

STATEMENT OF ESTIMATED QUANTITIES					
LINE	NOTES	SPEC NO	DESCRIPTION	UNIT	QUANTITY
1		2021.501	MOBILIZATION	LUMP SUM	1
2		2505.603	12" PE GAS MAIN INSTALLED BY DIRECTIONAL DRILL	LF	486
3		2505.603	12" PE GAS MAIN INSTALLED BY OPEN CUT	LF	80
4	1	2563.601	TRAFFIC CONTROL	LUMP SUM	1
5		2573.509	STORM DRAIN INLET PROTECTION	EACH	3
6		2573.511	FILTER LOG TYPE STRAW FIBER BIOROLL	LF	220
7		2575.523	EROSION CONTROL BLANKET, CATEGORY 2	SY	580
8		2575.501	RAPID STABILIZATION SEEDING	ACRE	0.12

NOTES	
1	TRAFFIC CONTROL SHOWN IN THE PLANS IS THE MINIMUM REQUIRED. PAY ITEM SHALL INCLUDE ALL NECESSARY TRAFFIC CONTROL DEVICES INCLUDED BUT NOT LIMITED TO THOSE SHOWN IN THE TRAFFIC CONTROL PLAN

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: Howard D. Smith, P.E.

HOWARD D. SMITH
TYPE NAME

DATE: 7-8-2015

LIC. NO: 46875



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

