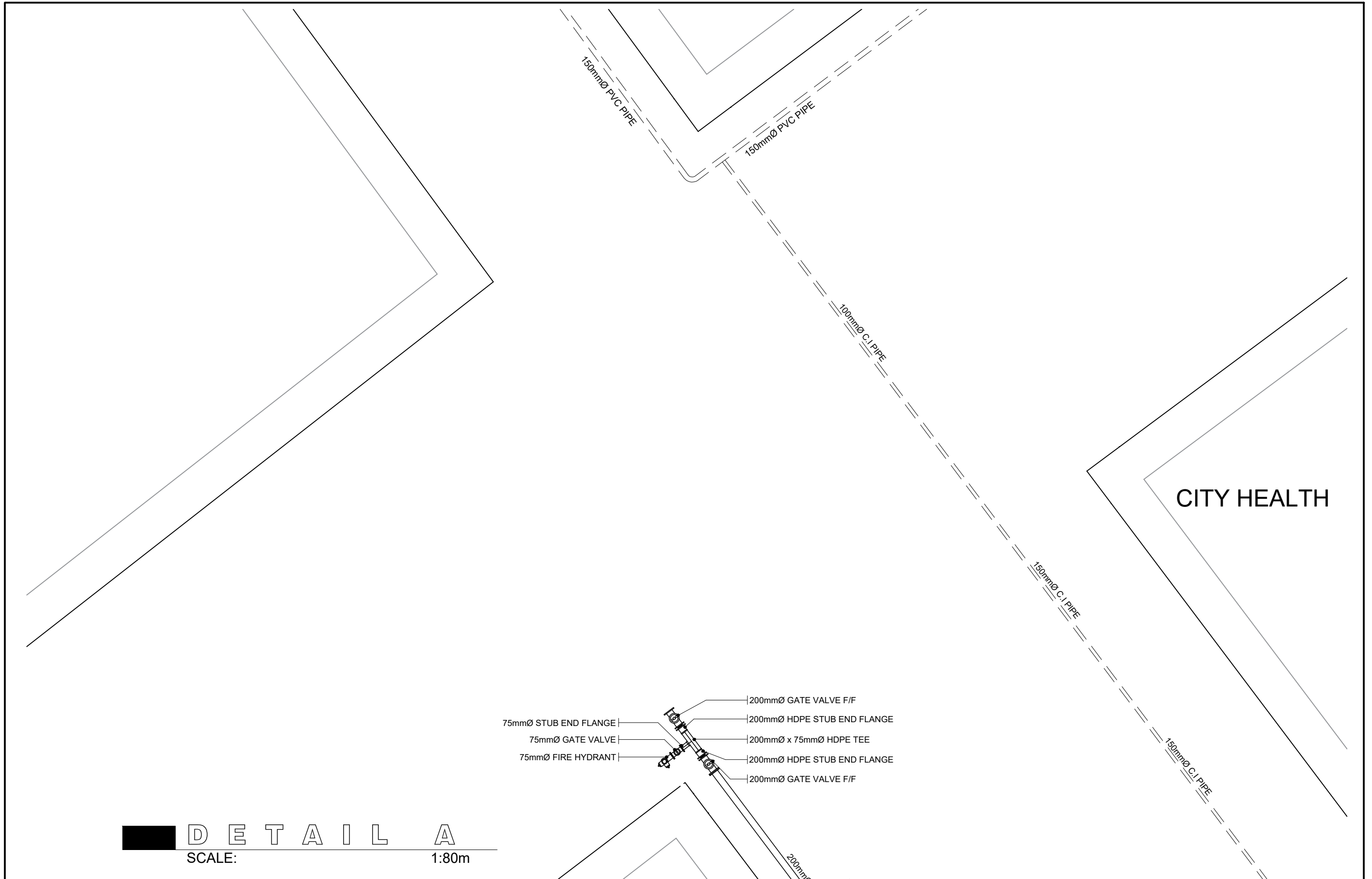


PIPE LAYING DETAILS
SCALE: 1:3000m

CERTIFIED BY:	PRC NO.:	PROJECT TITLE:	OWNER:	OWNERS APPROVAL:	SHEET	DRAWN BY:	SHEET NO.
	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION	VCWD	ABRAHAM J. DE DIOS JR. GENERAL MGR.	CONTENT:	EDMUND	
	TIN NO.:	LINE SECTION A	AS INDICATED		CHECKED		
	PTR NO.:	LOCATION:	VICTORIAS CITY		BY:		
DATE ISSUED:	VICTORIAS CITY						1/8

