OCTOBER 28, 2013

ADDENDUM NO. 2

TO THE CONTRACT DOCUMENTS
FOR THE CONSTRUCTION OF

CITY OF MASSILLON 2013 WWTP IMPROVEMENTS PROJECT
CONTRACT NO. 2 - GENERAL CONSTRUCTION

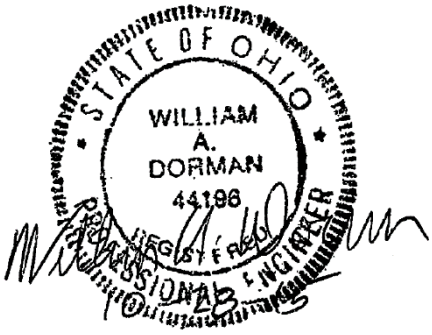
MASSILLON, OHIO

TO ALL HOLDERS OF CONTRACT DOCUMENTS:

Your attention is directed to the following interpretations of, changes in, and additions to the Contract Documents for the City of Massillon 2013 WWTP Improvements Project, Contract No. 2. Sealed bids for the above referenced project will be received by the City of Massillon, Attn: Joel Smith, 151 Lincoln Way East, Massillon OH 44646 until **2:00 p.m., local time, November 6, 2015.**

This addendum is issued in accordance with Instructions to Bidders Article M, and is made part of the Contract Documents in accordance with Article 1 of the Agreement.

CTI ENGINEERS, INC / O'BRIEN & GERE, A JOINT VENTURE



WILLIAM A. DORMAN, P.E.
JV PROJECT MANAGER

WILLIAM J. MEINERT, P.E.
JV DEPUTY PROJECT MANAGER

a. IN THE TABLE OF CONTENTS

1. Under Technical Specifications, Division 08 – Openings; ADD "SECTION 08 51 13 Aluminum Windows"

2. Under Technical Specifications, Division 08 – Openings; ADD "SECTION 08 81 00 Glass & Glazing"

3. Under Technical Specifications, Division 23 – Heating, Ventilating, and Air-Conditioning; ADD "SECTION 23 05 10 – Temporary HVAC"

b. IN THE TECHNICAL SECTIONS

1. ADD SECTION 08 51 13 Aluminum Windows, Dated 10/28/2015

2. ADD SECTION 08 81 00 Glass & Glazing, Dated 10/28/2015

3. ADD SECTION 23 05 10 – Temporary HVAC, Dated 10/28/2015

4. In Section 23 09 13,

   a. Under 2.1, DELETE paragraph G, AND SUBSTITUTE THEREFOR:

"G. Smoke Detectors

1. General Requirements for System Smoke Detectors:
   a. Comply with UL 268; operating at 24-V dc, nominal.
   b. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
   c. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
   d. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
   e. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
   f. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
      i. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 or 20 deg F (8 or 11 deg C) per minute.
      ii. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F (57 or 68 deg C).
      iii. Provide multiple levels of detection sensitivity for each sensor.

2. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

a. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
b. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
    i. Primary status.
    ii. Device type.
    iii. Present average value.
    iv. Present sensitivity selected.
    v. Sensor range (normal, dirty, etc.).
c. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
d. Each sensor shall have multiple levels of detection sensitivity.
e. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
f. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

5. In Section 35 20 16.1,

a. In paragraph 2.6.A "SCHEDULE", ADD the following:

Fine Screen Building							
	Slide Gate	Fine Screen No. 1 Influent Isolation	Self-Contained, CW	Down	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen No. 2 Influent Isolation	Self-Contained, CW	Down	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen No. 1 Effluent Isolation	Self-Contained, FE	Up	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen No. 2 Effluent Isolation	Self-Contained, FE	Up	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen Bypass Channel Influent Isolation	Self-Contained, CW	Down	48" x 84"	Floor Stand, Motor Operator, Rising Stem	5.5' Seating/ Unseating
	Slide Gate	Fine Screen Bypass Channel Effluent Isolation	Self-Contained, FE	Up	48" x 84"	Floor Stand, Motor Operator, Rising Stem	5.5' Seating/ Unseating
	Slide Gate	FRB FSB Bypass	Self-Contained CW	Up	24" x 24"	Side Mount Chain Wheel Operator, Rising Stem	10' Seating/ Unseating.

6. In Section 35 20 16.2,

b. In paragraph 2.6.A "SCHEDULE", DELETE the following:

Fine Screen Building							
	Slide Gate	Fine Screen No. 1 Influent Isolation	Self-Contained, CW	Down	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen No. 2 Influent Isolation	Self-Contained, CW	Down	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen No. 1 Effluent Isolation	Self-Contained, FE	Up	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen No. 2 Effluent Isolation	Self-Contained, FE	Up	36" x 84"	Side Mount Chain Wheel Operator, Rising Stem	7' Seating/ Unseating
	Slide Gate	Fine Screen Bypass Channel Influent Isolation	Self-Contained, CW	Down	48" x 84"	Floor Stand, Motor Operator, Rising Stem	5.5' Seating/ Unseating
	Slide Gate	Fine Screen Bypass Channel Effluent Isolation	Self-Contained, FE	Up	48" x 84"	Floor Stand, Motor Operator, Rising Stem	5.5' Seating/ Unseating

7. In Section 40 05 23.06,

   a. In paragraph 1.4.A.2, AFTER "Submittals shall include electric actuator information" ADD the following: ", if applicable"
   b. In paragraph 1.4.A.3, AFTER "Submit a coordination list that identifies the purpose for each electrically operated valve" ADD the following: ", if applicable"
   c. In paragraph 1.4.A.4.a, AFTER "The electric actuator supplied with the valve has been coordinated with the valve operating requirements" ADD the following: ", if applicable"
   d. In paragraph 1.4.A.4.b, AFTER "The valve manufacturer has reviewed the electric actuator shop drawings" ADD the following: ", if applicable"
   e. In paragraph 2.3.E, AFTER "Electric Actuators" ADD the following: " (If any)"

8. In Section 40 96 00,

   f. Under 2.2 "Control Panels" Paragraph B.5, Subparagraph I, RENUMBER item 6 to item 8 and ADD the following:

      "6. Switches shall be capable of connections to SC or ST UniCam style connectors. Coordinate with fiber optic cable connectors and patch panels.

      7. Switches shall have a minimum of 6 RJ-45 ports and 2 FX ports."

9. In Section 40 96 00,

   a. Under 2.2 "Control Panels" Paragraph B.5, Subparagraph J, ADD the following:

      "5. Connectors
         a) Shall be quick-connect, simplex and duplex, type SC UniCam, except where otherwise required by equipment or where otherwise shown.
         b) Shall have an insertion loss not more than 0.75 dB

      6. Fiber Optic Patch Panel
         a) Fiber optic patch panel shall be a Wall-Mountable Closet Housing (WCH), designed to provide interconnect or cross-connect capabilities between fiber optic cables
         b) Designed to accept 2 Connector Panels (CP). Each CP shall be designed to terminate 6 fibers. Each CP shall be designed for use with SC connectors and 62.5/125µm, multi-mode, connectors unless other specified.
         c) The overall housing shall be capable of terminating 12 fibers.
         d) The housing shall be Corning WCH-02P or equal
         e) The Connector Panel shall be Corning CCH-CP06 or equal

10. In Section 46 61 41,

   a. Under 2.11.A, DELETE the text "Control panel PLC shall be by Allen Bradley." and SUBSTITUTE THEREFOR the text "The PLC in each filter control panel shall be Allen-Bradley Compactlogix"

   b. Under 2.3.A, DELETE the text "10mm" and SUBSTITUTE THEREFOR the text "10 microns"

   c. Under 2.8.A, DELETE the text "The upper part of the filter shall be furnished with a cover fabricated from glass fiber-reinforced plastic (FRP). These filter covers shall be hinged and operate as lids that can be opened for disc filter service and inspection." and SUBSTITUTE THEREFOR the text "The upper part of the filter shall be furnished with a cover fabricated from glass fiber reinforced plastic (FRP). The filter cover shall be a single piece that shall be hinged and can be opened from either side for disc filter service and inspection."

c. <u>IN THE CONTRACT DRAWINGS</u>

1. DELETE Drawing C-004, File No. 23374.51633-C004, Revision 1, 9/23/2015, and SUBSTITUE THEREFOR Drawing C-004, File No. 23374.51633-C004, Revision 2, 10/28/2015.

2. DELETE Drawing C-107, File No. 23374.51633-C107, Revision 1, 9/23/2015, and SUBSTITUE THEREFOR Drawing C-107, File No. 23374.51633-C107, Revision 2, 10/28/2015.

3. DELETE Drawing C-111, File No. 23374.51633-C111, Revision 0, 9/23/2015, and SUBSTITUE THEREFOR Drawing C-111, File No. 23374.51633-C111, Revision 1, 10/28/2015.

4. DELETE Drawing A-001, File No. 23374.51633-A001, Revision 1, 10/23/2015, and SUBSTITUE THEREFOR Drawing A-001, File No. 23374.51633-A001, Revision 2, 10/28/2015.

5. DELETE Drawing A-700, File No. 23374.51633-A700, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing A-700, File No. 23374.51633-A700, Revision 2, 10/28/2015.

6. DELETE Drawing S-106, File No. 23374.51633-S106, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing S-106, File No. 23374.51633-S106, Revision 2, 10/28/2015.

7. DELETE Drawing S-107, File No. 23374.51633-S107, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing S-107, File No. 23374.51633-S107, Revision 2, 10/28/2015.

8. DELETE Drawing S-111, File No. 23374.51633-S111, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing S-111, File No. 23374.51633-S111, Revision 2, 10/28/2015.

9. DELETE Drawing S-204, File No. 23374.51633-S204, Revision 2, 10/23/2015, and SUBSTITUE THEREFOR Drawing S-204, File No. 23374.51633-S204, Revision 3, 10/28/2015.

10. DELETE Drawing S-208, File No. 23374.51633-S208, Revision 2, 10/23/2015, and SUBSTITUE THEREFOR Drawing S-208, File No. 23374.51633-S208, Revision 3, 10/28/2015.

11. In all M sheets, revise "PV" valve designations to "PLV".

12. Drawing M-001, File No.23374.51633-M001, Revision 1, 09/23/2015 Issued for Bid:

    a. ADD the following:

    "DIP Wall Penetration Notes:

    1. Unless another detail is specifically noted, ductile iron pipe penetrations (for pipes equal to or greater than 12" diameter) through existing walls shall be solid sleeve with mechanical seals. Refer to WC1 on M-011.

    2. Unless another detail is specifically noted, ductile iron pipe penetrations (for pipes less than 12" diameter) through existing walls shall be cored openings with mechanical seals. Refer to WC2 on M-011.

    3. Unless another detail is specifically noted, ductile iron pipe penetrations through new walls shall be wall castings per Detail M-005 on M-003.

13. DELETE Drawing M-152, File No. 23374.51633-M152, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing M-152, File No. 23374.51633-M152, Revision 2, 10/28/2015.

14. DELETE Drawing M-153, File No. 23374.51633-M153, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing M-153, File No. 23374.51633-M153, Revision 2, 10/28/2015.

15. DELETE Drawing M-154, File No. 23374.51633-M154, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing M-154, File No. 23374.51633-M154, Revision 2, 10/28/2015.

16. DELETE Drawing M-155, File No. 23374.51633-M155, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing M-155, File No. 23374.51633-M155, Revision 2, 10/28/2015.

17. Drawing M-328, File No.23374.51633-M328, Revision 1, 09/23/2015 Issued for Bid:

a. Under "DRAWING NOTES", DELETE the following:

1. FOAM CONTROL NOZZLES SHALL BE WEIGHTED SWING ARM TYPE NOZZLES MANUFACTURED BY SPRAYING SYSTEMS CO. (MODEL NO. 22561-10520) OR EQUAL. REFER TO SPECIFICATION NO. 40 50 23 07.

And SUBSTITUTE THEREFOR the following:

1. FOAM CONTROL NOZZLES SHALL BE WEIGHTED SWING ARM TYPE NOZZLES MANUFACTURED BY SPRAYING SYSTEMS CO. (MODEL NO. 22561-10520) OR EQUAL. REFER TO SPECIFICATION NO. 40 05 23.07.

18. Drawing M-330, File No.23374.51633-M330, Revision 1, 09/23/2015 Issued for Bid:

a. Under "DRAWING NOTES", DELETE the following:

1. FOAM CONTROL NOZZLES SHALL BE WEIGHTED SWING ARM TYPE NOZZLES MANUFACTURED BY SPRAYING SYSTEMS CO. (MODEL NO. 22561-10520) OR EQUAL. REFER TO SPECIFICATION NO. 40 50 23 07.

And SUBSTITUTE THEREFOR the following:

2. FOAM CONTROL NOZZLES SHALL BE WEIGHTED SWING ARM TYPE NOZZLES MANUFACTURED BY SPRAYING SYSTEMS CO. (MODEL NO. 22561-10520) OR EQUAL. REFER TO SPECIFICATION NO. 40 05 23.07.

19. DELETE Drawing M-621, File No. 23374.51633-M621, Revision 1, 09/23/2015, and SUBSTITUE THEREFOR Drawing M-621, File No. 23374.51633-M621, Revision 2, 10/28/2015.

20. Drawing H-006, File No. 23374.51633-H006, Revision 1, 09/23/2015 Issued for Bid:

a. In the Air Cooled Condensing Unit Schedule, under "ACCU-FSB-1" row and under "REMARKS" column, ADD "3".

b. In the Air Cooled Condensing Unit Schedule, under "ACCU-PEPS-1" row and under "REMARKS" column, ADD "4".

c. In the Air Cooled Condensing Unit Schedule, under "ACCU-PEPS-2" row and under "REMARKS" column, ADD "4".

d. In the Air Cooled Condensing Unit Schedule, under "ACCU-A-1" row and under "REMARKS" column, ADD "3".

e. In the Air Cooled Condensing Unit Schedule, under "ACCU-A-2" row and under "REMARKS" column, ADD "5".

f. Under the Air Cooled Condensing Unit Schedule, ADD the following Remark: "3. PROVIDE 3/8" LIQUID LINE AND 7/8" SUCTION LINE.

g. Under the Air Cooled Condensing Unit Schedule, ADD the following Remark: "4. PROVIDE 1/2" LIQUID LINE AND 1-1/8" SUCTION LINE.

h. Under the Air Cooled Condensing Unit Schedule, ADD the following Remark: "5. PROVIDE 1-1/8" LIQUID LINE AND 2-1/8" SUCTION LINE.

21. DELETE Drawing H-103, File No. 23374.51633-H103, Revision 1, 09/23/2015 Issued for Bid; AND SUBSTITUTE THEREFOR Drawing H-103, File No. 23374.51633-H103, Revision 2, 10/28/2015 Addendum 2.

22. Drawing E-024, File No. 23374.51633-E024, Revision 1, 09/23/2015 Issued for Bid.

a. CIRCUIT DESIGNATION "CC-BB-23" SHALL BE DELETED AND LABELED AS "NOT USED".

23. Drawing E-026, File No. 23374.51633-E026, Revision 1, 09/23/2015 Issued for Bid.

a. CIRCUIT DESIGNATION "CC-SG-28" DELETE "MOTOR CONTROL CENTER "MCC-DC2C" AND SUBSTITUTE THEREFOR "MOTOR CONTROL CENTER "MCC-IFAS-1".

b. CIRCUIT DESIGNATION "CC-SG-29" DELETE "MOTOR CONTROL CENTER "MCC-DC2C" AND SUBSTITUTE THEREFOR "MOTOR CONTROL CENTER "MCC-IFAS-1".

c. CIRCUIT DESIGNATION "CC-SG-30" DELETE "MOTOR CONTROL CENTER "MCC-DC2C" AND SUBSTITUTE THEREFOR "MOTOR CONTROL CENTER "MCC-IFAS-1".

24. In all I sheets, revise "PV" valve designations to "PIV".

d. QUESTIONS AND ANSWERS

Q21: Requested clarification on the following HVAC items:

Q21a: What are the Refrigerant Line sizes for equipment in administration building? I ran it as 7/8 &3/8..

A21a: Refer to addendum items.

Q21b: Is the A/C exposed supply in public view areas & mechanical rooms getting lined per the specs? Or figure mineral fiber/ glass cloth?

A21b: As posted on the bid website, The Question "Is the A/C exposed supply in public view areas & mechanical rooms getting lined per the specs?" is unclear, please provide

reference specification section and paragraph. Response pending clarification of question**.**

Q21c: Can Rigid Mineral Fiber & Glass Cloth be substituted for 703 Fiberglass Board and Aluma. Guard Jacket?

A21c: As posted on the bid website, please provide reference specification section and paragraph. Response pending clarification of question**.**

Q21d: Is SA & RA on H-105, H-109, H-114 Concealed or Exposed? I see its just floor below, no walls etc. to indicate its concealed…

A21d: H-105 (Administration Building second floor) – ductwork is concealed.

H-109 (Fine Screening Building) – make-up air ductwork is not required to be insulated.

H-114 (Fine Screening Building) – make-up air ductwork is not required to be insulated.

Q21e: H-202 Primary Effluent Pump Station Refrigerant line sizes?

A21e: Refer to Addendum item.

Q22: Requested clarification on the following Plumbing items:

Q22a: How far are the Storm drains from the roof required to be insulated into the building?

A22a: As per Section 22 07 19, Part 4, Table 1; all rainwater conductors shall be insulated.

Q22b: Is the Plant Effluent Water & Non-Potable waterlines part of the Plumbing or process pipes? It would change quotes.

A22b: In the Secondary Gallery and Biological Treatment Gallery, the plant effluent water has been considered plumbing piping on the contract drawings, except for piping downstream of the tee to scum well spray nozzles and downstream of the tee to foam control spray.

Q22c: Do Non-Freeze lines need heat traced? Or just regular insulation when they run down & out the inside of a building wall?

A22c: Water lines to non-freeze wall hydrants run inside the facility, and do not need to be heat traced. “Non-freeze” refers to the type of wall hydrant. See Section 22 11 19, Paragraph 2.4.

Q23: Requested clarification on the following Electrical items:

Q23a: Where is the Blower Building PCS panel (referred to in Drawing E-024 Line CC-BB-23) located?

A23a: Refer to Addendum items.

Q23b: What type of fiber connectors are required (LC, SC, ST)?

A23b: Fiber connections shall be SC UniCam type for new installations. Coordinate with Owner for existing connections. Refer to Addendum items.

Q23c: I take it WIH (referred to in Spec 26 05 20 2.1 A 5 b) in actually the Corning WIC as I can find no reference in Corning of a WIH housing.

A23c: Provide Corning Wall-Mountable Housing (WCH) with interconnect or cross connect capabilities between fiber optic cables. Provide Connector Panels (CCP) for use with SC connectors. Refer to Addendum items.

Q23d: What connectors are required (LC-LC, LC-SC, SC-LC, SC-ST, etc) and what lengths for the fiber patch cables (3', 6', 10', etc)?

A23d: New connectors shall be style SC. Coordinate connections with existing equipment and new equipment. Coordinate length of patch panels with actual location of WCH. Refer to Addendum items.

Q23e: Must Unicam connectors be used or will you accept Hot-melt or fusion-spliced?

A23e: UniCam connections are required. Refer to Addendum items.

Q23f: You are already using armored fiber, do you still want the expense of also installing Innerduct (Spec 26 05 20 2.1 A 6)?

A23f: Yes, innerduct shall be used indoor/outdoor as specified and shall be orange for easy identification.

Q23g: Will you accept Commscope as an equal for the fiber and Commscope or Berk-Tek as an equal for the Cat6 also will you accept General Cable as an equal for the RG-6 coax cable?

A23g: This item will be addressed during shop drawing submittal.

Q23h: What is the location of "Motor Control Center MCC-DC2C" (referred to in drawing E026 Line CC-SG-30)?

A23h: Refer to Addendum items.

Q24: Requested clarification on the following mechanical items:

Q24a. Reference Specification 00850-3, Item D-6 – The specification states that the permanent bypass chamber is in pre-aeration tank 3 but the drawings M-150/M-153 show this in tank 2 – please confirm. This specification also states that the Primary Flow Distribution Chamber is located in the Southeast corner, please confirm that this is the Southwest corner by tank 2.

A24a: The permanent bypass is to be located in pre-aeration tank 2. The Primary Flow Distribution Chamber is located at the Southwest corner by tank 2.

Q24b. Reference Specification 00850-3, Item D-12 – Please confirm that the tandem Roughing Filters have the ability to serve multiple Aeration tanks, as this is the only possible way to maintain the requirement of having 3 Aeration Basins in service and be able to construct the new temporarily-aerated Anaerobic/Anoxic tank?

A24b: Roughing filters 1 and 2 serve aeration tank 1 only. Roughing filters 3 and 4 serve aeration tank 2 only. Roughing filters 5 and 6 serve aeration tank 3 only.

Q24c. Reference Specification 00850-3, Item D-12 – Please confirm that the effluent from the new temporarily-aerated Anaerobic/Anoxic tank is able to feed into an adjacent Aeration Basin to allow for the construction of the new IFAS Bioreactor?

A24c: Confirmed. The proposed Anaerobic/Anoxic (An/Ax) effluent channel allows distribution of effluent into the three different aeration basins. Refer to Drawings M-305, M-306, M-307 and M-317 (Section 1). Contractor is responsible for sequencing to accommodate this transition, or provide further temporary facilities.

Q24d. Reference Drawing M-314, what is the intended path of the discharge from the temporary Aeration basins as shown? Our assumption is that this work is required to complete the Bioreactor work in basin 2 and 3, but given the requirements in Specification 00850 it is unclear.

A24d: Refer to A24c, the proposed An/Ax effluent channel allows distribution of effluent into the three different aeration basins. Refer to Drawings M-305, M-306, M-307 and M-317 (Section 1).

Q24e. Reference Spec Section 015100 (Temporary Utilities) Section 1.1 (Summary) Para B.2 which states: "Owner will pay up to $200,000 annually for electricity, Contractor to cover remaining." **Our question: What were your annual electrical consumption costs for the years 2014 and 2013?**

A24e: As stated in Addendum Number 1, the Owner will pay up to $200,000 for electricity over the entire project and not annually. The annual electrical consumption cost for 2013 was $568,655 and for 2014 is was $641,336.

Q24f. Reference Spec Section 015100 (Temporary Utilities). **Our question: Who pays for electrical consumption beyond the date of substantial completion?**

A24f: Assuming the Contractor has met all requirements for substantial completion, the Owner will pay for electrical consumption beyond the date of substantial completion.

Q24g. Refer to M-104. Is a sump pump required for this structure? If so, please issue a spec.

A24g: No.

Q24h. Refer to M-152. The detail drawing for ex sluice gate is missing the picture. Please provide.

A24h: This has been corrected via addendum. Please refer to addendum items.

Q24i. Refer to M-153. The gates on this drawing are shown to be ss, but in the specs they are in the aluminum gate schedule, not the ss gate schedule.

a. Which is correct?
b. The (2) gates to downstream of the screens are labeled as 48", should these be 36"
c. If these are 36", that would make a total of (4) 36" & (3) 48" new gates in this structure, according to this drawing. The spec schedule, 35 20 16.2-9, shows (4) 36" & (2) 48". Please advise.

A24i: The gates are stainless steel. The schedules in specification sections 35 20 16.1 and 35 20 16.2 will be revised. The (2) gates downstream of the screens that are labeled as 48"should be 36". The Flow Retention Bypass Gate (FRB FSB Bypass) is 24" as shown on M-152 and M-153. Refer to addendum items.

Q24j. Refer to M-200. What size, diameter, is the pressure slide gate valve and wall casing?

A24j: 24" diameter.

Q24k. Refer to M-231. Are we to use the same material as the permanent di piping for the temporary piping?

A24k: The temporary piping has been shown as a suggestion only. It is up to the Contractor's means and methods to determine if the same material should be used.

Q24l. There are several places on the drawings that show "PV" for a valve abbreviation, I could not find, in the documents, what this represents. Please advise.

A24l: In all M sheets, "PV" indicates Plug Valve. In all I Sheets "PV" indicates Pinch valve. This was revised via addendum. Please refer to addendum items.

Q24m. Refer to M-310. Is the 24"-stl-ras supposed to be ss instead of stl?

A24m: "STL" references are for existing steel lines.

Q24n. Refer to M-316. Are there wall sleeves or pipes for the interior tank wall penetrations? If so, which type?

A24n: This was clarified via note on drawing M-001 as revised in addendum. Refer to addendum items.

Q24o. Refer to M-328 & 330. Both drawings refer to spec 40 50 23 07, for spray nozzles. There is no such section, please provide.

A24o: Specification reference was revised to 40 05 23.07 via addendum. Refer to addendum items.

Q24p. Refer to M-331.

a. Is there a section view available for this area?
b. Is there a scaled drawing available?
c. Is any of this 14" pipe & fittings existing?
d. How far is the drop from one pipe to the other?

A24p: A section view and scaled drawing will not be provided. New piping is indicated by thicker line weights and tie in to existing 14" piping as noted. New 14" header will be placed high enough to install required 14" BFV in vertical and run above the existing 20" cross connection to the 40" discharge header as shown on the contract drawings. The new 14" header will tie back into the existing 14" piping approximately 3' below the existing 14" 90 degree bend where called out on the contract drawings.

Q24q. Refer to M-621. This drawing depicts the ss digester gas pipe/fittings as flanged, drawing M-001 states that it is to be welded.

a. Are the pipe joints to be welded & the fittings to be flanged?

A24q: The stainless steel piping and fittings are to be welded. Drawing M-621 has been revised and included in this Addendum.

