum.
P-2	Sheet P-2 is to be replaced in its entirety with Sheet P-2 that accompanies this Addendum.
S-0	Sheet S-0 is to be replaced in its entirety with Sheet S-0 that accompanies this Addendum.
S-1	Sheet S-1 is to be replaced in its entirety with Sheet S-0 that accompanies this Addendum.
S-2	Sheet S-2 is to be replaced in its entirety with Sheet S-0 that accompanies this Addendum.
S-3	Sheet S-3 is to be replaced in its entirety with Sheet S-0 that accompanies this Addendum.
E-1	Sheet E-1 is to be replaced in its entirety with Sheet E-1 that accompanies this Addendum.
E-2	Sheet E-2 is to be replaced in its entirety with Sheet E-2 that accompanies this Addendum.
E-3	Sheet E-3 is to be replaced in its entirety with Sheet E-3 that accompanies this Addendum.
E-3A	Sheet E-3A is to be replaced in its entirety with Sheet E-3A that accompanies this Addendum.

This Addendum is hereby incorporated into the original Contract Documents for the above-referenced bidding and is considered as binding as though originally appearing therein. RECEIPT OF THIS ADDENDUM MUST BE NOTED in the place provided on the Proposal page 00 4243-1, dated **March 6, 2020**.

Section 00 4243 Proposal

City of Flint
1101 S. Saginaw Street
Flint, MI 48502

Re: Secondary Water Supply

The undersigned Bidder proposes and agrees, if this Proposal is accepted, to enter into an Agreement with the City of Flint (OWNER) in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the Contract Documents.

In submitting this Proposal, Bidder represents, as more fully set forth in the Agreement, that;

- a) Bidder has examined copies of all Contract Documents which he understands and accepts as sufficient for the purpose, including any and all Addenda officially issued, the receipt of which is hereby acknowledged.

Addendum No.	Date of Release	Signature
_____	_____	_____
_____	_____	_____
_____	_____	_____

- b) Bidder has examined the surface and subsurface conditions where the Work is to be performed, the legal requirements and local conditions affecting cost, progress, furnishing or performance of the Work and has made such independent investigations as Bidder deems necessary.
- c) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any Agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or a corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for himself any advantage over any other Bidder or over OWNER.

The Bidder agrees to complete the Work, in accordance with the Contract Documents, for the following Contract Price:

Item	Description	Quantity	Unit	Unit Price	Amount
1.	Mobilization	1	LSUM	\$ _____	\$ _____
2.	Soil Erosion Sedimentation Control Measures	1	LSUM	\$ _____	\$ _____
2.A	Temporary Gravel Construction Entrance	6	EACH	\$ _____	\$ _____
2.B	Permanent Gravel Construction Entrance	11	EACH	\$ _____	\$ _____
3.	Traffic Maintenance & Control	1	LSUM	\$ _____	\$ _____
4.	Audio-Video Route Survey	1	LSUM	\$ _____	\$ _____
5.	Subsurface Utility Investigation	1	LSUM	\$ _____	\$ _____
6.	Transmission Main, Open Cut, 36-inch	28,910	LFT	\$ _____	\$ _____
7.	Transmission Main, Jack-and-Bore, 36-inch	1,090	LFT	\$ _____	\$ _____
8.	Butterfly Valve, 36-inch	3	EACH	\$ _____	\$ _____
9.	Air Valve for Water Service, 4-inch	11	EACH	\$ _____	\$ _____
10.	Hydrant Assembly, Blow-off	14	EACH	\$ _____	\$ _____
11.	Hydrant Assembly, Fire	1	EACH	\$ _____	\$ _____

Addendum 02
Issued 03/06/2020

Item	Description	Quantity	Unit	Unit Price	Amount
12.	Removal & Disposal of Non-Hazardous Materials	50	TONS	\$	\$
13.	Removal & Replacement of Bituminous Pavement	800	SYD	\$ _____	\$ _____
14.	Wetland Restoration, Plan 1	1,890	LFT	\$ _____	\$ _____
15.	Wetland Restoration, Plan 2	3,730	LFT	\$ _____	\$ _____
16.	Wetland Restoration, Plan 3	780	LFT	\$ _____	\$ _____
17.	Wetland Restoration, Plan 4	360	LFT	\$ _____	\$ _____
18.	GCDC Connection & Meter Vault	1	LSUM	\$ _____	\$ _____
19.	City of Flint WTP Connection & Meter Vault	1	LSUM	\$ _____	\$ _____
20.	Control Station No. 2 Modifications	1	LSUM	\$ _____	\$ _____
21.	Control Station No. 3 Modifications	1	LSUM	\$ _____	\$ _____
22.	Pressure Reducing Pit Modifications	1	LSUM	\$ _____	\$ _____
23.	Tank House Modifications	1	LSUM	\$ _____	\$ _____
24.	Restoration, City of Flint WTP	1	LSUM	\$ _____	\$ _____
25.	Allowance, Permit Fees	1	LSUM	\$ <u>20,000.00</u>	\$ <u>20,000.00</u>
26.	Allowance, Owner-Controlled Changes	1	LSUM	\$ <u>150,000.00</u>	\$ <u>150,000.00</u>

TOTAL BASE CONTRACT PRICE \$ _____
 (Items 1 through 26) (numeric)

(In Words)

All specified cash allowances are included in the price(s) set forth above and have been computed in accordance with Paragraph 11.02 of the General Conditions.

Proposed Subcontractors. Bidder proposes to utilize the services of the major subcontractors listed below for this Work.

Mechanical _____

Electrical _____

Instrumentation/SCADA _____

Other _____

***Proposed Manufacturers/Vendors.* Bidder proposes to utilize the services of the major Manufacturers/Vendors listed below for this Work.**

Transmission Main Pipe _____

Tapping Sleeve(s) & Valves _____

36-inch Butterfly Valves _____

The undersigned, as Bidder, hereby certifies that he or a qualified designated person in his employ has examined the Contract Documents provided by OWNER for bidding purposes. Further, the undersigned certifies that he or his qualified employee has reviewed the Bidder's proposed construction methods and finds them compatible with the conditions and from the information provided for Bidding.

Addendum 02
Issued 03/06/2020

The undersigned, as Bidder, shall complete the Work under any job circumstances or field conditions present and/or ascertainable prior to bidding. In addition, he shall also complete the Work under whatever conditions he may create by his own sequence of construction, construction methods, or other conditions he may create, at no additional cost to OWNER.

The undersigned, as Bidder, declares that he has familiarized himself with the location of the proposed Work and the conditions under which it must be constructed. Also, that he has carefully examined the Plans, the Specifications, and the Contract Documents, which he understands and accepts as sufficient for the purpose and agrees that he will Contract with OWNER to furnish all labor, material, tools, and equipment necessary to do all Work specified and prescribed for the completion of the Project.

The undersigned agrees, if awarded Contract, to sign the Agreement and submit satisfactory bonds and certificates of insurance coverage and other evidence of insurance required by the Contract Documents within fifteen (15) days after the date of OWNER'S Notice of Award.

The undersigned agrees that time is of the essence and, if awarded Contract, that the Work will be substantially completed within two hundred ten (210) calendar days of the issuance of the Notice to Proceed and completed within two hundred seventy (270) calendar days of the issuance of said Notice.

Liquidated damages, as specified in the General Conditions, Supplementary Conditions and Agreement, shall also apply to the above Substantial Completion date.

Engineering and inspection costs incurred after the above final completion date shall be paid by CONTRACTOR to OWNER as specified in the Conditions of the Contract and Agreement.

The following documents are attached to and made a condition of this Proposal:

a) Required Bid security in the form checked below:

☐ Certified Check ☐ Cashier's Check ☐ Money Order ☐ Bid Bond

b) Legal Status of Bidder.

c) Bidder's Name: _____

By: _____
(Signature) (Printed Name)

Address: _____

Phone No.: _____ Fax No.: _____

Email: _____

Section 01 2200 Unit Prices

Part 1 General

1.01 Scope

- A. This Section describes the method of measurement and basis of payment for all items of Work included in the Contract and specified in the Proposal. CONTRACTOR shall provide labor, material, tools, equipment and services required to complete the Work specified herein and indicated on the Plans.
- B. OWNER WILL MAKE NO ALLOWANCES FOR ITEMS NOT INCLUDED IN THE PROPOSAL.

1.02 Items of the Proposal

Item 1

Mobilization will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary for preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of CONTRACTOR's, ENGINEER's, and OWNER's field offices, and other facilities necessary to undertake the work on the project; and for other work and operations which must be performed, or for expenses incurred, prior to beginning work on the various contract items on the project site. It shall also include preconstruction costs, including insurance and bonds, exclusive of bidding costs, which are necessary direct costs to the project and are of a general nature rather than directly attributable to other pay items under the contract. Payment for mobilization will be based upon the following schedule:

Partial Payment Schedule

Percentage of Original Contract Amount Earned	Percentage of Bid Price for Mobilization Allowed
5	50
10	75
25	100

Item 2

Soil Erosion and Sedimentation Control (SESC) Measures will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material and equipment necessary to furnish and install soil erosion and sedimentation control devices, and shall include, but is not limited to, furnishing and installing, inlet filters, check dams, ditch sediment traps, temporary gravel construction entrance/exit, and other devices, as shown on the plans or detailed, maintaining devices, replacement of ineffective devices, removal of temporary devices, miscellaneous cleanup and restoration, and items necessary to complete the Work, whether specifically mentioned or implied.

Item 2A

Temporary Gravel Construction Entrance will be paid for at the Contract Unit Price on a per Each basis. Price paid shall be payment in full for labor, material and equipment necessary to furnish and install a temporary gravel entrance in the area(s) designated on the plans, including but not limited to grading, aggregate material, filter fabric, and culvert, as well as a wash water station, maintenance, dressing, repair and cleanout of the drive, sweeping of the adjacent roadway, removal of the drive after construction activities have been completed, cleanup and restoration of the area(s) affected by the drive, and items necessary to complete the Work, whether specifically mentioned or implied.

Item 2B

Permanent Gravel Construction Entrance will be paid for at the Contract Unit Price on a per Each basis. Price paid shall be payment in full for labor, material and equipment necessary to furnish and install a permanent gravel entrance in the area(s) designated on the plans, including but not limited to grading, aggregate material, filter fabric, and culvert, as well as a wash water station, maintenance, dressing, repair and cleanout of the drive, and sweeping of the adjacent roadway during construction activities. Once construction activities have been completed, price includes cleanup and restoration of the area(s) affected by the drive, and items necessary to complete the Work, whether specifically mentioned or implied.

Item 3

Traffic Maintenance & Control will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for all labor, material, and equipment required for maintaining traffic, and shall include, but is not limited to, furnishing, installing, operating, and maintaining all barricades, lighted arrow boards, drums, traffic control devices, signs, channeling devices, cones, flagmen, flag control, pavement markings, warning flashers, concrete barriers, minor traffic devices, and all other items necessary to complete the job, whether specifically mentioned or implied.

Item 4

Audio-Video Route Survey will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for all labor, material, equipment, and supplies necessary for furnishing an audio-video route survey in accordance with Section 01 3300, Submittal Procedures and Section 01 1100, Summary of Work.

Item 5

Subsurface Utility Investigation will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for all labor, material, equipment, and supplies necessary for an subsurface utility investigation in the designated locations at the City of Flint's Water Treatment Plant. Work shall include, but is not limited to, excavation, sheeting, bracing and shoring to a point that the designated utility is exposed. CONTRACTOR shall notify ENGINEER so that the utility location, material type, outside diameter, and closest joint may be recorded and surveyed by ENGINEER's personnel to verify the proposed locations, elevations, and connections proposed for Items 20 through 24 are accurate and constructible as specified.

Item 6

Transmission Main, of the type, diameter and class specified, in open cut trench, will be paid for at the Contract Unit Price per Linear Foot. Price paid shall be payment in full for labor, material, and equipment necessary for furnishing and installing water main and shall include, but is not limited to, specials and fittings, removal and replacement of fencing, **temporary haul routes**, excavation, sheeting, shoring and bracing, draining, dewatering, laying, jointing, bedding, testing, disinfecting, backfilling (including backfill with special materials where specified), disposal of excess excavated material, temporary blow-offs, thrust blocks, encasement, barricading, disinfection, testing restoration, final cleanup, connections to existing mains and other items necessary to complete the job, whether specifically mentioned or implied.

Measurement for transmission main will be field measured in linear feet along the centerline of the pipe installed by open cut, taken from end-to-end with no reduction for fittings and valves except for special structures, sections or connections for which either Lump Sum or unit prices have been taken will be deducted from the total length of water main and will be paid for at the prices bid therefore.

Item 7

Transmission Main, of the type, diameter and class specified installed by jack-and-bore will be paid for at the Contract Unit Price per Linear Foot. Price paid shall be payment in full for labor, material, and equipment necessary for furnishing and installing bored water main, and shall include, but is not limited to, removal and replacement of fencing, **temporary haul routes**, dewatering, excavation, sheeting, shoring and bracing, disposal of excess excavated material, casing pipe, grouting, backfilling, barricading, thrust blocks, disinfection, testing, restoration, and other items necessary to complete the job, whether specifically mentioned or implied.

Measurement for transmission main will be field measured in linear feet for the length of along the centerline of the pipe not exposed by open cut.

Item 8

Butterfly Valve, of the diameter specified will be paid for at the Contract Unit Price per Each. Price paid shall be payment in full for labor, material, and equipment necessary for furnishing and installing valve and well or valve box, and shall include, but is not limited to, valve well foundation, steel reinforcing, bricks, blocks, valve well sections, adjusting rings, well frame and cover, cement mortar plaster coat, valve box, necessary excavation, sheeting and bracing, shoring, dewatering, connection to water main, backfilling, restraints, disposal of excess excavated material, thrust blocks, disinfection, testing, restoration, cleanup, and other items necessary to complete the job, whether specifically mentioned or implied. Valves and wells will be measured as units installed.

Item 9

Air Valve for Water Service, of the diameter specified will be paid for at the Contract Unit Price per Each. Price paid shall be payment in full for labor, material, and equipment necessary for air release assembly, and shall include, but is not limited to, valve, valve well, valve well foundation, steel reinforcing, bricks, blocks, valve well sections, adjusting rings, well frame and cover, cement mortar plaster coat, valve box, **ventilation piping and cap**, necessary excavation, sheeting and bracing, shoring, dewatering, backfilling, connection to water main, miscellaneous piping, disposal of excess excavated material, thrust blocks, disinfection, testing, restoration, cleanup, and all other items necessary to complete the job, whether specifically mentioned or implied. Air valve and well or valve box will be measured as units installed.

Item 10

Hydrant Assembly, Blow-off, will be paid for at the Contract Unit Price per Each. Price paid shall be payment in full for labor, material, and equipment necessary for furnishing and installing hydrant blow-off assemblies, and shall include, but is not limited to, valves, valve boxes, connecting piping and fittings, necessary excavation, sheeting and bracing, shoring, dewatering, backfilling, disposal of excess excavated material, miscellaneous pipe connecting hydrant to water main, valves and fittings, thrust blocks, disinfection, testing, restoration, cleanup, and all other items necessary to complete the job, whether specifically mentioned or implied. Hydrants will be measured as units installed.

Item 11

Hydrant Assembly, Fire will be paid for at the Contract Unit Price per Each. Price paid shall be payment in full for labor, material, and equipment necessary for furnishing and installing fire hydrant assemblies, and shall include, but is not limited to, valves, valve boxes, connecting piping and fittings, necessary excavation, sheeting and bracing, shoring, dewatering, backfilling, disposal of excess excavated material, miscellaneous pipe connecting hydrant to water main, valves and fittings, thrust blocks, restoration, cleanup, and all other items necessary to complete the job, whether specifically mentioned or implied. Hydrants will be measured as units installed.

Item 12

Removal & Disposal of Non-Hazardous Materials will be paid for at the Contract Unit Price per Ton. Price paid shall be payment in full for labor, material, and equipment necessary to properly handle, manage, characterize, stockpile, load, transport, and dispose of excess non-hazardous materials generated onsite during the Work. Price for this pay item shall also include, but is not limited to obtaining the necessary permits, including paying all fees associated with said permits; providing proper notifications to applicable regulatory agencies and other authorities; furnishing and maintaining plastic sheeting, physical boundaries or barriers, soil erosion and sedimentation control measures, suppressants and foams for dust control, as needed for stockpiled materials; testing, classifying and determining waste characterization; separating materials based on said characterization, as necessary, for each type of waste; transporting materials to approved licensed facilities, including manifests, records or other documentation; decontamination of trucks leaving the site and proper coverage to prevent soil and/or dust from leaving the truck during transport; and other items necessary to complete the job, whether specifically mentioned or implied.

Item 13

Removal and Replacement of Bituminous Pavement will be paid for at the Contract Unit Price per Square Yard. Price paid shall be payment in full for labor, material, and equipment required for removal of the existing pavement and replacement with bituminous pavement as shown on the plans or specified and shall include, but is not limited to, sawcutting, excavation, removal and disposal of existing pavement and unsuitable material, furnishing, placing, and compacting backfill, protection of existing improvements, barricading, furnishing and applying prime and bond coats, furnishing, placing, rolling, and compacting the bituminous base course and wearing coarse, restoration, and other items necessary to complete the job, whether specifically mentioned or implied.

Measurement for removal and replacement of bituminous pavement will be by square yard of bituminous pavement field measured in place.

Item 14 - 17

Wetland Restoration, of the type specified will be paid for at the Contract Unit Price per Lineal Foot. Price paid shall be payment in full for labor, material, and equipment necessary to strip and stockpile existing wetland topsoil, as well as restoring and re-grading wetland areas to original contours by re-using stockpiled wetland topsoil in accordance with permit conditions for wetland restoration by the agency having jurisdiction. In addition, work for this item includes but is not limited to furnish and install temporary matting to protect existing wetlands, cofferdams or earthen berms necessary for temporary water control within the designated wetlands. Restoration shall also include labor, material, and equipment necessary to seed and install plantings as shown on the Contract Drawings or as directed by ENGINEER. This includes daily seeding with approved seed mix, mulching where wetland slopes exceed 5%, watering and maintenance to provide for uniform growth and any reseeding and erosion repair. Re-seeding and erosion repair shall be included to provide for uniform growth at the completion of the project.

Measurement for wetland restoration will be by lineal foot determined by field measurement. Areas disturbed by CONTRACTOR outside of the areas designated in the wetland restoration details will be at CONTRACTOR's expense.

Item 18

GCDC Connection & Meter Vault, will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary for connecting new water main to existing water main, as shown on the Plans, and shall include, but is not limited to, fittings, sleeves and adapters in order to "hot tap" an existing/active transmission main supply, removal and replacement of fencing, excavation, sheeting, shoring and bracing, dewatering, barricading, bedding, manhole structure, testing, disinfecting, filling, backfilling (including backfill

with special materials where specified), disposal of excess backfill and fill material, and thrust blocks to provide a complete and functional connection to an existing transmission main.

In addition, this item shall include labor, material, and equipment necessary to provide and install **piping, bends and fittings from the "hot tap" up to and through the meter vault** including, but not limited to excavation, sheeting, shoring and bracing, dewatering, ground stabilization, barricading, concrete, reinforcing, grouting, flow meters, valves and piping; wiring and transformers necessary for connection to the nearest electrical utility, instrumentation connections, control connections, electrical panels, SCADA panels and equipment; sump, sump pump, plumbing, hatches, drive and drive culvert, disposal of excess material, restoration, disinfection, testing and appurtenances necessary to provide a complete, working meter vault, whether specifically mentioned or implied.

Item 19

City of Flint WTP Connection & Meter Vault, will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary for connecting new transmission main to existing water supply line and constructing a meter vault, as shown on the Plans, and shall include, but is not limited to, coordination with other Contractor(s) working at the site, fittings, sleeves and adapters in order to "hot tap" an existing/active transmission main supply, as well as excavation, sheeting, shoring and bracing, dewatering, ground stabilization, barricading, concrete, reinforcing, grouting, flow meters, valves, wiring and transformers necessary for connection to the nearest electrical utility, instrumentation connections, control connections, electrical panels, SCADA panels and equipment; sump, sump pump, plumbing, hatches, disposal of excess material, restoration, disinfection, testing and appurtenances necessary to provide a complete, working meter vault, whether specifically mentioned or implied.

Item 20

Control Station No. 2 Modifications, will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary for connecting new water main to existing water main, as shown on the Plans, and shall include, but is not limited to, coordination with other Contractor(s) working at the site, pipe, fittings, adapters, excavation, sheeting, shoring, bracing, dewatering, ground stabilization, barricading, bedding, testing, disinfecting, filling, backfilling (including backfill with special materials where specified), disposal of excess backfill and fill material, and thrust blocks. In addition, this item shall include labor, material, and equipment necessary to **coordinate and work with City staff to disconnect, temporarily relocate, and reconnect the chemical feed system, as well as** furnish and install the specified meters and valves including, but not limited to bracing and supports, electrical connections, instrumentation connections, control connections, electrical panels, SCADA panels and equipment, disinfection, testing, and appurtenances necessary to provide a complete, working installation, whether specifically mentioned or implied.

Item 21

Control Station No. 3 Modifications, will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary to install the necessary electrical and instrumentation connections, electrical panels, SCADA panels and equipment, testing, and appurtenances necessary to provide a complete, working installation, whether specifically mentioned or implied.

Item 22

Pressure Reducing Pit Modifications, will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary to furnish and install the specified meter, including but not limited to coordination with other Contractor(s) working at the site, piping modifications, bracing and supports, electrical connections, instrumentation connections, control connections, electrical panels, SCADA panels and equipment,

disinfection, testing, and appurtenances necessary to provide a complete, working installation, whether specifically mentioned or implied.

Item 23

Tank House Modifications, will be paid for at the Contract Unit Price on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary to remove the existing altitude valve and related appurtenances and replace it with a new altitude valve. Work shall include but is not limited to but not limited to coordination with other Contractor(s) working at the site, piping modifications, valve, bracing and supports, disinfection, electrical connections, instrumentation connections, control connections, electrical panels, SCADA panels and equipment, disinfection, testing, and appurtenances necessary to provide a complete, working installation, whether specifically mentioned or implied.

Item 24

Restoration, with topsoil (of the depth specified), seed, and mulch will be paid for at the Contract on a Lump Sum basis. Price paid shall be payment in full for labor, material, and equipment necessary to restore all areas disturbed by CONTRACTOR's operation, including, but not limited to coordination with other Contractor(s) working at the site, subgrade preparation, filling, shaping, grading, plowing, discing, raking, disposing of unsuitable material and excess material, furnishing fill and topsoil, placing topsoil, seed, fertilizers, and mulch, rolling, tamping, mowing, maintenance and care, gravel lined ditch, and all items necessary to complete the job, whether specifically mentioned or implied.

Areas disturbed outside of the limits indicated shall be restored at CONTRACTOR's expense.

Item 25

Allowance, Permit Fees to cover costs to complete and obtain outstanding permits that are required for the specified Work. CONTRACTOR shall submit appropriate documentation to validate the actual cost of completing and obtaining the outstanding permit(s). The amount of the allowance shall be adjusted accordingly by Change Order to recognize the allowable cost incurred by CONTRACTOR at direction of OWNER.

Item 26

Allowance, Owner-Controlled Changes to cover unanticipated costs throughout the course of the project. CONTRACTOR will obtain OWNER's written acceptance before providing equipment, materials or other Work under this allowance. Payments under this allowance will be made based on actual costs, excluding costs of general conditions, handling, unloading, storage, installation, etc., which will be considered to be included within the Contract Price. Payments within the limits of any allowance will exclude overhead and profit and bond and insurance premiums, since those costs will be considered to be included within the Contract Amount. CONTRACTOR shall submit appropriate documentation to validate the actual cost of the item(s). The amount of the allowance shall be adjusted accordingly by Change Order to recognize the allowable cost incurred by CONTRACTOR at direction of OWNER.

Part 2 Products (Not Used)

Part 3 Execution (Not Used)

End of Section

Section 08 3113 Access Hatches

Part 1 General

1.01 Summary

- A. Section Includes:
 - 1. Specification for metal access hatches required as indicated on Drawings.
 - 2. Access hatches shall be of single- or double-cover construction of the size and as shown on Drawings.
- B. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1, apply to Work of this Section.

1.02 Design Requirements

- A. Structural Performance: Provide covers and units capable of withstanding a live load of 300 pounds per square foot with a maximum deflection of 1/150 of the span unless otherwise indicated. Provide H-20 reinforcing for 16,000-pound wheel load where indicated.

1.03 Submittals

- A. Shop Drawings: Submit in accordance with Section 01 3300, Submittal Procedures, covering the items included under this Section. Shop Drawing submittals shall include:
 - 1. Drawings for fabrication and installation of all floor, pit, and sidewalk doors and frames, including details of each frame type, elevations of door design types, anchorage, and accessory items.
 - 2. Product Data: Submit manufacturer's technical data and installation instructions for each type of access hatch assembly, including setting drawings, templates, and instructions and directions for installation of anchorage devices.
 - a. Include complete schedule including types, general locations, sizes, floor, pit, and sidewalk construction details, finishes, hardware information, latching or locking provisions, and other data pertinent to installation.
 - 3. Verification: Obtain specific locations and sizes for access hatches from trades and manufacturers requiring access to equipment and indicate on Submittal Schedule.
 - 4. Special Size and Load Floor, Pit, and Sidewalk Doors: Use where required or requested as indicated on Drawing Schedule.
 - 5. Samples: 3 inches by 5 inches minimum size, of each cover face material showing factory finished color, pattern, and texture.
- B. Submittals Sequence: Submit Schedule, Product Data, and Shop Drawings at earliest possible date, particularly where acceptance must precede fabrication of other work (e.g., concrete work) which is critical in the Project Construction Schedule. Include the product data, samples, Shop Drawings of other work affected by access hatches, and other information essential to the coordinated review of same.

1.04 Quality Assurance

- A. Single Source Responsibility: Provide access hatches, frames, hardware, and related items produced by a single manufacturer capable of showing prior production of floor access hatches assemblies similar to those required.
- B. Manufacturer's Qualifications: Firms regularly engaged in manufacture of equipment, of types and sizes required, and whose products have been in satisfactory use in similar service for not less than 5 years.
- C. Size Variations: Obtain ENGINEER's acceptance of manufacturer's standard size units which may vary slightly from sizes indicated.
- D. Coordination: Provide inserts and anchoring devices which must be built into other Work for installation of access hatches. Coordinate delivery with other Work to avoid delay.

1.05 Project Conditions

- A. Field Measurement: Where possible, field measure openings before fabrication to ensure proper fit of work; show measurements on final Shop Drawings. Coordinate fabrication with construction progress to avoid delay. If necessary, proceed with fabrication without measurements, and coordinate tolerances to ensure proper fit.

