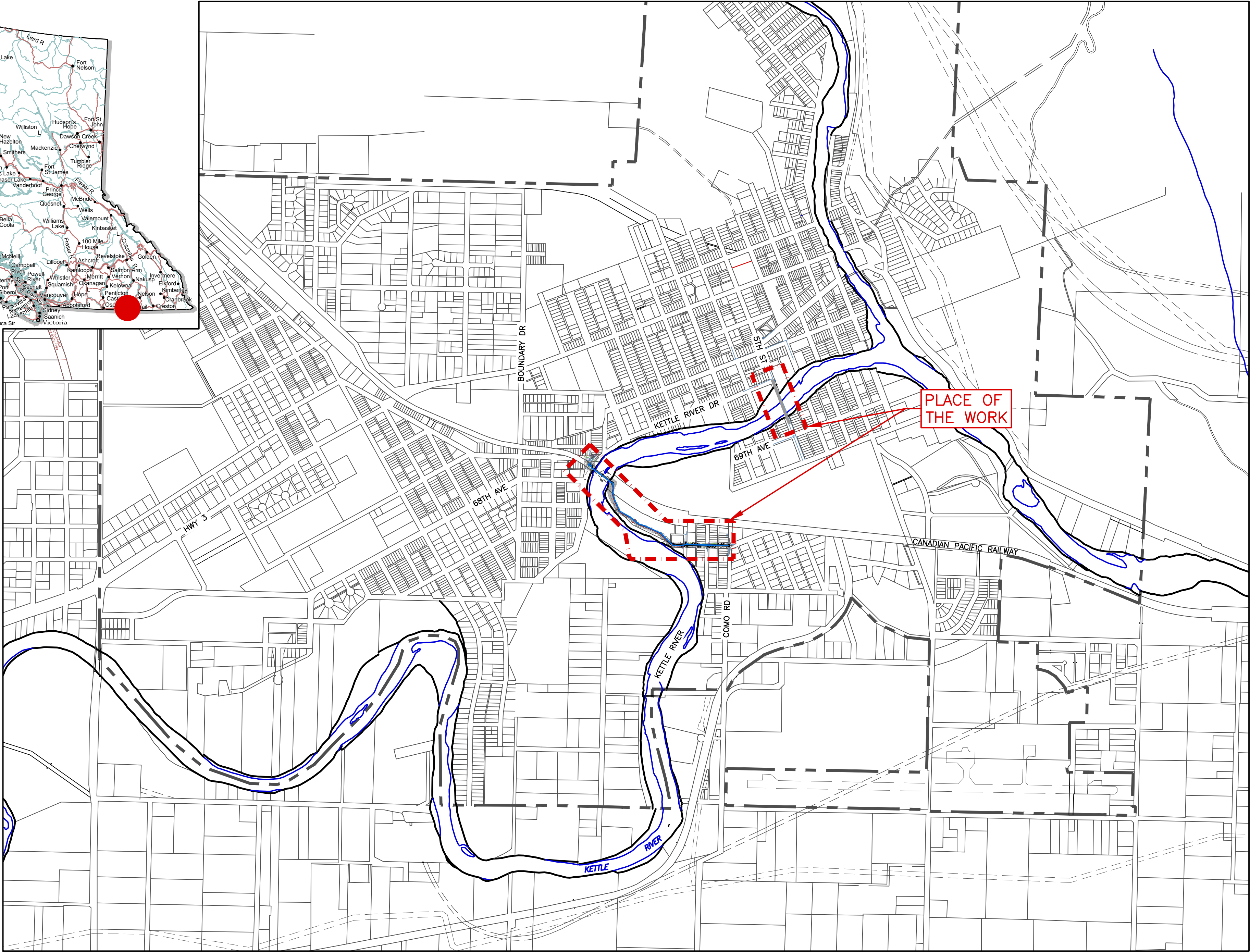




# DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING

ISSUED FOR  
TENDER  
AUGUST 22, 2016  
urbansystems.ca



Sheet Number	Sheet Title
L01	LEGEND
K01	KEY PLAN
C01	PLAN & PROFILE 0+000 to 0+340
C02	PLAN & PROFILE 0+340 to 0+710
C03	5TH ST PLAN
D01	DETAILS
D02	DETAILS
S01	PLANS AND SECTIONS
S02	SECTIONS AND TYPICAL DETAILS

SITE LOCATION  
SCALE 1:10000





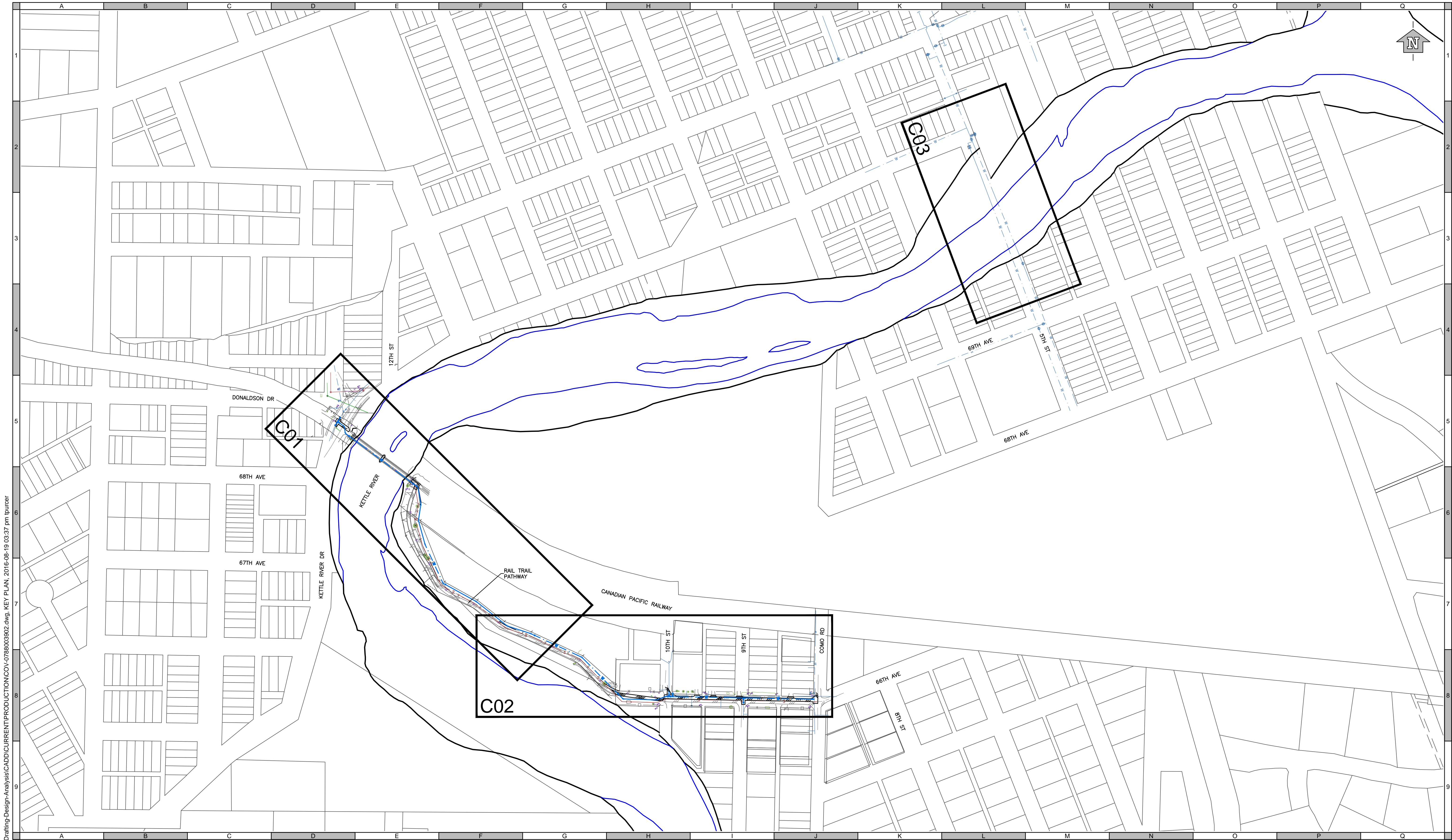
# DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING

## LEGEND

---

Sheet Number		1 of 7
Project Number	Drawing Number	Revision
0788.0039.02	L01	1





U:\Projects\_KELU0788\0039\02-Drafting-Design-Analysis\CADD\CURRENT\PRODUCTION\COV-0788003902.dwg, KEY PLAN, 2016-08-19 03:37 pm tpurcer

**ATTENTION**  
This drawing is prepared for the sole use of CITY OF GRAND FORKS  
No representations of any kind are made by Urban Systems Ltd. or its employees to any party with whom Urban Systems Ltd. does not have a contract.  
**WARNING**  
Utilities or structures shown on this drawing were compiled from information supplied by various parties and may not be complete or accurate. Expose and conclusively confirm the location in the field all underground utilities and structures indicated on this drawing, all underground utilities in the area of the proposed work and any utilities or structures reasonably apparent from an inspection of the proposed work. Urban Systems Ltd. assumes no responsibility for loss or damage caused by third party negligence or failure to comply with the above.

**DISCLAIMER**  
The seal and signature of the undersigned on this drawing certifies that the design information contained in these drawings accurately reflects the original design and the material design changes made during construction, that were brought to the undersigned's attention. These drawings are intended to incorporate addenda, change orders and other material design changes, but not necessarily all site instructions. The undersigned does not warrant or guarantee, nor accept any responsibility for the accuracy or completeness of information supplied by others contained in these drawings, but does, by sealing and signing, certify that the information, if accurate and complete, provides a system which substantially complies in all material respects with the original design intent.

**SURVEY INFORMATION**  
Prepared by: AL ANDRES  
Coordinate System: NAD83  
Compilation Date: APRIL 29, 2016

**ISSUED FOR  
TENDER**  
AUGUST 22, 2016  
**urbansystems.ca**

Professional Seals

#	Date	Issue / Revision	App
1	2016/08/22	ISSUED FOR TENDER	JC



**URBAN**  
systems

Scale  
10m 0 10 20 30

Quality Control by  
Designed by  
Drawn by

TS  
TF/JC  
ES

<b>DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING KEY PLAN</b>		
Sheet Number	2 of 7	
Project Number	Drawing Number	Revision
0788.0039.02	K01	1













U:\Projects\_KELU0788\0039\02\0-Drafting-Design-Analysis\CADD\CURRENT\PRODUCTION\CO-0788003902-BRIDGE CROSSING REMOVAL.dwg, C03, 2016-08-19 03:27 pm tpurcer

**ATTENTION**  
This drawing is prepared for the sole use of CITY OF GRAND FORKS  
No representations of any kind are made by Urban Systems Ltd. or its employees to any party with whom Urban Systems Ltd. does not have a contract.  
**WARNING**  
Utilities or structures shown on this drawing were compiled from information supplied by various parties and may not be complete or accurate. Expose and conclusively confirm the location in the field all underground utilities and structures indicated on this drawing, all underground utilities in the area of the proposed work and any utilities or structures reasonably apparent from an inspection of the proposed work. Urban Systems Ltd. assumes no responsibility for loss or damage caused by third party negligence or failure to comply with the above.

