

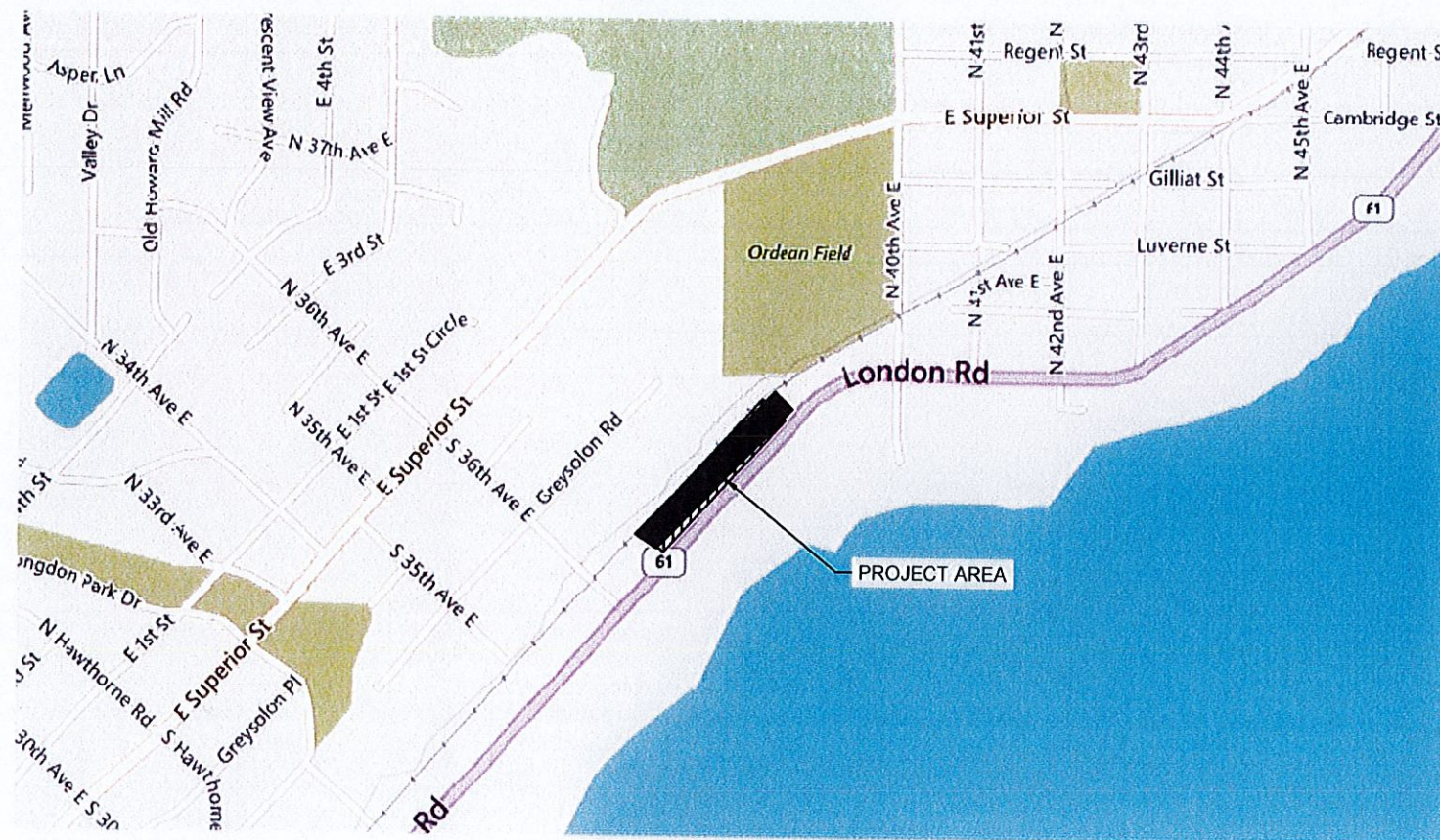
CITY OF DULUTH

DEPARTMENT OF PUBLIC WORKS AND UTILITIES - ENGINEERING DIVISION

LOCATION: 3697 LONDON RD, DULUTH, MN
 CONSTRUCTION PLANS FOR: LONDON ROAD UTILITY EXTENSIONS 37th TO 39th AVENUE EAST
 PROJECT NUMBER: 1927

LEGEND

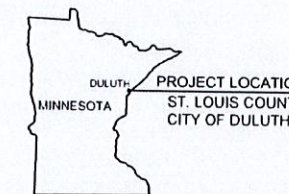
	EXISTING WATER MAIN
	EXISTING GATE VALVE & HYDRANT
	WATER SERVICE & CURB STOP
	PROPOSED WATERMAIN, VALVE, & HYDRANT
	PROPOSED WATER SERVICE & CURB STOP
	EXISTING SANITARY SEWER & MANHOLE
	EXISTING FORCEMAIN
	EXISTING STORM SEWER & INLET
	PROPOSED STORM SEWER & INLET
	PROPOSED MANHOLE & SEWER MAIN
	BURIED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



SITE LOCATION MAP
NOT TO SCALE

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

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."



GOVERNING SPECIFICATIONS

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.
 AVAILABLE AT:
<http://www.dot.state.mn.us/pre-letting/spec/index.html>

THE 2019 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT CONSTRUCTION STANDARDS AND SUPPLEMENTS OR ADDENDUMS SHALL APPLY.
 AVAILABLE AT:
<http://www.duluthmn.gov/engineering/standard-construction-specifications/>

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

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

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THIS PLANSET CONTAINS 26 SHEETS

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.

PROJECT ENGINEER: JOSEPH JUREWICZ 02/17/2020 50396

CITY APPROVAL

Caroline Pedersen *Caroline Pedersen* 7/8/2020
 APPROVED CHIEF ENGINEER OF TRANSPORTATION DATE

Eric R. Shaffer *Eric R. Shaffer* 7/8/2020
 APPROVED CHIEF ENGINEER OF UTILITIES DATE

Cindy Voigt *Cindy Voigt* 7/8/2020
 APPROVED CITY ENGINEER DATE

PROJECT DATE	DRAWN BY	DESIGNED BY	CHECKED BY	NO.	DATE	REVISION	BY
02/17/20	EDC	EDC	JJJ				

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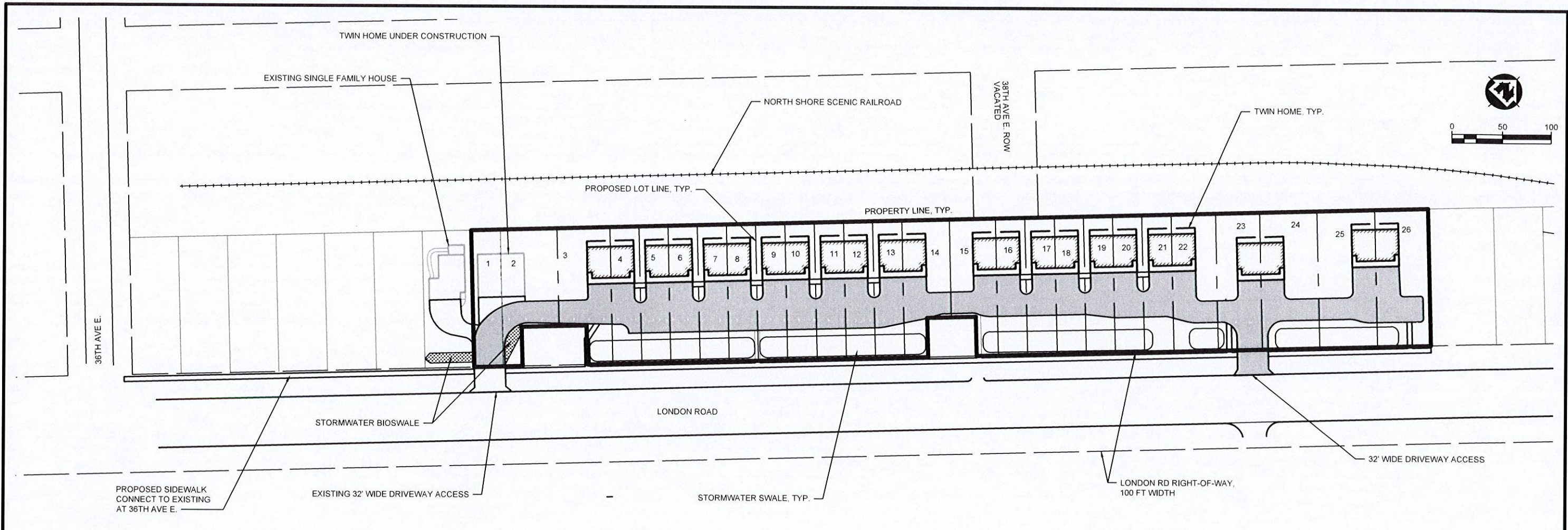
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 332 W Superior Street, Duluth, MN 55802
 (218) 722-3915 www.msa-ps.com

LONDON ROAD UTILITY EXTENSIONS
 37TH TO 39TH AVENUE EAST
 DULUTH, MN

TITLE SHEET

PROJECT NO: 05331006
SHEET: T-1



PROJECT SUMMARY:

1. EXISTING PARCELS:
 REARR PART EAST DULUTH & FIRST ADD TO EAST DU LOTS 10 THRU 18 BLK 33 INC W1/2 OF VACATED 38TH AVE E; EX SELY 40 FT OF LOTS 10 AND 18,
 REARR PART EAST DULUTH & FIRST ADD TO EAST DU LOT 9 INC E1/2 OF 38TH AVE E VACATED & ALL OF LOTS 10 THRU 16,
 REARR PART EAST DULUTH & FIRST ADD TO EAST DU LOTS 8 & 9

PARCEL IDs:
 010-1370-05190, 010-1370-05360, 010-1370-5590

2. ZONING AND SETBACKS:
 PROPERTY ZONING: R-1
 PROPOSED USE: TWIN-HOMES (NO CHANGE NEEDED)

	REQUIRED	PROVIDED
FRONT SETBACK:	25 FT	31 FT
REAR SETBACK:	25 FT	25 FT
SIDE YARD SETBACK:	6 FT	6 FT
MAXIMUM HEIGHT OF BUILDING:	30 FT	30 FT
MINIMUM LOT SIZE:	3000 SF	4200 SF

DEVELOPER HAS APPLIED FOR A REAR YARD SETBACK REDUCTION FROM 25 FT TO 20 FT DUE TO SITE CONSTRAINTS.

3. LAND USE BREAKDOWN:
 TOTAL LOT AREA: 3.20 AC
 AREA IMPACTED FOR CONSTRUCTION: 3.0 AC

BUILDINGS: 0.58 AC
 PAVEMENT: 1.09 AC
 TOTAL IMPERVIOUS: 1.67 AC

TOTAL PERVIOUS: 1.68 AC

4. PARKING REQUIREMENTS:

	REQUIRED	PROVIDED
DWELLING, ONE-FAMILY PER UNIT	1 SPACE	2 SPACES

5. LANDSCAPE/BUFFER REQUIREMENTS:
 STREET FRONTAGE: ONE TREE PER 35 LF, ONE SHRUB PER 25 LF

TREE REPLACEMENT REQUIREMENTS: NOT MORE THAN 30% OF REPLACEMENT TREES SHALL BE THE SAME SPECIES WITHOUT APPROVAL FROM THE CITY FORESTER.

6. WETLAND DISTURBANCES:
 13,613 SF - PERMANENT DISTURBANCE
 952 SF - TEMPORARY DISTURBANCE

PROJECT DATE	DRAWN BY	NO.	DATE	REVISION	BY
02/17/20	EDC				
	DESIGNED BY: EDC				
	CHECKED BY: JJJ				

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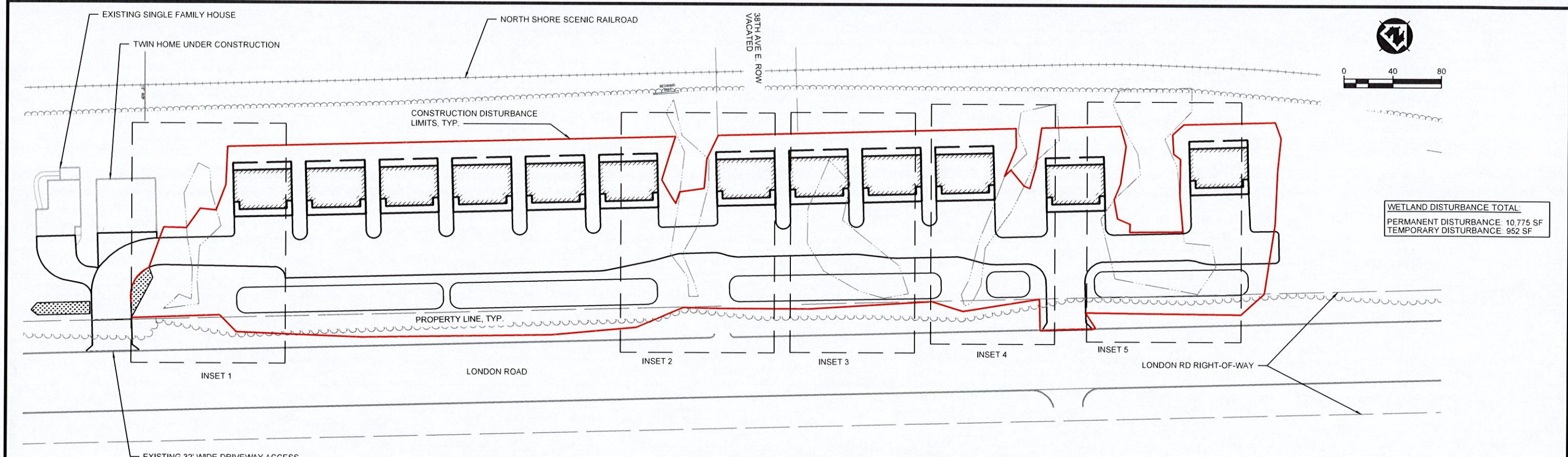
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 JOSEPH J. LARSEN

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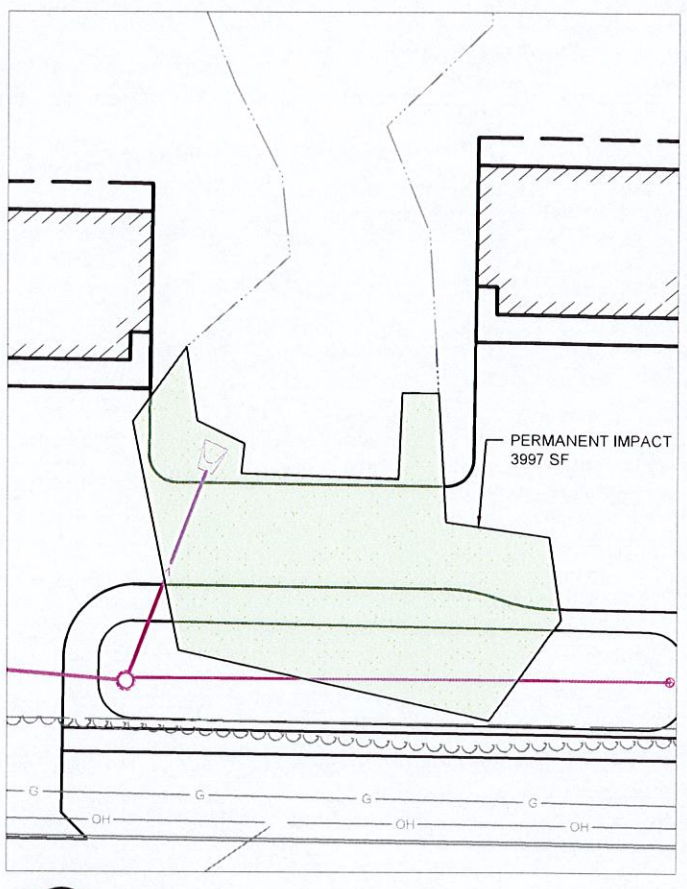
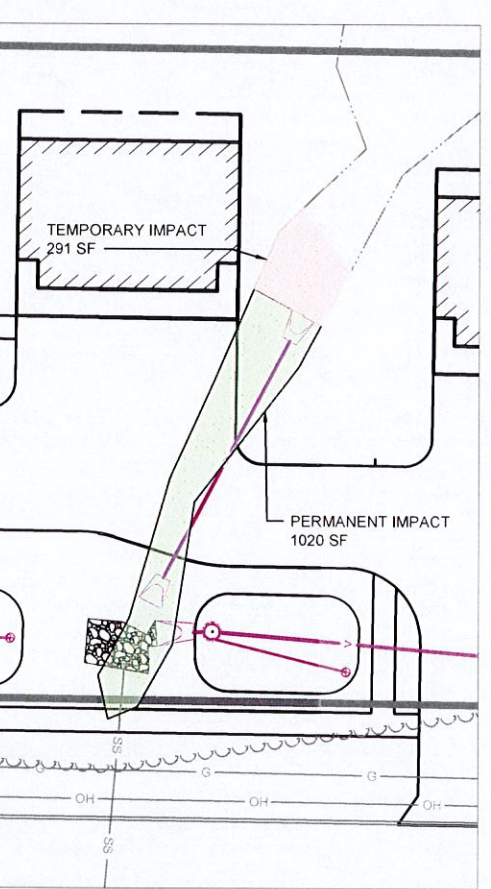
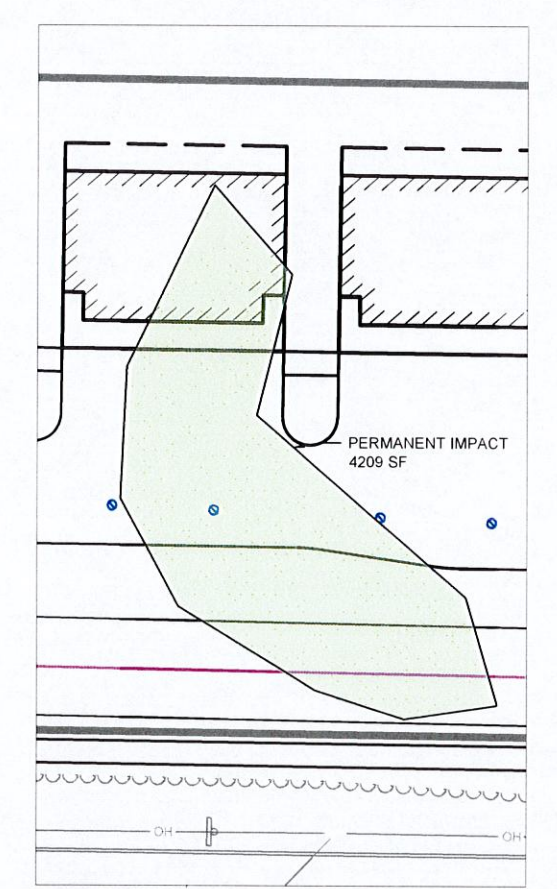
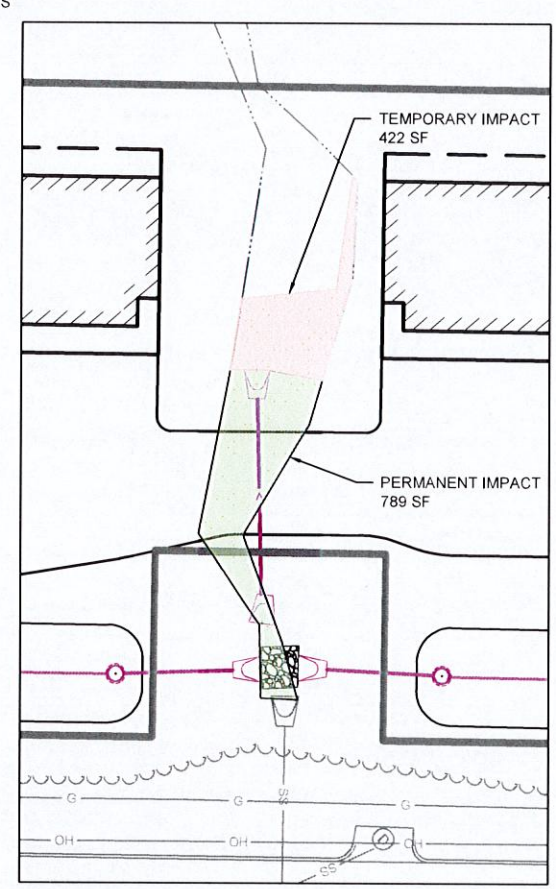
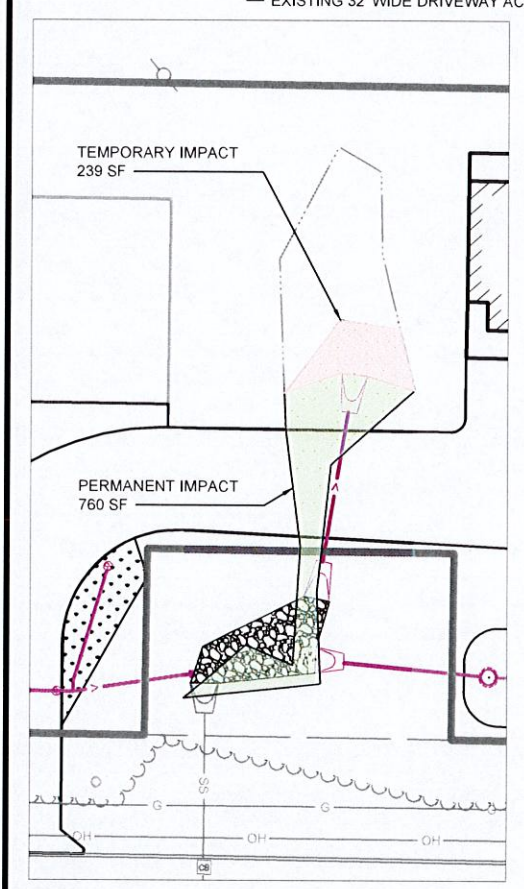
LONDON ROAD UTILITY EXTENSIONS
 37TH TO 39TH AVENUE EAST
 DULUTH, MN

OVERALL SITE PLAN

PROJECT NO. 05331006
 SHEET G-1



WETLAND DISTURBANCE TOTAL:
 PERMANENT DISTURBANCE: 10,775 SF
 TEMPORARY DISTURBANCE: 952 SF



GENERAL NOTES AND PROJECT SPECIFICATIONS:

1. SURVEY DATA COLLECTED AND PROVIDED BY:
MSA PROFESSIONAL SERVICES, INC.
HORIZONTAL COORDINATE SYSTEM: ASSUMED
VERTICAL DATUM: ASSUMED
2. CONTRACTOR SHALL NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY ALL MEASUREMENTS IN THE FIELD. IN CASE OF DISCREPANCY BETWEEN SHOWN DIMENSIONS AND FIELD CONDITIONS, CONTRACTOR SHALL CONTACT ENGINEER IMMEDIATELY FOR CLARIFICATION.
3. SPECIFICATIONS INCLUDED BY REFERENCE:
 - a. MINNESOTA DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2018 EDITION.
 - b. 2019 CITY OF DULUTH, MINNESOTA CONSTRUCTION STANDARDS
4. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAINTAINING SERVICE OF ALL EXISTING UTILITIES PRIOR TO AND DURING THE PERIOD OF CONSTRUCTION.
5. EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE BASED ON THOSE REPORTED TO THE ENGINEER WITHIN GOPHER STATE ONE-CALL TICKET NO.: 193051683
6. CONTRACTOR IS REQUIRED TO CONTACT GOPHER STATE ONE-CALL TO OBTAIN UTILITY LOCATES PRIOR TO ANY EXCAVATION WORK ON-SITE. SHOULD UTILITIES NOT SHOWN ON THE DRAWINGS BE IDENTIFIED IN THE FIELD, CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY.
7. CONTRACTOR SHALL PROTECT ANY UTILITIES FROM DAMAGE DURING THE CONSTRUCTION PROCESS. ANY DAMAGE DUE TO CONSTRUCTION OPERATIONS WILL BE THE CONTRACTORS SOLE RESPONSIBILITY TO REPAIR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE TERMS AND CONDITIONS OF THE FOLLOWING PERMITS:
 - a. WESTERN LAKE SUPERIOR SANITARY DISTRICT, SANITARY SEWER EXTENSION.
 - b. MINNESOTA POLLUTION CONTROL AGENCY, SANITARY SEWER EXTENSION.
 - c. MINNESOTA POLLUTION CONTROL AGENCY, AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)/STATE DISPOSAL SYSTEM(SDS) PROGRAM (MNR100001)
 - d. MNDOT RIGHT-OF-WAY PERMIT
 - e. MNDOT DRIVEWAY ACCESS PERMIT
9. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE MINNESOTA DEPARTMENT OF TRANSPORTATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD). ALL TEMPORARY WORK ZONE MAINTENANCE OF TRAFFIC SHALL COMPLY WITH LAYOUTS PROVIDED WITHIN THE MMUTCD.
10. CONTRACTOR SHALL LIMIT WORKING HOURS TO 8 AM TO 6 PM, UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER AND/OR CITY IN WRITING. CONTRACTOR MAY PERFORM PREPARATION AND CLEANUP WORK, NOT REQUIRING THE USE OF EQUIPMENT, WITHIN AN HOUR OF THESE WORKING HOURS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF ALL AREAS DISTURBED. FOR UNPAVED AREAS, RESTORATION SHALL BE ASSUMED TO BE WITH 6" TOPSOIL AND SEEDING UNLESS OTHERWISE NOTED IN THESE PLANS OR THOSE OF THE ARCHITECT OR LANDSCAPE ARCHITECT. FOR PAVED AREAS RESTORATION TO MATCH ADJACENT PAVED AREAS. MINIMUM ASPHALT PATCH TO BE 3" ASPHALT ON 8" CLASS 5 AGGREGATE.
12. CONTRACTOR SHALL ALLOW ACCESS TO EXISTING BUILDINGS WHICH USE THE SHARED DRIVEWAY AT ALL TIMES.
13. CONTRACTOR IS RESPONSIBLE FOR KEEPING A CLEAN AND TIDY SITE. WASTE RECEPTACLES SHALL BE PROVIDED AND CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE PERIODICALLY.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL ACTIVITIES ON SITE.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN ACCESSIBLE CONDITION TO THE ENGINEER, CITY OF DULUTH AND OTHER STATE AND LOCAL OFFICIALS HAVING JURISDICTION OVER THE SITE.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THEIR OWN SECURITY AND SECURING THE MATERIALS, EQUIPMENT AND OTHER ITEMS STORED OR PRESENT ON THE SITE. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MAINTAINING SITE SECURITY SUCH THAT THE PUBLIC IS NOT AFFORDED ACCESS TO THE SITE WHILE THE CONTRACTOR CONTROLS IT. THE ENGINEER AND OWNER RELY ON THE CONTRACTOR TO MAINTAIN THIS SECURITY TO KEEP OUT VANDALS AND OTHER PERSONS NOT RELATED TO THE PROJECT.

WATER UTILITIES:

MATERIALS:

1. ALL WATERMAIN PIPE AND FITTINGS SHALL BE HIGH DENSITY POLYETHYLENE (HDPE), SDR 11 CONFORMING TO CITY OF DULUTH CONSTRUCTION STANDARDS 2504.
2. ALL FIRE HYDRANTS SHALL BE PER CITY OF DULUTH CONSTRUCTION STANDARDS 2504.A.13.
3. ALL VALVES SHALL BE GATE VALVES, CONFORMING TO CITY OF DULUTH CONSTRUCTION STANDARDS 2504.A.15.
4. ALL SERVICE PIPING AND FITTINGS SHALL BE PER CITY OF DULUTH CONSTRUCTION STANDARDS 2504.
5. TRACER WIRE AND TERMINAL BOXES SHALL CONFORM TO CITY OF DULUTH CONSTRUCTION STANDARDS 2503/2504 LOCATING WIRE FOR WATER AND SEWER.
6. SUBMITTALS: CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE FOLLOWING MATERIALS FOR THE ENGINEERS REVIEW:
 - a. WATER PIPE MATERIAL
 - b. VALVES
 - c. HYDRANTS
 - d. MECHANICAL JOINT RESTRAINTS
 - e. CURB STOPS
 - f. CORPORATION STOPS
 - g. FITTINGS
 - h. TRACER WIRE AND TERMINAL BOXES

INSTALLATION

1. ALL WATERMAIN UTILITY WORK SHALL BE INSTALLED PER THE CITY OF DULUTH CONSTRUCTION STANDARDS SECTION 2504.

TESTING:

1. FLUSHING OF WATERMAINS SHALL BE COORDINATED WITH THE UTILITY OWNER TO ENSURE ADEQUATE PRECAUTIONS ARE TAKEN TO CONTINUE SERVICE TO OTHERS. 48 HOUR NOTICE IS REQUIRED FOR ALL FLUSHING.
2. TESTING SHALL BE COMPLETED IN CONFORMANCE WITH CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2504.
3. ENGINEER SHALL BE PRESENT FOR ALL TESTING ACTIVITIES.

SEWER UTILITIES:

MATERIALS:

1. PRESSURE SEWER PIPING SHALL BE HIGH DENSITY POLYETHYLENE (HDPE), SDR 11, CONFORMING WITH CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2503 PIPE SEWERS - PRESSURE.
2. PVC SEWER SERVICE PIPE SHALL CONFORM TO CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2503 PIPE SEWERS - GRAVITY.
3. STORMWATER SWALE UNDERDRAIN PIPING SHALL BE PERFORATED HIGH DENSITY POLYETHYLENE (HDPE) WITH A FILTER SOCK. THE FILTER SOCK SHALL BE TYPE 1 GEOTEXTILE CONFORMING TO MNDOT 3733.
4. STORMWATER SWALE OUTLET PIPING SHALL BE CORRUGATED POLYETHYLENE PIPE CONFORMING TO CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2503 PIPE SEWERS - GRAVITY, UNLESS OTHERWISE NOTED.
5. ROAD CROSSING CULVERTS SHALL BE REINFORCED CONCRETE PIPE CONFORMING TO THE CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2503 PIPE SEWERS - GRAVITY
6. MANHOLES SHALL BE PRECAST AND CONFORM TO CITY OF DULUTH CONSTRUCTION STANDARDS.
7. TRACER WIRE AND TERMINAL BOXES SHALL CONFORM TO CITY OF DULUTH CONSTRUCTION STANDARDS 2503/2504 LOCATING WIRE FOR WATER AND SEWER.
8. SUBMITTALS: CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE FOLLOWING MATERIALS ENGINEER'S REVIEW AND APPROVAL.
 - a. SEWER PIPING
 - b. TRACER WIRE
 - c. PRIVATE OWNED GRINDER BASIN
 - d. GRINDER BASIN PUMPS
 - e. GRINDER BASIN CONTROL PANEL

INSTALLATION

1. INSTALLATION OF ALL SEWER MATERIALS SHALL CONFORM TO CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2503.
2. ENGINEER SHALL INSPECT ALL MATERIALS PRIOR TO INSTALLATION.
3. TRACER WIRE INSTALLATION SHALL CONFORM WITH CITY OF DULUTH CONSTRUCTION STANDARDS.

TESTING:

1. SANITARY SEWER LEAKAGE TESTING:
 - 1.1. ALL TESTING FOR GRAVITY AND PRESSURE SANITARY SEWER SHALL COMPLY WITH CITY OF DULUTH CONSTRUCTION STANDARDS, SECTION 2503.

UTILITY COMPANIES

NAME	MARKING CONCERNS	DAMAGE	CUSTOMER SERVICE
CHARTER COMMUNICATIONS	(800)778-9140	(833)493-4939	(833)493-4939
CITY OF DULUTH - ENGINEERING	(218)730-5200	(218)730-5200	(218)730-5200
CITY OF DULUTH - TRAFFIC	(218)730-4420	(218)730-4150	(218)730-4420
DULUTH ENERGY SYSTEMS - STEAM	(218)723-3601	(218)723-3601	(218)723-3601
CENTURYLINK - CTLQL	(800)667-9963	(800)283-4237	(800)667-9963
MINNESOTA POWER	(320)582-7725	(320)582-7700	(800)228-4966
WESTERN LAKE SUPERIOR SANITARY	(218)722-3336	(218)722-3336	(218)722-3336

PROJECT NO.	SCALE	AS SHOWN	NO.	DATE	REVISION	BY
05331006	A5					
PROJECT DATE	02/17/20	DRAWN BY	EDC			
F.B.		CHECKED BY	JJJ			

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04/06/20
Date
50396
License No.
JOSEPH LAURENCE

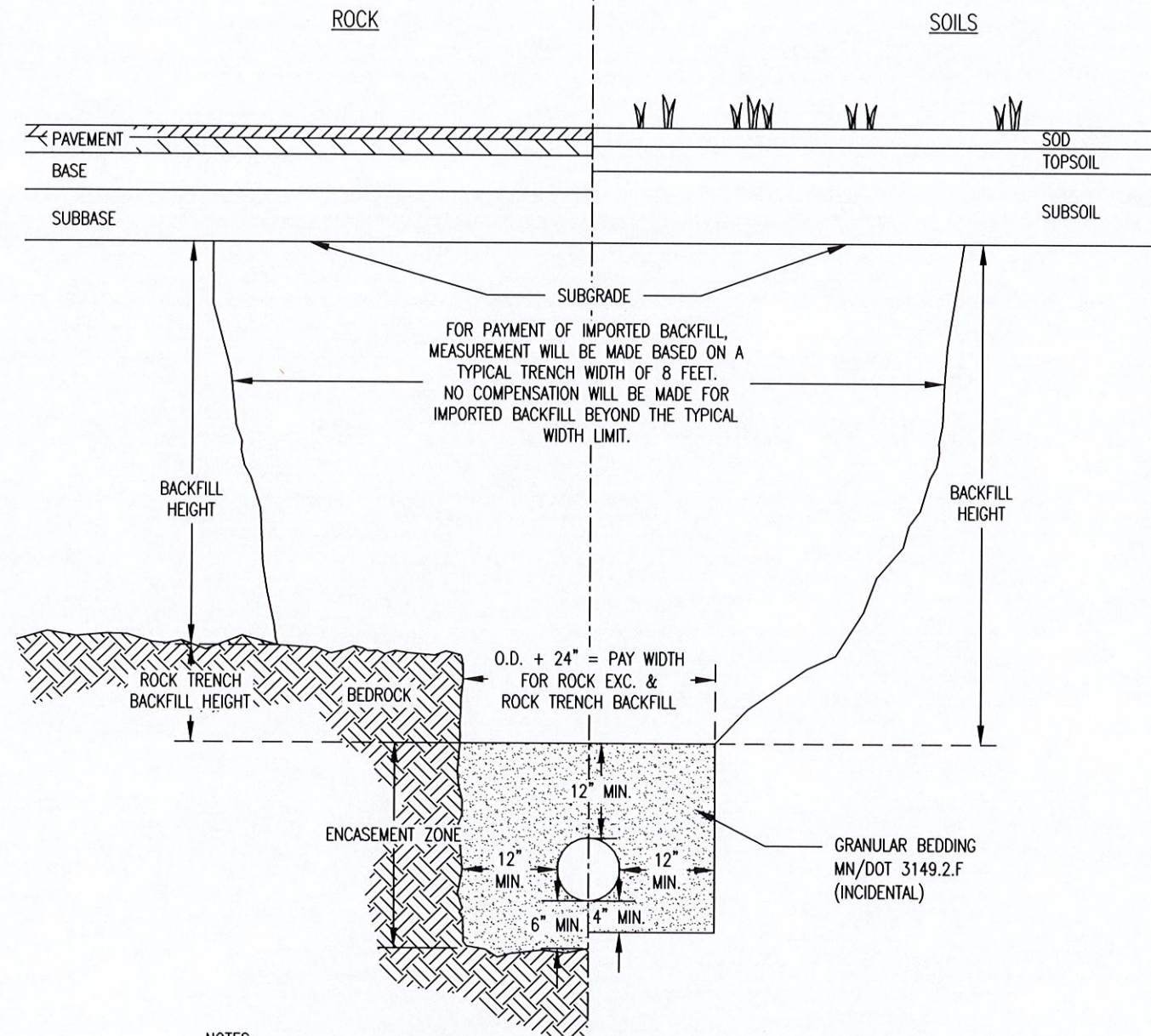


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LONDON ROAD UTILITY EXTENSIONS
37TH TO 39TH AVENUE EAST
DULUTH, MN

GENERAL NOTES &
SPECIFICATIONS

FILE NO.
05331006
SHEET
G-3

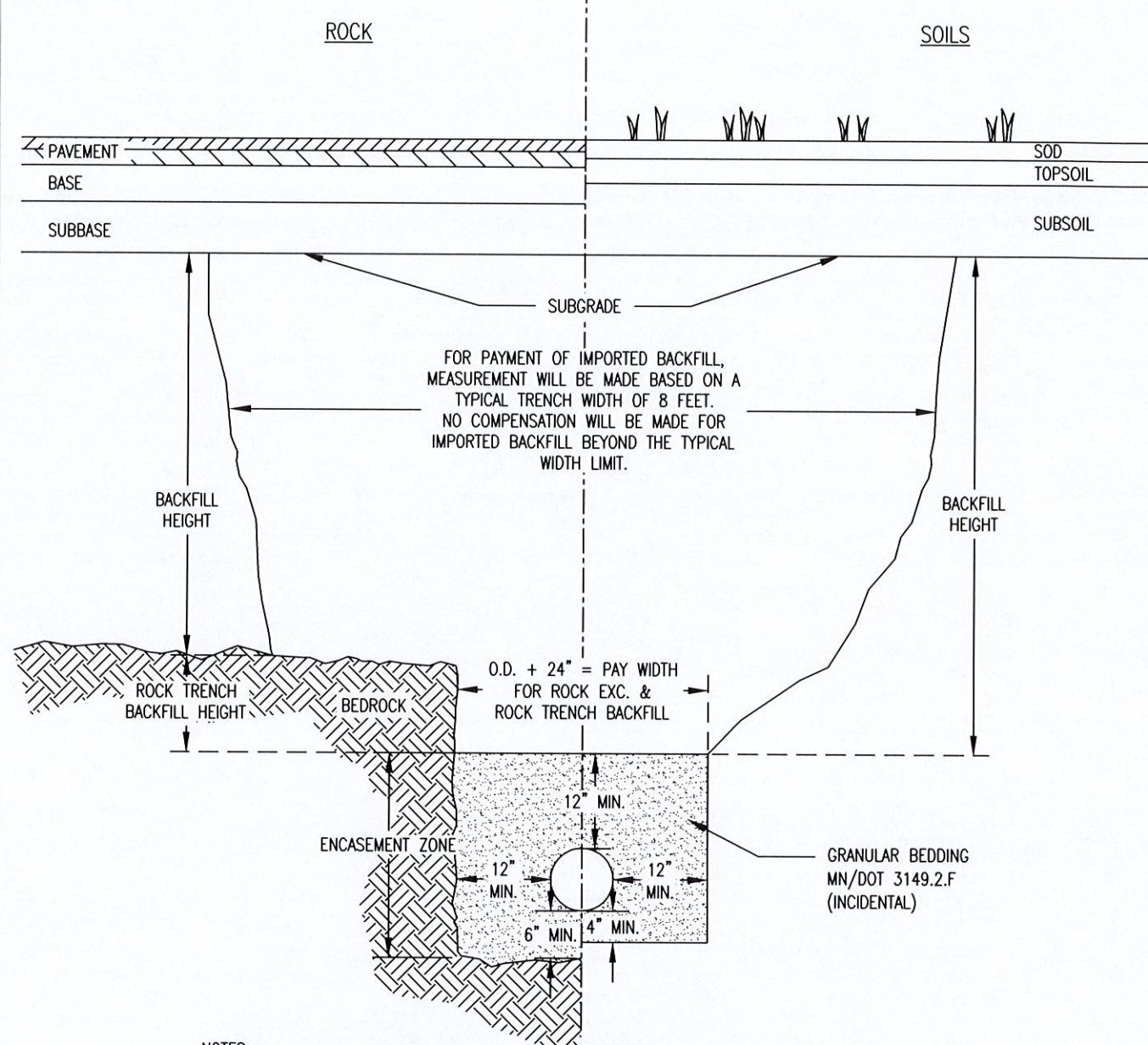


NOTES:

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

DUCTILE IRON, PE WATERMAIN, PRESSURE SEWER, & FORCEMAIN BEDDING EX-1

REVISED/APPROVED 04/05/2019 CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES NO SCALE



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CONCRETE STORM SEWER BEDDING EX-4

REVISED/APPROVED 04/05/2019 CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES NO SCALE

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02/17/20	EDC				
	DESIGNED BY				
	EDC				
	CHECKED BY				
	JJJ				

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04/05/20 50386 License No.
JOSEPH J. JUREWICZ



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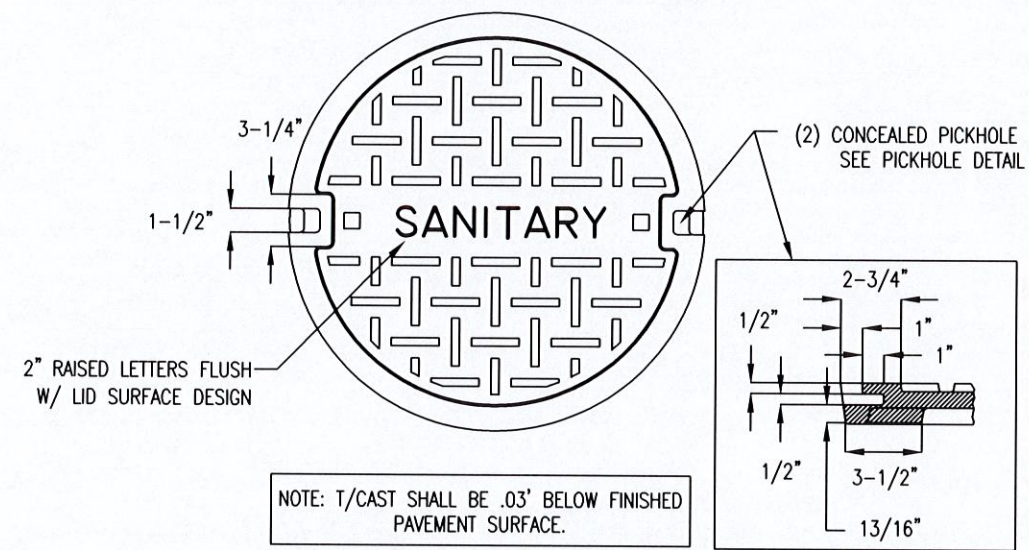
LONDON ROAD UTILITY EXTENSIONS
37TH TO 39TH AVENUE EAST
DULUTH, MN

DULUTH STANDARD DETAILS 1

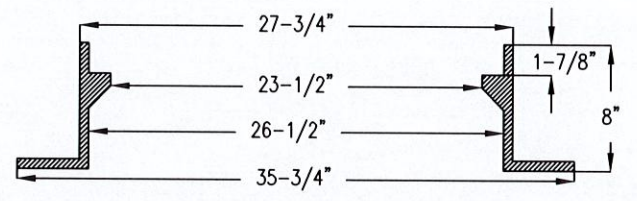
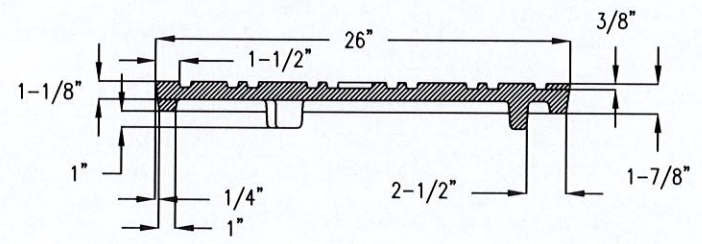
PROJECT NO.
05331006
SHEET
G-4

WGT. 298 LBS	MATERIAL: GRAY IRON CLASS 35B
WGT. 122 LBS	TOTAL WEIGHT 420 LBS. SPEC.: ASTM A-48-74

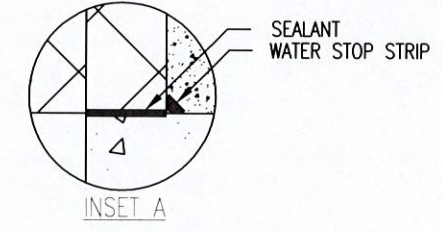
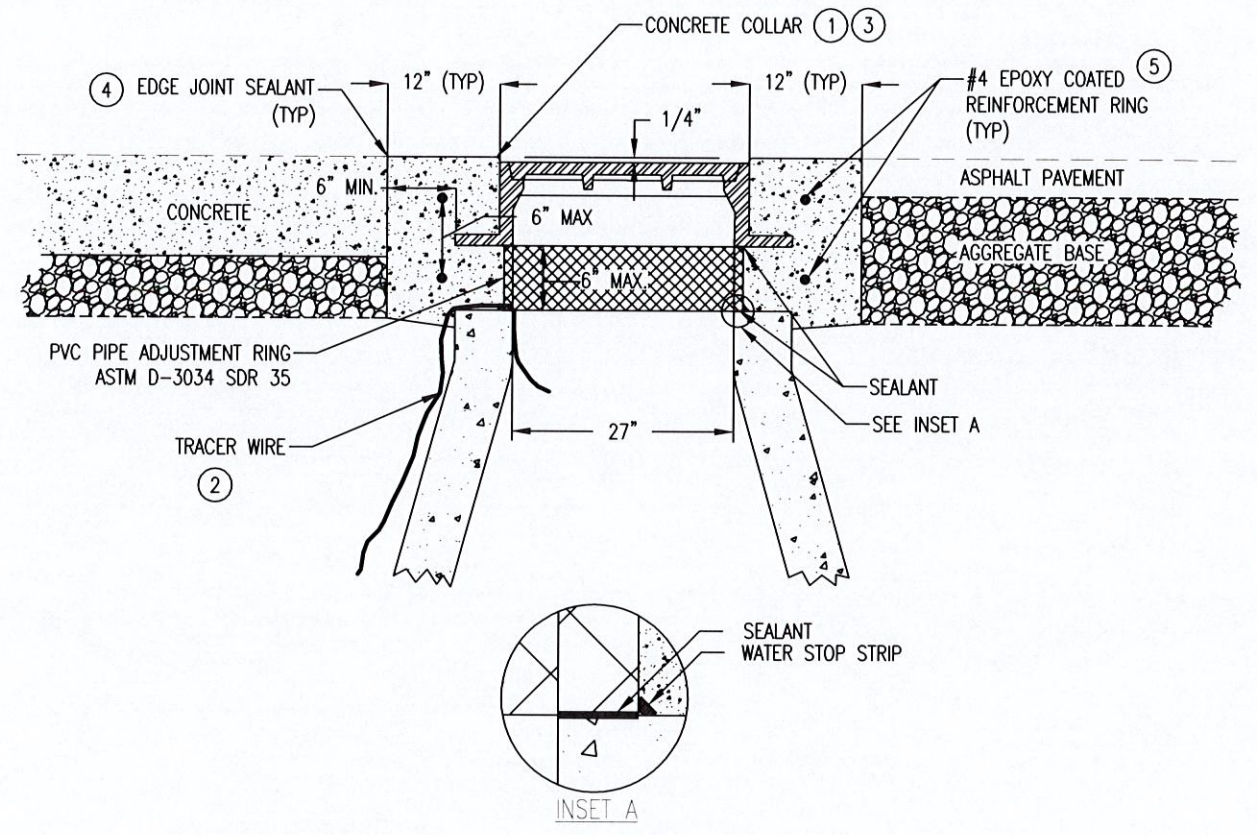
NOTE: SUITABLE FOR HS25 WHEEL LOADS