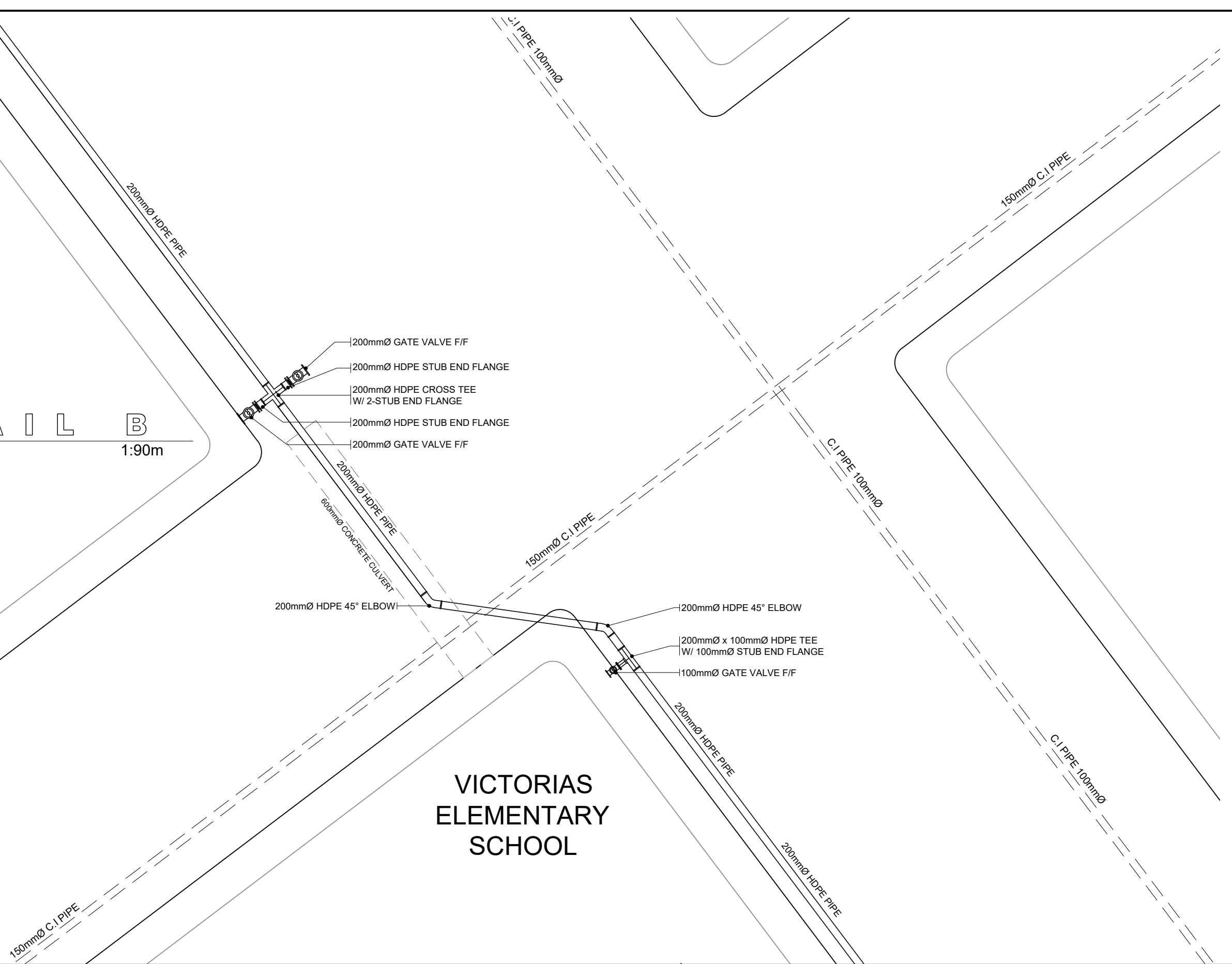


DETAIL A
SCALE: 1:80m

CERTIFIED BY:	PRC NO.:	PROJECT TITLE:	OWNER:	OWNERS APPROVAL:	SHEET	DRAWN BY:	SHEET NO.
	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION	VCWD		CONTENT:	EDMUND	2/8
	TIN NO.:	LINE SECTION A			AS INDICATED		
	PTR NO.:	LOCATION:	ADDRESS:	ABRAHAM J. DE DIOS JR.		CHECKED	
	DATE ISSUED:	VICTORIAS CITY	VICTORIAS CITY	GENERAL MGR.		BY:	

VICTORIAS
PUBLIC PLAZA

DETAIL B
SCALE: 1:90m



VICTORIAS
ELEMENTARY
SCHOOL

CERTIFIED BY:	PRC NO.:	PROJECT TITLE:	OWNER:	OWNERS APPROVAL:	SHEET	DRAWN BY:	SHEET NO.
	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION	VCWD	ABRAHAM J. DE DIOS JR. GENERAL MGR.	CONTENT:	EDMUND	3/8
	TIN NO.:	LINE SECTION A	ADDRESS:		AS INDICATED	CHECKED	
	PTR NO.:	LOCATION:	VICTORIAS CITY		BY:		
DATE ISSUED:	VICTORIAS CITY						

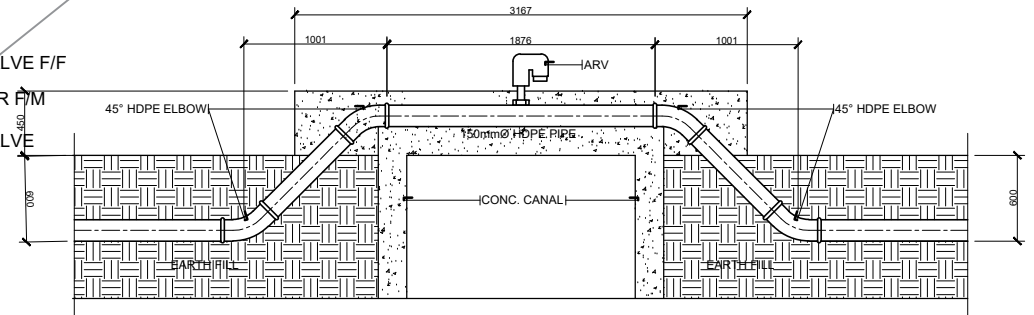
VICTORIAS ELEMENTARY SCHOOL

- 100mmØ HDPE STUB END FLANGE
- 100mmØ GATE VALVE F/F
- 100mmØ x 100mmØ TEE
- 100mmØ GI PIPE W/ FLANGE
- 100mmØ GATE VALVE
- 100mmØ FIRE HYDRANT

FIRE HYDRANT ASSEMBLY



- 150mmØ HDPE PRE-FAB. 45° ELBOW
- 200mmØ GATE VALVE F/F
- 200mmØ HDPE STUB END FLANGE
- 200mmØ x 150mmØ HDPE REDUCER
- 150mmØ x 100mmØ HDPE TEE
- 150mmØ HDPE STUB END FLANGE
- 150mmØ GATE VALVE F/F