1.06 Warranties

- A. Special Warranty: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace components or entire units which fail in materials or workmanship within the specified warranty period. Failures include, but are not necessarily limited to, structural failure including excessive deflection, excessive water leakage, faulty operation of hardware, deterioration of metals, metal finishes and other materials beyond normal weathering.
 - 1. Warranty period for access hatch units shall be 5 years after the date of Substantial Completion.

Part 2 Products

2.01 Manufacturers

- A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:
 - 1. Access hatches:
 - a. The Bilco Company.
 - b. Babcock-Davis Hatchways, Inc.
 - c. Dur-Red Products.

2.02 Materials and Fabrication

- A. Provide each access hatch assembly manufactured as an integral unit, complete with all parts and ready for installation.
- B. Aluminum access hatches and frames: Fabricate units of continuous welded aluminum construction unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure frames to types of floor or walkway shown on Drawings.

- C. Covers: Covers shall be mill finish aluminum 1/4-inch diamond pattern, reinforced on the underside. Covers shall open to 90 degrees and lock automatically in that position.
- D. Channel Frame: Channel frame shall be 1/4-inch extruded aluminum with bituminous coating applied to the exterior of the frame and with full anchor flange and welded anchors for concrete installation around the perimeter.
- E. For watertightness, furnish frame with formed gutters a minimum of 3-inch wide by 3-inch deep, anchors, and a welded 1-1/2-inch drain coupling located on the right front corner of the channel frame or in another corner if shown on Drawings or specified otherwise. Fully weld gutter frame for absolute weathertightness.
- F. Hinges, Pins, Bolts, and Nuts: Provide the covers with heavy 12 gauge, No. 316 stainless steel hinges and stainless steel pins. Hinges shall pivot so the cover does not protrude into channel frame. Hinges shall be through-bolted to the cover with stainless steel lock bolts and shall be through-bolted to the frame with stainless steel bolts and lock nuts.
- G. Springs, Tubes, Shoes, Plates, Enclosures, and Operators: Provide the covers with manufacturer's standard springs, tubes and caps, tube or spring enclosures, operators, support plates, and shoes, which shall allow ease of operation through the entire 90-degree arc of opening, and act as a check in retarding downward motion when being closed. Tube and spring enclosures shall prevent accumulation of moisture, grit, and debris inside the tube and spring assembly.
- H. Hold-Open Arms: Provide the covers with hold-open arms with guides which automatically lock the covers in the open position. Vinyl covered release handles shall be provided and conveniently located for closing.
- I. Interior Snap Lock and Lock Strike: Provide a stainless steel snap lock and lock strike with a stainless steel fixed turn handle and appropriate stainless steel bolts mounted on the underside of the covers.
- J. Exterior Lift Handle: Provide the covers with a stainless steel lift handle designed to be flush with walking surface when not in use.
- K. Locking and Latching Devices: Provide the covers with the following locking or latching device and related hinged lid, flush gasketed removable screw plug, or threaded cover plug as noted:
 - 1. Interior access hatches shall have removable exterior latch handle with plug: Provide removable exterior stainless steel latch handle and latch release protected by a flush gasketed removable screw plug.
 - 2. Exterior access hatches shall have cylinder lock: Provide a brass cylinder lock with keyway protected by a threaded cover plug. Equip lock with cylinder and keys as specified.
- L. Hardware Finish: Except where noted otherwise, all hardware shall be zinc plated and chromate sealed.

2.03 Accessories

- A. Provide ladder safety posts at fixed ladders and manhole rungs located below access hatches. Safety posts shall be designed with telescoping section that locks automatically when fully extended. Up and down movement shall be controlled by a stainless steel spring balancing mechanism. Unit shall be completely assembled with fasteners for securing to ladder rungs in accordance with manufacturer's instructions. Finish to match ladder served.

1. Safety post shall be Bilco Ladder Up or ENGINEER-approved equal.
- B. Provide fall prevention device below floor doors. Fall prevention device shall be permanently installed fall-through prevention system that is easily retractable for full access and allows visibility for inspection. The product must be FRP or stainless steel Type 316. Grating shall have a live load capacity of 100 pounds per square foot.

Part 3 Execution

3.01 Installation

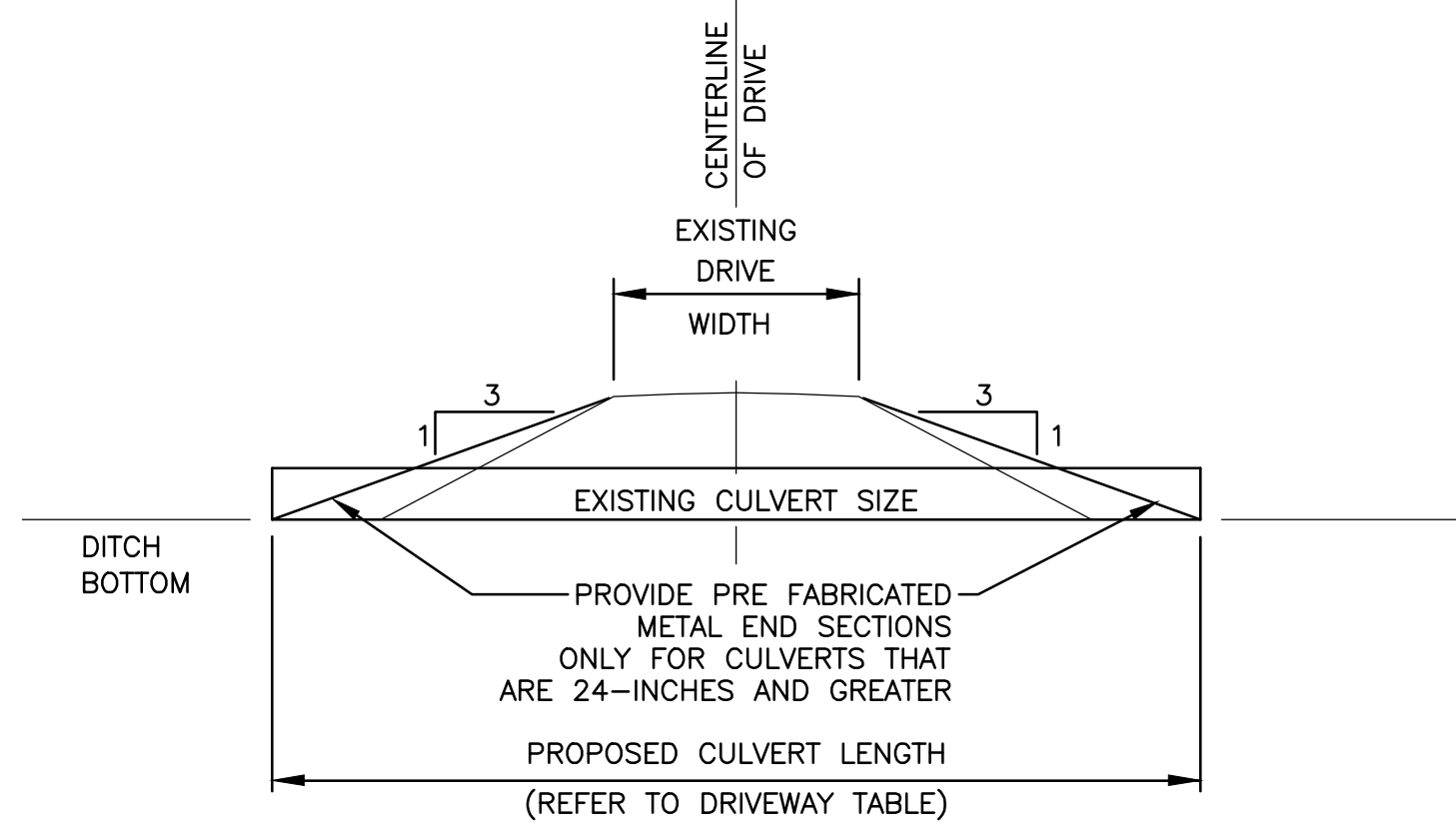
- A. Comply with manufacturer's instructions for installation of floor, pit, and sidewalk doors.
- B. Preparatory Work: For normal flush installation, set frames accurately in position, recessed below the finished grade or floor level with cover face panels plumb or level in relationship to adjacent finish surfaces. If unit is watertight type, unit should be set with slight pitch in direction of drain coupling. All four corners of the frame shall be in the same plane; verify that leaves are seated properly on frame all around. Securely attach units to supports.
- C. Method: For flush installation, pour concrete to top of frame. All aluminum surfaces in contact with concrete shall be coated with a bituminous coating prior to installation.
- D. Coordinate installation with Work of other trades.

3.02 Adjust and Clean

- A. Adjust hardware and covers after installation for proper operation.
- B. Remove and replace covers or frames which are warped, bowed, or otherwise damaged.

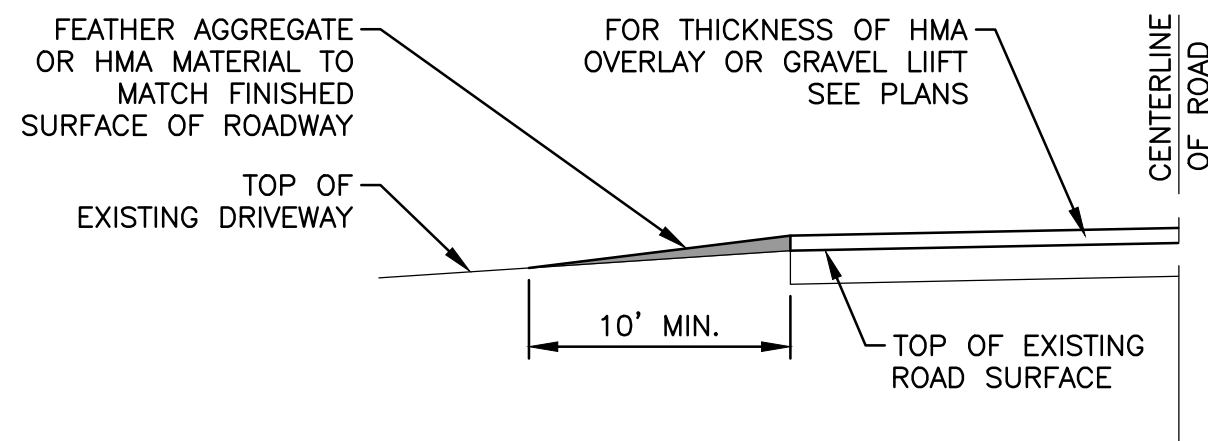
End of Section

PROJECT: MANAGER: JESSA B. KAYSON, PE
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CULVERT REPLACEMENT DETAIL - DRIVEWAYS
NOT TO SCALE

NOTE: DRIVEWAY CULVERTS SHALL BE PLACED AT FINAL DITCH GRADES. DITCH CLEANING IN AREAS WHERE DITCH IS DISTURBED BY CONSTRUCTION OR DESIGNATED ON THE PLANS, SHALL BE CLEANED TO PROVIDE POSITIVE DRAINAGE. CONTRACTOR SHALL NOTIFY ENGINEER OF PROPOSED METHOD TO RESTORE DITCH.



DRIVEWAY FEATHERING DETAIL
NOT TO SCALE

RESIDENTIAL\FIELD\ACCESSWAY DRIVES:

ASPHALT:
SURFACE COURSE: 2" HMA 13A AT 220 LBS/SY
BASE COURSE: 2" HMA MIX 13A AT 220 LBS/SY
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7, TOP 12" SHALL BE MDOT 22A COMPACTED LIMESTONE

CONCRETE:
SURFACE COURSE: 6" CONCRETE P-NC
BASE COURSE: 8" A5 COMPACTED SAND PER NOTE 7

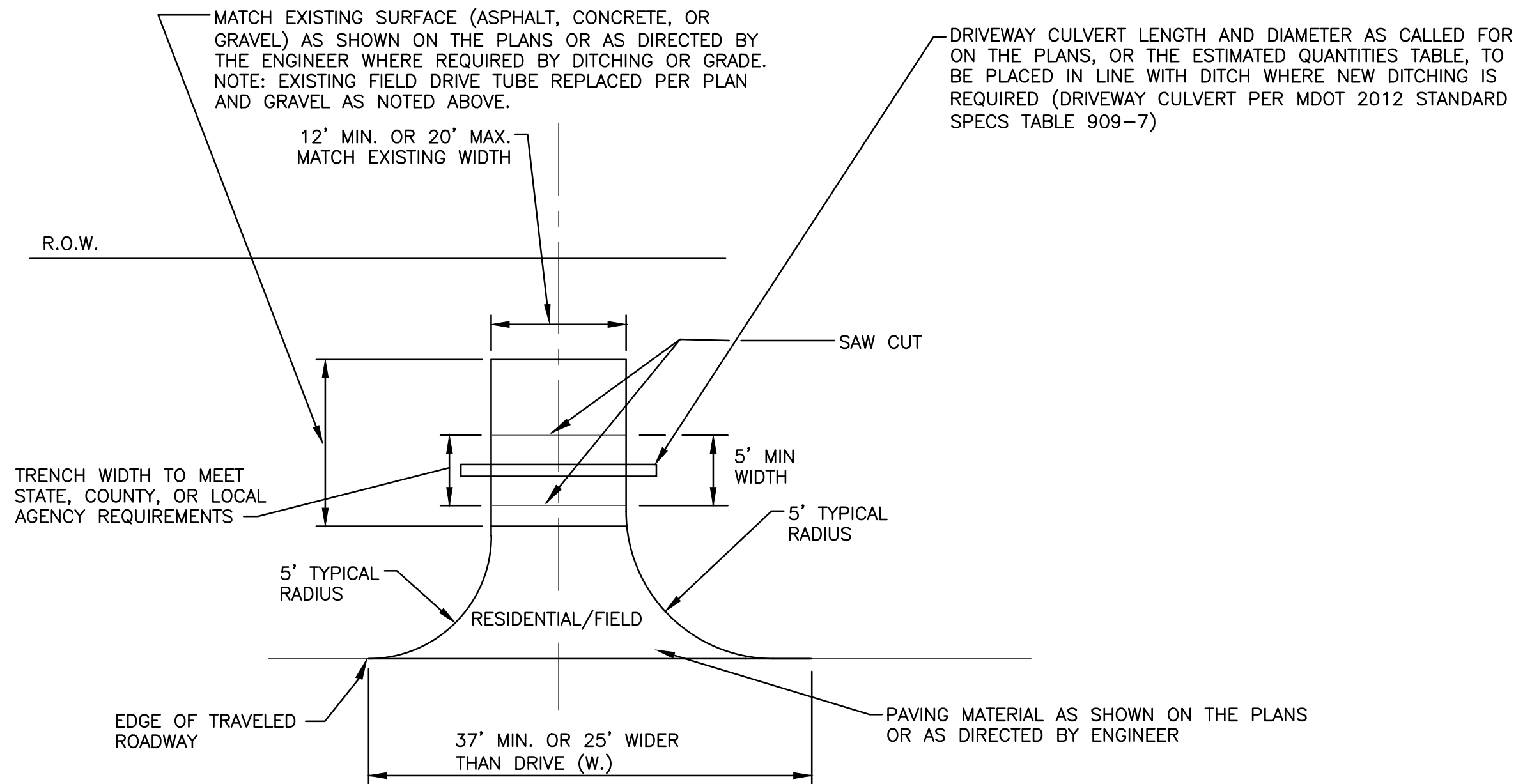
GRAVEL:
SURFACE COURSE: 8" A3 COMPACTED LIMESTONE
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7

COMMERCIAL DRIVES:

ASPHALT:
SURFACE COURSE: 2" HMA 13A AT 220 LBS/SY
BASE COURSE: 4" HMA 13A 2 LIFTS AT 440 LBS/SY
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7, TOP 12" SHALL BE MDOT 22A COMPACTED LIMESTONE

CONCRETE:
SURFACE COURSE: 8" CONCRETE P-NC
BASE COURSE: 12" A5 COMPACTED SAND PER NOTE 7

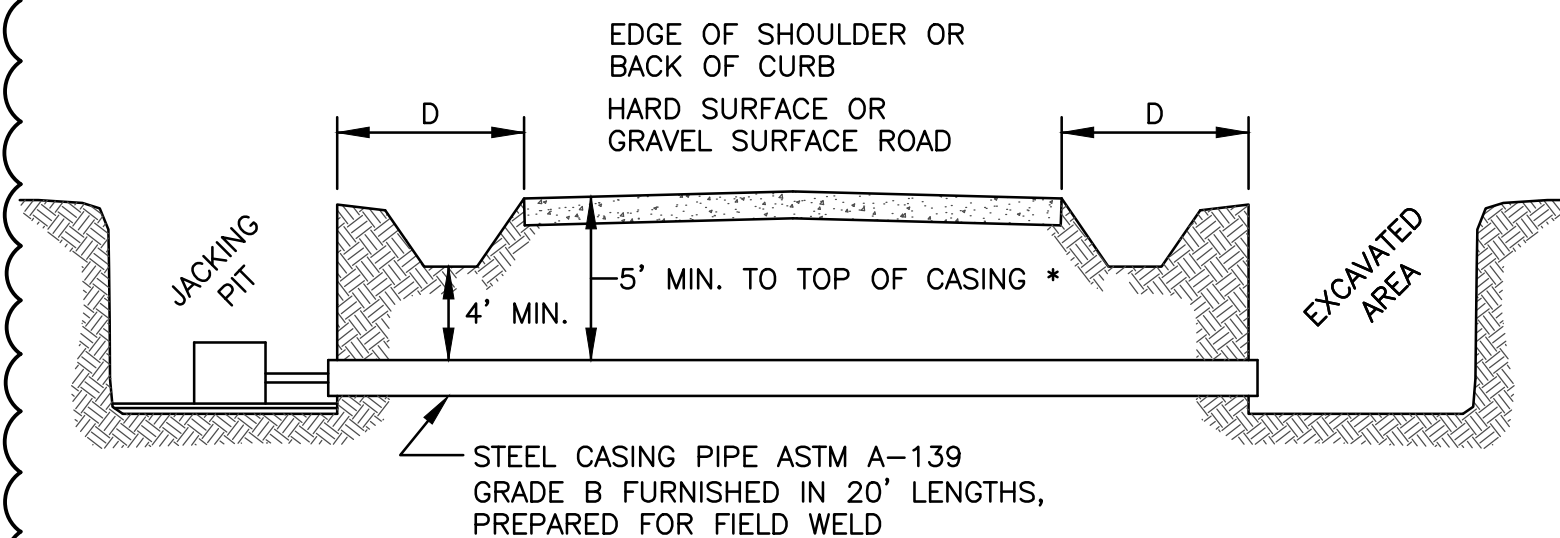
GRAVEL:
SURFACE COURSE: 12" A3 COMPACTED LIMESTONE
SUBGRADE: A5 COMPACTED SAND BACKFILL PER NOTE 7



SD 2.2 CULVERT AND DRIVEWAY REPLACEMENT DETAIL
NOT TO SCALE

NOTES:

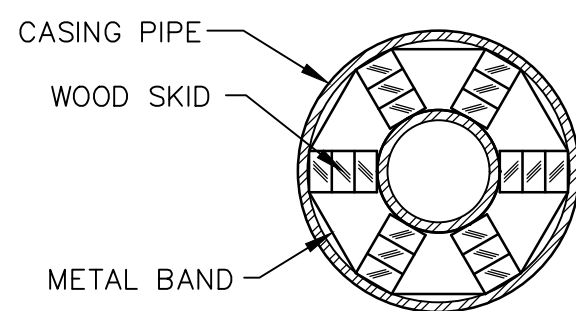
1. TYPE OF PAVING MATERIAL (ASPHALT, CONCRETE, OR GRAVEL) TO BE USED SHALL MATCH EXISTING ON THE PLANS, UNLESS DIRECTED OTHERWISE BY ENGINEER.
2. CONTRACTOR SHALL REMOVE CONCRETE DRIVE TO THE NEXT JOINT IF JOINT IS WITHIN 5'-FT OF A PROPOSED SAW CUT.
3. REPLACE EXISTING DRIVE AS INDICATED ON THE PLANS OR AS DIRECTED BY ENGINEER.
4. CONTRACTOR SHALL NEATLY SAW CUT ALL EXISTING PAVEMENT PRIOR TO PLACING NEW APPROACH ADJACENT TO EXISTING PAVEMENT.
5. IF SIDEWALK REMOVAL IS NECESSARY FOR PIPELINE CONSTRUCTION, THE SIDEWALK SHALL BE REPLACED TO THE SAME WIDTH AND SAME LOCATION AS EXISTING. THE THICKNESS SHALL MATCH EXISTING OR AS CALLED FOR IN THE SPECIFICATIONS, WHICHEVER IS GREATER.
6. THE BANKS OF ALL DRIVEWAYS AND CROSS ROAD CULVERTS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH MULCH BLANKETS FOR THE WIDTH OF THE DISTURBED TRENCH, FROM THE TOP OF THE BANK TO THE BOTTOM AND SIDES OF THE ROADSIDE DITCH. THIS MULCH BLANKET SHALL ALSO EXTEND A MINIMUM OF 10'-FT DOWNSTREAM ALONG THE ROADSIDE DITCH FROM THE DOWNSTREAM END OF THE CULVERT. SEE SOIL EROSION DETAIL 6 FOR ADDITIONAL INFORMATION.
7. MDOT CLASS II AND IIA SAND BACKFILL SHALL BE COMPACTED TO 95% STANDARD PROCTOR, MAXIMUM 12-IN LIFTS
8. CURB AND GUTTER SHALL BE REPLACED IF IT EXISTS. CURB AND GUTTER SHALL MATCH THE SAME TYPE AS EXISTING.



SIZE INCHES	MIN. CASING DIA. O.D. INCHES	MIN. WALL THICKNESS INCHES
6" OR SMALLER	12.75	0.375
8"-12"	20.00	0.375
16"	24.00	0.375
18"-24"	30.00	0.406
36"	54.00	0.625
48"	6000	0.625
60"	72.00	0.750
66"	78.00	0.750

*"D" DIMENSION FROM EDGE OF SHOULDER OR BACK OF CURB TO FACE OF BORE PIT (10' MIN FROM EDGE OF PAVEMENT OF SHOULDERED ROADS)

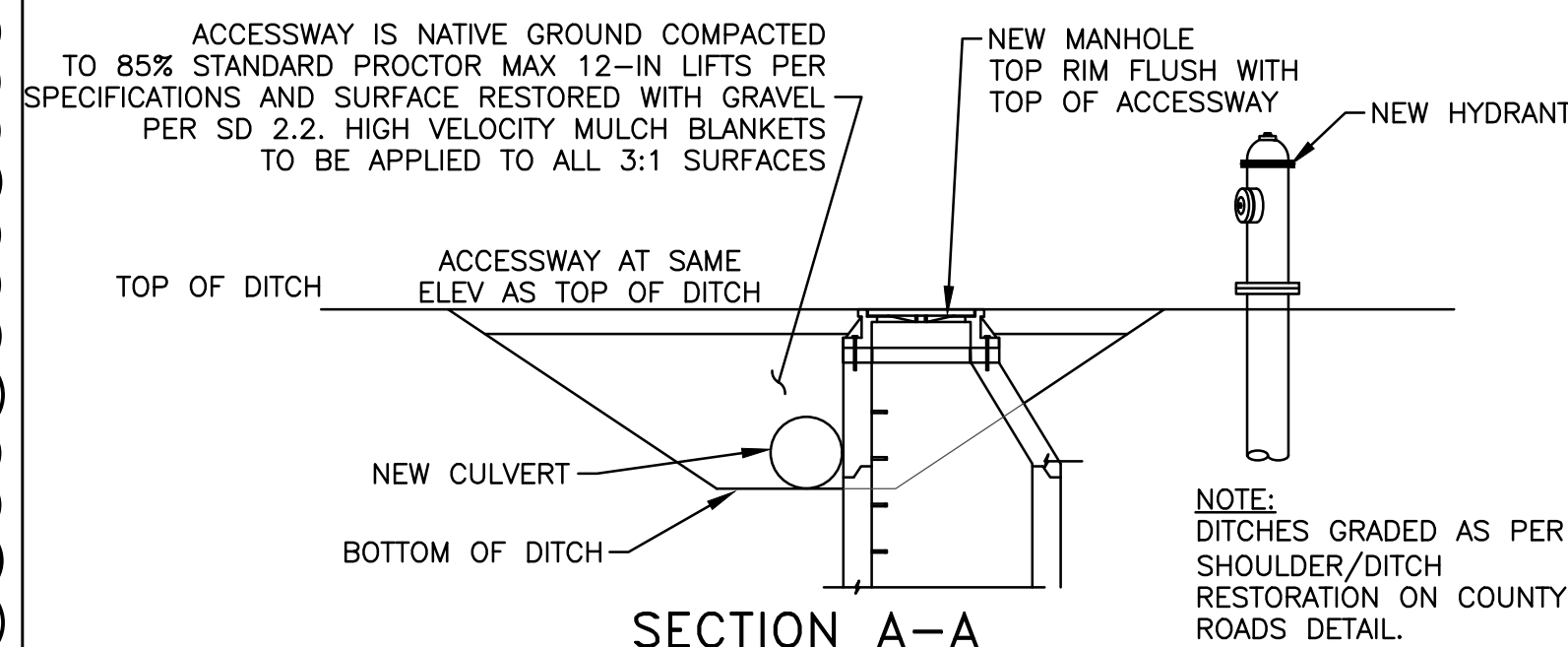
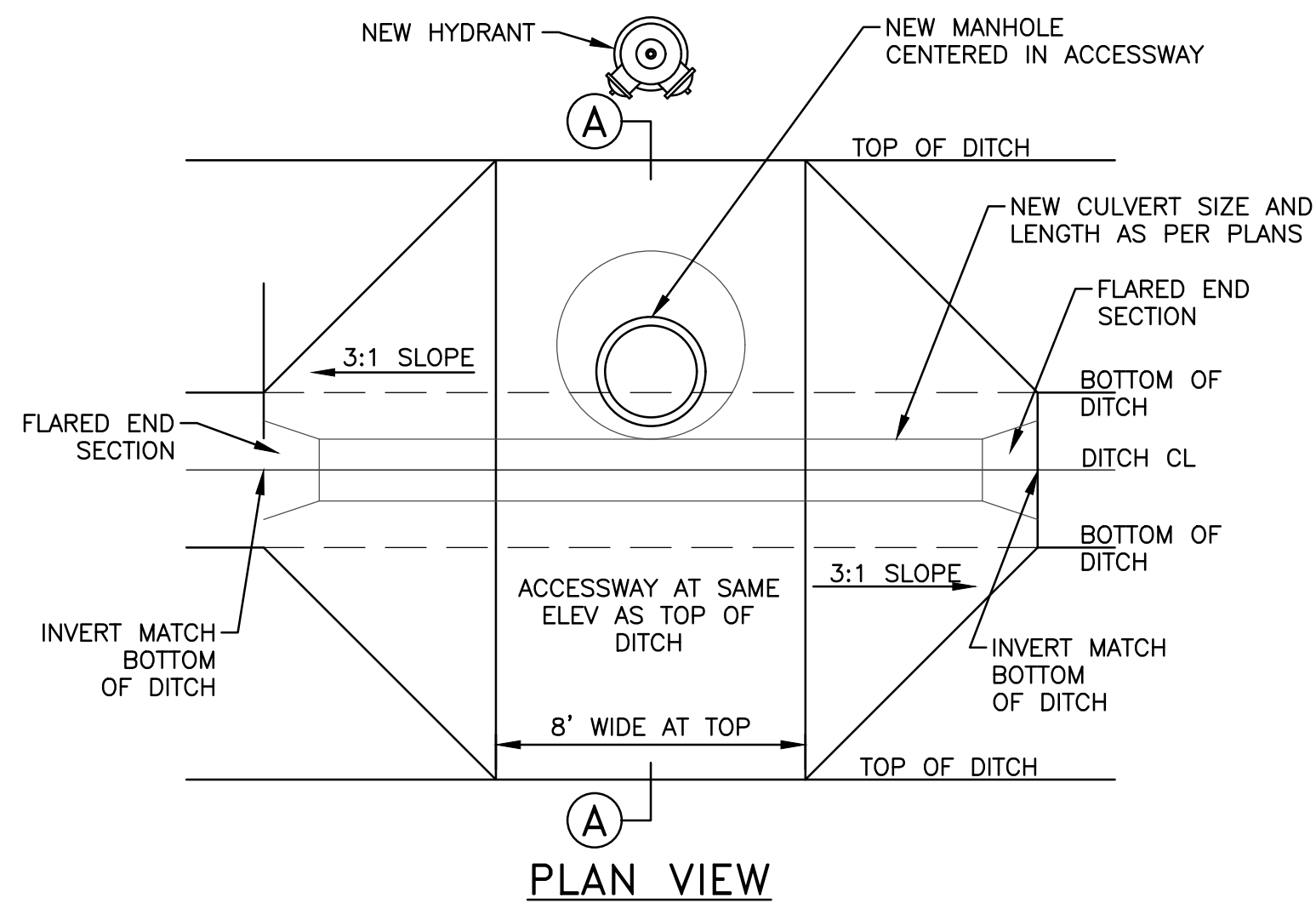
1. FOR ROADS WITH SHOULDER/DITCH - 10'
2. FOR ROADS WITH CURB & GUTTER - 5'



