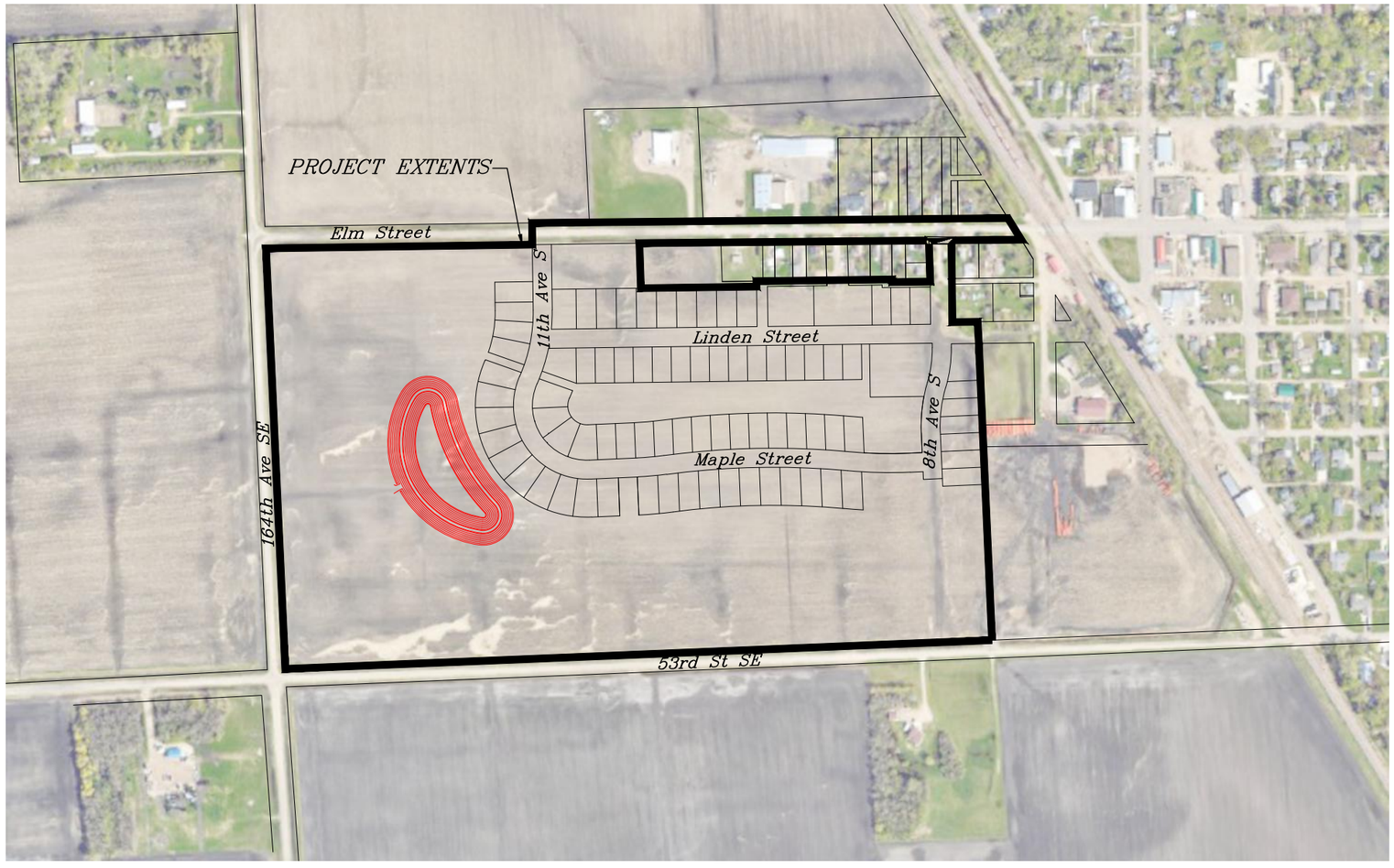
Sewer, Water, and Street Improvement District No. 2025-2

Plains Third Addition
Kindred, North Dakota



VICINITY MAP

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ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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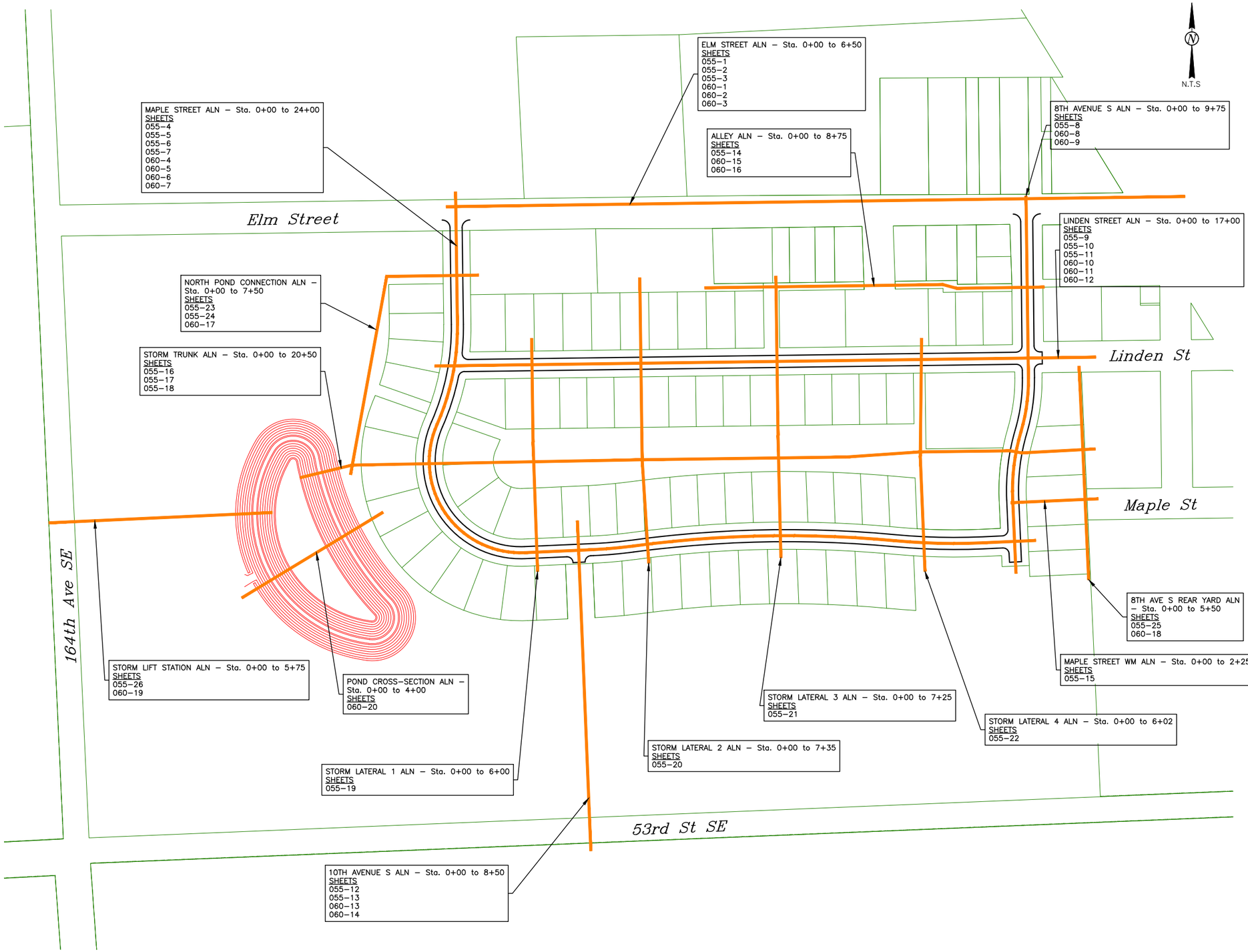

Sheet Index	
Sheet Number	Sheet Title
001 – Cover Sheet	
1	Cover
002 – Table of Contents	
1	Alignment & Sheet Index
004 – Overall Layout	
1–2	Overall Utility / Paving Layout
020 – Details	
1–8	Details
LS01–LS02	Sanitary Lift Station Details
030 – Typical Sections	
1	Typical Pavement Sections
040 – Removals	
1–2	Demolition
050 – Pipe & Structure Schedules	
1–2	Pipe & Structure Schedules
055 – Underground	
1–26	Underground Utilities
060 – Paving	
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075 – SWPPP	
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110 – Signing	
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Plan Notes	
1–38	Plan Notes

NOTE:
Soil Boring Report is Provided in the Plan Specifications Book.

ADDENDUM & CONSTRUCTION REVISIONS		
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Alignment Layout

Alignments & Sheet Index

Improvement District No. 2025–2

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MBN ENGINEERING	SECTION NO. 002	SHEET NO. 1

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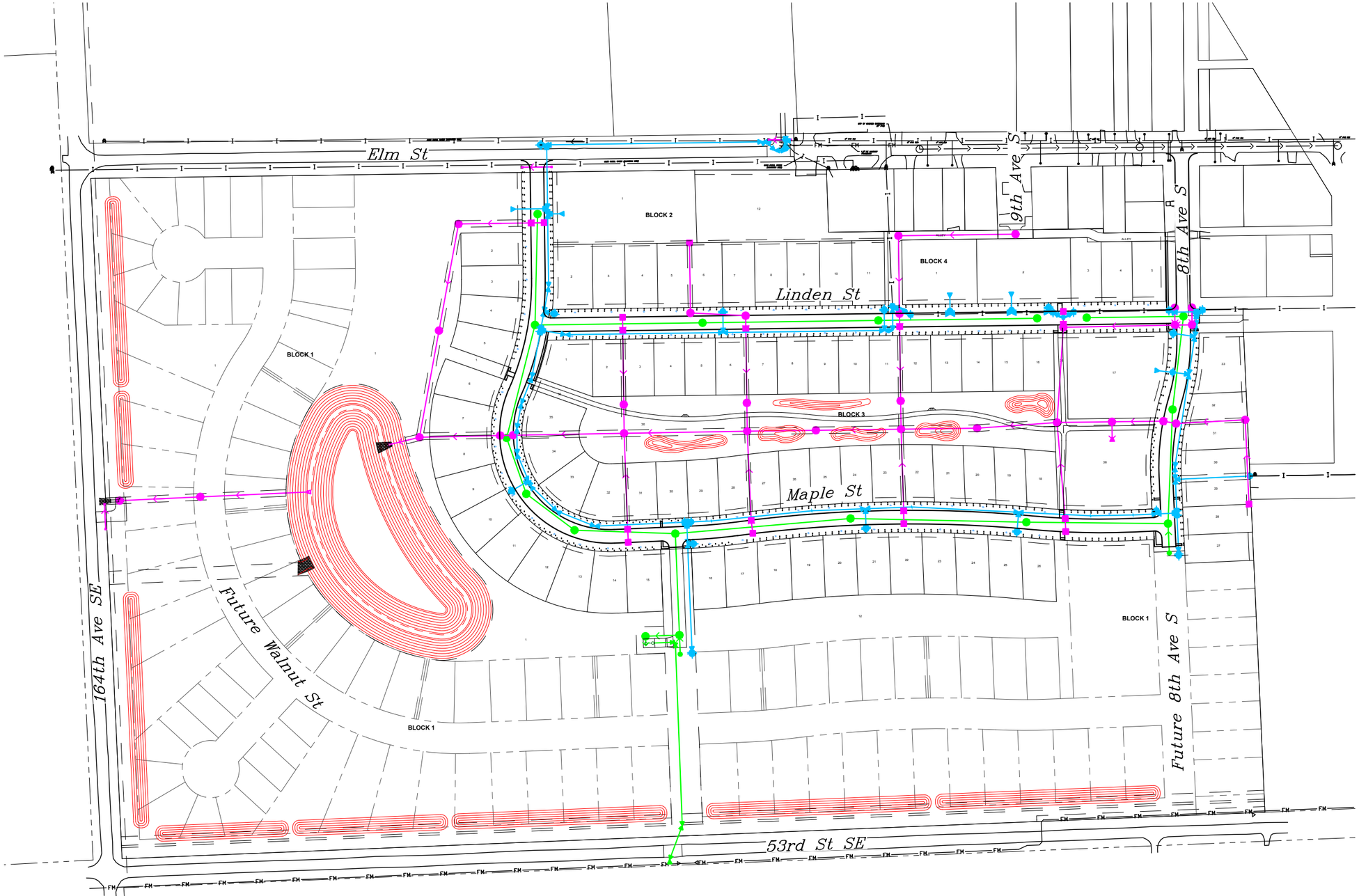

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Overall Utility Layout

New Paving & Utility Construction

Improvement District No. 2025–2

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SECTION NO.	SHEET NO.
004	1

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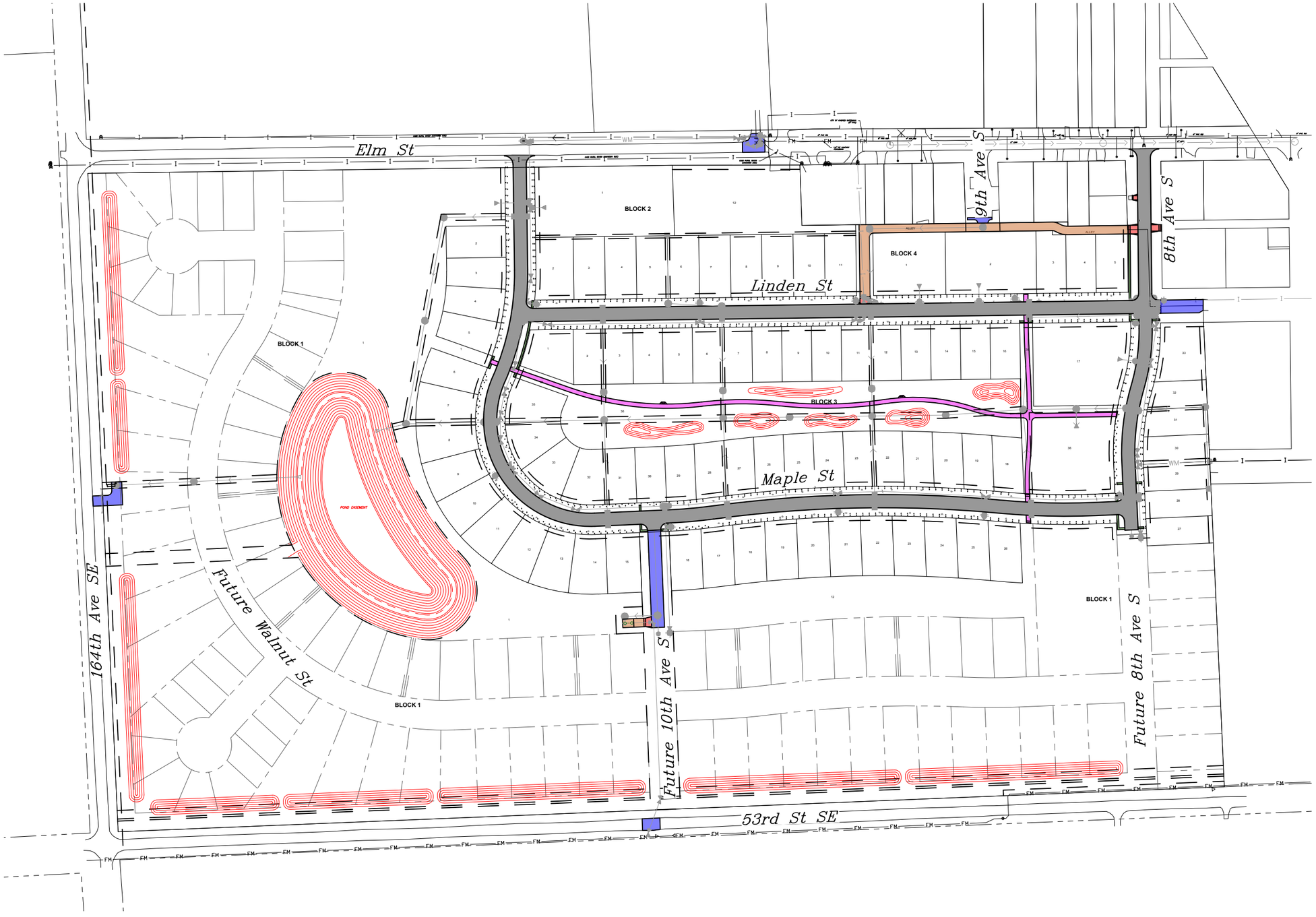

LEGEND:

- EX. SANITARY FORCEMAIN
- EX. SANITARY SEWER
- EX. WATERMAIN
- NEW MANHOLE
- NEW SANITARY SEWER
- NEW SANITARY FORCEMAIN
- NEW STORM SEWER
- NEW WATERMAIN
- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 5" MULTI-USE PATH
- PROPOSED 7" RC PAVEMENT
- PROPOSED 8" RC PAVEMENT
- PROPOSED 12" GRAVEL SECTION

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Overall Paving Layout

New Paving & Utility Construction

Improvement District No. 2025-2

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MBN ENGINEERING

SECTION NO.	SHEET NO.
004	2

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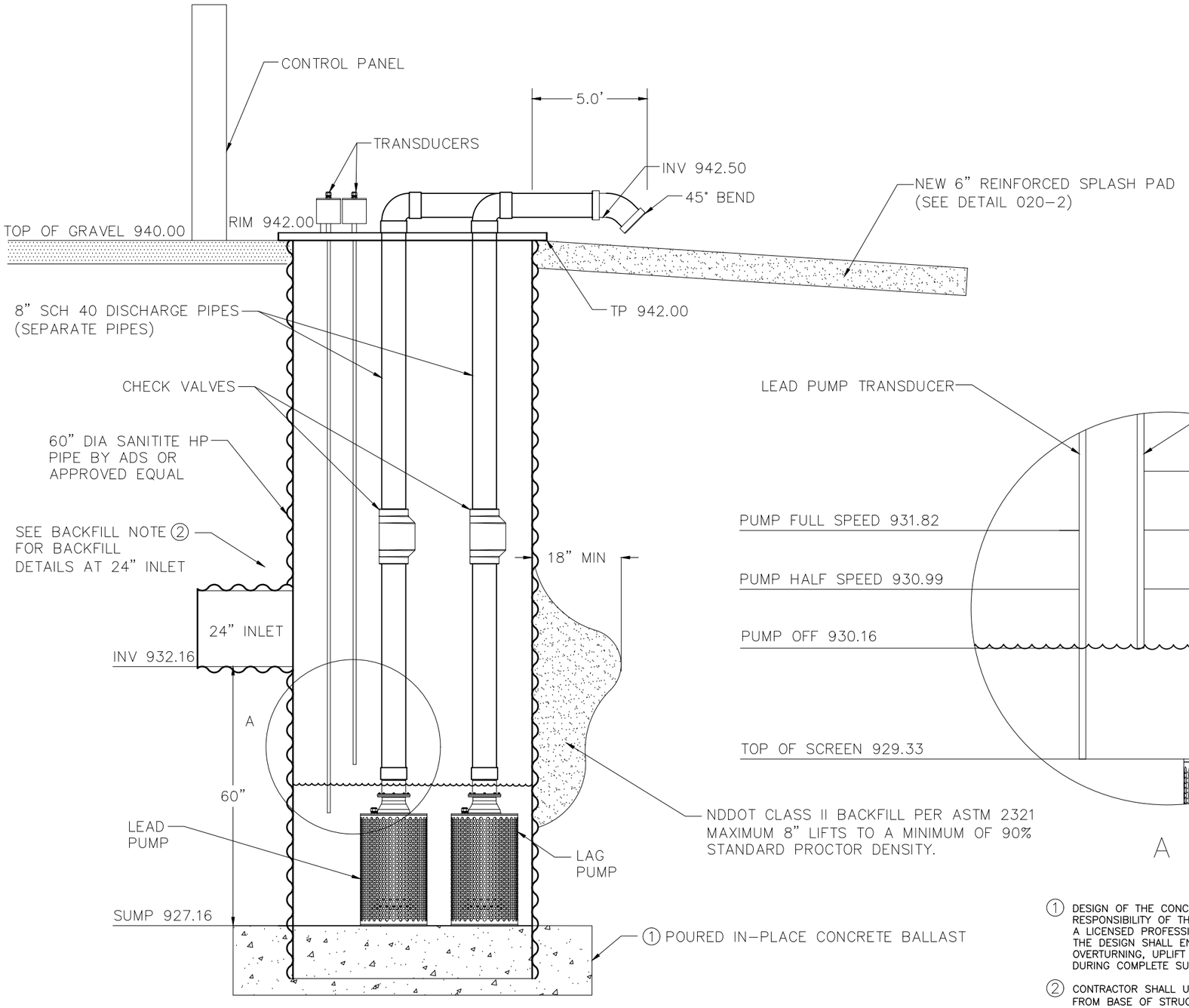

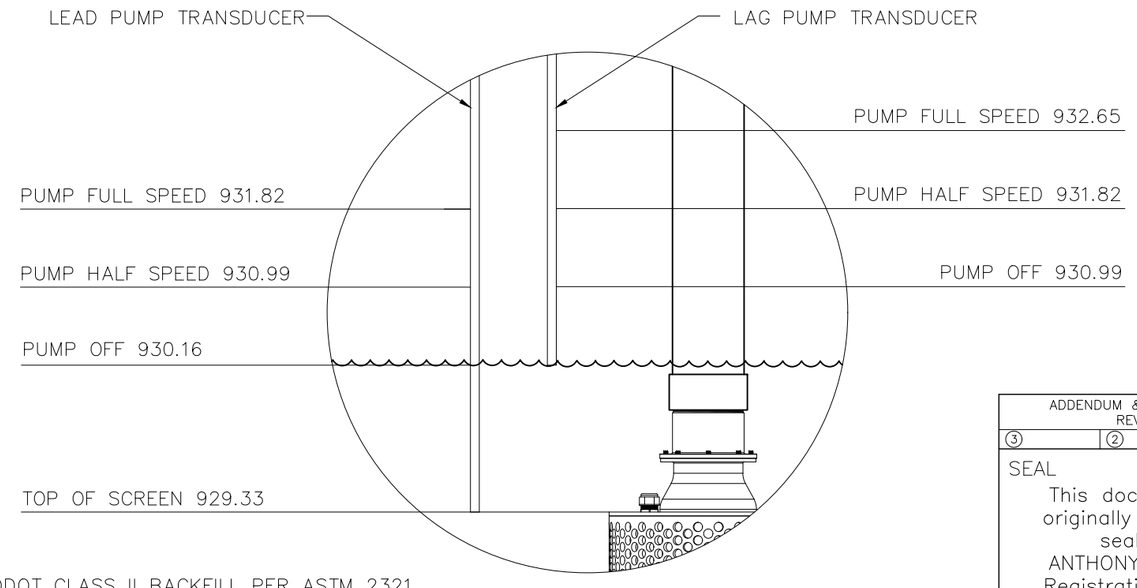

PUMP SCHEDULE

PERFORMANCE CHARACTERISTICS	
FLOW RATE (CFS)	4.0
TOTAL DYNAMIC HEAD (TDH) (FT)	12.5
NUMBER OF PUMPS	2
NUMBER OF VFD'S	2
POWER SUPPLY	230 VOLTS, 3 PHASE, 60 HZ
REMOTE MONITORING	YES
PUMP BASIS OF DESIGN	7.5 HP (10" IMPELLER) CP06 SERIES PUMP BY CARRY PUMPS (OR APPROVED EQUAL)

NOTES:
1. INSTALL ALL MATERIALS PER MANUFACTURER'S RECOMMENDATIONS.
2. CONTRACTOR SHALL COORDINATE WITH PUMP MANUFACTURER TO VERIFY PUMP ON/OFF ELEVATIONS.
3. SEE ELECTRICAL DRAWINGS FOR VFD REQUIREMENTS.
4. PUMP SYSTEM SHALL HAVE REMOTE MONITORING CAPABILITIES FOR BOTH THE LEAD & LAG PUMPS.

① DESIGN OF THE CONCRETE BALLAST SYSTEM SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER AND SHALL BE COMPLETED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA. THE DESIGN SHALL ENSURE THE STABILITY OF THE STRUCTURE AGAINST OVERTURNING, UPLIFT FORCES, AND MAINTAIN STRUCTURAL INTEGRITY DURING COMPLETE SUBMERGENCE IN WATER.

② CONTRACTOR SHALL USE NDDOT CLASS 5 FOR BACKFILL MATERIAL FROM BASE OF STRUCTURE TO 1' ABOVE 24" INLET PER ASTM 2321. MAXIMUM 8" LIFTS TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY. USE NDDOT CLASS II BACKFILL FROM 1' ABOVE 24" INLET TO SUBGRADE ELEVATION.

STORM LIFT STATION (SECTION) DETAIL

N.T.S.

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Details

Storm Lift Station (Section) Detail

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
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MBN ENGINEERING

SECTION NO.	SHEET NO.
020	1

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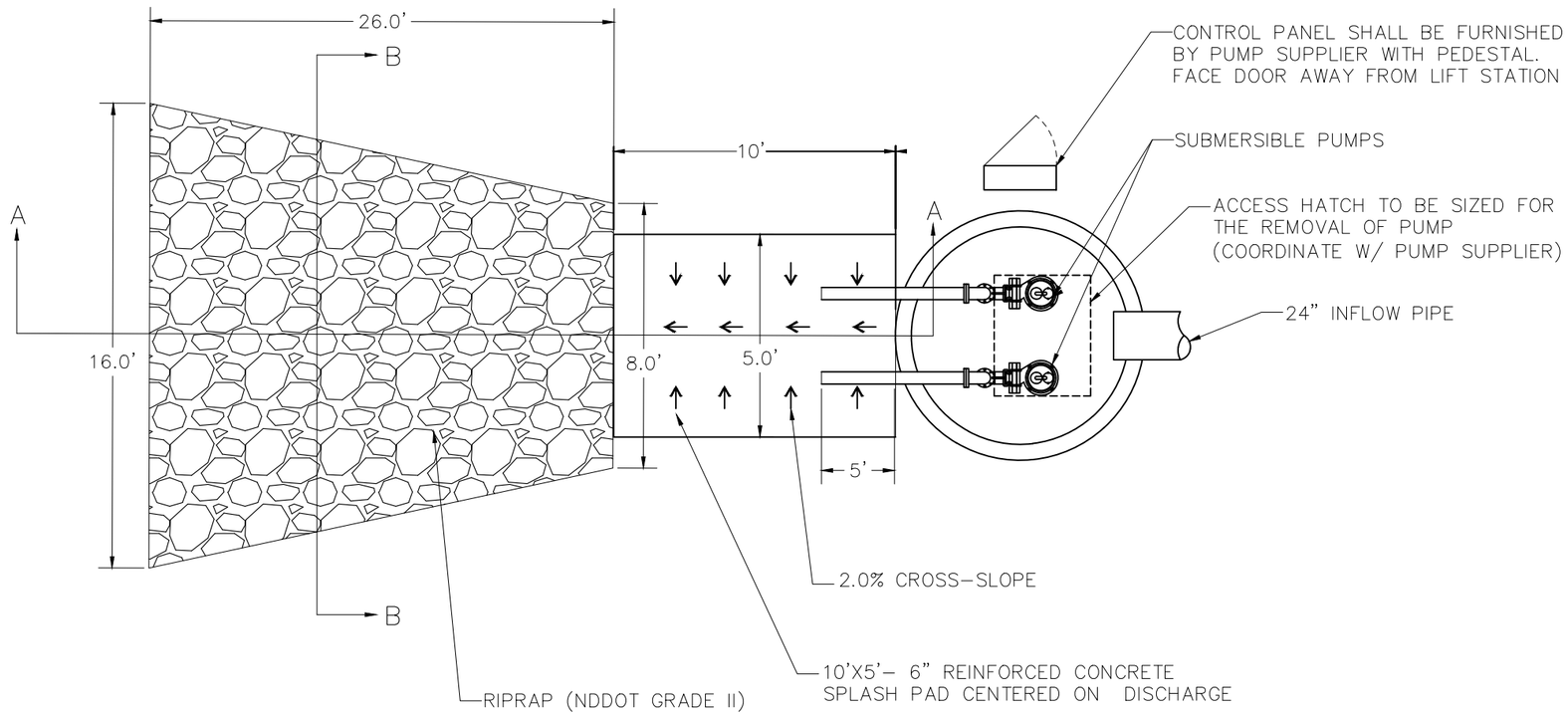
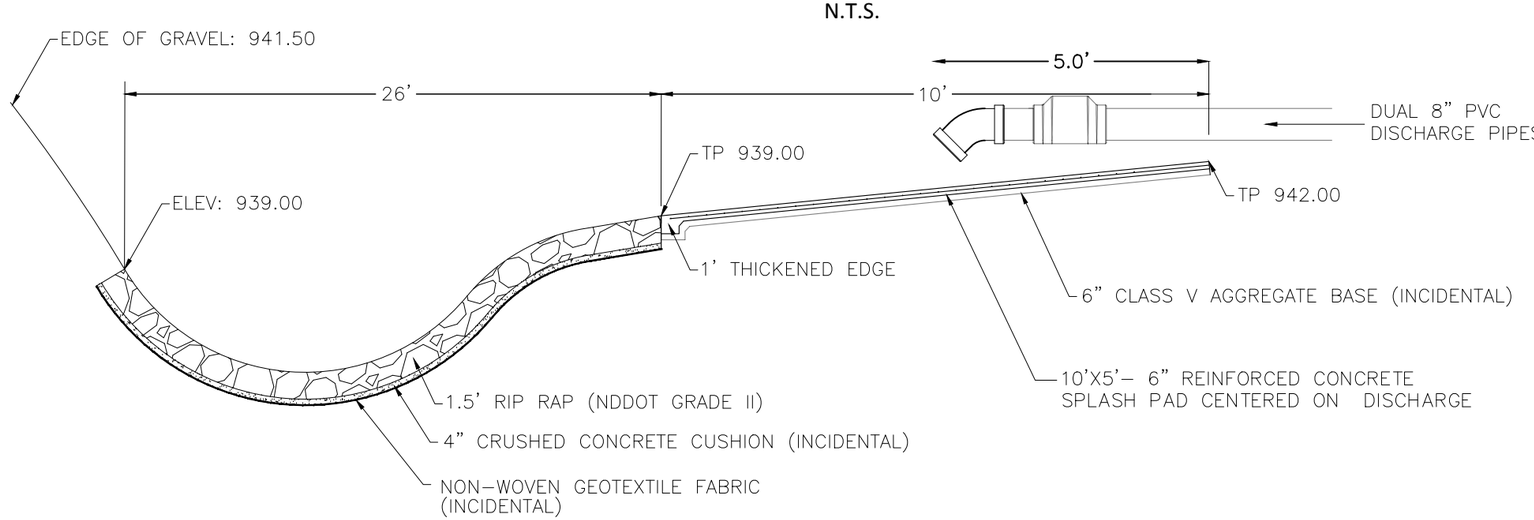


STORM LIFT STATION (PLAN) DETAIL

N.T.S.



SECTION A-A

STORM LIFT STATION OUTFALL DETAIL

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Details

Storm Lift Station Detail

Improvement District No. 2025-2

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SECTION NO.	SHEET NO.
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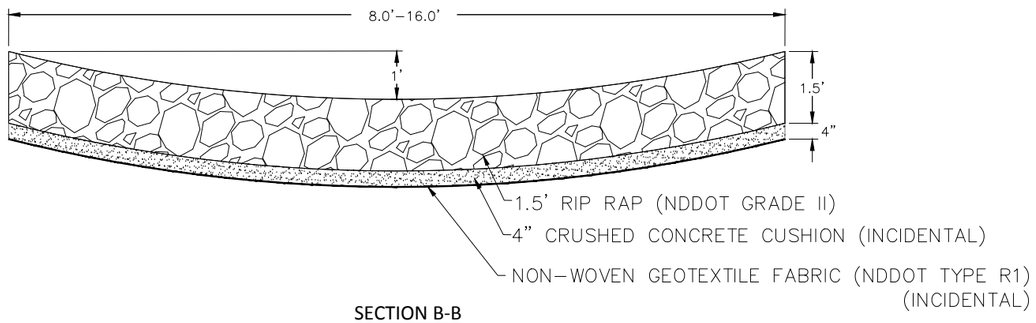

SECTION B-B

STORM LIFT STATION RIPRAP DETAIL

N.T.S.

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Details

Storm Lift Station Riprap Detail

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
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SECTION NO.	SHEET NO.
020	3

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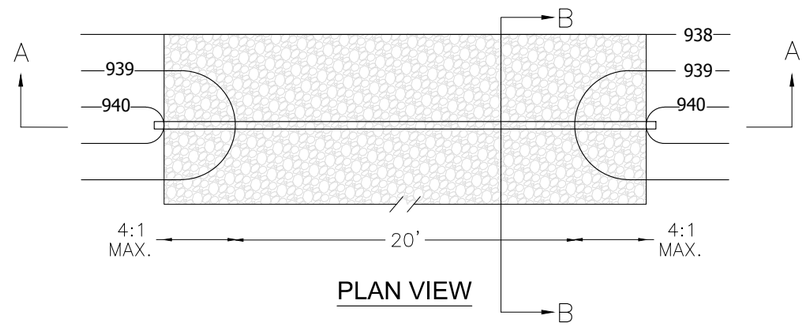
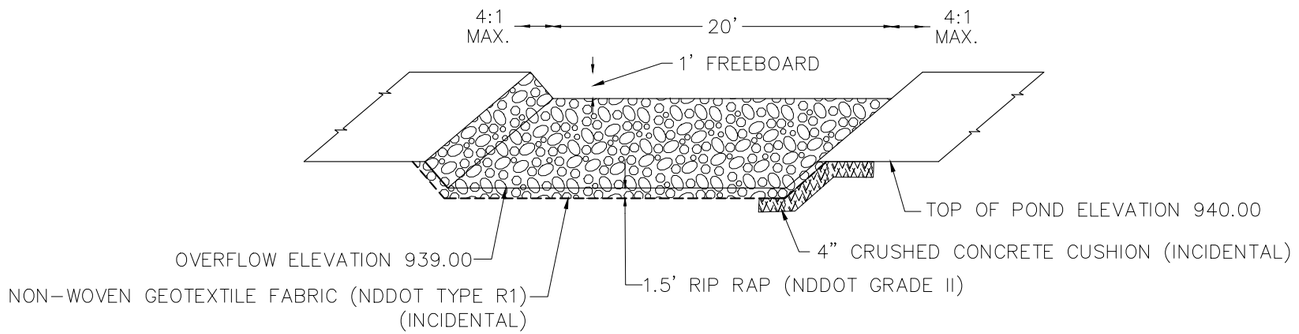
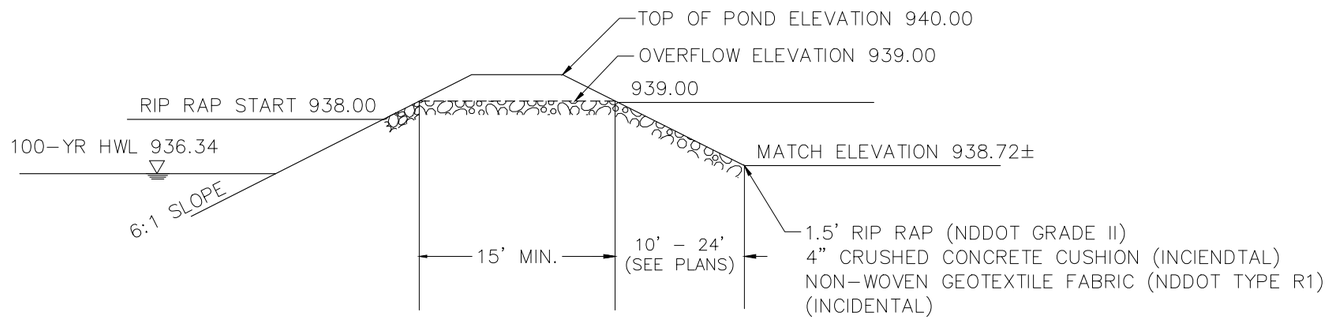


PLAN VIEW



SECTION A - A



SECTION B - B

POND EMERGENCY OVERFLOW DETAIL

N.T.S.

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3	2	1

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Details

Pond Emergency Overflow Detail

Improvement District No. 2025-2

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SECTION NO.	SHEET NO.
020	4

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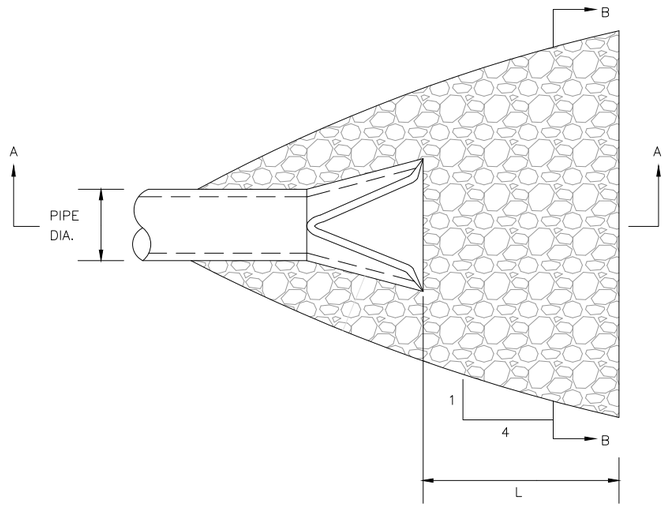
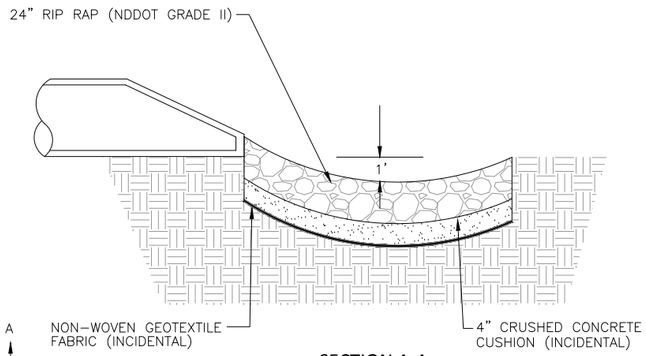
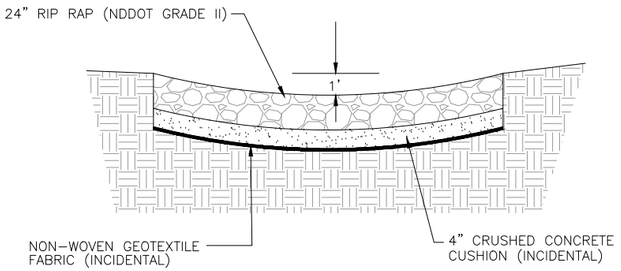




SECTION A-A



SECTION B-B

PIPE DIA (IN)	L (FT)	24" DEPTH RIP RAP (CY)
12	8	5.5
15	8	5.8
18	10	7.8
21	10	8.4
24	12	11.0
27	12	11.6
30	14	14.5
33	16	16.4
36	16	18.3
42	18	21.7
48	20	25.8

RIP RAP AT FLARED END SECTIONS DETAIL

N.T.S.

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Flared End Section Riprap Detail

Improvement District No. 2025-2

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SECTION NO.	SHEET NO.
020	5

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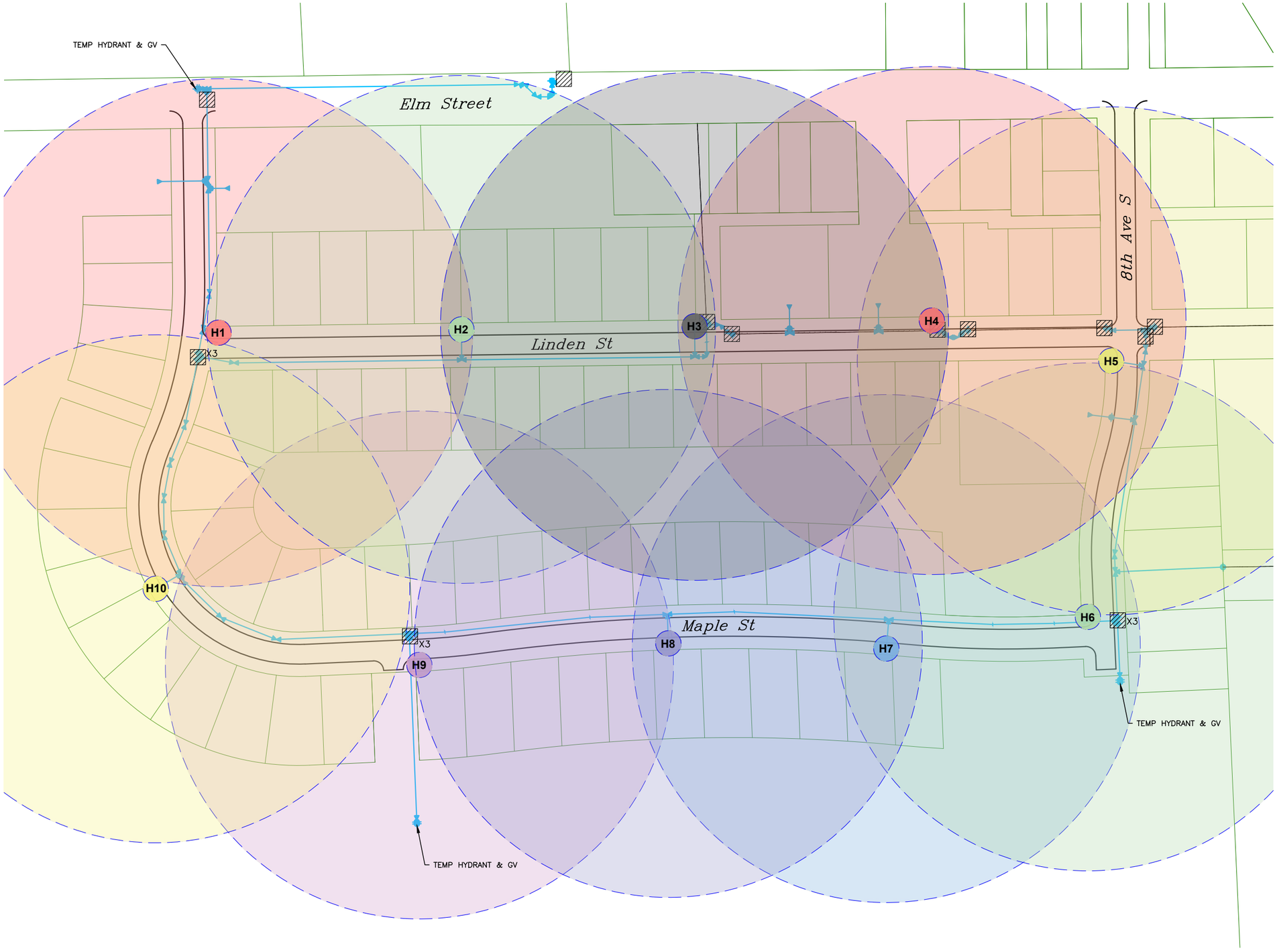

N

0 80' 160'

LEGEND:

- NEW GATE VALVE LOCATION
- H1 NEW HYDRANT LOCATION
- NEW HYDRANT INFLUENCE CIRCLE (400' RADIUS)

NOTES:
1. ALL HYDRANTS HAVE GATE VALVES ADJACENT (~3.0'). VALVES IDENTIFIED ON MAP ARE ISOLATION GATE VALVES LOCATED ON WATERMAIN.

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Details

Gate Valve Locations & Hydrant Influence

Improvement District No. 2025-2

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SECTION NO.	SHEET NO.
020	6

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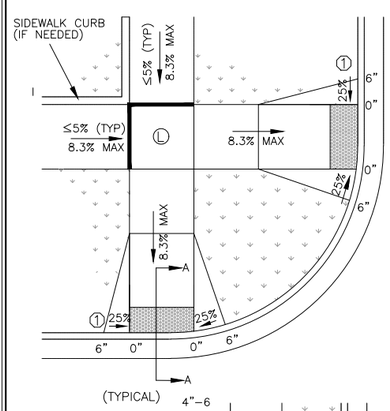
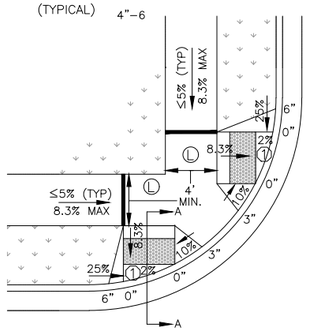
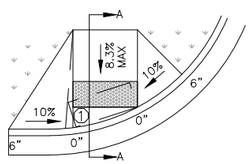
SIDEWALK RAMPS

TYPE A : GRASS BOULEVARD
TYPE B : SIDEWALK ADJACENT TO STREET CURB
TYPE C : CONTINUOUS CONCRETE IN BOULEVARD (TYPICALLY DOWNTOWN AREA)

TYPE A





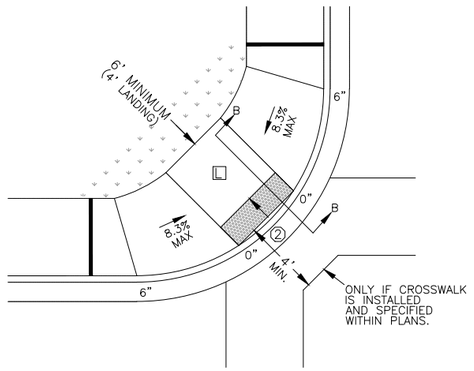


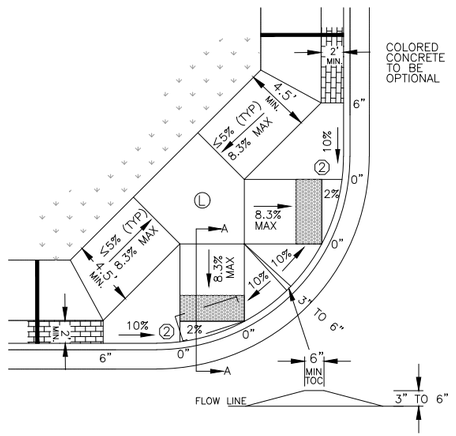
ALTERNATIVE DWP

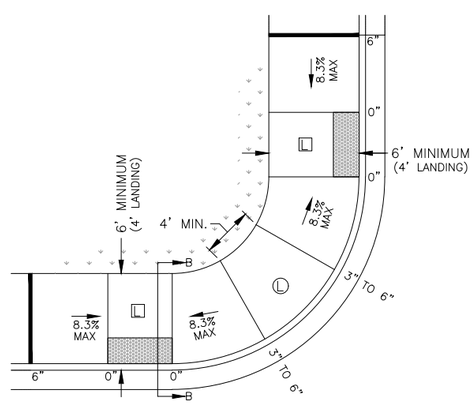
① 5' MAX, 3" MAX — NOT CONTINOUS WALK SURFACE IN BLVD (GRASS BLVD)

② 2' MAX, 3" MAX — CONTINOUS WALK SURFACE IN BLVD (CONCRETE BLVD)

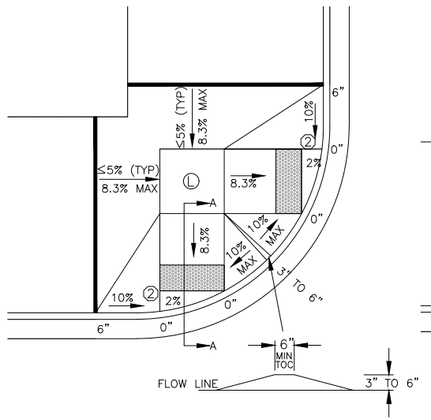
TYPE B

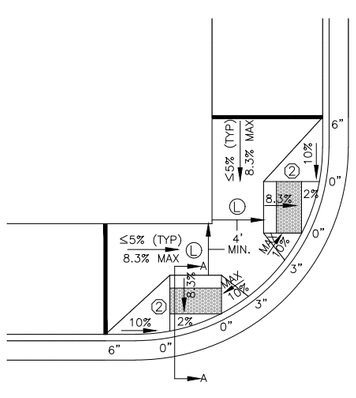


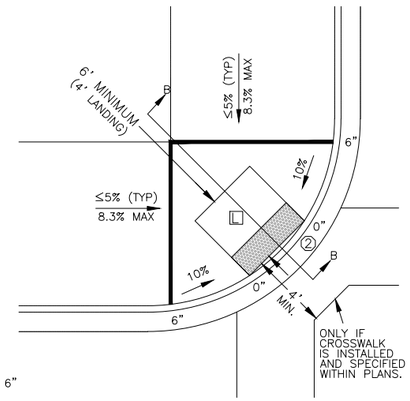


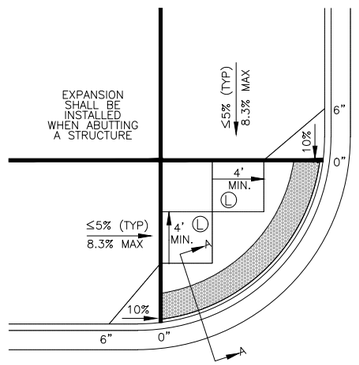


TYPE C









LEGEND:

	DETECTABLE WARNING PANEL UNPAINTED CAST IRON
	GRASS
	COLORED BRICK CONCRETE (MIN 2')
Ⓛ	UPPER LANDING 2% MAX
L	LOWER LANDING 2% MAX
0", 3", 4" OR 6"	CURB HEIGHT
	1/2" EXPANSION (ALL EXPANSION SHALL BE SEALED WITH HOT POUR)

20:1=5% 12:1=8.3% 10:1=10% 4:1=25%

NOTES:

1. RAMP WIDTH IS DEFINED AS THE USEABLE PORTION OF THE RAMP, EXCLUDING FLARES IF USED.

   CURB RAMP WIDTH SHOULD MATCH THE EXISTING SIDEWALK WIDTH. 4' WIDTH MINIMUM.

   RAMP WIDTH FOR SHARED–USE PATHS SHOULD MATCH THE EXISTING SHARED USE PATH WIDTH.

2. RAMP LENGTH SHALL BE MAXIMUM OF 15'.

   ANY PORTIONS OF SIDEWALK BETWEEN THE DETECTABLE WARNING PANELS AND THE CURB SHALL HAVE A MAX 2% LONGITUDINAL GRADE.

3. LANDINGS SHALL BE A MINIMUM OF 4' X 4' AND SHALL HAVE A MAX 2% SLOPE IN ANY DIRECTION. LANDINGS ARE DESIRABLY 5' X 5' OR LARGER.

4. DETECTABLE WARNING PANELS SHALL MATCH THE RAMP WIDTH. RADIAL PANELS MAY ALSO BE USED.THE DETECTABLE WARNING PANEL MAY BE LOCATED WITHIN THE LOWER LANDING.

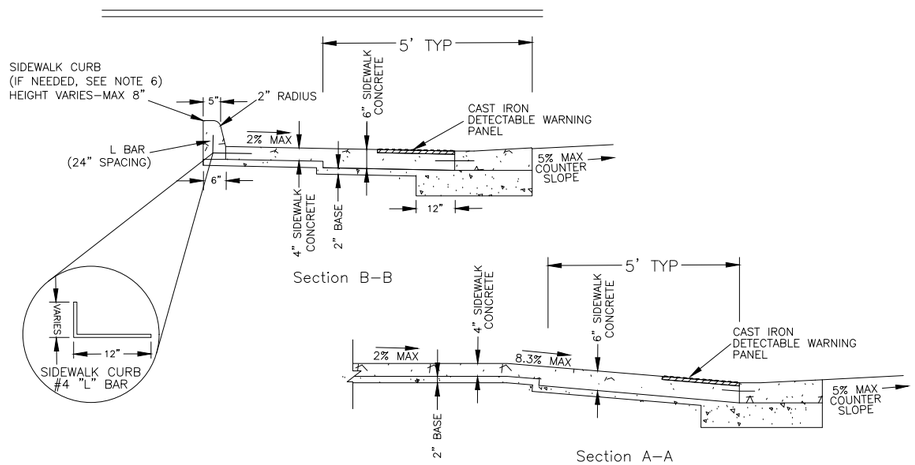
5. THE PEDESTRIAN ACCESS ROUTE SHALL BE CONTINUOUS 4' MIN. WIDTH. MAX 2% CROSS SLOPE APPLIES TO ALL CONCRETE, EXCLUDING FLARES.

6. LANDSCAPING IS PREFERRED TO MODIFY EXISTING GROUND SLOPE CHANGES AS NEEDED. IF NOT POSSIBLE, SUCH AS ADJACENT BUILDINGS, A VERTICAL CURB MAY BE USED AS SHOWN IN THE DETAIL BELOW. THE CURB WILL BE PAID FOR AT THE UNIT PRICE BID FOR THE ITEM"CURB – TYPE SW" PER LINEAL FOOT.

7. THE MAJORITY OF LINES SHOWN ON DETAILS INDICATE POINT OF DIFFERING GRADE CHANGES. ACTUAL JOINT DIMENSIONS MAY VARY IN FIELD.

8. LONGITUDINAL SLOPE ON SIDEWALK SHALL NOT EXCEED 5%. GENERALLY SIDEWALK GRADE IS ESTABLISHED BY THE ROADWAY GRADE. SIDEWALK SHALL NOT EXCEED 2% CROSS SLOPE.

9. CONCRETE LANDINGS SHALL BE PLACED SEPARATELY AND INSTALLED PRIOR TO ADJACENT ADA RAMPS AND/OR SIDEWALKS. CONCRETE LANDINGS SHALL HAVE A MINIMUM OF 24 HOURS OF CURE TIME PRIOR TO ADJACENT CONCRETE PLACEMENT.



SIDEWALK RAMP CROSS–SECTIONS

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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SW Details

Sidewalk and ADA Ramp Details

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
020	7

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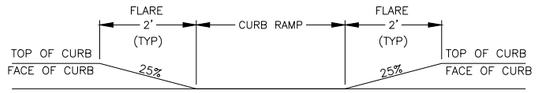
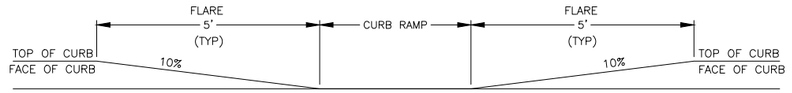
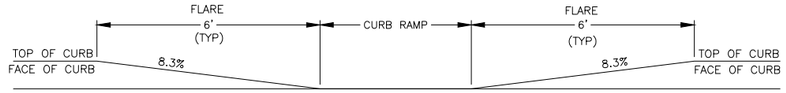
SIDEWALK/BIKETRAIL DETAILS



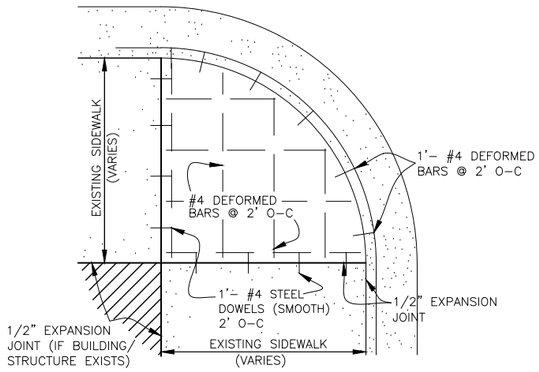
25% FLARES



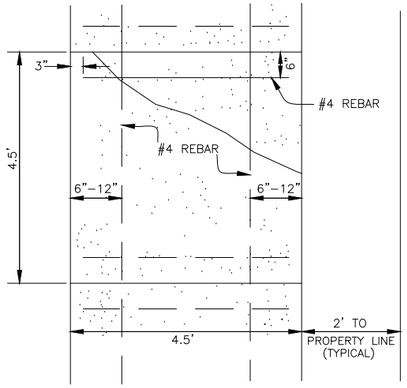
10% FLARES



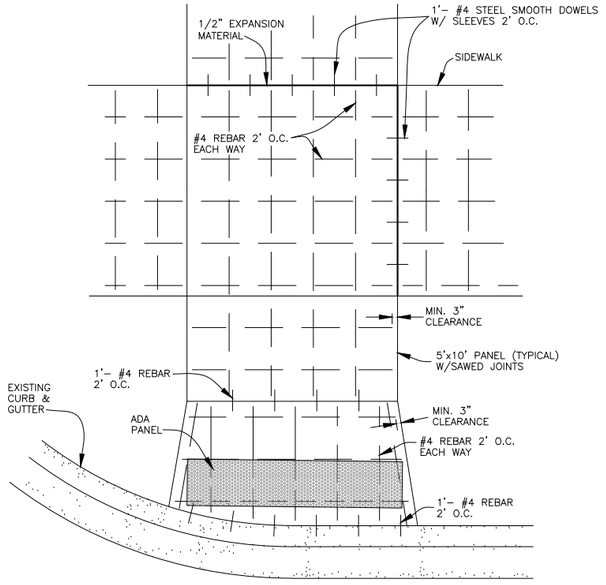
8.3% FLARES



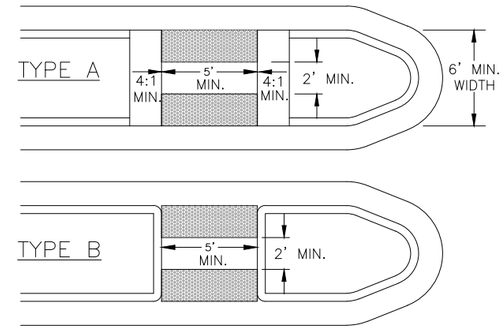
SIDEWALK REINFORCEMENT



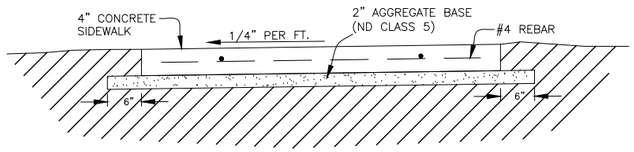
4.5' REINFORCEMENT



10' REINFORCEMENT



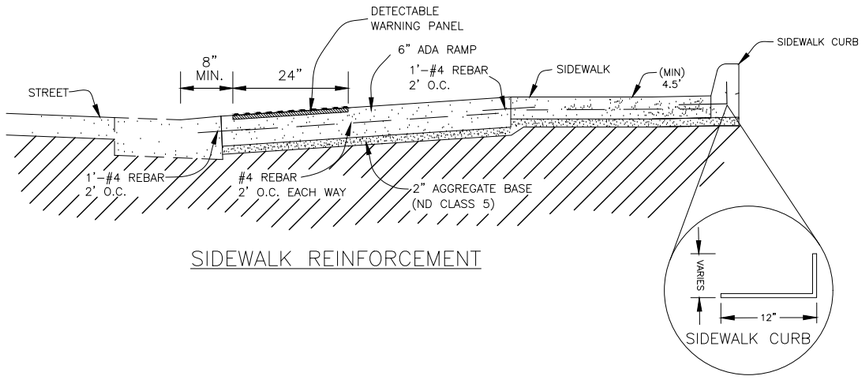
MEDIAN REFUGE ISLANDS (CUT-THROUGH)



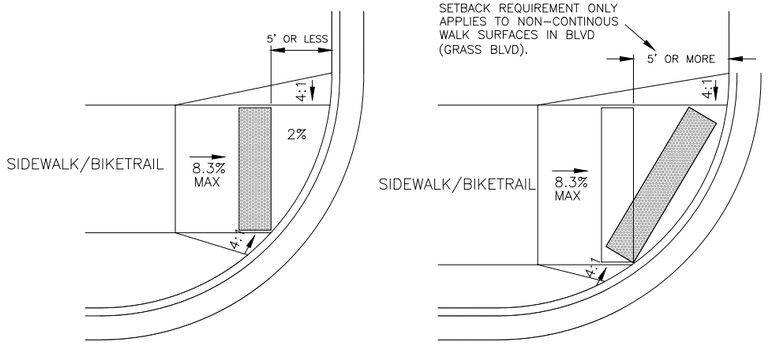
SIDEWALK CROSS-SECTION

SIDEWALK WIDTH	PANELS (L'xW')
6'	5'x6'
8'	4.5'x4'
10'	5'x5'

JOINT DIMENSION



SIDEWALK REINFORCEMENT



CONCRETE APRON FOR SIDEWALK/BIKETRAIL

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

SEAL

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SW Details

Sidewalk and ADA Ramp Details

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
020	8

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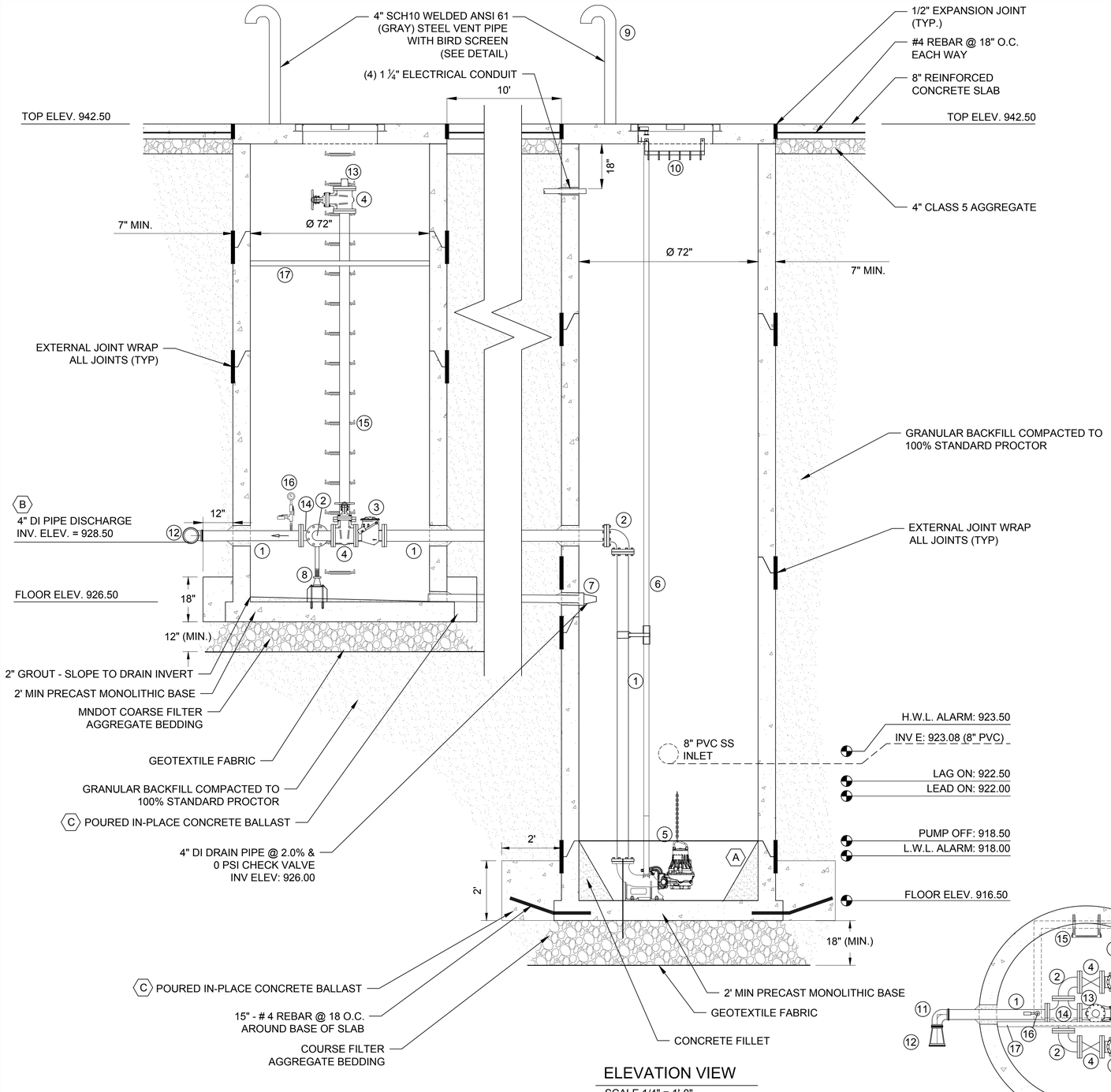
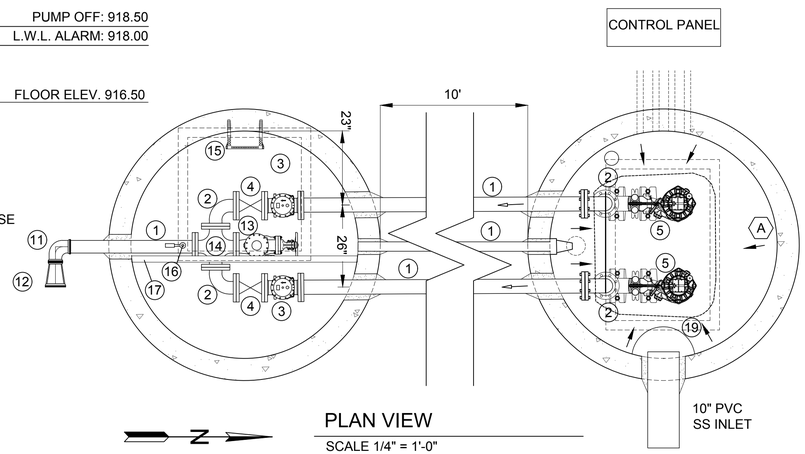


ELEVATION VIEW

SCALE 1/4" = 1'-0"



PLAN VIEW

SCALE 1/4" = 1'-0"

GENERAL NOTES

1. DIMENSIONS SHOWN ARE APPROXIMATE IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH THE PIPE, FITTINGS, PUMP, AND CONTROL SUPPLIER TO VERIFY THE DIMENSIONS AND LAY OUT THE WORK ACCORDINGLY.
2. ALL HARDWARE SHALL BE 304 STAINLESS STEEL.
3. ALL PIPE PENETRATIONS SHALL BE SEALED WATER TIGHT WITH A PRECAST PROVIDED FLEXIBLE RUBBER BOOT OR LINK SEAL.
4. ALL WORK SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE LIFT STATION LUMP BID ITEM.

CONSTRUCTION NOTES

A. SLOPE SUMP WALLS TO FLOOR AT 45°FORM AROUND DISCHARGE ELBOWS. PROVIDE PUMP CLEARANCE (0.25 x VOLUTE DIAMETER) FROM EDGE OF PUMP TO BOTTOM OF SUMP WALL. COORDINATE WITH ELECTRICAL TO FORM AROUND ANCHOR.

B. CONTRACTOR SHALL BE FIELD VERIFY INVERT ELEVATION OF EXISTING 14" RECEIVING FORCEMAIN PRIOR TO PRECAST CONSTRUCTION. TO ENSURE VALVE VAULT DISCHARGE PIPING IS LOWER THAN CONNECTION (NO HIGH POINT).

C. THE DESIGN OF THE PRECAST CONCRETE BALLAST SYSTEM SHALL BE THE RESPONSIBILITY OF PRECAST MANUFACTURER AND COMPLETED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA. THE DESIGN SHALL ENSURE THE STABILITY OF THE STRUCTURE AGAINST OVERTURNING, UPLIFT FORCES, AND MAINTAIN STRUCTURAL INTEGRITY DURING COMPLETE SUBMERGENCE IN WATER.

PROCESS SCHEDULE

1. 4" DI PIPE
2. 4" DI 90° BEND
3. 4" CHECK VALVE
4. 4" GATE VALVE
5. SUBMERSIBLE PUMP W/ DISCHARGE END
6. 2" SCH 40 SS GUIDE RAILS
7. 4" DI DRAIN PIPE & O PSI CHECK VALVE
8. PIPE SUPPORT
9. 4" SCH 40 SS VENT PIPE
10. SS CABLE RACK
11. 4" DI 90° BEND (MJ)
12. 4"x6" MJ REDUCER
13. 4" BLIND FLANGE W/ 4" SS THREADED MALE COMLOCK CONNECTION
14. 4" DI CROSS
15. MANHOLE STEPS
16. PRESSURE GAUGE
17. ANGLE BEAM SUPPORT
18. 10" INSIDE DROP (DROP BOWL ASSEMBLY NOT SHOWN FOR PLAN CLARITY. SEE DETAIL)
19. 10" DROP BOWL

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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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DETAILS

SANITARY SEWER LIFT STATION

Improvement District 25–2

DESIGN BY: JSO	CHECKED BY: AKE
DRAWN BY: JJF	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
020	LS-01

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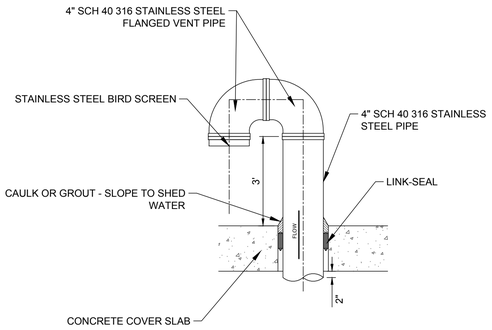
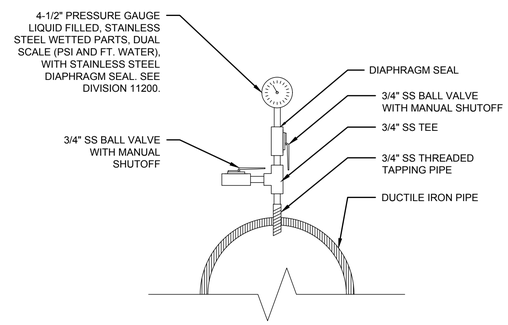


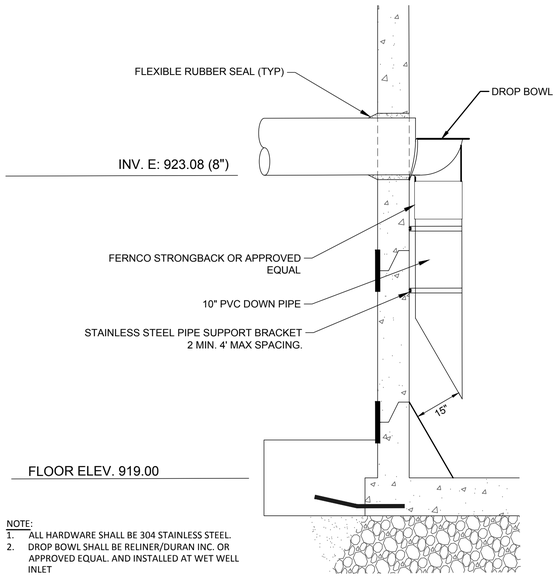
020.10 **4" VENTALATION PIPE**

NO SCALE



G.726 **VERTICAL PRESSURE GAUGE**

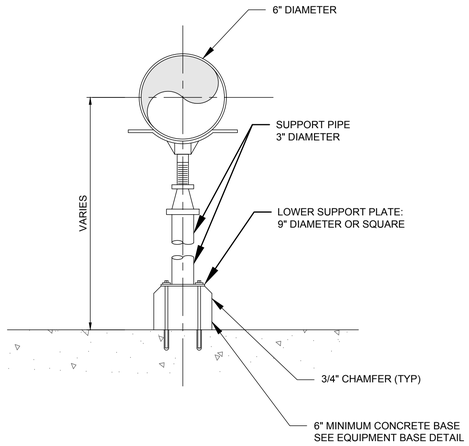
NO SCALE



NOTE:
1. ALL HARDWARE SHALL BE 304 STAINLESS STEEL.
2. DROP BOWL SHALL BE RELINER/DURAN INC. OR APPROVED EQUAL, AND INSTALLED AT WET WELL INLET

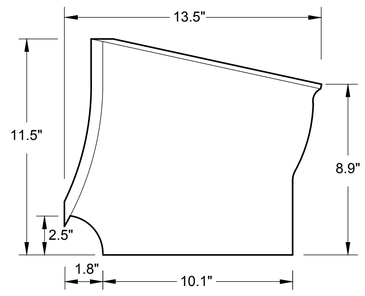
G.726 **10" DROP BOWL DETAIL**

NO SCALE



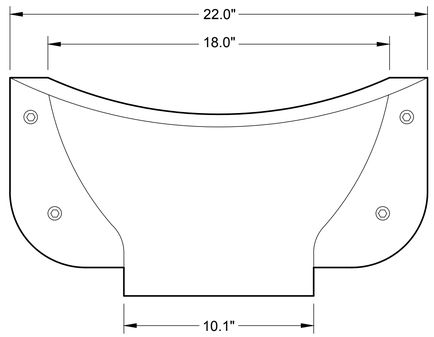
020.8 **PIPE SUPPORT FROM FLOOR**

NO SCALE



SIDE VIEW

NO SCALE:



FRONT VIEW

NO SCALE:

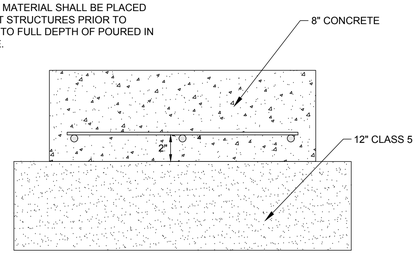
020.9 **10" DROP BOWL**

NO SCALE

NOTES:
1. CONCRETE SHALL BE JOINED BY SAW CUT. IT IS THE CONTRACTORS RESPONSIBILITY TO LAYOUT THE JOINTING PLAN. MAXIMUM PLAN SIZE SHALL BE 10'x10'.

2. NO. 5 BAR PLACED 12" O.C. IN BOTH DIRECTIONS.

3. 1/2" EXPANSION MATERIAL SHALL BE PLACED AROUND PRECAST STRUCTURES PRIOR TO CONCRETE POUR TO FULL DEPTH OF POURED IN PLACE CONCRETE.

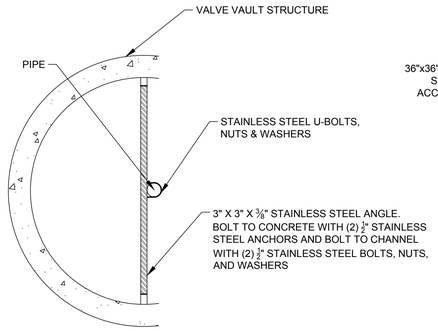


NOTE:

1. DETAIL FOR CONCRETE PAD AROUND SANITARY LIFT STATION

020.9 **8" REINFORCED CONCRETE DETAIL**

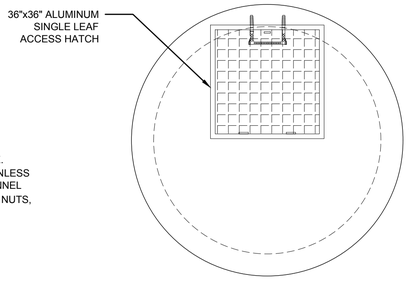
NO SCALE



NOTE: ALL HARDWARE SHALL BE 304 STAINLESS STEEL.

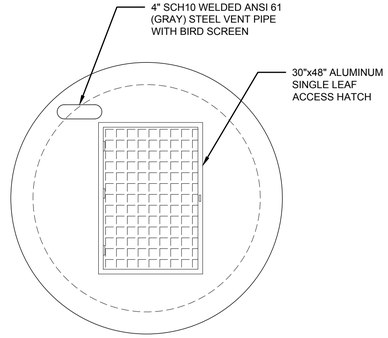
020.9 **ANGLE BEAM PIPE SUPPORT DETAIL**

NO SCALE



VALVE VAULT COVER VIEW

NO SCALE:



LIFT STATION COVER VIEW

NO SCALE:

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ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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DETAILS

SANITARY SEWER LIFT STATION

Improvement District 25–2

DESIGN BY: JSO	CHECKED BY: AKE
DRAWN BY: JJF	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
020	LS-02

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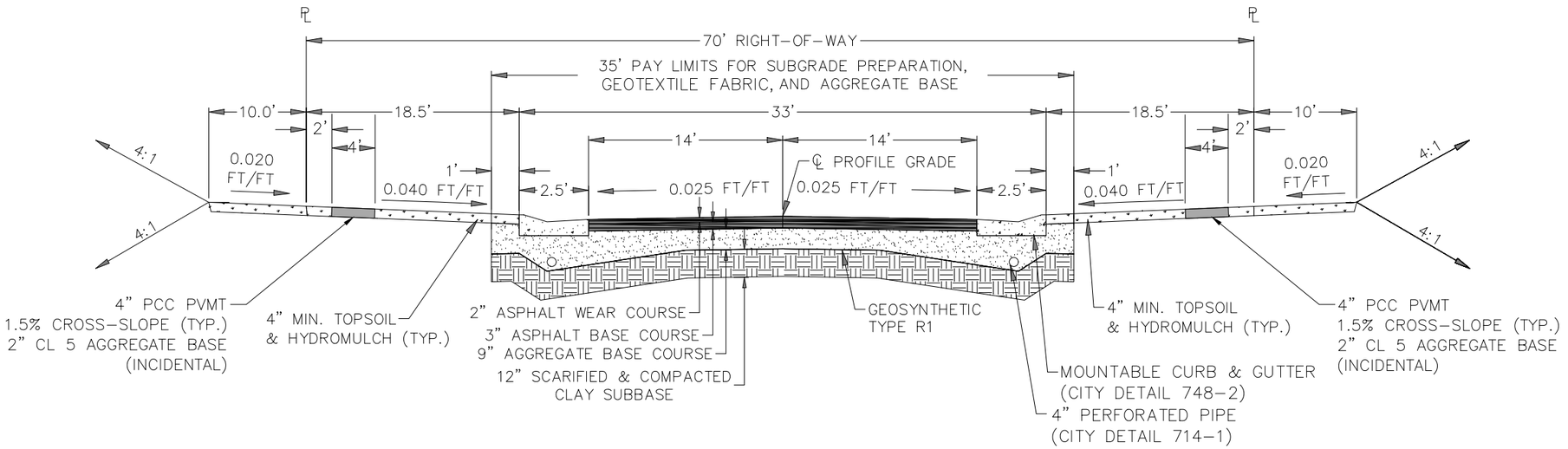
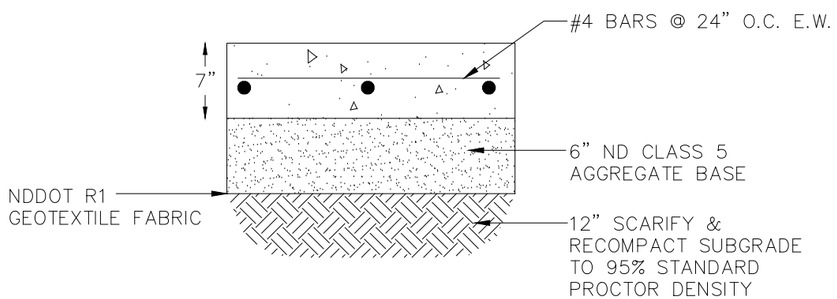


NOTE:
1. ALL CURB & GUTTER SHALL BE MOUNTABLE (INFLOW) UNLESS OTHERWISE NOTED ON PLANS.
2. SUBGRADE AND AGGREGATE BASE CROSS-SLOPE SHALL BE 2.50%.

TYPICAL PROPOSED ASPHALT STREET SECTION

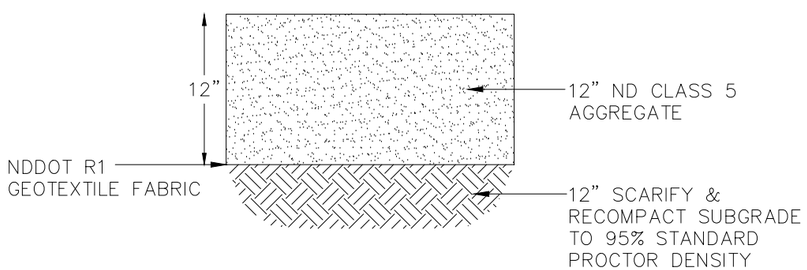
N.T.S.



NOTE:
1. JOINTING PATTERN L:W RATIO SHALL NOT EXCEED 1.25.

TYPICAL PROPOSED 7" CONCRETE SECTION

N.T.S.



TYPICAL PROPOSED 12" GRAVEL SECTION

N.T.S.

