

PLAN SYMBOLS

QUARTER SECTION LINE	----
SECTION LINE	----
SIXTEENTH SECTION LINE	----
STATE BOUNDARY	----
TOWNSHIP LINE	----
CONTOUR - INDEX	----
CONTOUR - INTERMEDIATE	----
ROAD - TRAIL	----
ROAD - GRAVEL (UNIMPROVED)	----
ROADWAY	----
ROAD - SHOULDER GRAVEL	----
PARKING - GRAVEL (UNIMPROVED)	----
PARKING	----
ROAD - CENTERLINE	----
ENTRANCE	----
CURB	----
GUARDRAIL	----
EXISTING STEAM	----
EXISTING GAS MAIN	----
EXISTING SANITARY SEWER	----
EXISTING STORM DRAIN	----
EXISTING WATER MAIN	----
EXISTING ELEC-UG	----
EXISTING TEL-UG	----
EXISTING TV-UG	----
PROPOSED STEAM	----
PROPOSED GAS MAIN	----
PROPOSED SANITARY SEWER	----
PROPOSED STORM DRAIN	----
PROPOSED WATER MAIN	----
PROPOSED ELEC-UG	----
PROPOSED TEL-UG	----
PROPOSED TV-UG	----
PROPOSED SUB-DRAIN	----
CULVERT - (LINE)	----
PROPERTY LINE	----
TEMPORARY EASEMENT	----
FENCE - CHAINLINK	----
FENCE - UNIDENTIFIED	----
FENCE - BARB WIRE	----
SIDEWALK - BITUMINOUS	----
RAILROADS	----
PAINTED STREET SYMBOLS	----
CROSSWALK LINES	----
ALLEYS - NO CURBS, CONCRETE	----
RECREATIONAL PATHS	----
TREE - UNIDENTIFIED (LINE)	----
HEDGE	----

UTILITY SYMBOLS

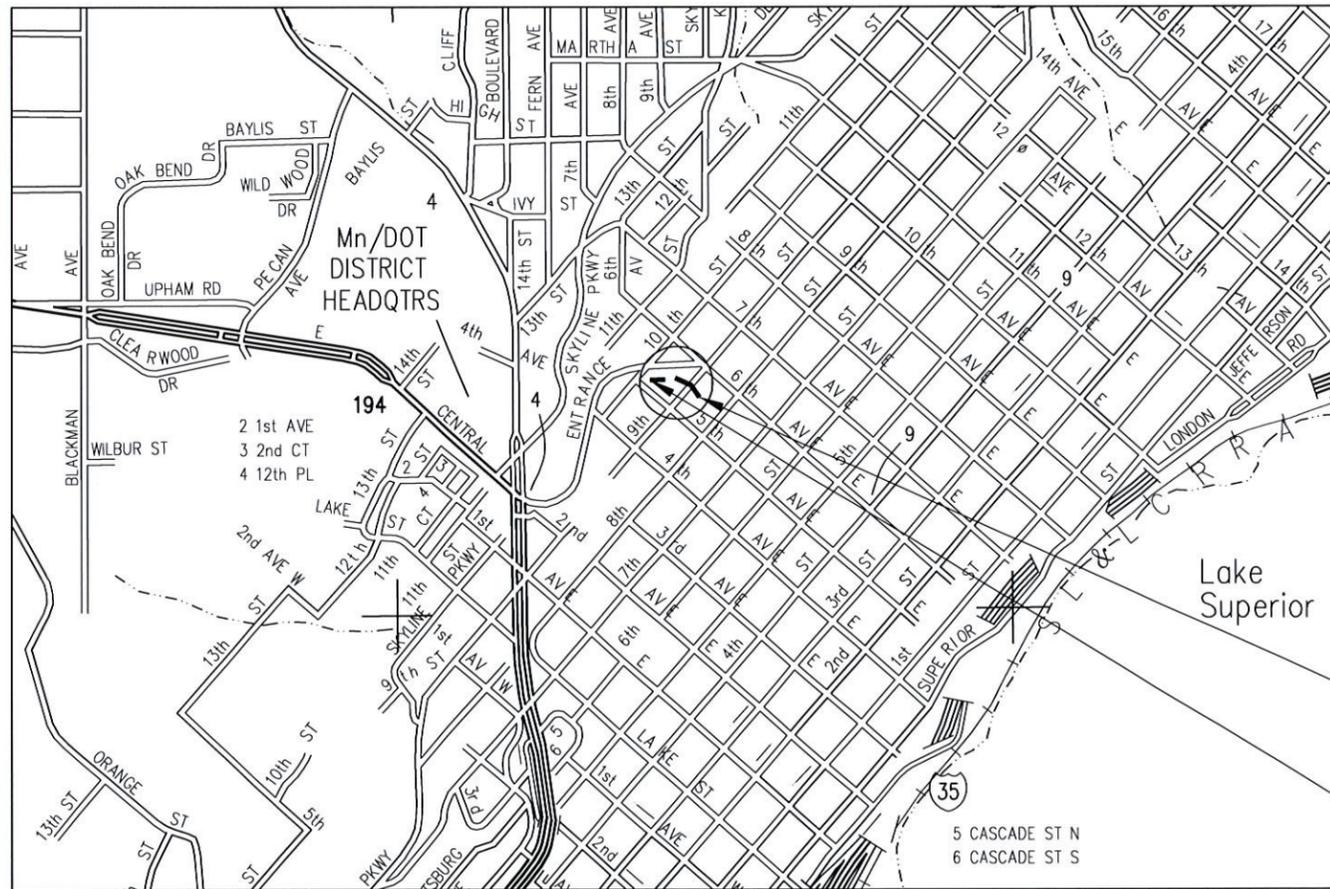
PROPERTY CORNER	○
CONTROL POINT	△
WATER METER	⊕
WELL	⊕
PEDESTAL (TELEPHONE CABLE TERMINAL)	⊕
PEDESTAL (TELEVISION CABLE TERMINAL)	⊕
PARKING METER - SINGLE	⊕
PARKING METER - DOUBLE	⊕
FIRE HYDRANT	⊕
GAS SHUT OFF VALVE	⊕
GAS VALVE	⊕
WATER SHUT OFF VALVE	⊕
WATER VALVE	⊕
EXISTING CATCH BASIN	⊕
EXISTING ELECTRIC MANHOLE	⊕
EXISTING GAS MANHOLE	⊕
EXISTING SANITARY MANHOLE	⊕
EXISTING STEAM MANHOLE	⊕
EXISTING STORM MANHOLE	⊕
EXISTING TELEPHONE MANHOLE	⊕
EXISTING TELEPHONE VAULT	⊕
EXISTING TELEVISION MANHOLE	⊕
EXISTING WATER MANHOLE	⊕
EXISTING WATER & GAS MANHOLE	⊕
PROPOSED CATCH BASIN	⊕
PROPOSED ELECTRIC MANHOLE	⊕
PROPOSED GAS MANHOLE	⊕
PROPOSED SANITARY MANHOLE	⊕
PROPOSED STEAM MANHOLE	⊕
PROPOSED STORM MANHOLE	⊕
PROPOSED TELEPHONE MANHOLE	⊕
PROPOSED TELEPHONE VAULT	⊕
PROPOSED TELEVISION MANHOLE	⊕
PROPOSED WATER MANHOLE	⊕
PROPOSED WATER & GAS MANHOLE	⊕
AND/	⊕
ELECTRICAL BOX	⊕
ELECTRICAL VAULT	⊕
ELECTRICAL HAND HOLE (PULL BOX)	⊕
ELECTRICAL METER	⊕
ELECTRICAL PANEL	⊕
ELECTRICAL TRANSFORMER BOX	⊕
EXISTING LIGHT POLE	⊕
PROPOSED LIGHT POLE	⊕
LITE ON POWER POLE	⊕
POLE - ELECTRICAL W/TRANSFORMER	⊕
LUMIN	⊕
LUMINZ	⊕
POWER POLE	⊕
SIGNAL VAULT	⊕
TRAFFIC SIGNAL	⊕
TRAFFIC SIGNAL POLE	⊕
ANCHOR	⊕
BUSH	⊕
SWAMP - (SYMBOL)	⊕
TREE - UNIDENTIFIED (SYMBOL)	⊕
TREE - EVERGREEN	⊕
SOIL BORING	⊕
SIGN - UNIDENTIFIED (SYMBOL)	⊕
MONUMENT	⊕

CITY OF DULUTH

DEPARTMENT OF PUBLIC WORKS AND UTILITIES ENGINEERING DIVISION

CONSTRUCTION PLANS FOR: REHABILITATION AND RELINE OF BREWERY CREEK STORM SEWER SECTION 29 (PHASE A)
AND SECTION 31 (PHASE B)

GEOGRAPHIC LOCATION: LOCATED BELOW THE 500 BLOCK OF EAST TENTH STREET BETWEEN NORTH 5TH AVENUE
EAST AND CENTRAL ENTRANCE.



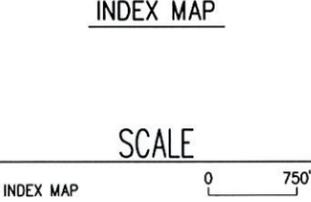
WARNING
LOCATION OF UNDERGROUND UTILITIES
TO BE VERIFIED BY CONTRACTOR.
CALL BEFORE DIGGING.
GOPHER STATE ONE CALL
1-800-252-1166
REQUIRED BY LAW

C.P. NO. 0036ST
BEG. PROJECT
STA. 44+77

C.P. NO. 0036ST
END PROJECT
STA. 49+58

MANHOLE & CATCH BASIN INDEX

INPLACE CATCH BASIN	INPLACE WATER/GAS MANHOLE	PROPOSED CATCH BASIN	PROPOSED WATER/GAS MANHOLE
INPLACE DRAINAGE MANHOLE	INPLACE STEAM MANHOLE	PROPOSED DRAINAGE MANHOLE	PROPOSED STEAM MANHOLE
INPLACE SANITARY MANHOLE	INPLACE GAS ONLY MANHOLE	PROPOSED SANITARY MANHOLE	PROPOSED GAS ONLY MANHOLE
INPLACE TELEPHONE MANHOLE	INPLACE POWER MANHOLE	PROPOSED TELEPHONE MANHOLE	PROPOSED POWER MANHOLE



CITY OF DULUTH PROJ. NO. 0036ST

GROSS LENGTH	481	FEET	0.091	MILE
BRIDGES-LENGTH		FEET		MILE
EXCEPTIONS-LENGTH	87	FEET	0.016	MILE
NET LENGTH	481	FEET	0.075	MILE



PROJECT LOCATION:
CITY OF DULUTH
ST. LOUIS COUNTY
SEC. 22 T50N R14W

LHB
PERFORMANCE
DRIVEN DESIGN.
LHBcorp.com
PROJ. NO. 140105
21 W. Superior St., Ste. 500 | Duluth, MN 55802 | 218.277.8446

LHB PROJECT. No. 140105
City of Duluth Proj. No. 0036ST

GOVERNING SPECIFICATIONS

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE
"MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
(AVAILABLE AT: <http://www.dot.state.mn.us/pre-letting/spec/>)

THE 2015 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT
STANDARD CONSTRUCTION SPECIFICATIONS SHALL APPLY.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM
TO THE MMUTCO, INCLUDING THE FIELD MANUAL DATED "LATEST EDITION".

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".

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9	SEWER ACCESS DETAILS - PHASE A
10	STORM SEWER PROFILE - PHASE A
11	SEWER ACCESS DETAILS - PHASE B
12	STORM SEWER PROFILE - PHASE B
13	STORM SEWER DETAILS

THIS PLAN CONTAINS 13 SHEETS

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

Jon W. Siiter
PROJECT ENGINEER

JON W. SIITER 11/09/2015 25128
PROJECT ENGINEER (TYPED OR PRINTED NAME) DATE LIC. No.

CITY APPROVALS:

APPROVED *[Signature]* 12-23-15
CHIEF ENGINEER OF TRANSPORTATION DATE

APPROVED *[Signature]* 12-23-15
CHIEF ENGINEER OF UTILITIES DATE

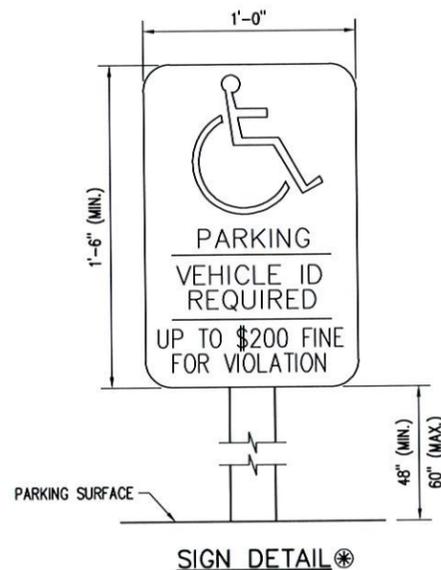
APPROVED *[Signature]* 12-22-15
CITY ENGINEER DATE

CASTING ASSEMBLY INFORMATION					
TYPE OF STRUCTURE	CATCH BASIN - STORM (PCB-3)			MANHOLE - STORM (PMH-5)	
	FRAME	GRATE	CURB BOX	FRAME	LID
CASTING DESCRIPTION	STRM-2	STRM-2	STRM-2	STRM-1	STRM-1
CITY STD. PLATE NUMBER	0.75	0.13	1.05	0.67	NA
HEIGHT IN FEET	1	1	1	1	1
NUMBER REQUIRED	4129G	4154B	4160D	4101D	NA
STANDARD PLATE NUMBER	DESIGN F			DESIGN F	
STRUCTURE TYPE					

STANDARD PLATES - MnDOT	
THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.	
PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR R.C. PIPE
3145G	CONCRETE PIPE OR PRECAST BOX CULVERT TIES
4005M	MANHOLE OR CATCH BASIN TYPE A & B CONE SECTIONS PRECAST DESIGN F
4010H	CONCRETE SHORT CONE AND ADJUSTING RING
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
7035N	CONCRETE WALK & CURB RETURNS AT ENTRANCES
7100H	CONCRETE CURB AND GUTTER DESIGN B AND DESIGN V
7102J	CONCRETE CURB AND GUTTER DESIGN D
8000I	STANDARD BARRICADES
8337C	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER
9102E	TURF ESTABLISHMENT AREAS (AT PIPE CULVERT ENDS)

STANDARD PLATES - CITY OF DULUTH	
THE FOLLOWING STANDARD PLATES, APPROVED BY THE CITY OF DULUTH, SHALL APPLY ON THIS PROJECT.	
PLATE NO.	DESCRIPTION
STRM-1	STORM MANHOLE CASTING
STRM-2	CATCH BASIN/CURB BOX CASTINGS

DIRECTORY OF KNOWN UTILITIES		
COMPANY	SERVICE	TELEPHONE
GOPHER STATE ONE CALL	LOCATORS	800-252-1166
MINNESOTA POWER	ELECTRIC POWER	218-722-1972
CENTURYLINK	TELEPHONE	218-741-9340
CITY OF DULUTH	WATER & SEWER	218-730-4000
CITY OF DULUTH	NATURAL GAS	218-730-4100



NOTES:
 - USE MN/DOT STANDARD SIGN R7-8m.
 - COLOR: WHITE LEGEND AND BORDER ON BLUE REFLECTORIZED BACKGROUND.
 - SIGN LOCATION TO BE DETERMINED BY ENGINEER IN THE FIELD.

