Department of Public Works

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Lake County Department of Public Works
Saunders Road Sanitary Sewer and Lift Station Improvements
Bid #25232
Project #2020.130
Addendum#2 – August 22, 2025

Please refer to the "Bid Documents & Technical Specifications and the Bidding Plans" for complete details. Statements, questions and answers below are added for emphasis.

Questions and Clarifications:

1. Question: From the pre-bid meeting; Are federal funds being used for this project that would necessitate the need for BABA (Build America, Buy America) documentation?

   Answer: LCPW is utilizing local funds for the construction of this project. BABA will not be required.

2. Question: From the pre-bid meeting; Will flowable fill be specified for the manholes that will be in the proposed paved shoulder once Riverwoods constructs their Saunders Road improvements?

   Answer: Flowable fill shall be used when backfilling manholes within the proposed paved shoulder.

3. Question: From the pre-bid meeting; Will the County allow a precast external drop manhole to be used or can the external drop manhole be constructed on-site? Details for both types of structures are included in the plans.

   Answer: The County does not have a preference and both details were included in the plans to give the contractor the option of using either.

4. Question: From the pre-bid meeting; On the gravity sewer, will the County allow fused joints on the pipe or will it be required to use CertaLok fittings to secure the pipe segments together?

   Answer: Please refer to 33 31 13 Sanitary Sewerage Gravity Piping section 2.03 for more details.

5. Question: From the pre-bid meeting; What is the timing of the Saunders Roadway Improvements being led by the Village of Riverwoods?

   Answer: It is the County's understanding that at the time of the prebid meeting on 8/14/25 that IDOT intend to award the roadway improvement contract in the fall. IDOT is involved since the Village is using federal funds for their project.

6. Question: From the pre-bid meeting; What are the truck weight restrictions on Saunders Road?

   Answer: The County is unaware of any weight restrictions on Saunders Road. The Village of Riverwoods has jurisdiction over this roadway and should be contacted regarding this matter.

7. Question: From the pre-bid meeting; Can a plan sheet from when the existing lift station was constructed be included in the specifications?

Answer: The existing plans from the original lift station are now included as an exhibit to the agreement for reference only.

8. Question: From the pre-bid meeting; Are there any homes on the west side of Saunders Road that will need to have their sanitary service tied into the proposed 16" sanitary sewer? If so, can a separate pay item be created to distinguish the "long side services" from the "short side services"?

   Answer: All known services have been accounted for in the construction plan set. There will not be a separate pay item created.

9. Question: From the pre-bid meeting; Will the contractor be allowed to close a lane on Saunders Road during construction?

   Answer: It is anticipated that short term lane closures utilizing proper signage and flagging operations will be allowed. It is not anticipated that a long-term closure of a lane (such as the southbound lane) on Saunders Road will be allowed. Please refer to section 01 55 26 Traffic Control in the project specifications.

10. Question: From the pre-bid meeting; Can a new line item be created for trench backfill to be paid by volume or weight?

    Answer: A new line item for trench backfill will not be added to the bid form.

11. On sheet 002C-CK-2, what exactly is the flow rate in the EX 12" Riverwoods Sewer that sits between 42RX01 and 42RX02? Also what is the flow rate for EX 10" PVC Relief Sewer line?

    Answer: Flows from 42RX02 to 42RX01 are included in the table listed in Section 01 11 00, paragraph 1.04.B.2. The 10-year wet weather flow rate for EX 10" PVC Relief Sewer line is 625 gpm.

12. On sheet 002-CP-2 in the profile plan, the 5 ft dia that's right underneath 42RX01, is that being replaced or are we connecting to the existing line?

    Answer: Manhole 42RX01 is being replaced per Plan Note 6 on 002-CR-3 and Plan Note 1 on 002-CP-2.

13. Is coating required for the proposed structures? Such as Tnemec?

    Answer: Conform to coating requirements of Section 09 96 00 – High Performance Coatings. Per Section 05 50 00 – Metal Fabrications, paragraph 2.05.G, coat aluminum surfaces in contact with concrete in accordance with AA and Section 09 96 00 – High Performance Coating. Under no circumstances shall aluminum contact dissimilar metal. Provide corrosion inhibitor for drop manholes and meter and valve vault per Section 33 05 61 – Precast Concrete Structures, paragraph 2.06.

14. I am requesting pre-approval for Ebara on the Saunders Road Sewer and Sanitary Lift Station Improvements that bids on 8/28. Attached is my pump selection and supporting documentation. We are non-overloading with a 50hp motor with 65 FLA, which could save electrical costs from the specified 60hp 69 FLA options. Please review and let me know if you have any questions.

    Answer: Any product substitutions will be addressed in accordance with the procedures outlined in Article 11.01 of the Instructions to Bidders.

15. Location of the new MH2 on sheet #29 it's shown being on top of a telephone/tv cable pole. Who will pay for its relocation?

Answer: Exact location of the existing AT&T line is unknown. Location of existing line to be verified during construction. Should there be a conflict, it is the intent for the existing AT&T line to remain and for the location of the manhole to be adjusted in the field. See General Note 3 on Sheet 29.

16. For the new Valve Vault structure, can we perform a cast-in-place? Also if the new Valve Vault is to be cast-in-place, could you show or include a detail of the reinforcement needed?

    Answer: The new Valve Vault structure must be precast per Section 33 05 61.

17. We are unable to directionally drill the proposed sanitary sewer and maintain a .5% slope for the pipe as designed.

    a. Would you allow for the sanitary sewer pipe that is called for to be directionally drilled to be installed by open cutting means and methods?

       Answer: Project constraints have dictated the method of construction to be horizontal directional drilling.

    b. Would you allow for the sanitary sewer pipe that is called for to be directionally drilled to be installed by auger boring a 30" steel casing and sleeving the gravity sewer inside the casing on casing spacers?

       Answer: Project constraints have dictated the method of construction to be horizontal directional drilling.

18. As far as landscape restoration, there is no detail of any sort on the plans on what needs to be done. Could this be clarified?

    Answer: See Detail C050 on Sheet 53 (999-C-3) and Section 32 92 00 – Turf and Grasses.

Revisions

Specifications:

1. Agreement – Add the following to the end of Article 4.03 A:

   "CONTRACTOR shall pay OWNER $500 (five hundred dollars) for each calendar day that expires after the milestone time until the work associated with the milestone reaches substantial completion as specified in Section 01 11 00 1.03 E."

2. Section 01 11 00 – Summary of Work, delete Part 1.03.D in its entirety and replace with the following:

   "D. Suggested Work Sequence:

      1. Phase A: Construct underground sewer piping, and manholes from MH 42RX01 to new lift station. Construct precast base and riser sections for new lift station wet well and valve and metering vault, and construct buried piping between lift station wet well and valve and metering vault.

         a. Complete replacement of manhole (MH) 42RX01. Provide bypass pumping from MH 42RX02 and 42RP09 to existing lift station wet well for replacement of MH 42RX01. Bypass pumping from 42RP09 to 42RX01 shall remain in place until sanitary flows

from existing 10-inch ACP sewer can be routed through temporary 10-inch piping installed during Phase B.

b. Remove MH 42RP01 and replace with Sanitary Manhole 2 (SAN MH 2). Temporarily plug 24inch outlet pipe at SAN MH 2 until new lift station is ready to be placed in service. Construct new 12-inch diameter sanitary sewer between existing MHe 42RX01 and SAN MH 2, including removal of existing 10-inch diameter relief sewer and direct replacement with a temporary 10-inch diameter relief sewer between manhole 42RX01 and SAN MH 2. Temporary piping to match existing alignment and elevations. (Removal of existing 10-inch diameter relief sewer required for construction of new 12-inch sewer directly beneath it. Temporary piping required to keep existing 10-inch relief sewer in service until new lift station is placed into service. As an alternative to constructing the temporary 10-inch sewer, Contractor may bypass pump from SAN MH 2 to 42RX01.)

   Outage of relief sewer is required for removal of MH 42RP01, construction of SAN MH 2, construction of new 12-inch diameter pipe between 42RX01 and SAN MH 2 and replacement of 10-inch diameter relief sewer pipe with temporary 10-inch relief sewer pipe. Outages to the existing 10-inch diameter sanitary relief sewer shall only occur during dry weather conditions. Contractor shall schedule work requiring outage of the 10-inch diameter sanitary relief sewer during a forecasted dry weather period of sufficient duration to complete the required Work.

c. Construct precast base and riser sections of new lift station wet well and valve and metering vault, and buried piping between wet well and valve vault. Provide temporary cover for lift station wet well and valve and metering vault. Permanent precast top slabs to be installed after installation of interior piping and equipment within lift station wet well and valve and metering vault is complete. Lift station wet well and valve and metering vault interior piping and equipment to be installed during Phase E.

2. Phase B: Construct new sanitary sewer from SAN MH 2 to downstream side of Sanitary Manhole 4 (SAN MH 4). Construct Sanitary Manhole 3 (SAN MH 3) and temporary piping from existing MH 42RP09 to SAN MH 3.

   a. Construct new 10-inch and 12-inch forcemains to new lift station. Provide temporary wye and valve at connection to existing 12-inch forcemain. This work will require an outage to the existing lift station.

   b. Construct new 16-inch diameter sanitary sewer from SAN MH 2 to downstream of SAN MH 4.

   c. Construct SAN MH 3.

   d. Construct temporary 10-inch sewer piping from SAN MH 3 to 42RP09:

      i. Bypass pumping from manhole 42RP09 to existing lift station wet well shall remain in place until downstream improvements are complete and temporary 10-inch piping is ready to be connected to 42RP09.
      ii. For connection of temporary 10-inch piping to manhole 42RP09, isolate manhole 42RP09 by routing sanitary flows in existing 10-inch ACP sewer through existing 10-inch PVC relief sewer. Flows may be routed to 10-inch PVC relief sewer by temporarily plugging the existing 10-inch ACP sewer at MH 42RP17 located at the upstream end of the project. Flows shall only be routed through 10-inch PVC relief sewer during dry weather conditions.
      iii. Drain sewage remaining in existing 10-inch ACP using the by pumping from 42RP09 to the existing lift station wet well. Abandon existing 10-inch ACP between

manhole 42RP09 and 42RX01. Permanently plug existing 10-inch ACP outlet at MH 42RP09.

iv. Connect temporary 10-inch piping to manhole 42RP09. Remove temporary plug at MH 42RP17 to return flow to existing 10-inch ACP. Flow will be conveyed to existing lift station through temporary 10-inch piping at MH 42RP09 until the remaining portions of the new 16-inch sewer upstream of SAN MH 3 are constructed and the new 16-inch sewer is ready to be placed in service.

3. Phase C: Construct new 16-inch diameter gravity sanitary sewer and manholes from downstream of Sanitary Manhole 4 (SAN MH 4) and to Sanitary Manhole 9 (SAN MH 9). Work shall progress from downstream to upstream direction. Complete necessary testing.

    a. Provide containment/disposal or other means of conveying sewage from MH 42RP14 during removal of manhole 42RP13 and replacement with Sanitary Manhole 6 (SAN MH 6).

    b. Transfer sanitary sewer service lines to new 16-inch sewer as downstream portions are completed.

    c. Provide bypass pumping from MH 42RP32 to 42RP17 for construction of SAN MH 9. Plug 10-inch diameter pipe to the east at MH42RP17 for replacement of 10-inch sewer between 42RP17 and SAN MH 9. Temporarily plug outlet from SAN MH 9 to new 16-inch diameter sewer until new sewer is ready to be placed in service.

    d. Place new 16-inch diameter sewer in service.

4. Phase D: Abandon existing sanitary sewer manholes, existing 10-inch ACP sewer, and temporary piping from MH 42RP09 to SAN MH 3. Extend sanitary sewer lines from west side of Saunders Road to new manholes.

5. Phase E: Complete remaining work at new lift station, lift station start-up and testing, demolition of existing lift station, and remaining site improvements and restoration.

    a. Install remaining piping, equipment, and appurtenances as required to complete new lift station.

    b. Complete lift station start-up and testing. Remove temporary plug from 24-inch outlet pipe at SAN MH 2 to route flow to new lift station.

    c. Following successful lift station start-up, remove temporary wye and valve at connection of new 12-inch diameter forcemain to existing 12-inch diameter forcemain and install permanent connection. All lift station flow to be routed through 10-inch forcemain during this time. Schedule tie-in of new 12-inch diameter forcemain during period of forecasted dry weather.

    d. Demolish existing lift station and abandon temporary 10-inch PVC relief sewer.

    e. Complete remaining site improvements and restoration."

3. Section 01 11 00 – Summary of Work, add the following as Part 1.03.E:

"E. Milestones

1. All underground work requiring pavement replacement on Saunders Road shall be completed within 210 days. Substantial completion in this context shall be defined as installation, testing, and backfill of underground items requiring pavement

replacement. Underground work behind (east of) the proposed M4.12 curb at the new lift station site does not need to be completed within the 210-day limit."

4. Section 01 11 00 – Summary of Work, delete Part 1.04.A in its entirety and replace with the following:

"A. Construction of the proposed improvements will at certain times require interruptions to existing sanitary sewer service. The Contractor shall arrange for continuous bypass pumping or other means of conveying sewage as required to complete the Work. Temporary conveyance of sewage shall continue until the proposed facilities under construction can be placed into service and normal operations can resume or be initiated. It is anticipated that service outages will be required for the following activities:

1. Replacement of Manhole 42RX01

   Replacement of Manhole 42RX01 will require bypass pumping from manhole 42RX02 and 42RP09 to the existing lift station wet well. Replacement of Manhole 42RX01 will result in a permanent disconnection of the existing 10-inch ACP sewer to Manhole 42RX01. Bypass pumping from Manhole 42RP09 to the existing lift station wet well shall remain in place until the new sewer and manholes from manhole 42RX01 to SAN MH 3, and the temporary piping from SAN MH 3 to 42RP09 is in place.

2. Replacement of MH 42RP01 with SAN MH 2, Removal of Existing 10-inch Relief Sewer between MH 42RX01 and 42RP01/SAN MH 2 and Replacement with Temporary Piping, and Construction of New 12-inch Sanitary Sewer between 42RX01 and 42RP01/SAN MH 2

   This work will require a service outage of the existing 10-inch diameter sanitary relief sewer on the west side of Saunders Road.

   Outages to the existing 10-inch diameter sanitary relief sewer shall only occur during dry weather conditions. Contractor shall schedule work requiring outage of the 10-inch diameter sanitary relief sewer during a forecasted dry weather period of sufficient duration to complete the required Work.

3. Replacement of Manhole 42RP13

   Replacement of Manhole 42RP13 with new SAN MH 6 and require an outage of the existing 6-inch diameter sewer from Manhole 42RP14 and the sanitary service from 1917 Saunders Road.

4. Temporary Connection of new 12-inch Forcemain to Existing 12-inch Forcemain

   Connection of the temporary 12-inch wye and valve to the existing 12-inch forcemain will require an outage of the existing Saunders Road Lift Station.

   Shutdown of the Saunders Road Lift Station shall occur only during Owner's working hours. Owner's working hours are 7:00 a.m. to 3:00 p.m., Monday through Friday, except for legal holidays, including Juneteenth. Contractor shall provide Vactor trucks to collect sewage from the lift station wet well during the lift station outage. Contractor shall provide Vactor trucks or other pumping and containment system with sufficient capacity to prevent sanitary sewer backups or overflows. Contractor shall haul and dispose of collected sewage at the Des Plaines River Water Reclamation Facility located at 800 Krause Drive, Buffalo Grove, IL, 60089 or at the Vernon Hills Water Reclamation Facility located at 50 American Way, Vernon Hills, IL 60061. Contractor shall coordinate disposal with the Owner. No disposal fees will apply.

5. Sanitary Sewer Line Extensions and Service Transfers

   Outages to existing sanitary sewer lines from the west side of Saunders Road and to existing sanitary sewer service lines will be required for sanitary sewer extensions and service line transfers."

2. Section 01 11 00 – Summary of Work, delete the table in Part 1.04.B.2 and replace with the following:

	42RX02	**42RP18**	**42RP32**	**42RP08**
Average Dry Weather Flow	53 gpm	64 gpm	55 gpm	N/A
Average Peak Dry Weather Flow	76 gpm	90 gpm	78 gpm	N/A
Peak Dry Weather Flow*	94 gpm	135 gpm	290 gpm	N/A
Wet Weather Flow	775 gpm	600 gpm	670 gpm	625 gpm
*Observed instantaneous peak dry weather flow from June 2021 flow data.				

3. Section 01 22 00 – Unit Prices, add the following as Part Y.1.yy:

   "yy. Section 23 11 23 – Facilities Natural Gas Piping"

4. Section 01 22 00 – Unit Prices, delete Part Y.2.e in its entirety and replace with the following:

   "e. Plumbing systems, including natural gas piping and appurtenances on the customer side of the meter and concrete pad for natural gas meter."

5. Add attached specification Section 23 11 23.

6. Section 40 61 96 – Process Control Descriptions, delete this Section in its entirety and replace with attached Section 40 61 96.

7. Section 40 67 15 – Control Panels and Enclosures, delete Part 2.02.A.2 and replace with the following:

   "2. Saginaw Control
   3. No substituations"

8. Section 40 67 15 – Control Panels and Enclosures, Part 2.03.A.4, delete "72"H" and replace with "42"H".

9. Section 40 70 00 – Instrumentation of Process Systems, delete this Section in its entirety and replace with attached Section 40 70 00.

10. Appendix A – Table of Contents, add the following as Appendix G:

    "G. Saunders Road PLC Control Panel Drawings"

11. Appendix – Add the attached Appendix G – Saunders Road PLC Panel Drawings.

Drawings:

1. Delete Drawing 001-G-2 in its entirety and replace with attached Drawing 001-G-2.

2. Delete Drawing 002-CK-2 in its entirety and replace with attached Drawing 002-CK-2.
3. Delete Drawing 002-CK-3 in its entirety and replace with attached Drawing 002-CK-3.
4. Delete Drawing 002-CK-4 in its entirety and replace with attached Drawing 002-CK-4.
5. Delete Drawing 002-CK-5 in its entirety and replace with attached Drawing 002-CK-5.
6. Add attached Drawing 002-CK-6.
7. Add attached Drawing 002-CK-7.
8. Delete Drawing 002-CP-3 in its entirety and replace with the attached Drawing 002-CP-3.
9. Delete Drawing 002-CPD-1 in its entirety and replace with the attached Drawing 002-CPD-1.
10. Delete Drawing 002-CFGD-2 in its entirety and replace with attached Drawing 002-CFGD-2.
11. Delete Drawing 002-CFGD-3 in its entirety and replace with attached Drawing 002-CFGD-3.
12. Delete Drawing 002-CFGD-4 in its entirety and replace with attached Drawing 002-CFGD-4.
13. Delete Drawing 999-M-1 in its entirety and replace with attached Drawing 999-M-1.

LAKE COUNTY, ILLINOIS
PUBLIC WORKS DEPARTMENT

1971

WATER POLLUTION CONTROL FACILITIES

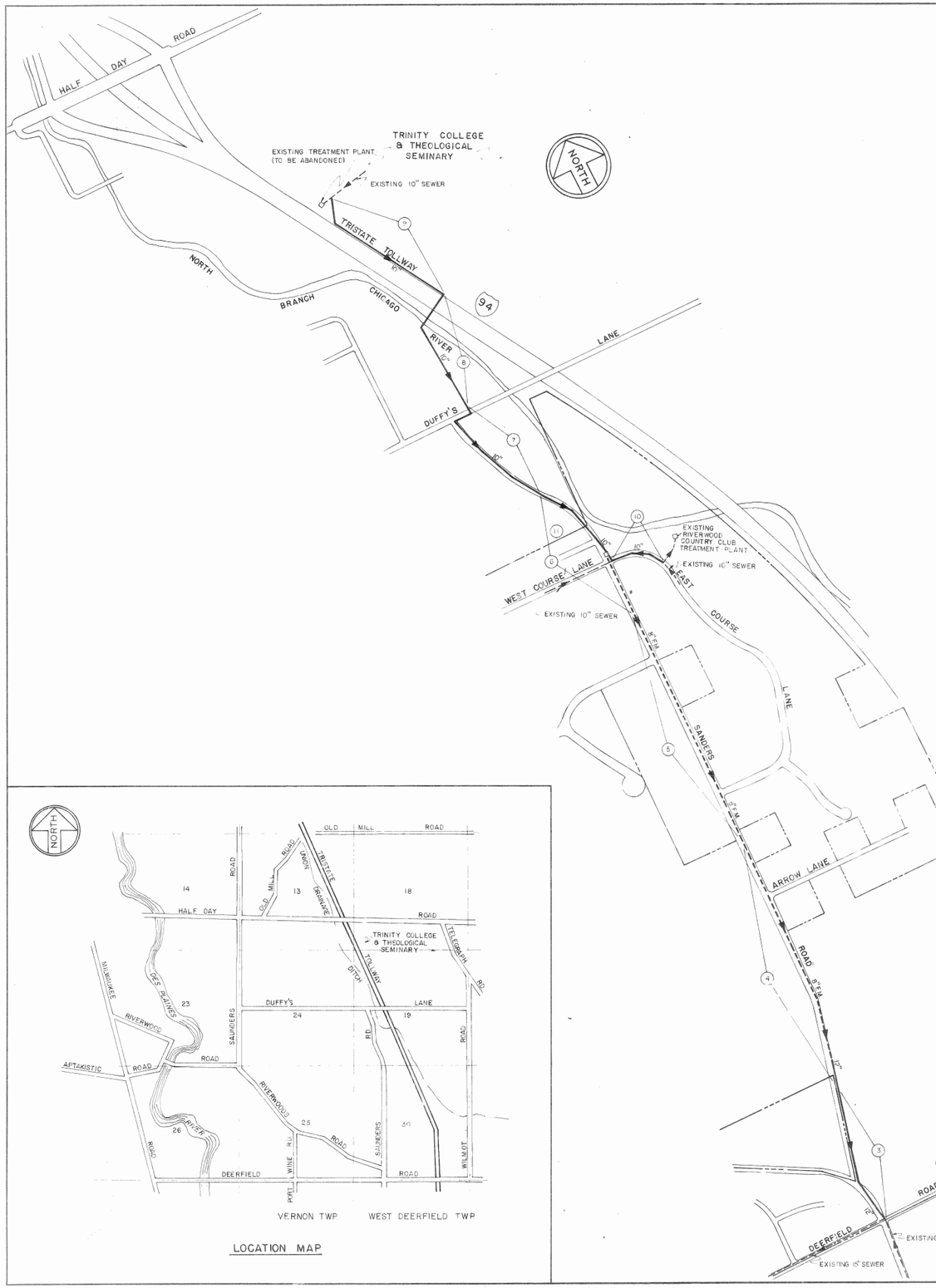
SOUTHEAST AREA
RIVERWOODS COLLECTION SYSTEM

#SAUNDERS RD LIFT STATION

R'WOODS DATUM + 583.17 = USGS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
360 EAST GRAND AVENUE
CHICAGO, ILLINOIS 60611

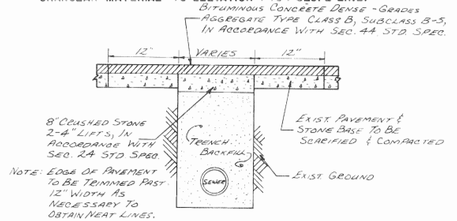
VOLUME II OF
CONTRACT DOCUMENTS



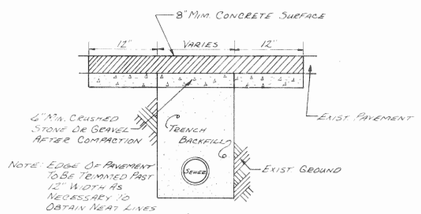
LOCATION MAP

GENERAL NOTES

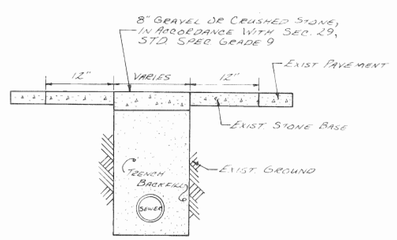
1. THE CONTRACTOR SHALL RESTORE ALL FENCES, CULVERTS, WALLS, HEDGES, SHRUBS, SIGNS, LIGHT AND POWER POLES, STREET MARKERS, MAIL BOXES, WATER AND GAS LINES, WATER AND GAS METERS AND BOXES INCLUDING SHUT-OFFS, AND LAWNS DISTURBED BY CONSTRUCTION OPERATIONS TO THEIR ORIGINAL CONDITIONS. THE COST OF THIS WORK SHALL BE MERGED IN THE UNIT BID AND CONTRACT PRICES FOR THE PROPOSED SEWERS.
2. THE CONTRACTOR SHALL UNCOVER ALL WATER AND GAS MAINS, STORM SEWERS, SANITARY SEWER, ETC. BETWEEN SUCCESSIVE MANHOLE LOCATIONS FOR CHECKING OF GRADIENT CLEARANCES IN ADVANCE OF STAKING OR LAYOUT BETWEEN SAID MANHOLES.
3. ALL SEWER LINES SHALL BE ENCASED IN CONCRETE ACROSS DITCHES, UNDER CULVERTS, AND WHERE DEPTH OF COVER IS LESS THAN 2½ FEET IN OPEN FIELDS AND 4 FEET IN ROADWAYS, AS DIRECTED BY THE ENGINEER.
4. ALL EASEMENTS FOR SEWER CONSTRUCTION THRU PRIVATE PROPERTY IN THIS PROJECT ARE 20 FEET IN WIDTH EXCEPT AS NOTED ON THE DRAWINGS.
5. EASEMENT LOCATIONS, WIDTHS, AND CONDITIONS ARE ON FILE AND ARE AVAILABLE FOR INSPECTION AT THE LAKE COUNTY PUBLIC WORKS OFFICE.
6. IN GENERAL ALL EASEMENTS SHALL BE RESTORED TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING AT THE COMMENCEMENT OF CONSTRUCTION EXCEPT AS NOTED.
7. THE CONTRACTOR SHALL HAVE REPLACED BY A REGISTERED LAND SURVEYOR, AT HIS OWN EXPENSE, ALL SECTION CORNERS, PROPERTY CORNERS OR BOUNDARY MARKERS OF ANY TYPE OR MATERIAL THAT MAY BE DAMAGED OR DESTROYED BY HIS OPERATION.
8. WHERE SEWER LINES PASS OVER OR WITHIN 4 FEET OF WATER MAINS, THE SEWER LINE SHALL BE ENCASED IN CONCRETE
9. THE CONTRACTOR SHALL NOTIFY THE NORTHSHORE GAS COMPANY, COMMENWEALTH EDISON COMPANY, ILLINOIS BELL TELEPHONE COMPANY, AND THE LAKE COUNTY DEPARTMENT OF PUBLIC WORKS WATER DIVISION PRIOR TO BEGINNING ANY CONSTRUCTION. SAID COMPANIES WILL ESTABLISH ON THE GROUND, THE LOCATION OF UNDERGROUND PIPES, CONDUITS OR CABLES ADJOINING OR CROSSING PROPOSED CONSTRUCTION.
10. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK IN EACH AREA. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.
11. THE CONTRACTOR SHALL OBTAIN ALL PERMITS FROM THE LAKE COUNTY HIGHWAY DEPARTMENT FOR WORK WITHIN THE RIGHTS-OF-WAY OF DUFFY'S LANE, AND SANDERS ROAD, SOUTH OF RIVERWOODS ROAD; AND FROM WEST DEERFIELD TOWNSHIP FOR WORK ON SANDERS ROAD; AND FROM THE ILLINOIS DIVISION OF HIGHWAYS FOR WORK ON DEERFIELD ROAD; AND FROM THE TOLL HIGHWAY COMMISSION FOR CROSSING TRISTATE TOLLWAY.
12. SEWER AND FORCE MAIN WITHIN 1 TO 1 SLOPE OF EDGE OF PAVEMENT SHALL BE BACKFILLED WITH GRANULAR MATERIAL - TO ELEVATION 1 TO 1 SLOPE LINE.



TYPICAL SECTION BITUMINOUS PAVEMENT



TYPICAL SECTION CONCRETE PAVEMENT



TYPICAL SECTION GRAVEL OR CRUSHED STONE PAVEMENT

PAVEMENT REPLACEMENT DETAILS

NOTE:
REFERENCES ARE TO STD. SPEC. FOR ROAD & BRIDGE CONSTRUCTION STATE OF ILLINOIS DIVISION OF HIGHWAYS.

LEGEND
FOR PLAN AND PROFILE SHEETS

- PROPOSED MANHOLE
- EXISTING MANHOLE
- PROPOSED SEWER
- PROPOSED FORCE MAIN
- EXISTING SEWER
- CULVERT PIPE
- INLET OR CATCH BASIN
- TELEPHONE OR POWER POLE
- POLE WITH GUY WIRE
- FIRE HYDRANT
- WATER VALVE
- WATER METER
- GAS VALVE
- GAS METER
- TREE
- HEDGE
- FENCE
- WATER MAIN
- GAS MAIN
- TELEPHONE CABLE
- PROPERTY LINE
- PROPERTY IRON
- STREET OR SIGN POST
- CONCRETE MONUMENT
- SHRUB

SHEET INDEX

DATUM:

DATUM USED IS RIVERWOODS VILLAGE. TO CONVERT TO U.S.G.S. ADD 583.17 TO RIVERWOODS VILLAGE.

LAKE COUNTY, ILLINOIS
PUBLIC WORKS DEPARTMENT
WATER POLLUTION CONTROL FACILITIES

GENERAL LAYOUT AND SHEET INDEX

DRAWN BY: J.Z.	CONSOER, TOWNSEND & ASSOCIATES	SCALE
DATE		
CHECKED BY:	CONSULTING ENGINEERS	REVISED
APPROVED BY:	CHICAGO, ILL. NASHVILLE, TENN.	SHEET NO. 2 OF 14 SHEETS

70273

PLAN — SURVEYED · PLOTTED · ALIGNMENT CHECKED · RT. OF WAY CHECKED · NOTE BOOK · NO. · DATE · BY

M.H. 12+00 = 7' Rt. ℄ Sta 11+96, Δ = 0°-00'

MATCH LINE STA. 12+05 SEE SHEET NO. 4

LOT 6 · LOT 5 · LOT 4 · LOT 3 · LOT 2 · LOT 1

NORTH

PROPOSED 12" SEWER

M.H. 8+50 = 6' Rt. ℄ Sta 8+47, Δ = 0°-00'

20' EASEMENT

PROPOSED 12" SEWER

110' EASEMENT

M.H. 5+00 = 14' Lt. ℄ Sta 4+98, Δ = 34°-00' Rt.

PROPOSED 12" SEWER

M.H. 3+00 = 17' Rt. ℄ Sta 3+00, Δ = 20°-30' Lt.

PROPOSED 12" SEWER

ROAD

B.M.

EXISTING M.H. 0+00

EXIST. 8" V.C.P. SEWER

EXISTING 8" V.C.P. SEWER

(ASPH. PAV'T)

WOODED AREA

DOG PEN

DOG PEN

(CONC. PAV'T)

MEDIAN

104 L.F. OF 12" SEWER IN CASING

DEERFIELD

B.M. SPIKE IN P. POLE LOCATED 39' Lt. OF ℄ STA 9+32. ELEV. 97.31

NOTE: PIPE CLASSIFICATION V.C.P. - C 2.00

B.M. SPIKE IN P. POLE S/E CORNER OF INTERSECTION DEERFIELD & SANDERS ELEV. 100.00

LOTS 92-97 · SANDERS · LOT 14 · ROAD · LOT 15

PROFILE — SURVEYED · PLOTTED · CHECKED · B.M.'S NOTED · STRUCTURE NOTATIONS CHKD. · NOTE BOOK · NO. · DATE · BY

PROFILE OF GROUND ALONG ℄ OF PROPOSED SEWER

DITCH PROFILE

104 L.F. OF 12" SEWER IN CASING

MATCH LINE STA. 12+05 SEE SHEET NO. 4

12" V.C.P. @ 0.22%

EXISTING 8" V.C.P. SEWER

INV. ELEV. 84.64

INV. ELEV. 85.87

INV. ELEV. 85.19

INV. ELEV. 84.40

INV. ELEV. 84.00

INV. ELEV. 83.79

M.H. 12+00

M.H. 8+50

M.H. 5+00

M.H. 3+00

EXISTING M.H. 0+00

100 · 90 · 80 · 70 · 60

12 · 11 · 10 · 9 · 8 · 7 · 6 · 5 · 4 · 3 · 2 · 1 · 0

SCALE
PLAN 1" = 40'
PROFILE: HORIZ. 1" = 40' VERT. 1" = 10'