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Typical Sections

Pavement & Street Sections

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
030	1

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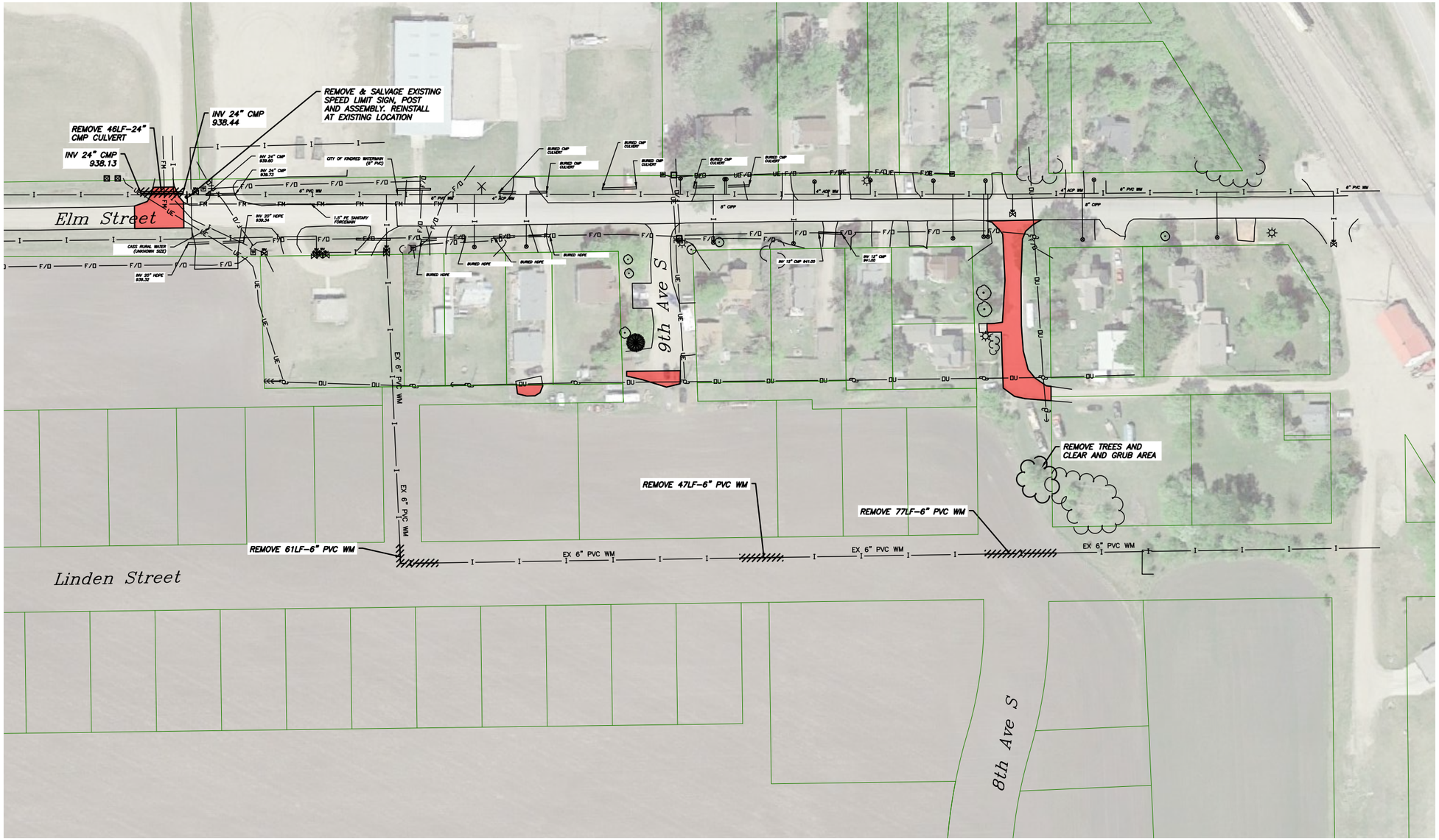

N.T.S

0 60' 120'

LEGEND:

- SALVAGE GRAVEL
- REMOVE TREES
- REMOVE WATERMAIN
- REMOVE STORM CULVERT
- SALVAGE EXISTING SIGN

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Removals

Demolition Plan

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
040	1

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N

N.T.S

0 50' 100'

LEGEND:

SALVAGE GRAVEL

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Removals

Demolition Plan

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
040	2

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SS Structure Schedule	
#/Desc.	Details
SS-1 MH	1+95.14 -0.2'L RIM 940.58 8" PVC S 930.36 BUILD 10.22'
SS-2 MH	4+47.84 0.0' RIM 941.71 8" PVC E 927.43 8" PVC S 927.43 8" PVC N 929.36 BUILD 14.28'
SS-3 MH	4+31.87 0.0' RIM 940.87 8" PVC E 928.96 8" PVC W 928.96 BUILD 11.92'
SS-4 MH	8+31.87 0.0' RIM 942.12 8" PVC E 930.56 8" PVC W 930.56 BUILD 11.57'
SS-5 MH	11+93.10 0.0' RIM 942.18 8" PVC W 932.00 BUILD 10.18'
SS-6 MH	7+14.64 0.0' RIM 940.41 8" PVC N 926.37 8" PVC S 926.37 BUILD 14.04'
SS-7 MH	8+51.25 0.0' RIM 941.14 8" PVC N 925.83 8" PVC SE 925.83 BUILD 15.31'
SS-8 MH	9+90.72 0.0' RIM 941.03 8" PVC NW 925.28 8" PVC E 925.28 BUILD 15.75'
SS-9 MH	12+21.87 0.0' RIM 941.68 8" PVC E 924.80 8" PVC S 924.36 8" PVC W 924.36 BUILD 17.32'
SS-10 MH	5+42.81 0.0' RIM 942.03 8" PVC N 923.44 8" PVC S 923.44 8" PVC W 923.44 BUILD 18.59'
SS-10.1 SS CLEANOUT	4+99.08 0.0' RIM 940.40 8" PVC N 923.61 BUILD 16.79'
SS-11 MH	16+22.02 0.0' RIM 941.06 8" PVC E 926.40 8" PVC W 926.40 BUILD 14.67'
SS-12 MH	20+22.32 0.0' RIM 940.85 8" PVC E 928.00 8" PVC W 928.00 BUILD 12.85'
SS-13 MH	23+45.09 0.0' RIM 941.65 8" PVC N 929.29 8" PVC W 929.29 8" PVC S 929.29 BUILD 12.36'
SS-13.1 SS CLEANOUT	0+15.60 0.0' RIM 941.43 8" PVC N 929.56 BUILD 11.87'
SS-14 MH	3+43.39 0.0' RIM 940.53 8" PVC N 930.33 8" PVC S 930.33 BUILD 10.20'

SS Structure Schedule	
#/Desc.	Details
SS-15 MH	5+57.91 0.0' RIM 942.41 8" PVC W 931.18 8" PVC S 931.18 BUILD 11.23'
SS-16 MH	13+05.84 0.0' RIM 942.15 8" PVC E 932.06 BUILD 10.09'
SS-17 MH	5+43.20 -77.2'L RIM 943.00 8" PVC E 923.13 8" PVC S 923.13 BUILD 19.87'
SS-17.1 LS CONNECTION	5+30.18 -77.3'L RIM 926.69 8" PVC N 923.08
SS-18.1 VALVE VAULT CONNECTION	5+27.08 -58.3'L RIM 929.05 6" PVC FORCEMAIN E 928.50
SS-18.2 MJ 45° BEND	5+27.08 -13.5'L RIM 929.08 6" PVC FORCEMAIN SE 928.56 6" PVC FORCEMAIN W 928.56
SS-18.3 MJ 45° BEND	5+23.55 -10.0'L RIM 929.09 6" PVC FORCEMAIN S 928.57 6" PVC FORCEMAIN NW 928.57
SS-18.4 MJ 22 1/2° BEND	1+09.52 -11.3'L RIM 929.66 6" PVC FORCEMAIN S 929.14 6" PVC FORCEMAIN N 929.14
SS-18.5 MJ 22 1/2° BEND	0+33.33 -43.1'L RIM 929.77 6" PVC FORCEMAIN S 929.25 6" PVC FORCEMAIN N 929.25
SS-18.6 EX. FM CONNECTION	0+23.33 -43.2'L RIM 929.38 6" PVC FORCEMAIN N 929.25

ST Structure Schedule	
#/Type	Details
ST-1 4' Dia MH Convex Grate	5+18.36-0.00' RIM 938.50 15" E 934.15 15" S 934.15
ST-1.1 4' Dia MH Mountable C&G Grate	6+83.61-0.00' RIM 940.02 15" RCP E 934.45 15" W 934.45
ST-1.2 2'x3' Box Inlet Mountable C&G Grate	7+13.11-0.00' RIM 940.02 15" RCP W 934.50
ST-2 4' Dia MH Convex Grate	2+71.68-0.00' RIM 938.50 15" N 933.70 18" S 933.70
ST-3 7' Dia MH Convex Grate	1+37.86-0.00' RIM 939.00 36" E 932.89 36" W 932.89 18" N 933.26
ST-3.1 36" CMP F.E.S.	36" E 932.78
ST-4 5' Dia MH Mountable C&G Grate	3+21.16-0.00' RIM 940.02 36" RCP E 933.22 36" W 933.22
ST-5 5' Dia MH Mountable C&G Grate	3+50.66-0.00'L RIM 940.02 36" E 933.28 36" RCP W 933.28
ST-6 7' Dia MH Convex Grate	6+03.47-0.00' RIM 938.90 36" E 933.73 36" W 933.73 15" S 935.55 18" N 934.02
ST-6.1 2'x3' Box Inlet Mountable C&G Grate	0+35.26-0.00' RIM 940.02 15" RCP N 936.00
ST-6.2 4' Dia MH 2'x3' Box Inlet Mountable C&G Grate	0+64.76-0.00'R RIM 940.02 15" RCP S 935.95 15" N 935.95
ST-6.3 4' Dia MH Convex Grate	3+48.55-0.00' RIM 938.50 15" N 934.14 18" S 934.14
ST-6.4 4' Dia MH Mountable C&G Grate	5+17.48-0.00' RIM 940.02 15" RCP N 934.45 15" S 934.45
ST-6.5 2'x3' Box Inlet Mountable C&G Grate	5+46.98-0.00' RIM 940.02 15" RCP S 934.50
ST-7 6' Dia MH Convex Grate	8+83.47-0.00' RIM 938.50 30" E 934.24 36" W 934.24 15" S 935.58 18" N 935.53
ST-7.1 2'x3' Box Inlet Mountable C&G Grate	0+34.37-0.00' RIM 940.02 15" RCP N 936.00
ST-7.2 4' Dia MH Mountable C&G Grate	0+63.87-0.01'L RIM 940.02 15" RCP S 935.95 15" N 935.95
ST-7.3 4' Dia MH Convex Grate	3+31.41-0.00' RIM 938.50 18" N 935.64 18" S 935.64
ST-7.4 4' Dia MH Mountable C&G Grate	5+00.34-0.00' RIM 940.02 18" RCP N 935.95 18" S 935.95
ST-7.5 4' Dia MH Mountable C&G Grate	5+29.84-0.00' RIM 940.02 18" RCP S 936.00 15" W 936.00

#/Type	Details
ST-7.6 4' Dia MH Flat Grate	5+37.84-125.65'L RIM 941.17 15" E 936.44 15" N 936.44
ST-7.7 30" Inlet - Catch Basin Convex Grate	6+97.10-125.65'L RIM 940.00 15" S 937.00
ST-8 5' Dia MH Convex Grate	10+39.63-0.00' RIM 939.00 30" E 934.52 30" W 934.52
ST-9 6' Dia MH Convex Grate	12+33.47-0.00' RIM 939.75 24" E 934.87 30" W 934.87 15" S 935.61 18" N 935.10
ST-9.1 2'x3' Box Inlet Mountable C&G Grate	0+42.30-0.00' RIM 940.02 15" RCP N 936.00
ST-9.2 4' Dia MH Mountable C&G Grate	0+71.81-0.00'L RIM 940.02 15" RCP S 935.95 15" N 935.95
ST-9.3 4' Dia MH Convex Grate	3+21.57-0.00' RIM 938.50 15" N 935.28 18" S 935.28
ST-9.4 4' Dia MH Mountable C&G Grate	4+90.51-0.00' RIM 941.52 15" RCP N 935.75 15" S 935.75
ST-10 4' Dia MH Mountable C&G Grate	5+20.01-0.00'R RIM 941.52 15" RCP S 935.86 15" RCP N 935.86
ST-11 4' Dia MH Self Leveling	1+83.81-0.00'R RIM 941.00 15" RCP E 936.52 15" RCP S 936.52
ST-11.2 4' Dia MH Self Leveling	4+50.21-0.00'R RIM 941.50 15" RCP W 937.50
ST-12 5' Dia MH Convex Grate	14+06.58-0.00' RIM 939.50 24" E 935.18 24" W 935.18
ST-13 5' Dia MH Convex Grate	15+88.76-0.00' RIM 939.50 15" E 935.51 24" W 935.51 15" S 935.55 15" N 935.53
ST-13.1 2'x3' Box Inlet Mountable C&G Grate	0+58.92-0.02'L RIM 940.02 15" RCP N 936.00
ST-13.2 4' Dia MH Mountable C&G Grate	0+88.54-0.02'R RIM 940.02 15" RCP S 935.95 15" N 935.95
ST-14 4' Dia MH Flat Grate	5+23.89-0.02'R RIM 941.94 15" N 937.32 15" S 936.19 15" E 936.19
ST-14.1 2'x3' Box Inlet Mountable C&G Grate	5+59.89-0.00' RIM 941.52 15" RCP S 937.50
ST-14.2 4' Dia MH Mountable C&G Grate	5+30.39-0.00'L RIM 941.52 15" RCP N 937.35 15" S 937.35
ST-15 4' Dia MH Mountable C&G Grate	15+06.34-19.51'R RIM 941.18 15" RCP N 937.04 15" RCP E 936.93 15" W 936.93
ST-15.1 4' Dia MH Mountable C&G Grate	15+06.29-19.49'L RIM 941.18 15" RCP S 937.15

#/Type	Details
ST-15.2 4' Dia MH Mountable C&G Grate	15+45.36-19.51'R RIM 941.18 15" RCP N 937.04 15" RCP W 937.04
ST-15.3 4' Dia MH Mountable C&G Grate	15+45.31-19.53'L RIM 941.18 15" RCP S 937.15
ST-16 4' Dia MH Convex Grate	17+13.83-0.00' RIM 941.25 15" E 935.74 15" W 935.74 12" S 935.74
ST-16.1 12" PLUG (MARK W/ 2X4 FOR FUTURE CONNECTION)	17+13.83-34.33'R 12" N 935.91
ST-17 4' Dia MH Mountable C&G Grate	18+30.86-0.10'L RIM 940.02 15" RCP E 935.95 15" W 935.95
ST-18 4' Dia MH Mountable C&G Grate	18+60.34-0.12'R RIM 940.02 15" RCP W 936.00 12" E 936.00
ST-19 4' Dia MH Convex Grate	20+17.72-0.00' RIM 940.50 12" W 936.45 12" S 936.45
ST-19.1 30" Inlet - Catch Basin Convex Grate	1+43.00-0.00'L RIM 940.50 12" N 937.00
ST-20 6' Dia MH Convex Grate	2+81.74-0.00' RIM 940.50 48" E 932.31 24" W 932.31
ST-20.1 48" CMP F.E.S.	48" W 932.50
ST-21 STORM LS 5' Dia MH	0+98.00-0.00' RIM 942.00 24" E 932.16 8" PVC W 942.50
ST-21.1 DUAL 8" LS OUTFALLS	8" PVC E 942.50
ST-22 24" CMP F.E.S.	24" CMP W 938.50
ST-22.1 24" CMP F.E.S.	24" CMP E 938.45
ST-23 24" CMP F.E.S.	24" CMP W 938.44
ST-23.1 24" CMP F.E.S.	24" CMP E 938.13
ST-24 24" CMP F.E.S.	24" CMP S 934.54
ST-24.1 24" CMP F.E.S.	24" CMP N 934.60

STORM SEWER STRUCTURE CASTINGS:

INSIDE CONCRETE PAVEMENT
1. NEENAH R-1955-1 (SELF LEVELING)
2. EAST JORDAN IRON WORKS 3025 SELFLEVEL (SELF LEVELING)
3. APPROVED EQUAL

GRASS OR OUTSIDE PAVEMENT
FLAT (SOLID):
1. NEENAH R-1733 TYPE C
2. EAST JORDAN IRON WORKS 1205 TYPE M
3. APPROVED EQUAL

CONVEX:
1. NEENAH R-2577 WITH CONVEX CASTING GRATE
2. EAST JORDAN IRON WORKS 1205-M2 WITH CONVEX CASTING GRATE.
3. APPROVED EQUAL.

MOUNTABLE CURB & GUTTER
1. NEENAH R-3067-C-C
2. EAST JORDAN IRON WORKS 7030 M2
3. APPROVED EQUAL

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

SEAL

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Schedule

Structure Schedule

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
050	1

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SS Pipe Schedule

Pipe	Size	Length	Slope
SS-1 to SS-2	8"	252.34'	0.40%
SS-2 to SS-6	8"	265.05'	0.40%
SS-3 to SS-2	8"	381.31'	0.40%
SS-4 to SS-3	8"	400.00'	0.40%
SS-5 to SS-4	8"	361.23'	0.40%
SS-6 to SS-7	8"	134.70'	0.40%
SS-7 to SS-8	8"	137.43'	0.40%
SS-8 to SS-9	8"	229.48'	0.40%
SS-9 to SS-10	8"	230.98'	0.40%
SS-10 to SS-17	8"	77.25'	0.40%
SS-10.1 to SS-10	8"	43.73'	0.40%
SS-11 to SS-9	8"	400.00'	0.40%
SS-12 to SS-11	8"	400.00'	0.40%
SS-13 to SS-12	8"	322.40'	0.40%
SS-13.1 to SS-13	8"	66.81'	0.41%
SS-14 to SS-13	8"	259.80'	0.40%
SS-15 to SS-14	8"	213.28'	0.40%
SS-16 to SS-15	8"	220.01'	0.40%
SS-17 to SS-17.1	8"	13.02'	0.40%
SS-18.2 to SS-18.1	6"	44.79'	0.14%
SS-18.3 to SS-18.2	6"	4.99'	0.14%
SS-18.4 to SS-18.3	6"	414.02'	0.14%
SS-18.5 to SS-18.4	6"	82.58'	0.14%
SS-18.6 to SS-18.5	6"	10.00'	0.00%

ST Pipe Schedule

Pipe	Size	Length	Slope	Material
ST-1 to ST-2	15"	246.68'	0.18%	RCP PP PVC
ST-1.1 to ST-1	15"	165.25'	0.18%	RCP PP PVC
ST-1.2 to ST-1.1	15"	29.50'	0.18%	RCP
ST-2 to ST-3	18"	246.68'	0.18%	RCP PP PVC
ST-3 to ST-3.1	36"	65.31'	0.18%	RCP PP PVC
ST-4 to ST-3	36"	183.30'	0.18%	RCP PP PVC
ST-5 to ST-4	36"	29.50'	0.18%	RCP
ST-6 to ST-5	36"	252.81'	0.18%	RCP PP PVC
ST-6.1 to ST-6.2	15"	29.50'	0.18%	RCP
ST-6.2 to ST-6	15"	218.34'	0.18%	RCP PP PVC
ST-6.3 to ST-6	18"	65.45'	0.18%	RCP PP PVC
ST-6.4 to ST-6.3	15"	168.94'	0.18%	RCP PP PVC
ST-6.5 to ST-6.4	15"	29.50'	0.18%	RCP
ST-7 to ST-6	36"	280.00'	0.18%	RCP PP PVC
ST-7.1 to ST-7.2	15"	29.50'	0.18%	RCP
ST-7.2 to ST-7	15"	203.15'	0.18%	RCP PP PVC
ST-7.3 to ST-7	18"	64.38'	0.18%	RCP PP PVC
ST-7.4 to ST-7.3	15"	168.94'	0.18%	RCP PP PVC
ST-7.5 to ST-7.4	18"	29.50'	0.18%	RCP
ST-7.5 to ST-7.6	15"	125.90'	-0.35%	RCP PP PVC
ST-7.6 to ST-7.7	15"	159.26'	-0.35%	RCP PP PVC
ST-8 to ST-7	30"	156.16'	0.18%	RCP PP PVC
ST-9 to ST-8	30"	193.84'	0.18%	RCP PP PVC
ST-9.1 to ST-9.2	15"	29.51'	0.18%	RCP
ST-9.2 to ST-9	15"	185.37'	0.18%	RCP PP PVC
ST-9.3 to ST-9	18"	64.38'	0.28%	RCP PP PVC
ST-9.4 to ST-9.3	15"	168.94'	0.28%	RCP PP PVC
ST-10 to ST-9.4	15"	29.50'	0.37%	RCP
ST-11 to ST-10	15"	177.26'	0.37%	RCP PP PVC
ST-11.2 to ST-11	15"	266.40'	0.37%	RCP PP PVC
ST-12 to ST-9	24"	173.11'	0.18%	RCP PP PVC
ST-13 to ST-12	24"	182.18'	0.18%	RCP PP PVC
ST-13.1 to ST-13.2	15"	29.61'	0.18%	RCP
ST-13.2 to ST-13	15"	219.46'	0.18%	RCP PP PVC
ST-14 to ST-13	15"	216.93'	0.30%	RCP PP PVC
ST-14.1 to ST-14.2	15"	29.50'	0.50%	RCP
ST-14.2 to ST-14	15"	6.50'	0.51%	RCP PP PVC
ST-15 to ST-14	15"	253.97'	0.29%	RCP PP PVC
ST-15.1 to ST-15	15"	39.00'	0.28%	RCP
ST-15.2 to ST-15	15"	39.02'	0.29%	RCP
ST-15.3 to ST-15.2	15"	39.04'	0.28%	RCP
ST-16 to ST-13	15"	125.06'	0.18%	RCP PP PVC
ST-16 to ST-16.1	12"	34.33'	-0.50%	RCP PP PVC
ST-17 to ST-16	15"	117.04'	0.18%	RCP PP PVC
ST-18 to ST-17	15"	29.50'	0.18%	RCP
ST-19 to ST-18	12"	157.38'	0.29%	RCP PP PVC
ST-19.1 to ST-19	12"	191.94'	0.29%	RCP PP PVC
ST-20 to ST-21 STORM LS	24"	183.74'	0.08%	RCP PP PVC
ST-20.1 to ST-20	48"	243.19'	0.08%	RCP PP PVC
ST-22 to ST-22.1	24"	62.51'	0.08%	CMP
ST-23 to ST-23.1	24"	45.63'	0.68%	CMP
ST-24.1 to ST-24	24"	52.00'	0.12%	CMP

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Schedule

Pipe Schedule

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
050	2

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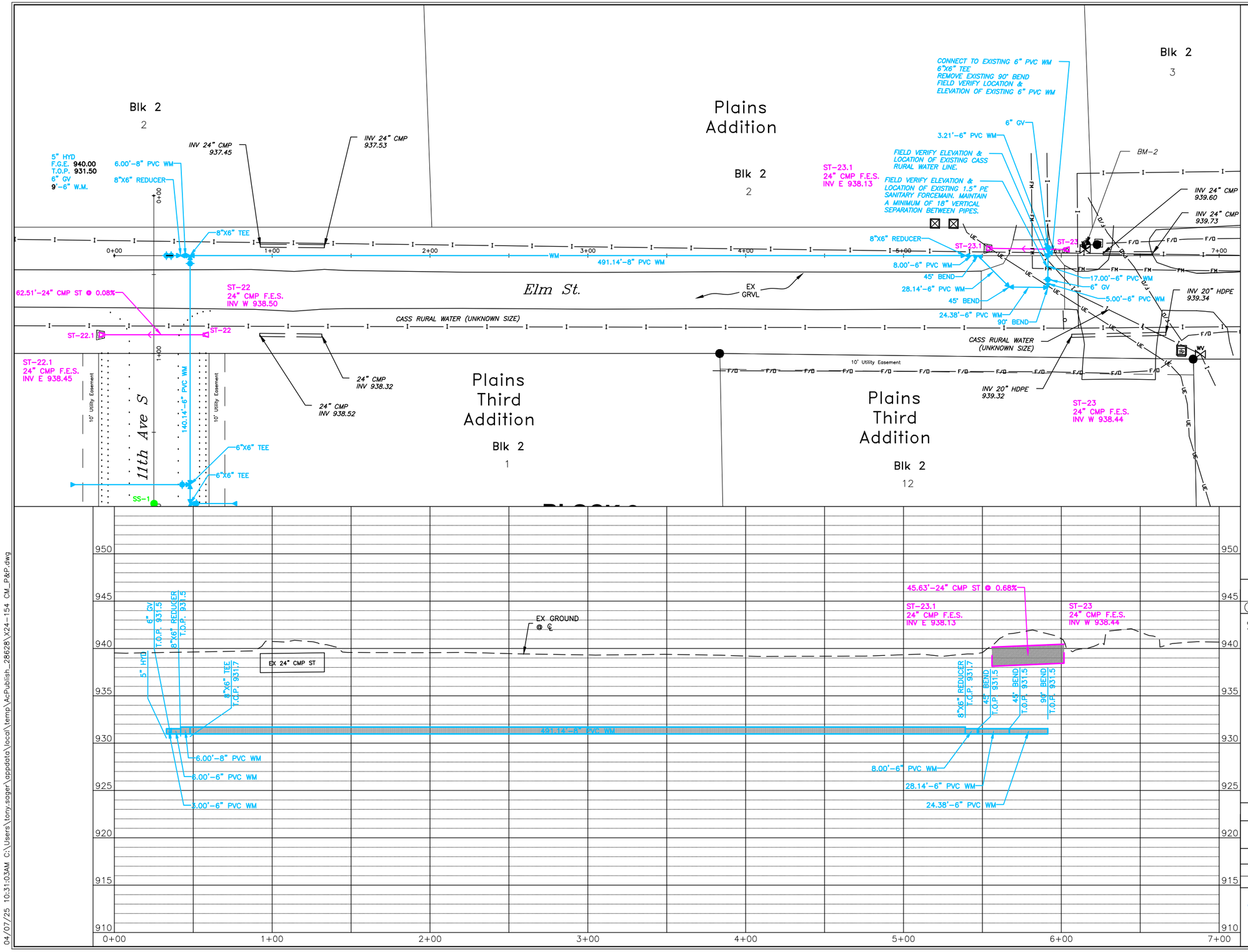

0 30' 60'

NOTES:
1. (XXX.XXCS) DENOTES TOP OF CURB STOP ELEVATION.
2. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.
3. CONTRACTOR SHALL USE MAINLINE WM OFFSET HUBS TO SET CURB STOP ELEVATIONS.
4. INVERT AT WATER SERVICE END SHALL BE 8' BELOW CS GRADE.
5. SEWER WYE STATIONING IS FROM DOWNSTREAM MANHOLE.
6. MINIMUM SAN SERVICE SLOPES:
   6.1. 6": $\frac{1}{8}$" PER FOOT (1%)
   6.2. 4": $\frac{1}{4}$" PER FOOT (2%)
7. PRIOR TO INSTALLATION OF SANITARY SEWER SERVICE, CONTRACTOR SHALL VERIFY THAT NO CONFLICTS WILL OCCUR WITH OTHER UTILITY PIPES (EXISTING OR PROPOSED).
8. CONTRACTOR SHALL FIELD VERIFY SANITARY SERVICE END INVERT IS A MINIMUM 8' BELOW FINISH GRADE.
9. PROVIDE RISER PIPE AT SEWER MAIN AS NEEDED.

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Elm Street

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	1

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Plains Addition

Blk 2

3

931 921 891 881 851 821

980 980 940 1 920 890 860 840 20 30

CITY OF KINDRED WATERMAIN (6" PVC)

EX SS MH RIM 943.65 INV E 935.83

EX SS MH RIM 943.72 INV W 934.51 INV E 934.51

BM-1

BURIED CMP CULVERT

6" PVC WM

4" ACP WM

8" CIPP

1.5" PE SANITARY FORCEMAIN

EX GRVL

EX ASPH PVMT

Elm St.

9th Ave S

BURIED HDPE

INV 12" CMP 941.00

INV 12" CMP 941.00

7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00

EX GROUND @ ℄

950 945 940 935 930 925 920 915 910

7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 14+50

0 30' 60'

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ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Elm Street

Underground Improvements

Improvement District No. 2025-2

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SECTION NO.	SHEET NO.
055	2

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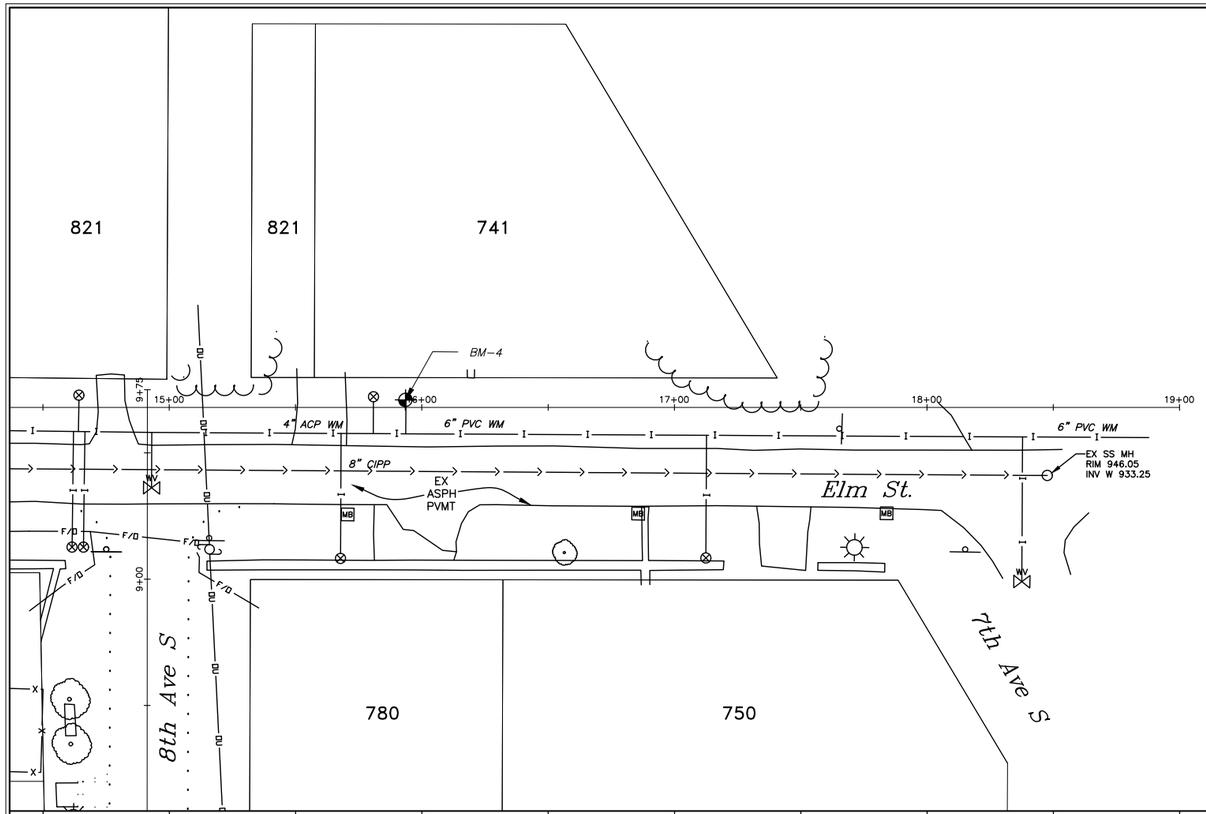

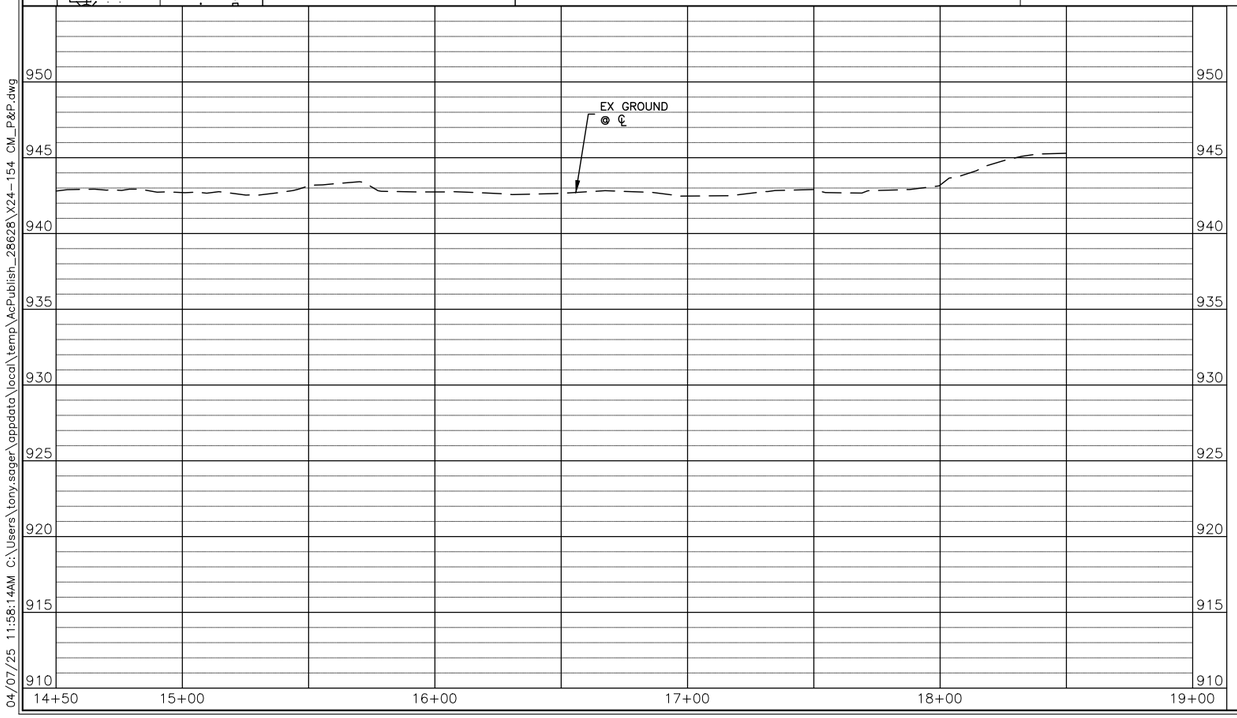

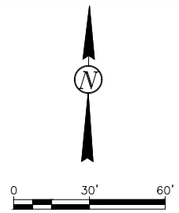

NOTES:
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ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

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Elm Street

Underground Improvements

Improvement District No. 2025-2

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SECTION NO.	SHEET NO.
055	3

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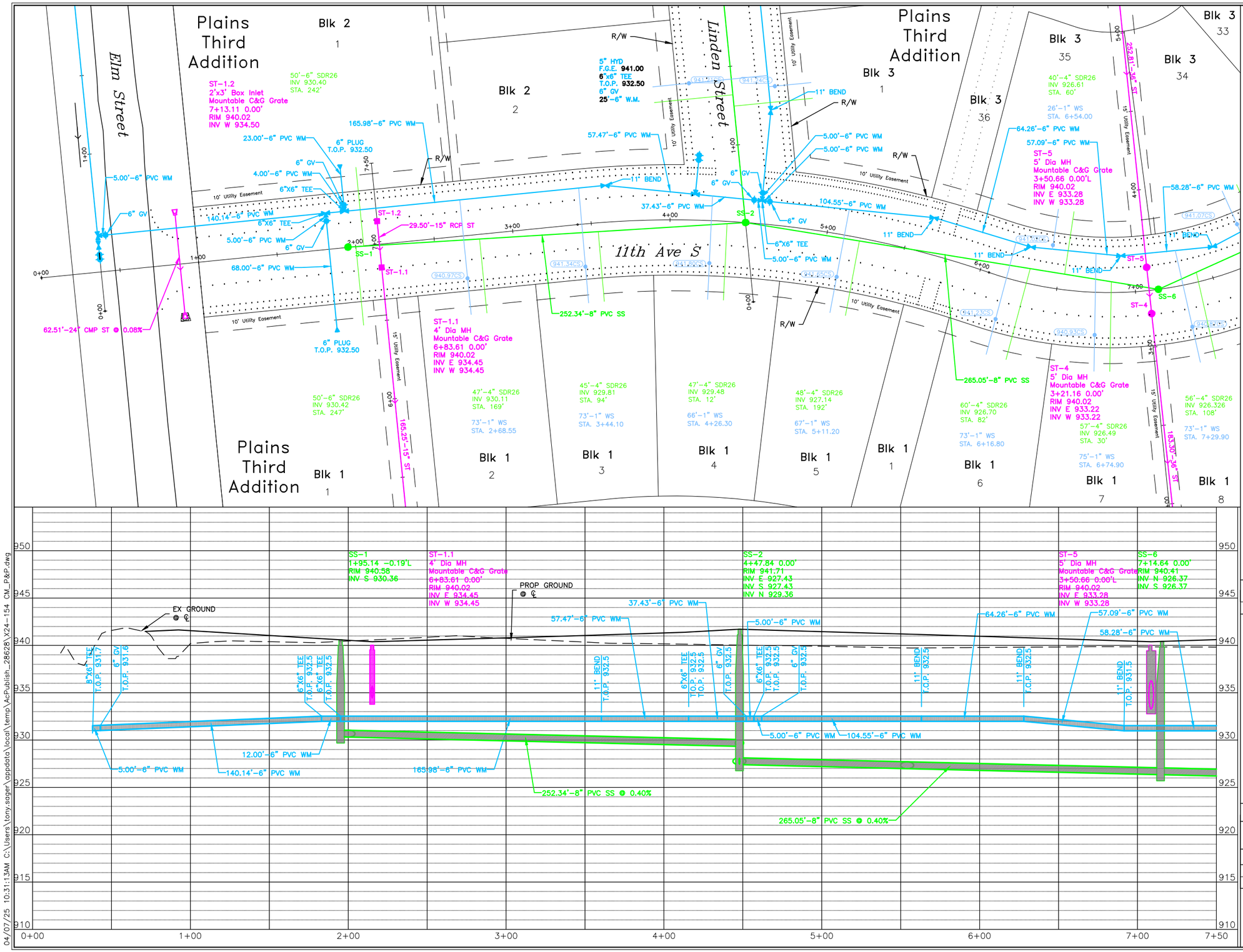

0 30' 60'

NOTES:
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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Maple Street

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	4

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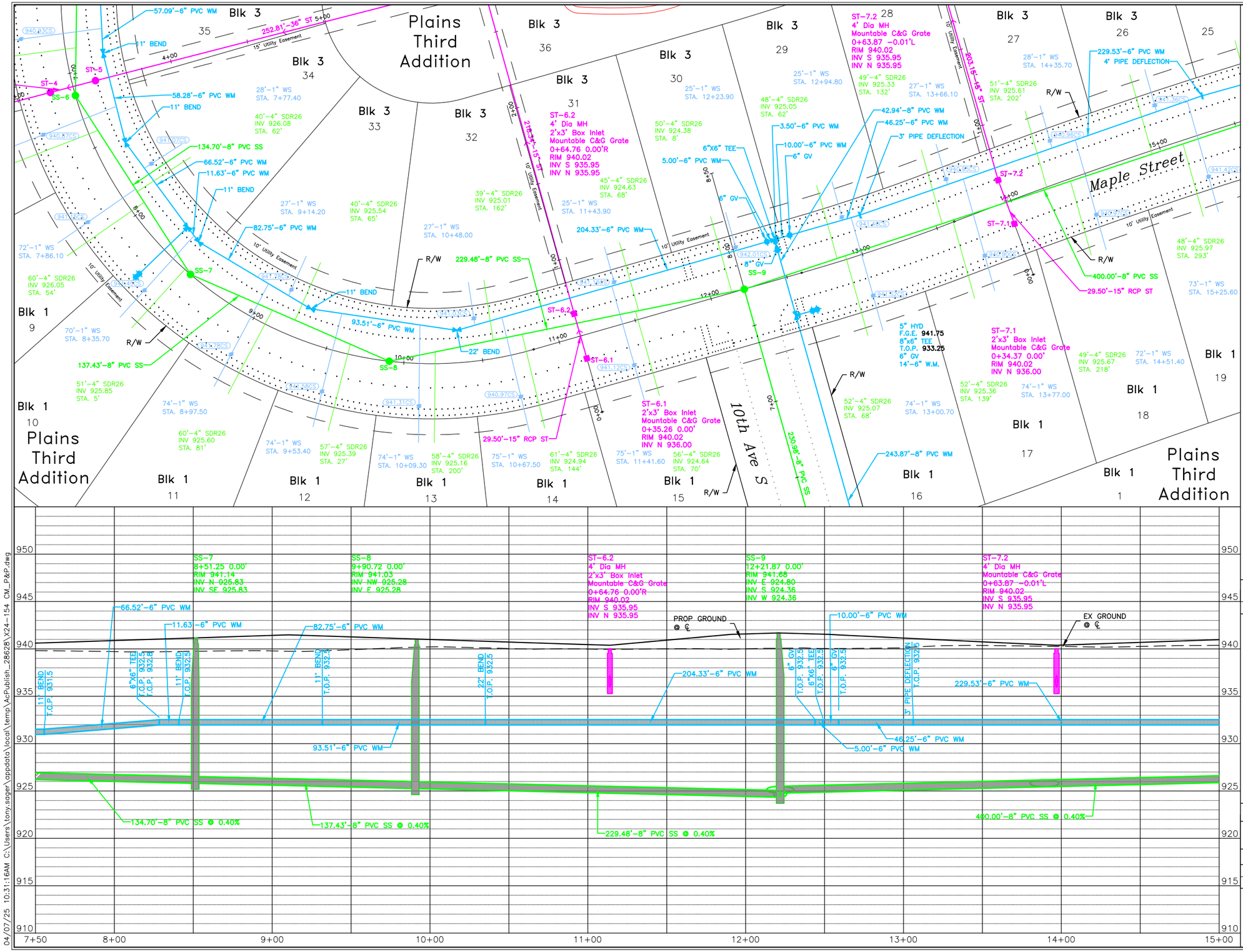

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9. PROVIDE RISER PIPE AT SEWER MAIN AS NEEDED.

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Maple Street

Underground Improvements

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	5

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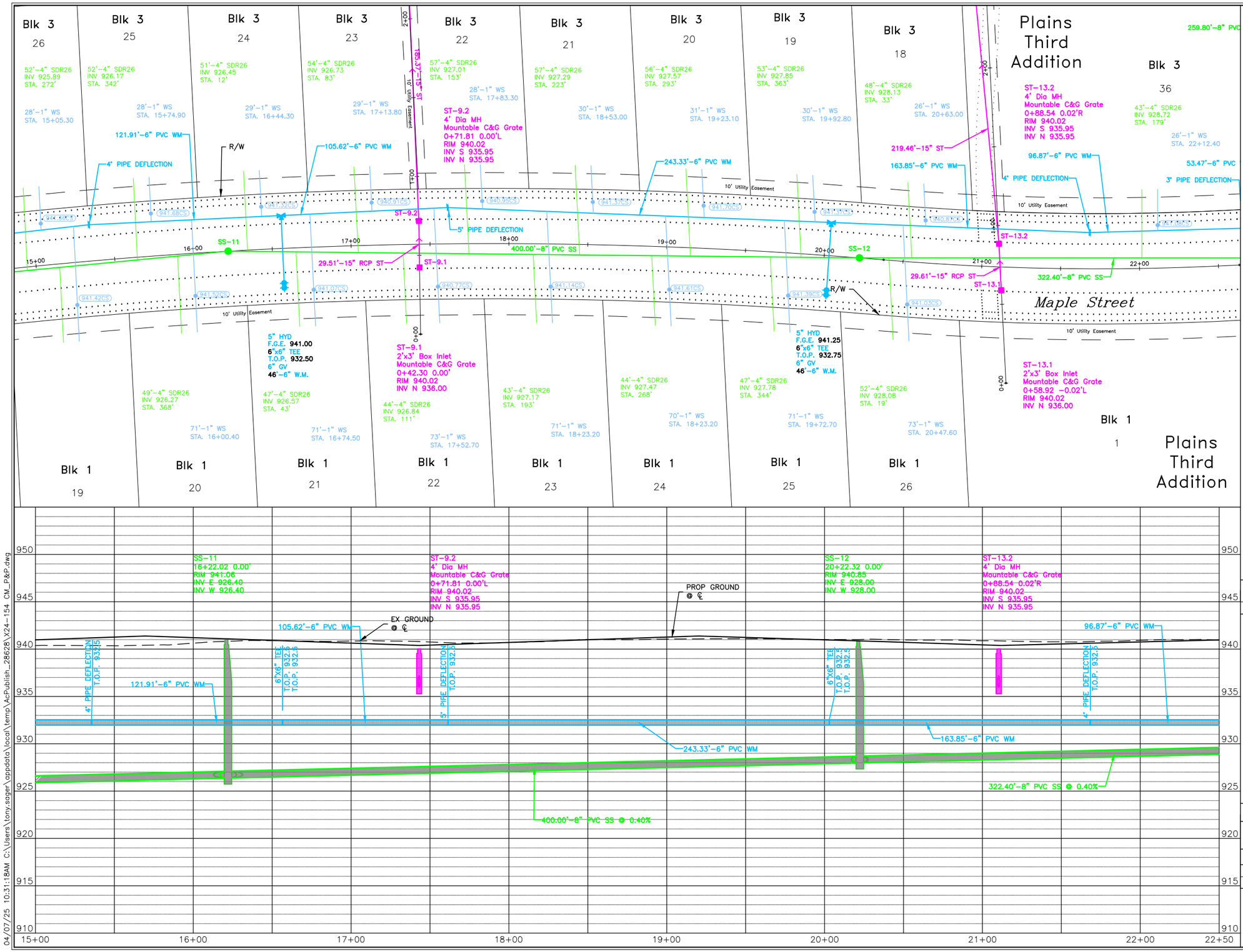

0 30' 60'

NOTES:
1. (XXX.XXCS) DENOTES TOP OF CURB STOP ELEVATION.
2. ALL WATER MAIN TO HAVE A MINIMUM 7.5' OF COVER.
3. CONTRACTOR SHALL USE MAINLINE WM OFFSET HUBS TO SET CURB STOP ELEVATIONS.
4. INVERT AT WATER SERVICE END SHALL BE 8' BELOW CS GRADE.
5. SEWER WYE STATIONING IS FROM DOWNSTREAM MANHOLE.
6. MINIMUM SAN SERVICE SLOPES:
   6.1. 6": $\frac{1}{8}$" PER FOOT (1%)
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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Maple Street

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	6

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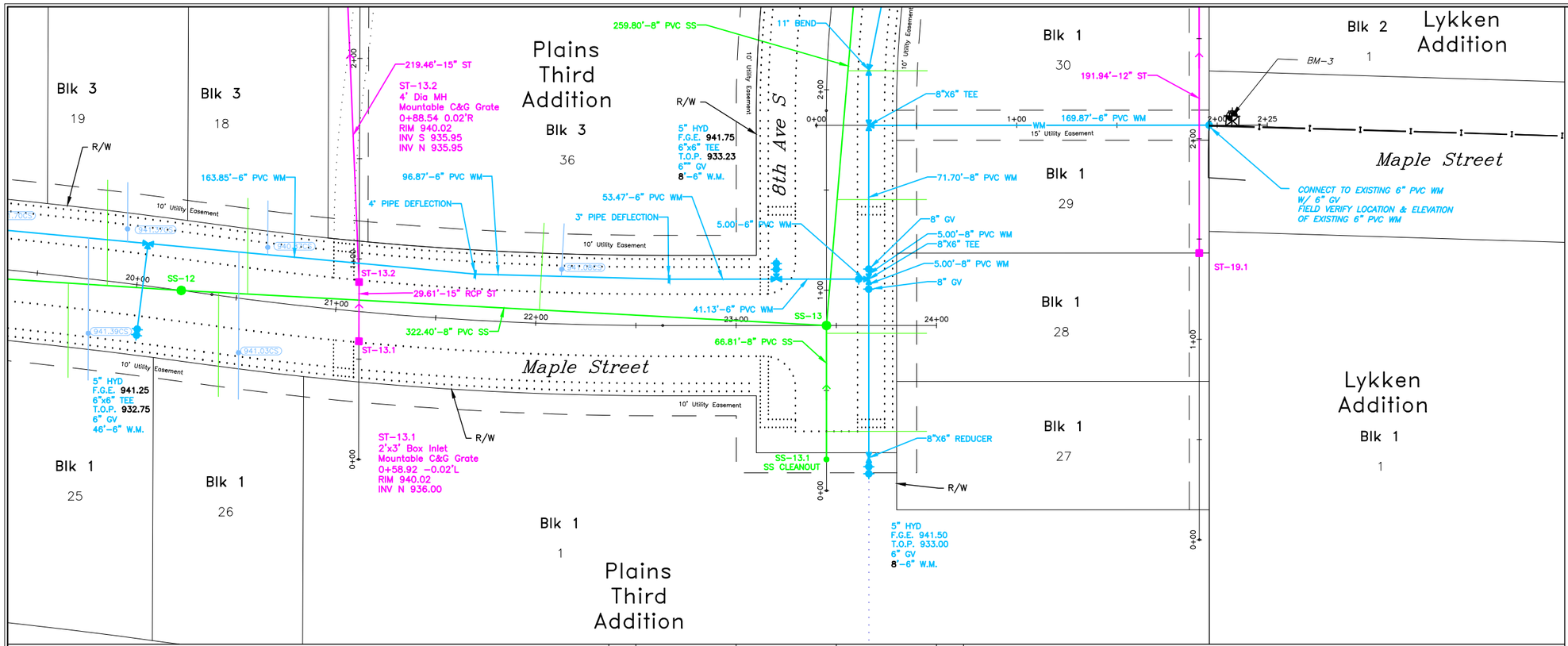

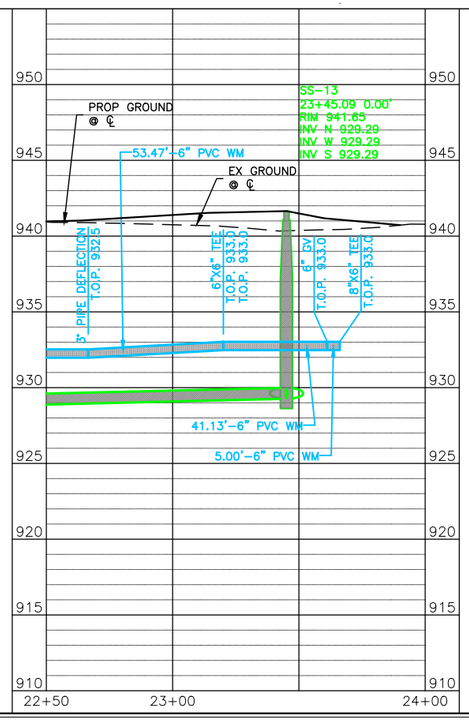

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ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

SEAL

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Maple Street

Underground Improvements

Improvement District No. 2025-2

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DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	7

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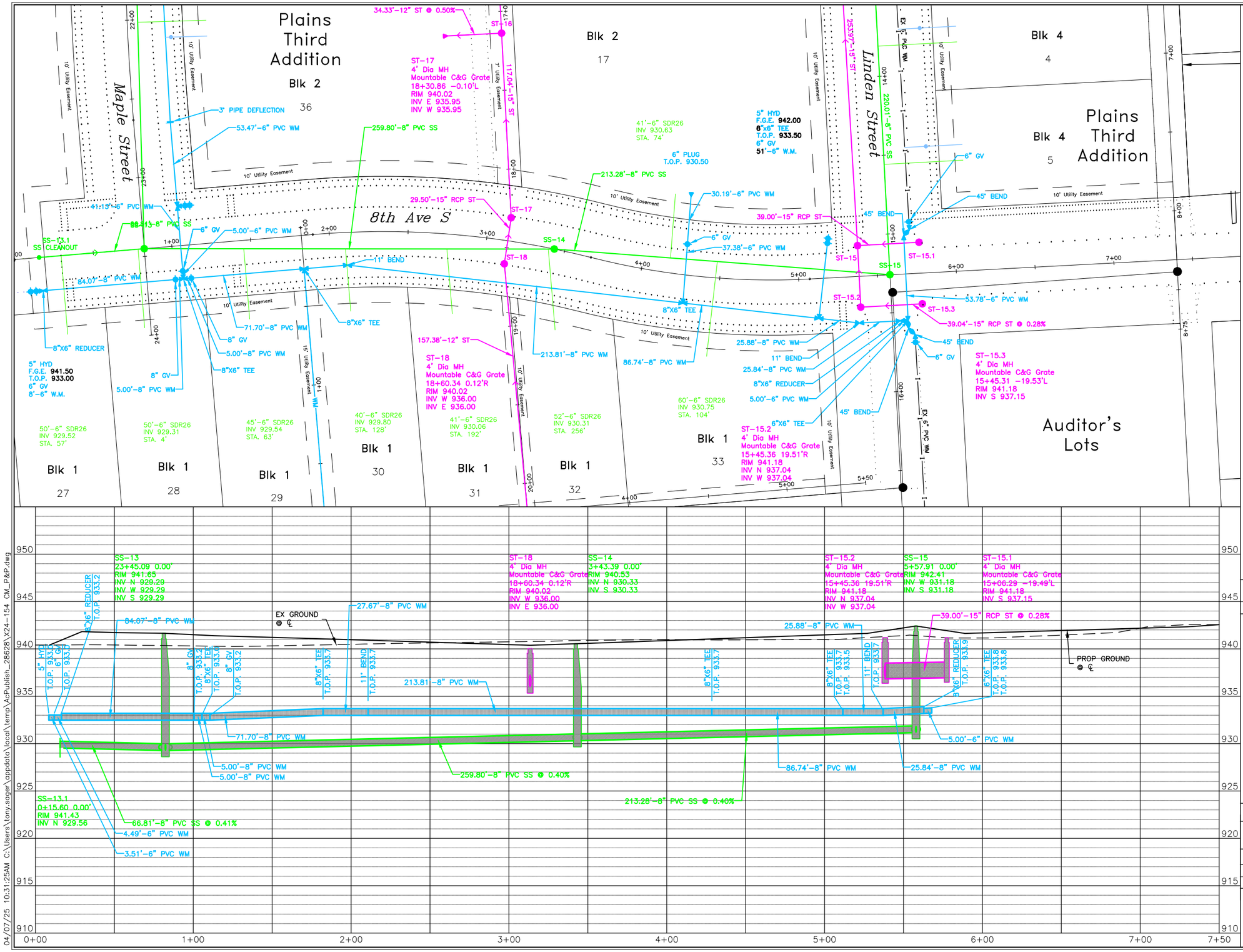

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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8th Avenue South

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	8

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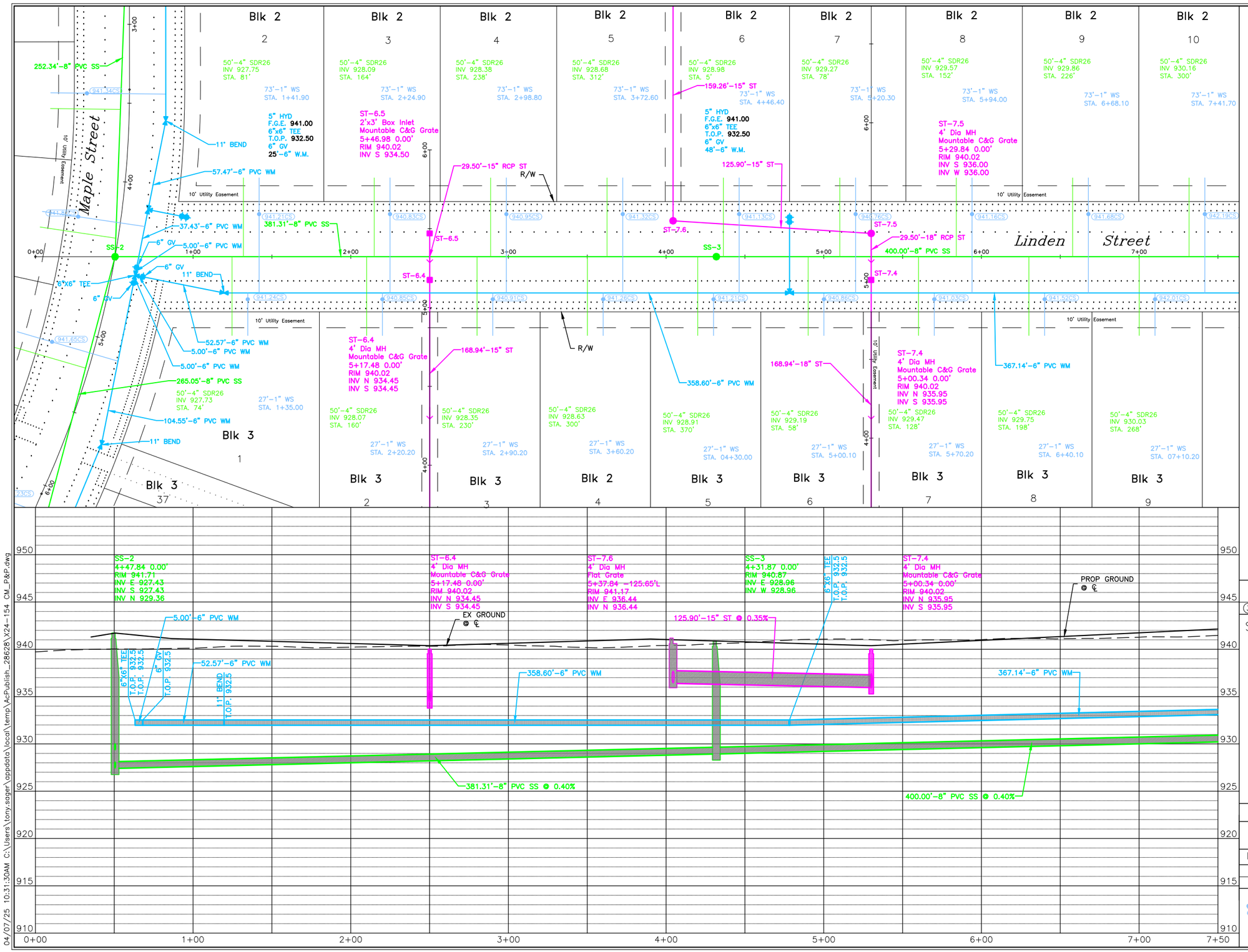

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ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Linden Street

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
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MBN ENGINEERING

SECTION NO.	SHEET NO.
055	9

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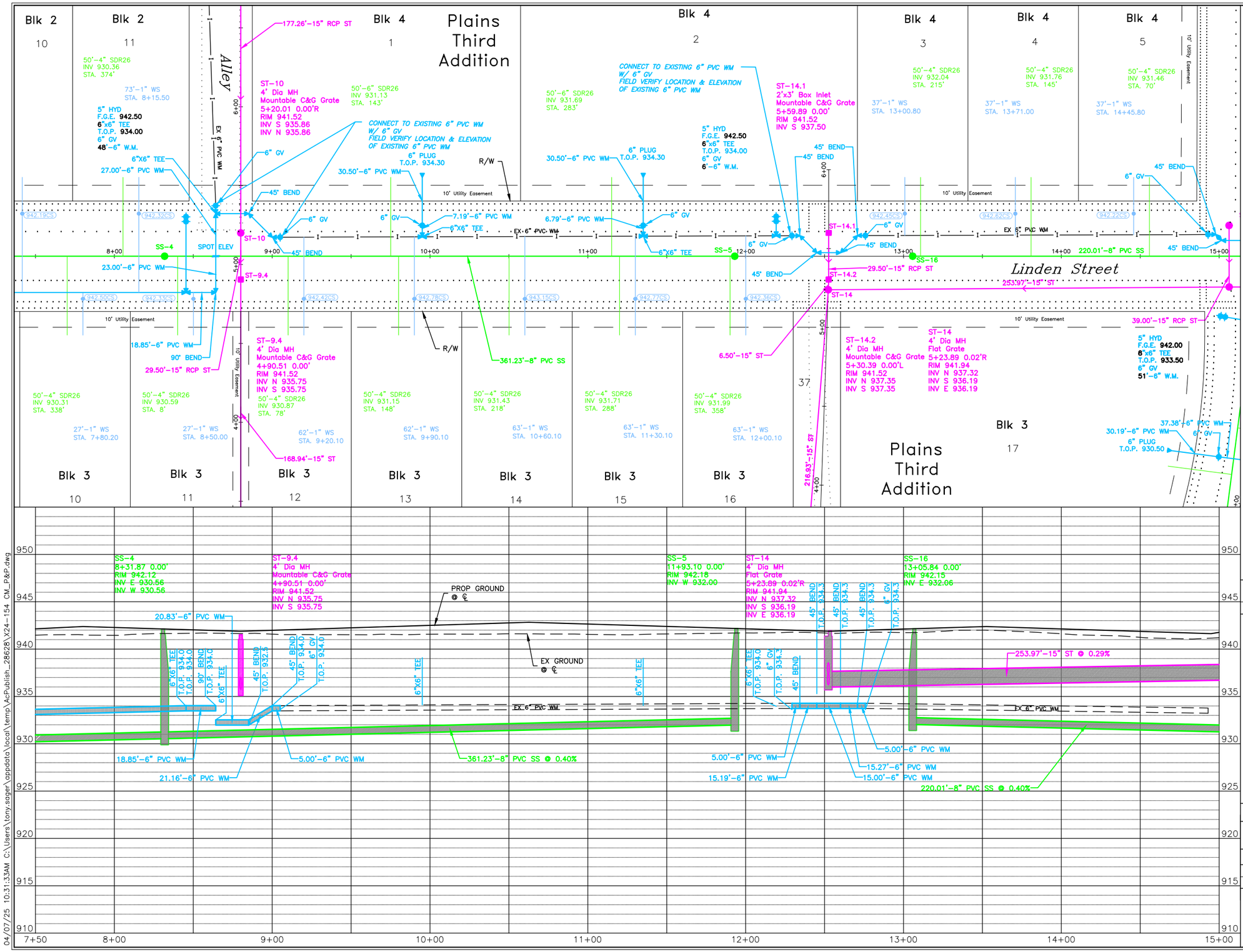

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ADDENDUM & CONSTRUCTION REVISIONS

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Linden Street

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	10

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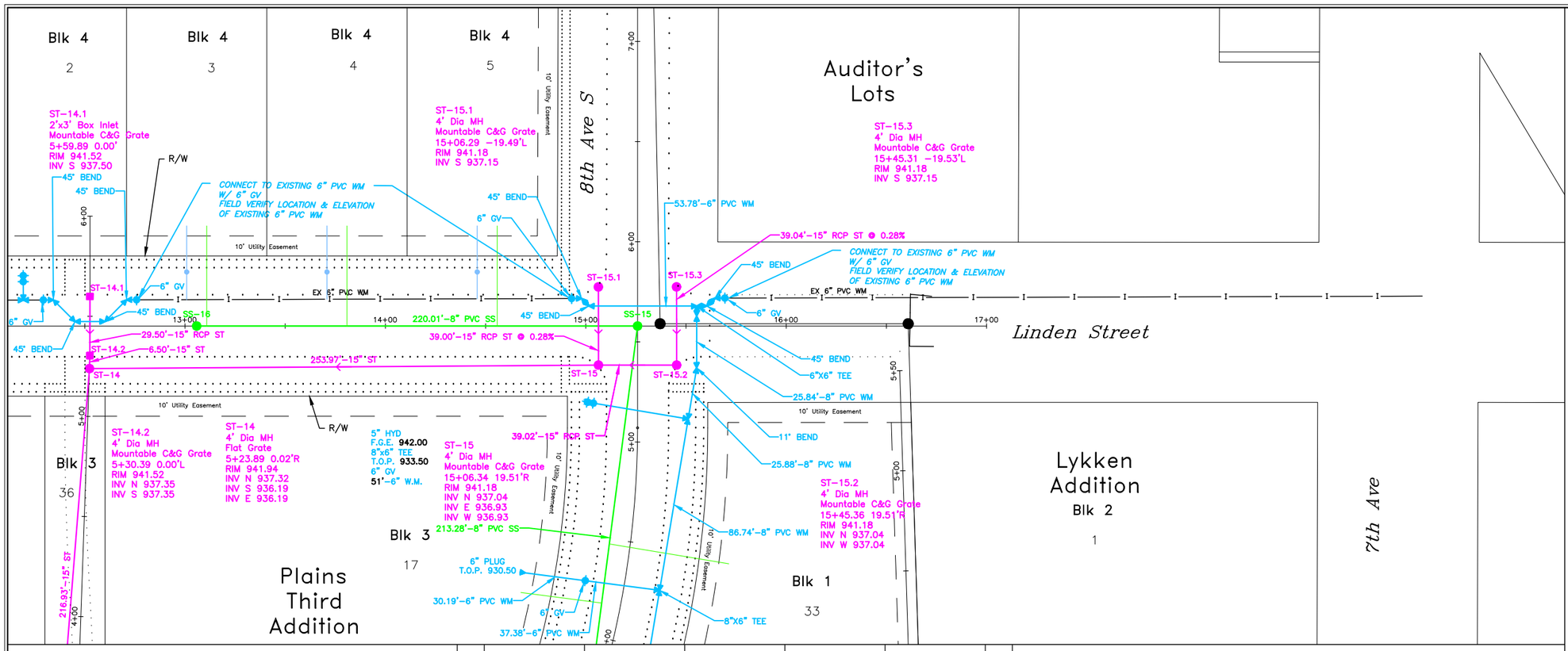

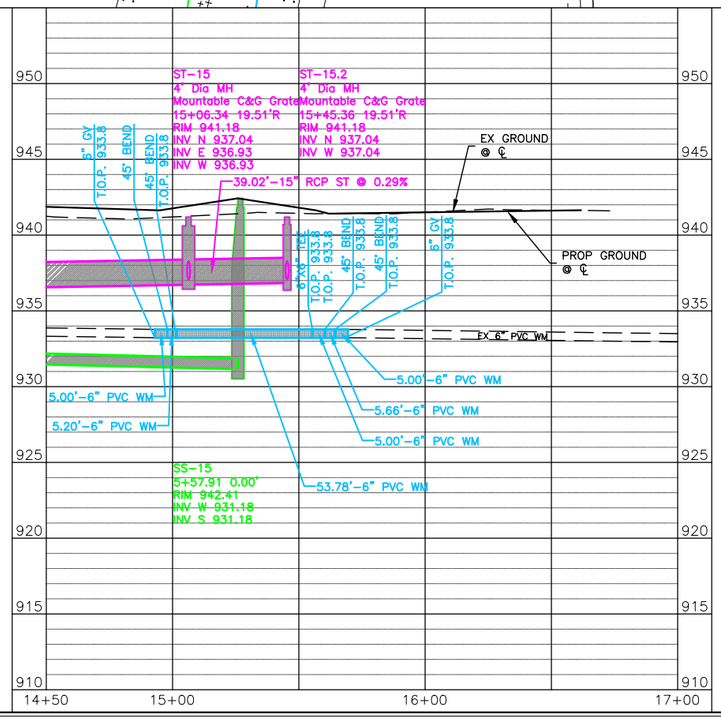

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ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Linden Street

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	11

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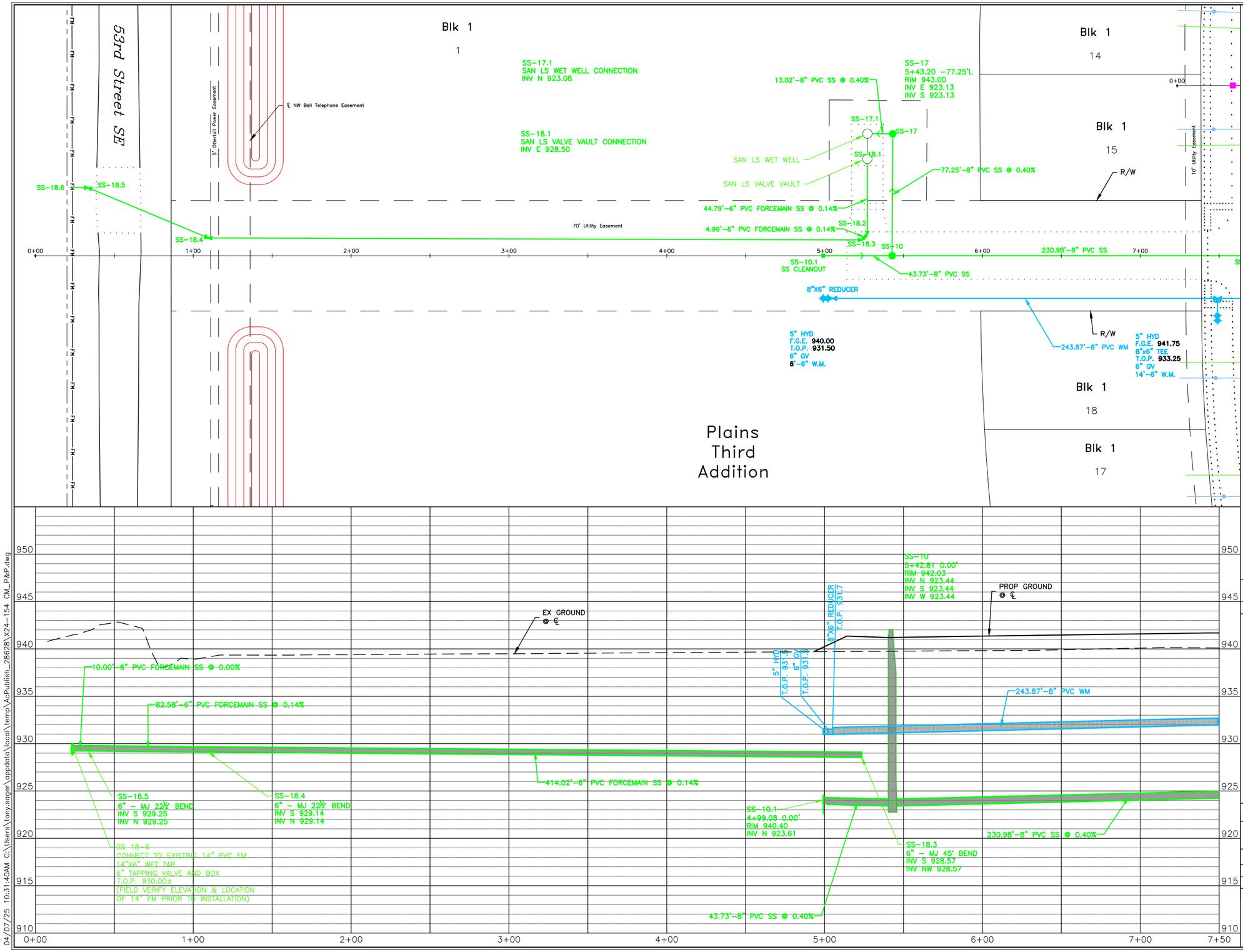

0 30' 60'

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9. PROVIDE RISER PIPE AT SEWER MAIN AS NEEDED.
10. CONTRACTOR SHALL FIELD VERIFY DEPTH, LOCATION, PIPE TYPE, AND SIZE PRIOR TO INSTALLATION OF SANITARY SEWER LIFT STATION. NOTIFY ENGINEER OF ANY DISCREPANCIES.
11. INSULATE SANITARY FORCEMAIN AT 53RD ST SE DITCH CROSSING IF COVER IS LESS THAN 8.5'.

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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10th Avenue South (Future)

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	12

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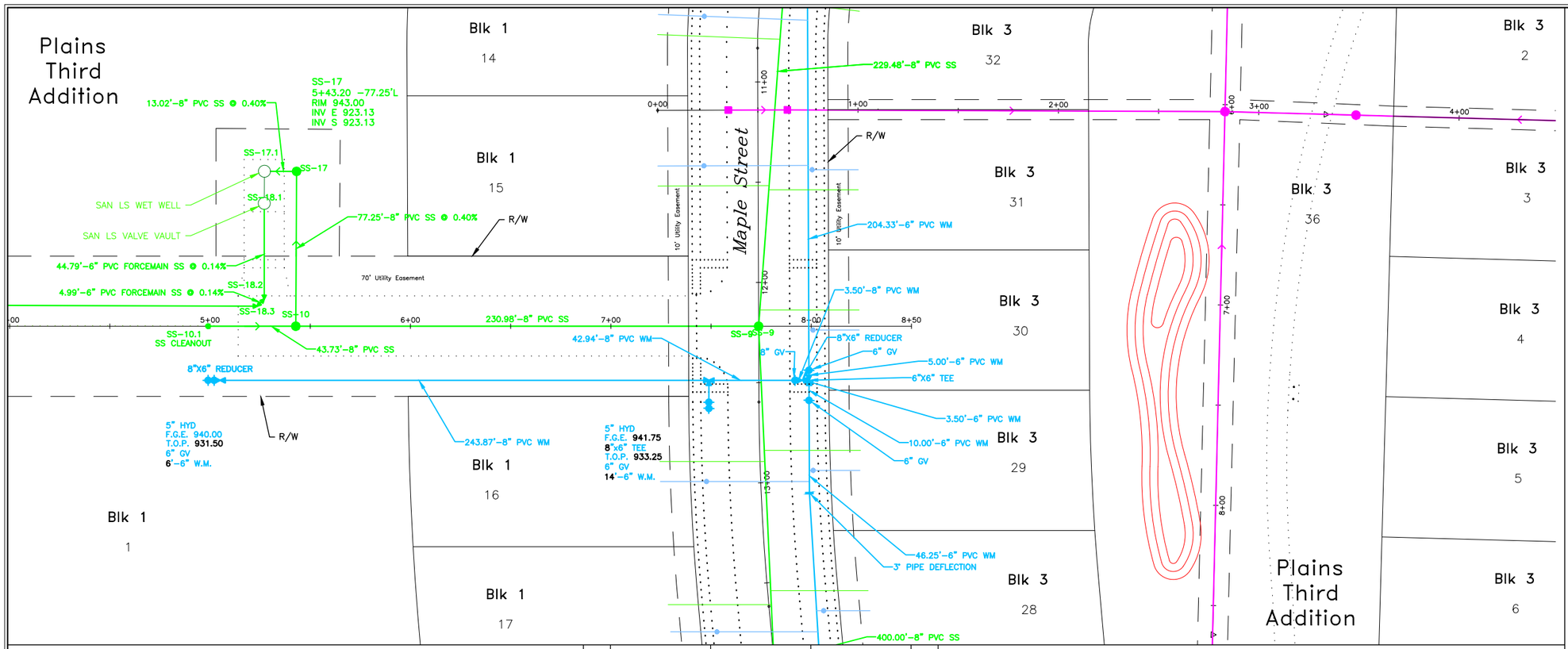

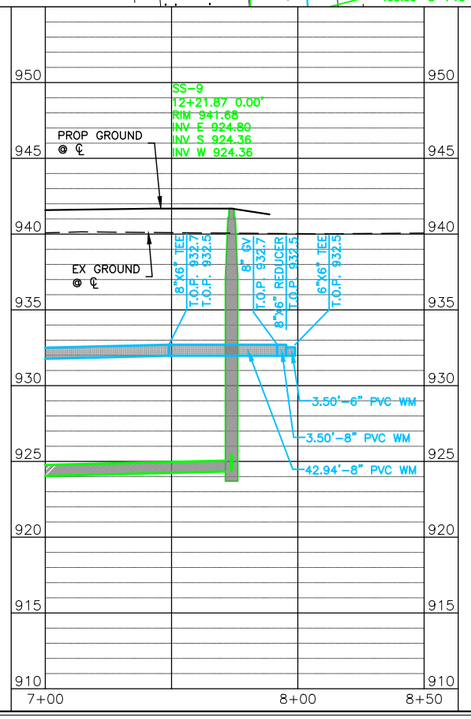

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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10th Avenue South (Future)

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	13

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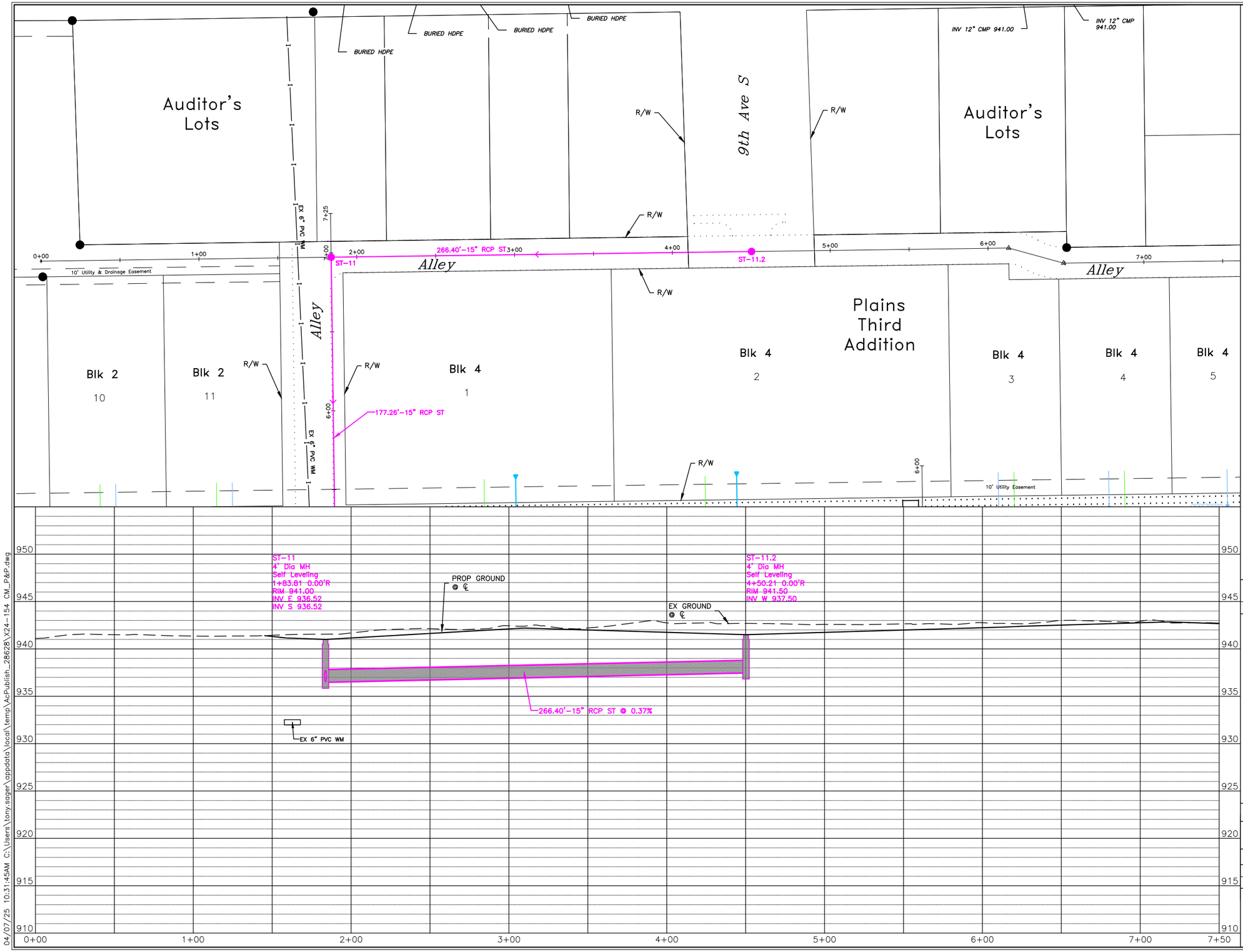

N

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Alley

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	14

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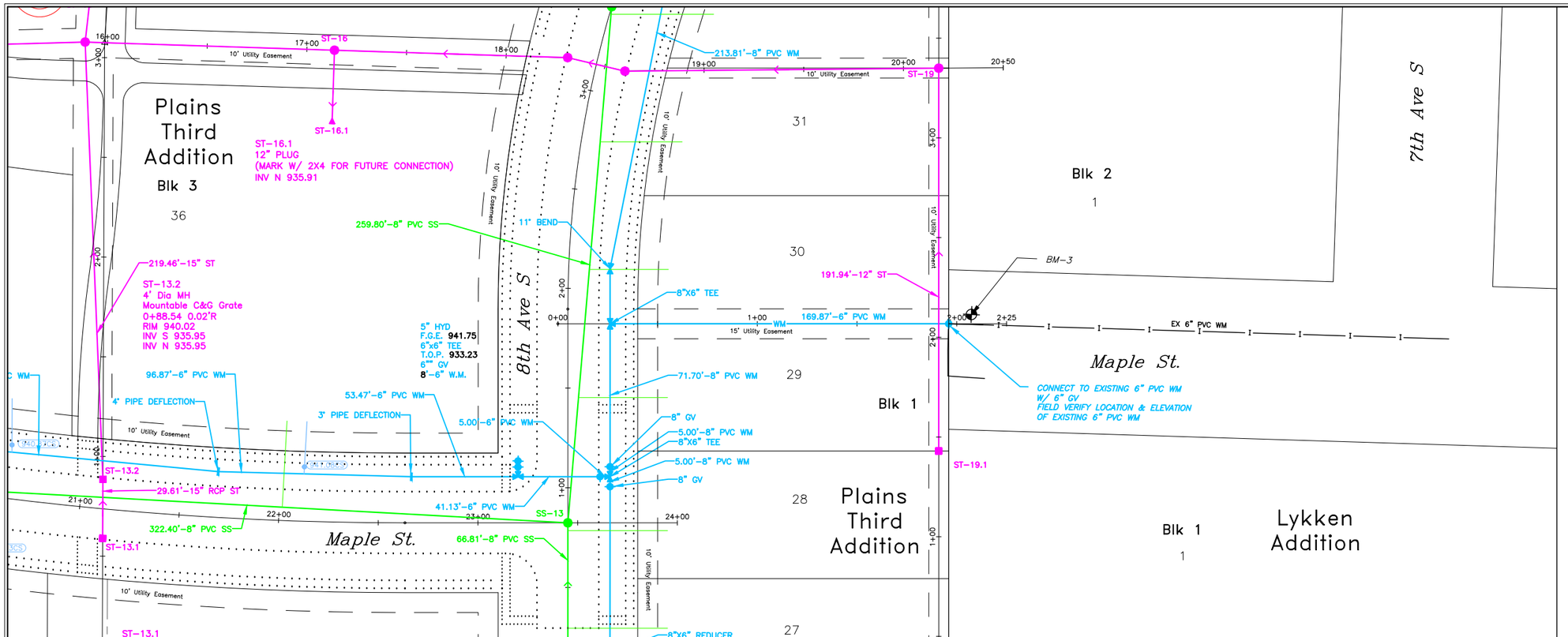

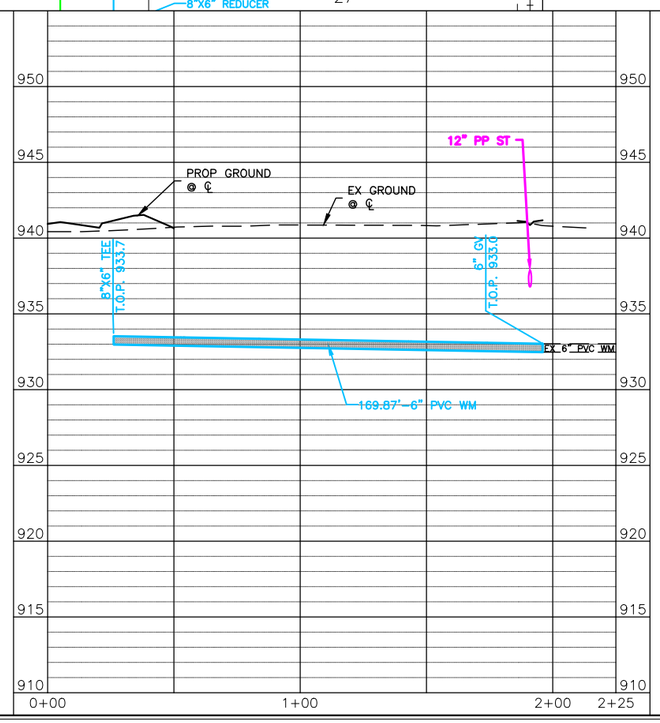

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ADDENDUM & CONSTRUCTION REVISIONS

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Maple Street Watermain Connection

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	15

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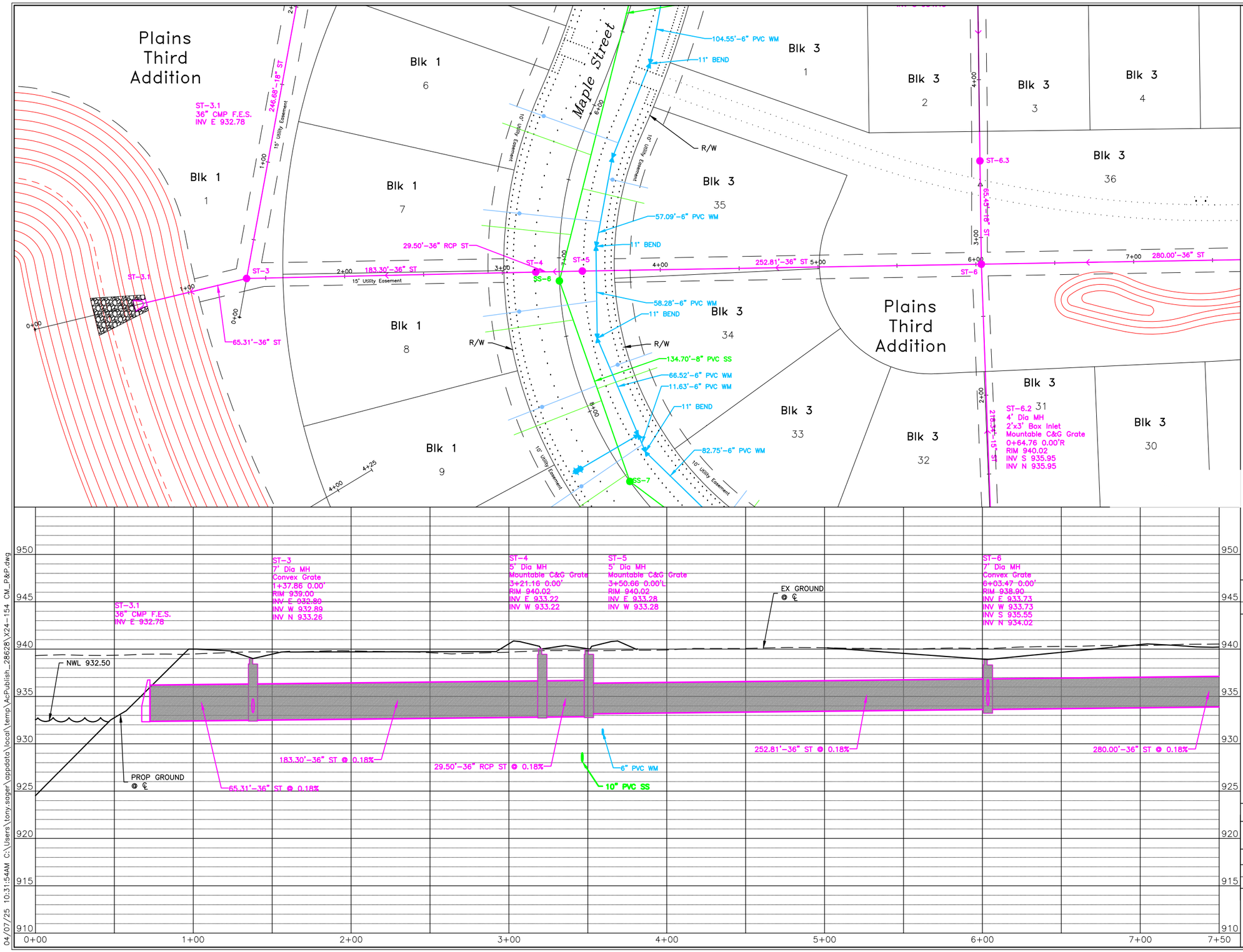

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ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Storm Trunk Line

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	16

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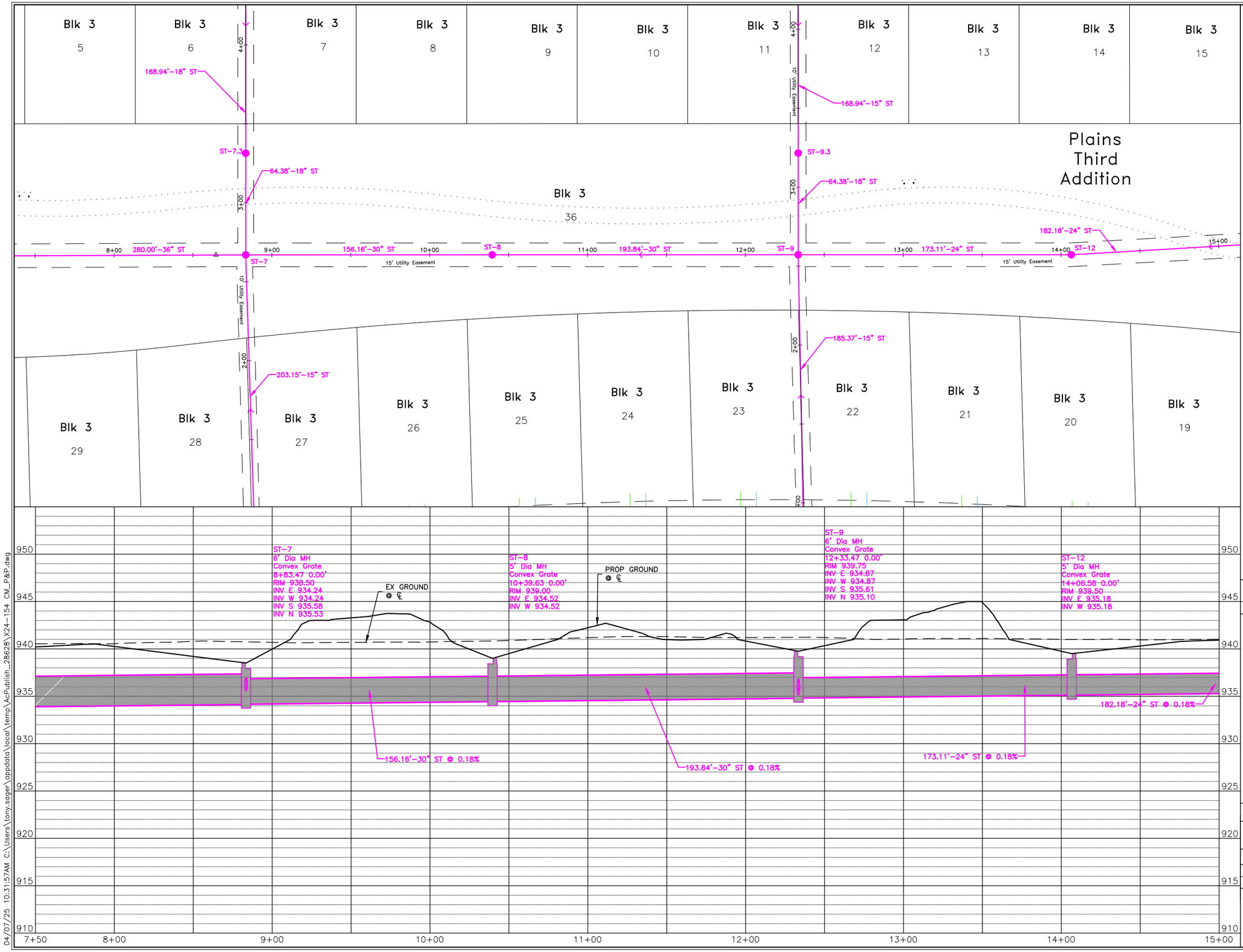

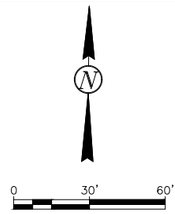

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3. CONTRACTOR SHALL USE MAINLINE WM OFFSET HUBS TO SET CURB STOP ELEVATIONS.
4. INVERT AT WATER SERVICE END SHALL BE 8' BELOW CS GRADE.
5. SEWER WYE STATIONING IS FROM DOWNSTREAM MANHOLE.
6. MINIMUM SAN SERVICE SLOPES:
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9. PROVIDE RISER PIPE AT SEWER MAIN AS NEEDED.

