December 13, 2024

Matthew Philips, PE
ODOT District 4
2088 S. Arlington Road| Akron, OH | 44306 | USA

Re: PID 121698; TRU-80-11.32 Truck Parking

Dear Mr. Philips,

2LMN is pleased to submit the revised preliminary alignment feasibility study and Part 2 fee proposal for the above referenced project. We are happy to meet with you to discuss.

We are looking forward to working on the next phase. If you have any questions or need further information, feel free to contact me at 614-832-1815 or Jim.Barna@2lmn.com

Respectfully,

James A. Barna, PE

Enclosures

Cc: Laura Beese
Emilie Worley
Lindsay Walker

December 19, 2024

Matthew Philips, PE
ODOT District 4
2088 S. Arlington Road| Akron, OH | 44306 | USA

Re: TRU-80-11.32 Truck Parking
PID 121698

Dear Mr. Philips,

2LMN, Inc. has been retained by ODOT District 4 to investigate three alternative alignments for water and sanitary services to supply a restroom facility for a truck parking area on I.R. 80 west bound, approximately 0.80 miles west of the Ohio/Pennsylvania state line.

Proposed Facility

The truck parking facility will reside at the location of the existing Trumbull Rest Area, which is currently closed. The site design, access, and building footprint is being performed by others. The intent is to construct a parking area on 6.39 Ac. with a single restroom building that includes water and sanitary service. The restroom facility will not have a fire suppression system and the site will not have fire hydrants.

Water Service

The water for the project will be supplied from the City of Hubbard off Hubbard Masury Rd.

The water distribution system was design based on the assumption that the operating pressure at the connection is 65 psi and the design flowrate is 20 gpm. Fire flow is not required for the project.

The water distribution system was modeled utilizing EPANET. Assuming a 4-in water line with a design flow rate of 20 gpm, the operating water pressure is estimated to be 55.11 psi at the truck parking location.

Based on the Recommended Standards for Water Works “Ten States Standards”, Section 8.2.1 - System design pressure; “The normal working pressure in the distribution system should be approximately 60 to 80 psi (410 - 550 kPa) and shall not be less than 35 psi (240 kPa) unless otherwise approved by the reviewing authority.” Therefore, a booster pump is not required to maintain an acceptable working pressure at the truck parking facility.

The waterline appurtenances required for operation do not change much across the alternates, however

Alternate 3 will require the most footage in piping. Alternate 2 requires just 27-ft less piping than Alternate 1. The waterlines for all alternates will cross Little Yankee Run and the Norfolk Southern Railroad and will be attached to the bridge super structure and insulated for approximately 330-ft. Effort will be made to combine bridge mountings, where feasible, to minimize design and construction costs. It is anticipated that Alternates 2 and 3 will require approximately 135-ft of jack and bore below I.R. 80 pavement crossings.

A water flush will be provided near the building at the parking location and drain to the sanitary pump.

Sanitary Service

Based on the topography in the project area, a conventional gravity sewer system is not feasible. While the elevation at the connection point is 1020 and at tie in is near 1000, the low point along the corridor is approximately 919.

Many alternative sewers have been considered instead of a conventional sewer, but a Grinder Pump (GP) is recommended to be considered for the TRU-80 truck parking facility, since onsite treatment is not permitted at ODOT facilities.

The Grinder Pump (GP) system is a pressure sewer system that requires a pump to operate. The pump is designed to account for head losses and maintain the required flow.

With a Grinder Pump (GP) system, the wastewater solids from the truck parking lot will be reduced to a slurry, similar to a garbage disposal. The 5-hp grinder pumps will provide a low-pressure head to transport the wastewater to the Hubbard collection system through a small diameter PVC or HDPE pipe (i.e. 2-inch). The force main will have a low probability of clogging because a minimum velocity is maintained to prevent solids from settling out in the pipe. In addition, GP can follow the existing groundline with minimum cover of 5 feet.

(GP) systems do not require a septic tank, but normally require more horsepower than septic tanksystems because of the grinding action.

The force main for all three alternates have similar appurtenances, such as valves, cleanouts, and air/vacuum release valves. Air valves operate automatically and do not require power. Alternate 3 has the longest estimated length; 7,189-ft and Alternate 1 has the shortest; 6,901-ft. Similar to the waterlines, the sanitary lines for all alternates will be mounted to the bridge superstructure over Little Yankee Run and the Norfolk Southern Railroad and insulated. It is anticipated that all alternates will require approximately 135-ft of jack and bore below I.R. 80 pavement crossings.

Water and Sewer Force main Separation

The ten states standards allow exceptions to the requirement for at least 10 feet horizontal separation between water and sewer lines.

SECTION 8.8.4 - EXCEPTIONS: "When it is impossible to obtain the minimum specified separation distances, **the reviewing authority must specifically approve** any deviation from the requirements of Sections 8.8.2 and 8.8.3."

Where water mains and/or sanitary or storm sewers are being installed and the parallel installation and crossing requirements cannot be met, Section 8.8.4 states the water main should be laid in a trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the gravity sewer. The Ohio Environmental Protection Agency (OEPA) requires a "variance request" letter listing the affected station range and reason the requirement cannot be met.

Along the length of the bridge over Little Yankee Run, it was discussed if the water and sewer could reside in the same bay. Upon corresponding with an environmental specialist at the OEPA, the 10-ft separation along the underside of a superstructure is not necessary. Rather, the concern would be to ensure insulation thickness, flow, temperature and support are appropriate in design.

Flush Valves

There are several reasons why water would need to be flushed; maintenance, removal of stagnant water, evidence of contamination or low disinfectant levels. 2LMN recommends using an automatic flush hydrant similar to the Mueller 300 Series Cold. This unit would need to be installed at the truck parking facility. While water samples can be taken directly from this unit, chlorination should be performed at the service line connection point near Hubbard.

Minimal Usage Concerns

Due to the length of the force main, there were concerns about the sanitary not being able to traverse the entire length based on such a small flow. 99The force main will be designed to maintain a minimum flow of 2 fps to keep solids in suspension. The length of the force main is considered in the calculations for head loss. Anticipated minimum and maximum flows will be discussed before starting design on the preferred alignment to ensure the correct pumps are selected for pumping efficiency.