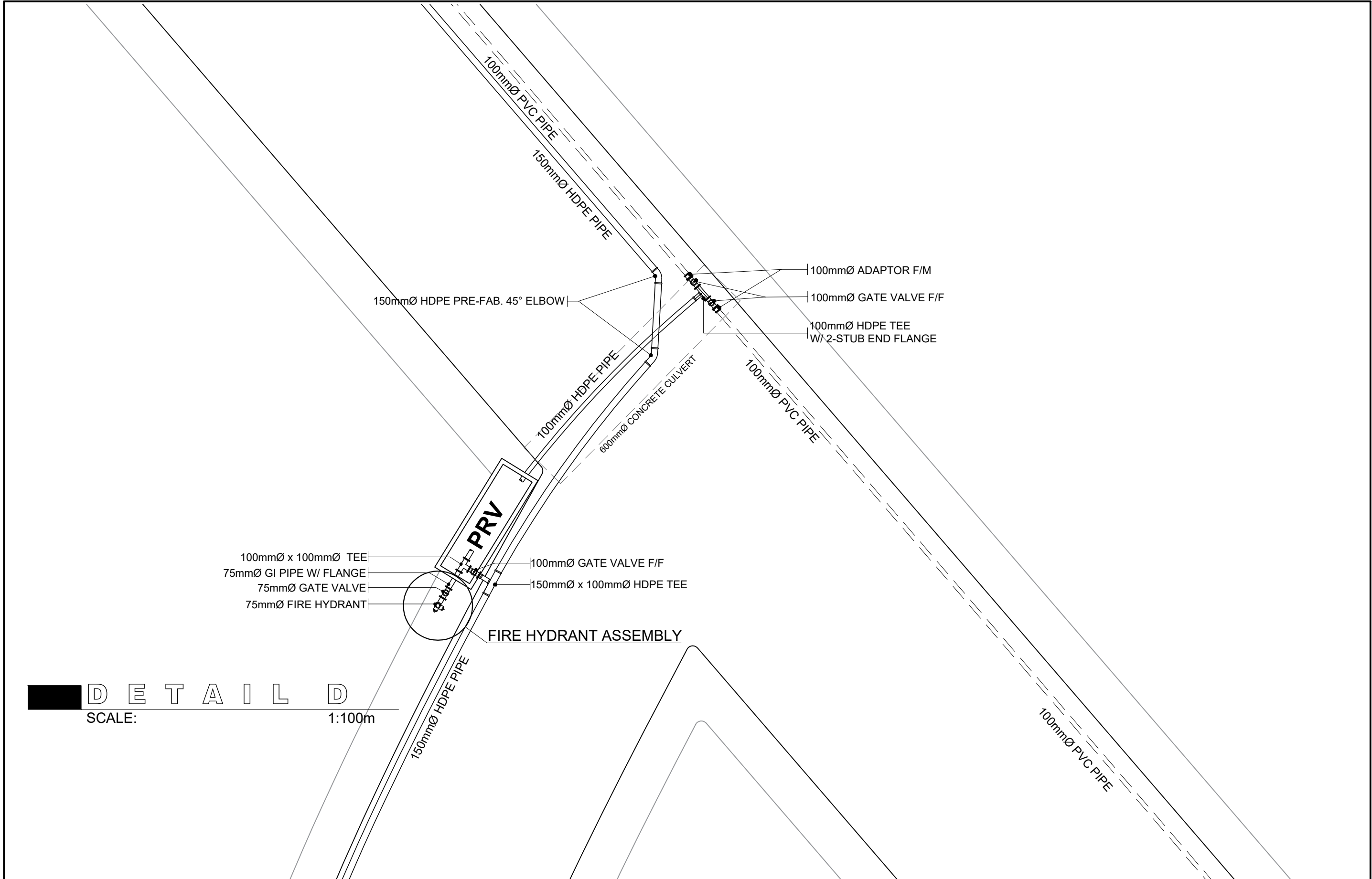
DETAIL C-1
SCALE: 1:50m

QUEZON ST.

DETAIL C
SCALE: 1:100m

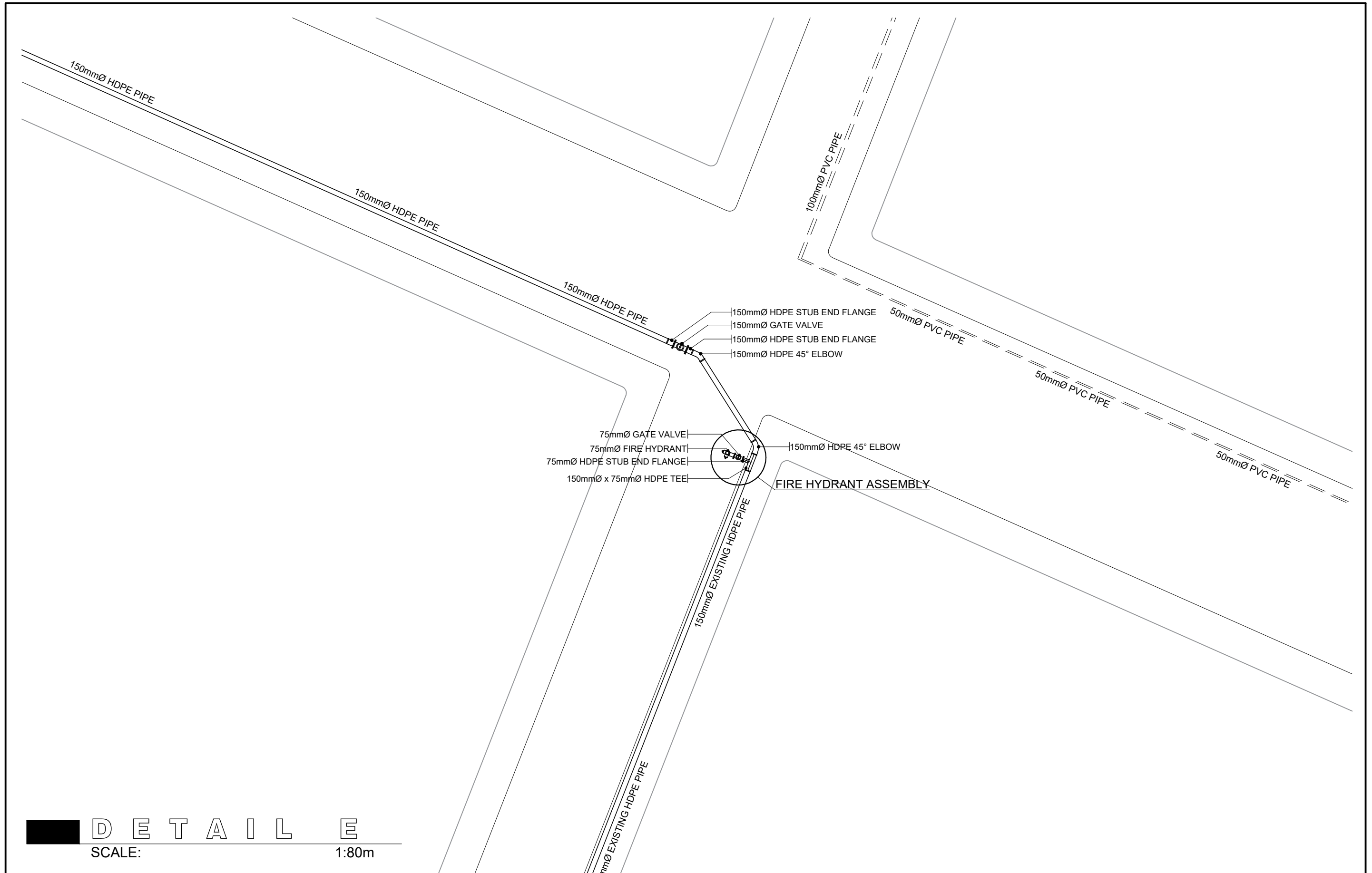
SEE DETAIL C-1

CERTIFIED BY:	PRC NO.:	PROJECT TITLE:	OWNER:	OWNERS APPROVAL:	SHEET	DRAWN BY:	SHEET NO.
	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION	VCWD		CONTENT:	EDMUND	
	TIN NO.:	LINE SECTION A			AS INDICATED		
	PTR NO.:	LOCATION:	ADDRESS:	ABRAHAM J. DE DIOS JR.		CHECKED	
	DATE ISSUED:	VICTORIAS CITY	VICTORIAS CITY	GENERAL MGR.		BY:	4/8