PLATE 1—PLAN PROFILE B. P. R. STANDARD
THE FREDERICK POST CO., CHICAGO

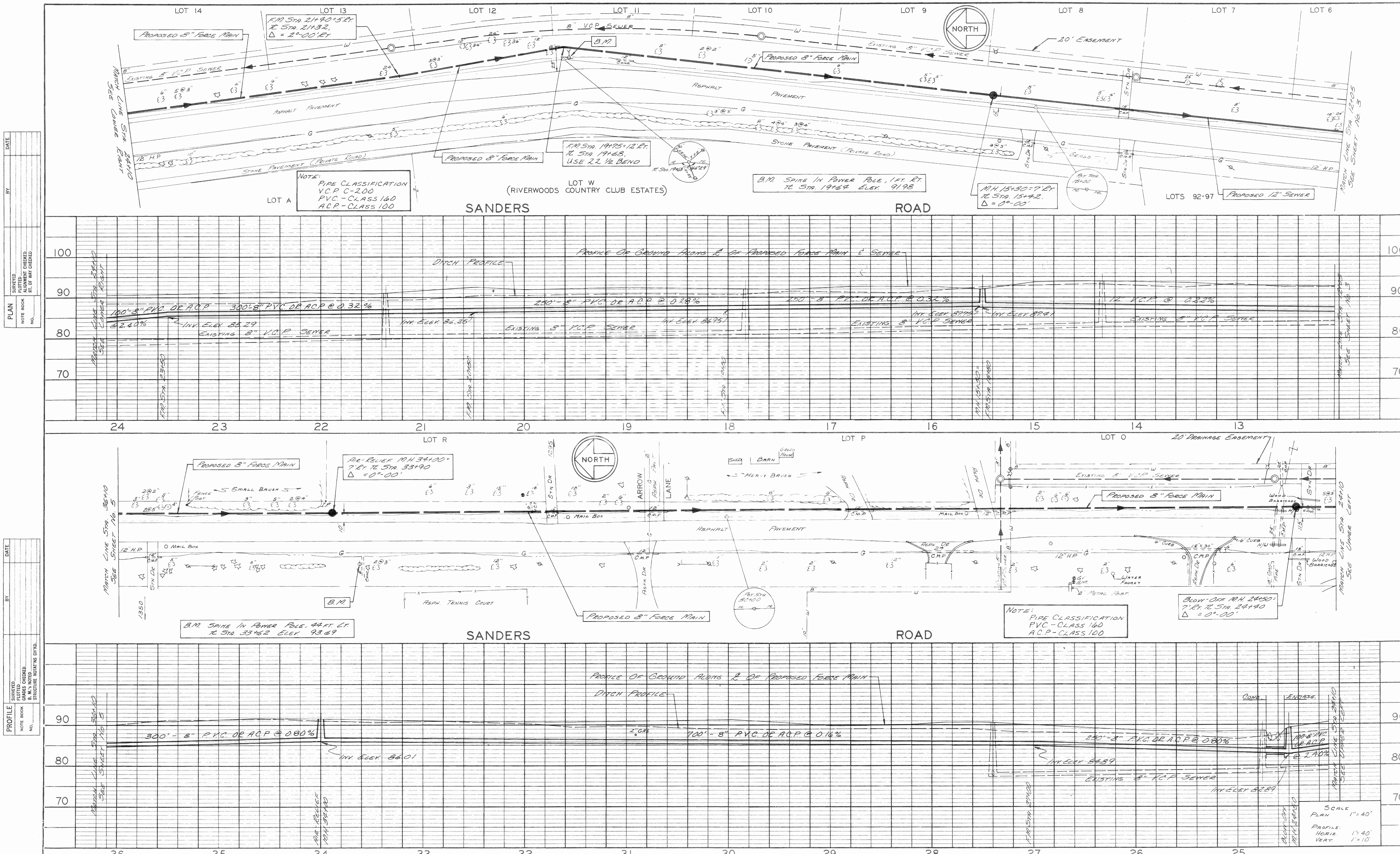


PLATE 2 —PLAN PROFILE O. P. R. & R. E. STANDARD
FREDERICK POST CO. CHICAGO

SHEET 4 OF 14 SHEETS

70273

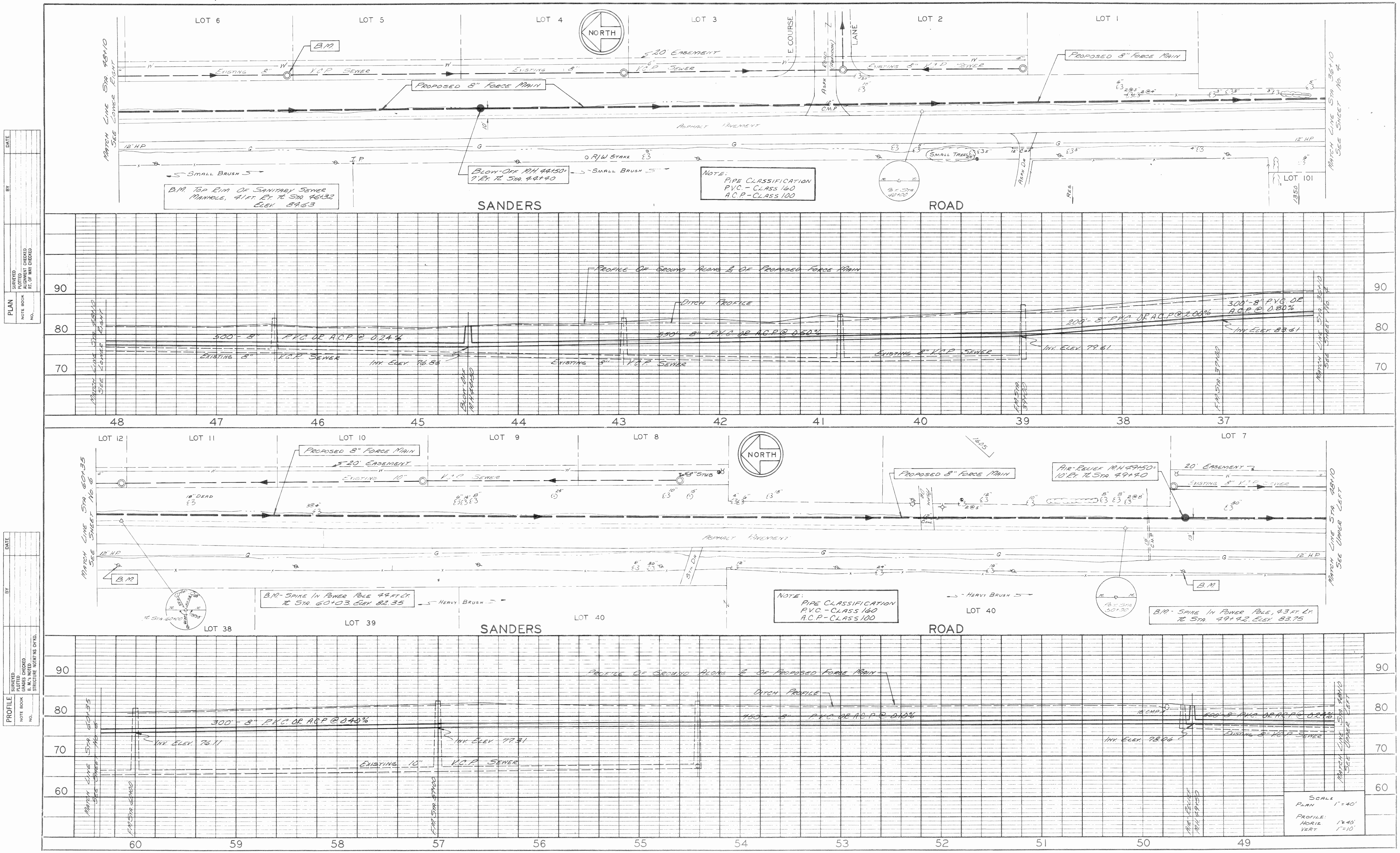
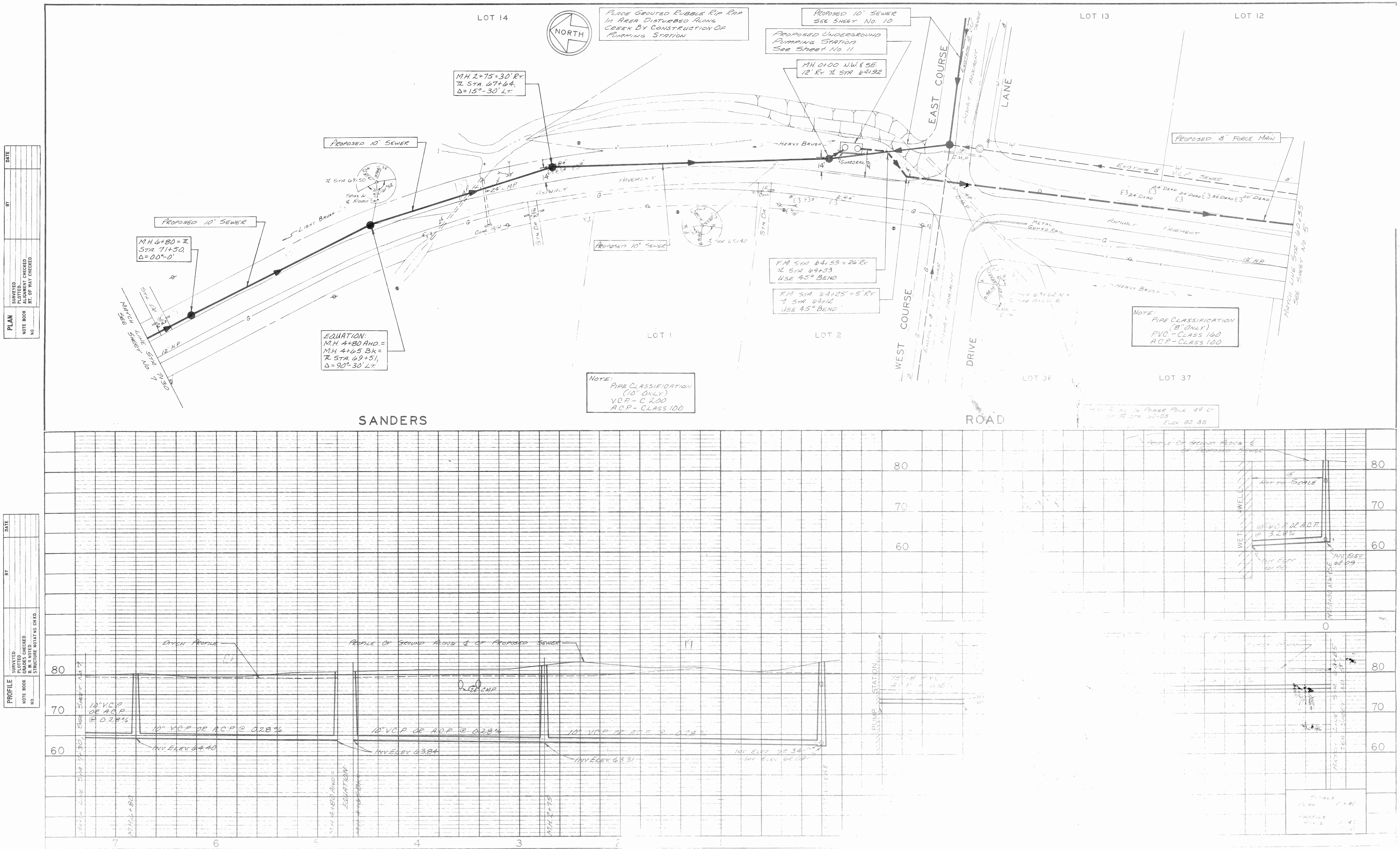


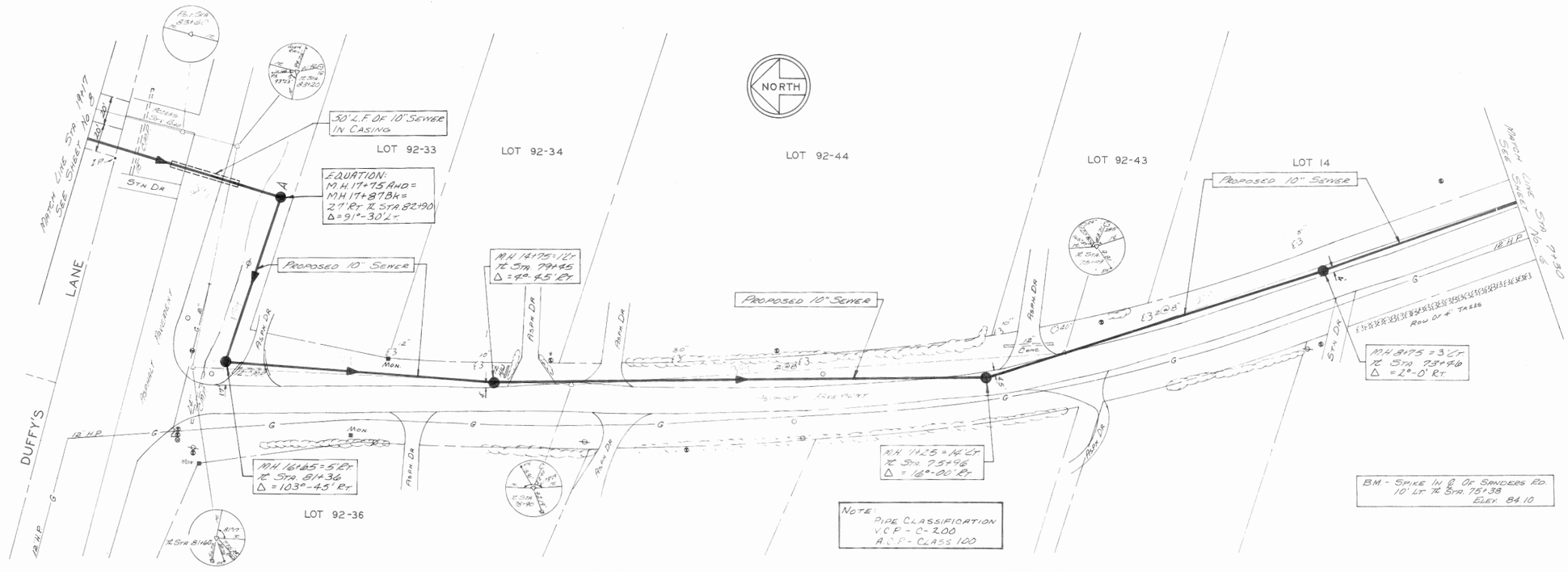
PLATE 2.—PLAN PROFILE C. P. & A. R. E. STANDARD
FREDERICK POST CO. CHICAGO

70273


LOT 14
NORTH
PLACE GROUTED RUBBLE RIP RAP IN AREA DISTURBED ALONG CREEK BY CONSTRUCTION OF PUMPING STATION
PROPOSED 10" SEWER SEE SHEET NO. 10
PROPOSED UNDERGROUND PUMPING STATION SEE SHEET NO. 11
M.H. 0+00 N.W. & SE. 12' RT ℄ STA 64+92
LOT 13
LOT 12
EAST COURSE
LANE
M.H. 2+75 = 30' RT. ℄ STA. 67+64, Δ = 15°-30' LT.
PROPOSED 10" SEWER
PROPOSED 8" FORCE MAIN
HEAVY BRUSH
GUARDRAIL
EXISTING 8" W VCP SEWER
PAVEMENT
ASPHALT
LIGHT BRUSH
PROPOSED 10" SEWER
M.H 6+80 = ℄ STA. 71+50, Δ = 00°-0'
F.M. STA. 64+55 = 26' RT ℄ STA. 64+33 USE 45° BEND
F.M. STA. 64+25 = 5' RT. ℄ STA 64+12 USE 45° BEND
METAL GUARD RAIL
ASPHALT PAVEMENT
12" H.P.
HEAVY BRUSH
NOTE: PIPE CLASSIFICATION (8" ONLY) PVC - CLASS 160 ACP - CLASS 100
MATCH LINE STA 60+35 SEE SHEET NO 5
MATCH LINE STA 71+30 SEE SHEET NO. 7
12" H.P.
EQUATION: M.H. 4+80 AHD. = M.H 4+65 BK = ℄ STA. 69+51, Δ = 90°-30' LT.
NOTE: PIPE CLASSIFICATION (10" ONLY) VCP - C 200 ACP - CLASS 100
LOT 1
LOT 2
WEST COURSE
DRIVE
LOT 36
LOT 37
SANDERS
ROAD
PLAN
PROFILE
80
70
60
DITCH PROFILE
PROFILE OF GROUND ALONG ℄ OF PROPOSED SEWER
10" V.C.P. OR A.C.P. @ 0.28%
10" VCP OR ACP @ 0.28%
10" VCP OR ACP @ 0.28%
INV. ELEV. 64.40
INV. ELEV. 63.84
INV. ELEV. 63.31
PUMP STATION
WET WELL
NOT TO SCALE
10" V.C.P. OR A.C.P. 3.28%
INV. ELEV. 62.09
M.H 6+80
M.H 4+80 AHD
EQUATION
M.H 2+75
7
6
5
4
3
2
0
SCALE
PLAN
PROFILE
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
GRADES CHECKED
B.M.'S NOTED
STRUCTURE NOTATI'NS CH'KD.
NOTE BOOK
NO.
BY
DATE

PLAN — SURVEYED · PLOTTED · NOTE BOOK · NO. · BY · DATE · ALIGNMENT CHECKED · RT. OF WAY CHECKED

PROFILE — SURVEYED · PLOTTED · GRADES CHECKED · B. M.'S NOTED · STRUCTURE NOTATNS CH'KD. · NOTE BOOK · NO. · BY · DATE



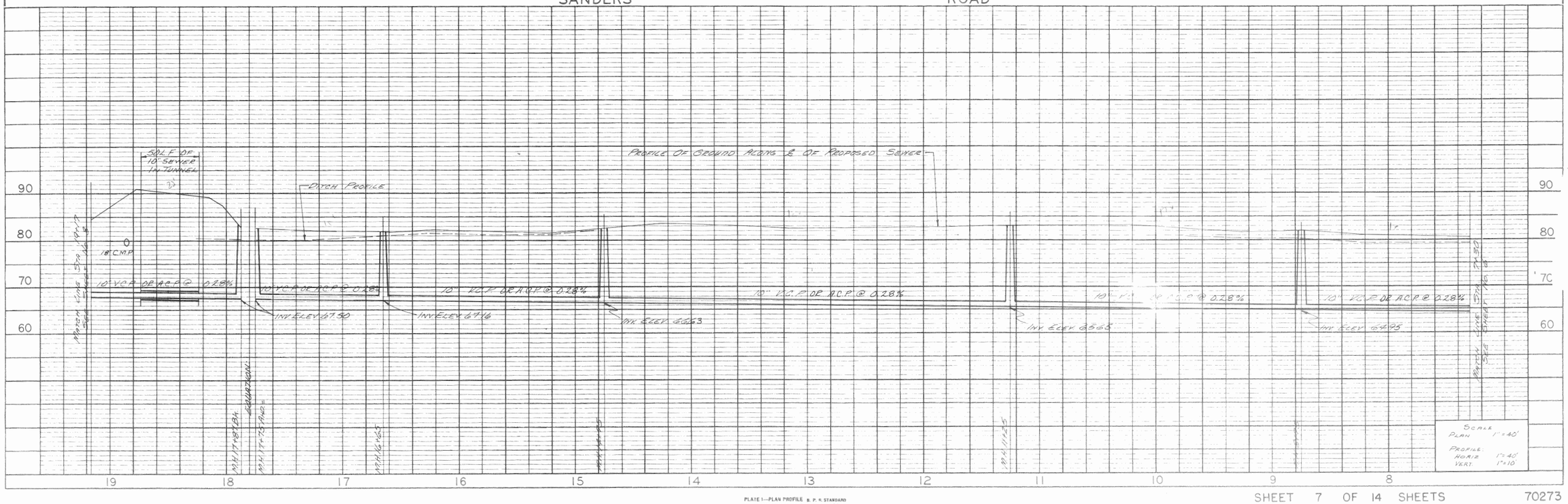
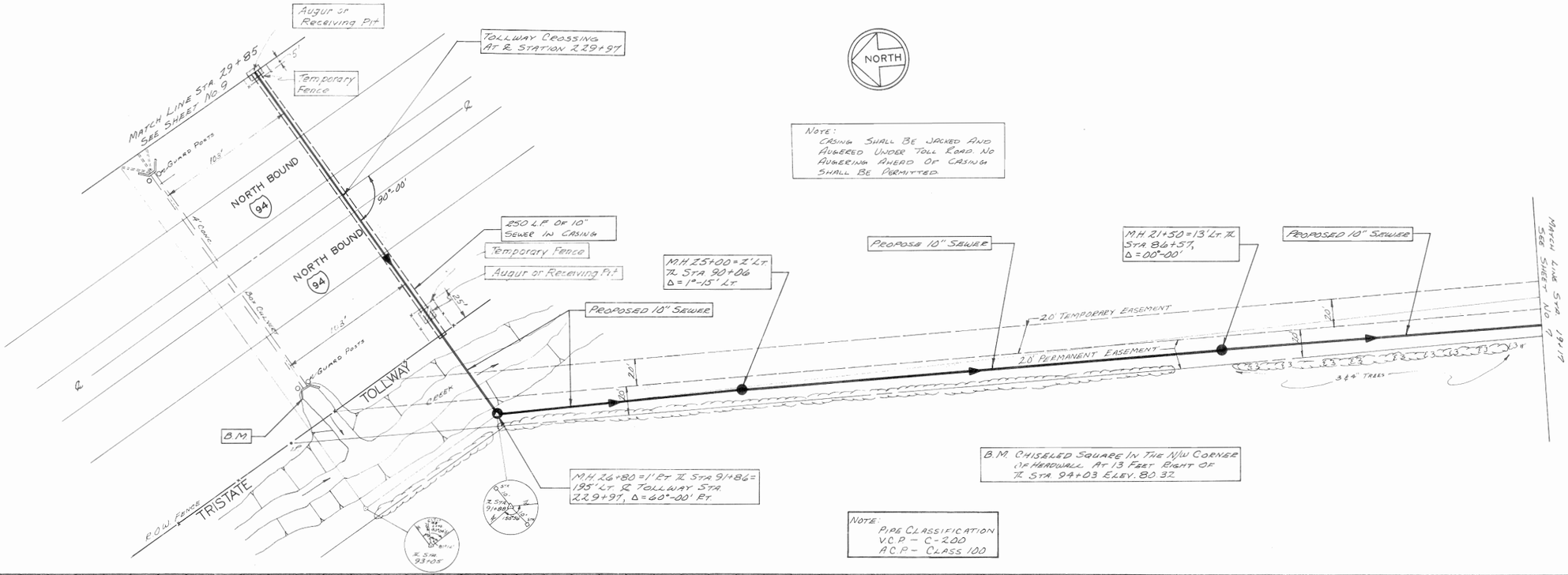
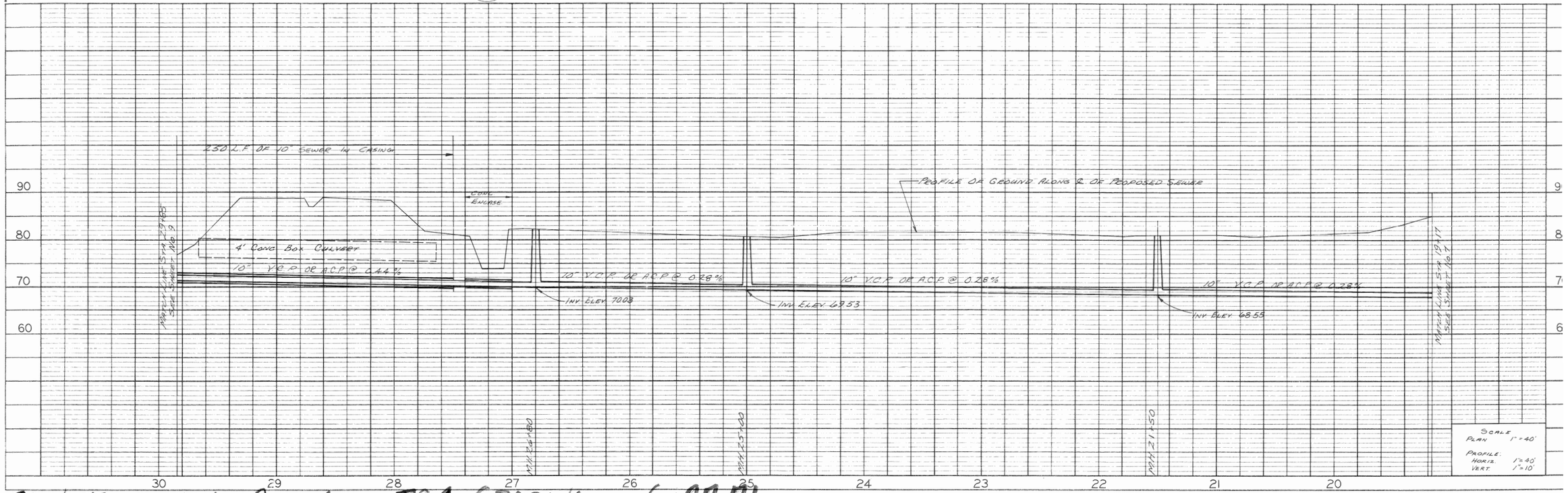


PLATE 1—PLAN PROFILE B. P. R. STANDARD
THE FREDERICK POST CO., CHICAGO

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
NOTE BOOK
RT. OF WAY CHECKED
NO.
BY
DATE



PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
NOTE BOOK
NO.
STRUCTURE NOTATIONS CHKD.
BY
DATE

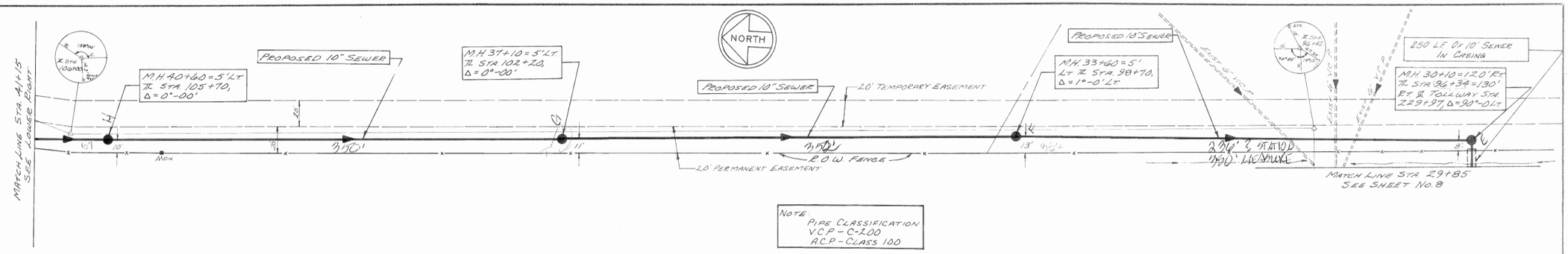


Scale
Plan 1" = 40'
Profile:
Horiz. 1" = 40'
Vert. 1" = 10'

$AN. TO TRINITY COLLEGE - I94 CROSSING 6-27-71

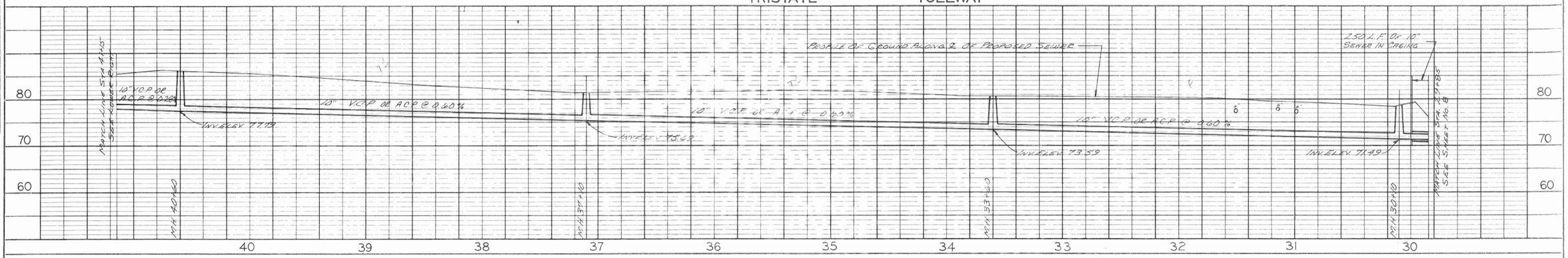
PLATE I—PLAN PROFILE U. P. R. STANDARD
THE FREDERICK POST CO., CHICAGO

REVISED: JUNE 27, 1971



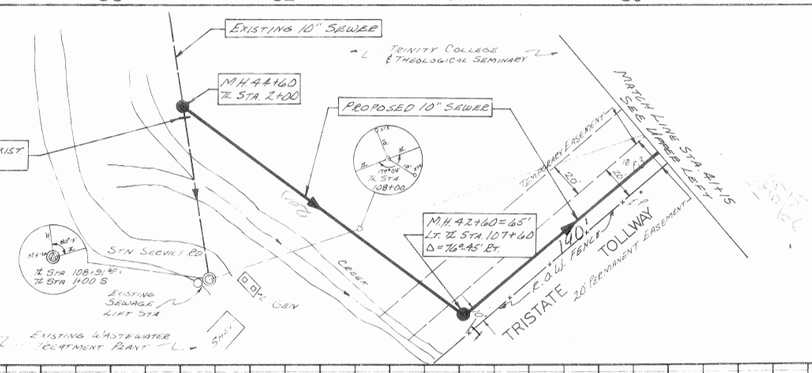
NOTE:
PIPE CLASSIFICATION
V.C.P. – C-200
A.C.P. – CLASS 100

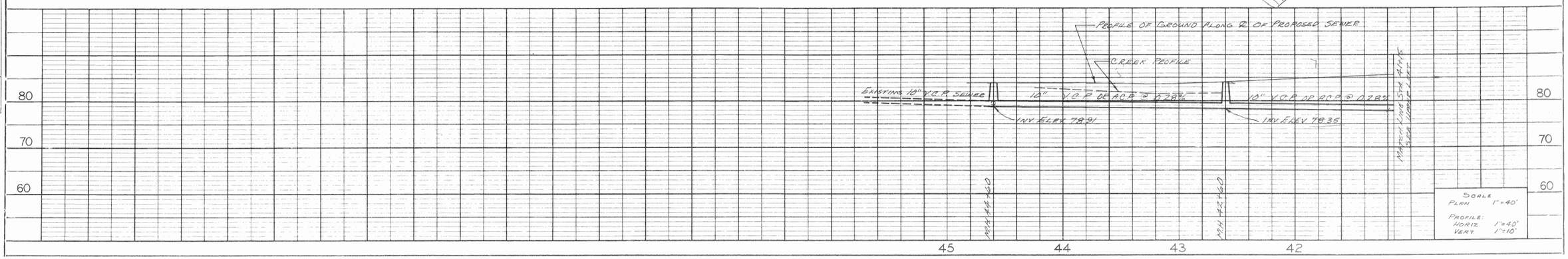
TRISTATE TOLLWAY



NOTE:
PIPE CLASSIFICATION
V.C.P. – C-200
A.C.P. – CLASS 100

NOTE: THE COST OF BULKHEAD TO BE MERGED INTO PRICE PER LINEAL FOOT OF THE PROPOSED 10" SEWER





SCALE
PLAN 1" = 40'
PROFILE:
HORIZ. 1" = 40'
VERT. 1" = 10'

PLATE 2 —PLAN PROFILE O. P. N. A. R. E. STANDARD
FREDERICK POST CO. CHICAGO

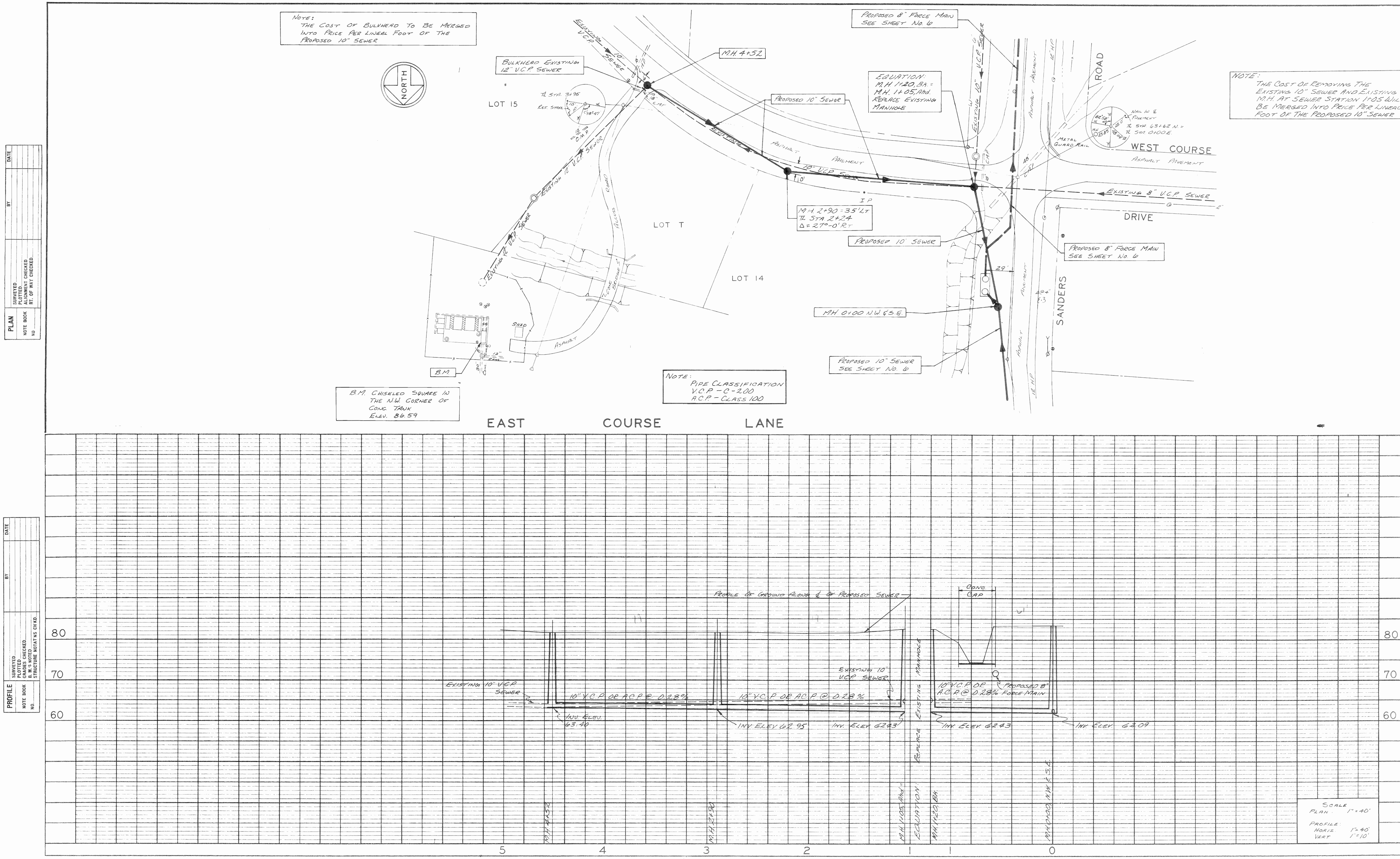
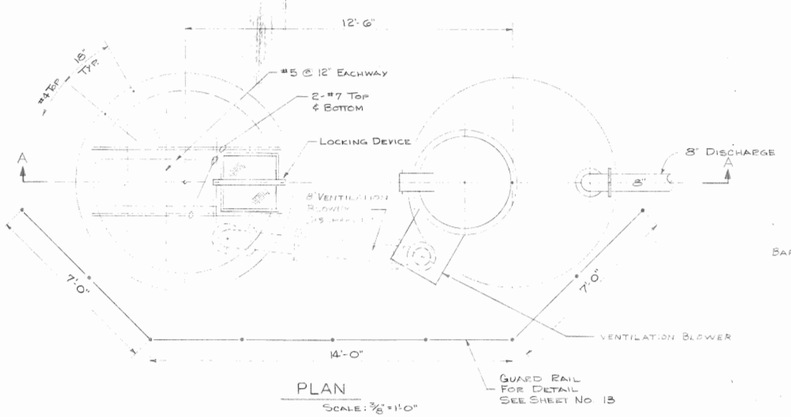


PLATE 1—PLAN PROFILE B. P. R. STANDARD
THE FREDERICK POST CO., CHICAGO

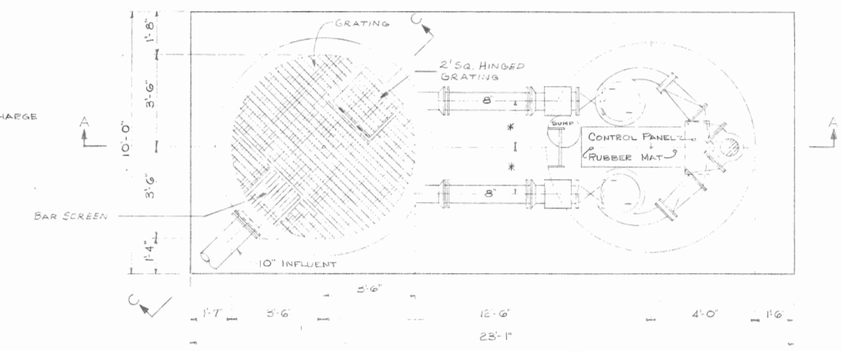
SHEET 10 OF 14 SHEETS

70273



PLAN

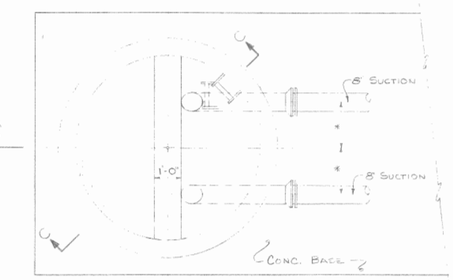
SCALE: 3/8" = 1'-0"



* LENGTHS DIMENSION SET BY MANUFACTURER

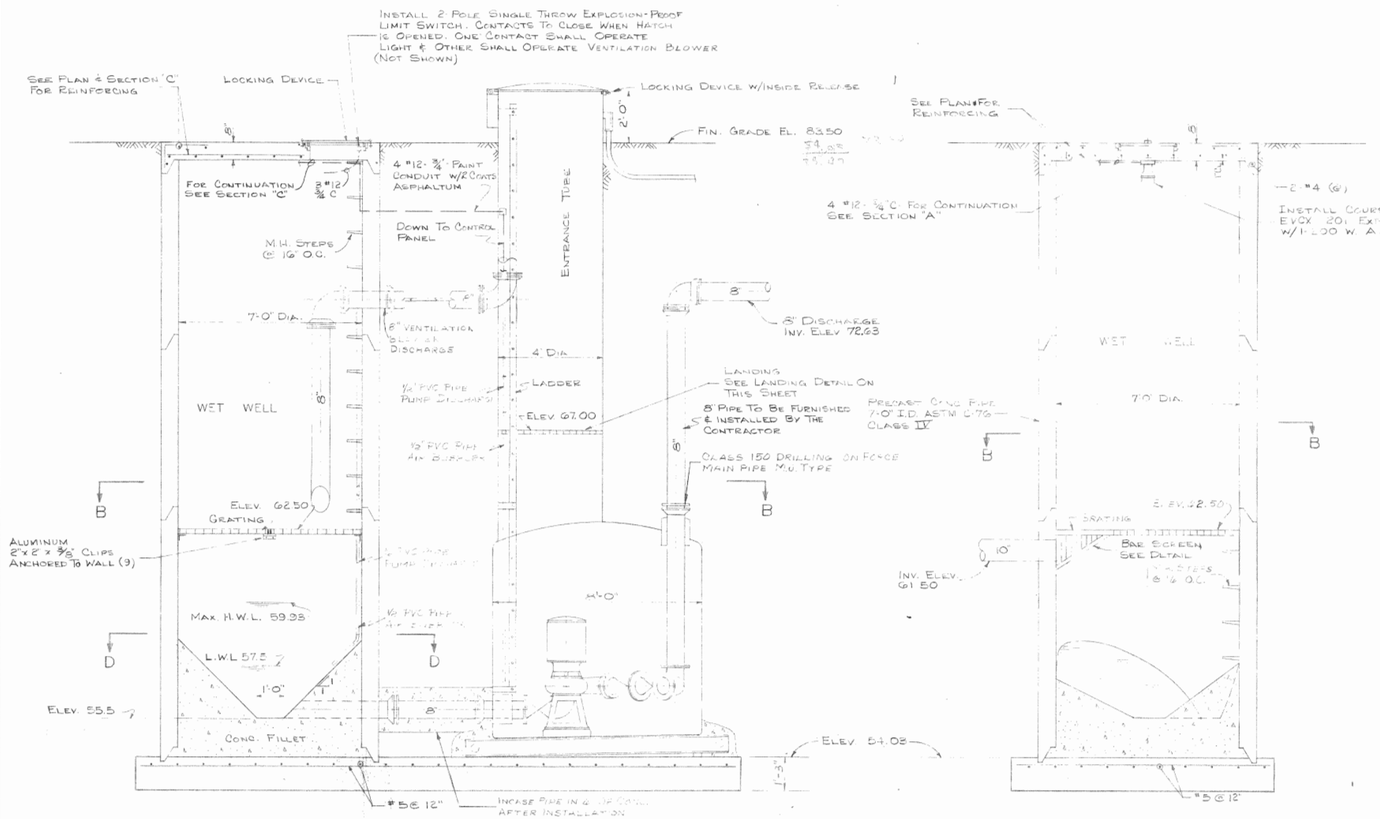
SECTION B

SCALE: 3/8" = 1'-0"



SECTION D

SCALE 3/8" = 1'-0"

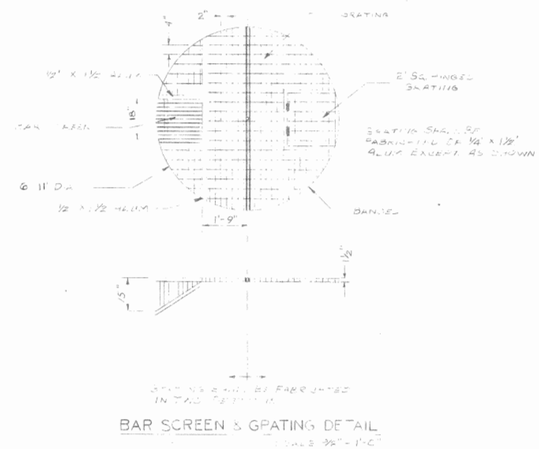


SECTION A

SCALE: 3/8" = 1'-0"

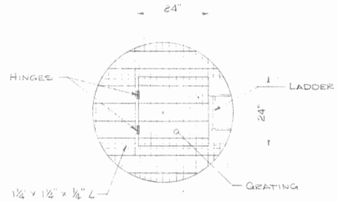
SECTION C

SCALE: 3/8" = 1'-0"



BAR SCREEN & GRATING DETAIL

SCALE 3/4" = 1'-0"

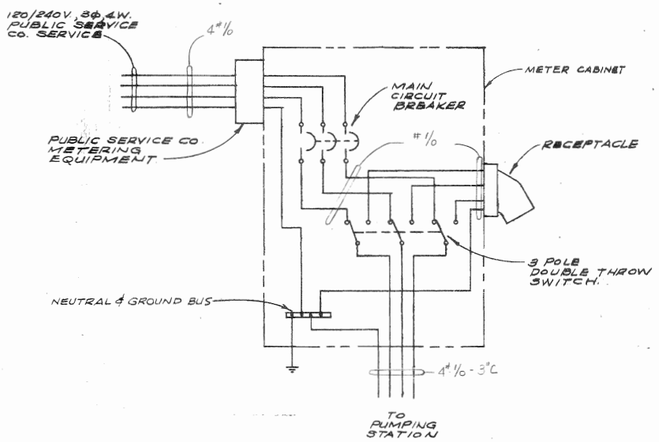


LANDING DETAIL

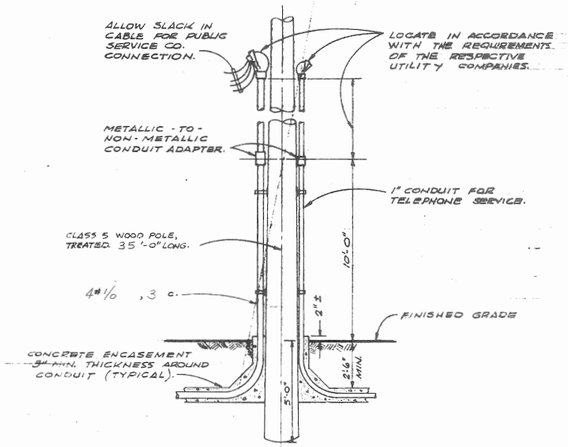
SCALE: 1/2" = 1'-0"

LAKE COUNTY, ILLINOIS PUBLIC WORKS DEPARTMENT WATER POLLUTION CONTROL FACILITIES		
RIVERWOODS PUMPING STATION		
DRAWN BY: FS DATE: CHECKED BY: APPROVED BY:	CONSOER, TOWNSEND & ASSOCIATES CONSULTING ENGINEERS CHICAGO, ILL.	SCALE: AS NOTED REVISED: SHEET NO. 11 OF 14 SHEETS

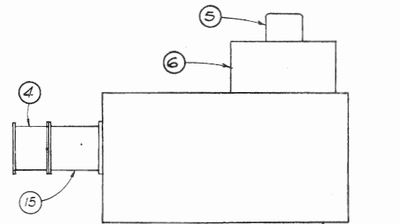
70273



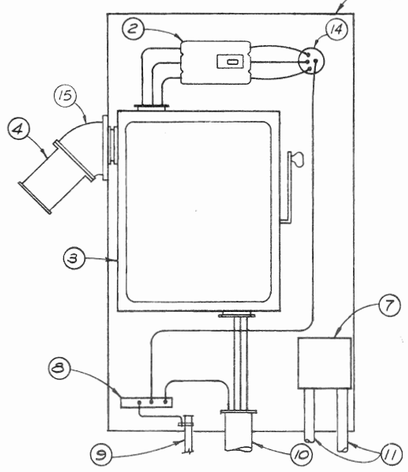
WIRING DIAGRAM
120/240 V., 3Φ, 4 W. SERVICE



UTILITY POLE DETAIL
NO SCALE



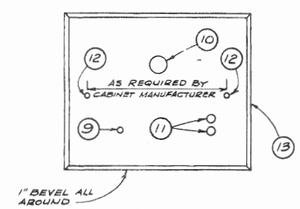
PLAN



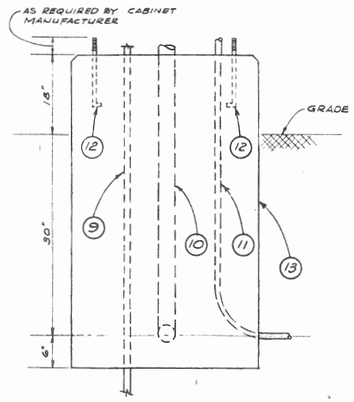
ELEVATION
METER CABINET
NO SCALE

NOTES:
1. SECURELY BOND ALL METAL PARTS, CONDUITS AND METER CABINET TO GROUND BUS.
2. INSTALL ALL EQUIPMENT ON PLYWOOD BOARD SECURELY FASTENED TO METER CABINET.