Sanitary and Water Tie-in Locations

The sanitary force main for all 3 alternates near Hubbard will occur at the existing sanitary manhole approximately 200-ft south of I-80. There is an existing 6-in waterline that runs along the west side of

Hubbard Masury Rd. Alternate 1 waterline will tie in to the existing line to the north of the northern approach slab of the bridge. Alternates 2 and 3 will tie in to the south of the southern approach slab.

Existing Soils

Historical soil borings were obtained from the ODOT TIMS site to determine if rock exists along any of the alignments. At the Hubbard Masury Rd. crossing, soil borings at the abutments illustrated gravelly sandy silts down to 46-ft. At TRU-80-10.69 L/R bridge over Little Yankee Run, soil borings were taken at both abutments. The borings extended to 45-ft below the surface and soils consisted of gravelly sandy silt.

According to the TRU-IR-80-8.90 soil profiles, there were several borings with boulder refusals, however most of these depths occurred over 6.5-ft deep. The shallowest boulder refusal was 4.5-ft near Little Yankee Run.

At the truck parking area, soil borings show weathered carbonaceous shale as shallow as 3.5-ft. Shale is typically not very hard and can be cut through fairly efficiently.

Based on the historical borings, rock should be able to be avoided considering water and sanitary depths of 5-ft. However, a contingency should be added in the event rock becomes encountered during construction.

We are requesting borings at the proposed bore and jack locations.

Utility/Structure Crossings

The project location for the water and sewer service extensions has existing utility and structure conflicts. Considering placement of the water and sewer alternates 1 and 3, tree removals are being avoided as much as possible. Most of the ground coverage within the existing LA has trees. It was found that the areas immediately adjacent to I.R. 80 had the least number of trees. The goal for placement was to get as close to the tree drip line as possible, but still maintain at least 10-ft of separation between water and sewer without getting into the edge of shoulder, where possible.

There is an existing bridge footer where an old railroad crossing once existed. The footer was excavated down to 1.5-ft below existing ground. The footprint and toe of the existing footer will be verified. It may be possible to run the water and sewer behind the footer. Otherwise, the lines will need to be jack and bored through this area.

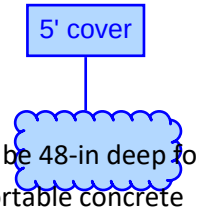
Alternate 1 water and sanitary lines have the most potential conflicts, crossing 6 storm sewers, a gas line and bridge footer. Alternate 3 has the least number of conflicts.

FEMA and the NWI wetland mapper sites were investigated for existing FEMA special flood hazard areas and potential wetlands, however neither were found to be within the project vicinity.

ODOT will coordinate with the Norfolk Southern railroad for any necessary permitting involved for the aerial crossings.

Near the structures, we requested survey including cross sections at the expansion joint and begin approach slab locations both rear and forward. For the bridges themselves, we requested the overhang, outside bay, including bottom beams, toe of parapet, edge of deck, bottom deck and cross frame locations for the facia beams.

Our plan is to attach 8-in insulated ductile lines for both water and sanitary to lateral hangers or vertical hangers between the outside two beams. For the median alternative (2), the waterline and sanitary will be attached to the left bridge within a single bay. We have included a combined cost for the pipe, insulation, and hangar installation in our estimates.



Maintenance of Traffic

For open trench construction, the water and sanitary excavations are anticipated to be 48-in deep for frost protection. Per ODOT SCD MT-101.90, if excavations exceed 24-in in depth, portable concrete barrier (PCB) must be used if excavations are left open overnight. If the contractor only installs a length that can be backfilled the same day, then drums can be used. For the purpose of this study, the PCB option was priced as the worst-case scenario. Instead of installing PCB the full 7,000-ft of the project, the barrier has been priced assuming a maximum length of 1,000-ft will be placed, and as the work area shifts the barrier will be moved further down the interstate.

For pavement crossings, jack and bore or directional drilling would have a lesser impact on MOT. Any open cut would require lane closures.

All options could be considered depending on the time of year that the utility work is performed. Regardless of the selected Alternative, an acceptable MOT scheme is possible but would be subject to various PLCS restrictions and PB requirements. Be advised that the PLCS requires that any shoulder closure in this area be treated as a single lane closure and that the PLCS schedule be followed accordingly. Because of this requirement, the contractor would not be permitted to work on the shoulder or median when the PLCS requires all lanes be open. If using PCB, we are confident that a MOTEC or DWZTM approval would allow a reasonable length of PCB to remain on a shoulder during restricted hours but NOT allow the crew to work during PLCS restrictions.

Winter Construction - If performing utility work during the winter months, the PLCS is more lenient February-April. Lane closure restrictions become more of an issue around 3-4PM. Depending on the project sale date, it may be desirable to install the utilities during the winter months. During winter

months, there are spotty PLCS restrictions requiring the shoulder be open during certain hours. If using PCB, we are confident that a MOTEC or DWZTM approval would allow the PB to remain on the shoulder during restricted hours but we would NOT allow the crew to work beyond 3:00PM for the PM peak. Due to the varying PLCS restrictions through the week, we would want to pursue MOTEC approval to limit the work day to 3PM. {Note, sale will be early 2026. It is likely that utilities will be installed during spring/summer/fall of 2026 and not over winter.}

Alternate 2: Given that this area has a wide center median, it would be possible to keep work outside of the clear zone depending on utility alignment. If the work remains close to the centerline, Alternate 2 would be feasible. Open trenches would be permitted but the length of the open trench should be minimized and any open trench would need to be protected. Any equipment or materials left within the R/W would need to be located outside of clear zone and must be properly delineated. When working in the median, the closure of an inside lane might be needed to allow for trucks entering and exiting the work area. Lane closures would need to follow the PLCS. The use of PCB may be minimized but is still very likely to be required at a boring/receiving pit.

Alternates 1 & 3 - If working on the shoulders, most of the work will be within clear zone if not protected by PCB. A quantity of PCB should move with the crew during the utility installation. If not working during the winter months, PLCS restrictions will substantially limit working hours. The WB PLCS seems more lenient with an afternoon peak developing around 2-3PM.Regardless of the option used, DWZTM or MOTEC approval is expected if allowing the PCB to remain in place for any shoulder closure outside of the PLCS.