KEY NOTES:

- CONTRACTOR DESIGNED TEMPORARY STREAM DIVERSION PLAN TO BE APPROVED BY ENGINEER PRIOR TO START OF WORK. SEE SPECIAL PROVISIONS FOR REQUIREMENTS.
- BASIS OF PAYMENT IS 115 LBS. PER SQ. YD. INCH.
- REPAINT PARKING LINES REMOVED DURING PHASE B SEWER ACCESS EXCAVATION.
- LINING SIZE SHOWN REFERS TO FINISHED INSIDE DIMENSION OF NEW LINING.
- TO INCLUDE ALL DEWATERING NECESSARY FOR COMPLETION OF THE WORK INCLUDING CONCRETE REMOVAL, REPAIRS AND SEWER LINING.
- SEE SHEET 09 FOR LOCATION.
- PHASE A SHALL BE CONSTRUCTED FIRST AND SUBSTANTIALLY COMPLETE PRIOR TO STARTING PHASE B.
- FOR FILLING VOID BEHIND PIPE IN SECTION 29, STA. 47+42.

LEGEND:

⊗ INDICATES OPTIONAL WORK THAT IS REQUIRED ONLY IF NEEDED TO ACCOMMODATE THE CONTRACTOR'S CHOSEN SEWER PIPE LINING METHOD AND GENERAL OPERATION. IF AN ITEM OF WORK IS LISTED THAT IS NOT REQUIRED BY THE CONTRACTOR A UNIT PRICE OF ZERO SHOULD BE ENTERED ON THE BID FORM.

STATEMENT OF ESTIMATED QUANTITIES							
BID ITEM	SPEC. NO.	ITEM	UNIT	PHASE A ⑦ EST. QTY.	PHASE B ⑦ EST. QTY.	TOTAL EST. QUANTITY	FINAL QUANTITY
1	2021.501	MOBILIZATION	LUMP SUM	0.7	0.3	1.0	
⊗ 2	2104.501	REMOVE CURB AND GUTTER	LIN FT	0	86	86	
3	2104.503	REMOVE CONCRETE FLOOR	SQ FT	540	260	800	
⊗ 4	2104.503	REMOVE CONCRETE WALK	SQ FT	0	370	370	
⊗ 5	2104.503	REMOVE BITUMINOUS PAVEMENT	SQ FT	1815	1600	3415	
⊗ 6	2104.501	REMOVE PIPE SEWERS	LIN FT	24	0	24	
⊗ 7	2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	LIN FT	130	130	260	
⊗ 8	2105.521	SELECT GRANULAR BORROW MOD. 7% (CV)	CU YD	350	410	760	
⑤ 9	2105.601	DEWATERING	LUMP SUM	0.7	0.3	1.0	
① 10	2105.601	TEMPORARY STREAM DIVERSION SYSTEM	LUMP SUM	0.7	0.3	1.0	
⊗ 11	2211.503	AGGREGATE BASE (CV) CLASS 5	CU YD	50	50	100	
⊗ 12	2301.607	PRESSURE GROUT	CU YD	10	0	10	
⊗ ② 13	2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)	TON	50	45	95	
⊗ 14	2401.601	STRUCTURE EXCAVATION CLASS E	LUMP SUM	0.7	0.3	1.0	
⊗ 15	2503.511	12" PVC PIPE SEWER	LIN FT	24	0	24	
④ 16	2503.603	LINING SEWER PIPE 60"	LIN FT	268	126	394	
⊗ 17	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN A OR F	LIN FT	11.3	11.8	23.1	
⊗ 18	2506.516	CASTING ASSEMBLY	EACH	1	1	2	
⊗ 19	2511.515	GEOTEXTILE FILTER TYPE V	SQ YD	260	270	530	
⊗ 20	2521.501	5" CONCRETE WALK	SQ FT	0	265	265	
⊗ ⑥ 21	2531.501	CONCRETE CURB AND GUTTER DESIGN B624	LIN FT	0	26	26	
⊗ ⑥ 22	2531.501	CONCRETE CURB AND GUTTER DESIGN D424	LIN FT	0	27	27	
23	2563.601	TRAFFIC CONTROL	LUMP SUM	0.7	0.3	1.0	
⊗ 24	2564.602	INSTALL SIGN	EACH	0	1	1	
25	2573.530	STORM DRAIN INLET PROTECTION	EACH	4	1	5	
⊗ 26	2575.505	SODDING TYPE LAWN	SQ YD	30	140	170	
⊗ 27	2582.501	PAVEMENT MESSAGE (HANDICAPPED SYMBOL) PAINT	EACH	0	1	1	
⊗ ③ 28	2582.502	4" SOLID LINE WHITE-PAINT	LIN FT	54	0	54	

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

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 COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

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 NAME: *Jon W. Sitter* LIC. NO. 25128 DATE 11/09/2015
 JON W. SITTER

City of Duluth Proj. No. 0036ST

STATEMENT OF ESTIMATED QUANTITIES

Sheet No. 02 of 13 Sheets

1. GENERAL REQUIREMENTS FOR CONSTRUCTION ACTIVITY

A. EROSION PREVENTION: THE CONTRACTOR MUST PLAN FOR AND IMPLEMENT CONSTRUCTION PRACTICES THAT MINIMIZE EROSION SO THAT INSPECTION AND MAINTENANCE REQUIREMENTS OF THE GENERAL STORMWATER PERMIT ARE MET. COMMON EROSION PREVENTION PRACTICES INCLUDE:

- 1) MARKING AND DELINEATING AREAS OF THE SITE NOT TO BE DISTURBED (WITH FLAGS, STAKES, SIGNS, SILT FENCE, ETC.).
2) STABILIZING ALL EXPOSED SOIL AREAS AS SOON AS POSSIBLE, BUT IN NO CASE LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
3) STABILIZE THE LAST 200 LINEAL FEET OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE WITHIN 24 HOURS AFTER CONNECTING TO RECEIVING SURFACE WATER OR STORM SEWER INLET.
4) PROVIDE TEMPORARY OR PERMANENT ENERGY DISSIPATION TO PIPE OUTLETS WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER.

B. SEDIMENT CONTROL: THE CONTRACTOR MUST PLAN FOR AND IMPLEMENT CONSTRUCTION PRACTICES THAT MINIMIZE SEDIMENT FROM ENTERING SURFACE WATERS, INCLUDING BUT NOT LIMITED TO: CURB AND GUTTER SYSTEMS AND STORM SEWER INLETS. COMMON SEDIMENT CONTROL PRACTICES INCLUDE:

- 1) DO NOT ALLOW ANY UNBROKEN SLOPE LENGTH GREATER THAN 75 FEET FOR 3:1 (H:V) SLOPES OR STEEPER IN ORDER TO MAINTAIN SHEET FLOW AND MINIMIZE RILLS AND GULLIES.
2) ALL SEDIMENT CONTROL BMPS MUST BE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS BEFORE ANY UPGRADIENT LAND DISTURBING ACTIVITIES CAN BEGIN AND SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION IS ESTABLISHED.
3) THE TIMING FOR SEDIMENT CONTROL BMPS MAY BE ADJUSTED TO ACCOMMODATE SHORT-TERM CONSTRUCTION ACTIVITIES, SUCH AS CLEARING AND GRUBBING OR PASSAGE OF VEHICLES, AND MUST BE COMPLETED AS QUICKLY AS POSSIBLE. SEDIMENT CONTROL BMPS MUST BE INSTALLED IMMEDIATELY AFTER SHORT-TERM CONSTRUCTION IS COMPLETE, OR BEFORE THE NEXT PRECIPITATION EVENT IF THE ACTIVITY IS NOT COMPLETE.
4) PROTECT ALL STORM DRAIN INLETS WITH APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED. INLET PROTECTION MAY ONLY BE REMOVED EARLIER IF SPECIFIC SAFETY CONCERNS (STREET FLOODING/FREEZING) HAVE BEEN BROUGHT FORTH IN WRITING BY JURISDICTIONAL AUTHORITY.
5) TEMPORARY STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS, AND CANNOT BE PLACED IN ANY SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS OR DITCHES.
6) ALL VEHICLE TRACKING OF SEDIMENT FROM THE CONSTRUCTION SITE, OR ONTO STREETS WITHIN THE SITE, MUST BE MINIMIZED BY BMPS SUCH AS STONE PADS, CONCRETE OR STEEL WASH RACKS, OR EQUIVALENT SYSTEMS. STREET SWEEPING MUST BE PERFORMED IF BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREETS / ROADWAYS.

C. DEWATERING AND BASIN DRAINING: THE CONTRACTOR MUST ENSURE THAT ALL WATER FROM DEWATERING OR BASIN DRAINING ACTIVITIES ARE DISCHARGED IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING CHANNELS OR DOWNSLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING SIGNIFICANT ADVERSE IMPACTS TO THE WETLANDS. ANY TURBID OR SEDIMENT LADEN DISCHARGE WATER MUST BE ADEQUATELY TREATED BY DISCHARGING TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE WHENEVER POSSIBLE, OR TREATED WITH APPROPRIATE BMPS IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENT BASIN. THE CONTRACTOR MUST VISUALLY CHECK THE TREATED STORMWATER PRIOR TO DISCHARGING TO RECEIVING WATERS TO ENSURE ADEQUATE TREATMENT IS BEING MET.

D. INSPECTIONS AND MAINTENANCE: THE CONTRACTOR MUST ROUTINELY INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS DURING CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES OVER 24 HOURS. INSPECTION OF AREAS WITH PERMANENT COVER MAY BE REDUCED TO ONCE PER MONTH. THE CONTRACTOR SHALL RECORD IN WRITING ALL INSPECTION AND MAINTENANCE ACTIVITY ON FORMS WITH INFORMATION REQUIRED BY PART IV.E.2 OF THE GENERAL STORMWATER PERMIT. ALL NONFUNCTIONAL BMPS MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS WITHIN 24 HOURS AFTER DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS. COMMON ROUTINE MAINTENANCE ACTIVITIES INCLUDE:

- 1) ALL SILT FENCE MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/3 OF THE FENCE HEIGHT WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
2) DRAIN ALL TEMPORARY AND PERMANENT SEDIMENTATION BASINS AND REMOVE SEDIMENT WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME WITHIN 72 HOURS OF DISCOVERY OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
3) REMOVE ALL DEPOSITED SEDIMENT FROM SURFACE WATERS AND STORMWATER CONVEYANCE SYSTEMS (DITCHES, CURB AND GUTTERS, CATCH BASINS, ETC.) AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL WITHIN 7 DAYS OF DISCOVERY OR AFTER OBTAINING PERMISSION FROM JURISDICTIONAL AUTHORITIES.
4) REMOVE ANY TRACKED SEDIMENT FROM ALL PAVED SURFACES WITHIN 24 HOURS AFTER DISCOVERY OR SOONER AS REQUIRED FOR PERMIT COMPLIANCE.
5) REMOVE ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE IN A MANNER AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS AND SAFETY HAZARDS.
6) OPERATE, MAINTAIN, AND INSPECT ANY TEMPORARY OR PERMANENT WATER QUALITY MANAGEMENT BMPS TO ENSURE ADEQUATE TREATMENT IS BEING MET.

E. POLLUTION PREVENTION MANAGEMENT MEASURES: THE CONTRACTOR MUST MANAGE AND IMPLEMENT POLLUTION PREVENTION MEASURES TO PREVENT AIR, LAND, AND WATER CONTAMINATION AND MEET REGULARY COMPLIANCE. COMMON POLLUTION PREVENTION MANAGEMENT MEASURES INCLUDE:

- 1) COLLECT SOLID WASTE (SEDIMENT, CONSTRUCTION AND DEMOLITION DEBRIS, ASPHALT/CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, ETC) AND DISPOSE IN COMPLIANCE WITH MPCA REQUIREMENTS.
2) STORE HAZARDOUS MATERIALS (FUEL, PAINT, ETC.) AND PROVIDE SECONDARY CONTAINMENT TO PREVENT SPILLS, LEAKS, AND OTHER DISCHARGE. RESTRICT ACCESS TO STORAGE AREAS AND DISPOSE OF HAZARDOUS WASTE IN COMPLIANCE WITH MPCA REQUIREMENTS.
3) LIMIT EXTERNAL WASHING OF TRUCKS AND CONSTRUCTION VEHICLES TO A DEFINED AREA OF SITE. CONTAIN RUNOFF AND PROPERLY DISPOSE OF WASTE. NO ENGINE DEGREASING IS ALLOWED ON SITE.
4) ALL LIQUID AND SOLID WASTE GENERATED BY CONCRETE WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER ONSITE. NO LIQUID OR SOLID WASTE MUST CONTACT THE GROUND AND NO RUNOFF IS ALLOWED FROM THE CONCRETE WASHOUT OPERATIONS OR AREA. ALL WASTE MUST BE PROPERLY DISPOSED IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED NEAR EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES.

F. FINAL STABILIZATION: THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING FINAL STABILIZATION FOR THE SITE AS DESCRIBED IN PART IV.G OF THE GENERAL STORMWATER PERMIT. SPECIFIC CONDITIONS REQUIRED FOR FINAL STABILIZATION INCLUDE:

- 1) ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND ALL SOILS ARE STABILIZED BY A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% OVER THE ENTIRE PERVIOUS SURFACE AREA, OR OTHER EQUIVALENT MEANS NECESSARY TO PREVENT SOIL FAILURE UNDER EROSION CONDITIONS. ALL TEMPORARY SYNTHETIC AND STRUCTURAL EROSION PREVENTION AND SEDIMENT CONTROL BMPS MUST BE LEFT IN-PLACE UNTIL RESTORATION GOAL IS MET - 70% DENSITY.
2) ALL PERMANENT STORMWATER TREATMENT SYSTEMS ARE OPERATIONAL AND ALL SEDIMENT IS REMOVED FROM TEMPORARY AND PERMANENT SEDIMENTATION BASINS AND CONVEYANCE SYSTEMS.
3) BMPS DESIGNED TO DECOMPOSE MAY BE LEFT IN PLACE.

2. EROSION CONTROL RESPONSIBILITIES

A. THE CONTRACTOR IS RESPONSIBLE FOR OVERSEEING THE EROSION CONTROL IMPLEMENTATION AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS BEFORE AND DURING CONSTRUCTION. THE FOLLOWING PERSON IS DESIGNATED TO PERFORM THESE DUTIES ON BEHALF OF THE CONTRACTOR AND IS TRAINED AND CERTIFIED TO INSPECT AND INSTALL BMPS AND/OR MANAGE SITES COVERED UNDER THE GENERAL STORMWATER PERMIT:

B. THE OWNER IS RESPONSIBLE FOR THE LONG-TERM OPERATION AND MAINTENANCE OF PERMANENT STORMWATER MANAGEMENT SYSTEM. THE FOLLOWING PERSON IS DESIGNATED TO PERFORM THESE DUTIES:
CITY OF DULUTH

C. THE GENERAL CONTRACTOR IS IN CHARGE OF ALL EROSION CONTROL IMPLEMENTATION ON THE SITE AND WILL BE ACCOUNTABLE FOR ALL OTHER CONTRACTORS WORKING ON SITE AND THEIR COMPLIANCE WITH GENERAL STORMWATER PERMIT AND SWPPP REQUIREMENTS.

3. REGULATORY AGENCIES AND PERMITS

A. THE CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF ALL REGULATORY AGENCIES AND PERMITS HAVING JURISDICTION DURING CONSTRUCTION ACTIVITIES. IN ADDITION TO THE MPCA AND GENERAL STORMWATER PERMIT, THE FOLLOWING REGULATORS AND PERMITS ARE KNOWN TO HAVE SITE JURISDICTION:

- 1) CITY OF DULUTH - EROSION CONTROL PERMIT

4. GENERAL NATURE OF CONSTRUCTION ACTIVITY DESCRIPTION

A. THE PROJECT INVOLVES THE RELINE OF EXISTING STORM SEWER

TOTAL DISTURBED AREA = 0.25 ACRES.

