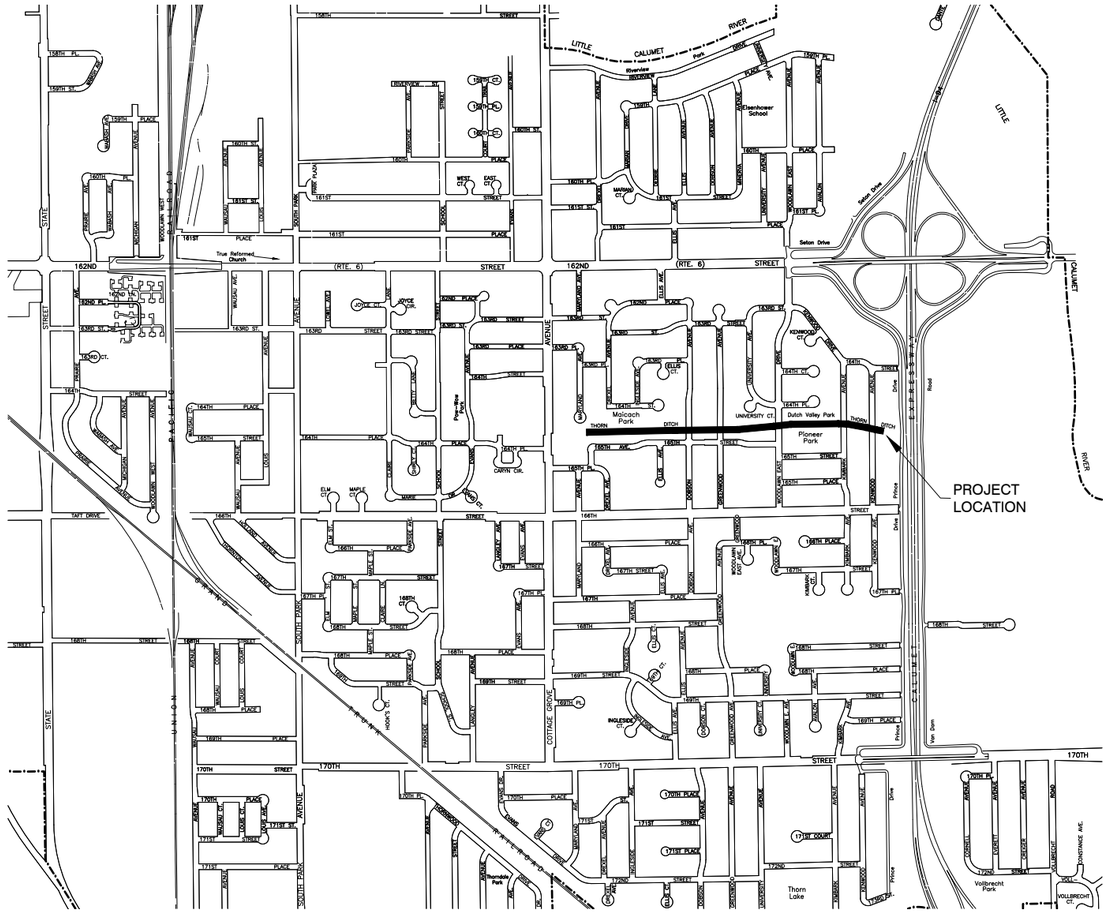
VILLAGE OF SOUTH HOLLAND, ILLINOIS

THORN DITCH
FLOOD MITIGATION PROJECT

LEGEND

- EXISTING FIRE HYDRANT
- EXISTING VALVE
- EXISTING VALVE VAULT
- EXISTING SIGN
- EXISTING MARKER FLAG
- EXISTING FLARED END SECTION
- EXISTING INLET
- EXISTING CATCH BASIN
- EXISTING MANHOLE
- EXISTING ALUMINUM LIGHT POLE
- EXISTING POWER POLE
- EXISTING POWER POLE W/ LIGHT
- EXISTING EVERGREEN
- EXISTING TREE
- EXISTING BUSH / HEDGE
- EXISTING DITCH / SWALE
- EXISTING TOP OF BANK
- EXISTING RIGHT OF WAY
- EXISTING EASEMENT
- EXISTING FENCE
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD CABLE TV
- EXISTING GAS MAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING FORCE MAIN
- EXISTING OVERHEAD TELEPHONE
- EXISTING UNDERGROUND TELEPHONE
- EXISTING WATER MAIN
- BENCHMARK
- EVERGREEN TREE REMOVAL
- DECIDUOUS TREE REMOVAL
- BUSH/SHRUB REMOVAL
- COMBINATION CURB AND GUTTER REMOVAL
- FENCE REMOVAL AND REINSTALLATION
- AGGREGATE SURFACE COURSE REMOVAL, PAID AS EARTH EXCAVATION
- PAVEMENT REMOVAL
- SIDEWALK REMOVAL
- REMOVAL OF EXISTING STRUCTURES OR STORM SEWER REMOVAL



LOCATION MAP

- INDICATES PROPOSED IMPROVEMENT

N

INDEX OF SHEETS

PREPARED BY OR UNDER THE DIRECT SUPERVISION OF:

05-06-2025

JOHN D. HILSEN
062-058722
REGISTERED PROFESSIONAL ENGINEER
STATE OF ILLINOIS

LICENSE EXPIRES: 11/30/25

Call Before You Dig
JULIE ILLINOIS ONE-CALL SYSTEM
Call: 811 OR 1-800-892-0123

JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS
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811

PREPARED BY:

Robinson ENGINEERING

ILLINOIS DESIGN FIRM REGISTRATION NO. 184001128.

PROJECT NO. 23-R0646

SHEET NO. 1 OF 71

23R0646-COVR-01 - C01

SUMMARY OF QUANTITIES

NO.	ITEM DESCRIPTION	UNIT	QUANTITY
1	MOBILIZATION	LSUM	1
2	TREE REMOVAL (6 TO 15 UNITS DIAMETER)	UNIT	617
3	TREE REMOVAL (OVER 15 UNITS DIAMETER)	UNIT	986
4	TREE TRUNK PROTECTION	EACH	20
5	EARTH EXCAVATION	CU YD	38,800
6	AGGREGATE SUBGRADE IMPROVEMENT	CU YD	50
7	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL	CU YD	50
8	EXPLORATION TRENCH 84" DEPTH	FOOT	90
9	PORTLAND CEMENT CONCRETE SIDEWALK 5 INCH	SQ FT	1,420
10	PAVEMENT REMOVAL	SQ YD	610
11	COMBINATION CURB AND GUTTER REMOVAL	FOOT	350
12	SIDEWALK REMOVAL	SQ FT	1,580
13	REMOVAL OF EXISTING STRUCTURES	L SUM	1
14	REMOVAL OF EXISTING STRUCTURES NO. 1	EACH	1
15	REMOVAL OF EXISTING STRUCTURES NO. 2	EACH	1
16	REMOVAL OF EXISTING STRUCTURES NO. 3	EACH	1
17	REMOVAL OF EXISTING STRUCTURES NO. 4	EACH	1
18	PRECAST CONCRETE BOX CULVERTS 7' X 7'	FOOT	856
19	PRECAST CONCRETE BOX CULVERTS 10' X 7'	FOOT	184
20	STRUCTURE EXCAVATION	CU YD	4,329
21	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES	CU YD	1,709
22	CONCRETE STRUCTURES	CU YD	25
23	GRANULAR BACKFILL FOR STRUCTURES	CU YD	8
24	CONCRETE SEALER	SQ FT	332
25	REINFORCEMENT BARS, EPOXY COATED	POUND	2,320
26	BOX CULVERT END SECTIONS, CULVERT NO. 1	EACH	3
27	BOX CULVERT END SECTIONS, CULVERT NO. 2	EACH	1
28	BOX CULVERT END SECTIONS, CULVERT NO. 3	EACH	4
29	STORM SEWERS, CLASS A, TYPE 1 12"	FOOT	31
30	STORM SEWERS, CLASS A, TYPE 2 18"	FOOT	41
31	STORM SEWERS, CLASS A, TYPE 1 24"	FOOT	397
32	STORM SEWERS, CLASS A, TYPE 2 36"	FOOT	150
33	PIPE UNDERDRAINS, TYPE 1, 4"	FOOT	486
34	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	1
35	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	2
36	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	EACH	2
37	INLETS, TYPE A, TYPE 1 FRAME, CLOSED LID	EACH	1
38	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 12"	EACH	1
39	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 24"	EACH	1
40	PRECAST REINFORCED CONCRETE FLARED END SECTIONS 36"	EACH	1
41	STORM SEWER REMOVAL 6"	FOOT	5
42	STORM SEWER REMOVAL 8"	FOOT	15
43	STORM SEWER REMOVAL 33"	FOOT	68
44	REMOVING MANHOLES	EACH	1
45	REMOVING CATCH BASINS	EACH	4
46	REMOVING INLETS	EACH	6
47	VALVE BOXES TO BE ADJUSTED	EACH	1
48	MANHOLES TO BE ADJUSTED	EACH	1
49	ADJUSTING WATER MAIN 6"	FOOT	150
50	20" DIAMETER STEEL SLEEVE, 0.344" WALL THICKNESS, OPEN CUT INSTALLATION	FOOT	130
51	COMBINATION CONCRETE CURB AND GUTTER, TYPE M-4.12	FOOT	350
52	AGGREGATE BASE COURSE, TYPE B 4"	SQ YD	160
53	AGGREGATE BASE COURSE, TYPE B 5"	SQ YD	100
54	AGGREGATE BASE COURSE, TYPE B 8"	SQ YD	640
55	AGGREGATE SURFACE COURSE, TYPE A 6"	SQ YD	1,710
56	BITUMINOUS MATERIALS (PRIME COAT)	POUND	1,330
57	BITUMINOUS MATERIALS (TACK COAT)	POUND	270
58	HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50	TON	140
59	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5, MIX "D", N50	TON	70
60	TOPSOIL EXCAVATION AND PLACEMENT	CU YD	5,872
61	SEEDING, CLASS 2A	ACRE	2.8
62	SEEDING, MESIC PRAIRIE	ACRE	1.05
63	SEEDING, SEDGE MEADOW MIX	ACRE	1
64	EROSION CONTROL BLANKET	SQ YD	24,200
65	PERENNIAL PLANTS, WETLAND EMERGENT	ACRE	0.34
66	TEMPORARY EROSION CONTROL SEEDING	POUND	280
67	TEMPORARY DITCH CHECKS	FOOT	240
68	PERIMETER EROSION BARRIER	FOOT	5,030
69	INLET FILTERS	EACH	19
70	TEMPORARY EROSION CONTROL BLANKET	SQ YD	13,170
71	STONE RIPRAP, CLASS A3	SQ YD	10
72	STONE RIPRAP, CLASS A4	SQ YD	30
73	STONE RIPRAP, CLASS A5	SQ YD	1,260
74	FILTER FABRIC	SQ YD	1,300
75	PILLAR RELOCATION	EACH	6
76	CONNECTION TO EXISTING SEWER	EACH	5
77	BIAXIAL GEOGRID	SQ YD	1,607
78	TRENCH BACKFILL	CU YD	137
79	POROUS GRANULAR EMBANKMENT	CU YD	4,606
80	POROUS GRANULAR EMBANKMENT, SPECIAL	CU YD	589
81	PLUG EXISTING STORM SEWERS	EACH	1
82	FENCE REMOVAL AND REINSTALLATION	FOOT	480
83	WOOD FENCE	FOOT	85
84	MEMBRANE WATERPROOFING SYSTEM FOR BURIED STRUCTURES	SQ YD	1,296
85	CLEANOUTS	EACH	1
86	WATER MAIN LINE STOP 6"	EACH	5
87	SANITARY SEWER MAIN LINE REPAIR 10"	FOOT	25
88	SANITARY SEWER MAIN LINE REPAIR 8"	FOOT	32
89	SANITARY SEWER POINT REPAIRS, 10"	LF	40
90	CURED-IN-PLACE PIPE LINER, 10"	FOOT	187
91	CUT PROTRUDING TAPS	EACH	1
92	SERVICE LATERALS TO BE REINSTATED	EACH	2
93	DYE TESTING OF PROPERTIES	EACH	1
94	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE	EACH	1
95	PROPOSED MANHOLE/CATCH BASIN CONNECTION OVER EXISTING STORM SEWER	EACH	2
96	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1
97	CHANGEABLE MESSAGE SIGN	CAL DA	500
98	STORM SEWER BACKFLOW PREVENTER, 18"	EACH	1
99	HELICAL PIER	EACH	172
100	TREE, ACER SACCHARUM (SUGAR MAPLE), 3" CALIPER, BALLED AND BURLAPPED	EACH	14
101	TREE, ULMUS CARPINIFOLIA NEW HORIZON (NEW HORIZON SMOOTHLEAF ELM), 3" CALIPER, BALLED AND BURLAPPED	EACH	14
102	TREE, QUERCUS RUBRA (RED OAK), 3" CALIPER, BALLED AND BURLAPPED	EACH	14
103	STABILIZED CONSTRUCTION ENTRANCE	SQ YD	280
104	ROCK FILL	CU YD	1,110
105	PLAYGROUND EQUIPMENT REMOVAL	LSUM	1
106	PRECAST CONCRETE RISER, T1F, OL	EACH	10
107	POND AERATING FOUNTAIN	EACH	3
108	REMOVE EXISTING OUTLET	EACH	1
109	CONTRACT EXTRA WORK	UNIT	150,000
110	REMOVAL AND RELOCATION OF EXISTING PEDESTRIAN BRIDGE	L SUM	1
111	WOOD DECKING SPECIAL	SQ FT	210
112	PEDESTRIAN TRUSS SUPERSTRUCTURE	SQ FT	210
113	ELECTRIC SERVICE INSTALLATION	EACH	3
114	ELECTRIC UTILITY SERVICE CONNECTION	L SUM	1

GENERAL NOTES

1. THESE CONSTRUCTION PLANS AND SUBSEQUENT DETAILS ARE TO BE CONSIDERED AS PART OF THE CONTRACT DOCUMENTS. INCIDENTAL ITEMS OR ACCESSORIES NECESSARY TO COMPLETE THIS WORK MAY NOT BE SPECIFICALLY NOTED BUT ARE TO BE CONSIDERED A PART OF THE CONTRACT.

2. THE ROBINSON ENGINEERING, LTD. FIELD OFFICE (708-331-6700), THE VILLAGE OF SOUTH HOLLAND PUBLIC WORKS (708-339-2323) AND THE MWRD LOCAL SEWER SYSTEMS SECTION OFFICE (708-588-4055) SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO START OF CONSTRUCTION.

3. THE WORK TO BE PERFORMED UNDER THIS CONTRACT SHALL INCLUDE ALL THE NECESSARY LABOR, EQUIPMENT AND MATERIALS REQUIRED TO FURNISH AND INSTALL PROPOSED WATER MAIN AND ALL OTHER APPURTENANCES AS SHOWN ON THE PLANS AND AS DESCRIBED IN THESE SPECIFICATIONS.

4. EXCEPT WHERE MODIFIED BY THE CONTRACT DOCUMENTS, ALL WORK PROPOSED HEREIN SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS. WHICH ARE HEREBY MADE A PART HEREOF:

   A. "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION IN ILLINOIS". AS PREPARED BY IDOT. LATEST EDITION.

   B. VILLAGE ORDINANCES.

   C. "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS". LATEST EDITION.

5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING SAFE AND HEALTHFUL WORKING CONDITIONS THROUGHOUT THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS. THE CONTRACTOR MUST, THEREFORE, BE FAMILIAR WITH AND ADHERE TO THE MINIMUM SAFETY STANDARDS AS SET FORTH IN PUBLIC LAW 91-596 ADMINISTERED BY THE DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND AS FURTHER DEFINED IN PART 1926 OF TITLE 29 CODE OF THE FEDERAL REGULATIONS ENTITLED "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION".

6. ALL UTILITY COMPANIES SHALL BE CONTACTED AND THEIR FACILITIES SHALL BE LOCATED PRIOR TO ANY WORK IN ANY EASEMENT, RIGHT-OF-WAY, OR SUSPECTED UTILITY LOCATION. REPAIR OF ANY DAMAGE TO EXISTING FACILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. UTILITY LOCATIONS SHOWN HEREIN ARE FOR GRAPHIC ILLUSTRATION ONLY AND ARE NOT TO BE RELIED UPON.

7. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THEIR WORK WITH THE ACTUAL CONDITIONS AT THE JOB SITE. IF THERE ARE ANY DISCREPANCIES FROM WHAT IS SHOWN ON THE CONSTRUCTION PLANS, HE MUST IMMEDIATELY REPORT SAME TO THE ENGINEER BEFORE DOING ANY WORK, OTHERWISE THE CONTRACTOR ASSUMES FULL RESPONSIBILITY. IN THE EVENT OF DISAGREEMENT BETWEEN THE CONSTRUCTION PLANS, STANDARD SPECIFICATIONS AND/OR SPECIAL DETAILS, THE CONTRACTOR SHALL SECURE WRITTEN INSTRUCTIONS FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK AFFECTED BY OMISSIONS OR DISCREPANCIES. FAILING TO SECURE SUCH INSTRUCTION, THE CONTRACTOR WILL BE CONSIDERED TO HAVE PROCEEDED AT HIS OWN RISK AND EXPENSE. IN THE EVENT OF ANY DOUBT OR QUESTION ARISING WITH RESPECT TO THE TRUE MEANING OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE DECISION OF THE ENGINEER SHALL BE FINAL AND CONCLUSIVE.

8. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE GUARANTEED AGAINST ALL DEFECTS IN MATERIALS AND WORKMANSHIP OF WHATEVER NATURE BY THE CONTRACTOR AND HIS SURETY FOR A PERIOD OF 12 MONTHS FROM THE DATE OF FINAL WRITTEN ACCEPTANCE OF THE WORK BY THE VILLAGE AND OTHER APPLICABLE GOVERNMENTAL AGENCIES.

9. THE CONTRACTOR SHALL INFORM THE ENGINEER AND THE VILLAGE BEFORE WORK COMMENCES ON EACH CATEGORY OF CONSTRUCTION, I.E. EARTH EXCAVATION FOR DETENTION PONDS, STORM SEWERS, BOX CULVERTS, PAVING AND RESTORATION IMPROVEMENTS.

10. EASEMENTS FOR THE EXISTING UTILITIES, BOTH PUBLIC AND PRIVATE, AND UTILITIES WITHIN PUBLIC RIGHTS-OF-WAY ARE SHOWN ON THE PLANS ACCORDING TO AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION IN THE FIELD OF THESE UTILITY LINES AND THEIR PROTECTION FROM DAMAGE DUE TO CONSTRUCTION OPERATIONS. IF EXISTING UTILITY LINES OF ANY NATURE ARE ENCOUNTERED WHICH CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.

11. WHENEVER, DURING CONSTRUCTION OPERATIONS, ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINE OF GUTTERS, DRAINAGE STRUCTURES, DITCHES, ETC. SUCH THAT THE NATURAL FLOW LINE OF WATER IS OBSTRUCTED, THIS LOOSE MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY BY THE CONTRACTOR. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AND FLOW LINES SHALL BE FREE FROM DIRT AND DEBRIS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

12. ALL PERMANENT TYPE PAVEMENTS OR OTHER PERMANENT IMPROVEMENTS WHICH ABUT THE PROPOSED IMPROVEMENT AND MUST BE REMOVED SHALL BE SAWED AS DIRECTED PRIOR TO REMOVAL. ALL ITEMS SO REMOVED SHALL BE REPLACED WITH SIMILAR CONSTRUCTION MATERIALS TO THEIR ORIGINAL CONDITION OR BETTER.

13. REMOVED PAVEMENT, SIDEWALK, CURB AND GUTTER, ETC. SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE AT LOCATIONS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN OFF-SITE DUMP SITE AT HIS OWN EXPENSE.

14. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE OF THE OWNER.

15. THE ENGINEER AND VILLAGE ARE NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, TIME OF PERFORMANCE, PROGRAMS OR FOR ANY SAFETY PRECAUTIONS USED BY THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXECUTION OF HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS.

16. ALL ELEVATIONS ARE BASED ON USGS NAVD 88' DATUM.

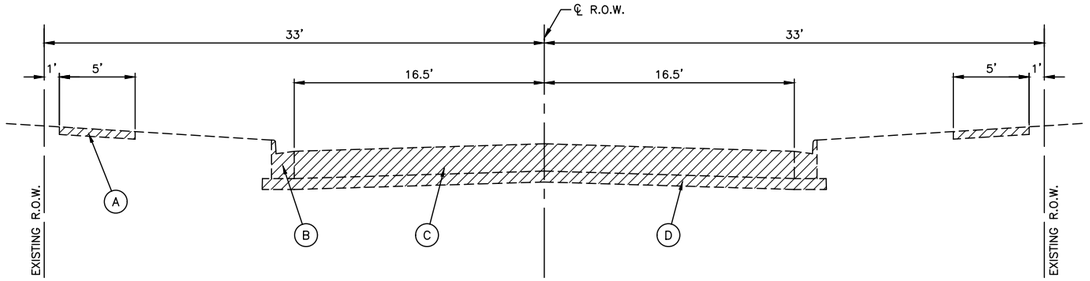
17. REMOVALS OF ANY CULVERT HEADWALLS AND EXISTING PEDESTRIAN BRIDGE FOUNDATIONS IS INCLUDED IN THE COST OF THE REMOVAL OF EXISTING STRUCTURES PAY ITEMS.

EARTHWORK SUMMARY

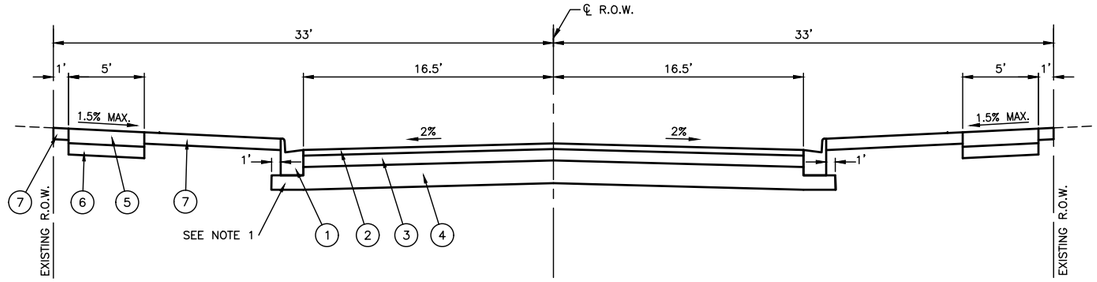
EARTH EXCAVATION		FILL (CY)	FILL (CY) ADJUSTED (+15%)	TOPSOIL PLACEMENT (CY)	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIALS (CY) TBD IN FIELD, ESTIMATED AT 10% OF PAVEMENT AREA	AGGREGATE SUBGRADE IMPROVEMENT (CY)	HAUL AWAY (CY)
CUT (CY)	AGGREGATE PATH REMOVAL/INSTALLATION OUTSIDE LIMITS OF POND EXCAVATION (CY)						
MAICACH PARK							
22,800	280	6	7	704	0	0	19,632
360	*			2,063			
0	0	0	0	219	0	0	
				456			
DOBSON AVE							
25	0	0	0	120	10	10	-208
				113			
GREENWOOD AVE							
25	0	0	0	111	10	10	-218
115				131			
WOODLAWN AVE							
35	0	0	0	37	10	10	-89
210				87			
PIONEER PARK							
8,455	100	36	41	552	0	0	6,802
120				1,159			
KIMBARK AVE							
25	0	0	0	37	10	10	-12
80							
KENWOOD AVE							
35	0	0	0	46	10	10	-48
150				37			
32435	**380**	**42**	**48**	**5872**	**50**	**50**	**25859**

EARTHWORK QUANTITY SUMMARY

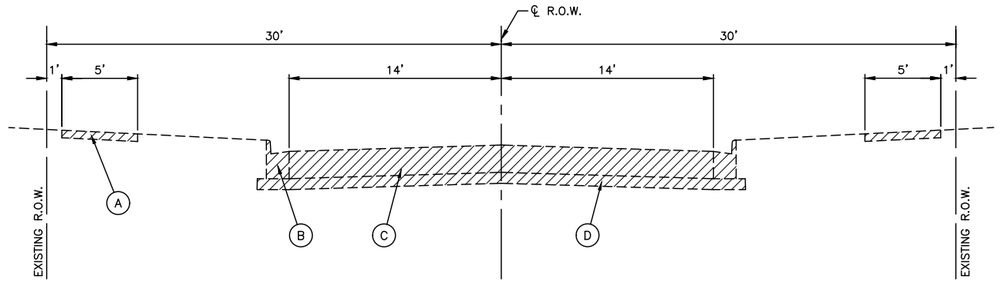
ITEM CODE	PAY ITEM		CU YD
20200100	EARTH EXCAVATION		32815
20201200	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL		50
30300001	AGGREGATE SUBGRADE IMPROVEMENT		50
STRUCTURE EXCAVATION SUMMARY			
20200100	EARTH EXCAVATION		5985
50200100	STRUCTURE EXCAVATION		4329
50200450	REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL FOR STRUCTURES		1709



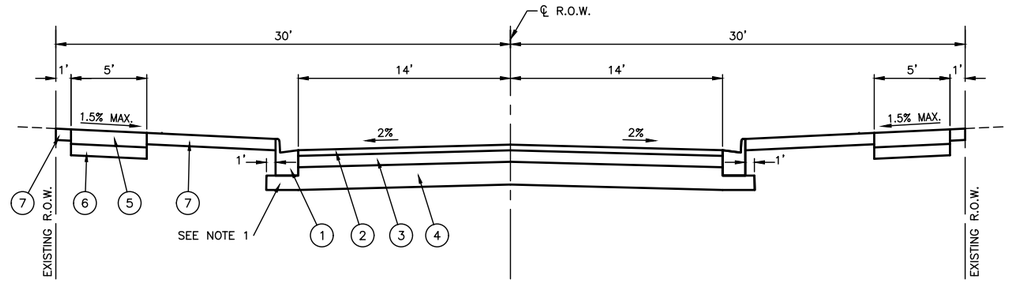
EXISTING TYPICAL SECTION
WOODLAWN AVENUE



PROPOSED TYPICAL SECTION
WOODLAWN AVENUE



EXISTING TYPICAL SECTION
DOBSON AVENUE
GREENWOOD AVENUE
KIMBARK AVENUE
KENWOOD AVENUE



PROPOSED TYPICAL SECTION
DOBSON AVENUE
GREENWOOD AVENUE
KIMBARK AVENUE
KENWOOD AVENUE

EXISTING LEGEND

- (A) SIDEWALK REMOVAL (AS DIRECTED BY THE ENGINEER)
- (B) EXISTING COMBINATION CURB AND GUTTER REMOVAL (AS DIRECTED BY THE ENGINEER)
- (C) PAVEMENT REMOVAL (AS DIRECTED BY THE ENGINEER)
- (D) EXISTING AGGREGATE REMOVAL TO 8" DEPTH (PAID AS EARTH EXCAVATION)
- ITEM TO BE REMOVED (AS DIRECTED BY THE ENGINEER)

PROPOSED LEGEND

1. COMBINATION CONCRETE CURB AND GUTTER REPLACE IN KIND AS DIRECTED BY THE ENGINEER (SEE NOTE 1)
2. 2" HMA SURFACE COURSE, MIX "D", N50
3. 4" HMA BINDER COURSE, IL-9.5, N50
4. AGGREGATE BASE COURSE, TYPE B, 8"
5. PORTLAND CEMENT CONCRETE SIDEWALK, 5"
6. AGGREGATE BASE COURSE, TYPE B, 4"
7. TOPSOIL FURNISH AND PLACE, 6" WITH SEEDING CLASS 2A

NOTES

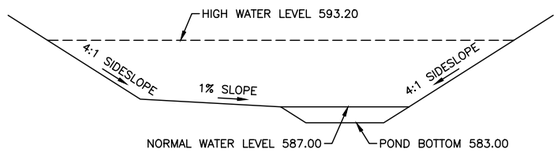
1. MIN 5" AGGREGATE BASE PROVIDED UNDER THE PROPOSED CURB AND GUTTER, PAID AS AGGREGATE BASE COURSE, TYPE B, 5"

HOT-MIX ASPHALT MIXTURE REQUIREMENTS		
MIXTURE TYPE	AIR VOIDS @NDES	QMP
PAVEMENT REPLACEMENT		
HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50 (2")	4% @ 50 Gyr.	LR 1030-2
HOT-MIX ASPHALT BINDER COURSE, IL-19.0, N50 (4") 1 LIFT	4% @ 50 Gyr.	LR 1030-2
QMP DESIGNATIONS: QUALITY CONTROL/QUALITY ASSURANCE (QC/QA) PER LOCAL ROADS SPECIFICATION 1030-2		

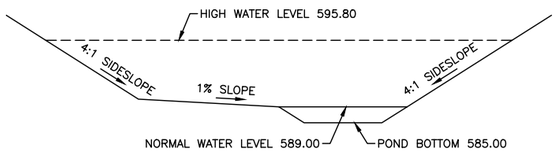
NOTE:
UNIT WEIGHT USED TO CALCULATE ALL HMA SURFACE MIXTURE QUANTITIES IS 112 LBS/SQ YD/IN.

THE "AC TYPE" FOR POLYMERIZED HMA MIXES SHALL BE "SBS/SBR PG 76-22" AND FOR NON-POLYMERIZED HMA THE "AC TYPE" SHALL BE "PG 64-22" UNLESS MODIFIED BY DISTRICT 1 SPECIAL PROVISIONS. FOR USE OF RECYCLED MATERIALS SEE SPECIAL PROVISIONS.

QUALITY MANAGEMENT PROGRAM (QMP) IDENTIFIES THE PARTICULAR QUALITY CONTROL SPECIFICATION THAT APPLIES TO THE HMA MIXTURE.



TYPICAL POND CROSS SECTION
PIONEER PARK



TYPICAL POND CROSS SECTION
MAICHACH PARK

DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT TYPICAL CROSS SECTIONS
SCALE =	CHECKED — JDH	REVISED —		VILLAGE of SOUTH HOLLAND
PROJECT NO = 23-R0646	DRAWN — RG	REVISED —		SHEET NO. 3 of 71
FILE NAME = 23R0646-TYPX-01	CHECKED — AG	REVISED —		

LAST SAVED BY: JHILSEN ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

NOTES:

1. COORDINATES ARE BASED ON ILLINOIS STATE PLANE EAST ZONE NORTH AMERICAN DATUM 1983.
2. SURVEY FEET UNITS WERE USED.
3. ALL ELEVATIONS REFER TO NAVD88 DATUM.

BENCHMARKS:

BENCHMARK #418
SQUARE ON TOP OF NORTHWEST COR OF CONC BASE FOR STREET LIGHT CONTROL CAB ON EAST SIDE OF COTTAGE GROVE AVE JUST SOUTH OF 164TH PL.
ELEV=600.56

BENCHMARK #419
SPIKENAIL IN WEST FACE OF PP ON NORTH SIDE OF 165TH ST AT WEST RES 944.
ELEV=597.33

BENCHMARK #420
CROSS ON TOP OF WEST SIDE OF CONC BASE FOR ALUM LP AT THE NORTHEAST COR OF 164TH ST & DREXEL AVE.
ELEV=599.11

BENCHMARK #421
CROSS ON TOP OF NORTHWEST COR OF CONC BASE FOR ALUM LP ON EAST SIDE OF INTERSECTION OF WOODLAWN E AVE & 165TH ST.
ELEV=595.92

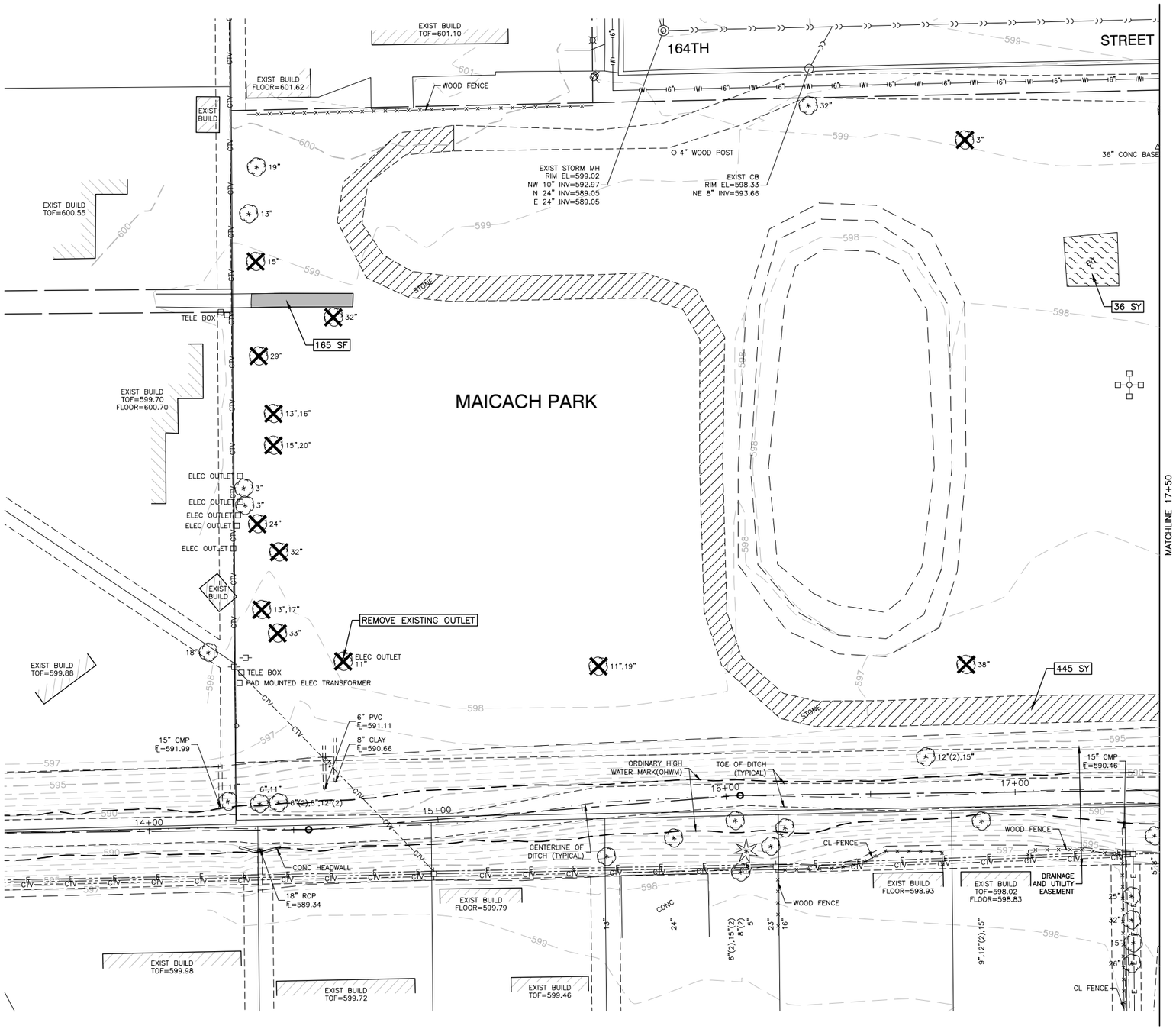
BENCHMARK #422
CROSS ON TOP OF NW FLANGE BOLT ON TOP FLANGE OF HYD ON WEST SIDE OF KIMBARK AVE, 1ST HYD NORTH OF 165TH ST.
ELEV=597.51

BENCHMARK #423
CROSS ON TOP OF SOUTHWEST COR OF CONC BASE FOR ALUM LP ON EAST SIDE KENWOOD AVE, IN FRONT OF RES 16443.
ELEV=595.26

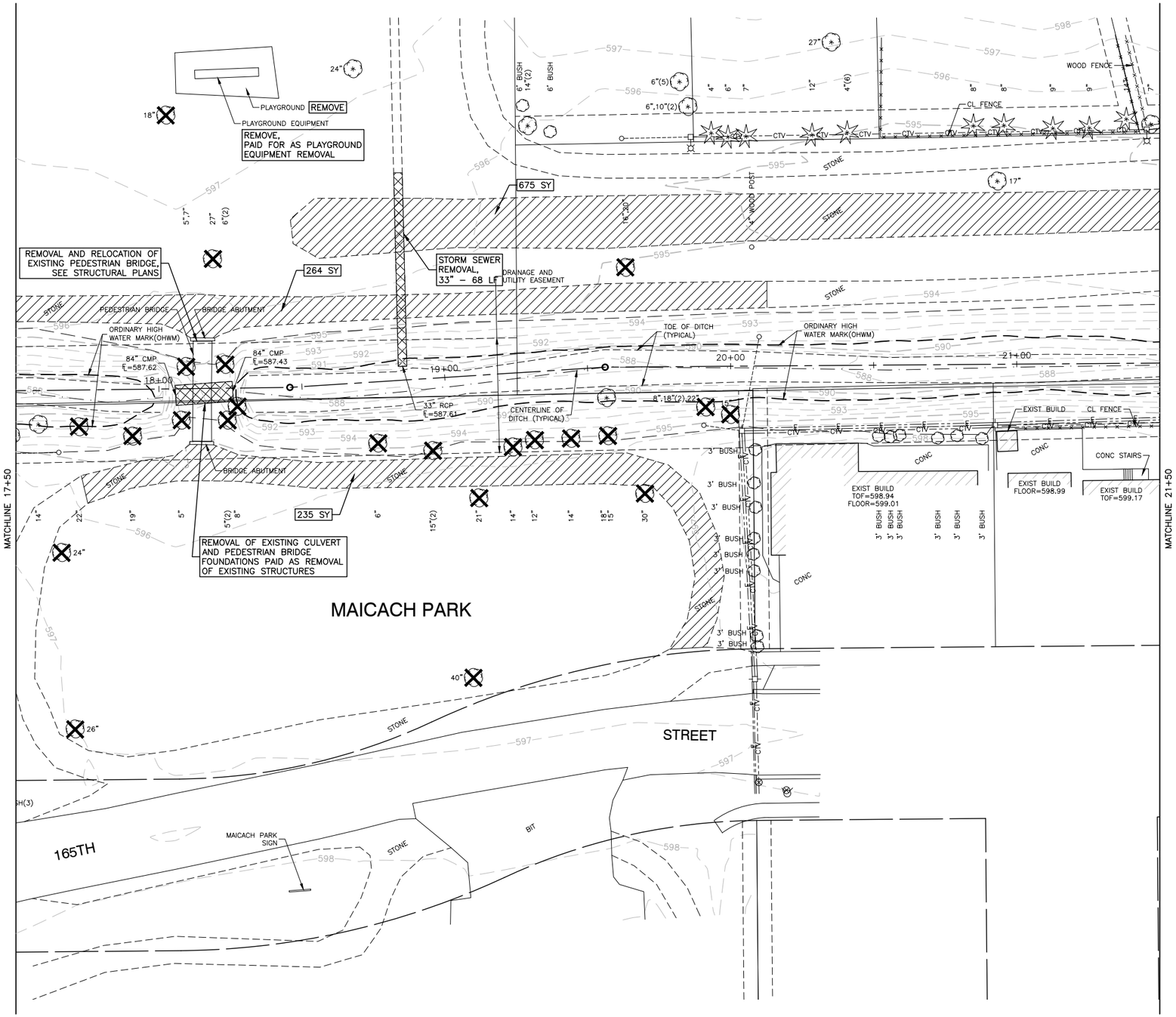
BENCHMARK #424
CROSS ON TOP OF NORTHWEST COR OF CONC BASE FOR ALUM LP AT SOUTH LINE RES 16448 PRINCE DR.
ELEV=597.13

DATE	= 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT ALIGNMENT, TIES & BENCHMARKS	VILLAGE of SOUTH HOLLAND	SHEET NO. 4 of 71
SCALE	= 1"=100'	CHECKED — JDH	REVISED —				
PROJECT NO	= 23-R0646	DRAWN — BG/RG	REVISED —				
FILE NAME	= 23R0646-TIES-01	CHECKED — AG	REVISED —				

LAST SAVED BY: NDENAULT ON 4/23/25
PLOTTED BY: JOHN HILSEN ON 5/6/25



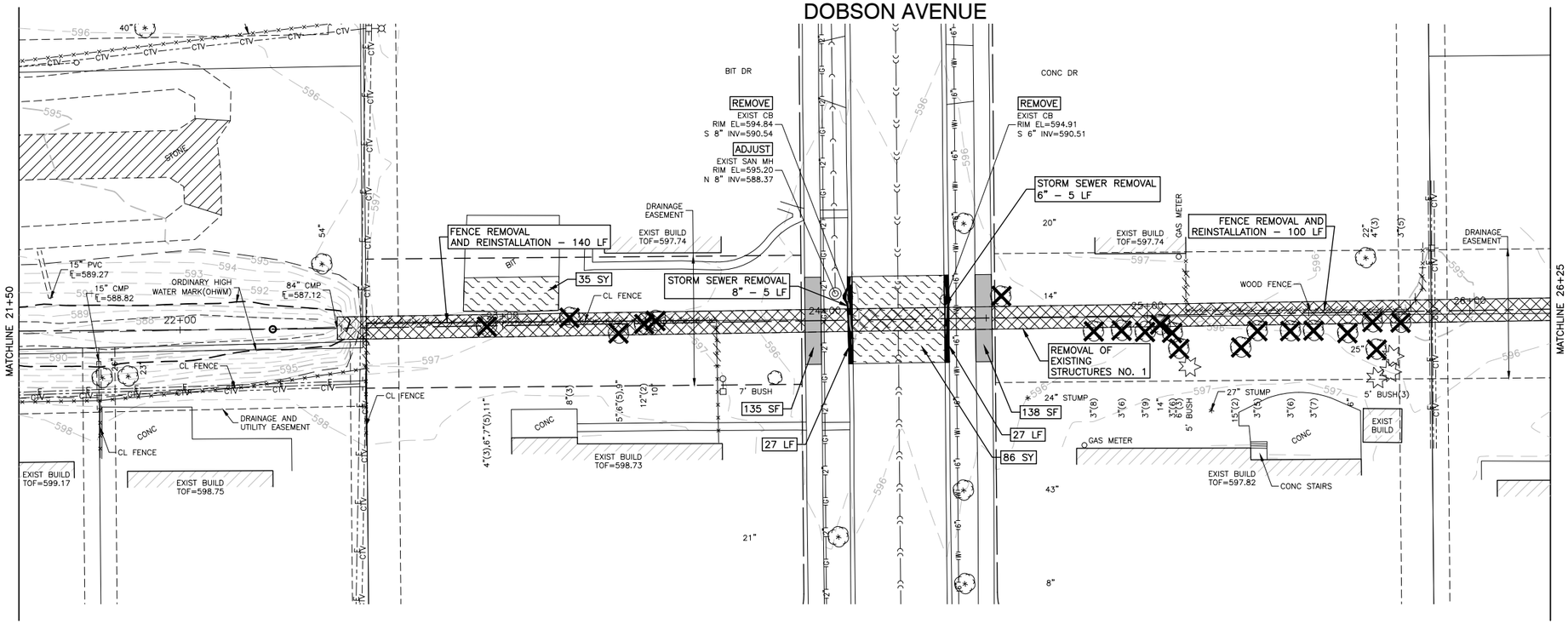
LAST SAVED BY: JHILSEN ON 5/6/25 PLOTTED BY: JOHN HILSEN ON 5/6/25	DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT EXISTING CONDITIONS & REMOVALS	VILLAGE of SOUTH HOLLAND	SHEET NO. 5 of 71
	SCALE = 1"=20'	CHECKED — JDH	REVISED —				
	PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —				
	FILE NAME = 23R0646-RMVL-01	CHECKED — AG	REVISED —				



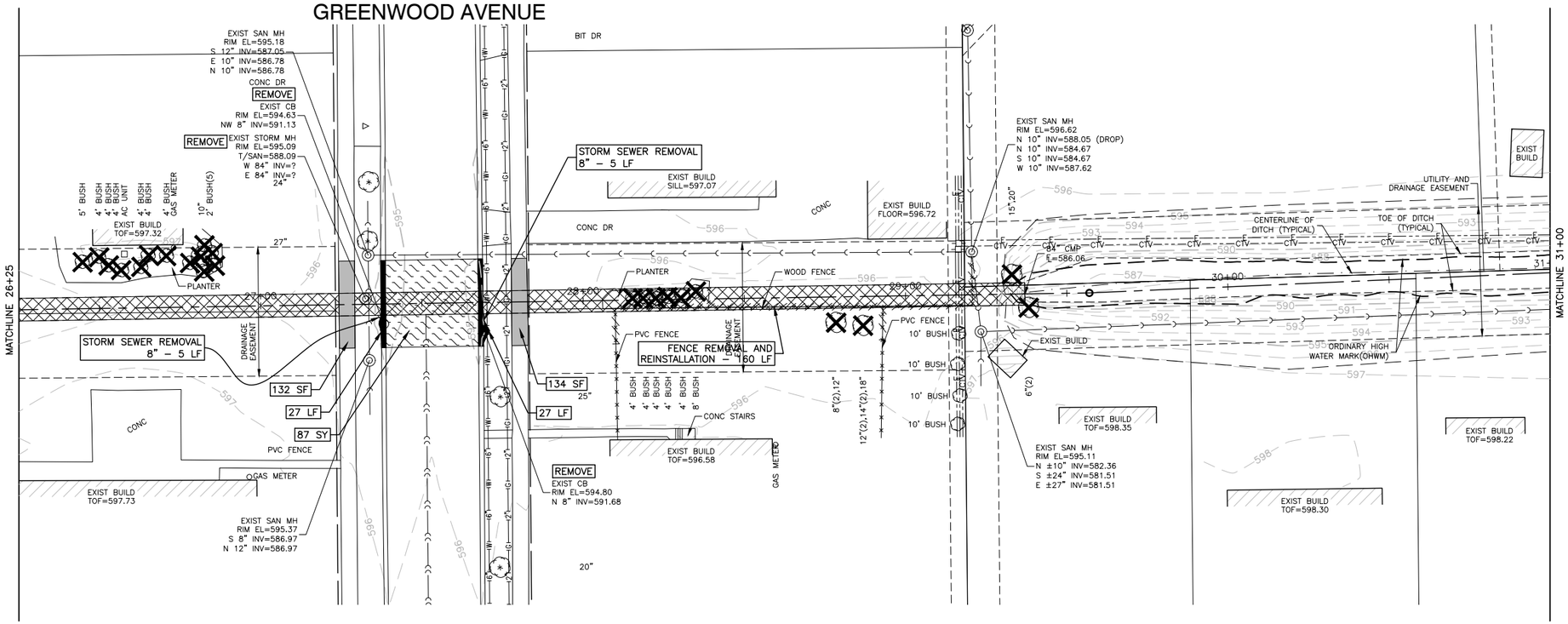
DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT EXISTING CONDITIONS & REMOVALS	VILLAGE of SOUTH HOLLAND
SCALE = 1"=20'	CHECKED — JDH	REVISED —			SHEET NO. 6 of 71
PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —			
FILE NAME = 23R0646-RMVL-01	CHECKED — AG	REVISED —			

LAST SAVED BY: JHILSEN ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

DOBSON AVENUE



GREENWOOD AVENUE



DATE	=	05-06-2025	DESIGNED —	MGP	REVISED	—
SCALE	=	1"=20'	CHECKED —	JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN —	BG/RG	REVISED	—
FILE NAME	=	23R0646-RMVL-01	CHECKED —	AG	REVISED	—

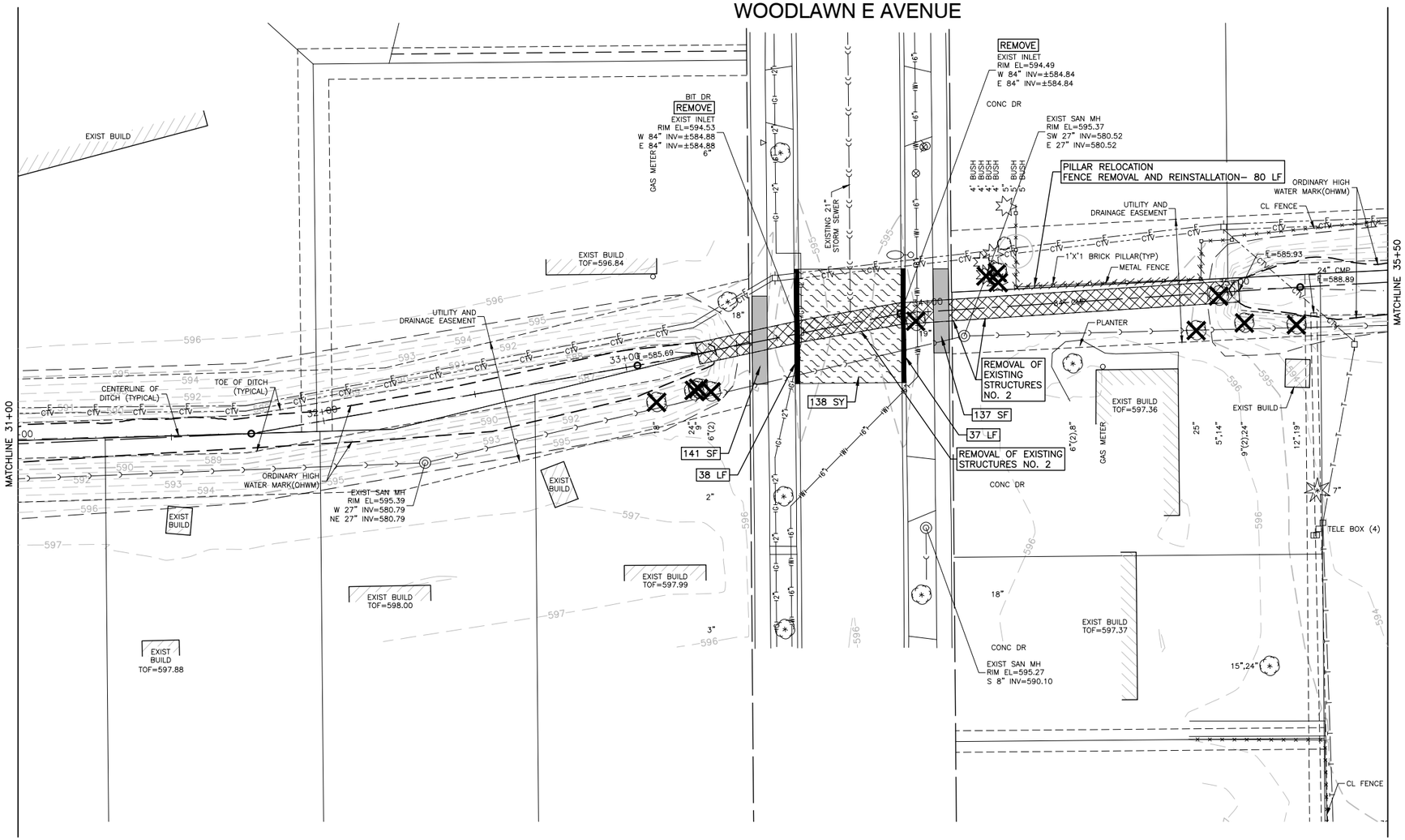
LAST SAVED BY: JHILSEN ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
EXISTING CONDITIONS & REMOVALS

VILLAGE
of
SOUTH HOLLAND

SHEET NO.
7 of 71



LAST SAVED BY: JHILSEN ON 5/6/25 PLOTTED BY: JOHN HILSEN ON 5/6/25	DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT EXISTING CONDITIONS & REMOVALS	VILLAGE of SOUTH HOLLAND	SHEET NO. 8 of 71
	SCALE = 1"=20'	CHECKED — JDH	REVISED —				
	PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —				
	FILE NAME = 23R0646-RMVL-01	CHECKED — AG	REVISED —				

N

MATCHLINE 35+50

MATCHLINE 39+75

EXIST BUILD TOF=597.17

EXIST BUILD TOF=596.82

EXIST BUILD TOF=596.78

EXIST SAN DROP MH
RIM EL=595.76
N 12" INV=588.51
N 12" INV=584.01
S 12" INV=584.01
OUTSIDE DROP TO NORTH

6",12"(2)

6" BUSH
8" BUSH
6",12"(2),4"(2),20"
8" BUSH
8" BUSH

28"

6",10",16"

16"

CL FENCE

CL FENCE

CENTERLINE OF DITCH (TYPICAL)

TOE OF DITCH (TYPICAL)

ORDINARY HIGH WATER MARK(OHWM)

UTILITY AND DRAINAGE EASEMENT

WOOD FENCE

±15" RCP
FL=586.84

CONC HEADWALL

PROPERTY LINE

36+00

37+00

38+00

39+00

EXIST SAN MH
RIM EL=595.46
W 27" INV=580.66
E 27" INV=580.66

40"

PLAYGROUND EQUIPMENT

PLAYGROUND

PLAYGROUND EQUIPMENT

PLAYGROUND EQUIPMENT

31"

34"

18"

EXIST SAN MH
RIM EL=594.79
N 12" INV=583.04
W 27" INV=580.19
E 27" INV=580.19

34"

24"

28"

PIONEER PARK

PARK RULES SIGN

25"

27"

30"

30"

36"

24"

TORM MH
=595.04
INV=590.74
NV=590.74

CL FENCE

TELE BOX

TELE BOX(2)

ELEC BOX

5' BUSH(2)

AC UNIT

5' BUSH(2)

TELE BOX

CL FENCE

TELE BOX
TELE BOX
ELEC BOX

PAD MOUNTED ELEC TRANSFORMER

EXIST BUILD

TELE BOX

6' BUSH

TELE BOX
TELE BOX

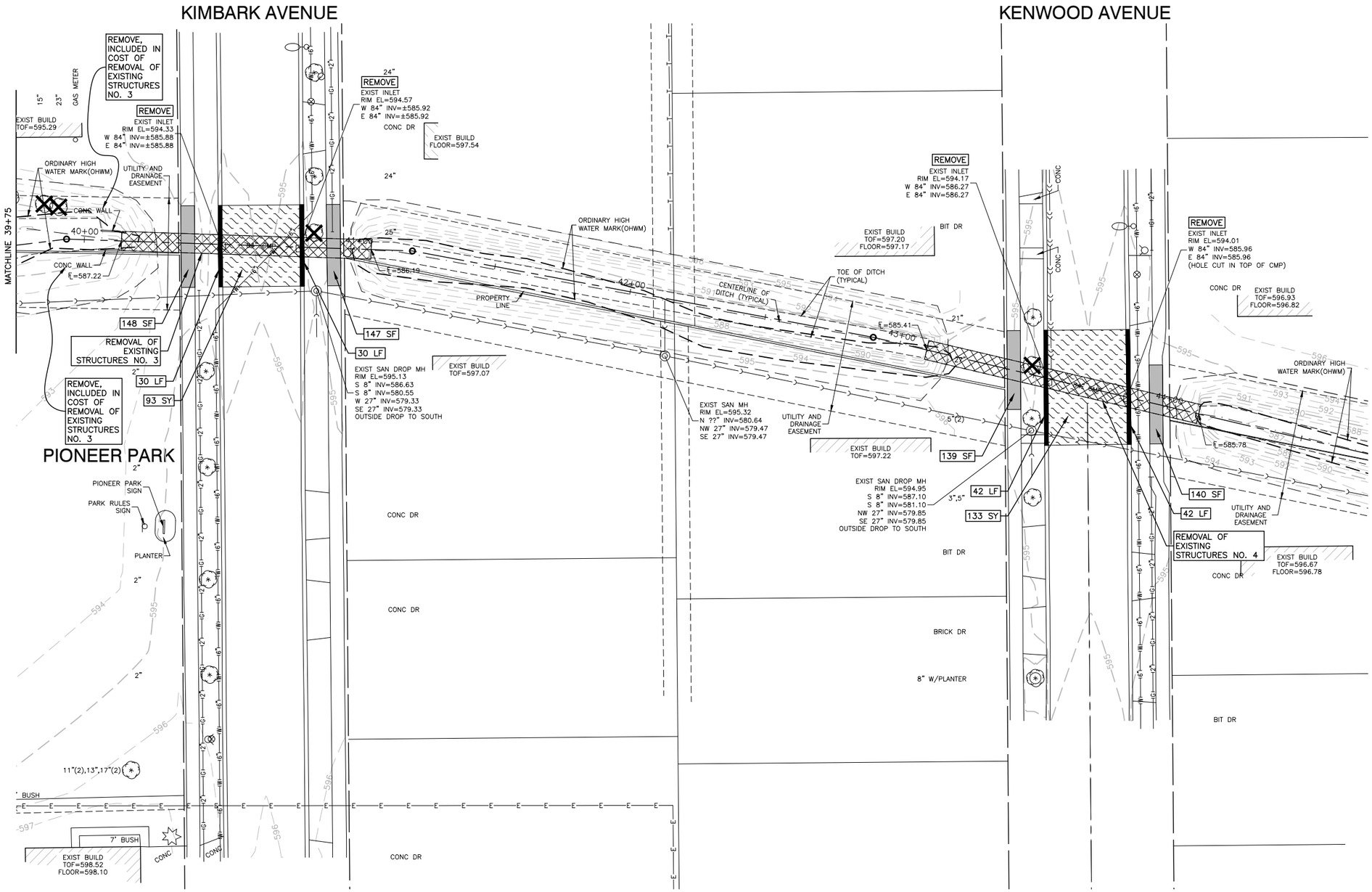
DATE	=	05-06-2025	DESIGNED	—	MGP	REVISED	—
SCALE	=	1"=20'	CHECKED	—	JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN	—	BG/RG	REVISED	—
FILE NAME	=	23R0646-RMVL-01	CHECKED	—	AG	REVISED	—

LAST SAVED BY: JHILSEN ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
EXISTING CONDITIONS & REMOVALS

VILLAGE of SOUTH HOLLAND



DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT EXISTING CONDITIONS & REMOVALS	VILLAGE of SOUTH HOLLAND	SHEET NO. 10 of 71
SCALE = 1"=20'	CHECKED — JDH	REVISED —				
PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —				
FILE NAME = 23R0646-RMVL-01	CHECKED — AG	REVISED —				

LAST SAVED BY: JHILSEN ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

DREXEL AVENUE

INGLESIDE AVENUE

164TH COURT

MAICACH PARK

165TH STREET

N

EXIST CB
RIM EL=598.19
E 8" INV=594.71
SE 10" INV=594.36

EXIST STORM MH
RIM EL=599.07
NW 10" INV=592.97
N 24" INV=589.05
E 24" INV=589.05

EXIST CB
RIM EL=598.25
W 8" INV=594.97

EXIST SAN MH
RIM EL=598.76
N 8" INV=592.53

EXIST CB
RIM EL=598.45
S 8" INV=593.15

EXIST CB
RIM EL=598.33
NE 8" INV=593.66

EXIST SAN MH
RIM EL=599.36
E 8" INV=592.56
NW 8" INV=592.56

EXIST STORM MH
RIM EL=600.03
NE 10" INV=593.98
N 24" INV=588.58
W 24" INV=588.58
S ±33" INV=588.58

599.10 599.10 599.10 599.00 599.10 599.00 599.10 598.80 598.70 600.00 600.15 599.90 599.95 599.00 599.00 599.10 598.40 598.50 598.50 598.40 8' 598.00 598.10 597.90 597.80 597.00 597.00 596.80 596.70 598.00 598.10 597.00 597.10 596.10 595.50 595.20 595.40 596.00 595.10 595.15 594.85 595.25 595.20 594.60 594.60 594.29 594.50 595.10 595.00 595.00 595.25 595.25 595.80 595.90 596.70 596.80 596.70 596.80 596.70 596.80 596.61 596.81 596.00 595.80 595.70 595.70 595.65 595.90 595.40 595.40 595.79 595.85

HWL 595.80
NWL 589.00
VOLUME PROVIDED
=8.28 AC-FT

AG

ORDINARY HIGH WATER MARK (OHWM)

TOE OF DITCH (TYPICAL)

CENTERLINE OF DITCH (TYPICAL)

PEDESTRIAN BRIDGES
SEE STRUCTURE PLANS

EXIST SAN MH
RIM EL=597.45
E 8" INV=589.90
W 8" INV=589.90

EXIST CB
RIM EL=597.07
S 8" INV=593.99
N 10" INV=593.72

EXIST INLET
RIM EL=597.07
N 8" INV=594.37

LEGEND

HMA ROADWAY PAVEMENT
- HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
- HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50, 4"
- AGGREGATE BASE COURSE, TYPE B, 8"

(PA)

(AG) AGGREGATE SURFACE COURSE, TYPE A, 6"

(SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"

(CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND

NOTE

SEE PLAN AND PROFILE SHEETS FOR STORM SEWER INFORMATION.

