



COMPLEX PROJECTS
REQUIRE RESOLVE
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CITY OF BRIDGEPORT
HARRISON COUNTY, WV

LIFT STATION #9 GRAVITY SEWER PROJECT

ADDENDUM #1

AUGUST 10, 2023

THRASHER PROJECT #T20-11064

TO WHOM IT MAY CONCERN:

A Pre-Bid Conference was held on Wednesday, July 26, 2023, for the above-referenced project. A copy of the sign in sheet is included in this Addendum. The following are clarifications and responses to questions posed by contractors for the above reference project.

A. GENERAL

1. **THE BID FORM HAS BEEN REVISED. YOU MUST USE THE REVISED BID FORM WHEN PREPARING YOUR BID PACKAGE FOR THIS PROJECT.**

B. SPECIFICATIONS

Specification Section 033050 - Crystalline Concrete Waterproofing has been added to the contract and is included in this Addendum.

C. DRAWINGS

Sheets 1-3 – Added stream bank slope protection and removal and replacement of existing fence.

D. QUESTIONS AND RESPONSES

1. QUESTION

Is there a bypass connection at the lift station? If not, could one be installed?

RESPONSE

There is an existing bypass connection at Lift Station #9.

2. QUESTION

What is the flow rate at the lift station? How much head would the bypass pumps have to overcome?

RESPONSE

Bypass pumping must be able to handle at least 500gpm. The duty point of the existing pumps at the lift station is 485gpm @ 165' TDH.

3. QUESTION

Does the existing force main discharge to a manhole and if so how far away?

RESPONSE

Yes. Approximately 9650 LF away from Lift Station #9.

4. QUESTION

Where would the bypass have to be set up in order to capture all of the flow to allow for the spray lining to be applied?

RESPONSE

The Contractor should note all connections to the main during construction and develop a bypass plan to accommodate connections.

The engineer cannot dictate how bypass pumping is completed, but some options are listed below:

- 1) The bypass pump may be moved to pump around each manhole that is being lined.
- 2) The bypass pump could pump around multiple manholes as manholes downstream are being lined.
- 3) A bypass pump could be set in the existing manhole upstream of MH #9-8 to pump around the entire gravity portion to Lift Station #9.

5. QUESTION

Would OBIC spray lining be an acceptable product?

RESPONSE

Yes, OBIC will be considered an acceptable manufacturer.

6. QUESTION

Would you consider adding additional lining item for the different diameter wet wells?

RESPONSE

All manholes are 48-inch diameter. There is already a separate line item for lining the existing manhole/well at Lift Station #9, which is 72-inch diameter. The bid form has been updated to include diameters for lining.

7. QUESTION

Do Davis Bacon Wages apply to this project?

RESPONSE

No. This project is completely funded by the City of Bridgeport. Davis Bacon Wages do not apply.

8. QUESTION

How soon can the Contract be awarded after the bid opening?

RESPONSE

The hold time is 90 days; however, the Contract is expected to be awarded within 45 to 60 days after the bid opening.

E. CLARIFICATIONS

1. Specification Section 033050 - Crystalline Concrete Waterproofing has been added to the contract and is included in this Addendum. All new manholes are required to have crystalline waterproofing.
2. The City of Bridgeport personnel will be performing Resident Project Representation during construction.

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until 10:00 a.m. on August 17, 2023, at 515 W. Main Street, Bridgeport, WV 26330. Good luck to everyone and thank you for your interest in the project.

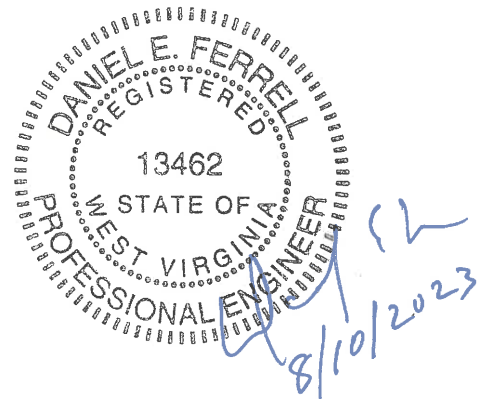
Sincerely,

THE THRASHER GROUP, INC.



DANIEL E. FERRELL, P.E.
Project Manager

Enclosures: Pre-Bid Sign-In Sheet
Index
C-410 Bid Form
Specification Section 033050 - Crystalline Concrete Waterproofing
Plan Sheet 1
Plan Sheet 2
Plan Sheet 3



**CITY OF BRIDGEPORT
HARRISON COUNTY, WEST VIRGINIA
LIFT STATION #9 GRAVITY SEWER PROJECT**

PRE-BID CONFERENCE

Wednesday, July 26, 2023

Thrasher Project #T20-11064

Name	Representing	Phone #	Email Address
Daniel Ferrer	Thrasher		
SEAN PINNES	RDR UTILITY SERVICES GROUP	304-476-5286	spheres@rdrug.com
David Wilson	Bear Contracting	304-326-0160	estimating@bear-contracting.com
Tony Closson	J.F. Allen Company	304-460-7424	T.Closson@J.F.Allen.Co.Com
Tracy Curtis	Green River Group LLC	304-203-4623	tracyscurtis@ychoo.com
Ty Martin	Solia Rock Exc. Inc	304-276-2371	ty.martine@solidrockinc.net
Rich Smathers	O.W.V. EXCAVATING	740-238-3921	rsmathers@owveexcavating.com
CRAIG HOWARD	Doss ENTERPRISES	304-476-8575	Craig.Howard@DossenEnterprises.com
Bill Saunders	CORE & MAIN	304-612-3140	william.saunders@coremain.com