SD 6.2 BORE & JACK CONSTRUCTION
NOT TO SCALE

NOTES:

1. IN THE EVENT THAT THE BORING AND JACKING OPERATION IS WITHIN THE COUNTY ROAD RIGHT-OF-WAY UNDER THE JURISDICTION OF THE ROAD COMMISSION WILL REQUIRE ROAD COMMISSION APPROVAL AND THE COMPLETION OF THEIR PERMIT FORM.
2. THE CONTRACTOR SHALL NAME THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS AS AN ADDITIONAL NAMED INSURED FOR CONTINGENT LIABILITY FOR THE PROPOSED WORK.
3. THE CONTRACTOR SHALL ABIDE BY ALL SAFETY PRECAUTIONS INCLUDING THE LATEST EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS REQUIRED BY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.
4. THE CONTRACTOR SHALL PROTECT AND RESTORE ALL PROPERTY.
5. THE CONTRACTOR SHALL ABIDE BY ALL CURRENT REQUIREMENTS OF THE AGENCY HAVING AUTHORITY/JURISDICTION OVER THE ROADWAYS.
6. THE SHEETING OF THE FRONT FACE OF THE BORE PIT(S) WILL BE REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.
7. THE AUGER MUST ALWAYS PROCEED THE CASING PIPE HEAD.
8. THE CONTRACTOR SHALL NOTIFY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS A MINIMUM OF 72 HOURS PRIOR TO BEGINNING WORK, OR AS REQUIRED BY THE PERMIT ISSUED BY THE AGENCY.
9. TREATED WOOD SKIDS AND STAINLESS STEEL METAL BANDS MINIMUM 5/8" WIDE SHALL BE INSTALLED FOR ALL BORES EVERY FOUR FEET ALONG THE ENTIRE LENGTH TO KEEP THE CARRIER PIPE ON LINE AND GRADE. THE MAXIMUM DISTANCE FROM THE I.D. OF THE CASING PIPE TO THE OUTSIDE EDGE OF THE SKID SHALL BE 1". THE CONTRACTOR SHALL PROTECT ALL CARRIER PIPES TO PREVENT DAMAGE TO THE PIPES FINISHED SURFACE.
10. THE ENDS OF THE CASING PIPE SHALL BE BULKHEADED WITH AN 8" THICK WATER TIGHT MASONRY BULKHEAD & GROUT.
11. THE CONTRACTOR MUST FOLLOW ANY ADDITIONAL REQUIREMENTS THAT MAY COME FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.
12. PEA STONE SHALL BE PLACED IN BETWEEN THE PIPE AND THE CASING PIPE THE ENTIRE LENGTH OF THE BORE.



SD 3.4 MANHOLE OR HYDRANT ACCESSWAY
NOT TO SCALE

555 S. Saginaw Street, Suite 201
Flint, MI 48502
www.wadetrtrim.com



CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
DETAIL SHEET 4

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

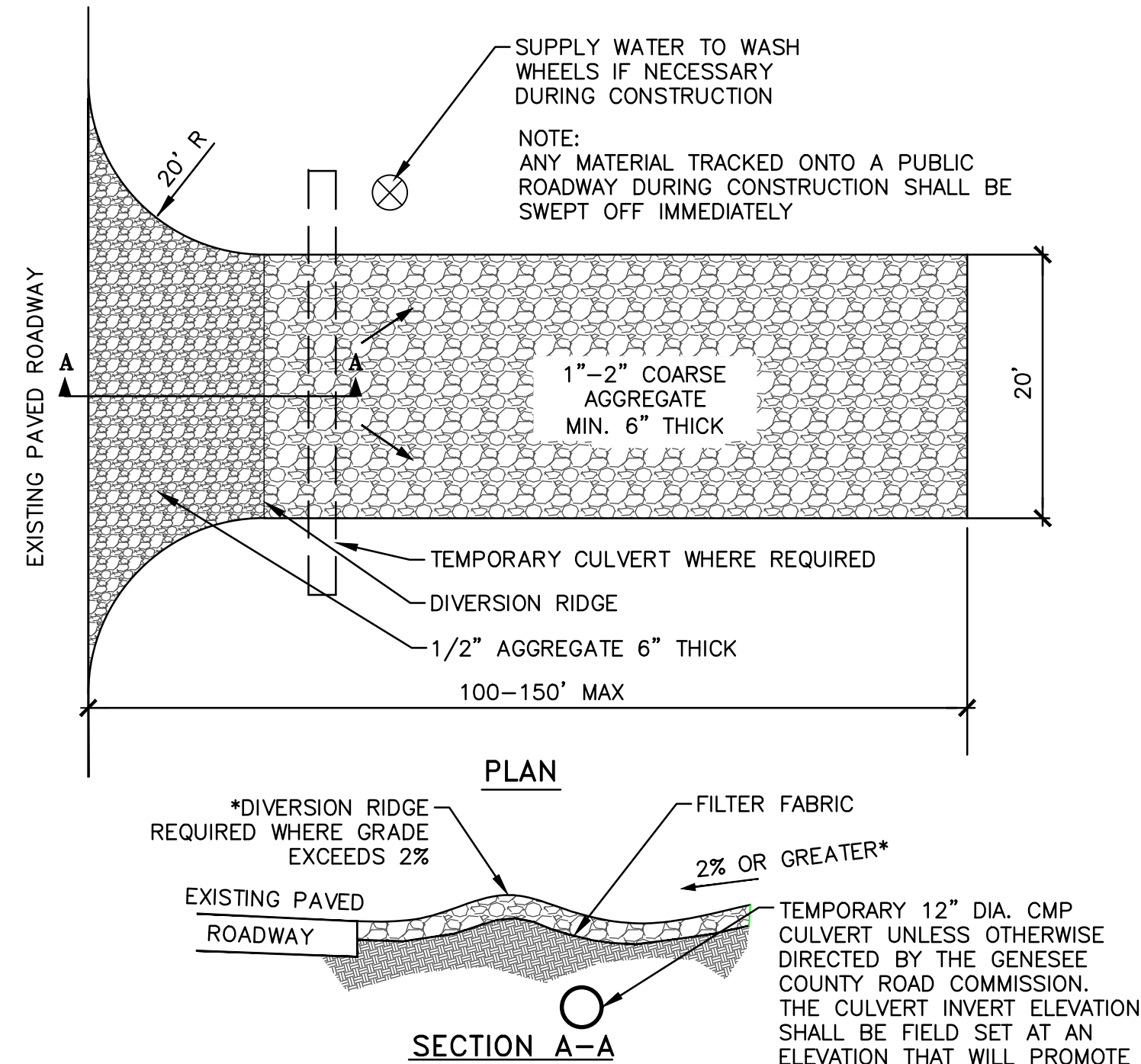
APPLICATIONS

1. STREAM CROSSING THAT NEEDS A DRY CONSTRUCTION SITE.
1. EXCAVATE BYPASS CHANNEL BEFORE PIPE LINE CONSTRUCTION REACHES POINT A.
2. INSTALL STREAM SEDIMENT BASIN.
3. REMOVE DOWNSTREAM PLUG AND STABILIZE CHANNEL DOWNSTREAM OF SEDIMENT BASIN WITH GEOTEXTILE FABRIC OR MDOT RIPRAP TO PREVENT EROSION. ALTERNATIVE IS TO LOCATE SEDIMENT BASIN ON DOWNSTREAM CHANNEL.
4. REMOVE UPSTREAM PLUG.
5. INSTALL UPSTREAM CONSTRUCTION DAM.

DESIGN (CONT)

6. INSTALL DOWN STREAM CONSTRUCTION DAM.
7. INSTALL PIPELINE FROM POINT A TO POINT B AND STABILIZE DISTURBED STREAM CHANNEL AND BANKS WITH MULCH BLANKET AND/OR RIPRAP.
8. REMOVE DOWN STREAM CONSTRUCTION DAM.
9. REMOVE UP STREAM CONSTRUCTION DAM.
10. INSTALL EARTHEN PLUG AT UPSTREAM AND DOWN STREAM ENDS OF BYPASS CHANNEL STABILIZE WITH RIPRAP AND/OR MULCH BLANKET.
11. BACKFILL BYPASS CHANNEL.
12. STABILIZE AND RESTORE ALL DISTURBED AREAS.

TEMPORARY STREAM CHANNEL CHANGE [45]
NOT TO SCALE



APPLICATIONS

1. ASSISTS IN REMOVING SOIL FROM THE TIRES OF CONSTRUCTION EQUIPMENT/VEHICLES WHEN EXITING THE CONSTRUCTION SITE. THIS REDUCES TRACKING EXCESSIVE SEDIMENT/SOIL ONTO THE ADJACENT ROAD.

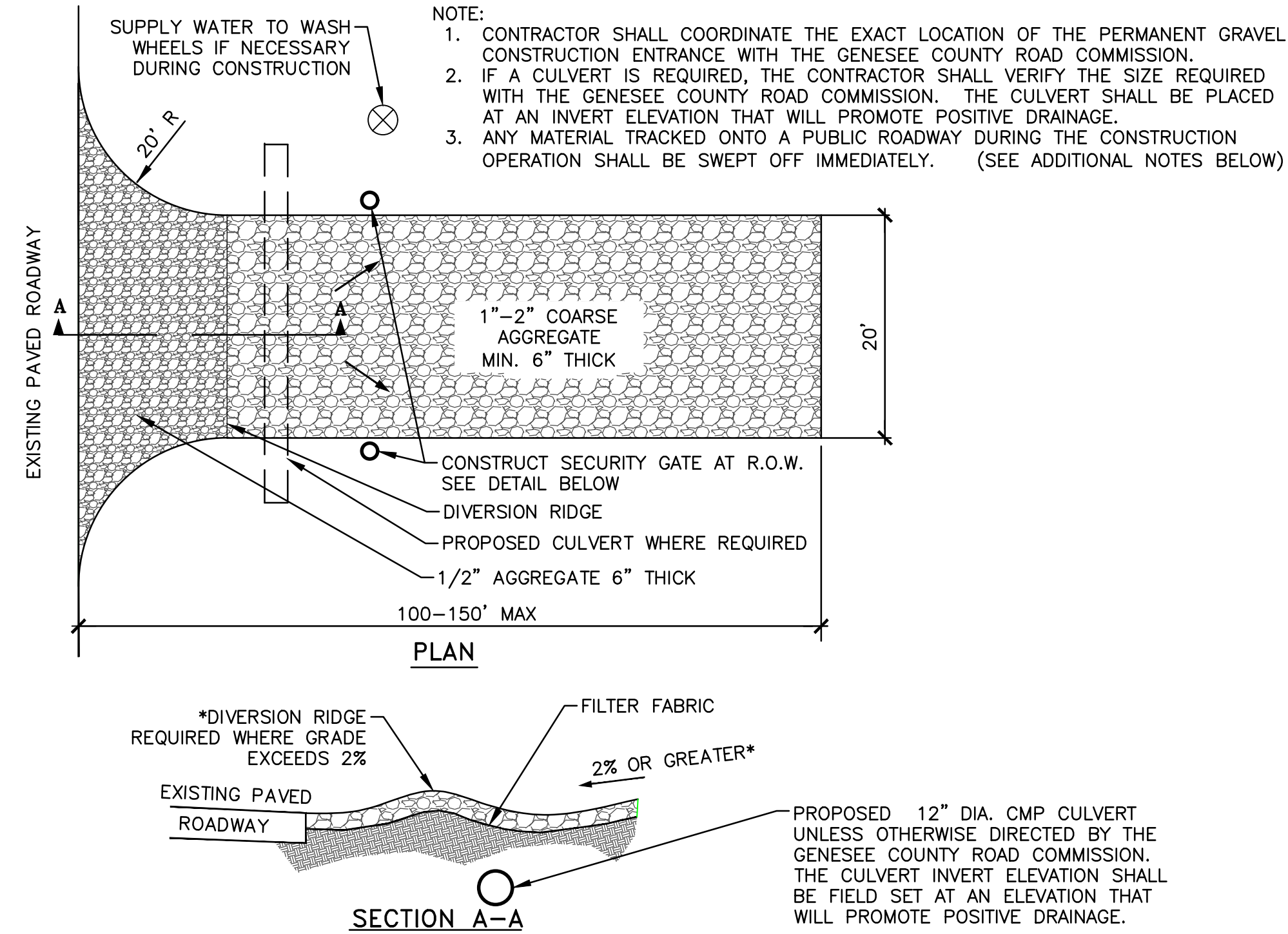
DESIGN

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP

DESIGN (CONT)

- DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ON PUBLIC RIGHTS-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE [60] T
NOT TO SCALE



APPLICATIONS

1. ASSISTS IN REMOVING SOIL FROM THE TIRES OF CONSTRUCTION EQUIPMENT/VEHICLES WHEN EXITING THE CONSTRUCTION SITE. THIS REDUCES TRACKING EXCESSIVE SEDIMENT/SOIL ONTO THE ADJACENT ROAD.

DESIGN

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP

DESIGN (CONT)

- DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ON PUBLIC RIGHTS-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

PERMANENT GRAVEL CONSTRUCTION ENTRANCE [60] P
NOT TO SCALE

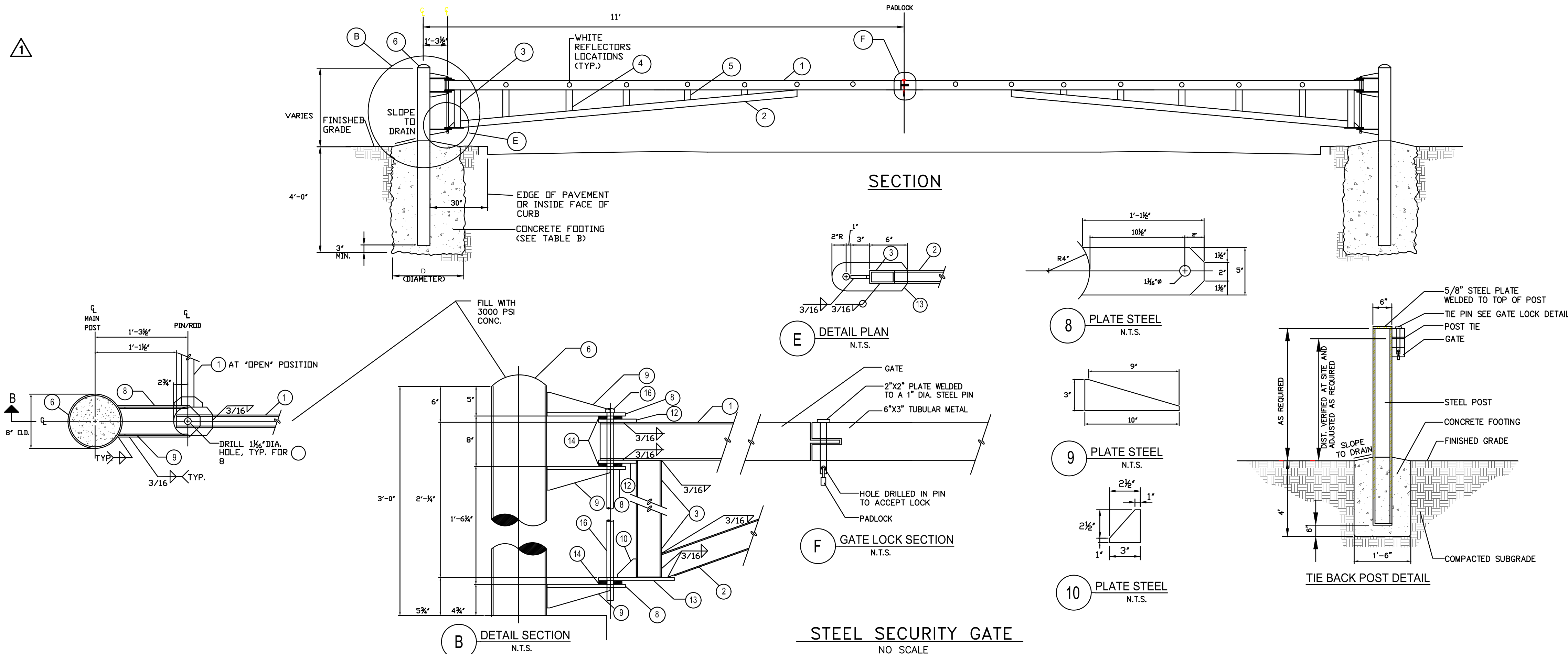


TABLE A			
DETAIL MARK	QTY.	DESCRIPTION	DIMENSIONS
1	2	REC. STL. TUBE	TS 6 X 2 X 1/4 , A500
2	2	"	TS 4 X 2 X 3/16 , A500
3	1	"	"
4	1	"	"
5	1	"	"
6	2	STEEL TUBE	8" O.D., STD., A53
7	2	"	6" O.D., STD., A36
8	6	PLATE STEEL	3/4" X 5" X 1'-1", A36
9	6	"	1/2" X 3" X 10", A36
10	6	"	1/2" X 3" X 3-1/2", A36
11	2	"	1/2" X 3" X 3"
12	4	"	1/2" X 4" X 6", A36
13	2	"	3/4" X 4" X 12", A36
14	2	BRG. PAD	1/2" X 4"
15	1	PLATE STEEL	1/2" X 6" X 6"
16	2	STEEL PIN ROD	1" X 3'-0", A36

NOTE: TABLE A SHOWS MATERIALS FOR ONE GATE ONLY. QUANTITIES WILL NEED TO BE DOUBLED WHERE DOUBLE GATES ARE USED.

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
DETAIL SHEET 14

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

18

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www.wadetrims.com

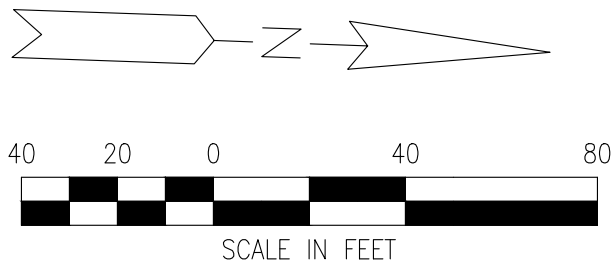
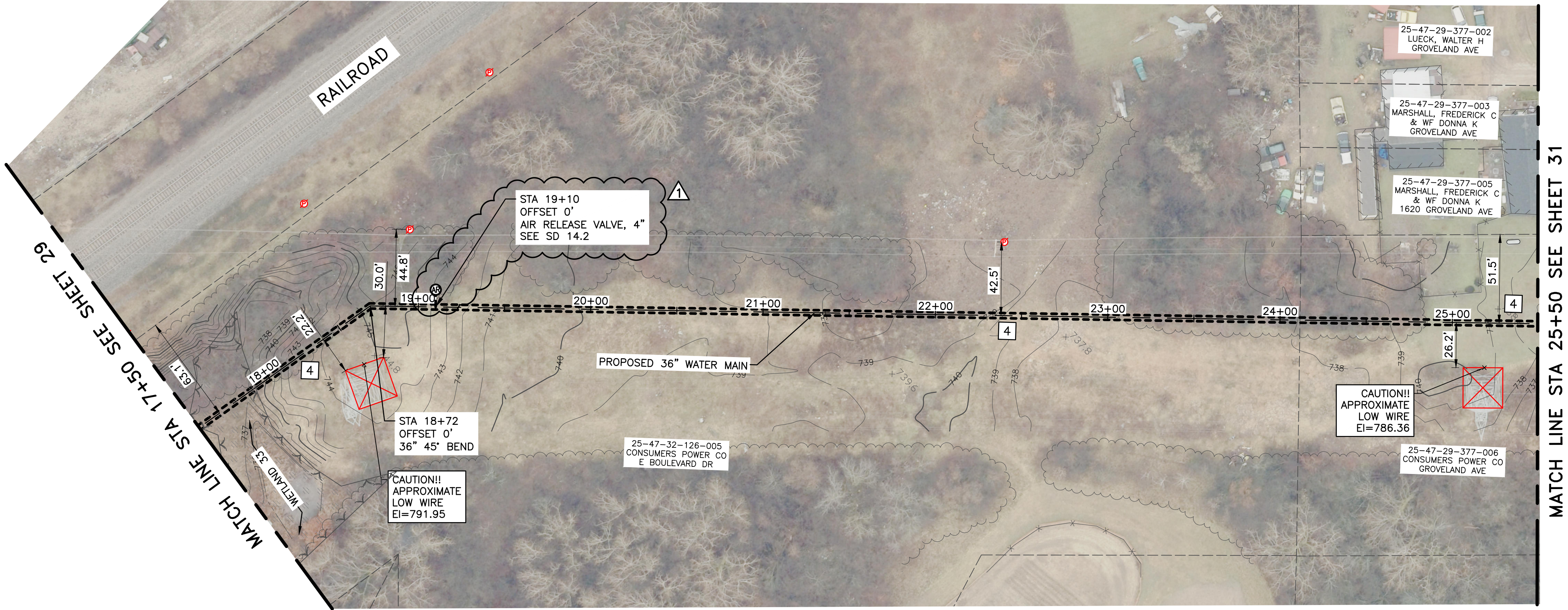
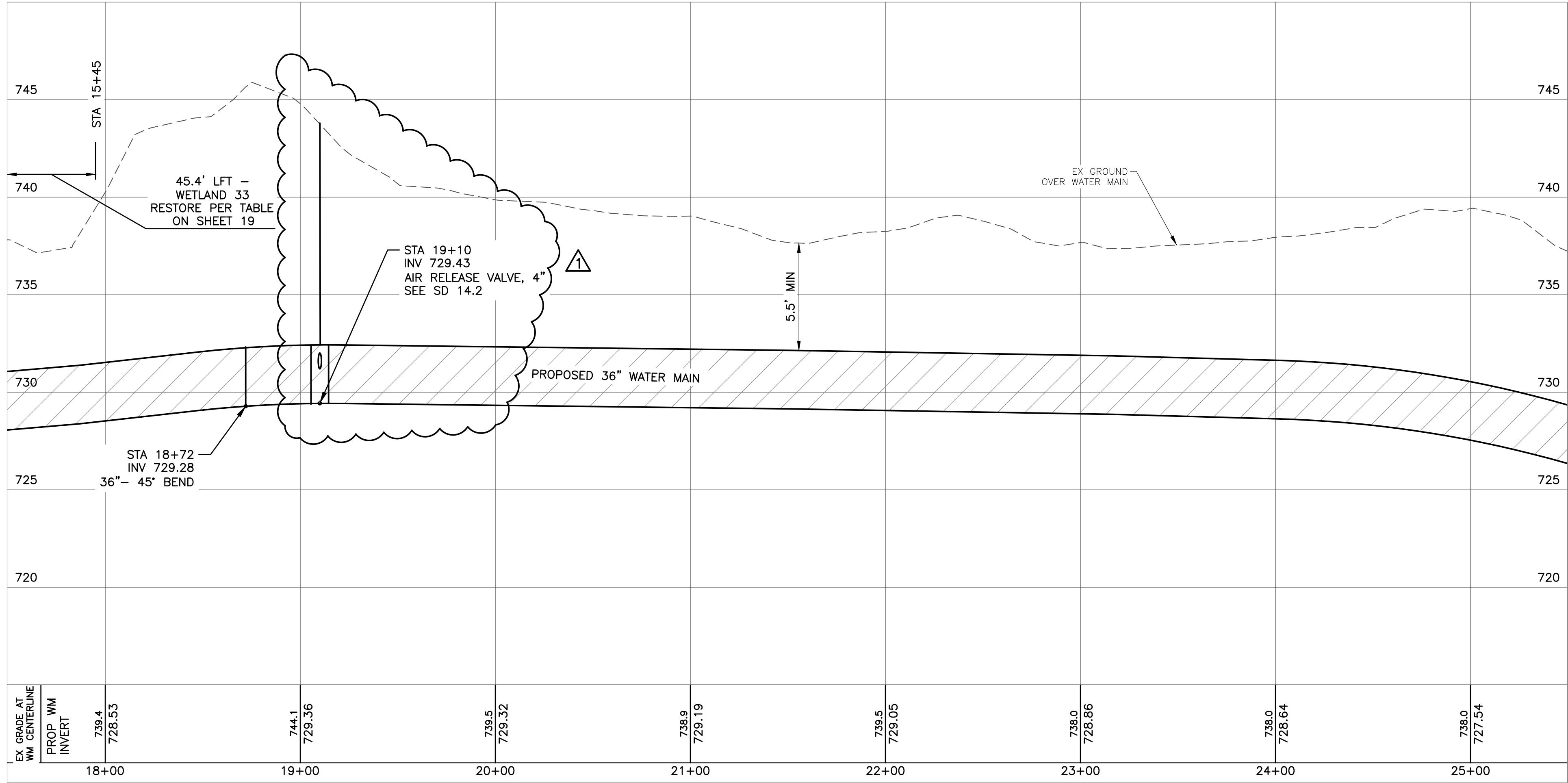


REV#	DATE	DESCRIPTION
1	3/6/20	Revised per GDC-WWS Comments

PROJECT: MANAGER-Jesse R. Kervick, PE FIELD BOOK INFORMATION: C:\PW\WORK\20048736\CUP-FLTS-PLAN-PROF-1.DWG - PP-4 - PLOTTED 3/6/2020 3:14 PM BY: RUGGLES, TIMOTHY



Know what's below.
Call before you dig.



CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 4

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

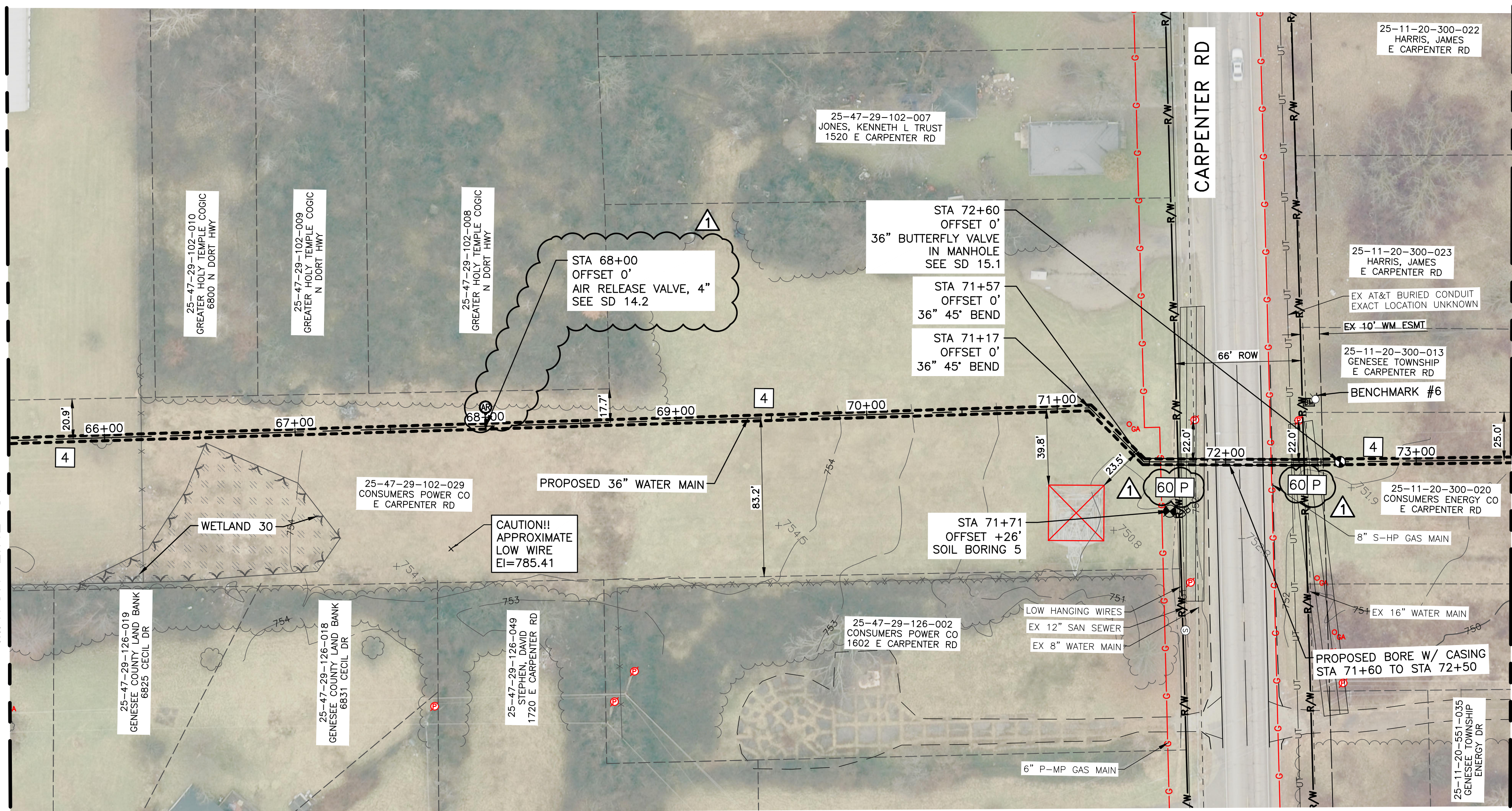
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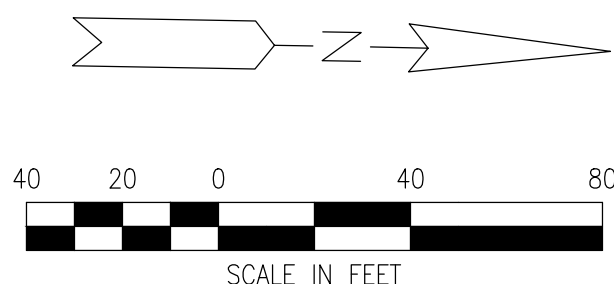


REV#	DATE	DESCRIPTION	TLH	BY
1	3/6/20	REVISED PER ADDENDUM 1		

MATCH LINE STA 65+50 SEE SHEET 35



1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
2. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL BE REQUIRED TO EXPOSE ALL EXISTING UTILITIES THAT CROSS OR ARE WITHIN THE INFLUENCE OF THE PROPOSED CONSTRUCTION, SO THE ENGINEER MAY DETERMINE IF A CONFLICT EXISTS BETWEEN AN EXISTING UTILITY AND THE PROPOSED WORK. ALL LABOR REQUIRED TO UNCOVER THE EXISTING UTILITY SHALL BE CONSIDERED INCLUSIVE TO THE UNIT PRICE OF THE WATER MAIN. THE CONTRACTOR SHALL VERIFY THE UTILITY SIZE, MATERIAL, DEPTH AND HORIZONTAL LOCATION OF ALL UTILITIES IN SUFFICIENT TIME SUCH THAT ANY CONFLICTS CAN BE RESOLVED BEFORE WORK IS STARTED.
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BENCHMARK #6
NORTH FLANGE BOLT ON HYDRANT
IN THE MIDDLE OF RIGHT OF WAY
ON THE NORTH SIDE OF
CARPENTER ROAD
ELEV=753.17

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01

SHEET

36

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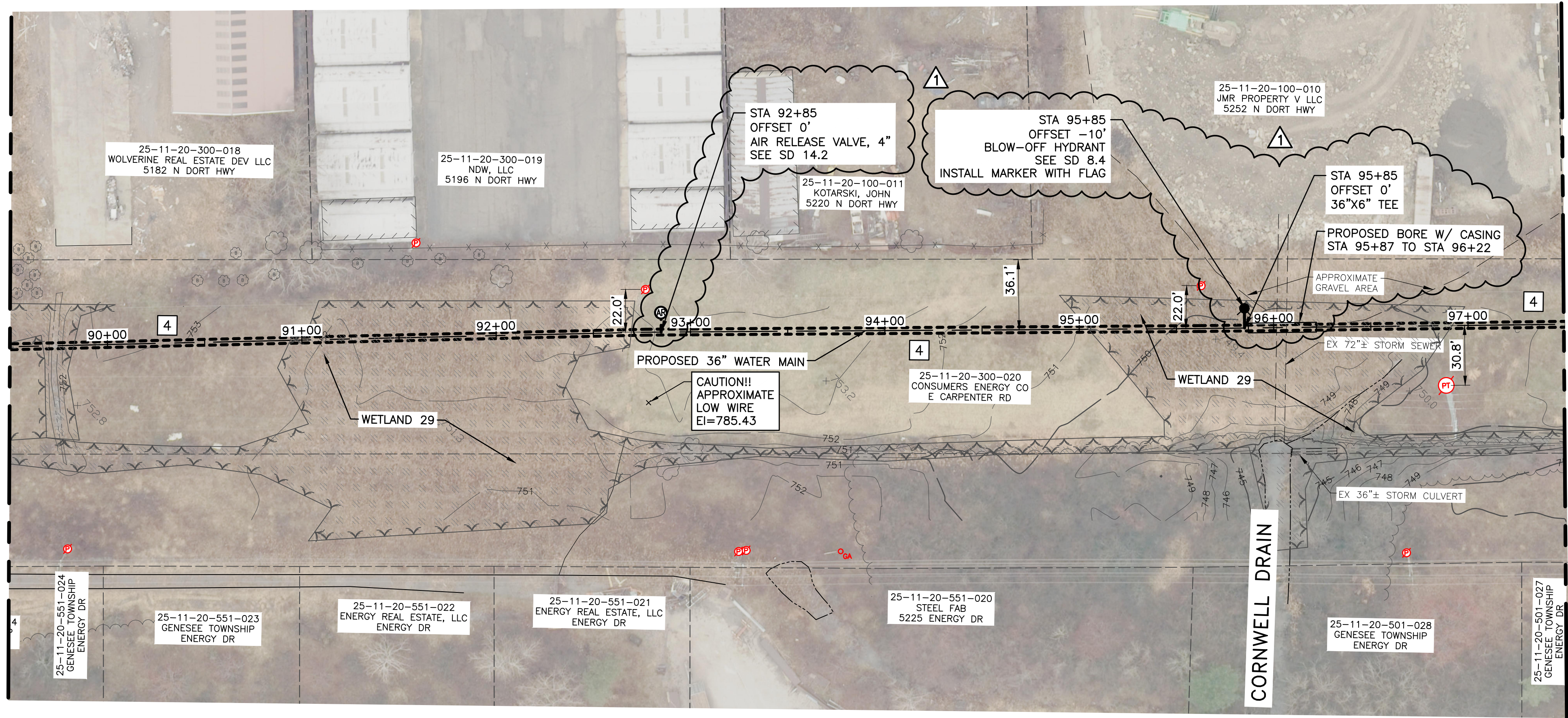
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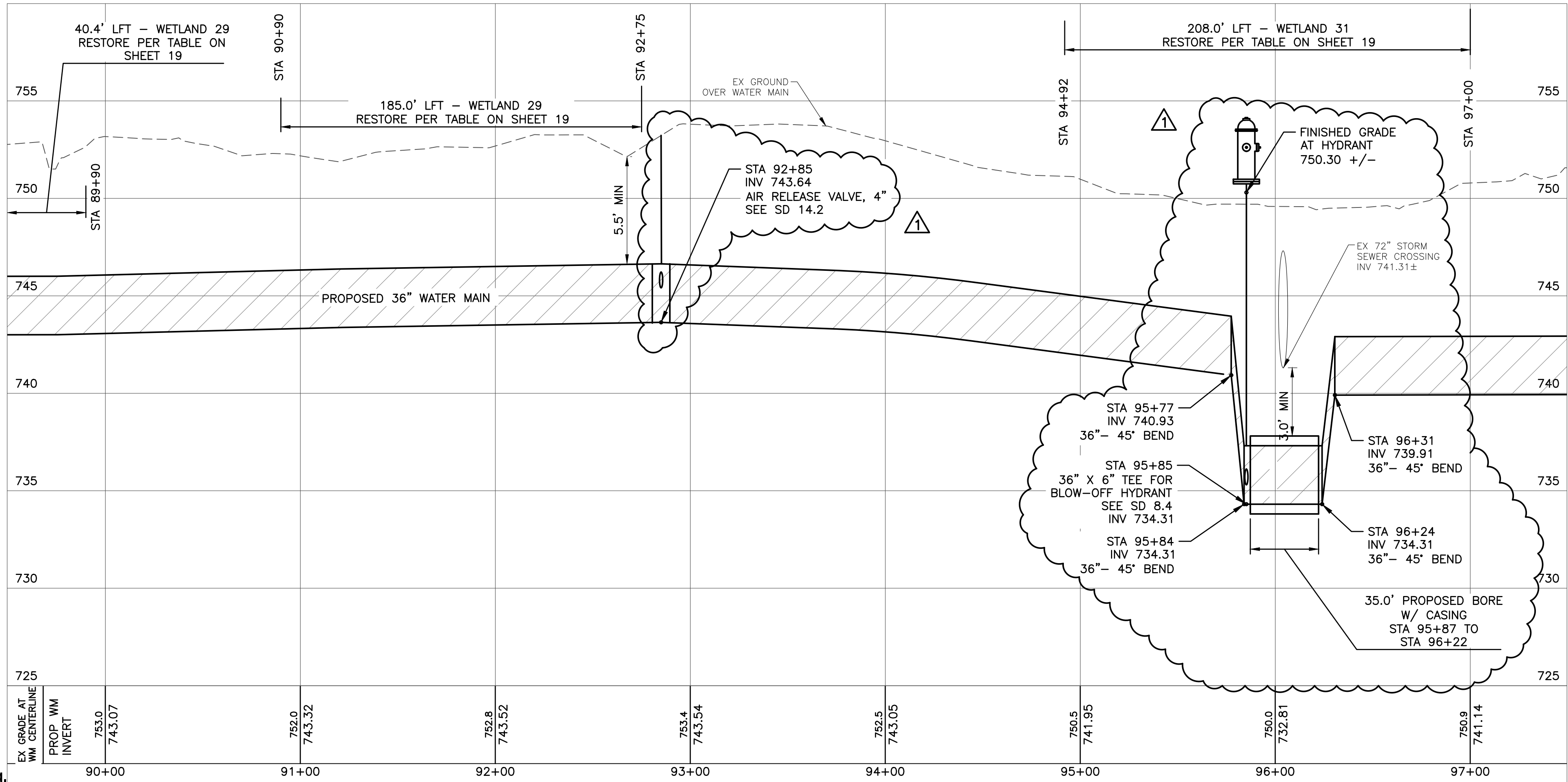


Know what's below.
Call before you dig.

MATCH LINE STA 89+50 SEE SHEET 38



MATCH LINE STA 97+50 SEE SHEET 40



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 13

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

39



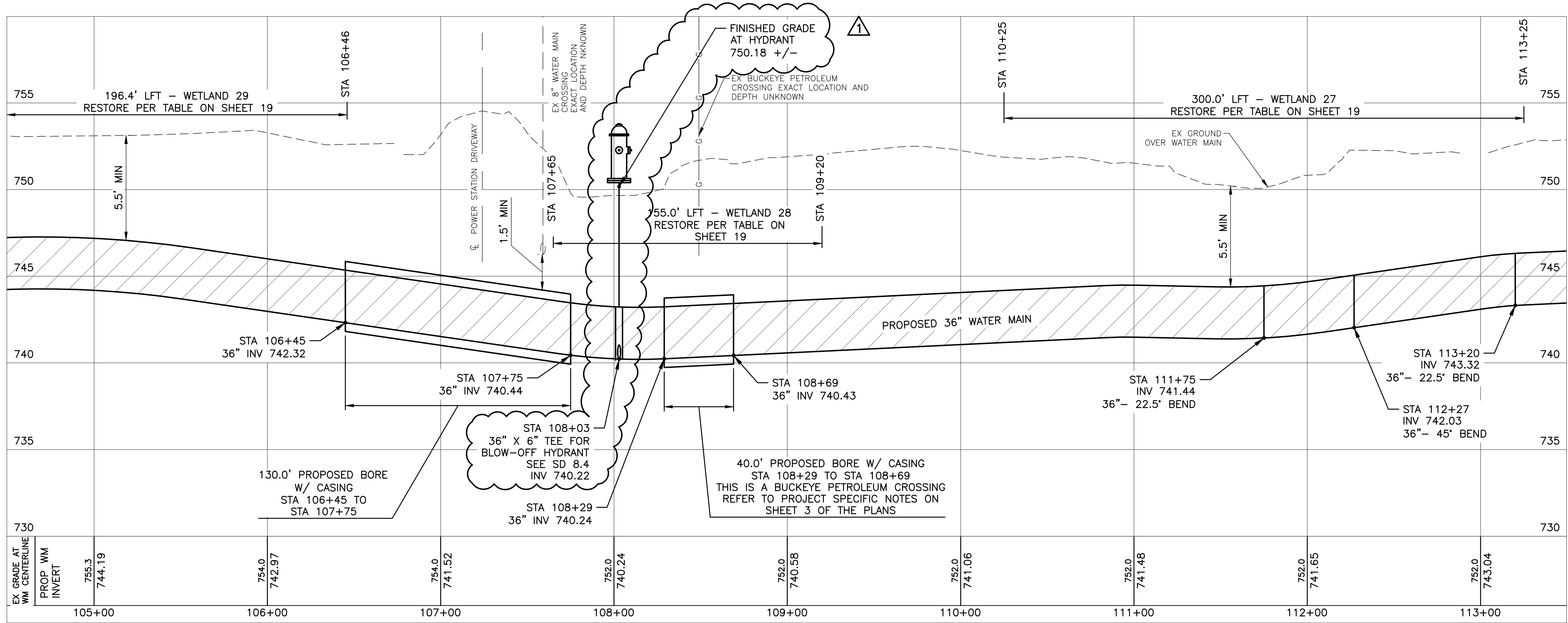
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REV#	DATE	DESCRIPTION	TLH	BY
1	3/6/20	REVISED PER ADDENDUM 1		

PROJECT: MANAGER: JESSA R. KAYNES, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\00848736\01P-PLANS-PLAN-PROF-2.DWG - PP-15 - PLOTTED: 3/6/2020 4:00 PM BY: RUGGLES, TIMOTHY



Know what's below.
Call before you dig.



NOTES

1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 15

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

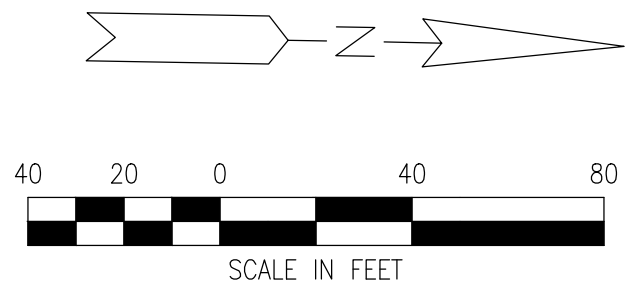
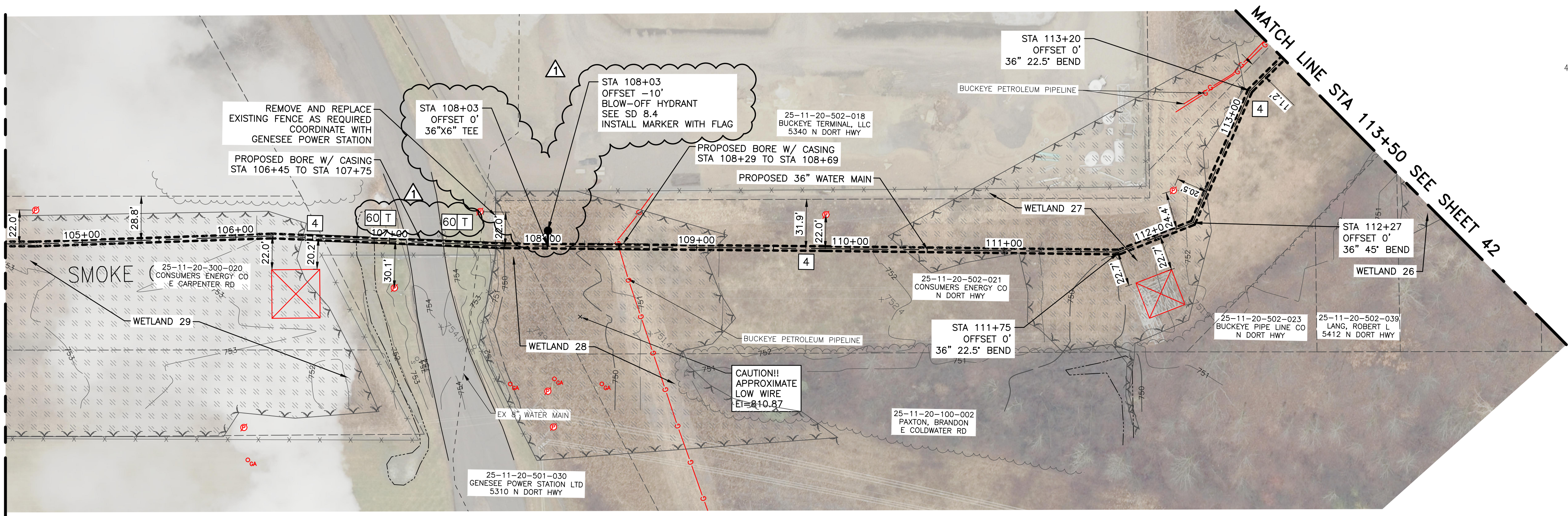
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REV#	DATE	DESCRIPTION
1	3/6/20	REVISED PER ADDENDUM 1

MATCH LINE STA 104+50 SEE SHEET 40



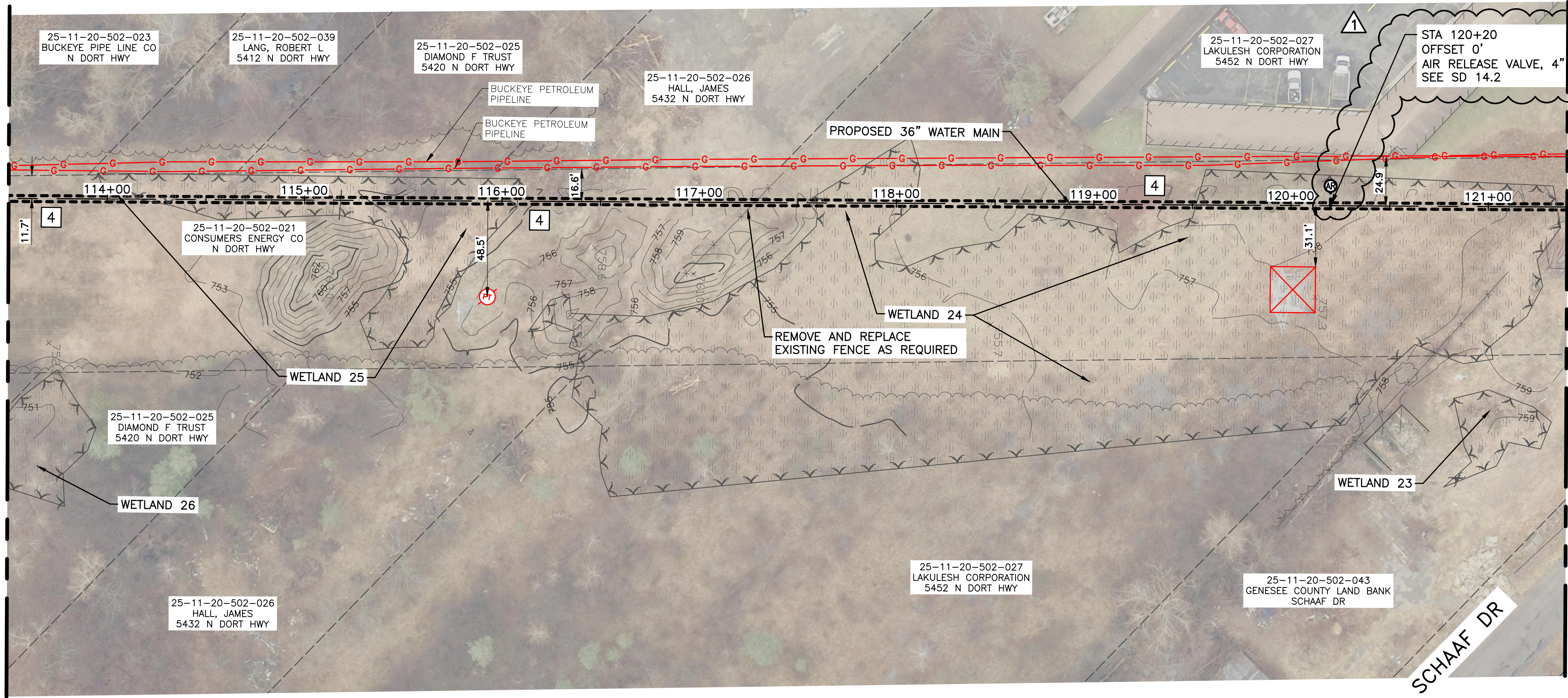
MATCH LINE STA 113+50 SEE SHEET 42

PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\00348735\0348735-PLAN-PROF-2.DWG - PP-16 - PLOTTED: 3/6/2020 3:18 PM BY: RUGGLES, TIMOTHY

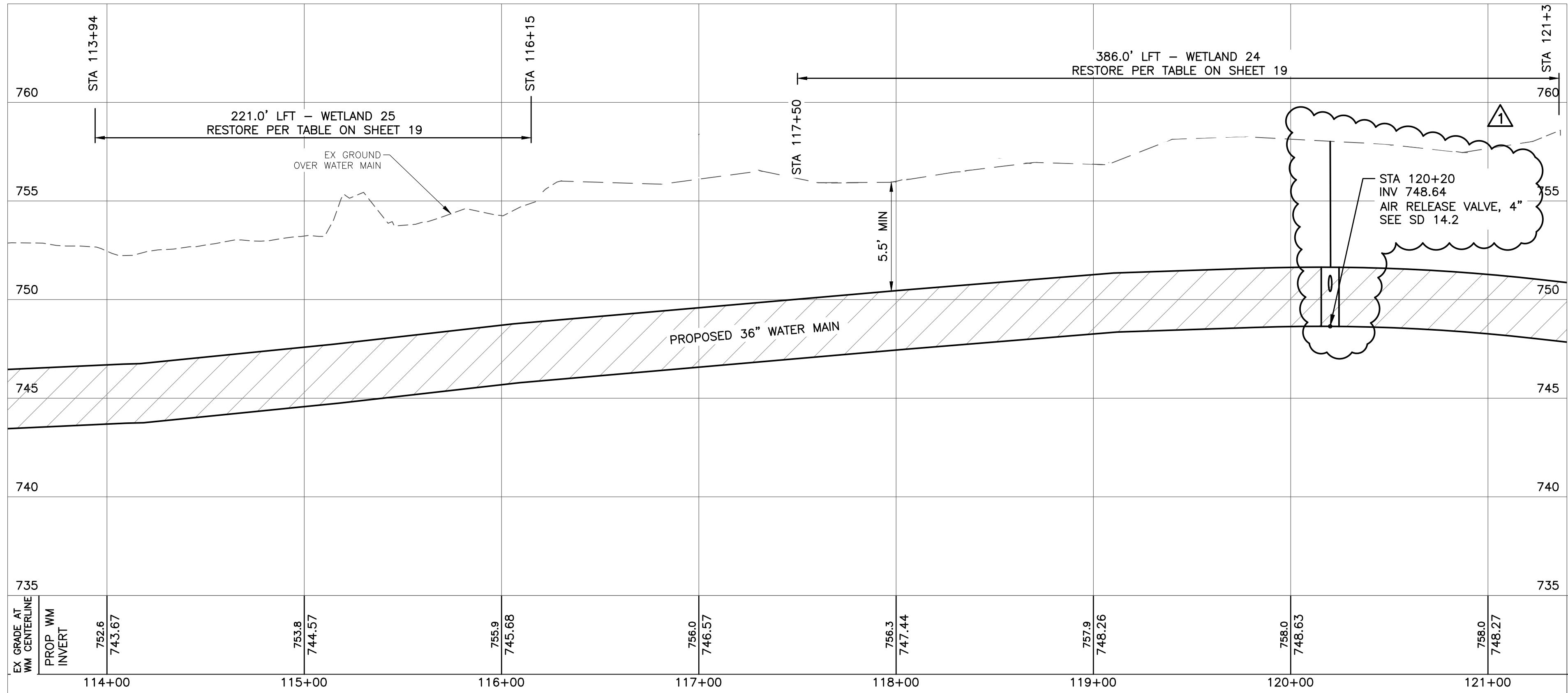


Know what's below.
Call before you dig.