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

SEAL

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Storm Trunk Line

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	17

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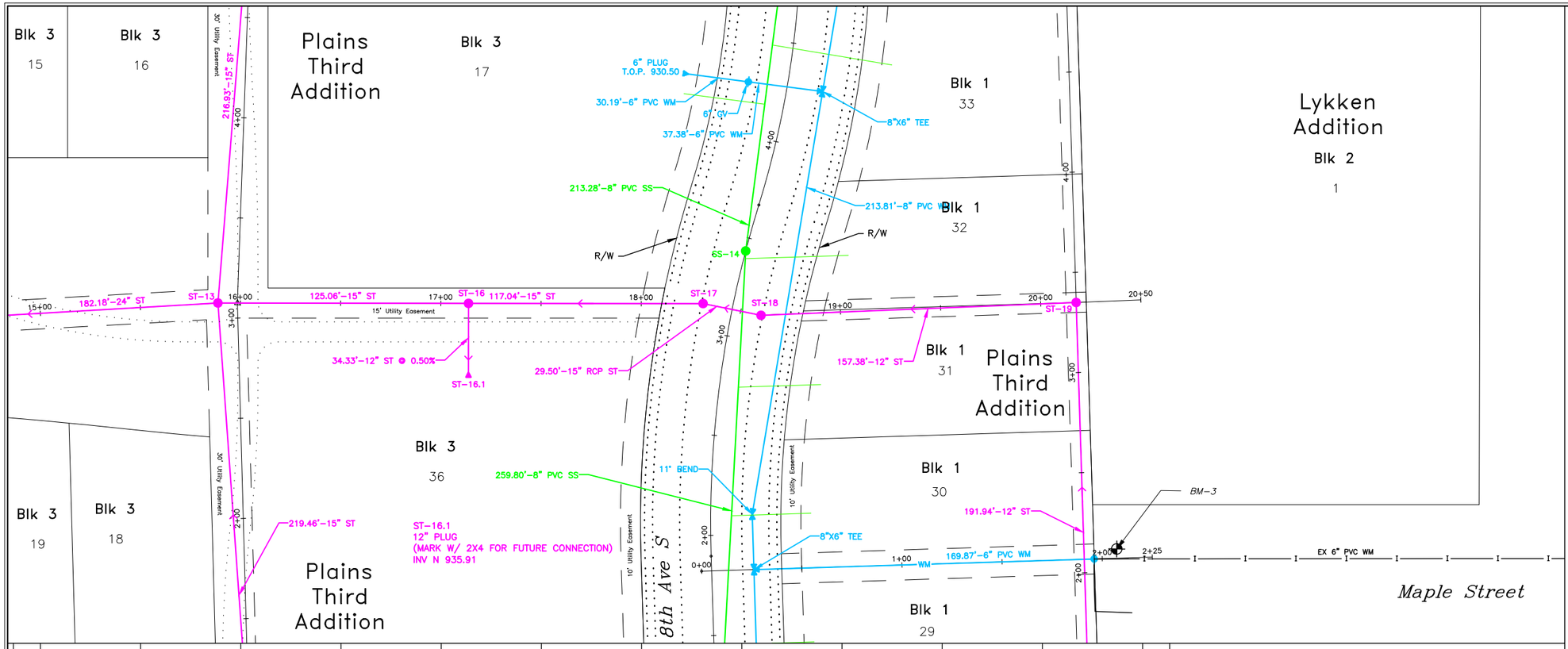

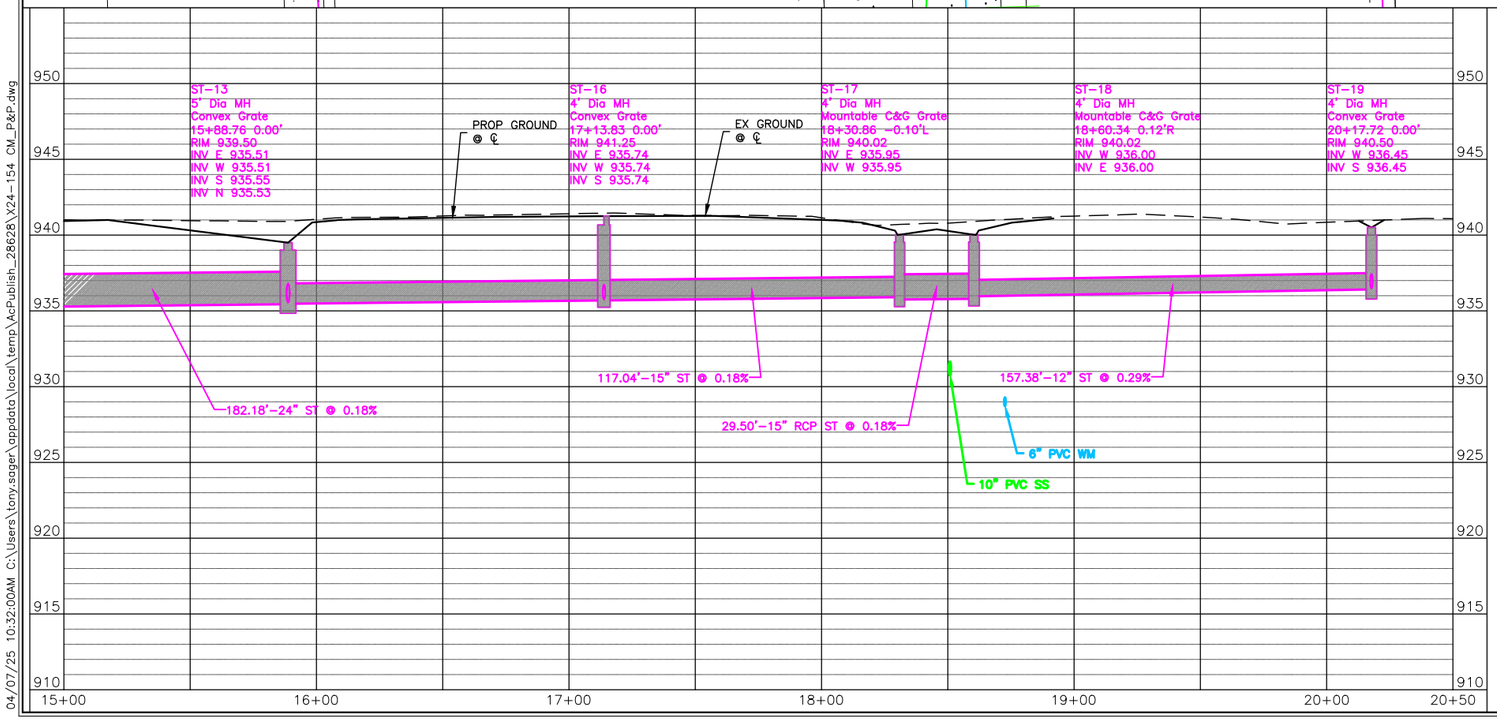

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Storm Trunk Line

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	18

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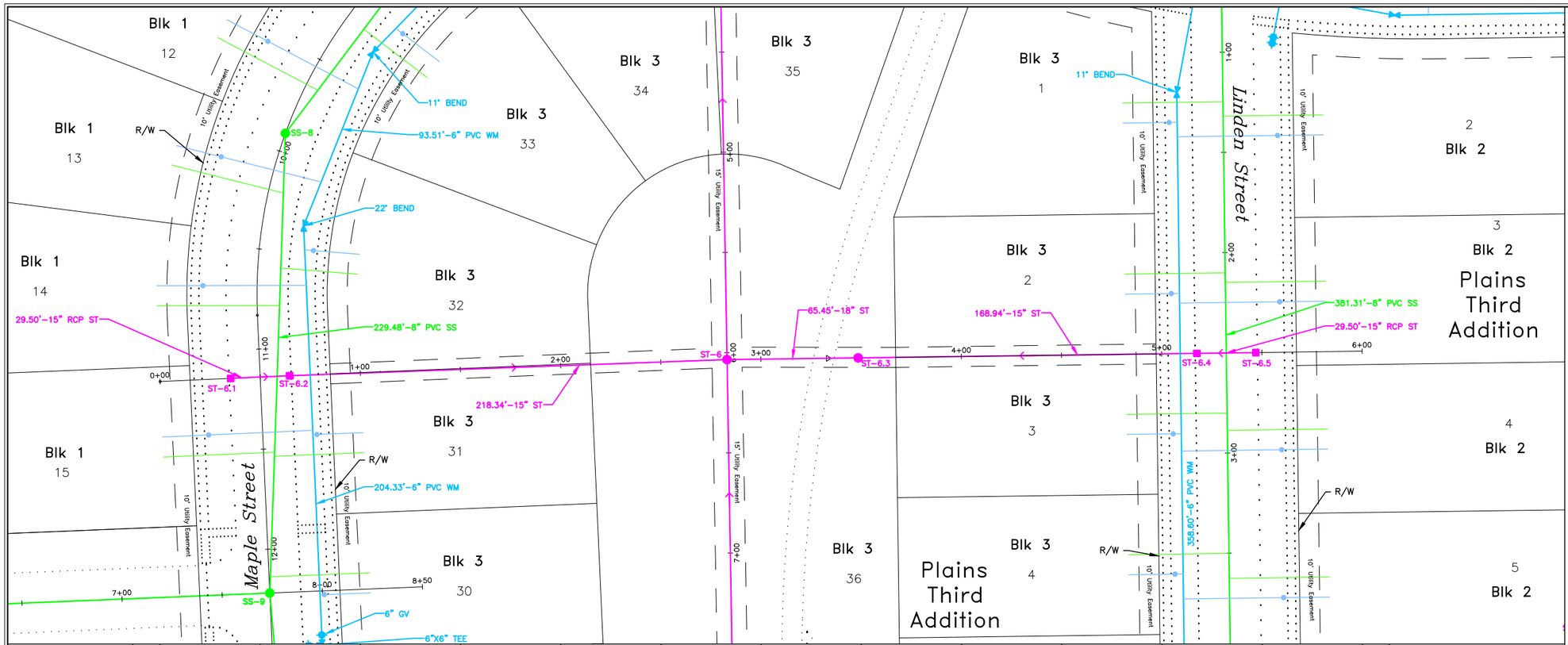

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ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Storm Lateral #1

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	19

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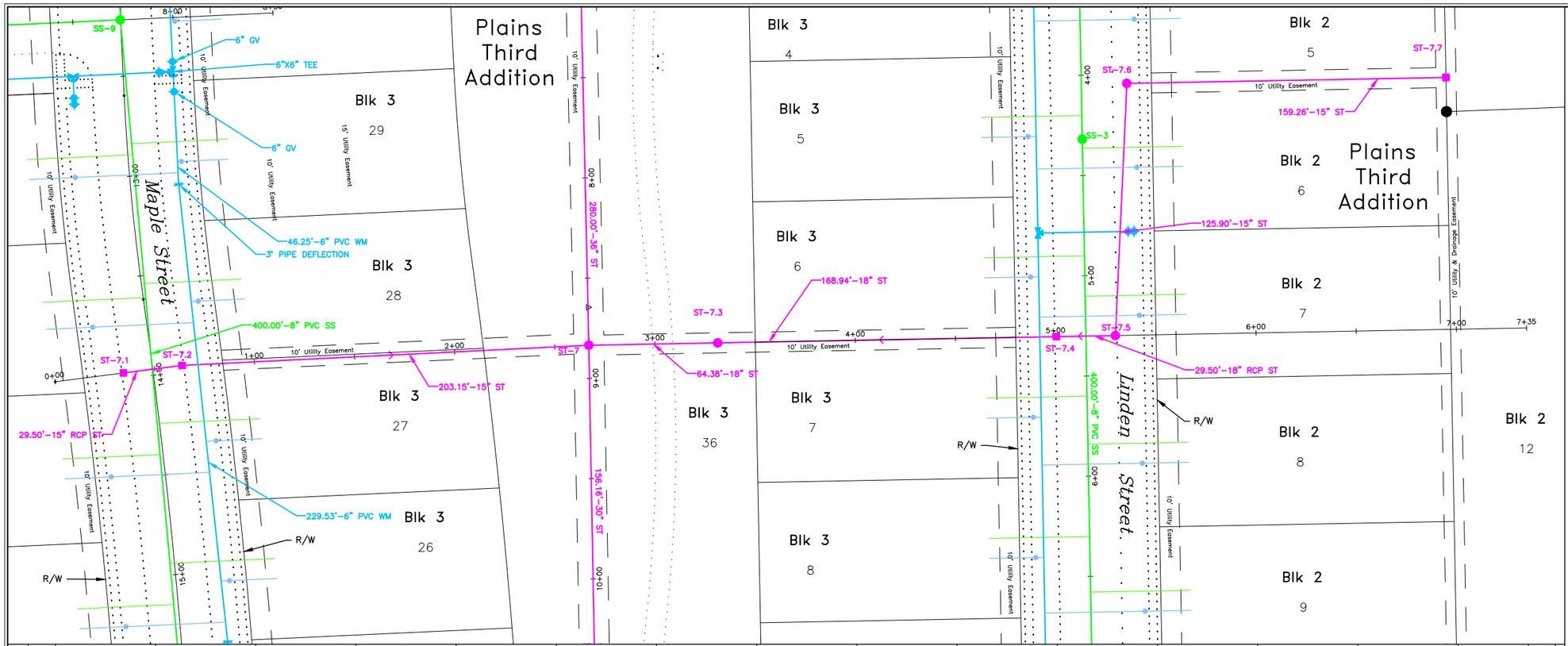

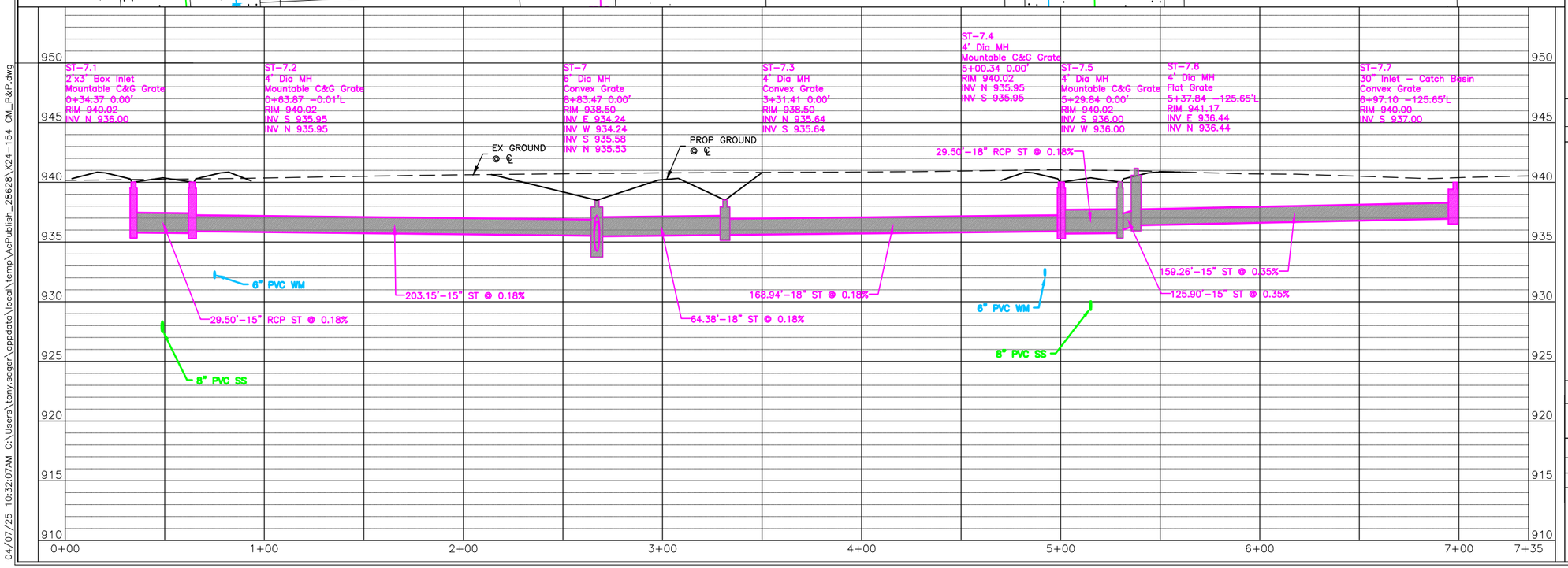

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Storm Lateral #2

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	20

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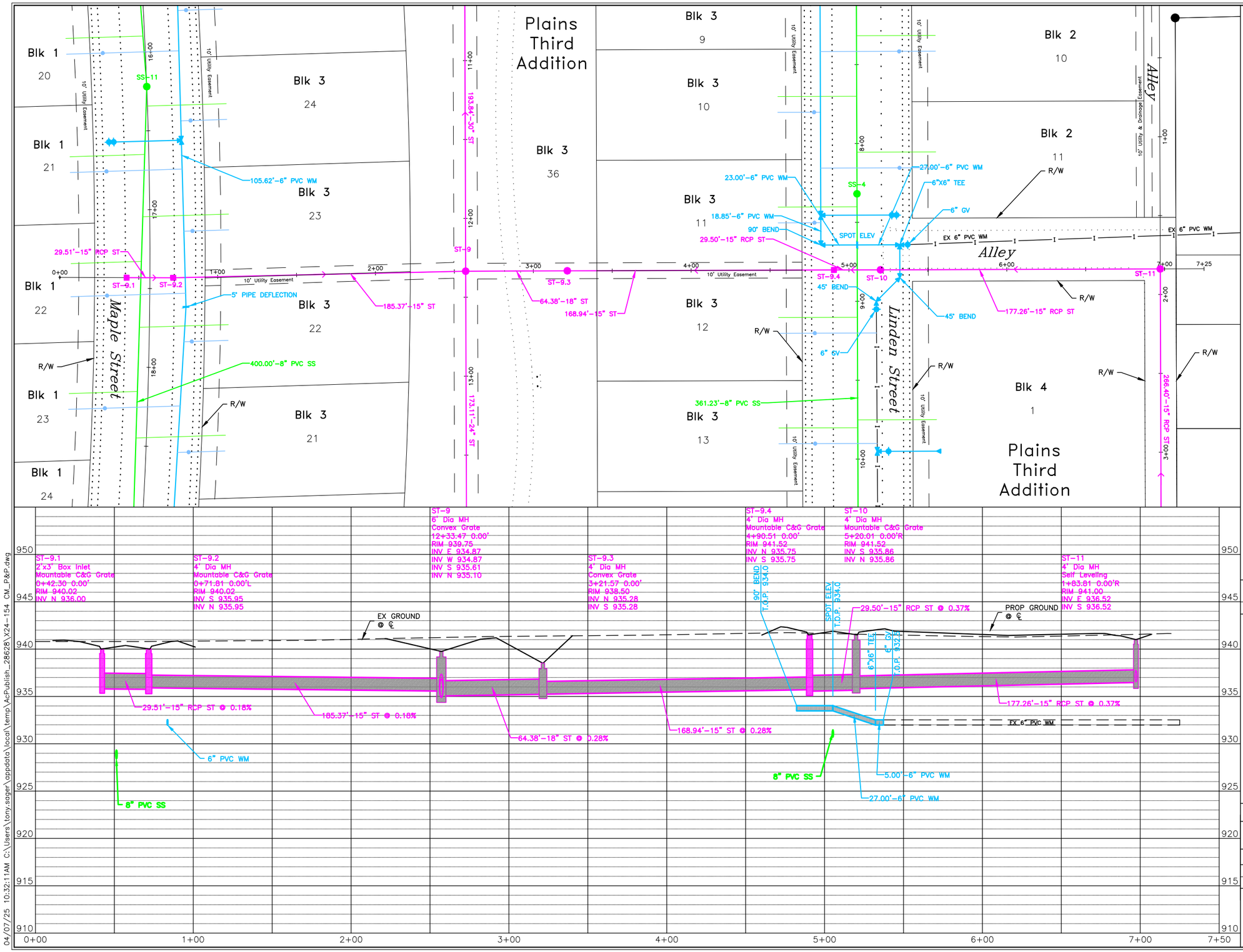

0 30' 60'

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ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS
③ ② ①

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Storm Lateral #3

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	21

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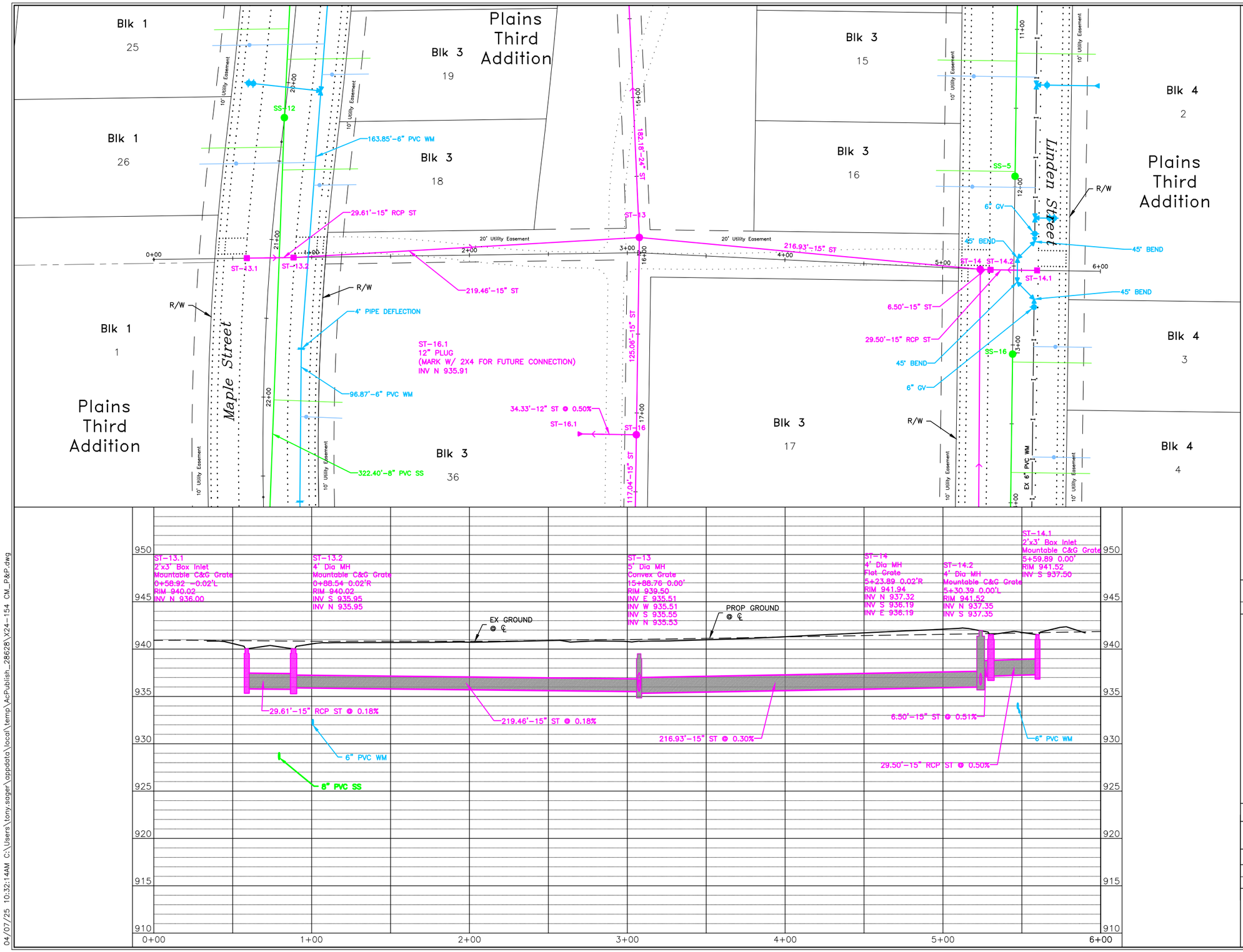

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Storm Lateral #4

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	22

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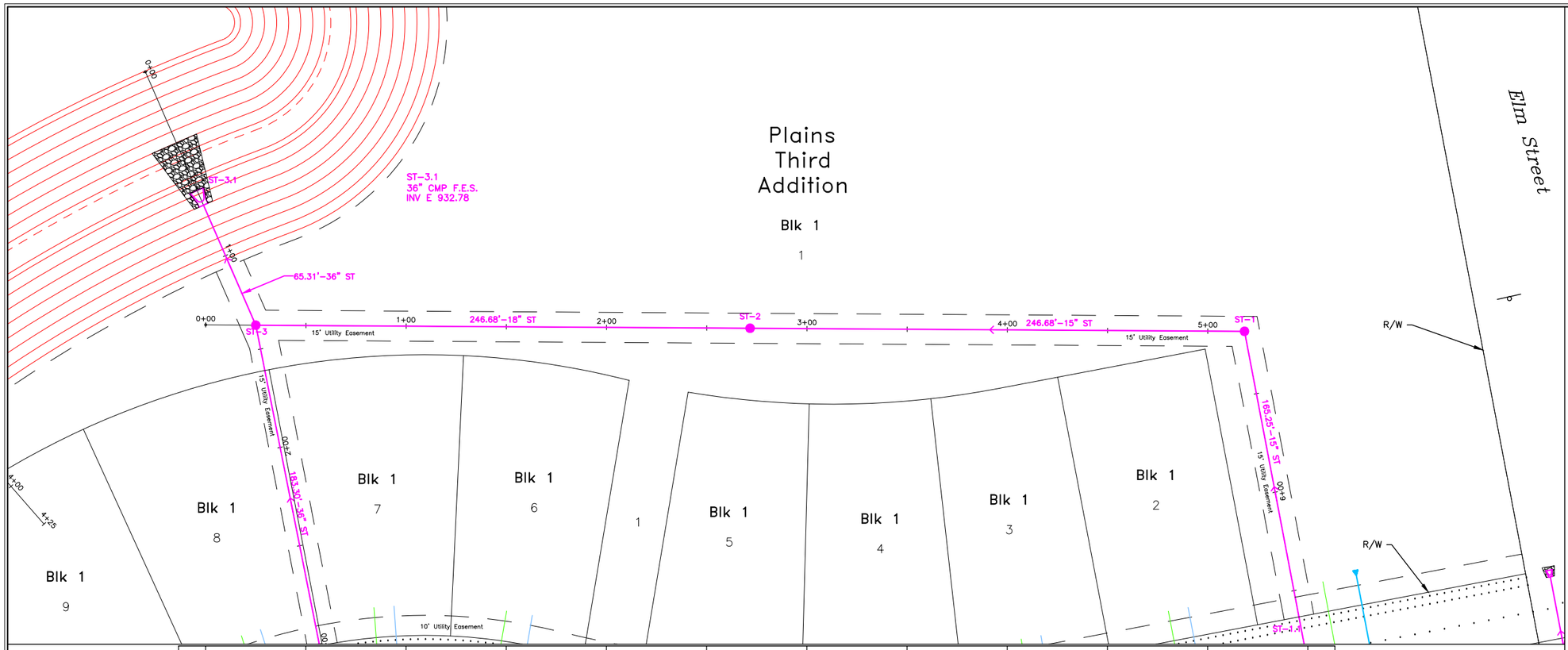

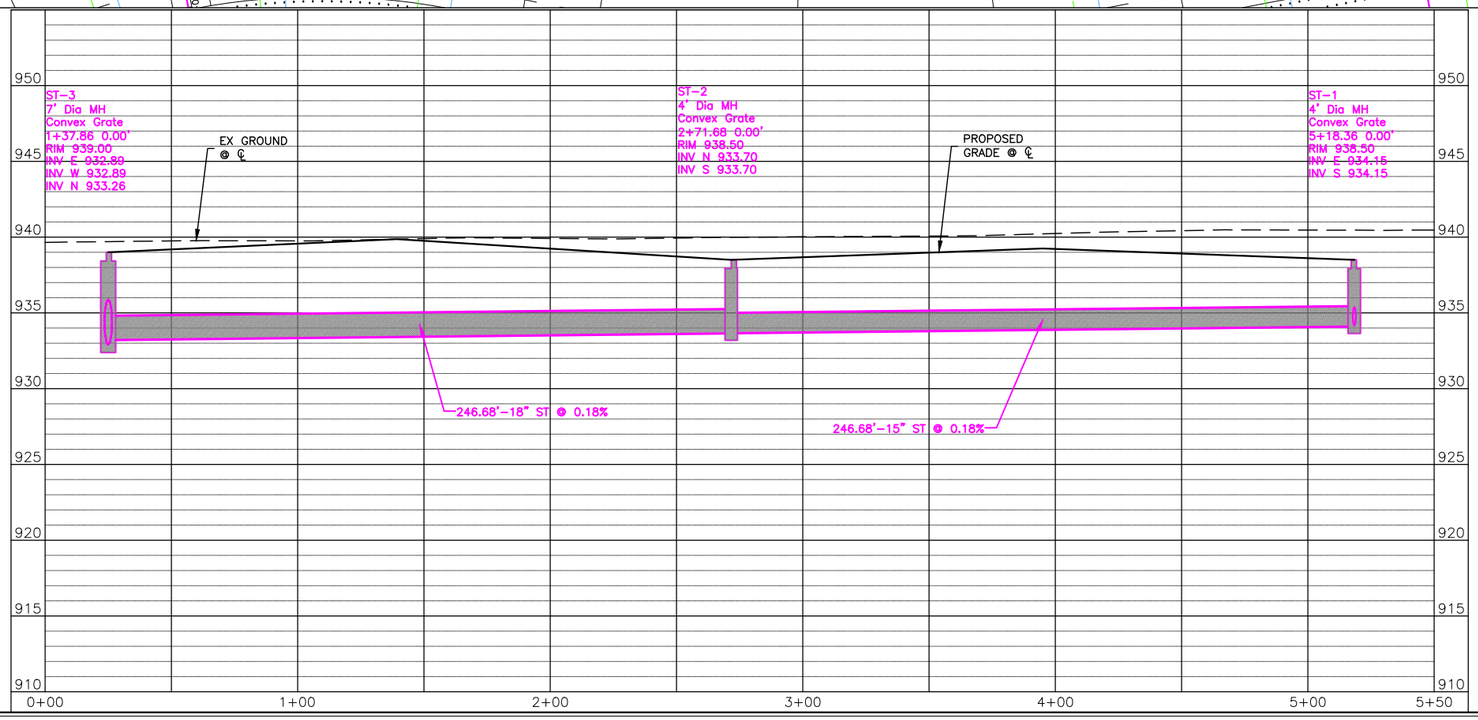

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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North Pond Storm Connection

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	23

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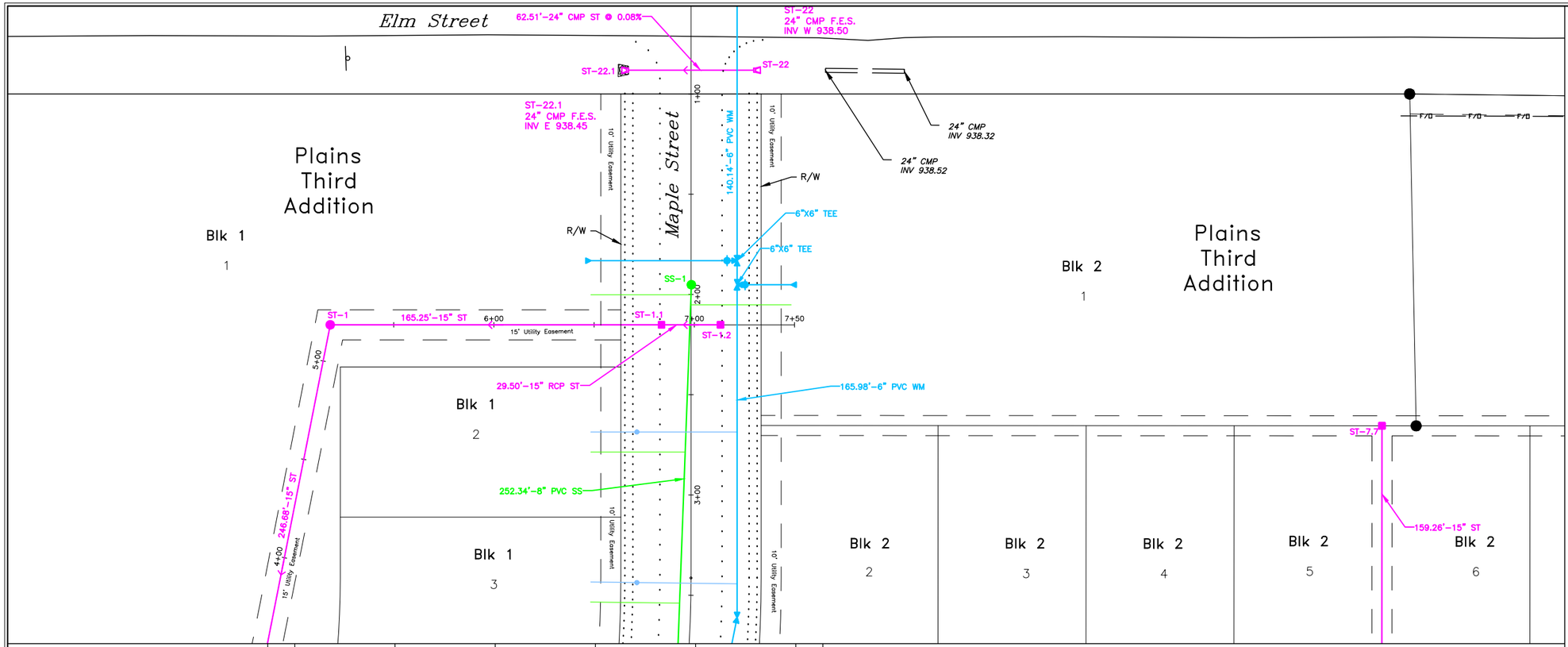

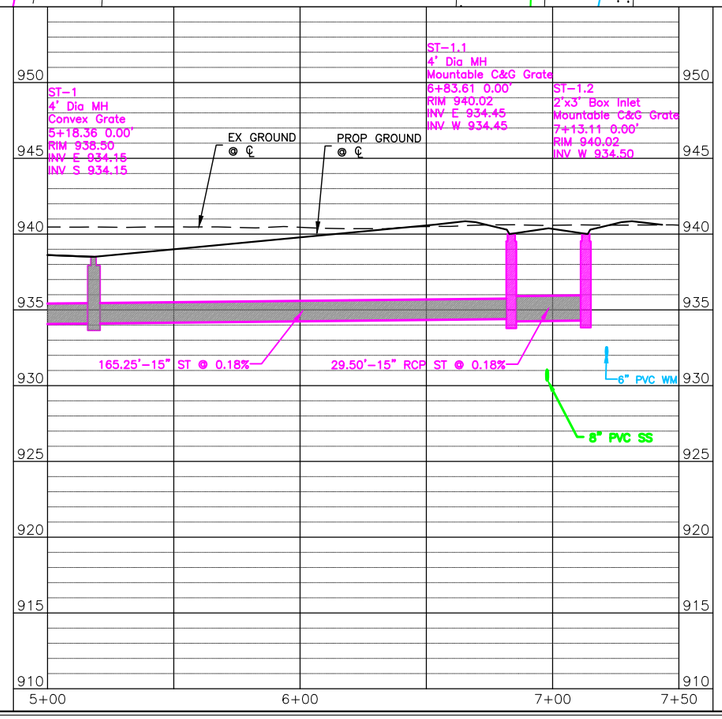

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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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North Pond Storm Connection

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	24

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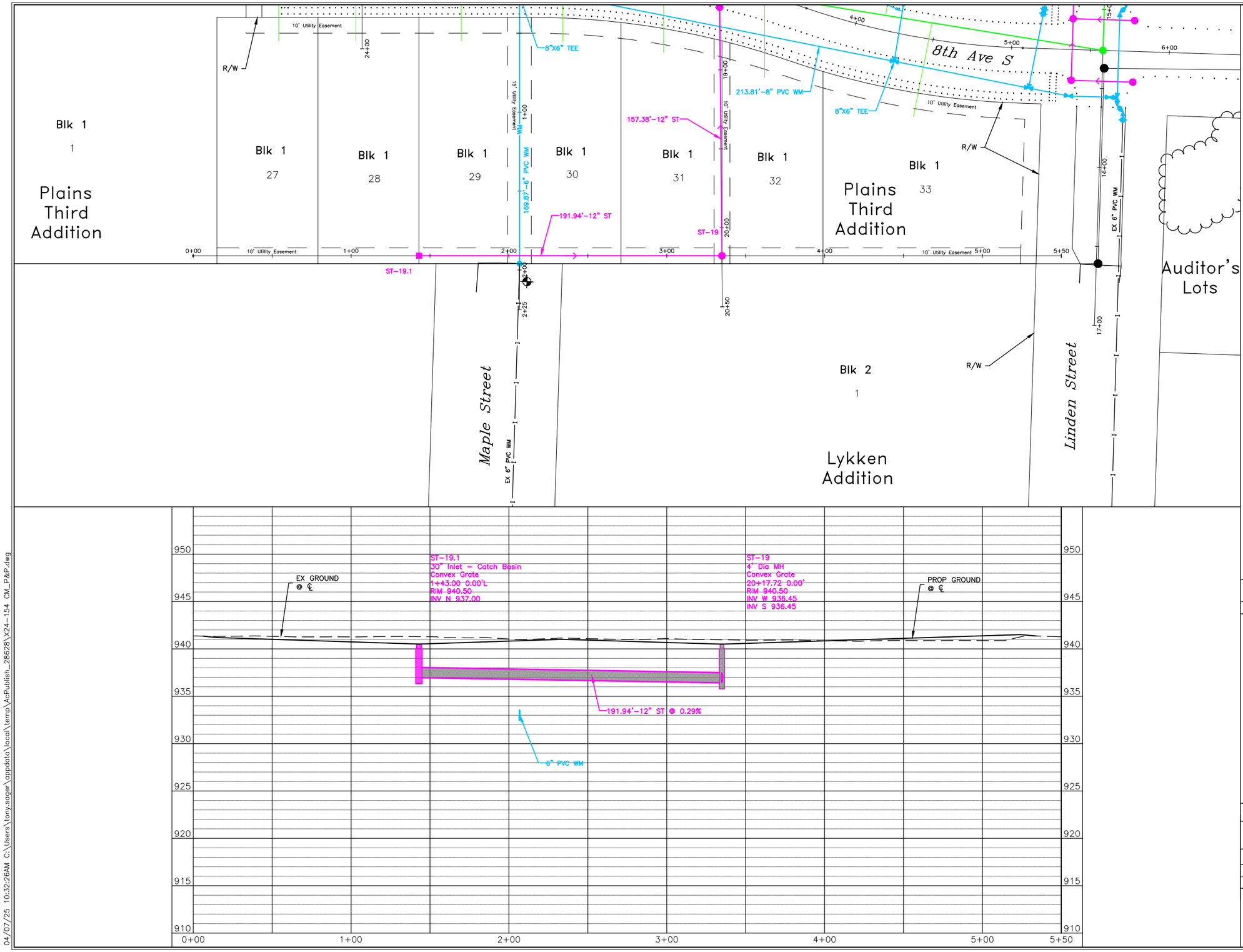

0 30' 60'

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ADDENDUM & CONSTRUCTION REVISIONS

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8th Ave S Rear Yard

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	25

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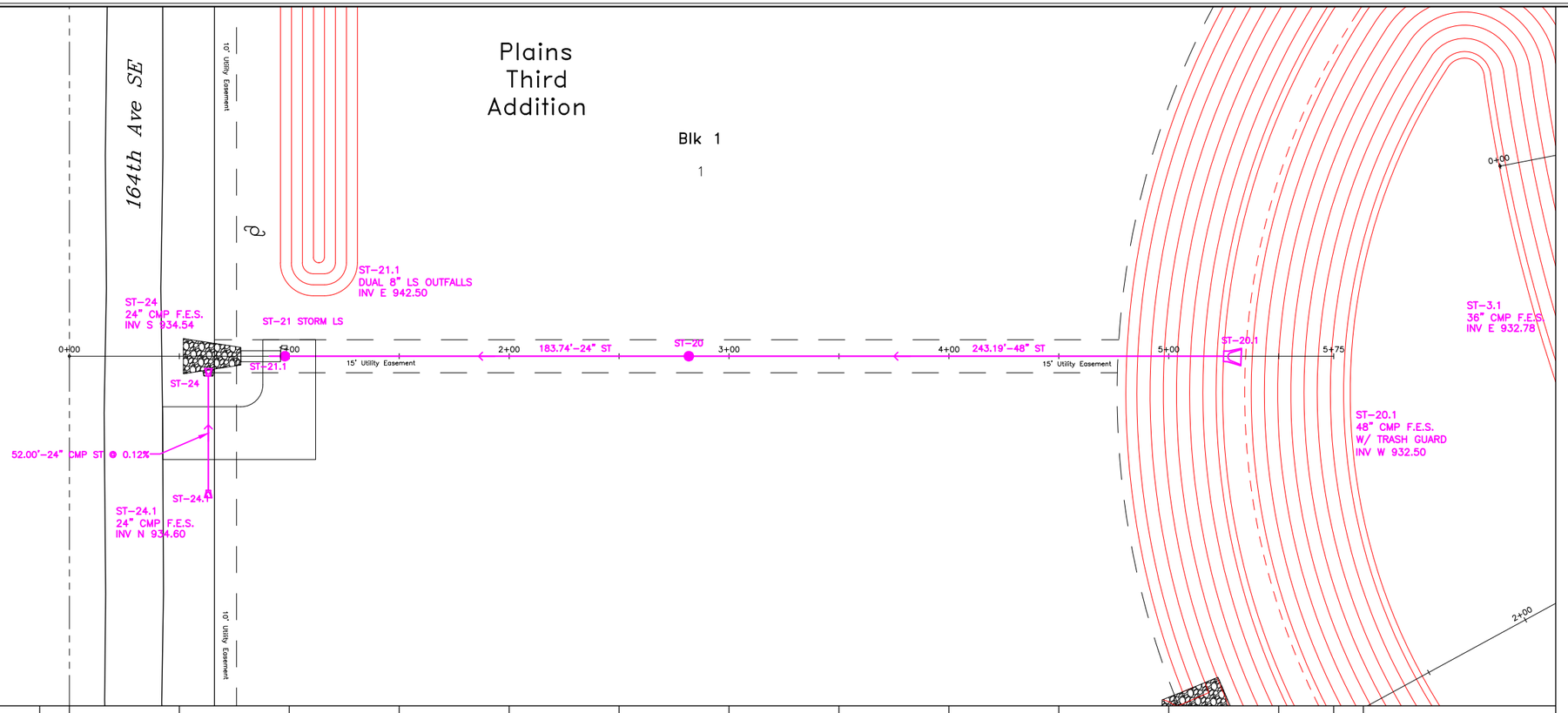

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ADDENDUM & CONSTRUCTION REVISIONS

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Storm Lift Station

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
055	26

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Blk 2
2

Plains
Second
Addition
Blk 2
2

Blk 2
3

Plains
Third
Addition
Blk 2
1

Plains
Third
Addition
Blk 2
12

INSTALL HIGHBACK CURB & GUTTER AT 20' RADIUS SECTIONS. PROVIDE 2' DROP CURB AT ELM STREET PC CONNECTIONS.

L=31.28 R=20.00
Δ=89°37'24"

L=31.65 R=20.00
Δ=90°40'18"

INV 24" CMP
937.45

INV 24" CMP
937.53

MATCH 12" GRAVEL SECTION WITH EXISTING ELEVATIONS. MAINTAIN EXISTING DRAINAGE PATTERN

BM-2

INV 24" CMP
939.60

INV 24" CMP
939.73

INV 20" HDPE
939.34

INV 20" HDPE
939.32

Elm St.

CASS RURAL WATER (UNKNOWN SIZE)

24" CMP
INV 938.32

24" CMP
INV 938.52

FUT 4" RC SIDEWALK (TYP)

FUT 4" RC SIDEWALK (TYP)

11th Ave S

10' Utility Easement

EX. GROUND
@ ℄

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Elm Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	1

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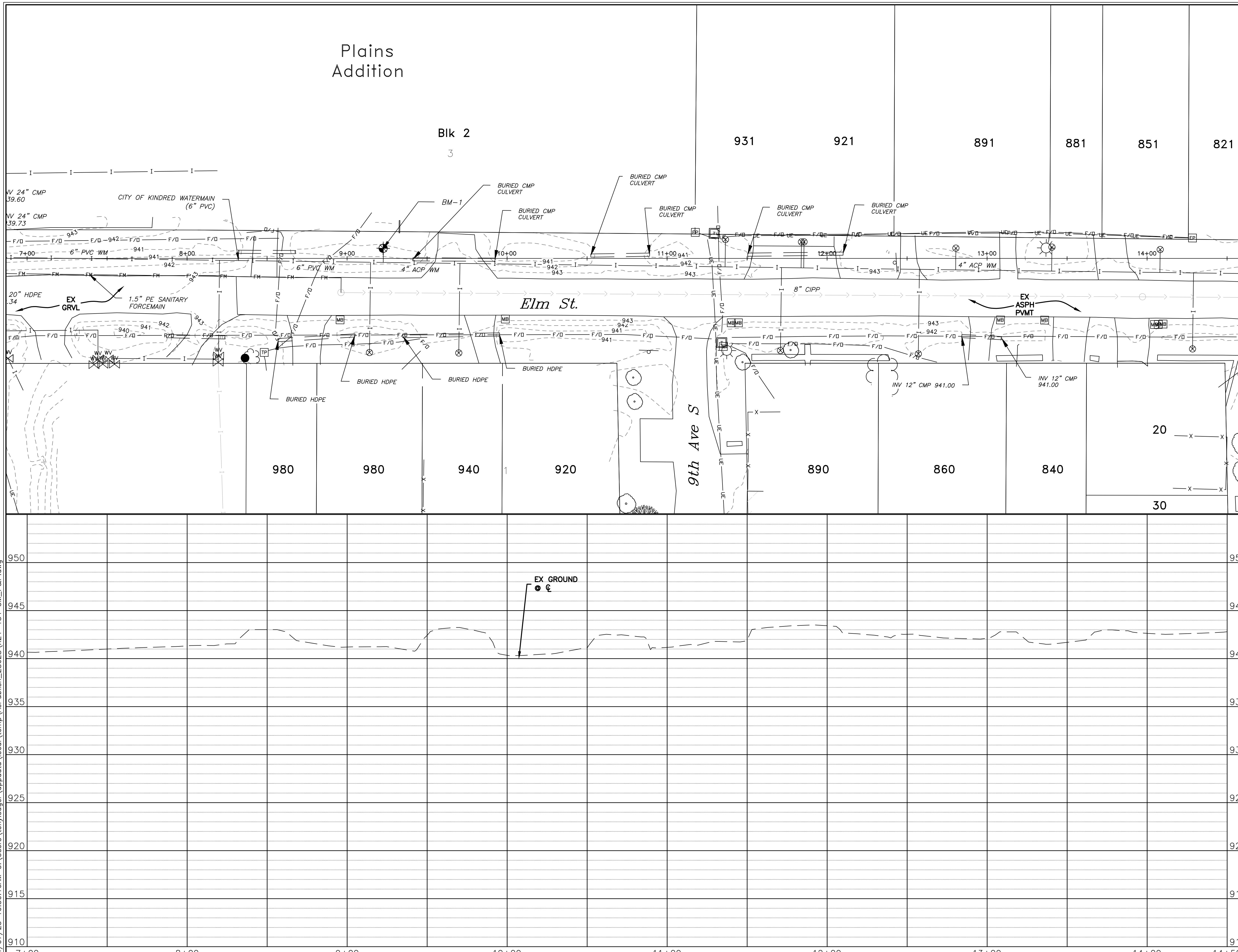

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

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Elm Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	2

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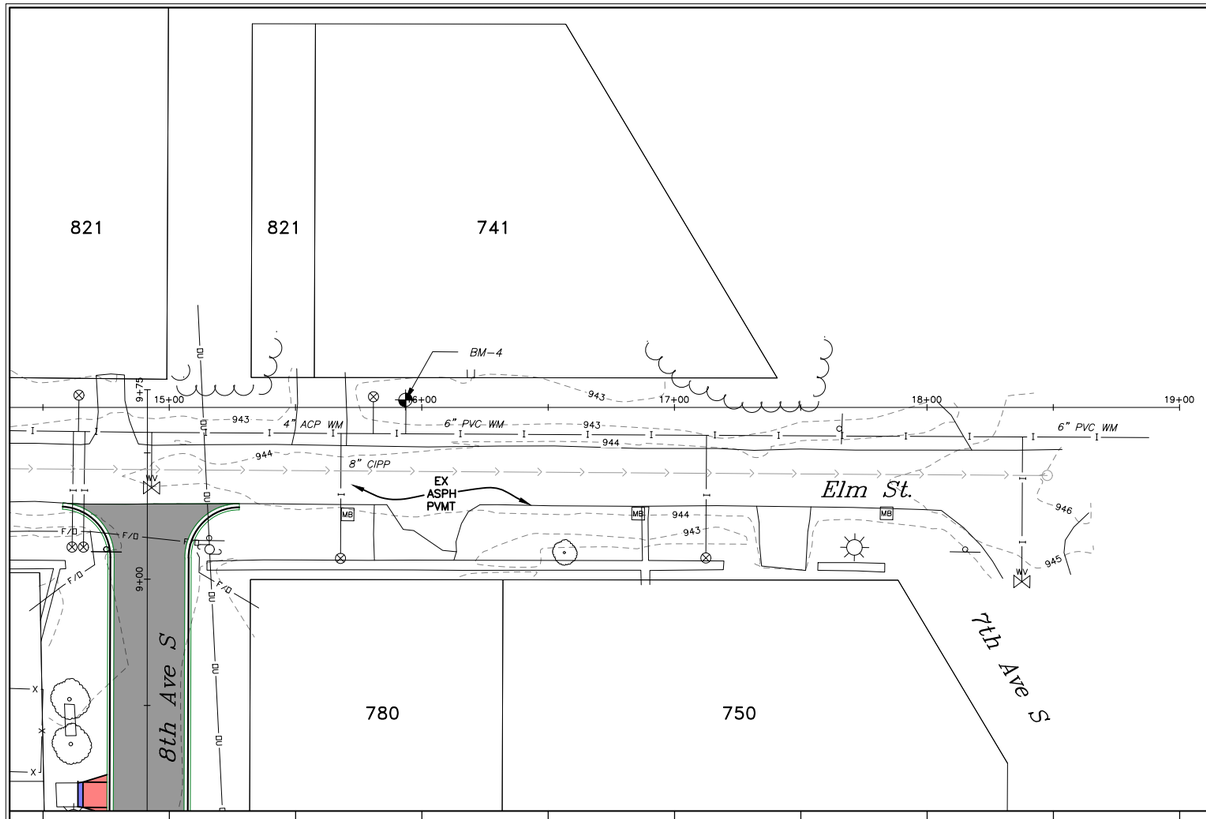

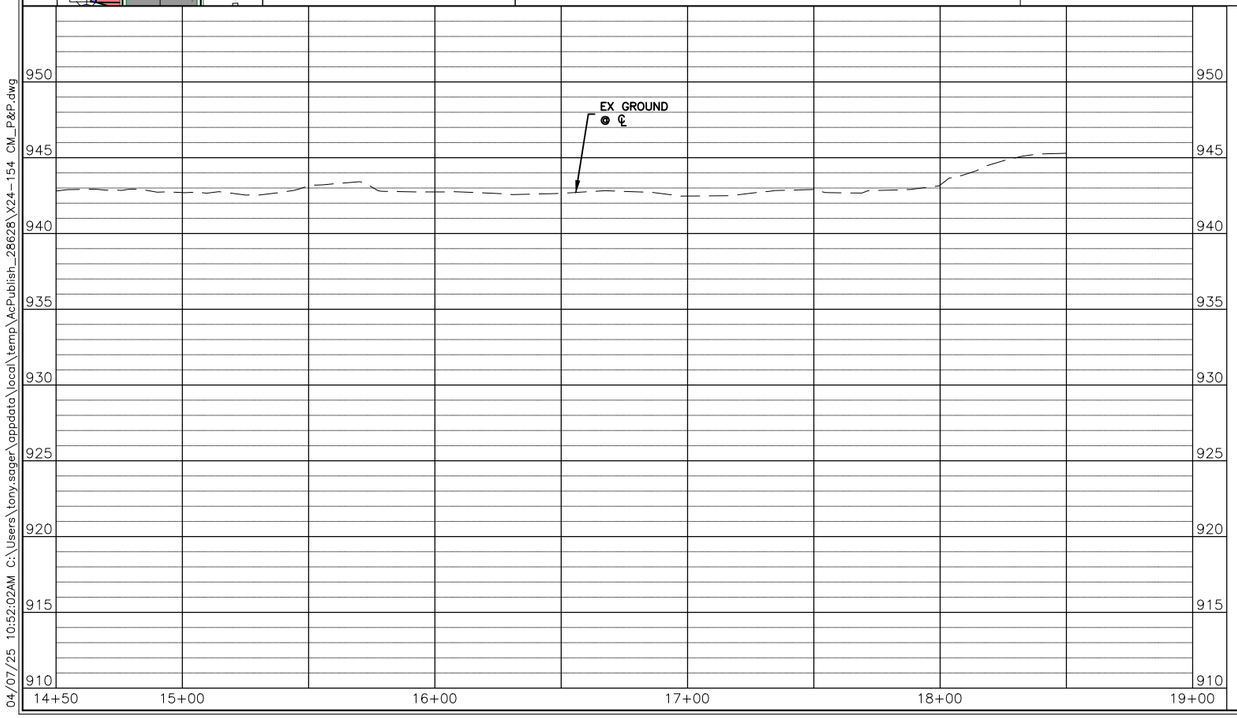

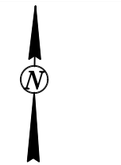

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PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 8" RC PAVEMENT

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

SEAL

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Elm Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	3

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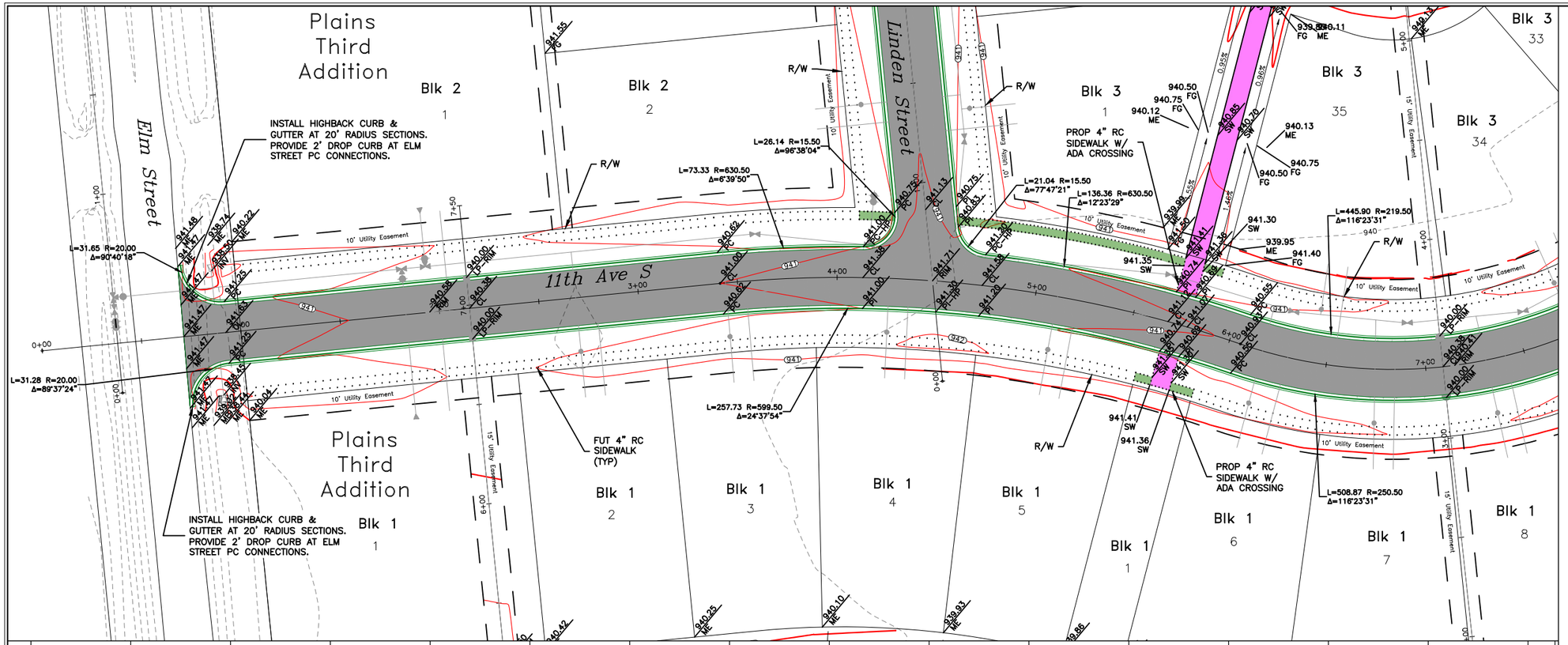

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 4" RC SIDEWALK

PROPOSED 5" MULTI-USE PATH

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Maple Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	4

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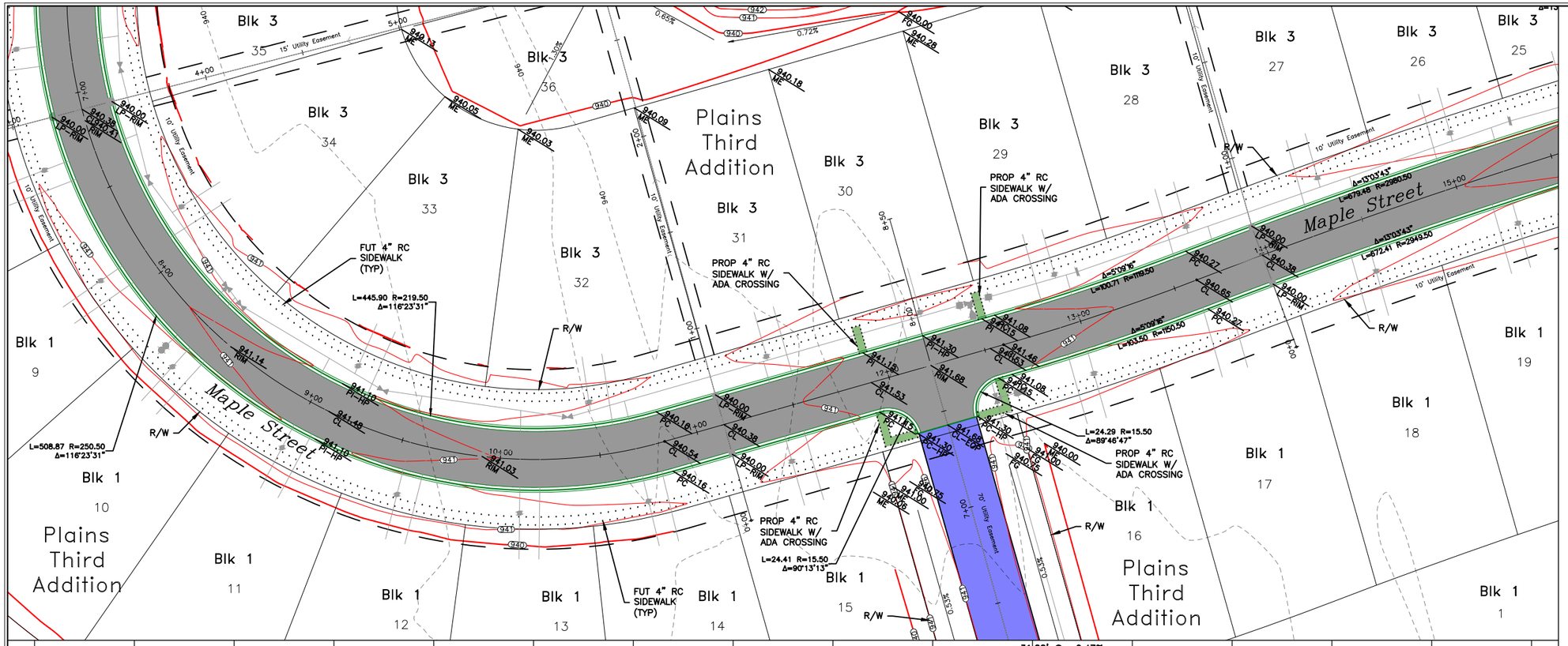

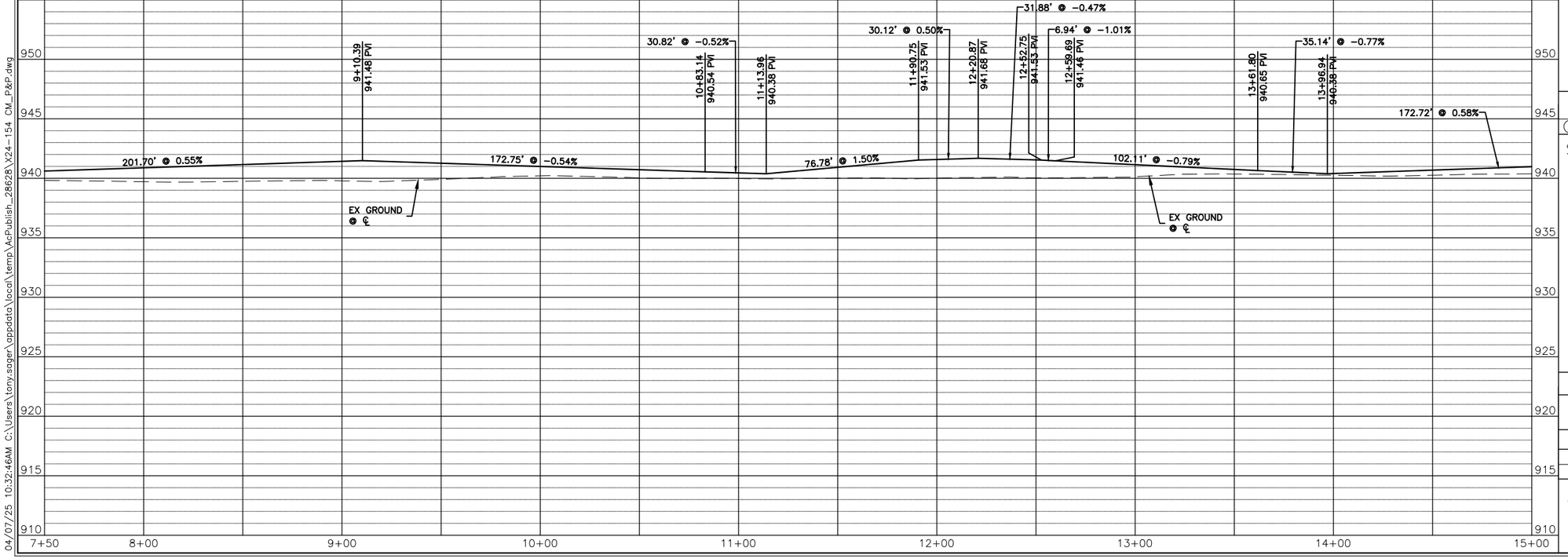

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 4" RC SIDEWALK

PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Maple Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	5

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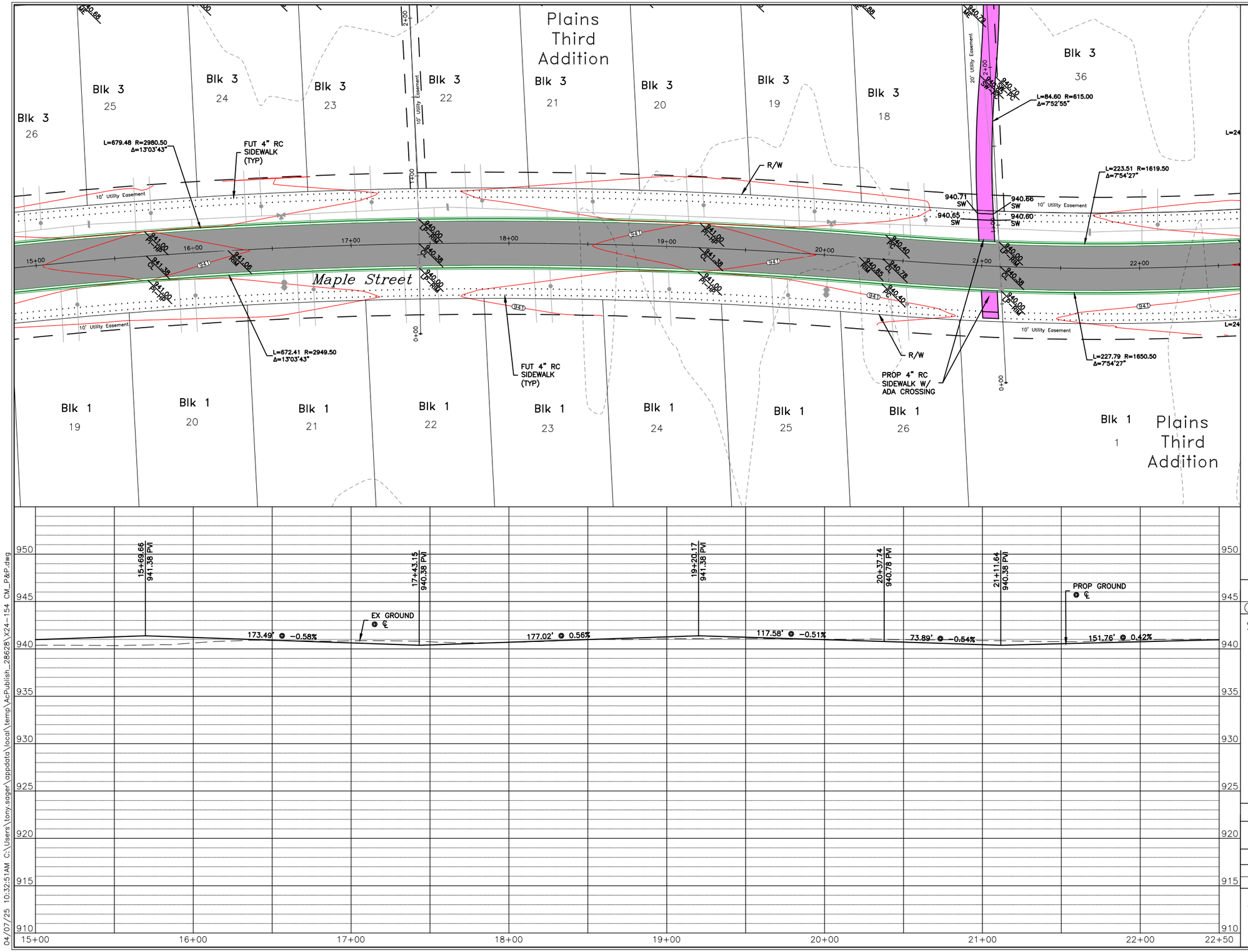

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 4" RC SIDEWALK

PROPOSED 5" MULTI-USE PATH

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Maple Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	6

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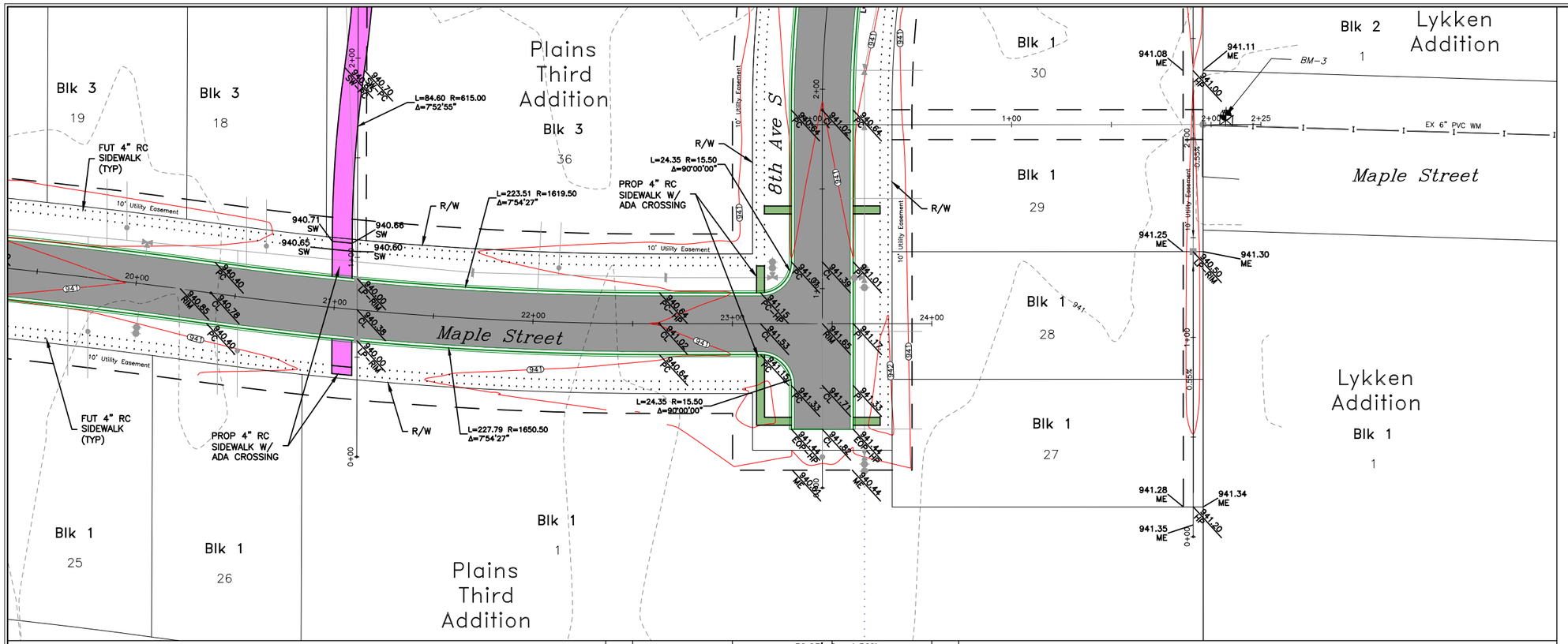

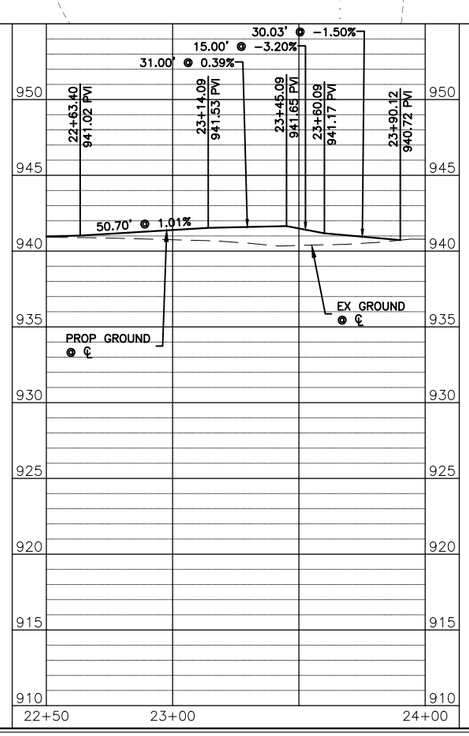

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 4" RC SIDEWALK

PROPOSED 5" MULTI-USE PATH

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Maple Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	7

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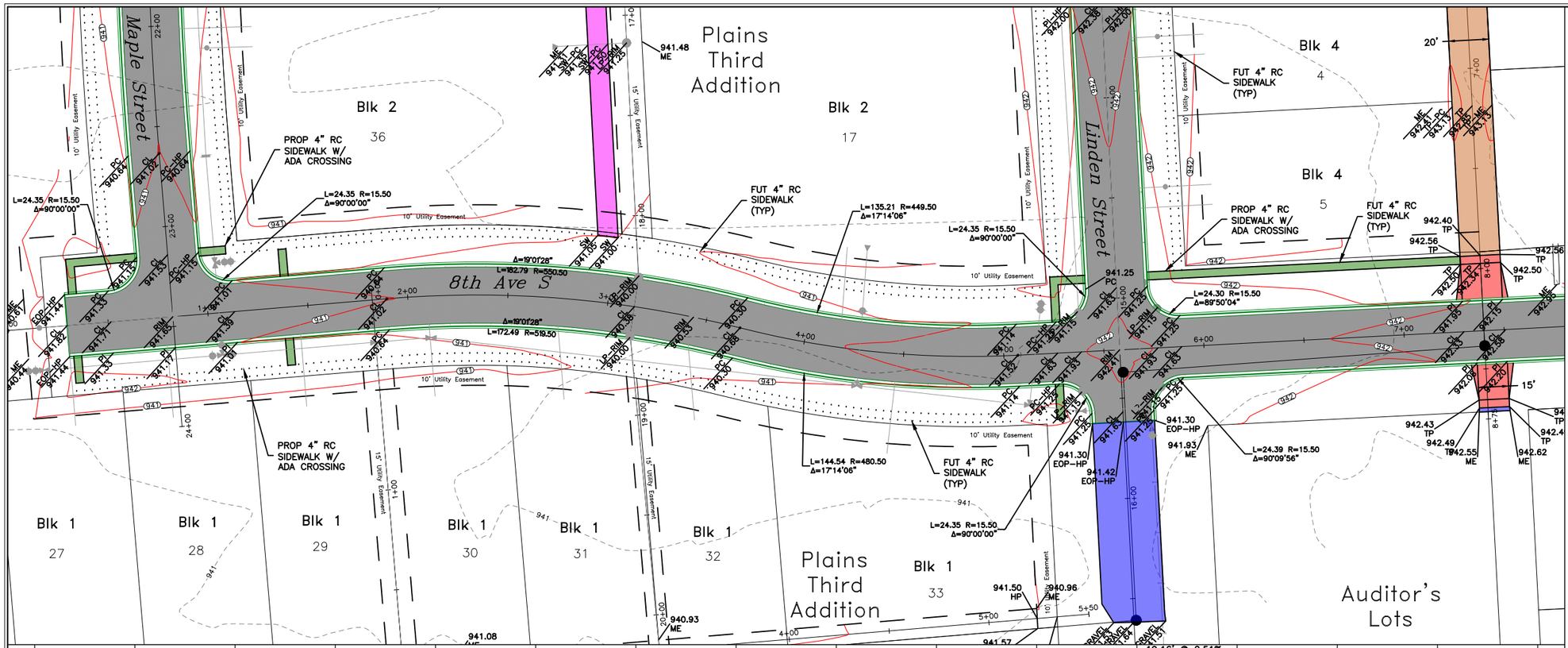

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 5" MULTI-USE PATH
- PROPOSED 7" RC PAVEMENT
- PROPOSED 8" RC PAVEMENT
- PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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8th Avenue South

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	8

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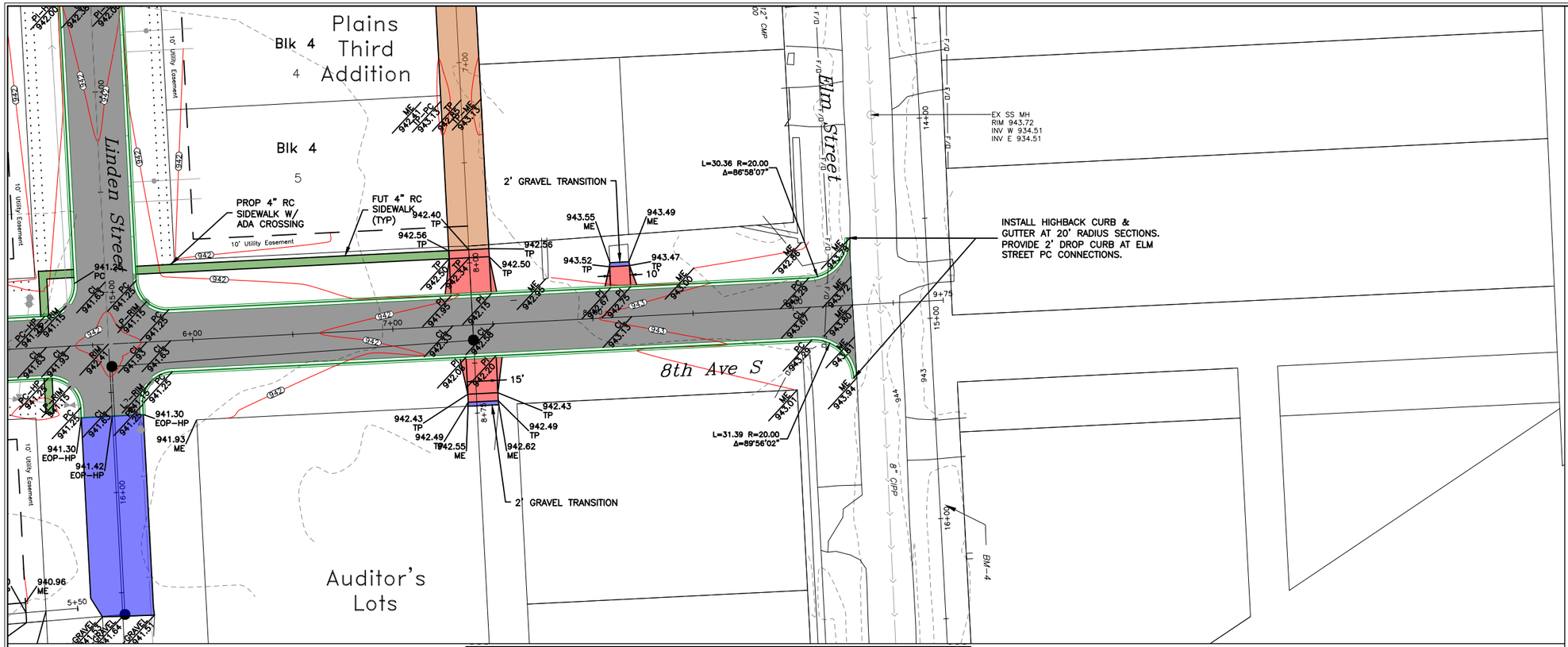

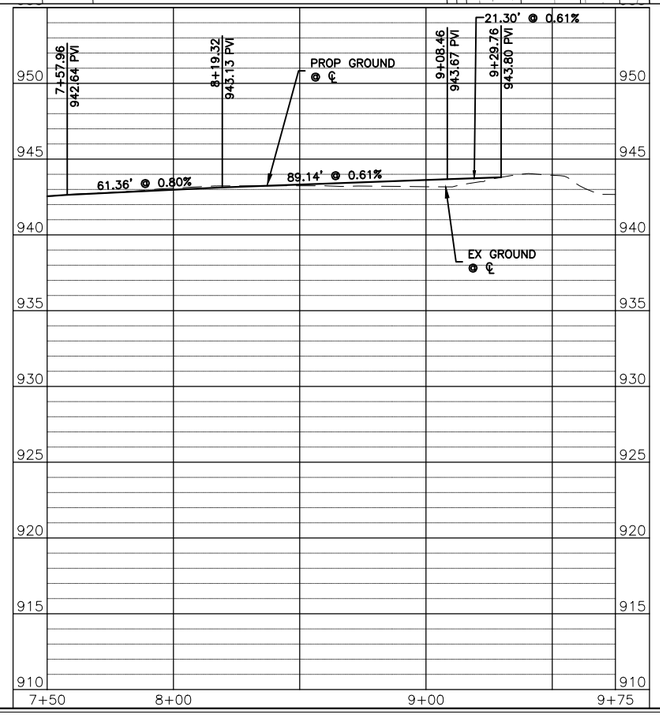

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 7" RC PAVEMENT
- PROPOSED 8" RC PAVEMENT
- PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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8th Avenue South

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	9

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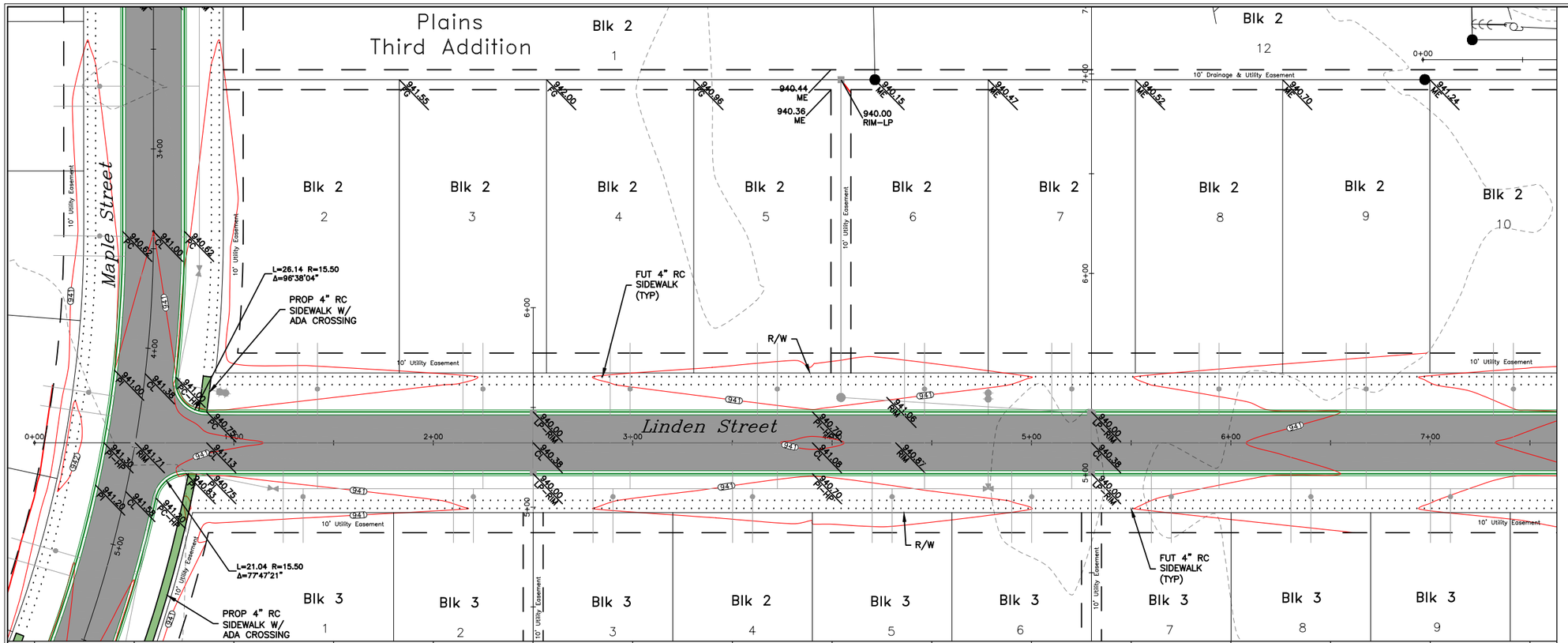