KNOWLTON CREEK GAS MAIN RELOCATION AT GRAND AVENUE

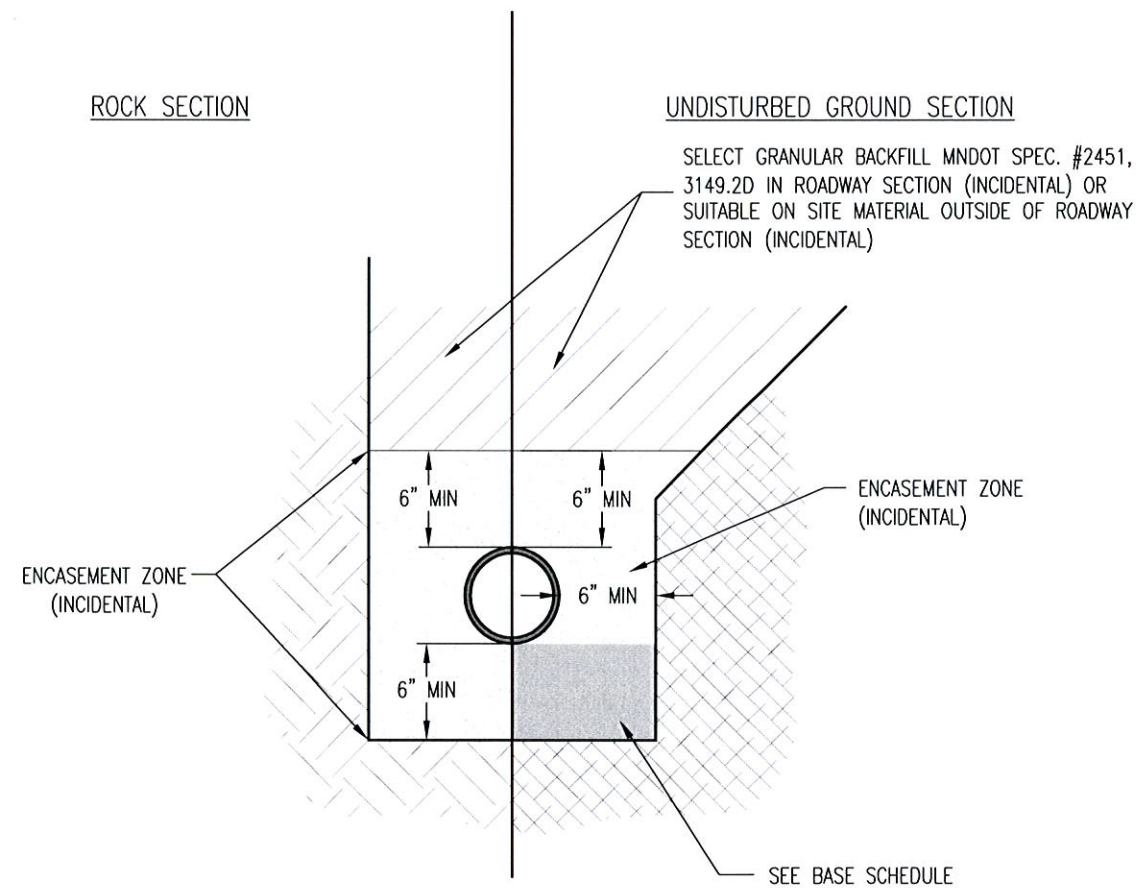
CITY PROJECT NO.: 1472

STATE AID PROJECT NO.:

DRAWN BY: KLM

STATEMENT OF ESTIMATED QUANTITIES

SHEET NO. 2 OF 5



NOTES:

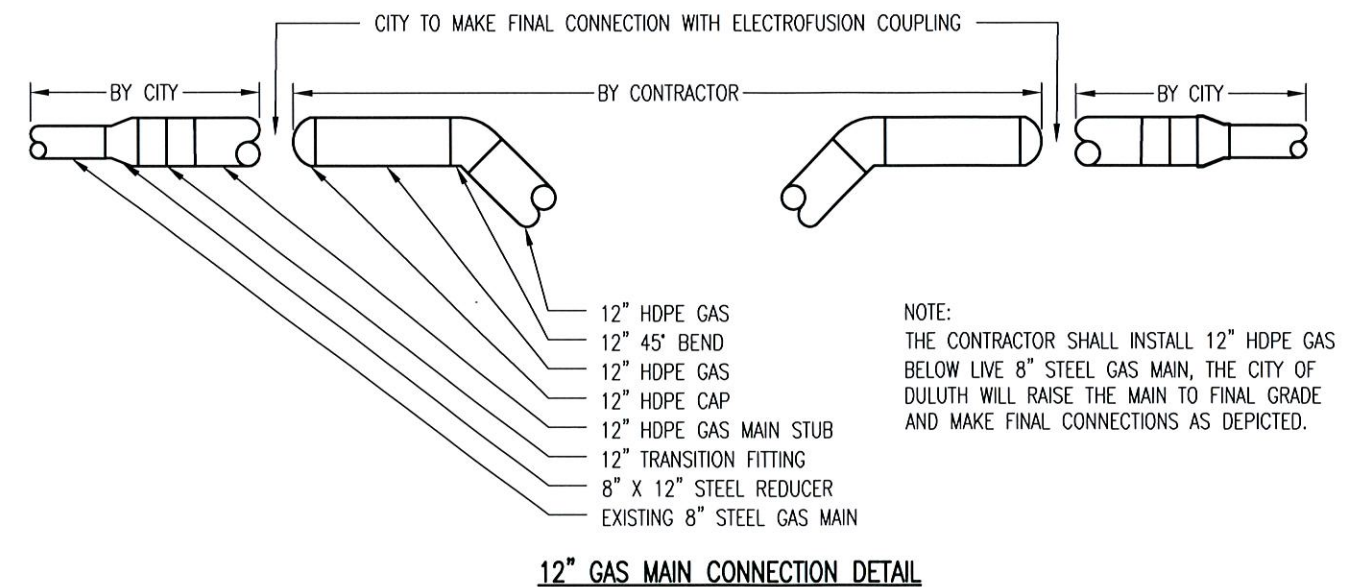
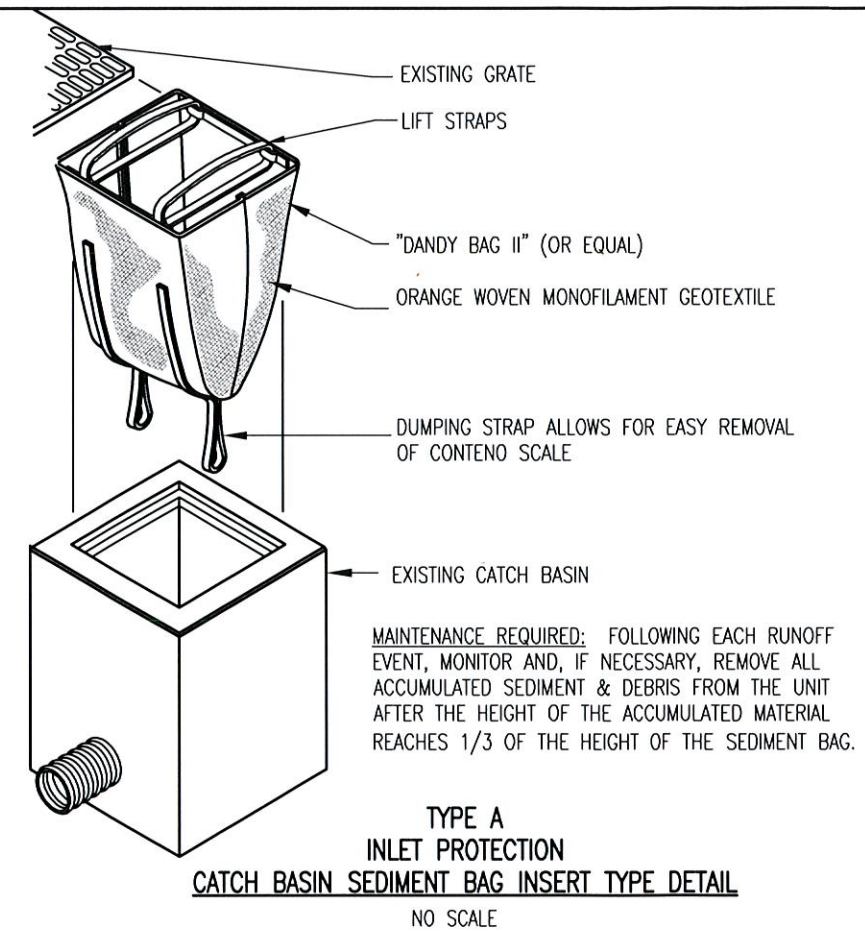
1. MAXIMUM PAY WIDTH IN A ROCK TRENCH SHALL BE THE PIPE O.D. + 24"
2. MAXIMUM PAY WIDTH IN AN EXCAVATED TRENCH SHALL BE 6'