Conclusion

The costs of all three alternatives are relatively close together, with Alternate 1 being the cheapest. There are also concerns with this alternate; it has the most utility crossings. Concerning MOT, alternates 1 and 3 are not feasible due to access, restricted work area combined with the need for closed trenches at the end of each day. Also, the contractor is restricted on work time due to PLCS rules. Alternate 3 is the most expensive alternate and there are slope stability concerns in certain areas due to moisture and unstable soils. Alternate 2 has minimal utility conflicts and is very desirable for maintenance of traffic due to the 84-ft wide median, edge line to edge line. Even if there are shortened work hours to require closed trenches and all equipment clear at end of day to meet the PLCS, we could easily have 30-ft+ from striped active lane to equipment/work. If there are pinch points, we could detail design or require the use of PCB for short stretches. Alternate 2 cost is also only $30,000 more expensive than Alternate 1, based on the preliminary estimate. It is the opinion of 2LMN that Alternate 2 is selected to move into detailed design.

For further details, see the following Exhibits:

Exhibit A: Feasibility Study Matrix

Exhibit B: Aerial Plan View of Alternates and Conflicts

Exhibit C: Cost Estimate

If you have any further questions or need additional information, feel free to contact me at 614-832-1815 or Jim.Barna@2lmn.com. We will make availability to discuss this accelerated project.

Sincerely,

James A. Barna, PE
Project Manager
2LMN

Enclosures

Cc: Laura Beese
Emilie Worley
Lindsay Walker

2475 Sugar Grove Rd. SE
Lancaster, Ohio 43130
www.2LMN.com

TRU-80 PARKING AREA FEASIBILITY STUDY MATRIX

	Alignment	Alternate 1		Alternate 2		Alternate 3	
	Service	Sanitary	Water	Sanitary	Water	Sanitary	Water
Source/Provider	City of Hubbard	Yes	Yes	Yes	Yes	Yes	Yes
Design Criteria	Design Flowrates (gpm)	25	20	25	20	25	20
	Design Pressure at Source (psi)	N/A	65	N/A	65	N/A	65
	Design Pressure at Truck Park (psi)	N/A	51	N/A	51	N/A	51
	Minimum Forcemain Velocity (fps)	2.0	N/A	2.0	N/A	2.0	N/A
Utility/Structure Conflicts	Existing Bridge Footer	1	1	0	0	1	1
	Catch Basin	0	0	1	1	1	1
	Storm Sewer	6	6	3	3	2	2
	Median Crossover	0	0	1	1	0	0
	Gas Line	2	2	2	2	2	2
	Potential ROW Purchase	1	1	1	1	1	1
Proposed Improvements	2" Sewer Forcemain (ft)	6,901	0	7,149	0	7,198	0
	25 gpm Grinder Pump Station (Ea)	1	0	1	0	1	0
	Air Release Valves	6	6	2	2	6	5
	4" Waterline (ft)	0	6,619	0	7,059	0	7,086
	Isolation Valves	7	7	7	7	7	7
	Water Meter and Meter Pit	0	1	0	1	0	1
	Backflow Preventer	0	1	0	1	0	1
	Bore and Jack (ft)	130	0	135	135	135	135
	Bridge Cross - Pipe Insulation (ft)	330	330	330	330	330	330
Cost before Inflation		$ 1,507,176.78		$ 1,531,261.10		$ 1,668,634.35	

2LMN

TRU-80-11.32 TRUCK PARKING

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HUBBARD MASURY RD.

EX. OVERHEAD ELECTRIC

EX. 6" WATER

PR. WATER TIE IN ALTERNATIVE 1

EX. LIMITED ACCESS RIGHT-OF-WAY

PR. WATER ALTERNATIVE 1

PR. WATER ALTERNATIVE 1

PR. SANITARY ALTERNATIVE 1

SFN: 1872117
EX. 4-SPAN BRIDGE
282-FT

PR. SANITARY ALTERNATIVE 1

B @ STA. 554

PR. SANITARY ALTERNATIVE 2

B @ STA. 556

TOP OF ROCK

EX. 15" STM
566-FT

B @ STA. 558

I.R. 80 WB

550 551 552 553 554 555 556 557 558 559

CATCH BASIN

MEDIAN CROSSOVER

I.R. 80 EB

PR. WATER ALTERNATIVE 2

PR. WATER ALTERNATIVE 3

PR. SANITARY ALTERNATIVE 3

PR. WATER TIE IN ALTERNATIVES 2 AND 3

EX. GAS

PR. SANITARY TIE IN
EX. SANITARY MANHOLE
ALL ALTERNATIVES

ELMWOOD DR. EXD.

