

LEGEND

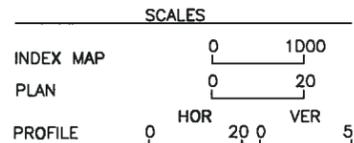
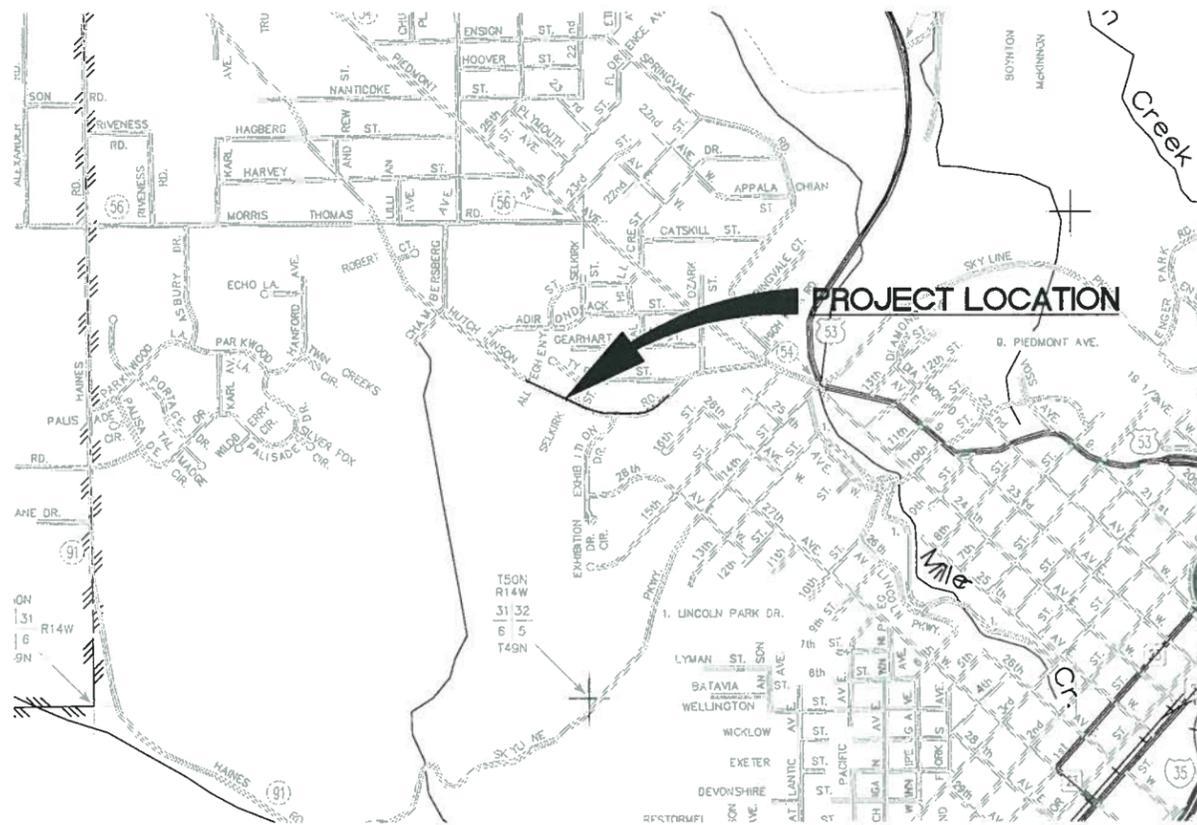
	STREET CENTERLINE
	SURVEY BASELINE
	COUNTY
	SECTION
	QUARTER
	SIXTEENTH
	CORPORATE LIMITS
EXISTING	
	RIGHT OF WAY
	PERMANENT EASEMENT
	PROPERTY LINE
	R.R. RIGHT OF WAY
	SANITARY SEWER AND MANHOLE
	FORCE MAIN
	SANITARY SEWER SERVICE & CLEANOUT
	WATER MAIN, HYDRANT AND VALVE
	WATER SERVICE AND CURB STOP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

CITY OF DULUTH, MINNESOTA

CONSTRUCTION PLANS FOR CULVERT REPLACEMENT, SURFACE RECLAMATION, RESURFACING AND STORM SEWER HUTCHINSON ROAD

CITY PROJECT NO. 1135

CITY FLOOD LOCATION NO. 43, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88



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

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



GOVERNING SPECIFICATIONS
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

THE 2011 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS AND ALL AMENDMENTS SHALL APPLY.

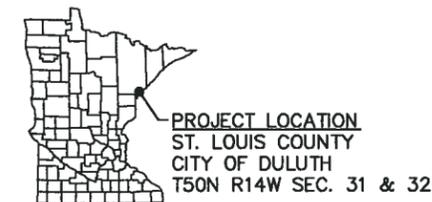
ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MMUTCO, INCLUDING "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS", - CURRENT EDITION.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	CONSTRUCTION DETAILS
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5	CONSTRUCTION DETAILS
6	CONSTRUCTION DETAILS
7	CONSTRUCTION DETAILS
8	TYPICAL SECTION
9	PLAN AND PROFILE
10	PLAN AND PROFILE
11	PLAN AND PROFILE
12	TRAFFIC CONTROL

THIS PLAN CONTAINS 12 SHEETS.

PROJECT LOCATION



APPROVED: 7/20/12
CITY ENGINEER OF TRANSPORTATION DATE

APPROVED: 7-20-12
CITY ENGINEER OF UTILITIES DATE

APPROVED: 7/20/12
CITY ENGINEER DATE

CITY OF DULUTH, MINNESOTA

SEH
PHONE: 218.279.3000
418 W SUPERIOR ST STE 200
DULUTH, MN 55802-1512
www.sehinc.com

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

Signature: Matthew J. Balf, P.E.
Date: 07/18/2012 Lic. No. 43913

FILE NO. DULLT121350
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STATEMENT OF ESTIMATED QUANTITIES					
NOTE	ITEM NO.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITIES	FINAL QUANTITIES
	2021.501	MOBILIZATION	LUMP SUM	1	
	2104.501	REMOVE PIPE CULVERTS	LIN FT	600	
	2104.501	REMOVE SEWER PIPE (STORM)	LIN FT	705	
6	2104.503	REMOVE BITUMINOUS DRIVEWAY PAVEMENT	(P) SQ FT	9204	
	2104.509	REMOVE MANHOLE OR CATCH BASIN	EACH	5	
	2104.513	SAWING BIT PAVEMENT (FULL DEPTH)	LIN FT	577	
	2104.523	SALVAGE & INSTALL SIGN TYPE SPECIAL (STREET SIGN)	EACH	2	
15	2104.601	REMOVE MISCELLANEOUS DEBRIS	LUMP SUM	1	
2,8	2105.523	COMMON BORROW (LV)	CU YD	1000	
	2105.603	CONSTRUCT DRAINAGE DITCH	LIN FT	1203	
	2123.510	10 CU YD TRUCK	hour	20	
	2123.610	TRACTOR MOUNTED BACKHOE-LOADER	hour	20	
3	2211.503	AGGREGATE BASE (CV) CLASS 5	CU YD	700	
13	2331.604	BITUMINOUS PAVEMENT RECLAMATION	(P) SQ YD	4434	
1,4	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TON	100	
1	2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	TON	438	
1	2360.501	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,C)	TON	584	
16	2411.507	CONCRETE DROP WALL	EACH	1	
	2501.511	24" CS PIPE CULVERT	LIN FT	530	
	2501.515	24" GS PIPE APRON	EACH	26	
	2501.515	18" RC PIPE APRON	EACH	1	
	2501.515	24" RC PIPE APRON	EACH	4	
	2501.515	48" RC PIPE APRON	EACH	1	
12	2503.541	18" RC PIPE SEWER CLASS III	LIN FT	81	
12	2503.541	24" RC PIPE SEWER CLASS III	LIN FT	147	
12	2503.541	36" RC PIPE SEWER CLASS III	LIN FT	319	
12	2503.541	48" RC PIPE SEWER CLASS III	LIN FT	440	
	2503.602	CONNECT INTO EXISTING DRAINAGE STRUCTURE	EACH	1	
10	2503.602	CONNECT TO EXISTING DRAINTILE	EACH	8	
	2504.602	ADJUST VALVE BOX - WATER	EACH	4	
	2505.602	ADJUST VALVE BOX - GAS	EACH	3	
	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN C OR G	LIN FT	4	
	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 60-4020	LIN FT	11	
	2506.501	CONSTRUCT DRAINAGE STRUCTURE DESIGN 72-4020	LIN FT	40	
	2506.516	CASTING ASSEMBLY	EACH	9	
	2506.522	ADJUST FRAME AND RING CASTING	EACH	6	
12	2506.603	CONSTRUCT DRAINAGE STRUCTURE DESIGN 72-4020 SPECIAL	LIN FT	25	
11	2511.501	RANDOM RIPRAP CLASS III	CU YD	130	
11	2511.501	RANDOM RIPRAP CLASS V	CU YD	71	
14	2531.501	CONCRETE CURB & GUTTER DESIGN B412	LIN FT	46	
	2535.501	BITUMINOUS CURB	LIN FT	723	
5	2540.602	RELOCATE MAIL BOX SUPPORT	EACH	14	
	2563.601	TRAFFIC CONTROL	LUMP SUM	1	
	2573.502	SILT FENCE, TYPE HEAVY DUTY	LIN FT	500	
7	2573.512	TEMPORARY DITCH CHECK TYPE 2	LIN FT	756	
	2573.530	STORM DRAIN INLET PROTECTION	EACH	5	
	2573.602	TEMPORARY ROCK CONSTRUCTION ENTRANCE	EACH	2	
9	2575.555	TURF ESTABLISHMENT	LUMP SUM	1	