Q25: Request Clarification on the following Structural Items:

Q25a: Reference to drawing S-106, new concrete footing in pipe gallery are missing reinforcement details.

A25a: #5's @ 12" c/c top and bottom. See Section 1/S-109 for detail.

Q25b: Reference to drawing S-108, sections 1/S-113 and 1/S-110, section 1 in drawing S-113 calls for class B concrete fill at channel below existing walkway, while section 1 in drawing S-110 do not show the fill for the channel, plans do not indicate the extent of the concrete fill, please clarify.

A25b: Sections are correct. Fill is in current influent channel in the 20'-3" portion that does

not show new planking.

Q25c: Reference to drawing S-108, there are two 2' square sumps shown at the channels, there are no details shown for these sumps in any other structural and mechanical drawings, please clarify.

A25c: Place 3' square slab before forming channel slab with waterstop all around.

Q26: On addendum #1, there are 3 air/vacuum valves added to the primary effluent pumps. What size are these valves?

A26: As noted in the table provided in Addendum No. 1, valves are 3" inlet/3" outlet.

Q27: Does HVAC duct, refrigerant lines, plumbing, and hydronic system get PVC jacket around the insulation? I have all my plumbing ran to where it connects to the stuff on the Mechanical prints. Which is everything on the plumbing & HVAC drawings. I was told that's the scope (the runs shown on my plumbing/heating drawings). Is that correct?

A27: PVC Jacket is required on all plumbing and HVAC piping (including refrigerant lines, and hydronic system). HVAC duct does not require PVC jacketing.

Q28: Requested clarification on the following Masonry items:

Q28a: Spec Section 04 22 00-15 Item 2.9 "Masonry Cell Insulation" calls for the insulation inserts to be stuffed in the cells of the CMU. Spec Section 07 21 00 Item 1.2 A. 3. "Mineral Wool Board insulation" used at cavity wall. Drawings do not detail either. What should we include?

A28a: Use "Masonry Cell Insulation" as called for in 04 22 00.

Q28b: Dwg A-002 - Need clarification on the Type of Material to be used for the wall coping shown on detail 1/A-002 called out as "Cap Block". Does not show on any other wall sections or elevations.

A28b: Match parapet construction of existing Administration Building

Q29: Requested clarification on the following control items for pinch valves:

Q29a: In the Electric Actuator spec on page 40 92 13.13-3, section 2.2 / A / 7: is a table of electric valves showing voltage and Control Mode. Pinch valves are not mentioned so I'm still in the dark.

a. 6" valve, voltage = ?
b. 6" valve, location is weatherproof or Hazardous-explosion proof?
c. 4" valve, voltage = ?

d. 4" valve, location is weatherproof or Hazardous-explosion proof?

A29a: Pinch valves are not mentioned in the electric actuator specification as both pinch valves are manual valves. Pinch valve Specification 40 05 23.06 was revise to clarify, see addendum items.

Q29b: Based on Drawing # M-201 I see a flow meter next to the pinch valve so I know that the 4" Pinch Valve is modulating. But (see 40 92 13.13-8, section 2.2 / D / 3 / d) is it Modulating Control Mode "C" with an "**Integral** control station" – or Modulating Control Mode "D" with a **Remote** Control Station?

A29b: The 4" pinch valve is a manual valve.

Q29c: Based on Drawing # M-402 I know that there is a 6" pinch valve in there, but no clue as to whether it's On/Off or Modulating.

A29c: The 6" pinch valve is a manual pinch valve.

Q29d: Any of these valves need a chain wheel operator attached to the auxiliary hand wheel?

A29d: Yes, elevated valves shall have chain wheel operators. Both Pinch valves are elevated.

Q30: Requested Clarification on the following items:

Q30a: Please provide more specific direction or detail relating to note 4 on drawing S-204 so that bidders can accurately quote the platform fabrication.

A30a: Drawings have been revised for clarity. Refer to addendum items.

Q30b: Please provide existing drawings with sections of the existing primary clarifiers showing the tank depths so that any underpinning requirements for adjacent construction can be evaluated.

A30b: Copies of drawing numbers 14, 15, 16, 19, and 20 from the 1959 Massillon, Ohio Sewage Treatment Plant Contract 2 drawing set are attached at the end of this Addendum for reference only . This data was prepared by others and are **NOT PART OF THE CONTRACT DOCUMENTS.**

Q30c: Please advise if there is existing media in the roughing filters and if so what is it composed of?

A30c: The roughing filter media consists of two (2) top layers of crossflow polyvinyl chloride (PVC) media and intermediate and bottom layers of vertical polyvinyl chloride

(PVC) media for the six (6) existing roughing filters with 28 feet inside diameters and 20 feet media depths.

Q30d: Is bypass pumping required for the sluice gate replacement at the existing influent structure shown on drawing M-101?

A30d: Yes.

Q31: On drawing E-201 there is an existing 120/208 panelboard and an existing PLC panel. Could you please provide the labels for these enclosures.

A31: The 120/208 panelboard as shown on drawing E-201 is mis-labeled, this panelboard is actually a 480 volt, 3 Phase, This panel has no panel designation. The PLC panel also has no panel designation.

Q32: Requested Clarification on the following items:

Q32a: Dwg S600: Pre-thickening tanks: Concrete repair and coatings are required at the tank walls per contract drawings- Drawings state "DO NOT SCALE" would it be possible to provide the size and depth of the existing tank, so a proper take off can be done?

A32a: The tank diameter is 49 feet. The depth of the tank is 11.5 feet. Wall elevations are shown on drawing M-613.

Q32b: Dwg S600: Pre-thickening tank repair; Will this work be required for both tanks?

A32b: Yes.

Q32c: Dwg S603: Solids Material Handling Building- A new set of stairs with a landing is required... What material is to be used to construct them? Alum / Steel / metal pan / grating??? Please clarify.

A32c: Steel.

Q32d: Dwg A100: Fine Screen Building- Window opening (in plan) is detailed at 8.0' wide, the W1 window as shown on the schedule is 3'-4" wide. Please clarify. Please provide a specification for the W1 window.

A32d: The correct dimensions are shown on drawing A-103. Revised drawing A-001 has been included in this Addendum. Specifications 08 51 13 Aluminum Windows and 08 81 00 Glass & Glazing have been added to this Addendum.

Q32e: Dwg C-111: Proposed New Site: Detail Plan- calls out for new concrete stairs-"for details see this sheet"-no details are provided. Please provide concrete and hand railing details if required.

A32e: See revised drawing C-004.

Q32f: Dwg A700: Secondary Gallery; Are there reinforcing details for the proposed new walls? Will doweling for the new walls to existing walls be required? Per Add#1-existing floor slab to be removed is 14" thick are we to replace it with a 14" floor slab? Is it possible to provide a location on the civil dwgs showing where this new vestibule is to be installed within the existing tunnel?

A32f: Reinforcement for the new walls will consist of #4s at 12 inches on center each way. Dowelling for the new walls to the existing walls will not be required. A detail has been added to drawing A-700 to show improvements at the floor slab.

Q32g: BID FORM: Please confirm- Item 1.2 is to be inclusive of all work shown within the contract documents, items 3.1 thru 3.17 and 4 will be used as a per needed basis and they do not reflect quantities on the documents.

A32g: Yes.

Q33: Specification section 40 42 00, page 12 indicates that all process wastewater is to be insulated with PVC jacket per the schedule in paragraph 3.9. Please clarify if the intent is to insulate all interior and exterior process wastewater piping including ductile and all other material types for this system.

A33: It is not the intent to insulate all interior and exterior wastewater piping. The schedule (paragraph 3.9) in specification section 40 42 00, page 12 indicates that process wastewater piping shall be insulated as noted in the process drawings and the provided note that states "At transition from above grade to below grade piping, provide insulation/jacket to minimum 36-inches below grade. All piping that is heat traced shall be insulated". Refer to Drawing E-031 for a schedule of heat traced piping.

Q34: Clarification requested on if PVC Coated conduits are required to have PVC-coated or Stainless Steel supports?

A34: Per Specification Section 26 05 33 Raceway and Boxes for Electrical Systems, Single Conduit Hangers shall be as defined in paragraph 2.5.B, threaded rod and beam clamps shall be stainless steel, all other components shall be PVC-coated RGS. , B. Single PVC-coated RGS attachment to structural steel. Multiple Conduit Hangers (Channel Supports) shall be as defined in 2.6.B, All channel, threaded rod and bolts shall be stainless steel, conduit straps shall be PVC-coated RGS with stainless steel bolts. Fiberglass channel and associated hardware and fittings shall only be used in corrosive areas.

Q35: Who is responsible to provide gas detectors, smoke detectors, and indicators such as horn / strobes. If it is the responsibility of the contractor please include specifications.

A35: The Contractor is responsible for these items.
Gas Detectors – Refer to Section 40 91 00, paragraph 2.2 Field Instruments.

Smoke detectors – refer to Section 23 09 13 and addendum item
Horn/Strobe – refer to Section 40 91 00, paragraph 2.2 Field Instruments.

Q36: Request clarification on the following Disc Filter items:

Q36a: For the local Disc Filter control panels, specification 46 61 41-4 only indicates that an 'Allen Bradley PLC' be provided. Please confirm that Allen Bradley Compact Logix platform can be used and if not what platform is required.

A36a: The PLC in each filter control panel shall be Allen-Bradley Compactlogix.

Q36b: Specification 46 61 41-4 Section 2.2.B and 2.2C indicate the required phosphorus removal with chemical and without chemical. Coagulant addition upstream of the secondary clarifiers but no coagulant or flocculent is shown directly upstream of the disc filters, which are typically required for chemical phosphorus removal. Please confirm that the effluent concentrations of phosphorus of 0.4mg/L without chemical and 0.3mg/L with chemical are based on mechanical separation of solids including insoluble phosphorus particles greater than 10 micron, the specified cloth pore size.

A36b: The effluent concentration for phosphorus of 0.4 mg/L is based on no chemical feed downstream of the secondary clarifiers. The effluent concentration for phosphorus of 0.3 mg/L is based on chemical feed downstream of the secondary clarifiers which would include future chemical feed addition and flocculation mixing.

Q36c: Section 2.2.C: In addition to a coagulant feed upstream of the secondary clarifiers, please note that for all disc filters a polymer feed system with flocculation mixing may be required to produce a floc capable of filtration. Please acknowledge.

A36c: The effluent concentration for phosphorus of 0.3 mg/L is based on chemical feed downstream of the secondary clarifiers which would include future chemical feed addition and flocculation mixing.

Q37: Referencing drawing M-153 – the notes pertaining to the seven slide gates shown on this drawing call for them to be "SS" (stainless steel). Request clarification on the following items:

Q37a: Six of these seven gates are listed in the schedule in spec. section 35 20 16.2 for ALUMINUM gates. Are these seven gates to be of aluminum or stainless steel construction?

A37a: Stainless steel. This has been clarified via addendum. Please refer to addendum items.

Q37b: What is the size and material of construction for the slide gate off of the 24" diameter Retention Basin by-pass?

A37b: This has been clarified via addendum. Please refer to addendum items.

Q37c: Drawing M-153 calls for this Retention Basin by-pass gate to be 48". It is mounted in a 48" wide channel. Again, please clarify the size of this gate.

A37c: This has been clarified via addendum. Please refer to addendum items.

Q38: Please specify the minimum number of discs for Westech as 30 and for Kruger as 26. The filter area per unit is different for the technologies due to the difference in dimensions of the disc. Item 6 of this article has specified the minimum effective surface area as 1362 square feet. The number of discs will be less for the Kruger unit due to larger disc dimensions.

A38: As stated in section 2.4.C, the maximum number of discs possible for each unit shall be provided by the Manufacturer, installed, and placed into satisfactory operation condition.

Q39: Please confirm if the 5-day performance test is to be completed on each filter unit. Also, confirm if the two separate 5-day performance tests are to be completed with and without chemical as defined within 2.2.B and C. There is a potential currently of eight (8) total 5-day performance tests.

A39: Yes, the 5-day performance test is to be completed on each filter unit. Testing will only be conducted based on the "without chemical" option.

Q40: How many VFDs are being replaced within the existing blower building? And do these VFDs need to be NEMA 4X?

A40: The project includes the replacement of all 6 VFD's within the existing blower building. The 6 VFDs within the blower building shall be NEMA 12. All other free standing VFD'S shall be NEMA 4X.

Further clarification from Addendum 1 Questions:

Addendum 1 Q9e: What is acceptable for heating and/or cooling the administration building while the boiler room is being replaced with the new equipment? Would an office trailer for the personnel next to the building be acceptable with a portable propane heating unit for the lab only? I'm assuming this work would only be possible in the winter months due to the difficulty of providing a cooling distribution system. What had you expected to see for this if not?

Addendum 1 A9e: A Temporary HVAC spec, which includes temporary electric power requirements, has been added via Addendum No. 2. Please refer to Addendum No. 2 items.

Addendum 1 Q9f: Will a plan view of the heating system piping in the administration boiler room be forthcoming or are we to guess at an equipment layout and go by the schematics? Are you sure the new equipment can actually be installed in the space where this equipment is going?

Addendum 1 A9f: Major equipment (AHU and boiler) has been confirmed to fit. Hot water pumps are inline type and may be mounted overhead. Drawing H-103 was revised for clarification via addendum. Please refer to Addendum No. 2 items.

* * * * *

SECTION 08 51 13

ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes heavy commercial-grade, fixed aluminum window units of the performance class indicated.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this section.

1.3 DEFINITIONS

A. Performance class number included as part of the window designation system is the actual design pressure in pounds per sq. ft. used to determine the structure test pressure and water test pressure.

1. Structural test pressure, windload test, is equivalent to 150 percent of the design pressure.

2. Water leakage resistance test pressure is equivalent to 15 percent of the design pressure with 2.86 psf as a minimum.

1.4 SYSTEM PERFORMANCE REQUIREMENTS

A. General. Provide aluminum window units that comply with performance requirements specified, as demonstrated by testing manufacturer's corresponding stock systems according to test methods indicated.

B. Design Requirements. Comply with structural performance, air infiltration, and water penetration requirements indicated in AAMA 101 for type, grade, and performance class of window units required.

1. Heights of window units above grade at the window centerline are indicated or can be determined from the Drawings. Consult with the Engineer for clarification needed to confirm required loading and test pressures.

2. Design wind velocity at the project site is 100 mph.

C. Testing. Test each type and size of required window unit through a recognized independent testing laboratory or agency, in accordance with ASTM E 330 for structural performance, with ASTM E 283 for air infiltration, and with both ASTM E 331 and ASTM E 547 for water penetration. Provide certified test results.

1. Structural Performance: Provide window units with no failure or permanent deflection in excess of 0.4 percent of any member's span after removal of the imposed load, for a positive (inward) and negative (outward) test pressure of 30 lbs./sq. ft.

2. Air Infiltration: Provide units with air infiltration rate of not more than 0.37 cfm/ft. of operable sash joint for an inward test pressure of 6.24 lbs./sq. ft.

3. Water Penetration: Provide units with no water penetration as defined in the test method at an inward test pressure of 15 percent of the design pressure.

4. Condensation Resistance: Where window units are indicated to be of "thermal-break construction," provide units that have been tested for thermal performance in accordance with AAMA 1503.1 showing a condensation resistance factor (CRF) of 45.

5. Forced-Entry Resistance: Provide window units that comply with requirements for Performance Level 10 when tested in accordance with ASTM F 588.

1.5 SUBMITTALS

A. General. Submit the following in accordance with the General and Supplementary Conditions of the Contract and Division 1 specification sections.

1. Product data for each type of window required, including:

a. Construction details and fabrication methods.
b. Profiles and dimensions of individual components.
c. Data on hardware, accessories, and finishes.
d. Recommendations for maintenance and cleaning of exterior surfaces.

2. Shop drawings for each type of window required. Include information not fully detailed in manufacturer's standard product data and the following:

a. Layout and installation details, including anchors.
b. Elevations of continuous work at ¼-inch scale and typical window unit elevations at ¾-inch scale.
c. Hardware including operators.
d. Glazing details.
e. Accessories.

3. Samples for Initial Color Selection: Submit samples of each selected finish on 12-inch-long sections of window members.

4. Certification: Provide certification by a recognized independent testing laboratory or agency showing that each type, grade, and size of window unit complies with performance requirements indicated.

1.6 QUALITY ASSURANCE

A. Standards. Requirements for aluminum windows, terminology and standards of performance, and fabrication workmanship are those specified and recommended in AAMA 101 and applicable general recommendations published by AAMA.

B. Single-Source Responsibility. Provide aluminum window units from one source and produced by a single manufacturer.

C. Design Concept. The Drawings indicate the size, profiles, and dimensional requirements of the aluminum window types required and are based on the specific type and model indicated. Aluminum windows by other manufacturers may be considered provided

deviations in dimensions and profiles are minor and do not change the design concept as judged by the Engineer. The burden of proof of equality is on the proposer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum Extrusions. Provide alloy and temper recommended by the window manufacturer for the strength, corrosion resistance, and application of required finish, but not less than 22,000-psi ultimate tensile strength and not less than 0.062-inch thick at any location for main frame and sash members.

B. Fasteners. Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by the manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125 inch thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard noncorrosive pressed-in splined grommet nuts.

2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Window Accessories. Fabricate anchors, clips, and window accessories of aluminum or nonmagnetic stainless steel complying with the requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.

D. Compression-Type Glazing Strips and Weatherstripping. Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets complying with AAMA SG-1 or with ASTM D 2000 Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287, or molded expanded EPDM or neoprene gaskets complying with ASTM C 509, Grade 4.

E. Sealant. For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating. Comply with Section 07 9000, Joint Sealants, for selection and installation of sealants.

2.2 HARDWARE

A. General. Provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

2.3 ACCESSORIES

A. General. Provide the manufacturer's standard accessories that comply with indicated standards.

2.4 FIXED WINDOWS

A. Window Grade and Class. Provide window units that comply with requirements of AAMA Grade and Performance Class C20. Window units shall successfully pass the following test requirements as specified in AAMA 101:

1. Horizontal concentrated load test.
2. Vertical concentrated load test.

2.5 FABRICATION

A. General. Fabricate aluminum window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.

B. Thermal-Break Construction. Fabricate window units with an integral concealed low-conductance thermal barrier, located between exterior materials and window members exposed on the interior, in a manner that eliminates direct metal-to-metal contact.

1. Provide thermal-break construction that has been in use for not less than 3 years, has been tested to demonstrate resistance to thermal conductance and condensation, and has been tested to show adequate strength and security of glass retention.

2. Weepholes: Provide weepholes and internal passages to conduct infiltrating water to the exterior.

C. Preglazed Fabrication. Preglaze window units at the factory where possible and practical for applications indicated. Comply with glass and glazing requirements of Section 08 81 00, Glass and Glazing, and AAMA 101.

2.6 FINISHES

A. General. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.

B. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

C. Class I Color Anodized Finish. AA-M12C22A42/A44 (Mechanical Finish: as fabricated, nonspecular; Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, film thicker than 0.7 mil with integral color or electrolytically deposited color) complying with AAMA 606.1 or AAMA 608.1.

1. Color: as selected by Engineer from within standard industry colors and color density range.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect openings before beginning installation. Verify that rough or masonry opening is correct and the sill plate is level.

1. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.

2. Metal surfaces shall be dry; clean; free of grease, oil, dirt, rust and corrosion, and welding slag; without sharp edges or offsets at joints.

3.2 INSTALLATION

A. Comply with manufacturer's specifications and recommendations for installation of window units and other components of the work.

B. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.

C. Set sill members and other members in a bed of compound or with joint fillers or gaskets, as shown, to provide weathertight construction. Refer to Section 07 92 00, Joint Sealants, for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the work.

3.3 CLEANING

A. Clean aluminum surfaces promptly after installation of windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances.

B. Clean glass of preglazed units promptly after installation of windows. Comply with requirements of Section 08 81 00, Glass and Glazing, for cleaning and maintenance.

3.4 PROTECTION

A. Initiate and maintain protection and other precautions required through the remainder of the construction period, to ensure that, except for normal weathering, window units will be free of damage or deterioration at the time of Substantial Completion.

END OF SECTION

SECTION 08 81 00

GLASS AND GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Extent of glass and glazing work is indicated on Drawings and schedules.

B. Section is applicable to all windows and doors with windows furnished either "unglazed" or "preglazed."

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions Division 1 Specification sections, apply to this Section.

1.3 SYSTEM DESCRIPTION

A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal thermal movement, wind loading and impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials and other defects in the work.

1. Normal thermal movement is defined as that resulting from an ambient temperature range of 120°F (67°C) and from a consequent temperature range within glass and glass framing members of 180°F (100°C).

2. Deterioration of insulating glass is defined as failure of hermetic seal due to other causes than breakage which results in intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coating, if any, resulting from seal failure, and any other visual evidence of seal failure or performance.

3. Deterioration of laminated glass is defined as the development of manufacturing defects including edge separation or delamination which materially obstructs vision through glass.

4. Deterioration of coated glass is defined as the development of manufacturing defects including peeling, cracking or other indications of deterioration in metallic coating due to normal conditions of use.

1.4 SUBMITTALS

A. Product Data. Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

B. Certificate. Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements.

C. Compatibility and Adhesion Test Report. Submit statement from sealant manufacturer indicating that glass and glazing materials have been tested for compatibility and adhesion with glazing sealants and interpreting test results relative to material

performance, including recommendations for primers and substrate preparation needed to obtain adhesion.

1.5 QUALITY ASSURANCE

A. Glazing Standards. Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

B. Fire Resistance Rated Wire Glass. Provide wire glass products that are identical to those tested per ASTM E 163 (UL 9) and are labeled and listed by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

C. Insulating Glass Certification Program. Provide insulating glass units permanently marked either on spacers or at least one component pane of units with appropriate certification label of the Insulating Glass Certification Council (IGCC).

D. Single Source Responsibility for Glass. To ensure consistent quality of appearance and performance, provide materials produced by a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source for each type and class required.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

1. Where insulating glass units will be exposed to substantial altitude changes, avoid hermetic seal ruptures by complying with insulating glass fabricator's recommendations for venting and sealing.

1.7 PROJECT CONDITIONS

A. Environmental Conditions. Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.

1. Install liquid sealants at ambient and substrate temperatures above 40°F (4.4°C).

1.8 WARRANTY

A. General. Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

B. Manufacturer's Special Project Warranty on Insulating Glass. Provide written warranty signed by manufacturer of insulating glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure of hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's

instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.

1. Warranty Period: Manufacturer's standard but not less than 10 years after date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

A. Primary Glass Standard. Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, mesh and pattern.

B. Heat-Treated Glass Standard. Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.

C. Sizes. Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer.

D. Glass usage shall comply with the following, unless otherwise indicated on the Drawings.

1. Windows: Nominal 1-inch-thick, tinted, sealed insulation glass units.

2. Exterior Doors: Nominal 1-inch-thick, tinted, heat-treated, sealed insulated glass units.

3. Interior Non-Rated Doors

a. Between spaces served by the same HVAC system: Nominal ¼-inch-thick, clear, heat-treated glass.

b. Between spaces served by different HVAC systems: Nominal 1-inch-thick, clear, heat-treated, sealed insulated glass units.

4. Fire Rated Doors: Nominal ¼-inch-thick, clear, heat-treated, wire glass.

2.2 PRIMARY GLASS PRODUCTS

A. Clear Float Glass. Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select); Federal Specification DD-G-451d, ¼-inch thick with daylight transmittance of not less than 88 percent.

B. Tinted Float Glass. Type I (transparent glass, flat), Class 2 (tinted heat absorbing and light reducing), Quality q3 (glazing select), and as follows:

1. Gray: Manufacturer's standard tint, with visible light transmittance of 41-43 percent and shading coefficient of 0.67 to 0.69 percent for ¼-inch-thick glass.

2. Refer to coated glass product requirements for tint and performance characteristics of coated tinted glass for single glazing relative to visible light transmittance, U-values, shading coefficient and visible reflectance.

3. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of tinted glass, coated or uncoated, relative to visible light transmittance, U-values, shading coefficient and visible reflectance.

C. Wired Glass. Type II (patterned and wired glass, flat), Class 1 (translucent), Quality q8 (glazing); complying with ANSI Z97.1; ¼-inch-thick; of form and mesh pattern indicated below:

1. Polished Wire Glass: Form 1 (wired, polished both sides), Mesh m1 (diamond).

2.3 HEAT-TREATED GLASS PRODUCTS

A. Manufacturing Process. Manufacture heat-treated glass by vertical (tong-held) or horizontal (roller hearth) process, at manufacturer's option, except horizontal process where indicated as "tongless" or "free of tong marks."

B. Uncoated Clear Heat-Treated Float Glass. Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), Kind FT (fully tempered) where indicated.

2.4 COATED GLASS PRODUCTS FOR SINGLE GLAZING APPLICATIONS

A. General. Performance characteristics designated for coated glass products are nominal values based on manufacturer's published test data for ¼-inch-thick glass products, unless otherwise indicated. Refer to primary and heat-treated glass product requirements relating to properties of glass products to which coatings are applied.

1. U-values indicated are expressed in the number of Btu's per hour per sq. ft. per degree F difference.

2. Provide heat-treated coated float glass of kind and where indicated or, if not otherwise indicated, provide heat-strengthened units where recommended by manufacturer for application indicated and tempered where coated safety glass is designated or required.

3. Tinted Float Glass Coated on First Surface: Gray. Manufacturer's standard tint, with visible light transmittance of 17 to 20 percent, summer daytime U-value of 1.08 to 1.10, winter nighttime U-value of 1.11 to 1.13, shading coefficient of 0.44 to 0.48, and outdoor visible reflectance of 35 to 45 percent.