MATCH LINE STA 113+50 SEE SHEET 41



MATCH LINE STA 121+50 SEE SHEET 43



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 16

ISSUED FOR: DATE: BY:

JOB NO.
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SHEET

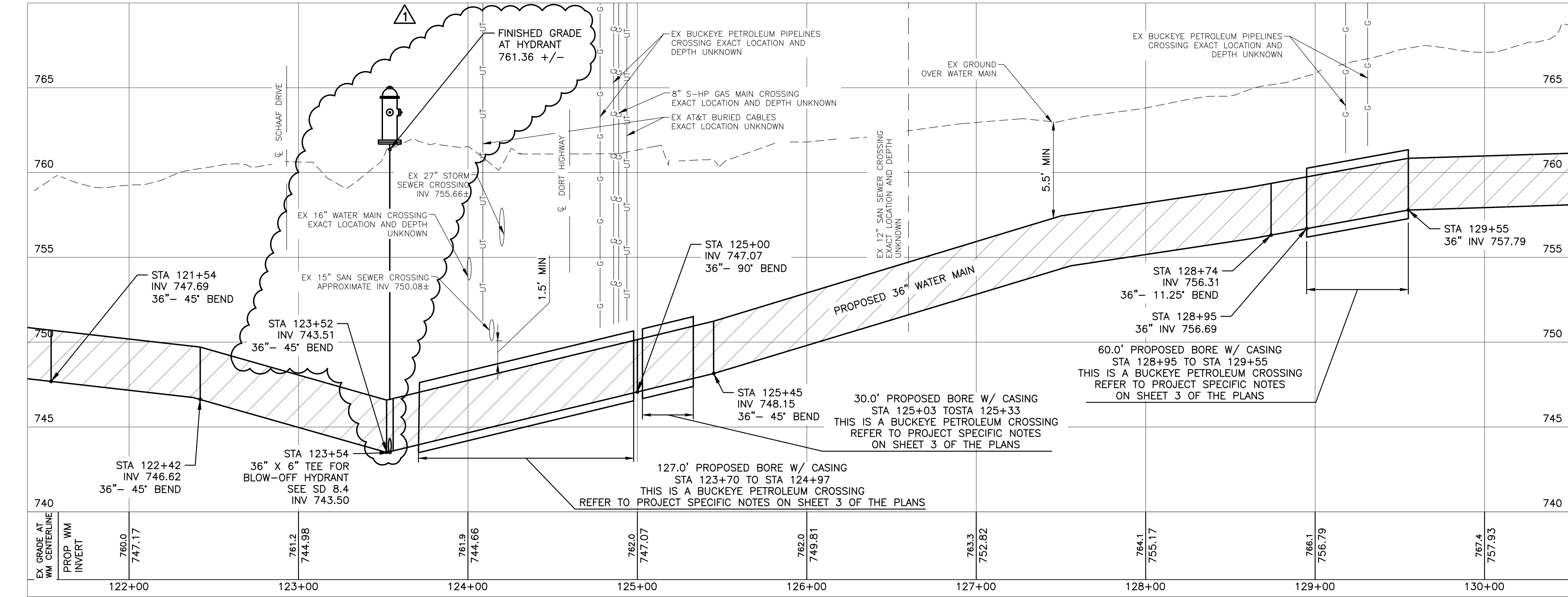
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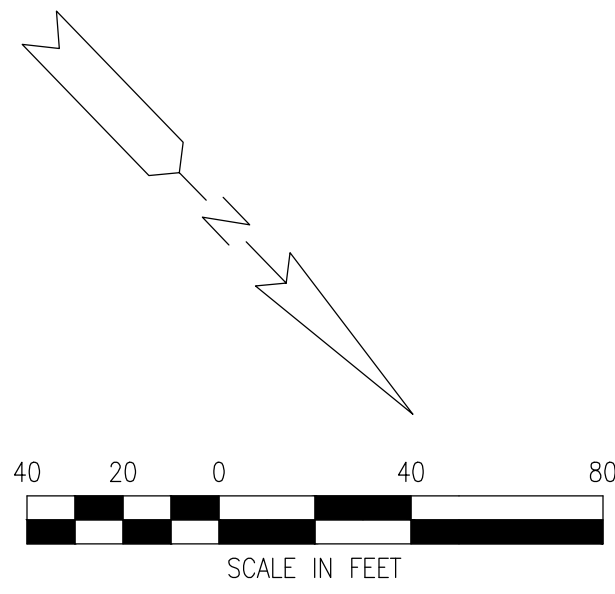
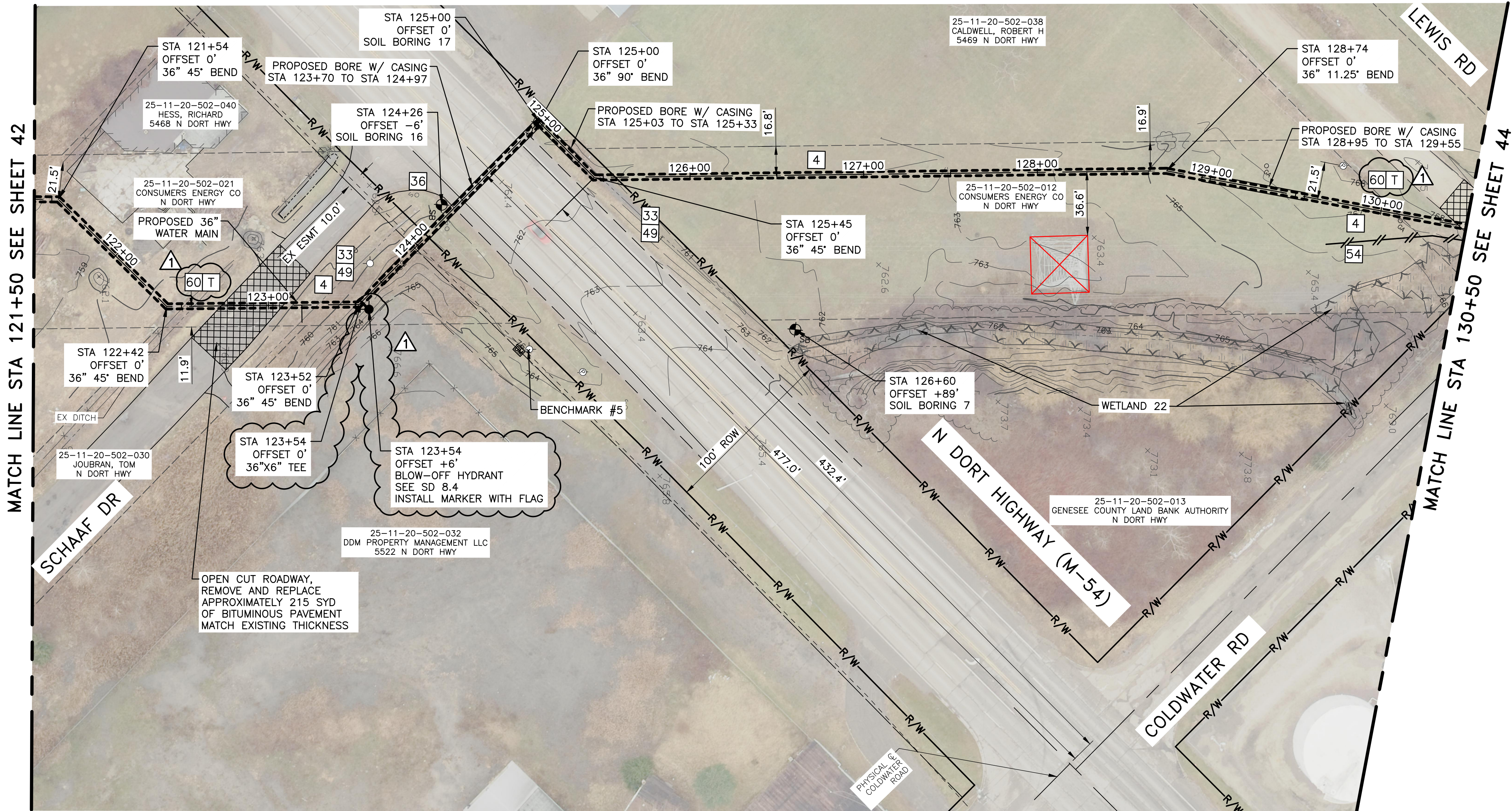
REV#	DATE	DESCRIPTION
1	3/6/20	REVISED PER ADDENDUM 1

PROJECT: MANAGER: JESSA R. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\2\03848735\03848735-PLAN-PROF-3.DWG - PP-17 - PLOTTED: 3/6/2020 3:53 PM BY: RUGGLES, TIMOTHY



NOTES

1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
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BENCHMARK #5
EAST FLANGE BOLT ON HYDRANT
ON EAST SIDE OF DORT HWY
75' +/- NORTH OF SCHAAF ROAD
ELEV=763.22

TRAFFIC CONTROL NOTE:
DURING JACK-AND-BORE OPERATION UNDER M-54 (DORT HIGHWAY), CONTRACTOR SHALL PROVIDE FOR A TEMPORARY, SINGLE-LANE CLOSURE FOR THE WEST-MOST SOUTHBOUND LANE UNTIL SUCH TIME AS THE BORE HAS BEEN COMPLETED AND THE CONTRACTOR MOVES HIS/HER OPERATION OUTSIDE OF THE RIGHT-OF-WAY FOR M-54. CONTRACTOR SHALL UTILIZE MDOT STANDARD MAINTAINING TRAFFIC TYPICAL M0250a, 'TYPICAL TEMPORARY TRAFFIC CONTROL FOR A ONE-LANE CLOSURE ON AN UNDIVIDED MULTI-LANE ROADWAY USING A SINGLE STEP DOWN IN SPEED LIMIT IN ONE DIRECTION ONLY'.

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 17

ISSUED FOR: DATE: BY:
JOB NO.:
COF1068.01F
SHEET
43

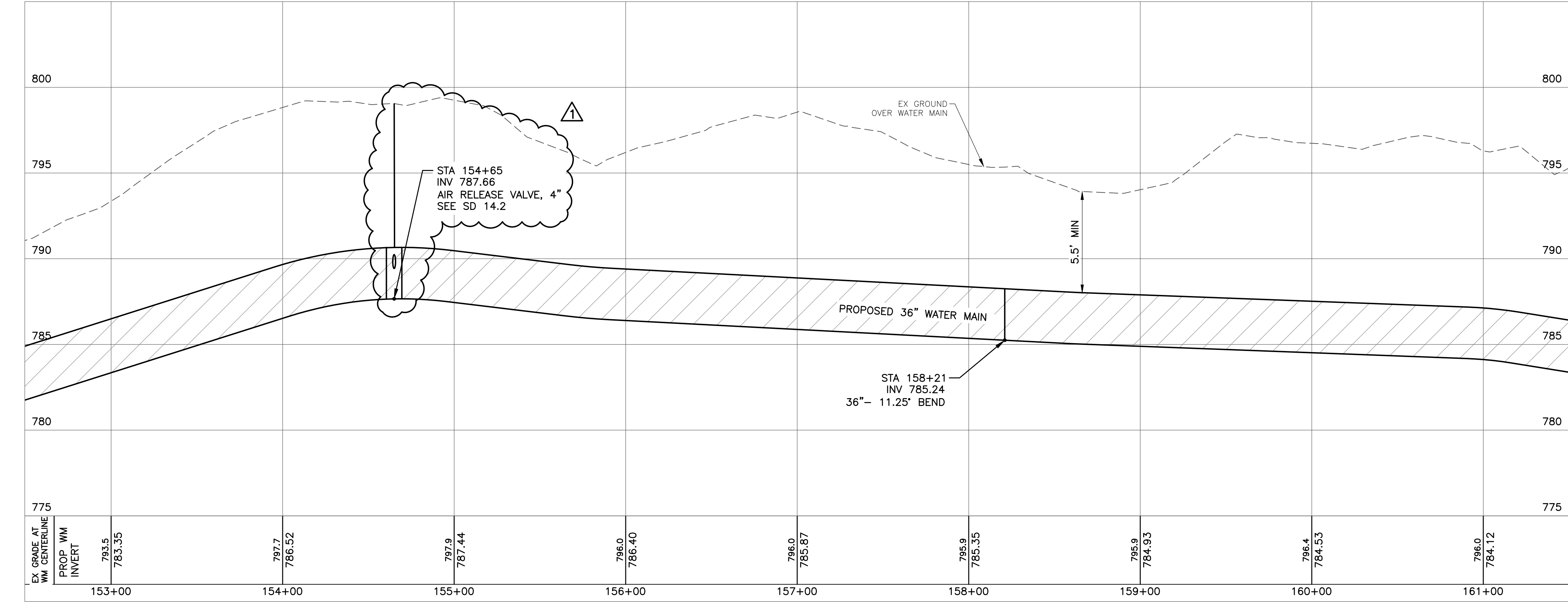


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REV#	DATE	DESCRIPTION
1	3/6/20	REVISED PER ADDENDUM 1

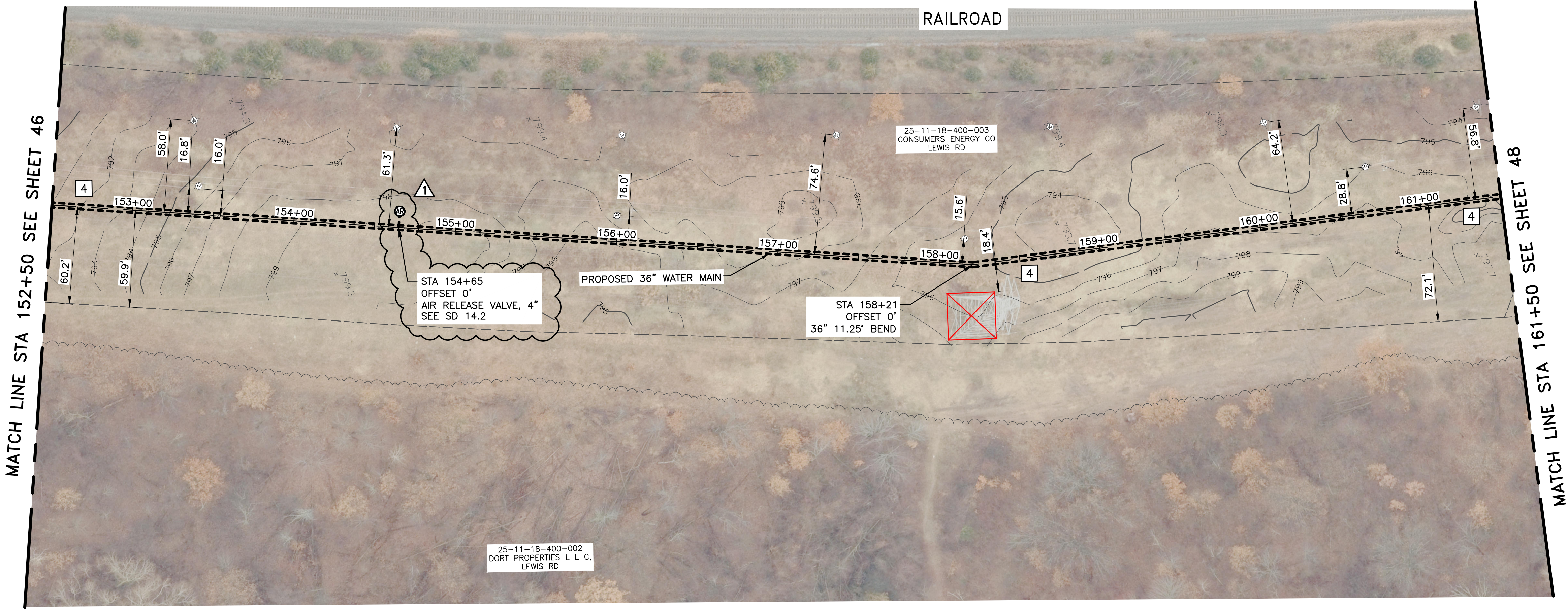
TLH	BY

PROJECT: MANAGER: JESSA B. KAYEVO, PE FIELD BOOK INFORMATION: C:\PW\WORK\2009\48736\CUP-FLTS-PLAN-PROF-3.DWG - PP-21 - PLOTTED: 3/6/2020 3:20 PM BY: RUGGLES, TIMOTHY



NOTES

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CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 21

ISSUED FOR: DATE: BY:
JOB NO.:
COF1068.01F
SHEET
47

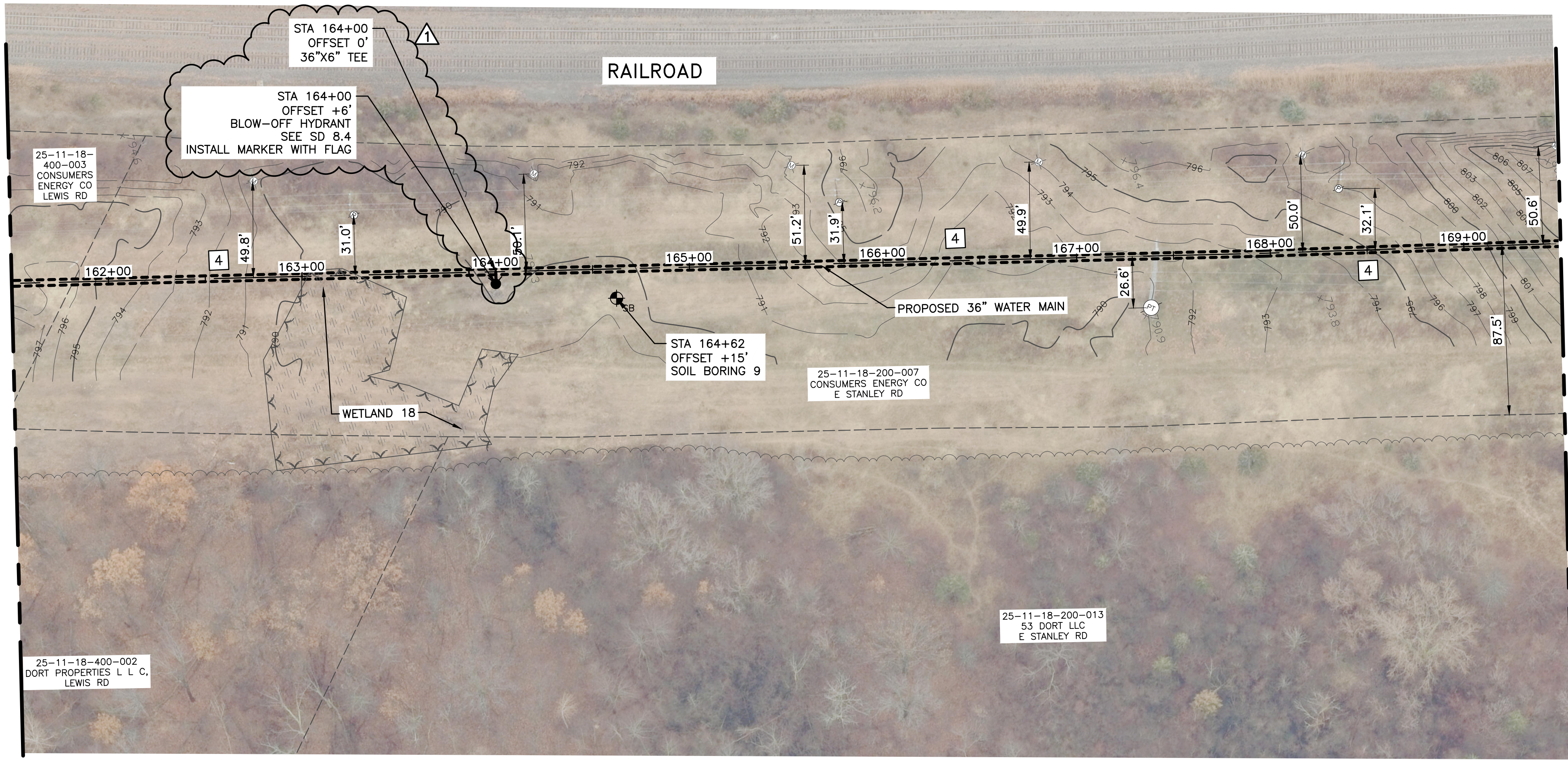
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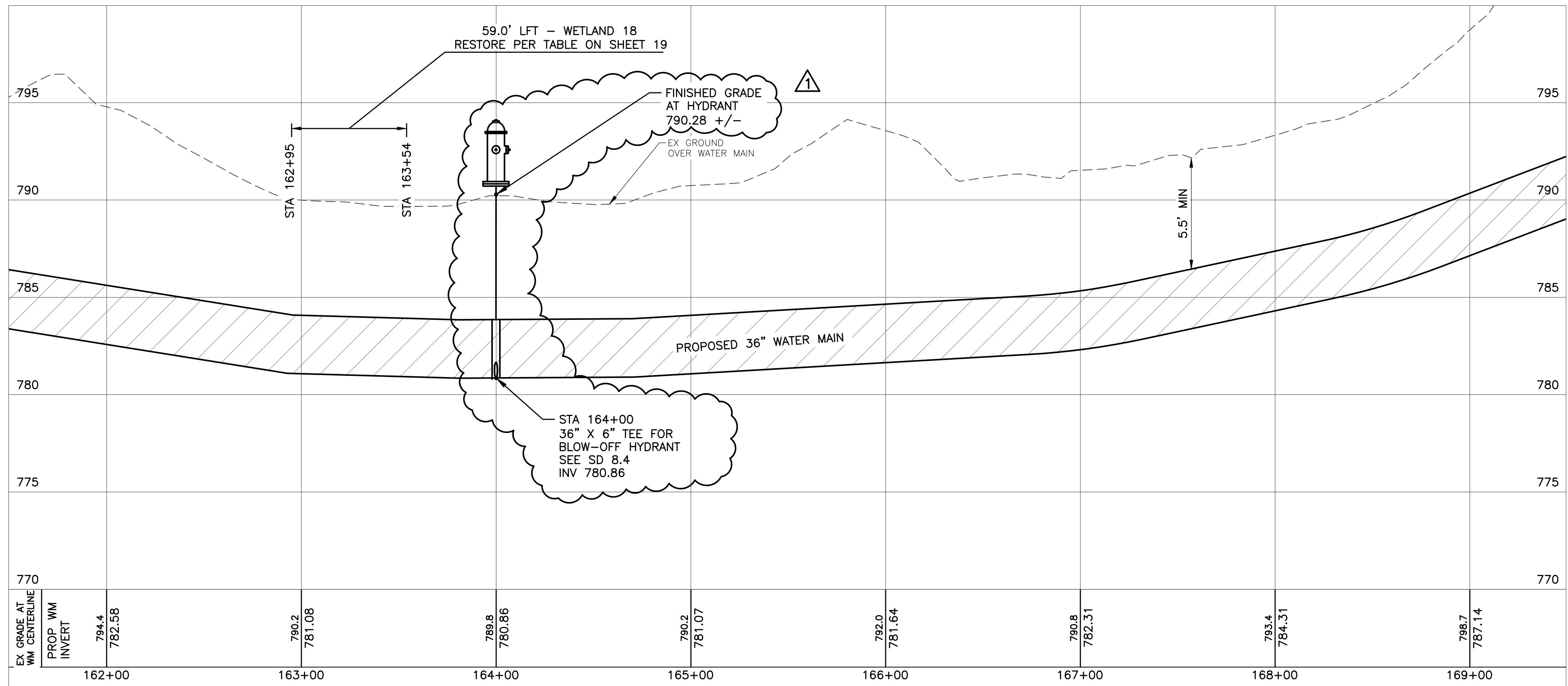
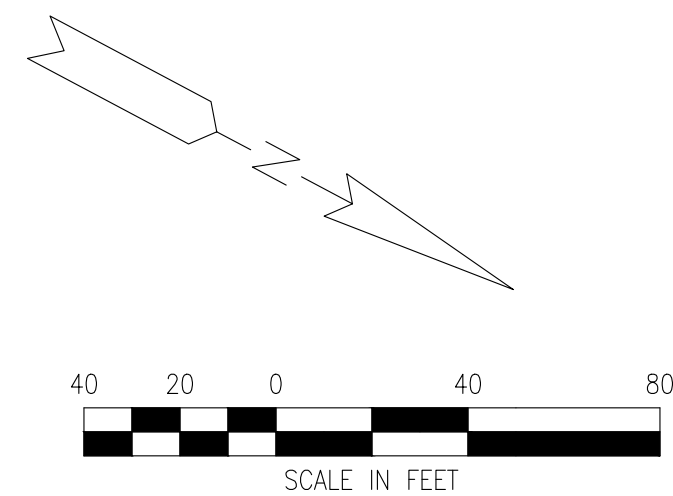
REV#	DATE	DESCRIPTION	BY
1	3/6/20	REVISED PER ADDENDUM 1	TLH

PROJECT: MANAGER: JESSA R. KAYE, PE
C:\PW\WORK\200848735\CUP-FLTS-PLAN-PROF-3.DWG - PP-22 - PLOTTED: 3/6/2020 3:21 PM BY: RUGGLES, TIMOTHY

MATCH LINE STA 161+50 SEE SHEET 47



MATCH LINE STA 169+50 SEE SHEET 49



NOTES

1. THE CONTRACTOR SHALL USE A TRENCH BOX IN ANY LOCATION WHERE THE PROPOSED WATER MAIN IS TO BE CONSTRUCTED LESS THAN 20' FROM AN EXISTING ELECTRIC POWER POLE OR TOWER.
2. PRIOR TO BEGINNING THE WORK. THE CONTRACTOR SHALL BE REQUIRED TO EXPOSE ALL EXISTING UTILITIES THAT CROSS OR ARE WITHIN THE INFLUENCE OF THE PROPOSED CONSTRUCTION, SO THE ENGINEER MAY DETERMINE IF A CONFLICT EXISTS BETWEEN AN EXISTING UTILITY AND THE PROPOSED WORK. ALL LABOR REQUIRED TO UNCOVER THE EXISTING UTILITY SHALL BE CONSIDERED INCLUSIVE TO THE UNIT PRICE OF THE WATER MAIN. THE CONTRACTOR SHALL VERIFY THE UTILITY SIZE, MATERIAL, DEPTH AND HORIZONTAL LOCATION OF ALL UTILITIES IN SUFFICIENT TIME SUCH THAT ANY CONFLICTS CAN BE RESOLVED BEFORE WORK IS STARTED.
3. ALL EXISTING UTILITIES SHALL BE PROPERLY SUPPORTED AND REMAIN IN SERVICE AT ALL TIMES DURING THE PROJECT, UNLESS OTHERWISE INDICATED.
4. UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE, OR REPLACED AS CALLED FOR ON THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SIZE AND MATERIAL REQUIRED PRIOR TO REPLACING.
5. ANY EXISTING STORM OR SANITARY SEWER PIPES THAT COME APART OR ARE DAMAGED IN THE CITY OF FLINT WILL NEED TO BE REPLACED WITH SDR-26 OR SCHEDULE 40 PVC PIPE, FROM MANHOLE TO MANHOLE. NEW MANHOLES CAN BE ADDED TO MINIMIZE LENGTH OF SEWER REPLACEMENT. ANY STORM AND SANITARY SEWER PIPES THAT ARE DAMAGED OUTSIDE OF THE CITY OF FLINT SHALL BE REPLACED IN KIND AT THE CONTRACTORS EXPENSE.
6. REGULATED WETLANDS HAVE BEEN DELINEATED, NUMBERED AND SHOWN ON THE PLANS ALONG THE PROPOSED WATER MAIN ROUTE. FOR WETLAND RESTORATION THE CONTRACTOR SHALL REFER TO THE TABLE LOCATED ON PLAN SHEET 19 ALONG WITH DETAILS ON SHEETS 20-23. CONTRACTOR SHALL LIMIT THE EXTENT OF CONSTRUCTION ACTIVITIES WITHIN DELINEATED WETLANDS TO REDUCE IMPACTS OF SUCH ACTIVITIES TO THE WETLANDS. AREAS DISTURBED BY CONTRACTOR OUTSIDE OF THE AREAS DESIGNATED IN THE WETLAND RESTORATION DETAILS WILL BE AT CONTRACTOR'S EXPENSE.
7. CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES ALONG THE TRANSMISSION MAIN ROUTE TO REDUCE IMPACTS OF SUCH ACTIVITIES ON THE REMAINDER OF THE PROPERTY, INCLUDING ON PROPERTIES OWNED BY CONSUMERS ENERGY. AREAS DISTURBED OUTSIDE OF THE DESIGNATED EASEMENT WILL BE AT CONTRACTOR'S EXPENSE.