NO.	ITEM
1	METER CABINET - EAGLE SIGNAL CO. CAT. NO. EL-500 WITH VENT HOLES.
2	3P, 150 A. CIRCUIT BREAKER - SQUARE D CO. CAT. NO. KAL 36150
3	3P, 200 A., DOUBLE THROW TRANSFER SWITCH SQUARE D CO. CAT. NO. 82344
4	200 A., 3 WIRE, 4 POLE RECEPTACLE - CROUSE-HINDS CO. CAT. NO. 20426-S22-S4 FURNISH ONE (1) CROUSE-HINDS CO. CAT. NO. AP 20467-S22-S4 PLUG
5	PUBLIC SERVICE COMPANY METER.
6	PUBLIC SERVICE COMPANY METERING EQUIPMENT.
7	TELEPHONE TERMINAL BOX AS REQUIRED BY LOCAL TELEPHONE UTILITY.
8	1/4" x 1" x 12" LONG COPPER GROUND BUS WITH LUGS AS REQUIRED.
9	3/4" DIA. x 10'-0" LONG COPPERCLAD GROUND ROD
10	PUMPING STATION FEEDER - 4 #1/0, 3 "C.
11	1" TELEPHONE CONDUIT.
12	ANCHOR BOLTS - FURNISHED WITH METER CABINET.
13	CONCRETE FOUNDATION.
14	CLOSE NIPPLE WITH LOCKNUTS AND INSULATING BUSHING, BOTH ENDS.
15	ANGLE ADAPTOR TO MATCH RECEPTACLE.



PLAN

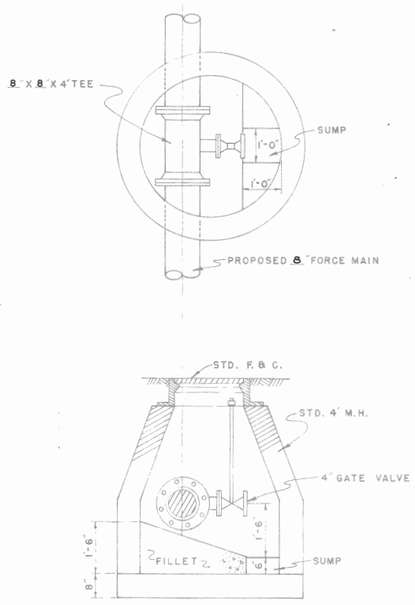


ELEVATION
METER CABINET FOUNDATION
NO SCALE

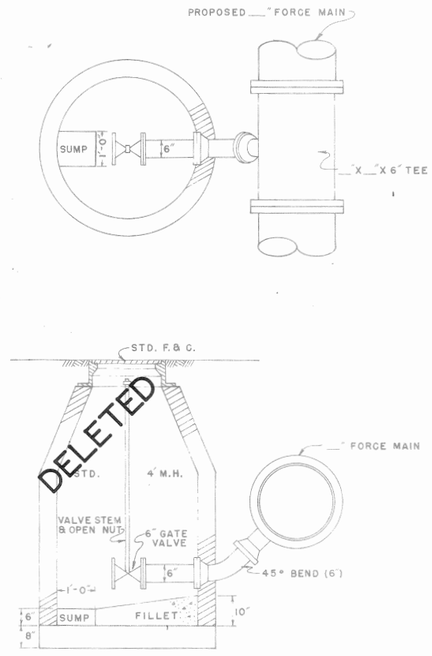
LAKE COUNTY ILLINOIS
PUBLIC WORKS DEPARTMENT
WATER POLLUTION CONTROL FACILITIES.
RIVERWOODS PUMPING STATION
ELECTRICAL DETAILS

DRAWN BY: AMS	CONSOER, TOWNSEND & ASSOCIATES	SCALE: NO SCALE
DATE:		REVISED:
CHECKED BY:	CONSULTING ENGINEERS	
APPROVED BY:	CHICAGO, ILL.	SHEET NO. 12 OF 14 SHEETS

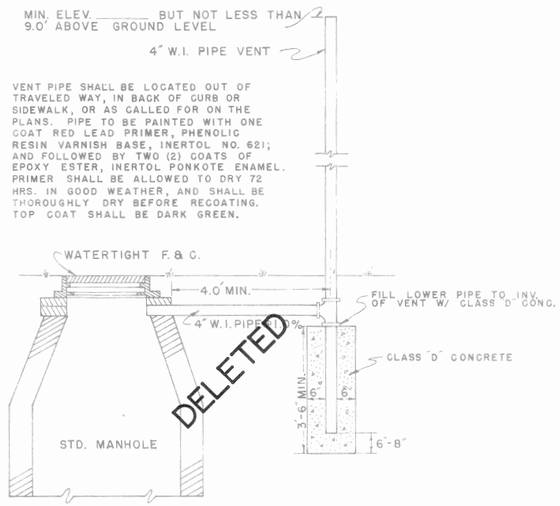
70273



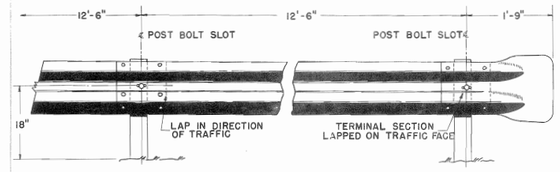
BLOW-OFF MANHOLE FOR SMALL DIA. FORCE MAINS



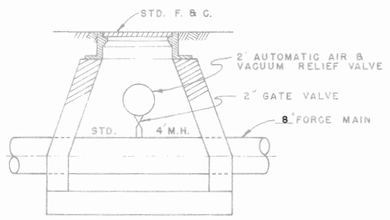
BLOW-OFF MANHOLE FOR LARGE DIA. FORCE MAINS



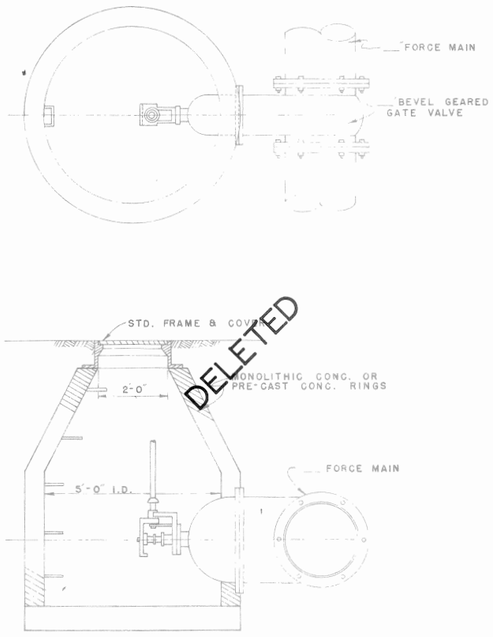
VENT PIPE ASSEMBLY DETAIL



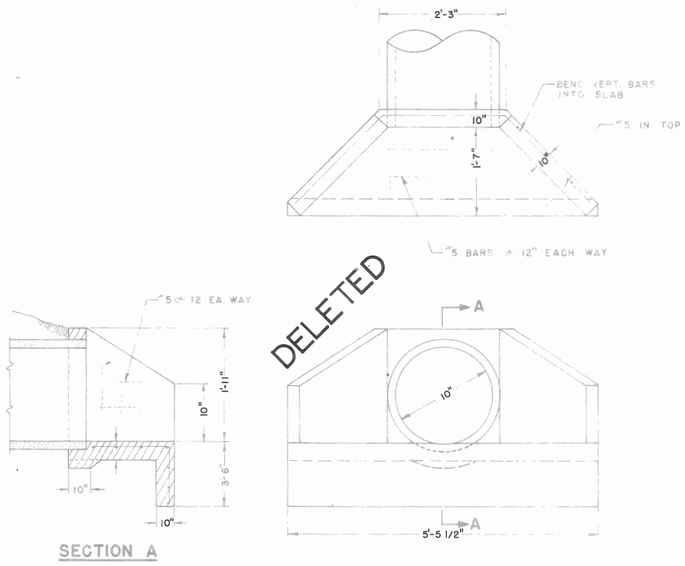
GUARDRAIL DETAIL



AIR RELIEF MANHOLE

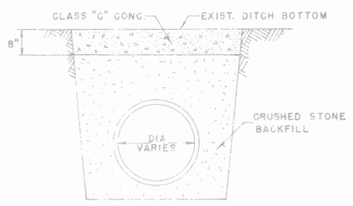


GATE VALVE MANHOLE



SECTION A

CONCRETE HEADWALL



CONCRETE CAP

THIS CONTRACT INCLUDES ITEMS CHECKED IN THIS TABLE

1. BLOW-OFF FOR SMALL DIA. FORCE MAINS	
2. BLOW-OFF FOR LARGE DIA. FORCE MAINS	X
3. VENT PIPE ASSEMBLY	
4. AIR RELIEF MANHOLE	X
5. GATE VALVE MANHOLE	
6. CONCRETE HEADWALL	
7. CONCRETE CAP	X
8. GUARDRAIL DETAIL	X

LAKE COUNTY, ILLINOIS
PUBLIC WORKS DEPARTMENT
WATER POLLUTION CONTROL FACILITIES

SEWER CONSTRUCTION DETAILS

DESIGNED BY: NAGY
DATE: 10-67
CHECKED BY: F.H.G.
DRAWN BY:
TRACED BY:

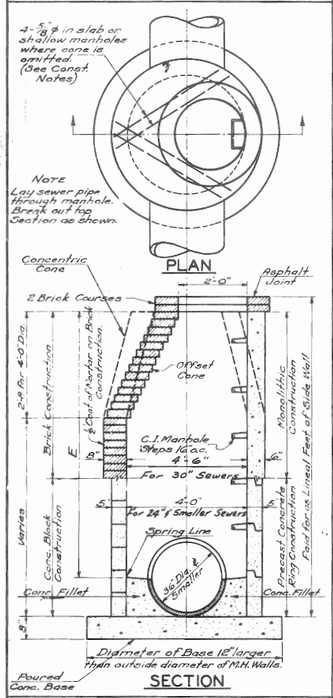
CONSOER, TOWNSEND & ASSOCIATES

SCALE: NONE

13
14

STANDARD MANHOLES

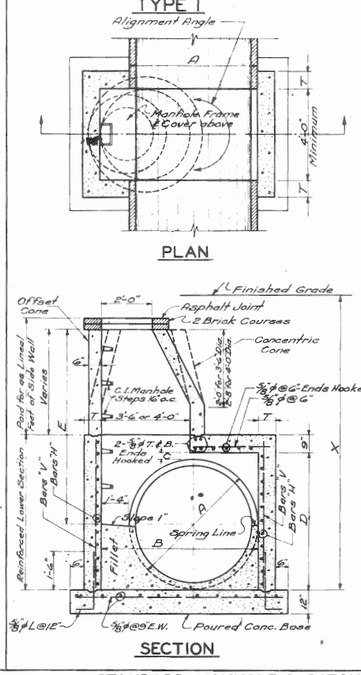
FOR SEWERS 36" DIAMETER & SMALLER



FOR SEWERS 42" INTERNAL DIAMETER AND LARGER

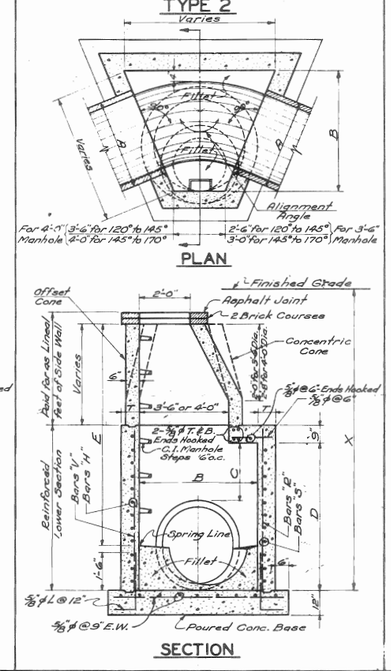
ALIGNMENT ANGLE - 180° TO 170°

TYPE 1



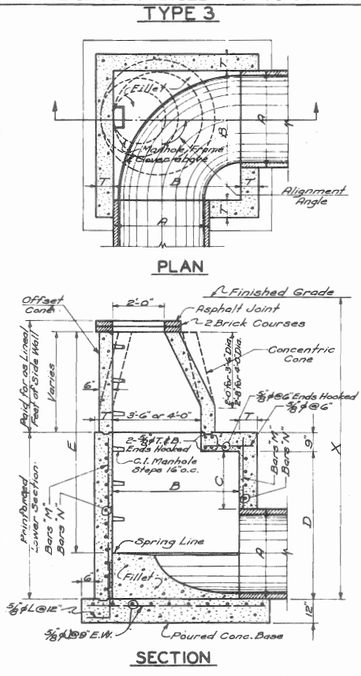
ALIGNMENT ANGLE - 169° TO 120°

TYPE 2



ALIGNMENT ANGLE - 119° TO 90°

TYPE 3



CONSTRUCTION DATA ALL MANHOLES

DIMENSIONS

A = Outside Diameter of Largest Pipe
B = A + 1'-4" (Minimum = 4'-0")
C = Not less than 6" above highest entering pipe.
D = Minimum 5'-0"
E = Varies (See Note below)

CONSTRUCTION NOTES

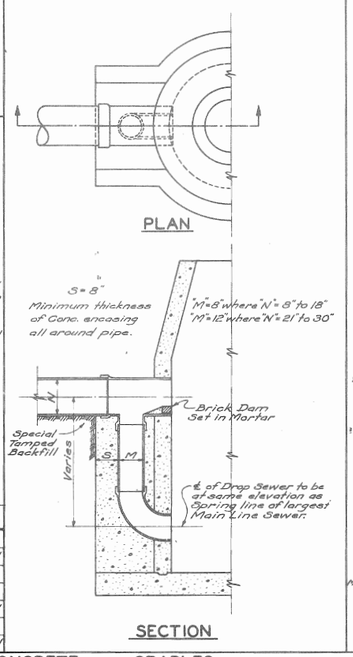
Cylindrical and Conical Sections of all Manholes shall be constructed of either monolithic concrete, precast concrete rings, concrete blocks, or sewer brick as designated in the Project Specifications of the Contract Document.

Concentric cones may be used on Precast Concrete and Concrete Block Units. Offset cones shall be used on Brick and Monolithic Concrete Units. Cylindrical section may be either 3'-6" or 4'-0" diameter at Contractors option on 42" Dia. Sewers or larger.

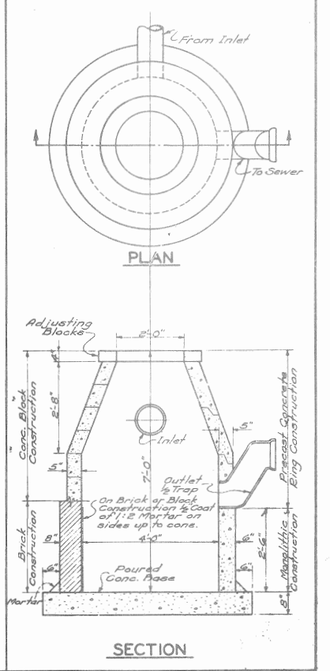
Dimension "E" varies. When less than 5 feet omit cone and extend cylindrical manhole sidewall section to an elevation 8 inches below bottom of adjusting brick. Construct 8 inch thick concrete slab on top of cylindrical section reinforced with ⅝"ø bars as shown. Provide 24" inch diameter opening in slab for manhole frame and brick adjustment rings as on coned manholes.

Item	For "X" Greater Than 15 Feet	For "X" Less Than 15 Feet
Dimension "T"	10"	8"
Bars "H"	⅝"ø @ 6"-Hooked	⅝"ø @ 9"-Hooked
Bars "V"	⅝"ø @ 6"	⅝"ø @ 9"
Bars "2"	⅝"ø @ 4"	⅝"ø @ 4½"
Bars "3"	⅝"ø @ 6"-Hooked	⅝"ø @ 6"-Hooked
Bars "M"	⅝"ø @ 5"	⅝"ø @ 6"
Bars "N"	⅝"ø @ 8"-Hooked	⅝"ø @ 6"-Hooked

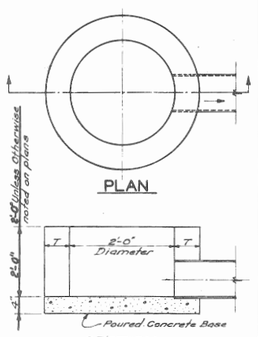
DROP PIPE FOR STANDARD MANHOLES



STANDARD CATCHBASIN



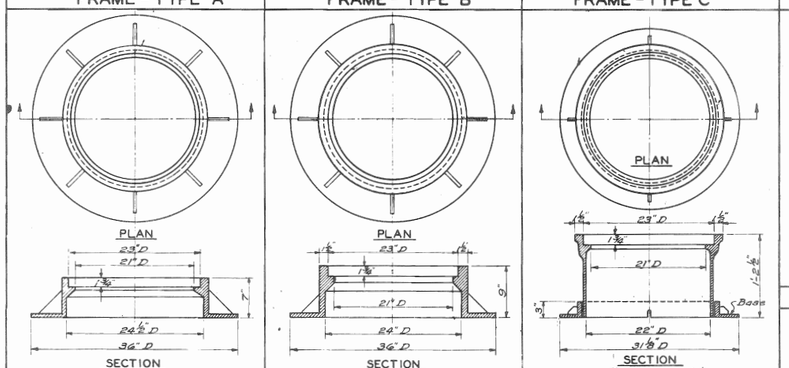
STANDARD STORM WATER INLET BOX



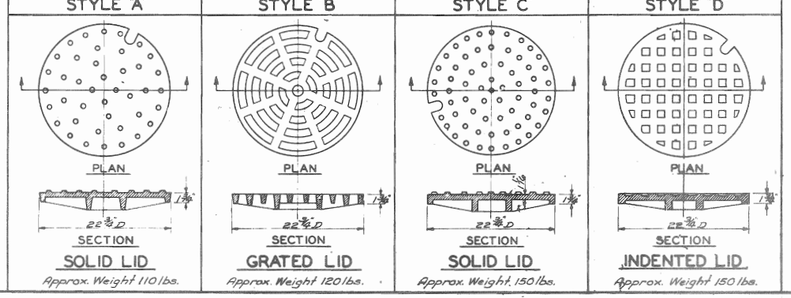
ALTERNATE MATERIALS FOR WALLS	T
Precast Reinforced Concrete Rings	5"
Precast Segmental Concrete Blocks	5"
Monolithic Concrete	6"
Common Brick, Grade "A"	8"

STANDARD MANHOLE & CATCHBASIN FRAMES & COVERS

FRAMES

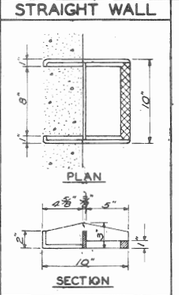


COVERS

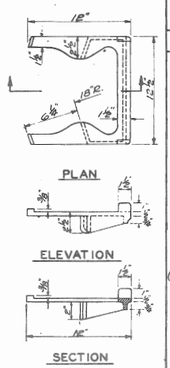


STANDARD LADDER STEPS

STRAIGHT WALL

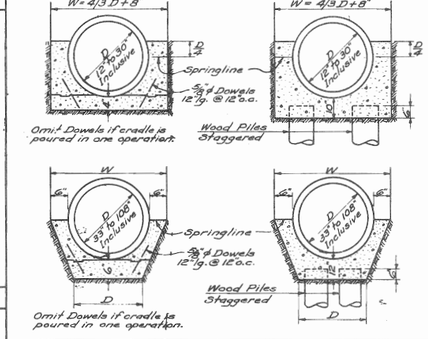


CURVED WALL



CONCRETE CRADLES

STANDARD CRADLE



STANDARD CRADLE DIMENSIONS & PAYMENT VOLUMES			
Internal Pipe Diameter	Width as shown	Payment Volumes of Concrete Cradle in Cubic Yards per Lineal Feet of Pipe.	
D	W	Without Piling	With Piling
12"	24"	.032	.089
15"	28"	.065	.108
18"	32"	.078	.127
21"	36"	.092	.147
24"	40"	.107	.169
27"	44"	.122	.189
30"	48"	.142	.216
33"	52½"	.123	.189
36"	56"	.136	.207
42"	63"	.163	.244
48"	70"	.191	.282
54"	77"	.222	.323
60"	84"	.254	.365
66"	91"	.288	.409
72"	98"	.324	.455
78"	105"	.362	.503
84"	112"	.401	.553
90"	118"	.443	.604
96"	125"	.487	.657
108"	138"	.579	.769

NOTES

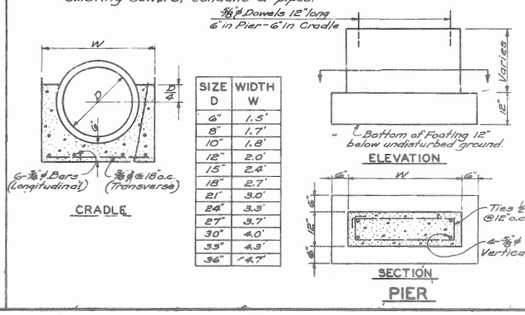
Concrete cradle shall be furnished and placed at locations shown on the contract drawings or at locations ordered by the Engineer. Concrete cradle shall be placed from the outside surface of the pipe to the undisturbed sides of the trench, with the minimum cross section as shown in Sections and dimensions for each pipe size as shown in table.

When a contract provides for payment for concrete cradle at a unit price per cubic yard, allowance for payment will be made on the basis of the installed lineal feet of each pipe size cradled multiplied by the volume in cubic yards per lineal feet as shown in the table regardless of the concrete volume actually placed.

When a contract provides for payment for the installation of a sewer including cradle, the complete cost of cradle shall be included in the unit bid and contract price for the sewer and no extra allowance will be made for furnishing and placing concrete cradle.

SPECIAL REINFORCED CRADLE

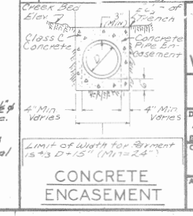
Note - Build reinforced cradle supported by piers at maximum 10'ft. intervals across excavations to carry and prevent settlement of new or existing sewers, conduits or pipes.



SIZE D	WIDTH W
6"	1.5'
8"	1.7'
10"	1.8'
12"	2.0'
15"	2.4'
18"	2.7'
21"	3.0'
24"	3.3'
27"	3.7'
30"	4.0'
33"	4.3'
36"	4.7'

THIS CONTRACT INCLUDES ITEMS CHECKED IN EC

1	Manhole for Sewers 36" Dia. & Smaller	11	Manhole
2	Manhole for Sewers 42" Dia. & Larger 180° to 170°	12	"
3	" " " " " " 169° to 120°	13	"
4	" " " " " " 119° to 90°	14	"
5	Drop Pipe for Standard Manholes	15	"
6	Standard Catchbasin		
7	Standard Storm Water Inlet Box		
8	Manhole Frame - Type "A"		
9	" " Type "B"		
10	" " Type "C"		



Limit of Width for Payment W = 3 D + 15" (Min = 24")

PUBLIC WATER POLLU

SEWER CON

DRAWN BY:	A.W.H.
DATE:	JUNE, 1969
CHECKED BY:	J.W.N.
APPROVED BY:	J.W.T.

CONSOER, TO & ASSOC CONSULTING EN CHICAGO,

SHT 14

SECTION 23 11 23
FACILITIES NATURAL GAS PIPING

PART 1 – GENERAL

1.01 SUMMARY

A. Drawings and General Requirements of Contract including General and Supplementary Conditions and Division 01 specification Sections apply to Work of this Section.

B. Extent of natural gas piping system work is indicated on drawings and schedules, and by requirements of this Section.

C. Applications for natural gas piping systems include the following:

1. Building distribution system from existing gas service to gas-fired equipment connections.

1.02 QUALITY ASSURANCE

A. National Fuel Gas Code Compliance - Comply with applicable provisions of NFPA 54 (ANSI Z223.1) "National Fuel Gas Code", and ANSI Z223.1a "Supplement to National Fuel Gas Code".

B. International Fuel Gas Code (IFGC) by the International Code Council (ICC), Inc.

C. Local Utility Compliance - Comply with requirements of local natural gas utility.

D. Welder's Qualifications:

1. Comply with ASME B31.8.
2. Steel welder shall have a copy of a certified ASME B31.8 qualification test report.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's data for fuel gas piping systems materials and products.

B. Shop Drawings: For pressure regulating valves indicate selected valve size, orifice, and spring range for each required valve and submit valve capacity charts.

C. Submit in accordance with Section 01 33 00.

PART 2 – PRODUCTS

2.01 NATURAL GAS PIPING MATERIALS AND PRODUCTS

A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities as indicated. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in natural gas piping systems. Where more than one type of material or product are indicated, selection is Installer's option.

2.02 BASIC PIPE, TUBE, AND FITTINGS

A. Building Distribution Piping (5 psi and below)

1. Pipe Size 2-inch and Smaller: Black steel pipe, ASTM A53.

    a. Pipe Weight: Schedule 40.
    b. Fittings: Malleable iron threaded.

2. Pipe size 2-1/2-inch and Larger: Black Steel Pipe, ASTM A53.

    a. Pipe weight: Schedule 40.
    b. Fittings: Wrought-steel butt welding.

B. Underground Distribution Piping

1. By Utility. Contractor to confirm anodeless riser is compatible with utility's piping material.

C. Anodeless Risers:

1. Manufacturers:

    a. GF Piping Systems.
    b. Elster Perfection.
    c. Continental Industries.

2. General:

    a. Custom factory bent anodeless riser providing transition from HPDE buried gas piping to steel above grade piping resulting in a joint stronger than the connecting HDPE piping.
    b. All metallic gas piping shall be sealed within casing and adequately protected to allow installation without supplemental cathodic protection.
    c. Built to suit proposed gas pipe bury depth, no less than 1'-6" below grade, with above grade termination located at 1'-0" above finished grade.
    d. Plain end below grade HDPE connection.
    e. Butt weld or threaded above grade end connection as dictated by applicable Building Distribution Piping paragraph.

3. Construction:

    a. Fitting shall meet the requirements of Mechanical Fittings within ASTM D2513, Category 1.
    b. All gas carrying steel components shall be fabricated of ASTM A53 steel. Minimum pipe weight of Schedule 40.
    c. All gas carrying polyethylene pipe and tubing shall conform to ASTM D2513.
    d. Casing materials shall meet or exceed requirement of ASTM A513.
    e. All steel components shall be electrostatically coated with a polyester or epoxy coating.

D. Flexible Pipe Connector:

1. Manufacturer:

    a. Metraflex series GASC.
    b. Or equal.

2. UL or CSA listed flexible pipe connector for natural gas service, suitable for outdoor installation.
3. Corrugated 300 series stainless steel hose and braid.

4. Schedule 40 carbon steel fittings.
5. Butt weld or threaded above grade end connection as dictated by applicable Building Distribution Piping paragraph.
6. Listed for working pressure up to 150 psig.
7. Capable of absorbing a minimum of 2 inches of piping offset between centerlines of connecting pipes.

2.03 VALVES

A. Provide valves meeting the requirements and as follows:

1. Equipment/Building Isolation, 2 inch and larger: Type V025.
2. Equipment Isolation, 1-1/2 inch and smaller: Type V382.
3. Pressure Regulating (1,000 to 12,000 SCFH): Type V708.

B. Natural Gas Isolation Valve, 1-1/2 inch and smaller.

1. Manufacturers:

a. Apollo, 80-100 Series.
b. Or Equal.

2. Listed shut-off valve for natural gas with operating temperatures as low as -20°F.
3. Bronze body.
4. Chrome plated ball.
5. RPTFE seats and seals.
6. Blow-out proof stem.
7. Threaded end connections.
8. 150-SWP.

C. Natural Gas Isolation Valve, 2 inch and larger.

1. Manufacturers:

a. Milliken 625 Series.
b. Key Port Figure 425.
c. Or equal.

2. Non-lubricated, resilient seated eccentric plug valve.
3. UL Listed for natural gas service.
4. Drip-tight shut-off up to full pressure rating of valve with pressure in either direction.
5. Pressure rating: 175-psig.
6. Cast iron body and plug.
7. Flanged end connections
8. Wrench nut operator.
9. Buna-N plug and stem seals.
10. Secondary seal of plug metal to metal seat interface.
11. Corrosion resistant bearings.

D. Natural Gas Equipment and Building Pressure Reducing Valve

1. Manufacturers:

a. Sensus, Model 243.
b. Fisher.

c. Or equal.

2. Utilize for pressure control of equipment with natural gas input rate between 1,000 and 12,000 SCFH.
3. Valve Manufacturer to recommend valve size based on scheduled flow rates and pressures.
4. Direct sensing pressure reducing valve with internal relief valve.
5. Suitable for inlet pressures up to 10-psig.
6. Adjustable outlet pressure range from 15-25 inwc.
7. Internal relief shall be capable of preventing outlet pressure of the valve from rising greater than 9-in. w.c. above outlet pressure setpoint.
8. Cast iron body with threaded end connections.
9. Die cast aluminum alloy diaphragm case.
10. Diaphragm shall be of Buna-N construction with nylon fabric insert.
11. Brass orifice and stem.

2.04 BASIC SUPPORTS, ANCHORS, AND SEALS

A. Provide supports, anchors, and seals complying with local Fuel Gas Code, Section 40 05 07, in accordance with the following listing:

1. Clevis hanger or band hangers for horizontal-piping.
2. Two-bolt riser clamps for vertical piping supports.
3. Concrete anchors and clamps for building attachments.
4. Piping indicated to be routed above the roof structure shall be supported with non-penetrating roof supports.

B. Material shall be in accordance with Section 40 05 07 with respect to the “Environment” where the piping support systems are installed as indicted on Project Space Environment/Hazardous Rating Schedule found in the 001 series of Drawings.

PART 3 – EXECUTION

3.01 INSTALLATION OF NATURAL GAS PIPING

A. Install natural gas distribution piping in accordance with applicable codes and local utility company requirements.

B. Use sealants on metal gas piping threads which are chemically resistant to natural gas. Use sealants sparingly and apply to only male threads of metal joints.

C. Remove cutting and threading burrs before assembling piping.

D. Do not install defective piping or fittings. Do not use pipe with threads which are chipped, stripped, or damaged.

E. Plug each gas outlet, including valves, with threaded plug or cap immediately after installation and retain until continuing piping, or equipment connections are completed.

F. Ground gas piping electrically and continuously within project, and bond tightly to grounding connection.

G. Install drip-legs in gas piping at all equipment connections, located directly upstream of unit pressure regulating valve or equipment connection if no regulating valve required, and elsewhere as required by code or regulation.

H. Install "Tee" fitting with bottom outlet plugged or capped, at bottom of pipe risers.

I. All branch connections shall be made horizontal from or vertically upward from main piping.

J. Install piping with 1-inch drop in 60' pipe run (0.14%) in direction of flow.

K. Install piping parallel to other piping.

L. Equipment Connections:

1. Connect piping to equipment as indicated on drawings and equipment Manufacturer's written instructions.
2. All piping serving equipment without flanged or grooved joint connections shall be installed with a union located between equipment isolation valve and equipment connection.
3. Where equipment connection size differs from pipe size indicated on Drawings, provide transition as required between equipment isolation valve and equipment connection.
4. All gas piping in concealed locations such as ceiling plenums shall have welded joints.
5. Vent all interior regulators to the building exterior. Vent termination shall be located a minimum of 10’-0” away from any outside air intake and 5’-0” from any combustion exhaust outlet.

M. Paint gas piping orange after all testing is complete in accordance with Section 09 96 00.

N. Label piping:

1. In accordance with label Manufacturer’s written instructions.
2. Provide a minimum of one pipe identification label with flow arrows on each exposed horizontal pipe run.
3. Pipe label shall include flow stream identifier as well as operating pressure of labeled pipe. Examples: NG - 5 PSI, NG - 0.25 psi.

O. Do not install polyethylene gas pipe inside buildings.

P. Underground Piping:

1. All transitions between underground polyethylene gas pipe and above ground steel gas piping shall be made with an anodeless riser.

3.02 GAS SERVICE

A. Contact gas utility to provide new gas service as indicated on the Drawings. Fees associated with Utility work to be included in Bid Price as allowance, see bid form, paid by Owner.

B. Natural Gas Utility Contact: Kristine Kawa, North Shore Gas Company, 847-327-6618, Kristine.kawa@northshoregasdelivery.com

3.03 INSTALLATION OF SUPPORTS, ANCHORS, AND SEALS

A. Install supports, anchors, and seals in accordance with Local Fuel Gas Code and Section 40 05 07.

3.04 INSTALLATION OF VALVES

A. Install valves meeting the requirements of Section 40 05 53 and as follows:

1. Provide gas cocks at connection to gas train for each gas-fired equipment item; and on risers and branches where indicated.
2. Locate gas cocks where easily accessible, and where they will be protected from possible injury.