NOTES:	
1	CALCULATED AT 120 LBS./SQ. YD./INCH.
2	FOR FILLING WASHOUTS AND DITCHES AS DIRECTED BY THE ENGINEER. SEE PLAN SHEETS FOR LOCATIONS.
3	QUANTITY FOR DRIVEWAYS AND MISCELLANEOUS ROADWAY PATCHING AREAS. APPROXIMATELY 300 CU. YD. FOR MAINLINE ROADWAY ADJUSTMENTS.
4	QUANTITY FOR DRIVEWAYS AND MISCELLANEOUS ROADWAY PATCHING AREAS.
5	INCLUDES BOTH SINGLE AND MULTIPLE SUPPORTS.
6	INCLUDES EXHIBITION DR. & SELKIRK RD. PAVEMENT.
7	DITCH CHECKS TO REMAIN ONCE FINAL DITCH SODDING COMPLETED (MAY NEED TO REMOVE AND RE-INSTALL DEPENDING ON CONSTRUCTION PHASING).
8	COMMON BORROW IS DEFINED AS ANY SOILS WITH THE EXCEPTION OF UNPROCESSED ROCK, CLAY, TOPSOIL, PEAT, SILT LOAM, WOOD, OR OTHER ORGANIC SOILS. NO MATERIAL SHALL BE LARGER THAN 6" IN SIZE.
9	DISTURBED AREAS SHALL BE RESTORED WITH 3" TOPSOIL, SODDING TYPE EROSION, FERTILIZER TYPE 3, 20-10-20 @ 200 LBS./ACRE PRIOR TO SODDING. SEE PLANS FOR LOCATIONS. NON-RESIDENTIAL AREAS SHALL BE RESTORED WITH 4" TOPSOIL, SEED (TYPE 250) @ 70 LBS./ACRE, FERTILIZER (TYPE 22-5-10) @ 350 LBS./ACRE, AND EROSION CONTROL BLANKET CATEGORY 3. SEE PLANS FOR LOCATIONS.
9	NON-RESIDENTIAL AREAS SHALL BE RESTORED WITH 4" TOPSOIL, SEED (TYPE 250) @ 70 LBS./ACRE, FERTILIZER (TYPE 22-5-10) @ 350 LBS./ACRE, AND EROSION CONTROL BLANKET CATEGORY 3. SEE PLANS FOR LOCATIONS.
10	EXISTING DRAINTILES VARY FROM 4"-8" PLASTIC. TIE INTO NEW CULVERT WITH RIGID PLASTIC TEE WITH A CLEANOUT.
11	FILTER MATERIAL IS INCIDENTAL.
12	TIE APRONS, ALL PIPE, AND MANHOLE NO. 9 (INCIDENTAL).
13	PAYMENT BASED ON 28 FEET WIDTH, EXCESS PAVEMENT WIDTH REMOVAL BEYOND 28 FEET IS INCIDENTAL.
14	REVERSE SLOPE GUTTER.
15	AREA FOR CLEAN-UP IS FROM EXISTING MANHOLE TO EXISTING OUTLET AT APPROXIMATELY STA. 24+00 RT. SEE SPECIAL PROVISIONS.
16	FOR 48" RCP OUTFALL.

STANDARD PLATES	
THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY	
PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
3006G	GASKET JOINT FOR R.C. PIPE
3007D	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES
3040F	CORRUGATED METAL PIPE CULVERT
3100G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3123J	METAL APRON FOR C.S. PIPE
3124B	METAL APRON CONNECTION
3133C	RIPRAP AT RCP OUTLETS
3145F	CONCRETE PIPE TIES
3221C	CORRUGATED STEEL PIPE COUPLING BAND
4005L	MANHOLE OR CATCH BASIN TYPE A & B CONE SECTIONS PRECAST- DESIGN F
4006L	MANHOLE OR CATCH BASIN PRECAST - DESIGNS G AND H
4010H	CONCRETE SHORT CONE & ADJUSTING RING
4011E	PRECAST CONCRETE BASE
4020J	MANHOLE OR CATCH BASIN
4026A	CONCRETE ENCASED CONCRETE ADJUSTING RINGS
41010	RING CASTING FOR MANHOLE OR CATCH BASIN
4108F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
7065C	BITUMINOUS CURB
7102J	CONCRETE CURB AND GUTTER
8000I	STANDARD BARRICADES
9000D	APPROACHES AND ENTRANCES
9102D	TURF ESTABLISHMENT AREAS (AT PIPE CULVERT ENDS)
9350A	MAILBOX SUPPORT

STRUCTURE INDEX		
STRUCTURE	DIAMETER	CASTING ASSEMBLY
1	60"	SLOPED TRASH GUARD
2	72"	NEENAH R-2560-G
3	60"	SLOPED TRASH GUARD
4	72"	NEENAH R-2560-G
5	72"	NEENAH R-2560-G
6	72"	CITY STO STRM-1
7	72"	CITY STO STRM-1
8	72"	CITY STO STRM-2
9	72"	CITY STO STRM-2

DRAWN BY: PRM			
DESIGNER: DRH			
CHECKED BY: MJB			
DESIGN TEAM	NO.	BY	DATE
			REVISIONS

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Matthew J. Bolf, P.E.
 Date: 07/18/2012 Lic. No. 43913

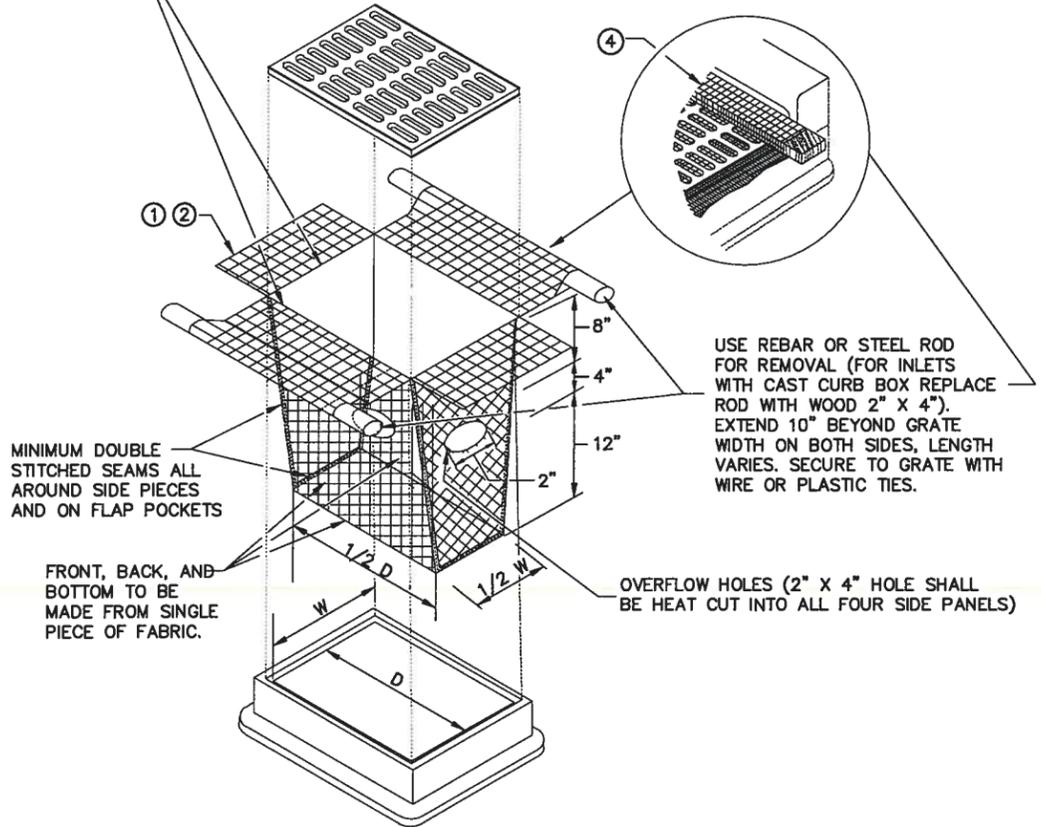


**CITY OF DULUTH
 HUTCHINSON ROAD
 CITY PROJECT NO. 1135**

STATEMENT OF ESTIMATED QUANTITIES

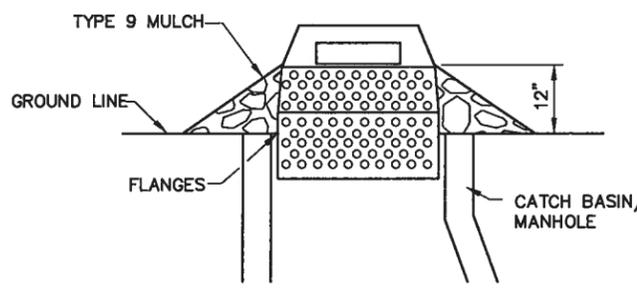
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INLET SPECIFICATIONS AS PER THE PLAN
DIMENSION LENGTH AND WIDTH TO MATCH
FLAP POCKET



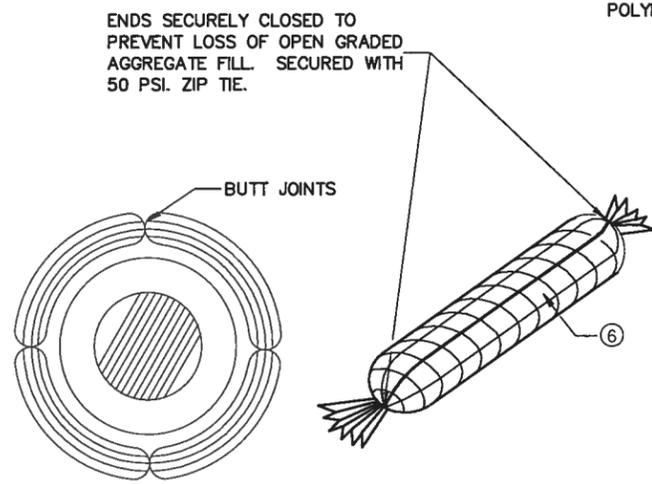
FILTER BAG INSERT ③

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



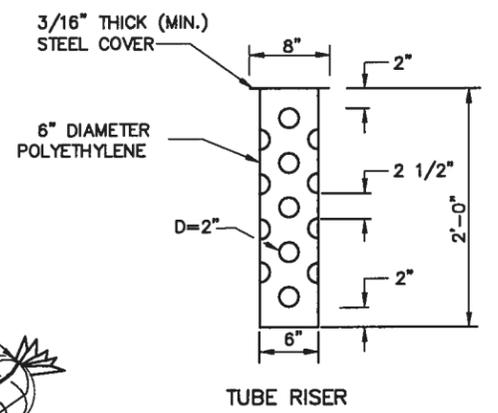
SEDIMENT CONTROL INLET HAT

NOTE:
THE SEDIMENT CONTROL BARRIER SHALL BE A METAL
OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE
THE CATCH BASIN/MANHOLE; HAVE PERFORATIONS TO ALLOW
FOR WATER INFILTRATION; HAVE AN OVERFLOW OPENING,
FLANGES AND A LID/COVER.