4. Tinted Float Glass Coated on Second Surface: Gray. Manufacturer's standard tint, with visible light transmittance of 17 to 23 percent, summer daytime U-value of 1.10 to 1.13, winter nighttime U-value of 1.10 to 1.13, shading coefficient of 0.48 to 0.53, and outdoor visible reflectance of 10 to 13 percent.

2.5 SEALED INSULATING GLASS UNITS

A. General. Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and desiccant.

1. For properties of individual glass panes making up units, refer to product requirements specified elsewhere in this section applicable to types, classes, kinds, and conditions of glass products indicated.

2. Provide heat-treated panes of kind and at locations indicated or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

3. Performance characteristics designated for coated insulating glass are nominal values based on manufacturer's published test data for units with ¼-inch-thick panes of glass and ½-inch-thick air space.

4. Performance classification per ASTM E 774: Class A.

5. Thickness of each pane: ¼ inch.

6. Air space thickness: ½ inch.

7. Sealing system: Dual seal.
   a. Primary sealant: polyisobutylene.
   b. Secondary sealant: polyurethane.

8. Spacer material: Aluminum or galvanized steel.

9. Desiccant: Manufacturer's standard; either molecular sieve or silica gel or blend of both.

10. Corner construction: Manufacturer's standard corner construction.

B. Uncoated Insulating Glass Units. Manufacturer's standard units complying with the following requirements.

1. Exterior Pane: Tinted float glass.
   a. Kind FT (fully tempered).

2. Interior Pane of Glass: Clear float glass.
   a. Kind FT (fully tempered).

3. Performance Characteristics: Visible light transmittance of 46 to 47 percent, summer daytime U-value of 0.56 to 0.57, winter nighttime U-value of 0.49, shading coefficient of 0.56 to 0.58 and outdoor reflectance of 8 percent.

2.6 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES

A. General. Provide products of type indicated and complying with the following requirements:

1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glazing products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.

2. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.

3. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for type, grade, class, and uses.

4. Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Engineer from manufacturer's standard colors.

B. Two-Part Polysulfide Glazing Sealant. Type M; Grade NS; Class 25; Uses NT, M, G, A, and as applicable to uses indicated, O.

2.7 GLAZING GASKETS

A. Lock-Strip Gaskets. Neoprene extrusions of size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542; black.

B. Cellular Elastomeric Preformed Gaskets. Extruded or molded closed cell, integral-skinned neoprene of profile and hardness required to maintain watertight seal; complying with ASTM C509, Type II; black.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. Compatibility. Provide materials with proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers. Type recommended by sealant or gasket manufacturer.

C. Setting Blocks. Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

D. Spacers. Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape, and hardness recommended by glass and sealant manufacturers for application indicated.

E. Edge Blocks. Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

F. Compressible Filler Rods. Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5 to 10 psi compression strength for 25 percent deflection.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Require glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.3 GLAZING, GENERAL

A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

B. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weaken glass and impair performance and appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

3.4 GLAZING

A. Install setting blocks of proper size in sill rabbet, locate one quarter of glass width from each corner, but with edge nearest corner not closer than 6 inches from corner, unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide ⅛-inch minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

D. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

E. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

F. Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

G. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.

H. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.5 PROTECTION AND CLEANING

A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

END OF SECTION

SECTION 23 05 10

TEMPORARY HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. This specification outlines temporary equipment requirements and associated work sequence for providing temporary HVAC in the Administration Building, while installing the permanent HVAC upgrades indicated on the Contract Drawings. The intent is to provide comfort conditioning and minimize disruption to the existing occupants during the construction.

1. Alternate or modified approaches may be proposed by the Contractor to improve upon the outline provided herein.

B. Temporary HVAC is required for two reasons:

1. When the existing heat exchanger is removed from the Pre-Aeration Basin, temporary heat and cooling will be required to maintain operation of the existing heat pump in the Administration Building Mechanical Room. The heat exchanger must be removed to allow the Pre-Aeration Basin to be converted to the Fine Screening Facility under this project. The timing of this work depends on the overall project schedule.
2. When new HVAC system is installed in the Administration Building, temporary HVAC will be required to maintain space conditions for occupants.

1.2 REFERENCES

A. Comply with the latest revision of the following codes, standards and specifications, except where more stringent requirements have been specified herein:

1. Local Building Codes
2. State Building Codes
3. State Mechanical Code
4. State Plumbing Code
5. State Fire Protection Code
6. National Fire Protection Association (NFPA)
7. Underwriters Laboratories (UL)
8. Occupational Safety and Health Administration (OSHA)
   a.

1.3 COORDINATION REQUIREMENTS

A. Submit specially prepared Coordination Drawings for this Project, including floor plans and sections, drawn to scale. Include scaled equipment layouts and relationships between equipment and adjacent architectural, structural, mechanical, HVAC, plumbing, and electrical elements. Include new and existing equipment and systems. Show the following:

1. Vertical and horizontal runs, offsets, and transitions.
2. Clearances for access above and to the side.
3. Show dimensions and details, including connections.
4. Support locations, type of support, and weight on each support.

5. Location of adjacent construction elements including light fixtures, HVAC and plumbing equipment, fire sprinklers and piping, signal and control devices, and other equipment.

B. Sequencing:

1. Coordinate mechanical equipment installation with other building components.
2. Arrange for chases, slots, and openings in building structure during progress of construction to allow for mechanical installations.
3. Coordinate the installation of required supporting devices.
4. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Coordinate installation of large equipment requiring positioning prior to closing in the building.
5. Coordinate connection of electrical services.
6. Coordinate connection of mechanical systems with utilities and services. Comply with requirements of governing regulations, service companies, and controlling agencies.
7. Coordinate requirements for access panels and doors where mechanical items requiring access are concealed behind finished surfaces.
8. Coordinate need for access to occupied spaces with Owner.

C. Electrical Requirements:

1. The Administration Building will require a temporary 480 Volt, 70 Amp, 3 Phase power feed to a temporary trailer mounted HVAC system. The electrical contractor shall modify the existing Administration Building power distribution as shown on Drawing E-007, File No. 23374.51633-E007 prior to providing power to the trailer mounted HVAC system. Utilize the 70 Amp, 3 Pole circuit breaker (Currently labeled as ACCU-A-1) as shown on Panelboard Schedule PP-ADMIN-1 located on Drawing E-018, File No. 23374.51633-E018. Provide SO cord (minimum conductor size 3-#4, 1-#8 grd) from Panelboard PP-ADMIN-1 to trailer mounted HVAC system. Electrical contractor shall coordinate all work with HVAC contractor.

1.4 SUBMITTALS

A. Submit the following in accordance with the General Conditions.

B. Coordination Drawings.

C. Product Data: “Catalog cuts” and spec sheets marked to specifically indicate the equipment and materials proposed for this project. Indicate selections with arrows, and cross out irrelevant data. Submit product data for following items:

1. Temporary HVAC equipment.

D. Sequencing: Detailed sequencing schedule.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver in shipping splits that can be moved past obstructions in the delivery path.

B. Coordinate delivery to allow movement into designated space.

C. Handle components according to manufacturer's written instructions. Use factory-installed lifting provisions.

PART 2 - PRODUCTS

2.1 TEMPORARY HEATING AND COOLING EQUIPMENT

A. Temporary heating and cooling is required to maintain operation of the existing heat pump unit when the existing heat exchanger is removed from the pre-aeration basin. The equipment requirements are provided on drawing H-102.

2.2 TEMPORARY AIR HANDLING UNIT

A. Trailer-mounted air handling unit, suitable for outdoor installation. Unit shall include mixing box, filter section, cooling coil, heating section, and fan.
   1. Mixing box shall have outside air and return air connections with dampers. Damper adjustment shall be manual.
   2. Filter section shall include 2" thick, MERV 8, disposable filters.
   3. Cooling coil shall be direct-expansion (DX) type (refrigerant based). The air handling unit shall be packaged with and compressor and condenser for a complete and operating cooling system. Cooling capacity shall be 25 tons (300,000 Btu/hr).
   4. Heat shall be provided by indirect natural-gas-fired heating section. Capacity shall be 337,000 Btu/hr.
   5. Fan shall have airflow capacity of 8,000 cfm at 2.5" external static pressure.
   6. Unit shall be provided with temperature sensor in the supply air, and automatic controls capable of maintaining supply air temperature setpoint..

B. Provide temporary electrical power.

C. Provide temporary natural gas supply from existing Admin Building natural gas system.

D. Provide temporary supply and return air ductwork. Connect ductwork to existing supply and return air distribution ductwork in the Administration Building Mechanical Room.

E. Set outdoor air dampers for 2240 cfm, to offset restroom and locker room exhausts, and provide fresh air for occupants.

2.3 MULTI-ZONE DAMPERS

A. Temporary multi-zone dampers, with one damper for each existing zone served by existing multi-zone unit. Dampers shall be installed at approximately 11 feet above finished floor, with dampers sized to match each zone duct at that elevation. Each multizone damper shall have a pneumatic actuator. Actuators shall be sized for the same air supply range as existing multi-zone dampers. Provide a 24" deep plenum with temporary supply air duct connection underneath the multi-zone dampers.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate all activities with Owner.

B. Coordinate location of temporary equipment with Owner and with other work in the area of the Administration Building.

C. Provide temporary HVAC for duration required to perform work in Administration Building.

D. Contractor shall maintain temporary equipment in working order.

E. Contractor shall supply filter changes as needed for the duration of use of each temporary HVAC unit.

F. Remove and replace existing suspended ceiling as required to perform work.

G. Provide tarp cover for furniture in spaces.

H. Clean work area of all dust and debris at the end of each work period.

I. Provide temporary wall penetrations as needed. Repair temporary wall penetrations to match existing when work is completed.

3.2 SEQUENCE

A. The following sequence shall be considered an outline for accomplishing HVAC work in the Administration Building. Contractor shall submit a detailed sequence for review.

B. Install temporary heating and cooling when heat exchanger removed from Pre-Aeration Basin. Coordinate timing and duration with overall project schedule.

C. Install temporary air handling unit
   1. Make electrical and gas hook-ups.
   2. Make wall penetrations for temporary ductwork.

D. During off hours, remove supply and return ductwork at existing air handling unit.
   1. Install new cap with temporary multi-zone dampers on building supply air ductwork. Connect temporary supply air ductwork from temporary unit to cap. Disconnect multi-zone damper pnuematics from existing multi-zone damper actuators, and connect to new (temporary) multi-zone damper actuators.
   2. Install new cap on building return air duct. Connect temporary return air ductwork from temporary unit to cap.
   3. Disconnect existing heat/cool command from existing heat pump unit, and connect to temporary air handling unit.
   4. Start-up temporary unit.

E. During off-hours, remove zone ductwork and install VAV boxes.

1. Place damper in full-open position until VAV box is ready to come on-line.
2. Once VAV box has power and control connected, start-up and test during off-hours. De-energize and return damper to full-open until ready to start entire system.

F. Install boiler in mechanical room.

1. Connect natural gas supply.
2. During off-hours, connect boiler flue to existing chimney. Re-work existing flue duct in boiler room to suit. Turn off existing water heater as needed.
3. Install hot water piping system, including pumps and control valves.
4. Route hot water piping to Laboratory (for RTU). Provide isolation valves. Set Lab RTU control valve to recirculation.
5. Start-up and test boiler.

G. Install air handling unit and air-cooled condenser.

1. Connect hot water piping to heating coil.
2. Install refrigerant piping.
3. Start-up and test air handling unit.

H. Install DDC control system.

1. Install space temperature sensors and wiring in occupied spaces during off-hours.
2. Install connections to VAV boxes during off hours..

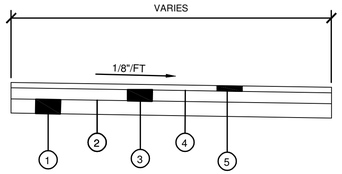
I. During off hours, switch to new system:

1. Turn off temporary air handling unit.
2. Remove temporary ductwork, dampers, and caps.
3. Connect new air handling unit supply air to building supply air with permanent duct.
4. Connect new air handling unit return air to building return air with permanent ductwork.
5. Start-up air handling unit and boiler.
6. Check controls are operational.

J. Install new rooftop unit mounted on roof above Laboratory.

1. Construct temporary wood partition to segregate the Laboratory from the area under the rooftop unit (off-hours). Partition shall include a door into the Laboratory.
2. Remove roofing and install roof penetrations. Install temporary protection to maintain integrity of roof.
3. Install roof curb, roof flashing, and rooftop unit.
4. During off-hours, remove existing zone ductwork serving the laboratory and cap. Install new supply air distribution ductwork and return duct.
5. During off-hours, start-up and test new RTU.

END OF SECTION

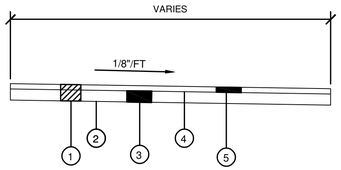


ITEM LEGEND

1. ODOT ITEM 304 - 9" AGGREGATE BASE
2. ODOT ITEM 408 - PRIME COAT
3. ODOT ITEM 301 - 4.5" ASPHALT CONCRETE BASE, 2 LIFTS
4. ODOT ITEM 407 - TACK COAT
5. ODOT ITEM 448 - 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE 1

FULL DEPTH ASPHALT PAVEMENT TYPICAL SECTION

NOT TO SCALE

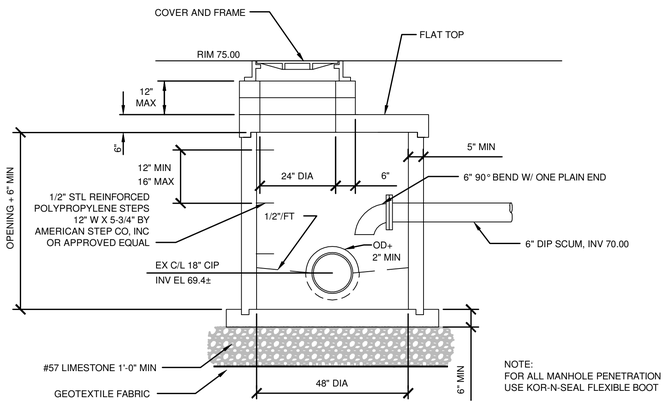


ITEM LEGEND

1. ODOT ITEM 254 - PAVEMENT PLANNING, ASPHALT CONCRETE, 3" (1 1/2" CART PATH)
2. ODOT ITEM 407 - TACK COAT
3. ODOT ITEM 448 - 1.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 (EXCLUDE CART PATH)
4. ODOT ITEM 407 - TACK COAT FOR INTERMEDIATE COURSE (EXCLUDE CART PATH)
5. ODOT ITEM 448 - 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE 1

FULL DEPTH ASPHALT PAVEMENT AND RESURFACING TYPICAL SECTION

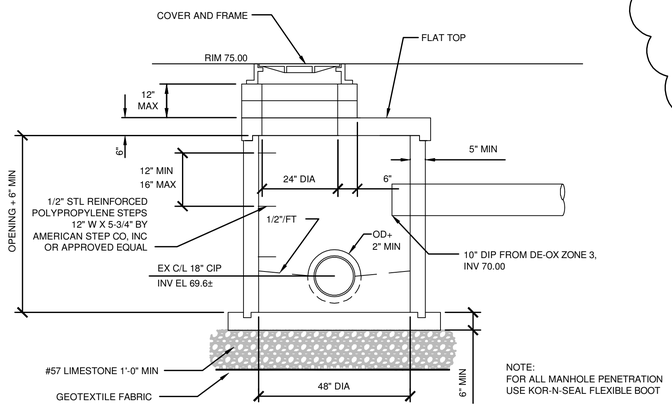
NOT TO SCALE



NOTE:
FOR ALL MANHOLE PENETRATION
USE KOR-N-SEAL FLEXIBLE BOOT

MANHOLE FOR SCUM PIPE

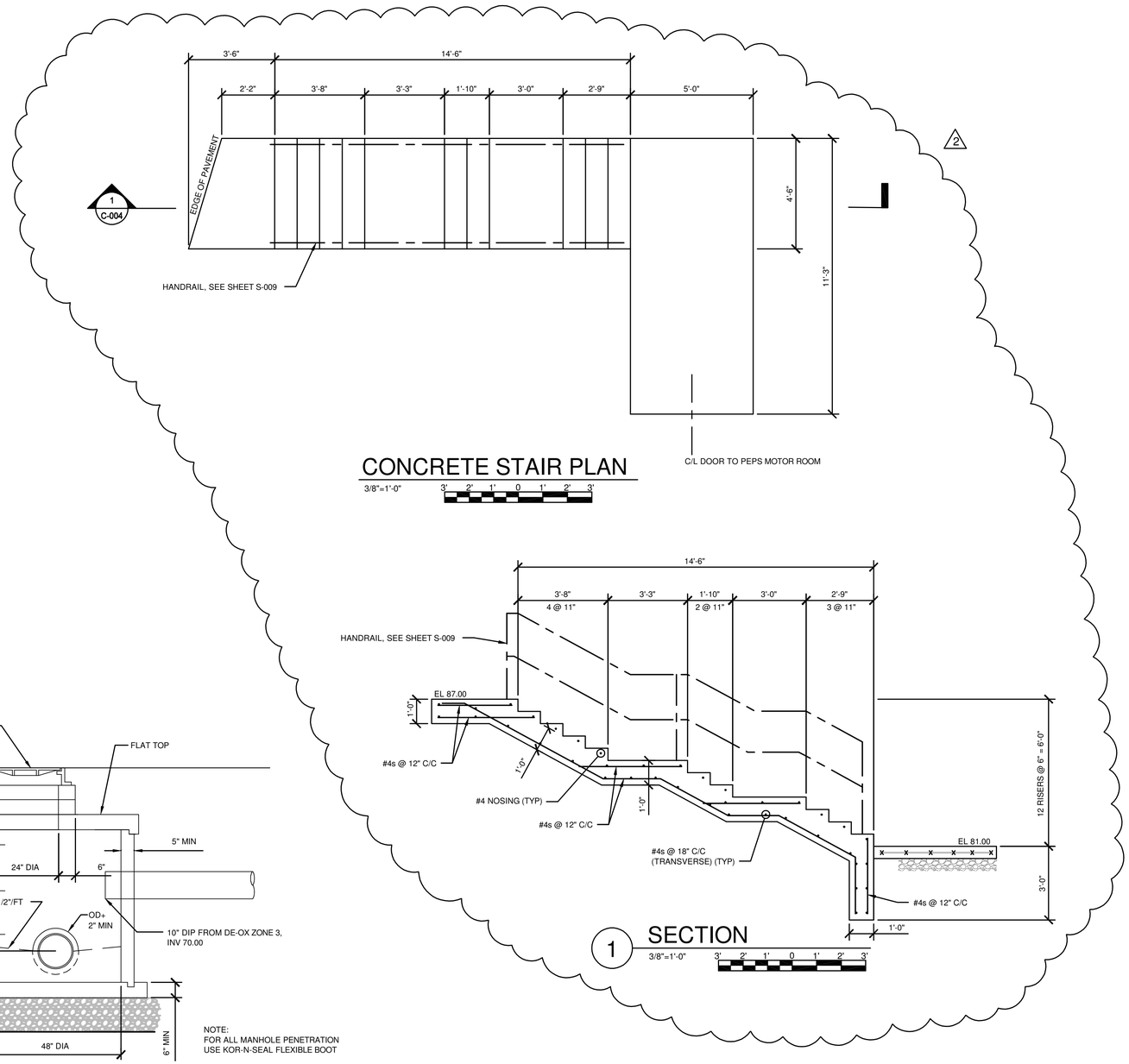
NOT TO SCALE



NOTE:
FOR ALL MANHOLE PENETRATION
USE KOR-N-SEAL FLEXIBLE BOOT

MANHOLE FOR TANK DRAIN 10" PIPE CONNECTION

NOT TO SCALE



CONCRETE STAIR PLAN

3/8"=1'-0"

3' 2' 1' 0 1' 2' 3'

1 SECTION

3/8"=1'-0"

3' 2' 1' 0 1' 2' 3'

IN CHARGE OF	WAD			
DESIGNED BY	RWR			
CHECKED BY	RWR			
DRAWN BY	AJP			

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	WAD
1	09/23/2015	ISSUED FOR BID	WAD
0	03/19/2015	ISSUED FOR OEPA REVIEW	WAD

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

CIVIL

GENERAL DETAILS

FILE NO. 23374.51633 -C004

DATE MARCH 19, 2015

C-004

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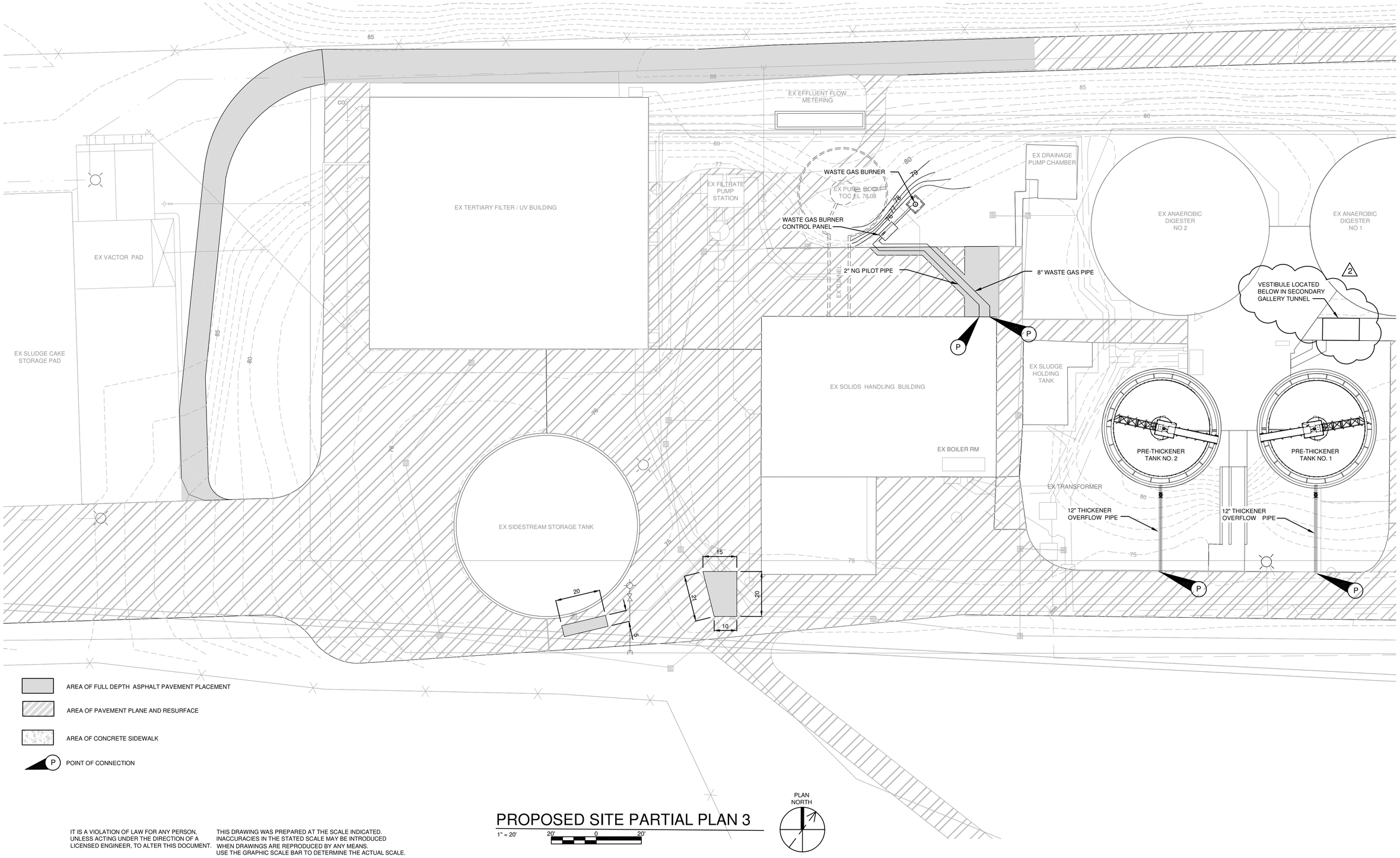

AREA OF FULL DEPTH ASPHALT PAVEMENT PLACEMENT

AREA OF PAVEMENT PLANE AND RESURFACE

AREA OF CONCRETE SIDEWALK

P POINT OF CONNECTION

PROPOSED SITE PARTIAL PLAN 3

1" = 20' 20' 0 20'

PLAN NORTH

IN CHARGE OF WAD
DESIGNED BY WAD
CHECKED BY RWR
DRAWN BY AJP

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	WAD
1	09/23/2015	ISSUED FOR BID	WAD
0	03/19/2015	ISSUED FOR OEPA REVIEW	WAD