MATCH LINE STA. 559+87.55

HORIZONTAL SCALE IN FEET
0 25 50 100

PROPOSED WATER & SANITARY LINE EXHIBIT
BEGIN TO STA. 559+87.55

DESIGN AGENCY
2LMN

DESIGNER MAK

REVIEWER JAB 11/07/24

PROJECT ID 121698

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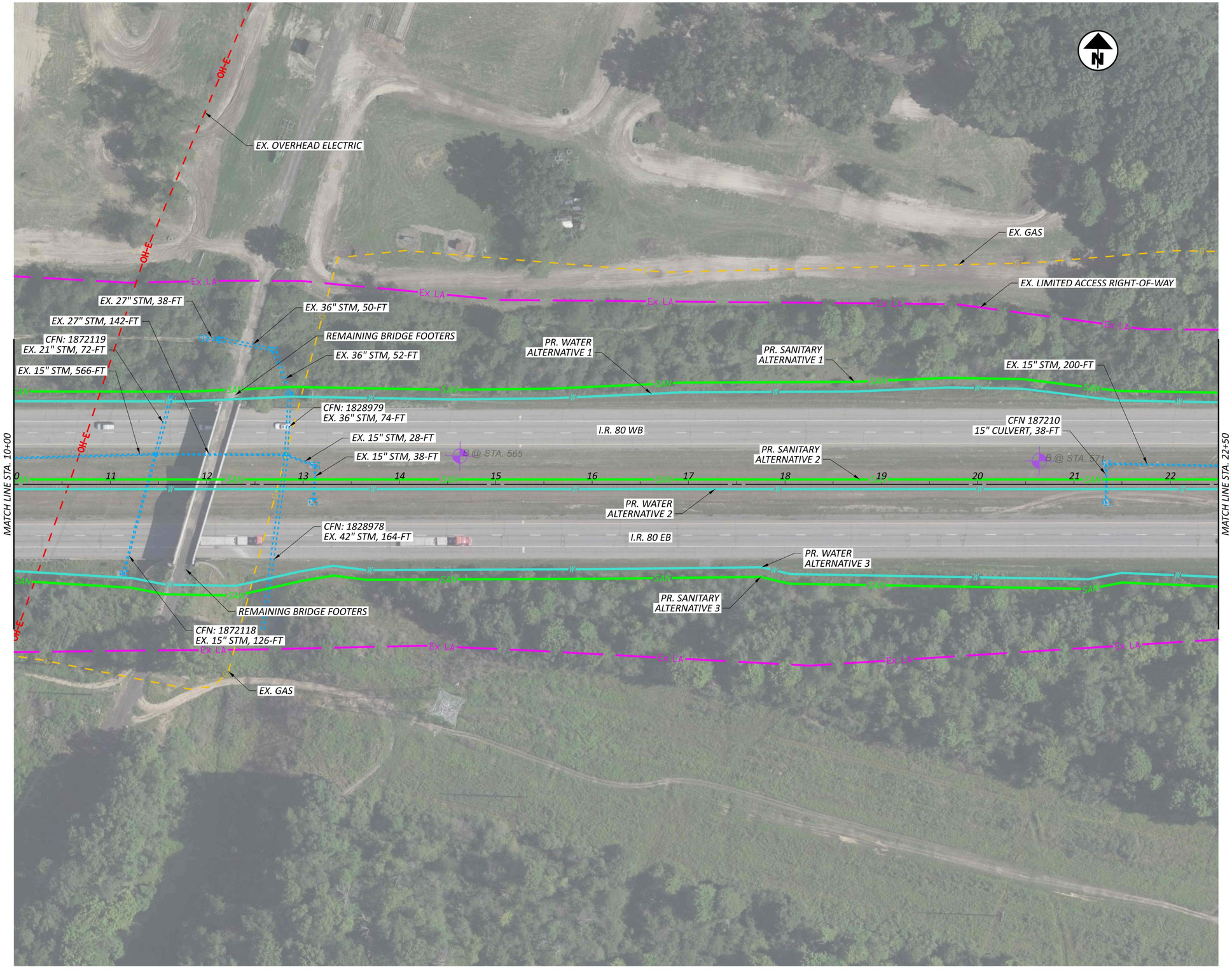

HORIZONTAL SCALE IN FEET
0 25 50 100

PROPOSED WATER & SANITARY LINE EXHIBIT
STA. 10+00.00 TO STA. 22+50.00

TRU-80-11.32 TRUCK PARKING

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DESIGN AGENCY
2LMN

DESIGNER	MAK
REVIEWER	JAB 11/07/24
PROJECT ID	121698
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TOTAL	6

TRU-80-11.32 TRUCK PARKING

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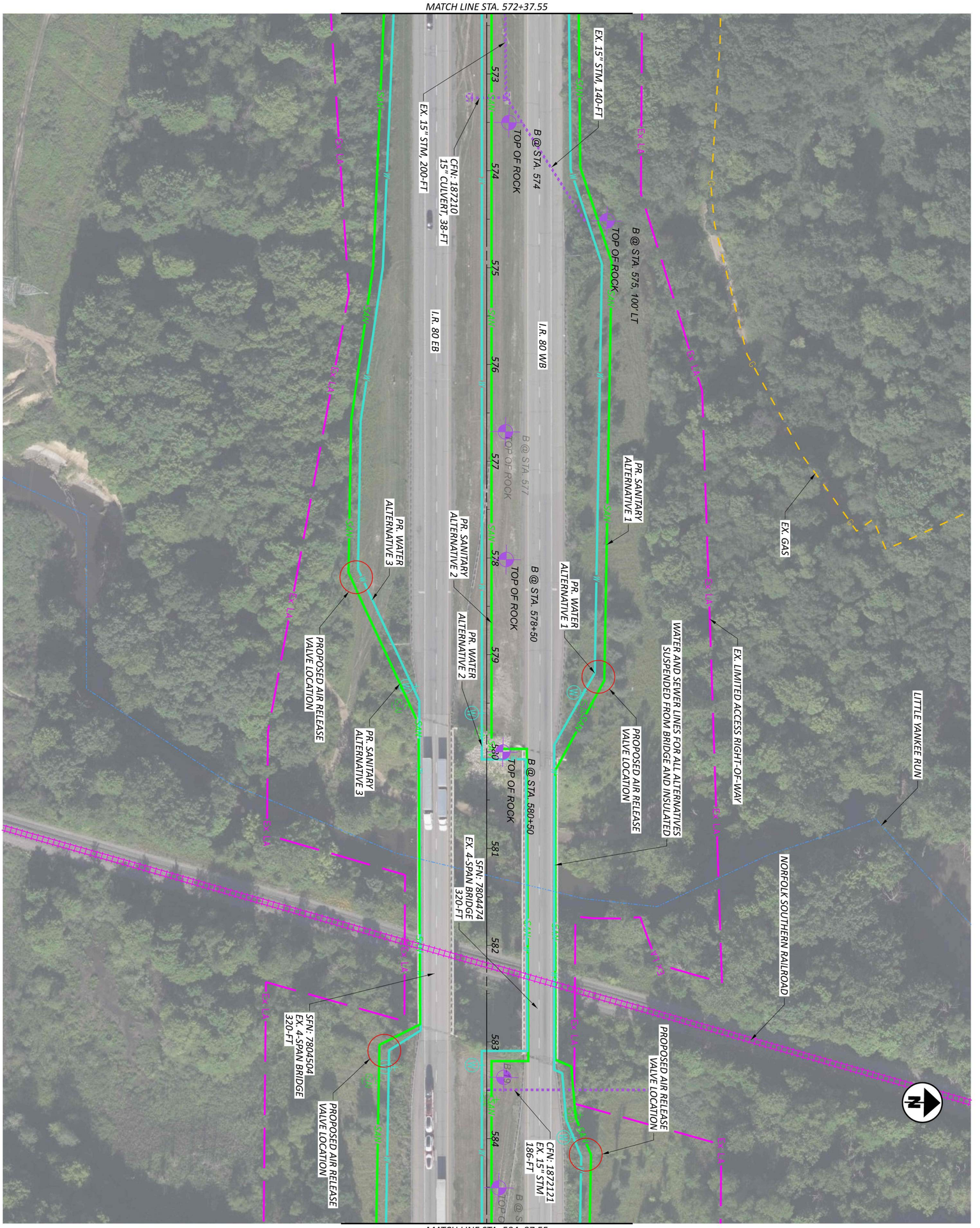