BASE SCHEDULE

TRENCH TYPE	MATERIAL	THICKNESS
NORMAL TRENCH	ENCASEMENT MATERIAL	4"
WET TRENCH	ENCASEMENT MATERIAL OVER FOUNDATION MATERIAL	4" + FOUNDATION THICKNESS T.B.D.
UNSTABLE TRENCH	AS DIRECTED BY INSPECTOR	AS DIRECTED BY INSPECTOR

MATERIAL SCHEDULE

SIEVE SIZE	ENCASEMENT (SAND COVER)	FOUNDATION
2"	-	100
1"	-	85-100
3/4"	-	30-60
3/8"	-	0-10
#4	100	-
#10	95-100	-
#40	0-50	-
#200	0-8	-



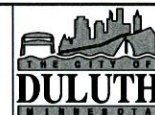
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE: *Howard D. Smith, RE*

HOWARD D. SMITH
TYPE NAME

DATE: 7-8-2015

LIC. NO: 46875



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

KNOWLTON CREEK GAS MAIN RELOCATION AT GRAND AVENUE

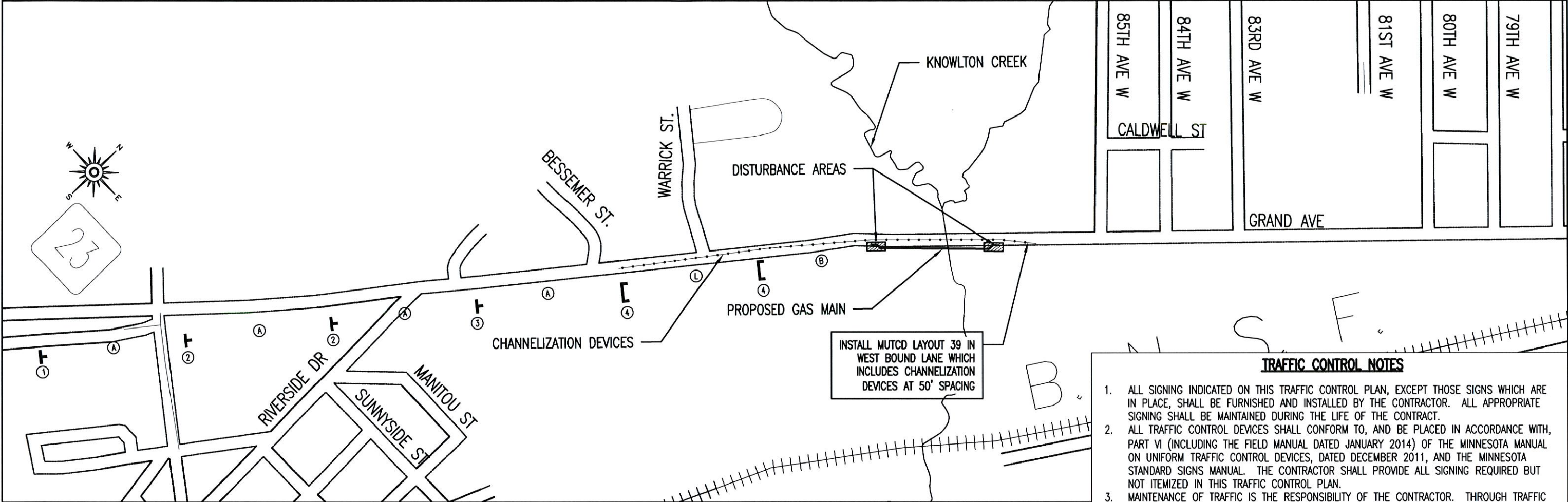
CITY PROJECT NO.: 1472

STATE AID PROJECT NO.:

DRAWN BY: KLM

CONSTRUCTION DETAILS

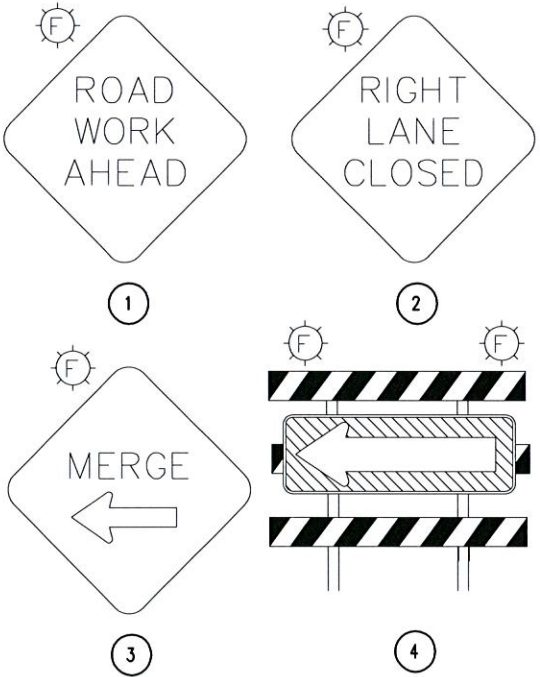
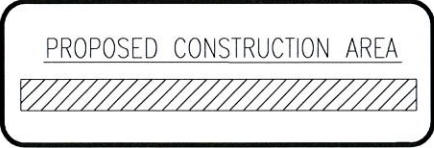
SHEET NO. 3 OF 5