**DISCLAIMER**  
The seal and signature of the undersigned on this drawing certifies that the design information contained in these drawings accurately reflects the original design and the material design changes made during construction, that were brought to the undersigned's attention. These drawings are intended to incorporate addenda, change orders and other material design changes, but not necessarily all site instructions. The undersigned does not warrant or guarantee, nor accept any responsibility for the accuracy or completeness of information supplied by others contained in these drawings, but does, by sealing and signing, certify that the information, if accurate and complete, provides a system which substantially complies in all material respects with the original design intent.

**SURVEY INFORMATION**  
Prepared by: AL ANDRES  
Coordinate System: NAD83  
Compilation Date: APRIL 29, 2016

**ISSUED FOR  
TENDER**  
AUGUST 22, 2016  
**urbansystems.ca**

Professional Seals

#	Date	Issue / Revision	App
1	2016/08/22	ISSUED FOR TENDER	JC



**URBAN**  
systems

Scale  
10m 0 10 20 30

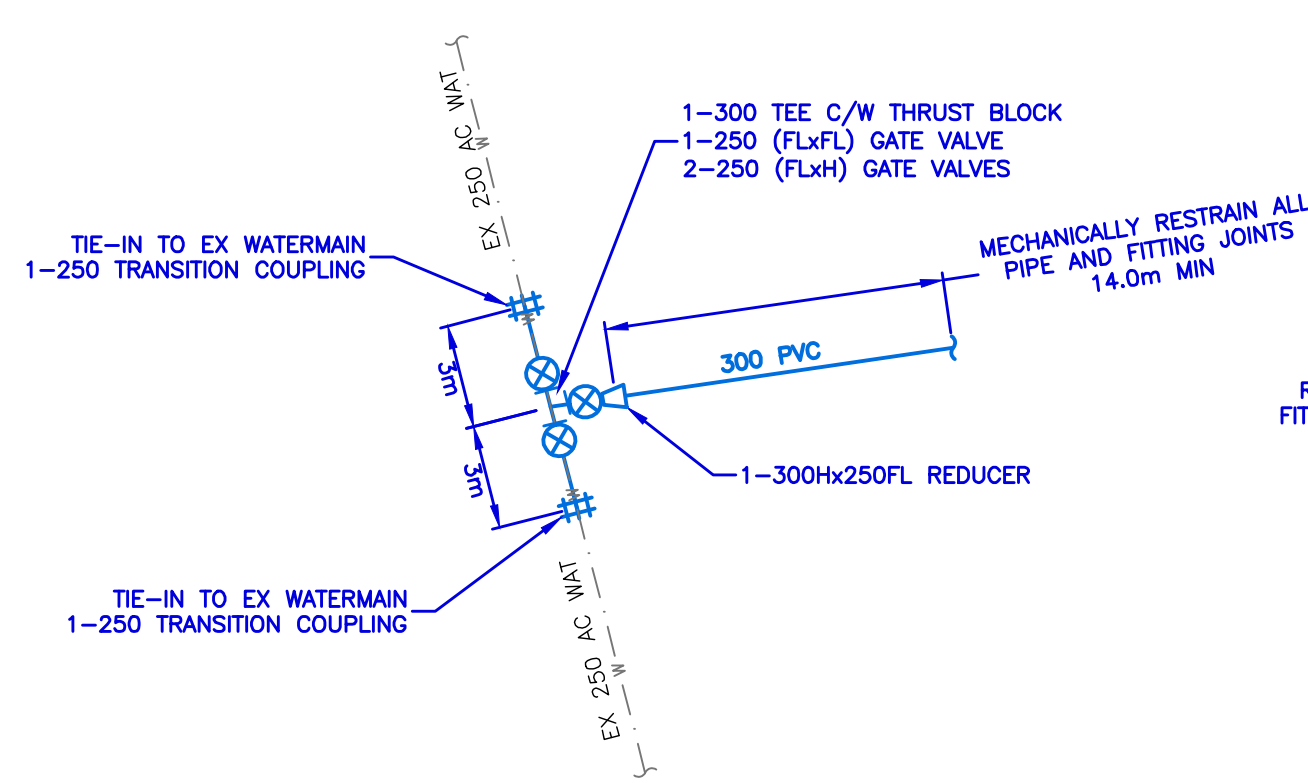
Quality Control by  
Designed by  
Drawn by

TS  
TF/JC  
ES

DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING 5TH ST PLAN		
Sheet Number	5 of 7	
Project Number	Drawing Number	Revision
0788.0039.02	C03	1

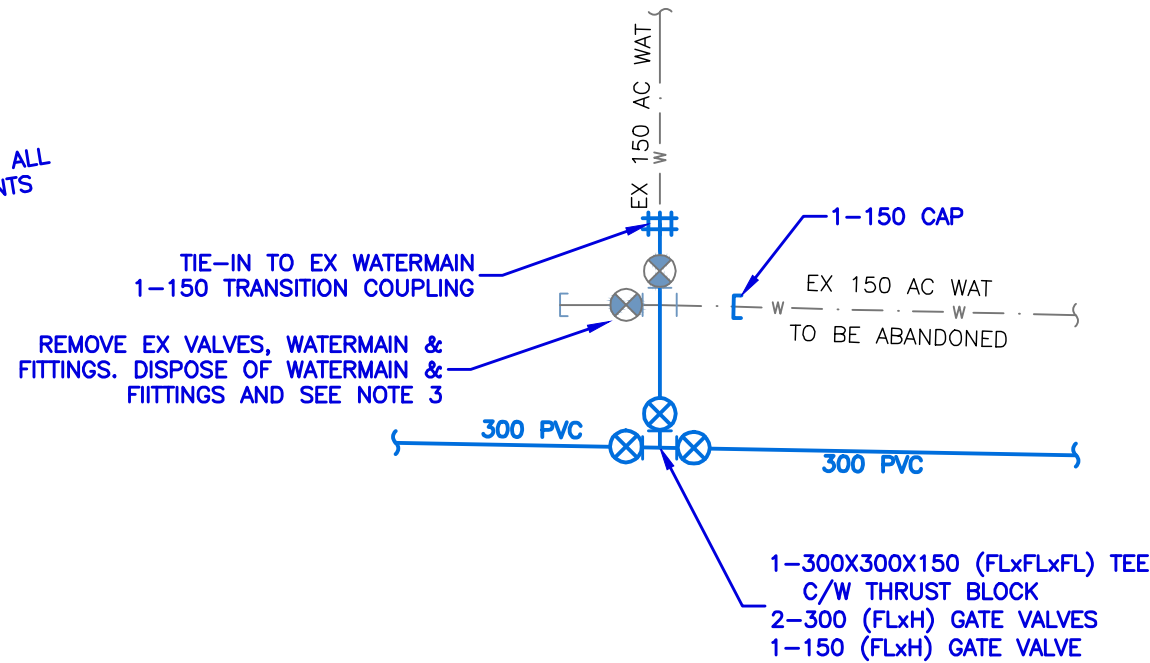


U:\Projects\_KELU078\0039\02\0-Drafting-Design-Analysis\CADD\CURRENT\PRODUCT\ID00-0788003902-DETAILS.dwg, D01, 2016-08-19 03:13 pm tpurcer



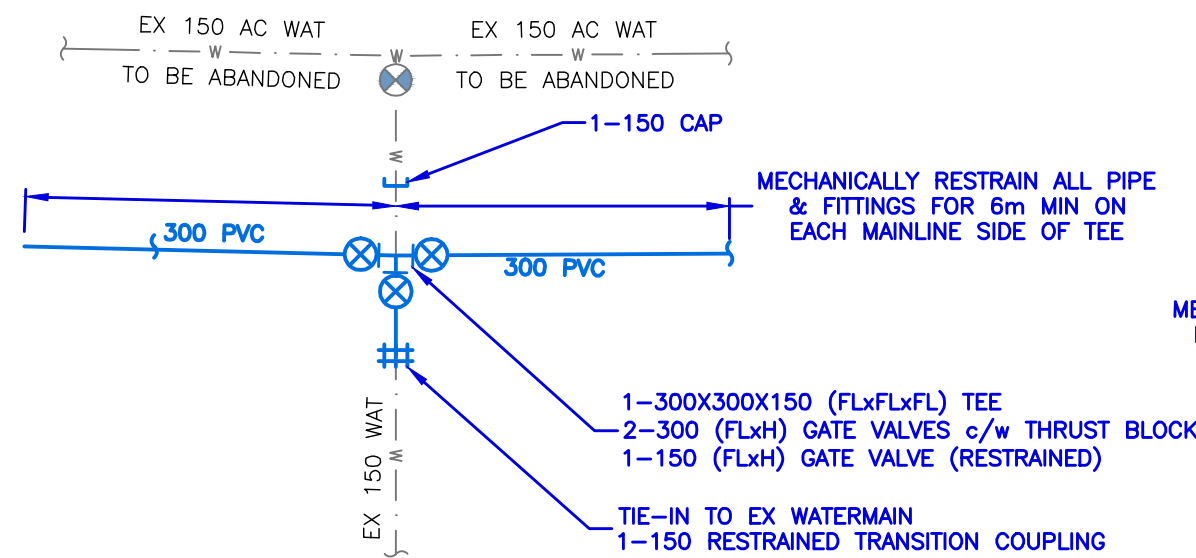
NOTE: INVERT OF EX WATERMAIN @ TIE-IN TO BE CONFIRMED PRIOR TO PLACEMENT OF PROPOSED TEE

1 TIE-IN TO EX WAT - KETTLE RIVER DR  
D01 NOT TO SCALE



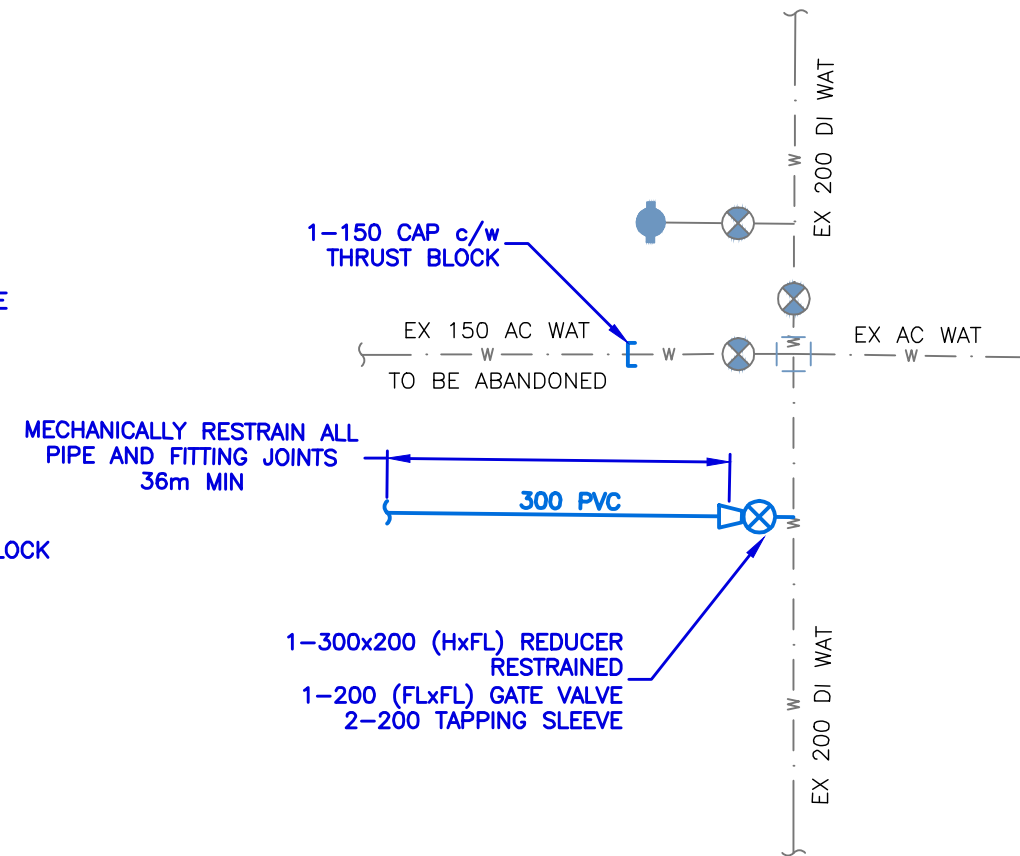
NOTE: INVERT OF EX WATERMAIN @ TIE-IN TO BE CONFIRMED PRIOR TO PLACEMENT OF PROPOSED TEE

