EXISTING

- RIGHT OF WAY
- PERMANENT EASEMENT
- PROPERTY LINE
- HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- BURIED FIBER OPTIC CABLE AND MANHOLE
- BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- BURIED TV CABLE, PEDESTAL AND MANHOLE
- BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WETLAND
- BUILDING
- FENCE (UNIDENTIFIED)
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- ELECTRIC WIRE FENCE
- WOOD FENCE
- WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL

PROPOSED

- STREET CENTERLINE
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

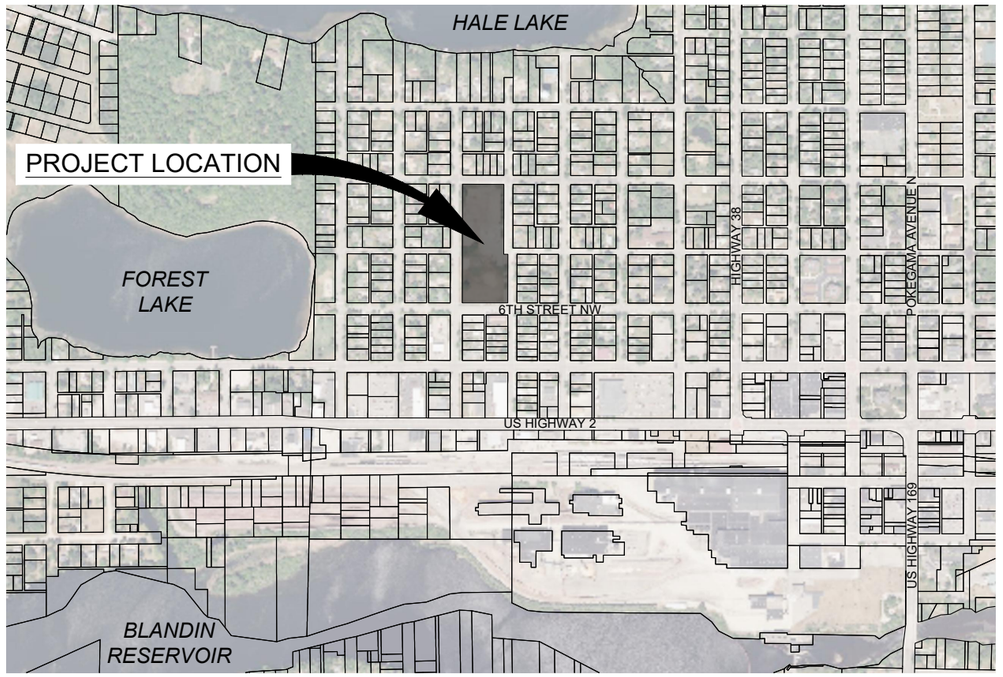
CITY OF
GRAND RAPIDS, MINNESOTA

CONSTRUCTION PLANS FOR

REMOVALS, GRADING, SANITARY SEWER, WATER MAIN, STORM SEWER,
CURB & GUTTER, BITUMINOUS, EROSION CONTROL

FOREST LAKE SITE UTILITIES

CITY PROJECT NO. 2022-5



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N.T.S.

NOTE:
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL CALL THE GOPHER STATE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

811 Know what's **below.** **Call** before you dig.

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

THIS PLAN CONTAINS 38 SHEETS.

PROJECT LOCATION

APPROVED:

CITY ENGINEER OF GRAND RAPIDS, MN — DATE: 02-19-23

GRAND RAPIDS, MINNESOTA

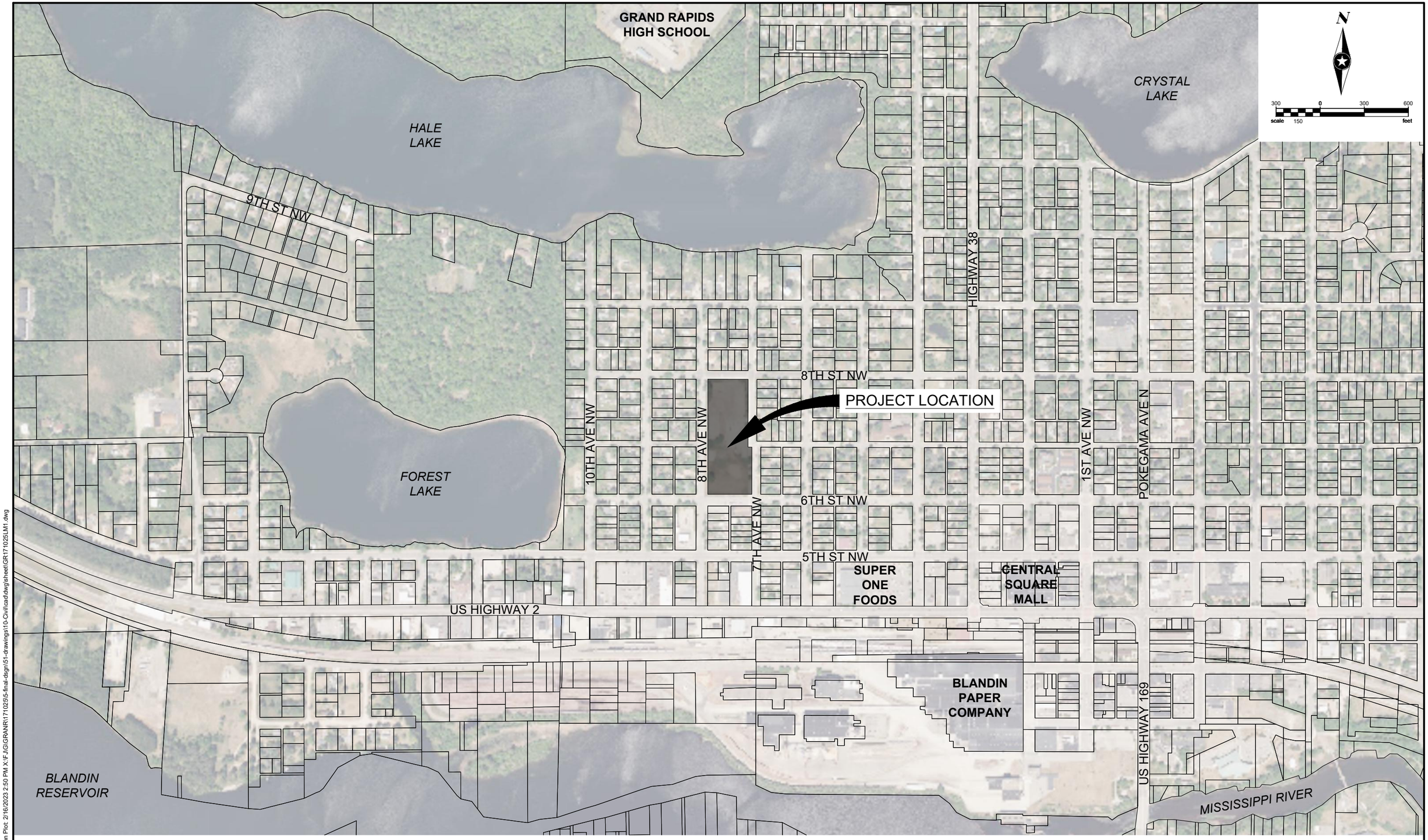
SEH
PHONE: 218.322.4500
1200 SE 4TH AVE, STE 200
GRAND RAPIDS, MN 55744
www.sehinc.com

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
Signature

Date: 02-19-23 Lic. No. 55414

PROJECT NO. GRANR171025



FOREST LAKE SITE UTILITIES

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025	.			.		
Drawn By	MBH, JLE	.			.		
Designed By	SLC	.			.		
Checked By	RJB	.			.		

SEH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

LOCATION MAP
FOREST LAKE SITE UTILITIES

Save: 2/16/2023 11:30 AM bolson Plot: 2/16/2023 2:50 PM X:\FJG\GRANR\171025\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\GR171025LM1.dwg

STATEMENT OF ESTIMATED QUANTITIES

LINE NO.	ITEM NO.	DESCRIPTION	UNITS	TOTAL QUANTITY	FOREST LAKE SITE UTILITIES (C.P. 2022-5) ROADWAY	SANITARY MAIN	SANITARY SERVICES	WATER MAIN	WATER SERVICES	ADD-ALT WATER MAIN	STORM SEWER	NOTES
1	2011.601	CONSTRUCTION SURVEYING	LUMP SUM	1	0.39	0.21	0.08	0.22	0.02		0.08	
2	2021.501	MOBILIZATION	LUMP SUM	1	0.39	0.21	0.08	0.22	0.02		0.08	
3	2101.501	CLEARING AND GRUBBING	LUMP SUM	1	0.39	0.21	0.08	0.22	0.02		0.08	FOR ALL CLEARING, GRUBBING AND TRIMMING OF TREES NOT SHOWN ON PLAN AS DIRECTED BY THE ENGINEER
4	2104.502	REMOVE HYDRANT	EACH	1				1				ALL TYPES AND SIZES
5	2104.502	REMOVE CASTING	EACH	1		1						INCLUDES REMOVAL OF ADJUSTING RINGS
6	2104.502	SALVAGE CASTING	EACH	1							1	INCLUDES REMOVAL OF ADJUSTING RINGS
7	2104.502	REMOVE SIGN TYPE C	EACH	1	1							INCLUDES REMOVAL OF POST
8	2104.502	SALVAGE SIGN PANEL TYPE C	EACH	1	1							INCLUDES SALVAGING OF SIGN PANEL TYPE C AND REMOVAL OF POST
9	2104.502	REMOVE MANHOLE OR CATCH BASIN	EACH	3							3	INCLUDES REMOVAL OF CASTING
10	2104.503	REMOVE CURB & GUTTER	LIN FT	607	607							ALL TYPES AND SIZES
11	2104.503	REMOVE SEWER PIPE (SANITARY)	LIN FT	15		15						ALL TYPES AND SIZES
12	2104.503	REMOVE SEWER PIPE (STORM)	LIN FT	92							92	ALL TYPES AND SIZES
13	2104.503	REMOVE WATER MAIN	LIN FT	332				40		292		ALL TYPES AND SIZES - INCLUDES REMOVAL OF VALVES, VALVE BOXES AND FITTINGS
14	2104.503	SAWING BITUMINOUS PVMT (FULL DEPTH)	LIN FT	740	740							ALL DEPTHS
15	2104.503	SAWING CONCRETE PVMT (FULL DEPTH)	LIN FT	94	94							ALL DEPTHS
16	2104.504	REMOVE BITUMINOUS PAVEMENT	SQ YD	904	904							ALL DEPTHS
17	2104.504	REMOVE CONCRETE PAVEMENT	SQ YD	273	273							ALL DEPTHS
18	2105.507	COMMON EXCAVATION (P)	CU YD	738	738							SALVAGING TOPSOIL, STOCKPILING SALVAGED TOPSOIL AND PLACEMENT OF SALVAGED TOPSOIL SHALL BE CONSIDERED INCIDENTAL
19	2112.519	SUBGRADE PREPARATION	RD ST	6	6.1							6" DEPTH UNDER ALLEYWAY
20	2112.519	SUBGRADE PREPARATION	SQ YD	1320	1320							6" DEPTH UNDER WALKS, DRIVES AND ROADWAY PATCHES
21	2118.507	AGGREGATE SURFACING (CV) CLASS 5	CU YD	26	26							4" DEPTH x 2' WIDTH SHOULDERING
22	2211.507	AGGREGATE BASE (CV) CLASS 5	CU YD	429	429							9" DEPTH IN ROADWAYS - 6" DEPTH UNDER CONCRETE DRIVE - 4" DEPTH UNDER CONCRETE WALK
23	2231.604	BITUMINOUS PATCH SPECIAL	SQ YD	798	798							ROADWAY PATCHES. INCLUDES PAVING (1.5" TYPE SP 9.5 WEARING COURSE MIX & 2.5" TYPE SP 12.5 WEARING COURSE MIX) AND AGGREGATE BASE (CV) CL5 (6")
24	2360.509	TYPE SP 12.5 WEARING COURSE MIX (3,C) (1)	TON	167	167							115 LB/SYIN - 2.5" DEPTH ON ROADWAYS
25	2360.509	TYPE SP 9.5 WEARING COURSE MIX (3,C) (1)	TON	101	101							115 LB/SYIN - 1.5" DEPTH ON ROADWAYS
26	2451.607	CRUSHED ROCK	CU YD	148		49	16	59		16	8	EST HALF OF THE LENGTH OF SANITARY MAINS, WATER MAINS, SANITARY SERVICES AND STORM PIPES x 12" DEPTH x 3' WIDTH
27	2502.503	4" PERF PE PIPE DRAIN	LIN FT	91	91							INCLUDES GEOTEXTILE SOCK , FITTINGS AND 4" CAPS
28	2502.602	4" PIPE DRAIN CLEANOUT	EACH	22			22					INCLUDES FITTINGS, RISER, THREADED CAP, TRACER SYSTEM, TERM. BOX & 8" CASTING
29	2502.604	2" INSULATION	SQ YD	29				29				
30	2503.503	15" RC PIPE SEWER CLASS III	LIN FT	141							141	
31	2503.602	8" x 4" WYE	EACH	22			22					
32	2503.602	CONNECT TO EX. SANITARY SEWER	EACH	6		6						CONNECTION TO EXISTING SANITARY SEWER PIPE
33	2503.602	CONNECT TO EX. STORM SEWER	EACH	2							2	CONNECTION TO EXISTING STORM SEWER PIPE OR STRUCTURE
34	2503.603	4" PVC SANITARY SERVICE PIPE	LIN FT	403			403					INCLUDES TRACER WIRE
35	2503.603	8" PVC PIPE SEWER	LIN FT	879		879						INCLUDES TRACER WIRE
36	2503.603	SANITARY SEWER INSPECTION	LIN FT	859		859						TELEVISING OF ALL NEW SANITARY SEWER MAINS
37	2504.602	INSTALL 1" CORPORATION STOP	EACH	22					22			INSTALLATION OF A CITY SUPPLIED CORPORATION STOP
38	2504.602	INSTALL 1" CURB STOP AND BOX	EACH	22					22			FOR INSTALLATION OF CITY SUPPLIED CURB STOP AND CONTRACTOR SUPPLIED CURB BOX (INCLUDES CONTRACTOR SUPPLIED TRACER WIRE TERMINATION BOX)
39	2504.602	6" GATE VALVE AND BOX	EACH	7				7				INCLUDES CENTERING ATTENUATOR
40	2504.602	CONNECT TO EXISTING WATER MAIN	EACH	6				6				
41	2504.602	HYDRANT	EACH	2				2				8.5' BURY
42	2504.602	ADJUST VALVE BOX	EACH	2				2				FOR ADJUSTMENT OF EXISTING VALVE BOXES
43	2504.603	1" TYPE K COPPER PIPE	LIN FT	381					381			PIGTAIL IS INCIDENTAL
44	2504.603	6" WATER MAIN DUCTILE IRON CL 52	LIN FT	1347				1055		292		
45	2504.603	HYDRANT RISER	LIN FT	1				1				ESTIMATE - AS DIRECTED BY THE ENGINEER
46	2504.608	WATER MAIN FITTINGS	POUND	540			540					BASED ON WEIGHTS OF COMPACT FITTINGS FROM AWWA C153/A21.53-94
47	2506.502	CASTING ASSEMBLY	EACH	10		5					5	INCLUDES ADJUSTMENT FOR WEARING COURSE PLACEMENT
48	2506.502	INSTALL CASTING	EACH	1							1	INCLUDES ADJUSTMENT FOR WEARING COURSE PLACEMENT
49	2506.502	CONST DRAINAGE STRUC. DES 48-4020	EACH	5							5	MINIMUM 5' DEPTH FROM TOP OF CASTING TO BOTTOM OF BASE
50	2506.502	CONST DRAINAGE STRUC. DESIGN F	EACH	4		4						SANITARY MANHOLE UP TO 8' DEPTH
51	2506.503	CONST DRAINAGE STRUC. DESIGN F	LIN FT	12.23		12.23						ADDITIONAL SANITARY MANHOLE DEPTH OVER 8'
52	2506.602	SEAL MANHOLE OR CATCH BASIN	EACH	9		4					5	GATOR WRAP ON ALL RINGS AND SEAMS OF NEW SANITARY MANHOLE AND NEW STORM STRUCTURES
53	2506.602	REPAIR MANHOLE	EACH	1							1	REPAIR OF MANHOLE WITH BLOCK AND MORTAR AFTER STORM PIPE REMOVAL
54	2521.518	4" CONCRETE WALK	SQ FT	2145	2145							
55	2521.518	6" CONCRETE WALK	SQ FT	248	248							
56	2531.503	CONCRETE CURB & GUTTER DESIGN B618	LIN FT	730	730							HAND OR MACHINE PLACED
57	2531.504	8" CONCRETE DRIVEWAY PAVEMENT	SQ YD	67	67							FOR COMMERCIAL DRIVEWAYS
58	2531.603	CONCRETE CURB DESIGN V	LIN FT	36	36							
59	2531.618	TRUNCATED DOMES	SQ FT	28	28.4							
60	2563.601	TRAFFIC CONTROL	LUMP SUM	1	0.39	0.21	0.08	0.22	0.02		0.08	
61	2564.518	INSTALL SIGN TYPE C	EACH	1	1							INCLUDES INSTALLATION OF SALVAGED SIGN PANEL TYPE C ON A NEW SQUARE POST WITH BREAKAWAY MOUNT
62	2573.501	STABILIZED CONSTRUCTION EXIT	LUMP SUM	1	0.39	0.21	0.08	0.22	0.02		0.08	INCLUDES INSTALLATION AND MAINTENANCE FOR THE DURATION OF PROJECT
63	2573.502	STORM DRAIN INLET PROTECTION	EACH	19	19							INLET PROTECTION FOR NEW AND EXISTING STORM STRUCTURES
64	2573.503	SILT FENCE, TYPE MS	LIN FT	800	800							INCLUDES MAINTENANCE AND CLEANING
65	2574.507	COMMON TOPSOIL BORROW	CU YD	355	355							ESTIMATED 3" DEPTH FOR ALL SEEDING AREAS
66	2575.505	SEEDING	ACRE	1	0.88							FOR INSTALLATION OF SEED MIXTURE
67	2575.506	WEED SPRAY MIXTURE	GAL	0	0.22							0.5 GALLON PER ACRE SPRAYED
68	2575.505	WEED SPRAYING	ACRE	0	0.44							0.5 ACRE PER ACRE SEEDED
69	2575.508	SEED MIXTURE MNST-12	POUND	176	176							200 LB PER ACRE
70	2575.508	MOWING	ACRE	2	1.76							2 ACRES OF MOWING PER ACRE SEEDED
71	2575.523	WATER	MGAL	19.21	19.21							FOR WATERING TURF/TREES/PLANTINGS
72	2575.601	EROSION CONTROL	LUMP SUM	1	0.39	0.21	0.08	0.22	0.02		0.08	FOR ALL ITEMS REQUIRED TO MEET NPDES PERMIT REQUIREMENTS SHOWN OR NOT SHOWN ON PLANS
73	2575.604	ROLLED EROSION PREVENTION CATEGORY 20	SQ YD	4259	4259							

NOTES:
1) (P) DENOTES ITEM IS A PLANNED QUANTITY
2) (CV) DENOTES A COMPACTED VOLUME
3) (1) DENOTES THAT BITUMINOUS TACK COAT IS INCIDENTAL

SANITARY TABULATION

FLOWS FROM	FLOWS TO	NORTHING	EASTING	TYPE	CASTING ASSEMBLY TYPE	TOP OF CASTING ELEV	INLET ELEV	OUTLET ELEV	STRUCTURE DEPTH	ADDITIONAL DEPTH (LF) OVER 8 FEET	PIPE LIN FT	PIPE
1		177386.46	548293.54	48 in MH	716/700-7	1290.36	1280.81 1280.91	1280.81	9.55	1.55	247	8" SDR-35 PVC
2	1	177386.80	548101.82	48 in MH	716/700-7	1297.23	1285.80	1285.70	11.53	3.53	192	8" SDR-35 PVC
3	2	177704.28	548100.67	48 in MH	716/700-7	1301.57	1289.40	1289.30	12.27	4.27	317	8" SDR-35 PVC
4	3	178054.28	548099.40	48 in MH	716/700-7	1317.78		1306.90	10.88	2.88	350	8" SDR-35 PVC

DRAINAGE TABULATION

FLOWS FROM	FLOWS TO	NORTHING	EASTING	TYPE	CASTING ASSEMBLY TYPE	TOP OF CASTING ELEV	INLET ELEV	OUTLET ELEV	LIN FT	PIPE
101		177650.25	548262.98	48 -4020 CB	805/814A/823A	1299.74	1294.76	1294.66	26	EXISTING 12"
102	101	177630.58	548238.54	48 -4020 CB	805/814A	1299.77	1295.25	1295.15	31	15" RCP CLASS III
103	102	177631.03	548139.37	48 -4020 CB	805/814A/823A	1299.83	1296.59	1296.49	99	15" RCP CLASS III
104	103	177631.08	548128.19	48 -4020 CB	805/814A/823A	1299.91		1296.73	11	15" RCP CLASS III
201		177664.20	547949.14	48 -4020 CB	805/814A	1299.32		1294.70	41	EXISTING 10"

PROPOSED WATER SCHEDULE

STRUCTURE	NORTHING	EASTING
CONNECT TO EXISTING 6" WATER MAIN (2X) PL 6" x 6" DI MJ TEE PL 6" DI MJ SLEEVE CONTRACTOR TO VERIFY ELEVATION AND LOCATION	177398.60	548284.38
CONNECT TO EXISTING 6" WATER MAIN (2X) PL 6" x 6" DI MJ TEE PL 6" DI MJ SLEEVE CONTRACTOR TO VERIFY ELEVATION AND LOCATION	178085.55	548261.79
CONNECT TO EXISTING WATER MAIN PL 5 LIN FT 6" DI WATER MAIN PL 6 " GATE VALVE & BOX	177641.74	547960.16
PL 6 " GATE VALVE & BOX	177646.70	548112.88
PL 6 " GATE VALVE & BOX	177665.74	547965.31
PL 6 " GATE VALVE & BOX PL 3 LIN FT 6" DI WATER MAIN CONNECT TO EXISTING WATER MAIN (TEE) CONTRACTOR TO VERIFY LOCATION	177641.71	548258.71
PL 6" 45° DI MJ BEND	177398.78	548118.76
PL 6" 45° DI MJ BEND	177403.81	548113.76
PL 6" 45° DI MJ BEND	178076.19	548111.32
PL 6" 45° DI MJ BEND	178086.10	548121.28
PL 6" GATE VALVE & BOX	177398.61	548274.03
PL 6" GATE VALVE & BOX	178085.56	548256.23
PL 6" GATE VALVE & BOX PL HYDRANT	178078.09	548121.74
PL 6" x 6" DI MJ TEE	177641.74	547965.16
PL 6"x6" DI MJ CROSS	177641.71	548112.89
PL 6"x6" DI MJ TEE	178082.39	548117.55
PL HYDRANT	177671.74	547965.35

SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

STRUCTURE SCHEDULES
FOREST LAKE SITE UTILITIES

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND REGULATIONS.
2. CONSTRUCTION LIMITS ARE THE RIGHT OF WAY UNLESS NOTED OTHERWISE.
3. ALL SEWER INVERTS, ELEVATIONS & GRADES ARE COMPUTED CENTER-TO CENTER OF STRUCTURES. PIPES THAT INCLUDE APRONS DISPLAY THE TOTAL PIPE AND APRON LENGTH ON THE PLAN, HOWEVER PAID QUANTITY WILL REFLECT ACTUAL PIPE LENGTH (MINUS APRON).
4. TREES TO BE CLEARED AND GRUBBED ARE DESIGNATED BY A OR WITH AN "X" ON PLANS. NO TREE SHALL BE CLEARED UNLESS MARKED BY THE ENGINEER IN FIELD.
5. THE LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED IN THE FIELD BEFORE DIGGING. THERE WILL BE NO ADDITIONAL COMPENSATION TO THE CONTRACTOR FOR WORKING AROUND EXISTING UTILITIES.
6. CONTRACTOR TO CONTACT UTILITY COMPANIES TO RELOCATE UTILITIES AS REQUIRED.
7. TRAFFIC CONTROL SHALL COMPLY WITH MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. SEE FIELD MANUAL LATEST VERSION.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DISPOSE OFF-SITE ALL TREES, STUMPS, BRUSH OR OTHER DEBRIS THAT EXISTS WITHIN THE CONSTRUCTION AREAS. NO BURNING IS PERMITTED.
9. CONSTRUCT ALL RADII AS PER PLANS. RADII SHOWN ARE TO GUTTER LINE/FACE OF CURB FOR CURB AREAS.
10. WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKS AND MONUMENTS UNTIL THE OWNER AND AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION.
11. SAW-CUT BITUMINOUS AS DIRECTED BY THE ENGINEER PRIOR TO REMOVAL. THE CONTRACTOR SHALL SAWCUT PAVEMENT AS INDICATED ON THE PLANS TO SEPARATE THE EXISTING MATERIAL TO BE REMOVED BY MEANS OF AN APPROVED SAW. SUITABLE GUIDELINES OR DEVICES SHALL BE USED TO ASSURE CUTTING A NEAT, STRAIGHT LINE AS SHOWN ON THE PLANS. CARE SHALL BE TAKEN BY THE CONTRACTOR SO AS NOT TO DAMAGE THE REMAINING MATERIALS DIRECTLY ADJACENT TO THE MATERIALS TO BE REMOVED. ANY DAMAGE TO THE EXISTING MATERIAL RESULTING FROM THE MATERIAL REMOVAL OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL FOLLOW FEDERAL REQUIREMENTS FOR DUST CONTROL.
12. CONTRACTOR SHALL SALVAGE ALL TOPSOIL AND REUSE ON SITE WHERE NEEDED, EXCEPT WHERE NOTED. SALVAGING OF TOPSOIL IS INCIDENTAL IN COMMON EXCAVATION. ALL TOPSOIL SHALL BE TESTED ACCORDING TO PROJECT SPECIFICATIONS.
13. CONTRACTOR SHALL VERIFY INVERTS ON EXISTING UTILITIES PRIOR TO INSTALLATION OF STRUCTURES OR PIPES.
14. MAINTENANCE OF HAUL ROADS SHALL BE INCIDENTAL TO CONSTRUCTION.
15. CONTRACTOR SHALL VERIFY WIDTH OF PROPOSED DRIVEWAYS AND LOCATION OF DRIVEWAY CURB OPENINGS WITH ENGINEER IN THE FIELD PRIOR TO CONSTRUCTION.
16. REMOVE AND RECONSTRUCT DRIVEWAY SURFACES AS SHOWN ON PLANS UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER OR THEIR REPRESENTATIVE.
17. CASTING REMOVAL SHALL BE INCIDENTAL TO MANHOLE / CATCH BASIN REMOVAL. CASTINGS SHALL BECOME PROPERTY OF THE CONTRACTOR.
18. WHEN EVER THE WORD "INCIDENTAL" IS USED IN THIS PLAN SET, IT SHALL MEAN NO DIRECT COMPENSATION WILL BE MADE.
19. CONTRACTOR SHALL PROVIDE ACCESS TO ALL PROPERTIES, UNLESS ALTERNATE PROVISIONS ARE APPROVED BY THE PROPERTY OWNER AND THE ENGINEER.
20. CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS A MINIMUM OF 48 HRS IN ADVANCE OF DISRUPTION TO SERVICE.
21. CONTRACTOR SHALL SUPPLY A TRASH CONTAINER ON SITE FOR CONSTRUCTION DEBRIS/TRASH. ABSOLUTELY NO TRASH TO BE DISCARDED IN EXCAVATIONS. CONTRACTOR SHALL ENSURE TRASH IS COLLECTED FROM WORK ACTIVITIES AND DISCARDED IN APPROPRIATE TRASH CONTAINERS DAILY.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING AND REPAIRING ALL EXISTING AREAS, PAVEMENTS, STRUCTURES OR OTHER FACILITIES DAMAGED DURING CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER CONDITIONS.
23. TRACER WIRE SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.
24. ANY TRIMMING OF BRANCHES / TREES REQUIRED FOR CONSTRUCTION SHALL BE INCIDENTAL TO CLEARING AND GRUBBING. THIS WILL INCLUDE ANY DEAD BRANCHES AFTER SUBSTANTIAL COMPLETION.
25. CONTRACTOR SHALL TAKE CARE TO MINIMIZE REMOVAL OF TREES. IF EXISTING TREE CAN BE MAINTAINED NEXT TO AN ADJACENT SERVICE IT SHALL NOT BE REMOVED.
26. WHENEVER "PLACE" (PL) IS USED IN THIS PLAN SET IT DENOTES PLACEMENT OF A CONTRACTOR SUPPLIED ITEM. WHENEVER "INSTALL" (INST) IS USED IN THIS PLAN SET IT DENOTES INSTALLATION OF AN ITEM SUPPLIED BY OTHERS OR INSTALLATION OF A SALVAGED ITEM.
27. ALL SIDEWALK JOINTS SHALL BE SAWCUT AT CURB JOINTS UNLESS REQUESTED OTHERWISE BY THE ENGINEER.

TURF ESTABLISHMENT NOTES:

1. CONTRACTOR SHALL TAKE CARE TO MINIMIZE PROJECT DISTURBANCE AND KEEP THE SEEDING AREA PER THE PLAN.
2. IF THE ENGINEER DETERMINES THAT EXCESS SEEDING AREAS WERE NOT NECESSARY FOR CONSTRUCTION, TURF ESTABLISHMENT IN THESE AREAS WILL BE THE CONTRACTOR'S RESPONSIBILITY.
3. CONTRACTOR SHALL PLACE 7" OF TOPSOIL PRIOR TO SETTLEMENT. BOTTOM OF TOPSOIL SHALL BE 6" LOWER THAN ADJACENT HARD SURFACE. FINAL TOPSOIL SURFACE GRADE SHALL MATCH ADJACENT HARD SURFACES.

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL EROSION CONTROL MEASURES AS SHOWN OR NOT SHOWN ON THESE PLANS AND SPECIFICATIONS AND IMPLEMENT ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY IN ORDER TO PROTECT ADJACENT PROPERTY. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR MAINTENANCE AND IMPLEMENTATION OF STORM WATER EROSION CONTROL ITEMS TO COMPLY WITH THE NPDES PERMIT REQUIREMENTS. THIS INCLUDES GEOTEXTILE FABRIC ON SLOPES/ ROADWAYS SUSCEPTIBLE TO EROSION. ADDITIONAL ITEMS REQUESTED BY THE MPCA AND ANY OTHER ITEMS REQUESTED BY THE ENGINEER DURING CONSTRUCTION. ALL WORK THAT IS NOT INCLUDED IN PAY ITEMS SHALL BE DEEMED INCIDENTAL TO CONSTRUCTION. ANY PENALTIES IMPOSED ON THE COUNTY OR THE CONTRACTOR AS A RESULT OF STORMWATER ISSUES WILL BE PAID COMPLETELY BY THE CONTRACTOR.
2. WATER FOR ON SITE DUST CONTROL SHALL BE INCIDENTAL TO CONSTRUCTION. WHEN A WATER TRUCK IS REQUESTED BY THE ENGINEER, THE CONTRACTOR SHALL RESPOND WITHIN 4 HOURS. IF THE CONTRACTOR DOES NOT COMPLY, A $250 PENALTY WILL BE ASSESSED PER INCIDENT.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS REQUIRED BY THE CONSTRUCTION COVERED IN THESE PLANS. THE CONTRACTOR SHALL OBTAIN THE CITY OF GRAND RAPIDS STORMWATER POLLUTION PREVENTION PERMIT. THE MPCA NPDES PERMIT IS PAID FOR BY THE CITY. THE CONTRACTOR SHALL BE A CO-PERMITEE.
4. WHEN STREET SWEEPING IS REQUESTED BY THE OWNER/ENGINEER, THE CONTRACTOR SHALL RESPOND WITHIN 4 HOURS. IF THE CONTRACTOR DOES NOT COMPLY, A $250 PENALTY WILL BE ASSESSED PER INCIDENT.
5. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN STABILIZED CONSTRUCTION EXITS AT ALL LOCATION WHERE TRAFFIC LEAVES THE CONSTRUCTION SITE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE STABILIZED CONSTRUCTION EXITS MAINTENANCE AND REPAIR ARE INCLUDED IN THE BID ITEM.
6. INLET PROTECTION IS PAID PER EXISTING OR PROPOSED STRUCTURE (EACH). EXISTING STRUCTURES ON OR ADJACENT TO THE PROJECT RECEIVE A DROP IN FILTER BAG. NEW STRUCTURES INITIALLY RECEIVE A SILT FENCE BOX. ONCE THE CASTING IS SET ON A NEW STRUCTURE IT SHALL RECEIVE A DROP IN FILTER BAG. CLEANING AND MAINTENANCE OF INLET PROTECTION SHALL BE CONSIDERED INCIDENTAL

TRAFFIC CONTROL NOTES:

1. CONTRACTOR SHALL SUPPLY A TRAFFIC CONTROL PLAN FOR ALL WORK.
2. TRAFFIC CONTROL PLANS SHALL BE SUBMITTED AT THE PRE-CONSTRUCTION MEETING, OR AT LEAST 2 WEEKS IN ADVANCE OF CONSTRUCTION ACTIVITIES COMMENCING. ENGINEER SHALL REVIEW AND APPROVE ALL TRAFFIC CONTROL PLANS.
3. ACCESS MUST BE PROVIDED AT ALL TIMES TO RESIDENTS.

PHASING/BITUMINOUS PAVING:

1. CONTRACTOR SHALL SUBMIT A PHASING PLAN FOR THE PROJECT PRIOR TO THE PRECONSTRUCTION MEETING FOR APPROVAL BY THE ENGINEER.

SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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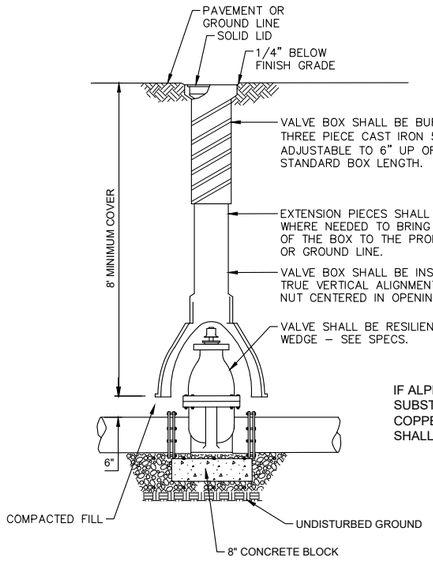
SEH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

CONSTRUCTION NOTES
FOREST LAKE SITE UTILITIES



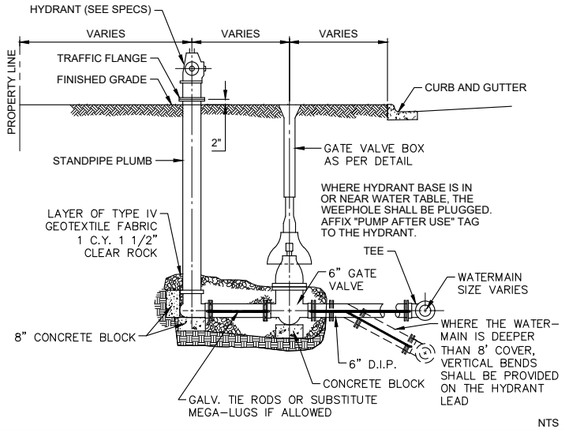
NTS

SEH	GATE VALVE AND BOX	Revised: Oct. 2011	SEH Plate No. WAT-04

HYDRANTS SHALL BE AS REQUIRED BY SPECIFICATIONS
- –FACTORY PAINTED (COLOR AS PER SPECIFICATIONS) TO GROUND LINE
- –TRAFFIC FLANGE
- –8.5 FOOT MIN. BURY
- –ALUMINUM PLATE TO DENOTE BURY DEPTH
- –STEAMER,NOZZLES AND THREAD PER SPECS.
- –PENTAGON NUT TYPE, CAPS WITH CHAINS
- –CONDUCTIVITY IS REQUIRED (DO NOT TEST CONDUCTIVITY THROUGH OPERATING NUT)

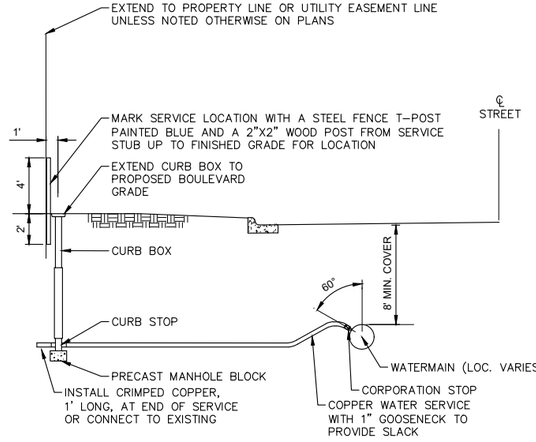
PROVIDE PERMANENT MARKINGS WHICH INDICATE:
- –MANUFACTURER'S NAME
- –YEAR OF MANUFACTURE

HYDRANTS GENERALLY LOCATED 5 FEET BEHIND BACK OF CURB.
HYDRANT LEADS SHALL BE EQUIPPED WITH AUXILIARY GATE VALVES LOCATED NEAR THE HYDRANT (BETWEEN CURB & HYD).
VALVES SHALL BE TIED TO HYDRANT AND TEE.



NTS

SEH	HYDRANT AND GATE VALVE INSTALLATION	Revised: Oct. 2016	SEH Plate No. WAT-01



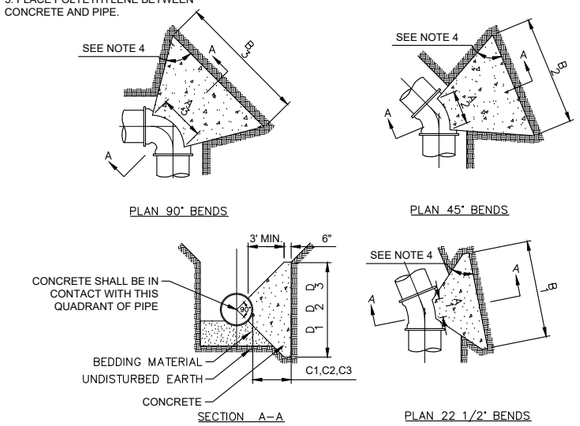
NOTES:
1. SEE SPECS FOR SIZE & TYPE OF MATERIALS
2. MAINTAIN 18" VERTICAL & 24" HORIZONTAL SEPARATION BETWEEN SEWER & WATER SERVICE LINES.
3. PROVIDE CURB BOXES THAT ARE IN CONCRETE OR BITUMINOUS DRIVEWAYS WITH A SHORT TOP SECTION OF A STANDARD GATE VALVE BOX WITH A LID MARKED "WATER".
4. WHERE WATER MAIN IS HDPE: USE ELECTROFUSION CORPORATIONS SADDLES TO CONNECT TO WATER MAIN.

NTS

SEH	COPPER WATER SERVICE CONNECTION	Revised: Oct. 2011	SEH Plate No. WAT-14

NOTES:
1. SHAPE OF BACK BUTTRESS MAY VARY AS LONG AS POURED AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION C1,C2,C3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE 0 EQUAL TO OR LARGER THAN 45°.
3. DIMENSION A1,A2,A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
4. 45° MINIMUM.
5. PLACE POLYETHYLENE BETWEEN CONCRETE AND PIPE.

PIPE SIZE	BUTTRESS DIMENSIONS					
	22 1/2° BEND		45° BEND		90° BEND	
	B_1	D_1	B_2	D_2	B_3	D_3
6"	1'–5"	1'–5"	1'–5"	1'–5"	2'–1"	1'–6"
8"	1'–5"	1'–5"	2'–1"	1'–6"	2'–8"	2'–0"
12"	1'–10"	1'–10"	3'–4"	2'–0"	4'–9"	2'–6"
16"	3'–0"	2'–0"	3'–10"	3'–0"	6'–2"	3'–6"
20"	3'–6"	2'–8"	5'–6'	3'–4"	8'–4"	4'–0"
24"	4'–4"	3'–0"	6'–10"	3'–10"	9'–8"	5'–0"
30"	–	–	9'–3"	6'–0"	17'–0"	6'–0"



NTS

SEH	CONCRETE THRUST BLOCKING	Revised: Feb. 2011	SEH Plate No. WAT-13

ALL WATER MAIN SHALL BE INSTALLED WITH APPROVED JOINT RESTRAINT CLAMPS, RODS, AND DEVICES AS ACCEPTED BY THE ENGINEER AT EACH FITTING. BASED UPON A 150 PSI TEST PRESSURE AND 8.0' COVER. THE FOLLOWING SHOWS THE MINIMUM LENGTH OF PIPE EACH WAY OF A FITTING TO BE RESTRAINED.

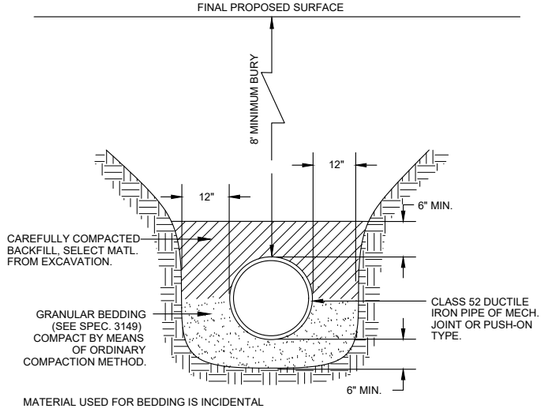
PIPE DIAMETER	DEAD END TEE BRANCH OR 90° BEND	45° BEND	22 1/2° BEND
6"	23 LF	7 LF	0 LF
8"	30 LF	10 LF	2 LF
10"	38 LF	12 LF	3 LF
12"	50 LF	14 LF	3 LF
16"	72 LF	24 LF	10 LF

WHERE RESTRAINED JOINTS ARE REQUIRED AND THE PIPE IS IN A CASING NEAR THE FITTING TO BE RESTRAINED, THE LENGTH OF PIPE IN THE CASING SHALL NOT BE INCLUDED IN THE LENGTH OF PIPE NECESSARY TO DEVELOP SUFFICIENT SOIL FRICTION TO OVERCOME THRUST.

ALL HYDRANTS, VALVES, SERVICES, FITTINGS AND PLUGS, STUBS AND EXTENSIONS, AND BLIND FLANGES USED FOR RETAINING WATER PRESSURE MUST BE TIED WITH TIE RODS OR RISER CLAMPS AND MEGA LUG COMBINATION AS A PRESSURE RESTRAINT. ALL TIE RODS OR BARE METALS SHALL HAVE TWO COATS OF BITUMASTIC OR ACCEPTED EQUAL.

NTS

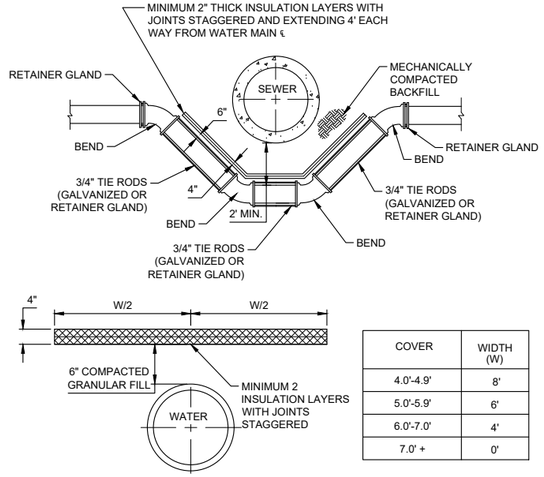
SEH	THRUST RESTRAINT	Revised: Oct. 2011	SEH Plate No. WAT-18



1. WHERE PUSH ON PIPE IS USED, PROVISION WILL BE MADE FOR ELECTRICAL THAWING BY PROVIDING METAL TO METAL CONTACT IN ALL JOINTS BY THE USE OF A MINIMUM OF TWO BRASS WEDGES RECOMMENDED BY THE PIPE MANUFACTURER OR BY THE USE OF A CABLE BOND CONNECTOR.
2. WHERE MECHANICAL JOINT PIPE, FITTINGS OR VALVES ARE INSTALLED, RUBBER GASKETS WILL BE TIPPED WITH METAL CONTACT STRIPS.
3. CONTRACTOR SHALL USE CRUSHED ROCK FOR PIPE BEDDING IN WET CONDITIONS AS DIRECTED BY THE ENGINEER. PAID AS CRUSHED ROCK, CU YD.

NTS

SEH	STANDARD WATER MAIN DUCTILE IRON PIPE	Revised: -	SEH Plate No. -



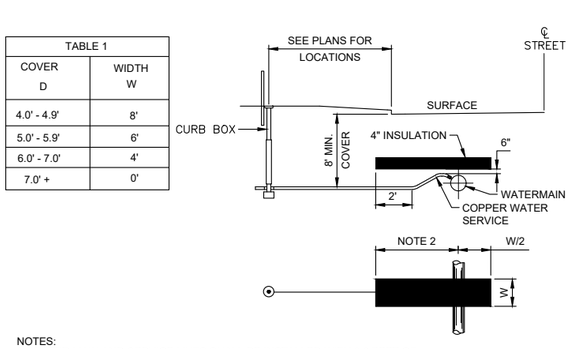
COVER	WIDTH (W)
4.0'-4.9'	8'
5.0'-5.9'	6'
6.0'-7.0'	4'
7.0' +	0'

NOTES:
1. INSULATION SHALL BE EXTRUDED POLYSYRENE (XEPS) INSULATION BOARD, "CERTIFOAM SE" OR "STYROFOAM SM" OF EQUIVALENT, EXCEPT AS FOLLOWS: WHERE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION" APPLY, INSULATION BOARD SHALL BE "CERTIFOAM 40" OR STYROFOAM HI-35 OR HI-40" OR EQUIVALENT.
2. INSULATION SHALL BE PLACED ON A SMOOTH, LEVEL FOUNDATION WHICH HAS BEEN FIRMLY COMPACTED.
3. SEPARATE LAYERS OF INSULATION USED TO MAKE UP THE 4" THICKNESS SHALL HAVE STAGGERED JOINTS TO ENSURE THE CONTINUITY OF THE INSULATION.
4. LENGTH AND WIDTH OF INSULATION SHOWN ON PLANS IS APPROXIMATE. SEE TABLE 1 FOR ACTUAL WIDTH REQUIRED ONCE THE ACTUAL DEPTH OF WATER MAIN IS KNOWN.

NTS

SEH	WATER MAIN INSULATION	Revised: Oct. 2011	SEH Plate No. WAT-17

TABLE 1	
COVER D	WIDTH W
4.0' - 4.9'	8'
5.0' - 5.9'	6'
6.0' - 7.0'	4'
7.0' +	0'



NOTES:
1. WATER MAIN AND SERVICE LINES SHALL BE INSTALLED WITH 8.0 FEET OF COVER. WHERE THE PLANS REQUIRE OR THE ENGINEER ORDERS AN INSTALLATION WITH LESS THAN 8.0 FEET OF COVER, TABLE 1 SHALL BE USED TO DETERMINE THE WIDTH OF INSULATION REQUIRED.
2. INSULATION SHALL BE CARRIED OUT 2 FEET BEYOND THE POINT WHERE 8.0 FEET OF COVER HAS BEEN RE-ESTABLISHED.
3. INSULATING MATERIAL SHALL BE PLACED ON A SMOOTH, LEVEL FOUNDATION WHICH HAS BEEN FIRMLY COMPACTED WITH A HAND-OPERATED, VIBRATORY COMPACTOR. SEPARATE LAYERS USED TO MAKE UP THE 4 INCH THICKNESS SHALL HAVE STAGGERED JOINTS TO ENSURE CONTINUITY. AFTER PLACING THE INSULATION, BACKFILL WITH 12 INCHES OF LOOSE MATERIAL AND COMPACT WITH A NON-VIBRATORY ROLLER.THEN RETURN TO STANDARD BACKFILL PROCEDURES OUTLINED IN THE SPECIFICATIONS. USE EXTREME CAUTION WHEN WORKING NEAR THE CORPORATION STOP TO ENSURE THE CONNECTION TO THE MAIN IS NOT DAMAGED.
4. INSULATION SHALL BE EXTRUDED POLYSTYRENE (XEPS) INSULATION BOARD, "CERTIFOAM SE", OR "STYROFOAM SM" OR EQUIVALENT, EXCEPT AS FOLLOWS: WHERE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION" APPLY, INSULATION BOARD SHALL BE "CERTIFOAM 40", OR "STYROFOAM HI-35 OR HI-40", OR EQUIVALENT.
5. BASIS OF PAYMENT: WHERE THERE IS NO BID ITEM TO FURNISH AND INSTALL INSULATION, PAYMENT WILL BE MADE FOR MATERIAL COST ONLY BASED ON APPROVED INVOICES. INSTALLATION SHALL BE INCIDENTAL.

NTS

SEH	WATER SERVICE INSULATION	Revised: Oct. 2011	SEH Plate No. WAT-16

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SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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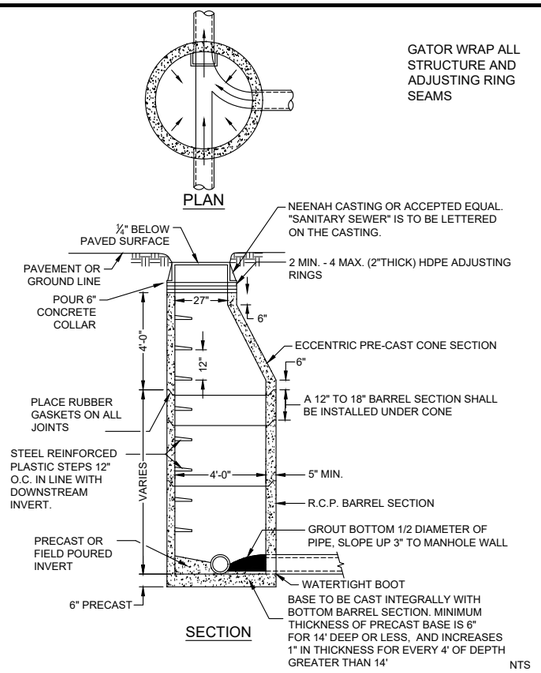
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

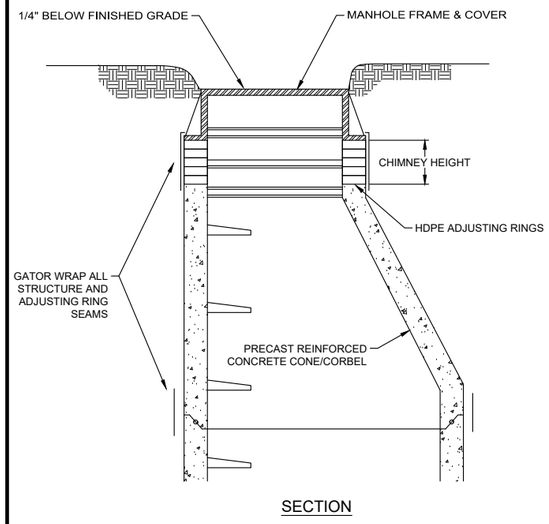
CONSTRUCTION DETAILS
FOREST LAKE SITE UTILITIES

6 of 38



NTS

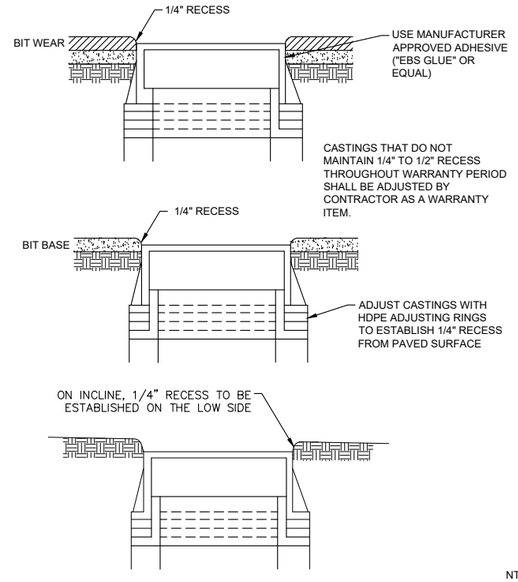
SANITARY SEWER MANHOLE	Revised: Oct. 2011	SEH Plate No. SAN-01



NTS

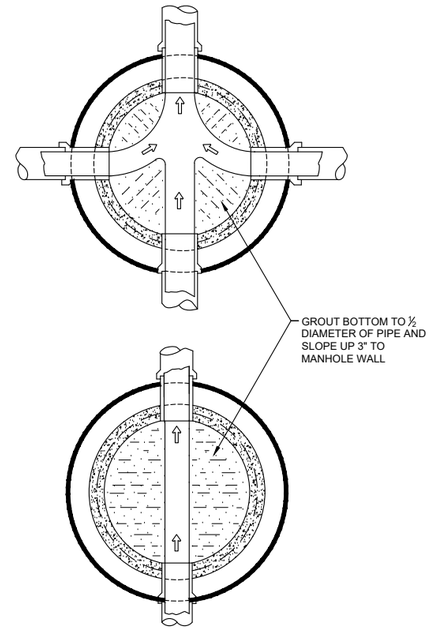
SANITARY MANHOLE SEAL	Revised: Jan. 2013	SEH Plate No. SAN-18

NOTE: THIS DETAIL APPLIES TO ALL SANITARY AND STORM MANHOLES INSTALLED UNDER A BITUMINOUS SURFACE



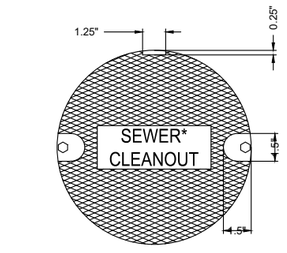
NTS

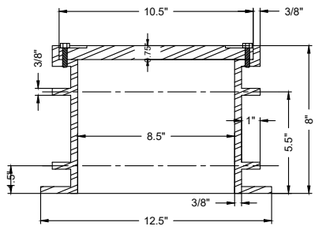
MANHOLE CASTING ADJUSTMENT	Revised: Oct. 2011	SEH Plate No. SAN-16



NTS

TYPICAL INVERT DETAILS	Revised: Oct. 2011	SEH Plate No. SAN-10





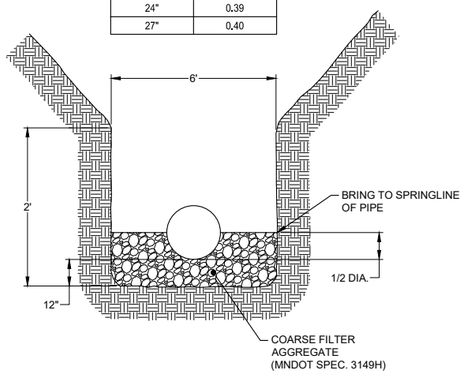
NOTE:
CASTING SHALL BE AN ESS BROTHERS 8" SEWER CLEANOUT CASTING WITH 2 – STAINLESS STEEL BOLTS (PART NO. 8SCOBD) OR APPROVED EQUAL

NTS

STANDARD SANITARY SEWER CLEANOUT CASTING	Revised:	SEH Plate No.

COARSE FILTER AGGREGATE SHALL BE MN/DOT SPEC 3149H. PAYMENT WILL BE BASED ON THE TABLE BELOW. (UNLESS NOTED OTHERWISE ON THE PLANS.)

PIPE SIZE	CY/FT
8"	0,30
10"	0,31
12"	0,32
15"	0,34
18"	0,36
21"	0,37
24"	0,39
27"	0,40



NOTE:
FOR USE IN UNSTABLE TRENCH BOTTOM AS DETERMINED BY THE ENGINEER

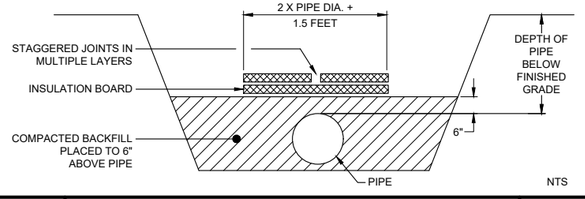
NTS

TRENCH BEDDING AND FOUNDATION	Revised: Oct. 2016	SEH Plate No. SAN-15

DEPTH OF SEWER MAIN BELOW FINISHED GRADE	DEPTH OF SERVICE LINE BELOW FINISHED GRADE	LAYERS OF 2" RIGID FOAM INSULATION REQUIRED OVER PIPE
4.5 - 5.5 FEET	5.5 - 6.5 FEET	2 LAYERS
5.5 - 6.5 FEET	6.5 - 7.5 FEET	1 LAYER
6.5 FEET & GREATER	7.5 FEET & GREATER	NONE REQUIRED

NOTES:

1. INSULATION SHALL BE 2" EXTRUDED POLYSTYRENE INSULATION BOARD.
2. THE WIDTH OF INSULATION BOARD SHALL BE A MINIMUM OF TWICE THE PIPE DIAMETER PLUS 1.5 FEET.
3. INSULATION SHALL BE PLACED ON A SMOOTH, LEVEL FOUNDATION WHICH HAS BEEN FIRMLY COMPACTED.
4. WHEN MULTIPLE LAYERS OF INSULATION ARE INSTALLED THE JOINTS SHALL BE STAGGERED.
5. THE REMAINDER OF THE TRENCH SHALL BE BACK FILLED WITH CARE BEING TAKEN NOT TO DAMAGE OR DISPLACE THE INSULATION.
6. LENGTH AND WIDTH OF INSULATION SHOWN ON THE PLANS IS APPROXIMATE, SEE TABLE 1 FOR ACTUAL WIDTH REQUIRED ONCE THE ACTUAL DEPTH OF SEWER MAIN IS KNOWN.



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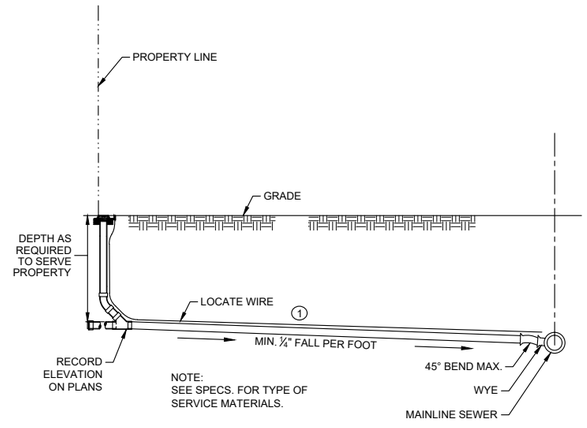
SEWER MAIN INSULATION	Revised: Oct. 2011	SEH Plate No. SAN-23



1 ALL SERVICE PIPE, BENDS, AND WYES SHALL BE SDR 35 PVC UNLESS OTHERWISE SPECIFIED.

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SANITARY SEWER SERVICE	Revised: Oct. 2011	SEH Plate No. SAN-11

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SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date

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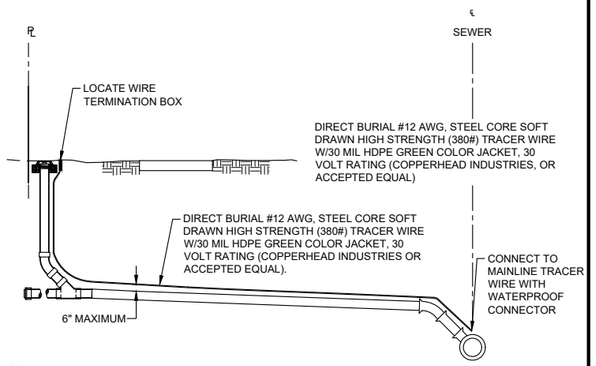
SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

CONSTRUCTION DETAILS
FOREST LAKE SITE UTILITIES

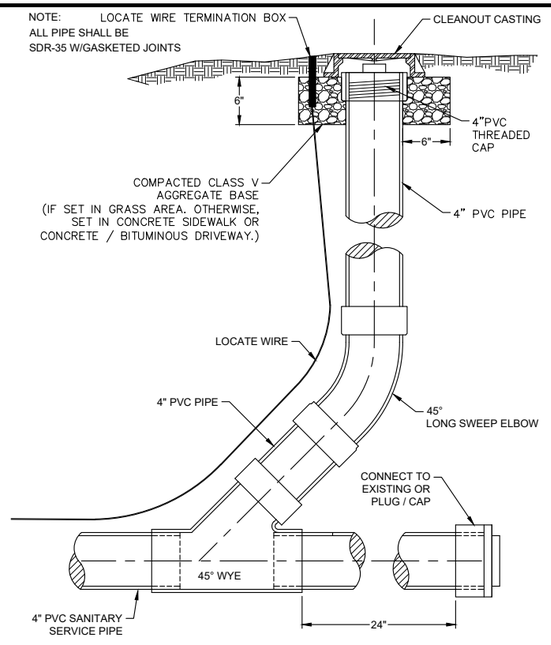


1. PLACE WIRE ALONG AXIS OF PIPE AND NOT IN DIRECT CONTACT WITH PVC PIPE.
2. EXCEPT FOR APPROVED SPLICED-IN CONNECTIONS, TRACER WIRE SHALL BE CONTINUOUS FROM END TO END.
3. SPLICED OR REPAIRED WIRE CONNECTIONS IN THE TRACER WIRE SYSTEM SHALL BE UL LISTED FOR DIRECT BURIAL, WATER AND CORROSION PROOF (DRYCONN KING, DRYCONN DIRECT BURY LUG OR ACCEPTED EQUAL). SPLIT-BOLT AND TWISTED WIRE SPLICES WILL NOT BE ACCEPTED.
4. TRACER WIRE FOR SERVICES INSTALLED WITH HORIZONTAL DIRECTIONAL DRILLING METHODS SHALL BE DIRECT BURIAL #12 AWG SOLID, STEEL CORE HARD DRAWN EXTRA HIGH STRENGTH WIRE (1150# AVERAGE TENSILE LOAD) WITH 45 MIL HDPE GREEN JACKET 30 VOLT RATING (COPPERHEAD INDUSTRIES OR ACCEPTED EQUAL)
5. PROVIDE 17# MAGNESIUM ANODE AT TRACER WIRE END. REMOVE ANODE PROTECTIVE PLASTIC COVER AND APPLY WATER AS DIRECTED BY MANUFACTURER.
6. TEST CONTINUITY OF CONDUCTION IN THE PRESENCE OF THE ENGINEER. DEMONSTRATE CONTINUITY BY CONNECTING A SIGNAL GENERATOR AT TERMINUS OF THE SYSTEM AND TRACE THE WIRE THROUGHOUT THE INSTALLATION. LOCATE AND REPAIR ANY BREAK IN CONDUCTIVITY.

NTS

TRACER WIRE

Revised: Oct. 2011 | SEH Plate No. SAN-09



IN LINE CLEANOUT

NTS

SANITARY SEWER SERVICE CLEANOUT

Revised: Oct. 2011 | SEH Plate No. SAN-17

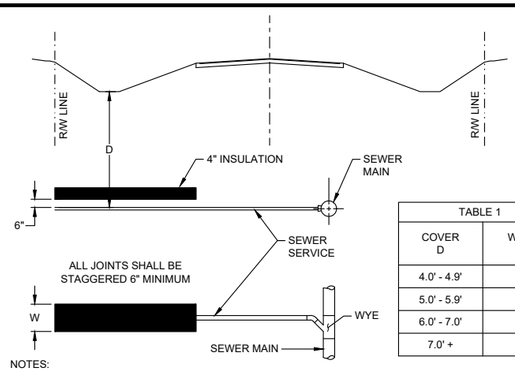


TABLE 1	
COVER D	WIDTH W
4.0' - 4.9'	8'
5.0' - 5.9'	6'
6.0' - 7.0'	4'
7.0' +	0'

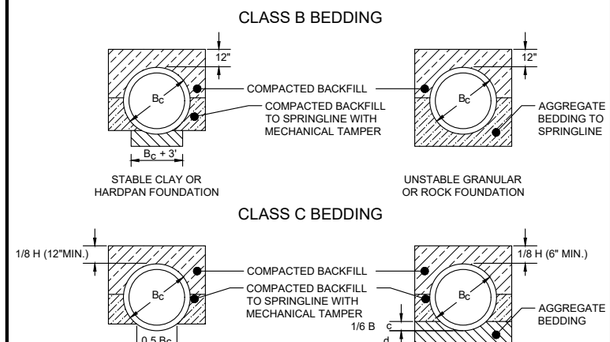
NOTES:

1. WHERE THE PLANS REQUIRE OR THE ENGINEER ORDERS INSULATION OF A SEWER SERVICE, TABLE 1 SHALL BE USED TO DETERMINE THE WIDTH OF INSULATION REQUIRED.
2. BEGIN INSULATION AT EDGE OF PAVEMENT AND CARRY INSULATION OUT TO R/W LINE OR THE END OF THE SERVICE PIPE.
3. INSULATING MATERIAL SHALL BE PLACED ON A SMOOTH, LEVEL FOUNDATION WHICH HAS BEEN FIRMLY COMPACTED WITH A HAND-OPERATED, VIBRATORY COMPACTOR. SEPARATE LAYERS USED TO MAKE UP THE 4" THICKNESS SHALL HAVE STAGGERED JOINTS TO ENSURE CONTINUITY. AFTER PLACING THE INSULATION, BACKFILL WITH 12" OF LOOSE MATERIAL AND COMPACT WITH A NON-VIBRATORY ROLLER; THEN RETURN TO STANDARD BACKFILL PROCEDURES OUTLINED IN THE SPECIFICATIONS.
4. INSULATING MATERIAL SHALL BE EXTRUDED POLYSTYRENE (XEPS) INSULATION BOARD "CERTIFOAM SE", OR "STYROFOAM SM", OR EQUIVALENT EXCEPT AS FOLLOWS: WHERE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION" APPLY, INSULATION BOARD SHALL BE "CERTIFOAM 40", OR "STYROFOAM HI-35 OR HI-40", OR EQUIVALENT.
5. BASIS OF PAYMENT: PAYMENT FOR INSULATION SHALL BE BY THE SQUARE YARD, FURNISHED, AND INSTALLED.

NTS

SEWER SERVICE INSULATION

Revised: Oct. 2011 | SEH Plate No. SAN-14



NOTES:

1. AGGREGATE BEDDING AND SAND ARE NOT SEPARATE PAY ITEMS UNLESS THEY ARE INCLUDED AS INDIVIDUAL QUANTITIES IN THE PROPOSAL.

LEGEND

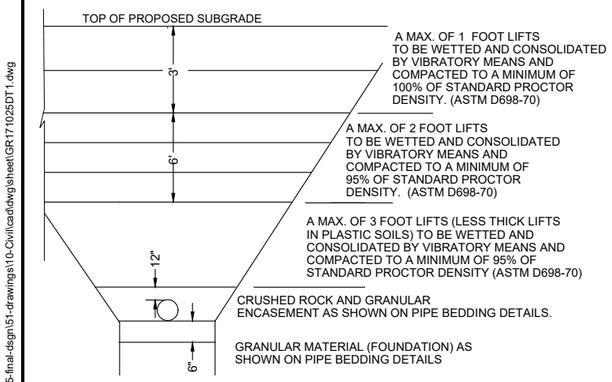
Bc = OUTSIDE DIAMETER
H = BACKFILL COVER OVER TOP OF PIPE
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE
As = AREA OF TRAVERSE STEEL IN THE CRADLE OR ARCH EXPRESSED AS A PERCENTAGE OF AREA OF CONCRETE AT INVERT OR CROWN.

DEPTH OF BEDDING MATERIAL BELOW PIPE	
D	d MIN.
27" & SMALLER	3"
30" TO 60"	4"
66" & LARGER	6"

NTS

TRENCH BEDDING FOR CIRCULAR PIPE

Revised: Mar. 2015 | SEH Plate No. STM-23



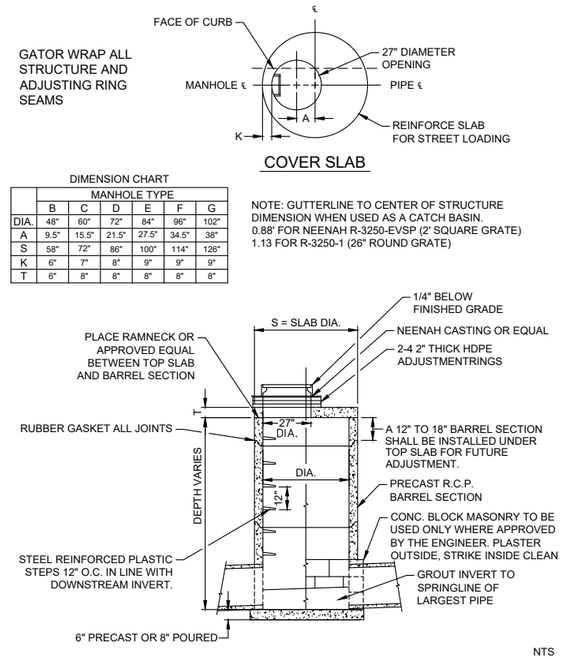
NOTES

1. VIBRATORY COMPACTION REQUIRED EACH SIDE OF PIPE AS DIRECTED BY THE ENGINEER.
2. THE UTILITY TRENCH SHALL BE BACKFILLED WITH NATIVE MATERIAL WITH THE EXCEPTION OF TOPSOIL, DEBRIS, ORGANIC MATERIAL, AND OTHER UNSUITABLE MATERIAL, WHICH WILL BW REPLACED WITH REPLACEMENT BACKFILL AS LISTED ON THE BID FORM.

NTS

TYPICAL TRENCH COMPACTION REQUIREMENTS

Revised: | SEH Plate No.



COVER SLAB

DIMENSION CHART

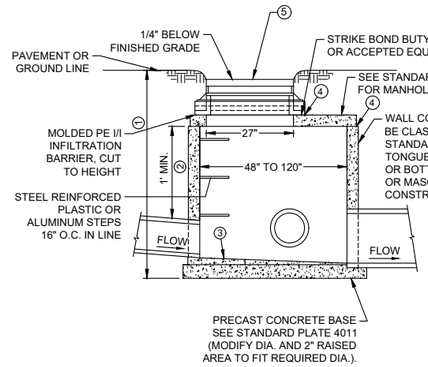
	MANHOLE TYPE					
	B	C	D	E	F	G
DIA.	48"	60"	72"	84"	96"	102"
A	9.5"	15.5"	21.5"	27.5"	34.5"	38"
S	58"	72"	86"	100"	114"	126"
K	6"	7"	8"	9"	9"	9"
T	6"	8"	8"	8"	8"	8"

NOTE: GUTTERLINE TO CENTER OF STRUCTURE DIMENSION WHEN USED AS A CATCH BASIN. 0.88' FOR NEENAH R-3250-EVSP (2' SQUARE GRATE) 1.13 FOR R-3250-1 (26" ROUND GRATE)

NTS

CATCH BASIN/MANHOLE (27" DIA. OPENING)

Revised: Oct. 2011 | SEH Plate No. STM-01

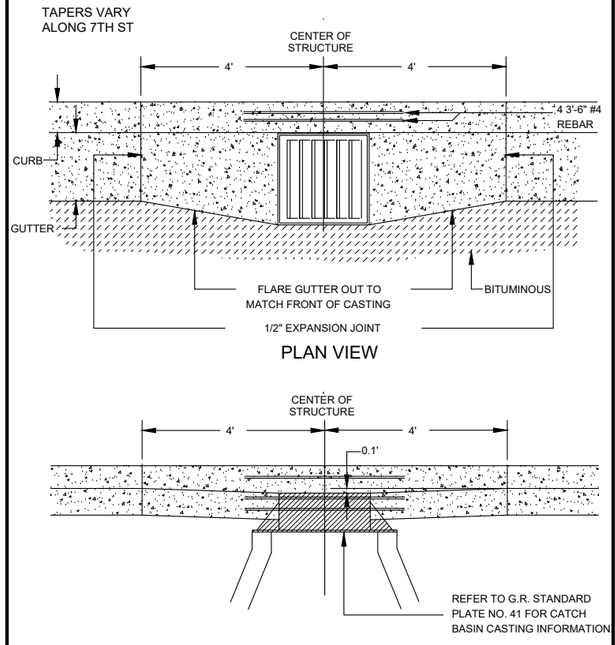


1. MINIMUM 5' TC TO BOTTOM OF STRUCTURE
2. REFER TO PLANS FOR HEIGHT AND DIAMETER REQUIREMENTS.
3. 1 FT MINIMUM FOR PRECAST CONSTRUCTION.
4. PROVIDE MORTAR FILLETS TO FIT BOTTOM PORTIONS OF PIPE TO DIRECT FLOW TO OUTLET.
5. PROVIDE A FULL MORTAR BED.

NTS

DRAINAGE STRUCTURE - DESIGN 4020

Revised: Oct. 2011 | SEH Plate No. STM-20



NTS

CURB AND GUTTER CONSTRUCTION AT CATCH BASIN

Revised: | SEH Plate No.

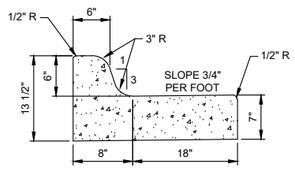
		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025						
Drawn By	MBH, JLE						
Designed By	SLC						
Checked By	RJB						

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

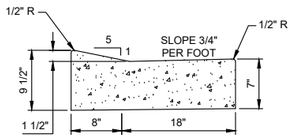
SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

CONSTRUCTION DETAILS
FOREST LAKE SITE UTILITIES



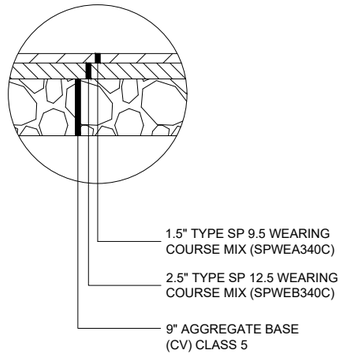
B618



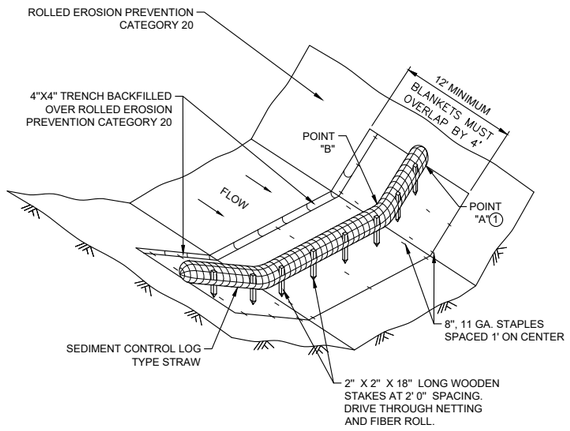
DRIVEWAY AT B618

NTS

SEH	CURB AND GUTTER	Revised: Oct. 2011	SEH Plate No. STR-19



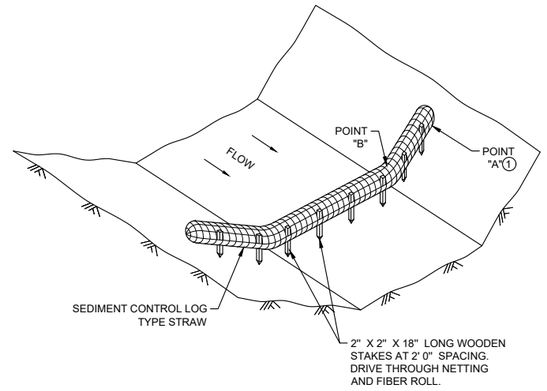
SEH	BITUMINOUS PATCH SPECIAL	Revised: Oct. 2011	SEH Plate No. STR-19



1 POINT "A" SHALL BE A MINIMUM OF 6" HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

NTS

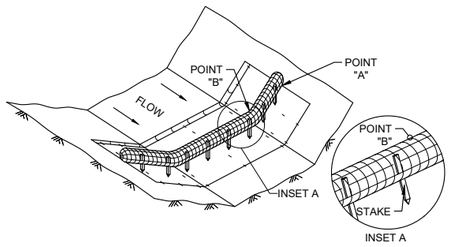
SEH	ROLLED EROSION PREVENTION CATEGORY 20 "BIOROLL BLANKET SYSTEM"	Revised: Oct. 2011	SEH Plate No. ERO-06

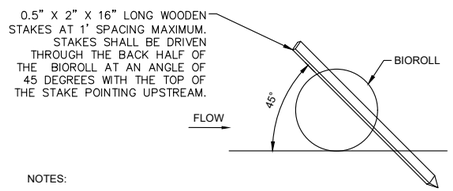


1 POINT "A" SHALL BE A MINIMUM OF 6" HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

NTS

SEH	SEDIMENT CONTROL LOG TYPE STRAW	Revised: Oct. 2011	SEH Plate No. ERO-05





NOTES:

SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{SPACING (FT)} = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}}$$

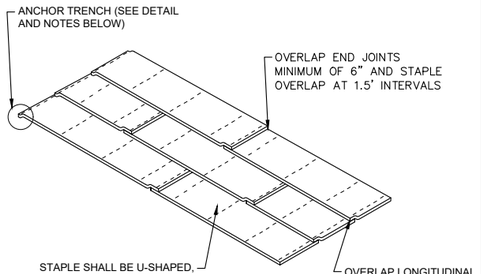
POINT "A" LABELED ON DETAILS SHALL BE A MIN. OF 6" HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

CHECK DAMS AND DIKES SHOULD BE LIMITED IN USE FOR DRAINAGE AREAS OF LESS THAN FIVE ACRES AND IN CHANNELS OF LESS THAT TEN PERCENT SLOPE.

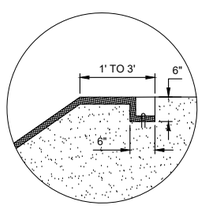
IF IN SERIES, THE TOP OF THE DOWNSTREAM DAM OR DIKE SHOULD ALIGN WITH THE BOTTOM OF THE UPSTREAM.

NTS

SEH	SEDIMENT CONTROL LOG TYPE STRAW (STAKING METHOD)	Revised: Oct. 2011	SEH Plate No. ERO-07

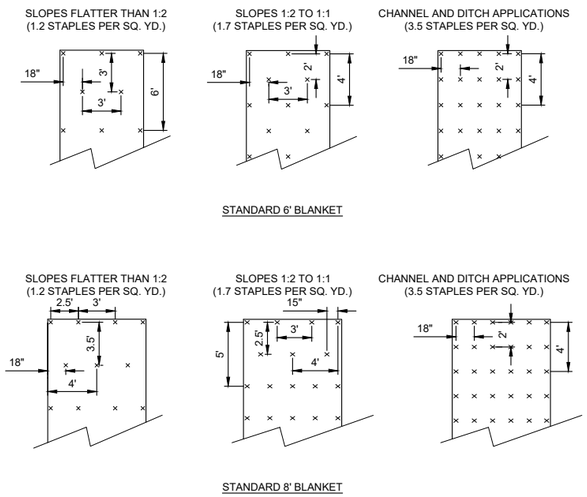


ANCHOR TRENCH
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. BLANKET LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH



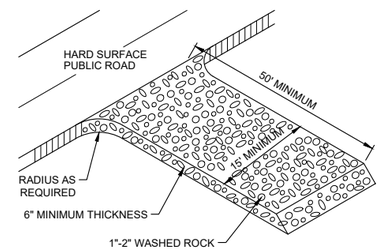
NTS

SEH	ROLLED EROSION PREVENTION CATEGORY 20 "STAPLING PATTERN (PLATE 1 OF 2)"	Revised: Oct. 2011	SEH Plate No. ERO-12



NTS

SEH	ROLLED EROSION PREVENTION CATEGORY 20 "STAPLING PATTERN (PLATE 2 OF 2)"	Revised: Oct. 2011	SEH Plate No. ERO-12



NOTE:
TO PREVENT TRACKING OF MUD ONTO PAVED ROADS, INSTALL ADDITIONAL ROCK OR REMOVE AND REPLACE THE PAD AS REQUIRED

NTS

SEH	STABILIZED CONSTRUCTION EXIT	Revised: Oct. 2011	SEH Plate No. ERO-35

SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

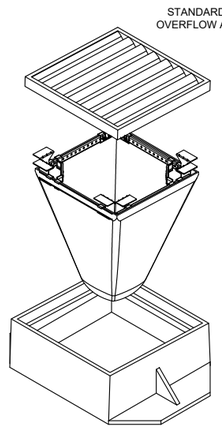
CONSTRUCTION DETAILS
FOREST LAKE SITE UTILITIES

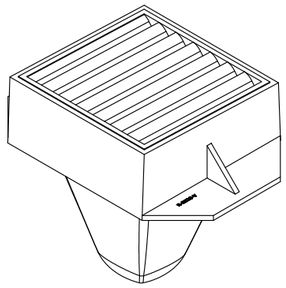
9 of 38

Save: 2/16/2023 12:08 PM tolson Plot: 2/16/2023 2:51 PM X:\F-JG\GRANR\171025\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\GR171025DT1.dwg

TYPICAL CURB BOX INLET FILTER

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

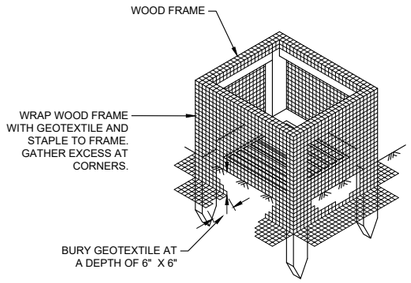




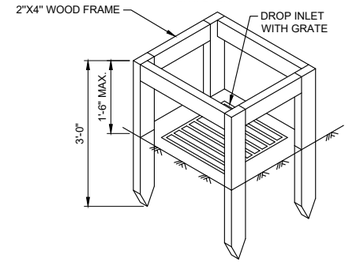
MATERIALS:
1. FRAMING – 11 GAUGE STEEL; CORROSION RESISTANT
2. SEDIMENT BAG – WOVEN GEOTEXTILE (TYPE FF OR APPROVED ALTERNATE); 2 CUBIC FT TYP VOLUME; STAINLESS STEEL LOCKING BAND SECURING BAG TO FRAME

NTS

SEH	STORM DRAIN INLET PROTECTION (FILTER BAG INSERT)	Revised: / SEH Plate No.



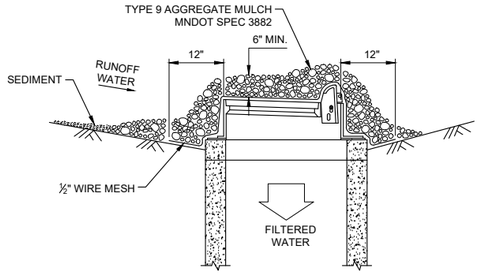
PLACE 1-1/2" WASHED ROCK 1' DEEP X 1' WIDE AROUND PERIMETER.



SILT FENCE BOX TO PROTECT DROP INLETS
USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 OR LESS (TYPE A. SPEC 3891)

NTS

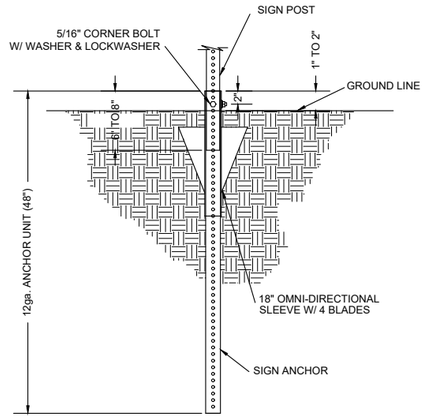
SEH	INLET PROTECTION - TYPE A	Revised: Oct. 2011 / SEH Plate No. ERO-01



INAGGREGATE FILTER AT CURB INLET
MN/DOT TYPE B WITHOUT CURB SPEC. 3891

NTS

SEH	INLET PROTECTION - TYPE B	Revised: Oct. 2011 / SEH Plate No. ERO-02

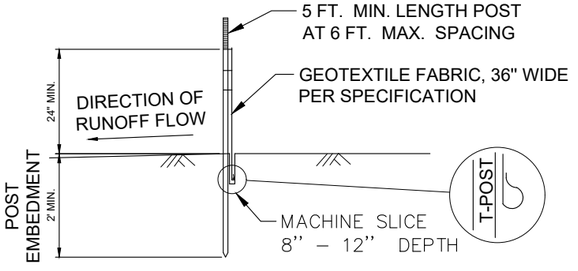


SQUARE POST ANCHOR DETAIL
(NON-HARD SURFACE LOCATIONS)

NOTE: FOR HARD SURFACE INSTALLATIONS, CONTRACTOR SHALL USE A BREAKAWAY MOUNTING SYSTEM FOLLOWING THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

NTS

SEH	INSTALL SIGN PANEL (TYPE SPECIAL, C)	Revised: / SEH Plate No.



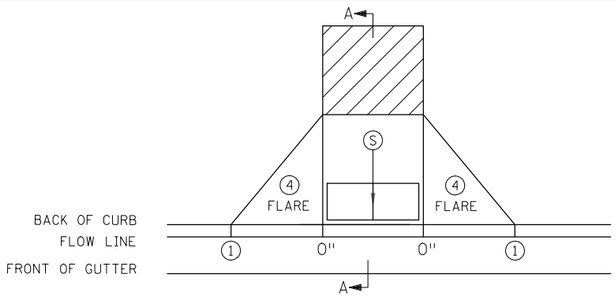
NTS

SEH	SILT FENCE TYPE MS	Revised: Jan. 2013 / SEH Plate No. ERO-15

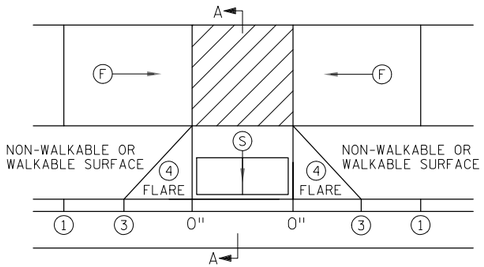
SEH Project	GRANR171025	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.
Drawn By	MBH, JLE	.			.			SARA CHRISTENSON, PE
Designed By	SLC	.			.			DATE 02-19-23 LICENSE NO. 55414
Checked By	RJB	.			.			

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

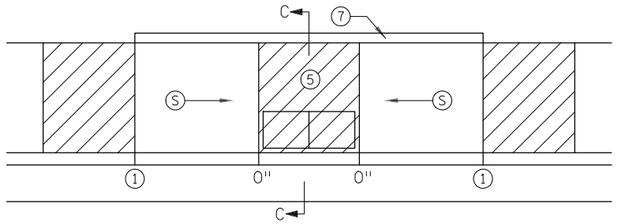
SHEET DESCRIPTION 1
FOREST LAKE SITE UTILITIES



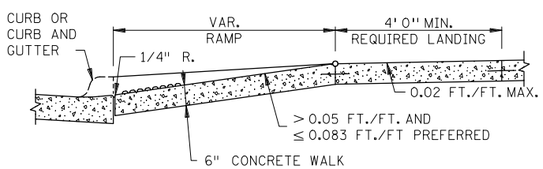
PERPENDICULAR



TIERED PERPENDICULAR

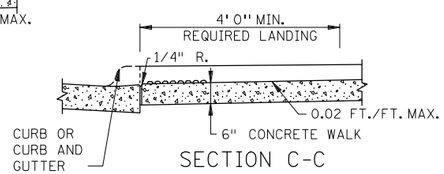


PARALLEL



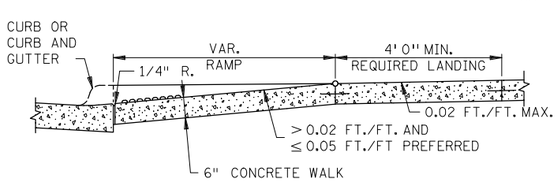
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



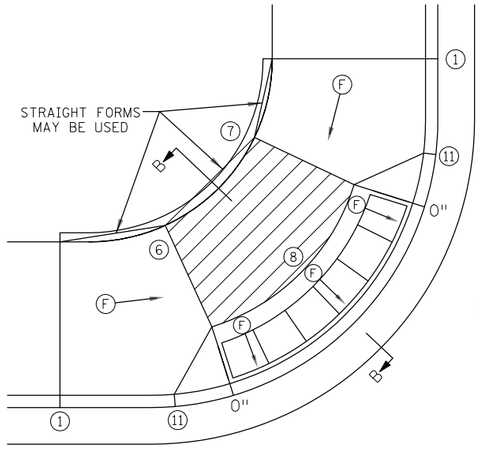
SECTION C-C

PARALLEL/DEPRESSED CORNER

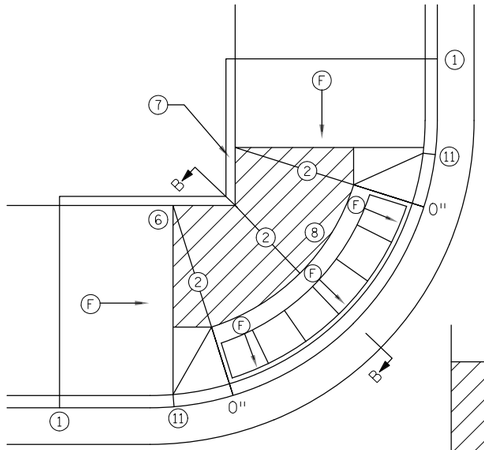


SECTION B-B

FAN

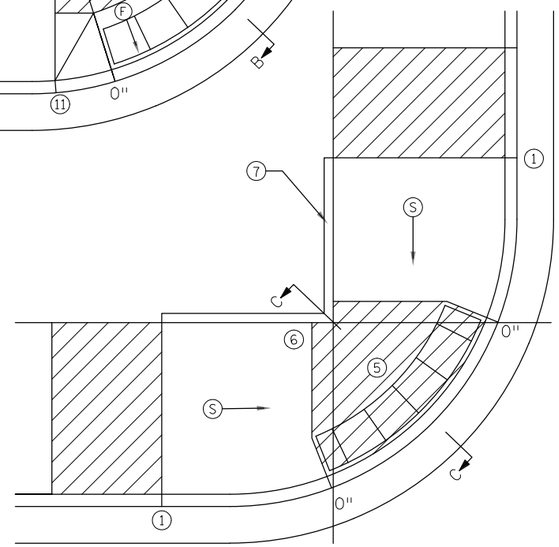


FAN (10)

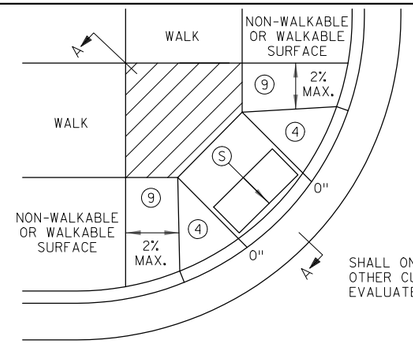


MODIFIED FAN (10)

USED WHEN RIGHT-OF-WAY
IS CONSTRAINED



DEPRESSED CORNER



DIAGONAL

SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN (6) BELOW.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

(1) MATCH FULL HEIGHT CURB.

(2) 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

(3) 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(4) SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(5) DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(6) THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)

(7) WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(8) A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.

(9) PAVE FULL WALK WIDTH.

(10) "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

(11) INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

REVISION:

APPROVED: 11-04-2021

JEFFREY PERKINS
OPERATIONS DIVISION

DEPARTMENT OF TRANSPORTATION

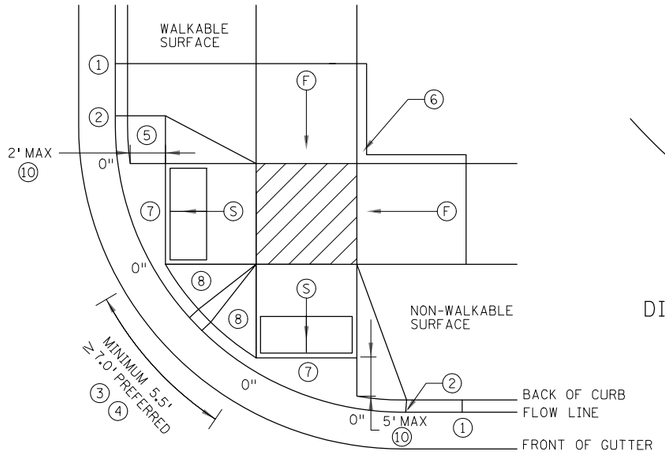
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.250 | 1 OF 6

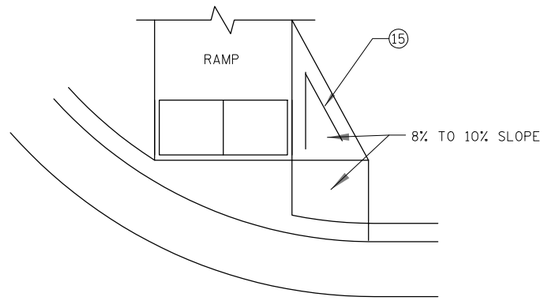
APPROVED: 11-04-2021
REVISED:

STATE PROJ. NO. | (TH) SHEET NO. OF SHEETS

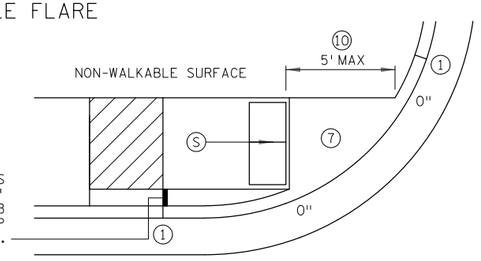
PEDESTRIAN CURB RAMP DETAILS



COMBINED DIRECTIONAL

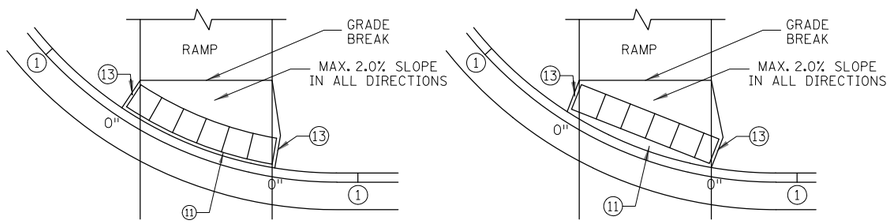


DIRECTIONAL RAMP WALKABLE FLARE



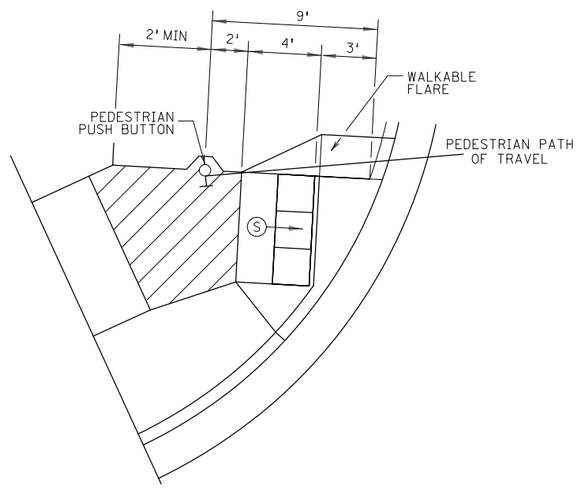
IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.

STANDARD ONE-WAY DIRECTIONAL ⑨



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

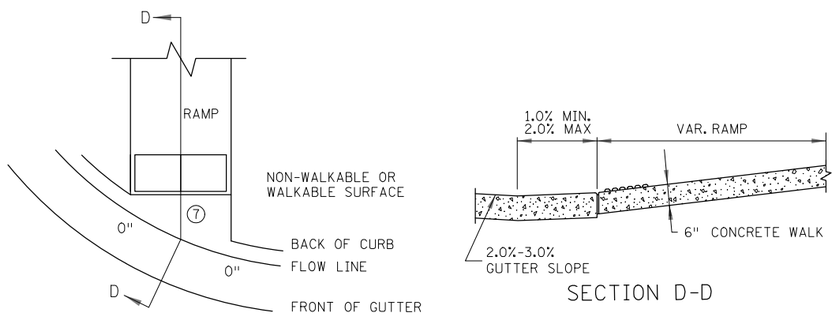
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



SEMI-DIRECTIONAL RAMP ③④⑨

3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)



SECTION D-D

CURB FOR DIRECTIONAL RAMPS ⑭

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

① MATCH FULL CURB HEIGHT.

② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.

③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.

⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.

⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

⑧ 8% TO 10% WALKABLE FLARE.

⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.

⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

REVISION:

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JEFFREY PERKINS
OPERATIONS DIVISION

DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.250 | 2 OF 6

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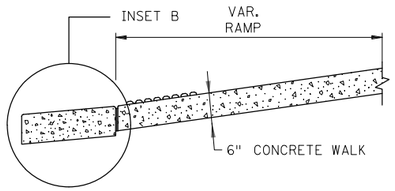
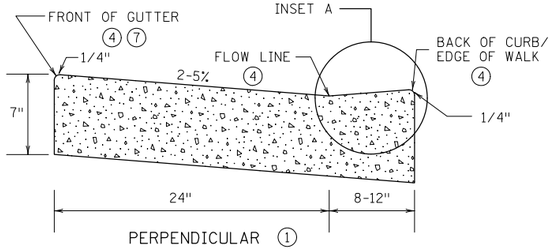
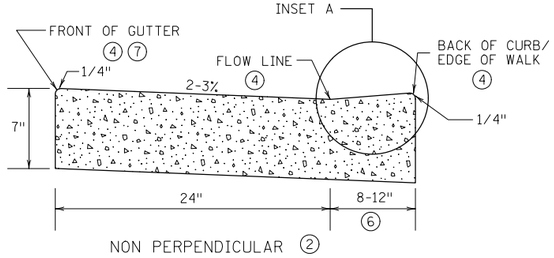
PEDESTRIAN CURB RAMP DETAILS

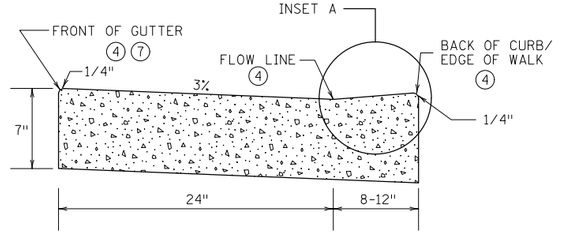




PERPENDICULAR ①

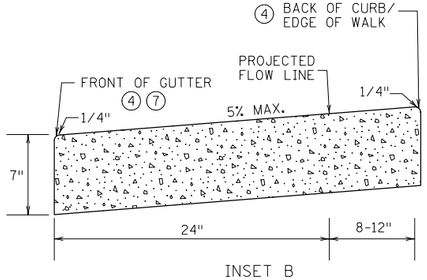


NON PERPENDICULAR ②



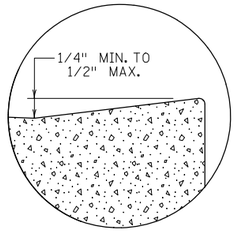
FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)

PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

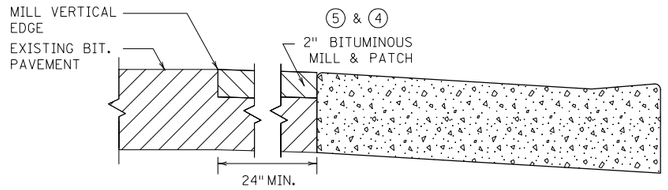


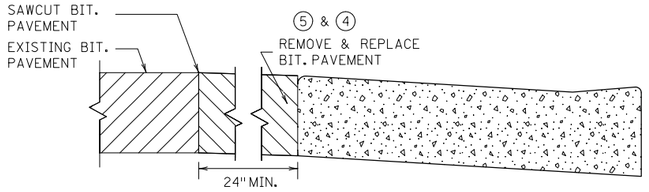
INSET B

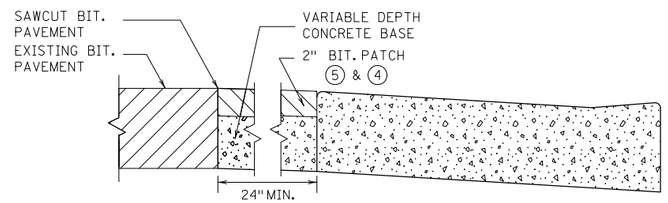
OUTFLOW GUTTER ⑧



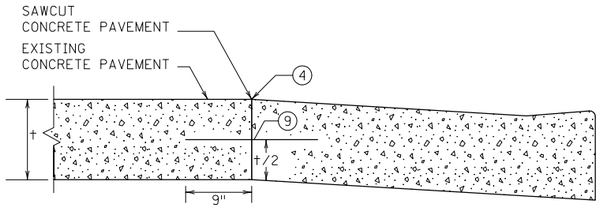
INSET A





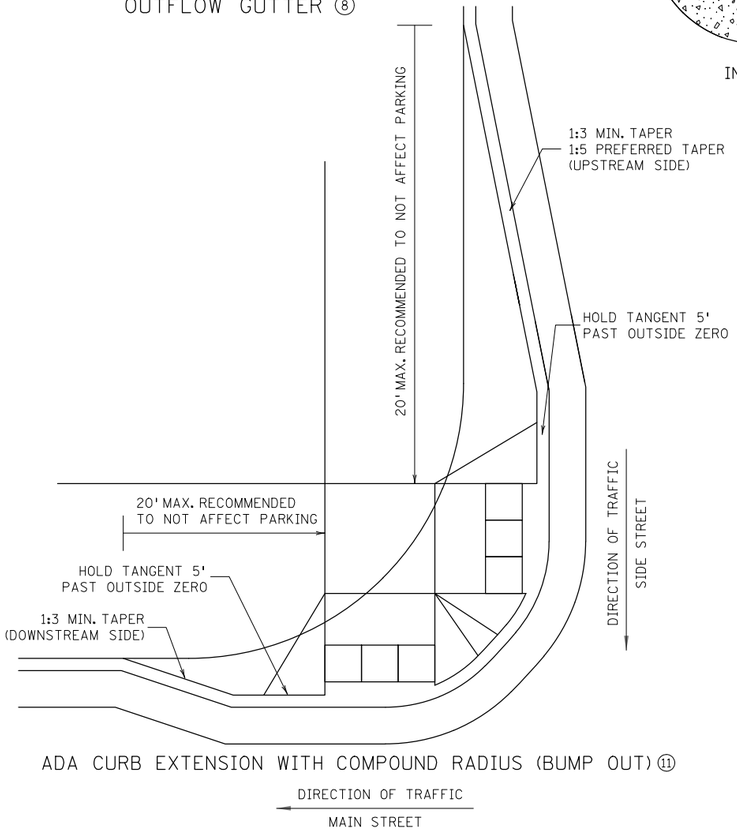


ONLY ALLOWED PER ENGINEER'S APPROVAL

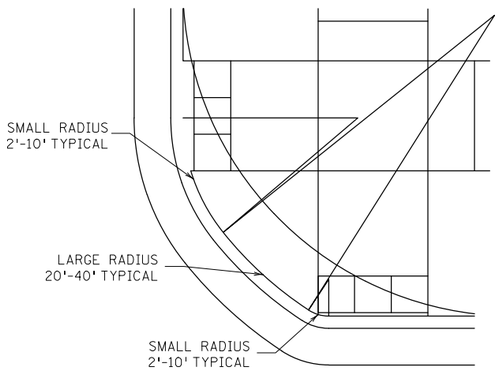


PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER

FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.

NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.

③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.

④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".

⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.

⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.

⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.

⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.

⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.

⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.

⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED.
PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

REVISION:

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JEFFREY PERKINS
OPERATIONS DIVISION

DEPARTMENT OF TRANSPORTATION

THOMAS STYBRICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.250 | 3 OF 6

APPROVED: 11-04-2021
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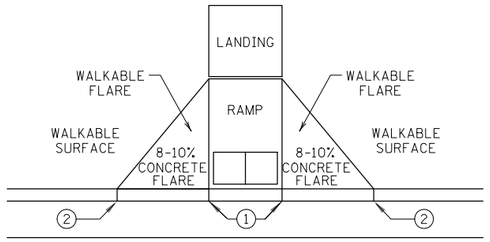
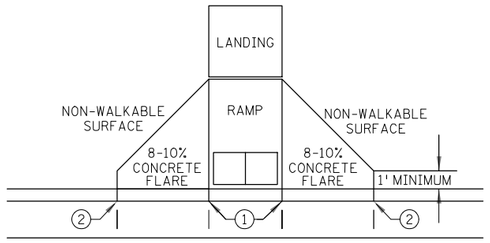
STATE PROJ. NO. | (TH) SHEET NO. OF SHEETS

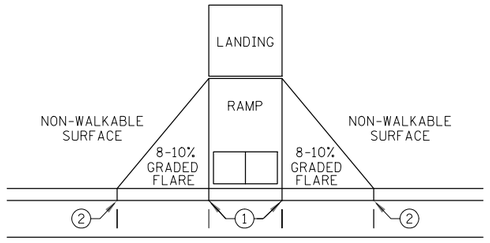
PEDESTRIAN CURB RAMP DETAILS



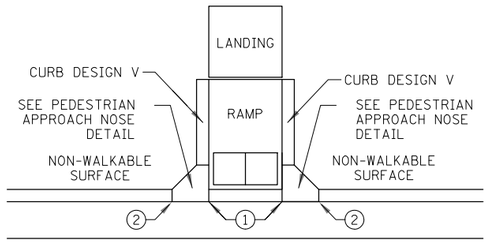
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

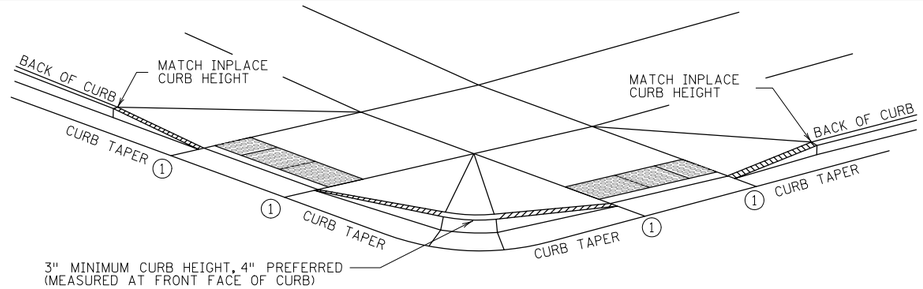


GRADED FLARES

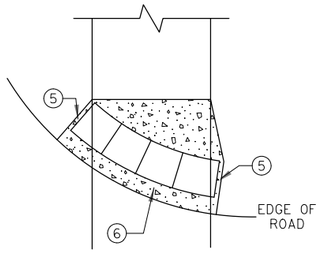


RETURNED CURB ④

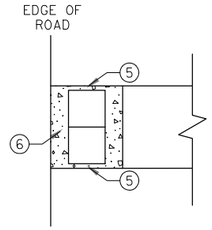
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

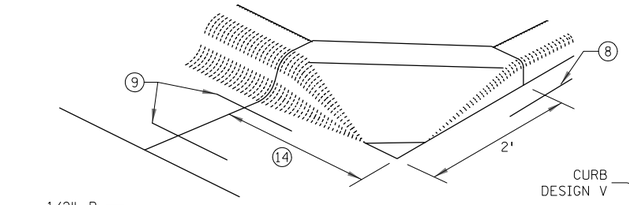


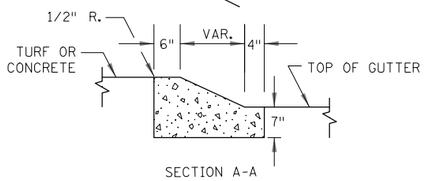
RADIAL DETECTABLE WARNING



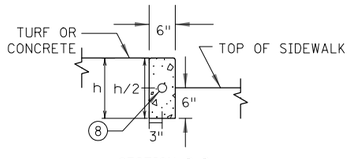
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

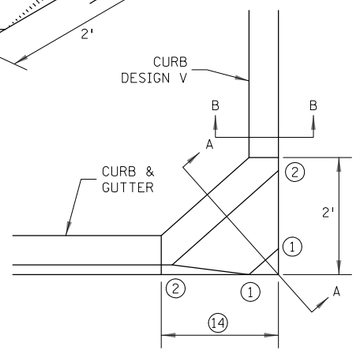




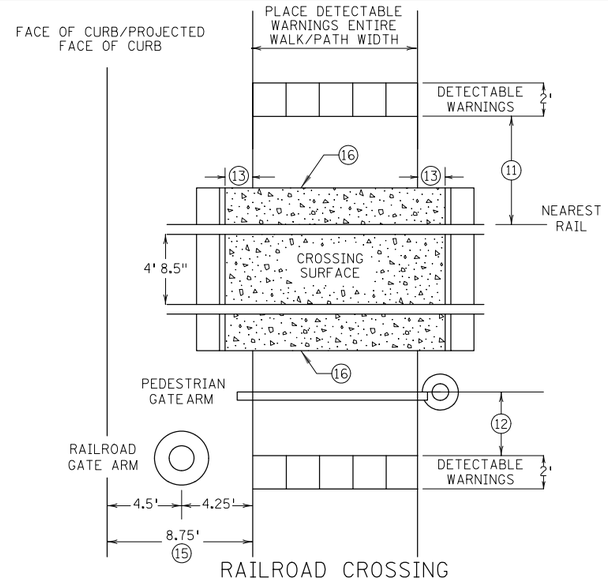
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.

⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS. AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.

⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.

⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.

⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.

⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

REVISION:

APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

DEPARTMENT OF TRANSPORTATION

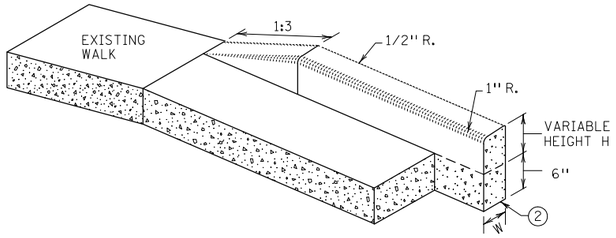
STANDARD PLAN 5-297.250 | 4 OF 6

APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

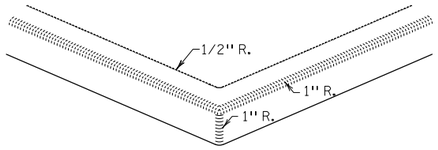
STATE PROJ. NO. | (TH) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS



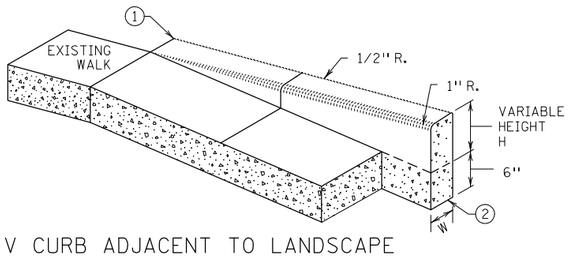
V CURB ADJACENT TO LANDSCAPE

CURB WITHIN SIDEWALK LIMITS



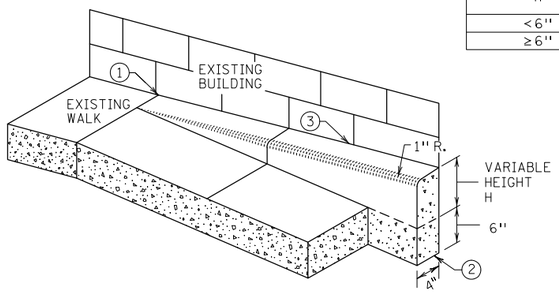
V CURB INTERSECTION

CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"

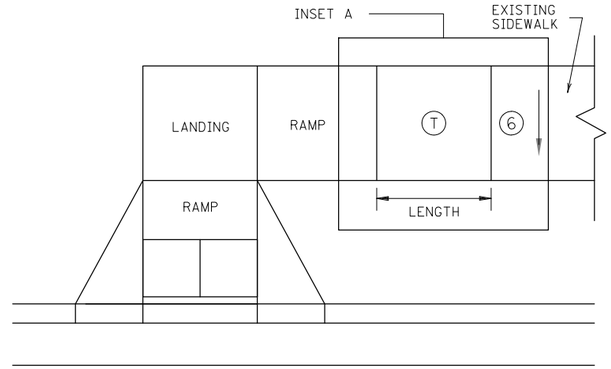


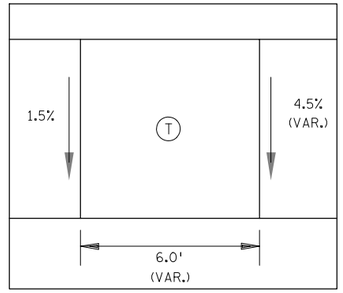
V CURB ADJACENT TO LANDSCAPE

CURB OUTSIDE SIDEWALK LIMITS



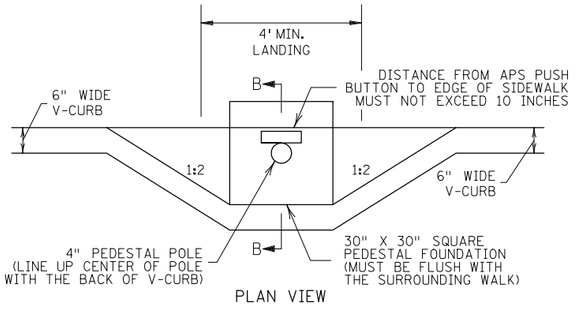
V CURB ADJACENT TO BUILDING OR BARRIER



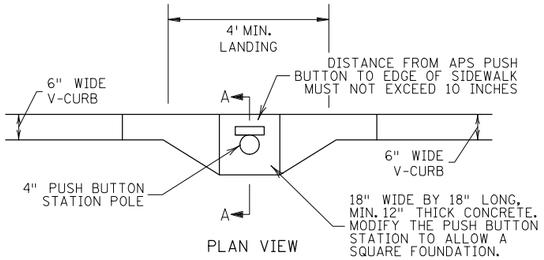


TRANSITION PANEL ④⑤

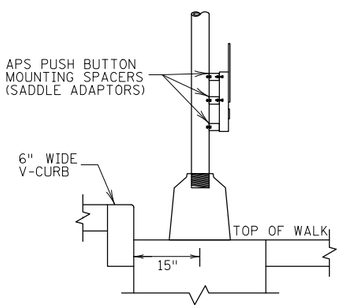
INSET A



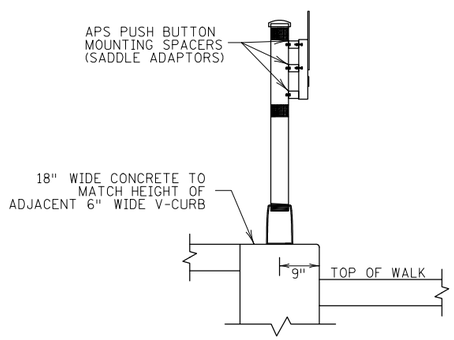
PLAN VIEW



PLAN VIEW



SECTION B-B



SECTION A-A

SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)

PUSH BUTTON STATION (V-CURB)

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

(1) END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

(2) ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

(3) CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.

(4) THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.

(5) TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

(6) EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

(T) TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

REVISION:

APPROVED: 11-04-2021

JEFFREY PERKINS
OPERATIONS DIVISION

DEPARTMENT OF TRANSPORTATION

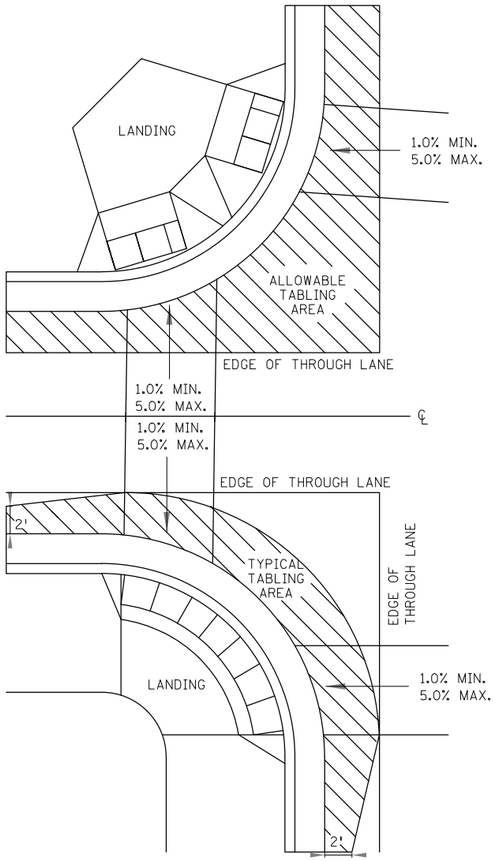
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.250 | 5 OF 6

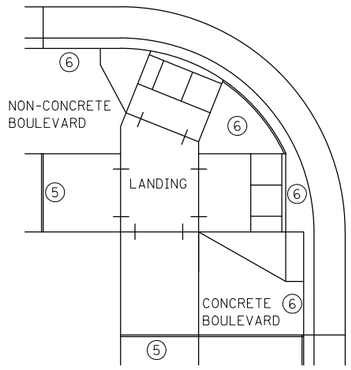
APPROVED: 11-04-2021
REVISED:

STATE PROJ. NO. | (TH) SHEET NO. OF SHEETS

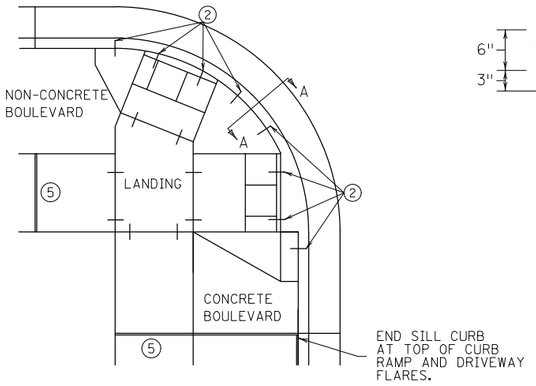
PEDESTRIAN CURB RAMP DETAILS



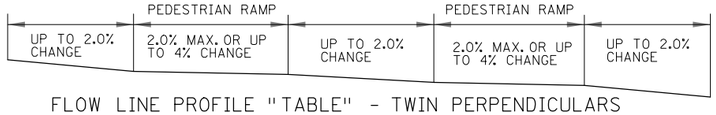
CURB LINE AND ROAD CROSSING ADJUSTMENTS



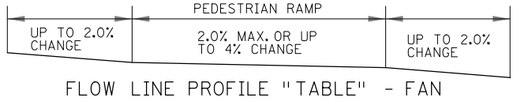
EXPANSION MATERIAL PLACEMENT
FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT ④
PLACEMENT ON BITUMINOUS ROADWAYS



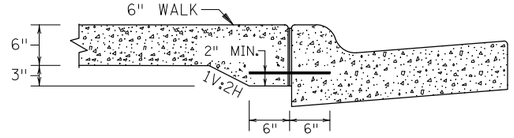
FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS



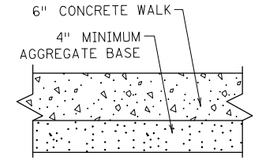
FLOW LINE PROFILE "TABLE" - FAN

FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS

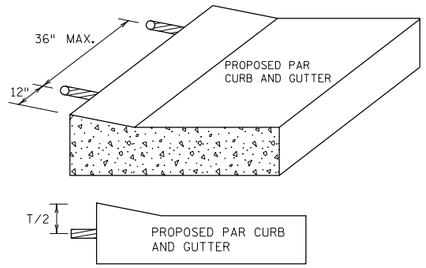
FLOW LINE PROFILE RAISE - FAN



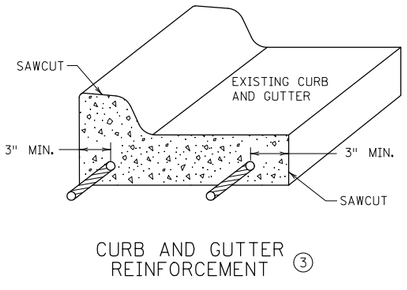
SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



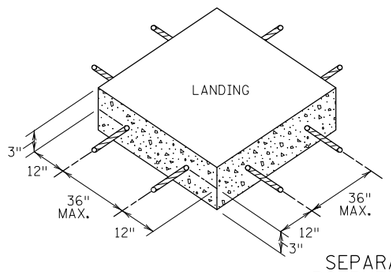
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

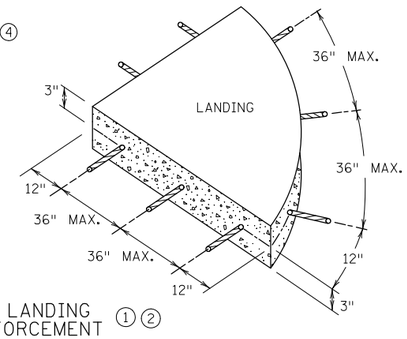


CURB RAMP REINFORCEMENT DETAILS ②④



CURB AND GUTTER
REINFORCEMENT ③





SEPARATE LANDING
POUR REINFORCEMENT ①②

GENERAL NOTES:

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:
1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA:
1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
3) 5.0% RECOMMENDED MAX. FLOW LINE
4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.

② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.

④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.

⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

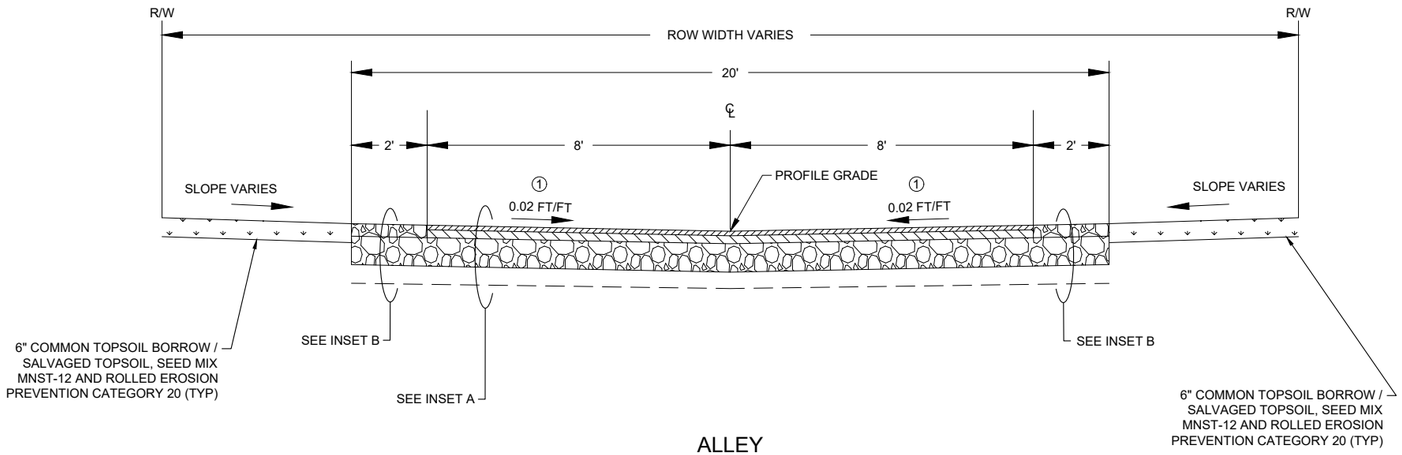
⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

REVISION:
APPROVED: 11-04-2021
JEFFREY PERKINS OPERATIONS DIVISION

DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICK
STATE DESIGN ENGINEER

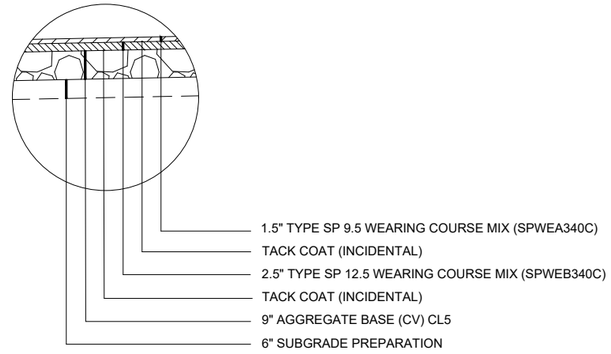
STANDARD PLAN 5-297.250	6 OF 6
APPROVED: 11-04-2021 REVISED:	PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO.	(TH) SHEET NO. OF SHEETS



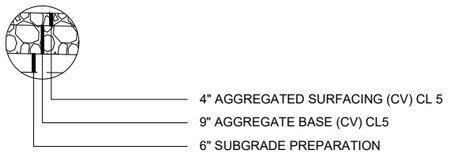
ALLEY

STA 100+48.18 TO STA 104+68.35

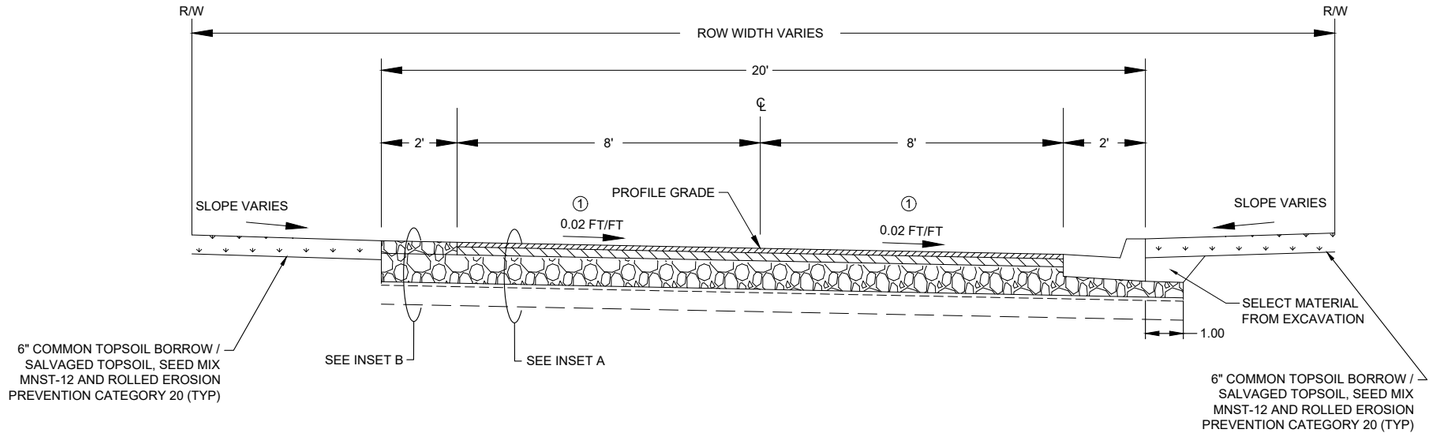
NOTE: WIDTH VARIES FROM 104+68.35 TO 105+16.83



INSET A



INSET B



ALLEY

STA 105+16.83 TO STA 106+26.86

① GRADES VARY SEE GRADING SHEETS

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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025	.			.		
Drawn By	MBH, JLE	.			.		
Designed By	SLC	.			.		
Checked By	RJB	.			.		

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

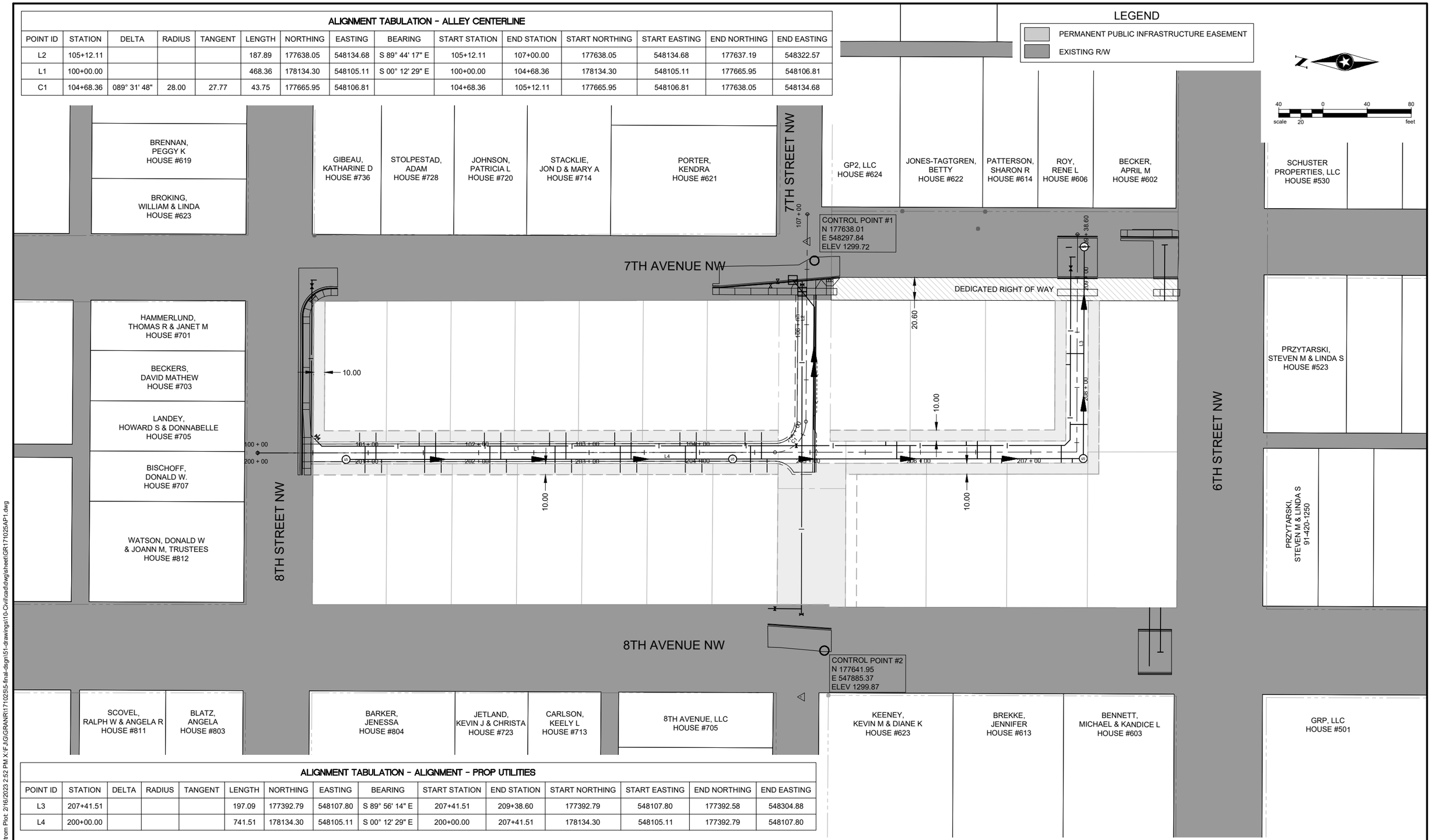
SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

TYPICAL SECTIONS
FOREST LAKE SITE UTILITIES

ALIGNMENT TABULATION - ALLEY CENTERLINE

POINT ID	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING	START STATION	END STATION	START NORTHING	START EASTING	END NORTHING	END EASTING
L2	105+12.11				187.89	177638.05	548134.68	S 89° 44' 17" E	105+12.11	107+00.00	177638.05	548134.68	177637.19	548322.57
L1	100+00.00				468.36	178134.30	548105.11	S 00° 12' 29" E	100+00.00	104+68.36	178134.30	548105.11	177665.95	548106.81
C1	104+68.36	089° 31' 48"	28.00	27.77	43.75	177665.95	548106.81		104+68.36	105+12.11	177665.95	548106.81	177638.05	548134.68



ALIGNMENT TABULATION - ALIGNMENT - PROP UTILITIES

POINT ID	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING	START STATION	END STATION	START NORTHING	START EASTING	END NORTHING	END EASTING
L3	207+41.51				197.09	177392.79	548107.80	S 89° 56' 14" E	207+41.51	209+38.60	177392.79	548107.80	177392.58	548304.88
L4	200+00.00				741.51	178134.30	548105.11	S 00° 12' 29" E	200+00.00	207+41.51	178134.30	548105.11	177392.79	548107.80

FOREST LAKE SITE UTILITIES

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025	.			.		
Drawn By	MBH, JLE	.			.		
Designed By	SLC	.			.		
Checked By	RJB	.			.		

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

ALIGNMENT & RIGHT OF WAY PLAN
FOREST LAKE SITE UTILITIES

UTILITY LEGEND

- PROPOSED WATERMAIN, HYDRANT AND VALVE
- PROPOSED WATER SERVICE AND CURB STOP BOX
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED SANITARY SEWER SERVICE & CLEANOUT
- PROPOSED STORM SEWER, MANHOLE AND CATCH BASIN
- P-BUR — E — EXISTING BURIED POWER, PEDESTAL
- OVERHEAD WIRE, POLE AND GUY WIRE
- G — G — EXISTING GAS MAIN
- T-BUR — T-BUR — T — EXISTING BURIED PHONE, PEDESTAL & MH
- FO — FO — EXISTING FIBER OPTIC, PEDESTAL & MH

scale 40 0 40 80 feet 20

7TH STREET NW

7TH AVENUE NW

6TH STREET NW

8TH STREET NW

8TH AVENUE NW

GRPU TO RELOCATE LIGHT POLE

GAS SERVICE IS ABANDONED

PAUL BUNYAN FIBER IS ABANDONED

UNDERGROUND POWER IS ABANDONED

GRPU TO REMOVE EXISTING TRANSFORMER

GAS SERVICE IS ABANDONED

UNDERGROUND POWER IS ABANDONED

GAS SERVICE IS ABANDONED

UNDERGROUND POWER IS ABANDONED

DO NOT DISTURB EXISTING TRANSFORMER

100 + 00 200 + 00 | 101 + 00 201 + 00 | 102 + 00 202 + 00 | 103 + 00 203 + 00 | 104 + 00 204 + 00 | 105 + 00 | 205 + 00 | 206 + 00 | 207 + 00 | 208 + 00 | 209 + 00 | 107 + 00 | 106 + 00 | 38.60

FOREST LAKE SITE UTILITIES

SEH Project	GRANR171025	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.	C.P. 2022-5 GRAND RAPIDS, MINNESOTA	EXISTING & PROPOSED UTILITIES EXHIBIT FOREST LAKE SITE UTILITIES	19 of 38
Drawn By	MBH, JLE								
Designed By	SLC								
Checked By	RJB								

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

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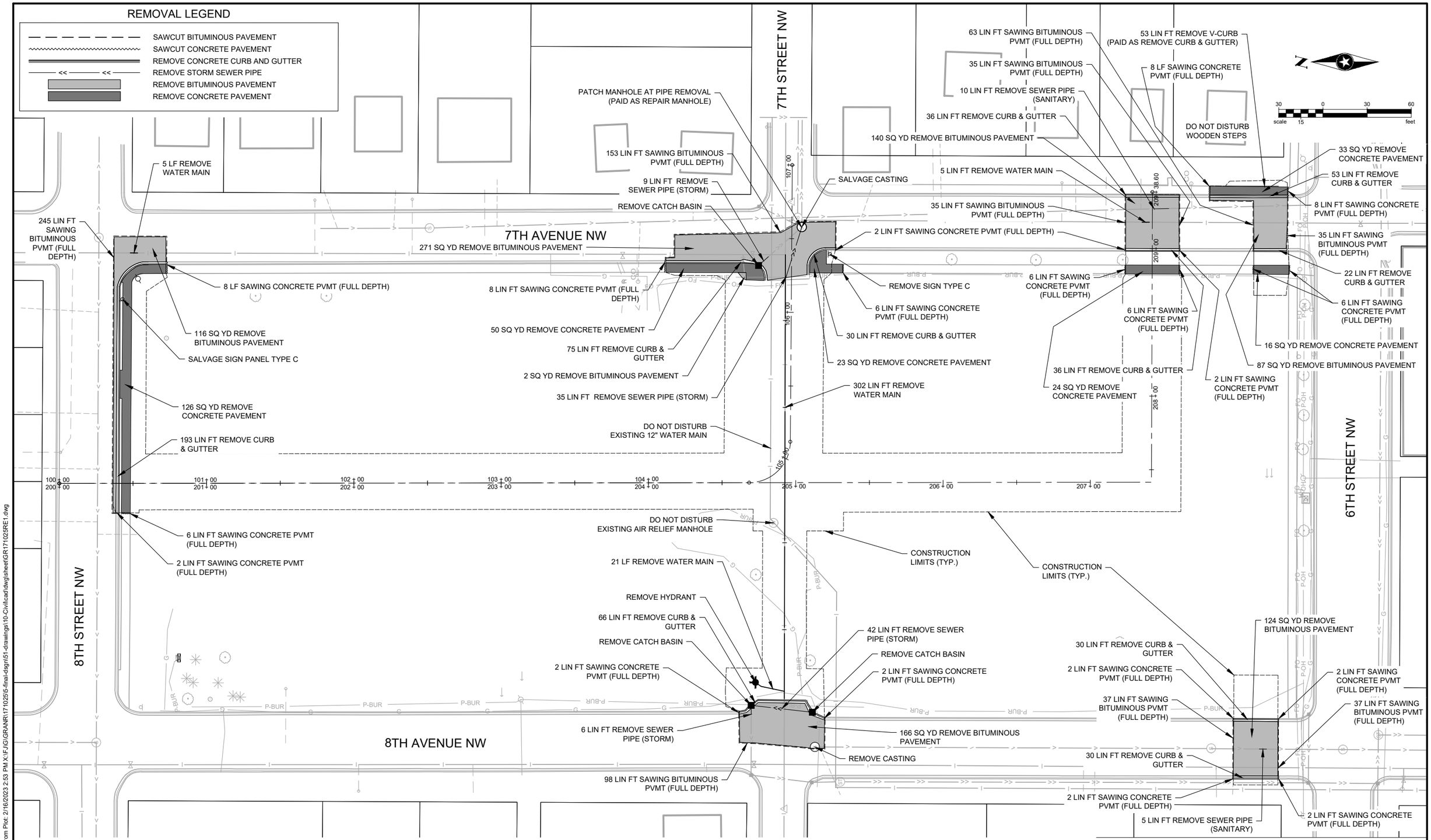

FOREST LAKE SITE UTILITIES

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025	.			.		
Drawn By	MBH, JLE	.			.		
Designed By	SLC	.			.		
Checked By	RJB	.			.		

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SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

REMOVAL PLAN
FOREST LAKE SITE UTILITIES

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of 38

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7TH AVENUE NW

7TH STREET NW

8TH STREET NW

6TH STREET NW

8TH AVENUE NW

CONSTRUCTION LIMITS (TYP.)

scale 30 0 30 60 feet 15

LEGEND

EXISTING CONTOURS

PROPOSED CONTOURS

FOREST LAKE SITE UTILITIES

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025	.			.		
Drawn By	MBH, JLE	.			.		
Designed By	SLC	.			.		
Checked By	RJB	.			.		

SEH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

GRADING PLAN
FOREST LAKE SITE UTILITIES

21 of 38

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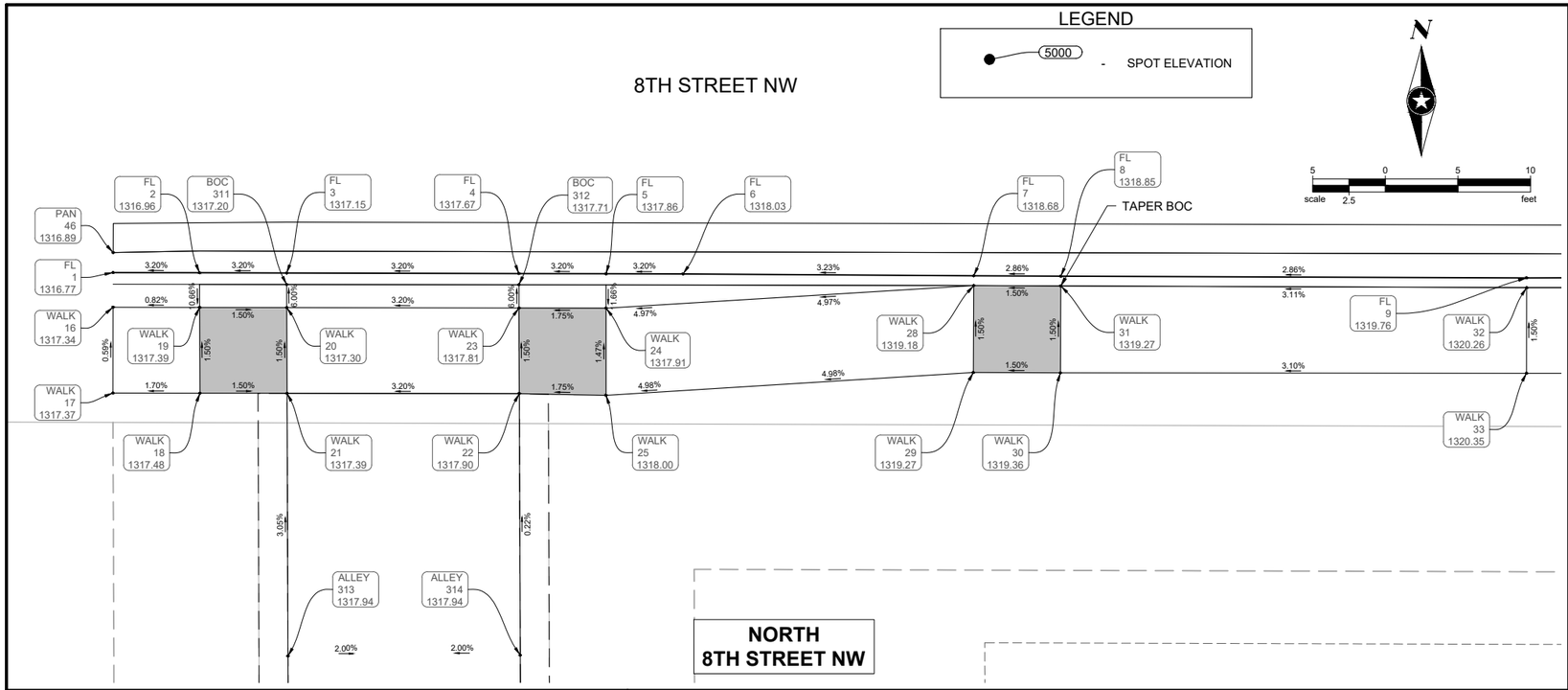

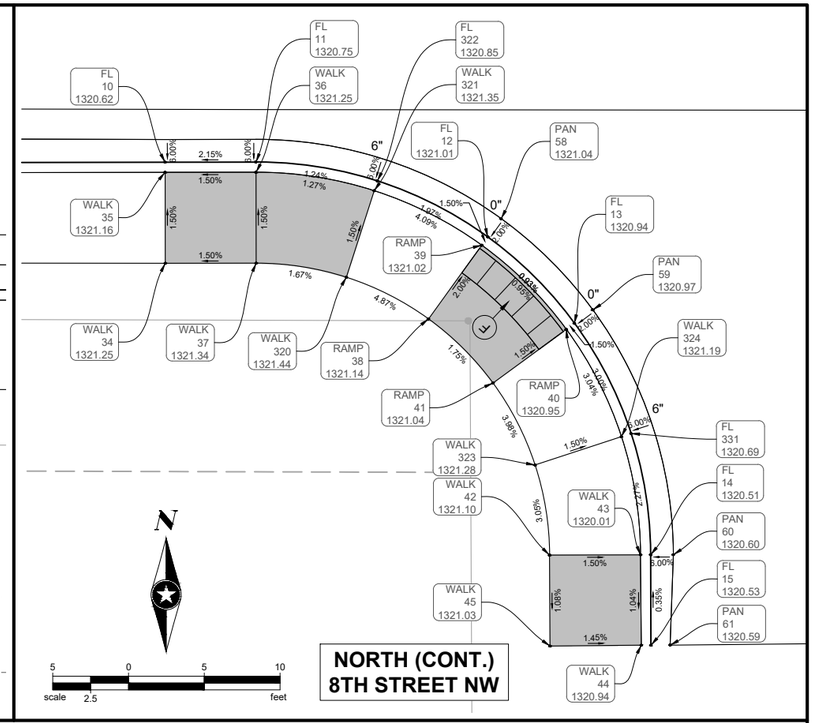

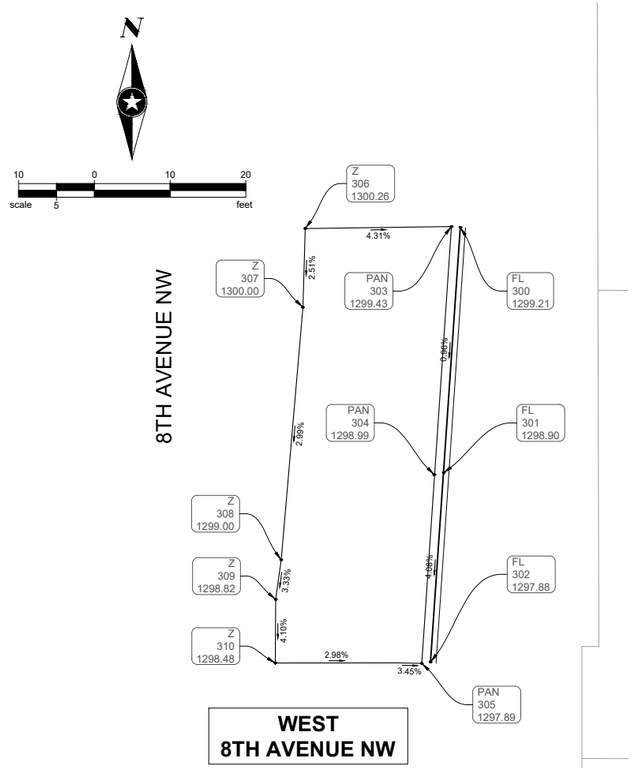

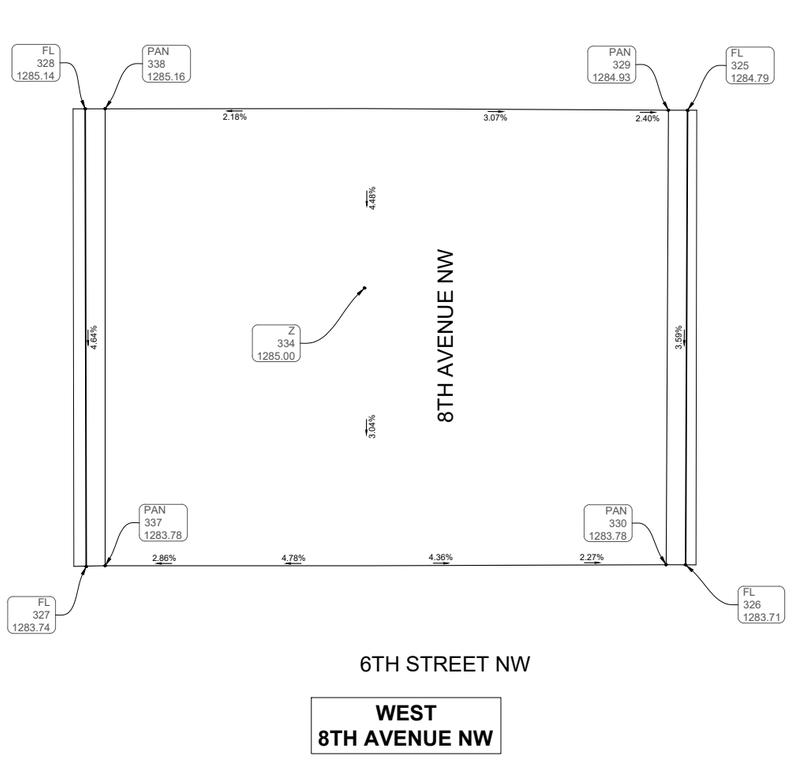

GRADING LEGEND

X"	CURB HEIGHT
	LANDING AREA - 4' x 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
(F)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

GRADING DETAILS
FOREST LAKE SITE UTILITIES

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of 38

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GRADING LEGEND

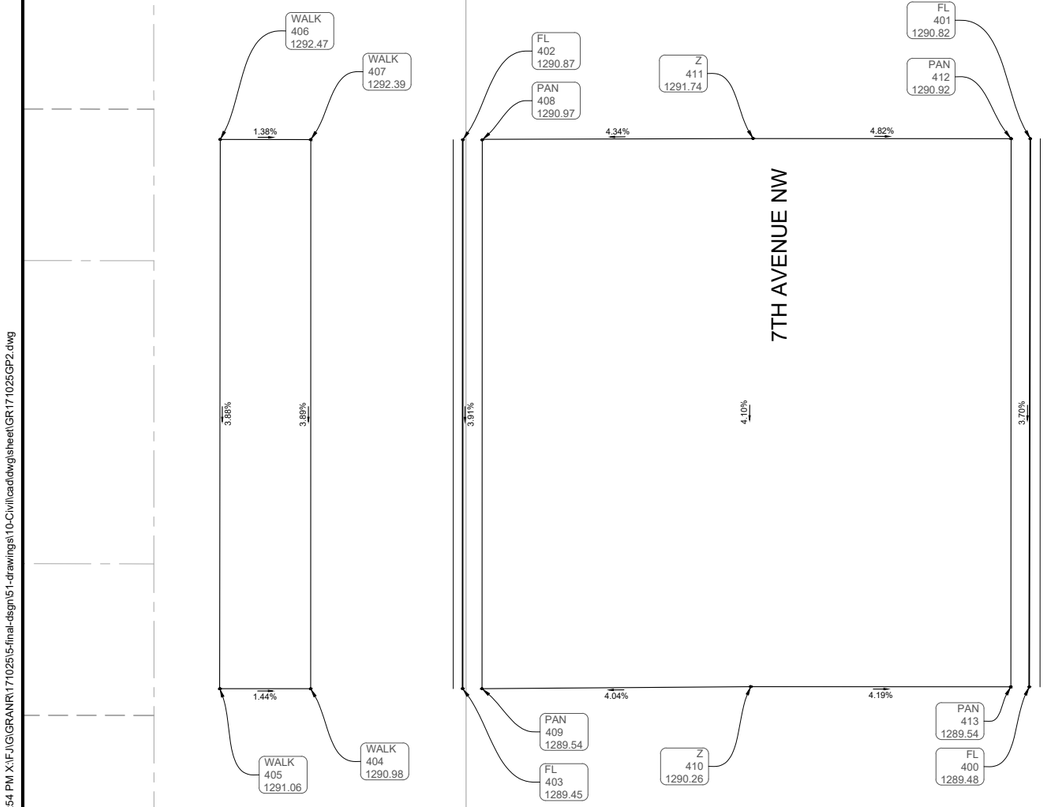
X"	CURB HEIGHT
	LANDING AREA - 4' x 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
S	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
F	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

N

5 0 5 10
2.5 feet

LEGEND

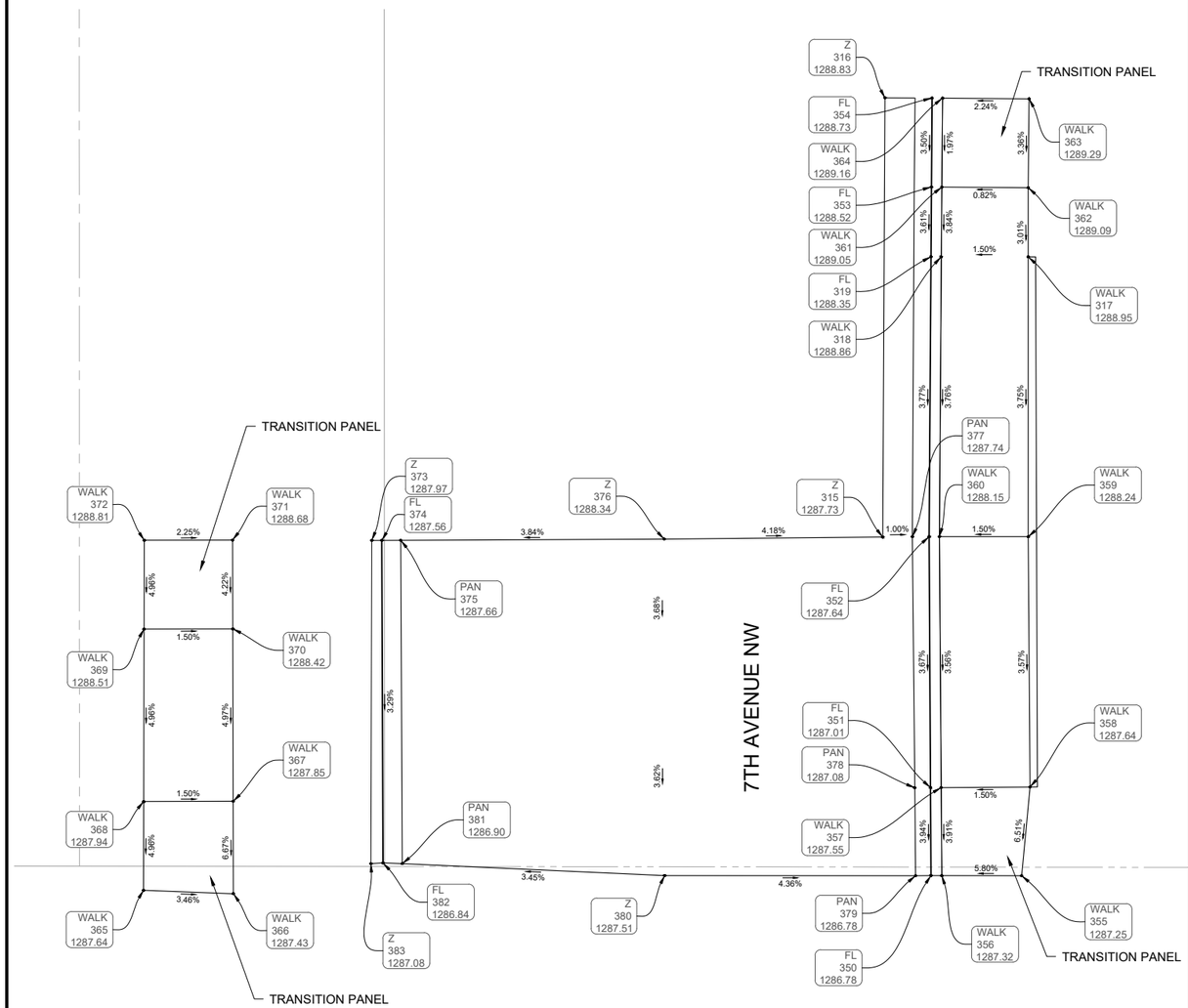
5000 - SPOT ELEVATION



EAST
7TH AVENUE NW

N

5 0 5 10
2.5 feet



6TH STREET NW

EAST
7TH AVENUE NW

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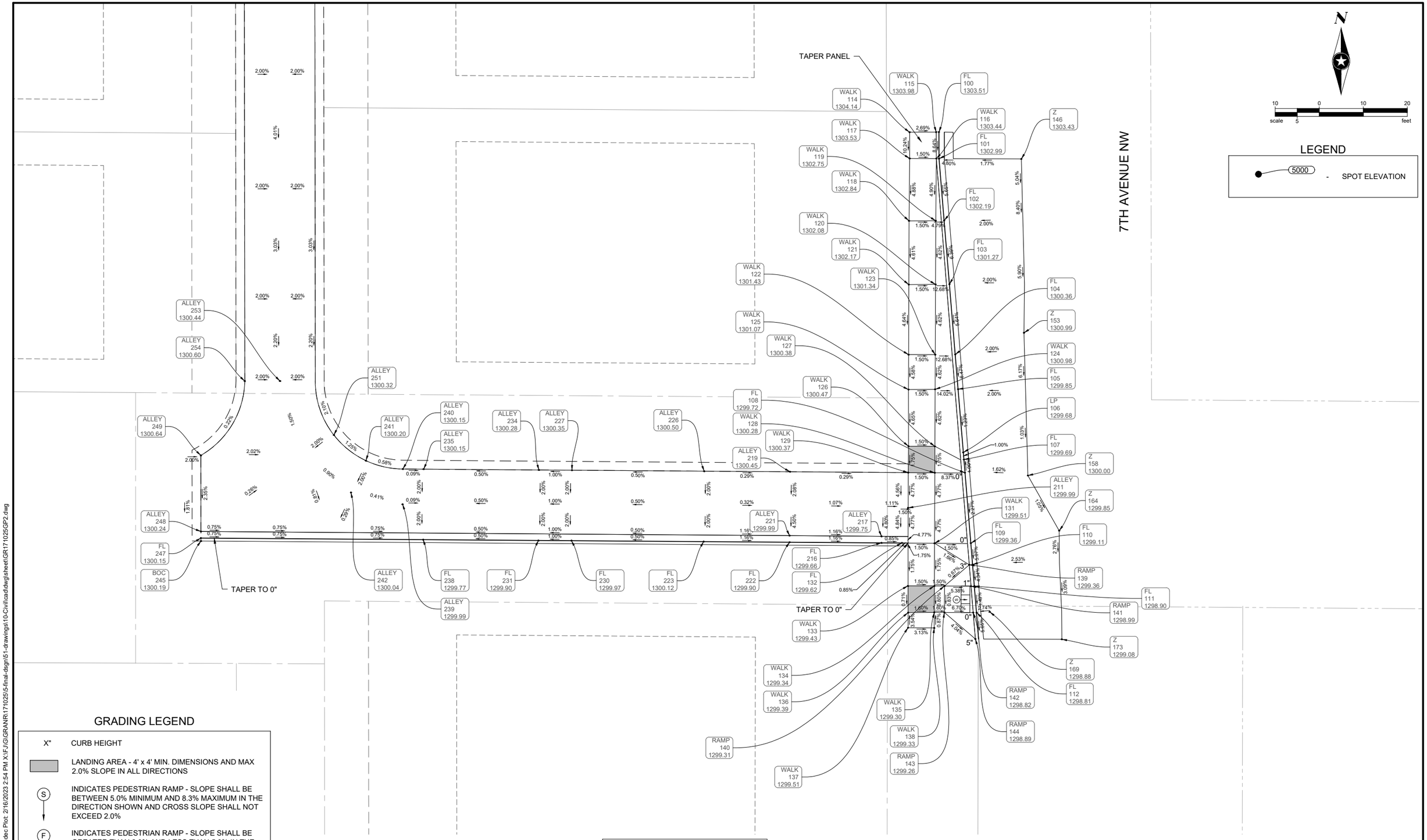
SEH Project	GRANR171025	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.
Drawn By	MBH, JLE	.			.				SARA CHRISTENSON, PE
Designed By	SLC	.			.				DATE 02-19-23 LICENSE NO. 55414
Checked By	RJB	.			.				

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

GRADING DETAILS
FOREST LAKE SITE UTILITIES



GRADING LEGEND

X"	CURB HEIGHT
	LANDING AREA - 4' x 4' MIN. DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS
S	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%
F	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

EAST ALLEY / 7TH AVENUE NW

SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

GRADING DETAILS
FOREST LAKE SITE UTILITIES

POINT TABLE				
#	DESC.	ELEVATION	NORTHING	EASTING
1	FL	1316.77	178094.45	548085.30
2	FL	1316.96	178094.44	548091.25
3	FL	1317.15	178094.42	548097.25
4	FL	1317.67	178094.38	548113.25
5	FL	1317.86	178094.37	548119.25
6	FL	1318.03	178094.36	548124.56
7	FL	1318.68	178094.23	548144.59
8	FL	1318.85	178094.20	548150.59
9	FL	1319.76	178094.08	548182.68
10	FL	1320.62	178094.14	548222.45
11	FL	1320.75	178094.15	548228.45
12	FL	1321.01	178089.21	548243.74
13	FL	1320.94	178083.52	548249.46
14	FL	1320.51	178068.25	548254.49
15	FL	1320.53	178062.28	548254.51
16	WALK	1317.34	178092.07	548085.29
17	WALK	1317.37	178086.16	548085.28
18	WALK	1317.48	178086.15	548091.28
19	WALK	1317.39	178092.05	548091.26
20	WALK	1317.30	178092.04	548097.26
21	WALK	1317.39	178086.14	548097.28
22	WALK	1317.90	178086.12	548113.28
23	WALK	1317.81	178092.01	548113.26
24	WALK	1317.91	178092.00	548119.26
25	WALK	1318.00	178086.00	548119.25
28	WALK	1319.18	178093.56	548144.58
29	WALK	1319.27	178087.57	548144.56
30	WALK	1319.36	178087.55	548150.56
31	WALK	1319.27	178093.53	548150.58
32	WALK	1320.26	178093.41	548182.68
33	WALK	1320.35	178087.52	548182.67
34	WALK	1321.25	178087.47	548222.46
35	WALK	1321.16	178093.47	548222.45
36	WALK	1321.25	178093.48	548228.45
37	WALK	1321.34	178087.48	548228.46
38	RAMP	1321.14	178083.81	548239.83
39	RAMP	1321.02	178088.67	548243.35
40	RAMP	1320.95	178083.12	548248.92
41	RAMP	1321.04	178079.58	548244.08
42	WALK	1321.10	178068.22	548247.82
43	WALK	1320.01	178068.24	548253.82
44	WALK	1320.94	178062.28	548253.87
45	WALK	1321.03	178062.22	548247.85
46	PAN	1316.89	178095.83	548085.30
58	PAN	1321.04	178090.42	548244.62
59	PAN	1320.97	178084.40	548250.67
60	PAN	1320.60	178068.25	548255.99
61	PAN	1320.59	178062.29	548255.77
100	FL	1303.51	177722.84	548256.21
101	FL	1302.99	177716.82	548256.23

POINT TABLE				
#	DESC.	ELEVATION	NORTHING	EASTING
102	FL	1302.19	177702.77	548257.43
103	FL	1301.27	177688.32	548258.66
104	FL	1300.36	177672.37	548260.02
105	FL	1299.85	177664.50	548260.69
106	LP	1299.68	177650.15	548261.92
107	FL	1299.69	177648.52	548262.06
108	FL	1299.72	177645.53	548262.31
109	FL	1299.36	177629.53	548263.68
110	FL	1299.11	177624.69	548264.09
111	FL	1298.90	177619.79	548264.51
112	FL	1298.81	177613.79	548265.02
114	WALK	1304.14	177722.80	548249.56
115	WALK	1303.98	177722.84	548255.59
116	WALK	1303.44	177716.82	548255.63
117	WALK	1303.53	177716.84	548249.58
118	WALK	1302.84	177702.67	548249.47
119	WALK	1302.75	177702.71	548255.54
120	WALK	1302.08	177688.26	548255.52
121	WALK	1302.17	177688.21	548249.46
122	WALK	1301.43	177672.32	548249.45
123	WALK	1301.34	177672.32	548255.49
124	WALK	1300.98	177664.44	548255.48
125	WALK	1301.07	177664.38	548249.45
126	WALK	1300.47	177651.50	548249.49
127	WALK	1300.38	177651.50	548255.47
128	WALK	1300.28	177645.50	548255.46
129	WALK	1300.37	177645.53	548249.43
131	WALK	1299.51	177629.50	548255.44
132	FL	1299.62	177629.53	548248.04
133	WALK	1299.43	177619.80	548249.42
134	WALK	1299.34	177619.80	548255.42
135	WALK	1299.30	177613.80	548255.42
136	WALK	1299.39	177613.74	548249.49
137	WALK	1299.51	177610.30	548249.48
138	WALK	1299.33	177610.28	548255.41
139	RAMP	1299.36	177624.63	548263.34
140	RAMP	1299.31	177619.79	548257.72
141	RAMP	1298.99	177619.79	548263.75
142	RAMP	1298.82	177613.79	548264.25
143	RAMP	1299.26	177613.79	548257.72
144	RAMP	1298.89	177607.79	548264.76
146	Z	1303.43	177716.80	548274.93
153	Z	1300.99	177677.34	548275.63
158	Z	1300.00	177644.93	548276.59
164	Z	1299.85	177632.42	548283.72
169	Z	1299.88	177613.95	548268.00
173	Z	1299.08	177607.77	548284.38
211	ALLEY	1299.99	177637.53	548249.43
216	FL	1299.66	177629.55	548243.39
217	ALLEY	1299.75	177631.05	548243.40

POINT TABLE				
#	DESC.	ELEVATION	NORTHING	EASTING
219	ALLEY	1300.45	177645.65	548222.60
221	ALLEY	1299.99	177631.15	548222.54
222	FL	1299.90	177629.65	548222.53
223	FL	1300.12	177629.74	548203.03
226	ALLEY	1300.50	177645.74	548203.11
227	ALLEY	1300.35	177645.88	548173.11
230	FL	1299.97	177629.88	548173.03
231	FL	1299.90	177629.91	548165.53
234	ALLEY	1300.28	177645.91	548165.60
235	ALLEY	1300.15	177646.03	548139.44
238	FL	1299.77	177630.03	548139.36
239	ALLEY	1299.99	177638.05	548134.68
240	ALLEY	1300.15	177646.05	548134.71
241	ALLEY	1300.20	177647.93	548126.34
242	ALLEY	1300.04	177640.68	548122.95
245	BOC	1300.19	177629.59	548088.93
247	FL	1300.15	177630.26	548088.94
248	ALLEY	1300.24	177631.76	548088.93
249	ALLEY	1300.64	177649.02	548088.87
251	ALLEY	1300.32	177653.75	548119.04
253	ALLEY	1300.44	177665.95	548106.81
254	ALLEY	1300.60	177665.92	548098.80
300	FL	1299.21	177672.03	547950.87
301	FL	1298.90	177639.65	547948.67
302	FL	1297.88	177614.68	547946.93
303	PAN	1299.43	177672.14	547949.70
304	PAN	1298.99	177639.40	547947.43
305	PAN	1297.89	177614.50	547945.78
306	Z	1300.26	177671.89	547930.40
307	Z	1300.00	177661.51	547930.10
308	Z	1299.00	177628.18	547927.23
309	Z	1298.82	177622.94	547926.50
310	Z	1298.48	177614.55	547926.46
311	BOC	1317.20	178093.63	548097.25
312	BOC	1317.71	178093.62	548113.25
313	ALLEY	1317.94	178068.05	548097.35
314	ALLEY	1317.94	178068.11	548113.35
315	Z	1287.73	177323.88	548299.16
316	Z	1288.83	177353.55	548299.31
317	WALK	1288.95	177342.80	548308.99
318	WALK	1288.86	177342.80	548303.11
319	FL	1288.35	177342.81	548302.42
320	WALK	1321.44	178086.55	548234.41
321	WALK	1321.35	178092.27	548236.25
322	FL	1320.85	178092.90	548236.45
323	WALK	1321.28	178074.17	548246.86
324	WALK	1321.19	178076.04	548252.56
325	FL	1284.79	177336.55	547946.90
326	FL	1283.71	177306.56	547946.77
327	FL	1283.74	177306.46	547907.22

POINT TABLE				
#	DESC.	ELEVATION	NORTHING	EASTING
328	FL	1285.14	177336.65	547907.15
329	PAN	1284.93	177336.56	547945.64
330	PAN	1283.78	177306.57	547945.49
331	FL	1320.69	178076.25	548253.20
334	Z	1285.00	177324.82	547925.58
337	PAN	1283.78	177306.50	547908.47
338	PAN	1285.16	177336.65	547908.47
350	FL	1286.78	177301.01	548302.42
351	FL	1287.01	177306.94	548302.39
352	FL	1287.64	177323.90	548302.29
353	FL	1288.52	177347.52	548302.45
354	FL	1288.73	177353.53	548302.49
355	WALK	1287.25	177300.99	548308.54
356	WALK	1287.32	177301.00	548303.15
357	WALK	1287.55	177306.95	548303.11
358	WALK	1287.64	177306.99	548309.11
359	WALK	1288.24	177323.90	548308.99
360	WALK	1288.15	177323.91	548302.99
361	WALK	1289.05	177347.52	548303.16
362	WALK	1289.09	177347.48	548308.99
363	WALK	1289.29	177353.48	548309.05
364	WALK	1289.16	177353.53	548303.20
365	WALK	1287.64	177300.01	548249.23
366	WALK	1287.43	177299.78	548255.30
367	WALK	1287.85	177306.03	548255.29
368	WALK	1287.94	177306.01	548249.24
369	WALK	1288.51	177317.66	548249.27
370	WALK	1288.42	177317.67	548255.26
371	WALK	1288.68	177323.67	548255.24
372	WALK	1288.81	177323.66	548249.29
373	Z	1287.97	177323.65	548264.65
374	FL	1287.56	177323.65	548265.32
375	PAN	1287.66	177323.66	548266.60
376	Z	1288.34	177323.74	548284.40
377	PAN	1287.74	177323.90	548301.16
378	PAN	1287.08	177306.94	548301.32
379	PAN	1286.78	177301.00	548301.38
380	Z	1287.51	177301.01	548284.44
381	PAN	1286.90	177301.81	548266.71
382	FL	1286.84	177301.86	548265.41
383	Z	1287.08	177301.81	548264.59
400	FL	1289.48	177374.53	548302.65
401	FL	1290.82	177410.69	548302.72
402	FL	1290.87	177410.62	548265.27
403	FL	1289.45	177374.41	548265.26
404	WALK	1290.98	177374.40	548255.23
405	WALK	1291.06	177374.41	548249.23
406	WALK	1292.47	177410.64	548249.26
407	WALK	1292.39	177410.64	548255.24
408	PAN	1290.97	177410.62	548266.56

POINT TABLE				
#	DESC.	ELEVATION	NORTHING	EASTING
409	PAN	1289.54	177374.41	548266.54
410	Z	1290.26	177374.54	548284.27
411	Z	1291.74	177410.70	548284.43
412	PAN	1290.92	177410.69	548301.46
413	PAN	1289.54	177374.53	548301.44

SEH Project	GRANR171025
Drawn By	MBH, JLE
Designed By	SLC
Checked By	RJB

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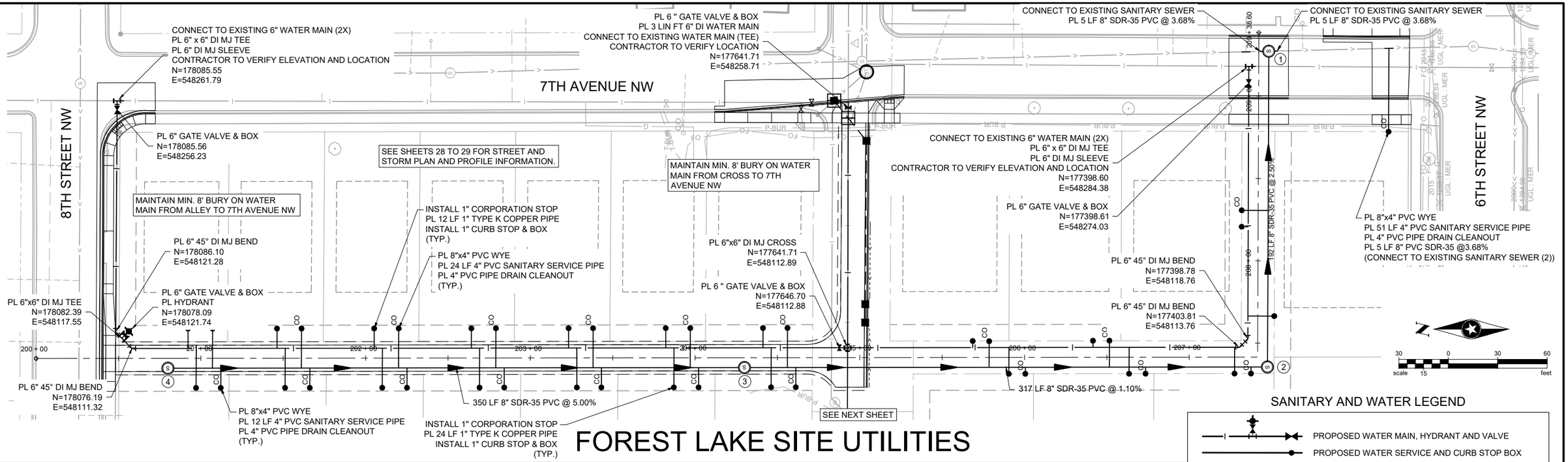
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

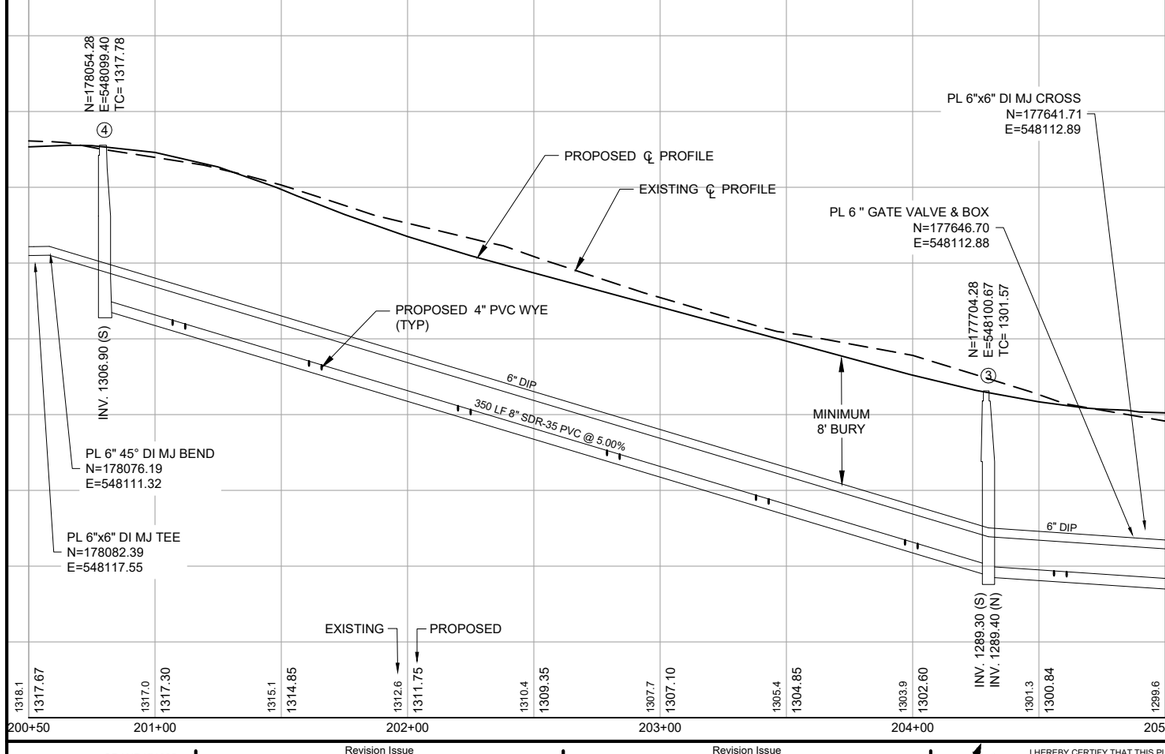
GRADING POINT TABLES
FOREST LAKE SITE UTILITIES

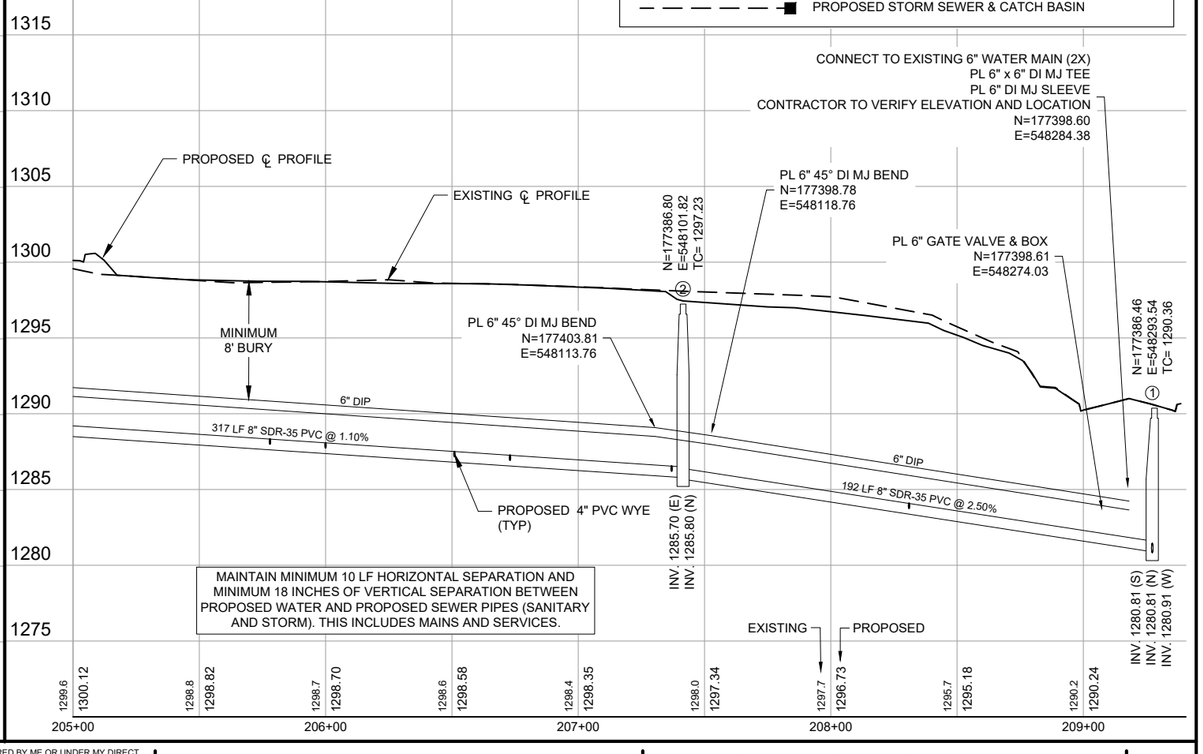


FOREST LAKE SITE UTILITIES

SANITARY AND WATER LEGEND

- PROPOSED WATER MAIN, HYDRANT AND VALVE
- PROPOSED WATER SERVICE AND CURB STOP BOX
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED SANITARY SEWER SERVICE & CLEANOUT
- PROPOSED STORM SEWER & CATCH BASIN





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C.P. 2022-5
GRAND RAPIDS, MINNESOTA

SANITARY SEWER & WATERMAIN PLAN AND PROFILE FOREST LAKE SITE UTILITIES

26 of 38

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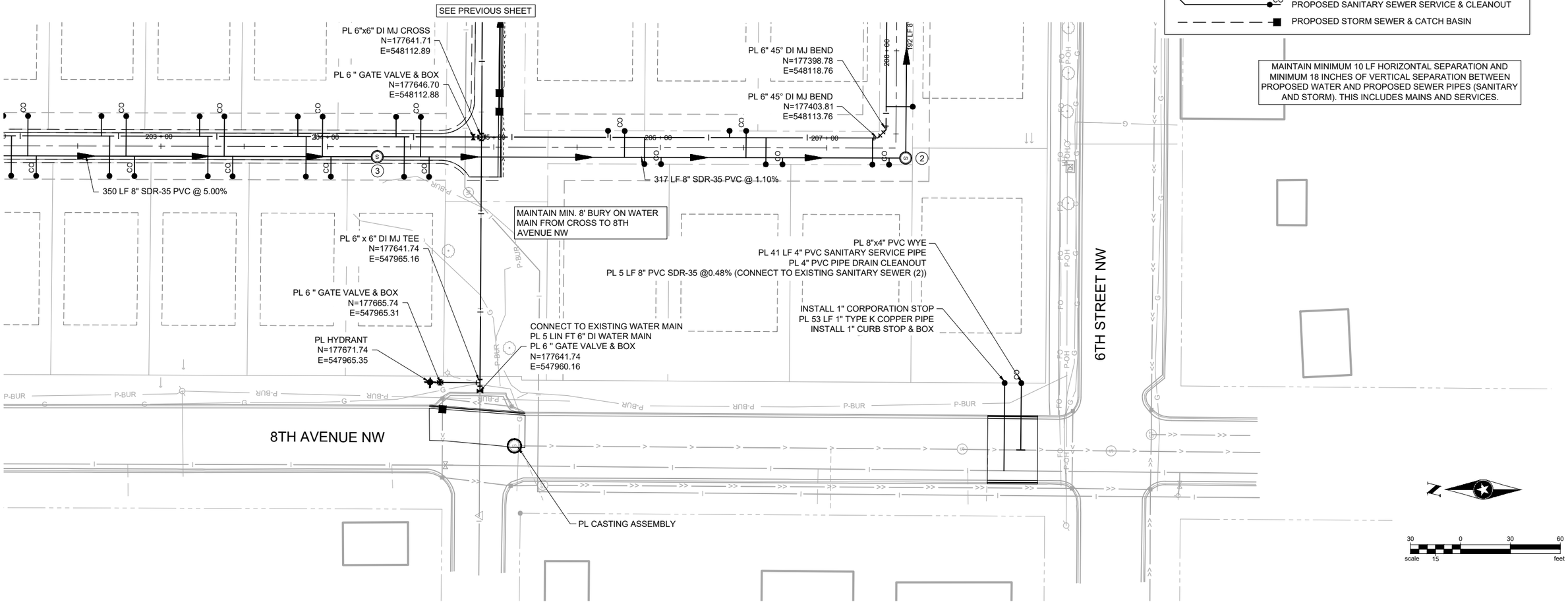

FOREST LAKE SITE UTILITIES

SEH Project	GRANR171025	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	C.P. 2022-5	SANITARY SEWER & WATERMAIN PLAN AND PROFILE FOREST LAKE SITE UTILITIES
Drawn By	MBH, JLE	.			.			GRAND RAPIDS, MINNESOTA	
Designed By	SLC	.			.				27 of 38
Checked By	RJB	.			.				

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SARA CHRISTENSON, PE
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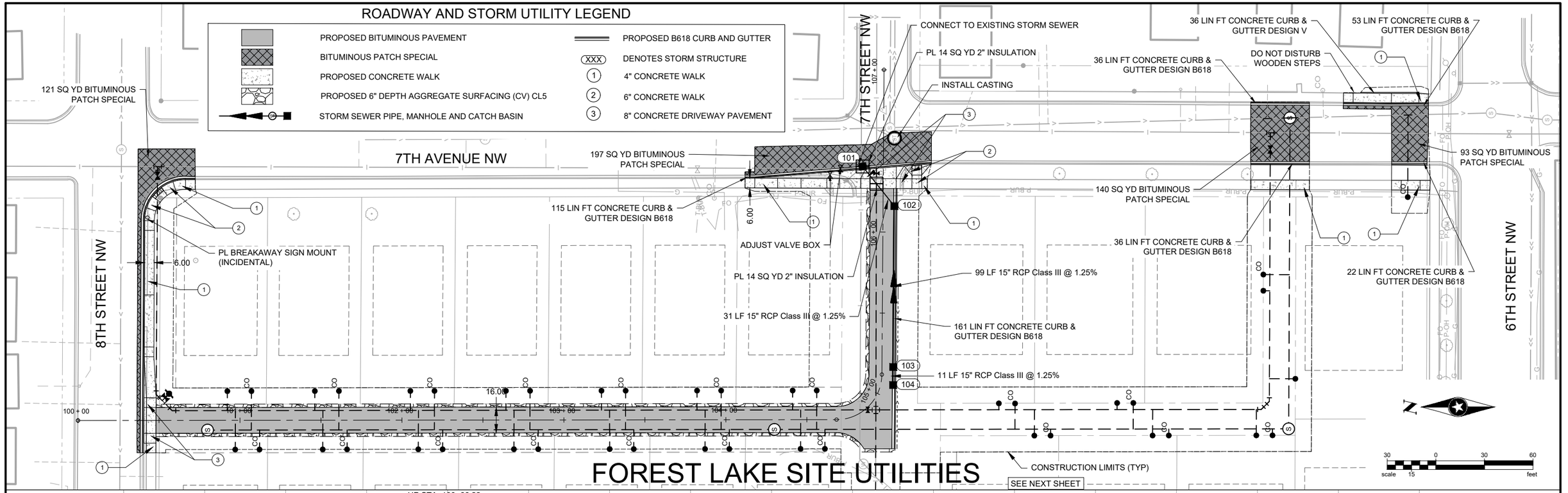
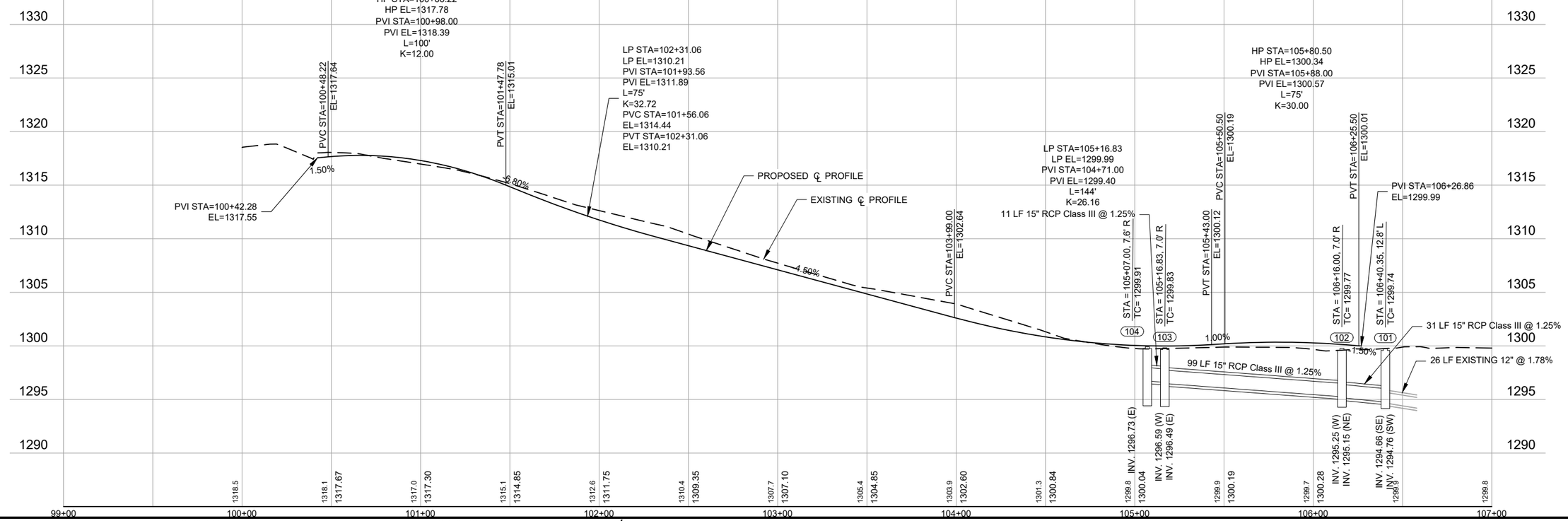
ROADWAY AND STORM UTILITY LEGEND

- PROPOSED BITUMINOUS PAVEMENT
- BITUMINOUS PATCH SPECIAL
- PROPOSED CONCRETE WALK
- PROPOSED 6" DEPTH AGGREGATE SURFACING (CV) CL5
- STORM SEWER PIPE, MANHOLE AND CATCH BASIN
- PROPOSED B618 CURB AND GUTTER
- (XXX) DENOTES STORM STRUCTURE
- (1) 4" CONCRETE WALK
- (2) 6" CONCRETE WALK
- (3) 8" CONCRETE DRIVEWAY PAVEMENT





		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	GRANR171025	.			.		
Drawn By	MBH, JLE	.			.		
Designed By	SLC	.			.		
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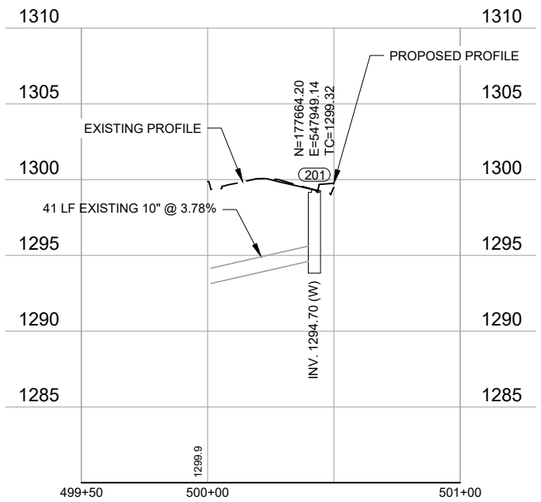
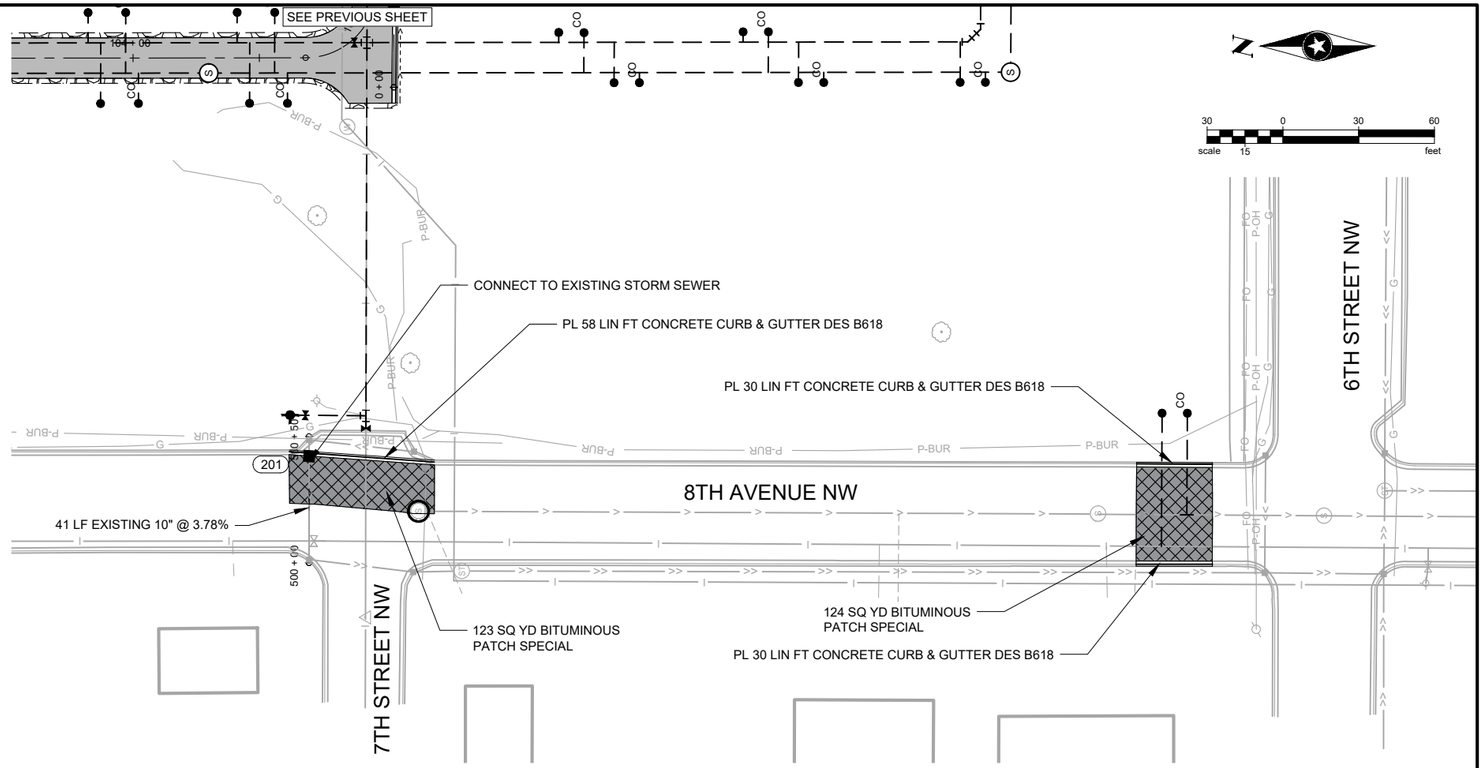
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

STREET AND STORM SEWER PLAN
FOREST LAKE SITE UTILITIES



STORM LATERAL PROFILE
STRUCTURES 201 - CONNECTION



ROADWAY AND STORM UTILITY LEGEND

	PROPOSED BITUMINOUS PAVEMENT		PROPOSED B618 CURB AND GUTTER
	BITUMINOUS PATCH SPECIAL	XXX	DENOTES STORM STRUCTURE
	PROPOSED CONCRETE WALK	1	4" CONCRETE WALK
	PROPOSED 6" DEPTH AGGREGATE SURFACING (CV) CL5	2	6" CONCRETE WALK
	STORM SEWER PIPE, MANHOLE AND CATCH BASIN	3	8" CONCRETE DRIVEWAY PAVEMENT

FOREST LAKE SITE UTILITIES

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C.P. 2022-5
GRAND RAPIDS, MINNESOTA

STORM SEWER LATERAL PROFILES
FOREST LAKE SITE UTILITIES

7TH AVENUE NW

7TH STREET NW

6TH STREET NW

8TH STREET NW

8TH AVENUE NW

PL STABILIZED CONSTRUCTION EXIT

PL 160 LIN FT SILT FENCE TYPE MS

PL 425 LIN FT SILT FENCE TYPE MS

CONSTRUCTION LIMITS (TYP.)

PL 176 LIN FT SILT FENCE TYPE MS

PL 30 LIN FT SILT FENCE TYPE MS

N

30 0 30 60
scale 15 feet

EROSION CONTROL LEGEND

- 6" TOPSOIL, SEED MIXTURE MNST-12 AND ROLLED EROSION PREVENTION CATEGORY 20
- SILT FENCE TYPE MS
- STORM DRAIN INLET PROTECTION
- DRAINAGE ARROW

FOREST LAKE SITE UTILITIES

SEH Project	GRANR171025
Drawn By	MBH, JLE
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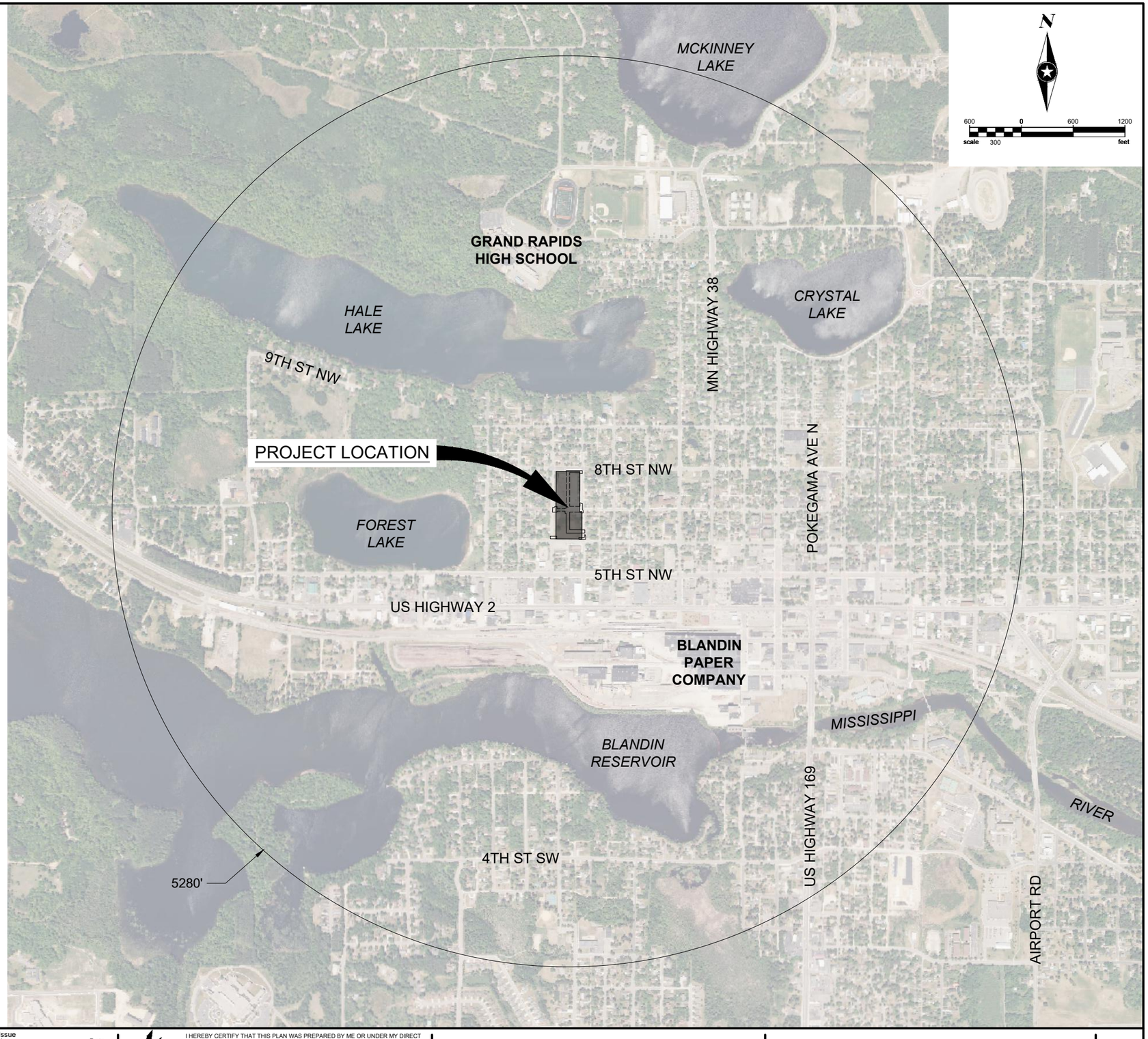
C.P. 2022-5
GRAND RAPIDS, MINNESOTA

EROSION CONTROL AND TURF ESTABLISHMENT PLAN FOREST LAKE SITE UTILITIES

CONTAMINATION SCREENING CHECKLIST		
This checklist addresses mobilization of contaminants by stormwater infiltration. See Part III.D of the Construction Stormwater permit for additional prohibitions.		
If the site being investigated receives discharges from vehicle fueling or maintenance facilities, STOP - Infiltration is prohibited under the CSW permit		
Box	**Question**	**Criteria or check box**
1	Is the project located in a well head protection area	
2	Is the project located in a Drinking Water Supply Management Area (DWSMA)	
3	Is the project located in a Karst area	
4	If any of the above are checked, what measures will be implemented to ensure protection of drinking water supply	
	Assess the site and proposed location of the BMP	
1	Is the site contaminated or does it have a history of soil or groundwater contamination at levels of concern? If Yes, proceed to Box 2; if No, proceed to Box 3.	
2	If the answer to Box 1 is yes, has the contaminated soil or groundwater been remediated to acceptable levels? NOTE: closure letters sent by the MPCA do not assure that a site is not contaminated. Click on the link in Cell E8 for more information. If yes, proceed to Box 3.	If no or unknown, Stop. There is sufficient information to suggest that contaminants may be mobilized by infiltration. For Construction Stormwater permittees, infiltration is prohibited when the infiltration system will be constructed in areas where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater. SEE FOOTNOTE
3	For Boxes 4 through 12, check each box in which the item occurs on the site with the proposed BMP?	
4	Underground storage tank vent(s) or fill port(s)	
5	Monitoring well(s)	
6	Soil pile(s) covered with plastic sheeting or tarp(s)	
7	Staining of soil(s) and/or dead vegetation	
8	Unusual odor(s)	
9	Mismanaged drum(s) or chemical container(s)	
10	Excavation(s) that is/are not backfilled with clean material	
11	Presence of debris that may indicate presence of structure(s) or activity(ies) that could result in contamination	
12	Site is a confirmed stormwater hotspot	
13	Are there any potential sources identified (checked) in Boxes 4 through 12? If Yes, proceed to Box 14; if no proceed to Box 15.	
14	For all potential sources identified (checked) in Boxes 5 through 13, can adequate separation be achieved? If yes, proceed to Box 16.	If no, Stop. There is sufficient information to suggest that contaminants may be mobilized by infiltration. For Construction Stormwater permittees, infiltration is prohibited when the infiltration system will be constructed in areas where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater. SEE FOOTNOTE
	Assessing adjacent properties	
15	For Boxes 16 through 25, check each box in which the item occurs within the influence zone of the site property. See Influence zone worksheet (click on tab at bottom of this spreadsheet).	
16	Known groundwater or soil contamination on adjacent property	
17	Underground storage tank vents or fill ports	
18	Monitoring wells	
19	Soil piles covered with plastic sheeting or tarps	
20	Staining of soils and/or dead vegetation	
21	Unusual odors	
22	Mismanaged drums or chemical containers	
23	Excavations that are not backfilled with clean material	
24	Presence of debris that may indicate presence of structures or activities that could result in contamination	
25	Site is a confirmed stormwater hotspot	
26	Are any potential sources identified (checked) in Boxes 16 through 25? If yes, proceed to Box 27	If no, Stop - Infiltration is appropriate
27	For all potential sources identified (checked) in Boxes 16 through 25, can adequate separation be achieved? If no, proceed to Box 28.	If yes, Stop - Infiltration is appropriate
28	If Box 27 is no, Stop. There is sufficient information to suggest that contaminants may be mobilized by infiltration. For Construction Stormwater permittees, infiltration is prohibited when the infiltration system will be constructed in areas where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater. SEE FOOTNOTE	
FOOTNOTE: If infiltration is pursued, additional investigation, such as a Phase 1 or Phase 2 Environmental Site Assessment, is highly recommended. For more information, see Stormwater management guidelines for sites with on-site contamination or Stormwater management guidelines for sites with off-site contamination at http://stormwater.pca.state.mn.us/index.php/Stormwater_infiltration_and_contaminated_soils_and_groundwater.		



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SEH Project	GRANR171025	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.
Drawn By	MBH, JLE	.			.				SARA CHRISTENSON, PE
Designed By	SLC	.			.				DATE 02-19-23 LICENSE NO. 55414
Checked By	RJB	.			.				

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

SWPPP
FOREST LAKE SITE UTILITIES

SWPPP SUMMARY/OVERVIEW:
THIS STORM WATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN DEVELOPED TO ADDRESS THE REQUIREMENTS OF NPDES PERMIT MN R100001. THIS SWPPP INCLUDES A COMBINATION OF NARRATIVE AND PLAN SHEETS THAT DESCRIBE THE TEMPORARY AND PERMANENT STORM WATER MANAGEMENT PLAN FOR THE PROJECT.

PROJECT INFORMATION:

LOCATION:	GRAND RAPIDS, MINNESOTA
LATITUDE/LONGITUDE:	47.239216, -93.539701
PROJECT DESCRIPTION:	FOREST LAKE SITE UTILITIES
SOIL DISTURBING ACTIVITIES:	REMOVALS, GRADING, PAVING, CURB & GUTTER, UTILITIES

CONTACTS:

OWNER:	CITY OF GRAND RAPIDS
CONTACT:	MATT WEGWERTH
ADDRESS:	420 NORTH POKEGAMA AVENUE | GRAND RAPIDS, MINNESOTA 55744
PHONE:	218.326.7625
EMAIL:	MWEGWERTH@GRANDRAPIDSMN.GOV

ENGINEER:	SHORT ELLIOTT HENDRICKSON INC. (SEH)
CONTACT:	SARA CHRISTENSON, PE
PHONE:	218.322.4513
EMAIL:	SCHRISTENSON@SEHINC.COM
PROJECT NO.:	GRANR 171025

KNOWLEDGEABLE PERSON/CHAIN OF RESPONSIBILITY
THE CONTRACTOR SHALL IDENTIFY A PERSON KNOWLEDGEABLE AND EXPERIENCED IN THE APPLICATION OF EROSION PREVENTION AND SEDIMENT CONTROL BMPS WHO WILL COORDINATE WITH ALL CONTRACTORS, SUBCONTRACTORS, AND OPERATORS ON-SITE TO OVERSEE THE IMPLEMENTATION OF THE SWPPP.

CONTRACTOR	TO BE DETERMINED
CONTACT	TO BE DETERMINED
PHONE	TO BE DETERMINED
EMAIL	TO BE DETERMINED

THE CONTRACTOR SHALL ESTABLISH A CHAIN OF RESPONSIBILITY FOR ALL CONTRACTORS AND SUB-CONTRACTORS ON SITE TO ENSURE THE SWPPP IS BEING PROPERLY IMPLEMENTED AND MAINTAINED. THE CONTRACTOR SHALL PROVIDE THE CHAIN OF RESPONSIBILITY TO THE OWNER AND ATTACH TO THE SWPPP PRIOR TO ANY CONSTRUCTION ACTIVITY.

GENERAL SWPPP RESPONSIBILITIES:
THE CONTRACTOR SHALL KEEP THE SWPPP, INCLUDING ALL AMENDMENTS AND INSPECTION AND MAINTENANCE RECORDS ON SITE DURING CONSTRUCTION.

THE SWPPP WILL BE AMENDED AS NEEDED AND/OR AS REQUIRED BY PROVISIONS OF THE PERMIT. PERMITTEES MUST AMEND THE SWPPP TO INCLUDE ADDITIONAL OR MODIFIED BMPS AS NECESSARY TO CORRECT PROBLEMS IDENTIFIED OR ADDRESS SITUATIONS WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASONAL CONDITIONS HAVING A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS OR GROUNDWATER. AMENDMENTS WILL BE APPROVED BY BOTH THE OWNER AND CONTRACTOR AND WILL BE ATTACHED OR OTHERWISE INCLUDED WITH THE SWPPP DOCUMENTS. THE SWPPP AMENDMENTS SHALL BE INITIATED, FACILITATED, AND PROCESSED BY THE CONTRACTOR.

ALL SWPPP CHANGES MUST BE DONE BY AN INDIVIDUAL TRAINED IN ACCORDANCE WITH SECTION 21.2. CHANGES INVOLVING THE USE OF A LESS STRINGENT BMP MUST INCLUDE A JUSTIFICATION DESCRIBING HOW THE REPLACEMENT BMP IS EFFECTIVE FOR THE SITE CHARACTERISTICS.

BOTH THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER TERMINATION AND/OR TRANSFER OF THE PERMIT.

LONG TERM OPERATION AND MAINTENANCE
THE OWNER WILL BE RESPONSIBLE OR WILL OTHERWISE IDENTIFY WHO WILL BE RESPONSIBLE FOR THE LONG TERM OPERATION AND MAINTENANCE OF THE PERMANENT STORMWATER MANAGEMENT SYSTEM(S).

THE OWNER WILL PREPARE AND IMPLEMENT A PERMANENT STORMWATER TREATMENT SYSTEM(S) MAINTENANCE PLAN.

IMPLEMENTATION SEQUENCE:
THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING SEQUENCE.
THE ENGINEER MAY APPROVE ADJUSTMENTS TO THE SEQUENCE AS NEEDED.

1.	INSTALL ROCK CONSTRUCTION ENTRANCE(S)
2.	INSTALL PERIMETER CONTROL AND STABILIZE DOWN GRADIENT BOUNDARIES
3.	INSTALL INLET PROTECTION ON EXISTING CATCH BASINS
4.	COMPLETE SITE GRADING
5.	INSTALL UTILITIES, STORM SEWER, INLET PROTECTION, CURB & GUTTER, PAVING
6.	COMPLETE FINAL GRADING AND STABILIZE DISTURBED AREAS
7.	AFTER CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, REMOVE ACCUMULATED SEDIMENT, REMOVE BMPS, AND RE-STABILIZE ANY AREAS DISTURBED BY THEIR REMOVAL.

TRAINING DOCUMENTATION:

PREPARER/DESIGNER OF SWPPP:	MICHAEL HUDEC, CIVIL TECHNICIAN
EMPLOYER:	SHORT ELLIOTT HENDRICKSON, INC. (SEH)
DATE OBTAINED / REFRESHED	09.10.2019
INSTRUCTOR(S)/ENTITY PROVIDING TRAINING:	JOHN CHAPMAN, REBECCA FORMAN - U OF M

CONTENT OF TRAINING AVAILABLE UPON REQUEST.

THE CONTRACTOR (OPERATOR) SHALL ADD TO THE SWPPP TRAINING RECORDS FOR THE FOLLOWING PERSONNEL:

-INDIVIDUALS OVERSEEING THE IMPLEMENTATION OF, REVISING, AND AMENDING THE SWPPP
-INDIVIDUALS PERFORMING INSPECTIONS
-INDIVIDUALS PERFORMING OR SUPERVISING THE INSTALLATION, MAINTENANCE AND REPAIR OF BMPS

TRAINING MUST RELATE TO THE INDIVIDUAL'S JOB DUTIES AND RESPONSIBILITIES AND SHALL INCLUDE:

1) DATES OF TRAINING
2) NAME OF INSTRUCTORS
3) CONTENT AND ENTITY PROVIDING TRAINING

THE CONTRACTOR SHALL ENSURE THAT THE INDIVIDUALS ARE TRAINED BY LOCAL, STATE, FEDERAL AGENCIES, PROFESSIONAL ORGANIZATIONS, OR OTHER ENTITIES WITH EXPERTISE IN EROSION PREVENTION, SEDIMENT CONTROL, PERMANENT STORMWATER MANAGEMENT AND THE MINNESOTA NPDES/SDS CONSTRUCTION STORMWATER PERMIT.

PROJECT SUMMARY:

TOTAL DISTURBED AREA:	1.41 AC
PRE-CONSTRUCTION IMPERVIOUS AREA:	0.27 AC
POST-CONSTRUCTION IMPERVIOUS AREA:	0.52 AC
IMPERVIOUS AREA ADDED:	0.25 AC

RECEIVING WATER(S) WITHIN ONE MILE FROM PROJECT BOUNDARIES:
(http://pca-gis02.pca.state.mn.us/CSW/index.html)

ID	NAME	TYPE	SPECIAL WATER?	IMPAIRED WATER?	CONSTRUCTION RELATED IMPAIRMENT OR SPECIAL WATER CLASSIFICATION	TMDL
31053300	BLANDIN	RESERVOIR	N	Y		
SEE SECTION 23 OF THE PERMIT AND APPLICABLE TMDL WLA'S						

SITE SOIL INFORMATION: (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)
(SOIL INFORMATION PROVIDED IS FOR NPDES PERMIT INFORMATION ONLY. SOIL INFORMATION WAS OBTAINED FROM THE USGS WEBSITE. THE CONTRACTOR SHALL NOT RELY ON THIS SOIL INFORMATION FOR CONSTRUCTION PURPOSES.)

SOIL NAME:	HYDROLOGIC CLASSIFICATION:
ITASCA-GOODLAND SILT LOAMS, 2-12% SLOPES	B
ANTICIPATED RANGE OF PARTICLE SIZES	FINE

RELATED REVIEWS & PERMITS:
ENVIRONMENTAL, WETLAND, ENDANGERED OR THREATENED SPECIES, ARCHEOLOGICAL, LOCAL, STATE, AND/OF FEDERAL REVIEWS/PERMITS:

AGENCY:	TYPE OF PERMIT:
CITY OF GRAND RAPIDS	GRAND RAPIDS STORM WATER PERMIT
MPCA	CONSTRUCTION STORMWATER GENERAL PERMIT
MDH	WATER EXTENSION PERMIT
MPCA	SANITARY SEWER EXTENSION PERMIT

PROJECT SPECIFIC NOTES:
N/A

THE FOLLOWING DOCUMENTS ARE CONSIDERED PART OF THE SWPPP:
PLAN AND PROFILE PLAN SHEETS:
EROSION AND SEDIMENT CONTROL PLAN SHEETS:
TURF ESTABLISHMENT PLAN SHEETS:
STORM SEWER PLAN & PROFILE PLAN SHEETS:
GRADING PLAN SHEETS:
DETAIL PLAN SHEETS:
SWPPP NOTE AND DETAIL SHEETS:
PROJECT SPECIFICATIONS:
PROJECT BID FORM:

TEMPORARY BMP DESIGN FACTORS:
EROSION PREVENTION AND SEDIMENT CONTROL BMP'S MUST BE DESIGNED TO ACCOUNT FOR:

THE EXPECTED AMOUNT, FREQUENCY, INTENSITY, AND DURATION OF PRECIPITATION

THE NATURE OF STORMWATER RUNOFF AND RON-ON AT THE SITE, INCLUDING FACTORS SUCH AS EXPECTED FLOW FROM IMPERVIOUS SURFACES, SLOPES, AND SITE DRAINAGE FEATURES

THE STORMWATER VOLUME, VELOCITY, AND PEAK FLOW RATES TO MINIMIZE DISCHARGE OF POLLUTANTS IN STORMWATER AND TO MINIMIZE CHANNEL AND STREAMBANK EROSION AND SCOUR IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS

THE RANGE OF SOIL PARTICLE SIZES EXPECTED TO BE PRESENT.

TEMPORARY SEDIMENT BASINS:
THE CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT BASIN(S) INDICATED ON PLANS AND REQUIRED BY THE NPDES CONSTRUCTION PERMIT.

THE TEMPORARY BASIN MUST PROVIDE LIVE STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A TWO (2)-YEAR, 24-HOUR STORM FROM EACH ACRE DRAINED TO THE BASIN OR 1,800 CUBIC FEET OF LIVE STORAGE PER ACRE DRAINED, WHICHEVER IS GREATER.

TEMPORARY SEDIMENT BASIN OUTLETS SHALL BE CONSTRUCTED TO PREVENT SHORT-CIRCUITING AND PREVENT THE DISCHARGE OF FLOATING DEBRIS.

OUTLET STRUCTURES MUST BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE TO MINIMIZE THE DISCHARGE OF POLLUTANTS.

BASINS MUST INCLUDE A STABILIZED EMERGENCY OVERFLOW, WITHDRAW WATER FROM THE SURFACE, AND PROVIDE ENERGY DISSIPATION AT THE OUTLET.

TEMPORARY SEDIMENT BASINS SHALL BE PROVIDED WITH ENERGY DISSIPATION AT ANY BASIN OUTLET TO PREVENT SOIL EROSION.

SEDIMENT BASINS MUST BE SITUATED OUTSIDE OF SURFACE WATERS AND ANY BUFFER ZONES, AND MUST BE DESIGNED TO AVOID THE DRAINING WATER FROM WETLANDS.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

EROSION PREVENTION MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION PREVENTION MEASURES FOR THE PROJECT.

EROSION PREVENTION MEASURES SHOWN ON PLANS ARE THE ABSOLUTE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL EROSION PREVENTION MEASURES AS NECESSARY TO PROPERLY MANAGE THE PROJECT AREA.

THE CONTRACTOR SHALL PLAN AND IMPLEMENT APPROPRIATE CONSTRUCTION PRACTICES AND CONSTRUCTION PHASING TO MINIMIZE EROSION AND RETAIN VEGETATION WHENEVER POSSIBLE.

THE PERMITTEE SHALL DELINEATE AREAS NOT TO BE DISTURBED. PERMITTEE(S) MUST MINIMIZE THE NEED FOR DISTURBANCE OF PORTIONS OF THE PROJECT WITH STEEP SLOPES. WHEN STEEP SLOPES MUST BE DISTURBED, PERMITTEES MUST USE TECHNIQUES SUCH AS PHASING AND STABILIZATION PRACTICES DESIGNED FOR STEEP SLOPES.

THE CONTRACTOR SHALL STABILIZE OF ALL EXPOSED SOILS IMMEDIATELY TO LIMIT SOIL EROSION. IN NO CASE SHALL ANY EXPOSED AREAS, INCLUDING STOCK PILES, HAVE EXPOSED SOILS FOR MORE THAN 14 DAYS WITHOUT PROVIDING TEMPORARY OR PERMANENT STABILIZATION. STABILIZATION MUST BE COMPLETED WITHIN 14 DAYS AFTER CONSTRUCTION ACTIVITY HAS CEASED. TEMPORARY STOCKPILES WITHOUT SIGNIFICANT CLAY, SILT, OR ORGANIC COMPONENTS DO NOT REQUIRE STABILIZATION.

DRAINAGE PATHS, DITCHES, AND/OR SWALES SHALL HAVE TEMPORARY OR PERMANENT STABILIZATION WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER OR 24 HOURS AFTER CONSTRUCTION ACTIVITY IN THE DITCH/SWALE HAS TEMPORARILY OR PERMANENTLY CEASED.

THE CONTRACTOR SHALL COMPLETE THE STABILIZATION OF ALL EXPOSED SOILS WITHIN 24 HOURS THAT LIE WITHIN 200 FEET OF PUBLIC WATERS PROMULGATED "WORK IN WATER RESTRICTIONS" BY THE MN DNR DURING SPECIFIED FISH SPAWNING TIMES.

THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL BMPS AND VELOCITY DISSIPATION DEVICES ALONG CONSTRUCTED STORMWATER CONVEYANCE CHANNELS AND OUTLETS.

THE CONTRACTOR SHALL STABILIZE TEMPORARY AND/OR PERMANENT DRAINAGE DITCHES OR SWALES WITHIN 200 LINEAL FEET FROM PROPERTY EDGE, OR DISCHARGE POINT(S) WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE.

TEMPORARY OR PERMANENT DITCHES OR SWALES USED AS A SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.

THE CONTRACTOR SHALL NOT UTILIZE HYDROMULCH, TACKIFIER, POLYACRYLAMIDE OR SIMILAR EROSION PREVENTION PRACTICES AS A FORM OF STABILIZATION FOR TEMPORARY OR PERMANENT DRAINAGE DITCHES OR SWALE SECTION WITH A CONTINUOUS SLOPE OF GREATER THAN 2 PERCENT.

THE CONTRACTOR SHALL ENSURE PIPE OUTLETS HAVE TEMPORARY OR PERMANENT ENERGY DISSIPATION WITH IN 24 HOURS OF CONNECTION TO A SURFACE WATER.

THE CONTRACTOR SHALL DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORMWATER INFILTRATION. VELOCITY DISSIPATION DEVICES MUST BE USED TO PREVENT EROSION WHEN DIRECTING STORMWATER TO VEGETATED AREAS.

SEDIMENT CONTROL MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL SEDIMENT CONTROL MEASURES FOR THE PROJECT.

SEDIMENT CONTROL MEASURES SHOWN ON PLANS ARE THE ABSOLUTE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL SEDIMENT CONTROL MEASURES AS NECESSARY TO PROPERLY MANAGE THE PROJECT AREA.

THE CONTRACTOR SHALL ENSURE SEDIMENT CONTROL MEASURES ARE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS BEFORE ANY UPGRADIENT LAND DISTURBING ACTIVITIES BEGIN. THESE MEASURES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ESTABLISHED.

A FLOATING SILT CURTAIN PLACED IN THE WATER IS NOT A SEDIMENT CONTROL BMP EXCEPT WHEN WORKING ON A SHORELINE OR BELOW THE WATERLINE. IMMEDIATELY AFTER THE SHORT TERM CONSTRUCTION ACTIVITY IS COMPLETE, PERMITTEE(S) MUST INSTALL AN UPLAND PERIMETER CONTROL PRACTICE IF EXPOSED SOILS STILL DRAIN TO A SURFACE WATER.

THE CONTRACTOR SHALL ENSURE SEDIMENT CONTROL PRACTICES REMOVED OR ADJUSTED FOR SHORT-TERM ACTIVITIES BE RE-INSTALLED IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY HAS BEEN COMPLETED. SEDIMENT CONTROL PRACTICES MUST BE REINSTALLED BEFORE THE NEXT PRECIPITATION EVENT EVEN IF THE SHORT-TERM ACTIVITY IS NOT COMPLETE.

THE CONTRACTOR SHALL ENSURE STORM DRAIN INLETS ARE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED.

THE CONTRACTOR SHALL PROVIDE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROL AT THE BASE OF THE STOCKPILES.

THE CONTRACTOR SHALL INSTALL PERIMETER CONTROL AROUND ALL STAGING AREAS, BORROW PITS, AND AREAS CONSIDERED ENVIRONMENTALLY SENSITIVE.

THE CONTRACTOR SHALL ENSURE VEHICLE TRACKING BE MINIMIZED WITH EFFECTIVE BMPS. WHERE THE BMPS FAIL TO PREVENT SEDIMENT FROM TRACKING ONTO STREETS THE CONTRACTOR SHALL CONDUCT STREET SWEEPING TO REMOVE ALL TRACKED SEDIMENT.

THE CONTRACTOR SHALL IMPLEMENT CONSTRUCTION PRACTICES TO MINIMIZE SOIL COMPACTION.

THE CONTRACTOR SHALL ENSURE ALL CONSTRUCTION ACTIVITY REMAIN WITHIN PROJECT LIMITS AND THAT ALL IDENTIFIED RECEIVING WATER BUFFERS ARE MAINTAINED.

RECEIVING WATER	NATURAL BUFFER	IS THE BUFFER BEING ENCROACHED ON?	REASON FOR BUFFER ENCROACHMENT
MISSISSIPPI RIVER / BLANDIN RESERVOIR	100 FT	N	N/A

A 50 FOOT NATURAL BUFFER MUST BE PRESERVED OR PROVIDE REDUNDANT (DOUBLE) PERIMETER SEDIMENT CONTROLS IF NATURAL BUFFER IS INFEASIBLE.

THE CONTRACTOR SHALL NOT UTILIZE SEDIMENT CONTROL CHEMICALS ON SITE.

INSPECTION AND MAINTENANCE:
ALL INSPECTIONS, MAINTENANCE, REPAIRS, REPLACEMENTS, AND REMOVAL OF BMPS IS TO BE CONSIDERED INCIDENTAL TO THE BMP BID ITEMS.

THE PERMITTEE(S) IS RESPONSIBLE FOR COMPLETING SITE INSPECTIONS, AND BMP MAINTENANCE TO ENSURE COMPLIANCE WITH THE PERMIT REQUIREMENTS.

THE PERMITTEE(S) SHALL INSPECT THE CONSTRUCTION SITE ONCE EVERY 7 DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS.

THE PERMITTEE(S) SHALL DOCUMENT A WRITTEN SUMMARY OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES CONDUCTED WITHIN 24 HOURS OF OCCURRENCE. RECORDS OF EACH ACTIVITY SHALL INCLUDE THE FOLLOWING:

-DATE AND TIME OF INSPECTIONS;
-NAME OF PERSON(S) CONDUCTING INSPECTION;
-FINDINGS AND RECOMMENDATIONS FOR CORRECTIVE ACTIONS IF NECESSARY;
-CORRECTIVE ACTIONS TAKEN;
-DATE AND AMOUNT OF RAINFALL EVENTS;
-POINTS OF DISCHARGE OBSERVED DURING INSPECTION AND DESCRIPTION OF THE DISCHARGE
-AMENDMENTS MADE TO THE SWPPP.

THE PERMITTEE(S) SHALL SUBMIT A COPY OF THE WRITTEN INSPECTIONS TO THE ENGINEER AND OWNER ON A MONTHLY BASIS. IF MONTHLY INSPECTION REPORTS ARE NOT SUBMITTED, MONTHLY PAYMENTS MAY BE HELD.

THE CONTRACTOR SHALL DOCUMENT AMENDMENTS TO THE SWPPP AS A RESULT OF INSPECTION(S) WITHIN 7 DAYS.

THE CONTRACTOR SHALL KEEP THE SWPPP, ALL INSPECTION REPORTS, AND AMENDMENTS ONSITE. THE CONTRACTOR SHALL DESIGNATE A SPECIFIC ONSITE LOCATION TO KEEP THE RECORDS

THE CONTRACTOR IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY BMP'S, AS WELL AS EROSION AND SEDIMENT CONTROL BMP'S.

THE CONTRACTOR SHALL INSPECT EROSION PREVENTION AND SEDIMENTATION CONTROL BMPS TO ENSURE INTEGRITY AND EFFECTIVENESS. ALL NONFUNCTIONAL BMPS SHALL BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS WITHIN 24 HOURS OF FINDING. THE CONTRACTOR SHALL INVESTIGATE AND COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS:

PERIMETER CONTROL DEVICES, INCLUDING SILT FENCE SHALL BE REPAIRED, OR REPLACED, WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE DEVICE HEIGHT. THESE REPAIRS SHALL BE MADE WITHIN 24 HOURS OF DISCOVERY.

TEMPORARY AND PERMANENT SEDIMENT BASINS SHALL BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY.

SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. THE CONTRACTOR SHALL REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS. THE CONTRACTOR SHALL RE-STABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN 7 DAYS OF DISCOVERY, UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL CONSTRAINTS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND OBTAIN ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK IN SURFACE WATERS.

CONSTRUCTION SITE VEHICLE EXIT LOCATIONS SHALL BE INSPECTED DAILY FOR EVIDENCE OF SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES WITHIN 24 HOURS OF DISCOVERY.

IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANOR AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS.

EROSION PREVENTION BMP SUMMARY:
SEE EROSION AND SEDIMENT CONTROL PLAN SHEET AND BID FORM FOR TYPE, LOCATION, AND QUANTITY OF EROSION PREVENTION BMPS.

SEDIMENT CONTROL BMP SUMMARY:
SEE EROSION AND SEDIMENT CONTROL PLAN SHEETS AND BID FORM FOR TYPE, LOCATION, AND QUANTITY OF SEDIMENT CONTROL BMPS.

DEWATERING AND BASIN DRAINING ACTIVITIES:
THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL DEWATERING AND SURFACE DRAINAGE REGULATIONS.

WATER FROM DEWATERING ACTIVITIES SHALL DISCHARGE TO A TEMPORARY AND/OR PERMANENT SEDIMENT BASIN.

IF WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN, IT SHALL BE TREATED WITH OTHER APPROPRIATE BMPS, TO EFFECTIVELY REMOVE SEDIMENT.

DISCHARGE THAT CONTAINS OIL OR GREASE MUST BE TREATED WITH AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE PRIOR TO DISCHARGE.

WATER FROM DEWATERING SHALL BE DISCHARGED IN A MANNER THAN DOES NOT CAUSE NUISANCE CONDITIONS, EROSION, OR INUNDATION OF WETLANDS.

BACKWASH WATER USED FOR FILTERING SHALL BE HAULED AWAY FOR DISPOSAL, RETURNED TO THE BEGINNING OF TREATMENT PROCESS, OR INCORPORATED INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR SHALL REPLACE AND CLEAN FILTER MEDIAS USED IN DEWATERING DEVICES WHEN REQUIRED TO MAINTAIN ADEQUATE FUNCTION.

POLLUTION PREVENTION MANAGEMENT MEASURES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POLLUTION PREVENTION MANAGEMENT MEASURES.

ALL POLLUTION PREVENTION MEASURES ARE CONSIDERED INCIDENTAL TO THE MOBILIZATION BID ITEM, UNLESS OTHERWISE NOTED.

THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL, IN COMPLIANCE WITH MPCA DISPOSAL REQUIREMENTS, OF ALL HAZARDOUS MATERIALS, SOLID WASTE, AND PRODUCTS ON-SITE.

THE CONTRACTOR SHALL ENSURE BUILDING PRODUCTS THAT HAVE THE POTENTIAL TO LEAK POLLUTANTS ARE KEPT UNDER COVER TO PREVENT THE DISCHARGE OF POLLUTANTS.

THE CONTRACTOR SHALL ENSURE PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS ARE COVERED TO PREVENT THE DISCHARGE OF POLLUTANTS.

THE CONTRACTOR SHALL ENSURE HAZARDOUS MATERIALS AND TOXIC WASTE IS PROPERLY STORED IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS, OR OTHER DISCHARGE. STORAGE AND DISPOSAL OF HAZARDOUS WASTE OR HAZARDOUS MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.

THE CONTRACTOR SHALL ENSURE ASPHALT SUBSTANCES USED ON-SITE SHALL ARE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

THE CONTRACTOR SHALL ENSURE PAINT CONTAINERS AND CURING COMPOUNDS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT AND/OR CURING COMPOUNDS SHALL NOT BE DISCHARGED INTO THE STORM SEWER SYSTEM AND SHALL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURE'S INSTRUCTION.

THE CONTRACTOR SHALL ENSURE SOLID WASTE BE STORED, COLLECTED AND DISPOSED OF PROPERLY IN COMPLIANCE WITH MINN. R. CH. 7035.

THE CONTRACTOR SHALL ENSURE POTABLE TOILETS ARE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY IN ACCORDANCE WITH MINN. R, CH. 7041.

THE CONTRACTOR SHALL MONITOR ALL VEHICLES ON-SITE FOR LEAKS AND RECEIVE REGULAR PREVENTION MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.

THE CONTRACTOR SHALL ENSURE WASHOUT WASTE MUST CONTACT THE GROUND AND BE PROPERLY DISPOSED OF IN COMPLIANCE WITH MPCA RULES.

THE CONTRACTOR SHALL INCLUDE SPILL KITS WITH ALL FUELING SOURCES AND MAINTENANCE ACTIVITIES. SECONDARY CONTAINMENT MEASURES SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.

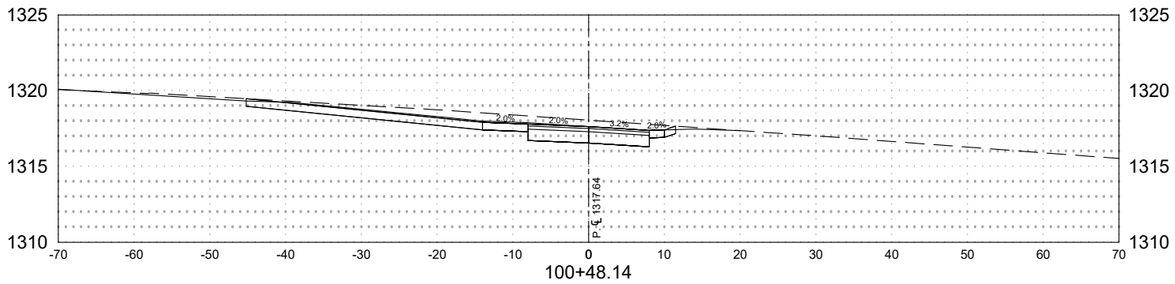
THE CONTRACTOR SHALL ENSURE SPILLS ARE CONTAINED AND CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM WATER CONVEYANCE SYSTEM SHALL BE REPORTED TO THE MINNESOTA DUTY OFFICER AT 1.800.422.0798.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LICENSE PROFESSIONAL UNDER THE LAWS OF THE STATE OF MINNESOTA.

SARA CHRISTENSON, PE
DATE 02-19-23 LICENSE NO. 55414

C.P. 2022-5
GRAND RAPIDS, MINNESOTA

SWPP
FOREST LAKE SITE UTILITIES



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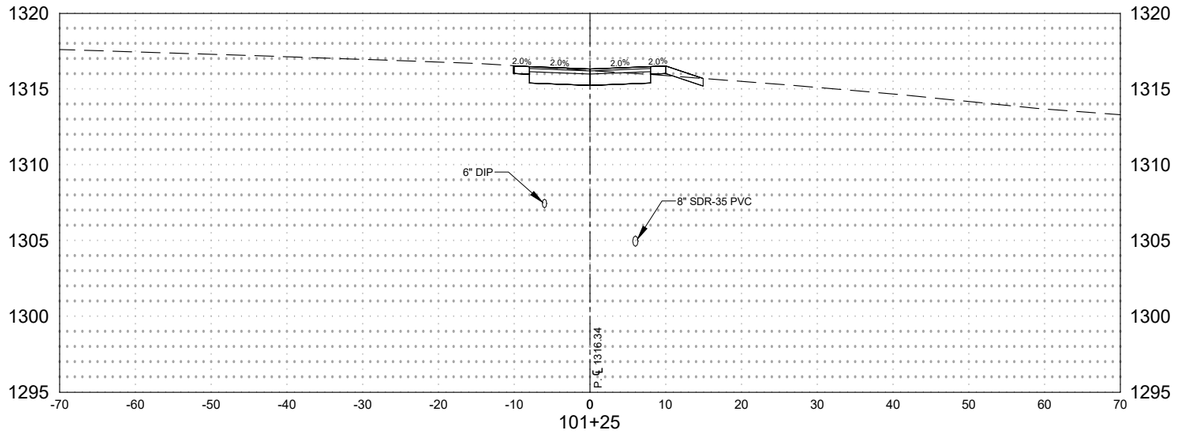

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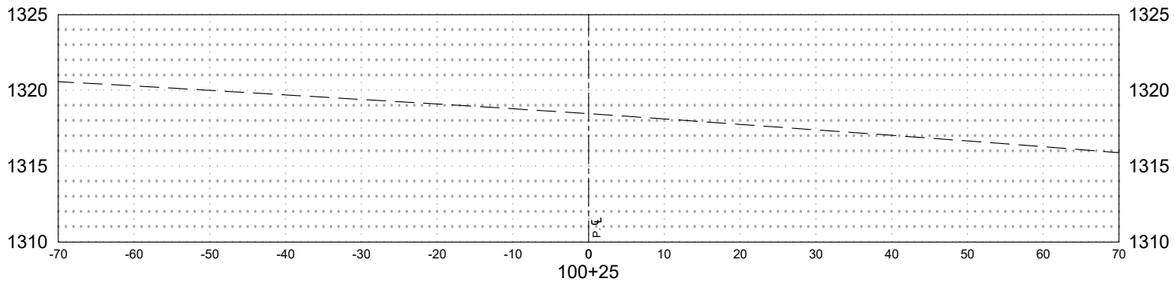

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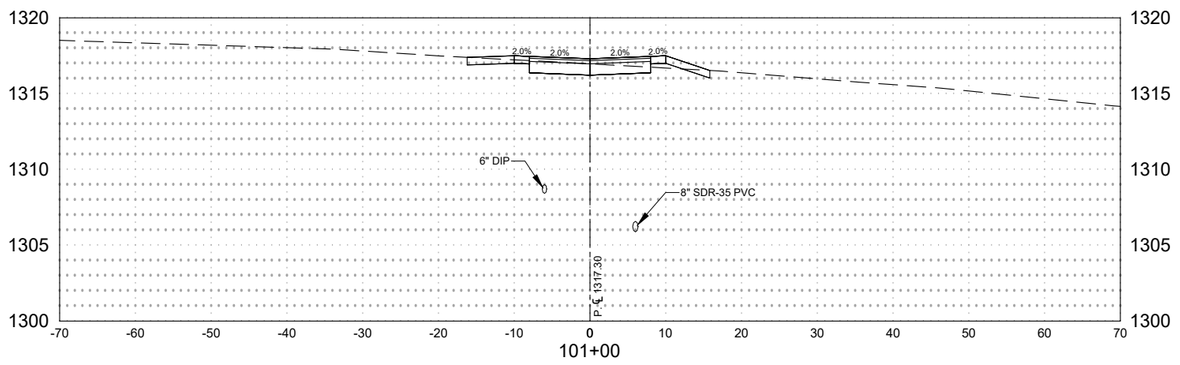

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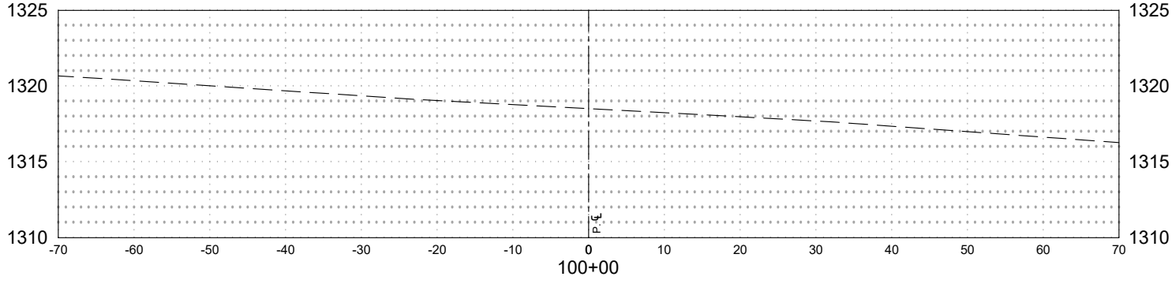

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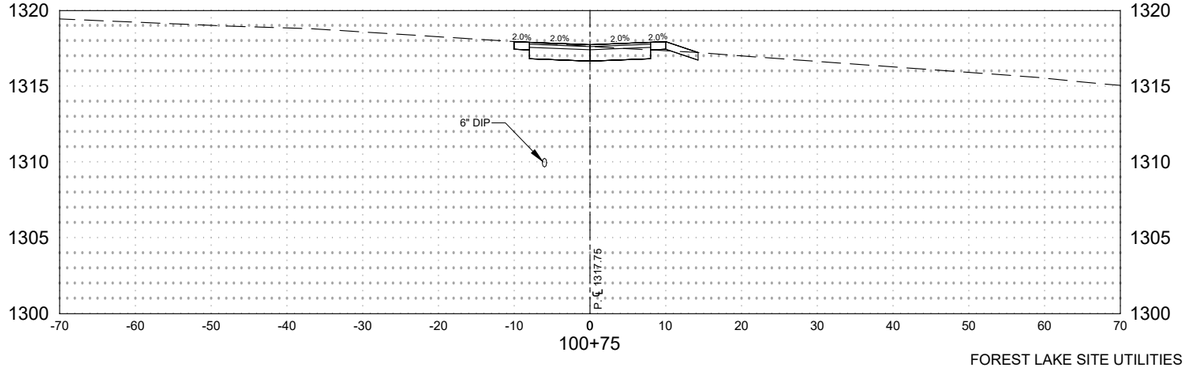

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FOREST LAKE SITE UTILITIES
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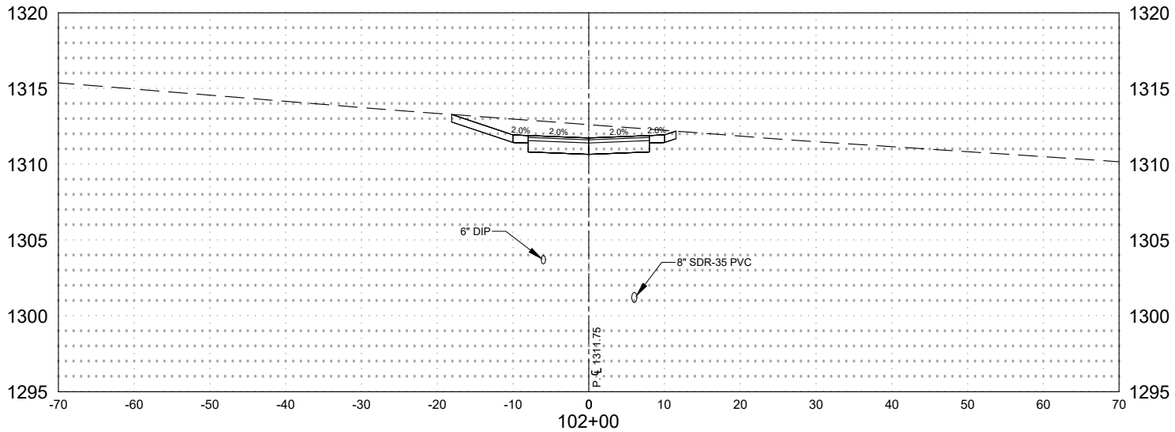

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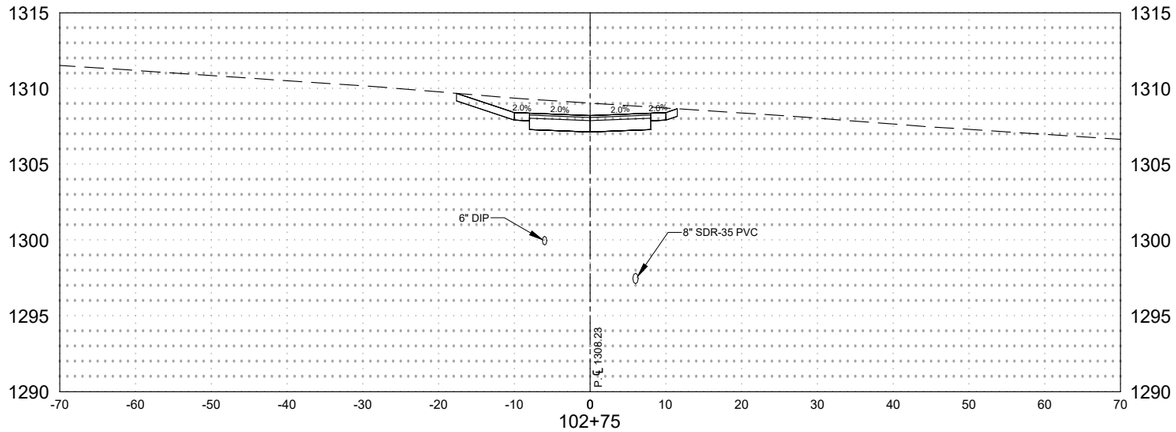

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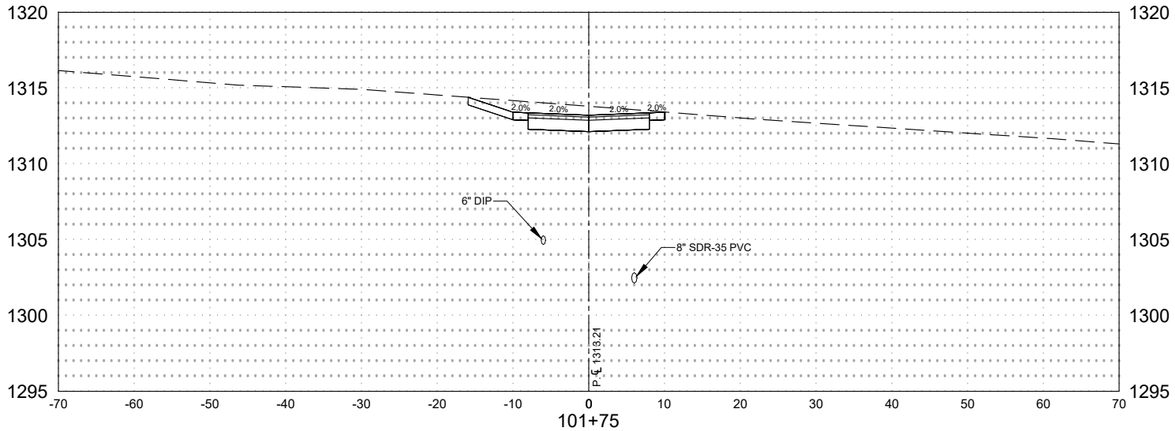

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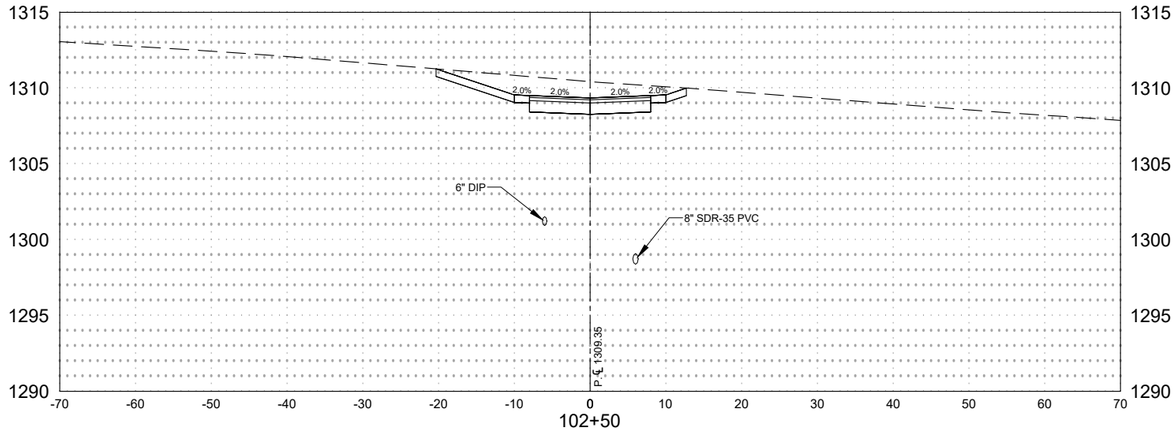

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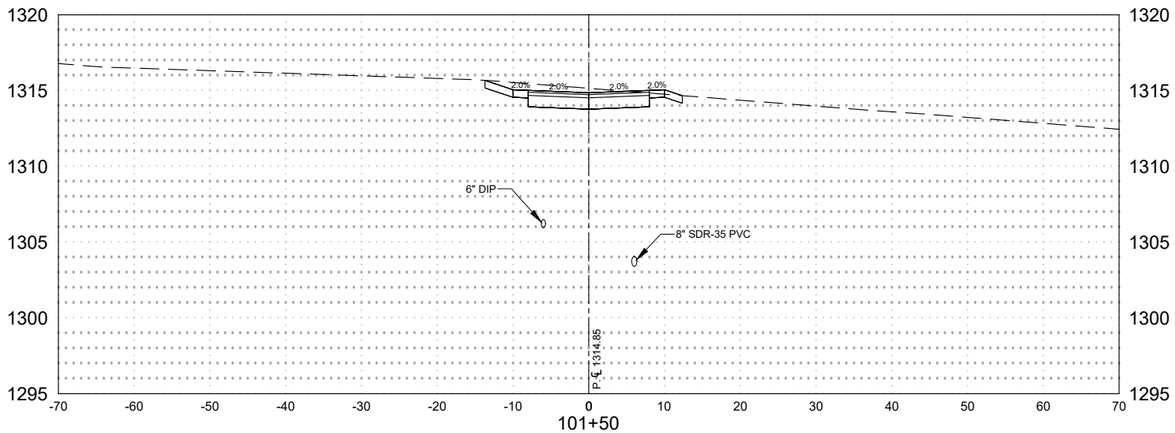

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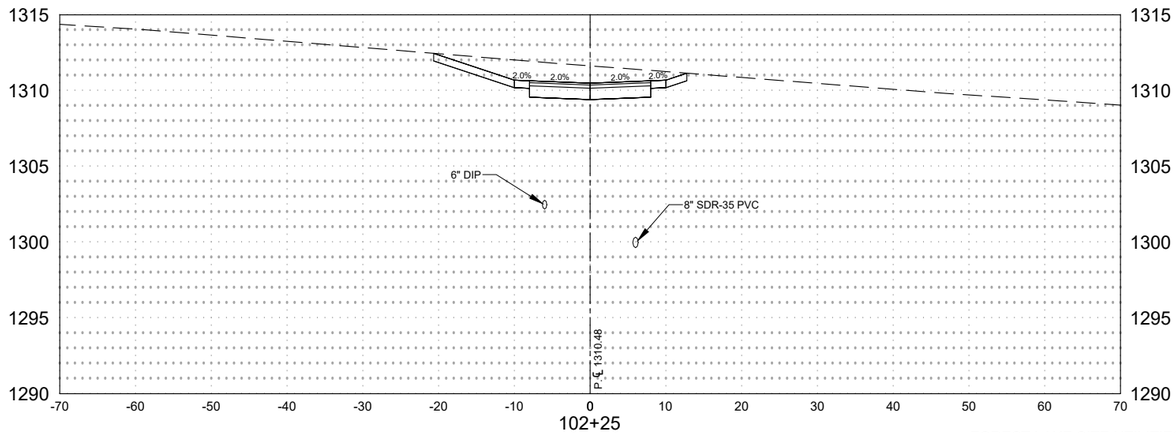

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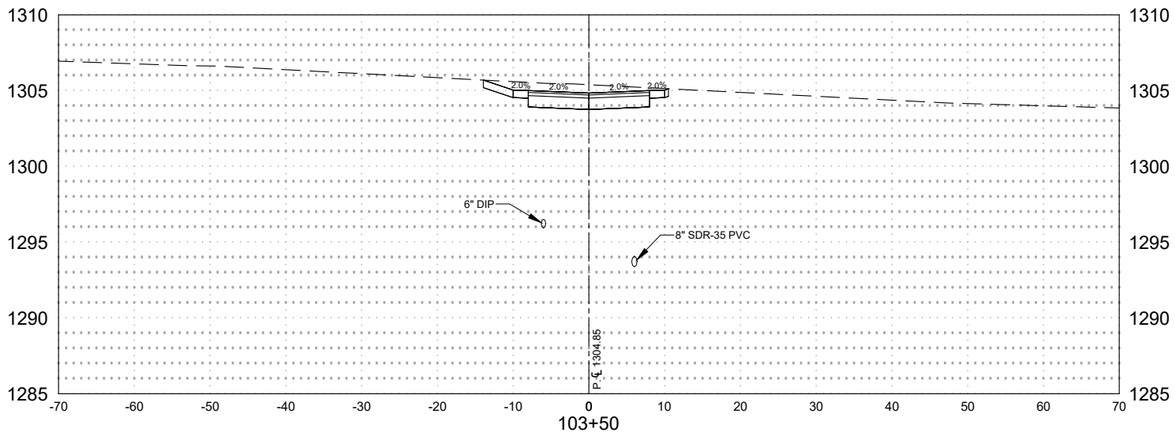

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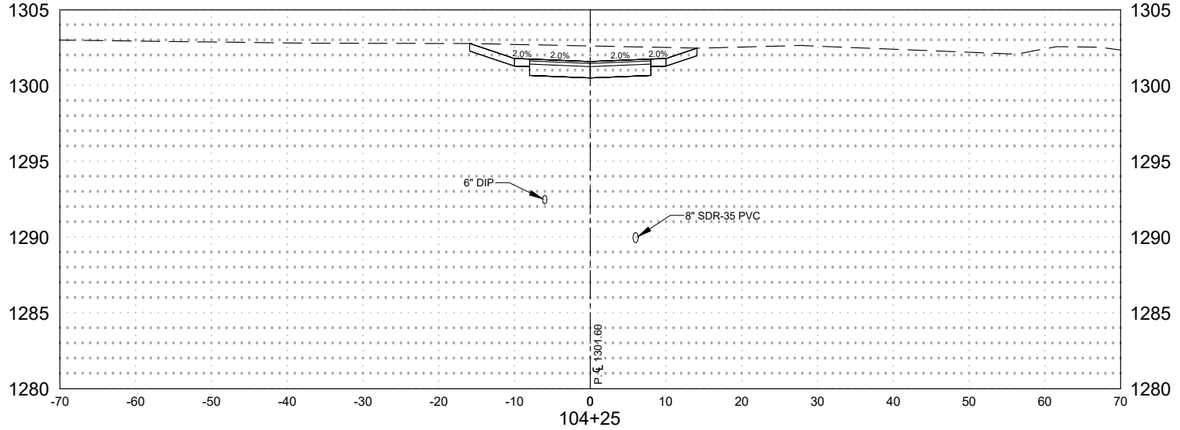

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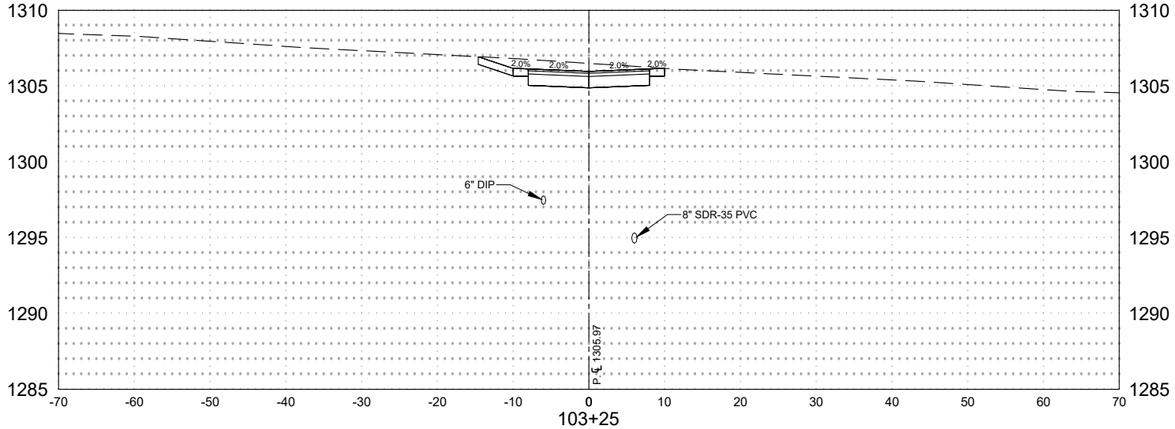

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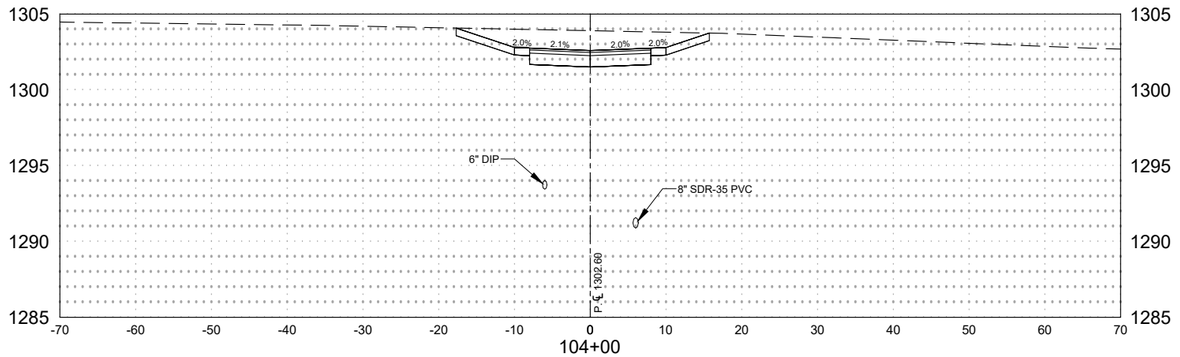

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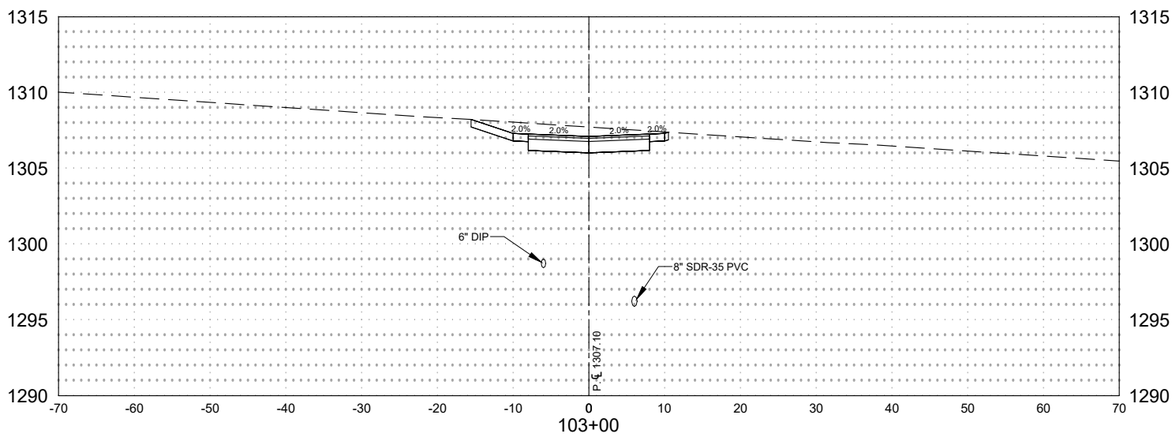

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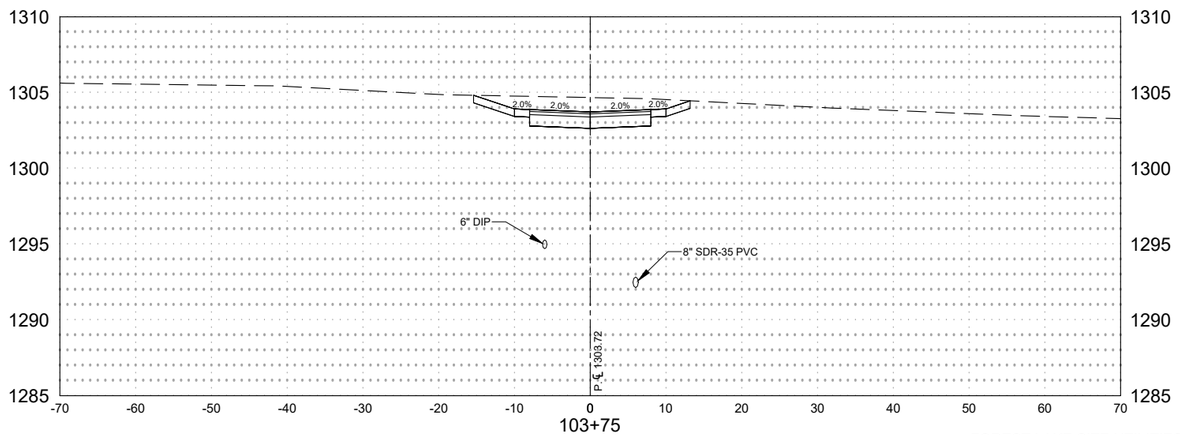

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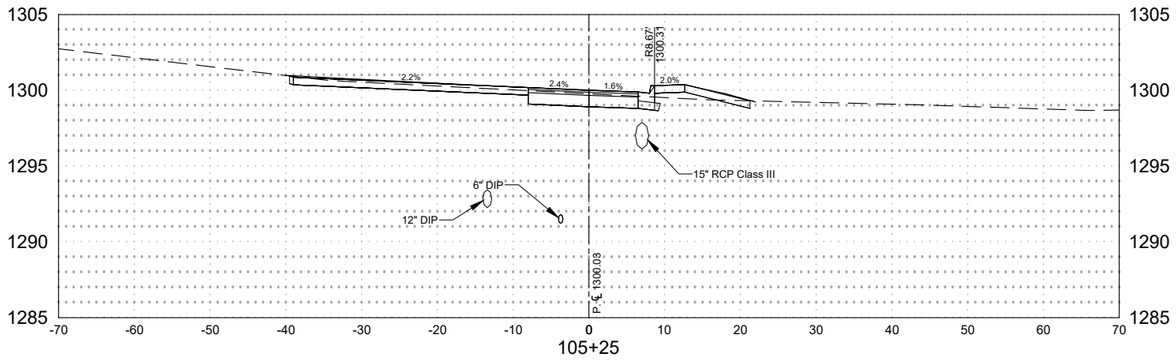

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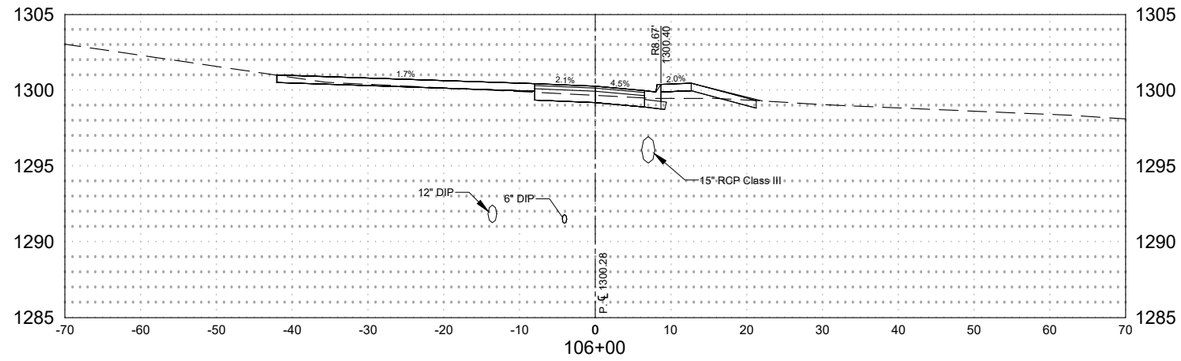

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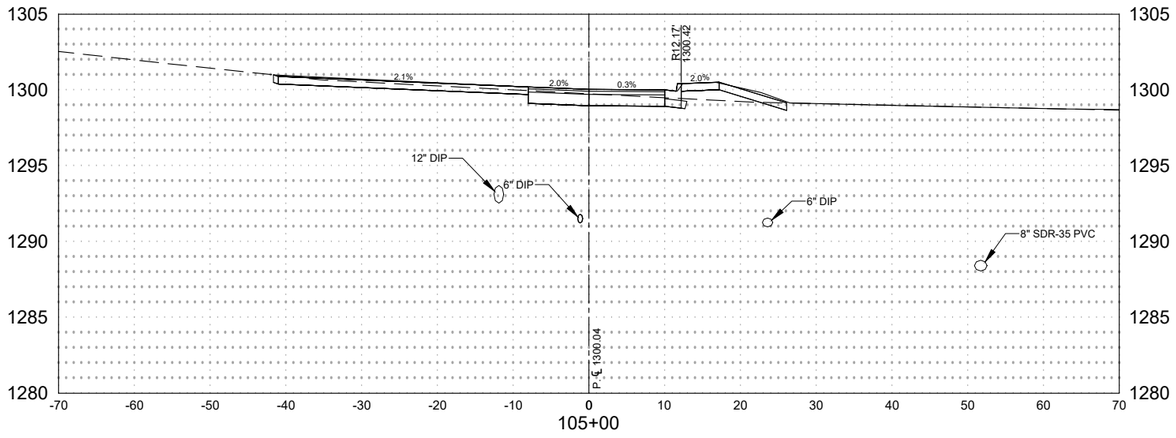

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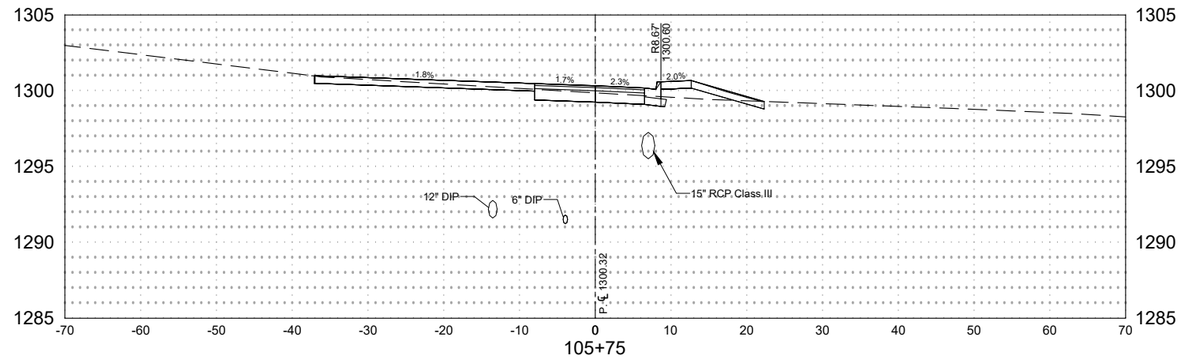

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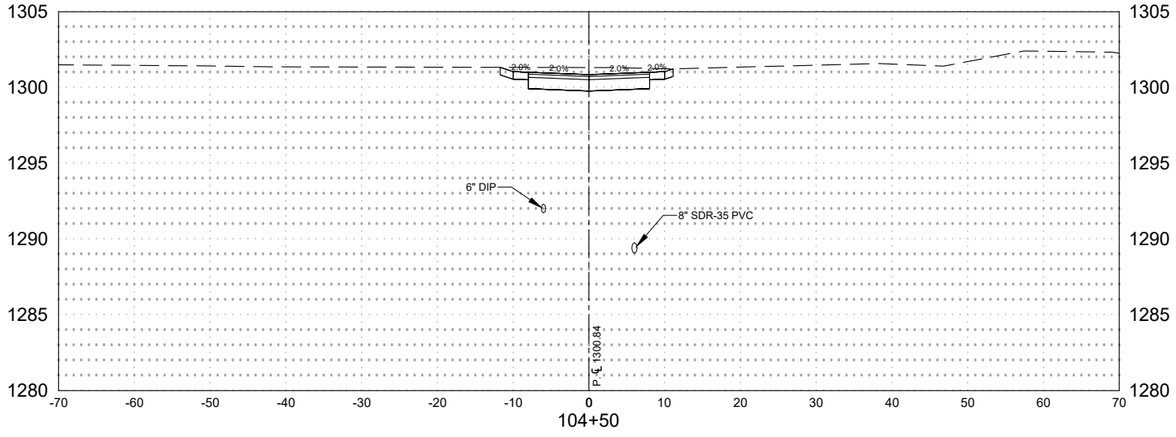

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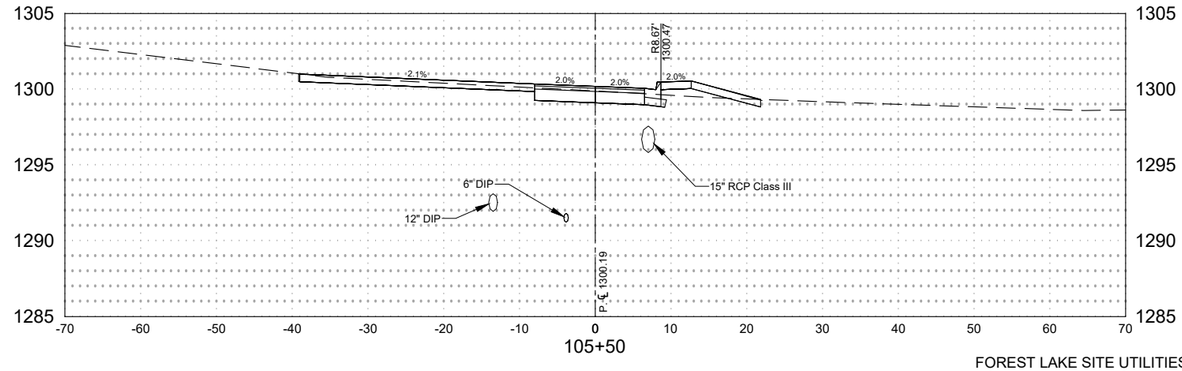

105+50

FOREST LAKE SITE UTILITIES
STA: 104+25 - STA: 106+00

Sheet No. 37 Of 38 Sheets

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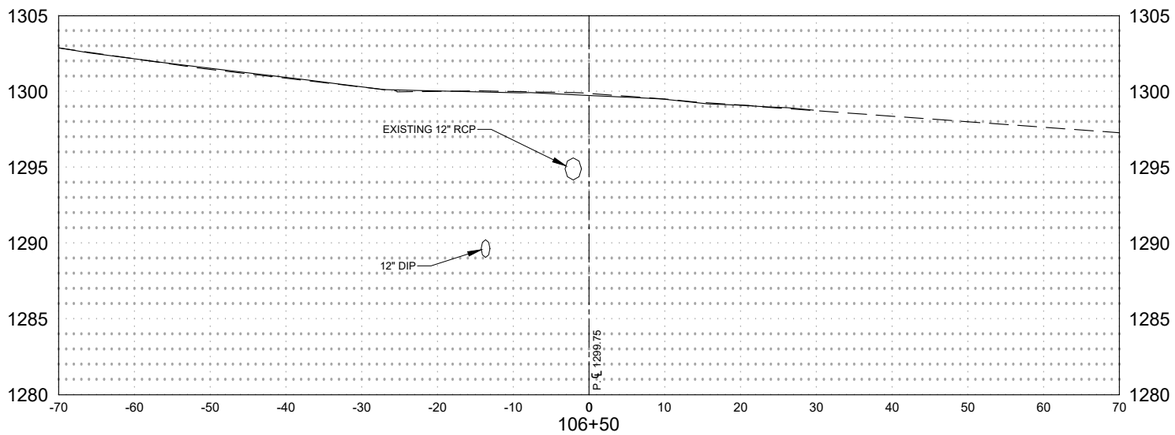

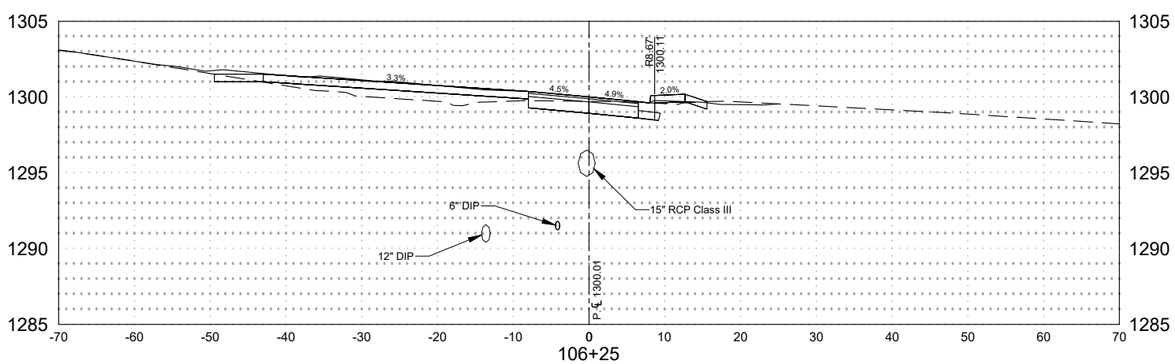

FOREST LAKE SITE UTILITIES
STA: 106+00 - STA: 106+50