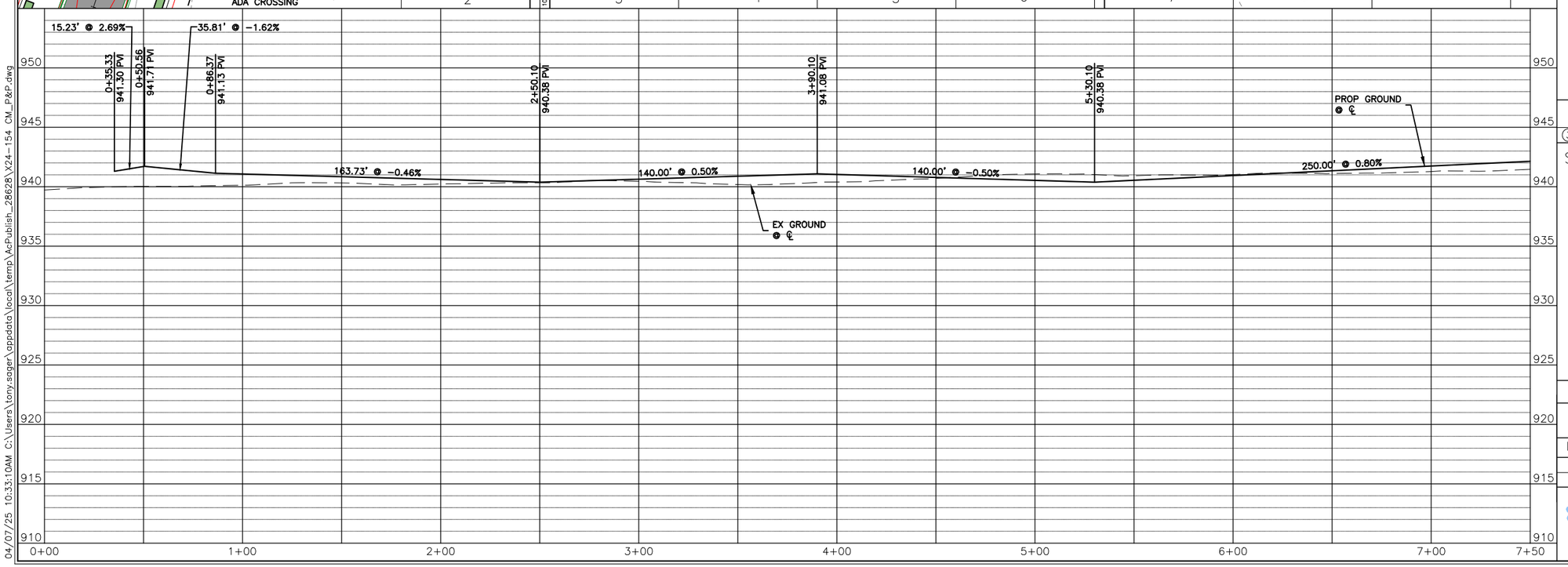

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 4" RC SIDEWALK

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Linden Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	10

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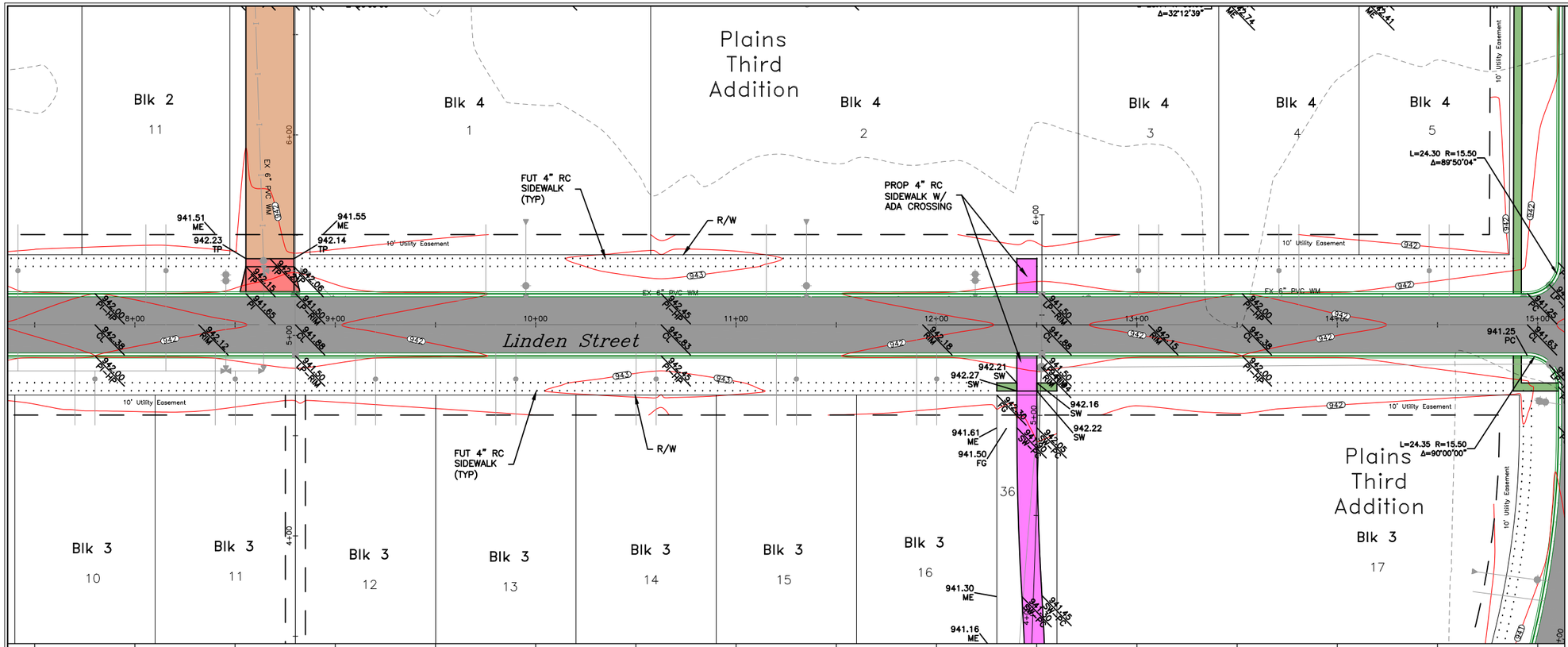

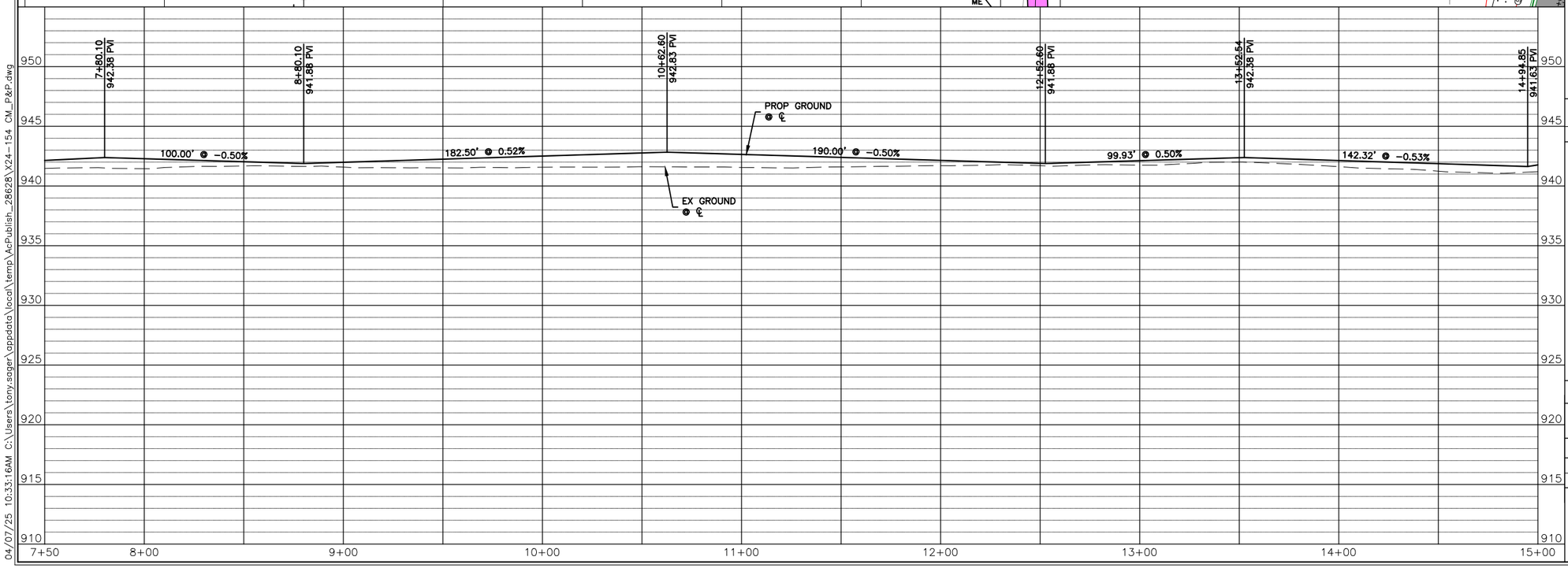

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 5" MULTI-USE PATH
- PROPOSED 7" RC PAVEMENT
- PROPOSED 8" RC PAVEMENT

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Linden Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	11

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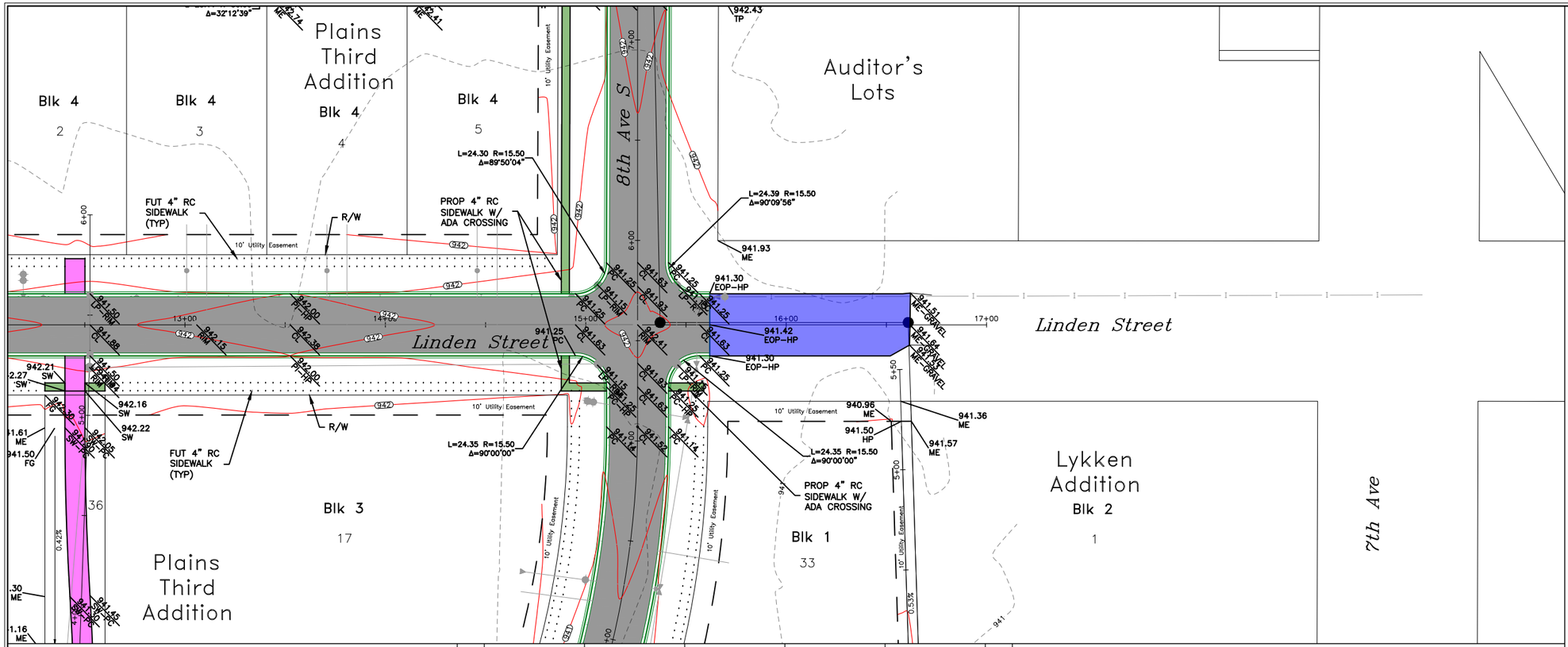

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 5" MULTI-USE PATH
- PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Linden Street

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	12

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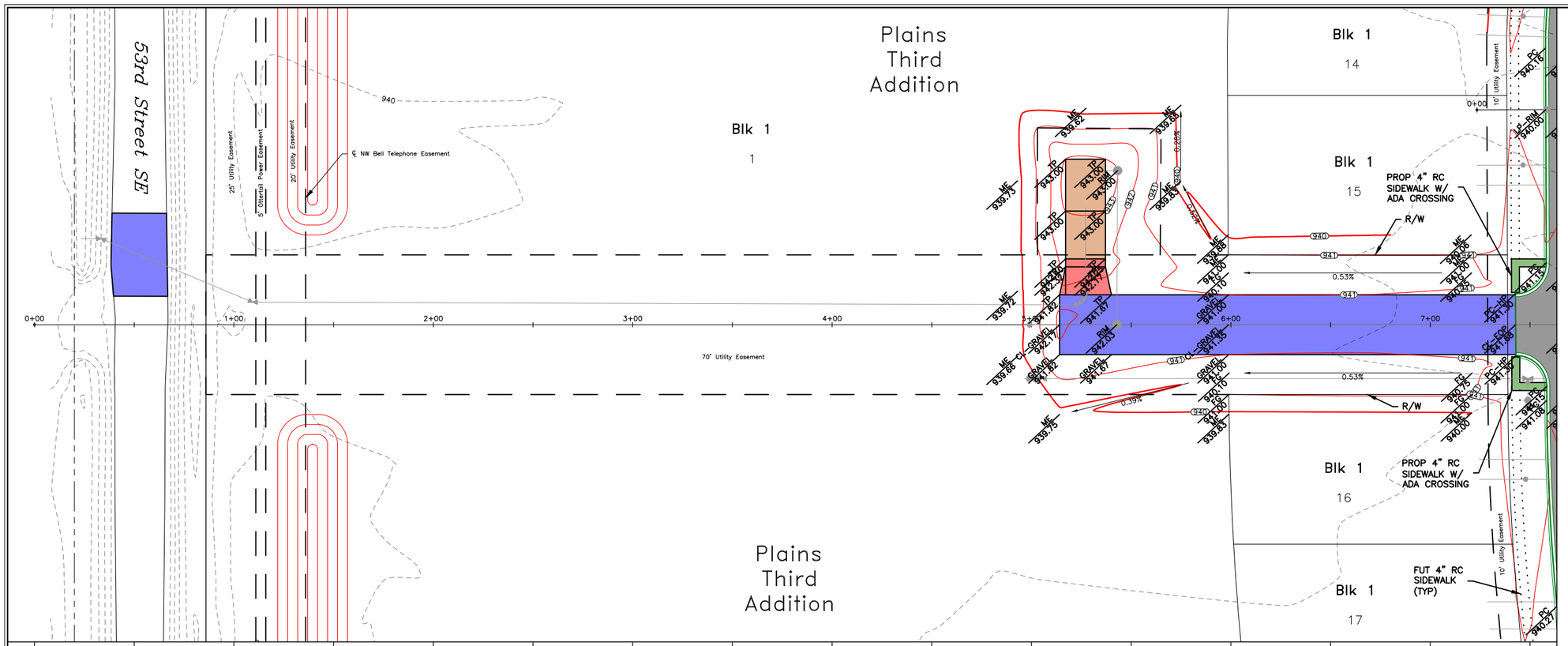

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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10th Avenue South (Future)

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	13

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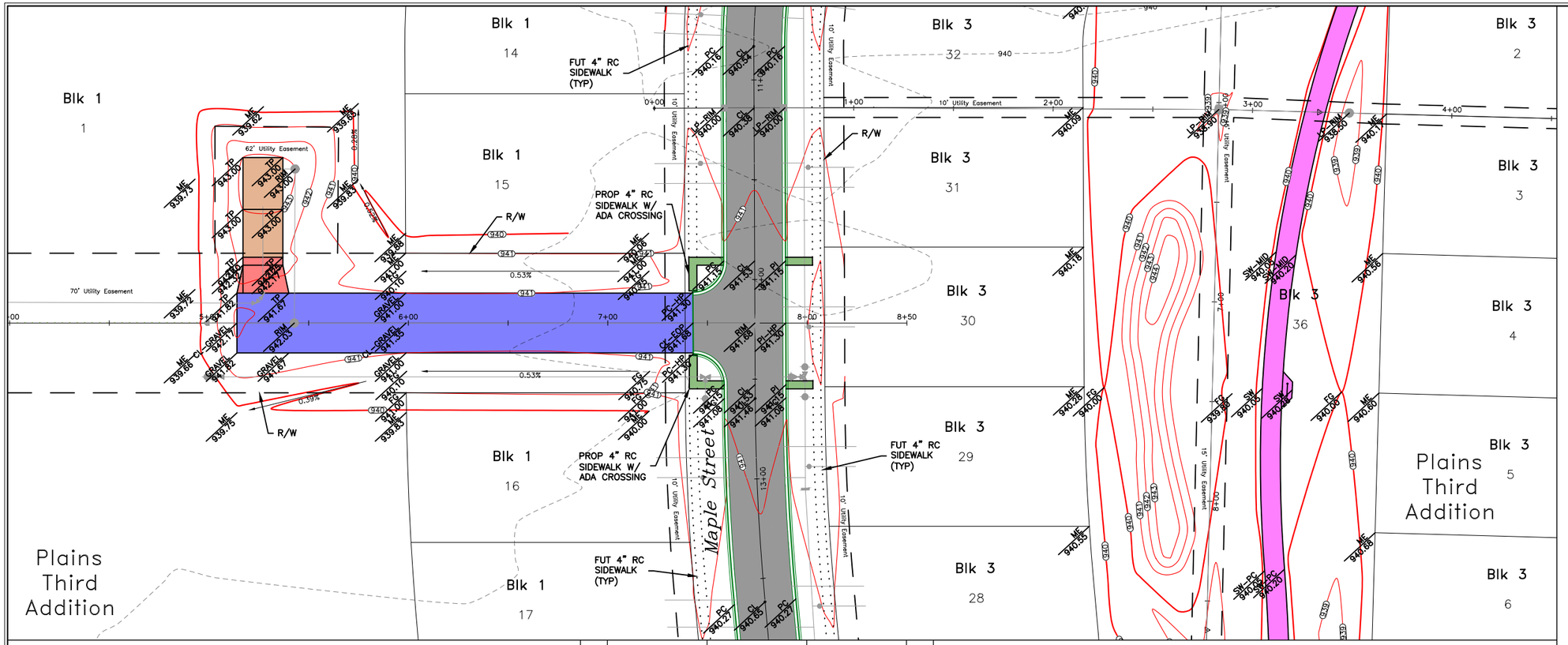

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 7" RC PAVEMENT
- PROPOSED 8" RC PAVEMENT
- PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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10th Avenue South (Future)

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	14

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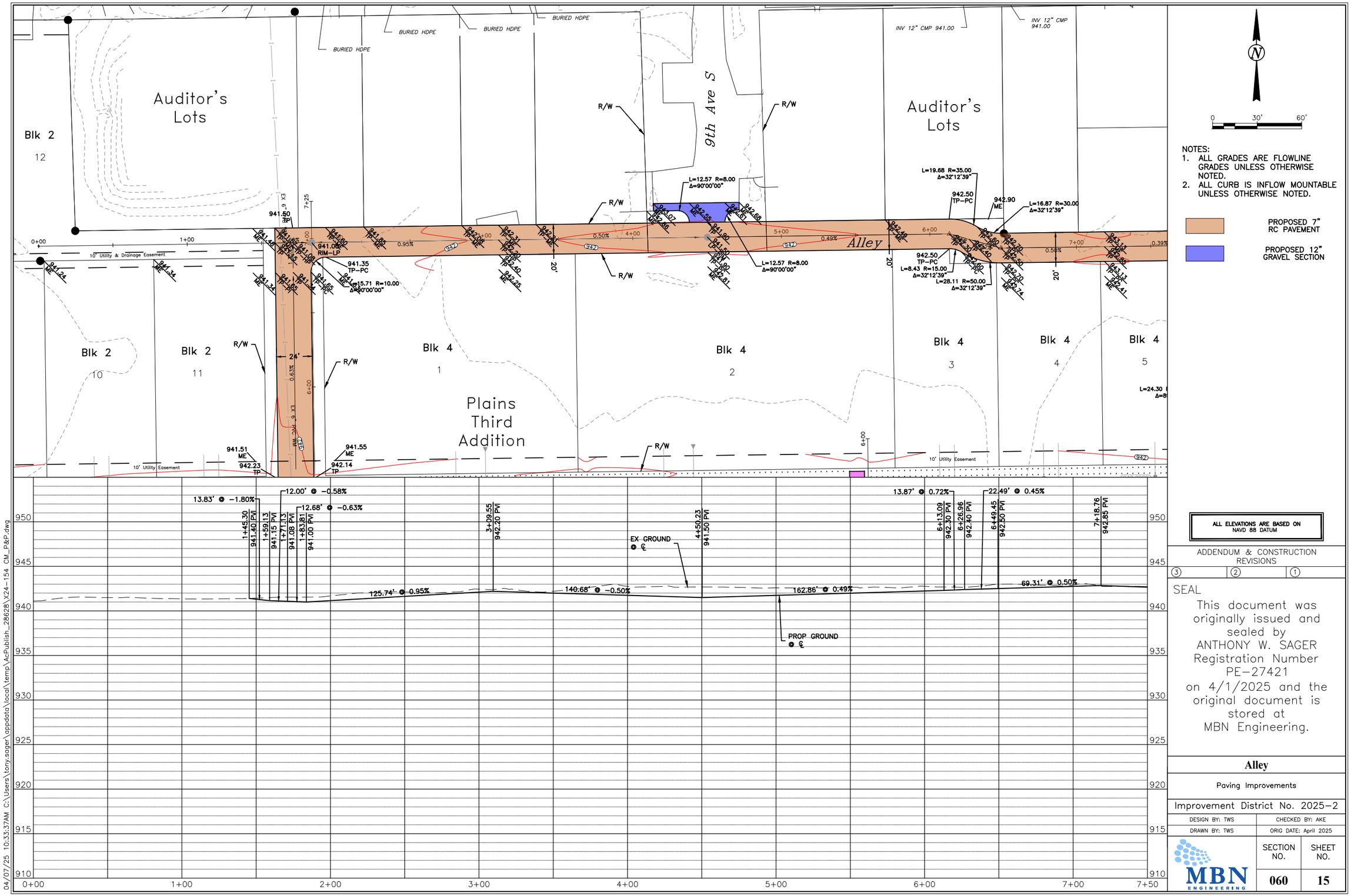

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 7" RC PAVEMENT

PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Alley

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	15

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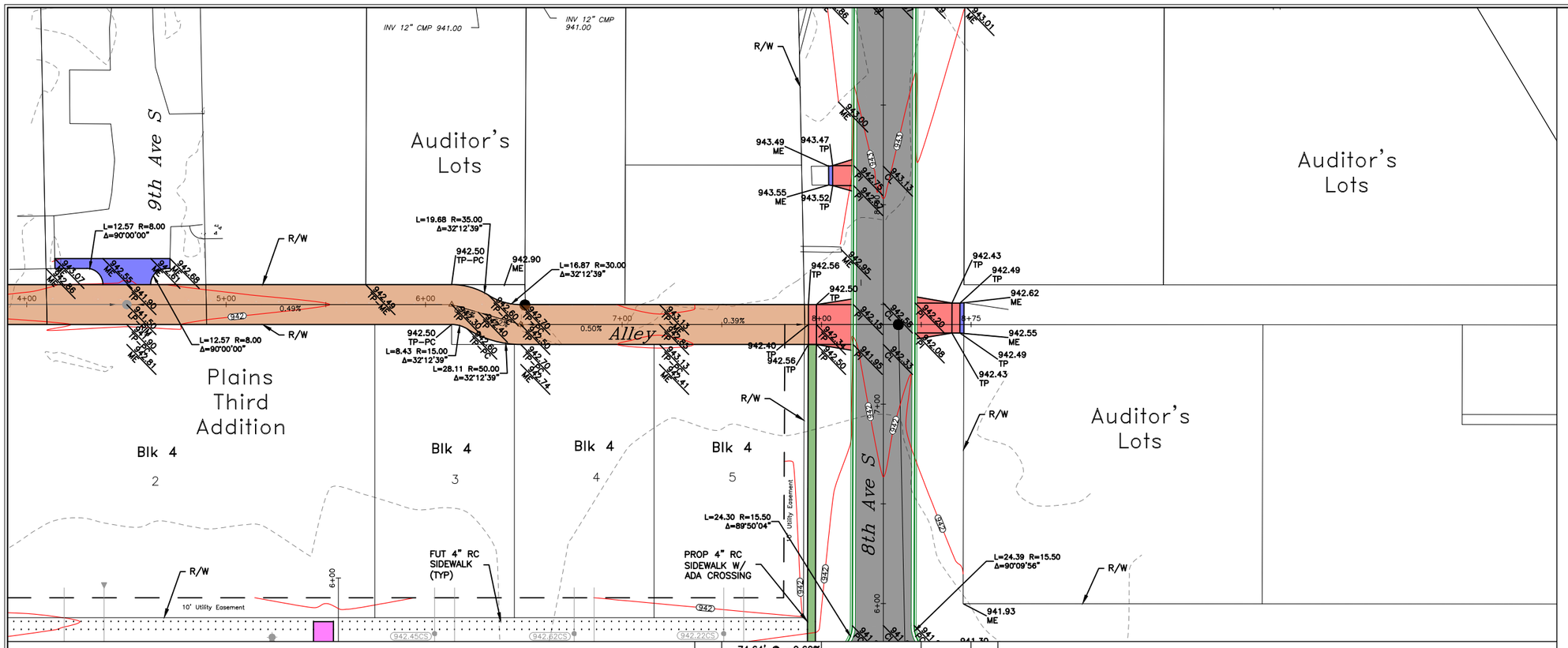

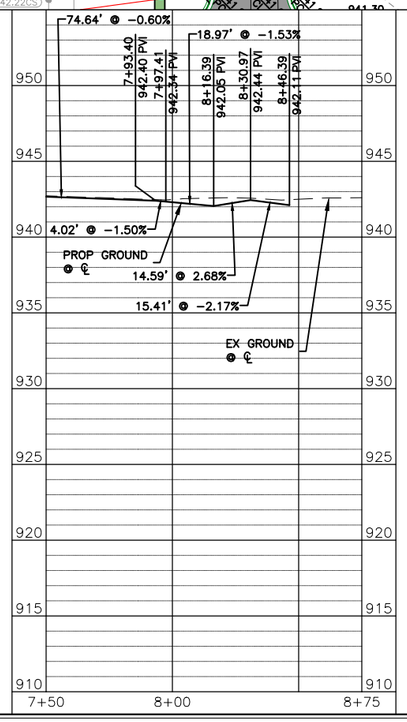

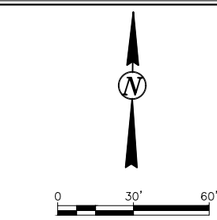

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 7" RC PAVEMENT
- PROPOSED 8" RC PAVEMENT
- PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Alley

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	16

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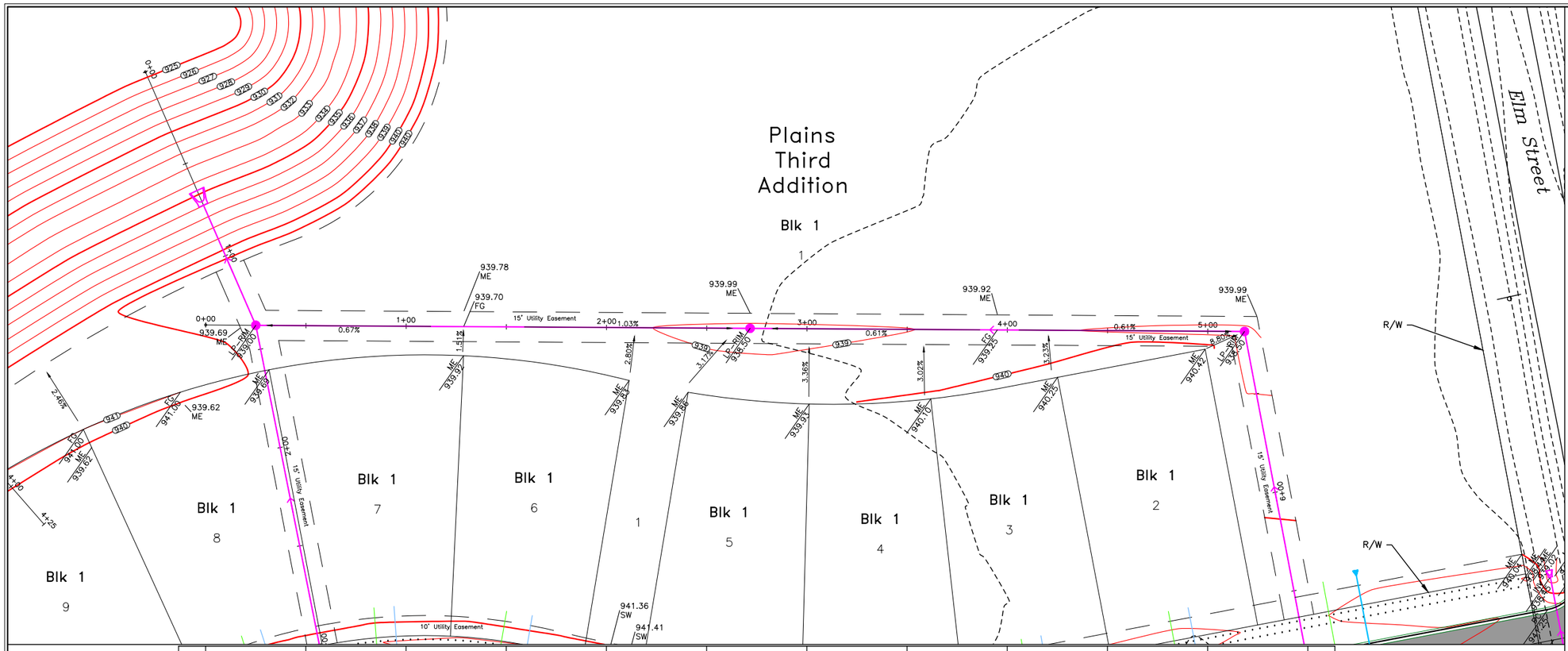

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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North Pond Storm Connection

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	17

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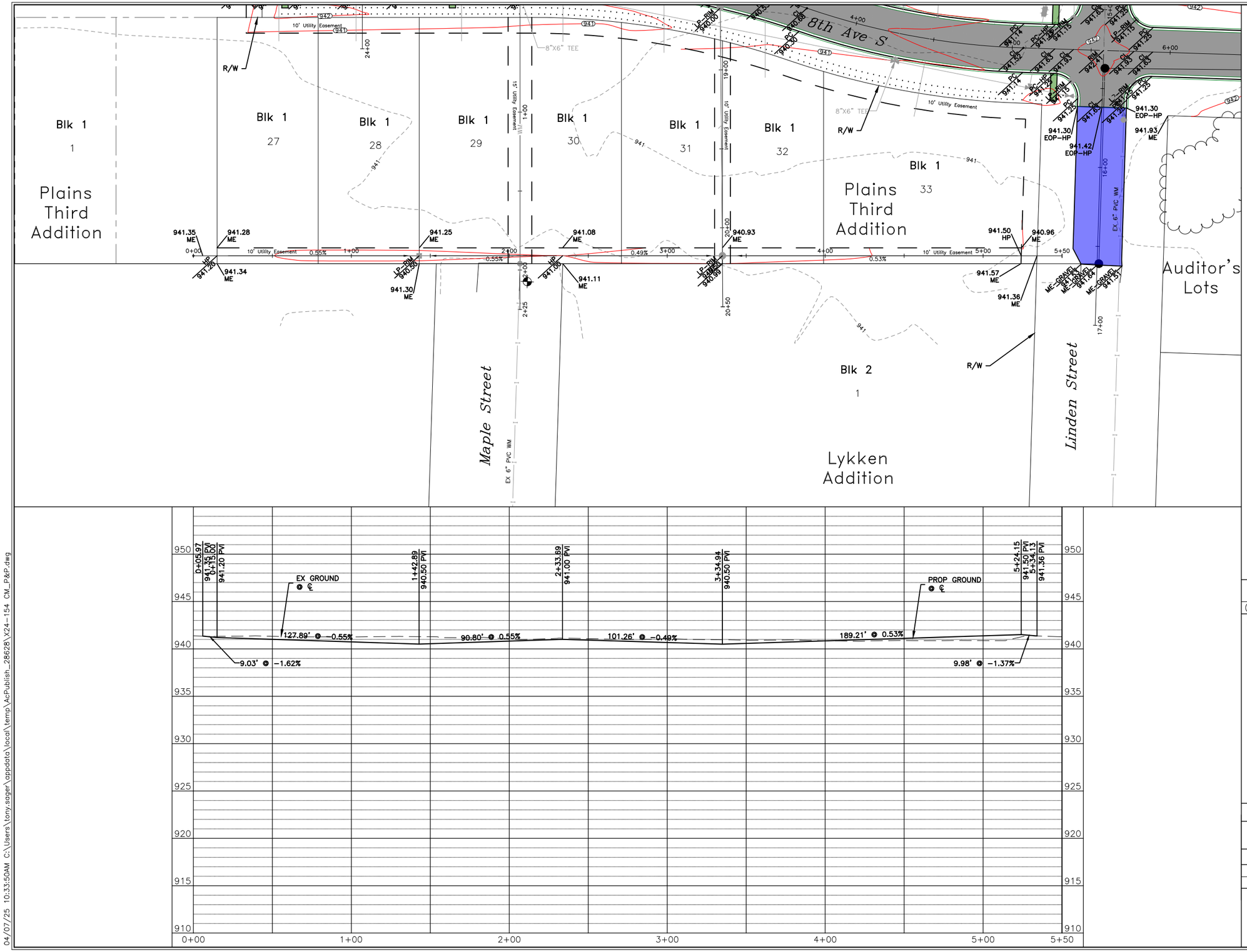

0 30' 60'

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 5" ASPHALT PAVEMENT

PROPOSED 4" RC SIDEWALK

PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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8th Ave S Rear Yard

Underground Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
066	18

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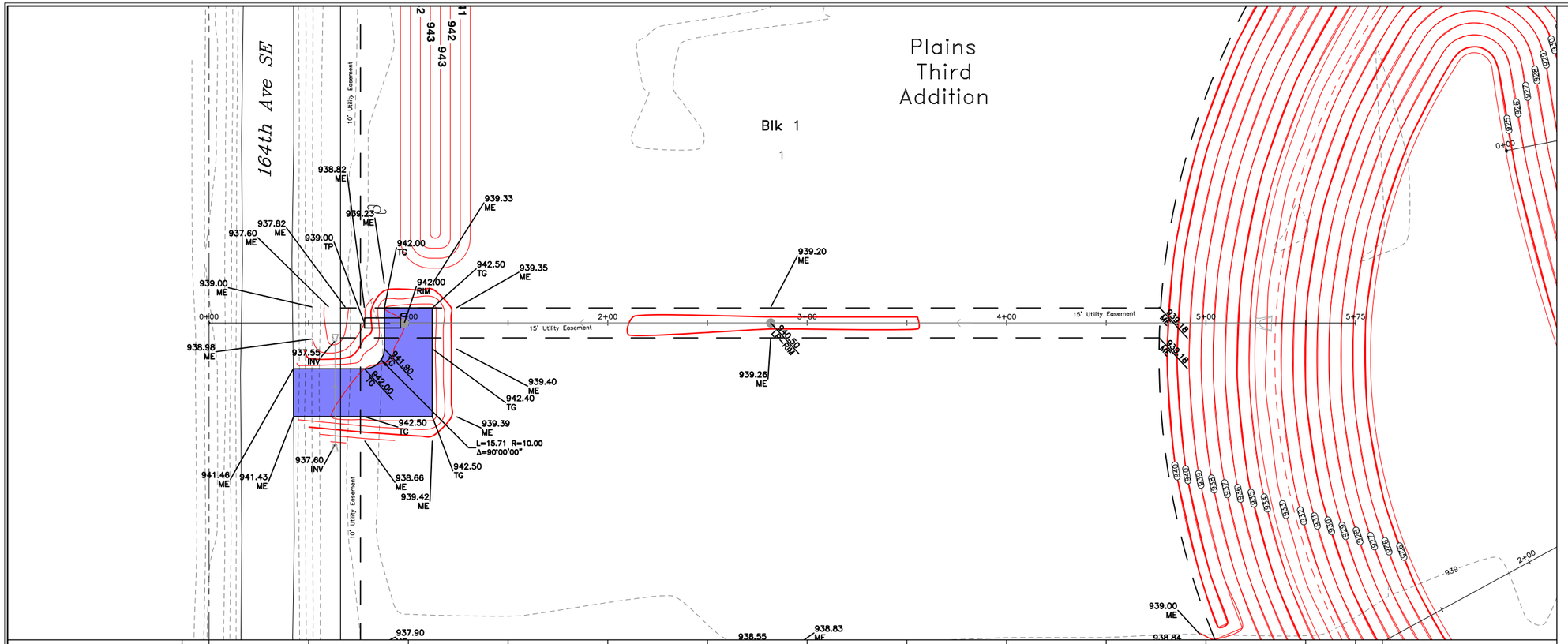

NOTES:
1. ALL GRADES ARE FLOWLINE GRADES UNLESS OTHERWISE NOTED.
2. ALL CURB IS INFLOW MOUNTABLE UNLESS OTHERWISE NOTED.

PROPOSED 12" GRAVEL SECTION

ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③	②	①

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Storm Lift Station

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	19

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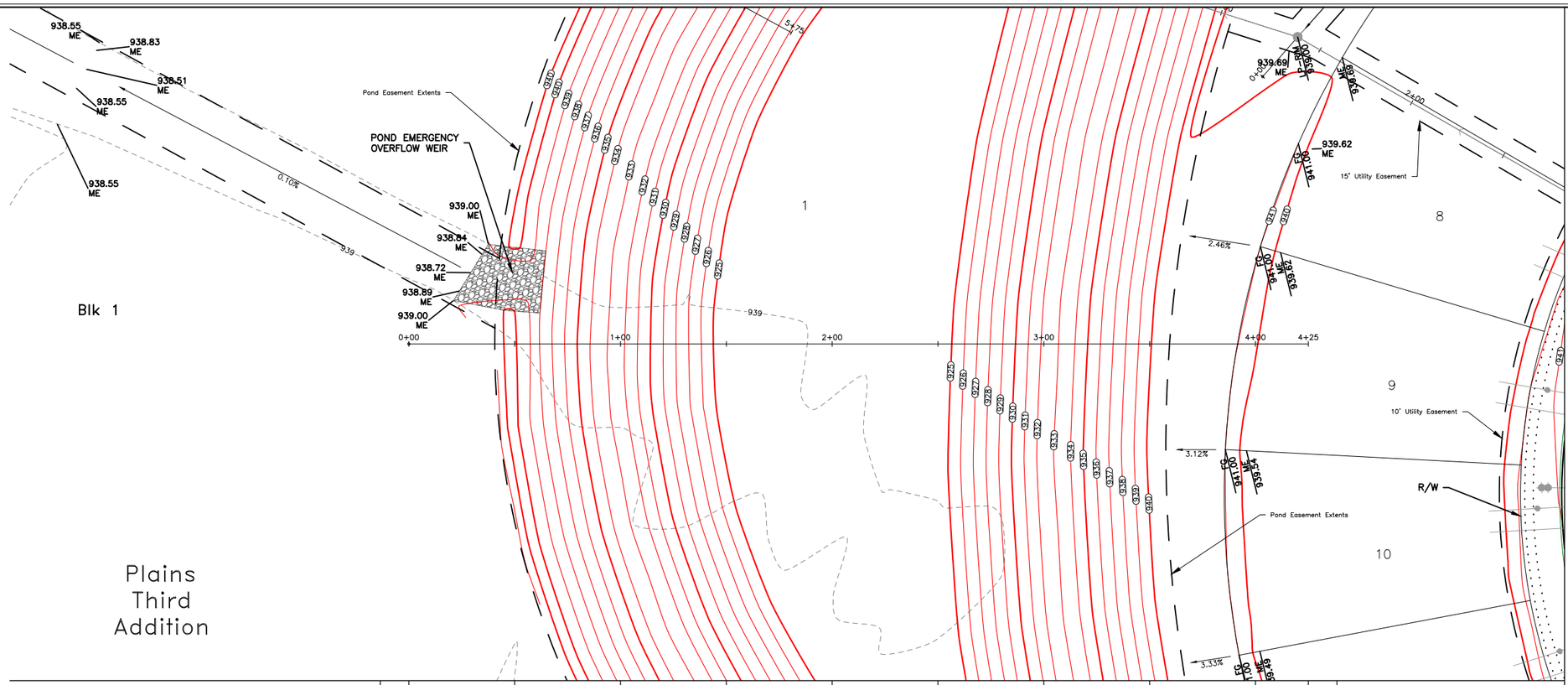
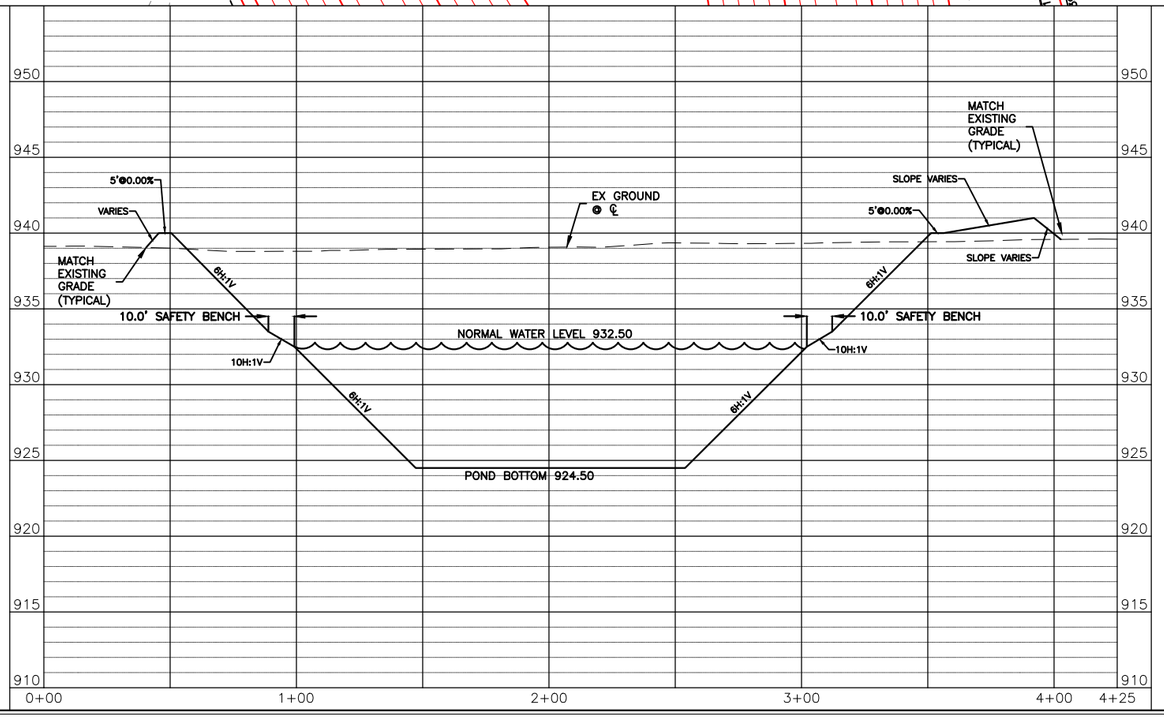


Plains Third Addition

CRITICAL ELEVATIONS	
MINIMUM FINISH FLOOR ELEVATION (FFE)	943.00
TOP OF POND	940.00
MINIMUM STORM RIM	
STREET	940.00
GREENSPACE	938.50
100-YR HIGH WATER LEVEL (HWL)	936.29
FREEBOARD	3.71'
NORMAL WATER LEVEL	932.50
POND BOTTOM	924.50
POND WET DEPTH	8'



ALL ELEVATIONS ARE BASED ON NAVD 88 DATUM

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Pond Cross-Section

Paving Improvements

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
060	20

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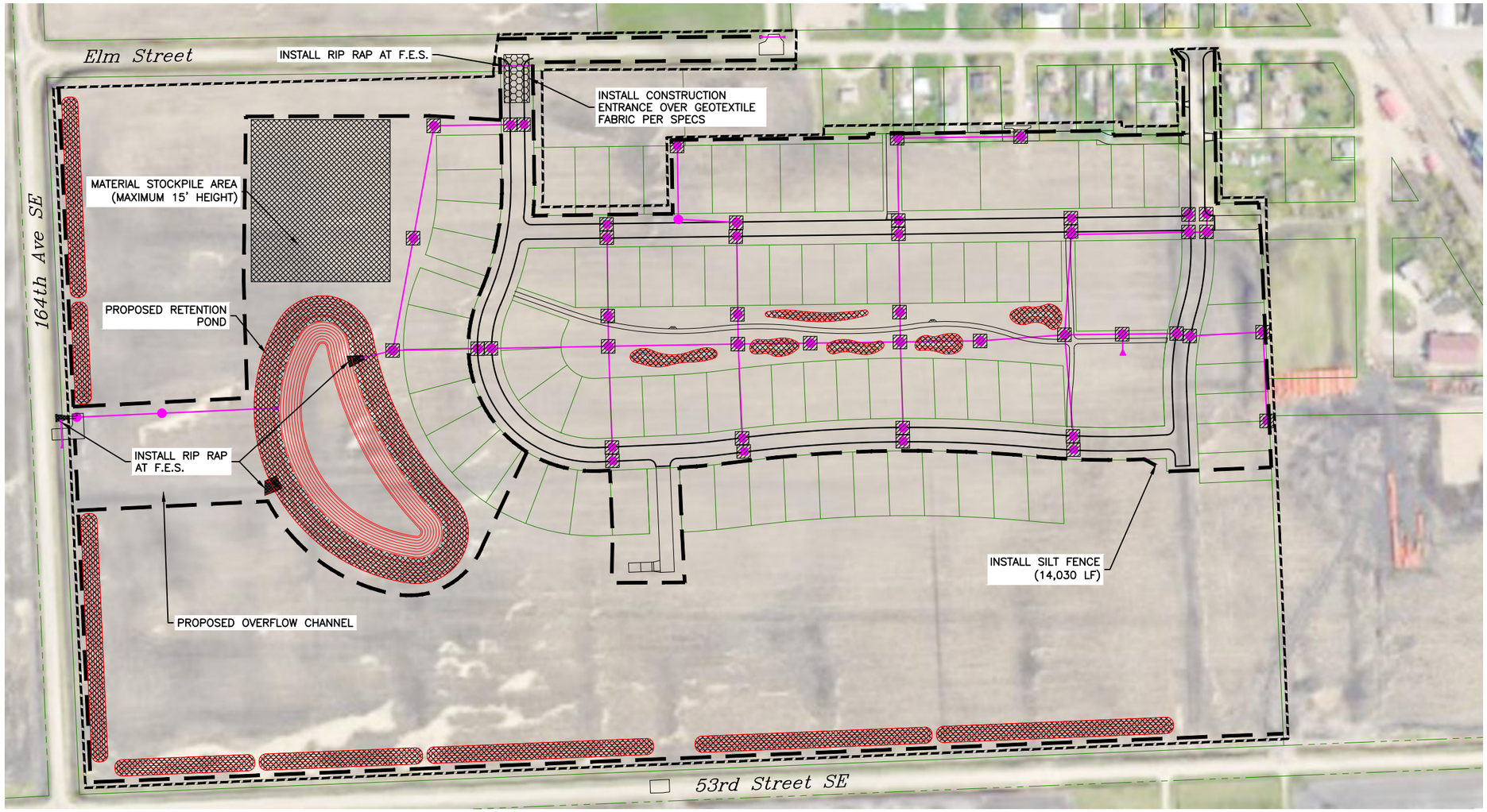

N

0 130' 260'

LEGEND:

- INLET PROTECTION – NEW INLET
- PROPOSED STORM MH
- PROPOSED STORM SEWER
- PROPOSED SILT FENCE
- CONSTRUCTION LIMITS
- ECB TYPE 3
- TEMPORARY CONSTRUCTION ENTRANCE

NOTES:
1. SEE 020 SHEETS FOR RIP RAP DETAILS.

PROJECT DESCRIPTION:

THIS PROJECT CONSISTS OF THE FOLLOWING IMPROVEMENTS: UNDERGROUND UTILITIES, SITE GRADING, ASPHALT PAVEMENT & INCIDENTALS.

TOTAL SITE AREA:

THE TOTAL SITE AREA IMPACTED BY CONSTRUCTION IS 24 ACRES.

EXISTING SITE CONDITIONS:

- THERE ARE NO EXISTING UNDERGROUND STORM SEWER IMPROVEMENTS NEAR THE PROJECT.
- CONSTRUCTION AREA CONSISTS OF 10% IMPERVIOUS.
- GRADE CHANGE ACROSS THE SITE RUNS IN A NORTHEAST TO SOUTH AND EAST DIRECTION.

CRITICAL AREAS:

CRITICAL EROSION AREAS INCLUDE AREAS WHERE SLOPES EXCEED 5:1. CUT AND FILL SLOPES FOR THIS PROJECT ARE DESIGNED AT A 7:1 MAXIMUM. OTHER CRITICAL AREAS INCLUDE LOCATIONS DESIGNED TO RECEIVE CONCENTRATED RUNOFF (SWALES & PIPE OUTFALLS). ADDITIONAL POINTS OF CONCERN ARE LOCATED AT THE INGRESS AND EGRESS LOCATIONS FOR CONSTRUCTION TRAFFIC. THESE AREAS WILL BE PROTECTED FROM EROSION BY MEASURES INDICATED ON THE PLANS.

FLOOD CERTIFICATE:

THE PROJECT AREA IS NOT LOCATED WITHIN A RECORDED FEMA FIRM PANEL.

RECEIVING WATERS:

STORM WATER FROM THIS SITE WILL BE COLLECTED BY THE EXISTING MUNICIPAL STORM INFRASTRUCTURE AT VARIOUS CATCH BASINS. THE ULTIMATE RECEIVING WATERS FOR THIS PROJECT WILL BE THE RED RIVER.

GENERAL NOTES:

- REFER TO SPECIAL INSTRUCTIONS SHEETS FOR ADDITIONAL PROVISIONS REQUIRED TO BE ADDED BY THE CONTRACTOR WITHIN THIS SWPPP AS WELL AS SWPPP RESPONSIBILITIES AND PERMITTING REQUIREMENTS.
- CONTRACTOR SHALL INSPECT SITE EROSION CONTROL WEEKLY AND AFTER EACH RAIN EVENT MEASURING ¼".
- CONTRACTOR SHALL MAINTAIN A LOG OF ALL COMPLETED INSPECTIONS.
- NO ON–SITE SURFACE WATERS AND NO DIRECT DISCHARGE TO SURFACE WATERS UNDER PROJECT.
- A COPY OF THE INSPECTION LOG, EROSION CONTROL PLAN, AND SWPPP SHALL REMAIN ON SITE AT ALL TIMES.
- CONTRACTOR SHALL NOTIFY CITY EROSION INSPECTOR ONCE REPAIRS/MODIFICATIONS HAVE BEEN MADE AND SHALL KEEP A LOG OF ALL MODIFICATIONS/REPAIRS ON SITE.
- A COMPLETED N.O.T. SHALL BE SUBMITTED BY THE CONTRACTOR TO THE STATE PRIOR TO FINAL ACCEPTANCE.
- CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES ON THIS SITE UNTIL FINAL ACCEPTANCE.
- CONTRACTOR SHALL UPDATE THIS EROSION CONTROL PLAN AS NEEDED TO REFLECT MEASURES IMPLEMENTED IN THE FIELD DURING CONSTRUCTION.
- ON–SITE CONVEYANCES ARE STORM DRAIN SYSTEM.
- CONTRACTOR SHALL SPREAD TOPSOIL FOR SEEDING INSIDE ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES TO A MINIMUM DEPTH OF 6", UNLESS OTHERWISE NOTED IN THE PLAN NOTES.
- CONTRACTOR SHALL STRIP TOPSOIL BEFORE PLACEMENT OF MATERIAL AT DESIGNATED STOCKPILE LOCATION. UNLESS MATERIAL TO BE STOCKPILED IS TOPSOIL.

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

SEAL

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SWPPP

Stormwater Pollution Prevention Plan

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
075	1

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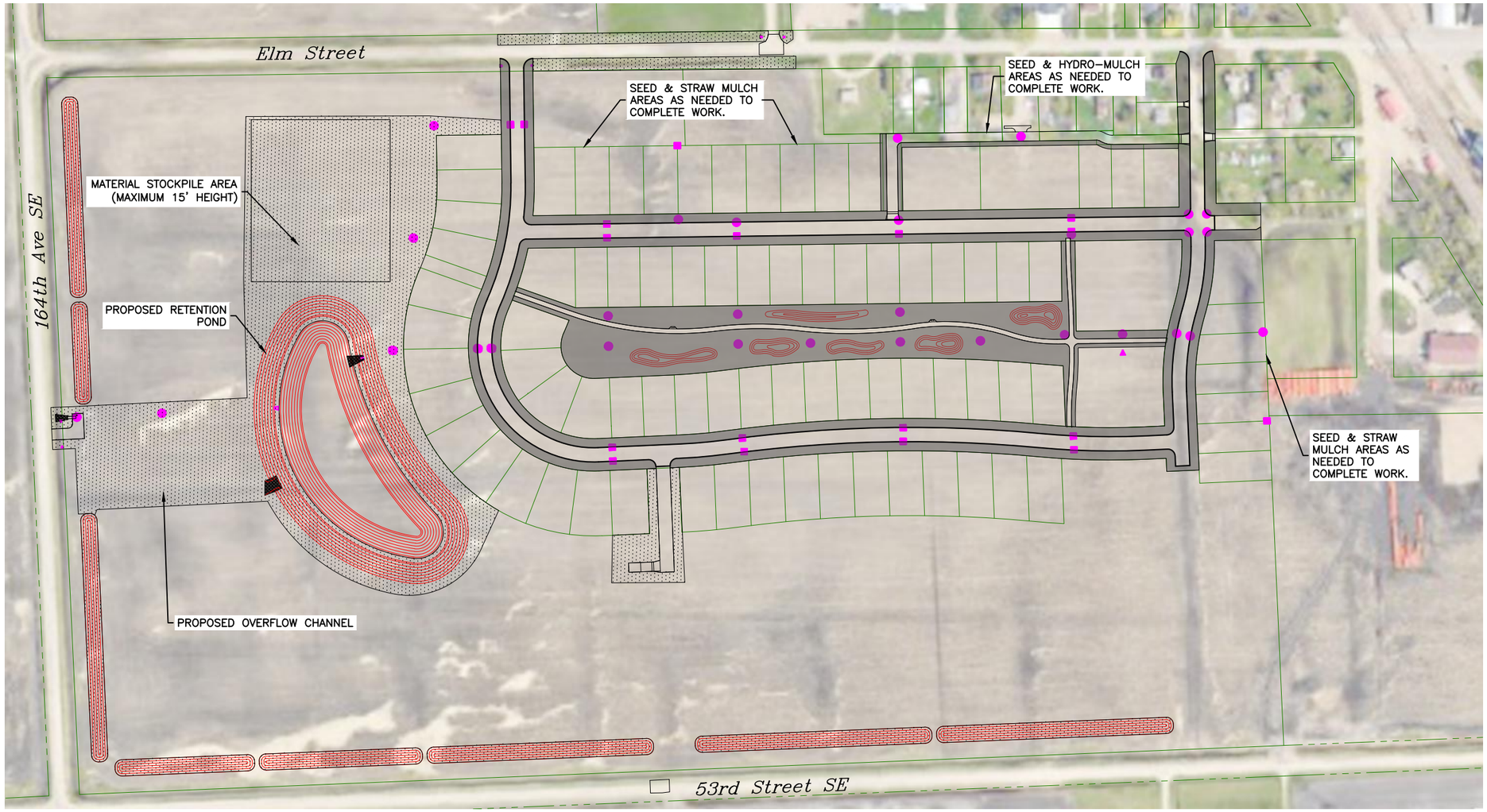

N

0 130' 260'

LEGEND:

- PROPOSED STORM MH
- SEED WITH HYDRAULIC-MULCH
- SEED WITH STRAW MULCH

PROJECT DESCRIPTION:

THIS PROJECT CONSISTS OF THE FOLLOWING IMPROVEMENTS: UNDERGROUND UTILITIES, SITE GRADING, ASPHALT PAVEMENT & INCIDENTALS.

TOTAL SITE AREA:

THE TOTAL SITE AREA IMPACTED BY CONSTRUCTION IS 24 ACRES.

EXISTING SITE CONDITIONS:

- THERE ARE NO EXISTING UNDERGROUND STORM SEWER IMPROVEMENTS NEAR THE PROJECT.
- CONSTRUCTION AREA CONSISTS OF 10% IMPERVIOUS.
- GRADE CHANGE ACROSS THE SITE RUNS IN A NORTHEAST TO SOUTH AND EAST DIRECTION.

CRITICAL AREAS:

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FLOOD CERTIFICATE:

THE PROJECT AREA IS NOT LOCATED WITHIN A RECORDED FEMA FIRM PANEL.

RECEIVING WATERS:

STORM WATER FROM THIS SITE WILL BE COLLECTED BY THE EXISTING MUNICIPAL STORM INFRASTRUCTURE AT VARIOUS CATCH BASINS. THE ULTIMATE RECEIVING WATERS FOR THIS PROJECT WILL BE THE RED RIVER.

GENERAL NOTES:

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- CONTRACTOR SHALL STRIP TOPSOIL BEFORE PLACEMENT OF MATERIAL AT DESIGNATED STOCKPILE LOCATION. UNLESS MATERIAL TO BE STOCKPILED IS TOPSOIL.

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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SWPPP

Seeding Extents

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
075	2

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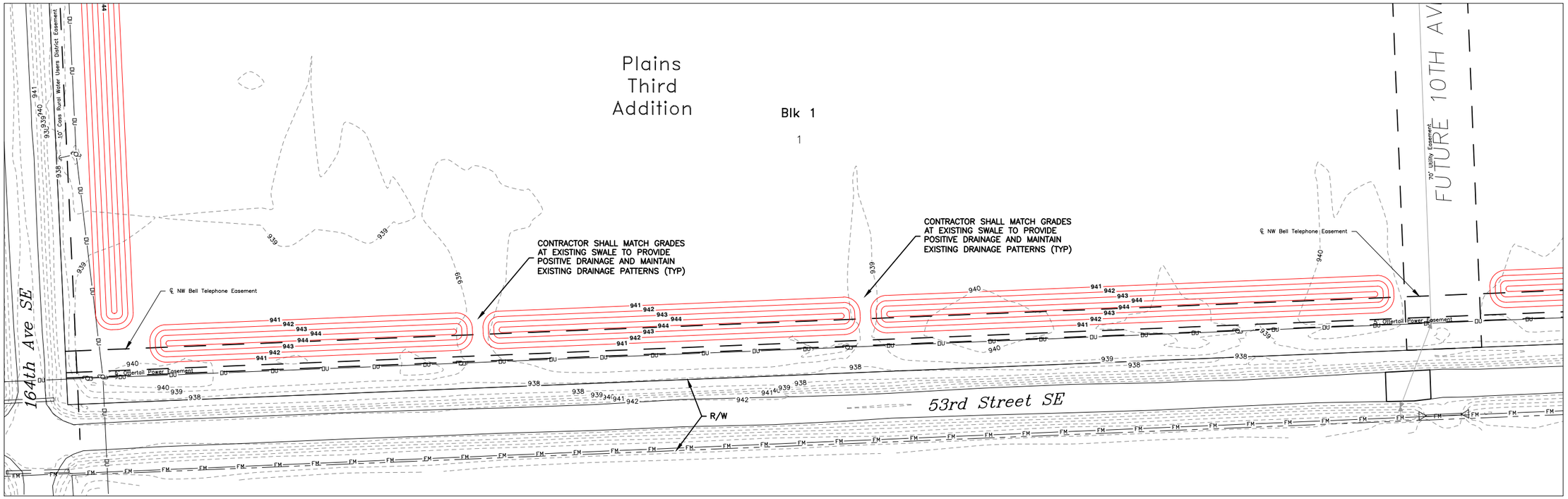

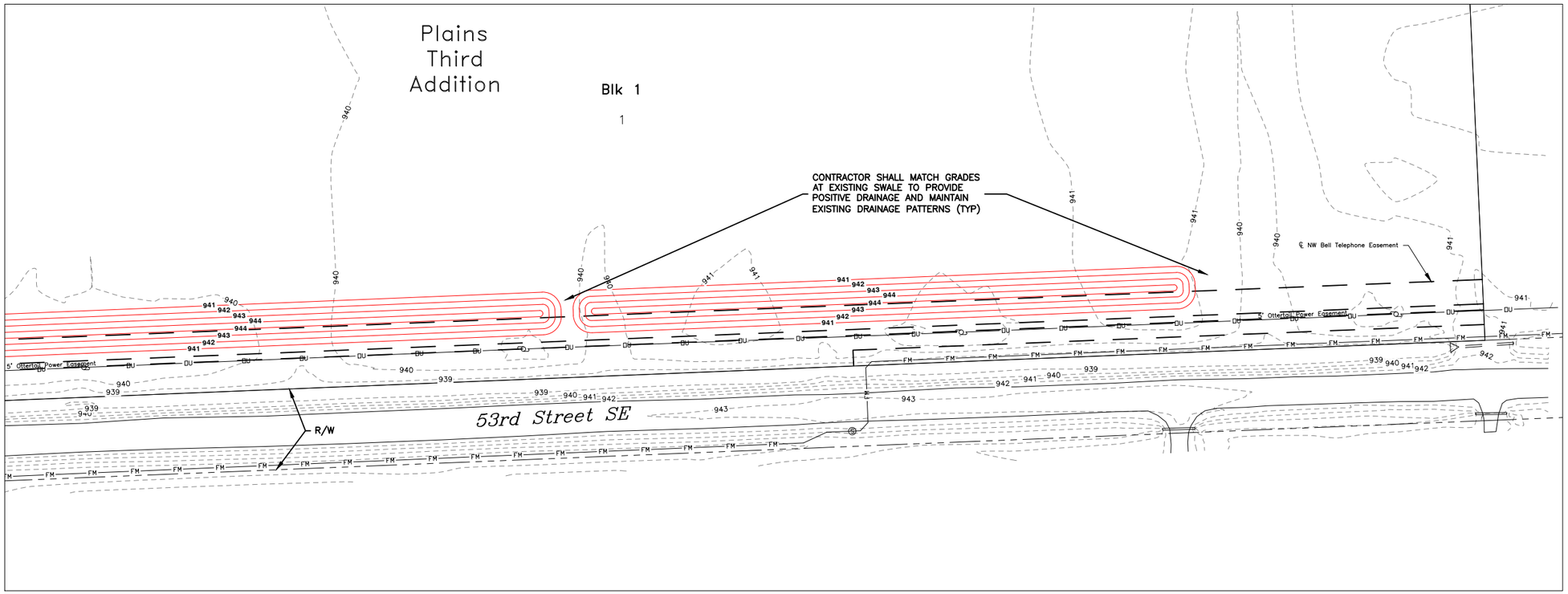

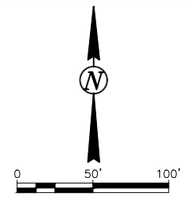

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Mass Grading

New Paving & Utility Construction

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
080	1

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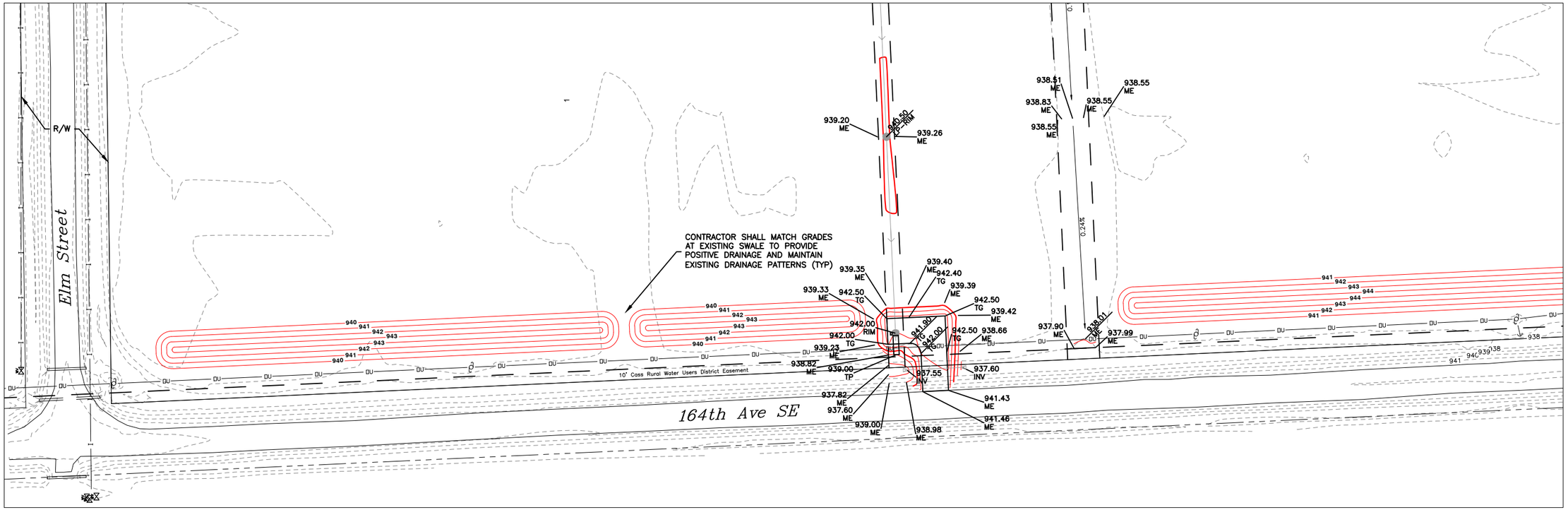

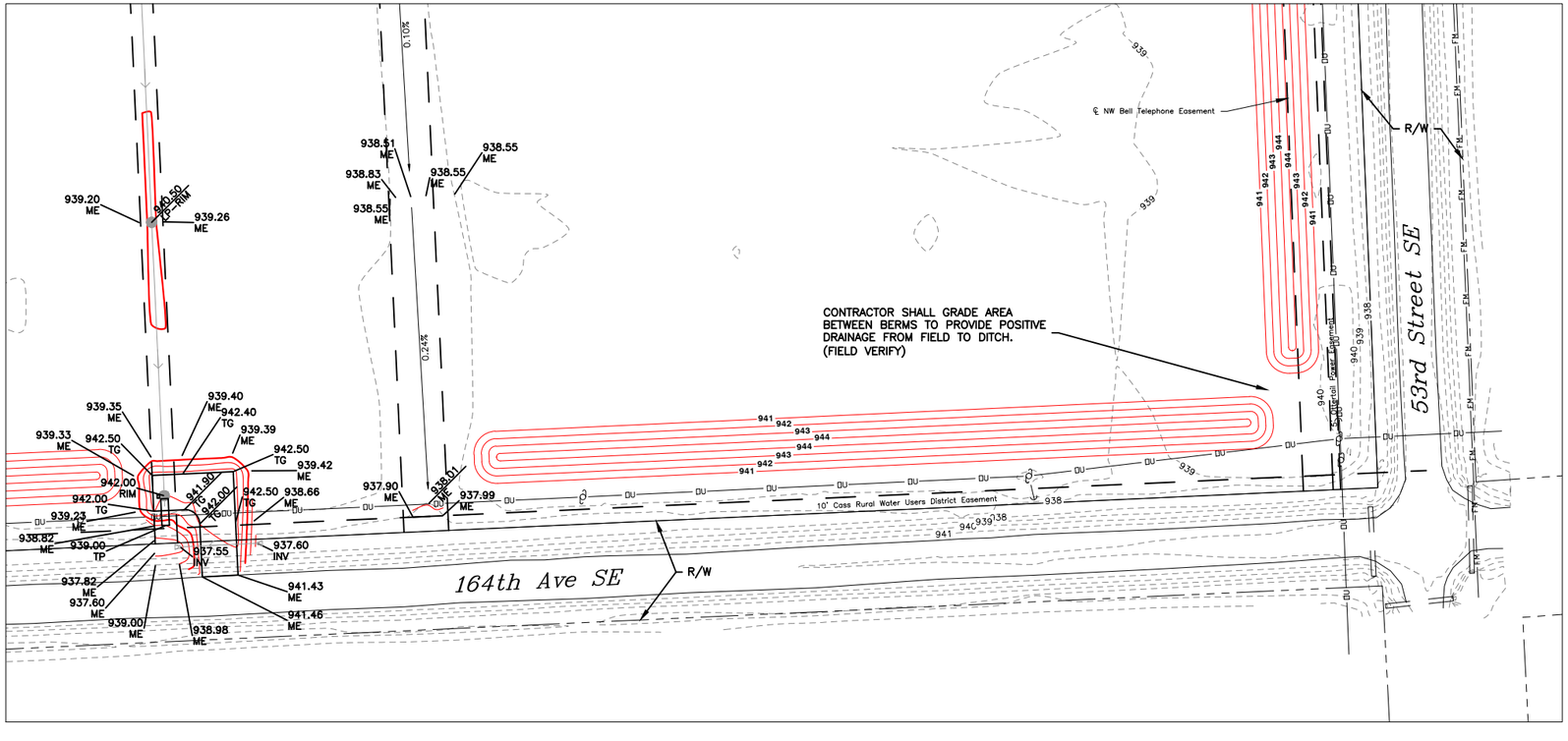

0 50' 100'

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Mass Grading

New Paving & Utility Construction

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
080	2

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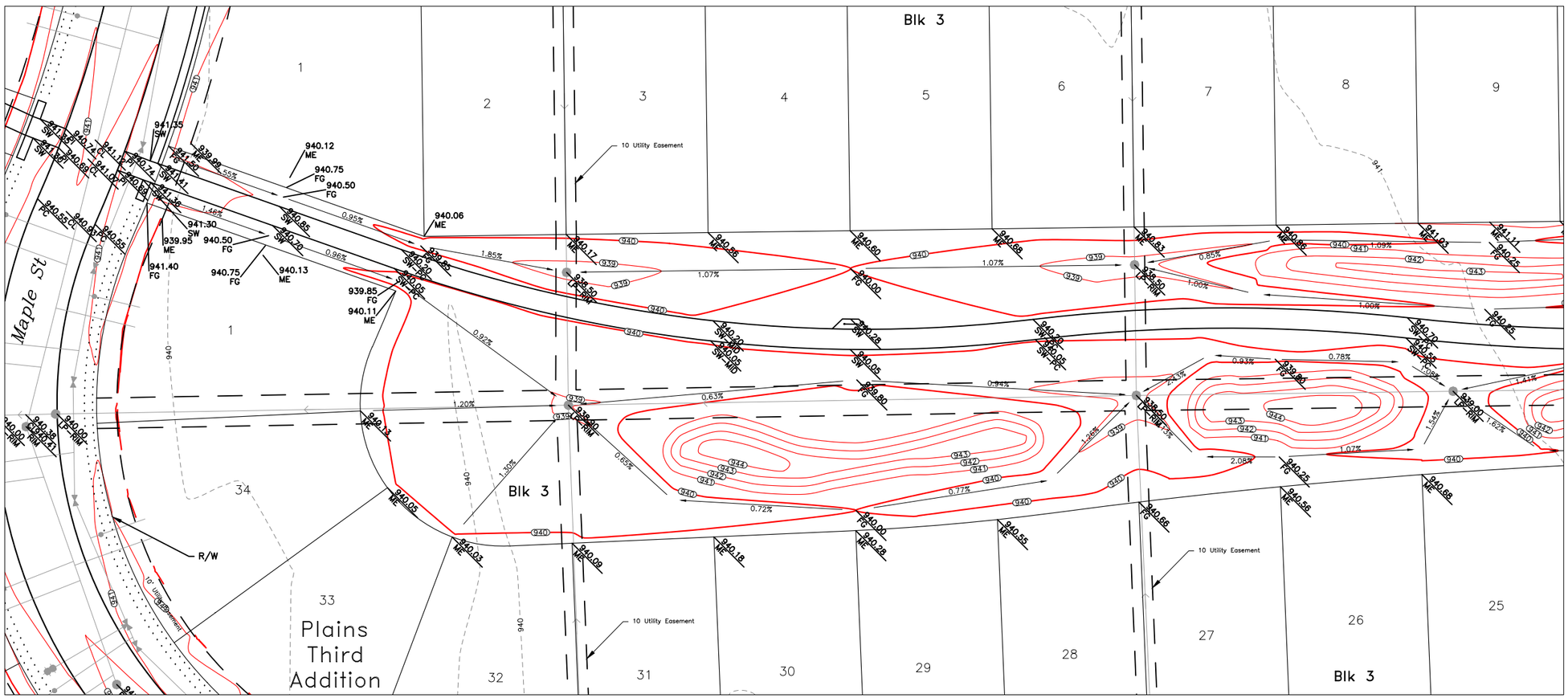

0 30' 60'

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Mass Grading

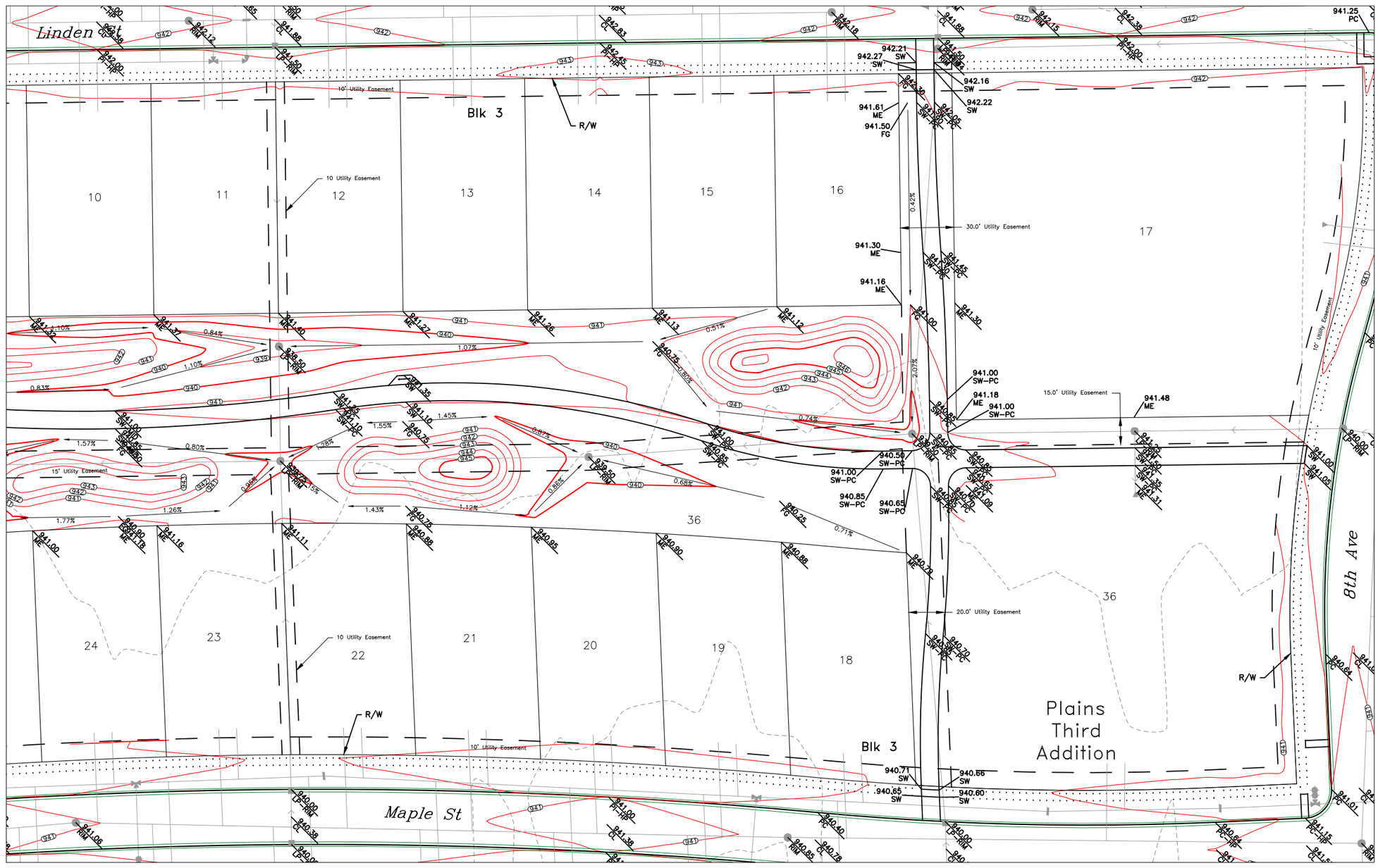
New Paving & Utility Construction

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
080	3



ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Mass Grading

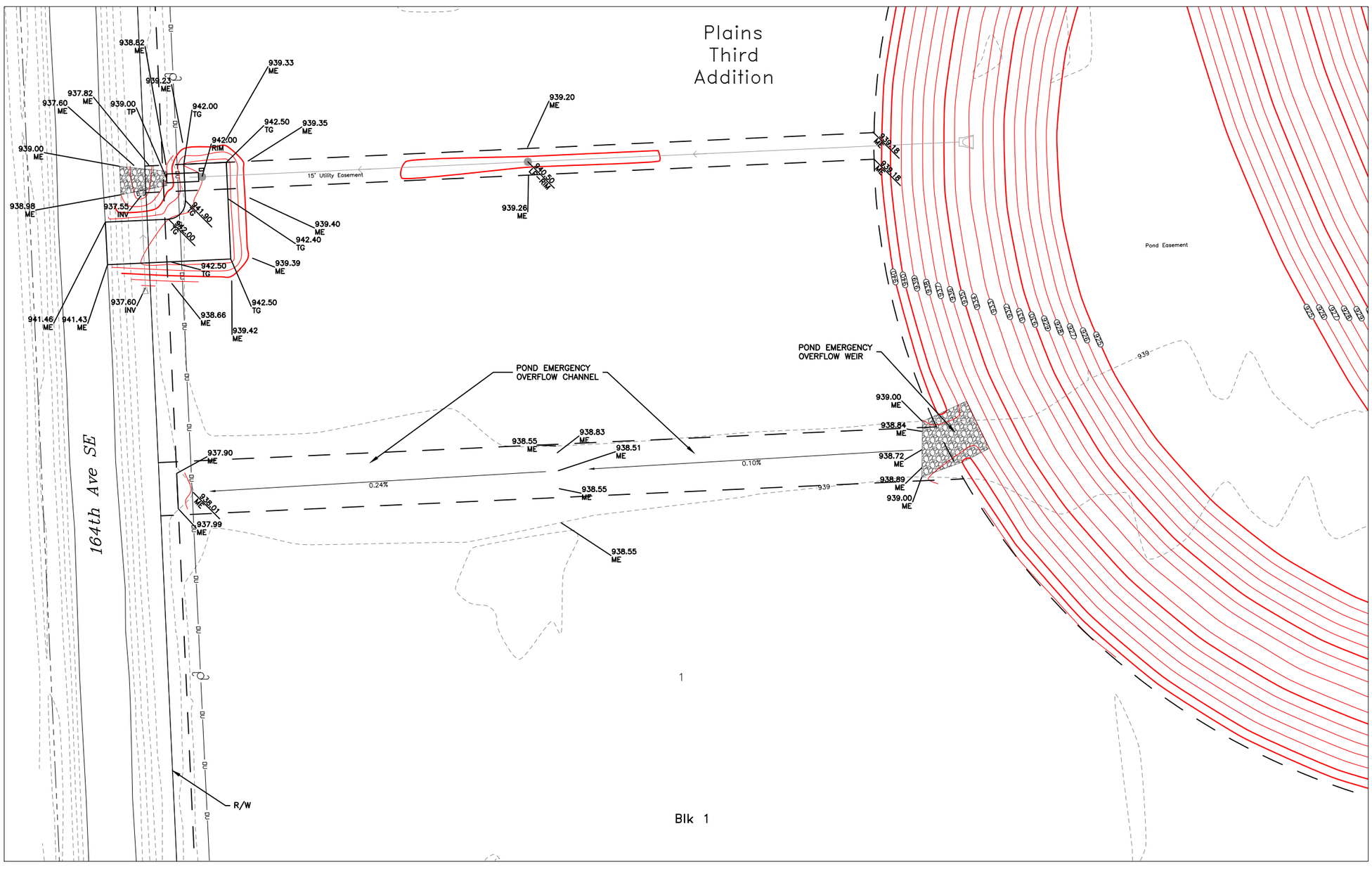
New Paving & Utility Construction

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
080	4



ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Mass Grading

New Paving & Utility Construction

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

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SECTION NO.	SHEET NO.
080	5

Plains
Third
Addition

0 30' 60'

Maple St

Blk 3

Blk 1

Blk 1

Pond Easement

POND EMERGENCY
OVERFLOW WEIR

R/W

R/W

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Mass Grading

New Paving & Utility Construction

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
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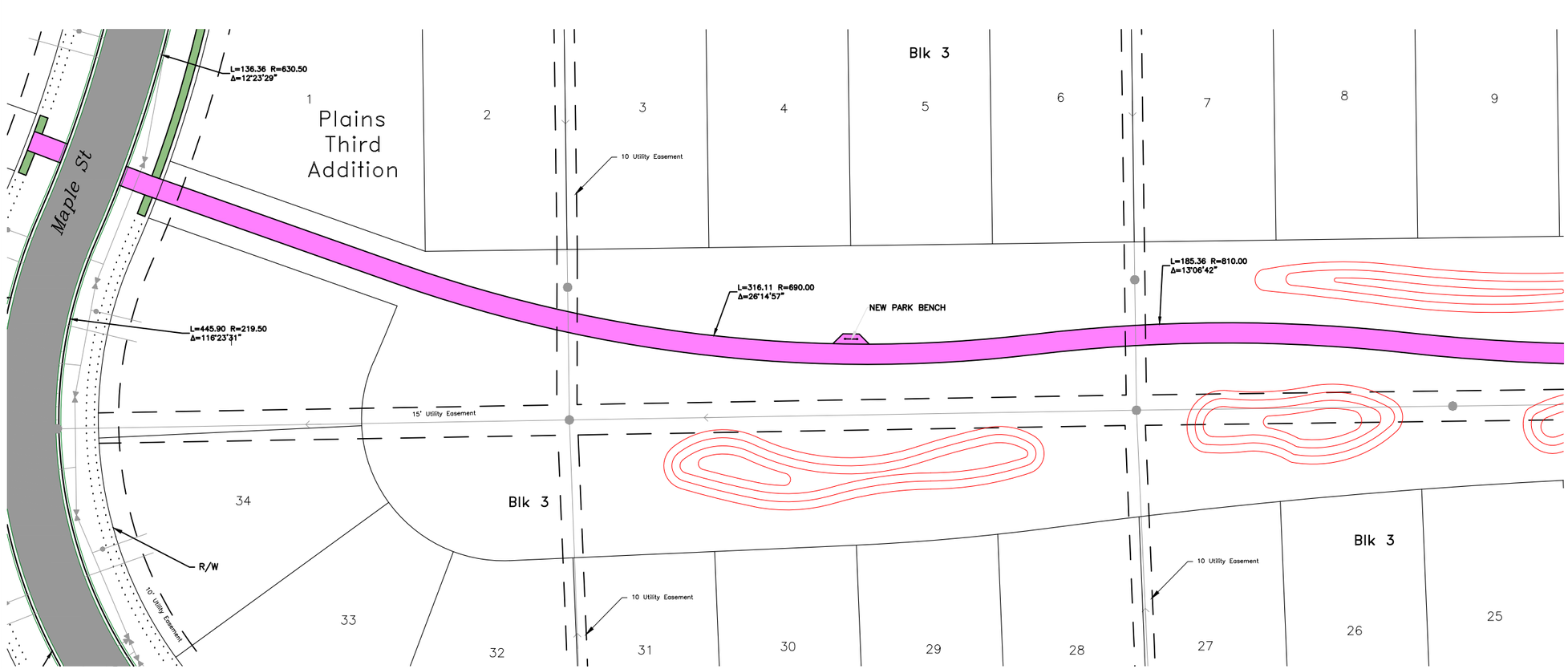
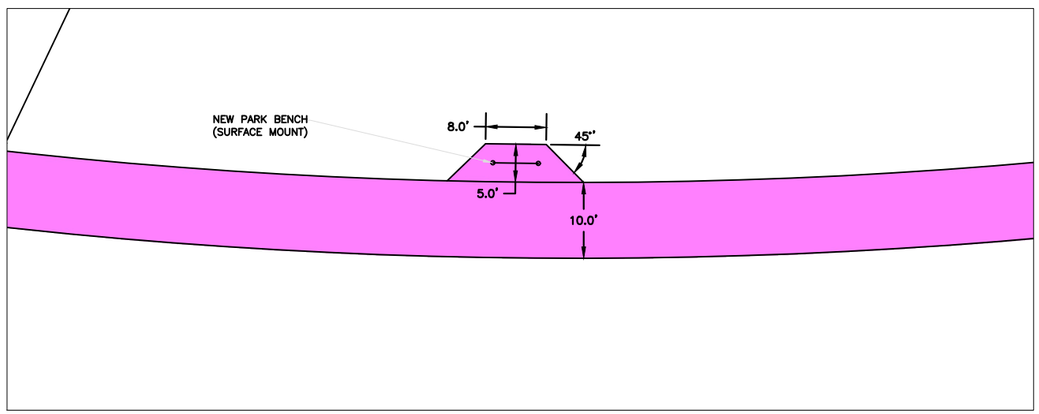
MBN ENGINEERING

SECTION NO.	SHEET NO.
080	6





TYPICAL PARK BENCH DETAIL

N.T.S.