**CITY OF BRIDGEPORT
HARRISON COUNTY, WEST VIRGINIA
FOR THE
LIFT STATION #9 GRAVITY SEWER PROJECT**

- I N D E X -

BIDDING DOCUMENTS

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Bid Forms	C-410

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Revised per Addendum #1
August 10, 2023

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ACCOMMODATION OF UTILITIES ON HIGHWAY RIGHT OF WAY

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

*City of Bridgeport
515 W. Main Street
Bridgeport, WV 26330*

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Bid Opening Requirements

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

GENERAL

The Bidder shall take notice of and shall be responsible for any local or state taxes levied and applicable, and the cost for the same shall be included as part of the submitted Bid.

The total Bid cost stated includes a complete operating installation including furnishing and installation of any and all changes or additions in plans, piping, mechanical work, additional electrical work, accessories, controls, etc. necessary to accommodate alternative equipment systems or materials used in construction.

BID PROPOSAL

The Bidder agrees to perform all required Work described in the detailed Specifications and as shown on the Plans for the complete construction and placing in satisfactory operation the Lift Station #9 Gravity Sewer Project. The Project "Sequence of Construction" has been detailed in the Drawings and Specification Division 1, Project Summary, Section 011000. The Bidder agrees to perform all the Work proposed for the total of the following Bid prices.

3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the lump sum (stipulated) price(s), together with any Unit Prices indicated in Paragraph 3.02 and shown in the bid schedule.

B. Lump Sum Bids may be one of the following:

1. Lump Sum Price (Single Lump Sum)
 2. Lump Sum Price (Base Bid and Alternates)
 3. Lump Sum Price (Sectional Lump Sum Bids)
- C. All specified cash allowance(s) are included in the price(s) set forth in the bid schedule, and have been computed in accordance with Paragraph 13.02 of the General Conditions.
- D. All specified contingency allowances are included in the price(s) set forth in the bid schedule, and have been computed in accordance with Paragraph 13.02 of the General Conditions.

3.02 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit prices as shown in the Bid Schedule.
- B. Bidder acknowledges that:
1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
 2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.03 *Total Bid Price (Lump Sum and Unit Prices)*

**PROPOSED
LIFT STATION #9 GRAVITY SEWER
FOR THE

CITY OF BRIDGEPORT
HARRISON COUNTY, WEST VIRGINIA

THRASHER PROJECT #T20-11064**

BID SCHEDULE

NOTE: Bid Unit Price amounts are to be shown in both words and figures. In case of discrepancy, the Bid Unit Price shown in words will govern. Bids shall include applicable taxes and fees.

Bid Item	Quantity	Description with Unit Price Written In Words	Unit Price (In Figures)	Total Price (In Figures)
1	1	LS Mobilization/Demobilization		
		Dollars		
		Cents	\$	\$
2	1	LS Erosion and Sediment Controls		
		Dollars		
		Cents	\$	\$

Bid Item	Quantity		Description with Unit Price Written In Words	Unit Price (In Figures)	Total Price (In Figures)
3	1	LS	Videotaping of Project Area	Dollars _____	\$ _____
				Cents _____	\$ _____
4	1	EA	Tie Existing 4" PVC Sewer Into New Manhole	Dollars _____	\$ _____
				Cents _____	\$ _____
5	2	EA	Tie Existing 6" PVC Sewer Into New Manhole	Dollars _____	\$ _____
				Cents _____	\$ _____
6	1	EA	Tie Existing 8" PVC Sewer Into New Manhole	Dollars _____	\$ _____
				Cents _____	\$ _____
7	2	EA	Demolish Existing Manhole	Dollars _____	\$ _____
				Cents _____	\$ _____
8	2	EA	48" Diameter Manhole w/ Crystalline Water Proofing and Frame & Cover	Dollars _____	\$ _____
				Cents _____	\$ _____
9	7	EA	Remove and Replace 48" Diameter Manhole w/ Crystalline Water Proofing and Frame & Cover	Dollars _____	\$ _____
				Cents _____	\$ _____
10	30	VF	48" Diameter Manhole Riser	Dollars _____	\$ _____
				Cents _____	\$ _____

Bid Item	Quantity		Description with Unit Price Written In Words	Unit Price (In Figures)	Total Price (In Figures)
11	2	EA	Cut and Plug Existing Sewer		
				Dollars	
				Cents	\$
					\$
12	4	EA	Customer Cleanout		
				Dollars	
				Cents	\$
					\$
13	120	LF	24" Steel Casting (Bore and Jack)		
				Dollars	
				Cents	\$
					\$
14	2	EA	HDPE Concrete Anchor		
				Dollars	
				Cents	\$
					\$
15	1,200	LF	12" PVC Gravity Sewer (0"-6")		
				Dollars	
				Cents	\$
					\$
16	360	LF	12" PVC Gravity Sewer (6"-9")		
				Dollars	
				Cents	\$
					\$
17	80	LF	12" PVC Gravity Sewer (9"-12")		
				Dollars	
				Cents	\$
					\$
18	140	LF	12" HDPE Gravity Sewer (0"-6")		
				Dollars	
				Cents	\$
					\$
19	50	LF	12" HDPE Gravity Sewer (6"-9")		
				Dollars	
				Cents	\$
					\$