3.05 INSTALLATION OF PRESSURE REGULATORS

A. Install pressure regulators where indicated in accordance with manufacturer’s instructions.

3.06 EQUIPMENT CONNECTION

A. Connect gas piping to each gas-fired equipment item, with drip leg, union or flange, pressure regulating valve (where required), and shutoff gas cock. Comply with equipment Manufacturer's instructions.

B. All connections to outdoor, concrete pad mounted equipment and other locations where specifically indicated, shall include a flexible pipe connector.

1. This connector shall be located downstream of isolation valve.
2. For equipment fed by buried gas piping, flexible connector shall be installed between point of existing ground and first pipe support on concrete equipment pad.
3. For equipment fed by building supported above-grade gas piping, flexible connector shall be installed between last building support and first pipe support on concrete equipment pad.

C. Site gas distribution systems will be at 2-psi, confirm with utility. Any natural gas fueled component that is not suitable for stated distribution pressure shall be provided with pressure reducing valve, sized for equipment flow rate and selected to reduce pressure from distribution pressure to maximum allowable pressure of equipment served.

3.07 PIPING TESTS

A. Test natural gas piping in accordance with Local Fuel Gas Code requirements. At a minimum, testing shall include:

1. Preparation:

a. All pipe joints shall be exposed and accessible for examination during testing.
b. All appliances or equipment not suitable for test pressure shall be disconnected from piping system and respective outlets capped.

2. Testing:

a. Testing medium shall be instrument quality (maximum -40°F dewpoint) air or other dry inert gas.
b. Testing shall be completed at a pressure no less than 2 times the design operating pressure of the piping, 3 psig minimum. Pressure shall be held for a minimum duration of 30 minutes plus an additional 30 minutes for each 500 ft3 of system volume above 500 ft3, but no greater than 24 hours.
c. System shall maintain pressure for duration of test. Any drop in system pressure over duration of test shall be followed by system leak testing with gas detector or noncorrosive leak detection medium.
d. All leaks found shall be corrected and system retested.

END OF SECTION

SECTION 40 61 96
PROCESS CONTROL DESCRIPTIONS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes Process Control System in conjunction with P&IDs.

B. Items specified in this section shall conform to general requirements of Section 40 61 13.

C. See Section 40 61 20 for PCS Configuration Requirements.

1.02 BASIS OF PAYMENT

A. The following bid items apply to Work described in this Section:

1. Lift Station

B. All other Work described in this Section shall be considered incidental to the Contract and no separate payment will be made.

PART 2 – PROCESS CONTROL DESCRIPTIONS

2.01 SPD's – GENERAL

A. Surge Protection Devices (SPD's) are specified in Section 26 43 13.

B. The Surge Protective Device provides a degree of electrical protection to the 3-phase and 1-phase circuits located in any given building.

C. An alarm will alert the Operator if an internal failure is observed by the device, which can be further investigated locally at the SPD interface.

2.02 VFD's – GENERAL

A. VFD's are specified in Section 26 29 23, with the associated Harmonic Filters being specified in Section 26 35 26.

B. Some equipment wired to VFD's include local power disconnect switches that are specified under Division 26. The disconnect switches include an auxiliary contact that shall be wired to the drive enable input of the VFD.

C. VFD's shall be programmed with the following operational features:

1. During functional testing, any frequencies throughout the speed range of the VFD exhibit pump/motor/equipment vibration characteristics above normal running conditions, then the VFD shall be programmed to skip these frequencies with an associated bandwidth above and below the skip frequency. Adjustable to 0.1Hz.
2. VFD's shall be programmed to not fault on loss of communications.
3. VFD's shall be programmed for auto-restart enabled.
4. VFD's shall be programmed with minimum and maximum speed clamps to protect equipment and processes from damage or disruption.
5. High temperature and/or leakage detection inputs wired to VFD's shall be programmed for "enable" and not "fault".

6. Multiple VFD's shall operate at the same speed when operating pumps simultaneously.

D. Following signals shall be monitored via network connection in addition to hardwired monitoring signals. These are ins adVFD Network Monitoring Signals

1. Line Side Voltage A-N, B-N, and C-N
2. Line Side Voltage A-B, B-C, and A-C
3. Line Side Amperes, A, B, C, N
4. Power Factor
5. VFD Fault Code

2.03 PLC-BASED CONTROL PANELS – GENERAL

A. PLC-Based Control Panel Functional Descriptions - General:

1. Functional Descriptions for PLC-based control panels that follow pertain to "Auto" modes requiring supervisory control with interactive logic.
2. PLC control of equipment shall require "Hand/Off/Auto" selector switches to be in the "Auto" position. Equipment not in "Auto" shall be considered to be in "Hand" mode and shall be controlled manually at the equipment. "Hand" mode shall be for maintenance purposes and may inhibit equipment safeguards such as seal fail or overtemp conditions.
3. Equipment that is capable of auto operation (and controlled from PLC) shall alarm the Operator if the equipment has been removed from "Remote" or "Auto" operation for longer than 24 hours.
4. Stop or emergency stops shall work as designed for all modes of operation.
5. All equipment fail signals shall alert the Operator, alarm the equipment, and remove from equipment sequencer.
6. All adjustable set-points described in this Section shall be by the Operator or higher level authority such as a Supervisor. Hierarchy shall be defined with the Owner by the HMI SCADA Programmer.
7. Nominal dimensions for new PLC panels are estimates, and shall be determined by the System Integrator during detailed design. Final dimensions of each panel shall be included in shop drawing submittals, and shall be coordinated with the Contractor for properly sizing of concrete housekeeping pads when not wall mounted.

2.04 ALARMS AND STATUS – GENERAL

A. Multiple alarms for equipment that fails from a single event, shall annunciate only the single root cause event. (i.e. Station power outage and subsequent return power shall mask other failures caused by the power outage.)

B. Alarms shall be provided for conditions which shall cause safety or health risk, environmental damage, property or equipment damage, or process failure. Alarms are considered High Priority, Medium Priority, or Low Priority in nature and are defined as follows.

C. Critical Alarms are defined as high priority alarms that the will be annunciated from the SCADA system remotely.

D. High Priority Alarms are defined as those which shall cause safety or health risk, environmental damage, significant property or equipment damage, or failure of process operations critical to meeting operations limitations if not attended to and corrected immediately.

E. Medium Priority Alarms are defined as those which, if not attended to and corrected within a specific timeframe, may eventually cause safety or health risk, environmental or property damage, or process failure.

F. Low Priority Alarms / Equipment Status are defined as non-critical change-of-state events such as a motor changing state, a valve opening or closing, etc. Low priority alarms are not visible in the Alarms Summary and do not require operator attention. They are intended for event tracking and shall be recorded in the daily event log.

2.05 FUNCTION DESCRIPTIONS:

A. Lift Station Pumps (009-N-1)

1. Associated Equipment

a. Wet Well Pump 1
b. Wet Well Pump 1 VFD
c. Wet Well Pump 2
d. Wet Well Pump 2 VFD
e. Wet Well Pump 3
f. Wet Well Pump 3 VFD
g. (5) Float Switches
h. Triplex Controller (backup control)
i. Motor Protection Relay for each Pump
j. Discharge Valve Actuator 1
k. Discharge Valve Actuator 2

2. Auto Mode – Primary (PLC / Level Sensor)

a. This operating mode will be active when the Backup Mode is not selected.

b. The submersible level sensor shall continuously monitor level in the wet well and adjust the number of pumps running and the pump speed of each pump.

c. If multiple pumps are running, they should always operate at the same VFD speed.

d. The PLC program shall utilize a table with levels, pump enable/disable, and VFD speed. All entries in the table shall be operator adjustable.

e. At the end of each pumping cycle when pumps shut off due to low level, pumps shall rotate in sequence.

f. The program shall include a time setpoint, operator adjustable on OIU or HMI, the timer shall be set when a new pump cycle starts and if the set time elapses, a pump rotation shall be forced.

g. Auto Primary mode shall utilize VFDs and not bypass contactors. Bypass contactors for this station are for local, manual mode only.

h. Time delays shall be programmed in for pump starts to stagger start pump starts.

i. The program shall include a time delay before pump restart setpoint, operator adjustable on OIU or HMI. The time delay must elapse before any given pump can restart once it turns off.

3. Backup Mode – Backup (Floats / Triplex Controller)

a. The PLC shall have a backup mode output that will energize a relay. This output will be de-energized, initiating backup mode under the following conditions:
    1) The transducer signal has bad quality or no signal
    2) VFD fault
    3) The PLC dies
    4) The Backup Mode push button is pressed inside the PLC panel
    5) The Wet Well level reaches the Lead/Lag1/Lag2 floats and the Lead/Lag1/Lag2 pumps are not already running at the speed reference of the PLC.
        a) There are toggle switches in parallel with the float relays that can be manually actuated to turn pumps on when in Backup Mode

b. This operating mode will utilize the Bypass Contactors

4. Manual Mode – OIT

    a. Manual control of the pumps shall be provided through the OIT.

        1) In Hand position, the pump shall run from the VFD at an operator adjustable speed reference on the HMI.
        2) In Off position, the pump shall not run.
        3) In Auto position, the PLC shall control when each pump runs.
        4) This mode will only use the VFD to power the pumps
        5) VFDs can alternatively be ran in manual at the HIM module on the VFD

5. Alarms

    a. Critical:

        1) Wet Well High Level Alarm – float switch
        2) Wet Well High Level Alarm – level sensor

    b. High Priority:

        1) Wet Well Low Level Alarm – float switch
        2) Wet Well High Level Alarm – float switch
        3) Wet Well Low Level Alarm – level sensor
        4) VFD Fail (Each Pump)
        5) Bypass Motor Overload Tripped (Each Pump)
        6) Wet Well Pump High Motor Temp
        7) Valve Fail
        8) UPS Fail
        9) Loss of Communication to PLC

    c. Medium Priority:

        1) Wet Well Pump not in Auto
        2) Wet Well Pump Seal Fail

    d. Low Priority:

        1) Wet Well Pump Running
        2) Wet Well Pump Stopped

6. PLC Power-up

a. On PLC power-up, the pump control shall be set to Auto mode.

7. PLC Power Failure

   a. On PLC power-failure, the pump control shall be set to Auto mode.

8. Operator Workstation Requirements

   a. Providing monitoring and control at OIT. All of the functionality on the local OIT shall be duplicated to the Operator HMI Workstations at the Wastewater Treatment Plant.

9. Calculations

   a. Pump Runtimes
   b. Number of Pump Starts

10. Permissive

    a. Pumps:

       1) HOA in Hand or Auto
       2) At least one Discharge Valve Open
       3) Motor not in Overtemp
       4) VFD not faulted
       5) Bypass Overload not tripped.
       6) Level not below Low Level Float Switch level

B. Valve Actuators and Vault (009-N-1)

1. The valves shall be able to be controlled manually at the local OIT and at the head end SCADA workstation if the Actuator LOR is in Remote position.

2. The flow meters shall be summed and a total pumped flow value shall be displayed and trended in addition the individual flow meter display and trend.

3. The program shall automatically open an additional valve if a certain flow rate is sustained for a set amount of time. The following table and setpoints shall be used, each setpoint shall be adjustable by the Operator on the OIU or HMI.

Valve(s) Opened	Flowrate	Duration
10”	1180 gpm	30 minutes
12”	1780 gpm	30 minutes
10” and 12”	2960 gpm	30 minutes

   For example, with the 10” valve opened and the 12” valve closed, if the pumped flow rate is equal to or grater than 1180 gpm for 15 minutes, the 12” valve shall open.

4. When the total flow rate decreases and remains below a flow rate setpoint (2960 gpm per table above) for a period of time (30 minutes per table above), the valve that more recently opened shall stay opened, and the valve that was originally opened shall close.

5. The Operator shall also be able to set a time period to force rotation of which valve was opened. This shall be set to 24 hours (adjustable on OIU and HMI). For example, if the 10” valve is opened and the 12” valve is closed for 24 hours, the PLC program shall open the 12” valve and close the 10” valve.

6. Valve position shall be able to be controlled manually at actuator when LOR is in Local position.

7. Valve control shall be off if LOR is in Off position.

8. Provide monitoring status as indicated on the P&ID.

9. Alarms and Status

    a. Critical:

        1) Both Valves Closed
        2) Valve Vault High Level Alarm

    b. High Priority:

        1) Valve Fail (Each Valve)

    c. Medium Priority:

        1) Valve LOR Not In Remote Position

    d. Low Priority:

        1) Valve Fully Opened
        2) Valve Fully Closed

C. Standby Generator (009-N-1)

1. The Standby Generator System equipment is specified in Section 26 32 13.

2. Programming of PLC to accommodate equipment/processes staggered start functionality and circuit breaker operation as described in Section 26 32 13 shall be performed by the System Integrator.

3. Following Discrete Signals shall be transferred via network connection.

    a. High Engine Temperature Shutdown.
    b. Low-Lube Oil Pressure Shutdown.
    c. Overspeed Shutdown.
    d. Remote Emergency Stop Shutdown.
    e. High Engine Temperature Pre-alarm.
    f. Low-Lube Oil Pressure Pre-alarm.
    g. Overcrank Shutdown.
    h. Low Coolant Temperature Alarm.
    i. Control Switch Not in "Auto" position.
    j. Battery-Charger Malfunction Alarm.
    k. Low Battery-Voltage Alarm.

4. Following Variable Signals shall be transferred via network connection.

    a. Bus Voltage: A-N, B-N, and C-N.
    b. Bus Voltage: A-B, B-C, and A-C.
    c. Bus Amperes: A, B, and C.

d. Total Bus KW (average power).
e. Total Bus KVAR (average reactive power).
f. Power Factor.
g. Frequency.
h. KW-Hours.

5. Alarms and Status

a. Critical:

1) Generator ESTOP Pressed

b. High Priority:

1) Generator Common Fail
2) High Engine Temperature Shutdown.
3) Low-Lube Oil Pressure Shutdown.
4) Overspeed Shutdown.
5) Overcrank Shutdown.

c. Medium Priority:

1) Generator Weak Battery
2) High Engine Temperature Pre-alarm.
3) Low-Lube Oil Pressure Pre-alarm.
4) Low Coolant Temperature Alarm.
5) Control Switch Not in "Auto" position.
6) Battery-Charger Malfunction Alarm.
7) Low Battery-Voltage Alarm.

d. Low Priority:

1) Generator Run Status
2) Bus Voltage: A-N, B-N, and C-N.
3) Bus Voltage: A-B, B-C, and A-C.
4) Bus Amperes: A, B, and C.
5) Total Bus KW (average power).
6) Total Bus KVAR (average reactive power).
7) Power Factor.
8) Frequency.
9) KW-Hours.

D. Automatic Transfer Switch (009-N-1)

1. The Automatic Transfer Switch shall signal when the Generator should run using hardwired control wiring.

2. Alarms and Status

a. Critical:

1) NONE

b. High Priority:

1) NONE

c. Medium Priority:

1) ATS IN Emergency Position

d. Low Priority:

1) ATS IN Utility Position
2) Utility Available
3) Generator Available

E. Miscellaneous (009-N-1)

1. Provide any additional monitoring and functionality not described specifically above.

2. Alarms and Status

a. Critical:

1) NONE

b. High Priority:

1) 24VDC Fail
2) 120V Power Fail

c. Medium Priority:

1) UPS Fail
2) Panel Temp High
3) 120V SPD Fail
4) 480V SPD Fail

d. Low Priority:

1) NONE

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 40 70 00
INSTRUMENTATION OF PROCESS SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

A. Section identifies instrumentation types and initial parameters.

B. Items specified in this section shall conform to general requirements of Section 40 61 13.

C. Provide devices/instrumentation/equipment as listed herein and as shown on Drawings:

1.02 ABBREVIATIONS AND REFERENCES

A. NEC: National Electrical Code

B. NEIS: National Electrical Installation Standards

C. NEMA: National Electrical Manufacturers Association

1.03 DEFINITIONS

A. The Rating column of instrument tables refers to the NEC hazardous environment rating the device is to be installed in.

1. CID1 – Class I Division 1 Group D
2. CID2 – Class I Division 2 Group D
3. NR – Not Rated

1.04 BASIS OF PAYMENT

A. The following bid items apply to Work described in this Section:

1. Lift Station

B. All other Work described in this Section shall be considered incidental to the Contract and no separate payment will be made.

PART 2 – PRODUCTS

2.01 (F4) MAGNETIC FLOW ELEMENT AND TRANSMITTER (Ref. Section 40 71 00)

Tag	Description	Service	Pipe Dia. (in)	Liner	Range (mgd)	Rating
350-FE/FIT-0111	Pump 1 Flow	RWW	8	Hard Rubber	0-3.5	CID2
350-FE/FIT-0112	Pump 2 Flow	RWW	8	Hard Rubber	0-3.5	CID2
350-FE/FIT-0113	Pump 3 Flow	RWW	8	Hard Rubber	0-3.5	CID2

2.02 (L8) LEVEL SWITCH, BALL FLOAT (Ref. Section 40 72 00)

Tag	Location	Setting (Elev)	Rating
350-LSLL-0101	Wet Well Low Low Level (alarm)	636.90’	CID1
350-LSL-0102	Wet Well Low Level (pumps off)	637.40’	CID1

350-LS1-0103	Wet Well Lead Level	642.30’	CID1
350-LS2-0104	Wet Well Lag 1 Level	642.80’	CID1
350-LSH-0105	Wet Well High Level / Lag 2	643.30’	CID1
350-LSHH-0106	Wet Well High High Level	643.80’	CID1
350-LSHH-0111	Vault High Level Alarm	immediately above sump pump pit level	CID2

2.03 (L9) VERTICAL FLOAT SWITCH (Ref. Section 40 72 00)

Tag	Location	Setting (Elev)	Rating
350-LSHH-0111	Vault High Level Alarm	immediately above sump pump pit level	CID2

2.04 (L12) LEVEL ELEMENT AND TRANSMITTER, SUBMERSIBLE (Ref. Section 40 72 00)

Tag	Location	Range (ft)	Rating
350-LE-0101	Wet Well Level	0-30	CID1
Submersible level sensor operating points shall match back up float switch operating points.			

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install and wire in accordance with equipment/instrument manufacturer’s written instructions, approved submittals, applicable requirements of the NEC, NEIS, and recognized industry practices.
B. Instrumentation transmitters, displays, and other indicators shall be configured to display information in the units given in this section.

END OF SECTION

APPENDIX G

SAUNDERS ROAD PLC PANEL DRAWINGS

8/22/2025 3:34 AM

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

ELECTRICAL

SHEET NO.	DESCRIPTION
000	TITLE SHEET
001	SYMBOL SHEET
002	AC POWER
003	DC POWER
010	PLC PROCESSOR, RACK 0 SLOT 0
011	DIGITAL OUTPUTS, RACK 0 SLOT 1
012	DIGITAL INPUTS, RACK 0 SLOT 2
013	DIGITAL INPUTS, RACK 0 SLOT 3
014	DIGITAL INPUTS, RACK 0 SLOT 4
015	ANALOG INPUTS & OUTPUTS, RACK 0 SLOT 5
016	ANALOG INPUTS & OUTPUTS, RACK 0 SLOT 6
050	TRIPLEX CONTROL & PHASE MONITOR
051	MOTOR PROTECTION RELAYS
052	SIGNALS TO VFD, VALVES & MCP
200	3-PHASE POWER

NETWORK

SHEET NO.	DESCRIPTION
100	NETWORK DETAIL

MECHANICAL

SHEET NO.	DESCRIPTION
110	BILL OF MATERIALS
120	FRONT PANEL LAYOUT
121	PUSH BUTTON PANEL LAYOUT
122	PUMP HAND SWITCH LAYOUT
123	BACK PANEL LAYOUT
130	TERMINAL STRIP 1
131	TERMINAL STRIP 2
132	TERMINAL STRIP 3
133	TERMINAL STRIP 4

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	000 TITLE SHEET
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

TITLE SHET

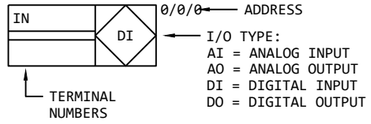
DONOHUE

Sheet No.

000

8/22/2025 3:34 AM

INPUT/OUTPUT DEVICES



LINE REFERENCING KEY CODE

WIRE AND COMPONENT REFERENCING: XXXXXX

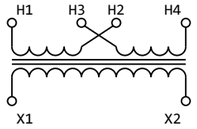
- LINE DESIGNATION NUMBER
- LINE NUMBER
- SHEET NUMBER

EXAMPLE: 002180

FORM "A" OR "X" CONTACT: XXXXX

FORM "B" OR "Y" CONTACTS: XXXXX

FORM "C" OR "Z" CONTACTS: XXXXX, XXXXX



XF
480V PRI/120V SEC
KVA
TRANSFORMER
SECONDARY VOLTAGE
AND RATING INDICATED
AS APPLICABLE

WIRE NUMBERING AND COLOR STANDARDS

DESCRIPTION	COLOR CODE
120 VAC POWER	RED
120 VAC NEUTRAL	WHT
24 VDC POSITIVE	BLU
24 VDC COMMON	WHT WITH BLU STRIPE
SHLD 2 CONDUCTOR TWISTED PAIR	BLK(-) AND CLR/WHT(+)
INCOMING POWER AC	BLK
EXTERNAL POWER SOURCE	ORG
EXTERNAL POWER SOURCE NEUTRAL	WHT WITH ORG STRIPE

SWITCHES

DESCRIPTION TEXT (EXAMPLE: LAMP TEST)

NORMALLY OPEN NEMA FORM "X" CONTACT PUSHBUTTON

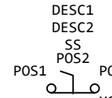
NORMALLY CLOSED NEMA FORM "Y" CONTACT PUSHBUTTON

NORMALLY CLOSED MUSHROOM HEAD E-STOP

MECHANICAL CONNECTION

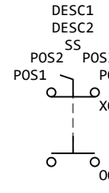
TWO POSITION SELECTOR SWITCH SHOWN IN 'POS1'

CONTACT MADE IN 'POS2'



THREE POSITION SELECTOR SWITCH SHOWN IN 'POS1' NEMA FORM "Z" CONTACTS

CONTACT MADE IN 'POS3'



FOUR POSITION SELECTOR SWITCH SHOWN IN 'POS1'

CONTACT MADE IN 'POS3'

THREE POSITION SELECTOR POSITION SPRING RETURNED FROM LEFT MAINTAINED CENTER MAINTAINED RIGHT

CONTACT MADE IN 'POS3'

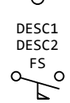
PROCESS SWITCHES

TORQUE SWITCH NORMALLY OPEN CLOSE ON INCREASE TORQUE

TORQUE SWITCH NORMALLY CLOSED OPEN ON INCREASE TORQUE

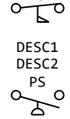
LIQUID LEVEL SWITCH NORMALLY OPEN CLOSE ON RISE

LIQUID LEVEL SWITCH NORMALLY CLOSED OPEN ON RISE

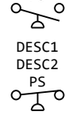


FLOW SWITCH NORMALLY OPEN CLOSE ON INCREASE FLOW

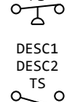
FLOW SWITCH NORMALLY OPEN CLOSE ON INCREASE FLOW



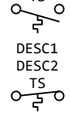
PRESSURE SWITCH NORMALLY OPEN CLOSE ON RISE



PRESSURE SWITCH NORMALLY CLOSED OPEN ON RISE



TEMPERATURE SWITCH NORMALLY OPEN CLOSE ON RISE



TEMPERATURE SWITCH NORMALLY CLOSED OPEN ON RISE

LIMIT SWITCHES

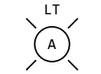
NORMALLY OPEN

NORMALLY CLOSED

NORMALLY OPEN HELD CLOSED

NORMALLY CLOSED HELD OPEN

PILOT LIGHTS



PILOT LIGHT COLOR: AMBER

PUSH TO TEST PILOT LIGHT COLOR: RED

COLOR CODES
A = AMBER
W = WHITE
R = RED
B= BLUE
G = GREEN
Y = YELLOW

MISCELLANEOUS

CIRCUIT BREAKER WITH AMPERAGE

FUSE WITH AMPERAGE

AUDIBLE DEVICE

ELAPSED RUNTIME METER

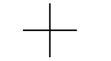
RESISTOR 250 OHM

RECTIFIER, DIODE

CAPACITOR, ELECT.

CONDUCTORS

CONDUCTOR

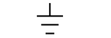


CONDUCTORS NOT CONNECTED

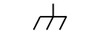
CONDUCTORS CONNECTED

CONDUCTOR SHIELD

FIELD CONDUCTOR



EXTERNAL CIRCUIT



CHASSIS GROUND

SHIELD GROUND (ISOLATED IF REQUIRED BY SPEC.)

TERMINALS

TERMINAL BLOCK FOR FIELD TERMINATION

GROUNDED TERMINAL

INTERNAL CONNECTIONS

JUMPER

RELAY COILS

DEVICE ID
CONTROL RELAY
RELAY OR TIMER CODE
A = 120VAC 1 = 1 POLE
B = 24VDC 2 = 2 POLE
C = 12VDC 3 = 3 POLE
D = 24VAC 4 = 4 POLE
X = SPECIAL

MOTOR STARTER

ELECTRIC TIMER WITH ADJUSTABLE TIMING RANGE

SOLENOID

THERMAL OVERLOAD

COIL CONTACTS

NORMALLY OPEN CONTACT NEMA FORM "A" CONTACT

NORMALLY CLOSED CONTACT NEMA FORM "B" CONTACT

NORMALLY OPEN CONTACT ON DELAY

NORMALLY CLOSED CONTACT ON DELAY

NORMALLY OPEN CONTACT OFF DELAY

NORMALLY CLOSED CONTACT OFF DELAY

COMPONENT DESIGNATIONS

PREFIX	DESCRIPTION	PREFIX	DESCRIPTION	PREFIX	DESCRIPTION
A	AIR COMPRESSED	FS	FLOW SWITCH	PS	PRESSURE SWITCH
AC	AIR CONDITIONER	FU	FUSE	PWS	POWER SUPPLY
AD	AUTO DIALER	GFI	GROUND FAULT INTERRUPTER	RE	RADIO EQUIPMENT
AH	ALARM HORN	HTR	HEATER	RECPT	RECEPTACLE
AL	ALARM LIGHT	IM	INPUT MODULE	SPD	SURGE PROTECTOR
AM	AMP METER	LA	LIGHTNING ARRESTOR	SS	SELECTOR SWITCH
AN	ANNUNCIATOR	LED	PANEL LIGHT	SV	SOLENOID VALVE
AR	ALTERNATING RELAY	LP	LIGHTING PANEL	SW	SWITCH
AWG	AMERICAN WIRE GAUGE	LR	LATCHING RELAY	TD	TIME DELAY RELAY
BAT	BATTERY	LS	LIMIT SWITCH	TG	TOGGLE SWITCH
CB	CIRCUIT BREAKER	LT	PILOT LIGHT	TS	TEMPERATURE SWITCH
CBL	NETWORK CABLES	MS	MOTOR STARTER, CONTACTORS	TSP	TWISTED SHIELD PAIR
CR	CONTROL RELAY	M	MOTOR	TT	TEMPERATURE TRANSMITTER
PC	COMPUTER	OIT	OPERATOR INTERFACE TERMINAL	UM	UTILITY METER
CT	CURRENT TRANSFORMER	OL	OVERLOAD	UPS	UNINTERRUPTIBLE POWER SUPPLY
CTU	COUNT UP	OM	OUTPUT MODULE	VA	VOLTAMPERE
CTD	COUNT DOWN	OV	OVER VOLTAGE DETECTOR	VFD	VARIABLE FREQUENCY DRIVE
DB	DISTRIBUTION BLOCK	PB	PUSH BUTTON	VM	VOLT METER
DI	DIODE	PC	PULL CORD	VR	VARIABLE RESISTOR
DS	DISCONNECT SWITCH	PF	POWER FACTOR CAPACITOR	WS	WEIGHT OR TORQUE SWITCH
EC	ELECTRONIC DEVICES	PLC	PLC EQUIPMENT	XF	TRANSFORMER
ETM	ELAPSED TIME METER	PM	POWER OR PHASE MONITOR	ISO	SIGNAL ISOLATOR
FAN	FAN	PN	PNEUMATICS		
FO	FIBER OPTIC	PR	PRESSURE REGULATOR		

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
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8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	001 SYMBOLS SHEET
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

SYMBOLS SHEET

DONOHUE

Sheet No.

001

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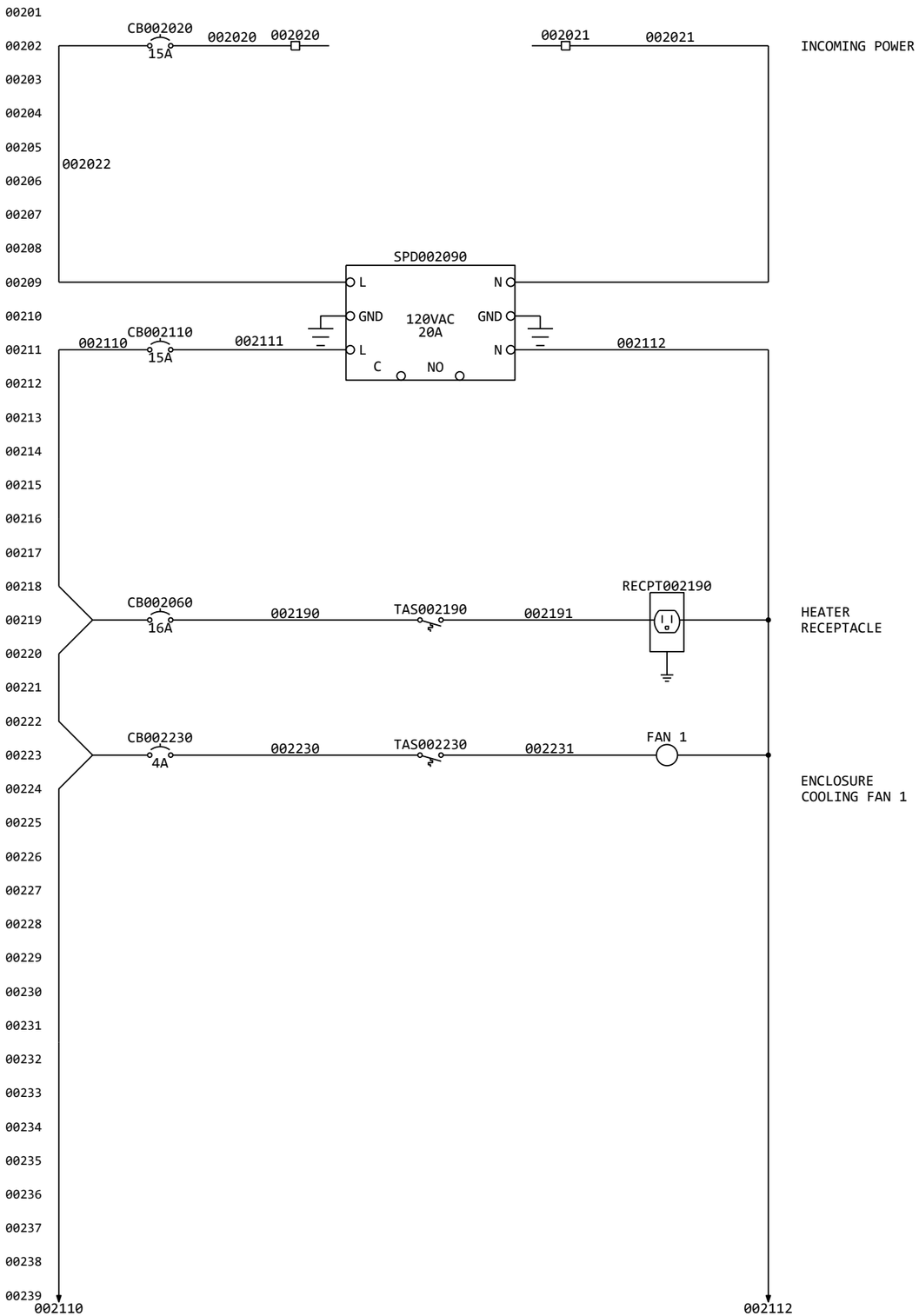

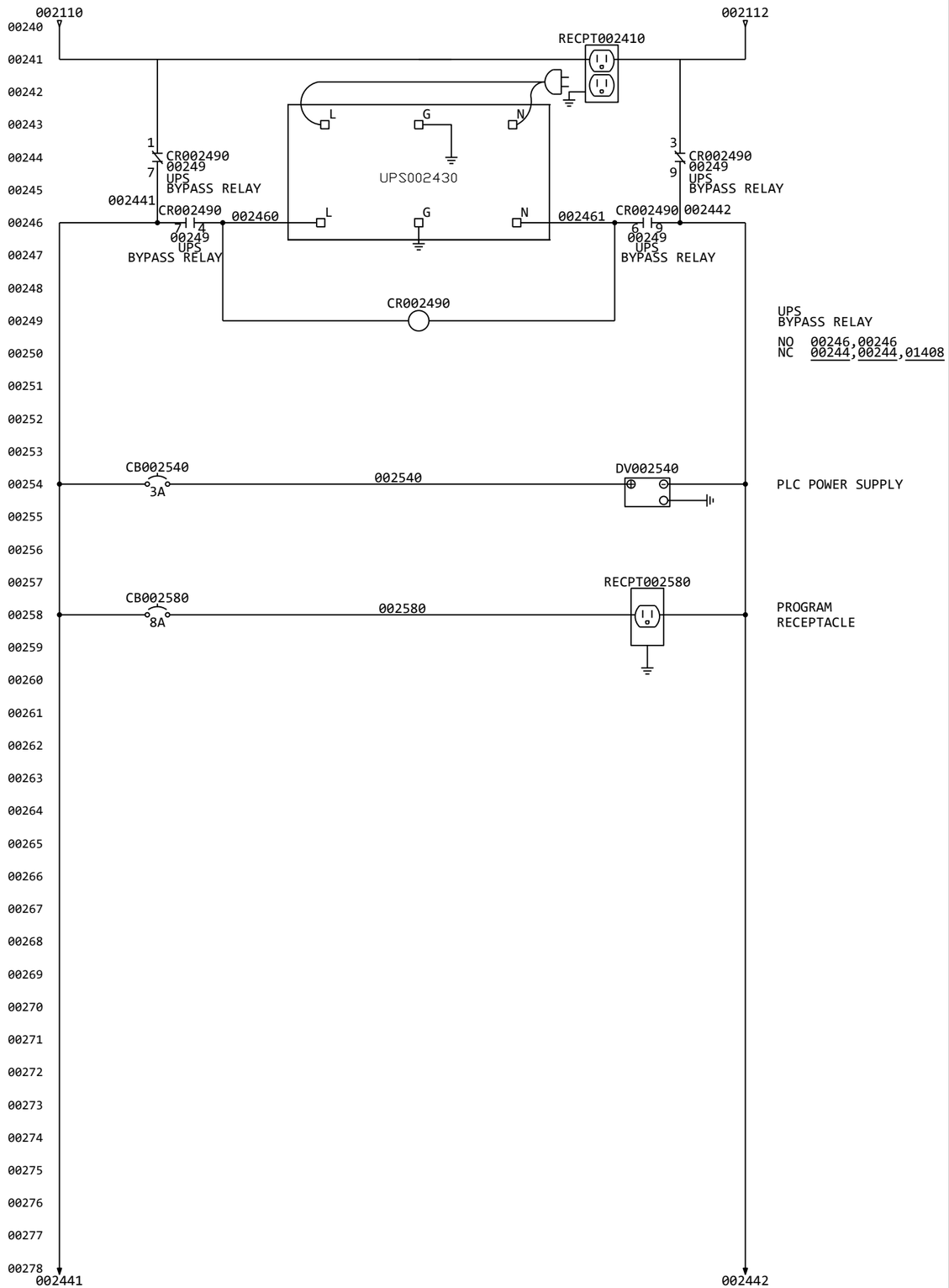

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1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	002 AC POWER
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

AC POWER

DONOHUE

Sheet No.