2 TIE-IN TO EX WAT - 66TH AVE & 10TH ST  
D01 NOT TO SCALE



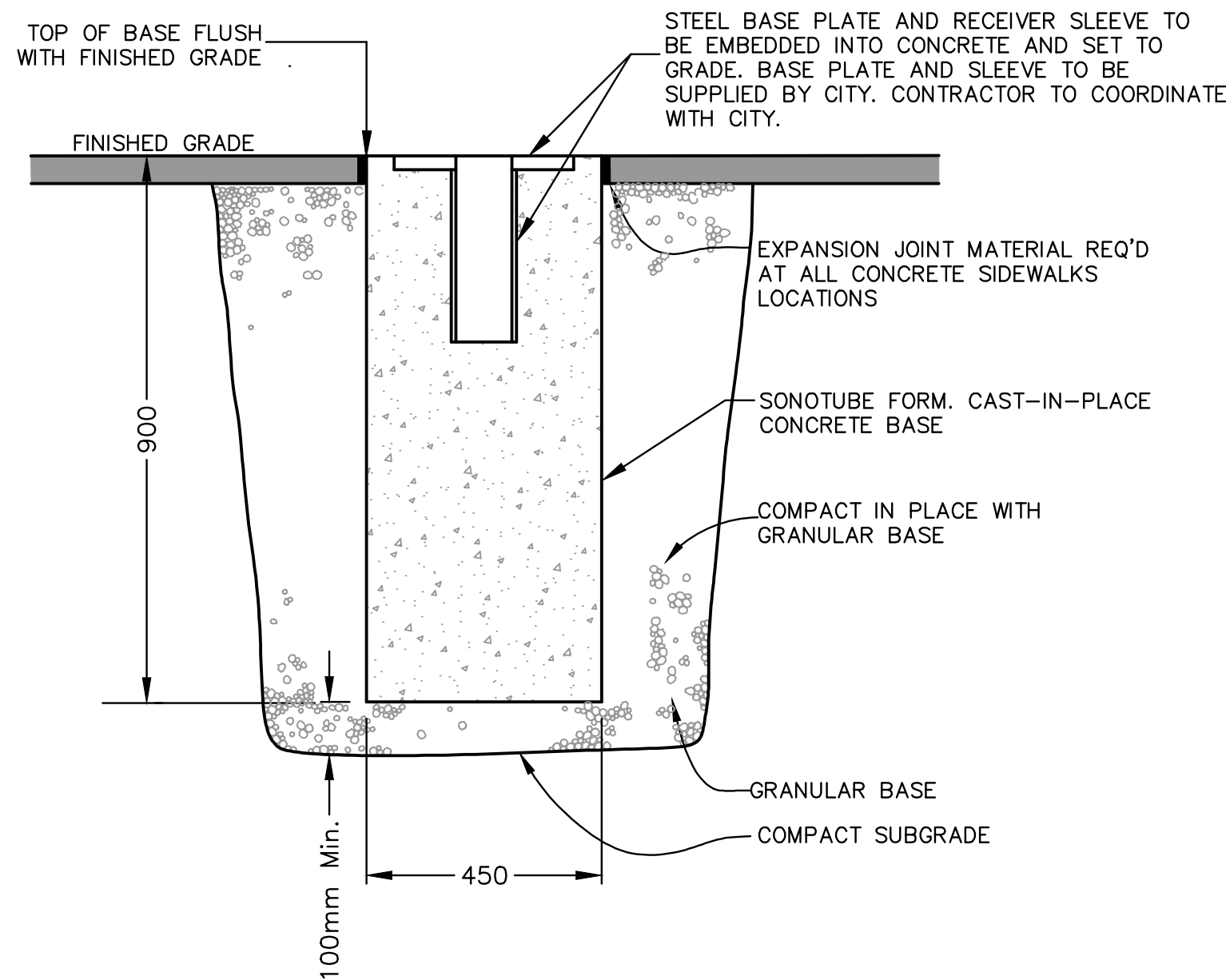
NOTE: INVERT OF EX WATERMAIN @ TIE-IN TO BE CONFIRMED PRIOR TO PLACEMENT OF PROPOSED TEE

