

PLAN LEGEND

RIGHT OF WAY LINE	---
DITCH CENTERLINE	---
FENCE LINE	---
RETAINING WALL	---
GRAVEL LINE	---
GUARD RAIL LINE	---
RAILROAD TRACK LINE	---
ROAD CENTERLINE	---
TREE LINE	---
STREAM LINE	---
WETLAND LINE	---
EX SANITARY LINE	---
PR SANITARY LINE	---
AB SANITARY LINE	---
EX FORCEMAIN LINE	---
PR FORCEMAIN LINE	---
AB FORCEMAIN LINE	---
EX STORM LINE	---
PR STORM LINE	---
AB STORM LINE	---
EX WATER LINE	---
PR WATER LINE	---
AB WATER LINE	---
EX GAS LINE	---
PR GAS LINE	---
AB GAS LINE	---
EX STEAM LINE	---
PR STEAM LINE	---
AB STEAM LINE	---
UG CABLE TV LINE	---
AB CABLE TV LINE	---
UG ELECTRIC LINE	---
AB ELECTRIC LINE	---
UG FIBEROPTIC LINE	---
AB FIBEROPTIC LINE	---
UG TELEPHONE LINE	---
AB TELEPHONE LINE	---
OH ELECTRIC LINE	---
OH TELEPHONE LINE	---
OH CABLE TV LINE	---

SYMBOLS

EX SANITARY MANHOLE	(SAN)
EX SANITARY CLEANOUT	(X)
EX STORM MANHOLE	(STRM)
EX STORM CATCHBASIN	(W)
EX WATER MANHOLE	(W)
EX WATER VALVE	(V)
EX WATER HYDRANT	(H)
EX WATER SHUTOFF	(S)
EX WATER & GAS MH	(W&G)
EX GAS MANHOLE	(GAS)
EX GAS VALVE	(V)
EX GAS SHUTOFF	(S)
EX STEAM MANHOLE	(STEAM)
EX TELEPHONE MANHOLE	(T)
EX ELECTRIC MANHOLE	(E)
EX POWERPOLE	(P)
EX LIGHT POLE	(L)
EX ELECTRIC VAULT	(V)
EX ANCHOR	(A)
EX ELECTRIC TRANSFORMER	(ET)
EX STREET LIGHT	(SL)
EX SIGNAL W/ STREET LIGHT	(S)
EX HANDHOLE	(H.H.)
EX TELEPHONE PEDESTAL	(P)
EX WELL	(W)
BENCHMARK	(B)
FOUND CI MONUMENT	(M)
EX SIGN	(S)
CONTROL POINT	(C)
EX DECIDUOUS TREE	(D)
EX CONIFEROUS TREE	(C)
EX PARKING METER	(P)
EX SOIL BORING	(SB#) (ELEV.)