NOTE: T/CAST SHALL BE .03\"/>



SANITARY CASTING DETAIL SAN-1
 REVISED/APPROVED 02/01/2013 CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES NO SCALE



- NOTES:
- ① CONCRETE (MIX NO. 3G52) COLLAR TO ENCASE CASTING AND ADJUSTMENT RING.
 - ② TRACER WIRE REQUIRED ON ALL SANITARY SEWER MAINS.
 - ③ CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT. PAVEMENT AND BASE SHALL BE CUT OUT WITH ROTATING CUTTING DEVICE
 - ④ FINISH CONCRETE EDGE WITH 1/4\"/>

NOT TO SCALE

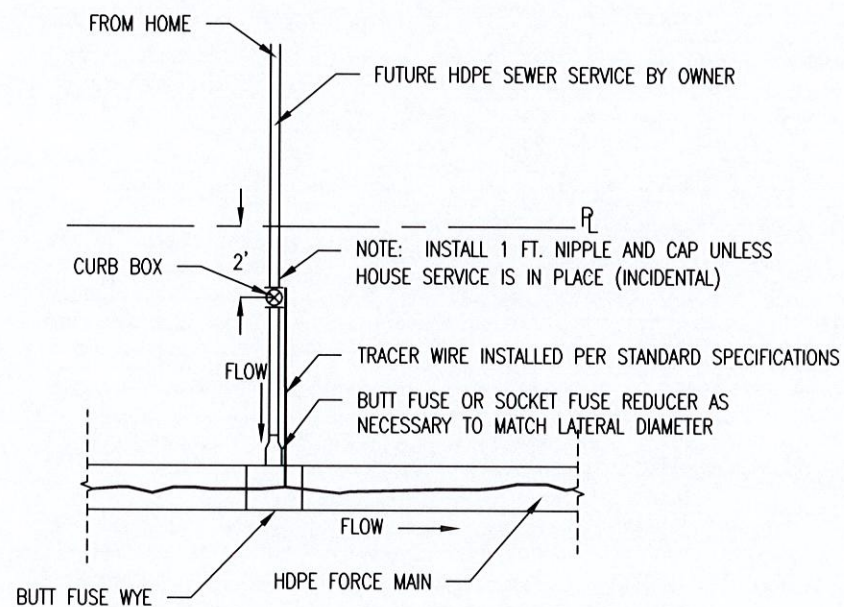
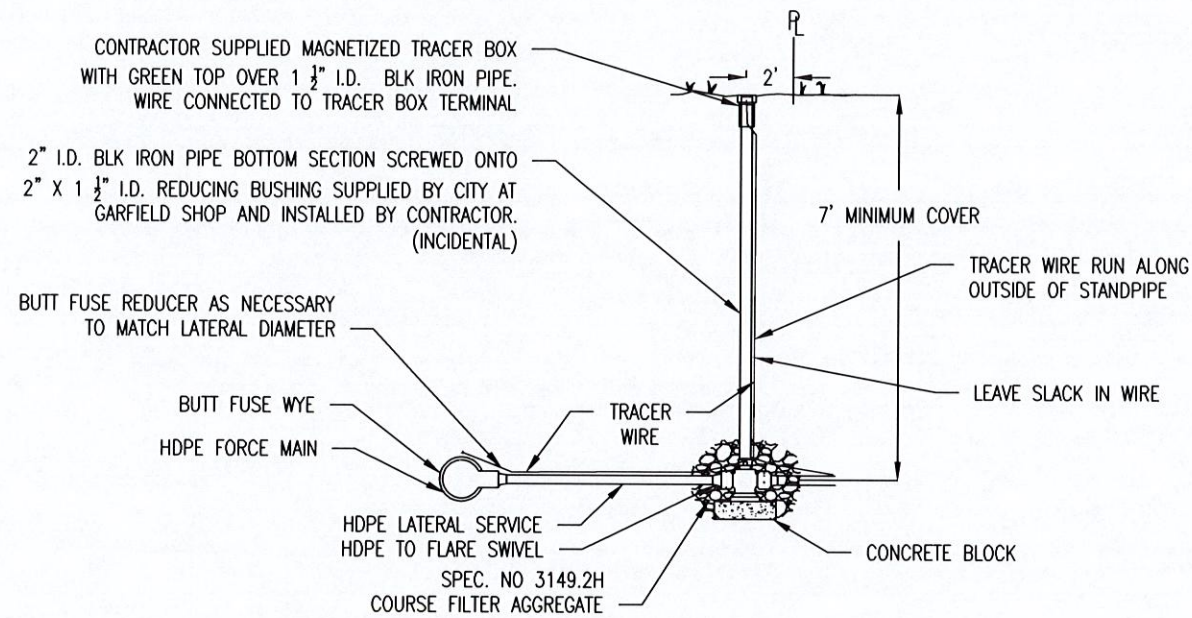
CONCRETE ENCASED CASTING COLLAR FOR SANITARY MH IN ROADWAY, WALKS, & DRIVES SAN-3A
 REVISED/APPROVED 04/05/2019 CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES NO SCALE

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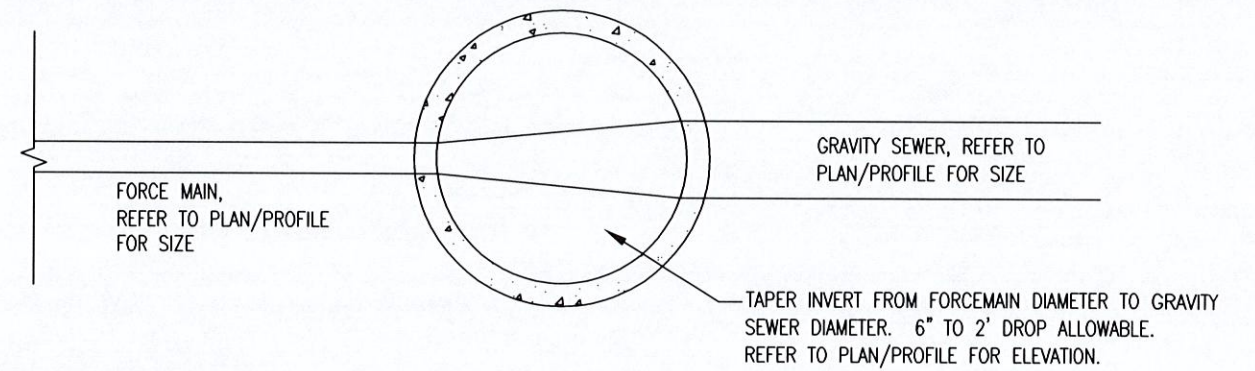
LONDON ROAD UTILITY EXTENSIONS
 37TH TO 39TH AVENUE EAST
 DULUTH, MN

DULUTH STANDARD DETAILS 2
 PROJECT NO. 05331006
 SHEET G-5

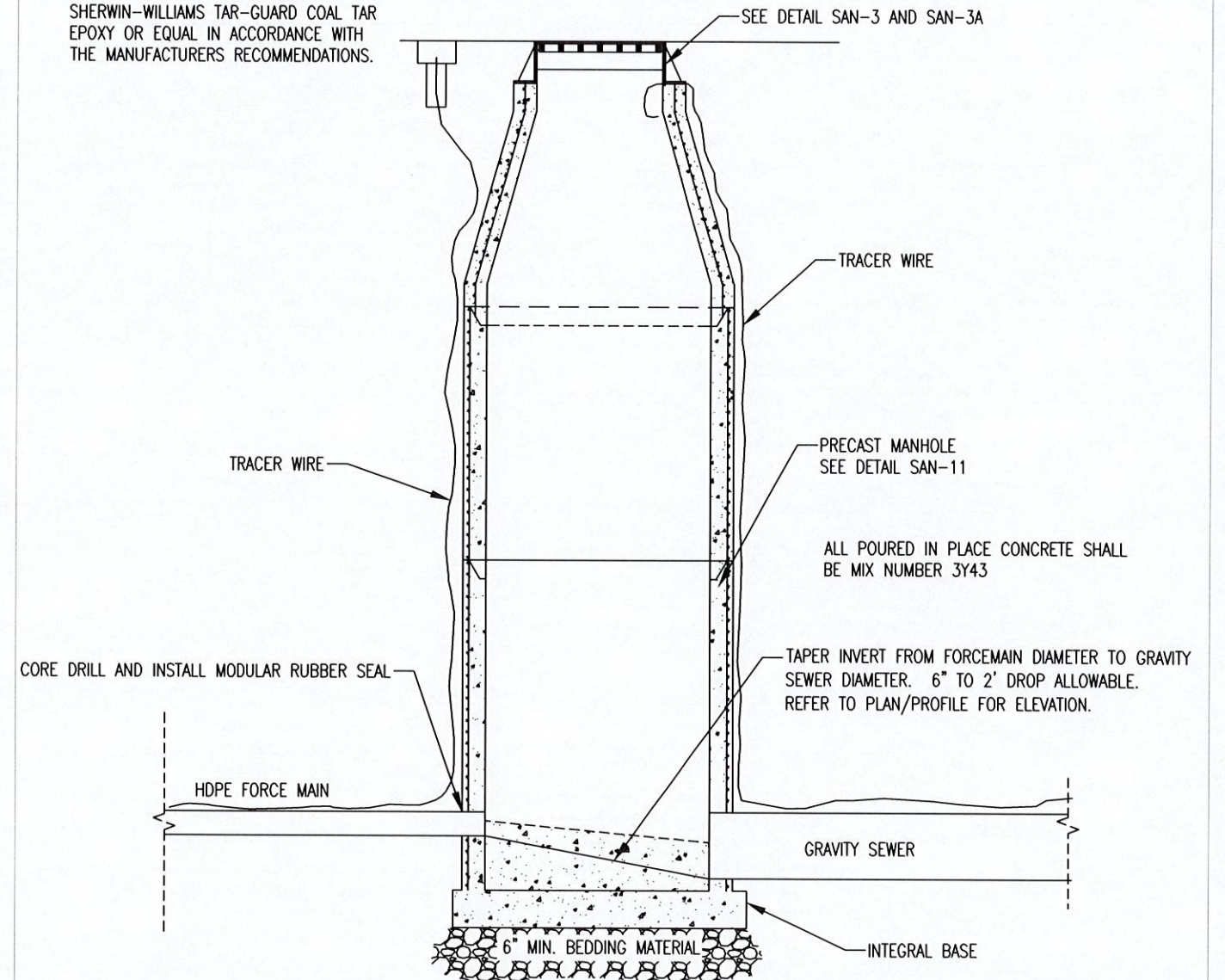


- NOTES:
- #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED WITH THE NON-CONDUCTIVE SERVICE PIPE. TRACER WIRE INSTALLATION REQUIRES ACCESS POINTS AT LEAST EVERY 300 FEET.
 - THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.
 - TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON TOP.

HDPE SANITARY SEWER PRESSURE LATERAL CONNECTION		SAN-5
REVISED/APPROVED 04/05/2019	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE



NOTE:
ALL CONCRETE SURFACES INSIDE OF MANHOLES TO BE COATED WITH SHERWIN-WILLIAMS TAR-GUARD COAL TAR EPOXY OR EQUAL IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.



HDPE FORCEMAIN TO GRAVITY MAIN MANHOLE		SAN-6
REVISED/APPROVED 01/08/2016	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

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	CHECKED BY JJJ							
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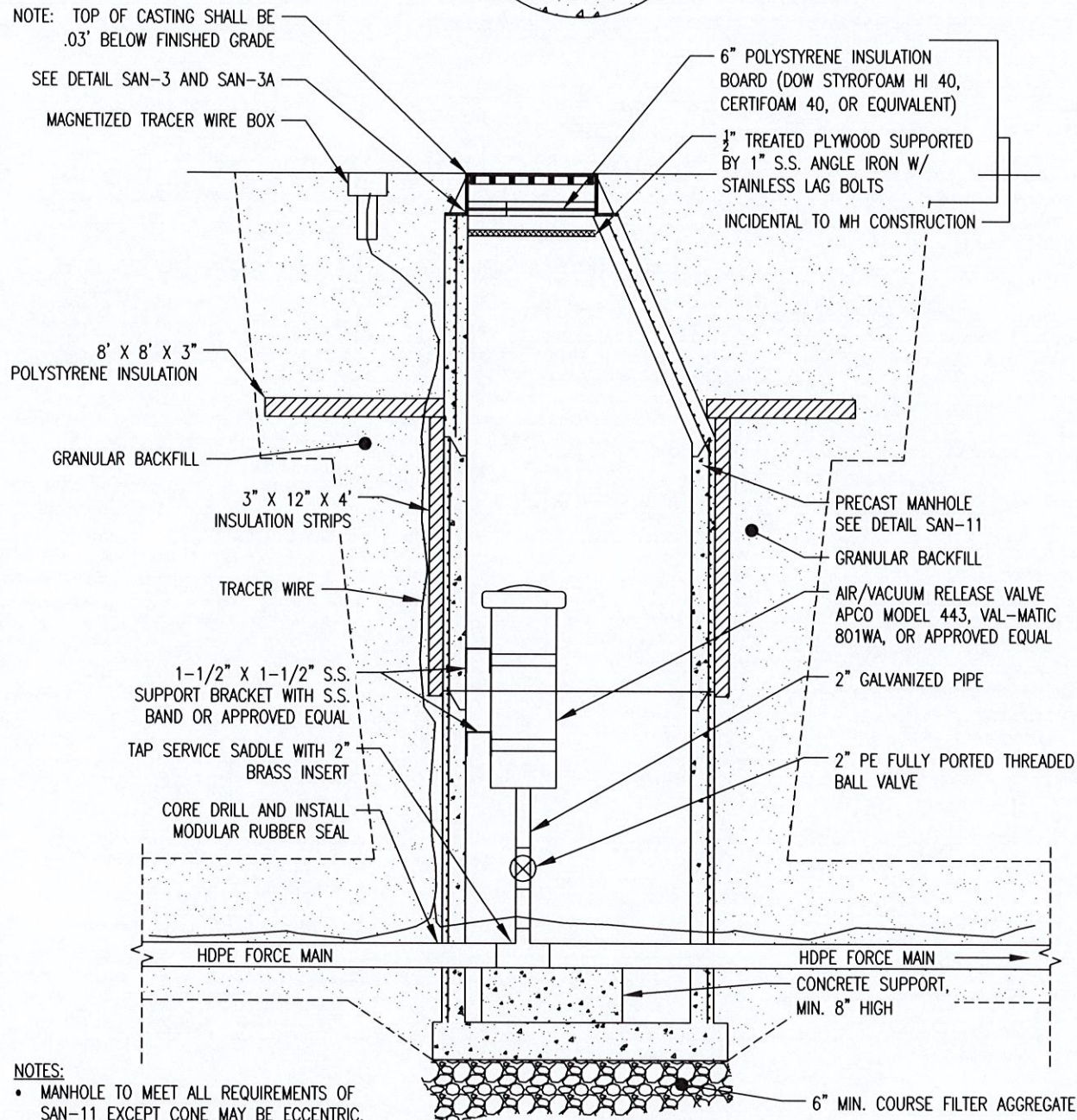
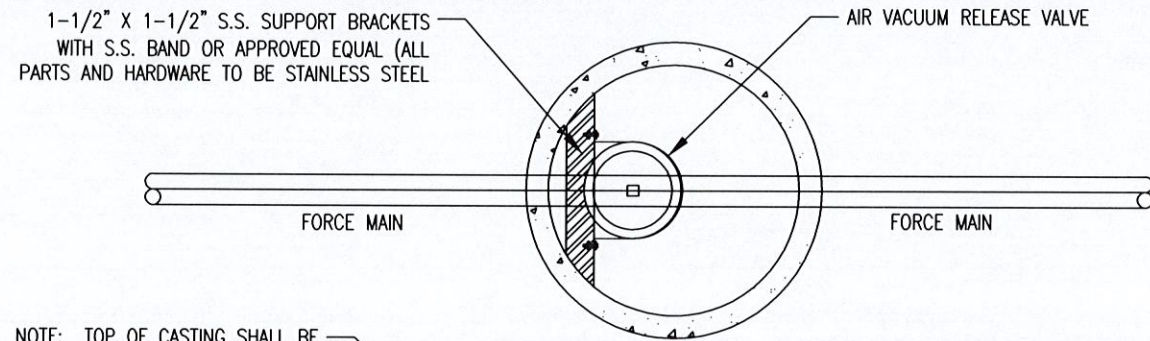


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DULUTH STANDARD DETAILS 3

PROJECT NO.
05331006
SHEET
G-6



- NOTES:
- MANHOLE TO MEET ALL REQUIREMENTS OF SAN-11 EXCEPT CONE MAY BE ECCENTRIC.
 - ALL POUTED IN PLACE CONCRETE SHALL BE MIX NUMBER 3Y43.

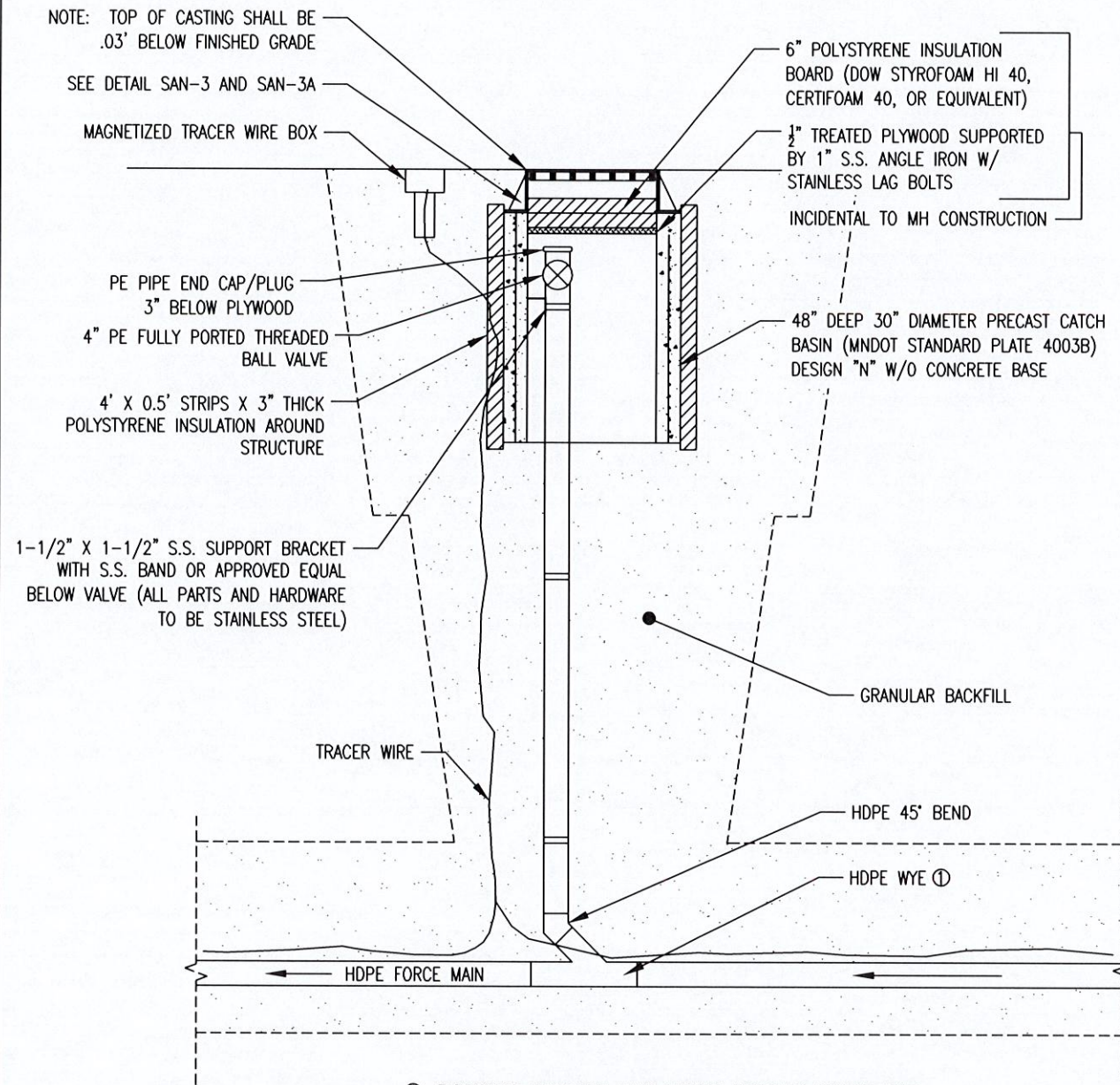
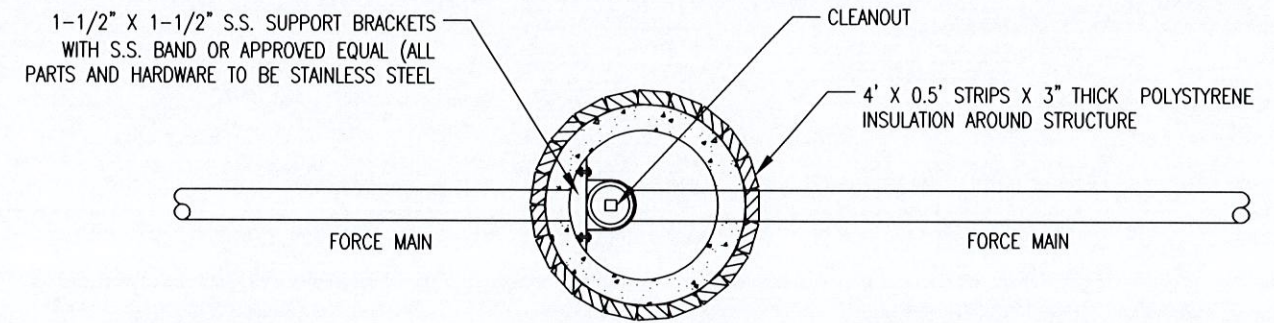
AIR-RELEASE MANHOLE - MODIFIED

SAN-7M

MODIFIED FOR PROJECT 9/23/2016

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE



① FABRICATED HDPE WYE HAND REAMED INSIDE TO REMOVE BUTT FUSE BURR TO MAINTAIN TRUE INSIDE DIAMETER.

CLEANOUT HAND HOLE STRUCTURE

SAN-8B

REVISED/APPROVED 9/23/2016

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE

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	EDC				
	JJJ				

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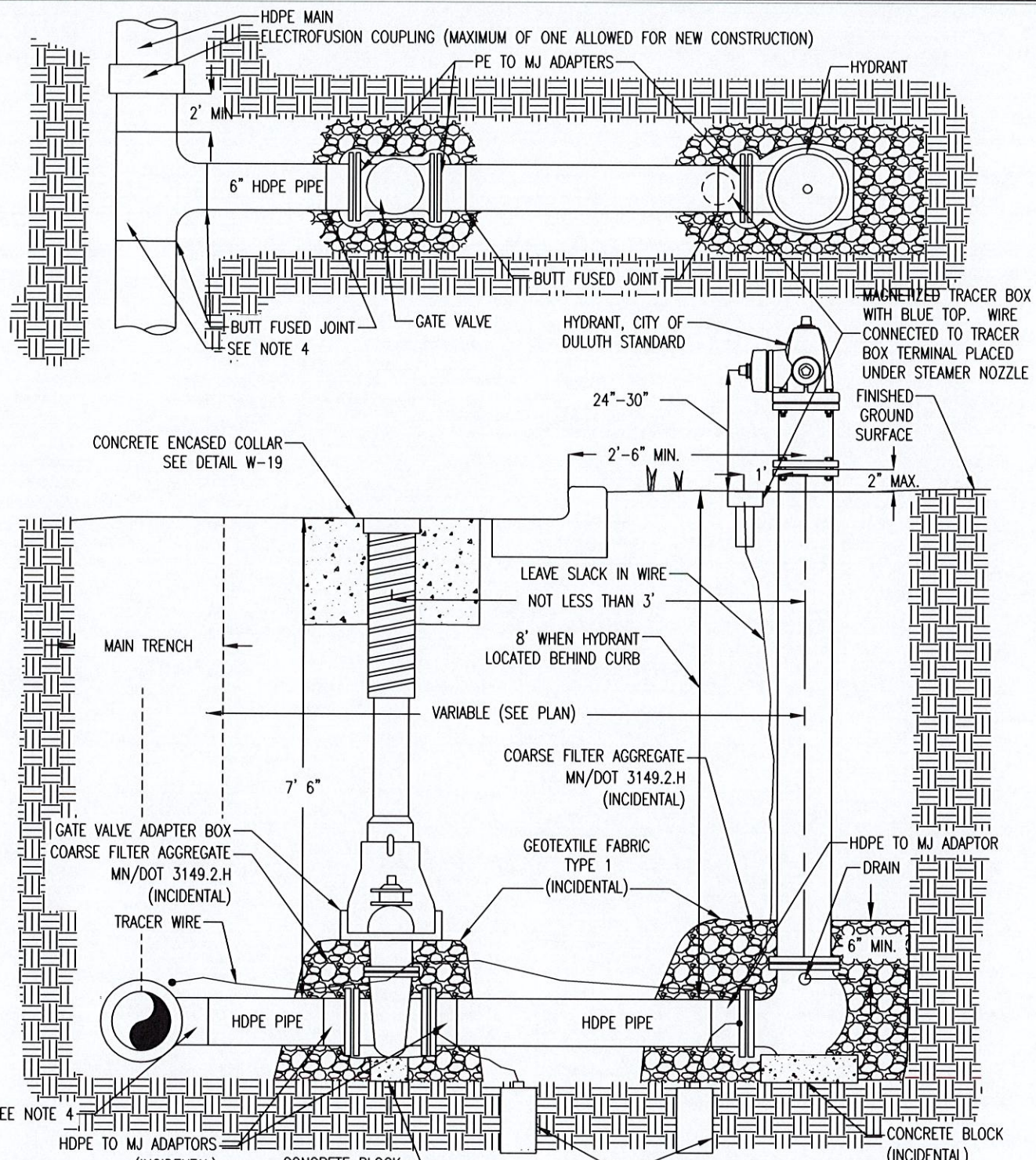
JOSEPH L. LOREWICK

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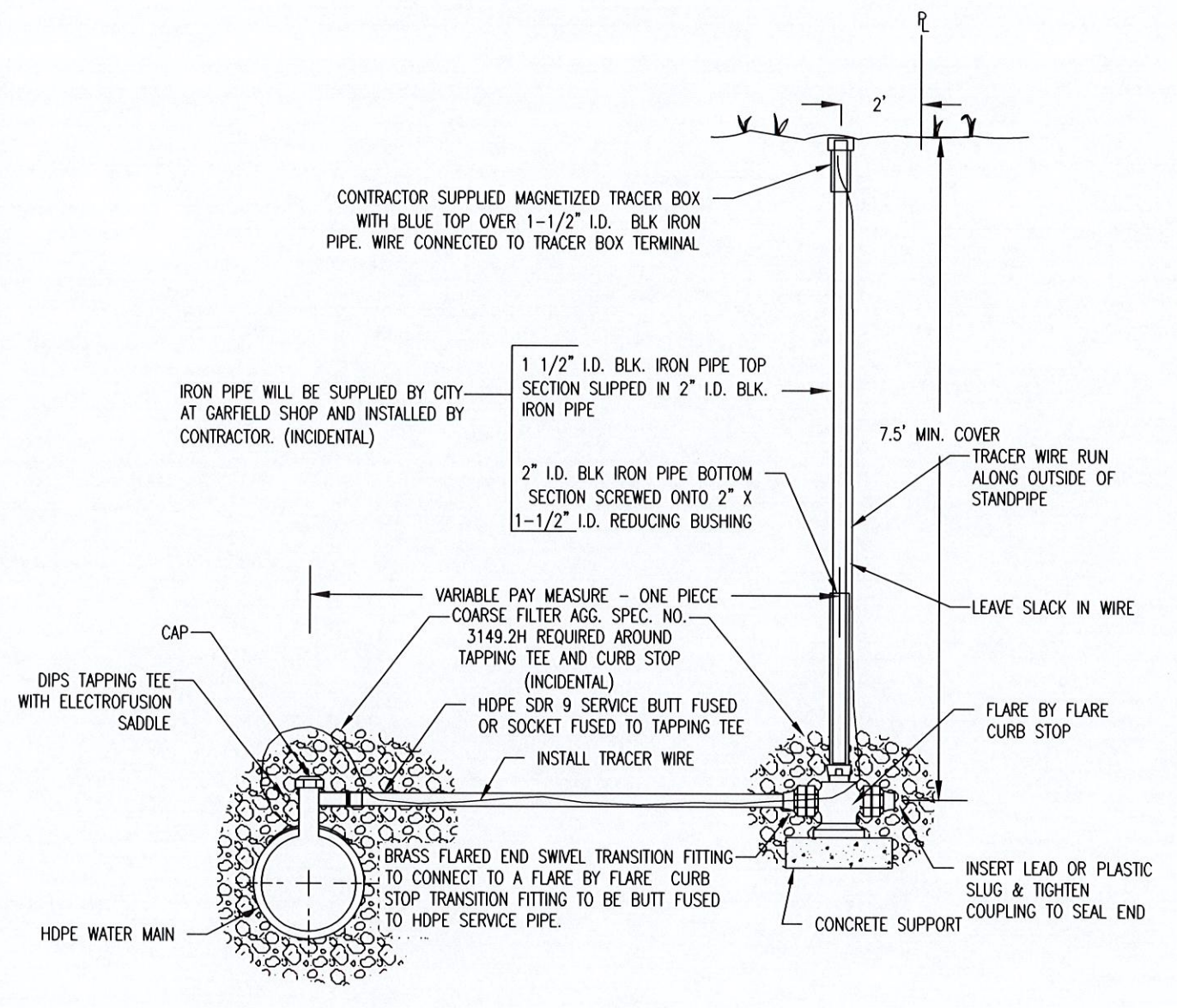
PROJECT NO. 05331006
SHEET G-7



- GENERAL NOTE:
1. VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
 2. USE EPOXY COATING ON VALVE AND HYDRANT BASE
 3. ALL BOLTS SHALL BE BLUE COATED COR-TEN WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL JOINT FITTINGS.
 4. FOR 8" MAINS, CONTRACTOR SHALL USE AN 8 X 8 TEE WITH A MACHINED 8 X 6 REDUCER OR AN 8 X 6 ELECTROFUSION BRANCH SADDLE. FOR LARGER DIMENSION MAINS A FABRICATED TEE WITH A 6" BRANCH OUTLET MAY BE USED.
 5. HYDRANT AND GATE VALVES WITH ALPHA RESTRAINED COUPLERS MAY BE USED IN LIEU OF MJ FITTINGS. ANODES SHALL BE CONNECTED DIRECTLY TO THE VALVE BONNET BOLTS.

FIRE HYDRANT SETTING DETAIL - HDPE		W-4A
REVISED/APPROVED 04/05/2019	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

NOTE: EXCAVATE 6" UNDER IN-PLACE MAIN AND BACKFILL WITH COURSE FILTER AGGREGATE MNDOT SPEC. # 3149.2H. CONTRACTOR SHALL PROVIDE & PLACE A TRENCH BOX WHEN REQUIRED.



NOTE: SERVICE TO BE AIR TESTED PRIOR TO TAPPING MAIN

THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS OR CLIP TYPE CONNECTOR SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

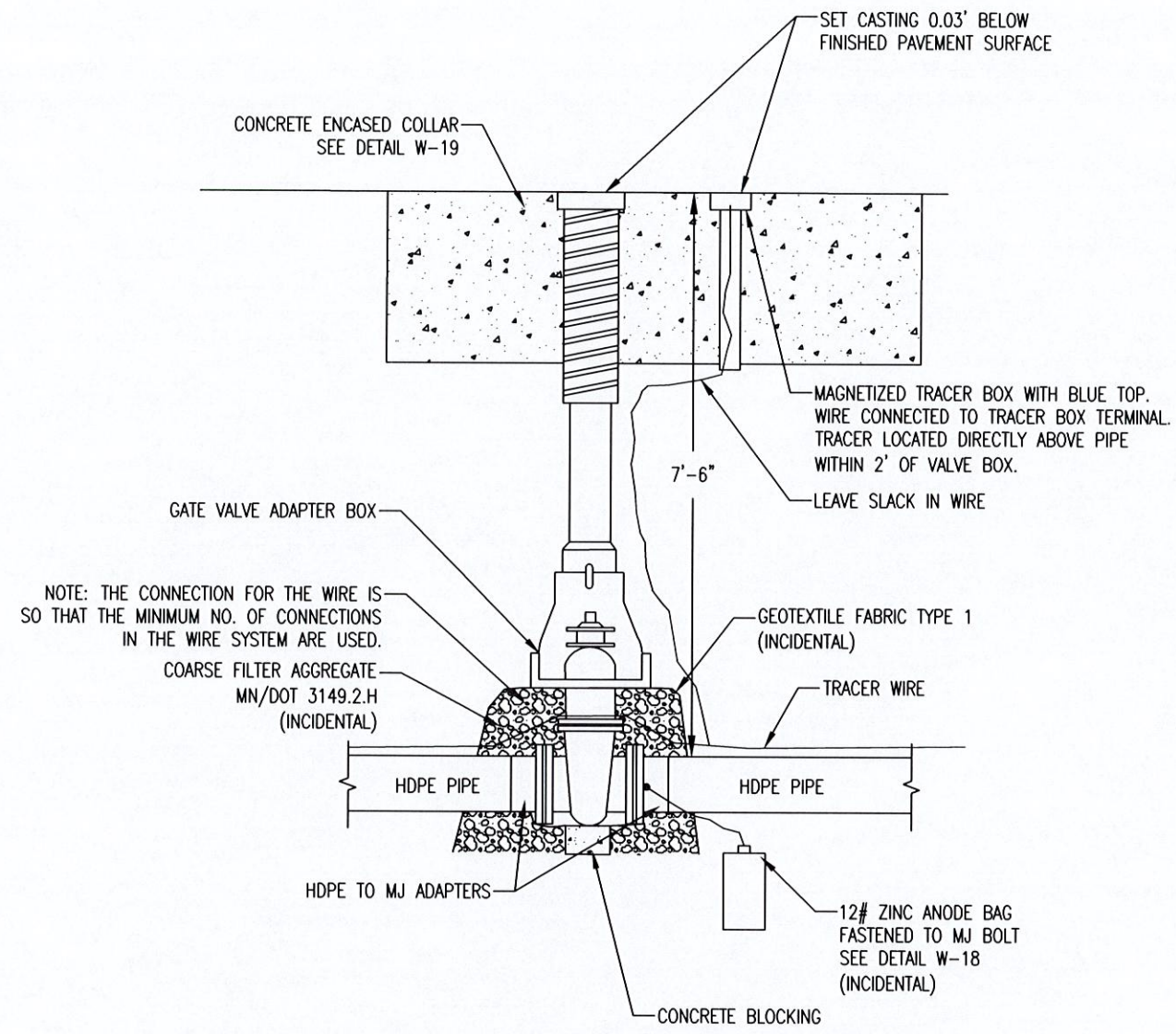
TYPICAL HDPE WATER SERVICE - 1", 1-1/4", AND 2"		W-5A
REVISED/APPROVED 04/05/2019	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

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DULUTH STANDARD DETAILS 5
PROJECT NO: 05331006
SHEET G-8



NOTE: THE CONNECTION FOR THE WIRE IS SO THAT THE MINIMUM NO. OF CONNECTIONS IN THE WIRE SYSTEM ARE USED.

COARSE FILTER AGGREGATE
MN/DOT 3149.2.H
(INCIDENTAL)

GEOTEXTILE FABRIC TYPE 1
(INCIDENTAL)

TRACER WIRE

HDPE PIPE

HDPE PIPE

HDPE TO MJ ADAPTERS

12# ZINC ANODE BAG
FASTENED TO MJ BOLT
SEE DETAIL W-18
(INCIDENTAL)

CONCRETE BLOCKING

NOTES:

1. VALVES SHALL BE CONNECTED DIRECTLY TO HDPE WITH HDPE TO MECHANICAL JOINT ADAPTERS.
2. USE EPOXY COATING ON EXTERIOR OF VALVES.
3. ALL BOLTS SHALL BLUE COATED BE COR-TEN WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL JOINT FITTINGS.
4. FOR OPEN CUT PIPE INSTALLATIONS, ELECTROFUSION COUPLINGS ARE NOT ALLOWED FOR CONNECTION OF HDPE TO MJ ADAPTERS. FOR DIRECTIONAL DRILLED INSTALLATIONS, ONE ELECTROFUSION COUPLING MAY BE USED PER VALVE.
5. GATE VALVES WITH ALPHA RESTRAINT COUPLERS MAY BE USED IN LIEU OF MJ FITTINGS. ANODE SHALL BE CONNECTED DIRECTLY TO THE VALVE BONNET BOLTS.

WATER VALVE BOX - HDPE MAIN

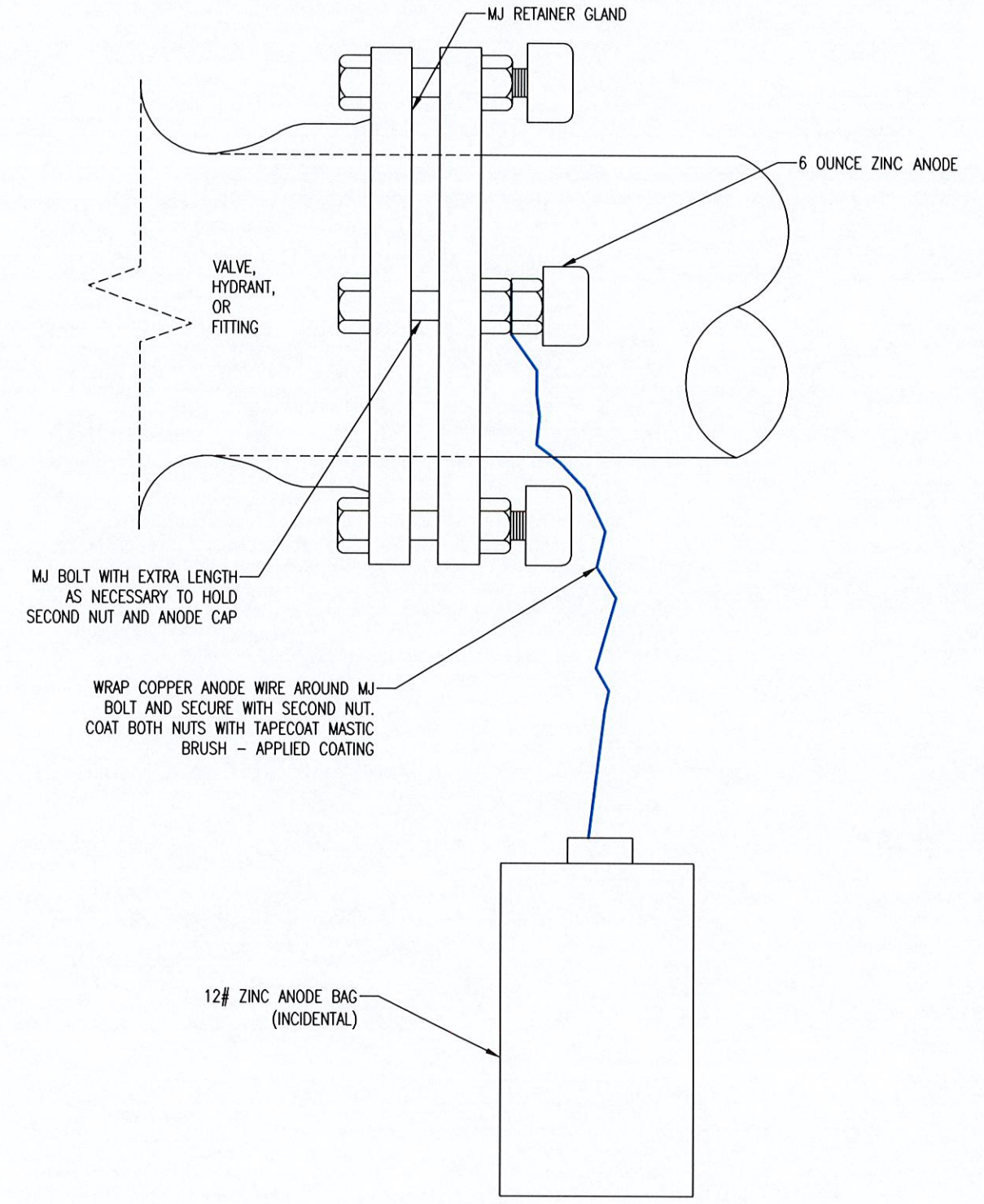
W-17A

REVISED/APPROVED 04/05/2019

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

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NOTE: ALL DUCTILE IRON VALVES, HYDRANTS, OR FITTINGS SHALL RECEIVE ANODES.



MJ BOLT WITH EXTRA LENGTH
AS NECESSARY TO HOLD
SECOND NUT AND ANODE CAP

WRAP COPPER ANODE WIRE AROUND MJ
BOLT AND SECURE WITH SECOND NUT.
COAT BOTH NUTS WITH TAPECOAT MASTIC
BRUSH - APPLIED COATING

12# ZINC ANODE BAG
(INCIDENTAL)

ANODE CONNECTION

W-18

REVISED/APPROVED 04/05/2019

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

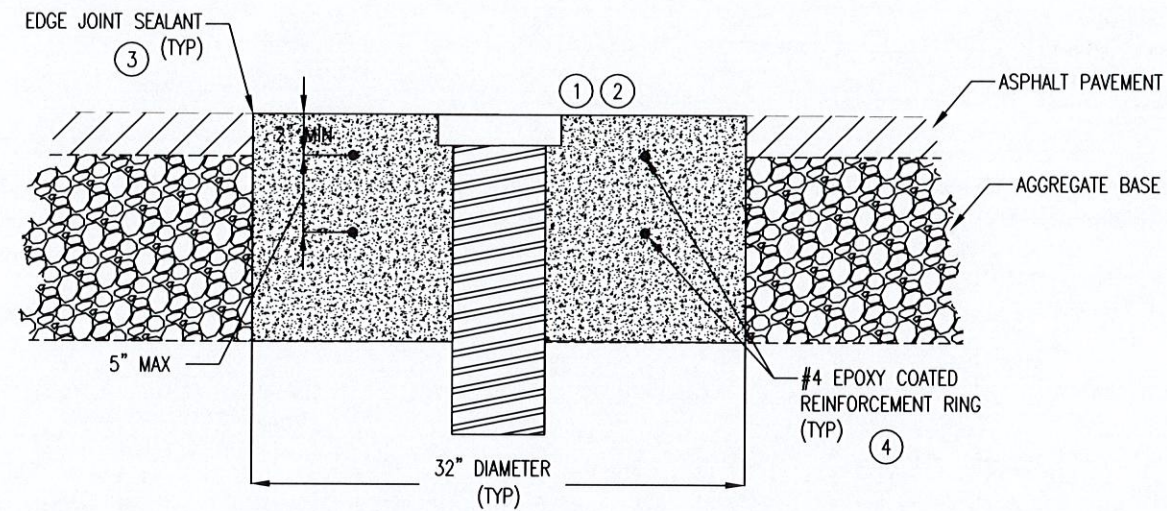
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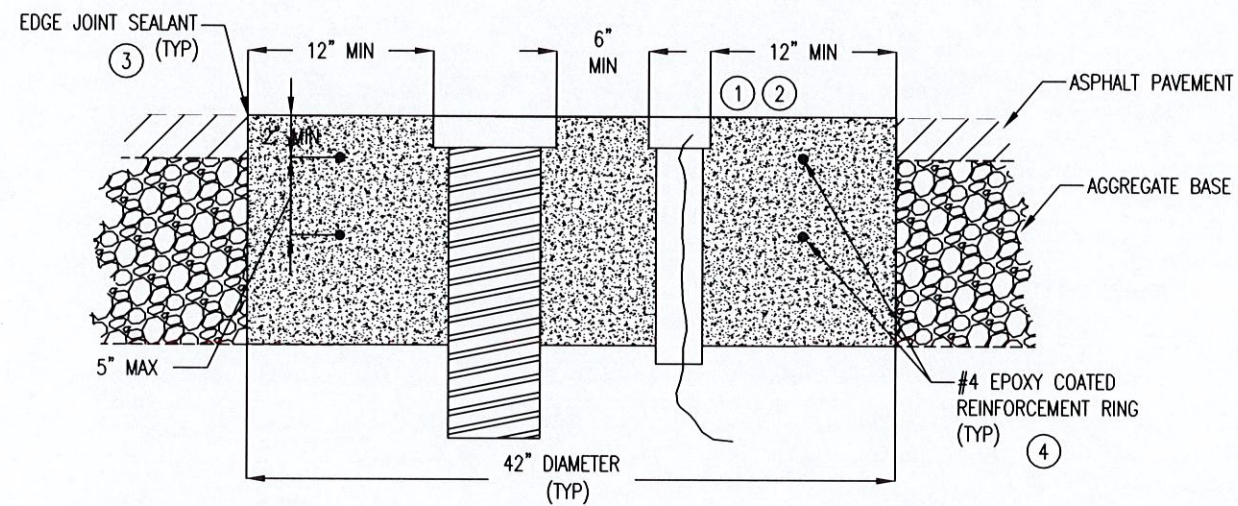
DULUTH STANDARD DETAILS 6
PROJECT NO: 05331006
SHEET: G-9



NOTES:

- ① CONCRETE (MIX NO. 3052) COLLAR TO ENCASE VALVE BOX CASTING.
- ② CONCRETE COLLAR SHALL BE CIRCULAR LAYOUT. PAVEMENT AND BASE SHALL BE CUT OUT WITH ROTATING CUTTING DEVICE
- ③ FINISH CONCRETE EDGE WITH 1/4" RADIUS. SEAL JOINT BETWEEN PAVEMENT AND COLLAR.
- ④ MAINTAIN 3.5" COVER ON REINFORCEMENT. NOT TO SCALE

CONCRETE ENCASED WATER VALVE BOX COLLAR



CONCRETE ENCASED WATER VALVE BOX COLLAR W/
TRACER BOX ALTERNATIVE

CONCRETE ENCASED VALVE BOX COLLAR IN ROADWAY		W-19
REVISED/APPROVED 01/20/2017	CITY OF DULUTH STANDARD DETAIL DEPT. OF PUBLIC WORKS AND UTILITIES	NO SCALE

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DULUTH STANDARD DETAILS 7
 PROJECT NO. 05331006
 SHEET G-10

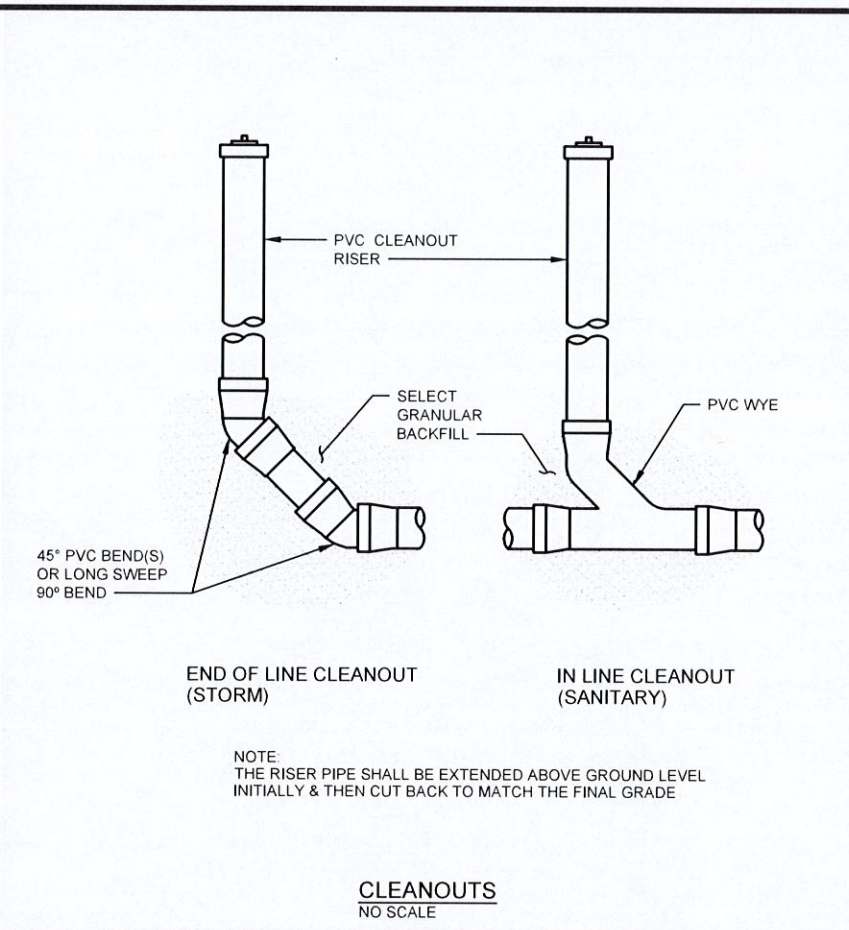
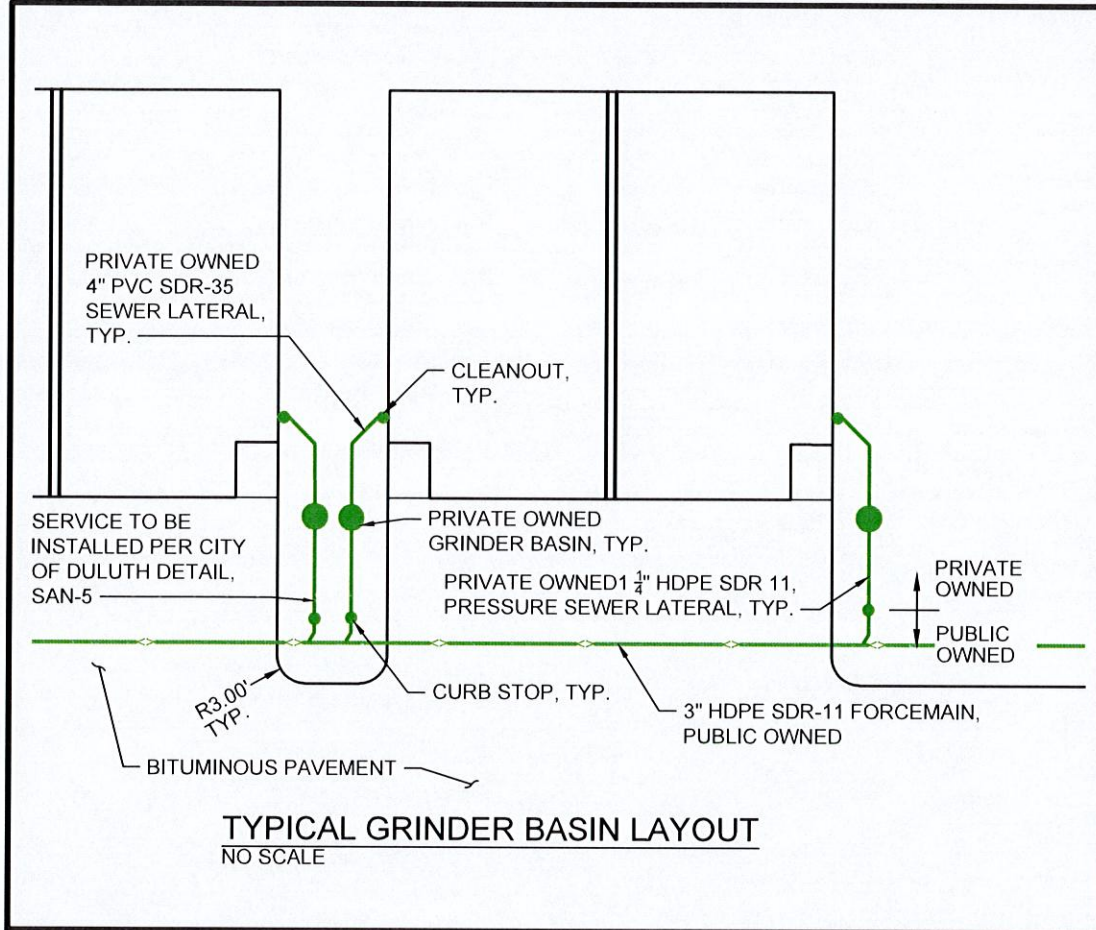
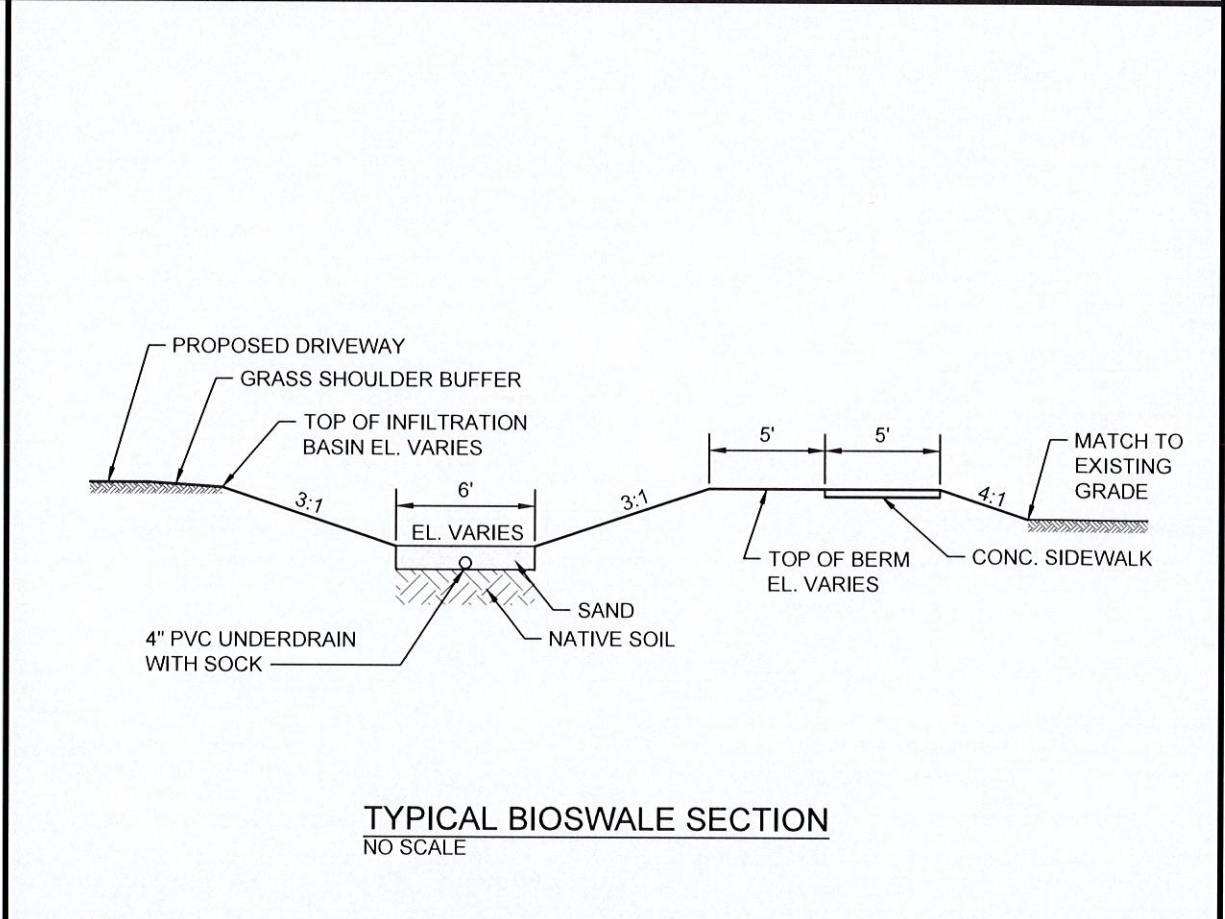
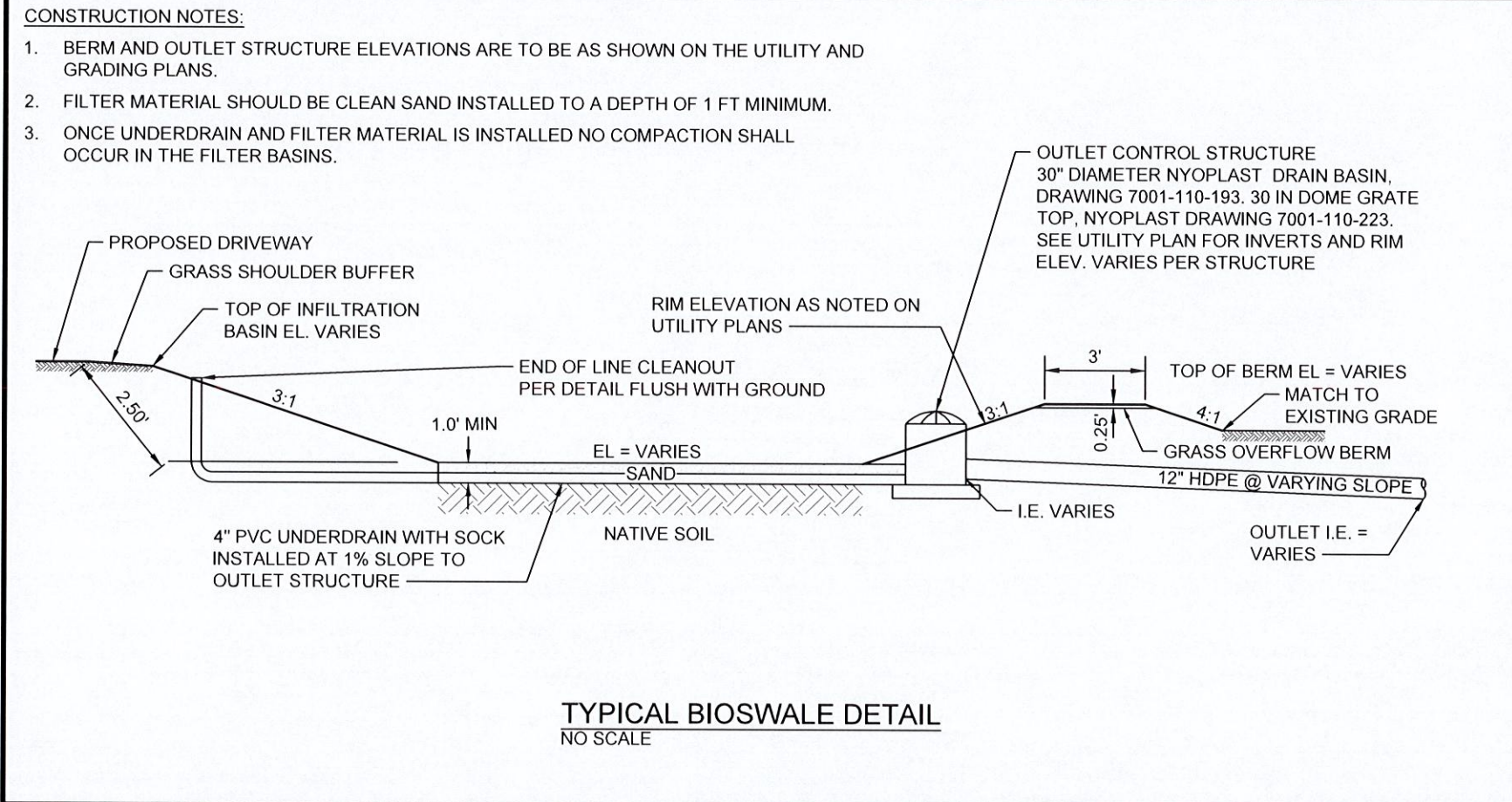
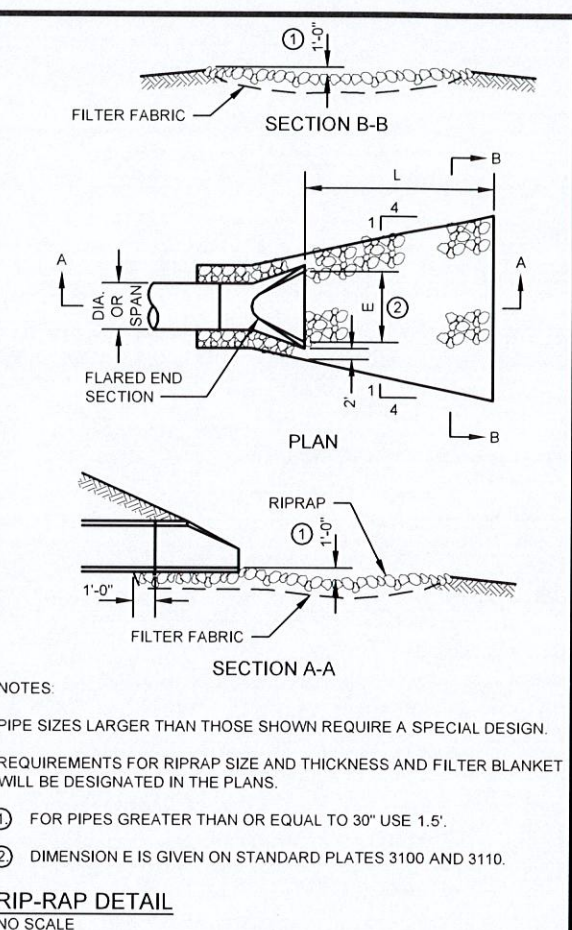


TABLE OF QUANTITIES
RIPRAP AT RCP OUTLETS

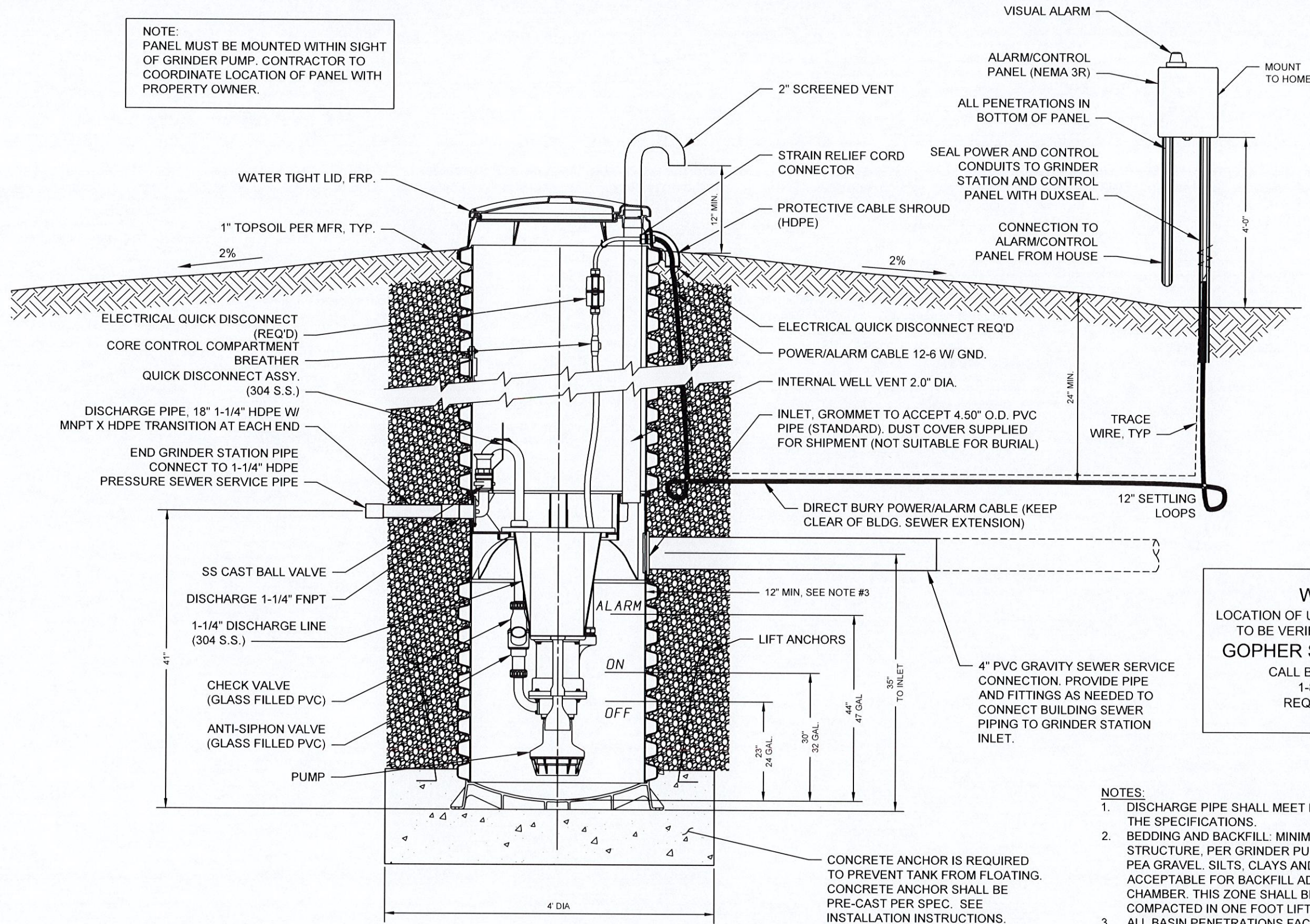
DIA. OF ROUND PIPE (IN.)	L (FT.)	CLASS II	CLASS III	CLASS IV
		d50=6"	d50=9"	d50=12"
12	8	2.8	4.1	5.5
15	8	2.9	4.4	5.8
18	10	3.9	5.9	7.8
21	10	4.2	6.3	8.4
24	12	5.5	8.3	11.0
27	12	5.8	8.7	11.6
30	14	7.3	10.9	14.5
36	16	9.2	13.8	18.3
42	18	10.9	16.3	21.7
48	20	12.9	19.4	25.8

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

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



NOTE:
 PANEL MUST BE MOUNTED WITHIN SIGHT
 OF GRINDER PUMP. CONTRACTOR TO
 COORDINATE LOCATION OF PANEL WITH
 PROPERTY OWNER.



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

- NOTES:
- DISCHARGE PIPE SHALL MEET DEPTH REQUIREMENTS OF THE SPECIFICATIONS.
 - BEDDING AND BACKFILL: MINIMUM 12" SURROUNDING STRUCTURE, PER GRINDER PUMP STATION SPECIFICATIONS. PEA GRAVEL, SILTS, CLAYS AND NATIVE SOILS ARE NOT ACCEPTABLE FOR BACKFILL ADJACENT TO THE PUMP CHAMBER. THIS ZONE SHALL BE MECHANICALLY COMPACTED IN ONE FOOT LIFTS.
 - ALL BASIN PENETRATIONS FACTORY MOLDED. NO FIELD PENETRATIONS
 - ALL ITEMS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE COST BID FOR GRINDER STATIONS.