3 TIE-IN TO EX WAT - 66TH AVE & 9TH ST  
D01 NOT TO SCALE

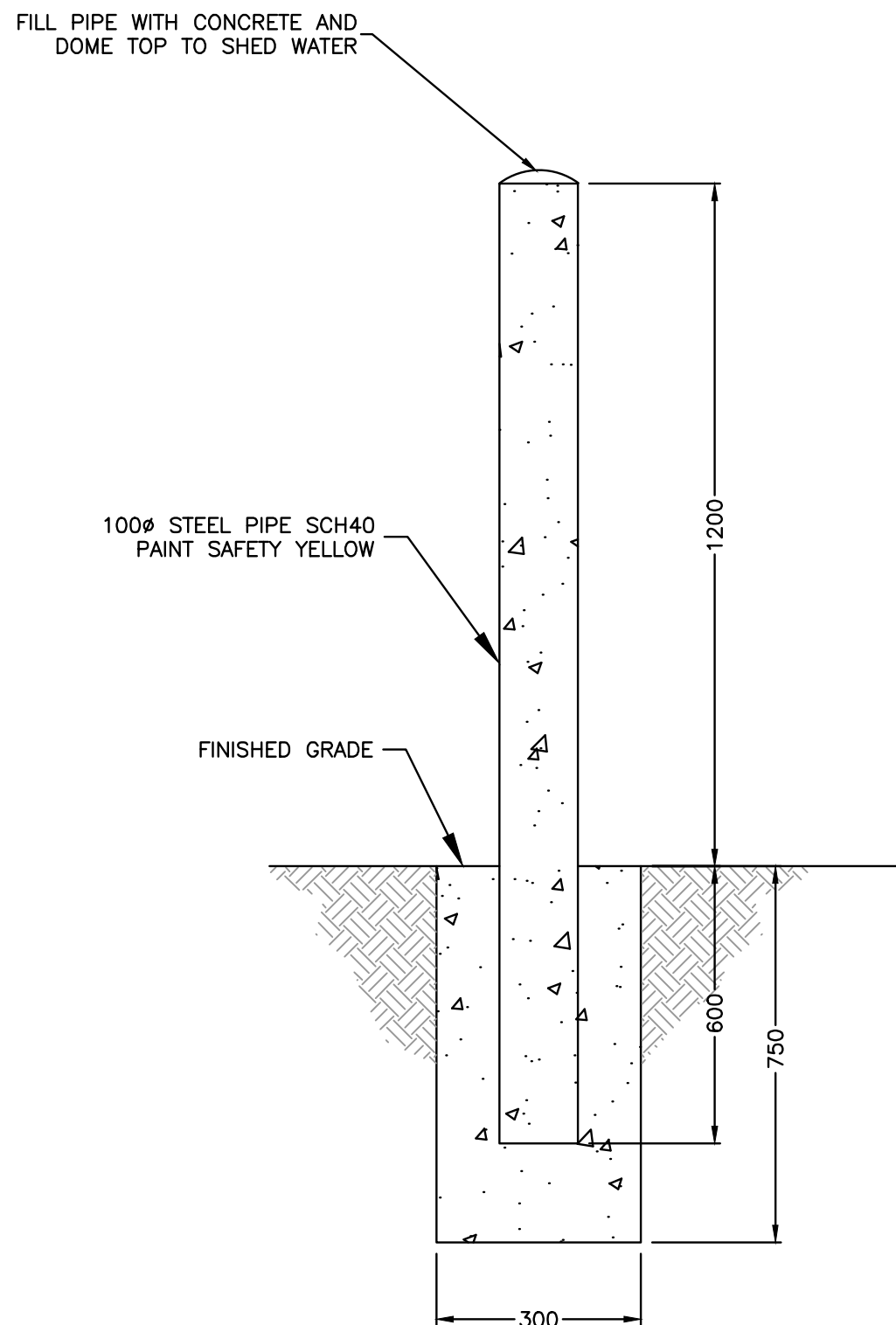


NOTES: HOT TAP CONNECTION REQUIRED  
INVERT OF EX WATERMAIN @ TIE-IN TO BE CONFIRMED PRIOR TO HOT TAP

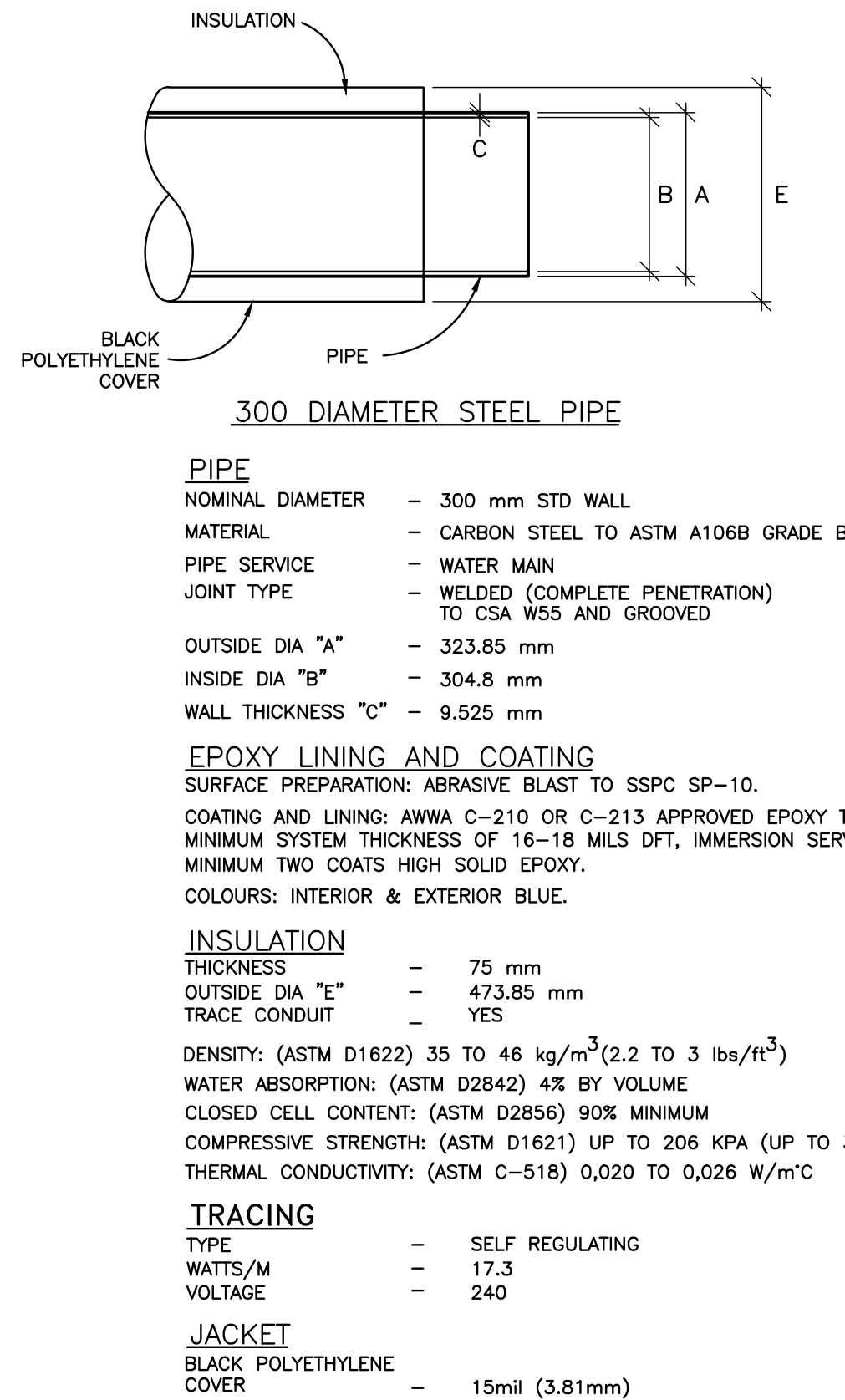
4 TIE-IN TO EX WAT - 66TH AVE & COMO ST  
D01 NOT TO SCALE



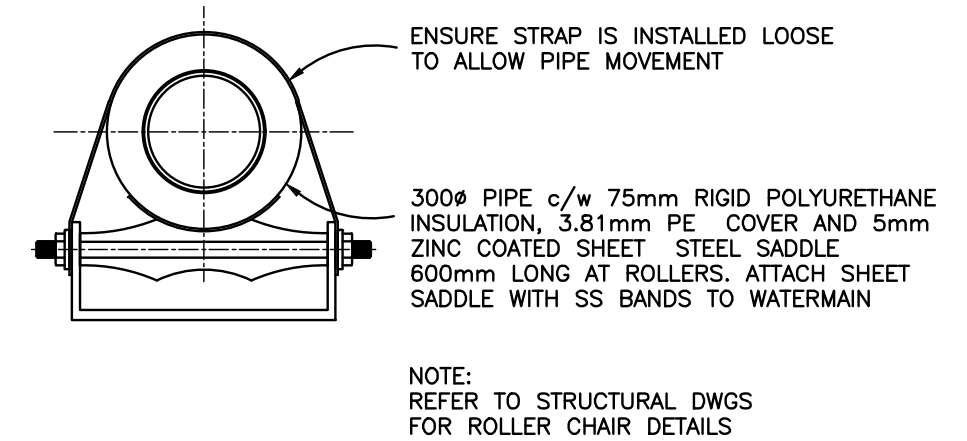
8 REMOVABLE BOLLARD DETAIL  
D01 NOT TO SCALE



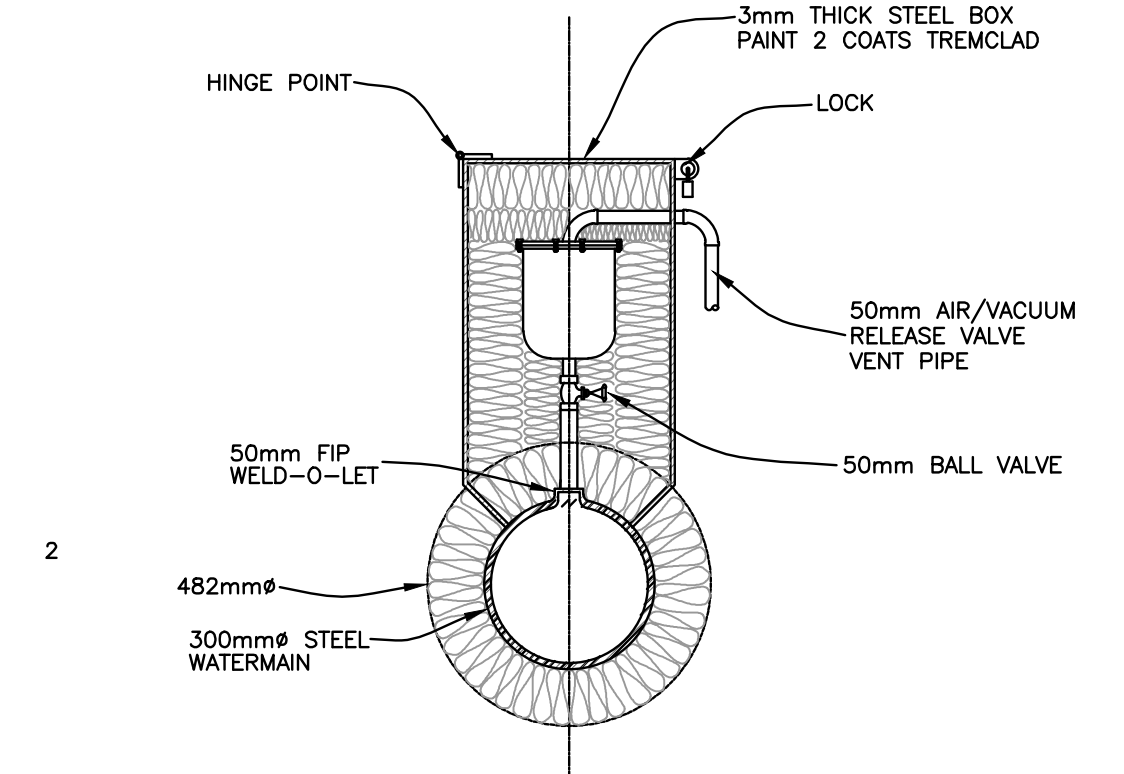
9 BOLLARD DETAIL  
D01 NOT TO SCALE



5 TYPICAL PIPE INSULATION  
D01 NOT TO SCALE



6 TYPICAL SIPOPT DETAIL  
D01 NOT TO SCALE



7 AIR RELEASE VALVE DETAIL  
D01 NOT TO SCALE

**ATTENTION**  
This drawing is prepared for the sole use of CITY OF GRAND FORKS. No representations of any kind are made by Urban Systems Ltd. or its employees to any party with whom Urban Systems Ltd. does not have a contract.

**WARNING**  
Utilities or structures shown on this drawing were compiled from information supplied by various parties and may not be complete or accurate. Expose and conclusively confirm the location in the field all underground utilities and structures indicated on this drawing, all underground utilities in the area of the proposed work and any utilities or structures reasonably apparent from an inspection of the proposed work. Urban Systems Ltd. assumes no responsibility for loss or damage caused by third party negligence or failure to comply with the above.

**DISCLAIMER**  
The seal and signature of the undersigned on this drawing certifies that the design information contained in these drawings accurately reflects the original design and the material design changes made during construction, that were brought to the undersigned's attention. These drawings are intended to incorporate addenda, change orders and other material design changes, but not necessarily all site instructions. The undersigned does not warrant or guarantee, nor accept any responsibility for the accuracy or completeness of information supplied by others contained in these drawings, but does, by sealing and signing, certify that the information, if accurate and complete, provides a system which substantially complies in all material respects with the original design intent.

**SURVEY INFORMATION**  
Prepared by: AL ANDRES  
Coordinate System: NAD83  
Compilation Date: APRIL 29, 2016

**ISSUED FOR TENDER**  
AUGUST 22, 2016  
urbansystems.ca

Professional Seals

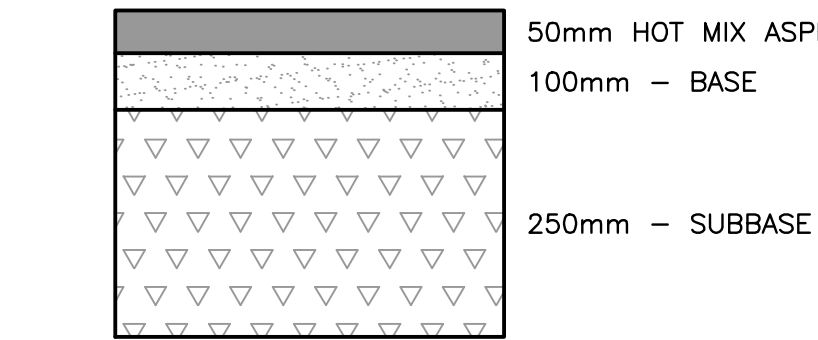
#	Date	Issue / Revision	App
1	2016/08/22	ISSUED FOR TENDER	JC



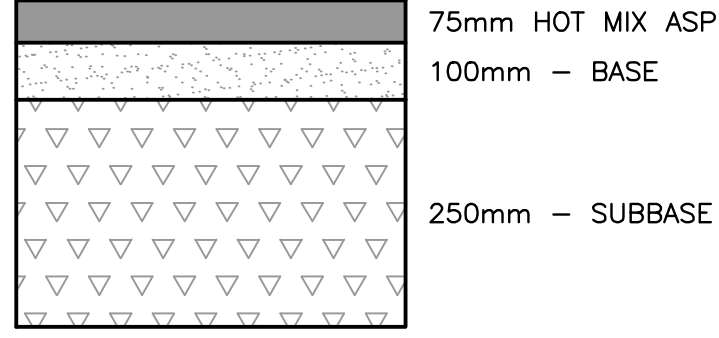
URBAN systems	
Scale	NOT TO SCALE
Quality Control by	TS
Designed by	TF/JC
Drawn by	ES

DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING DETAILS		
Sheet Number	6 of 7	
Project Number	Drawing Number	Revision
0788.0039.02	D01	1

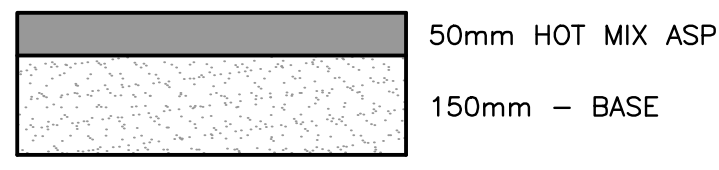
U:\Projects\_KEL\0788\0039\02-Drafting-Design-Analysis\CADD\CURRENT\PRODUCTION\00-0788003902-DETAILS.dwg, D02, 2016-08-22 11:23 am tpurcer



