LEGEND

STREET CENTERLINE
SURVEY BASELINE
COUNTY
SECTION
QUARTER
SIXTEENTH
CORPORATE LIMITS

EXISTING

RIGHT OF WAY
PERMANENT EASEMENT
PROPERTY LINE
R.R. RIGHT OF WAY
SANITARY SEWER AND MANHOLE
FORCE MAIN
SANITARY SEWER SERVICE & CLEANOUT
WATER MAIN, HYDRANT AND VALVE
WATER SERVICE AND CURB STOP BOX
WATER VALVE MANHOLE
STORM SEWER, APRON, MANHOLE AND CATCH BASIN
CULVERT
BULKHEAD
BURIED FIBER OPTIC CABLE
BURIED FIBER OPTIC DUCT OR CONDUIT
BURIED PHONE CABLE AND PEDESTAL
BURIED PHONE DUCT OR CONDUIT AND MANHOLE
BURIED TV CABLE AND PEDESTAL
BURIED ELECTRIC CABLE
BURIED ELECTRIC DUCT OR CONDUIT AND MANHOLE
OVERHEAD ELECTRIC, POLE AND DOWN GUY ANCHOR
LIGHT POLE
TRAFFIC SIGNAL STANDARD
GAS MAIN
GAS SIGN, VALVE AND VENT
PETROLEUM PIPELINE
SOIL BORING
TRAVERSE POINT
CONCRETE CURB AND GUTTER
EXISTING PAVEMENT OR SIDEWALK
SIGN (HWY, PARK, STOP, ETC.)
STREET NAME SIGN
DITCH
RAILROAD TRACKS
FENCE (UNIDENTIFIED)
BARBED WIRE FENCE
CHAIN LINK FENCE
ELECTRIC WIRE FENCE
WOOD FENCE
WOVEN WIRE FENCE
PLATE BEAM GUARDRAIL
CABLE GUARDRAIL
DECIDUOUS AND CONIFEROUS TREE
BUSH–SHRUB
WOODED AREA
WETLAND
BUILDING

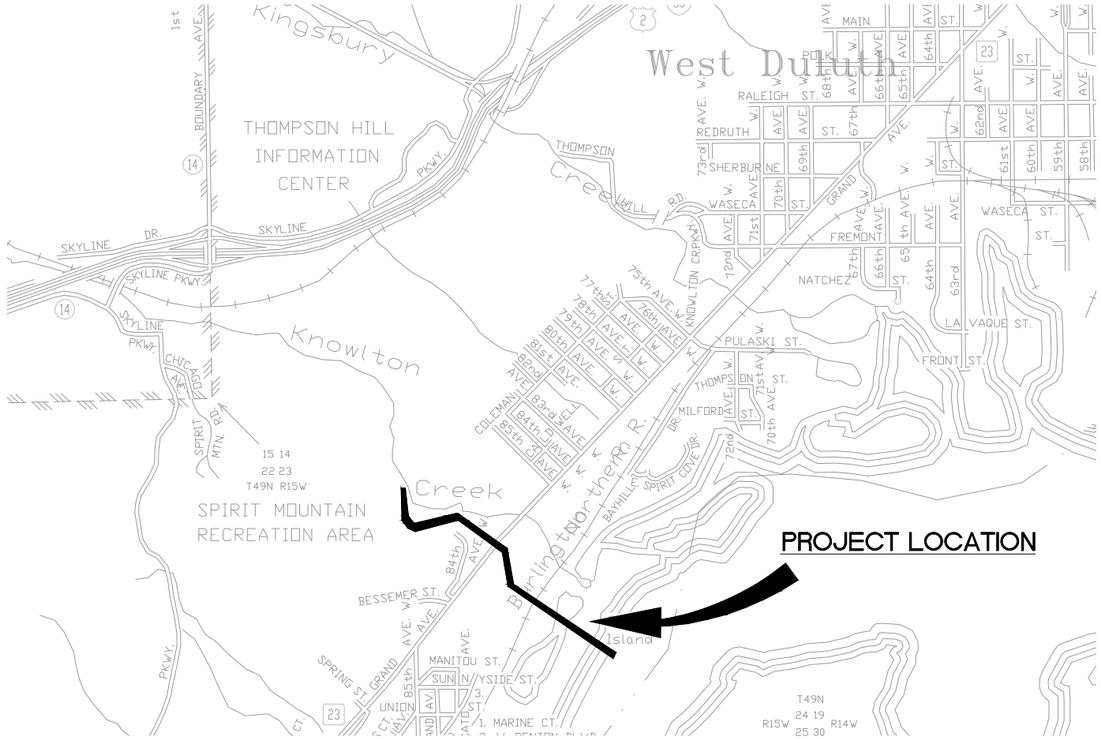
PROPOSED

NEW RIGHT OF WAY
PERMANENT EASEMENT
TEMPORARY EASEMENT
SANITARY SEWER AND MANHOLE
FORCE MAIN
SANITARY SEWER SERVICE & CLEANOUT
WATER MAIN, HYDRANT AND VALVE
WATER SERVICE AND CURB STOP BOX
WATER VALVE MANHOLE
STORM SEWER, MANHOLE AND CATCH BASIN
CULVERT
BULKHEAD
DRAIN PIPE
DITCH
CONCRETE CURB AND GUTTER
SILT FENCE
FLOATATION SILT CURTAIN
BIOROLL
LIGHT POLE
TRAFFIC SIGNAL, STANDARD
SIGN (HWY, PARK, STOP, ETC.)
STREET LIGHT FEED POINT
STREET LIGHTING CABLE

SPIRIT MOUNTAIN
CITY OF DULUTH, MINNESOTA

CONSTRUCTION PLANS
FOR
INFRASTRUCTURE IMPROVEMENTS
CONTRACT "A"
REVERSABLE RUNOFF COLLECTION AND WATER SUPPLY LINE

CLIENT PROJECT NO. 129137



N

N.T.S.

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

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

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

INDEX

THIS PLAN CONTAINS 30 SHEETS.

PROJECT LOCATION

DULUTH, MINNESOTA

FOSTER, JACOBS, & JOHNSON, INC.
PROFESSIONAL ENGINEERS
340 CANAL PARK DRIVE (218) 722-8080
SUITE 204 FAX (218) 722-1613
DULUTH, MN 55802 Email: mail@fjj.com

SEH
PHONE: 218.855.1700
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www.sehinc.com

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

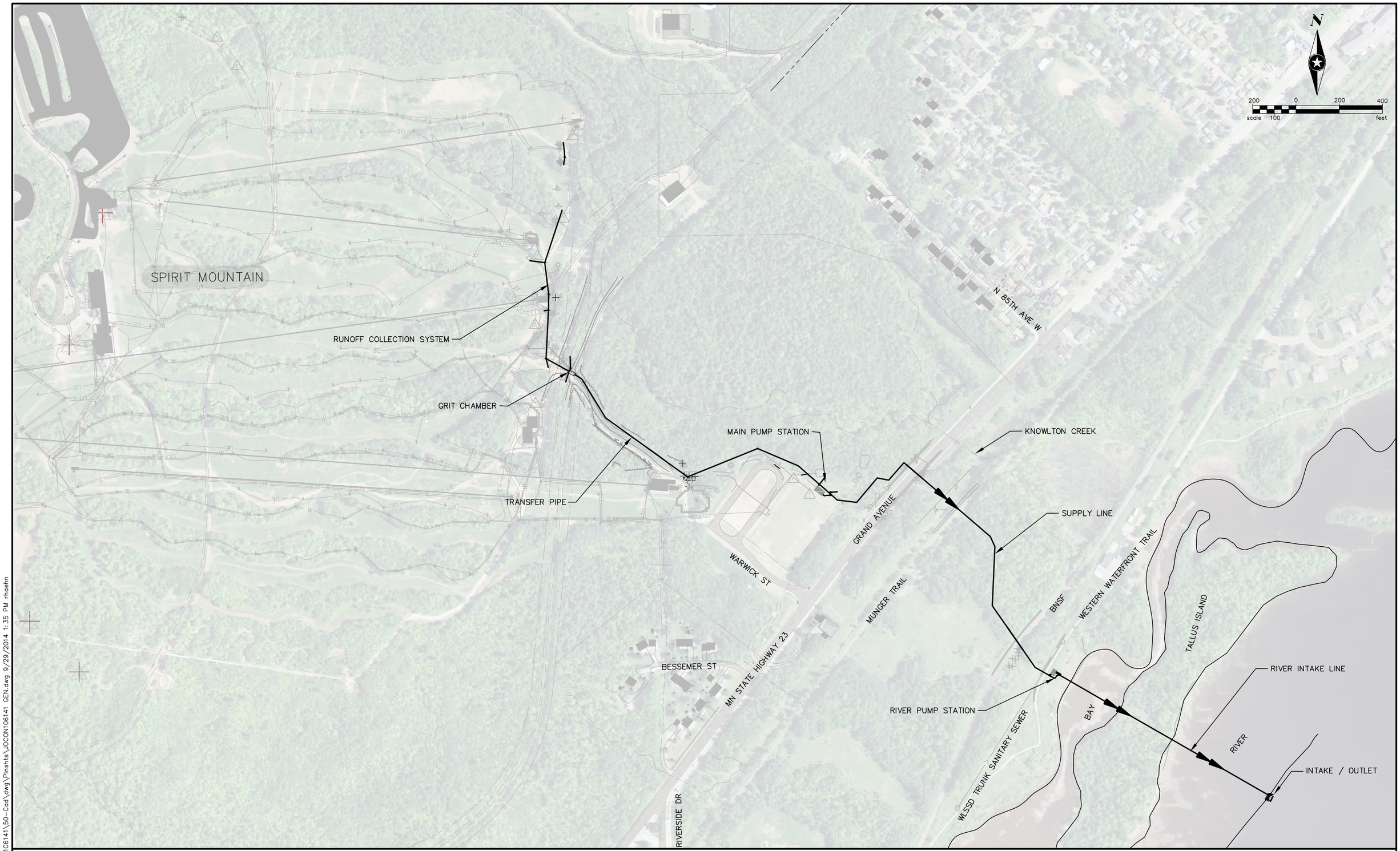
Signature JEFFERY R. LEDIN P.E.

Date: 10/17/2014 Lic. No. 25222

FILE NO. FOSJJ129137

C1 / 30

P:\F\J\JOCON\106141\50-Cad\dwg\Pnshts\JOCON106141 TL.dwg 10/15/2014 1:16 PM rhoehn



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DRAWN BY:	RVH			
DESIGNER:	GGK/RVH			
CHECKED BY:	JRL			
DESIGN TEAM	NO.	BY	DATE	REVISIONS

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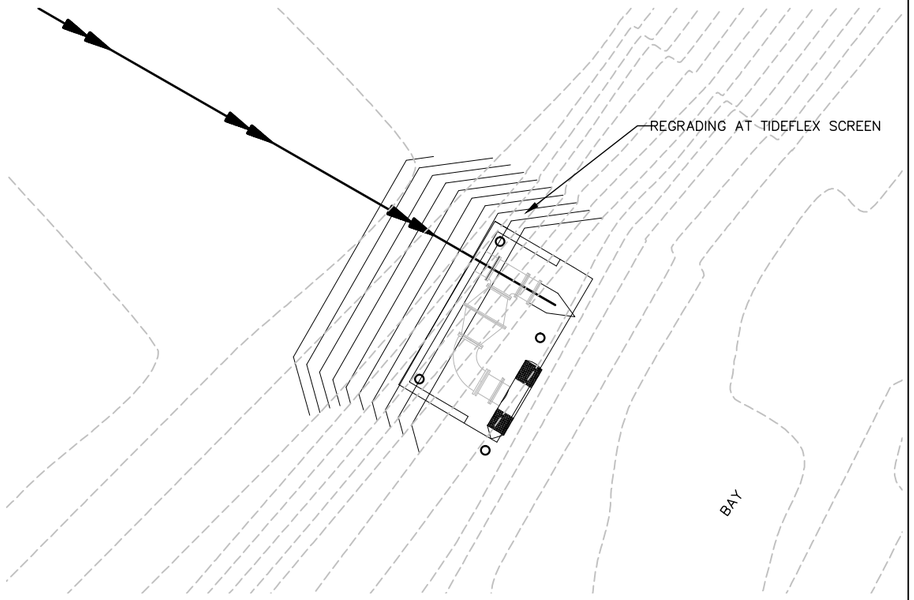
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

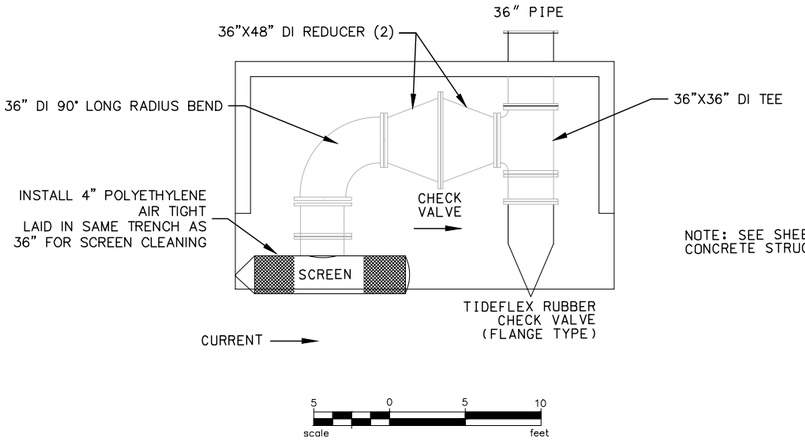
GENERAL LAYOUT

FILE NO. FOSJJ129137

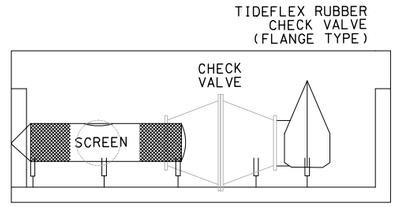
C2/30

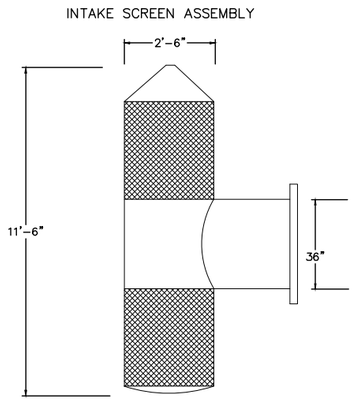


NOTE: EXCAVATED MATERIAL TO BE DREDGED AND PROPERLY DISPOSED OF. COST IS INCIDENTAL TO STRUCTURE INSTALLATION.



NOTE: SEE SHEET S1 FOR CONCRETE STRUCTURE DETAILS



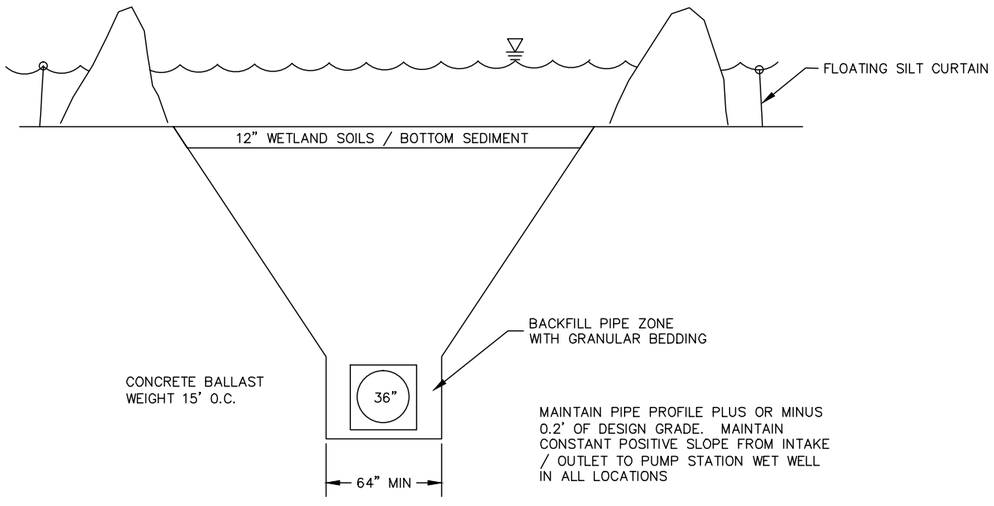


TOP VIEW

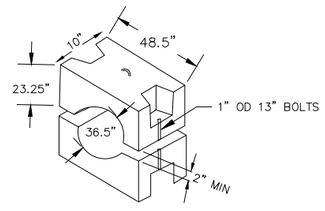
INTAKE SCREEN DETAIL
1 REQUIRED
NOT TO SCALE

TRANSFER PIPE STRUCTURE SCHEDULE								
LINE	STRUCTURE NO.	TC	INV IN	INV OUT	ADDT'L INV'S	MH DIA	FRAME TYPE	COVER TYPE
1	110			677.50			APRON	
2	112			677.50			APRON	SOLID LID
3	114	700.70	688.00	688.00		48"	1733	SOLID LID
4	116	715.34	706.00	706.00		60"	1733	SOLID LID
RUNOFF COLLECTION STRUCTURE SCHEDULE								
5	298		758.53				APRON	
6	299			749.63			APRON	
7	300	764.45	751.72	750.16		72"	1733	SOLID LID
8	GRIT CHAMBER	765.05	751.77	751.77	756.00	35'X14'X10'	1733	SOLID LID
9	301	768.81	752.37	752.37	758.88	84"	1733	SOLID LID
10	302		761.00				APRON	
11	304A	764.12	753.99	753.49		84"	1733	SOLID LID
12	304	762.43	754.72	754.72		72"	1733	SOLID LID
13	305	773.51	766.50	760.00	760.00	84"	1733	SOLID LID
14	306	775.84		761.84		72"	1733	SOLID LID
15	308		776.24				APRON	
16	309			782.77			APRON	
17	310	785.45	783.87	783.87	780.87 SUMP	48"	1733	SOLID LID
18	311		786.02				APRON	

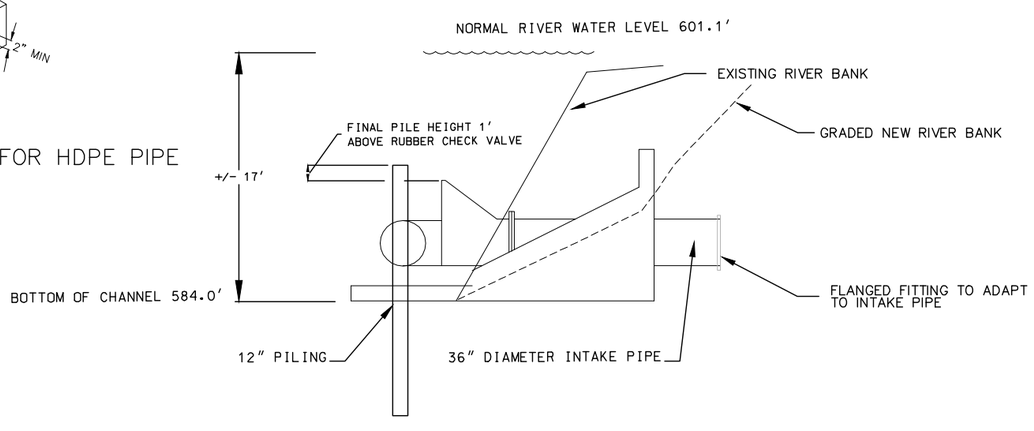
CASTINGS REFERENCED TO NEENAH TYPE — STAMPED DRAI



TYPICAL SECTION
MARINE INSTALLED PIPE



CONCRETE WEIGHT FOR HDPE PIPE



P:\FJ\J\JOCON\106141\50-Cad\dwg\Plnshts\JOCON106141 DT.dwg 10/15/2014 10:56 AM rhaehn

DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

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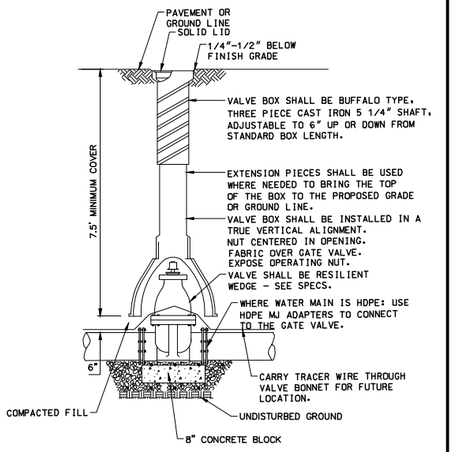
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

SCREEN / INLET DETAILS STRUCTURE SCHEDULE

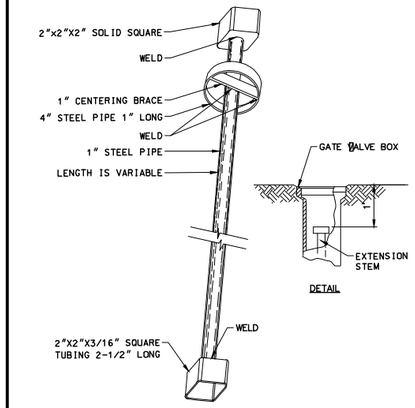
FILE NO. FOSJJ129137

C3 / 30



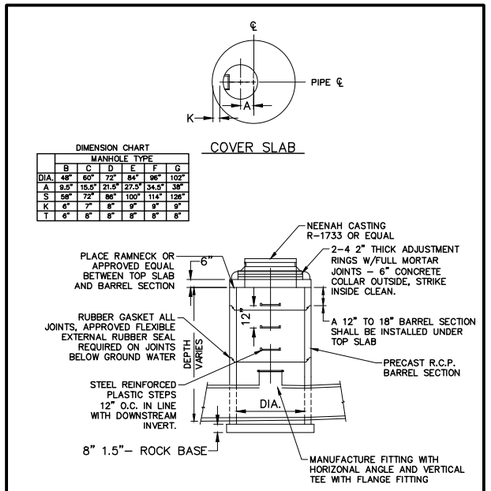
NTS

SEH	**GATE VALVE AND BOX HDPE MAIN**	Revised: Oct. 2011 / SEH Plate No. WAT-05



NTS

SEH	**VALVE EXTENSION STEM**	Revised: Oct. 2011 / SEH Plate No. WAT-11



DIMENSION CHART

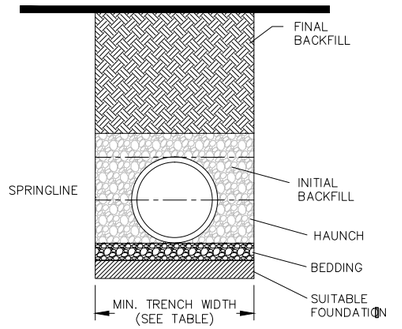
	MANHOLE TYPE					
	B	C	D	E	F	G
DIA.	48"	60"	72"	84"	96"	102"
A	9.5"	15.5"	21.5"	27.5"	34.5"	38"
S	58"	72"	86"	100"	114"	126"
K	6"	7"	8"	9"	9"	9"
T	6"	8"	8"	8"	8"	8"

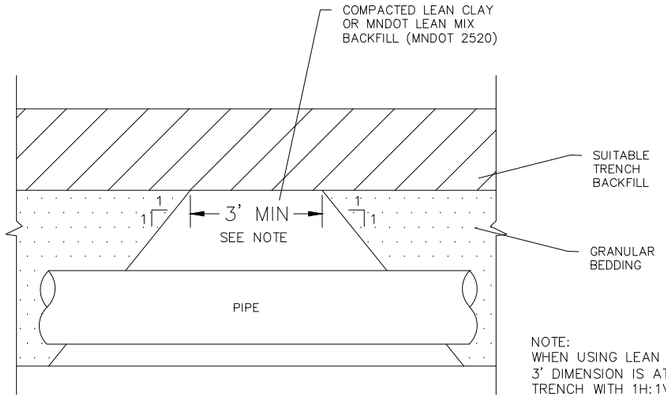
NTS

SEH	**MANHOLE WITH TEE FLANGE VERTICAL**	Revised: Oct. 2011 / SEH Plate No. MOD

RECOMMENDED MINIMUM TRENCH WIDTHS

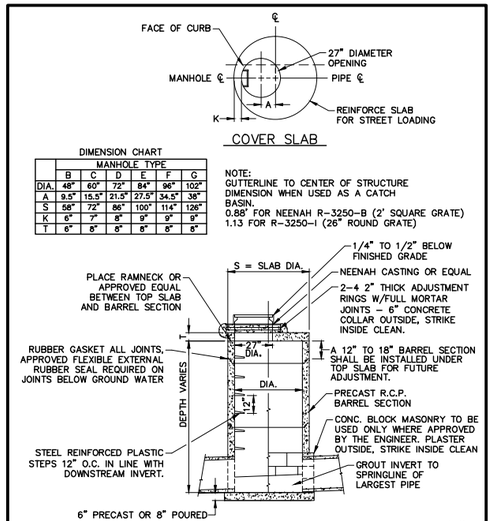
PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"





NOTE:
WHEN USING LEAN MIX BACKFILL, 3' DIMENSION IS AT BOTTOM OF TRENCH WITH 1H:1V SIDE SLOPE EXTENDING UPWARD

TRENCH DAM



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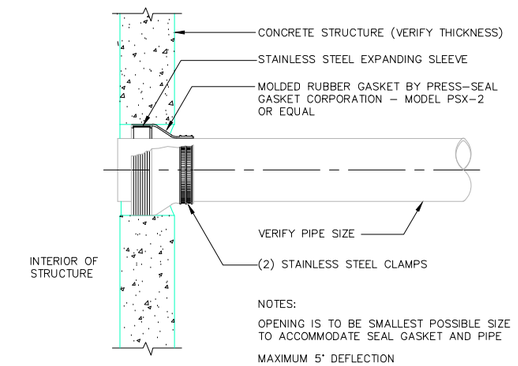
S	58"	72"	86"	100"	114"	126"
K	6"	7"	8"	9"	9"	9"
T	6"	8"	8"	8"	8"	8"

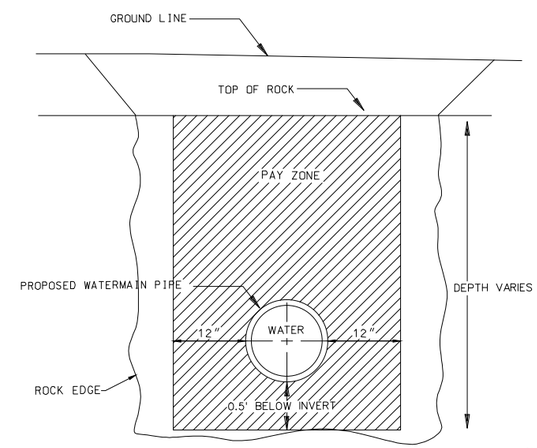
NOTE:
GUTTERLINE TO CENTER OF STRUCTURE DIMENSION WHEN USED AS A CATCH BASIN.
0.88' FOR NEENAH R-3250-B (2' SQUARE GRATE)
1.13 FOR R-3250-I (26" ROUND GRATE)

NTS

SEH	**CATCH BASIN/MANHOLE (27" DIA. OPENING)**	Revised: Oct. 2011 / SEH Plate No. STM-01



PIPE SEAL GASKET DETAIL
PPIPE012
SCALE: NONE



NOTE: ROCK EXCAVATION QUANTITY IS BASED ON THE DIMENSIONS SHOWN ON THE DETAIL. TOP OF EXISTING ROCK WILL BE PROFILED AT TIME OF EXCAVATION TO DETERMINE FINAL PAY QUANTITY.