PROPOSED WATER & SANITARY LINE EXHIBIT
STA. 572+37.55 TO STA. 584+87.55

HORIZONTAL SCALE IN FEET
0 50
25 100

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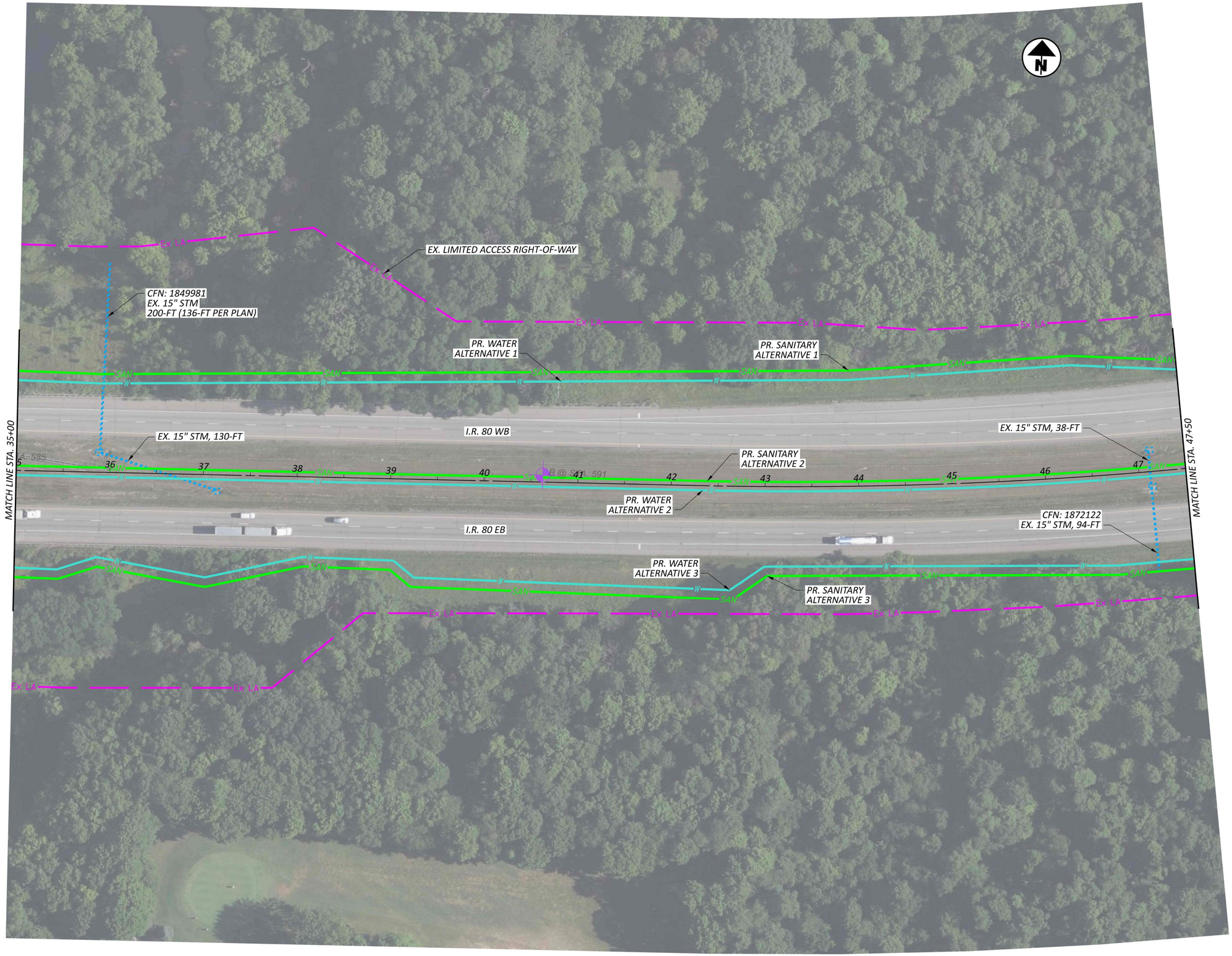

HORIZONTAL SCALE IN FEET
0 25 50 100

PROPOSED WATER & SANITARY LINE EXHIBIT
STA. 35+00.00 TO STA. 47+50.00

TRU-80-11.32 TRUCK PARKING

DESIGN AGENCY
2LMN

DESIGNER	MAK
REVIEWER	JAB 11/07/24
PROJECT ID	121698
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EX. OVERHEAD ELECTRIC