- 1. PARTIAL DECONSTRUCTION OF MANHOLE DRAINAGE STRUCTURE AND SURROUNDING EXCAVATION.

5. IMPERVIOUS SURFACE AREAS (TO NEAREST 1/4 ACRE)

- A. PRE-CONSTRUCTION CONDITIONS: 0.25 ACRES
B. POST-CONSTRUCTION CONDITIONS: 0.25 ACRES
C. NET DIFFERENCE: 0.00 ACRES

6. POTENTIAL FOR SEDIMENT AND POLLUTANTS DISCHARGES FROM THE SITE

- A. SEDIMENT FROM OVERLAND (SHEET) FLOW FROM THE SITE WILL BE CONTAINED BY A PERIMETER CONTROL OF SILT FENCE AND SEDIMENT TRAPS AT POINTS OF DISCHARGE.
B. SEDIMENT AND TURBIDITY FROM DEWATERING ACTIVITIES WILL BE TREATED BY MEANS OF A PORTABLE SEDIMENT CONTAINMENT SYSTEM OR OTHER ENGINEER APPROVED METHOD. THE CONTRACTOR IS RESPONSIBLE TO MEET THE STORMWATER DISCHARGE REQUIREMENTS OF THE COUNTY, AND OTHER AGENCIES WITH REGULATING AUTHORITY. AT A MINIMUM, STORMWATER QUALITY FROM DEWATERING ACTIVITIES AND OTHER DISCHARGES FROM THE SITE MUST MEET THE TURBIDITY AND SEDIMENT LEVELS OF THE RECEIVING SURFACE WATERS.
C. LIQUID AND SOLID WASTE FROM CONCRETE OPERATIONS WILL BE TREATED BY DESIGNATED CONCRETE WASHOUT STATIONS.
D. MAJOR DRAINAGE WAY RUNS THROUGH PROJECT LIMITS. CONTRACTOR SHALL BE PREPARED FOR LARGE RUNOFF VOLUMES & FLOWS FROM RAIN EVENTS.

7. DRAWING REFERENCES

A. LOCATION AND TYPE OF EROSION PREVENTION AND SEDIMENT CONTROL BMPS

- 1) TEMPORARY BMPS: SEE SHEET 4
2) PERMANENT BMPS: SEE SHEET 4
B. SITE MAPS
1) EXISTING GRADES: SEE PLAN SHEETS
2) FINAL GRADES: SEE PLAN SHEETS
3) DRAINAGE PATTERNS: SEE SHEET 4
4) IMPERVIOUS SURFACING AND SOIL TYPES: SEE PLAN AND PROFILE SHEETS
5) LOCATION OF AREAS NOT TO BE DISTURBED: SEE PLAN AND PROFILE SHEETS

C. STANDARD DETAILS FOR BMPS: SEE SHEET 4

D. TABULATION OF ESTIMATED PRELIMINARY QUANTITIES FOR BMPS: SEE SHEET 2

8. TIMING/SCHEDULE OF BMP INSTALLATION FOR EROSION PREVENTION AND SEDIMENT CONTROL

- A. PRIOR TO LAND DISTURBANCE ACTIVITIES:
1) INSTALL SILT FENCE AT SITE PERIMETERS AND AROUND AREAS NOT TO BE DISTURBED.
B. DURING CONSTRUCTION ACTIVITIES:
1) INSTALL SILT FENCE AROUND STOCKPILES.
2) INSTALL AND MAINTAIN PORTABLE SEDIMENT CONTAINMENT SYSTEMS FOR TREATING GROUNDWATER FROM DEWATERING OPERATIONS.
3) INSTALL INLET PROTECTION AT NEW CULVERT INLETS AND DITCH FLOW CONTROL DEVICES.
4) CONSTRUCT RIPRAP AT CULVERT OUTLETS AND ELSEWHERE AS SHOWN ON THE PLANS.
5) INSTALL EROSION CONTROL BLANKETS, SOD, AND SEED/MULCH IN AREAS SHOWN ON THE PLANS WHEN LAND DISTURBING ACTIVITIES ARE COMPLETE.

6) INSPECT AND MAINTAIN ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, INCLUDING REMOVING SEDIMENT DEPOSITS AND SWEEPING STREETS.

7) ALL DEMOLITION AND REMOVAL OPERATIONS SHALL BE PERFORMED IN A MANNER WHICH CONTAINS ALL DEBRIS FROM ENTERING THE STREAM. IF REMOVAL OPERATIONS RESULT IN DEBRIS ENTERING THE STREAM REMOVAL OPERATIONS SHALL BE SUSPENDED AND METHODS CORRECTED PRIOR TO RESUMING. ANY DEBRIS WHICH DOES ENTER THE STREAM SHALL BE REMOVED.

C. UPON COMPLETION OF LAND DISTURBANCE ACTIVITIES:

- 1) ESTABLISH PERMANENT COVER IN ALL AREAS OF THE SITE AND MAINTAIN UNTIL FINAL STABILIZATION.
2) UPON FINAL STABILIZATION, REMOVE ALL TEMPORARY BMPS (STABILIZED CONSTRUCTION EXITS, INLET PROTECTION, SILT FENCE, CONCRETE WASHOUT STATIONS, PORTABLE SEDIMENT CONTAINMENT SYSTEMS) AND REMOVE ANY SEDIMENT THAT HAS ACCUMULATED IN TEMPORARY BMPS, CONVEYANCE SYSTEMS, SEDIMENT BASINS, AND PERMANENT STORMWATER MANAGEMENT SYSTEMS.

9. PROCEDURES FOR ESTABLISHING ADDITIONAL BMPS FOR SITE CONDITIONS DURING CONSTRUCTION

A. IF ANY DOWN GRADIENT TREATMENT SYSTEM IS OVERLOADED, ADDITIONAL UPGRADING SEDIMENT CONTROL OR REDUNDANT BMPS MUST BE INSTALLED BY THE CONTRACTOR TO ELIMINATE THE OVERLOADING CONDITION. CONTRACTOR SHALL BE PROACTIVE REGARDING EROSION & SEDIMENT CONTROL MEASURES.

10. METHODS OF FINAL STABILIZATION

A. FINAL STABILIZATION WILL BE ACCOMPLISHED BY IMPERVIOUS SURFACING (BITUMINOUS STREETS, CONCRETE SIDEWALKS, CURB AND GUTTER, ASPHALT ROOFTOPS, ETC.) AND VEGETATIVE GROUND COVERS (SODDING AND SEEDING/MULCHING). SPECIFIC CONSTRUCTION METHODS ARE DESCRIBED IN THE PLANS AND SPECIFICATIONS.

11. PERMANENT STORMWATER MANAGEMENT SYSTEMS (NOT REQUIRED)

A. THE PROJECT DOES NOT EXCEED THE THRESHOLD OF 1 ACRE OF NEW IMPERVIOUS THEREFORE NO PERMANENT STORMWATER MANAGEMENT SYSTEM IS REQUIRED.

12. STANDARDS SPECIFICATIONS FOR CONSTRUCTION

A. UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS, ALL MATERIAL AND CONSTRUCTION REQUIREMENTS FOR TEMPORARY SEDIMENT CONTROL AND EROSION PREVENTION SHALL BE IN ACCORDANCE WITH THE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2014 EDITION AND AS MODIFIED BY THE PROJECT SPECIAL PROVISIONS.

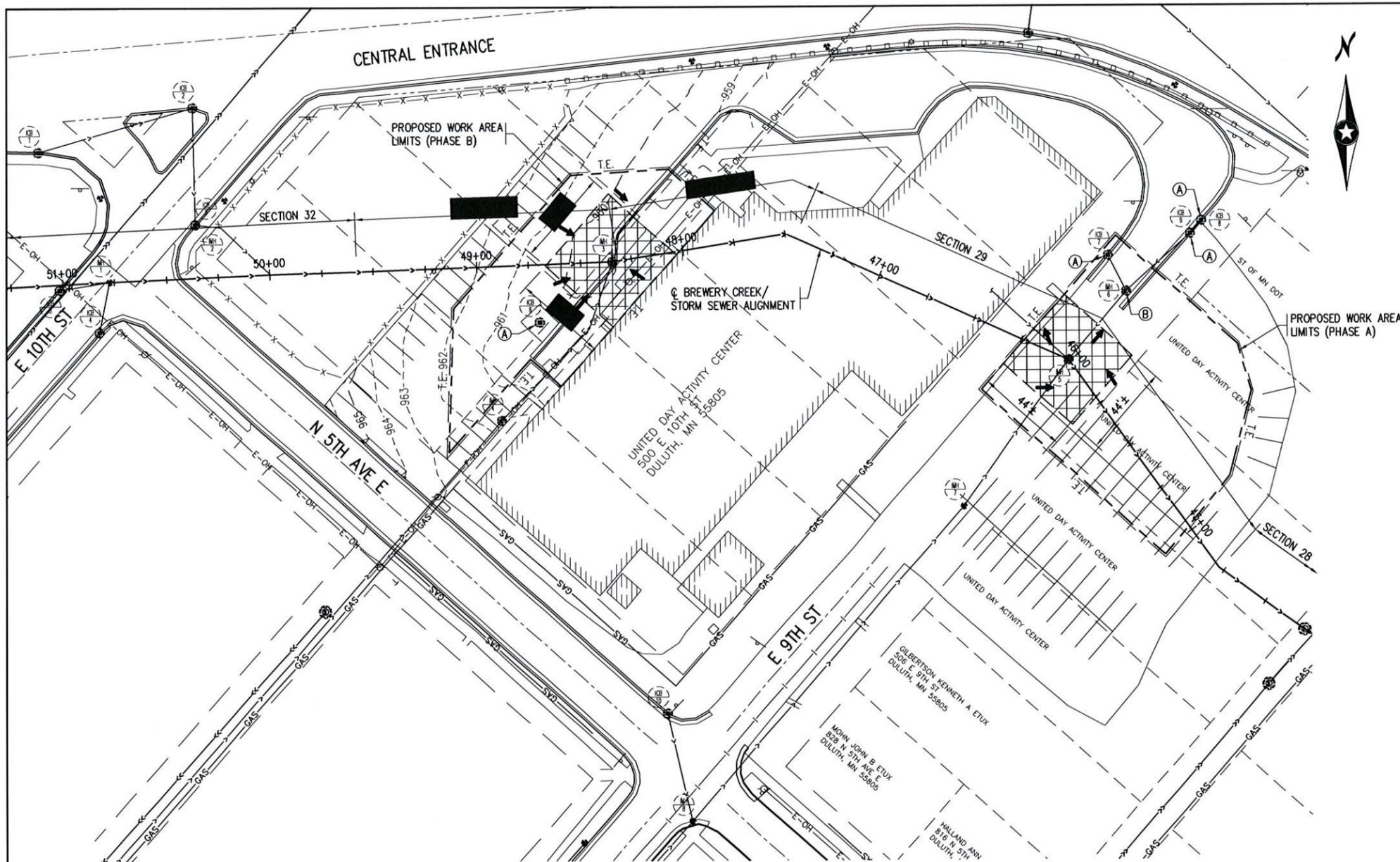
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

NAME: Jon W. Siter LIC. NO. 25128 DATE 11/09/2015

City of Duluth Proj. No. 0036ST

EROSION CONTROL NOTES

Sheet No. 03 of 13 Sheets



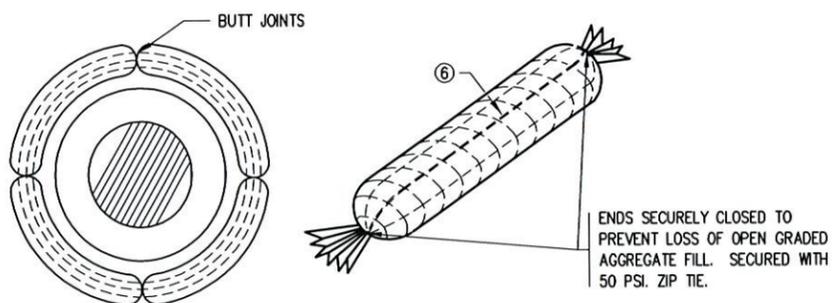
NOTES:

- SEE SPECS. 2573, 3137 & 3886.
- MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.
- ① STORM DRAIN INLET PROTECTION REQUIRED REGARDLESS OF SEWER LINING METHOD.
 - ② ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.
 - ③ FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
 - ④ INSTALLATION NOTES:
DO NOT INSTALL FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE INSTALLED 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 CLUNCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
 - ⑤ 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.
 - ⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-4; CA-35 GRADATION.
 - ⑦ FILTER BAG INSERT (EST. 4 EA.) AND ROCK LOG/COMPOST LOG (EST. 1 EA.) TO BE PAID FOR UNDER ITEM "STORM DRAIN INLET PROTECTION".
 - ⑧ GEOTEXTILE FILTER TYPE V (EST. 530 SQ. YD.) TO BE PAID FOR UNDER ITEM "GEOTEXTILE FILTER TYPE V".

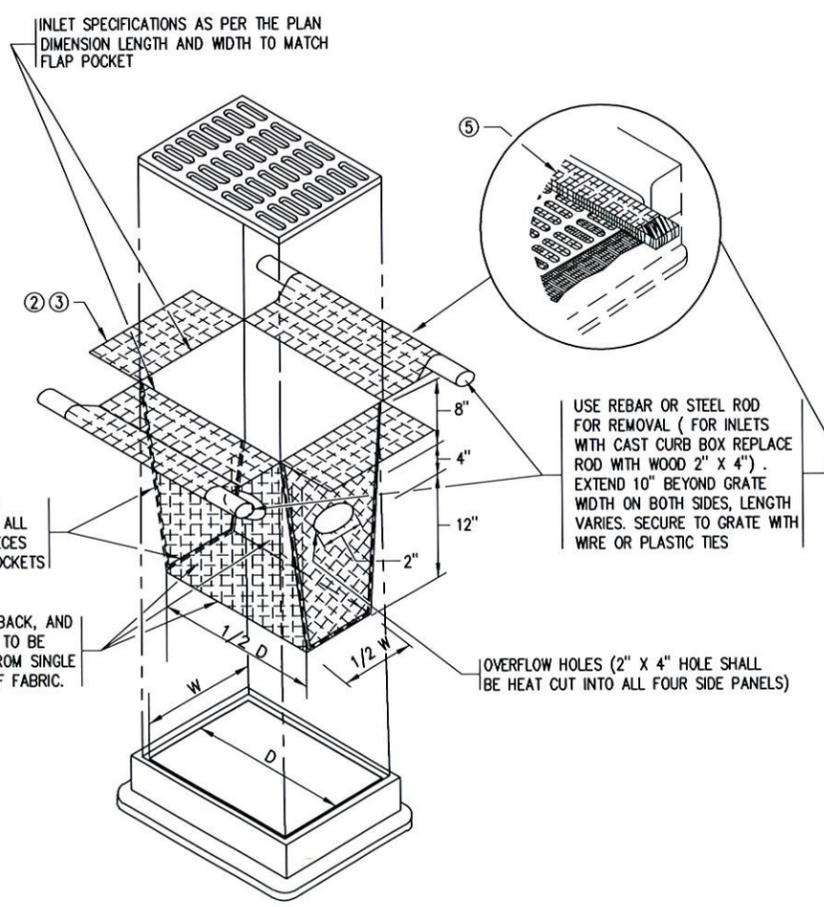
EROSION CONTROL PLAN ①

LEGEND

- Ⓐ FILTER BAG INSERT (OR EQUIVALENT SYSTEM) ⑦
- Ⓑ ROCK LOG/COMPOST LOG ⑦
- ⊗ MANHOLE ACCESS LOCATION & APPROX. EXCAVATION AREA (PLACE GEOTEXTILE FILTER ON ALL EXPOSED SURFACES) ⑧
- ← DENOTES DRAINAGE FLOW DIRECTION