ROCK EXCAVATION PAYMENT ZONE

P:\FJ\J\JOCON\106141\50-Cad\dwg\Plnshts\JOCON106141 DT.dwg 10/15/2014 10:56 AM rhaehn

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DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

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Date: 10/17/2014 JEFFERY R. LEDIN, P.E. Lic. No. 25222

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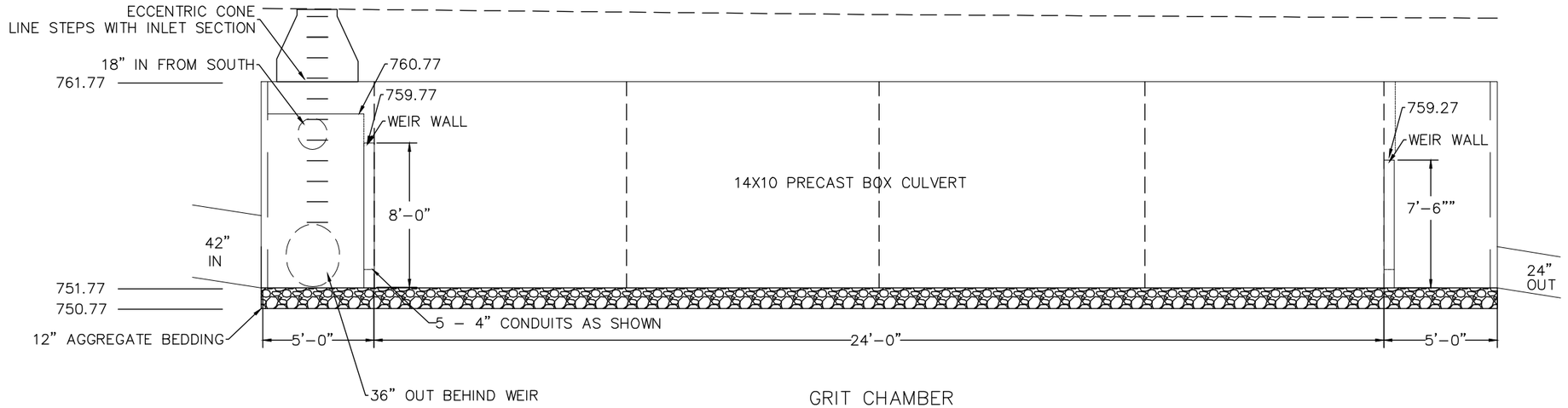
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

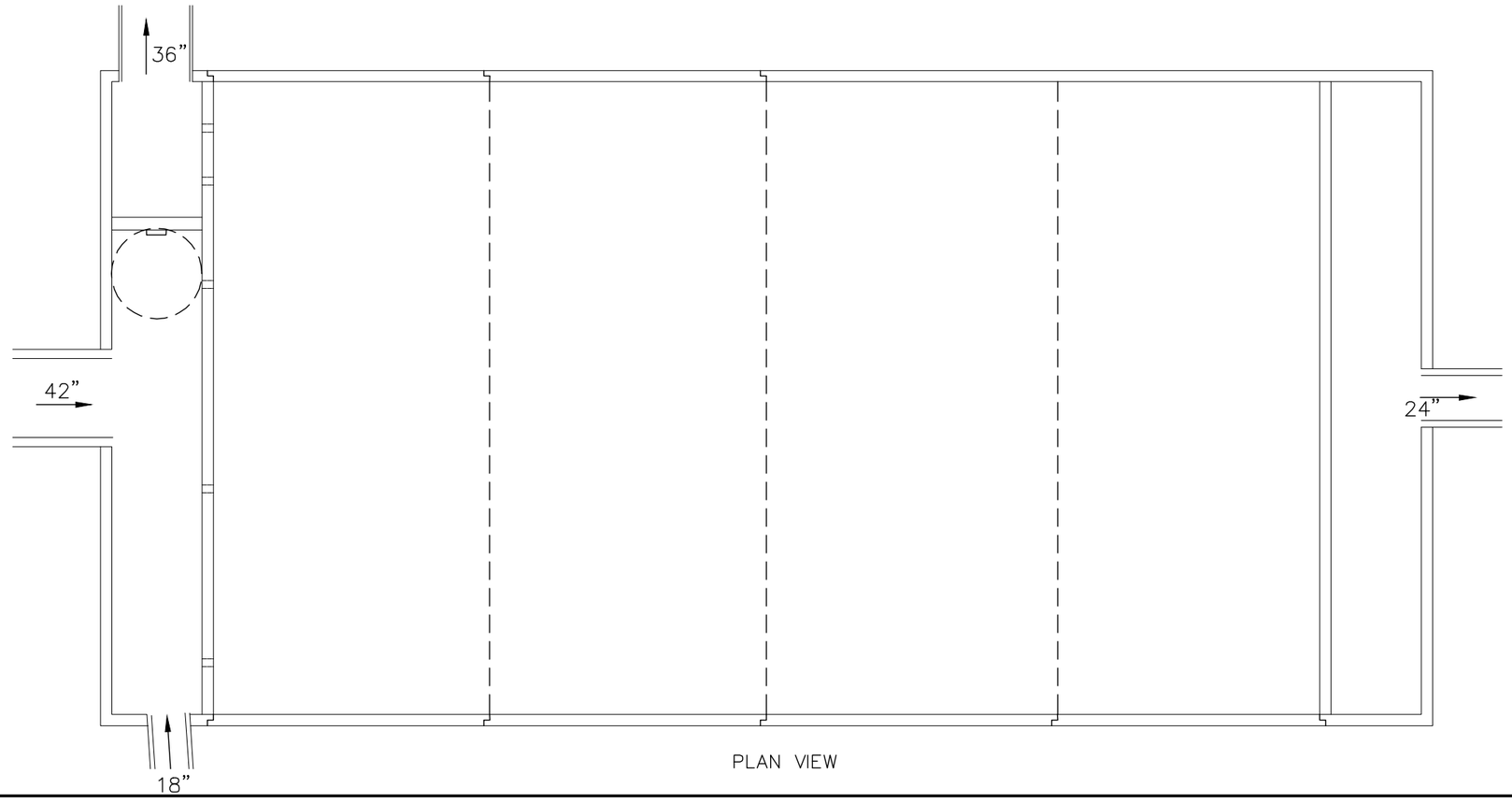
ROCK EXCAVATION, TRENCH DAM, DETAILS

FILE NO. FOSJJ129137

C4 / 30



GRIT CHAMBER



5' INLET SECTION
4- 6' X 14' X 10' SECTIONS
5' OUTLET SECTION

PLAN VIEW

P:\FJJ\JOCON\106141\50-Cad\dwg\Plnshts\JOCON106141 DT.dwg 10/15/2014 10:56 AM rhaehn

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DESIGNER: GGK/RVH				
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DESIGN TEAM	NO.	BY	DATE	REVISIONS

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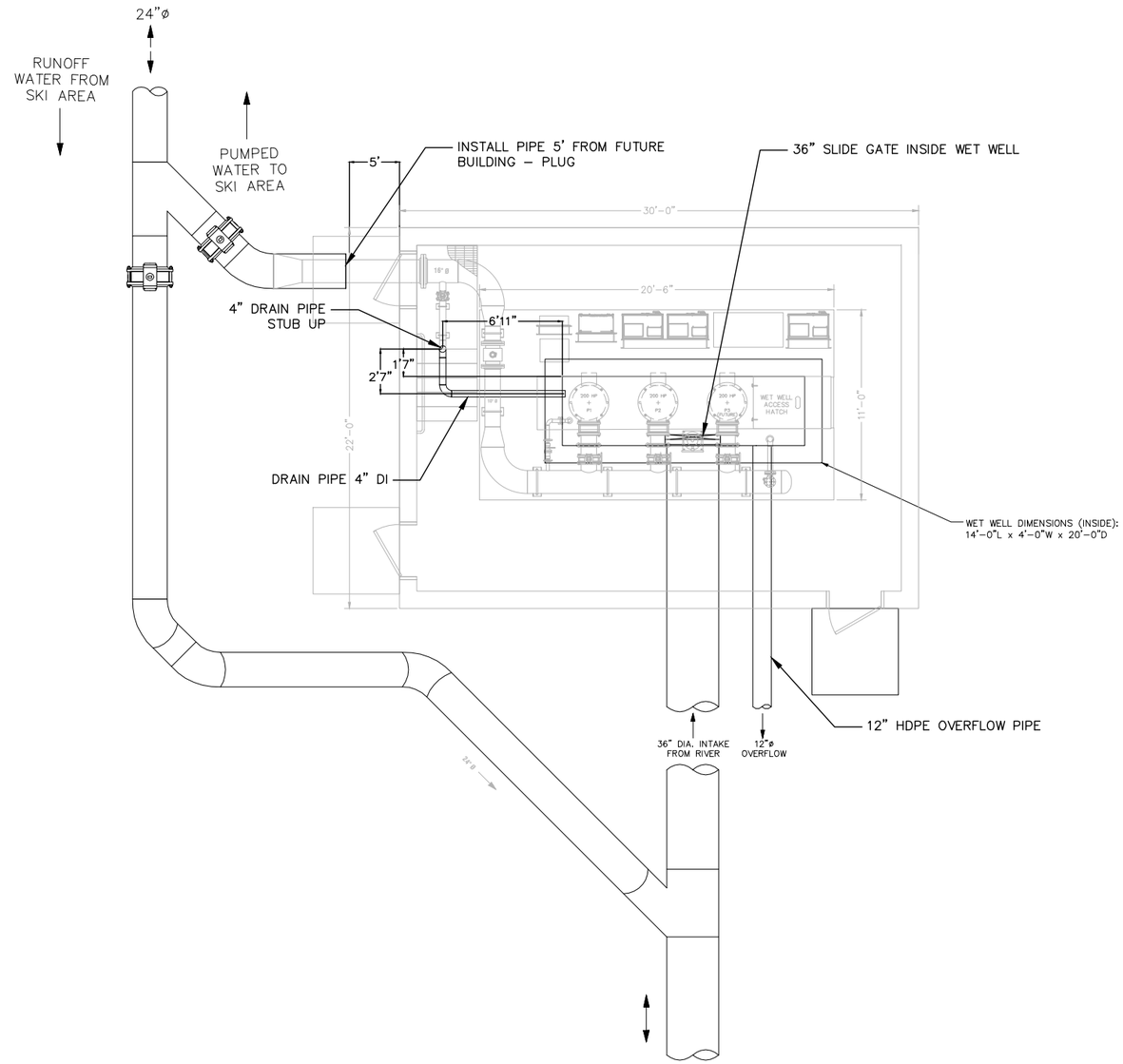
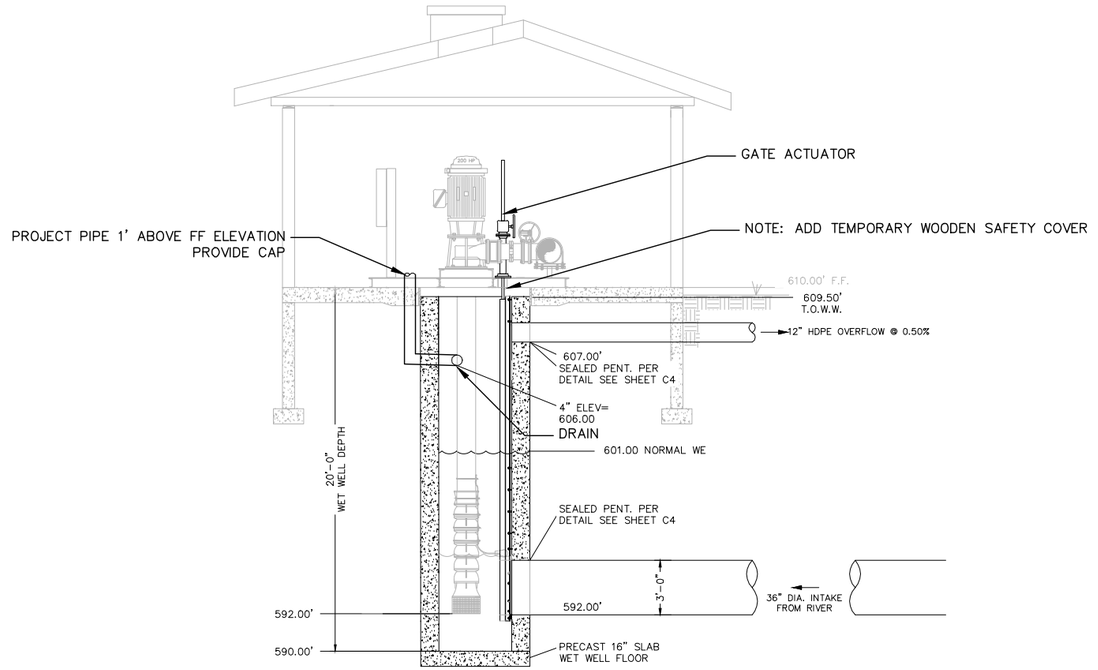
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

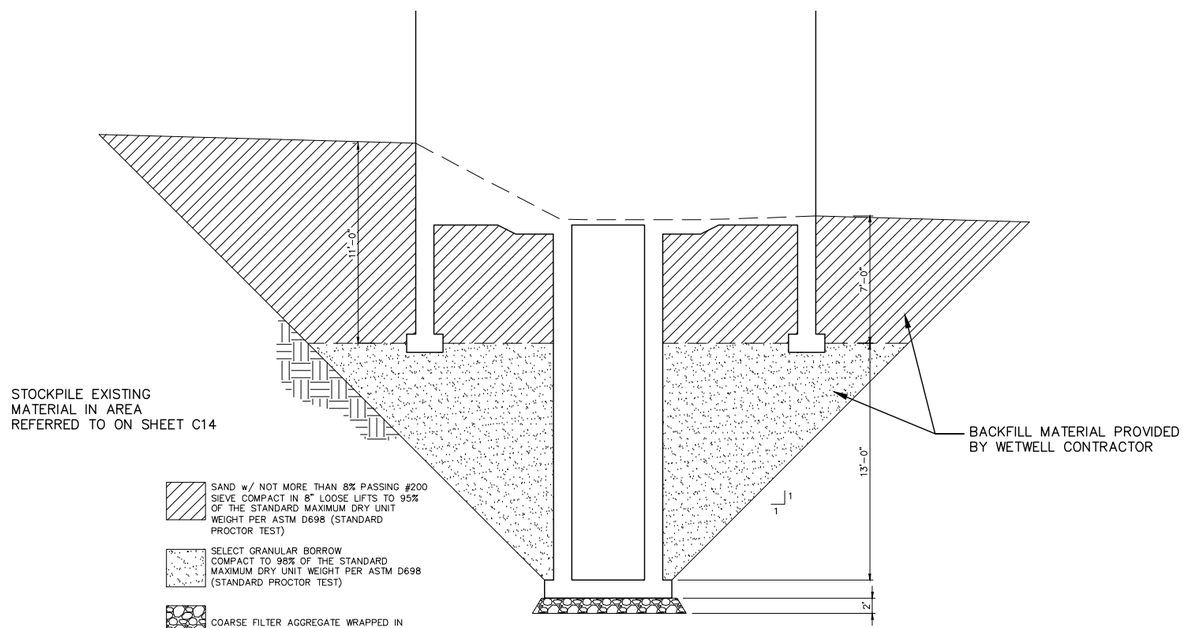
GRIT CHAMBER DETAILS

FILE NO. FOSJJ129137

C5 / 30







2 S4 **SOIL CORRECTION DIAGRAM**

P:\FJ\J\JOCON\106141\50-Cad\dwg\Plnshts\river pump detail.dwg 10/17/2014 3:17 PM rhaehn

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DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

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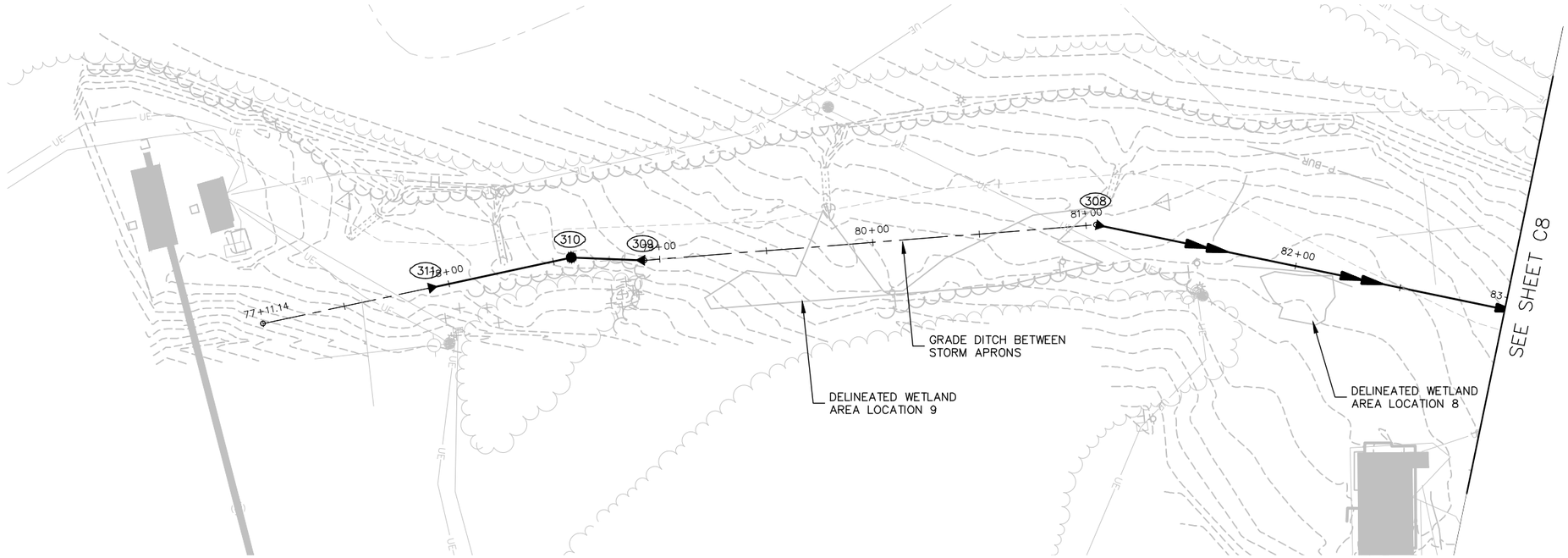
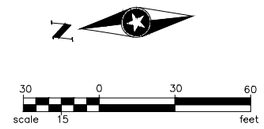
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

RIVER PUMP STATION DETAIL SHEET

FILE NO. FOSJJ129137

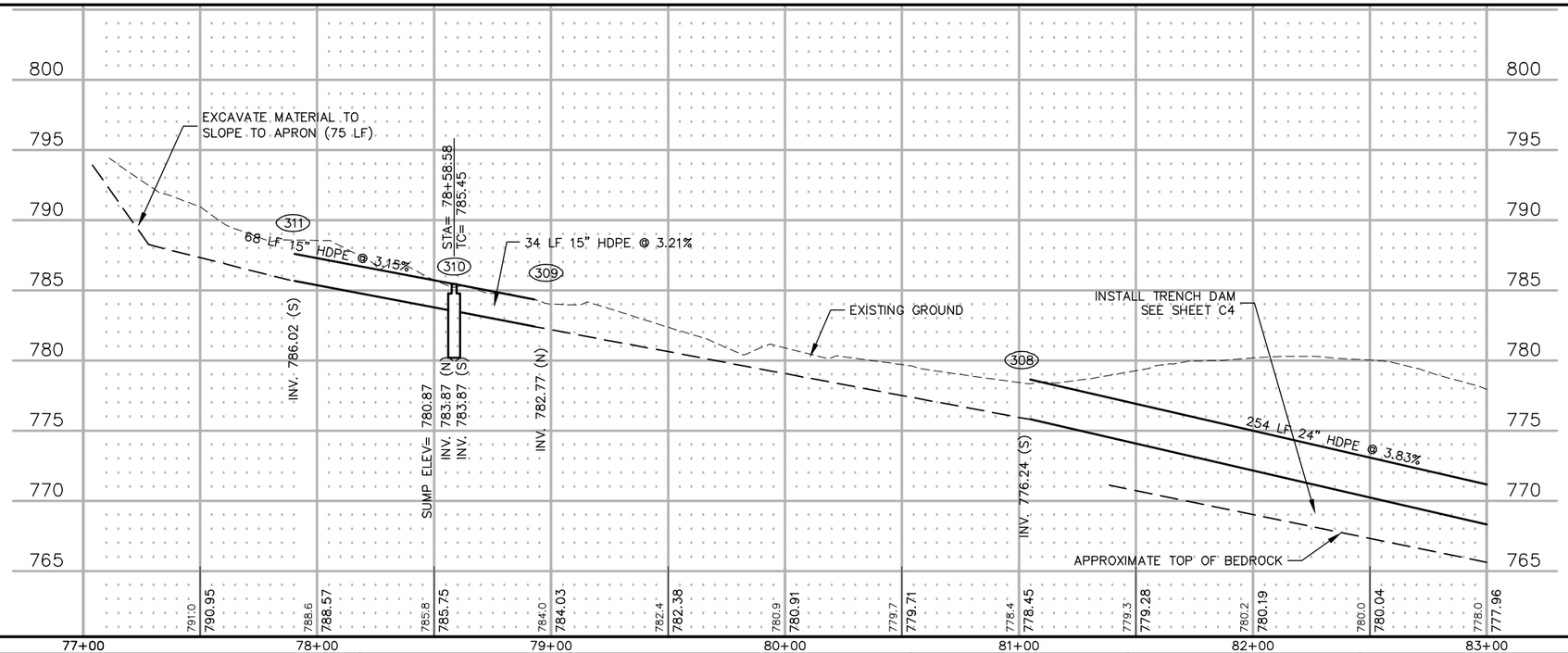
C6/30





NOTE: SEE SHEET C21 FOR TEMPORARY WETLAND IMPACTS AND PROCEDURES

RUNOFF COLLECTION SYSTEM



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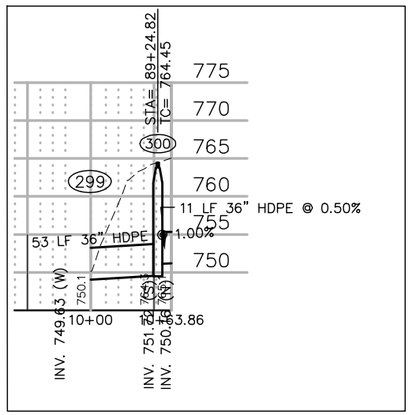
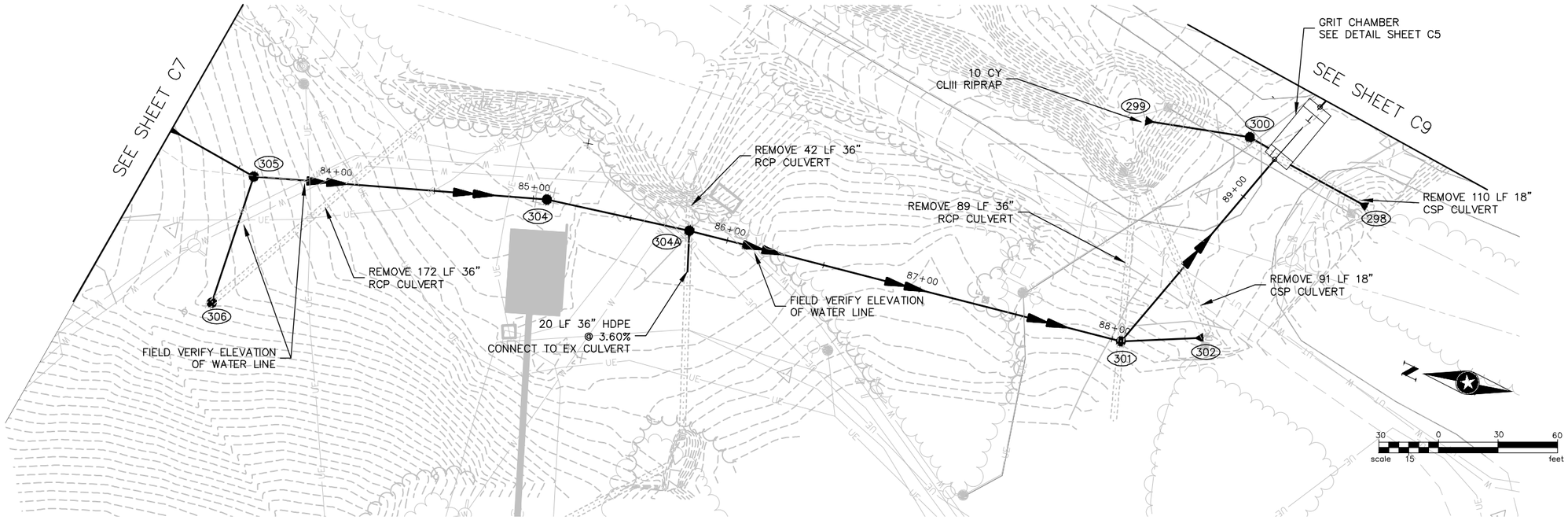
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