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

SEAL

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Park Improvements

Overall Park Improvements Plan

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
090	1

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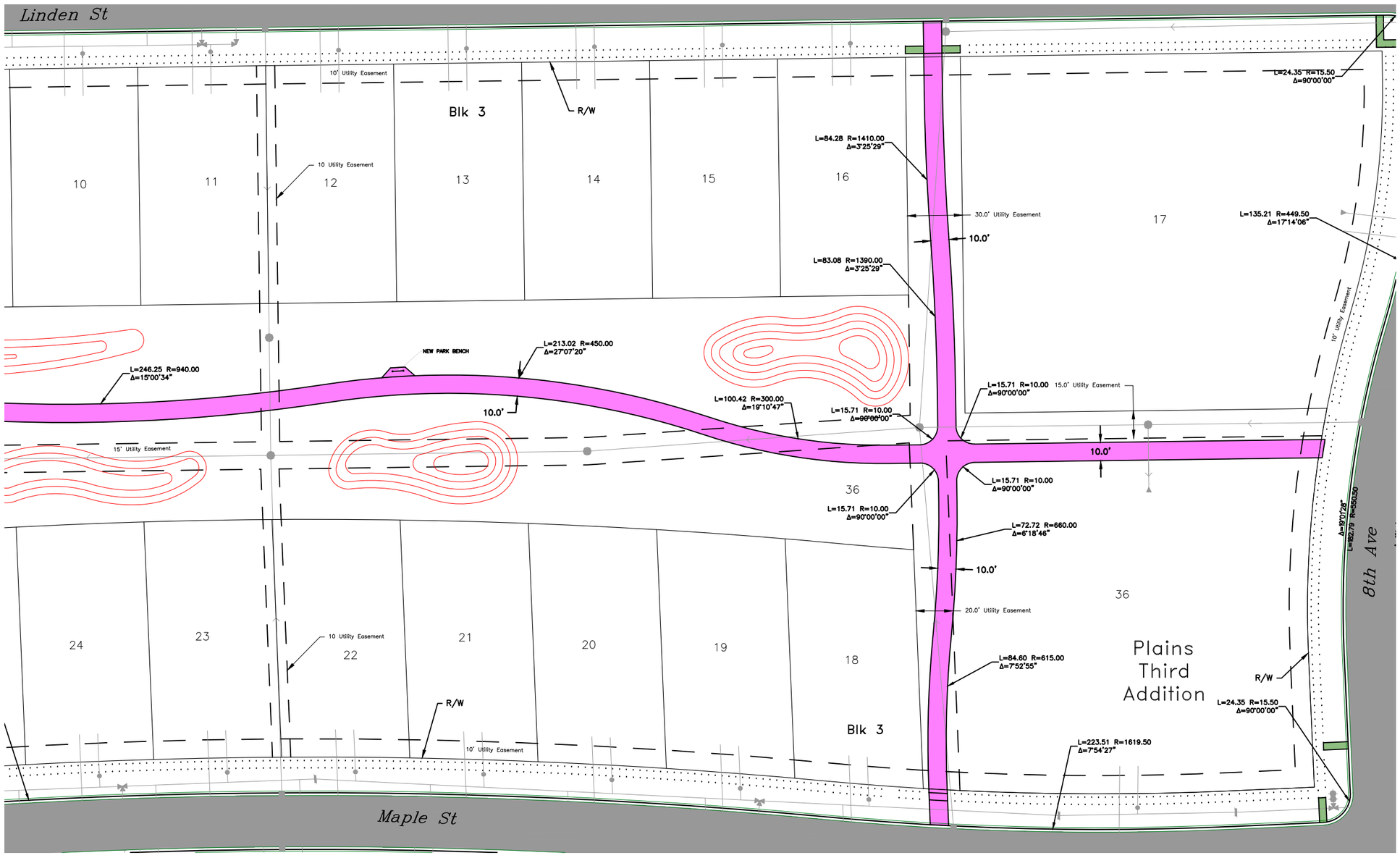

LEGEND:

- PROPOSED 5" ASPHALT PAVEMENT
- PROPOSED 4" RC SIDEWALK
- PROPOSED 5" MULTI-USE PATH

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Park Improvements

Overall Park Improvements Plan

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
090	2

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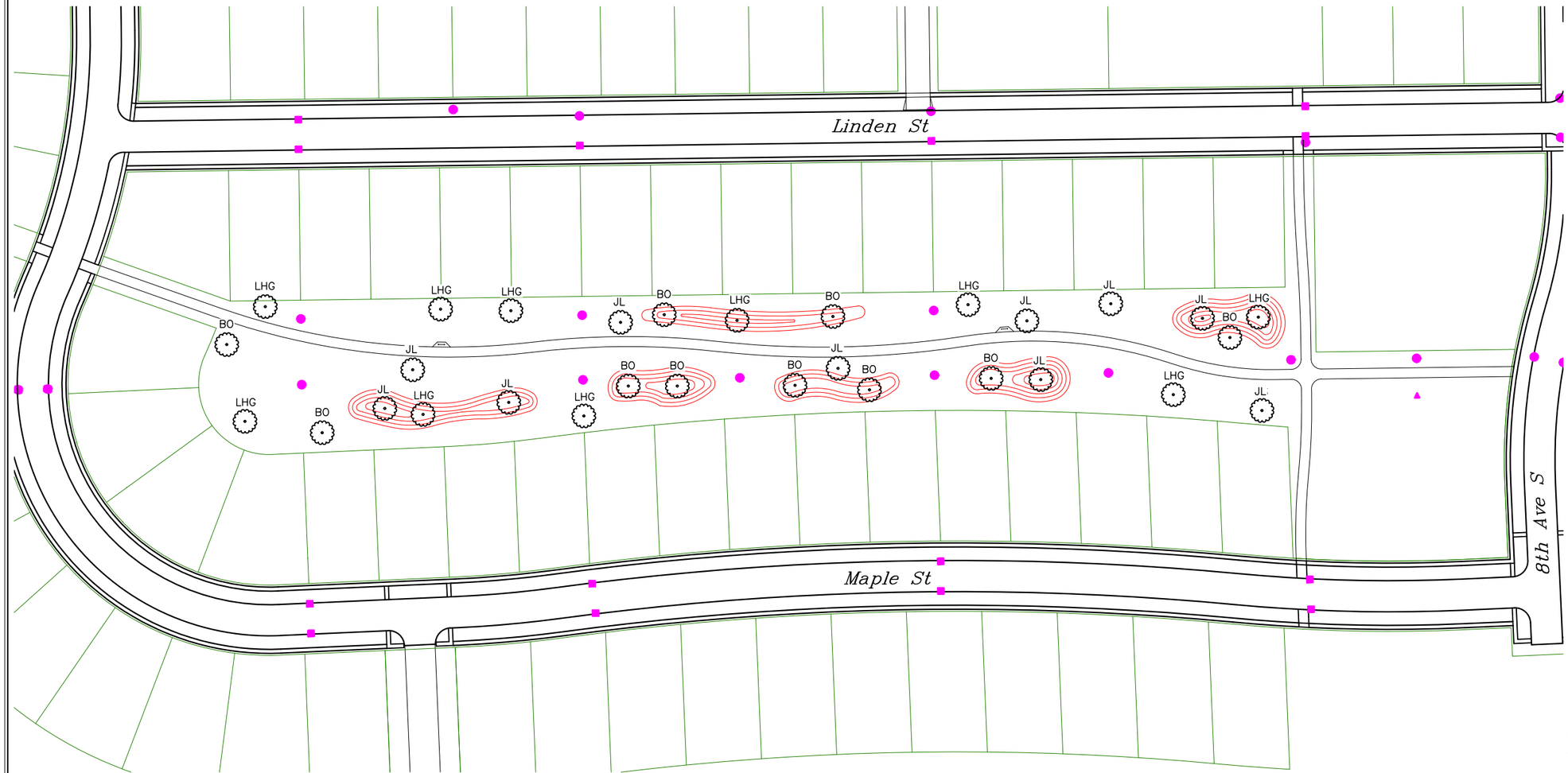

LEGEND:

PROPOSED DECIDUOUS TREE

NOTES:
1. COORDINATE FINAL TREE LOCATIONS WITH CITY OF KINDRED PARK BOARD REPRESENTATIVES.

TREE PLANTING SCHEDULE

PLANT TYPE	QUANTITY	SCIENTIFIC NAME
JL – JAPANESE TREE LILAC (2" CALIPER MIN.)	10	SYRINGA RETICULATA
BO – BUR OAK (2" CALIPER MIN.)	10	QUERCUS MACROCARPA
LHG – LINDEN 'HARVEST GOLD' (2" CALIPER MIN.)	10	TILIA X MONGOLICA 'HARVEST GOLD'

*ALL TREES SHALL BE CONTAINER OR BALLED AND BURLAP (B&B)

ADDENDUM & CONSTRUCTION REVISIONS

③ ② ①

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Landscaping Plans

Tree Plantings & Schedule

Improvement District No. 2025–2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
095	1

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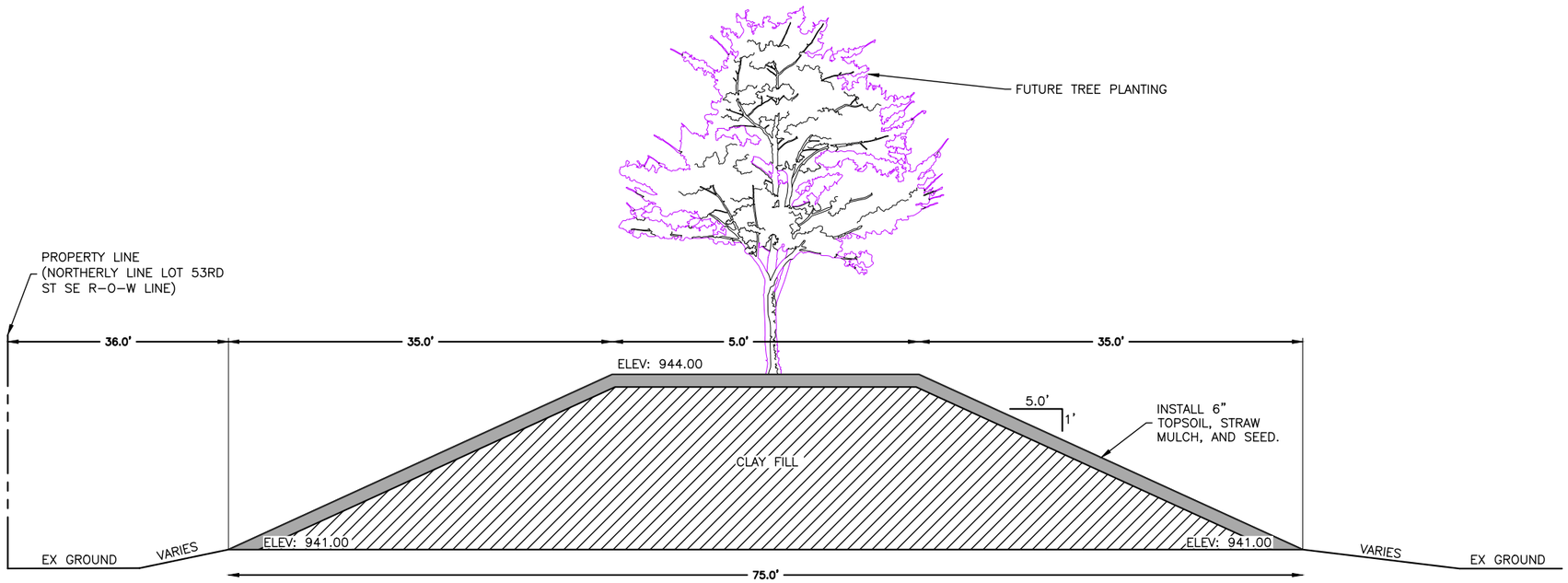
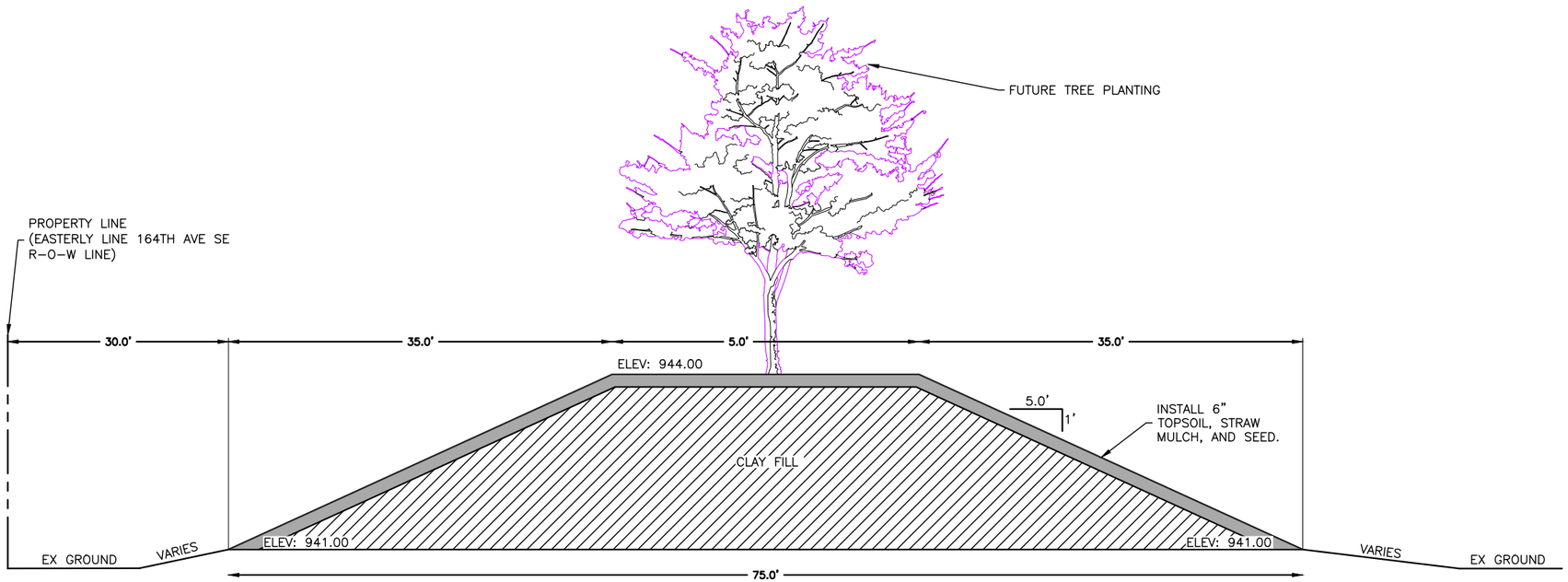


LANDSCAPE BERM DETAIL (53RD ST SE)

N.T.S.



LANDSCAPE BERM DETAIL (164TH AVE SE)

N.T.S.

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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Landscaping Plans

Landscape Berm Details

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
095	2

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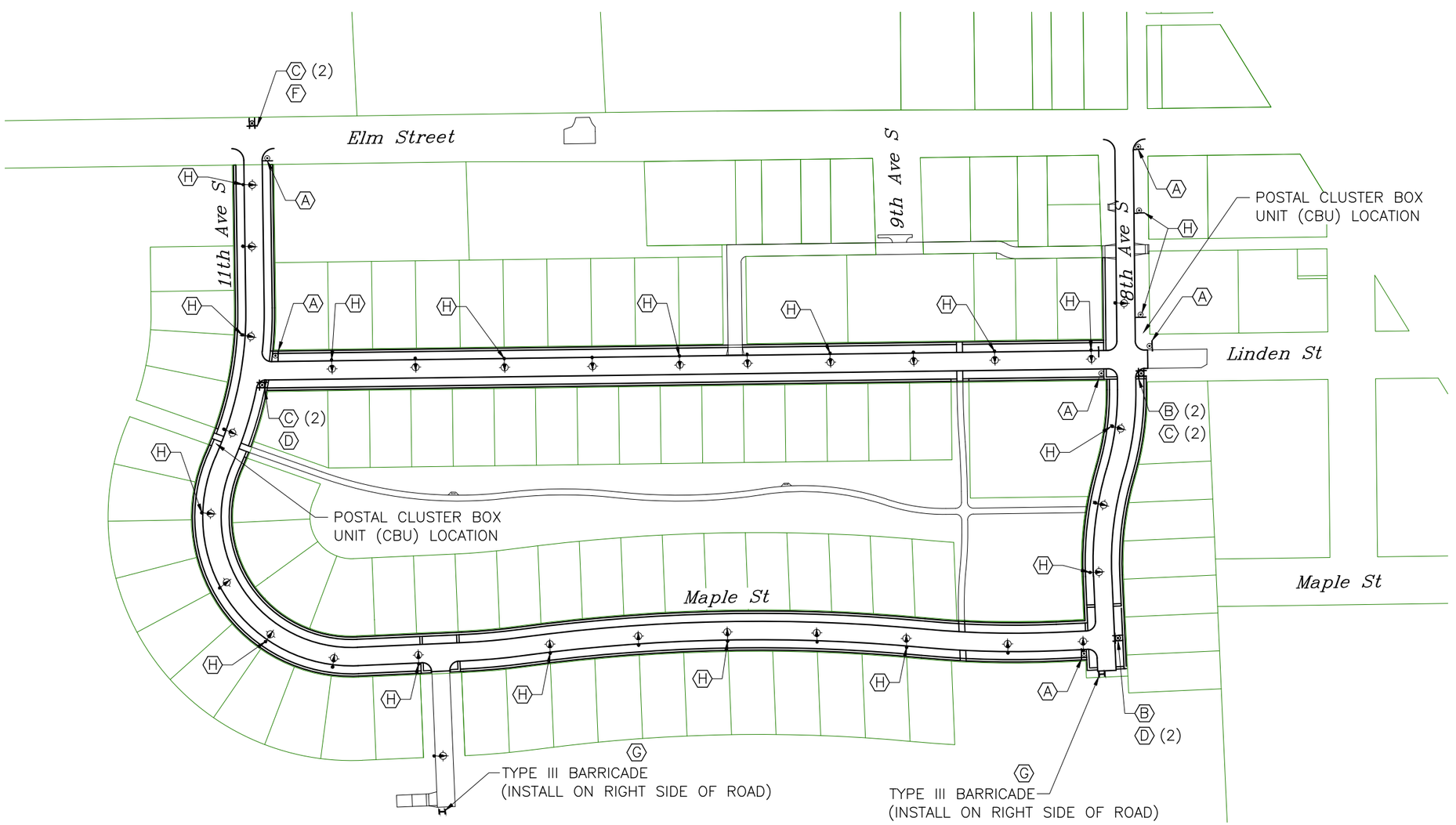

0 100' 200'

LEGEND:

NEW SIGN LOCATION

NEW LIGHTPOLE LOCATION

NOTE:

1. CONTRACTOR SHALL COORDINATE WITH OWNER ON FINAL LOCATIONS OF CBU'S.
2. "NO PARKING" SIGNS SHOWN ON PROPOSED STREET LIGHTING FIXTURES TO BE INSTALLED VIA STAINLESS STEEL BAND CLAMPS.
3. SEE ELECTRICAL DRAWINGS FOR LIGHTPOLE LOCATIONS. LOCATIONS SHOWN ARE APPROXIMATE.

(A) STOP R1-1-30

(B) 8th Ave S — 2" | 30" | 2" — 6" — 9" — 1.5" Radius, 0.5" Border, White on Green

(C) Linden St — 2" | 30" | 2" — 6" — 9" — 1.5" Radius, 0.5" Border, White on Green

(D) Maple St — 3" | 30" | 3" — 6" — 9" — 1.5" Radius, 0.5" Border, White on Green

(E) 11th Ave S — 2" | 30" | 2" — 6" — 9" — 1.5" Radius, 0.5" Border, White on Green

(F) Elm St — 6" | 30" | 6" — 6" — 9" — 1.5" Radius, 0.5" Border, White on Green

(G) ROAD CLOSED

*Mounted To Top Of Type III Barricade
MUTCD R11-2 (48"X30")
(Permanent Installation per NDDOT D-754-18, Assembly A)

(H) 12" × 12"

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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Signing

Signing

Improvement District No. 2025-2

DESIGN BY: TWS	CHECKED BY: AKE
DRAWN BY: TWS	ORIG DATE: April 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
110	1

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ELECTRICAL SYMBOLS LEGEND

LIGHTING

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
A a	CEILING SURFACE MOUNTED LIGHT FIXTURE, CAPITAL LETTER INDICATES FIXTURE TYPE, SMALL LETTER INDICATES SWITCHING.	
	WALL MOUNTED INCAND. OR H.I.D. LIGHT FIXTURE, SURFACE OR, RECESSED MOUNTED	
	CEILING EXIT SIGN, SHADED SIDE INDICATES LIGHTED FACE, ARROWS INSTALLED AS SHOWN	
	WALL EXIT SIGN	6 INCHES ABOVE DOOR FRAME TO BOTTOM
	SUSPENDED FIXTURE	
	EMERGENCY BATTERY LIGHT	8 FEET
PC	PHOTO CELL	9 FOOT
C 2	CONTACTOR (NUMBER INDICATES NUMBER OF POLES)	
$	SINGLE POLE (HORSEPOWER RATED WHEN USED AS MOTOR DISCONNECT)	48 INCHES

SYSTEMS

S	WALL MOUNTED SPEAKER	90 INCHES
R	REQUEST TO EXIT DEVICE	
DS	DOOR POSITION SWITCH	
CR	CARD READER	
	SURVEILLANCE CAMERA	
A	AUXILIARY INPUT OUTLET	
2	COMPUTER OUTLET (NUMBER INDICATES QUANTITY OF CABLES AND JACKS, NO NUMBER INDICATES ONE)	
	STROBE LIGHT	

POWER

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
	DUPLEX RECEPTACLE (*C* INDICATES EMERGENCY CRITICAL BRANCH POWER)	18 INCHES
	DOUBLE DUPLEX RECEPTACLE (*C* INDICATES EMERGENCY CRITICAL BRANCH POWER)	18 INCHES
A	TYPE L14-30 RECEPTACLE	18 INCHES
B	TYPE L14-50 RECEPTACLE	18 INCHES
G	GFCI TYPE RECEPTACLE	18 INCHES
	MULTI-OUTLET ASSEMBLY - M.O.A., PROVIDE DEVICES AS SHOWN ON PLANS	18 INCHES
	DUPLEX RECEPTACLE, HALF SWITCHED	18 INCHES
R	FLOOR OUTLET, 'R' INDICATES RECESSED, 'F' INDICATES FLUSH, 'S' INDICATES SURFACE MOUNT	
T	DRY TYPE TRANSFORMER	
PB	PUSH BUTTON	
HC	POWER DOOR HANDICAP PUSH PAD	42 INCHES
EB	EMERGENCY BOILER SHUTDOWN PUSH BUTTON	48 INCHES
TE	THERMOSTAT - PROVIDE BY DIVISION 16	48 INCHES
T	THERMOSTAT - FURNISHED BY DIVISION 15, INSTALLED BY DIVISION 16	48 INCHES
TM	THERMAL SWITCH (MOTOR OVERLOAD TYPE)	48 INCHES
1	MOTOR (NUMBER REFERS TO MOTOR AND EQUIPMENT SCHEDULE SEE SCHEDULE FOR WIRING AND CONTROLLER REQUIREMENTS)	
	LIGHTING AND APPLIANCE PANELBOARD	
	RECESSED LIGHTING AND APPLIANCE PANELBOARD	
	SWITCHBOARD OR MOTOR CONTROL CENTER AS NOTED	
	SPECIAL EQUIPMENT CABINET AS NOTED	
CB	ENCLOSED MOLDED CASE CIRCUIT BREAKER	
VF	VARIABLE FREQUENCY CONTROLLER WITH CONTROLLER	
	NON-FUSED DISCONNECT	
F	FUSED DISCONNECT	
	MAGNETIC STARTER	
	COMBINATION STARTER-DISCONNECT	

MISC/ABBREVATIONS

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
J	CEILING-MOUNTED JUNCTION BOX	
J	WALL JUNCTION BOX	18 INCHES
	DASHED LINES INDICATE EXISTING FIXTURES, DEVICES, OR EQUIPMENT	
	HASH MARKS INDICATE ITEM NOTED TO BE REMOVED	
	CONDUIT CONCEALED IN WALL OR CEILING, QUANTITY OF CONDUCTORS NOT SHOWN, PROVIDE AS REQUIRED FOR DEVICE/CIRCUIT NUMBERS SHOWN.	
	CONDUIT UP	
	CONDUIT DOWN	
	CONDUIT CONCEALED IN FLOOR	
UG	UNDERGROUND CONDUIT AT 24 INCHES MINIMUM	
L1-2,4,6 #10	HOME RUN TO PANELBOARD, QUANTITY OF CONDUCTORS REQUIRED NOT INDICATED, PROVIDE QUANTITY AS REQUIRED FOR CIRCUIT NUMBERS SHOWN, SWITCHING ARRANGEMENT, OR NUMBER OF HOME RUNS SHOWN. '#10' INDICATES WIRE SIZE, NO NUMBERS INDICATES #12, 3/4 INCH CONDUIT MINIMUM.	
	SURFACE CONDUIT OR SURFACE RACEWAY	
1	NOTE IDENTIFICATION	
A	AMPERE	
AC	ABOVE COUNTER	
ATS	AUTOMATIC TRANSFER SWITCH	
CUH	CABINET UNIT HEATER	
EF	EXHAUST FAN	
FA	FIRE ALARM	
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	
GR	GROUND	
PH	PHASE	
XST	EXISTING	
W	WIRE	
WP	WEATHERPROOF	

NOTES:
1. THIS IS A COMPREHENSIVE SYMBOL SCHEDULE. NOT ALL SYMBOLS ARE APPLICABLE TO THESE DRAWINGS.
2. MOUNTING HEIGHT IS TO THE CENTER OF DEVICE UNLESS OTHERWISE INDICATED.
3. FOR DEVICES SHOWN AS 48 INCHES MOUNTING HEIGHT, WHEN INSTALLED IN MASONRY BLOCK WALLS, MOUNTING AT 48 INCHES TO THE TOP OF THE OUTLET BOX IS ACCEPTABLE.

FEEDER SCHEDULE - ALUMINIUM

FEEDER NUMBER	AMPERE RATING	PHASE CONDUCTORS PER CONDUIT		NEUTRAL CONDUCTOR SIZE		GROUND CONDUCTOR SIZE	CONDUIT SIZE	NUMBER OF PARALLEL SETS	REMARKS
		QUANTITY	SIZE	QUANTITY	SIZE				
100S3	100	3	1 AWG	1	1 AWG		2"	1	
100N3	100	3	1 AWG	1	1 AWG	6 AWG	2"	1	
50N	50	2	6 AWG	1	6 AWG	8 AWG	1"	1	

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

SEAL

REGISTERED PROFESSIONAL ENGINEER
LINDI C. BRAUN
PE-28009
DATE 4/30/2025
NORTH DAKOTA

ELECTRICAL SYMBOLS LEGEND

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
140	E-01

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ELECTRICAL SYMBOLS LEGEND

LIGHTING

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
A a	CEILING SURFACE MOUNTED LIGHT FIXTURE, CAPITAL LETTER INDICATES FIXTURE TYPE, SMALL LETTER INDICATES SWITCHING.	
	WALL MOUNTED INCAND. OR H.I.D. LIGHT FIXTURE, SURFACE OR, RECESSED MOUNTED	
	CEILING EXIT SIGN, SHADED SIDE INDICATES LIGHTED FACE, ARROWS INSTALLED AS SHOWN	
	WALL EXIT SIGN	6 INCHES ABOVE DOOR FRAME TO BOTTOM
	SUSPENDED FIXTURE	
	EMERGENCY BATTERY LIGHT	8 FEET
PC	PHOTO CELL	9 FOOT
C 2	CONTACTOR (NUMBER INDICATES NUMBER OF POLES)	
$	SINGLE POLE (HORSEPOWER RATED WHEN USED AS MOTOR DISCONNECT)	48 INCHES

SYSTEMS

S	WALL MOUNTED SPEAKER	90 INCHES
R	REQUEST TO EXIT DEVICE	
DS	DOOR POSITION SWITCH	
CR	CARD READER	
	SURVEILLANCE CAMERA	
A	AUXILIARY INPUT OUTLET	
2	COMPUTER OUTLET (NUMBER INDICATES QUANTITY OF CABLES AND JACKS, NO NUMBER INDICATES ONE)	
	STROBE LIGHT	

POWER

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
	DUPLEX RECEPTACLE (*C* INDICATES EMERGENCY CRITICAL BRANCH POWER)	18 INCHES
	DOUBLE DUPLEX RECEPTACLE (*C* INDICATES EMERGENCY CRITICAL BRANCH POWER)	18 INCHES
A	TYPE L14-30 RECEPTACLE	18 INCHES
B	TYPE L14-50 RECEPTACLE	18 INCHES
G	GFCI TYPE RECEPTACLE	18 INCHES
	MULTI-OUTLET ASSEMBLY - M.O.A., PROVIDE DEVICES AS SHOWN ON PLANS	18 INCHES
	DUPLEX RECEPTACLE, HALF SWITCHED	18 INCHES
R	FLOOR OUTLET, 'R' INDICATES RECESSED, 'F' INDICATES FLUSH, 'S' INDICATES SURFACE MOUNT	
T	DRY TYPE TRANSFORMER	
PB	PUSH BUTTON	
HC	POWER DOOR HANDICAP PUSH PAD	42 INCHES
EB	EMERGENCY BOILER SHUTDOWN PUSH BUTTON	48 INCHES
TE	THERMOSTAT - PROVIDE BY DIVISION 16	48 INCHES
T	THERMOSTAT - FURNISHED BY DIVISION 15, INSTALLED BY DIVISION 16	48 INCHES
$M	THERMAL SWITCH (MOTOR OVERLOAD TYPE)	48 INCHES
1	MOTOR (NUMBER REFERS TO MOTOR AND EQUIPMENT SCHEDULE SEE SCHEDULE FOR WIRING AND CONTROLLER REQUIREMENTS)	
	LIGHTING AND APPLIANCE PANELBOARD	
	RECESSED LIGHTING AND APPLIANCE PANELBOARD	
	SWITCHBOARD OR MOTOR CONTROL CENTER AS NOTED	
	SPECIAL EQUIPMENT CABINET AS NOTED	
	ENCLOSED MOLDED CASE CIRCUIT BREAKER	
V	VARIABLE FREQUENCY CONTROLLER WITH CONTROLLER	
	NON-FUSED DISCONNECT	
F	FUSED DISCONNECT	
	MAGNETIC STARTER	
	COMBINATION STARTER-DISCONNECT	

MISC/ABBREVATIONS

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT
J	CEILING-MOUNTED JUNCTION BOX	
J	WALL JUNCTION BOX	18 INCHES
	DASHED LINES INDICATE EXISTING FIXTURES, DEVICES, OR EQUIPMENT	
	HASH MARKS INDICATE ITEM NOTED TO BE REMOVED	
	CONDUIT CONCEALED IN WALL OR CEILING, QUANTITY OF CONDUCTORS NOT SHOWN, PROVIDE AS REQUIRED FOR DEVICE/CIRCUIT NUMBERS SHOWN.	
	CONDUIT UP	
	CONDUIT DOWN	
	CONDUIT CONCEALED IN FLOOR	
UG	UNDERGROUND CONDUIT AT 24 INCHES MINIMUM	
L1-2,4,6 #10	HOME RUN TO PANELBOARD, QUANTITY OF CONDUCTORS REQUIRED NOT INDICATED, PROVIDE QUANTITY AS REQUIRED FOR CIRCUIT NUMBERS SHOWN, SWITCHING ARRANGEMENT, OR NUMBER OF HOME RUNS SHOWN. '#10' INDICATES WIRE SIZE, NO NUMBERS INDICATES #12, 3/4 INCH CONDUIT MINIMUM.	
	SURFACE CONDUIT OR SURFACE RACEWAY	
1	NOTE IDENTIFICATION	
A	AMPERE	
AC	ABOVE COUNTER	
ATS	AUTOMATIC TRANSFER SWITCH	
CUH	CABINET UNIT HEATER	
EF	EXHAUST FAN	
FA	FIRE ALARM	
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	
GR	GROUND	
PH	PHASE	
XST	EXISTING	
W	WIRE	
WP	WEATHERPROOF	

NOTES:
1. THIS IS A COMPREHENSIVE SYMBOL SCHEDULE. NOT ALL SYMBOLS ARE APPLICABLE TO THESE DRAWINGS.
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ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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ELECTRICAL SYMBOLS LEGEND

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

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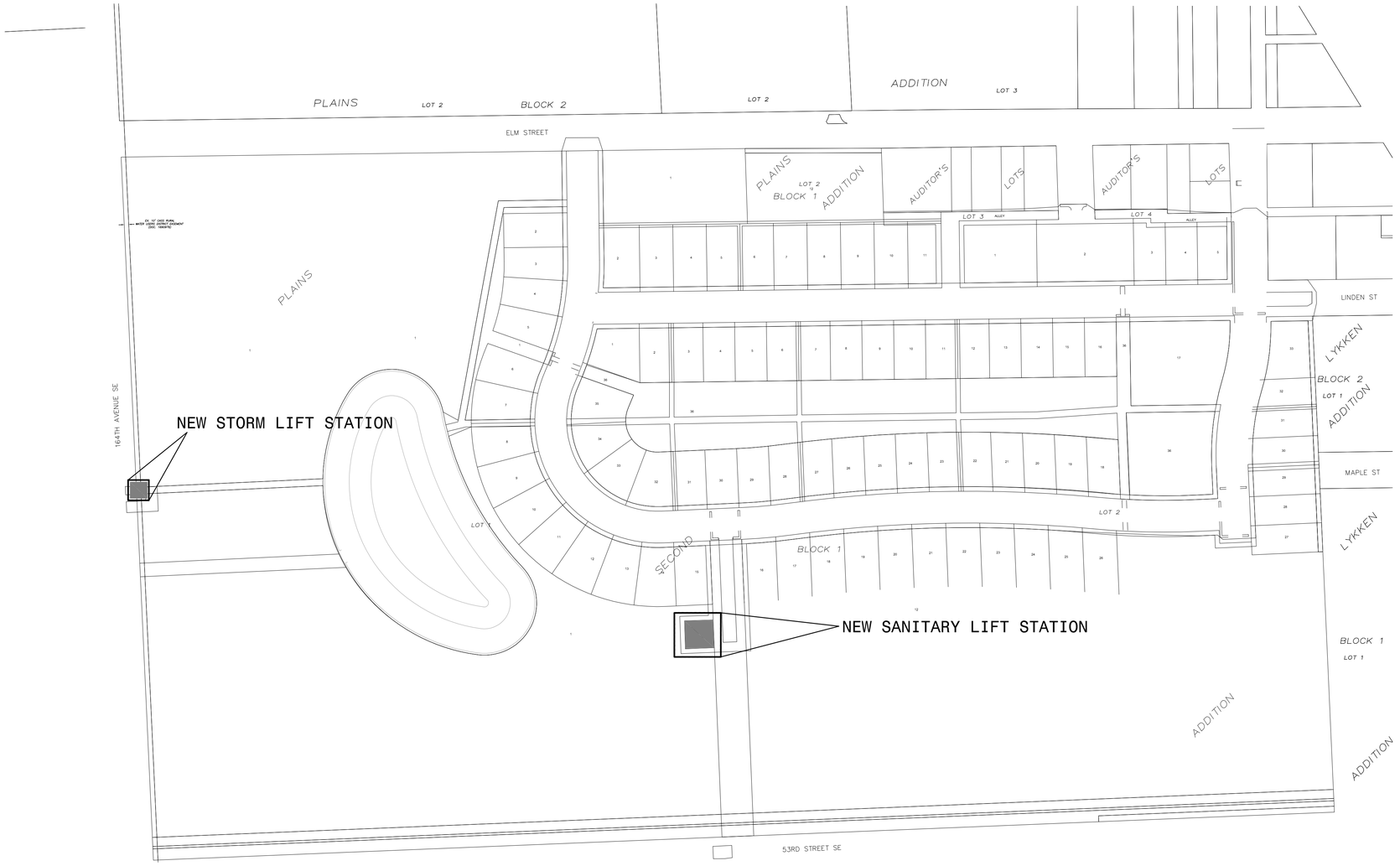

1 E-02 OVERALL SITE PLAN - LIFT STATION LOCATIONS

NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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OVERALL SITE PLAN

Improvement District 2025-2

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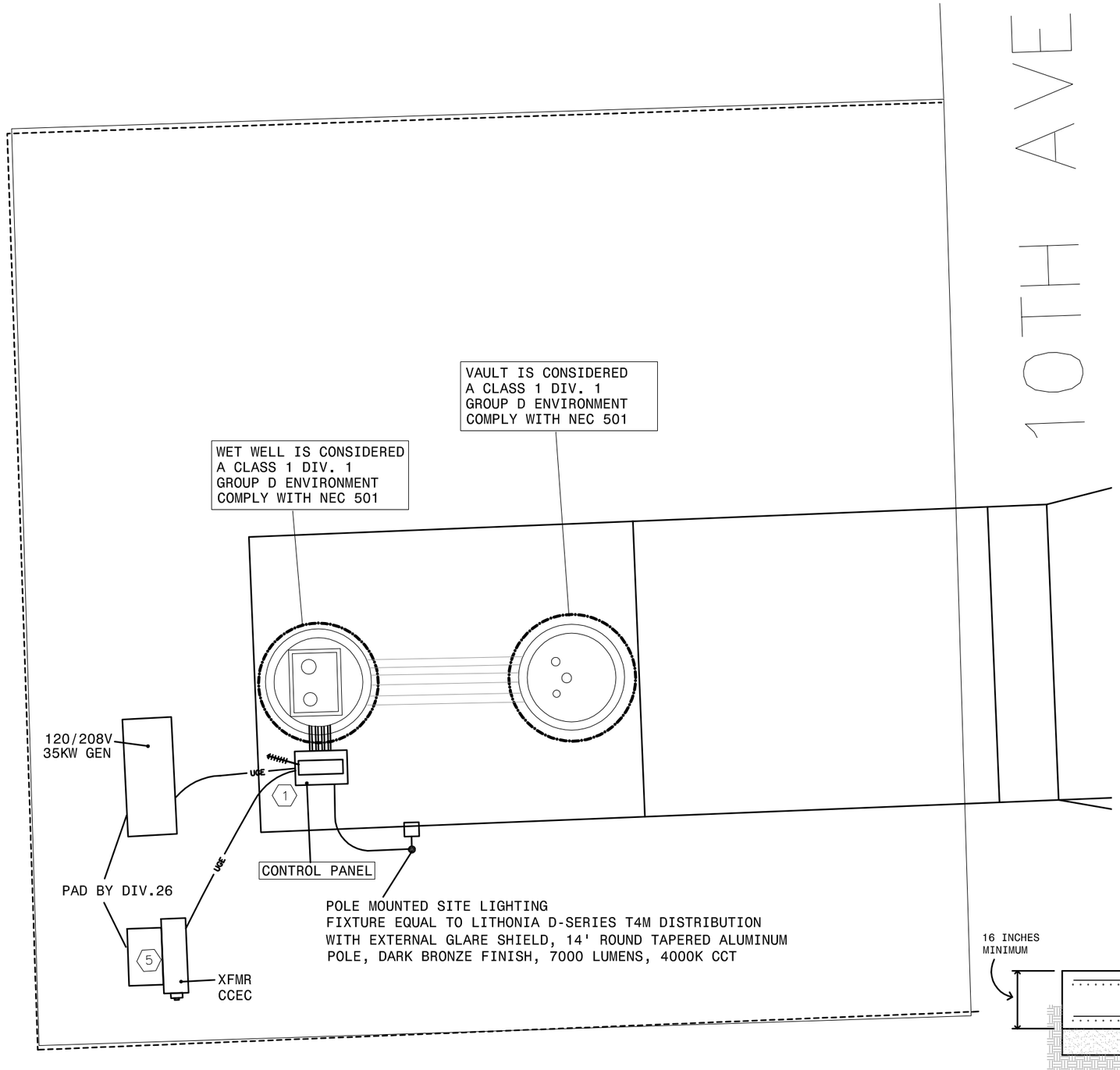

1 E-03 SANITARY LIFT STATION ELECTRICAL SITE PLAN
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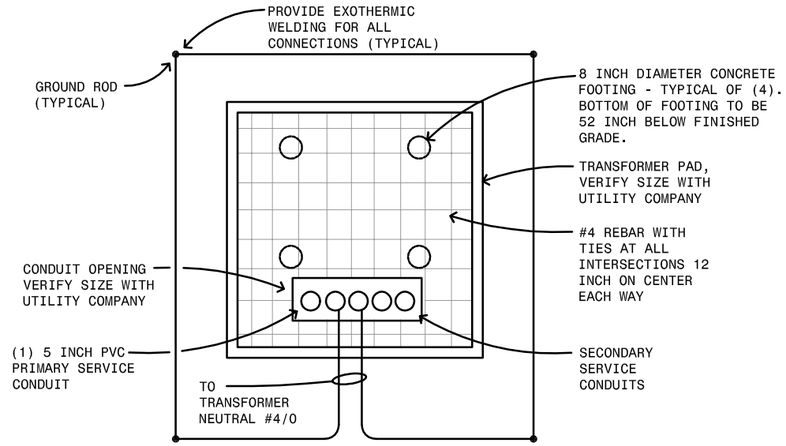

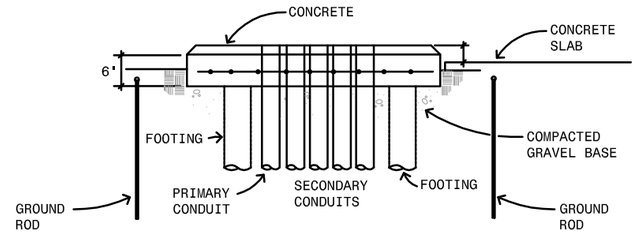

2 E-03 TYPICAL TRANSFORMER PAD
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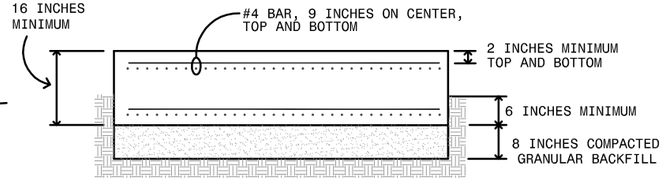

3 E-03 TYPICAL GENERATOR PAD
NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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REGISTERED PROFESSIONAL ENGINEER
LINDI C. BRAUN
PE-28009
DATE 4/30/2025
NORTH DAKOTA

SANITARY ELECTRICAL SITE PLAN

Improvement District 2025-2

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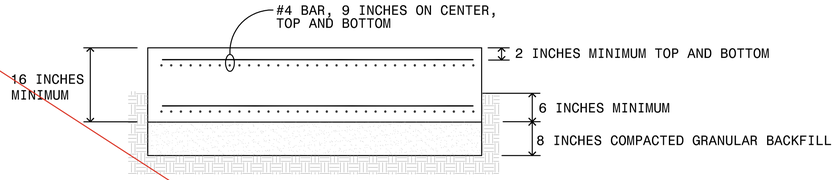

3 E-03 TYPICAL GENERATOR PAD

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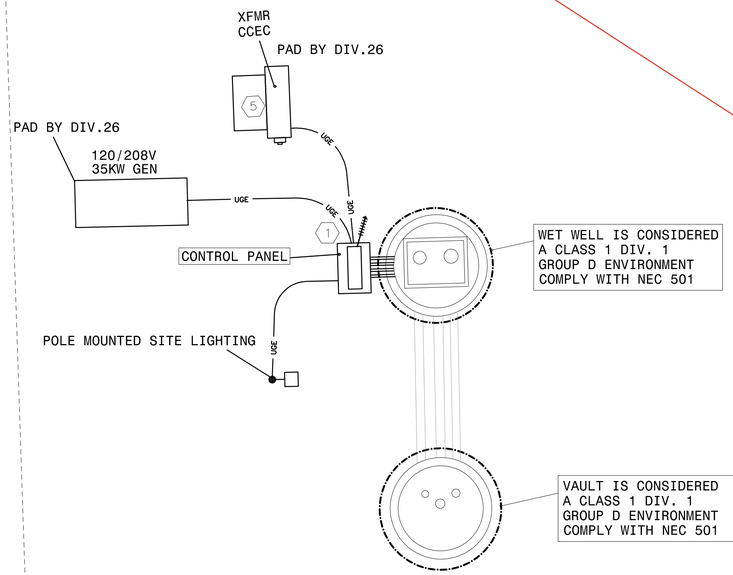
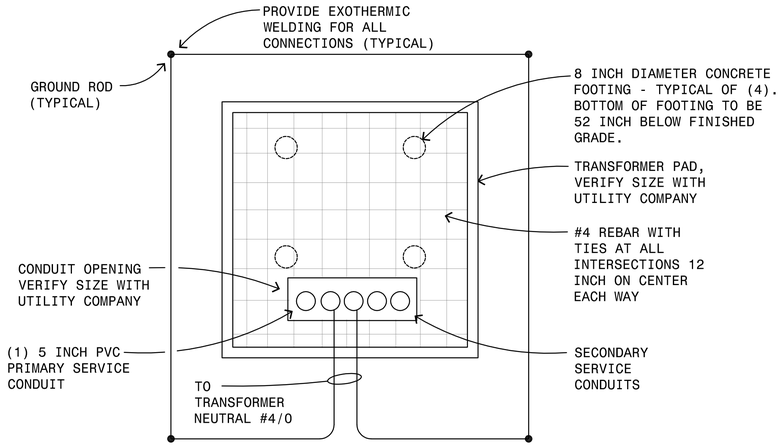
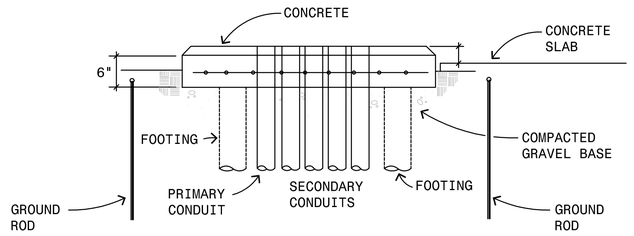


1 E-03 SANITARY LIFT STATION ELECTRICAL SITE PLAN

NO SCALE





2 E-03 TYPICAL TRANSFORMER PAD

NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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SANITARY ELECTRICAL SITE PLAN

Improvement District 2025-2

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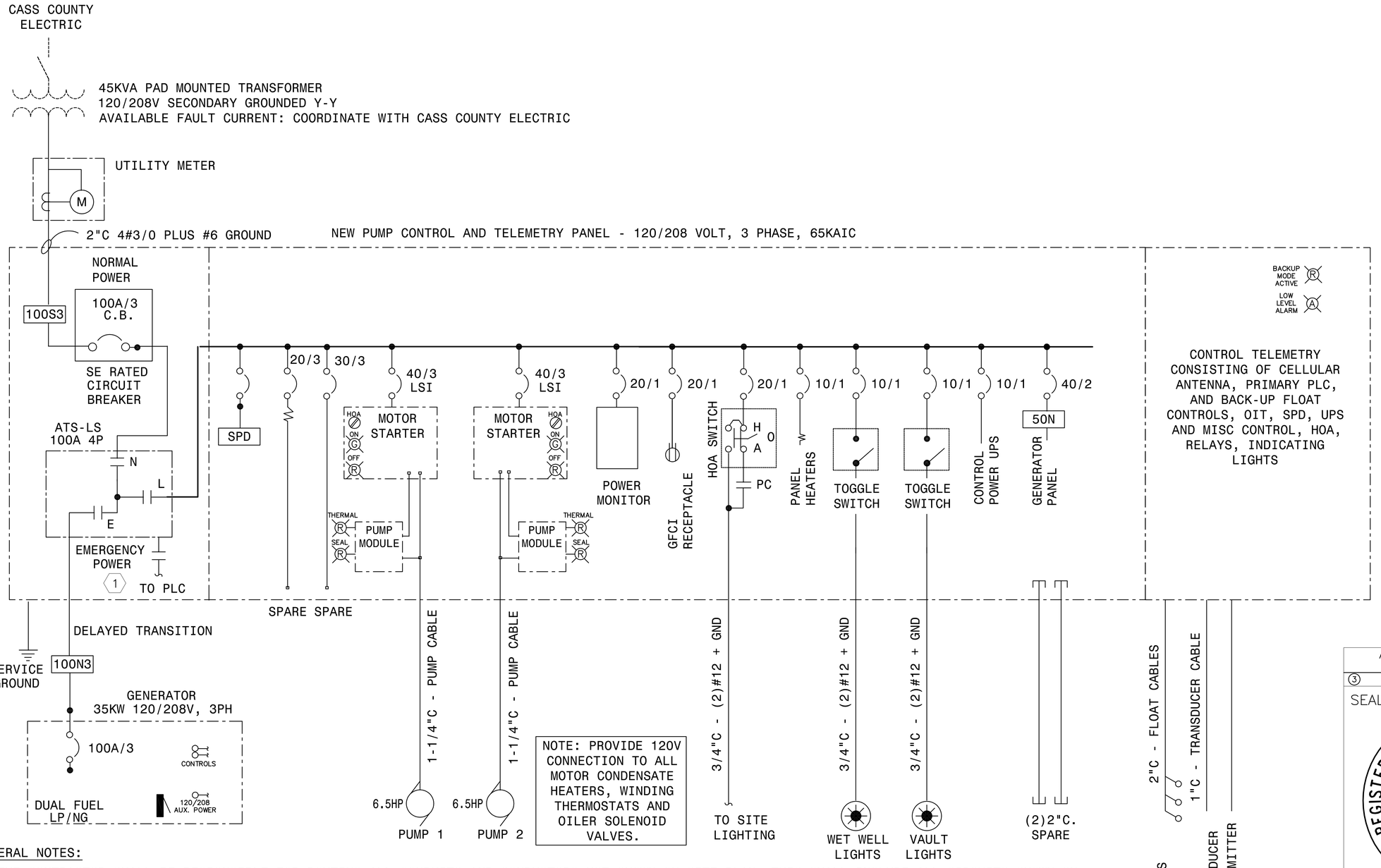

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS AND CONDUCTORS NOT SHOWN ON SITE PLAN. THIS SHALL INCLUDE ALL CIRCUITS SHOWN ON THE ONE-LINE DIAGRAMS, HOMERUNS SHOWN ON THE PLANS, AND ALL CIRCUITS DEFINED IN THE SPECIFICATIONS.

2. AUXILIARY ITEMS ON THE ONE-LINE DIAGRAM MAY NOT BE SHOWN COMPLETELY. FOR EXAMPLE, A CONTROL PANEL SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

3. CONTRACTOR MUST COORDINATE WITH CASS COUNTY ELECTRIC FOR UTILITY TRANSFORMER INSTALLATION.

4. COORDINATE GENERATOR SUPPLY BREAKERS WITH ACTUAL EQUIPMENT PROVIDED, SEPARATE 20 AMPERE RATED SUPPLY CIRCUITS FOR GENERATOR BATTERY CHARGER AND WATER JACKET HEATER ARE ACCEPTABLE IN LIEU OF A CENTRAL LOAD CENTER WITHIN THE GENERATOR ENCLOSURE.

1 LS-E3 SANITARY LIFT STATION CONTROL PANEL ONE-LINE DIAGRAM
NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS
3 | 2 | 1

SEAL

REGISTERED PROFESSIONAL ENGINEER
LINDI C. BRAUN
PE-28009
DATE 4/30/2025
NORTH DAKOTA

SANITARY CONTROL ONE-LINE

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

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SECTION NO.	SHEET NO.
140	E-04

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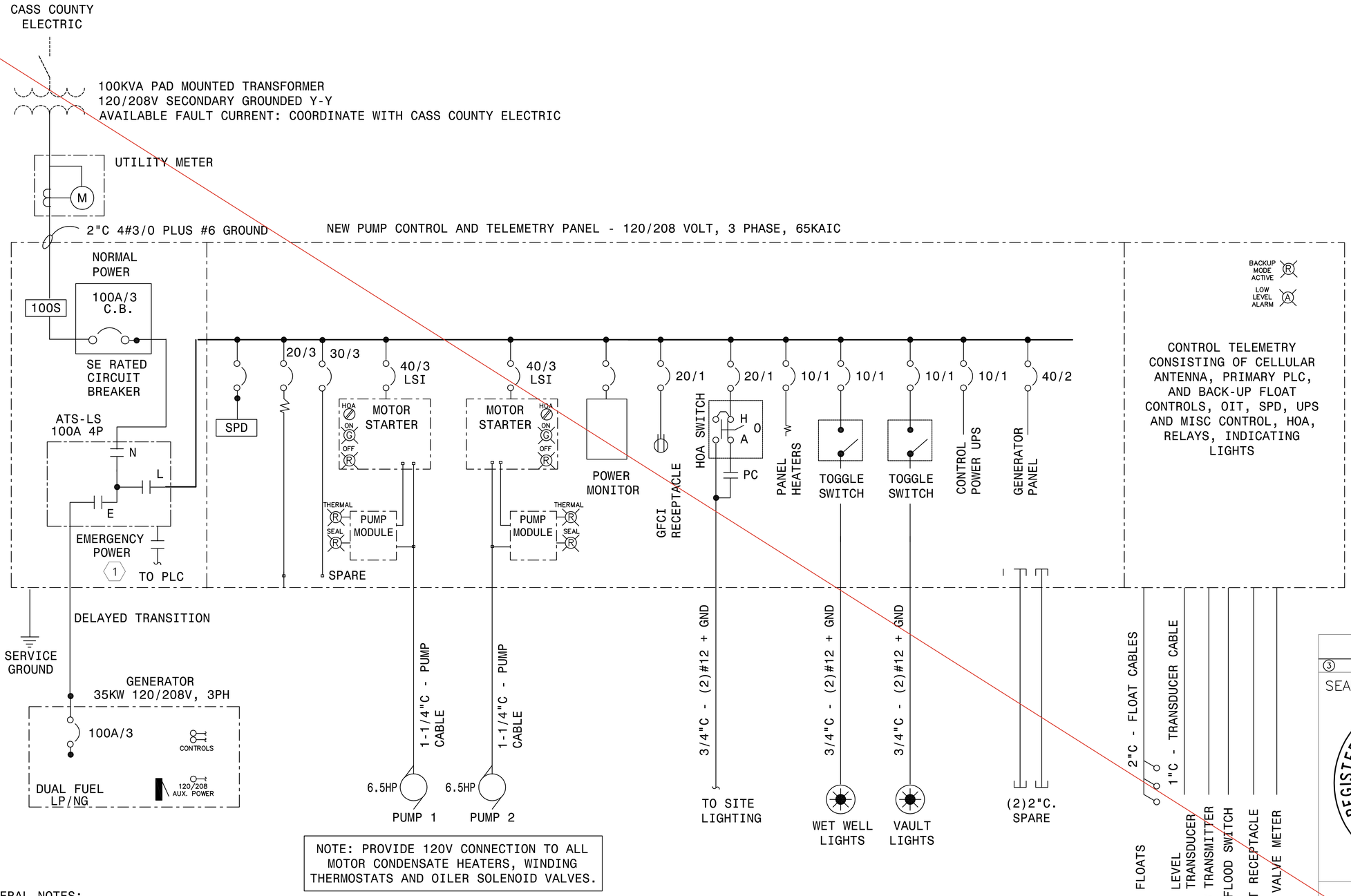

NOTE: PROVIDE 120V CONNECTION TO ALL MOTOR CONDENSATE HEATERS, WINDING THERMOSTATS AND OILER SOLENOID VALVES.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS AND CONDUCTORS NOT SHOWN ON SITE PLAN. THIS SHALL INCLUDE ALL CIRCUITS SHOWN ON THE ONE-LINE DIAGRAMS, HOMERUNS SHOWN ON THE PLANS, AND ALL CIRCUITS DEFINED IN THE SPECIFICATIONS.

2. AUXILIARY ITEMS ON THE ONE-LINE DIAGRAM MAY NOT BE SHOWN COMPLETELY. FOR EXAMPLE, A CONTROL PANEL SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

1 LS-E3 SANITARY LIFT STATION CONTROL PANEL ONE-LINE DIAGRAM
NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1 4/22/25

SEAL

REGISTERED PROFESSIONAL ENGINEER
LINDI C. BRAUN
PE-28009
DATE 4/22/2025
NORTH DAKOTA

OVERALL SITE PLAN

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
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SECTION NO.	SHEET NO.
140	E-04

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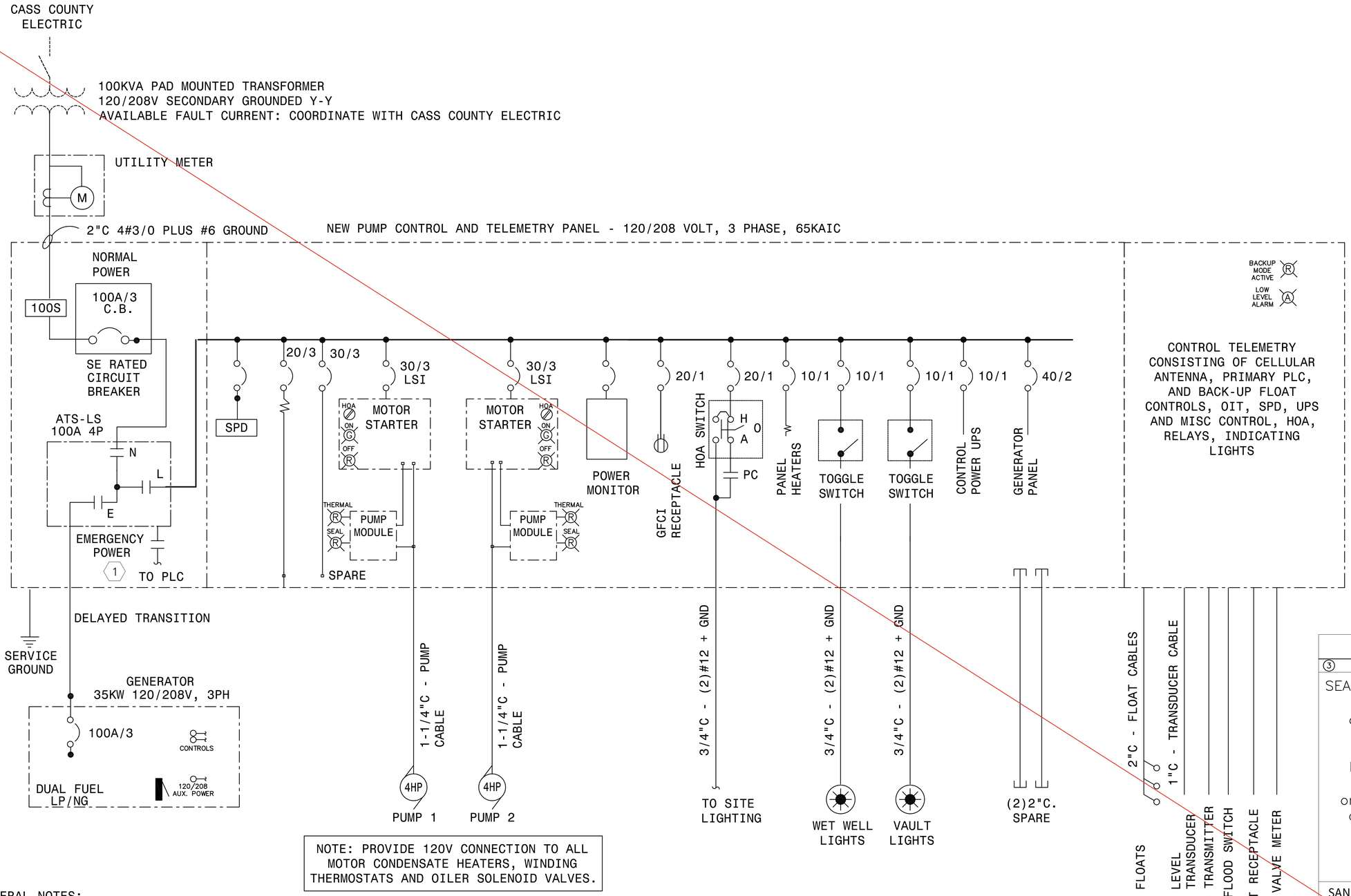

NOTE: PROVIDE 120V CONNECTION TO ALL MOTOR CONDENSATE HEATERS, WINDING THERMOSTATS AND OILER SOLENOID VALVES.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS AND CONDUCTORS NOT SHOWN ON SITE PLAN. THIS SHALL INCLUDE ALL CIRCUITS SHOWN ON THE ONE-LINE DIAGRAMS, HOMERUNS SHOWN ON THE PLANS, AND ALL CIRCUITS DEFINED IN THE SPECIFICATIONS.

2. AUXILIARY ITEMS ON THE ONE-LINE DIAGRAM MAY NOT BE SHOWN COMPLETELY. FOR EXAMPLE, A CONTROL PANEL SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

1 E-04 SANITARY LIFT STATION CONTROL PANEL ONE-LINE DIAGRAM
NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS
3 | 2 | 1

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SANITARY LIFT STATION CONTROLS

Improvement District 2025-2

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DRAWN BY: LCB | ORIG DATE: APRIL 2025

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SECTION NO.	SHEET NO.
140	E-04

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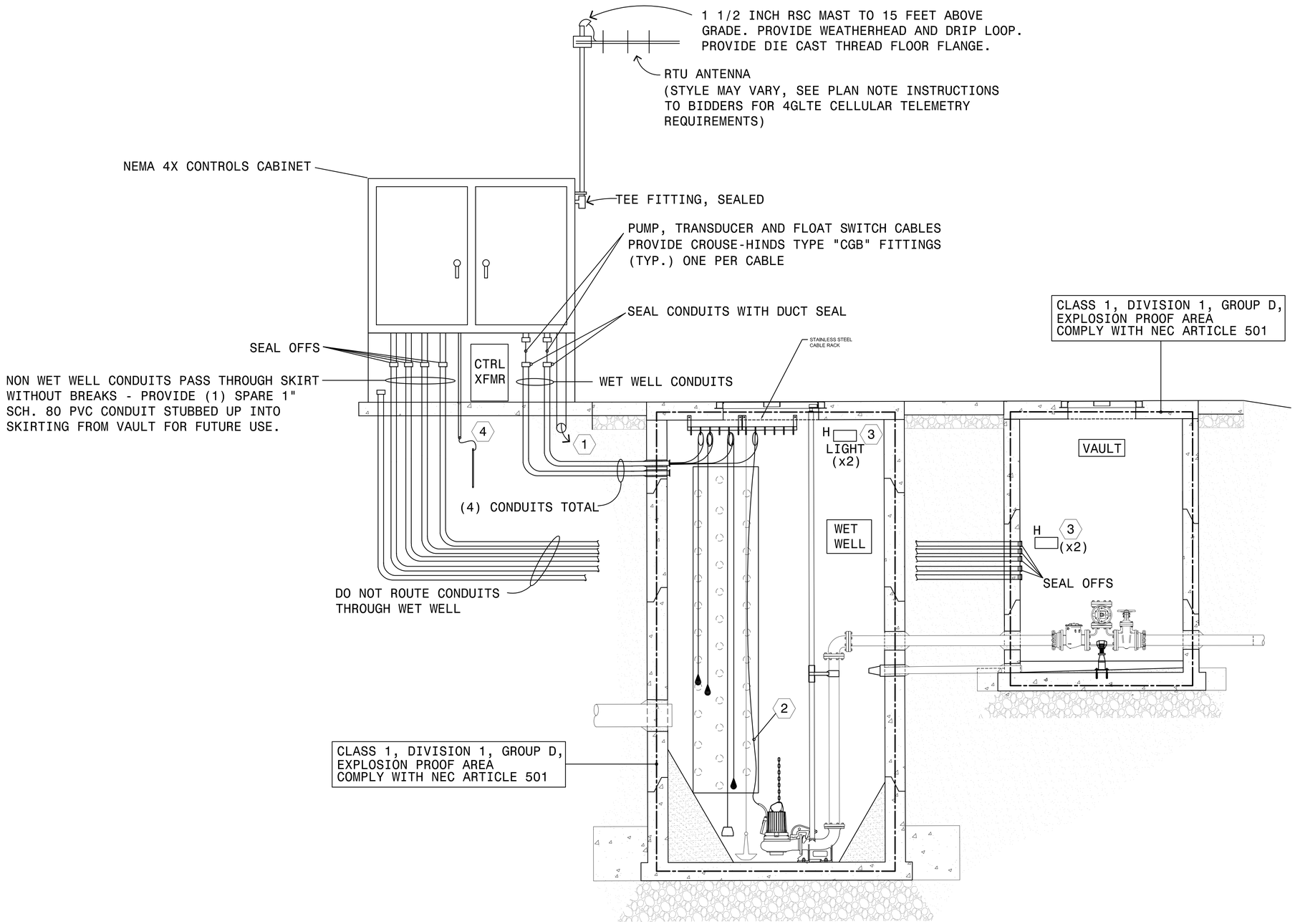

1 E-05 SANITARY LIFT STATION SECTION
NO SCALE

PLAN NOTES:

1. EXTEND 2" SCH.80 PVC CONDUIT TO CT CABINET, REFER TO SITE PLAN FOR LOCATION.
2. PUMP POWER AND CONTROL CABLES TO BE PROVIDED AND INSTALLED BY PUMP SUPPLIER.
3. PROVIDE (2) CLASS 1 DIV.1 RATED FIXTURES EQUAL TO CROUSE HINDS XLPA4/UNV1 SERIES WITH ANGLE MOUNTING BRACKET. FIXTURES TO BE INSTALLED ON OPPOSITE ENDS OF VAULT AT 7'-0" AFF.
4. 1 INCH SCH.80 PVC FOR GROUNDING CONDUCTOR AND CONNECTION TO GROUND ROD.

ADDENDUM & CONSTRUCTION REVISIONS

3	2	1

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SANITARY LIFT ELECTRICAL SECTION

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

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SECTION NO.	SHEET NO.
140	E-05

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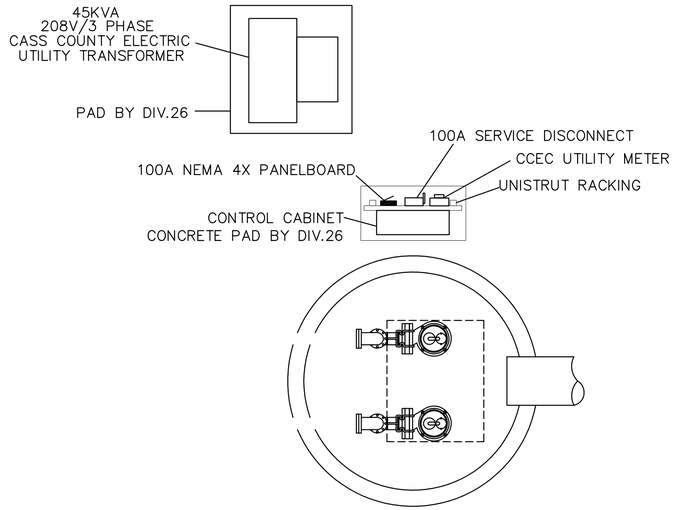
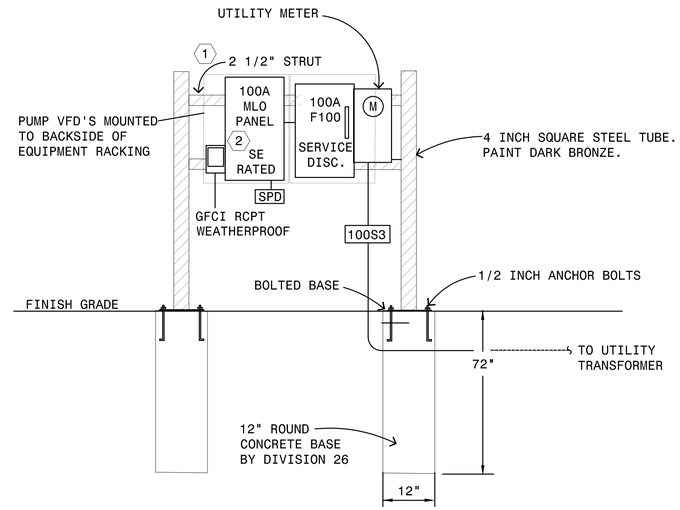
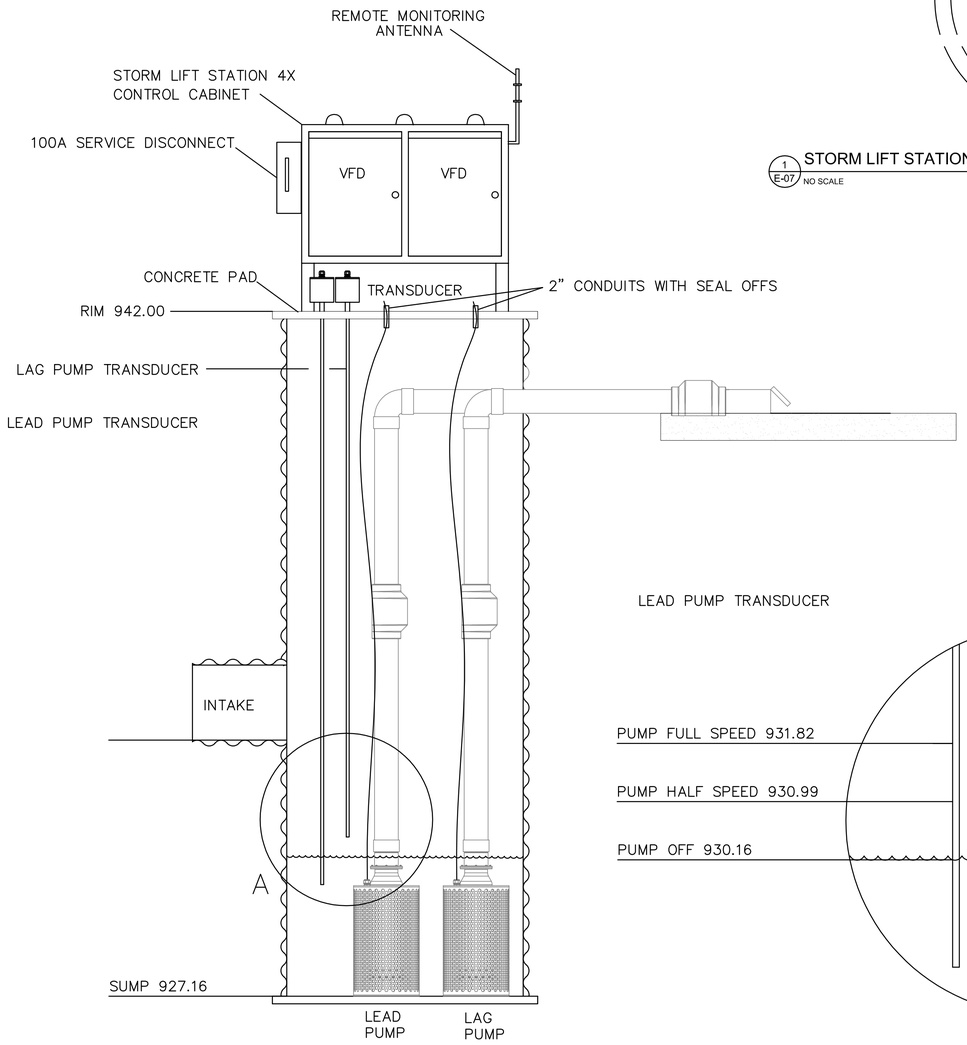


1 E-07 STORM LIFT STATION ELECTRICAL SITE PLAN
NO SCALE

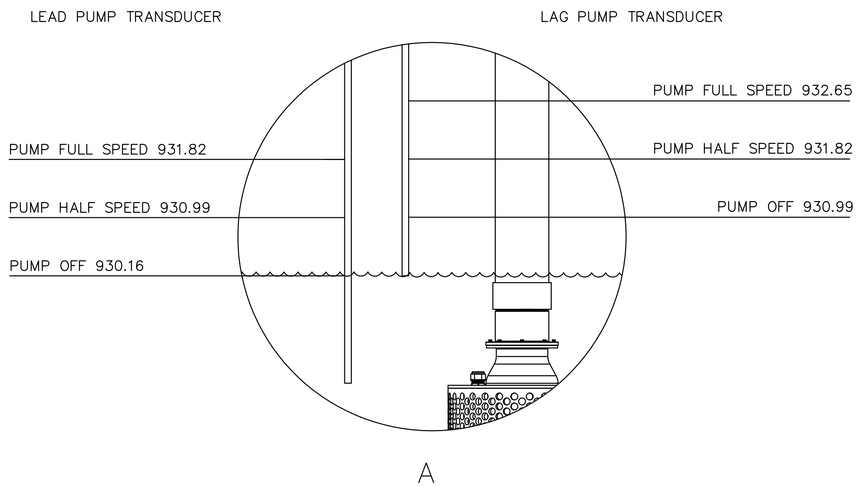


2 E-07 STORM LIFT STATION EQUIPMENT RACKING DETAIL
NO SCALE



PUMP SCHEDULE

PERFORMANCE CHARACTERISTICS	
VFD PROVIDED BY OTHERS INSTALLED BY DIV. 26	
NUMBER OF PUMPS	2
POWER SUPPLY	230 VOLTS, 3 PHASE, 60 HZ
REMOTE MONITORING	YES
PUMP BASIS OF DESIGN	7.5 HP (10" IMPELLER) CP06 SERIES PUMP BY CARRIER PUMPS (OR APPROVED EQUAL)
VFD BASIS OF DESIGN	CARRY PUMP 208/230V 3 PHASE, 24.5 AMP (OR APPROVED EQUAL) VFD-0075-233-E DRIVE: CI007-P2
ENCLOSURE	OUTDOOR RATED NEMA 4X



STORM LIFT STATION (SECTION) DETAIL
N.T.S.

PLAN NOTES:

1. PROVIDE 2 1/2 INCH DEEP GALVANIZED UNISTRUT TO MOUNT EQUIPMENT.
2. PROVIDE 100A NEMA 4X PANELBOARD, SERVICE ENTRY RATED, 10KAIC WITH THE FOLLOWING BREAKERS:
   - (2) 30 AMPERE 3 POLE BREAKERS - PUMP VFDS
   - (4) 20 AMPERE 1 POLE BREAKERS - PANEL RECPT
   - VFD AUX POWER
   - (2) SPARE
   - (1) 30 AMPERE 2 POLE BREAKER - SPD

ADDENDUM & CONSTRUCTION REVISIONS
3 | 2 | 1

SEAL

REGISTERED PROFESSIONAL ENGINEER
LINDI C. BRAUN
PE-28009
DATE 4/30/2025
NORTH DAKOTA

STORM WATER ELECTRICAL PLAN

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
140	E-06

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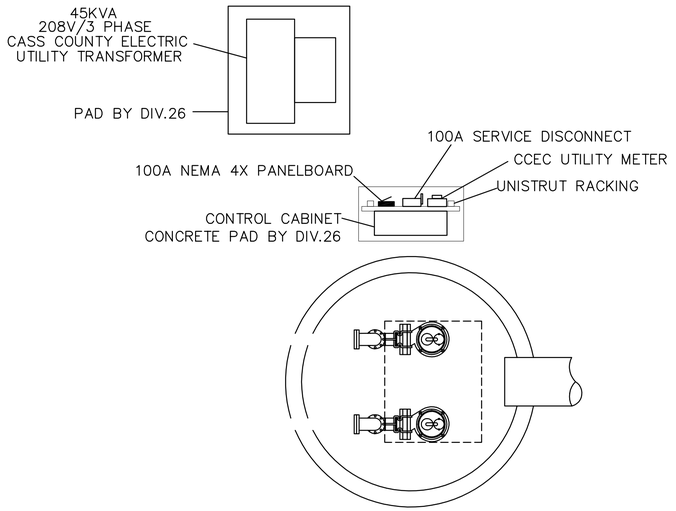
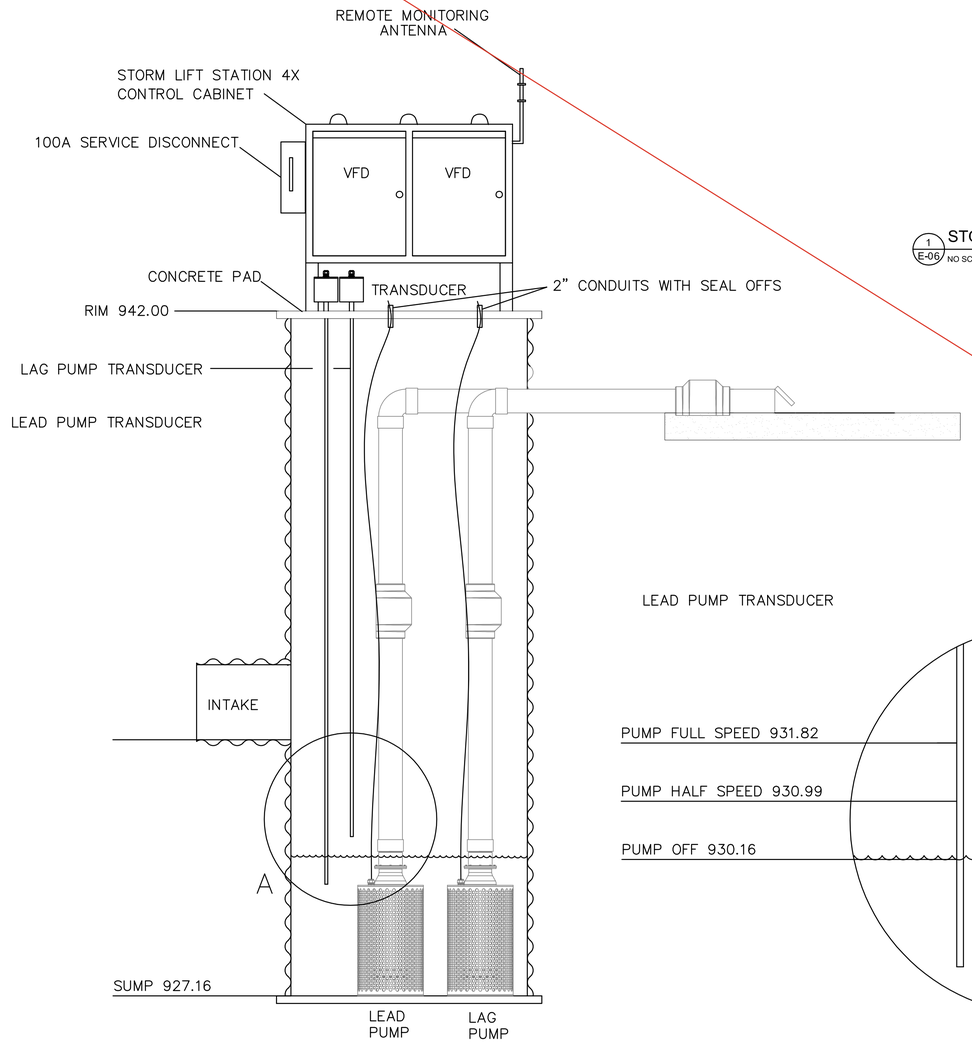
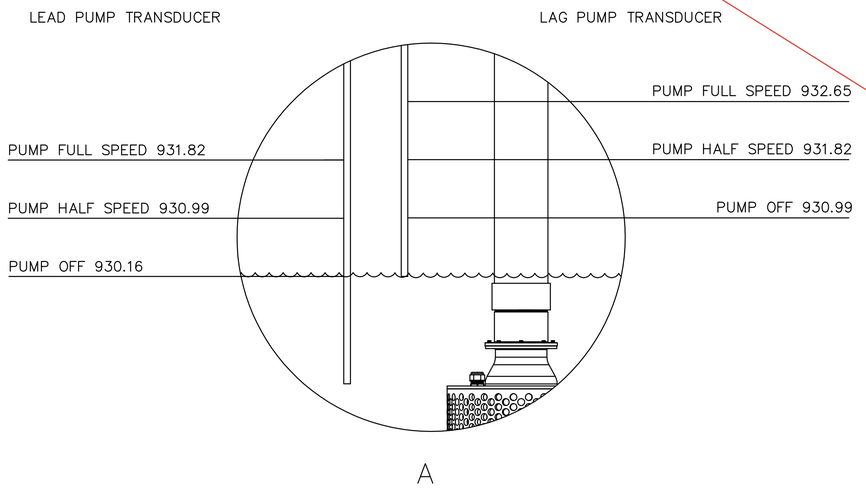


1 E-06 NO SCALE **STORM LIFT STATION ELECTRICAL SITE PLAN**

PUMP SCHEDULE

PERFORMANCE CHARACTERISTICS	
VFD PROVIDED BY OTHERS INSTALLED BY DIV. 26	
NUMBER OF PUMPS	2
POWER SUPPLY	230 VOLTS, 3 PHASE, 60 HZ
REMOTE MONITORING	YES
PUMP BASIS OF DESIGN	7.5 HP (10" IMPELLER) CP06 SERIES PUMP BY CARRIER PUMPS (OR APPROVED EQUAL)
VFD BASIS OF DESIGN	CARRY PUMP 208/230V 3 PHASE, 24.5 AMP (OR APPROVED EQUAL) VFD-0075-233-E DRIVE: CI007-P2
ENCLOSURE	OUTDOOR RATED NEMA 4X





STORM LIFT STATION (SECTION) DETAIL
N.T.S.