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PLAN AND PROFILE SHEET 22

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

48

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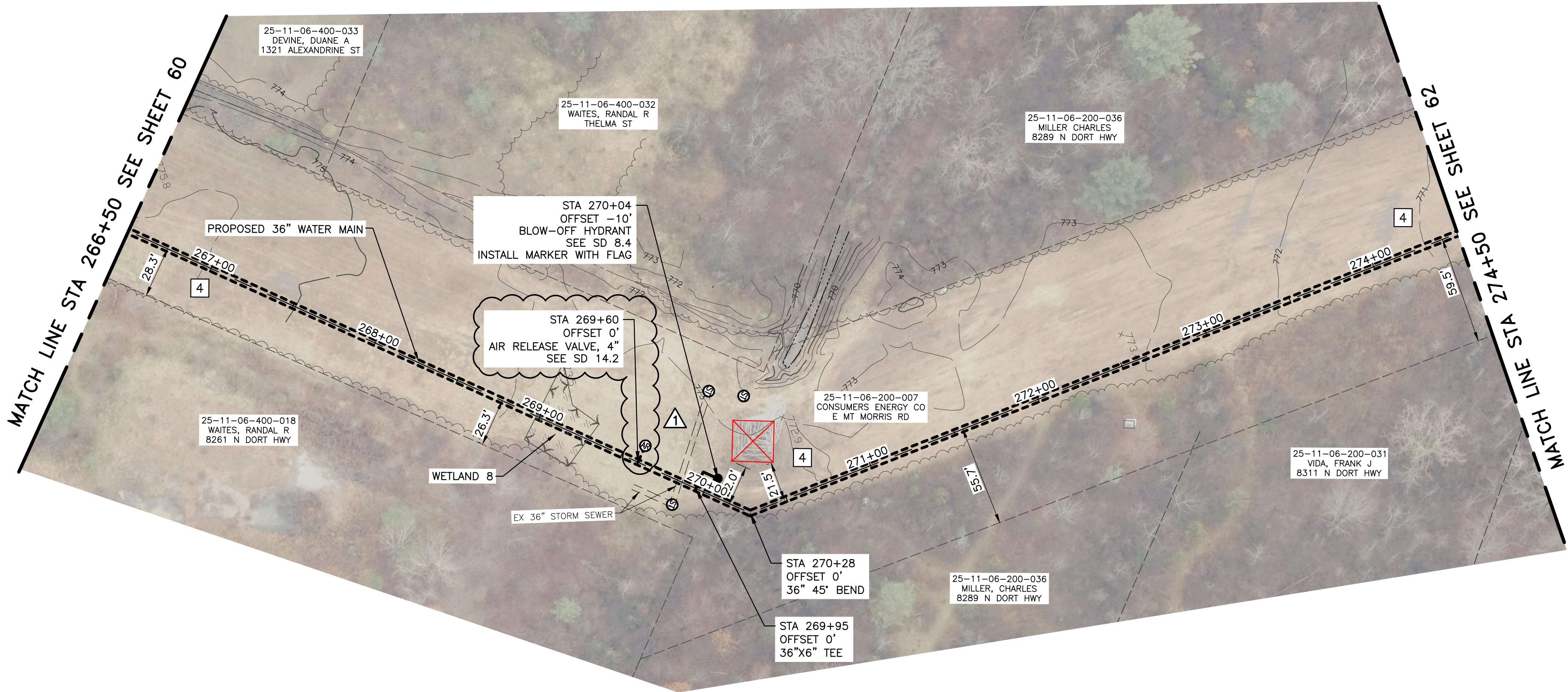
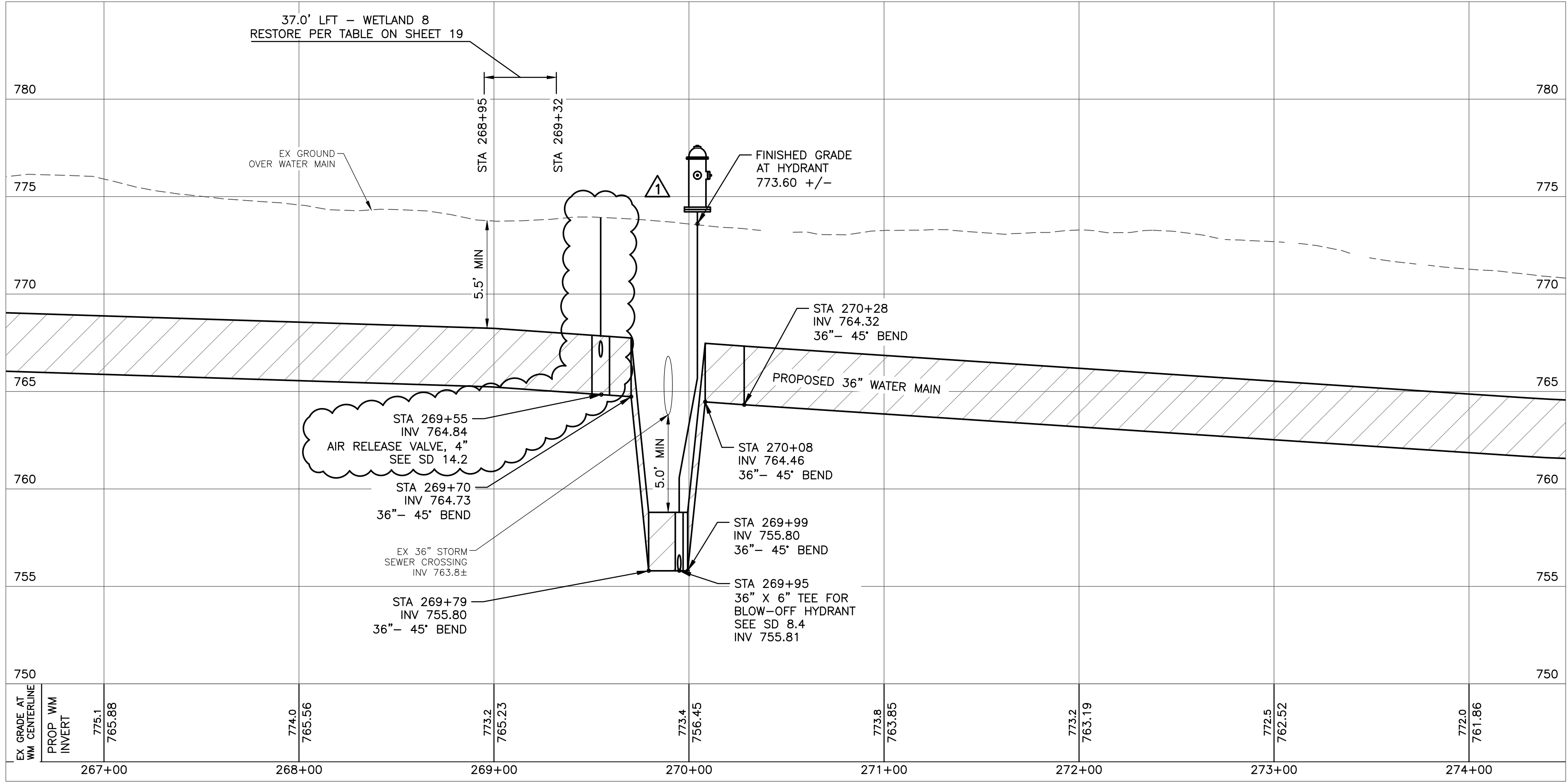


REV#	DATE	REVISION PER ADDENDUM	DESCRIPTION	TLH	BY
1	3/6/20				

PROJECT: MANAGER: JESSA R. KAYNES, PE FIELD BOOK INFORMATION: C:\P\WORK\200848736\CUP-PLTS-PLAN-PROF-5.DWG - PP-35 - PLOTTED: 3/6/2020 3:45 PM BY: RUGGLES, TIMOTHY



Know what's below.
Call before you dig.



1. DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON PREVIOUS CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING W/ FIELD MEASUREMENTS ALL DIMENSIONS AND ELEVATIONS FOR FABRICATION AND/OR MODIFICATIONS OR ADDITIONS BEING MADE UNDER THIS CONTRACT. ANY DISCREPANCIES SHALL BE PRESENTED TO THE OWNER AND ANY DESIGN CONFLICTS SHALL BE RESOLVED WITH OWNER PRIOR TO FABRICATIONS OR CONSTRUCTION OF IMPACTED ITEMS.

- ### CAST-IN-PLACE CONCRETE

- ## METALS

- 

1. DUE TO THE PROXIMITY OF EXISTING STRUCTURES, ROADS AND UTILITIES, IT WILL BE NECESSARY TO PROVIDE TEMPORARY EARTH RETENTION FOR CONSTRUCTION WITHIN DEEP EXCAVATIONS. SELECTION AND DESIGN OF TEMPORARY EARTH RETENTION SYSTEMS AND PROTECTION OF EXISTING STRUCTURES, ROADS AND UTILITIES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. DESIGN CALCULATIONS FOR PROPOSED EARTH RETENTION MEASURES, SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN, SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING RELATED EXCAVATION WORK.

- ## FOUNDATIONS

- MISCELLANEOUS

1. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT FOUNDATION, PAD AND CURB DIMENSIONS, AND THE SIZES AND LOCATIONS OF ANCHOR BOLTS FROM MANUFACTURER'S CERTIFIED SHOP DRAWINGS.
2. CONTRACTOR IS RESPONSIBLE TO IDENTIFY AND ACCOMMODATE OPENINGS AND EMBEDDED ITEMS SHOWN ON OTHER DRAWINGS.
3. ALL ADHESIVE ANCHORING SYSTEMS FOR POST INSTALLED ANCHORS AND/OR REINFORCING DOWELS IN CONCRETE AND MASONRY SHALL BE "HIT-HY 200 ADHESIVE ANCHORING SYSTEM" BY HILTI AT SIZE AND SPACING INDICATED ON DRAWINGS (OR APPROVED EQUAL).
4. PROVIDE EXPANDED METAL CLOSURES AND SUPPORT FRAMING, MATCHING MATERIAL AND FINISH OF ADJACENT GUARDRAILS, AT ALL EQUIPMENT OPENING LOCATIONS, AS REQUIRED TO MEET FEDERAL AND LOCAL SAFETY REGULATIONS.

BAR SIZE	TENSION LAP LENGTH	* TOP BARS
#3	16"	22"
#4	20"	29"
#5	24"	36"
#6	29"	43"
#7	42"	63"
#8	48"	72"
#9	54"	81"
#10	61"	91"
#11	67"	101"

1. ABOVE TABLE IS FOR NORMAL WEIGHT CONCRETE;
 $f'_c=5,000$ PSI AND REINFORCING STEEL; $f_y=60,000$ PSI.


2. ALL SPLICES SHALL BE CONSIDERED TENSION SPLICES USING LAP LENGTHS IN TABLE ABOVE UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS.

3. LENGTHS ARE BASED ON LAP CLASS B SPLICES WITH CENTER TO CENTER SPACING OF BARS EQUAL TO OR GREATER THAN 6 DIAMETERS.

4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST UNDER THEM.

5. USE TENSION LAP LENGTHS FOR HORIZ & VERT. WALL BARS.

ALT ALUM	ALTERNATE ALUMINUM	ID IE IF IN INFL INT	INSIDE DIAMETER INVERT ELEVATION INCHES INFLUENT INTERIOR
B/ BLDG BM BOT BSMT	BOTTOM BUILDING BEAM BOTTOM BASEMENT	JT	JOINT
CHAN CIP CJ JOINT CL CLR COL CONC CONST CONSTR CONT CLSM	CHANNEL CAST-IN-PLACE CONSTRUCTION CENTERLINE CLEAR COLUMN CONCRETE CONSTANT CONSTRUCTION CONTINUOUS CONTROLLED LOW STRENGTH MATERIAL	KIP KB LP LGTH MFR MIN MO NF NS	THOUSAND POUNDS KNEE BRACE LOW POINT LENGTH MAXIMUM MANUFACTURER MINIMUM MASONRY OPENING NEAR FACE NEAR SIDE
COR CY	CORNER CUBIC YARD	NTS NIC	NOT TO SCALE NOT IN CONTRACT
DET DIA / Ø DIAG DISC DIST DWLS	DETAIL DIAMETER DIAGONAL DISCONTINUOUS DISTANCE DOWELS	OC OD OF OPNG PEMB	ON CENTER OUTSIDE DIAMETER OUTSIDE FACE OPENING PRE-ENGINEERED METAL BUILDING POUNDS PER SQ.
EJ EE EF EFF ES EW EA EL/ EX EXT EXTENSION	EXPANSION JOINT EACH END EACH FACE EFFLUENT EACH SIDE EACH WAY EACH ELEVATION EXISTING EXTERIOR/ EXTENSION	PSF FOOT PSI INCH REINF RE SCHED SET SHTS SIM SJ JOINT SS STIR STRUCT	POUNDS PER SQ. POUNDS PER SQ. REINFORCEMENT REFER TO SCHEDULE SETTLING SHEETS SIMILAR SLAB CONTROL STAINLESS STEEL STIRRUPS STRUCTURAL
FND FST TANK FT	FOUNDATION FINAL SETTLING FEET	TOS T/ TYP	ELEVATION TOP OF STRUCTURAL STEEL TOP TYPICAL
GALV GR	GALVANIZED GRADE	UNO	UNLESS NOTED OTHERWISE
H/ HP HK HT	HORIZONTAL HIGH POINT HOOK HEIGHT	V WP	VERTICAL WORK POINT



**WADE
TRIM**

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
STRUCTURAL
GENERAL NOTES AND ABBREVIATIONS

ISSUED	DATE:	BY:
FOR:		

JOB
NO. COF1068.01F

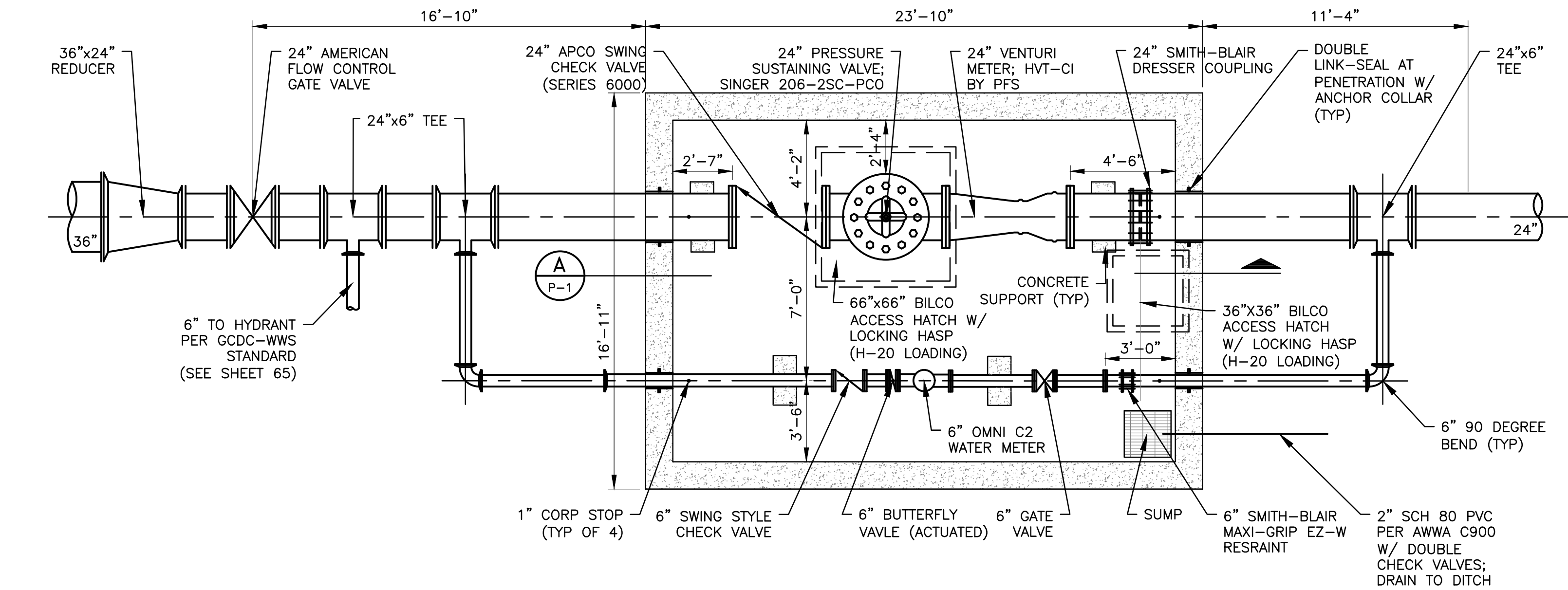
SHEET

S-0

PROJECT: MANAGER: JESSA B. KAYNES, PE
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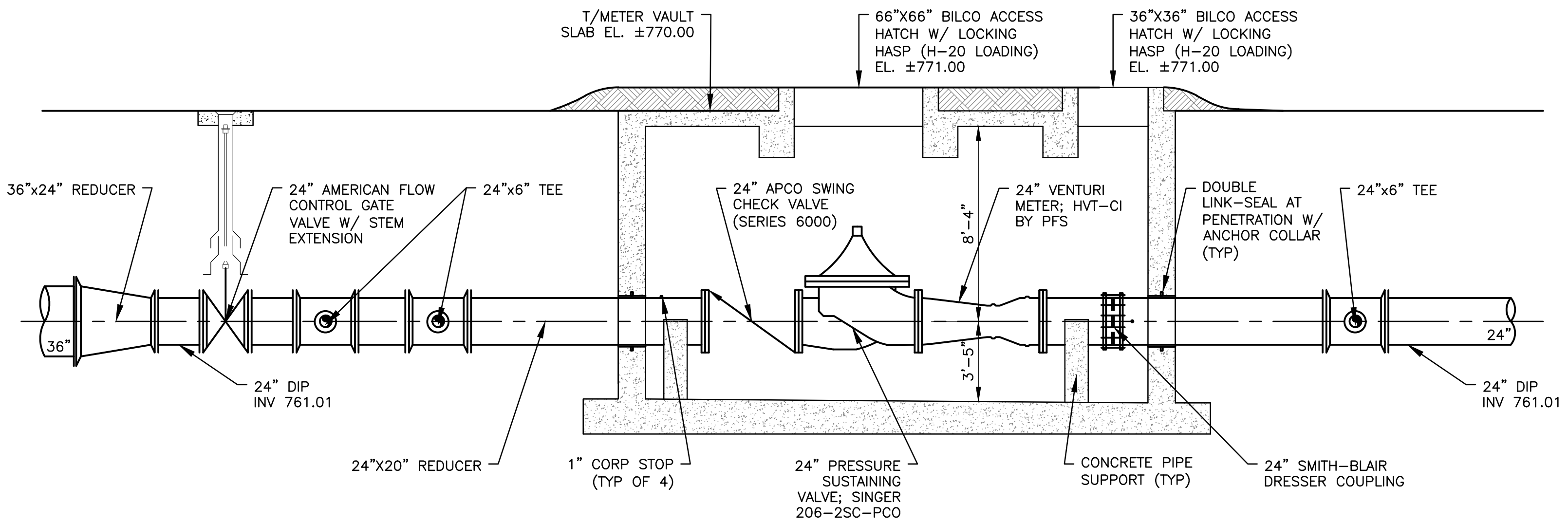


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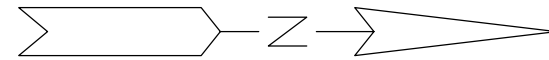
METER VAULT - PLAN

SCALE: 3/4"=1'-0"



SECTION A - METER VAULT

SCALE: 3/4"=1'-0"



REV#	DATE	DESCRIPTION
1	2/20/20	PIPING, VALVES AND VENTURI FROM 20" TO 24"