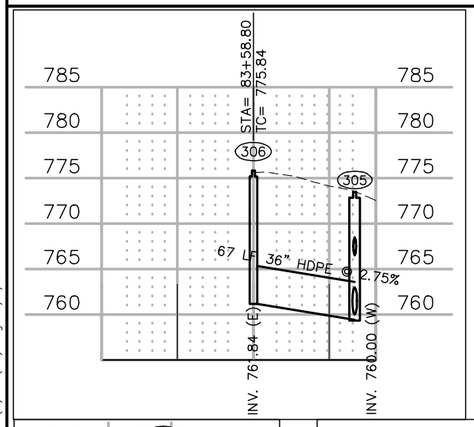
FILE NO. FOSJJ129137

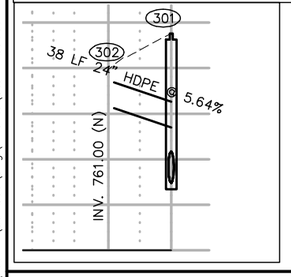
C7 / 30

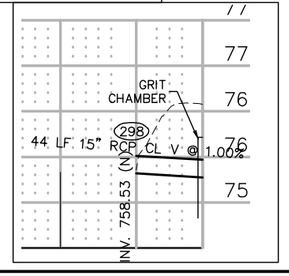


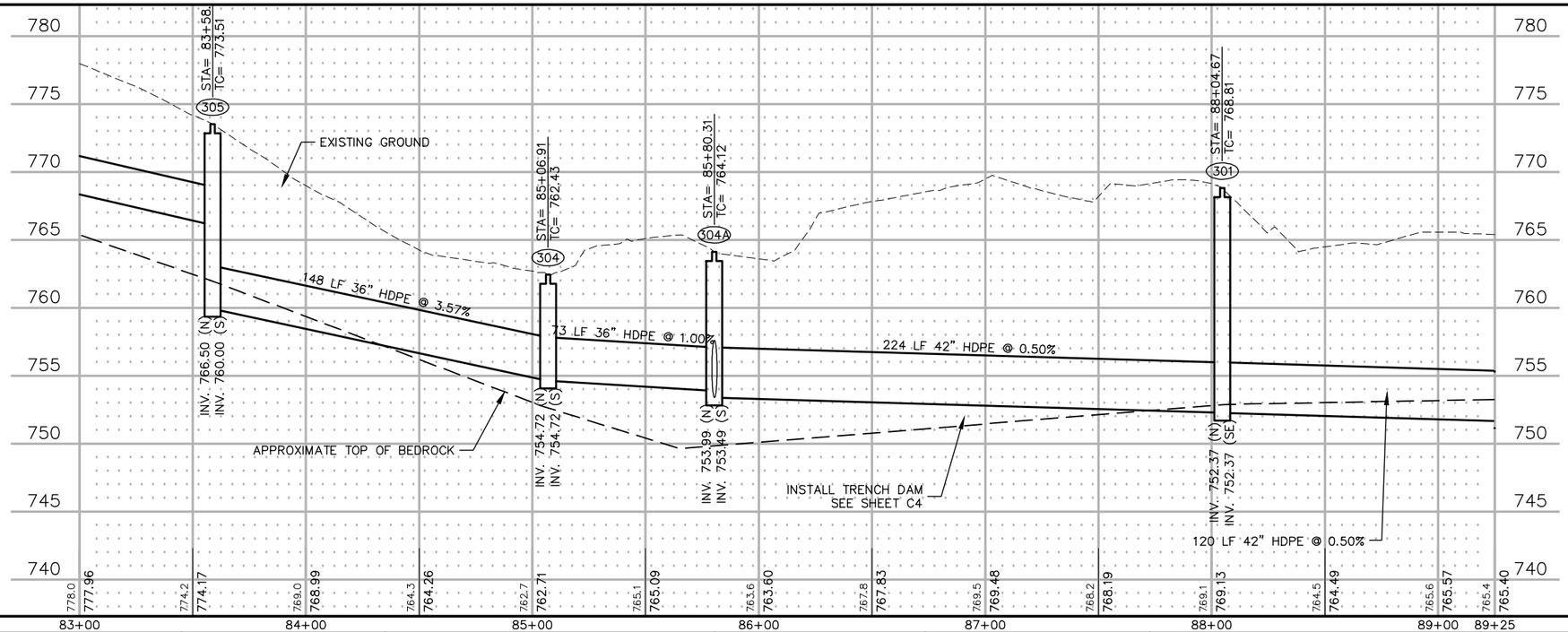


RUNOFF COLLECTION SYSTEM









DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

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JEFFERY R. LEDIN, P.E.
Date 10/17/2014 Lic. No. 25222

SEH
PHONE: 218.855.1700
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BRAINERD, MN 56401-3540
www.sehinc.com

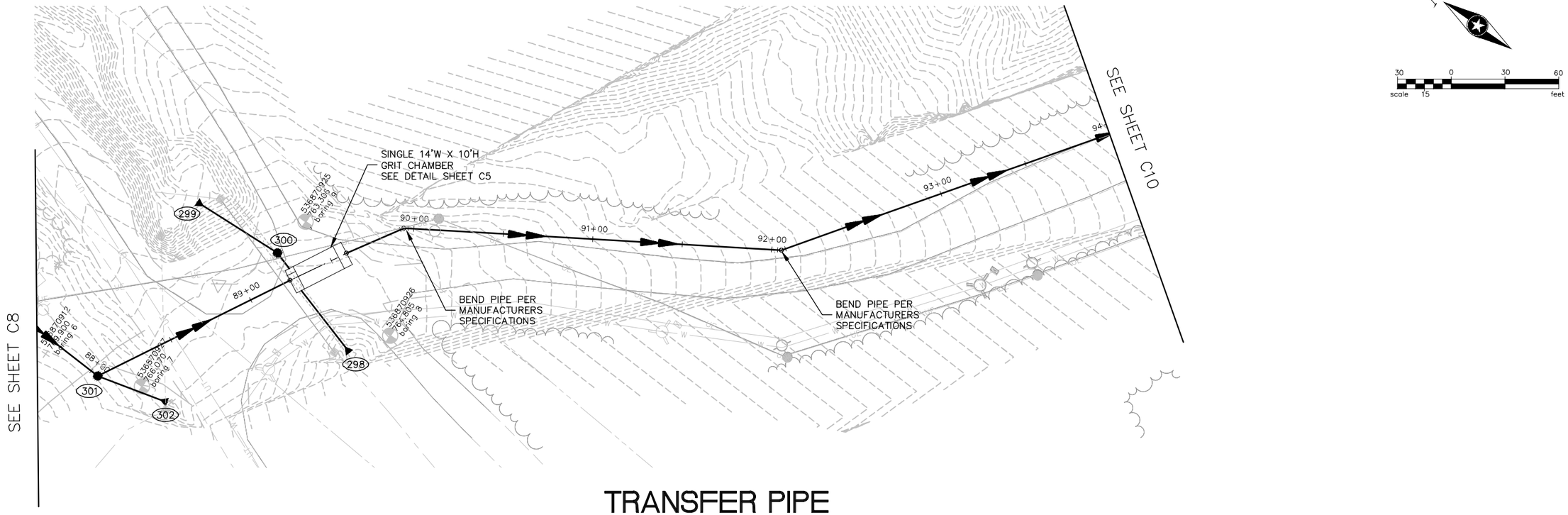
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

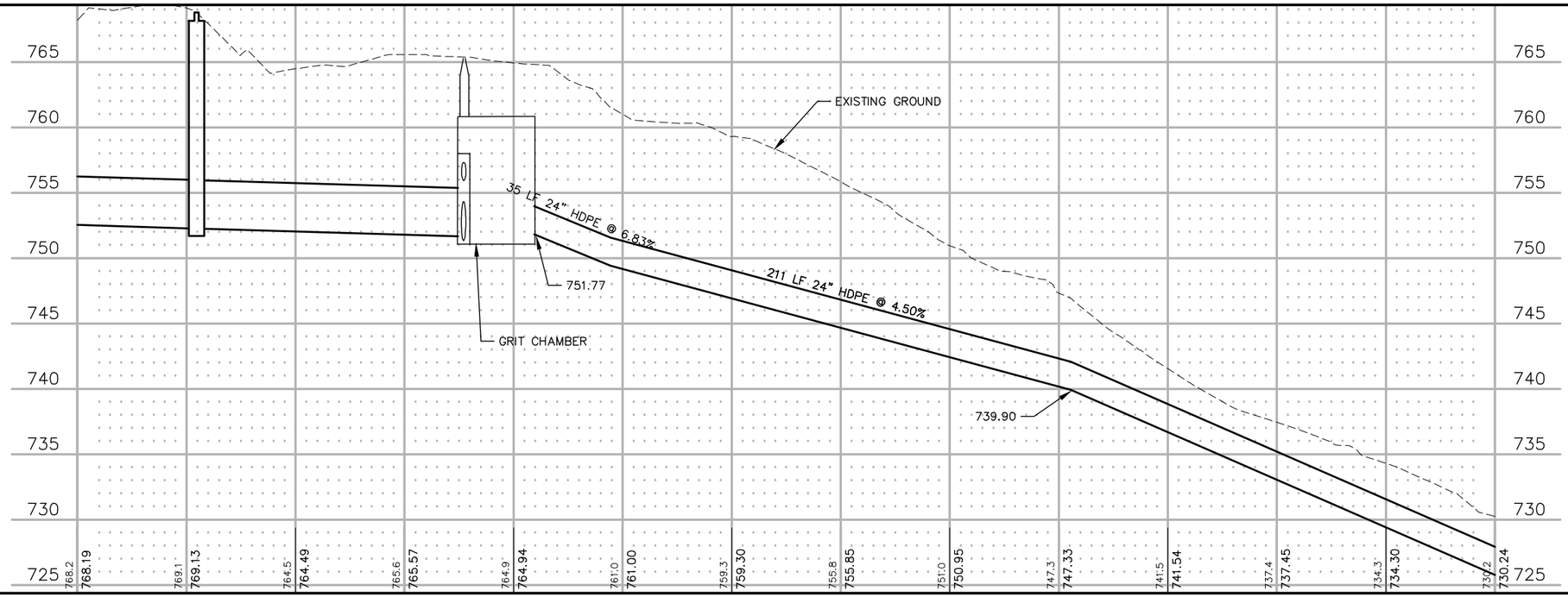
FILE NO. FOSJJ129137

C8 / 30

P:\FJ\J\JOCON\106141\50-Cad\dwg\Plnshts\Storm Outlet - (9) - (02).dwg 10/7/2014 3:34 PM rhaehn



TRANSFER PIPE



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DESIGNER: GGK/RVH				
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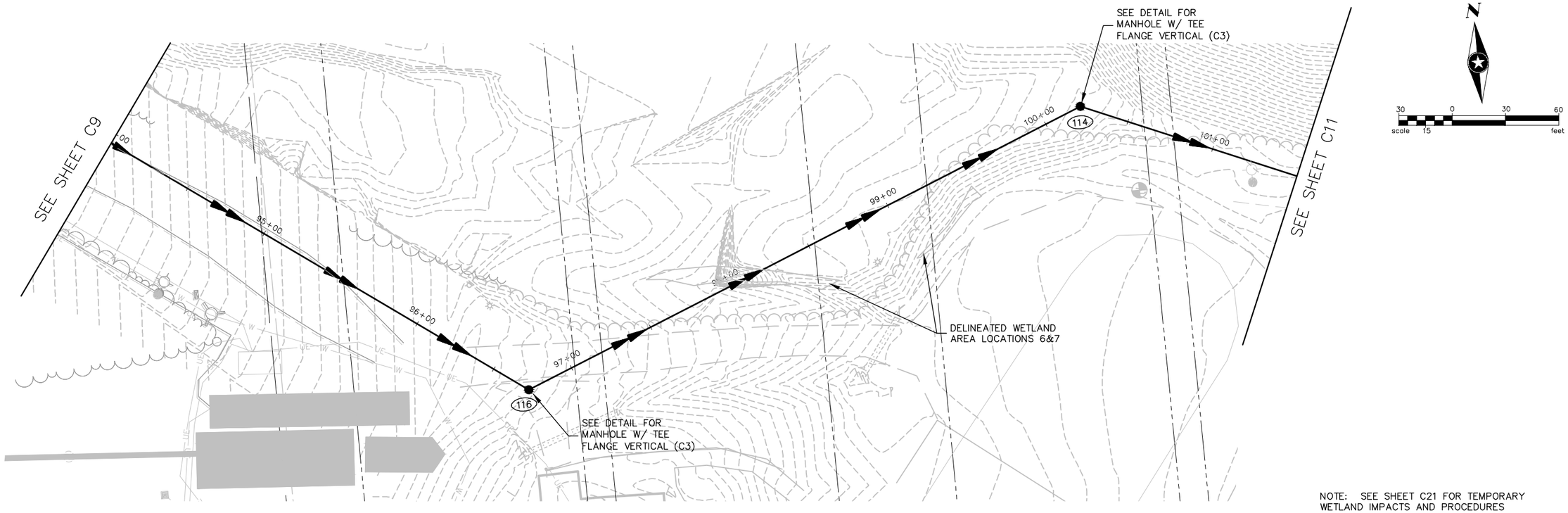
SPIRIT MOUNTAIN IMPROVEMENTS
DULUTH, MINNESOTA

PLAN AND PROFILE
WATER IN/OUTFLOW

FILE NO. FOSJJ129137

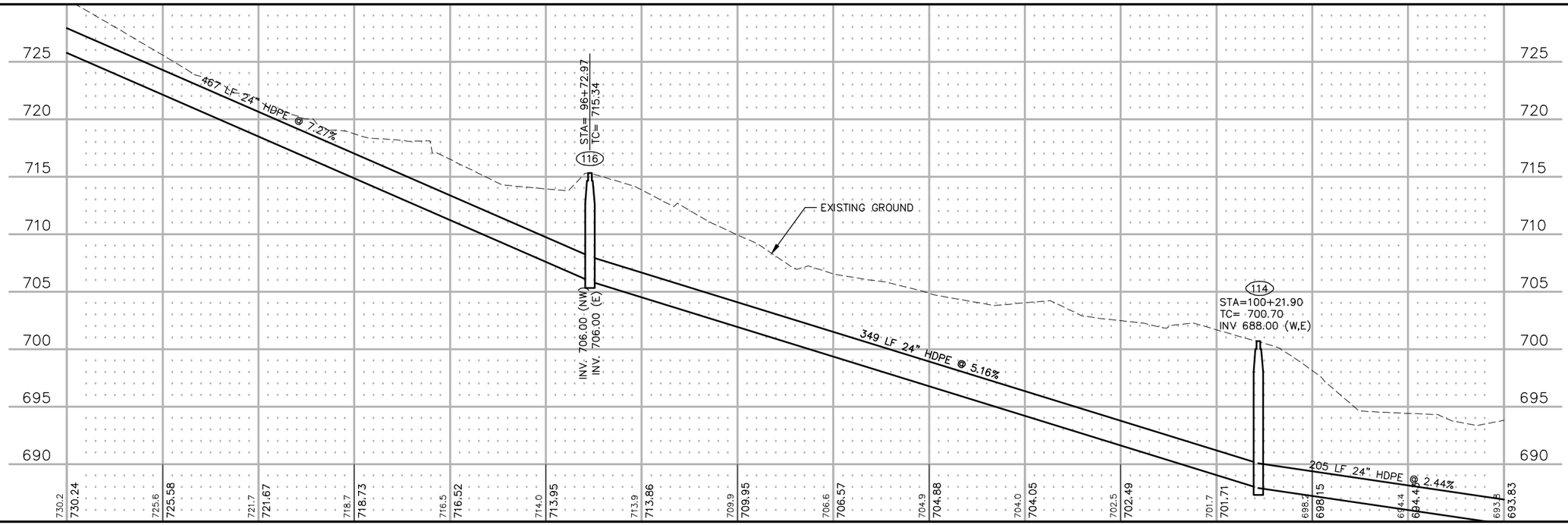
C9 / 30

P:\FJ\J\JOCON\106141\50-Cad\dwg\Plnshts\Storm Outlet - (01).dwg 10/17/2014 3:19 PM rhaehn



NOTE: SEE SHEET C21 FOR TEMPORARY WETLAND IMPACTS AND PROCEDURES

TRANSFER PIPE



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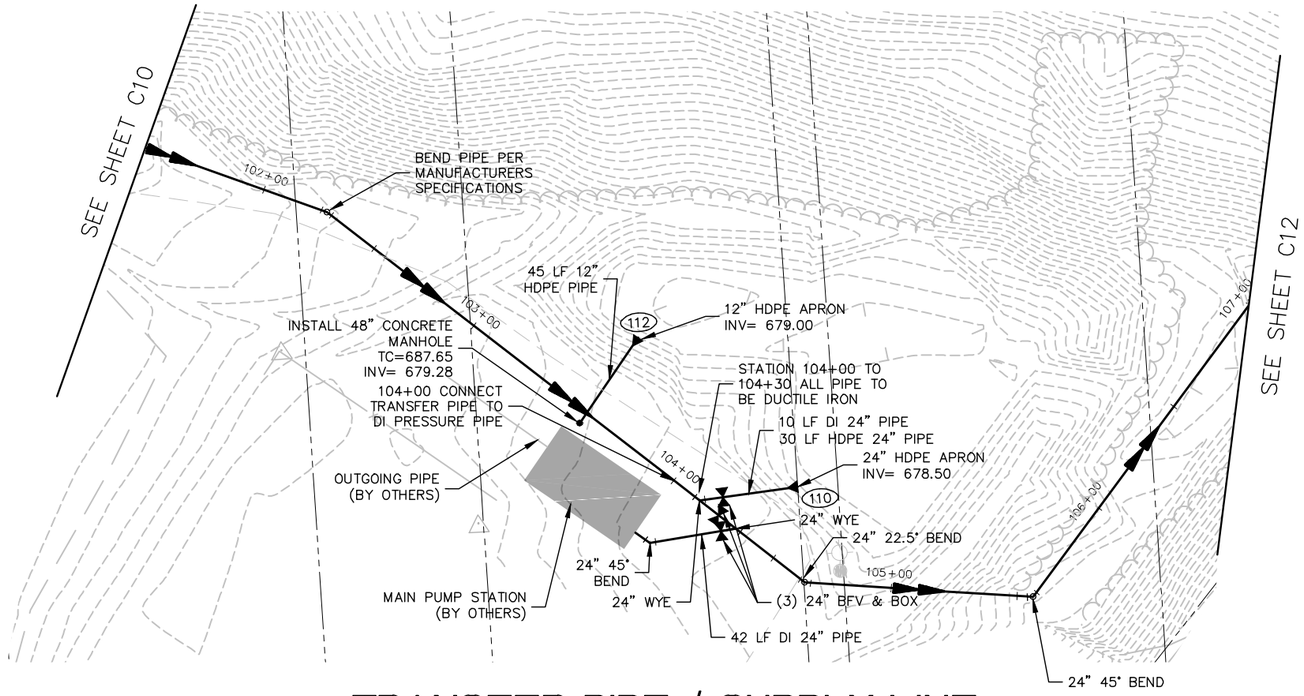
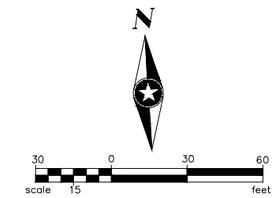
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

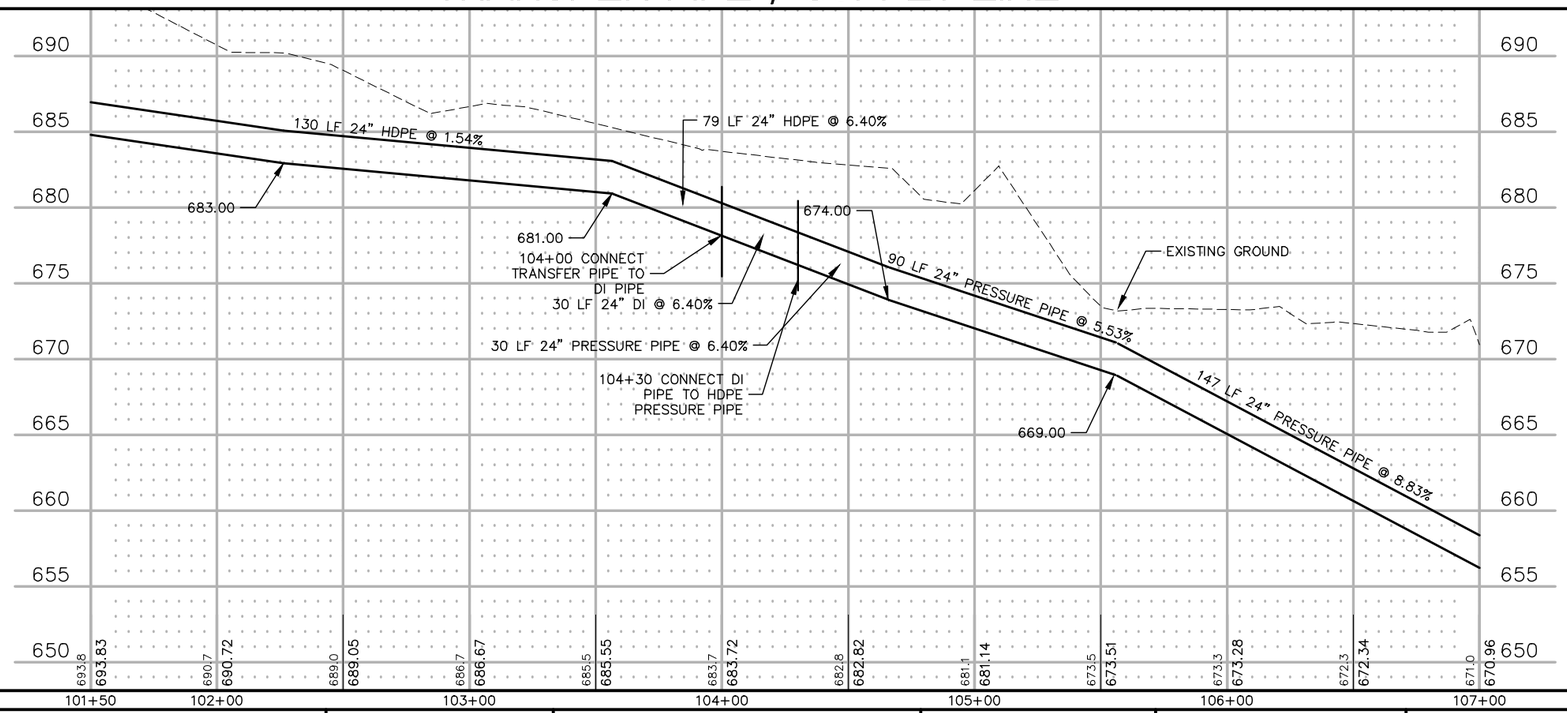
FILE NO. FOSJJ129137

C10/30





TRANSFER PIPE / SUPPLY LINE



DRAWN BY: RVH DESIGNER: GGK/RVH CHECKED BY: JRL DESIGN TEAM	NO.	BY	DATE	REVISIONS	FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

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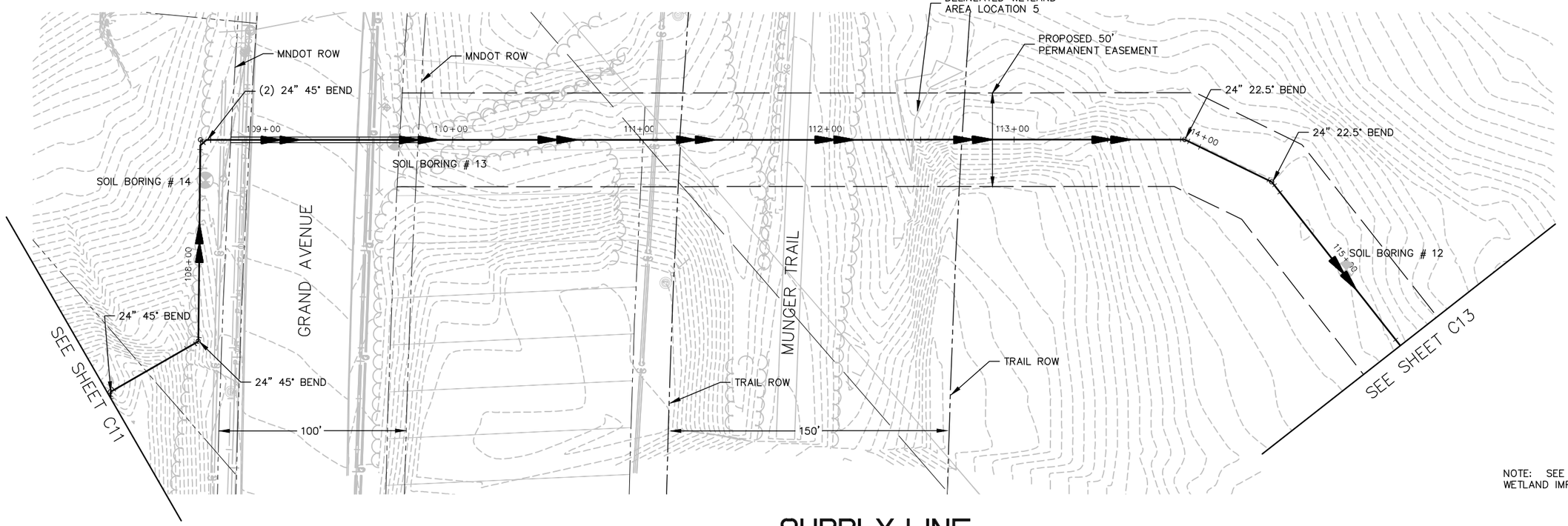
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