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

CIVIL
SITE

PROPOSED SITE PARTIAL PLAN 3

FILE NO. 23374.51633 - C107
DATE MARCH 19, 2015

C-107

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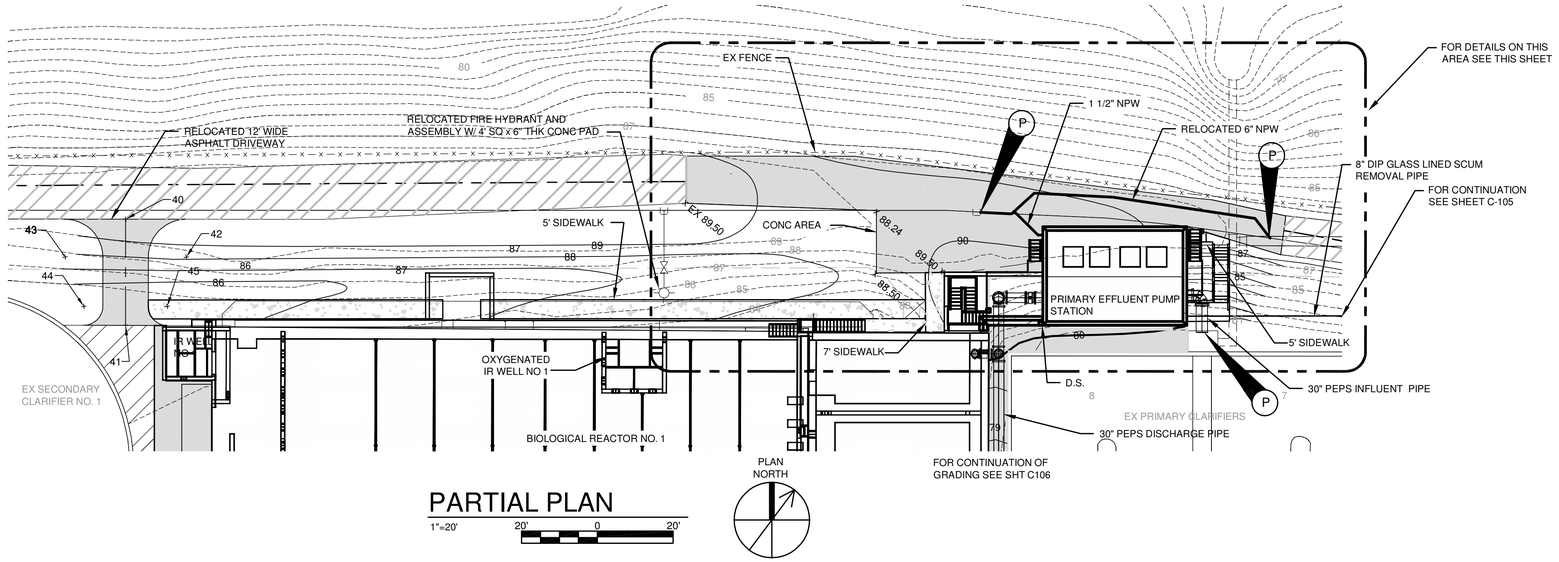
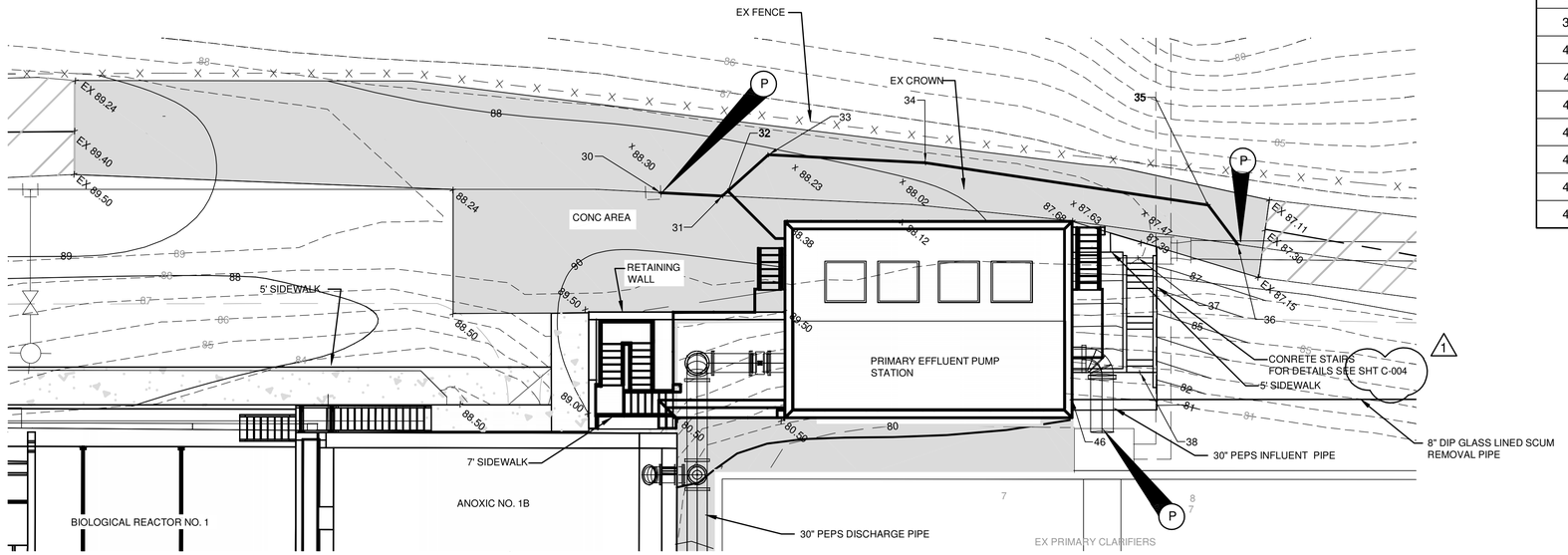


PARTIAL PLAN

1"=20' 20' 0 20'



DETAIL PLAN

1"=10' 10' 0 10'

PEPS POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
30	403541.4222	2238684.3222	6" TIE IN PNT
31	403545.9081	2238691.1357	6" 45 BEND
32	403546.8806	2238691.3360	1 1/2" SUPPLY TIE IN
33	403553.9166	2238692.7854	6" 45 BEND
34	403565.3673	2238710.1775	6" BEND
35	403583.0503	2238743.6573	6" 45 BEND
36	403581.1716	2238749.9307	6" 45 BEND
37	403571.9286	2238740.3314	C/L STEPS
38	403559.8505	2238749.5224	C/L STEPS
40	403406.3592	2238503.6932	C/L 12' DRIVE
41	403383.7819	2238520.2541	C/L 12' DRIVE
42	403407.7631	2238522.5063	10' RAD PT
43	403388.8363	2238496.7037	10' RAD PT
44	403381.3074	2238508.4271	5' RAD PT
45	403394.3196	2238526.1665	5' RAD PT
46	403551.6293	2238744.4122	8" SCUM INTO BLDG

IN CHARGE OF WAD
DESIGNED BY RWR
CHECKED BY RWR
DRAWN BY AJP

NO.	DATE	REVISION	INT.
1	10/28/2015	ADDENDUM NO. 2	WAD
0	09/23/2015	ISSUED FOR BID	WAD

CTI / O'BRIEN & GERE JOINT VENTURE
ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

CIVIL
SITE

PARTIAL SITE PLAN

FILE NO. 23374.51633 - C111
DATE SEPT. 23, 2015

C-111

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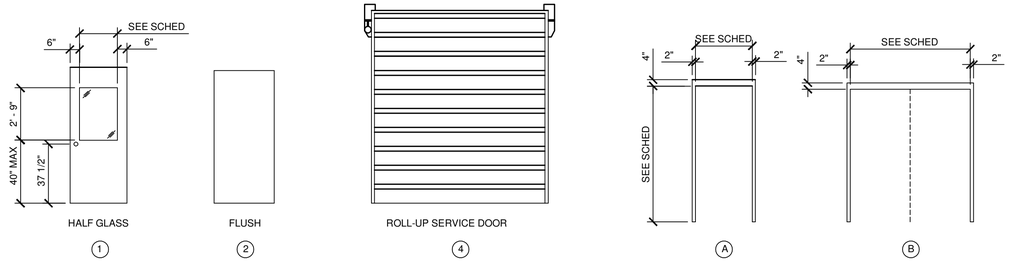
DOOR AND FRAME SCHEDULE

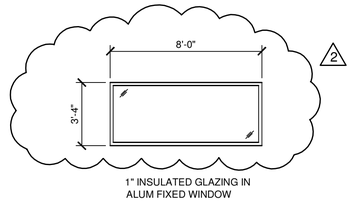
DOOR NUMBER	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	DOOR SIZE OF EACH	DOOR GLAZING TYPE	FRAME ELEVATION	FRAME MATERIAL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	HARDWARE SET NO.	REMARKS
FINE SCREEN BUILDING (FSB)													
FSB-1	3	ALUM	-	8'-0"x8'-0"					H3	J1	S3		ELECTRIC MOTOR OPERATOR
FSB-2	3	ALUM	-	8'-0"x8'-0"					H3	J1	S3		ELECTRIC MOTOR OPERATOR
FSB-3	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
FSB-4	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
FSB-5	1	FRP	PTD	2'-10"x7'-0"	1/4" TEMP GLASS	B	FRP	PTD	H1	J1	S2	3	DOUBLE
FSB-6	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
FSB-7	1	FRP	PTD	2'-10"x7'-0"	1/4" TEMP GLASS	B	FRP	PTD	H1	J1	S1	2	DOUBLE
FSB-8	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
PRIMARY EFFLUENT PUMP STATION (PEPS)													
PEPS-1	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
PEPS-2	1	FRP	PTD	2'-10"x7'-0"	1/4" TEMP GLASS	B	FRP	PTD	H1	J1	S1	2	DOUBLE
PEPS-3	3	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
PEPS-4	4	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
PEPS-5		ALUM		3'-0"X3'-0"			ALUM						FLOOR DOOR
PEPS-6		ALUM		3'-0"X3'-0"			ALUM						FLOOR DOOR
PEPS-7		ALUM		5'-0"X5'-0"			ALUM						FLOOR DOOR
PEPS-8		ALUM		5'-0"X5'-0"			ALUM						FLOOR DOOR
PEPS-9		ALUM		5'-0"X5'-0"			ALUM						FLOOR DOOR
PEPS-10		ALUM		5'-0"X5'-0"			ALUM						FLOOR DOOR
PEPS-11		ALUM		2'-6"X2'-6"			ALUM						FLOOR DOOR w/FALL PROTECTION - NOTE 1
PEPS-12		ALUM		2'-6"X2'-6"			ALUM						FLOOR DOOR
PEPS-13		ALUM		2'-6"X2'-6"			ALUM						FLOOR DOOR
PEPS-14		ALUM		2'-6"X2'-6"			ALUM						FLOOR DOOR - NOTE 1
SECONDARY GALLERY (SG)													
SG-1	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	
SG-2	1	FRP	PTD	3'-0"x7'-0"	1/4" TEMP GLASS	A	FRP	PTD	H1	J1	S1	1	

NOTE 1 : PROVIDE 8"X8" DOOR FOR GATE ACCESS. COORDINATE LOCATION WITH GATE MANUFACTURER



DOOR TYPES
NOT TO SCALE

FRAME TYPES
NOT TO SCALE



WINDOW TYPES
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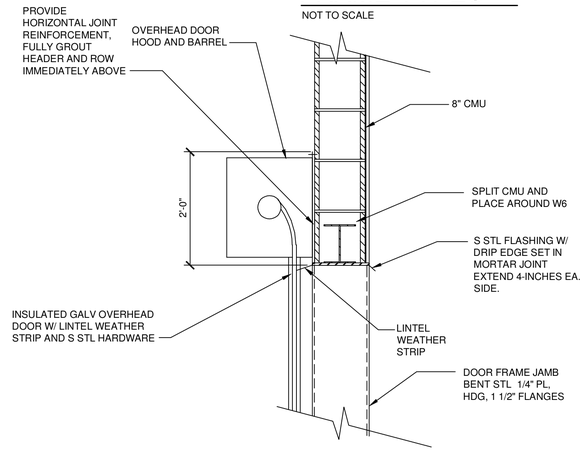
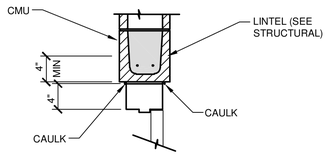
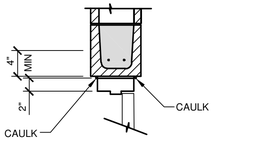
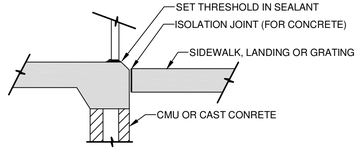




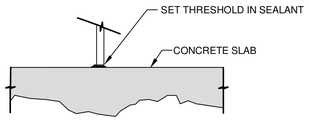
H1 DOOR HEAD DETAIL
1"=1'-0"



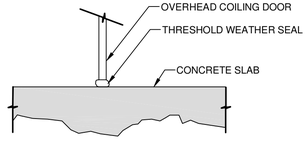
J1 DOOR JAMB DETAIL
1"=1'-0"



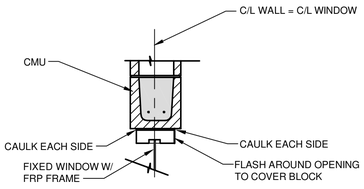
S1 DOOR SILL DETAIL
1"=1'-0"



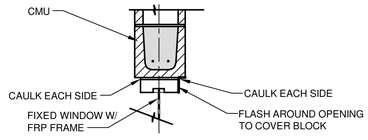
S2 DOOR SILL DETAIL
1"=1'-0"



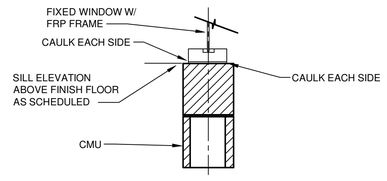
S3 DOOR SILL DETAIL
1"=1'-0"



H2 WINDOW HEAD DETAIL
1"=1'-0"



J2 WINDOW JAMB DETAIL
1"=1'-0"



H3 OVERHEAD DOOR - HEADER - DETAIL
1"=1'-0"

S5 WINDOW SILL DETAIL
1"=1'-0"

ROOM FINISH SCHEDULE

Room	Floor Finish	Wall Finish	Ceiling Height	Ceiling Finish
FSB				
101 PIPE GALLERY	CONCRETE	CONCRETE	13'-0"	CONCRETE
200 SCREEN ROOM	CONCRETE	PAINT ON CMU	12'-0" +/-	PAINT ON CONCRETE
201 ELECTRICAL ROOM	CONCRETE	PAINT ON CMU	12'-0" +/-	PAINT ON CONCRETE
202 MECHANICAL ROOM	CONCRETE	PAINT ON CMU	12'-0" +/-	PAINT ON CONCRETE
203 DUMPSTER ROOM	CONCRETE	PAINT ON CMU	17'-4" +/-	PAINT ON CONCRETE
PEPS				
200 MOTOR ROOM	CONCRETE	PAINT ON CONCRETE	11'-6"	PAINT ON CONCRETE
300 ELECTRICAL ROOM	CONCRETE	PAINT ON CMU	11'-8"	PAINT ON CONCRETE
TFB				
MAIN ROOM	NA	NA		PAINT ON CONCRETE - MATCH EXISTING
NOTE: FOR COLORS CONSULT WITH OWNER				

1

IN CHARGE OF WAD
DESIGNED BY KGP
CHECKED BY RWR
DRAWN BY AJP

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	KGP
1	10/23/2015	ADDENDUM NO. 1	KGP
0	09/23/2015	ISSUED FOR BID	KGP

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

ARCHITECTURAL

GENERAL DETAILS

FILE NO. 23374.51633 - A001
DATE SEPT. 23, 2015

A-001

E:\E14007 MASSILLON WWTP IMPROVEMENTS\DWG\SHEETS\A-001 GENERAL DETAILS.DWG

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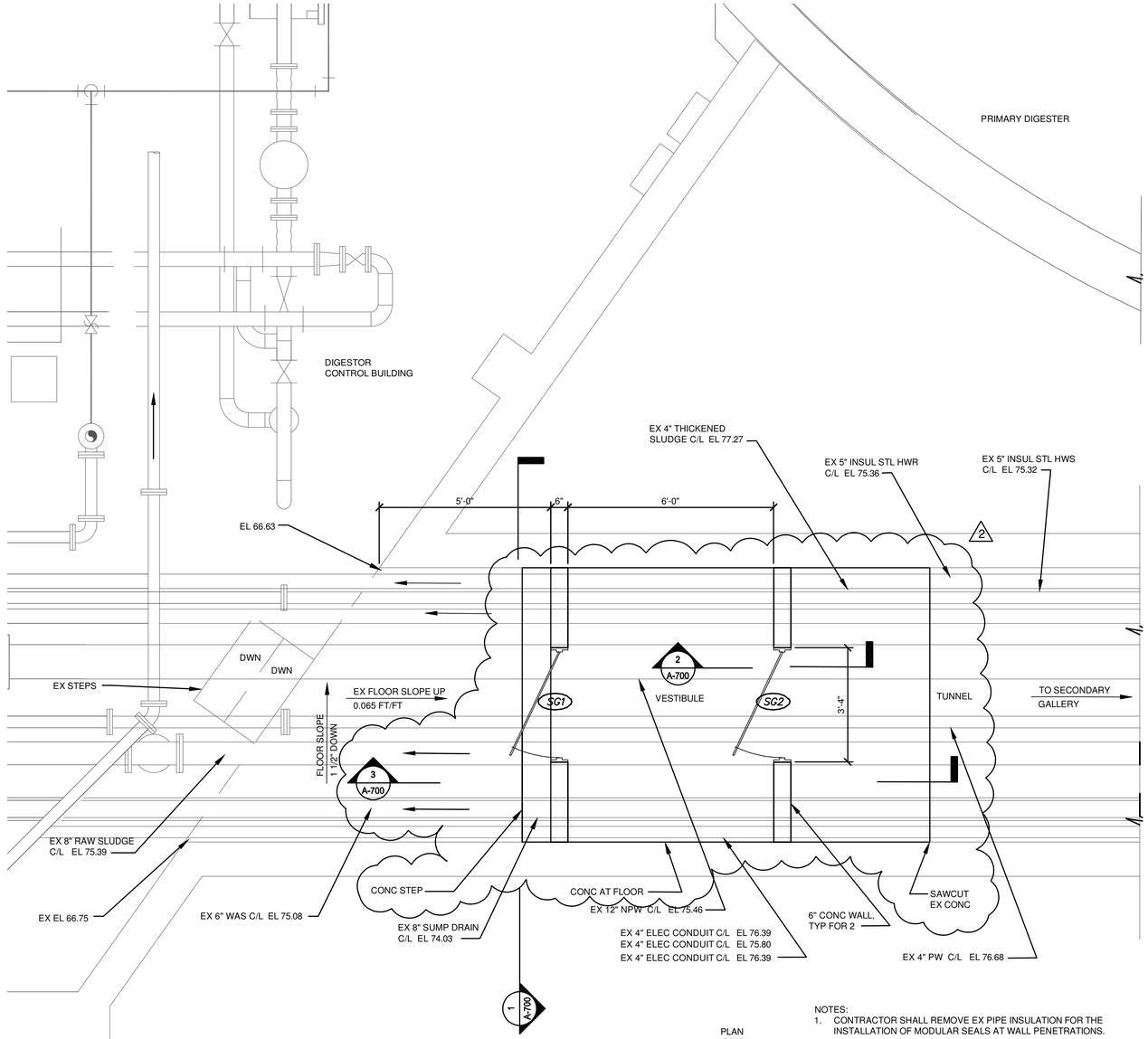


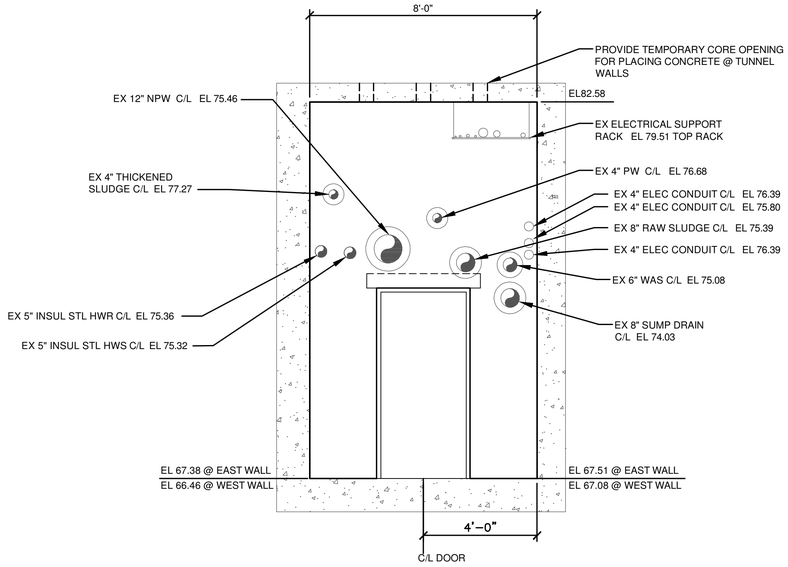
VESTIBULE PLAN

1/2"=1'-0" 2' 1' 0 1' 2'

PLAN NORTH

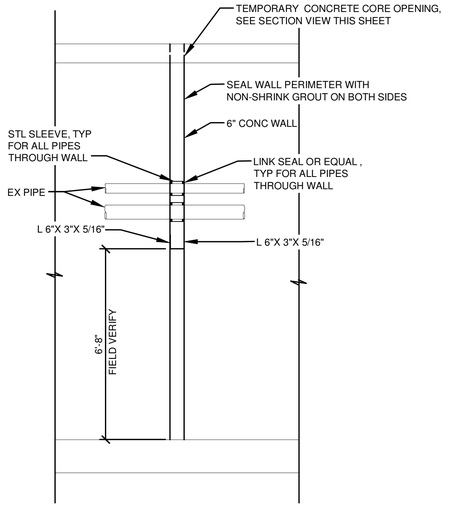
NOTES:
1. CONTRACTOR SHALL REMOVE EX PIPE INSULATION FOR THE INSTALLATION OF MODULAR SEALS AT WALL PENETRATIONS.
2. FOR DOOR SCHEDULE SEE SHEET A-001.
3. WATER OR SHOTBLAST EXISTING CONCRETE TO A ROUGHNESS OF CSP5 BEFORE APPLYING BONDING AGENT.

2



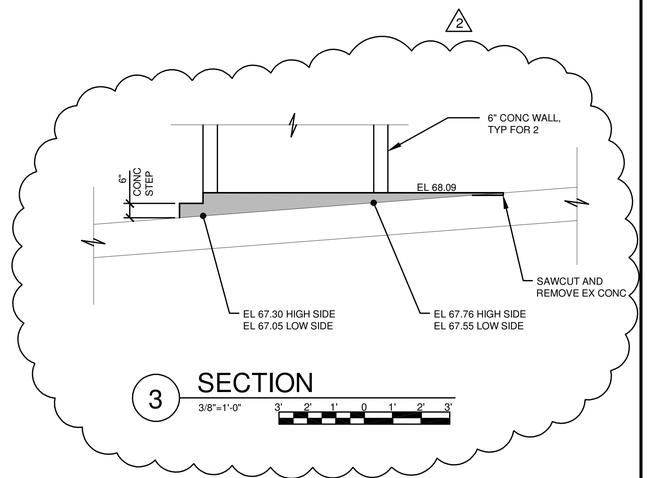
1 SECTION

3/8"=1'-0" 3' 2' 1' 0 1' 2' 3'



2 SECTION

3/8"=1'-0" 3' 2' 1' 0 1' 2' 3'



3 SECTION

3/8"=1'-0" 3' 2' 1' 0 1' 2' 3'

IN CHARGE OF WAD
DESIGNED BY KGP
CHECKED BY PCC
DRAWN BY GJL

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	KGP
1	09/23/2015	ISSUED FOR BID	KGP
0	03/19/2015	ISSUED FOR OEPA REVIEW	KGP

CTI / O'BRIEN & GERE JOINT VENTURE
ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

ARCHITECTURAL
SECONDARY GALLERY

TUNNEL PLAN, SECTION, AND DETAILS

FILE NO. 23374.51633 - A700
DATE MARCH 19, 2015
A-700

E:\E14007 MASSILLON WWTP IMPROVEMENTS\DWG\SHEETS\A-700 TUNNEL.DWG

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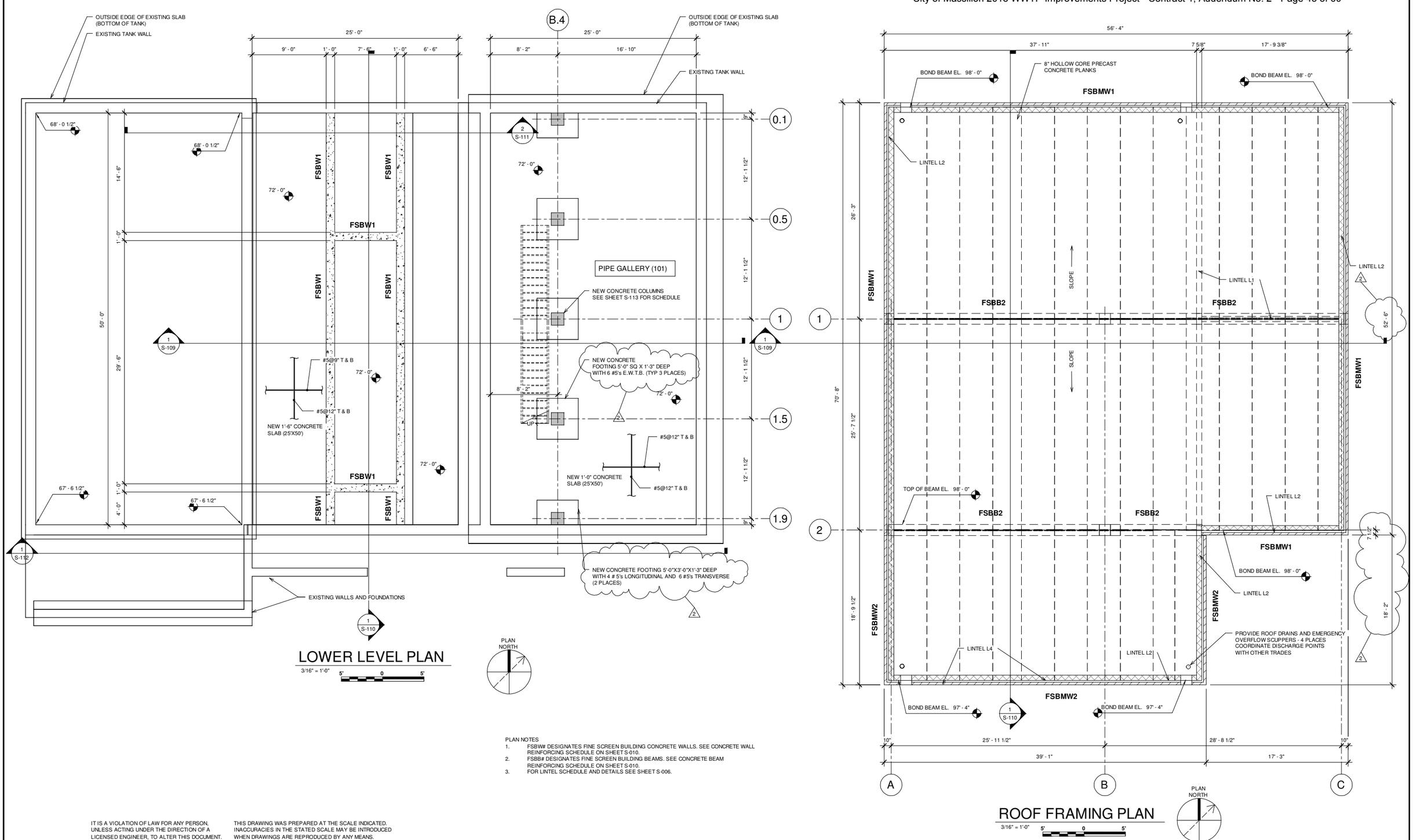

LOWER LEVEL PLAN

ROOF FRAMING PLAN

PLAN NOTES
1. FSBW# DESIGNATES FINE SCREEN BUILDING CONCRETE WALLS. SEE CONCRETE WALL REINFORCING SCHEDULE ON SHEET S-010.
2. FSBB# DESIGNATES FINE SCREEN BUILDING BEAMS. SEE CONCRETE BEAM REINFORCING SCHEDULE ON SHEET S-010.
3. FOR LINTEL SCHEDULE AND DETAILS SEE SHEET S-006.