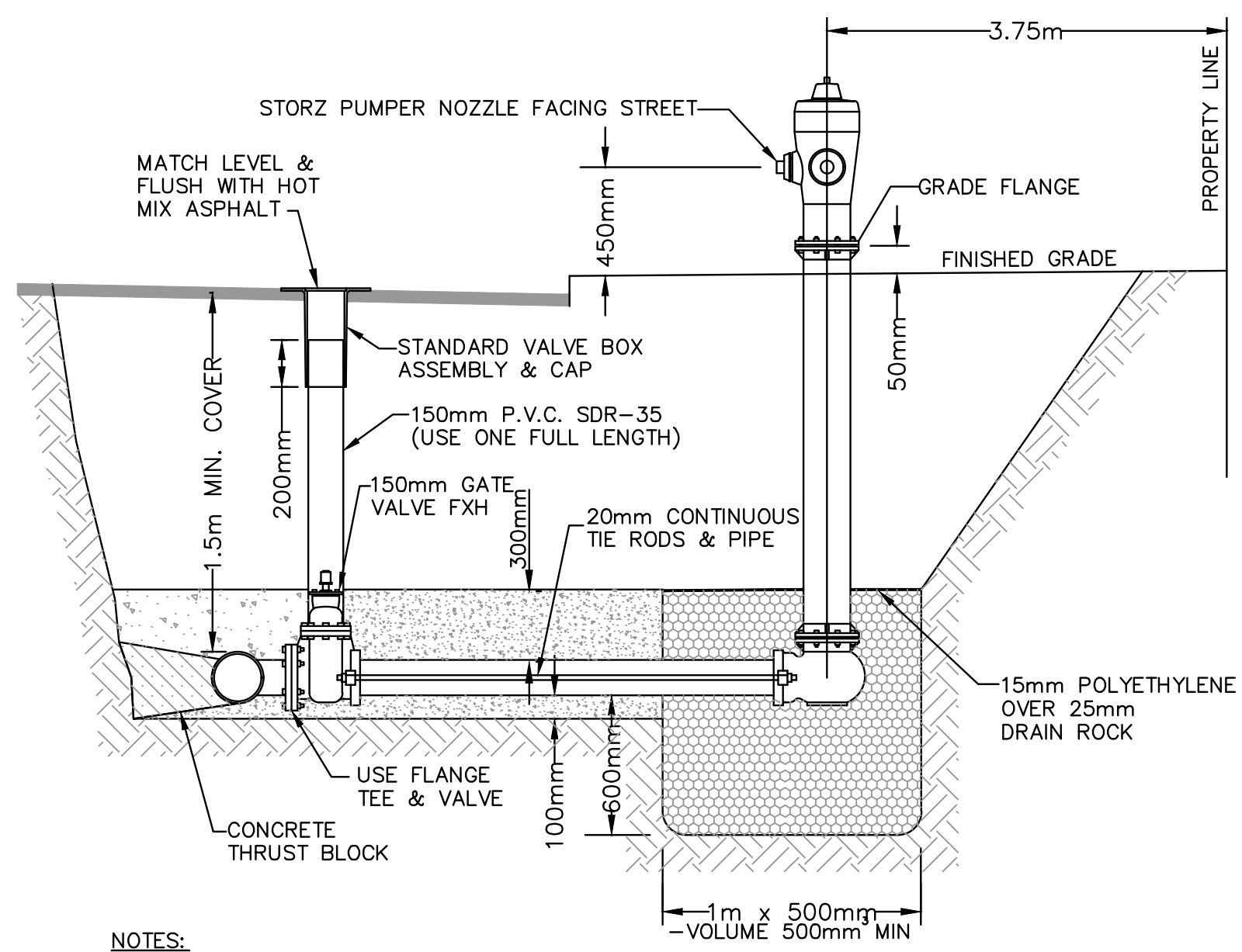
1 PAVEMENT STRUCTURE – 66TH AVE  
D02 SCALE: N.T.S.



2 PAVEMENT STRUCTURE – KETTLE RIVER DR  
D02 SCALE: N.T.S.

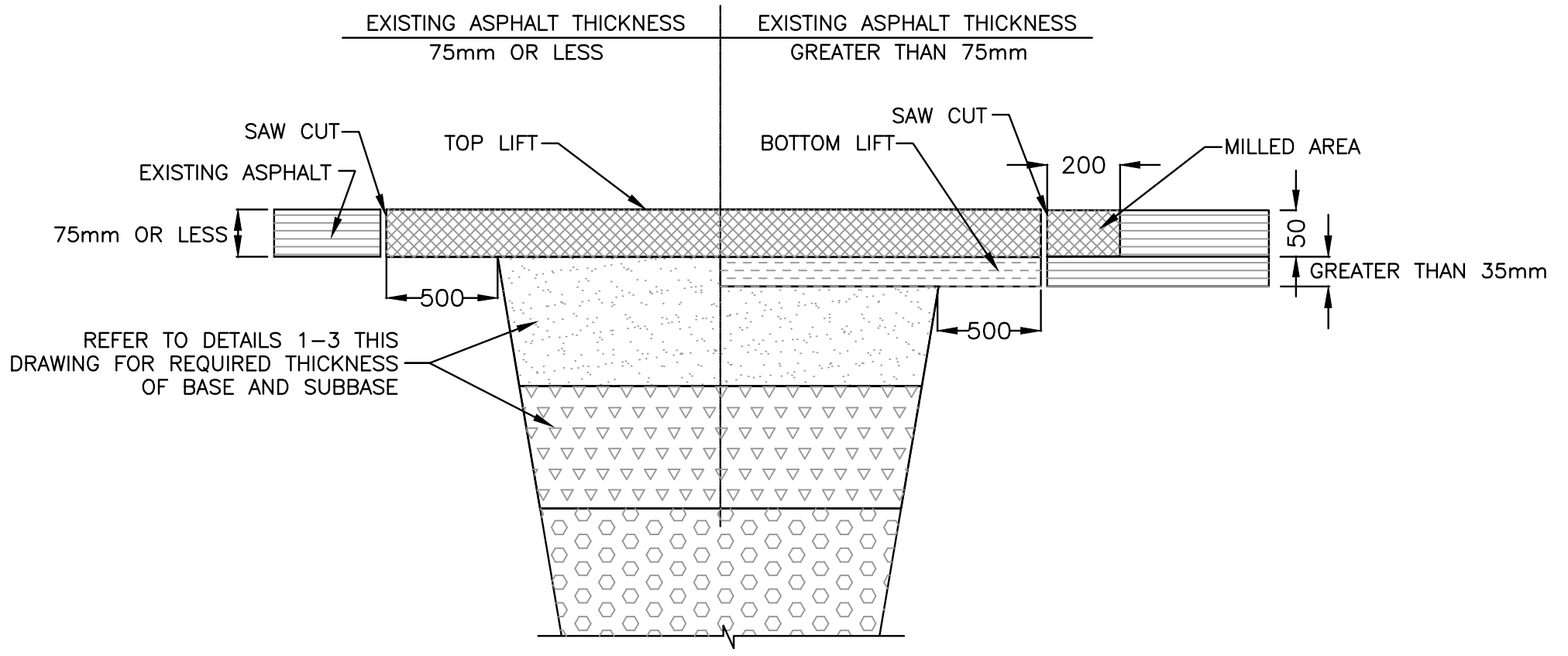


3 MULTI-USE PATHWAY  
D02 SCALE: N.T.S.

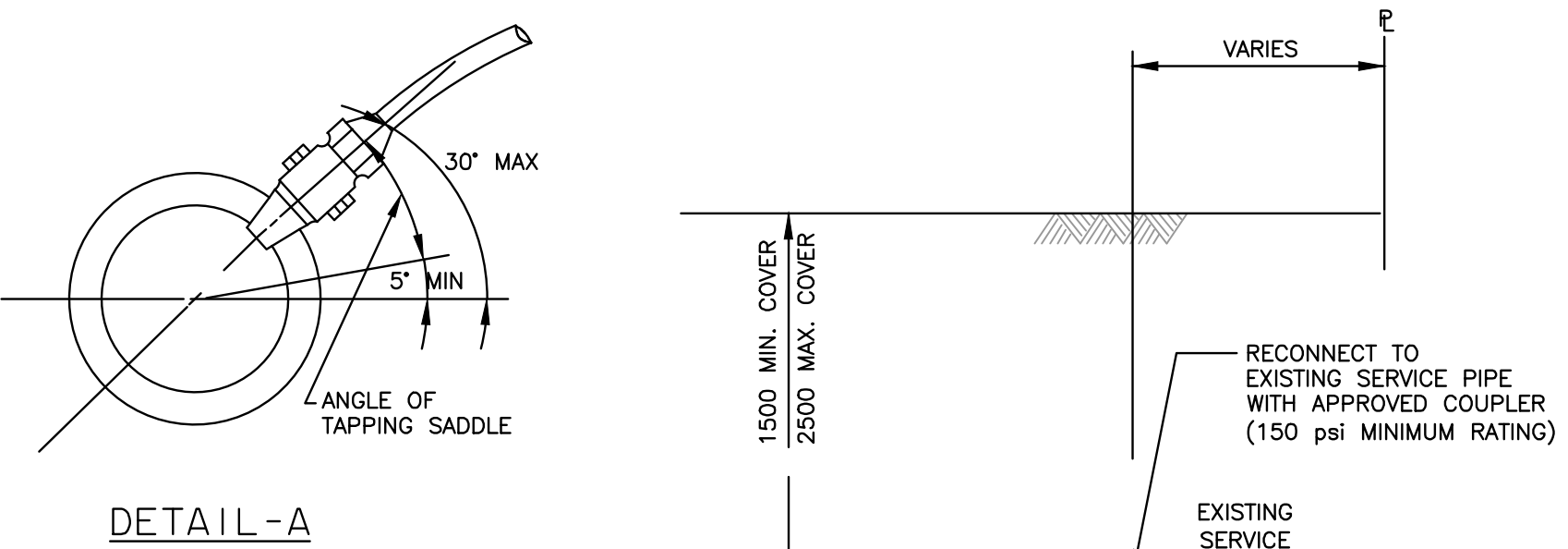


- NOTES:
- 1) ALL PIPE, FITTINGS & HYDRANTS SHALL BE ELECTRICALLY CONDUCTIVE IF METAL PIPE IS USED.
  - 2) THE EXTERIOR OF THE HYDRANT BARREL BELOW THE GRADE FLANGE SHALL BE COATED WITH ONE COAT OF COAL TAR.

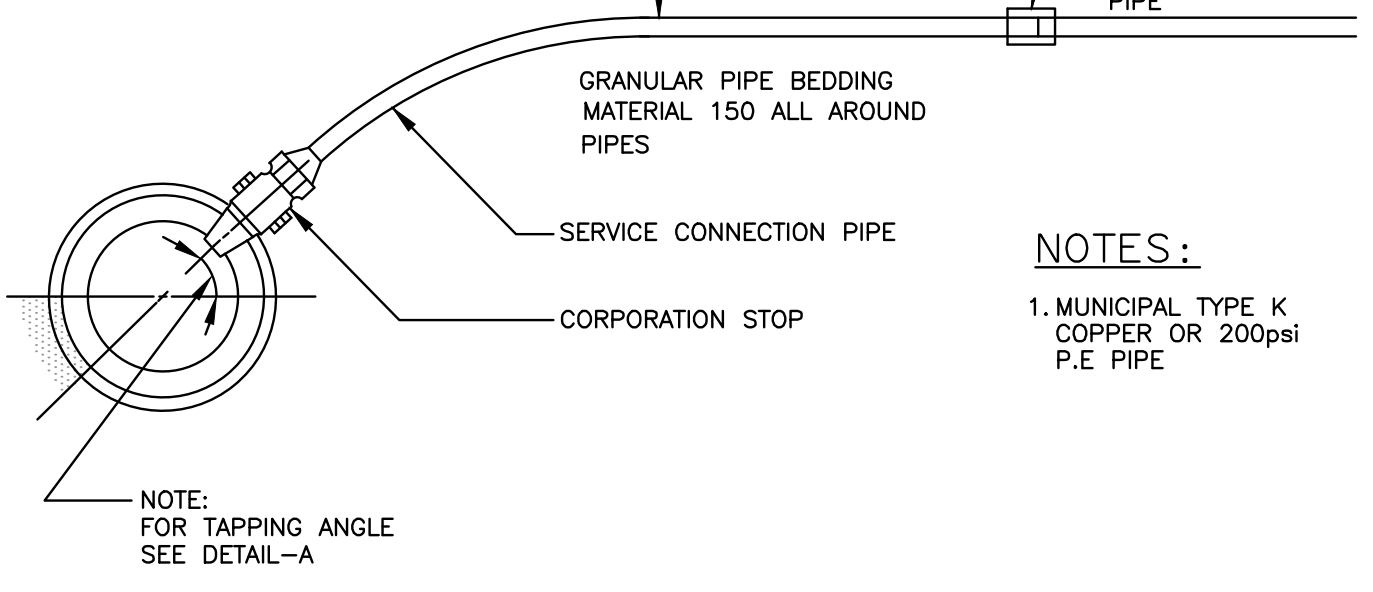
6 STANDARD HYDRANT DETAIL  
D02 SCALE: N.T.S.