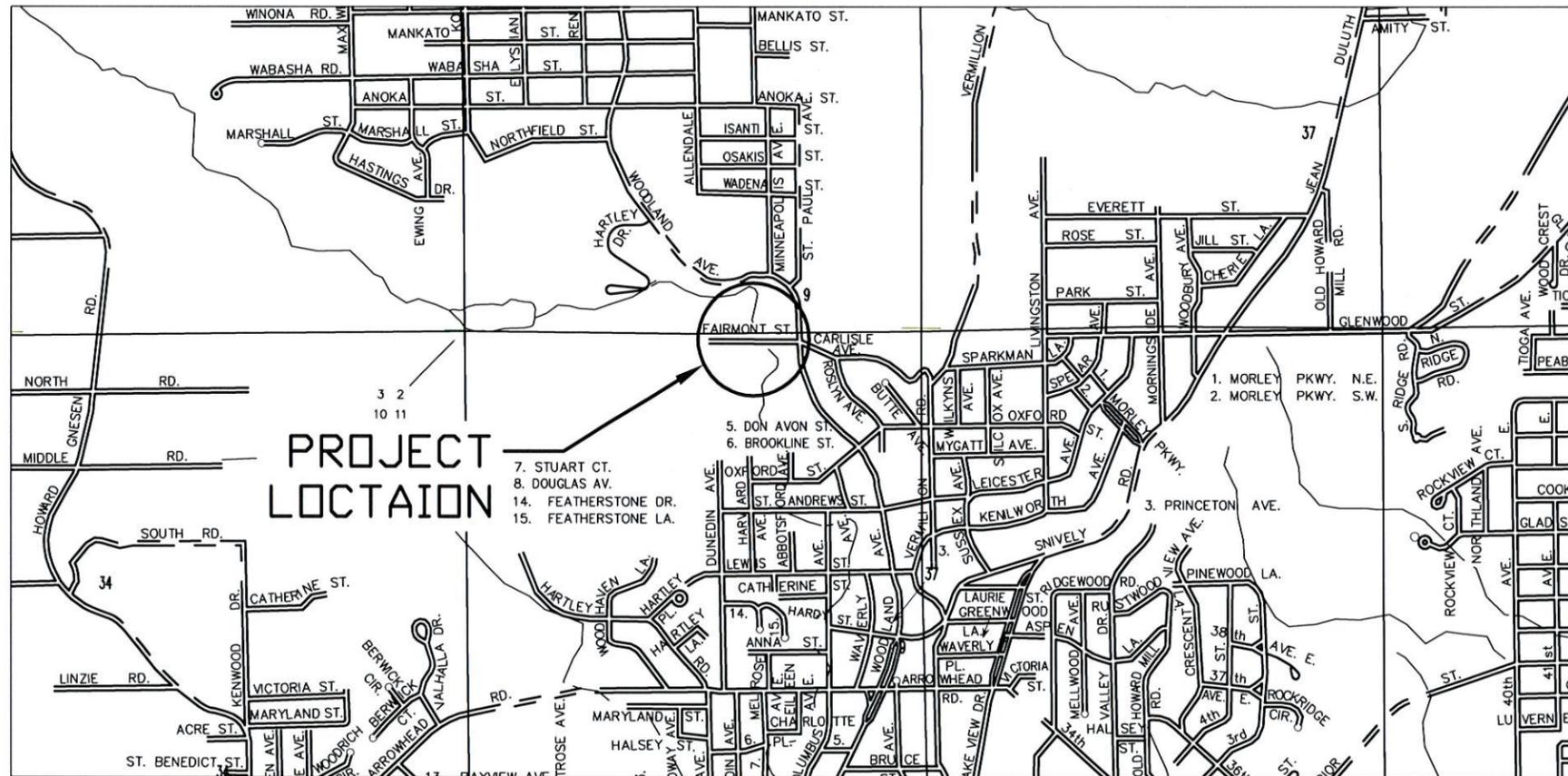
CITY OF DULUTH

DEPARTMENT OF PUBLIC WORKS AND UTILITIES ENGINEERING DIVISION

CONSTRUCTION PLANS FOR:

FAIRMONT STREET WATER MAIN REPLACEMENT

CITY PROJECT NO. 1333



PROJECT LOCATION



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

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

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/index.html>

THE 2360 PLANT MIXED ASPHALT PAVEMENT SPECIFICATION DATED 01/23/2013 SHALL APPLY. AVAILABLE AT: <http://www.dot.state.mn.us/materials/bituminous.html>

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MN MUTCD, INCLUDING THE FIELD MANUAL DATED JANUARY 2014. AVAILABLE AT: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual/index.html>

THE 2013 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT STANDARD CONSTRUCTION SPECIFICATIONS AND SUPPLEMENTS OR ADDENDUMS SHALL APPLY. AVAILABLE AT: <http://www.duluthmn.gov/engineering/standard-construction-specifications/>

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SEQ & STANDARD DETAIL
3	STANDARD DETAILS
4	CONNECTION DETAIL
5	PLAN & PROFILE
6	

THIS PLAN CONTAINS 6 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.

Tim Sanders 7/10/15
TIM SANDERS, P.E. DATE LIC. NO. 50401

CITY APPROVAL
[Signature] 7/20/15
APPROVED CHIEF ENGINEER OF TRANSPORTATION DATE

[Signature] 7/20/15
APPROVED CHIEF ENGINEER OF UTILITIES DATE

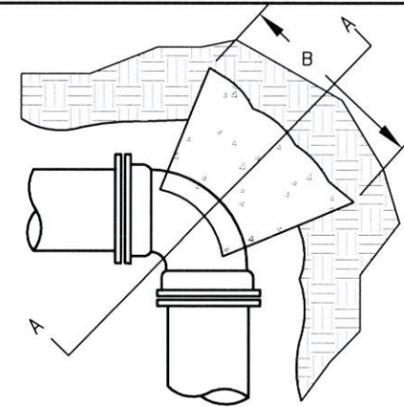
[Signature] 7/20/15
APPROVED CITY ENGINEER DATE

STATEMENT OF ESTIMATED QUANTITIES

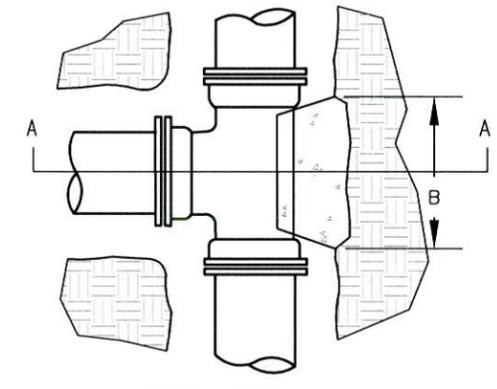
NOTES	ITEM NUM	SPEC NUM	DESCRIPTION	UNIT	QUANTITY
	1	2021.501	MOBILIZATION	LS	1
	2	2104.505	REMOVE BITUMINOUS PAVEMENT	SY	80
	3	2104.513	SAWING BIT PAVEMENT (FULL DEPTH)	LF	88
	4	2104.525	ABANDON EXISTING WATER MAIN	EACH	1
	5	2211.502	AGGREGATE BASE CLASS 5 (LV)	CY	20
1	6	2360.503	TYPE SP 9.5 WEARING COURSE MIXTURE (3, B) 3.5" THICK	SQ YD	80
	7	2451.607	FURNISH GRANULAR BACKFILL (CV)	CY	65
	8	2504.602	CONNECT 8" HDPE TO EXISTING 6" CI WATER MAIN	EACH	2
	9	2504.602	WATER TRACER BOX	EACH	2
	10	2504.603	8" HDPE WATER MAIN SDR11 (DIRECTIONAL DRILL)	LF	185
	11	2504.603	6" DI WATER MAIN	LF	28
	12	2563.601	TRAFFIC CONTROL	LS	1
2	13	2574.508	FERTILIZER, TYPE 1	LB	4
	14	2574.525	COMMON TOPSOIL BORROW	CY	5
	15	2575.523	EROSION CONTROL BLANKET CATEGORY 3	SY	50
	16	2575.501	SEEDING	ACRE	0
3	17	2575.502	SEED MIXTURE 36-311	LB	2