DETAIL D
SCALE: 1:100m

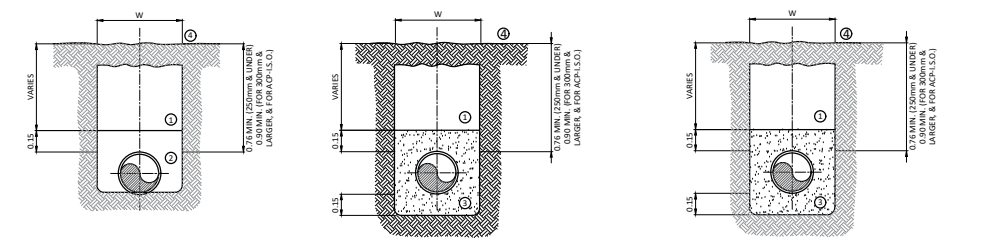
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	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION LINE SECTION A	VCWD	ABRAHAM J. DE DIOS JR. GENERAL MGR.	AS INDICATED	EDMUND	5/8
	TIN NO.:	LOCATION:	ADDRESS:			CHECKED	
	PTR NO.:	VICTORIAS CITY	VICTORIAS CITY	BY:			
DATE ISSUED:							



CERTIFIED BY:	PRC NO.:	PROJECT TITLE:	OWNER:	OWNERS APPROVAL:	SHEET	DRAWN BY:	SHEET NO.
	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION	VCWD		CONTENT:	EDMUND	6/8
	TIN NO.:	LINE SECTION A			AS INDICATED		
	PTR NO.:	LOCATION:	ADDRESS:	ABRAHAM J. DE DIOS JR.	CHECKED		
DATE ISSUED:	VICTORIAS CITY	VICTORIAS CITY	GENERAL MGR.	BY:			

GENERAL NOTES:

- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- THE MINIMUM COVER FOR ALL PIPES SHALL BE AS FOLLOWS:
PIPE DIAMETER (mm) MINIMUM COVER (mm)
50-300 750-900
- ALL PAVEMENTS DISTURBED IN THE INSTALLATION OF PIPES SHALL BE REPAIRED TO MATCH THE EXISTING CONDITIONS.
- FOR INSTALLATION OF BURIED PIPES, VALVES, AND OTHER RELEVANT CONSTRUCTION DETAILS, SEE STANDARD CIVIL DRAWINGS
- CONCRETE THRUST BLOCKS SHALL BE PROVIDED ON ALL NON-WELDED STEEL PIPELINES WHETHER SHOWN OR NOT IN ACCORDANCE WITH THE STANDARD DRAWINGS. THRUST BLOCK MAY BE OMITTED WHEN WELDED STEEL PIPE IS USED AS AN ALTERNATIVE PIPE MATERIAL EXCEPT AS PROVIDED FOR IN STANDARD DRAWINGS.
- PROPOSED PIPE LOCATION INDICATED ON THE PLANS ARE APPROXIMATE. SOME DEVIATIONS DIRECTED BY THE RESIDENT ENGINEER TO SUIT FIELD CONDITIONS.
- ALIGNMENT OF PROPOSED TRANSMISSION MAINS ON OPEN FIELDS OR OUTSIDE WELL-DEFINED ROADWAY SHALL IN GENERAL FOLLOW THE BEARING/AZIMUTH OF THE PIPELINES AS SHOWN IN THE PLANS WHERE CROSS-SECTIONS ARE AVAILABLE. THE PIPE SHALL BE "PULLED JOINT" TO THE INDICATED ALIGNMENT IN THE CROSS-SECTION AND THEN RETURNED TO THE ORIGINAL ALIGNMENT ESTABLISHED BY THE PIPE BEARING AZIMUTH.
- PIPE AND PIPE JOINTS MAY BE DEFLECTED WITHIN THE RECOMMENDED DEFLECTION BY PIPE MANUFACTURERS SUBJECT TO ENGINEERING'S APPROVAL.
- IN CROSSING CULVERTS IN PIPE-UNDER MANNER, CONCRETE ENCASEMENT SHALL BE PROVIDED WHERE FLEXIBLE JOINTS OCCUR OR WHERE CLEARANCE BETWEEN PIPES IS LESS THAN 0.30M. FOR PIPE-OVER MANNER, ENCASEMENT SHALL LIKEWISE BE PROVIDED IN PORTIONS WHERE PIPE COVER IS LESS THAN THE SPECIFIED MINIMUM LENGTH OF CONCRETE ENCASEMENT SHALL BE THE CULVERT WIDTH OR OUTSIDE DIAMETER PLUS 0.30M OR BOTH SIDES.
- THE MINIMUM DESIGN PRESSURE FOR ALL DISTRIBUTION AND TRANSMISSION PIPELINES SHALL BE 10 psi.
- THE MAXIMUM DESIGN PRESSURE FOR ALL TRANSMISSION MAINS AND DISTRIBUTION PIPELINES SHALL BE 100 psi.
- ALL PIPE TRENCH EXCAVATION AND BACKFILLING SHALL BE IN ACCORDANCE WITH STANDARD DRAWINGS.
- UNLESS OTHERWISE SHOWN OR SPECIFIED, WHENEVER A PROPOSED PIPE HAS TO CROSS A CULVERT (PIPE OR BOX CULVERT), SUCH CULVERT CROSSING SHALL BE INCLUDED IN THE UNIT BID PRICES FOR THE PIPE.