4 PAVEMENT RESTORATION  
D02 SCALE: N.T.S.

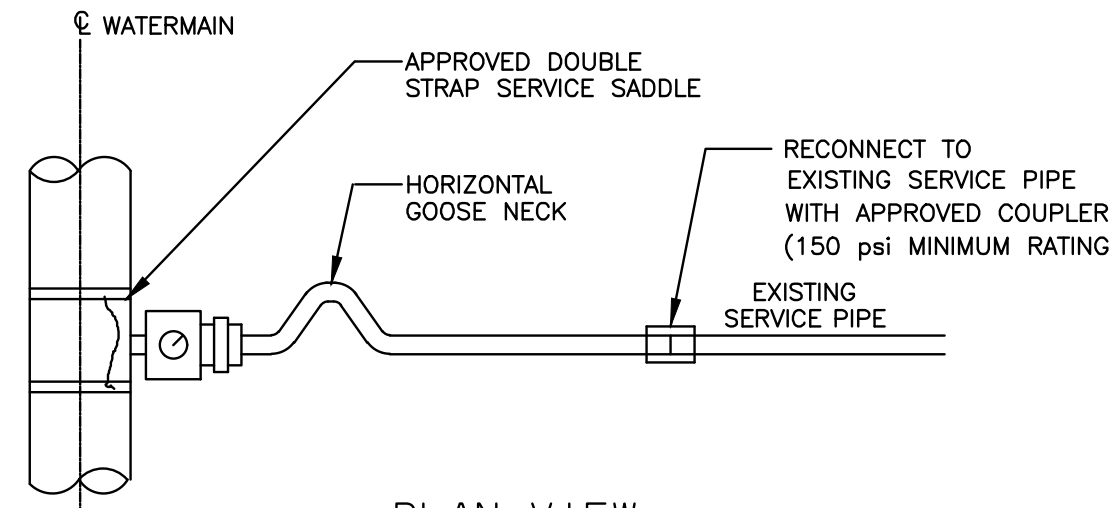


DETAIL-A



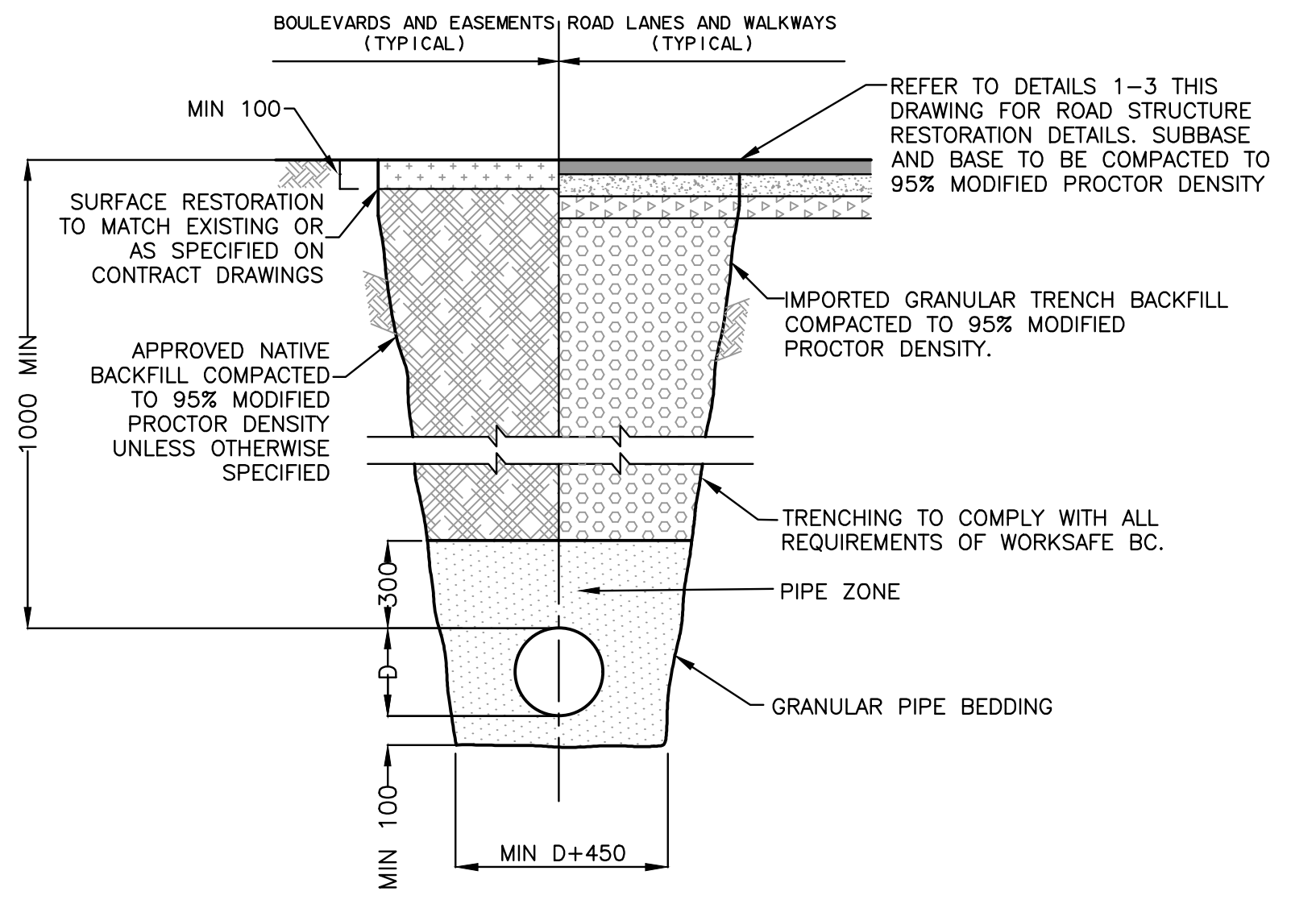
- NOTES:
1. MUNICIPAL TYPE K COPPER OR 200psi P.E PIPE

CROSS SECTION



PLAN VIEW

7 WATER SERVICE CONNECTION  
D02 SCALE: N.T.S.



5 UTILITY TRENCH  
D02 SCALE: N.T.S.

THIS SPECIFICATION MUST BE READ IN CONJUNCTION WITH THE LATEST VERSION OF THE MMCD AND THE SCHEDULES IN THE SUBDIVISION SERVICING BYLAW. WHERE THERE ARE CONTRADICTIONS, THIS DRAWING SHALL PREVAIL.

1	2	3
4	5	6
7	8	9
10	11	12

BEARING AREA OF BLOCKS						
CONCRETE AREAS IN M.						
PIPE SIZE	100	150	200	250	300	
1, 4, 11	0.2	0.4	0.7	1.1	1.45	
3, 5, 7	0.3	0.55	0.9	1.45	2.05	
2			0.25	0.5	0.75	
6, 8	0.15	0.3	0.5	0.8	1.2	
9	0.1	0.15	0.3	0.45	0.6	
10	0.3	0.6	1.0	1.55	2.2	

DESIGN ASSUMPTIONS

- HYDRAULIC HEAD = 1.38 MPa.
- SOIL BEARING VALUE = 0.096 MPa. (MEDIUM SOFT CLAY)
- THRUST BLOCKS FOR MAINS LARGER THAN 300mm $\phi$  SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER AND SHOWN ON THE ENGINEERED DRAWINGS

VERTICAL REACTION BLOCK SHALL BE DESIGNED BY A STRUCTURAL ENGINEER.

8 THRUST BLOCK DETAILS  
D02 SCALE: N.T.S.

ATTENTION  
This drawing is prepared for the sole use of CITY OF GRAND FORKS  
No representations of any kind are made by Urban Systems Ltd. or its employees to any party with whom Urban Systems Ltd. does not have a contract.  
WARNING  
Utilities or structures shown on this drawing were compiled from information supplied by various parties and may not be complete or accurate. Expose and conclusively confirm the location in the field all underground utilities and structures indicated on this drawing, all underground utilities in the area of the proposed work and any utilities or structures reasonably apparent from an inspection of the proposed work. Urban Systems Ltd. assumes no responsibility for loss or damage caused by third party negligence or failure to comply with the above.

DISCLAIMER  
The seal and signature of the undersigned on this drawing certifies that the design information contained in these drawings accurately reflects the original design and the material design changes made during construction, that were brought to the undersigned's attention. These drawings are intended to incorporate addenda, change orders and other material design changes, but not necessarily all site instructions. The undersigned does not warrant or guarantee, nor accept any responsibility for the accuracy or completeness of information supplied by others contained in these drawings, but does, by sealing and signing, certify that the information, if accurate and complete, provides a system which substantially complies in all material respects with the original design intent.