TYPICAL GRINDER STATION WITH CONTROL PANEL
 NOT TO SCALE

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	DESIGNED BY: EDC											SHEET G-12
	CHECKED BY: JJJ											

EROSION CONTROL NOTES:

TIMING OF BMP INSTALLATION

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

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

CALCULATIONS

TOTAL DISTURBED AREA = 3.0 ACRES
ACRES POST CONSTRUCTION IMPERVIOUS AREA = 1.67 ACRES (72,947 SF)
EXISTING IMPERVIOUS AREA = 0.00 ACRES
IMPERVIOUS NET = 1.67 AC

WATER QUALITY VOLUME: 1" X NWE IMPERVIOUS AREA
REQUIRED TREATMENT VOLUME: 1" X 1.67 ACRES = 6,079 CU FT
PROVIDED TREATMENT VOLUME: 15,120 CU FT

CONTRACTOR REQUIREMENTS

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

BMP ESTIMATED QUANTITIES

- SILT FENCE: 3000 LF
- FILTER ROCK LOG INLET PROTECTION: 2 EACH
- SILT FENCE IN DRAINAGEWAY: 3 EACH

CONSTRUCTION PRACTICES TO MINIMIZE STORM WATER CONTAMINATION

TO PREVENT STORM WATER CONTAMINATION FROM OCCURRING, THE FOLLOWING BMPs WILL BE IMPLEMENTED.

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

TMDL IMPLEMENTATION PLANS CONTAINING STORM WATER REQUIREMENTS

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

DNR "WORK IN WATER" RESTRICTIONS

THE SITE HAS NO PUBLIC WATERS WHICH THE DNR HAS PROMULGATED "WORK IN WATER" RESTRICTIONS.

VOLUME REDUCTION REQUIREMENT

AFTER DISCUSSIONS WITH CITY OF DULUTH STORMWATER STAFF, IT WAS DETERMINED THAT IT WOULD NOT BE FEASIBLE TO MEET WATER VOLUME CONTROL REQUIREMENTS. THIS IS DUE TO THE SITES TIGHT LAYOUT AND LIMITED SPACE AS WELL AS CLOSE PROXIMITY TO LAKE SUPERIOR. STORMWATER SWALES WILL HAVE A LAYER OF ENGINEERED MEDIA WHERE STORMWATER WILL FILTER THROUGH TO AN UNDERDRAIN BUT NO INFILTRATION INTO THE NATIVE GROUND IS EXPECTED DUE TO ASSUMED POOR ONSITE SOIL TYPES. IN LIEU OF VOLUME CONTROL REQUIREMENTS, MSA WORKED TO OPTIMIZE RATE CONTROL TO HELP MANAGE RUNOFF AND HELP PREVENT OVERLOADING OF DOWNSTREAM STOMWATER STRUCTURES DURING LARGE RAIN EVENTS.

IMPAIRED WATERS DISCHARGE

THE SITE DRAINS INTO A DISCHARGE POINT WITHIN 1-MILE OF LAKE SUPERIOR, LAKE SUPERIOR IS LISTED AS AN IMPAIRED WATER BY THE MPCDA. LAKE SUPERIOR DOES NOT HAVE ANY TMDL REQUIREMENTS FOR DISCHARGING INTO IT.

OPERATION AND MAINTENANCE

THE PROJECT OWNER WILL BE RESPONSIBLE FOR LONG TERM OPERATION AND MAINTENANCE OF THE PERMANENT STORMWATER TREATMENT SYSTEMS.

EROSION CONTROL NOTES

- MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION (2018 EDITION) SHALL APPLY.
 - SUBMIT INITIAL EROSION CONTROL (EC) SCHEDULE AT OR BEFORE THE PRECONSTRUCTION CONFERENCE.
 - SUBMIT EC SCHEDULE ALTERATIONS/ADJUSTMENTS WEEKLY THEREAFTER FOR ENGINEER'S APPROVAL.
- THE CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL QUALITY CONTROL (QC) ON THIS PROJECT. CONTRACTOR SHALL PHASE/SEQUENCE THE PROJECT TO MINIMIZE EXPOSURE TO EROSION. CONTRACTOR SHALL PLACE OR OTHERWISE CONSTRUCT EROSION CONTROL AND SEDIMENT CONTAINMENT DEVICES TO MINIMIZE THE RUNOFF, TRACKING, AND SEDIMENT LOSS FROM DISTURBED AREAS OF THE PROJECT SITE.
- DISTURBED SLOPES NOT ACTIVELY WORKED SHALL BE PROTECTED FROM SOIL EROSION WITH TEMPORARY OR PERMANENT COVER WITHIN 3 DAYS OF BEING WORKED. EROSION CONTROL BLANKET AND SOIL STAPLES SHALL BE USED.
 - AT MINIMUM, THE FOLLOWING CONTROLS WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE:
 - EROSION CONTROL BLANKETS SHALL BE USED ON ALL SLOPES 1:3(V:H) OR STEEPER
 - SILT FENCES SHALL BE USED IN CONJUNCTION WITH OTHER EROSION BMPs
 - ROCK DITCH CHECKS OR APPROVED EQUAL ARE TO BE USED TO REDUCE DITCH VELOCITIES AND REDUCE EROSION
 - STORM INLET AND OUTLET AREAS SHALL BE CONTINUOUSLY PROTECTED WITH MNDOT APPROVED DEVICES/METHODS
 - STABILIZED CONSTRUCTION ENTRANCE, OR REUSABLE MUD MAT SHALL BE USED TO REDUCE SEDIMENT TRACKING
 - PERMANENT VEGETATION WILL BE ESTABLISHED IMMEDIATELY AFTER TOPSOIL IS SPREAD
 - CONTROL ALL SITE SOLID WASTE, DEBRIS, MATERIAL STORAGE AND CONCRETE WASHOUT ON SITE. NO MIGRATION OF SEDIMENT OFFSITE OR INTO DITCHES/STORM SYSTEMS PERMITTED
 - ALL SLOPES AND DITCHES SHALL BE STABILIZED PRIOR TO OPENING NEW CULVERTS INTO EXISTING DRAINAGEWAYS.
 - IF ANY STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN THREE DAYS.
 - WATER PUMPED OR OTHERWISE DISCHARGED FROM THE SITE DURING CONSTRUCTION DEWATERING SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
 - THE CONTRACTOR SHALL TAKE ALL POSSIBLE PRECAUTIONS TO PREVENT APPRECIABLE SOIL TRACKING ONTO ROADWAYS. APPRECIABLE SOIL, MUD, OR DEBRIS WASHED, TRACKED, OR DEPOSITED ONTO PAVED SURFACES SHALL BE REMOVED PRIOR TO THE END OF EACH WORK DAY.
 - STABILIZED CONSTRUCTION ENTRANCE(S) SHALL BE REMOVED AND AREA RESTORED AFTER GRADING IS COMPLETE.
 - THE CONTRACTOR QC PROGRAM SHALL ENSURE THAT A COMPETENT INDIVIDUAL SHALL INSPECT EROSION AND SEDIMENT CONTROL DEVICES WEEKLY AND AFTER EACH RAIN EVENT. ALL NONFUNCTIONAL DEVICES SHALL BE REPAIRED/REPLACED/CLEANED. MAINTAIN A WRITTEN LOG OF ALL WEEKLY INSPECTIONS AND RAIN EVENTS - INCLUDE THE CORRECTIVE ACTIONS THAT WERE TAKEN.
 - THE CONTRACTOR SHALL MAINTAIN THE CAPABILITY TO IMPLEMENT RAPID STABILIZATION METHOD 4 (MNDOT 2573.4) AT ALL TIMES. INCLUDES CAT III EROSION CONTROL BLANKET (ECB) [N. AMERICAN GREEN S150 OR APPROVED EQUAL] ALONG WITH SEED MIXTURE, FERTILIZER, AND SOIL STAPLES PER 2573-3. THE UPGRADIENT END OF EACH BLANKET STRIP SHALL BE BURIED AT LEAST 6 INCHES IN A VERTICAL CHECK SLOT. STAPLES SHALL BE PLACED AT SEAMS AND THROUGHOUT THE BLANKET AT A MAXIMUM SPACING IN ALL DIRECTIONS OF 2 FEET. PAYMENT ALLOWED SHALL BE PER CONTRACT BID PRICE OR IN ABSENCE OF CONTRACT BID PRICE IN ACCORDANCE WITH MNDOT SPECIFICATION 2575.5
 - COVER DEBRIS AND CRUSHING STOCKPILES. PROVIDE SILT FENCING AROUND PERIMETER OF STOCKPILE AREAS.
 - REPLACE TOPSOIL AND SEED ALL AREAS DISTURBED BY WORK.

SWPPP IMPLEMENTATION CONTACTS:

PROJECT ENGINEER:
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jjurewicz@msa-ps.com

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218-591-4580
tedstocke@gmail.com

MINNESOTA POLLUTION CONTROL AGENCY:
JAMES DEXTER
218-302-6632
james.dexter@state.mn.us

STATE DUTY OFFICER:
MINNESOTA PCA
1-800-422-0798

CONTRACTOR:
TO BE DETERMINED

COUNTY SOIL AND WATER CONSERVATION DISTRICT:
RC BOHEIM, DISTRICT MANAGER
SOUTH ST. LOUIS COUNTY SWCD
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DULUTH, MN 55802
(218) 723-4867
RC.Boheim@southstlouisswd.org

ARMY CORPS OF ENGINEERS:
DARYL WIERZBINSKI
600 SOUTH LAKE AVENUE
DULUTH, MN 55802
218-720-5291
daryl.w.wierzbinski@usace.army.mil

DESCRIPTION	TITLE	LOCATION
SUMMARY OF PERVIOUS AND IMPERVIOUS	SWPPP NOTES	SHEET G-13
DIRECTION OF FLOW/DRAINAGE AREA	EROSION CONTROL PLAN	SHEET S-1 AND S-2
RECEIVING SURFACE WATERS	SWPPP NOTES	SHEET G-13
NO DISTURBANCE AREAS OR AREAS OF PHASED CONST.	NA	NA
DRAINAGE STRUCTURES	UTILITY PLAN	SHEET S-7 AND S-8
DRAINAGE TABULATIONS	SWPPP NOTES	SHEET G-13
EROSION CONTROL TABULATIONS	SWPPP NOTES	SHEET G-13
EROSION CONTROL SHEETS	EROSION CONTROL PLAN	SHEET S-1 AND S-2
EROSION CONTROL DETAILS	EROSION CONTROL DETAILS	SHEET G-14
SEDIMENT CONTROL PRACTICES	SWPPP NOTES	SHEET G-13
FINAL STABILIZATION	SWPPP NOTES	SHEET G-13
SEDIMENT BASIN (POND) TABULATIONS	NA	NA
POND SHEETS (SEDIMENT BASINS)	GRADING PLAN	SHEET S-5 AND S-6
LOCATIONS OF PONDS	GRADING PLAN	SHEET S-5 AND S-6

TRAINING

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

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

SWPPP DESIGNER:

NAME: ANDREW BARNEBEY
TITLE: PROJECT MANAGER
COMPANY: MSA PROFESSIONAL SERVICES, INC.
DATE OF TRAINING: NOVEMBER 2018
TRAINING CERTIFICATION: DESIGN OF CONSTRUCTION SWPPP
EXPIRATION: MAY, 2022
TRAINING ENTITY: U. OF MINNESOTA, DEPT. OF BIOPRODUCTS AND BIOSYSTEMS ENGINEERING

PROJECT DATE	DRAWN BY	NO.	DATE	REVISION	BY
02/17/20	EDC	-	-	-	-
	DESIGNED BY	EDC	-	-	-
	CHECKED BY	JJJ	-	-	-

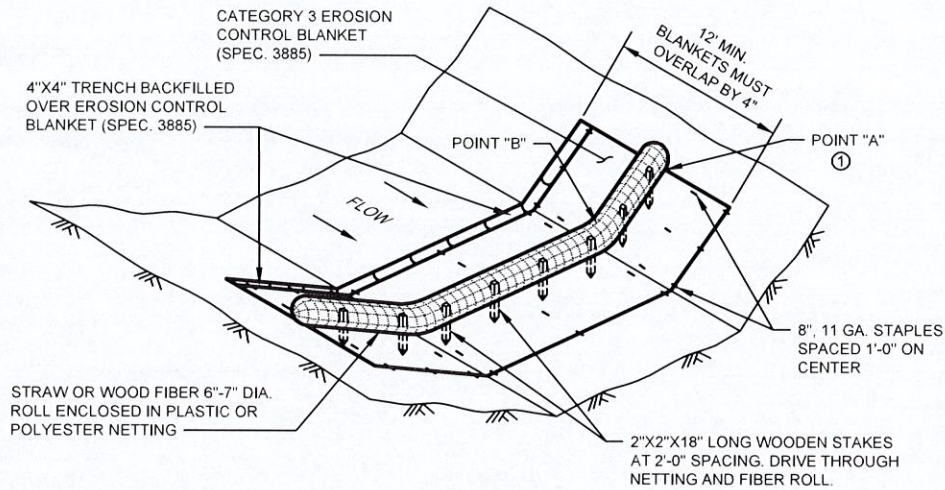
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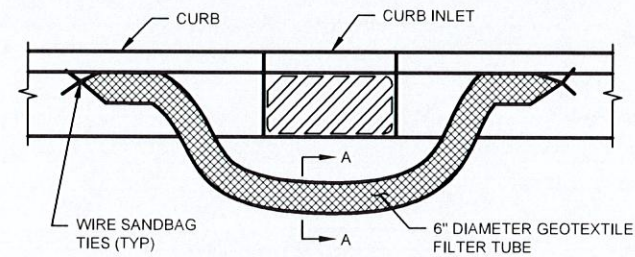
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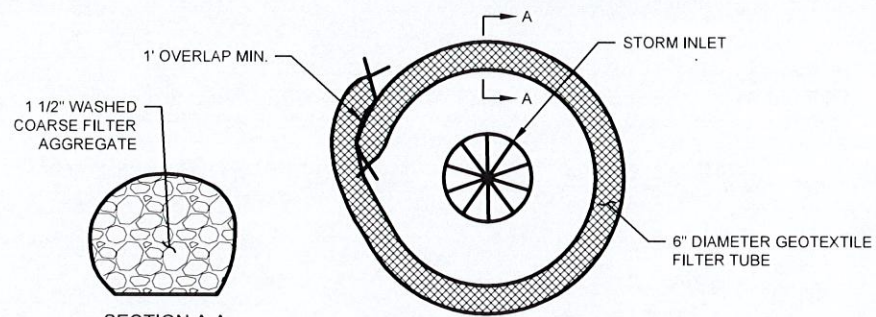
PROJECT NO: 05331006
SHEET: G-13
SWPPP NOTES



BIOROLL BLANKET SYSTEM
NO SCALE



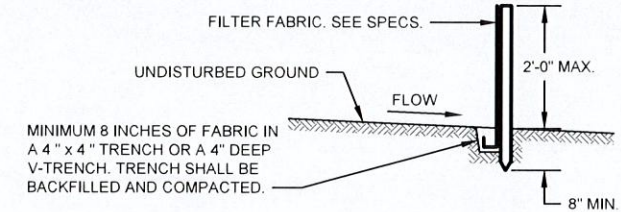
INSTALLATION AT CURB INLET



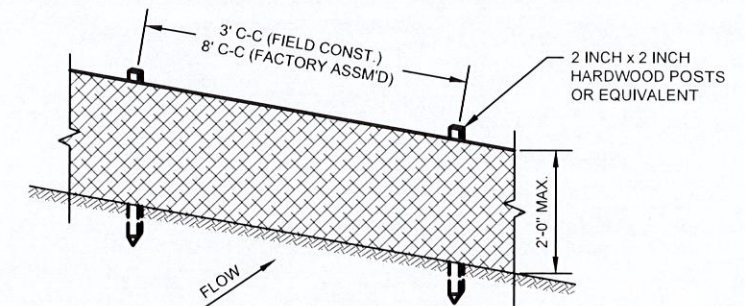
INSTALLATION AT AREA DRAIN

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

FILTER ROCK LOG DETAIL
NO SCALE



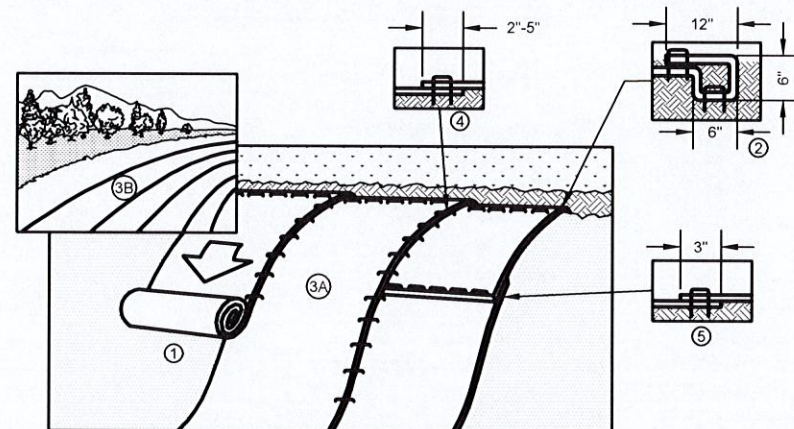
SECTION



PERSPECTIVE VIEW

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

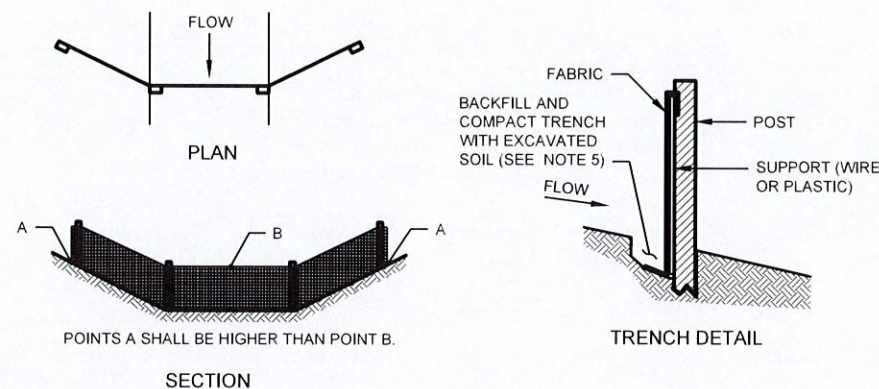
TYPICAL SILT FENCE INSTALLATION AT SITE PERIMETER DETAIL
NO SCALE



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

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

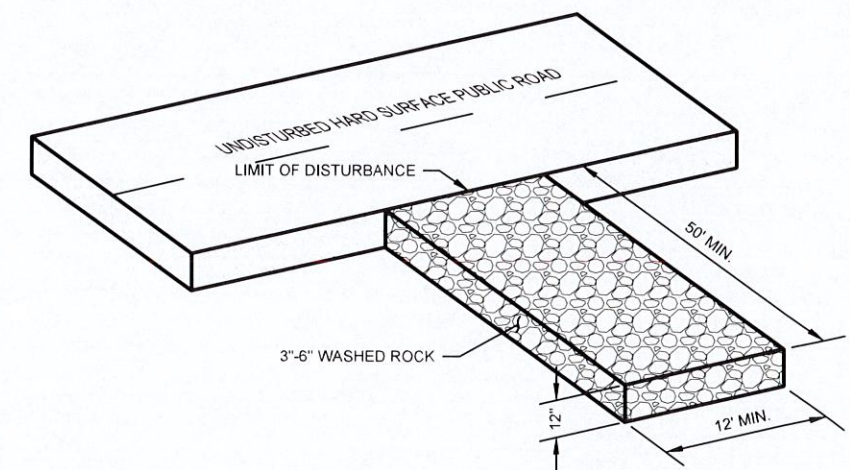
EROSION CONTROL BLANKET SLOPE INSTALLATION
NO SCALE



GENERAL NOTES:

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

TYPICAL SILT FENCE INSTALLATION AT DRAINAGE WAYS DETAIL
NO SCALE



VEHICLE TRACKING PAD
NO SCALE

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	EDC				
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	JJJ				

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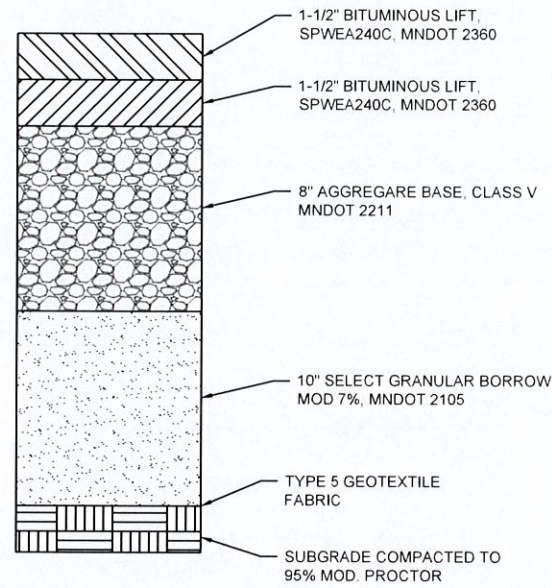


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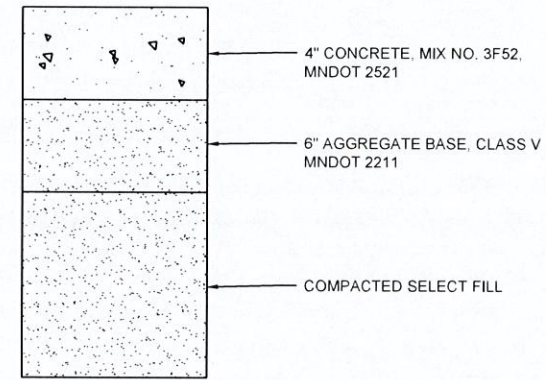
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EROSION CONTROL DETAILS

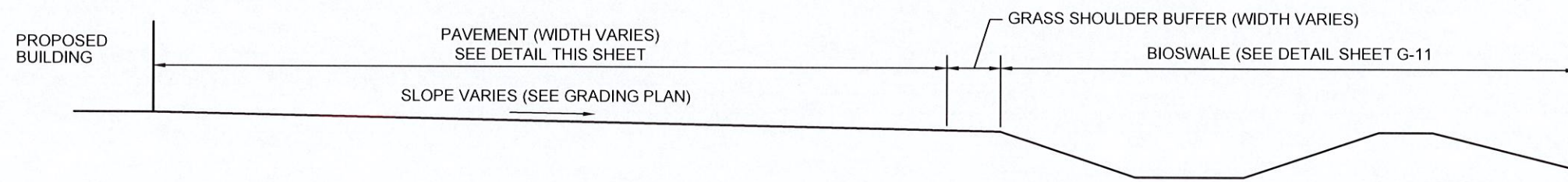
PROJECT NO.
05331006
SHEET
G-14



TYPICAL PAVEMENT SECTION
NO SCALE



TYPICAL SIDEWALK SECTION
NO SCALE



TYPICAL DRIVEWAY SECTION
NO SCALE

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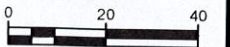
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PAVING DETAILS