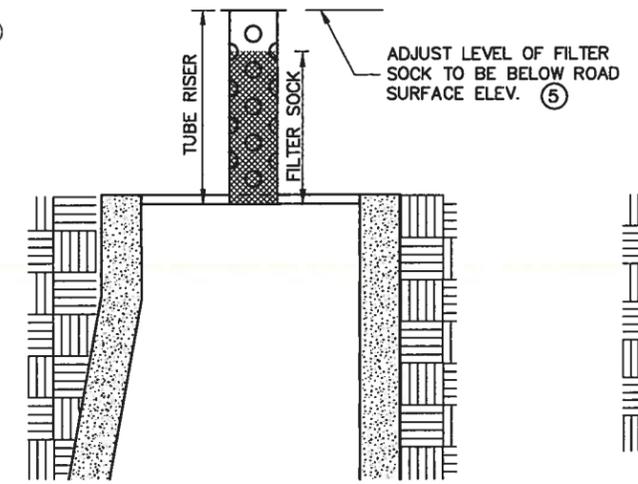


ROCK LOG/COMPOST LOG

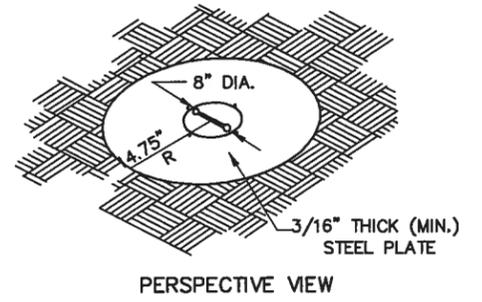
ENDS SECURELY CLOSED TO
PREVENT LOSS OF OPEN GRADED
AGGREGATE FILL. SECURED WITH
50 PSI. ZIP TIE.



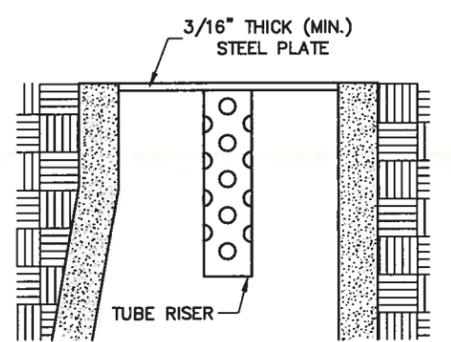
TUBE RISER



**SECTION
(UP POSITION)**

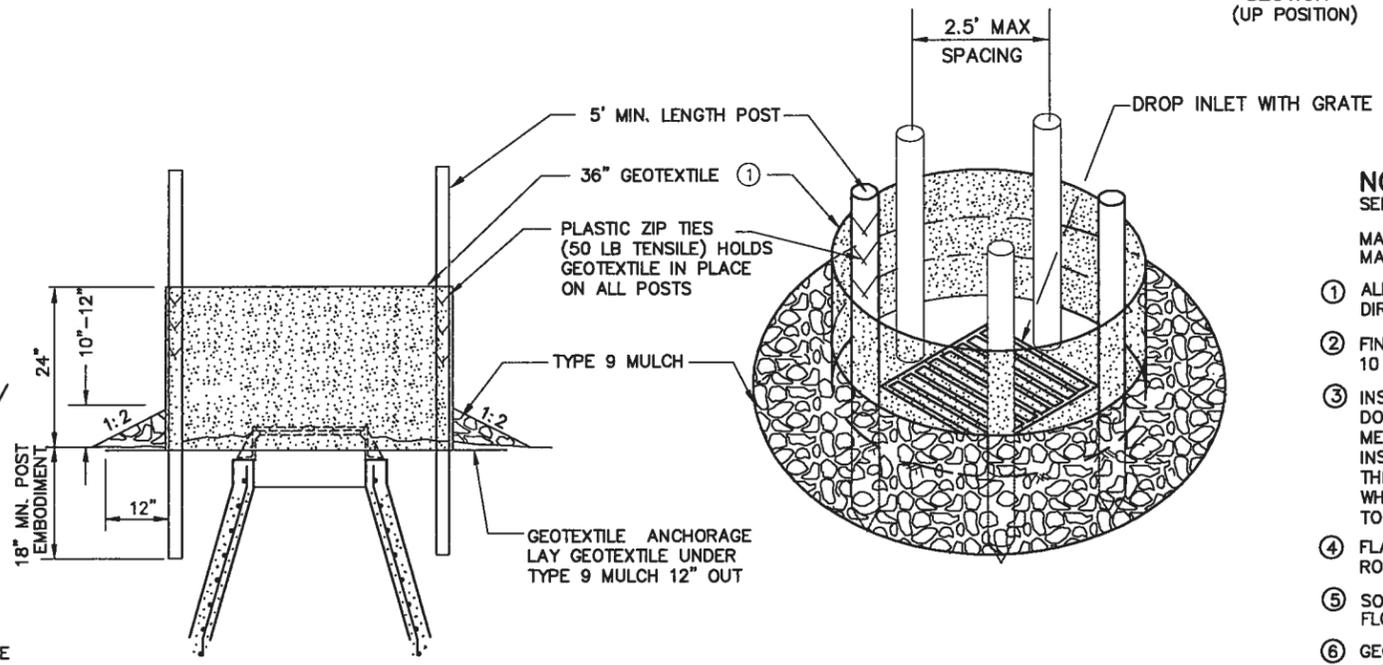


PERSPECTIVE VIEW



**SECTION
(DOWN POSITION)**

POP-UP HEAD



SILT FENCE RING AND ROCK FILTER BERM

USE WHERE INLET DRAINS IN AN AREA WITH SLOPES AT 1:3 OR LESS

NOTES:

- SEE SPECS. 2573, 3137, 3886 & 3891.
- MANUFACTURED ALTERNATIVES LISTED ON Mn/DOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.
- ① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.
- ② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ③ INSTALLATION NOTES:
DO NOT 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 CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.
- ④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.
- ⑤ SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.
- 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 3137-1; CA-3 GRADATION.

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DRAWN BY:	PRM
DESIGNER:	DRH
CHECKED BY:	MJB
DESIGN TEAM	

NO.	BY	DATE	REVISIONS

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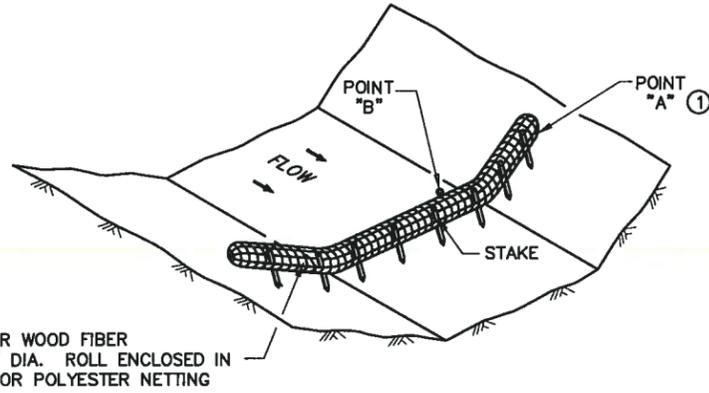
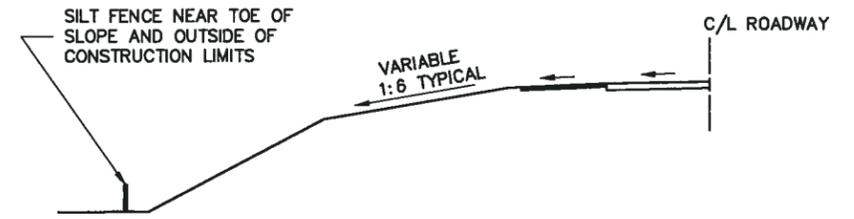
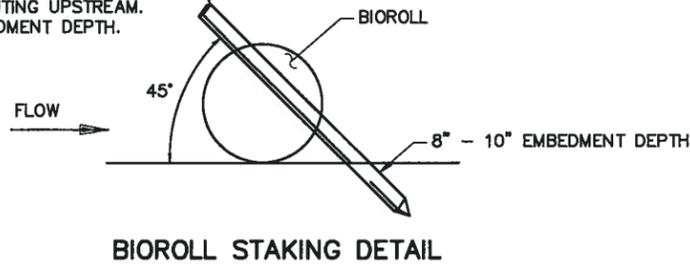
**CITY OF DULUTH
HUTCHINSON ROAD
CITY PROJECT NO. 1135**