SURVEY INFORMATION  
Prepared by: AL ANDRES  
Coordinate System: NAD83  
Compilation Date: APRIL 29, 2016

ISSUED FOR  
TENDER  
AUGUST 22, 2016  
urbansystems.ca

Professional Seals

#	Date	Issue / Revision	App
1	2016/08/22	ISSUED FOR TENDER	JC



**URBAN**  
systems

Scale  
NOT TO SCALE

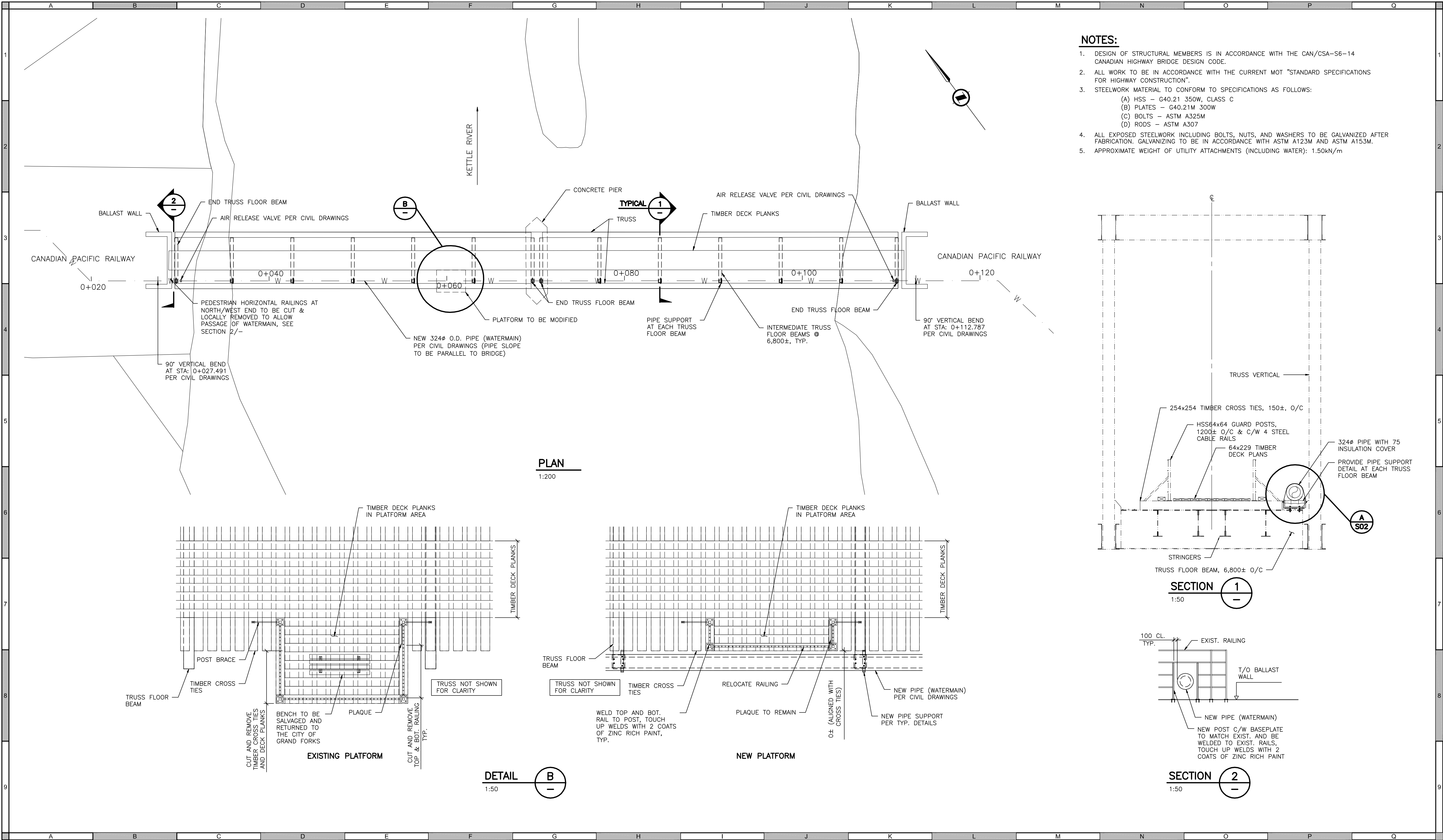
Quality Control by  
Designed by  
Drawn by

TS  
TF/JC  
ES

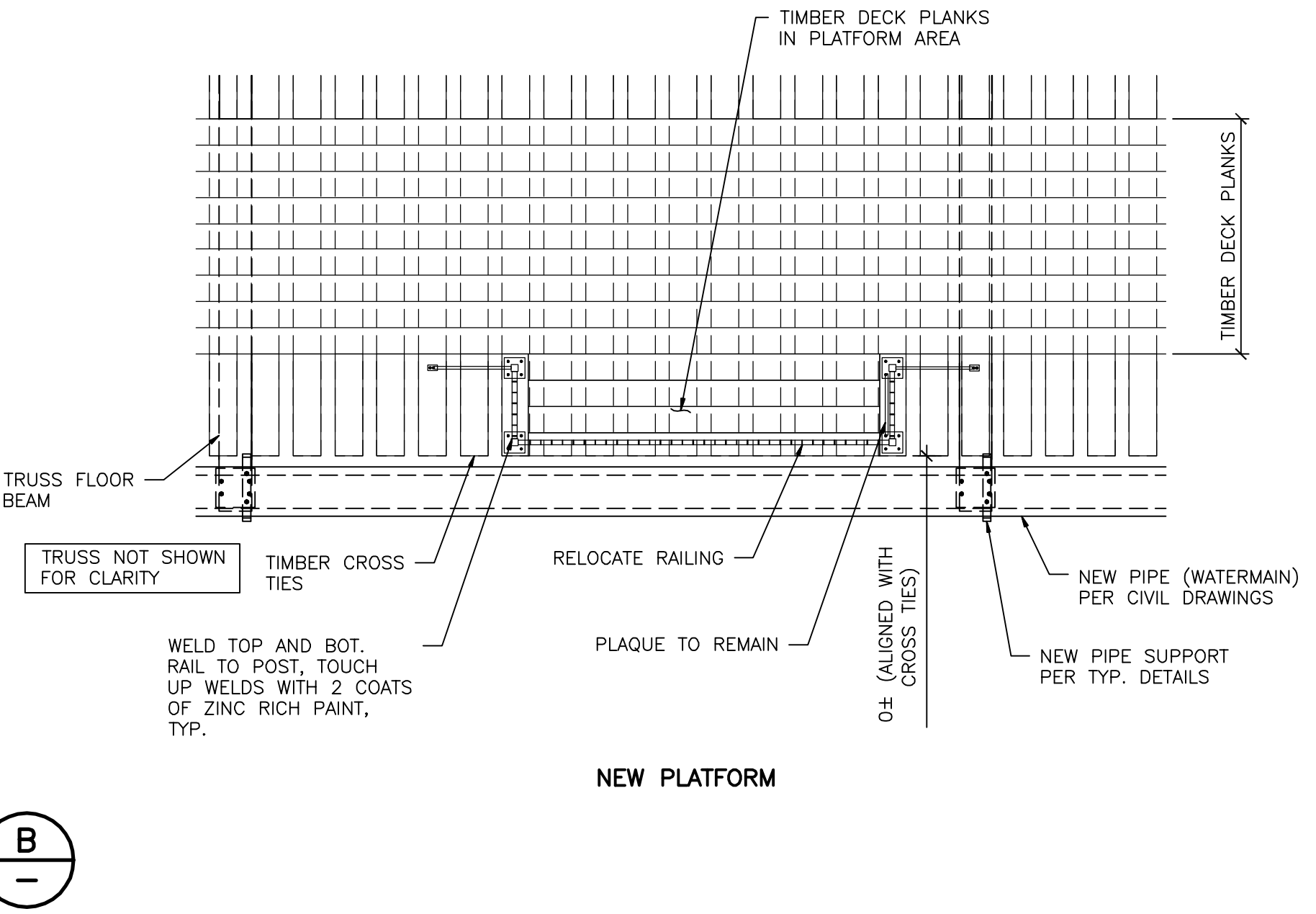
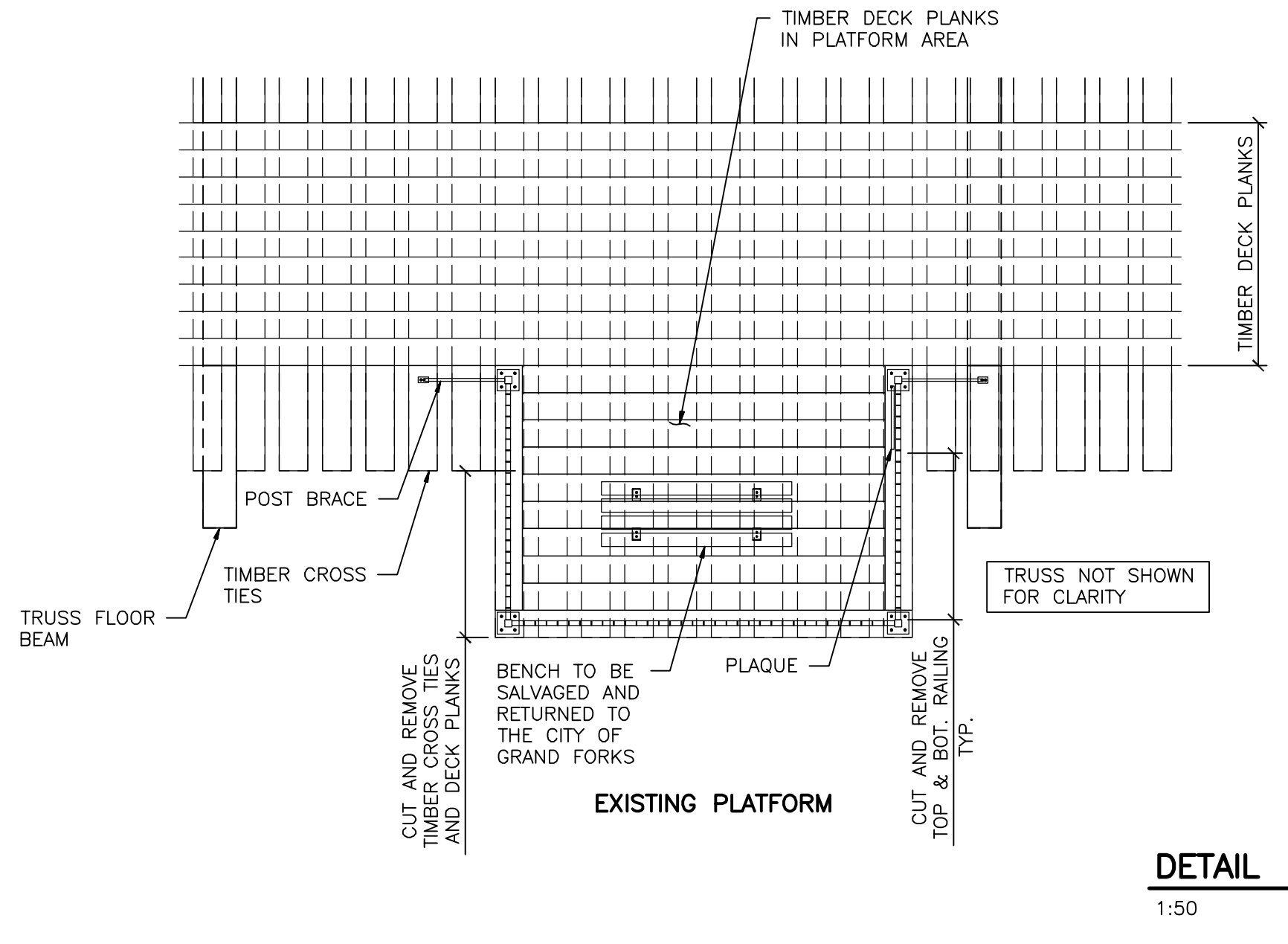
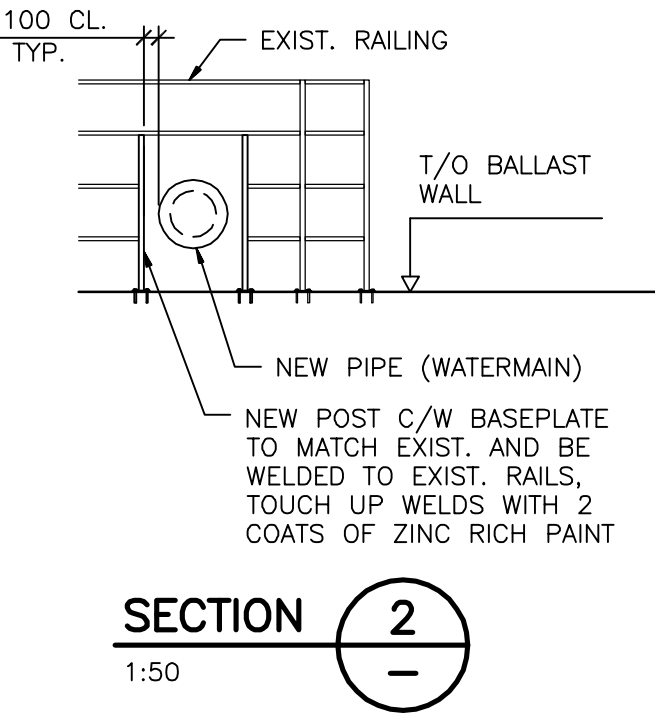
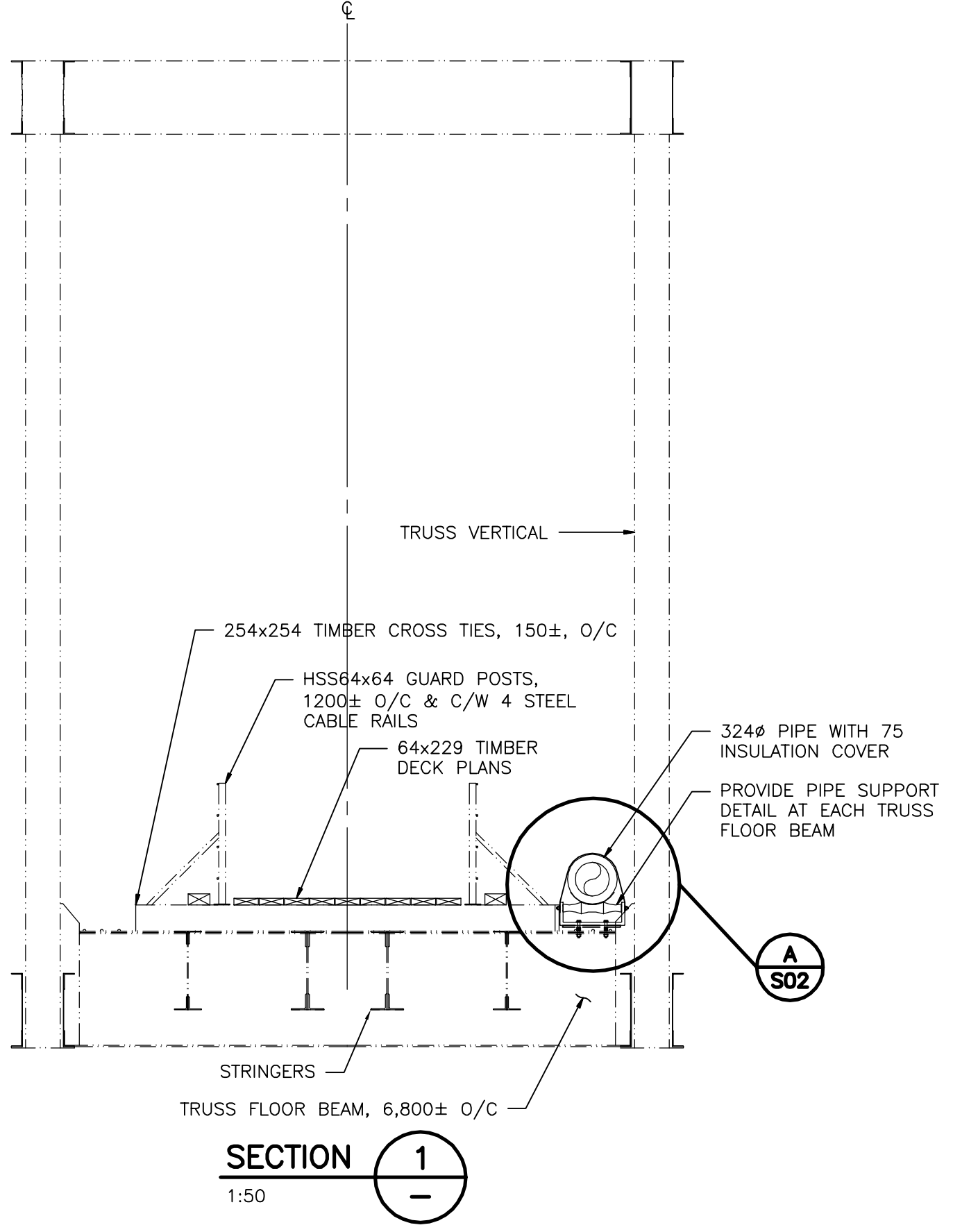
DARRELL J. PRIEDE BRIDGE  
WATERMAIN CROSSING  
DETAILS