Bid Item	Quantity		Description with Unit Price Written In Words	Unit Price (In Figures)	Total Price (In Figures)
20	40	LF	6" SDR-35 Lateral Piping		
				Dollars	
				Cents	\$
					\$
21	1,100	LF	Remove and Replace Existing 8" ACP with 12" PVC (0"-6")		
				Dollars	
				Cents	\$
					\$
22	10	LF	Remove and Replace Existing 8" ACP with 12" PVC (6"-9")		
				Dollars	
				Cents	\$
					\$
23	1	EA	Tie-in to Existing Wet Well		
				Dollars	
				Cents	\$
					\$
24	85	VF	Lining for 48" Diameter Manholes		
				Dollars	
				Cents	\$
					\$
25	65	LF	Gravel Driveway/Road Repair		
				Dollars	
				Cents	\$
					\$
26	150	LF	HMA Driveway/Road Repair		
				Dollars	
				Cents	\$
					\$
27	210	LF	Remove and Replace Existing Fence		
				Dollars	
				Cents	\$
					\$
28	10	VF	Lining for Existing 72" Wet Well M.H.		
				Dollars	
				Cents	\$
					\$

Bid Item	Quantity		Description with Unit Price Written In Words	Unit Price (In Figures)	Total Price (In Figures)
29	1	LS	Bypass Pumping		
				Dollars	
				Cents	\$
					\$
30	875	LF	Remove and Replace Existing Fence		
				Dollars	
				Cents	\$
					\$
31	1,200	LF	Rip Rap Ditch Slope Protection		
				Dollars	
				Cents	\$
					\$
32	1,500	LS	Reclamation of Disturbed Area		
				Dollars	
				Cents	\$
					\$
33	1	LS	Construction Stakeout		
				Dollars	
				Cents	\$
					\$

TOTAL BASE BID: _____
 _____ (Words)
 _____ (\$ _____) (Figures)

(Bid Unit Price amounts are to be shown in both words and figures. In case of discrepancy, the Bid Unit Price shown in words will govern.)

3.04 *Method of Award*

If at the time this contract is to be awarded, the lowest total bid submitted by a qualified, responsive, responsible Bidder does not exceed the amount of funds then estimated by the Owner, as available to finance the contract, the construction contract will be awarded. If such bids exceeds such amount, the owner may reject all bids.

- A. Unit prices have been computed in accordance with paragraph 13.03.A of the General Conditions.

- B. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4 — BASIS OF BID — COST PLUS FEE

4.01 ~~The Contract Price will be the Cost of the Work, determined as provided in Paragraph 13.01 of the General Conditions, together with the following fee, and subject to the Guaranteed Maximum Price.~~

4.02 *Contractor's Fee*

A. ~~Contractor's fee will be [number] percent of the Cost of the Work. No fee will be payable on the basis of costs itemized as excluded in Paragraph 13.01.C of the General Conditions.~~

1. ~~The maximum amount payable by Owner as a percentage fee (Guaranteed Maximum Fee) will not exceed \$[insert cap amount], subject to increases or decreases for changes in the Work.~~

B. ~~Contractor's fee will be determined by applying the following percentages to the various portions of the Cost of the Work as defined in Article 13 of the General Conditions. No fee will be payable on the basis of costs itemized as excluded in Paragraph 13.01.C of the General Conditions:~~

Costs	Percent
Payroll costs (See Paragraph 13.01.B.1, General Conditions)	
Materials and Installed Equipment cost (GC 13.01.B.2)	
Amounts to be paid to Subcontractors (GC 13.01.B.3)	
Amount to be paid to special consultants (GC 13.01.B.4)	
Other costs (GC 13.01.B.5)	

1. ~~The maximum amount payable by Owner as a percentage fee (Guaranteed Maximum Fee) will not exceed \$[insert cap amount], subject to increases or decreases for changes in the Work.~~

C. ~~Contractor's fee will be the fixed sum of \$[number].~~

4.03 *Guaranteed Maximum Price*

A. ~~The Guaranteed Maximum Price to Owner of the Cost of the Work including Contractor's Fee will not exceed \$[Bidder fill in GMP].~~

Deleted

ARTICLE 5 — PRICE PLUS TIME BID

5.01 *Price-Plus-Time Contract Award (Stipulated Price Contract)*

A. ~~The Bidder to which an award of the Contract will be made will be determined in part on the basis of the Total Bid Price and the total number of calendar days to substantially complete the Work, in accordance with the following:~~

	Description		Amount
A	1. Total Bid Price		\$[number]
	2. Total number of calendar days to substantially complete the Work	[number] days	
	3. Liquidated Damages Rate (from Agreement)	\$[number]/day	
B	4. Adjustment Amount (2 x 3)		\$[number]
A+B	5. Amount for Comparison of Bids		\$[number]

~~B. The purpose of the process in the table above is only to calculate the lowest price plus time (A+B) bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is the Total Bid Price.~~

~~C. Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.~~

5.02 ~~Price Plus Time Contract Award (Cost Plus Fee with Guaranteed Maximum Price Contract)~~

~~A. The Bidder to which an award of Contract will be made will be determined in part on the basis of the Guaranteed Maximum Price and the total number of calendar days to substantially complete the Work, in accordance with the following:~~

	Description		Amount
A	1. Guaranteed Maximum Price		\${number}
	2. Total number of calendar days to substantially complete the Work	{number} days	
	3. Liquidated Damages Rate (from Agreement)	\${number}/day	
B	4. Adjustment Amount (2 x 3)		\${number}
A+B	5. Amount for Comparison of Bids		\${number}