IN CHARGE OF	WAD
DESIGNED BY	KGP
CHECKED BY	PCC
DRAWN BY	KGP

NO.	DATE	REVISION	INT.
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1	09/23/2015	ISSUED FOR BID	KGP
0	03/19/2015	ISSUED FOR OEPA REVIEW	KGP

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CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

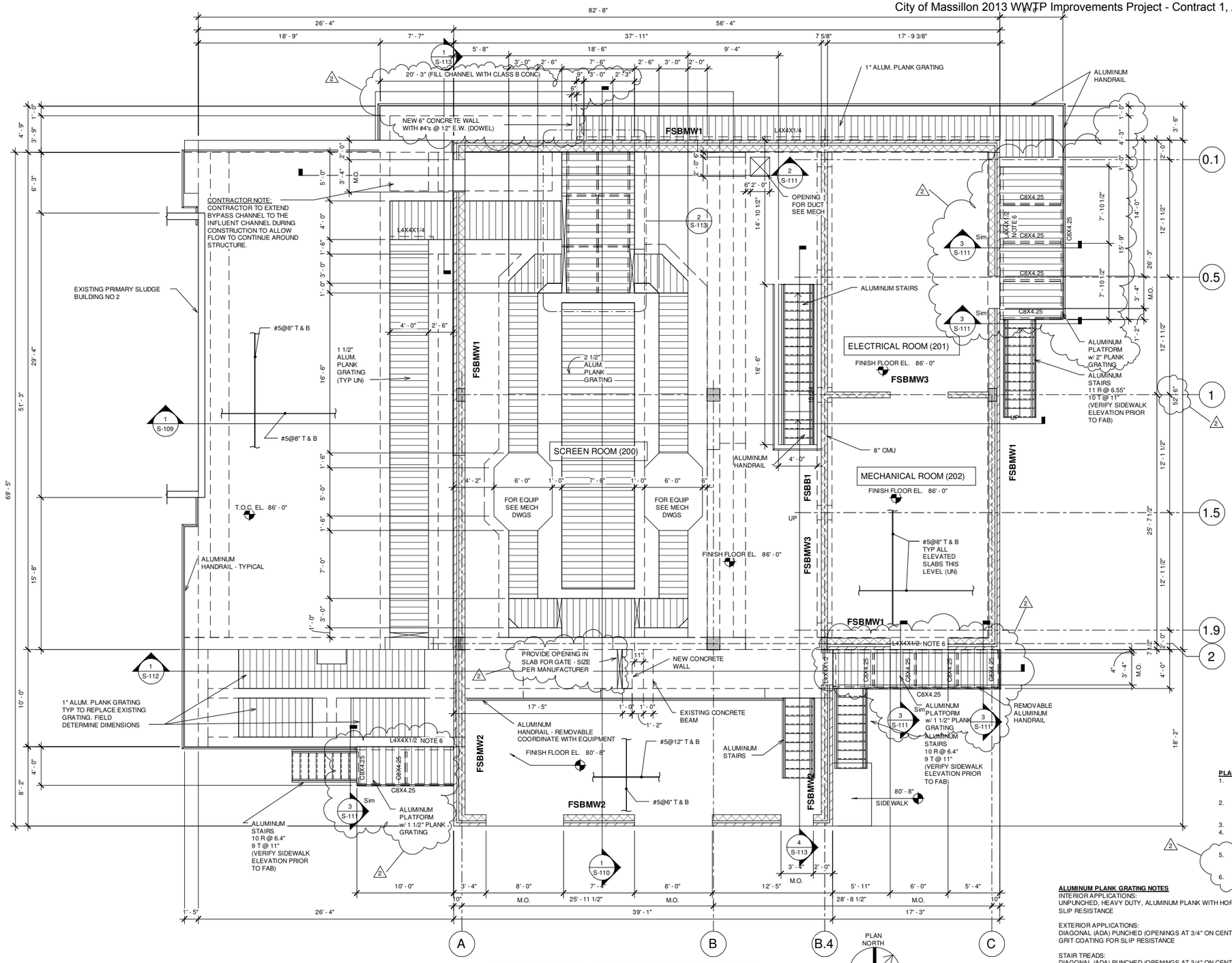
CITY OF MASSILLON, OHIO
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

STRUCTURAL
FINE SCREEN BUILDING
LOWER LEVEL & ROOF FRAMING PLANS

FILE NO. 23374.51633- 106
DATE MARCH 19,2015

S-106

\\fscanton\FE14007 Massillon WWTP Improvements\DWG\Revit\Structural (CTI)\51633-STRU-FSB.rvt



MAIN LEVEL STRUCTURAL PLAN

3/16" = 1'-0"

5' 0 5'

PLAN NOTES

1. FSBMW# DESIGNATES FINE SCREEN BUILDING MASONRY WALLS. SEE MASONRY WALL REINFORCING SCHEDULE ON SHEET S-010.
2. FSBB# DESIGNATES FINE SCREEN BUILDING BEAM. SEE CONCRETE BEAM REINFORCING SCHEDULE ON SHEET S-010.
3. FLOOR, PLATFORM AND STAIR LIVE LOAD = 100 PSF
4. ALL ALUMINUM STAIRS, PLATFORMS, FRAMING, HANDRAIL AND PLANK GRATING SHOWN ON THIS PLAN ARE NEW.
5. PLATFORM BEAMS TO BE ALUMINUM AND CONNECTED TO STRUCTURE USING TYPICAL DETAILS FOUND ON S-325
6. L4X4 BOLTED TO CONCRETE USING 1/2" DIA SS ADHESIVE ANCHORS @ 18" OC

ALUMINUM PLANK GRATING NOTES

INTERIOR APPLICATIONS:
UNPUNCHED, HEAVY DUTY, ALUMINUM PLANK WITH HORIZONTAL CROSS CUTS PERPENDICULAR TO STRIATIONS FOR SLIP RESISTANCE

EXTERIOR APPLICATIONS:
DIAGONAL (ADA) PUNCHED (OPENINGS AT 3/4" ON CENTER), HEAVY DUTY, ALUMINUM PLANK WITH ALUMINUM OXIDE GRIT COATING FOR SLIP RESISTANCE

STAIR TREADS:
DIAGONAL (ADA) PUNCHED (OPENINGS AT 3/4" ON CENTER), HEAVY DUTY, ALUMINUM PLANK WITH ALUMINUM OXIDE GRIT COATING FOR SLIP RESISTANCE. STAIRS TREADS SHALL HAVE ALUMINUM NOSINGS WITH ALUMINUM OXIDE COATING FOR SLIP RESISTANCE.

IN CHARGE OF	WAD
DESIGNED BY	KGP
CHECKED BY	PCC
DRAWN BY	KGP

NO.	DATE	REVISION	INT.
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1	09/23/2015	ISSUED FOR BID	KGP
0	03/19/2015	ISSUED FOR OEPA REVIEW	KGP

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON, OHIO
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

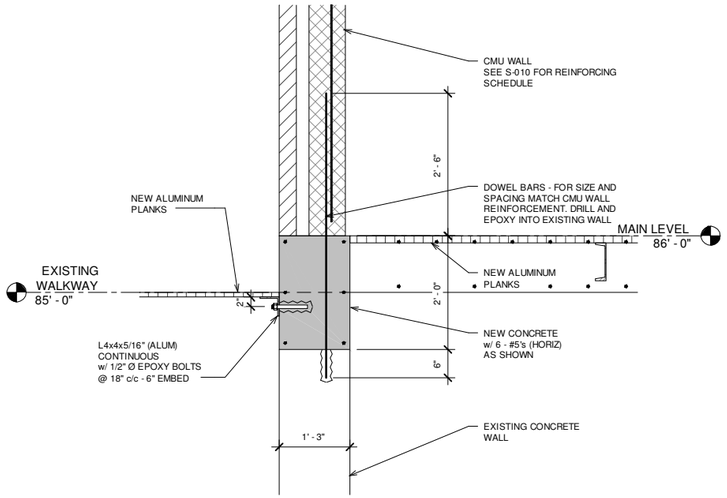
STRUCTURAL
FINE SCREEN BUILDING

MAIN LEVEL FRAMING PLAN

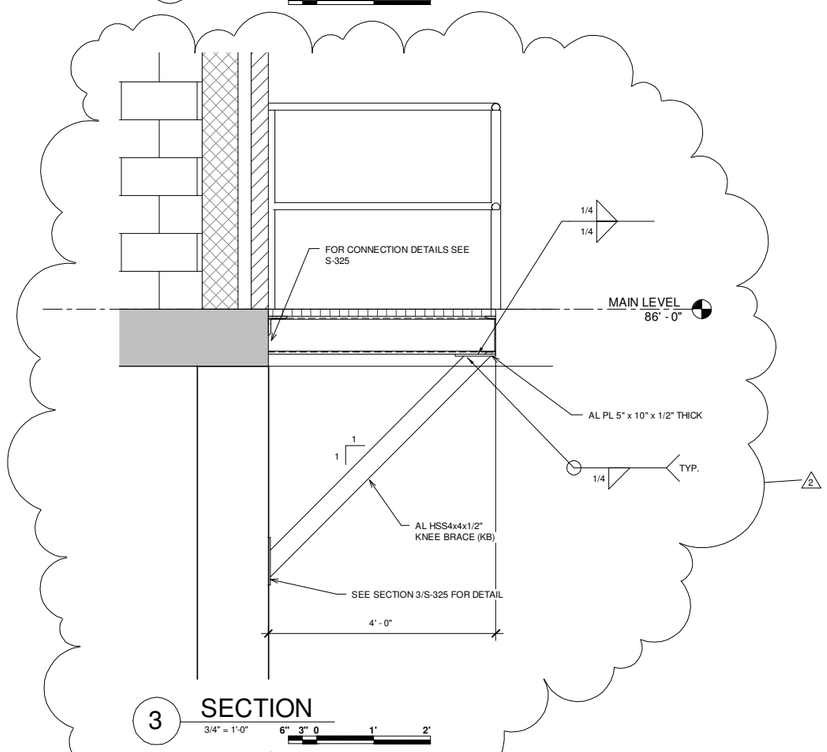
FILE NO. 23374.51633- 107

DATE MARCH 19,2015

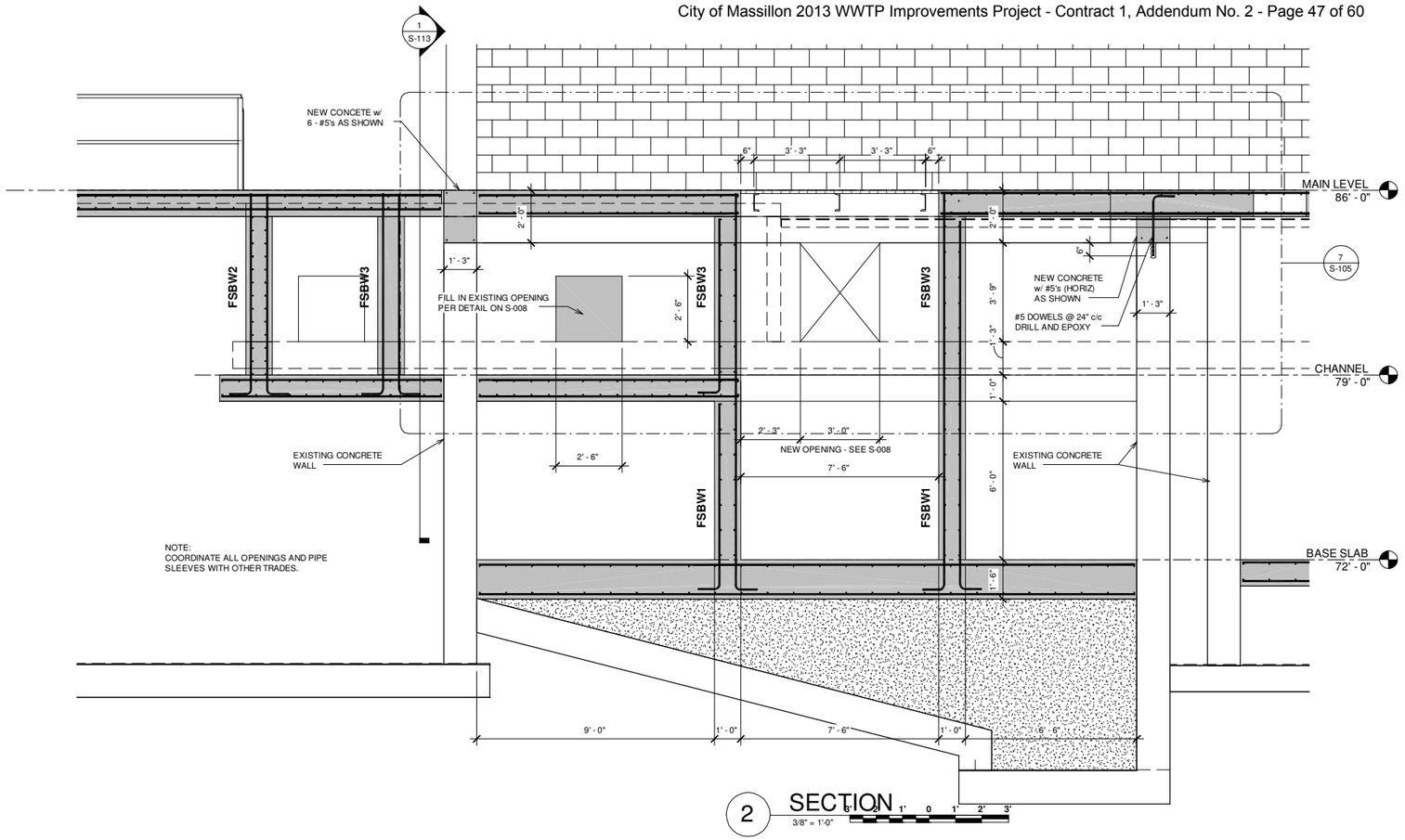
S-107



1 DETAIL
3/4" = 1'-0"



3 SECTION
3/4" = 1'-0"



2 SECTION
3/8" = 1'-0"

IN CHARGE OF	WAD
DESIGNED BY	KGP
CHECKED BY	PCC
DRAWN BY	KGP

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	KGP
1	09/23/2015	ISSUED FOR BID	KGP
0	03/19/2015	ISSUED FOR OEPA REVIEW	KGP

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CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

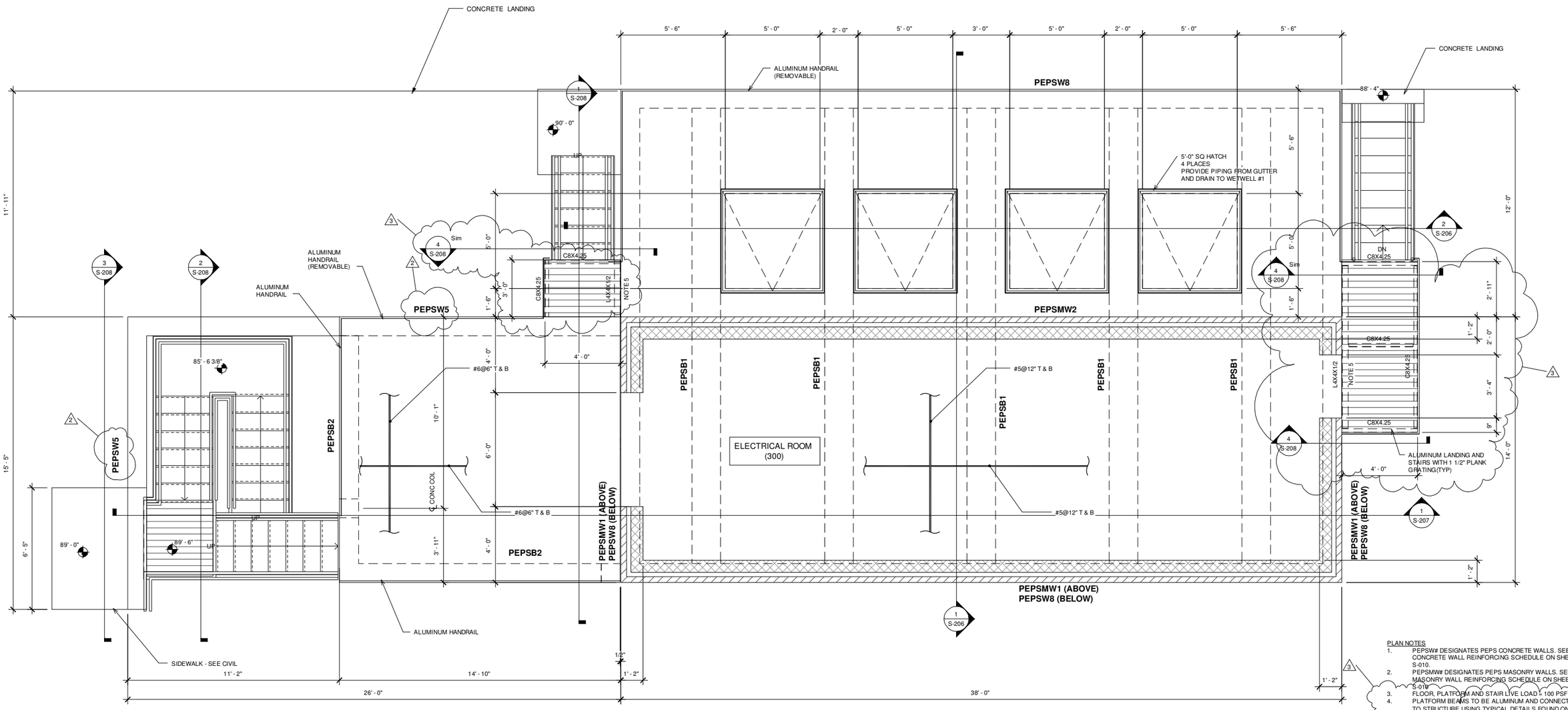
CITY OF MASSILLON, OHIO
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

STRUCTURAL
FINE SCREEN BUILDING

SECTIONS & DETAILS

FILE NO. 23374.51633- 111
DATE MARCH 19,2015

S-111



PLAN NOTES:

1. PEPSW# DESIGNATES PEPS CONCRETE WALLS. SEE CONCRETE WALL REINFORCING SCHEDULE ON SHEET S-010.
2. PEPSMW# DESIGNATES PEPS MASONRY WALLS. SEE MASONRY WALL REINFORCING SCHEDULE ON SHEET S-010.
3. FLOOR, PLATFORM AND STAIR LIVE LOAD = 100 PSF
4. PLATFORM BEAMS TO BE ALUMINUM AND CONNECTED TO STRUCTURE USING TYPICAL DETAILS FOUND ON S-325
5. L4X4 BOLTED TO CONCRETE USING 1/2" DIA SS ADHESHIVE ANCHORS @ 18" C/C

ALUMINUM PLANK GRATING NOTES

EXTERIOR APPLICATIONS:
DIAGONAL (ADA) PUNCHED (OPENINGS AT 3/4" ON CENTER), HEAVY DUTY, ALUMINUM PLANK WITH ALUMINUM OXIDE GRIT COATING FOR SLIP RESISTANCE

STAIR TREADS:
DIAGONAL (ADA) PUNCHED (OPENINGS AT 3/4" ON CENTER), HEAVY DUTY, ALUMINUM PLANK WITH ALUMINUM OXIDE GRIT COATING FOR SLIP RESISTANCE. STAIRS TREADS SHALL HAVE ALUMINUM NOSINGS WITH ALUMINUM OXIDE COATING FOR SLIP RESISTANCE.