NOTES:

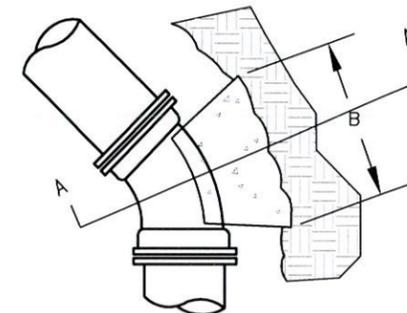
- 1 ASPHALT SHALL BE PLACED IN 2 LIFTS; A 2" BASE LIFT AND A 1.5" SURFACE LIFT.
- 2 APPLIED AT A RATE OF 400 POUNDS PER ACRE.
- 3 SPREAD AT A RATE OF 125 POUNDS PER ACRE.



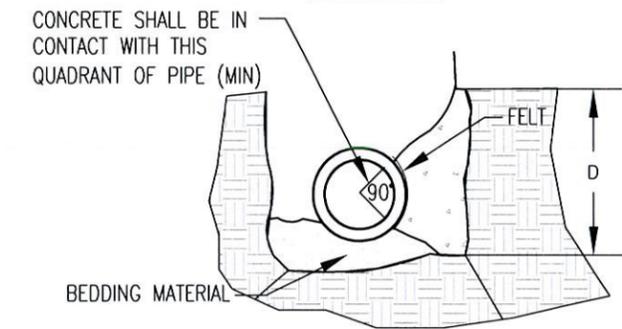
PLAN - 90° BEND



PLAN - TEE



PLAN - 45° BEND



SECTION A-A

NOTES

1. DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. & AN EARTH RESISTANCE OF 2 TONS/S.F.
2. BLOCKING TO BE SET AGAINST UNDISTURBED SOIL.
3. CONCRETE SHALL BE TYPE 3 GRADE B. (MNDOT SPEC. 2461) CONCRETE SHALL NOT INTERFERE WITH MECHANICAL JOINTS.
4. POLYETHYLENE SHALL BE USED TO SEPARATE CONCRETE FROM FITTING.
5. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

BEND OR BRANCH SIZE	BLOCKING DIMENSIONS							
	22-1/2" BENDS		45° BENDS		90° BENDS		TEES	
	B	D	B	D	B	D	B	D
0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"	1'-3"	1'-0"
0'-8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"	1'-6"	1'-4"
1'-0"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"	2'-0"
1'-4"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"	3'-2"	2'-4"
1'-8"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	4'-0"	3'-0"
2'-0"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	5'-3"	3'-4"
2'-6"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	6'-3"	4'-3"

THRUST BLOCKING FOR WATERMAIN

W-3

REVISED/APPROVED 2/01/2013

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

NO SCALE

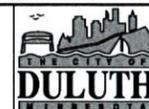
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DATE: 7/10/2015