~~B. The purpose of the process in the table above is only to calculate the lowest price plus time (A+B) bid amount for bid comparison purposes. The price for completion of the Work (the Contract Price) is based on the cost of the Work, plus a fee, subject to a guaranteed maximum price, as set forth in the Agreement.~~

~~C. Bonds required under Paragraph 6.01 of the General Conditions will be based on the Contract Price.~~

~~Deleted~~

ARTICLE 6—TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

~~6.02 Bidder agrees that the Work will be substantially complete on or before [Bidder inserts date], and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before [Bidder inserts date].~~

~~Deleted~~

~~6.03 Bidder agrees that the Work will be substantially complete within [Bidder inserts number] calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within [Bidder inserts number] calendar days after the date when the Contract Times commence to run.~~

~~Deleted~~

6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

**ARTICLE 7—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS,
AND RECEIPT OF ADDENDA**

7.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

7.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

7.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 8—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

8.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
 - 1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 - 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 - 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 - 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 - 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder’s (Contractor’s) safety precautions and programs.
 - 7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for

the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

8.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)

SECTION 033050 - CRYSTALLINE CONCRETE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and all related Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Furnishing of all labor, materials, services, and equipment necessary for the supply and installation of crystalline waterproofing additive to new and existing concrete structures as indicated on the Drawings and as specified herein. The crystalline waterproofing material shall be added to concrete during the mixing cycle and shall be used in above or below-grade walls and slabs, including liquid retaining structures where enhanced chemical resistance is required.
- B. Related Sections
 - 1. Section 013300 - Submittal Procedures.
 - 2. Section 033000 - Cast-In-Place Concrete.
 - 3. Section 330513 - Manholes and Structures.

1.3 REFERENCES

- A. Applicable Standards: The following standards are referenced herein.
 - 1. American Society for Testing and Materials (ASTM).
 - 2. Army Corps of Engineers (CRD).
 - 3. American Concrete Institute (ACI).
 - 4. NSF International (NSF).

1.4 SYSTEM DESCRIPTION

- A. Crystalline Waterproofing Additive (CWA): Concrete waterproofing system shall be of the crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete. The system shall cause the concrete to become sealed against the penetration of liquids from any direction and shall protect the concrete from deterioration due to harsh environmental conditions.

1.5 SYSTEM PERFORMANCE REQUIREMENTS

- A. Testing Requirements: Crystalline waterproofing system shall be tested in accordance with the following standards and conditions, and the testing results shall meet or exceed the performance requirements as specified herein.
- B. Independent Laboratory: Testing shall be performed by an independent laboratory meeting the requirements of ASTM E 329-90 and certified by the United States Bureau of Standards. Testing laboratory shall obtain all concrete samples and waterproofing product samples.
- C. Crystalline Formation: Crystallizing capability of waterproofing system shall be evidenced by independent SEM (Scanning Electron Microscope) photographs showing crystalline formations within the concrete matrix.
- D. Permeability: Independent testing shall be performed according to U.S. Army Corps of Engineers CRD-C48-73 "Permeability of Concrete". Treated concrete samples shall be pressure tested to 150 psi (350-foot head of water) or 1.05 MPa (106 m head of water). The treated samples shall exhibit no measurable leakage.
- E. Chemical Resistance: Independent testing shall be performed to determine "Sulfuric Acid Resistance of Concrete Specimens". Treated concrete samples (dosage rates of 3 percent, 5 percent, and 7 percent) shall be tested against untreated control samples. All samples shall be immersed in sulfuric acid and weighed daily until a control sample reaches a weight loss of 50 percent or over. On final weighing the percentage weight loss of the treated samples shall test significantly lower than the control samples.
- F. Compressive Strength: Independent testing shall be performed according to ASTM C39 "Compressive Strength of Cylindrical Concrete Specimens". Concrete samples containing the crystalline waterproofing additive shall be tested against untreated control sample. At twenty-eight (28) days, the treated samples shall exhibit a minimum of 10 percent increase in compressive strength over the control sample.
- G. Potable Water Approval: Independent testing shall be performed according to NSF Standard 61, and approval for use of waterproofing material on structures holding potable water shall be evidenced by NSF certification.

1.6 SUBMITTALS

- A. General: Submit listed submittals in accordance with conditions of the Contract Documents and with Section 013300 - Submittal Procedures.
- B. Product Data: Submit product data, including manufacturer's Specifications, installation instructions, and general recommendations for waterproofing applications. Also include manufacturer's certification or other data substantiating that products comply with requirements of Contract Documents.
- C. Test Reports: Submit, for acceptance, complete test reports from approved independent testing laboratories certifying that waterproofing system conforms to performance characteristics and testing requirements specified herein.

- D. **Manufacturer's Certification:** Provide certificate signed by manufacturer or manufacturer's representative certifying that the materials to be installed comply in all respects with the requirements of this Specification.

1.7 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** Manufacturer to be ISO 9001 registered, and to have no less than ten (10) years' experience in manufacturing the crystalline waterproofing additive for the required Work. Manufacturer must be capable of providing field service representation during construction phase. Manufacturers that cannot provide the performance test data specified herein will not be considered for the Project.
- B. **Applicator:** Installer of crystalline waterproofing additive shall be approved by the manufacturer or manufacturer's representative in writing.
- C. **Technical Consultation:** The waterproofing manufacturer's representative shall provide technical consultation on waterproofing application.