002

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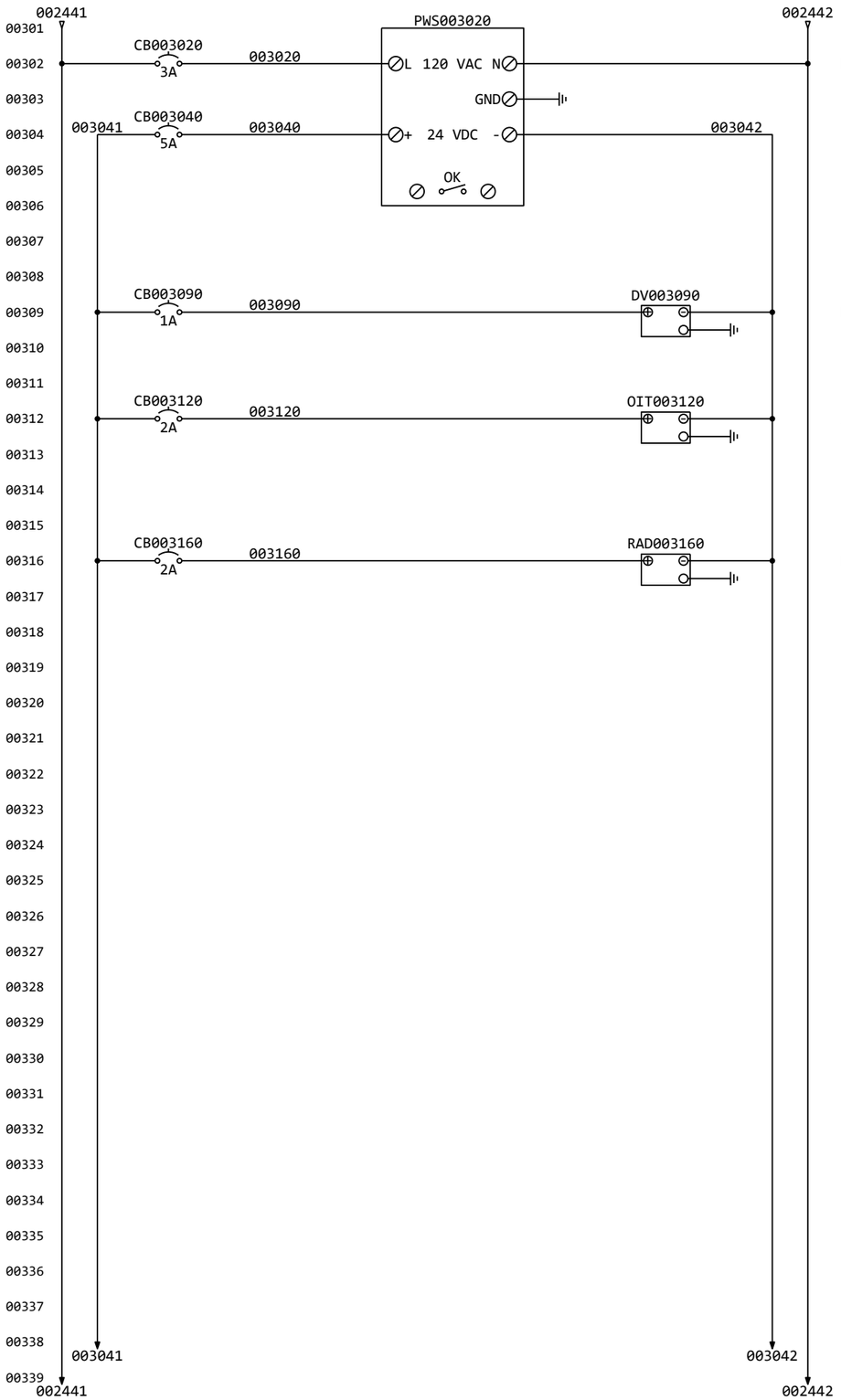

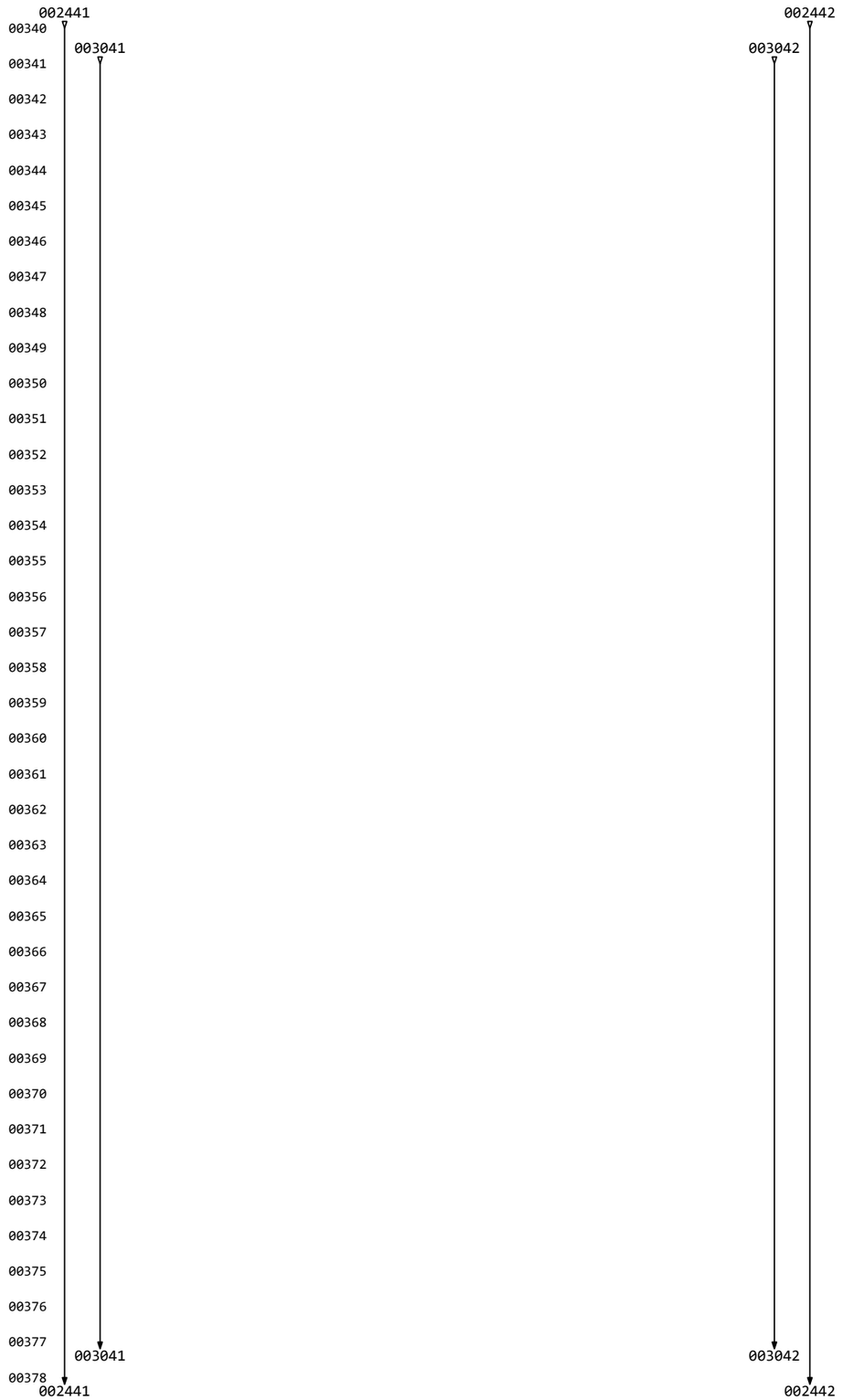

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
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6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	003 DC POWER
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

DC POWER

DONOHUE

Sheet No.

003

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002441

003041

01001
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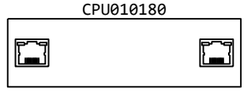
CPU010180



PROCESSOR MODULE
RACK 0
SLOT 0

002442

003042

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	010 PLC PROCESSOR
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

PLC PROCESSOR

DONOHUE

Sheet No.

010

8/22/2025 3:34 AM

002441

003041

100/240VAC 16-PT OUTPUT
PLC110030
AB
1769-OW16
RACK 0
SLOT 1

002442

003042

VAC 1

VAC 2

01101				
01102				
01103				
01104				
01105	O:0	OUT 0	011050	CR011050
01106				
01107	O:1	OUT 1	011070	CR011070
01108				
01109	O:2	OUT 2	011090	CR011090
01110				
01111	O:3	OUT 3	011110	CR011110
01112				
01113	O:4	OUT 4	011130	CR011130
01114				
01115	O:5	OUT 5	011150	CR011150
01116				
01117	O:6	OUT 6	011170	CR011170
01118				
01119	O:7	OUT 7	011190	CR011190
01120				
01121				
01122				
01123	O:8	OUT 8	011230	CR011230
01124				
01125	O:9	OUT 9	011250	CR011250
01126				
01127	O:10	OUT 10	011270	CR011270
01128				
01129	O:11	OUT 11	011290	CR011290
01130				
01131	O:12	OUT 12	011310	CR011310
01132				
01133	O:13	OUT 13	011330	CR011330
01134				
01135	O:14	OUT 14	011350	CR011350
01136				
01137	O:15	OUT 15	011370	CR011370
01138				
01139				

BACK-UP RELAY

NO 05204,05209,05214
NC 05202,05207,05212

PUMP 1 VFD REQ

NO 05204, 05230
NC 05202

PUMP 2 VFD REQ

NO 05209, 05233
NC 05207

PUMP 3 VFD REQ

NO 05214,05236
NC 05212

HIGH WET-WELL

NO 05037
NC

DISCHARGE VALVE 1
OPEN COMMAND

NO 05218
NC

DISCHARGE VALVE 1
CLOSE COMMAND

NO 05221,05230
NC

DISCHARGE VALVE 2
OPEN COMMAND

NO 05224,05233
NC

DISCHARGE VALVE 2
CLOSE COMMAND

NO 05227
NC

SPARE

NO
NC

SPARE

NO
NC

SPARE

NO
NC

SPARE

NO
NC

SPARE

NO
NC

SPARE

NO
NC

SPARE

NO
NC

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	011 DIGITAL OUTPUTS, RACK 0 SLOT 1
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

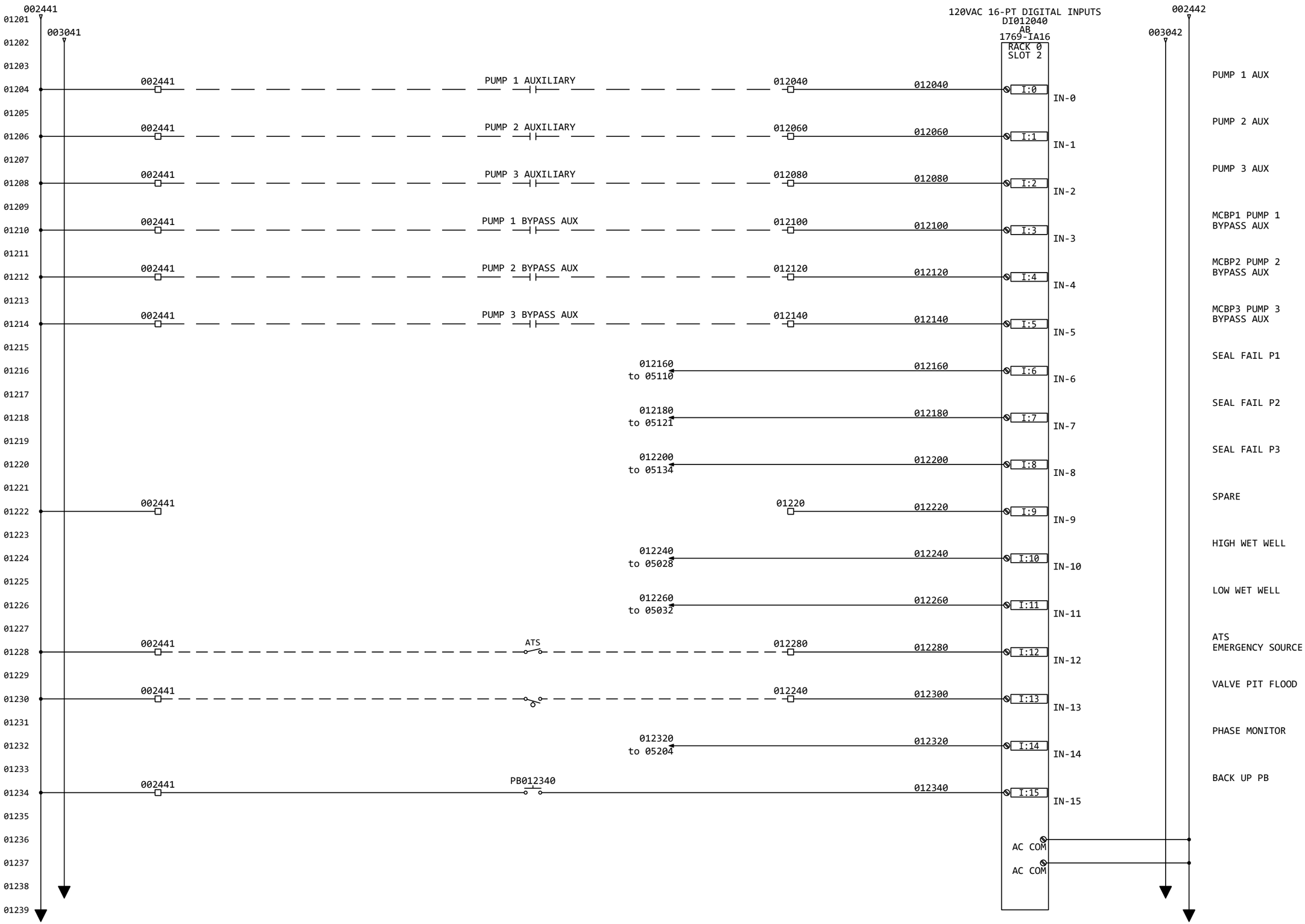
DIGITAL OUTPUTS
RACK 0 SLOT 1

DONOHUE

Sheet No.

011

8/22/2025 3:34 AM



Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	012 DIGITAL INPUTS, RACK 0 SLOT 2
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

DIGITAL INPUTS
RACK 0 SLOT 2

DONOHUE

Sheet No.

012

8/22/2025 3:34 AM

002441

003041

120VAC 16-PT DIGITAL INPUTS
DI013040
AB
1769-IA16
RACK 0
SLOT 3

002442

003042

01304	002441	PUMP 1 AUXILIARY	013040	013040	I:0	IN-0	PUMP 1 VFD FAIL
01306	002441	PUMP 2 AUXILIARY	013060	013060	I:1	IN-1	PUMP 2 VFD FAIL
01308	002441	PUMP 3 AUXILIARY	013080	013080	I:2	IN-2	PUMP 3 VFD FAIL
01310	002441	MS1 OL	013100	013100	I:3	IN-3	PUMP 1 BYPASS FAIL
01312	002441	MS2 OL	013120	013120	I:4	IN-4	PUMP 2 BYPASS FAIL
01314	002441	MS3 OL	013140	013140	I:5	IN-5	PUMP 3 BYPASS FAIL
01316	002441	P1 OVERTEMP 05106		013160	I:6	IN-6	MOTOR OVERTEMP PUMP 1
01318	002441	P2 OVERTEMP 05117		013180	I:7	IN-7	MOTOR OVERTEMP PUMP 2
01320	002441	P3 OVERTEMP 05130		013200	I:8	IN-8	MOTOR OVERTEMP PUMP 3
01322	002441	FULLY CLOSED	013220	013220	I:9	IN-9	DISCHARGE VALVE 1 FULLY CLOSED
01324	002441	FULLY OPENED	013240	013240	I:10	IN-10	DISCHARGE VALVE 1 FULLY OPENED
01326	002441	IN REMOTE	013260	013260	I:11	IN-11	DISCHARGE VALVE 1 IN REMOTE
01328	002441	FULLY CLOSED	013280	013280	I:12	IN-12	DISCHARGE VALVE 2 FULLY CLOSED
01330	002441	FULLY OPENED	013300	013300	I:13	IN-13	DISCHARGE VALVE 2 FULLY OPENED
01332	002441	IN REMOTE	013320	013320	I:14	IN-14	DISCHARGE VALVE 2 IN REMOTE
01334	002441	GEN RUNNING	013340	013340	I:15	IN-15	GENERATOR RUN STATUS
					AC COM		
					AC COM		

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	012 DIGITAL INPUTS, RACK 0 SLOT 2
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

DIGITAL INPUTS
RACK 0 SLOT 3

DONOHUE

Sheet No.

013

8/22/2025 3:35 AM

002441 — 003041

120VAC 16-PT DIGITAL INPUTS
DI014040
AB
1769-IA16
RACK 0
SLOT 4

002442 — 003042

01404	002441	PUMP 1 AUXILIARY	014040	014040	I:0	IN-0	GENERATOR COMMON FAIL
01406	002441	PUMP 2 AUXILIARY	014060	014060	I:1	IN-1	GENERATOR E-STOP
01408	002441	CR002490 (00249 UPS BYPASS RELAY)		014080	I:2	IN-2	UPS FAIL
01410	002441	480V SPD1	014100	014100	I:3	IN-3	480 SPD 1 FAIL
01412	002441	480V SPD2	014120	014120	I:4	IN-4	480 SPD 2 FAIL
01414	002441	120V SPD	014140	014140	I:5	IN-5	120V SPD FAIL
01416	002441	CR050080 (05008 LEAD FLOAT)		014160	I:6	IN-6	LEAD FLOAT
01418	002441	CR050100 (05010 LAG 1 FLOAT)		014180	I:7	IN-7	LAG 1 FLOAT
01420	002441	CR050120 (05012 LAG 2 FLOAT)		014200	I:8	IN-8	LAG 2 FLOAT
01422	002441		014220	014220	I:9	IN-9	SPARE
01424	002441		014240	014240	I:10	IN-10	SPARE
01426	002441		014260	014260	I:11	IN-11	SPARE
01428	002441		014280	014280	I:12	IN-12	SPARE
01430	002441		014300	014300	I:13	IN-13	SPARE
01432	002441		014320	014320	I:14	IN-14	SPARE
01434	002441		014340	014340	I:15	IN-15	SPARE
01436					AC COM		
01437					AC COM		

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	012 DIGITAL INPUTS, RACK 0 SLOT 2
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

DIGITAL INPUTS
RACK 0 SLOT 4

DONOHUE

Sheet No.

014

8/22/2025 3:35 AM

002441

003041

002442

003042

4 ANALOG INPUTS, 2 ANALOG OUTPUTS
AI015040
AB
1769-IF4XOF2
RACK 0
SLOT 5

PR ELECTRONICS
9116B
ISB

LEVEL AND ISB SETUP WILL DEPEND ON INSTRUMENTS SELECTED.

TRANSDUCER
+ 015050 — 44 13 — 015051 — V IN 0+ — I:0
11 — 015060 — V/I IN 0-
- 015070 — 42 31 — I IN 0+

LEVEL TRANSDUCER

FLOW METER
+ — 015100 — 015100 — V IN 1+ — I:1
- — 015110 — 015110 — V/I IN 1-
SHLD — SHLD — I IN 1+

FLOW METER 1

FLOW METER
+ — 015150 — 015150 — V IN 2+ — I:2
- — 015160 — 015160 — V/I IN 2-
SHLD — SHLD — I IN 2+

FLOW METER 2

FLOW METER
+ — 015200 — 015200 — V IN 3+ — I:3
- — 015210 — 015210 — V/I IN 3-
SHLD — SHLD — I IN 3+

FLOW METER 3

ANLG COM

ANLG COM

VFD
+ — 015260 — 015260 — V OUT 0+ — O:0
- — 015270 — 015270 — I OUT 0+
SHLD — SHLD

PUMP 1 VFD SPEED REFERENCE

VFD
+ — 015290 — 015290 — V OUT 1+ — O:1
- — 015300 — 015300 — I OUT 1+
SHLD — SHLD

PUMP 2 VFD SPEED REFERENCE

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	013 ANALOG INPUTS & OUTPUTS, RACK 0 SLOT 3
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

ANALOG INPUTS & OUTPUTS
RACK 0 SLOT 5

DONOHUE

Sheet No.

015

8/22/2025 3:35 AM

002441

003041

4 ANALOG INPUTS, 2 ANALOG OUTPUTS
AI016040
AB
1769-IF4XOF2
RACK 0
SLOT 6

002442

003042

VFD

+ 016050 — 016050 — V IN 0+ — I:0 — PUMP 1 VFD SPEED FEEDBACK

\- 016060 — 016060 — V/I IN 0-

I IN 0+

VFD

+ 016100 — 016100 — V IN 1+ — I:1 — PUMP 2 VFD SPEED FEEDBACK

\- 016110 — 016110 — V/I IN 1-

SHLD — SHLD

I IN 1+

VFD

+ 016150 — 016150 — V IN 2+ — I:2 — PUMP 3 VFD SPEED FEEDBACK

\- 016160 — 016160 — V/I IN 2-

SHLD — SHLD

I IN 2+

016200 — 016200 — V IN 3+ — I:3 — SPARE

016210 — 016210 — V/I IN 3-

SHLD — I IN 3+

ANLG COM

ANLG COM

VFD

016260 — 016260 — V OUT 0+ — O:0 — PUMP 3 VFD SPEED REFERENCE

016270 — 016270 — I OUT 0+

SHLD — SHLD

016290 — 016290 — V OUT 1+ — O:1 — SPARE

016300 — 016300 — I OUT 1+

SHLD

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	013 ANALOG INPUTS & OUTPUTS, RACK 0 SLOT 3
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

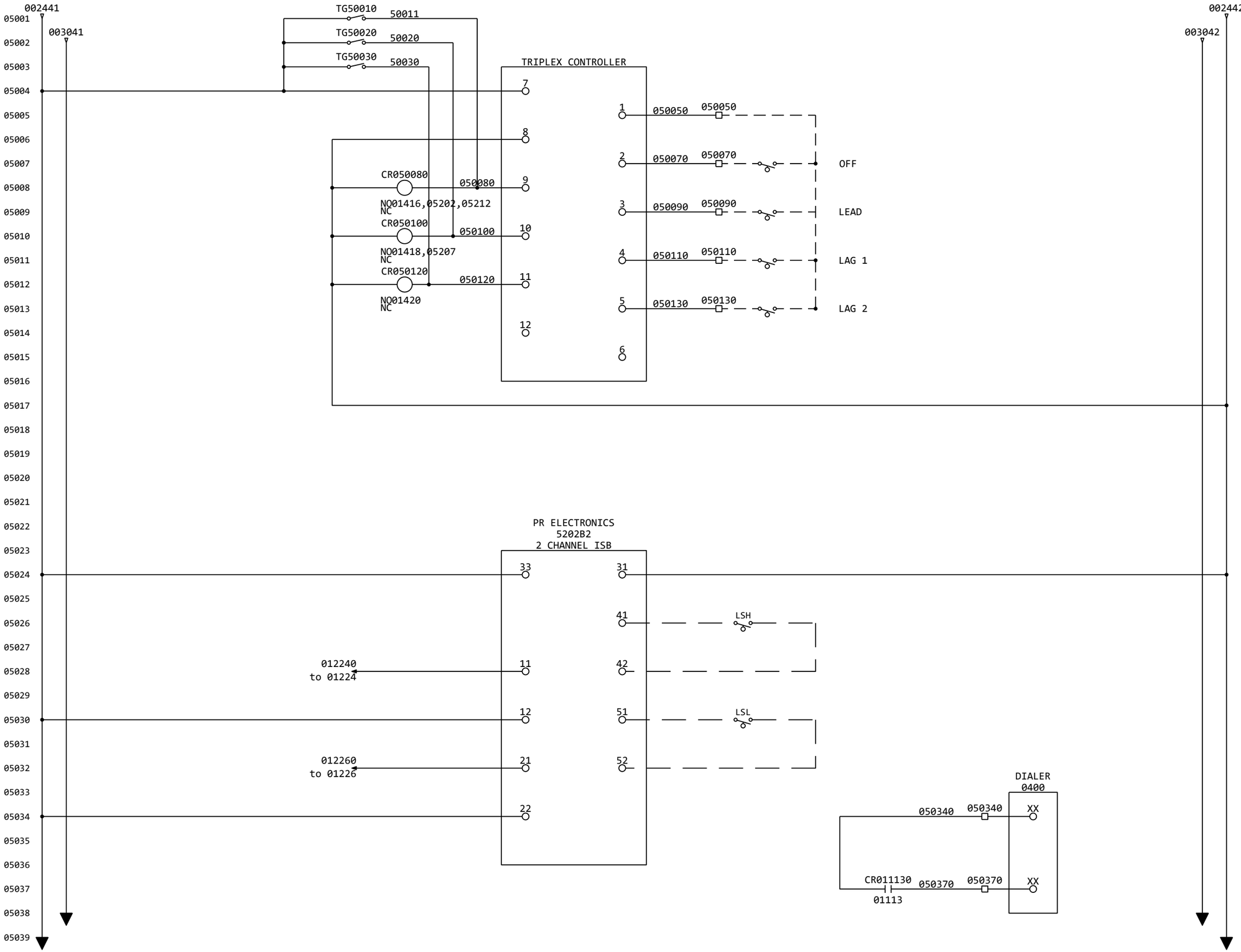
ANALOG INPUTS & OUTPUTS
RACK 0 SLOT 6

DONOHUE

Sheet No.

016

8/22/2025 3:35 AM



Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	050 DUPLEX CONTROL & PHASE MONITOR
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

TRIPLEX CONTROL & PHASE MONITOR

DONOHUE

Sheet No.

050

8/22/2025 3:35 AM

002441

003041

002442

003042

MINICAS II

RESET

051040

PUMP 1

P1 OVERTEMP

NQ01316,05202
NC

012160
from 01216

**MOTOR PROTECTION RELAYS
DEPEND ON MFG. OF SELECTED PUMPS**

MINICAS II

PUMP 2

051170

P2 OVERTEMP

NQ01318,05207
NC

012180
from 01218

MINICAS II

PUMP 3

051300

P3 OVERTEMP

NQ01320,05212
NC

012200
from 01220

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	051 SEAL FAIL DETECTION
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

MOTOR PROTECTION RELAYS

DONOHUE

Sheet No.

051

8/22/2025 3:35 AM

002441

PHASE MONITOR

003041

052020 052020

1

2

012320
from 01232

002442

003042

P1 OVERTEMP
05106

052021 CR011050 052022 CR011070 052023 CR050080 052024 052024 MS1A 052025 MS1A OL 052026 MS1B 002442

01105 BACK-UP RELAY

1107 PUMP 1 VFD REQUIRED

05008 PUMP 1 BYPASS START

BYPASS

05204 VFD

NO
NC05204

CR011050 052040 CR011070 052041 052041 MS1B 052042 MS1A 002442

01105

01107 PUMP 1 VFD REQUIRED

VFD

05202 BYPASS

NO
NC05202

P2 OVERTEMP
05117

052070 CR011050 052071 CR011090 052072 CR050100 052073 052073 MS2A 052074 MS2A OL 052075 MS2B 002442

01105 BACK-UP RELAY

01109 PUMP 2 REQUIRED

05010 PUMP 2 BYPASS START

BYPASS

05209 VFD

NO
NC05209

CR011050 052090 CR011090 052091 052091 MS2B 052092 MS2A 002442

01105

01109 PUMP 2 REQUIRED

VFD

05207 BYPASS

NO
NC05207

P3 OVERTEMP
05130

052120 CR011050 052121 CR011110 052122 CR050080 052123 052123 MS3A 052124 MS3A OL 052125 MS3B 002442

01105 BACK-UP RELAY

01111 PUMP 3 VFD REQUIRED

05008 PUMP 1 VFD BYPASS START

BYPASS

05214 VFD

NO
NC05214

CR011050 052142 CR011110 052143 052143 MS3B 052144 MS3A 002442

01105

01111 PUMP 3 VFD REQUIRED

VFD

05212 BYPASS

NO
NC05212

OVERTEMP RELAYS ARE ENERGIZED UNDER NORMAL OPERATION

052180 052180 CR011150 052181 052181

01115 DISCH. VALVE 1 OPEN CMD

052210 052210 CR011170 052211 052211

01117 DISCH. VALVE 1 CLOSE CMD

052240 052240 CR011190 052241 052241

01119 DISCH. VALVE 2 OPEN CMD

052270 052270 CR011230 052271 052271

01123 DISCH. VALVE 2 CLOSE CMD

052300 052300 CR011170 052301 052301

01117 PUMP 1 VFD REQUIRED

052330 052330 CR011190 052331 052331

01119 PUMP 2 VFD REQUIRED

052360 052360 CR011110 052361 052361

01111 PUMP 3 VFD REQUIRED

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4			BMB	2023-09-20
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	52 VFD WIRING
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

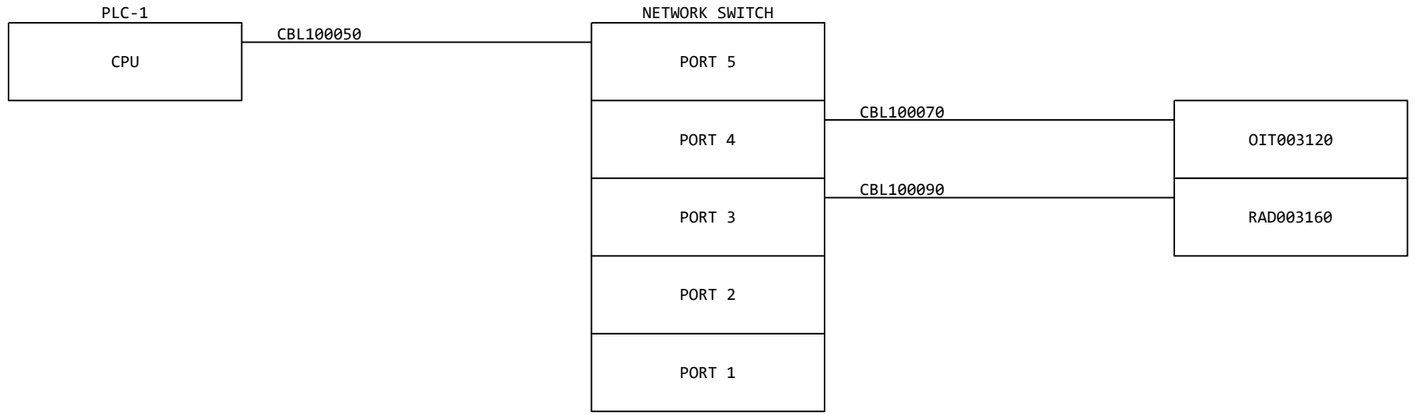
VFD, VALVES, AND MCP

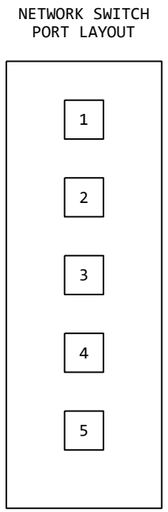
DONOHUE

Sheet No.

52

8/22/2025 3:35 AM





Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
4				
5				
6				
7				
8				

Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	100 NETWORK DETAIL
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

NETWORK DETAIL

DONOHUE

Sheet No.

100

8/22/2025 4:02 AM

ID	TAG ID	QTY	MANUFACTURER	PART NO.	DESCRIPTION
1	ENCLOSURE	1	SAGINAW	SCE-A424816WFLP	42 X 48 X 16 NEMA 12 ENCLOSURE
2	BACK PANEL	1	HOFFMAN	SCE-48P42	BACK PANEL
3	SPARE				
4	FAN 1	1	HOFFMAN	TFP61	SIDE MOUNT COOLING FAN
5	EXHAUST GRILLE	1	HOFFMAN	TEP6	SIDE MOUNT EXHAUST GRILLE
6	HEATER	1	DAYTON	3VU37	ELECTRIC FAN HEATER
7	OIT003120	1	ALLEN BRADLEY	2711P-T6C21D8S	PANELVIEW OPERATOR INTERFACE TERMINAL
8	DIALER	1	SENSAPHONE	400	DIALER MONITORING SYSTEM
9	UPS	1	APC	SMT1000C	1000VA 120V UPS
10	2 CHANNEL IS BARRIER	1	PR ELECTRONICS	5202B2	2 CHANNEL INTRINISCALLY SAFE BARRIER
11	INTRINSICALLY SAFE BARRIER	1	PR ELECTRONICS	9116B	INTRINSICALLY SAFE BARRIER
12	PUSH BUTTON ENCLOSURE	1	HOFFMAN	E1PB	PUSH BUTTON ENCLOSURE, NEMA 12
13	PUSH BUTTON LEGEND PLATE **	1	SQUARE D	9001KN100BP	PUSH BUTTON LEGEND PLATE 30MM T-K
14	PUSH BUTTON	1	SQUARE D	9001SKR1U	30MM PUSH BUTTON, TYPE SK, PUSH BUTTON, FULL GUARD, UNIVERSAL
15	PUSH BUTTON CONTACT BLOCK	1	SQUARE D	9001KA1	30MM PUSH BUTTON, TYPES K, SK OR KX, CONTACT BLOCK, 1 NO AND 1 NC
16	CPU010180	1	ALLEN BRADLEY	1769-L33ER	COMPACTLOGIX PROCESSOR
17	DO011030	1	ALLEN BRADLEY	1769-OW8	COMPACTLOGIX DIGITAL OUTPUT MODULE
18	DI012040, DI013040, DI013040	3	ALLEN BRADLEY	1769-IA16	COMPACTLOGIX DIGITAL INPUT MODULE
19	PWS002480	1	ALLEN BRADLEY	1769-PA4	COMPACTLOGIX POWER SUPPLY
20	AI015040, AI016040	2	ALLEN BRADLEY	1769-IF4XOF2	COMPACTLOGIX ANALOG INPUT AND OUTPUT MODULE
21	END CAP	1	ALLEN BRADLEY	1769-ECR	COMPACTLOGIX END CAP
22	RAD003160 ***	1	GE	MXCX4G5NNNNN1S1F1DUNN	MDS ORBIT MCR RADIO
23	SW003080	1	HIRSCHMANN	SPIDER 5TX	NETWORK SWITCH, 6 PORT
24	END ANCHOR	27	SQUARE D	NSYTRAABV35	END ANCHOR BLOCK
25	TRIPLEX CONTROLLER	1	DIVERSIFIED ELECTRONICS	ARM120(ACE)	TRIPLEX CONTROLLER
26	PHASE MONITOR	1	TIME-MARK	257B	THREE PHASE MONITOR
27	PHASE MONITOR SOCKET	1	IDEC CORPORATION	SR2P-06	8 PIN MOUNTING SOCKET
28	MINICAS-II****	3	FLYGT	MINICAS-II	MOTOR PROTECTION RELAY
29	RELAY BASE	3	ALLEN BRADLEY	700-HN101	MINICAS-II BASE
30	CONTROL RELAYS	19	SQUARE D	8501KPR13P14V20	TUBULAR RELAY, 3PDT, 3 N.O. 3 N.C.
31	RELAY SOCKET	19	SQUARE D	8501NR62	RELAY SOCKET
32	GROUND TERMINAL	16	SQUARE D	NSYTRV62PE	GROUND TERMINAL BLOCK
33	SURGE PROTECTION DEVICE	1	PHOENIX CONTACT	DT-TELE-RJ45	SURGE PROTECTION DEVICE WITH RJ45, 2882925
34	TERMINAL BLOCK	150	SQUARE D	9080GP6	TERMINAL BLOCK, 40A
35	END BARRIER	25	SQUARE D	9080GP6B	TERMINAL BLOCK END BARRIER
36	JUMPER	10	SQUARE D	9080GH78	2 POLE JUMPER FOR 9080GP6
37	JUMPER	15	SQUARE D	9080GH79	6 POLE JUMPER FOR 9080GP6
38	CB002580	1	EATON	FAZ-C8/1-NA-SP	8A CIRCUIT BREAKER
39	CB002060	1	EATON	FAZ-C16/1-NA-SP	16A CIRCUIT BREAKER
40	CB002230	1	EATON	FAZ-C4/1-NA-SP	4A CIRCUIT BREAKER
41	CB003090	1	EATON	FAZ-C1/1-NA-SP	1A CIRCUIT BREAKER
42	CB003120, CB003160	2	EATON	FAZ-C2/1-NA-SP	2A CIRCUIT BREAKER
43	CB002540, CB003020	2	EATON	FAZ-C3/1-NA-SP	3A CIRCUIT BREAKER
44	CB003040	1	EATON	FAZ-C5/1-NA-SP	5A CIRCUIT BREAKER
45	CB002020, CB002110	2	EATON	FAZ-C15/1-NA-SP	15A CIRCUIT BREAKER
46	CR002490	1	ALLEN BRADLEY	700-HB33A1-4	AC SQUARE RELAY BLOCK, 3PDT, 120V
47	RELAY BASE	1	ALLEN BRADLEY	700-HN153	SQUARE RELAY SOCKET, DIN MOUNT
48	CIRCUIT BREAKER JUMPER	3	EATON	Z-SV/UL-16/1P-1TE/3	6 POLE JUMPER FOR EATON CIRCUIT BREAKER
49	RECEPT002060, RECEPT002520	2	PHOENIX CONTACT	EO-AB/UT/LED/15	DIN RAIL RECEPTACLE
50	SPARE				
51	TAS002060	1	HOFFMAN	ATEMNC	TEMPERATURE CONTROL SWITCH, N.C.
52	TAS002110	1	HOFFMAN	ATEMNO	TEMPERATURE CONTROL SWITCH, N.O.
53	PWS003020	1	SOLAHD	SDN5-24-100P	DC POWER SUPPLY, 24VDC, 5A
54	SPD002420	1	SOLAHD	STV25K-10S	SURGE PROTECTOR, 120V, 20A
55	CBL100050, CBL100090	2	PANDUIT	UTP28SP3BU	CAT 6, 28 AWG UTP CORD, BLUE, 3FT
56	CBL100070	1	PANDUIT	UTP28SP10BU	CAT 6, 28 AWG UTP CORD, BLUE, 10FT
57	WIRE DUCT	*30FT	PANDUIT	F2X2WH6	NARROW SLOT WIRE DUCT, PVC, WHITE, COMES IN AS 6 FT EACH, USE AR
58	WIRE DUCT COVER	*30FT	PANDUIT	C2WH6	DUCT COVER, PVC, WHITE, COMES IN AS 6 FT EACH, USE AR
59	DIN RAIL	*26.4FT (8M)	ALLEN BRADLEY	199-DR1	PERFORATED DIN RAIL, COMES IN AS 3.3 FT(1M), USE AR
60	SELECTOR SWITCH ENCLOSURE	1	SCHNEIDER ELECTRIC	XALD04H7	3 CUT-OUT CONTROL ENCLOSURE
61	TG50010, TG50020, TG50030	3	SCHNEIDER ELECTRIC	ZB4BD28	TOGGLE SWITCH
62	CONTACT BLOCK	3	SCHNEIDER ELECTRIC	ZBE101	CONTACT BLOCK FOR TOGGLE SWITCH
63	CONDUIT BUSHED NIPPLE	1	EATON	50	CONDUIT BUSHED (CHASE) NIPPLE, RIGID/IMC, NON-INSULATED, STEEL, 1/2"
64	CONDUIT LOCKNUT	1	EATON	11	RIGID/IMC CONDUIT LOCKNUT, STEEL, 1/2"
65	CONDUIT BRUSHING	1	EATON	931	INSULATING BUSHING, RIGID/IMC, INSULATED, PLASTIC, 105°C, THREADED, 1/2"

* QUALITY SHOWN IS PURCHASE QUANTITY AND NOT BUILD QUANTITY
** LEGEND PLATE TO BE CUSTOM ENGRAVED, SEE SHEET 122 FOR DETAILS
*** PROVIDED BY OWNER
**** PROVIDED BY PUMP MFG.