Sheet Number	7 of 7
Project Number	0788.0039.02
Drawing Number	D02
Revision	1





- NOTES:**
- DESIGN OF STRUCTURAL MEMBERS IS IN ACCORDANCE WITH THE CAN/CSA-S6-14 CANADIAN HIGHWAY BRIDGE DESIGN CODE.
  - ALL WORK TO BE IN ACCORDANCE WITH THE CURRENT MOT "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION".
  - STEELWORK MATERIAL TO CONFORM TO SPECIFICATIONS AS FOLLOWS:
    - (A) HSS - G40.21 350W, CLASS C
    - (B) PLATES - G40.21M 300W
    - (C) BOLTS - ASTM A325M
    - (D) RODS - ASTM A307
  - ALL EXPOSED STEELWORK INCLUDING BOLTS, NUTS, AND WASHERS TO BE GALVANIZED AFTER FABRICATION. GALVANIZING TO BE IN ACCORDANCE WITH ASTM A123M AND ASTM A153M.
  - APPROXIMATE WEIGHT OF UTILITY ATTACHMENTS (INCLUDING WATER): 1.50kN/m



Professional Seals

**CWMM CONSULTING ENGINEERS LTD.**  
200-1854 Kinsler Road  
Kelowna, B.C.  
Canada, V1Y 4N6  
Tel: (250) 868-2308  
Fax: (250) 868-2374  
kelowna@cwmm.ca

K4989

#	Date	Issue / Revision	App
1	2016-08-04	TENDER	BM

**URBAN systems**

Scale: AS SHOWN

Quality Control by  
Designed by  
Drawn by

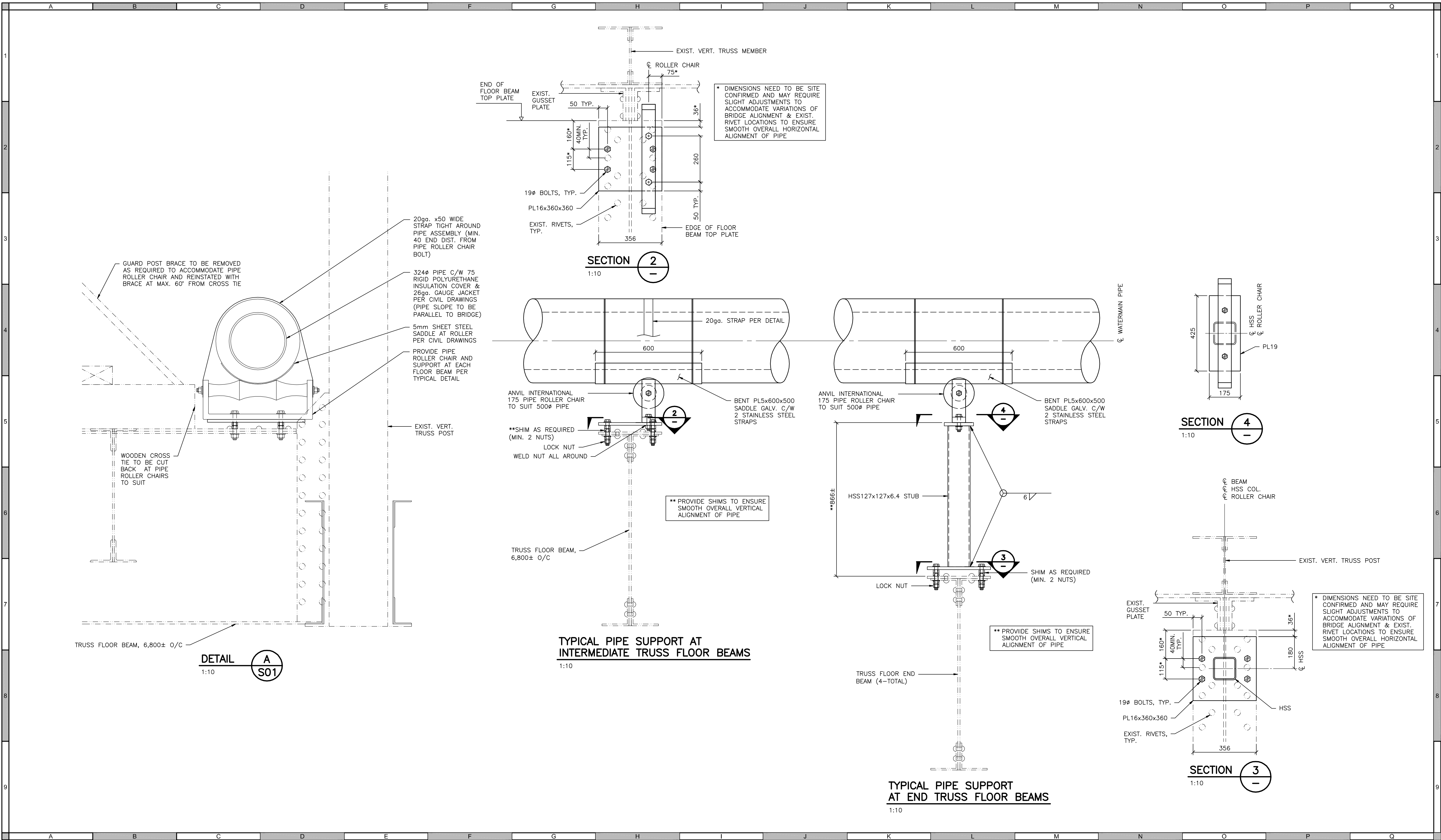
DB  
BM  
PA

**DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING**

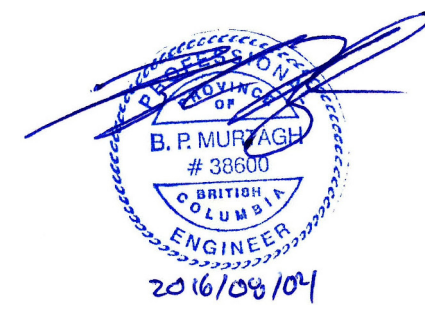
PLAN AND SECTIONS

Sheet Number	1 of 2
Project Number	Drawing Number
0714.0121.01	S01





Professional Seals



**CWMM**  
CONSULTING  
ENGINEERS LTD.  
200-1854 Kinsinger Road  
Kelowna, B.C.  
Canada, V1Y 4N6  
Tel: (250) 868-2308  
Fax: (250) 868-2374  
kelowna@cwmm.ca

K4989

#	Date	Issue / Revision	App
1	2016-08-04	TENDER	BM



<b>URBAN</b> systems	
Scale: AS SHOWN	
Quality Control by	DB
Designed by	BM
Drawn by	PA

DARRELL J. PRIEDE BRIDGE WATERMAIN CROSSING			
SECTIONS AND TYPICAL DETAILS			
Sheet Number	2 of 2		
Project Number	Drawing Number	Revision	
0714.0121.01	S02	-	