Purchasing Division
Finance Department

Room 120
411 West First Street
Duluth, Minnesota 55802

218-730-5340
purchasing@duluthmn.gov

Addendum 1
Solicitation 22-99747
Enger Golf Course Improvements

This addendum serves to notify all bidders of the following changes to the solicitation documents:

1. The pre-bid meeting sign-in sheet has been uploaded to the Bid Express solicitation and the City's Purchasing web page.

2. The DNR Stream Restoration project is no longer being constructed. As a result, the landscape and grading drawings have been reissued to simplify the golf course improvements project.

3. A new Bid Form is being provided to reflect the changes to the Alternates. As a reminder, prices must be entered into the Bid Express solicitation.

4. Final Project Completion Date has been changed to: <u>May 23, 2025</u> with all 27 holes open for play. An interim completion date if the course is closed completely is for 18 holes to be open by <u>April 15, 2025</u>.

5. The City of Duluth Project Requirements in the Construction Specifications are revised as follows (removed language is stricken; added language is underlined):

   23. It is the intention of the City of Duluth to have ~~9 or~~ 18 holes of the course remain open during construction. Regardless, irrigation work on a hole must be 95% complete (mainline trenching, lateral trenching or pulling, automation and adjustment of sprinklers) before moving on to the next scheduled hole as the existing course conditions (opened or closed) must be maintained during construction. Installed sprinklers shall be wired and automated before moving on to the next hole. This restriction will be strictly enforced by the Golf Course Superintendent and the Owner's Representative, and is subject to the discretion of the Golf Course Superintendent and the Owner's Representative. The request for which hole is to be closed shall be communicated to Golf Course Superintendent no later than 11:00 a.m. the day before the hole is to be closed from play and no earlier than 72 hours preceding the same time. If a hole subsequently does not need to be closed or no longer needs to be closed, the Contractor shall notify the Golf Course Superintendent immediately. If they are not available, the Contractor shall notify the Pro Shop. When possible, the Contractor shall make an effort to use temporary greens and tees in order to keep the holes open.

24. Contractor shall keep the existing 27-hole irrigation system operational - regardless of hole closures - at the end of each day until October 13, 2023 and until October 14, 2024, weather permitting and as necessary to meet a water-to-greens requirement of May 10, 2024 and May 9, 2025. The Contractor shall schedule any shut downs with the Golf Course Superintendent a minimum of 12 hours in advance of the start of the shutdown period.

6. The Project Schedule Note on page 11 of 130 of the Construction Specifications is revised as follows:
   Enger Park Golf Course is an existing 27-hole public golf course. Installation of the irrigation system mainline is expected to begin September 5, 2023 or as negotiated. Mobilization may begin August 21, 2023 before the start of construction. Contractor must meet a water-to-greens requirement of May 10, 2024 and May 9, 2025. Interim Completion shall be no later than ~~July 19, 2024~~ April 15, 2025 (18 holes) if the course has been closed, and Final Completion shall be no later than May 23, 2025 (27 holes).

7. Section 00 41 00
   Contractors Bid Form
   2.03 Add Alternates (Replace with the following):

   Add Alt Item #1

   Re-Seed Fairway. Payment includes soil preparation, regrading/tilling as directed, fertilization, fine grading, providing and installing seed to meet specifications, establishment of seed, restoration of haul routes once construction is complete and all other related work. Measurement for payment will be lump sum installed.

   Add Alt Item #2-9

   Tee Boxes. Payment includes providing, hauling and installing fill material and tee sand/ material, establishing and laser-levelling tee surface, installing irrigation heads as shown in plans and connecting heads to mainline; and all related work per specifications. In cases where the new tee box is connected to an existing tee box, existing soil should be stripped off existing tee to a level that allows for restoration and seeding per detail. Restoration of tee box side slopes and haul routes to each tee is considered incidental to tee box construction. Reconstruction of cart paths and re-seeding of existing tee box is considered incidental to tee box construction. Re-seeding of existing tee boxes on holes where new tees are being constructed is considered incidental to the new tee box construction on that hole. Measurement for payment shall be lump sum installed.

   Add Alt Item #10

   Fill Existing Bunker. Payment includes salvaging sand, providing and installing fill material to meet specifications, seeding and intended final grades as shown in plans and as directed and all related work. Measurement for payment shall be lump sum installed.

Add Alt Item #11-12

Rebuild Existing Bunker. Payment includes removing and disposing (or stockpiling) of existing material as required, cutting new sod edge, tilling subgrade, sand trench, reshaping/ regrading per plans, specifications and/or as directed, providing and installing new material to meet specifications, restoration of haul routes to bunkers once construction is complete, and all related work. Measurement for payment shall be lump sum installed.

Add Alt Item #13

Driving Range Improvements. Payment includes stripping existing topsoil; re-grading as per plans; providing, hauling and installing fill material and tee mix; establishing and laser-levelling driving range surface, installing irrigation and related equipment as shown in plans; providing and installing tee mat with 6-inch CV base; and all related work per specifications. RESTORATION OF SIDE SLOPES AND HAUL ROUTES TO DRIVING RANGE IS CONSIDERED INCIDENTAL TO CONSTRUCTION. Measurement for payment shall be lump sum .

8. Section 00 41 00
   Contractors Bid Form
   2.04 Deduct Alternates (Replace with the following):

   Deduct Alt #1

   Complete closure of Enger Golf Course throughout construction. Deduction includes the cost savings that would be incurred if Enger Golf Course were shut down for play for the entirety of the construction process. This would eliminate conflict with players, increase parking/laydown and add some flexibility on the number of holes being worked on at a time. Current/ Base Bid approach is to keep eighteen (18) holes open during construction. With this approach, work would need to be phased to minimize the impact to golf by closing only (one) 1 hole at a time. Measurement for deduction shall be lump sum.

9. Section 31 23 19
   Dewatering (Delete in its Entirety)

10. Section 32 84 00
    2.05 Sprinklers (Change the following):

    A. 80' FULL CIRCLE VIH SPRINKLER - The full circle sprinkler shall be a lubricated gear drive rotor capable of covering an 83-85 foot radius at a base pressure of 80 psi and a discharge rate of 43.5-48.2 gpm. Rotation through 360 degrees shall be four minutes or less for the full-circle sprinkler. The internal assembly shall be retained in the case by a plastic snap ring. The pop-up height shall be 2.25 or 3.25 inches. The retract spring shall be of stainless steel and of sufficient force for positive pop-down. The

nozzle shall be tested per ASABE S398.1. The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female ACME bottom inlet. The sprinkler shall have a solenoid actuated normally closed valve in the base of the case. The rotor shall have a pressure regulator. The case shall have a 1.25 or 1.5-inch ACME threaded inlet. The sprinkler shall be as manufactured by Rain Bird IC900-E-56-80-ACME (Green) or Toro INF54-578-6 (Black).

C. 75' FULL CIRCLE VIH SPRINKLER - The full circle sprinkler shall be a lubricated gear drive rotor capable of covering a 76–81-foot radius at a base pressure of 80 psi and a discharge rate of 37.1-39.7 gpm. Rotation through 360 degrees shall be four minutes or less for the full-circle sprinkler. The internal assembly shall be retained in the case by a plastic snap ring. The pop-up height shall be 2.25 or 3.25 inches. The retract spring shall be of stainless steel and of sufficient force for positive pop-down. The nozzle shall be tested per ASABE S398.1. The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female ACME bottom inlet. The sprinkler shall have a solenoid actuated normally closed valve in the base of the case. The rotor shall have a pressure regulator. The case shall have a 1.25 or 1.5-inch ACME threaded inlet. The sprinkler shall be as manufactured by Rain Bird IC900-E-52-80-ACME (Orange) or Toro INF54-558-6 (Green).

E. 70' FULL CIRCLE VIH SPRINKLER (TYPE "D") - The full/part circle sprinkler shall be a lubricated gear drive rotor capable of covering a 72-75-foot radius at a base pressure of 80 psi and a discharge rate of 31.7-34.1 gpm. Rotation through 360 degrees shall be four minutes or less for the full-circle sprinkler. The internal assembly shall be retained in the case by a plastic snap ring. The pop-up height shall be 2.25 or 3.25 inches. The retract spring shall be of stainless steel and of sufficient force for positive pop-down. The nozzle shall be tested per ASABE S398.1. The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female ACME bottom inlet. The sprinkler shall have a solenoid actuated normally closed valve in the base of the case. The rotor shall have a pressure regulator. The case shall have a 1.25 or 1.5-inch ACME threaded inlet. The sprinkler shall be as manufactured by Rain Bird IC900-E-48-80-ACME (Yellow-C) or Toro INF54-548-6 (Orange).

G. 65' FULL CIRCLE VIH SPRINKLER (TYPE "F") - The full/part circle sprinkler shall be a lubricated gear drive rotor capable of covering a 67 foot radius at a base pressure of 80 psi and a discharge rate of 25-27.1 gallons per minute. Rotation through 360 degrees shall be four minutes or less for the full-circle setting. The internal assembly shall be retained in the case by a plastic snap ring. The pop-up height shall be 2.6 or 3.25 inches. The retract spring shall be of stainless steel and of sufficient force for positive pop-down. The nozzle shall be tested per ASABE S398.1. The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female ACME bottom inlet. The sprinkler shall have a solenoid actuated normally closed valve in the base of the case. The rotor shall have a pressure regulator. The

case shall have a 1.0 inch or 1.25-inch ACME threaded inlet. The sprinkler shall be as manufactured by Rain Bird IC702-E-32-80-ACME (Blue) or Toro INF34-338-6 (Brown).

I. 50' FULL CIRCLE VIH SPRINKLER (TYPE "H") – The full/part circle sprinkler shall be a lubricated gear drive rotor capable of covering a 53-59 foot radius at a base pressure of 50/65 psi and a discharge rate of 15.5 to 16,9 gallons per minute. Rotation through 360 degrees shall be four minutes or less for the full-circle setting. The internal assembly shall be retained in the case by a plastic snap ring. The pop-up height shall be 2.6 or 3.25 inches. The retract spring shall be of stainless steel and of sufficient force for positive pop-down. The nozzle shall be tested per ASABE S398.1. The rotor body shall be molded of engineering grade plastic and shall have a double-wall construction female ACME bottom inlet. The sprinkler shall have a solenoid actuated normally closed valve in the base of the case. The rotor shall have a pressure regulator. The case shall have a 1.0 or 1.25-inch ACME threaded inlet. The sprinkler shall be as manufactured by Rain Bird IC702-E-28-50-ACME (White) or Toro INF34-316-6 (Yellow).

10. Section 32 84 00

2.20 Swing Joints (Change the following):

B. Support sizes shall be as follows:

Size	Rain Bird	Toro
1 Inch Swing Joint		INF35-338-6 INF34-338-6 INF35-316-6 INF34-316-6
1-1/4 Inch Swing Joint	IC702-E-32-80-ACME IC752-E-36-80-ACME IC702-E-28-50-ACME IC752-E-28-50-ACME	
1-1/2 Inch Swing Joint	IC900-E-56-80-ACME IC950-E-24-80-ACME IC900-E-52-80-ACME IC950-E-22-80-ACME IC900-E-48-80-ACME IC950-E-18-80-ACME	INF55-578-6 INF54-578-6 INF55-558-6 INF54-558-6 INF55-548-6 INF54-548-6

Please acknowledge receipt of this Addendum by checking the acknowledgment box within the www.bidexpress.com solicitation.

Posted: **11/8/2022**

SECTION 00 41 00
CONTRACTOR'S BID FORM
CITY OF DULUTH

PART 1: BID SCHEDULE

1.01 The following bid items are to include materials, labor, profit, taxes and overhead for the complete system in place.

1.02 Contractor to fill in all bid items, failure to do so may result in disqualification.

Base Bid Item #	Description	Unit	Amount
1	**27 Hole Rain Bird or equal Irrigation System**	LS	$
	Lightning Protection System	LS	$
	Rock/ Deleterious Material Allowance	LS	$
	Upgraded City Water Line	LS	$
	Demolition of Existing Pump House	LS	$
	TOTAL – Base Bid Item #1		$
2	**27 Hole Toro or Equal Irrigation System**	LS	$
	Lightning Protection System	LS	$
	Rock/ Deleterious Material Allowance	LS	$
	Upgraded City Water Line	LS	$
	Demolition of Existing Pump House	LS	$
	TOTAL – Base Bid Item #2		$
3	**Electrical Supply**	LS	$
	TOTAL – Base Bid Item #3		$
4	**Pond Construction**		
	Excavation & Placement of Material	LS	$
	Haul Route	LS	$
	Wet Well/Concrete Base/Inlet Pipe	LS	$
	Erosion Control/ SWPPP	LS	$
	Fairway/Rough Seeding - Middle #18	LS	$
	TOTAL – Base Bid Item #4		$
TOTAL – BASE BID			$

1.03 ADD ALTERNATIVES

Add Alt Item #	Description	Unit	Amount
1	**Re-Seeding Fairway**		
	Back #10	LS	$
	Back #11	LS	$
	Back #14	LS	$
	Back #15	LS	$
	Back #16	LS	$
	Back #17	LS	$
	Back #18	LS	$
	TOTAL – Add Alt Item #1		$

2	**New Tee Box- Middle #18[1]**	LS	$
3	**New Tee Box- Back #17[1]**	LS	$
4	**New Tee Box- Back #18[3]**	LS	$
5	**New Tee Box- Middle #10[1]**	LS	$
6	**New Tee Box- Back #10[3]**	LS	$
7	**New Tee Box- Back #11[1]**	LS	$
8	**New Tee Box- Back #13[2]**	LS	$
9	**New Tee Box- Back #16[1]**	LS	$

10	**Fill Existing Bunkers (one per hole)**	**Unit**	**Amount**
	Middle #11	LS	$
	Middle #12	LS	$
	Middle #15	LS	$
	Middle #16	LS	$
	Middle #18	LS	$
	Back #10	LS	$
	Back #11	LS	$
	TOTAL – Add Alt Item #10		$
11	**Rebuild Existing Bunkers**	**Unit**	**Amount**
	Middle #16 (2)	LS	$
	TOTAL – Add Alt Item #11		$
12	**Rebuild Existing Bunkers**	**Unit**	**Amount**
	Back #10 (2)	LS	$
	Back #11 (2)	LS	$
	Back #12	LS	$
	Back #13	LS	$
	Back #14	LS	$
	Back #16	LS	$
	Back #17	LS	$
	Back #18 (2)	LS	$
	TOTAL – Add Alt Item #12		$
13	**Driving Range Improvements**	**Unit**	**Amount**
	Haul & Place Fill Material	LS	$
	Tee Seed Mix	LS	$
	Irrigation System	LS	$
	Tee Mat	LS	$
	TOTAL – Add Alt Item #13		$

TOTAL – ADD ALTS	$

1.04 DEDUCT ALTERNATIVES

Deduct Alt Item #	Description		
			Amount
1	Complete closure of Enger Golf Course throughout construction (ALL 27 HOLES CLOSED)		$

WRITTEN_____

SIGNATURE_____ **DATE**_____

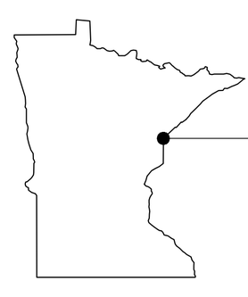
COMPANY_____

NOTES:

1 - Restoration of tee box side slopes and construction of haul routes to tees is incidental to tee box

2- Reconstruction of cart path and re-seeding of existing tee box is incidental to construction of the tee box

3- Re-seeding of existing tee box is incidental to construction of the new tee box on this hole



GSOC
1-800-252-1166

GENERAL CIVIL NOTES

SHOP DRAWINGS

SHOP DRAWINGS FOR THE FOLLOWING ITEMS, BUT NOT LIMITED TO, SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION IF APPLICABLE;

A. BITUMINOUS MIX DESIGN
B. CONCRETE MIX DESIGN
C. STORM SEWER COMPONENTS
D. WATER MAIN COMPONENTS
E. SANITARY SEWER COMPONENTS
F. CONCRETE STRUCTURES
G. STORM WATER TREATMENT MATERIALS
H. GEOSYNTHETIC PRODUCTS

DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER OF RECORD; THEREFORE, THEY SHALL BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW AND STAMP DRAWINGS PRIOR TO REVIEW BY THE ENGINEER OF RECORD. CONTRACTOR SHALL REVIEW DRAWINGS FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND ALL SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO. SUBMITTALS SHALL INCLUDE ONE ELECTRONIC COPY TO BE MARKED AND RETURNED.

SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS. IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATION SHALL CONTROL AND SHALL BE FOLLOWED.

UTILITIES

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS TO UTILITY LEVEL "D" AS DEFINED BY CI/ASCE 38-02. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "GSOC" AT (1-800-252-1166) TWO WORKING DAYS PRIOR TO ANY EXCAVATION OR CONSTRUCTION.

GEOTECHNICAL & MATERIAL TESTING

THE CONTRACTOR SHALL VERIFY RECOMMENDATIONS NOTED IN THE GEOTECHNICAL REPORT PRIOR TO INSTALLATION OF SITE IMPROVEMENT MATERIALS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE GEOTECHNICAL REPORT AND THE PLANS.

OWNER HAS OPTION TO COMPLETE QUALITY ASSURANCE OF MATERIAL TESTING. MATERIAL TESTING SHALL FOLLOW THE MnDOT SCHEDULE OF MATERIAL CONTROL UNLESS NOTED IN THE CONTRACT DOCUMENTS.

AMERICANS WITH DISABILITY ACT (ADA)

ALL PEDESTRIAN FACILITIES ON THIS PROJECT MUST BE CONSTRUCTED ACCORDING TO PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) WHICH CAN BE FOUND AT: http://www.dot.state.mn.us/ada/pdf/PROWAG.pdf and MnDOT STANDARD PLANS 5-297.250 & 5-297.254

THE CONTRACTOR MUST DESIGNATE A RESPONSIBLE PERSON COMPETENT IN ALL ASPECTS OF PROWAG TO ASSESS PROPOSED SIDEWALK LAYOUT AT EACH SITE BEFORE WORK BEGINS. THE DESIGNATED PERSON MUST HAVE ATTENDED THE MnDOT ADA CONSTRUCTION CERTIFICATION COURSE AND RECEIVED A PASSING SCORE, WITHIN THE PAST 3 YEARS. FOR CLASS DATES AND LOCATIONS PLEASE REFER TO THE FOLLOWING LINK AT: http://www.dot.state.mn.us/ada/training.html. A MINIMUM OF ONE PERSON PER PROJECT MUST POSSESS A VALID ADA CONSTRUCTION CERTIFICATION CARD ANYTIME ADA WORK IS BEING PERFORMED ON THE PROJECT. IF WORK ON ELECTRICAL COMPONENTS IS THE ONLY ADA WORK TAKING PLACE ON THE PROJECT THE ELECTRICIAN MUST HAVE IN THEIR POSSESSION A CURRENT MnDOT SIGNALS AND LIGHTING CERTIFICATION.

THE CONTRACTOR AND THE ENGINEER SHALL WORK TOGETHER TO CONSTRUCT ALL PEDESTRIAN FACILITIES SET FORTH IN THE PLANS AND REQUIREMENTS OF PROWAG.

IF THE PLAN OR SITE CONDITIONS DO NOT ALLOW ACCESSIBILITY STANDARDS TO BE MET, THE CONTRACTOR SHALL CONSULT WITH THE ENGINEER TO DETERMINE A RESOLUTION. THE ENGINEER SHALL RESPOND TO THE CONTRACTOR, IN A TIMELY MANNER (UP TO 24 HOURS) WITH A SOLUTION ON HOW TO PROCEED. THE CONTRACTOR SHALL MITIGATE ANY POTENTIAL DELAYS BY PROGRESSING OTHER AVAILABLE WORK ON THE PROJECT.

IF THE CONTRACTOR CONSTRUCTS ANY PEDESTRIAN FACILITIES THAT ARE NOT PER PLAN, DO NOT MEET THE REQUIREMENTS OF PROWAG, OR DO NOT FOLLOW THE AGREED UPON RESOLUTION WITH THE ENGINEER, THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTING THE DEFICIENT FACILITIES WITH NO COMPENSATION PAID FOR THE CORRECTIVE WORK.

SURVEY STAKES & BENCHMARKS

THE CONTRACTOR IS RESPONSIBLE FOR ALL STAKING OPERATIONS UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.

IF NOTED IN THE CONTRACT DOCUMENTS FOR THE OWNER TO PROVIDE STAKING OPERATIONS, THE CONTRACTOR SHALL GIVE THE ENGINEER AT LEAST 72 HOURS NOTICE IN WRITING BEFORE REQUIRING ANY SURVEYS OR CONSTRUCTION STAKES TO BE SET, OR BEFORE COMMENCING WORK ON ANY PORTION OF THE CONTRACT, OR AT ANY NEW PLACE, AS WELL AS AT ANY PLACE WHERE WORK HAS BEEN RELINQUISHED OR STOPPED FOR ANY CAUSE.

THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF ALL SUCH STAKES AND BENCH MARKS IN THEIR PROPER POSITIONS, AND IN CASE OF ANY OF THEM BEING LOST, DESTROYED, OR OBLITERATED AFTER ONCE HAVING BEEN GIVEN, THE CONTRACTOR SHALL AT ONCE NOTIFY THE OWNER IN WRITING AND ALL EXPENSE INCURRED BY THE OWNER IN REPLACING THE SAME MAY BE CHARGED AGAINST THE CONTRACTOR AND DEDUCTED FROM THE ESTIMATES.

ENGINEER'S AUTHORITY

THE ENGINEER SHALL GIVE ALL ORDERS AND DIRECTIONS CONTEMPLATED UNDER THIS CONTRACT AND SPECIFICATIONS RELATIVE TO THE EXECUTION OF THE WORK. THE ENGINEER SHALL DETERMINE THE AMOUNT, QUALITY, ACCEPTABILITY, AND FITNESS OF THE SEVERAL KINDS OF WORK AND MATERIALS WHICH ARE TO BE PAID FOR UNDER THIS CONTRACT AND SHALL DECIDE ALL QUESTIONS WHICH MAY ARISE IN RELATION TO SAID WORK AND THE CONSTRUCTION THEREOF.

THE ENGINEER'S ESTIMATES AND DECISIONS SHALL BE FINAL AND CONCLUSIVE, EXCEPT AS HEREIN OTHERWISE EXPRESSLY PROVIDED. IN CASE ANY QUESTIONS SHALL ARISE BETWEEN THE PARTIES HERETO RELATIVE TO SAID CONTRACT OR SPECIFICATIONS, THE DETERMINATION OF DECISION OF THE ENGINEER SHALL BE A CONDITION PRECEDENT TO THE RIGHT OF THE CONTRACTOR TO RECEIVE ANY MONEY OR PAYMENT FOR WORK UNDER THIS CONTRACT AFFECTED IN ANY MANNER OR TO ANY EXTENT BY SUCH QUESTION.

THE ENGINEER SHALL DECIDE THE MEANING AND INTENT OF ANY PORTION OF THE SPECIFICATIONS AND OF ANY PLAN OR DRAWINGS WHERE THE SAME MAY BE FOUND OBSCURE OR BE IN DISPUTE. ANY DIFFERENCES OR CONFLICTS IN REGARD TO THEIR WORK WHICH MAY ARISE BETWEEN THE CONTRACTOR UNDER THIS CONTRACT AND OTHER CONTRACTORS PERFORMING WORK FOR THE OWNER SHALL BE ADJUSTED AND DETERMINED BY THE ENGINEER.

THE CONTRACTOR IS TO FURNISH THE ENGINEER OR SUPERVISOR WITH ALL REQUIRED ASSISTANCE TO FACILITATE THOROUGH INSPECTION, OR CULLING OVER REMOVAL OF DOUBTFUL OR DEFECTIVE MATERIAL, OR FOR THE THOROUGH EXAMINATION INTO ANY OF THE WORK PERFORMED, OR FOR ANY OTHER PURPOSE REQUIRED IN THE DISCHARGE OF THEIR DUTIES, FOR WHICH SERVICE NO ADDITIONAL ALLOWANCE WILL BE MADE. THE ENGINEER OR SUPERVISOR MAY STOP THE WORK ENTIRELY IF THERE IS NOT SUFFICIENT QUANTITY OF SUITABLE AND APPROVED MATERIALS ON THE SITE TO CARRY IT ON PROPERLY, OR FOR ANY GOOD AND SUFFICIENT CAUSE; ALSO TO SEE THAT ALL OF THE PROVISIONS OF THIS CONTRACT AND SPECIFICATION ARE FAITHFULLY ADHERE TO, AND SHALL HAVE THE POWER TO DISMISS ANY EMPLOYEE OF THE CONTRACTOR FOR INCOMPETENCE, INTOXICATION, WILLFUL NEGLIGENCE, OR DISREGARD OF ORDERS.

THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE ACTS OF OMISSIONS OF THE CONTRACTOR, OR ANY SUBCONTRACTORS, OR ANY OF THE THEIR SUPERINTENDENCE, AGENTS, OR EMPLOYEES.

CHANGES IN WORK

NO CHANGES IN THE WORK COVERED BY THE APPROVED CONTRACT DOCUMENTS SHALL BE MADE WITHOUT HAVING PRIOR WRITTEN APPROVAL BY THE ENGINEER.

GOVERNING SPECIFICATIONS

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION 'STANDARD SPECIFICATIONS FOR CONSTRUCTION' SHALL GOVERN. AVAILABLE AT: http://www.dot.state.mn.us/pre-letting/spec/index.html

UTILITY DETAIL LEVEL

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS 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".

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

BASIS OF BEARING/CONTROL

MAP COORDINATE SYSTEM : ST. LOUIS COUNTY TRANSVERSE MERCATOR SYSTEM OF 1996

NAME:	NORTHING:	EASTING:	ELEV:
____			
____			
____			

GENERAL LEGEND

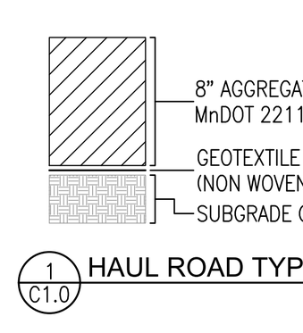
DESCRIPTION	PROPOSED	EXISTING
SITE PROPERTY LINE	———	———
SECTION LINE	— - - -	— - - -
RIGHT OF WAY LINE	— — —	— — —
EASEMENT LINE	— — —	— — —
LOT LINE	— - —	— - —
CONTROL / BENCHMARK	△	△
RLS MONUMENT	⊙	⊙
T-BAR	N/A	⊤
CHISELED X	N/A	✖
CALCULATED MONUMENT	N/A	○
REBAR / NAIL	N/A	•
CENTERLINE	— — —	— — —
PAVEMENT	▨	▨
PAVERS	▨	▨
CONCRETE	▨	▨
SIDEWALK	▨	▨
GRAVEL	▨	▨
RIP RAP	▨	▨
CURB & GUTTER	═══	═══
CURB & GUTTER (SPILL CURB)	▨	N/A
STRIPING	▬	▬
TRUNCATED DOMES	▨	N/A
FLAG POLE	~○	~○
MAIL BOX	▭	▭
POST	▫	▫
BOLLARD	•	•
PARKING METER	⬡	⬡
SIGN	⊥	⊥
CHAIN LINK FENCE	—○—	—○—
BARB WIRE FENCE	—×—	—×—
MISCELLANEOUS FENCE	—□—	—□—
GUARD RAIL	—▪—	—▫—
VEGETATION	⌒⌒⌒	⌒⌒⌒
TREE	○ ●	○ ●
WETLAND	N/A	▨
BUILDING	▨	▨
RETAINING WALL	▨	▨
DOORS	◿	◿
OVERHANG	- - - -	———
STOOP / FOOTING	▭	N/A
DOWN DRAIN	▭	N/A
MAJOR CONTOUR LINE	———	- - - -
MINOR CONTOUR LINE	———	- - - -
TOP OF SLOPE	— TOP —	— TOP —
TOE OF SLOPE	— TOE —	— TOE —
SLOPE CATCH LINE (FILL)	— F —	N/A
SLOPE CATCH LINE (CUT)	— C —	N/A
FLOW LINE	← ←	← ←
OVERHEAD UTILITY LINE	— OH —	— OH —
UTILITY POLE	-○-	-○-
GUY WIRE	∈--	∈--
VALVE	⋈	⋈
UTILITY BOX	B	B
METER	M	M
CLEANOUT	©	©
STORM PIPE	—<<—	—<<—
DRAINAGE MANHOLE	Ⓓ	Ⓓ
CB - SQUARE GRATE	▤	▤
CB - ROUND GRATE	⊜	⊜
APRON / END SECTION	▷	▷
FORCEMAIN PIPE	—< FM—	—< FM—
SANITARY PIPE	—<—	—<—
SANITARY MANHOLE	Ⓢ	Ⓢ
WATER LINE	— W —	— W —
WATER MANHOLE	Ⓦ	Ⓦ
HYDRANT	⚲	⚲
WELL	W	W
GAS PIPE	— G —	— G —
GAS MANHOLE	Ⓖ	Ⓖ
REGULATOR	Ⓡ	Ⓡ
ELECTRICAL LINE	— E —	— E —
ELECTRICAL MANHOLE	Ⓔ	Ⓔ
LIGHT POLE	☼	☼
TRAFFIC SIGNAL	⊣○	⊣○
ELECTRICAL LINE	☒	☒
ELECTRICAL OUTLET	⊘	⊘
FIBER OPTIC LINE	— FO —	— FO —
TELECOM LINE	— T —	— T —
CABLE TV LINE	— CBL —	— CBL —
COMMUNICATION MH	Ⓣ	Ⓣ

SHEET INDEX

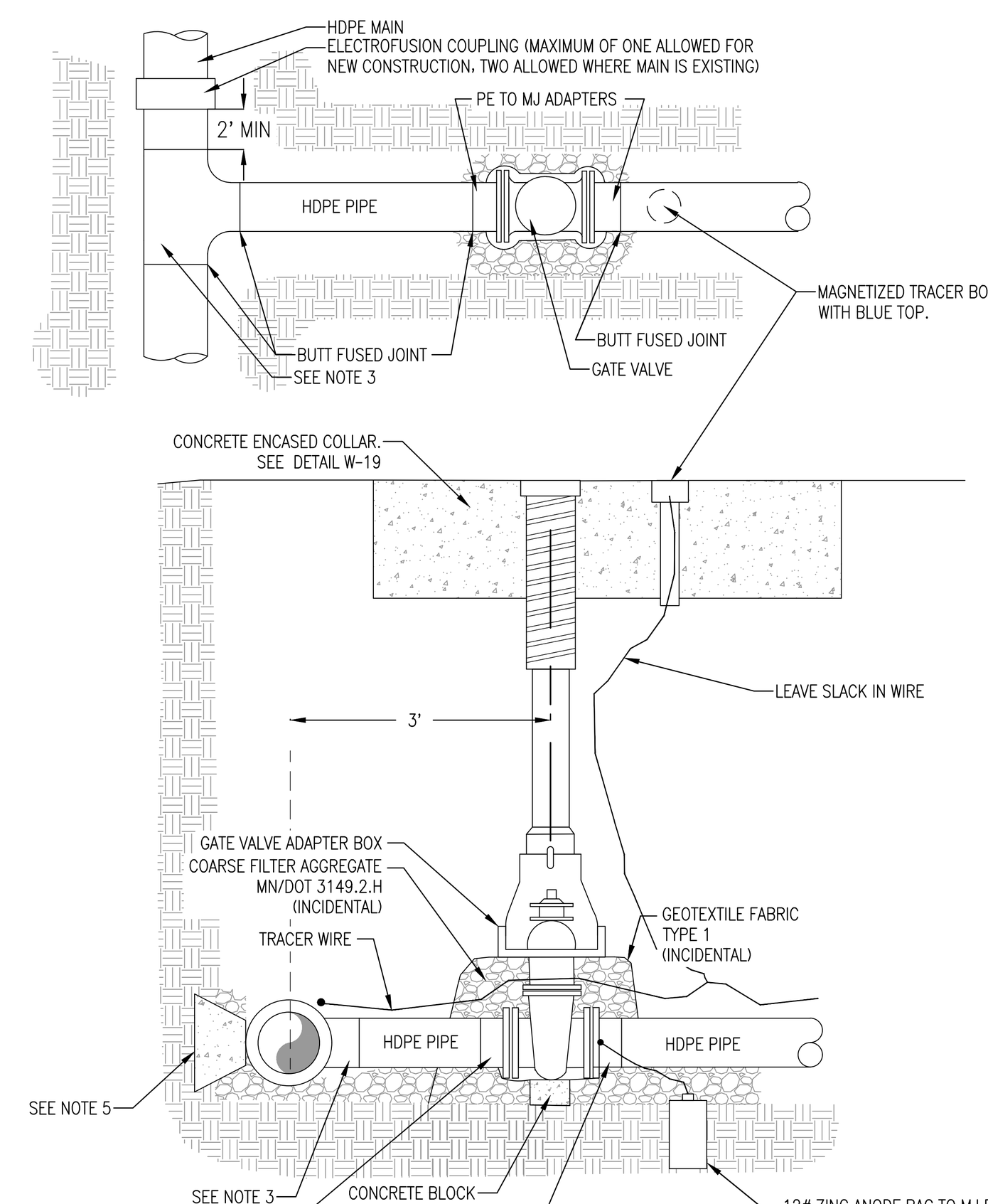
SHEET NUMBER	SHEET NAME
C1.0	GENERAL NOTES AND DETAILS
C2.0	OVERALL SITE PLAN
C3.0	GRADING AND UTILITY PLAN
C4.0	SWPPP LAYOUT AND NOTES

GEOTECHNICAL NOTE:
1. REFER TO THE PROJECT GEOTECHNICAL EVALUATION REPORT FOR SOIL CONDITIONS AND RECOMMENDATIONS.
   -PREPARED BY: EPC Engineering & Testing
   -PROJECT NO. : 22G1589
   -DATE : 2/16/22

2. SITE AND BUILDING SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT.

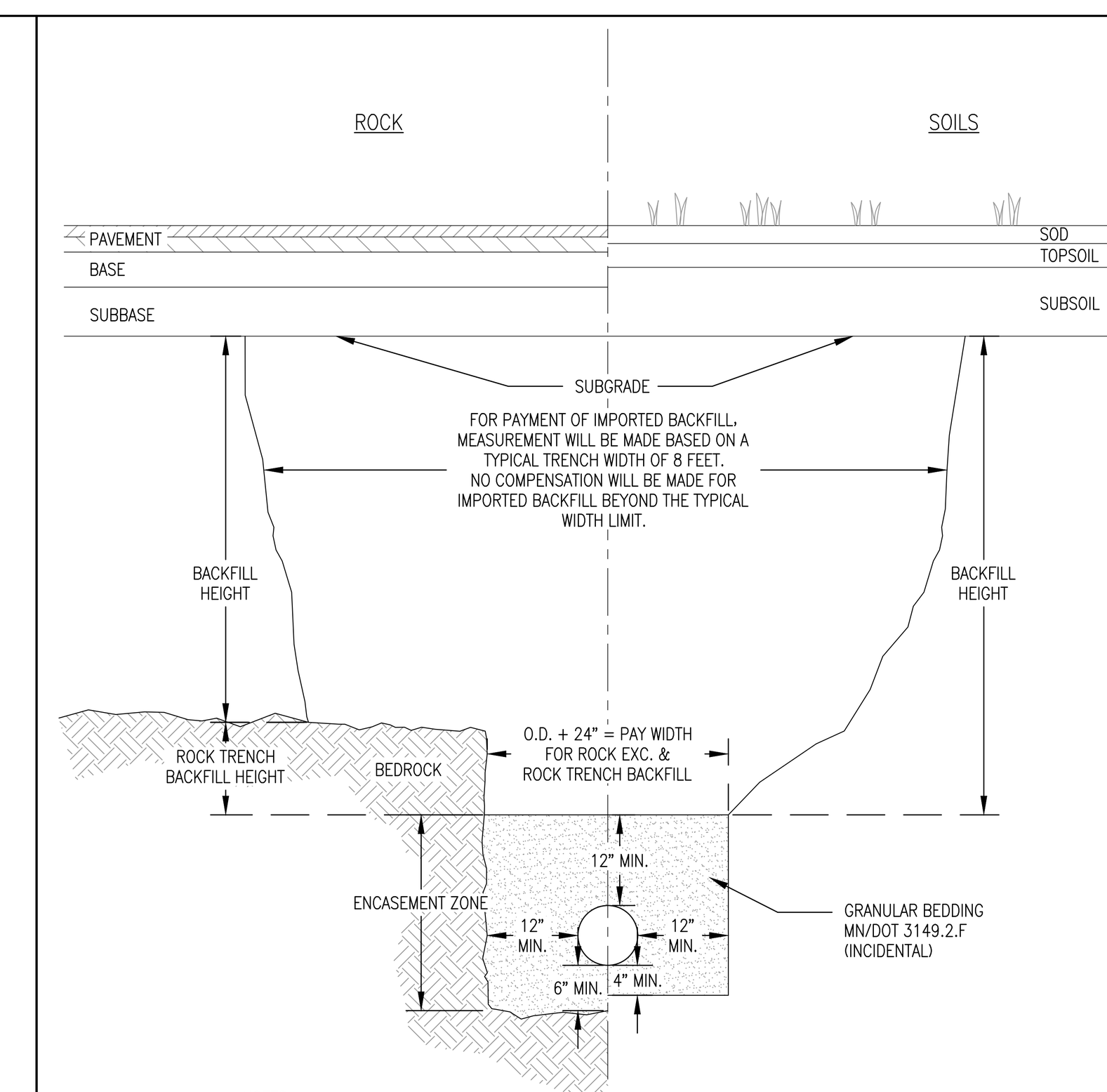


1 C1.0 HAUL ROAD TYPICAL SECTION
SCALE: 1" = 12"



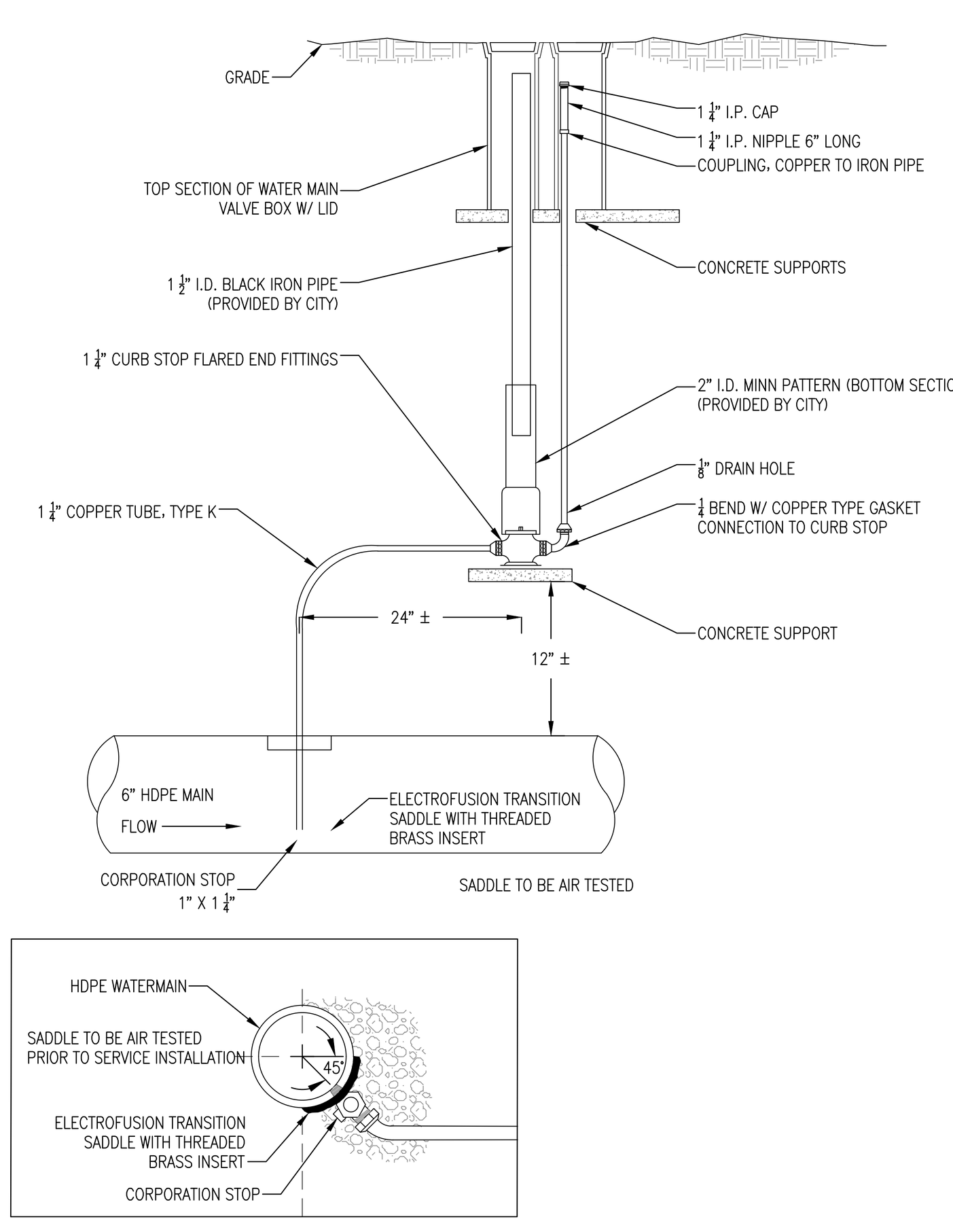
GENERAL NOTES
1. VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
2. ALL BOLTS SHALL BE BLUE COATED COR-TEN WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL JOINT FITTINGS.
3. FOR 8" MAINS, CONTRACTOR SHALL USE AN 8 X 8 TEE WITH A MACHINED 8 X 6 REDUCER OR AN 8 X 6 ELECTROFUSION BRANCH SADDLE. FOR LARGER DIMENSION MAINS A FABRICATED TEE WITH A 6" BRANCH OUTLET MAY BE USED.
4. GATE VALVES WITH ALPHA RESTRAINT COUPLERS MAY BE USED IN LIEU OF MJ FITTINGS. ANODES SHALL BE CONNECTED DIRECTLY TO THE VALVE BONNET BOLTS.
5. WHEN RECONNECTING TO EXISTING SERVICE PIPING CONCRETE THRUST BLOCKING MAY BE REQUIRED

4" & LARGER WATER SERVICE - HDPE — 2 C1.0 — W-5B
REVISED/APPROVED 04/05/2019 — CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES — NO SCALE



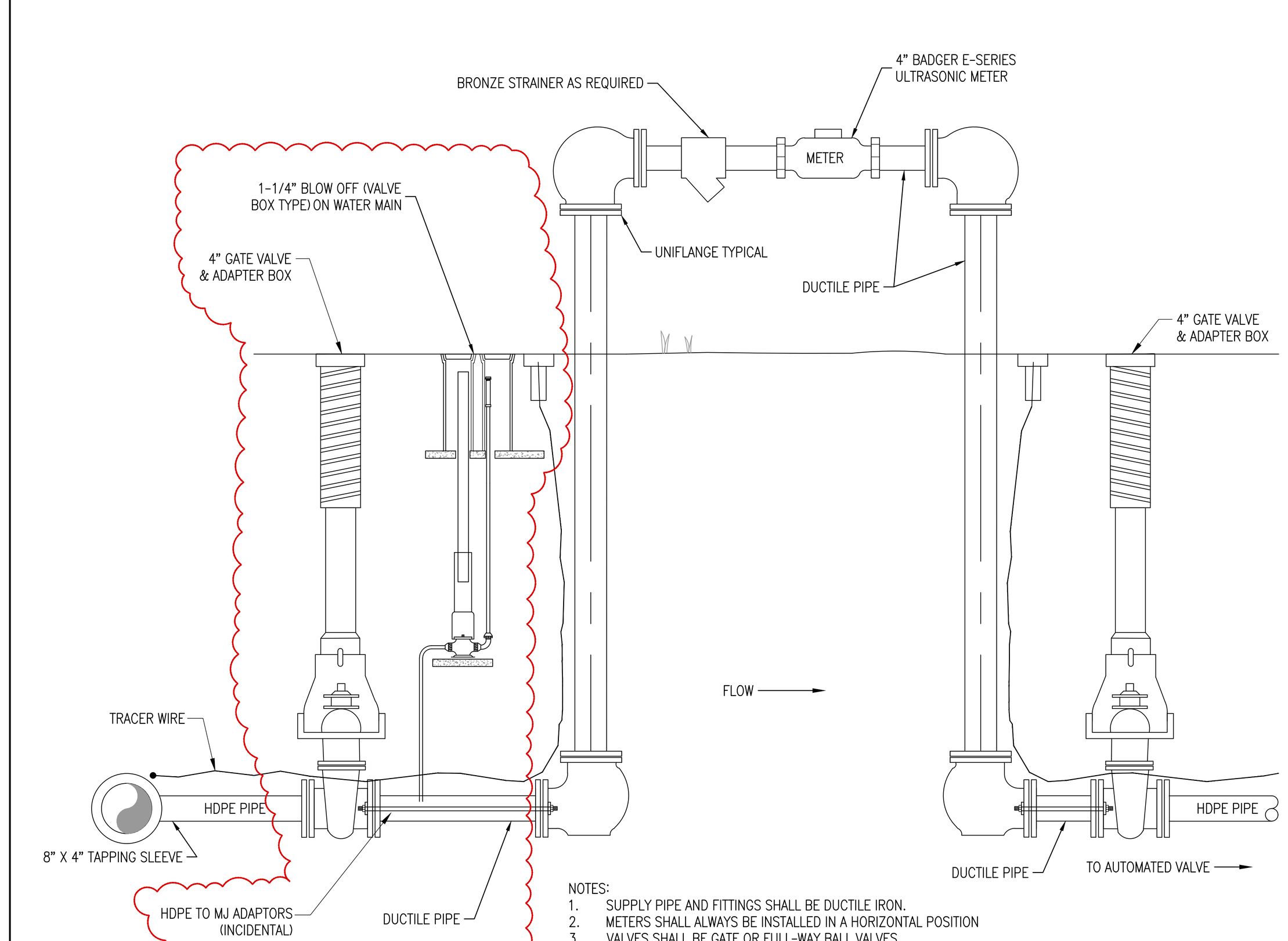
NOTES:
1. EXCESS EXCAVATION MATERIAL SHALL BE DISPOSED OF OFF PROJECT R.O.W. (INCIDENTAL)
2. PAY WIDTH FOR ROCK EXCAVATION SHALL BE BASED ON OUTSIDE DIAMETER OF PIPE PLUS 24".
3. A MINIMUM OF 1 CUBIC YARD OF STRUCTURE EXCAVATION, CLASS R, WILL BE PAID FOR EVERY 10' OF PIPE WHERE ROCK REMOVAL IS REQUIRED.
4. TRENCH STABILIZATION BEDDING MATERIAL MAY BE USED IN AREAS AS DETERMINED BY THE ENGINEER.
5. ENCASEMENT ZONE MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY.
6. BACKFILL SHALL BE SELECT GRADING MATERIAL FOUND ON-SITE WHEN DEEMED SUITABLE BY THE ENGINEER OR AS OTHERWISE DEFINED IN THE PROJECT SPECIAL PROVISIONS. WHEN ON-SITE MATERIAL IS NOT SUITABLE AND WHEN BACKFILL MATERIAL IS NOT SPECIFIED, IMPORTED MATERIAL MEETING MN/DOT 3149.2.D.1 GRANULAR BACKFILL SHALL BE PROVIDED. USE OF NATIVE ON-SITE MATERIAL IS INCIDENTAL.
7. COMPACT BACKFILL MATERIALS TO 100% OF MAXIMUM STANDARD PROCTOR DENSITY FOR THE UPPER 3' BELOW THE SUBGRADE, AND TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY BELOW THE UPPER 3'.

DUCTILE IRON, PE WATERMAIN, PRESSURE SEWER, & FORCEMAIN BEDDING — EX-1
REVISED/APPROVED 04/05/2019 — CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES — 3 C1.0 — NO SCALE



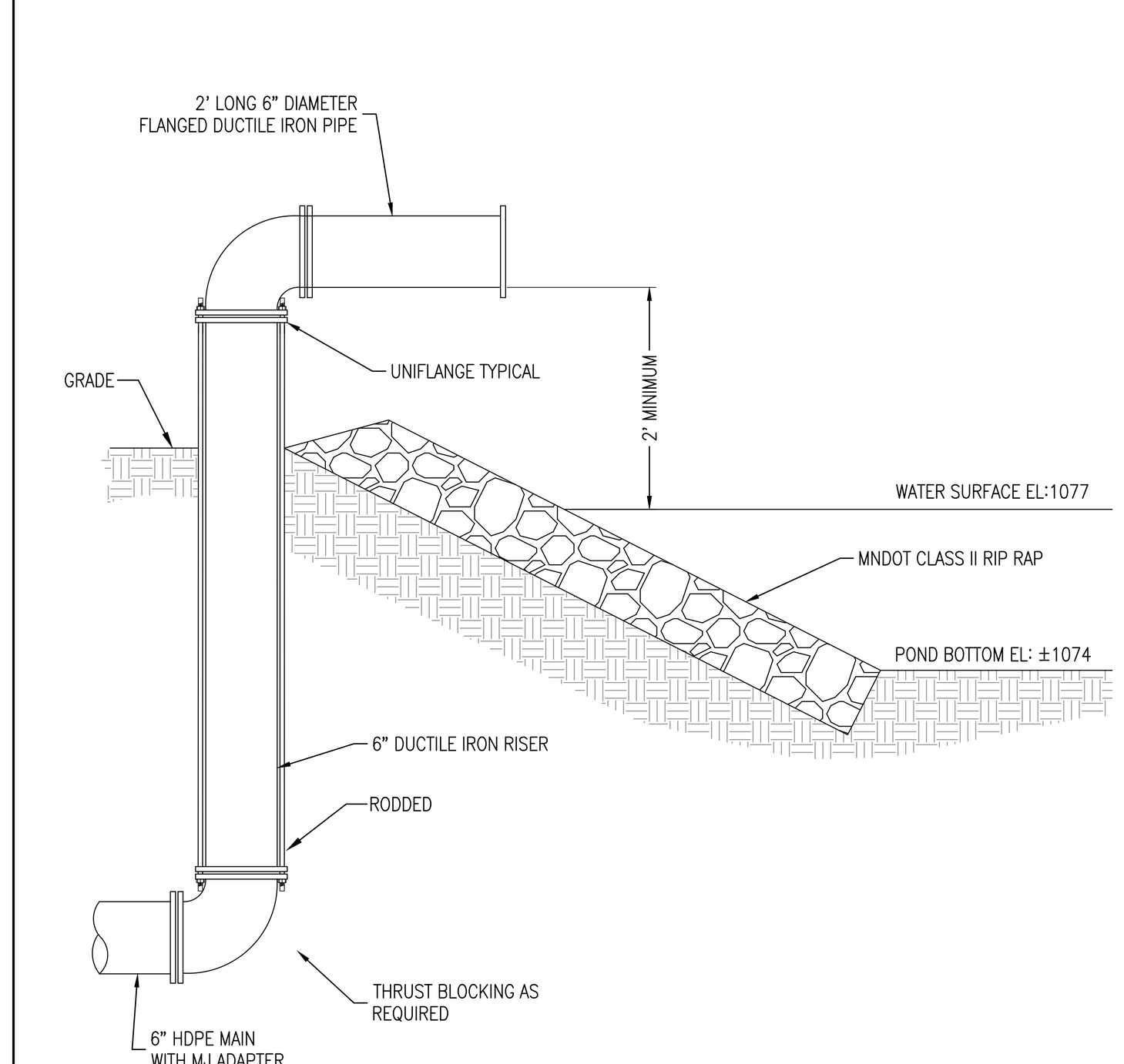
NOTE:
1. ATTACH BLOW OFF VALVE WITHIN FIVE FEET OF THE 6" SERVICE VALVE.
2. ELECTROFUSION SADDLE SHALL BE MINIMUM TWO FEET FROM THE HDPE TO MJ ADAPTOR FITTING FOR THE SERVICE VALVE.

1-1/4" BLOW OFF (VALVE BOX TYPE) ON WATER MAIN — 4 C1.0



NOTES:
1. SUPPLY PIPE AND FITTINGS SHALL BE DUCTILE IRON.
2. METERS SHALL ALWAYS BE INSTALLED IN A HORIZONTAL POSITION
3. VALVES SHALL BE GATE OR FULL-WAY BALL VALVES
4. FOR METERS 3" AND LARGER, A STRAINER IS REQUIRED AHEAD OF METER
5. UPSTREAM METER VALVE ON MULTIMETER INSTALLATIONS MUST BE LOCKABLE
6. THRUST BLOCKING WHERE REQUIRED

4" WATER SERVICE METER — 5 C1.0



6" POND DISCHARGE — 6 C1.0

I hereby certify that this plan, specification, or report 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.
[illegible]
10/19/22
Engineer: David G. Bolf — Lic. No: 40926

Northland Consulting Engineers L.L.P.
Structural, Civil and Forensic Engineering Services
Voice: (218)727-5995
Fax: (218)727-7779
www.nce-engineers.com

SCALE:
1"=100'-0"

DATE:
11/10/22

SHEET NUMBER:
C1.0

STATUS:
FINAL SIGNED

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	11-8-22	ADDENDUM #1

SHEET TITLE:
GENERAL NOTES AND DETAILS

PROJECT NAME:
ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

CLIENT NAME:
ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com
20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com
112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com


PROJECT LOCATION
ST. LOUIS COUNTY
CITY OF DULUTH
OBSERVATION ROAD
GSOC
1-800-252-1166
M11
M12
M13
M14
M15
M16
M17
M18
M10
F1
F4
F5
F6
F7
F8
F9
B10
B11
B12
B13
B14
B15
B16
B17
B18
BUCKINGHAM CREEK
BUCKINGHAM CREEK
ADD ALTERNATE #8
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #2
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #9
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #7
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #5
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #4
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #3
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #6
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
ADD ALTERNATE #16
TEE BOX (SEE LANDSCAPE ARCHITECT AND IRRIGATION PLANS)
HAUL ROAD
PER DETAIL
1
C1.0
NEW BUILDING
PROPOSED
POND
EXISTING POND
6
C1.0
DISCHARGE TO POND
WATER SERVICE LINE
(SEE IRRIGATION PLAN)
2
C1.0
CONNECT TO EXISTING WATER
10" D.I. WATER MAIN
EXISTING CLUBHOUSE
W SKYLINE PARKWAY
HANK JENSEN DRIVE
GEOTECHNICAL NOTE:
1. REFER TO THE PROJECT GEOTECHNICAL EVALUATION REPORT FOR SOIL CONDITIONS AND RECOMMENDATIONS.
-PREPARED BY: EPC Engineering & Testing
-PROJECT NO. : 22G1589
-DATE : 2/16/22
2. SITE AND BUILDING SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT.
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS 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".
EXISTING GROUND SURFACE MODEL FROM GIS LIDAR SOURCE

NORTH ARROW	GRAPHIC SCALE
N	0 100' 200' MAP COORDINATE SYSTEM : ST. LOUIS COUNTY TRANSVERSE MERCATOR SYSTEM OF 1996

SHEET REISSUED IN ENTIRETY

I hereby certify that this plan, specification, or report 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.

10/19/22

Engineer: David G. Bolf Lic. No: 40926

Northland Consulting Engineers L.L.P.
Structural, Civil and Forensic Engineering Services
Voice: (218)727-5995
Fax: (218)727-7779
www.nce-engineers.com

SCALE:
1"=100'-0"

DATE:
11/10/22

SHEET NUMBER:
C2.0

STATUS:

FINAL SIGNED

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	11-8-22	ADDENDUM #1

SHEET TITLE:

OVERALL SITE PLAN

PROJECT NAME:

ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

CLIENT NAME:

ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com

20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com

112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com

PROJECT LOCATION
ST. LOUIS COUNTY
CITY OF DULUTH

GSOC
1-800-252-1166

HAUL ROAD

12' WIDE HAUL ROAD

PROPOSED BUILDING

TOP OF BERM EL=1078.25

IRRIGATION INTAKE LINE (SEE IRRIGATION PLANS)

SURFACE EL=1077.00'
AREA=1.26 ACRES

TOP OF FAIRWAY EL=1076.60

TOP OF FAIRWAY EL=1075.74

SURFACE EL=1077.00'

(WESTERN APRON) INV=1074.00
N=3340318.98, E=4837314.42
(D-100) E, 24" RCP OUT=1074.00

(D-100) 24" RCP CLASS III
223.98' @ 0.00%

POND STORM

CONTRACTOR TO EXCAVATE 20'x20' HOLE TO A DEPTH OF 8' BELOW HIGH WATER MARK

(EASTERN-APRON) INV=1074.00
N=3340319.73, E=4837538.39
(D-100) W, 24" RCP IN=1074.00

(CB-1) RIM=1077.25
N=3340284.89, E=4837662.15
(D-101) SE, 12" RCP OUT=1074.39

6" EARTHEN OVERFLOW EL=1077.75

(D-101) 12" RCP CLASS III
128.00' @ 2.00%

TOP OF BERM EL=1078.25

DISCHARGE TO POND

(APRON-103) INV=1071.83
N=3340185.28, E=4837742.53
(D-101) NW, 12" RCP IN=1071.83

POND STORM

WATER SERVICE LINE (SEE IRRIGATION PLAN)

M18

F9

B10

B17

B18

BLOW OFF VALVE PER DETAIL 4/C1.0
METER AND METER VALVES PER DETAIL 5/C1.0
TO AUTOMATED VALVE AND POND
BLOW OFF VALVE PER DETAIL 4/C1.0
MAIN CONNECTION AND SERVICE VALVE PER DETAIL 2/C1.0
EXISTING 10" D.I. WATER MAIN

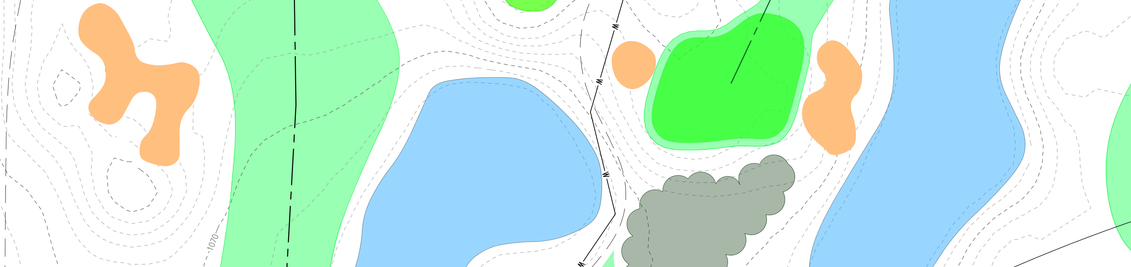
SEE BLOW UP FOR MAIN CONNECTION, VALVES, BLOWOFFS AND METERING.

EXISTING 10" D.I. WATER MAIN

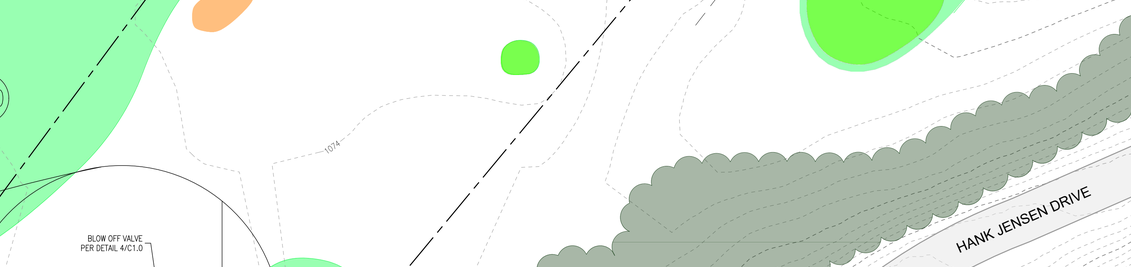
EXISTING CLUBHOUSE

HANK JENSEN DRIVE

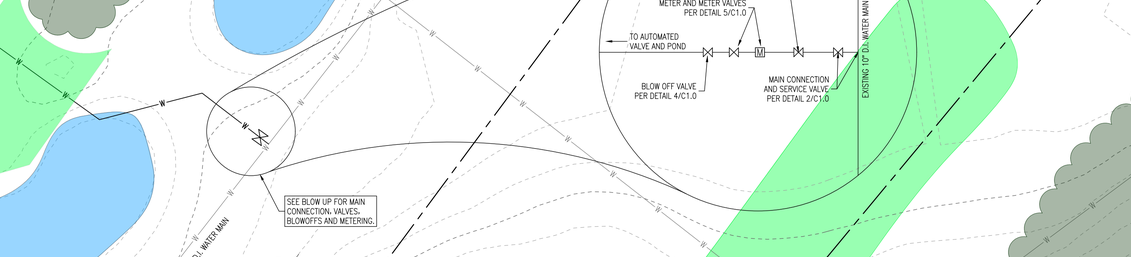
A 0+00.00 - 6+00.00



B 0+00.00 - 6+00.00



POND STORM 0+00.00 - 6+00.00



CROSS SECTION
SCALE 1 x 1

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS 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".

EXISTING GROUND SURFACE MODEL FROM GIS LIDAR SOURCE

NORTH ARROW	GRAPHIC SCALE
N	0 40' 80'

MAP COORDINATE SYSTEM : ST. LOUIS COUNTY TRANSVERSE MERCATOR SYSTEM OF 1996

1 SHEET REISSUED IN ENTIRETY

I hereby certify that this plan, specification, or report 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.
10/19/22
Engineer: David G. Bolt Lic. No: 40926

Northland Consulting Engineers L.L.P.
Structural, Civil and Forensic Engineering Services
Voice: (218)727-5995 Fax: (218)727-7779
www.nce-engineers.com

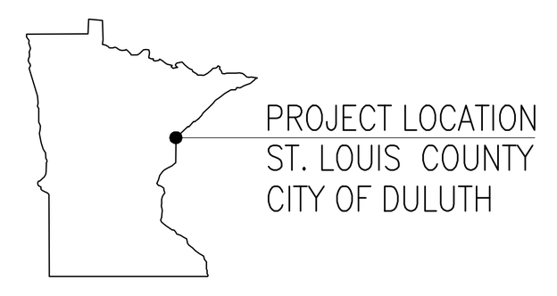
SCALE:	STATUS:	REVISIONS:		
1"=100'-0"		NO.:	DATE:	DESCRIPTION:
DATE:	FINAL SIGNED	1	11-8-22	ADDENDUM #1
11/10/22				
SHEET NUMBER:				
C3.0				

SHEET TITLE:
GRADING AND UTILITY PLAN

PROJECT NAME:
ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

CLIENT NAME:
ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com
20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com
112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com



LEGEND & ESTIMATED QUANTITIES			
REF	DESCRIPTION	QUANTITY	SYMBOL
1 C4.0	STABILIZED CONSTRUCTION EXIT	1 LS	
2 C4.0	SILT FENCE, TYPE HI	2300 LF	
3 C4.0	STORM DRAIN INLET PROTECTION	1 EA	
	RANDOM RIPRAP CLASS ## (FRACTURED)		
	FLOW DIRECTION	NA	
	SWALE FLOWLINE	NA	

NOTE:

**SEE LANDSCAPE ARCHITECT PLANS FOR FINAL STABILIZATION THROUGHOUT.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) NARRATIVE

THIS SWPPP HAS BEEN PREPARED TO SATISFY THE REQUIREMENTS OF THE MPCA NPDES CONSTRUCTION STORM WATER PERMIT. THE SWPPP DOCUMENT INCLUDES THE FOLLOWING DOCUMENTS TO DEFINE THE REQUIREMENTS FOR TEMPORARY AND PERMANENT STORM WATER MANAGEMENT AND EROSION CONTROL:

1.) SWPPP NARRATIVE & DETAILS
2.) PLAN SHEETS AND PROJECT SPECIFICATIONS
3.) STORMWATER MANAGEMENT PLAN

PROJECT INFORMATION:	
PROJECT LOCATION:	ENGER GOLF COURSE, DULUTH, MN
LATITUDE AND LONGITUDE:	46.779314, -92.129748
PROJECT NAME:	ENGER GOLF PARK IMPROVEMENTS
PROJECT DESCRIPTION:	EXCAVATION OF EXISTING POND TO REMOVE INTERIOR ISLAND AND CONNECT POND TO NEW NEIGHBORING POND TO IT'S EAST WITH STORM AND PROVIDE STORM OUTFALL, WATER SERVICE LINE IMPROVEMENTS
EST. PROJECT TIMELINE:	SPRING 2023 - FALL 2023

CONTACTS	
OWNER:	CITY OF DULUTH
CONTACT NAME:	ROBERT HURD
ADDRESS:	1532 WEST MICHIGAN ST., DULUTH MN 55806
PHONE:	218-626-5130
EMAIL:	rhurd@duluthmn.gov
ENGINEER:	NORTHLAND CONSULTING ENGINEERS, L.L.P.
CONTACT NAME:	TRENT PRIGGE, P.E.
ADDRESS:	102 S. 21ST AVE. W., SUITE ONE, DULUTH, MN 55806
PHONE:	(218) 727-5995
EMAIL:	DAVID@NCE-DULUTH.COM

SWPPP DESIGNER TRAINING INFORMATION	
SWPPP DESIGNER:	
CERTIFICATION CLASS AND EXPIRATION YEAR:	DESIGN OF CONSTRUCTION SWPPP, 2023
NAME OF INSTRUCTOR:	UNIVERSITY OF MINNESOTA
EMPLOYER:	NORTHLAND CONSULTING ENGINEERS, L.L.P.

CONTRACTOR'S EROSION CONTROL

THE CONTRACTOR MUST PROVIDE AND ATTACH CONTACT INFORMATION FOR THEIR CERTIFIED EROSION CONTROL SUPERVISOR. THIS INFORMATION MUST ACCOMPANY THE SWPPP PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY. THIS PERSON SHALL BE TRAINED, KNOWLEDGEABLE AND EXPERIENCED IN THE IMPLEMENTATION OF EROSION AND SEDIMENT CONTROL MEASURES. THIS INDIVIDUAL MUST OVERSEE INSTALLATION, MAINTENANCE AND INSPECTION OF THE EROSION AND SEDIMENT CONTROL BMPs, AND MAKE PROPER REVISION AND/OR AMENDMENTS TO THE SWPPP. A CERTIFIED PERSON REPRESENTING THE CONTRACTOR MUST BE AVAILABLE FOR AN ONSITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE MPCA.

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE NECESSARY TRAINING AND CERTIFICATIONS FOR THEIR RESPONSIBLE INDIVIDUALS AND CONTRACTOR MUST PROVIDE SAID TRAINING CERTIFICATIONS FOR ANY INDIVIDUAL:

1.) OVERSEEING IMPLEMENTATION, INSTALLATION AND MAINTENANCE OF SWPPP ELEMENTS.
2.) REVISING AND/OR AMENDING OF THE SWPPP.
3.) CONDUCTING SWPPP INSPECTIONS.

CONTRACTOR MUST FILL OUT THE TABLE BELOW AND PROVIDE DOCUMENTATION OF TRAINED INDIVIDUALS AT THE TIME OF APPLICATION OR BEFORE CONSTRUCTION ACTIVITY COMMENCES.

CONTRACTOR'S EROSION CONTROL SUPERVISOR/S	
NAME/S:	
CERTIFICATION CLASS AND EXPIRATION YEAR:	CONSTRUCTION SITE MANAGEMENT -
NAME OF INSTRUCTOR:	UNIVERSITY OF MINNESOTA
EMPLOYER:	

GENERAL SWPPP IMPLEMENTATION PHASING	
1.)	CONSTRUCT VEHICLE TRACKING BMP(S)
2.)	INSTALL SEDIMENT CONTROL BMPs ON ALL DOWN GRADIENT PERIMETERS.
3.)	INSTALL STORM DRAIN INLET PROTECTION WHERE NECESSARY.
4.)	INSTALL ANY TEMPORARY STABILIZATION DURING CONSTRUCTION AS NEEDED.
5.)	MONITOR SITE FOR SEDIMENT AND REPAIR/REPLACE OR SUPPLEMENT BMPs AS REQUIRED.
6.)	INSTALL FINAL STABILIZATION AS REQUIRED PER CONTRACT.
7.)	AFTER SITE HAS ACHIEVED A DENSITY OF 70% PERMANENT COVERAGE, TEMPORARY BMPs MAY BE REMOVED. RE-STABILIZE AND AREAS DISTURBED BY REMOVAL ACTIVITIES.

CONSTRUCTION STORMWATER PERMIT TIMELINES	
IMMEDIATELY	INSTALL PERIMETER CONTROL AT BASE STOCK PILES.
24 HOURS	STABILIZE EXPOSED SOILS WITHIN 200 FEET OF PUBLIC WATERS.
	STABILIZE WETTED PERIMETER OF DITCHES WITHIN 200 FEET AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE.
	INSTALL ENERGY DISSIPATION AT ALL PIPE OUTLETS.
	RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITIES.
7 DAYS	IF RECEIVING WATERS WITHIN 1 MILE OF THE SITE **ARE SPECIAL OR IMPAIRED**, EXPOSED SOILS MUST BE STABILIZED AFTER CONSTRUCTION HAS CEASED FOR 7 DAYS.
14 DAYS	IF RECEIVING WATERS WITHIN 1 MILE OF SITE **ARE NOT** SPECIAL OR IMPAIRED, EXPOSED SOILS MUST BE STABILIZED AFTER CONSTRUCTION HAS CEASED FOR 14 DAYS.

INSPECTION RECORDS

CONTRACTOR'S CERTIFIED EROSION CONTROL SUPERVISOR IS RESPONSIBLE FOR ALL INSPECTION AND MAINTENANCE RECORDS. DOCUMENTS SHALL BE KEPT WITH THE SWPPP DOCUMENT.

OPERATION AND MAINTENANCE OF PERMANENT STORM WATER CONTROLS

FOLLOWING CONSTRUCTION COMPLETION THE OWNER AND CONTRACTOR ARE RESPONSIBLE FOR NOTICE OF TERMINATION OR TRANSFER OF PERMIT.

THE OPERATION AND MAINTENANCE OF THE PERMANENT STORM WATER CONTROLS SHALL BE THE RESPONSIBILITY OF THE OWNER. THE OWNER MUST FOLLOW THE LONG TERM OPERATIONS AND MAINTENANCE PLAN AS OUTLINED AS PART OF THE SWPPP IN THE STORM WATER MANAGEMENT PLAN.

TEMPORARY SEDIMENT BASIN CALCULATIONS

CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING OF TEMPORARY SEDIMENT BASINS BASED OFF THE INFORMATION SHOWN BELOW;

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.

WHERE PERMITTEES HAVE NOT CALCULATED THE TWO (2)-YEAR, 24-HOUR STORM RUNOFF AMOUNT, THE TEMPORARY BASIN MUST PROVIDE 3,600 CUBIC FEET OF LIVE STORAGE PER ACRE OF THE BASINS' DRAINAGE AREA.

CALCULATIONS	
SOILS INFORMATION: PREDOMINATELY CLAY SOILS	
DESCRIPTION	AREA (ACRES)
TOTAL AREA	403.562 ACRES
TOTAL DISTURBED AREA	5.841 ACRES
EXISTING IMPERVIOUS AREA	7.570 ACRES
POST CONSTRUCTION IMPERVIOUS AREA	7.678 ACRES
CHANGE IN IMPERVIOUS AREA	0.108 ACRES INCREASE

RECEIVING WATERS WITHIN ONE MILE OF PROJECT			
NAME	SPECIAL OR IMPAIRED	WORK IN WATER RESTRICTIONS	TMDL
BUCKINGHAM AND COFFEE CREEK	SPECIAL TROUT	YES	NONE

SENSITIVE AREAS	
IS THE PROJECT LOCATION IN A KARST AREA:	NO
DOES THE PROJECT FLOW TO A CALCAREOUS FEN?	NO

SWPPP AMENDMENTS

THIS SWPPP IS A STARTING POINT FOR EROSION PREVENTION AND SEDIMENT CONTROL ON THE SITE. CONTRACTOR'S OPERATIONS AND PHASING OF CONSTRUCTION ACTIVITY WILL REQUIRE THE CONTRACTOR TO MODIFY AND AMEND THE SWPPP AND SUBSEQUENT BMPs USED ON SITE. IF SITE CONDITIONS PROVE IN-PLACE BMPs ARE INEFFECTIVE, THE SWPPP MUST BE AMENDED TO DOCUMENT ADDITIONAL OR MODIFIED BMPs AS NECESSARY TO CORRECT PROBLEMS IDENTIFIED. ANY AMENDMENT SHALL BE NOTED ON THE PLAN AND KEPT AS RECORD AND AVAILABLE AT THE SITE.

AMENDMENTS TO THE SWPPP MUST BE DOCUMENTED AND SENT TO THE OWNER AND ENGINEER.

AMENDMENTS TO SWPPP	
NO. AND DESCRIPTION	DATE:
1.	
2.	
3.	
4.	
5.	

SWPPP IMPLEMENTATION CONTACTS - CITY OF DULUTH				
AGENCY	PERMIT	NAME	PHONE	E-MAIL
MINNESOTA POLLUTION CONTROL AGENCY	NPDES	JIM DEXTER	(218) 529-6253	JAMES.DEXTER@STATE.MN.US
SOIL AND WATER CONSERVATION DISTRICT	N/A	RC BOHEIM	(218) 723-4629	RC.BOHEIM@SOUTHSTLOUISSWCD.ORG
MNDNR WATERS AREA HYDROLOGIST	N/A	VACANT		
CORPS OF ENGINEERS	N/A	ANDY CHAMBERS	(218) 720-5291	ANDREW.R.CHAMBERS@USACE.ARMY.MIL
STATE DUTY OFFICER	N/A	MPCA	(800) 422-0798	
CITY REVIEW	N/A	TOM JOHNSON	(218) 730-5103	TAJOHNSON@DULUTHMN.GOV

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS 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".

EROSION PREVENTION PRACTICES

PERMITTEES 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.

PERMITTEES MUST STABILIZE ALL EXPOSED SOIL AREAS, INCLUDING STOCKPILES. STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHEN CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. STABILIZATION MUST BE COMPLETED NO LATER THAN 14 CALENDAR DAYS AFTER THE CONSTRUCTION ACTIVITY HAS CEASED.

FOR PUBLIC WATERS THAT THE MNDNR HAS PROMULGATED "WORK IN WATER RESTRICTIONS" DURING SPECIFIED FISH SPAWNING TIME FRAMES, PERMITTEES MUST COMPLETE STABILIZATION OF ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THESE WATERS, WITHIN 24 HOURS DURING THE RESTRICTION PERIOD.

PERMITTEES MUST STABILIZE THE NORMAL WETTED PERIMETER OF THE LAST 200 LINEAR FEET OF TEMPORARY OR PERMANENT DRAINAGE DITCHES OR SWALES THAT DRAIN WATER FROM THE SITE WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE. PERMITTEES MUST COMPLETE STABILIZATION OF REMAINING PORTIONS OF TEMPORARY OR PERMANENT DITCHES OR SWALES WITHIN 14 CALENDAR DAYS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE AND CONSTRUCTION IN THAT PORTION OF THE DITCH TEMPORARILY OR PERMANENTLY CEASES.

TEMPORARY OR PERMANENT DITCHES OR SWALES BEING USED AS SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION DO NO NEED TO BE STABILIZED. PERMITTEES MUST STABILIZE THESE AREAS WITHIN 24 HOURS AFTER THEIR USE AS A SEDIMENT CONTAINMENT SYSTEM CEASES.

PERMITTEES MUST NOT USE MULCH, HYDROMULCH, TACKIFIER, POLYACRYLAMIDE OR SIMILAR EROSION PREVENTION PRACTICES WITHIN ANY PORTION OF THE NORMAL WETTED PERIMETER OF A TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE SECTION WITH A CONTINUOUS SLOPE OF GREATER THAN 2 PERCENT.

PERMITTEES MUST PROVIDE TEMPORARY OR PERMANENT ENERGY DISSIPATION AT ALL PIPE OUTLETS WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER OR PERMANENT STORMWATER TREATMENT SYSTEM.

PERMITTEES MUST NOT DISTURB MORE LAND (I.E., PHASING) THAN CAN BE EFFECTIVELY INSPECTED AND MAINTAINED IN ACCORDANCE WITH SECTION 11.

SEDIMENT CONTROL PRACTICES

PERMITTEES MUST ESTABLISH SEDIMENT CONTROL BMPS ON ALL DOWNGRADIENT PERIMETERS OF THE SITE AND DOWNGRADIENT AREAS OF THE SITE THAT DRAIN TO ANY SURFACE WATER, INCLUDING CURB AND GUTTER SYSTEMS. PERMITTEES MUST LOCATE SEDIMENT CONTROL PRACTICES UPGRADIENT OF ANY BUFFER ZONES. PERMITTEES MUST INSTALL SEDIMENT CONTROL PRACTICES BEFORE ANY UPGRADIENT LAND-DISTURBING ACTIVITIES BEGIN AND MUST KEEP THE SEDIMENT CONTROL PRACTICES IN PLACE UNTIL THEY ESTABLISH PERMANENT COVER.

IF DOWNGRADIENT SEDIMENT CONTROLS ARE OVERLOADED, BASED ON FREQUENT FAILURE OR EXCESSIVE MAINTENANCE REQUIREMENTS, PERMITTEES MUST INSTALL ADDITIONAL UPGRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS TO ELIMINATE THE OVERLOADING AND AMEND THE SWPPP TO IDENTIFY THESE ADDITIONAL PRACTICES AS REQUIRED IN ITEM 6.3.

TEMPORARY OR PERMANENT DRAINAGE DITCHES AND SEDIMENT BASINS DESIGNED AS PART OF A SEDIMENT CONTAINMENT SYSTEM REQUIRE SEDIMENT CONTROL PRACTICES ONLY AS APPROPRIATE FOR SITE CONDITIONS.

PERMITTEES MUST RE-INSTALL ALL SEDIMENT CONTROL PRACTICES ADJUSTED OR REMOVED TO ACCOMMODATE SHORT-TERM ACTIVITIES SUCH AS CLEARING OR GRUBBING, OR PASSAGE OF VEHICLES, IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY IS COMPLETED. PERMITTEES MUST RE-INSTALL SEDIMENT CONTROL PRACTICES BEFORE THE NEXT PRECIPITATION EVENT EVEN IF THE SHORT-TERM ACTIVITY IS NOT COMPLETE.

PERMITTEES MUST PROTECT ALL STORM DRAIN INLETS USING APPROPRIATE BMPS DURING CONSTRUCTION UNTIL THEY ESTABLISH PERMANENT COVER ON ALL AREAS WITH POTENTIAL FOR DISCHARGING TO THE INLET.

PERMITTEES MAY REMOVE INLET PROTECTION FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN IS IDENTIFIED BY THE PERMITTEES OR THE JURISDICTIONAL AUTHORITY. PERMITTEES MUST DOCUMENT THE NEED FOR REMOVAL IN THE SWPPP.

PERMITTEES MUST PROVIDE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS AT THE BASE OF STOCKPILES ON THE DOWNGRADIENT PERIMETER.

PERMITTEES MUST LOCATE STOCKPILES OUTSIDE OF NATURAL BUFFERS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER.

PERMITTEES MUST INSTALL A VEHICLE TRACKING BMP TO MINIMIZE THE TRACK OUT OF SEDIMENT FROM THE CONSTRUCTION SITE OR ONTO PAVED ROADS WITHIN THE SITE.

PERMITTEES MUST USE STREET SWEEPING IF VEHICLE TRACKING BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT TRACKING ONTO THE STREET.

PERMITTEES MUST INSTALL TEMPORARY SEDIMENT BASINS AS REQUIRED IN SECTION 14.

IN ANY AREAS OF THE SITE WHERE FINAL VEGETATIVE STABILIZATION WILL OCCUR, PERMITTEES MUST RESTRICT VEHICLE AND EQUIPMENT USE TO MINIMIZE SOIL COMPACTION.

PERMITTEES MUST PRESERVE TOPSOIL ON THE SITE, UNLESS INFEASIBLE.

PERMITTEES MUST DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS UNLESS INFEASIBLE.

PERMITTEES MUST PRESERVE A 50 FOOT NATURAL BUFFER OR, IF A BUFFER IS INFEASIBLE ON THE SITE, PROVIDE REDUNDANT PERIMETER SEDIMENT CONTROLS WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF THE PROJECT'S EARTH DISTURBANCES AND STORMWATER FLOWS TO THE SURFACE WATER. PERMITTEES MUST INSTALL PERIMETER SEDIMENT CONTROLS AT LEAST 5 FEET APART UNLESS LIMITED BY LACK OF AVAILABLE SPACE. NATURAL BUFFERS ARE NOT REQUIRED ADJACENT TO ROAD DITCHES, JUDICIAL DITCHES, COUNTY DITCHES, STORMWATER CONVEYANCE CHANNELS, STORM DRAIN INLETS, AND SEDIMENT BASINS. IF PRESERVING THE BUFFER IS INFEASIBLE, PERMITTEES MUST DOCUMENT THE REASONS IN THE SWPPP.

PERMITTEES MUST USE POLYMERS, FLOCCULANTS, OR OTHER SEDIMENTATION TREATMENT CHEMICALS IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES, DOSING SPECIFICATIONS AND SEDIMENT REMOVAL DESIGN SPECIFICATIONS PROVIDED BY THE MANUFACTURER OR SUPPLIER. THE PERMITTEES MUST USE CONVENTIONAL EROSION AND SEDIMENT CONTROLS PRIOR TO CHEMICAL ADDITION AND MUST DIRECT TREATED STORMWATER TO A SEDIMENT CONTROL SYSTEM FOR FILTRATION OR SETTLEMENT OF THE FLOC PRIOR TO DISCHARGE.

DEWATERING AND BASIN DRAINING

PERMITTEES MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATERS RELATED TO DEWATERING OR BASIN DRAINING TO A TEMPORARY OR PERMANENT SEDIMENT BASIN ON THE PROJECT SITE UNLESS INFEASIBLE. PERMITTEES MAY DEWATER TO SURFACE WATERS IF THEY VISUALLY CHECK TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED AND NUISANCE CONDITIONS WILL NOT RESULT FROM THE DISCHARGE. IF PERMITTEES CANNOT DISCHARGE THE WATER TO A SEDIMENTATION BASIN PRIOR TO ENTERING A SURFACE WATER, PERMITTEES MUST TREAT IT WITH APPROPRIATE BMPS SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE SURFACE WATER OR DOWNSTREAM PROPERTIES.

IF PERMITTEES MUST DISCHARGE WATER CONTAINING OIL OR GREASE, THEY MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE (E.G., CARTRIDGE FILTERS, ABSORBENTS PADS) PRIOR TO DISCHARGE.

PERMITTEES MUST DISCHARGE ALL WATER FROM DEWATERING OR BASIN-DRAINING ACTIVITIES IN A MANNER THAT DOES NOT CAUSE EROSION OR SCOUR IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS OR INUNDATION OF WETLANDS IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS THAT CAUSES SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.

IF PERMITTEES USE FILTERS WITH BACKWASH WATER, THEY MUST HAUL THE BACKWASH WATER AWAY FOR DISPOSAL, RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION.

INSPECTIONS AND MAINTENANCE

PERMITTEES MUST ENSURE A TRAINED PERSON, AS IDENTIFIED IN ITEM 21.2.B, WILL INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 1/2 INCH IN 24 HOURS.

PERMITTEES MUST INSPECT AND MAINTAIN ALL PERMANENT STORMWATER TREATMENT BMPS.

PERMITTEES MUST INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS AND POLLUTION PREVENTION MANAGEMENT MEASURES TO ENSURE INTEGRITY AND EFFECTIVENESS. PERMITTEES MUST REPAIR, REPLACE OR SUPPLEMENT ALL NONFUNCTIONAL BMPS WITH FUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY UNLESS ANOTHER TIME FRAME IS SPECIFIED IN ITEM 11.5 OR 11.6. PERMITTEES MAY TAKE ADDITIONAL TIME IF FIELD CONDITIONS PREVENT ACCESS TO THE AREA.

DURING EACH INSPECTION, PERMITTEES MUST INSPECT SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS BUT NOT CURB AND GUTTER SYSTEMS, FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. PERMITTEES MUST REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. PERMITTEES MUST COMPLETE REMOVAL AND STABILIZATION WITHIN SEVEN (7) CALENDAR DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. PERMITTEES MUST USE ALL REASONABLE EFFORTS TO OBTAIN ACCESS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF OBTAINING ACCESS.

PERMITTEES MUST INSPECT CONSTRUCTION SITE VEHICLE EXIT LOCATIONS, STREETS AND CURB AND GUTTER SYSTEMS WITHIN AND ADJACENT TO THE PROJECT FOR SEDIMENTATION FROM EROSION OR TRACKED SEDIMENT FROM VEHICLES. PERMITTEES MUST REMOVE SEDIMENT FROM ALL PAVED SURFACES WITHIN ONE (1) CALENDAR DAY OF DISCOVERY OR, IF APPLICABLE, WITHIN A SHORTER TIME TO AVOID A SAFETY HAZARD TO USERS OF PUBLIC STREETS.

PERMITTEES MUST REPAIR, REPLACE OR SUPPLEMENT ALL PERIMETER CONTROL DEVICES WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE DEVICE.

PERMITTEES MUST DRAIN TEMPORARY AND PERMANENT SEDIMENTATION BASINS AND REMOVE THE SEDIMENT WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME.

PERMITTEES MUST ENSURE THAT AT LEAST ONE INDIVIDUAL PRESENT ON THE SITE (OR AVAILABLE TO THE PROJECT SITE IN THREE (3) CALENDAR DAYS) IS TRAINED IN THE JOB DUTIES DESCRIBED IN ITEM 21.2.B.

PERMITTEES MAY ADJUST THE INSPECTION SCHEDULE DESCRIBED IN ITEM 11.2.

PERMITTEES MUST RECORD ALL INSPECTIONS AND MAINTENANCE ACTIVITIES WITHIN 24 HOURS OF BEING CONDUCTED AND
THESE RECORDS MUST BE RETAINED WITH THE SWPPP. THESE RECORDS MUST INCLUDE:

A. DATE AND TIME OF INSPECTIONS; AND
B. NAME OF PERSONS CONDUCTING INSPECTIONS; AND
C. ACCURATE FINDINGS OF INSPECTIONS, INCLUDING THE SPECIFIC LOCATION WHERE CORRECTIVE ACTIONS ARE NEEDED; AND
D. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES); AND
E. DATE OF ALL RAINFALL EVENTS GREATER THAN 1/2 INCHES IN 24 HOURS, AND THE AMOUNT OF RAINFALL FOR EACH EVENT. PERMITTEES MUST OBTAIN RAINFALL AMOUNTS BY EITHER A PROPERLY MAINTAINED RAIN GAUGE INSTALLED ONSITE, A WEATHER STATION THAT IS WITHIN ONE (1) MILE OF YOUR LOCATION, OR A WEATHER REPORTING SYSTEM THAT PROVIDES SITE SPECIFIC RAINFALL DATA FROM RADAR SUMMARIES; AND
F. IF PERMITTEES OBSERVE A DISCHARGE DURING THE INSPECTION, THEY MUST RECORD AND SHOULD PHOTOGRAPH AND DESCRIBE THE LOCATION OF THE DISCHARGE (I.E., COLOR, ODOR, SETTLED OR SUSPENDED SOLIDS, OIL SHEEN, AND OTHER OBVIOUS INDICATORS OF POLLUTANTS); AND
G. ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED AS REQUIRED IN SECTION 6 WITHIN SEVEN (7) CALENDAR DAYS.

POLLUTION PREVENTION MANAGEMENT MEASURES

PERMITTEES MUST PLACE BUILDING PRODUCTS AND LANDSCAPE MATERIALS THAT ARE CONSIDERED TO BE A SOURCE OF CONTAMINATION, PESTICIDES, FERTILIZERS, AND CHEMICALS UNDER COVER TO MINIMIZE CONTACT WITH STORMWATER.

PERMITTEES MUST STORE HAZARDOUS MATERIALS AND TOXIC WASTE IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.

PERMITTEES MUST PROPERLY STORE, COLLECT AND DISPOSE SOLID WASTE IN COMPLIANCE WITH MINN. R. CH. 7035.

PERMITTEES MUST POSITION PORTABLE TOILETS SO THEY ARE SECURE AND WILL NOT TIP OR BE KNOCKED OVER.

PERMITTEES MUST TAKE REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS, INCLUDING FUEL, FROM ANY AREA WHERE CHEMICALS OR FUEL WILL BE LOADED OR UNLOADED INCLUDING THE USE OF DRIP PANS OR ABSORBENTS UNLESS INFEASIBLE. PERMITTEES MUST ENSURE ADEQUATE SUPPLIES ARE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS AND THAT AN APPROPRIATE DISPOSAL METHOD IS AVAILABLE FOR RECOVERED SPILLED MATERIALS. PERMITTEES MUST REPORT AND CLEAN UP SPILLS IMMEDIATELY AS REQUIRED BY MINN. STAT. 115.061, USING DRY CLEAN UP MEASURES WHERE POSSIBLE.

PERMITTEES MUST LIMIT VEHICLE EXTERIOR WASHING AND EQUIPMENT TO A DEFINED AREA OF THE SITE. PERMITTEES MUST CONTAIN RUNOFF FROM THE WASHING AREA IN A SEDIMENT BASIN OR OTHER SIMILARLY EFFECTIVE CONTROLS AND MUST DISPOSE WASTE FROM THE WASHING ACTIVITY PROPERLY. PERMITTEES MUST PROPERLY USE AND STORE SOAPS, DETERGENTS, OR SOLVENTS.

PERMITTEES MUST PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS RELATED TO THE CONSTRUCTION ACTIVITY. PERMITTEES MUST PREVENT LIQUID AND SOLID WASHOUT WASTES FROM CONTACTING THE GROUND AND MUST DESIGN THE CONTAINMENT SO IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR AREAS. PERMITTEES MUST PROPERLY DISPOSE LIQUID AND SOLID WASTES IN COMPLIANCE WITH MPCA RULES. PERMITTEES MUST INSTALL A SIGN INDICATING THE LOCATION OF THE WASHOUT FACILITY.

PERMIT TERMINATION CONDITIONS

PERMITTEES MUST COMPLETE ALL CONSTRUCTION ACTIVITY AND MUST INSTALL PERMANENT COVER OF ALL AREAS. PERMANENT (VEGETATIVE) COVER MUST CONSIST OF A UNIFORM PERENNIAL VEGETATION WITH A DENSITY OF 70 PERCENT OF ITS EXPECTED FINAL GROWTH.

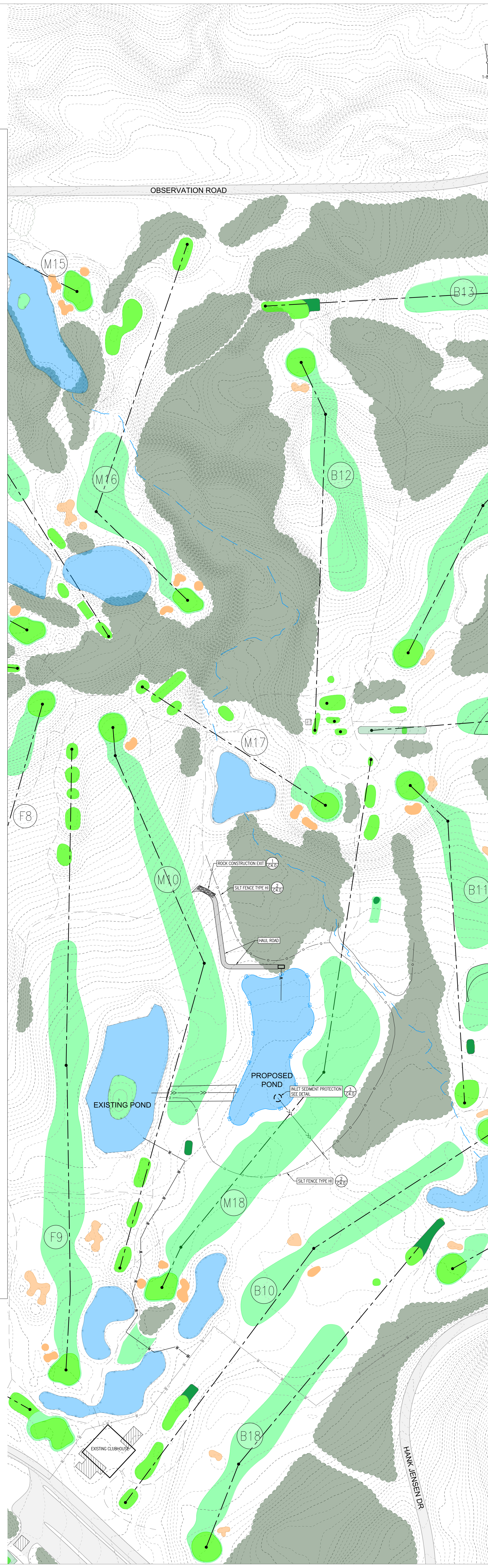
PERMITTEES MUST CLEAN THE PERMANENT STORMWATER TREATMENT SYSTEM OF ANY ACCUMULATED SEDIMENT AND MUST ENSURE THE SYSTEM MEETS ALL APPLICABLE REQUIREMENTS IN SECTION 15 THROUGH 19 AND IS OPERATING AS DESIGNED.

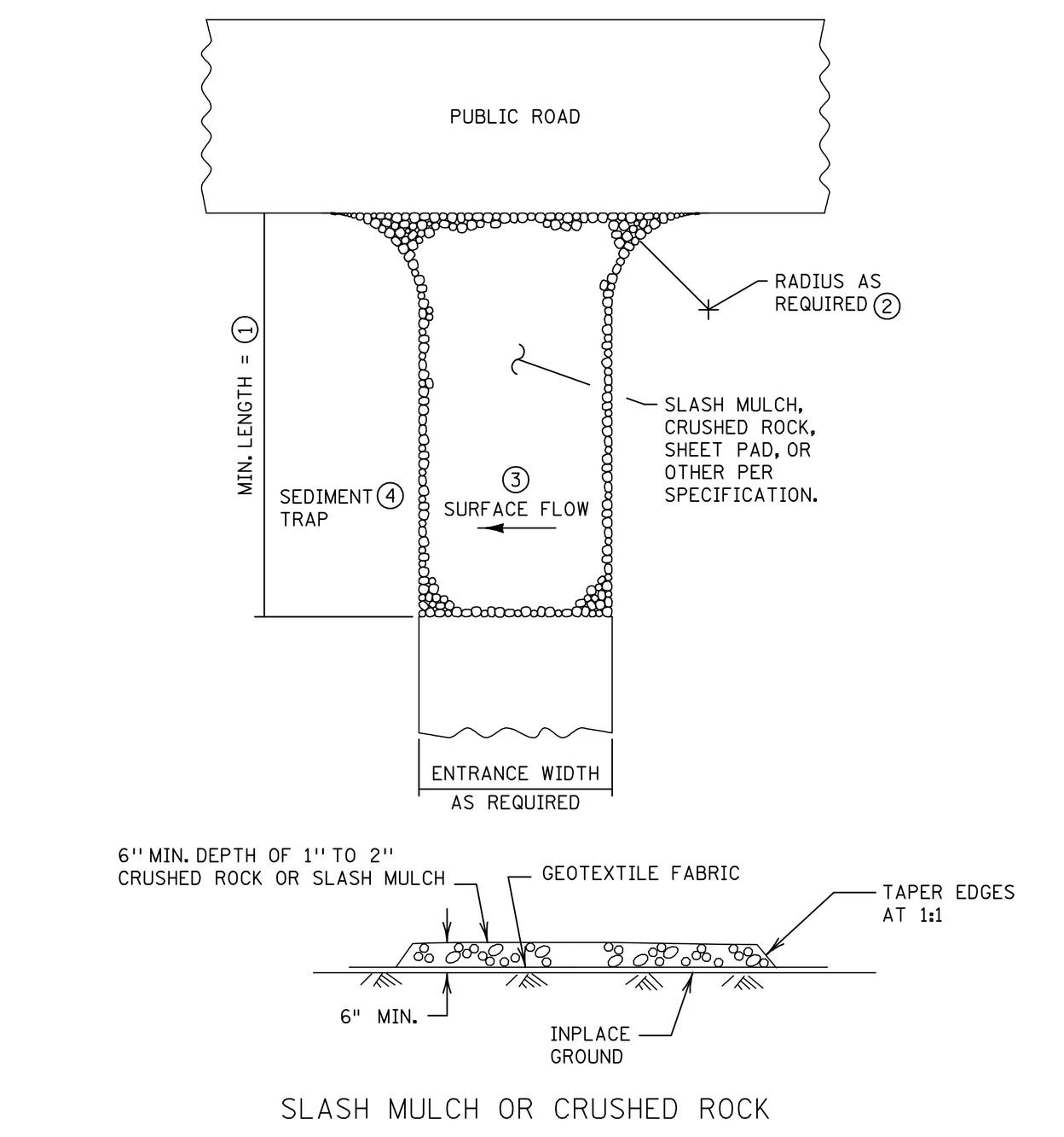
PERMITTEES MUST REMOVE ALL SEDIMENT FROM CONVEYANCE SYSTEMS

PERMITTEES MUST REMOVE ALL TEMPORARY SYNTHETIC EROSION PREVENTION AND SEDIMENT CONTROL BMPS. CONTRACTOR MAY LEAVE BMPS DESIGNED TO DECOMPOSE ON-SITE IN PLACE.

FOR RESIDENTIAL CONSTRUCTION ONLY, PERMIT COVERAGE TERMINATES ON INDIVIDUAL LOTS IF THE STRUCTURES ARE FINISHED AND TEMPORARY EROSION PREVENTION AND DOWNGRADIENT PERIMETER CONTROL IS COMPLETE, THE RESIDENCE SELLS TO THE HOMEOWNER, AND THE PERMITTEE DISTRIBUTES THE MPCA'S "HOMEOWNER FACT SHEET" TO THE HOMEOWNER.

FOR CONSTRUCTION PROJECTS ON AGRICULTURAL LAND (E.G., PIPELINES ACROSS CROPLAND), PERMITTEES MUST RETURN THE DISTURBED LAND TO ITS PRECONSTRUCTION AGRICULTURAL USE PRIOR TO SUBMITTING THE NOT.



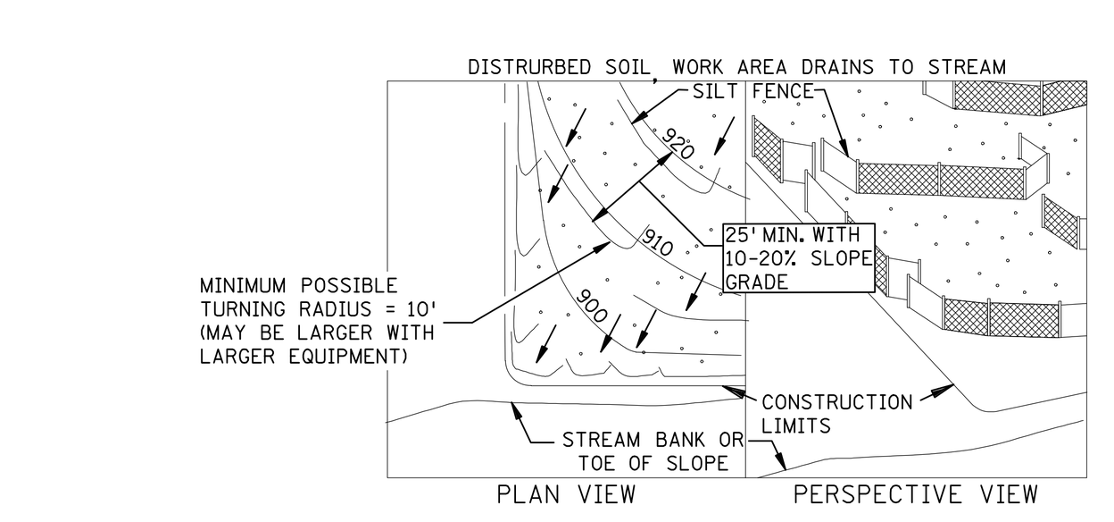


SLASH MULCH OR CRUSHED ROCK

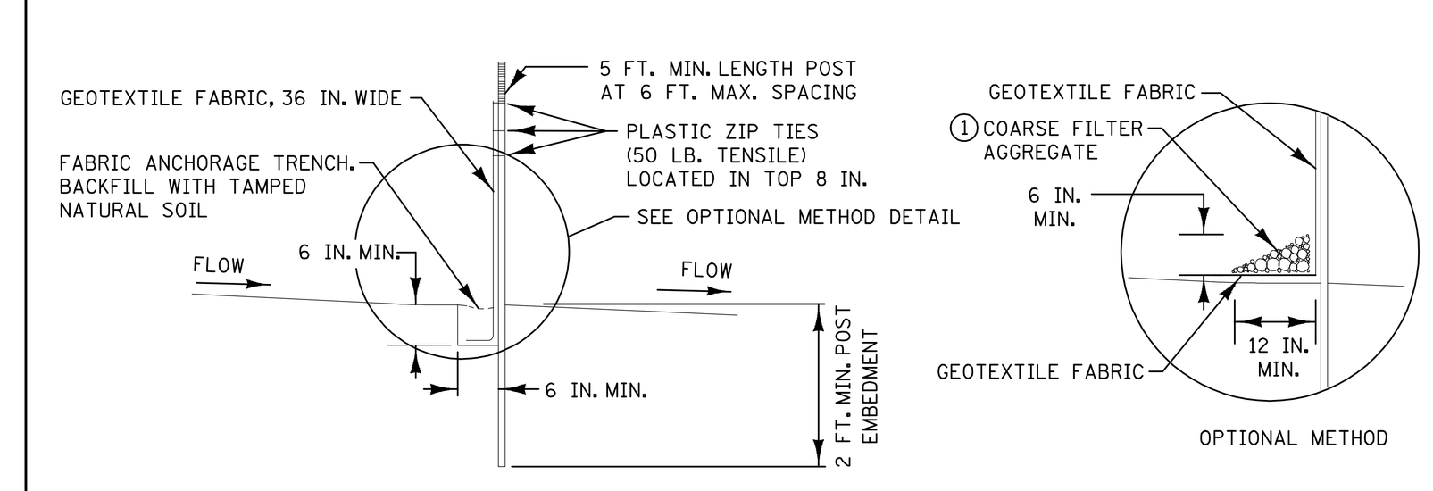
NOTES:
SEE MNDOT SPECS. 2573 & 3882.

1. MINIMUM LENGTH SHALL BE THE GREATER OF 50 FEET OR A LENGTH SUFFICIENT TO ALLOW A MINIMUM OF 5 TIRE ROTATIONS ON THE PROVIDED PAD. MINIMUM LENGTH SHALL BE CALCULATED USING THE LARGEST TIRE WHICH WILL BE USED IN TYPICAL OPERATIONS.
2. PROVIDE RADIUS OR WIDEN PAD SUFFICIENTLY TO PREVENT VEHICLE TIRES FROM TRACKING OFF OF PAD WHEN LEAVING SITE.
3. IF RUNOFF FROM DISTURBED AREAS FLOWS TOWARD CONSTRUCTION EXITS, PREVENT RUNOFF FROM DRAINING DIRECTLY TO PUBLIC ROAD OVER CONSTRUCTION EXIT BY CROWNING THE EXIT OR SLOPING TO ONE SIDE. IF SURFACE GRADING IS INSUFFICIENT, PROVIDE OTHER MEANS OF INTERCEPTING RUNOFF.
4. IF RUNOFF FROM CONSTRUCTION EXITS WILL DRAIN OFF OF PROJECT SITE, PROVIDE SEDIMENT TRAP WITH STABILIZED OVERFLOW.
5. IF A TIRE WASH OFF IS REQUIRED THE CONSTRUCTION EXITS SHALL BE GRADED TO DRAIN THE WASH WATER TO A SEDIMENT TRAP.
6. MAINTENANCE OF CONSTRUCTION EXITS SHALL OCCUR WHEN THE EFFECTIVENESS OF SEDIMENT REMOVAL HAS BEEN REDUCED. MAINTENANCE SHALL CONSIST OF REMOVING SEDIMENT AND CLEANING THE MATERIALS OR PLACING ADDITIONAL MATERIAL (SLASH MULCH OR CRUSHED ROCK) OVER SEDIMENT FILLED MATERIAL TO RESTORE EFFECTIVENESS.

1 C4.0 TEMPORARY SEDIMENT CONTROL
CONSTRUCTION EXIT ⑤⑥ NTS.



J-HOOK INSTALLATION

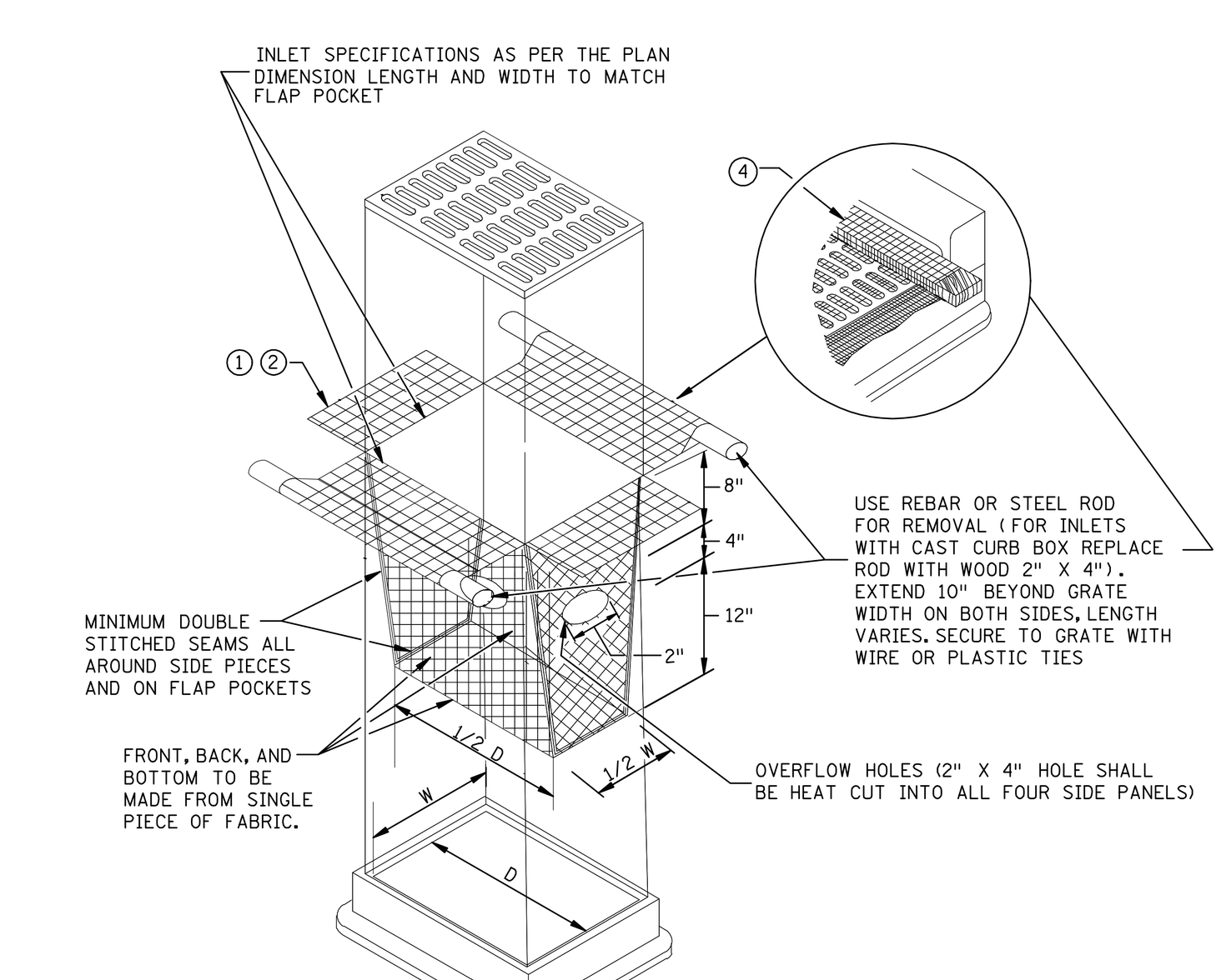


NOTES:
SEE MNDOT SPECS. 2573, 3149 & 3886.

1. COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.
2. TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

SILT FENCE TYPE HI ②
(HAND INSTALLED)

2 C4.0 NTS.



FILTER BAG INSERT ③
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)

NOTES:
SEE MNDOT SPECS. 2573, 3137, & 3886.

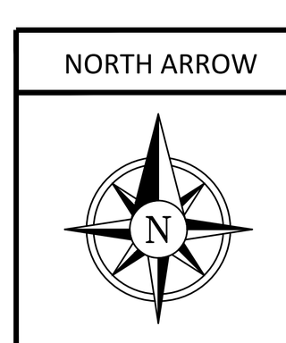
DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.

1. ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.
2. FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
3. INSTALLATION NOTES:
DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
4. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

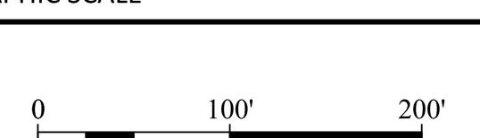
3 C4.0 TEMPORARY SEDIMENT CONTROL
STORM DRAIN INLET PROTECTION NTS.

EXISTING GROUND SURFACE MODEL FROM GIS LIDAR SOURCE

NORTH ARROW



GRAPHIC SCALE



MAP COORDINATE SYSTEM : ST. LOUIS COUNTY TRANSVERSE MERCATOR SYSTEM OF 1996

I hereby certify that this plan, specification, or report 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.
10/19/22
Engineer: David G. Bolf Lic. No: 40926

Northland Consulting Engineers L.L.P.
Structural, Civil and Forensic Engineering Services
Voice: (218)727-5995
Fax: (218)727-7779
www.nce-engineers.com

SCALE: 1"=100'-0"

DATE: 11/10/22

SHEET NUMBER: C4.0

STATUS: FINAL SIGNED

REVISIONS:		
NO.:	DATE:	DESCRIPTION:
1	11-8-22	ADDENDUM #1

SHEET TITLE: SWPPP LAYOUT AND NOTES

PROJECT NAME:
ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

CLIENT NAME:
ENGER GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com

20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com

112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com

PROJECT NOTES

GENERAL NOTES:

1. GRADING PLAN REFLECTS GENERAL GRADING OF THE GOLF COURSE TEES AND FAIRWAYS. LANDSCAPE ARCHITECT AND LEAD SHAPERS TO DETERMINE DETAILED SHAPING IN THE FIELD. LANDSCAPE ARCHITECT TO SIGN OFF ON DETAILED SHAPING.
2. LANDSCAPE ARCHITECT WILL HAVE AN ACTIVE ROLE IN THE FIELD THROUGHOUT THE CONSTRUCTION PROCESS. CONTRACTOR TO CLOSELY COORDINATE GOLF COURSE SHAPING WITH LANDSCAPE ARCHITECT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY MAINTAINING OF ALL GRASSED AREAS FOR A PERIOD OF THIRTY (30) DAYS SUBSEQUENT TO THE COMPLETION OF THE GRASSING OPERATIONS. MAINTENANCE DURING THIS TIME PERIOD SHALL CONSIST OF THE SUPERVISION OF THE WATERING UTILIZING THE IRRIGATION SYSTEM AND THE RESTORATION OF ANY AREAS, WHICH ERODE OR ARE OTHERWISE ALTERED BY NATURAL MEANS.
4. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR MOWING AS PART OF THIS CONTRACT. SHOULD THE GRASS REACH A MOWING HEIGHT WITHIN THE THIRTY-DAY TEMPORARY MAINTENANCE PERIOD, THE MOWING WILL BE PERFORMED BY THE OWNER. HOWEVER, AS PART OF THE CONTRACTOR'S THIRTY-DAY RESPONSIBILITY TO MONITOR THE IRRIGATION OF THE SEEDED AREA, HE SHALL NOTIFY THE OWNER OF ANY PROBLEMS WITH THE EFFICIENCY OF FUNCTIONING OF THE IRRIGATION SYSTEM SO THAT THE INSTALLING COMPANY CAN BE SUMMONED.
5. ALL CONTRACTORS ARE PROHIBITED FROM DRIVING OVER GREENS OR FAIRWAYS UNLESS ON A DESIGNATED HAUL ROUTE. THE REPAIR OF ANY ROUGH AREAS DAMAGED FROM BUNKER, FAIRWAY OR TEE REPAIR/ CONSTRUCTION IS TO BE INCIDENTAL TO THAT BID ITEM AND SHALL BE REPAIRED AS SHOWN IN DETAIL 2/ SHEET L-2.0 OF THE PLAN SET.
6. EXISTING PLAN FROM ST. LOUIS COUNTY LIDAR VIA CITY OF DULUTH. VERIFY EXISTING CONDITIONS AND REPORT ANY DISCREPANCIES TO THE PROJECT MANAGER IMMEDIATELY.
7. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE WHICH MIGHT BE CAUSED BY THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES. CALL GOPHER STATE ONE AT 811 FOR UTILITY LOCATE MINIMUM OF 72 HOURS PRIOR TO ANY SITE WORK.
8. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND ON-GOING MAINTENANCE OF STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP) AND COMPLIANCE WITH ALL STATE OF MINNESOTA AND CITY OF DULUTH EROSION AND SEDIMENT CONTROL REGULATIONS. THIS CONTRACTOR SHALL CONDUCT THEIR WORK IN A MANNER TO LIMIT EROSION AND TO PRESERVE THE EROSION AND SEDIMENT CONTROL BMP MEASURES. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-ESTABLISHMENT AND RESTORATION THAT MAY BE NECESSARY DUE TO THEIR FAILURE TO CONDUCT THEIR WORK IN A CAREFUL RESPONSIBLE MANNER.
9. PERIMETER SEDIMENT BMP'S SHALL BE IMPLEMENTED PRIOR TO THE START OF CONSTRUCTION ACTIVITY. STORM INLET PROTECTION SHALL BE MAINTAINED ON ALL STORM DRAINAGE STRUCTURES.
10. ALL EROSION AND SEDIMENT CONTROL BMP'S SHALL REMAIN IN PLACE AND BE MAINTAINED AS OPERATIONAL UNTIL PERMANENT VEGETATIVE COVER IS ESTABLISHED AND ALL PAVING IS COMPLETE. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL EROSION CONTROL PROTECTION ITEMS FROM THE SITE AT THE COMPLETION OF THE PROJECT.
11. EROSION CONTROL NETTING SHALL BE USED ON ALL SLOPES GREATER THAN 3:1.
12. ALL AREAS MUST PROPERLY DRAIN; PUDDLING WILL NOT BE ACCEPTED.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING ADEQUATE FENCING AROUND CONSTRUCTION AREA TO LIMIT ACCESS TO CONSTRUCTION SITE BY OTHERS.
14. SIGN CONSTRUCTION AND BUILDING ENTRY DURING CONSTRUCTION.
15. THE CONTRACTOR SHALL MAINTAIN A CLEAN SITE AT ALL TIMES AND SHALL BE RESPONSIBLE FOR REMOVING TRASH AND CONSTRUCTION DEBRIS FROM THE SITE ON A DAILY BASIS. THE TRACKING OF SOIL ONTO ADJOINING ROADWAYS, WALKS AND PARKING AREAS SHALL NOT BE ALLOWED.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PAVEMENTS AND SURFACES TO REMAIN AND SHALL BE RESPONSIBLE FOR REPAIRING/REPLACING ANY DAMAGED SURFACES.
17. IDENTIFY STAGING AREA FOR APPROVAL BY OWNERS REPRESENTATIVE.
18. CONTRACTOR TO NOTIFY OWNER AND/OR CITY REPRESENTATIVE 24 HOURS PRIOR TO REMOVAL OF ANY TREES IN ORDER TO DETERMINE FENCING REQUIREMENTS/ TREE PROTECTION.
19. PROTECT EXISTING WALLS, POSTS, FOOTINGS, BUILDINGS, WALLS, ETC. THROUGHOUT CONSTRUCTION.
20. ALL HORIZONTAL AND VERTICAL CONTROL POINTS SHALL BE ESTABLISHED AND MAINTAINED BY THE GENERAL CONTRACTOR.
21. ALL GRADES AND ELEVATIONS SHOWN ARE FINISHED GRADES AND ELEVATIONS.
22. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION WITH TOPSOIL AND PLANTING BEDS/SOD/SEED/MULCH AS SPECIFIED AND INDICATED ON PLANS.
23. ALL GRADES SHALL SLOPE AWAY FROM BUILDINGS AT A 2% MINIMUM SLOPE.
24. ALL SIDEWALKS, CURB RAMPS, AND OTHER SITE ELEMENTS MUST CONFORM TO THE STATE OF MINNESOTA ACCESS CODES AND STANDARDS, AND WITH FEDERAL ADA GUIDELINES.
25. COORDINATE ALL WORK BETWEEN TRADES. NOTIFY THE PROJECT MANAGER IMMEDIATELY OF ANY CONFLICT THAT AFFECTS THIS SITE WORK.
26. ALL CONCRETE SHALL BE A MINIMUM 4000 PSI WITH FIBERMESH REINFORCEMENT.
27. CONTRACTOR TO OBTAIN CITY PERMITS AND APPROVALS PRIOR TO BEGINNING WORK.
28. CONTRACTOR SHALL COORDINATE CONSTRUCTION ENTRANCE AND STAGING AREA WITH THE CITY OF DULUTH PRIOR TO COMMENCING CONSTRUCTION.
29. NOTIFY LANDSCAPE ARCHITECT 72 HRS. PRIOR TO START OF CONSTRUCTION TO SCHEDULE A PRE-CONSTRUCTION MEETING.

TOPSOIL:

1. EXCESS TOPSOIL SHALL BE USED THROUGHOUT THE PROJECT AND IN LOCATIONS DESIGNATED BY THE LANDSCAPE ARCHITECT.
2. ALL AREAS RECEIVING TOPSOIL SHALL BE LEVELED AND SMOOTHED TO CONFORM TO THE SUB-GRADE CONTOURS PREVIOUSLY ESTABLISHED. FINAL CONTOURING SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT AND PROVISIONS AS SET FORTH IN ASSOCIATED DIVISION FOR EARTHWORK FAIRWAY, TEE, AND BUNKER CONSTRUCTION.
3. AFTER TOPSOIL IS SPREAD, ALL STONES, ROOTS, AND DEBRIS GREATER THAN ONE (1") INCH DIAMETER SHALL BE REMOVED FROM THE SITE BY STONE PICKERS, RAKES OR OTHER DEVICES. CAREFUL ATTENTION SHALL BE PAID TO ELIMINATE ALL WATER HOLDING POCKETS OR CREATING NEW POCKETS.
4. THE FAIRWAYS AND ROUGHS SHALL BE LIGHTLY HARROWED AND FLOATED TO A SMOOTH FINISHED GRADE, WITH NO WATER HOLDING POCKETS SO THAT THE FINAL RESULT PRIOR TO PLANTING SHALL BE A SMOOTH, FIRM, MOIST GRANULAR TOPSOIL BASE.
5. ALL FAIRWAY AND ROUGH AREAS SHALL BE WORKED WITH SMALL EQUIPMENT AS NEEDED TO PULVERIZE ALL CLODS AND TO CORRECT ALL SURFACE DEFICIENCIES. FINE GRADING SHALL CONTINUE UNTIL A SUITABLE SEEDBED IS PROVIDED THROUGHOUT THE SEEDING AREA. IN ALL AREAS, SURFACES SHALL HAVE A SMOOTH CONTINUAL GRADE AND SHALL BE LEFT IN AN EVEN, PROPERLY COMPACTED CONDITION, WHICH WILL NOT PROVIDE DIPS AND POCKETS WHERE WATER MAY STAND.
6. TEES SHALL RECEIVE A FINAL DRAGGING AND RAKING BY SMALL MACHINES OR BY HAND TO CORRECT ANY SURFACE IRREGULARITIES CAUSED BY EQUIPMENT, EROSION, OR ANY OTHER REASON. ALL FINISH GRADES SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT BEFORE ANY SEEDING TAKES PLACE. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE IRRIGATION INSTALLATION.

SOIL TESTING:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING SOIL TESTS TO DETERMINE THE SOIL PH AND LEVELS OF PHOSPHOROUS (P) AND POTASH (K). THE ANALYSIS OF SOIL SAMPLES SHALL BE CONDUCTED BY AN INDEPENDENT, PROFESSIONAL SOIL-TESTING LABORATORY.
2. THE TESTING LAB SHALL ISSUE RECOMMENDATIONS FOR SOIL PH ADJUSTMENT (IF NEEDED) AS WELL AS FERTILIZER ANALYSIS FOR NITROGEN, PHOSPHOROUS, AND POTASH (N-P-K) WHICH WILL BE THE BASIS FOR SOIL PH AMENDMENT AND FERTILIZER ANALYSIS.
3. THE SOIL SAMPLES MAY BE TAKEN BY THE CONTRACTOR IN ACCORDANCE WITH THE TESTING LAB'S SPECIFICATIONS OR BY THE TESTING COMPANY ITSELF. TESTS REQUIRED WHICH WILL INCLUDE ONE (1) PER NEW TEE AREA AND TWO (2) PER RESHAPED FAIRWAY AND ONE (1) PER RE-GRASSED FAIRWAY. EACH SOIL SAMPLE SHALL BE NUMBERED (DOCUMENTED) IN SUCH A WAY THAT ITS APPROXIMATE LOCATION WILL BE KNOWN.
4. A COPY OF THE TEST RESULTS AND RECOMMENDATIONS SHALL BE PROVIDED BY THE CONTRACTOR TO THE LANDSCAPE ARCHITECT.

SEEDING:

1. SEEDING SHALL BE PERFORMED BY MECHANICAL MEANS. APPLICATION BY WAY OF HYDRO-SEEDING IS NOT ACCEPTABLE. HALF OF THE SEED/SPRIG SHALL BE APPLIED WHILE MOVING IN ONE DIRECTION AND REMAINDER WHILE MOVING AT RIGHT ANGLES TO THE FIRST SOWING.
2. THE SEED/SPRIG SHALL BE INCORPORATED INTO THE UPPER INCH OF THE SOIL MECHANICALLY OR BY HAND. IF THE SEEDING EQUIPMENT DOES NOT COMPACT, A SEPARATE ROLLING WITH A 500 LB. ROLLER SHALL BE REQUIRED TO FIRM UP THE SEEDBED.
3. ALL SEEDING OPERATIONS SHALL BE PERFORMED BY PERSONNEL EXPERIENCED IN GOLF COURSE SEEDING.
4. ACCEPTANCE OF SEEDED AREAS WILL BE DETERMINED BY THE INSPECTING LANDSCAPE ARCHITECT AND/OR OWNER. PRELIMINARY ACCEPTANCE (FOR 90% PAYMENT) SHALL BE GRANTED UPON SATISFACTORY COMPLETION OF THE REQUIRED SEEDING OPERATIONS, EXCLUSIVE OF THE MAINTENANCE PERIOD.
5. FINAL ACCEPTANCE (FOR THE REMAINING 10% WITHHOLDING) SHALL BE GRANTED UPON SATISFACTORY CONFORMANCE OF THE AREA WITH THE FOLLOWING:
   A. GRASS SHALL DISPLAY A REASONABLY UNIFORM DISTRIBUTION OF GRASS PLANTS.
   B. GRASS SHALL DISPLAY VIGOROUS GROWTH AND BE GREEN AND HEALTHY IN APPEARANCE.
6. THE INSPECTION FOR THE FINAL ACCEPTANCE SHALL TAKE PLACE NO SOONER THAN AFTER THE THIRD MOWING.
7. AREAS WHICH DO NOT MEET THE CRITERIA OF FINAL ACCEPTANCE, SHALL BE RE-SEEDED OR OVER-SEEDED. BARE SPOTS GREATER THAN ONE (1') SQUARE FOOT WILL NOT BE ACCEPTABLE. THE OWNER'S GROUNDS SUPERINTENDENT SHALL INSPECT ALL SEEDED AREAS AND SHALL DETERMINE BOTH THE AREAS REQUIRING REWORKING AND THE METHOD (RESEEDING OR OVER-SEEDING) TO BE USED. GENERALLY, TOTALLY BARE AREAS WILL BE RE-SEEDED AND THIN AREAS WILL BE OVER-SEEDED WITH A SLIT SEEDER. ALL AREAS, WHICH HAVE WASHED OR OTHERWISE ERODED SHALL BE RETURNED TO THE PROPER GRADE AND RE-SEEDED.

EROSION CONTROL BLANKETS:

1. A MINIMUM OF SIX (6') FEET OF A EROSION CONTROL BLANKET SHALL BE LAID AROUND THE TEES OR TO THE BASE OF THE SIDE-SLOPE, WHICHEVER IS GREATER, IF STEEPER THAN 4:1.
2. A MINIMUM OF SIX (6') FEET OF AN EROSION CONTROL BLANKET SHALL BE LAID AROUND THE PERIMETER OF ALL PONDS OR TO THE TOP OF THE SIDE-SLOPE, WHICHEVER IS GREATER. THE SAME SHALL BE LAID IN THE BASE OF ALL OVERFLOW / DIVERSION SWALES IN ACCORDANCE WITH THE DRAWINGS.

ENGER PARK GOLF COURSE

SAS LANDSCAPE ARCHITECTURE + ASSOCIATES WWW.SASLANDARCH.COM

SCALE: NO SCALE DATE: 7/15/2022 SHEET NUMBER: N-1.0	STATUS: FOR BID, NOT FOR CONSTRUCTION	REVISIONS: NO.: / DATE: / DESCRIPTION:	SHEET TITLE: PROJECT NOTES	PROJECT NAME: ENGER PARK GOLF COURSE, 1801 W SKYLINE PKWY, DULUTH, MN 55806	CLIENT NAME: ENGER PARK GOLF COURSE, 1801 W SKYLINE PKWY, DULUTH, MN 55806	Irrigation Consulting, Inc. *Providing innovative design solutions for irrigation worldwide.* www.irrigationconsulting.com 20 Merrit Parkway, 2nd Floor, Nashua, NH 03062, (978) 433-8972 Fax (978)-433-2788, e-mail: bvinches@irrigationconsulting.com 112 S. Old Statesville Road, Suite 109, Huntersville, NC 28078, (704) 843-3688 Fax (704) 843-3511, e-mail: sgardner@irrigationconsulting.com

LEGEND

NEW IRRIGATION POND

AREAS OF FILL (IF REQUIRED TO SPOIL EXCESS CUT)

RE-GRASSED MINOR GRADING

FILL SAND TRAP AREA ± 420 S.F.

FILL SAND TRAP AREA ± 950 S.F.

TOP DRESS & INCIDENTAL TO

NEW ±112

REBUILD SAND TRAP(2) AREA ± 2,230 S.F.

FILL SAND TRAP AREA ± 500 S.F.

FILL SAND TRAP AREA ± 1,200 S.F.

APPROXIMATE HAUL ROUTE; SEE CIVIL PLANS FOR DETAILS

POND ELEV. 1077.0 1.26 ACRES

DISTURBED AREA ±3,000 S.F.

FAIR RE-SEED +/- 1.33 AC

REBUILD SAND TRAP AREA ± 925 S.F.

FILL SAND TRAP AREA ± 500 S.F.

NEW TEE BOX PER PLAN ±1,020 S.F.

DISTURBED AREA ±3,500 S.F.

TOP DRESS AND SEED ± 3,120 SF OF OLD TEE BOX

REBUILD SAND TRAP AREA ± 600 S.F.

REBUILD SAND TRAP AREA ± 500 S.F.

TEE MAT; CONTRACTOR TO SUBMIT SAMPLE FOR APPROVAL

RE-GRADE AND RE-SEED DRIVING RANGE ±23,550 S.F.

M10 M11 M12 M13 M14 M15 M16 M17 M18

F1 F2 F3 F4 F5 F6 F7 F8 F9

B10 B18

WEST HALF

NORTH ARROW | GRAPHIC SCALE 0 100' 200'

ENGER PARK GOLF COURSE

SAS LANDSCAPE ARCHITECTURE + ASSOCIATES WWW.SASLANDARCH.COM

SCALE: 1" = 100'-0"

DATE: 10/19/2022

SHEET NUMBER: L-1.0

STATUS: FOR BID NOT FOR CONSTRUCTION

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	11/8/2022	ADDENDUM #1
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE: COURSE REPAIRS / WEST HALF / GENERAL IMPROVEMENTS

PROJECT NAME: ENGER PARK GOLF COURSE 1801 W SKYLINE PKWY DULUTH, MN 55806

CLIENT NAME: ENGER PARK GOLF COURSE 1801 W SKYLINE PKWY DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com

20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com

112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com

FILL SAND TRAP AREA ± 420 S.F.

FILL SAND TRAP AREA ± 950 S.F.

TOP DRESS & SEED ± 4300 S.F. OF OLD TEE BOX; INCIDENTAL TO CONSTRUCTION OF NEW TEE BOX

NEW TEE BOX PER PLAN ±1120 S.F.

DISTURBED AREA +/- 5,800 S.F.

REBUILD SAND TRAP AREA ± 550 S.F.

HOLE 13 CART PATH +/- 205 L.F.; INCIDENTAL TO TEE BOX CONSTRUCTION

REBUILD SAND TRAP AREA ± 820 S.F.

REBUILD SAND TRAP(2) AREA ± 2,230 S.F.

FILL SAND TRAP AREA ± 500 S.F.

FAIRWAY RE-SEEDING +/- 1.78 ACRES

REBUILD SAND TRAP AREA ± 750S.F.

FAIRWAY RE-SEEDING +/- 1.47 ACRES

REBUILD SAND TRAP AREA ± 700 S.F.

FAIRWAY RE-SEEDING +/- 1.22 ACRES

REBUILD SAND TRAP AREA ± 450 S.F.

DISTURBED AREA ±4,500 S.F.

FILL SAND TRAP AREA ± 990 S.F.

DISTURBED AREA ±7,300 S.F.

APPROXIMATE HAUL ROUTE; SEE CIVIL PLANS FOR DETAILS

FAIRWAY RE-SEEDING +/- 1.21 ACRES

POND ELEV. 1077.0 1.26 ACRES

DISTURBED AREA ±3,700 S.F.

REBUILD SAND TRAP AREA ± 480 S.F.

REBUILD SAND TRAP AREA ± 950 S.F.

FAIRWAY RE-SEEDING +/- 2.72 ACRES

DISTURBED AREA ±4,500 S.F.

DISTURBED AREA ±3,000 S.F.

FAIRWAY RE-SEEDING +/- 1.33 ACRES

REBUILD SAND TRAP AREA ± 925 S.F.

DISTURBED AREA ±12,500 S.F.

REBUILD SAND TRAP AREA ± 650 S.F.

FAIRWAY RE-SEEDING +/- 0.10 ACRES

FILL SAND TRAP AREA ± 620 S.F.

NEW TEE BOX PER PLAN ±2,850 S.F.

TOP DRESS AND SEED ± 1,800 S.F. OF OLD TEE BOX

FILL SAND TRAP AREA ± 500 S.F.

NEW TEE BOX PER PLAN ±1,020 S.F.

DISTURBED AREA ±3,500 S.F.

FAIRWAY RE-SEEDING +/- 1.13 ACRES

TOP DRESS AND SEED ± 3,120 SF OF OLD TEE BOX

REBUILD SAND TRAP AREA ± 600 S.F.

TEE MAT; CONTRACTOR TO SUBMIT SAMPLE FOR APPROVAL

REBUILD SAND TRAP AREA ± 500 S.F.

RE-GRADE AND RE-SEED DRIVING RANGE ±23,550 S.F.

LEGEND

- NEW IRRIGATION POND
- AREAS OF FILL (IF REQUIRED TO SPOIL EXCESS CUT)
- RE-GRASSED MINOR GRADING

EAST HALF

NORTH ARROW | GRAPHIC SCALE

0 100' 200'

ENGER PARK GOLF COURSE

SAS LANDSCAPE ARCHITECTURE + ASSOCIATES WWW.SASLANDARCH.COM

SCALE: 1" = 100'-0"

DATE: 10/19/2022

SHEET NUMBER: L-1.1

STATUS: FOR BID NOT FOR CONSTRUCTION

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	11/8/2022	ADDENDUM #1
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE: COURSE REPAIRS / EAST HALF / GENERAL IMPROVEMENTS

PROJECT NAME: ENGER PARK GOLF COURSE, 1801 W SKYLINE PKWY, DULUTH, MN 55806

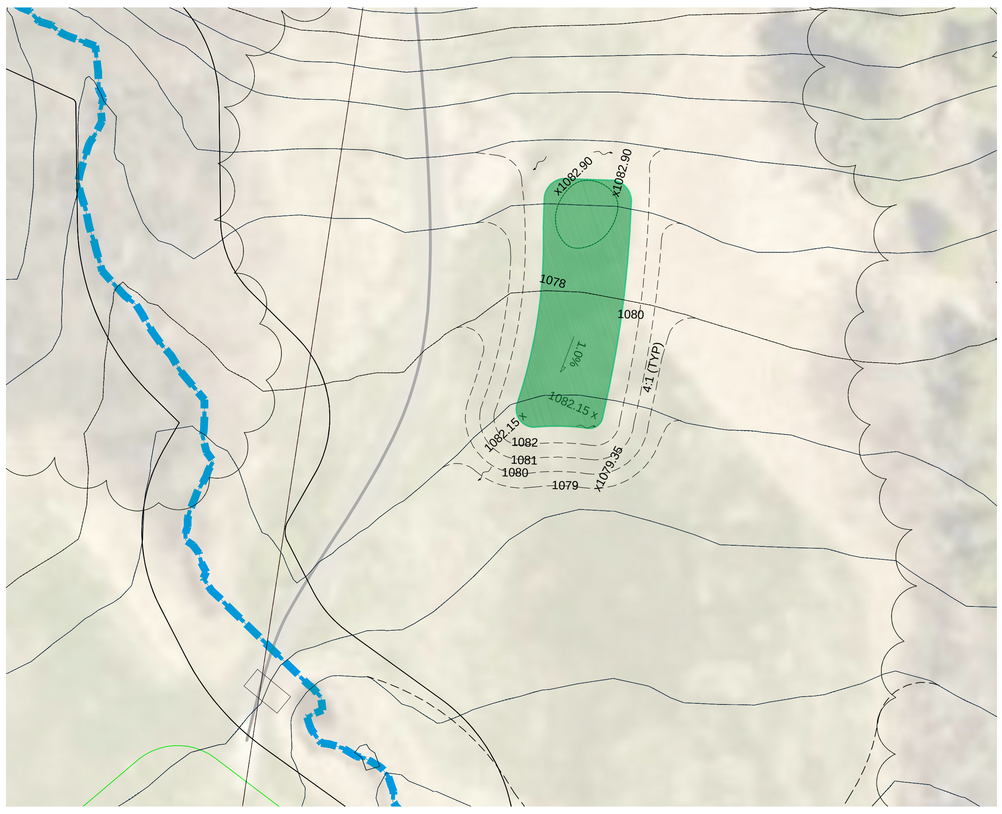
CLIENT NAME: ENGER PARK GOLF COURSE, 1801 W SKYLINE PKWY, DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com

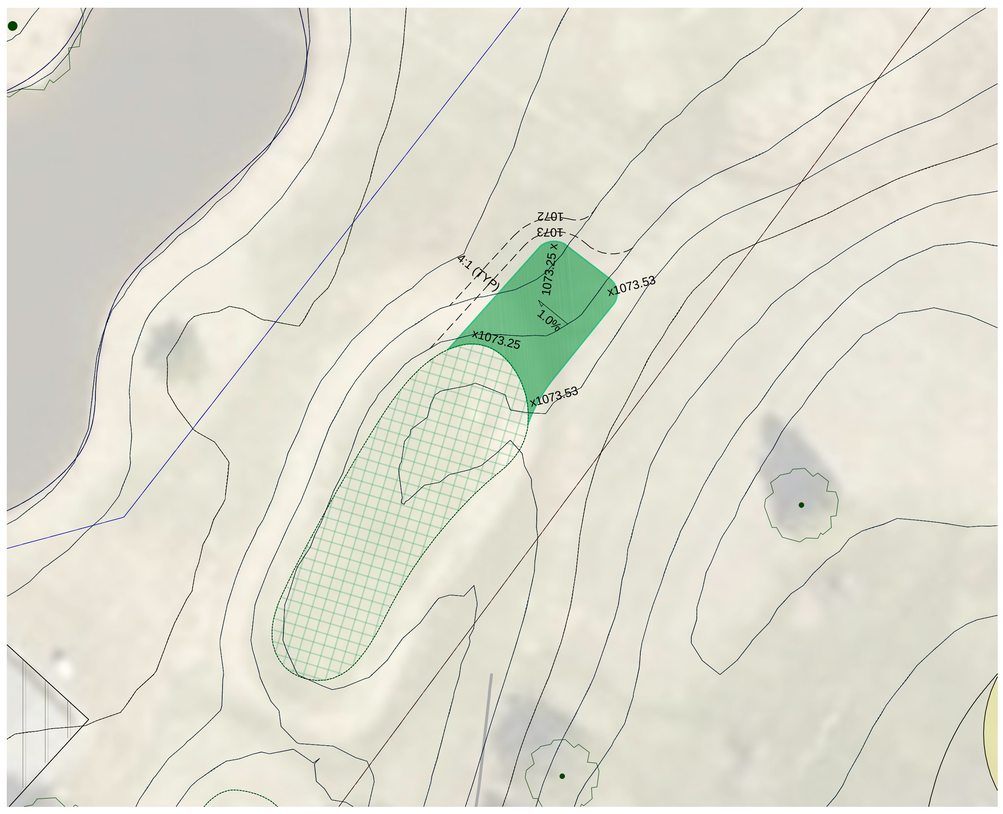
20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com

112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com

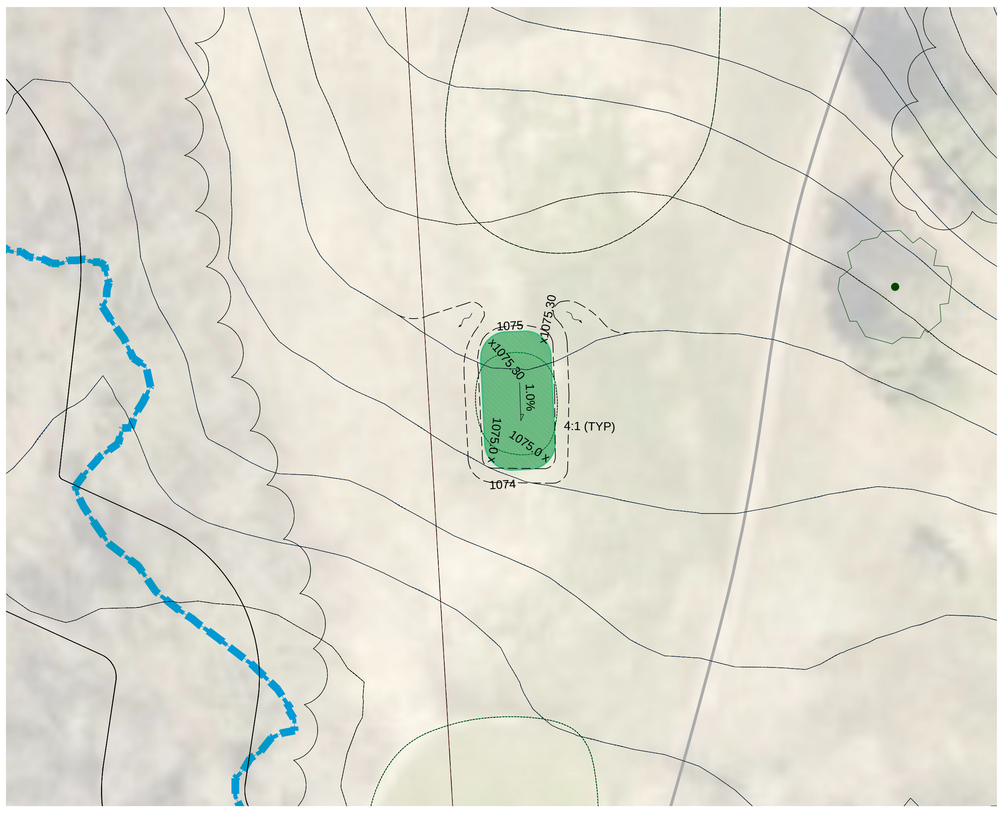
MIDDLE NINE HOLE 10
(ADD ALT #5)



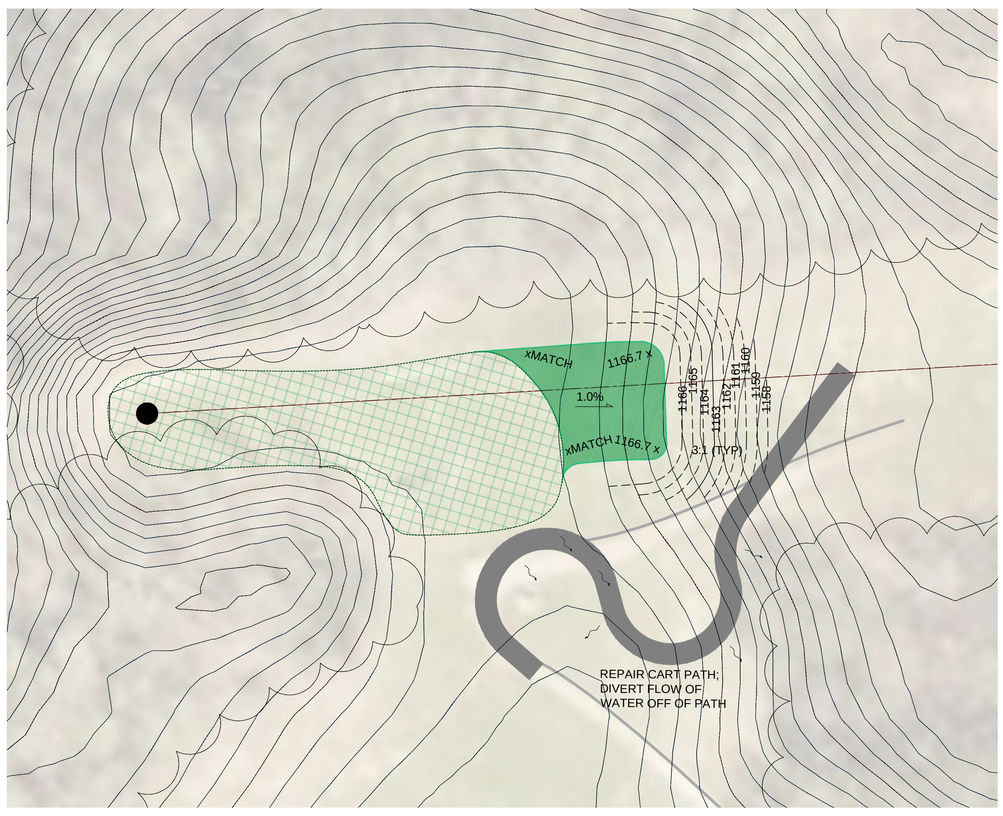
MIDDLE NINE HOLE 18
(ADD ALT #2)



BACK NINE HOLE 10 (ADD ALT #6)
*RE-CONSTRUCTION & SEEDING OF EXISTING TEE BOX AREA IS INCIDENTAL TO CONSTRUCTION OF NEW TEE BOX FOR THIS HOLE



BACK NINE HOLE 11
(ADD ALT #7)



BACK NINE HOLE 13 (ADD ALT #8)
*RECONSTRUCTION OF CART PATH AND RE-CONSTRUCTION & SEEDING OF EXISTING TEE BOX AREA IS INCIDENTAL TO CONSTRUCTION OF NEW TEE BOX FOR THIS HOLE

NORTH ARROW	GRAPHIC SCALE
N	0 20' 40'

ENGER PARK GOLF COURSE

SAS LANDSCAPE ARCHITECTURE + ASSOCIATES
WWW.SASLANDARCH.COM

SCALE: 1" = 20'-0"

DATE: 10/19/2022

SHEET NUMBER: L-1.2

STATUS: FOR BID
NOT FOR CONSTRUCTION

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	11/8/2022	ADDENDUM #1
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE:
NEW TEES
MIDDLE NINE: HOLES 10 & 18
BACK NINE: HOLES 10, 11 & 13

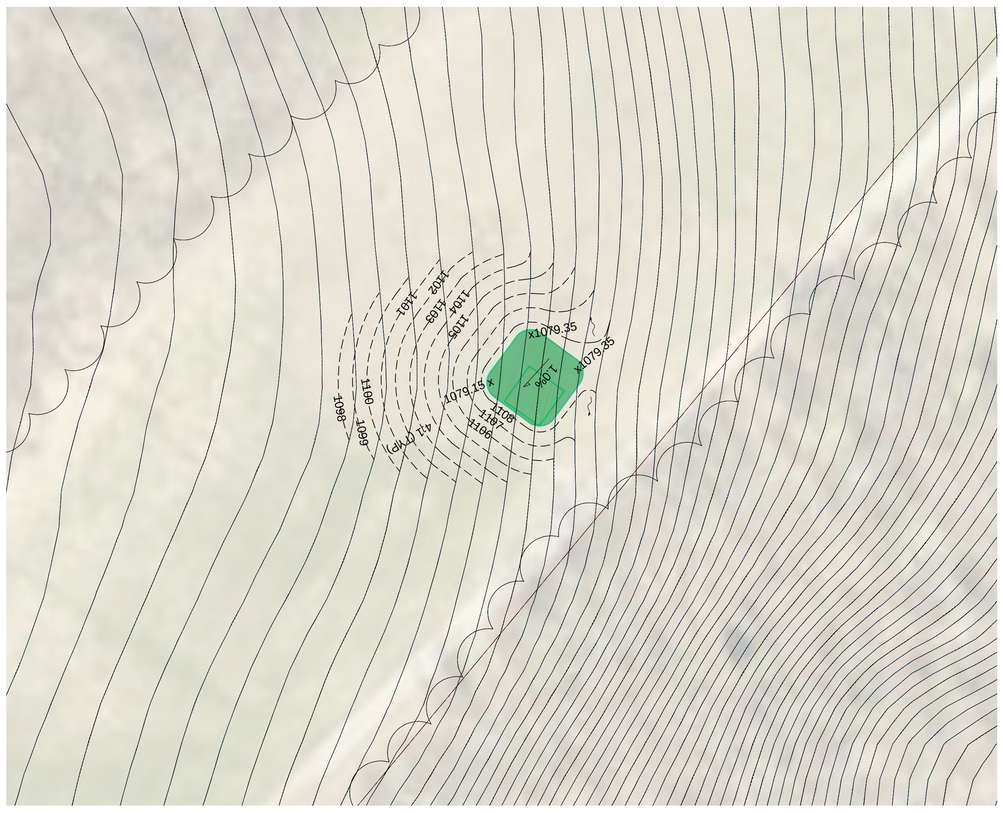
PROJECT NAME:
ENGER PARK GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

CLIENT NAME:
ENGER PARK GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

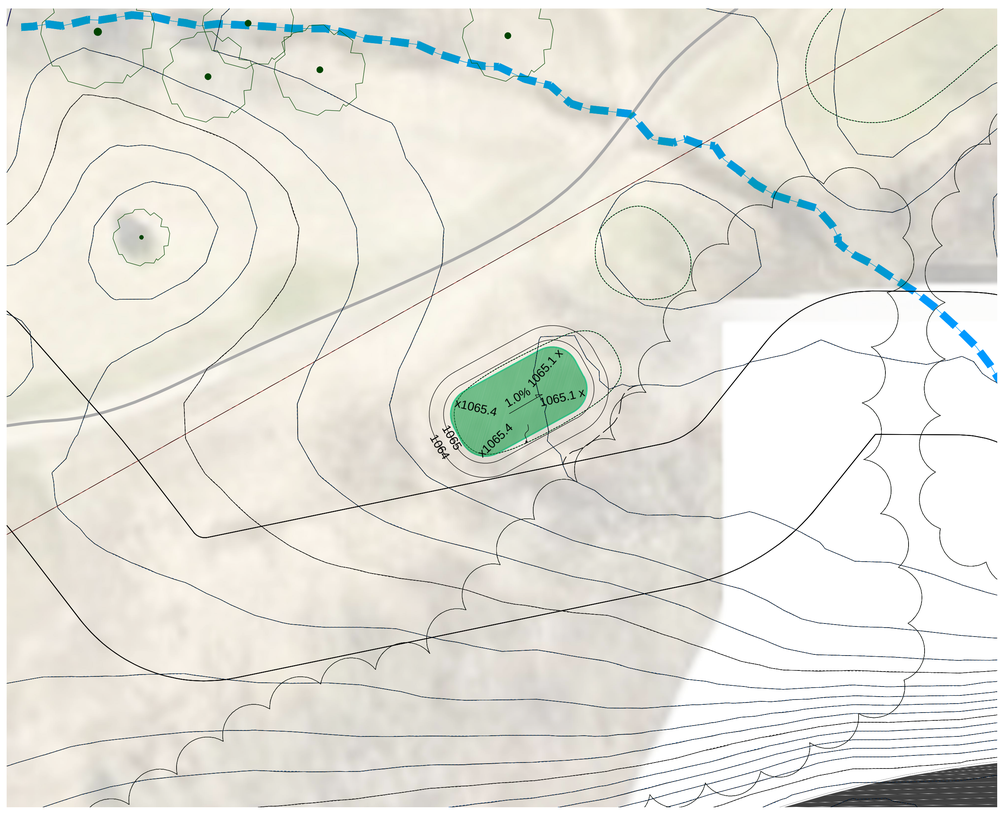
Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com

20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com

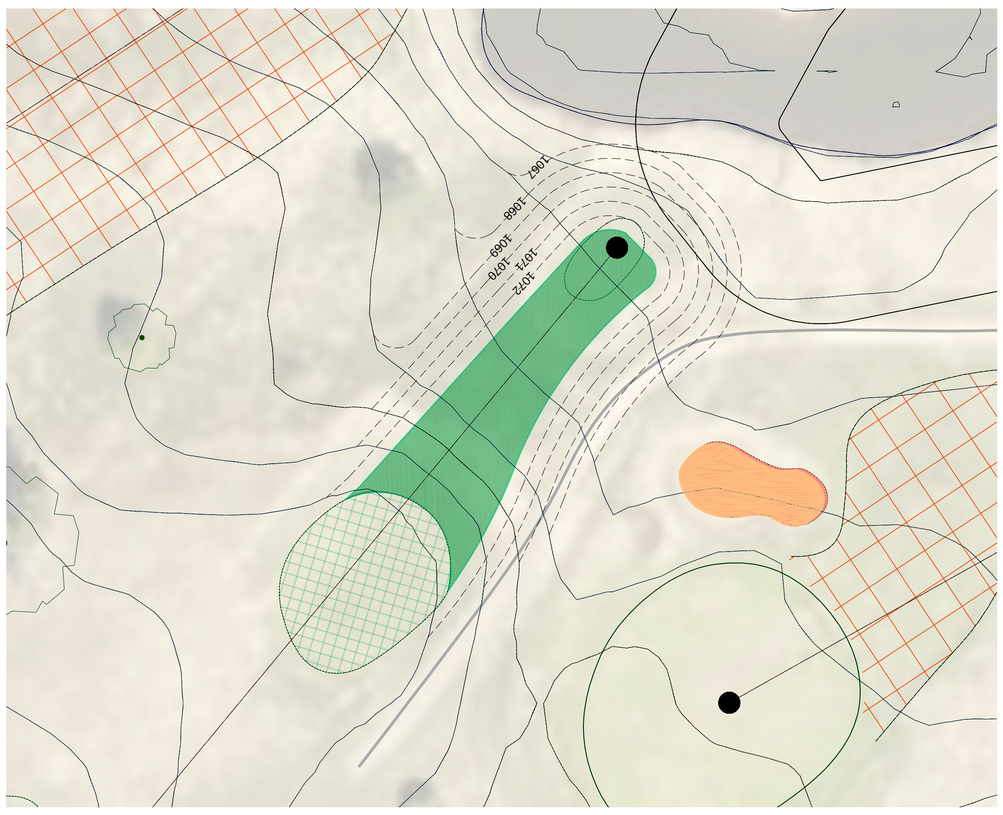
112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com



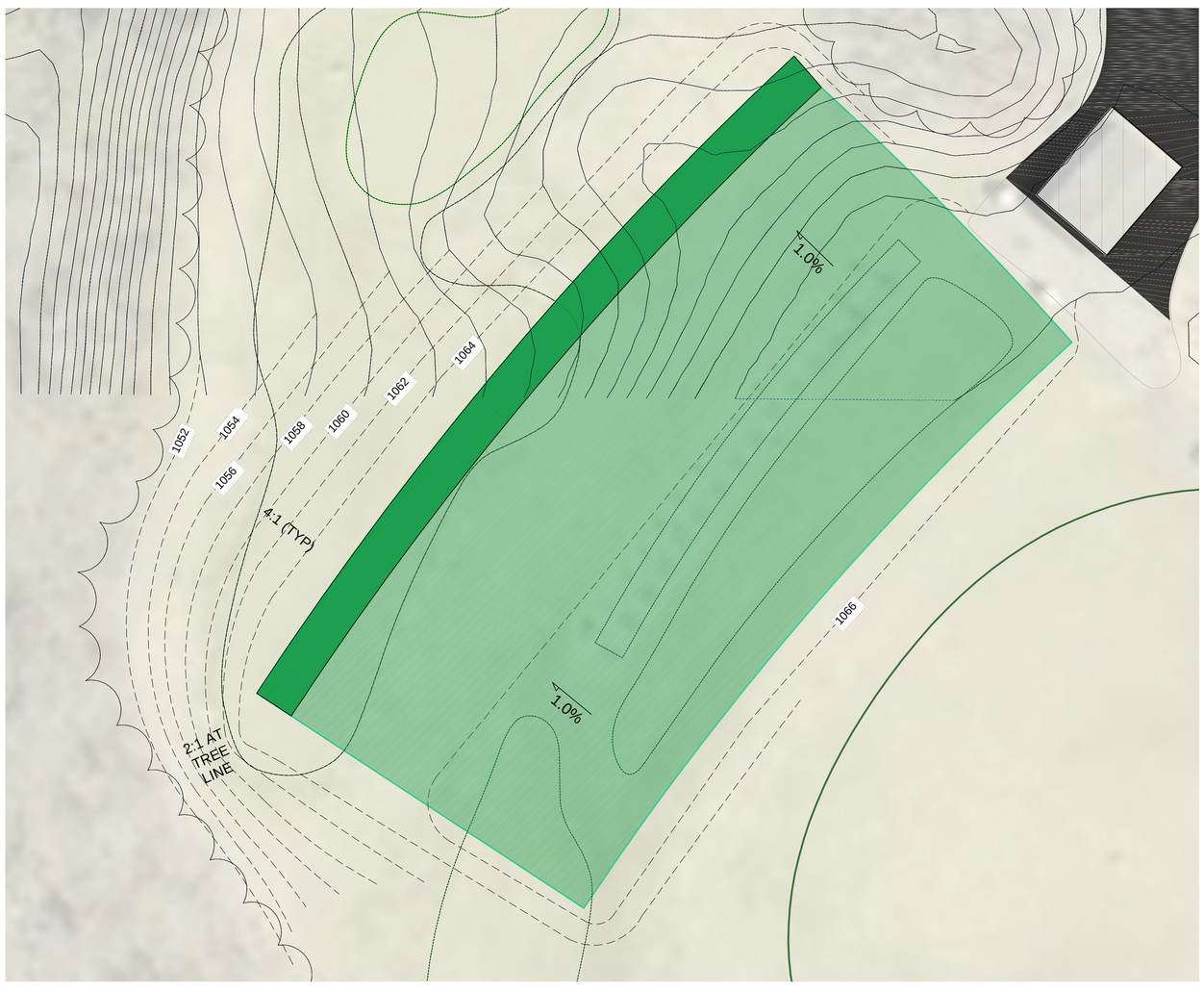
BACK NINE HOLE 16
(ADD ALT #9)



BACK NINE HOLE 17
(ADD ALT #3)



BACK NINE HOLE 18 (ADD ALT #4)
*RE-CONSTRUCTION & SEEDING OF EXISTING TEE BOX AREA IS INCIDENTAL TO CONSTRUCTION OF NEW TEE BOX FOR THIS HOLE



DRIVING RANGE IMPROVEMENTS (ADD ALT #13)

NORTH ARROW	GRAPHIC SCALE
N	0 20' 40' — ENGER PARK GOLF COURSE

SAS LANDSCAPE ARCHITECTURE + ASSOCIATES
WWW.SASLANDARCH.COM

SCALE: 1" = 20'-0"

DATE: 10/19/2022

SHEET NUMBER: L-1.3

STATUS:
FOR BID
NOT FOR CONSTRUCTION

REVISIONS:

NO.:	DATE:	DESCRIPTION:
1	11/8/2022	ADDENDUM #1
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE:
NEW TEES
BACK NINE - HOLES 16, 17 & 18
DRIVING RANGE IMPROVEMENTS

PROJECT NAME:
ENGER PARK GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

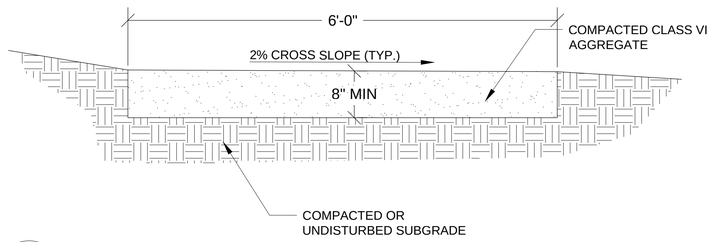
CLIENT NAME:
ENGER PARK GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com

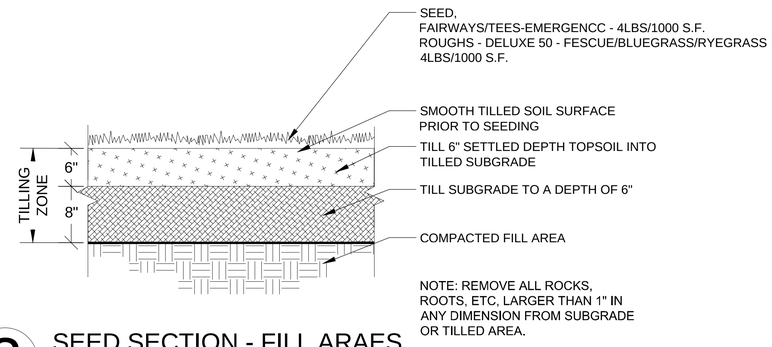
20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com

112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com

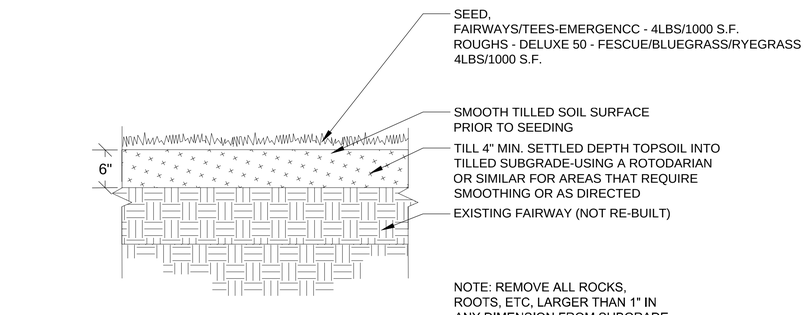
NOTES:
1) MATERIALS NOT SUITABLE FOR CONSTRUCTION SHALL BE PROPERLY DISPOSED AT AN OFF SITE FACILITY. MATERIALS SUCH AS DEBRIS AND ROCK MAY BE BURIED ON SITE IN ROUGH AREAS WITH A MINIMUM 5'-0" COVER, THEN RESTORED PER PLANS, NOTIFY OWNER PRIOR TO BACKFILL.
2) ALL AREAS DISTURBED SHALL BE REPAIRED TO ORIGINAL CONDITION.
3) CONTRACTOR SHALL PROTECT UTILITIES AND WORK COMPLETED BY OTHERS, SUCH AS ELECTRICAL, IRRIGATION, BRIDGES, FLATWORK, EVEN IF NOT SHOWN ON PLANS.
4) CONTRACTOR TO ASSURE SETTLEMENT / COMPACTION OF ALL FILL AREAS PRIOR TO PLACEMENT OF TOPSOIL AND SEEDING. IF SETTLEMENT OCCURS WITHIN ONE YEAR OF ACCEPTANCE THE CONTRACTOR SHALL CORRECT THE WORK AT NO COST TO THE OWNER. SETTLEMENT SHALL BE DEFINED AS 1" OVER A 10' SPAN.
5) STRIPPED TOPSOIL SHALL MAY BE USED IF FREE OF DEBRIS, TREE ROOTS, OR SUBSOIL. ALL TOPSOIL SHALL BE FREE OF ROCK AND DEBRIS AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLACEMENT.
6) COMPACTED AREAS SHALL BE DISKED, PLOWED AND DRAGGED TO MATCH THE CONSISTENCY OF ADJACENT GRADED AREAS. CONTRACTOR TO PRESENT AREAS FOR APPROVAL.
7) ALL AREAS SHALL PROPERLY DRAIN, PUDDLING WILL NOT BE ACCEPTED.
8) AREAS OF FILL SHALL BE COMPLETED IN 6" LIFTS AND COMPACTED TO 95% PROCTOR DENSITY. ALL FILL SHOULD BE FREE OF ORGANIC MATTER AND DEBRIS



1 CART PATH
SCALE: NOT TO SCALE

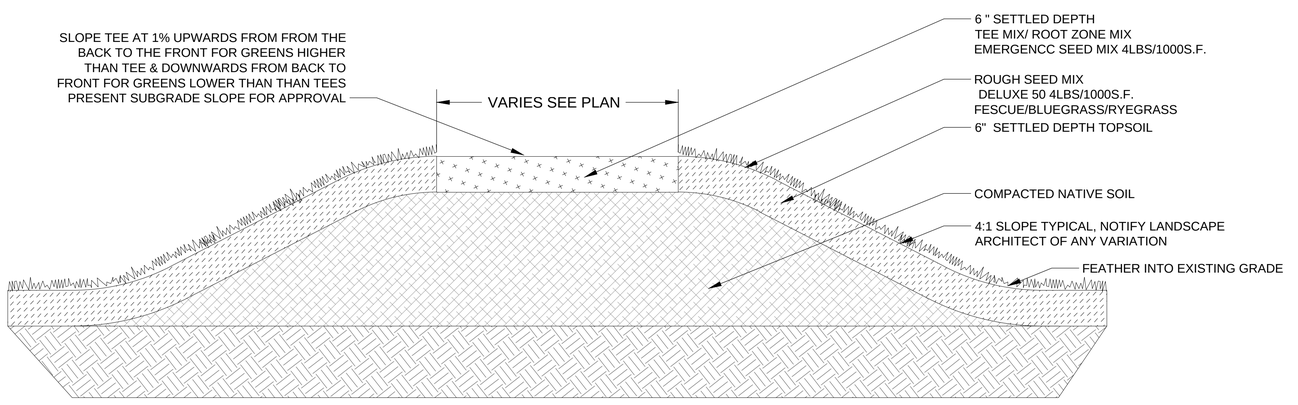


2 SEED SECTION - FILL ARAES
SCALE: NOT TO SCALE



3 SEED SECTION - FAIRWAYS
SCALE: NOT TO SCALE

NOTE:
1) CONSTRUCT DIVERSION CHANNEL AROUND TEE BOX IF SLOPED TO TEE
2) SOD OR EROSION CONTROL FABRIC COLLAR AS REQUIRED TO PREVENT EROSION



4 TEE BOX CONSTRUCTION
SCALE: NOT TO SCALE

NORTH ARROW	GRAPHIC SCALE
	ENGER PARK GOLF COURSE

SAS LANDSCAPE ARCHITECTURE + ASSOCIATES
WWW.SASLANDARCH.COM

SCALE: NOT TO SCALE
DATE: 7/15/2022
SHEET NUMBER: L-2.0

STATUS:
FOR BID
NOT FOR CONSTRUCTION

REVISIONS:

NO.:	DATE:	DESCRIPTION:
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE:
COURSE REPAIRS
DETAILS

PROJECT NAME:
ENGER PARK GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

CLIENT NAME:
ENGER PARK GOLF COURSE
1801 W SKYLINE PKWY
DULUTH, MN 55806

Irrigation Consulting, Inc.
Providing innovative design solutions for irrigation worldwide.
www.irrigationconsulting.com
20 Merrit Parkway, 2nd Floor
Nashua, NH 03062
(978) 433-8972 Fax (978)-433-2788
e-mail: bvinchesi@irrigationconsulting.com
112 S. Old Statesville Road, Suite 109
Huntersville, NC 28078
(704) 843-3688 Fax (704) 843-3511
e-mail: sgardner@irrigationconsulting.com