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	110 BILL OF MATERIALS
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

BILL OF MATERIALS

DONOHUE

Sheet No.
110

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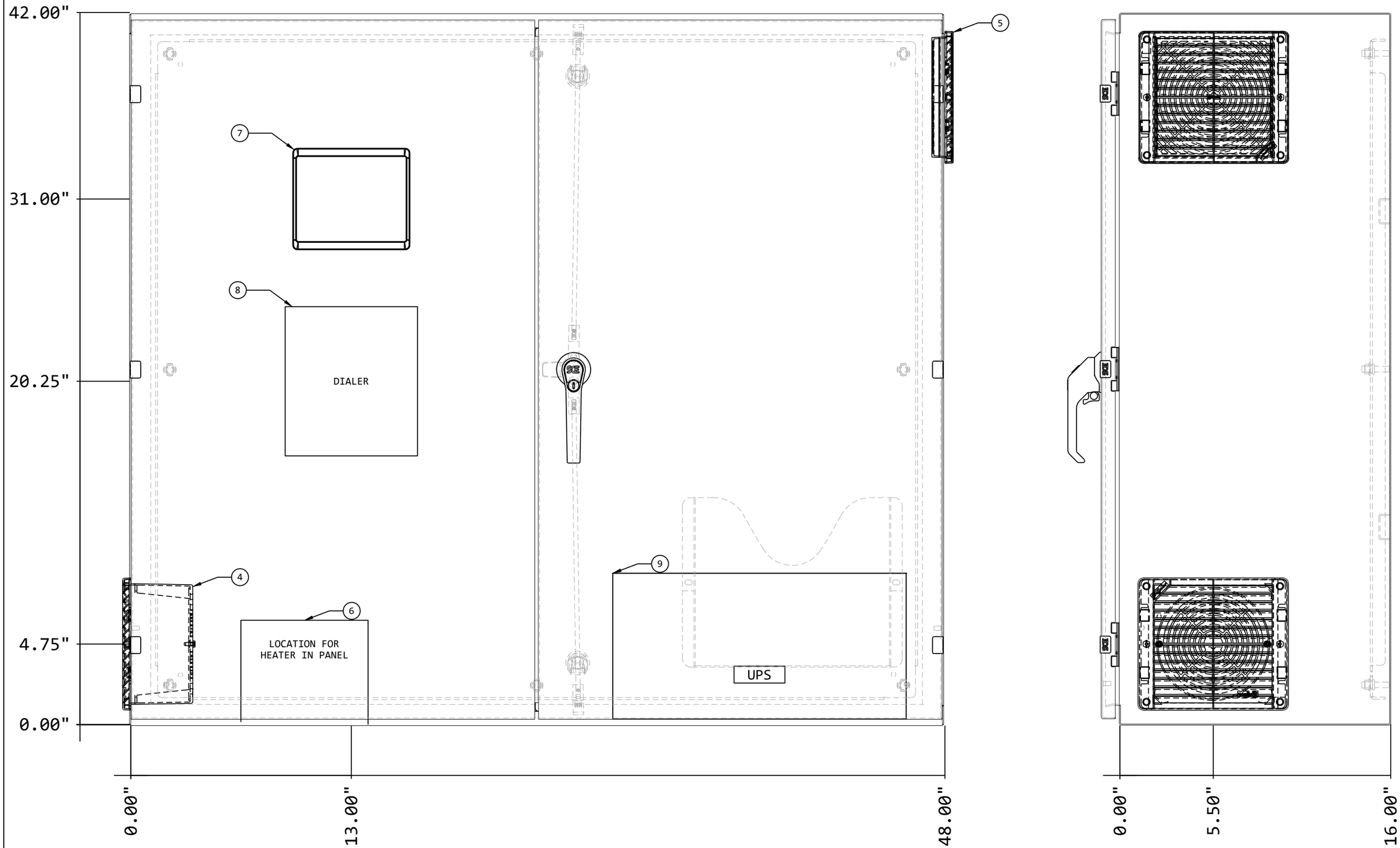

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	120 FRONT PANEL LAYOUT
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

FRONT PANEL LAYOUT

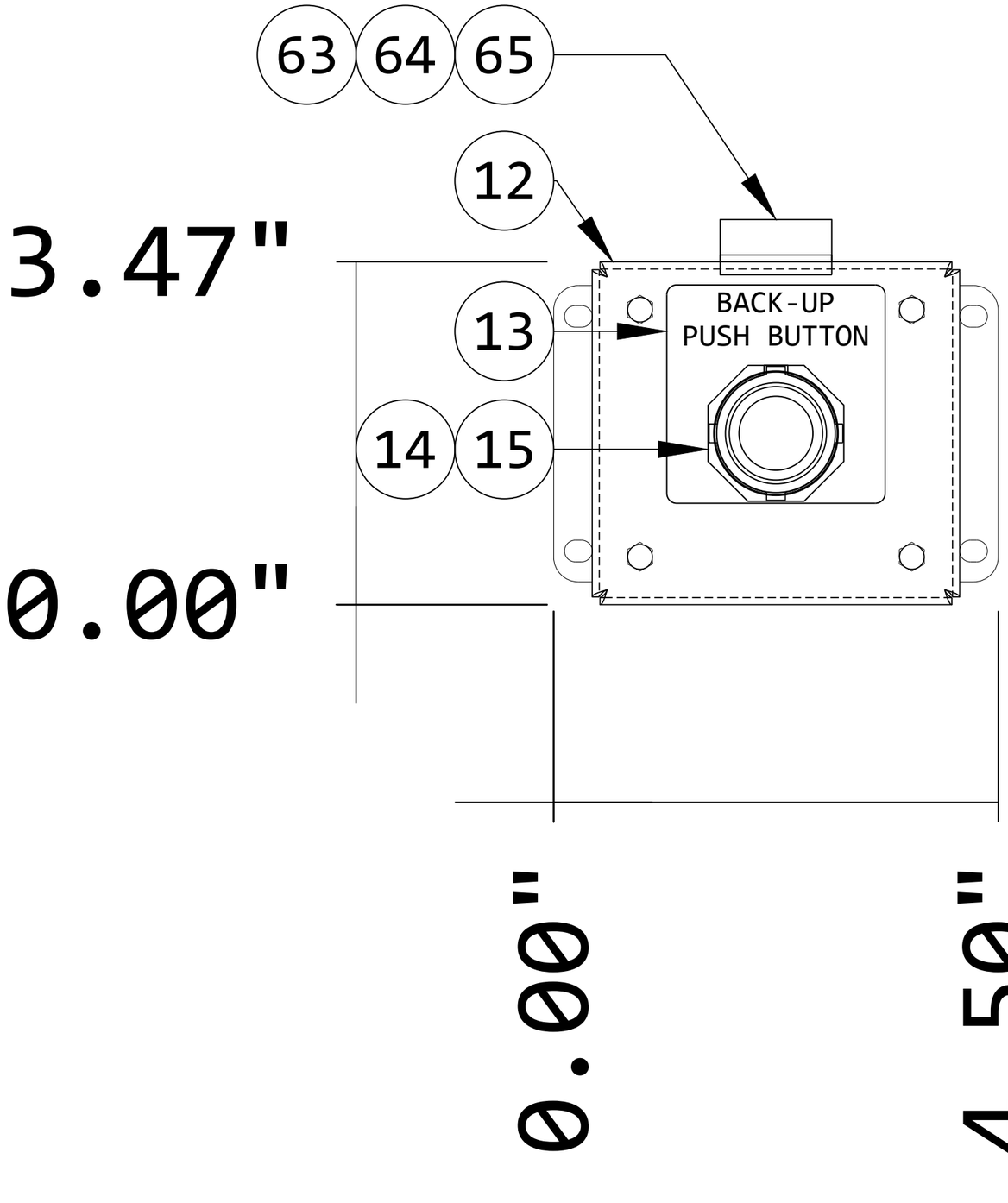
DONOHUE

Sheet No.

120

8/22/2025 3:35 AM

NOTE:
1. NAMEPLATE TO BE CUSTOM ENGRAVED FROM SQUARE D TO INCLUDE THE TEXT
2. CONDUIT BRUSHED NIPPLE TO BE INSTALLED ON TOP OF PUSH BUTTON ENCLOSURE



Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	122 PUSH BUTTON PANEL LAYOUT
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

PUSH BUTTON PANEL LAYOUT

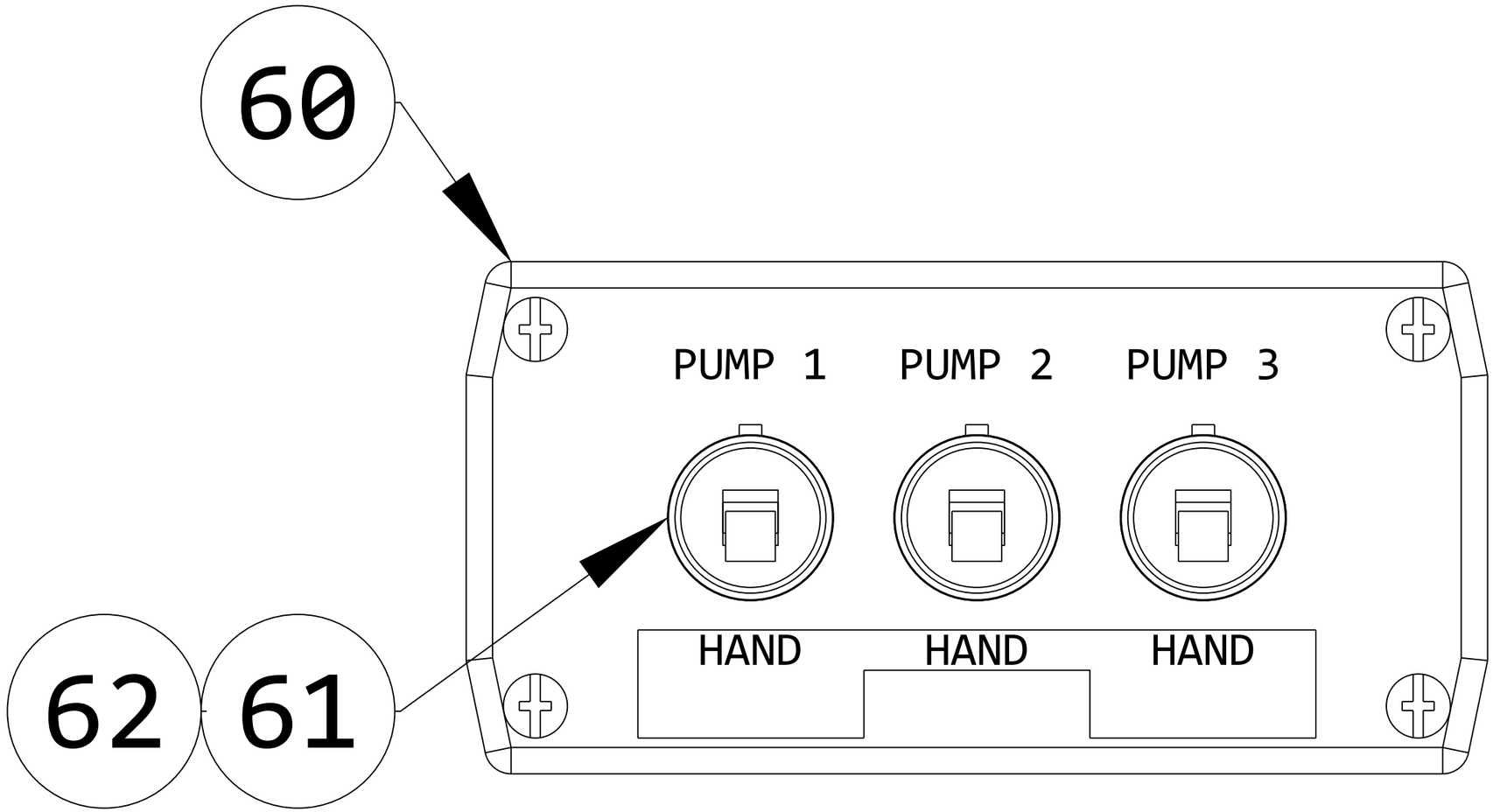
DONOHUE

Sheet No.

122

8/22/2025 3:35 AM

NOTE:
1. ADD LABELS TO CORRESPONDING LOCATION ON THE SWITCH BOX



Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	122 PUMP HAND SWITCHES PANEL
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

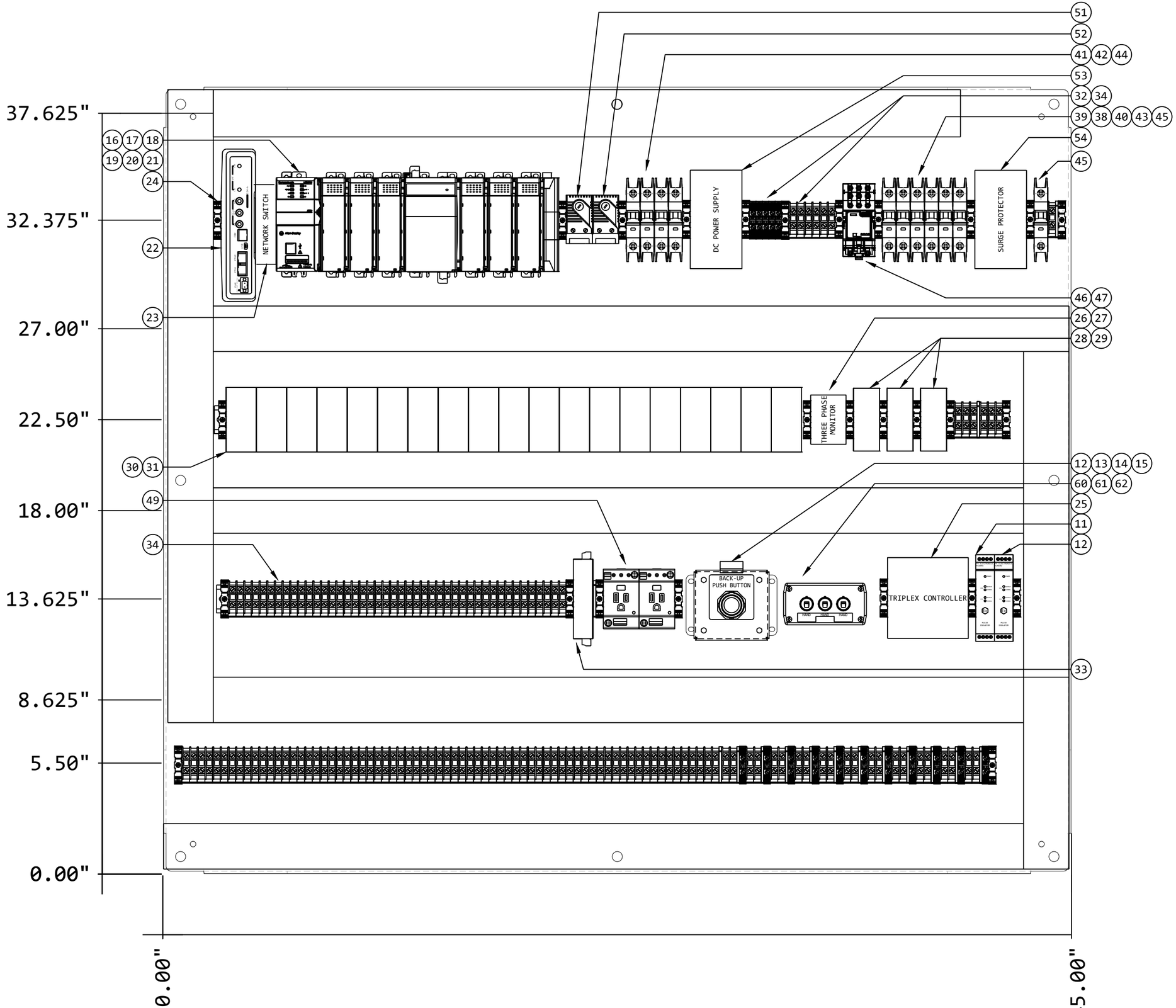
PUMP HAND SWITCHES PANEL

DONOHUE

Sheet No.

122

8/22/2025 3:35 AM



Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	123 BACK PANEL LAYOUT
Project No.	13883
Project Date	2025-08-22

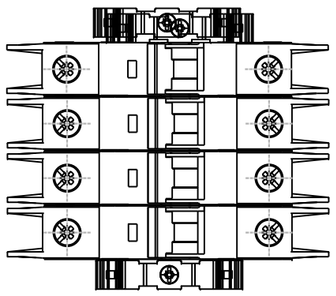
LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

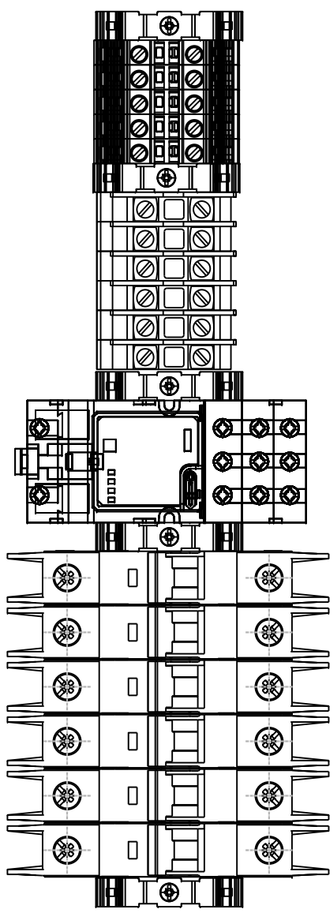
BACK PANEL LAYOUT

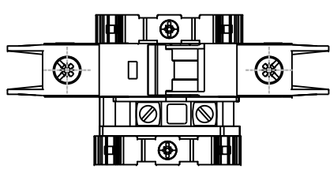
DONOHUE

Sheet No.

123







Sheet No.
130

DONOHUE

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

TERMINAL STRIP 1

Project Date	2025-08-22
Project No.	13883
Filename	130 TERMINAL STRIP 1
Approved By	BLG
Checked By	BLG
Drawn By	LSM
Designed By	LSM

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
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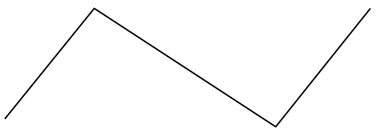

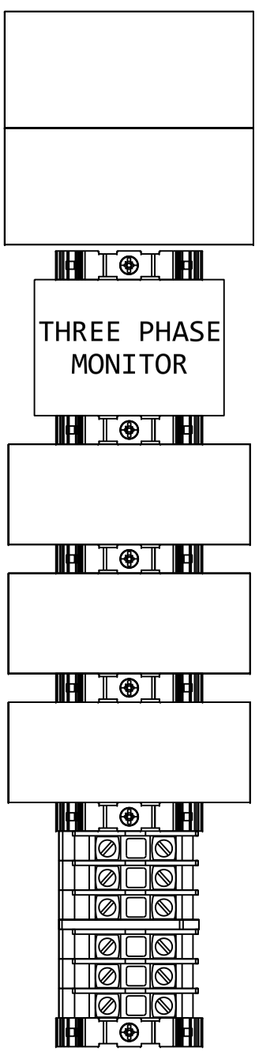

P2 OVERTEMP

P3 OVERTEMP

P1 MINICAS II

P1 MINICAS II

P1 MINICAS II

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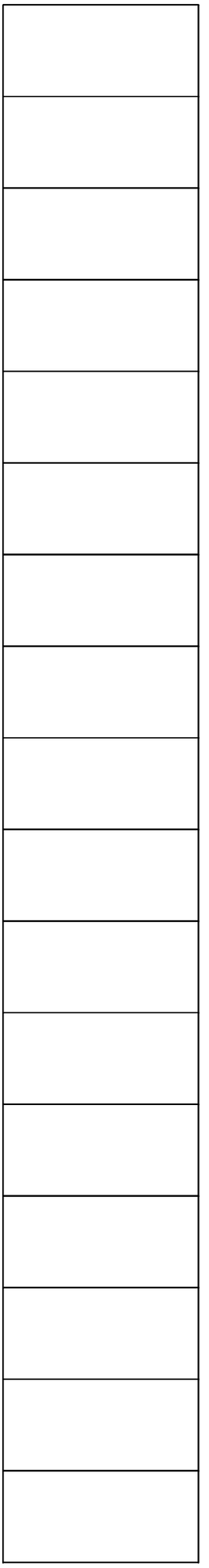
003042 (X3)



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CR011070

CR011090

CR011110

CR011130

CR011150

CR011170

CR011190

CR011230

CR011250

CR011270

CR011290

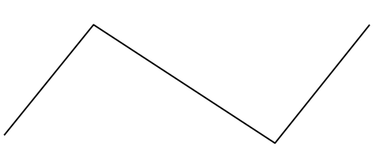
CR011310

CR011330

CR011350

CR011370

P1 OVERTEMP



Sheet No.

131

DONOHUE

LAKE COUNTY

DEPARTMENT OF PUBLIC WORKS

SAUNDERS ROAD LIFT STATION

TERMINAL STRIP 2

Project Date	2025-08-22
Project No.	13883
Filename	131 TERMINAL STRIP 2
Approved By	
Checked By	BLG
Drawn By	LSM
Designed By	LSM

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
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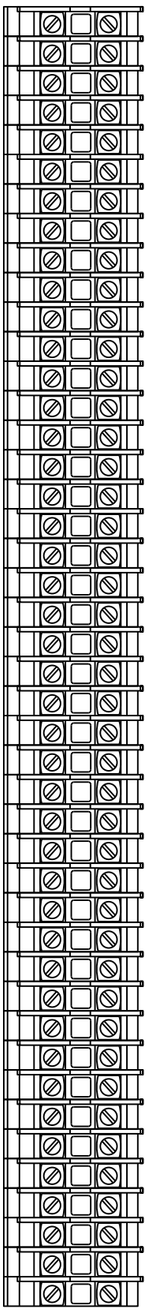

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052123
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002442
052180
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052210
052211
052240
052241
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052300
052301
052330
052331
052360
052361

Sheet No.
132

DONOHUE

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

TERMINAL STRIP 3

Project Date	2025-08-22
Project No.	13883
Filename	132 TERMINAL STRIP 3
Approved By	
Checked By	BLG
Drawn By	LSM
Designed By	LSM

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
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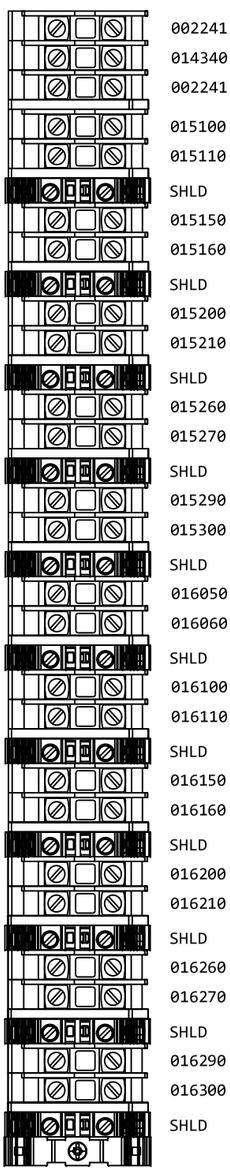

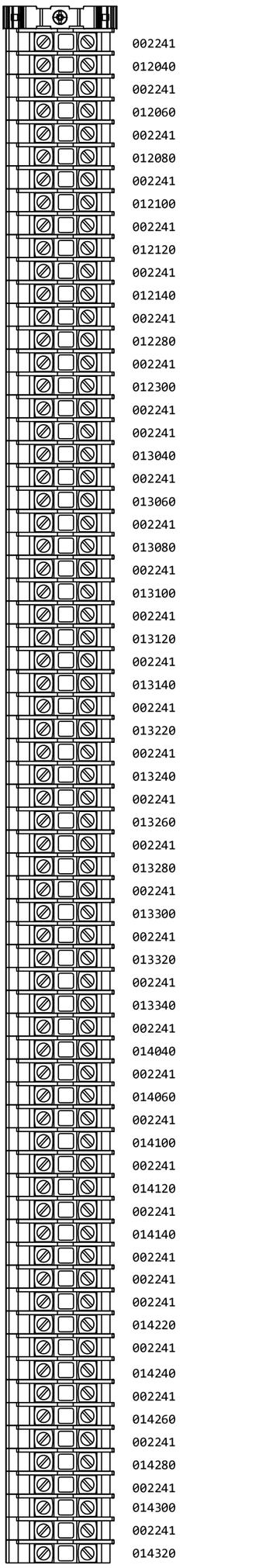

Sheet No.
133

DONOHUE

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

TERMINAL STRIP 4

Project Date	2025-08-22
Project No.	13883
Filename	133 TERMINAL STRIP 4
Approved By	
Checked By	BLG
Drawn By	LSM
Designed By	LSM

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
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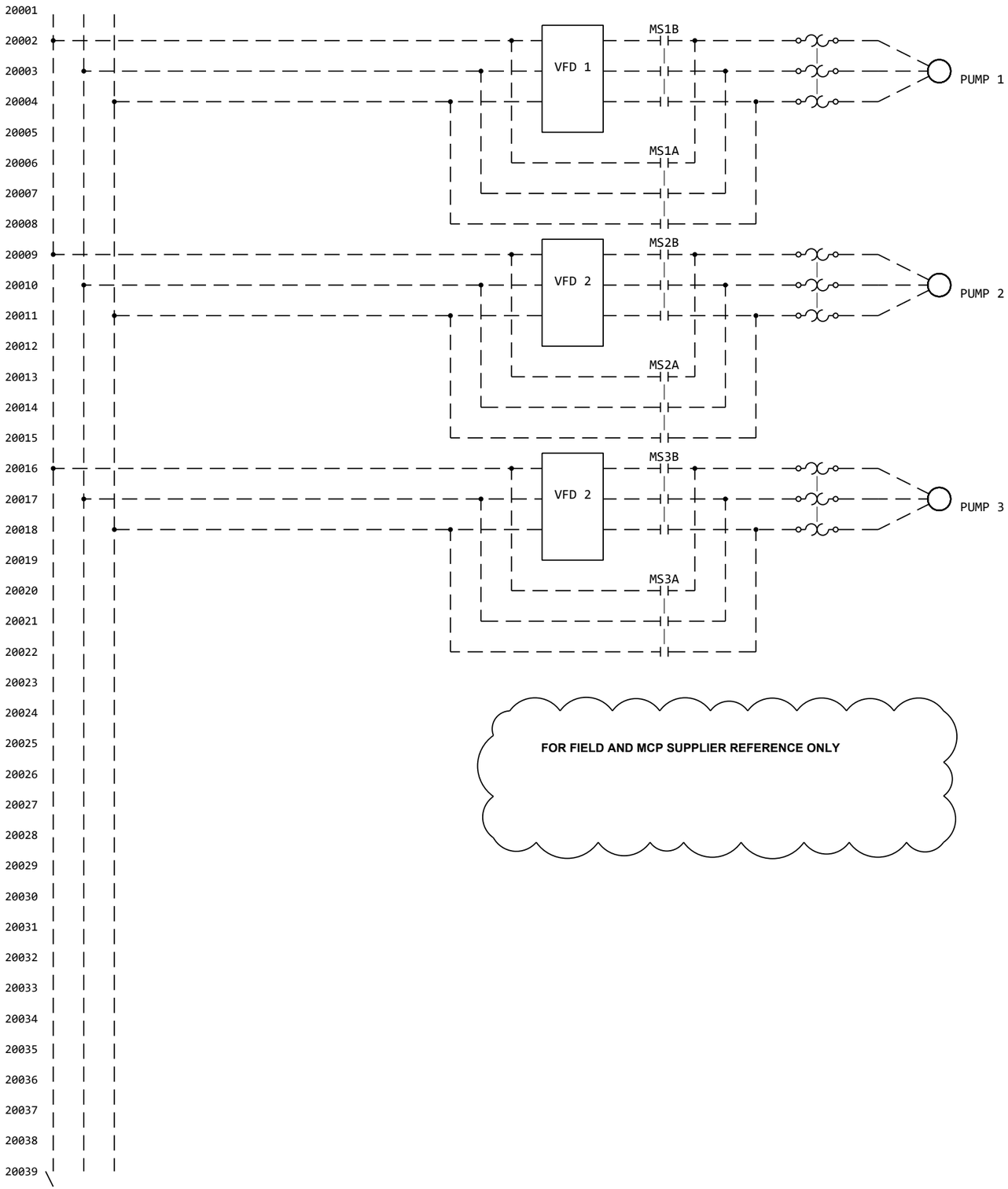

FOR FIELD AND MCP SUPPLIER REFERENCE ONLY

Revision Number	Revision Description	Drawn By	Checked By	Date
1	PRELIMINARY DRAWINGS	LSM	BLG	2025-07-23
2	ADDENDUM 1	LSM	CJ	2025-08-22
3				
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Designed By	LSM
Drawn By	LSM
Checked By	BLG
Approved By	BLG
Filename	200 3-PHASE POWER
Project No.	13883
Project Date	2025-08-22

LAKE COUNTY
DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD LIFT STATION

3-PHASE POWER

DONOHUE

Sheet No.

200

DRAWING INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
001 - GENERAL		
1	COVER	COVER
2	001-G-1	SEAL AND SIGNATURE SHEET
3	001-G-2	DRAWING INDEX
4	001-G-3	SYMBOLS AND ABBREVIATIONS
5	001-G-4	CIVIL LEGEND
6	001-G-5	ELECTRICAL LEGEND
7	001-G-6	INSTRUMENTATION AND CONTROL LEGEND
8	001-G-7	INSTRUMENTATION AND CONTROL SYMBOLOGY
9	001-ENV-1	HAZARDOUS RATING AND MATERIALS SCHEDULE
002 - SITE DEVELOPMENT		
10	002-CK-1	SURVEY CONTROL AND SOIL BORING INFORMATION
11	002-CK-2	SUGGESTED CONSTRUCTION SEQUENCING - OVERALL PLAN
12	002-CK-3	SUGGESTED CONSTRUCTION SEQUENCING - PHASE A
13	002-CK-4	SUGGESTED CONSTRUCTION SEQUENCING - PHASE B
1 14	002-CK-5	SUGGESTED CONSTRUCTION SEQUENCING - PHASE C
14A	002-CK-6	SUGGESTED CONSTRUCTION SEQUENCING - PHASE D
14B	002-CK-7	SUGGESTED CONSTRUCTION SEQUENCING - PHASE E
15	002-CE-1	EROSION CONTROL KEY PLAN
16	002-CE-2	EROSION CONTROL PLAN - WORK AREAS 1 THROUGH 3
17	002-CE-3	EROSION CONTROL PLAN - WORK AREAS 4 THROUGH 6
18	002-CR-1	REMOVAL KEY PLAN
19	002-CR-2	REMOVAL PLAN - WORK AREA 1 SURFACE REMOVALS
20	002-CR-3	REMOVAL PLAN - WORK AREA 1 PIPING REMOVALS
21	002-CR-4	REMOVAL PLAN - WORK AREAS 2 THROUGH 5
22	002-CR-5	REMOVAL PLAN - WORK AREA 6
23	002-CP-1	FORCEMAIN AND GRAVITY SEWER KEY PLAN
24	002-CP-2	FORCEMAIN AND GRAVITY SEWER PLAN AND PROFILE
25	002-CP-3	GRAVITY SEWER PLAN AND PROFILE
26	002-CP-4	GRAVITY SEWER PLAN AND PROFILE
27	002-CP-5	GRAVITY SEWER PLAN AND PROFILE
28	002-CP-6	GRAVITY SEWER PLAN AND PROFILE
29	002-CPD-1	ENLARGED PIPING PLAN - LIFT STATION SITE
30	002-CFGD-1	FACILITIES AND GRADING KEY PLAN - LIFT STATION SITE
31	002-CFGD-2	FACILITIES AND GRADING PLAN - LIFT STATION SITE
32	002-CFGD-3	FACILITIES AND GRADING PLAN - LIFT STATION SITE
33	002-CFGD-4	FACILITIES AND GRADING PLAN - LIFT STATION SITE
34	002-XS-1	CROSS SECTIONS - LIFT STATION SITE
35	002-XS-2	CROSS SECTIONS - LIFT STATION SITE
36	002-EN-1	SITE PLAN
37	002-E-2	DUCT BANK SCHEDULE AND SECTIONS
007 - ELECTRICAL DISTRIBUTION		
38	007-ER-1	OVERALL ONE-LINE DIAGRAM - REMOVAL
39	007-E-2	OVERALL ONE-LINE DIAGRAM
40	007-E-3	PANEL SCHEDULE
009 - PROCESS AND INSTRUMENTATION DIAGRAM		
41	009-N-1	LIFT STATION
350 - LIFT STATION		
42	350-S-1	LOWER PLAN
43	350-S-2	UPPER PLAN
44	350-S-3	SECTION
45	350-M-1	LOWER PLAN
46	350-M-2	UPPER PLAN
47	350-M-3	SECTION
48	350-EN-1	LOWER PLAN
49	350-EN-2	UPPER PLAN
50	350-HEN-3	PLAN
999 - GENERAL NOTES SCHEDULES AND STANDARD DETAILS		
51	999-C-1	CIVIL
52	999-C-2	CIVIL
53	999-C-3	CIVIL
54	999-C-4	CIVIL
55	999-C-5	CIVIL
56	999-C-6	CIVIL
57	999-C-7	CIVIL
58	999-C-8	LCDOT TRAFFIC CONTROL DETAILS
59	999-C-9	IDOT STANDARD DETAILS
60	999-C-10	IDOT STANDARD DETAILS
61	999-C-11	IDOT STANDARD DETAILS
62	999-C-12	IDOT STANDARD DETAILS
63	999-C-13	IDOT STANDARD DETAILS
64	999-C-14	IDOT STANDARD DETAILS
65	999-C-15	IDOT STANDARD DETAILS
66	999-C-16	IDOT STANDARD DETAILS
67	999-C-17	IDOT STANDARD DETAILS
68	999-S-1	STRUCTURAL
69	999-M-1	PROCESS
70	999-E-1	ELECTRICAL
71	999-E-2	ELECTRICAL
72	999-EN-1	ELECTRICAL, INSTRUMENTATION AND CONTROL
73	999-N-1	INSTRUMENTATION AND CONTROL
74	999-N-2	INSTRUMENTATION AND CONTROL

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

Designed By	MLM
Drawn By	MLM
Checked By	JCH
Approved By	MLM
Filename	001G2.DWG
Project No.	13883
Project Date	JULY 2025

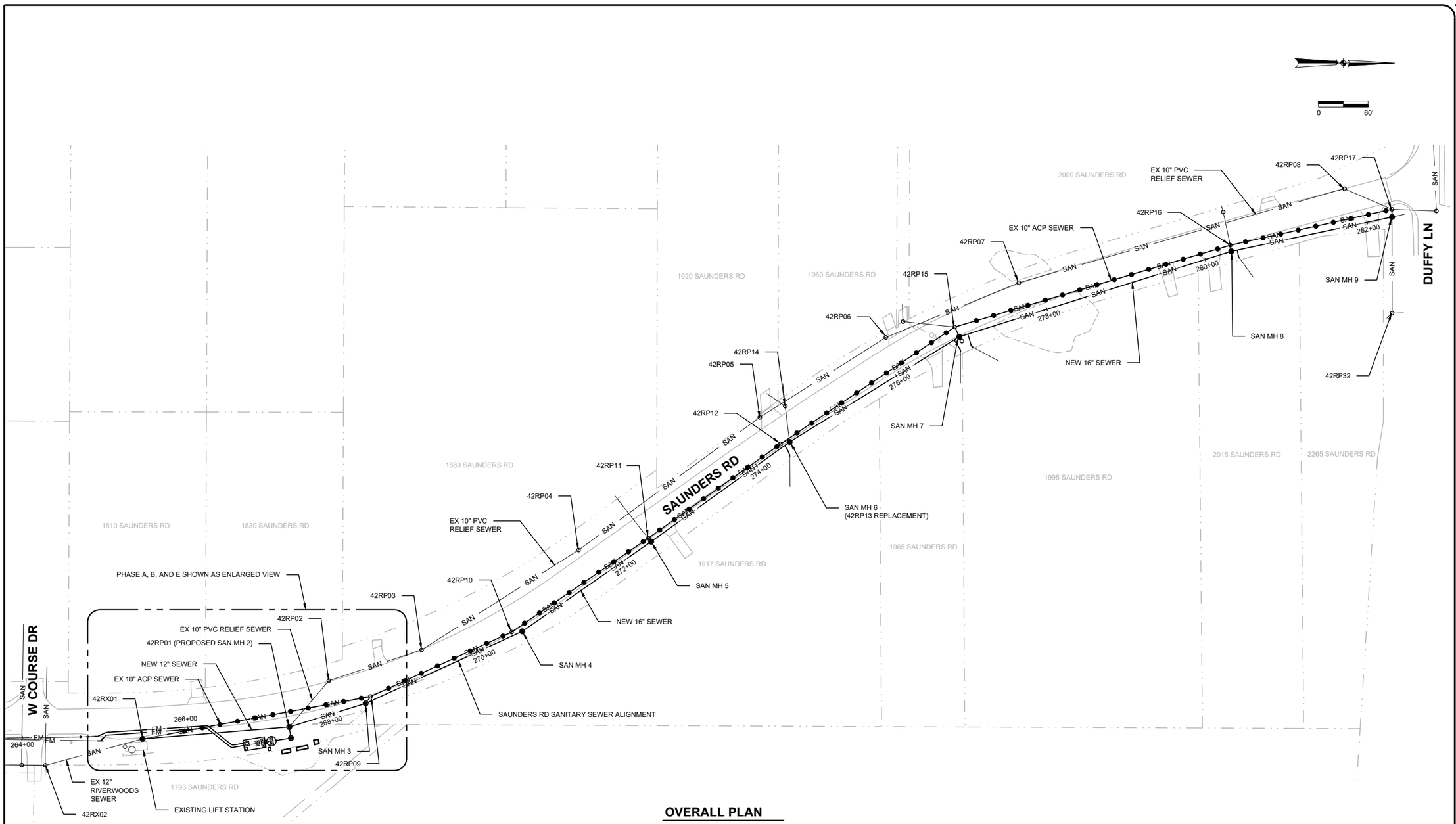
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

GENERAL
DRAWING INDEX

DONOHUE

Sheet No. 3

Drawing No. **001-G-2**



OVERALL PLAN

LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE TO BE REMOVED OR ABANDONED
- NEW OR REPLACED SANITARY SEWER MANHOLE
- SAN — EXISTING SANITARY SEWER
- FM — EXISTING SANITARY FORCEMAIN
- SAN — NEW SANITARY SEWER
- FM — NEW SANITARY FORCEMAIN
- EXISTING SANITARY SEWER TO BE ABANDONED

GENERAL NOTES

1. FOR CLARITY, ONLY UNDERGROUND SANITARY GRAVITY SEWER AND FORCEMAIN ARE SHOWN ON THE SUGGESTED CONSTRUCTION SEQUENCING PLANS. NO OTHER BURIED UTILITIES ARE SHOWN.
2. SEQUENCING SHOWN IS SUGGESTED. CONTRACTOR TO PREPARE AND SUBMIT DETAILED CONSTRUCTION SEQUENCING AND BYPASS PUMPING PLAN TO OWNER.
3. THE INTENT OF THE SEQUENCING PLANS IS TO PRESENT A SUGGESTED WORK SEQUENCE IN WHICH ALL WORK IMPACTING PAVEMENT ON SAUNDERS ROAD IS COMPLETED FIRST WHILE MAINTAINING SERVICE TO THE EXISTING LIFT STATION AND MINIMIZE BYPASS PUMPING.
4. SUGGESTED CONSTRUCTION SEQUENCING IS SHOWN IN FIVE (5) PHASES (A THROUGH E). SEQUENCING PLANS FOR PHASES A, B, AND E SHOWN ON ENLARGED VIEWS.