SIGNATURE: Tim Sanders

TIM SANDERS, P.E.
TYPE NAME

LIC. NO: 50401



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

FAIRMONT ST WATER MAIN REPLACEMENT

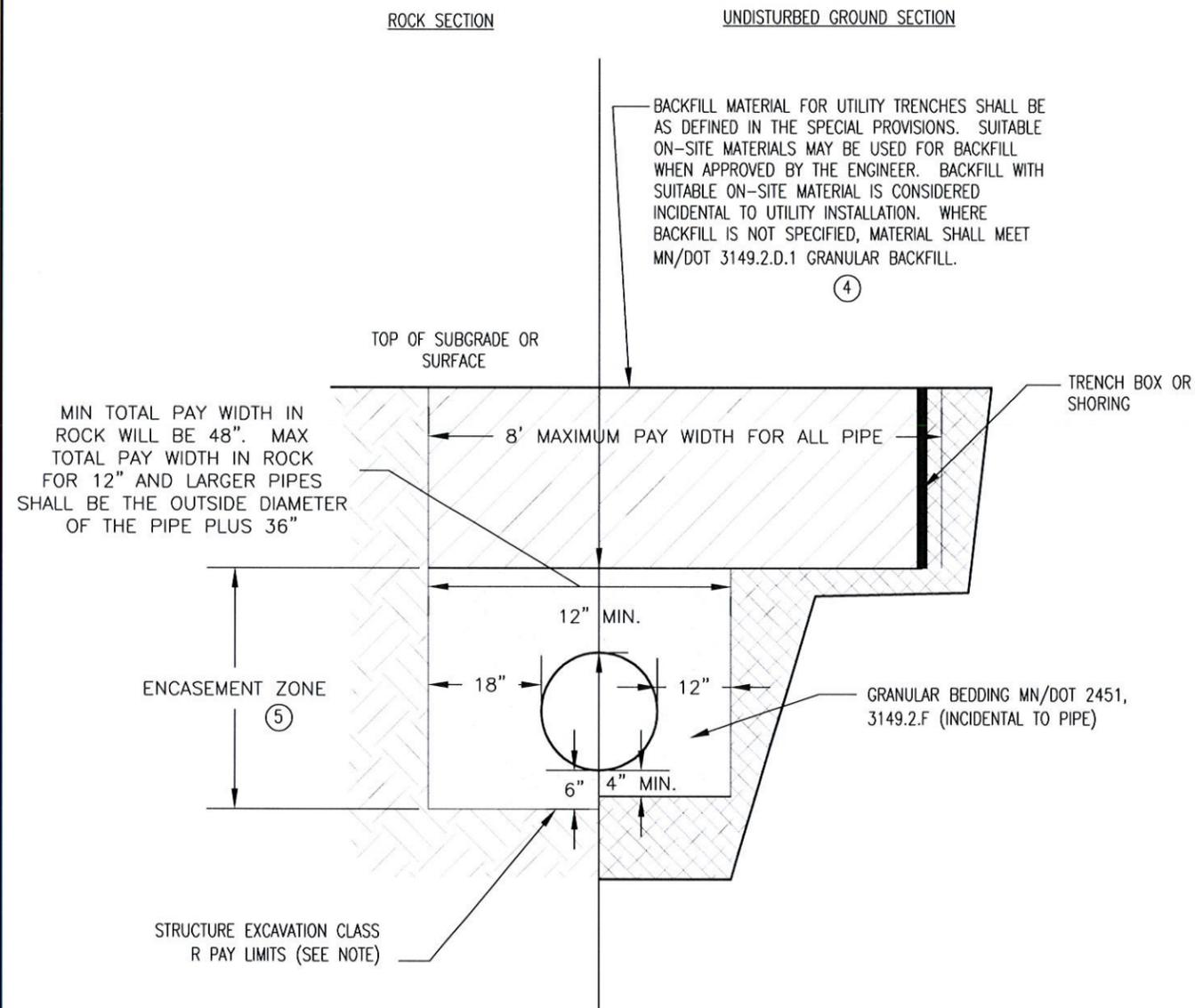
DRAWN BY: **JJM**

SEQ & STANDARD DETAILS

CITY PROJECT NO.: **1333**

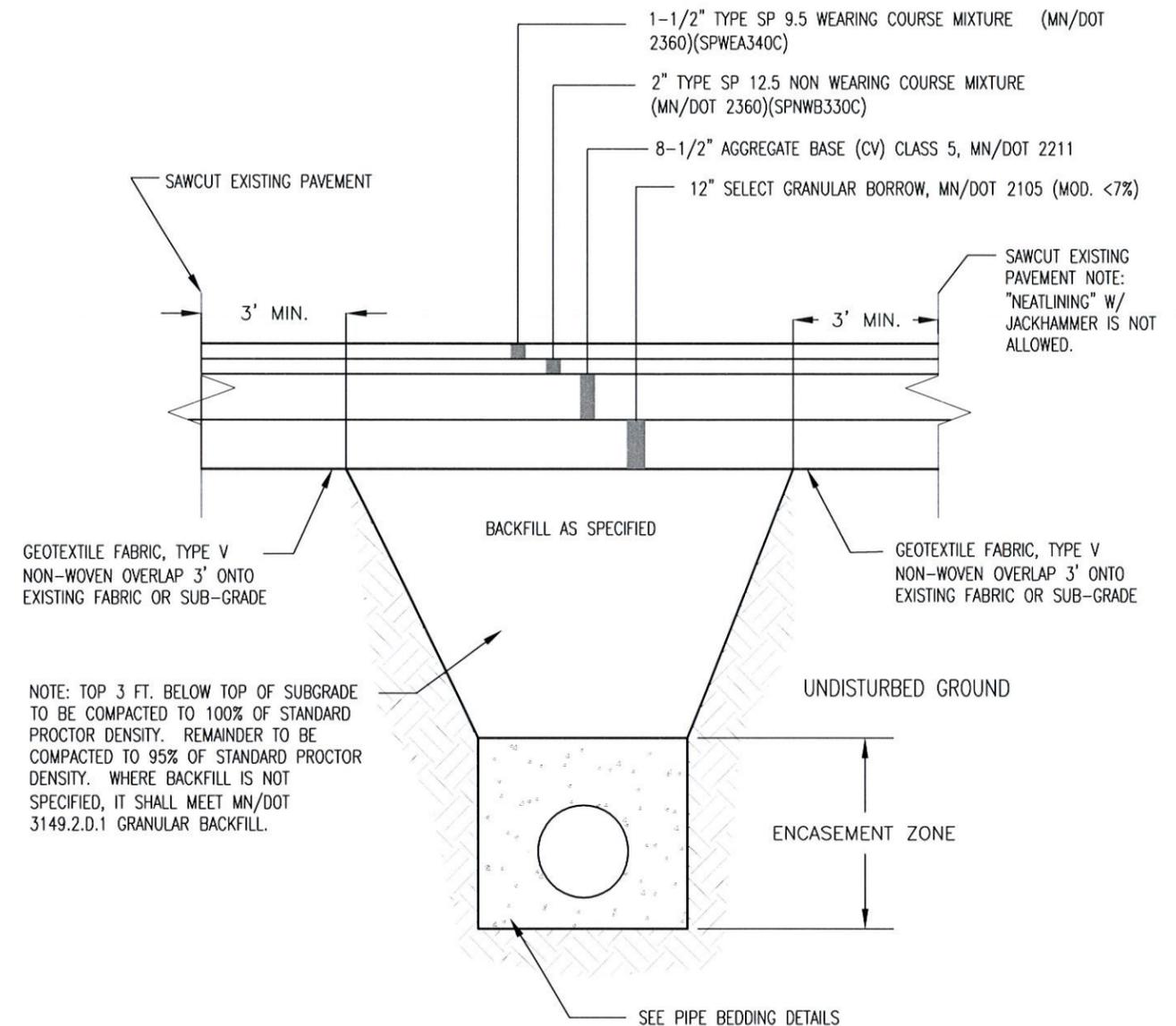
STATE AID PROJECT NO.:

SHEET NO. **2** OF **6**



NOTES:

1. TRENCH STABILIZATION MATERIAL MAY BE USED IN AREAS AS DETERMINED BY THE ENGINEER.
2. A MIN. OF 1 CU. YD. OF STRUCTURE EXCAVATION, CLASS R, WILL BE PAID FOR EVERY 10' OF PIPE WHERE ROCK REMOVAL IS REQUIRED.
3. EXCESS EXCAVATION MATERIAL SHALL BE DISPOSED OF OFF PROJECT R.O.W. (INCIDENTAL)
4. ABOVE THE PIPE ENCASEMENT ZONE, COMPACT BACKFILL MATERIALS TO MEET 100% OF MAXIMUM STANDARD PROCTOR DENSITY FOR THE UPPER 3' BELOW THE TOP OF SUBGRADE; AND 95% OF MAXIMUM STANDARD PROCTOR DENSITY BELOW THE UPPER 3'.
5. ENCASEMENT ZONE MATERIAL SHALL BE COMPACTED TO 95% OF MAXIMUM STANDARD PROCTOR DENSITY



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

REVISED/APPROVED 2/19/2015

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

NO SCALE

STREET RESTORATION OVER TRENCH STR-8

REVISED/APPROVED 2/01/2013

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

NO SCALE

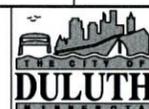
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FAIRMONT ST WATER MAIN REPLACEMENT

CITY PROJECT NO.: 1333

STATE AID PROJECT NO.:

DRAWN BY: JJM

STANDARD DETAILS 2

SHEET NO. 3 OF 6

TRAFFIC CONTROL PLAN

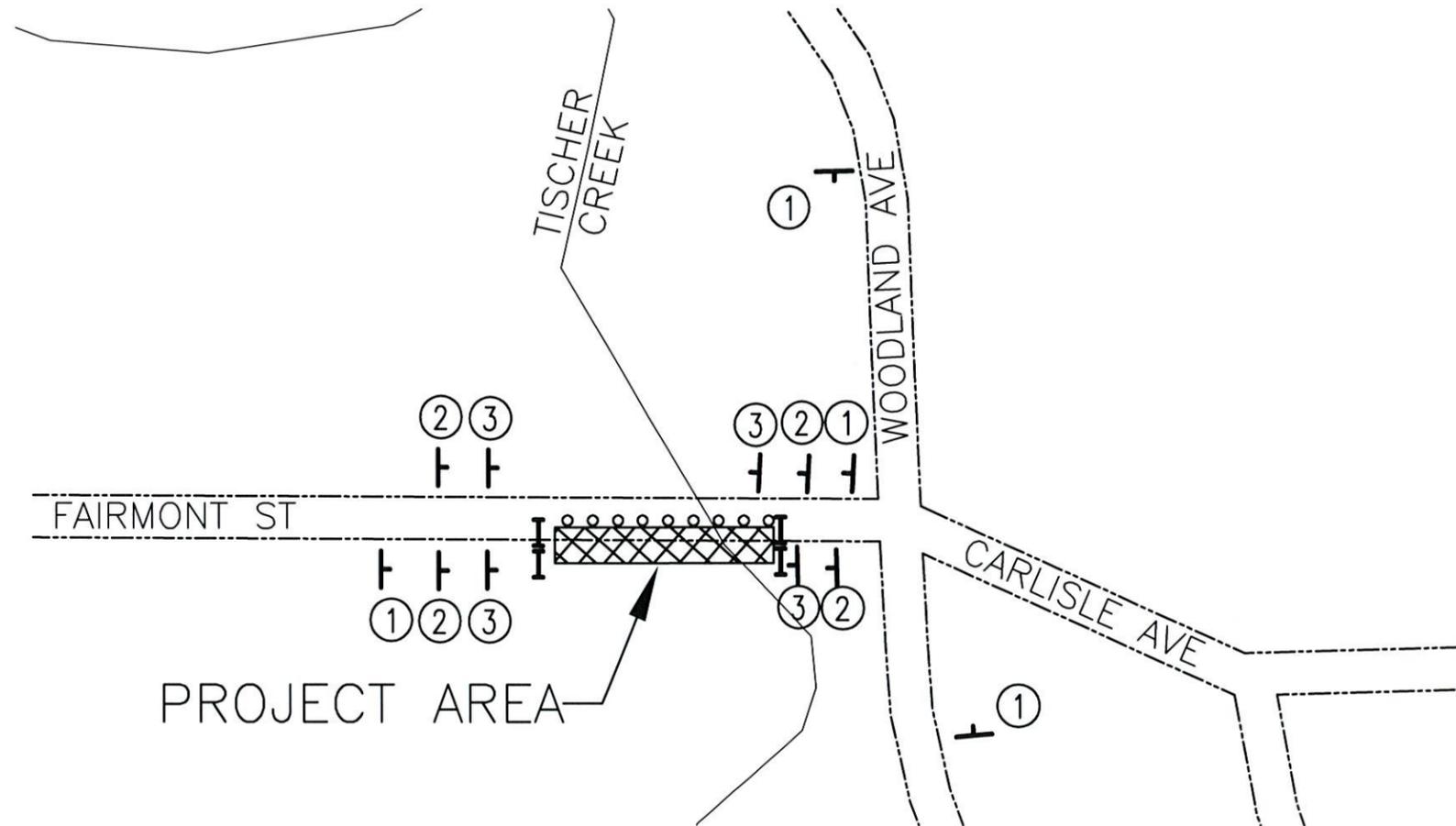
GENERAL TRAFFIC CONTROL NOTES:

1. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN THE DEVICES IN THIS TRAFFIC CONTROL PLAN UNLESS OTHERWISE NOTED.
2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE 2014 MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES INCLUDING "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL 2014" (AVAILABLE AT: <http://www.dot.state.mn.us/trafficeng/publ/fieldmanual/index.html>)
3. FIELD CONDITIONS MAY REQUIRE MODIFICATIONS OF THIS LAYOUT AS DEEMED NECESSARY BY THE ENGINEER.
4. THE NUMBER AND PLACEMENT OF TRAFFIC CONTROL DEVICES WILL DEPEND UPON THE SEQUENCE OF THE CONTRACTORS OPERATION.
5. ALL DISTANCES ARE APPROXIMATE.
6. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ANY WORK AREAS NEAR TRAFFIC IN ACCORDANCE WITH MMUTCD.
7. IF THE CONTRACTOR DECIDES TO PERFORM THE CONSTRUCTION WORK IN A SEQUENCE OTHER THAN SHOWN IN THIS TRAFFIC CONTROL PLAN, THE CONTRACTOR SHALL PROVIDE COMPLETE REVISED TRAFFIC CONTROL PLANS TO BE APPROVED BY THE ENGINEER.
8. ALL TRAFFIC CONTROL DEVICES, INCLUDING OVERHEAD SIGNS ON ROADS OPEN TO TRAFFIC THAT ARE NOT CONSISTENT WITH TRAFFIC OPERATION, SHALL BE COVERED, REMOVED OR REVISED AS DIRECTED BY THE ENGINEER.
9. "ROAD WORK AHEAD" SIGNS SHALL BE MOUNTED APPROX. 300 FT (1 BLOCK) IN ADVANCE OF THE CONSTRUCTION AND SHALL HAVE A TYPE "A" LOW INTENSITY FLASHING AMBER WARNING LIGHT MOUNTED ON THEM.
10. "ROAD CLOSED AHEAD" SIGNS SHALL BE ERECTED APPROX. 300 FT (1 BLOCK) IN ADVANCE OF THE CLOSURE.
11. "ROAD CLOSED TO THRU TRAFFIC" SIGNS SHALL BE INSTALLED ON TYPE III BARRICADES AND SHALL BE LOCATED AT A POINT IN THE STREET AS TO PERMIT LOCAL TRAFFIC USE BUT EFFECTIVELY DISCOURAGE THRU TRAFFIC USE.
12. 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.
13. "ROAD CLOSED" SIGNS MAY BE USED WHERE THE ROADWAY IS CLOSED TO ALL TRAFFIC EXCEPT CONTRACTOR'S EQUIPMENT OR OFFICIALLY AUTHORIZED VEHICLES.
14. ADDITIONAL SIGNING MAY BE REQUIRED FOR SEPARATE LANE CLOSURES. THE SIGNING SHALL BE IN CONFORMANCE WITH "TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL 2014" AND SHALL BE CONSIDERED INCIDENTAL TO "TRAFFIC CONTROL".

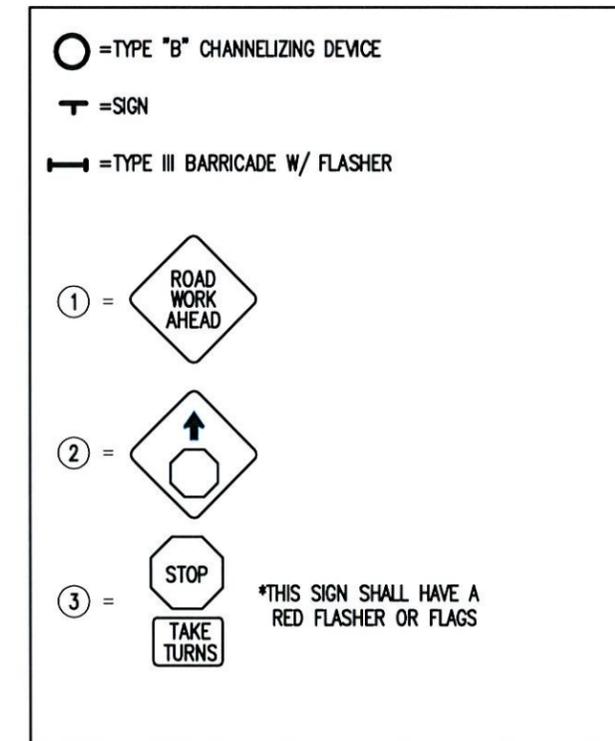
SITE SPECIFIC NOTES:

- ROAD CLOSURE AND CONSTRUCTION ACTIVITY SHALL ALLOW FOR UNINTERRUPTED ACCESS FOR FAIRMONT ST RESIDENTS AND CHURCH PATRONS
- REFERENCE THE MUTCD TEMPORARY TRAFFIC CONTROL FIELD MANUAL LAYOUT 20

CONSTRUCTION SITE TRAFFIC CONTROL LAYOUT



LEGEND



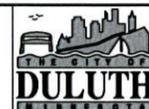
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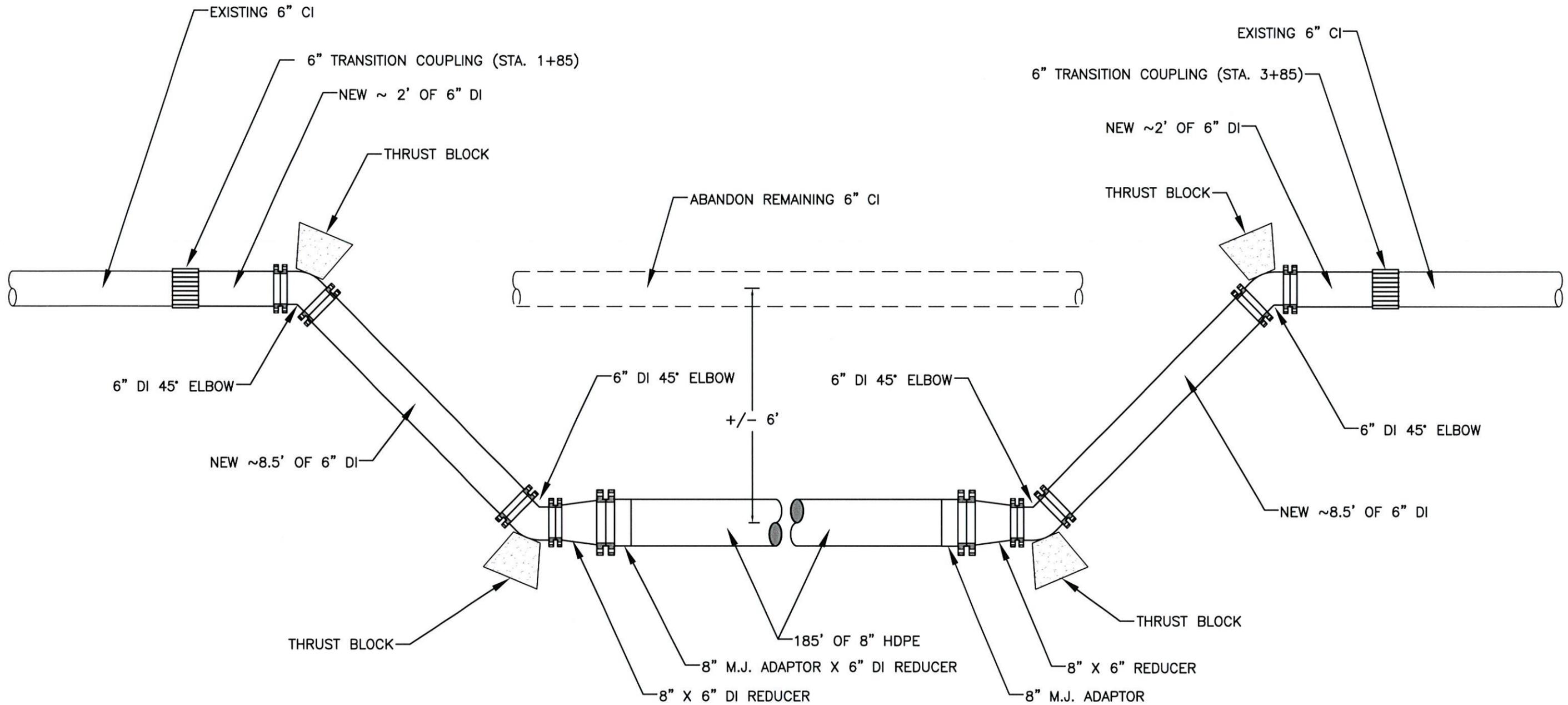
CITY PROJECT NO.: 1333

STATE AID PROJECT NO.:

DRAWN BY: JJM

TRAFFIC CONTROL PLAN

SHEET NO. 4 OF 6



NOTES:

- 1) ALL DI PIPE AND FITTINGS SHALL BE WRAPPED IN 8 MIL. V-BILE POLYETHYLENE
- 2) ALL DI PIPE FITTINGS SHALL BE RESTRAINED WITH MEGA-LUG GLANDS RESTRAINED JOINTS