1.8 DELIVERY, STORAGE AND HANDLING

- A. **Ordering:** Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. **Delivery:** Deliver packaged waterproofing materials to Project Site in original undamaged containers, with manufacturer's labels and seals intact.
- C. **Storage:** Store waterproofing materials in dry, enclosed location, at temperature and humidity conditions recommended by manufacturer.

1.9 WARRANTY

- A. **Project Warranty:** Refer to conditions of the Contract Documents for Project warranty provisions.
- B. **Manufacturer's Warranty:** Manufacturer shall provide standard product warranty executed by authorized company official. Term of warranty shall be five (5) years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include but are not limited to the following:
 - 1. Penetron

2. Xypex
3. Sika

B. Products: Crystalline waterproofing materials as follows:

1. Penetron Admix®
2. Xypex® Admix C-1000
3. MasterLife® 300D.

C. Source Quality: Obtain proprietary crystalline waterproofing products from a single manufacturer.

2.2 DOSAGE

A. General: Admix must be added to concrete mix at time of batching.

B. Dosage Rate: Under normal conditions, the crystalline waterproofing powder shall be added to the concrete mix at the following rates:

Penetron Admix	0.8% - 1.0% by weight of portland cement content
Xypex Admix C-1000	2% - 3% by weight of portland cement content
MasterLife® 300D	2% - 2.5% by weight of portland cement content

For enhanced chemical protection or meeting specific Project requirements, or where the concrete mix design contains higher than 20 percent fly ash content or includes a portland cement/slag cement blend, consult with manufacturer or its authorized representative to determine appropriate dosage rates.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data regarding installation, including technical bulletins, product catalogue, installation instructions and product packaging labels.

3.2 PROJECT CONDITIONS

A. Reinforcement: All reinforcement shall be welded wire fabric in accordance with applicable standards. Exposed concrete decks (joint free) shall contain sufficient reinforcement to minimize thermal movement and control cracking.

B. Setting Time and Strength: Some retardation of set may occur when using CWA. The amount of retardation will depend upon the concrete mix design, the particular Admix product used, dosage rate of the Admix, temperature of the concrete and climatic conditions. Concrete containing a CWA may develop higher ultimate strengths than plain concrete. Conduct trial mixes under Project conditions to determine setting time and

strength of the concrete. Consult with manufacturer or manufacturer's representative regarding concrete mix design, Project conditions and proper dosage rate.

- C. Weather Conditions: For mixing, transporting, and placing concrete under conditions of high temperature or low temperature, follow concrete practices as referred to in ACI 305R-77 (Hot Weather Concreting) and ACI 306R-78 (Cold Weather Concreting). For flatwork being placed in either hot, dry, or windy conditions use of monomolecular film (evaporation retardant) is recommended to control loss of bleed water.

3.3 CURING

- A. General: Concrete containing CWA shall be moist cured in accordance with ACI Reference 308, "Standard Practice for Curing Concrete".
- B. Curing Compounds: Curing compounds may be used in the event that Project requirements or conditions prevent moist curing. Curing compounds shall comply with ASTM C-309.

3.4 PROTECTION

- A. Protection: Protect installed product and finished surfaces from damage during construction.

3.5 FIELD QUALITY CONTROL

- A. Examination for Defects: Do not conceal the treated concrete before it has been observed by Engineer, waterproofing manufacturer's representative, and other designated entities. Concrete shall be examined for structural defects such as faulty construction joints, cold joints and cracks. Such defects to be repaired in accordance with manufacturer's repair procedures.

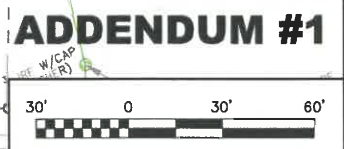
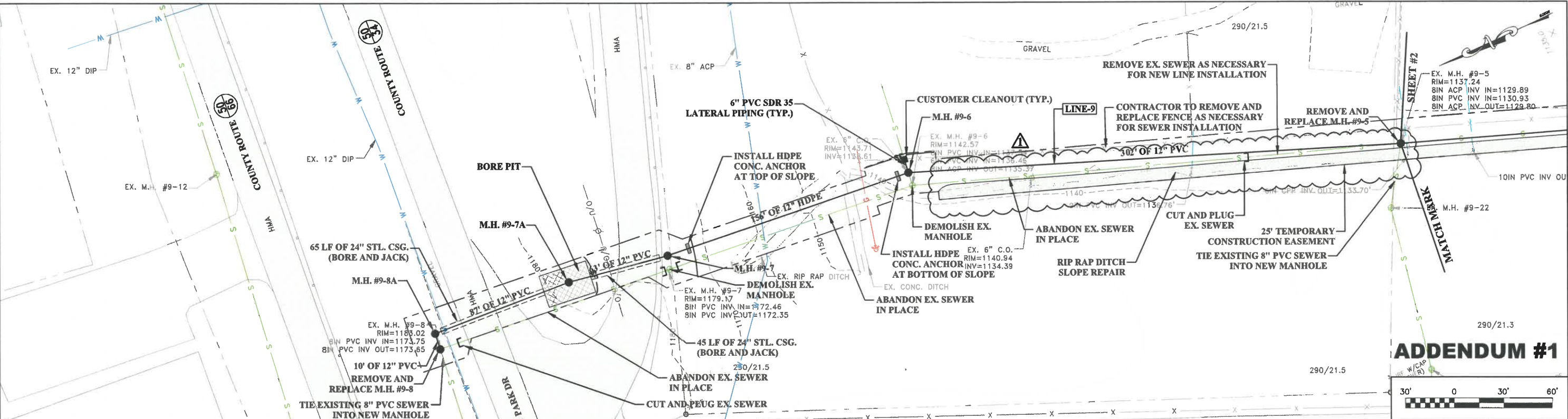
3.6 INTERACTION WITH OTHER MATERIALS