DATE	=	05-06-2025	DESIGNED	—	MGP	REVISED	—
SCALE	=	1"=30'	CHECKED	—	JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN	—	BG/RG	REVISED	—
FILE NAME	=	23R0646-GRAD-01	CHECKED	—	AG	REVISED	—

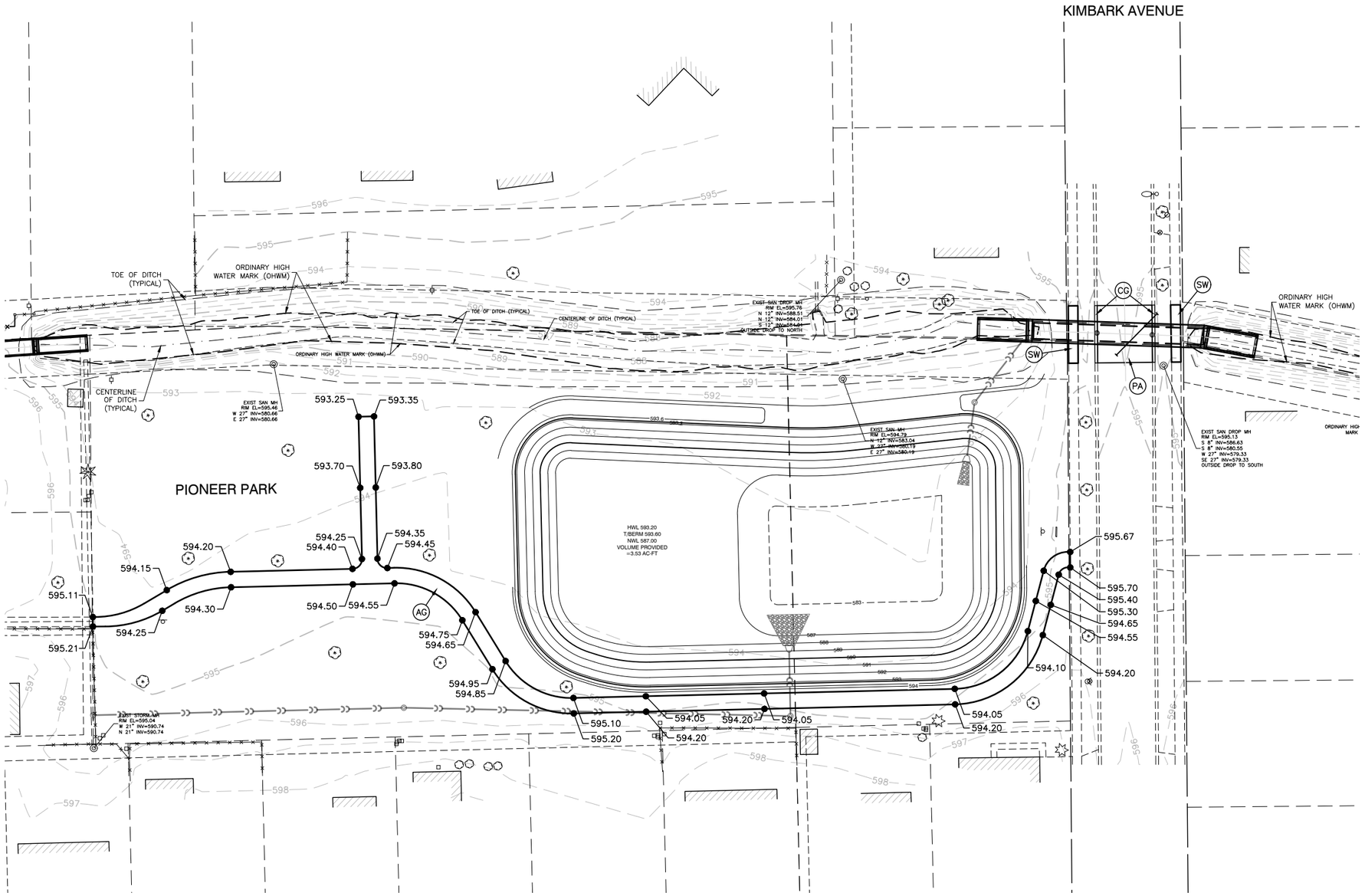
LAST SAVED BY: NDENAULT ON 5/8/25
PLOTTED BY: JOHN HILSEN ON 5/8/25

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
MAICACH PARK GRADING PLAN

VILLAGE of SOUTH HOLLAND

SHEET NO. 11 of 71



LEGEND

HMA ROADWAY PAVEMENT
- HOT–MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
- HOT–MIX ASPHALT BINDER COURSE, IL–9.5, N50, 4"
- AGGREGATE BASE COURSE, TYPE B, 8"

(PA)

(AG) AGGREGATE SURFACE COURSE, TYPE A, 6"

(SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"

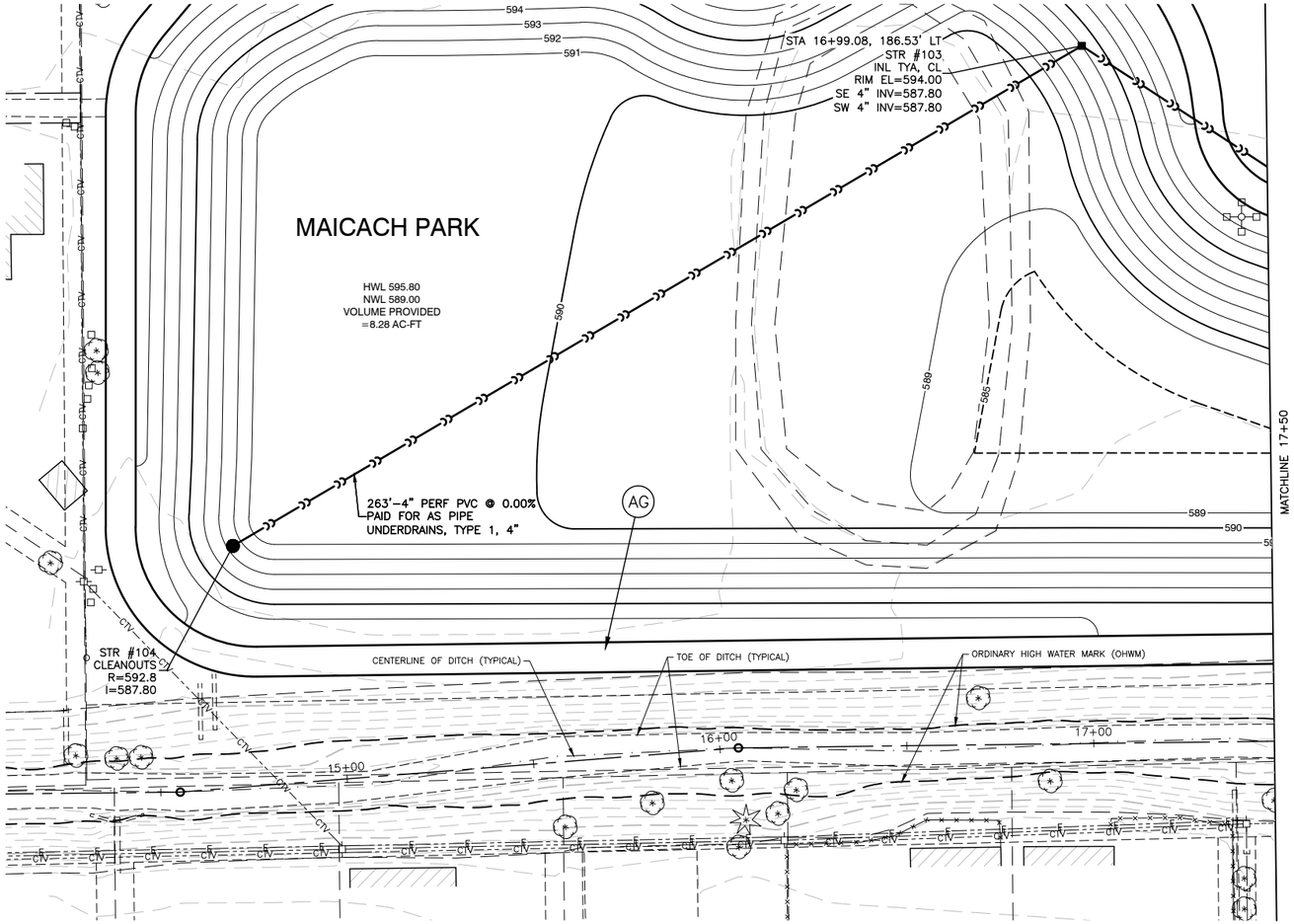
(CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND

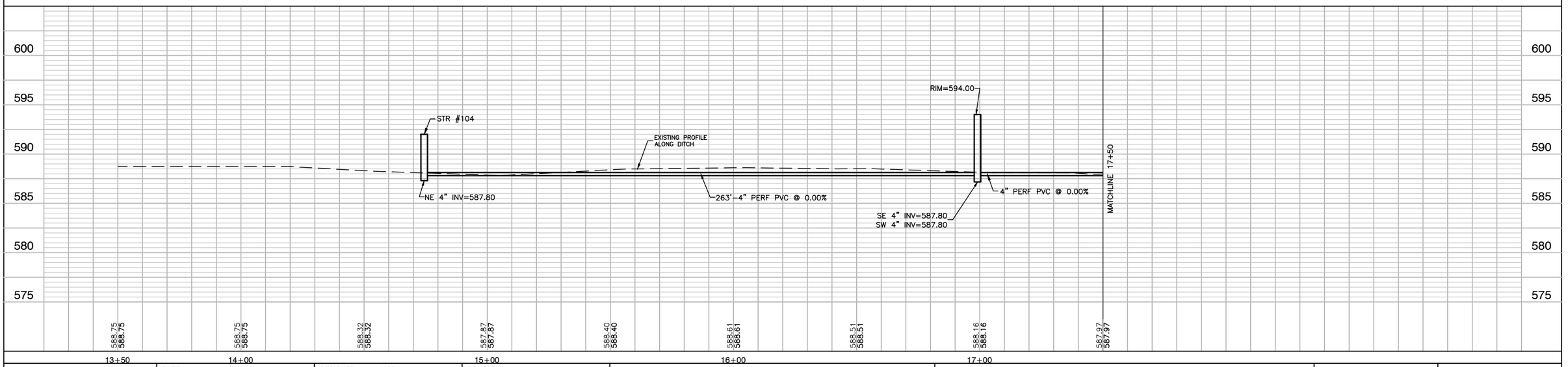
NOTE

SEE PLAN AND PROFILE SHEETS FOR STORM SEWER INFORMATION.

DATE	= 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT PIONEER PARK GRADING PLAN	VILLAGE of SOUTH HOLLAND	SHEET NO. 12 of 71
SCALE	= 1"=30'	CHECKED — JDH	REVISED —				
PROJECT NO	= 23-R0646	DRAWN — BG/RG	REVISED —				
FILE NAME	= 23R0646-GRAD-01	CHECKED — AG	REVISED —				

LAST SAVED BY: NDENAULT ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25





N

LEGEND

- (PA) HMA ROADWAY PAVEMENT
  - HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
  - HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50, 4"
  - AGGREGATE BASE COURSE, TYPE B, 8"
- (AG) AGGREGATE SURFACE COURSE, TYPE A, 6"
- (SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"
- (CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND

DATE = 05-06-2025	DESIGNED — MGP	REVISED —	
SCALE = H 1"=20' V 1"=5'	CHECKED — JDH	REVISED —	
PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —	
FILE NAME = 23R0646-STRM-01	CHECKED — AG	REVISED —	

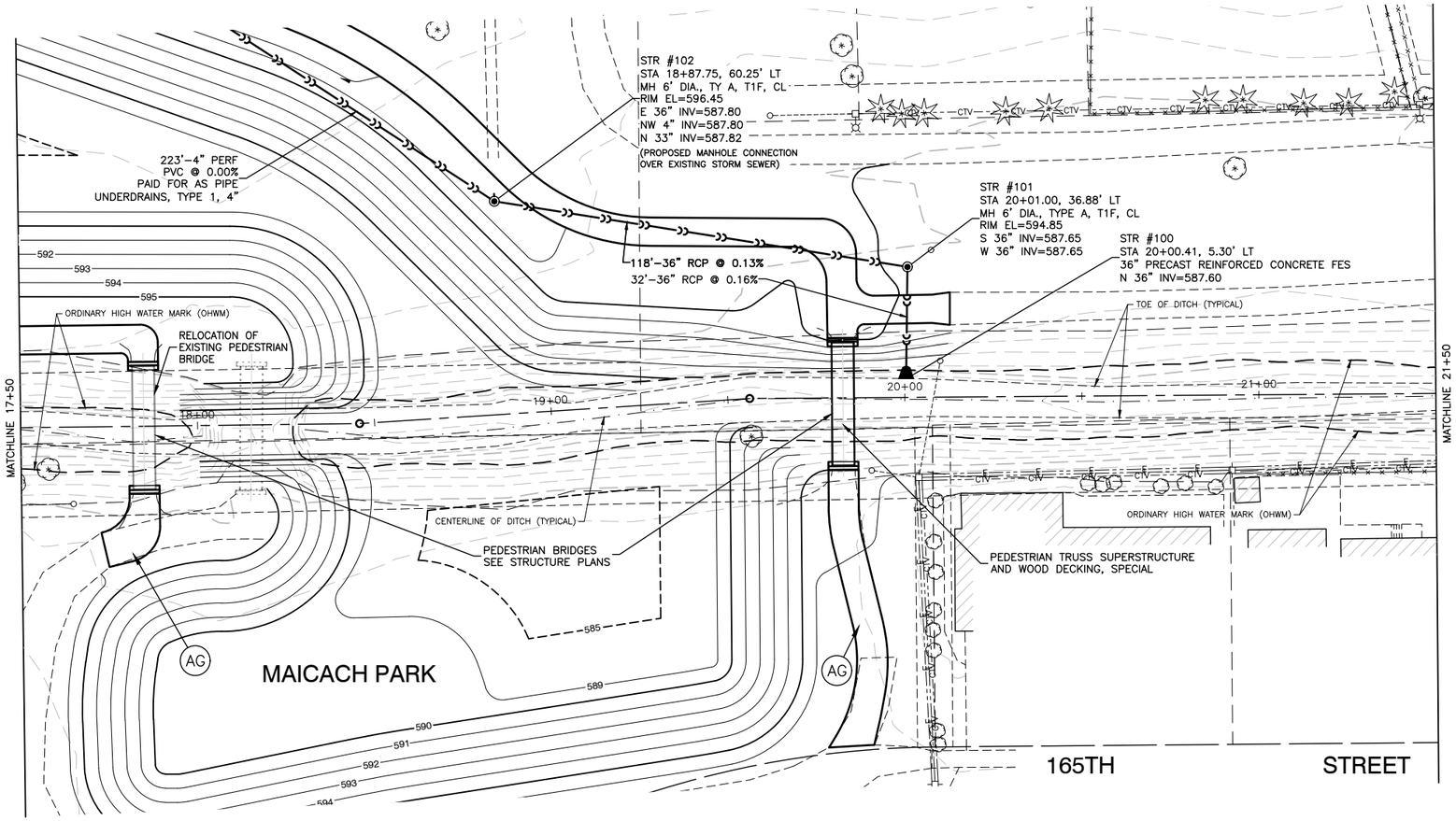
LAST SAVED BY: MATT.PALYS ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
PLAN & PROFILE

VILLAGE of SOUTH HOLLAND

SHEET NO. 13 of 71



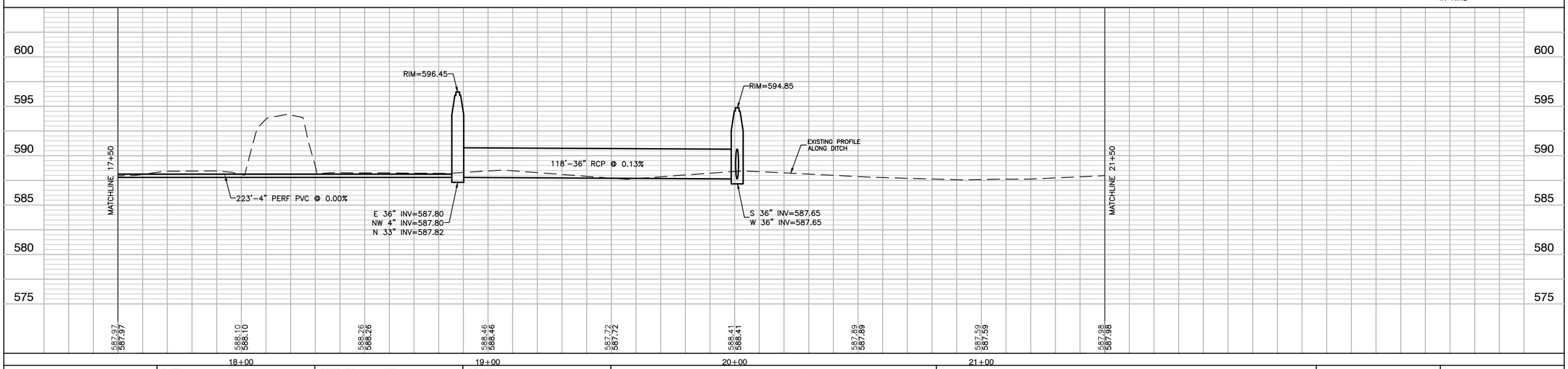
LEGEND

HMA ROADWAY PAVEMENT
- (PA) HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
- HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50, 4"
- AGGREGATE BASE COURSE, TYPE B, 8"

(AG) AGGREGATE SURFACE COURSE, TYPE A, 6"

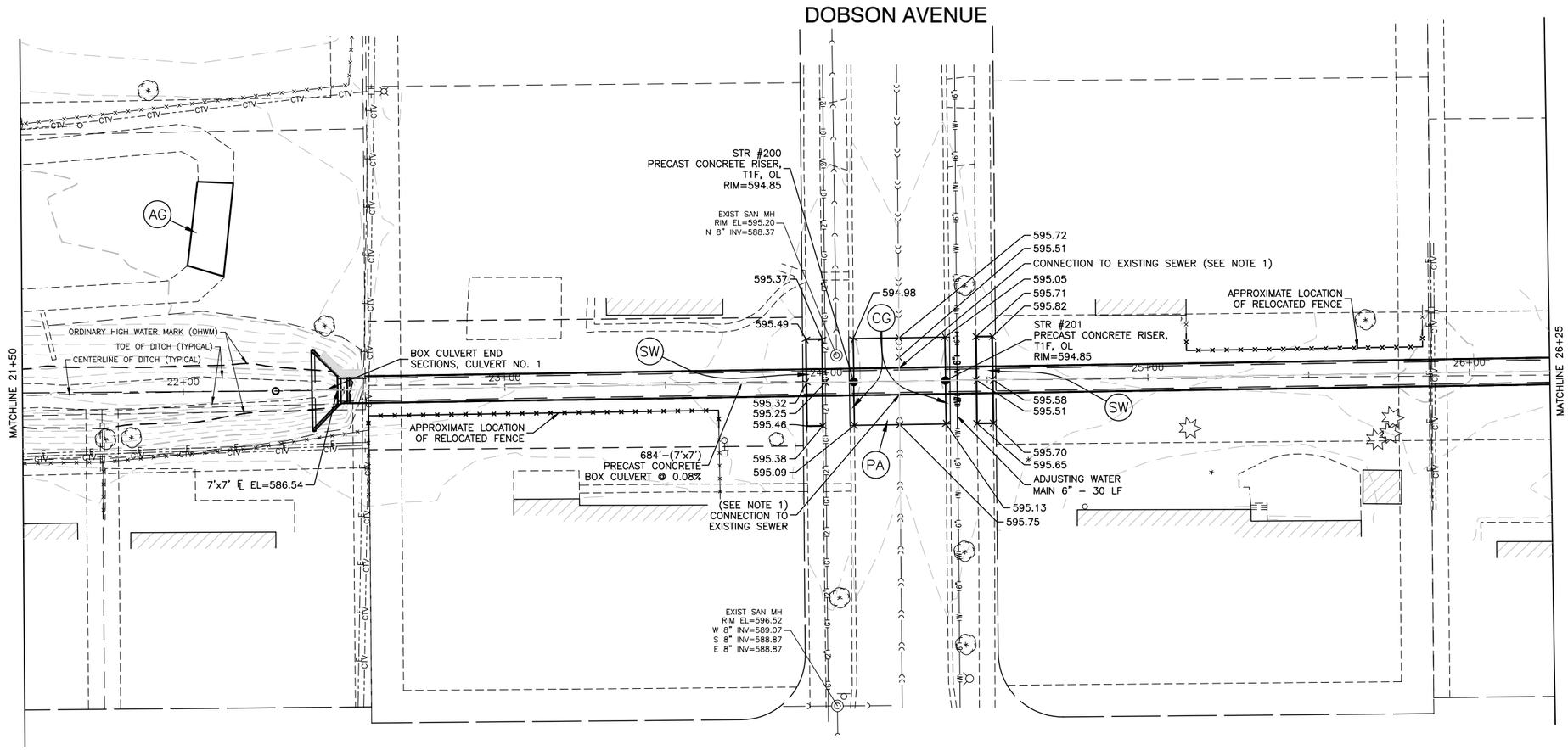
(SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"

(CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND



DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT PLAN & PROFILE	VILLAGE of SOUTH HOLLAND
SCALE = H 1"=20' V 1"=5'	CHECKED — JDH	REVISED —			SHEET NO. 14 of 71
PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —			
FILE NAME = 23R0646-STRM-01	CHECKED — AG	REVISED —			

LAST SAVED BY: MATT.PALYS ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25



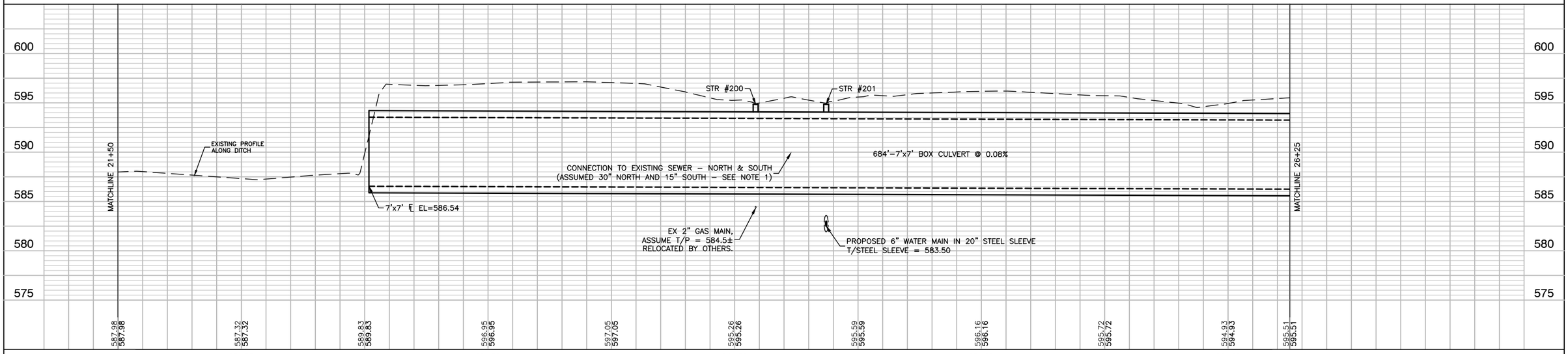
NOTE 1:

CONTRACTOR TO POTHOLE EXISTING STORM SEWER TO CONFIRM EXISTING INVERT AND OUTSIDE DIAMETER AT PROPOSED CULVERT CONNECTION, WORK PAID AS EXPLORATION TRENCH 84" DEPTH.

CONNECTION TO PROPOSED BOX CULVERT PAID AS CONNECTION TO EXISTING SEWER.

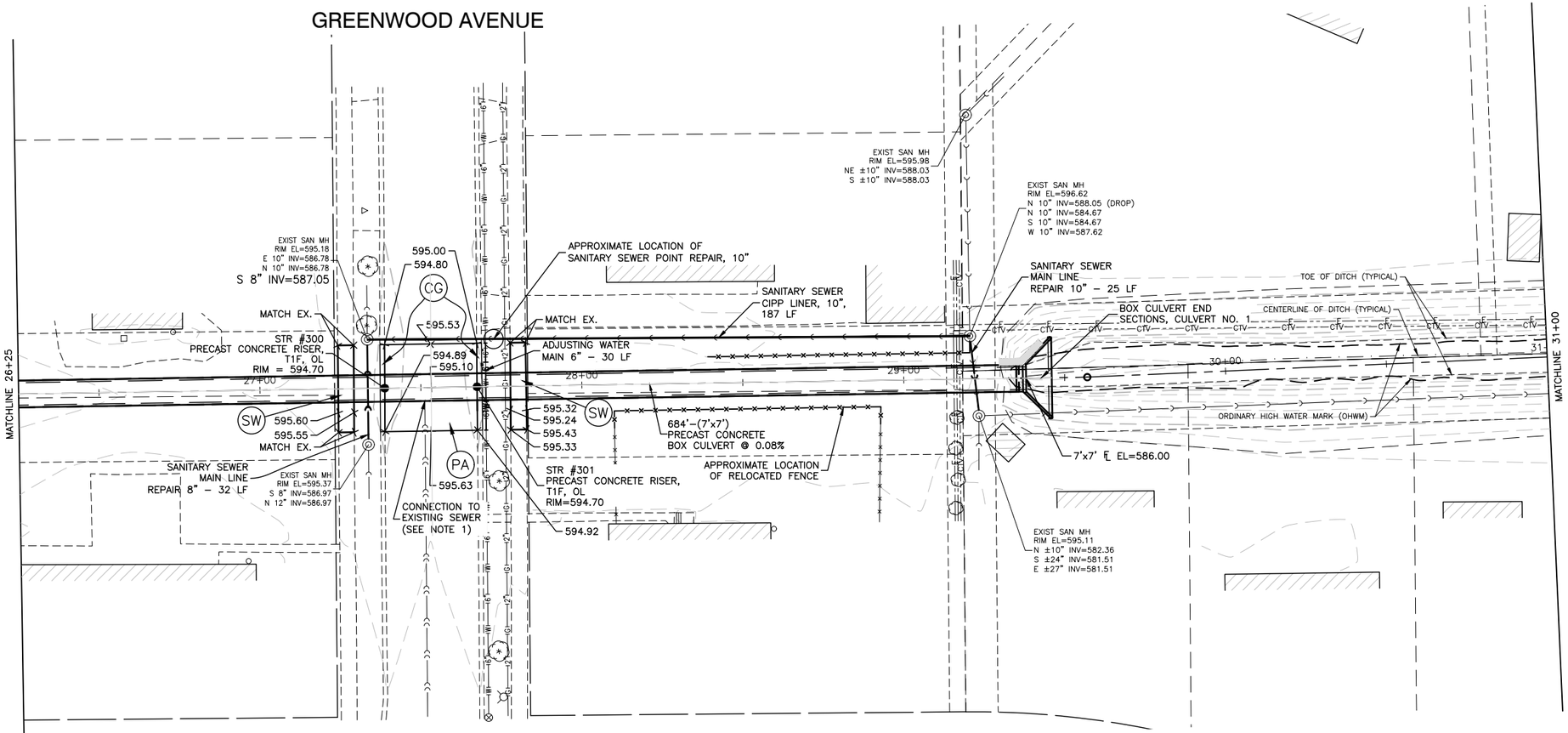
LEGEND

- (PA) HMA ROADWAY PAVEMENT
  - HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
  - HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50, 4"
  - AGGREGATE BASE COURSE, TYPE B, 8"
- (AG) AGGREGATE SURFACE COURSE, TYPE A, 6"
- (SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"
- (CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND



DATE	= 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT PLAN & PROFILE	VILLAGE of SOUTH HOLLAND
SCALE	= H 1"=20' V 1"=5'	CHECKED — JDH	REVISED —			SHEET NO. 15 of 71
PROJECT NO	= 23-R0646	DRAWN — BG/RG	REVISED —			
FILE NAME	= 23R0646-STRM-01	CHECKED — AG	REVISED —			

LAST SAVED BY: MATT.PALYS ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25



N

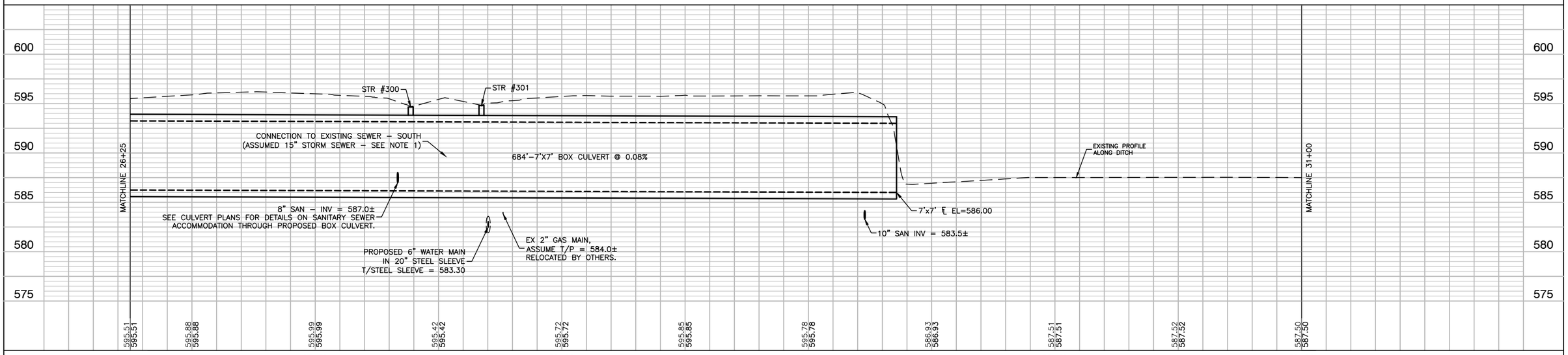
NOTE 1:

CONTRACTOR TO POTHOLE EXISTING STORM SEWER TO CONFIRM EXISTING INVERT AND OUTSIDE DIAMETER AT PROPOSED CULVERT CONNECTION, WORK PAID AS EXPLORATION TRENCH 84" DEPTH.

CONNECTION TO PROPOSED BOX CULVERT PAID AS CONNECTION TO EXISTING SEWER.

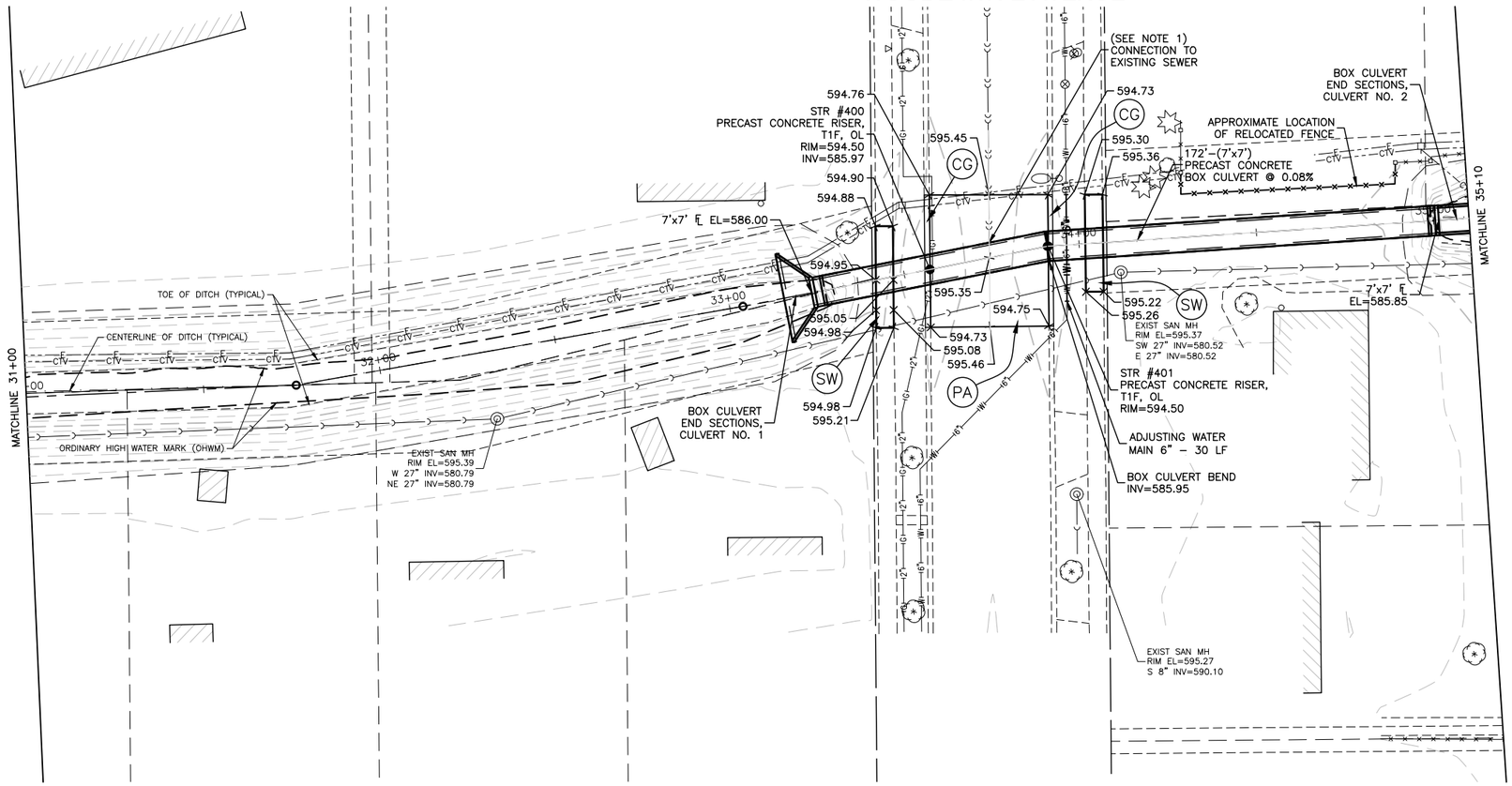
LEGEND

- HMA ROADWAY PAVEMENT
  - HOT–MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
  - HOT–MIX ASPHALT BINDER COURSE, IL–9.5, N50, 4"
  - AGGREGATE BASE COURSE, TYPE B, 8"
- (PA)
- (AG) AGGREGATE SURFACE COURSE, TYPE A, 6"
- (SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"
- (CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND



DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT PLAN & PROFILE	VILLAGE of SOUTH HOLLAND
SCALE = H 1"=20' V 1"=5'	CHECKED — JDH	REVISED —			SHEET NO. 16 of 71
PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —			
FILE NAME = 23R0646-STRM-01	CHECKED — AG	REVISED —			

LAST SAVED BY: MATT.PALYS ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25



N

NOTE 1:

CONTRACTOR TO POTHOLE EXISTING STORM SEWER TO CONFIRM EXISTING INVERT AND OUTSIDE DIAMETER AT PROPOSED CULVERT CONNECTION, WORK PAID AS EXPLORATION TRENCH 84" DEPTH.

CONNECTION TO PROPOSED BOX CULVERT PAID AS CONNECTION TO EXISTING SEWER.

LEGEND

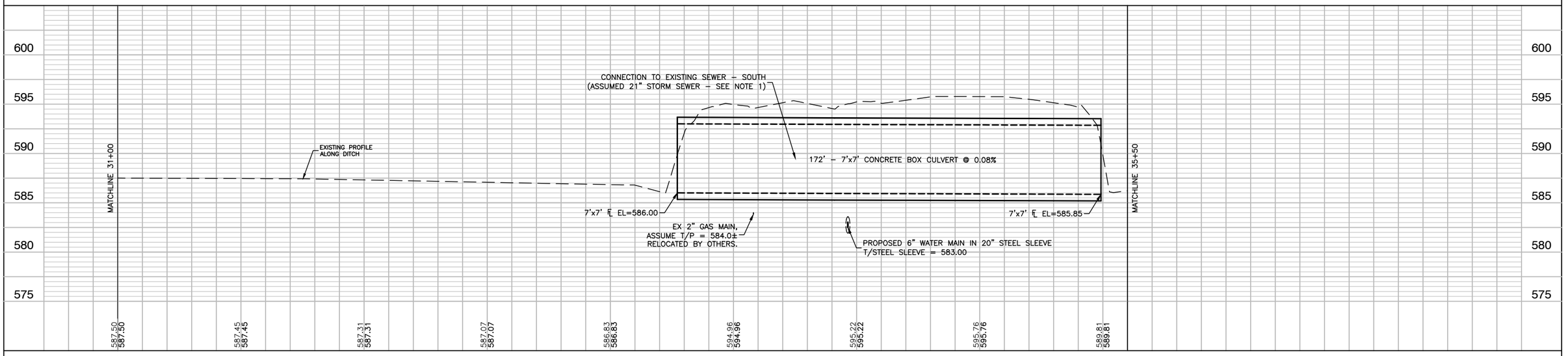
HMA ROADWAY PAVEMENT
- HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
- HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50, 4"
- AGGREGATE BASE COURSE, TYPE B, 8"

(PA) HMA ROADWAY PAVEMENT

(AG) AGGREGATE SURFACE COURSE, TYPE A, 6"

(SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"

(CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND



DATE	=	05-06-2025	DESIGNED	—	MGP	REVISED	—
SCALE	=	H 1"=20' V 1"=5'	CHECKED	—	JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN	—	BG/RG	REVISED	—
FILE NAME	=	23R0646-STRM-01	CHECKED	—	AG	REVISED	—

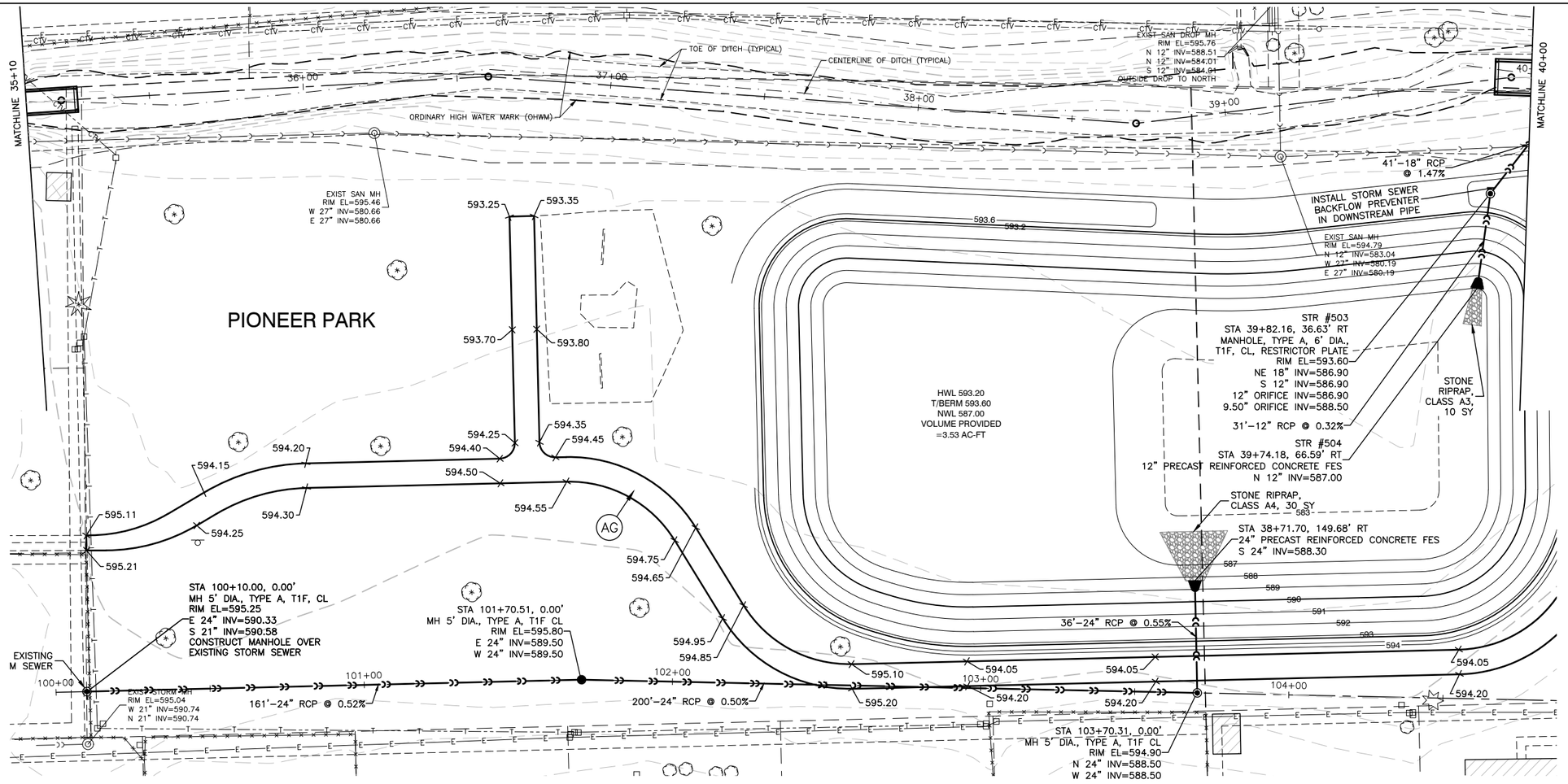
LAST SAVED BY: MATT.PALYS ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
PLAN & PROFILE

VILLAGE
of
SOUTH HOLLAND

SHEET NO.
17 of 71



LEGEND

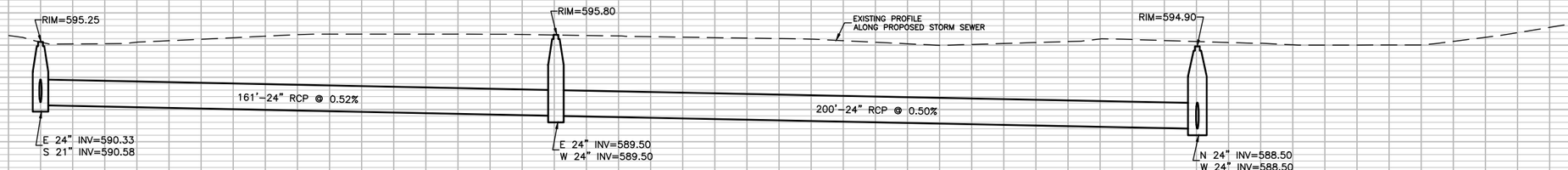
HMA ROADWAY PAVEMENT
- HOT-MIX ASPHALT SURFACE COURSE, MIX "D", N50, 2"
- HOT-MIX ASPHALT BINDER COURSE, IL-9.5, N50, 4"
- AGGREGATE BASE COURSE, TYPE B, 8"

(PA)

(AG) AGGREGATE SURFACE COURSE, TYPE A, 6"

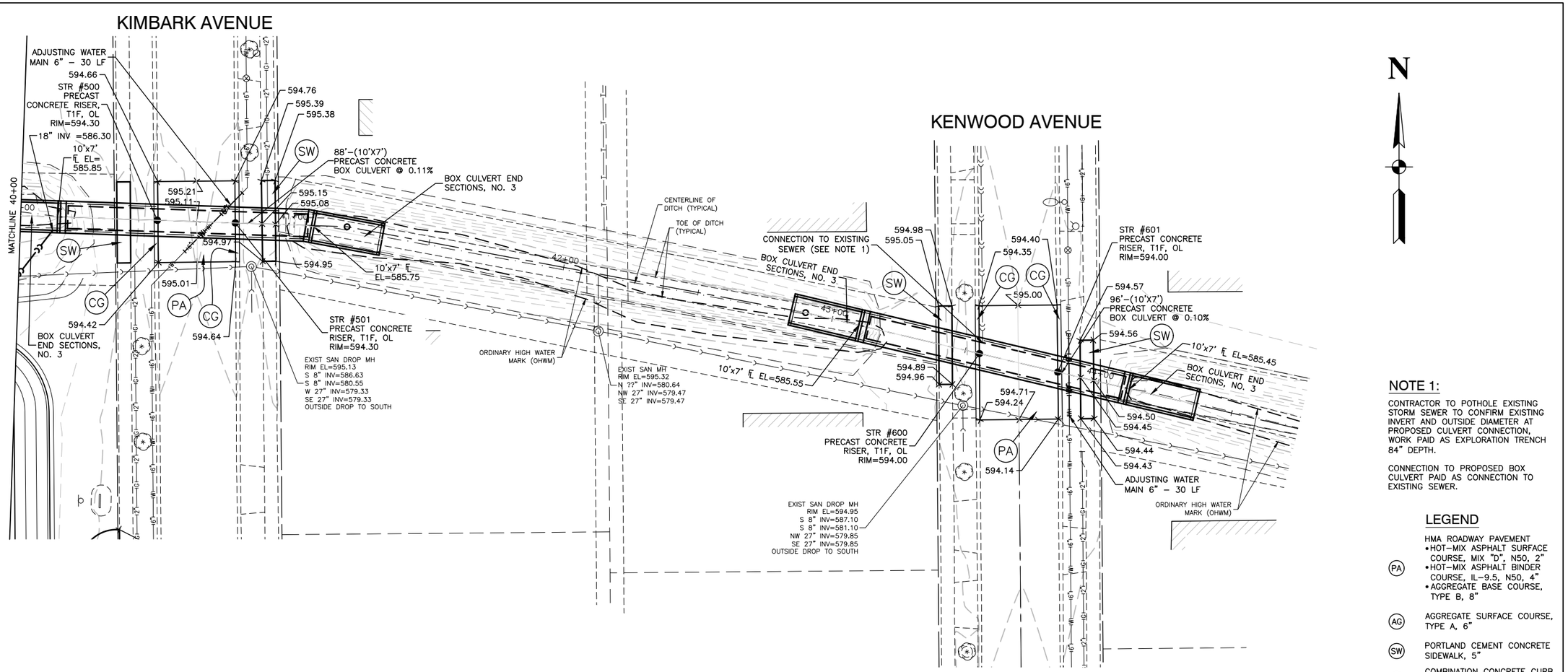
(SW) PORTLAND CEMENT CONCRETE SIDEWALK, 5"

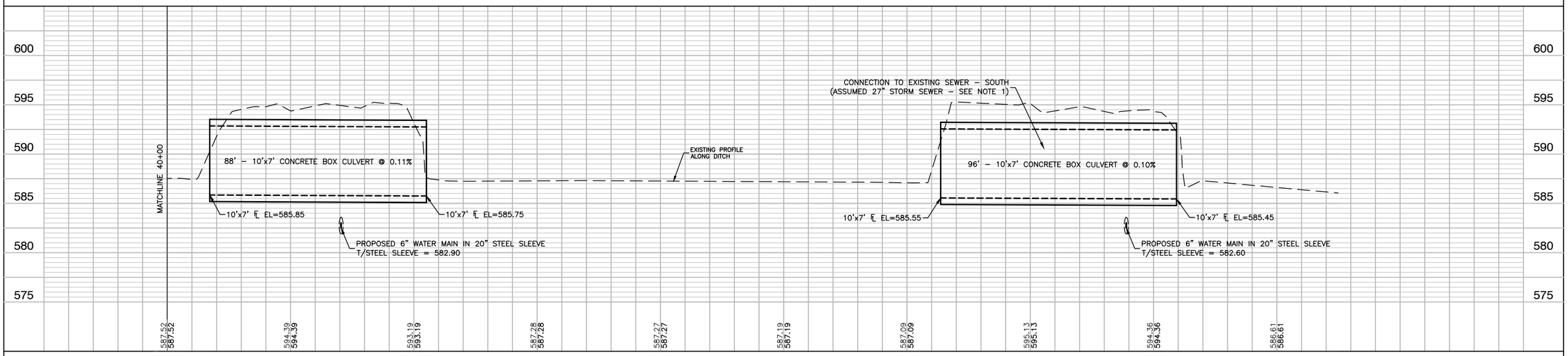
(CG) COMBINATION CONCRETE CURB AND GUTTER, TYPE, REPLACE IN KIND



DATE	= 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT PLAN & PROFILE
SCALE	= H 1"=20' V 1"=5'	CHECKED — JDH	REVISED —		VILLAGE of SOUTH HOLLAND
PROJECT NO	= 23-R0646	DRAWN — BG/RG	REVISED —		SHEET NO. 18 of 71
FILE NAME	= 23R0646-STRM-01	CHECKED — AG	REVISED —		

LAST SAVED BY: MATT.PALYS ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25





DATE	= 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT PLAN & PROFILE	VILLAGE of SOUTH HOLLAND
SCALE	= H 1"=20' V 1"=5'	CHECKED — JDH	REVISED —			SHEET NO. 19 of 71
PROJECT NO	= 23-R0646	DRAWN — BG/RG	REVISED —			
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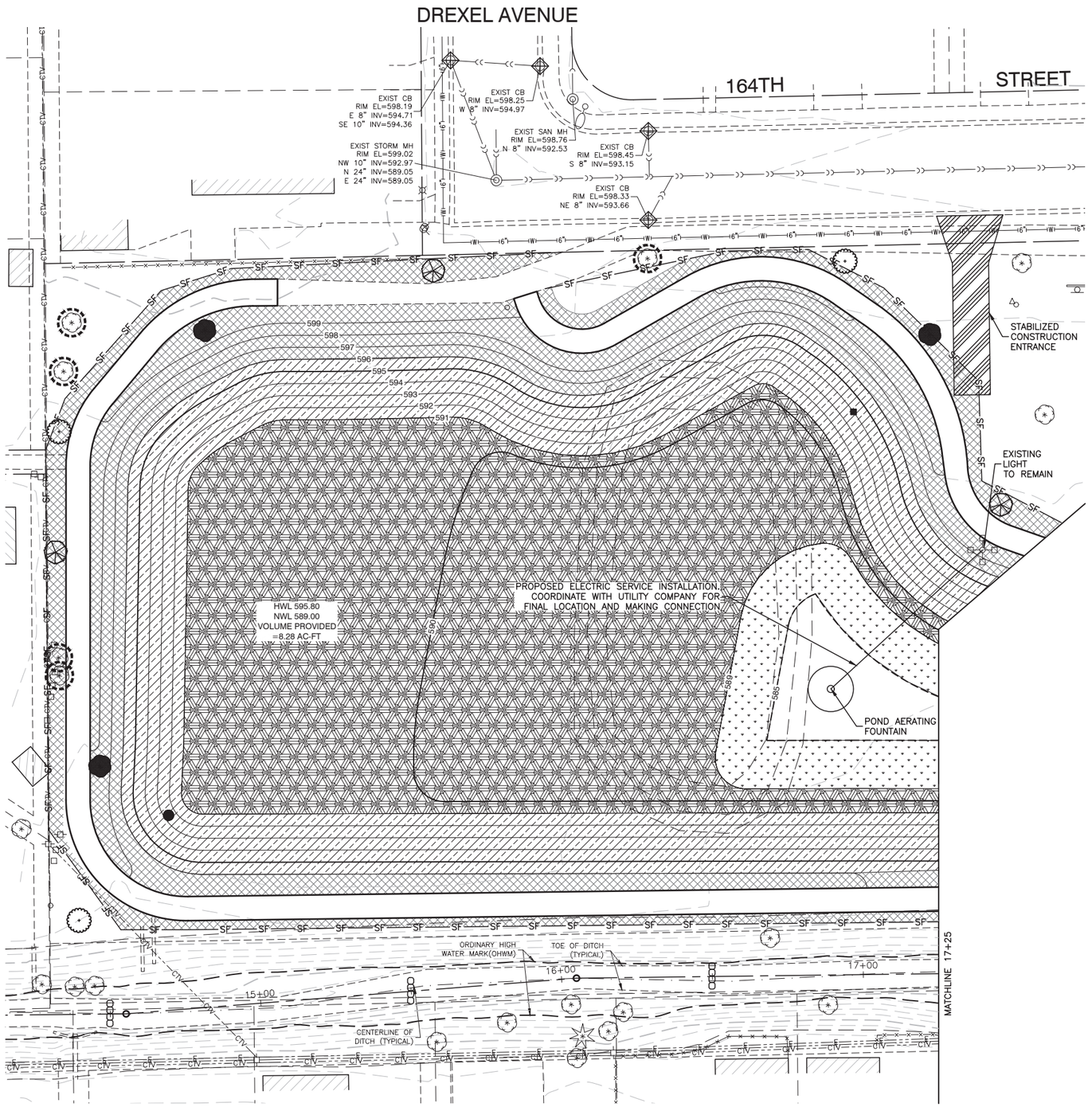

LEGEND

N

- SF — PERIMETER EROSION BARRIER
- TEMPORARY DITCH CHECKS
- INLET FILTER
- TOPSOIL EXCAVATION AND PLACEMENT, 6" SEEDING CLASS 2A, EROSION CONTROL BLANKET
- TOPSOIL EXCAVATION AND PLACEMENT, 12" SEEDING, MESIC PRAIRIE, EROSION CONTROL BLANKET
- TOPSOIL EXCAVATION AND PLACEMENT, 12" SEEDING, SEDGE MEADOW MIX, EROSION CONTROL BLANKET
- TOPSOIL EXCAVATION AND PLACEMENT, 12" PERENNIAL PLANTS, WETLAND EMERGENT
- TREE TRUNK PROTECTION
- TREE, ACER SACCHARUM (SUGAR MAPLE), 3" CALIPER, BALLED AND BURLAPPED
- TREE, ULMUS CARPINIFOLIA NEW HORIZON (NEW HORIZON SMOOTHLEAF ELM), 3" CALIPER, BALLED AND BURLAPPED
- TREE, QUERCUS RUBRA (RED OAK), 3" CALIPER, BALLED AND BURLAPPED

DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT MAICACH PARK LANDSCAPING & EROSION CONTROL
SCALE = 1"=20'	CHECKED — JDH	REVISED —		VILLAGE of SOUTH HOLLAND
PROJECT NO = 23-R0646	DRAWN — BG/RG	REVISED —		SHEET NO. 20 of 71
FILE NAME = 23R0646-LNSC-01	CHECKED — AG	REVISED —		

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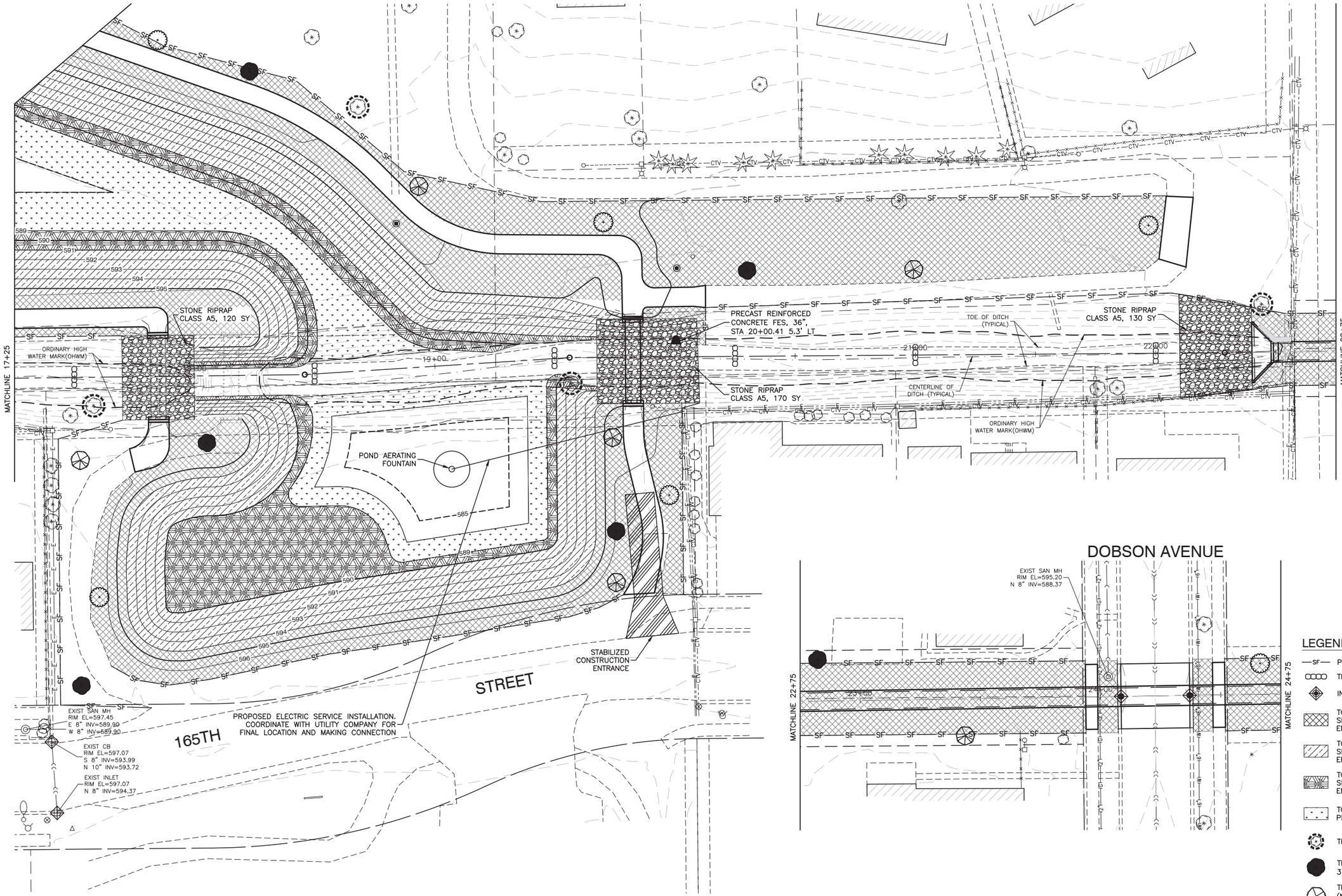

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PLOTTED BY: NATHAN DENAULT ON 5/6/25

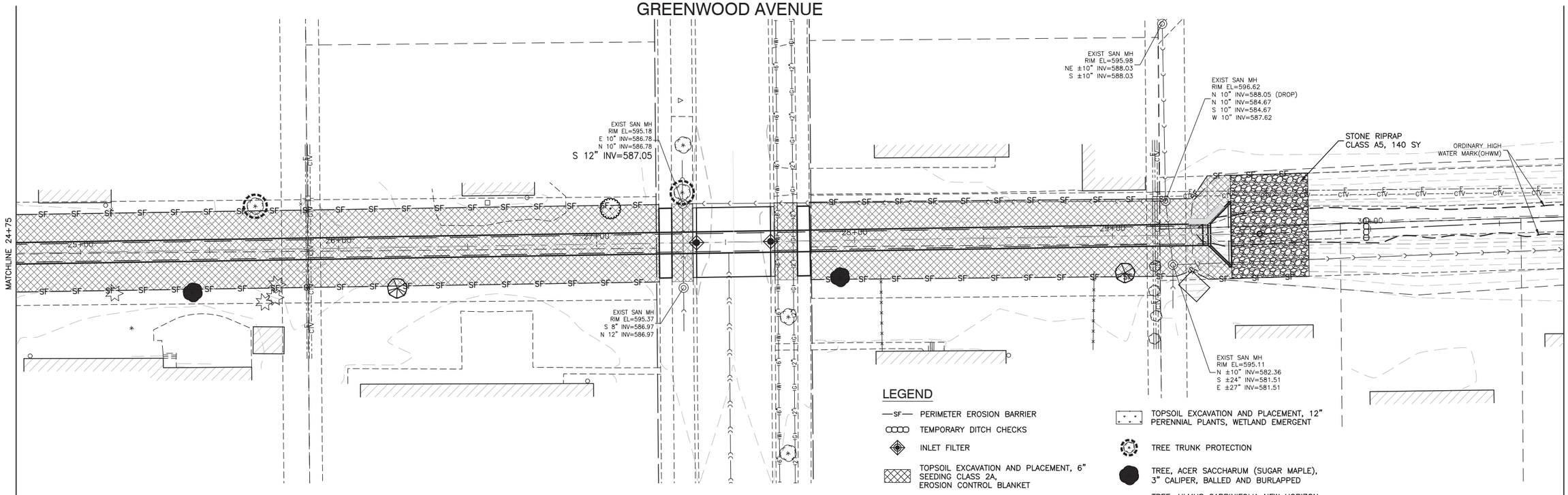
Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
MAICACH PARK LANDSCAPING & EROSION CONTROL

VILLAGE of SOUTH HOLLAND

SHEET NO. 21 of 71

GREENWOOD AVENUE



LEGEND

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- INLET FILTER
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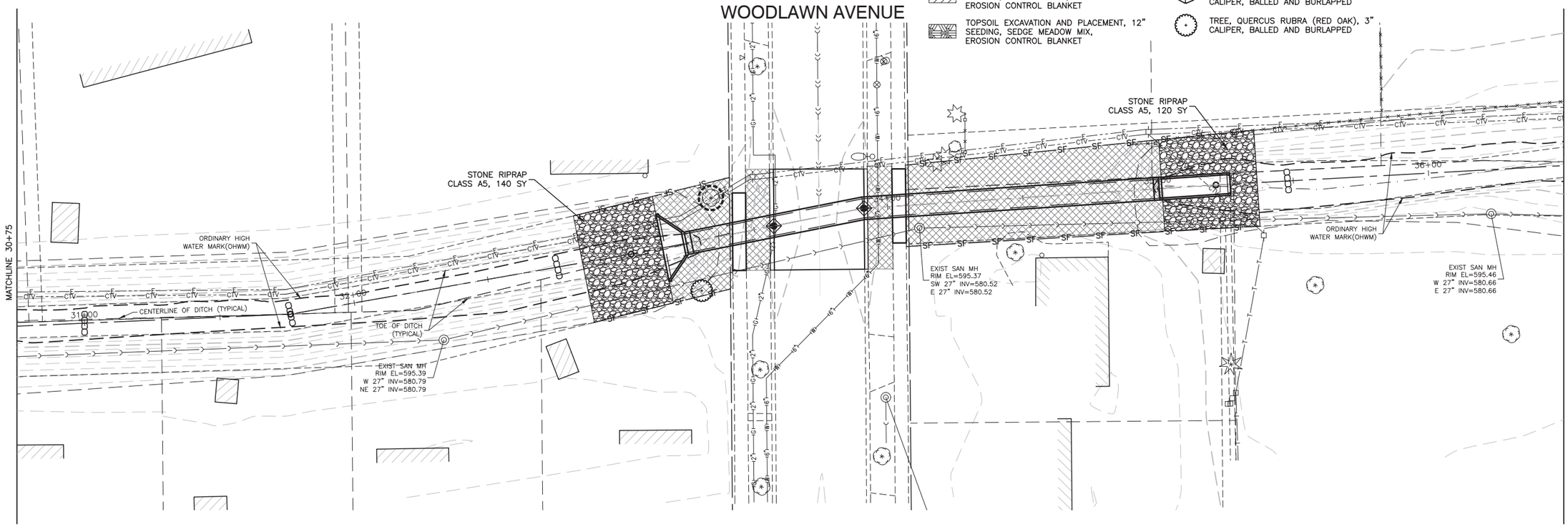
WOODLAWN AVENUE



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SCALE	= 1"=20'	CHECKED — JDH	REVISED —		VILLAGE of SOUTH HOLLAND
PROJECT NO	= 23-R0646	DRAWN — BG/RG	REVISED —		SHEET NO. 22 of 71
FILE NAME	= 23R0646-LNSC-01	CHECKED — AG	REVISED —		

LAST SAVED BY: NDENAULT ON 5/8/25
PLOTTED BY: NATHAN DENAULT ON 5/8/25

LEGEND

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N

KIMBARK AVENUE

MATCHLINE 36+50

MATCHLINE 41+50

ORDINARY HIGH WATER MARK(OHWM)

TOE OF DITCH (TYPICAL)

CENTERLINE OF DITCH (TYPICAL)

37+00

38+00

39+00

40+00

41+00

EXIST SAN DROP MH
RIM EL=595.76
N 12" INV=588.51
N 12" INV=584.01
S 12" INV=584.91
OUTSIDE DROP TO NORTH

STONE RIPRAP
CLASS A5, 140 SY

STONE RIPRAP
CLASS A5, 100 SY

EXIST SAN MH
RIM EL=594.29
N 12" INV=583.04
W 27" INV=580.19
E 27" INV=580.19

EXIST SAN DROP MH
RIM EL=595.13
S 8" INV=586.63
S 8" INV=580.55
W 27" INV=579.33
SE 27" INV=579.33
OUTSIDE DROP TO SOUTH

HWL 593.20
T/BERM 593.60
NWL 587.00
VOLUME PROVIDED
=3.53 AC-FT

PROPOSED ELECTRIC SERVICE INSTALLATION. COORDINATE WITH UTILITY COMPANY FOR FINAL LOCATION AND MAKING CONNECTION

STONE RIPRAP CLASS A4, 30 SY
24" PRECAST REINFORCED
CONCRETE FES, STA 38+71.70
149.68' RT

STONE RIPRAP CLASS A3, 10 SY
18" PRECAST REINFORCED
CONCRETE FES, STA 39+74.18
66.59' RT

POND AERATING FOUNTAIN

STABILIZED CONSTRUCTION ENTRANCE

EXIST STORM MH
RIM EL=595.04
W 18" INV=590.74
N 21" INV=590.74

583 587 588 589 590 591 592 593 594

593.6 593.2

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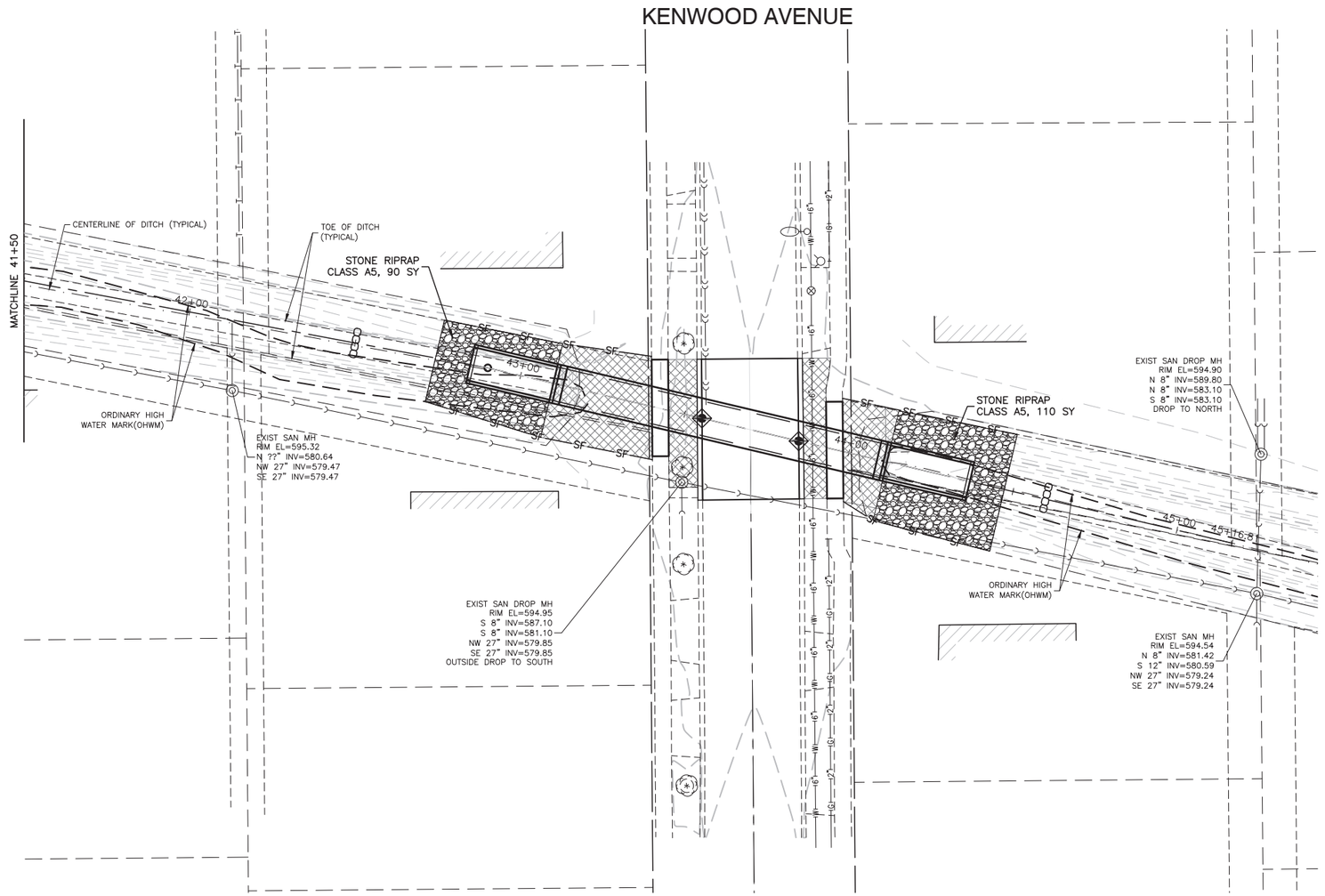
Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
PIONEER PARK LANDSCAPING & EROSION CONTROL

VILLAGE of SOUTH HOLLAND

SHEET NO. 23 of 71



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Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
LANDSCAPING & EROSION CONTROL

VILLAGE of SOUTH HOLLAND

A. REFERENCED SPECIFICATIONS

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE FOLLOWING, EXCEPT AS MODIFIED HEREIN OR ON THE PLANS:
   * STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT SS) FOR ALL IMPROVEMENTS EXCEPT SANITARY SEWER AND WATER MAIN CONSTRUCTION;
   * STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION (SSWS) FOR SANITARY SEWER AND WATER MAIN CONSTRUCTION;
   * VILLAGE OF SOUTH HOLLAND MUNICIPAL CODE;
   * THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO (MWRD) WATERSHED MANAGEMENT ORDINANCE AND TECHNICAL GUIDANCE MANUAL;
   * IN CASE OF CONFLICT BETWEEN THE APPLICABLE ORDINANCES NOTED, THE MORE STRINGENT SHALL TAKE PRECEDENCE AND SHALL CONTROL ALL CONSTRUCTION.

B. NOTIFICATIONS

1. THE MWRD LOCAL SEWER SYSTEMS SECTION FIELD OFFICE MUST BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK (CALL 708-588-4055).

2. THE VILLAGE OF SOUTH HOLLAND ENGINEERING DEPARTMENT AND PUBLIC MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION AND PRIOR TO EACH PHASE OF WORK. CONTRACTOR SHALL DETERMINE ITEMS REQUIRING INSPECTION PRIOR TO START OF CONSTRUCTION OR EACH WORK PHASE.

3. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION FOR THE EXACT LOCATIONS OF UTILITIES AND FOR THEIR PROTECTION DURING CONSTRUCTION. IF EXISTING UTILITIES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, IMMEDIATELY NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED. CALL J.U.L.I.E. AT 1-800-892-0123.

C. GENERAL NOTES

1. ALL ELEVATIONS SHOWN ON PLANS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

2. MWRD, THE MUNICIPALITY AND THE OWNER OR OWNER'S REPRESENTATIVE SHALL HAVE THE AUTHORITY TO INSPECT, APPROVE, AND REJECT THE CONSTRUCTION IMPROVEMENTS.

3. THE CONTRACTOR(S) SHALL INDEMNIFY THE OWNER, ENGINEER, MUNICIPALITY, MWRD, AND THEIR AGENTS, ETC., FROM ALL LIABILITY INVOLVED WITH THE CONSTRUCTION, INSTALLATION, OR TESTING OF THIS WORK ON THE PROJECT.

4. THE PROPOSED IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERING PLANS AS APPROVED BY MWRD AND THE MUNICIPALITY UNLESS CHANGES ARE APPROVED BY MWRD, THE MUNICIPALITY, OR AUTHORIZED AGENT. THE CONSTRUCTION DETAILS, AS PRESENTED ON THE PLANS, MUST BE FOLLOWED. PROPER CONSTRUCTION TECHNIQUES MUST BE FOLLOWED ON THE IMPROVEMENTS INDICATED ON THE PLANS.

5. THE LOCATION OF VARIOUS UNDERGROUND UTILITIES WHICH ARE SHOWN ON THE PLANS ARE FOR INFORMATION ONLY AND REPRESENT THE BEST KNOWLEDGE OF THE ENGINEER. VERIFY LOCATIONS AND ELEVATIONS PRIOR TO BEGINNING THE CONSTRUCTION OPERATIONS.

6. ANY EXISTING PAVEMENT, SIDEWALK, DRIVEWAY, ETC., DAMAGED DURING CONSTRUCTION OPERATIONS AND NOT CALLED FOR TO BE REMOVED SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.

7. MATERIAL AND COMPACTION TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPALITY, MWRD, AND OWNER.

8. THE UNDERGROUND CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS TO NOTIFY ALL INSPECTION AGENCIES.

9. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS DISTURBED DURING CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE PRIOR TO FINAL INSPECTION.

10. RECORD DRAWINGS SHALL BE KEPT BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER AS SOON AS UNDERGROUND IMPROVEMENTS ARE COMPLETED. FINAL PAYMENTS TO THE CONTRACTOR SHALL BE HELD UNTIL THEY ARE RECEIVED. ANY CHANGES IN LENGTH, LOCATION OR ALIGNMENT SHALL BE SHOWN IN RED. ALL WYES OR BENDS SHALL BE LOCATED FROM THE DOWNSTREAM MANHOLE. ALL VALVES, B-BOXES, TEES OR BENDS SHALL BE TIED TO A FIRE HYDRANT.

D. SANITARY SEWER

1. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT ANY POLLUTED WATER, SUCH AS GROUND AND SURFACE WATER, FROM ENTERING THE EXISTING SANITARY SEWERS.

2. A WATER-TIGHT PLUG SHALL BE INSTALLED IN THE DOWNSTREAM SEWER PIPE AT THE POINT OF SEWER CONNECTION PRIOR TO COMMENCING ANY SEWER CONSTRUCTION. THE PLUG SHALL REMAIN IN PLACE UNTIL REMOVAL IS AUTHORIZED BY THE MUNICIPALITY AND/OR MWRD AFTER THE SEWERS HAVE BEEN TESTED AND ACCEPTED.

3. DISCHARGING ANY UNPOLLUTED WATER INTO THE SANITARY SEWER SYSTEM FOR THE PURPOSE OF SEWER FLUSHING OF LINES FOR THE DEFLECTION TEST SHALL BE PROHIBITED WITHOUT PRIOR APPROVAL FROM THE MUNICIPALITY OR MWRD.

4. ALL SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS (LATEST EDITION).

5. ALL FLOOR DRAINS SHALL DISCHARGE TO THE SANITARY SEWER SYSTEM.

6. ALL DOWNSPOUTS AND FOOTING DRAINS SHALL DISCHARGE TO THE STORM SEWER SYSTEM.

7. ALL SANITARY SEWER PIPE MATERIALS AND JOINTS (AND STORM SEWER PIPE MATERIALS AND JOINTS IN A COMBINED SEWER AREA) SHALL CONFORM TO THE FOLLOWING:

PIPE MATERIAL	PIPE SPECIFICATIONS	JOINT SPECIFICATIONS
VITRIFIED CLAY PIPE	ASTM C-700	ASTM C-425
REINFORCED CONCRETE SEWER PIPE	ASTM C-76	ASTM C-443
CAST IRON SOIL PIPE	ASTM A-74	ASTM C-564
DUCTILE IRON PIPE	ANSI A21.51	ANSI A21.11
POLYVINYL CHLORIDE (PVC) PIPE		
6-INCH TO 15-INCH DIAMETER SDR 26	ASTM D-3034	ASTM D-3212
18-INCH TO 27-INCH DIAMETER F/DY=46	ASTM F-679	ASTM D-3212
HIGH DENSITY POLYETHYLENE (HDPE)	ASTM D-3350 ASTM D-3035	ASTM D-3261,F-2620 (HEAT FUSION) ASTM D-3212,F-477 (GASKETED)
WATER MAIN QUALITY PVC		
4-INCH TO 36-INCH	ASTM D-2241	ASTM D-3139
4-INCH TO 12-INCH	AWWA C900	ASTM D-3139
14-INCH TO 48-INCH	AWWA C905	ASTM D-3139

THE FOLLOWING MATERIALS ARE ALLOWED ON A QUALIFIED BASIS SUBJECT TO DISTRICT REVIEW AND APPROVAL PRIOR TO PERMIT ISSUANCE. A SPECIAL CONDITION WILL BE ADDED TO THE PERMIT WHEN THE PIPE MATERIAL BELOW IS USED FOR SEWER CONSTRUCTION OR A CONNECTION IS MADE.

PIPE MATERIAL	PIPE SPECIFICATIONS	JOINT SPECIFICATIONS
POLYPROPYLENE (PP) PIPE		
12-INCH TO 24-INCH DOUBLE WALL	ASTM F-2736	D-3212, F-477
30-INCH TO 60-INCH TRIPLE WALL	ASTM F-2764	D3212, F-477

8. ALL SANITARY SEWER CONSTRUCTION (AND STORM SEWER CONSTRUCTION IN COMBINED SEWER AREAS), REQUIRES STONE BEDDING WITH STONE ¼ " TO 1" IN SIZE, WITH MINIMUM BEDDING THICKNESS EQUAL TO ¼ THE OUTSIDE DIAMETER OF THE SEWER PIPE, BUT NOT LESS THAN FOUR (4) INCHES NOR MORE THAN EIGHT (8) INCHES. MATERIAL SHALL BE CA-7, CA-11 OR CA-13 AND SHALL BE EXTENDED AT LEAST 12" ABOVE THE TOP OF THE PIPE WHEN USING PVC.

9. NON-SHEAR FLEXIBLE-TYPE COUPLINGS SHALL BE USED IN THE CONNECTION OF SEWER PIPES OF DISSIMILAR PIPE MATERIALS.

10. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS. SANITARY LIDS SHALL BE CONSTRUCTED WITH A CONCEALED PICKHOLE AND WATERTIGHT GASKET WITH THE WORD "SANITARY" CAST INTO THE LID.

11. WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR AN EXISTING MANHOLE, ONE OF THE FOLLOWING METHODS SHALL BE USED:
    a) A CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ("SHEWER-TAP" MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUBWYE SADDLE OR HUB-TEE SADDLE.
    b) REMOVE AN ENTIRE SECTION OF PIPE (BREAKING ONLY THE TOP OF ONE BELL) AND REPLACE WITH A WYE OR TEE BRANCH SECTION.
    c) WITH PIPE CUTTER, NEATLY AND ACCURATELY CUT OUT DESIRED LENGTH OF PIPE FOR INSERTION OF PROPER FITTING, USING "BAND SEAL" OR SIMILAR COUPLINGS TO HOLD IT FIRMLY IN PLACE.

12. WHENEVER A SANITARY/COMBINED SEWER CROSSES UNDER A WATERMAIN, THE MINIMUM VERTICAL DISTANCE FROM THE TOP OF THE SEWER TO THE BOTTOM OF THE WATERMAIN SHALL BE 18 INCHES. FURTHERMORE, A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN SANITARY/COMBINED SEWERS AND WATERMAINS SHALL BE MAINTAINED UNLESS: THE SEWER IS LAID IN A SEPARATE TRENCH, KEEPING A MINIMUM 18" VERTICAL SEPARATION; OR THE SEWER IS LAID IN THE SAME TRENCH WITH THE WATERMAIN LOCATED AT THE OPPOSITE SIDE ON A BENCH OF UNDISTURBED EARTH, KEEPING A MINIMUM 18" VERTICAL SEPARATION. IF EITHER THE VERTICAL OR HORIZONTAL DISTANCES DESCRIBED CANNOT BE MAINTAINED, OR THE SEWER CROSSES ABOVE THE WATER MAIN, THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN STANDARDS OR IT SHALL BE ENCASED WITH A WATER MAIN QUALITY CARRIER PIPE WITH THE ENDS SEALED.

13. ALL EXISTING SEPTIC SYSTEMS SHALL BE ABANDONED. ABANDONED TANKS SHALL BE FILLED WITH GRANULAR MATERIAL OR REMOVED.

14. ALL SANITARY MANHOLES, (AND STORM MANHOLES IN COMBINED SEWER AREAS), SHALL HAVE A MINIMUM INSIDE DIAMETER OF 48 INCHES, AND SHALL BE CAST IN PLACE OR PRE-CAST REINFORCED CONCRETE.

15. ALL SANITARY MANHOLES, (AND STORM MANHOLES IN COMBINED SEWER AREAS), SHALL HAVE PRECAST "RUBBER BOOTS" THAT CONFORM TO ASTM C-923 FOR ALL PIPE CONNECTIONS. PRECAST SECTIONS SHALL CONSIST OF MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS.

16. ALL ABANDONED SANITARY SEWERS SHALL BE PLUGGED AT BOTH ENDS WITH AT LEAST 2 FEET LONG NON-SHRINK CONCRETE OR MORTAR PLUG.

17. EXCEPT FOR FOUNDATION/FOOTING DRAINS PROVIDED TO PROTECT BUILDINGS, OR PERFORATED PIPES ASSOCIATED WITH VOLUME CONTROL FACILITIES, DRAIN TILES/FIELD TILES/UNDERDRAINS/PERFORATED PIPES ARE NOT ALLOWED TO BE CONNECTED TO OR TRIBUTARY TO COMBINED SEWERS, SANITARY SEWERS, OR STORM SEWERS TRIBUTARY TO COMBINED SEWERS IN COMBINED SEWER AREAS. CONSTRUCTION OF NEW FACILITIES OF THIS TYPE IS PROHIBITED; AND ALL EXISTING DRAIN TILES AND PERFORATED PIPES ENCOUNTERED WITHIN THE PROJECT AREA SHALL BE PLUGGED OR REMOVED, AND SHALL NOT BE CONNECTED TO COMBINED SEWERS, SANITARY SEWERS, OR STORM SEWERS TRIBUTARY TO COMBINED SEWERS.

18. A BACKFLOW PREVENTER IS REQUIRED FOR ALL DETENTION BASINS TRIBUTARY TO COMBINED SEWERS. REQUIRED BACKFLOW PREVENTERS SHALL BE INSPECTED AND EXERCISED ANNUALLY BY THE PROPERTY OWNER TO ENSURE PROPER OPERATION, AND ANY NECESSARY MAINTENANCES SHALL BE PERFORMED TO ENSURE FUNCTIONALITY. IN THE EVENT OF A SEWER SURCHARGE INTO AN OPEN DETENTION BASIN TRIBUTARY TO COMBINED SEWERS, THE PERMITTEE SHALL ENSURE THAT CLEAN UP AND WASH OUT OF SEWAGE TAKES PLACE WITHIN 48 HOURS OF THE STORM EVENT.

E. EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL INSTALL THE EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.

2. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL PRIOR TO HYDROLOGIC DISTURBANCE OF THE SITE.

3. ALL DESIGN CRITERIA, SPECIFICATIONS, AND INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL.

4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

5. INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED, AT A MINIMUM:
   a) UPON COMPLETION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES, PRIOR TO ANY SOIL DISTURBANCE.
   b) ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT WITH GREATER THAN 0.5 INCH OF RAINFALL OR LIQUID EQUIVALENT PRECIPITATION.

6. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. IF STRIPPING, CLEARING, GRADING, OR LANDSCAPING ARE TO BE DONE IN PHASES, THE CO-PERMITTEE SHALL PLAN FOR APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES.

7. A STABILIZED MAT OF CRUSHED STONE MEETING THE STANDARDS OF THE ILLINOIS URBAN MANUAL SHALL BE INSTALLED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE. SEDIMENT OR SOIL REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.

8. CONCRETE WASHOUT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL AND SHALL BE INSTALLED PRIOR TO ANY ON SITE CONSTRUCTION ACTIVITIES INVOLVING CONCRETE.

9. MORTAR WASHOUT FACILITIES SHALL BE CONSTRUCTED IN ADDITION TO CONCRETE WASHOUT FACILITIES FOR ANY BRICK AND MORTAR BUILDING ENVELOPE CONSTRUCTION ACTIVITIES.

10. TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN. VOLUME CONTROL FACILITIES SHALL NOT BE USED AS TEMPORARY SEDIMENT BASINS.

12. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) DAYS.

13. ALL FLOOD PROTECTION AREAS AND VOLUME CONTROL FACILITIES SHALL, AT A MINIMUM, BE PROTECTED WITH A DOUBLE-ROW OF SILT FENCE (OR EQUIVALENT).

14. VOLUME CONTROL FACILITIES SHALL NOT BE CONSTRUCTED UNTIL ALL OF THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

15. SOIL STOCKPILES SHALL, AT A MINIMUM, BE PROTECTED WITH PERIMETER SEDIMENT CONTROLS. SOIL STOCKPILES SHALL NOT BE PLACED IN FLOOD PROTECTION AREAS OR THEIR BUFFERS.

16. EARTHEN EMBANKMENT SIDE SLOPES SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL BLANKET.

17. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY APPROPRIATE SEDIMENT CONTROL MEASURES.

18. THE CONTRACTOR SHALL EITHER REMOVE OR REPLACE ANY EXISTING DRAIN TILES AND INCORPORATE THEM INTO THE DRAINAGE PLAN FOR THE DEVELOPMENT. DRAIN TILES CANNOT BE TRIBUTARY TO A SANITARY OR COMBINED SEWER. DRAIN TILES ALLOWED IN COMBINED SEWER AREA FOR GREEN INFRASTRUCTURE PRACTICES.

19. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS. THE SITE INSPECTOR MUST BE PRESENT AT THE COMMENCEMENT OF DEWATERING ACTIVITIES.

20. THE CONTRCTOR SHALL BE RESPONSIBLE FOR TRENCH DEWATERING AND EXCAVATION FOR THE INSTALLATION OF SANITARY SEWERS, STORM SEWERS, WATERMAINS AS WELL AS THEIR SERVICES AND OTHER APPURTENANCES. ANY TRENCH DEWATERING, WHICH CONTAINS SEDIMENT SHALL PASS THROUGH A SEDIMENT SETTLING POND OR EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE. ALTERNATIVES MAY INCLUDE DEWATERING INTO A SUMP PIT, FILTER BAG OR EXISTING VEGETATED UPSLOPE AREA. SEDIMENT LADEN WATERS SHALL NOT BE DISCHARGE TO WATERWAYS, FLOOD PROTECTION AREAS OR THE COMBINED SEWER SYSTEM.

21. ALL PERMANENT EROSION CONTROL PRACTICES SHALL BE INITIATED WITHIN SEVEN (7) DAYS FOLLOWING THE COMPLETION OF SOIL DISTURBING ACTIVITIES.

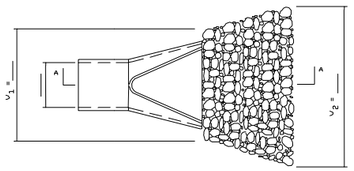
22. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED ON A YEAR-ROUND BASIS DURING CONSTRUCTION AND ANY PERIODS OF CONSTRUCTION SHUTDOWN UNTIL PERMANENT STABILIZATION IS ACHIEVED.

23. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER PERMANENT SITE STABILIZATION.

24. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, SITE INSPECTOR, OR MWRD.

25. CONTRACTOR SHALL PROVIDE WATER MANAGEMENT PLAN FOR REVIEW THAT WILL ADDRESS PLANNED APPROACH DURING CONSTRUCTION.

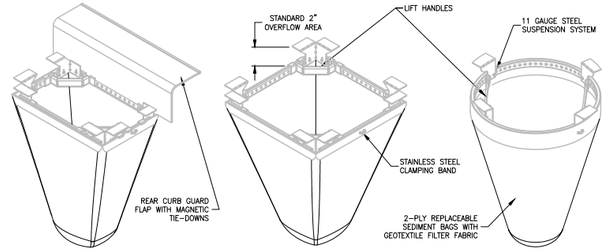
LAST SAVED BY: NDENAULT ON 5/6/25 PLOTTED BY: JOHN HILSEN ON 5/6/25	DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT STORM WATER POLLUTION PREVENTION NOTES
	SCALE =	CHECKED — JDH	REVISED —		VILLAGE of SOUTH HOLLAND
	PROJECT NO = 23-R0646	DRAWN — RG	REVISED —		SHEET NO. 25 of 71
	FILE NAME = 23R0646-SWPP-01	CHECKED — AG	REVISED —		



RIRAP TABLE						
MAIN PIPE SIZE	W_t	W_s	L_s	RIPRAP CLASS	MINIMUM THICKNESS	BEDDING THICKNESS
12"	3'	16'	15'	A3	8"	–
15"	3'	16'	15'	A3	8"	–
24"	6'	19'	17'	A4	16"	6"

STONE RIPRAP FOR INLET/OUTLET PROTECTION

PAID AS STONE RIPRAP, CLASS A3/A4/A5 & FILTER FABRIC

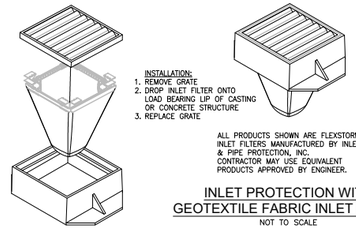


TYPICAL CURB BOX INLET FILTER

TYPICAL FLAT/RECTANGULAR/ROLLED CURB INLET FILTER

TYPICAL ROUND INLET FILTER

Inlet Filter Specifications			
Material Property	*Test Method*	*Value (min ave)*	
> Inner Filter Bag Specs (2 ft² min vol)		**Non-Woven**	**Woven Mono**
Grab Tensile	ASTM D 4632	100 lbs	200 lbs
Puncture Strength	ASTM D 4833	65 lbs	90 lbs
Trapezoidal Tear	ASTM D 4533	45 lbs	75 lbs
UV Resistance	ASTM D 4355	70% at 500 hrs	90%
App Open Size (AOS)	ASTM D 4751	70 sieve (0.212 mm)	40 sieve (0.425 mm)
Permittivity	ASTM D 4491	2.0 / sec	2.1 / sec
Water Flow Rate	ASTM D 4491	145 gpm / sqft	145 gpm / sqft
> Polyester Outer Reinforcement Bag Specifications			
Weight	ASTM D 3776	4.55 oz / sqyd +/- 15%	
Thickness	ASTM D 1777	0.040 +/- 0.005	
> Frame Construction			
A36 Structural Steel; 11 Guage; Zinc Plated	ASTM A 576	*Tensile Strength > 58,00 psi; Yield Strength > 36,000 psi*	



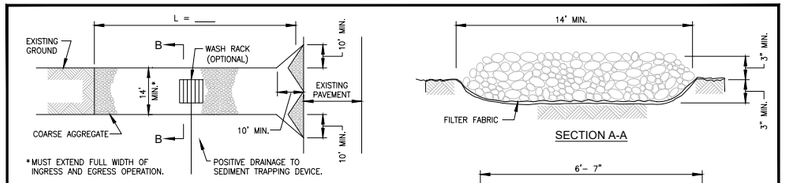
INSTALLATION:
1. REMOVE GRATE
2. DROP INLET FILTER ONTO LOAD BEARING LIP OF CASTING OR CONCRETE STRUCTURE
3. REPLACE GRATE

ALL PRODUCTS SHOWN ARE FLEXSTORM INLET FILTERS MANUFACTURED BY INLET & PIPE PROTECTION, INC. CONTRACTOR MAY USE EQUIVALENT PRODUCTS APPROVED BY ENGINEER.

INLET PROTECTION WITH GEOTEXTILE FABRIC INLET FILTER

NOT TO SCALE

PAID AS INLET FILTER



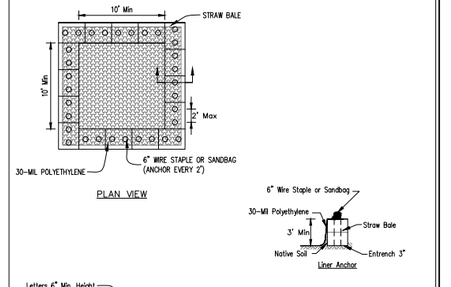
NOTES:
1. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE I OR 2, CLASS I, II OR IV AND SHALL BE PLACED OVER THE CLEARED AREA PRIOR TO THE PLACING OF ROCK.
2. ROCK OR RECLAIMED CONCRETE SHALL MEET ONE OF THE FOLLOWING IDOT COARSE AGGREGATE GRADATION, CA–1, CA–2, CA–3 OR CA–4 AND BE PLACED ACCORDING TO CONSTRUCTION SPECIFICATION 25 ROCKFILL USING PLACEMENT METHOD 1 AND CLASS III COMPACTION.
3. ANY DRAINAGE FACILITIES REQUIRED BECAUSE OF WASHING SHALL BE CONSTRUCTED ACCORDING TO MANUFACTURERS SPECIFICATIONS.
4. IF WASH RACKS ARE USED THEY SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

STABILIZED CONSTRUCTION ENTRANCE PLAN

NOT TO SCALE

NRCS Natural Resources Conservation Service — STANDARD DWG. NO. IL-630 — DATE 8–18–94

PAID AS STABILIZED CONSTRUCTION ENTRANCE



NOTES:
1. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and/or slurry and returning the facilities to a functional condition.
2. Facility shall be cleaned or reconstructed in a new area once washout becomes two–thirds full.
3. Each straw bale is to be staked in place using (2) 2"x2"x4' wooden stakes.
4. The concrete washout facility is intended for concrete, masonry and slurry.

TEMPORARY CONCRETE WASHOUT FACILITY – STRAW BALE

NOT MEASURED FOR PAYMENT

STORM WATER POLLUTION PREVENTION EROSION CONTROLS AND SEDIMENT CONTROLS

DESCRIPTION OF STABILIZATION PRACTICES AT THE BEGINNING OF CONSTRUCTION (WHERE APPLICABLE):

1) THE AREA BETWEEN THE EXISTING AND PROPOSED RIGHT-OF-WAY/TEMPORARY EASEMENT BOUNDARIES AND LIMITS OF THE PROJECT WILL BE IMPROVED AND MANAGED FOR THE PURPOSES OF CONTROLLING EROSION WITHIN THE AREA, REDUCING WATER FLOW BY TEMPORARY DIVERSION AND MINIMIZING SILTATION INTO THE CONSTRUCTION ZONE, AND ESTABLISHING VEGETATIVE COVER WHICH WILL BECOME PERMANENT VEGETATION AND ACT AS AN EROSION BARRIER. WORK AT THE BEGINNING OF CONSTRUCTION WILL CONSIST OF THE FOLLOWING:

A) AREAS OF EXISTING VEGETATION (WOODS AND GRASSLANDS) OUTSIDE THE PROPOSED CONSTRUCTION SLOPE LIMITS SHALL BE IDENTIFIED FOR PRESERVING AND SHALL BE PROTECTED FROM MOWING, BRUSH CUTTING, TREE REMOVAL AND OTHER ACTIVITIES WHICH WOULD BE DETRIMENTAL TO THEIR MAINTENANCE AND DEVELOPMENT.

B) DEAD, DISEASED, OR UNSUITABLE VEGETATION WITHIN THE SITE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER, ALONG WITH REQUIRED TREE REMOVAL.

C) AS SOON AS REASONABLE ACCESS IS AVAILABLE (SUCH AS TREES CLEARED) TO ALL LOCATIONS WHERE DITCH CHECKS AND/OR EROSION CONTROL FENCE SHALL BE INSTALLED AS CALLED OUT IN THE PLAN AND DIRECTED BY THE ENGINEER.

D) BARE AND SPARSELY VEGETATED GROUND IN HIGHLY ERODABLE AREAS AS DETERMINED BY THE ENGINEER SHALL BE TEMPORARILY SEEDED AT THE BEGINNING OF CONSTRUCTION WHERE NO CONSTRUCTION ACTIVITIES ARE IMMEDIATELY EXPECTED AS STATED IN THE SPECIAL PROVISION "TEMPORARY EROSION CONTROL SEEDING."

E) IMMEDIATELY AFTER TREE REMOVAL IS COMPLETED IN CERTAIN AREAS WHICH ARE HIGHLY ERODABLE AREAS AS DETERMINED BY THE ENGINEER, THE AREAS SHALL BE TEMPORARILY SEEDED WHERE NO CONSTRUCTION ACTIVITIES ARE IMMEDIATELY EXPECTED AS STATED IN THE SPECIAL PROVISION "TEMPORARY EROSION CONTROL SEEDING."

F) AT LOCATIONS WHERE A SIGNIFICANT AMOUNT OF WATER DRAINING INTO THE CONSTRUCTION ZONE, RIP RAP DITCH CHECKS WILL BE UTILIZED TO LOCALLY DIVERT WATER, REDUCE FLOW RATES, AND COLLECT OUTSIDE SILTATION INSIDE THE RIGHT-OF-WAY LINE. EROSION CONTROL ITEMS WILL NOT BE ALLOWED TO BE INSTALLED TO CAUSE FLOODING TO UPSTREAM PRIVATE PROPERTY WHICH COULD CAUSE CROP DAMAGES OR OTHER UNDESIRABLE CONDITIONS.

G) AT LOCATIONS WHERE WATER DRAINS AWAY FROM THE PROJECT, SEDIMENT BASINS, RIP RAP DITCH CHECKS, TEMPORARY EROSION CONTROL FENCE, OR TEMPORARY DITCH CHECKS SHALL BE USED.

2) ESTABLISHMENT OF THESE TEMPORARY EROSION CONTROL MEASURES WILL HAVE ADDITIONAL BENEFITS TO THE PROJECT. DESIRABLE GRASS SEED WILL BECOME ESTABLISHED IN THESE AREAS AND WILL SPREAD SEEDS ONTO THE CONSTRUCTION SITE UNTIL PERMANENT SEEDING/MOWING AND OVERSEEDING CAN BE COMPLETE.

3) A THIRD PARTY BENEFIT OF THESE FILTER AREAS IS THAT THEY WILL BEGIN TO PROVIDE A SCREEN AND BUFFER. THEY WILL HELP PROTECT THE CONSTRUCTION SITE FROM WINDS AND EXCESS SUN AND MITIGATE CONSTRUCTION NOISE AND DUST.

DESCRIPTION OF STABILIZATION PRACTICES DURING CONSTRUCTION (WHERE APPLICABLE):

1) DURING ROADWAY CONSTRUCTION, AREAS OUTSIDE THE CONSTRUCTION SLOPE LIMITS AS OUTLINED PREVIOUSLY HEREIN SHALL BE PROTECTED FROM DAMAGING EFFECTS OF CONSTRUCTION. THE CONTRACTOR SHALL NOT USE THIS AREA FOR STAGING (EXCEPT AS DESIGNATED ON THE PLANS OR DIRECTED BY THE ENGINEER), PARKING OF VEHICLES OR CONSTRUCTION EQUIPMENT, STORAGE OF MATERIALS, OR OTHER CONSTRUCTION RELATED ACTIVITIES.

A) WITHIN THE CONSTRUCTION ZONE, CRITICAL AREAS WHICH HAVE HIGH FLOWS OF WATER AS DETERMINED BY THE ENGINEER SHALL REMAIN UNDISTURBED UNTIL FULL SCALE CONSTRUCTION IS UNDERWAY TO PREVENT UNNECESSARY SOIL EROSION.

B) TOP SOIL AND EARTH STOCKPILES SHALL BE TEMPORARILY SEEDED IF THEY ARE TO REMAIN UNUSED FOR MORE THAN FOURTEEN DAYS.

C) AS THE CONTRACTOR CONSTRUCTS A PORTION OF THE ROADWAY IN A FILL SECTION, HE/SHE SHALL FOLLOW THE FOLLOWING STEPS AS DIRECTED BY THE ENGINEER:

I. PLACE TEMPORARY EROSION CONTROL SYSTEMS AT LOCATIONS WHERE WATER LEAVES AND ENTERS THE CONSTRUCTION ZONE.

II. TEMPORARY SEED HIGHLY ERODABLE AREAS OUTSIDE THE CONSTRUCTION ZONE SLOPE LIMITS.

III. CONSTRUCT ROADSIDE DITCHES AND PROVIDE TEMPORARY EROSION CONTROL SYSTEMS.

IV. TEMPORARY DIVERT WATER AROUND PROPOSED CULVERT LOCATIONS.

V. BUILD NECESSARY EMBANKMENT AT CULVERT LOCATIONS AND THEN EXCAVATE AND PLACE CULVERT.

VI. CONTINUE BUILDING UP THE EMBANKMENT TO THE PROPOSED GRADE WHILE AT THE SAME TIME PLACING PERMANENT EROSION CONTROL SUCH AS RIP RAP DITCH LINING AND CONDUCT FINAL SHAPING TO THE SLOPES.

D) THE CONTRACTOR SHALL IMMEDIATELY FOLLOW MAJOR EARTH MOVING OPERATIONS WITH FINAL GRADING EQUIPMENT. AFTER MAJOR EARTH SPREAD OPERATION HAS MOVED TO A NEW LOCATION, FINAL GRADING SHALL BE COMPLETED WITHIN FOURTEEN DAYS. IF GRADING IS NOT COMPLETED WITHIN FOURTEEN DAYS, ALL MAJOR EARTH MOVING OPERATIONS WILL BE STOPPED, AS DIRECTED BY THE ENGINEER, UNTIL DISTURBED AREAS ARE FINAL GRADED AND SEEDED.

E) EXCAVATED AREAS AND EMBANKMENTS SHALL BE PERMANENTLY SEEDED WHEN FINAL GRADED. IF NOT, THEY SHALL BE TEMPORARILY SEEDED AS STATED IN THE SPECIAL PROVISION "TEMPORARY EROSION CONTROL SEEDING."

F) CONSTRUCTION EQUIPMENT SHALL BE STORED AND FUELED ONLY AT DESIGNATED LOCATIONS. ALL NECESSARY MEASURES SHALL BE TAKEN TO CONTAIN ANY FUEL OR POLLUTION RUN-OFF IN COMPLIANCE WITH EPA WATER QUALITY REGULATIONS. LEAKING EQUIPMENT OR SUPPLIES SHALL BE IMMEDIATELY REPAIRED OR REMOVED FROM THE SITE.

G) THE RESIDENT ENGINEER SHALL INPSECT THE PROJECT DAILY DURING ACTIVITIES AND WEEKLY OR AFTER LARGE RAINS DURING THE WINTER SHUTDOWN PERIOD. THIS PROJECT SHALL ADDITIONALLY BE INSPECTED BY THE CONSTRUCTION FIELD ENGINEER ON A BIWEEKLY BASIS TO DETERMINE THAT EROSION CONTROL EFFORTS ARE IN PLACE AND EFFECTIVE AND IF OTHER CONTROL WORK IS NECESSARY.

H) SEDIMENT COLLECTED DURING CONSTRUCTION BY THE VARIOUS TEMPORARY EROSION CONTROL SYSTEMS SHALL BE DISPOSED OF ON SITE ON A REGULAR BASIS AS DIRECTED BY THE ENGINEER. THE COST OF MAINTENANCE WILL BE PAID FOR IN ACCORDANCE WITH ARTICLE 109.04 OF THE STANDARD SPECIFICATIONS.

I) THE TEMPORARY EROSION CONTROL SYSTEMS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AFTER USE IS NO LONGER NEEDED OR NO LONGER FUNCTIONING. THE COSTS OF THIS REMOVAL SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE TEMPORARY EROSION CONTROL SYSTEM. NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

DOCUMENTATION

1) A REPORT SUMMARIZING THE SCOPE OF INSPECTION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THIS STORM WATER POLLUTION PREVENTION PLAN, AND ACTION TAKEN IN ACCORDANCE WITH SECTION 4. B. SHALL BE MADE AND RETAINED AS PART OF THE PLAN FOR AT LEAST THREE YEARS AFTER THE DATE OF INSPECTION. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART VI. G. OF THE GENERAL PERMIT.

2) IF ANY VIOLATION OF THE PROVISIONS OF THIS PLAN IS IDENTIFIED DURING THE CONDUCT OF THE CONSTRUCTION WORK COVERED BY THIS PLAN, THE RESIDENT ENGINEER OR RESIDENT TECHNICIAN SHALL COMPLETE AND FILE AN "INCIDENT OF NONCOMPLIANCE (ION)" REPORT FOR THE IDENTIFIED VIOLATION. THE RESIDENT ENGINEER OR RESIDENT TECHNICIAN SHALL USE FORMS PROVIDED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY AND SHALL INCLUDE SPECIFIC INFORMATION ON THE NONCOMPLIANCE, ACTIONS WHICH WERE TAKEN TO PREVENT ANY FURTHER CAUSES OF NONCOMPLIANCE, AND A STATEMENT DETAILING ANY ENVIRONMENTAL IMPACT WHICH MAY HAVE RESULTED FROM THE NONCOMPLIANCE. ALL REPORTS OF NONCOMPLIANCE SHALL BE SIGNED BY A RESPONSIBLE AUTHORITY IN ACCORDANCE WITH PART VI. G. OF THE GENERAL PERMIT. THE REPORT OF NONCOMPLIANCE SHALL BE MAILED TO THE FOLLOWING ADDRESS:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF WATER POLLUTION CONTROL
COMPLIANCE ASSURANCE SECTION #19
POST OFFICE BOX 19276
SPRINGFIELD, IL 62794-9276

DESCRIPTION OF INTENDED SEQUENCE OF MAJOR CONSTRUCTION ACTIVITIES WHICH WILL DISTURB EARTH AND LEAD TO POSSIBLE EROSION FOR MAJOR PORTIONS OF THE CONSTRUCTION SITE:

1) EXCAVATION AND FURNISHED EXCAVATION WILL BE COMPLETED AT LOCATION AS INDICATED ON THE PLANS OR DIRECTED BY THE ENGINEER.

2) DRAINAGE STRUCTURES WILL BE INSTALLED BEFORE AND/OR DURING THE CONSTRUCTION OF THE EXCAVATION AND FURNISHED EXCAVATION TO ALLOW PROPER DRAINAGE IN AREA OF THE PROPOSED ROADWAY FACILITY.

3) PLACEMENT, MAINTENANCE, REMOVAL AND PROPER CLEANUP OF TEMPORARY EROSION CONTROL, SUCH AS EROSION CONTROL FENCE, HAY OR STRAW BALE DITCH CHECKS, RIP RAP DITCH CHECKS, TEMPORARY SEEDING AND MULCHING.

4) PLACEMENT OF PERMANENT EROSION CONTROL, SUCH AS RIP RAP DITCH LINING, FILTER FABRIC FOR USE WITH RIP RAP, SEEDING AND MULCHING.

5) FINAL GRADING, AND OTHER MISCELLANEOUS ITEMS. USE WITH RIP RAP, SEEDING AND MULCHING.

AREA OF DISTURBED GROUND

THE TOTAL AREA DISTURBED BY CONSTRUCTION ACTIVITIES IS APPROXIMATELY **4.78** ACRES.

THE FOLLOWING PLAN WAS ESTABLISHED AND INCLUDED IN THESE PLANS TO DIRECT THE CONTRACTOR IN THE PLACEMENT OF TEMPORARY EROSION CONTROL SYSTEMS AND TO PROVIDE A STORM WATER POLLUTION PREVENTION PLAN FOR COMPLIANCE UNDER NPDES. THE CONTRACTOR SHALL ABIDE TO ALL REQUIREMENTS WITHIN THIS PLAN AS PART OF THE CONTRACT.

ALL DISTURBED AREAS HAVING HIGH POTENTIAL FOR EROSION, AS DETERMINED BY THE ENGINEER, SHALL BE PERMANENTLY SEEDED AS SOON AS POSSIBLE.

DESCRIPTION OF STABILIZATION PRACTICES AFTER FINAL GRADING (WHERE APPLICABLE):

1) TEMPORARY EROSION CONTROL SYSTEMS SHALL BE LEFT IN PLACE WITH PROPER MAINTENANCE UNTIL PERMANENT EROSION CONTROL IS IN PLACE AND WORKING PROPERLY AND ALL PROPOSED TURF AREAS SEEDED AND ESTABLISHED WITH A PROPER STAND.

2) ONCE PERMANENT EROSION CONTROL SYSTEMS AS PROPOSED IN THE PLANS ARE FUNCTIONAL AND ESTABLISHED, TEMPORARY ITEMS SHALL BE REMOVED, CLEANED UP, AND DISTURBED TURF RESEEDED. TEMPORARY RIP RAP DITCH CHECKS WILL BE ALLOWED TO REMAIN IN PLACE WHERE APPROVED BY THE ENGINEER.

MAINTENANCE AFTER CONSTRUCTION (WHERE APPLICABLE):

1) CONSTRUCTION IS COMPLETE AFTER ACCEPTANCE IS RECEIVED AT THE FINAL INSPECTION.

2) AREAS WILL BE INSPECTED ON A REGULAR BASIS BY **THE CONTRACTOR**.

3) MAINTENACE CREWS WILL PERFORM REGULAR MOWING TO AID IN KEEPING WEEDS DOWN AND ESTABLISHING A GOOD ROADSIDE SEED STAND.

4) MAINTENANCE CREWS WILL ALSO AID IN ANY DITCH LINING MAINTENANCE OR IN ANY DRAINAGE PROBLEMS.

5) ALL MAINTENANCE WILL BE CONDUCTED AT TIMES WHEN WEATHER CONDITIONS WILL NOT CAUSE SITE DAMAGE

6) CONTRACTOR SHALL COMPLY WITH ALL TERMS AND CONDITIONS OF IEPA NPDES PERMIT ILR 10. RESTORATION SHALL OCCUR WITHIN 7 DAYS OF DISTURBANCE.

7) CONTRACTOR SHALL SUBMIT INSPECTION REPORTS TO THE **VILLAGE** AT LEAST ONCE PER SEVEN DAYS AND AFTER RAINFALL EVENTS OF A HALF INCH (OR EQUIVALENT SNOW FALL).

8) CONSTRUCTION SHALL NOT COMMENCE UNTIL THE NOI IS SUBMITTED AND THE IEPA ISSUES AN EFFECTIVE DATE. THE CONSTRUCTION SCHEDULE SHOULD BE COGNIZANT OF THE IEPA REVIEW SCHEDULE (APPROXIMATELY 30 DAYS).

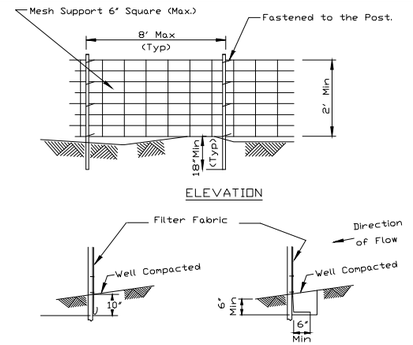
10) THE CONTRACTOR IS RESPONSIBLE FOR HAVING THE SWPPP ON SITE AT ALL TIMES.

11) A NOTICE OF TERMINATION SHALL BE COMPLETED BY THE OWNER WHEN ALL PERMANENT EROSION CONTROL MEASURES ARE IN PLACE WITH A 70% ESTABLISHMENT RATE OF VEGETATION. THE NOT SHALL BE SENT TO THE IEPA AND THE **VILLAGE**.

12) TECHNIQUES SHALL BE EMPLOYED BY THE CONTRACTOR TO PREVENT THE BLOWING OF DUST OR SEDIMENT FROM THE SITE.

13) DAILY REMOVAL OF SEDIMENT AND DEBRIS FROM ALL ROADS SHALL BE REQUIRED OF THE CONTRACTOR.

SILT FENCE WITH WIRE SUPPORT PLAN



NOTES:
1. Silt Fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading and site stabilization. Silt fence shall be placed on the flattest area available.
2. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1, Class 2.
3. Fence posts shall be either standard steel post or wood post 2"X2" nominal.
4. Wire mesh may be omitted if post spacing is 5' on center or less.

REFERENCE
Project
Designed — Date
Checked — Date
Approved — Date

STANDARD DWG. NO. IUM-620A(W)
SHEET 1 OF 2
DATE 4-15-2021

PAID AS PERIMETER EROSION BARRIER

DATE	=	05-06-2025	DESIGNED	—	MGP	REVISED	—
SCALE	=		CHECKED	—	JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN	—	RG	REVISED	—
FILE NAME	=	23R0646-SWPP-01	CHECKED	—	AG	REVISED	—

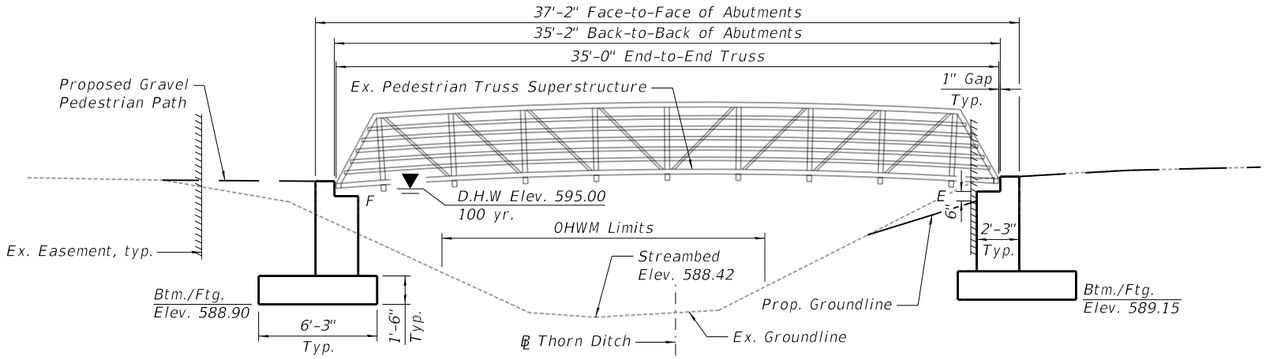
LAST SAVED BY: NDENAULT ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

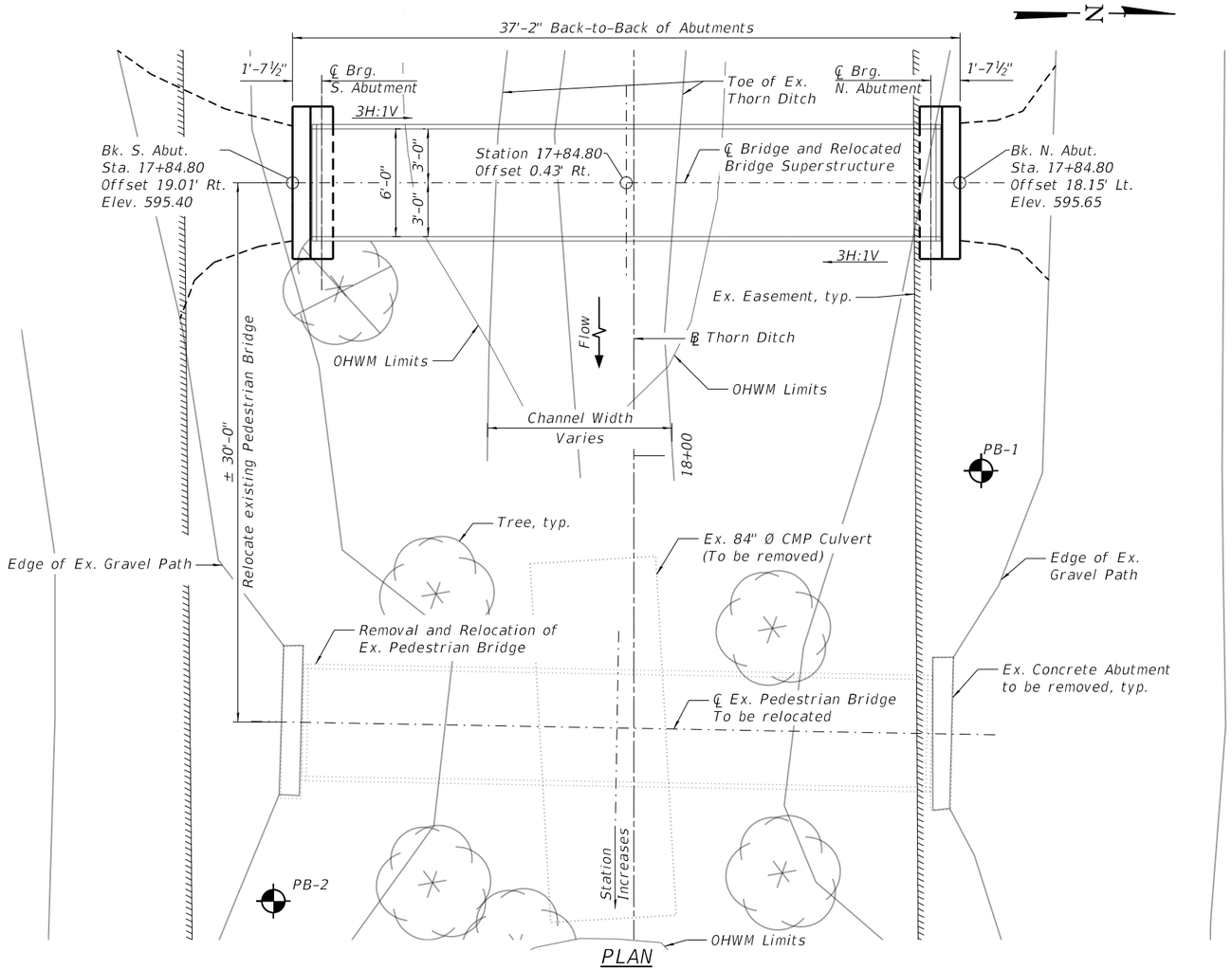
THORN DITCH
FLOOD MITIGATION PROJECT
STORM WATER POLLUTION PREVENTION DETAILS

VILLAGE of SOUTH HOLLAND

SHEET NO. 26 of 71



ELEVATION
(Looking West)

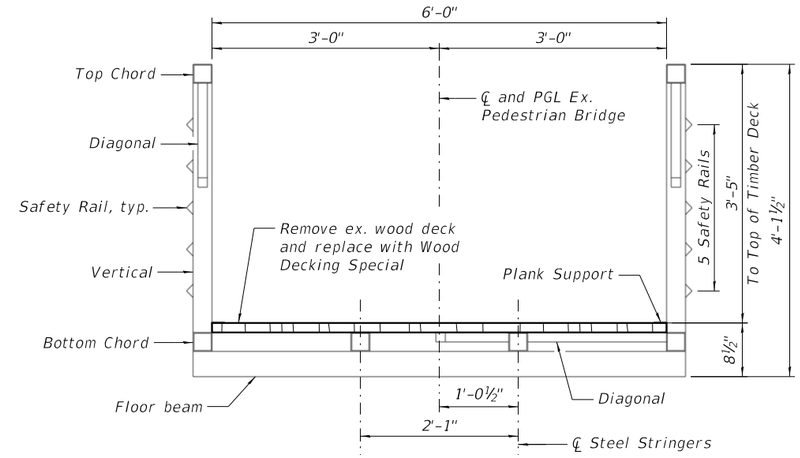


PLAN

Bench Mark: Spike nail in west face of power pole on north side of 165th St. at west Residence 944. Elev = 597.33

Existing Structure: The original pedestrian bridge was constructed at an unknown time before 1998 as a single span, 35' prefabricated steel truss on concrete abutments. The existing structure is to be relocated approx. 30' west of existing and placed on new concrete abutments. Pedestrian traffic will be detoured during construction.

Salvage: Truss superstructure to be removed, stored and relocated.



EXISTING BRIDGE CROSS SECTION

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.04g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.10g
Soil Site Class E

LOADING

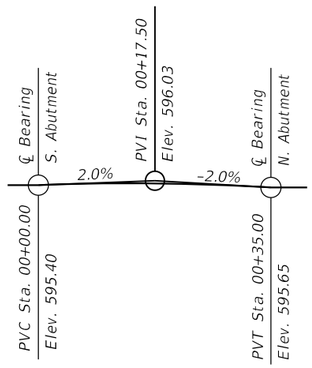
90 psf Live Load
5,000 lb Vehicle Load (Class 1)

DESIGN SPECIFICATIONS

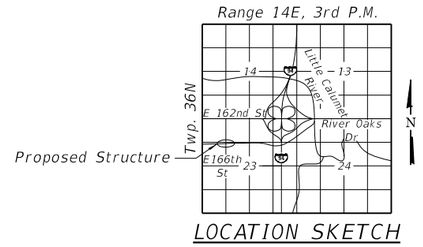
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition
AASHTO Guide Specifications for the Design of Pedestrian Bridges, 2009

DESIGN STRESSES

(FIELD UNITS)
f'c = 1,300 psi min. (Wood Deck)
f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50)



PEDESTRIAN BRIDGE PROFILE GRADE



LOCATION SKETCH

DRAWING 1 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS WEST PEDESTRIAN BRIDGE - GENERAL PLAN AND ELEVATION	VILLAGE of SOUTH HOLLAND	SHEET NO. 27 of 71
SCALE = 8.000 ' / in.	CHECKED – OS	REVISED –				
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –				
FILE NAME = THORN_DITCH_PB1_001	CHECKED – OS	REVISED –				

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GENERAL NOTES

1. Reinforcement bars designated (E) shall be epoxy coated.
2. Concrete Sealer shall be applied to the top, front and sides of the abutments.
3. No field welding is permitted except as specified in the contract documents.
4. All structural steel shall be AASHTO M270 Grade 50.
5. Plan dimensions and details relative to the existing structure have been taken from field measurements. The contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope, however, the Contractor shall be paid for the quantity actually furnished at the unit price bid for the work.

SUGGESTED CONSTRUCTION SEQUENCE

1. Perform construction of new abutments.
2. Close pedestrian path to traffic.
3. Remove and Relocate Pedestrian Truss onto new abutments.
4. Remove existing abutments.
5. Open relocated pedestrian truss to traffic.

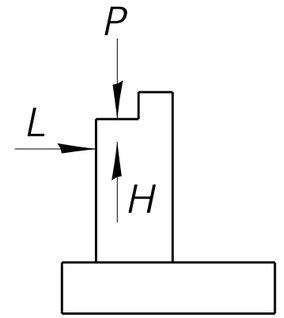
INDEX OF DRAWINGS

TOTAL BILL OF MATERIAL

Item	Unit	Total
Structure Excavation	Cu. Yd.	62
Concrete Structures	Cu. Yd.	12.4
Reinforcement Bars, Epoxy Coated	Pound	1,160
Granular Backfill for Structures	Cu. Yd.	4
Concrete Sealer	Sq. Ft.	166
Removal and Relocation of Existing Pedestrian Bridge	L Sum	1
Removal of Existing Structures	L Sum	1
Wood Decking Special	Sq. Ft.	210

BRIDGE REACTION TABLE

Item	P (lbs) Brg.	H (lbs) Abutment.	L (lbs)
Dead Load	1,900	–	–
Uni. Live Load	4,725	–	–
Vehicle Load	4,600	–	–
Uplift Wind (20 psf)	-273	–	–
Wind	±777	1,095	–
Thermal	–	–	285



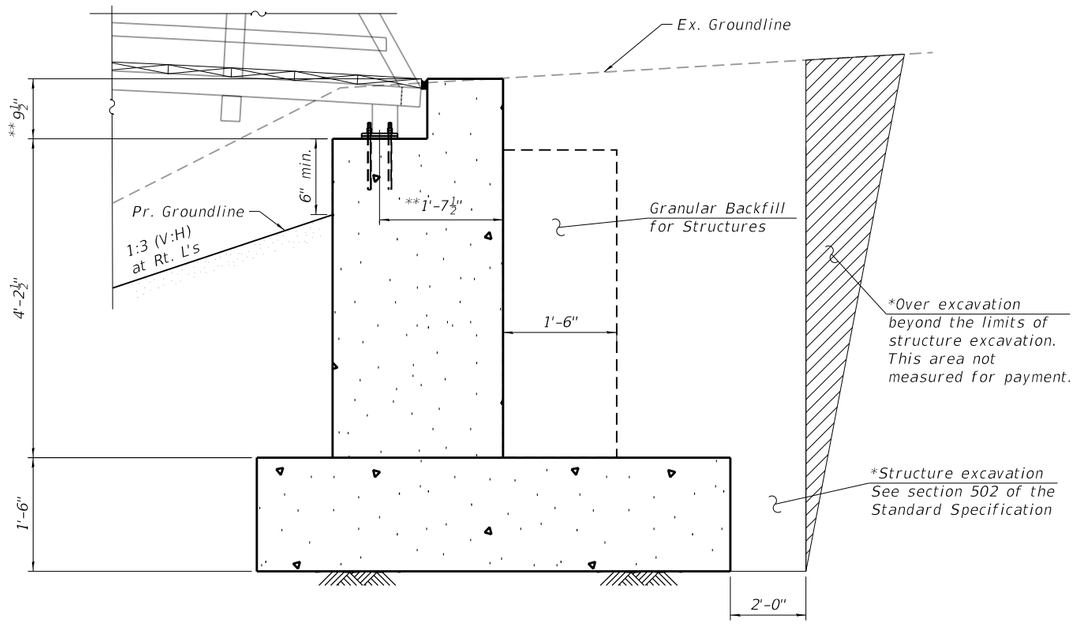
All footings have been designed based on the bridge reactions shown

"P" Vertical Load Per Base Plate
"H" Horizontal Load Per Footing
"L" Longitudinal Load Per Base Plate

Bridge Lifting Weight: ±7,600 LBS

Unfactored bridge reactions table information is for reference only.

Anchor bolt sizes, layout and locations are shown for general reference. Contractor shall be responsible for final anchor bolt sizes, layouts and locations with dimensioned referenced to abutment backwall and abutment centerline.



SECTION THRU ABUTMENT

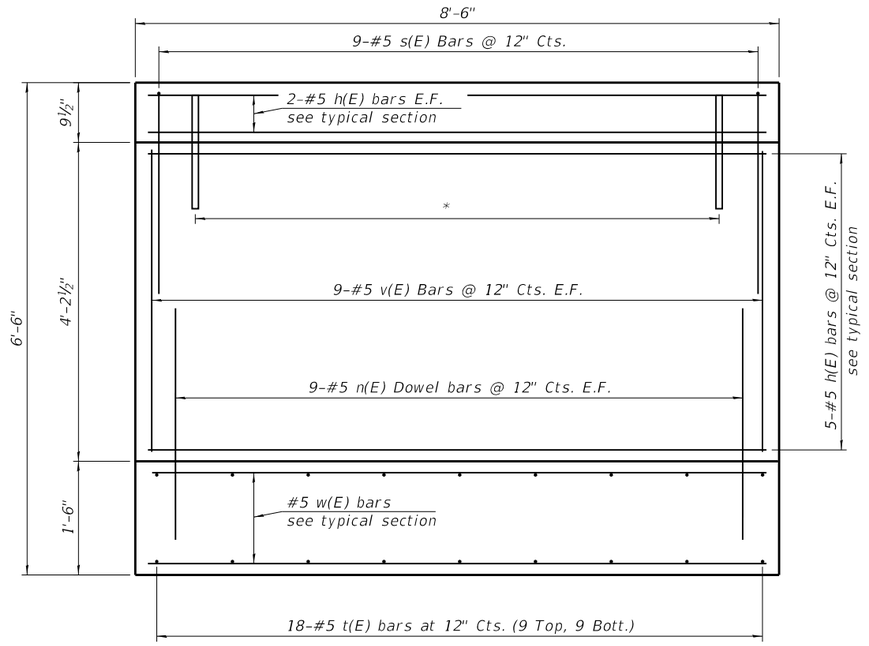
* Backfill remainder of structure excavation and over excavation with same material specified for roadway embankment.

** Final anchor bolt location and backwall height to be verified by the contractor.

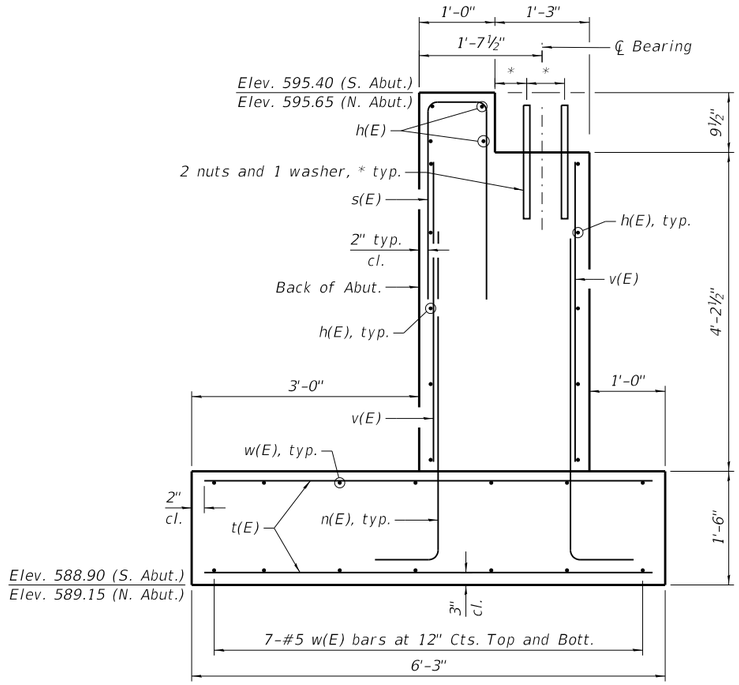
DRAWING 2 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS WEST PEDESTRIAN BRIDGE - GENERAL DATA	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 28 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB1_002	CHECKED – OS	REVISED –			

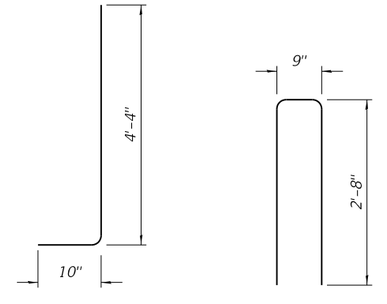
LAST SAVED BY: omahaban
PLOTTED BY: omahaban



TYPICAL ABUTMENT ELEVATION

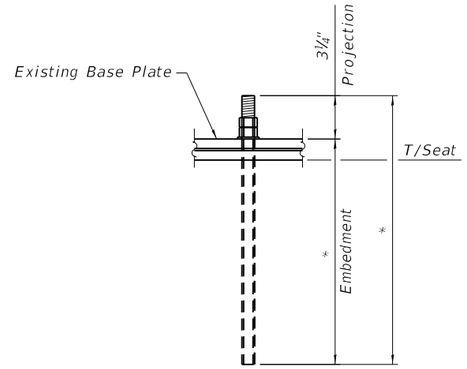


TYPICAL ABUTMENT SECTION



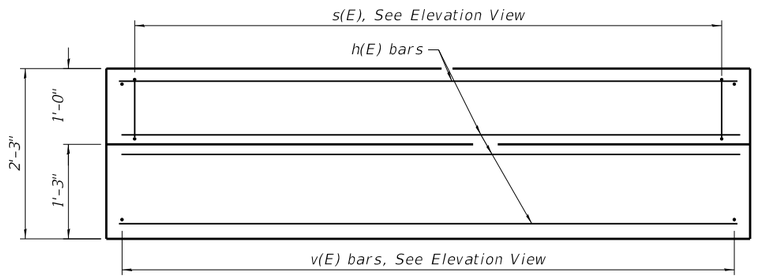
DOWEL BAR n(E)

BAR s(E)

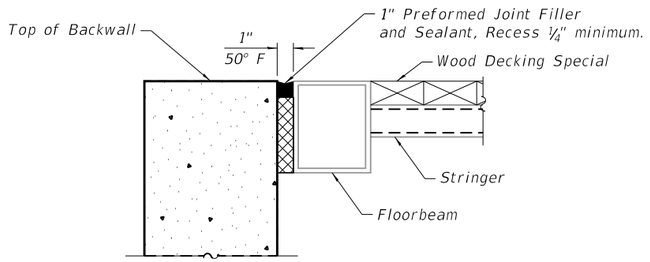


ANCHOR BOLT DETAIL

*The existing anchor bolts are buried and could not be verified. Contractor to match existing anchor bolt pattern and diameter and submit to the engineer for approval of size and embedment depth for new anchor bolts.



TYPICAL ABUTMENT PLAN



JOINT SEAL AT ABUTMENT

BILL OF MATERIAL

(Per Abutment)

Bar	No.	Size	Length	Shape
h(E)	14	#5	8'-2"	
n(E)	18	#5	5'-2"	
s(E)	9	#5	6'-1"	
t(E)	18	#5	5'-11"	
v(E)	18	#5	4'-0"	
w(E)	14	#5	8'-2"	
Concrete Structures			Cu. Yd.	6.2
Reinforcement Bars, Epoxy Coated			Pound	580

DRAWING 3 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS WEST PEDESTRIAN BRIDGE - ABUTMENT DETAILS	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 29 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB1_003	CHECKED – MDS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/16/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	594.7		6" TOPSOIL											
			black and dark brown CLAY (FILL) trace gravel very stiff	SS 1	89	3-3-4 (7)	3.0		18.1					
	592.2		brown and gray LEAN CLAY trace silt very stiff											
5				SS 2	100	2-4-5 (9)	2.0	2.2	21.5					
				SS 3	100	3-5-6 (11)	2.25	2.4	23.8					
10				SS 4	100	3-3-4 (7)	3.75	3.7	26.8					
	584.2		gray LEAN CLAY stiff to hard											
				SS 5	100	3-3-5 (8)	2.25	2.4	27.7					
15			moist in SS6	SS 6	100	4-5-10 (15)	3.5	3.4	19.9					
				SS 7	100	2-3-4 (7)	1.25	1.4	19.8					
20				SS 8	100	2-6-4 (10)	2.5	2.5	20.1					

COMPLETION DEPTH 38.58 ft **GROUND ELEVATION** 595.2 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

▽ **AT TIME OF DRILLING** 38.00 ft / Elev 557.20 ft

▼ **AT END OF DRILLING** 38.00 ft / Elev 557.20 ft

AFTER DRILLING ---

NOTES

STA 18+01.04 Offset 17.3 LT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/16/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
20			gray LEAN CLAY stiff to hard *(continued)*											
				SS 9	100	4-3-7 (10)	3.0	3.1	18.8					
25				SS 10	100	7-9-13 (22)	4.5+	8.5	14.4					
				SS 11	100	6-9-15 (24)	4.5+	10.0	13.5					
30				SS 12	100	6-8-12 (20)	4.5+	9.6	13.6					
	562.2		GRAVEL or POSSIBLE WEATHERED LIMESTONE very dense, wet poor recovery											
35				SS 13	100	50/1"			5.6					
	556.6		Refusal at 38.6 feet. Bottom of borehole at 38.6 feet.	SS 14	100	50/1"			12.3					

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

DRAWING 4 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS WEST PEDESTRIAN BRIDGE - SOIL BORING LOGS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 30 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB1_004	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-2

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/17/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	594.6		4" TOPSOIL											
			black and dark brown CLAY (FILL) trace gravel stiff	SS 1	44	2-2-2 (4)	1.5		16.2					
	590.9		dark brown SANDY CLAY trace gravel very stiff	SS 2	44	2-2-3 (5)	2.0		30.8					
5	588.9		brown and gray LEAN CLAY very stiff	SS 3	78	2-2-3 (5)	2.0	2.2	27.9					
				SS 4	89	2-2-2 (4)	2.0	2.0	23.9					
10				SS 5	94	2-3-3 (6)	2.25	2.2	25.8					
				SS 6	100	3-3-4 (7)	2.0	2.0	21.4					
15	578.9		gray LEAN CLAY very stiff to hard	SS 7	100	4-4-5 (9)	2.25	2.4	19.9					
				SS 8	100	2-4-5 (9)	2.25	2.4	20.5					
20														

COMPLETION DEPTH 37.5 ft **GROUND ELEVATION** 594.9 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

▽ **AT TIME OF DRILLING** 16.00 ft / Elev 578.90 ft

▼ **AT END OF DRILLING** 16.00 ft / Elev 578.90 ft

AFTER DRILLING ---

NOTES

STA 18+24.11 Offset 19.3 RT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-2

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/17/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
20			gray LEAN CLAY very stiff to hard *(continued)*											
				SS 9	100	5-6-8 (14)	4.5+	5.1	16.2					
25				SS 10	100	5-8-10 (18)	4.0	4.4	17.7					
				SS 11	100	5-9-16 (25)	4.5+	7.8	14.7					
30				SS 12	100	4-11-16 (27)	4.5+	6.6	15.6					
	561.9		gray SANDY CLAY with gravel stiff, wet	SS 13	40	50/5"	1.0		17.5					
35	558.9		POSSIBLE WEATHERED LIMESTONE											
	557.4													

Refusal at 37.5 feet.
Bottom of borehole at 37.5 feet.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORN

DRAWING 5 OF 5

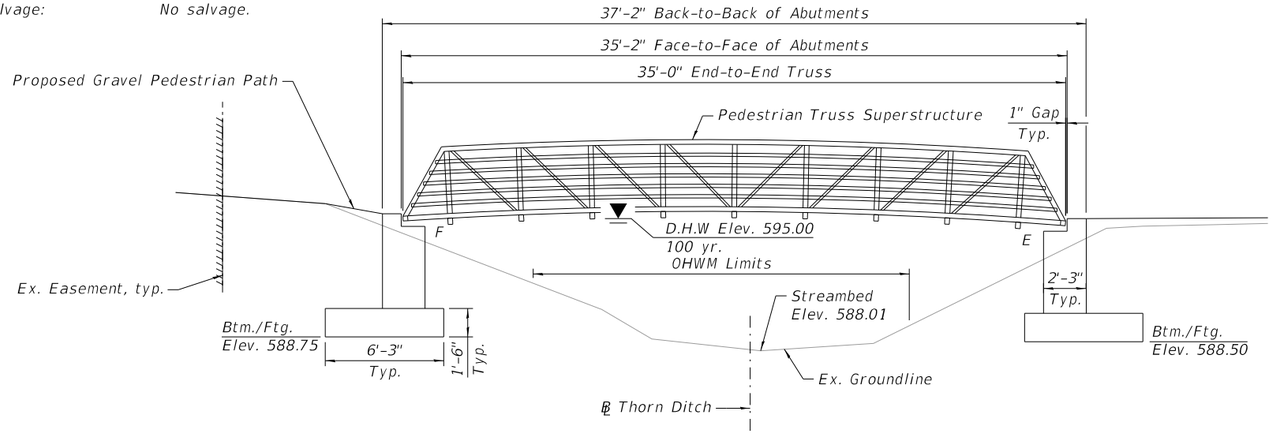
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS WEST PEDESTRIAN BRIDGE - SOIL BORING LOGS 2	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 31 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB1_005	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

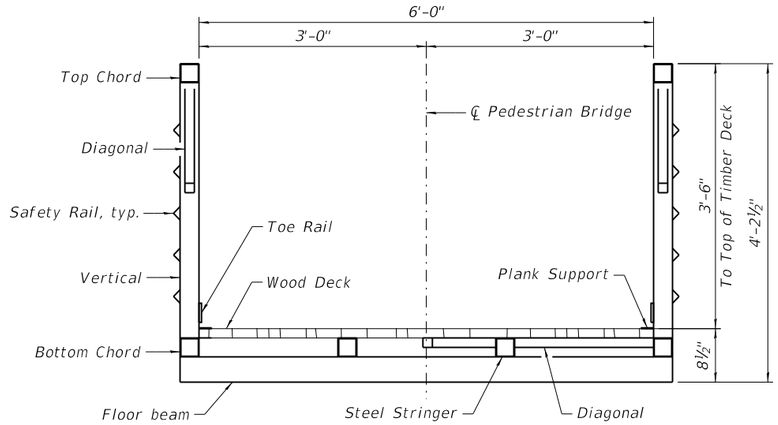
Bench Mark: Spike nail in west face of power pole on north side of 165th St. at west Residence 944. Elev = 597.33

Existing Structure: No existing structure.

Salvage: No salvage.

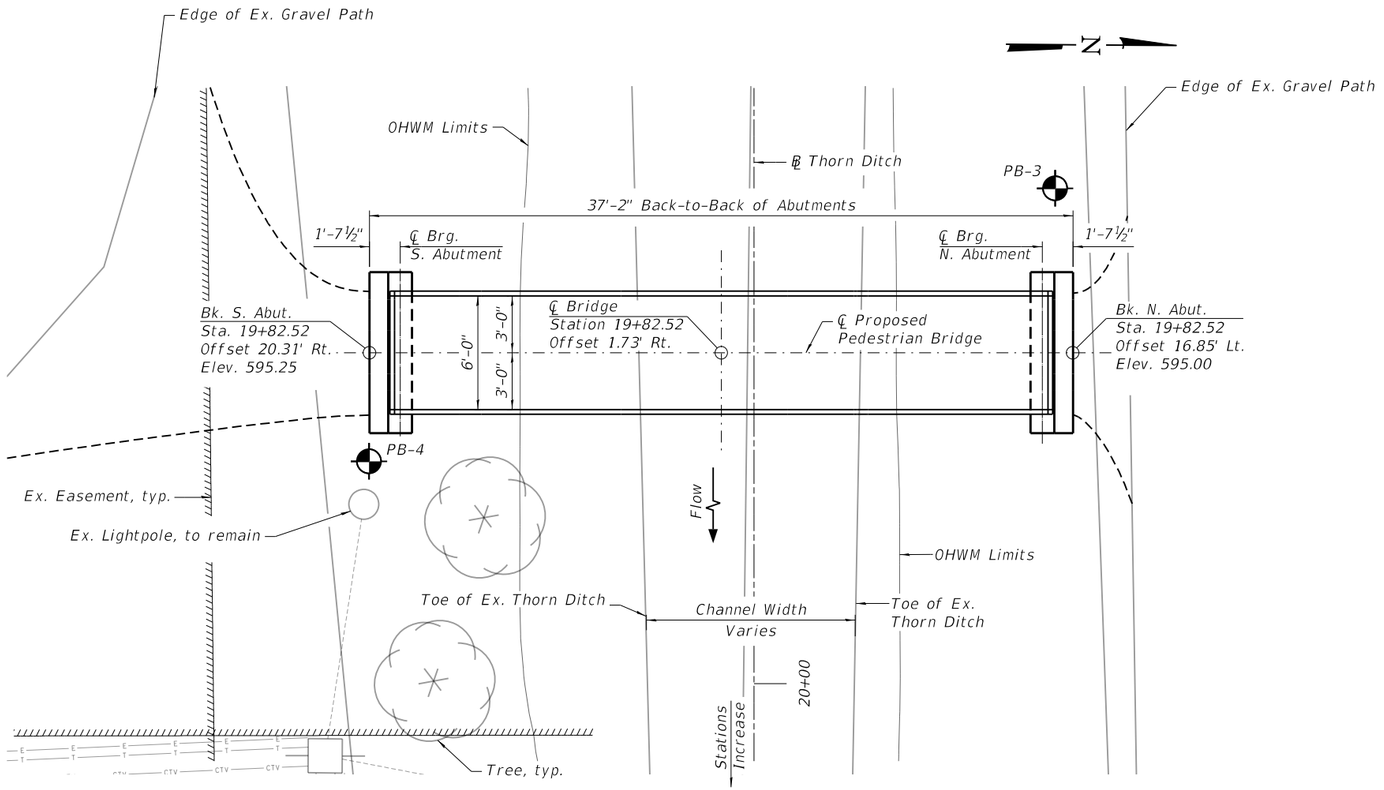


ELEVATION
(Looking West)



BRIDGE CROSS SECTION

Bridge cross section is for reference only. Truss Manufacturer is responsible for final design, dimensions and details. Wood deck shall be preservative treaded timber that is equivalent to 3x12 Select Structural Douglas Fir, or, 3x10 Southern Yellow Pine. Preservative treatment and fasteners shall comply with Article 1007.12 of the IDOT Standard Specifications.



PLAN

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (SD1) = 0.04g
Design Spectral Acceleration at 0.2 sec. (SDS) = 0.10g
Soil Site Class E

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition
AASHTO Guide Specifications for the Design of Pedestrian Bridges, 2009

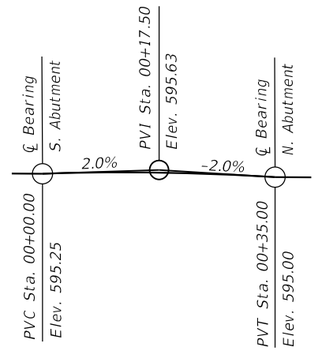
LOADING

90 psf Live Load
5,000 lb Vehicle Load (Class 1)

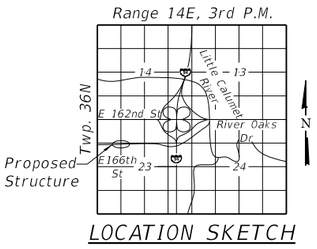
DESIGN STRESSES

(FIELD UNITS)

f'c = 1,300 psi min. (Wood Deck)
f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50)



PEDESTRIAN BRIDGE PROFILE GRADE



LOCATION SKETCH

DRAWING 1 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS EAST PEDESTRIAN BRIDGE - GENERAL PLAN AND ELEVATION	VILLAGE of SOUTH HOLLAND
SCALE = 8.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 32 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB2_001	CHECKED – OS	REVISED –			

LAST SAVED BY: omshaban
PLOTTED BY: omshaban

GENERAL NOTES

1. Reinforcement bars designated (E) shall be epoxy coated.
2. Concrete Sealer shall be applied to the top, front and sides of the abutments.
3. No field welding is permitted except as specified in the contract documents.
4. All structural steel shall be AASHTO M270 Grade 50.
5. Truss shall not use weathering steel, instead, steel shall meet the requirements for AASHTO Grade 50. Fasteners shall be mechanically galvanized high-strength bolts in accordance with the requirements of Article 1006.08(a) of the Standard Specifications. Bolt size shall be determined by Pedestrian Truss Manufacturer.
6. Truss and appurtenances shall be painted using a three coat organic zinc rich system that conforms to Section 1008.05 of the Standard Specification. The entire system shall be shop applied with exception of areas to be masked off for connections and/or pick points. Masked off areas and damaged areas shall be touched up in the field. Finish color shall be per owner's selection. A sample of steel truss painted the exact color shall be submitted to the Engineer for approval prior to painting any truss elements. Cost of Painting is included with Pedestrian Truss Superstructure.
7. The substructure is designed per the current AASHTO LRFD Bridge Design Specifications and is based on the assumed bridge reactions shown in the table. If the manufacturer's design exceeds those loads and/or the substructure dimensions need to be adjusted to accommodate the truss superstructure chosen, then the Contractor shall submit the redesign to the Engineer for review and approval prior to ordering material or starting construction. The Contractor's responsibility shall include the submittal of shop drawings for the revised reinforcement bar layout and quantities, abutment cap and backwall dimensions, and, if requested, updated design calculations for the foundations signed and sealed by an Illinois Licensed Structural Engineer.
8. Bridge bearing seat elevations are subject to revision based on the approved pedestrian truss superstructure shop drawings.
9. Design of pedestrian bridge shall accommodate anticipated dead and live load deflections so that the bridge profile matches the PGL in its final position.
10. All temporary support systems, cribbing, crane platforms, and other temporary works necessary for the erection of the superstructure shall be included with the cost of Pedestrian Truss Superstructure. Shop drawings for all temporary works shall be submitted to the Engineer for approval.

INDEX OF DRAWINGS

SUGGESTED CONSTRUCTION SEQUENCE

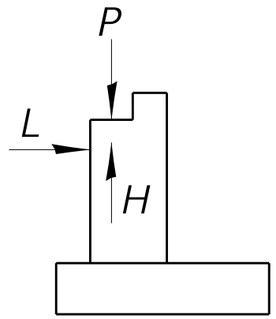
1. Perform construction of new abutments.
2. Install Pedestrian Truss Superstructure.
3. Open pedestrian truss to traffic.

TOTAL BILL OF MATERIAL

Item	Unit	Total
Structure Excavation	Cu. Yd.	62
Concrete Structures	Cu. Yd.	12.4
Reinforcement Bars, Epoxy Coated	Pound	1,160
Granular Backfill for Structures	Cu. Yd.	4
Concrete Sealer	Sq. Ft.	166
Pedestrian Truss Superstructure	Sq. Ft.	210

BRIDGE REACTION TABLE

Item	P (lbs) Brg.	H (lbs) Abutment.	L (lbs)
Dead Load	1,900	–	–
Uni. Live Load	4,725	–	–
Vehicle Load	4,600	–	–
Uplift Wind (20 psf)	-273	–	–
Wind	±777	1,095	–
Thermal	–	–	285



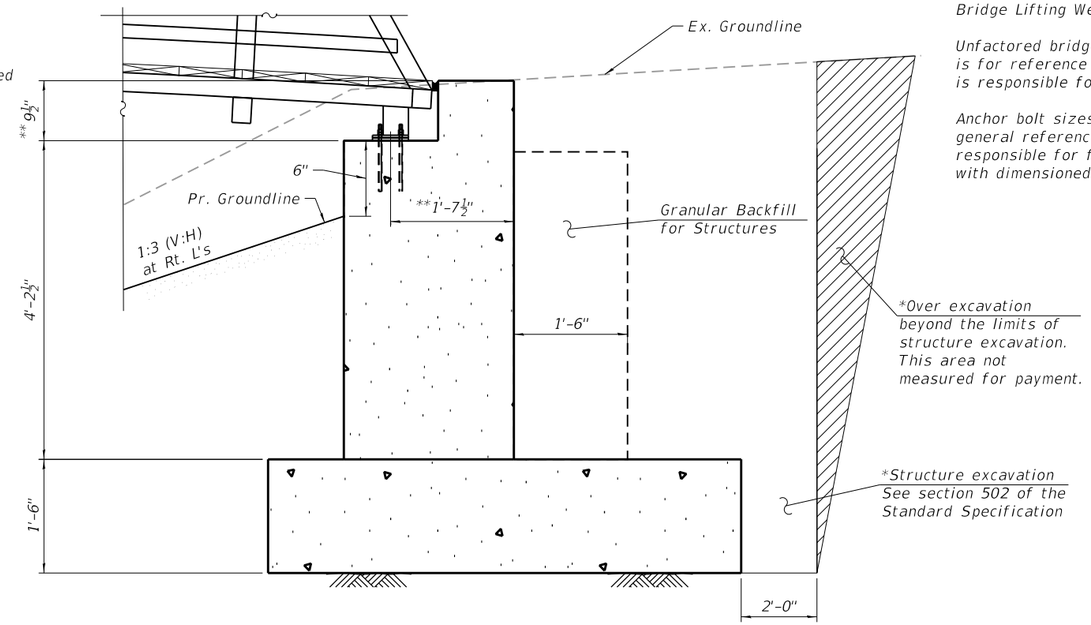
All footings have been designed based on the bridge reactions shown

"P" Vertical Load Per Base Plate
"H" Horizontal Load Per Footing
"L" Longitudinal Load Per Base Plate

Bridge Lifting Weight: 7,600 LBS

Unfactored bridge reactions table information is for reference only. Pedestrian Truss manufacturer is responsible for final design loads.

Anchor bolt sizes, layout and locations are shown for general reference. Pedestrian Truss manufacturer shall be responsible for final anchor bolt sizes, layouts and locations with dimensioned referenced to abutment backwall and abutment centerline.



SECTION THRU ABUTMENT

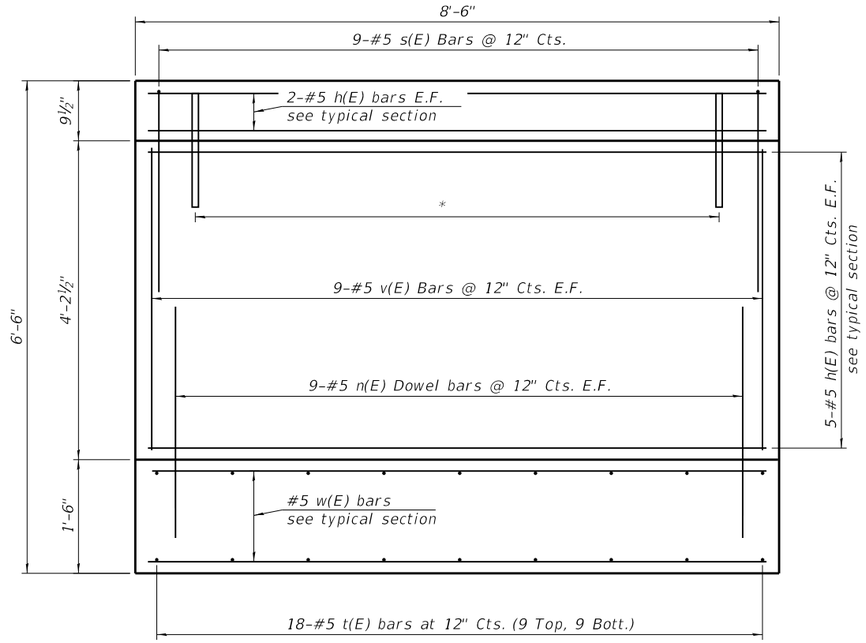
* Backfill remainder of structure excavation and over excavation with same material specified for roadway embankment.

** Final anchor bolt location and backwall height to be verified by pedestrian truss supplier.

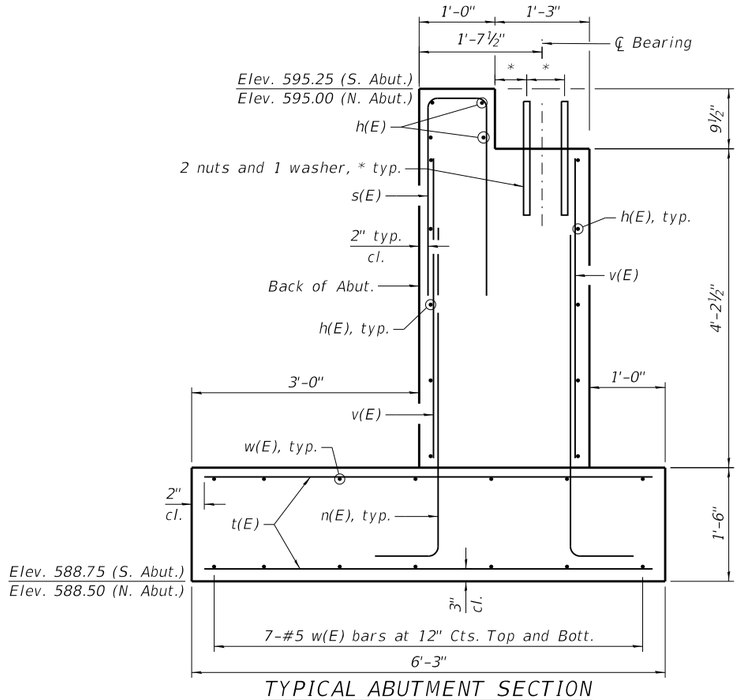
DRAWING 2 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS EAST PEDESTRIAN BRIDGE - GENERAL DATA	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 33 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB2_002	CHECKED – OS	REVISED –			

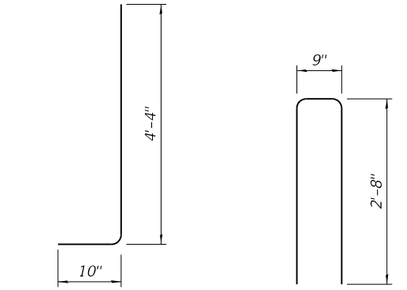
LAST SAVED BY: omshaban
PLOTTED BY: omshaban



TYPICAL ABUTMENT ELEVATION

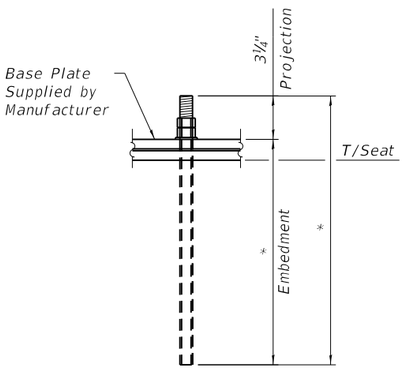


TYPICAL ABUTMENT SECTION



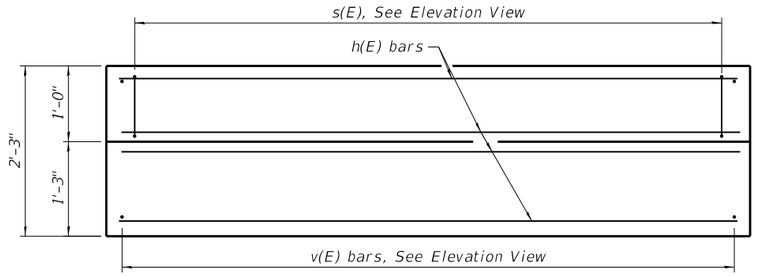
DOWEL BAR n(E)

BAR s(E)

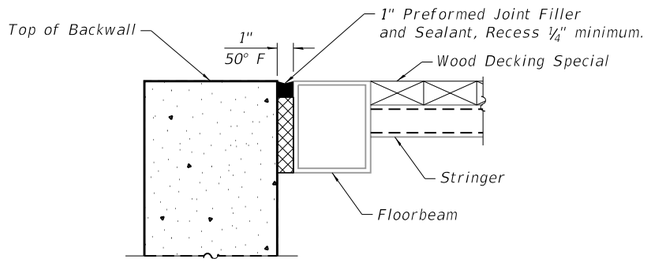


ANCHOR BOLT DETAIL

*Per Manufacturer Recommendations



TYPICAL ABUTMENT PLAN



JOINT SEAL AT ABUTMENT

BILL OF MATERIAL

(Per Abutment)

Bar	No.	Size	Length	Shape
h(E)	14	#5	8'-2"	———
n(E)	18	#5	5'-2"	⌐
s(E)	9	#5	6'-1"	⊐
t(E)	18	#5	5'-11"	———
v(E)	18	#5	4'-0"	———
w(E)	14	#5	8'-2"	———
Concrete Structures			Cu. Yd.	6.2
Reinforcement Bars, Epoxy Coated			Pound	580

DRAWING 3 OF 5

LAST SAVED BY: omshaban
PLOTTED BY: omshaban

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS EAST PEDESTRIAN BRIDGE - ABUTMENT DETAILS
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –		VILLAGE of SOUTH HOLLAND
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –		SHEET NO. 34 of 71
FILE NAME = THORN_DITCH_PB2_003	CHECKED – MDS	REVISED –		

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-3

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/16/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	594.2		6" TOPSOIL											
			black tc dark gray CLAY (FILL) very stiff	SS 1	72	3-2-3 (5)	3.0		31.1					
				SS 2	100	2-2-2 (4)	2.0	2.1	37.6					
5	588.7		brown and gray LEAN CLAY very stiff	SS 3	89	2-2-3 (5)	2.0	2.0	29.8					
	586.7		dark gray LEAN CLAY trace organics stiff	SS 4	100	1-1-2 (3)	1.0	1.2	26.3					
10	583.7		brown and gray LEAN CLAY very stiff to hard	SS 5	89	2-2-4 (6)	3.0	2.9	24.5					
				SS 6	89	3-4-6 (10)	4.5+	5.3	20.6					
15	578.7		gray LEAN CLAY very stiff to hard	SS 7	89	4-4-6 (10)	3.5	3.4	20.4					
				SS 8	100	3-3-5 (8)	2.5	2.6	20.4					
20														

COMPLETION DEPTH 33 ft **GROUND ELEVATION** 594.7 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING 11.00 ft / Elev 583.70 ft

AT END OF DRILLING 18.00 ft / Elev 576.70 ft

AFTER DRILLING ---

NOTES

STA 19+60.56 Offset 18.1 LT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-3

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/16/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
20			gray LEAN CLAY very stiff to hard *(continued)*	SS 9	100	3-4-9 (13)	4.0	4.4	17.0					
25				SS 10	100	3-7-9 (16)	4.5+	5.4	16.7					
				SS 11	100	7-10-15 (25)	4.5+	8.0	15.3					
30				SS 12	100	6-9-14 (23)	4.5+	7.3	14.3					
	562.7		POSSIBLE WEATHERED LIMESTONE											
	561.7		Refusal at 33.0 feet. Bottom of borehole at 33.0 feet.											

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

DRAWING 4 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS EAST PEDESTRIAN BRIDGE - SOIL BORING LOGS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 35 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB2_004	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-4

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/17/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	596.2		3" TOPSOIL											
			black and brown CLAY (FILL) trace gravel and roots very stiff to hard	SS 1	67	2-3-4 (7)	2.5		18.3					
				SS 2	89	3-4-6 (10)	4.5		24.1					
5	591.9		brown and gray LEAN CLAY stiff to hard	SS 3	89	2-3-5 (8)	3.75	3.8	26.1					
				SS 4	89	2-2-2 (4)	1.5	1.6	24.5					
10				SS 5	100	2-2-3 (5)	2.75	2.8	24.4					
				SS 6	100	3-4-6 (10)	4.0	4.1	24.2					
15				SS 7	100	3-5-6 (11)	4.0	4.3	23.0					
	578.4		gray LEAN CLAY stiff to hard											
20				SS 8	100	3-4-5 (9)	1.75	1.8	21.4					

COMPLETION DEPTH 34.5 ft **GROUND ELEVATION** 596.4 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

▽ **AT TIME OF DRILLING** 13.50 ft / Elev 582.90 ft

▼ **AT END OF DRILLING** 13.50 ft / Elev 582.90 ft

AFTER DRILLING ---

NOTES

STA 19+83.04 Offset 27.0 RT

Boring offset approximately 5 ft west due to overhead trees.

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORN

GEOCON PROFESSIONAL SERVICES

BORING NO. PB-4

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/17/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
20			gray LEAN CLAY stiff to hard *(continued)*											
			moist in SS9	SS 9	100	3-5-5 (10)	2.0	1.9	20.2					
25				SS 10	100	4-6-9 (15)	4.5+	5.4	16.4					
	570.4		gray SILTY CLAY with sand very stiff	SS 11	100	4-11-17 (28)	3.5		12.3					
	568.4		gray LEAN CLAY hard											
30				SS 12	100	4-9-11 (20)	4.5+	9.6	14.0					
	563.4		gray SANDY SILT trace gravel very dense											
	561.9			SS 13	100	50/5"			7.3					

Refusal at 34.5 feet.
Bottom of borehole at 34.5 feet.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:42 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORN

DRAWING 5 OF 5

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS EAST PEDESTRIAN BRIDGE - SOIL BORING LOGS 2	VILLAGE of SOUTH HOLLAND
SCALE = 2,000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 36 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_PB2_005	CHECKED – OS	REVISED –			

LAST SAVED BY: omshaban
PLOTTED BY: omshaban

Bench Mark: Spike nail in west face of power pole on north side of 165th Street at west residence 944. Elevation=597.33'

Existing Structure: The original culvert was constructed at an unknown time before 1970 as a single 84" Ø CMP culvert. The existing structure is to be removed and replaced with a precast single box culvert 7'-0" wide by 7'-0" high and 690' long. Traffic will be detoured during construction.

Salvage: No Salvage.

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

INDEX OF DRAWINGS

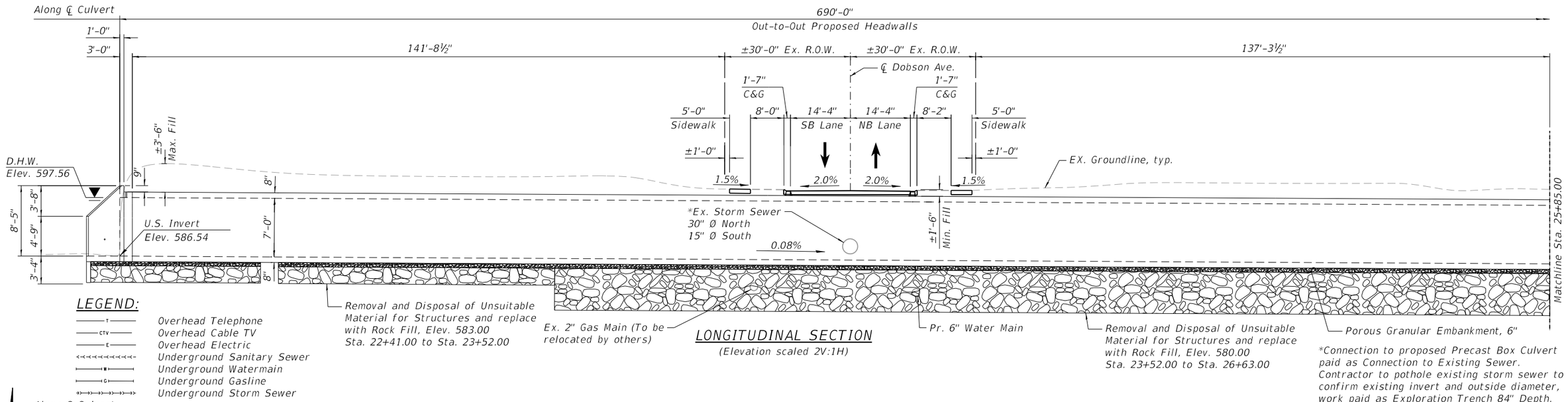
DESIGN STRESSES

PRECAST UNITS
(New Construction)

f'c = 5,000 psi
fy = 65,000 psi (Welded Wire Reinforcement)

FIELD UNITS
(New Construction)

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

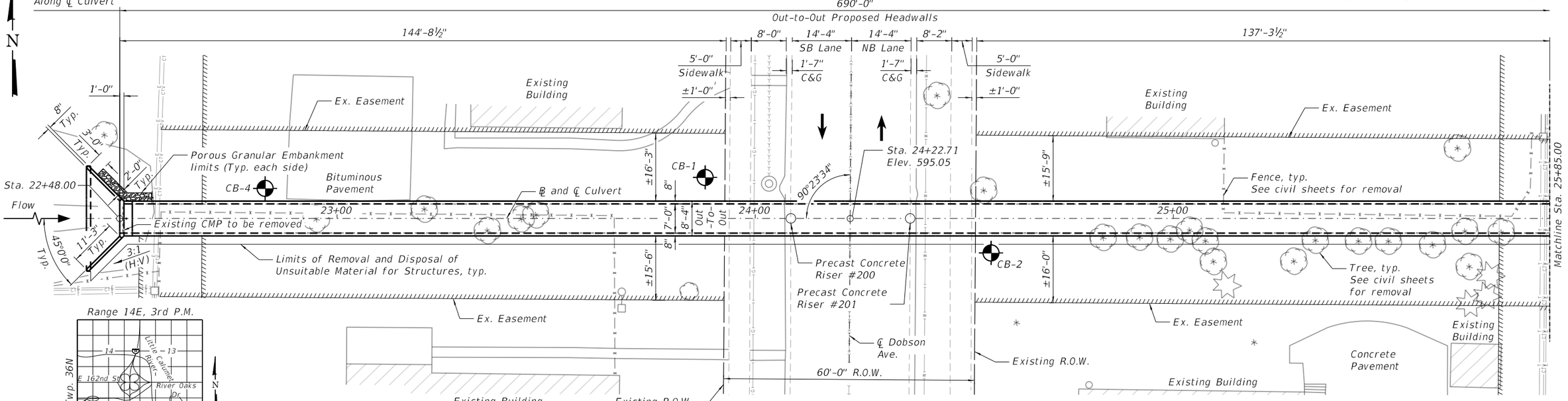


LONGITUDINAL SECTION

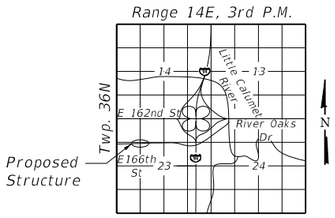
(Elevation scaled 2V:1H)

LEGEND:

- Overhead Telephone
- Overhead Cable TV
- Overhead Electric
- Underground Sanitary Sewer
- Underground Watermain
- Underground Gasline
- Underground Storm Sewer



PLAN VIEW



LOCATION SKETCH

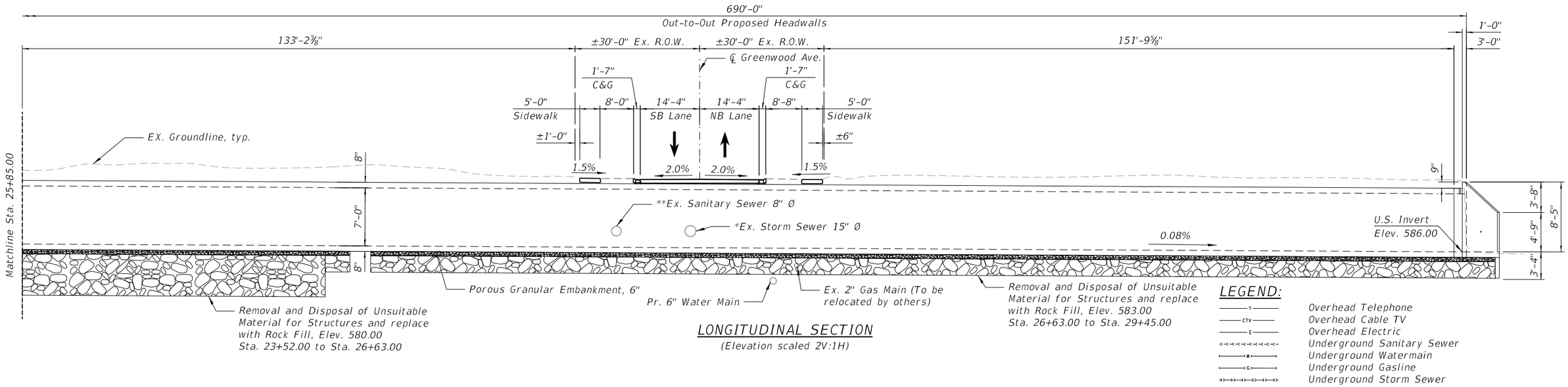
DRAWING 1 OF 7

DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - GENERAL PLAN AND ELEVATION 1	VILLAGE of SOUTH HOLLAND
SCALE = 24.000 ' / in.	CHECKED – MDS	REVISED –			SHEET NO. 37 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_001	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

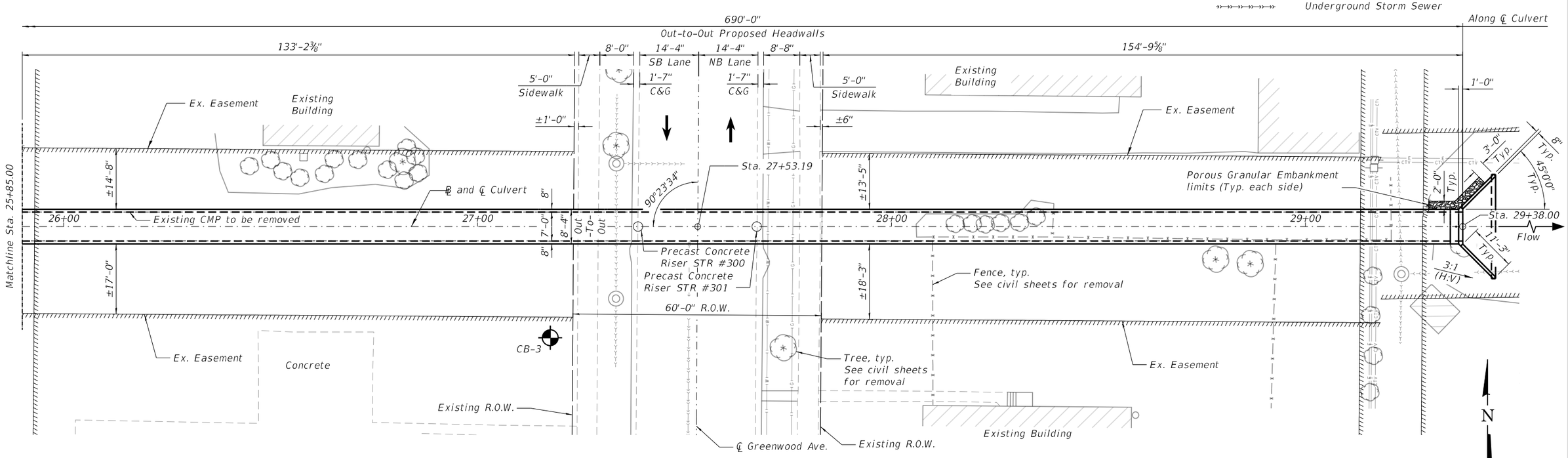
*Connection to proposed Precast Box Culvert paid as Connection to Existing Sewer. Contractor to pothole existing storm sewer to confirm existing invert and outside diameter, work paid as Exploration Trench 84" Depth.

**Precast Box Culvert to be detailed to accomodate Sanitary Sewer through culvert This work is included in the cost of Sanitary Sewer Main Line Repair 8".



LONGITUDINAL SECTION

(Elevation scaled 2V:1H)

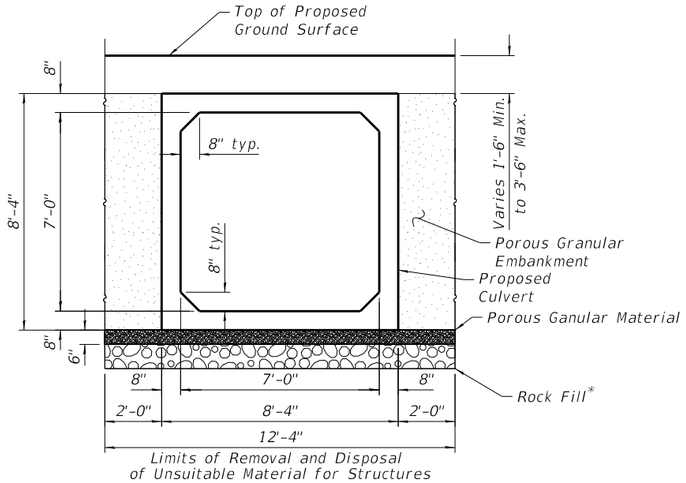


PLAN VIEW

DRAWING 2 OF 7

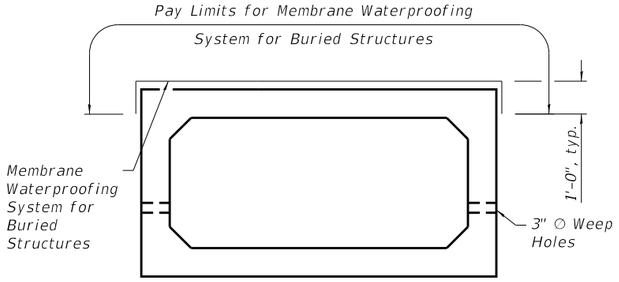
DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - GENERAL PLAN AND ELEVATION 2	VILLAGE of SOUTH HOLLAND
SCALE = 24.000 ' / in.	CHECKED – MDS	REVISED –			SHEET NO. 38 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_002	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban



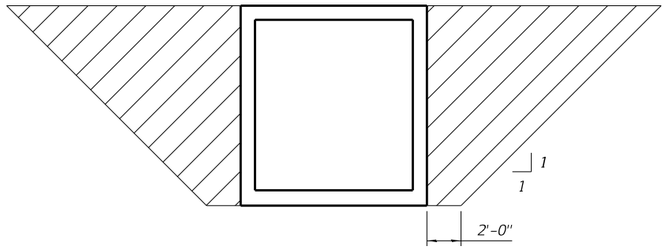
SECTION THRU PRECAST BOX CULVERT

* Elev. 583.00 (Sta. 22+41.00 to 23+52.00)
Elev. 580.00 (Sta. 23+52.00 to 26+63.00)
Elev. 583.00 (Sta. 26+63.00 to 29+45.00)



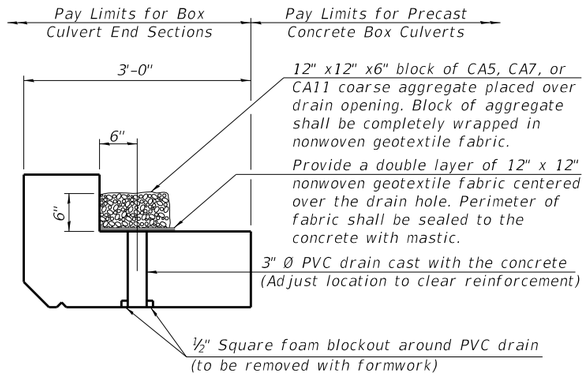
LIMITS OF MEMBRANE WATERPROOFING

Longitudinal limits of membrane waterproofing for the precast concrete culvert are along the full length between headwalls



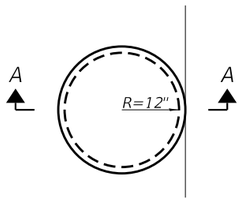
PAY LIMITS FOR POROUS GRANULAR EMBANKMENT

(Hatched area)

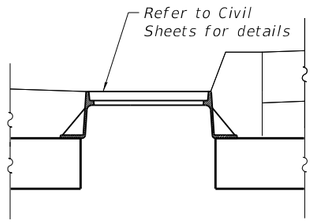


DRAIN DETAIL

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



PRECAST CONCRETE RISER PLAN VIEW



SECTION A-A

GENERAL NOTES

1. The design fill height for this box is shown on Section Thru Box Culvert. The precast box culvert sections shall conform to the requirements of ASTM C 1577.
2. Drain holes shall be provided on exterior culvert walls for each precast box segment. The drain hole shall be located within 1/3 of the clear rise of the box culvert, shall not intercept the haunch, and shall conform to the requirements of Article 503.11 of the Standard Specification.
3. Nonwoven geotextile fabric shall conform to the requirements of Art. 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.
4. Precast concrete box culverts and box culvert end sections shall be backfilled with Porous Granular Embankment in the required excavation areas on the sides of the box culvert from the top of the box culvert to the bottom of the box culvert. This area of PGE is included in the Porous Granular Embankment pay item. The 6-inch thick layer of porous granular material required under the precast concrete box culvert, according to Section 540.06 of the standard specifications, shall also apply to the end sections. Cost of this porous granular material will not be paid for separately but shall be included in the unit price of the work for which it is required.
5. The Rock Fill shall be capped with 6" of CA7 and satisfy the Standard Specifications unless otherwise indicated in the Special Provisions. The cost of the capping material shall be included in the pay item for Rock Fill.
6. The limits and quantities of Removal and Replacement of Unsuitable Materials for Structures shown are based on the boring data and may be modified by the Engineer for variable subsurface conditions encountered in the field.
7. The contractor shall be responsible to divert the stream flow during construction to keep construction area free of water. The method of the water diversion shall be subject to the approval of the engineer and the cost shall be included in the cost of Precast Concrete Box Culverts, 7'x7'.

CULVERT CONSTRUCTION SEQUENCE

1. Close roadway to all traffic.
2. Divert water from construction area.
3. Perform removal of existing culvert.
4. Perform construction of replacement structure.
5. Open roadway to traffic.
6. Remove water diversion measures.

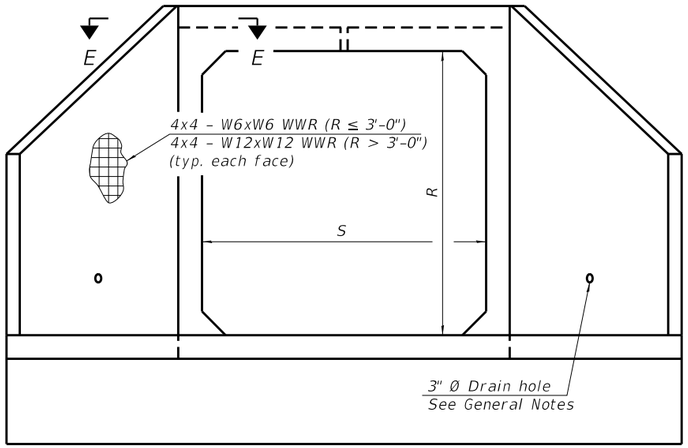
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Earth Excavation	Cu. Yd	4,265
Porous Granular Embankment	Cu. Yd	2,688
Removal of Existing Structures No. 1	Each	1
Structure Excavation	Cu. Yd	2,667
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd	1,110
Box Culvert End Sections, Culvert No. 1	Each	2
Membrane Waterproofing System for Buried Structures	Sq. Yd	793
Rock Fill	Cu. Yd	1,110
Precast Concrete Box Culverts, 7'x7'	Foot	684

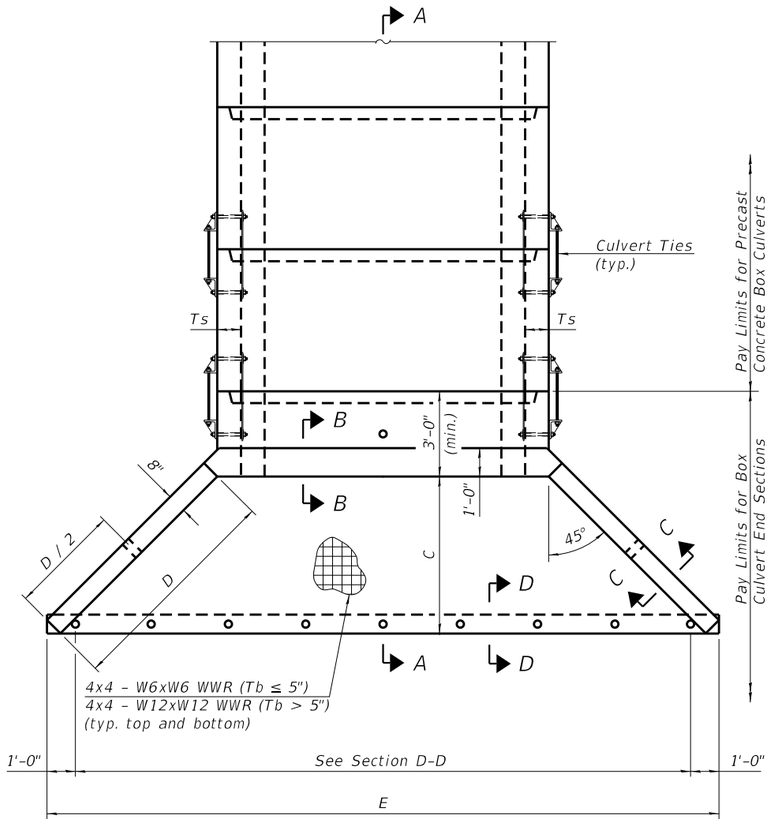
DRAWING 3 OF 7

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - GENERAL DATA	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 39 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_003	CHECKED – OS	REVISED –			

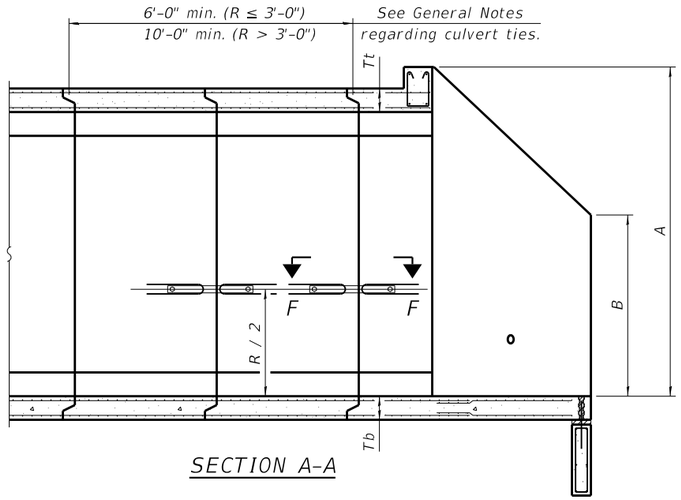
LAST SAVED BY: omahaban
PLOTTED BY: omahaban



END VIEW



PLAN



SECTION A-A

APRON END SECTION DIMENSIONS

Span (S)	Rise (R)	Tt	Tb	Ts	A	B	C	D	E	Concrete Cu. Yd.	Culvert Ties Required
7'-0"	7'-0"	8"	8"	8"	8'-5"	4'-9"	7'-11½"	11'-3"	25'-2¼"	12.3	Yes

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. End sections will be paid for at the contract unit price per each for Box Culvert End Sections.

The Contractor may furnish the end section as a single precast concrete piece or construct the end section in the field using cast-in-place (CIP) construction. For CIP construction, the bottom slab thickness shall be increased by 2" and the clear cover to the bottom mat of reinforcement shall be increased to 3".

Box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements for ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

The number of culvert ties shall be sufficient to engage the minimum length of culvert barrel shown within the pay limits for Precast Concrete Box Culverts and will be dependent upon the length of box culvert segments furnished by the Contractor. Culvert ties are not required for box culverts having a rise (R) less than or equal to 3 ft and a span (S) greater than or equal to 10 ft.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the unit price for Box Culvert End Sections of the culvert number specified.

Shop drawings that detail slab thickness and reinforcement layout for the Box Culvert End Sections shall be provided to the Engineer for review and approval. Reinforcement bars not detailed herein shall be detailed with a clear distance at the end of the reinforcement not less than ½" nor more than 2". For the precast option, it shall be the Contractor's responsibility for determining a method of handling and a construction procedure shall be included on the shop drawings. The Contractor shall determine and detail in the shop drawings any necessary strengthening or stiffening provisions necessary to handle the precast segment. Any required modifications shall be at no extra charge.

The Contractor may use reinforcement bars in lieu of welded wire reinforcement (WWR). Reinforcement bars shall be limited to the sizes of #3 through #5 bars, a maximum spacing of the lesser of 8" or the member thickness, and shall result in an area of reinforcement equal to or greater than that provided by the WWR. Minimum lap lengths detailed herein are applicable to WWR and reinforcement bars.

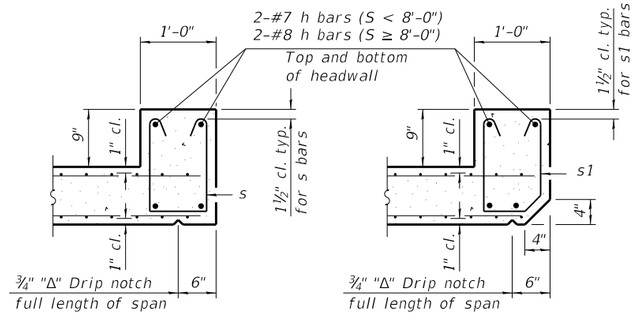
Reinforcement (circumferential and longitudinal) in the culvert barrel portion of the end section being lapped with reinforcement from the wingwalls or bottom slab of the end section shall not be less than that required by ASTM C 1577 for the design fill height or the reinforcement detailed for the end section, whichever is greater.

One drain hole shall be provided in each wingwall for end sections of box culverts having an opening with a clear rise greater than 3 ft. The drain hole shall be located within the lower 1/3 of the clear rise of the box culvert and shall conform to the requirements of Article 503.11 of the Standard Specifications.

DRAWING 4 OF 7

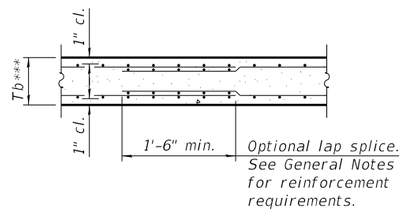
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - BOX CULVERT END SECTION DETAILS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 40 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_004	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban



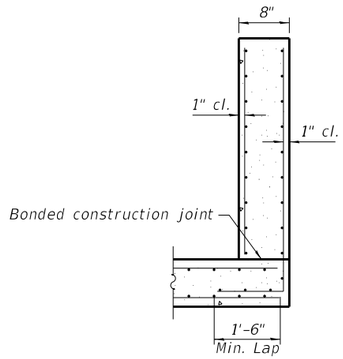
SECTION B-B
(Top slab at downstream end)

SECTION B-B
(Top slab at upstream end)

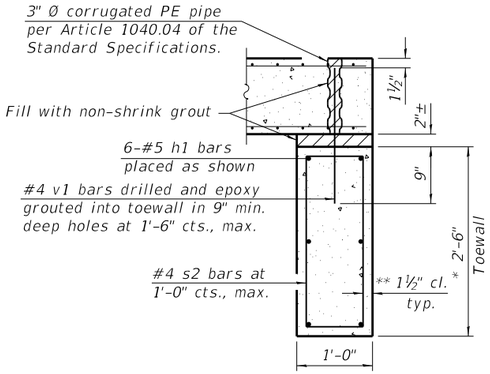


SECTION B-B
(Bottom Slab)

*** This dimension shall be increased by 2" for CIP construction.



SECTION C-C



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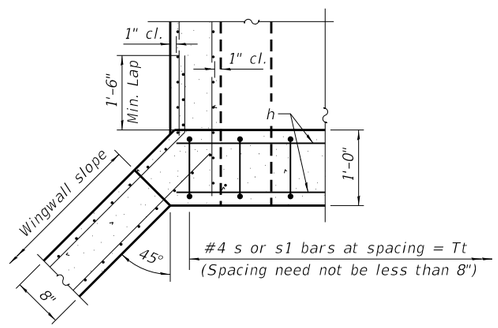
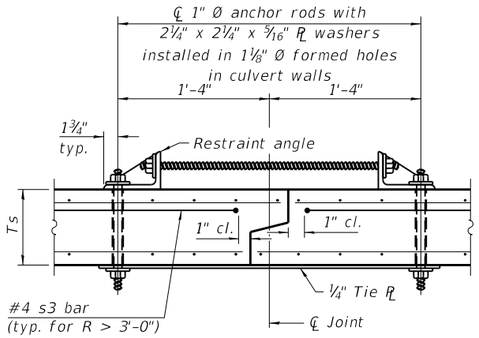
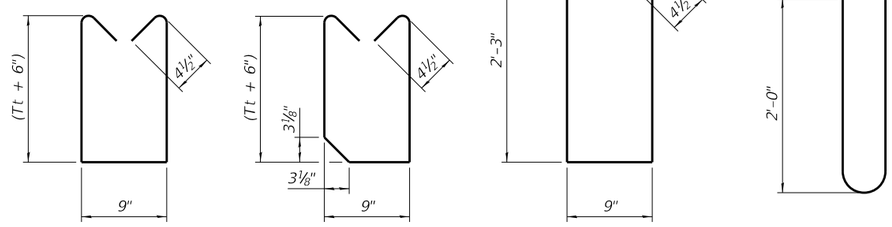


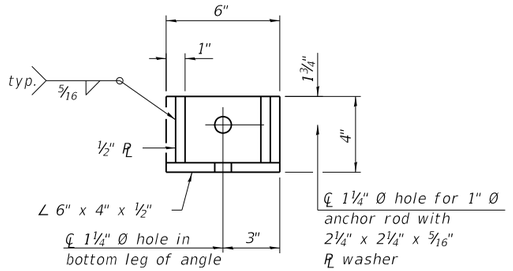
SECTION E-E



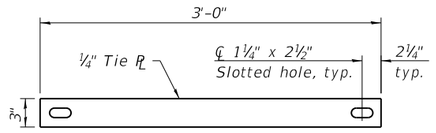
SECTION F-F
(Showing culvert tie details)



BAR s | BAR s1 | BAR s2 | BAR s3



RESTRAINT ANGLE DETAIL



TIE PLATE DETAIL

TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill accordingly and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.

Notes:

1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for the tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2¼"x2¼"x5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional ½ turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

DRAWING 5 OF 7

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - BOX CULVERT END SECTION DETAILS 2	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 41 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_005	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/19/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	595.5		4" TOPSOIL											
			brown and gray SILTY CLAY hard	SS 1	100	4-4-5 (9)	4.5+		18.4					
	592.8		black, brown, and gray FAT CLAY trace organics stiff to very stiff	SS 2	44	2-2-3 (5)	2.0	1.8	30.3					
5				SS 3	78	2-2-3 (5)	2.0	2.2	28.9					
				SS 4	61	2-1-2 (3)	2.0	1.7	30.9			55	20	35
10	584.8		gray ORGANIC LEAN CLAY stiff	SS 5	89	2-1-1 (2)	1.0	1.2	62.2					
	582.3		gray LEAN CLAY medium stiff, moist	SS 6	100	1-1-2 (3)	0.5	0.7	25.2					
15	579.8		brown and gray LEAN CLAY hard	SS 7	89	5-7-10 (17)	4.5+	5.4	19.6					
	577.3		gray LEAN CLAY very stiff to hard	SS 8	100	4-5-6 (11)	4.5+	5.3	18.4					
20				SS 9	100	3-4-6 (10)	3.5	3.7	18.4			36	18	18
25	570.8			SS 10	100	4-6-10 (16)	4.5+	5.3	15.8					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 595.8 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 23+87.01 Offset 10.6 LT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-2

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/19/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	595.0		4" TOPSOIL											
			dark brown and brown LEAN CLAY trace topsoil in SS1 very stiff	SS 1	67	3-4-6 (10)	3.25		21.0					
5				SS 2	56	2-3-3 (6)	3.5	3.8	20.9					
	589.3		black, brown, and gray FAT CLAY trace organics stiff to very stiff, moist	SS 3	56	2-2-3 (5)	2.5	2.6	38.5					
10				SS 4	100	1-2-2 (4)	1.5	1.4	38.3					
	584.3		dark gray ORGANIC LEAN CLAY stiff	SS 5	100	1-1-1 (2)	1.0	1.0	64.4					
	581.8		gray LEAN CLAY soft, very, moist	SS 6	44	1-1-2 (3)	0.5	0.4	26.9					
15	579.3		gray LEAN CLAY very stiff to hard	SS 7	100	4-7-9 (16)	4.5+	7.4	16.8					
20				SS 8	100	3-5-7 (12)	4.5+	5.2	19.0					
				SS 9	100	3-4-5 (9)	3.0	3.2	18.9					
25	570.3			SS 10	100	3-5-6 (11)	3.5	3.8	18.5					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 595.3 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING 8.50 ft / Elev 586.80 ft

AT END OF DRILLING 15.00 ft / Elev 580.30 ft

AFTER DRILLING ---

NOTES

STA 24+56.55 Offset 9.1 RT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - SOIL BORING LOGS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 42 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_006	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-3

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/19/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	595.8		4" TOPSOIL											
			brown SILTY CLAY very stiff	SS 1	56	3-5-5 (10)	3.5		20.7					
	593.1		brown and gray LEAN CLAY trace roots in SS2 and SS3 very stiff to hard											
5				SS 2	67	3-4-5 (9)	3.0	2.8	21.4					
				SS 3	100	3-2-4 (6)	2.5	2.3	24.2					
10				SS 4	100	2-3-5 (8)	3.5	3.4	26.8					
				SS 5	100	5-5-7 (12)	4.0	3.8	23.4			36	21	15
15				SS 6	100	3-6-9 (15)	4.5+	6.0	20.7					
	580.1		gray LEAN CLAY very stiff to hard											
				SS 7	100	3-5-8 (13)	3.5	3.4	18.9					
20				SS 8	100	4-4-7 (11)	3.5	3.4	18.8					
				SS 9	100	4-4-7 (11)	3.75	3.8	18.6					
25	571.1			SS 10	100	4-5-9 (14)	4.25	4.4	14.6					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 596.1 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 27+17.15 Offset 10.7 RT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-4

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/19/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	596.6		4" TOPSOIL											
			dark brown to brown SILTY CLAY trace topsoil in SS1 very stiff	SS 1	67	3-4-4 (8)	2.5		20.6					
5				SS 2	78	3-4-5 (9)	2.0	2.0	25.4					
	590.9		brown CLAYEY SILT loose, moist	SS 3	100	5-5-4 (9)			27.1					
	588.4		brown and gray LEAN CLAY very stiff											
10				SS 4	100	2-3-4 (7)	3.5	3.5	24.7					
				SS 5	100	2-3-4 (7)	2.5	2.2	25.4					
	583.9		gray LEAN CLAY trace silt stiff to hard moist in SS6											
15				SS 6	100	2-3-3 (6)	2.0	1.9	19.4					
				SS 7	89	3-3-4 (7)	2.25	2.2	21.5					
20				SS 8	100	2-3-4 (7)	2.25	2.3	20.8					
				SS 9	100	4-4-7 (11)	3.5	3.4	19.0					
25	571.9			SS 10	100	3-6-9 (15)	4.5+	5.4	13.0					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 596.9 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 22+83.75 Offset 9.3 LT

Boring offset approximately 12 ft north due to overhead trees.

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

DRAWING 7 OF 7

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 1 - SOIL BORING LOGS 2	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 43 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C1_007	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaan
PLOTTED BY: omahaan

Bench Mark: Cross on top of northwest corner of concrete base of aluminum light pole on east side of intersection of Woodlawn E Avenue and 165th Street. Elev.=595.92'

Existing Structure: The original culvert was constructed at an unknown time before 1970 as a single 84" Ø CMP culvert. The existing structure is to be removed and replaced with a precast single box culvert 7'-0" wide by 7'-0" high and 178'-0" long. Traffic will be detoured during construction.

Salvage: No Salvage.

INDEX OF DRAWINGS

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES

PRECAST UNITS

(New Construction)

f'c = 5,000 psi
fy = 65,000 psi (Welded Wire Reinforcement)

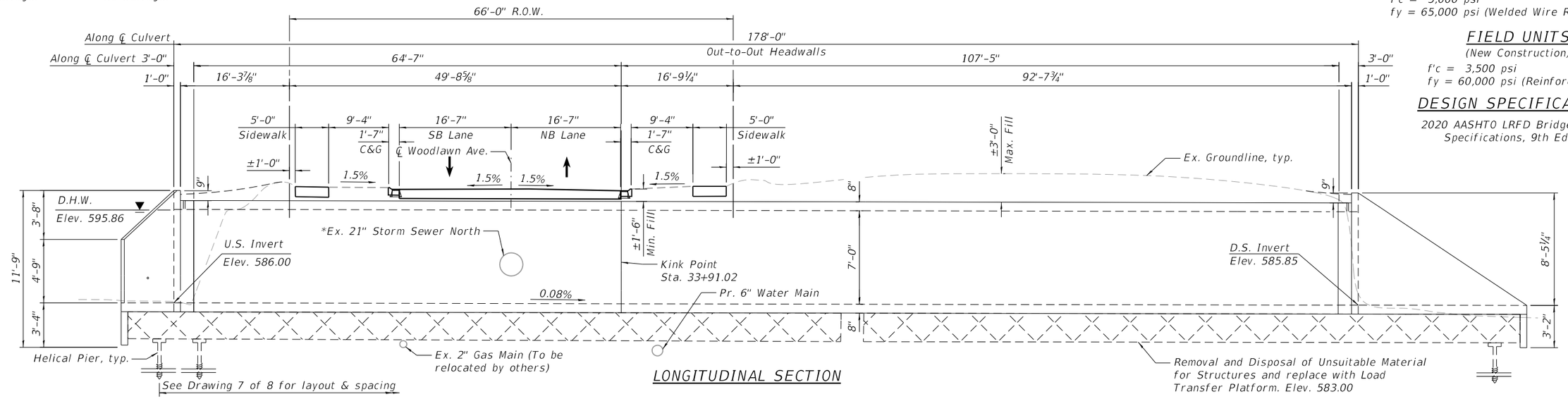
FIELD UNITS

(New Construction)

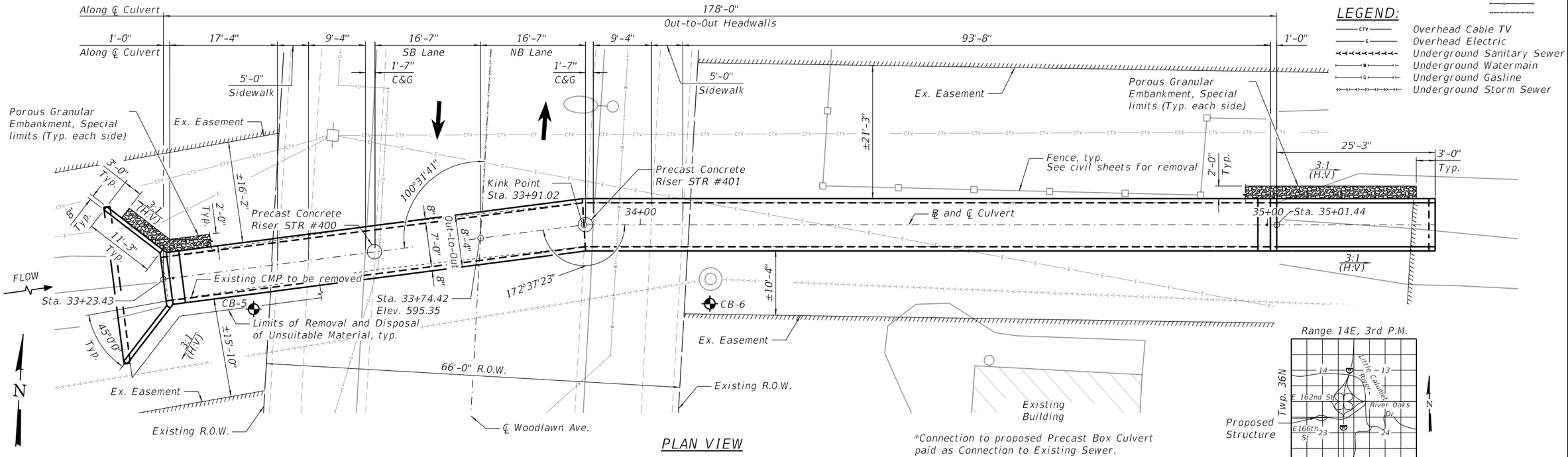
f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design Specifications, 9th Edition



LONGITUDINAL SECTION



PLAN VIEW

*Connection to proposed Precast Box Culvert paid as Connection to Existing Sewer. Contractor to pothole existing storm sewer to confirm existing invert and outside diameter, work paid as Exploration Trench 84" Depth.

LEGEND:

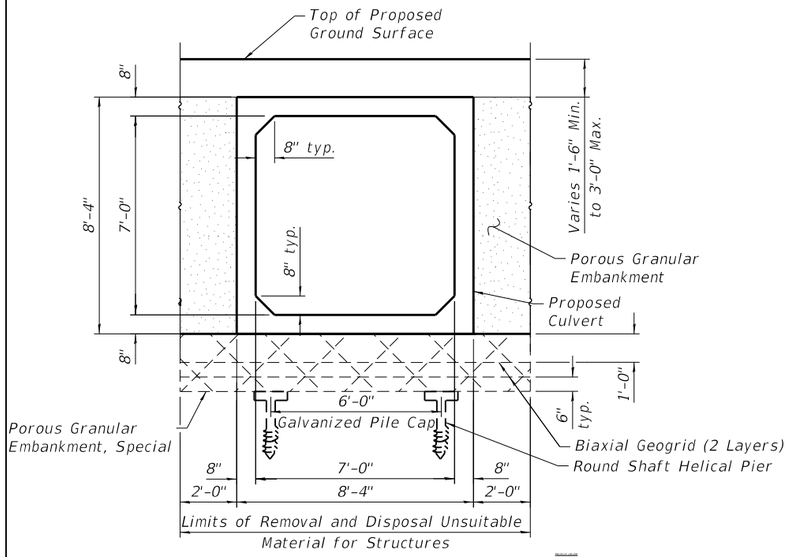
- Overhead Cable TV
- Overhead Electric
- Underground Sanitary Sewer
- Underground Watermain
- Underground Gasline
- Underground Storm Sewer

LOCATION SKETCH

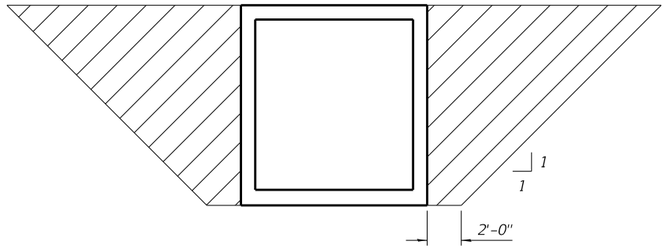
DRAWING 1 OF 8

DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 2 - GENERAL PLAN AND ELEVATION	VILLAGE of SOUTH HOLLAND
SCALE = 16.000 ' / in.	CHECKED – MDS	REVISED –			SHEET NO. 44 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_001	CHECKED – OS	REVISED –			

LAST SAVED BY: omshaban
PLOTTED BY: omshaban



SECTION THRU PRECAST BOX CULVERT

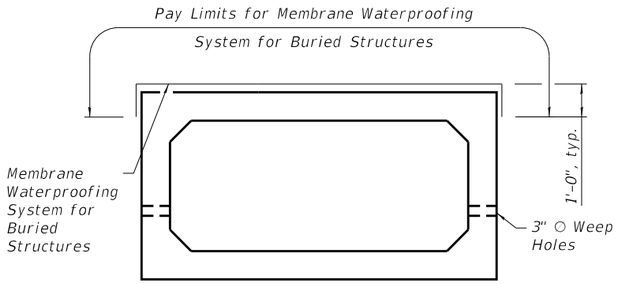


PAY LIMITS FOR POROUS GRANULAR EMBANKMENT

(Hatched area)

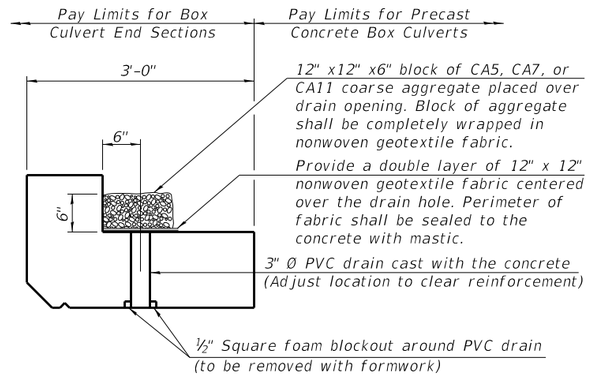
GENERAL NOTES

1. The design fill height for this box is shown on Section Thru Box Culvert. The precast box culvert sections shall conform to the requirements of ASTM C 1577.
2. Drain holes shall be provided on exterior culvert walls for each precast box segment. The drain hole shall be located within 1/3 of the clear rise of the box culvert, shall not intercept the haunch, and shall conform to the requirements of Article 503.11 of the Standard Specification.
3. Nonwoven geotextile fabric shall conform to the requirements of Art. 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.
4. Precast concrete box culverts and box culvert end sections shall be backfilled with Porous Granular Embankment in the required excavation areas on the sides of the box culvert from the top of the box culvert to the bottom of the box culvert. This area of PGE is included in the Porous Granular Embankment pay item. The 6-inch thick layer of porous granular material required under the precast concrete box culvert, according to Section 540.06 of the standard specifications, shall also apply to the end sections. Cost of this porous granular material will not be paid for separately but shall be included in the unit price of the work for which it is required.
5. The limits and quantities of Removal and Replacement of Unsuitable Materials for Structures shown are based on the boring data and may be modified by the Engineer for variable subsurface conditions encountered in the field.
6. The contractor shall be responsible to divert the stream flow during construction to keep construction area free of water. The method of the water diversion shall be subject to the approval of the engineer and the cost shall be included in the cost of Precast Concrete Box Culverts, 7'x7'.



LIMITS OF MEMBRANE WATERPROOFING

Longitudinal limits of membrane waterproofing for the precast concrete culvert are along the full length between headwalls

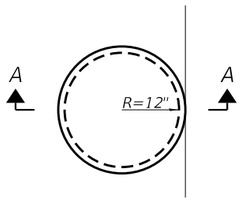


DRAIN DETAIL

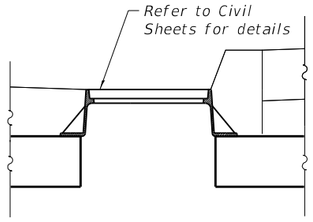
(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)

CULVERT CONSTRUCTION SEQUENCE

1. Close roadway to all traffic.
2. Divert water from construction area.
3. Perform removal of existing culvert.
4. Perform construction of replacement structure.
5. Open roadway to traffic.
6. Remove water diversion measures.



PRECAST CONCRETE RISER PLAN VIEW



SECTION A-A

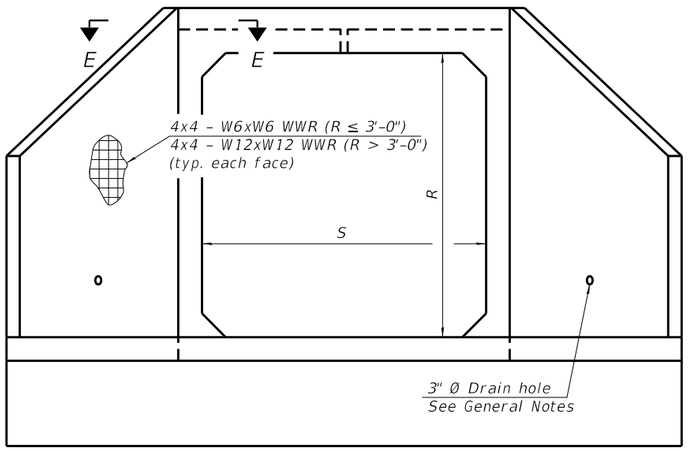
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Earth Excavation	Cu. Yd	850
Porous Granular Embankment	Cu. Yd	792
Removal of Existing Structures No. 2	Each	1
Structure Excavation	Cu. Yd	668
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd	222
Box Culvert End Sections, Culvert No. 1	Each	1
Box Culvert End Sections, Culvert No. 2	Each	1
Membrane Waterproofing System for Buried Structures	Sq. Yd	205
Helical Pier	Each	72
Porous Granular Embankment, Special	Cu. Yd	217
Biaxial Geogrid	Sq. Yd	588
Precast Concrete Box Culverts, 7'x7'	Foot	172

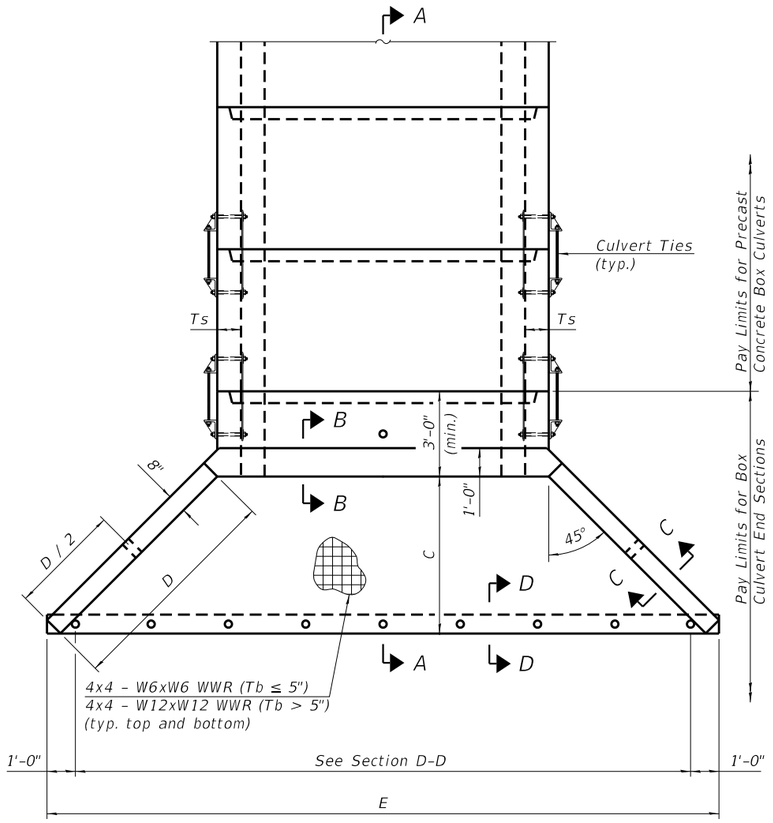
DRAWING 2 OF 8

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 2 - GENERAL DATA	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 45 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_002	CHECKED – OS	REVISED –			

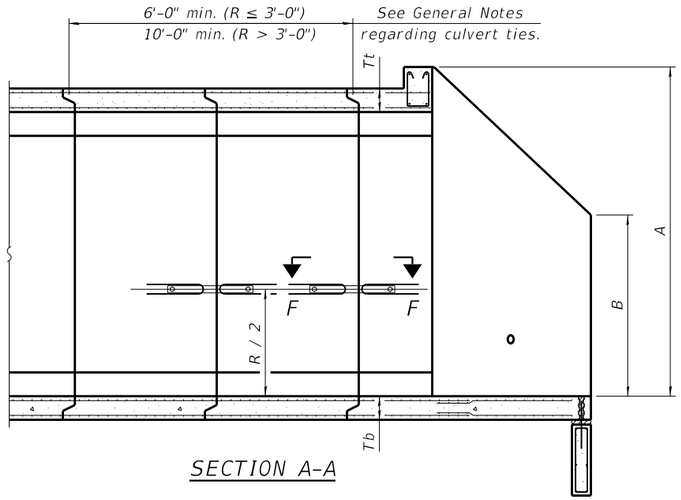
LAST SAVED BY: omahaban
PLOTTED BY: omahaban



END VIEW



PLAN



SECTION A-A

APRON END SECTION DIMENSIONS

Span (S)	Rise (R)	Tt	Tb	Ts	A	B	C	D	E	Concrete Cu. Yd.	Culvert Ties Required
7'-0"	7'-0"	8"	8"	8"	8'-5"	4'-9"	7'-11½"	11'-3"	25'-2¼"	12.3	Yes

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. End sections will be paid for at the contract unit price per each for Box Culvert End Sections, Culvert No. 1.

The Contractor may furnish the end section as a single precast concrete piece or construct the end section in the field using cast-in-place (CIP) construction. For CIP construction, the bottom slab thickness shall be increased by 2" and the clear cover to the bottom mat of reinforcement shall be increased to 3".

Box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements for ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

The number of culvert ties shall be sufficient to engage the minimum length of culvert barrel shown within the pay limits for Precast Concrete Box Culverts and will be dependent upon the length of box culvert segments furnished by the Contractor. Culvert ties are not required for box culverts having a rise (R) less than or equal to 3 ft and a span (S) greater than or equal to 10 ft.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the unit price for Box Culvert End Sections, Culvert No. 1.

Shop drawings that detail slab thickness and reinforcement layout for the Box Culvert End Sections shall be provided to the Engineer for review and approval. Reinforcement bars not detailed herein shall be detailed with a clear distance at the end of the reinforcement not less than ½" nor more than 2". For the precast option, it shall be the Contractor's responsibility for determining a method of handling and a construction procedure shall be included on the shop drawings. The Contractor shall determine and detail in the shop drawings any necessary strengthening or stiffening provisions necessary to handle the precast segment. Any required modifications shall be at no extra charge.

The Contractor may use reinforcement bars in lieu of welded wire reinforcement (WWR). Reinforcement bars shall be limited to the sizes of #3 through #5 bars, a maximum spacing of the lesser of 8" or the member thickness, and shall result in an area of reinforcement equal to or greater than that provided by the WWR. Minimum lap lengths detailed herein are applicable to WWR and reinforcement bars.

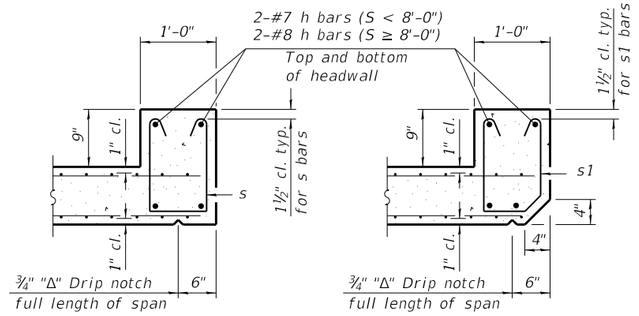
Reinforcement (circumferential and longitudinal) in the culvert barrel portion of the end section being lapped with reinforcement from the wingwalls or bottom slab of the end section shall not be less than that required by ASTM C 1577 for the design fill height or the reinforcement detailed for the end section, whichever is greater.

One drain hole shall be provided in each wingwall for end sections of box culverts having an opening with a clear rise greater than 3 ft. The drain hole shall be located within the lower 1/3 of the clear rise of the box culvert and shall conform to the requirements of Article 503.11 of the Standard Specifications.

DRAWING 3 OF 8

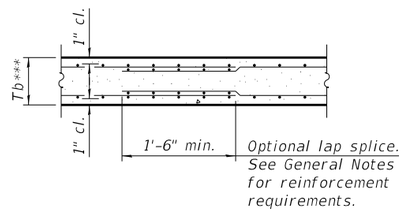
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 2- BOX CULVERT END SECTION DETAILS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 46 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_003	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban



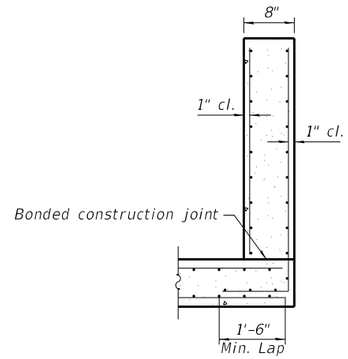
SECTION B-B
(Top slab at downstream end)

SECTION B-B
(Top slab at upstream end)

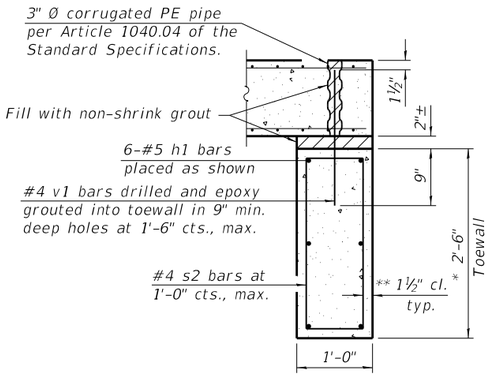


SECTION B-B
(Bottom Slab)

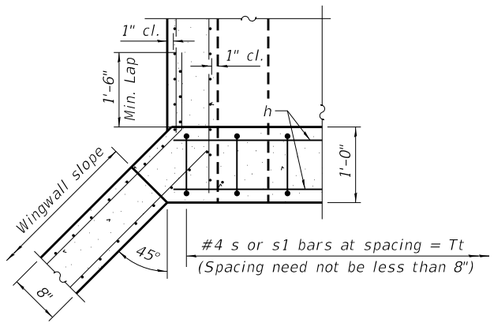
*** This dimension shall be increased by 2" for CIP construction.



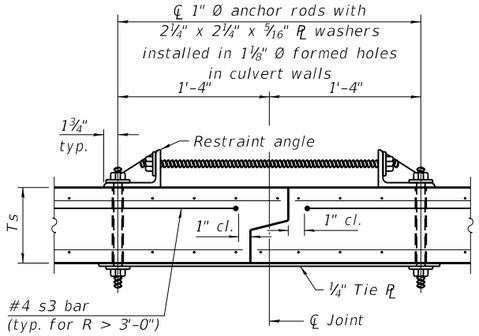
SECTION C-C



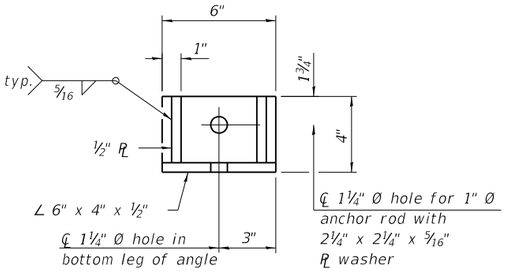
SECTION D-D



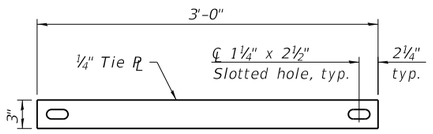
SECTION E-E



SECTION F-F
(Showing culvert tie details)



RESTRAINT ANGLE DETAIL



TIE PLATE DETAIL

TOEWALL CONSTRUCTION SEQUENCE

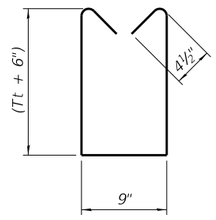
1. Perform excavation and construct toewall.
2. Backfill accordingly and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling method.

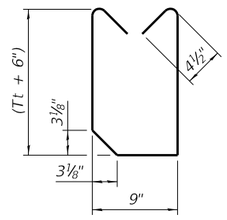
** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.

Notes:

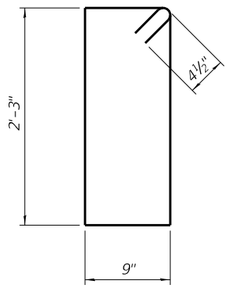
1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for the tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2¼"x2¼"x5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional ½ turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.



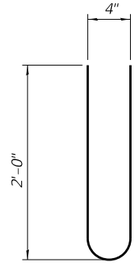
BAR s



BAR s1



BAR s2



BAR s3

DRAWING 4 OF 8

DATE = 5/5/2025		DESIGNED – MJS		REVISED –	
SCALE = 2.000 ' / in.		CHECKED – OS		REVISED –	
PROJECT NO = 23-R0646		DRAWN – MJS		REVISED –	
FILE NAME = THORN_DITCH_C2_004		CHECKED – OS		REVISED –	

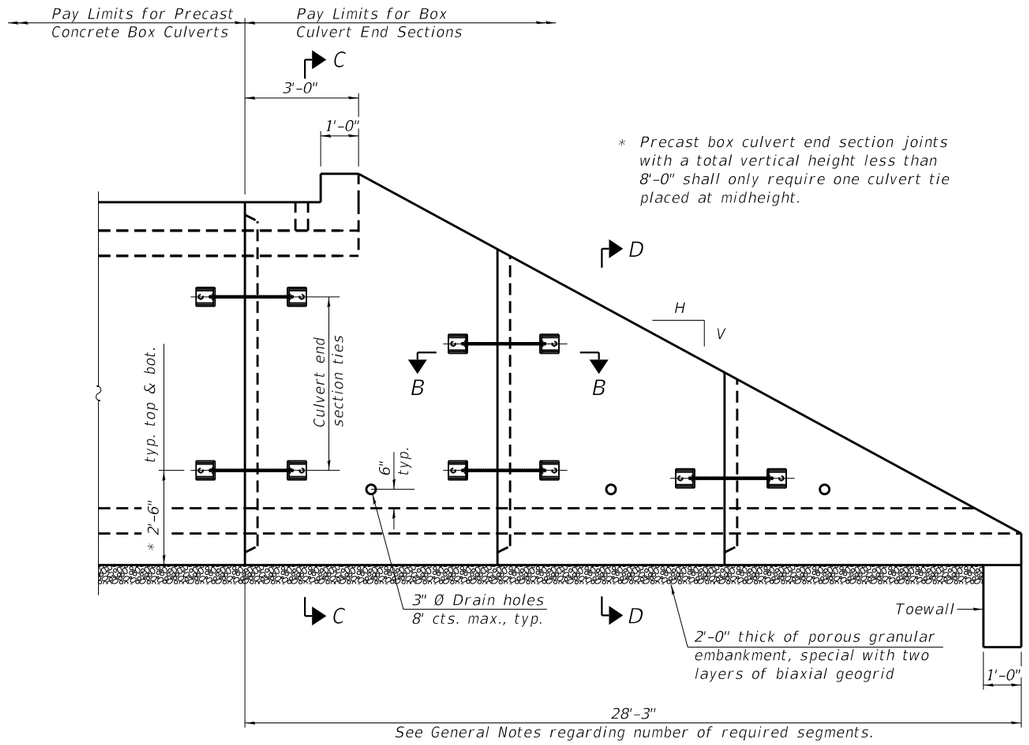
LAST SAVED BY: omahaban
PLOTTED BY: omahaban

TRANSYSTEMS

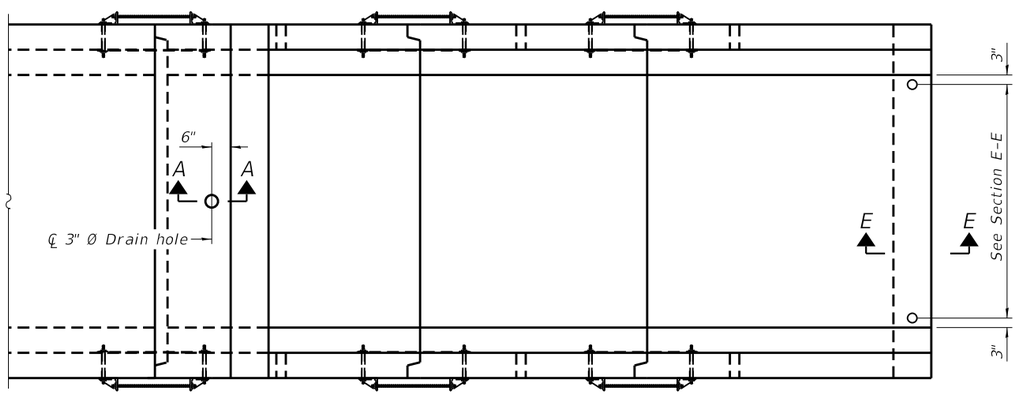
THORN DITCH
DRAINAGE IMPROVEMENTS
CULVERT 2 - BOX CULVERT END SECTION DETAILS 2

VILLAGE of SOUTH HOLLAND

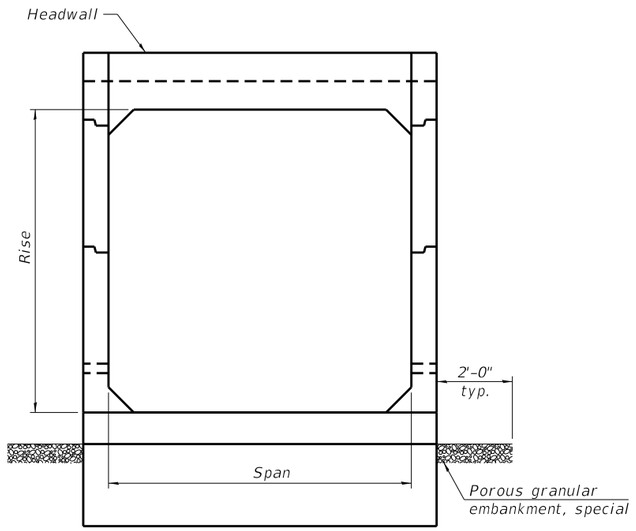
SHEET NO. 47 of 71



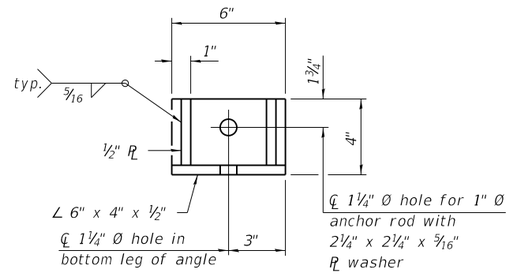
ELEVATION



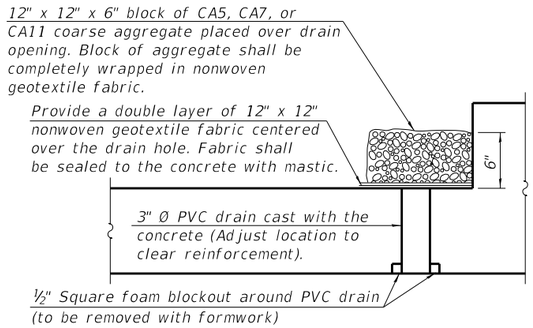
PLAN



END VIEW

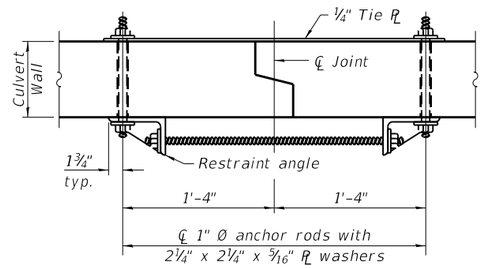


RESTRAINT ANGLE DETAIL



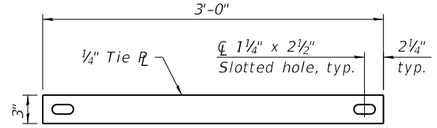
SECTION A-A

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



SECTION B-B

(Showing end section tie details)



TIE PLATE DETAIL

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. This work will be measured for payment as each, with each end of each culvert being one each. End sections will be paid for at the contract unit price per each for Box Culvert End Sections, Culvert No. 2.

Typical box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements of ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Number of segments shown in Elevation is for example only. Length and number of precast box sections required to construct Box Culvert End Sections shall be determined by the Contractor.

See roadway plans for embankment slope (V:H).

1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2¼" x 2¼" x 5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional ½ turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the contract unit price for Box Culvert End Sections, Culvert No. 2.

Drain holes shall conform to the requirements of Article 503.11 of the Standard Specifications unless noted otherwise.

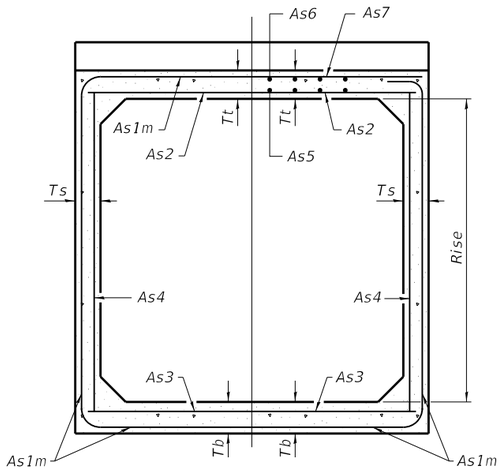
Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01. The minimum weight of the fabric shall be 6 oz. / sq. yd..

For end sections with traversable pipe grate systems, see grate detail sheet for required modifications.

DRAWING 5 OF 8

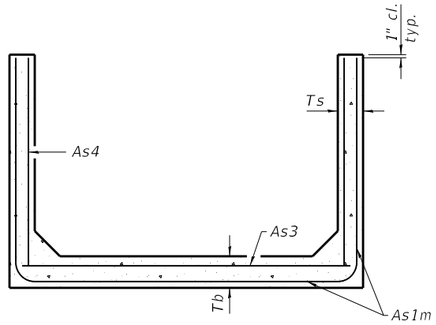
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 2 - PRECAST TAPERED END SECTION DETAILS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 48 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_005	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

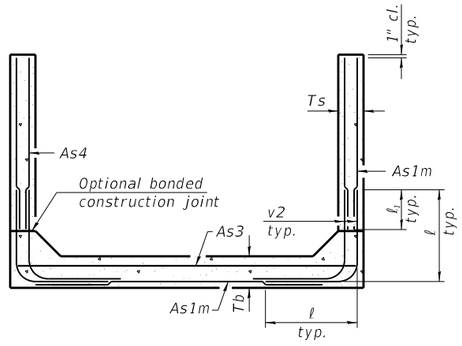


(Design Earth Cover ≥ 2 ft) (Design Earth Cover < 2 ft)

SECTION C–C



SECTION D–D



ALTERNATE SECTION D–D

As1m REINFORCEMENT

(in.²/ ft)

Ts (in.) \ Rise (ft)	2	3	4	5	6	7	8	9	10	11	12
8	0.40	0.35	0.43	0.39	0.36	0.34	0.40				

(As1m reinforcement based upon welded wire reinforcement conforming to AASHTO M 55 or M 221).

ℓ_1 DIMENSION

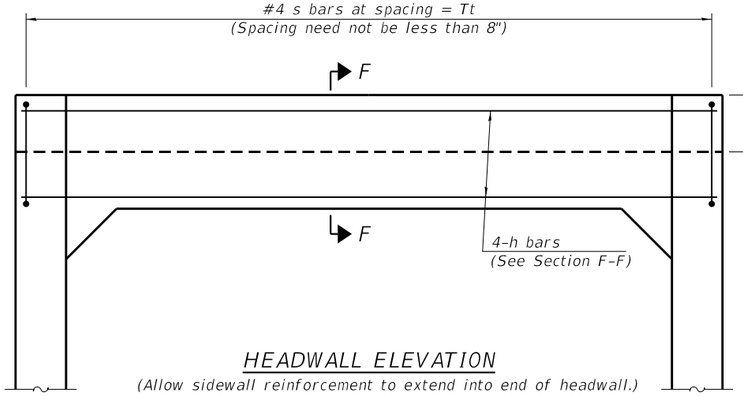
#3 bar = 2'–0"
#4 bar = 2'–8"
#5 bar = 3'–4"
#6 bar = 3'–11"

Notes:

Alternate Section D–D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D–D.

The size and spacing of the v2 bars shall provide a minimum reinforcement area along each face of the walls (in.²/ft.) equal to 1.10*(As1m). v2 bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.

Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.

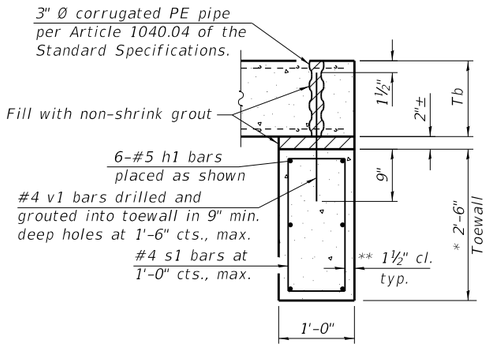


HEADWALL ELEVATION

(Allow sidewall reinforcement to extend into end of headwall.)

BAR s

BAR s1



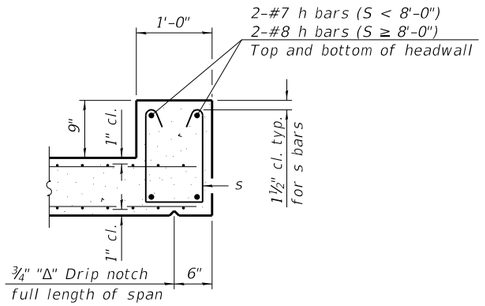
SECTION E–E

TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling the method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.

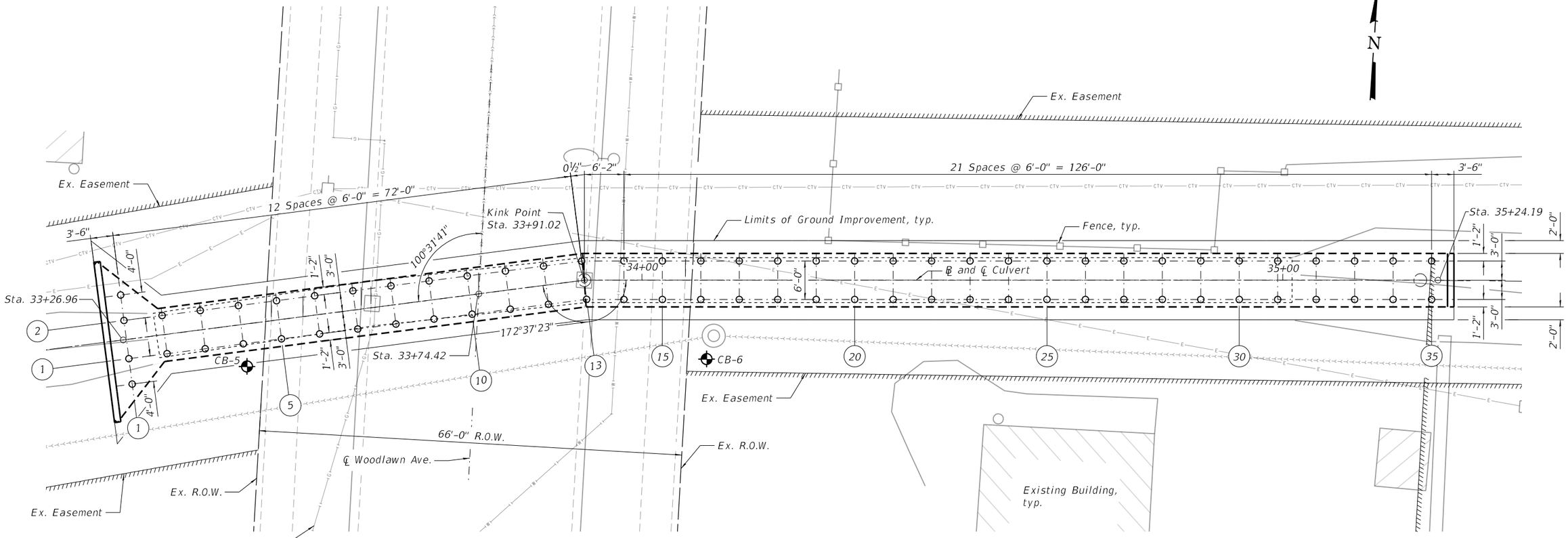


SECTION F–F

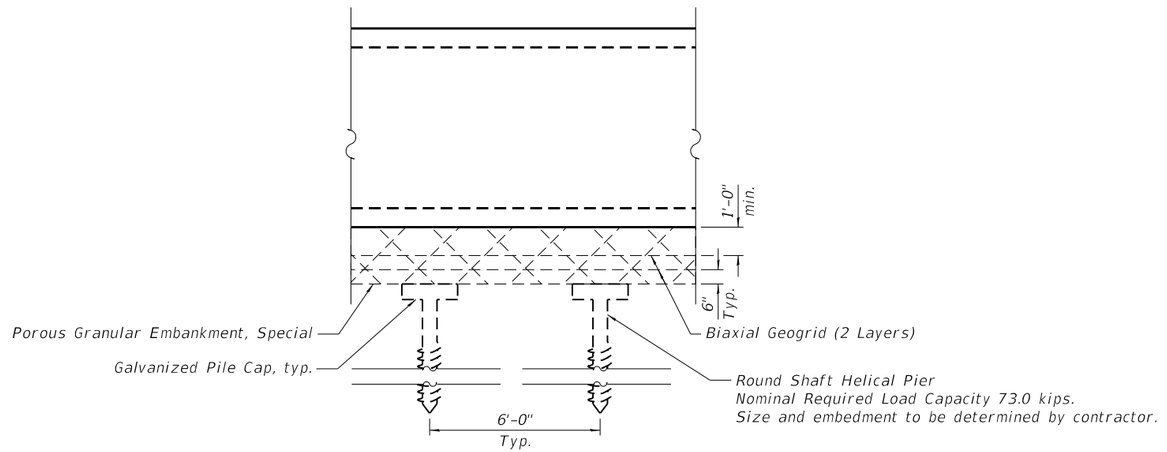
DRAWING 6 OF 8

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 2 - PRECAST TAPERED END SECTION DETAILS 2	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 49 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_006	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban



HELICAL PIER LAYOUT PLAN



TYPICAL SECTION THRU HELICAL PIER SUPPORTED EMBANKMENT AT 7' x 7' CONCRETE BOX CULVERT

LEGEND:

- ctv — Overhead Cable TV
- E — Overhead Electricity
- Underground Sanitary Sewer
- W — Underground Watermain
- G — Underground Gasline
- Underground Storm Sewer

Notes:
1. See Drawing 1 of 8 for the Elevation view of the Helical Pier Improvement.
2. Helical Pier Galvanized Pile Cap cost is included in the Helical Pier unit price.
3. Existing utilities shall be located prior to installing Helical Piers. Contractor shall mark any conflicts and submit revised layout to Engineer for approval.

DRAWING 7 OF 8

DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CIULVERT 2 - HELICAL PIER LAYOUT PLAN	VILLAGE of SOUTH HOLLAND
SCALE = 16.000 ' / in.	CHECKED – MDS	REVISED –			SHEET NO. 50 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_007	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-5

PAGE 1 OF 1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/19/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	594.7		4" TOPSOIL											
			brown SILTY CLAY hard	SS 1	72	4-4-5 (9)	4.0		18.2					
	592.0		brown and gray LEAN CLAY trace sand stiff	SS 2	67	2-3-4 (7)	1.75		27.5					
5	589.0		black, dark brown, and gray ORGANIC CLAY medium stiff to stiff	SS 3	44	2-1-2 (3)	1.25	1.2	40.8					
				SS 4	83	1-2-1 (3)	0.75		43.3					
10	584.0		gray LEAN CLAY medium stiff	SS 5	100	1-1-1 (2)	0.75	0.6	68.4			46	23	23
	582.0		dark gray and black ORGANIC CLAY very soft to soft	SS 6	100	1-1-1 (2)	0.5	0.4	49.6					
15				SS 7	83	WOH-1-1 (2)	0.25		80.6		9.0			
	577.0		gray LEAN CLAY very stiff to hard	SS 8	100	1-2-3 (5)	3.0	3.0	22.8					
20				SS 9	100	8-5-9 (14)	4.5+	5.2	17.9					
25	570.0			SS 10	100	4-5-7 (12)	4.5+	4.6	17.8					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 595 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 33+36.50 Offset 8.4 RT

Boring offset approximately 5 ft east due to overhead power lines.

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-6

PAGE 1 OF 1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/19/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	595.2		4" TOPSOIL											
			dark brown CLAY (FILL) trace topsoil very stiff	SS 1	67	3-4-4 (8)	3.75		20.6					
	592.5		black, brown, and gray LEAN CLAY trace organics stiff to very stiff	SS 2	72	3-3-3 (6)	2.0	2.0	32.4					
5				SS 3	56	2-2-3 (5)	2.0	2.2	26.8					
10			slight manure odor in SS4	SS 4	33	1-2-2 (4)	1.5	1.4	28.2					
				SS 5	33	2-2-3 (5)	1.0	1.1	27.1					
15				SS 6	67	2-2-3 (5)	1.0	1.0	15.9					
	579.5		dark gray and black ORGANIC LEAN CLAY medium stiff	SS 7	100	2-1-1 (2)	0.5	0.6	94.7		5.9			
	577.0		gray LEAN CLAY stiff to hard moist in SS8 and SS9	SS 8	78	WOH-2-3 (5)	1.0	1.0	27.2					
20				SS 9	89	2-3-5 (8)	1.0	1.1	26.0					
25	570.5			SS 10	100	4-5-8 (13)	4.5+	4.8	17.6					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 595.5 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING 23.50 ft / Elev 572.00 ft

AT END OF DRILLING 23.50 ft / Elev 572.00 ft

AFTER DRILLING ---

NOTES

STA 34+11.09 Offset 12.9 RT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

DRAWING 8 OF 8

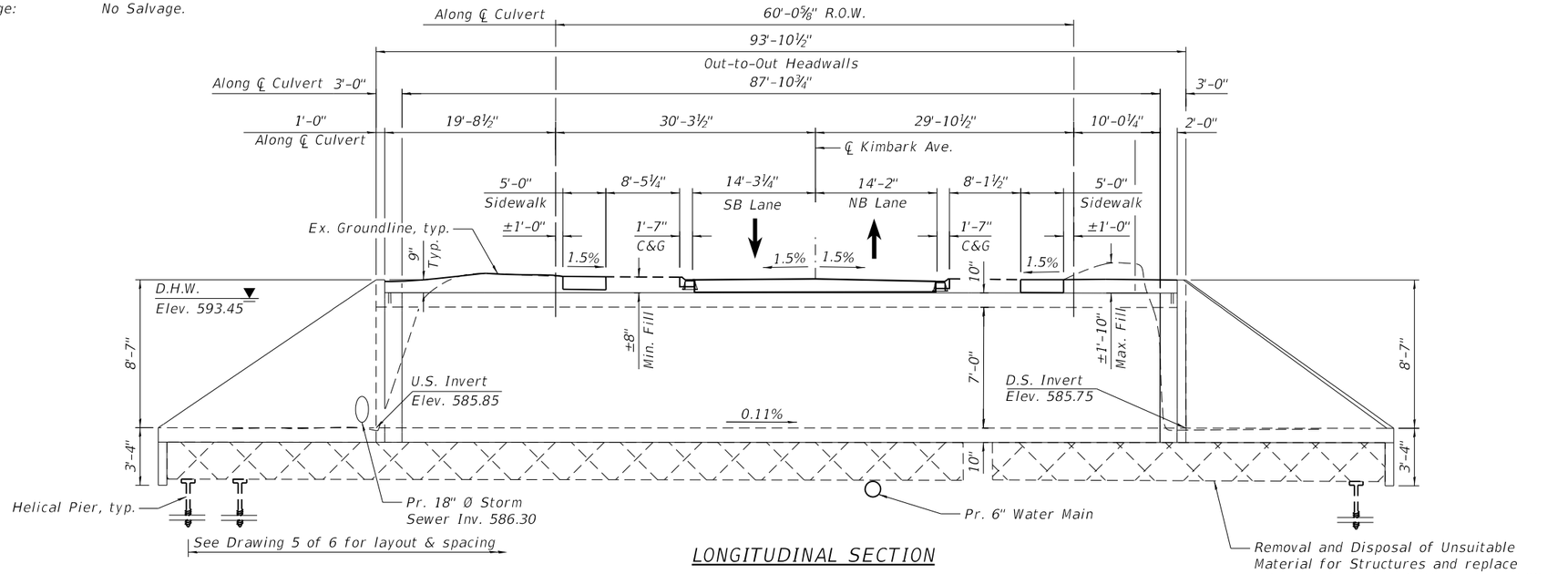
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 2 - SOIL BORING LOGS	VILLAGE of SOUTH HOLLAND
SCALE = 2,000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 51 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C2_008	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaon
PLOTTED BY: omahaon

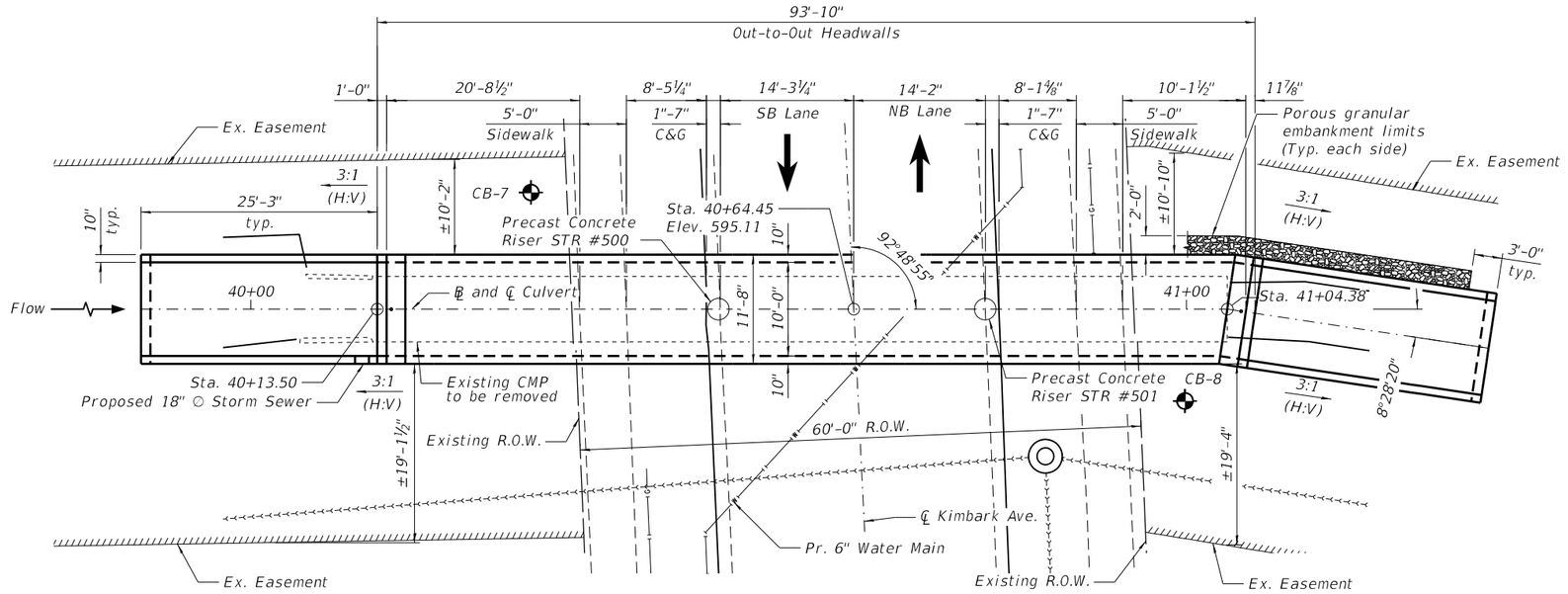
Bench Mark: Cross on top of Northwest flange bolt on top flange of hydrant on West side of Kimbark Avenue, 1st hydrant North of 165th Street. Elev.=597.51'

Existing Structure: The original culvert constructed at an unknown time before 1970 as a single 84" Ø CMP culvert. The existing structure is to be removed and replaced with a precast single box culvert 10'-0" wide by 7'-0" high and 91'-0" long. Traffic will be detoured during construction.

Salvage: No Salvage.



LONGITUDINAL SECTION



PLAN VIEW

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES

PRECAST UNITS

(New Construction)

f'c = 5,000 psi
fy = 65,000 psi (Welded Wire Reinforcement)

FIELD UNITS

(New Construction)

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

DESIGN SPECIFICATIONS

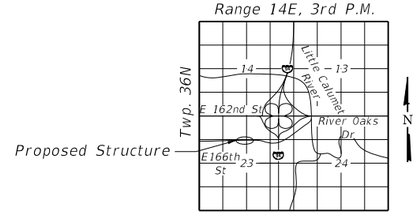
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

INDEX OF DRAWINGS

LEGEND:

Underground Sanitary Sewer
Underground Watermain
Underground Gasline

N



LOCATION SKETCH

DRAWING 1 OF 6

DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 3 - GENERAL PLAN AND ELEVATION	VILLAGE of SOUTH HOLLAND
SCALE = 16,000 ' / in.	CHECKED – MDS	REVISED –			SHEET NO. 52 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
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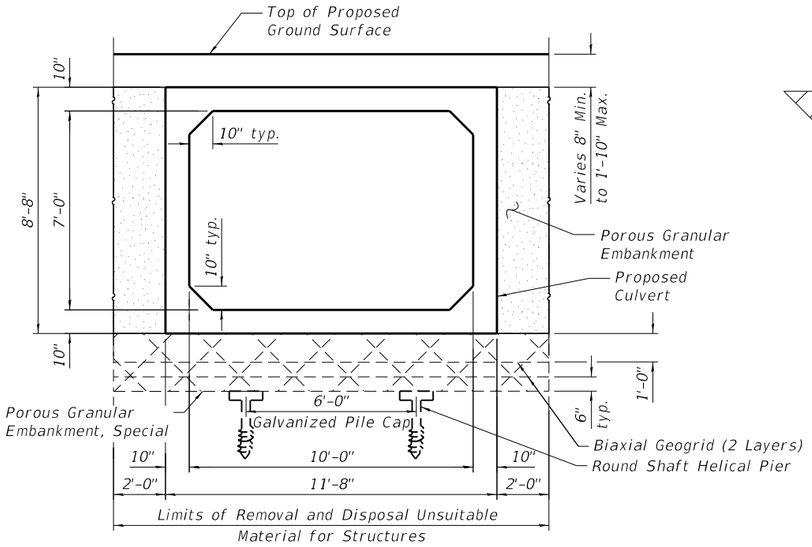
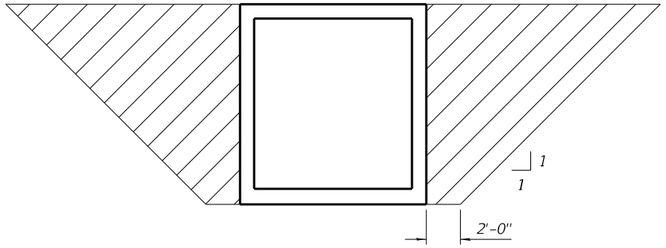
LAST SAVED BY: omshaban
PLOTTED BY: omshaban



SECTION THRU PRECAST BOX CULVERT

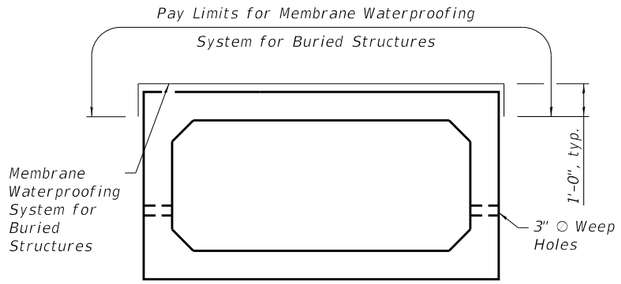


PAY LIMITS FOR POROUS GRANULAR EMBANKMENT

(Hatched area)

GENERAL NOTES

1. The design fill height for this box is shown on Section Thru Box Culvert. The precast box culvert sections shall conform to the requirements of ASTM C 1577.
2. Drain holes shall be provided on exterior culvert walls for each precast box segment. The drain hole shall be located within 1/3 of the clear rise of the box culvert, shall not intercept the haunch, and shall conform to the requirements of Article 503.11 of the Standard Specification.
3. Nonwoven geotextile fabric shall conform to the requirements of Art. 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.
4. Precast concrete box culverts and box culvert end sections shall be backfilled with Porous Granular Embankment in the required excavation areas on the sides of the box culvert from the top of the box culvert to the bottom of the box culvert. This area of PGE is included in the Porous Granular Embankment pay item. The 6-inch thick layer of porous granular material required under the precast concrete box culvert, according to Section 540.06 of the standard specifications, shall also apply to the end sections. Cost of this porous granular material will not be paid for separately but shall be included in the unit price of the work for which it is required.
5. The limits and quantities of Removal and Replacement of Unsuitable Materials for Structures shown are based on the boring data and may be modified by the Engineer for variable subsurface conditions encountered in the field.
6. The contractor shall be responsible to divert the stream flow during construction to keep construction area free of water. The method of the water diversion shall be subject to the approval of the engineer and the cost shall be included in the cost of Precast Concrete Box Culverts, 10'x7'.

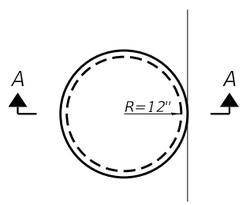


LIMITS OF MEMBRANE WATERPROOFING

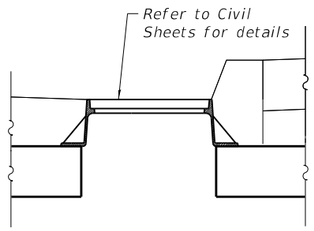
Longitudinal limits of membrane waterproofing for the precast concrete culvert are along the full length between headwalls

CULVERT CONSTRUCTION SEQUENCE

1. Close roadway to all traffic.
2. Divert water from construction area.
3. Perform removal of existing culvert.
4. Perform construction of replacement structure.
5. Open roadway to traffic.
6. Remove water diversion measures.



PRECAST CONCRETE RISER PLAN VIEW



SECTION A-A

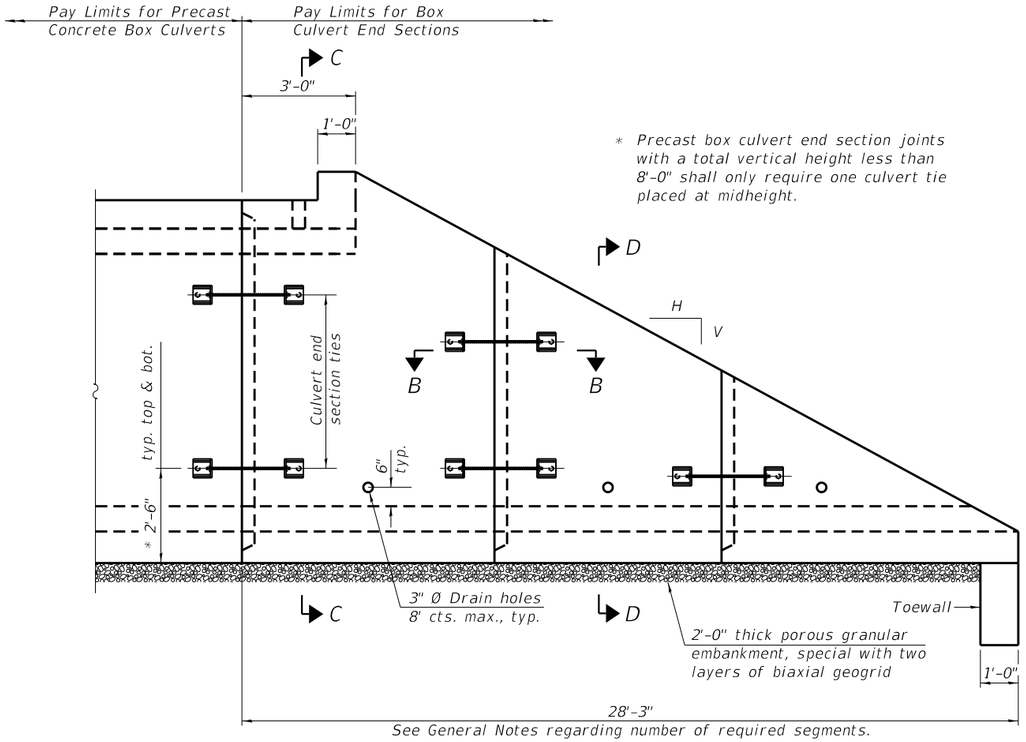
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Earth Excavation	Cu. Yd	455
Porous Granular Embankment	Cu. Yd	541
Removal of Existing Structures No. 3	Each	1
Structure Excavation	Cu. Yd	420
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd	185
Box Culvert End Sections, Culvert No. 3	Each	2
Membrane Waterproofing System for Buried Structures	Sq. Yd	143
Helical Pier	Each	48
Porous Granular Embankment, Special	Cu. Yd	183
Biaxial Geogrid	Sq. Yd	496
Precast Concrete Box Culverts, 10' x 7'	Foot	88

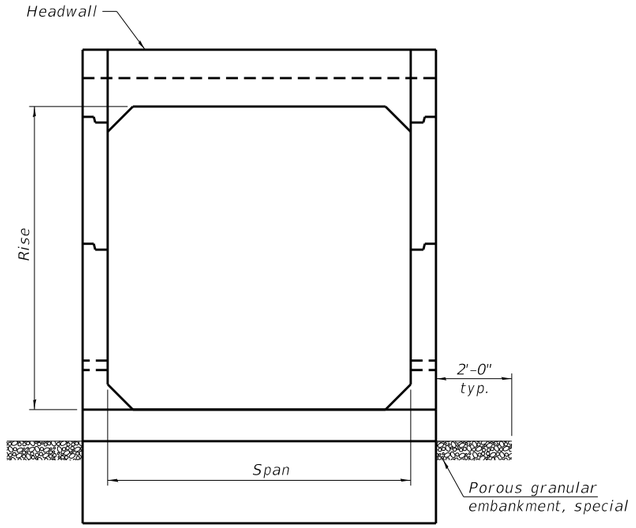
DRAWING 2 OF 6

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 3 - GENERAL DATA	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 53 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C3_002	CHECKED – OS	REVISED –			

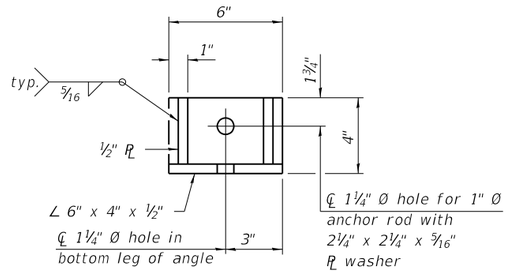
LAST SAVED BY: omshaban
PLOTTED BY: omshaban



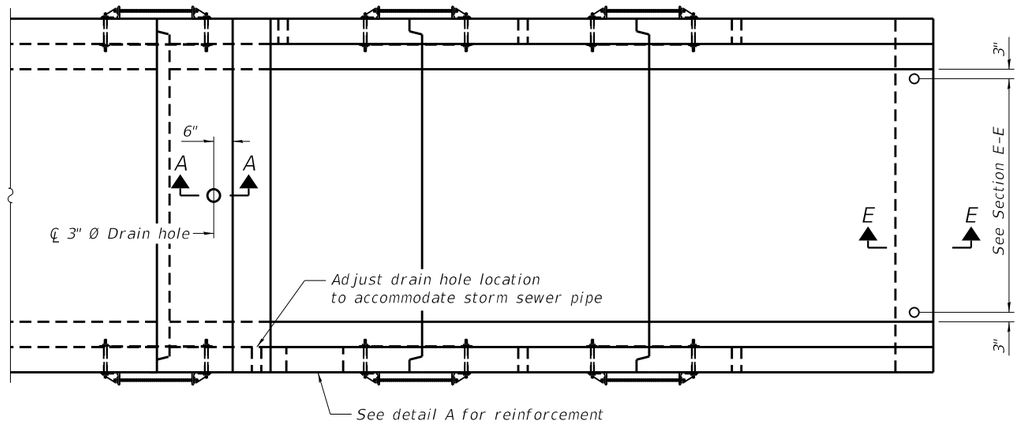
ELEVATION



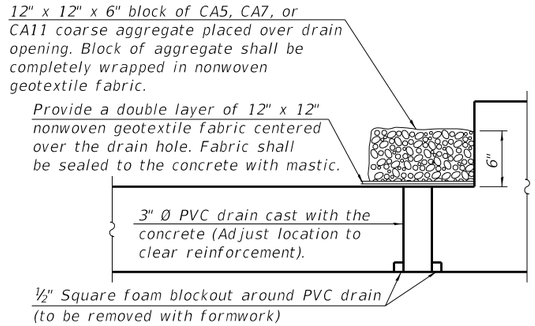
END VIEW



RESTRAINT ANGLE DETAIL

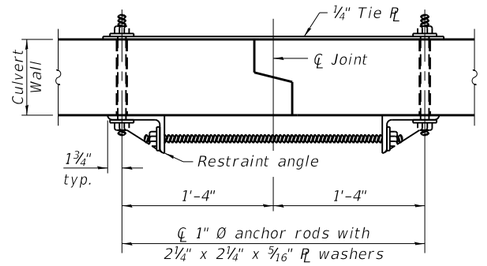


PLAN



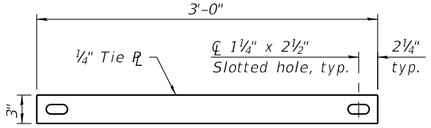
SECTION A-A

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



SECTION B-B

(Showing end section tie details)



TIE PLATE DETAIL

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. This work will be measured for payment as each, with each end of each culvert being one each. End sections will be paid for at the contract unit price per each for Box Culvert End Sections, Culvert No. 3.

Typical box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements of ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Number of segments shown in Elevation is for example only. Length and number of precast box sections required to construct Box Culvert End Sections shall be determined by the Contractor.

See roadway plans for embankment slope (V:H).

1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2¼" x 2¼" x 5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional ½ turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the contract unit price for Box Culvert End Sections, Culvert No. 3.

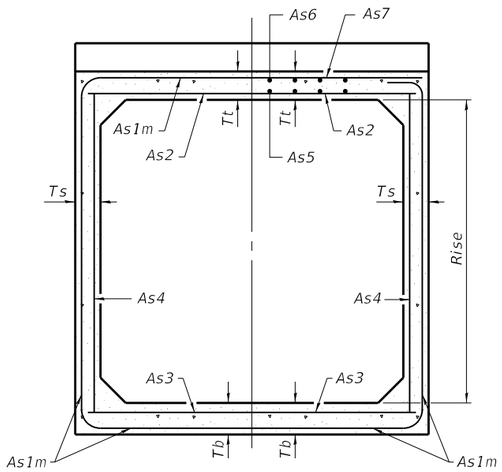
Drain holes shall conform to the requirements of Article 503.11 of the Standard Specifications unless noted otherwise.

Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01. The minimum weight of the fabric shall be 6 oz. / sq. yd..

For end sections with traversable pipe grate systems, see grate detail sheet for required modifications.

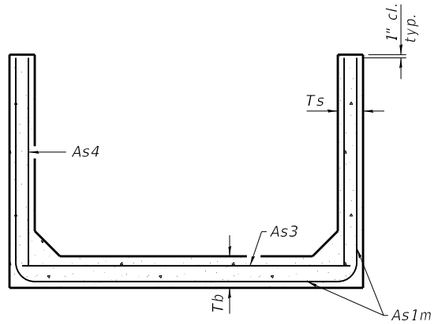
DRAWING 3 OF 6

LAST SAVED BY: omahaban PLOTTED BY: omahaban	DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 3 - PRECAST TAPERED END SECTION DETAILS 1	VILLAGE of SOUTH HOLLAND	SHEET NO. 54 of 71
	SCALE = 2,000 ' / in.	CHECKED – OS	REVISED –				
	PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –				
	FILE NAME = THORN_DITCH_C3_003	CHECKED – OS	REVISED –				

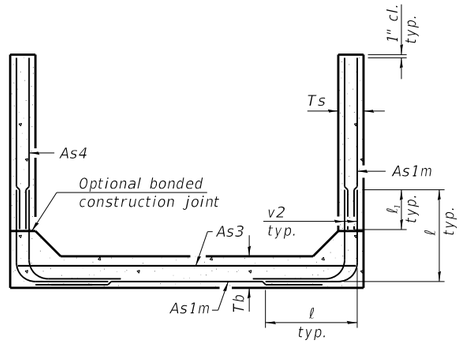


(Design Earth Cover ≥ 2 ft) (Design Earth Cover < 2 ft)

SECTION C–C



SECTION D–D



ALTERNATE SECTION D–D

As1m REINFORCEMENT
(in.²/ ft)

Ts (in.) \ Rise (ft)	2	3	4	5	6	7	8	9	10	11	12
10	0.48	0.42	0.38	0.47	0.44	0.41	0.38	0.42	0.56		

(As1m reinforcement based upon welded wire reinforcement conforming to AASHTO M 55 or M 221).

ℓ_1 DIMENSION

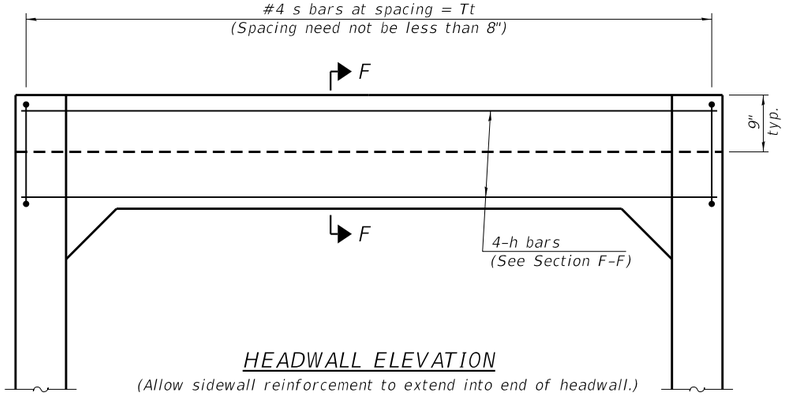
#3 bar = 2'–0"
#4 bar = 2'–8"
#5 bar = 3'–4"
#6 bar = 3'–11"

Notes:

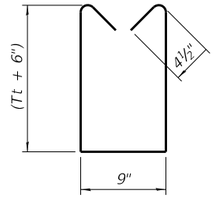
Alternate Section D–D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D–D.

The size and spacing of the v2 bars shall provide a minimum reinforcement area along each face of the walls (in.²/ft.) equal to 1.10*(As1m). v2 bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.

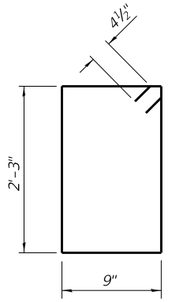
Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.



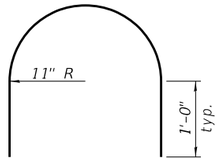
HEADWALL ELEVATION
(Allow sidewall reinforcement to extend into end of headwall.)



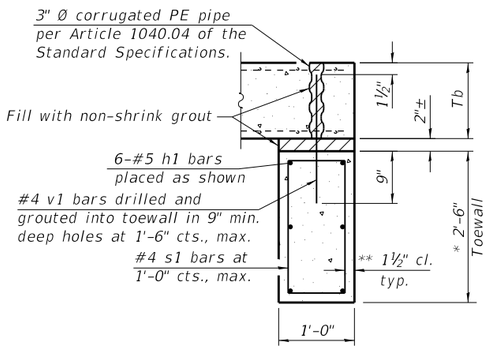
BAR s



BAR s1



BAR s2



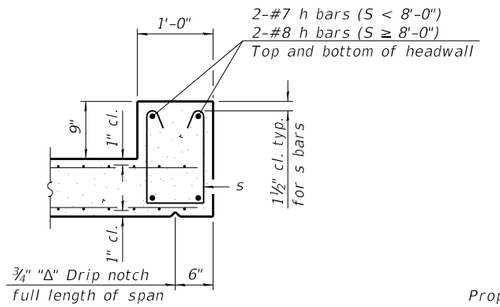
SECTION E–E

TOEWALL CONSTRUCTION SEQUENCE

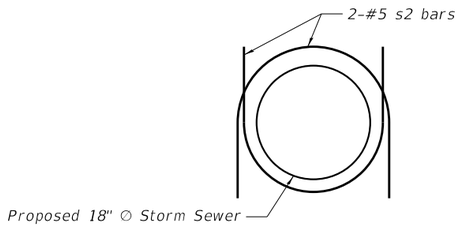
1. Perform excavation and construct toewall.
2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling the method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.



SECTION F–F



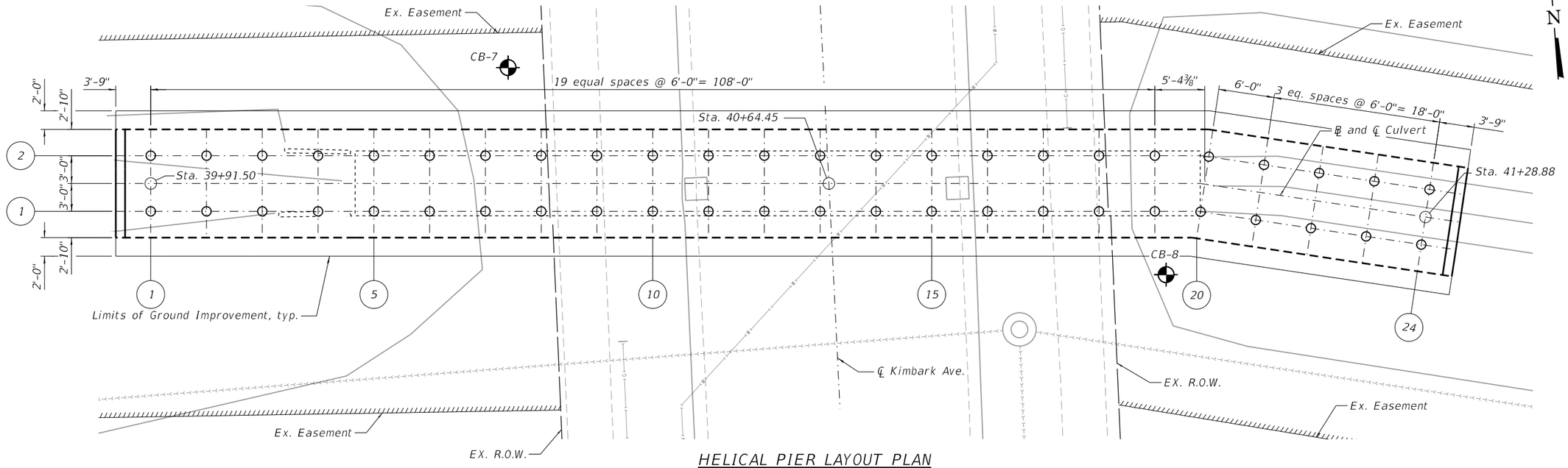
DETAIL A

DRAWING 4 OF 6

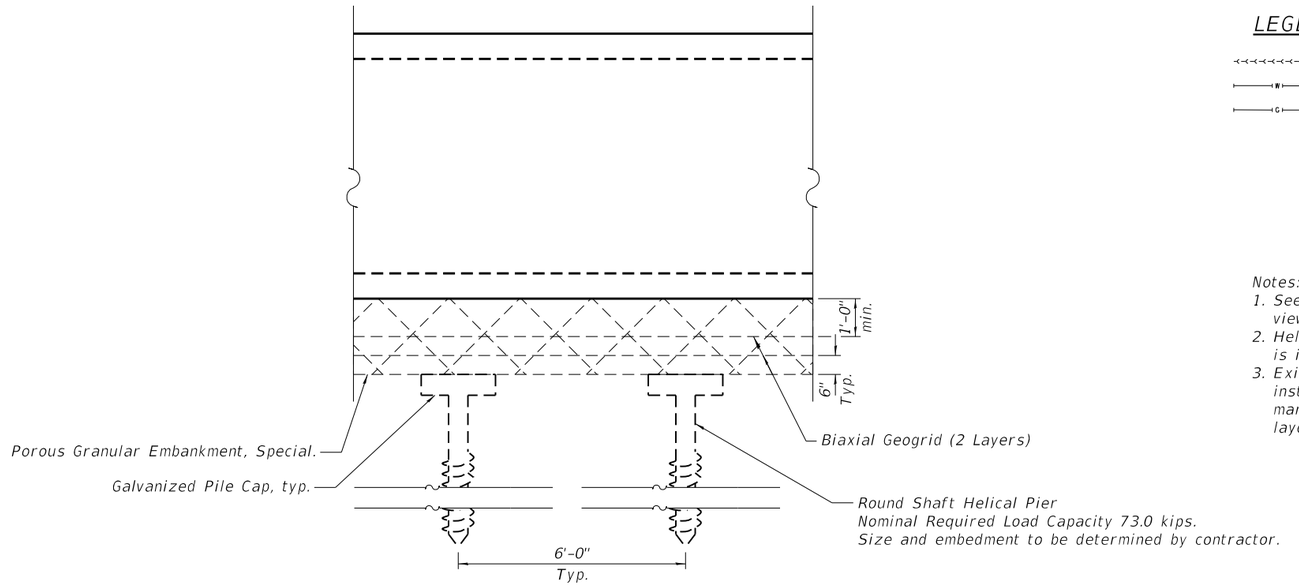
LAST SAVED BY: omshaban PLOTTED BY: omshaban	DATE = 5/5/2025 SCALE = 2.000 ' / in. PROJECT NO = 23-R0646 FILE NAME = THORN_DITCH_C3_004	DESIGNED – MJS CHECKED – OS DRAWN – MJS CHECKED – OS	REVISED – REVISED – REVISED – REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 3 - PRECAST TAPERED END SECTION DETAILS 2

VILLAGE of SOUTH HOLLAND

SHEET NO. 55 of 71



HELICAL PIER LAYOUT PLAN



TYPICAL SECTION THRU HELICAL PIER SUPPORTED EMBANKMENT AT 10' x 7' CONCRETE BOX CULVERT

LEGEND:

- Underground Sanitary Sewer
- Underground Watermain
- Underground Gasline

Notes:
1. See Drawing 1 of 6 for the Elevation view of the Helical Pier Improvement.
2. Helical Pier Galvanized Pile Cap cost is included in the Helical Pier unit price.
3. Existing utilities shall be located prior to installing Helical Piers. Contractor shall mark any conflicts and submit revised layout to Engineer for approval.

DRAWING 5 OF 6

LAST SAVED BY: omahaban PLOTTED BY: omahaban	DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 3 - HELICAL PIER LAYOUT PLAN
	SCALE = 12.000 ' / in.	CHECKED – MDS	REVISED –		VILLAGE of SOUTH HOLLAND
	PROJECT NO = 23-R0646	DRAWN – OS	REVISED –		SHEET NO. 56 of 71
	FILE NAME = THORN_DITCH_C3_005	CHECKED – MDS	REVISED –		

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORN

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-7

PAGE 1 OF 1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/18/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	594.4		4" TOPSOIL											
			dark brown CLAY (FILL) trace gravel stiff	SS 1	44	3-3-3 (6)	1.5		19.7					
	591.7		brown SILTY CLAY stiff											
5				SS 2	61	2-3-2 (5)	1.5		21.0					
	588.7		black LEAN CLAY trace organics very stiff	SS 3	67	2-3-5 (8)	2.0	2.1	35.0					
	586.2		brown and gray LEAN CLAY stiff											
10				SS 4	83	2-1-3 (4)	1.75	1.8	30.2					
	583.7		gray FAT CLAY very soft to stiff											
				SS 5	100	1-2-1 (3)	0.5	0.6	58.3					
				SS 6	100	1-1-1 (2)	0.75	0.8	66.5					
15				SS 7	100	1-1-1 (2)	0.25	0.3	74.0		5.0			
			with shells in SS7 and SS8											
				SS 8	100	1-1-1 (2)	1.25	1.1	70.1					
20	573.7		gray LEAN CLAY stiff to hard											
				SS 9	100	1-2-2 (4)	1.25	1.1	27.2					
			moist in SS9											
25	569.7			SS 10	89	3-6-8 (14)	4.5+	6.8	18.7					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 594.7 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 40+27.15 Offset 11.4 LT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORN

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-8

PAGE 1 OF 1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/18/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	593.4		4" TOPSOIL											
			brown SILTY CLAY very stiff	SS 1	44	3-5-5 (10)	2.0		17.3					
5				SS 2	56	3-5-6 (11)	3.75		17.4					
	587.7		dark brown and gray LEAN CLAY trace sand very stiff	SS 3	56	3-3-5 (8)	3.0		27.3					
	585.2		gray and black LEAN CLAY stiff											
10				SS 4	67	2-2-3 (5)	1.75	1.6	27.3					
	582.7		dark gray FAT CLAY medium stiff, moist											
				SS 5	100	1-1-1 (2)	0.5	0.6	51.1					
				SS 6	100	WOH-1-1 (2)	0.75	0.8	67.7		3.6			
15	577.7		black and gray ORGANIC SILT trace shells very loose											
				SS 7	100	1-1-1 (2)			78.8			63	48	15
				SS 8	100	WOH-1-1 (2)			74.6		7.3			
20	572.7		gray LEAN CLAY very soft to hard											
				SS 9	100	WOH-1-2 (3)	<0.25		25.1					
			very moist in SS9											
25	568.7			SS 10	100	3-6-9 (15)	4.5+	6.0	20.8					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 593.7 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING 21.00 ft / Elev 572.70 ft

AT END OF DRILLING 21.00 ft / Elev 572.70 ft

AFTER DRILLING ---

NOTES

STA 41+00.29 Offset 10.9 RT

Boring offset approximately 5 ft west due to overhead trees.

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

DRAWING 6 OF 6

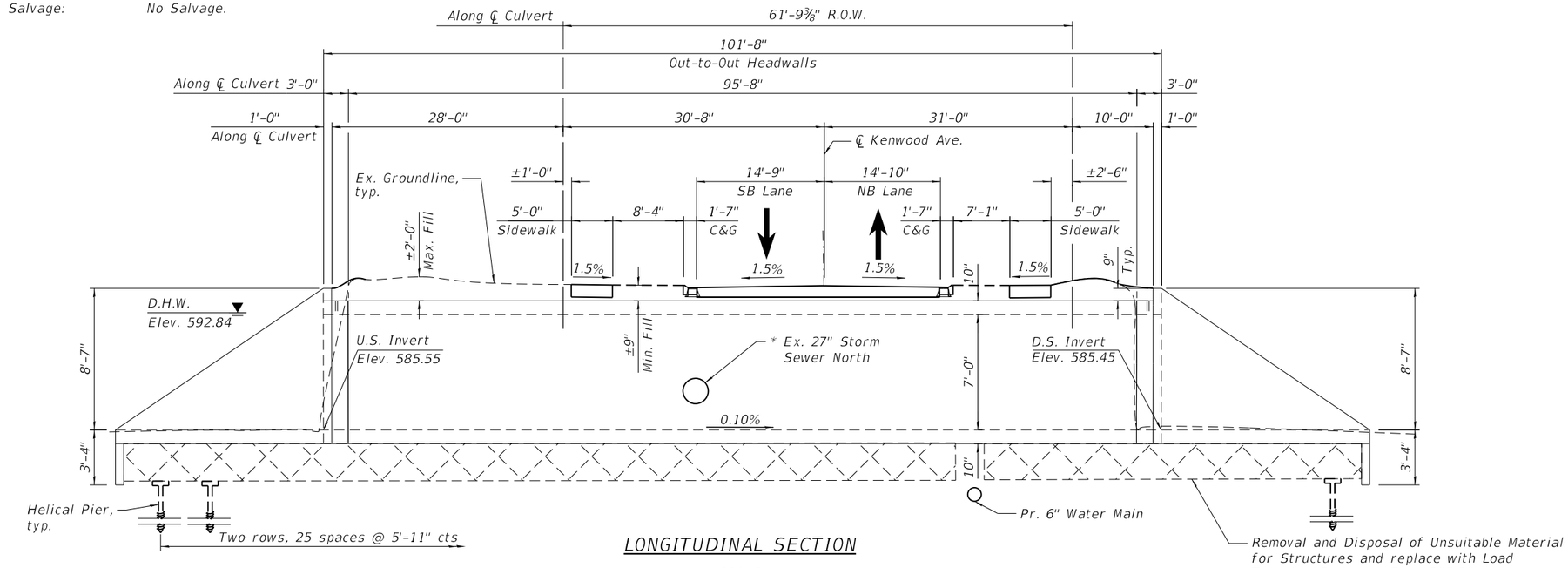
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 3 - SOIL BORING LOGS	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 57 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C3_006	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaon
PLOTTED BY: omahaon

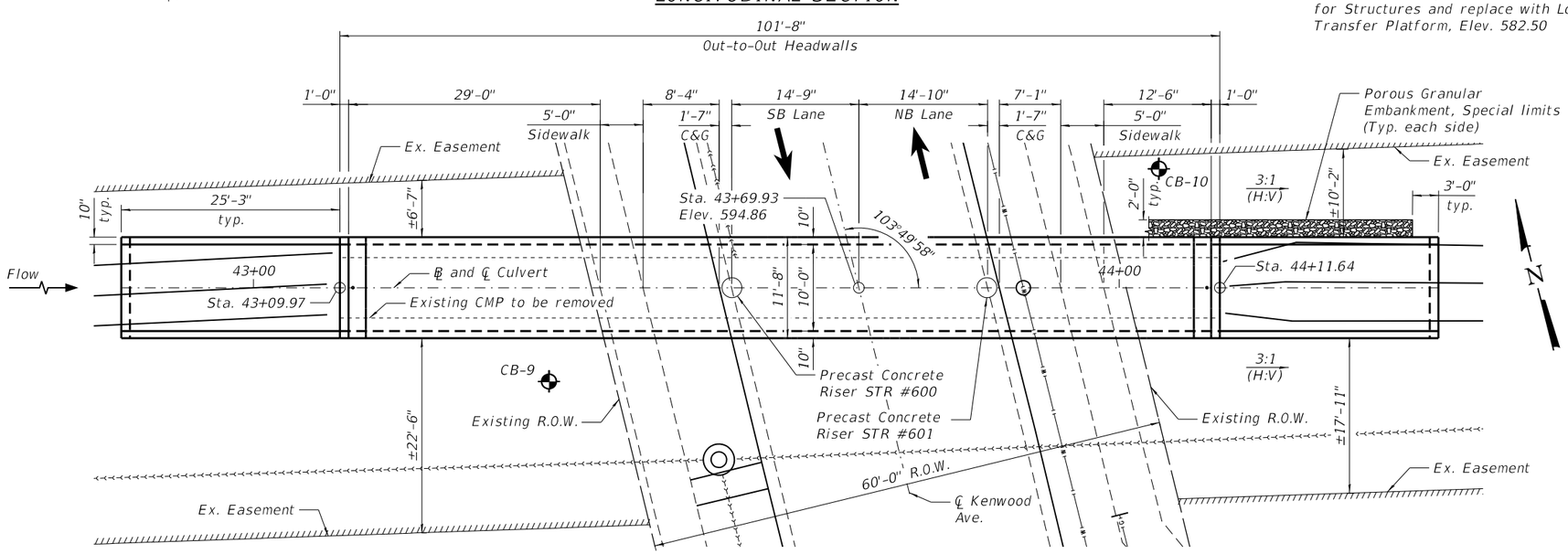
Bench Mark: Cross on top of Southwest corner of concrete base for aluminum light pole on East side Kenwood Avenue, in front of residence 16443. Elev.=595.26'

Existing Structure: The original culvert was constructed at an unknown time before 1970 as a single 84" Ø CMP culvert. The existing structure is to be removed and replaced with a precast single box culvert 10'-0" wide by 7'-0" high and 101'-8" long. Traffic will be detoured during construction.

Salvage: No Salvage.



LONGITUDINAL SECTION



PLAN VIEW

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES

PRECAST UNITS

(New Construction)

f'c = 5,000 psi
fy = 65,000 psi (Welded Wire Reinforcement)

FIELD UNITS

(New Construction)

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

DESIGN SPECIFICATIONS

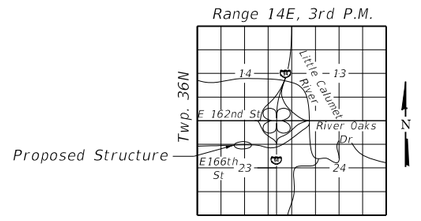
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

INDEX OF DRAWINGS

*Connection to proposed Precast Box Culvert paid as Connection to Existing Sewer. Contractor to pothole existing storm sewer to confirm existing invert and outside diameter, work paid as Exploration Trench 84" Depth.

LEGEND:

- Underground Sanitary Sewer
- Underground Watermain
- Underground Gasline
- Underground Storm Sewer



LOCATION SKETCH

DRAWING 1 OF 6

LAST SAVED BY: omahaban PLOTTED BY: omahaban	DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 4 - GENERAL PLAN AND ELEVATION
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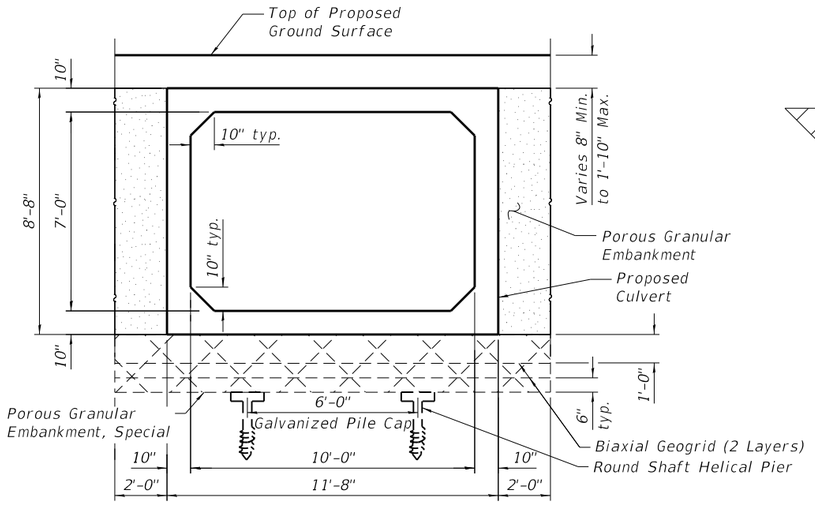
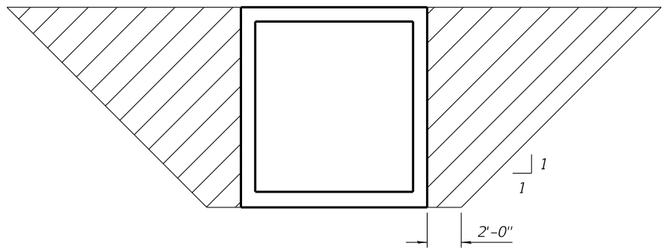
	PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –		SHEET NO. 58 of 71
	FILE NAME = THORN_DITCH_C4_001	CHECKED – OS	REVISED –		



SECTION THRU PRECAST BOX CULVERT



PAY LIMITS FOR POROUS GRANULAR EMBANKMENT

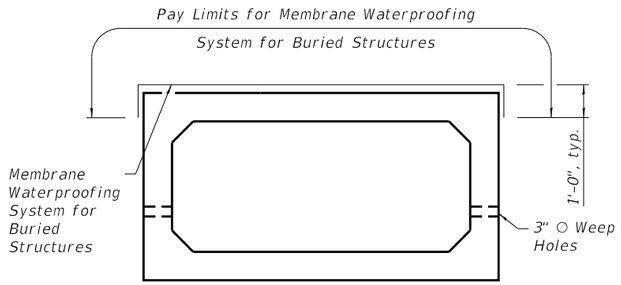
(Hatched area)

GENERAL NOTES

1. The design fill height for this box is shown on Section Thru Box Culvert. The precast box culvert sections shall conform to the requirements of ASTM C 1577.
2. Drain holes shall be provided on exterior culvert walls for each precast box segment. The drain hole shall be located within 1/3 of the clear rise of the box culvert, shall not intercept the haunch, and shall conform to the requirements of Article 503.11 of the Standard Specification.
3. Nonwoven geotextile fabric shall conform to the requirements of Art. 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.
4. Precast concrete box culverts and box culvert end sections shall be backfilled with Porous Granular Embankment in the required excavation areas on the sides of the box culvert from the top of the box culvert to the bottom of the box culvert. This area of PGE is included in the Porous Granular Embankment pay item. The 6-inch thick layer of porous granular material required under the precast concrete box culvert, according to Section 540.06 of the standard specifications, shall also apply to the end sections. Cost of this porous granular material will not be paid for separately but shall be included in the unit price of the work for which it is required.
5. The limits and quantities of Removal and Replacement of Unsuitable Materials for Structures shown are based on the boring data and may be modified by the Engineer for variable subsurface conditions encountered in the field.
6. The contractor shall be responsible to divert the stream flow during construction to keep construction area free of water. The method of the water diversion shall be subject to the approval of the engineer and the cost shall be included in the cost of Precast Concrete Box Culverts, 10'x7'.

CULVERT CONSTRUCTION SEQUENCE

1. Close roadway to all traffic.
2. Divert water from construction area.
3. Perform removal of existing culvert.
4. Perform construction of replacement structure.
5. Open roadway to traffic.
6. Remove water diversion measures.

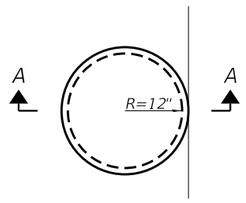


LIMITS OF MEMBRANE WATERPROOFING

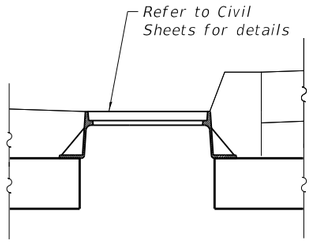
Longitudinal limits of membrane waterproofing for the precast concrete culvert are along the full length between headwalls

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Earth Excavation	Cu. Yd	415
Porous Granular Embankment	Cu. Yd	585
Removal of Existing Structures No. 4	Each	1
Structure Excavation	Cu. Yd	450
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd	192
Box Culvert End Sections, Culvert No. 3	Each	2
Membrane Waterproofing System for Buried Structures	Sq. Yd	155
Helical Pier	Each	52
Porous Granular Embankment, Special	Cu. Yd	189
Biaxial Geogrid	Sq. Yd	523
Precast Concrete Box Culverts, 10' x 7'	Foot	96



PRECAST CONCRETE RISER PLAN VIEW

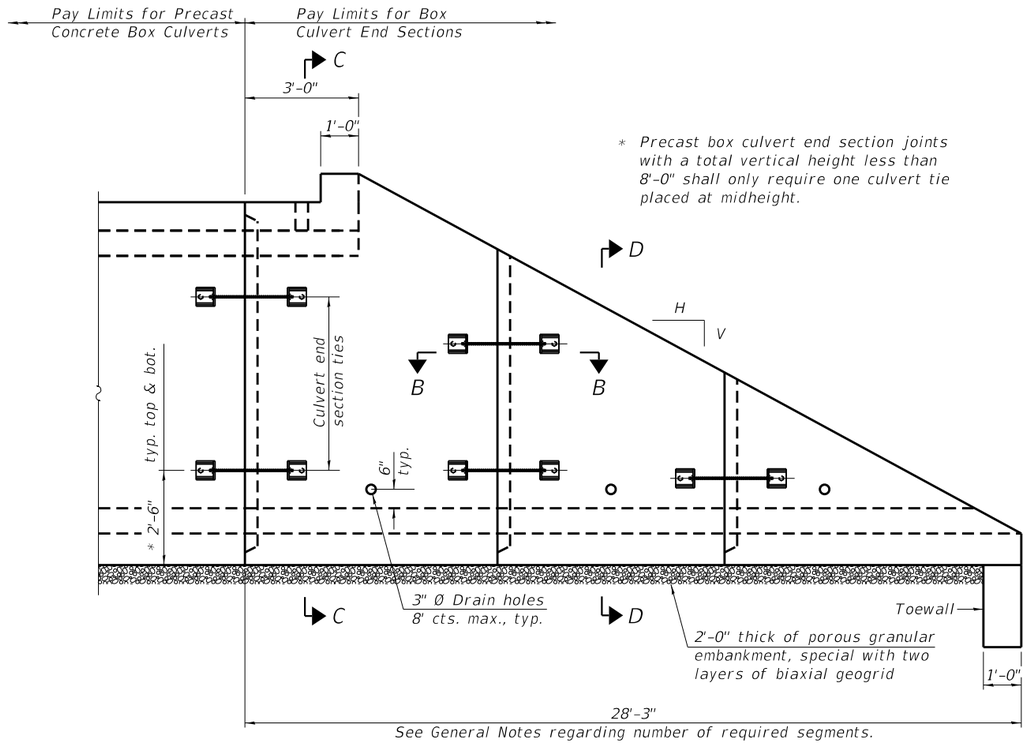


SECTION A-A

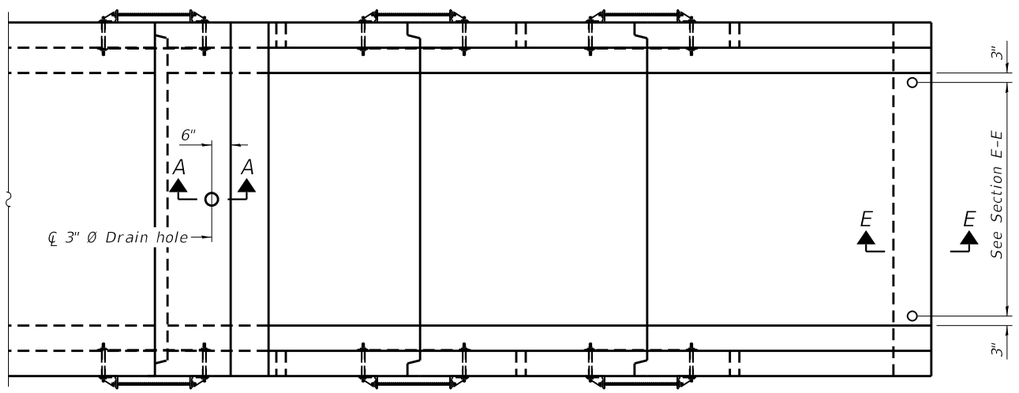
DRAWING 2 OF 6

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 4 - GENERAL DATA	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 59 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C4_002	CHECKED – OS	REVISED –			

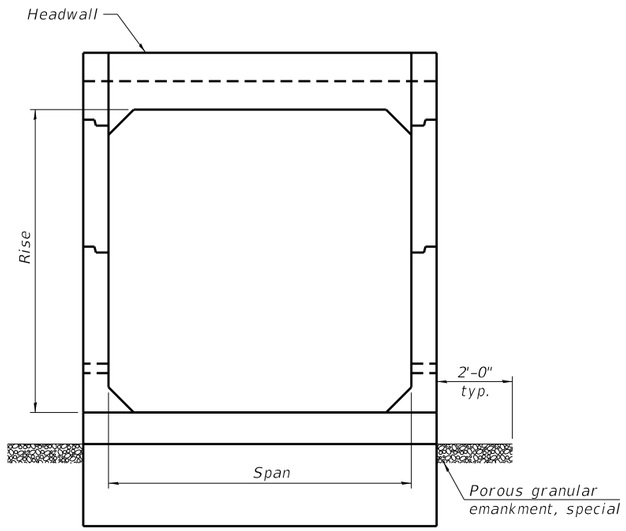
LAST SAVED BY: omshaban
PLOTTED BY: omshaban



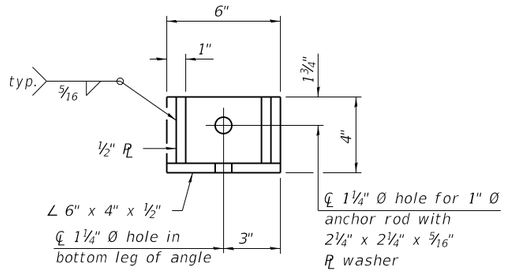
ELEVATION



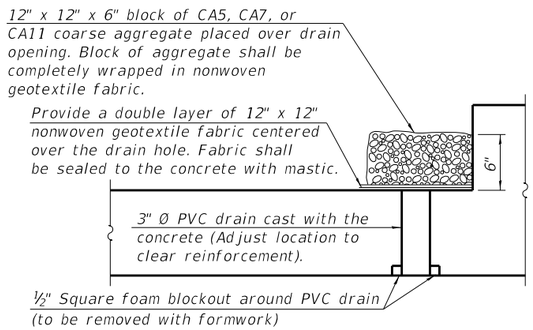
PLAN



END VIEW

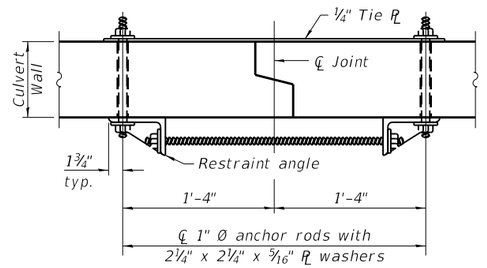


RESTRAINT ANGLE DETAIL



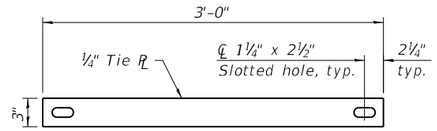
SECTION A-A

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)



SECTION B-B

(Showing end section tie details)



TIE PLATE DETAIL

GENERAL NOTES

Box Culvert End Sections shall be constructed according to the requirements of Section 540 of the Standard Specifications except as modified herein. This work will be measured for payment as each, with each end of each culvert being one each. End sections will be paid for at the contract unit price per each for Box Culvert End Sections, Culvert No. 4.

Typical box section dimensions, materials, and reinforcement details for Box Culvert End Sections shall be according to the requirements of ASTM C 1577 as required for the design of the portion of the culvert within the limits of Precast Concrete Box Culverts except as modified herein.

Number of segments shown in Elevation is for example only. Length and number of precast box sections required to construct Box Culvert End Sections shall be determined by the Contractor.

See roadway plans for embankment slope (V:H).

1" Ø anchor rods for the culvert ties shall conform to the requirements of ASTM F1554, Grade 105. Structural steel for tie plate and restraint angle shall conform to the requirements of Article 1006.04 of the Standard Specifications. All components of the culvert tie detail shall be galvanized according to the requirements of AASHTO M 111 or M 232 as applicable. 2¼" x 2¼" x 5/16" plate washers shall be provided under each nut required for the anchor rods. Anchor rods connecting precast sections shall be brought to a snug tight condition followed by an additional ½ turn on one of the nuts for anchor rods installed in the walls. Match marks shall be provided on the bolt and nut to verify relative rotation between the bolt and the nut. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of using formed holes.

All costs associated with furnishing and installing or constructing the toewall and culvert ties will not be measured for payment but shall be included in the contract unit price for Box Culvert End Sections, Culvert No. 4.

Drain holes shall conform to the requirements of Article 503.11 of the Standard Specifications unless noted otherwise.

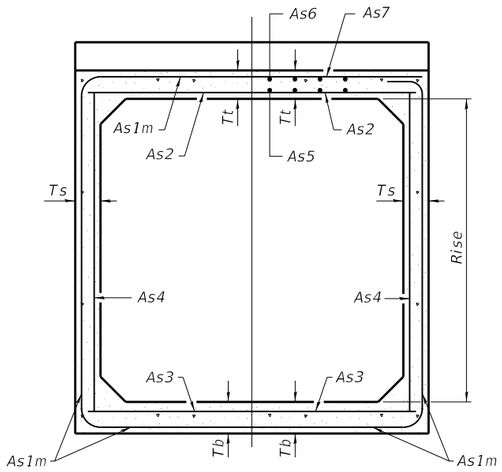
Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01. The minimum weight of the fabric shall be 6 oz. / sq. yd..

For end sections with traversable pipe grate systems, see grate detail sheet for required modifications.

DRAWING 3 OF 6

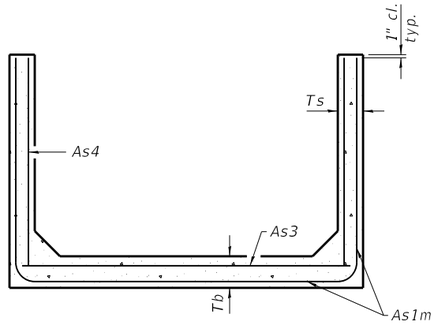
DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 4 - PRECAST TAPERED END SECTION DETAILS 1	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 60 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C4_003	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaban
PLOTTED BY: omahaban

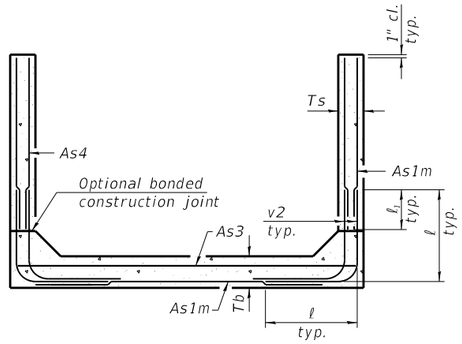


(Design Earth Cover ≥ 2 ft) (Design Earth Cover < 2 ft)

SECTION C–C



SECTION D–D



ALTERNATE SECTION D–D

As1m REINFORCEMENT
(in.²/ ft)

Ts (in.) \ Rise (ft)	2	3	4	5	6	7	8	9	10	11	12
10	0.48	0.42	0.38	0.47	0.44	0.41	0.38	0.42	0.56		

(As1m reinforcement based upon welded wire reinforcement conforming to AASHTO M 55 or M 221).

ℓ_1 DIMENSION

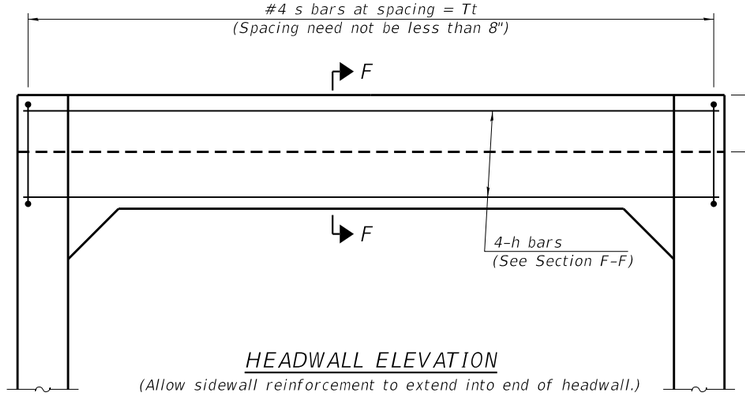
#3 bar = 2'–0"
#4 bar = 2'–8"
#5 bar = 3'–4"
#6 bar = 3'–11"

Notes:

Alternate Section D–D is provided to allow the Contractor the option of casting the bottom slab of the end section first followed by construction of the sidewalls using conventional forming methods. Shop drawings that detail slab thickness and reinforcement layout shall be submitted to the Engineer for review and approval when using Alternate Section D–D.

The size and spacing of the v2 bars shall provide a minimum reinforcement area along each face of the walls (in.²/ft.) equal to 1.10*(As1m). v2 bars may consist of #3 thru #6 size reinforcement bars and the longitudinal spacing shall not exceed the lesser of the wall thickness or 8 inches.

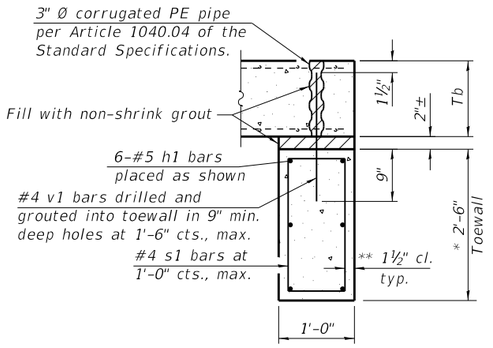
Bonded construction joints shall be prepared according to Article 503.09 of the Standard Specifications.



HEADWALL ELEVATION
(Allow sidewall reinforcement to extend into end of headwall.)

BAR s

BAR s1



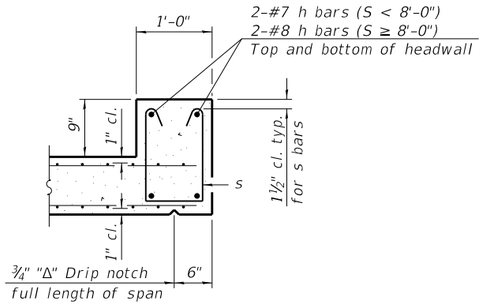
SECTION E–E

TOEWALL CONSTRUCTION SEQUENCE

1. Perform excavation and construct toewall.
2. Backfill according to the applicable paragraphs of Article 502.10 of the Standard Specifications and place bedding for precast box culvert end sections.
3. Set precast box culvert end section.
4. Drill and epoxy grout reinforcement in toewall in accordance with Section 584 of the Standard Specifications.
5. Pressure grout voids using non-shrink grout conforming to Section 1024 of the Standard Specifications.

* The Contractor may furnish a precast or cast-in-place toewall. The Contractor shall be responsible for the strength and stability of the precast toewall during handling. Additional lifting points may be required depending upon the length of the toewall or the Contractor may need to modify the design of the toewall for the proposed handling the method.

** If soil conditions permit, the sides of the toewall may be poured directly against the soil. The clear cover on the sides of the toewall shall be increased to 3" by increasing the thickness of the toewall.

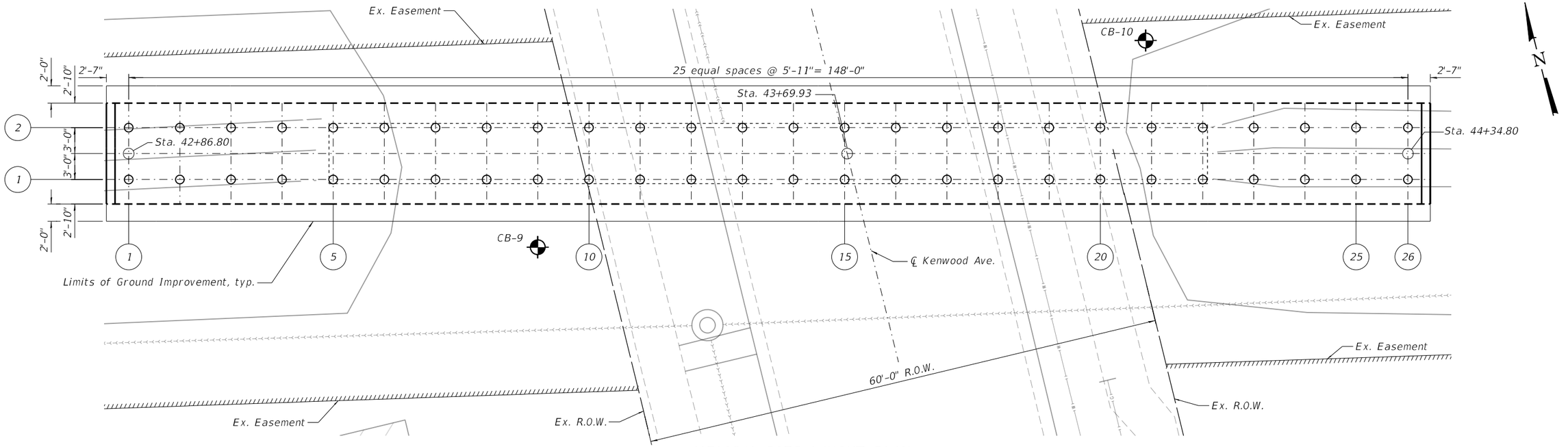


SECTION F–F

DRAWING 4 OF 6

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 4 - PRECAST TAPERED END SECTION DETAILS 2	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 61 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C4_004	CHECKED – OS	REVISED –			

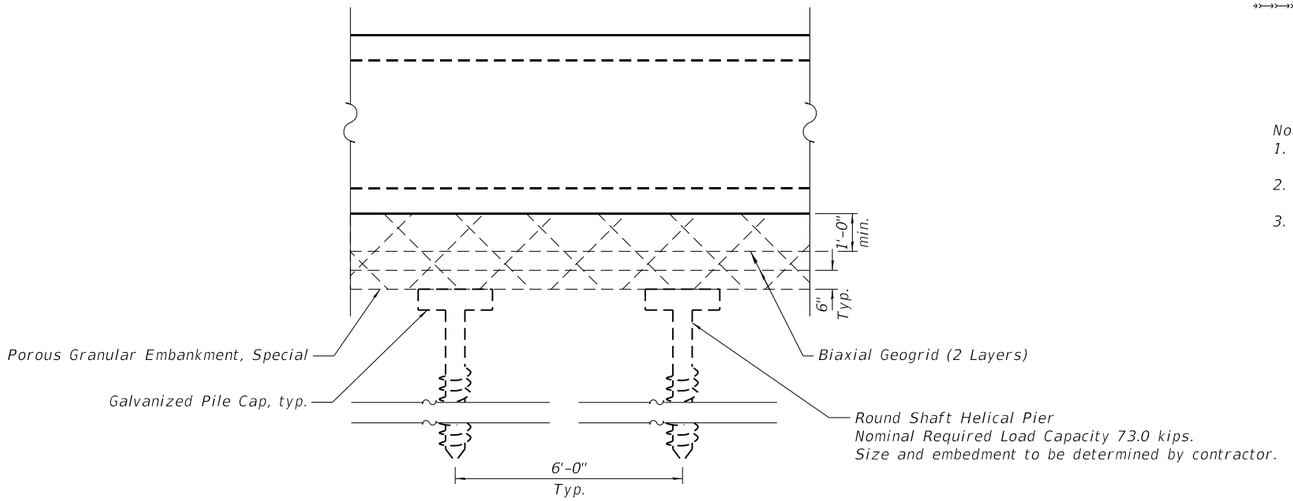
LAST SAVED BY: omahaban
PLOTTED BY: omahaban



HELICAL PIER LAYOUT PLAN

LEGEND:

- Underground Sanitary Sewer
- Underground Watermain
- Underground Gasline
- Underground Storm Sewer



TYPICAL SECTION THRU HELICAL PIER SUPPORTED EMBANKMENT AT 10' x 7' CONCRETE BOX CULVERT

Notes:

1. *See Drawing 1 of 6 for the Elevation view of the Helical Pier Improvement.*
2. *Helical Pier Galvanized Pile Cap cost is included in the Helical Pier unit price.*
3. *Existing utilities shall be located prior to installing Helical Piers. Contractor shall mark any conflicts and submit revised layout to Engineer for approval.*

DRAWING 5 OF 6

DATE = 5/5/2025	DESIGNED – OS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 4 - HELICAL PIER LAYOUT PLAN	VILLAGE of SOUTH HOLLAND
SCALE = 12.000 ' / in.	CHECKED – MDS	REVISED –			SHEET NO. 62 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C4_005	CHECKED – OS	REVISED –			

LAST SAVED BY: omahaan
PLOTTED BY: omahaan

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-9

PAGE 1 OF 1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/18/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	595.2		5" TOPSOIL											
			dark brown and black LEAN CLAY trace gravel and organics hard	SS 1	67	2-2-3 (5)	4.0		20.0					
5				SS 2	78	2-3-6 (9)	4.25		21.8					
				SS 3	61	3-4-4 (8)	4.0	4.1	22.2					
	587.1		brown and gray LEAN CLAY stiff to hard	SS 4	67	2-1-3 (4)	1.5		24.7					
10			moist and trace roots in SS4											
				SS 5	83	2-2-3 (5)	2.0	2.0	25.2					
15				SS 6	100	2-3-5 (8)	4.0	3.7	21.8					
				SS 7	89	4-3-5 (8)	4.5	4.4	21.3					
20				SS 8	100	5-6-10 (16)	4.5+	8.0	20.3					
	574.6		gray LEAN CLAY hard	SS 9	100	5-6-9 (15)	4.5+	4.4	18.4					
25	570.6			SS 10	100	3-5-6 (11)	4.5+	4.6	18.4					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 595.6 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

▽ **AT TIME OF DRILLING** 13.50 ft / Elev 582.10 ft

▼ **AT END OF DRILLING** 13.50 ft / Elev 582.10 ft

AFTER DRILLING ---

NOTES

STA 43+36.59 Offset 12.6 RT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

GEOCON PROFESSIONAL SERVICES

BORING NO. CB-10

PAGE 1 OF 1

CLIENT Robinson Engineering, Ltd. **PROJECT NAME** Thorn Ditch

PROJECT NUMBER 24-G0400 **PROJECT LOCATION** South Holland, IL

DATE COMPLETED 4/18/24 **LOGGED BY** TW/KE **DRILLING METHOD** 3.25 in. HSA

DEPTH (ft)	ELEVATION (ft.)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (Qp) (tsf)	UNC. STRENGTH (Qu) (tsf)	MOISTURE CONTENT (%)	DRY UNIT WT. (pcf)	ORGANIC CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
0	594.5		4" TOPSOIL											
			dark brown CLAY (FILL) trace topsoil and gravel stiff	SS 1	61	3-3-2 (5)	1.0		21.5					
	591.8		brown LEAN CLAY stiff											
5				SS 2	56	3-3-2 (5)	2.0	1.9	20.3					
	588.8		black, brown, and gray LEAN CLAY stiff to very stiff	SS 3	100	2-2-3 (5)	2.5	2.8	31.1					
				SS 4	78	2-1-2 (3)	1.5	1.2	37.5					
10	583.8		dark gray FAT CLAY very soft to soft											
				SS 5	100	1-1-1 (2)	0.25	0.3	46.8					
15				SS 6	100	1-1-1 (2)	0.25	0.4	62.7			51	28	23
				SS 7	100	WOH-1-1 (2)	0.25	0.4	77.1		8.0			
				SS 8	100	WOH-1-1 (2)	0.25	0.3	75.4					
20	573.8		gray LEAN CLAY medium stiff to stiff, moist											
				SS 9	83	2-1-1 (2)	1.0	1.0	27.3					
25	569.8			SS 10	89	2-2-3 (5)	0.75	0.8	24.8					

Bottom of borehole at 25.0 feet.

COMPLETION DEPTH 25 ft **GROUND ELEVATION** 594.8 ft

CAVE DEPTH ft **BACKFILL** Soil Cuttings

GROUND WATER LEVELS:

AT TIME OF DRILLING --- None

AT END OF DRILLING --- Dry upon completion

AFTER DRILLING ---

NOTES

STA 44+00.44 Offset 10.0 LT

Groundwater levels were recorded during drilling and may not represent the groundwater conditions at the time of construction.

Lines of Demarcation represent an **approximate** boundary between soil types. Variations may occur between sampling intervals and between boring locations, and the transition may be gradual. Dashed lines are indicative of potentially erratic or unknown changes.

GPS STANDARD GEOTECH LOG - OZ STD DATA TEMPLATE.GDT - 6/18/24 10:41 - K:\GEOTECHNICAL\2024\24-G0400 GEO REL SGR CULVERT REPLACEMENTS, PEDESTRIAN BRIDGES AND DETENTION, THORN DITCH, SOUTH HOLLAND, IL\LAB\24-G0400 THORI

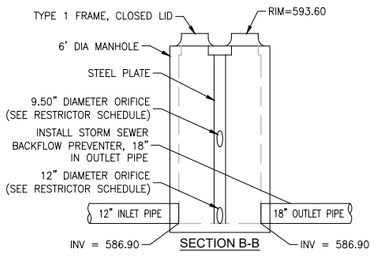
DRAWING 6 OF 6

DATE = 5/5/2025	DESIGNED – MJS	REVISED –	TRANSYSTEMS	THORN DITCH DRAINAGE IMPROVEMENTS CULVERT 4 - SOIL BORING LOGS	VILLAGE of SOUTH HOLLAND
SCALE = 2.000 ' / in.	CHECKED – OS	REVISED –			SHEET NO. 63 of 71
PROJECT NO = 23-R0646	DRAWN – MJS	REVISED –			
FILE NAME = THORN_DITCH_C4_006	CHECKED – OS	REVISED –			

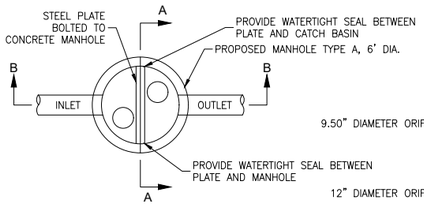
LAST SAVED BY: omahaan
PLOTTED BY: omahaan

RESTRICTOR SCHEDULE

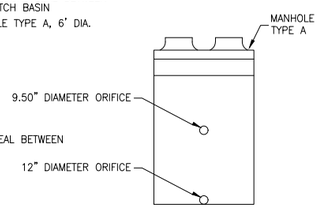
DIAMETER= 12" @ EL.= 586.90 (INV.)
DIAMETER= 9.50" @ EL.= 588.50 (INV.)



SECTION B-B



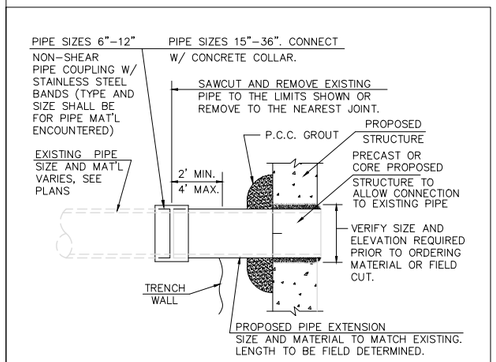
PLAN VIEW



SECTION A-A

MANHOLE #503 RESTRICTOR DETAIL

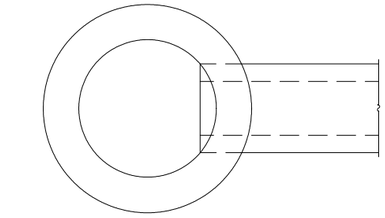
NOT TO SCALE



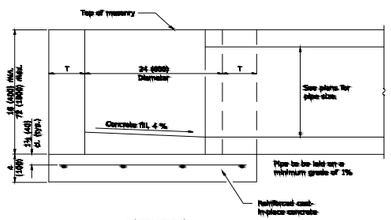
NOTE:
THE COST OF ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY TO INCORPORATE EXISTING PIPE INTO PROPOSED STRUCTURE, INCLUDING THE PIPE EXTENSION, PIPE REMOVAL, GROUT AND COUPLING OR COLLAR AS DETAILED SHALL BE INCLUDED IN THE COST OF PROPOSED MANHOLE/CATCH BASIN CONNECTION OVER EXISTING STORM SEWER OR CONNECTION TO EXISTING SEWER.

EXISTING PIPE CONNECTION TO PROPOSED STRUCTURE

NOT TO SCALE

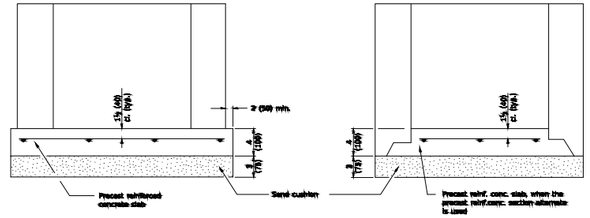


PLAN



ELEVATION

ALTERNATE MATERIALS FOR WALLS	T
BRICK MASONRY	8 (200)
CAST-IN-PLACE CONCRETE	6 (150)
CONCRETE MASONRY UNIT	5 (125)
PRECAST REINFORCED CONCRETE SECTION	3 (75)



ALTERNATE METHODS

GENERAL NOTES

Bottom slabs shall be reinforced with a minimum of 0.24 sq. in./ft. (510 sq. mm/m) in both directions with a maximum spacing of 12 (300).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

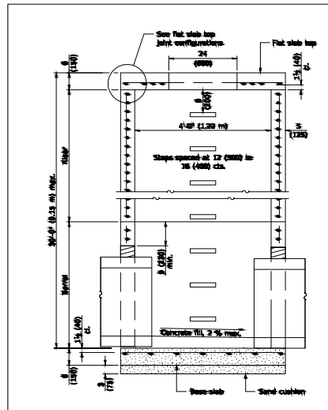
All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
Approved: January 1, 2024
Bureau of Design and Environment
Date: 1-1-24

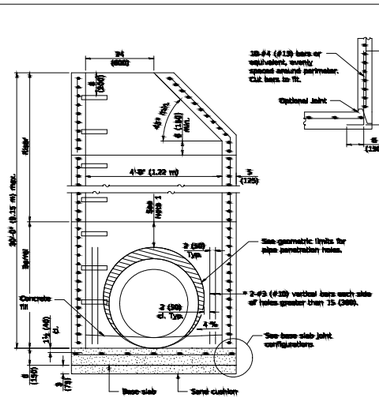
DATE	REVISIONS
1-1-14	Increased height to 72 (1800) maximum.
1-1-11	Deleted min. h-sides.
	Added max. limit to height.
	Added general notes.

INLET - TYPE A

STANDARD 602301-04



SECTION PARALLEL TO PIPE
(Without conical top riser)



SECTION PERPENDICULAR TO PIPE
(With conical top riser)

* As an alternate, the barrel wall reinforcement may be reduced in riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

Note 1: A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 24 (600).

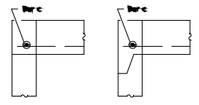
Note 2: A minimum 12 (300) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).

Note 3: A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.

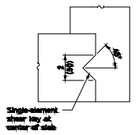
Note 4: Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint within for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.

Note 5: The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).

Note 6: Only pipe penetration holes < 75 (380) are allowed in riser sections.

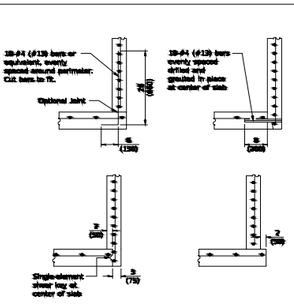


FLAT SLAB TOP JOINT CONFIGURATIONS
(Sheet at access hole)



Single-element
shear key at
center of slab

SHEAR KEY GEOMETRY
(Reinforcement not shown for clarity)



BASE SLAB JOINT CONFIGURATIONS

GENERAL NOTES

The manufacturer shall ensure that all precast, manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

See Standard 602701 for details of manhole steps.

All dimensions are in inches (millimeters) unless otherwise noted.

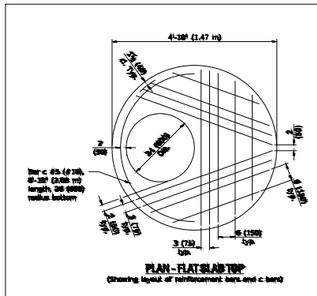
DATE	REVISIONS
1-1-21	Revised Note 1 and lifting hole general notes.
3-1-19	Moved wall reinforcement from inside face to middle.

Illinois Department of Transportation
Approved: January 1, 2021
Bureau of Design and Environment
Date: 1-1-21

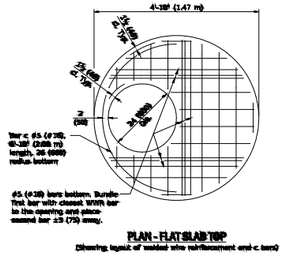
PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER

(Sheet 1 of 2)

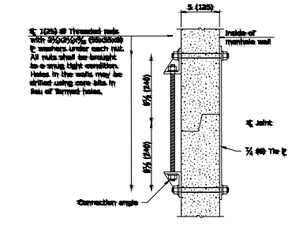
STANDARD 602401-07



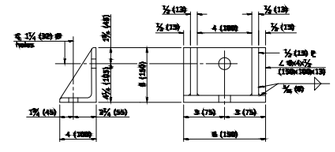
PLAN - FLAT SLAB TOP
(Showing layout of reinforcement bars and c bars)



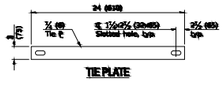
PLAN - FLAT SLAB TOP
(Showing layout of welded wire reinforcement and c bars)



JOINT SPLICE



CONNECTION ANGLE



TIE PLATE

FLAT SLAB TOP REINFORCEMENT

Location	WWR (each direction)		Rebar		
	A_s (min.)	Spacing (max.)	A_s (min.)	Spacing (max.)	Bar Size
Bottom Mat	** 0.07 sq. in./ft. (1312 sq. mm/m)	6 (150)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size.	#5 (#16)

** Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

Location	Orientation	WWR or Rebar	
		A_s (min.)	Spacing (max.)
Riser	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.055 sq. in./ft. (116 sq. mm/m)	12 (300)
Barrel	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.15 sq. in./ft. (318 sq. mm/m)	4 (100)

BASE SLAB REINFORCEMENT

Location	Total Height	WWR or Rebar (each direction)	
		A_s (min.)	Spacing (max.)
Top Mat	≤ 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	12 (300)
	> 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	12 (300)

Illinois Department of Transportation
Approved: January 1, 2021
Bureau of Design and Environment
Date: 1-1-21

PRECAST MANHOLE TYPE A 4' (1.22 m) DIAMETER

(Sheet 2 of 2)

STANDARD 602401-07

DATE	=	05-06-2025	DESIGNED — MGP	REVISED	—
SCALE	=		CHECKED — JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN — RG	REVISED	—
FILE NAME	=	23R0646-DTLS-01	CHECKED — AG	REVISED	—

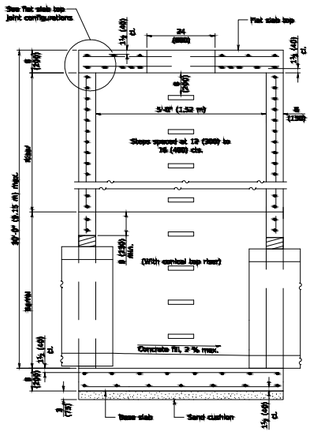
LAST SAVED BY: NDENAULT ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

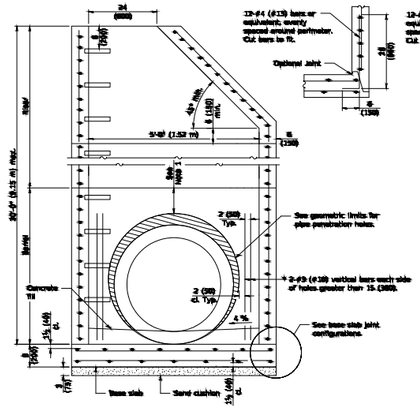
THORN DITCH
FLOOD MITIGATION PROJECT
CONSTRUCTION DETAILS

VILLAGE
of
SOUTH HOLLAND

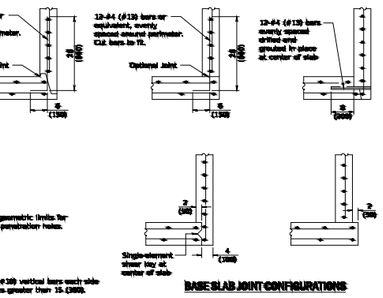
SHEET NO.
64 of 71



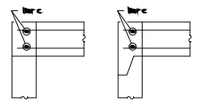
SECTION PARALLEL TO PIPE
(Without vertical top riser)



SECTION PERPENDICULAR TO PIPE
(With vertical top riser)



BASE SLAB JOINT CONFIGURATIONS



FLAT SLAB TOP JOINT CONFIGURATIONS
(Shown at access hole)

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

Note 1: A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 32 (810).

Note 2: A minimum 12 (300) inside-arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).

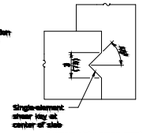
Note 3: A maximum of 65 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.

Note 4: Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside-arc length between pipe penetration holes is < 24 (600). See joint splice detail.

Note 5: The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).

Note 6: Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.

* As an alternate, the barrel wall reinforcement may be reduced to riser wall reinforcement with #3 (#10) bars placed around the pipe penetration holes as shown. This option may be utilized when the pipe penetration holes are formed as opposed to cored.



SHEAR KEY GEOMETRY
(Reinforcement not shown for clarity)

GENERAL NOTES

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

See Standard 602701 for details of manhole steps.

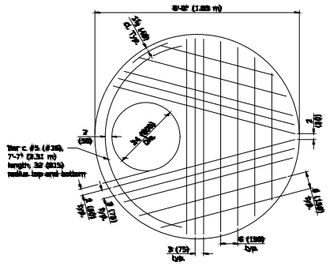
All dimensions are in inches (millimeters) unless otherwise noted.

DATE	REVISIONS
1-1-21	Revised Note 1 and lifting hole general note.
3-1-19	Moved wall reinforcement from inside face to middle.

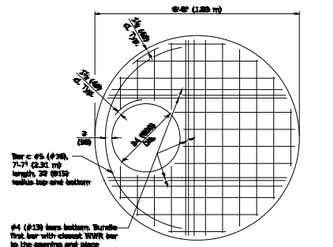
Illinois Department of Transportation
Highway Standard

PRECAST MANHOLE TYPE A
5' (1.52 m) DIAMETER
(Sheet 1 of 2)

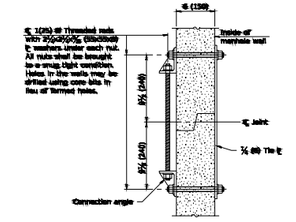
STANDARD 602402-08



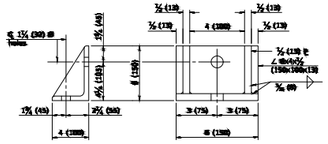
PLAN - FLAT SLAB TOP
(Showing layout of bottom reinforcement bars and c bars)



PLAN - FLAT SLAB TOP
(Showing layout of welded wire reinforcement and c bars)



JOINT SPLICE



CONNECTION ANGLE

TIE PLATE

FLAT SLAB TOP REINFORCEMENT

Location	WWR (each direction)		Rebar (each direction except as noted)		
	A_s (min.)	Spacing (max.)	A_s (min.)	Spacing (max.)	Bar Size
Top Mat	0.11 sq. in./ft. (230 sq. mm/m)	18 (450)	0.11 sq. in./ft. (230 sq. mm/m)	18 (450)	#3 or #4 (#10) (#13)
Bottom Mat	** 0.05 sq. in./ft. (847 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

** Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

Location	Orientation	WWR or Rebar	
		A_s (min.)	Spacing (max.)
Riser	Circumferential	0.15 sq. in./ft. (318 sq. mm/m)	6 (150)
	Vertical	0.045 sq. in./ft. (95 sq. mm/m)	9 (230)
Tapered	Circumferential	0.15 sq. in./ft. (318 sq. mm/m)	6 (150)
	Vertical	0.16 sq. in./ft. (338 sq. mm/m)	4 (100)

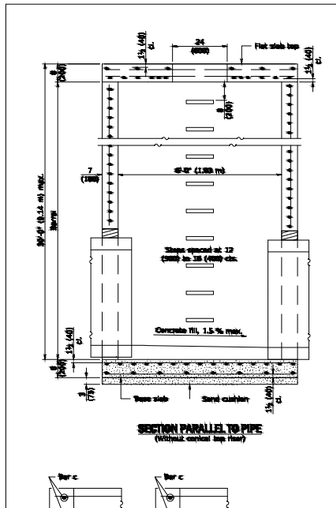
BASE SLAB REINFORCEMENT

Location	Total Height	WWR or Rebar (each direction)	
		A_s (min.)	Spacing (max.)
Top Mat	≤ 20 ft. (6.10 m)	0.24 sq. in./ft. (508 sq. mm/m)	12 (300)
	> 20 ft. (6.10 m)	0.36 sq. in./ft. (508 sq. mm/m)	8 (200)
Bottom Mat	All	0.11 sq. in./ft. (230 sq. mm/m)	18 (450)

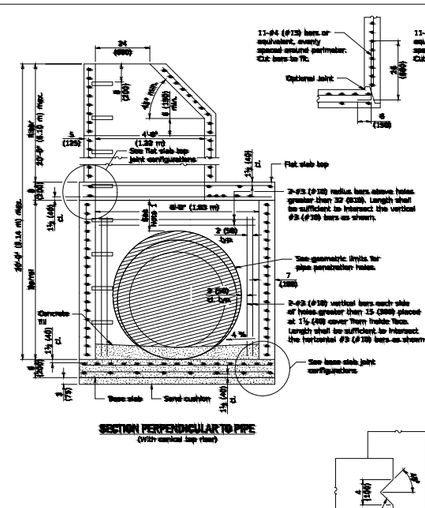
Illinois Department of Transportation
Highway Standard

PRECAST MANHOLE TYPE A
5' (1.52 m) DIAMETER
(Sheet 2 of 2)

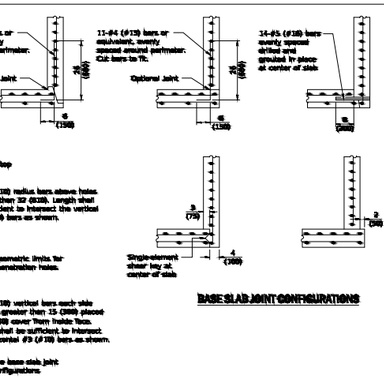
STANDARD 602402-08



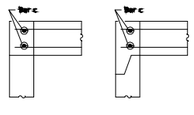
SECTION PARALLEL TO PIPE
(Without vertical top riser)



SECTION PERPENDICULAR TO PIPE
(With vertical top riser)



BASE SLAB JOINT CONFIGURATIONS



FLAT SLAB TOP JOINT CONFIGURATIONS
(Shown at access hole)

GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES

Note 1: A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 32 (810).