**CONSTRUCTION DETAILS
TEMPORARY SEDIMENT CONTROL**

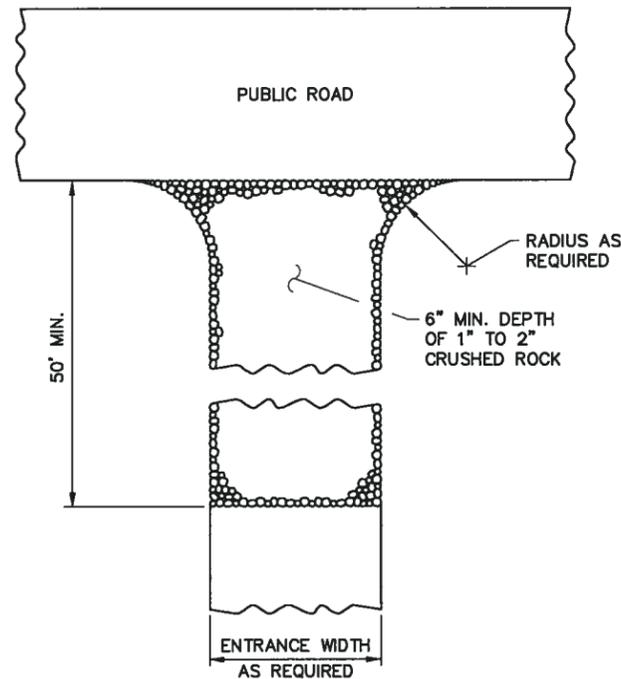
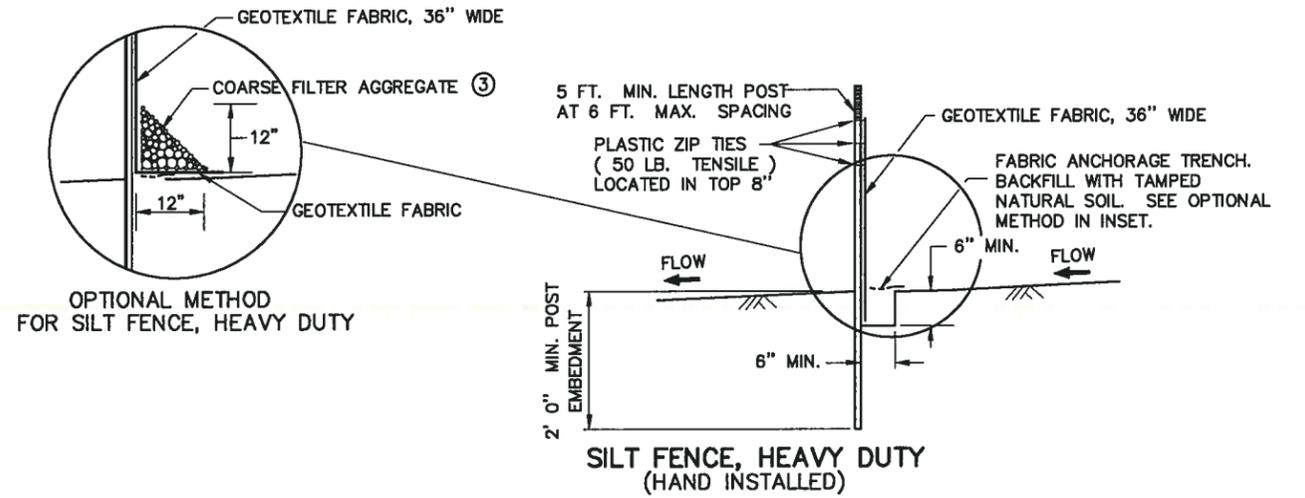
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12

1" X 2" X 18" LONG WOODEN STAKES AT 1' 0" SPACING MAXIMUM. STAKES SHALL BE DRIVEN THROUGH THE BACK HALF OF THE BIOROLL AT AN ANGLE OF 45 DEGREES WITH THE TOP OF THE STAKE POINTING UPSTREAM. PROVIDE 8" TO 10" OF EMBEDMENT DEPTH.



GENERAL DESIGN GUIDELINES	
DITCH CHECK TYPE	BIOROLL
STORM FREQUENCY:	2 YR. - 24 HR.
MAX. FLOW VELOCITY:	1.5 FT./SECOND
MAX. DITCH GRADE:	1.5% - 3%
MAX. DRAINAGE AREA:	2 ACRE



NOTES:
SEE SPECS. 2573, 3149 & 3886.
APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:
APPROXIMATE SPACING OF DITCH CHECKS (FT.) = $Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\% \text{ CHANNEL SLOPE}} \times 100$
① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.
② ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE TRUCKS ENTER MAIN ROAD. KEEPING MUD OFF THE ROAD WILL PREVENT AUTO DAMAGE AND KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS. GEOTEXTILE MAY BE PLACED UNDER THE ROCK TO KEEP ROCKS SEPARATE FROM SOIL.
③ COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

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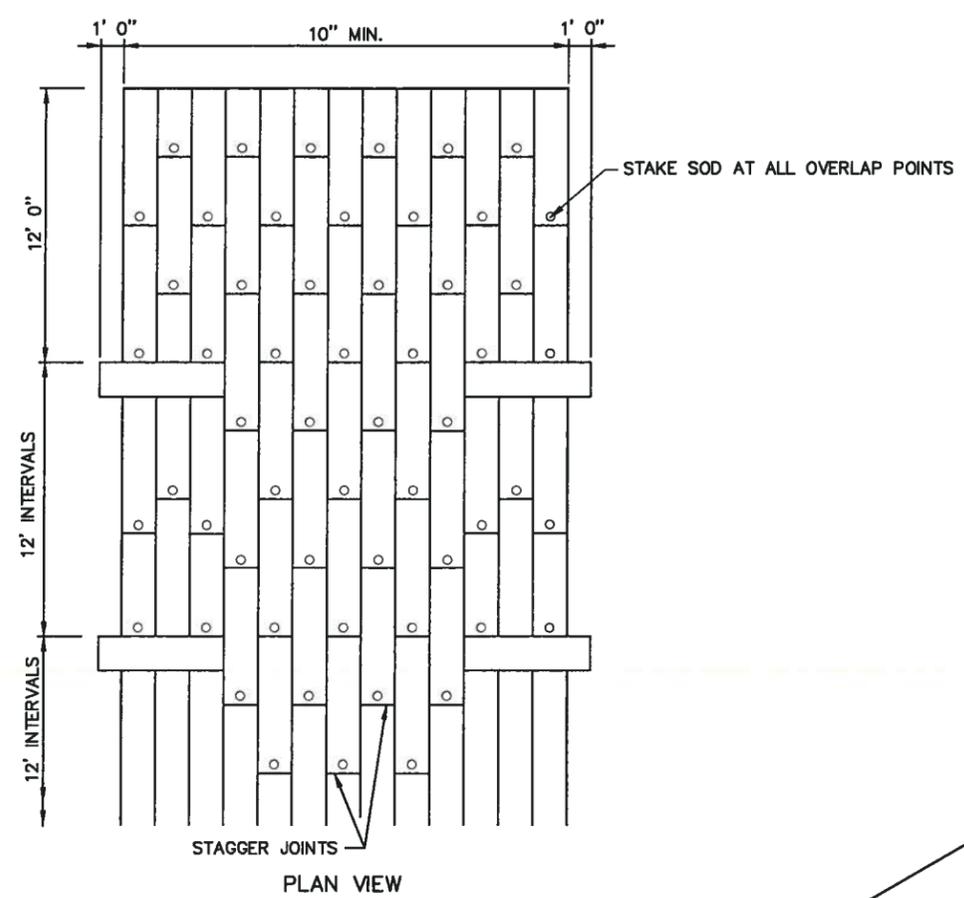
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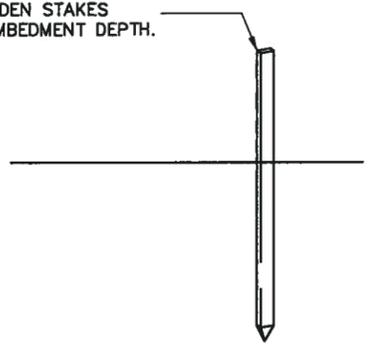
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HUTCHINSON ROAD
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CONSTRUCTION DETAILS
TEMPORARY SEDIMENT CONTROL

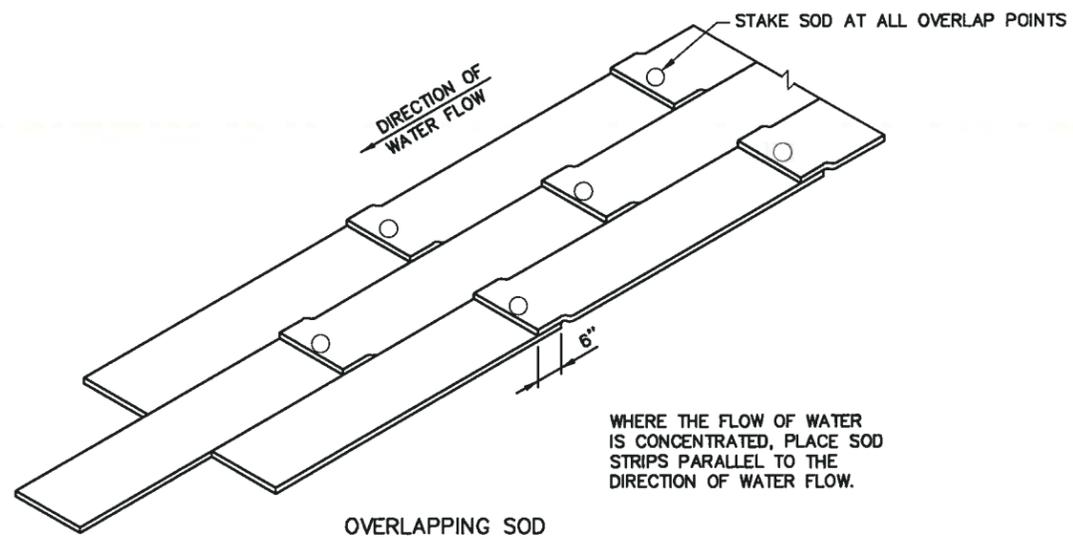
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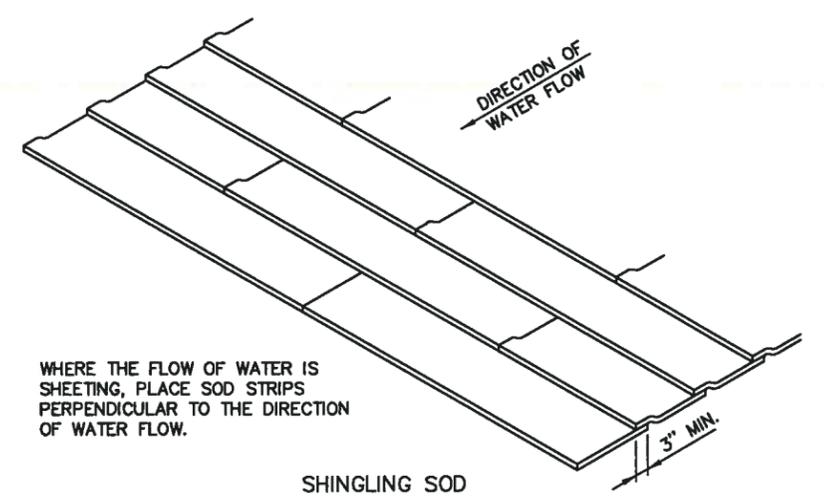
1" X 2" X 18" LONG WOODEN STAKES
PROVIDE 8" TO 10" OF EMBEDMENT DEPTH.