- A. Grout, Cement Parge Coat, Plaster or Stucco: Because concrete containing CWA form a relatively smooth surface and the resulting crystalline formation fills the concrete pores thereby reducing suction characteristics of the concrete, it may be necessary to use a suitable bonding agent for proper bonding of cementitious systems.
- B. Responsibility to Ensure Compatibility: CWA are compatible with most admixtures used in the production of quality concrete. However, the companies make no representations nor warranties regarding such compatibility of their products with other additives or admixtures, nor regarding compatibility of the treated concrete with coatings, plasters, stuccos, tiles, or other surface-applied materials. It shall be the responsibility of the concrete Supplier to take whatever measures are necessary, including testing, to ensure compatibility of the products with other additives or admixtures being used in the concrete mix, and it shall be the responsibility of the installer of the surface-applied

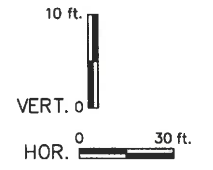
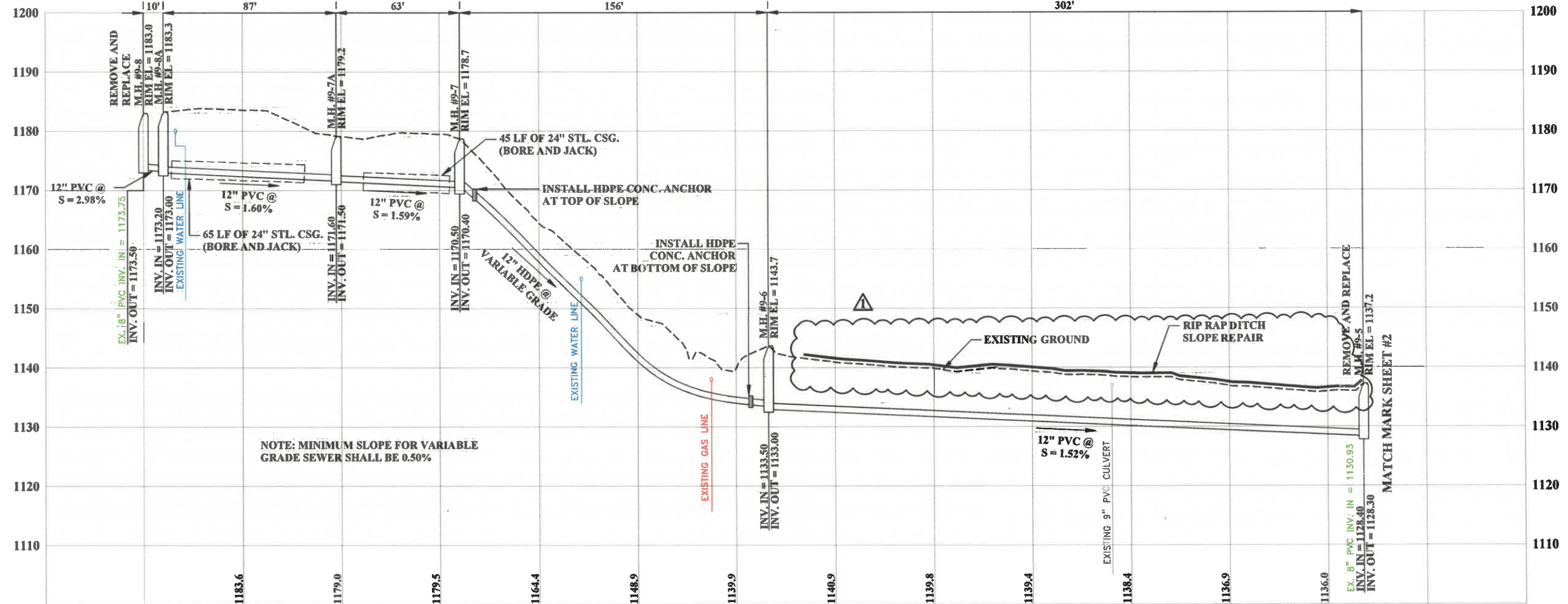
material that is to be applied over the treated concrete to take whatever measures are necessary, including testing, to ensure acceptance by or adhesion to the treated concrete.

END OF SECTION 033050

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ADDENDUM #1



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 APPROVED: D. FERRELL DATE:
 SURVEY DATE:
 SURVEY BY:
 FIELD BOOK No.:

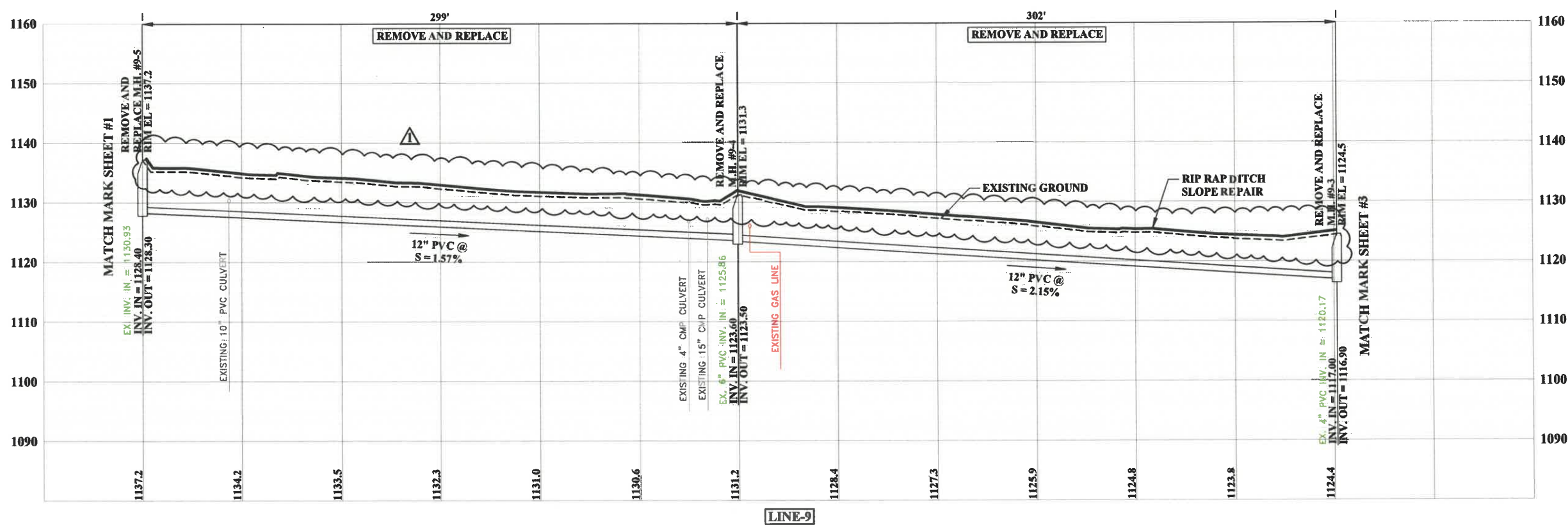
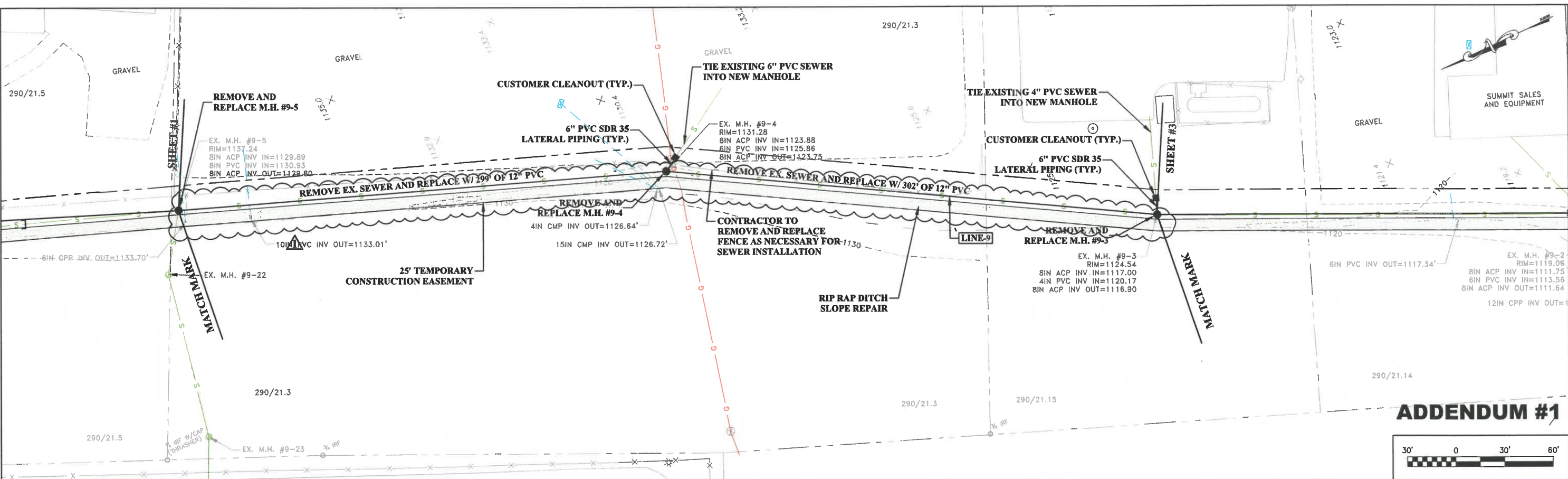