EX. GAS

CUL DE SAC

EX. LIMITED ACCESS RIGHT-OF-WAY

PR. SANITARY ALTERNATIVE 1

PR. WATER ALTERNATIVE 1

CFN: 1872124
EX. 21" STM, 61-FT

STORM SEWER

I.R. 80 WB

CFN: 1872123
EX. 18" STM, 62-FT

PR. SANITARY ALTERNATIVE 2

PR. WATER ALTERNATIVE 2

EX. 15" STM, 38-FT

I.R. 80 EB

PR. WATER ALTERNATIVE 3

PR. SANITARY ALTERNATIVE 3

MATCH LINE STA. 47+50

MATCH LINE STA. 60+00

HORIZONTAL SCALE IN FEET
0 25 50 100

PROPOSED WATER & SANITARY LINE EXHIBIT
STA. 47+50.00 TO STA. 60+00.00

DESIGN AGENCY
2LMN

DESIGNER
MAK

REVIEWER
JAB 11/07/24

PROJECT ID
121698

SHEET P.5 | TOTAL 6

TRU-80-11.32 TRUCK PARKING

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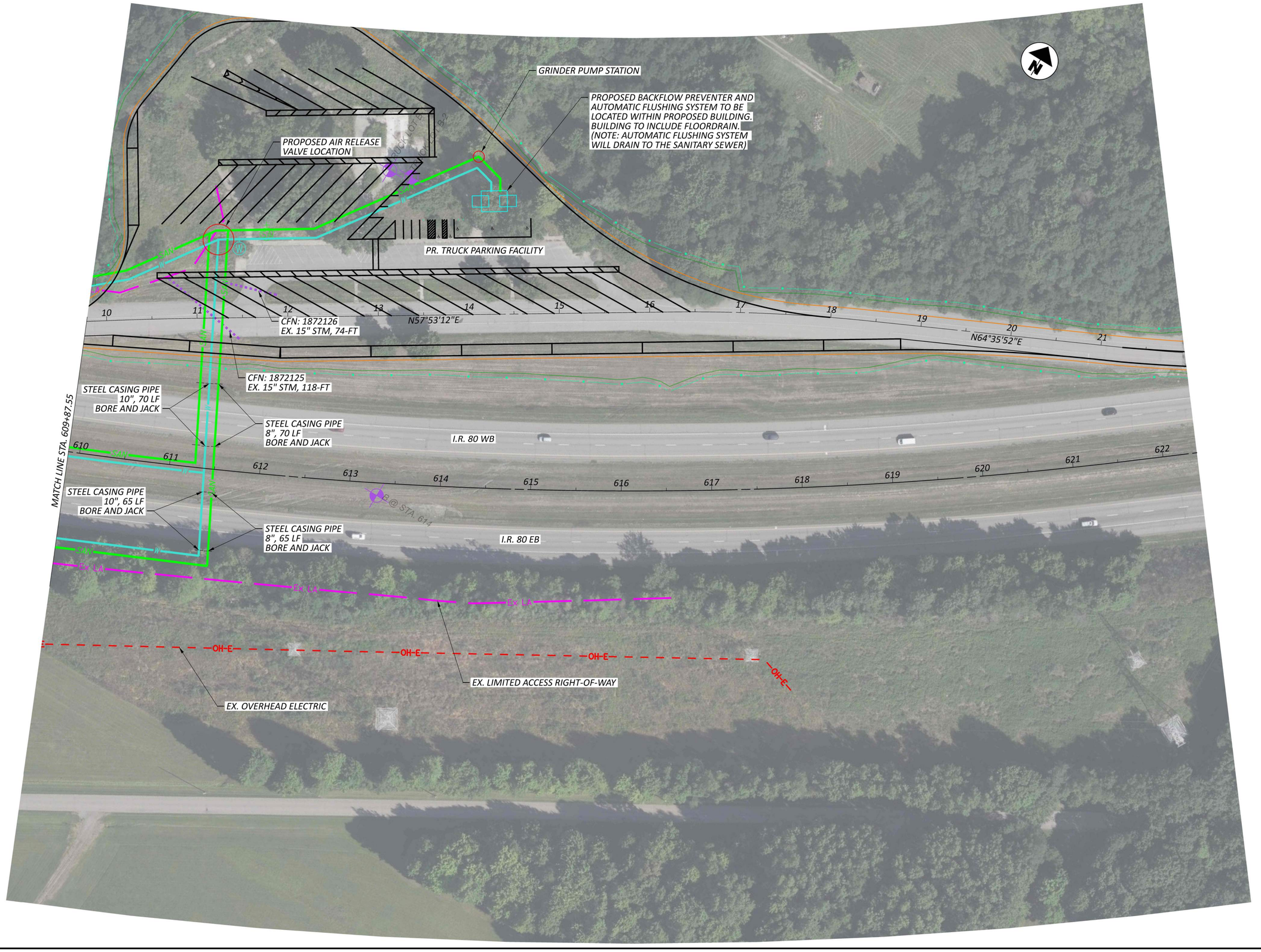
TRU-80-11.32 TRUCK PARKING



HORIZONTAL SCALE IN FEET
0 50 100
25

PROPOSED WATER & SANITARY LINE EXHIBIT
STA. 609+87.55 TO END

DESIGN AGENCY
2LMN

DESIGNER
MAK

REVIEWER
JAB 11/07/24

PROJECT ID
121698

SHEET P.6 | TOTAL 6

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Estimate

Estimated Cost:$1,507,176.78

Contingency: 7.70%

Estimated Total: $1,623,229.39

TRU-80
ALTERNATIVE 1
Cost Estimate

Base Date: 12/11/24

Spec Year: 23

Unit System: E

Work Type: DRAINAGE: BOX CULVERTS AND PIPE WORK

Highway Type:

Urban/Rural Type: RURAL CLASS

Season: SPRING

County: TRUMBULL

Latitude of Midpoint: 411037

Longitude of Midpoint: 803231

District: 04

Federal/State Project Number: E241 (083)

Prepared by 2LMN on 12/11/24

Line #	Item Number	Quantity	Units	Unit Price	Extension
	Description				
	Supplemental Description				

Group 0023: Sanitary Sewer

0005	611E99574	1.000	EACH	$6,107.40422	$6,107.40
	MANHOLE, NO. 3				
0006	638E07100	130.000	FT	$250.00000	$32,500.00
	12" STEEL PIPE ENCASEMENT, BORED OR JACKED				
0007	638E07690	7.000	EACH	$1,700.00000	$11,900.00
	2" GATE VALVE AND VALVE BOX				
0008	638E11310	6.000	EACH	$770.00000	$4,620.00
	2" AIR RELEASE VALVE				
0009	638E98000	1.000	EACH	$56,120.00000	$56,120.00
	WATER WORK, MISC.:				
	DUPLEX GRINDER PUMP STATION				
0010	638E98600	330.000	FT	$483.26300	$159,476.79
	WATER WORK, MISC.:				
	INSULATION AND BRIDGE BRACKETS				
0011	638E98600	6,901.000	FT	$45.00000	$310,545.00
	WATER WORK, MISC.:				
	2" CONDUIT (FORCEMAIN), ASTM D 3035, DR 11				

Total for Group 0023:$581,269.19

Group 0024: Water

0012	638E07700	7.000	EACH	$1,700.00000	$11,900.00
	4" GATE VALVE AND VALVE BOX				
0013	638E11200	1.000	EACH	$20,000.00000	$20,000.00
	METER, SETTING, STOP AND CHAMBER				
0014	638E11310	6.000	EACH	$770.00000	$4,620.00
	2" AIR RELEASE VALVE				
	1.5"				
0015	638E20414	6,619.000	FT	$48.33000	$319,896.27
	SPECIAL - 2" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS				
	4" WATERLINE				
0016	638E98000	1.000	EACH	$5,000.00000	$5,000.00
	WATER WORK, MISC.:				
	BACKFLOW PREVENTER				
0017	638E98100	1.000	LS	$10,000.00000	$10,000.00
	WATER WORK, MISC.:				
	AUTOMATIC FLUSHING SYSTEM				
0018	638E98600	330.000	FT	$483.26300	$159,476.79
	WATER WORK, MISC.:				
	INSULATION AND BRIDGE BRACKETS				