SOD STAKING DETAIL



OVERLAPPING SOD

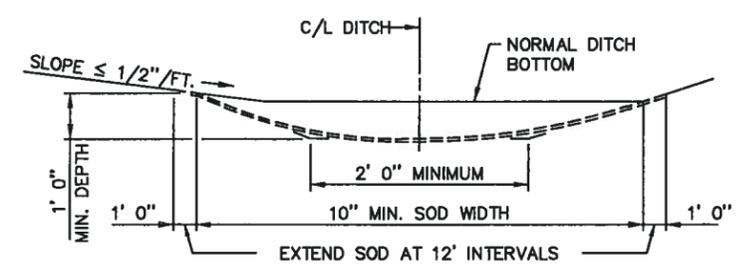


SHINGLING SOD

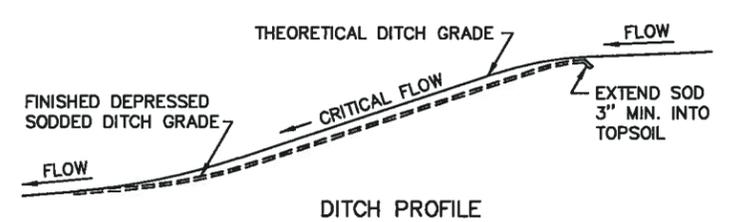
SPECIAL SOD PLACEMENT TECHNIQUES

WHERE THE FLOW OF WATER IS CONCENTRATED, PLACE SOD STRIPS PARALLEL TO THE DIRECTION OF WATER FLOW.

WHERE THE FLOW OF WATER IS SHEETING, PLACE SOD STRIPS PERPENDICULAR TO THE DIRECTION OF WATER FLOW.



SODDED DITCH CROSS SECTION
WHERE FRONT OR BACK SLOPE IS FLAT (LESS THAN 1/2"/FT.), FIRST NOTCH DITCH AND THEN PROVIDE ROUNDING.



DITCH PROFILE
SODDED DITCH DETAILS

NOTES:
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.

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DESIGNER: DRH				
CHECKED BY: MJB				
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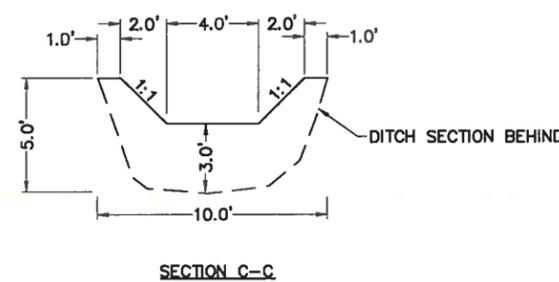
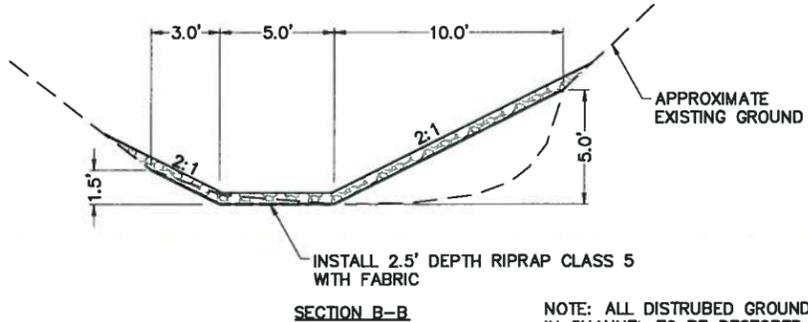
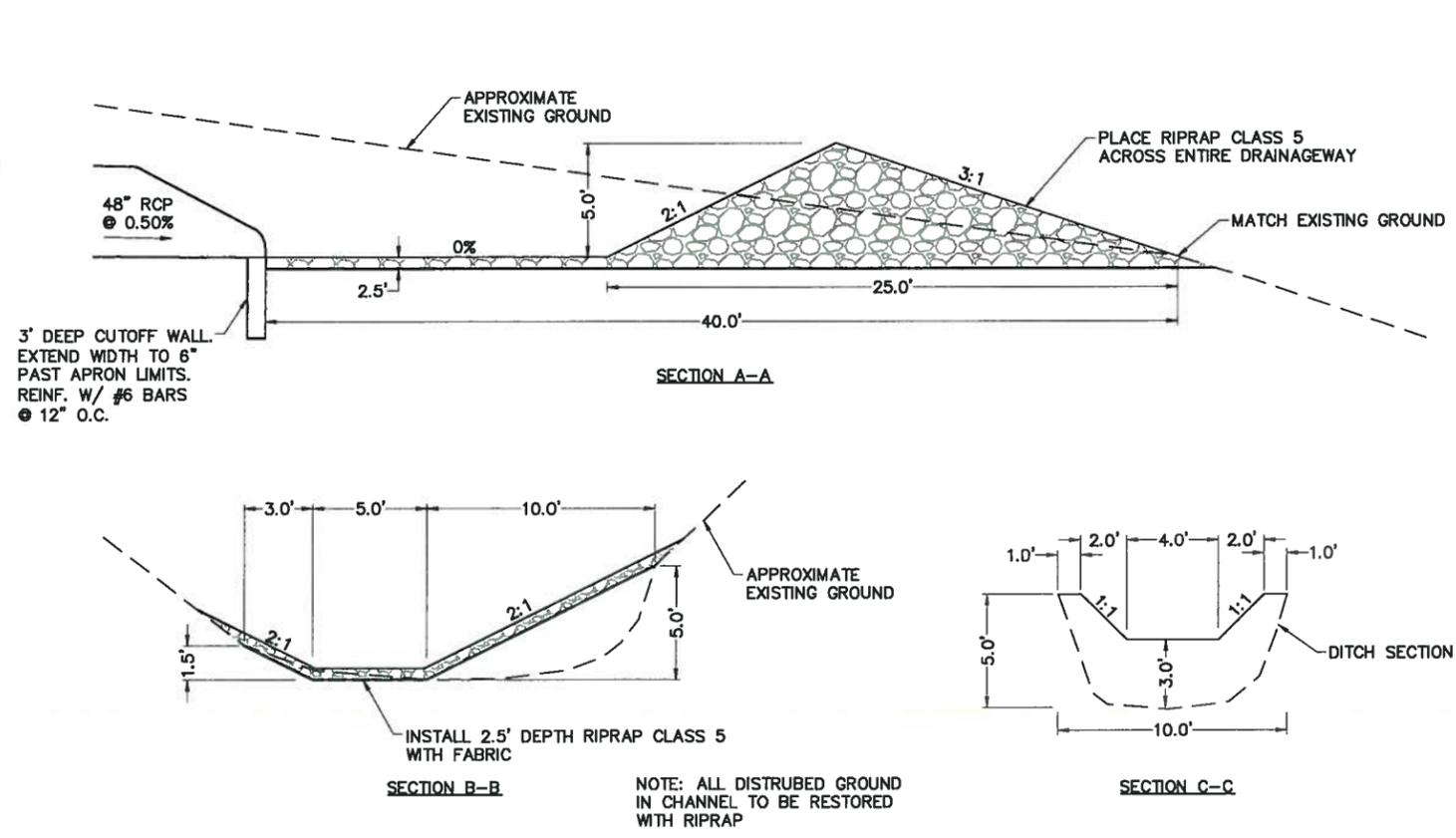
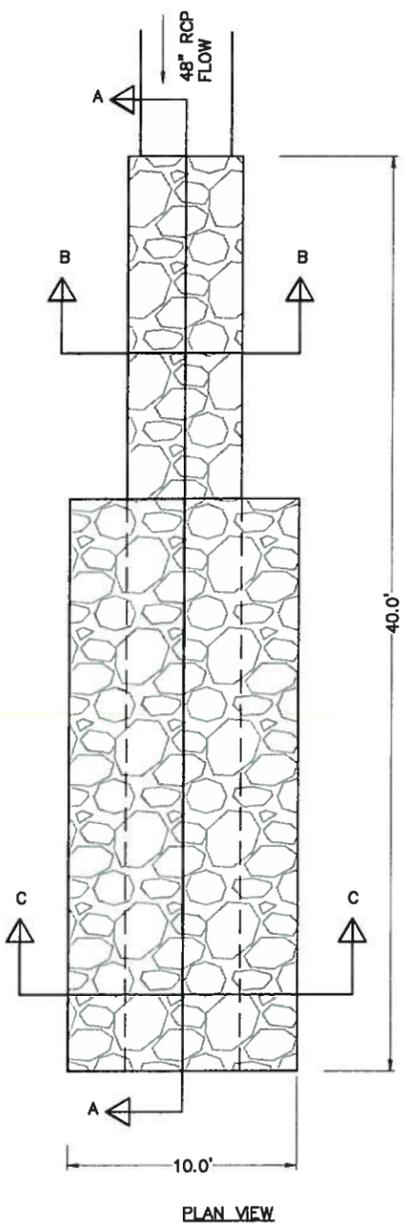
Matthew J. Baf
Matthew J. Baf, P.E.
Date: 07/18/2012 Lic. No. 43913

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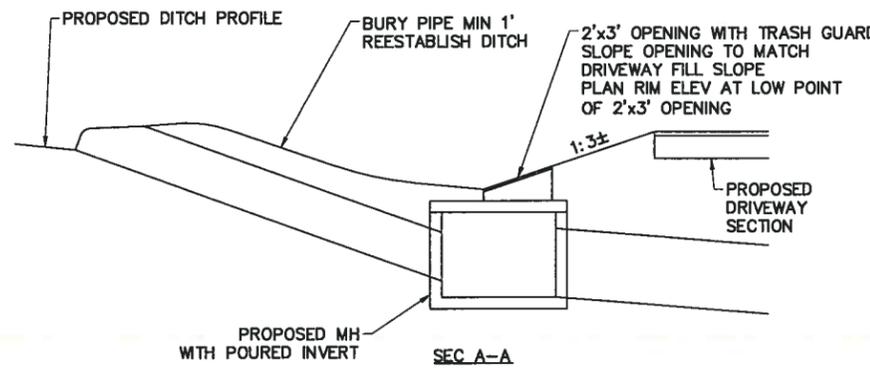
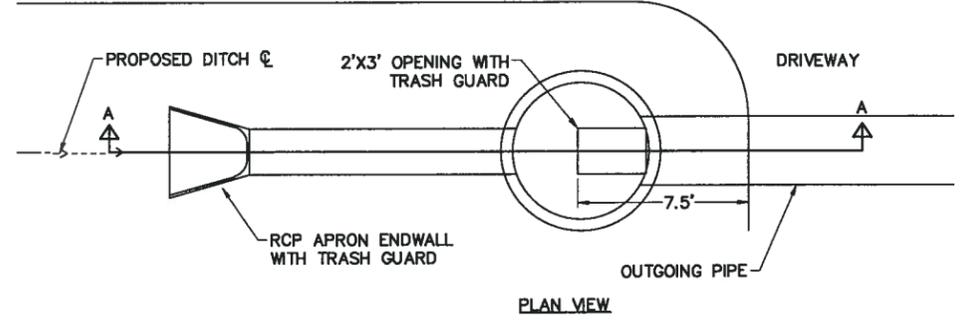
CITY OF DULUTH
HUTCHINSON ROAD
CITY PROJECT NO. 1135

CONSTRUCTION DETAILS
PERMANENT EROSION CONTROL

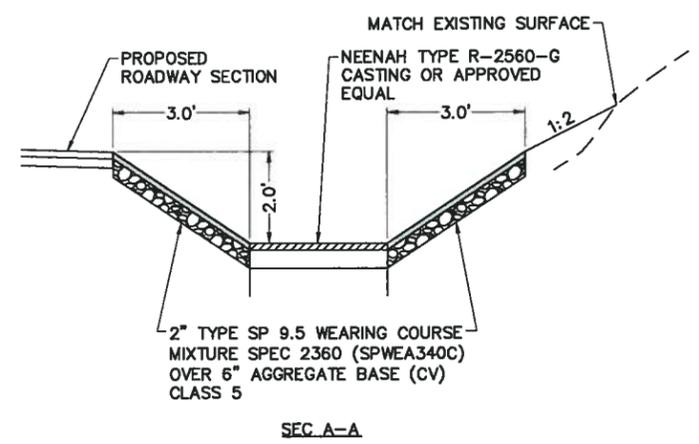
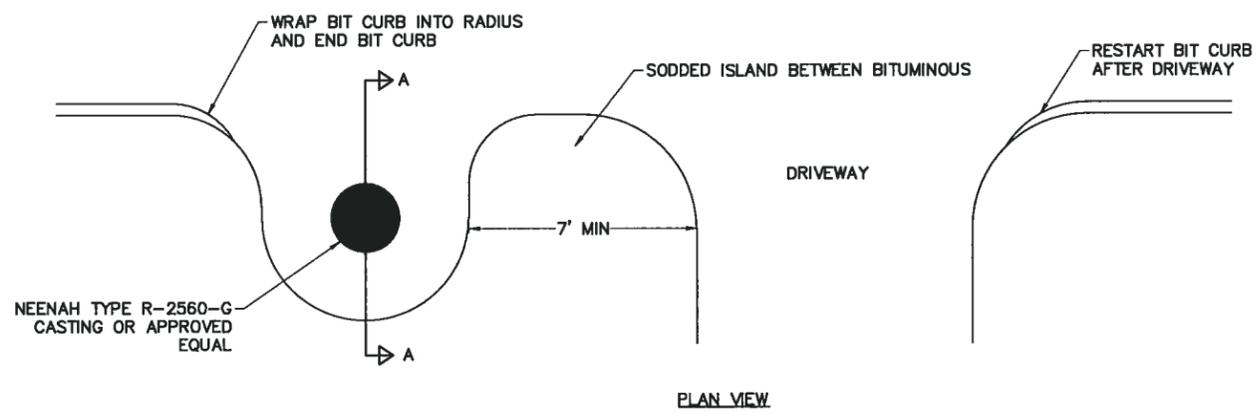
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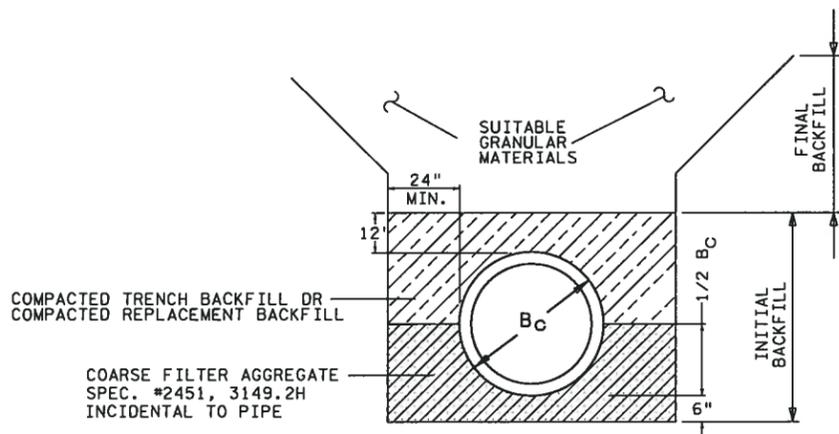
OUTFALL STABILIZATION DETAIL



DITCH APRON WITH OVERFLOW



ROADSIDE INLET DETAIL



- NOTES:
1. IN ROCK TRENCHES, MIN. ϕ IS 6" BELOW PIPE BELL AND MIN. TRENCH WIDTH IS 36".
 2. SUBSTITUTE CRUSHED ROCK PIPE FOUNDATION FOR GRANULAR PIPE FOUNDATION IN WET TRENCH CONDITIONS.

PIPE BEDDING DETAIL

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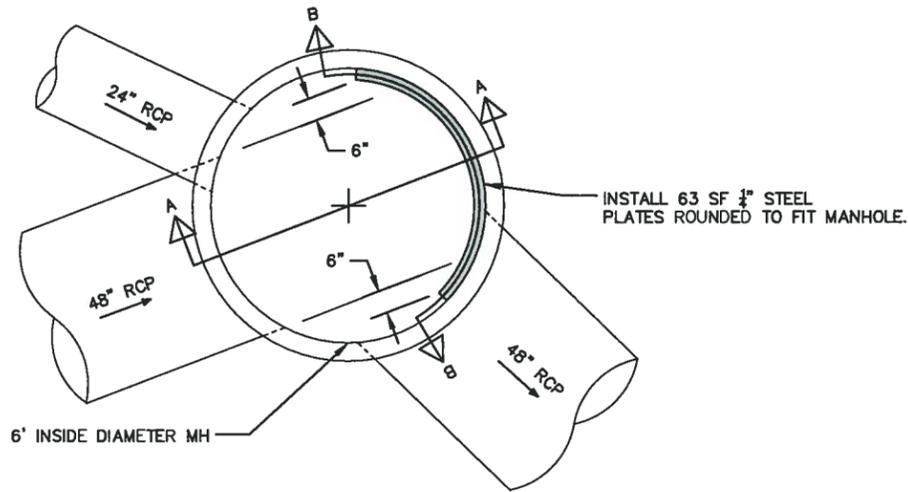
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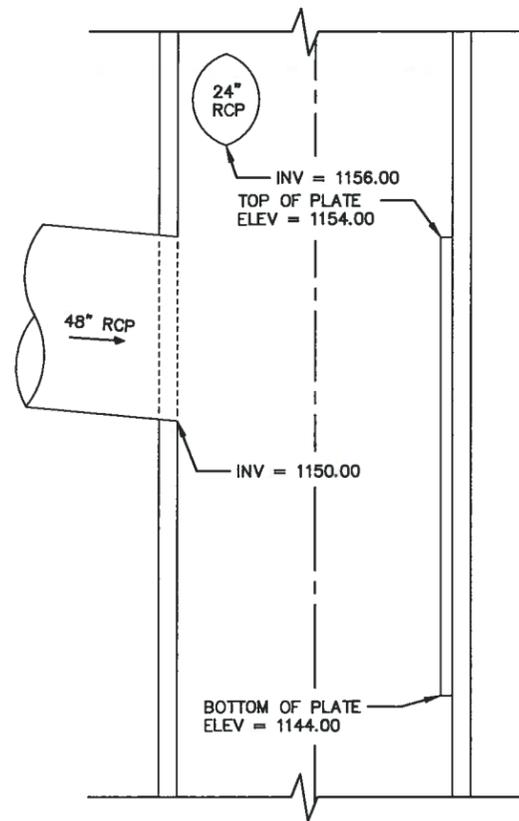
CONSTRUCTION DETAILS