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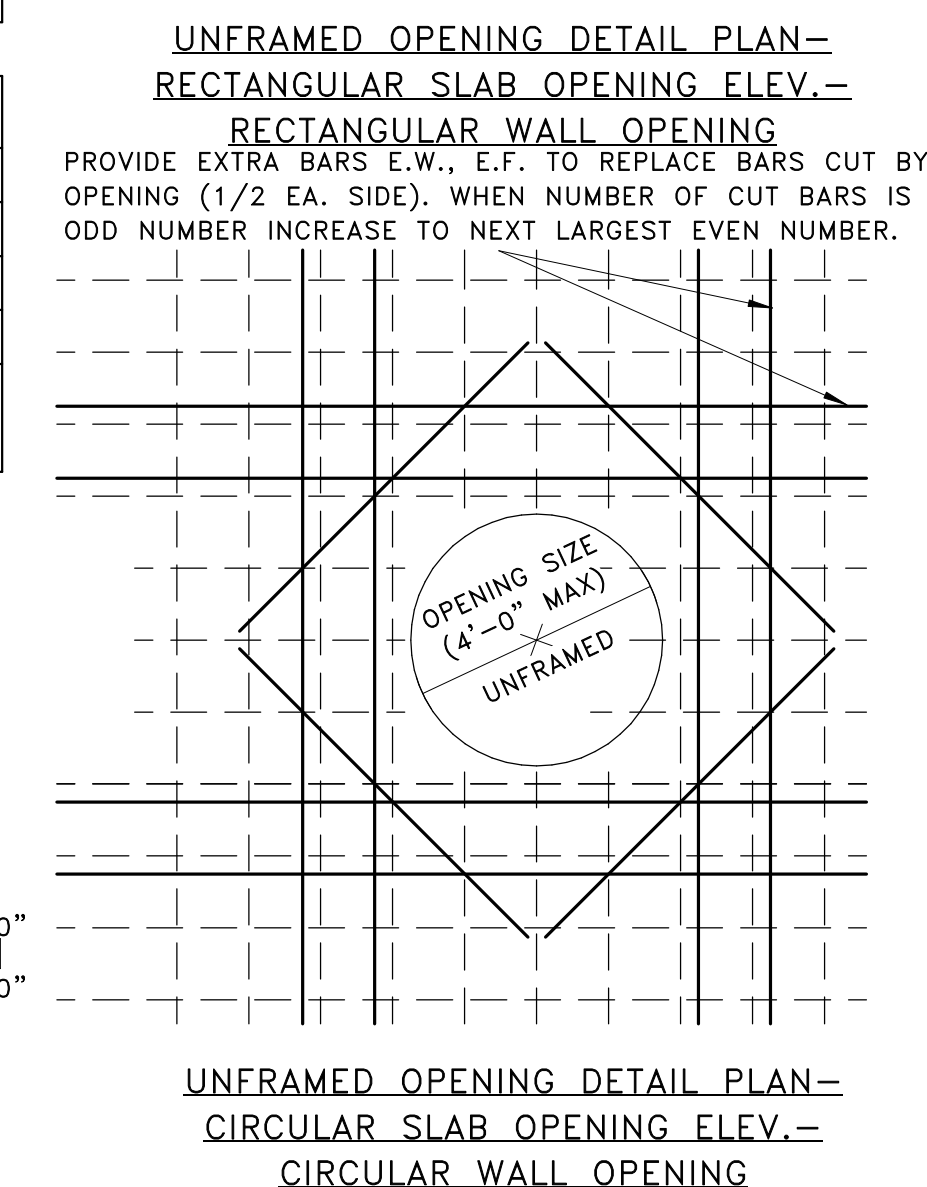
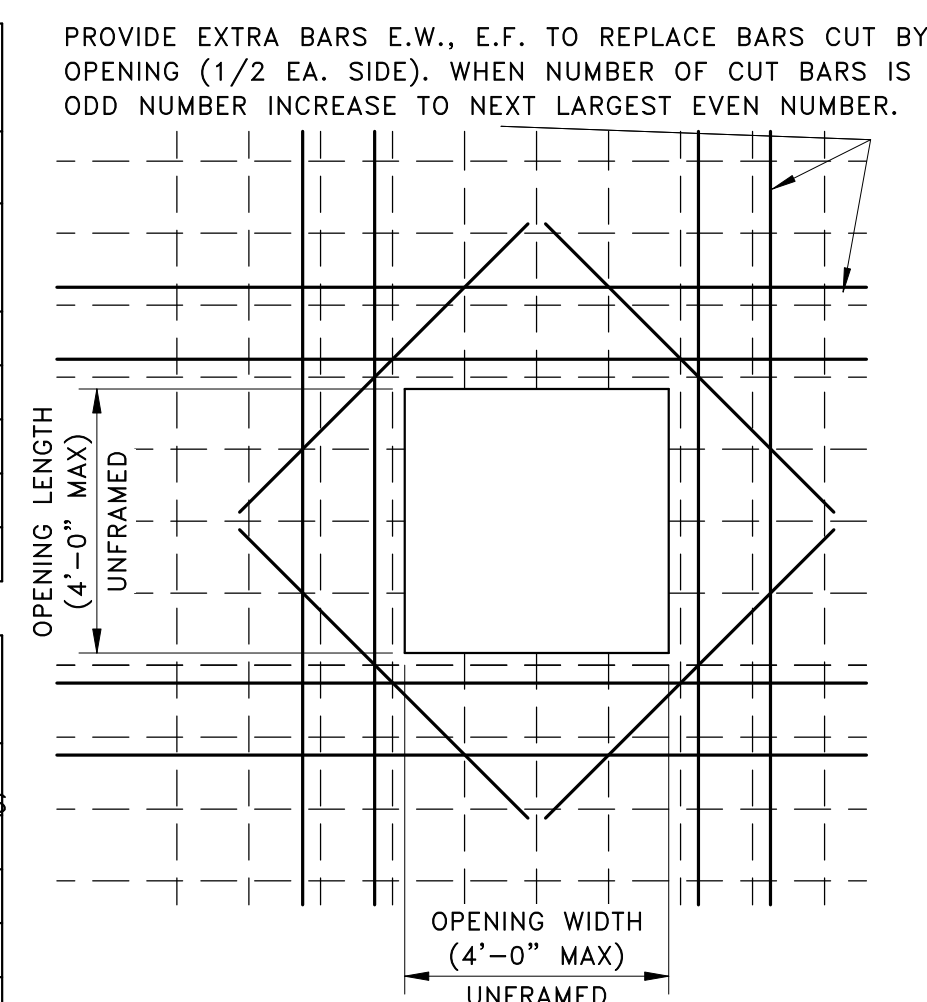
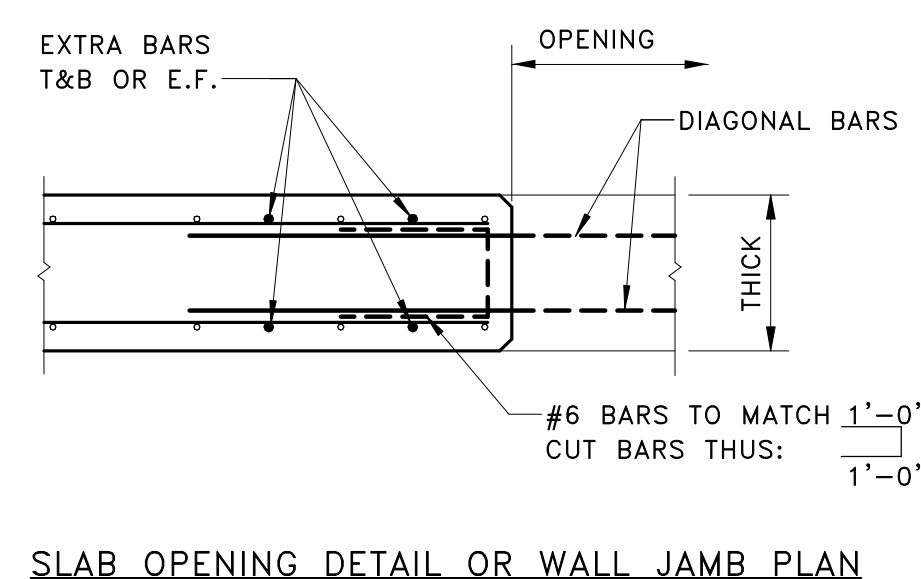
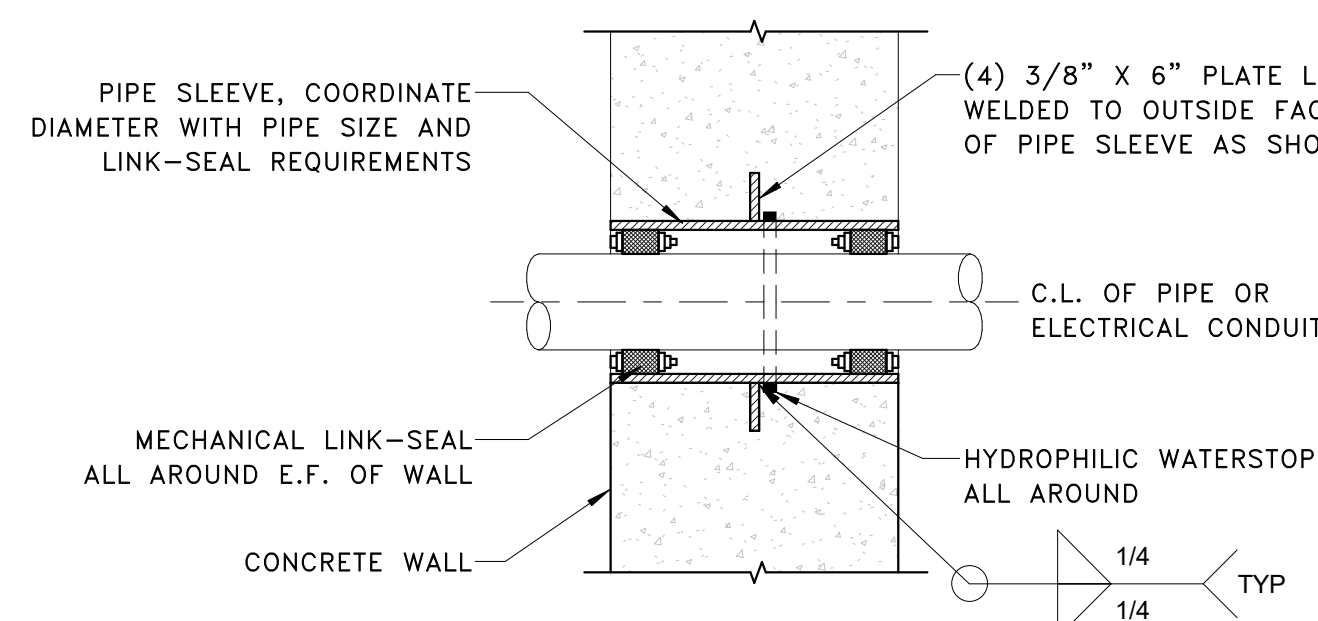
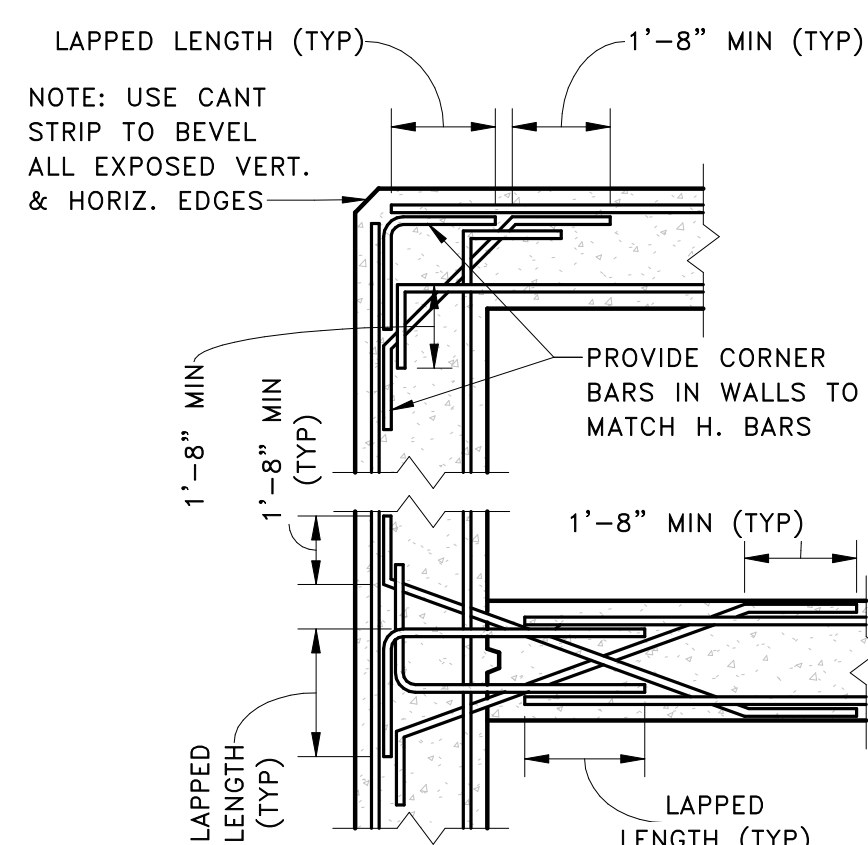
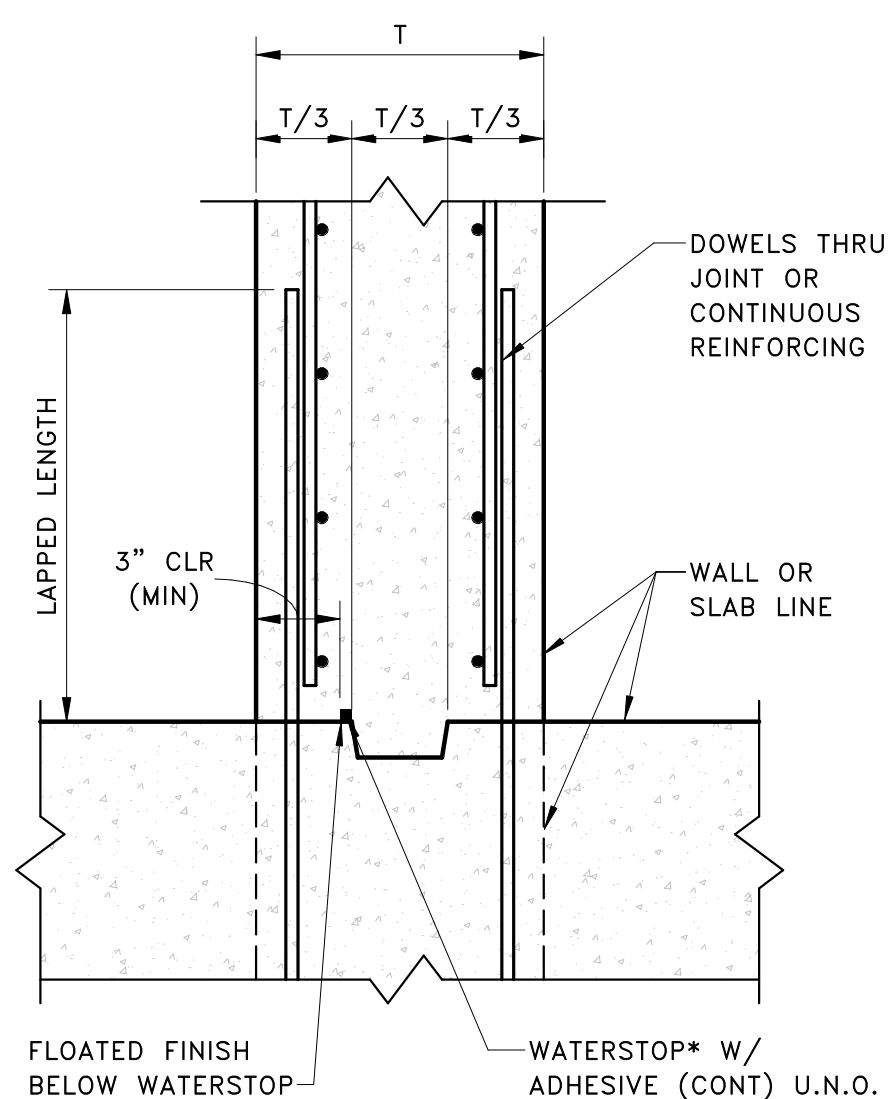
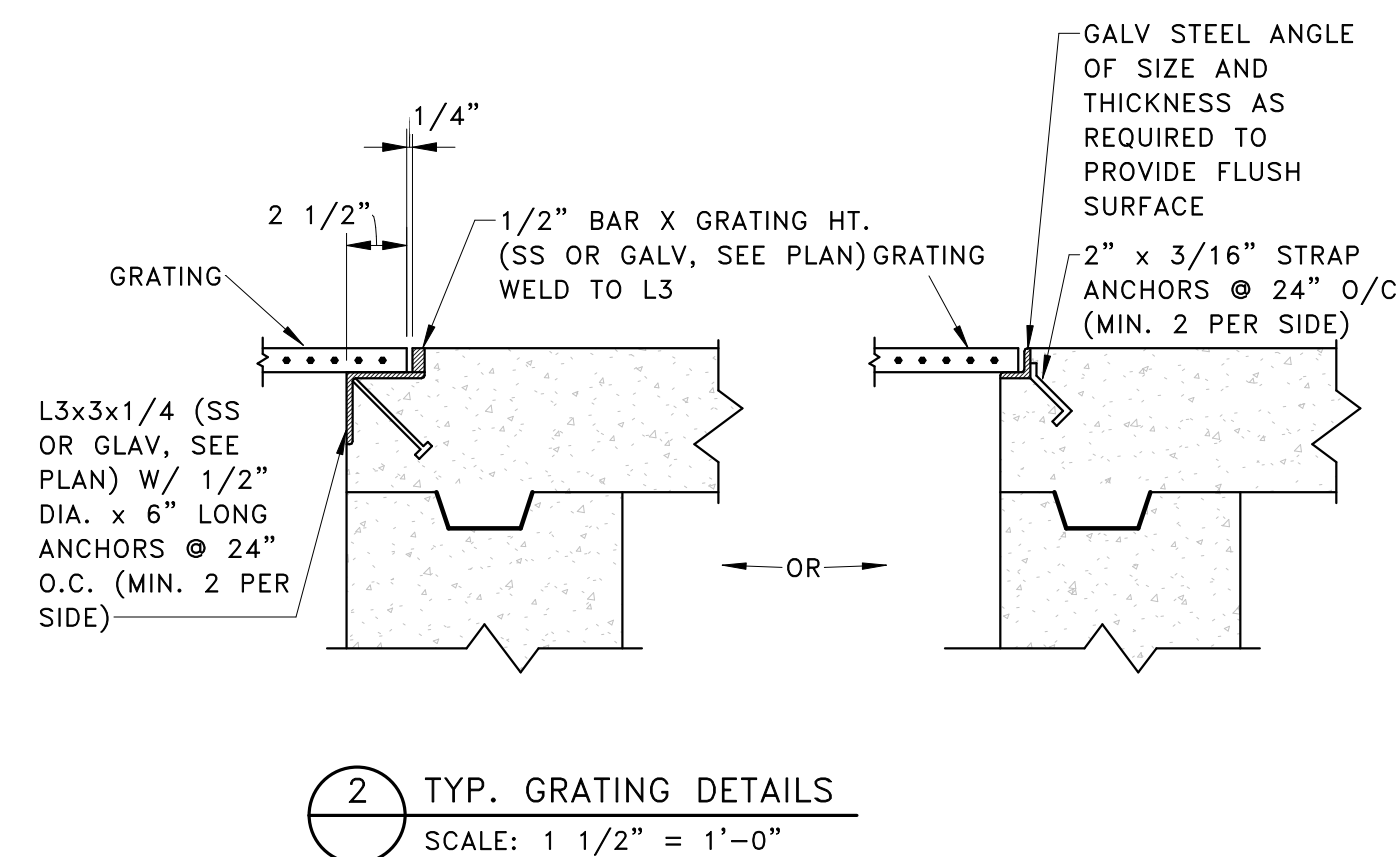
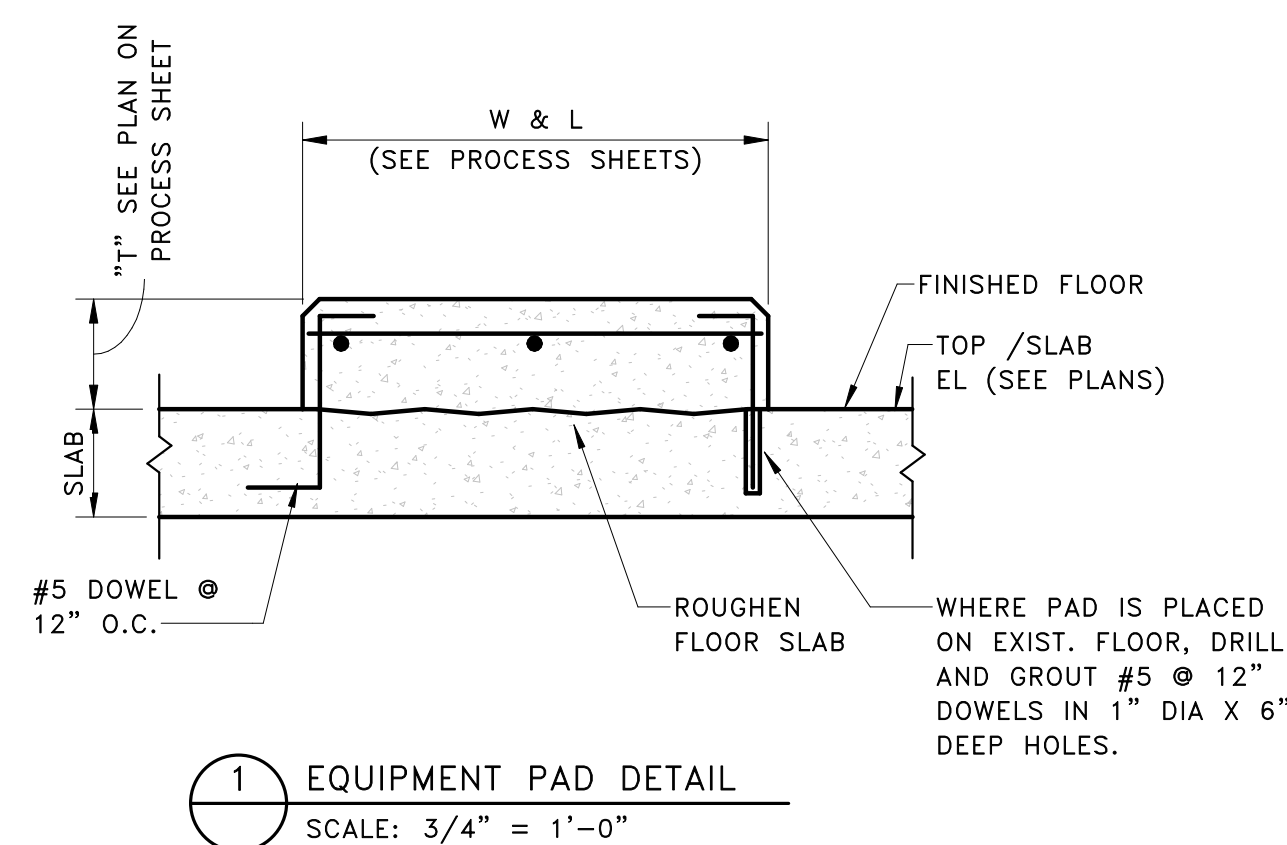
CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502
36" SECONDARY WATER SUPPLY
PROPOSED - GCDC METER VAULT AT FRANCES RD

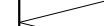
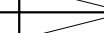
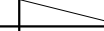
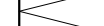

ISSUED FOR: DATE: BY:
JFB 2/10/20 JRK
ADD #1 2/20/20 JRK









JOB NO.
COF1068.01F

SHEET
P-1

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DIAGONAL BARS ALL OPENINGS				
SLAB OR WALL THICKNESS		DIAG. BARS - (4) SIDES OF OPENING E.F.; EQUAL SPACING		
FROM	TO & INCLUDING	NO.	BAR SIZE	LENGTH
0	8"	1	 #4	3'-0"
8"	16"	2	 #5	4'-0"
16"	24"	2	 #6	5'-0"
24"	32"	3	 #6	5'-0"
32"	40"	3	 #7	6'-0"

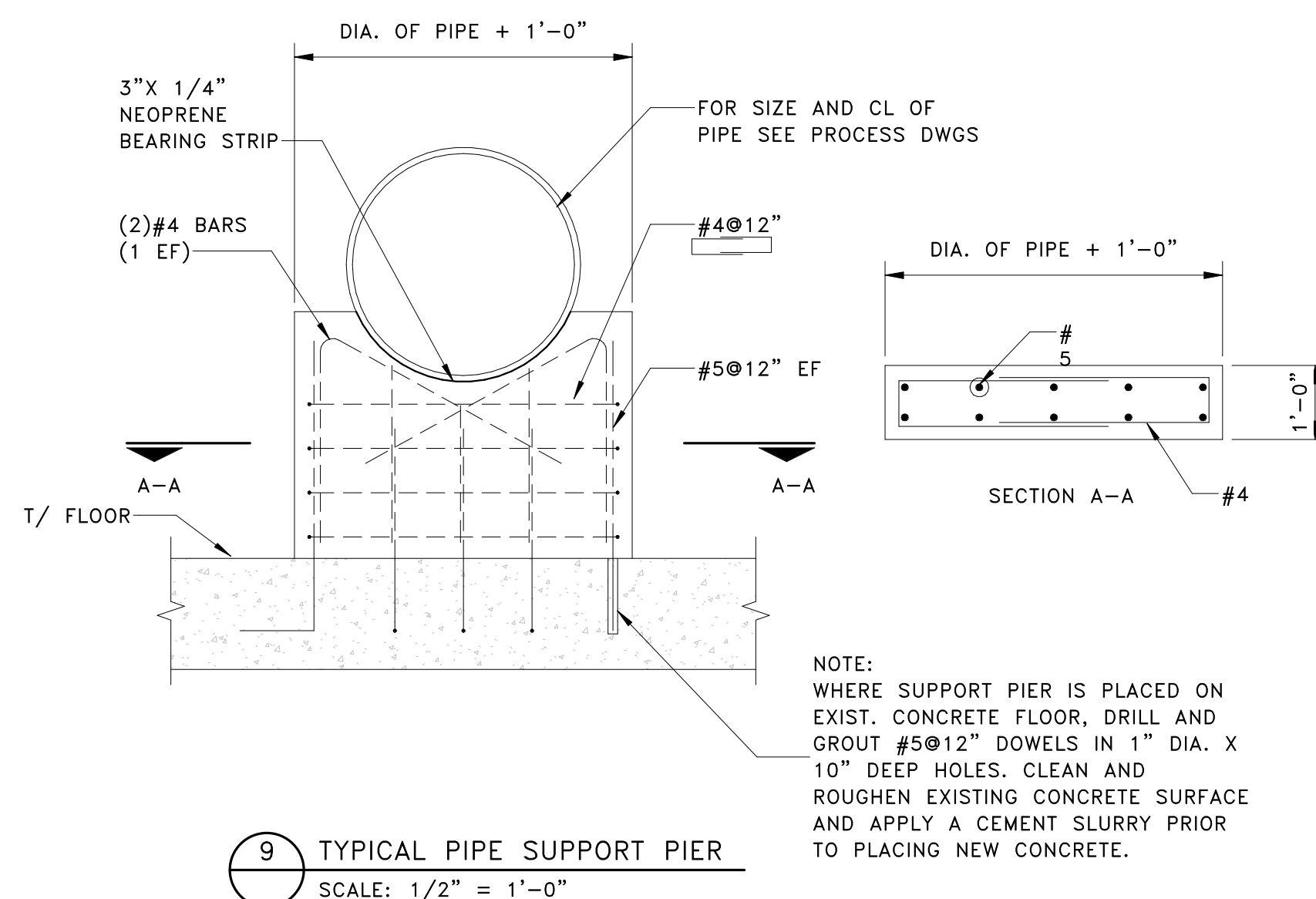
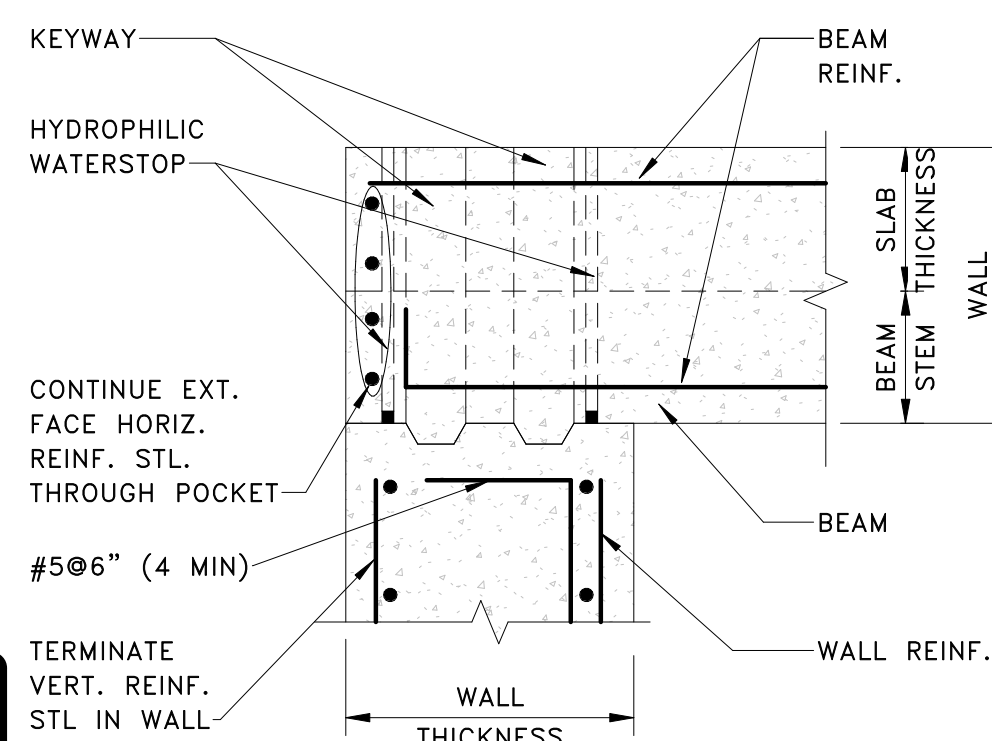
LENGTH OF EXTRA BARS CENTERED ON Q OF OPENING			
BAR SIZE	LENGTH = OPENING PLUS	BAR SIZE	LENGTH = OPENING PLUS
 #4	3'-0"	 #8	10'-0"
 #5	4'-0"	 #9	12'-0"
 #6	6'-0"	 #10	16'-0"
 #7	8'-0"	 #11	20'-0"