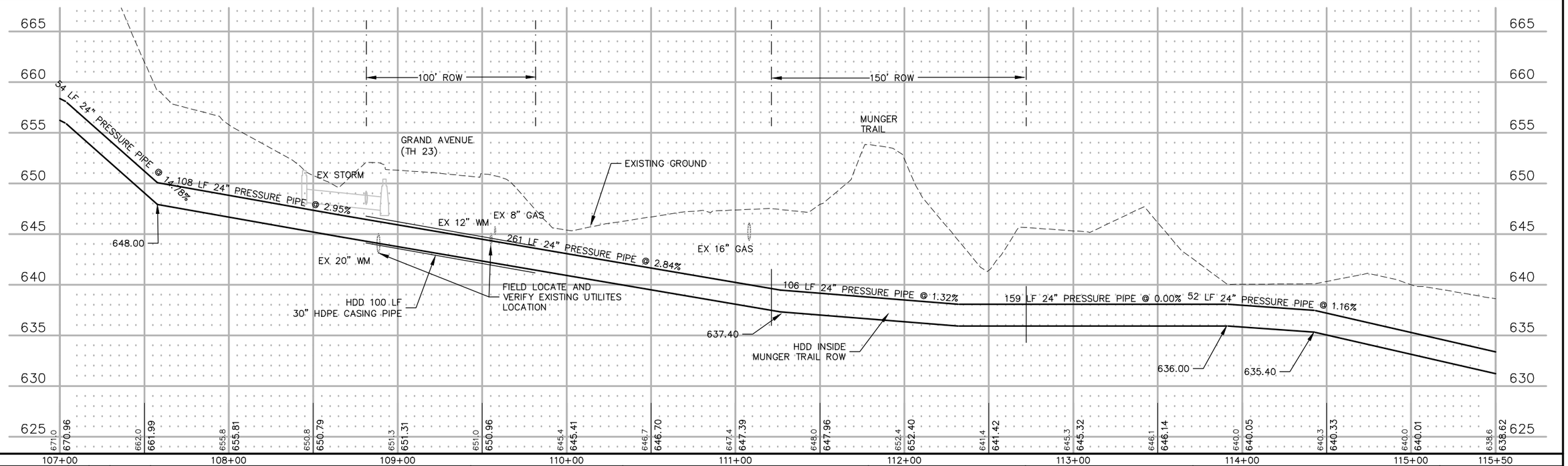
FILE NO. FOSJJ129137

C11 / 30



NOTE: SEE SHEET C21 FOR TEMPORARY WETLAND IMPACTS AND PROCEDURES

SUPPLY LINE



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DESIGNER: GGK/RVH
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DESIGN TEAM

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SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

FILE NO. FOSJJ129137

C12/30

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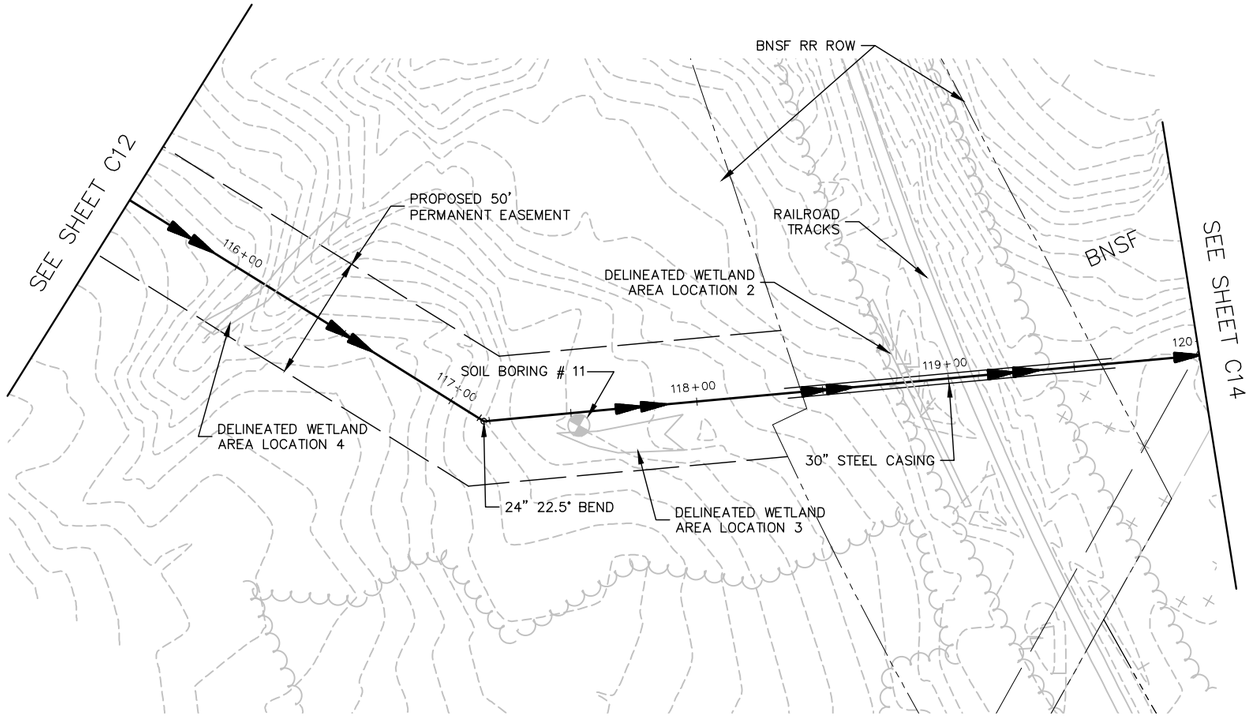
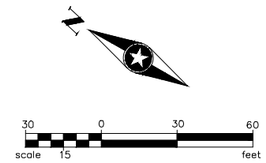
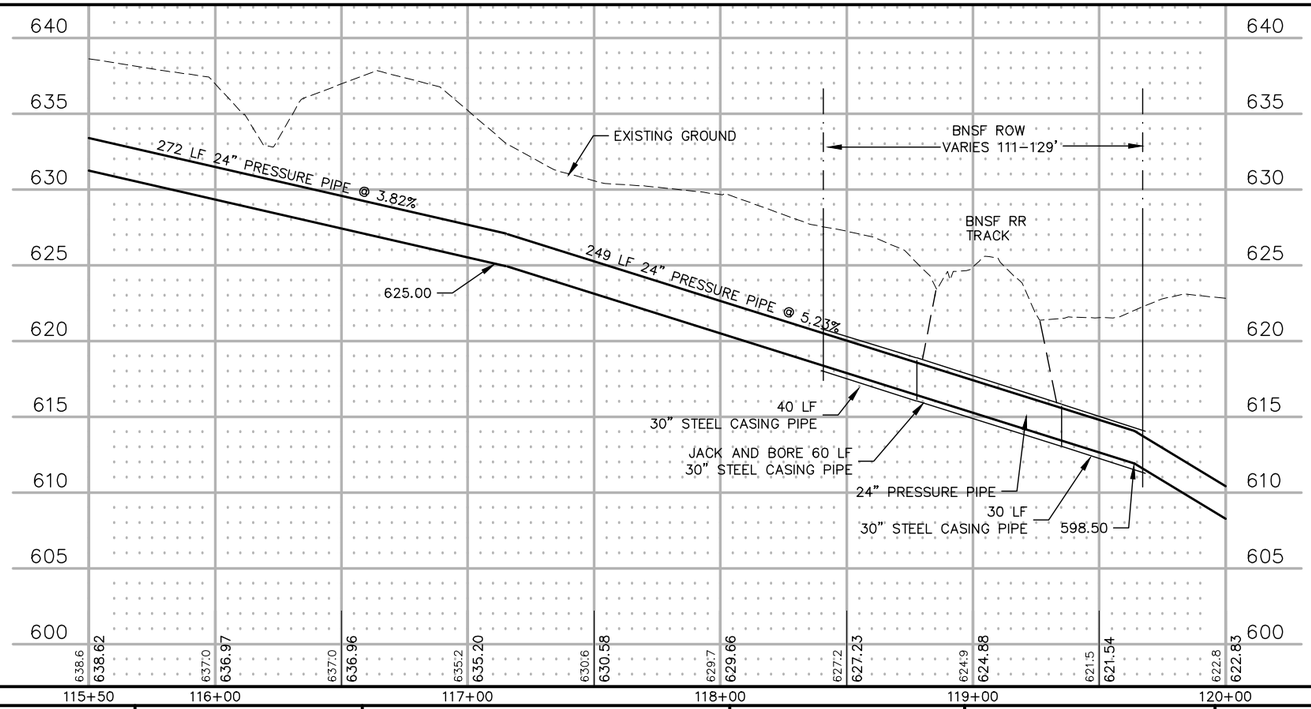




NOTE: SEE SHEET C21 FOR TEMPORARY WETLAND IMPACTS AND PROCEDURES

SUPPLY LINE



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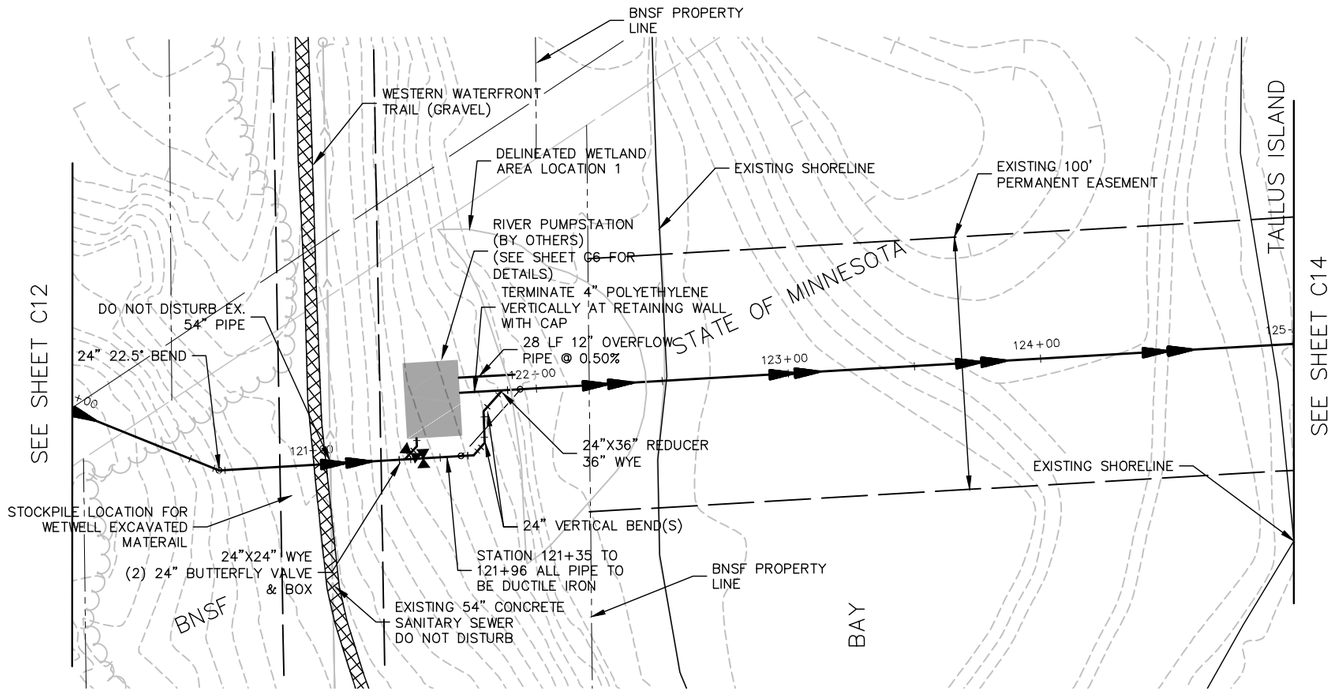
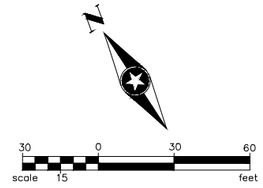
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

FILE NO. FOSJJ129137

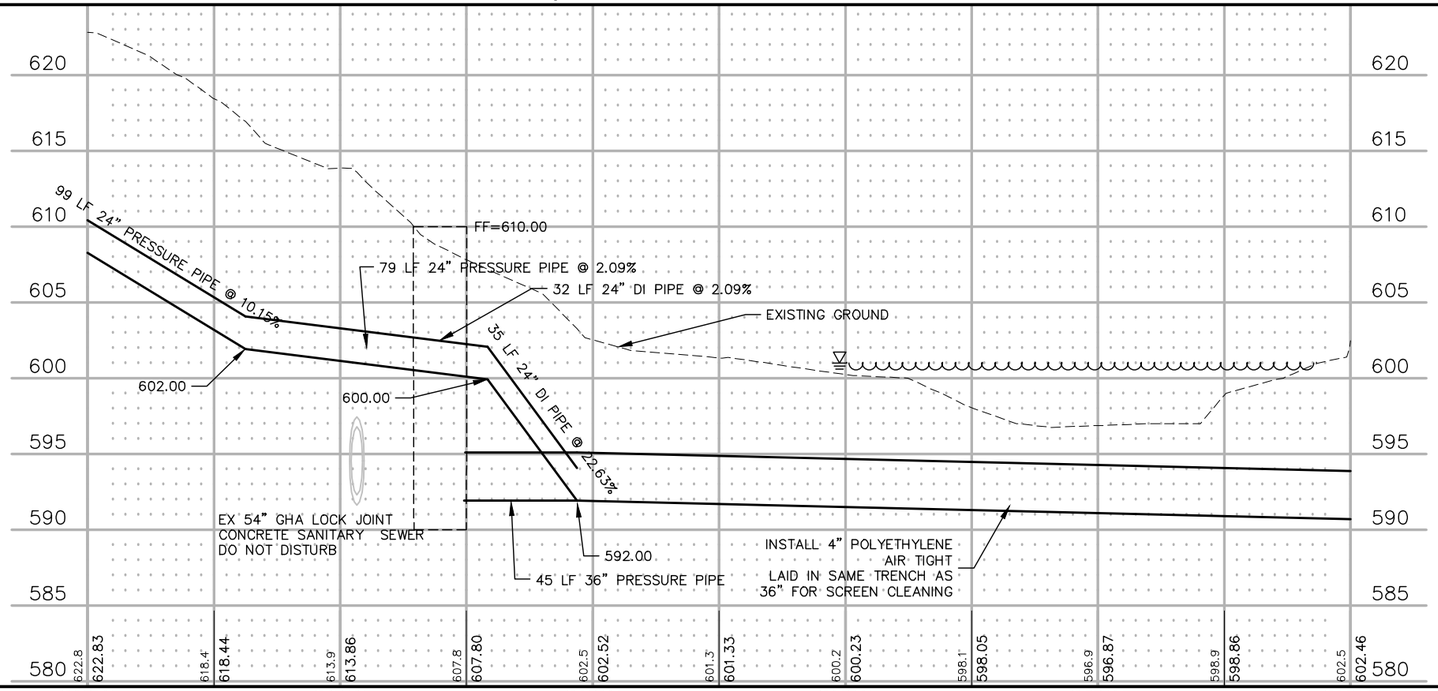
C13 / 30





NOTE: SEE SHEET C21 FOR TEMPORARY WETLAND IMPACTS AND PROCEDURES

SUPPLY LINE / RIVER INTAKE LINE



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CHECKED BY: JRL
DESIGN TEAM

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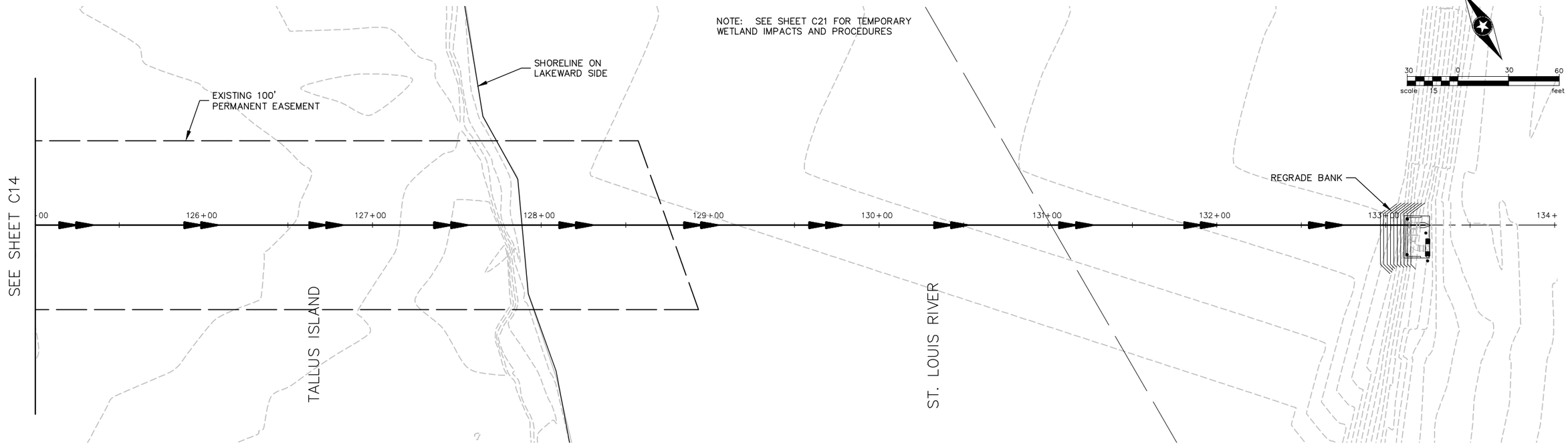
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

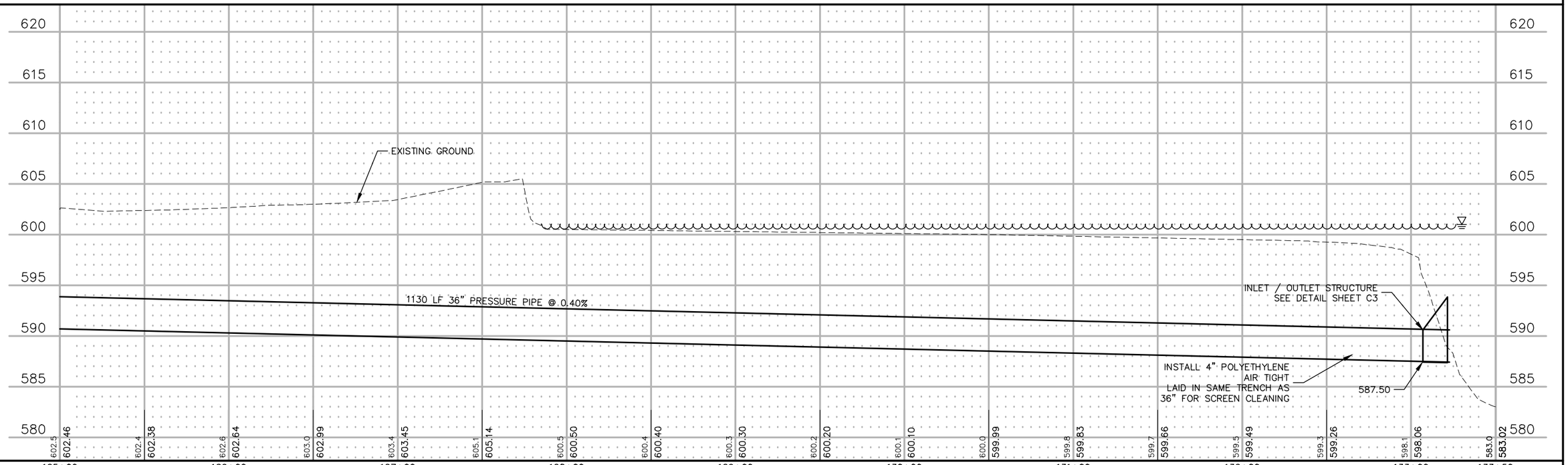
PLAN AND PROFILE WATER IN/OUTFLOW

FILE NO. FOSJJ129137

C14 / 30



RIVER INTAKE LINE



DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

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SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

PLAN AND PROFILE WATER IN/OUTFLOW

FILE NO. FOSJJ129137

C15 / 30

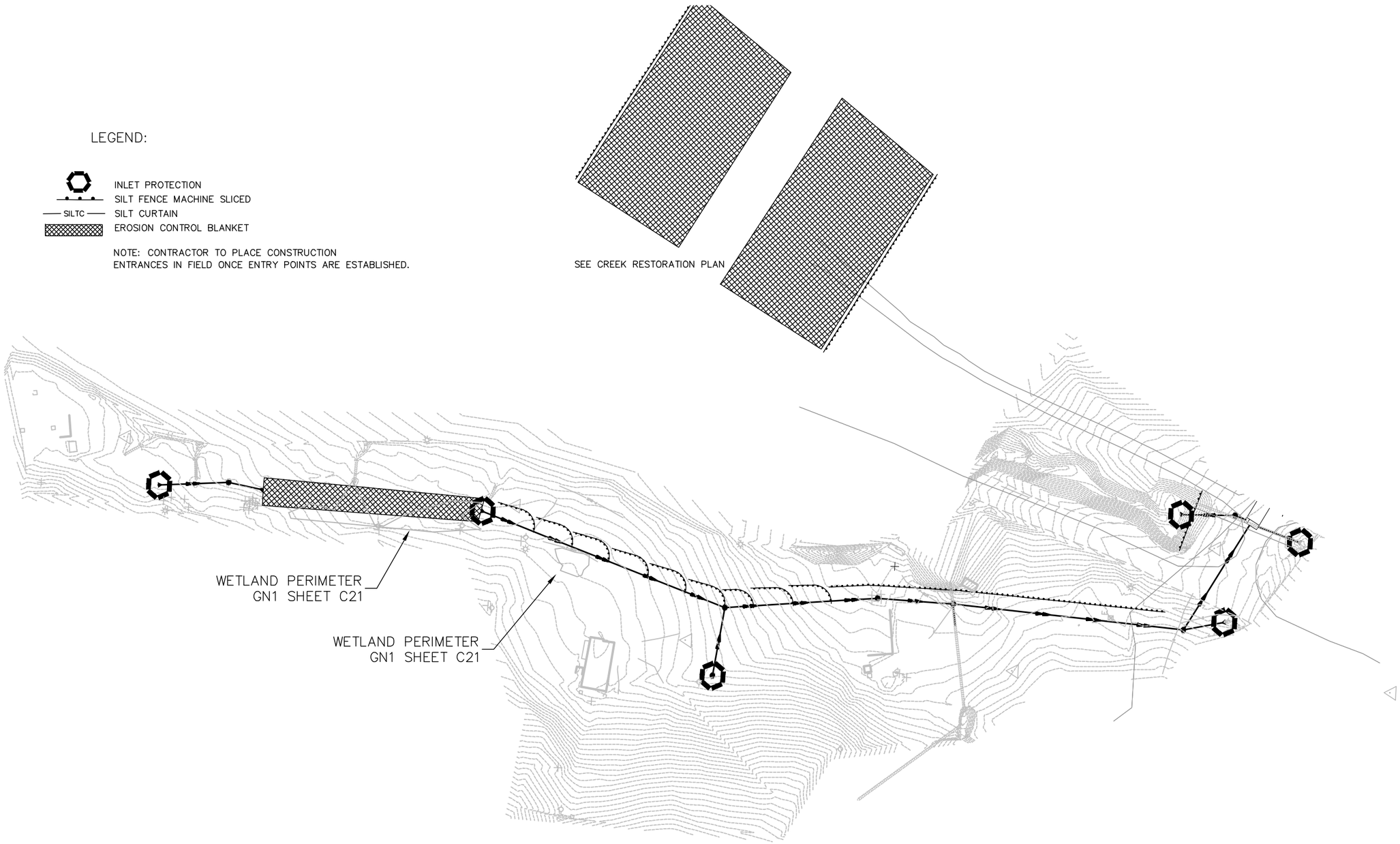
P:\FJ\J\JOCON\106141\50-Cad\dwg\Plnshts\Storm Outlet - (01).dwg 10/17/2014 3:19 PM rhaehn

LEGEND:

INLET PROTECTION
SILT FENCE MACHINE SLICED
SILTC — SILT CURTAIN
EROSION CONTROL BLANKET

NOTE: CONTRACTOR TO PLACE CONSTRUCTION ENTRANCES IN FIELD ONCE ENTRY POINTS ARE ESTABLISHED.

SEE CREEK RESTORATION PLAN



N

50 0 50 100
scale 25 feet

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DRAWN BY:	RVH
DESIGNER:	GGK/RVH
CHECKED BY:	JRL
DESIGN TEAM	

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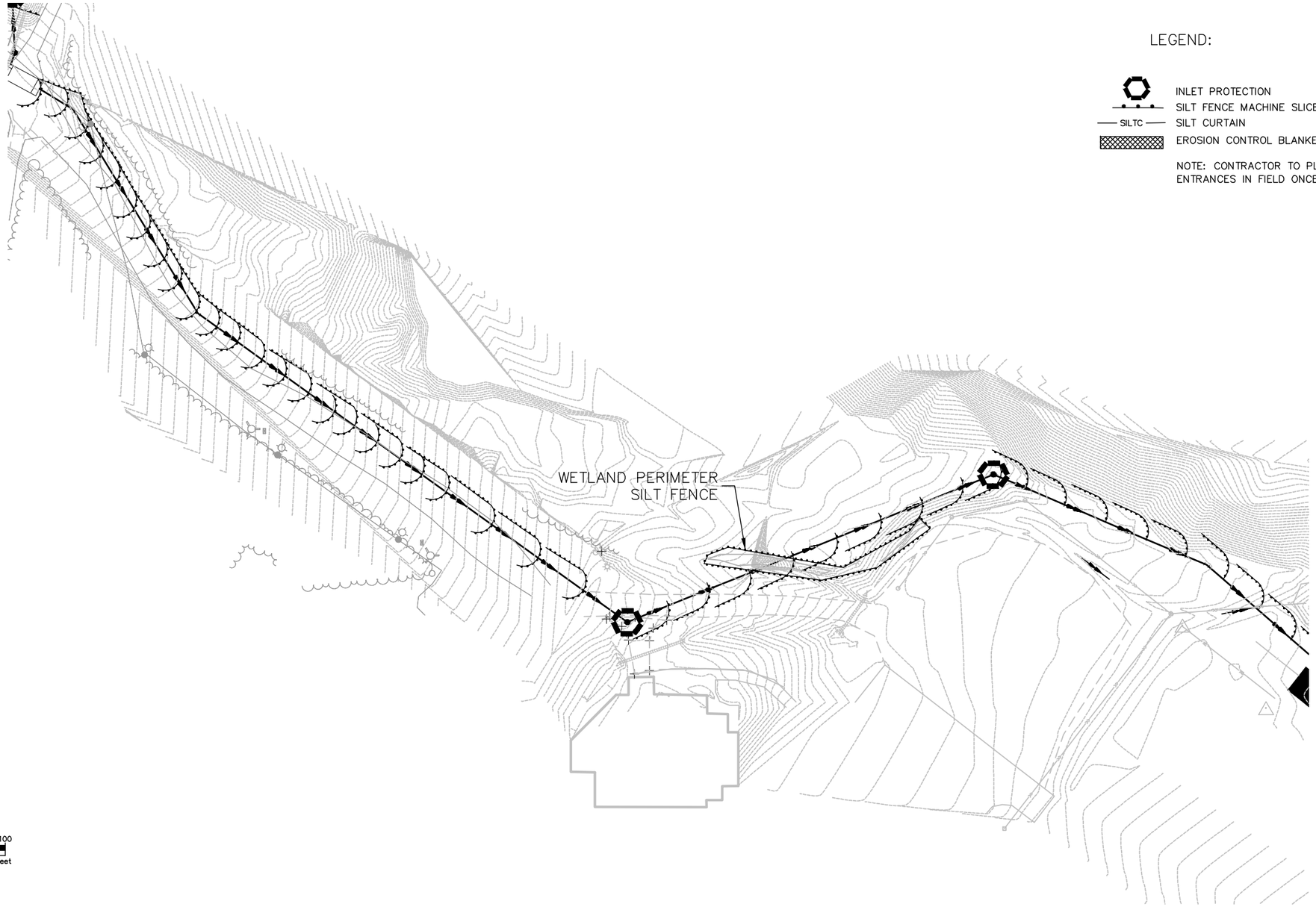
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

RUNOFF COLLECTION SYSTEM EROSION CONTROL

FILE NO. FOSJJ129137

C16/30



LEGEND:

INLET PROTECTION
SILT FENCE MACHINE SLICED
SILTC — SILT CURTAIN
EROSION CONTROL BLANKET

NOTE: CONTRACTOR TO PLACE CONSTRUCTION ENTRANCES IN FIELD ONCE ENTRY POINTS ARE ESTABLISHED.

N

50 0 50 100
scale 25 feet

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DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

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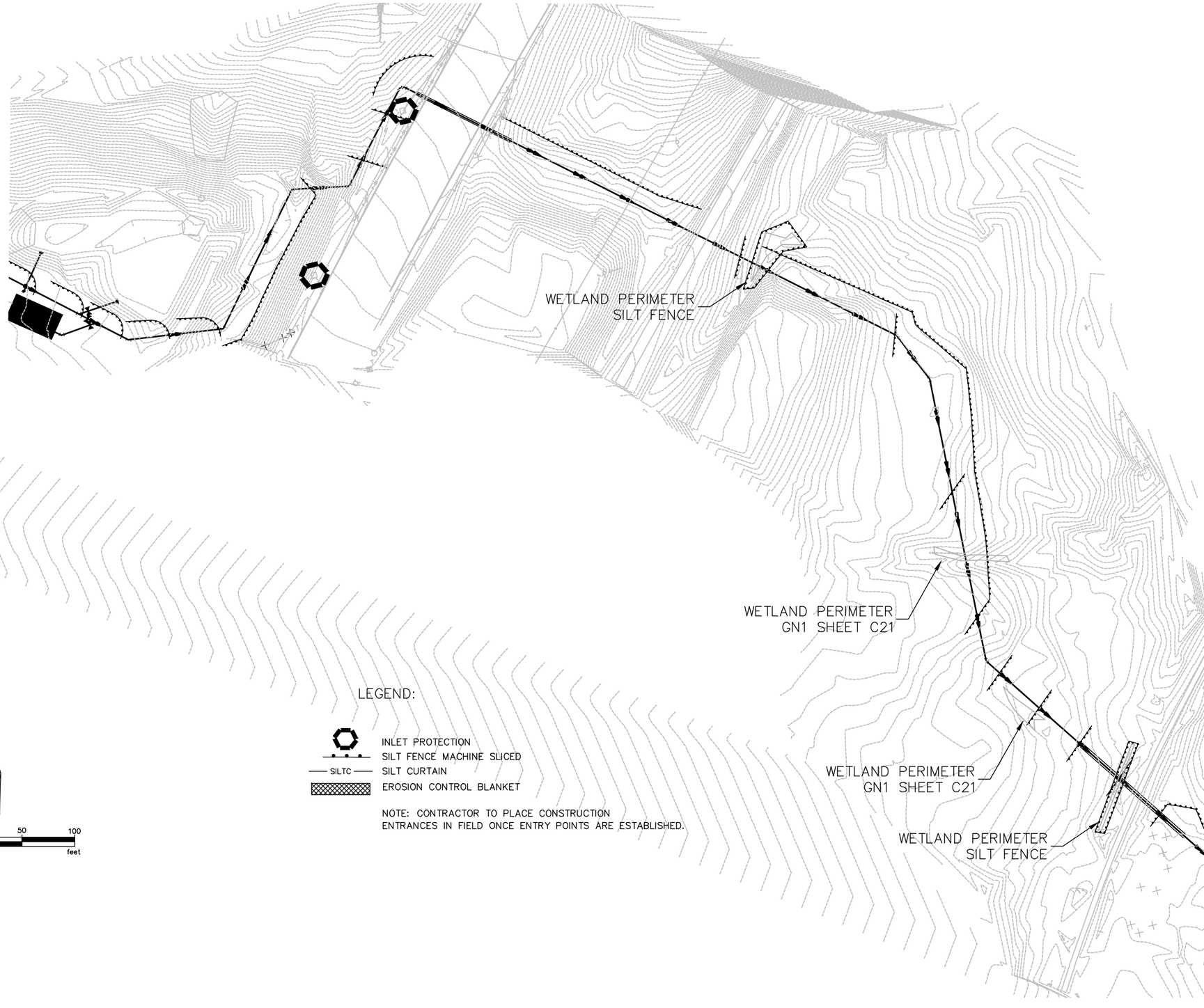
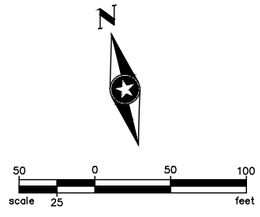
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH, MINNESOTA

TRANSFER PIPE EROSION CONTROL

FILE NO. FOSJJ129137

C17/30





LEGEND:

- INLET PROTECTION
- SILT FENCE MACHINE SLICED
- SILTC — SILT CURTAIN
- EROSION CONTROL BLANKET

NOTE: CONTRACTOR TO PLACE CONSTRUCTION ENTRANCES IN FIELD ONCE ENTRY POINTS ARE ESTABLISHED.

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DESIGNER: GGK/RVH
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SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

SUPPLY LINE EROSION CONTROL

FILE NO. FOSJJ129137

C18 / 30

LEGEND:

- INLET PROTECTION
- SILT FENCE MACHINE SLICED
- SILTC — SILT CURTAIN
- EROSION CONTROL BLANKET

NOTE: CONTRACTOR TO PLACE CONSTRUCTION ENTRANCES IN FIELD ONCE ENTRY POINTS ARE ESTABLISHED.

N

50 0 50 100
scale 25 feet

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DRAWN BY:	RVH
DESIGNER:	GGK/RVH
CHECKED BY:	JRL
DESIGN TEAM	

NO.	BY	DATE	REVISIONS

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SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

RIVER INTAKE EROSION CONTROL

FILE NO. FOSJJ129137

C19/30

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

CONTACTS:
OWNER: CITY OF DULUTH
CONTACT: X
PHONE: X
EMAIL: X

ENGINEER: SHORT ELLIOTT HENDRICKSON INC.
CONTACT: GREG KIMMAN, PE
PHONE: 218-855-1717
EMAIL: GKIMMAN@SEHINC.COM

THE GENERAL CONTRACTOR SHALL ATTACH THEIR REQUIRED CONTACT INFORMATION TO THE SWPPP AFTER THE CONTRACT FOR THE PROJECT IS AWARDED.

CONTRACTOR: TBD
CONTACT: TBD
PHONE: TBD
EMAIL: TBD

GENERAL PROJECT INFORMATION:
PROJECT NAME: SPIRIT MOUNTAIN REVERSABLE RUNOFF COLLECTION AND WATER SUPPLY LINE
PROJECT LOCATION: DULUTH, MN
CONSTRUCTION START DATE: AUGUST 2014
CONSTRUCTION END DATE: AUGUST 2015
THIS PROJECT WILL CONSIST OF: CLEARING, GRUBBING, GRADING, STORM SEWER, TRAIL CONSTRUCTION, & TURF ESTABLISHMENT

AMENDMENTS TO THE SWPPP:
THE SWPPP WILL BE AMENDED AS NEEDED AND/OR AS REQUIRED BY PROVISIONS OF THE PERMIT. AMENDMENTS WILL BE APPROVED BY BOTH THE OWNER AND CONTRACTOR AND WILL BE ATTACHED TO THE SWPPP AS AN ADDITIONAL SHEET. THE SWPPP AMENDMENTS SHALL BE INITIATED, FACILITATED, AND PROCESSED BY THE CONTRACTOR. THE SWPPP AND AMENDMENTS SHALL BE KEPT ON SITE BY THE CONTRACTOR WHENEVER CONSTRUCTION ACTIVITY IS IN PROGRESS.

GENERAL SWPPP RESPONSIBILITIES

GENERAL SWPPP RESPONSIBILITIES:
THE CONTRACTOR SHALL PROVIDE A KNOWLEDGEABLE AND EXPERIENCED PERSON(S) TO OVER SEE THE IMPLEMENTATION OF THE SWPPP, AND THE INSTALLATION, INSPECTION AND MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL BMP'S BEFORE AND DURING CONSTRUCTION.

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

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

TRAINING REQUIREMENTS:
PREPARER/DESIGNER OF SWPPP: GREG KIMMAN
EMPLOYER: SEH INC.
TRAINING OBTAINED: UNIVERSITY OF MN, EROSION AND STORMWATER MANAGEMENT CERTIFICATION PROGRAM DESIGN OF SWPPP-JUNE 2013

THE CONTRACTOR (OPERATOR) SHALL PROVIDE AT LEAST ONE TRAINED PERSON TO OVERSEE THE IMPLEMENTATION OF THE SWPPP AND TO INSTALL, INSPECT, MAINTAIN AND REPAIR BMP'S.

TRAINING MUST BE IN CONFORMANCE WITH THE NPDES CONSTRUCTION PERMIT REQUIREMENTS. TRAINING DOCUMENTATION MUST KEPT ON-SITE WITH THE SWPPP AND THE TRAINED PERSON MUST BE AVAILABLE ON-SITE WITHIN 72 HOURS.

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

1. INSTALL ROCK CONSTRUCTION ENTRANCE(S)
2. INSTALL PERIMETER CONTROL AND STABILIZE DOWN GRADIENT BOUNDARIES
3. CLEAR AND GRUB STORM WATER POND AREAS
4. CONSTRUCT STORM WATER PONDS
5. CLEAR AND GRUB REMAINING SITE
6. COMPLETE GRADING
7. INSTALL STORM SEWER, INLET PROTECTION, CURB & GUTTER, AND PAVING.
8. AFTER CONSTRUCTION IS COMPLETED AND THE SITE IS STABILIZED REMOVE ACCUMULATED SEDIMENT FROM STORM WATER POND, REMOVE BMP'S, AND RE-SEED ANY AREAS DISTURBED BY THEIR REMOVAL.

INSPECTION AND MAINTENANCE:
ALL INSPECTIONS, MAINTENANCE, REPAIRS, REPLACEMENTS, AND BMPS ARE TO BE CONSIDERED INCIDENTAL TO THE BMP BID ITEM.

THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING REQUIRED INSPECTIONS, MAINTENANCE AND OBSERVATION OF WEATHER CONDITIONS AND RAINFALL AMOUNTS TO ENSURE COMPLIANCE WITH THE PERMIT REQUIREMENTS.

THE CONTRACTOR SHALL INSPECT THE CONSTRUCTION SITE ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN TWENTY-FOUR (24) HOURS AFTER A RAINFALL EVENT GREATER THAN HALF (0.5) AN INCH IN TWENTY-FOUR (24) HOURS.

THE CONTRACTOR SHALL KEEP A MAINTENANCE AND INSPECTIONS REPORT TO BE RECORDED AFTER EACH SITE VISIT AND/OR OBSERVATION. RECORDS SHALL INCLUDE THE FOLLOWING:
1. DATE AND TIME OF INSPECTION/MAINTENANCE.
2. NAME OF PERSON(S) CONDUCTING INSPECTION/MAINTENANCE.
3. FINDINGS AND RECOMMENDATIONS FOR CORRECTIVE ACTIONS, IF NECESSARY.
4. CORRECTIVE ACTIONS TAKEN.
5. DATE AND AMOUNT OF RAINFALL(S) GREATER THAN HALF (0.5) INCHES IN 24 HOURS.
6. DOCUMENTATION OF CHANGES MADE TO THE SWPPP.
7. A SITE MAP INDICATING ACTIVE AREAS AND LAND DISTURBING ACTIVITIES.

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

THE CONTRACTOR MUST KEEP A COPY OF THE SWPPP, INSPECTION REPORTS, AND AMENDMENTS ONSITE. THE CONTRACTOR SHALL DESIGNATE A SPECIFIC LOCATION TO KEEP THE RECORDS WHENEVER CONSTRUCTION ACTIVITY IS IN PROGRESS.

ALL EROSION PREVENTION AND SEDIMENTATION CONTROL BMP'S MUST BE INSPECTED TO ENSURE INTEGRITY AND EFFECTIVENESS. ALL NONFUNCTIONAL BMP'S MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMP'S. THE CONTRACTOR MUST INVESTIGATE AND COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS:

ALL SEDIMENT BARRIERS, INCLUDING SILT FENCE MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE FENCE HEIGHT. THESE REPAIRS SHALL BE MADE WITHIN 24 HOURS OF DISCOVERY.

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

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

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

THE CONTRACTOR IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY BMP'S, AS WELL AS EROSION AND CONTROL BMP'S, FOR THE DURATION OF THE CONSTRUCTION WORK AT THE SITE.

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

ALL INFILTRATION AREAS MUST BE INSPECTED TO ENSURE THAT NO SEDIMENT FROM ONGOING CONSTRUCTION ACTIVITIES IS REACHING THE INFILTRATION AREAS AND THESE AREAS ARE PROTECTED FROM COMPACTION DUE TO CONSTRUCTION EQUIPMENT DRIVING ACROSS THE INFILTRATION AREA.

RELATED REVIEWS AND PERMITS:
ENVIRONMENTAL, ARCHEOLOGICAL, LOCAL, STATE, AND/OR FEDERAL REVIEWS/PERMIT:

TYPE OF PERMIT/REVIEW:	REQUIRED ACTIONS
WETLAND DISTURBANCE	NONE

POLLUTION PREVENTION MANAGEMENT MEASURES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POLLUTION PREVENTION MANAGEMENT MEASURES. THE CONTRACTOR IS RESPONSIBLE FOR INFORMING ALL VISITORS AND/OR PERSONNEL ON-SITE OF THE POLLUTION PREVENTION MANAGEMENT MEASURES. ALL POLLUTION PREVENTION MANAGEMENT MEASURES ARE TO BE CONSIDERED INCIDENTAL TO THE MOBILIZATION BID ITEM, UNLESS OTHERWISE NOTED. POLLUTION PREVENTION MANAGEMENT MEASURES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

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

CONCRETE TRUCKS SHALL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON-SITE, UNLESS DONE IN AN ENGINEERED LEAK-PROOF CONTAINMENT SYSTEM. THE ENGINEERED SYSTEM PROVIDED BY THE CONTRACTOR 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 WATERS OF THE STATE DURING A MINIMUM OF A 100-YEAR STORM EVENT. ANY LIQUID AND SOLID WASTE MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT SYSTEM TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES. THE CONCRETE WASHOUT CONTAINMENT SYSTEM AND ALL RELATED ITEMS SHALL BE CONSIDERED INCIDENTAL TO THE MOBILIZATION BID ITEM.

ALL NONHAZARDOUS WASTE MATERIALS SHALL 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. THE DUMPSTER SHALL BE EMPTIED AS NECESSARY TO FUNCTION AS INTENDED FOR DEBRIS COLLECTION. NO CONSTRUCTION GARBAGE OR WASTE MATERIAL SHALL BE BURIED ON-SITE.

A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR SHALL COLLECT ALL SANITARY WASTE FROM THE PORTABLE UNITS AT A RATE NECESSARY TO MAINTAIN DESIGNED FUNCTION.

ALL VEHICLES ON-SITE SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTION MAINTENANCE TO REDUCE THE CHANCE OF LEEKAGE.

FERTILIZERS SHALL BE STORED IN A COVERED SHELTER. PARTIALLY USED BAGS SHALL BE TRANSFERRED TO A SEALABLE BIN TO REDUCE THE CHANCE OF SPILLAGE.

PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS, WHICH ARE CLEARLY LABELED.

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

ANY ASPHALT SUBSTANCES USED ON-SITE SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

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

MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEAN-UP SHALL BE KEPT IN AN ENCLOSED TRAILER OR SHED ON-SITE. EQUIPMENT SHALL BE INCLUDE, BUT NOT LIMITED TO, BROOMS, MOPS, DUST PANS, RAGS, GLOVES, GOGGLES, ABSORBENT (KITTY LITTER), OIL ABSORBENT BOOMS AND DIAPERS, AND BUCKETS.

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

EXTERNAL WASHING OF TRUCKS AND OTHER CONSTRUCTION VEHICLES AND ENGINE DEGREASING ARE PROHIBITED AT THE CONSTRUCTION SITE.

SWPPP SHEETS / ADDITIONAL INFORMATION:
THE SWPPP INCLUDES THE FOLLOWING PLAN SHEETS:
GENERAL SWPPP NOTES AND SHEETS - 20-21
EROSION AND SEDIMENT CONTROL SHEETS - 16-19
SWPPP DETAIL SHEETS - 23

THE SWPPP INCLUDES THE SPECIFICATION BID FORM & PROJECT MANUAL.

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DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

I HEREBY CERTIFY THAT THIS PLAN 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.
JEFFERY R. LEDIN, P.E.
Date: 10/17/2014 Lic. No. 25222

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SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

SWPP PLAN

FILE NO. FOSJJ129137

C20/30

PROJECT SPECIFIC INFORMATION:
TOTAL PROJECT AREA: 15.50 ACRES
TOTAL LAND AREA TO BE DISTURBED: 5.50 ACRES
PRE-CONSTRUCTION IMPERVIOUS AREA: 0 ACRES
POST-CONSTRUCTION IMPERVIOUS AREA: 0 ACRES
IMPERVIOUS AREA ADDED: 0 ACRES

RECEIVING WATERS WITHIN 1 MILE FROM PROJECT BOUNDARIES:
WATER BODY: ST. LOUIS RIVER
TYPE: RIVER
IMPAIRMENT: DDT, DIOXIN, MERCURY, PCB, TOXAPHENE
SPECIAL WATER CLASSIFICATION: YES
REQUIRED ADDITIONAL BMPS: YES-SOIL STABILIZATION WITHIN 7 DAYS, WATER QUALITY VOLUME 1"
TMDL: NO
REQUIRED TMDL ACTIONS: NONE

WATER BODY: KNOWLTON CREEK
TYPE: CREEK
IMPAIRMENT: NONE
SPECIAL WATER CLASSIFICATION: YES
REQUIRED ADDITIONAL BMPS: YES- SOIL STABILIZATION WITHIN 7 DAYS, WATER QUALITY VOLUME 1" WITH ½" INFILTRATION.
TMDL: NO
REQUIRED TMDL ACTIONS: NONE

THIS PROJECT IS NOT LOCATED IN A KARST AREA.
THE PROJECT DOES NOT DISCHARGE TO A CALCAREOUS FEN.

SITE SOIL INFORMATION:
SOIL INFORMATION PROVIDED IS OBTAINED FROM THE USGS SOIL SURVEY INFORMATION AND IS FOR NPDES PERMIT INFORMATION ONLY. THE OPERATOR SHALL NOT RELY ON THIS SOIL INFORMATION

SOIL NAME	HYDROLOGIC CLASSIFICATION
MISKOKI-FLUVAQUENUTS, COMPLEX	D
BARTO, STONY GRESOLON-ROCK OUTCROP	D
HULLIGAN FINE SANDY LOAM	A/D
BOWSTRING AND FLUVAQUENTS, LOAMY	B/D

SEDIMENT CONTROL MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL SEDIMENT CONTROL MEASURES FOR THE PROJECT. SEDIMENT CONTROL MEASURES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

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

ON SLOPES WITH 3:1 OR STEEPER GRADES, THERE SHALL BE NO UNBROKEN SLOPE LENGTH GREATER THAN 75 FEET.

ALL STORM DRAIN INLETS AND CULVERT INLETS SHALL BE PROTECTED BY AN APPROPRIATE BMP DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAS BEEN STABILIZED. INLET AND CULVERT PROTECTION SHALL CONFORM TO THE 2005 MNDOT SPECIFICATIONS 2573 AND 3891.

STOCK PILES SHALL BE PROVIDED WITH AN EFFECTIVE SEDIMENT PERIMETER CONTROL AND SHALL NOT BE PLACED IN ANY TYPE OF SURFACE WATER.

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

TEMPORARY SEDIMENT BASINS:
THE CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT BASIN AS INDICATED IN THE PLANS OR AS REQUIRED BY THE NPDES CONSTRUCTION PERMIT.

TEMPORARY SEDIMENT BASINS SHALL BE CONSTRUCTED AND MADE OPERATIONAL CONCURRENT WITH THE START OF SOIL DISTURBANCE THAT IS UPGRADIENT AND CONTRIBUTES RUNOFF TO THE AREA

TEMPORARY SEDIMENT BASINS SHALL BE CONSTRUCTED TO PREVENT SHORT-CIRCUITING OF STORM WATER TREATMENT AND PREVENT DISCHARGE OF FLOATING DEBRIS.

TEMPORARY SEDIMENT BASINS SHALL BE PROVIDED WITH ENERGY DISSIPATION TO PREVENT SOIL EROSION.

EROSION PREVENTION MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION PREVENTION MEASURES FOR THE PROJECT. EROSION PREVENTION MEASURES INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

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

ALL AREAS NOT TO BE DISTURBED SHALL BE DELINEATED WITH FLAGS, STAKES, SIGNS, OR OTHER MEANS NECESSARY TO PROTECT THESE AREAS BEFORE CONSTRUCTION BEGINS ON THE SITE.

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

ALL PIPE OUTLETS SHALL HAVE TEMPORARY OR PERMANENT ENERGY DISSIPATION WITH 24 HOURS OF CONNECTING TO A SURFACE WATER.

ALL EXPOSED SOILS SHALL BE STABILIZED AS SOON AS POSSIBLE TO LIMIT SOIL EROSION. IN NO CASE SHALL UN-WORKED AREAS, INCLUDING STOCK PILES, HAVE EXPOSED SOILS FOR MORE THAN 7 DAYS WITHOUT PROVIDING TEMPORARY OR PERMANENT STABILIZATION.

DEWATERING AND BASIN DRAINING ACTIVITIES:
THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL DEWATERING AND SURFACE DRAINAGE REGULATIONS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

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

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

ALL DISCHARGE POINTS SHALL BE PROTECTED FROM EROSION AND SCOUR.

DISCHARGE WATER SHALL BE DISPERSED OVER AN EFFECTIVE ENERGY DISSIPATION MEASURE.

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

FINAL STABILIZATION:
THE CONTRACTOR IS RESPONSIBLE FOR ENSUING FINAL STABILIZATION OF THE SITE. FINAL STABILIZATION INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

ALL SOIL DISTURBING ACTIVITIES HAVE BEEN COMPLETED.

ALL EXPOSED SOILS HAVE BEEN UNIFORMLY STABILIZED WITH AT LEAST 70% VEGETATION COVERAGE.

ALL DRAINAGE DITCHES, PONDS AND ALL STORM WATER CONVEYANCE SYSTEMS HAVE BEEN CLEARED OF SEDIMENT AND STABILIZED TO PRECLUDE EROSION.

ALL TEMPORARY BMPS HAVE BEEN REMOVED AND PROPERLY DISPOSED OF.

FINAL STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH MNDOT 2005 SPECIFICATION 2575.

WETLAND AREAS

LOCATION NO.	AREA (SQ FT)
1	5171
2	228
3	387
4	376
5	523
6	176
7	709
8	605
9	3228

PROJECT SPECIFIC NOTES:
1) EQUIPMENT SHALL BE PRESSURE WASHED BEFORE COMMENCING WORK

2) TEMPORARY IMPACTS WILL BE RESTORED APPROPRIATELY USING BEST MANAGEMENT PRACTICES (BMPs). SILT FENCE WILL BE INSTALLED ALONG THE CONSTRUCTION CORRIDORS TO DEFINE THE CONSTRUCTION LIMITS AND PROJECT ADJACENT WETLANDS. THIS FENCING WILL ALSO ENSURE THAT WORK WITHIN WETLANDS IS COMPLETED IN ONLY THOSE AREAS NECESSARY (AND AS PERMITTED) FOR INSTALLATION OF UTILITIES. THE EXCAVATED WETLAND SOIL WILL BE STOCKPILED SEPARATELY WITHIN THE CONSTRUCTION LIMITS OR COMPLETELY OUTSIDE OF WETLAND AREAS. EXCAVATED SOIL WILL NOT BE STOCKPILED IN ANY OTHER WETLAND AREAS THAT HAVE NOT BEEN PERMITTED FOR IMPACTS AS SUCH. THE EXCAVATED WETLAND SOIL WILL BE STRIPPED AND STOCKPILED PRIOR TO ANY EXCAVATION FOR THE UTILITY TRENCH. UPON COMPLETION OF THE UTILITY INSTALLATION, THE SOILS WILL BE REPLACED IN THE OPPOSITE ORDER THEY WERE EXCAVATED TO RESEMBLE THE PRE-CONSTRUCTION SOIL PROFILE. THIS WILL INSURE THAT THE EXCAVATED WETLAND TOPSOIL IS APPROPRIATELY PLACED AT THE SURFACE FOR RE-SEEDING NATIVE WETLAND VEGETATION.

General Note (GN1) To Address Temporary Wetland Impacts
Temporary impacts will be restored appropriately using best management practices (BMPs). Silt fence will be installed along the construction corridors to define the construction limits and project adjacent wetlands. This fencing will also ensure that work within wetlands is completed in only those areas necessary (and as permitted) for installation of the utilities. The excavated wetland soil will be stockpiled separately within the construction limits or completely outside of wetland areas. Excavated soil will not be stockpiled in any other wetland areas that have not been permitted for impacts as such. The excavated wetland soil will be stripped and stockpiled prior to any excavation for the utility trench. Upon completion of the utility installation, the soils will be replaced in the opposite order they were excavated to resemble the pre-construction soil profile. This will insure that the excavated wetland topsoil is appropriately placed at the surface for re-seeding native wetland vegetation.

Location 1
- Mitigation: At this location GN1 will be applied. After removal of the wetland soils the pipe will be installed and the surface restored.
- Also a permanent retaining wall will be installed upland of wetland boundary to facilitate grading and prevent filling of wetland.
- Avoidance: The pipeline route is generally perpendicular to the St Louis River and connects Spirit Mountain and the river. Upstream and downstream alignments were considered, however this location was selected to avoid other more significant wetland impacts.

Location 2
- This wetland is a drainage ditch parallel to railroad tracks
- Avoidance: The pipeline will be installed by jack/bore construction and no impacts will occur.

Location 3
- This area is converted to wetlands from prior grading and earthmoving
- Mitigation: At this location GN1 will be applied.
- Avoidance: The alignment in this reach of the pipeline was granted by the Developer of the property, and generally located at the top of the bluff area leading to Knowlton Creek. The location of the pipe is confined to the right-of-way corridor.

Location 4
- This area is a longitudinal drainage way and the same amount of impact would occur if the alignment were moved up or down the hill
- Mitigation: At this location GN1 will be applied.
- Avoidance: The alignment in this reach of the pipeline was granted by the Developer of the property, and generally located at the top of the bluff area leading to Knowlton Creek. The location of the pipe is confined to the right-of-way corridor.

Location 5
- Wetland is at toe of slope at Trail Grade
- Avoidance: Pipe will be installed by directional drilling under the trail and impact will be avoided.

Location 6
- This area is a drainage ditch bottoms adjacent to the recently constructed chalet
- Avoidance: If the alignment were shifted, additional clearing of trees would be needed and the drainage way would be crossed at a different location

Location 7
- This area is a drainage ditch bottoms adjacent to the recently constructed chalet.
- Avoidance: If the alignment were shifted, additional clearing of trees would be needed and the drainage way would be crossed at a different location

Location 8
- This wetland occurs at a natural low point in the grading.
- Mitigation: At this location GN1 will be applied.
- Avoidance: The alignment is necessarily dictated by connecting the low points to capture excess storm water runoff.

Location 9
- This wetland occurs at a natural low point in the grading.
- Mitigation: At this location GN1 will be applied
- Large open drainage swale will be constructed in this area and wetland will likely expand as a result of the change.

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DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

I HEREBY CERTIFY THAT THIS PLAN 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.
JEFFERY R. LEDIN, P.E.
Date: 10/17/2014 Lic. No. 25222

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SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

SWPP PLAN

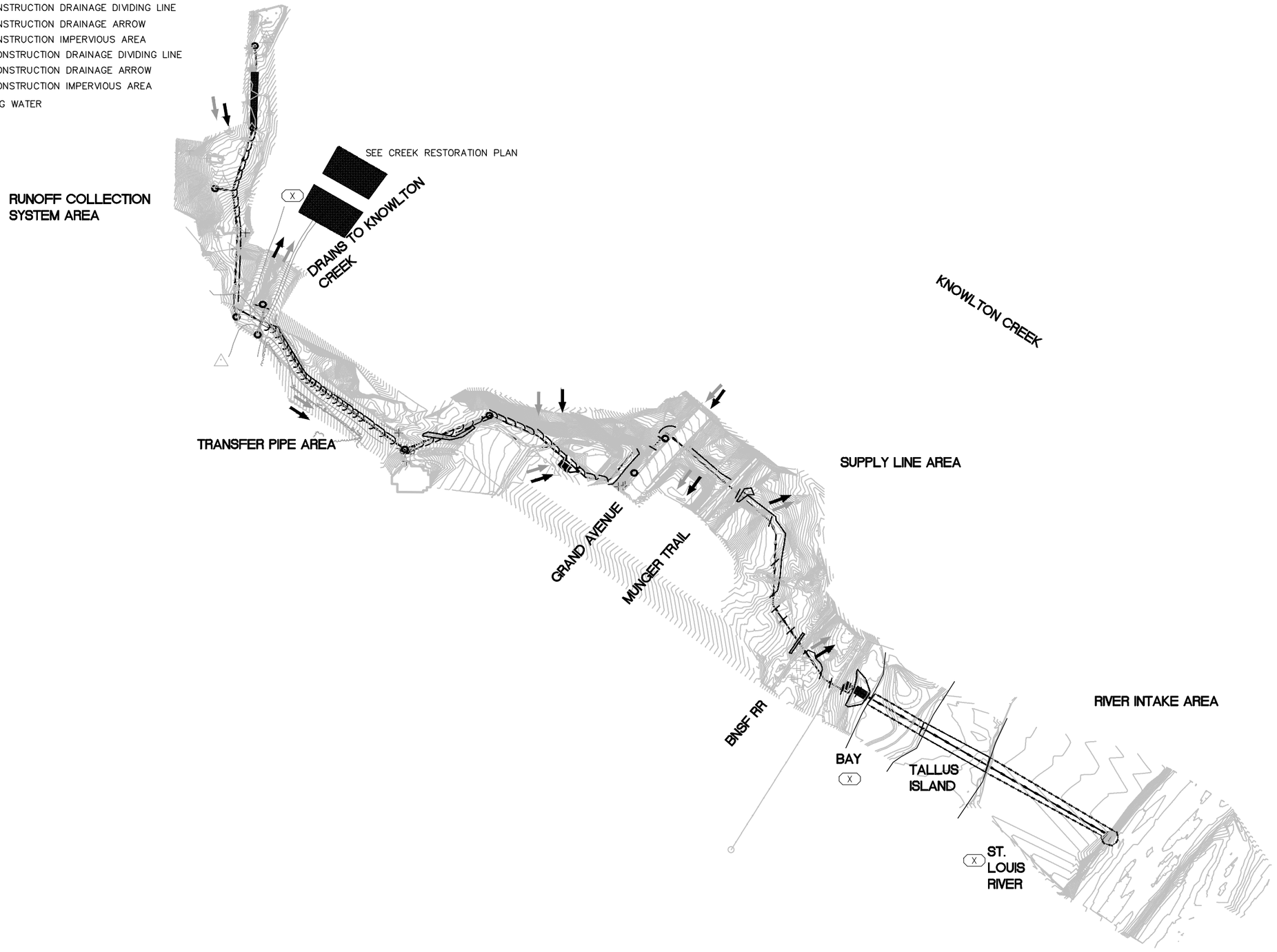
FILE NO. FOSJJ129137

C21/30

DRAINAGE SUMMARY MAP

LEGEND

- PRE–CONSTRUCTION DRAINAGE DIVIDING LINE
- PRE–CONSTRUCTION DRAINAGE ARROW
- PRE–CONSTRUCTION IMPERVIOUS AREA
- POST–CONSTRUCTION DRAINAGE DIVIDING LINE
- POST–CONSTRUCTION DRAINAGE ARROW
- POST–CONSTRUCTION IMPERVIOUS AREA
- (X) RECEIVING WATER



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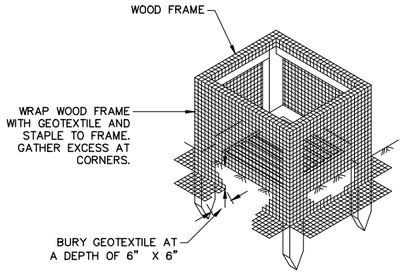
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

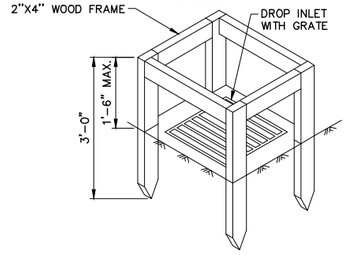
SWPP PRE/POST CONSTRUCTION

FILE NO. FOSJJ129137

C22/30



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



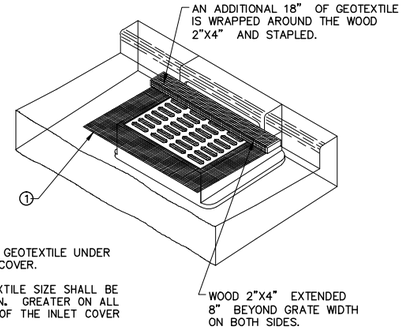
SILT FENCE BOX TO PROTECT DROP INLETS
USE WHERE INLET DRAINS AN AREA WITH SLOPES AT 1:3 OR LESS (TYPE A. SPEC 3891)

NTS

INLET PROTECTION - TYPE A

Revised: Oct. 2011
SEH Plate No. ERO–01

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILIMENT IN BOTH DIRECTIONS, MEETING MN/DOT SPEC 3886 FOR MACHINED SLICED.



PLACE GEOTEXTILE UNDER INLET COVER.

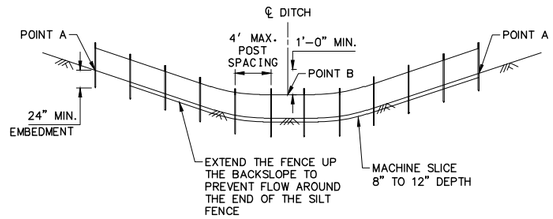
GEOTEXTILE SIZE SHALL BE 8" MIN. GREATER ON ALL SIDES OF THE INLET COVER

GEOTEXTILE FILTER AT STREET INLET WITH CURB BOX
MN/DOT TYPE C SPEC. 3891

NTS

INLET PROTECTION - TYPE C

Revised: Oct. 2011
SEH Plate No. ERO–03



NOTES:

THE AMOUNT OF SILT FENCE ABOVE GROUND SHOULD BE 24"TO 28". WHEN SEDIMENT BUILD UP REACHES 8"TO 9", THE SEDIMENT MUST BE REMOVED.

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

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

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

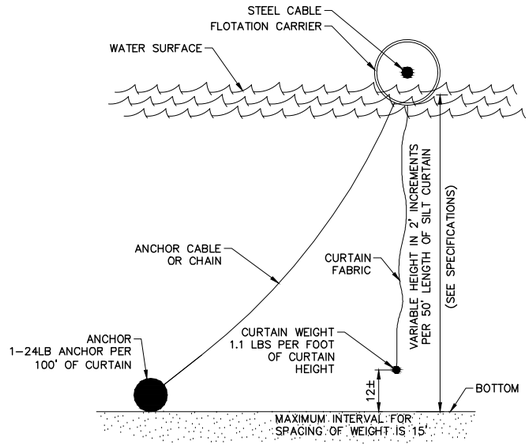
CHECK DAMS AND DIKES SHOULD BE LIMITED IN USE FOR DRAINAGE AREAS OF LESS THAN FIVE ACRES AND IN CHANNELS OF LESS THAT TEN PERCENT SLOPE.

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

NTS

SILT FENCE DITCH CHECK

Revised: Oct. 2011
SEH Plate No. ERO–08

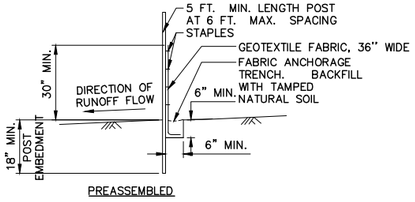


NOTES:
–REFER TO SPECS FOR TYPE OF SILT CURTAIN (STILL OR MOVING WATER).
–DOUBLE SILT CURTAINS SHOULD BE SPACED 10' APART.
–CURTAIN LENGTH TO MATCH BOTTOM PROFILE AS CLOSELY AS POSSIBLE.

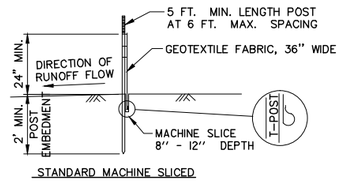
NTS

FLOTATION SILT CURTAIN

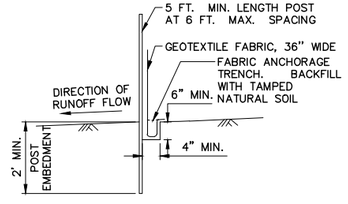
Revised: Oct. 2011
SEH Plate No. ERO–14



PREASSEMBLED



STANDARD MACHINE SLICED



HEAVY DUTY

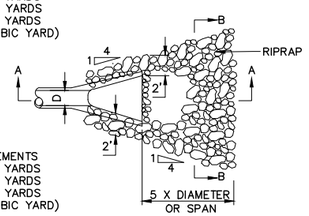
DESIGN GUIDELINES:
(SEE MNDOT SPEC. 2573.3C AND 3886)

NTS

SILT FENCE

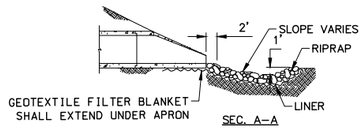
Revised: Jan. 2013
SEH Plate No. ERO–15

CLASS II RIPRAP REQUIREMENTS
12" TO 24" 4 CUBIC YARDS
27" TO 33" 8 CUBIC YARDS
36" TO 48" 12 CUBIC YARDS
(APPROX. 1.4 TONS PER CUBIC YARD)

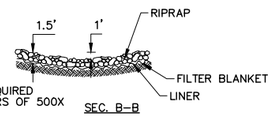


PLAN

CLASS III RIPRAP* REQUIREMENTS
12" TO 24" 6 CUBIC YARDS
27" TO 33" 12 CUBIC YARDS
36" TO 48" 18 CUBIC YARDS
(APPROX. 1.4 TONS PER CUBIC YARD)



SEC. A–A



NOTE: FILTER BLANKET REQUIRED UNDER RIPRAP OR 2 LAYERS OF 500X "MIRAFI" FABRIC OR EQUAL

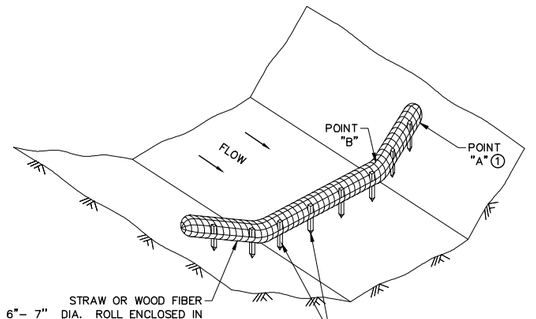
SEC. B–B

* CLASS III RIPRAP, D50= 9 IN.

NTS

CLASS II AND III RIPRAP AT OUTLETS

Revised: Oct. 2011
SEH Plate No. ERO–23

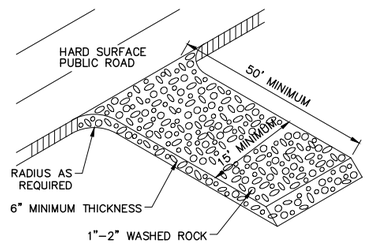


① POINT "A" SHALL BE A MINIMUM OF 6" HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

NTS

BIOROLL DITCH CHECK

Revised: Oct. 2011
SEH Plate No. ERO–05



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

NTS

ROCK CONSTRUCTION ENTRANCE

Revised: Oct. 2011
SEH Plate No. ERO–35

P:\FJJ\JJOCON\106141\50-Cad\C3D\JC122747ec.dwg 10/7/2014 2:05 PM rhaehn

DRAWN BY: RVH
DESIGNER: GGK/RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

I HEREBY CERTIFY THAT THIS PLAN 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.

JEFFERY R. LEDIN, P.E.
Date: 10/17/2014 Lic. No. 25222

PHONE: 218.855.1700
416 S 6TH ST, STE 200
BRAINERD, MN 56401–3540
www.sehinc.com

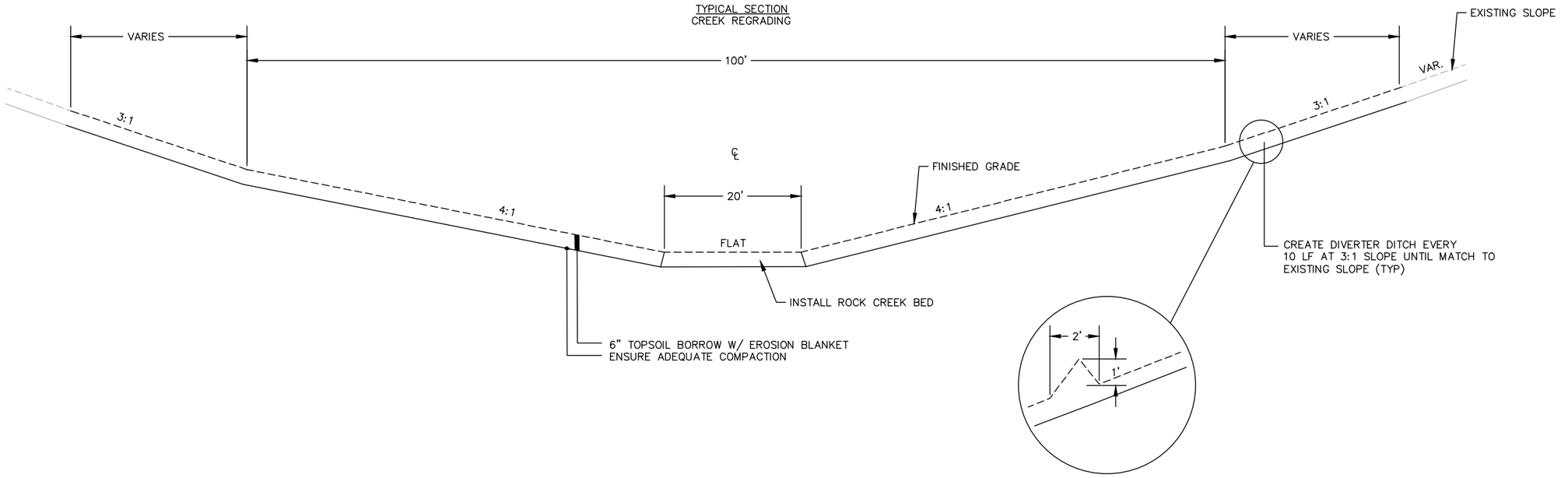
SPIRIT MOUNTAIN IMPROVEMENTS DULUTH,MINNESOTA

SWPP DETAILS

FILE NO. FOSJJ129137

C23/30

TYPICAL SECTION
CREEK REGRADING



STATEMENT OF ESTIMATED QUANTITIES CREEK RESTORATION			
ITEM DESCRIPTION	UNIT OF MEASUREMENT	QUANTITY	BASIS
REMOVE EX SILT FENCE	LF	300	
REMOVE EX RCP CULVERT	LF	160	DISPOSE OF OFF SITE
CLEAR & GRUB TREE	EA	4	DISPOSE OF OFF SITE
COMMON EXCAVATION	CY	875	
RIPRAP CL III	CY	25	
1.5" WASHED ROCK	CY	45	15' WIDE CREEK BOTTOM - REUSE EXISTING ROCKS AS WELL
TOPSOIL BORROW	CY	394	
EROSION CONTROL BLANKET	SY	2362	
SEEDING (INCL FERTILIZER	AC	0.49	MN SEED MIX 36-311
INSTALL SILT FENCE	LF	400	

P:\FJ\J\JOCON\106141\50-Cad\extra work\Creek regrading_TY.dwg 10/20/2014 4:06 PM rhaehn

DRAWN BY: RVH
DESIGNER: RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC.
PROFESSIONAL ENGINEERS

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Date: 10/17/2014 Lic. No. 25222

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1200 25TH AVENUE SOUTH
P.O. BOX 1717
ST. CLOUD, MN 56302-1717
www.sehinc.com

CREEK GRADING
SPIRIT MOUNTAIN
DULUTH, MN

TYPICAL SECTIONS
SEQ / DETAILS

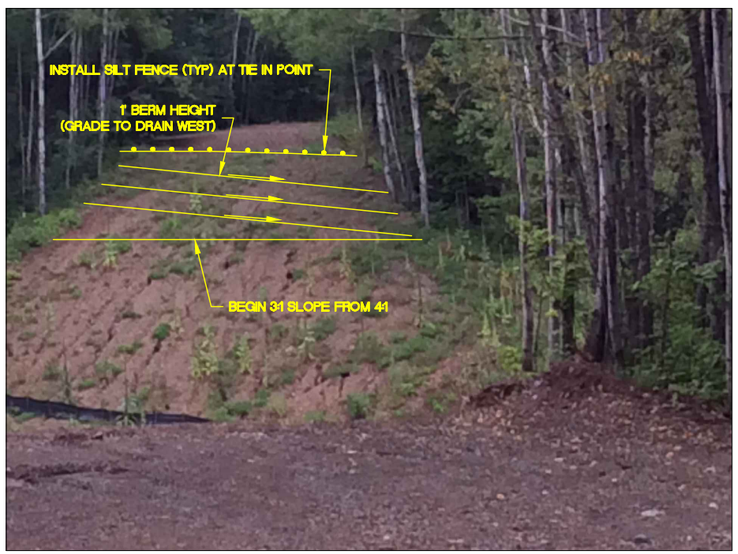
FILE NO.
FOSJJ129137

C24
30

REMOVALS

GRADING

DIVERSION DITCH TYPICAL



SLOPE CORRECTION KNOWLTON CREEK

DRAWN BY: RVH
DESIGNER: RVH
CHECKED BY: JRL
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC.
PROFESSIONAL ENGINEERS

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CREEK GRADING
SPIRIT MOUNTAIN
DULUTH, MN

NOTES, VIEWS

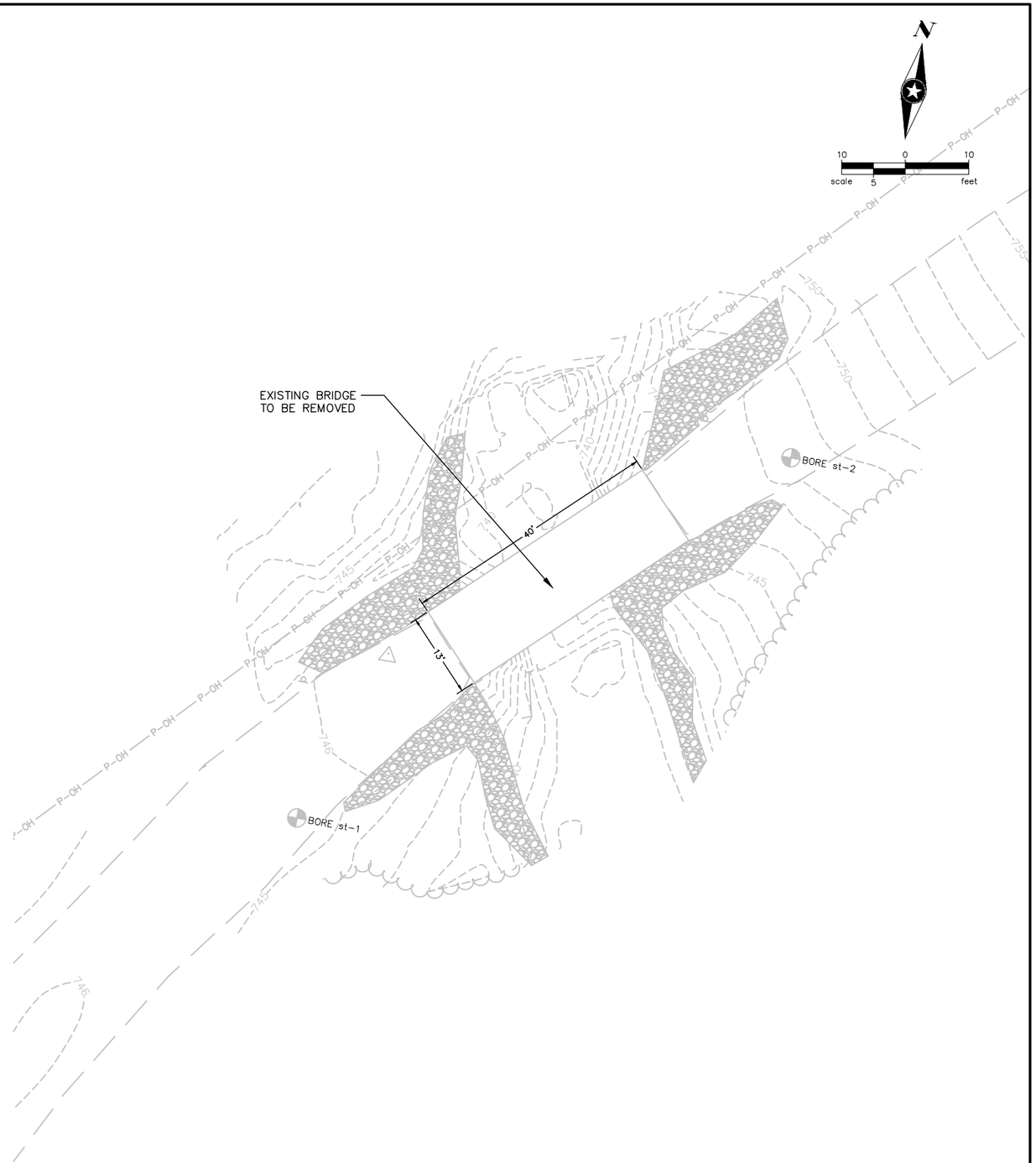
FILE NO.
FOSJJ129137

C25
30

P:\FJJ\JJOCON\106141\50-Cad\extra work\Creek regrading_Plan.dwg 10/13/2014 11:23 AM rhoehn

EXISTING ROCKS TO BE REMOVED
AND REPLACE WITH CLASS IV RIPRAP
TO PROVIDE 20' CHANNEL WIDTH

EXISTING ABUTMENT FILL MATERIAL TO BE
REMOVED AND REPLACED WITH CLASS IV RIPRAP



P:\FJJ\JJOCON\106141\50-Cad\extra work\SM125435BA2.dwg 10/22/2014 8:24 AM rhaehn

DRAWN BY: ACO					
DESIGNER: JRL					
CHECKED BY: KLA					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

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PROFESSIONAL ENGINEERS

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JEFFERY R. LEDIN, P.E.
Date: 10/18/2014 Lic. No. 25222

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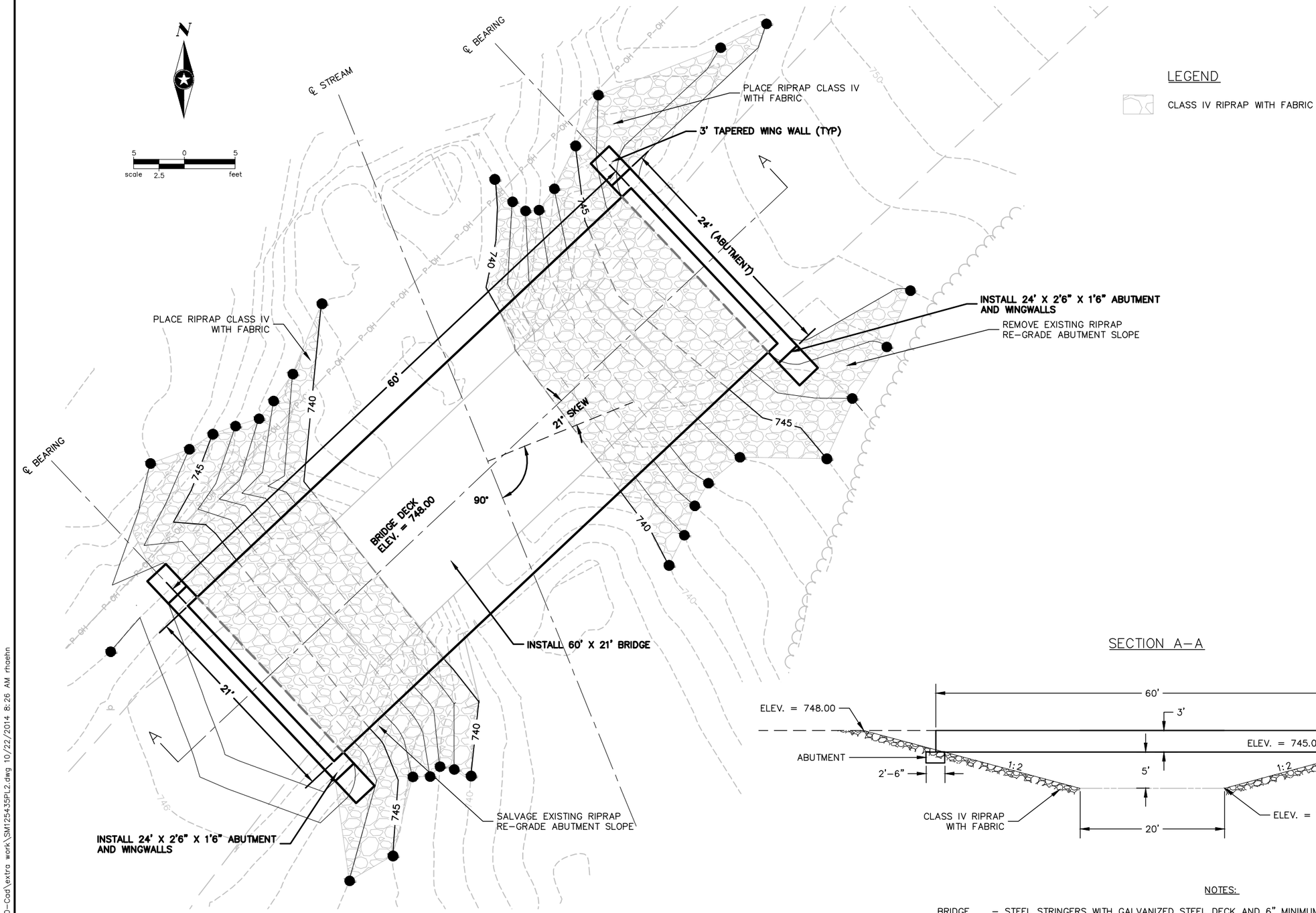
www.sehinc.com

DULUTH, MINNESOTA

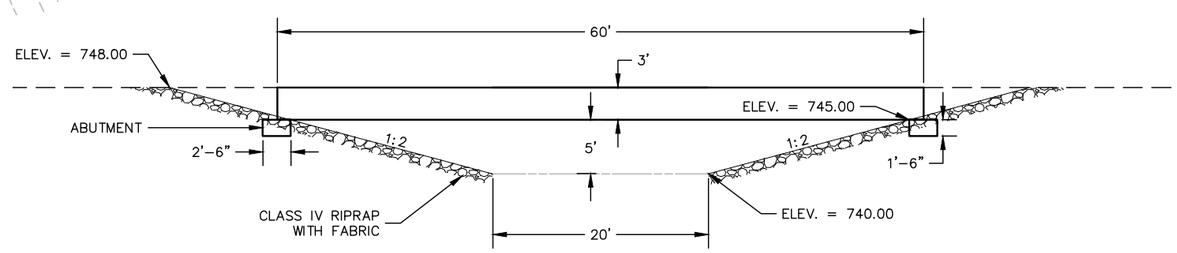
SPIRIT MOUNTAIN RECREATION AREA
KNOWLTON CREEK BRIDGE
EXISTING CONDITIONS

FILE NO.
FOSJJ129137

B1
30



SECTION A–A



BENCHMARK EL. 746.78
NORTHING = 3318342.59
EASTING = 4818080.76

NOTES:

BRIDGE – STEEL STRINGERS WITH GALVANIZED STEEL DECK AND 6" MINIMUM OF CLASS V AGGREGATE SURFACE
ABUTMENT – STEEL CRIB/CONCRETE FILLED ON COMPACTED AGGREGATE

DRAWN BY: ACO	NO.	BY	DATE	REVISIONS
DESIGNER: JRL				
CHECKED BY: KLA				
DESIGN TEAM				

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

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Date: 10/17/2014 JEFFERY R. LEDIN, P.E. Lic. No. 25222

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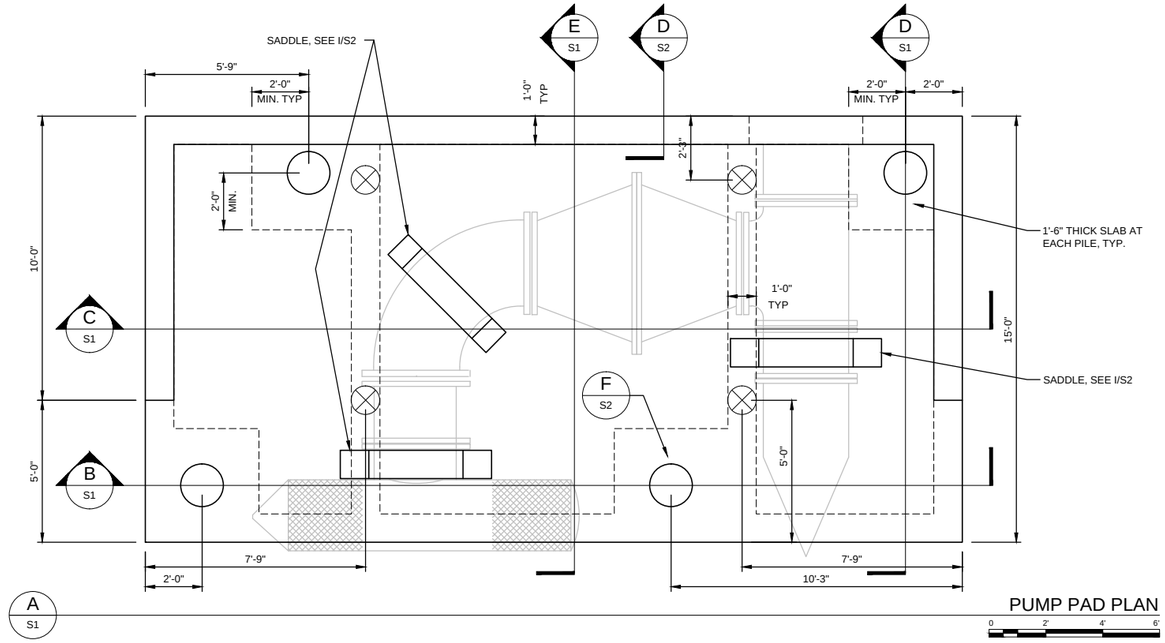
DULUTH, MINNESOTA

SPIRIT MOUNTAIN RECREATION AREA
KNOWLTON CREEK BRIDGE

FILE NO. FOSJJ129137

B2 / 30



PUMP PAD PLAN

0 2' 4' 6'

LEGEND

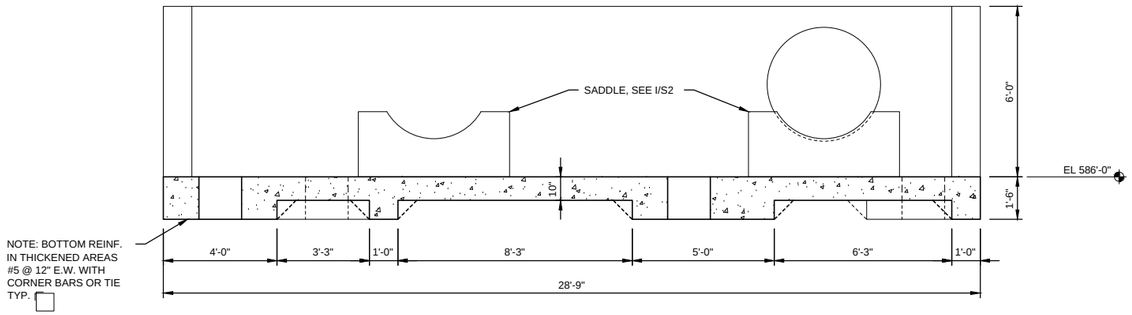
PICK UP POINT

PILE VOID (1'-6" DIAM.)

NOTES:

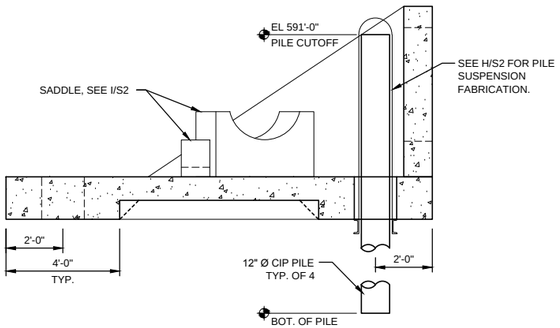
1. THIS DRAWING ASSUMES PILING DRIVEN FIRST. THEN ADJUST DIMENSIONS AS REQUIRED FOR IN-PLACE PILE LOCATIONS.

2. CONTRACTOR SHALL ENGAGE A GEOTECHNICAL ENGINEER TO TAKE A SOIL BORING AT THE LOCATION OF THIS PLATFORM FROM CONTRACTOR'S BARGE, TAKEN TO A MINIMUM DEPTH OF 75 FEET BELOW RIVERBED, TO GAIN INFORMATION NECESSARY FOR GEOTECHNICAL ENGINEER TO DESIGN PILE LENGTHS TO CARRY A SERVICE LOAD OF 15 TONS. FOR BIDDING PURPOSES, CONTRACTOR SHALL ASSUME PILE LENGTH OF 50 FEET AFTER FILLING AND CUTOFF, INCLUDING SPLICES AS REQUIRED. (FILLING IS DONE WITH PILE HEAD ABOVE WATER BEFORE CUTOFF.) CONTRACTOR SHALL PROVIDE UNIT COST PER FOOT OF ADDITIONAL PILE LENGTH. CONTRACTOR'S GEOTECHNICAL ENGINEER SHALL USE SOIL INFORMATION THUS GAINED IN THE USE OF PILE DRIVING ANALYZER PER ASTM D4945 TO CONFIRM DESIGNED LENGTH DURING DRIVING. SEE SPECIFICATION SECTION 01 45 29.



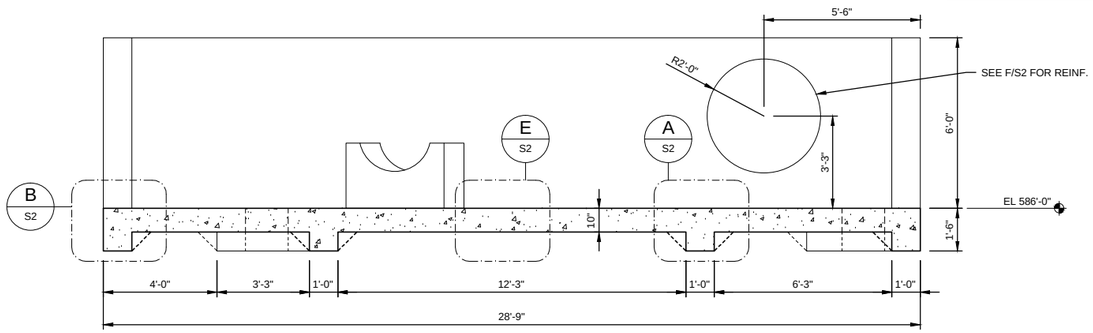
B S1 SECTION

0 2' 4' 6'



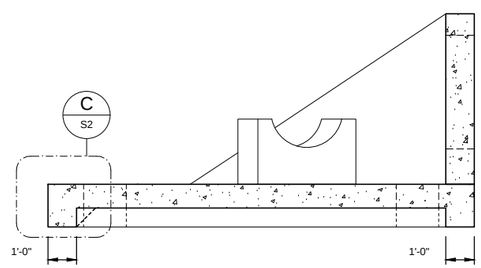
D S1 SECTION

0 2' 4' 6'



C S1 SECTION

0 2' 4' 6'



E S1 SECTION

0 2' 4' 6'

S:\FJF\FOSJJ\129137\5-final-dsgn\51-const-dwgs-CAD\20-Struct\Contract A S1-S2.dwg 10/15/2014 2:42 PM jburns

DRAWN BY: JMB					
DESIGNER: JMB					
CHECKED BY: MLH					
DESIGN TEAM	NO.	BY	DATE	REVISIONS	

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

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Michael L. Hemstad

MICHAEL L. HEMSTAD, PE

Date: OCTOBER 17, 2014 Lic. No. 19165

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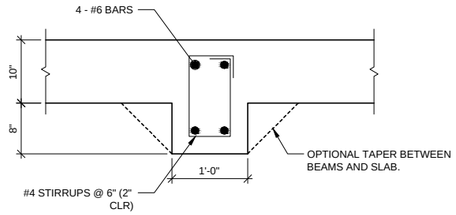
www.sehinc.com

PLATFORM PLANS
CONTRACT 'A'
SPIRIT MOUNTAIN
DULUTH, MN

STRUCTURAL PLAN AND SECTIONS

FILE NO. FOSJJ129137

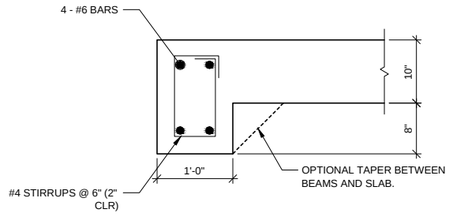
S1 / 30



A S2

PICK-UP POINT BEAM DETAIL

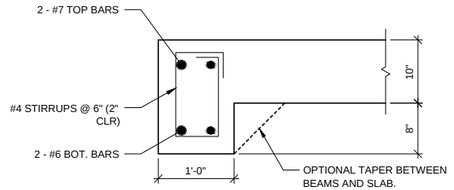
SCALE: NONE



B S2

SIDE EDGE BEAM DETAIL

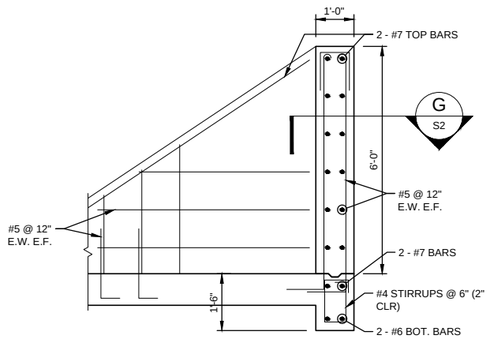
SCALE: NONE



C S2

FRONT EDGE BEAM DETAIL

SCALE: NONE

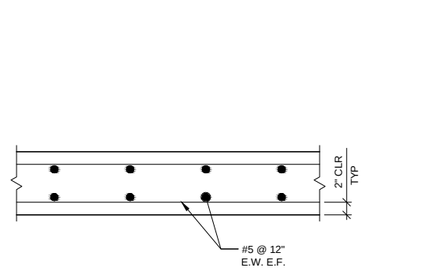


D S2

WALL DETAIL

DRAWING NAME

SCALE: NONE

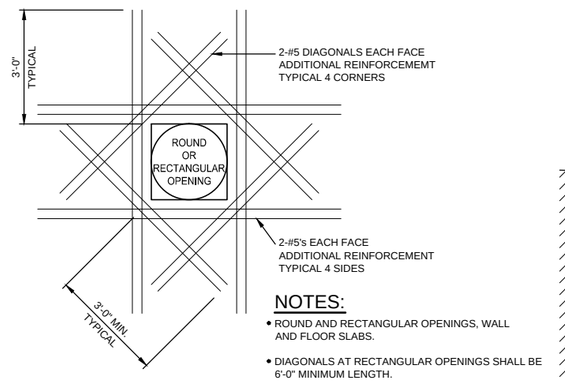


E S2

SLAB DETAIL

DRAWING NAME

SCALE: NONE



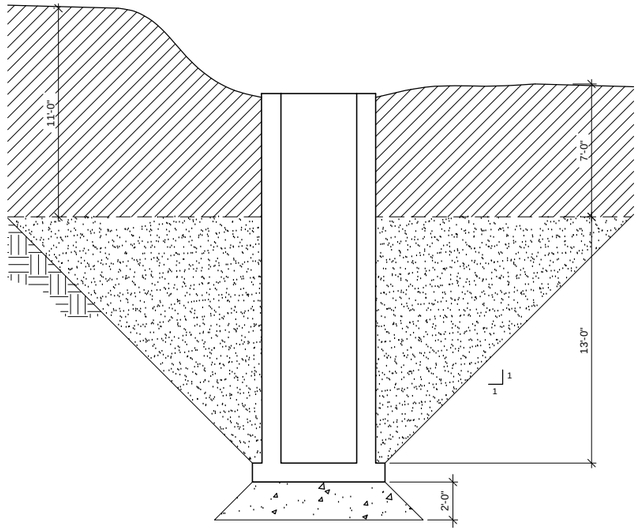
NOTES:

- ROUND AND RECTANGULAR OPENINGS, WALL AND FLOOR SLABS.
- DIAGONALS AT RECTANGULAR OPENINGS SHALL BE 6'-0" MINIMUM LENGTH.

F S2

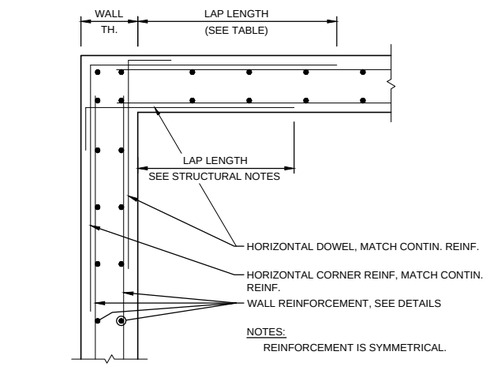
OPENING REINFORCEMENT DETAIL

NOT TO SCALE



J S2

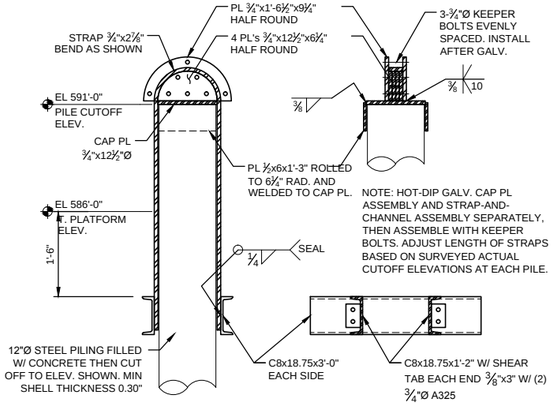
SOIL CORRECTION FOR WET WELL DIAGRAM



G S2

WALL CORNER REINFORCEMENT DETAIL

NOT TO SCALE

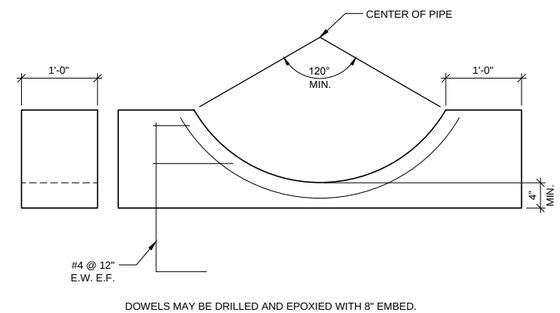


H S2

PILE HANGER DETAILS

DRAWING NAME

SCALE: NONE



DOWELS MAY BE DRILLED AND EPOXIED WITH 8" EMBED.

I S2

SADDLE DETAIL

DRAWING NAME

SCALE: NONE

DRAWN BY:	JMB
DESIGNER:	JMB
CHECKED BY:	MLH
DESIGN TEAM	

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

I HEREBY CERTIFY THAT THIS PLAN 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.

MICHAEL L. HEMSTAD, PE

Date: OCTOBER 17, 2014 Lic. No. 19165

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PLATFORM PLANS
CONTRACT 'A'
SPIRIT MOUNTAIN
DULUTH, MN

STRUCTURAL DETAILS

FILE NO. FOSJJ129137

S2 / 30

GENERAL STRUCTURAL NOTES

THESE NOTES DO NOT REPLACE THE SPECIFICATIONS BUT ARE TO BE READ IN CONJUNCTION WITH THEM. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE TWO SHALL BE BROUGHT TO THE ATTENTION OF THE SER FOR RESOLUTION.

THESE DRAWINGS ARE FOR *THIS SPECIFIC PROJECT* AND NO OTHER USE IS AUTHORIZED. CONTACT SER, MIKE HEMSTAD AT SEH 651-490-2005.

GOVERNING BUILDING CODE:

1. 2007 MINNESOTA STATE BUILDING CODE.
2. 2006 INTERNATIONAL BUILDING CODE AS ADOPTED AND AMENDED BY THE STATE BUILDING CODE
3. ACI - 318
4. AISC - 360, 303

DESIGN LOADS

1. LIVE LOAD: NOT APPLICABLE
2. SNOW LOADS: NOT APPLICABLE
3. WIND LOADS: NOT APPLICABLE
4. SEISMIC LOADS: NOT APPLICABLE
5. SOIL CRITERIA:

APPROX. WATER ELEVATION	602.0
ALLUVIAL BACKFILL	
WET UNIT WEIGHT	115 PCF
FRICTION ANGLE	30 DEGREES
AT-REST PRESSURE	55 PCF

DESIGN / CONSTRUCTION CRITERIA

1. DESIGN OF PLATFORM ASSUMES DRIVING PILING, FILLING WITH CONCRETE TO CUTOFF ELEVATION, CUTTING OFF, THEN ADJUSTING DIMENSIONS OF PLATFORM TO SUIT FINAL SURVEYED PILE LOCATIONS. IF CONTRACTOR WISHES TO USE PLATFORM AS A DRIVING TEMPLATE, DISCUSS WITH ENGINEER HOW PIPING ETC. WILL BE ATTACHED AFTER DRIVING.
2. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES, INCONSISTENCIES, OR DIFFICULTIES AFFECTING THE WORK BEFORE PROCEEDING.
3. ALL MATERIAL, WORKMANSHIP, AND DETAILS SHALL BE IN ACCORDANCE WITH TYPICAL COMPETENT CONSTRUCTION PRACTICES, CURRENT MANUFACTURERS RECOMMENDATIONS, AND ALL APPLICABLE CODES AND GOVERNMENT REGULATIONS. SPECIAL STRUCTURAL INSPECTION IS REQUIRED AS SCHEDULED AND PER IBC CHAPTER 17. CONTRACTOR SHALL COORDINATE WITH *OWNER'S/CONTRACTOR'S* TESTING AGENCY.
4. THE CONTRACTOR SHALL COORDINATE PLATFORM LOCATION AND PIPE, VERIFYING SIZE AND LOCATION OF ALL OPENINGS AND PIPE SEGMENTS. ALL CONFLICTS, INCONSISTENCIES, OR OTHER DIFFICULTIES AFFECTING STRUCTURAL WORK SHALL BE CALLED TO THE ENGINEER'S ATTENTION FOR DIRECTION BEFORE PROCEEDING.
5. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
6. JOB SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR & THEIR SUBCONTRACTORS.
7. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PRACTICES. WHERE DRAWINGS AND DETAILS IMPLY THIS, THEY ARE PROVIDED TO SHOW FINAL CONSTRUCTION. IF CONTRACTOR DESIRES TO USE DIFFERENT MEANS AND METHODS THAN IMPLIED BY THESE DRAWINGS, SUBMIT SIMILAR DETAILS FOR REVIEW.
8. STANDARD OR *TYPICAL* STRUCTURAL DETAILS ARE INTENDED TO ILLUSTRATE DESIGN CONCEPTS AND TO SPECIFY MATERIAL AND REQUIRED PHYSICAL DIMENSIONS MATCHING OR SIMILAR TO THE REFERENCED LOCATIONS IN THE DRAWINGS SET.

FOUNDATIONS

1. CAUTION: EXISTING UNDERGROUND UTILITIES MAY EXIST ANYWHERE ON THE SITE. NOTIFY GOPHER ONE-CALL (800) 252-1166 PRIOR TO DISTURBING ANY GRADE OR EXCAVATION.
2. STRUCTURAL FOUNDATIONS CONSIST OF 12 INCH DIAMETER CAST IN PLACE PILING DRIVEN TO A SAFE WORKING CAPACITY OF 15 TONS. A SOIL REPORT BY AET DATED 12-31-2012, AND AN ADDENDUM DATED 09-17-2014, ARE AVAILABLE FOR REVIEW, BUT DO NOT REACH DEEP ENOUGH FOR DESIGN OF THE PILING. THUS THE CONTRACTOR SHALL EMPLOY A CERTIFIED GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO DRILL A NEW BORING FROM CONTRACTOR'S BARGE AT THE PLATFORM LOCATION, DEPTH AS REQUIRED FOR THE CONTRACTOR'S GEOTECHNICAL ENGINEER TO DESIGN PILING LENGTH TO CARRY 15 TONS SERVICE LOAD, WITH A MINIMUM DEPTH OF 75 FEET BELOW RIVERBED. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR THE ACCURACY OR CONTENT OF THE SUBSURFACE SOIL CONDITIONS DESCRIBED IN THE SPECIFICATIONS, TEST BORINGS, OR GEOTECHNICAL REPORT. CONTRACTOR SHALL BID PILING AT 50 FEET LONG IN PLACE AND CUT OFF, AND PROVIDE A UNIT COST PER FOOT AS AN ADD OR DEDUCT BASED ON FINAL LENGTH INSTALLED, FILLED, AND CUT OFF.

DRIVEN PILES

1. THE FOUNDATION SYSTEM SHALL BE SUPPORTED BY CLOSED END DRIVEN STEEL PIPE PILING BASED ON THE RECOMMENDATIONS OF THE CONTRACTOR'S GEOTECHNICAL ENGINEER.
2. PILES ARE DESIGNED FOR A MAXIMUM NET CAPACITY OF 15 TONS PER PILE (WORKING LOAD). MAXIMUM NET CAPACITIES SHALL HAVE A MINIMUM FACTOR OF SAFETY OF 2.0.
3. PILES ARE NOT DESIGNED FOR UPLIFT LOAD.
4. PILES ARE DESIGNED FOR A MAXIMUM LATERAL LOAD OF 5 TONS PER PILE.
5. MINIMUM STEEL PIPE PROPERTIES SHALL BE: 12" DIAMETER X 0.30" WALL THICKNESS; ASTM A252, GRADE 3; Fy=45 ksi.
6. PIPE PILES SHALL BE DRIVEN WITH A CLOSED END CONSISTING OF A 1" THICK END PLATE, NO LARGER THAN THE PIPE. THE PILE SHALL BE PREPARED FOR FULL PENETRATION WELDING TO THE END PLATE OR WITH COMMERCIALLY FABRICATED POINT REINFORCEMENT AS REQUIRED BY THE GEOTECHNICAL ENGINEER.
7. ALL CONNECTION SPLICES BETWEEN PILE SECTIONS SHALL BE FULL PENETRATION WELDS, UNLESS NOTED OTHERWISE ON PLANS.
8. ALL PIPE PILES SHALL BE FILLED WITH CONCRETE AFTER INSPECTING FOR DAMAGE OR LEAKING. PILES SHALL NOT BE CUT OFF UNTIL AT LEAST 24 HOURS AFTER CONCRETE FILL IS PLACED.
9. SEE PROJECT SPECIFICATION FOR REQUIRED PILE DRIVING CRITERIA, ETC.

CONCRETE

1. CONCRETE AND ITS PLACEMENT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING:
   ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
   ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE
   ACI MCP MANUAL OF CONCRETE PRACTICE
2. AN INDEPENDENT TESTING AGENCY SHALL CAST 4 TEST CYLINDERS FOR EACH 50 CUBIC YARDS OF EACH CONCRETE MIX PLACED OR FOR EACH DAY'S OPERATION, WHICH EVER IS THE LESSER AMOUNT. THE TESTING AGENCY SHALL CAST, CURE, AND TEST THE SPECIMENS IN ACCORDANCE WITH ASTM C31 AND ASTM C39. AIR AND SLUMP SHALL BE TESTED FOR EACH TRUCKLOAD AT THE FINAL LOCATION (TEST AFTER PUMP, NOT AT TRUCK).
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF FORM WORK TO COMPLY WITH THE DIMENSIONS INDICATED ON THE PLANS, MAINTAINING PROPER ALIGNMENT DURING CONCRETE POURING OPERATIONS. SPECIAL CARE SHALL BE TAKEN WITH FORMWORK FOR SELF-CONSOLIDATING CONCRETE.
4. ALL CONCRETE EXCEPT PILE FILL SHALL DEVELOP MINIMUM ULTIMATE COMPRESSIVE DESIGN STRENGTH OF 4000 PSI IN 28 DAYS. CONCRETE SHALL HAVE A MAXIMUM W/C (WATER/ CEMENT + POZZOLAN) RATIO OF 0.45, AND A MAXIMUM OF 4 INCHES OF SLUMP BEFORE ADDITION OF ADMIXTURES.
5. CONCRETE FOR PILE FILL SHALL HAVE A MINIMUM DESIGN COMPRESSIVE STRENGTH OF 3500 PSI IN 28 DAYS, A MAXIMUM W/C RATIO OF 0.50, AND A MAXIMUM OF 6 INCHES OF SLUMP BEFORE ADDITION OF WATER REDUCING ADMIXTURE.
6. THE PRECEEDING MINIMUM MIX REQUIREMENTS MAY HAVE WATER-REDUCING ADMIXTURES CONFORMING TO ASTM C494 ADDED TO THE MIX AT MANUFACTURER'S DOSAGE RATES FOR IMPROVED WORKABILITY. NO CHLORIDE CONTAINING ADMIXTURES WILL BE ALLOWED. DO NOT ADD WATER TO CONCRETE AT THE JOBSITE WITHOUT WRITTEN APPROVAL OF THE S.E.R.
7. ALL CONCRETE IS NORMAL WEIGHT UNLESS SPECIFICALLY NOTED OTHERWISE. CEMENT SHALL BE PORTLAND CEMENT TYPE 1 CONFORMING TO ASTM C150. UP TO 25% CEMENT CAN BE REPLACED WITH CLASS "C" FLYASH, AND UP TO 40% WITH GGBFS (50% COMBINED MAX.). AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. WATER IS TO BE POTABLE.
8. PROTECT CONCRETE IN ACCORDANCE WITH ACI 305 AND ACI 306 FOR HOT WEATHER CONCRETING AND COLD WEATHER CONCRETING RESPECTIVELY. WHEN HEAT IS REQUIRED, CONCRETE SHALL NOT BE EXPOSED TO COMBUSTION PRODUCTS (USE DUCTED HEATER OR GROUND THAW). KEEP PROTECTION IN PLACE MINIMUM 24 HOURS AFTER CESSATION OF HEATING TO PROVIDE GRADUAL COOL-DOWN. CONCRETE BEING PLACED SHALL BE PROTECTED FROM RAIN. IF RAIN FALLS ON CONCRETE BEFORE IT HAS SET, OR WITHIN 3 HOURS OF PLACEMENT IN ANY EVENT, CONTRACTOR SHALL BEAR COST OF TESTING TO PROVE CONCRETE IS UNAFFECTED, AND SHALL REMOVE AND REPLACE AFFECTED CONCRETE TO THE SATISFACTION OF THE ENGINEER.
9. WET POLY CURE CONCRETE MINIMUM 5 DAYS FROM SLAB CONCRETE PLACEMENT AND ASSURE MINIMUM STRENGTH OF 3500 PSI BEFORE LIFTING. IF REQUIRED STRENGTH IS REACHED BEFORE 10 DAYS, DO NOT REMOVE POLY OR OTHERWISE CEASE CURING UNTIL 10 DAYS HAVE ELAPSED OR SLAB IS PICKED AND PLACED IN THE RIVER. WHEN CONSTRUCTING BACKWALL AND PIPE SADDLES, REMOVE POLY FROM SLAB MINIMUM REQUIRED TO DO WORK, THEN RESUME CURE, COVERING NEW WORK.
10. CEMENTITIOUS GROUT SHALL BE NON-SHRINK AND NON-METALLIC GROUT. PLACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND TRIM NEATLY WHERE VISIBLE.
11. COORDINATE WITH OTHER TRADES FOR SLEEVES, ANCHOR BOLTS, INSERTS, PIPING, AND OTHER ITEMS TO BE EMBEDDED INTO CONCRETE AND VERIFY THAT THEY ARE PROPERLY INSTALLED AND SUPPORTED BEFORE CASTING CONCRETE.
12. NO UNCOATED ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE. ALL ALUMINUM SURFACES IN DIRECT CONTACT WITH CONCRETE SHALL RECEIVE ONE 8-12 MIL DRY FILM THICKNESS BITUMASTIC.
13. UNLESS SHOWN ON DRAWINGS, CONCRETE SHALL BE PLACED WITHOUT CONSTRUCTION JOINTS EXCEPT WHERE SPECIFICALLY SHOWN ON SHOP DRAWINGS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING ADDITIONAL OR ALTERNATE CONSTRUCTION JOINT LOCATIONS TO THE ENGINEER FOR APPROVAL.
14. BEVEL ALL EXPOSED CORNERS OF CONCRETE ¾" X ¾".
15. VERIFY SIZE AND LOCATION OF ALL EQUIPMENT SADDLES.

REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DETAILED, FABRICATED, AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CODES: ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCING" ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" MSP2 "CRSI MANUAL OF STANDARD PRACTICE" AWS D1.4 "STRUCTURAL WELDING CODE- REINFORCING STEEL" WRI "WELDED WIRE FABRIC MANUAL OF STANDARD PRACTICE"
2. ALL CONCRETE IS REINFORCED CONCRETE UNLESS SPECIFICALLY CALLED OUT AS UNREINFORCED. REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH SAME STEEL AS IN SIMILAR SECTIONS OR AREAS. ANY DETAILS NOT SHOWN SHALL BE DETAILED PER ACI 315 AND MEET REQUIREMENTS OF ACI 318, CURRENT EDITIONS.
3. ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 OR A706 GRADE 60 STEEL. REINFORCING TO BE WELDED SHALL ONLY BE WELDED TO STRUCTURAL STEEL, NOT OTHER REINFORCING, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
4. CLEAR MINIMUM COVERAGE OF CONCRETE OVER REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS SPECIFICALLY NOTED OTHERWISE:

CONCRETE PLACED AGAINST EARTH	3"
ALL OTHER CONCRETE	2"

5. ALL WALL AND SADDLE DOWELS SHALL BE ACCURATELY POSITIONED AND WIRED IN PLACE BEFORE CASTING SLAB CONCRETE, EXCEPT SADDLE DOWELS MAY BE DRILLED AND EPOXIED WITH 8 INCH EMBEDMENT AT CONTRACTOR'S OPTION. WHERE NOT NOTED, PROVIDE AND INSTALL DOWELS OF SAME SIZE AND SPACING AS VERTICAL REINFORCEMENT IN ALL SADDLES AND WALLS. POSITION ALL ANCHOR BOLTS WITH TEMPLATES.
6. BAR LAP LENGTHS IN CONCRETE AND 90 DEGREE END HOOKS SHALL BE IN ACCORDANCE WITH THE TABLE BELOW UNLESS NOTED OTHERWISE. THIS TABLE LISTS CLASS 'B' LAPS.

REINF.	WALL, COLUMN OR SLAB		BEAMS		90 DEGREE
BAR SIZE	BAR LAP	* TOP BAR	BAR LAP	* TOP BAR	END HOOK
#3	19 IN	24 IN	28 IN	36 IN	6 IN
#4	25 IN	32 IN	37 IN	48 IN	8 IN
#5	31 IN	40 IN	46 IN	60 IN	10 IN
#6	37 IN	48 IN	56 IN	72 IN	12 IN
#7	54 IN	70 IN	81 IN	105 IN	14 IN
#8	62 IN	80 IN	93 IN	120 IN	16 IN
#9	70 IN	90 IN	104 IN	135 IN	18 IN
#10	78 IN	102 IN	117 IN	152 IN	20 IN
#11	86 IN	113 IN	130 IN	169 IN	22 IN

7. BARS MARKED CONTINUOUS, CORNER BARS, AND ALL VERTICAL STEEL SHALL BE LAPPED IN ACCORDANCE WITH TABLE ABOVE AT SPLICES AND EMBEDMENTS, UNLESS SHOWN OTHERWISE. SPLICE TOP BARS NEAR MIDSPAN AND SPLICE BOTTOM BARS OVER SUPPORTS, UNLESS NOTED OTHERWISE.
8. BAR SUPPORT ACCESSORIES SHALL BE AS SPECIFIED IN LATEST EDITION OF THE ACI DETAILING HANDBOOK AND THE CONCRETE REINFORCING STEEL INSTITUTE DESIGN HANDBOOK. MAXIMUM ACCESSORY SPACING SHALL BE 4'-0" ON CENTER, AND ALL ACCESSORIES ON EXPOSED SURFACES SHALL HAVE PLASTIC COATED ENDS.

CONCRETE REPAIR (FOR AREAS DAMAGED OR INADEQUATELY CONSOLIDATED)

1. LOCATE AND REMOVE AREAS OF LOOSE, DELAMINATED, OR DAMAGED CONRETE. SAWCUT OUTSIDE PERIMETER OF DAMAGED AREAS TO A MINIMUM DEPTH OF APPROXIMATELY 3/4 INCH; DO NOT CUT REINFORCING. TALLY AREAS REMOVED FOR PAYMENT. SANDBLAST AREA TO BE PATCHED AND BLOW CLEAN. PROTECT SURROUNDINGS AND WORKERS FROM DUST AND HAZARDS ASSOCIATED WITH THIS WORK.
2. WHERE HALF OR MORE OF THE PERIMETER OF REINFORCING BAR IS EXPOSED, BOND BETWEEN REINFORCING BAR AND SURROUNDING CONCRETE IS BROKEN, OR REINFORCING BAR IS CORRODED, REMOVE CONCRETE FROM ENTIRE PERIMETER OF BAR TO PROVIDE MINIMUM 3/4 INCH CLEARANCE BEHIND BAR. CLEAN AND COAT EXPOSED SUFACE OF BAR WITH BONDING AGENT (SIKA ARMATEC 110, SONOPREP, OR EUCLID CORR-BOND).
3. DAMPEN PATCH AREA AND APPLY MORTAR SCRUB COAT, KEEPING MOIST UNTIL PATCH IS APPLIED.
4. PATCH WITH POLYMER-MODIFIED CEMENTITIOUS PATCHING MORTAR (DAYTON SUPERIOR HD-50, EUCLID VERTI-COAT, MASTER BUILDERS EMACO R320, SIKATOP 121, OR SONOPATCH 100).

POST INSTALLED ANCHOR RODS AND DOWELS

1. UNLESS NOTED OTHERWISE, ANCHORS AND REINFORCING DOWELS INSTALLED IN CONCRETE OR CONCRETE MASONRY SHALL BE AS NOTED BELOW. ANCHORS NOT SHOWN OR NOTED ON THE DRAWINGS, THOSE REQUIRED BY THE CONTRACTOR SOLELY FOR HIS MEANS AND METHODS, OR THOSE REQUIRED BY MECHANICAL/ELECTRICAL AND CARRYING LESS THAN 100 POUNDS, DO NOT REQUIRE SPECIAL INSPECTION.
2. APPROVED MANUFACTURERS ARE: HILTI, ITW/REDHEAD, SIMPSON, AND POWERS/RAWL. SUBMIT PRODUCT DATA AND CURRENT ICC ES REPORT OR IAPMO REPORT SHOWING PRODUCT IS COMPLIANT WITH PROJECT CODE REQUIREMENTS FOR REVIEW. CONTRACTOR SHALL ARRANGE FOR MANUFACTURER'S REP TO TRAIN ALL INSTALLERS ON THE COMPLETE INSTALLATION PROCESS. A LETTER OF PROCEDURE STATING METHOD OF DRILLING, THE PRODUCT FOR USE, THE COMPLETE INSTALLATION PROCEDURE, MANUFACTURER TRAINING DATE AND A LIST OF THE PERSONNEL TRAINED ON ANCHOR INSTALLATION SHALL BE SUBMITTED TO THE ENGINEER.
3. PERMANENT ANCHORS EXPOSED TO EARTH, WEATHER, OR CORROSIVE ENVIRONMENTS, INCLUDING ALL ANCHORS IN WWTP AND WATER TREATMENT PLANT WORK, SHALL BE STAINLESS STEEL TYPE 304 OR 316; ANCHORS IN CONTACT WITH SEWAGE OR CHLORIDE DEICER RUNOFF SHALL BE TYPE 316. OTHERWISE, ANCHORS SHALL BE ZINC PLATED, MINIMUM ASTM A36 MATERIAL UNLESS ASTM A193 GRADE B7 IS NOTED IN THE DRAWINGS, AND SHALL BE ACCORDING TO ASTM F1554. REINFORCING DOWELS SHALL BE OF THE SAME MATERIAL AND COATING (IF ANY) AS THE CONTINUING REINFORCING.
4. WHERE EXPANSION ANCHORS ARE CALLED FOR, CONTRACTOR MAY SUBSTITUTE SCREW TYPE ANCHORS WITH SELF-TAPPING THREADS OR ADHESIVE ANCHORS OF THE SAME SIZE AND EMBEDMENT, SUBJECT TO REVIEW OF CAPACITY BY THE ENGINEER FOR THE PRODUCT SUBSTITUTED. WHERE ADHESIVE ANCHORS ARE CALLED FOR, OTHER TYPES SHALL NOT BE SUBSTITUTED.
5. ADHESIVE SHALL HAVE A CURRENT ICC ES REPORT. USE LOW TEMPERATURE FORMULATIONS FOR COLD WEATHER WORK. DO NOT APPLY SIGNIFICANT LOAD TO ANCHORS IN COLD WEATHER UNTIL THEIR CAPACITY HAS BEEN ASSURED.
6. ANCHORS INSTALLED IN CONCRETE MASONRY AND PRECAST HOLLOWCORE CONCRETE SHALL BE INSTALLED IN CORES GROUTED SOLID. MINIMUM GROUT STRENGTH f'_g = 3000 PSI. MINIMUM 6 INCHES OF GROUT EACH WAY ALONG HORIZONTAL CORES FROM ANCHOR. VERTICAL CORES SHALL BE GROUTED FULL HEIGHT. ANCHORS INSTALLED IN MASONRY SHALL NOT BE INSTALLED WITHIN 1 1/2 INCHES OF ANY HEAD JOINT UNLESS BLOCK ARE SQUARE END AND MORTARED ACROSS FULL WIDTH OF HEAD JOINT, OR FILLED BOND BEAM.
7. HOLES SHALL BE DRILLED, CLEANED, AND MAINTAINED UNTIL INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING STANDARD ROTARY-IMPACT BITS AND OIL-FREE COMPRESSED AIR; DIAMOND CORE BITS SHALL NOT BE USED UNLESS SPECIFICALLY APPROVED BY THE MANUFACTURER. LOCATE AND AVOID REINFORCING BARS AND PT TENDONS. MAINTAIN SPACING (MINIMUM 8 INCHES) AND EDGE/CORNER DISTANCES (MINIMUM 4 INCHES) AS RECOMMENDED BY MANUFACTURER UNLESS SPECIFICALLY NOTED OTHERWISE IN THE DRAWINGS.
8. UNLESS NOTED OTHERWISE, ANCHORS SHALL BE INSTALLED TO THE FOLLOWING EMBEDMENTS:

	DIAMETER	CIP CONCRETE	GROUTED CMU
EXPANSION/SCREW:	1/2 INCH	3 1/2 INCHES	4 1/2 INCHES
	5/8 INCH	4 INCHES	5 INCHES
	3/4 INCH	5 INCHES	6 INCHES
ADHESIVE:	1/2 INCH	4 1/2 INCHES	5 1/2 INCHES
	5/8 INCH	5 INCHES	6 INCHES
	3/4 INCH	6 INCHES	7 INCHES (6" IN 8" CMU)

9. EXCEPT AS NOTED, ALL ANCHORS SHALL HAVE INTERMITTENT SPECIAL STRUCTURAL INSPECTION BY ONE OF THE FOLLOWING. LOAD TESTS SHALL BE TO 150 PERCENT OF SERVICE CAPACITY OR 50 PERCENT OF ULTIMATE STRENGTH, WITH NO APPRECIABLE SLIP OR PERMANENT DEFORMATION. ANCHORS WHICH FAIL THIS TEST SHALL BE REPLACED AT NO COST TO THE PROJECT. TWO FAILURES IN A GIVEN INSTALLATION SHALL RESULT IN MANDATORY LOAD TESTING AT DOUBLE THE RATE NOTED BELOW.

EXPANSION AND SCREW ANCHORS:

- WITNESS INSTALLATION WITH TORQUE WRENCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS OF ICC REPORT
- TEST WITH TORQUE WRENCH AFTER INSTALLATION (INCLUDING LOAD TEST OF 5 PERCENT OF INSTALLED ANCHORS)
- LOAD TEST OF 10 PERCENT OF INSTALLED ANCHORS BY SUPPLIER OR THIRD PARTY INSPECTOR

ALL ADHESIVE ANCHOR RODS AND DOWELS SHALL HAVE SPECIAL STRUCTURAL INSPECTION (INTERMITTENT EXCEPT AS NOTED FOR OVERHEAD INSTALLATION) BY ONE OF THE FOLLOWING:

- WITNESS INSTALLATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS OF ICC REPORT
- LOAD TEST OF 10 PERCENT OF INSTALLED ANCHORS BY SUPPLIER OR THIRD PARTY INSPECTOR

SHOP DRAWING REVIEW

1. SHORT ELLIOTT HENDRICKSON INC. (SEH) WILL REVIEW THE GENERAL CONTRACTOR'S (GC) SHOP DRAWINGS AND RELATED SUBMITTALS (AS INDICATED BELOW) WITH RESPECT TO THE ABILITY OF THE DETAILED WORK, WHEN COMPLETE, TO BE A PROPERLY FUNCTIONING INTEGRAL ELEMENT OF THE OVERALL STRUCTURAL SYSTEM DESIGNED BY SEH. IN GENERAL, SUBMITTALS WILL NOT BE REVIEWED FOR CORRECT QUANTITIES OR CONSTRUCTION CONSIDERATIONS.
2. PRIOR TO SUBMITTAL OF A SHOP DRAWING OR ANY RELATED MATERIAL TO SEH, THE GC SHALL:
   - REVIEW EACH SUBMISSION FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND OPERATIONS OF CONSTRUCTION AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE GC.
   - REVIEW AND APPROVE EACH SUBMISSION.
   - STAMP EACH SUBMISSION AS APPROVED.
3. SEH SHALL ASSUME THAT NO SUBMISSION COMPRISES A VARIATION FROM THE CONTRACT DOCUMENTS UNLESS THE GC ADVISES SEH WITH WRITTEN DOCUMENTATION. SHOP DRAWINGS AND RELATED MATERIAL (IF ANY) REQUIRED ARE INDICATED BELOW, SHOULD SEH REQUIRE MORE THAN TEN (10) WORKING DAYS TO PERFORM THE REVIEW, SEH SHALL SO NOTIFY THE GC. SUBMITTALS SHALL INCLUDE:
   - CONCRETE MIX DESIGNS AND MATERIAL CERTIFICATES INCLUDING ADMIXTURES AND COMPOUNDS APPLIED TO THE CONCRETE AFTER PLACEMENT.
   - AGGREGATE TESTS AND CONCRETE TEST HISTORY FOR EACH MIX DESIGN, WITH THE SUBMISSION OF CONCRETE MIX DESIGNS.
   - REINFORCING STEEL SHOP DRAWINGS INCLUDING ERECTION DRAWINGS AND BENDING DETAILS. BAR LIST WILL NOT BE REVIEWED FOR CORRECT QUANTITIES.
   - ELEVATIONS OF ALL REINFORCED CONCRETE MASONRY WALLS AND ALL CONCRETE WALLS WITH FOOTING STEPS OR OTHER ELEVATION CHANGES, AT A SCALE NO SMALLER THAN ⅛" = 1'-0" SHOWING ALL REQUIRED REINFORCING.
   - PILE LENGTH DESIGN.
   - SEH SHALL REVIEW SHOP DRAWINGS AND RELATED MATERIALS WITH COMMENTS PROVIDED THAT EACH SUBMISSION HAS MET THE ABOVE REQUIREMENTS. SEH SHALL RETURN WITHOUT COMMENT UNREQUIRED MATERIAL OR SUBMISSIONS WITHOUT GC APPROVAL STAMP.

SPECIAL INSPECTION

DESCRIPTION	TESTING		INSPECTING		NA
	YES	NO	YES	NO	
1 METAL CONSTRUCTION					
WELDING		●	●		
DETAILS: BRACING, LOCATIONS, ETC.		●	●		
BOLTING		●	●		
2 CONCRETE CONSTRUCTION					
CONCRETE	●		●		
PRECAST/PRESTRESSED CONCRETE	●		●		
REINFORCEMENT: SIZE AND SPACING		●	●		
BOLTS INSTALLED IN CONCRETE		●	●		
3 MASONRY CONSTRUCTION					
REINFORCEMENT: SIZE AND SPACING		●	●		
PRISMS	●		●		
DETAILS: GROUTING, LINTELS, ETC.		●	●		
4 WOOD CONSTRUCTION					●
5 GRADING, EXCAVATION AND FILLING	●		●		
6 PILING, PIERS AND CAISSONS	●		●		

A. SPECIAL INSPECTIONS IN ACCORDANCE WITH IBC CHAPTER 17 SHALL BE PERFORMED.

ABBREVIATIONS

ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE
AL	ALUMINUM
APPROX.	APPROXIMATELY
B/	BOTTOM OF
BLDG	BUILDING
BOT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
C.J	CONTROL JOINT
CL	CENTERLINE
CLR	CLEAR COVER
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC.	CONCRETE
CONSTR.	CONSTRUCTION
CONT.	CONTINUOUS
CTR	CENTERED
DEG.	DEGREE
DIA.	DIAMETER
DWG	DRAWING
DWL	DOWEL
E	EAST
EF	EACH FACE
EL.	ELEVATION
ENCL.	ENCLOSURE
EQ. SP.	EQUALLY SPACED
EQUIP.	EQUIPMENT
EW	EACH WAY
EX.	EXISTING
EXP.	EXPANSION
F.F.	FRONT FACE
FFE	FINISHED FLOOR ELEVATION
F.D.	FLOOR DRAIN
FRP	FIBERGLASS-REINFORCED PLASTIC
FT	FOOT, FEET
FTG	FOOTING
GALV.	GALVANIZED
GND	GROUND
H.C.	HOLLOW CORE
HGT	HEIGHT
HORIZ.	HORIZONTAL
H.P.	HIGH POINT
I.D.	INSIDE DIAMETER

ABBREVIATIONS

INV. EL.	INVERT ELEVATION
ISF	INSIDE FACE
LB	POUND, POUNDS
L.P.	LOW POINT
LVL	LEVEL
LVR	LOUVER
MATL	MATERIAL
MAX.	MAXIMUM
MECH.	MECHANICAL
MIN.	MINIMUM
N	NORTH
N/A	NOT APPLICABLE
N.T.S.	NOT TO SCALE
O.C.	ON CENTERS
O.D.	OUTSIDE DIAMETER
OPNG	OPENING
OSF	OUTSIDE FACE
PL	PLATE
PSF	POUNDS PER SQUARE FOOT
REINF.	REINFORCEMENT
S	SOUTH
SER	STRUCTURAL ENGINEER OF RECORD
SIM.	SIMILAR
SPEC.	SPECIFICATION
SQ	SQUARE
S.S.	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
T&B	TOP AND BOTTOM
T.O.	TOP OF
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W	WEST
W/	WITH
W/O	WITHOUT
WS	WATERSTOP

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DRAWN BY: JMB
DESIGNER: JMB
CHECKED BY: MLH
DESIGN TEAM

NO.	BY	DATE	REVISIONS

FOSTER, JACOBS, & JOHNSON, INC. PROFESSIONAL ENGINEERS

I HEREBY CERTIFY THAT THIS PLAN 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.
Michael L. Hemstad
Date: OCTOBER 17, 2014 MICHAEL L. HEMSTAD, PE Lic. No. 19165

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PLATFORM PLANS
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GENERAL STRUCTURAL NOTES

FILE NO. FOSJJ129137

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