UPPER LEVEL FLOOR/DECK @ 93'-6"

3/8"3\ 1'0"2' 1' 0 1' 2' 3'

PLAN NORTH

IN CHARGE OF	WAD
DESIGNED BY	KGP
CHECKED BY	PCC
DRAWN BY	KGP

NO.	DATE	REVISION	INT.
3	10/28/2015	ADDENDUM NO. 2	KGP
2	10/23/2015	ADDENDUM NO. 1	KGP
1	09/23/2015	ISSUED FOR BID	KGP
0	03/19/2015	ISSUED FOR OEPA REVIEW	KGP

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

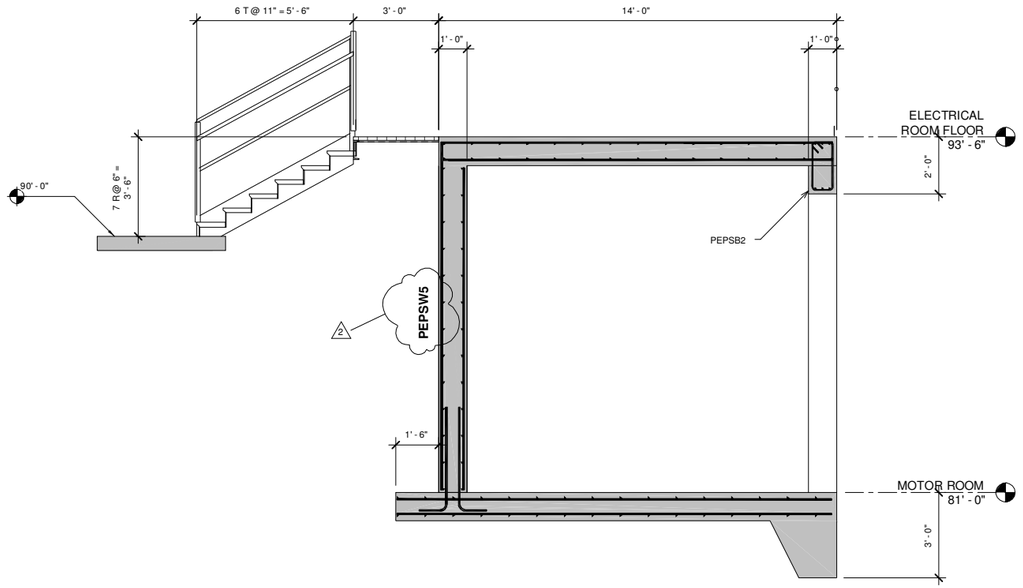
STRUCTURAL
PRIMARY EFFLUENT PUMP STATION

UPPER LEVEL FLOOR / DECK PLAN

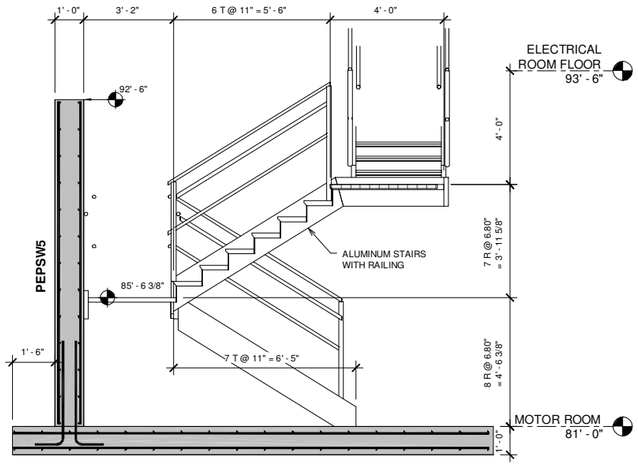
FILE NO. 22374.51633-S204

DATE MARCH 19, 2015

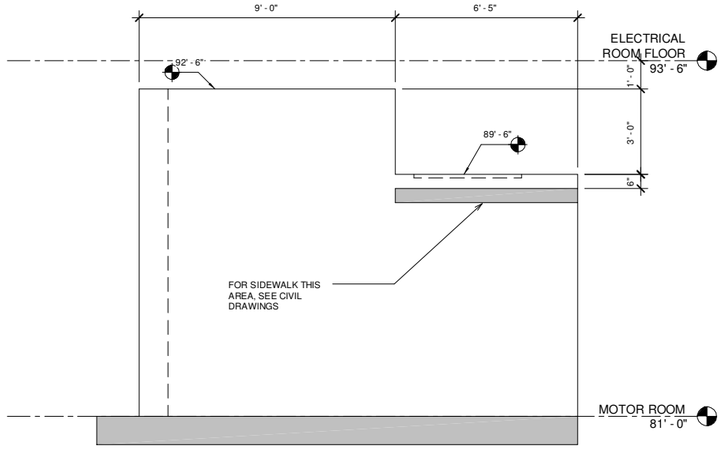
S-204



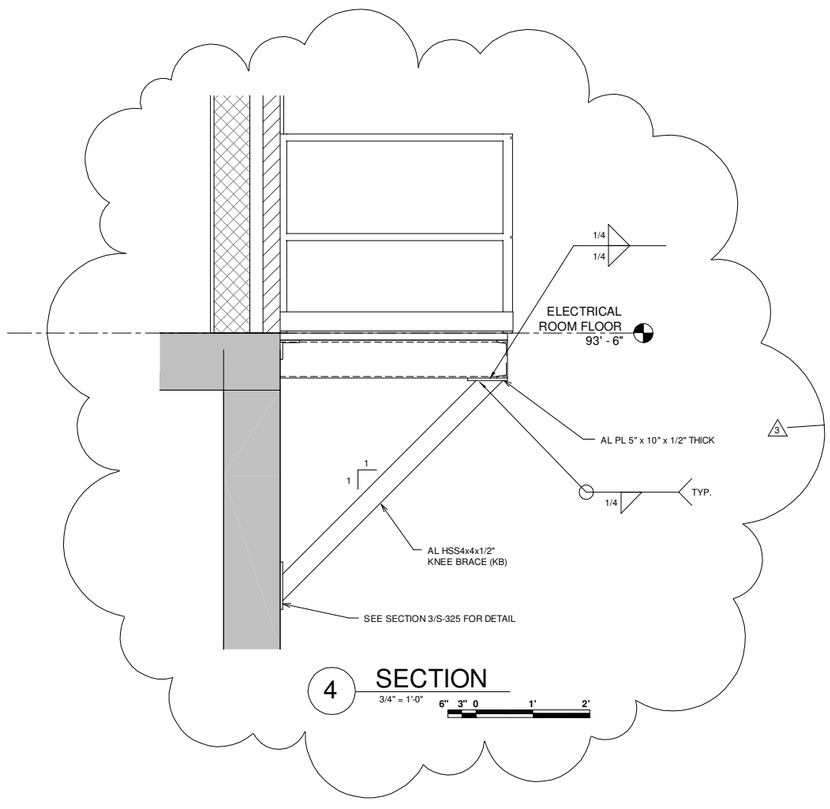
1 SECTION
3/8" = 1'-0"



2 SECTION
3/8" = 1'-0"



3 SECTION
3/8" = 1'-0"



4 SECTION
3/4" = 1'-0"

IN CHARGE OF	WAD
DESIGNED BY	KGP
CHECKED BY	PCC
DRAWN BY	KGP

NO.	DATE	REVISION	INT.
3	10/28/2015	ADDENDUM NO. 2	KGP
2	10/23/2015	ADDENDUM NO. 1	KGP
0	09/23/2015	ISSUED FOR BID	KGP

CTI / O'BRIEN & GERE JOINT VENTURE
ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

STRUCTURAL
PRIMARY EFFLUENT PUMP STATION

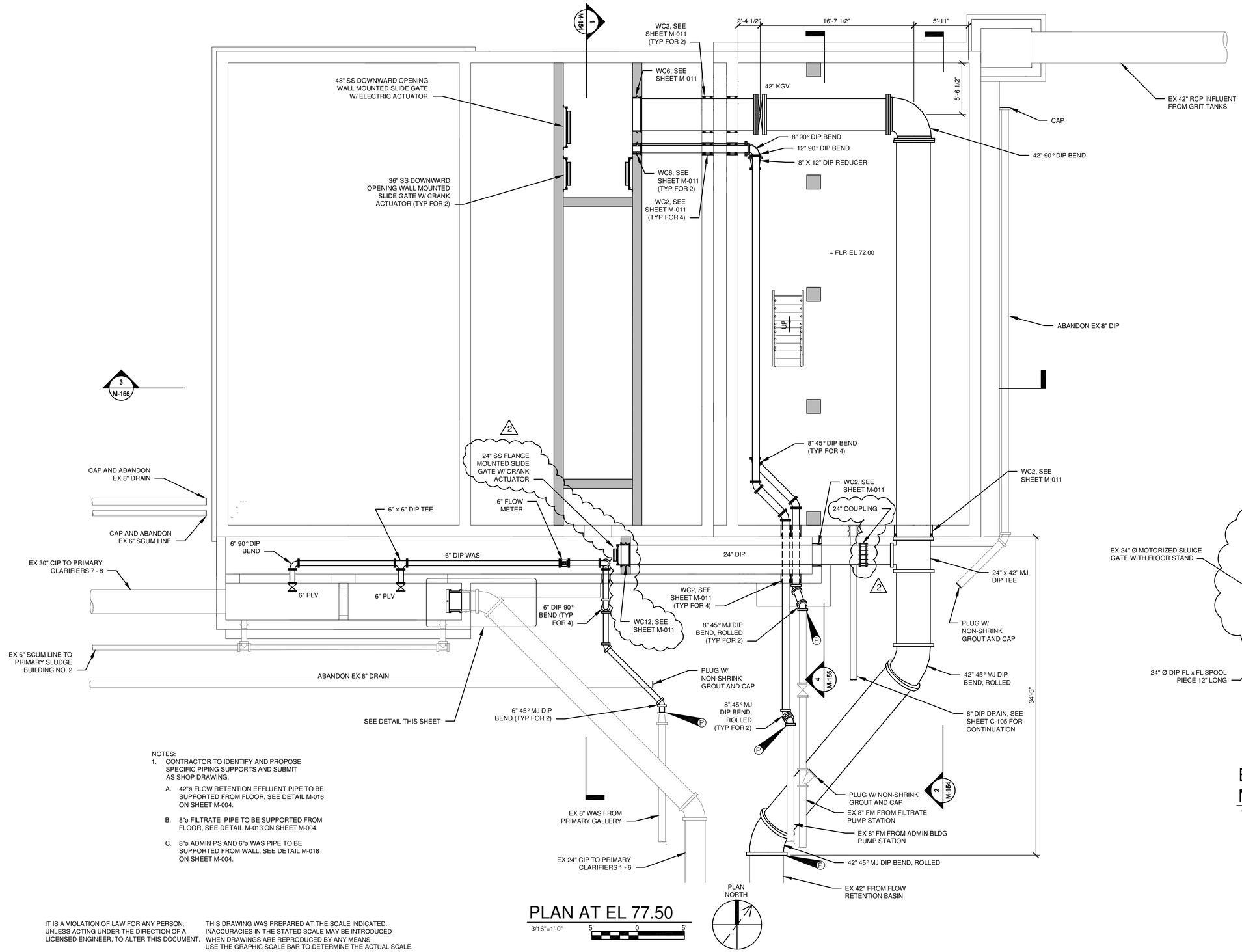
SECTIONS

FILE NO. 22374.51633-S208

DATE MARCH 19, 2015

S-208

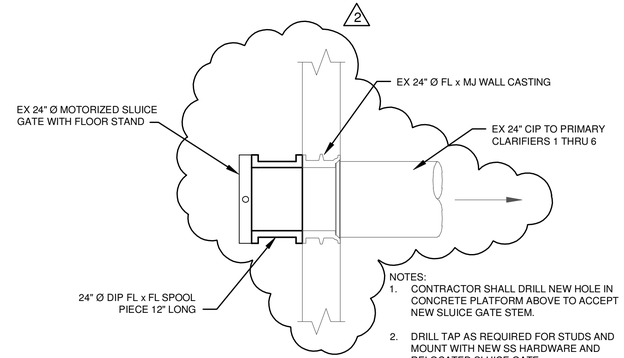
SAVED: 10/28/15 9:00 AM



PLAN AT EL 77.50

3/16"=1'-0" 5' 0 5'

NOTES:
1. CONTRACTOR TO IDENTIFY AND PROPOSE SPECIFIC PIPING SUPPORTS AND SUBMIT AS SHOP DRAWING.
   - A. 42"ø FLOW RETENTION EFFLUENT PIPE TO BE SUPPORTED FROM FLOOR, SEE DETAIL M-016 ON SHEET M-004.
   - B. 8"ø FILTRATE PIPE TO BE SUPPORTED FROM FLOOR, SEE DETAIL M-013 ON SHEET M-004.
   - C. 8"ø ADMIN PS AND 6"ø WAS PIPE TO BE SUPPORTED FROM WALL, SEE DETAIL M-018 ON SHEET M-004.



NOTES:
1. CONTRACTOR SHALL DRILL NEW HOLE IN CONCRETE PLATFORM ABOVE TO ACCEPT NEW SLUICE GATE STEM.
2. DRILL TAP AS REQUIRED FOR STUDS AND MOUNT WITH NEW SS HARDWARE AND RELOCATED SLUICE GATE.
3. EXISTING HOLE THROUGH WHICH SLUICE GATE STEM HAD PREVIOUSLY BEEN INSTALLED SHALL BE PLUGGED WITH NON SHRINK GROUT.

EX SLUICE GATE MODIFICATION DETAIL

1/2"=1'-0" 2' 1' 0 1' 2'

IN CHARGE OF WAD
DESIGNED BY TRT
CHECKED BY RWR
DRAWN BY JAM

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	RWR
1	09/23/2015	ISSUED FOR BID	RWR
0	03/19/2015	ISSUED FOR OEPA REVIEW	RWR

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

MECHANICAL
FINE SCREEN BUILDING

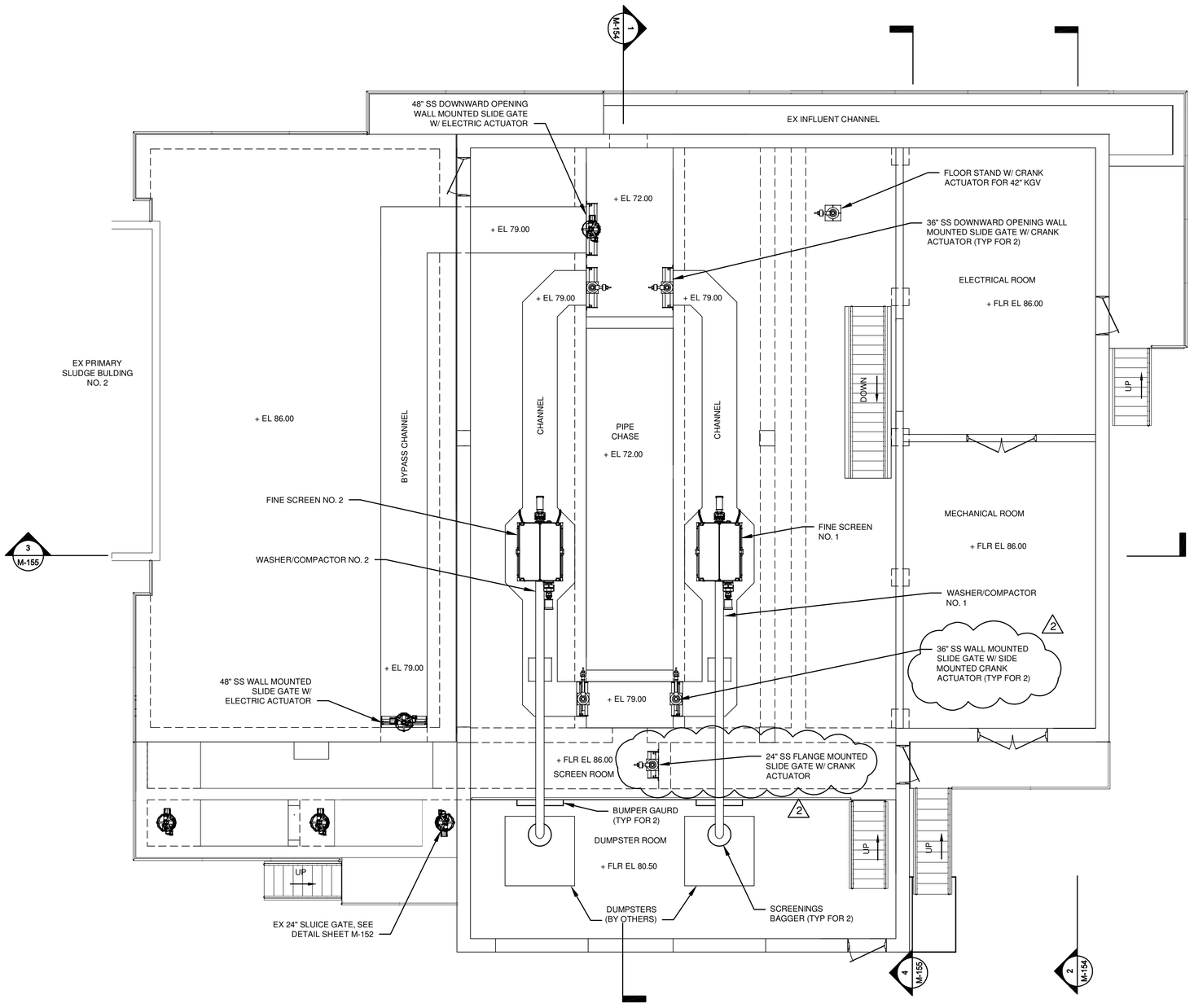
PLAN AT EL 77.50

FILE NO. 23374.51633 -M152
DATE MARCH 19, 2015

M-152

E:\E14007 MASSILLON WWTP IMPROVEMENTS\DWG\SHEETS\51633-M-152.DWG

SAVED: 10/28/15 8:46 AM



PLAN AT EL 86.00

3/16"=1'-0" 5' 0 5'

PLAN NORTH

NOTES:
1. FOR ODOR CONTROL PIPING, SEE SHEET M-110.
2. ALUMINUM PLANKING OVER CHANNELS NOT SHOWN FOR CLARITY. SEE SHEET S-107.

IN CHARGE OF WAD
DESIGNED BY TRT
CHECKED BY RWR
DRAWN BY JAM

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	RWR
1	09/23/2015	ISSUED FOR BID	RWR
0	03/19/2015	ISSUED FOR OEPA REVIEW	RWR

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

MECHANICAL
FINE SCREEN BUILDING

PLAN AT EL 86.00

FILE NO. 23374.51633 -M153
DATE MARCH 19, 2015

M-153

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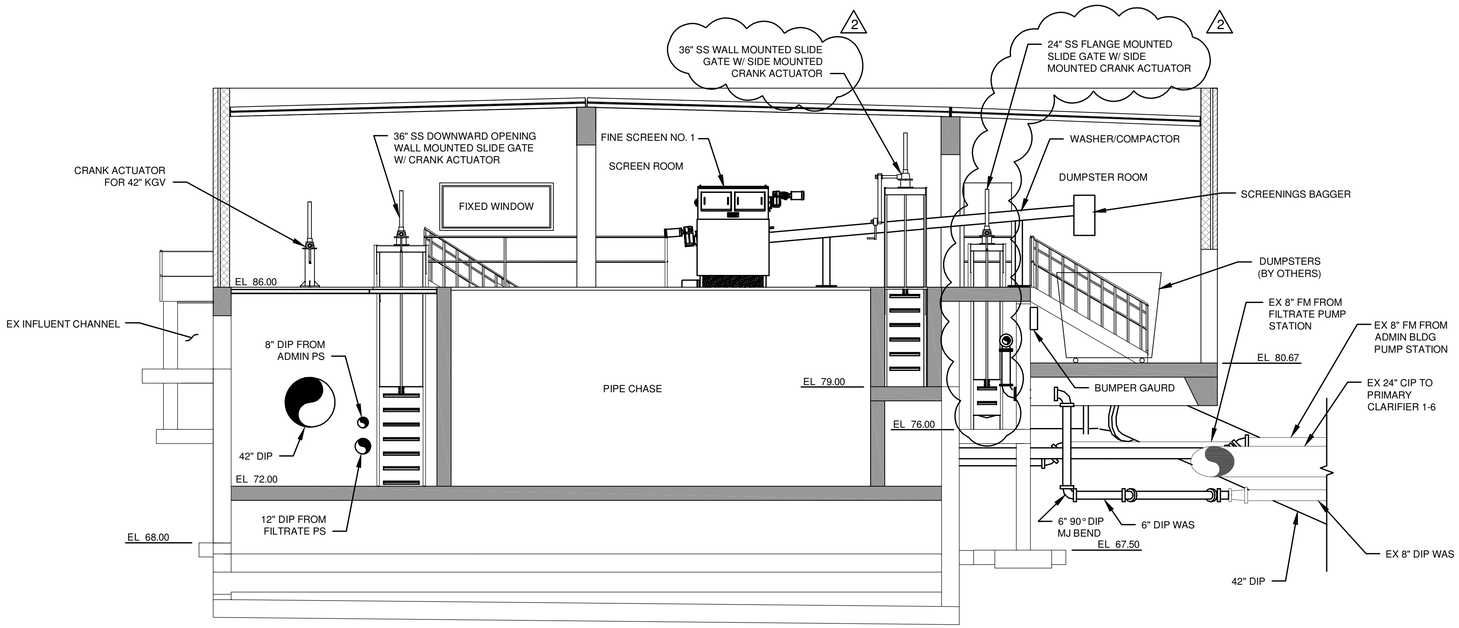
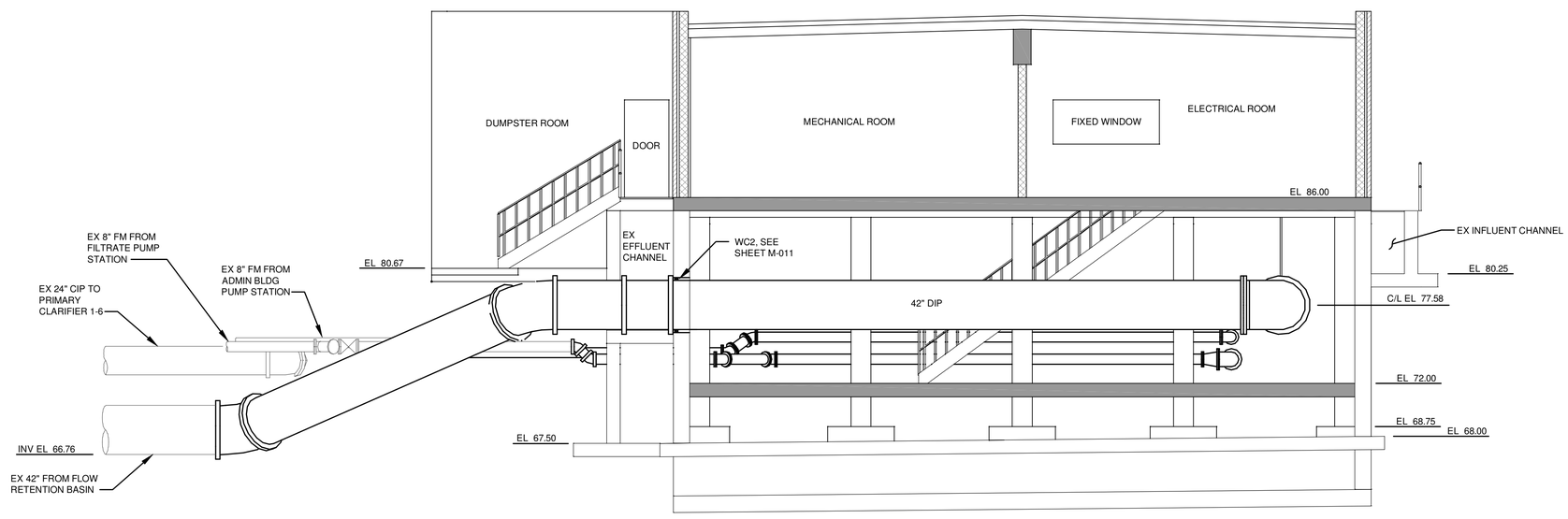


1 SECTION

3/16"=1'-0" 5' 0 5'



2 SECTION

3/16"=1'-0" 5' 0 5'

NOTES:
1. CONTRACTOR TO IDENTIFY AND PROPOSE SPECIFIC PIPING SUPPORTS AND SUBMIT AS SHOP DRAWING.
   1. 42"ø FLOW RETENTION EFFLUENT PIPE TO BE SUPPORTED FROM FLOOR, SEE DETAIL M-016 ON SHEET M-004.
   2. 8"ø FILTRATE PIPE TO BE SUPPORTED FROM FLOOR, SEE DETAIL M-013 ON SHEET M-004.
   3. 8"ø ADMIN PS AND 6"ø WAS PIPE TO BE SUPPORTED FROM WALL, SEE DETAIL M-018 ON SHEET M-004.

IN CHARGE OF WAD
DESIGNED BY TRT
CHECKED BY RWR
DRAWN BY JAM

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	RWR
1	09/23/2015	ISSUED FOR BID	RWR
0	03/19/2015	ISSUED FOR OEPA REVIEW	RWR

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

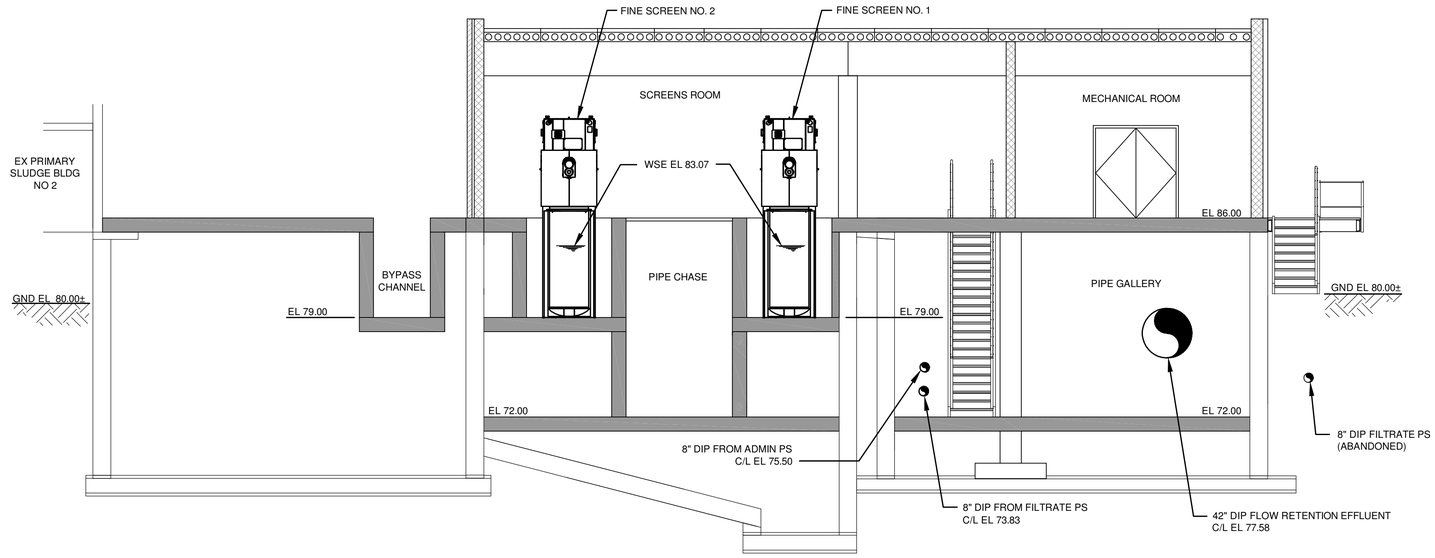
MECHANICAL
FINE SCREEN BUILDING

SECTIONS

FILE NO. 23374.51633 -M154

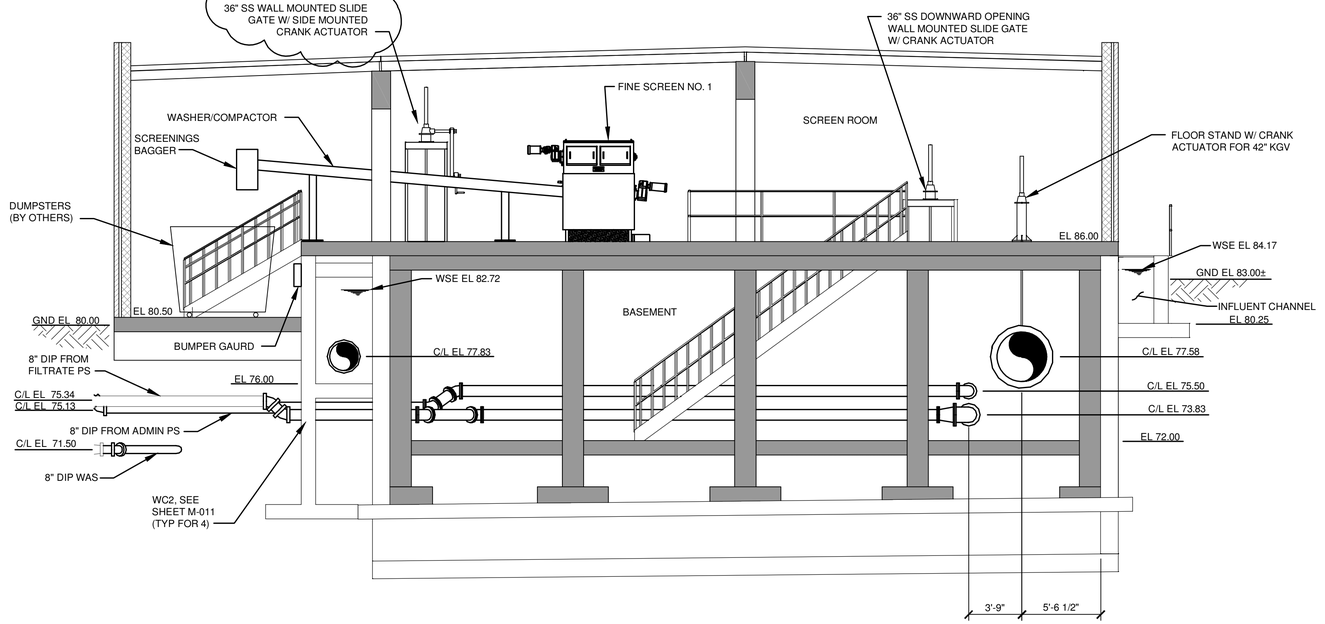
DATE MARCH 19, 2015

M-154



3 SECTION

3/16"=1'-0" 5' 0 5'



4 SECTION

3/16"=1'-0" 5' 0 5'

NOTES:
1. CONTRACTOR TO IDENTIFY AND PROPOSE SPECIFIC PIPING SUPPORTS AND SUBMIT AS SHOP DRAWING.
   1. 42"ø FLOW RETENTION EFFLUENT PIPE TO BE SUPPORTED FROM FLOOR, SEE DETAIL M-016 ON SHEET M-004.
   2. 8"ø FILTRATE PIPE TO BE SUPPORTED FROM FLOOR, SEE DETAIL M-013 ON SHEET M-004.
   3. 8"ø ADMIN PS AND 6"ø WAS PIPE TO BE SUPPORTED FROM WALL, SEE DETAIL M-018 ON SHEET M-004.