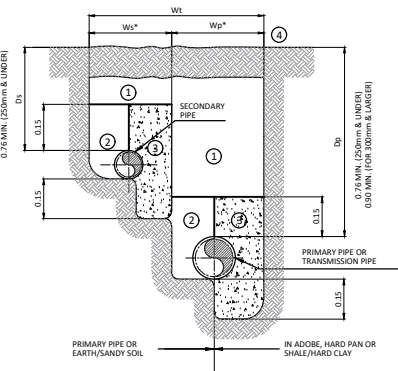
1 NORMAL INSTALLATION
1A WHERE SAND BEDDING/BACKFILL NOT REQUIRED
1B IN ROCK OR WHEN ORDERED BY ENGINEER
1C IN NON-GRANULAR SOIL AS DETERMINED BY ENGINEER

LEGEND:
 ① COMPACTED SELECTED NATIVE MATERIALS BACKFILL (SEE SPECS.)
 ② COMPACTED SELECTED NATIVE MATERIAL IN 0.15 LAYERS (SEE SPECS.)
 ③ APPROVED SAND BEDDING & BACKFILL HAND PLACED AND COMPACTED.
 ④ PAYMENT FOR ANY RESURFACING WILL BE BASED ON MAXIMUM TRENCH WIDTHS PER SIZE PIPE SHOWN. RESTORATION OF PAVEMENT SUB-BASE AND COURSE SAME THICKNESS AS EXISTING.
 ⑤ APPROVED SELECTED BACKFILL (NATIVE OR FROM SELECTED BORROW AREA) (SEE SPECS.)

NOTE:
 ALL DIMENSIONS IN METERS EXCEPT WHERE OTHERWISE SHOWN. SPACE SHALL BE PROVIDED FOR PIPE JOINTS TO PREVENT BRIDGING.

TABLE OF TRENCH DIMENSION (IN METERS)

PIPE DIAMETER	3" & UNDER	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
MINIMUM 'W'	0.20	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.90
MAXIMUM 'W'	0.30	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.20



1D TYPICAL DOUBLE TRENCH IN SOIL CONDITION 1A OR 1B

NOTES:
 1. Dp = DEPTH OF COVER FOR PRIMARY PIPE
 2. Ds = DEPTH OF COVER FOR SECONDARY PIPE
 3. Wp = TRENCH WIDTH FOR PRIMARY PIPE
 4. Ws = TRENCH WIDTH FOR SECONDARY PIPE
 5. Wt = TOTAL TRENCH WIDTH (Wp + Ws)
 6. ALL BEDDING AND BACKFILL ARE PER TYPICAL TRENCH DETAILS.
 7. FOR TRENCHES IN PAVED SURFACE AREAS SUB-BASE AND BASE COURSE SAME THICKNESS AS EXISTING (150mm MIN.). CONCRETE AND ASPHALT PAVEMENT SAME THICKNESS AS EXISTING.
 * SEE TABLE OF TYPICAL TRENCH DIMENSION FOR TRENCH WIDTHS.

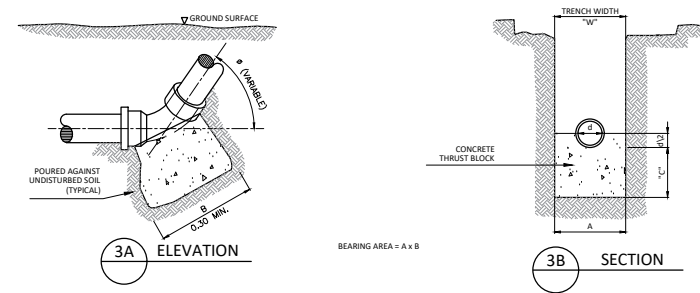


TABLE OF MINIMUM THRUST BLOCK DIMENSIONS FOR PIPE SIZES 75mm TO 600mm Ø

PIPE SIZE	"C"	THRUST BLOCK BEARING AREAS IN SQ. METERS		
		90° BEND	45° BEND	22 1/2° BEND
75 (3")	0.10	0.14	0.12	-
150 (6")	0.25	0.31	0.17	0.12
200 (8")	0.25	0.54	0.30	0.15
250 (10")	0.25	0.85	0.46	0.24
300 (12")	0.30	1.23	0.66	0.34
350 (14")	0.30	1.67	0.90	0.46
400 (16")	0.30	2.18	1.18	0.60
450 (18")	0.35	2.76	1.49	0.76
500 (20")	0.35	3.41	1.84	0.94
600 (24")	0.40	4.91	2.65	1.35

* THRUST BLOCK NOT REQUIRED

NOTES:
 ① ABOVE AREAS BASED ON AN ASSUMED SOIL BEARING PRESSURE OF 96 kPa (2000psf.).
 ② REDUCE OR INCREASE AREAS PROPORTIONATELY TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF ENGINEER.
 ③ CONCRETE FOR THRUST BLOCK SHALL BE 13.8 MPa (2000psi).
 ④ THRUST BLOCKS NOT REQUIRED ON STEEL PIPE LINES WITH WELDED OR FLANGED JOINTS OR ON SOLVENT WELDED PVC PIPE.
 ⑤ WHERE PIPE CONNECTS TO A FITTING ON A STEEL PIPELINE, THE STEEL PIPELINE SHALL BE BLOCKED AS SHOWN HEREON.
 ⑥ BEARING AREAS BASED ON INTERNAL PRESSURE OF 106m (150psi).

1 TYPICAL TRENCH DETAILS

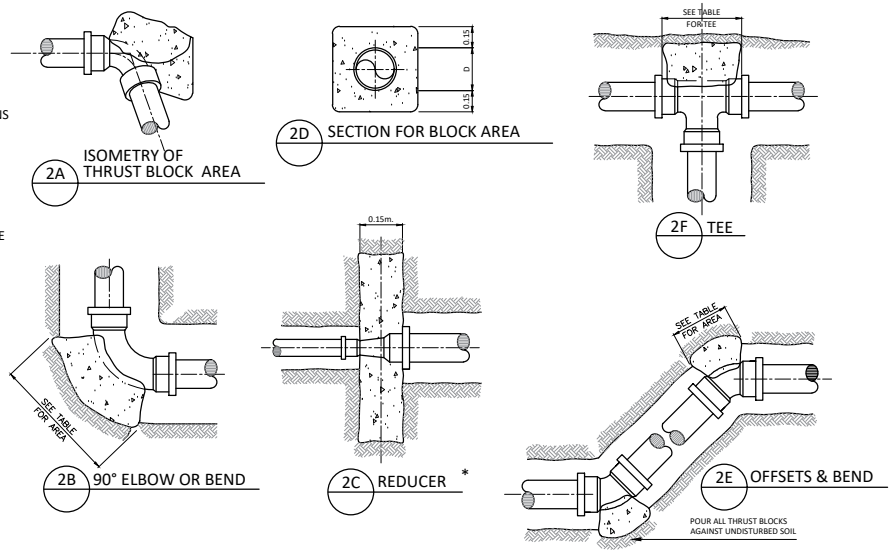


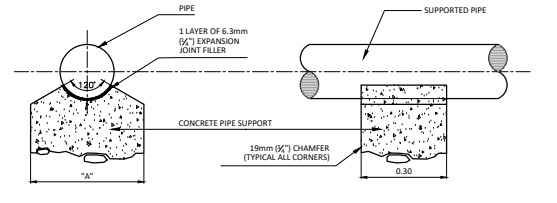
TABLE OF MINIMUM THRUST BLOCK BEARING AREAS IN SQUARE METERS FOR PIPE SIZES 75mm TO 600mm Ø.

PIPE SIZE	TEE & DEAD END	90° BEND	45° BEND	22 1/2° BEND OR REDUCER
75 (3")	0.05	0.07	0.04	0.02
100 (4")	0.09	0.12	0.07	0.04
150 (6")	0.20	0.28	0.15	0.08
200 (8")	0.35	0.50	0.27	0.14
250 (10")	0.55	0.77	0.42	0.21
300 (12")	0.79	1.11	0.60	0.31
350 (14")	1.07	1.52	0.82	0.42
400 (16")	1.40	1.98	1.07	0.55
450 (18")	1.77	2.51	1.36	0.69
500 (20")	2.19	3.10	1.68	0.85
600 (24")	3.15	4.46	2.42	1.23

NOTES:
 ① ABOVE AREAS BASED ON AN ASSUMED SOIL BEARING PRESSURE OF 96 kPa (2000psf.).
 ② REDUCE OR INCREASE AREAS PROPORTIONATELY TO SUIT ACTUAL FIELD CONDITIONS UPON APPROVAL OF ENGINEER.
 ③ CONCRETE FOR THRUST BLOCK SHALL BE 13.8 MPa (2000psi).
 ④ ALL CONCRETE SHALL BE POURED TO AVOID INTERFERENCE WITH JOINTS.

① THRUST BLOCKS NOT REQUIRED ON STEEL PIPE LINE WITH WELDED OR FLANGED JOINTS OR ON SOLVENT WELDED PVC PIPE.
 ② WHERE PIPE CONNECTS TO A FITTING IN A STEEL PIPELINE, THE STEEL PIPELINE SHALL BE BLOCKED AS SHOWN HEREON.
 ③ BEARING AREAS BASED ON INTERNAL PRESSURE OF 106m (150 psi).
 * SEE PLANS FOR BEARING AREAS.

2 HORIZONTAL CONCRETE THRUST BLOCKS

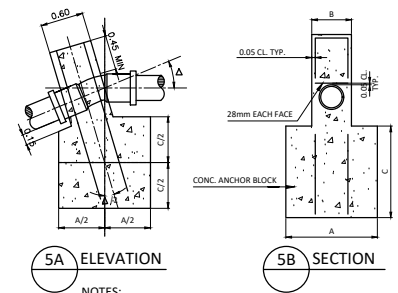


DIMENSION "A" IN METERS

PIPE SIZE	SUPPORTING	
	PIPE	FLANGE
100 (4")	0.30	0.30
150 (6")	0.30	0.35
200 (8")	0.30	0.45
250 (10")	0.35	0.50
300 (12")	0.40	0.55
350 (14")	0.45	0.60
400 (16")	0.50	0.70
450 (18")	0.55	0.75
500 (20")	0.60	0.80
600 (24")	0.70	0.90

NOTES:
 ① ALL CONCRETE SHALL BE POURED TO AVOID INTERFERENCE WITH BOLTED CONNECTIONS.
 ② PIPE SUPPORTS TO BE LOCATED AS SHOWN ON THE PLANS.
 ③ SPECIAL PIPE SUPPORTS SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS SHOWN ON THE PLANS.
 ④ WHEN SUPPORTING PIPE AND FLANGE ON THE SAME LINE OF PIPE, CONCRETE PIERS FOR ALL PIPE SUPPORTS SHALL HAVE DIMENSION "A" AS A FLANGE SUPPORT.

4 PIPE SUPPORT DETAIL



NOTES:
 ① ALL DIMENSIONS IN METERS EXCEPT WHERE OTHERWISE SHOWN.
 ② CONCRETE FOR ANCHOR BLOCKS SHALL BE 13.8 MPa (2000psi).
 ③ ANCHOR BLOCK DIMENSIONS BASED ON INTERNAL PRESSURE OF 106m (150psi) AND A SAFETY FACTOR OF 1.5.

TABLE OF MINIMUM ANCHOR BLOCK VOLUMES IN CUBIC METERS FOR PIPE SIZES 350 TO 600mm

PIPE SIZE	DEFLECTION ANGLE Δ	ANCHOR BLOCK DIMENSION		
		A	B	C
350 (14")	45°	1.66	0.56	1.66
350 (14")	22 1/2°	1.29	0.56	1.29
350 (14")	11 1/4°	0.95	0.56	0.95
400 (16")	45°	1.82	0.61	1.82
400 (16")	22 1/2°	1.44	0.61	1.44
400 (16")	11 1/4°	1.07	0.61	1.07
450 (18")	45°	1.98	0.66	1.98
450 (18")	22 1/2°	1.54	0.66	1.54
450 (18")	11 1/4°	1.17	0.66	1.17
500 (20")	45°	2.13	0.71	2.13
500 (20")	22 1/2°	1.68	0.71	1.68
500 (20")	11 1/4°	1.28	0.71	1.28
600 (24")	45°	2.42	0.81	2.42
600 (24")	22 1/2°	1.90	0.81	1.90
600 (24")	11 1/4°	1.46	0.81	1.46

NOTES:
 ① EMBED END OF BARS A MINIMUM OF 0.30 METRE INTO CONCRETE.
 ② CONCRETE FOR ANCHOR BLOCKS SHALL BE 13.8 MPa (2000psi).
 ③ ANCHOR BLOCK DIMENSIONS BASED ON INTERNAL PRESSURE
 ④ THRUST BLOCKS NOT REQUIRED ON STEEL PIPELINES WITH WELDED OR FLANGED JOINTS OR ON SOLVENT WELDED PVC PIPE.