ADDENDUM & CONSTRUCTION REVISIONS
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STORM WATER ELECTRICAL PLAN

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
140	E-06

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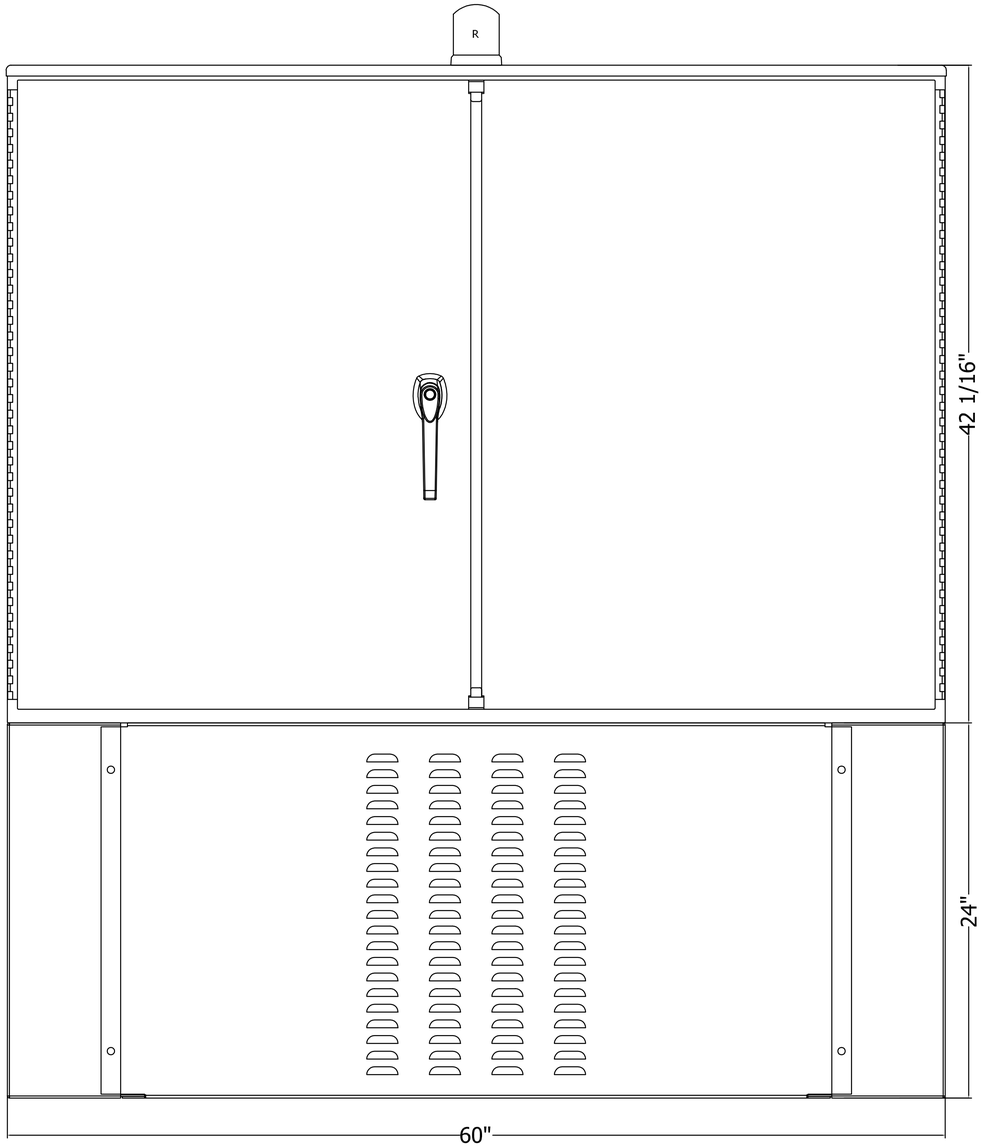
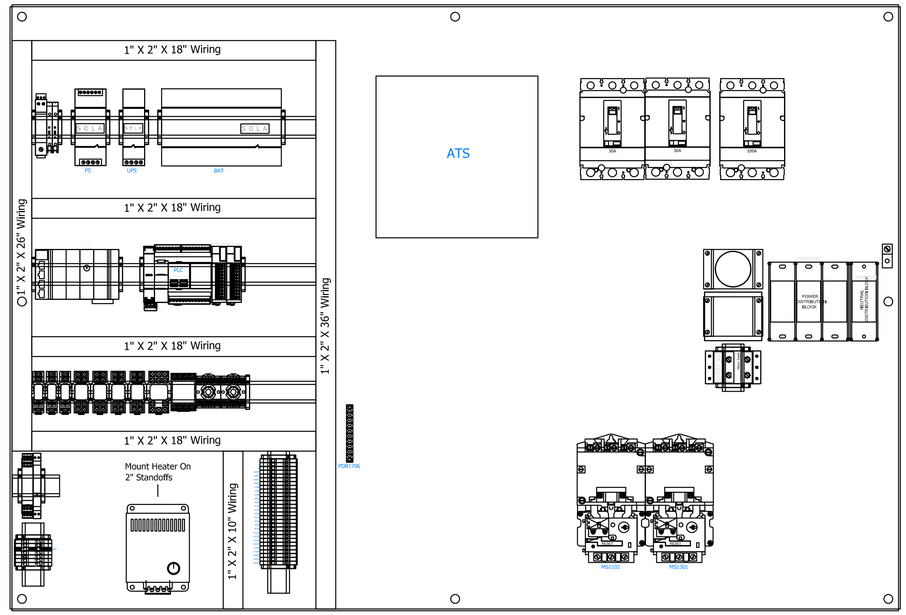
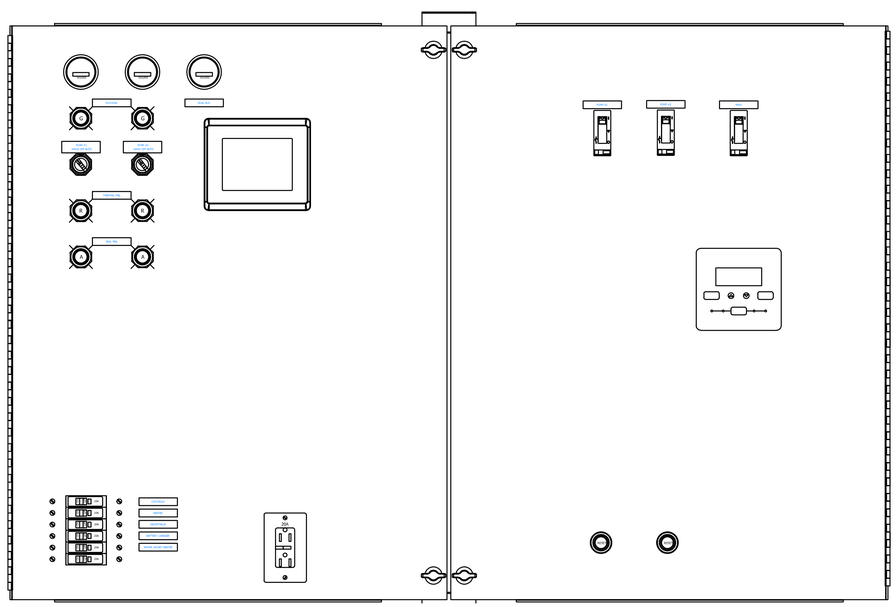


1 E-07 SANITARY LIFT STATION CONTROL PANEL EXTERIOR ELEVATION
NO SCALE



2 E-07 CONTROL PANEL INTERIOR ELEVATION
NO SCALE



3 E-07 CONTROL PANEL INTERIOR ELEVATION
NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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CONTROL PANEL ELEVATIONS

Improvement District 2025–2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

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SECTION NO.	SHEET NO.
140	E-07

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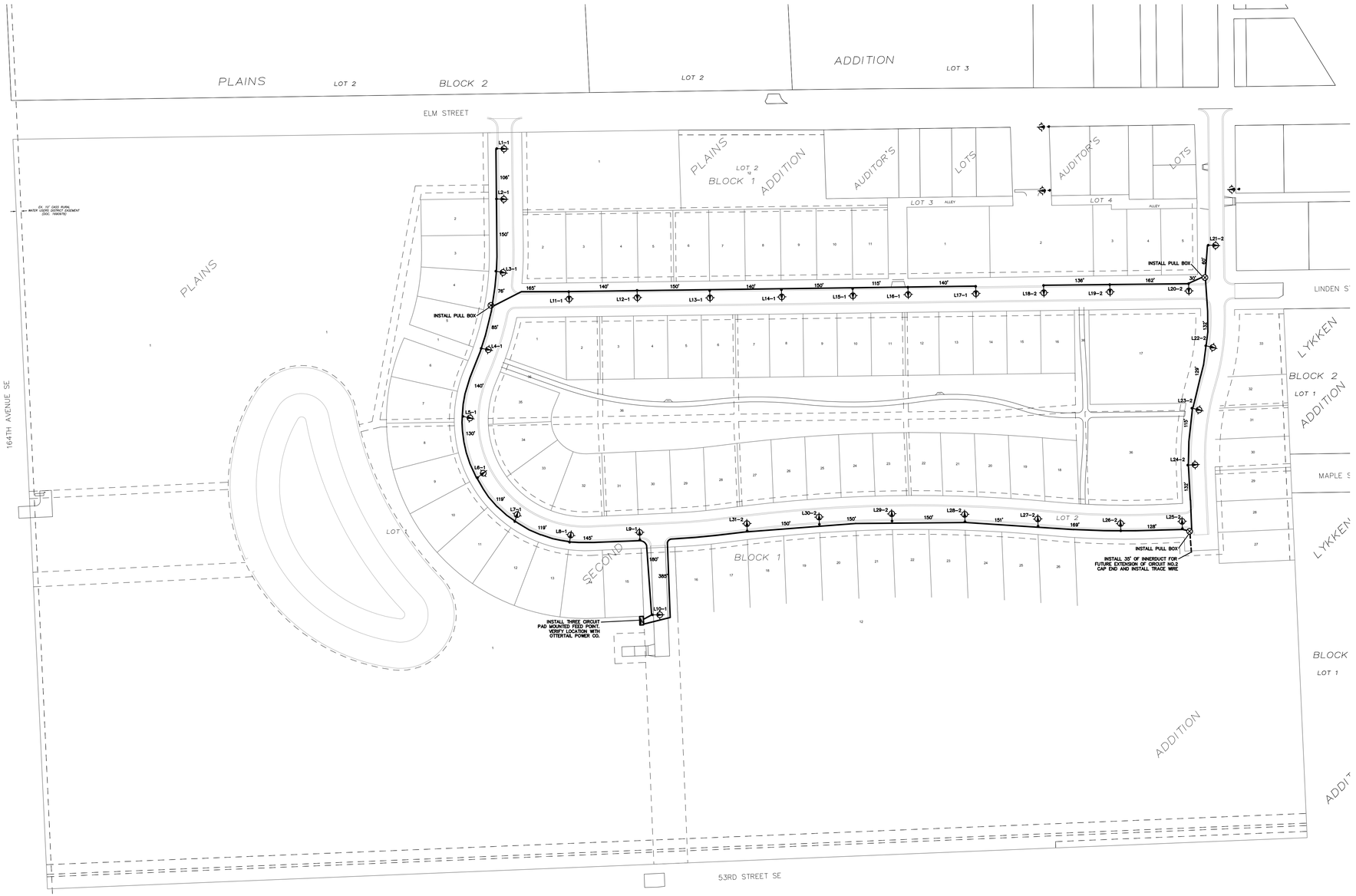

LEGEND

L1	TYPE "A" LED LUM. ON 16' STD. WITH LUM. NO.
	EXISTING STREET LIGHT
	1.5" INNERDUCT WITH CONDUCTOR CU, TRIPLEX (3)#6 USE
	1.5" INNERDUCT
	PULL BOX

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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SITE LIGHTING ELECTRICAL PLAN

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
140	E-08

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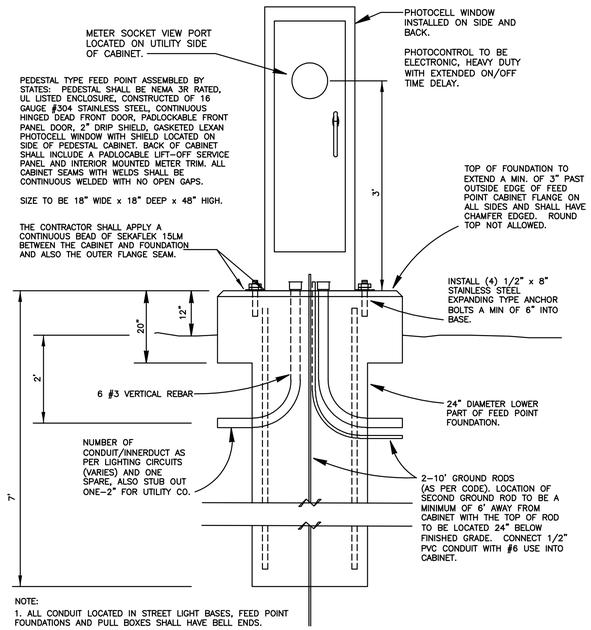
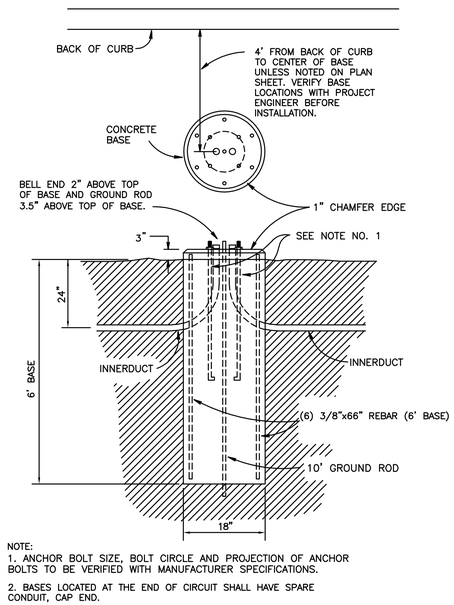


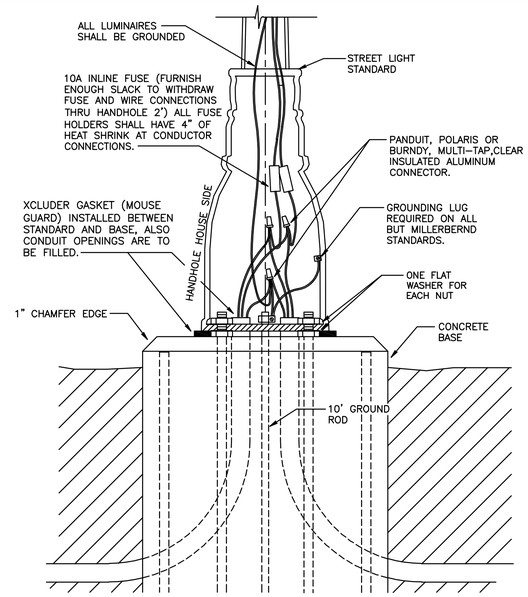
FEED POINT ELEVATION

NO SCALE



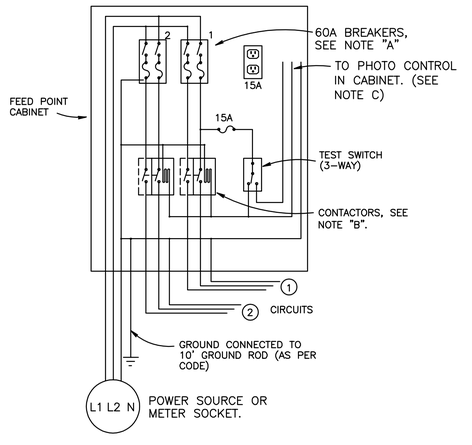
CONCRETE BASE DETAIL: COMMERCIAL

NO SCALE



LIGHT STANDARD: WITH LEVELING NUTS

NO SCALE



NOTES:

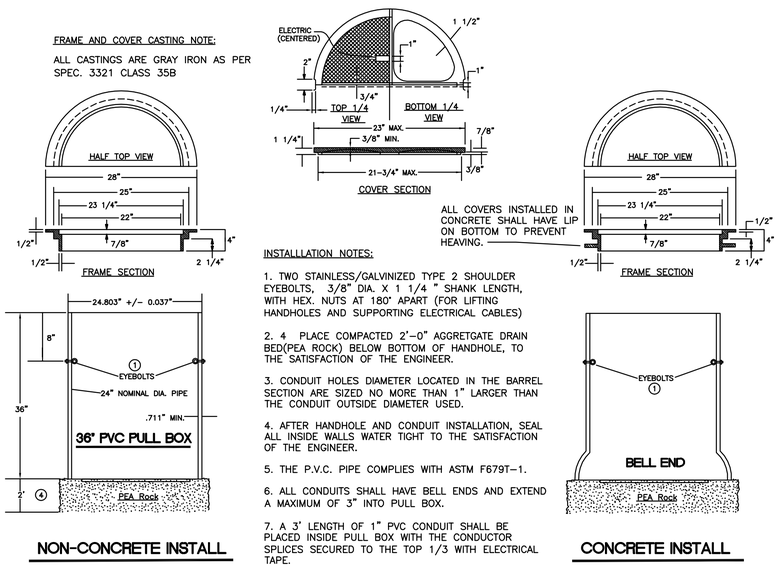
A. CIRCUIT BREAKERS TO BE 60A., 2-POLE. TEST SWITCH CIRCUIT TO BE 15A 1-POLE. ALL BREAKERS ARE TO BE RATED AT 22,000 AIC.

B. CONTACTORS TO BE NORMAL OPEN TYPE, 60A, 2-POLE, MECHANICAL, 240V TO GROUND. QUANTITY OF RELAYS AS REQUIRED FOR NUMBER OF CIRCUITS.

C. PHOTOCONTROL: MUST BE ELECTRONIC, HEAVY DUTY WITH EXTENDED ON/OFF TIME DELAY.

WIRING SCHEMATIC: TWO CIRCUIT FEED POINT

NO SCALE



PULL BOX, METAL FRAME AND COVER DETAIL

NO SCALE

ADDENDUM & CONSTRUCTION REVISIONS		
3	2	1

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SITE LIGHTING DETAILS

Improvement District 2025-2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
140	E-09

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PLAN NOTES:

1. These special instructions shall govern the construction of this project.

The Street Lighting Special Instructions include the new Street Lighting Standard Specifications for section 4400. These specifications shall supplant any previous Street Lighting Specifications. These specifications shall provide additional information and requirements for the project and to the plan notes below.

2. INNERDUCT: 1.5" HDPE Innerduct, Smooth Outside, Controlled Outside Diameter at 1.900. Inside Diameter of 1.579, Minimum wall thickness of .145 and color RED (Schedule 40 equivalent).
Innerduct will be recuired as shown on plans and will be connected to stubbed out 1.5" conduit at all concrete base and feed point locations. Installation of Innerduct shall be at a depth of 24" to 32" below finished grade. The innerduct will be placed in line with bases behind curb unless contractor gets approval from project engineer to adjust placement. Boring will be the required method of installation in all established areas. Duct Seal all innerduct/conduit with conductor at feed points and sealed with Xcluder at pull boxes and street light stanard bases. All spare conduits, at all locations, either empty or with trace wire, shall be plugged with and expanding rubber plug and the plug shall be labeled with the direction of stub out.
Innerduct will be measured by the linear foot. Couplings/fittings used at concrete bases and feed points, trace wire and the method of innerduct installation will not be measured for payment but will be included in the price bid for innerduct.

3. CONDUCTOR: All conductor shall be continuously color coded (black, red and green).
The conductor between standards shall be stranded copper, triplex, 3–#6 USE.
All wiring within standards between distribution conductors and luminaires shall be #12 AWG stranded copper, 600–VOLT, type RHW. All luminaires shall be grounded. Provide ground conductor from the luminaire to the hand hole.
Conductor connections in street light bases and feed points shall be Panduit, clear insulated aluminum connector (PCSB4–__–12Y), Polaris or Burndy equal. The contractor shall use the proper multi–tap connector that meets the current National Electrical Code requirements allowing only one wire under each lug. All connectors shall be torqued according to manufacturers specifications using approved torque tool. Panduit torque specification is 50inch LBS for #4–8 wire and 45inch LBS for #10–14 wire. Verify other manufacturers torque specs. Strip wires according to manufacturers specs.
Splice connections in pull boxes shall be: NSI Industries Easy–Splice Gel Tap (ESGTS–2) Splice Kit or Burndy (DSR–2K). All other conductor splices shall be UL listed, with PowerGel sealant type connections meeting all codes for desired application and be pre–approved by the project engineer.

4. FUSE AND FUSE HOLDERS: Shall be a type FNM 10 amp fuse with a Eaton Bussmann, type HEB–AA or Littlefuse, type LEB–AAK, in line fuse holder. All fuse holders shall have 4" of heat shrink on each end of fuse holder at conductor connections.
Heat Shrink shall be: 3M, ITCSN 0400 12–6 AWG 600V or approved equal.

5. CONCRETE BASE: STANDARD TYPE "A", 24" x 6' deep. Bolt circle and proj. to be verified with manufacturer specifications.

The contractor shall use Hydro–vac excavation for concrete bases where standard auger method is not possible. Base locations shall be field verified after locates with contractor and City of Fargo project manager. Method of base excavation is incidental to bid.
The contractor will be required to maintain at all times a cover over the top of the base to help in the protection of anchor bolts, conduit, ground rod and exposed conductor. This cover shall remain in place until the street light is installed. Cover shall be: Proline 8" to 12" Plastic Pipe Stand (or equal), cone shape, highly visible color. Cost to provide and maintain these covers shall be incidental to the project.

6. ANTI–SEIZE: Anti–seize material shall be applied to all threaded bolts and screws. Verify with project engineer type of material.

7. FURNISH AND INSTALL LUMINAIRE TYPE "A": Holophane Utility Taft Postop LED PTUE3 SERIES, 40W Nominal LED, 4000K, 5,200 Lumen, GL3 Distribution, Multi Volt 120–277 V, Two Clamps with 4 Bolts, No Photocontrol Receptical, Black Finish.
Catalog No.: PTUE3–P20–40K–MVOLT–GL3–BK–SK

8. FURNISH AND INSTALL LIGHTING STANDARD TYPE "A": 12' Mounting Height Standard (Decorative Pole), with Transformer base: Holophane 12' Fluted Straight Aluminum Standard with MVA Series Base slotted 7" to 8" bolt circle, Powder Coat finish. 12" Base Diameter. Cat. No.: MVA–12–F4C–12–C03–BK

9. MOUSE GUARD: If the street light standard or "T" base is installed with, or requires leveling nuts, the contractor shall furnish and install mouse guard (incidental to standard):
Halek Solutions (PVC rodent intrusion guard) Item No. RWL1058W35S or
Xcluder Light Pole Gasket 2800g Item No. 162728

10. FURNISH & INSTALL PULL BOX: PVC Pull Box with metal frame and cover, the size shall be 24" dia x 36" deep. Pull box installed in concrete shall have bell end and frame shall have lip to prevent heaving (see detail). 24" of pea rock shall be installed for drainage below the pull box and will extend 6" beyond the outside edge of pull box. The top of pull box shall be flush mounted in concrete areas and level with final grade and sloped to match in areas of sod. Provide enough slack to pull conductor and splices a minimum of four feet above finished grade. Splices shall be secured with electrical tape, near the top of a 3' length of 1" PVC conduit placed inside the pull box.
The pull box will be measured as a complete unit installed. Pull box, cover, pea rock and other miscellaneous items required shall be incidental to the cost bid.

11. FURNISH AND INSTALL FEED POINT: Pedestal type, NEMA 3R rated, UL listed two circuit, 16 gauge #304 stainless steel feed point cabinet, shall be concrete pad mounted (see detail for size of cabinet). Feed Point cabinet shall also include a padlocable lift–off service panel along with a factory installed, interior mounted meter trim which meets the requirements of the local utility company (CCEC) Meter to be provided by the local utility company.
All exposed conduit shall be 2" galvanized steel. Concrete foundation/pad, weather head and riser, 2" conduit and properly sized conductor for connection to transformer or to closest utility pole as required by the utility company and other miscellaneous items shall be incidental to the price bid for feed point. The feed point will be measured as a complete unit installed and operational. Verify feed point location and elevation with the project engineer and CCEC before installation.
FEED POINT: Prefabricated feed point enclosure to be assembled by States, UL 508 Listed, Service entrance rated. Or approved equal.

ADDENDUM & CONSTRUCTION REVISIONS
③ ② ①

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SITE LIGHTING PLAN NOTES

Improvement District 2025–2

DESIGN BY: LCB	CHECKED BY: MAB
DRAWN BY: LCB	ORIG DATE: APRIL 2025

MBN ENGINEERING

SECTION NO.	SHEET NO.
140	E-10

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THE FOLLOWING PLAN NOTES SUPPLEMENT AND AMEND THE PLAN SHEETS, CITY OF KINDRED SPECIFICATIONS AND NDDOT REFERENCES AS FOLLOWS:

COMPLETION:

Milestone 1: 45 Consecutive Working Days

The contractor shall have 45 consecutive working days to complete roadway subgrade work and underground utility installation within the dedicated Alley.

Failure to meet the timeline in Milestone 1 will result in liquidated damages being applied in the amount of $500 per calendar day.

Substantial Completion Date: October 17, 2025

Substantial Completion shall consist of all work included in the contract.

Final Completion Date: October 31, 2025

Final Completion shall include all remaining work items, punchlist items, and cleanup.

Failure to meet completion dates will result in liquidated damages being applied per the contract.

GENERAL NOTES:

1. The drawings designate those existing items for removal, replacement, or improvement. If not designated for removal, replacement, or improvement, all other existing items within the site to be protected. Construction activities shall be performed within the construction limits, right of way, or easements.

2. The City of Kindred Standard Specifications for Construction are located on the city's website, www.kindrednd.com.

3. Work shall be generally performed during normal business working hours of 7:00 am to 7:00 pm.

4. Prior to commencement of any work, contractor shall file a notice of intent to obtain coverage under NDPDES general permit for storm water discharge associated with construction activity (NOI) the NOI shall be filed with the North Dakota department of health per the permit requirements. Contractor is responsible to ensure all erosion control measures are in-place before construction begins, in compliance with the 2022 City of Kindred Standard Specifications for Construction, NDPDES general permit requirements, and maintained throughout construction.

5. The contractor shall be responsible for appropriate traffic control measures before work begins. The city engineer shall have final approval of the traffic control plan. All traffic control shall comply with the NDDOT Standard Specifications for Road and Bridge Construction, Section 704, and the Manual of Uniform Traffic Control Devices (MUTCD). Road closures will require prior approval from the City of Kindred. Detours, if necessary, shall be clearly established. Traffic control plan must be submitted a minimum of 14 days prior to planned start of work.

6. Construction staking shall be the responsibility of the contractor. Include all costs associated with construction staking under bid item "Construction Staking (LS)". Contractor is responsible for any required restaking.

7. The contractor shall be responsible for all material testing as specified in these plans and City of Kindred specifications. All costs associated with this work shall be included in the respective bid items. Additionally, the contractor shall bear the cost of any required retesting due to failed tests.

8. Where new pavement will abut existing pavement, a full-depth vertical saw cut shall be made along the entire length of the joint. The material to be removed shall then be removed without disturbing the material that is designated to remain. The sawed edge shall be reasonably free of frays or spalls. The new pavement shall be placed to match the existing pavement elevation and to provide a satisfactory surface profile. Any intermediate saw cuts performed to aid in the removal of pavement shall not be paid separately.

9. Storage of materials on city streets is not allowed unless approved by engineer. Contractor shall be responsible for obtaining any storage or staging areas as needed for their operations.

10. Unless specifically noted, all removed materials and items not needed to be reused to complete the project shall become property of the contractor for removal and disposal. Manhole and catch basin castings that are removed and not being reused shall always become property of the city.

11. The designated haul route shall be from 53rd St SE to the south, 164th Ave SE to the west, and Elm Street from 164th to Maple Street only. Construction traffic on Elm Street through Kindred to the east is prohibited. Any construction traffic damage to roads outside the haul route to be repaired by the contractor.

12. Stations on this plan are for information purposes only. Locations of manholes, catch basins, gate valves, etc. Shall reference future roadway, property lines, or existing structures.

13. Contractor shall take the necessary precautions required to protect adjacent properties during the construction operations.

14. The Contractor shall provide a project representative. The representative shall be knowledgeable in construction operations, possess written and verbal communication skills, be able to organize productive meetings, and be able to provide information necessary for media releases. All Contractor's project representative activities shall be incidental to the project.

15. The Contractor's project representative will be responsible for providing the following:
    - Organize, schedule, and conduct the weekly planning and reporting meetings, if required.
    - Provide routine face to face communications with the public, property owners, and business affected by construction activities, including calling on businesses or residents along the corridor. The representative must have sufficient knowledge and authority to resolve property owner and business concerns regarding scheduling and construction activities.

16. Any miscellaneous items needed to complete the project per plans and specifications that are not listed as pay items shall be considered incidental and no direct compensation shall be made.

17. It shall be the contractor's responsibility to investigate all on-site conditions, such as street grades, utility locations, typical service line locations, subsurface conditions, etc.

18. Any ASTM, ACI, CSI, NDDOT standards, designations, specifications, etc. or the like shall reference the current editions of such.

19. Any pumping, dewatering, well pointing, etc. required to remove water from the site, storm sewer, or any other underground system shall be incidental, unless otherwise noted. Water shall not be discharged onto adjacent properties. Coordinate discharge locations with City of Kindred.

20. Location and elevation of existing sanitary/water/storm mains and service lines need to be verified in the field.

21. The contractor shall maintain access to the interior of all curb stops, gate valves, and manholes at all times so that they may be checked for proper operation. Before conclusion of the project, all utilities shall be uncovered and installed to finished grade unless directed by the engineer.

22. Contractor shall not interrupt operation of existing services to existing properties. Not all services are shown on these plans. Any damage to existing services shall be repaired at no cost to affected party.

23. Trench excavation shall be limited to right-of-way and easement areas to not disturb subsurface in adjacent building footprint areas, unless otherwise noted.

24. Construction limits shown are a combination of right-of-way and temporary construction limits.

25. The contractor is specifically cautioned that the location and/or elevation of existing utilities, as shown on these plans, is based on records of the various utility companies and, where possible, measurements taken in the field. The information is

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ADDENDUM & CONSTRUCTION REVISIONS

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Special Instructions to Bidders

Plan Notes

not to be relied upon as being exact or complete. The contractor must call the local utility location center at least 48 hours before any excavation to request exact field locations of the utilities. Prior to construction, the contractor shall verify pertinent locations and elevations, especially at the connection points and at potential utility conflicts. ND One call: 1-800-795-0555.

26. The contractor shall be responsible for obtaining all necessary permits from all applicable agencies. The contractor shall notify the City of Kindred at least 48 hours prior to the start of any earth disturbing activity, or construction on any and all public improvements.

27. The contractor shall have one (1) signed copy of the approved plans, one (1) copy of the appropriate standards and specifications, and a copy of any permits and extension agreements needed for the job, on hand at all times.

28. The contractor shall be responsible for all aspects of safety including, but not limited to, excavation, trenching, shoring, traffic control, and security.

29. The contractor shall be responsible for recording as-built information on a set of record drawings kept at the construction site, and available to the City of Kindred and project engineer at all times. Contractor to provide record drawings to construction engineer at job completion.

30. All equipment and vehicles leaving the site shall be cleaned of loose debris and soil. A rock construction entrance shall be built to prevent excessive tracking as a result of site or weather conditions. All soil and other debris tracked onto adjacent roadways (outside the project limits) is to be removed regularly and by the end of each day's work.

31. Contractor is responsible to coordinate all work with the gas, electric, television, telephone and communications utility companies prior to start of construction.

32. Testing requirements for NDDOT bid item numbers to be in accordance with the NDDOT field sampling and testing manual unless otherwise noted.

33. Items of work identified by NDDOT Item Numbers shall comply with the referenced sections of the North Dakota Department of Transportation Standard Specifications For Road And Bridge Construction, including supplemental specifications.

34. Contractor to use published truck routes. Any construction traffic damage to roads outside the construction area to be repaired by the contractor.

35. Contractor to coordinate construction staging. Contractor to coordinate and secure any other locations necessary for staging. All costs associated to be included in other items of work.

36. Concrete washout to be located within project limits and consist of a mobile/portable/rolloff container.

37. Where work is being performed within private properties, coordinate with property owner to verify protection of existing landscaping or private utilities such as underground sprinkler systems.

38. The Contractor shall use care to protect trees within the work area that are to remain during construction. In order to minimize tree damage the critical root zone (CRZ) must be protected from heavy construction activities at all times. The CRZ is an area defined by the diameter of the tree as measured at a point 4.5 feet above the ground line. For every 1 inch of tree diameter, a 1 foot clear zone must be established to protect the CRZ. For a 24 inch diameter tree, the CRZ would be a 24 feet radius from the base of the tree. The Contractor will be required to establish and mark out the CRZ areas prior to construction or staging occurring.

    A. In the event the Contractor has work that must be performed within the CRZ, every effort must be made to minimize damage to the tree within the CRZ. Prior to commencing work within the CRZ, the Contractor will be required to present a plan of action to City personnel that may include using smaller equipment, trenchless installation of sewer and water services, or other means of non-evasive action that will protect the trees. All branches and any roots over 4" diameter that are to be cut will require an inspection by a Forestry Department representative or other designated individual. Exposed roots shall be cut clean and backfilled as quickly as possible to avoid drying out.

    B. If damage is caused to any existing tree due to the Contractor's failure to adhere to the tree protection requirements, the City Forester will assess the damage to determine if the damage can be repaired or if the tree must be removed. Any action plan, as determined by the City Forester, to repair damaged trees shall be done by a certified arborist at the Contractor's expense. If damage is so severe that tree removal is necessary the tree's appraised value, as determined by the City Forester utilizing the most recent edition of the Guide for Plant Appraisal by the Council of Tree and Landscape Appraisers, shall be deducted from the contract.

    C. All costs related to tree protection shall be incidental to other items.

39. Contractor to create and deliver construction notices to residents and businesses affected by construction operations which restrict access such as street reconstruction, underground utility installation, driveway replacements, and sidewalk replacements. Construction notices shall not be placed in mailboxes as this is illegal. Place notices securely in front doors or an equally conspicuous location. At a minimum, construction notices shall detail:

    A. Contractor and engineer information
    B. Type of construction activity about to take place and what can be expected
    C. Duration of the activity and when the activity will cease
    D. Next activity that will take place
    E. When normal conditions will be restored
    F. Construction notices may include information about multiple activities, but if the schedule of operations will deviate from the schedule shown on a particular notice, a revised notice must be delivered

40. Mailboxes: Include all costs for removal, salvage, delivery to storage location and reinstallation of existing mailboxes impacted by the construction in associated Work bid item. Temporary mailboxes shall be provided if existing mailbox is removed. Coordinate temporary mailbox locations with the Post Office and Resident.

41. Park Benches:
    A. Paid at contract unit price per each, delivered and installed under Bid Item "Park Bench (EA)."
    B. 6' bench length
    C. Perforated
    D. Black in color
    E. Back Rest
    F. Approved Manufacturers
        i. Wabash Valley – Model No. PP300(P)
        ii. Webcoat, Inc. – B6WBPERSM
        iii. Ultra Site – Model #940SM-PR6
        iv. Or approved equal

42. Garbage pickup is completed every Tuesday. Recycling pickup is completed every other Tuesday. See www.kindrednd.com for schedule and observed holiday schedule. Contractor to move garbage and recycling bins to locations readily accessible by Waste Management during the project, if affected by construction. Contractor is to return to each property after pickup. All costs associated to be included in other items of work. Coordinate with Waste Management by phone at 701-277-0714.

43. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report
Geotechnical Report AET Project P-0039597	02/26/2025

Request copies of reports from Project Engineer.

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44. Specification 310516 – Aggregates for Earthwork Type A4 (drainage aggregate) to be Pea Rock:

    a. Stone: Natural and washed.
    b. Quality: Free of clay, shale, and organic matter.
    c. Grading:
        1) Comply with ASTM C136.
        2) Minimum Size: 1/4 inch.
        3) Maximum Size: 5/8 inch.

45. The salvaged gravel base shown for removal in section 40 of these plans may be utilized at locations to receive 12” gravel as a finished surface. Salvage gravel may <u>not</u> be used as a base for new pavement sections.

    The salvaged material must meet or exceed the NDDOT class 5 specification. The contractor has permission to test this material during the bidding timeframe. Any costs associated with testing shall be considered incidental to other bid items. If material is noncompliant with class 5 specifications, contractor shall remove the material from the project.

46. Wage Rate Requirements (Davis Bacon): Two separate wage decisions are included in the bidding documents, “Heavy” and “Highway”.

    A. Heavy is to be used for Work pertaining to underground utility improvements.
    B. Highway is to be used for Work pertaining to roadway improvements and surface restoration.

47. Project Benchmarks:
    A. Coordinate system: North Dakota State Plan – Cass County (International Survey Foot)
    B. Vertical Datum: NAVD 88

Benchmark	Location	Elevation
BM-1	Top nut of hydrant on the north side of Elm Street, +/- 190’ west of the intersection of Elm Street & 9th Ave S	943.57
BM-2	Top nut of hydrant on the north side of Elm Street, +/- 490’ west of the intersection of Elm Street & 9th Ave S	943.70
BM-3	Top nut of Hydrant located on the north side of Apple St., west end.	943.86
BM-4	Top nut of hydrant located on the north side of Elm Street, +/- 100’ east of the intersection of Elm Street & 8th Ave S.	945.86

STORM WATER PERMITTING

The Engineer has estimated that this project will result in a land disturbance or total amount of exposed erodible surface of 25 acres. Therefore, the Contractor must follow the NDPDES permit (Permit No. NDR10) requirements for construction activity with land disturbance over an acre as specified under the NDPDES permit. This requirement includes the preparation of a Storm Water Prevention Pollution Plan (SWPPP). Throughout the duration of the project, the contractor shall be required to document and incorporate any changes to the erosion and sediment controls measures, as shown in section 075, into the SWPPP.

The Contractor shall be responsible for all inspections, documentation, record keeping, maintenance, remedial actions and repairs of storm water protection measures required to maintain compliance with the NDPDES permit for stormwater discharge associated with construction activities by the North Dakota Department of Environmental Quality.

The Contractor shall also keep all inspections and maintenance forms current as required by the NDPDES permit. Inspections shall be done at a minimum of every two weeks and after each rain event measuring 0.25” or greater.

The plan sheet provided in section 075 is being provided to the contractor as guidance for development of their SWPPP. In order for this plan sheet to be fully encompassing all the SWPPP requirements, the Contractor will also be required to add, at a minimum, the following items to it:

- Areas of ground disturbance during each phase/stage of the project.
- Location of all temporary and permanent sediment and erosion controls during each particular phase.
- Location of potential sources of pollution (portable toilets, trash receptacles, etc.)
- Location of soil stockpiles (if different from what is shown or if no location is currently designated)
- Locations of dewatering discharge points, include any locations where chemical treatment of stormwater may be performed
- Fueling locations, vehicle and equipment maintenance areas, designated wash water collection site, storage sites (debris, lubricant, chemical, fuel, construction material, etc.)
- Site maps for any borrow site or excavated fill material disposal sites.

GRADING NOTES

1. Contractor is responsible for verifying all utilities and notifying the appropriate utility company prior to beginning grading.

2. Unless otherwise shown, no proposed slope shall exceed four (4) horizontal to one (1) vertical. All sloped areas must be protected from erosion. (See SWPPP).

3. If stripped materials consisting of vegetation and organic materials are stockpiled on the site, topsoil may be placed to a height of five feet. Silt fence shall be placed around the base of the stockpile.

4. Spot elevations shall take precedence over slopes shown. The contractor shall notify the engineer of spot elevations that do not appear to be consistent with the slopes. Spot elevations and specific profile designs shall be used for setting elevations of curb, gutter, and utilities.

5. The contractor shall adhere to all terms & conditions as outlined in the general permit for storm water discharge associated with construction activities.

UNDERGROUND NOTES:

1. It shall be the contractor's responsibility to locate and protect all existing utilities prior to excavation. A minimum of 48 hour notice shall be given to the appropriate utility to allow for location scheduling. Any damage to existing utilities caused by the contractor's operations shall be repaired at the contractor's expense.

2. Contractor shall notify City a minimum 24 hours prior to flushing hydrants.

3. Unless otherwise noted, any removal, relocation, replacement, or bracing of power poles or any other utilities shall be incidental. Contractor to coordinate any utility relocations.

4. All utility information is for informational purposes only. All utilities may not be shown. Contractor shall call for locates before digging.

5. Not all water main fittings required for a complete installation may be shown on the plans. Provide all required fittings for installation and record drawings of which fittings were eliminated.

6. Provide safe and sanitary movement of wastewater for the duration of the project. Do not allow wastewater to back-up in the mains.

7. Before putting any out-of-service (new installation or existing) water main into service: flush, disinfect, and bacteria test main during city hours and with a city representative. Notify the City at least 24 hours prior to flushing water mains.

8. Modify Specification 330561 Paragraph 2.6 D.2 to: Infi-Shield Gator Wrap external joint sealant required on sanitary sewer manholes deeper than 5’.

9. If sanitary sewer services are installed prior to and below water main, televise sanitary sewer services after installation of water main is complete to verify no damage to sewer services after installation of water main.

10. All costs included in connections to existing water and sewer mains to be included in the price bid for the associated item.

11. Geotechnical investigations did not encounter groundwater at the time of borings. However, shallow groundwater depths fluctuate with seasonal conditions. When underground installations are impacted by groundwater, all costs associated

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in using Coarse Aggregate Type A6 (crushed) in Specification 310516 - Aggregates for Earthwork for pipe bedding and cover in lieu of Coarse Aggregate Type A5 (pipe bedding and cover) to be included in the price bid for “Crushed Rock Pipe Bedding”. Cost includes Coarse Aggregate Type A5 material cost reduction for the substitution. This bid item shall be used at the sole discretion of the Engineer or his representative and shall be paid in addition to the lineal foot price of the pipe being installed. Assumed quantity is total length of water, storm, and sanitary sewer pipes, respectively.

12. Approved equal for water service lines: PEXa Pipe:

    Comply with AWWA C904, ASTM F876, SDR 9, and CSA B137.5.
    Certified to NSF/ANSI Standards 14 and 61 (NSF-pw-g) for potable water applications.
    Certified to PPI TR-3 Category 3306 for long-term hydrostatic strength, chlorine and UV resistance.
    Co-extruded UV Shield made from UV-resistant high-density polyethylene, color Blue.
    Minimum recommended UV exposure time of one (1) year when tested in accordance with ASTM F2657.
    Pressure-rated for continuous use at 200 psi @ 73.4 °F based on a 0.63 design factor.
    Approved by manufacturer for use with manual plastic pipe squeeze-off tools for temporary stoppage of flow.
    Fittings: Type: Molded. Comply with AWWA C904, and be recommended for use by the fitting manufacturer for CTS SDR 9 PEXa pipe.
    Joints: Compression. Compression fittings shall be used for all water services 2 inches in diameter or smaller (copper and PEX). Compression fittings shall be Mueller 110 Compression, Ford Quick Joint, A.Y. McDonald McQuik, or approved equal. Underground fittings and insert-stiffeners used with PEX pipe must comply with the material and performance requirements of ANSI/AWWA C800 and must be recommended for use by the fitting manufacturer for CTS SDR9 PEX pipe per the ANSI/AWWA C904 standard. Insert-stiffeners shall be stainless steel.

13. Approved Storm Sewer Gravity Piping:

    A. Reinforced Concrete Pipe (RCP): Comply with ASTM C76 Latest addition. Sizes 12” – 18” Class V, Sizes 21” – 36” Class III, Sizes 42” and larger Class II
        i. Furnish pipe in four to eight foot lengths. Reinforcement: Mesh. End Joints: Tongue and Groove. Supply weather butyl rubber gaskets in flexible rope form meeting or exceeding the requirements of Federal Specification SS-S-210 A and AASHTO M198.

    B. Polypropylene (PP) Pipe, Material: Pipe material comply with the following for their respective diameters, ASTM F2881, Section 5, AASHTO MP-21-11, Section 6.1, AASHTO M330
        i. Manufacturer: Pipe 12-60 inches in diameter, Smooth interior, Annular exterior corrugations, Meet or exceed ASTM F2881 and AASHTO M330
        ii. Joints: Gasketed integral bell and spigot joint meeting the requirements of AASHTO M330, and ASTM F2881 for respective diameters.
        iii. Watertight according to ASTM D3212, Ensure gasket complies with ASTM F477

    C. Solid Wall Polyvinyl Chloride Pipe: Material Comply with ASTM D1784, Class 12454-B, Class 1254-C, 12364-C Manufacturer: Pipe and Fittings 15-inches in diameter or smaller Comply with ASTM D2024 SDR 35, Interior: Smooth Lined. Joints: Integral bell gasket joint, Watertight seal

    D. Perforated Polyvinyl Chloride Pipe - Material: Comply with ASTM D1784, Manufacturer: Pipe size 4 inch, Comply with ASTM D3034 SDR 35. Perforations: ¼” in diameter, Arranged in rows parallel to the axis of the pipe, Spaced 3” center to center, Rows of Perforations: 4, Perforations per row: 48 (for 12.5’ laying lengths). Joints: Solvent welded

    E. Corrugated Steel Pipe. Manufacturers; True North Steel. Corrugation 2 2/3” X ½” corrugation, Gauge - Smaller than 30” diameter shall be 16 gauge steel. Materials: Comply with ASTM A760, galvanized, Helical lock seam, Tapered Ends: Same material as pipe, machine cut, for joining to pipe end. Coupling Bands: Galvanized steel, 0.052 inches thick by 24 inches wide; connected with two galvanized steel bolts.

14. Supply curb box utility access castings for all new water services. Include all costs to supply and deliver in the price bid for “Water Service Connection”.

15. Notify the Engineer and City at least 48 hours prior to disruption of water service. Contact the City to locate necessary gate valves and to have the City shut appropriate valves after discussion with the engineer. Notifying any house/business in writing 24 hours prior to disruption of their water service. The maximum amount of time a house/business service may be disconnected from service is 4 hours, otherwise provide temporary water service to any affected house/business. No house/business service may be disconnected from service overnight and limit the time any service is out of water. Temporary water to be included in the price bid for the associated item.

16. All sanitary force main shall be subject to pressure and leakage testing in compliance with Section 330505.31-3.2. Testing of force mains shall be incidental to the price bid for the force main. Payment will not be made for force main until such time as it has been successfully installed.

17. ROCK BEDDING AND ENCASEMENT FOR PIPE STUBS

    To aid with future pipe connections, the Contractor shall “upgrade” the pipe embedment and encasement on the last 10’ of each pipe stub to 1 ¼” Trench Foundation Rock. Water and Sewer stubs into single family residential lots are excluded. All costs shall be incidental to the lineal foot price of the pipe being installed.

20. <u>CONNECT PIPE TO EXISTING PIPE</u>

    This bid item is for the connection of new City of Kindred main line (sanitary, water, and/or storm) runs to existing City of Kindred main line.

    The Contractor is not required under this project to make connections to any utilities stubbed out from construction projects on private property, unless otherwise directed. With the assistance of the Engineer and personnel from the adjacent building sites, the Contractor must verify the locations, alignments, and elevations of any new site development utilities to ensure a proper connection can be made by the adjacent site’s contractor.

    All required testing must be performed on all utilities installed as part of this project prior to allowing adjacent site development utility connections to be made.

21. Section 331419 – Valves and Hydrants for Water Utility Service, part 2.2.B.4 in the City of Kindred Standard Specifications for Construction shall be deleted and replaced with the following:

    Nozzle sizes shall be two 2½” and one 4” pumper.

STORM LIFT STATION NOTES

1. Storm Lift Station design shown on Sheets 020-1 is to be referenced as a basis for design and should not be considered complete. Contractor shall work with suppliers to provide a system capable of handling the design parameters listed below.

Storm Lift Station Performance Requirements

Flow Rate (CFS)	4.0
Total Dynamic Head (TDH) (feet)	12.5
Number of Pumps	2 (Lead & Lag)
Variable Frequency Drive (VFD)	One (1) for each pump
Maximum Structure Dia. (feet)	5.0

2. Contractor shall coordinate with pump supplier to verify pump on/off elevations.

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3. “STORM LIFT STATION (LS)” bid item includes furnishing and installing: Structure, pump and associated appurtenances, controls, telemetry devices, pedestal, conduit, and lid/hatches.

4. Contractor to provide an O&M Manual that includes the following information:

   A. Documentation shall be specific to the equipment supplied and collated in functional sections. Each section shall combine to form a complete system manual covering all aspects of equipment supplied. Instructions shall include the following as a minimum:

      i. Functional description of each major component, complete with operating instructions.
      ii. Instructions for operating pumps and pump controls in all modes of operation.
      iii. Calibration and adjustment of equipment for initial start-up, replacement of level control components, or as required for routine maintenance.
      iv. Manufacturer’s warranties.

   B. Literature based on general configurations, requiring the operating personnel to selectively read portions of the manual shall not be acceptable. Operation and maintenance instructions must be specific to equipment supplied in accordance with these specifications.

5. Startup Procedures:

   A. Startup services for the pumps and the control panel shall be performed by personnel that are factory authorized by each manufacturer to perform startup services. Proof of factory authorization shall be provided by the pump and control panel manufacturers and submitted in writing to the Engineer prior to site visits as detailed below.
   B. The Contractor shall comply with manufacturer’s operating and maintenance instructions regarding startup and operation.
   C. The Contractor shall demonstrate the ability of each pump to operate continuously without vibration, jamming, leaking, overheating, and any other specified functions.
   D. The Contractor shall make any final adjustments necessary to place the equipment in satisfactory working order.
   E. The Contractor shall instruct operating personnel on the proper operation and maintenance procedures.
   F. Prior to startup, a factory certified technician in coordination with the electrical systems supplier shall check and test pumps and electrical systems for proper connections and installation to ensure that the systems are installed correctly and ready for owner witnessed startup.
   G. A certified technical representative from the system supplier shall be provided for final testing, calibration, and owner witness startup. Certified technician shall provide startup report summarizing all results.
   H. The Contractor shall coordinate with the Electrical system supplier to test and verify that all software is running properly and that all alarms and status changes are being properly logged.

6. APPROVED VENDORS
   a. Acre Nexus
      201 4th St
      Argyle, MN 56713
      218-280-2735
   b. Carry Pumps
      1360 Prospect Ave
      Caro, MI 48723
      800-492-2779

EARTH WORK

All work described below will be included in the PAVING CONTAINER of the BID FORM

A. Topsoil

Topsoil stripping shall be in accordance with Section 310513 of the City of Kindred Standard Specifications.

Contractor shall maintain drainage throughout the project to prevent water backup and flooding throughout the project limits.

The topsoil from the ROW and front 15’ of the properties shall be stripped and temporarily stockpiled between 15’ and 35’ into the properties. If the Contractor chooses to stockpile at different locations, a written request must be submitted to the Engineer for review prior to stockpiling topsoil. Topsoil piles shall be rounded and stabilized within 7 days of being placed.

An assumed thickness of 4” was used to calculate the quantity of topsoil stripping per the project geotechnical report.

It is estimated that 13,810 CY of topsoil will be stripped.

It is estimated that 2,445 CY of topsoil material will be needed to complete installation of Landscaping Berming shown on Section 80 (6” depth). TOPSOIL – SPREAD (CY) bid item.

6-inches of topsoil shall be re-spread in the boulevards, 10’ PUE, and park land (Lot 36, Block 3), and placed to finished grade estimated at a quantity of 8,365 CY. TOPSOIL – SPREAD (CY) bid item.

A minimum of 4-inches of topsoil shall be re-spread to all other areas where topsoil has been stripped, including the pond side slopes. Spread all remaining topsoild evenly throughout these areas. Estimated quantity of 3,000 CY. TOPSOIL – SPREAD (CY) bid item.

All topsoil handling, stockpile stabilizing, re-spreading, maintaining and restoration of the drainage as described above in Section - A. Topsoil shall be included in the bid items TOPSOIL – STRIP (CY) and TOPSOIL – SPREAD (CY).

B. Clay Backfill

The clay material required to construct this project has been calculated by comparing the original ground surface (less 4” for stripping existing topsoil) and the proposed top of clay ground surface (not including final topsoil grade, gravel backfill, gravel base, or asphalt and/or concrete). This calculation includes all work within the public right-of-ways, 10’ utility easements, pond easement, drainage easements, landscape berming, park land, (Lot 36, Block 3), and access roads/pads for each respective lift station as specified in the plans. The calculated clay quantity of the compared surfaces resulted in 60,975 CYs of cut paid as “Excavation (CY)” and 18,325 CYs of fill paid as “Fill-Haul (CY)”.

The above cut/fill quantities are partially calculated from these large earth operations as specified below. All remaining cut/fill quantities are within the remaining areas listed above.

Proposed Stormwater Pond – 50,350 CY’s of Excavation.
280 CY’s of Fill-Haul

Grading within Lot 36, Block 3 – 4,020 CY’s of Excavation.
1,450 CY’s of Fill-Haul

Landscaping Berming – 11,130 CY’s of Fill-Haul

These calculated quantities do not include a factor for shrinkage, nor does it account for material generated during the construction of underground utilities.

All excess excavation shall be placed north of the pond as shown in Section 75, graded to maximum 4:1 slopes and stabilized as shown in the plans. It is estimated that 42,650 CY of clay material will be stockpiled. Stockpiling of the excess material shall be included in the bid price for “Excavation (CY)”.

FILL-HAUL (CY) includes all work associated with hauling, placing, and compacting clay material to proposed subgrade elevations.

CHANNEL GRADING (LS) includes all work associated with grading the pond emergency overflow channel as shown on 080-5.

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NDDOT NOTES

Reference the following standard NDDOT standard drawings:

Standard No	Standard Title
D255-02	Erosion and Siltation Control - Erosion Control Blanket Installation
D260-01	Erosion and Siltation Controls - Silt Fence
D261-01	Erosion Control - Fiber Roll Placement Details
D704-13	Barricade and Channelizing Device Details
D704-14	Construction Sign Punching and Mounting Details
D714-04	Round Corrugated Steel Pipe Culverts and End Sections
D722-03	Inlet – Mountable Curb (Type B)
D722-1A	Inlet – Catch Basin
D722-05	Manhole Details

105-P01 PAVEMENT SWEEPING: Sweep the roadway adjacent to the construction area at the end of each day. Sweep paved areas that were used by construction traffic before opening these areas to public traffic. Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection. Use a vacuum type sweeper to perform this work.

203-P01 COMPACTION AND DENSITY CONTROL: Compact material as specified in section 203.04 E.2.b, "ND T-99". Moisture content no less than 1 percentage points below optimum and no more than 3 percentage points above optimum. Manipulate embankment material with disking equipment.

203-P02 TOPSOIL: Minimum replacement of 6 inches of topsoil as indicated on the drawings. Topsoil to be reasonably free of vegetation and stones larger than 1 inch in the greatest dimension.

203-P03 DENSITY AND MOISTURE TESTING: Field testing method for density and moisture control to be in accordance with ASTM D6938 - Standard Test Method for in-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

203-P04 COMMON EXCAVATION-SUBCUT: In the event unsuitable soil is encountered in areas within the new pavement sections, the contractor shall excavate and dispose of organic material encountered within 3' of subgrade elevation. Include cost to excavate and dispose of unsuitable material, replace with suitable material, compaction and moisture conditioning in the price bid for "Subcut (CY)". Payment for "Subcut (CY)" to be measured in excavated volume (CY). This is a bid purpose item and shall be used at the sole discretion of the Engineer or his representative.

203-P05 TESTING FREQUENCY: Test embankment per the frequency listed below.

Compaction Curve:
1 for each change in soil

Density and Moisture:
1 test per 350 feet of roadway per 12" lift,
1 test per city block per 12" lift,
or 1 test per 500 cubic yards of fill

203-P06 CONCRETE FIELD TESTING:

Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 75 cu yd or lessof each class of concrete placed.

Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents. Perform one slump test for each set of test cylinders taken. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to Owner.

203-P07 COMPACTION CONTROL: Meet the compaction control requirements below for embankment construction:

Location	Compaction Control
Work in public R.O.W.	Type A
Work outside public R.O.W.	Type B
Topsoil stockpile	Type C

216-P01 WATER: Include all water required for dust control and to obtain proper moisture content and compaction in the associated bid item.

230-P01 SUBGRADE PREPARATION: Scarify and recompact subgrade areas under the roadway section, 7" concrete pavement, and 12" section as indicated on the drawings.

Proof roll all pavement subgrades prior to aggregate placement, along all travel lanes to verify the uniformity of the underlying subgrade throughout the roadway section and to check for the presence of localized soft or weak zones. Perform proof roll under the observation of the engineer with a fully loaded, tandem axle dump truck with a weight of approximately 25 tons, or an approved equal. Proof roll at a vehicle speed of between 1 ½ and 3 miles per hour along the pavement subgrades such that unrolled areas between wheel paths are not wider than 1 foot. Typical yielding should be limited to less than 1 1/2-inches for pavement subgrades, provided the underlying subgrade does not display permanent deformation. Correct areas that display excessive yielding, pumping or rutting during the proof roll. Repeat proof roll procedures until accepted by the Engineer.

Include all costs associated with scarifying, recompacting, and proof rolling the subgrade in the price bid for "Subgrade Preparation".

251-P01 SEEDING AND MULCHING - TYPE III: Seed and mulch disturbed ground as noted on the Drawings.

Use a seed mixture as follows within the Meadow Trails Development*:

Species	Pounds Live Seed/Acre
Kentucky Bluegrass	120
Fine Leaf Perennial Ryegrass	60
Creeping Red Fescue	20
	200

Use a seed mixture as follows for inside the pond easement area. Price bid for "Seeding Class III - Acre – Pond" *:

Species	Pounds Live Seed/Acre
Kentucky Bluegrass	70
Ephraim Crested Wheatgrass	35
Fairway Crested Wheatgrass	35
Perennial Ryegrass	35
Little Bluestem	1.50
Side-Oats Grama	1.20
Nodding Wild Rye	1.00
Slender Wheatgrass	1.00
Kalm's Brome	0.90
Blue Grama	0.75
Porcupine Grass	0.45
Junegrass	0.25
Sand Dropseed	0.20
Grasses Subtotal	182.25
Purple Prairie Clover	0.11
Canada Milk Vetch	0.07
White Prairie Clover	0.06
Early Sunflower	0.06
Prairie Coneflower	0.06
Black-Eyed Susan	0.06
Canada Tick Trefoil	0.05
Heart-Leaved Alexanders	0.05
Prairie Wild Onion	0.03
Stiff Sunflower	0.03
Rough Blazing Star	0.03
Wild Bergamot	0.03
Stiff Goldenrod	0.03
Smooth Aster	0.03
Dotted Blazing Star	0.02
Gray Goldenrod	0.02
Heath Aster	0.01

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	Forbs Subtotal	0.75
Oats		3.00
	Cover Crop Subtotal	3.00
	TOTAL	186

*Dormant Seeding: Include an additional 1/4 lb. per 1,000 sq. ft. of oats.

Apply hydraulic-mulch as noted on the Drawings after the seed is broadcast, drilled, or raked into the topsoil.

Apply straw mulch as noted on the Drawings immediately following seeding at a rate of 2 tons per acre. Punch mulch at least 3 inches into soil. 50% of the straw mulch is to be 10 inches long or more. Mulch is to be oat, barley, rye, or wheat straw, free from weeds & foreign matter.

Use fertilizer mixture of 12-24-12 applied at a rate of 220 pounds per acre. Water after placement in order to provide sufficient moisture for growth. Reseed, at no cost to the Owner, any areas not established within 6 weeks for normal seeding or not established by July 1 for dormant seeding. All cost for labor, equipment, and materials necessary to complete the work included in the price bid for “Seeding Type III”.

Payment for seeding will be based on the table below:

Contract Amount Earned	Progress
50%	Completion of Seeding
100%	Fully Established

251-P02 WATER FOR GRASS ESTABLISHMENT: Immediately begin watering all seeded and mulched areas to provide a minimum of 1.0 inch depth of moisture per week, at intervals of 0.25 inches per watering and no more than 4 times per week. Watering is to be completed until acceptable for Final Stabilization per ND Department of Environmental Quality Construction General Permit NDR11-000.

Water only during early morning hours to avoid excessive evaporation. Water at intervals such that the soil remains moist and not overly soaked. Reduce watering as necessary to account for rainfall during each week and increase watering during hot and/or windy periods. Provide the Engineer weekly reports of watering operations including dates, times and quantity of watering or rainfall amounts to indicate minimum moisture is being obtained. Include all cost for labor and equipment to complete the work in the price bid for “Watering”.

251-P03 MOWING: Mow and maintain completed areas of seeding with established turf. Mow within 48 hours of notification by the Engineer in the field. Remove any clippings that land on locations other than the grassed area. Mow grass when longer than 5” and/or as directed by the Engineer in the field. Refer to Engineer to waive mowing requirement if any unestablished turf areas prior to project completion. All cost for labor, equipment and materials necessary to complete the work included in the price bid for “Seeding Class III”.

251-P04 FINAL STABILIZATION: All disturbed areas to receive permanent stabilization within 14 days after completion of work in the specific area.

302-P01 GRADATION: Independent Testing Firm will collect three samples for each 250 tons of material placed.

302-P02 AGGREGATE BASE: Proof roll all aggregate bases prior to paving along all travel lanes to verify the uniformity of the underlying base throughout the roadway section and to check for the presence of localized soft or weak zones. Perform proof roll under the observation of the Engineer with a fully loaded, tandem axle dump truck with a weight of approximately 25 tons, or an approved equal. Proof roll at a vehicle speed of between 1 ½ and 3 miles per hour along the aggregate base such that unrolled areas between wheel paths are not wider than 1 foot. Typical yielding should be limited to less than ½-inches for aggregate bases, provided the aggregate base does not display permanent deformation. Correct areas that display excessive yielding, pumping or rutting during the proof roll. Repeat poof roll procedures until accepted by the Engineer.

Include all costs associated with proof rolling the aggregate base in the price bid for “Aggregate Base Course CI5”.

401-P01 LATE SEASON PAVING: If the top lift of asphalt is placed after September 30th, apply a fog seal (CSS-1h at 0.10 Gal/SY) to the top lift in accordance with section 401. Apply fog seal following final rolling while the pavement is still hot. If necessary, spread CI 44 blotter material to prevent tracking. Include all costs for the fog seal and blotter material in the price bid for “Asphalt Pavement FAA43 w/ PG58S-34”.

430-P01 ASPHALT TESTING: Independent Testing Firm to provide Quality Assurance (QA) testing in accordance with Section 430.03 of the North Dakota Department of Transportation Field Sampling and Testing Manual at a frequency of one set of tests per 1,000 Tons of mix production and will conduct a minimum of one set of tests per production day and a minimum of two sets of tests per project. Contractor responsibility as shown in section 430.03 B of the North Dakota Department of Transportation Field Sampling and Testing Manual will not apply. Independent Testing Firm must provide NDDOT certified personnel to conduct all required asphalt testing. Testing Results shall be sent to the Engineer within 24 hours of the sample being received.

The following QA tests will be conducted in accordance with the modified table below:

Table 430-8	
Test	Worksheet
ND T 27, “Sieve Analysis of Fine and Coarse Aggregates”	SFN 9987, Aggregate Sample Worksheet
ND T 11, “Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing”	SFN 9987, Aggregate Sample Worksheet
ND T 304, “Fine Aggregate Angularity”	SFN 51701, Uncompacted Void Content of Fine Aggregate
ND T 312, “Preparing and Determining the Density of Hot Mix Asphalt Specimens by Means of Superpave Gyratory Compactor”	SFN 50289, Maximum Density Worksheet
ND T 209, “Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt”	SFN 50289, Maximum Density Worksheet
ND T 166, “Bulk Specific Gravity of Compacted Hot Mix Asphalt Using Saturated Surface-Dry Specimens”	SFN 50289, Maximum Density Worksheet
AASHTO T 308, “Determining the Asphalt Binder Content of Hot mix Asphalt (HMA) by Ignition Method”	None

The contractor shall provide Daily Cut-Off Reports for asphalt cement on each individual lot. The average AC Content shall be calculated at the end of each production day and results recorded on SFN 9988, Mix Bitumen Cut-Off Report. SFN 9988 shall be filled out in prior to submission to the Engineer. These results shall be sent to the Project Engineer the following day.

Independent Testing Firm will determine the asphalt content per AASHTO T 308. One sample will be taken from the first half of the project and a second will be taken from the second half of the project using random numbers to determine when sample shall be taken. The results of the tests will be used as a cross check for the AC Content from the Daily Cut-Off from that Lot. The recorded average asphalt contents of the lots will be totaled and divided by the number of lots within the production day to obtain the average asphalt content of the pavement, to be used in the Asphalt Content Adjustment Factor in Section 430.05C.3 of the Specifications.

The Independent Testing Firm will perform one set of tests per project as indicated in Table 430-10 of the North Dakota Department of Transportation Field Sampling and Testing Manual.

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Table 430-10	
Test	Worksheet
NDDOT 4, “Percentage of Fractured Particles in Coarse Aggregate”	SFN 9987, Aggregate Sample Worksheet
ND T 113, “Lightweight Pieces in Aggregate”	SFN 9987, Aggregate Sample Worksheet
ND T 176, “Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test”	SFN 51730, Sand Equivalent of Fine Aggregate
ND D 4791, “Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate:	SFN 51700, Flat or Elongated Particles in Coarse Aggregate

A sublot is defined as a single lift, one paver width wide, approximately 2 blocks in length or every 700 feet, whichever is less. If a partial sublot is less than 1 blocks or 350 feet, it will be included in the previous sublot. A partial sublot, greater than 1 block or 350 feet in length will be considered a separate sublot.

The Engineer will direct the Independent Testing Firm to obtain two cores from each sublot with the cores being marked out by the Engineer using random numbers for the station and offset. Coring will be conducted by the Independent Testing Firm and will be taken the following day prior to any successive lifts being placed. If the location of the core falls within one foot of the edge of the pavement, the Engineer will adjust the location or generate new random numbers to select a different area. Coring will be observed by both the Engineer and paving Contractor. All costs associated with this work shall be included in the respective bid items.

The Engineer will record the information on SFN 10071, “Compaction Control” and will observe the coring procedure. The Independent Testing Firm will take immediate possession of the cores.

The Independent Testing Firm will determine the density of the cores in accordance with ND T 166, “Bulk Specific Gravity of Compacted Hot Mix Asphalt Using Saturated Surface-Dry Specimens,” and ND T 209, “Maximum Theoretical Density.” The individual sublot densities will be averaged to determine the density of the pavement lot. The core data is recorded on SFN 59132, Density Pay Factor.

As shown in section 430.06 C.4 in the North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, payment will not be made for densities over the adjustment factor of 1.000.

430-P02 PAYMENT ADJUSTMENT FOR ASPHALT THICKNESS: Upon completion of paving operations, two cores shall be taken at full depth in intervals of 700 feet. Cores will be measured to the nearest 1/8”. Deficient cores shall be averaged between conforming cores using the planned thickness for the conforming cores. A deduct shall be applied to the area between the core locations. Contractor can provide additional cores at their expense. Locations will be selected using random numbers. Density cores from the final lift can be used as pavement thickness cores. In this instance, cores would be taken full depth and measured prior to cutting the core for pavement densities.

The deduct shall be the calculated percentage of the ratio between the depth of deficiency and the planned thickness of asphalt multiplied by the square yard area of asphalt between the two cores. The square yard deduction shall be applied to the Bid on both the Base and Wear Courses quantities. Any pavement with more than 1” of deficiency will be removed and replaced to the proper thickness at no additional cost to the owner. There will be no additional payment for pavement thickness exceeding the specified section. See table below for pavement thickness deduct example.

Core #	Core Thickness	Street Name	Pavement Width(ft)	Station/Location			Specified Thickness (in)	Avg Core Thickness (in)	Deviation (in)	Length (ft)	Area (SY)	Pay Factor *(NTE 100%)
1	5.25	Main	24	100	+	25	5					
2	4.75	Main	24	107	+	25	5	5.00	0.00	700	1866.7	100.0%
3	4.5	Main	24	114	+	35	5	4.63	-0.38	710	1893.3	92.5%
4	5.3	Main	24	121	+	25	5	4.90	-0.10	690	1840.0	98.0%
5	5.3	Main	24	128	+	25	5	5.30	0.30	700	1866.7	100.0%

430-P04 ASPHALT PAVEMENT FAA 43: Include the cost for the asphalt cement (PG 58S-34) and tack required for the bituminous pavement in the unit price bid for “Asphalt Pavement FAA 43 w/ PG58S-34.”

704-P01 TRAFFIC CONTROL: All required labor, equipment, and materials required to install, maintain, and remove the traffic devices, as shown on the traffic control plan to be included in the lump sum price bid for “Traffic Control”. Item includes any revisions to the traffic control plan by the Contractor to help facilitate their operations and all required flagging operations to maintain traffic.

704-P02 ACCESS: Maintain access to residents and businesses during the duration of the project. Erect business specific signs with directions as needed. Work in the designated alleyway, and 8th Ave S including underground and roadway improvements will impact adjacent residents. Include coordination, scheduling, and temporary access accordingly. Consider business working hours and resident access times. All items to be included in the cost for the associated Work.

It is anticipated that commercial sitework will be taking place adjacent to this project within Block 4. The Contractor shall coordinate with adjacent builders on the timing of the work specified in Milestone 1 to provide access to these sites.

708-P01 INLET PROTECTION: Install inlet protection in accordance with the plans. Leave all devices installed in place until the turf has been established. Remove inlet protection devices in the fall and reinstall in the spring. Include installing, cleaning, removing sediment, maintaining, and replacing damaged devices in the unit price bid for “Inlet Protection-New Inlet (EA)”.

714-P02 EDGEDRAIN NON-PERMEABLE BASE: Construct edgedrains in accordance with the plans. Include all costs required for installing the perforated PVC pipe, Cl 7 drainage aggregate, and outlets to structures in the price bid for “Edge Drain 4” Dia PVC (LF)”

714-P03 STORM DRAIN: All storm drains (located under paved areas) to be reinforced concrete pipe. Reinforced concrete pipe to be Class III with bell and spigot joints and rubber gaskets per AASHTO M198.

Storm drains located in unpaved areas may be reinforced concrete pipe or polypropylene pipe with bell and spigot joints and elastomeric gaskets per ASTM F477. Install lift hole plugs in accordance with the manufacturer’s instructions.

Use concrete plugs and mortar for RCP pipe 12 inches through 36 inches, and POPIT plugs, as manufactured by POPIT, Inc, on RCP pipe 42 inches in diameter and larger.

714-P04 TELEVISION INSPECTION: All storm drains to be televised per “Section 330130.11- Television Inspection of Sewers”. Televising to be completed on new mains and laterals prior to street construction. Engineer shall review television inspection recording and reports within 7 days of receipt. Deficiencies shall be repaired by the Contractor prior to street construction.

Televising schedule:

1) Pre-construction: televise at least 100’ in all directions of existing manhole/inlet connections and verify overall condition and presence of existing debris or defects.
2) Post-construction: televise all newly installed pipes, manholes, and inlet leads.

714-P05 STORM PIPE: The Engineer will measure pipe from center of structure to center of structure to the nearest foot. At outfalls, measure from the center of the structure to the end of the flared end section.

714-P06 END SECTION: Include flared end section and trash rack in the price bid for “Trash Guard – 48 Dia Pipe” as indicated on the drawings.

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722-P01 INLETS AND MANHOLES: Fill the bottom of each drainage structure with concrete, up to the lowest invert elevation.

722-P02 MANHOLE: Manhole riser sections will not be paid for separately but included in the price bid for “Manhole <size> Reinf Conc (EA)”.

722-P03 INLET CASTINGS: Inlet castings installed in curb and gutter, grass, or outside of pavement are as follows:

Inside concrete pavement:

1) Neenah R-1955-1 (Self Leveling)
   a. East Jordan Iron Works 3025 SELFLEVEL (Self Leveling)
   b. Approved Equal

Grass or outside pavement:

1) Flat grate (Solid):
   a. Neenah R-1733 type C
   b. East Jordan Iron Works 1205 Type M
   c. Approved Equal

2) Convex:
   a. Neenah R-2577 with convex casting grate.
   b. East Jordan Iron Works 1205-M2 with convex casting grate.
   c. Approved Equal

Mountable curb & gutter :

1) Neenah R-3067-C-C
2) East Jordan Iron Works 7030-M2
3) Approved equal

722-P04 INLETS: Provide edge drain knockouts and rubber boots with plugs in all storm structures in curb and gutter.

722-P05 STORM MANHOLES - CHIMNEY SEAL: Storm sewer manholes to include Classic External Chimney Seal by Cretex Specialty Products, I & I Barrier by Strike Products, or Infi-Shield Uni-Band by Sealing Systems Inc.

748-P01 CURB & GUTTER: Construct curb and gutter in accordance with the details in the Specifications. Include all curb and gutter types shown in the plans, high back curb, mountable curb and gutter, and knockdown curb and gutter, in the price bid for “Curb & Gutter – Mountable” or “Curb & Gutter – Standard”.

All curb and gutter to be tied to existing curb and gutter with (3) No.4 x 12” bars.

748-P03 CONTRACTION JOINTS: Sealing of contraction joints in curb and gutter or valley gutter as specified in NDDOT Standard Drawing D-748-1 is not required.

750-P01 DRIVEWAY CONCRETE: Driveways to be reinforced with No.4 bars @ 24" on center both ways, placed mid-depth in the slab. All driveways to be tied to proposed curb and gutter and/or sidewalk with No.4 x 12" dowel bars placed mid depth at 24” on center. All joints are to be sawed. Include all subgrade preparation, aggregate base, concrete, and reinforcing steel in the price bid for “Driveway 8” Thick Reinf Conc (SY)”.

750-P02 SIDEWALKS: Sidewalks to be the 4” thick (unless otherwise noted) as indicated on the plans. Reinforce all sidewalks with a No.4 deformed reinforcing bar placed 24 inches on center both ways. Include an 18 inch minimum lap at splice locations. Use plastic chairs to support the bars at mid-depth of the slab and ensure a clearance of 3 inches to all side forms.

Saw a centerline longitudinal joint on concrete sidewalk greater than 8 feet in width. Saw all longitudinal and transverse contraction joints. Saw joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, remove and replace all damaged panels at the contractor’s expense.

Tie all sidewalks to existing sidewalk with No.4 x 12” smooth dowels placed mid depth at 30” on center with ½” expansion joint material.

Sidewalk ramps to be 6” thick for a minimum of 5’ from curb and to be tied to curb and gutter with No.4 x 12” epoxy coated rebar placed mid depth at 18” on center.

Include all subgrade preparation, aggregate base, concrete, and reinforcing steel in the price bid for “Sidewalk 4” Thick Reinf Conc (SY)”.

750-P03 MULTI-USE PATH: Multi-Use path shall follow city detail 750-02. Include all subgrade preparation, aggregate base, concrete, and reinforcing steel in the price bid for “Multi-Use Path 5 Thick Reinf Conc (SY)”.

750-P04 DETECTABLE WARNING PANELS: All detectable warning panels to be made of ductile iron, no finish as specified in section 885 of the specification.

754-P01 REFLECTIVE SHEETING: All sign reflective sheeting to be Type XI, 3M Series 400 Diamond Grade DG^3 or approved equal.

754-P02 LIGHT STANDARD MOUNTED SIGNS: Signs mounted on light poles to be mounted with stainless steel bandits or equal. This work is incidental to “F&I Diamond Grade Cubed (SF)”.

754-P03 STREET SIGNS: Sheeting quantity for sheets signs is based on 30” sign length.

754-P04 SIGN ASSEMBLY & ANCHOR: All costs associated with furnishing and installing sign posts, anchors, and attachment assemblies to be paid under “Sign Assembly & Anchor (EA)”.

754-P05 STREET SIGNS: All costs for the removal and resetting of existing street signs impacted by the project to be included in the cost for the associated Work. Damaged signs, posts, and/or anchors to be replaced at the Contractor’s expense.

810-P01 CURING MATERIALS: Use the following curing materials as indicated:

Standard Concrete

1) L & M Cure W-2 by L & M Construction Chemicals.
2) W.R. Meadows 1600 White-pigmented Curing Compound.

970-P01 WEED CONTROL: If weeds of any kind are present before seeding, control them with a pre-emergence herbicide applied at the rate as labeled by the manufacturer. If weeds of any kind are present after seed germination and during grass establishment, control them with a herbicide applied at the rate as labeled by the manufacturer.

Notify property owners in writing, a minimum of 5 days prior to herbicide application. When instructed by property owner, do not apply herbicide to their property and adjacent right of ways.

Herbicides will only be applied by qualified applicators, following herbicide labels and manufacturer’s recommendations for application rates. A qualified applicator is an individual who had been trained regarding the product and application method, and meets any federal, state and local laws and regulations. This individual is required to hold a certified applicators license, or be under the direct supervision of a certified applicator. Supervisors of qualified applicators are required to hold a certified applicators license in the State of North Dakota. Applicators must use extreme caution when applying herbicides near water, adjacent to properties with plants that might be damaged, or other landscape areas. Remedy damage resulting from improper use of herbicides. The applicator is responsible for the purchase, storage, record keeping, and disposal of herbicides. All herbicide applications will be reported to the Engineer on a weekly basis.

All costs necessary to complete the work shall be incidental to bid item “Seeding Class III.

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Special Instructions to Bidders

Plan Notes

02700 – Forcemain System

SECTION 1 – GENERAL

1.01 SUBMITTALS/SHOP DRAWINGS

A. Submit Shop Drawings of all pipe, fittings, and valves.
B. Submit Shop Drawings of all manhole, frames, and castings.
C. Shop Drawing shall indicate at a minimum, manufacturer's name and address, sizes or dimensions, and general orientation.

1.02 DELIVERY, HANDLING, AND STORAGE

A. Contractor shall ensure that all materials remain undamaged during delivery, handling, and storage. All methods shall be in accordance with the manufacturer's recommendations and instructions.
B. Any material found to be damaged shall not be incorporated into the Work and shall be replaced by the Contractor at no additional cost to the Owner.

SECTION 2 – PRODUCTS

2.01 PVC FORCEMAIN

A. PVC Forcemain
   1. All PVC Forcemain Piping shall conform to the latest edition of AWWA Standard C900 and shall have a minimum DR of 18.
      a. Piping shall have a minimum pressure rating of 235 psi.
   2. All pipe shall conform to ductile iron pipe sizes (DIPS).
   3. All piping shall contain an integral bell joint with a gasket conforming to the latest edition of ASTM F477.

2.02 DUCTILE IRON FITTINGS

1. Ductile iron fittings shall be mechanical joint Ductile Iron, Class 350, and shall conform to the latest edition of AWWA Standard C153.
2. All ductile iron fitting interiors shall be furnished with a cement-mortar
3. The exterior of fittings shall be coated with a layer of arc-sprayed zinc per ISO 8179. The mass of the zinc applied shall be 200 g/m2 of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The coating system shall conform to ISO 8179-1 "Ductile iron pipes – External zinc-based coating – Part 1: Metallic zinc with finishing layer. Second edition 2004-06-01".
4. All fittings shall be encased in polyethylene .
5. Zinc Anode Caps
   a. Zinc anode caps shall conform to ASTM B418-88 "Galvanic Zinc Anodes".
   b. Zinc anode caps shall be 1" - 8 NC tapped weighing 6oz.
   c. Cap dimensions shall be in accordance to manufactures design; equal to "Trumbull", "Sigma", "Christy", or approved equal.
   d. Two zinc anode caps shall be installed on each ductile iron fitting and gate valve.
6. All nuts and bolts for fittings shall be stainless steel, Cor-Blu, or approved equal.
7. Mechanical joint restraints shall be provided on all joints and shall be PVC Stargrip Series 4000 by Star, One-Lok Series SLCE by Sigma, Tufgrip Series 2000 by Tyler Union, and Megalug Series 2000PV by EBAA Iron.

2.03 JOINT AND BELL RESTRAINTS

A. All forcemain fittings shall be installed with joint and bell restraints.
B. Joint restraints shall be Sigma ONE-LOK for DIP, or approved equal.
C. Joint restraints shall be Sigma PV-LOK for PVC, or approved equal.
D. All hardware shall be Type 304 stainless steel.

2.04 TAPPING SLEEVES

A. Tapping sleeves shall have T304 stainless steel bodies and branches. All welds shall be free from pinholes and other defects and shall be fully chemically passivated at the factory in accordance with ASTM A-380. All bolts shall be T304 stainless steel.
B. Tapping sleeves shall have T304 stainless steel flanged, gasketed joints and shall be hydrostatically tested to 1.5 times the working pressure.
C. Tapping sleeves shall be Power Seal 3460-HP or approved equal. All tapping sleeves shall carry a ten (10) year warranty from date of manufacture.

2.05 TAPPING VALVES

A. Valves shall be manufactured by American Flow Control or approved equal.
B. Valves shall conform to the latest revision of AWWA C515.
C. Valves shall be flanged, of the inside screw, non-rising stem, resilient wedge type with 125 lb. flanged ends faced and drilled per ANSI B16.1 standard for ductile iron flanges.
D. High solids epoxy coating shall be applied on the valve interior and exterior.
E. Valves shall have a minimum working pressure of 250 pounds per square inch (psi).
F. Stem shall be stainless steel.
G. All exterior valve bolts shall be made of stainless steel.
H. Gasket material shall be compatible with the service medium, as recommended by the valve manufacturer.
I. Valve operators shall be provided with a manual gear operator sized so that the maximum rim pull required is not more than eighty pounds.

SECTION 3 – EXECUTION

3.01 PROTECTION AND VERIFICATION

A. Protection
   1. Support, protect, and maintain all existing surface and underground utilities for the duration of the project.
   2. Provide for the protection of vehicular and pedestrian traffic for the duration of the project.
   3. Unless otherwise provided for, the Contractor shall be responsible for any removal and replacement, relocation, or temporary bracing of any utility necessary to complete the work.

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Revisions:

1)	2)	3)

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4. Engineer may order or consider minor modifications to grades or alignments to avoid conflict with other utilities.

B. Verification
   1. All existing utilities shall be located prior to any excavation work.
   2. Contractor shall coordinate with owners of existing utilities prior to any excavation work.

3.02 TESTING OF FORCEMAIN INSTALLATIONS

A. The Contractor shall perform hydrostatic testing of all forcemains. Hydrostatic testing shall conform to the latest edition of AWWA Standard C605 with the following modifications.
B. Forcemains shall be tested to a hydrostatic pressure of not less than 100 psi, for two (2) hours.
C. The Contractor shall provide all equipment and fittings (including bracing and/or shoring) necessary to conduct the test. The pressure gauge dial shall register from 0 – 160 pounds per square inch gauge (psi) with one (1) psi increments and shall be a minimum of four- and one-half inches (4-1/2") in diameter. The gauge shall be installed at or near the lift station or valve vault.
D. A passing hydrostatic pressure test is required before placement of new main into service. The pressure test shall pass if no more than 2.00 psi drop is observed within the two (2) hour test period. If more than 2.00 psi drop is observed the test shall be repeated until a passing test occurs.

END OF SECTION

05550 – Access Hatches

SECTION 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Aluminum Access Hatches to be provided by pump supplier.

1.02 QUALITY CONTROL

A. Use an adequate number of skilled personnel who are thoroughly trained and experienced in the necessary crafts and who are thoroughly familiar with the requirements and methods need for proper execution of the Work detailed in this Specification.
B. Any shop or field welding required shall be performed in strict adherence to the current recommendations of the American Welding Society.

1.03 VERIFICATION AND COORDINATION

A. Where metal fabrications are indicated to fit walls and other construction, Contractor shall verify dimensions by field measurements before fabrication. Contractor shall coordinate the fabrication schedule with construction progress to avoid delays in the Work.
B. Identify type and size of each access hatch in a way not to damage finish prior to delivery.
C. Products shall be delivered only after proper facilities are available in the original packaging and original containers with seals unbroken and label intact until time of use.
D. Handle carefully to prevent damage and store on clean concrete surface or raised platform in safe, dry area (do not dump onto ground).
E. Protect floor access doors during shipment and storage to prevent warping, bending, and corrosion.
F. Where field measurements cannot be made without delaying the Work, Contractor may take the responsibility to establish dimensions and proceed with metal fabrications without field measurements. Contractor shall coordinate the construction to ensure that actual dimensions correspond to established dimensions and allow for trimming and fitting. Contractor shall notify the manufacturer and/or fabricator of all dimensions.
G. Contractor shall coordinate the installation of all anchorages. Furnish drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete. Deliver such items to the project site for installation.

1.04 MATERIAL HANDLING

A. Contractor shall take measures to protect all materials before, during, and after installation.
B. Any damaged materials shall be immediately repaired or replaced to the approval of the Engineer at the Contractor's expense.

SECTION 2 – PRODUCTS

2.01 SCHEDULE

A. Access hatches shall be provided and installed as shown on the construction drawings.

2.02 ACCESS HATCHES

A. All access hatches shall be as manufactured by Halliday Products, Inc., or approved equal.
B. Access hatches shall have a ¼" thick, one-piece, mill finish, extruded aluminum channel frame. A 1-1/2" drainage coupling shall be located in the front left corner of the channel frame. A non-ozone depleting bituminous coating shall be applied to the frame exterior where it will come in contact with concrete.
C. New installations shall incorporate a continuous concrete anchor. For in-place installations, continuous concrete anchor shall be deleted, and Contractor shall fasten access hatch in place as required by the Manufacturer.
D. The door panel shall be ¼" aluminum diamond plate, reinforced to withstand a live load of 300 pounds per square foot (psf).
E. The door shall open to 90 degrees and automatically lock with T-316 stainless steel hold-open arms with an aluminum release handle. For ease of operation, the hold-open arm shall incorporate enclosed stainless steel compression spring assist mechanism. The door shall close flush with the frame and rest on a built-in neoprene gasket to be watertight and to ensure odor containment. The gasket shall limit air infiltration to less than 1 cubic foot per minute (cfm) per

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lineal foot of opening perimeter, with a pressure differential equal to 1 inch of water column.