IN CHARGE OF WAD
DESIGNED BY TRT
CHECKED BY RWR
DRAWN BY JAM

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	RWR
1	09/23/2015	ISSUED FOR BID	RWR
0	03/19/2015	ISSUED FOR OEPA REVIEW	RWR

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

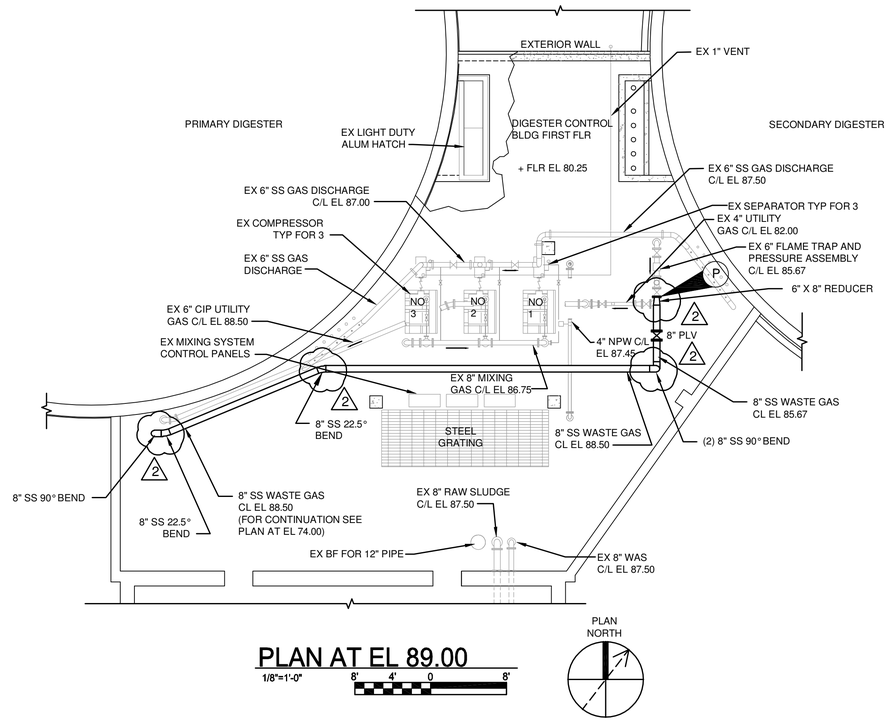
CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

MECHANICAL
FINE SCREEN BUILDING

SECTIONS

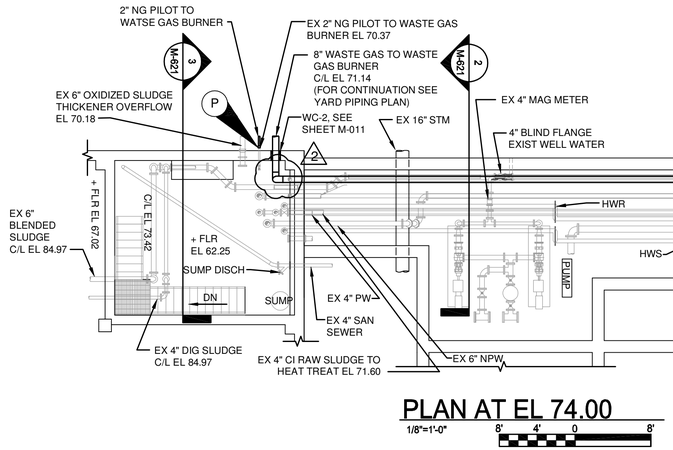
FILE NO. 23374.51633 -M155
DATE MARCH 19, 2015

M-155



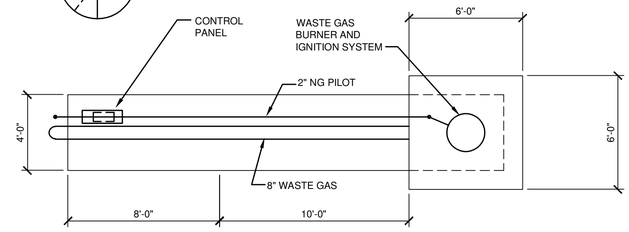
PLAN AT EL 89.00

1/8"=1'-0"



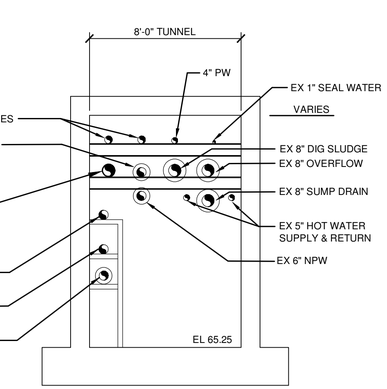
PLAN AT EL 74.00

1/8"=1'-0"



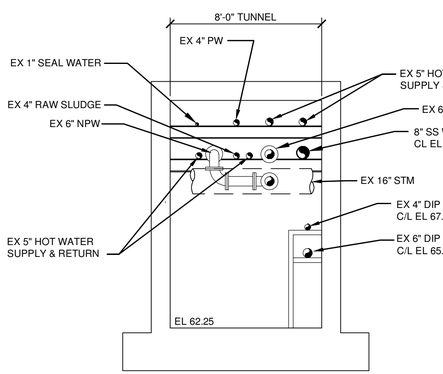
DIGESTER WASTE GAS BURNER PLAN

1/4"=1'-0"



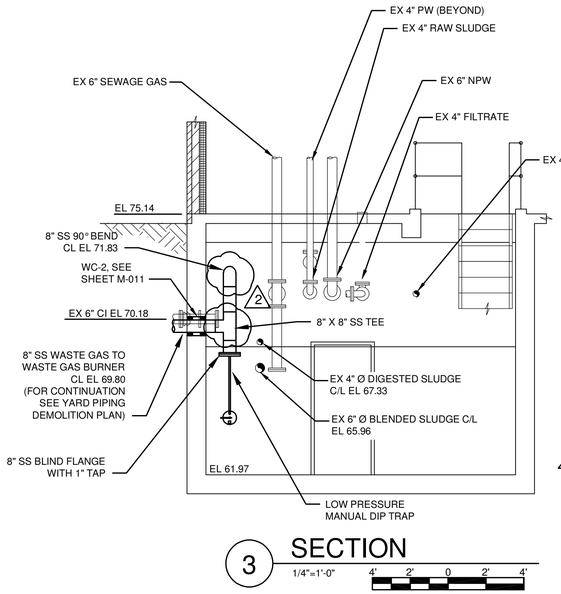
1 SECTION

1/4"=1'-0"



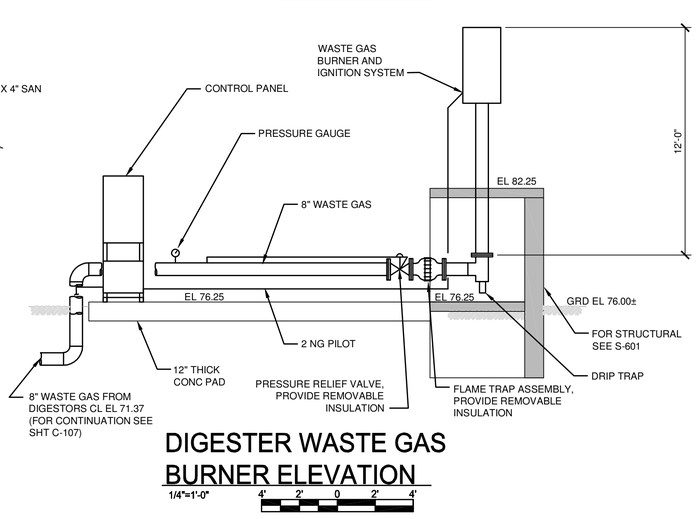
2 SECTION

1/4"=1'-0"



3 SECTION

1/4"=1'-0"



DIGESTER WASTE GAS BURNER ELEVATION

1/4"=1'-0"

IN CHARGE OF WAD
DESIGNED BY TRT
CHECKED BY RWR
DRAWN BY JAM

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO. 2	RWR
1	09/23/2015	ISSUED FOR BID	RWR
0	03/19/2015	ISSUED FOR OEPA REVIEW	RWR

CTI / O'BRIEN & GERE JOINT VENTURE
CTI ENGINEERS, INC.
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

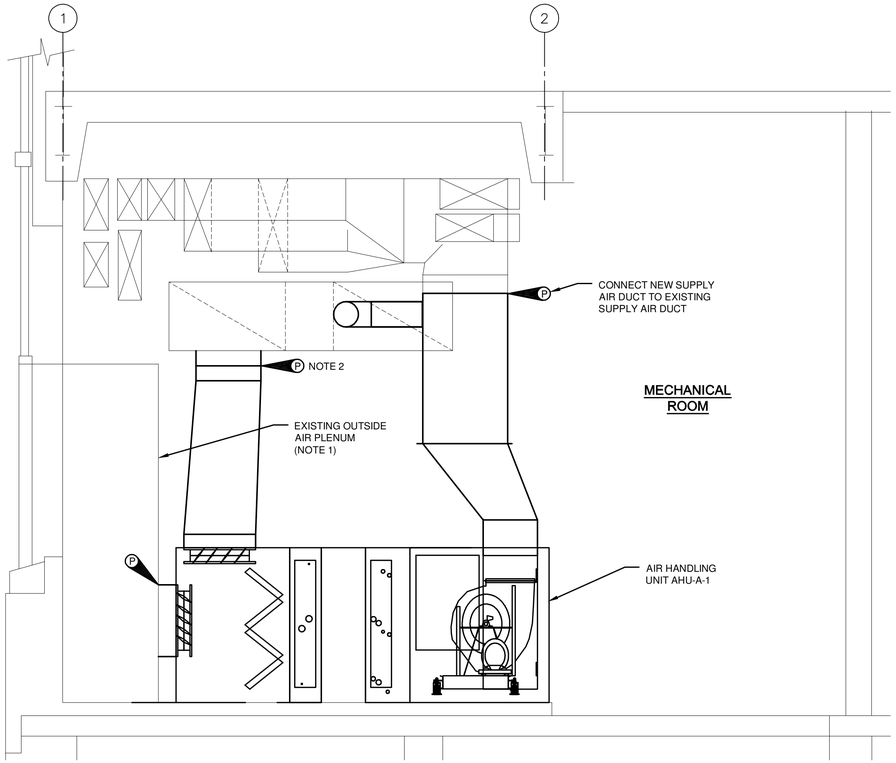
MECHANICAL
WASTE GAS BURNER

PLANS AND SECTIONS

FILE NO. 23374.51633 -M621
DATE MARCH 19, 2015

M-621

SAVED: 10/27/15 2:55 PM



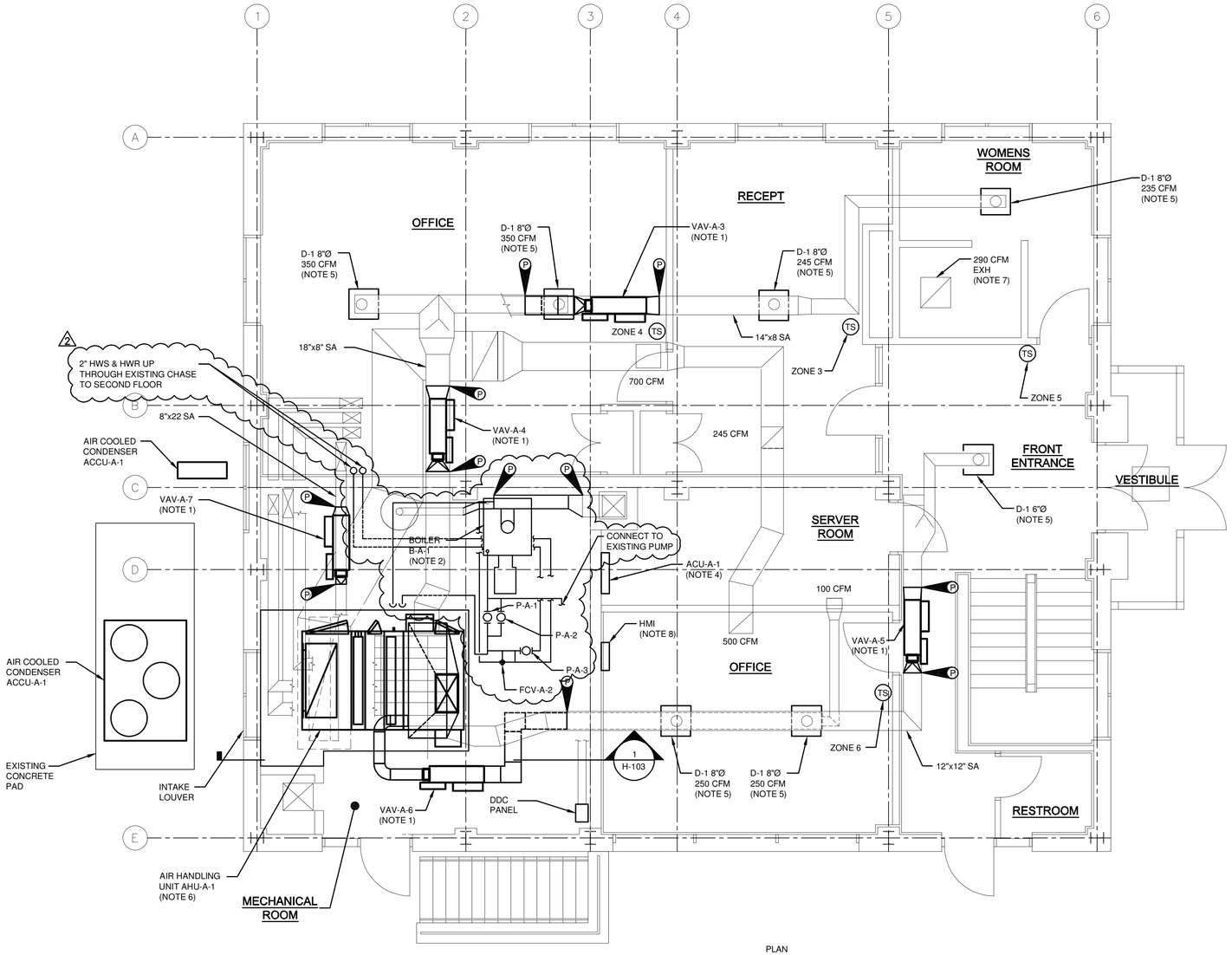
1 SECTION

1/2" = 1'-0"

2' 1' 0 1' 2'

SECTION NOTES:

1. CONNECT AHU-A-1 TO EXISTING OUTSIDE AIR PLENUM.
2. CONNECT NEW RETURN AIR DUCT TO EXISTING RETURN AIR DUCT.



FIRST FLOOR PLAN

1/4"=1'-0"

4' 2' 0 2' 4'

PLAN NOTES:

1. REMOVE EXISTING SUPPLY AIR DUCT AND INSTALL VAV BOX AND TRANSITIONS.
2. CONNECT BOILER TO EXISTING VENT AND CHIMNEY. REFER TO H-107 FOR BOILER PIPING SYSTEM SCHEMATIC.
3. BALANCE SUPPLY, RETURN AND EXHAUST AIR FLOWS.
4. PROVIDE REFRIGERANT LINES BETWEEN AC UNIT AND OUTDOOR CONDENSER ACC-A-1.
5. REPLACE EXISTING DIFFUSER AND ASSOCIATED FLEX DUCT
6. PROVIDE REFRIGERANT LINES BETWEEN AHU AND ACCU-A-1. PIPE CONDENSATE DRAIN TO FLOOR DRAIN IN MECHANICAL ROOM.
7. BALANCE RESTROOM EXHAUST SYSTEM TO AIR FLOWS SHOWN.
8. PROPOSED LOCATION OF HMI (DDC OPERATOR INTERFACE). COORDINATE FINAL LOCATION WITH OWNER.

IN CHARGE OF DL
DESIGNED BY SWM
CHECKED BY JPW
DRAWN BY KJL

NO.	DATE	REVISION	INT.
2	10/28/2015	ADDENDUM NO.2	DL
1	09/23/2015	ISSUED FOR BID	DL
0	03/17/2015	ISSUED FOR OEPA REVIEW	DL

CTI / O'BRIEN & GERE JOINT VENTURE
O'BRIEN & GERE
220 MARKET AVENUE SOUTH
SUITE 750
CANTON, OH 47702

CITY OF MASSILLON
2013 WWTP IMPROVEMENTS
MASSILLON, OHIO

HVAC
ADMINISTRATION BUILDING

FIRST FLOOR PLAN

FILE NO. 23374.51633 -H103

DATE SEPT. 23, 2015

H-103

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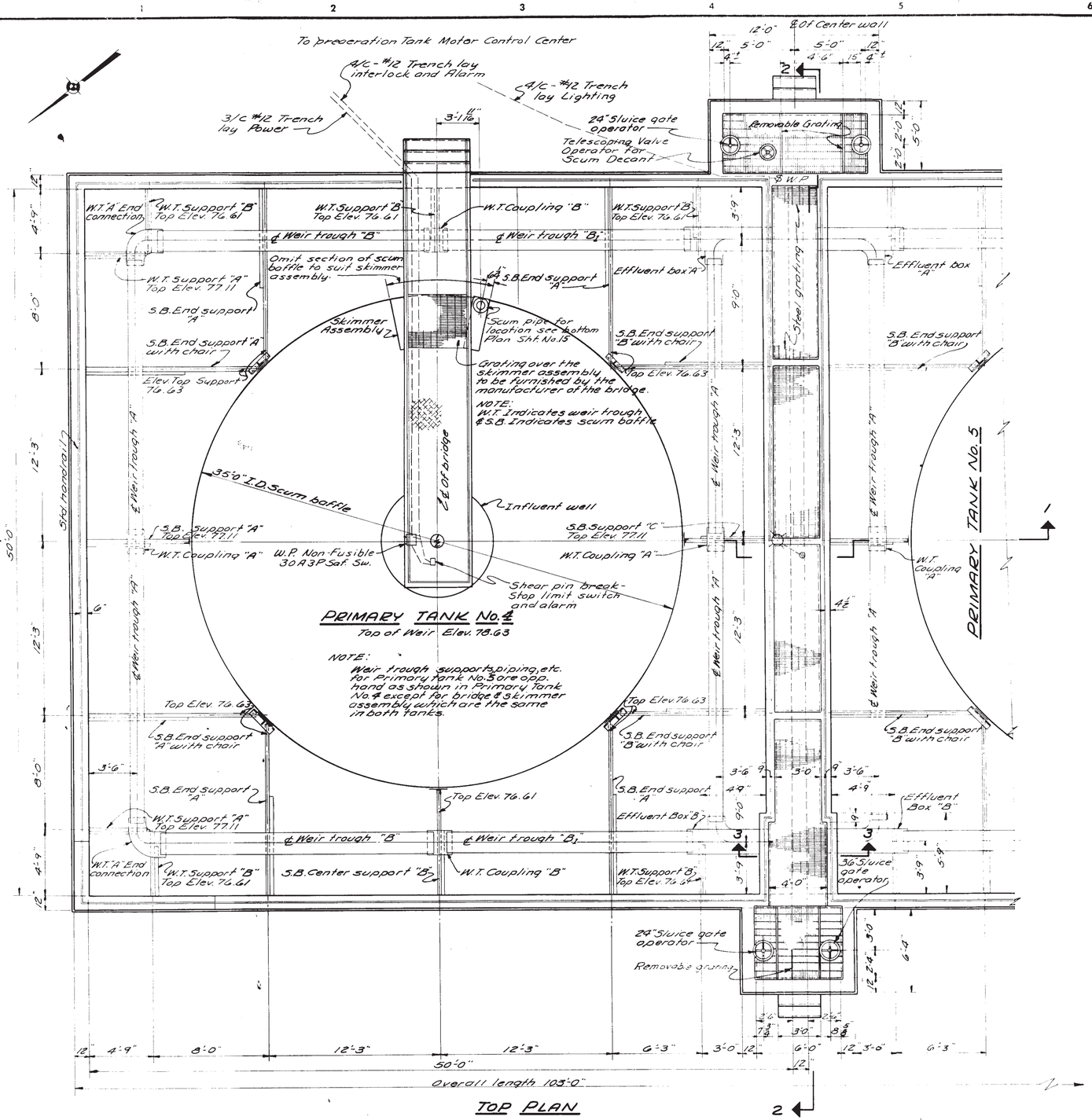


TOP PLAN

General Notes:

A. All troughs, trough couplings, support brackets etc. to be all welded construction and receive one (1) shop coat of red lead at place of manufacture. Field painting shall be as specified and performed after all units are erected.

B. Weir plates will be galvanized. Weir plates are not to be installed until all Field painting of troughs is completed. All "Vee" notches in weir plates must be machine cut, Flame cutting of "Vee" notches will not be permitted.

C. Except for anchor bolts, in concrete and concrete inserts, all bolts, nuts and washers used to erect units will be zinc plated.

D. For Structural Details See Sheets 19 and 20

14 OF 55

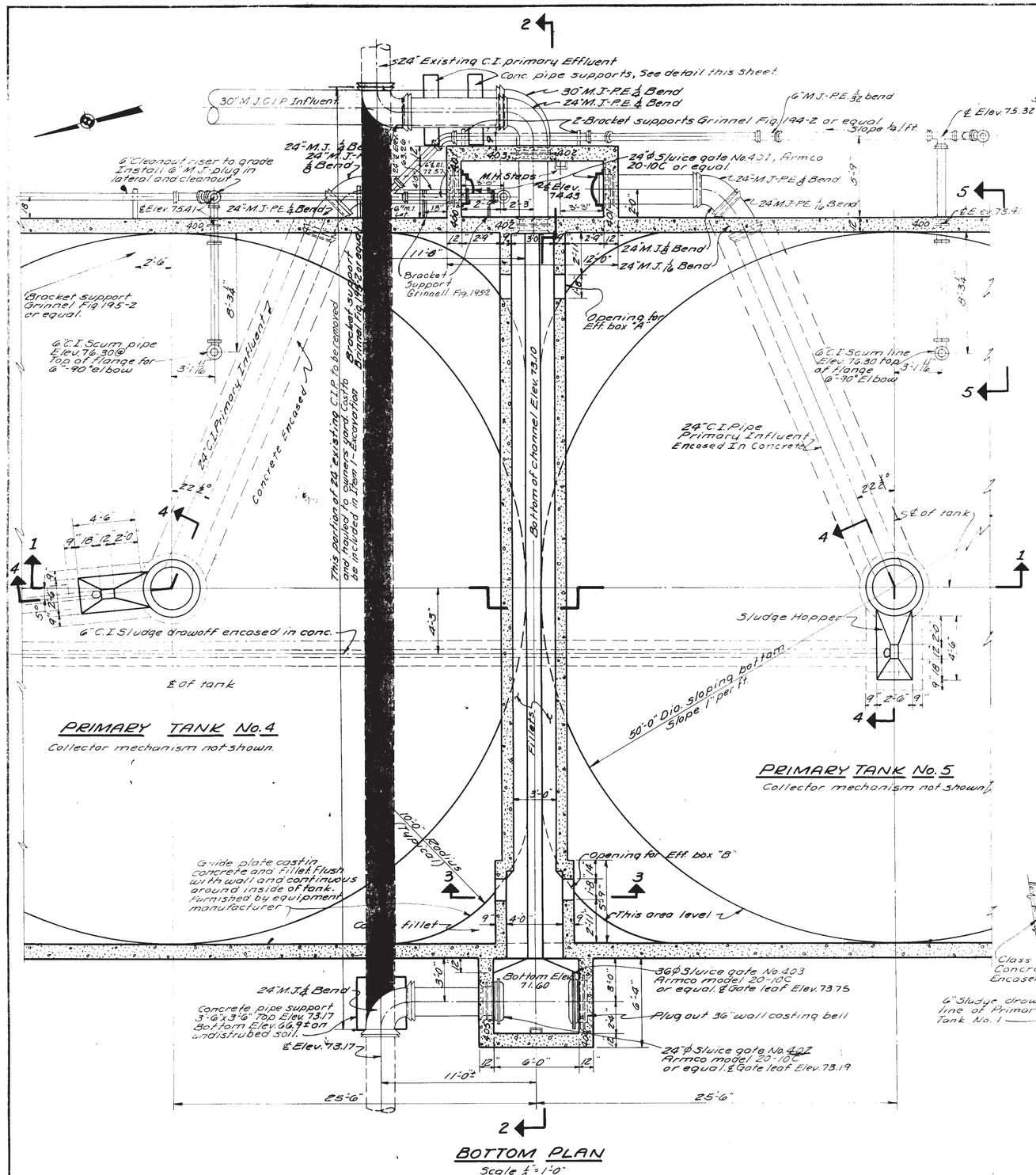
NO.	REVISIONS	DATE	BY	APP'D
	Revised to date	Jan. 1960	L.E.R.	