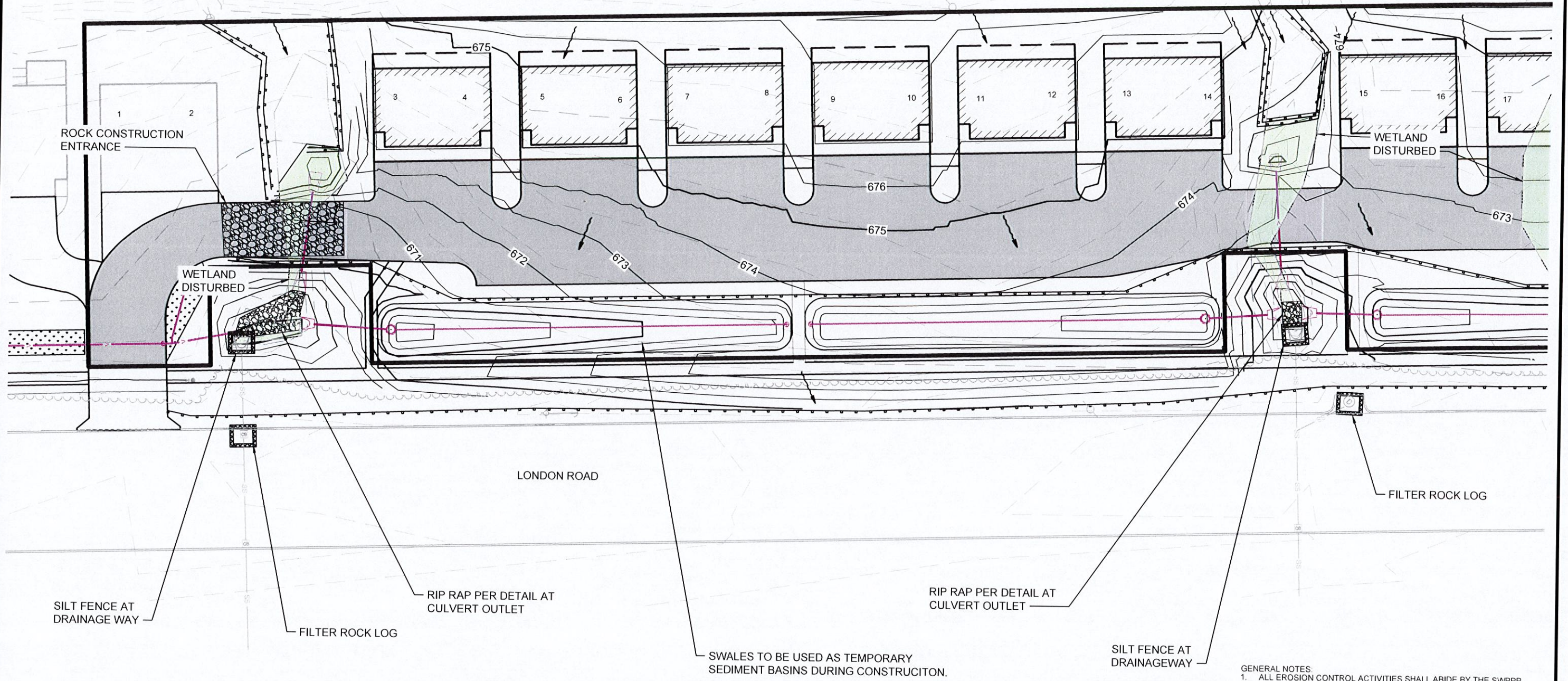
PROJECT NO.
05331006
 SHEET
G-15

LEGEND:

-  SILT FENCE
-  DOUBLE ROW OF SILT FENCE AT WETLANDS, TYP



NORTH SHORE SCENIC RAILROAD



- GENERAL NOTES:**
1. ALL EROSION CONTROL ACTIVITIES SHALL ABIDE BY THE SWPPP.
 2. ANY DIRT TRACKED ONTO LONDON ROAD FROM THE PROJECT SITE SHALL BE SWEEPED CLEAN.

PROJECT DATE	02/17/20	NO.	DATE	REVISION	BY
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EROSION CONTROL PLAN 1

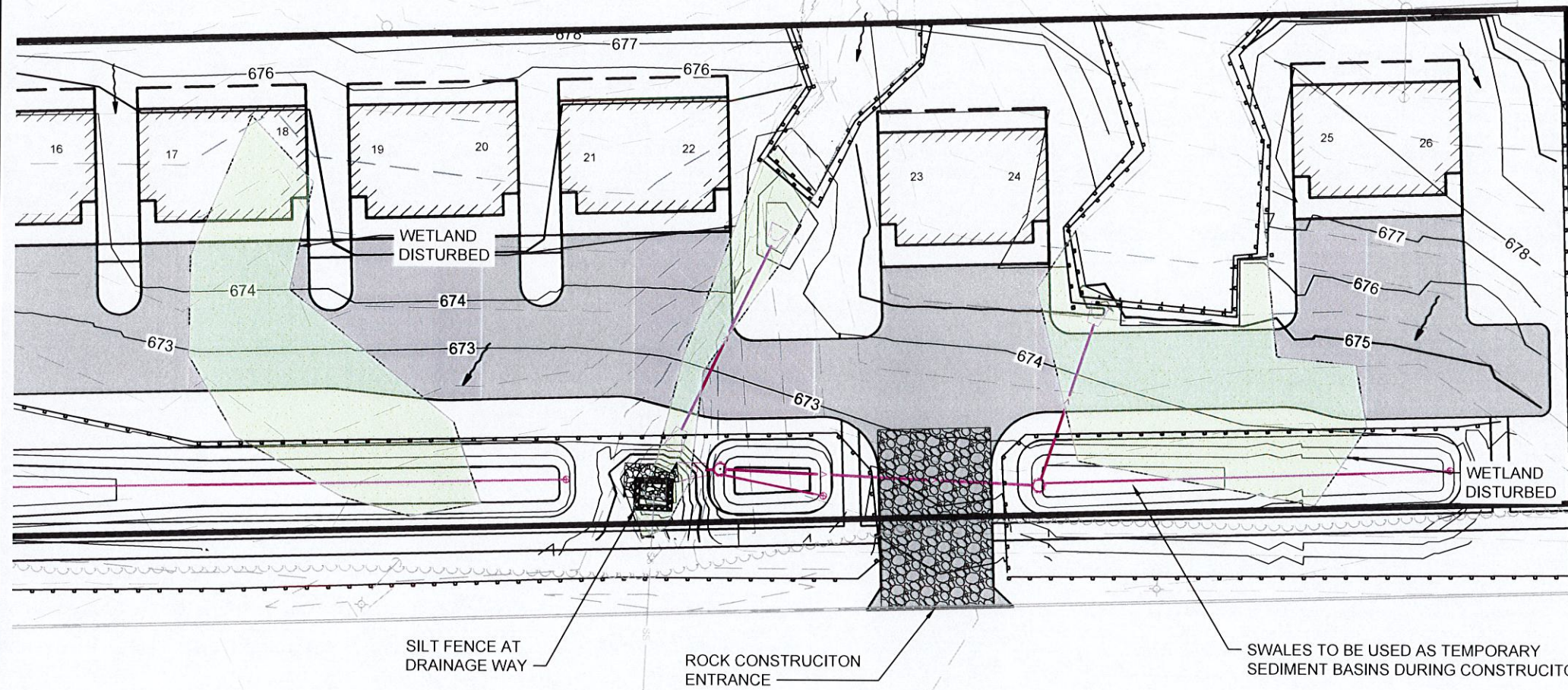
PROJECT NO. 05331006
 SHEET S-1

LEGEND:

- SILT FENCE
- DOUBLE ROW OF SILT FENCE AT WETLANDS, TYP



NORTH SHORE SCENIC RAILROAD



- GENERAL NOTES:
1. ALL EROSION CONTROL ACTIVITIES SHALL ABIDE BY THE SWPPP.
 2. ANY DIRT TRACKED ONTO LONDON ROAD FROM THE PROJECT SITE SHALL BE SWEEPED CLEAN.

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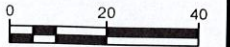
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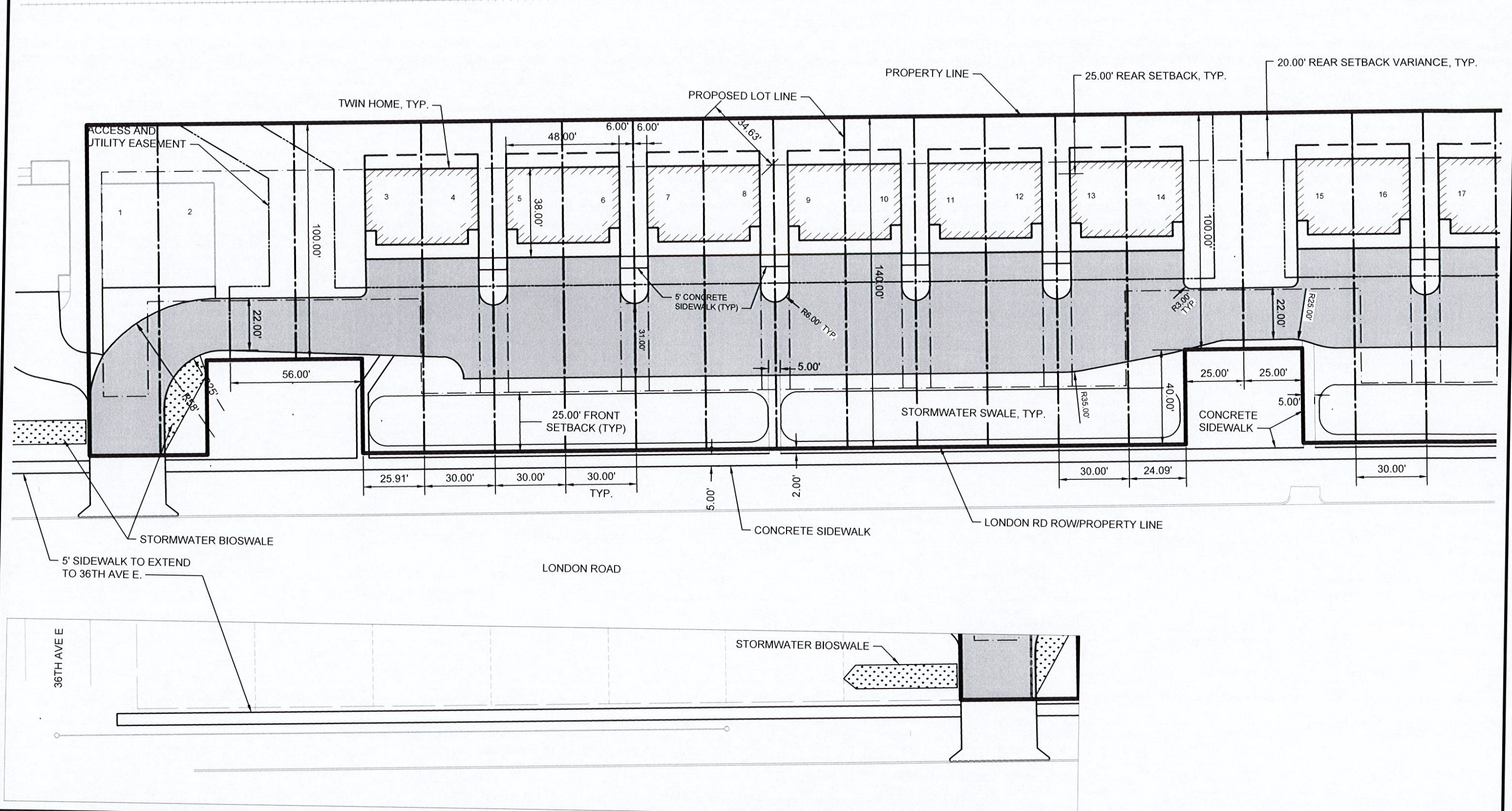
LONDON ROAD UTILITY EXTENSIONS
37TH TO 39TH AVENUE EAST
DULUTH, MN

EROSION CONTROL PLAN 2

PROJECT NO.
05331006
SHEET
S-2



DULUTH NORTH SHORE SCENIC RAILROAD



PROJECT DATE	DRAWN BY	NO.	DATE	REVISION	BY
02/17/20	EDC				
	EDC				
	JJJ				

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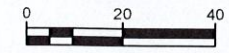
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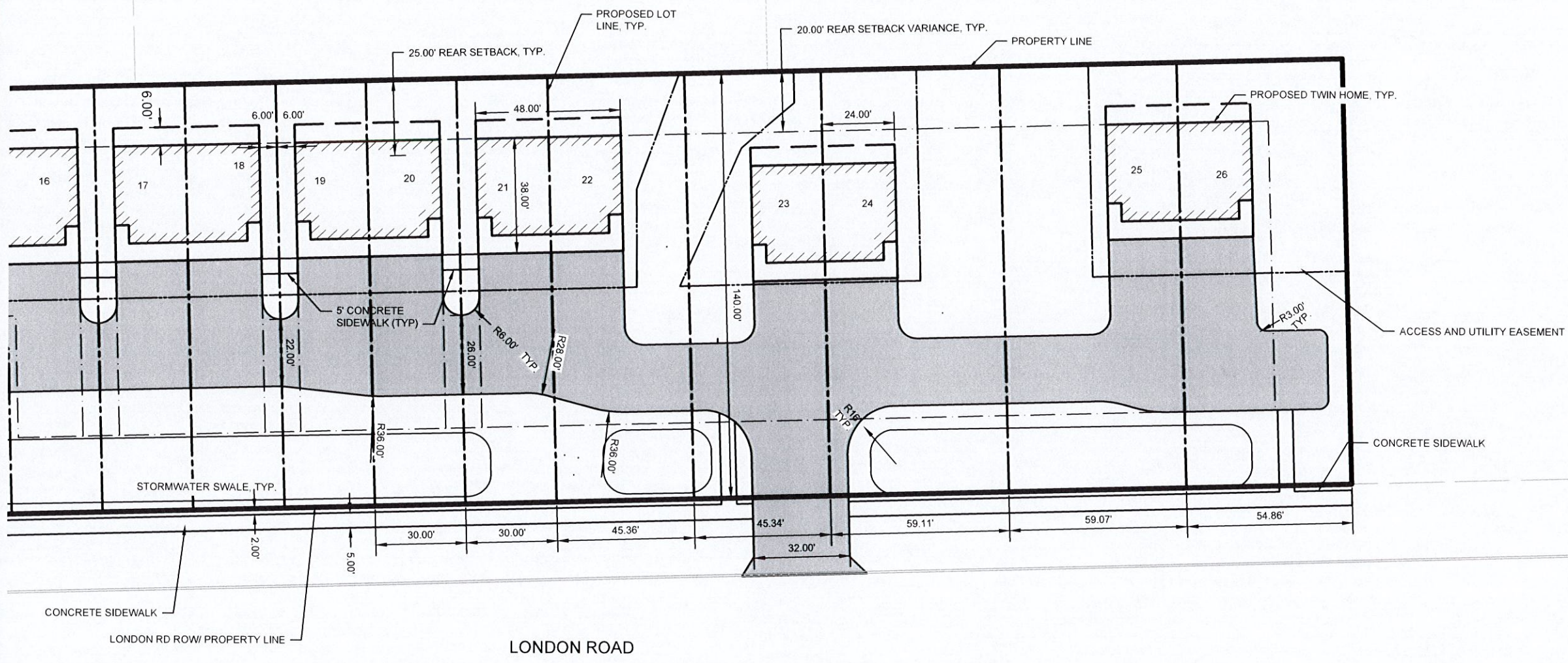
SITE PLAN 1

PROJECT NO. 05331006
 SHEET S-3

PLOT DATE: 6/29/2020 11:52 AM P:\63004\53304\533105331006\CADD\Construction Drawings\05331006 Site Plan.dwg



DULUTH NORTH SHORE SCENIC RAILROAD



PROJECT DATE	DRAWN BY	NO.	DATE	REVISION	BY
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	DESIGNED BY	EDC	-	-	-
	CHECKED BY	JJJ	-	-	-

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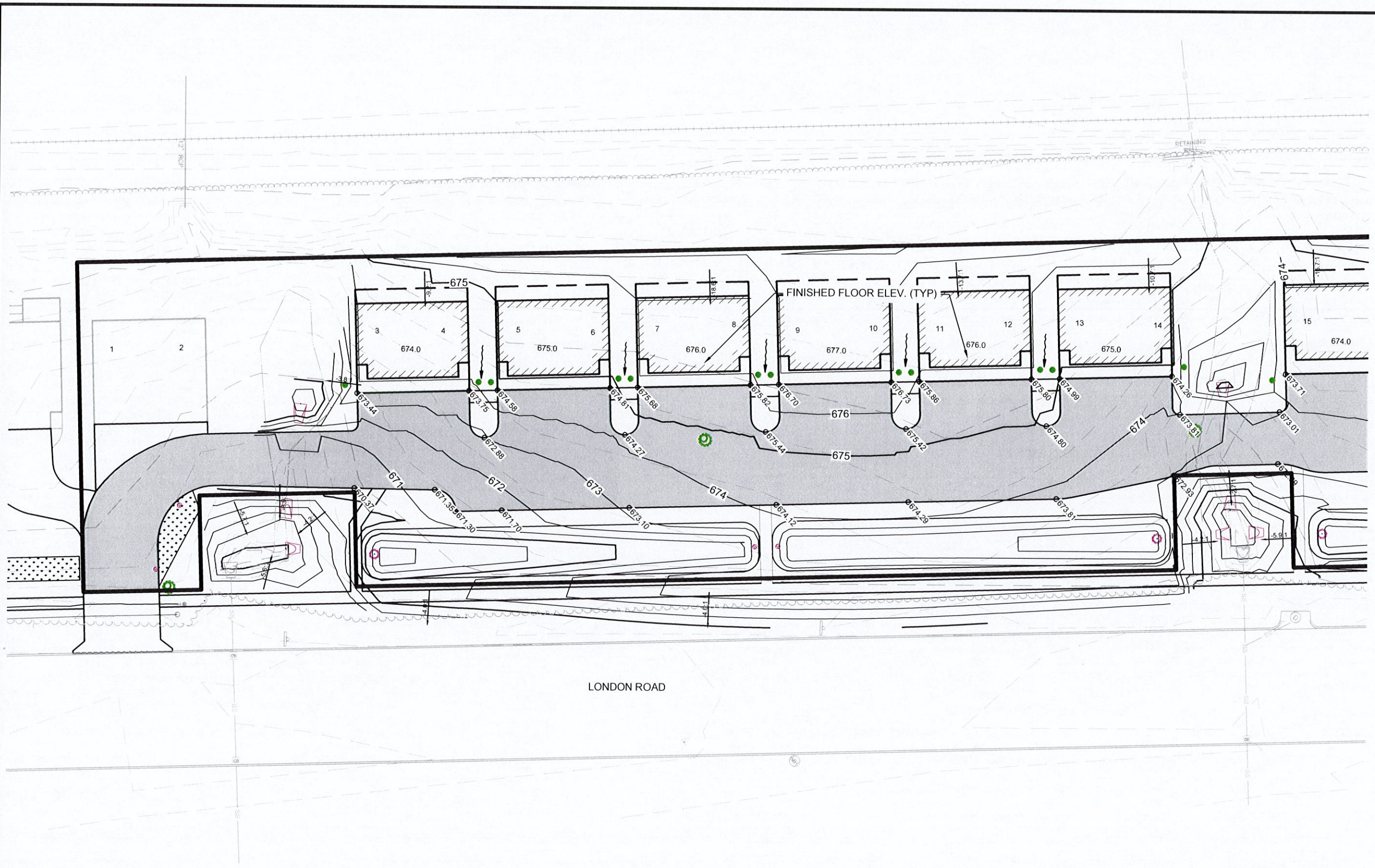
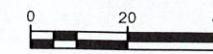
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LONDON ROAD UTILITY EXTENSIONS
 37TH TO 39TH AVENUE EAST
 DULUTH, MN

SITE PLAN 2

PROJECT NO.
05331006
 SHEET
S-4



- CONSTRUCTION NOTES:
1. CONTRACTOR TO GRADE BETWEEN BUILDINGS SO WATER FLOWS FROM THE BACK YARDS TO THE ROAD/STORMWATER SWALES.
 2. CONTRACTOR TO GRADE SIDEWALK CROSSING DRIVEWAY TO APPLICABLE ADA REQUIREMENTS.

PROJECT DATE	DRAWN BY	DESIGNED BY	CHECKED BY	NO.	DATE	REVISION	BY
02/17/20	EDC	EDC	JJJ	-	-	-	-

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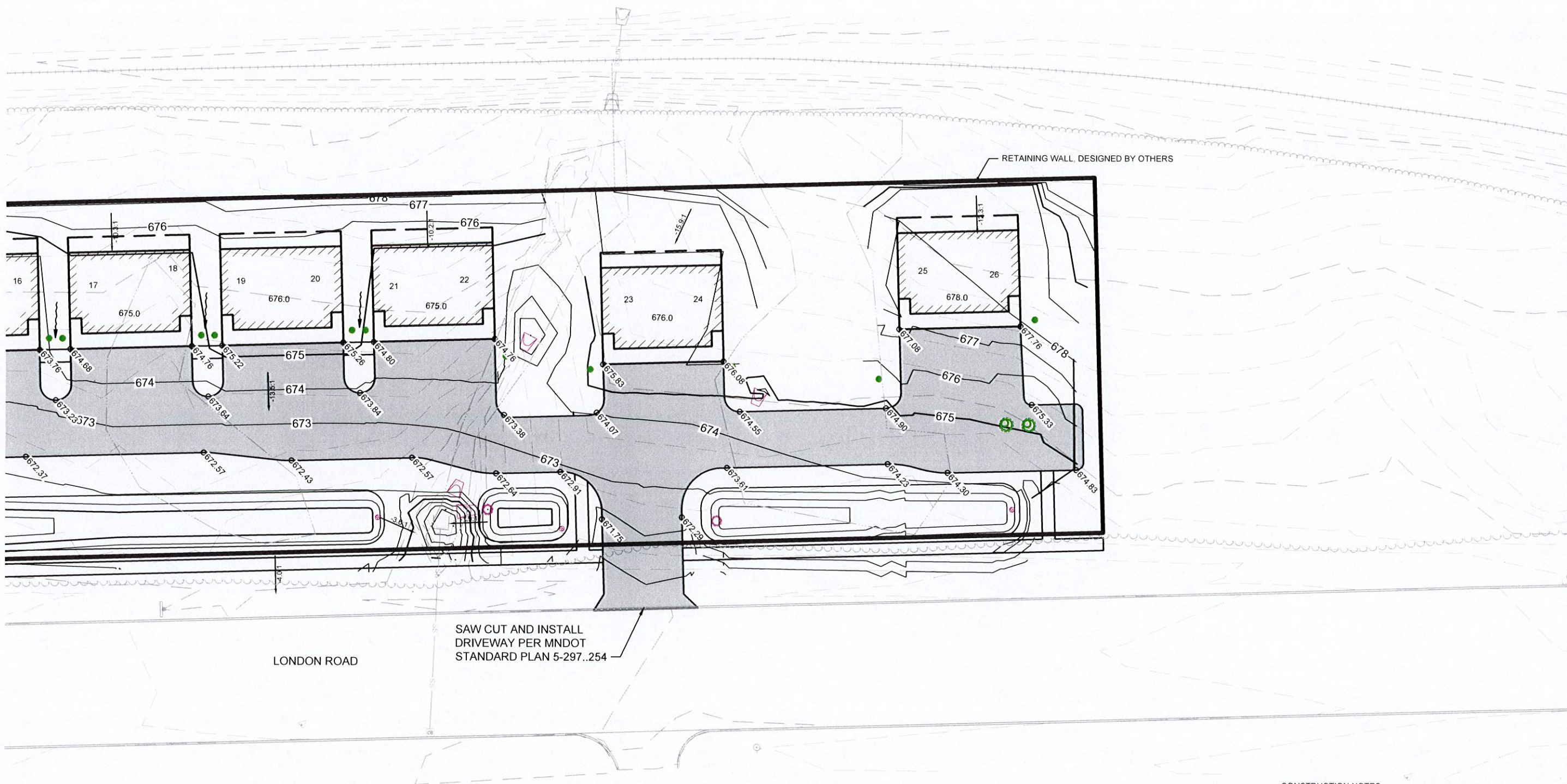
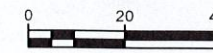
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LONDON ROAD UTILITY EXTENSIONS
 37TH TO 39TH AVENUE EAST
 DULUTH, MN

GRADING PLAN 1

PROJECT NO. 05331006
 SHEET S-5

PLOT DATE: 6/29/2020 11:52 AM. P:\53006\53306\5331006\CADD\Construction Drawings\05331006 Grading Plan.dwg



- CONSTRUCTION NOTES:
1. CONTRACTOR TO GRADE BETWEEN BUILDINGS SO WATER FLOWS FROM THE BACK YARDS TO THE ROAD/STORMWATER SWALES.
 2. CONTRACTOR TO GRADE SIDEWALK CROSSING DRIVEWAY TO APPLICABLE ADA REQUIREMENTS.