F. All hinges and fastening hardware shall be T-316 stainless steel.
G. All hatches shall incorporate recessed vinyl grip lifting handles designed to release cover from closing.
H. The hatch shall carry a lifetime guarantee against defects in material and/or workmanship.
I. Provide a locking clasp for a padlock.
J. Secondary safety grate shall be supplied inside each access hatch conforming to the latest OSHA standards. Safety grate shall be aluminum construction rated for 300 psf and shall incorporate a separate locking device from the main door.

SECTION 3 – EXECUTION

3.01 INSPECTION AND PREPARATION

A. Contractor shall examine construction to receive access hatch and verify correctness of dimensions and other supporting or adjoining conditions. Contractor shall examine the areas and conditions under which the items are to be installed and correct any conditions detrimental to the completion of the Work.
B. Contractor shall coordinate placement of items with mechanical piping and other equipment. Contractor shall notify Engineer of any interference prior to fabrication so that modifications may be made, if required.
C. Apply coating to aluminum surfaces that will be in contact with dissimilar metals or concrete when there is none.

3.02 INSTALLATION

A. When fastening to in-place construction, provide anchorage devices and fasteners where necessary for securing hatches to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through bolts, lay bolts, wood screws, and other connectors, as required.
B. Ensure correct types and adequate sizes at proper locations.
C. Perform cutting, drilling, and fitting required for installation. Set work accurately in location, alignment, and elevation and make plumb, level, and true, as measured from established lines and levels. Provide temporary bracing or anchors for items that are to be built into concrete or masonry construction. Fit exposed connections accurately together to form tight hairline joints. Grout as required. Ensure doors, frames, and hardware operate smoothly and are free from warp, twist, and distortion.
D. Attach drain pipe to coupling provided. Drainage shall be routed as indicated on drawings.
E. Any welding shall comply with the American Welding Society Code for procedures of manual shielding metal-arc welding, appearance and quality of weld made, and methods for correcting welding work. Grind exposed joints smooth and touch up shop paint coat. Do not weld the surfaces of exterior units that have been hot-dipped galvanized after fabrication and are intended for bolted or screwed field connection.

3.03 ADJUSTING

A. Adjust doors, frames, and hardware to operate smoothly, freely, and properly without binding.

3.04 CLEANING

A. Thoroughly clean surfaces of grease, oil, or other impurities.
B. Touch up primer painting shall be completed immediately after erection. Contractor shall clean field welds, bolted connection and abraded areas or shop paint and paint exposed areas with the same materials as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

3.05 TOLERANCES

A. The maximum variation from plumb shall be ¼" per story, non-cumulative.
B. The maximum offset from true alignment shall be ¼".

END OF SECTION

11200 – Process Piping

SECTION 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Piping, fittings, and other accessories intended for unburied service.

1.02 SUBMITTALS

A. Submittals shall include product data, details, materials, finishes, and dimensions, as well as methods for connecting, relationship to adjoining work, and other requirements called for the applicable Sections of Division 01.

1.03 DELIVERY, HANDLING AND STORAGE

A. Handle and store all products in accordance with manufacturer's instructions and recommendations.
B. Replace damaged materials at no additional cost to the Owner.

SECTION 2 – PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS

A. Ductile iron pipe shall be flanged pipe and shall conform to AWWA C115 / ANSI A21.15.
B. Ductile iron fittings, unless otherwise shown on the Drawings, shall be short-radius, flanged fittings and shall conform to AWWA C110 / ANSI A21.10.
C. All ductile iron piping interiors shall be furnished with a cement-mortar lining. All cuts and damaged coatings shall be repaired per the coating manufacturer's instructions.

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D. All ductile iron piping and fitting exteriors shall be furnished with a red, Pota-Pox Plus Series N140 coating by Tnemec installed in accordance with manufacturer's recommendations. All cuts and damaged coatings shall be repaired per the coating manufacturer's instructions.
E. Joints shall be flat-faced, flanged, ductile iron with 125 pound threads, suitable for 250 psi working pressure. Threads shall conform to AWWA C115/ANSI A21.15 for pipe and AWWA C110/ANSI A21.10 for fittings.
F. Gaskets shall be full-face and meet the material requirements of AWWA C111/ANSI A21.11.
G. All bolts shall be 304 stainless steel.
H. Couplings shall be Style 38 Dresser couplings with stainless steel bolts in ductile iron pipe sizes.
I. Flanged adaptors shall be Series 2100 MEGAFLANGE Restrained Flange Adapter as produced by EBAA Iron, Inc. or approved equal. Adapter flanges shall be compatible with ANSI/AWWA C110/A21.10 (125#/Class 150 Bolt Pattern).

2.02 STAINLESS STEEL PIPE AND FITTINGS

A. Stainless steel pipe 2" diameter and smaller shall be Type 316 Schedule 5S, rated for a maximum working pressure of 150 psi, and shall conform to ASTM A-312, ASME SA-312.
B. Stainless steel couplings and fittings 2" diameter and smaller shall be Press Technology (Viega, or equal), formed of Type 316 Schedule 5S, including self-contained o-ring seals molded of synthetic FKM rubber. Couplings and fittings shall conform to ASTM A-312, ASME SA-312, with a maximum working pressure rating of 150 psi.
C. Stainless steel pipe larger than 2" diameter shall be Type 316 Schedule 10S and shall conform to ASTM A-312, ASME SA-312.
D. Stainless steel fittings larger than 2" diameter, unless otherwise shown on the Drawings, shall be Type 316 Schedule 10S stainless steel, long-radius, slip-on welded, flat-face flanged fittings conforming to ASTM A-403, ASA B16.5 and ASTM-ASME A-182.
E. Joints shall be slip-on factory welded, flat-face flanged Type 316 stainless steel with 150 pound flanges, suitable for 250 psi working pressure. Flanges shall conform to ASTM A-182, ASA B16.5 specifications for dimensions and ASTM A-372, ASME SA-312 for material specifications.
F. Gaskets shall be full-face and meet the material requirements of AWWA C111/ANSI A21.11.
G. Gaskets shall be of a material compatible with the service medium, as recommended by the gasket manufacturer.
H. All bolts shall be Type 316 stainless steel.
I. No field cuts, welds or field fabrication will be allowed, unless specifically approved by the Engineer. All stainless steel pipe and fittings shall be factory fabricated. Stainless steel piping and fittings shall be factory passivated after fabrication to remove embedded iron, surface rust and weld burn. All surfaces shall be factory cleaned and passivated per ASTM A-380, Sections 6.2.11, 6.3 and 6.4.
J. Stainless steel pipe and fittings shall not be painted.

2.03 STEEL PIPE AND FITTINGS

A. Steel pipe shall be Schedule 40 NPT, conforming to ASTM A-53 and ANSI B1.20.1.
B. Fittings shall be threaded, malleable iron, Class 150, conforming to ASME B16.3.

2.04 MISCELLANEOUS MATERIALS

A. Bonding compound shall be Sikadur Hi-Mod epoxy by Sika Corp.; Euclid Chemical Corp.; Master Builders Company or equal.
B. Non-shrink grout shall be Masterflow 713 by Master Builders Co.; Euco N-S by Euclid Chemical Co.; Five Star Grout by U.S. Grout Corp. or equal.

2.05 PRESSURE GAUGES FOR LIQUID SERVICE

A. Pressure gauges shall be heavy-duty, 4-1/2" white-background dial, Type 316 stainless steel Bourdon tube and a 300 series stainless steel movement, male threaded bottom connection as manufactured by Dwyer, U.S. Gauge, Ashcroft, or equal.
B. Gauges shall be liquid filled with glycerin and shall be provided with a filler/breather cap.
C. Provide union and gauge cock at each gauge connection. Refer to detail shown on the Drawing for other requirements.
D. Pressure range shall be 0 – 100 psi.

SECTION 3 – EXECUTION

3.01 EXAMINATION AND VERIFICATION

A. Prior to installation, Contractor shall verify all measurements to determine pipe laying lengths. All materials shall be placed without forcing.

3.02 INSTALLATION

A. Install all piping and fittings in accordance with the manufacturer's recommendations.
B. Contractor shall rap and blow out all piping, fittings, and accessories prior to and after installation.
C. Contactor shall provide pipe supports as necessary to prevent movement or deflection of piping.
D. Contractor shall remove any temporary coatings from all piping, fittings, and accessories.
E. Contractor shall be responsible for the malfunction of pumps, valves, controls, and other equipment due to the presence of foreign matter remaining in the piping after installation. Contractor shall clean, repair, or replace malfunctioning equipment at no expense to the Owner.
F. Inspect pipe for soundness and replace damaged lengths.
G. Lay pipe to line and grade as shown on Drawings.
1. Any bell joints shall be installed with bell facing the upgrade upstream the flow direction.
2. Elevations of horizontal piping shall not deviate from plan elevations by more than ¼-inch.
3. Vertical piping shall be vertically plumb within a tolerance of ¼-inch as measured over a 10-foot straight edge in any direction.
H. Pipes through concrete wall penetrations shall be centered and under no circumstance within ¾"-inch of the concrete in any location. Pipe penetrations that are not perpendicular to the precast wall (e.g., in valve vaults the pipes are straight through the structure however are not centered on structure and pipe and

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structure wall angle are skewed) shall be oversized to accommodate the non-perpendicular pipe angle.

I. Assemble joints in accordance with manufacturer's recommendations.

3.03 TESTING

A. Contractor shall test the piping with water in accordance with the forcemain testing requirements of the Sanitary Sewer specification after installation. Segments of pipe not practical to pressure test shall be visually inspected to ensure all joints are free of leakage after the piping has been under pressure.

B. Contractor shall valve off, or otherwise isolate any instruments, controls, or other accessories that may be damaged be the test pressure.

C. Contractor shall provide all necessary test pumps, plugs, blind flanges, pipe, and gauges, as well as make the required connections to the piping.

D. Any piping showing signs of leakage shall be refit. Defective piping, fittings, or accessories that become dislocated during testing shall be replaced at no additional expense.

END OF SECTION

11210 – Submersible Sewage Pumps

SECTION 1 – GENERAL

1.01 SPECIFICATION INCLUDES

A. Submersible Sewage Pumps

B. Pump guide system

1.02 RELATED STANDARDS

A. Standards shown below form a part of this specification by reference in the text to basic designation. The latest edition of each Standard shall be used, unless otherwise noted.

1. American National Standards Institute (ANSI)
2. American Water Works Association (AWWA)
3. Hydraulic Institute (HI)
4. American Society for Testing and Materials (ASTM)
5. National Electric Code (NEC)
6. National Electrical Manufacturers Association (NEMA)

1.03 GENERAL REQUIREMENTS

A. The Contractor shall furnish and install the pumps and all accessories in accordance with these specifications and the manufacturers' recommendations.

1. List of 10 other installation of similar size within the State of North Dakota. Include Owner name and contact information for reference verification.

1.04 SUBMITTALS

A. Product Information and Data

1. Pump submittals shall include, at a minimum, the following data:
   a. Major component characteristics
   b. Materials of construction
   c. Major dimensions
   d. Motor data
   e. Pump curves showing duty point, capacity, heat, net positive suction head (NPSH), and hydraulic brake horsepower (BHP)
   f. Full description of components for pump protection
2. Control panel submittals shall include, at a minimum, the following data:
   g. Description of operation
   h. Electrical ladder logic diagrams
   i. Catalog cut sheets of equipment items
3. Hatches
   j. Dimensional drawings
   k. Product cut sheets

B. Operation and Maintenance Manuals

1. All documentation shall be specific to the equipment supplied and collated in functional sections. Each section shall combine to form a complete system manual covering all aspects of the equipment supplied. Instructions shall include, as a minimum, the following:
   a. Functional description of each major component, complete with operating instructions.
   b. Instructions for operating pumps in all modes of operation.
   c. Warranties.
   d. Wet well access hatches for lift stations with submersible pumps.
2. Instructions, descriptions, or data based on general configurations shall not be acceptable. Manuals must be specific to the equipment supplied under these specifications.

C. Start-Up Test Results. See section 3 of this specification for details.

1.05 QUALITY ASSURANCE

A. A technical representative, authorized by the manufacturer, shall provide guidance to the Contractor as to proper handling and installation of the equipment. That same representative shall also inspect the completed installation and correct any defects, deficiencies, or malfunctions.

B. A technical representative, authorized by the manufacturer, shall instruct operating personnel in the proper operation and maintenance of the equipment as described in subsequent sections of this specification and in Division 01.

1.06 WARRANTY

A. The pump manufacturer shall provide a five (5) year, non-prorated warranty on the motor and pump to the Owner against defects in workmanship, materials and/or worn items.

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B. Components that fail to perform as specified by the Engineer, or as represented by the Manufacturer, or as proven defective in service during the warranty period, shall be replaced, repaired, or satisfactorily modified without cost to the Owner. This shall include wear items, including seals, and all travel expenses.

1.07 NON-CLOG GUARANTEE

A. The manufacturer shall guarantee clog-free operation for a period of 24 months from the date of start-up of the pumps by the local authorized factory representative.
B. A certificate shall be provided to the Owner on the day of start up with the local contact information and effective date.
C. Should the impeller clog with typical solids and/or modern trash debris normally found in domestic wastewater during this period, an authorized representative shall, either travel to the jobsite, remove the pump, clear the obstruction, and reinstall the pump at no cost; or reimburse the Owner for reasonable cost to provide this service. A written report shall be provided to the Owner detailing the service call with pictures for verification purposes

SECTION 2 – PRODUCTS

2.01 SCOPE

A. The Contractor shall furnish and install two (2) submersible sewage pumps and related equipment. The pump shall be capable of passing a minimum 3-inch solid sphere.
B. Each pump shall be equipped with a **6.5** hp submersible motor, capable to operate on a 208 V volt, 3 phase, 60 hertz voltage supply.
C. Maximum motor speed is 3600 rpm.
D. Motor shall be non-overloading across the entire pump curve.
E. The system static is 17 feet.
F. Each pump shall be capable of delivering 200 gpm at the 45 feet Total Dynamic Head (TDH). The Net Positive Suction Head required (NPSHr) at this duty point shall not exceed 18 feet.
A. An additional point on the same curve shall be 280 gpm at 28 feet TDH. The Net Positive Suction Head required (NPSHr) at this duty point shall not exceed 24 feet.
B. The manufacturer of the submersible pumps shall be Flygt. No other manufacturers will be considered.

2.02 PUMP SPECIFICATION

G. General
   1. The pump shall be a non-clog, solids-handling submersible pump capable of handling raw, unscreened sewage.
   2. The discharge connection elbow shall be permanently installed in the wet well along with the discharge piping.
   3. The pump shall be automatically connected to the discharge connection elbow when lowered into place, and shall be easily removed for inspection, service, and maintenance. There shall be no need for personnel to enter the wet well. A simple, linear, downward motion shall accomplish sealing of the pumping unit to the discharge connection elbow. No portion of the pump shall bear directly on the floor of the sump. The pump, with all its appurtenances and cable, shall be capable of continuous submergence without loss of watertight integrity to a depth of at least 50 feet.

H. Materials of Construction
   1. The volute shall be of gray cast iron, ASTM A-48, Class 35B.
   2. Impeller and insert ring/wear plate shall be A 532 ALLOY III A (25% Chrome).
   3. The stator housing shall be of gray cast iron, ASTM A-48, Class 35B.
   4. The shaft shall be stainless steel ASTM A479 S43100-T.
   5. Any O-rings and elastomers shall be made of Nitrile (Buna-N) rubber.
   6. All exposed nuts and bolts shall be of ASTM A167, 304 Stainless Steel or A276, Type 316 Ti Stainless Steel.
   7. Upper/motor side shaft seal: per manufacturer's recommendation for wastewater application.
   8. Lower/pump side shaft seal: per manufacturer's recommendation for wastewater application.

I. Watertight Seals
   1. All mating surfaces where watertight sealing is required shall be machined and fitted with nitrile O-rings. Fitting shall be such that sealing is accomplished by metal-to-metal contact between machined surfaces. No secondary sealing compounds, rectangular gaskets requiring specific torque limits, elliptical O-rings, grease or other devices shall be used.
   2. The cable entry water seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall be comprised of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function, separate from the function of the sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign materials gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems are also considered acceptable.
   3. The junction chamber containing the terminal board shall be sealed from the motor by elastomer compression seal (O-rings). Where a sealed junction chamber is not used, the motor chamber shall be fitted with a moisture detection probe. The probe shall be connected to and activate a warning light in the control panel.
   4. Connection between the cable conductors and stator leads shall be made with crimp connectors or threaded compressed type binding post permanently affixed to a terminal board and thus perfectly leak proof.
   5. Each unit shall be provided with an adequately designed cooling system. When thermal radiators (cooling fins) are used, they shall be integral to the stator housing and shall be adequate to provide the cooling required by the motor. When water jackets are used, the water jacket shall encircle the stator housing. Regardless of the cooling system used, the motor must be capable of pumping under full load continuously with the water level only to the top of the volute. Motors with intermittent full

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REGISTERED PROFESSIONAL ENGINEER
JON OLSON
PE-10560
Date: 4/22/25
NORTH DAKOTA

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B. Components that fail to perform as specified by the Engineer, or as represented by the Manufacturer, or as proven defective in service during the warranty period, shall be replaced, repaired, or satisfactorily modified without cost to the Owner. This shall include wear items, including seals, and all travel expenses.

1.07 NON-CLOG GUARANTEE

A. The manufacturer shall guarantee clog-free operation for a period of 24 months from the date of start-up of the pumps by the local authorized factory representative.
B. A certificate shall be provided to the Owner on the day of start up with the local contact information and effective date.
C. Should the impeller clog with typical solids and/or modern trash debris normally found in domestic wastewater during this period, an authorized representative shall, either travel to the jobsite, remove the pump, clear the obstruction, and reinstall the pump at no cost; or reimburse the Owner for reasonable cost to provide this service. A written report shall be provided to the Owner detailing the service call with pictures for verification purposes

SECTION 2 – PRODUCTS

2.01 SCOPE

A. The Contractor shall furnish and install two (2) submersible sewage pumps and related equipment. The pump shall be capable of passing a minimum 3-inch solid sphere.
B. Each pump shall be equipped with a 4.0 hp submersible motor, capable to operate on a 208 V volt, 3 phase, 60 hertz voltage supply.
C. Maximum motor speed is 3600 rpm.
D. Motor shall be non-overloading across the entire pump curve.
E. The system static is 17 feet.
F. Each pump shall be capable of delivering 200 gpm at the 45 feet Total Dynamic Head (TDH). The Net Positive Suction Head required (NPSHr) at this duty point shall not exceed 18 feet.
A. An additional point on the same curve shall be 280 gpm at 28 feet TDH. The Net Positive Suction Head required (NPSHr) at this duty point shall not exceed 24 feet.
B. The manufacturer of the submersible pumps shall be Flygt. No other manufacturers will be considered.

2.02 PUMP SPECIFICATION

G. General
   1. The pump shall be a non-clog, solids-handling submersible pump capable of handling raw, unscreened sewage.
   2. The discharge connection elbow shall be permanently installed in the wet well along with the discharge piping.
   3. The pump shall be automatically connected to the discharge connection elbow when lowered into place, and shall be easily removed for inspection, service, and maintenance. There shall be no need for personnel to enter the wet well. A simple, linear, downward motion shall accomplish sealing of the pumping unit to the discharge connection elbow. No portion of the pump shall bear directly on the floor of the sump. The pump, with all its appurtenances and cable, shall be capable of continuous submergence without loss of watertight integrity to a depth of at least 50 feet.

H. Materials of Construction
   1. The volute shall be of gray cast iron, ASTM A-48, Class 35B.
   2. Impeller and insert ring/wear plate shall be A 532 ALLOY III A (25% Chrome).
   3. The stator housing shall be of gray cast iron, ASTM A-48, Class 35B.
   4. The shaft shall be stainless steel ASTM A479 S43100-T.
   5. Any O-rings and elastomers shall be made of Nitrile (Buna-N) rubber.
   6. All exposed nuts and bolts shall be of ASTM A167, 304 Stainless Steel or A276, Type 316 Ti Stainless Steel.
   7. Upper/motor side shaft seal: per manufacturer's recommendation for wastewater application.
   8. Lower/pump side shaft seal: per manufacturer's recommendation for wastewater application.

I. Watertight Seals
   1. All mating surfaces where watertight sealing is required shall be machined and fitted with nitrile O-rings. Fitting shall be such that sealing is accomplished by metal-to-metal contact between machined surfaces. No secondary sealing compounds, rectangular gaskets requiring specific torque limits, elliptical O-rings, grease or other devices shall be used.
   2. The cable entry water seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall be comprised of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function, separate from the function of the sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the motor interior from foreign materials gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems are also considered acceptable.
   3. The junction chamber containing the terminal board shall be sealed from the motor by elastomer compression seal (O-rings). Where a sealed junction chamber is not used, the motor chamber shall be fitted with a moisture detection probe. The probe shall be connected to and activate a warning light in the control panel.
   4. Connection between the cable conductors and stator leads shall be made with crimp connectors or threaded compressed type binding post permanently affixed to a terminal board and thus perfectly leak proof.
   5. Each unit shall be provided with an adequately designed cooling system. When thermal radiators (cooling fins) are used, they shall be integral to the stator housing and shall be adequate to provide the cooling required by the motor. When water jackets are used, the water jacket shall encircle the stator housing. Regardless of the cooling system used, the motor must be capable of pumping under full load continuously with the water level only to the top of the volute. Motors with intermittent full

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load ratings or motors requiring oil for cooling will not be allowed.

J. Impellers and Insert Ring/Wear Plates
   1. The impeller shall be dynamically balanced, semi-open, and non-clogging.
   2. The impeller shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in normal sewage applications.
   3. The impeller shall be mounted on the motor shaft.
   4. The impeller blades shall be self-cleaning upon each rotation as they pass across a sharp relief groove in the insert ring/wear plate and shall keep the impeller blades clear of debris.
   5. The clearance between the insert ring/wear plate and the impeller leading edges shall be adjustable.

K. Volute
   1. The volute shall be a single piece, non-concentric design devoid of blowholes and other irregularities with smooth fluid passages large enough at all points to pass any size solid which can pass through the impeller.

L. Pump Motor
   1. The motor and the pump shall be produced by the same manufacturer.
   2. The pump motor shall be a NEMA B design, induction type with squirrel cage rotor, shell type design, housed in an air filled, watertight chamber rate for continuous submergence in accordance IP68 protection rating.
   3. The motor shall be inverted duty rated in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing.
   4. The motor shall have at minimum a 1.15 service factor and be suitable for use in Class I, Division 1, Group C & D atmospheres as Explosion Proof.
   5. The motor shall be capable of operating completely submerged, partially submerged, or not submerged.
   6. The motor shall have a voltage tolerance of plus or minus ten percent (10%).
   7. The motor stator shall use at minimum Class H insulation rated for 180 Degrees F. The motors shall be designed, rated, and warranted for continuous operation and capable of at minimum fifteen (15) evenly spaced starts per hour.
   8. The motor shall be rated for continuous operation while pumping liquids up to 104^{o}F.
   9. A performance chart shall be provided showing torque curve, current, power factor, input/output kW, and efficiency. These charts shall also include data on starting and no-load characteristics.

M. Motor Cable
   1. The external motor overload protection, thermal switches and leakage sensors shall be connected to the Control Panel.
   2. The power cable shall be sized according to the NEC and ICEA standards and shall be sufficient length to reach the control panel or junction box without the need for splices.
   3. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber.
   4. The cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
   5. Cable entry shall consist of a dual elastomer sleeves or grommets flanked by stainless steal washers.
   6. The motor cables shall be suspended by appropriately sized, stainless steel, cable strain relief mechanisms.
   7. Cable hanging bracket for pump cables shall be 316 stainless steel with six hooks.

N. Bearings
   1. The pump shaft shall rotate on two bearings.
   2. Motor bearings shall be permanently grease lubricated.
   3. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two-row angular contact bearing to compensate for axial thrust and radial forces.
   4. The minimum L10 bearing life shall be 50,000 hours at any portion of the pump curve.

O. Pump Shaft
   1. The pump shaft and motor shaft shall be an integral, one piece unity adequately designed to meet the maximum torque required at any normal start-up condition or operation point in the system.
   2. The shaft shall have a polished finish with machined shoulders to accommodate bearings, seals, and the impeller.

P. Mechanical Seal
   1. The shaft shall be sealed by a tandem mechanical shaft seal system consisting of two seals, each having an independent spring system. The seals shall require neither maintenance nor adjustment and shall be capable of operating in either clockwise or counterclockwise direction of rotation without damage or loss of seal function.
   2. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside.
   3. The seal system shall not rely upon the pumped media for lubrication. Seal lubricant shall be non-hazardous.
   4. The upper seal unit, located between the lubricant chamber and motor housing, shall contain one stationary industrial duty seal ring, and one rotating industrial duty seal ring. Each seal interface shall be held in contact by its own spring system. r.
   5. The lower seal unit, located between the pump and the lubricant chamber, shall contain one stationary industrial duty seal ring and one rotating industrial duty seal ring.

Q. Discharge Base
   1. For each pump a base elbow assembly shall be provided and shall be permanently mounted at the invert of the wetwell per the manufacturer's recommendations.
   2. The pump(s) shall be automatically and firmly connected to the base elbow assembly, guided by two guide bars extending from the top of the station to the wet well mounted discharge connection per the Guide System section of this specifications.
   3. The sealing of the pumping unit to the base elbow assembly shall be accomplished by a machined metal to metal contact.

R. Guide System
   1. All pump-lifting slide rails shall be made of 316 Schedule 40 stainless steel pipe and shall consist of two rails for each pump.
   2. Slide rails shall be installed and sized per manufacturer's instructions.

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3. The slide rails shall be firmly braced to the wet pit wall with stainless steel support brackets. Maximum spacing between brackets shall be every 10 feet.
4. The pump manufacturer shall supply a stainless steel coupler on applications that require the guide rail to be of multiple sections. Discharge piping shall not support pump guide rail bracing.
5. Pump lifting chain, clevises and shackles shall be made of 316 stainless steel. The chain shall be sized to accommodate twice (200%) the installed pump weight, but shall not be sized smaller than 3/16" stainless steel diameter links. Each pump lifting chain shall be attached to a dedicated stainless steel hanger device.
6. All field-installed bolts, nuts, and washers used inside either the wet well shall be made of 316 stainless steel. All threaded portions of field installed bolts and fasteners shall be coated with stainless steel anti-seize lubricant.
7. All concrete fasteners used for installation of braces brackets or boxes shall be stainless steel wedge type stud anchors. Anchor holes shall be drilled to the manufacturer's recommended depth. All threaded portions of field installed bolts and fasteners shall be coated with stainless steel anti-seize lubricant.
8. Pump base anchor studs shall be per pump manufacturer's recommendations.

S. Removal System
1. One (1) chain grab hook type devise shall be supplied for each lift station (2 total).
2. The devise shall be of steel construction sufficiently sized to lift the pumps at the station.
3. The devise shall consist of three holes in a straight line; the first shall connect to the City's truck hoist, the middle hole shall slide over the pump lift chain and shall have a teardrop shaped slit to receive the chain, and the last hole shall be for a 3/8" guide rope.

2.03 PROTECTION AND MONITORING

A. The stator shall incorporate three thermal switches connected in series to provide over temperature protection of the motor winding. If high temperature occur, the thermal switches shall open and, stop the motor, and activate an alarm.
B. The stator shall also include one PT-100 type temperature probe to provide for monitoring of the stator temperature.
C. The motor shall be equipped with a leakage sensor in the stator chamber. When activated the motor shall stop and activate an alarm.
D. Each pump shall be equipped with a solid-state memory unit to record pump run time, number of starts as well as contain the motor unit performance and manufacturing data and service history.
1. The pump supplier shall furnish all relays and a separate monitoring device for each pump necessary for monitoring motor memory unit, sensors, probes and/or switches. Monitoring devices shall be mounted on or near the control panel and shall have soft-touch operator keys and LCD screen read-out. Remote indication of the pump unit status shall be connected to the PCL.
2. The pump supplier shall coordinate with the control supplier to ensure the pump monitoring equipment is properly mounted within the lift station control panel and to ensure that the status of each pump sensor is properly communicated with main programmable logic controller (PLC) as well as properly shown on the operator interface. General Contractor shall coordinate with Electrical Contractor and System Integrator.

2.04 FACTORY TESTING

E. Each completed and assembled pump/motor unit shall undergo the following factory tests at the manufacturer's plant prior to shipment. The Manufacturer shall provide on demand a copy of his quality control plan for these tests and an ISO 9001 factory certificate:
1. Hydraulic performance test.
2. No-Leak seal integrity test
3. Electrical integrity test

SECTION 3 – EXECUTION

3.01 PREPARATION AND INSTALLATION

A. The pump supplier shall size and supply the hatch opening over the pump and provide desired hatch opening location per the pump manufacturer's recommendations. Hatch opening shall be positioned such that the guiderails are vertically plumb. Rails shall be evenly spaced for catch free pump removal and installation. See Division 05 for Hatch requirements.
B. It is the Contractor's responsibility to layout the process piping in the wet wells through the valve vaults. The dimensions shown on the plan are approximate. All dimensions shall be verified prior to fabrication or installation.
C. Contractor shall install the pumps as shown on the drawings and in accordance with the manufacturer's instructions and recommendations. Pump cables shall be routed behind the guide rails to protect cables from potential damage during pump installation or removal.
D. Contractor shall identify any deficiencies immediately as they are noted and notify the Engineer.
E. The equipment supplier shall inspect the completed installation and correct or supervise the correction of any deficiencies, defects, or malfunctions.

3.02 STARTUP

A. Startup services for the pumps and control system shall be performed by personnel that are factory-authorized by the manufacturer to perform such services. Proof of factory authorization shall be provided by the pump manufacturer and submitted in writing to the Engineer prior to site visits as detailed below.
B. Manufacturer's factory-authorized startup representative will be required to make two trips to the project site with a minimum duration of six (6) hours on site for each trip. One site visit (minimum of 6 hours) will be required prior to owner/engineer witnessed startup for certification of pumps and controls installation and operation. One site visit (minimum of 6 hours) will be required for owner/engineered witnessed startup.
C. The complete lift station shall be 100% operational and tested by the Contractor and subcontractors/suppliers prior to the scheduled owner/engineer witnessed startup. A five hundred dollar ($500) per hour penalty will be assessed to the Contractor for any delays beyond the scheduled start up for uncompleted work by the Contractor, subcontractors, or suppliers. The penalty will be rounded to the nearest half hour and assessed accordingly.

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D. It is the Contractor's responsibility to schedule the Owner/Engineer witnessed startup. The Contractor, electrical contractor, pump supplier, control manufacturer/integrator shall be present to confirm installation, make final set point/float elevation adjustments, and assist with owner training.

E. The Contractor shall comply with the manufacturer's operating and maintenance instructions regarding startup and operation and shall, at minimum conduct the following:
    a. Contractor shall demonstrate the ability of each pump to operate continuously without vibration, jamming, leaking, overheating, and any other specified functions.
    b. Contractor shall calibrate each pump and take gauge reading. Contractor shall provide temporary guage and fittings necessary for gauge reading.
    c. Contractor shall simulate and document various failures for verification of all backup systems and alarm systems.
    d. Contractor shall make any final adjustments including adjustments check valve, set points, and float levels as may be necessary to place the equipment in satisfactory working order. Documentation of initial setpoints established at start up shall be provided to Owner and Engineer.
    e. Contractor shall submit a report of the test results, including motor full load currents and line voltages, both loaded and unloaded.

F. The Contractor shall provide Owner training to include a summary of recommended maintenance requirements and frequencies. In addition, they shall review the PLC operational screens relevant to daily operations. At minimum the training shall included:
    a. Review of each PLC screen including all user inputs and alarms
    b. Review list of contacts for pumps, panel, and generator
    c. Review regular maintenance items and frequencies for entire pumping system including:
        i. Pumps
        ii. Panel
            1. VFD filters
            2. Uninterruptible power supply (UPS)
            3. Fuses
            4. Demonstrate how to restart PLC in the event it locks up
        iii. Generator
        iv. Floats
        v. Grease zerk locations
        vi. Wet well cleaning
        vii. Check valves
        viii. Radar

3.03 ONE YEAR WARRANT CHECK

A. The factory-authorized pump representative shall return one additional time, within one year of owner/engineer witnessed startup to recheck system operation.

END OF SECTION

11290 – Process Valves

SECTION 1 – GENERAL

1.01 SPECIFICATION INCLUDES
- A. Check Valves
- B. Duckbill Elastomeric Check Valves
- C. Gate Valves
- D. Stainless Steel Ball Valves
- E. Combination Air/Vacuum Valves

1.02 SUBMITTALS
- A. Submittals shall include product data, details, materials, finishes, and dimensions, as well as methods for connecting, relationship to adjoining work, and other requirements called for the applicable Sections of Division 01.
- B. Submit certified hydrostatic test data for all valves. Testing shall be per manufacturer's standard procedures or Manufacturers Standardization Society (MSS-SP-61).

1.03 STANDARDS
- A. ANSI B16.1 – Cast Iron Pipe Flanges and Flanged Fittings.
- B. ASTM A126 – Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
- C. ASTM A536 – Ductile Iron Castings
- D. AWWA C508 – Swing Check Valves
- E. AWWA C512 – Combination Air/Vacuum Valves

SECTION 2 – PRODUCTS

2.01 CHECK VALVES
- A. Check valves shall be Series #7200 as manufactured by Val-Matic, RD-Series by Henry Pratt Company, or approved equal.
- B. All valves shall be hydrostatically tested and seat tested to demonstrate zero leakage. When requested, the manufacturer shall provide test certificates, dimensional drawings, parts list drawings, and operation and maintenance manuals.
- C. The exterior and interior of the valve shall be coated with an NSF/ANSI 61 approved fusion bonded epoxy coating suitable for use in both water and wastewater applications.
- D. The valve shall be certified to be Lead-Free in accordance with NSF/ANSI 372.
- E. The check valve shall be of the full flow body type, with a domed access cover and only two moving parts, the flexible disc and the disc accelerator.

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F. The valves shall be designed, manufactured, tested and certified to American Water Works Association Standard ANSI/AWWA C508.
G. Flanges shall conform to ANSI B16.1 Class 125.
H. The valve body shall be full flow equal to nominal pipe diameter at all points through the valve. The 4 in. (100mm) valve shall be capable of passing a 3 in. (75mm) solid. The seating surface shall be on a 45 degree angle to minimize disc travel. A threaded port with stainless steel pipe plug shall be provided on the bottom of the valve to allow for field installation of a backflow actuator or oil cushion device without special tools or removing the valve from the line.
I. The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc for operating in lines containing high solids content. A threaded port with pipe plug shall be provided in the access cover to allow for field installation of a mechanical, disc position indicator.
J. The disc shall be of one-piece construction, precision molded with an integral O-ring type sealing surface and reinforced with alloy steel. The flex portion of the disc contains nylon reinforcement and shall be warranted for twenty-five years. Non-Slam closing characteristics shall be provided through a short 35 degree disc stroke.
K. The valve disc shall be cycle tested 1,000,000 times in accordance with ANSI/AWWA C508 and show no signs of wear, cracking, or distortion to the valve disc or seat and shall remain drop tight at both high and low pressures.
L. The valve body and cover shall be constructed of ASTM A536 Grade 65-45-12 ductile iron.
M. The disc shall be precision molded Buna-N (NBR), ASTM D2000-BG.
N. All fasteners and hardware shall be stainless steel.

2.02 DUCKBILL ELASTOMERIC CHECK VALVES

A. Check Valves are to be all rubber and flow operated check type with an integral flanged end connection. The port area shall contour down to a duckbill, which shall allow passage of flow in one direction while preventing reverse flow. The flange and flexible duckbill sleeve shall be one-piece rubber construction with nylon reinforcement.
B. The linear bill slit dimension to nominal valve size ratio shall be greater than 2.0.
C. The flange drilling shall conform to ANSI B16.1, Class 125. Valves shall be furnished with 316 stainless steel retaining rings for installation. All hardware shall be Type 316 stainless steel.
D. When line pressure inside the check valve exceeds the backpressure outside the valve, the differential pressure shall force the bill of the valve open, allowing flow to discharge. When backpressure exceeds the line pressure, the bill of the valve shall be forced closed preventing backflow. Valves shall be designed to resist at least 25 feet of submergence without leaking.
E. Check valves shall not corrode, warp, or freeze open or shut. The valves shall require no maintenance and shall be capable of sealing watertight around debris.
F. The hydraulic characteristics of the duckbill valves shall be defined by the manufacturer using a “Hydraulic Code Number” or “Catalog Number.”
G. Manufacturer shall have conducted independent hydraulic testing to determine headloss and jet velocity characteristics on a minimum of eight (8) sizes of duckbill valves ranging from 2” through 48”. The testing must include multiple constructions (stiffness) within each size and must have been conducted for free discharge (discharge to atmosphere) and submerged conditions.
H. Manufacturer shall have conducted an independent hydraulic test where multiple valves (at least four) of the same size and construction (stiffness) were tested to validate the submitted headloss characteristics and to prove the repeatability of the manufacturing process to produce the same hydraulic characteristics.
I. Manufacturer to have conducted Finite Element Analysis (FEA) on various duckbill valves to determine deflection, stress, and strain characteristics under various load conditions. Modeling must have been done for flowing conditions (positive differential pressure) and reverse differential pressure.
J. Manufacturer must have conducted in-house backpressure testing on duckbill valves ranging from ¾” to 48”.
K. Company name, plant location, valve size and serial number shall be bonded to outside of the check valve. Valves shall be manufactured in the USA.
L. Check valves shall be Series 35-1 as manufactured by Tideflex Technologies or approved equal.

2.03 GATE VALVES

A. Valves shall conform to the latest revision AWWA C515 and shall be manufactured by American Flow Control, Mueller, or approved equal.
B. Valves shall be of the inside screw, non-rising stem, resilient wedge type with wheel operator.
C. Joints shall be flange per ANSI B16.1, Class 125. Gasket material shall be compatible with the service medium (e.g., sludge, wastewater, biogas), as recommended by the valve manufacturer.
D. High solids epoxy coating shall be applied on the valve interior and exterior.
E. Valves shall be rated for working pressure of two hundred fifty (250) pounds per square inch gauge (psig) cold water working pressure.
F. All exposed nuts, bolts and washers shall be stainless steel.

2.04 STAINLESS STEEL BALL VALVES

G. Stainless Steel Ball Valves
1. Two piece full port 304 stainless steel ball valves shall be installed as indicated on the plans. Valve must have an adjustable stem packing, reinforced PTFE seats, PTFE stem packing, thrust washer and body seal.
2. Pressure rating shall be no less than 1000 psi WOG non-shock, 125 psi WSP.
3. Valve must conform to MSS-SP-110.
4. Valve shall be manufactured by Watts Regulator Company Series S-FBV-1, or approved equal.

SECTION 3 – EXECUTION

3.01 WARRANTY

A. All valves shall be warranted against defects in material and/or workmanship and manufacturer shall guarantee trouble-free operation for a period of two (2) years following substantial completion when the valve is operated as recommended by the manufacturer’s written instructions.

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3.02 INSTALLATION

A. Prior to installation, Contractor shall verify all measurements.
B. Contractor shall install all valves and operators in accordance with the manufacturer's recommendations and as shown on the Drawings.
C. Contractor shall provide a minimum of two (2) hours of training on operation and maintenance of each type of valve or accessory.
D. Contractor shall provide adequate concrete supports for all valves.

END OF SECTION

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THE FOLLOWING PLAN NOTES SUPPLEMENT AND AMEND THE PLAN SHEETS, CITY OF KINDRED SPECIFICATIONS AND NDDOT REFERENCES AS FOLLOWS:

SANITARY SEWER LIFT STATION - ELECTRICAL

A. GENERAL ELECTRICAL REQUIREMENTS:

1. The Contractor shall give all necessary notices, obtain all permits and pay all government and state sales taxes, fees, and other costs, including utility connections or extensions, in connection with his work; file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction; obtain all required certificates of inspection for his work and deliver same to the Engineer before request for acceptance and final payment of the work.

2. All material and equipment for the electrical portion of the system shall bear the approval label, or shall be listed by Underwriter's Laboratories, Incorporated or another Nationally Recognized Testing Laboratory (NRTL) approved by OSHA.

3. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. The engineering drawings and details shall be examined for exact locations of fixtures and equipment. Where they are not definitely located, this information shall be obtained from the Engineer.

4. The Contractor shall submit for approval, detailed shop drawings of all equipment and all material required to complete the project, and no material or equipment may be delivered to the job site or installed until the Contractor has in his possession the approved shop drawings for the particular material or equipment.

5. This Contractor shall give full cooperation to other trades and shall furnish in writing to the Contractor, with copies to the Engineer, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. EXCAVATING, TRENCHING, AND BACKFILLING

1. General Backfill Requirements: For under equipment pads use material that has 100% passing 3/4" sieve and gradation to insure compatibility with no more than 5% passing No. 200 sieve.

2. Installation Procedures:
   a. Strip topsoil from new construction and grading areas and stockpile enough for finish grading in area directed by Engineer. Remove excess from site.
   b. Provide electrical ribbon marker tape above conduits in each trench.
   c. Protect bottom of excavation from frost and do not place structures or conduit on frozen ground.
   d. Compact backfill to 95% maximum density.
   e. Restore surface to original condition.

C. POWER AND INSTRUMENTATION CABLE- LESS THAN 600V

1. General
   a. Conductors
      i. Type P1 - 600V Rated General Purpose Single Conductor Cable
         (a) Construction:
            (1) No. 14 AWG and larger: Stranded Copper, (THHN/THWN-2). Solid Copper is acceptable for lighting and branch circuits.
            (2) Conductors shall contain factory color coded insulation in standard colors to match the voltage level used.
            (3) Sequential footage markers shall be factory installed on the insulation jacket.
            (4) Provide Cable Tray (CT) rated cable where installed in cable tray.
            (5) Aluminum conductors not permitted.
         (b) Feeder Conductors:
            (1) 98 percent conductivity copper, 600 volt insulation.
         (c) Branch Circuit Conductors:
            (1) 98 percent conductivity copper, 600 volt insulation.
            (2) Conductors smaller than No. 14 AWG not permitted except in control panel.
         (d) Project Use Areas:
            (1) General use indoor building circuiting.
            (2) Not allowed for any VFD output circuitry
         (e) Manufacturer:
            (1) Service Wire Co.
            (2) Okonite Co.
            (3) Southwire
            (4) Belden
            (5) Alpha Wire
      ii. Type P2 - 600V Rated Special Purpose Single Conductor Cable
         (a) Construction:
            (1) XHHW insulation which is moisture, heat, and flame retardant cross-linked polyethylene covered with a overall flame retardant, moisture and sunlight resistant PVC jacket.
            (2) Stranded Copper
            (3) Conductors shall contain factory color coded insulation in standard colors to match the voltage level used.
            (4) Sequential footage markers shall be factory installed on the insulation jacket.
            (5) Provide Cable Tray (CT) rated cable where installed in cable tray.
         (6) Aluminum conductors not permitted.
         (b) Project Use Areas:
            (1) 600V and less service entrance conductors and feeders routed underground from the exterior to the interior.
         (c) Manufacturer:
            (1) Service Wire Co.
            (2) Okonite Co.
            (3) Southwire
            (4) Belden
            (5) Alpha Wire
      iii. Type S1 - Signal Cable - Single Pair - Shielded/Twisted
         (a) Construction
            (1) NFPA 70, Type CMP Single pair, twisted, 100% shield coverage, Class B, 16 AWG, stranded (19 x 29) tinned copper conductors (7 strand minimum).
            (2) 600V minimum insulation rating
            (3) 15 mil (nominal), 90 deg C PVC primary insulation with a flame retardant, low smoke PVC, plenum rated.
            (4) Conductors shall be shielded with a .35 x 5 mil (min.), 100% coverage, aluminum or copper mylar tape shield, or equal with an 18 gauge strand copper drain wire.
         (b) Ratings/Listings:
            (1) Flame Resistance: Comply with UL 1685 & NFPA 262
            (2) UL Temperature Rating: 75 deg C Dry, 90 deg C wet
            (3) ICEA S-73-532, S-61-402
         (c) Project Use Areas:
            (1) Any and all control circuiting requiring one shielded twisted pair from a control panel to a field instrument or similar application.
         (d) Manufactures:
            (1) Service Wire Co.
            (2) Okonite Co.
            (3) Southwire
            (4) Belden
            (5) Alpha Wire
      iv. Type S4 - Magnetic Flowmeter Transmitter Cable
         (a) Furnish and install new continuous length of signal cables between magnetic flowmeters and transmitters as indicated on the Drawings. Coordinate scope and supply with magnetic flowmeter systems manufacturer.

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(b) No splices shall be allowed in these types of signal cable installations. New length of signal cables shall be installed in one continuous length from flowmeter to transmitter.

(c) Assumed Cable Manufacturer / Type for Bidding Purposes:

(1) Coil Drive Cable: 14 AWG Belden 8720, Alpha 2442, or manufacturer approved equivalent.

(2) Signal Cable: 20 AWG Belden 8762, Alpha 2411, or manufacturer approved equivalent.

(3) Combination cable is acceptable if it meets individual specifications of signal and coil drive cables and the manufacturer.

(4) Confirm all proposed cables with Manufacturer of equipment before installation. In the majority of the new installations, the manufacturer of the flowmeter equipment (Division 11) furnishes the required specialty flowmeter cables for installation by the Contractor. It is the Contractor's responsibility to confirm and coordinate the exact requirements.

b. Cord Connector Grips

i. Manufacturer: Killark "Z" series or equal

ii. Type: Aluminum cord connector, stainless steel mesh grips, straight or 90° as required in eliminating sharp cable bending radii.

iii. Use: To support all cables/cords from the enclosure at their point of use and/or wherever cables/cords enter or leave the bottom of conduit risers (above grade). Required for all cord connections to motors or enclosures.

c. Bolted, Pressure Type Connectors

i. Manufacturer: Burndy or equal

ii. Use: Connecting conductors to busbars, suitable for copper and aluminum conductors.

iii. Size: As required for conductor.

d. Solderless Connectors

i. Manufacturer: 3M "Scotchlok" or equal

ii. Type: Twiston, spring tension.

iii. Use: With copper conductors only.

2. Execution

a. Installation

i. Draw conductors into conduit only after conduit system is complete. Install in a manner so as not to injure insulation.

ii. Use stranded, copper conductors only. Solid conductors are not acceptable.

iii. Make splices on branch circuit conductors with solderless stapleless, mechanical wire connectors.

iv. Tighten bolted, pressure type connectors to manufacturer's recommendations.

v. No. 10 AWG and smaller shall be stranded copper for all motor and control circuits. Branch circuits for lighting and convenience outlets shall be solid copper.

vi. Make splices and terminations in control panel by using bolted, pressure type connections. Install according to manufacturer's recommendations.

vii. Provide strain relief cord connectors and stainless steel mesh on all cords entering motor termination boxes, junction boxes or conduits.

viii. Use factory color coded conductors with separate color for each phase and neutral conductor by integral pigmentation for all conductor sizes.

ix. Use following codes:

CONDUCTOR SYSTEM VOLTAGE-120/208, 3 PHASE

Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Equip.GND	Green

CONDUCTOR SYSTEM VOLTAGE-277/480, 3 PHASE

Phase A	Brown
Phase B	Orange
Phase C	Yellow
Neutral	Gray
Equip.GND	Green

x. Lace or clip groups of feeder conductors in control panel, pull boxes, and wireways.

xi. Use wiring pulling lubricant for pulling No. 4 AWG and larger wire.

xii. Splice only in accessible junction or outlet boxes.

D. GROUNDING

1. Furnish and install a complete grounding system for all electrical equipment at the facility and for each antenna mast.

2. Bond electrical equipment, control panels, panelboards, etc., to the metallic conduit system through conduit connectors or bonding jumpers, as required, to provide effective electrical continuity.

3. Ground Rods: Copper clad steel, 5/8-inch diameter, 10 feet long.

4. Provide a properly sized copper grounding conductor in all branch circuit and feeder conduits. Size the conductor according to Table 250-122 of the National Electric Code. Connect the grounding connector to grounding points (grounding bars, ground studs, etc.) in all electrical enclosures, electrical equipment, junction boxes and outlet boxes.

E. CONDUIT

1. Furnish and install a complete conduit system for all conductors. Low voltage control conductors and fiber optic cabling shall be installed within a conduit as well.

2. Rigid Metal Conduit:

a. All above grade, exposed conduit shall be Galvanized Rigid Metal Conduit.

b. Transitions from below grade or exiting from concrete shall utilize PVC Coated Rigid Metal Conduit and/or fittings as manufactured by Rob Roy Industries.

c. The PVC coated galvanized rigid conduit must comply with either the ETL Verified to the Intertek ETL SEMKO High Temperature H2O PVC Coating Adhesion Test Procedure for 200 hours, or comply with the UL Adhesion Test comprised of a 240 hour oven test at 212 def F and a 600 hour salt fog test per ASTM B117-94. The PVC coated galvanized rigid conduit must bear the ETL Verified PVC-001 label to signify compliance to the adhesion performance standard or bear the UL label to signify compliance to the UL Adhesion test.

3. Schedule 80 PVC Conduit:

a. All below grade or cast in place conduit shall be Schedule 80 PVC.

4. Installation Procedures

a. Size conduits as shown on the Drawings or as required by National Electrical Code (whichever is larger) for number and size of conductors installed.

b. Minimum trade size for home runs is 3/4-inch.

c. Cut conduit joints square and ream smooth. Make bends with an approved bender, or utilize standard conduit elbows.

d. Contractor shall core drill walls or coordinate reinforced, boxed out areas as required to install all conduit in a neat and workmanlike manner. Contractor shall also patch all wall penetrations and prepare surface for final paint by General Contractor. Coordinate routing of larger conduits (2" and larger) with other trades and with Field Engineer prior to installation.

e. Cast in Place Conduit Installation Requirements:

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Contractor is encouraged to install conduits below grade and under concrete slabs to feed equipment wherever possible. Do not route conduits through wet wells unless required to feed equipment located within the same. Use PVC coated RMC sweeps whenever penetrating concrete floors. Schedule 40 PVC conduits shall be allowed under concrete slabs. All transitions from below grade PVC back to rigid steel before exposing above grade shall be made via below grade transition couplings and PVC coated rigid steel elbows/sweeps.

f. Utilize stainless steel unistrut and clamps for all applications. All anchors shall be lead, expansion type with stainless steel hardware. Route all conduits parallel to and at right angles to building lines. Conduits mounted directly in contact with wall surface will not be acceptable.
g. Tie wires to hang or strap conduits not permitted.
h. Locate conduits poured in concrete entirely in the middle 1/3 of the concrete member.
i. Conduit systems must be installed complete before conductors are pulled in.
j. Povide watertight installation where conduits pass through roof, wall or waterproofing membranes.
k. Cap ends of conduit to prevent entrance of foreign materials during construction.

5. Flexible Metal Conduit: (PVC Jacketed)
   a. Use rain tight flexible metal conduit with rain tight fittings for final connections to motors (non hazardous areas), and fixed control devices (non hazardous areas) that do not come with factory installed cords. Minimum trade size is 3/4-inch.
   b. Use Class I, Division 1, Group D flexible metal conduit with listed fittings for final connections to motors (hazardous areas), and fixed control devices (hazardous areas). Minimum trade size is 3/4-inch.
   c. Provide sufficient length conduit to avoid transmission of vibration and noise, 12 inch minimum.

6. Rigid Non Metallic Conduit (Heavy Wall)
   a. Use rigid non metallic, Schedule 80 PVC conduit for all direct burial unless specifically noted otherwise on Drawings. Cut conduit square with round edges removed from ends to protect the wires from abrasion. Make connections by solvent welding. Install fittings in accordance with the manufacturer's recommended procedures. All elbows 2" and larger shall be rigid metal conduit. Provide expansion joints wherever there are long runs of conduit and a wide temperature differential exists. Use PVC coated RMC sweeps whenever penetrating through concrete floors.
   b. Provide grounding conductor in all control circuit, branch circuit and feeder conduits.

7. Rigid Metal Conduit (Heavy Wall)
   a. Use rigid metal conduit throughout entire project unless other types of conduit are specifically called for on Drawings or elsewhere in these specifications. Intent is to use RMC conduit everywhere except below finished grade. Fittings type to be threaded. Use threaded hubs (equal to Myers hub) where rigid conduit is connected to a thread less box or enclosure for indoor and outdoor applications. Lock nut with O-Ring is not an acceptable alternative.
   b. Paint conduit that is in contact with earth with heavy coat of bitumastic paint. Paint couplings after assembly. Where bitumastic paint is applied the paint must be thoroughly dried before backfilling.

F. <u>WIRING DEVICES</u>

1. Products
   a. Duplex Receptacles: (Surface mounted within generator enclosure)
      i. Manufacturer: Equal to Hubbell #5352 Series, Slater #5352 Series, Bryant #5352, Leviton #5352, or Eagle #5352.
      ii. Type: Specification grade
      iii. Gray in color (normal applications); yellow for UPS applications.
      iv. 20 ampere
      v. 120 volt
      vi. 3 wire grounding
   b. Ground Fault Receptacle
      i. Manufacturer: P & S #1591, Eagle 646-2
      ii. Type: Specification Grade
      iii. 20 ampere capacity
      iv. Gray
      v. 120 volt with 5 milliampere trip
   c. Toggle Switches
      i. Manufacturer: Equal to P & S #20AC, Eagle 2221
      ii. Type: Specification grade
      iii. Gray in color
      iv. 20 ampere
      v. 120/277 volt
      vi. Quiet operation, keyed switch where indicated, single pole unless noted otherwise.
   d. Device Plates
      i. Provide device wall plates per Specification Section 16230 and as required by NEC.
   e. Weatherproof Covers
      i. Provide weatherproof device covers on all exterior devices, wet area devices, chemical room devices and in other areas indicated on the Drawings and as required by the NEC.
      ii. Unless indicated otherwise, covers shall be of the "weather protected while in use" variety and shall consist of the following:
      iii. Exterior Applications: cast aluminum, lockable, sized as required for the application. Manufacturer/Model: Intermatic / Type #WP10, or equal.
      iv. Wet, Chemical or Caustic Interior Areas: clear plastic or PVC construction, Carlon, or equal.
   f. Class I, Division I, Group D or Class I, Division 2, Group D Areas
      i. All devices shown on Drawings to be located in areas that are noted as Class I, Division 1, Group D or Class I, Division 2, Group D shall be UL listed for use in the respective classified areas. Specifically all electrical within Odor and Corrosion Control room and within Wet Wells shall be Explosion proof, and wired per NEC 500 and NEC 501.
      ii. Toggle Switches:
         (1) Manufacturer: Appleton EDS Series or equal by Crouse Hinds or Killark.
         (2) Type: 20 amp, 120/277 VAC, self sealing, or provide listed seal offs
         (3) Class I, Div. 2, Groups B,C,D

G. <u>AUTOMATIC TRANSFER SWITCH:</u>

1. Summary
   a. The automatic transfer switch (ATS) shall be furnished by the Systems Integrator as specified and be installed and prewired within the Lift Station Control Panel prior to shipment.
   b. Furnish and install complete factory assembled power transfer equipment with digital (microprocessor based) electronic controls designed for fully automatic operation (but shall allow operation in the manual mode) and including: surge voltage isolation, voltage sensors on all phases of both sources, power switch mechanism with manual operation provisions, electrical interlocking, and mechanically held contacts for both sources. Transfer switches and controller shall be the products of the same manufacturer. Specifically, the transfer switch shall be rated as follows:
      ii. Ampacity:100 A
      iii. Voltage: 120/208 VAC
      iv. kAIC Rating: 65,000 Amps
      v. # of Poles: 3
      vi. Neutral Type: Switched
      vii. Transition Type: Delayed
      viii. Enclosure Type: Open Style Mounted within Control Panel
      ix. Lug Type: Mechanical

2. Description of System
   a. An electrically operated switch is automatically operated during a utility power service interruption and the system can also be manually controlled by the System Operatorto

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transfer the load from the utility source to the fixed engine generator source.

b. Automatic Transfer Switch Requirements
   i. All Electrical requirements as listed in Section 1.1.
   ii. The transfer switch shall be electrically operated and mechanically held. The switch shall be mechanically and electrically interlocked to ensure two power sources can not be paralleled or paralleled out of phase.
   iii. All transfer switch sizes shall use only one type of main operator for ease of maintenance and commonality of parts.
   iv. The switch shall be positively locked and unaffected by momentary outages, so that contact pressure is maintained at a constant value and contact temperature rise is minimized for maximum reliability and operating life.
   v. All main contacts shall be silver composition. Switches rated 600 amperes and above shall have segmented, blow on construction for high withstand and close on capability and be protected by separate arcing contacts.
   vi. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. Switches rated 600 amps and higher shall have front removable and replaceable contacts. All stationary and moveable contacts shall be replaceable without removing power conductors and/or bus bars.
   c. Designs utilizing components of molded case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources, are not acceptable.
   d. Where neutral conductors are to be solidly connected as shown on the plans, a neutral conductor plate with fully rated AL-CU pressure connectors shall be provided.

3. Microprocessor Controller
   a. The controller's sensing and logic shall be provided by a single built in microprocessor for maximum reliability, minimum maintenance, and the ability to communicate serially through an optional serial communication module or Ethernet connectivity module.
   b. A single controller shall provide twelve selectable nominal voltages for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to ± 1% of nominal voltage. Frequency sensing shall be accurate to ± 0.2%. The panel shall be capable of operating over a temperature range of -20 to +60 degrees C and storage from -55 to +85 degrees C.
   c. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance. Sensing and control logic shall be provided on multilayer printed circuit boards. Interfacing relays shall be industrial grade plug in type with dust covers. The panel shall be enclosed with a protective cover and be mounted separately from the transfer switch unit for safety and ease of maintenance. The protective cover shall include a built in pocket for storage of the operator's manuals.
   d. RS485 Communication Port shall be enabled for common alarm output contact.
   e. All customer connections shall be wired to a common terminal block to simplify field wiring connections.
   f. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:

EN 55011:1991 Emission standard - Group 1, Class A
EN 50082-2:1995 Generic immunity standard, from which:
EN 61000-4-2:1995 Electrostatic discharge (ESD) immunity
ENV 50140:1993 Radiated Electro-Magnetic field immunity
EN 61000-4-4:1995 Electrical fast transient (EFT) immunity
EN 61000-4-5:1995 Surge transient immunity
EN 61000-4-6:1996 Conducted Radio-Frequency field immunity
IEEE472 (ANSI C37.90A) Ring Wave Test.

4. Enclosure
   a. Provide Enclosure rating as stated in Section 1.01
   b. All standard door mounted switches and indicating lights described in Section 3 shall be integrated into a flush mounted, interface membrane or equivalent in the interior enclosure door for easy viewing & replacement. The panel shall include a manual locking feature to allow the user to lockout all membrane mounted control switches to prevent unauthorized tampering.
   c. Accessories
   d. Auxiliary Contacts: Provide two (2) auxiliary contacts that indicate "Normal" position of the switch and two (2) auxiliary contacts that indicate "Emergency" position of the switch. The contacts shall be available for the Owner's use.

5. Controller Display and Keypad
   a. A four line, 20 character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the communications interface port. The following parameters shall only be adjustable via DIP switches on the controller:
   b. Nominal line voltage and frequency
   c. Single or three phase sensing
   d. Operating parameter protection
   e. Transfer operating mode configuration
   f. All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

6. Voltage, Frequency and Phase Rotation Sensing
   a. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as % of nominal unless otherwise specified):

Parameter	Sources	Dropout/Trip	Pickup/Reset
Undervoltage	N&E, 3 Phase	70% to 98%	85% to 100%
Overvoltage	N&E, 3 Phase	102% to 115%	2% below trip
Underfreq.	N&E	85% to 98%	90% to 100%
Overfreq.	N&E	102% to 110%	2% below trip
Volt. Unbalance	N&E	5% to 20%	1% below trip

   b. Repetitive accuracy of all settings shall be within ± 0.5% over an operating temperature range of -20 deg C to 60 deg C.
   c. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via the communications interface port.
   d. The controller shall be capable (when activated by the keypad or the communications interface port) of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).
   e. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases, frequency, and phase rotation.

7. Time Delays
   a. An adjustable time delay of 0 to 6 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes by providing an external 24 VDC power supply.
   b. A provision shall be available to connect an external 24 VDC power supply to allow the LCD and the door mounted control indicators to remain functional when both power sources are dead.
   c. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
   d. Two time delay modes (which are independently adjustable) shall be provided on re-transfer to normal. One time delay shall be for actual normal power failures and the other for the test mode function. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
   e. A time delay shall be provided on shut down of engine

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generator for cool down, adjustable from 0 to 60 minutes.

f. All time delays shall be adjustable in 1 second increments, except the extended parallel time, which shall be adjustable in .01 second increments.

g. All time delays shall be adjustable by using the LCD display and keypad or with a remote device connected to the communications interface port.

8. Additional Features

a. Membrane type switches shall be provided for the test and retransfer to normal functions. The test position will simulate a normal source failure. The retransfer to normal position shall bypass the time delays on retransfer to normal.

b. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.

c. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of two contacts, closed when the ATS is connected to the normal source and two contacts closed, when the ATS is connected to the emergency source.

d. LED indicating lights shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).

e. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and emergency sources, as determined by the voltage sensing trip and reset settings for each source.

f. A membrane switch shall be provided on the membrane panel to test all indicating lights when pressed.

g. The following features shall be built into the controller, but capable of being activated through keypad programming or the communications interface port only when required by the user:

h. Provide the ability to select “commit/no commit to transfer” to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.

i. Terminals shall be provided for a remote contact which opens to signal the ATS to transfer to emergency and for remote contacts which open to inhibit transfer to emergency and/or retransfer to normal. Both of these inhibit signals can be activated through the keypad or the communications interface port.

j. An Inphase monitor shall be provided in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The inphase monitor shall be specifically designed for and be the product of the ATS manufacturer.

k. The controller shall be capable of accepting a normally open contact that will allow the transfer switch to function in a non automatic mode when a non automatic version of the user interface membrane is furnished.

l. Engine Exerciser - The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to seven different exercise routines. For each routine, the user shall be able to:
   i. Enable or disable the routine.
   ii. Enable or disable transfer of the load during routine.
   iii. Set the following:
      (a) start time
      (b) time of day
      (c) day of week
      (d) week of month (1st, 2nd, 3rd, 4th, alternate or every)
   iv. Set the duration of the run.

m. At the end of the specified duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. A 10 year life battery that supplies power to the real time clock in the event of a power loss will maintain all time and date information.

n. Key Locking Feature - The control switches on the interface membrane shall be capable of being locked via password protected screens on the controller LCD display to prevent unauthorized tampering. A red LED indicator shall be illuminated on the interface membrane when the membrane controls are locked.

o. System Status - The controller LCD display shall include a “System Status” screen which shall be readily accessible from any point in the menu by depressing the “ESC” key a maximum of two times. This screen shall display a clear description of the active operating sequence and switch position. For example:
   i. Normal Failed
   ii. Load on Normal
   iii. TD Normal to Emerg
   iv. 2min15s

p. Controllers that require multiple screens to determine system status or display “coded” system status messages, which must be explained by references in the operator’s manual, are not permissible.

q. Self Diagnostics - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input signals to the controller which may be preventing load transfer commands from being completed.

r. Data Logging - The controller shall have the ability to log data and to maintain the last 300 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory:

s. Event Logging
   i. Data and time and reason for transfer normal to emergency.
   ii. Data and time and reason for transfer emergency to normal.
   iii. Data and time and reason for engine start.
   iv. Data and time engine stopped.
   v. Data and time emergency source available.
   vi. Data and time emergency source not available.

t. Statistical Data
   i. Total number of transfers.
   ii. Total number of transfers due to source failure.
   iii. Total number of days controller is energized.
   iv. Total number of hours both normal and emergency sources are available.

u. Acceptable Manufacturers
   i. ASCO 300 Series
   ii. Approved Equal

v. Withstand and Closing Ratings
   i. The ATS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the plans.
   ii. The ATS shall be UL listed in accordance with UL 1008 and be labeled in accordance with that standard's 1½ and 3 cycle, long time ratings. ATS’s which are not tested and labeled with 1½ and 3 cycle (any breaker) ratings and have series, or specific breaker ratings only, are not acceptable.

w. Tests and Certification
   i. The complete ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.
   ii. Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards, and withstand and closing ratings. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.
   iii. The ATS manufacturer shall be certified to ISO 9001 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001.

x. Service Representation
   i. The ATS manufacturer shall maintain a national service organization of company employed

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personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.

ii. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.

y. General Execution
   i. Securely mount transfer switch where indicated.
   ii. Provide all power and control connections.
   iii. Test for proper operation and adjust time delay relays to manufacturer's and/or the serving Utilities recommendations.

z. Training
   i. Training on the project ATS's shall be for four (4) hours, minimum on site. The Owner may record the training sessions.
   ii. All training sessions shall be at times that are prior approved with the Owner. Two week prior approval of all training sessions is required.

aa. Supplies and Spare Parts
   i. At Final Completion, Contractor shall furnish the following expendable items:
      (a) Twenty (20) percent spare fuses and lamps of each type furnished under this Section, but not less than six (6) of each type.

H. ENGINE GENERATOR SET

1. Summary
   a. Furnish and install a complete engine generator set, fully assembled in a weatherproof packaged skin tight enclosure as indicated on the Drawings, tested and ready to operate including fuel supply, exhaust system with additional vertical discharge plenum and cooling equipment. This unit shall be installed at the Sanitary Lift Station site in Kindred, ND. Both engine and generator shall be the responsibility of a single manufacturer and be of a standard model or series in regular production at the manufacturers place of business. No unit assembled by anyone other than a recognized manufacturer will be accepted.

2. Description of System
   a. After failure of normal power, the engine starts automatically, attains rated voltage and frequency and in conjunction with the automatic transfer switch, transfers power to the load in less than 10 seconds from the time of the power failure signal. Upon restoration of utility power, automatically retransfer load back to normal power, and then shuts down the generator (after programmable cool down period) and returns to readiness for another operating cycle.
   b. Generator shall meet most current and adopted emissions standards in project location.

3. Quality Assurance
   a. Built to NEMA Standards, U.L. 2200 listed (enclosure and generator set), and in accordance with NFPA 70. The engine generator set will be a packaged unit and will be the product of a single manufacturer, with all warranties for the complete unit provided by the factory.

4. Requirements of Regulatory Agencies
   a. The electric generating system consists of a prime mover, generator, governor, coupling and all controls.
   b. Conform to N.E.C. and applicable inspection authorities

5. Warranty
   a. The manufacturer's and dealer's warranty shall in no event be for a period of less than five (5) years or 1000 operating hours from date of initial startup of the system.
      i. The warranty shall include repair parts, labor, reasonable travel expense necessary for repairs at the jobsite, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during the course of the repair.
      ii. Running hours shall not be a limiting factor for the system warranty by either the manufacturer or servicing dealer.
      iii. Submittals received without written warranties as specified will be rejected in their entirety.
      iv. Provide extended warranty and maintenance program details for warranties and maintenance services offered by the supplier along with associated pricing for the Owner's review. Include details and pricing for years 6 thru 10.

6. Shop Drawings and Product Data
   a. Submit in accordance with General Requirements
   b. Clearly indicate all connection points, installed weight, dimensions, clearance requirements, accessory description, fuel requirements, air quantity requirements, electrical rating, power factor, short circuit available amperes (R.M.S. value), voltage regulator type, temperature rise of the alternator, ambient air rating of the radiator, recommended pipe sizes and routing.
   c. Submit enclosure drawings indicating dimensions, exhaust and intake louvers, access doors, fuel tank and service stub up locations, load center, lighting, switches, receptacles, heating devices and all associated electrical circuiting.
   d. Submit exterior enclosure paint color sample chart for the Owner/Architect/Engineer to select the exterior paint color for the enclosure from.

7. Delivery, Storage and Handling
   a. Generator Supplier shall deliver generator set (FOB) to the job site, unload, and set in place on concrete pad. Concrete pad furnished by General Contractor, coordinated with Electrical Contractor and Generator Supplier.

8. Operation and Maintenance Data
   a. Include complete data in accordance with General Requirements for maintaining and operating the unit including fuel requirements, lubrication requirements, exercising, tests to be performed, spare parts list, troubleshooting guide, description of operation. Include a minimum of four hours for Owner instruction.

9. Motor Starting Capability
   a. The engine generator set shall have sufficient starting kVA to withstand the loading sequence listed below. The staggered start sequencing indicated will be provided from plant PLC SCADA system programming, separate from generator system. During motor starting, instantaneous voltage dip shall not exceed the limits indicated per individual step. The Contractor shall submit calculations with the shop drawing submittal that confirm the unit's conformance with this requirement.
   b. Starting Sequence:
      i. Step 1 Loads (15% Maximum Allowable Voltage and Frequency Dip per Step)
         (a) 5 kW Miscellaneous Load @ 0.9 pf
         (b) (1) **6.5 HP** NEMA motor – **Pump #1 (P-1) or Pump #2 (P-2) – motor starter. (Pumps are redundant and will not run simultaneously)**
   c. The supplier shall provide a larger unit than the specified size if required to meet the motor starting requirements. The use of field "boost", or similar means, is not acceptable. Please note that some of the projected step loads are for future pump additions/revisions and that all loads listed may not be present at initial startup of the facility.

10. Supplier Experience and Capabilities
   a. It is the intent of this Specification that all equipment specified in this Section shall be furnished by a single source supplier who shall assume system responsibility along with the Contractor.
   b. The engine generator set supplier shall be normally engaged in the assembly, installation, repair, and maintenance of generation equipment. The supplier shall

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REGISTERED PROFESSIONAL ENGINEER
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PE–28009
DATE 4/22/2025
NORTH DAKOTA

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ii. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.

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   a. The manufacturer's and dealer's warranty shall in no event be for a period of less than five (5) years or 1000 operating hours from date of initial startup of the system.
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   d. Submit exterior enclosure paint color sample chart for the Owner/Architect/Engineer to select the exterior paint color for the enclosure from.

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   a. The engine generator set shall have sufficient starting kVA to withstand the loading sequence listed below. The staggered start sequencing indicated will be provided from plant PLC SCADA system programming, separate from generator system. During motor starting, instantaneous voltage dip shall not exceed the limits indicated per individual step. The Contractor shall submit calculations with the shop drawing submittal that confirm the unit's conformance with this requirement.
   b. Starting Sequence:
      i. Step 1 Loads (15% Maximum Allowable Voltage and Frequency Dip per Step)
         (a) 5 kW Miscellaneous Load @ 0.9 pf
         (b) (1) 4 HP NEMA motor – Pump #1 (P-1) – variable frequency drive.
      ii. Step 2 Loads (15% Maximum Allowable Voltage and Frequency Dip per Step)
         (a) (1) 4 HP NEMA motor – Pump #2 (P-2) – variable frequency drive.
   c. The supplier shall provide a larger unit than the specified size if required to meet the motor starting requirements. The use of field "boost", or similar means, is not acceptable. Please note that some of the projected step loads are for future pump additions/revisions and that all loads listed may not be present at initial startup of the facility.

10. Supplier Experience and Capabilities
   a. It is the intent of this Specification that all equipment specified in this Section shall be furnished by a single source supplier who shall assume system responsibility along with the Contractor.
   b. The engine generator set supplier shall be normally engaged in the assembly, installation, repair, and maintenance of generation equipment. The supplier shall

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have provided at least three (3) systems of equal or greater complexity/size in the last year.

c. The supplier shall be a factory authorized sales, parts, and service representative of the engine manufacturing company. The supplier shall demonstrate that it has spare parts in stock to service and maintain the engine and to repair the unit in 48 hours or less for most failures.
d. The supplier shall have a service depot within a 75 mile radius of the project site.
e. The supplier shall modify or supplement the supplier's "standard products" to meet these specifications. Standard products of a particular supplier that do not meet the functional and technical requirements of the specification are not acceptable.
f. The supplier shall have qualified, trained service personnel on staff who are capable of maintaining and repairing the equipment. The supplier shall be capable of offering an extended service contract after completion of the warranty period, including 24 hour, 7 day per week emergency services.
g. Upon request, the supplier shall submit:
    i. List of three (3) projects referenced above, including customer's name, contact person, and phone number.
    ii. Description of service contract capability, including number of personnel, their location, and types of service contract available.

11. Site Requirements
    a. Noise
        i. The power generation system for this application shall meet the following noise requirements.
            (a) Noise from the generation equipment shall not exceed 75dB over background noise 25 feet from the enclosure in any direction with the unit operating at full standby load conditions.
            (b) Noise from the generation equipment shall meet all City and State requirements.

12. Manufacturer
    a. The generator set shall be as manufactured by:
        i. Caterpillar
        ii. Cummins N Power
    b. The engine, generator and all major items must be manufactured in the United States.

13. Ratings
    a. 120/208 VAC output voltage at 60Hz, 3 phase.
    b. 35 Standby eKW @ .8PF, 40 kVA
        i. The standby (maximum or intermittent) rating of the unit shall not exceed the fuel rate limit of the engine based on two (2) hours of standby operation out of any 24 hour period at rated speed and rated voltage. The ambient temperature is 120 degrees F. This is measured two (2) feet from the end bearing housing of the generator in line with the shaft. The standby rating shall be no greater than 10% above the prime rating. The rating must be adjusted for the elevation of the installation if necessary. The engine fuel rate must not be adjusted higher than the fuel rate recommended by the engine manufacturer.
        ii. The submittal shall include the efficiency of a similar production generator and the fuel utilization of a similar production engine after 4 hours of continuous operation at prime rated load. This data shall be based on use of municipal natural gas.
        iii. These ratings must be substantiated by the manufacturer's certified standard published curves. Special ratings or maximum ratings are not acceptable.
        iv. Ambient temperature: -35Degrees F. minimum to +120 Degrees F. maximum

14. Engine
    a. Type
        i. Natural Gas, Dual Fuel LP Capable
        ii. Liquid cooled
        iii. Four cycle
        iv. 1800RPM
        v. Full pressure lubrication system; engine driven lube oil pump
        vi. Lube oil filters
        vii. Spring loaded by pass valve
        viii. Lube oil cooler
        ix. Lube oil
        x. Flexible fuel lines (labeled for fuel flow direction)
        xi. Engine mounted fuel oil filter
        xii. Engine driven water pump
        xiii. Dry type air cleaners with service indicators

15. Governor
    a. Isochronous governor (electronic type with magnetic pickup) +/- ¼% speed regulation no load to full load

16. Generator (In Accordance with NEMA Standard MG1-22.40)
    a. Type
        i. 12-lead alternator configured to 120/208 volt, 3 phase, wye connected
        ii. Drip proof
        iii. Permanent magnet excitation
        iv. Brushless exciter with static regulator containing no moving parts
        v. Field circuit with inherent protection against excessive field currents or voltages
        vi. Heavy duty single ball bearing type
        vii. Direct coupled to the engine through a semi-flexible coupling
        viii. NEMA Class “H” insulation
        ix. NEMA Class “F” temperature rise (115o C maximum)
        x. Rating and voltage stamped on a permanent nameplate
        xi. Voltage regulator (solid state), +/- 2% from no load to full load
        xii. Voltage level adjustment, +/- 5%

17. Output Circuit Breaker
    a. The generator output circuit breaker shall be mounted on the generator.
    b. Circuit breaker to be molded case, thermal magnetic, **100amperes**, 3 pole, **208** VAC, 22 KAIC minimum.

18. Instrumentation and Controls
    a. The generator control panel shall be generator mounted and shall provide all operating, monitoring and control functions for the generator set.
    b. The control panel shall include the following functional requirements:
        i. LCD display with text based alarm/event descriptions.
        ii. Automatic and manual start/stop controls
        iii. Local run/off/auto control
        iv. Emergency stop pushbutton
        v. Lamp test
        vi. Voltage control
        vii. Speed control
        viii. Password protected system programming
            i. Spare relay - programmable
    c. Controls shall provide the following keypad accessible digital readouts for the engine and generator:
        i. Engine
            (a) Engine oil pressure
            (b) Engine oil temperature
            (c) Engine coolant temperature
            (d) Engine RPM
            (e) Battery Volts
            (f) Hours Run
        ii. Generator
            (a) AC Voltage (L-L & L-N)
            (b) AC Amps
            (c) Generator AC Frequency
            (d) KW (total & per phase)
            (e) KVA (total & per phase)
            (f) KVAR (total & per phase)
            (g) Power Factor (Average and per phase)
            (h) KWh (total)
            (i) KVARh (total)
            (j) % of rated KW (total)
        iii. Voltage Regulation
            (a) DC voltage
            (b) DC current

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NORTH DAKOTA

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have provided at least three (3) systems of equal or greater complexity/size in the last year.

c. The supplier shall be a factory authorized sales, parts, and service representative of the engine manufacturing company. The supplier shall demonstrate that it has spare parts in stock to service and maintain the engine and to repair the unit in 48 hours or less for most failures.

d. The supplier shall have a service depot within a 75 mile radius of the project site.

e. The supplier shall modify or supplement the supplier's "standard products" to meet these specifications. Standard products of a particular supplier that do not meet the functional and technical requirements of the specification are not acceptable.

f. The supplier shall have qualified, trained service personnel on staff who are capable of maintaining and repairing the equipment. The supplier shall be capable of offering an extended service contract after completion of the warranty period, including 24 hour, 7 day per week emergency services.

g. Upon request, the supplier shall submit:
   i. List of three (3) projects referenced above, including customer's name, contact person, and phone number.
   ii. Description of service contract capability, including number of personnel, their location, and types of service contract available.

11. Site Requirements
    a. Noise
       i. The power generation system for this application shall meet the following noise requirements.
          (a) Noise from the generation equipment shall not exceed 75dB over background noise 25 feet from the enclosure in any direction with the unit operating at full standby load conditions.
          (b) Noise from the generation equipment shall meet all City and State requirements.

12. Manufacturer
    a. The generator set shall be as manufactured by:
       i. Caterpillar
       ii. Cummins N Power
    b. The engine, generator and all major items must be manufactured in the United States.

13. Ratings
    a. 120/208 VAC output voltage at 60Hz, 3 phase.
    b. 35 Standby eKW @ .8PF, 40 kVA
       i. The standby (maximum or intermittent) rating of the unit shall not exceed the fuel rate limit of the engine based on two (2) hours of standby operation out of any 24 hour period at rated speed and rated voltage. The ambient temperature is 120 degrees F. This is measured two (2) feet from the end bearing housing of the generator in line with the shaft. The standby rating shall be no greater than 10% above the prime rating. The rating must be adjusted for the elevation of the installation if necessary. The engine fuel rate must not be adjusted higher than the fuel rate recommended by the engine manufacturer.
       ii. The submittal shall include the efficiency of a similar production generator and the fuel utilization of a similar production engine after 4 hours of continuous operation at prime rated load. This data shall be based on use of municipal natural gas.
       iii. These ratings must be substantiated by the manufacturer's certified standard published curves. Special ratings or maximum ratings are not acceptable.
       iv. Ambient temperature: -35Degrees F. minimum to +120 Degrees F. maximum

14. Engine
    a. Type
       i. Natural Gas, Dual Fuel LP Capable
       ii. Liquid cooled
       iii. Four cycle
       iv. 1800RPM
       v. Full pressure lubrication system; engine driven lube oil pump
       vi. Lube oil filters
       vii. Spring loaded by pass valve
       viii. Lube oil cooler
       ix. Lube oil
       x. Flexible fuel lines (labeled for fuel flow direction)
       xi. Engine mounted fuel oil filter
       xii. Engine driven water pump
       xiii. Dry type air cleaners with service indicators

15. Governor
    a. Isochronous governor (electronic type with magnetic pickup) +/- ¼% speed regulation no load to full load

16. Generator (In Accordance with NEMA Standard MG1-22.40)
    a. Type
       i. 12-lead alternator configured to 120/208 volt, 3 phase, wye connected
       ii. Drip proof
       iii. Permanent magnet excitation
       iv. Brushless exciter with static regulator containing no moving parts
       v. Field circuit with inherent protection against excessive field currents or voltages
       vi. Heavy duty single ball bearing type
       vii. Direct coupled to the engine through a semi-flexible coupling
       viii. NEMA Class “H” insulation
       ix. NEMA Class “F” temperature rise (115o C maximum)
       x. Rating and voltage stamped on a permanent nameplate
       xi. Voltage regulator (solid state), +/- 2% from no load to full load
       xii. Voltage level adjustment, +/- 5%

17. Output Circuit Breaker
    a. The generator output circuit breaker shall be mounted on the generator.
    b. Circuit breaker to be molded case, thermal magnetic, 200amperes, 3 pole, 480 VAC, 22 KAIC minimum.

18. Instrumentation and Controls
    a. The generator control panel shall be generator mounted and shall provide all operating, monitoring and control functions for the generator set.
    b. The control panel shall include the following functional requirements:
       i. LCD display with text based alarm/event descriptions.
       ii. Automatic and manual start/stop controls
       iii. Local run/off/auto control
       iv. Emergency stop pushbutton
       v. Lamp test
       vi. Voltage control
       vii. Speed control
       viii. Password protected system programming
          i. Spare relay - programmable
    c. Controls shall provide the following keypad accessible digital readouts for the engine and generator:
       i. Engine
          (a) Engine oil pressure
          (b) Engine oil temperature
          (c) Engine coolant temperature
          (d) Engine RPM
          (e) Battery Volts
          (f) Hours Run
       ii. Generator
          (a) AC Voltage (L-L & L-N)
          (b) AC Amps
          (c) Generator AC Frequency
          (d) KW (total & per phase)
          (e) KVA (total & per phase)
          (f) KVAR (total & per phase)
          (g) Power Factor (Average and per phase)
          (h) KWh (total)
          (i) KVARh (total)
          (j) % of rated KW (total)
       iii. Voltage Regulation
          (a) DC voltage
          (b) DC current

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d. Alarms and Shutdowns (Engine)
   i. Low oil pressure alarm/shutdown
   ii. High coolant temperature alarm/shutdown
   iii. Loss of coolant shutdown
   iv. Overspeed shutdown
   v. Overcrank shutdown
   vi. Low coolant level alarm
   vii. Low fuel level alarm
   viii. Emergency stop shutdown
   ix. Low coolant temperature alarm
   x. Low battery voltage alarm
   xi. High battery voltage alarm
   xii. Control switch not in auto position alarm
   xiii. Battery charger failure alarm

e. Alarms and Shutdowns (Generator)
   i. Generator over voltage
   ii. Generator under voltage
   iii. Generator over frequency
   iv. Generator under frequency
   v. Generator reverse power
   vi. Generator overcurrent
   vii. Generator breaker open

f. Alarms and Shutdowns (Voltage Regulation)
   i. Loss of excitation alarm/shutdown
   ii. Instantaneous over excitation alarm/shutdown
   iii. Time over excitation alarm/shutdown
   iv. Rotating diode failure
      (a) Loss of sensing
      (b) Loss of PMG

g. Auxiliary
   i. Provide (6) programmable discrete inputs.
   ii. Provide (6) programmable discrete dry contact outputs (rated at 120VAC):
      (a) One discrete output to indicate “Generator Running” to SCADA Panel.
      (b) One discrete output to indicate “General Common Shutdown Alarm” to SCADA Panel.
      (c) One discrete output to indicate “General Pre-Shutdown Alarm” to SCADA Panel.
      (d) One discrete output to indicate “Generator Low Fuel Pre-Alarm” to SCADA Panel.
      (e) One discrete output to indicate “Generator Fuel Basin Rupture Detected” to SCADA Panel.
   iii. Provide (1) programmable analog output (4-20mAdc):
      (a) One analog (4-20mAdc) output to indicate continuous fuel level to SCADA Panel.

h. Enclosure
   i. Mounted integral to generator
   ii. Vandal door
   iii. Panel lights

i. Indicating Lights
   i. Low oil pressure
   ii. High coolant temperature
   iii. Overspeed
   iv. Overcrank
   v. Emergency stop
   vi. Fault shutdown
   vii. Fault alarms
   viii. 3 Spare lights/4 spare inputs
   ix. Customer programmable (shutdown or alarm) to spare alarm or fault LEDs

j. Pre-alarm and LED indicators for
   i. Approach high coolant temperature
   ii. Low coolant temperature (70 degrees F.)
   iii. Approach low oil pressure
   iv. Low DC volts
   v. System not in “automatic”
   vi. Low fuel level
   vii. Fuel in rupture basin

k. Starting System
   i. 12 volt DC starter motor(s)
   ii. Automatic reset circuit breaker to protect against butt engagement of starter motor(s)
   iii. Batteries, low maintenance, lead acid type (low antimony) adequately sized per the ambient temperatures stated
   iv. Corrosion resistant or coated steel battery rack
   v. Required battery cables

19. Battery Charger
   a. Automatic mode switching type. 10 ampere minimum rating.
   b. Rating of at least 1/20 of the ampere hour rating of the batteries
   c. Factory preset ranges – not field adjustable
      i. DC output +/- 0.2% with AC input variation of +/- 10%
      ii. DC voltmeter
      iii. DC ammeter
      iv. NFPA malfunction alarm contacts

20. Jacket Water Heater(s)
   a. 208 volts, single phase, sized to manufacturer’s recommendations
   b. Adjustable thermostatic control
   c. Isolation valves
   d. Sized to maintain engine jacket water temperature at a minimum of 120 degrees F. when the engine is idle.