PHASE No.
 CONTRACT No.
 PROJECT No.
T20-11064

CITY OF BRIDGEPORT
 LIFT STATION #9
 GRAVITY SEWER REPLACEMENT
 HARRISON COUNTY, WEST VIRGINIA
 PLAN SHEET

SHEET No.
1

LAYOUT TAB: 2
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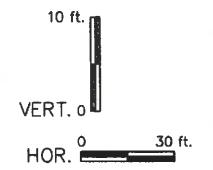
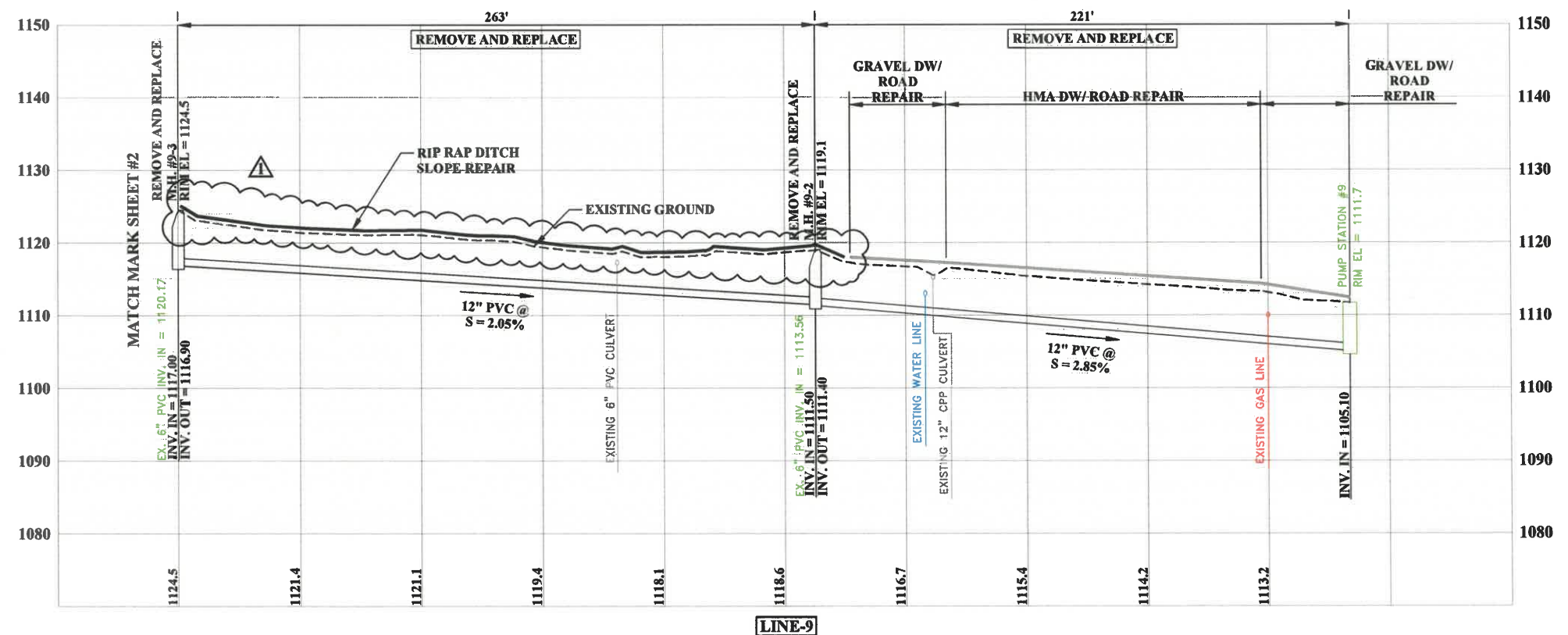
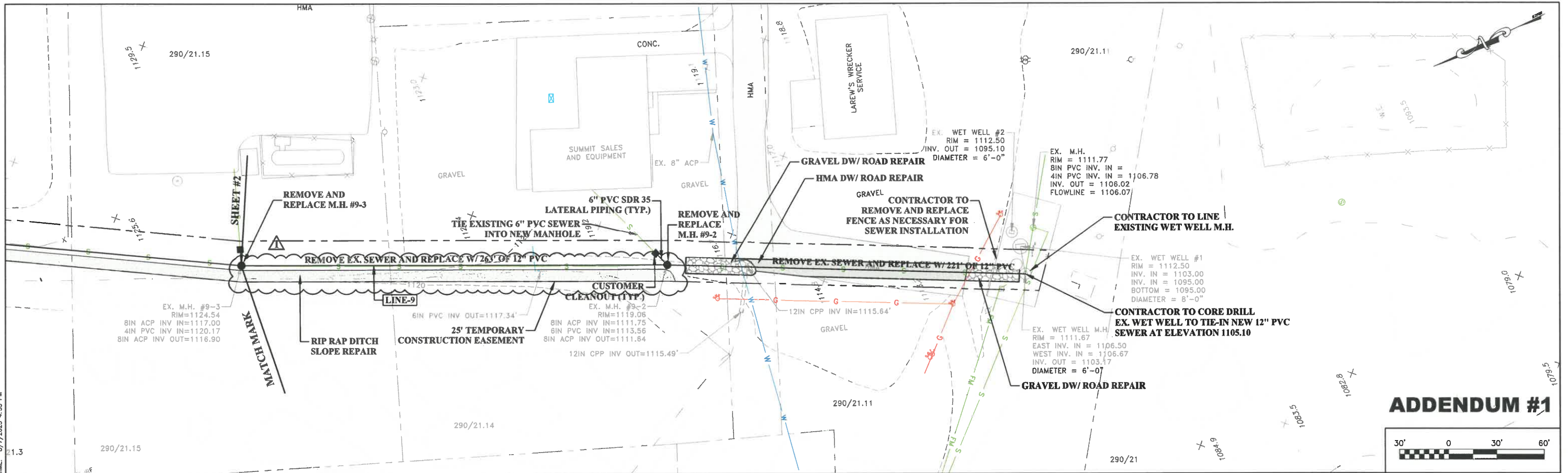


PHASE No.
 CONTRACT No.
 PROJECT No.
T20-11064

**CITY OF BRIDGEPORT
 LIFT STATION #9
 GRAVITY SEWER REPLACEMENT
 HARRISON COUNTY, WEST VIRGINIA
 PLAN SHEET**

SHEET No.
2

LAYOUT TAB: 3
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SHEET No.	3
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