OPENING REINFORCEMENT SCHEDULE				
TYPE OF OPENING	THICKNESS	REINFORCEMENT REQUIRED		
		EXTRA	DIAGONAL	[- BAR]
UNFRAMED	16" OR LESS	YES	YES	NO
	16" TO 4'-0"	YES	YES	YES
FRAMED (BEAMS)	ALL	NO	YES	NO

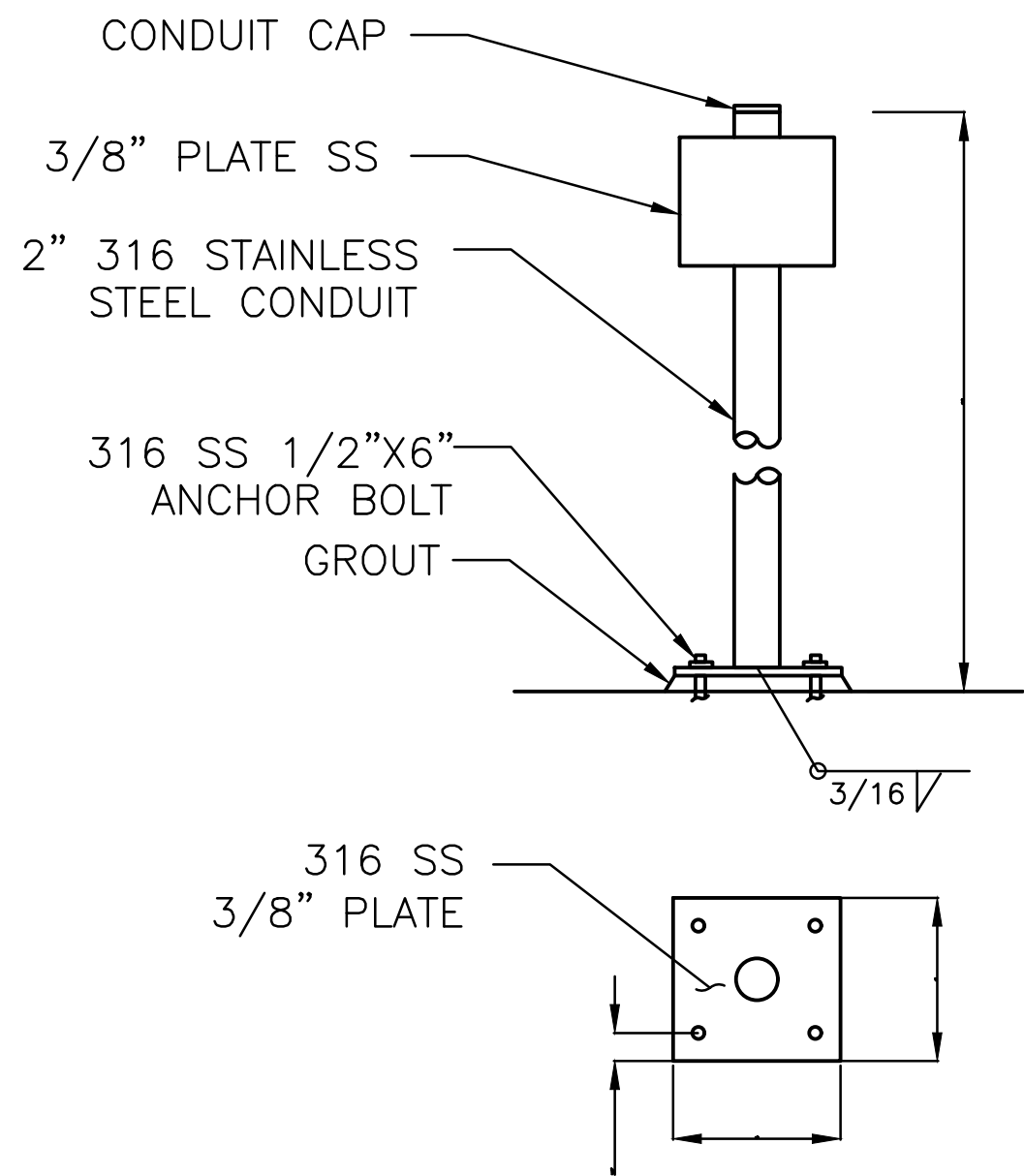
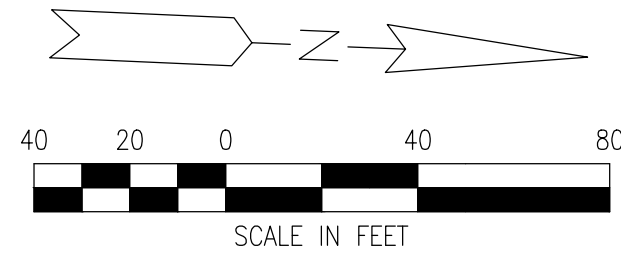
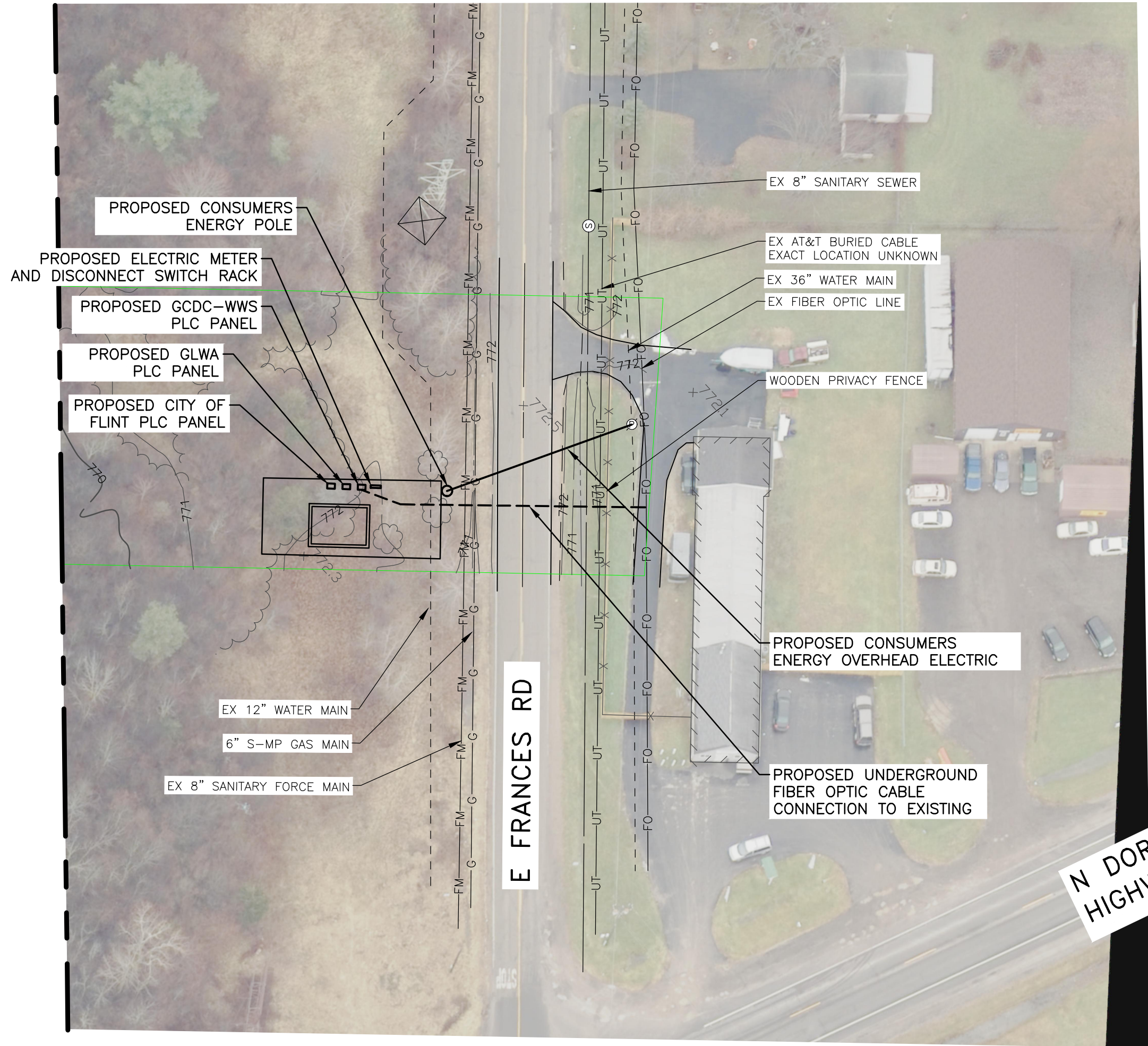
(FOR MEMBERS UP TO 18" THICK) EITHER SHOWN ON
SECTION OR NOTED AS
C.J. ON PLAN

*NOTE

1. HYDROPHILIC RUBBER WATERSTOP SHALL BE USED IN ALL CAST-IN-PLACE CONCRETE BELOW GROUNDWATER TABLE.
2. BENTONITE WATERSTOP (NSF 61 CERTIFIED) MAY BE USED AT ALL OTHER JOINTS IN CAST-IN-PLACE CONCRETE CONSTRUCTION.
3. ALL UNFORMED SURFACES WHERE WATERSTOP IS TO BE ADHERED SHALL HAVE A FLOATED FINISH.
4. ALL KEYWAYS SHALL BE CONSTRUCTED USING WOOD FORM EMBEDDED IN PLASTIC CONCRETE AND REMOVED AFTER CURING.



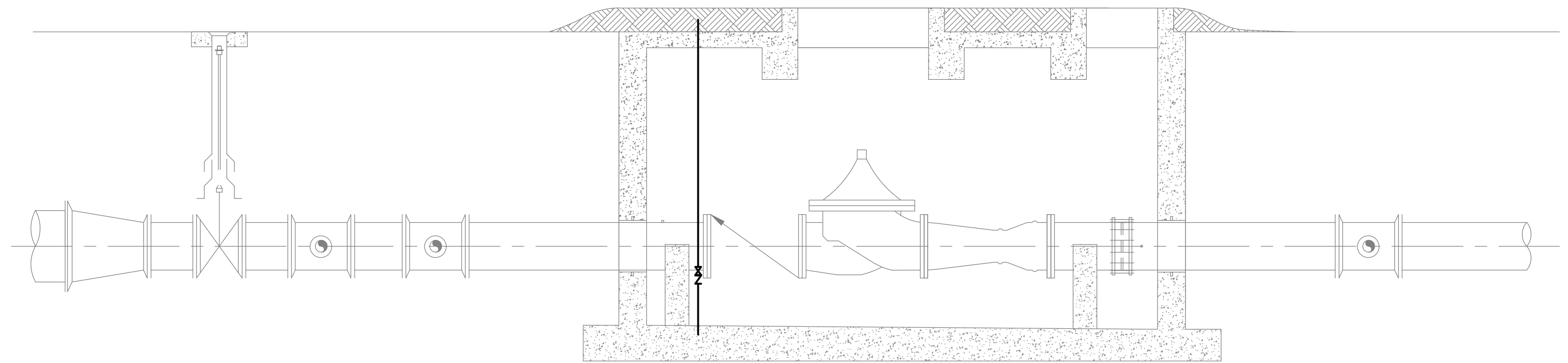
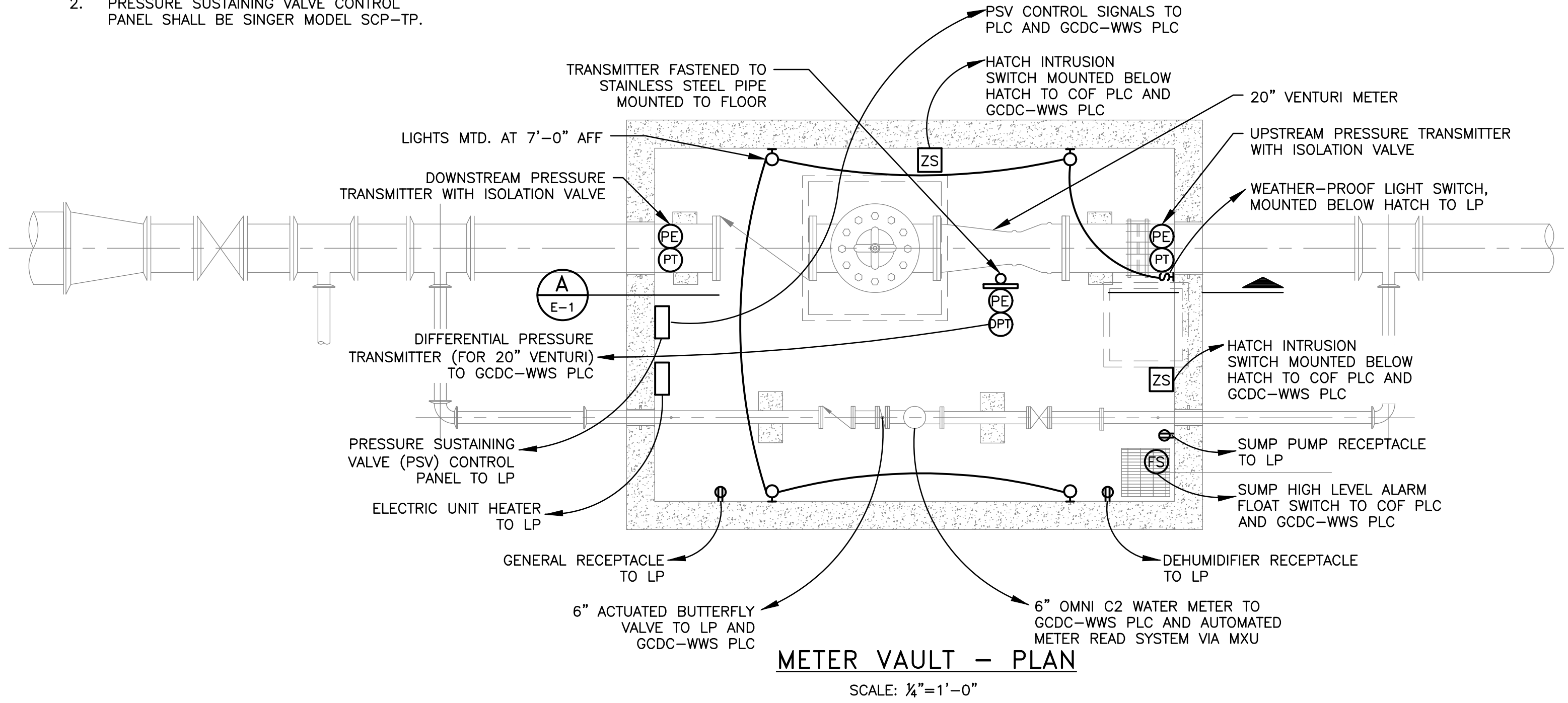
PROJECT MANAGER: JESSIE B. KOSKOV, PE
C:\PL\WORK\SCHWAB\009693\96\PLT-PROC-PLAN.DWG - E-1 - PLOTTED 3/7/2020 2:11 PM BY: SCHWAB, ALAN
FIELD BOOK INFORMATION:



DIFFERENTIAL PRESSURE TRANSMITTER MOUNTING DETAIL

NOTES:

1. DIFFERENTIAL PRESSURE TRANSMITTER SHALL BE ROSEMOUNT MODEL 3051S3CD2A3A11A1AC1M5D1Q4 WITH 3-WAY VALVE MANIFOLD MODEL 0305RC32B11B4.
2. PRESSURE SUSTAINING VALVE CONTROL PANEL SHALL BE SINGER MODEL SCP-TP.



METER VAULT - PROFILE
SCALE: 1/4"=1'-0"

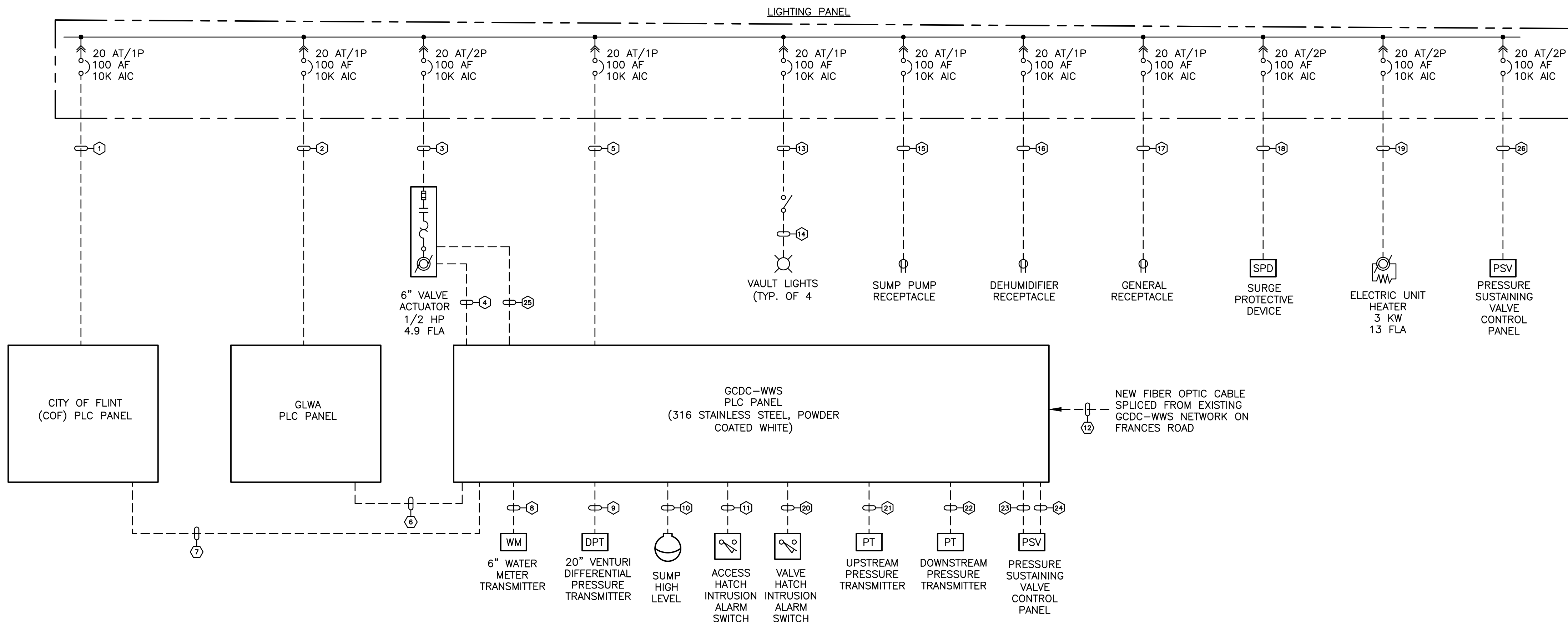


CITY OF FLINT 1101 S. SAGINAW STREET FLINT, MI 48502 36" SECONDARY WATER SUPPLY PROPOSED- GCDC METER VAULT AT FRANCES RD ELECTRICAL PLAN		ISSUED FOR: DATE: BY:
JOB NO. COF1068.01F		REVISIONS
SHEET E-1		DESCRIPTION
DATE		BY

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RISER DIAGRAM



CABLE SCHEDULE									
NO.	CONDUIT LABEL	FROM	TO	CONDUIT		CABLE			
				SIZE	TYPE	QTY. AND SIZE	VOLT	TYPE	COMMENTS
1	COFPLC-PWR-1	LIGHTING PANEL	COF PLC PANEL	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
2	GLWAPLC-PWR-1	LIGHTING PANEL	GLWA PLC PANEL	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
3	VA6-PWR-1	LIGHTING PANEL	6" ACTUATOR	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	240V. POWER
4	VA6-CTRL-1	GCDC PLC PANEL	6" ACTUATOR	3/4"	RGS	14#14	600	THWN-2	120V. CONTROL
5	GCDCPLC-PWR-1	LIGHTING PANEL	GCDC PLC PANEL	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
6	GCDC/GLWA-COM-1	GLWA PLC PANEL	GCDC PLC PANEL	3/4"	RGS	1#16 TWIST. SHIELD PAIR	600	PVC	24V. 20" FLOW
						1#16 TWIST. SHIELD PAIR	600	PVC	24V. 6" FLOW
						1#16 TWIST. SHIELD PAIR	600	PVC	24V. 20" FLOW
7	GCDC/COF-COM-1	COF PLC PANEL	GCDC PLC PANEL	3/4"	RGS	1#16 TWIST. SHIELD PAIR	600	PVC	24V. 20" FLOW
						1#16 TWIST. SHIELD PAIR	600	PVC	24V. 6" FLOW
8	WM6-CTRL-1	6" WM	GCDC PLC PANEL	3/4"	RGS	1#16 TWIST. SHIELD PAIR	600	PVC	24V. 6" FLOW
9	DPT20-CTRL-1	20" DPT	GCDC PLC PANEL	3/4"	RGS	1#16 TWIST. SHIELD PAIR	600	PVC	24V. 20" FLOW
10	GCDCPLC-CTRL-1	FLOAT SWITCH	GCDC PLC PANEL	3/4"	RGS	2#14	600	THWN-2	120V. CONTROL
11	GCDCPLC-CTRL-2	LIMIT SWITCH	GCDC PLC PANEL	3/4"	RGS	2#14 + 1#14 GND	600	THWN-2	120V. CONTROL
12	GCDC-COM-1	CCDC	GCDC PLC PANEL	2"	PVC	FIBER OPTIC CABLE	N/A	-	COMMUNICATION
13	LIGHTS-PWR-1	LIGHTING PANEL	LIGHT SWITCH	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
14	LIGHTS-PWR-2	LIGHTS (TYP.)	LIGHT SWITCH	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
15	SPRECP-PWR-1	LIGHTING PANEL	SUMP PUMP REC.	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
16	DHRECP-PWR-1	LIGHTING PANEL	DEHUMID. RECP.	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
17	GENRECP-PWR-1	LIGHTING PANEL	GENERAL RECP.	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER
18	SPD-PWR-1	LIGHTING PANEL	SPD	3/4"	RGS	3#12 + 1#12 GND	600	THWN-2	120V. POWER
19	EUH-PWR-1	LIGHTING PANEL	UNIT HEATER	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	240V. POWER
20	GCDCPLC-CTRL-3	LIMIT SWITCH	GCDC PLC PANEL	3/4"	RGS	2#14 + 1#14 GND	600	THWN-2	120V. CONTROL
21	UPSPT-CTRL-1	UPSTREAM PT	GCDC PLC PANEL	3/4"	RGS	1#16 TWIST. SHIELD PAIR	600	PVC	24V. UPSTREAM PRESSURE
22	DNSPT-CTRL-1	DOWNSTREAM PT	GCDC PLC PANEL	3/4"	RGS	1#16 TWIST. SHIELD PAIR	600	PVC	24V. DOWNSTREAM PRESSURE
23	VA20-CTRL-1	GCDC PLC PANEL	PSV CTRL PANEL	3/4"	RGS	10#14	600	THWN-2	120V. CONTROL
24	VA20-CTRL-2	GCDC PLC PANEL	PSV CTRL PANEL	3/4"	RGS	2#16 TWIST. SHIELD PAIR	600	PVC	24V. SETPOINT & FEEDBACK
25	VA6-CTRL-2	GCDC PLC PANEL	6" ACTUATOR	3/4"	RGS	2#16 TWIST. SHIELD PAIR	600	PVC	24V. SETPOINT & FEEDBACK
26	PSVCP-PWR-1	LIGHTING PANEL	PSV CTRL PANEL	3/4"	RGS	2#12 + 1#12 GND	600	THWN-2	120V. POWER

PANEL:		LIGHTING PANEL		100A BUS (10K AIC)				
VOLTAGE: 240/120 VAC PHASE: 1 WIRE: 3 MAIN: 100 AMP/2P TYPE: NEMA 4X STAINLESS STEEL MOUNTING: SURFACE								
CKT	BKR	LOAD	VA	PH	VA	LOAD	BKR	CKT
1	20A/2P	ELECTRIC UNIT HEATER	1560	A	0	SURGE PROTECTIVE DEVICE (SPD)	20A/2P	2
3			1560	B	0			4
5	20A/2P	6" VALVE ACTUATOR	588	A	1176	SUMP PUMP RECEPTACLE	20A/1P	6
7			588	B	600	DEHUMIDIFIER RECEPTACLE	20A/1P	8
9	20A/1P	METER PIT LIGHTS	200	A	180	GENERAL RECEPTACLE	20A/1P*	10
11	20A/1P	GCDC-WWS PLC PANEL	600	B	600	CITY OF FLINT PLC PANEL	20A/1P	12
13	20A/1P	GLWA PLC PANEL	600	A	0	SPARE	20A/1P	14
15	20A/1P	PRESSURE SUSTAINING VALVE CONTROL PANEL	600	B	0	SPARE	20A/1P	16
17	20A/1P	SPARE	0	A	0	SPACE	SPACE	18
19	SPACE	SPACE	0	B	0	SPACE	SPACE	20
TOTAL:								
A=4304			B=4548					
TOTAL CONNECTED LOAD:			8852					

* GFCI CIRCUIT BREAKER



Know what's **below**.
Call before you dig

[illegible]

**WADE
TRIM**

525 S. Oakview Street, Suite 201
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810.239.2555
www.wadetrim.com

CITY OF FLINT
1101 S. SAGINAW STREET
FLINT, MI 48502

36" SECONDARY WATER SUPPLY
PROPOSED- GCDC METER VAULT AT FRANCES RD
ELECTRICAL DIAGRAM AND SCHEDULES

ISSUED FOR: DATE: BY:

JOB NO.
COF1068.01F

SHEET

E-2