TRAFFIC CONTROL NOTES

1. ALL SIGNING INDICATED ON THIS TRAFFIC CONTROL PLAN, EXCEPT THOSE SIGNS WHICH ARE IN PLACE, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. ALL APPROPRIATE SIGNING SHALL BE MAINTAINED DURING THE LIFE OF THE CONTRACT.
2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO, AND BE PLACED IN ACCORDANCE WITH, PART VI (INCLUDING THE FIELD MANUAL DATED JANUARY 2014) OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, DATED DECEMBER 2011, AND THE MINNESOTA STANDARD SIGNS MANUAL. THE CONTRACTOR SHALL PROVIDE ALL SIGNING REQUIRED BUT NOT ITEMIZED IN THIS TRAFFIC CONTROL PLAN.
3. MAINTENANCE OF TRAFFIC IS THE RESPONSIBILITY OF THE CONTRACTOR. THROUGH TRAFFIC SHALL BE MAINTAINED DURING ALL PERIODS OF CONSTRUCTION OPERATIONS. BUSINESSES AND GOVERNMENT BUILDINGS SHALL HAVE ACCESS AT ALL TIMES.
4. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SIGNING, PLASTIC DRUMS AND BARRICADES FOR CHANNELIZATION OF TRAFFIC WITHIN THE CONSTRUCTION ZONE.
5. THE CONTRACTOR SHALL RECEIVE COMPENSATION FOR ALL WORK DESCRIBED HEREIN ON THE BASIS OF A LUMP SUM PAYMENT FOR TRAFFIC CONTROL (2563.601).
6. THE CONTRACTOR SHALL PLACE ADEQUATE PLASTIC DRUMS, WARNING SIGNS AND BARRICADES WITHIN THE CONSTRUCTION ZONE TO PROTECT VEHICULAR TRAFFIC AND PEDESTRIAN TRAFFIC FROM CONSTRUCTION OPERATIONS. ADDITIONAL SIGNING MAY INCLUDE, BUT IS NOT LIMITED TO: BUMP, DIP, LOOSE GRAVEL, ETC. THE NUMBER AND LOCATIONS OF TRAFFIC CONTROL DEVICES SHALL BE DETERMINED BY THE SEQUENCE OF THE CONTRACTOR'S OPERATIONS. TRAFFIC CONTROL DEVICES MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.
7. ALL WARNING SIGNS ARE TO BE 48" x 48", BLACK ON ORANGE WITH HIGH INTENSITY OR "DIAMOND GRADE" RETROREFLECTIVE SHEETING. ALL BLACK ON ORANGE WORK ZONE TRAFFIC CONTROL SIGNS, ORANGE AND WHITE TYPE I, TYPE II AND TYPE III BARRICADES, DETOUR ROUTE MARKERS AND ALL OTHER RIGID SIGNS INSTALLED TO CONTROL AND DIRECT TRAFFIC DURING CONSTRUCTION OPERATIONS SHALL BE CONSTRUCTED OF HIGH INTENSITY OR "DIAMOND GRADE" RETROREFLECTIVE SHEETING.
8. THE CONTRACTOR SHALL FOLLOW THIS TRAFFIC CONTROL PLAN ALONG WITH THE SPECIAL PROVISIONS.
9. ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED OR COVERED AS SOON AS THEY ARE NO LONGER REQUIRED OR APPROPRIATE.
10. THE INITIAL CONSTRUCTION SIGNING SHALL BE ERECTED PRIOR TO BEGINNING CONSTRUCTION OPERATIONS THAT WILL AFFECT THE TRAVELING PUBLIC.
11. TYPE A (LOW INTENSITY) FLASHERS SHALL BE FURNISHED, INSTALLED AND MAINTAINED ON ALL TYPE III BARRICADES AND ADVANCED WARNING SIGNS AS DETAILED IN THIS TRAFFIC CONTROL PLAN. ADDITIONAL FLASHERS SHALL BE FURNISHED, INSTALLED AND MAINTAINED ON SIGNS, BARRICADES AND CHANNELIZERS AS NEEDED OR AS DIRECTED BY THE ENGINEER FOR TRAFFIC CONTROL THROUGH WORK ZONES WITHIN THE PROJECT LIMITS.
12. TEMPORARY LANE CLOSURES BY THE CONTRACTOR WILL BE PERMITTED DURING THOSE HOURS AND AT THOSE LOCATIONS APPROVED BY THE ENGINEER, IN ACCORDANCE WITH THE PERTINENT LAYOUTS SHOWN IN APPENDIX 'B' OF THE MMUTCD. ALL SUCH WORK RELATING TO THE CLOSURES, INCLUDING FLAGPERSONS, SHALL BE CONSTRUED TO BE INCLUDED IN THE LUMP SUM PAYMENT UNDER ITEM NO. 2563.601 (TRAFFIC CONTROL).

TRAFFIC CONTROL DISTANCE CHART		
	35-40mph	45-50mph
A	325'	600'
B	325'	425'
L	325'	600'
G	25'	50'



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: *Howard D. Smith, P.E.*

HOWARD D. SMITH
TYPED NAME

DATE: 7-8-2015
LIC. NO: 46875



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

KNOWLTON CREEK GAS MAIN RELOCATION AT GRAND AVENUE

CITY PROJECT NO.: 1472

STATE AID PROJECT NO.:

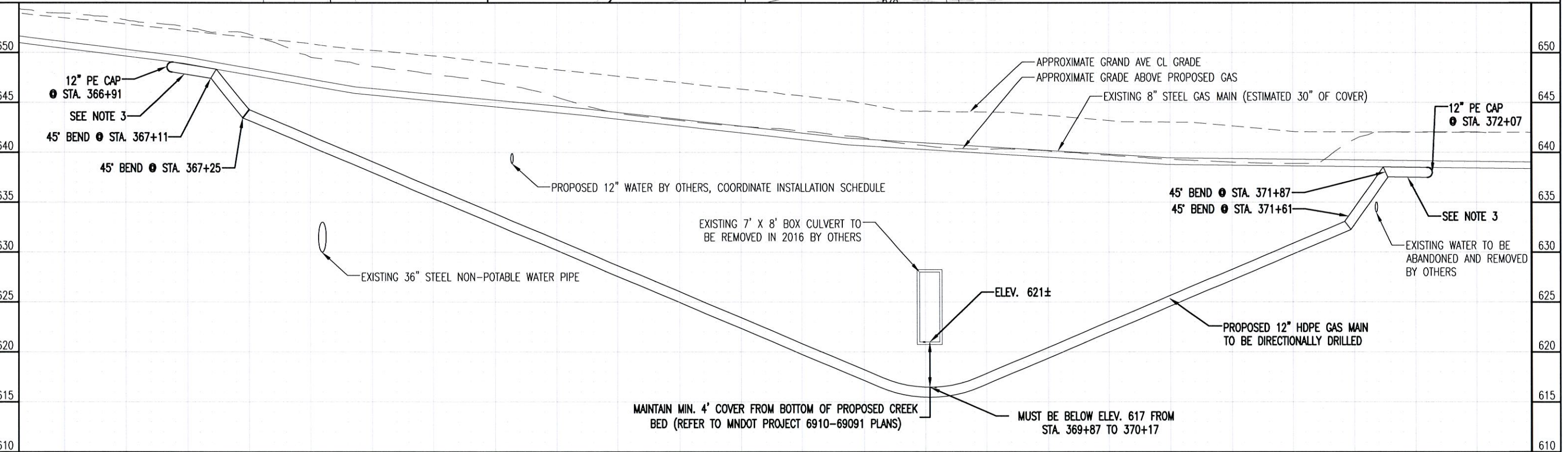
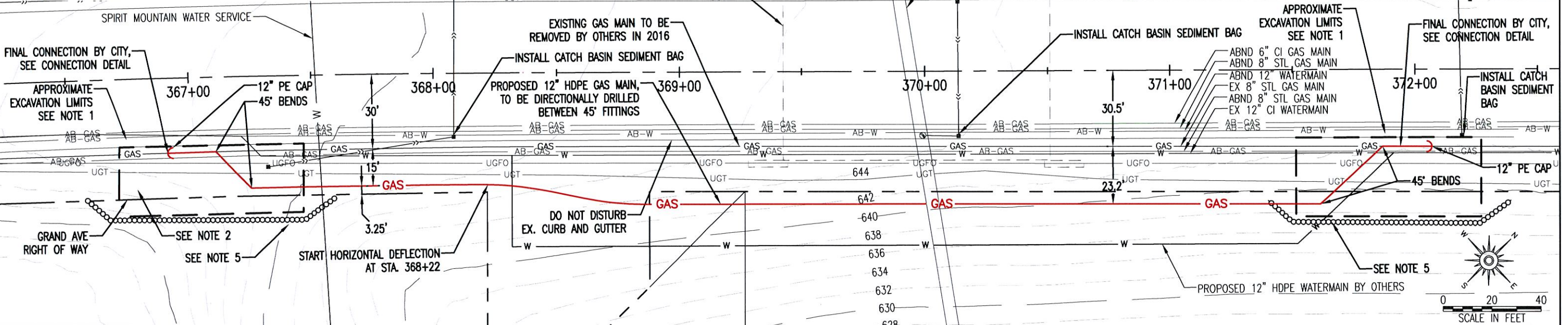
DRAWN BY: KLM

TRAFFIC CONTROL PLAN

SHEET NO. 4 OF 5

NOTES:

1. CONTRACTOR SHALL RESTORE EXCAVATED AND DISTURBED AREAS WITH A RAPID STABILIZATION SEED MIXTURE COVERED WITH CATEGORY 2 EROSION CONTROL BLANKET
2. CLEAR AND GRUB TREES IN EXCAVATION LIMITS AS NEEDED, INCIDENTAL TO PROJECT
3. INSTALL NEW 12" HDPE GAS BELOW EXISTING 8" STEEL GAS MAIN, THE CITY OF DULUTH WILL REMOVE EXISTING STEEL MAIN AND RAISE NEW MAIN FOR FINAL CONNECTION
4. CONTRACTOR SHALL PROTECT AND MAINTAIN EXISTING TRAFFIC SIGNS (NOT SHOWN)
5. INSTALL STRAW BIO-ROLL AT THE TOE OF EXCAVATIONS, TURN ENDS UP GRADIENT, BIO-ROLLS TO REMAIN WITH PERMANENT RESTORATION
6. CONTRACTOR SHALL EMPLOY THE APPROPRIATE BEST MANAGEMENT PRACTICES TO PREVENT THE MIGRATION OF EXCAVATED SPOILS AND STOCK-PILED MATERIALS



366+50		367+00		367+50		368+00		368+50		369+00		369+50		370+00		370+50		371+00		371+50		372+00		372+50								
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: <u>Howard Smith, P.E.</u>													HOWARD D. SMITH		DATE: <u>7-15-2015</u>				CITY OF DULUTH ENGINEERING DIVISION 411 W. 1ST ST. STE. 211 DULUTH, MN 55802		KNOWLTON CREEK GAS MAIN RELOCATION AT GRAND AVENUE										DRAWN BY: KLM	
TYPE NAME																																
LIC. NO: 46875																																
PLAN & PROFILE																																
CITY PROJECT NO.: 1472										STATE AID PROJECT NO.:										SHEET NO. 5 OF 5												