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DULUT 121350

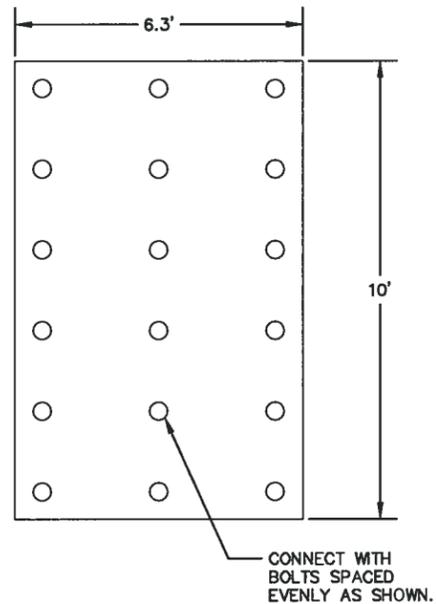
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PLAN VIEW

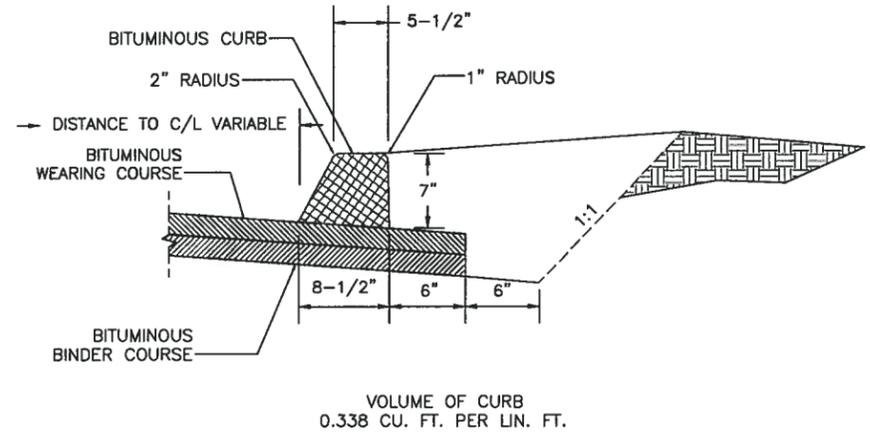


SECTION A-A

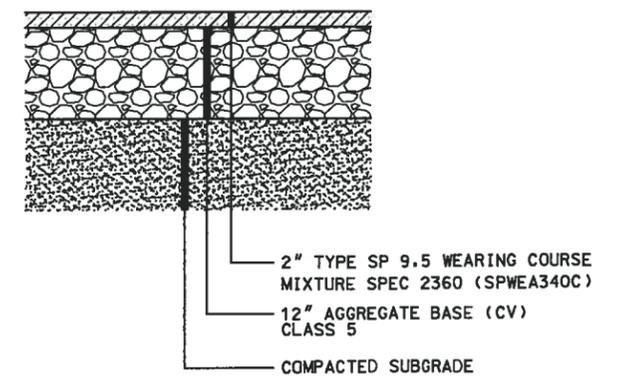


SECTION B-B

MANHOLE PLATE DETAIL

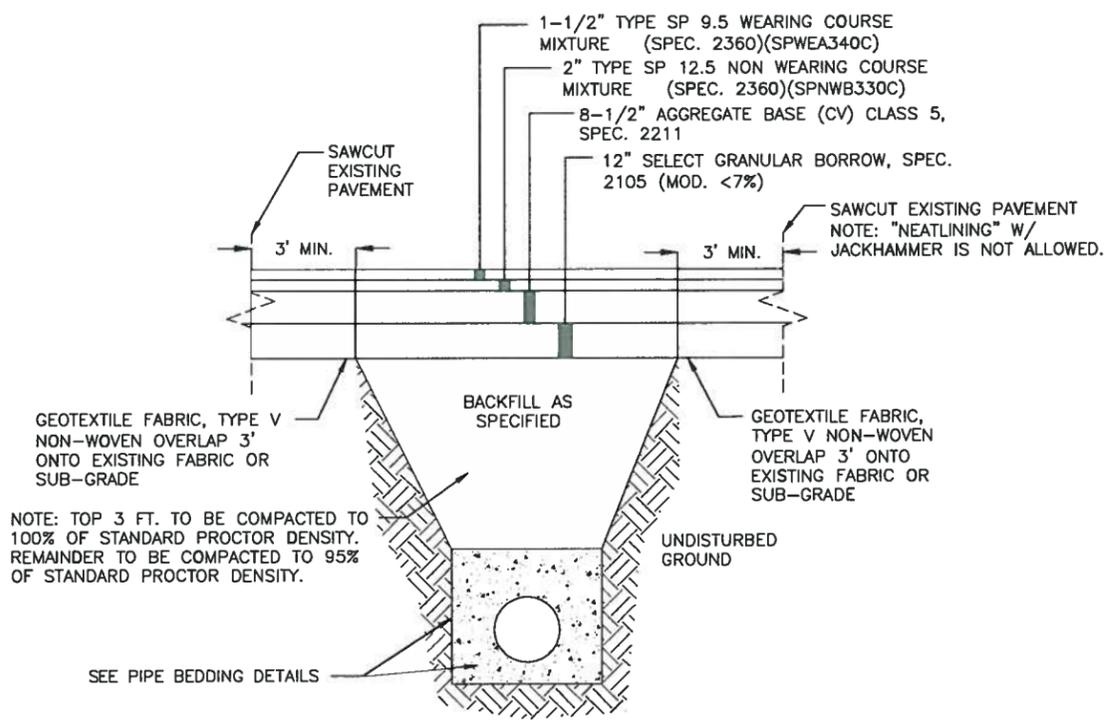


BITUMINOUS CURB
NTS



DRIVEWAY RESTORATION DETAIL
NTS

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STREET RESTORATION OVER TRENCH
NTS

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Date: 07/18/2012 Lic. No. 43913

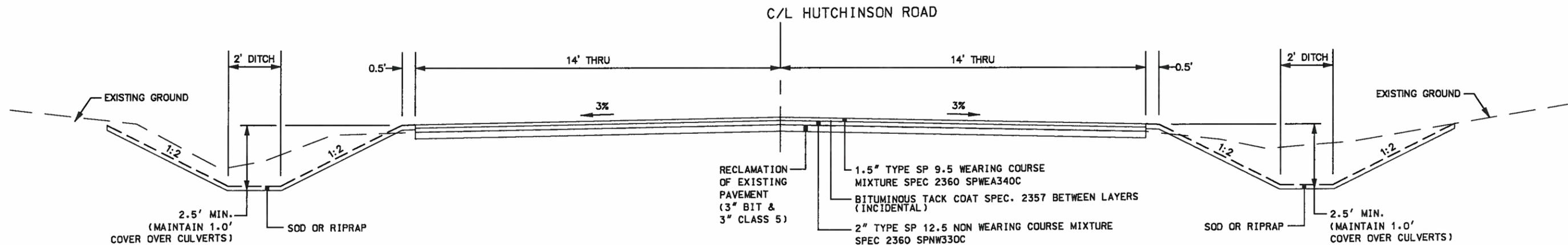
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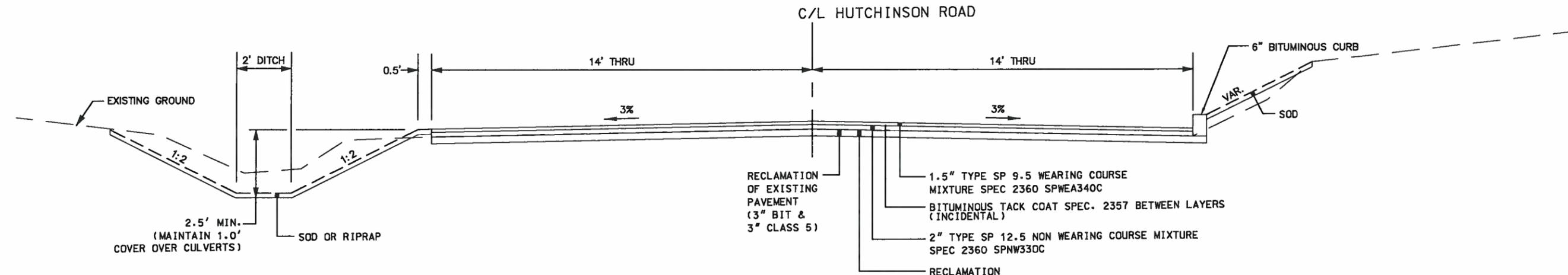
CONSTRUCTION DETAILS

FILE NO.
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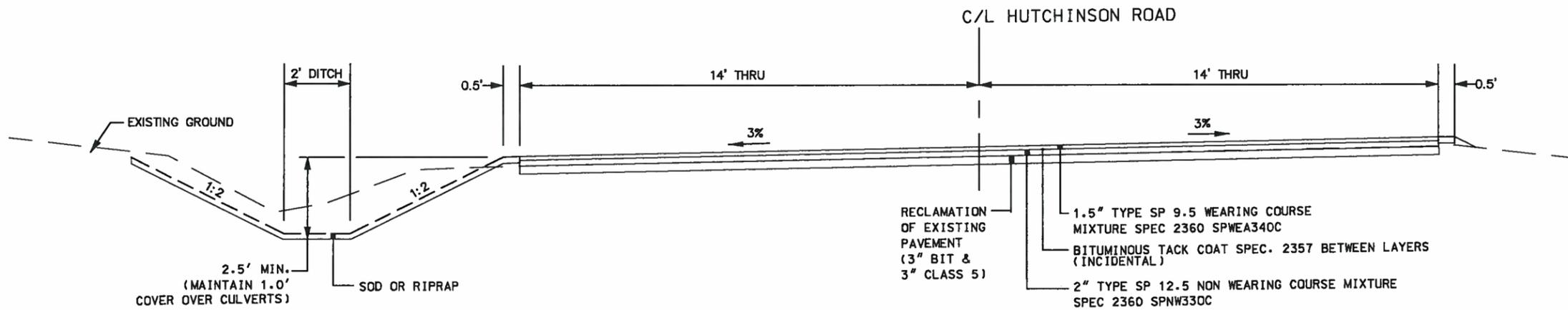
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TYPICAL ROADWAY SECTION - HUTCHINSON ROAD
STA 10+10 - STA 16+80