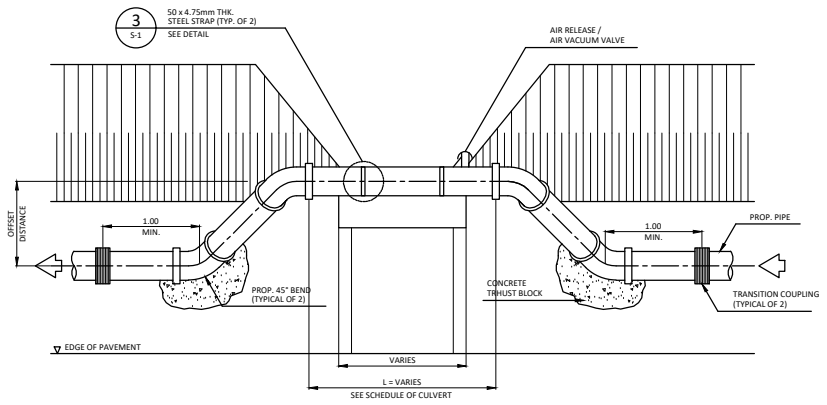
TABLE OF MINIMUM ANCHOR BLOCK VOLUMES IN CUBIC METERS FOR PIPE SIZES 75 TO 300mm

PIPE SIZE	DEFLECTION ANGLE Δ	ANCHOR BLOCK DIMENSION		
		A	B	C
75 (3")	45°	0.23	0.12	0.06
100 (4")	45°	0.41	0.21	0.10
150 (6")	45°	0.92	0.47	0.23
200 (8")	45°	1.63	0.83	0.42
250 (10")	45°	2.55	1.30	0.65
300 (12")	45°	3.68	1.87	0.96

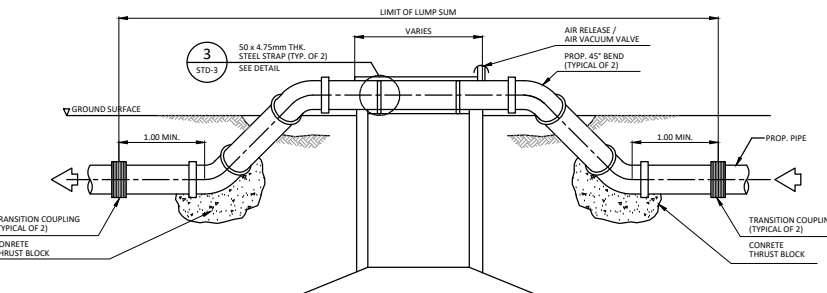
5 CONCRETE ANCHOR BLOCK DETAIL

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	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION LINE SECTION A	VCWD	ABRAHAM J. DE DIOS JR. GENERAL MGR.		EDMUND	
	TIN NO.:	LOCATION:	VICTORIAS CITY			CHECKED	
	PTR NO.:	VICTORIAS CITY	BY:				
DATE ISSUED:							

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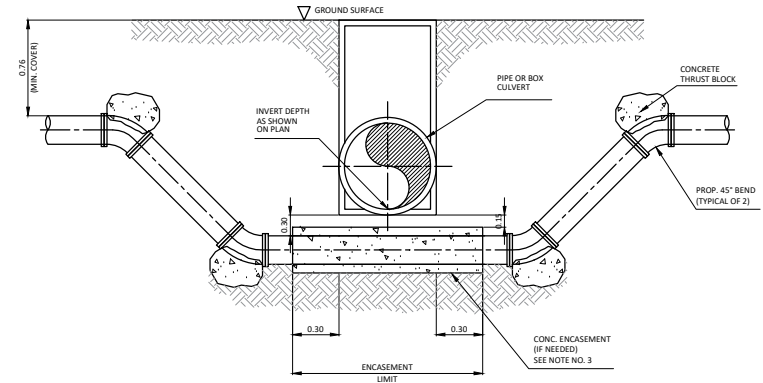
1a PLAN



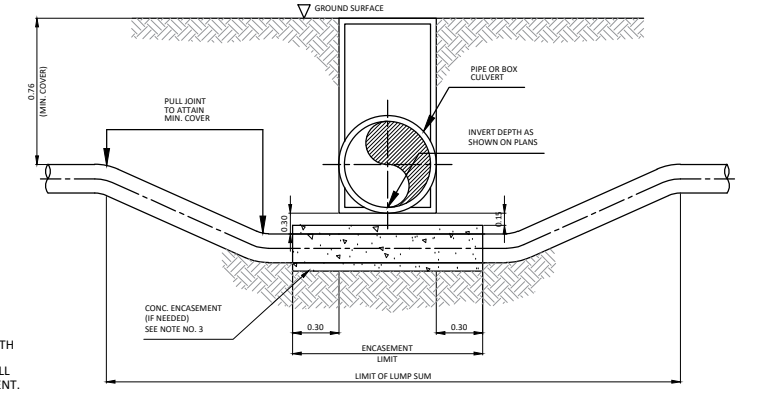
1b ELEVATION

- NOTES:**
- WHENEVER A PROPOSED PIPE ENCOUNTERS A CULVERT, SUCH PIPE SHALL BE DEFLECTED BELOW CULVERT AS SHOWN IN TYPICAL DETAIL 2b IF INVERT OF CULVERT DOES NOT EXCEED 1.25M. BELOW GROUND SURFACE, OR AS SHOWN IN TYPICAL DETAIL 2a IF IT EXCEEDS 1.25M.
 - THE COST OF SUCH CULVERT CROSSING INCLUDING BEDDING, PIPE AND THE ESSENTIAL FITTINGS SHALL BE CONSIDERED AS INCLUDED IN THE CONTRACT UNIT PRICE FOR CORRESPONDING PIPE SIZE AND/OR MATERIAL. THE COST OF OVER EXCAVATION SHALL BE PAID FOR IN ACCORDANCE WITH THE UNIT PRICE FOR OVER EXCAVATION AND CONCRETE ENCASEMENT.
 - IF FLEXIBLE OR RUBBER JOINTS OCCUR WITHIN THE LIMIT SHOWN AND/OR DEPTH OF PROPOSED PIPE FROM THE BOTTOM OF CULVERT IS LESS THAN 0.45 M., PROVIDE CONCRETE ENCASEMENT. THE COST OF CONCRETE ENCASEMENT SHALL BE PAID FOR IN ACCORDANCE WITH THE UNIT PRICE FOR CONCRETE ENCASEMENT.
 - DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.