ROCK LOG/COMPOST LOG



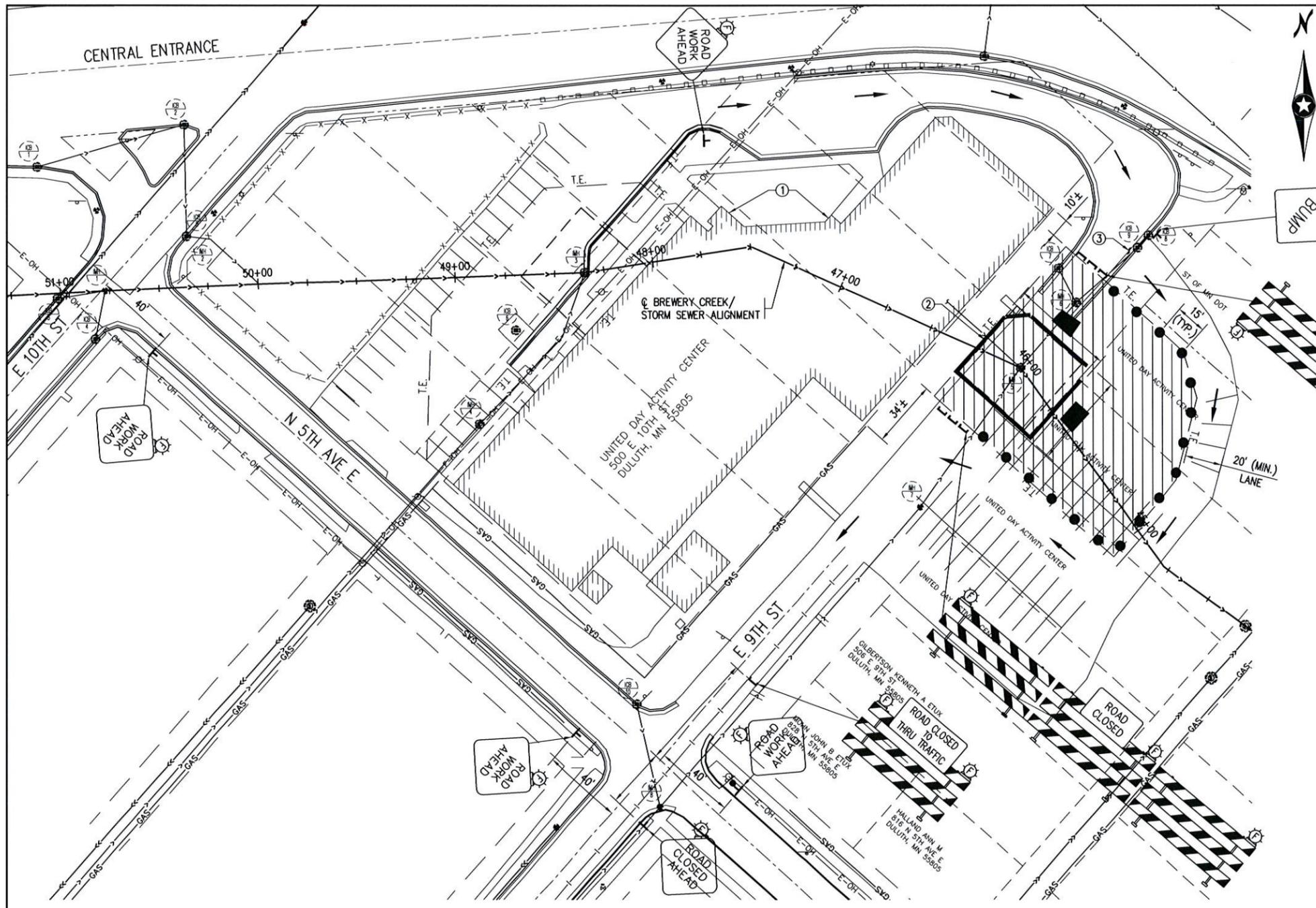
FILTER BAG INSERT ④

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX)

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.
 NAME: *Jon W. Silter* LIC. NO. 25128 DATE 11/09/2015
 JON W. SILTER

City of Duluth Proj. No. 0036ST

EROSION CONTROL DETAILS
 Sheet No. 04 of 13 Sheets



TRAFFIC CONTROL PLAN - PHASE A

- KEY NOTES:**
- CONTRACTOR SHALL PROVIDE ACCESS TO FRONT ENTRANCE OF UDAC BUILDING THROUGHOUT DURATION OF THE PROJECT.
 - PRECAST CONCRETE BARRIERS TO BE PLACED AROUND PERIMETER OF EXCAVATION LIMITS EXCEPT AS NOTED BELOW. CONTRACTOR MAY OMIT BARRIERS WHERE ACCESS IS REQUIRED FOR CONSTRUCTION AND REPLACE WITH ORANGE SAFETY FENCE (INCIDENTAL).
 - CONSTRUCT BITUMINOUS RAMP OVER CURB AND ICB-9 LEADING INTO EXISTING PARKING LOT. COVER ICB-9 WITH PLATE OR PLYWOOD PRIOR TO PLACING BITUMINOUS RAMP. ICB-8 MUST REMAIN IN SERVICE, FURNISHING, PLACING AND REMOVING BITUMINOUS RAMP AND COVERING ICB-9 SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS.
 - INSTALL ORANGE SAFETY FENCE BETWEEN/ALONG PLASTIC DRUMS (INCIDENTAL).

- GENERAL NOTES:**
- LAYOUT SHOWN IS APPROXIMATE AND SHALL BE DEPENDENT ON CONTRACTORS OPERATIONS AND EXCAVATION METHOD/REQUIREMENTS.
 - IN NO CASE SHALL THE ACTUAL CONSTRUCTION AREA EXCEED THAT SHOWN WITHOUT PRIOR APPROVAL FROM THE ENGINEER IN THE FIELD.
 - ADJUSTMENTS TO LAYOUT AND LOCATION OF PRECAST CONCRETE BARRIER SHALL BE MADE AS DIRECTED BY THE ENGINEER IN THE FIELD TO ACCOMMODATE FACILITY OPERATION, TRAFFIC, AND OR SAFETY CONCERNS.
 - "PHASE A" AND "PHASE B" TRAFFIC CONTROL SHALL NOT BE IMPLEMENTED CONCURRENTLY. PHASE A SHALL BE IMPLEMENTED FIRST AND ALL WORK EXCEPT FINAL PAVING (IF REQUIRED) SHALL BE COMPLETED PRIOR TO BEGINNING WORK AT PHASE B.

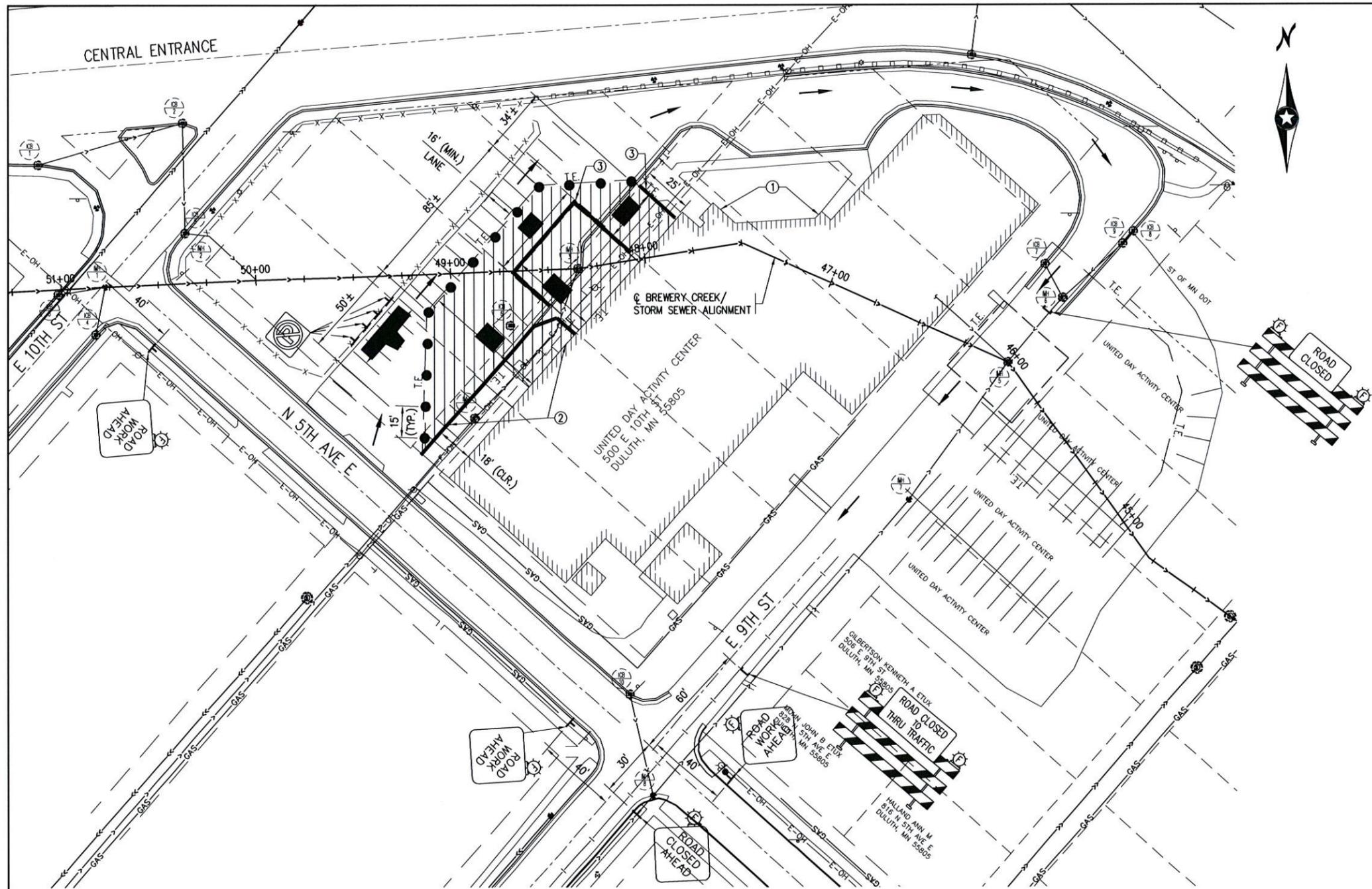
LEGEND	
	DENOTES TYPE III BARRICADE
	DENOTES SINGLE POST SIGNAGE
	DENOTES PLASTIC DRUM
	DENOTES PRECAST CONCRETE BARRIER
	DENOTES PROPOSED WORK AREA LIMITS ④
	DENOTES TRAFFIC FLOW

NOTE:
 PRECAST CONCRETE BARRIERS WILL BE REQUIRED ONLY IF CONTRACTOR'S CHOSEN METHOD OF SEWER LINING REQUIRES EXCAVATION AND RECONSTRUCTION OF EXISTING MANHOLES.

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.
 NAME: *Jon W. Siter* LIC. NO. 25128 DATE 11/09/2015
 JON W. SITER

City of Duluth Proj. No. 0036ST

TRAFFIC CONTROL - PHASE A
 Sheet No. 05 of 13 Sheets



- KEY NOTES:**
- ① CONTRACTOR SHALL PROVIDE ACCESS TO FRONT ENTRANCE OF UDAC BUILDING THROUGHOUT DURATION OF THE PROJECT.
 - ② PRECAST CONCRETE BARRIERS SHALL BE PLACED AS SHOWN TO PROVIDE WALKWAY BETWEEN BUILDING AND BARRIERS. EXCEPT AS NOTED BELOW.
 - ③ PRECAST CONCRETE BARRIERS TO BE PLACED AROUND PERIMETER OF EXCAVATION LIMITS EXCEPT AS NOTED BELOW. CONTRACTOR MAY OMIT BARRIERS WHERE ACCESS IS REQUIRED FOR CONSTRUCTION AND REPLACE WITH ORANGE SAFETY FENCE (INCIDENTAL).
 - ④ INSTALL ORANGE SAFETY FENCE BETWEEN/ALONG PLASTIC DRUMS (INCIDENTAL).
 - ⑤ IN LIEU OF SINGLE POST SIGNAGE, "NO PARKING" SIGNS SHALL BE TEMPORARILY ATTACHED TO EXISTING FENCE/RAILING DURING PHASE A CONSTRUCTION.

- GENERAL NOTES:**
- LAYOUT SHOWN IS APPROXIMATE AND SHALL BE DEPENDENT ON CONTRACTORS OPERATIONS AND EXCAVATION METHOD/REQUIREMENTS.
 - IN NO CASE SHALL THE ACTUAL CONSTRUCTION AREA EXCEED THAT SHOWN WITHOUT PRIOR APPROVAL FROM THE ENGINEER IN THE FIELD.
 - ADJUSTMENTS TO LAYOUT AND LOCATION OF PRECAST CONCRETE BARRIER SHALL BE MADE AS DIRECTED BY THE ENGINEER IN THE FIELD TO ACCOMMODATE FACILITY OPERATION, TRAFFIC, AND OR SAFETY CONCERNS.
 - "PHASE A" AND "PHASE B" TRAFFIC CONTROL SHALL NOT BE IMPLEMENTED CONCURRENTLY. PHASE A SHALL BE IMPLEMENTED FIRST AND ALL WORK EXCEPT FINAL PAVING (IF REQUIRED) SHALL BE COMPLETED PRIOR TO BEGINNING WORK AT PHASE B.

TRAFFIC CONTROL PLAN - PHASE B

LEGEND	
	DENOTES TYPE III BARRICADE
	DENOTES SINGLE POST SIGNAGE
	DENOTES PLASTIC DRUM
	DENOTES PRECAST CONCRETE BARRIER
	DENOTES PROPOSED WORK AREA LIMITS ④
	DENOTES TRAFFIC FLOW

NOTE:
 PRECAST CONCRETE BARRIERS WILL BE REQUIRED ONLY IF CONTRACTOR'S CHOSEN METHOD OF SEWER LINING REQUIRES EXCAVATION AND RECONSTRUCTION OF EXISTING MANHOLES.