1
ENTIRE SHEET

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

Designed By	MLM
Drawn By	MLM
Checked By	JCH
Approved By	MLM
Filename	002CK2.DWG
Project No.	13883
Project Date	JULY 2025

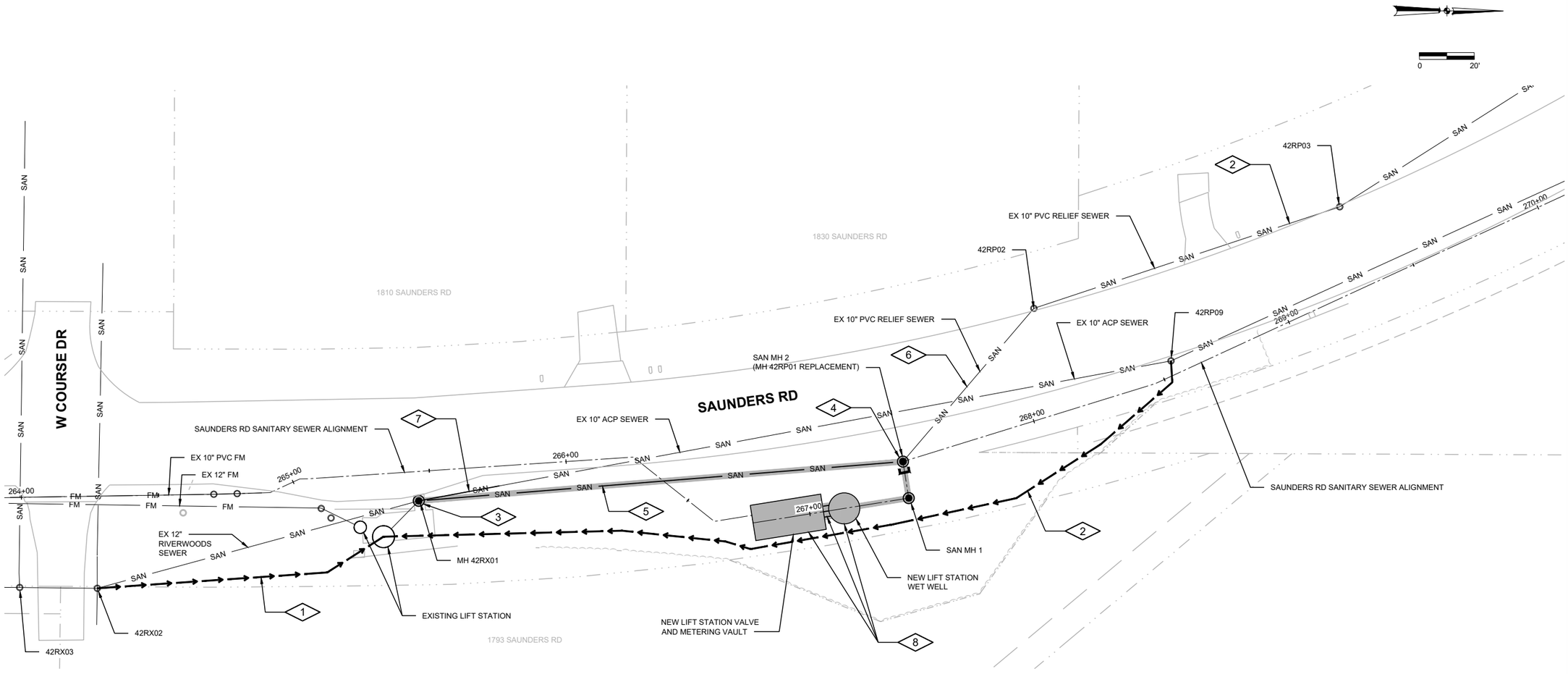
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
SUGGESTED CONSTRUCTION SEQUENCING - OVERALL PLAN

DONOHUE

Sheet No. 11

Drawing No. 002-CK-2



PHASE A

LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE TO BE REMOVED OR ABANDONED
- NEW OR REPLACED SANITARY SEWER MANHOLE
- NEW SANITARY MANHOLE CONSTRUCTED IN PREVIOUS PHASE
- SAN — EXISTING SANITARY SEWER OR NEW SANITARY SEWER CONSTRUCTED IN PREVIOUS PHASE
- SAN — NEW SANITARY SEWER
- FM — EXISTING SANITARY FORCEMAIN
- FM — NEW SANITARY FORCEMAIN
- EXISTING SANITARY SEWER TO BE ABANDONED
- WORK IN CURRENT PHASE (HIGHLIGHT/SHADING)
- CURRENT PHASE BYPASS PUMPING

PHASE DESCRIPTION

CONSTRUCT UNDERGROUND SEWER PIPING, AND MANHOLES FROM MH 42RX01 TO NEW LIFT STATION. CONSTRUCT PRECAST BASE AND RISER SECTIONS FOR NEW LIFT STATION WET WELL AND VALVE AND METERING VAULT, AND CONSTRUCT BURIED PIPING BETWEEN LIFT STATION WET WELL AND VALVE AND METERING VAULT.

PLAN NOTES:

1. BYPASS PUMP FROM MH 42RP09 TO EXISTING LIFT STATION WET WELL FOR REPLACEMENT OF MH 42RX01, CONSTRUCTION OF SAN MH 2, AND NEW 12" SEWER FROM MH 42RX01 TO SAN MH 2. BYPASS PUMPING TO REMAIN IN PLACE UNTIL COMPLETION OF TEMPORARY PIPING FROM MH 42RP09 TO SAN MH 3 IN PHASE B.
2. BYPASS PUMP FROM MH 42RX02 TO EXISTING LIFT STATION WET WELL FOR REPLACEMENT OF MH 42RX01. BYPASS PUMPING MAY BE REMOVED AFTER COMPLETION OF MH 42RX01 REPLACMENT.
3. REPLACE MH 42RX01.
4. REMOVE MH 42RP01 AND REPLACE WITH NEW SAN MH 2. TEMPORARILY PLUG 16-INCH DIAMETER INLET AND 24-INCH DIAMETER OUTLET UNTIL PIPING IS READY TO BE PLACED IN SERVICE.
5. CONSTRUCT NEW 12-INCH DIAMETER SEWER FROM MH 42RX01 TO NEW SAN MH 2 (NEW SAN MH 2 IS MH 42RP01 REPLACEMENT). REMOVE EXISTING 10-INCH DIAMETER PVC RELIEF SEWER. INSTALL DIRECT REPLACEMENT TEMPORARY 10-INCH RELIEF SEWER IN THE SAME LOCATION AND ELEVATIONS AS THE EXISTING RELIEF SEWER. THIS TEMPORARY PIPING IS REQUIRED TO KEEP EXISTING 10-INCH RELIEF SEWER IN SERVICE UNTIL NEW LIFT STATION IS OPERATIONAL.
6. OUTAGE OF RELIEF SEWER IS REQUIRED TO CONSTRUCT NEW 12-INCH DIAMETER PIPE BETWEEN 42RX01 AND SAN MH 2 AND TO CONSTRUCT REPLACEMENT OF MH 42RX01. OUTAGES TO THE EXISTING 10-INCH DIAMETER SANITARY RELIEF SEWER SHALL ONLY OCCUR DURING DRY WEATHER CONDITIONS. CONTRACTOR SHALL SCHEDULE WORK REQUIRING OUTAGE OF THE 10-INCH DIAMETER SANITARY RELIEF SEWER DURING A FORECASTED DRY WEATHER PERIOD OF SUFFICIENT DURATION TO COMPLETE THE REQUIRED WORK.
7. REMOVE EXISTING 10-INCH DIAMETER ACP SEWER AS REQUIRED FOR REPLACEMENT OF MH 42RX01 AND CONSTRUCTION OF NEW 12-INCH DIAMETER SEWER. PERMANENTLY PLUG AT REMOVAL LIMIT.
8. INSTALL PRECAST BASE AND RISERS FOR NEW LIFT STATION WET WELL AND VALVE AND METERING VAULT. INSTALL BURIED PIPING BETWEEN WET WELL AND VALVE AND METERING VAULT. PROVIDE TEMPORARY COVERS FOR WET WELL AND VALVE AND METERING VAULT UNTIL REMAINING EQUIPMENT AND PIPING IS READY TO BE INSTALLED (PHASE E).

1 ENTIRE SHEET

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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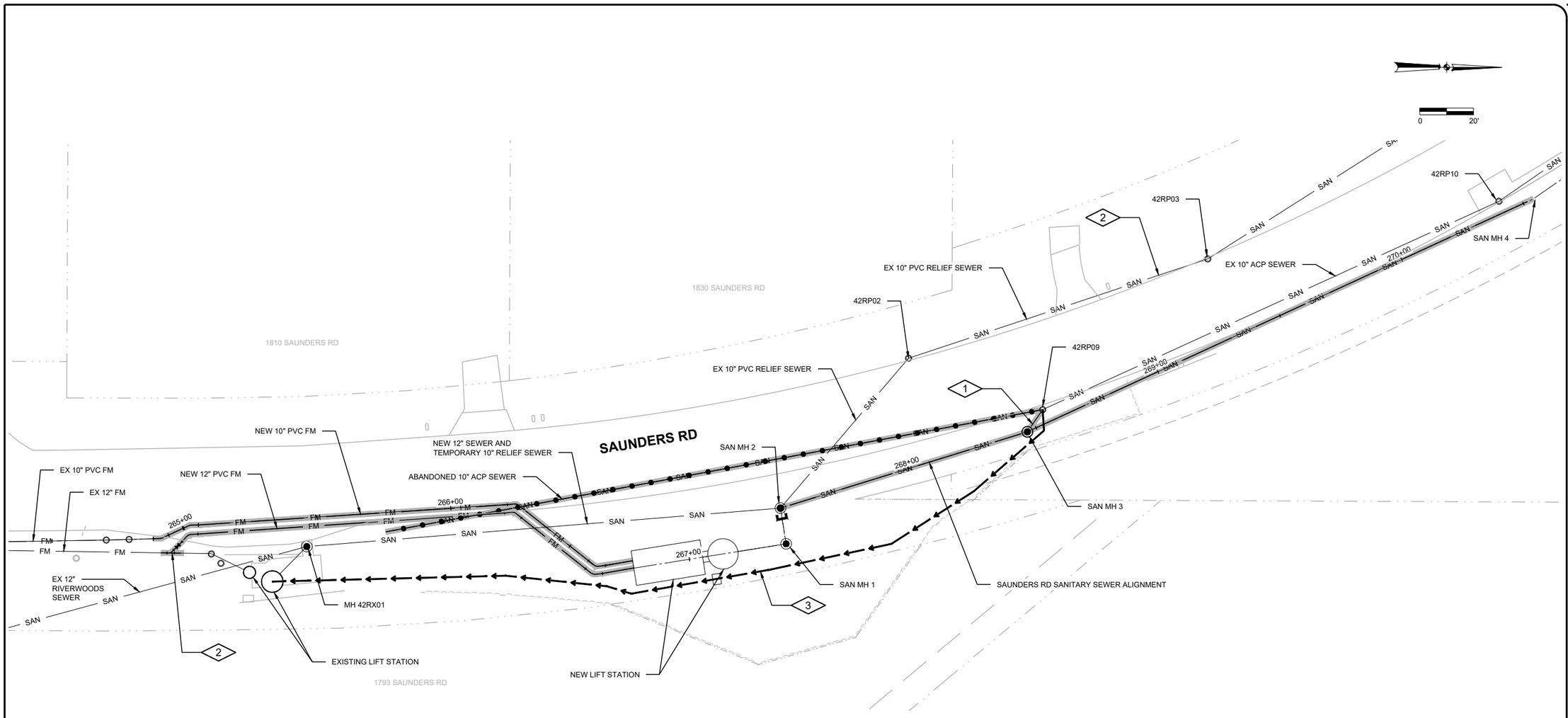
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
SUGGESTED CONSTRUCTION SEQUENCING - PHASE A

DONOHUE

Sheet No. 12

Drawing No. 002-CK-3



PHASE B

LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE TO BE REMOVED OR ABANDONED
- NEW OR REPLACED SANITARY SEWER MANHOLE
- NEW SANITARY MANHOLE CONSTRUCTED IN PREVIOUS PHASE
- SAN — EXISTING SANITARY SEWER OR NEW SANITARY SEWER CONSTRUCTED IN PREVIOUS PHASE
- SAN — NEW SANITARY SEWER
- FM — EXISTING SANITARY FORCEMAIN
- FM — NEW SANITARY FORCEMAIN
- EXISTING SANITARY SEWER TO BE ABANDONED
- WORK IN CURRENT PHASE (HIGHLIGHT/SHADING)
- CURRENT PHASE BYPASS PUMPING

PHASE DESCRIPTION

CONSTRUCT NEW 10-INCH AND 12-INCH FORCEMAINS TO NEW LIFT STATION. CONSTRUCT NEW 16-INCH DIAMETER SANITARY SEWER FROM SAN MH 2 TO DOWNSTREAM SIDE OF SAN MH 4. CONSTRUCT SAN MH 3 AND TEMPORARY PIPING FROM EXISTING MH 42RP09 TO SAN MH 3.

PLAN NOTES:

1. CONSTRUCT TEMPORARY 10-INCH PIPING FROM SAN MH 3 TO MH 42RP09:
   - A. ISOLATE 42RP09 FOR CONNECTION OF TEMPORARY PIPING BY ROUTING FLOW THROUGH EXISTING 10-INCH PVC RELIEF SEWER. ONLY DRY WEATHER FLOW MAY BE ROUTED THROUGH 10-INCH PVC RELIEF SEWER. SCHEDULE WORK DURING A FORECASTED DRY WEATHER PERIOD OF SUFFICIENT DURATION TO COMPLETE THE WORK. FLOW MAY BE ROUTED THROUGH 10-INCH PVC RELIEF SEWER BY PLUGGING OUTLET TO EXISTING 10-INCH ACP PIPE AT MH 42RP17 (LOCATED AT UPSTREAM END OF PROJECT).
   - B. AFTER TRANSFERRING FLOW TO 10-INCH PVC RELIEF SEWER, USE BYPASS PUMPING TO DRAIN REMAINING SEWAGE FROM 10-INCH ACP.
   - C. CONNECT TEMPORARY10-INCH PIPING TO MH 42RP09.
   - D. ABANDON EXISTING 10-INCH ACP BETWEEN MH 42RX01 AND 42RP09. PERMANENTLY PLUG EXISTING 10-INCH ACP OUTLET AT MH 42RP09.
   - E. RETURN FLOW TO EXISTING 10-INCH ACP SEWER. FLOW WILL BE CONVEYED TO EXISTING LIFT STATION THROUGH TEMPORARY 10-INCH PIPING AT MH 42RP09 UNTIL REMAINING PORTIONS OF THE NEW 16-INCH SEWER UPSTREAM OF SAN MH 3 ARE CONSTRUCTED AND READY TO BE PLACED IN SERVICE.
2. PROVIDE TEMPORARY WYE AND VALVE AT CONNECTION TO EXISTING 12-INCH FORCEMAIN. THIS WORK WILL REQUIRE A SHUTDOWN OF THE EXISTING LIFT STATION.
3. BYPASS PUMPING FROM MH 42RP09 TO EXISTING LIFT STATION WET WELL TO REMAIN IN PLACE UNTIL TEMPORARY10-INCH PIPING FROM MH 42RP09 TO SAN MH 3 IS READY TO BE CONNECTED TO MH 42RP09 AND PLACED IN SERVICE.

1 ENTIRE SHEET

Revision Number	Revision Description	Drawn By	Checked By	Date
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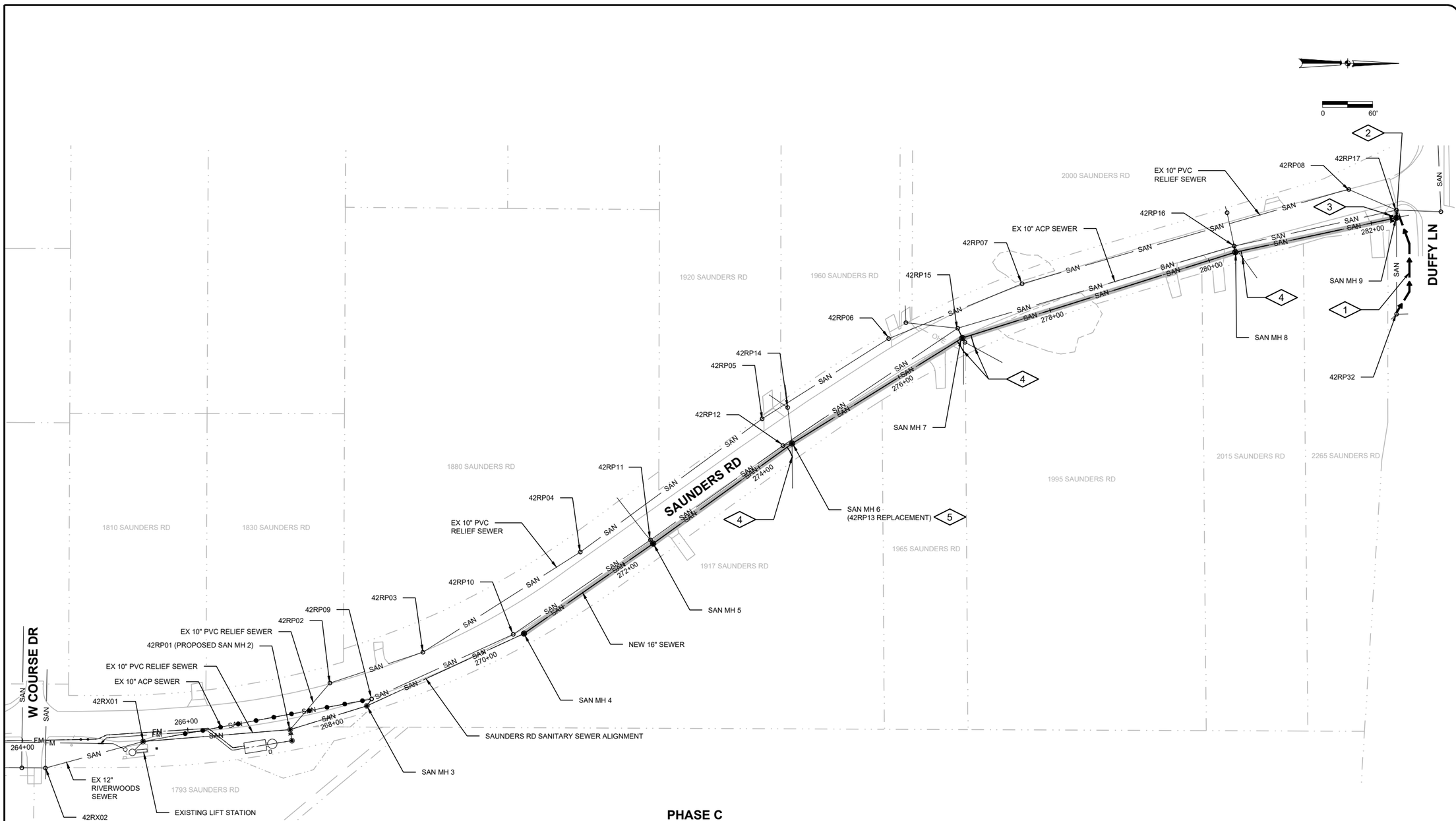
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
SUGGESTED CONSTRUCTION SEQUENCING - PHASE B

DONOHUE

Sheet No. 13

Drawing No. 002-CK-4



LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE TO BE REMOVED OR ABANDONED
- NEW OR REPLACED SANITARY SEWER MANHOLE
- NEW SANITARY MANHOLE CONSTRUCTED IN PREVIOUS PHASE
- SAN — EXISTING SANITARY SEWER OR NEW SANITARY SEWER CONSTRUCTED IN PREVIOUS PHASE
- SAN — NEW SANITARY SEWER
- FM — EXISTING SANITARY FORCEMAIN OR NEW SANITARY FORCEMAIN CONSTRUCTED IN PREVIOUS PHASE
- EXISTING SANITARY SEWER TO BE ABANDONED
- WORK IN CURRENT PHASE (HIGHLIGHT/SHADING)
- CURRENT PHASE BYPASS PUMPING

PHASE C

PHASE DESCRIPTION

CONSTRUCT NEW 16-INCH DIAMETER GRAVITY SANITARY SEWER AND MANHOLES FROM SANITARY MANHOLE 4 (SAN MH 4) TO SANITARY MANHOLE 9 (SAN MH 9). COMPLETE NECESSARY TESTING AND PLACE NEW 16-INCH DIAMETER SEWER IN SERVICE.

PLAN NOTES:

1. PROVIDE BYPASS PUMPING FROM MH 42RP32 TO 42RP17 FOR CONSTRUCTION OF SAN MH 9.
2. TEMPORARILY PLUG 10-INCH DIAMETER PIPE TO THE EAST AT MH42RP17 FOR REPLACEMENT OF 10-INCH SEWER BETWEEN 42RP17 AND SAN MH 9.
3. TEMPORARILY PLUG OUTLET FROM SAN MH 9 TO NEW 16-INCH SEWER UNTIL NEW SEWER IS READY TO BE PLACED IN SERVICE.
4. TRANSFER EXISTING SANITARY SEWER SERVICE LINES TO NEW 16-INCH SEWER. SERVICES SHALL NOT BE TRANSFERRED UNTIL CONSTRUCTION OF NEW 16-INCH SEWER AND MANHOLES DOWNSTREAM OF SERVICE TO BE TRANSFERRED IS COMPLETE.
5. PROVIDE CONTAINMENT/DISPOSAL OR OTHER MEANS OF CONVEYING SEWAGE FROM MH 42RP14 DURING REMOVAL OF MH 42RP13 AND CONSTRUCTION OF SAN MH 6.

1 ENTIRE SHEET

Revision Number	Revision Description	Drawn By	Checked By	Date
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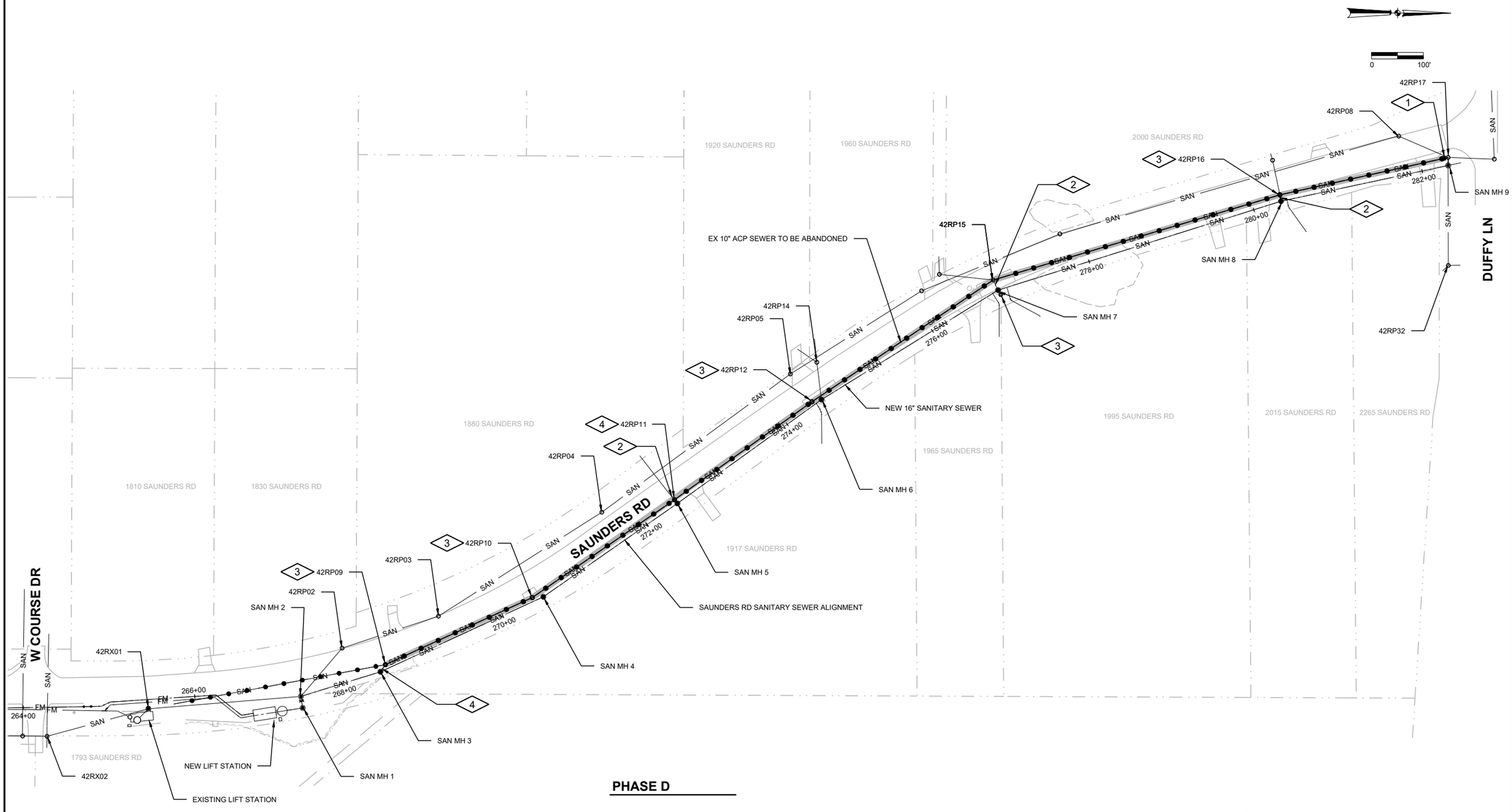
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
SUGGESTED CONSTRUCTION SEQUENCING - PHASE C

DONOHUE

Sheet No. 14

Drawing No. 002-CK-5



PHASE D

LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE TO BE REMOVED OR ABANDONED
- NEW OR REPLACED SANITARY SEWER MANHOLE
- NEW SANITARY MANHOLE CONSTRUCTED IN PREVIOUS PHASE
- SAN — EXISTING SANITARY SEWER OR NEW SANITARY SEWER CONSTRUCTED IN PREVIOUS PHASE
- SAN — NEW SANITARY SEWER
- FM — EXISTING SANITARY FORCEMAIN OR NEW SANITARY FORCEMAIN CONSTRUCTED IN PREVIOUS PHASE
- EXISTING SANITARY SEWER TO BE ABANDONED
- WORK IN CURRENT PHASE (HIGHLIGHT/SHADING)
- CURRENT PHASE BYPASS PUMPING

PHASE DESCRIPTION

ABANDON EXISTING 10-INCH DIAMETER ACP SANITARY SEWER AND REMOVE OR ABANDON ASSOCIATED MANHOLES AS SHOWN ON THE 002-CR DRAWINGS. EXTEND EXISTING SEWER LINES FROM WEST SIDE OF SAUNDERS ROAD TO NEW 16-INCH SEWER.

PLAN NOTES:

1. PERMANENTLY PLUG 10-INCH ACP OUTLET AT MH 42RP17.
2. EXTEND EXISTING SANITARY SEWER TO NEW MANHOLE. SEE 002-CP DRAWINGS FOR ADDITIONAL INFORMATION.
3. REMOVE OR ABANDON EXISTING MANHOLE. SEE 002-CR DRAWINGS.
4. PERMANENTLY PLUG 10-INCH TEMPORARY PIPE AT SAN MH 3.

1 ENTIRE SHEET

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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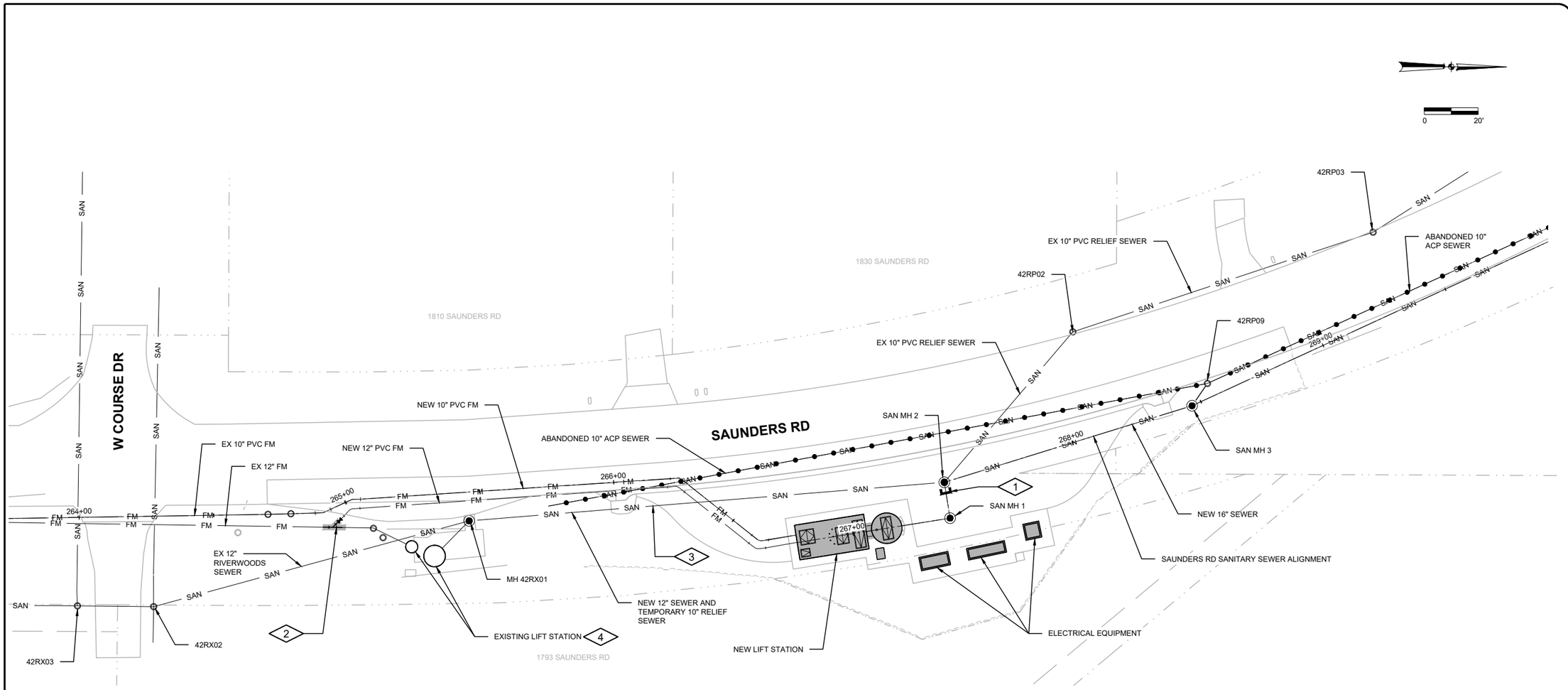
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
SUGGESTED CONSTRUCTION SEQUENCING - PHASE D

DONOHUE

Sheet No. 14A

Drawing No. 002-CK-6



PHASE E

LEGEND

- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE TO BE REMOVED OR ABANDONED
- NEW OR REPLACED SANITARY SEWER MANHOLE
- NEW SANITARY MANHOLE CONSTRUCTED IN PREVIOUS PHASE
- SAN — EXISTING SANITARY SEWER OR NEW SANITARY SEWER CONSTRUCTED IN PREVIOUS PHASE
- SAN — NEW SANITARY SEWER
- FM — EXISTING SANITARY FORCEMAIN OR NEW SANITARY FORCEMAIN CONSTRUCTED IN PREVIOUS PHASE
- FM — NEW SANITARY FORCEMAIN
- EXISTING SANITARY SEWER TO BE ABANDONED
- WORK IN CURRENT PHASE (HIGHLIGHT/SHADING)
- CURRENT PHASE BYPASS PUMPING

PHASE DESCRIPTION

INSTALL REMAINING PIPING AND EQUIPMENT AT LIFT STATION SITE. COMPLETE LIFT STATION START-UP AND TESTING.

FOLLOWING SUCCESSFUL START-UP AND TESTING OF NEW LIFT STATION, COMPLETE REMAINING REMOVALS AND SITE/RESTORATION WORK.

PLAN NOTES:

1. REMOVE TEMPORARY PLUG FROM SAN MH 2 OUTLET TO SEND FLOW TO NEW LIFT STATION.
2. FOLLOWING SUCCESSFUL TESTING AND START-UP OF NEW LIFT STATION, REMOVE TEMPORARY 12-INCH WYE AND VALVE. INSTALL 12-INCH 45° SWEEP BEND FOR PERMANENT CONNECTION OF NEW 12-INCH FORCEMAIN FROM NEW LIFT STATION TO EXISTING 12-INCH FORCEMAIN.
3. FOLLOWING SUCCESSFUL TESTING AND START-UP OF NEW LIFT STATION, ABANDON TEMPORARY 10-INCH RELIEF SEWER. PERMANENTLY PLUG AT SAN MH 2 AND MH 42RX01.
4. FOLLOWING SUCCESSFUL TESTING AND START-UP OF NEW LIFT STATION, COMPLETE REMOVALS AT EXISTING LIFT STATION. SEE 002-CR DRAWINGS.