21. Cooling System, Engine Mounted (Ambient Rating of -35 F to +120F)
   a. Vertical core with built in expansion tank
   b. Flanged for direct duct connection
   c. Engine driven blower fan
   d. OSHA type fan and belt guards
   e. Low coolant level contactor
   f. 50% ethylene glycol inhibited antifreeze liquid with additives

22. Exhaust System
   a. Critical type silencer
   b. Silencer configuration shall be for horizontal installation with a bottom inlet.
   c. Stainless steel bellows type flexible exhaust (minimum length of 18")
   d. Corrosion resistant rain cap.
   e. Vertical discharge plenum to exhaust discharge air out the top of the enclosure. Vertical discharge is required due to the masonry screen wall being constructed around the generator system as indicated on the Drawings.

23. Accessories
   a. Glycol coolant mixture (50%)
   b. OSHA approved ear protectors (four sets).

24. Lube Oil System
   a. Forced-feed lubrication system with piston cooling, lube oil circulating pump with safety valve, lube oil filter, lube oil heat exchanger, filler neck, dip stick, and closed crankcase breather system.

25. All Steel Skin Tight Style Weather Proof Enclosure
   a. A weatherproof enclosure, designed to allow for full load operation of the engine generator system and all of its accessories, sized for the exact unit being installed shall be supplied. The enclosure shall be sized and equipped with adequate doors for ease of inspection and servicing.
   b. The enclosure shall be insulated with a high density foam insulation.
   c. The air openings shall include motor-operated intake and gravity exhaust dampers with fixed louvers on the intake and a 90 degree hood on the outlet sized to allow proper air flow (restriction not to exceed .5" H2O).
   d. Doors shall be installed to allow sufficient access to the generator set and all accessories. All doors shall be hinged and equipped with positive locking assemblies and handles and be weather stripped.
   e. The enclosure shall arrive at the jobsite completely wired (battery charger, jacket water heater, louver motors, etc. all wired to the factory installed panelboard) and ready for final installation.
   f. Provide an enclosure mounted panelboard as shown on the Drawings.

26. Installation
   a. Coordinate with Electrical Contractor to provide concrete base as shown on drawings, and per manufacturer’s

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recommendations.

b. Coordinate with Electrical Contractor the unloading and proper placement of the engine generator set and enclosure on concrete pad.
c. Provide all power feeders per Drawings and connect.
d. Tighten all lugs and bolts to manufacturer's recommendations.
e. Neatly dress conductors and bundle with nylon cable ties.
f. Provide all required control connections between generator control panel and ATS, between generator control panel and SCADA, and between SCADA and ATS.
g. Provide grounding at generator set location with ground rods and copper conductors as specified and as indicated on the Drawings.
h. Use touch-up paint, as recommended by the manufacturer, to repair scratches and other surface defects.
i. Coordinate with local natural gas utility to supply new natural gas service to serve unit. Final connection to unit shall be completed by a licensed mechanical contractor under the direction of the Division 26 contractor.

27. Checkout & Startup

Electrical Contractor shall contract with manufacturer of the electric generating plant and associated items covered herein to provide factory trained technicians to checkout the completed installation and to perform an initial startup inspection to include:

a. Ensuring the engine starts (both hot and cold) within the specified time.
b. Verification of engine parameters are within manufacturer's recommendations.
c. Set no load frequency and voltage.
d. Single step load pickup per NFPA 110-1985, Paragraph 5-13.2.
e. Transient and voltage dip responses and steady state voltage and speed (frequency) checks.
f. Test all automatic shutdowns of the engine generator.
g. Furnish to engineer, a report indicating that installation has been tested by a manufacturer's representative and is installed and operating properly.

28. Training

a. Training for the Owner's personnel shall be for not less than four (4) hours on the power generation system. The eight hours shall consist of (1) session on site.
b. All training sessions shall be at times that are pre-approved with the Owner (7 days minimum advance notice).
c. Training shall be in accordance Division 1 requirements.

29. Wiring

a. Wiring of the engine generator set, switchgear, lighting, outlets, panelboard, transformer, ventilation and other components of the integrated generation system shall meet all State requirements. These requirements shall include, but are not limited to:
   i. Applying and paying for an electrical construction permit.
   ii. Installation by an electrician appropriately licensed by the State of North Dakota.
   iii. Inspection and approval by an electrical inspector recognized by the State of North Dakota.

30. Testing

a. Testing During Fabrication
   i. Engine Generator. The power generation system manufacturer or fabricator shall have:
      (a) Witnessed test on the power generation system to insure satisfactory operation. The manufacturer shall have a four hour, minimum, period during a normal working day set aside for the test. The power generation system shall be arranged as called for in the contract documents. Any necessary corrections shall be made and the system shall not be placed in service until approved by the Engineer in writing. Two copies of the factory test report shall be furnished to the Engineer prior to this testing during fabrication.
      (b) The power generation system is to be tested as a complete unit including engine, generator, excitation system, together with all subsystems in the enclosure and cooled by the engine radiator and fan.
      (c) The manufacturer shall provide all equipment for the test including, but not limited to, ammeters, voltmeters, fuel supply, frequency meter, and load banks capable of 10% maximum steps to 100% of the engine generator's continuous standby rating; and the addition, in one step, of 50% of the continuous standby rating from a 50% continuous standby rating load point, or removal of the total load from the generator in one step. The load banks shall be connected through the switchgear. The load bank shall be connected to the power generation system's load terminals. The test program will cover the following items:
         (1) Extended operation at 100% of continuous-standby rating, 2 (two) hours minimum.
         (2) 50% load to 100% load test with a +10%-15% from nominal voltage dip, maximum, permitted with frequency fluctuation measurement. Code F motor inrush characteristics. Frequency deviation shall not exceed 3 cycles for 2 seconds.
         (3) Engine protective device evaluation.
         (4) No load operation with an addition of load to 50% of rating with 15% voltage dip maximum and frequency fluctuation not exceeding 2 cycles for 2 seconds.
         (5) Various 10% load additions and subtractions.
         (6) Evaluation of subsystems, noise, component installation and interconnections, workmanship, quality, engine and generator performance, etc.
         (7) The test program will not start without all required equipment, including but not limited to load banks and voltmeter as required.
   iv. The Engineer and representatives of the Owner - reserve the right to witness the test. Certified test reports shall be furnished after testing is complete and before the unit is shipped. The manufacturer or supplier shall notify the Owner and the Engineer in writing not less than 10 days prior to the test. The manufacturer shall pay travel and per diem costs for up to three (3) witnesses if the testing occurs outside of the Kindred, ND metropolitan area.

b. Site Testing
   i. After installation, but prior to acceptance for substantial completion, the system shall undergo formal on-site testing. This testing will be witnessed by representatives of the Owner and the Engineer. The testing will include, but not be limited to:
      (a) Demonstration of system features and functions.
      (b) Machine performance.
      (c) Use project loads and a separate resistive load bank equal to the generator capacity for testing purposes. Unit shall be tested as follows:
   ii. With generator in a "cold start" condition and load at normal operating level, initiate a normal power failure by opening all switches or breakers supplying normal power to the facility. Test load shall be that load which is served by the generator.
   iii. Observe and record the time delay on start.
   iv. Observe and record the cranking time until the generator starts and runs.
   v. Observe and record the time required to come up to operating speed.

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vi. Record voltage and frequency overshoot.
vii. Observe and record time required to achieve steady-state condition with all switches transferred to the emergency/standby position.
viii. Record voltage, frequency and amperes.
ix. Continue load test with building load for one (1) hour, observing and recording load changes and the resultant effect on voltage and frequency.
x. Return normal power to the facility, record the time delay on retransfer to normal (set to 15 minutes minimum) and the time delay on the generator cool down period and shutdown.
xi. Confirm and record the time delays associated with the delayed transition feature of the switch and the “pre-transfer” signal to SCADA.
xii. Perform a crank cycle test. Utilize any method recommended by the manufacturer to prevent the generator from running. Put the control switch into the “run” position to cause the generator to crank. Observe the complete crank/rest cycle specified and record.

c. After successful testing with the available facility loads, provide a resistive load bank to test the generator at full specified load at 1.0 power factor. Run generator at full load for two (2) hours. Record generator oil pressure, water temperature, and battery charge rate, voltage, frequency, and amperes at 5 minute intervals for the first 15 minutes and at fifteen minute intervals thereafter.
d. Test all safeties specified, as recommended by the manufacturer.
e. Perform testing at time pre approved by Owner and Engineer (7 day prior notice, minimum).
f. Submit record of site test procedures and results and include a copy in the O&M manuals.
g. If the system is not accepted or does not perform satisfactorily, repairs shall be completed and the unit retested until it performs to the Owner, Utility, and the Engineer's satisfaction.

31. Fuel
a. Provide all fuel for initial start up, training and testing procedures.

32. Supplies and Spare Parts
a. Provide all supplies, spare parts, expendable items and related equipment for initial startup, training and testing procedures.
b. At project completion, provide Owner with a complete set of spare parts for the equipment, including, but not limited to lamps, fuses, etc. Provide twenty (20) percent spare fuses and lamps of each type furnished under this Section, but not less than six (6) of each type.

I. <u>ELECTRICAL LIFT STATION CONTROLS – SANITARY</u>

1. Description
a. Bidding Requirements, Conditions of the Contract and pertinent portions of Sections in Division One of these Specifications apply to the Work of this Sections as fully as though repeated herein.
b. The Contractor shall furnish and install, complete, a lift station control panel and field instruments. All internal buswork and wiring shall be completed by the control panel manufacturer and where connections must be completed between equipment sections in the field, the wiring or buswork, shall be terminated in each section of equipment in a manner to facilitate field connections. The Contractor shall furnish, properly sized and coordinated, connectors for the conductors entering the equipment. All equipment shall meet the requirements of NEMA standards and the latest edition of the National Electrical Code, where applicable.
c. The City of Kindred utilizes Sweeney Controls Insight platform for SCADA remote monitoring and all supervisory controls provided under this contract shall utilize and integrate with these existing services.

2. Submittals
a. The Contractor shall submit complete shop drawings, instruction manuals, and record drawings to the Engineer for review, approval and forwarding to the Owner. The quantity and general format shall be as defined in the General Conditions. The information shall include:
b. System schematic drawings.
c. Component schematic drawings.
d. Dimension drawings, wiring and/or piping drawings.
e. Equipment specification sheets.
f. Fabrication and nameplate legend drawings on panels and other enclosures.
g. Complete control panel layout, structural, panel and equipment location
h. After installation and before the final acceptance of the equipment, bound books containing the record drawings in addition to complete information in connections with the assembly, operation, adjustments, maintenance and repair of all equipment, together with a detailed parts list with drawings and photographs shall be furnished to the Engineer for transmittal to the Owner.
i. The shop drawings submittal shall conform to the requirements of the special instructions to bidders. All field wiring shall be terminated on barrier type terminals. Where the contract documents show a nomenclature used on the terminal strips then the shop drawings and manufactured equipment shall also utilize the same nomenclature. Where none is assigned the manufacturer shall generate a nomenclature.
j. The Contractor shall not accept or install any equipment until he or she has received complete review for the drawings. The Contractor, manufacturer and supplier accept total responsibility for any modifications to equipment or any costs incurred due to the removal and replacement of equipment that has not had shop drawing reviewed with no exceptions being taken.

3. Basis of Bid
a. In order to assure uniform quality, ease of maintenance, and minimal parts storage, it is the intent of the specification that all equipment called for under this section shall be supplied by a single manufacturer. The equipment manufacturer shall, in addition to the Contractor, assume the responsibility for proper installation and functioning of the equipment.
b. This project requires the services of a prequalified control systems manufacturer. The approved control system manufacturers are as follows:
i. Integrated Process Solutions, Fosston, MN (218) 435-1703
ii. Sweeney Controls Company, Fargo, ND (701) 232-3644
iii. Or “Approved Equal”.
c. For full consideration of “Approved Equal” manufacturers, additional information must be provided 5 days prior to bid opening. Additional information to be provided shall include the following:
i. A description of company organization, listing types and numbers of registered engineers, other engineers, technicians and other technical employees, production staff and plant production capabilities, lead times, etc.
ii. List of service personnel (minimum of 4). Provide their qualifications, locations, dates of hire, and prior experience.
iii. A list of insurance carried for:
(a) Professional liability “errors and omissions”
(b) General liability
(c) General business insurance
(d) Provide carrier, terms for each type and limits of insurance.
d. The naming of a manufacturer of equipment in this Specification is not intended to eliminate competition or prohibit qualified manufacturers from offering equipment. Rather, the intent is to establish a minimum standard of quality, and to indicate a principle of operation desired for this project. Other manufacturers of similar system controls are encouraged to submit for prior approval.
e. No equipment shall be supplied by any manufacturer not regularly engaged in the manufacturing and production

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d. Test all safeties specified, as recommended by the manufacturer.
e. Perform testing at time pre approved by Owner and Engineer (7 day prior notice, minimum).
f. Submit record of site test procedures and results and include a copy in the O&M manuals.
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    a. Provide all supplies, spare parts, expendable items and related equipment for initial startup, training and testing procedures.
    b. At project completion, provide Owner with a complete set of spare parts for the equipment, including, but not limited to lamps, fuses, etc. Provide twenty (20) percent spare fuses and lamps of each type furnished under this Section, but not less than six (6) of each type.

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    a. The Contractor shall submit complete shop drawings, instruction manuals, and record drawings to the Engineer for review, approval and forwarding to the Owner. The quantity and general format shall be as defined in the General Conditions. The information shall include:
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    f. Fabrication and nameplate legend drawings on panels and other enclosures.
    g. Complete control panel layout, structural, panel and equipment location
    h. After installation and before the final acceptance of the equipment, bound books containing the record drawings in addition to complete information in connections with the assembly, operation, adjustments, maintenance and repair of all equipment, together with a detailed parts list with drawings and photographs shall be furnished to the Engineer for transmittal to the Owner.
    i. The shop drawings submittal shall conform to the requirements of the special instructions to bidders. All field wiring shall be terminated on barrier type terminals. Where the contract documents show a nomenclature used on the terminal strips then the shop drawings and manufactured equipment shall also utilize the same nomenclature. Where none is assigned the manufacturer shall generate a nomenclature.
    j. The Contractor shall not accept or install any equipment until he or she has received complete review for the drawings. The Contractor, manufacturer and supplier accept total responsibility for any modifications to equipment or any costs incurred due to the removal and replacement of equipment that has not had shop drawing reviewed with no exceptions being taken.

3. Basis of Bid
    a. In order to assure uniform quality, ease of maintenance, and minimal parts storage, it is the intent of the specification that all equipment called for under this section shall be supplied by a single manufacturer. The equipment manufacturer shall, in addition to the Contractor, assume the responsibility for proper installation and functioning of the equipment.
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        i. Integrated Process Solutions, Fosston, MN (218) 435-1703
        ii. Sweeney Controls Company, Fargo, ND (701) 232-3644
        iii. Primex, Plymouth, MN (763) 559-0568
        iv. Expanse Electrical Co, Williston, ND (701) 609-0942
        v. Quality Control and Integration, New Prague, MN (952)758-9445
        vi. Or "Approved Equal".
    c. For full consideration of "Approved Equal" manufacturers, additional information must be provided 5 days prior to bid opening. Additional information to be provided shall include the following:
        i. A description of company organization, listing types and numbers of registered engineers, other engineers, technicians and other technical employees, production staff and plant production capabilities, lead times, etc.
        ii. List of service personnel (minimum of 4). Provide their qualifications, locations, dates of hire, and prior experience.
        iii. A list of insurance carried for:
            (a) Professional liability "errors and omissions"
            (b) General liability
            (c) General business insurance
            (d) Provide carrier, terms for each type and limits of insurance.
    d. The naming of a manufacturer of equipment in this Specification is not intended to eliminate competition or prohibit qualified manufacturers from offering equipment. Rather, the intent is to establish a minimum standard of quality, and to indicate a principle of operation desired for this project. Other manufacturers of similar system controls are encouraged to submit for prior approval.
    e. No equipment shall be supplied by any manufacturer not regularly engaged in the manufacturing and production

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of non-clog submersible pump controls. The manufacturer must have installed and had in satisfactory use for a period of not less than five (5) years a minimum of twenty five (25) installations of the size and type comparable to the units specified.

f. Bids from manufacturers lacking the experience requirements, but meeting all technical and performance requirements of this specification, can be considered if the manufacturer provides a satisfactory five (5) year maintenance bond in lieu of evidence of experience and operation.

4. Lift Station Control Panel
   a. The control panel shall be constructed in accordance with Underwriter's Laboratories (UL) Standard 698A - “Industrial Control Panels for Hazardous Locations” and applicable portions of UL Standard 913 - “Intrinsically Safe Apparatus and Associated Apparatus for use in Class I, II and III, Division 1, Hazardous Locations”. The panel(s) shall be shop inspected by UL, or constructed in a UL recognized facility. Each completed panel shall bear a serialized UL label indicating acceptance under Standards 698A and 913.
   b. Enclosure
      i. The enclosure shall be rated as NEMA 3R minimum and be tamper resistant. All panels shall be of not less than 12 gauge type 304 stainless steel with continuously welded seams. The enclosure shall contain an interior subpanel for mounting all control components and the enclosure shall be sufficiently large to accept all control components without crowding. Larger enclosures shall contain door and panel stiffeners as required. The front door shall have a rolled lip and the door flanged and the corners ground smooth. All enclosure welding seams shall also be ground smooth.
      ii. The door shall be fastened to the enclosure with a continuous type stainless steel piano hinge and locking three point minimum, stainless steel hardware. The three point latch hardware shall accept an Owner furnished padlock. The inside of the door shall contain data pockets.
      iii. Enclosure shall have full height dead front inner hinged doors that house all front panel components including switches, indicating lights, circuit breaker operating handles, running time meters, overload reset pushbuttons, and other controls that require operator access.
   d. The enclosure shall include 1" thick foil backed insulation on all interior surfaces and shall have thermostatically controlled heaters to prevent condensation and freezing within the enclosure per the requirements on the Drawings and per the recommendations of the Supplier.
   e. Provide a ventilated louvered skirt and 24-inch legs for outdoor enclosure constructed of not less than 14 gauge type 304 stainless steel.

5. Programmable Logic Controller (PLC)
   a. See SIB Paragraph J, sheet 14 for PLC requirements.

6. Operator Interface Terminal (OIT)
   a. Screen:
      i. Size: 10-inch
      ii. Type: Color TFT
      iii. Input Type: Touch
   b. Communications:
      i. Ethernet TCP/IP – 10/100
      ii. RS-232
   c. Memory:
      i. On board memory.
      ii. USB Port for Data storage and application backup.
   d. Power:
      i. 24VDC
   e. Manufacturer/Model:
      i. Allen Bradley Panel View Plus 7 (1) Part #: 2711P-T6C21D8S
      ii. No exceptions

7. Uninterruptable Power Supply (UPS)
   a. Furnish a 700 VA minimum capacity (continuous) with a 5 minute battery reserve time at full load, Eaton 9SX700, or prior approved equal, with relay card for monitoring “UPS Trouble” condition and an input side control power relay for monitoring to the PLC. Furnish all required miscellaneous DC power supply and current sensitive DC relay interface equipment as required (See Drawings).

8. Control Devices
   a. All control devices including, but not limited to, selector switches, pushbutton switches, limit switches, and indicating lights shall be of the heavy duty, oil tight type. The contacts shall meet NEMA rating designation A600. The devices shall be Cutler Hammer Type T, Allen Bradley Bulletin 800T, or Square D Class 9001 units, Idec, Omron,or equal. Each shall be supplied complete with escutcheon and nameplate.
   b. Provide the following control devices:
      i. Pump No. 1 HOA
      ii. Pump No. 2 HOA
      iii. Redundant Backup System Active Reset PB

9. Control Relays
   a. Relays shall be of the plug-in type with associated sockets and retaining clips. The relays shall have dust covers. All contacts shall be rated for not less than 10 amps at 120 VAC with 3/16" diameter gold flashed silver cadmium oxide moving and stationary points. Insulation resistance shall be 1000 megohms, nominal, at 500 VDC between all non connected terminals. Dielectric withstand shall be 2,000 VAC between non connected terminals.

10. Circuit Breakers
    a. All circuit breakers shall be UL labeled and shall be of the size shown. All breakers shall have an interrupting rating of not less than 22,000 amps, sym.
    b. Square D or equal

11. Receptacles
    a. The interior convenience receptacle for portable tools, etc. shall be a 20 amp specification grade, UL listed ground fault interrupter.

12. Terminals and Wiring
    a. All field wiring shall be terminated on terminal strips. The terminal strips shall be of the barrier type. Each terminal shall be of the two screw type. The contacts shall be tin plated copper, capable of carrying 10 amps at 600 VAC. The contacts shall be large enough to accept up to and including No. 12 AWG wire. The barrier strip shall have a minimum voltage withstand of 5,000 volts. The barrier strip shall be suitable for the required number of contacts.
    b. Power wiring shall be terminated on barrier type blocks sized for the application.
    c. Number all terminals and tag all conductors to correlate with manufacturers’ drawings.

13. Surge Arrestors
    a. Controls shall include surge protectors on all incoming phases, Square D Class 6671 or equal.

14. Indicating Lights
    a. Nominal 1 inch diameter, opaque colored lens.
    b. Press-to-test feature.
    c. heavy-duty, oil-tight.
    d. Indicating lights must be large enough to allow hand replacement without the use of special tools.
    e. LED type.
    f. Allen Bradley 800T series or Square D equal
    g. Provide the following indicating lights:
       i. Required (White) - qty. 2
       ii. Running Lights (Green) - qty. 2
       iii. Thermal Fail (Red) - qty. 2
       iv. Seal Fail (Red) - qty. 2
       v. Pump Fail (Amber) - qty. 2
       vi. Redundant Backup System Active (Red) - qty. 1

15. Running Time Meters
    a. Six digit, hours and tenths.
    b. Non-resettable.
    c. 2.25-inch diameter front, nominal

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d. Provide the following running time meters:
    i. Pump No. 1
    ii. Pump No. 2

16. Enclosure Heat
    a. Manufactured unit with aluminum housing and integral thermostat and 0 - 100 degF adjustable range.
    b. UL labeled.
    c. Provide quantity and size as required to meet temperature requirements specified.
    d. Hoffman DAH Series or equal.

17. Intrinsically Safe Barrier
    a. UL labeled unit suitable for using non rated devices in NEC Class 1, Division 1 explosive area.
    b. Terminal strip connections.

18. 10 Port Ethernet Unmanaged Switches
    a. Performance:
        i. Unmanaged with 10 Ethernet ports
        ii. Store & Forward wire speed switching
        iii. Automatic address learning, aging and migration.
    b. Power Input:
        i. 10-35 VDC
        ii. Redundant input terminals
    c. Environmental:
        i. Operation temperature: 0 to 60°C
        ii. Storage temperature: -40 to 85°C
        iii. Humidity (non-condensing) 5 to 95% RH
    d. Din Rail mounting
    e. Manufacturer/Model:
        i. Allen-Bradley 2000
        ii. Prior approved equal.

19. Power Monitor
    a. The power monitor shall de-energize the motor control circuits upon an abnormality. When “normal” power is restored, the unit shall automatically re-energize the control circuits. The unit shall be fitted with instrument fuses and shall feature a 0.5 second delay to prevent nuisance operation.
    b. The relay shall sense negative sequence voltages when a single phasing condition occurs. The relay shall “pick up” when the negative sequence voltage exceeds 4% (nominal). The relays shall sense line-to-line undervoltage conditions and “pick up” at 83% (nominal) of the normal conditions with an inverse time/voltage relationship.
    c. Manufacturer/Model
        i. SymCom MotorSaver 460
        ii. Prior approved equal.

20. Instrumentation
    a. Submersible Transducer
        i. Two wire, loop powered, large diaphragm transducer/transmitter that produces an instrumentation signal(4-20mA) in direct proportion to the measured level excursion over a factory calibrated range as required by the application indicated on the Drawings. Manufacturer shall provide equipment with range best suiting the application as indicated on the Drawings. Accuracy of +/-0.25% FS or better.
        ii. Solid-state, head pressure sensing or piezoelectric type, suitable for continuous submergence and operation and installed in accordance with manufacturer’s instructions. Bottom of diaphragm sensor shall be installed approximately 6 inches above the wet well or tank floor. Coordinate final location and mounting details.
        iii. Transducer housing shall be fabricated of type 316 stainless steel with a bottom diaphragm of no less than 2.75” diameter of heavy duty, limp, foul free molded Teflon (TM) bonded to a synthetic rubber back/seal. Furnish adequate length of submersible cable to reach control panel or junction box as indicated on the Drawings.
    b. A hydraulic fill liquid behind the diaphragm shall transmit the sensed pressure to a solid-state variable capacitance transducer element to convert the sensed pressure to a corresponding electrical value. The sensed media shall exert its pressure against the diaphragm that flexes minutely so as to vary the proximity between an internal ceramic diaphragm and a ceramic substrate to vary the capacitance of an electrical field created between the two surfaces. A stable, hybrid, operational amplifier assembly shall be incorporated in the transducer to excite and demodulate the sensing mechanism. The transducer shall incorporate laser trimmed temperature compensated, high quality components and construction to provide a precise, reliable, stable output signal directly proportional to the sensed pressure over a factory calibrated range.
        a. Calibrated range of 0-10 psi.
        b. Provided with aneroid bellows, protective spacer
        c. Manufacturer/ Model:
            i. Keller LevelRat

21. Float Switches
    a. General Specifications:
        i. Polypropylene with encapsulated single pole mercury switch.
        ii. Contact rating: 4.5 amps, 120 VAC, resistive.
        iii. Operating differential: 3.5 inch, nominal.
        iv. Extra flexible cord in length as required for application.
        v. Cable mounted Type W
        vi. Contact type – SPDT NONC
    b. Manufacturer / Model:
        i. Anchor Scientific Eco-Float Model G

22. Solid State Motor Controllers – SMC
    a. Manufacturer/Model: Allen Bradley SMC-1
    b. Voltage Rating: 208V, 3 Phase
    c. Assembly shall bear the U.L. label.
    d. Electronic softstarter shall have the following features:
        i. Furnish with line side circuit breaker, internal automatic bypass contactor which bypasses the power electronics once the softstarter is up to speed and other components and features as indicated on the Drawings.
        ii. Provide PFCC as indicated on Drawings.
        iii. Furnish soft starter with auxiliary NO, “Running” (up to speed) and “Overload/Fault” contacts rated 0.6 amps at 120VAC minimum.
        iv. The soft starter shall be sized for motors as shown on the Drawings. Additionally, the soft starter shall be sized at a minimum of 115% of the respective motor nameplate FLA.
        v. Provide all ancillary equipment including indication lights, control switches, etc… as shown on the Drawings.
        vi. Schedule: As per plans.

23. Cellular Telemetry
    a. 4G/3G Multiband Cellular Antenna
        i. General Specifications:
            (a) Frequency: LTE 700 band and Global LTE 2600
            (b) Number of Elements: 6
            (c) Gain: 5dBi
            (d) Bandwidth VSWR <2.5:1
            (e) Power Rating: 100 Watts
            (f) Mounting: MB195
            (g) Polarization: Vertical
            (h) No Ground Plane
            (i) Warranty: 2 years
        ii. Manufacturer/Model:
            (a) LAIRD – TRA6927M3PBN-001
            (b) Prior approved equal.
    b. Antenna Cable
        i. Cabling runs of 100 feet or greater:
            (a) Andrew LDF5-50A
        ii. Cabling runs of less than 100 feet:
            (a) Times Microwave Systems LMR-400
            (b) Prior approved equal
        iii. Connections are all to be N-Type with the exception of connections to the Radio
            (a) All connectors must be installed by qualified personnel with experience with radio telemetry equipment.
    c. All connection points outside of buildings must be weather proofed as per manufacturer’s instructions
        i. Weather proofing materials must be designed to resist water and UV light.

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d. Antenna Jumper Cable\
  i. Length: As needed.
    (a) Must be able to reach between the lightning arrestor and the radio without tension. Minimum 3 feet.
  ii. Type: RGS142 or equal
  iii. Connectors: N Male / TNC Male

e. Router
  i. General:
    (a) 4X Ethernet LAN 10/100Mb
      (1) Available Configurations:
        (i)Ethernet
  ii. Physical Interface:
    (a) 4x Ethernet - 10/100 BaseT, RJ-45
  iii. Environmental:
    (a) Temperature: -25°C to 70°C
    (b) Humidity: < 95% RH (Non-Condensing)
  iv. Electrical:
    (a) Input Power: 12-24 VDC
  v. Network Management:
    (a) Remote Diagnostics
  vi. Mounting:
    (a) Din Rail
  vii. Manufacturer/Model:
    (a) eWON Flexy20100
    (b) Provide with 4G LTE Extension card
    (c) No exceptions.

24. Sequence of Operations
  i. Normal Pump Operation – Automatic
    (a) When the wet well level provided by the level transducer reaches "lead start" level, the lead pump shall be started and remain running until the wet well level falls to the "stop" level.
    (b) If the lead pump cannot keep up with capacity and the wet well rises to "lag start" level, the lag pump shall be started. In this scenario, both pumps shall remain running until the wet well level falls to the "stop" level.
    (c) If for any reason the "high level" float is reached the station shall enter "backup" mode as described below. In this case, the PLC shall be locked out until it is physically reset at the respective lift station control panel.
  ii. Backup Pump Operation
    (a) The lift station "high level" float is set at an elevation above the elevation used for Normal Pump Operation and the "low level" float is set at an elevation below the elevation for stopping pumps under Normal Pump Operation. The floats are used for alarming purposes and to provide a backup control mode of the pumps which is entirely independent of the PLC.
    (b) Provide the required emergency control circuitry to backup the primary controls. If the wet well level increases and reaches the "high level" float in the wet well for a field adjustable time delay, override the primary controls (PLC) and start the lead pump followed by the lag pump after a field adjustable time delay. The lag pump is only started if the time delay expires before the "stop level" float is reached. A time delay shall be implemented for the high level float alarm. The high level float alarm time delay shall be adjustable and set such that the station can run in backup mode (between the "high level" and "stop level" floats) and generate a high float alarm every time the backup mode cycles between the floats.
    (c) The backup control mode shall be latched until a dead front-mounted reset button is pressed to allow the system to return back to Normal Pump Operation mode. A dead front mounted pilot light shall illuminate when the backup mode is active. The backup mode shall be designed such that the PLC is entirely isolated from controlling the pumps once backup mode is activated. Any design which merely parallels the backup mode with the PLC control will not be acceptable. Any design which does not provide a latched PLC lock-out until the reset button referenced above is pressed, will not be acceptable.

25. Start Up Services
  i. Confirm proper operation of all features and functions. Demonstrate operation to Owner and Engineer.
  ii. All PLC, OIT and Network Switch programming shall be provided by the Owner.

26. Supplies
  i. Provide a two year supply of expendable items at project completion:
  ii. Twenty percent (20%) spare fuses but not less than six (6) of each type furnished.
  iii. Two (2) spare relays of each type furnished.
  iv. One (1) spare submersible transducer
  v. Two (1) spare floats
  vi. Two (2) replacement lamps for each type of indication light used
  vii. Contractor shall provide all expendable items such as lamps, fuses, etc. for system start up and checkout.

J. PROGRAMMABLE LOGIC CONTROLLERS

1. Summary
  a. Section Includes
    i. Programmable logic controllers (PLC)
    ii. Input and Output (I/O) modules
    iii. I/O connections and configurations
    iv. Spares

2. References
  a. Reference sections include, but are not limited to:
    i. NEMA ICS 1 – General Standards for Industrial Control and Systems.
    ii. NEMA ICS 2 – Standards for Industrial Control Devices, Controllers and Assemblies.
    iii. NEMA ICS 3 – Industrial Systems.
    iv. NEMA ICS 6 – Enclosures for Industrial Controls and Systems.

3. Project record documents
  a. Accurately record actual locations of controller cabinets and input and output devices connected to system. Include interconnection wiring and cabling information, and terminal block layouts in controller cabinets.

4. Operation and maintenance data
  a. Submit Operation and Maintenance data.
  b. Include bound copies of operating instructions
  c. Include card replacement, adjustments, and preventative maintenance procedures and materials.

5. Qualifications
  a. The contractor shall provide all programming.

6. Delivery, storage, and handling
  a. Accept products on site in factory containers and verify damage.
  b. Store products in clean, dry area; maintain temperature to NEMA ICS 1.

7. Environmental requirements
  a. Maintain temperature above 32 degrees F and below 104 degrees F during and after installation of products.
  b. Maintain area free of dirt and dust during and after installation of products.

8. Maintenance service
  a. Provide a one (1) year warranty to correct equipment defects from the Date of Substantial Completion.

PRODUCTS

1. Programmable logic controller(s)

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a. IDEC MicroSmart Platform
   i. The PLC system for each control panel shall be based on the IDEC Microsmart FC6A platform. Provide equipment as indicated on the Electrical Drawings and/or specifications.
   ii. Each PLC system shall consist of a processor, communications modules, and I/O modules as specified on the Electrical Drawings in the occasion that the specified item is not available. Contractor must submit intent to use and alternate module to Engineer and receive approval from Engineer prior to installation of the alternate module.

MicroSmart Item:	Mfg.	Part Number
Processor	IDEC	FC6A-C24R1CE

   iii. See I/O Schedule for further details
   iv. All terminals shall be screw-in type.

2. Chassis-based i/o modules
   a. Microsmart I/O
      i. Each PLC system shall use the following I/O modules. In the occasion that the specified module is not available, Contractor must submit intent to use and alternate module to Engineer:

CompactLogix Item:	Mfg.	Part Number
Digital Input	IDEC	FC6A-N08B1
Analog Input	IDEC	FC6A-PJ2A

3. I/o connection & configuration
   a. All I/O points, including spares, must be factory wired to terminals as indicated in the typical wiring diagrams in the Electrical Plans. No field terminations may be made directly to the PLC Modules, with the exception to the Flex I/O modules.
   b. All I/O points shall be wired to the points indicated in the I/O schedule found in the Electrical Plans.
   c. Programmable Controllers shall be manufactured to NEMA ICS 3 standards, with component circuit boards manufactured to NEMA ICS 2 standards.
   d. Service Conditions:
      i. Temperature: 0-60C
      ii. Humidity: 5-95% without condensation.
      iii. Altitude: 5000 feet above sea level.
   e. Configuration:
      i. Processor Unit: Include processor, power supply, and battery backup.
      ii. I/O: Provide by separate expansion units or by modular hardware units.
      iii. I/O Capacity: As required plus 25% or 4 points for each type whichever is greater.
   f. Ratings:
      i. Scan Rate: 1 millisecond per Kbyte.

EXECUTION

1. Examination
   a. Verify that surfaces are ready to receive work.
   b. Verify field measurements are as shown on Drawings.
   c. Verify that required utilities are available, in proper location, and ready for use.
   d. Beginning of installation means installer accepts conditions.

2. Installation
   a. Install in accordance with manufacturer's instructions.
   b. Do not install products until major construction is complete and control panel is enclosed and heated.
   c. Connect input and output devices as shown on Drawings.

3. Manufacturer's field services
   a. Prepare and start systems.
   b. Provide in writing to Engineer that installation and verification of all I/O devices has been performed.
   c. Provide one (1) day field installation and verification of all I/O devices with the Electrical Contractor and testing with Engineer.

4. Demonstration
   a. Provide systems demonstration.
   b. Demonstrate operation of controller.

STORM SEWER LIFT STATION - ELECTRICAL

A. GENERAL ELECTRICAL REQUIREMENTS

1. Description
   a. The Contractor shall furnish and install, complete, a lift station control panel and field instruments for each lift station to be constructed. All internal buswork and wiring shall be completed by the control panel manufacturer and where connections must be completed between equipment sections in the field, the wiring or buswork, shall be terminated in each section of equipment in a manner to facilitate field connections. The Contrator shall furnish, properly sized and coordinated, connectors for the conductors entering the equipment. All equipment shall meet the requirements of NEMA standards and the latest edition of the National Electrical Code, where applicable.

2. Submittals
   a. The Contractor shall submit complete shop drawings, instruction manuals, and record drawings to the Engineer for review, approval and forwarding to the Owner. The quantity and general format shall be as defined in the General Conditions. The information shall include:
      i. System schematic drawings.
      ii. Component schematic drawings.
      iii. Dimension drawings, wiring and/or piping drawings.
      iv. Equipment Specification sheets.
      v. Fabrication and nameplate legend drawings on panels and other enclosures.
      vi. Complete control panel layout, structural, panel and equipment location.
   b. After installation and before the final acceptance of the equipment, bound books containing the record drawings in addition to complete information in connections with the assembly, operation, adjustments, maintenance and repair of equipment, together with the detailed parts list with drawings and photographs shall be furnished to the Engineer for transmittal to the Owner.
   c. Provide approval shop drawings of the lift station control panel.
   d. The Contractor shall not accept or install any equipment until they have received complete review for the drawings. The Contractor, manufacturer and supplier accept total responsibility for any modifications to equipment or any costs incurred due to the removal and replacement of equipment that has not had shop drawings reviewed with no exceptions being taken.

3. Pump Controls Basis of Design
   a. Storm Sewer Lift station shall consist of (2) 7.5hp submersible pumps Equal to Carry Pump CP06 series, with VFD controls mounted above the concrete manhole cover. VFDs and associated controls shall be provided by the pump manufacturer and installed by the electrical contractor.
   b. VFD Specifications:
      i. Voltage: 208V/3 phase in/out
      ii. Horsepower: 7.5hp
      iii. Enclosure: Outdoor Rated Enclosed
      iv. Manufacturer: Carry Pumps
      v. Model: VFD-0075-203-E
      vi. Drive: CI-007-P2
   c. Transducer:
      i. On/Off & Variable Speed Control based on indicated water levels.
      ii. Manufacturer: Carry Pumps
      iii. Model: TRANS-KIT-E
   d. Remote Monitoring:
      i. Eagle I Remote Monitoring System
      ii. Model: RMS-VFD-23E
      iii. Text Notifications:
         (a) Power Failure

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(b) Low Water
(c) High Water

iv. Provide with 5-year Annual Service: RMS-SERVICE

e. Indicator Lights:
i. 5-color LED Signal Light
(a) Red: Fault
(b) Orange: Disabled
(c) Green: Running
(d) Blue: Auto Mode
(e) White: Manual Mode
ii. Manufacturer: Carry Pumps
iii. Part #: LED-LIGHT-KIT-E

f. Float:
i. Manufacturer: Carry Pumps
ii. Part #: 100-21-35
iii. Low-Level “OFF”

ELECTRICAL SITE WORK

A. STREET LIGHTING

1. Underground Conductors
a. Underground circuit conductors shall be stranded copper, Type “USE”, conductors insulated for direct burial and rated 600 volts. Conductor sheath shall be marked as to voltage, AWG, type (USE), and manufacturer. All conductors shall be Triplex and continuously color coded (red, black and green). Conductors shall be of the size shown on the plans.

2. Street Light Standard Conductor
a. The conductor required for the street light standards between distribution conductors and luminaire shall consist of No. 12 AWG stranded copper, Type “USE”, rated 600 volts and be color coded “Black/Red/Green”. Provide ground conductor from the luminaire to the hand hole.

3. Splice Connections
a. Splice connections in street light bases and feed points shall be a Panduit PCSB4-__-12Y or Burndy BIBS4__, clear insulated aluminum multi-tap connector. Splice connections in pull boxes shall be a NSI Industries Easy-Splice Gel Tap splice kit model ESGTS-2 or a Burndy DSR-2K splice kit. All other conductor splice connections shall be UL listed, with PowerGel sealant type connections meeting all codes for desired applications and be preapproved by the engineer before using.
b. Street Light fuses shall be a type FNM 10 amp fuse with an Eaton Bussmann type HEB-AA or a Littlefuse type LEB-AAK in line fuse holder. Heat shrink shall be 3M ITCSN 0400 12-6 AWG 600 volt rated or approved equal.

4. Pull Box
a. PVC PULL BOX
i. PVC pull boxes shall be 24” Nominal Diameter PVC pipe that complies with ASTM F679T-1 specifications and have metal frames and covers, and shall have “Street Lighting” stamped on the cover and conform to the detail included in the plans. All PVC pull boxes in concrete areas shall have a bell end on the bottom of the pull box to prevent frost heaving.
b. COMPOSITE PULL BOX
i. The composite pull box shall be manufactured by Channell, model BULKU243636J061003, all composite pull boxes will be 24” x 36” x 36” in size unless otherwise noted on the plans. The cover shall be composite and be rated for 33,750 pounds of proof load, be gray in color and have “Street Lighting” stamped on the cover.

5. Feed Point
a. Pedestal type feed point shall be concrete pad mounted (see plans for size of cabinet and number of circuits). The pedestal cabinet shall have a NEMA 3R rating. The cabinet shall be constructed of 16 gauge #304 stainless steel, stainless steel hardware and a padlockable stainless steel handle with 3-point latch operation, continuous hinged deadfront, 2” drip shield, gasketed lexan photocell window on side and back of pedestal cabinet. All circuit breakers shall be rated 22,000 AIC. The pedestal cabinet shall also include a factory installed interior mounted meter trim which meets the size requirements of the local utility company and a viewport window with gasketed lexan located on the front door of pedestal cabinet. Meter shall be provided by the local utility company. All outside seams shall be completely welded with no open gaps.
b. All photo eye lighting controls shall be manufactured by Tyco Electronics, model SST-PV-IES with a 20 to 40 second on and off delay or approved equal.
c. Prefabricated feed point enclosure to be assembled by States Electric, UL 508 listed, service entrance rated, or approved equal.

6. Street Lighting Standards
a. Refer to plans for information on size and type of standards.
b. Mouse Proofing
i. H-base and T-base standards require mouse proofing with Xcluder Pole Gasket 2800g item #162728 or approved Halek Soultions rodent intrusion guard.
c. Grounding
i. Grounding rod shall be 10’ x ½” and pole grounding lugs shall be copper, and the wire to connect the lugs shall be #6 bare copper.
d. Mounting arms for straight non-Davit Poles
i. Mounting arms shall be steel galvanized or galvanized and painted black. All mounting arms shall have a minimum of 4 galvanized or stainless steel set screw bolts and shall have an indent stopper just below the arm to prevent the arm from falling down the tenon and pinching the wire.
e. Wire Strain Relief
i. UV Black Pure Nylon Heavy Duty Cable Ties with a temperature rating of -40 to 185 degrees Fahrenheit, plenum rated with a strength rating of 120lbs.

7. Street Lighting Luminaires
a. Refer to plans for information on size and type of luminaires.
b. Lamps
i. All lamps shall be a LED.
c. Mogul Lamp Socket
i. All mogul lamp sockets will be an Ex-39 Leviton 8756-J mogul socket with Satco Paper Insulator model 80-2215
d. Luminaires
i. Refer to the plans for the brand and model of luminaires.

8. General Construction
a. All work and material shall meet the National Electric Code, the North Dakota State Electrical Board, the local utility company, and the ordinances established by the City of Kindred. All materials shall be new.
b. Shop Drawings
i. The Contractor shall provide an electronic PDF file of shop drawings. The Contractor shall submit shop drawings on the following listed items for approval:
(a) Conductors, underground and inside pole.
(b) Pull Boxes
(c) Feed Point: cabinet, relays, switches, panels and photo cells.
(d) Street Light Standards, including all necessary calculations and drawings used in designing these poles.
(e) Street Light Luminaires and bulbs
(f) Splice materials
(g) Items requested by Engineer
c. Overhead Lines Clearance.
i. The Contractor is responsible for verifying and following the minimum horizontal and vertical clearance between street light standards/luminaires and power lines, before any concrete bases are installed near power lines.
d. Concrete Base
i. See plans for detail of Concrete Base size requirements and construction requirements. It shall be the Contractor’s responsibility to verify shop drawing information, provided by the manufacturer of the street light standards, for anchor bolt size, bolt circle diameter and anchor bolt projections.
ii. Column forms shall be used for the top 12” of base tops. Square top forms will not be allowed. Verify

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anchor bolt projection requirements. Conduit with bell end shall have a maximum height of 2" above concrete base surface and the ground rod shall be a maximum of 1-1/2" above conduit with bell end. Finish of the base top shall be level without any irregularities or depressions in the concrete. Grinding of base top or filling of depressions will not be allowed and any base not meeting these requirements will be removed and replaced at the Contractors expense. Column forms shall be removed as part of clean up before landscaping. Bases shall have a minimum seven day cure time before any standards shall be installed. Excess dirt from the drilling of base hole shall be removed from the project site daily. Street light base shall have the anchor bolts, ground rod and conduits installed before concrete is poured. Concrete shall be vibrated around anchor bolts and base. Within 3 days of street light bases being poured, the Contractor shall install well pipe covers to protect the street light base and conduits. The well pipe cover shall remain in place until the street light standard is installed. Any bases that have live conductors going in and out of the base shall have 37" traffic drum installed and secured to the base to protect the live wires and be marked with red electrical caution tape.

iii. Concrete shall be in accordance with Section 2100 of specifications.

iv. Any base damaged will be replaced at the Contractor's expense.

e. Conduit

i. Innerduct shall be installed at the location shown on the plans and will be connected to stubbed out 1.5" conduit at all concrete base and feed point locations. Installation of innerduct shall be at a depth of 24 to 32" below finished grade. The innerduct shall be placed in line with bases. Innerduct shall be bored under existing pavement (jacking will only be allowed under existing sidewalks and multi use paths) and in areas of mature trees, established sod and all others locations shown on plans. All innerduct/conduits entering a pull box shall extend between 2-3" into the box. Any trench under sidewalks need to backfilled with Class 5.

ii. All innerduct/conduit shall have bell ends installed on both ends of the innerduct/conduit run. All innerduct/conduit containing conductor/cables shall be sealed with duct seal at the feed point cabinets and with Xcluder at pull boxes and street light standard bases. All spare conduits shall be plugged with an expanding rubber pipe plug at the feed point cabinet, pull boxes, and street light standard bases and the plug shall be labeled with the direction the conduit is stubbed out.

f. Conductors

i. Distribution circuits shall be routed as shown on plans. Any deviation in routing of circuits must be approved by the project Engineer.

ii. Luminaire or outlet circuits are to be fused in the base of each lighting standard. Heat shrink fuse holders for a distance of 4" on each side of the fuse holder. Fuse holders to be complete with proper fuse to protect the luminaire. If required for an outlet circuit the neutral conductor shall be solidly connected and unfused throughout the system. Each luminaire will require its own set of conductors and fuse holders.

iii. Contractor will install a wire strain relief for the luminaire conductors by drilling a ½" hole on the bottom part of the tenon, exactly ½" away from the end of the tenon and use a wire tie to secure the three luminaire conductors that run down the pole to the base.

iv. Ground conductors shall be bonded to standards by a copper ground lug and to the following by approved grounding methods per national electrical code, ground rod at standard base, feed point enclosure, feed point panels, relay cabinets and ground rods. A continuous #6 solid bare conductor shall be installed from the splice connector to the ground rod and then to the ground lug on standard.

g. Additional Conductor Lengths And Splicing

i. Splices and fuse holders will have sufficient slack to separately extend 24" outside of the street light standard hand hole, meaning the fuse holder will be able to extend 24" outside of the standard hand hole while the splice is still stored in the shaft of the standard. Splices and fuse holders will NOT be spooled in bottom of the street light standard, they will be stored pointing up into the shaft of the standard. Contractor will use the correct multi-tap connector that meets the NEC allowing only one wire under each lug. Strip wires according to manufacturer's specifications before inserting them into the connector and wrap the conductors together with electrical tape approximately 8" below the connector. All connectors will be torqued according to the manufacturer's specifications using an approved torque tool. Torque specification is 50inch LBS for #4-8 wire and 45inch LBS for #10-14 wire. When finished torqueing the connector, the Contractor will re-install the protective dust caps and then wrap the caps with electrical tape three times, only wrapping the cap area and not the bottom half of the connector so the terminations can be clearly seen. If any existing conductors need to be extended the Contractor will extend the wire use a Burndy YS8CA1 (#8 wire) or a Burndy YS6CA1 (#6 wire) use~~with~~ the same existing gauge wire and install 3" of heat shrink on both sides of the splice.

ii. Splices and conductors in pull box. Splices shall extend a minimum of four feet above finished grade. Splices in pull boxes shall have the splice connection secured to a length of 1" PVC with electrical tape such that the splice is secured in the upper 1/3 of the pull box. If any existing conductors need to be extended the Contractor shall extend the wire with the same existing gauge wire and install 3" of heat shrink on both sides of the splice.

iii. Feed Point. Spool up an additional 36-42 inches for each circuit feeder conductor into bottom of feed point cabinet. If any existing conductors need to be extended the Contractor shall extend the wire with the same existing gauge wire and install 3" of heat shrink on both sides of the splice. All wire in the feed point shall have a wire Ferrule installed on the end of the stripped wire before it is terminated onto the contactor.

h. Pull Box

i. <u>PVC Pull Box.</u> Pull boxes in landscaped areas shall have the top of the box level with the above final grade and sloped to match the slope of the final grade on all four quadrants. Pull boxes in concrete area shall be set with the top of the box flush with the final grade at all four quadrants. Two feet of pea rock shall be installed for drainage below the pull box and will extend 6" beyond the outside edge of pull box. The top of box shall be at final grade and sloped to match.

ii. <u>Composite Pull Box.</u> Two feet of pea rock shall be installed for drainage below the pull box and will extend 6" beyond the outside edge of pull box. The top of box shall be at final grade and sloped to match.

i. Feed Point

i. All street light feed points shall be pad mounted. See plans for details of concrete pad, cabinet size and feed point wiring schematic with number of circuits. Padlock shall be obtained from the City of Kindred Engineering Department.

ii. A bead of Sikaflex 15LM construction sealant shall be placed continuously under the bottom of the feed point and around the outside of the cabinet at the seam between the cabinet and the foundation. All other exposed outer cabinet seams shall be sealed with a bead of Sikaflex 15LM construction sealant.

iii. Feed points shall require two ground rods that are spaced 6' to 7' apart.

iv. All exposed conduit shall be 2" schedule 80 PVC with a galvanized steel conduit guard. Concrete pad, riser (if needed) and other miscellaneous items needed to make feed point operational shall be incidental. Verify connection requirements with the local utility company. The Contractor must contact the project Engineer and local utility company to verify specific

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location and elevation of feed point. The Contractor shall also communicate with the utility company specific connection requirements. The meter shall be furnished and installed by the utility company.

v. Exposed conduit on pole mounted feed points or on feeder runs from the electrical company to the feed point shall be installed as following:

i. 2" SCH80 PVC, minimum 10' sticks installed with factory coupling pointed down, no other couplings are allowed. Conduit needs to be strapped according to NEC.
ii. PVC weather head entrance.
iii. 5' steel galvanized conduit guard, 6" below ground, and 4'6" above ground.
iv. All straps, conduit guard, feed points, disconnects, and other necessary materials shall use galvanized 3" long fully threaded ¼" lag screw for mounting/securing.
v. Riser shall not face toward sidewalks or streets and shall be on the backside of traffic flow direction or as otherwise directed by the project Engineer.

j. Street Light Standards
i. Refer to Plans for information on size and type of standards. The Contractor shall take delivery of standards from the manufacturer and shall be responsible for the storage and transportation of standards. The packing material shall be removed from standards when stored outside and as per manufacturer's requirements to prevent damage to the standard's finish. Anti-seize shall be applied on all anchor bolts and nuts, and on all other fasteners attached to the street light standard and mounting arm. Standards shall be installed level and be grounded. Mouse proofing shall be installed according to the manufacturer's instructions and recommendations.
ii. Any damage to the standards will be the Contractor's responsibility to repair or replace as directed by the Engineer.

k. Street Light Luminaires
i. Refer to Plans for information on type of luminaires. The Contractor shall take delivery of luminaires from the manufacturer and shall be responsible for the storage and transportation of luminaires All luminaires shall be grounded with a ground wire from the fixture to base/pole ground connector. Anti-seize shall be applied to all mounting bolts, fasteners and latches on all luminaires.
ii. Any damage to the luminaires will be the Contractor's responsibility to repair or replace as directed by the Engineer.

l. Install Standards And Luminaires
i. Refer to Plans for information on size and type of standards and luminaires. The Contractor shall take delivery of standards and luminaires from the manufacturer or the City of Kindred and shall be responsible for the storage, transportation, installation of standards and luminaires, all wiring within standards and lamps. If the standards and luminaires are supplied by the City of Kindred for installation, the Contractor shall assume the standard one year warranty typically associated with Contractor provided materials.

m. Street Lighting Initial And Final Inspection And Substantial Completion
i. The project will not be classified as substantially complete until the street lighting system is functional, including the completions of all pay items.
ii. After the Contractor has completed the installation of the street lighting system and any clean up items, he shall complete the "Contractor's Street Lighting Check List", provided by the City. Each item on the checklist shall be inspected and initialed by the Contractor's personnel performing this inspection, noting that all deficiencies have been corrected. The Contractor shall forward the completed check list to the project Engineer along with the request for an initial inspection. The Engineer will set a date and time for the inspection. The Contractor shall be present at this inspection and is required to open and close all pull boxes, street light standard hand holes and remove and hold wiring to allow for inspection of splices, fuse holders and anchor bolt nut tightness.
iii. All items requiring additional work after the initial inspection will be noted by the City on the checklist. After the Contractor has completed any deficiencies, the Contractor shall request for final inspection. The project will not be classified as final until the City accepts the project and assigns a final acceptance date. The Contractor is responsible for all maintenance of the street lighting system until the date of final acceptance.
iv. Initial and final inspections will not be performed between November 1st and April 1st. Inspections will not be done if there is rain or snow or wind greater than 15mph or if the temperature is less than 50° F.
v. The City of Kindred will perform one final inspection at no cost to the Contractor. The Contractor will be assessed a fee of $500 for each additional final inspection performed by the City.

9. Guarantee, Measurement & Payment
a. Guarantee
i. The guarantee shall be per the contract with the following additions. All manufacturer warranties and guarantees with respect to materials, parts, workmanship, or performance which the products covered by the proposal shall be secured and included with the shop drawing submittal. All LED fixtures supplied shall have a 10 year manufacturer warranty. All HPS fixtures and LED corn cob bulbs shall have a 5 year manufacturer warranty.

b. Measurement And Payment
i. Payment for all items shall be full compensation for all labor, material, equipment and miscellaneous items necessary for constructing these items in place.

c. Concrete Base
i. The measurement for payment will be for each (EA) size of concrete base installed. Drilling of base hole or hand digging where required, concrete, column forms, anchor bolts, reinforcing rods, conduit, ground rod, and any miscellaneous items necessary for the concrete base will be incidental to the item and will not be measured for payment.

d. Innerduct/Conduit
i. Payment will be made for each size of innerduct/conduit and measured by the linear foot (LF). The measurement for payment will be the length of innerduct/conduit installed from center of concrete base to center of concrete base, pull box or feed point. The method used to install innerduct/conduit (such as boring, jacking or trenching) will not be measured but will be incidental to innerduct/conduit. Couplings/fittings used at concrete bases, and the method of innerduct installation, will not be measured for payment but will be included in the price bid for conduit.

e. Conductor
i. Payment will be made for each size of conductor and measured by the linear foot (LF). The measurement for payment will be the length of conductor installed from center of concrete base to center of concrete base, pull box or feed point. Additional quantities required as detailed in Part 2 and Part 3 of this Section will not be measured for payment but shall be incidental.

f. Pull Box
i. The measurement for payment will be for each (EA) type of pull box installed. Pull box, all gel type connectors, backfill and restoration of surrounding area to original conditions will be incidental.

g. Feed Point
i. Measurement and payment will be made for each (EA) feed point installed and operational. Cabinet, concrete foundation and pad, conduit, meter trim, riser with weather head (if needed), ground rods, conductor and conduit between feed point and transformer (for

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Cass County Electric areas, sized as per Cass County Electric requirements) and other miscellaneous items needed to have a complete and operational feed point shall be incidental to item. Additional conductor lengths at splices and feed points will not be measured for payment but shall be incidental. The Contractor is responsible for all coordination and costs involved with getting power to the feed point and setting up the meter service. This shall be incidental to the price bid for “Feed Point”.

h. Street Light Standard
    i. The measurement for payment will be for each (EA) type of street light standard supplied for installation, or to be supplied to the City of Kindred for maintenance stock. See plans for type of standard required. The cost bid for this item shall include providing unloading, storage and transportation to project site and to the City of Kindred Street Lighting Department.

i. Street Light Luminaire
    i. The measurement for payment will be for each (EA) type of street light luminaire supplied for installation, or to be supplied to the City of Kindred for maintenance stock. See plans for type of luminaire required. Cost of lamp shall be incidental to price bid for luminaire. The cost bid for this item shall include providing unloading, storage and transportation to project site and to the City of Kindred Street Lighting Department.

j. Install Standard And Luminaire
    i. The measurement for payment will be for each (EA) street light standard and luminaire installed as a complete and operational unit. Incidental to this cost shall be all storage, transportation, all wiring and connections within standards, the standard one year warranty typically associated with Contractor provided materials on City of Kindred supplied standards and luminaires. Cost for street light standard conductor, fuse holders and fuses will not be measured for payment and shall be incidental to the price bid to install standards and luminaire. Cost to install standards with twin mast arms and luminaires shall be incidental to the price bid.

k. Borrowing Of Maintenance Stock
    i. All costs for the Contractor to borrow City maintenance stock, including all costs for work to load, transport, and unload borrowed and returned materials, shall be considered incidental to the project.

l. Other Costs
    i. All other costs for work necessary to properly complete the work specified herein shall not be bid items; the costs shall be charged to other items unless a bid item is specifically included on the bid sheet.

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City of Kindred

Meadow Trails Development

Sewer, Water and Street Improvement District No. 2025-2

Kindred, North Dakota

MBN Project No. 24-154

Bid Date: April 30, 2025 @ 2:00 PM

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SIOUX FALLS OFFICE 101 Main Avenue South, Suite 302 • Sioux Falls, SD 57104 • Phone: 701-478-6336
BISMARCK OFFICE 418 Rosser Avenue East, Suite 204 • Bismarck, ND 58501 • Phone: 701-478-6336

ADVERTISEMENT FOR BIDS
CITY OF KINDRED
SEWER, WATER AND STREET IMPROVEMENT DISTRICT NO. 2025-2

Bids will be received by City of Kindred via the Quest CDN VirtuBid™ platform until 2:00 p.m., April 30, 2025. Mailed or hand delivered bids will not be accepted. The public is encouraged to view the bid opening from their computer, tablet, or smartphone. Video Conference is provided at www.mbnengr.com by clicking the Plan Room tab, or at www.questcdn.com.

Bids must be submitted electronically and must be accompanied by a bidder's bond in a sum equal to five percent (5%) of the full amount of the bid executed by the bidder as principal and by a surety company authorized to do business in this state, conditioned that if the bidder's bid be accepted and the contract be awarded to the bidder, the bidder, within ten (10) days after notice of award, will execute and effect a contract in accordance with the terms of the bidder's bid and a contractor's bond as required by law and the regulations and determinations of the City of Kindred. The successful bidder will be required to furnish a performance and payment Bond in the full amount of their contract.

Additional Stipulations:

a. Bidders on this work will be required to comply with American Iron and Steel requirements of the Consolidated Appropriations Act, 2014. The requirements for bidders and contractors under this regulation are explained in the specifications.

b. Bidders are required to comply with Davis-Bacon prevailing wage requirements.

c. Any lead service line replacements conducted under this project must replace the entire lead service line, not just a portion, unless a portion has already been replaced or is concurrently being replaced with another funding source.

Bidding documents are available at www.mbnengr.com by clicking the Plan Room tab, or at www.questcdn.com. **Refer to eBidDoc# 9622026.** To be considered a plan holder, register with QuestCDN.com for a free regular membership and download the bidding documents in digital form at a cost of $22.00. Downloading the documents and becoming a plan holder is recommend as plan holder's receive automatic notice of addenda, bid updates and access to vBid online bidding via QuestCDN. Parties that download the plans and specifications and need to have them printed elsewhere are solely responsible for those printing costs. The sales of paper copies for projects listed on this site are not available. To access the electronic bid form, download the digital bidding documents and click the 'Online Bid' button or Online Bidding 'Available' button on the bid posting page. After the bid close, bidders will be charged a fee $50.00 for a successful bid submission. Bids will ONLY be received and accepted through vBid via QuestCDN.com. Prospective bidders must be on the plan holder list through QuestCDN for bids to be accepted. Contact QuestCDN.com at 952-233-1632 or Success@questcdn.com for assistance in membership.

Bidders must be the holder of a Contractor's License at least ten (10) days before the date set for receiving bids to be a qualified bidder and a copy of the Contractor's License issued by the Secretary of State must be included in the online bid submission as required und N.D. Cent. Code Section 43-07-12.

The City of Kindred reserves the right to hold all bids for a period of sixty (60) days after the day fixed for the opening of the bids, and the right to reject any or all bids and to waive any informalities.

No bid will be read or considered which does not fully comply with the above provisions as to bond and licenses and any deficient bid will be rejected via the Quest CDN vBid platform and will not be opened.

THE CITY OF KINDRED
(April 9, 16, 23, 2025)

AGREEMENT

BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between The City of Kindred ("Owner") and

_____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

A. Sewer, Water and Street Improvement District No. 2025-2.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

A. Sewer, Water and Street Improvement District No. 2025-2.

1. Total Contract Price:

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed by MBN Engineering, Inc.

3.02 The Owner has retained MBN Engineering, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. Time of Commencement and Completion

The Contractor shall commence the work within thirty (30) days after written notice from the City, continue the work without interruption, and complete the entire Contract on or before **October 31st, 2025.** Contractor's failure to satisfactorily and timely complete the Contract work shall result in a deduction by City, out of the money which may be due or become due Contractor liquidated damages at rate of $500 per calendar day, fixed and determined by the parties to be liquidated damages.

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Substantial completion shall consist of the following items unless otherwise noted in the Plan Notes:

1. Projects with underground utilities: Substantial completion shall consist of the installation of all main line sewer, water, storm sewer pipe. Installation shall include testing of water main and sanitary sewer and installation of sewer and water services. All underground utilities shall be functional.

2. Projects with paving; Substantial completion requires that the curb and gutter and paving section be installed and functional. This includes driveways, sidewalks, finish grading, street lights, and signals.

B. Final completion shall consist of completing remaining items and the repair of all punch list and clean up items.

C. At any time before expiration of the original or extended Contract time, a written request may be made to the City Engineer for additional time to complete the Contract. The request shall be supported by adequate documentation stating the reasons and basis for the request. The City Engineer's determination will consider to what extent the delays were caused by conditions beyond the Contractor's control that may be offset by time lost due to the failure to diligently prosecute the work or to other conditions within the Contractor's control. A plea that insufficient time was specified is not a valid reason for a time extension. A time extension will not be considered for inclement weather or for the time period from November 15 to April 15.

D. Contractor must pay City liquidated damages for failure to timely complete the Contract work irrespective of whether there are monies due on the Contract.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500.00 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

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4.04 *Special Damages*

A. In addition to the amount provided for liquidated damages, Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.

B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item. The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

B. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 1st day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

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a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 97.5 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the project.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the

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Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement.
2. Performance bond.
3. Payment bond.
4. General Conditions.
5. Specifications as listed in the table of contents of the Project Manual.
6. Drawings (not attached but incorporated by reference) bearing the following general title: **Sewer, Water and Street Improvement District No. 2025-2**.
7. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid.
8. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

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D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*

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BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
The City of Kindred
31 5th Ave N
Kindred, ND 58051

BID
Bid Due Date:
Description *(Project Name— Include Location)*:

BOND
Bond Number:
Date:
Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at

length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:
The City of Kindred
31 5th Ave N
Kindred, ND 58051

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ *(seal)*
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ *(seal)*
Surety's Name and Corporate Seal

By: _____
Signature *(attach power of attorney)*

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

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10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:
The City of Kindred
31 5th Ave N
Kindred, ND 58051

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ *(seal)*
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ *(seal)*
Surety's Name and Corporate Seal

By: _____
Signature *(attach power of attorney)*

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

    5.1 Claimants who do not have a direct contract with the Contractor,

        5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2 Pay or arrange for payment of any undisputed amounts.

    7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

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12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default**: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

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has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Engineer*—The individual or entity named as such in the Agreement.

21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

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24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

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37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

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48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

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3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

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3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

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computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

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error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

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3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Contractor shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

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2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

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G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

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by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

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c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

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becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

    b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

    d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

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5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

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F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

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ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

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maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

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4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

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of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.

2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

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6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

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5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

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6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

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policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

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guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

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D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

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2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

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E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

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O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

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7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

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2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

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exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

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provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

   a. Contractor shall submit the number of Samples required in the Specifications.

   b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

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8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

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D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

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Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

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8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner for whom the Owner is responsible causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

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D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

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9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

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or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

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adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

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the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.04.C.2.a and 11.04.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

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the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

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B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

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submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

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thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

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other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

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B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

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cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

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B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

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include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

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a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

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e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

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remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

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E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

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inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all disputes that Contractor believes are unsettled; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

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including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

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and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for

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expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

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18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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CONTRACTOR'S NAME, ADDRESS & TELEPHONE NUMBER

_____

_____

_____

Return to:

U.S. Department of Labor for OFCCP
Southwest and Rocky Mountain
Region Federal Building, Room 840
525 South Griffin St.
Dallas, TX 75202

EMPLOYER ID NUMBER OF CONTRACTOR:_____

CONTRACT INFORMATION

PROJECT AND LOCATION:				
Dollar Amount of Contract	Estimated Start Date	Estimated Completion Date	Contract No.	Geographical Area

NOTIFICATION OF SUBCONTRACTS AWARDED (>$10,000)

Subcontractor's Name, Address, & Phone Number	Employer ID Number of Subcontractor	Estimated $ Amount of Subcontract	Estimated Start Date	Estimated Completion Date

DISCOVERY OF ARCHAEOLOGICAL AND OTHER HISTORICAL ITEMS

In the event of an archaeological find during any phase of construction, the following procedure will be followed:

(1) Construction shall be halted, with as little disruption to the archaeological site as possible.

(2) The Contractor shall notify the Owner who shall contact the State Historical Preservation Officer.

(3) The State Historical Preservation Officer may decide to have an archaeologist inspect the site and make recommendations about the steps needed to protect the site, before construction is resumed.

(4) The entire event should be handled as expediently as possible in order to hold the loss in construction time to a minimum while still protecting archaeological finds.

A similar procedure should be followed with regard to more recent historical resources. Should any artifacts, housing sites, etc., be uncovered, the same procedure should be followed as for an archaeological find.

In the event archaeological/historical data are evaluated to meet National Register criteria, the Advisory Council on Historic Preservation may be notified and asked to comment.

BONDING REQUIREMENTS

Bonding requirements must meet the minimums established in 2 CFR 200:

(1) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.

(2) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor’s requirements under such contract.

(3) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and materials in the execution of the work provided for in the contract.

WILLIAMS-STEIGER OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

A. AUTHORITY

(1) The contractor is subject to the provisions of the Williams-Steiger Occupational Safety and Health Act of 1970.

(2) These construction documents and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the Federal law(s) , including but not limited to the latest amendment of the following:

a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 94-596;

b. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;

c. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

B. SAFETY AND HEALTH PROGRAM REQUIREMENTS

(1) This project, its prime contractor and its subcontractors, shall at all times be governed by Chapter XVII of Title 29, Code of Federal Regulations, Part 1926 - Safety and Health Regulations for Construction (29 CFR 22801), as amended to date.

(2) To implement the program and to provide safe and healthful working conditions for all persons, general project safety meetings will be conducted at the site at least once each month during the course of construction, by the construction superintendent or his/her designated safety officer. Notice of such meeting shall be issued not less than three (3) days prior, stating the exact time, location, and agenda to be included. Attendance by the owner, architect, general foreman, shop steward(s), and trades, or their designated representatives, witnessed in writing as such, shall be mandatory.

(3) To further implement the program, each trade shall conduct a short gang meeting, not less than once a week, to review project safety requirements mandatory for all persons during the coming week. The gang foreman shall report the agenda and specific items covered to the project superintendent, who shall incorporate these items in his/her daily log or report.

(4) The prime contractor and all subcontractors shall immediately report all accidents, injuries, or health hazards to the owner and architect, or their designated representatives, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Act of 1970.

(5) This program shall become a part of the contract documents and the contract between the owner and prime contractor, prime contractor and all subcontractors, as though fully written therein.

WAGE RATE REQUIREMENTS

Wage Rate Requirements under Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Loans for Subrecipients that are Governmental Entities.

Preamble

All laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code.

Pursuant to Reorganization Plan No. 14 and the Copeland Act, 40 U.S.C. 3145, the Department of Labor has issued regulations at 29 CFR Parts 1, 3, and 5 to implement the Davis-Bacon and related Acts. Regulations in 29 CFR 5.5 instruct agencies concerning application of the standard Davis-Bacon contract clauses set forth in that section. Federal agencies providing grants, cooperative agreements, and loans shall ensure that the standard Davis-Bacon contract clauses found in 29 CFR 5.5(a) are incorporated in any resultant covered contracts that are in excess of $2,000 for construction, alteration or repair (including painting and decorating).

For additional guidance on the wage rate requirements, contact your awarding agency. Recipients of grants, cooperative agreements and loans should direct their initial inquiries concerning the application of Davis-Bacon requirements to a particular federally assisted project to the Federal agency funding the project. The Secretary of Labor retains final coverage authority under Reorganization Plan Number 14.

Wage Rate Requirements under CWSRF and DWSRF Loans.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

   Davis-Bacon prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a state water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor https://sam.gov/ weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor https://sam.gov/ on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from https://sam.gov/ into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract

or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract Provisions

(a) The Recipient and/or subrecipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or part from Federal funds in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1, the following clauses:

(1) Minimum wages.

(i)All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act 1937 or under Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate of any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis –Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually preformed, without regard to skill, except as provided in §5.5(a)(4). Laborers or

mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is preformed. The wage determination (including any additional classification and wage rate conformed under paragraph (a)(1)(ii) of this section) and the subcontractors at the site of work in a prominent and accessible place where it can be easily seen by the workers.

Recipients may obtain wage determinations from the U.S. Department of Labor's web site: https://sam.gov/.

(ii)(A) The recipient, on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe befits therefore only when the following criteria have been met:

(1) The work to be performed by classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the recipient to the EPA award official. The award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the award official or will notify the award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The (recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of

1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the EPA if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the recipient who will maintain the records on behalf of EPA. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an

individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at: http://www.dol.gov/whd/programs/dbra/wh347.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the EPA if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the recipient for transmission to the EPA, if requested by EPA , the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the recipient.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees—

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the

applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as

amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis- Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section. Withholding for unpaid wages and liquidated damages. The subrecipient**,** upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(3) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a) (6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor’s submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB . Subrecipients shall

immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/whd/america2.htm.

"General Decision Number: ND20250006 01/03/2025

Superseded General Decision Number: ND20240006

State: North Dakota

Construction Type: Highway

Counties: North Dakota Statewide.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	• Executive Order 14026 generally applies to the contract. • The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	• Executive Order 13658 generally applies to the contract. • The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025

ELEC0714-018 12/01/2024

ADAMS, BILLINGS, BOTTINEAU, BOWMAN, BURKE, DIVIDE, DUNN, EMMONS, GOLDEN VALLEY, GRANT, HETTINGER, MCHENRY, MCKENZIE, MCLEAN, MERCER, MOUNTRIAL, OLIVER, PIERCE, RENVILLE, ROLLETTE, SHERIDAN, SOIUX, SLOPE, WARD, & WILLIAMS COUNTIES:

	Rates	Fringes
ELECTRICIAN		
CABLE SPLICER	$ 53.48	8.80+29.5%
ELECTRICIAN	$ 53.48	8.80+29.5%

ELEC0714-019 12/01/2024

	Rates	Fringes
LINE CONSTRUCTION		
CABLE SPLICER	$ 53.48	8.80+29.5%
GROUNDMAN	$ 30.26	8.80+19.5%
LINE EQUIPMENT OPERATOR	$ 45.41	8.80+29.5%
LINEMAN	$ 53.48	8.80+29.5%

ELEC0714-020 12/01/2024

BURLIEGH, MORTON, STARK:

	Rates	Fringes
ELECTRICIAN		
CABLE SPLICER	$ 53.48	29.5%+8.8
ELECTRICIAN	$ 53.48	8.80+29.5%

ELEC1426-002 12/01/2024

BARNES, BENSON, CAVALIER, DICKEY, EDDY, FOSTER, GRAND FORKS, GRIGGS, KIDDER, LA MOURE, LOGAN, MCINTOSH, NELSON, PEMBINA, RAMSEY, RANSOM, RICHLAND, SARGENT, STEELE, STUTSMAN, TOWNER, TRAILL, WALSH, AND WELLS COUNTIES

	Rates	Fringes
ELECTRICIAN		
CABLE SPLICER	$ 53.48	29.5%+8.80
ELECTRICIAN	$ 53.48	29.5%+8.80

ENGI0049-021 10/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 35.05	21.90
GROUP 2	$ 33.65	21.90
GROUP 3	$ 33.40	21.90
GROUP 4	$ 33.25	21.90
GROUP 5	$ 32.40	21.90
GROUP 6	$ 31.60	21.90

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: All Cranes 60 tons and over, Cranes doing piling, sheeting, dragline/clam work, Derrick(Guy & Stiff), Gentry Crane Operator, Helicopter Operator, Mole Operator or Tunnel Mucking Machine, Power Shovel 3-1/2 CY. and over and

Traveling Tower Crane.

GROUP 2: All Cranes 59 tons and under, Backhoe Operator 3 CY. and over, Creter Crane, Dredge Operator 12' and Over, Equipment Dispatcher, Equipment Foreman, Finish Dozer, Finish Motor Grader, Front End Loader Operator 8 CY. and over, Master Mechanic (When supervising 5 or more Mechanics), Mon-o-rail Hoist Operator, Power Shovel up to and including 3-1/2 CY. and Tugboat.

GROUP 3: Lazer-Screed Operator, Asphalt Paving Machine Operator, Asphalt Plant Operator, Automated Grade Trimmer, Backhoe Operator 1 CY. up to and including 2-1/2 CY., Boom Truck Hydraulic (8 Tons & over), Cableway Operator, Concrete Batch Plant Operator(electronic or manual), Concrete Mixer Paving Machine Operator, Concrete Paver-Bridge Decks, Concrete Pump, Concrete Spreader Operator & Belt Placer, Crushing Plant Operator, Dozer Operator, Dredge Operator or Engineer 11'' and under, Drill Rigs, Heavy Duty Rotary or Chum or Cable Drill, Front End Loader (3-1/2 CY. up to and including 7-1/2 CY.), Gravel Washing & Screening Plant Operator, Locomotive, all types, Mechanic or Welder(heavy duty), Motor Grade Operator, Pavement Breaker (Non-Hydro Hammer type, Pipeline Wrapping, Cleaning & Bending Machine Operator, Power Actuated Auger and Horizontal Boring Machine Operator 6'' and over, Refrigeration Plant Engineer, Roto Milling Machine (Surface Planer) 43'' & over, Scraper Operator, Slip Form Concrete Paving Operator, Tandem Pushed Quad 9 or similar, Tractor with Boom Attachment, Trenching Machine- 100 HP. and over.

GROUP 4: Articulated/Off Road Hauler, Asphalt Dump Person (Controls the Spread of Asphalt), Asphalt Paving Screed Operator, Backhoe - up to and including 1/2 CY., Boring Machine locator, Console Board Operator, Curb Machine Operator, Distributor Operator (Bituminous), Forklift Operator, Front End Loader- 1-1/2 CY. up to and including 3 Cubic Yards (Machine Standard Mfg. Rating), Fuel/Lube Truck Operator, Grade Person (Responsible for Establishing and Determining Grade through Instrumentation), Gravel Screening Plant Operator (not Crushing or Washing), Greaser, Hydro-VAC and Hydro Excavator Self-Propelled, Longitudinal Float and Spray Operator, Micro surfacer Machine, Motor Grade Operator-Hual Roads, Paving Breaker-Hydro Hammer Type, Pugmill Operator, Push Tractor, Roller, Steel & Rubber on Hot Mix Asphalt Paving, Rotomill Machine (Surface Planer), up to and including 42'', Rumble Strip Machine, Sand and Chip Spreader, Self-propelled Sheepsfoot Packer with or without Blade attachment, Self-propelled Traveling Soil Stabilizer, Sheepsfoot Packer with Dozer attatchment- 100 HP and over, Shouldering Machine, Slip Form, Curb & Gutter Operator, Slurry Seal Machine, Tamping Machine Operator, Tie Tamper and Ballast Machine, Trenching Machine Operator- 46 HP up to and including 99 HP, Truck Mechanic, Well Points, Tub Grinder.

GROUP 5: Boom Truck- A- Frame or Hydraulic 2 tons up to and including 7 tons, Broom-Self propelled, Concrete Saw (Power Operated), Cure Bridge Operator, Front End Loader Operator, less than 1-1/2 CY., Mobile Cement Mixer-Non-Truck, Power Actuated Auger & Horizontal Boring Machine Operator up to and including 5"", Roller, on other than Hot Mix Asphalt Paving, Oilers, Vibrating Packer Operator (Pad Type) Self-propelled, Water Spraying Equipment-Self Propelled, Skidsteer Operator with Attachments.

GROUP 6: Brakeman or Switchman, Dredge or Tugboat Deckhand, Drill Truck Gravel/Testing Operator, Form Trench Digger (Power), Gunite Operator Gunall, Paint Machine Striping Operator, Pick-up Sweeper, 1CY. & over Hopper Capacity, Scissor Jack-Self Propelled Platform Lift, Straw Mulcher, Blower and Straw Press, Stump Chipper Operator, Tillage Equipment Operator, Tractor Pulling Compaction or Aerating Equipment and No Till Drills, Trenching Machine Operator-up to and including 45 HP., Assistant/Apprentice Operator.

TEAM0638-004 10/01/2024

	Rates	Fringes
TRUCK DRIVER		
Euclid over 20 yds	$ 34.83	17.99
Single Axle Trucks	$ 32.88	17.99
Tandem Tri Axle Semi, Low Boy and Off Road Heavy Duty End Dumps 20 yds & under	$ 33.31	17.99
Tandem Tri/ Axle Truck	$ 33.00	17.99

SUND2023-001 10/16/2020

	Rates	Fringes
CARPENTER	$ 35.85	7.60
CEMENT MASON/CONCRETE FINISHER	$ 35.85	7.60
ELECTRICIAN		
Cass County	$ 35.35	16.32
LABORER		
GROUP 1	$ 27.65	3.15
GROUP 2	$ 27.90	3.15
GROUP 3	$ 28.05	3.15
GROUP 4	$ 28.80	3.15

LABORERS CLASSIFICATIONS

GROUP 1: General Construction Laborers: Sack Shaker (cement and mineral filler): Pipe Handler: Drill Runner Tender: Salamander Heater and Blower Tender, Light truck, Pickup Driver, Flaggers and Pilot Car Drivers.

GROUP 2: Semi Skilled Laborer: Bulk Cement Handler: Conduit Layer, Telephone or Electrical: Form Setter (pavement): Gas Electric or pneumatic tool operator: Chipping Hammer, Grinders and Paving Brakers (tamper-drit) Concrete Vibrator Operator: Chain Saw Operator: Concrete Saw Operator: Concrete Curing Man (not water): Bituminous worker (Shoveler, Dumper, Raker and Floated): Kettleman (bituminous or lead): Concrete Bucket Signlman: Power Buggy Operator: Brick and Mason Tender: Multiplate Pipelayer: Culvert Pipe Layers: Carpenters Tenders.

GROUP 3: Caisson Worker: Bottom Man (sanitary sewer, storm sewer water and gas liners): Concrete Mixer Operator (one bag capacity): Mortar Mixer.

GROUP 4: Pipe Layers (sanitary sewer, storm sewer, water and

gas lines): Drill runner (includes Wagon Churn or Air Track) Powderman, Gunite and Sandblast, Nozzleman, Reinforcing Steel Setters/Tiers, Concrete Finishers Tender.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates

in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination

c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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200 Constitution Avenue, N.W.
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The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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END OF GENERAL DECISION"

"General Decision Number: ND20250050 02/28/2025

Superseded General Decision Number: ND20240050

State: North Dakota

Construction Type: Heavy
HEAVY CONSTRUCTION PROJECTS

County: Cass County in North Dakota.

HEAVY CONSTRUCTION PROJECTS
Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025
1	02/28/2025

* ELEC0714-014 07/01/2024

	Rates	Fringes
ELECTRICIAN	$ 44.98	13.21+11.5%

ENGI0049-022 10/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR (Bulldozer)	$ 32.40	20.65

ENGI0049-026 05/01/2022

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Crane	$ 38.30	21.60
Forklift	$ 35.05	21.60

ENGI0049-027 10/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Mechanic	$ 32.40	20.65
Scraper	$ 32.40	20.65

IRON0512-033 04/28/2024

	Rates	Fringes
IRONWORKER, REINFORCING	$ 39.80	24.47
IRONWORKER, STRUCTURAL	$ 39.80	24.47

TEAM0638-003 10/01/2023

	Rates	Fringes
TRUCK DRIVER (Dump Truck)	$ 32.40	16.90

SUND2017-013 07/31/2020

	Rates	Fringes
CARPENTER	$ 26.68	5.60
CEMENT MASON/CONCRETE FINISHER	$ 24.00	0.00
LABORER: Common or General	$ 18.79	0.00
LABORER: Pipelayer	$ 23.14	0.00
OPERATOR: Backhoe/Excavator/Trackhoe	$ 24.91	14.85
OPERATOR: Bobcat/Skid Steer/Skid Loader	$ 20.01	0.00
OPERATOR: Grader/Blade	$ 24.29	0.00
OPERATOR: Loader	$ 26.10	14.85
OPERATOR: Roller	$ 28.00	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Washington, DC 20210.

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END OF GENERAL DECISION"

AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

The Contractor acknowledges that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

One of the following certification forms should be used as documentation of compliance with the AIS requirements.

Sample Certification for AIS

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Sample Step Certification for AIS

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

LEAD SERVICE LINE REPLACEMENT (DWSRF)

The memo *Implementing Lead Service Line Replacement Projects Funded by the Drinking Water State Revolving Fund* dated May 1, 2024 and issued by the Environmental Project Agency outlines the following requirements that apply to lead service line replacements (LSLR) depending on the project type:

Stand-alone LSLR
Stand-alone LSLR projects refers to projects that are solely replacing lead service lines and are not conducting additional construction or activities that would disturb the service line, such as main replacement or meter replacement. All LSLRs conducted through a stand-alone LSLR project must replace the full lead service line (i.e., the customer-owned and system-owned portions) unless a portion has already been replaced or is concurrently being replaced with another funding source. The entire length of each property's lead service line must be replaced at the same time except where it is impractical due to access constraints or local requirements that prevent the same organization from completing the full LSLR at the same time. The time between starting and completing full LSLR should be as short as possible and should not exceed three months.

LSLR in Conjunction with Planned Infrastructure Projects
All DWSRF-funded projects involving LSLR implemented in conjunction with other planned infrastructure projects that affect the service line must plan to replace the full service line. Planned infrastructure work includes water infrastructure or capital improvement projects that do not solely replace lead service lines. Examples include, but are not limited to, water main replacement, meter replacement, and transportation-related construction projects. A partial LSLR may only be funded by the SRF where the water system shows all of the following: that the partial LSLR is done in conjunction with planned infrastructure work, that disturbance to the service line is unavoidable because of the planned infrastructure work, and that the water system has documented customer refusal showing it cannot gain access to that property to conduct a full LSLR following multiple attempts. Refusals may consist of any of the following: a refusal signed by the customer, documentation of a verbal statement refusing replacement, or documentation of no response after multiple attempts to reach the customer regarding full LSLR.

LSLR in Conjunction with Emergency Infrastructure Repair or Replacement
Emergency repair and replacement of drinking water transmission and distribution infrastructure can necessitate unexpected replacement of lead service lines. Under such circumstances, DWSRF-funded borrowers must offer to replace the full lead service line. However, the borrower may use DWSRF funding to pay for emergency partial LSLR if full replacement is not possible due to a documented customer refusal. Refusals may consist of any of the following: a refusal signed by the customer, documentation of a verbal statement refusing replacement, or documentation of no response after multiple attempts to reach the customer regarding full LSLR.