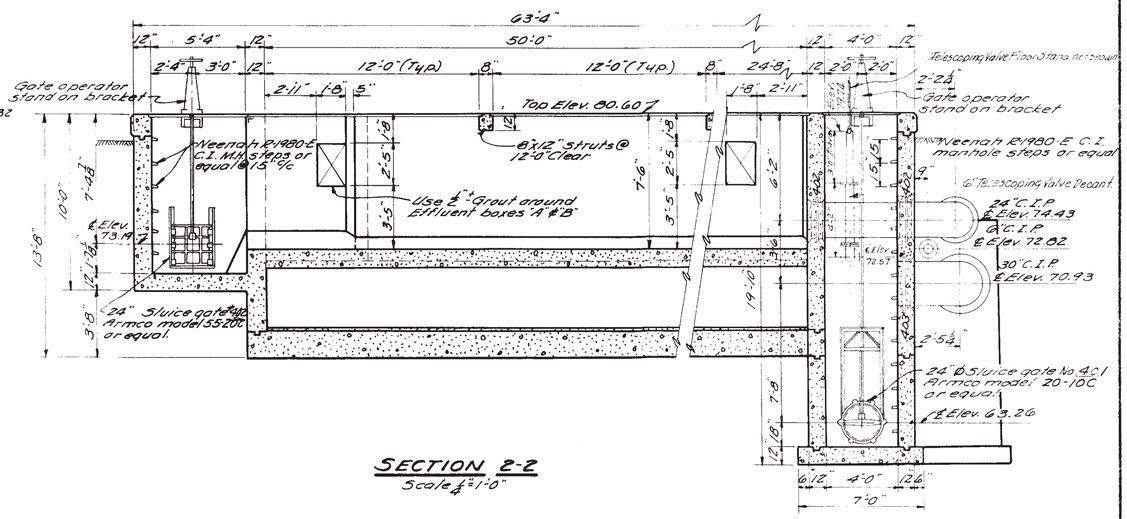
FLOYD G. BROWNE AND ASSOCIATES
CONSULTING ENGINEERS
MARION, OHIO

DATE JUNE 1959 | JOB No. 295.2 | DRAWN N.O. | CHECKED W.R.W
SCALE 1/4" = 1'-0" | DWG. No 59366 | TRACED L.J.P. | APPROVED

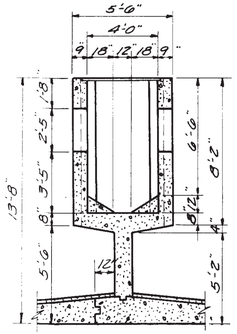
CITY OF MASSILLON, OHIO

SEWAGE TREATMENT PLANT IMPROVEMENTS
CONTRACT NO. 2
NEW PRIMARY TANKS
MECHANICAL AND ELECTRICAL TOP PLAN

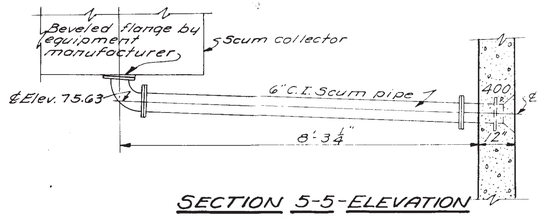




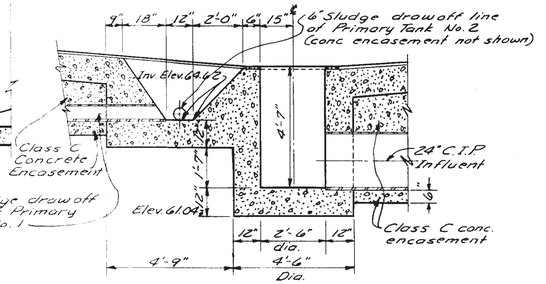
SECTION 2-2
Scale 1/4" = 1'-0"



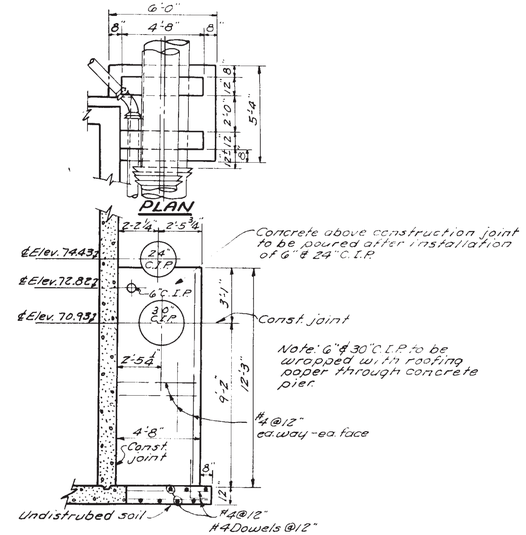
SECTION 3-3
Scale 1/4" = 1'-0"



SECTION 5-5-ELEVATION
SCUM PIPE EACH TANK



SECTION 4-4
Scale 3/8" = 1'-0"



ELEVATION CONCRETE
INFLUENT PIPE SUPPORTS
Scale 1/4" = 1'-0"

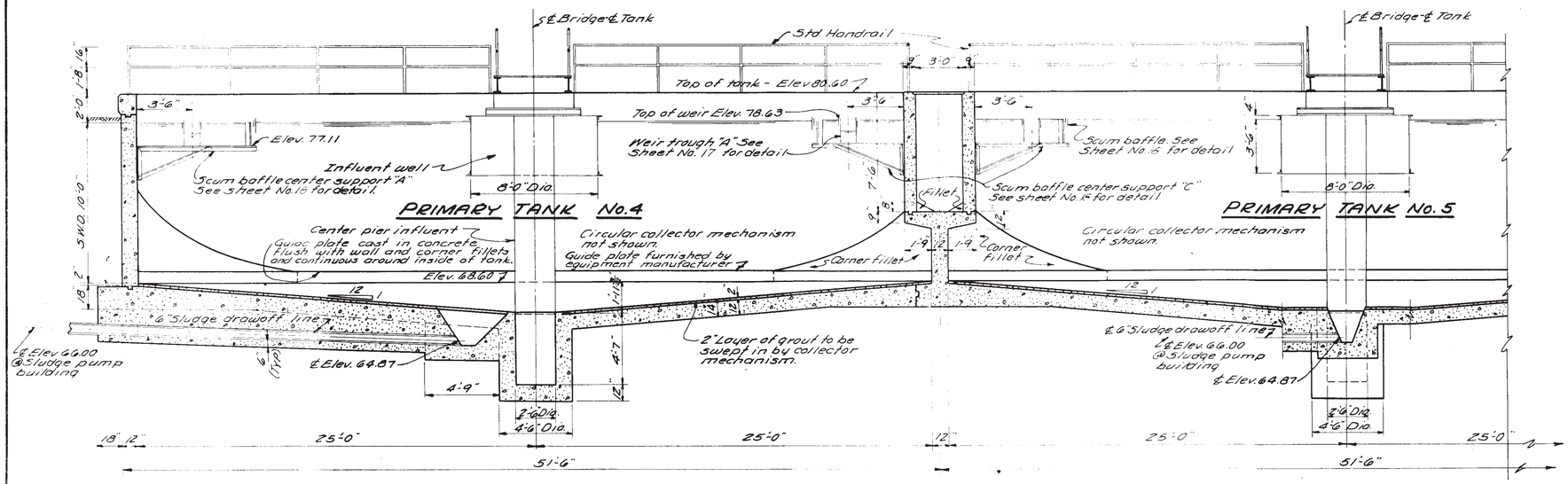
15 OF 55

NO.	REVISION DATA	DATE	BY	APP'D
	Revised to date	Jan. 1960	L.E.R.	

FLOYD G. BROWNE AND ASSOCIATES
CONSULTING ENGINEERS
MARION, OHIO

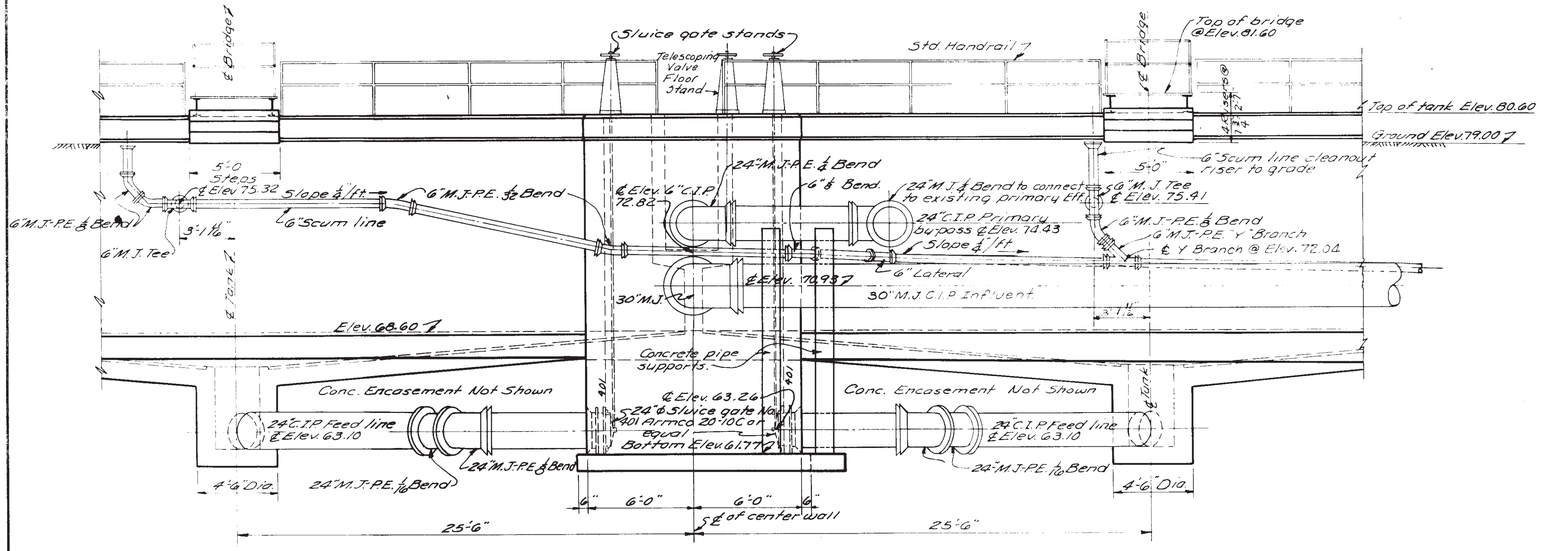
DATE JUNE 1959 | JOB No. 295-2 | DRAWN N.O. | CHECKED W.P.W.
SCALE AS SHOWN | DWG. No. 59967 | TRACED L.J.P. | APPROVED

CITY OF MASSILLON, OHIO
SEWAGE TREATMENT PLANT IMPROVEMENTS
CONTRACT NO. 2
NEW PRIMARY TANKS
MECHANICAL BOTTOM
PLAN AND SECTIONS



SECTION 1-1

Scale ¼" = 1'-0"



ELEVATION LOOKING WEST

Scale ¼" = 1'-0"

NO.	REVISION DATA	DATE	BY	APP'D
	Revised to date	Jan. 1960	L.E.P.	

FLOYD G. BROWNE AND ASSOCIATES
CONSULTING ENGINEERS
MARION, OHIO

DATE JUNE 1959 | JOB No. 2952 | DRAWN N.O. | CHECKED W.R.W.
SCALE AS SHOWN | DWG. No. 59368 | TRACED L.J.P. | APPROVED

CITY OF MASSILLON, OHIO

SEWAGE TREATMENT PLANT IMPROVEMENTS
CONTRACT NO. 2
NEW PRIMARY TANKS
MECHANICAL SECTIONS

16 OF 55

PRIMARY TANK No.4

PRIMARY TANK No.5

Class "C" concrete encasement for 24" C.I.P. Influent.

Drain trench with 4"ϕ hydrostatic relief valves spaced as shown. See detail

50'-0" Dia. Sloping top of base slab

38'-0" Dia. Sloping bottom of base slab

℄ of Tank

Class "C" Conc. encasement for sludge drawoff line

Final dimensions of sludge hopper & influent well to suit equipment

For Corner Steel See Detail "A"

(Footing)

C.I. Manhole Steps @15" c/c.

Exp. Joint Coping Const. Joint

This area level

For openings see section C-C sht. No 13

Coping Const. Joint Exp. Joint

Top of wall Elev. 80.60

Low top of wall this area in Tank No.4 only 81.60

For corner steel see detail "A"

C.I. Manhole Steps @ 15" c/c

Extent of sheet piling left in place Symmetrical about ℄ of Tanks

51'-6" (One half overall length)

℄ of center wall

Entire structure symmetrical about this ℄ except for sludge hoppers, conc. encasement of sludge drawoff lines, and base slab const. joint @ center wall.

PLAN
Scale $\frac{1}{8}$"=1'-0"

SECTION A-A
Scale $\frac{1}{2}$"=1'-0"

Class "C" concrete encasement

℄ of pipe

Variable See Sec E-E

6" G.I.P.

SECTION B-B
Scale $\frac{3}{8}$"=1'-0"

2-#5 U-Bars

#4@12" ea way

6 #5 U-Bars (See below)

#5 Loops @12

DETAIL "A"
Scale $\frac{3}{8}$"=1'-0"

#4@12"

#4@6"

PLAN
Scale $\frac{3}{8}$"=1'-0"

6-#5 U-Bars

#5 loops

SECTION C-C
Scale $\frac{1}{2}$"=1'-0"

Equipment bridge Elev. 81.60

1-#4 ea. nosing

Elev. 80.60

Elev. 79.00 ±

#5@12"

Foundation Cushion

SECTION D-D
Scale $\frac{1}{2}$"=1'-0"

1-#4 ea. nosing

Elev. 80.60

Elev. 79.02 ±

#5 @12"

DRAIN TRENCH DETAIL
Scale $\frac{1}{2}$"=1'-0"

Hydrostatic relief valve Clow F1492 or equal

At valves place 1 cu ft of ¾" max. size gravel or crushed stone below valve screen to be paid for as foundation cushion

Ohio Dept. of Highways spec. M-8.1 sand tamped in place to be paid for as foundation cushion

General Notes:

1. Wall reinforcing shown is same for both faces, unless noted.
2. Minimum concrete cover over reinforcing bars shall be 2½" for walls, 2" for beams and columns, 1" for slabs, and 3" for concrete poured against earth, unless noted. Top bars in base slab shall have 2½" minimum cover.
3. Lap reinforcing bars a minimum of 24 diameters at all splices.
4. Hooks shall conform to A.C.I. building code (A.C.I. 318-56)
5. Provide one #6 bar in each reinforcing plane around all openings 4'-0" longer than opening, unless noted.
6. All exposed concrete corners shall be chamfered ¾" unless noted.
7. Size and location of equipment openings, bases, anchors, wall castings, drains, floor gratings etc. shown on Arch., Mech., and Elec. drawings shall conform to manufacturers details.
8. Provide continuous 6" hollow center dumbbell type rubber waterstop at joints in walls as shown.
9. The contractor may use the steel sheet piling that is to be left in place as the outside form for concrete walls at his own option.
10. Minimum section of steel sheet piling to be left in place shall be M.P. 115, or approved equal, weighing not less than 22 lbs. per square foot of wall and having a minimum section modulus of 5.4 inches cubed per lineal foot of wall and shall be paid for on the basis of 22 lbs. per square foot of wall under Item 7-B
11. Tanks are not to be drained when river is above Elevation 72.00.

19 OF 55

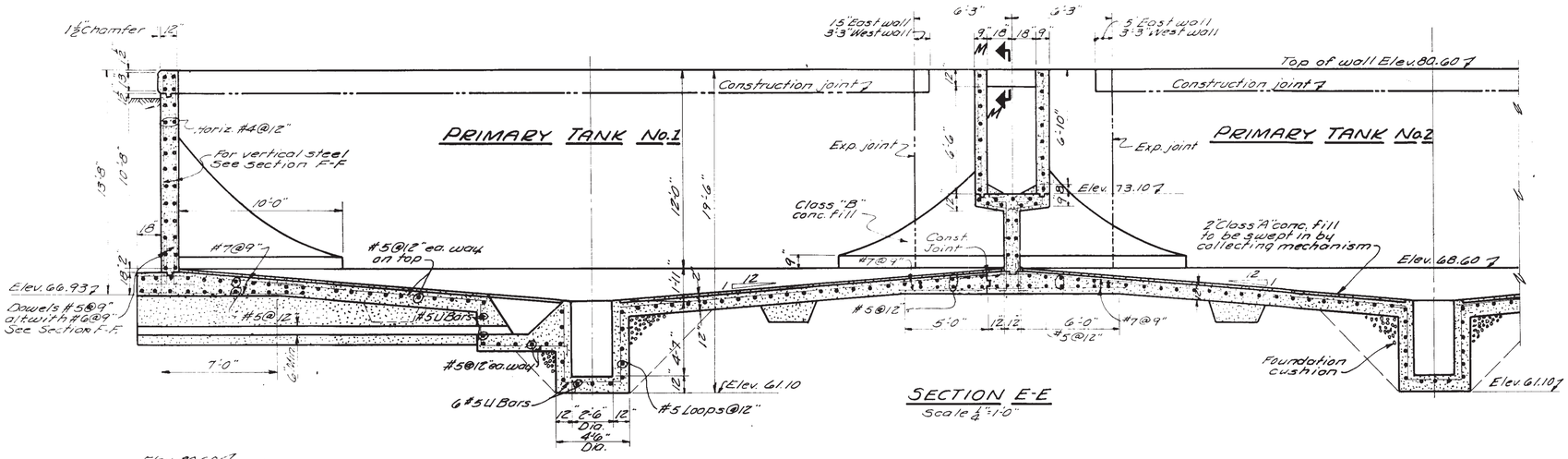
NO.	REVISION DATA	DATE	BY	APP'D
	Revised to date	Jan. 1960	L.E.E.	

FLOYD G. BROWNE AND ASSOCIATES
CONSULTING ENGINEERS
MARION, OHIO

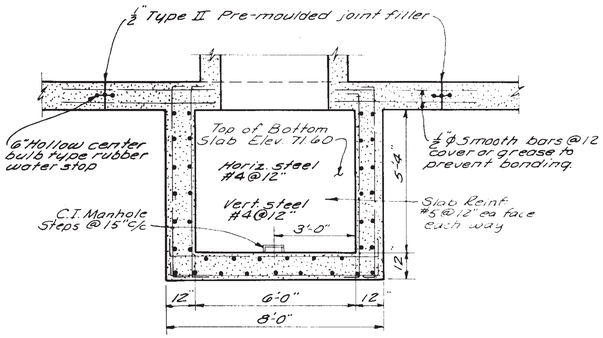
DATE JUNE 1959	JOB NO. 2952	DRAWN N.O.	CHECKED
SCALE AS SHOWN	DWG. NO. 59371	TRACED L. J. P.	APPROVED

CITY OF MASSILLON, OHIO

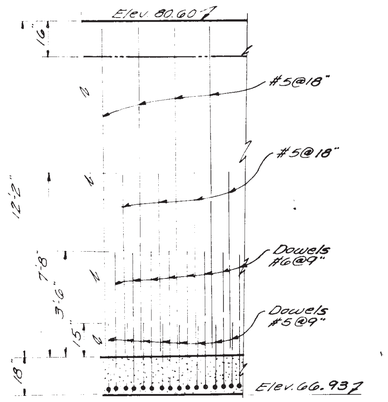
SEWAGE TREATMENT PLANT IMPROVEMENTS
CONTRACT NO. 2
NEW PRIMARY TANKS
STRUCTURAL PLANS



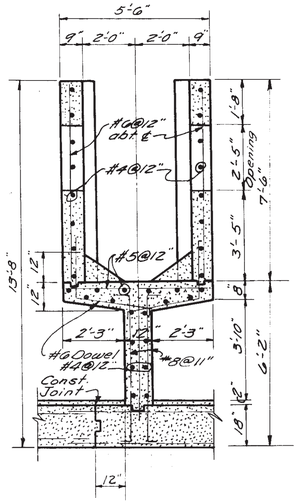
SECTION E-E
Scale ¼"=1'-0"



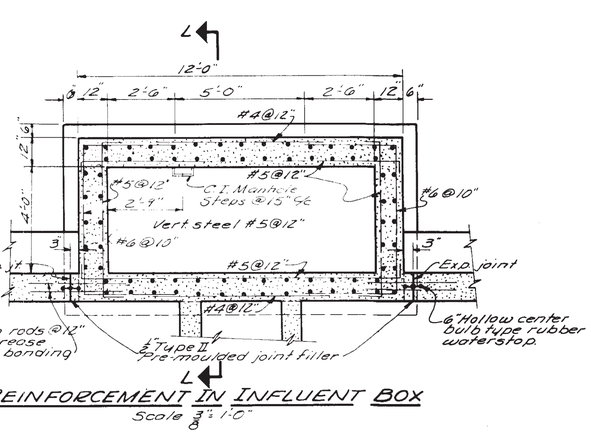
REINFORCING STEEL IN EFFLUENT BOX
Scale ⅜"=1'-0"



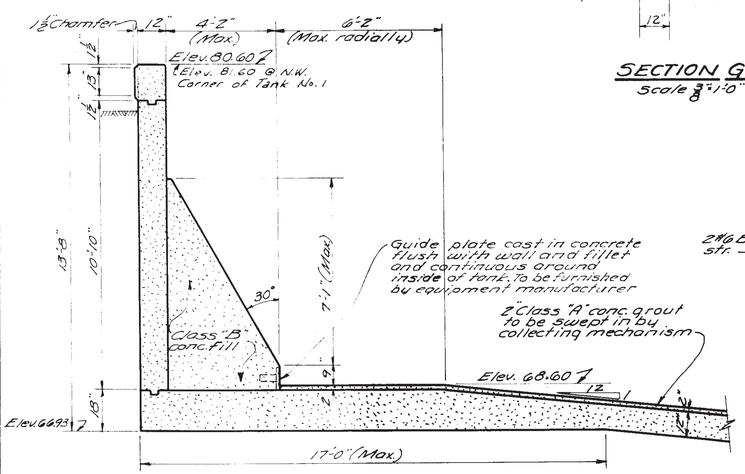
SECTION F-F
TYPICAL WALL REINFORCEMENT
No Scale



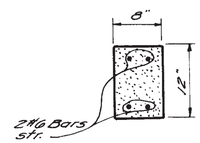
SECTION G-G
Scale ⅜"=1'-0"



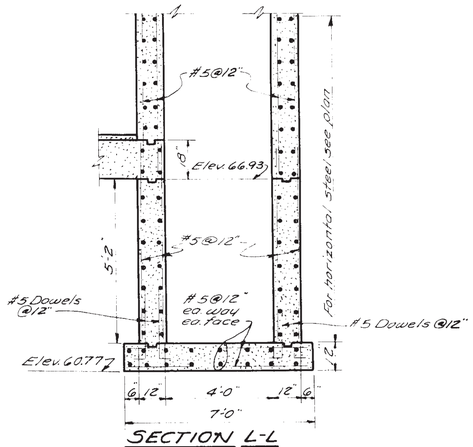
REINFORCEMENT IN INFLUENT BOX
Scale ⅜"=1'-0"



SECTION H-H
Scale ⅜"=1'-0"



SECTION M-M
Scale 1"=1'-0"



SECTION L-L
Scale ⅜"=1'-0"

REFERENCE ONLY

20 OF 55

NO.	REVISION DATA	DATE	BY	APP'D
	Revised To Date	Jan. 1960	L.E.R.	

FLOYD G. BROWNE AND ASSOCIATES
CONSULTING ENGINEERS
MARION, OHIO

DATE JUNE 1959 | JOB NO. 295.2 | DRAWN N.O. | CHECKED R.J.S.
SCALE AS SHOWN | DWG. NO 59372 | TRACED L.J.P. | APPROVED F.L.B.

CITY OF MASSILLON, OHIO
SEWAGE TREATMENT PLANT IMPROVEMENTS
CONTRACT NO. 2
NEW PRIMARY TANKS
STRUCTURAL SECTIONS