WATER MAIN CONNECTION DETAIL

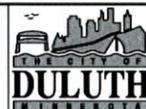
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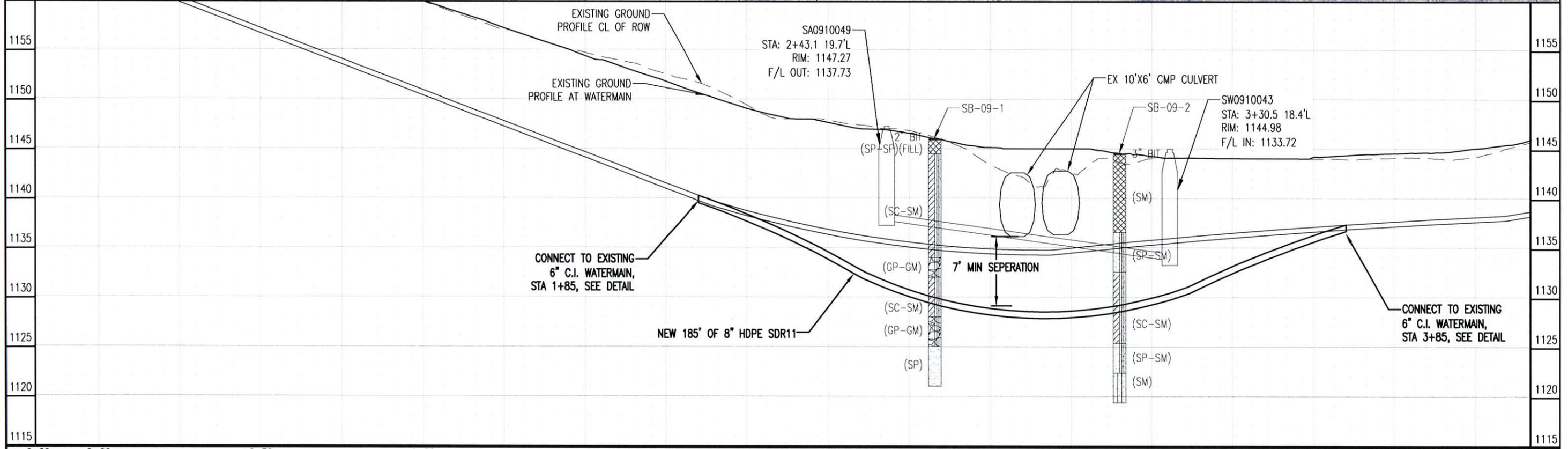
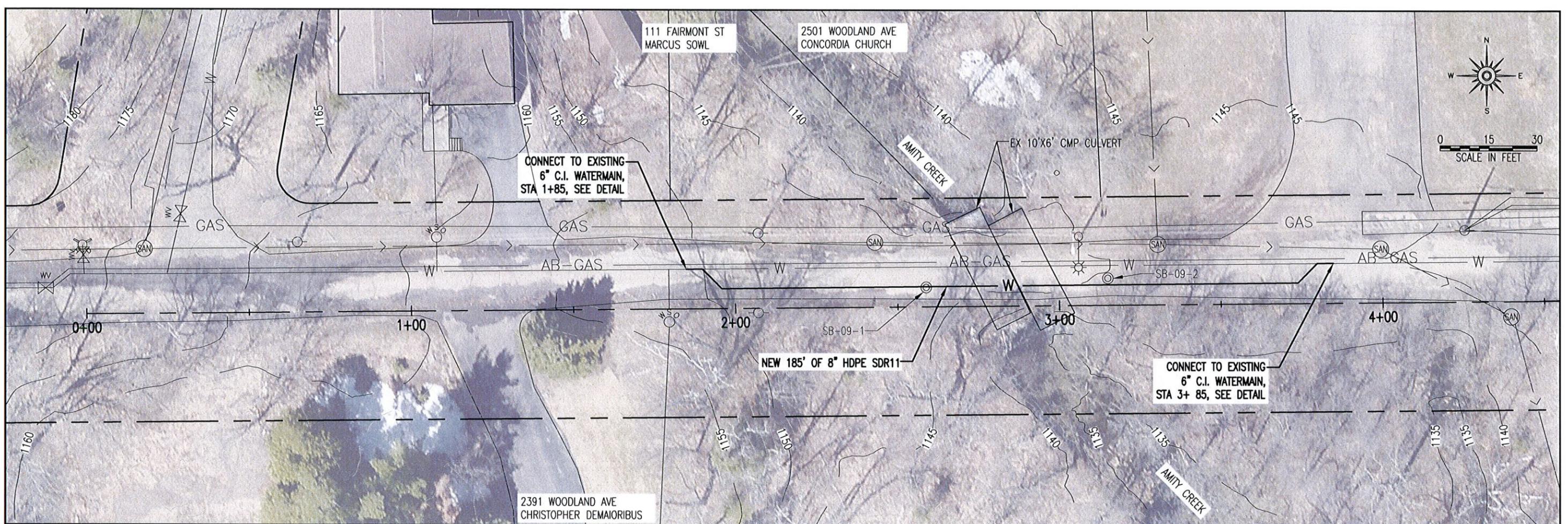
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CONNECTION DETAIL

SHEET NO. **5** OF **6**



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SIGNATURE: <i>Tim Sanders</i>	TIM SANDERS, P.E. TYPE NAME	LIC. NO.: 50401		CITY PROJECT NO.: 1333	STATE AID PROJECT NO.:	PLAN & PROFILE	