Total for Group 0024:$530,893.06

Group 0025: Erosion Control

0019	659E10000	15,222.000	SY	$1.00366	$15,277.71
	SEEDING AND MULCHING				

Line #	Item Number	Quantity	Units	Unit Price	Extension
	Description				
	Supplemental Description				
0020	659E14000	761.100	SY	$0.75549	$575.00
	REPAIR SEEDING AND MULCHING				
0021	659E20000	2.120	TON	$612.58077	$1,298.67
	COMMERCIAL FERTILIZER				
0022	659E31000	3.150	ACRE	$50.14252	$157.95
	LIME				
0023	659E35000	84.000	MGAL	$0.56029	$47.06
	WATER				
0024	832E30000	20,000.000	EACH	$1.00000	$20,000.00
	EROSION CONTROL				

Total for Group 0025:$37,356.39

Group 0027: Maintenance of Traffic

0025	614E12384	2.000	EACH	$2,686.03079	$5,372.06
	WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (BIDIRECTIONA L)				
0026	622E41100	1,000.000	FT	$120.00000	$120,000.00
	PORTABLE BARRIER, UNANCHORED				
	NOTE, PRICE INCLUDES LABOR TO INSTALL BARRIER AND MOVE 6 TIMES ($15/FT/MOVE)				

Total for Group 0027:$125,372.06

Group 0028: Incidentals

0027	614E11000	1.000	LS	$25,697.81000	$25,697.81
	MAINTAINING TRAFFIC				
0028	623E10000	1.000	LS	$10,000.00000	$10,000.00
	CONSTRUCTION LAYOUT STAKES AND SURVEYING				
0029	624E10000	0.000	LS	$64,244.53000	$0.00
	MOBILIZATION				
0030	990E25400	1.000	LS	$196,588.27000	$196,588.27
	LUMP SUM ADJUSTMENT - GENERAL / OTHER ITEMS				
	15% CONTINGENCY				

Total for Group 0028:$232,286.08

FY 2025-2029 Business Plan Inflation Calculator:

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(mm/dd/yyyy)

12/19/2024
Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 12/19/2049)
(mm/dd/yyyy)

4/15/2026
Construction Mid-Point Date:

Present-Day Estimated Cost:

$1,507,176.78
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **16** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**7.7%**	**$1,623,564.39**

Estimator's Name:

County - Route - Section: TRU-80 ALT 1

PID:

Estimator's Notes:

Estimate

Estimated Cost:$1,531,261.10

Contingency: 7.70%

Estimated Total: $1,649,168.20

TRU-80
ALTERNATIVE 2
Cost Estimate

Base Date: 12/11/24

Spec Year: 23

Unit System: E

Work Type: DRAINAGE: BOX CULVERTS AND PIPE WORK

Highway Type:

Urban/Rural Type: RURAL CLASS

Season: SPRING

County: TRUMBULL

Latitude of Midpoint: 411037

Longitude of Midpoint: 803231

District: 04

Federal/State Project Number: E241 (083)

Prepared by 2LMN on 12/11/24

Line #	Item Number	Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0022: Sanitary Sewer						
0005	611E99574	MANHOLE, NO. 3	1.000	EACH	$6,107.40422	$6,107.40
0006	638E07100	12" STEEL PIPE ENCASEMENT, BORED OR JACKED	135.000	FT	$250.00000	$33,750.00
0007	638E07690	2" GATE VALVE AND VALVE BOX	7.000	EACH	$1,700.00000	$11,900.00
0008	638E11310	2" AIR RELEASE VALVE	2.000	EACH	$770.00000	$1,540.00
0009	638E98000	WATER WORK, MISC.: *DUPLEX GRINDER PUMP STATION*	1.000	EACH	$56,120.00000	$56,120.00
0010	638E98600	WATER WORK, MISC.: *INSULATION AND BRIDGE BRACKETS*	330.000	FT	$483.26300	$159,476.79
0011	638E98600	WATER WORK, MISC.: *2" CONDUIT (FORCEMAIN), ASTM D 3035, DR 11*	7,149.000	FT	$45.00000	$321,705.00
					Total for Group 0022:	$590,599.19
Group 0023: Water						
0012	638E07100	12" STEEL PIPE ENCASEMENT, BORED OR JACKED	135.000	FT	$250.00000	$33,750.00
0013	638E07700	4" GATE VALVE AND VALVE BOX	7.000	EACH	$1,700.00000	$11,900.00
0014	638E11200	METER, SETTING, STOP AND CHAMBER	1.000	EACH	$20,000.00000	$20,000.00
0015	638E11310	2" AIR RELEASE VALVE Confirm size during detailed design. *1.5"*	2.000	EACH	$770.00000	$1,540.00
0016	638E20414	SPECIAL - 2" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS *4" WATERLINE*	7,059.000	FT	$48.33000	$341,161.47
0017	638E98000	WATER WORK, MISC.: *BACKFLOW PREVENTER*	1.000	EACH	$5,000.00000	$5,000.00
0018	638E98100	WATER WORK, MISC.: *AUTOMATIC FLUSHING SYSTEM*	1.000	LS	$10,000.00000	$10,000.00
0019	638E98600	WATER WORK, MISC.: *INSULATION AND BRIDGE BRACKETS*	330.000	FT	$483.26300	$159,476.79
					Total for Group 0023:	$582,828.26

Estimate:

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0024: Erosion Control					
0020	659E10000 SEEDING AND MULCHING	14,444.000	SY	$1.02651	$14,826.91
0021	659E14000 REPAIR SEEDING AND MULCHING	722.000	SY	$0.76432	$551.84
0022	659E20000 COMMERCIAL FERTILIZER	2.000	TON	$616.21613	$1,232.43
0023	659E31000 LIME	2.980	ACRE	$50.69844	$151.08
0024	659E35000 WATER	80.000	MGAL	$0.56853	$45.48
0025	832E30000 EROSION CONTROL	20,000.000	EACH	$1.00000	$20,000.00
				Total for Group 0024:	$36,807.74
Group 0025: Maintenance of Traffic					
0026	614E12384 WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (BIDIRECTIONA L)	2.000	EACH	$2,686.03079	$5,372.06
0027	622E41100 PORTABLE BARRIER, UNANCHORED	200.000	FT	$60.00000	$12,000.00
				Total for Group 0025:	$17,372.06
Group 0026: Incidentals					
0028	614E11000 MAINTAINING TRAFFIC	1.000	LS	$31,074.48000	$31,074.48
0029	623E10000 CONSTRUCTION LAYOUT STAKES AND SURVEYING	1.000	LS	$10,000.00000	$10,000.00
0030	624E10000 MOBILIZATION	1.000	LS	$62,148.96000	$62,148.96
0031	990E25400 LUMP SUM ADJUSTMENT - GENERAL / OTHER ITEMS *15% CONTINGENCY*	1.000	LS	$200,430.41000	$200,430.41
				Total for Group 0026:	$303,653.85