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	DESIGNED BY	EDC	-	-	-
	CHECKED BY	JJJ	-	-	-

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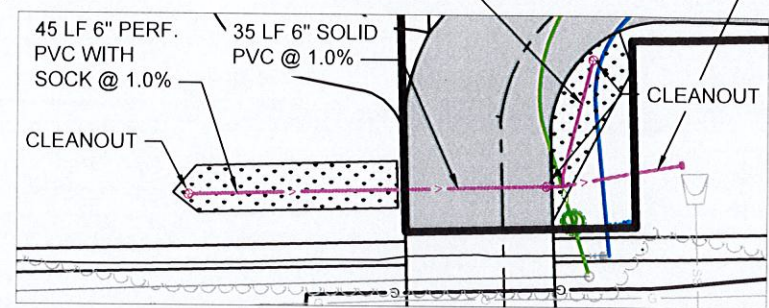
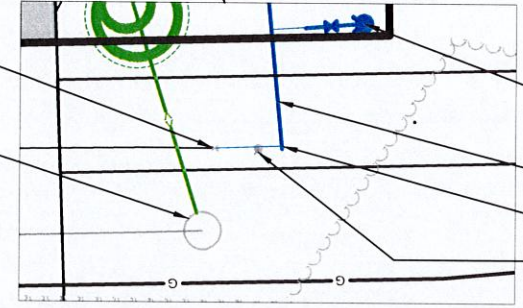
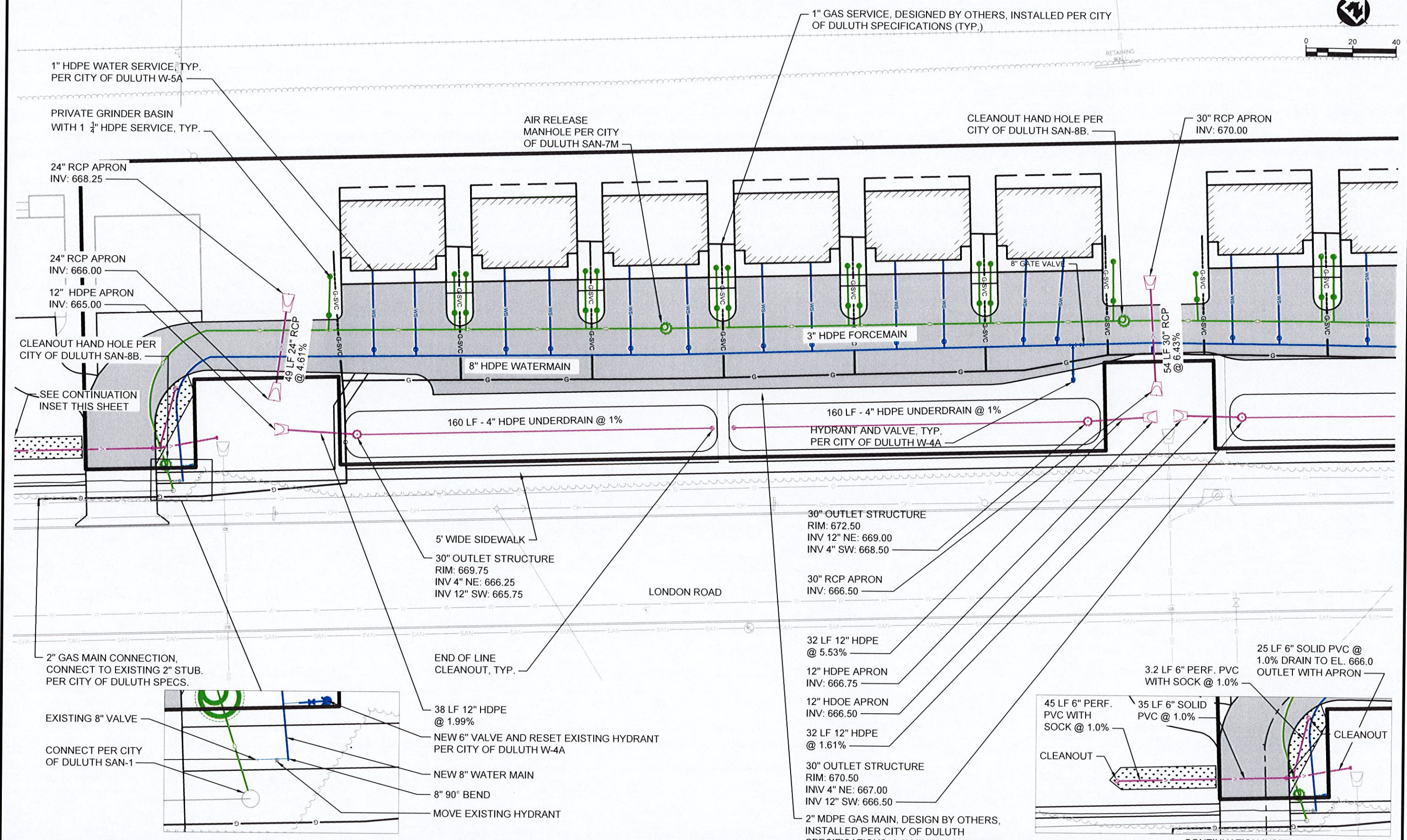
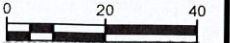
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LONDON ROAD UTILITY EXTENSIONS
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GRADING PLAN 2

PROJECT NO.
05331006
 SHEET
S-6



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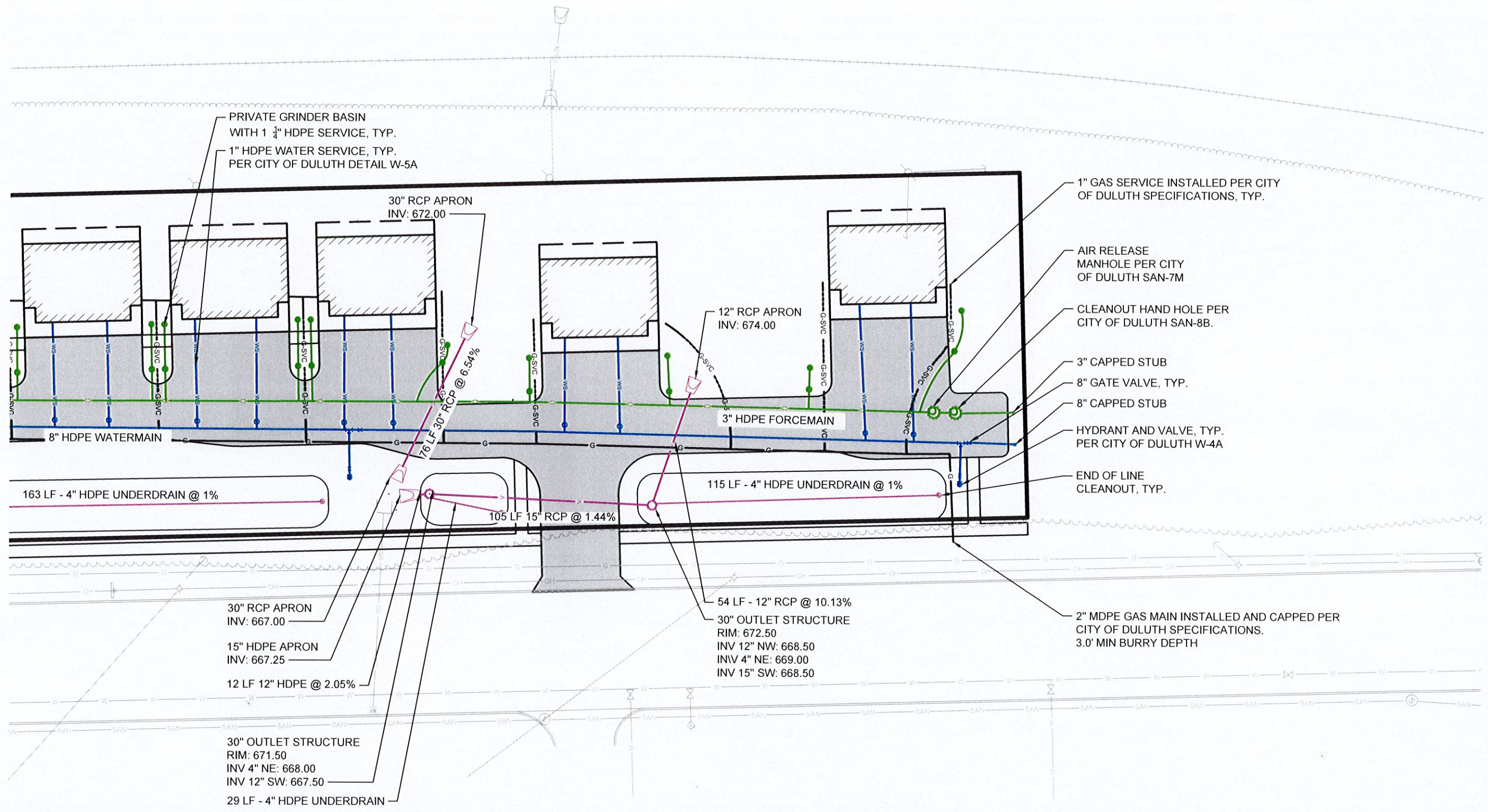
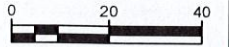
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LONDON ROAD UTILITY EXTENSIONS
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UTILITY PLAN 1

PROJECT NO.
05331006
 SHEET
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	DESIGNED BY	EDC	-	-	-
	CHECKED BY	JJJ	-	-	-

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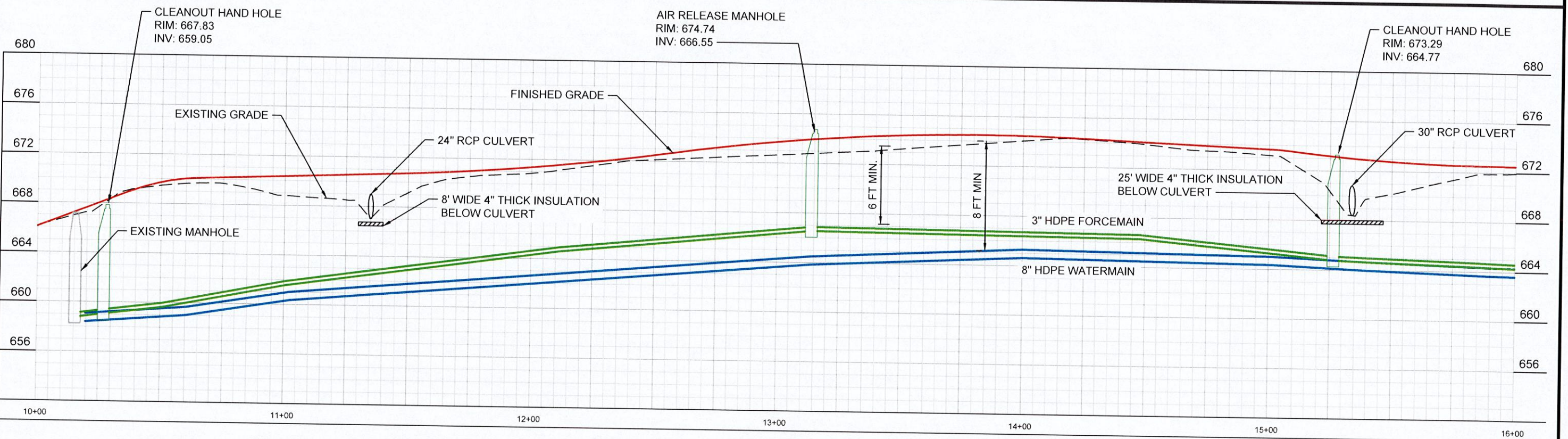
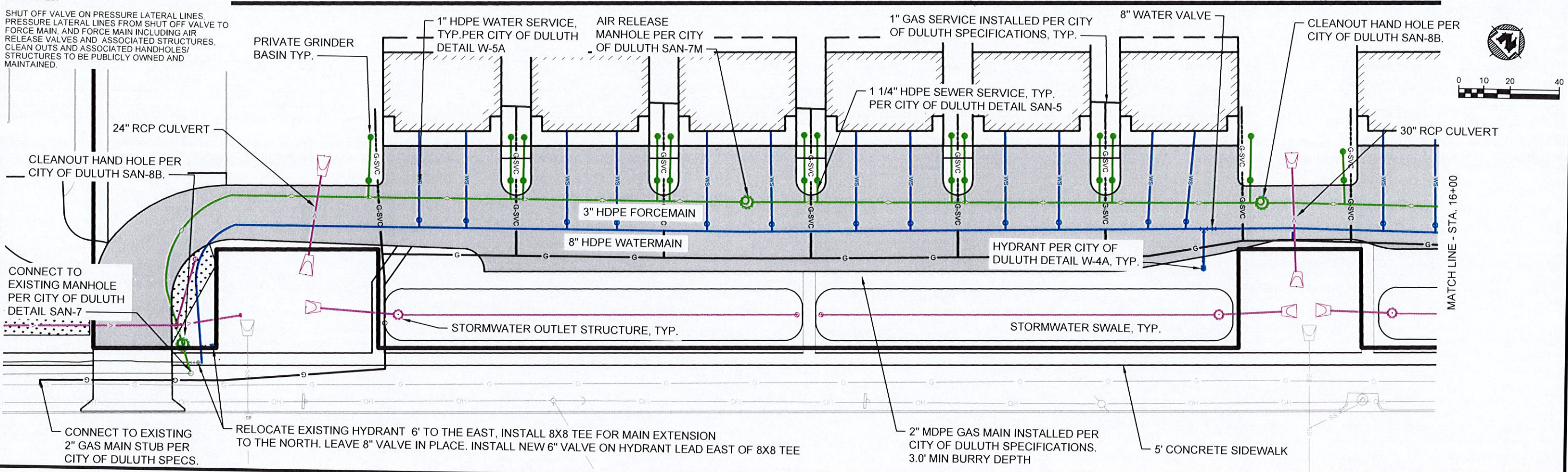
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LONDON ROAD UTILITY EXTENSIONS
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UTILITY PLAN 2
 PROJECT NO. 05331006
 SHEET S-8

GRAVITY SANITARY LATERAL LINE, GRINDER BASIN AND PRESSURE LATERAL FROM BASIN TO SHUT OFF VALVE ARE TO BE PRIVATELY OWNED AND MAINTAINED.

SHUT OFF VALVE ON PRESSURE LATERAL LINES. PRESSURE LATERAL LINES FROM SHUT OFF VALVE TO FORCE MAIN, AND FORCE MAIN INCLUDING AIR RELEASE VALVES AND ASSOCIATED STRUCTURES, CLEAN OUTS AND ASSOCIATED HANDHOLES/ STRUCTURES TO BE PUBLICLY OWNED AND MAINTAINED.



PROJECT DATE	02/17/20	DRAWN BY	EDC	NO.	DATE	REVISION	BY
		DESIGNED BY	EDC				
		CHECKED BY	JJJ				

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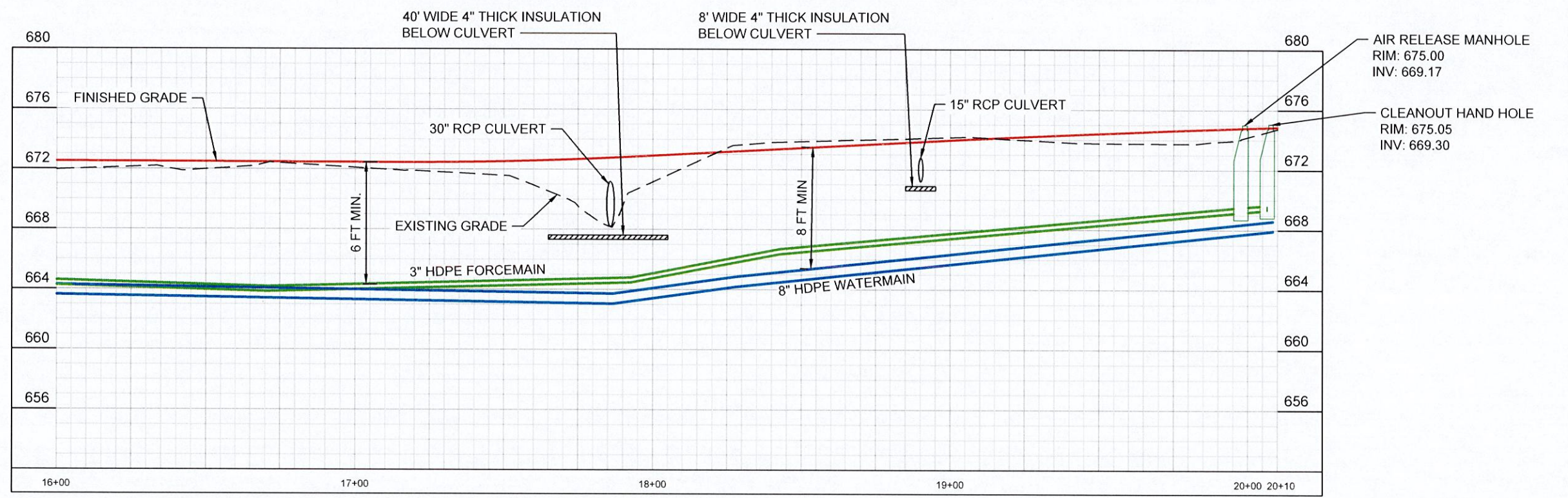
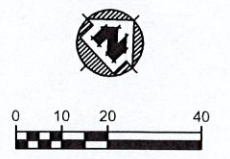
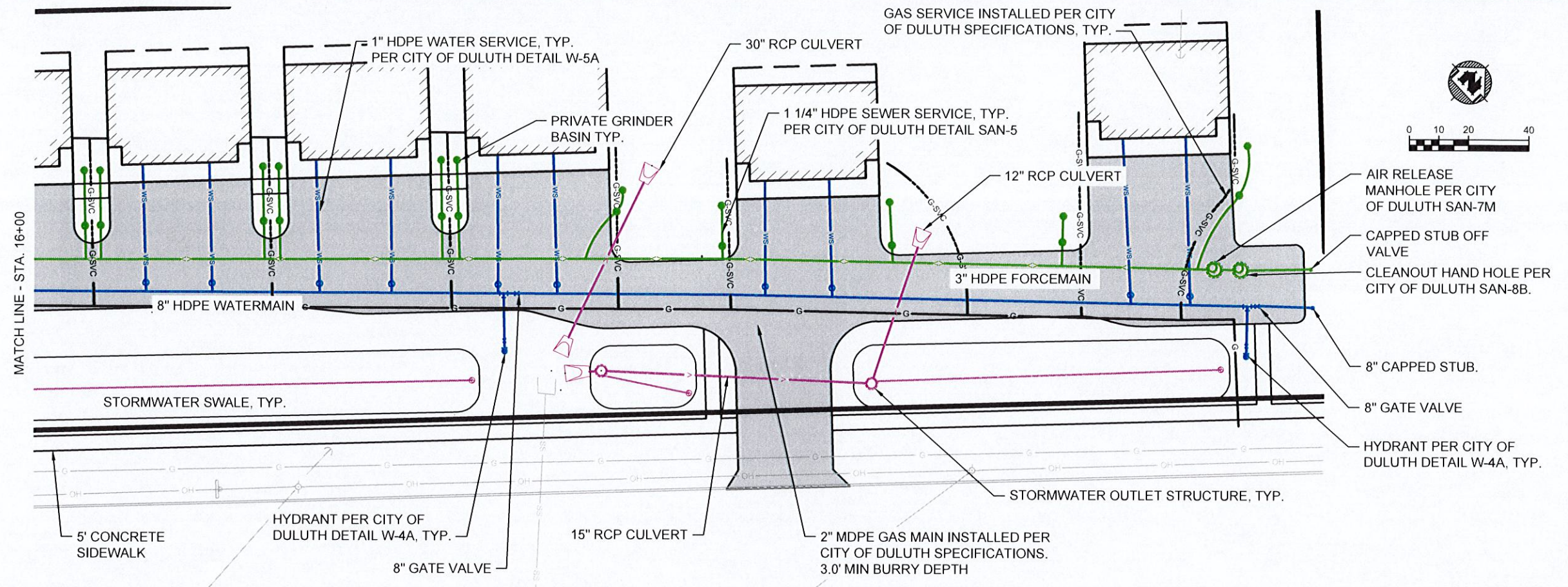
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PLAN AND PROFILE 1

PROJECT NO. 05331006
 SHEET P-1

GRAVITY SANITARY LATERAL LINE, GRINDER BASIN AND PRESSURE LATERAL FROM BASIN TO SHUT OFF VALVE ARE TO BE PRIVATELY OWNED AND MAINTAINED.

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	DESIGNED BY	EDC	-	-	-
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PLAN AND PROFILE 2

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