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 NAME: *Jon W. Siter* LIC. NO. 25128 DATE 11/09/2015
 JON W. SITER

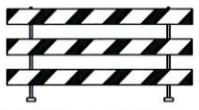
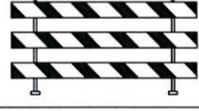
City of Duluth Proj. No. 0036ST

TRAFFIC CONTROL - PHASE B
 Sheet No. 06 of 13 Sheets

TRAFFIC CONTROL NOTES

- ① ALL SIGNING INDICATED ON THIS TRAFFIC CONTROL PLAN, EXCEPT THOSE SIGNS WHICH ARE INPLACE, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. ALL APPROPRIATE SIGNING, INCLUDING INPLACE SIGNS, SHALL BE MAINTAINED BY THE CONTRACTOR DURING THE LIFE OF THE CONTRACT. EXISTING STOP SIGNS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.
- ② ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO, AND BE PLACED IN ACCORDANCE WITH, THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MMUTCD) INCLUDING PART VI AND THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS DATED JANUARY 2014, THE MINNESOTA STANDARD SIGNS MANUALS PARTS I, II, AND III AND THE APPROPRIATE MATERIAL SPECIFICATIONS.
- ③ THE CONTRACTOR SHALL RECEIVE COMPENSATION FOR ALL WORK DESCRIBED HEREIN AND ELSEWHERE IN THESE PLANS ON THE BASIS OF A LUMP SUM PAYMENT FOR ITEM TRAFFIC CONTROL (2563.601).
- ④ THE CONTRACTOR SHALL PLACE ADEQUATE PLASTIC DRUMS, WARNING SIGNS, AND BARRICADES WITHIN THE CONSTRUCTION ZONE TO PROTECT VEHICULAR TRAFFIC AND PEDESTRIAN TRAFFIC FROM CONSTRUCTION OPERATIONS. ADDITIONAL SIGNING MAY INCLUDE, BUT IS NOT LIMITED TO BUMP, DIP, LOOSE GRAVEL, ETC. THE NUMBER AND PLACEMENT OF TRAFFIC CONTROL DEVICES SHALL BE DETERMINED BY THE SEQUENCE OF THE CONTRACTORS OPERATIONS. TRAFFIC CONTROL DEVICES SHALL BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.
- ⑤ ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED OR COVERED AS SOON AS THEY ARE NO LONGER REQUIRED OR APPROPRIATE.
- ⑥ THE INITIAL CONSTRUCTION SIGNING SHALL BE ERECTED PRIOR TO CONSTRUCTION OPERATIONS.
- ⑦ TYPE A (LOW INTENSITY) FLASHERS SHALL BE FURNISHED, INSTALLED, AND MAINTAINED ON TYPE III BARRICADES AND ADVANCED WARNING SIGNS WHEN USED AT NIGHT, OR TO IDENTIFY HAZARDS, AND AS DETAILED IN THIS TRAFFIC CONTROL PLAN. ADDITIONAL FLASHERS SHALL BE FURNISHED, INSTALLED, AND MAINTAINED ON SIGNS, BARRICADES, AND CHANNELIZERS AS NEEDED OR AS DIRECTED BY THE ENGINEER FOR TRAFFIC CONTROL THROUGH WORK ZONES WITHIN THE PROJECT LIMITS.
- ⑧ FLAGGING SHALL BE REQUIRED WHEN WORK IS AT THE EDGE OF THE DRIVING LANE TO PROTECT TRAFFIC FROM EXCAVATION AND PAVING OPERATIONS. FLAGGING SHALL BE IN ACCORDANCE WITH THE PERTINENT LAYOUTS SHOWN IN PART VI OF THE MMUTCD, INCLUDING THE FIELD MANUAL DATED JANUARY 2014. ALL SUCH WORK RELATED TO FLAGGING, INCLUDING FLAG PERSONS, SHALL BE CONSTRUED TO BE INCLUDED IN THE LUMP SUM PAYMENT FOR TRAFFIC CONTROL (2563.601).
- ⑨ "ROAD CLOSED AHEAD" SIGNS SHALL BE MOUNTED APPROXIMATELY 250 FT IN ADVANCE OF THE CONSTRUCTION AND THE NEAREST INTERSECTION AND SHALL HAVE A TYPE "A" LOW INTENSITY FLASHING AMBER WARNING LIGHT MOUNTED ON THEM.
- ⑩ "ROAD CLOSED" SIGNS MAY BE USED WHERE THE ROADWAY IS CLOSED TO ALL TRAFFIC EXCEPT CONTRACTOR'S EQUIPMENT OR OFFICIALLY AUTHORIZED VEHICLES.
- ⑪ WHEN A "ROAD CLOSED TO THRU TRAFFIC" SIGN IS USED, THE "STOP" OR "YIELD" SIGN AT THAT INTERSECTION SHALL BE LEFT IN PLACE OR MOVED TO A SUITABLE LOCATION WHERE THE DRIVER CAN STILL SEE THE SIGN.
- ⑫ "ROAD CLOSED TO THRU TRAFFIC" SIGNS SHALL BE LOCATED AT A POINT IN THE STREET AS TO PERMIT LOCAL TRAFFIC USE BUT EFFECTIVELY DISCOURAGE THRU TRAFFIC USE.

NOTE:
 PRECAST CONCRETE BARRIERS WILL BE REQUIRED ONLY IF CONTRACTOR'S CHOSEN METHOD OF SEWER LINING REQUIRES EXCAVATION AND RECONSTRUCTION OF EXISTING MANHOLES.

TRAFFIC – BILL OF MATERIALS ①					
THE FOLLOWING ITEMS ARE INCLUDED AND PAID FOR UNDER SPEC. 2563.601 TRAFFIC CONTROL					
SIGN NO.	DEVICE	SIZE ②	NO. REQ'D. PHASE A	NO. REQ'D. PHASE B	NOTES
RB-3		18" x 18" BLK. ON WHITE	0	4	
R11-2		48" x 30" BLK. ON WHITE	2	1	
R11-4		60" x 30" BLK. ON WHITE	1	1	
W1-6L		48" x 24" BLK. ON ORANGE	1	0	
WB-1		36" x 36" BLK. ON ORANGE	1	0	
W20-1		36" x 36" BLK. ON ORANGE	4	3	
W20-3		36" x 36" BLK. ON ORANGE	1	1	
TYPE III BARRICADE		8' ORANGE & WHITE	5	2	
TYPE III BARRICADE		8' ORANGE & WHITE	2	0	
PLASTIC DRUM		ORANGE & WHITE	17	13	
TEMPORARY PORTABLE PRECAST CONCRETE BARRIER		32" x 150"	14	20	③
TYPE A FLASHERS		YELLOW	13	8	

KEY NOTES:

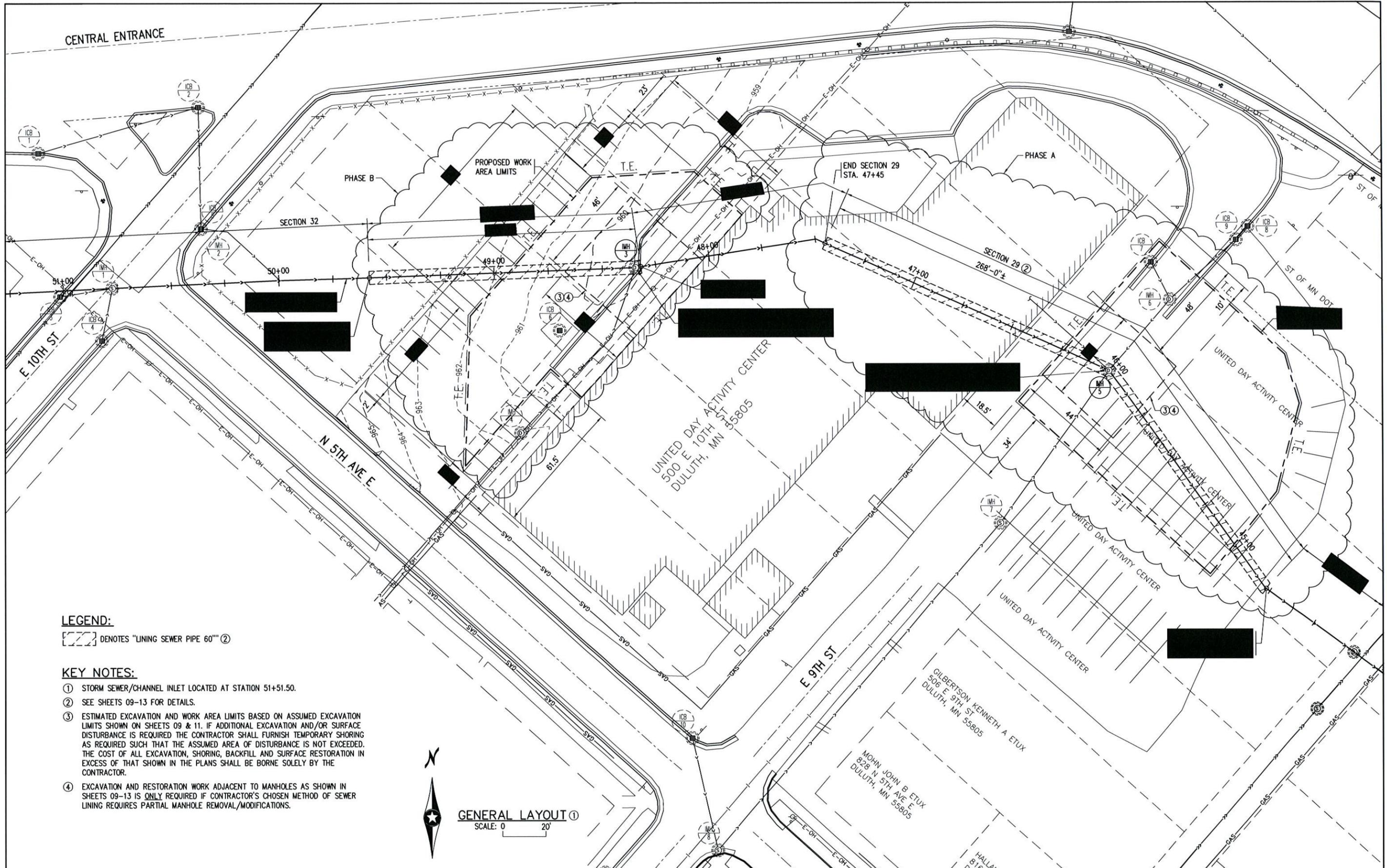
- ① POSTS, WEIGHTS AND HARDWARE REQUIRED FOR SIGN PLACEMENT ARE INCIDENTAL ITEMS.
- ② ALL SIGN PANEL DIMENSIONS ARE IN INCHES.
- ③ TOTAL REPRESENTS ESTIMATED MAXIMUM QUANTITY. CONTRACTOR SHALL VERIFY TOTAL QUANTITY NEEDED BASED ON ACCESS LOCATIONS FOR PROPOSED CONSTRUCTION. ONLY REQUIRED IF EXISTING MANHOLES REQUIRE EXCAVATION TO PERMIT LINING.

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.
 NAME: Jon W. Sitter LIC. NO. 25128 DATE 11/09/2015

City of Duluth Proj. No. 0036ST

TRAFFIC CONTROL NOTES

Sheet No. 07 of 13 Sheets



LEGEND:

DENOTES "LINING SEWER PIPE 60" (2)

KEY NOTES:

- ① STORM SEWER/CHANNEL INLET LOCATED AT STATION 51+51.50.
- ② SEE SHEETS 09-13 FOR DETAILS.
- ③ ESTIMATED EXCAVATION AND WORK AREA LIMITS BASED ON ASSUMED EXCAVATION LIMITS SHOWN ON SHEETS 09 & 11. IF ADDITIONAL EXCAVATION AND/OR SURFACE DISTURBANCE IS REQUIRED THE CONTRACTOR SHALL FURNISH TEMPORARY SHORING AS REQUIRED SUCH THAT THE ASSUMED AREA OF DISTURBANCE IS NOT EXCEEDED. THE COST OF ALL EXCAVATION, SHORING, BACKFILL AND SURFACE RESTORATION IN EXCESS OF THAT SHOWN IN THE PLANS SHALL BE BORNE SOLELY BY THE CONTRACTOR.
- ④ EXCAVATION AND RESTORATION WORK ADJACENT TO MANHOLES AS SHOWN IN SHEETS 09-13 IS ONLY REQUIRED IF CONTRACTOR'S CHOSEN METHOD OF SEWER LINING REQUIRES PARTIAL MANHOLE REMOVAL/MODIFICATIONS.



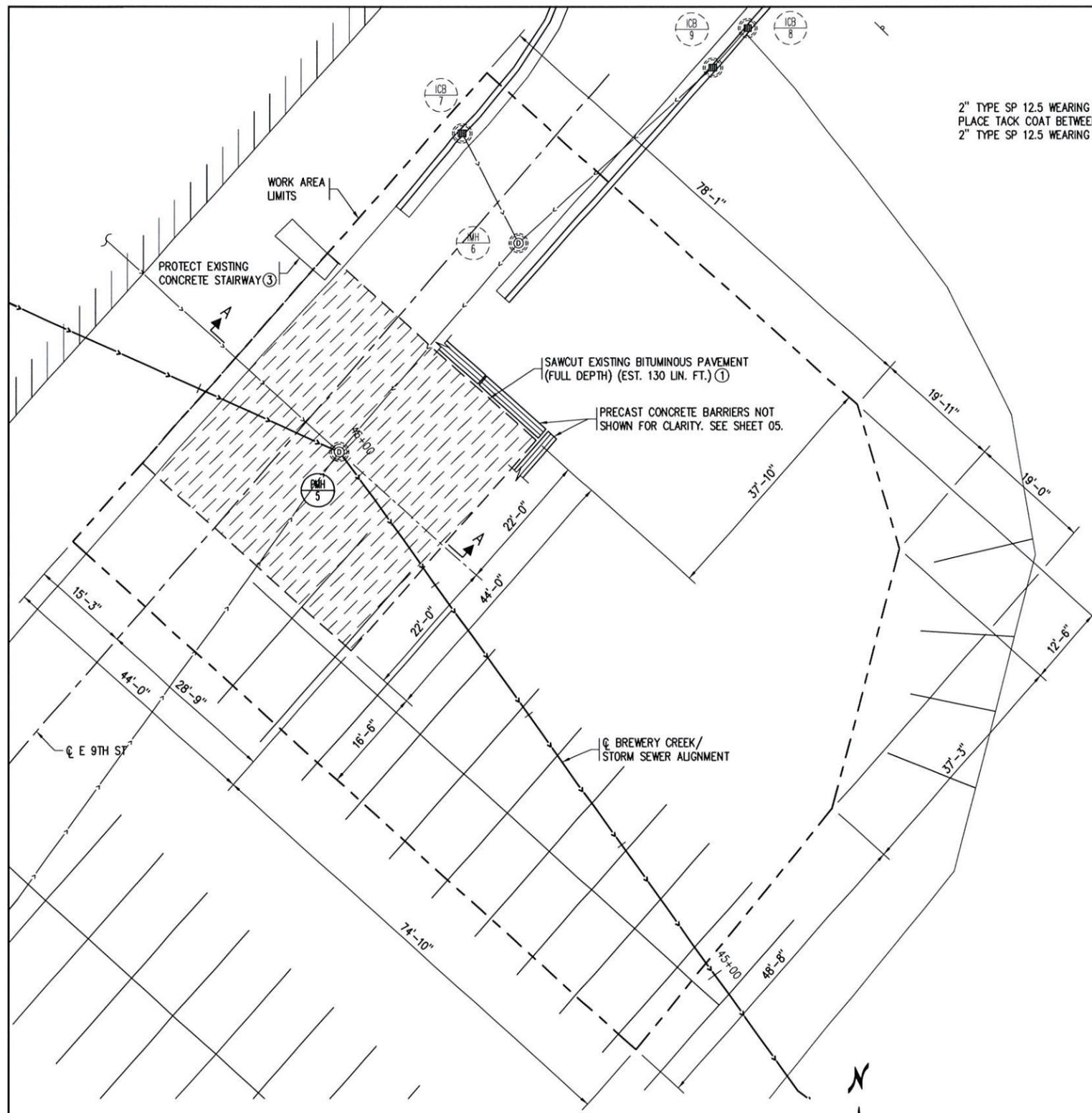
GENERAL LAYOUT ①
SCALE: 0 20'

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NAME: *Jon W. Siter* LIC. NO. 25128 DATE 11/09/2015
JON W. SITER

City of Duluth Proj. No. 0036ST

GENERAL PLAN (PHASE A & B)

Sheet No. 08 of 13 Sheets



SEWER ACCESS PLAN - SECTION 29
SCALE: 0 10'

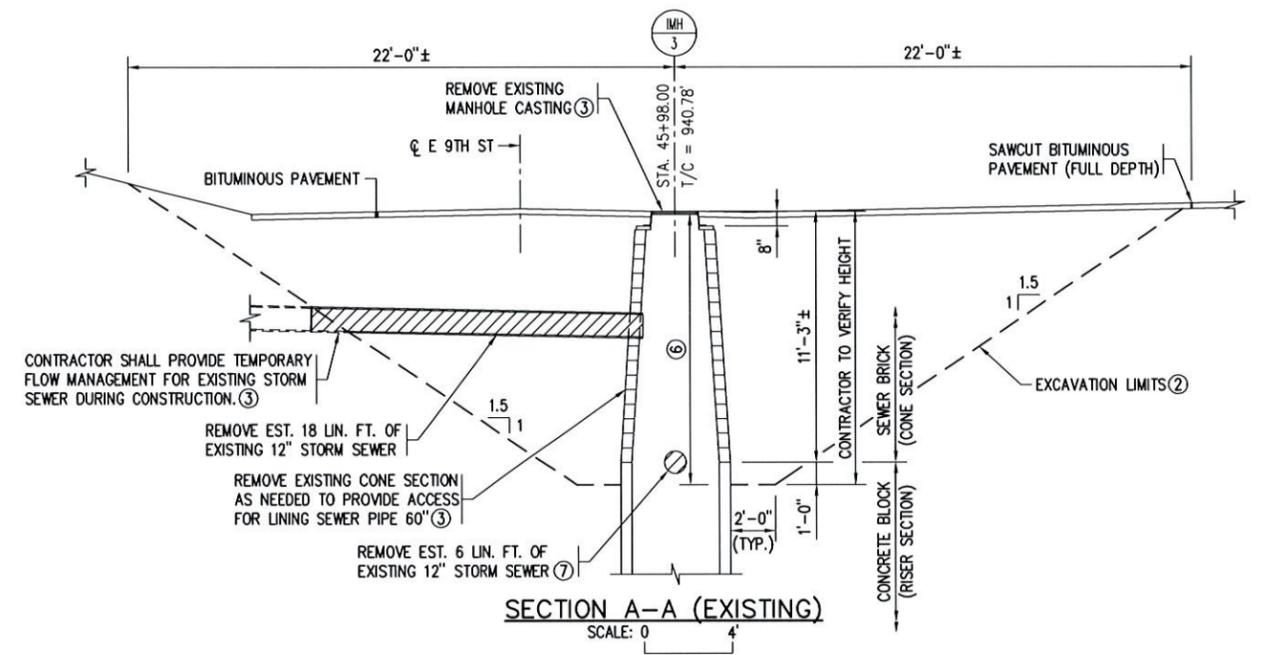
LEGEND:
 DENOTES BITUMINOUS REMOVAL (EST. 1810 SQ. FT.) AND REPLACEMENT (EST. 50 TONS). TO BE PAID FOR UNDER ITEMS "REMOVE BITUMINOUS PAVEMENT" AND "TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)".

2" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) SPWEB340C
 PLACE TACK COAT BETWEEN BIT. COURSES - SPEC. 2357 (INCIDENTAL)
 2" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) SPWEB340C

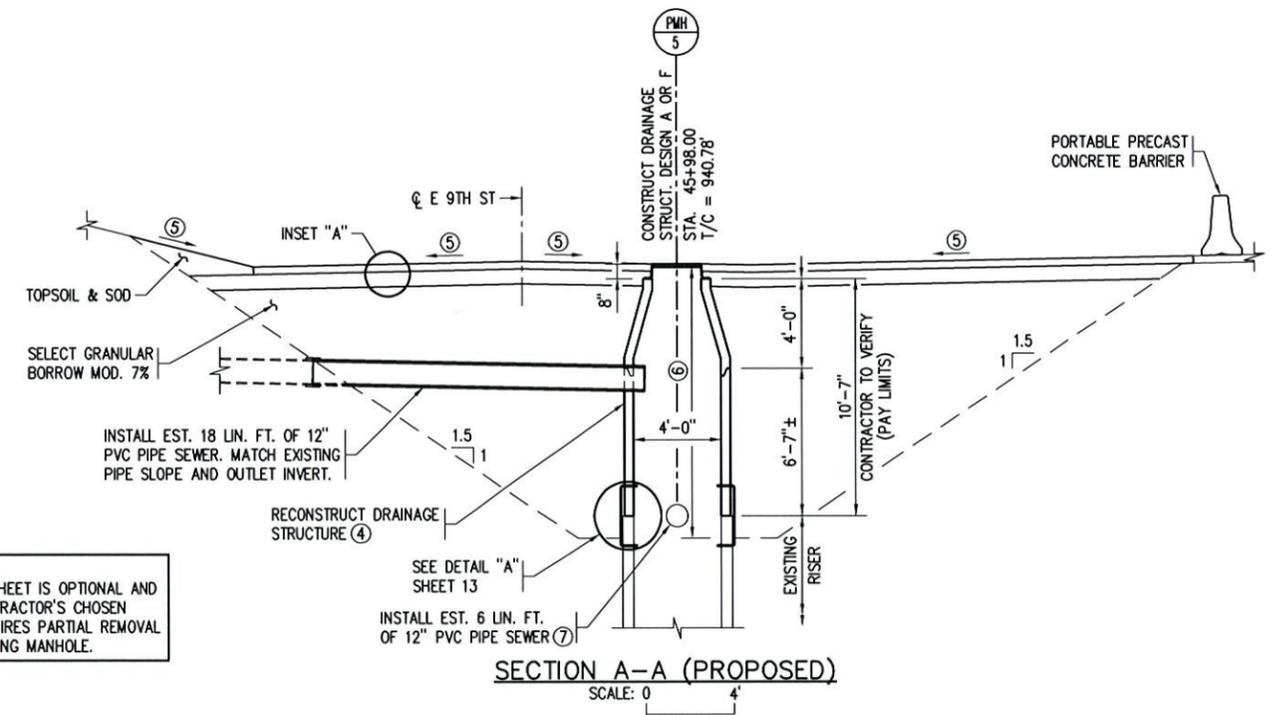
8" AGG. BASE (CV) CLASS 5
INSET "A"

KEY NOTES:

- ① TO BE PAID FOR UNDER ITEM "SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)".
- ② IF SLOPES ARE REQUIRED TO BE FLATTER THAN THAT SHOWN IN THE PLANS DUE TO SOIL CONDITIONS, OSHA REQUIREMENTS, PRESENCE OF STRUCTURES OR OTHER REASONS THE CONTRACTOR SHALL PROVIDE SUITABLE SHORING. IN NO CASE SHALL PAVEMENT REMOVAL OR SURFACE DISTURBANCE LIMITS EXCEED THAT SHOWN IN THE PLANS. THE COST FOR SHORING, EXCAVATION, BACKFILL AND SURFACING REQUIRED IN EXCESS OF THAT SHOWN IN THE PLANS SHALL BE BORNE SOLELY BY THE CONTRACTOR AND NO MEASUREMENT OR PAYMENT SHALL BE MADE THEREFORE.
- ③ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "STRUCTURE EXCAVATION CLASS E".
- ④ TO BE PAID FOR UNDER ITEM "CONSTRUCT DRAINAGE STRUCTURE DESIGN A OR F".
- ⑤ MATCH EXISTING PERIMETER GRADES AND SLOPE TO DRAIN TO ICB-7, 8 & 9 AS DIRECTED BY ENGINEER IN FIELD.
- ⑥ MAXIMUM REMOVAL AND RECONSTRUCTION LIMITS THAT WILL BE ELIGIBLE FOR PAYMENT UNDER CONTRACT ITEMS.
- ⑦ REMOVAL AND REPLACEMENT OF EXISTING STORM SEWER SHALL BE DETERMINED BY ENGINEER IN FIELD.



SECTION A-A (EXISTING)
SCALE: 0 4'



SECTION A-A (PROPOSED)
SCALE: 0 4'

NOTE:
 ALL WORK DEPICTED ON THIS SHEET IS OPTIONAL AND IS ONLY REQUIRED IF THE CONTRACTOR'S CHOSEN METHOD OF SEWER LINING REQUIRES PARTIAL REMOVAL OR MODIFICATION OF THE EXISTING MANHOLE.

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.
 NAME: *Jon W. Siter* LIC. NO. 25128 DATE 11/09/2015
 JOHN W. SITER

City of Duluth Proj. No. 0036ST

SEWER ACCESS DETAILS - PHASE A
 Sheet No. 09 of 13 Sheets

APPROX. EXISTING STORM SEWER DIMENSIONS

STATION	44+75	45+00	45+25	45+50	45+75	46+00	46+25	46+50	46+75	47+00	47+25	47+45
INSIDE HEIGHT (INCHES)	62	63	63	64	60.5	65	61.5	64	62	60	62	64
INSIDE WIDTH (INCHES)	68	68	68	71	67.5	70	69	71	72.5	75.5	75	70

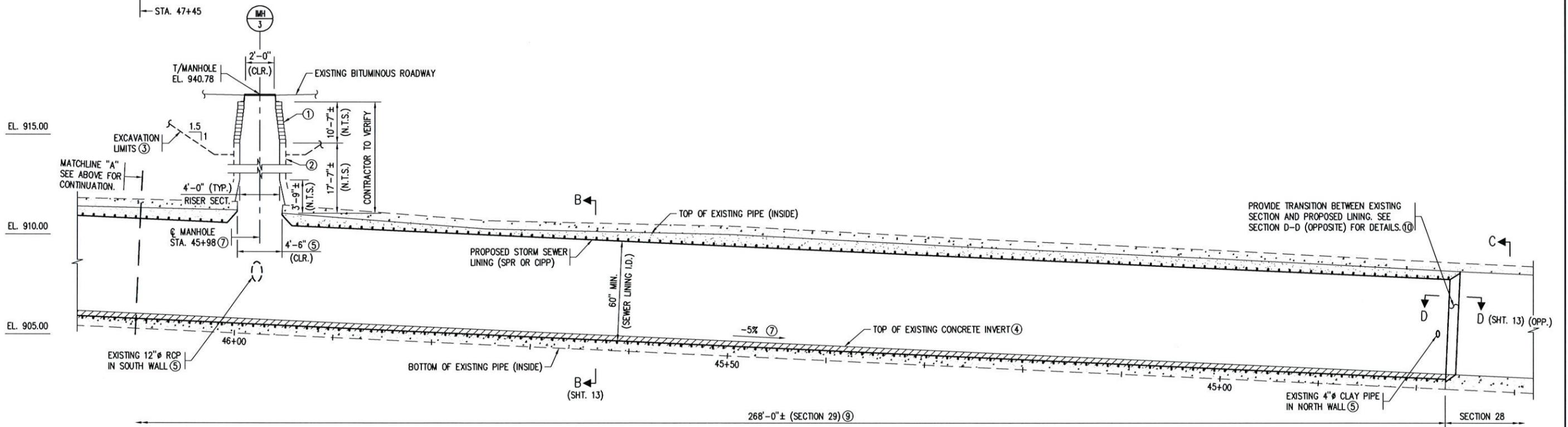
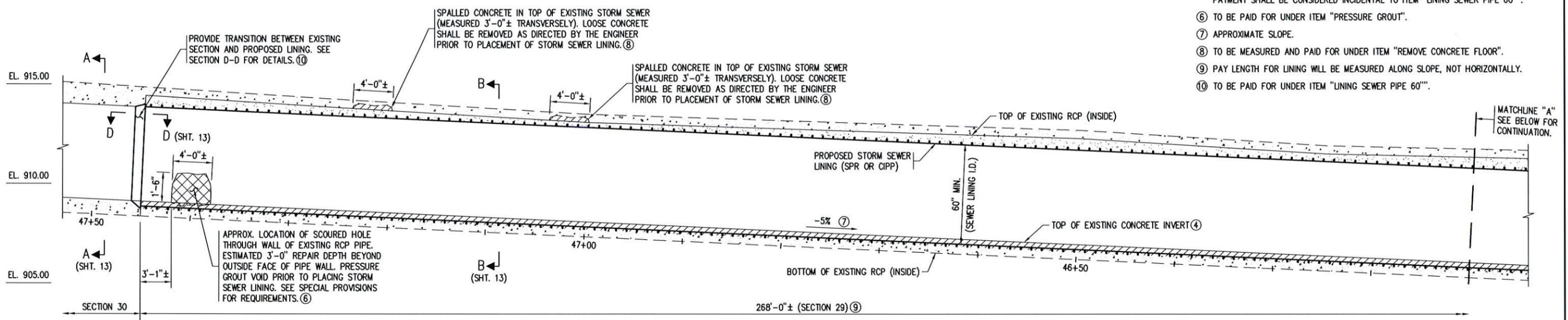
THE INFORMATION GIVEN IN THE TABLE ABOVE IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY EXISTING PIPE SIZE OPENINGS AND SHALL COORDINATE HIS WORK AS REQUIRED TO PERMIT SATISFACTORY INSTALLATION OF THE PIPE LINER AS REQUIRED BY THE CONTRACT.

LEGEND:

-  DENOTES PROPOSED CONCRETE REMOVAL PAID FOR UNDER ITEM "REMOVE CONCRETE FLOOR". (4)
-  DENOTES PRESSURE GROUTED AREA BETWEEN EXISTING PIPE AND PROPOSED LINING (NOT REQUIRED IF CIPP METHOD OF LINING IS USED)
-  DENOTES CONCRETE VOID TO BE GROUTED SOLID PRIOR TO LINING SEWER. PAID FOR UNDER ITEM "PRESSURE GROUT".

KEY NOTES:

- ① EXISTING CONE SECTION CONSTRUCTED OF SEWER BRICK.
- ② EXISTING RISER SECTION CONSTRUCTED OF CONCRETE MODULAR BLOCKS.
- ③ SEE SHEET 09 FOR ADDITIONAL DETAILS.
- ④ ESTIMATED 540 SQ. FT. OF "REMOVE CONCRETE FLOOR". IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD MEASURE AND DOCUMENT LOCATIONS IN THE FIELD WHERE REMOVAL IS REQUIRED TO PERMIT INSTALLATION OF THE LINING. REMOVAL AREAS SHALL BE CLEARLY MARKED BY CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING REMOVAL OPERATIONS.
- ⑤ CONTRACTOR SHALL PROVIDE OPENINGS/EXTENSIONS THROUGH PROPOSED SEWER LINING AT ALL EXISTING MANHOLE AND DRAINAGE STRUCTURES WITHIN REPAIRED PIPE SECTION. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "LINING SEWER PIPE 60\"".
- ⑥ TO BE PAID FOR UNDER ITEM "PRESSURE GROUT".
- ⑦ APPROXIMATE SLOPE.
- ⑧ TO BE MEASURED AND PAID FOR UNDER ITEM "REMOVE CONCRETE FLOOR".
- ⑨ PAY LENGTH FOR LINING WILL BE MEASURED ALONG SLOPE, NOT HORIZONTALLY.
- ⑩ TO BE PAID FOR UNDER ITEM "LINING SEWER PIPE 60\"".



STORM SEWER PROFILE - SECTION 29

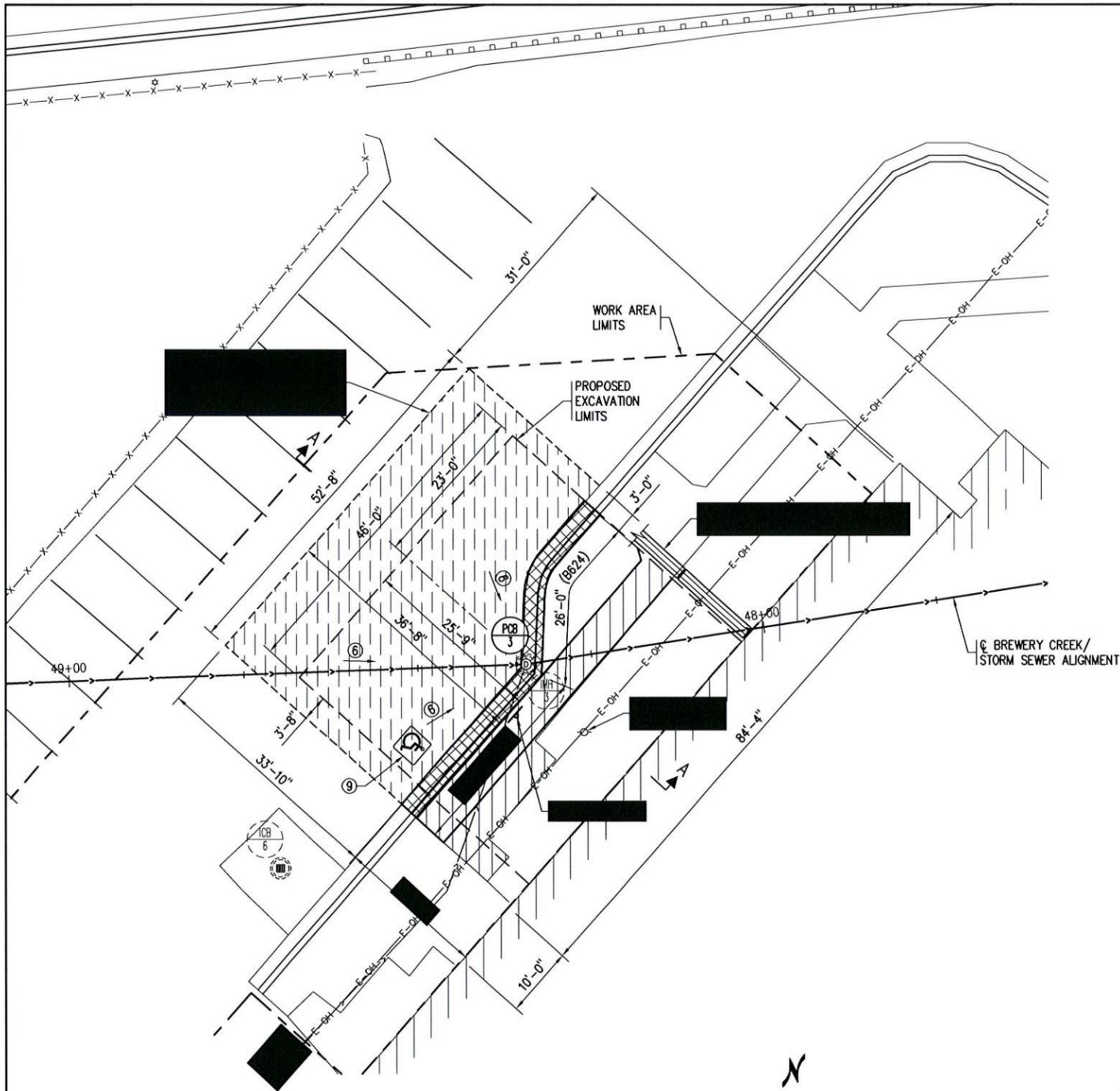
SCALE: 0 5'-0" (HORIZ.)
0 2'-6" (VERT.)

NOTES:
1. N.T.S. = NOT TO SCALE
I.D. = INSIDE DIAMETER

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.
NAME: *Jon W. Sitter* LIC. NO. 25128 DATE 11/09/2015
JON W. SITTER

City of Duluth Proj. No. 0036ST

STORM SEWER PROFILE - PHASE A
Sheet No. 10 of 13 Sheets



SEWER ACCESS PLAN - SECTION 31
SCALE: 0 10'

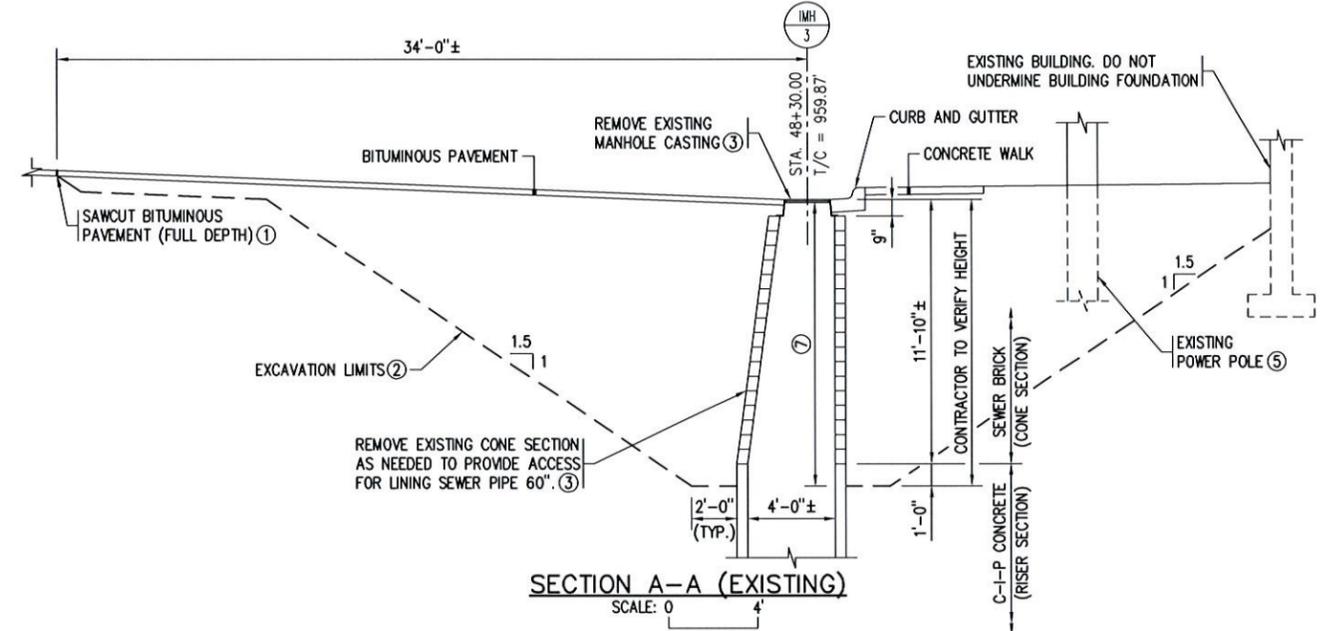
LEGEND:

- DENOTES SIDEWALK REMOVAL (EST. 370 SQ. FT.) AND REPLACEMENT (265 SQ. FT.). TO BE PAID FOR UNDER ITEMS "REMOVE CONCRETE WALK" AND "5" CONCRETE WALK".
- DENOTES BITUMINOUS REMOVAL (EST. 1600 SQ. FT.) AND REPLACEMENT (EST. 45 TONS). TO BE PAID FOR UNDER ITEMS "REMOVE BITUMINOUS PAVEMENT" AND "TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)".
- DENOTES CURB & GUTTER REMOVAL (EST. 53 LIN. FT.) AND REPLACEMENT (26 LIN. FT. OF B624 & 27 LIN. FT. OF D424). TO BE PAID FOR UNDER ITEMS "REMOVE CURB AND GUTTER" AND "CONCRETE CURB AND GUTTER DESIGN B624/D424".

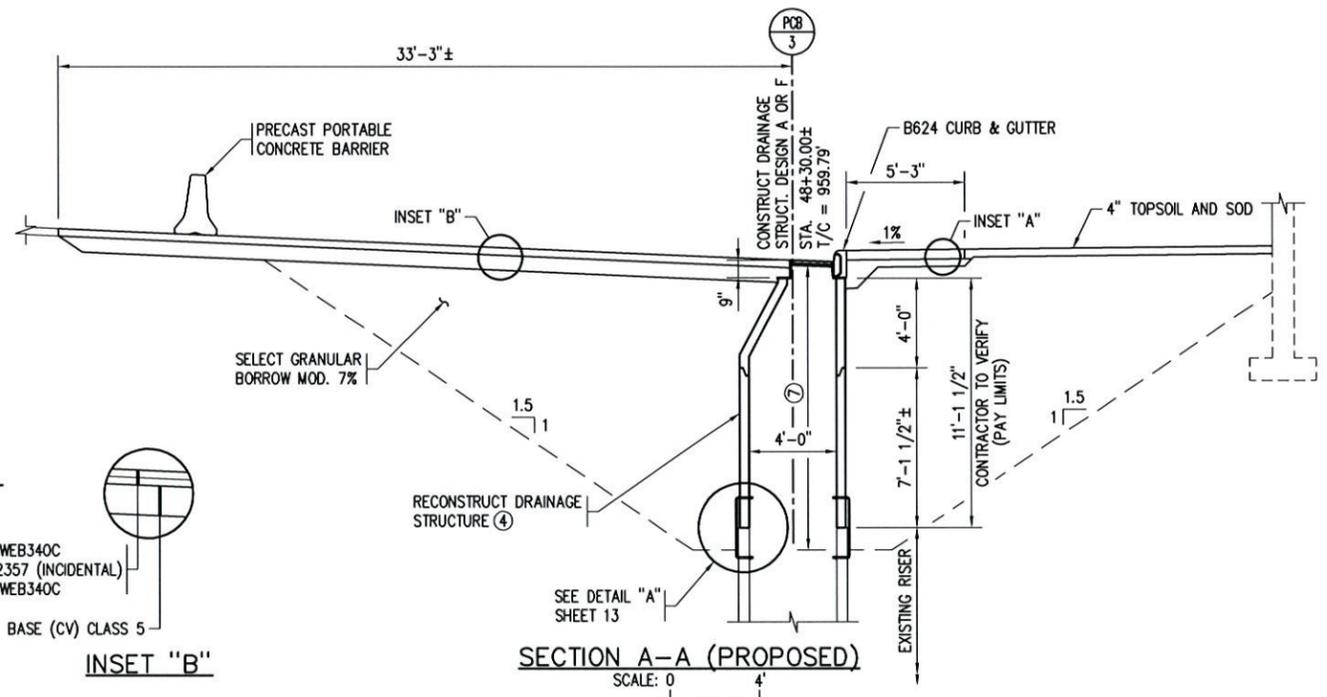
NOTE:
ALL WORK DEPICTED ON THIS SHEET IS OPTIONAL AND IS ONLY REQUIRED IF THE CONTRACTOR'S CHOSEN METHOD OF SEWER LINING REQUIRES PARTIAL REMOVAL OR MODIFICATION OF THE EXISTING MANHOLE.

KEY NOTES:

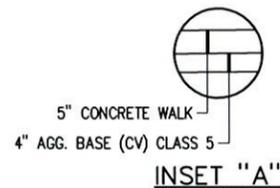
- ① TO BE PAID FOR UNDER ITEM "SAWCUT BITUMINOUS PAVEMENT (FULL DEPTH)".
- ② IF SLOPES ARE REQUIRED TO BE FLATTER THAN THAT SHOWN IN THE PLANS DUE TO SOIL CONDITIONS, OSHA REQUIREMENTS, PRESENCE OF STRUCTURES OR OTHER REASONS THE CONTRACTOR SHALL PROVIDE SUITABLE SHORING. IN NO CASE SHALL PAVEMENT REMOVAL OR SURFACE DISTURBANCE LIMITS EXCEED THAT SHOWN IN THE PLANS. THE COST FOR SHORING, EXCAVATION, BACKFILL AND SURFACING REQUIRED IN EXCESS OF THAT SHOWN IN THE PLANS SHALL BE BORNE SOLELY BY THE CONTRACTOR AND NO MEASUREMENT OR PAYMENT SHALL BE MADE THEREFORE.
- ③ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "STRUCTURE EXCAVATION CLASS E".
- ④ TO BE PAID FOR UNDER ITEM "CONSTRUCT DRAINAGE STRUCTURE DESIGN A OR F".
- ⑤ TO BE RELOCATED BY OTHERS.
- ⑥ SLOPE NEW BITUMINOUS TO DRAIN TO PCB-3 AS DIRECTED BY ENGINEER IN FIELD.
- ⑦ MAXIMUM REMOVAL AND RECONSTRUCTION LIMITS THAT WILL BE ELIGIBLE FOR PAYMENT UNDER CONTRACT ITEMS.
- ⑧ INSTALL SIGN PER "SIGN DETAIL" ON SHEET 02. LOCATION SHALL BE DETERMINED BY ENGINEER IN FIELD. TO BE PAID FOR UNDER ITEM "INSTALL SIGN".
- ⑨ PAINT HANDICAPPED SYMBOL WITHIN PARKING AREA AS DIRECTED BY ENGINEER IN FIELD. TO BE INCLUDED FOR PAYMENT UNDER ITEM "PAVEMENT MESSAGE (HANDICAPPED SYMBOL) PAINT".



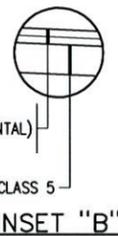
SECTION A-A (EXISTING)
SCALE: 0 4'



SECTION A-A (PROPOSED)
SCALE: 0 4'



5" CONCRETE WALK
4" AGG. BASE (CV) CLASS 5
INSET "A"



8" AGG. BASE (CV) CLASS 5
INSET "B"

2" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) SPWEB340C
PLACE TACK COAT BETWEEN BIT. COURSES - SPEC. 2357 (INCIDENTAL)
2" TYPE SP 12.5 WEARING COURSE MIXTURE (3,C) SPWEB340C

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.
NAME: *Jon W. Siter* LIC. NO. 25128 DATE 11/09/2015
JON W. SITER

City of Duluth Proj. No. 0036ST

SEWER ACCESS DETAILS - PHASE B

Sheet No. 11 of 13 Sheets

APPROX. EXISTING STORM SEWER DIMENSIONS							
STATION	48+32	48+50	48+75	49+00	49+25	49+50	49+58
INSIDE HEIGHT (INCHES)	67	67.5	65	65.5	65	67	66
INSIDE WIDTH (INCHES)	70	71	69	71	73	72	72

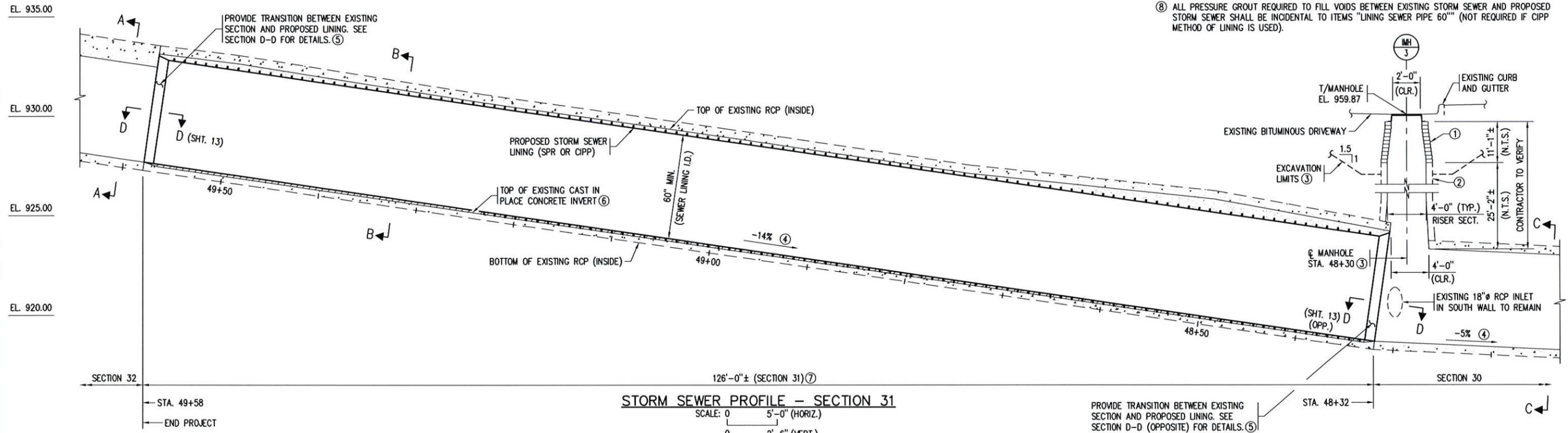
THE INFORMATION GIVEN IN THE TABLE ABOVE IS FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY EXISTING PIPE SIZE OPENINGS AND SHALL COORDINATE HIS WORK AS REQUIRED TO PERMIT SATISFACTORY INSTALLATION OF THE PIPE LINER AS REQUIRED BY THE CONTRACT.

LEGEND:

-  DENOTES PROPOSED CONCRETE REMOVAL. PAID FOR UNDER ITEM "REMOVE CONCRETE FLOOR". ⑥
-  DENOTES PRESSURE GROUTED AREA BETWEEN EXISTING PIPE AND PROPOSED LINING (NOT REQUIRED IF CIPP METHOD OF LINING IS USED)

KEY NOTES:

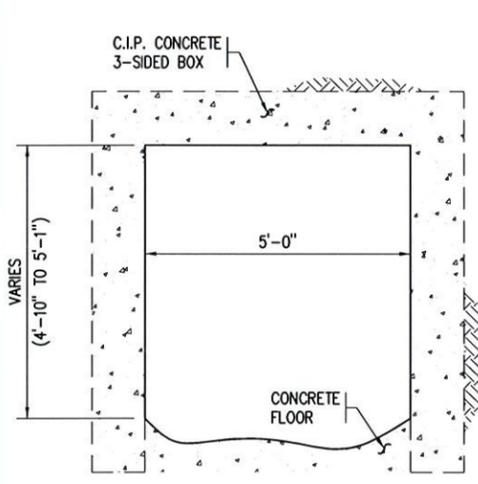
- ① EXISTING CONE SECTION CONSTRUCTED OF SEWER BRICK.
- ② EXISTING RISER SECTION CONSTRUCTED OF CAST IN PLACE CONCRETE.
- ③ SEE SHEET 11 FOR ADDITIONAL DETAILS.
- ④ APPROXIMATE SLOPE.
- ⑤ TO BE PAID FOR UNDER ITEM "LINING SEWER PIPE 60\"".
- ⑥ ESTIMATED 260 SQ. FT. OF "REMOVE CONCRETE FLOOR". IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD MEASURE AND DOCUMENT LOCATIONS IN THE FIELD WHERE REMOVAL IS REQUIRED TO PERMIT INSTALLATION OF THE LINING. REMOVAL AREAS SHALL BE CLEARLY MARKED BY CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING REMOVAL OPERATIONS.
- ⑦ PAY LENGTH FOR LINING WILL BE MEASURED ALONG SLOPE, NOT HORIZONTALLY.
- ⑧ ALL PRESSURE GROUT REQUIRED TO FILL VOIDS BETWEEN EXISTING STORM SEWER AND PROPOSED STORM SEWER SHALL BE INCIDENTAL TO ITEMS "LINING SEWER PIPE 60\"". (NOT REQUIRED IF CIPP METHOD OF LINING IS USED).



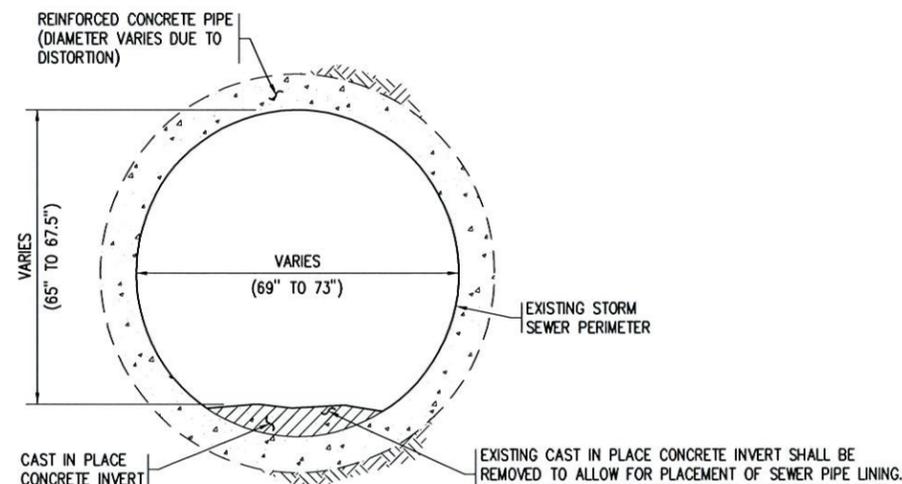
STORM SEWER PROFILE - SECTION 31

SCALE: 0 5'-0" (HORIZ.)
0 2'-6" (VERT.)

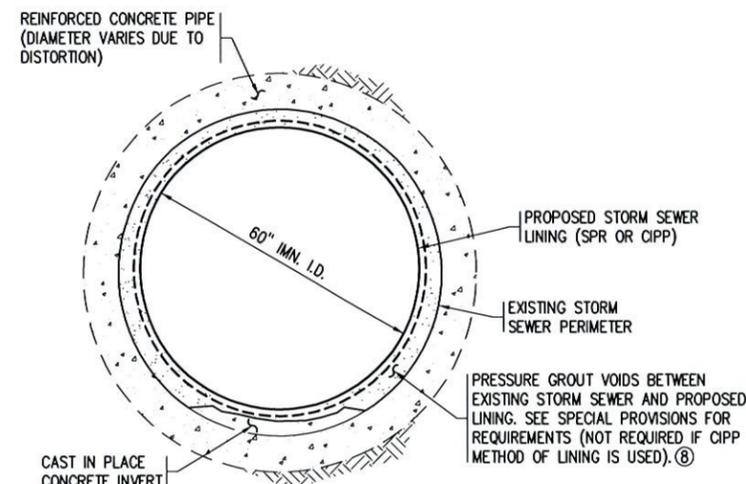
PROVIDE TRANSITION BETWEEN EXISTING SECTION AND PROPOSED LINING. SEE SECTION D-D (OPPOSITE) FOR DETAILS. ⑤



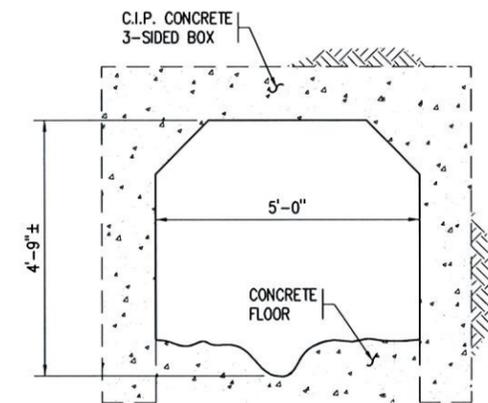
SECTION A-A (SECTION 32)
(NO PROPOSED WORK WITHIN SECTION, SHOWN FOR REFERENCE ONLY)



SECTION B-B (EXISTING) (SECTION 31)



SECTION B-B (PROPOSED) (SECTION 31)



SECTION C-C (SECTION 30)
(NO PROPOSED WORK WITHIN SECTION, SHOWN FOR REFERENCE ONLY)

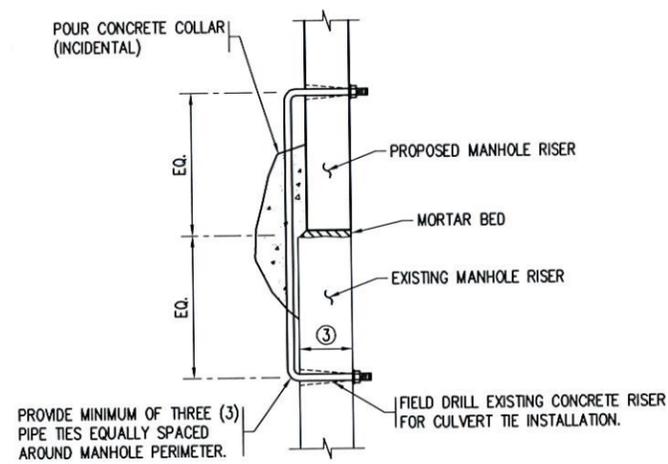
NOTES:
1. N.T.S. = NOT TO SCALE
I.D. = INSIDE DIAMETER

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NAME: *Jon W. Siler* LIC. NO. 25128 DATE 11/09/2015

City of Duluth Proj. No. 0036ST

STORM SEWER PROFILE - PHASE B

Sheet No. 12 of 13 Sheets



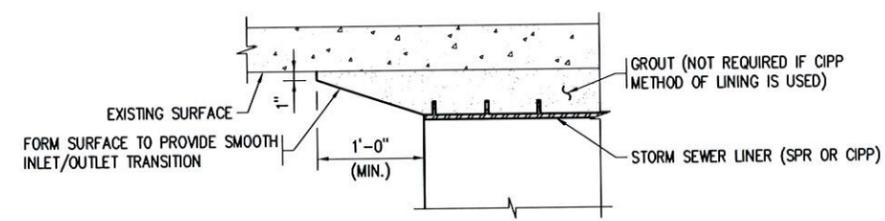
DETAIL "A" ②
(REFER TO MN/DOT STANDARD PLATE 3145G FOR INSTALLATION DETAILS UNLESS NOTED OTHERWISE)

KEY NOTES:

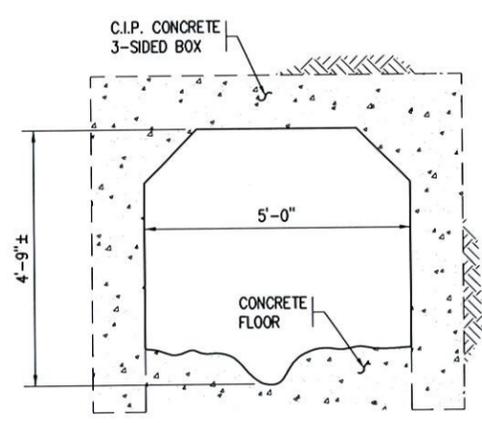
- ① ALL PRESSURE GROUT REQUIRED TO FILL VOIDS BETWEEN EXISTING STORM SEWER AND PROPOSED STORM SEWER SHALL BE INCIDENTAL TO ITEMS "LINING SEWER PIPE 60" (NOT REQUIRED IF CIPP METHOD OF LINING IS USED).
- ② ALL WORK REQUIRED FOR CULVERT TIE INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO ITEM "CONSTRUCT DRAINAGE STRUCTURE DESIGN A OR F".
- ③ VERIFY EXISTING CAST-IN-PLACE RISER THICKNESS PRIOR TO CULVERT TIE FABRICATION.

LEGEND:

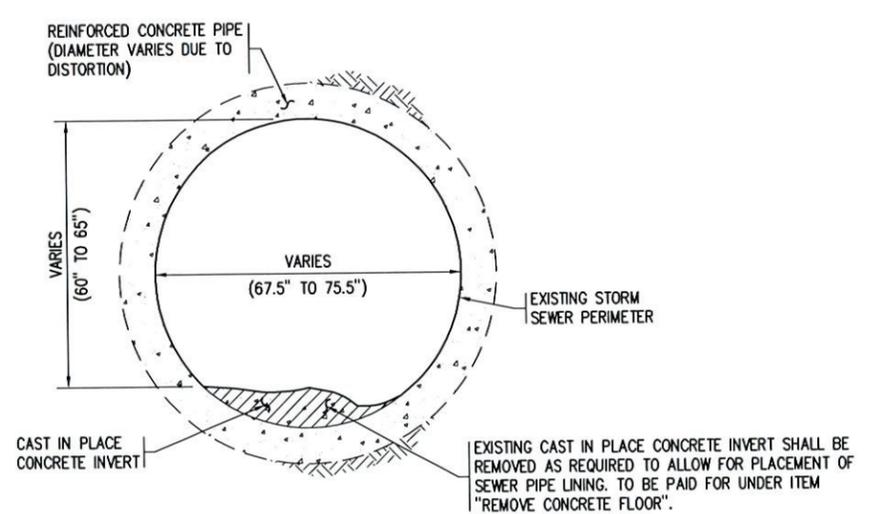
- DENOTES PROPOSED CONCRETE INVERT REMOVAL
- DENOTES PRESSURE GROUTED AREA BETWEEN EXISTING PIPE AND PROPOSED LINING (NOT REQUIRED IF CIPP METHOD OF LINING IS USED)



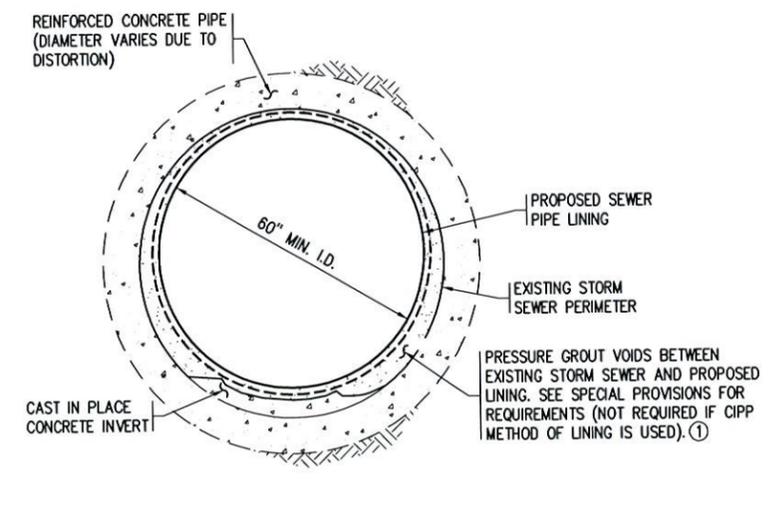
SECTION D-D
(GENERAL TRANSITION SECTION SHOWN)



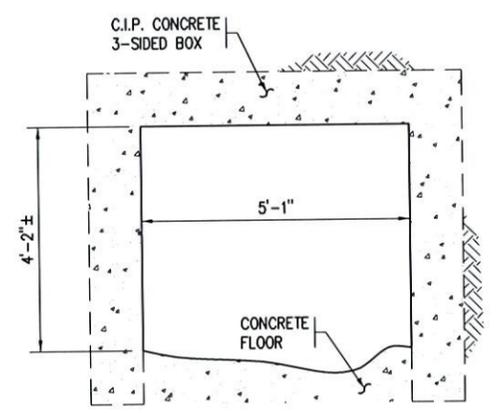
SECTION A-A (SECTION 30)
(NO PROPOSED WORK WITHIN SECTION, SHOWN FOR REFERENCE ONLY)



SECTION B-B (EXISTING) (SECTION 29)



SECTION B-B (PROPOSED) (SECTION 29)



SECTION C-C (SECTION 28)
(NO PROPOSED WORK WITHIN SECTION, SHOWN FOR REFERENCE ONLY)

NOTES:
1. I.D. = INSIDE DIAMETER

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NAME: *Jon W. Sitter* LIC. NO. 25128 DATE 11/09/2015
JON W. SITTER

City of Duluth Proj. No. 0036ST

STORM SEWER DETAILS

Sheet No. 13 of 13 Sheets