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Start Date:

Enter Construction Mid-Point Date:
(cannot exceed 12/19/2049)
(mm/dd/yyyy)

4/15/2026
Construction Mid-Point Date:

Present-Day Estimated Cost:

$1,531,261.10
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **16** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**7.7%**	**$1,649,508.56**

Estimator's Name:

County - Route - Section: TRU-80 ALT 2

PID:

Estimator's Notes:

Estimate

Estimated Cost:$1,668,634.35

Contingency: 7.70%

Estimated Total: $1,797,119.19

TRU-80
ALTERNATIVE 3
Cost Estimate

Base Date: 12/11/24

Spec Year: 23

Unit System: E

Work Type: DRAINAGE: BOX CULVERTS AND PIPE WORK

Highway Type:

Urban/Rural Type: RURAL CLASS

Season: SPRING

County: TRUMBULL

Latitude of Midpoint: 411037

Longitude of Midpoint: 803231

District: 04

Federal/State Project Number: E241 (083)

Prepared by 2LMN on 12/11/24

Line #	Item Number	Quantity	Units	Unit Price	Extension
	Description				
	Supplemental Description				

Group 0021: Sanitary Sewer

0005	611E99574	1.000	EACH	$6,107.40422	$6,107.40
	MANHOLE, NO. 3				
0006	638E07100	135.000	FT	$250.00000	$33,750.00
	12" STEEL PIPE ENCASEMENT, BORED OR JACKED				
0007	638E07690	7.000	EACH	$1,700.00000	$11,900.00
	2" GATE VALVE AND VALVE BOX				
0008	638E11310	6.000	EACH	$770.00000	$4,620.00
	2" AIR RELEASE VALVE				
0009	638E98000	1.000	EACH	$56,120.00000	$56,120.00
	WATER WORK, MISC.:				
	DUPLEX GRINDER PUMP STATION				
0010	638E98600	330.000	FT	$483.26300	$159,476.79
	WATER WORK, MISC.:				
	INSULATION AND BRIDGE BRACKETS				
0011	638E98600	7,198.000	FT	$45.00000	$323,910.00
	WATER WORK, MISC.:				
	2" CONDUIT (FORCEMAIN), ASTM D 3035, DR 11				

Total for Group 0021:$595,884.19

Group 0022: Water

0012	638E07100	135.000	FT	$250.00000	$33,750.00
	12" STEEL PIPE ENCASEMENT, BORED OR JACKED				
0013	638E07700	7.000	EACH	$1,700.00000	$11,900.00
	4" GATE VALVE AND VALVE BOX				
0014	638E11200	1.000	EACH	$20,000.00000	$20,000.00
	METER, SETTING, STOP AND CHAMBER				
0015	638E11310	5.000	EACH	$770.00000	$3,850.00
	2" AIR RELEASE VALVE				
	1.5"				
0016	638E20414	7,086.000	FT	$48.33000	$342,466.38
	SPECIAL - 2" WATER MAIN POLYVINYL CHLORIDE PIPE AND FITTINGS				
	4" WATERLINE				
0017	638E98000	1.000	EACH	$5,000.00000	$5,000.00
	WATER WORK, MISC.:				
	BACKFLOW PREVENTER				
0018	638E98100	1.000	LS	$10,000.00000	$10,000.00
	WATER WORK, MISC.:				
	AUTOMATIC FLUSHING SYSTEM				
0019	638E98600	330.000	FT	$483.26300	$159,476.79
	WATER WORK, MISC.:				
	INSULATION AND BRIDGE BRACKETS				

Total for Group 0022:$586,443.17

Estimate:

Line #	Item Number / Description / *Supplemental Description*	Quantity	Units	Unit Price	Extension
Group 0023: Erosion Control					
0020	659E10000 SEEDING AND MULCHING	15,222.000	SY	$1.00366	$15,277.71
0021	659E14000 REPAIR SEEDING AND MULCHING	761.000	SY	$0.75551	$574.94
0022	659E20000 COMMERCIAL FERTILIZER	2.120	TON	$612.58077	$1,298.67
0023	659E31000 LIME	3.150	ACRE	$50.14252	$157.95
0024	659E35000 WATER	84.000	MGAL	$0.56029	$47.06
0025	832E30000 EROSION CONTROL	20,000.000	EACH	$1.00000	$20,000.00
				Total for Group 0023:	$37,356.33
Group 0024: Maintenance of Traffic					
0026	614E12384 WORK ZONE IMPACT ATTENUATOR, 24" WIDE HAZARDS, (BIDIRECTIONA L)	2.000	EACH	$2,686.03079	$5,372.06
0027	622E41100 PORTABLE BARRIER, UNANCHORED *NOTE, PRICE INCLUDES LABOR TO INSTALL BARRIER AND MOVE 6 TIMES ($15/FT/MOVE)*	1,000.000	FT	$120.00000	$120,000.00
				Total for Group 0024:	$125,372.06
Group 0025: Incidentals					
0028	614E11000 MAINTAINING TRAFFIC	1.000	LS	$27,208.55000	$27,208.55
0029	623E10000 CONSTRUCTION LAYOUT STAKES AND SURVEYING	1.000	LS	$10,000.00000	$10,000.00
0030	624E10000 MOBILIZATION	1.000	LS	$68,021.39000	$68,021.39
0031	990E25400 LUMP SUM ADJUSTMENT - GENERAL / OTHER ITEMS *15% CONTINGENCY*	1.000	LS	$218,348.66000	$218,348.66
				Total for Group 0025:	$323,578.60

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(mm/dd/yyyy)

4/15/2026
Construction Mid-Point Date:

Present-Day Estimated Cost:

$1,668,634.35
Estimated Dollar Amount:

Estimate Start Date to Construction Mid-Point Date: **16** **Months**

Inflation - Start to Mid-Point of Construction:

	(compounded growth rate)	Inflated Dollar Amount:
Business Plan	**7.7%**	**$1,797,490.08**

Estimator's Name:

County - Route - Section: TRU-80 ALT 3

PID:

Estimator's Notes: