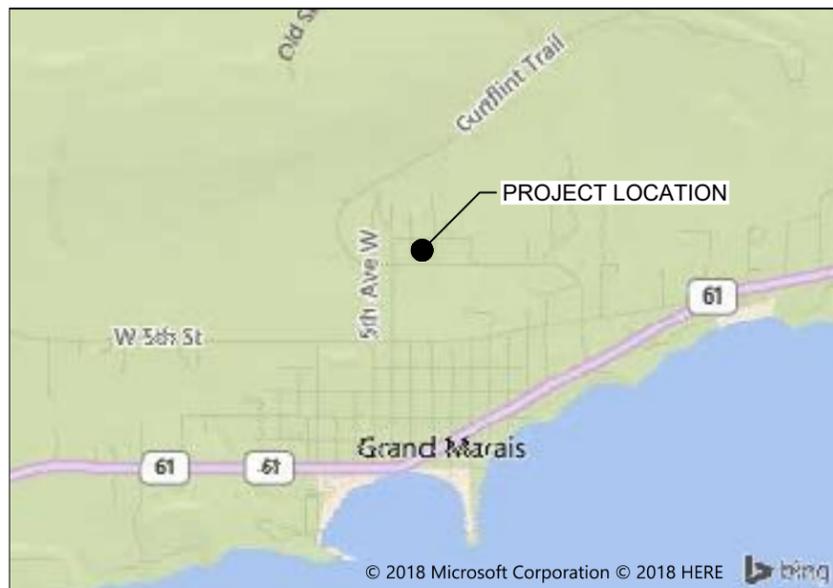


WINTERSTONE DEVELOPMENT

CITY OF GRAND MARAIS COOK COUNTY, MINNESOTA



REGIONAL LOCATION MAP
MINNESOTA



LOCATION MAP
NO SCALE

SHEET INDEX

<u>G - GENERAL SHEETS</u>	
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LEGEND

	EXISTING WATER MAIN
	EXISTING GATE VALVE & HYDRANT
	WATER SERVICE & CURB STOP
	PROPOSED WATERMAIN, VALVE, & HYDRANT
	PROPOSED WATER SERVICE & CURB STOP
	EXISTING SANITARY SEWER & MANHOLE
	EXISTING FORCEMAIN
	EXISTING STORM SEWER & INLET
	PROPOSED STORM SEWER & INLET
	PROPOSED STORM SEWER & MANHOLE
	PROPOSED SANITARY SEWER & MANHOLE
	BURIED ELECTRIC
	BURIED GAS & VALVE
	BURIED CABLE TELEVISION
	BURIED TELEPHONE
	BURIED FIBER OPTICS
	OVERHEAD UTILITY
	RAILROAD TRACKS
	EXISTING CURB & GUTTER
	PROPOSED CURB & GUTTER
	EXISTING SIDEWALK
	PROPOSED SIDEWALK
	EXISTING CULVERT PIPE
	PROPOSED CULVERT PIPE
	FENCE LINE
	DRAINAGE ARROW
	SILT FENCE
	RIGHT-OF-WAY
	BASELINE
	PROPERTY LINE
	TREE LINE
	BENCHMARK
	IRON PIPE
	IRON ROD
	CONTROL POINT
	UTILITY POLE & GUY
	SOIL BORING
	LIGHT POLE
	PEDESTAL
	STREET SIGN
	MAILBOX
	FLAGPOLE
	TREE - DECIDUOUS
	TREE - CONIFEROUS
	TREE TO BE REMOVED

UTILITIES

ELECTRIC:
ARROWHEAD COOPERATIVE
218-663-7239

WATER/SEWER/ELECTRIC:
GRAND MARAIS UTILITIES
218-387-1848

TELEPHONE:
CENTURYLINK
800-283-4237

CATV:
MEDIACOM CABLEVISION
845-443-2840

WARNING
LOCATION OF UNDERGROUND UTILITIES
TO BE VERIFIED BY CONTRACTOR
GOPHER STATE ONE CALL
CALL BEFORE DIGGING,
1-800-252-1166
REQUIRED BY LAW

NOTE:
UTILITY LOCATIONS SHOWN ON PLANS ARE APPROXIMATE AND CONTRACTOR
SHALL HAVE APPROPRIATE UTILITY MARK EXACT LOCATIONS PRIOR TO CONSTRUCTION.

GSOC DESIGN #182483060

PROJECT NO.: 17454001	SCALE: AS SHOWN	NO.	DATE	REVISION	BY
PROJECT DATE: 12-14-2018	DRAWN BY: JAS				
F.B.:	CHECKED BY: AKB				

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1/10/2019
50396
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GRAND MARAIS MINNESOTA

TITLE SHEET

FILE NO.
17454001
SHEET
G1

BENCHMARK TABLE

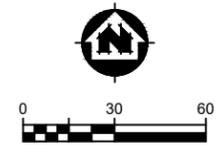
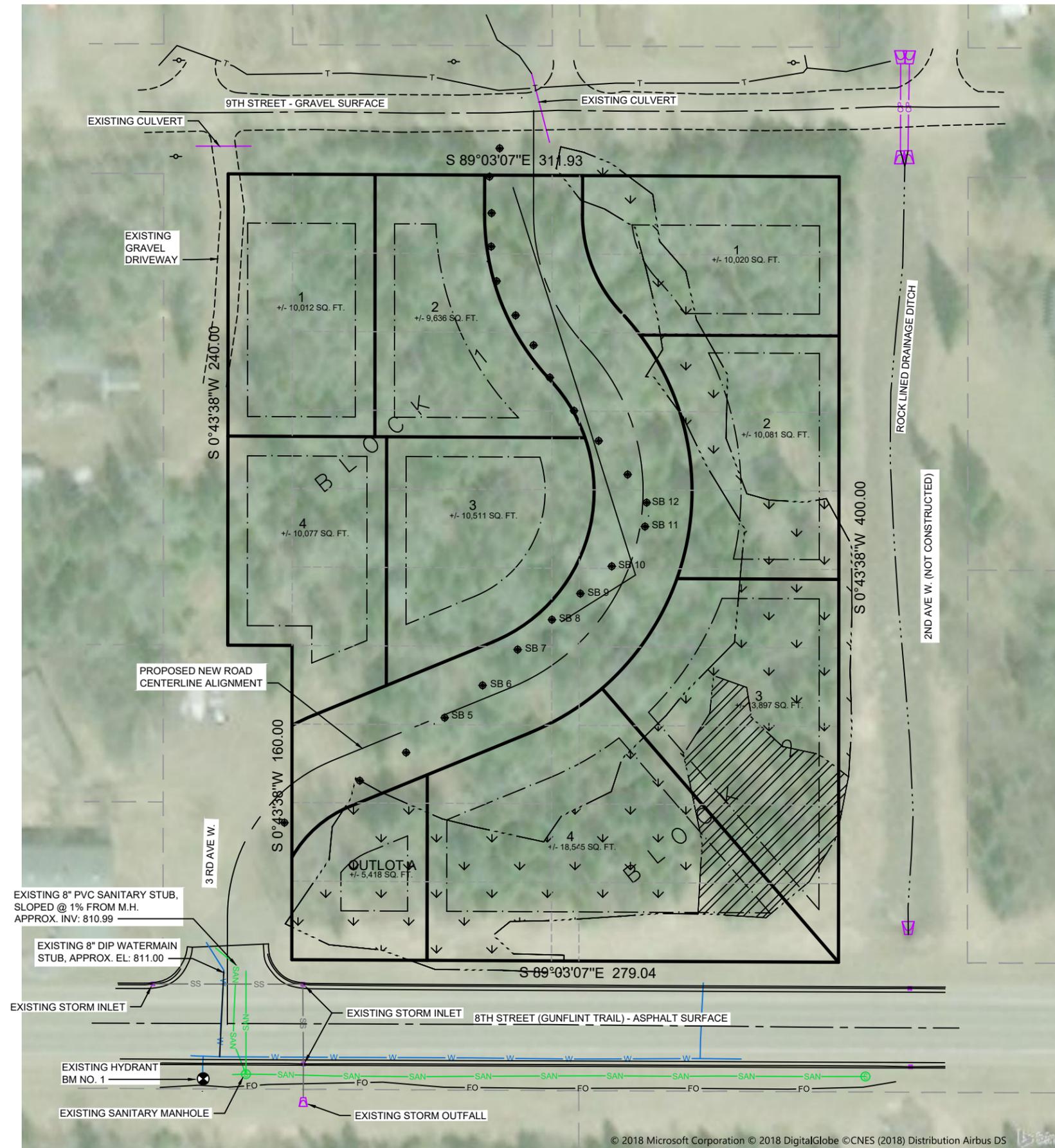
BM. NO.	STATION	DESCRIPTION	ELEV.
1	1+22 LT	TOP NUT ON HYDRANT	824.25

LEGEND

	WETLAND
	WETLAND / NON- WETLAND MOSAIC APPROX. 42% WETLAND
	WATER MAIN
	BURIED TELEPHONE
	SANITARY SEWER
	FIBER OPTIC
	DRAINAGE CENTERLINE
	SETBACK LINE
	CULVERT
	PROPERTY LINE

GENERAL CONSTRUCTION NOTES:

- ALL WORK SHALL COMPLY WITH THE STANDARD CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) SPECIFICATIONS.
- ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE CITY OF GRAND MARAIS. ALTERNATES ARE REQUIRED TO BE APPROVED IN WRITING BY THE CITY.



EXISTING 8" PVC SANITARY STUB,
SLOPED @ 1% FROM M.H.
APPROX. INV: 810.99

EXISTING 8" DIP WATERMAIN
STUB, APPROX. EL: 811.00

EXISTING STORM INLET

EXISTING HYDRANT
BM NO. 1

EXISTING SANITARY MANHOLE

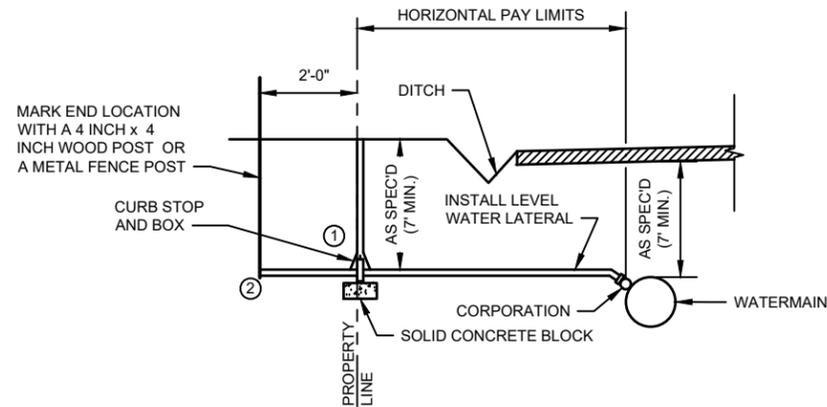
EXISTING STORM INLET

EXISTING STORM OUTFALL

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PROJECT NO.: 17454001	SCALE: AS SHOWN	NO.:	DATE:	REVISION:	BY:	1/10/2019	50396	<p>ENGINEERING ARCHITECTURE SURVEYING FUNDING PLANNING ENVIRONMENTAL 332 W Superior Street, Duluth MN 55802 (218) 722-3915 www.msa-ps.com © MSA Professional Services, Inc.</p>	<p>WINTERSTONE DEVELOPMENT TAIGA DESIGN+BUILD, LLC GRAND MARAIS MINNESOTA</p>	<p>EXISTING SITE PLAN</p>	FILE NO.: 17454001
PROJECT DATE: 12-14-2018	DRAWN BY: JAS	NO.:	DATE:	REVISION:	BY:	License No.	SHEET G2				
F.B.:	CHECKED BY: AKB	NO.:	DATE:	REVISION:	BY:	License No.					

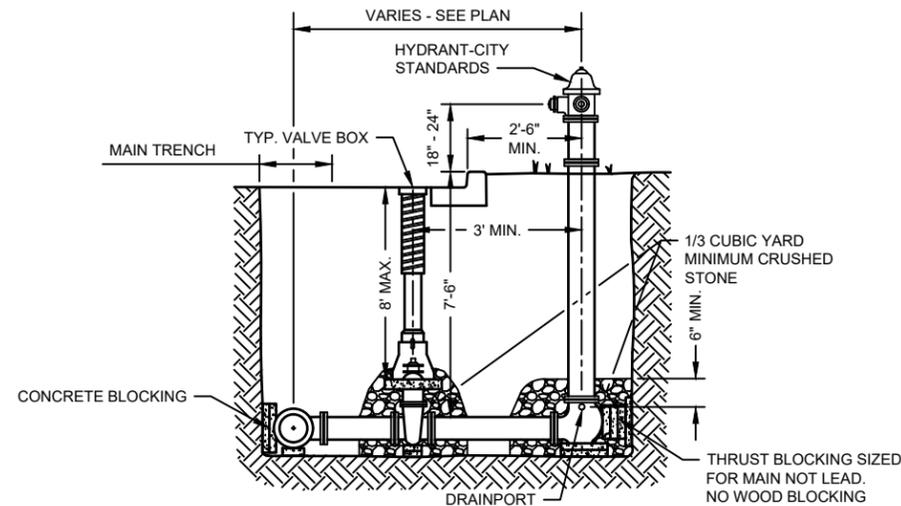
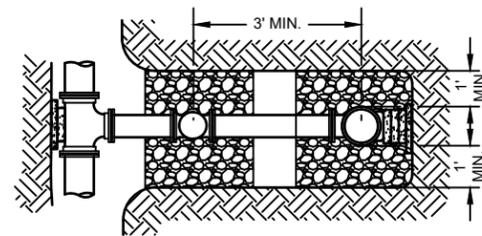
PLOT DATE: 1/17/19, P:\17400s\17450a\17454\17454001\CADD\Construction Drawings\17454001 Existing Site Plan.dwg



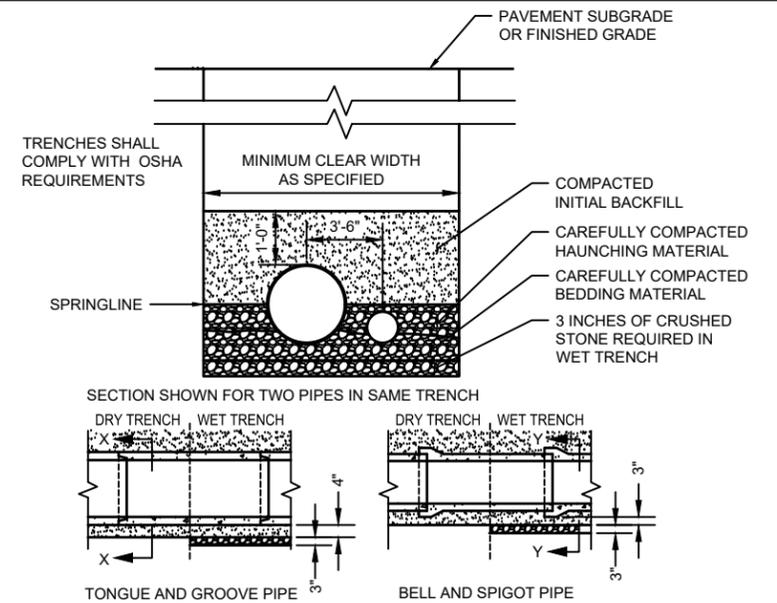
GENERAL NOTES:

1. SEE PLANS AND SPECIFICATIONS FOR SIZE AND TYPE OF CURB STOP AND BOX CORPORATION AND SERVICE LINE.
2. WATER SERVICES SHALL BE 1" COPPER.
3. COMMUNITY STANDARDS SHALL SUPERSEDE THE DIMENSIONS FROM THE PROPERTY LINE.

WATER SERVICE DETAIL
NO SCALE



TYPICAL HYDRANT & VALVE SETTING DETAIL
NO SCALE

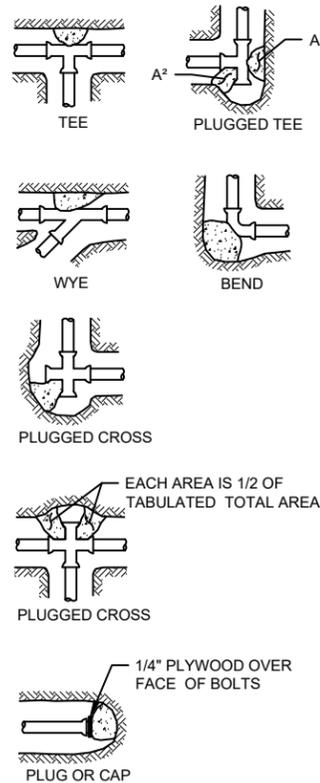


GENERAL NOTES:

1. BEDDING AND HAUNCHING MATERIAL SHALL BE WELL-GRADED 3/4 TO 1/4 INCH CRUSHED STONE OR OTHER NONE COHESIVE MATERIAL NOT SUBJECT TO MIGRATION AND FREE OF DEBRIS, ORGANIC MATERIAL, AND LARGE STONES.
2. BEDDING MATERIAL TO BE PLACED BEFORE SETTING PIPE, 4 INCH MINIMUM UNDER BARREL WITH 3 INCH MINIMUM UNDER BELL.
3. INITIAL BACKFILL SHALL BE DENSELY COMPACTED, NON-COHESIVE FINELY DIVIDED MATERIAL FREE OF DEBRIS, ORGANIC MATERIAL, AND LARGE STONES.
4. IN ROCK OR OTHER INCOMPRESSIBLE MATERIALS THE TRENCH SHALL BE OVEREXCAVATED A MINIMUM OF 6-INCHES AND REFILLED WITH GRANULAR MATERIAL.

CLASS "B" EMBEDMENT FOR RIGID PIPE DETAIL
NO SCALE

NOMINAL FITTING SIZE (INCHES)	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22 1/2° BEND	11 1/4° BEND
			A ¹	A ²			
4	1.0	1.4	1.9	1.4	1.0	---	---
6	2.1	3.0	4.3	3.0	1.6	1.0	---
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.6	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

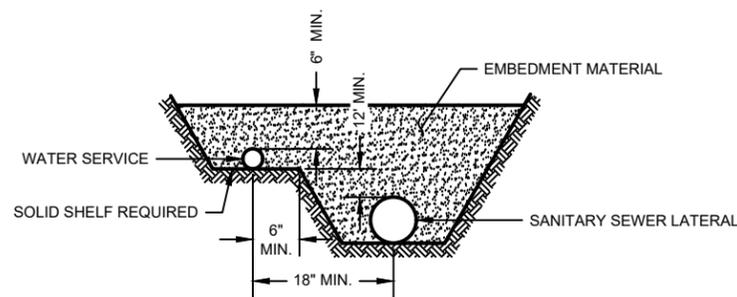


NOTE

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2. KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
3. IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUSTED IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES).
4. BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN IN THIS STANDARD DETAIL.
5. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION:

$$\text{BEARING AREA} = (\text{TEST PRESSURE}/150) \times (2000/\text{SOIL BEARING STRESS}) \times (\text{TABLE VALUE}).$$

THRUST BLOCKING DETAIL
NO SCALE



GENERAL NOTES:

1. WATER SERVICES 3 INCHES IN DIAMETER AND LARGER SHALL BE LAID WITH A CLEAR HORIZONTAL SEPARATION NOT LESS THAN 2 FEET FROM THE SANITARY LATERAL.

WATER SERVICE AND SANITARY SEWER TRENCH DETAIL
NO SCALE

NOT USED

PROJECT NO.:	17454001	SCALE:	AS SHOWN	NO.	DATE	REVISION	BY
PROJECT DATE:	12-14-2018	DRAWN BY:	JAS				
F.B.:		CHECKED BY:	AKB				

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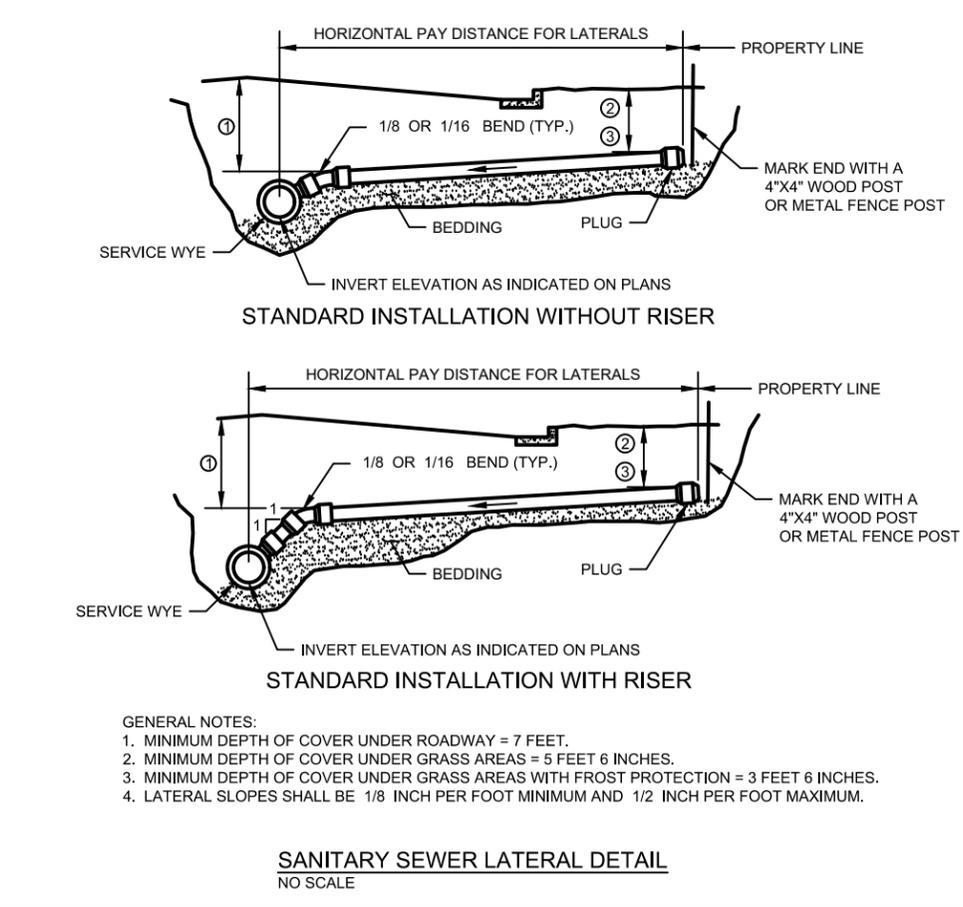
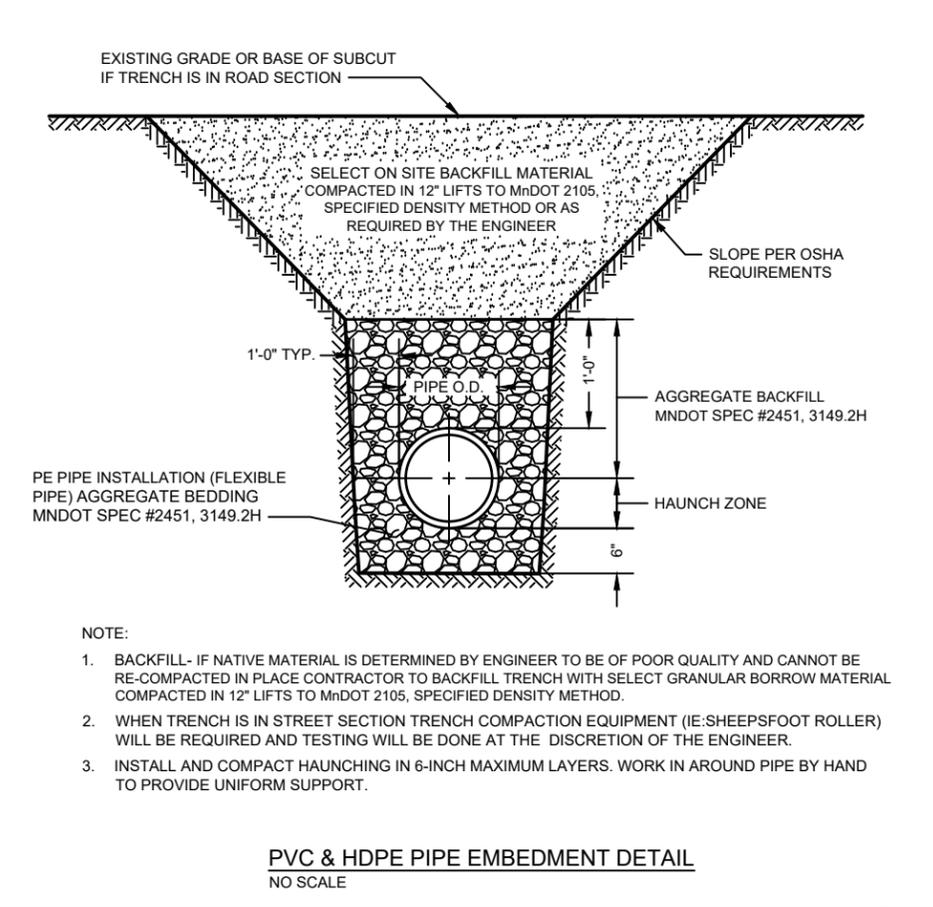
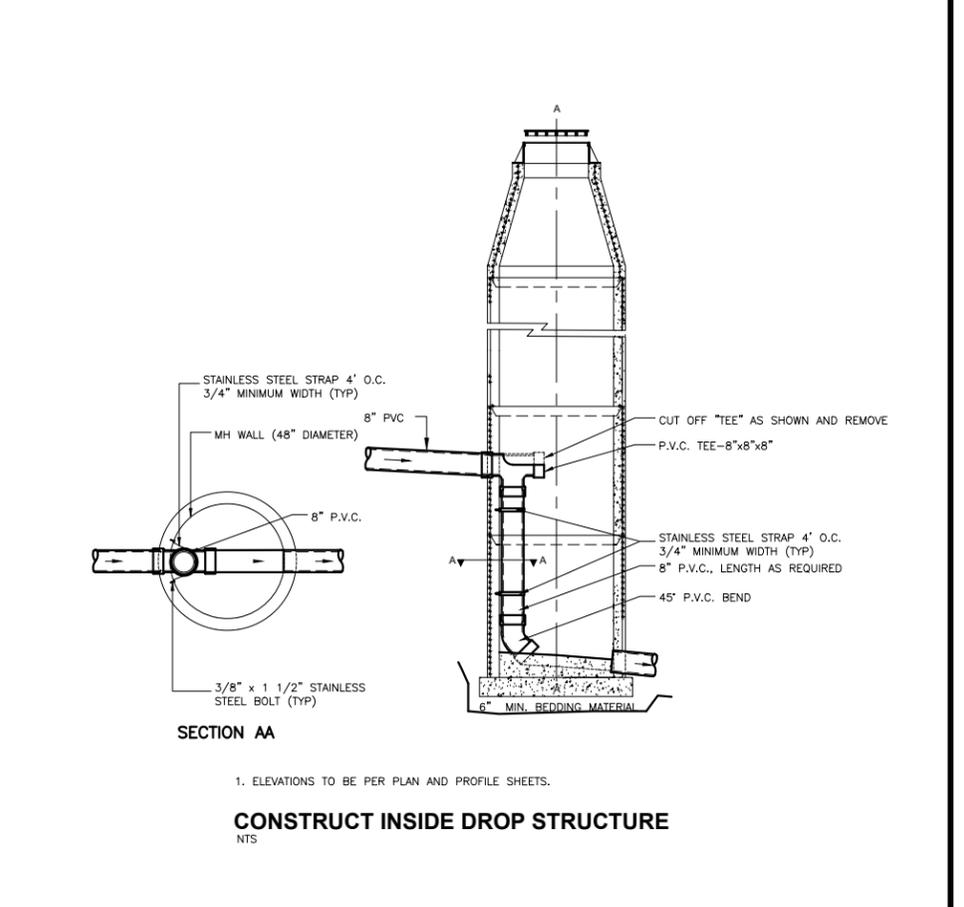
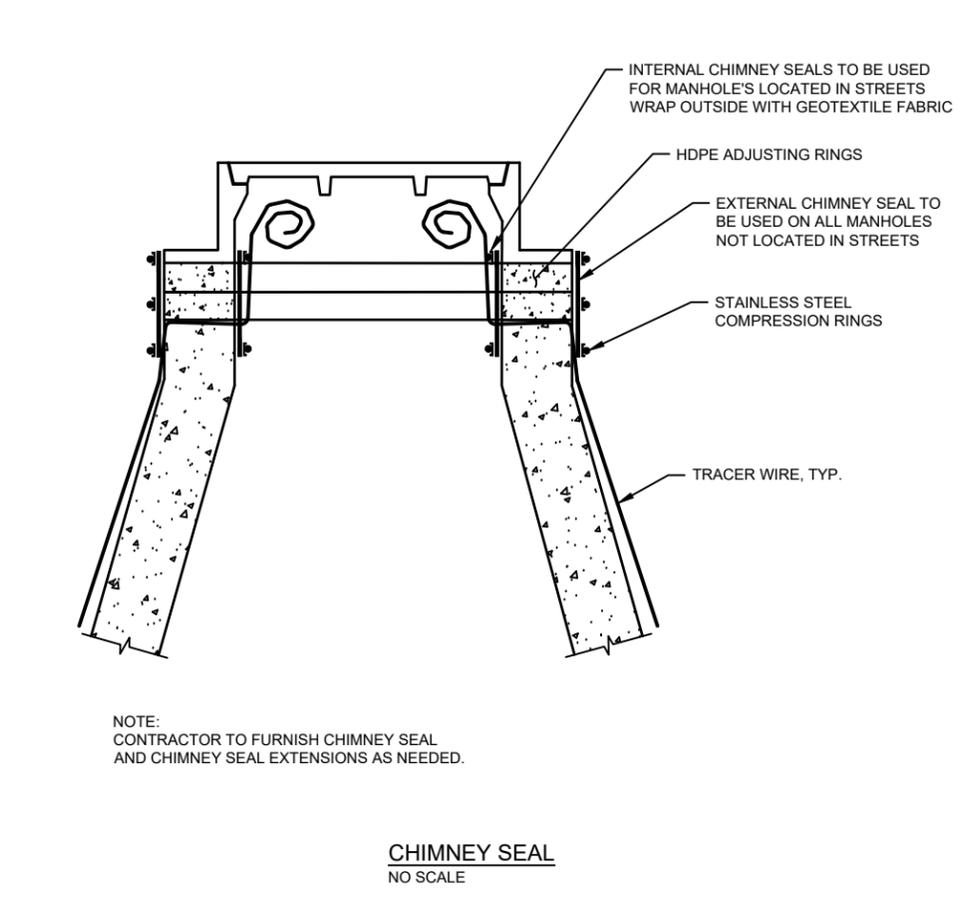
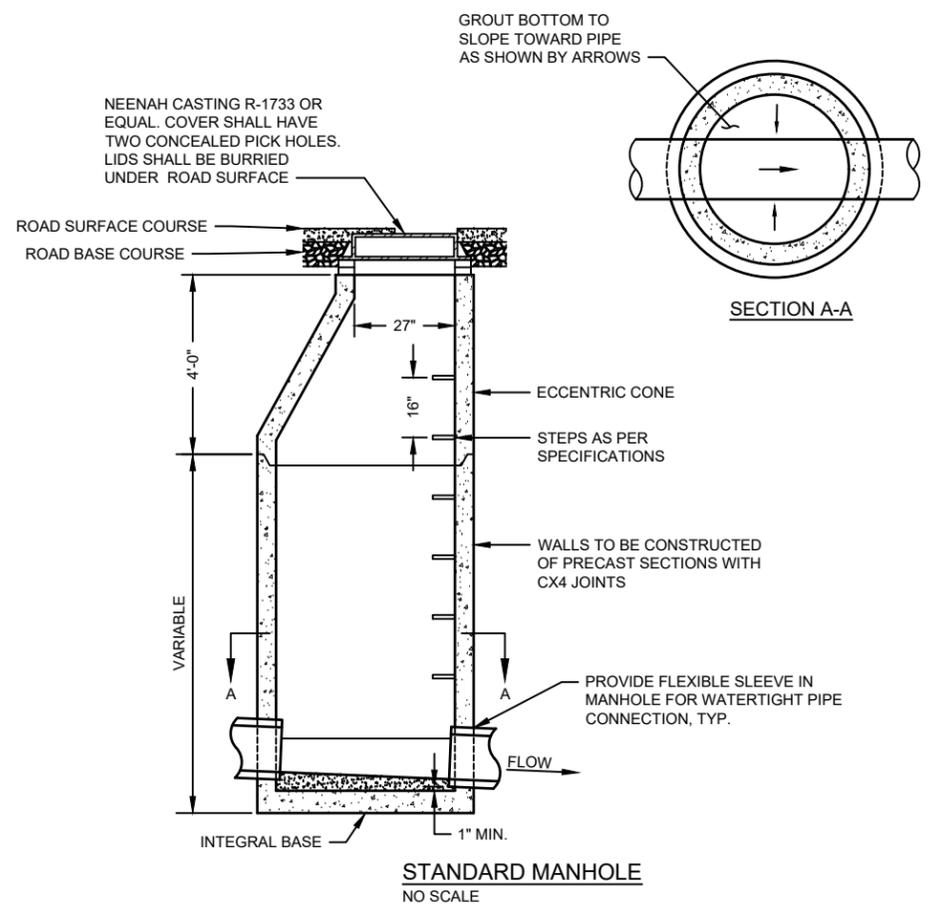


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WATER DETAILS

FILE NO.
17454001
SHEET
G3



NOT USED

PROJECT NO.:	17454001	SCALE:	AS SHOWN	NO.	DATE	REVISION	BY
PROJECT DATE:	12-14-2018	DRAWN BY:	JAS				
F.B.:		CHECKED BY:	AKB				

PLOT DATE: 1/17/19, P:\17400s\1745001\17454001\CADD\Construction Drawings\17454001 Details.dwg

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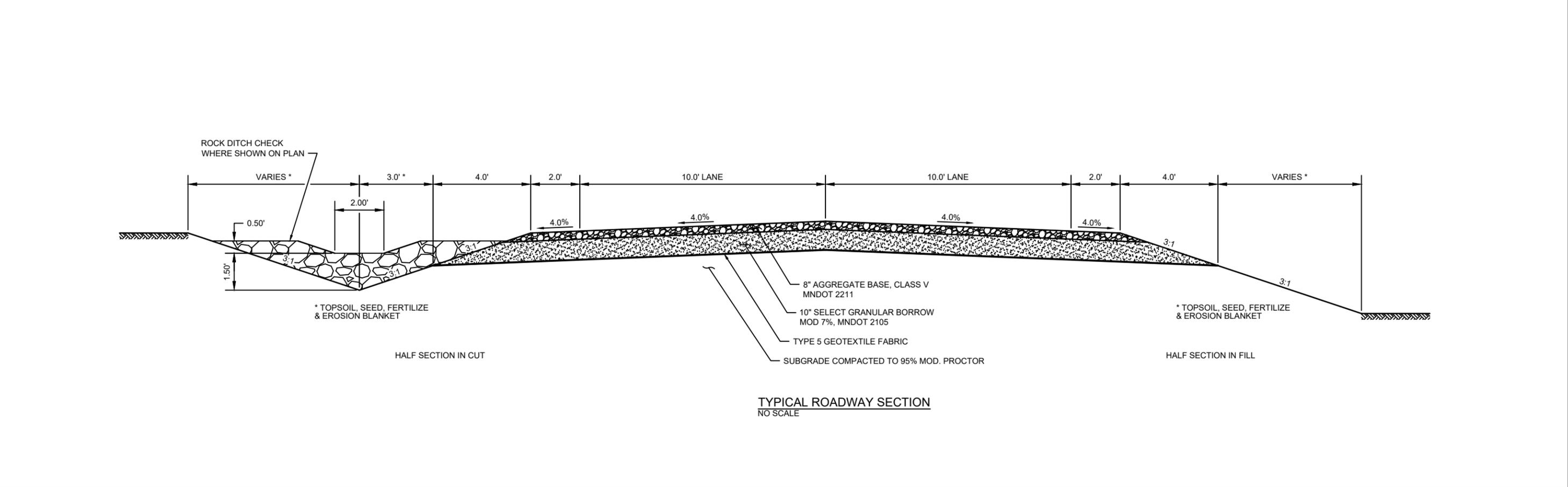
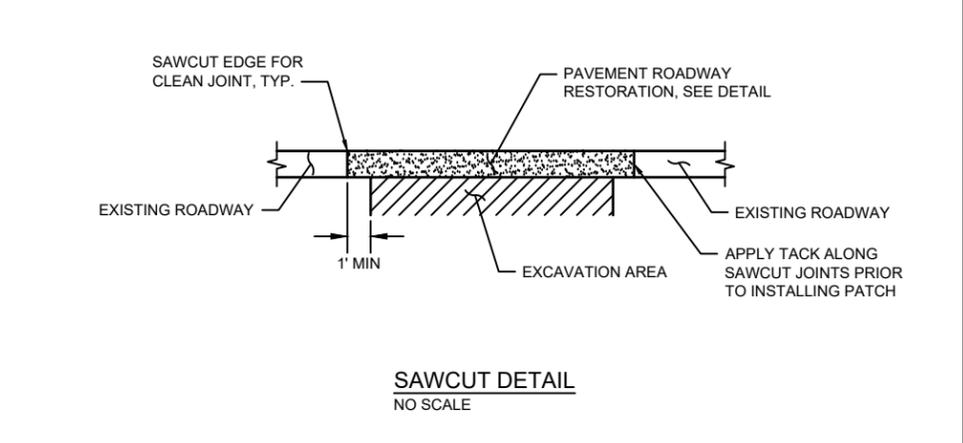
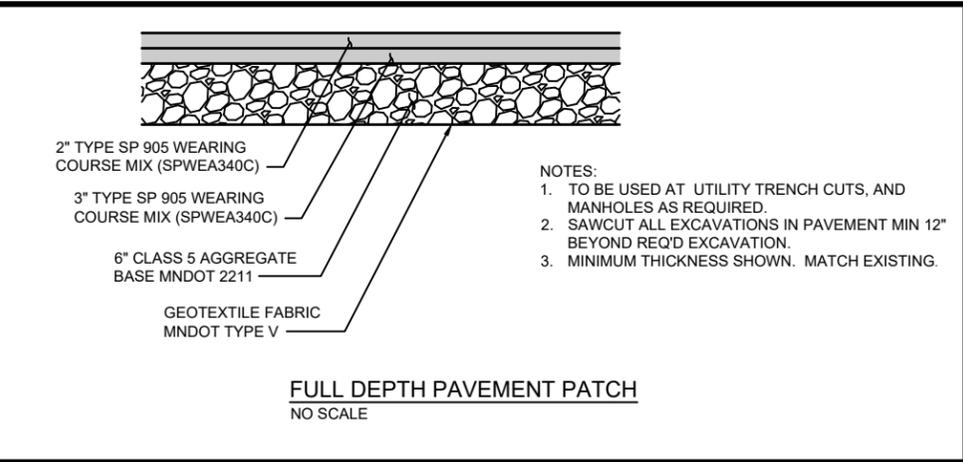
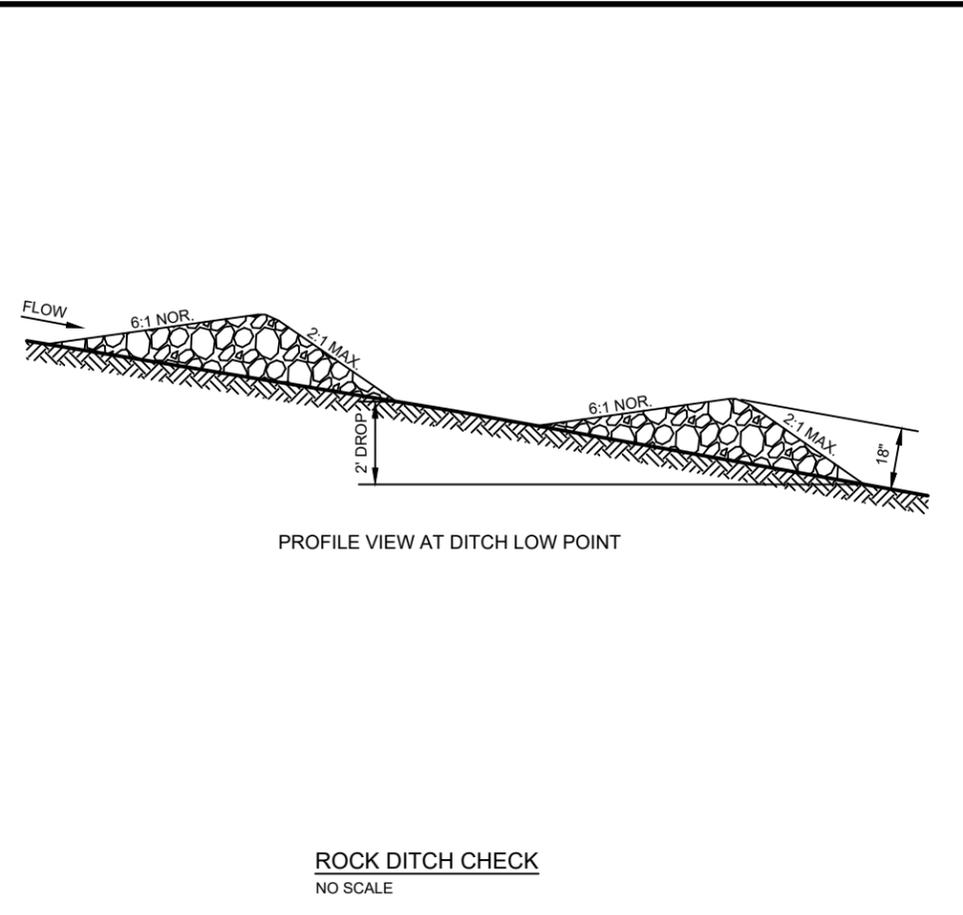
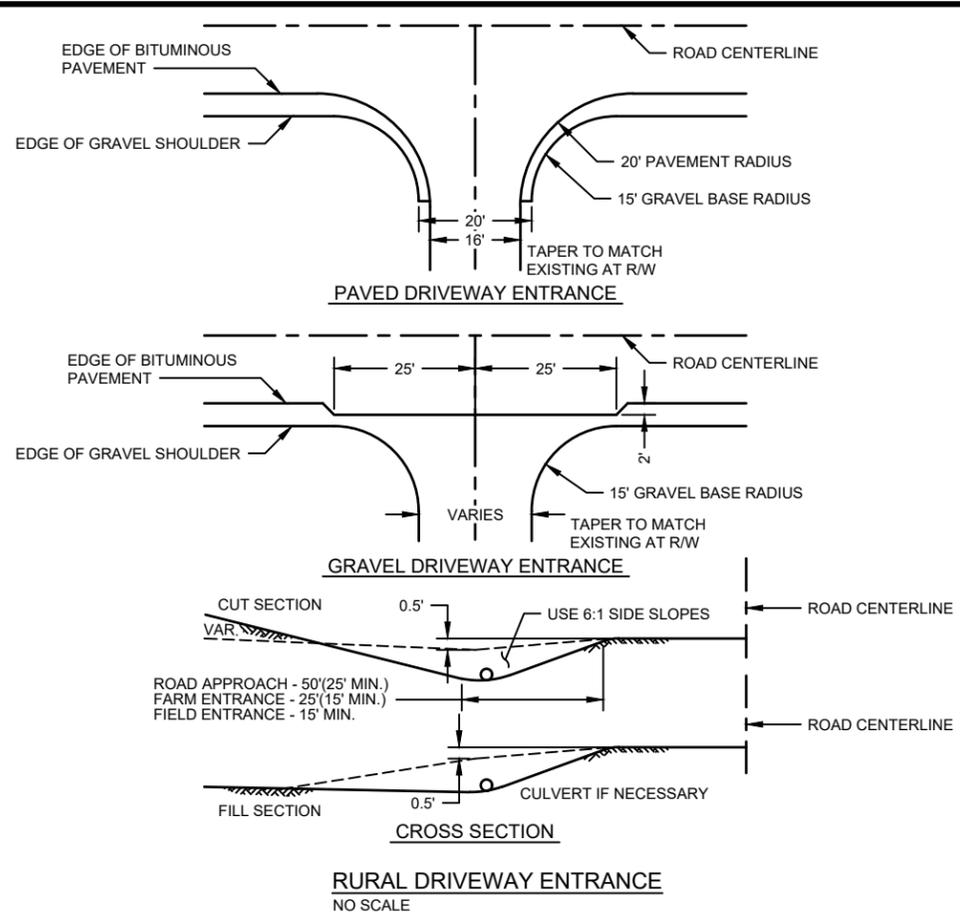
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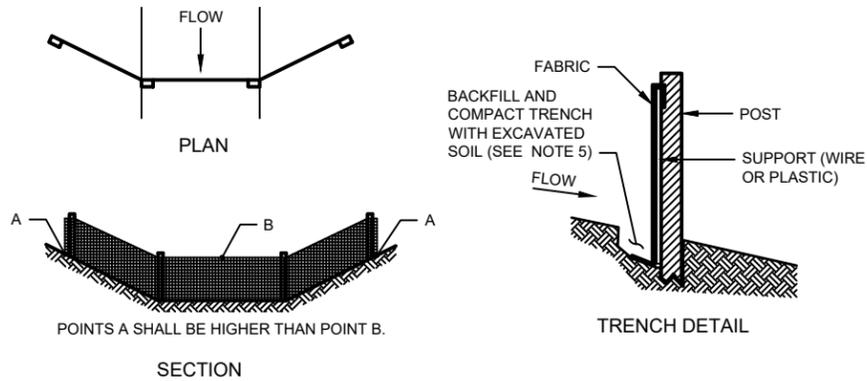
SANITARY DETAILS

FILE NO.
17454001

SHEET
G4



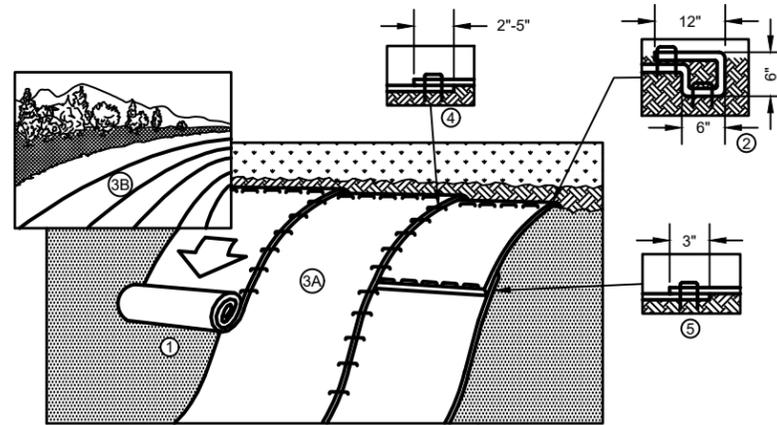
PROJECT NO.: 17454001	SCALE: AS SHOWN	NO.	DATE	REVISION	BY	I HEREBY CERTIFY THAT THIS PLAN, REPORT, OR SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. JOSEPH L. REWICKA License No. 50396 1/10/2019	ENGINEERING ARCHITECTURE SURVEYING FUNDING PLANNING ENVIRONMENTAL 332 W Superior Street, Duluth MN 55802 (218) 722-3915 www.msa-ps.com © MSA Professional Services, Inc.	WINTERSTONE DEVELOPMENT TAIGA DESIGN+BUILD, LLC GRAND MARAIS MINNESOTA	ROADWAY DETAILS	FILE NO. 17454001
PROJECT DATE: 12-14-2018	DRAWN BY: JAS				SHEET G5					
F.B.:	CHECKED BY: AKB									
PLOT DATE: 1/17/19, P:\17400s\17450a\17454\17454001\CADD\Construction Drawings\17454001 Details.dwg										



GENERAL NOTES:

1. DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.
2. WHEN POSSIBLE THE SILT FENCE SHOULD BE CONSTRUCTED IN AN ARC OR HORSESHOE SHAPE, WITH THE ENDS POINTING UPSLOPE TO MAXIMIZE BOTH STRENGTH AND EFFECTIVENESS.
3. CROSS BRACE WITH 2 INCH BY 4 INCH WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS AS DIRECTED BY THE ENGINEER.
4. MINIMUM 14 GAGE WIRE REQUIRED, FOLD FABRIC 3 INCHES OVER THE WIRE AND STAPLE OR PLACE WIRE RINGS 12 INCHES O.C.
5. EXCAVATE A TRENCH A MINIMUM OF 4 INCHES WIDE AND 6 INCHES DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD THE MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.
6. WIRE SUPPORT FENCE SHALL BE 14 GAGE MINIMUM WOVEN WIRE WITH A MAXIMUM MESH SPACING OF 6 INCHES, SECURE TOP OF GEOTEXTILE FABRIC TO TOP OF FENCE WITH STAPLES OR WIRE RINGS AT 12 INCHES O.C.
7. GEOTEXTILE FABRIC SHALL BE REINFORCED WITH AN INDUSTRIAL POLYPROPYLENE NETTING WITH A MAXIMUM MESH SPACING OF 3/4 INCH OR EQUAL. A HEAVY DUTY NYLON TOP SUPPORT CORD OR EQUIVALENT IS REQUIRED.
8. STEEL POSTS SHALL BE STUDDED "TEE" OR "U" TYPE WITH A MINIMUM WEIGHT OF 1.28 LBS./LIN. FT. (WITHOUT ANCHOR). FIN ANCHORS SUFFICIENT TO RESIST POST MOVEMENT ARE REQUIRED. WOOD POSTS SHALL BE 4 INCH IN DIAMETER OR 1- 1/2 INCH BY 3- 1/2 INCH EXCEPT WOOD POSTS FOR GEOTEXTILE FABRIC REINFORCED WITH NETTING SHALL BE A MINIMUM OF 1- 1/8 INCH BY 1- 1/8 INCH OAK OR HICKORY.

TYPICAL SILT FENCE INSTALLATION AT DRAINAGE WAYS DETAIL
NO SCALE

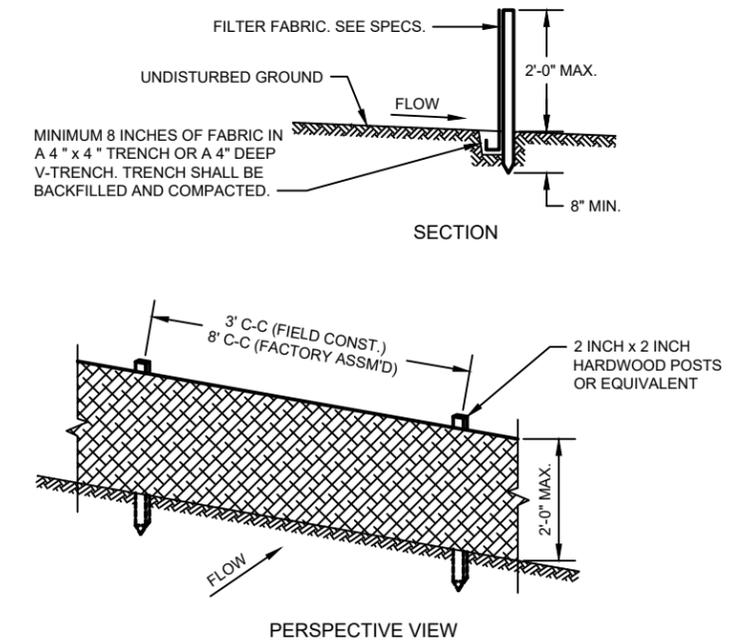


1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30CM) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5 CM-12.5 CM) OVERLAP DEPENDING ON BLANKET TYPE.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:

*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

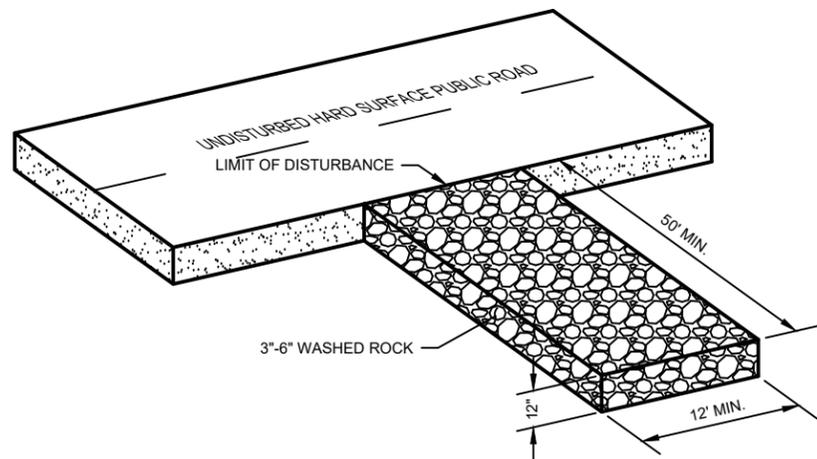
EROSION CONTROL BLANKET SLOPE INSTALLATION
NO SCALE



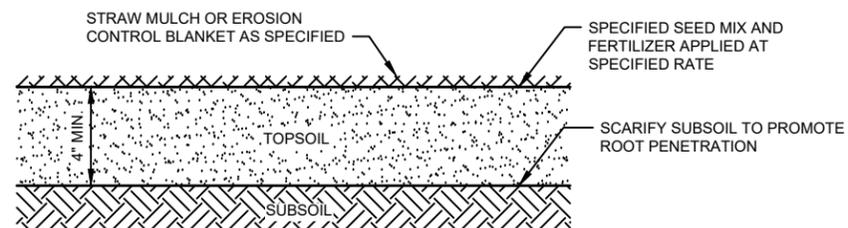
GENERAL NOTES:

1. ENDS OF FENCE SHALL BE TURNED UPSLOPE 1 TO 2 FEET IN ELEVATION TO PREVENT FLANKING.
2. STAPLE FABRIC WITH 1/2 INCH (MINIMUM) STAPLES TO THE UPSLOPE SIDE OF THE POSTS.
3. WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.

TYPICAL SILT FENCE INSTALLATION AT SITE PERIMETER DETAIL
NO SCALE

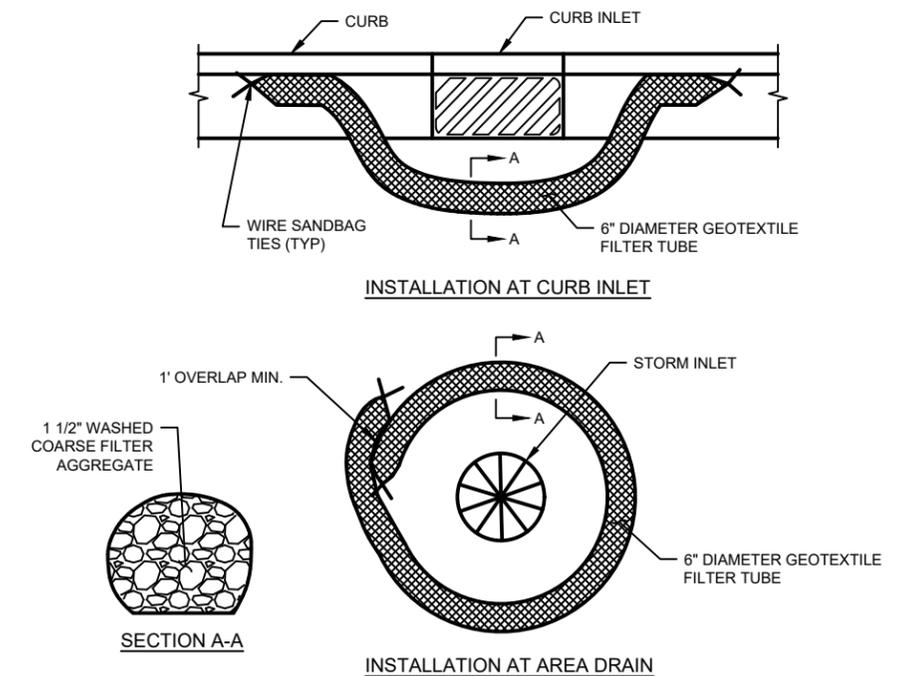


VEHICLE TRACKING PAD
NO SCALE



NOTE: WHERE REQUIRED, PLANT HERBACEOUS PLUGS ACCORDING TO PLAN, OR AS DIRECTED BY ENGINEER.

TOPSOIL AND SEEDING DETAIL
NO SCALE



NOTES:

1. ANCHOR AS NECESSARY
2. MAY ALSO BE USED AS SLOPE BREAK.
3. PROVIDE SHALLOW DEPRESSION UPSTREAM FOR SEDIMENT STORAGE WHERE POSSIBLE.
4. OVERLAP ENDS OF BAGS MINIMUM OF 1'.

FILTER ROCK LOG DETAIL
NO SCALE

PROJECT NO.:	17454001	SCALE:	AS SHOWN	NO.		DATE		REVISION		BY	
PROJECT DATE:	12-14-2018	DRAWN BY:	JAS								
F.B.:		CHECKED BY:	AKB								

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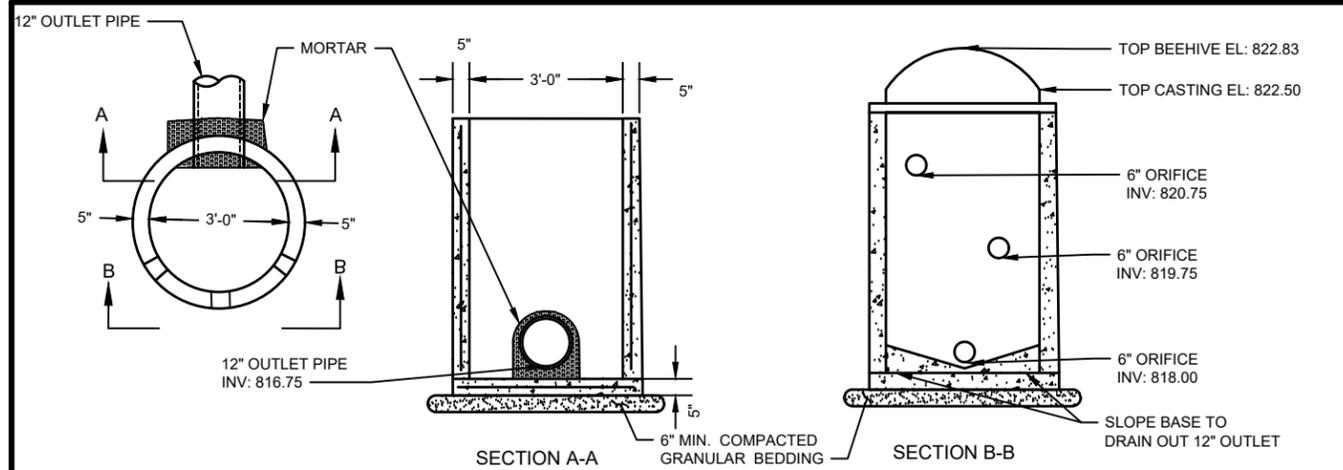


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EROSION CONTROL DETAILS

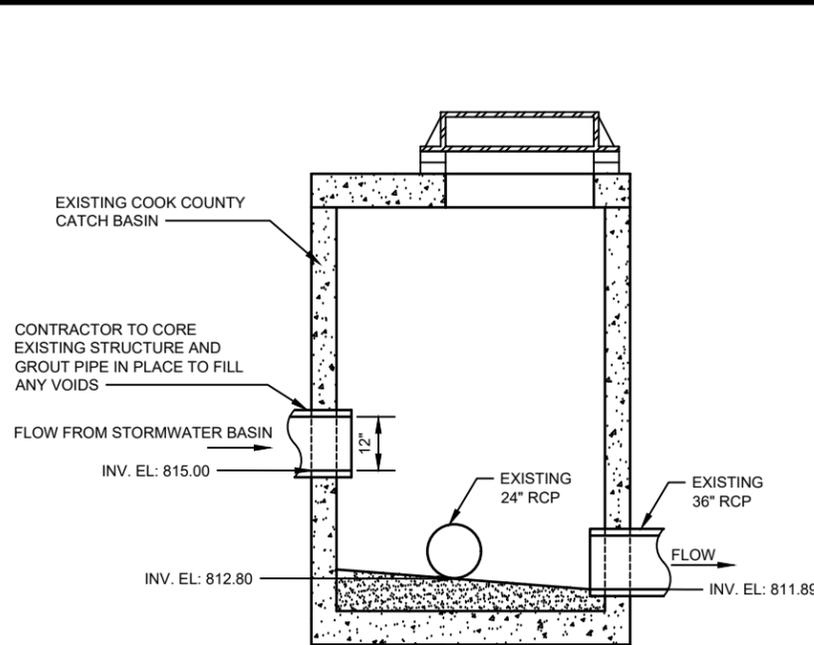
FILE NO.
17454001
SHEET
G6



GENERAL NOTES:

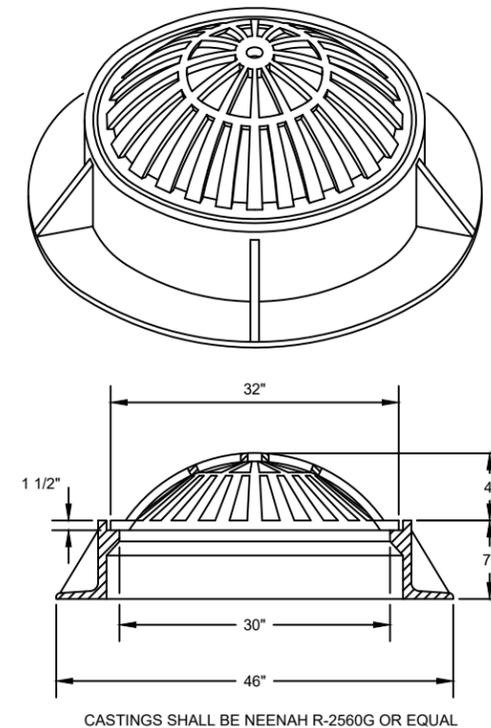
1. SEE PLANS FOR SIZE, NUMBER, AND LOCATION OF PIPES.
2. DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE SPECIFICATIONS.
3. DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.
4. ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.
5. PRECAST REINFORCED BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS FOR GRANULAR BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.
6. PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON THE STRUCTURES. THE TOPS SHALL BE INSTALLED ON A BED OF MORTAR.
7. ALL BAR STEEL AND WELDED WIRE FABRIC REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
8. PRECAST REINFORCED CONCRETE RISERS SHALL BE PLACED WITH TONGUE DOWN.

DRAINAGE OUTLET STRUCTURE DETAIL
NO SCALE

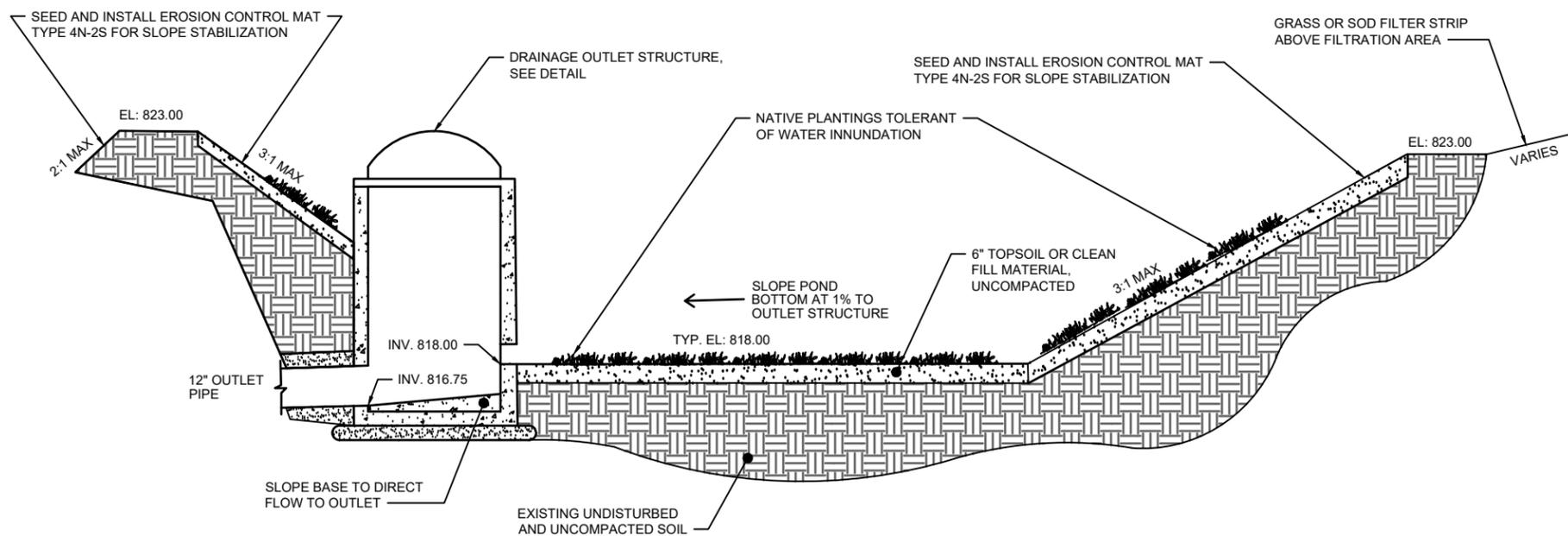


- NOTE:**
1. CONNECTION SHALL MEET THE CURRENT STANDARDS AS NOTED IN THE SPECIFICATIONS.

STORM SEWER CONNECTION
NO SCALE



BEEHIVE CASTING
NO SCALE



- NOTE:**
1. CLEAN SAND SHALL BE CONSISTENT WITH AASHTO M-6 ORASTM C-33 WITH A GRAIN SIZE OF 0.02" TO 0.04".
 2. ORGANIC COMPOST SHALL BE Mn/DOT GRADE 2.

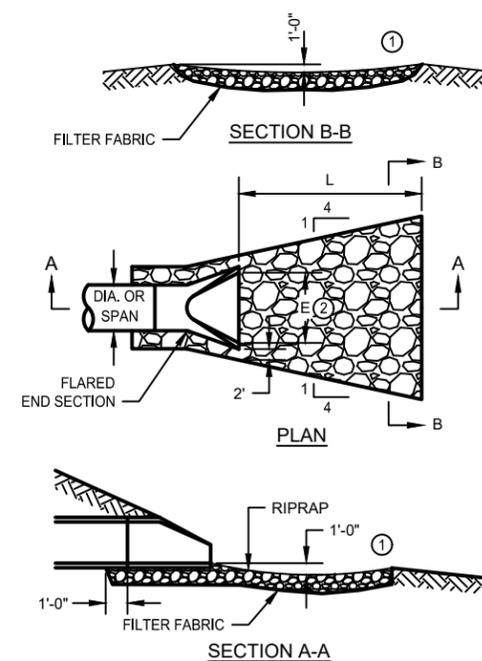
TYPICAL SECTION, STORMWATER BASIN
NO SCALE

TABLE OF QUANTITIES RIPRAP AT RCP OUTLETS

DIA. OF ROUND PIPE (IN.)	L (FT.)	CLASS II	CLASS III	CLASS IV
		d50=6"	d50=9"	d50=12"
12	8	2.8	4.1	5.5
15	8	2.9	4.4	5.8
18	10	3.9	5.9	7.8
21	10	4.2	6.3	8.4
24	12	5.5	8.3	11.0
27	12	5.8	8.7	11.6
30	14	7.3	10.9	14.5
36	16	9.2	13.8	18.3
42	18	10.9	16.3	21.7
48	20	12.9	19.4	25.8

TABLE OF QUANTITIES RIPRAP AT RCP-A OUTLETS OR BOXES OF EQUIVALENT SPAN WIDTH

SPAN OF PIPE ARCH (IN.)	L (FT.)	CLASS II	CLASS III	CLASS IV
		d50=6"	d50=9"	d50=12"
22	10	3.9	5.9	7.8
28	12	5.5	8.2	10.9
36	14	7.2	10.8	14.3
43	16	9.2	13.7	18.3
51	18	10.9	16.3	21.7
58	20	12.7	19.0	25.4



- NOTES:**
- PIPE SIZES LARGER THAN THOSE SHOWN REQUIRE A SPECIAL DESIGN.
 - REQUIREMENTS FOR RIPRAP SIZE AND THICKNESS AND FILTER BLANKET WILL BE DESIGNATED IN THE PLANS.
 - ① FOR PIPES GREATER THAN OR EQUAL TO 30" USE 1.5'.
 - ② DIMENSION E IS GIVEN ON STANDARD PLATES 3100 AND 3110.