1 ENTIRE SHEET

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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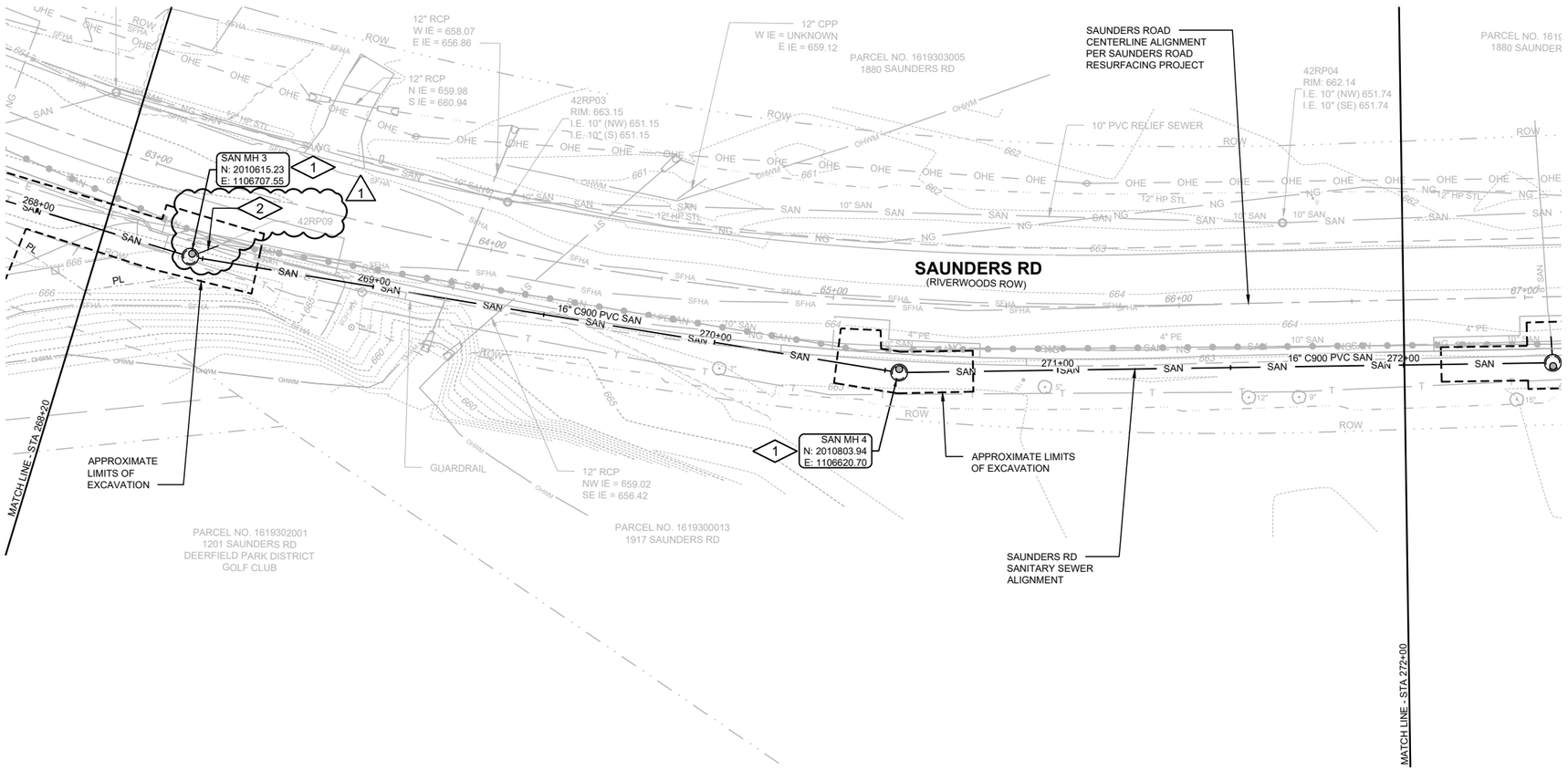
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

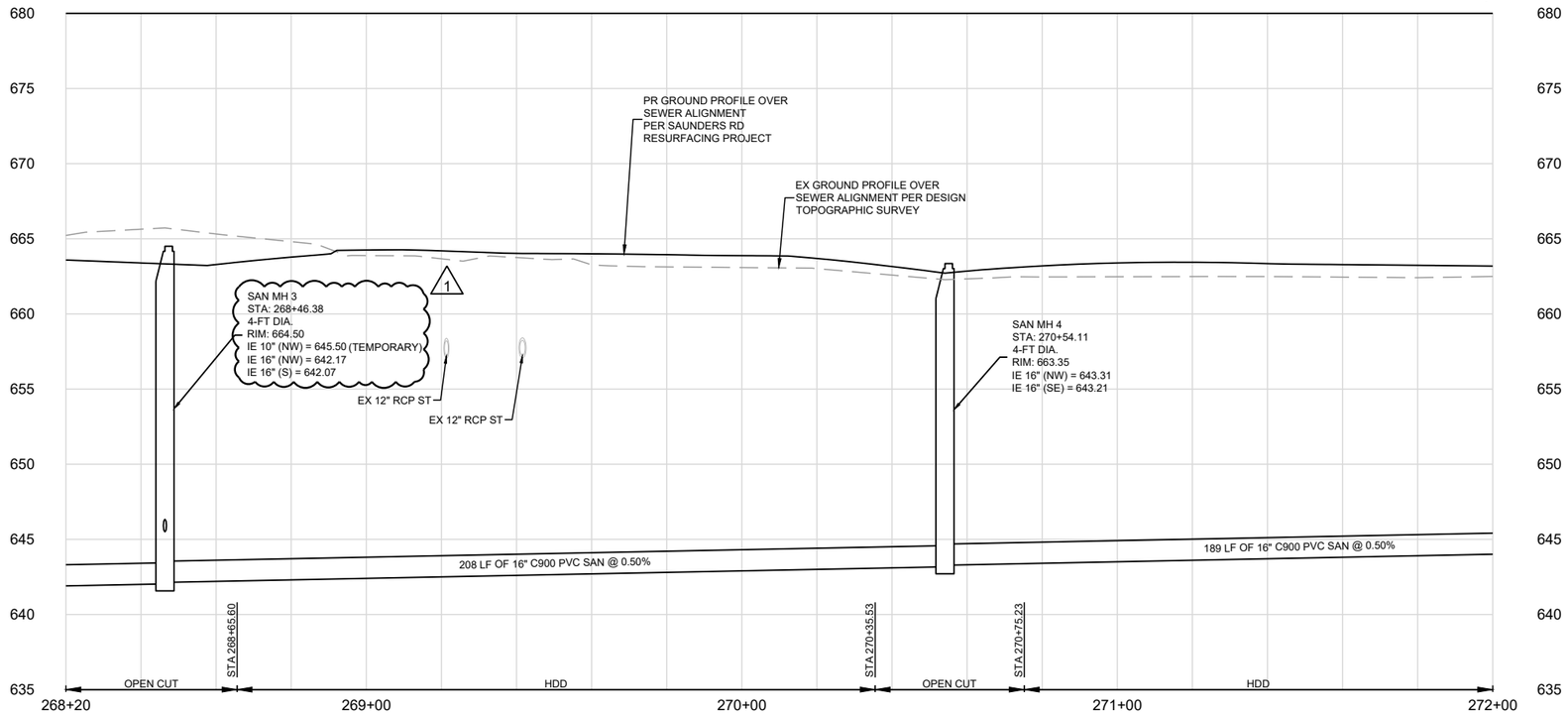
CIVIL
SUGGESTED CONSTRUCTION SEQUENCING - PHASE E

DONOHUE

Sheet No. 14B

Drawing No. 002-CK-7





HORIZONTAL SCALE: 1" = 20'

0 20'

VERTICAL SCALE: 1" = 5'

0 5'

GENERAL NOTES:

1. SEE 999-C DRAWINGS FOR STANDARD DETAILS AND ADDITIONAL GENERAL NOTES.
2. BACKFILL EXCAVATIONS INSTALL OPEN CUT PIPING IN ACCORDANCE WITH C501, C507, AND C566.
3. EXISTING MANHOLE RIM ELEVATIONS AND TOPOGRAPHIC CONTOURS SHOWN ARE FROM DESIGN SURVEY. RIM ELEVATIONS AND TOPOGRAPHY SUBJECT TO CHANGE DUE TO SAUNDERS RD RESURFACING PROJECT.

PLAN NOTES:

1. CONSTRUCT SANITARY MANHOLE PER C200
2. PROVIDE 10-INCH DIAMETER SDR 21 SANITARY SEWER FROM EXISTING MANHOLE 42RP09 TO SAN MH 3. INVERT ELEVATION AT MANHOLE 42RP09 = 645.83 (MATCH EXISTING). ABANDON TEMPORARY 10-INCH SEWER AND PLUG AT SAN MH 3 PER C266 AFTER CONSTRUCTION OF NEW 16-INCH GRAVITY SEWER IS COMPLETE. SEE SEQUENCING PLANS AND SECTION 01 11 00 FOR CONSTRUCTION SEQUENCING INFORMATION.

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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Project No.	13883
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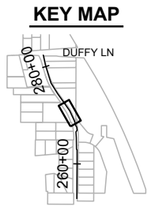
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
GRAVITY SEWER PLAN AND PROFILE

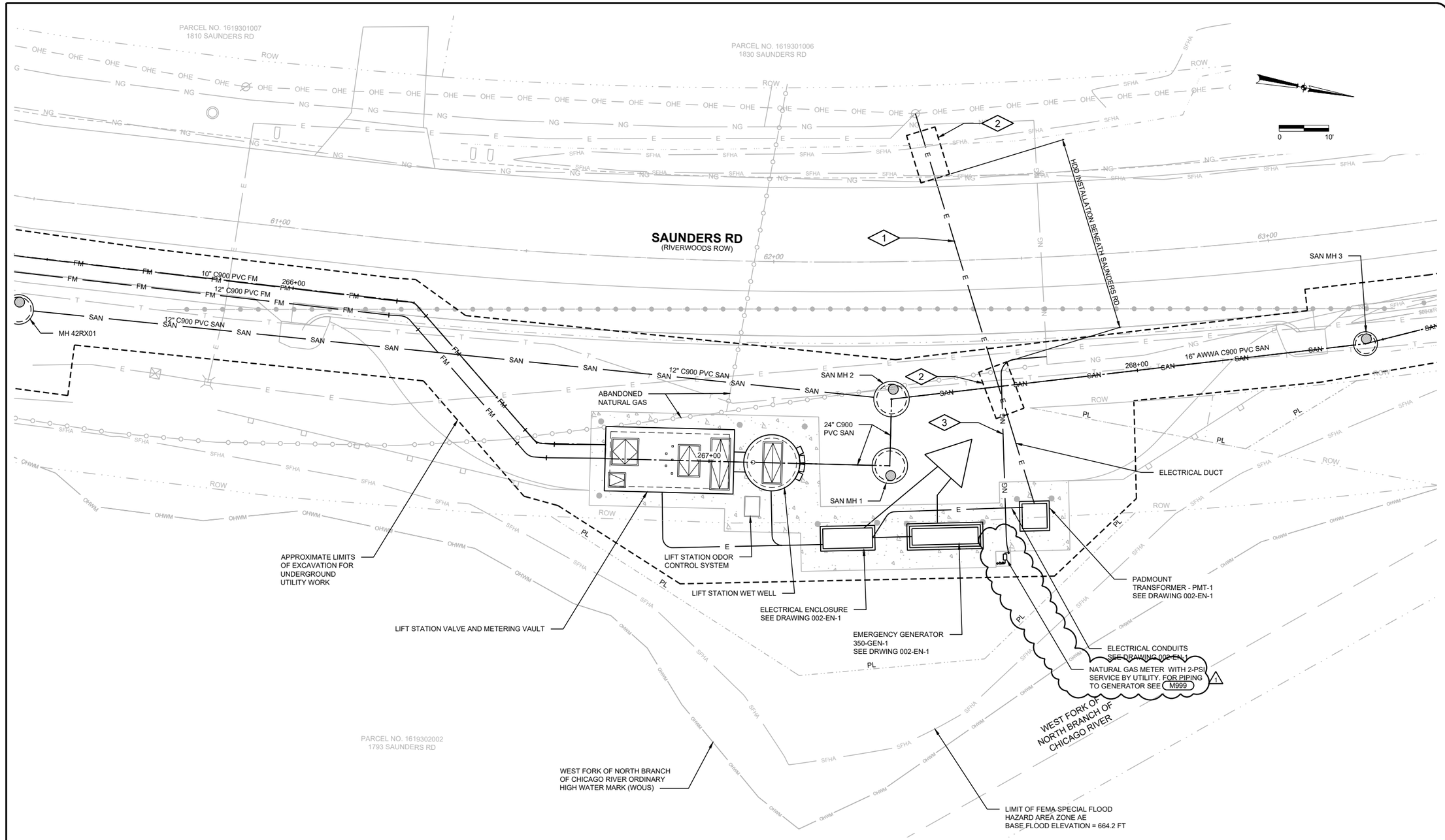
KEY MAP



DONOHUE

Sheet No. 25

Drawing No. 002-CP-3



GENERAL NOTES:

1. SEE 002-CP DRAWINGS FOR GRAVITY SEWER AND FORCEMAIN INFORMATION.
2. SEE 002-CFGD DRAWINGS FOR LIFT STATION SITE LAYOUT AND GRADING INFORMATION.
3. ADJUSTMENT TO PROPOSED MANHOLE LOCATIONS MAY BE REQUIRED DEPENDENT UPON ACTUAL LOCATION OF EXISTING BURIED UTILITIES IDENTIFIED IN FIELD.

PLAN NOTES:

1. PROVIDE DIRECTIONALLY DRILLED ELECTRICAL CONDUITS BENEATH SAUNDERS RD. CONDUITS SHALL CONFORM TO COMED REQUIREMENTS. COORDINATE WITH COMED.
2. HDD PIT FOR ELECTRICAL SERVICE INSTALLATION BENEATH SAUNDERS RD. LOCATION AND DIMENSIONS SHOWN ARE APPROXIMATE.
3. NEW GAS SERVICE TO BE INSTALLED BY NORTH SHORE GAS COMPANY. CONTRACTOR SHALL COORDINATE WITH NORTH SHORE GAS COMPANY FOR INSTALLATION OF NEW GAS SERVICE.

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	JLP	KRB	08/22/2025

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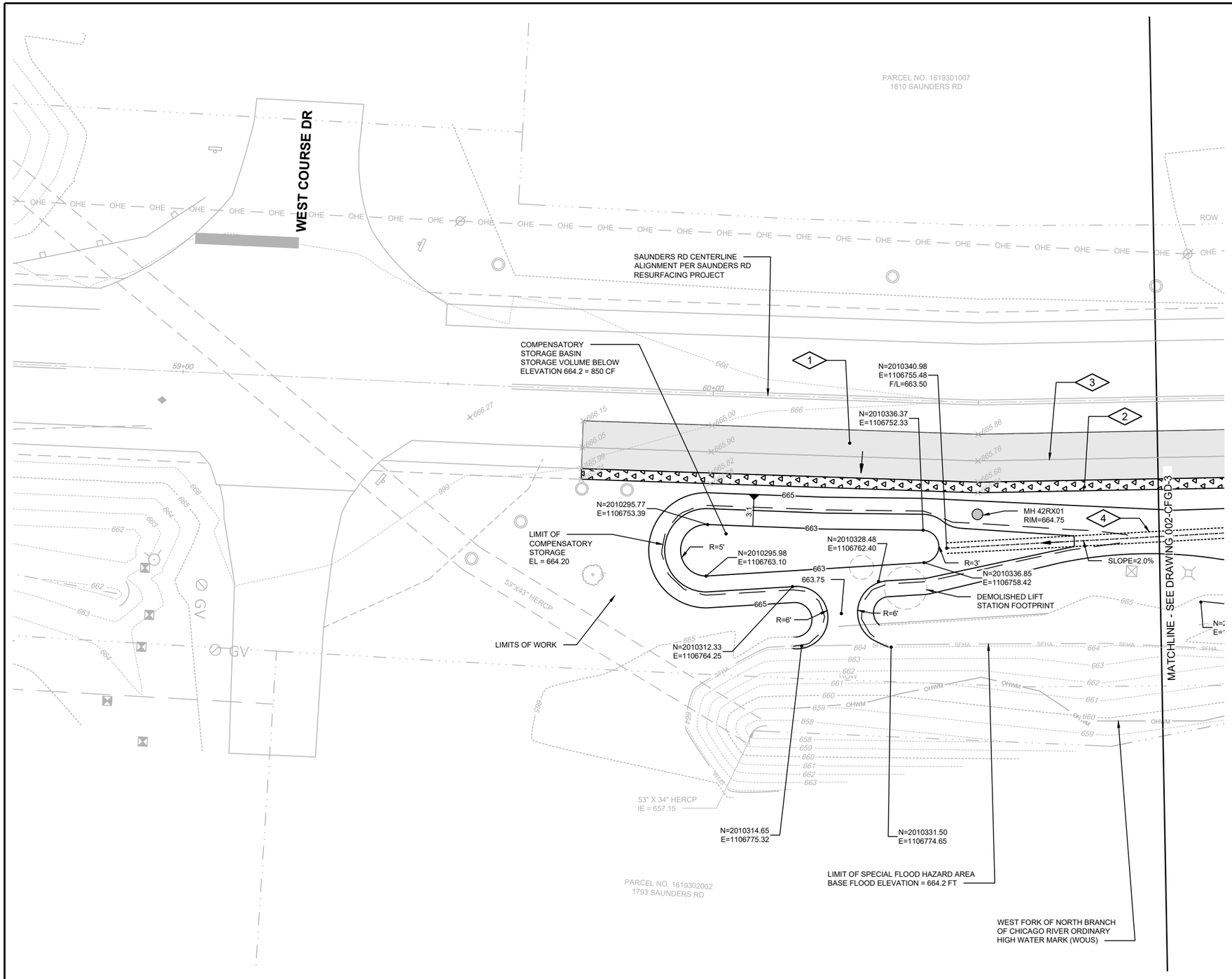
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
ENLARGED PIPING PLAN - LIFT STATION SITE

DONOHUE

Sheet No. 29

Drawing No. **002-CPD-1**



GENERAL NOTES:

1. RESTORE ALL SURFACES NOT INDICATED TO BE PAVED PER C050 1
2. EXISTING CONTOURS SHOWN ON THIS SHEET ARE CREATED FROM A COMPOSITE OF THE EXISTING GROUND SURFACE MODEL FROM THE TOPOGRAPHIC SURVEY COMPLETED FOR THIS PROJECT AND THE PROPOSED GROUND SURFACE FROM DESIGN INFORMATION FROM THE SAUNDERS RD RESURFACING PROJECT. ACTUAL CONDITIONS MAY VARY.

PLAN NOTES:

1. PROVIDE ASPHALT PAVEMENT PER C115 1
2. PROVIDE AGGREGATE SHOULDER PER C130
3. PROVIDE 4" WIDE SOLID WHITE THERMOPLASTIC PAVEMENT MARKING.
4. PROVIDE 2' WIDE DITCH WITH 3:1 MAXIMUM SIDE SLOPES.

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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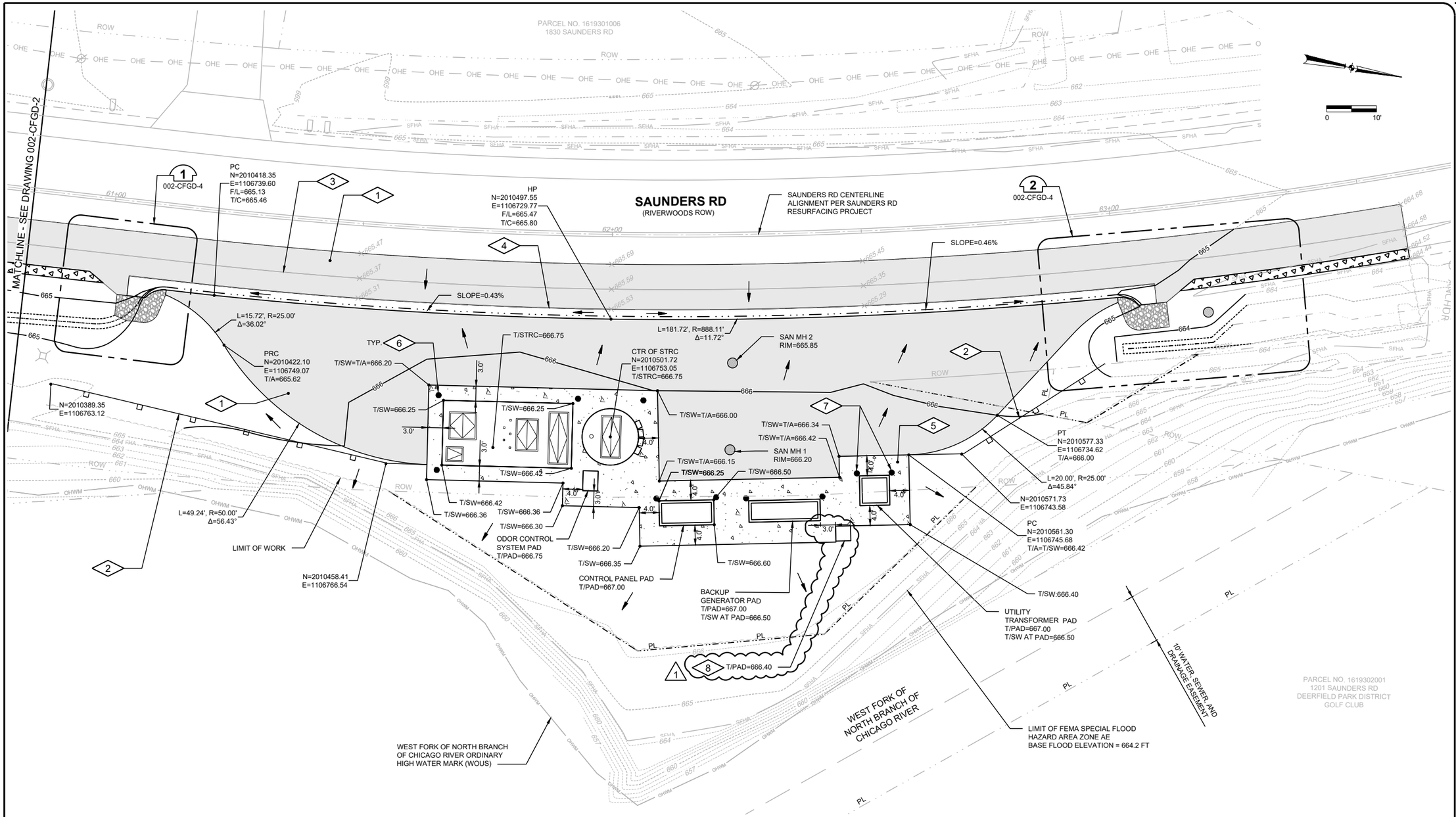
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
FACILITIES AND GRADING PLAN - LIFT STATION SITE

DONOHUE

Sheet No. 31

Drawing No. 002-CFGD-2



GENERAL NOTES:

1. RESTORE ALL SURFACES NOT INDICATED TO BE PAVED PER C050.
2. CURB LAYOUT INFORMATION PROVIDED IS TO THE BACK OF CURB.
3. EXISTING CONTOURS SHOWN ON THIS SHEET ARE CREATED FROM A COMPOSITE OF THE EXISTING GROUND SURFACE MODEL FROM THE TOPOGRAPHIC SURVEY COMPLETED FOR THIS PROJECT AND THE PROPOSED GROUND SURFACE FROM DESIGN INFORMATION FROM THE SAUNDERS RD RESURFACING PROJECT. ACTUAL CONDITIONS MAY VARY.

PLAN NOTES:

1. PROVIDE ASPHALT PAVEMENT PER C115.
2. PROVIDE GUARDRAIL PER IDOT STANDARD 630001-12.
3. PROVIDE 4" WIDE SOLID WHITE THERMOPLASTIC PAVEMENT MARKING.
4. PROVIDE IDOT M4.12 CURB AND GUTTER. PROVIDE 6" COMPACTED AGGREGATE BASE BENEATH CURB AND GUTTER.
5. PROVIDE CONCRETE SIDEWALK PER C150.
6. PROVIDE GUARD POST PER C801. COORDINATE LAYOUT OF GUARD POSTS WITH OWNER DURING CONSTRUCTION.
7. COORDINATE LOCATION OF GUARD POSTS AT TRANSFORMER WITH COMED.
8. PROVIDE 3' X 3' GAS METER PAD PER S346.

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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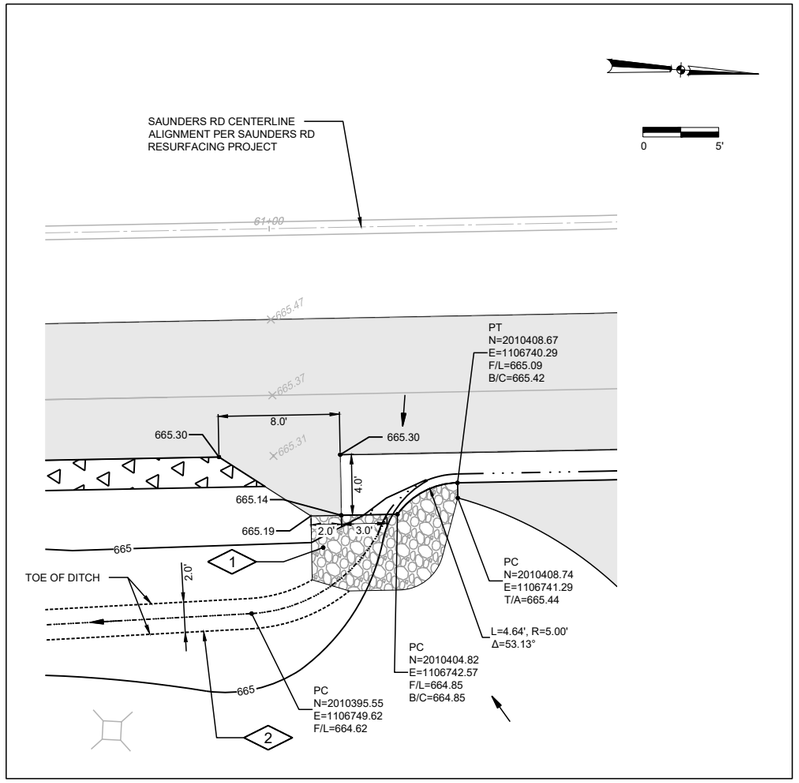
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

CIVIL
FACILITIES AND GRADING PLAN - LIFT STATION SITE

DONOHUE

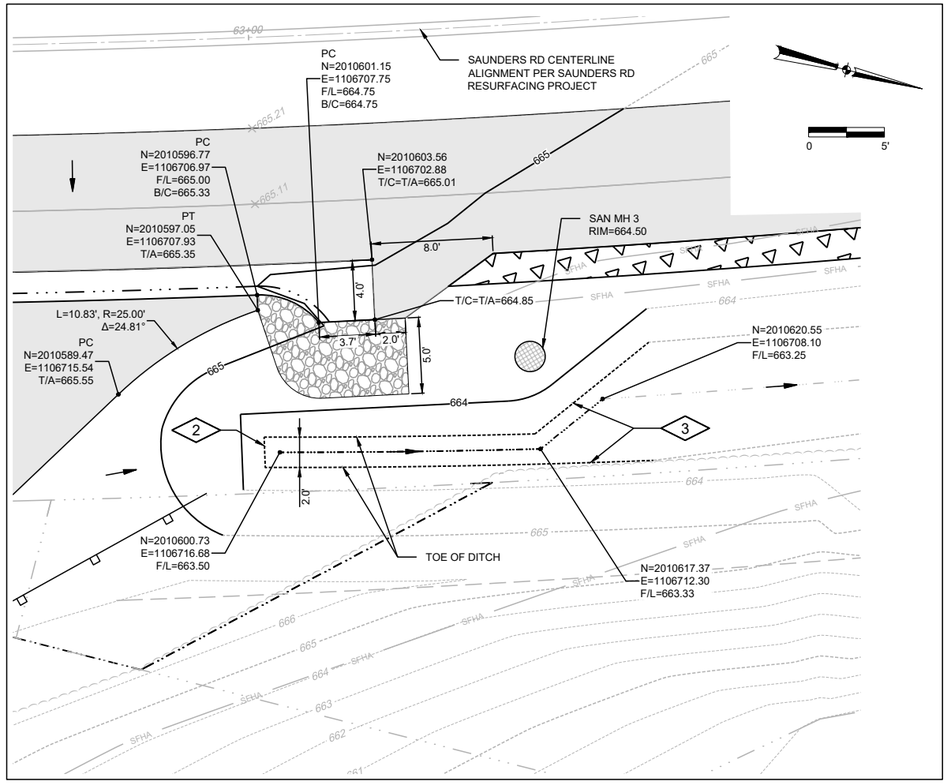
Sheet No. 32

Drawing No. 002-CFGD-3



ENLARGEMENT 1

1"=5' 002-CFGD-3



ENLARGEMENT 2

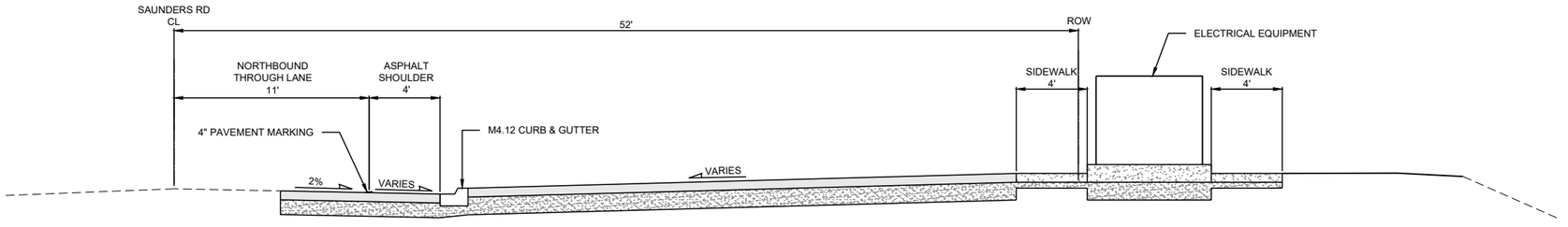
1"=5' 002-CFGD-3

GENERAL NOTES:

1. RESTORE ALL SURFACES NOT INDICATED TO BE PAVED PER C050 (1)
2. CURB LAYOUT INFORMATION PROVIDED IS TO THE BACK OF CURB.
3. EXISTING CONTOURS SHOWN ON THIS SHEET ARE CREATED FROM A COMPOSITE OF THE EXISTING GROUND SURFACE MODEL FROM THE TOPOGRAPHIC SURVEY COMPLETED FOR THIS PROJECT AND THE PROPOSED GROUND SURFACE FROM DESIGN INFORMATION FROM THE SAUNDERS RD RESURFACING PROJECT. ACTUAL CONDITIONS MAY VARY.

PLAN NOTES:

1. PROVIDE 18" THICK IDOT RR-3 RIPRAP OVER GEOXTEXTILE FABRIC AT CURB OUTLET TERMINATION.
2. PROVIDE DITCH WITH 2' WIDE BOTTOM AND 3:1 MAXIMUM SIDE SLOPES.
3. TRANSITION DITCH FROM 2' BOTTOM WIDTH TO 7' BOTTOM WIDTH. MATCH EXISTING.



SECTION AT APPROXIMATE SAUNDERS RD CL STA 62+25

NTS 002-CFGD-3

Revision Number	Revision Description	Drawn By	Checked By	Date
1	ADDENDUM NO. 2	MLM	KRB	08/22/2025

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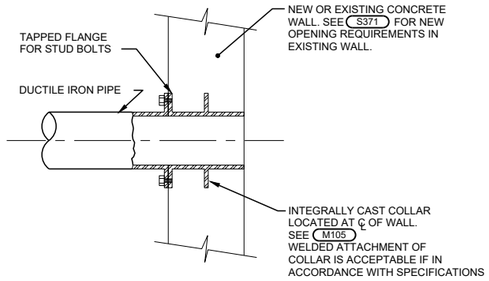
LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER
AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

LIFT STATION
SITE GRADING PLAN

DONOHUE

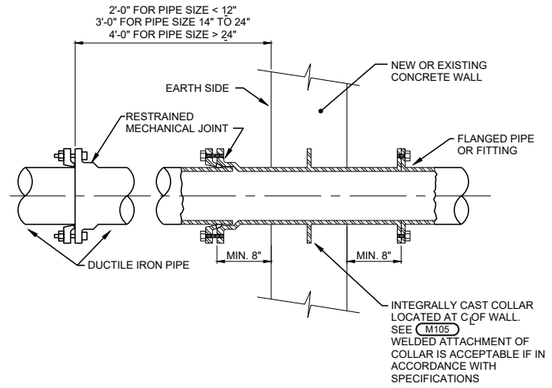
Sheet No. 33

Drawing No. **002-CFGD-4**



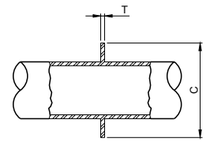
FLG / PLAIN END DUCTILE IRON WALL PIPE DETAIL M102

NTS



MJ / FLG DUCTILE IRON WALL PIPE DETAIL M109

NTS

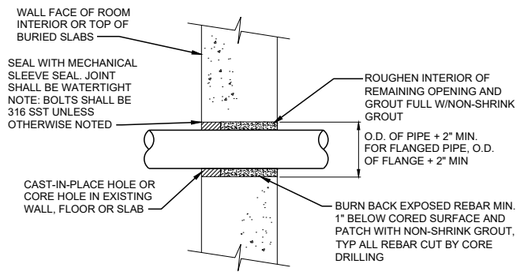


MINIMUM COLLAR DIMENSIONS

NOMINAL PIPE DIA (INCHES)	INTEGRALLY CAST D.I. COLLAR T THICKNESS (INCHES)	INTEGRALLY CAST D.I. COLLAR C DIAMETER (INCHES)	STEEL COLLAR T THICKNESS (INCHES)	STEEL COLLAR C DIAMETER (INCHES)
4	0.50	8.00	0.25	6.80
6	0.50	10.00	0.25	8.90
8	0.50	12.50	0.25	11.05
10	0.50	14.50	0.25	13.10
12	0.50	16.50	0.25	15.20
14	0.75	19.50	0.25	17.30
16	0.75	21.75	0.25	19.40
18	0.75	23.75	0.38	22.50
20	0.75	25.75	0.38	24.60
24	0.75	30.25	0.38	28.80
30	1.00	36.50	0.50	36.00
36	1.00	43.00	0.50	42.30
42	1.25	49.50	0.75	50.75
48	1.25	56.50	0.75	57.05
54	1.50	63.00	1.00	66.06
60	1.50	70.25	1.00	70.11

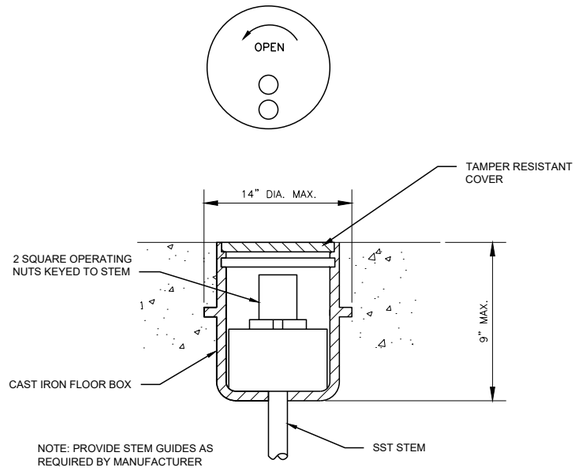
DUCTILE IRON WALL AND FLOOR PIPE COLLAR DIMENSIONS DETAIL M105

NTS



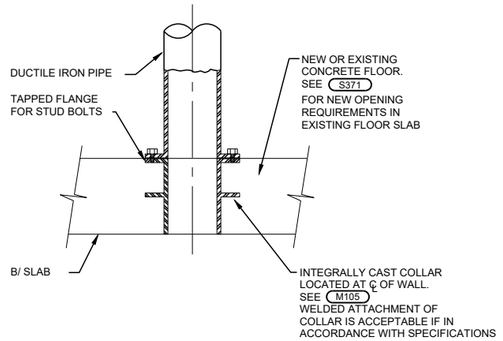
PIPE PENETRATION DETAIL M126

NTS



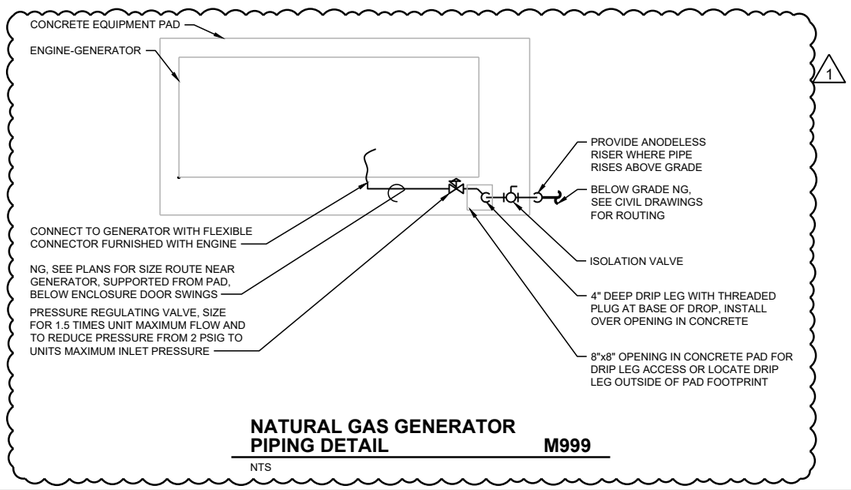
FLOOR BOX DETAIL M355

NTS



FLG / PLAIN END DUCTILE IRON FLOOR PIPE DETAIL M201

NTS



NATURAL GAS GENERATOR PIPING DETAIL M999

NTS

Revision Number	Revision Description	Drawn By	Checked By	Date
01	ADDENDUM#2	JLP	KRB	08/22/25

Designed By	KRL
Drawn By	KRL
Checked By	EPC
Approved By	PMS
Filename	999MD1.DWG
Project No.	13883
Project Date	JULY 2025

LAKE COUNTY DEPARTMENT OF PUBLIC WORKS
SAUNDERS ROAD SANITARY SEWER AND LIFT STATION IMPROVEMENTS
BID #25232 PW #2020.130
LAKE COUNTY, IL

GENERAL NOTES, SCHEDULES, AND STANDARD DETAILS PROCESS

DONOHUE

Sheet No. 69

Drawing No. 999-M-1