TYPICAL ROADWAY SECTION - BITUMINOUS CURB
STA 16+80 - STA 22+00



TYPICAL ROADWAY SECTION - SUPERELEVATION
STA 23+50 - STA 24+35

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Matthew J. Bolf
Matthew J. Bolf, P.E.
Date: 07/16/2012 Lic. No. 43913

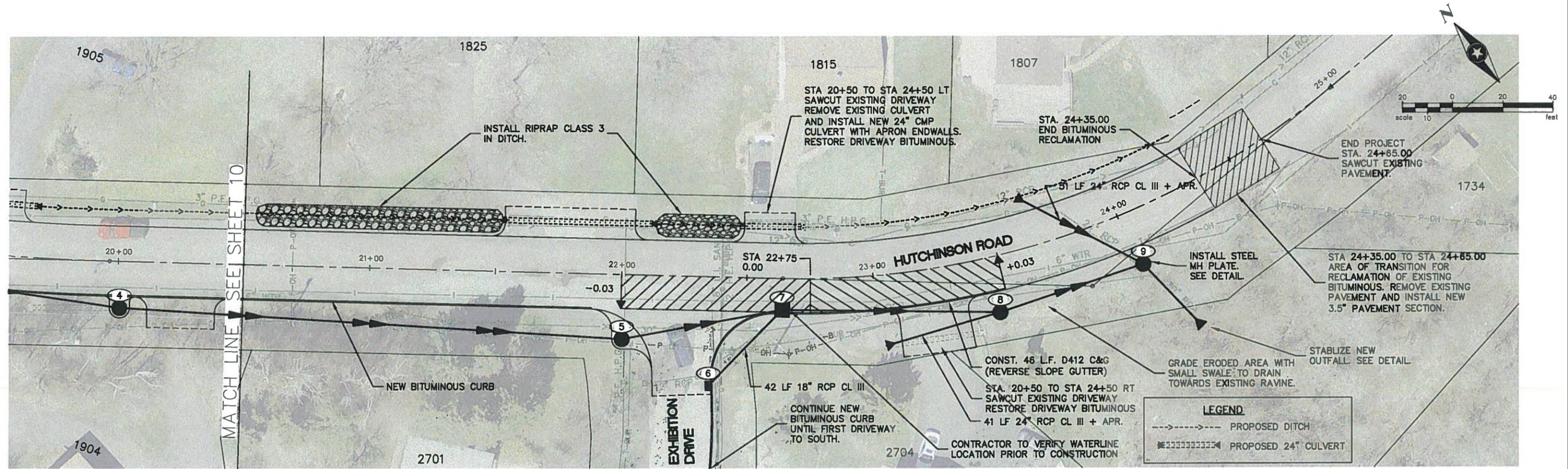
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TYPICAL SECTION

FILE NO.
DULUT 121350

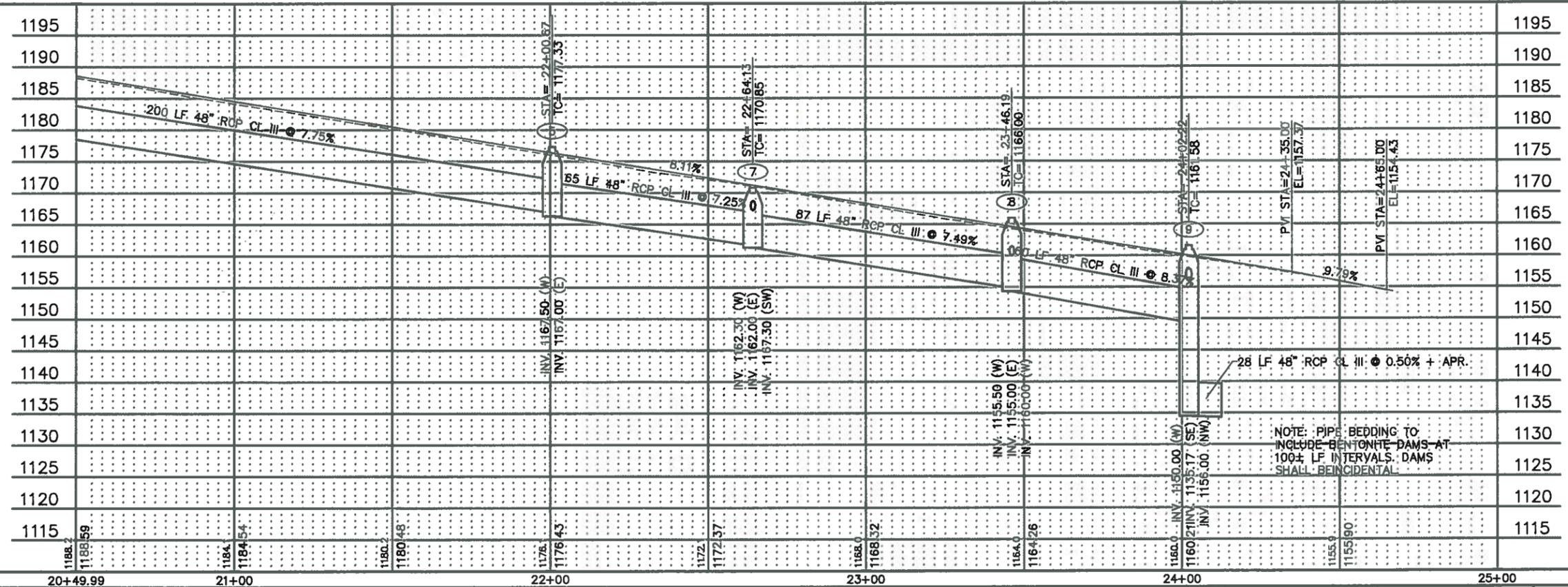
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HUTCHINSON ROAD

BENCHMARK EL. DESCRIPTION

BENCHMARK EL. DESCRIPTION



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DESIGNER:	DRH
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DESIGN TEAM	

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Matthew J. Bolz, P.E.
Date: 07/18/2012 Lic. No. 43913

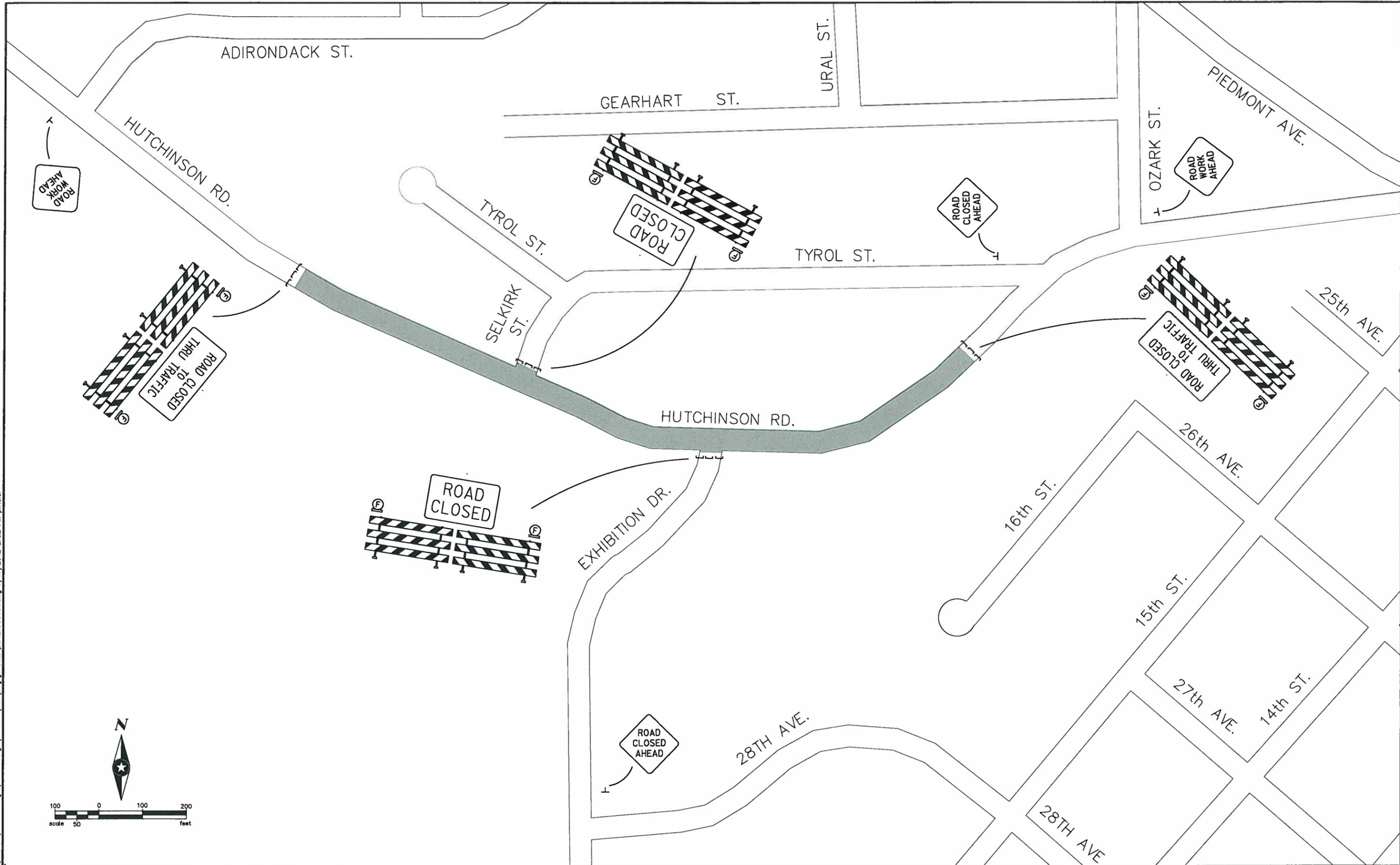
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PLAN AND PROFILE
HUTCHINSON ROAD REPAIR

FILE NO. 11
DULUTH 121350 12

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 Matthew J. Bolf, P.E.
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TRAFFIC CONTROL

FILE NO. **12**
 DULUT 121350 **12**