RIP RAP AT OUTLETS
NO SCALE

PROJECT NO.:	17454001	SCALE:	AS SHOWN	NO.:		DATE:		REVISION:		BY:	
PROJECT DATE:	12-14-2018	DRAWN BY:	JAS								
F.B.:		CHECKED BY:	AKB								

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

1/10/2019
50396
License No.
JOSEPH L. REWICKA



ENGINEERING | ARCHITECTURE | SURVEYING
FUNDING | PLANNING | ENVIRONMENTAL
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WINTERSTONE DEVELOPMENT
TAIGA DESIGN+BUILD, LLC
GRAND MARAIS MINNESOTA

STORM DETAILS

FILE NO.
17454001
SHEET
G7

NPDES STORM WATER POLLUTION PREVENTION PLAN (SWPPP) CONSTRUCTION NOTES

THIS PROJECT INCLUDES THE DEVELOPMENT OF A 2.74 ACRE SITE IN GRAND MARAIS, IN COOK COUNTY, MINNESOTA. THIS DEVELOPMENT WILL INCLUDE THE CONSTRUCTION OF A GRAVEL ROAD, INSTALLATION OF UTILITIES AND ROUGH GRADING OF 8 BUILDING LOTS. THIS PROJECT WILL RESULT IN AN OVERALL INCREASE OF IMPERVIOUS AREA OF 0.835 ACRES TOTAL. THE SITE WILL BE DRAINED TO A STORMWATER COLLECTION POND ON THE SOUTH WEST SIDE OF THE PROPERTY WITH SOME OF THE PROPERTY DRAINING TO THE EXISTING ROCK LINED COUNTY DITCH TO THE EAST OF THE PROPERTY. EXCESS FLOW DURING FLOOD CONDITIONS WILL RUNOFF TO THE ROCK LINED COUNTY DITCH TO THE EAST BASED ON THE HISTORICAL DRAINAGE OF THE SITE.

PROJECT ENGINEER: MSA PROFESSIONAL SERVICES JOSEPH J. JUREWICZ, P.E. 332 W. SUPERIOR STREET, SUITE 600 DULUTH, MN 55802 (218) 499-3176 jjurewicz@msa-ps.com	AREA HYDROLOGIST: MINNESOTA DNR CLIFF BENTLEY 1568 HWY 2 TWO HARBORS, MN 55616 (218) 834-1441 cliff.bentley@state.mn.us	PROJECT OWNER: TAIGA DESIGN + BUILD, LLC ANTON MOODY, OWNER P.O. BOX 1428 GRAND MARAIS, MN 55604 (218) 370-0944 Anton.Moody@gmail.com	COOK COUNTY SOIL AND WATER CONSERVATION DISTRICT: ILENA HANSEL, DISTRICT MANAGER 411 W. 2ND ST. GRAND MARAIS, MN 55604 (218) 387-3648 ilena.hansel@co.cook.mn.us
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TIMING OF BMP INSTALLATION

THE EROSION AND SEDIMENTATION CONTROL BMPS SHALL BE INSTALLED AS NECESSARY TO MINIMIZE EROSION FROM DISTURBED SURFACES AND CAPTURE SEDIMENT ON SITE, AND SHALL MEET THE NPDES PERMIT PART IV CONSTRUCTION ACTIVITY REQUIREMENTS.

- TEMPORARY PERIMETER CONTROL BMPS WILL BE INSTALLED BEFORE ANY UP GRADIENT SOIL DISTURBANCE OCCURS.
- PERMANENT AND TEMPORARY SEDIMENT TRAPS AND BASINS (IF APPLICABLE) WILL BE CONSTRUCTED BEFORE ANY CONVEYANCE OR DEWATERING OCCURS.
- TOPSOIL AND TEMPORARY EROSION CONTROL BMPS SHALL BE PLACED WITHIN 3 DAYS OF COMPLETION OF EMBANKMENT.
- PLACEMENT OF RIPRAP SHALL BE COMPLETED WITHIN 24 HOURS OF SHORELINE DISTURBANCE OR CULVERT PLACEMENTS AND DONE IN ONE CONTINUOUS OPERATION.
- ONCE CONSTRUCTION ACTIVITY CEASES FOR 3 DAYS OR MORE IN AN AREA, THAT AREA WILL BE STABILIZED WITH TEMPORARY OR PERMANENT BMPS FOR EROSION.

CALCULATIONS

TOTAL DISTURBED AREA = 1.74 ACRES
ACRES POST CONSTRUCTION IMPERVIOUS AREA = 0.868 ACRES
EXISTING IMPERVIOUS AREA = 0.00 ACRES
IMPERVIOUS NET = 0.868 ACRES

- CONSTRUCTION SHALL BE GOVERNED BY THE APPLICABLE DEMOLITION PERMITS AND MN/DOT SPECIFICATIONS (WHERE APPLICABLE).
- THE CONTRACTOR SHALL KEEP WRITTEN INSPECTION AND MAINTENANCE LOGS (INCLUDING ALL CLEAN OUT AND CORRECTIVE ACTIONS) IN ACCORDANCE WITH THIS SWPPP AND ALL PERMITS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION AND MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL BMPS BEFORE AND DURING CONSTRUCTION.
- ALL MATERIAL SHALL BE MAINTAINED IN STOCKPILE AREAS, PROTECTED AS NOTED. NO ADDITIONAL IMPERVIOUS AREA SHALL BE CREATED THROUGH THE PROPOSED ACTION.

CONSTRUCTION PRACTICES TO MINIMIZE STORM WATER CONTAMINATION

TO PREVENT STORM WATER CONTAMINATION FROM OCCURRING, THE FOLLOWING BMPS WILL BE IMPLEMENTED:

- ALL AREAS THAT ARE ROUGH GRADED MUST BE KEPT IN A SMOOTH CONDITION TO ALLOW SHEET FLOW OF STORM WATER WHEREVER PRACTICAL AND ALWAYS READY FOR SURFACE APPLICATION OF DEGRADABLE OR NON-DEGRADABLE BLANKETS, MULCH, OR OTHER PROTECTIVE COVERS.
- A STABILIZED CONSTRUCTION ENTRANCE/EXIT WILL BE CONSTRUCTED TO REDUCE VEHICLE TRACKING OF SEDIMENTS OFF THE PROJECT SITE.
- ALL SOLID WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER OR OTHER APPROVED CONTAINMENT METHOD AT THE END OF EACH DAY. ANY ALTERNATIVE TO A METAL DUMPSTER MUST BE SUBMITTED IN WRITING FOR APPROVAL BY THE PROJECT ENGINEER. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY TO FUNCTION AS INTENDED FOR DEBRIS COLLECTION. NO CONSTRUCTION MATERIALS WILL BE BURIED ON-SITE. THE CONTRACTOR'S EROSION CONTROL SUPERVISOR WILL INSTRUCT ALL PERSONNEL REGARDING THE CORRECT PROCEDURE FOR DISPOSAL.
- RECYCLABLE MATERIALS MUST BE SEPARATED ON-SITE AND SEGREGATED IN DESIGNATED CONTAINERS.
- A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR WILL COLLECT ALL SANITARY WASTE FROM THE PORTABLE UNITS AT A RATE NECESSARY TO MAINTAIN DESIGNED FUNCTION.
- ALL VEHICLES ON SITE WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.
- FERTILIZERS WILL BE STORED IN A COVERED SHED AND PARTIALLY USED BAGS WILL BE TRANSFERRED TO A SEALABLE BIN TO REDUCE THE CHANCE OF SPILLAGE.
- PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS, WHICH ARE CLEARLY LABELED.
- SPILL KITS WILL BE INCLUDED WITH ALL FUELING SOURCES AND MAINTENANCE ACTIVITIES. SECONDARY CONTAINMENT MEASURES WILL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.
- ANY ASPHALT SUBSTANCES USED ON SITE WILL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
- ALL PAINT CONTAINERS AND CURING COMPOUNDS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM WATER SYSTEM BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTION.
- MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEAN-UP SHALL BE READILY AVAILABLE AND BE KEPT IN AN ENCLOSED TRAILER OR SHED ON SITE. EQUIPMENT WILL INCLUDE, BUT NOT LIMITED TO, BROOMS, MOPS, DUST PANS, RAGS, GLOVES, GOGGLES, ABSORBENT (KITTY LITTER, OIL ABSORBENT BOOMS AND DIAPERS) AND BUCKETS.
- ALL SPILLS WILL BE CONTAINED AND CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM WATER CONVEYANCE SYSTEM WILL BE REPORTED TO THE MPCA DUTY OFFICER AT 1-800-422-0798.
- CONCRETE TRUCKS WILL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE UNLESS DONE IN AN ENGINEERED CONTAINMENT SYSTEM. THE ENGINEERED SYSTEM MUST INCLUDE SITE DRAWINGS FOR THE PROJECT FILE AND WRITTEN ASSURANCE THAT THE SYSTEM WILL WORK AS DESIGNED AND LEAVE NO DISCHARGE OF CONCRETE OR CONCRETE RESIDUE POTENTIAL TO ENTER WATERS OF THE STATE.
- FORM RELEASE OIL USED FOR CONCRETE WORK MUST BE APPLIED OVER A PALLET CONTAINING ABSORBENT WORK TO COLLECT EXCESS LIQUID. THE ABSORBENT MATERIAL WILL BE REPLACED AND PROPERLY DISPOSED OF WHEN SATURATED.
- DISCHARGES FROM BASIN DEWATERING OPERATIONS THAT ARE TURBID OR SEDIMENT LADEN SHALL BE DISCHARGED TO TEMPORARY SEDIMENT BASINS CONSTRUCTED ON THE SITE TO PROVIDE TREATMENT PRIOR TO DISCHARGE TO A WATER OF THE STATE.

TMDL IMPLEMENTATION PLANS CONTAINING STORM WATER REQUIREMENTS

NO TMDL IMPLEMENTATION PLANS CURRENTLY EXIST FOR THE RECEIVING WATERS ON THIS PROJECT.

SUMMARY OF EROSION CONTROL ITEMS		
LOCATION	SILT FENCE	INLET PROTECTION
PROJECT SITE	900 LF	3

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN		
DESCRIPTION	TITLE	LOCATION
SUMMARY OF PERVIOUS AND IMPERVIOUS	SWPPP NOTES	SHEET G8
DIRECTION OF FLOW/DRAINAGE AREA	GRADING PLAN	SHEET ST2
RECEIVING SURFACE WATERS	SWPPP NOTES	SHEET G8
NO DISTURBANCE AREAS AND AREAS OF PHASED CONSTRUCTION	NA	NA
DRAINAGE STRUCTURES	STORM DETAILS	SHEET G7
DRAINAGE TABULATIONS	SWPPP NOTES	SHEET G8
EROSION CONTROL TABULATIONS	SWPPP NOTES	SHEET G8
EROSION CONTROL SHEETS	EROSION CONTROL PLAN	SHEET ST3
EROSION CONTROL DETAILS	EROSION CONTROL DETAILS	SHEET G6
SEDIMENT CONTROL PRACTICES	SWPPP NOTES	SHEET G8
FINAL STABILIZATION	SWPPP NOTES	SHEET G8
SEDIMENT BASIN (POND) TABULATIONS	NA	NA
POND SHEETS (SEDIMENT BASINS)	GRADING PLAN/STORM DTL	SHEET ST2 & G7
LOCATIONS OF PONDS	GRADING PLAN	SHEET ST2

SWPPP IMPLEMENTATION CONTACTS			
AGENCY	PERMIT	NAME	PHONE/E-MAIL
CONTRACTOR'S EROSION CONTROL SUPERVISOR		ANTON MOODY	(218) 262-6622 anton.moody@gmail.com
MPCA	NPDES	JIM DEXTER	(218) 302-6632 james.dexter@state.mn.us
SWCD	N/A	ILENA HANSEL	218-387-3648 ilena.hansel.co.cook.mn.us
MnDNR WATERS AREA HYDROLOGIST	N/A	CLIFF BENTLEY	(218) 834-1441 cliff.bentley@state.mn.us
CORPS OF ENGINEERS	N/A		651-290-5525
STATE DUTY OFFICER	N/A	MPCA	800-422-0798

EROSION CONTROL NOTES

- MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION (2016 EDITION) SHALL APPLY.
 - SUBMIT INITIAL EROSION CONTROL (EC) SCHEDULE AT OR BEFORE THE PRECONSTRUCTION CONFERENCE.
 - SUBMIT EC SCHEDULE ALTERATIONS/ADJUSTMENTS WEEKLY THEREAFTER FOR ENGINEER'S APPROVAL.
- THE CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL QUALITY CONTROL (QC) ON THIS PROJECT. CONTRACTOR SHALL PHASE/SEQUENCE THE PROJECT TO MINIMIZE EXPOSURE TO EROSION. CONTRACTOR SHALL PLACE OR OTHERWISE CONSTRUCT EROSION CONTROL AND SEDIMENT CONTAINMENT DEVICES TO MINIMIZE THE RUNOFF, TRACKING, AND SEDIMENT LOSS FROM DISTURBED AREAS OF THE PROJECT SITE.
- DISTURBED SLOPES NOT ACTIVELY WORKED SHALL BE PROTECTED FROM SOIL EROSION WITH TEMPORARY OR PERMANENT COVER WITHIN 3 DAYS OF BEING WORKED. EROSION CONTROL BLANKET AND SOIL STAPLES SHALL BE USED.
- AT MINIMUM, THE FOLLOWING CONTROLS WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE:
 - EROSION CONTROL BLANKETS SHALL BE USED ON ALL SLOPES 1:3(V:H) OR STEEPER
 - SILT FENCES SHALL BE USED IN CONJUNCTION WITH OTHER EROSION BMPS
 - ROCK DITCH CHECKS OR APPROVED EQUAL ARE TO BE USED TO REDUCE DITCH VELOCITIES AND REDUCE EROSION
 - STORM INLET AND OUTLET AREAS SHALL BE CONTINUOUSLY PROTECTED WITH MNDOT APPROVED DEVICES/METHODS
 - STABILIZED CONSTRUCTION ENTRANCE, OR REUSABLE MUD MAT SHALL BE USED TO REDUCE SEDIMENT TRACKING
 - PERMANENT VEGETATION WILL BE ESTABLISHED IMMEDIATELY AFTER TOPSOIL IS SPREAD
 - CONTROL ALL SITE SOLID WASTE, DEBRIS, MATERIAL STORAGE AND CONCRETE WASHOUT ON SITE. NO MIGRATION OF SEDIMENT OFFSITE OR INTO DITCHES/STORM SYSTEMS PERMITTED
- ALL SLOPES AND DITCHES SHALL BE STABILIZED PRIOR TO OPENING NEW CULVERTS INTO EXISTING DRAINAGE WAYS.
- IF ANY STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN THREE DAYS.
- WATER PUMPED OR OTHERWISE DISCHARGED FROM THE SITE DURING CONSTRUCTION DEWATERING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
- THE CONTRACTOR SHALL TAKE ALL POSSIBLE PRECAUTIONS TO PREVENT APPRECIABLE SOIL TRACKING ONTO ROADWAYS. APPRECIABLE SOIL, MUD, OR DEBRIS WASHED, TRACKED, OR DEPOSITED ONTO PAVED SURFACES SHALL BE REMOVED PRIOR TO THE END OF EACH WORK DAY.
- STABILIZED CONSTRUCTION ENTRANCE(S) SHALL BE REMOVED AND AREA RESTORED AFTER GRADING IS COMPLETE.
- THE CONTRACTOR QC PROGRAM SHALL ENSURE THAT A COMPETENT INDIVIDUAL SHALL INSPECT EROSION AND SEDIMENT CONTROL DEVICES WEEKLY AND AFTER EACH RAIN EVENT. ALL NONFUNCTIONAL DEVICES SHALL BE REPAIRED/REPLACED/CLEANED. MAINTAIN A WRITTEN LOG OF ALL WEEKLY INSPECTIONS AND RAIN EVENTS - INCLUDE THE CORRECTIVE ACTIONS THAT WERE TAKEN.
- THE CONTRACTOR SHALL MAINTAIN THE CAPABILITY TO IMPLEMENT RAPID STABILIZATION METHOD 4 (MNDOT 2573.4) AT ALL TIMES. INCLUDES CAT III EROSION CONTROL BLANKET (ECB) [N. AMERICAN GREEN S150 OR APPROVED EQUAL] ALONG WITH SEED MIXTURE, FERTILIZER, AND SOIL STAPLES PER 2573-3. THE UPGRADIENT END OF EACH BLANKET STRIP SHALL BE BURIED AT LEAST 6 INCHES IN A VERTICAL CHECK SLOT. STAPLES SHALL BE PLACED AT SEAMS AND THROUGHOUT THE BLANKET AT A MAXIMUM SPACING IN ALL DIRECTIONS OF 2 FEET. PAYMENT ALLOWED SHALL BE PER CONTRACT BID PRICE OR IN ABSENCE OF CONTRACT BID PRICE IN ACCORDANCE WITH MNDOT SPECIFICATION 2575.5
- COVER DEBRIS AND CRUSHING STOCKPILES. PROVIDE SILT FENCING AROUND PERIMETER OF STOCKPILE AREAS.
- REPLACE TOPSOIL AND SEED ALL AREAS DISTURBED BY WORK.

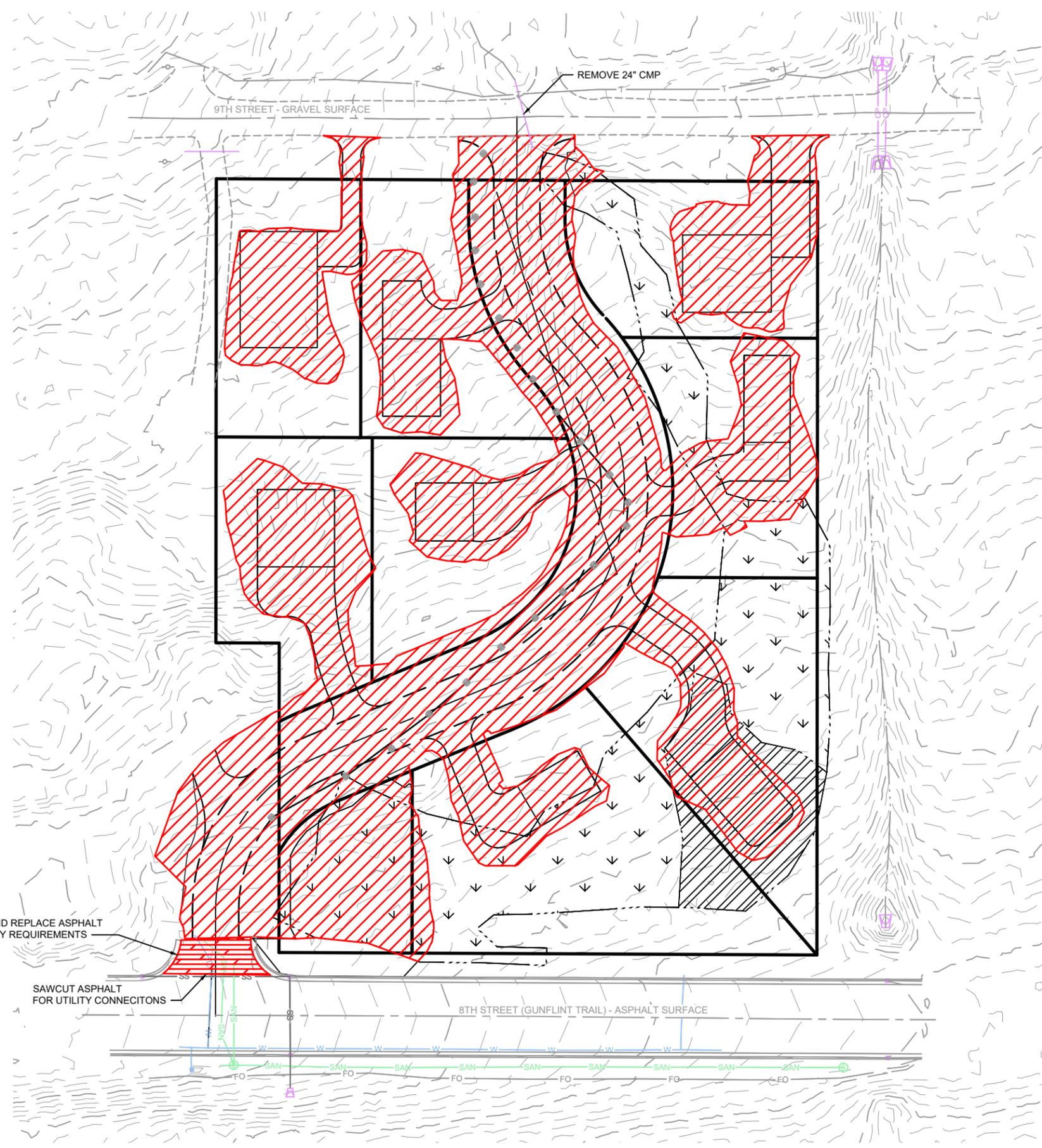
TRAINING

TRAINING IS REQUIRED FOR ALL PERMITTED PROJECTS AFTER FEBRUARY 1, 2010. IT MUST BE PROVIDED BY ENTITIES W/ EXPERTISE IN EROSION PREVENTION, SEDIMENT CONTROL OR PERMANENT STORMWATER MANAGEMENT. TRAINING MUST BE FOCUSED ON THE INDIVIDUAL'S JOB DUTIES AS THEY RELATE TO PERMIT REQUIREMENTS (PART III.A.2).

INDIVIDUALS WHO MUST BE TRAINED INCLUDE:
A. INDIVIDUALS PREPARING THE SWPPP FOR THE PROJECT.

SWPPP DESIGNER:

NAME: JOSEPH J. JUREWICZ
TITLE: PROJECT ENGINEER
COMPANY: MSA PROFESSIONAL SERVICES, INC.
DATE OF TRAINING: FEBRUARY, 2013, NOVEMBER, 2015
TRAINING CERTIFICATION: DESIGN OF CONSTRUCTION SWPPP
EXPIRATION: 2019
TRAINING ENTITY: U. OF MINNESOTA, DEPT. OF BIOPRODUCTS AND BIOSYSTEMS ENGINEERING
INSTRUCTORS: JOHN CHAPMAN, TODD SMITH
PROFESSIONAL TRAINING HOURS: 12



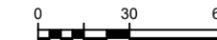
- LEGEND**
- CLEAR & GRUB
 - REMOVE AND REPLACE ASPHALT

CLEARING: 1.67 ACRES
 WETLAND DISTURBANCE: 9,471 SF

REMOVE AND REPLACE ASPHALT
 PER COUNTY REQUIREMENTS

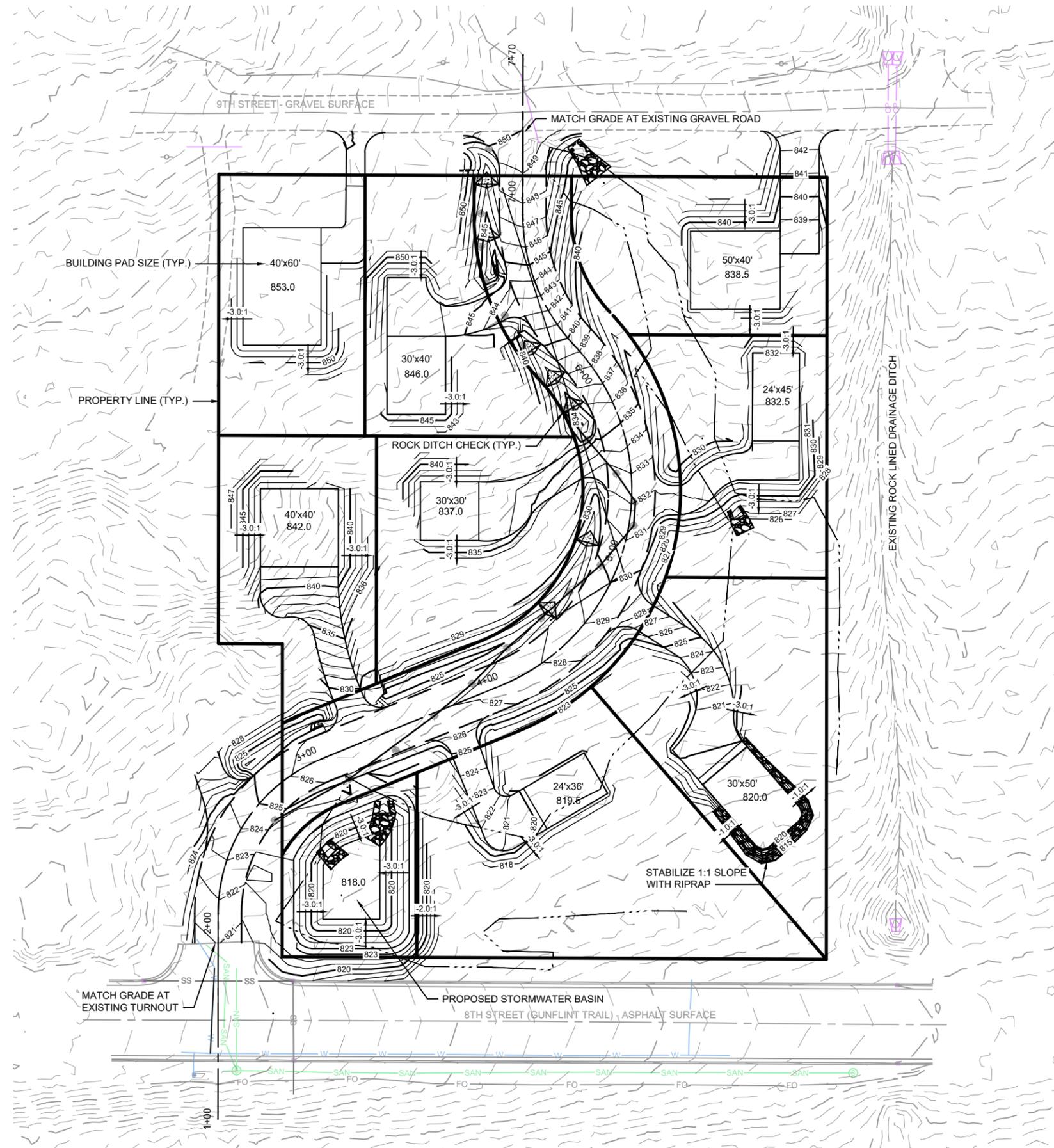
SAWCUT ASPHALT
 FOR UTILITY CONNECTIONS

PROJECT NO.:	17454001	SCALE:	AS SHOWN	NO.:	DATE:	REVISION:	BY:	I HEREBY CERTIFY THAT THIS PLAN, REPORT, OR SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	1/10/2019 JOSEPH J. REWICK	50396 License No.	MSA ENGINEERING ARCHITECTURE SURVEYING FUNDING PLANNING ENVIRONMENTAL 332 W Superior Street, Duluth MN 55802 (218) 722-3915 www.msa-ps.com <small>© MSA Professional Services, Inc.</small>	WINTERSTONE DEVELOPMENT TAIGA DESIGN+BUILD, LLC GRAND MARAIS MINNESOTA	CLEARING & DEMOLITION PLAN	FILE NO. 17454001 SHEET ST1
PROJECT DATE: 12-14-2018 DRAWN BY: JAS F.B.: CHECKED BY: AKB														
PLOT DATE: 1/17/19, P:\17400s\17450a\17454\17454001\CADD\Construction Drawings\17454001 Clearing Plan.dwg														



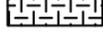
PROPOSED LAND USE BREAKDOWN:

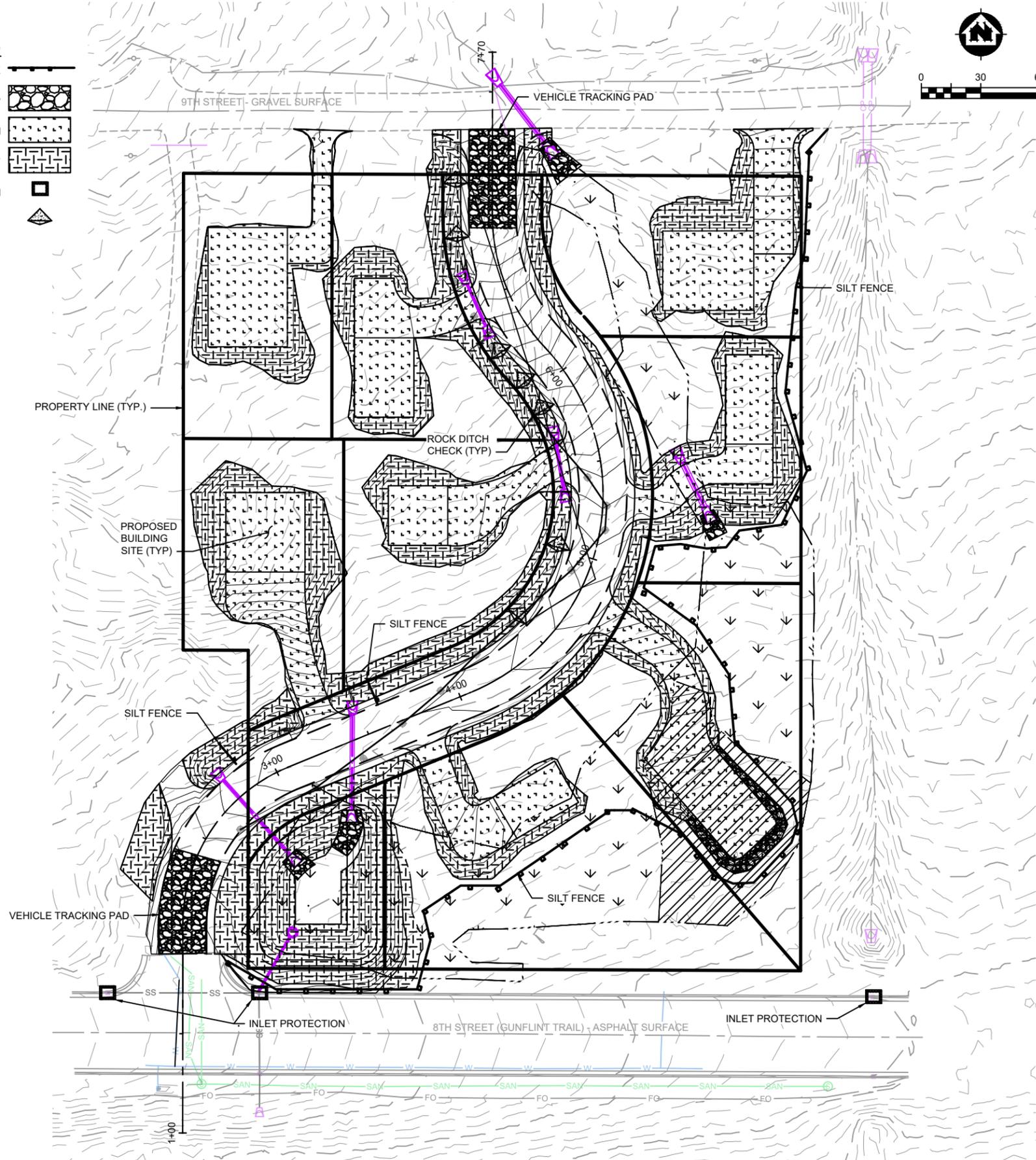
TOTAL PROPERTY AREA:	119,518 SF
AREA IMPACTED BY CONSTRUCTION:	72,699 SF
IMPERVIOUS AREA ADDED:	36,512 SF
PERVIOUS AREA:	78,992 SF
STORMWATER BASIN:	4,014 SF



PROJECT NO.: 17454001	SCALE: AS SHOWN	NO.	DATE	REVISION	BY	I HEREBY CERTIFY THAT THIS PLAN, REPORT, OR SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. JOSEPH L. KUREWICZ	1/10/2019	50396	ENGINEERING ARCHITECTURE SURVEYING FUNDING PLANNING ENVIRONMENTAL 332 W Superior Street, Duluth MN 55802 (218) 722-3915 www.msa-ps.com © MSA Professional Services, Inc.	WINTERSTONE DEVELOPMENT TAIGA DESIGN+BUILD, LLC GRAND MARAIS MINNESOTA	GRADING PLAN	FILE NO.	
PROJECT DATE: 12-14-2018	DRAWN BY: JAS											17454001	
F.B.:	CHECKED BY: AKB												SHEET
PLOT DATE: 1/17/19, P:\17400s\17450a\17454\17454001\CADD\Construction Drawings\17454001 Grading Plan.dwg												ST2	

LEGEND

- SILT FENCE 
- RIPRAP 
- TOPSOIL, SEED, FERTILIZE, MULCH 
- TOPSOIL, SEED, FERTILIZE, MNDOT TYPE 4N-2S EROSION BLANKET 
- INLET PROTECTION 
- ROCK DITCH CHECK 



PROJECT NO.	17454001	SCALE	AS SHOWN	NO.	DATE	REVISION	BY
PROJECT DATE:	12-14-2018	DRAWN BY:	JAS				
F.B.:		CHECKED BY:	AKB				

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

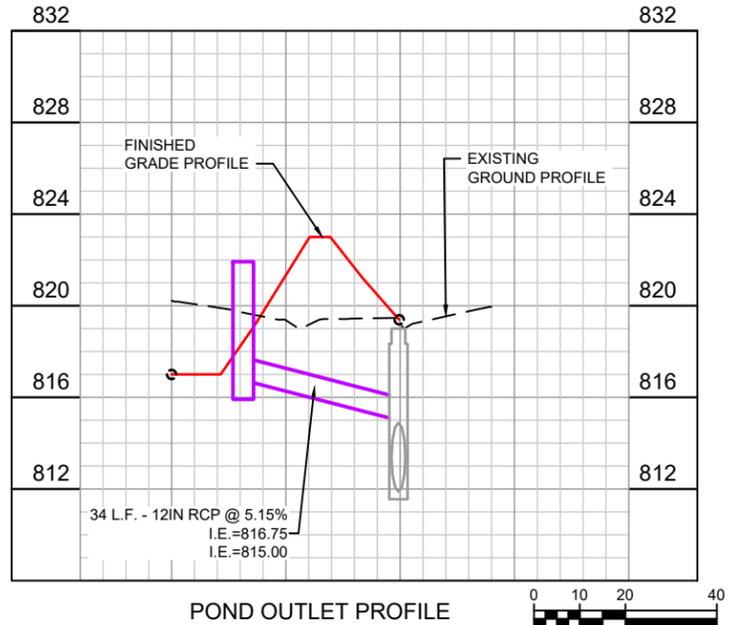
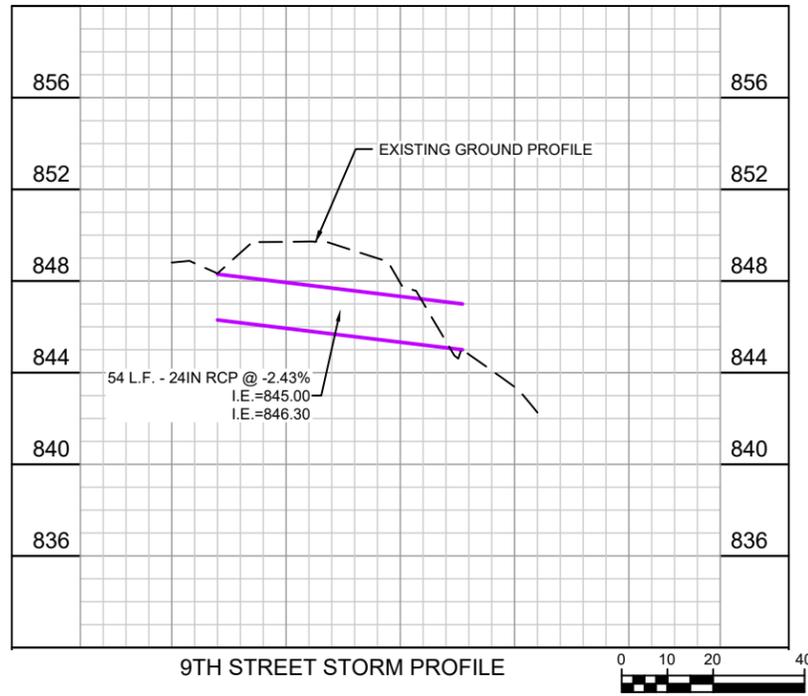
1/10/2019
 License No. 50396
 JOSEPH L. KUREWICZ

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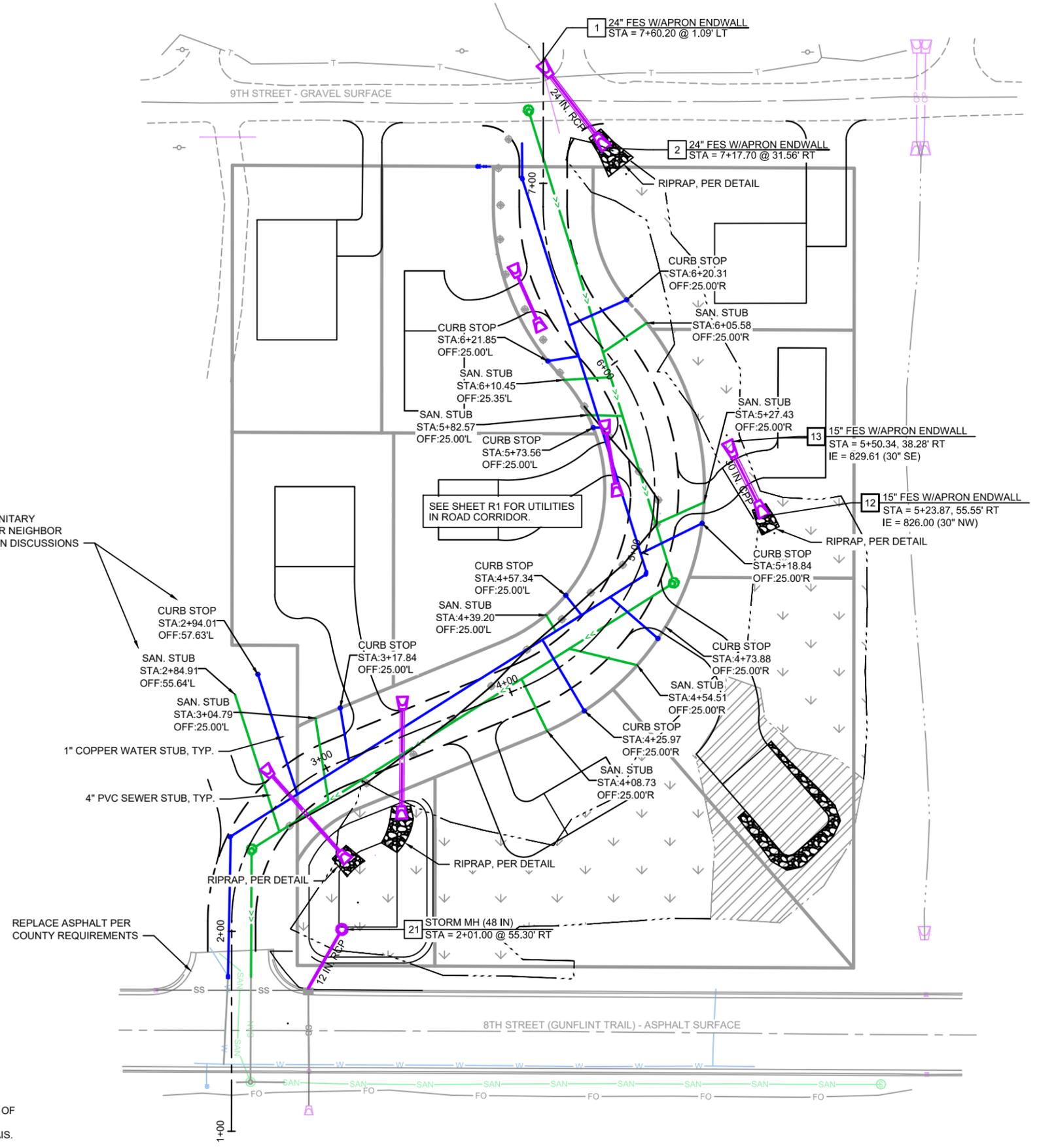
WINTERSTONE DEVELOPMENT
 TAIGA DESIGN+BUILD, LLC
 GRAND MARAIS MINNESOTA

EROSION CONTROL PLAN

FILE NO. 17454001
 SHEET ST3



CURB STOP AND SANITARY STUB PROVIDED FOR NEIGHBOR PER R.O.W VACATION DISCUSSIONS



- GENERAL CONSTRUCTION NOTES:
- ALL WORK SHALL COMPLY WITH THE STANDARD CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) SPECIFICATIONS.
 - ALL MATERIALS SHALL MEET THE REQUIREMENTS OF THE CITY OF GRAND MARAIS. ALTERNATES ARE REQUIRED TO BE APPROVED IN WRITING BY THE CITY.