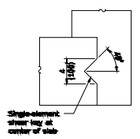
Note 2: A minimum 12 (300) inside-arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).

Note 3: A maximum of 65 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.

Note 4: Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside-arc length between pipe penetration holes is < 24 (600). See joint splice detail.

Note 5: The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).

Note 6: Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.



SHEAR KEY GEOMETRY
(Reinforcement not shown for clarity)

GENERAL NOTES

Pipe holes shall be formed to facilitate proper placement of hole reinforcement.

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

See Standard 602701 for details of manhole steps.

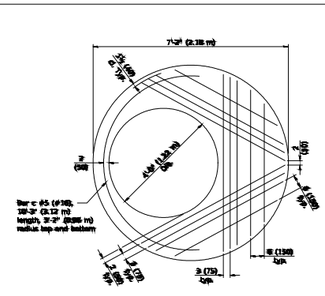
All dimensions are in inches (millimeters) unless otherwise noted.

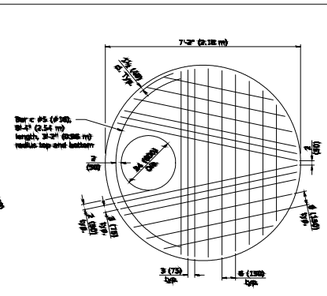
DATE	REVISIONS
1-1-21	Revised Note 1, Note 2 and lifting hole general note.
3-1-19	Moved wall reinforcement from inside face to middle.

Illinois Department of Transportation
Highway Standard

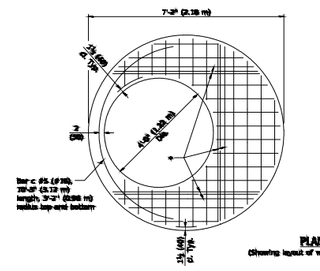
PRECAST MANHOLE TYPE A
6' (1.83 m) DIAMETER
(Sheet 1 of 2)

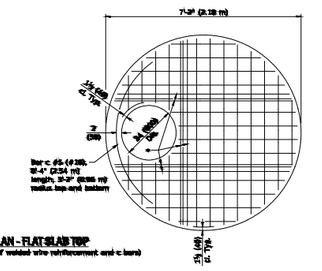
STANDARD 602406-11





PLAN - FLAT SLAB TOP
(Showing layout of bottom reinforcement bars and c bars)





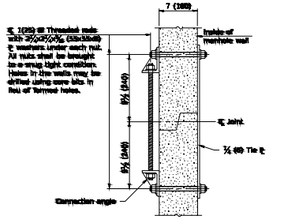
PLAN - FLAT SLAB TOP
(Showing layout of welded wire reinforcement and c bars)

> #5 (#16) bars for risers ≤ 10 ft. (3.05 m) tall or #6 (#19) bars for risers > 10 ft. (3.05 m) tall bottom. Bundle first bar with closest WWR bar to the opening and place second bar ±3 (75) away.

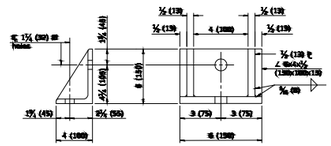
Illinois Department of Transportation
Highway Standard

PRECAST MANHOLE TYPE A
6' (1.83 m) DIAMETER
(Sheet 2 of 2)

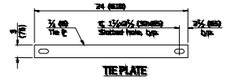
STANDARD 602406-11



JOINT SPLICE



CONNECTION ANGLE



TIE PLATE

FLAT SLAB TOP REINFORCEMENT

Location	Riser Height (Hr)	WWR (each direction)		Rebar (each direction except as noted)		
		A_s (min.)	Spacing (max.)	A_s (min)	Spacing (max.)	Bar Size
Top Mat	All	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	#3 or #4 (#10) (#13)
Bottom Mat	Hr ≤ 10 ft. (3.05 m)	** 0.062 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)
	Hr > 10 ft. (3.05 m)	** 0.093 sq. in./ft. (1968 sq. mm/m)	6 (150)			#6 (#19)

** Only one layer of WWR permitted to avoid congestion.

WALL REINFORCEMENT

Location	Orientation	WWR or Rebar	
		A_s (min.)	Spacing (max.)
4 ft. (1.22 m) ø Riser	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.015 sq. in./ft. (95 sq. mm/m)	12 (300)
6 ft. (1.83 m) ø Barrel	Circumferential	0.18 sq. in./ft. (381 sq. mm/m)	6 (150)
	Vertical	0.045 sq. in./ft. (95 sq. mm/m)	12 (300)

BASE SLAB REINFORCEMENT

Location	Riser Height (Hr)/ Total Height (TH)	WWR or Rebar (each direction)	
		A_s (min.)	Spacing (max.)
Top Mat	Hr ≤ 10 ft. (3.05 m) & TH ≤ 20 ft. (6.10 m)	0.255 sq. in./ft. (355 sq. mm/m)	6 (150)
	Hr > 10 ft. (3.05 m) or TH > 20 ft. (6.10 m)	0.421 sq. in./ft. (847 sq. mm/m)	6 (150)
Bottom Mat	All	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)

Illinois Department of Transportation

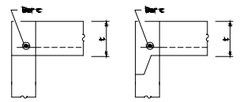
Passed: Jayme L. Snyder 2021
Engineer of Policy and Procedures

Approved: Jeffrey L. Hutson 2021
Engineer of Bridges and Structures

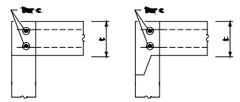
Standard 602406

PRECAST MANHOLE TYPE A 6' (1.83 m) DIAMETER
(Sheet 3 of 3)

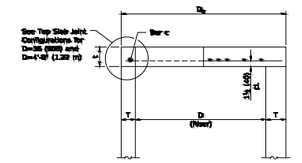
STANDARD 602406-11



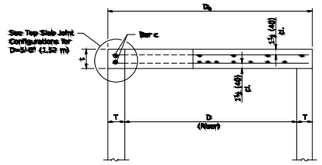
FLAT SLAB TOP JOINT CONFIGURATIONS FOR D = 36 (900) AND D = 4'-0" (1.22 m)
(Shown at access hole)



FLAT SLAB TOP JOINT CONFIGURATIONS D = 5'-0" (1.52 m)
(Shown at access hole)



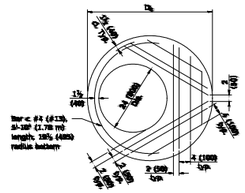
SECTION THRU FLAT SLAB TOP FOR D = 36 (900) AND D = 4'-0" (1.22 m)



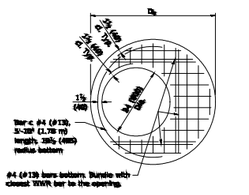
SECTION THRU FLAT SLAB TOP FOR D = 5'-0" (1.52 m)

D	T	Dp (min.)	t
36 (900)	See Applicable Standards	2'-3" (675)	6 (150)
4'-0" (1.22 m)			6 (150)
5'-0" (1.52 m)			8 (200)

TABLE



PLAN - FLAT SLAB TOP FOR D = 36 (900)
(Showing layout of reinforcement bars and c bars)



PLAN - FLAT SLAB TOP FOR D = 36 (900)
(Showing layout of welded wire reinforcement and c bars)

GENERAL NOTES

The flat slab top may be used in lieu of the tapered type shown on Standards 602001, 602006, or 602101 at the option of the Contractor or when field conditions prohibit the use of tapered tops.

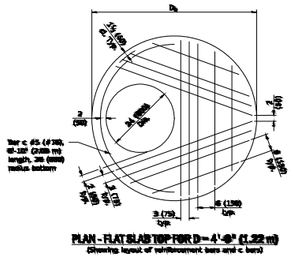
Lifting holes shall be located in the sections as per the manufacturer's recommendations.

All dimensions are in inches (millimeters) unless otherwise shown.

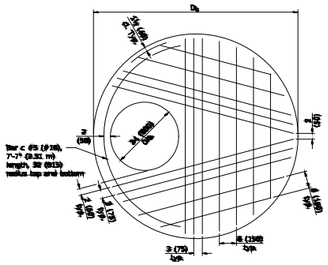
DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options.
1-1-22	Revised for compliance with LRFD.

PRECAST REINFORCED CONCRETE FLAT SLAB TOP
(Sheet 1 of 2)

STANDARD 602601-06



PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m)
(Showing layout of reinforcement bars and c bars)



PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m)
(Showing layout of bottom reinforcement bars and c bars)

FLAT SLAB TOP REINFORCEMENT FOR D = 36 (900)

Location	WWR (each direction)		Rebar		
	A_s (min.)	Spacing (max.)	A_s (min)	Spacing (max.)	Bar Size
Bottom Mat	* 0.093 sq. in./ft. (1970 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

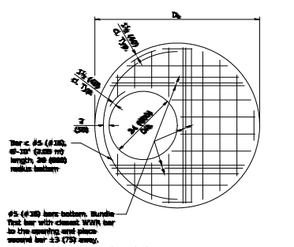
FLAT SLAB TOP REINFORCEMENT FOR D = 4'-0" (1.22 m)

Location	WWR (each direction)		Rebar		
	A_s (min.)	Spacing (max.)	A_s (min)	Spacing (max.)	Bar Size
Bottom Mat	* 0.062 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)

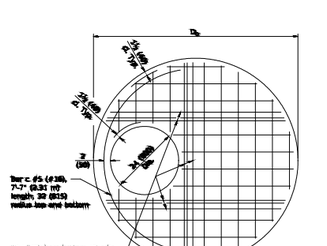
FLAT SLAB TOP REINFORCEMENT FOR D = 5'-0" (1.52 m)

Location	WWR (each direction)		Rebar (each direction except as noted)		
	A_s (min.)	Spacing (max.)	A_s (min)	Spacing (max.)	Bar Size
Top Mat	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	#3 or #4 (#10) (#13)
Bottom Mat	* 0.48 sq. in./ft. (847 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

* Only one layer of WWR permitted to avoid congestion.



PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m)
(Showing layout of welded wire reinforcement and c bars)



PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m)
(Showing layout of welded wire reinforcement and c bars)

Illinois Department of Transportation

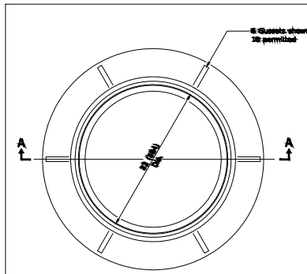
Passed: Jayme L. Snyder 2021
Engineer of Policy and Procedures

Approved: Jeffrey L. Hutson 2021
Engineer of Bridges and Structures

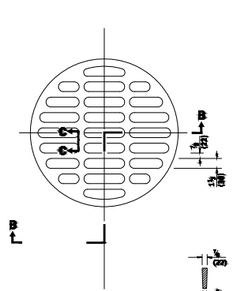
Standard 602601

PRECAST REINFORCED CONCRETE FLAT SLAB TOP
(Sheet 2 of 2)

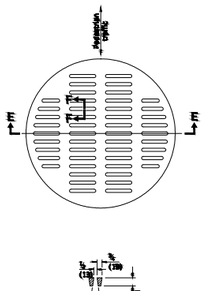
STANDARD 602601-06



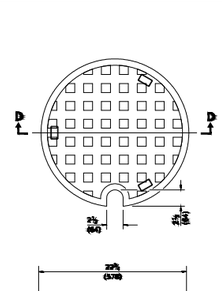
CAST FRAME



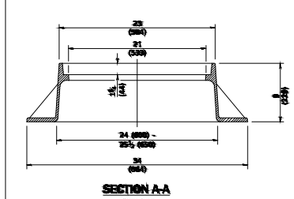
SECTION C-C



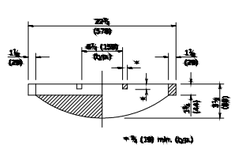
SECTION F-F



SECTION D-D

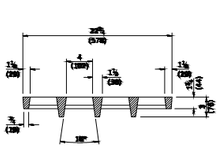


SECTION A-A
Grey Iron



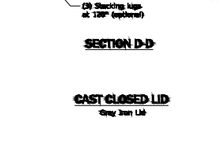
SECTION B-B

CAST OPEN LID



SECTION E-E

ADA COMPLIANT CAST OPEN LID



SECTION D-D

CAST CLOSED LID
Gray Iron Lid

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-22	Revised dimension in Section B-B of cast open lid.
1-1-19	Revised dimensioning of frame. Added ADA compliant open lid.
1-1-02	Switched units to English (metric).

FRAME AND LIDS TYPE 1

STANDARD 604001-05

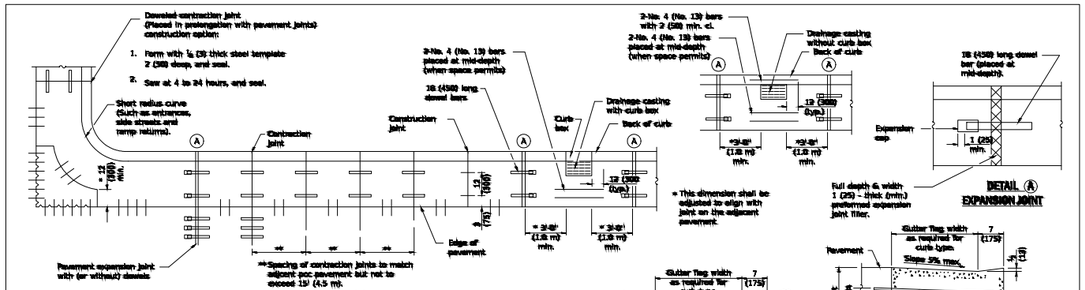


TABLE OF DIMENSIONS BARRIER CURB					
TYPE	A	B	C	D	R1
M-6.06 *	6	1	6	6	1
(M-15.15)	(150)	(25)	(150)	(150)	(25)
M-6.12	12	1	6	6	1
(M-15.30)	(300)	(25)	(150)	(150)	(25)
M-6.18	18	2	6	6	1
(M-15.45)	(450)	(50)	(150)	(150)	(25)
M-6.24	24	1	6	6	1
(M-15.60)	(600)	(25)	(150)	(150)	(25)
M-6.12	12	3	5	6	1
(M-30.30)	(300)	(80)	(125)	(225)	(25)
M-6.18	18	3	5	6	1
(M-30.45)	(450)	(80)	(125)	(225)	(25)
M-6.24	24	3	5	6	1
(M-30.60)	(600)	(80)	(125)	(225)	(25)

* For corner islands only.

TABLE OF DIMENSIONS MOUNTABLE CURB						
TYPE	A	B	C	D	R1	R2
M-3.06	6	2	4	3	3	2
(M-5.15)	(150)	(50)	(100)	(80)	(75)	(50)
M-3.12	12	2	4	3	3	2
(M-5.30)	(300)	(50)	(100)	(80)	(75)	(50)
M-3.18	18	2	4	3	3	2
(M-5.45)	(450)	(50)	(100)	(80)	(75)	(50)
M-4.06	6	4	3	4	3	NA
(M-10.15)	(150)	(100)	(75)	(100)	(75)	NA
M-4.12	12	4	3	4	3	NA
(M-10.30)	(300)	(100)	(75)	(100)	(75)	NA
M-4.18	18	4	3	4	3	NA
(M-10.45)	(450)	(100)	(75)	(100)	(75)	NA
M-4.24	24	4	3	4	3	NA
(M-10.60)	(600)	(100)	(75)	(100)	(75)	NA
M-6.06	6	6	2	6	3	NA
(M-15.15)	(150)	(150)	(50)	(150)	(75)	NA
M-6.12	12	6	2	6	3	NA
(M-15.30)	(300)	(150)	(50)	(150)	(75)	NA
M-6.18	18	6	2	6	3	NA
(M-15.45)	(450)	(150)	(50)	(150)	(75)	NA
M-6.24	24	6	2	6	3	NA
(M-15.60)	(600)	(150)	(50)	(150)	(75)	NA

GENERAL NOTES

The bottom slope of combination curb and gutter constructed adjacent to pcc pavement shall be the same slope as the subbase or BSL when subbase is omitted.

t = Thickness of pavement.

Longitudinal joint tie bars shall be No. 6 (No. 19) at 36 (900) centers in accordance with details for longitudinal construction joint shown on Standard 420001.

A minimum clearance of 2 (50) between the end of the tie bar and the back of the curb shall be maintained.

The dowel bars shown in contraction joints will only be required for monolithic construction.

See Standard 606301 for details of corner islands.

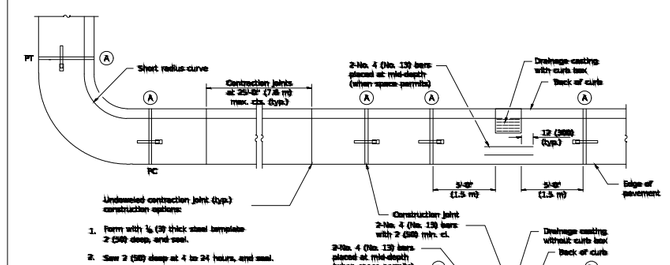
All dimensions are in inches (millimeters) unless otherwise shown.

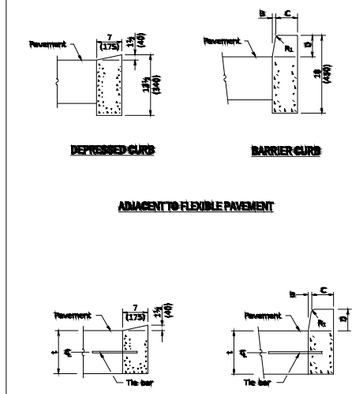
DATE	REVISIONS
1-1-22	Revised contraction joint spacing adjacent to pcc pavement.
1-1-18	Revised Dowel Note for tie bar spacing to 36 (900) ctr.

CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER
(Sheet 1 of 2)

STANDARD 606001-08

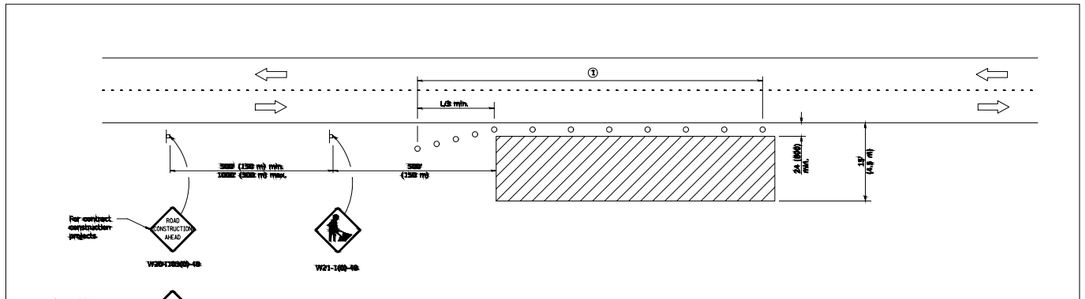
Illinois Department of Transportation
Effective: January 1, 2024
Revised: January 1, 2022
Engineer of Bureau of Roads and Streets
Engineer of Design and Environment





CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER
(Sheet 2 of 2)

STANDARD 606001-08



GENERAL NOTES

This Standard is used where any vehicles, equipment, workers or their activities will encroach in the area 15' (4.5 m) to 24 (600) from the edge of pavement.

Calculate L as follows:

SPEED LIMIT	FORMULAS English	(Metric)
40 mph (70 km/h) or less:	$L=\frac{WS^2}{60}$	$L=\frac{WS^2}{155}$
45 mph (80 km/h) or greater:	L=(W)(S)	L=0.6(W)(S)

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

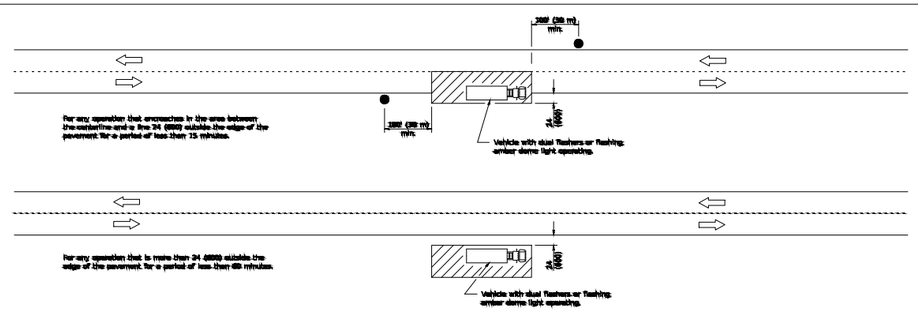
All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-14	Revised workers sign number to agree with current MUTCD.
1-1-13	Omitted text "WORKERS" on sign.

OFF-RD OPERATIONS, 2L, 2W, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE

STANDARD 701606-05

Illinois Department of Transportation
Effective: January 1, 2024
Revised: January 1, 2021
Engineer of Safety Programs
Engineer of Design and Environment



300' (90 m) SPACING	
Posted Speed	Sign Spacing
35	300' (90 m)
40-45	300' (90 m)
<35	300' (90 m)

① = Refer to 300' SPACING table for distance.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-11	Revised Flagger sign.
1-1-09	Switched units to English (metric).

LANE CLOSURE, 2L, 2W, SHORT TIME OPERATIONS

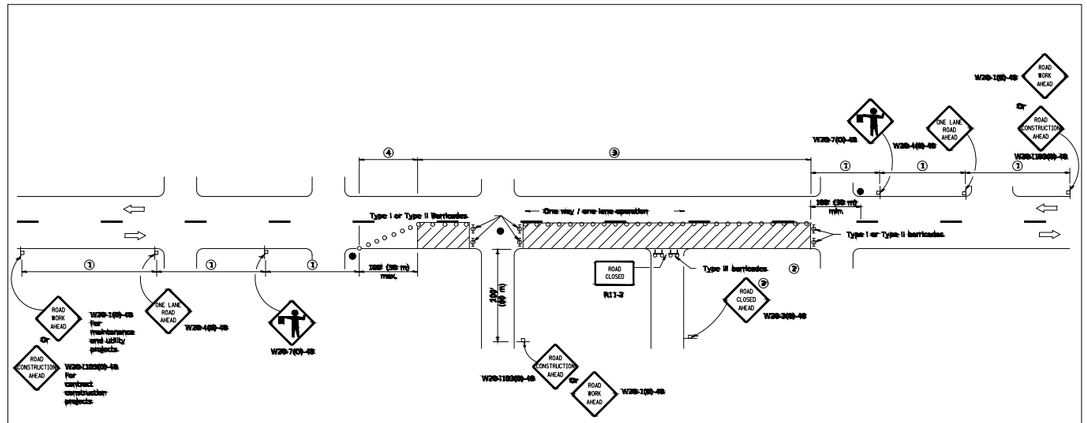
STANDARD 701201-04

Illinois Department of Transportation
Effective: January 1, 2021
Revised: January 1, 2021
Engineer of Safety Programs
Engineer of Design and Environment

DATE	= 05-06-2025	DESIGNED — MGP	REVISED —	THORN DITCH FLOOD MITIGATION PROJECT CONSTRUCTION DETAILS	VILLAGE of SOUTH HOLLAND
SCALE	=	CHECKED — JDH	REVISED —		SHEET NO. 67 of 71
PROJECT NO	= 23-R0646	DRAWN — RG	REVISED —		
FILE NAME	= 23R0646-DTLS-01	CHECKED — AG	REVISED —		

Robinson ENGINEERING

LAST SAVED BY: NDENAULT ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25



SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (105 m)
<45	250' (80 m)

SYMBOLS

- Work area
- Cone, drum or barricade (not required for moving operations)
- Sign on portable or permanent support
- Flagger with traffic control sign
- Barricade or drum with flashing light
- Type II barricade with flashing lights

1. Refer to SIGN SPACING TABLE for distances.
2. For approved sidewalk closures.
3. Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
4. Cones, drums or barricades at 30' (9 m) centers.

GENERAL NOTES

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement, requiring the closure of one traffic lane in an urban area.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED _____ January 3, 2021
Bureau of Safety Engineering

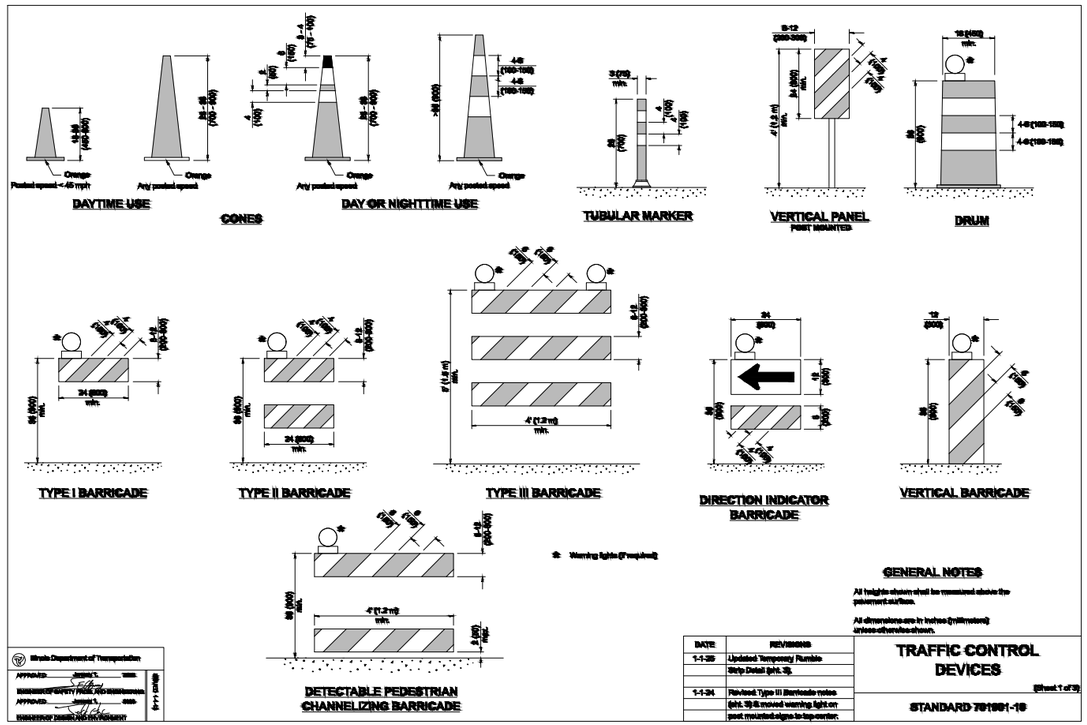
APPROVED _____ January 3, 2021
Bureau of Design and Environment

SHEET 1 OF 3 SHEETS

DATE	REVISIONS
1-1-11	Revised flagger sign.
1-1-69	Switched units to English (metric).
	Corrected sign No.'s.

URBAN LANE CLOSURE, 2L, 2W, UNDIVIDED

STANDARD 701501-06



GENERAL NOTES

All heights shown shall be measured above the pavement surface.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED _____ January 3, 2021
Bureau of Safety Engineering

APPROVED _____ January 3, 2021
Bureau of Design and Environment

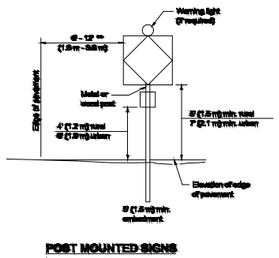
SHEET 2 OF 3 SHEETS

DATE	REVISIONS
1-1-20	Updated Temporary Rumble Strip Detail (sht. 3).
1-1-24	Revised Type III Barricade notes (sht. 1) & moved warning light on post mounted signs to top-center.

TRAFFIC CONTROL DEVICES

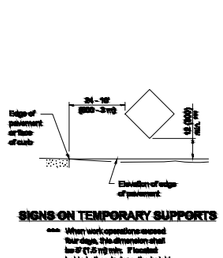
(Sheet 1 of 3)

STANDARD 701501-18



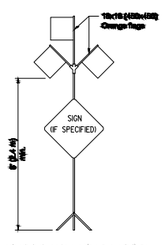
POST MOUNTED SIGNS

** When curbed paved shoulder are present, this dimension shall be 24" (600) to the face of curb or 6' (1.8 m) to the outside edge of the paved shoulder.



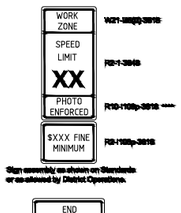
SIGNS ON TEMPORARY SUPPORTS

*** When work operations exceed four days, this dimension shall be 5' (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen completely above the devices.



HIGH LEVEL WARNING DEVICE

WORK LIMIT SIGNING

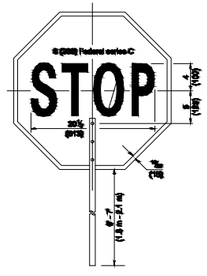


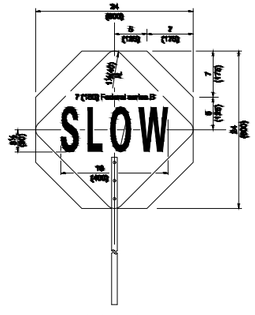
HIGHWAY CONSTRUCTION SPEED ZONE SIGNS

**** R10-11(60) shall only be used along roadways under the jurisdiction of the State.

WIDTH RESTRICTION SIGN

XX-XX" width and X miles are variable.





FLAGGER TRAFFIC CONTROL SIGN

Illinois Department of Transportation

APPROVED _____ January 3, 2021
Bureau of Safety Engineering

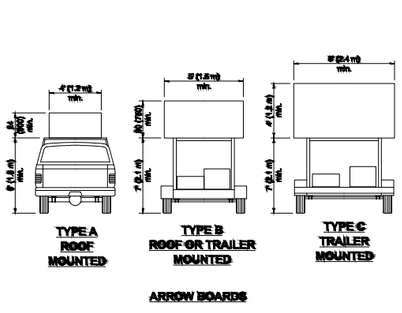
APPROVED _____ January 3, 2021
Bureau of Design and Environment

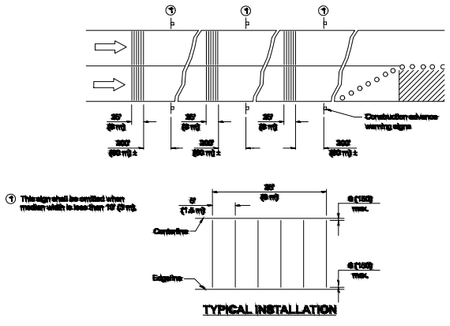
SHEET 3 OF 3 SHEETS

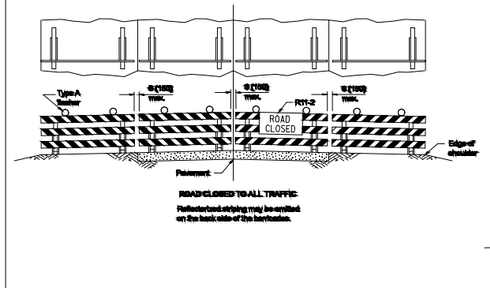
TRAFFIC CONTROL DEVICES

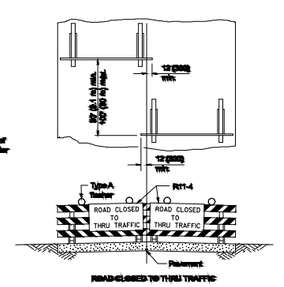
(Sheet 2 of 3)

STANDARD 701501-18









TYPICAL APPLICATIONS OF TYPE III BARRICADES CLOSING A ROAD

For Type III barricade with an offset rail sign panel which meets NCHRP 350 or MASH is not available, the sign may be mounted on an NCHRP 350 or MASH compliant sign support directly in front of the barricade.

TRAFFIC CONTROL DEVICES

(Sheet 3 of 3)

STANDARD 701501-18

DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT CONSTRUCTION DETAILS	VILLAGE of SOUTH HOLLAND
SCALE =	CHECKED — JDH	REVISED —			SHEET NO. 68 of 71
PROJECT NO = 23-R0646	DRAWN — RG	REVISED —			
FILE NAME = 23R0646-DTLS-01	CHECKED — AG	REVISED —			

LAST SAVED BY: NDENAULT ON 5/6/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

2400VFX FOUNTAIN

Dimensions
Float diameter: 28"
Unit height with float: 16"

OVERVIEW
- Complete package includes motor unit, control panel, float with screen, mooring lines, cable.
- Cable is UL, CSA & NEC rated for underwater use.
- Total package Listed by ETL to UL/CSA standards.
- Intake near surface allows for shallow operation
- Saltwater compatible
- Packaged for convenient shipping
- Optional lighting available

FLOAT
- UV-resistant polyethylene
- Single-piece float
- Series 300 stainless steel hardware
- Thermoplastic protective bottom screen
- Three 50' braided nylon mooring ropes

FOUNTAIN COMPONENTS
- Custom thermoplastic propeller
- UV-resistant thermoplastic draft tube and fountain disc
- Series 300 stainless steel hardware

MOTOR UNIT
- 1/2HP, 120Vac operating voltage, single phase
- 1750 RPM
- Oil cooled
- Continuous duty rated
- 17mm top and bottom bearings
- Thermal overload protection
- Fully unitized heavy-duty carbon-ceramic mechanical seal
- Series 300 stainless steel can
- Engineering grade thermoplastic top
- Sacrificial anode installed on 316 stainless shaft

POWER CABLE
- 3 wire (L, N, G)
- Quick Disconnect standard on 12+ AWG cords (otherwise optional)
- Stainless steel strain relief on 12+ AWG cords
- 6' flex sleeving protection standard (optional for entire cord length)

CONTROL PANEL
- UL type 3R/4X thermoplastic enclosure
- Human-rated GFCI protection
- 24-hour mechanical fountain timer
- Photo eye for optional lighting
- 120V plug on 3' power cord

Kasco
800 Deere Rd. Prescott, WI 54021 | 715.262.4488 | sales@kascomarine.com | kascomarine.com
2400VFX FOUNTAIN CUT SHEET

PAID FOR AS POND AERATING FOUNTAIN

2400VFX FOUNTAIN

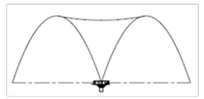
OVERVIEW

HP	Voltage / Phase / Hz	Running Amps	Lock Rotor Amps	Suggested Pond Size (SA)	Min. Depth of Operation (in.)
1/2	120V / 1 / 60	6	20	Up to 1/4*	15"

*Surface Acreage; also consider pond shape, depth, and oxygen demand.

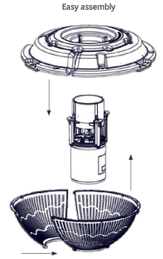
MODEL SPECIFICATIONS

Model	Cord Length (ft.)	Cord Gauge	Number of Boxes
2400VFX050	50	16/3	2
2400VFX100	100	14/3	2
2400VFX150	150	12/3	3
2400VFX200	200	12/3	3



Pattern size: 5' H x 15' W

Easy assembly



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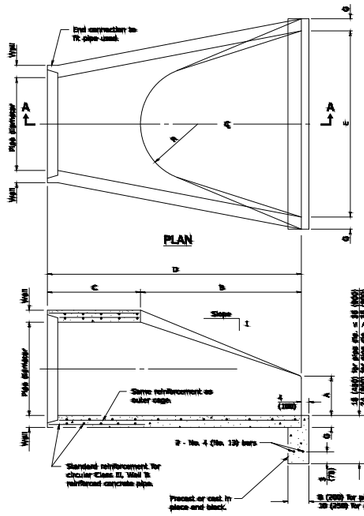
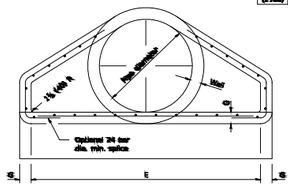
2400VFX FOUNTAIN CUT SHEET





PIPE DIA.	APPROX. QTY. lbs. (kg)	WALL	A	B	C	D	E	G	R	APPROX. SLOPE
12 (305)	530 (240)	2 (51)	4 (102)	24 (610)	4'-0¼" (1.241 m)	4'-0⅝" (1.251 m)	24 (610)	2 (51)	9 (229)	1:2.4
15 (375)	740 (335)	2¼ (57)	6 (152)	27 (686)	4'-3⅜" (1.305 m)	4'-3⅞" (1.314 m)	30 (762)	2½ (57)	11 (280)	1:2.4
18 (450)	980 (445)	2½ (64)	9 (229)	27 (686)	4'-3⅜" (1.305 m)	4'-1" (1.254 m)	36 (914)	2½ (64)	12 (305)	1:2.4
21 (525)	1280 (580)	2½ (70)	9 (229)	30 (762)	4'-6⅜" (1.381 m)	4'-4" (1.334 m)	36 (914)	2½ (70)	13 (330)	1:2.4
24 (600)	1530 (695)	3 (76)	9½ (241)	30 (762)	4'-10⅜" (1.486 m)	4'-7⅝" (1.419 m)	36 (914)	3 (76)	14 (356)	1:2.5
27 (675)	1860 (845)	3½ (89)	10½ (267)	30 (762)	5'-1⅜" (1.559 m)	4'-10⅝" (1.492 m)	36 (914)	3½ (89)	14½ (368)	1:2.4
30 (750)	2120 (965)	3½ (89)	12 (305)	30 (762)	5'-4⅜" (1.635 m)	5'-1⅝" (1.572 m)	36 (914)	3½ (89)	15 (381)	1:2.5
36 (900)	3020 (1370)	3½ (89)	12 (305)	30 (762)	5'-10⅜" (1.797 m)	5'-7⅝" (1.724 m)	36 (914)	3½ (89)	17½ (445)	1:2.5
42 (1050)	4180 (1900)	4 (102)	15 (381)	30 (762)	6'-4⅜" (1.962 m)	6'-1⅝" (1.877 m)	36 (914)	4 (102)	20 (508)	1:2.5
48 (1200)	5280 (2400)	4½ (114)	21 (533)	30 (762)	6'-10⅜" (2.118 m)	6'-7⅝" (2.029 m)	36 (914)	4½ (114)	22 (559)	1:2.5
54 (1350)	6500 (2970)	5 (127)	24 (610)	30 (762)	7'-4⅜" (2.268 m)	7'-1⅝" (2.181 m)	36 (914)	5 (127)	25 (635)	1:2.5
60 (1500)	8040 (3740)	5½ (140)	27 (686)	30 (762)	7'-10⅜" (2.424 m)	7'-7⅝" (2.337 m)	36 (914)	5½ (140)	28 (838)	1:2.5
66 (1650)	9720 (4500)	6 (152)	30 (762)	30 (762)	8'-4⅜" (2.579 m)	8'-1⅝" (2.492 m)	36 (914)	5 (127)	*	1:1.9
72 (1800)	11520 (5400)	7 (178)	36 (914)	30 (762)	8'-10⅜" (2.735 m)	8'-7⅝" (2.648 m)	36 (914)	6 (152)	*	1:1.7
78 (1950)	14720 (6700)	7½ (191)	36 (914)	30 (762)	9'-4⅜" (2.890 m)	9'-1⅝" (2.803 m)	36 (914)	6½ (165)	*	1:1.8
84 (2100)	18320 (8340)	8 (203)	36 (914)	30 (762)	9'-10⅜" (3.046 m)	9'-7⅝" (2.959 m)	36 (914)	7 (178)	*	1:1.8

* Radius as furnished by manufacturer

GENERAL NOTES
All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

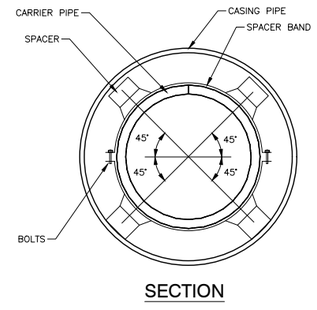
All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation
Approved: January 1, 2021 — Bureau of Design and Environment
Approved: January 1, 2021 — Bureau of Local Roads and Streets
BLRS 5149

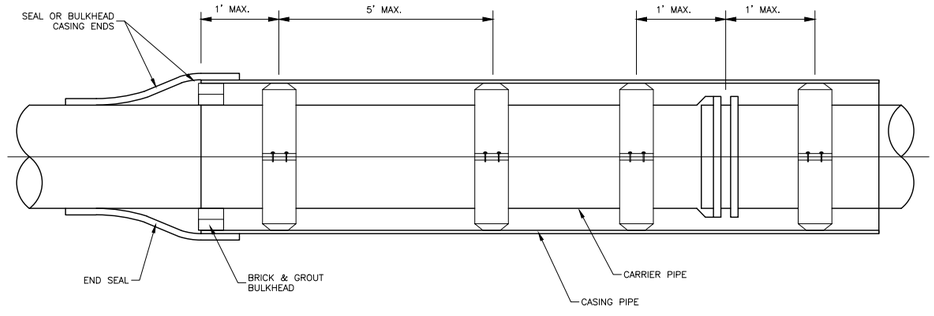
DATE	REVISIONS
1-1-21	Clarified ref. in pipe dia.
	on Section A-A. Changed
	'over' to 'outer' cage ref.
1-1-09	Switched units to
	English (metric).

PRECAST REINFORCED CONCRETE FLARED END SECTION

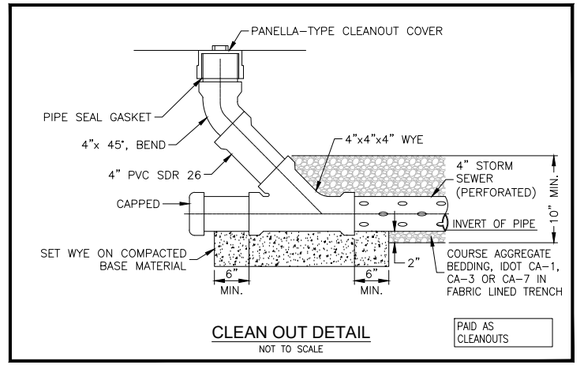
STANDARD 542301-03



SECTION



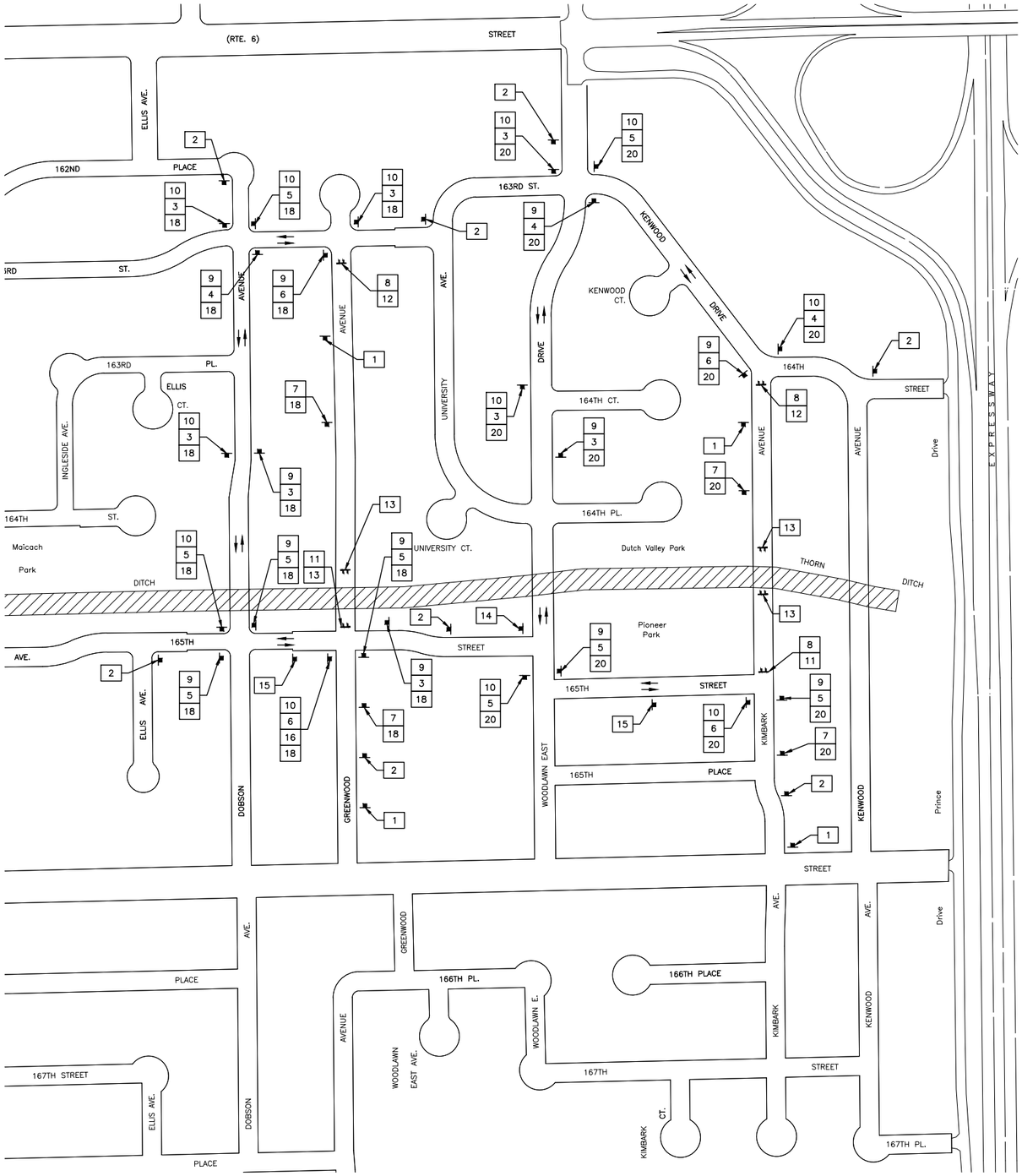
CASING SPACER INSTALLATION



CLEAN OUT DETAIL
NOT TO SCALE

PAID AS CLEANOUTS

LAST SAVED BY: NDENAULT ON 5/6/25 PLOTTED BY: JOHN HILSEN ON 5/6/25	DATE = 05-06-2025	DESIGNED — MGP	REVISED —	Robinson ENGINEERING	THORN DITCH FLOOD MITIGATION PROJECT CONSTRUCTION DETAILS	VILLAGE of SOUTH HOLLAND	SHEET NO. 69 of 71
	SCALE =	CHECKED — JDH	REVISED —				
	PROJECT NO = 23-R0646	DRAWN — RG	REVISED —				
	FILE NAME = 23R0646-DTLS-01	CHECKED — AG	REVISED —				



DETOUR SIGNAGE PHASE ONE - CLOSE GREENWOOD AVENUE AND KIMBARK AVENUE

LEGEND

- WORK AREA
- DETOUR ROUTE
- TYPE III BARRICADE WITH FLASHING LIGHT
- SIGN
- ADVANCE MESSAGE BOARD

NORTH
Dobson Ave
DETOUR

TYPICAL DETOUR ASSEMBLY DETAIL

1 — ROAD CONSTRUCTION AHEAD — W20-1103(0) 48"X48"

2 — DETOUR AHEAD — W20-2 48"X48"

3 — DETOUR — M4-9 30"X24"

4 — DETOUR — M4-9R 30"X24"

5 — DETOUR — M4-9L 30"X24"

6 — END DETOUR — M4-8a 24"X18"

7 — ROAD CLOSED AHEAD — W20-3 48"X48"

8 — ROAD CLOSED TO THRU TRAFFIC — R11-4 60"X30" MOUNT ON TYPE III BARRICADE

9 — NORTH — M3-2(0) 24"X12"

10 — SOUTH — M3-2(0) 24"X12"

11 — DETOUR — M4-10L 48"X18"

12 — DETOUR — M4-10R 48"X18"

13 — ROAD CLOSED — R11-2 48"X30" MOUNT ON TYPE III BARRICADE

14 — ROAD CONSTRUCTION AHEAD — W20-1103(0) 48"X48"; M6-1 21"X15"

15 — ROAD CONSTRUCTION AHEAD — W20-1103(0) 48"X48"; M6-1 21"X15"

16 — R3-2 24"X24"

17 — DOBSON AVE — D3-1 48"X9"

18 — GREENWOOD AVE — D3-1 48"X9"

19 — WOODLAWN AVE — D3-1 48"X9"

20 — KIMBARK AVE — D3-1 48"X9"

21 — KENWOOD AVE — D3-1 48"X9"

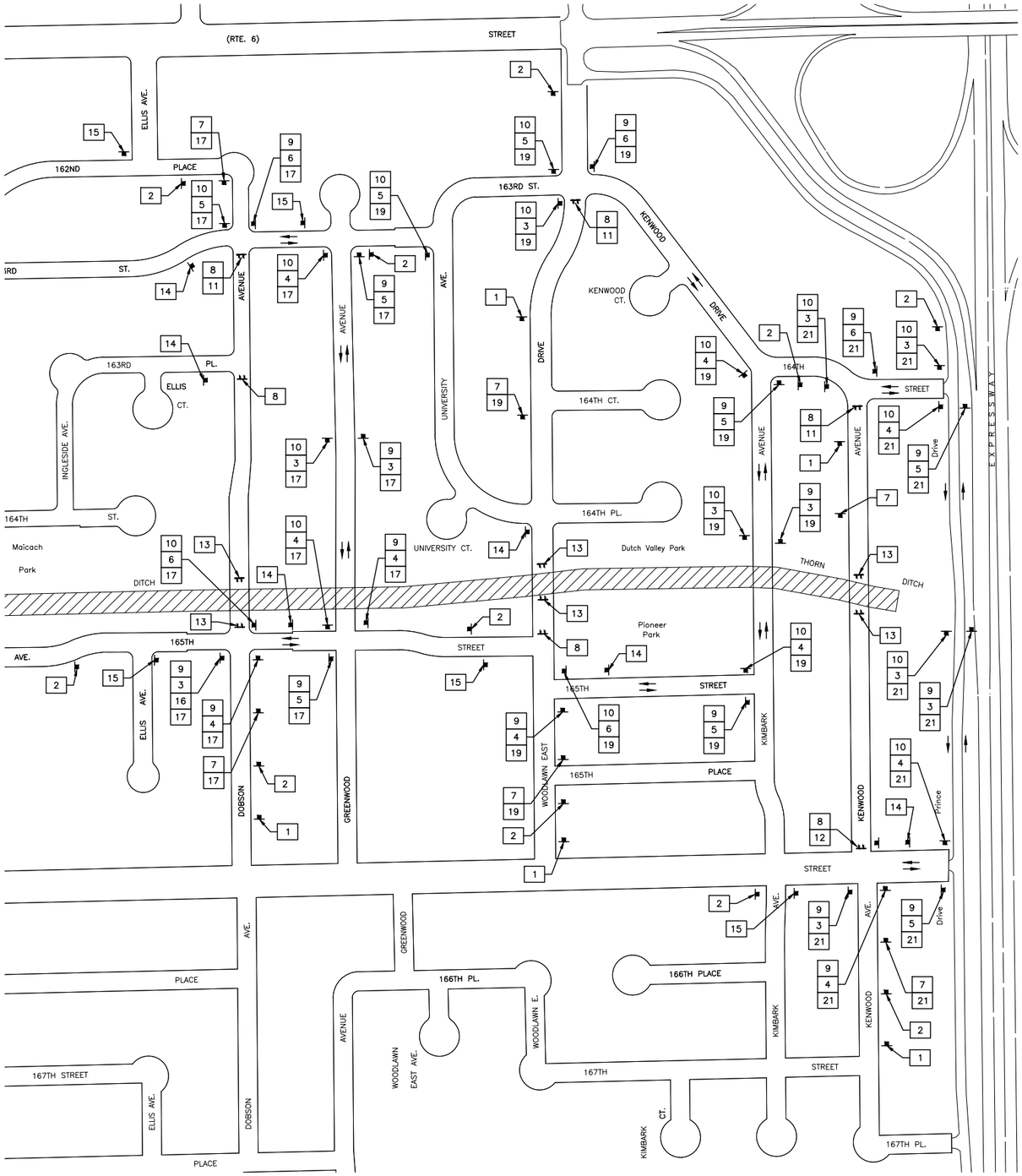
DATE = 05-06-2025	DESIGNED — MGP	REVISED —
SCALE = 1"=200'±	CHECKED — JDH	REVISED —
PROJECT NO = 23-R0646	DRAWN — ND	REVISED —
FILE NAME = 23R0646-DETR-01	CHECKED — AG	REVISED —

LAST SAVED BY: NDENAULT ON 3/11/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
DETOUR PLAN

VILLAGE of SOUTH HOLLAND



DETOUR SIGNAGE PHASE TWO - CLOSE DOBSON AVENUE, WOODLAWN AVENUE AND KENWOOD AVENUE

LEGEND

- WORK AREA
- DETOUR ROUTE
- TYPE III BARRICADE WITH FLASHING LIGHT
- SIGN
- ADVANCE MESSAGE BOARD

NORTH
Dobson Ave
DETOUR

TYPICAL DETOUR ASSEMBLY DETAIL

1. ROAD CONSTRUCTION AHEAD — W20-1103(0) 48"X48"
2. DETOUR AHEAD — W20-2 48"X48"
3. DETOUR — M4-9 30"X24"
4. DETOUR — M4-9R 30"X24"
5. DETOUR — M4-9L 30"X24"
6. END DETOUR — M4-8a 24"X18"
7. ROAD CLOSED AHEAD — W20-3 48"X48"
8. ROAD CLOSED TO THRU TRAFFIC — R11-4 60"X30" MOUNT ON TYPE III BARRICADE
9. NORTH — M3-2(O) 24"X12"
10. SOUTH — M3-2(O) 24"X12"
11. DETOUR — M4-10L 48"X18"
12. DETOUR — M4-10R 48"X18"
13. ROAD CLOSED — R11-2 48"X30" MOUNT ON TYPE III BARRICADE
14. ROAD CONSTRUCTION AHEAD — W20-1103(0) 48"X48"; M6-1 21"X15"
15. ROAD CONSTRUCTION AHEAD — W20-1103(0) 48"X48"; M6-1 21"X15"
16. R3-2 24"X24"
17. DOBSON AVE — D3-1 48"X9"
18. GREENWOOD AVE — D3-1 48"X9"
19. WOODLAWN AVE — D3-1 48"X9"
20. KIMBARK AVE — D3-1 48"X9"
21. KENWOOD AVE — D3-1 48"X9"

LAST SAVED BY: NDENAULT ON 3/11/25
PLOTTED BY: JOHN HILSEN ON 5/6/25

DATE	=	05-06-2025	DESIGNED	—	MGP	REVISED	—
SCALE	=	1"=200'±	CHECKED	—	JDH	REVISED	—
PROJECT NO	=	23-R0646	DRAWN	—	ND	REVISED	—
FILE NAME	=	23R0646-DETR-01	CHECKED	—	AG	REVISED	—

Robinson ENGINEERING

THORN DITCH
FLOOD MITIGATION PROJECT
DETOUR PLAN

VILLAGE of SOUTH HOLLAND

SHEET NO. 71 of 71