1 TYPICAL CROSSING DETAIL BOX CULVERT FOR PIPE LESS THAN 350mm.

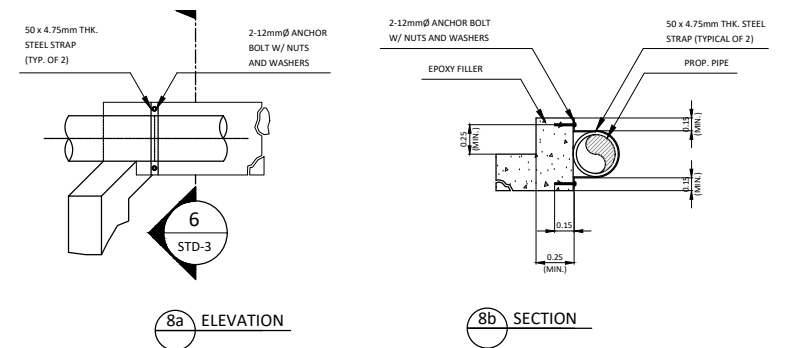


2a FOR CULVERT WITH INVERT EQUAL OR GREATER THAN 1.25 M.

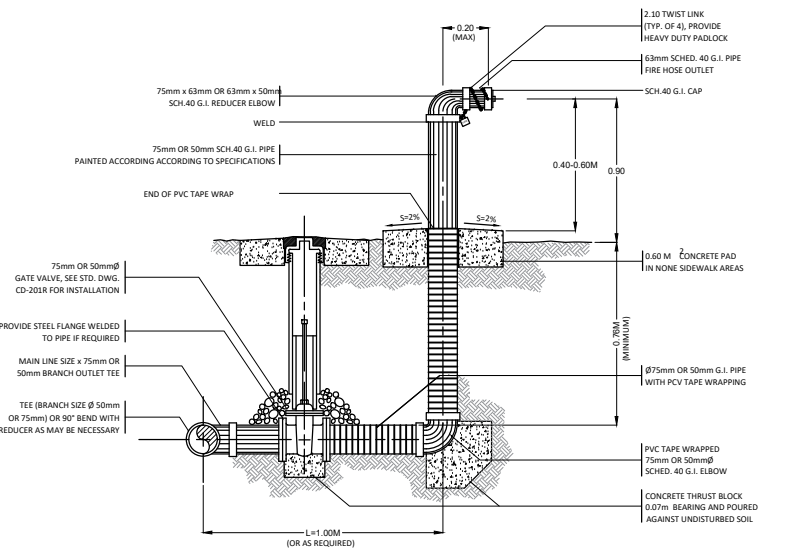


2b FOR CULVERT WITH INVERT DEPTH LESS THAN 1.25 M.

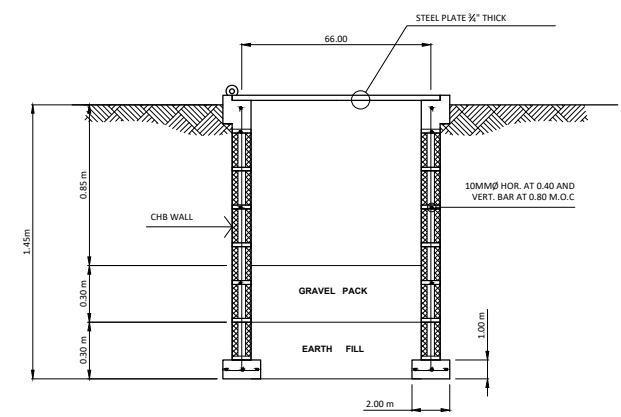
2 TYPICAL BELOW-GROUND CULVERT CROSSING DETAIL FOR PIPE LESS THAN 350mm.



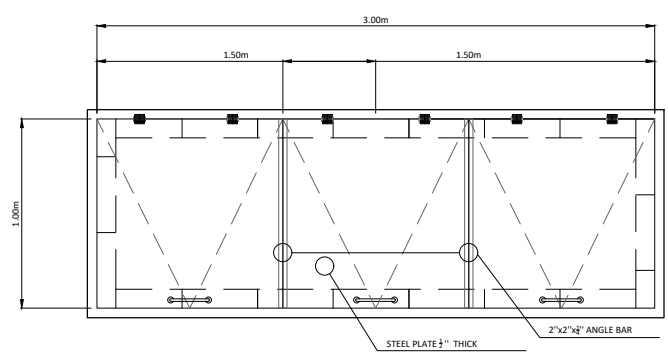
3 TYPICAL PIPE SUPPORT DETAIL



4 TYPICAL IMPROVED BLOW-OFF VALVE ASSEMBLY AND FIRE HYDRANT DETAIL

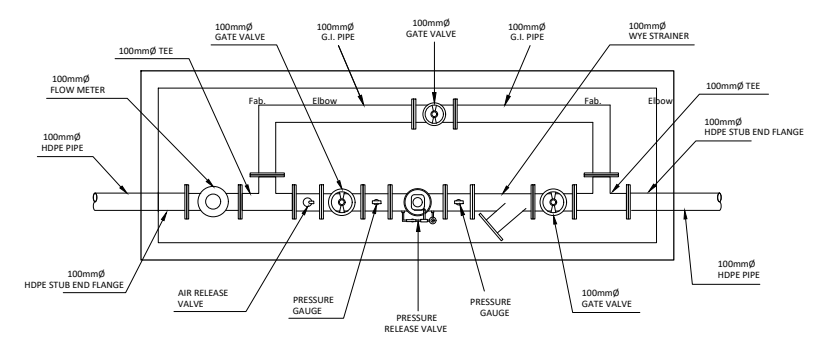


5a PLAN

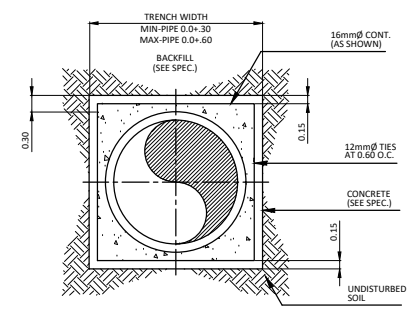


5b ELEVATION

5 TYPICAL CONCRETE VALVE BOX WITH STEEL PLATE COVER



5c DETAILS



6 CONCRETE ENCASEMENT DETAIL

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	VALIDITY:	PROPOSE CONSTRUCTION OF TRANSMISSION	VCWD		AS INDICATED	EDMUND	
	TIN NO.:	LINE SECTION A	ADDRESS:	ABRAHAM J. DE DIOS JR.		CHECKED	
	PTR NO.:	LOCATION:	VICTORIAS CITY	GENERAL MGR.		BY:	
	DATE ISSUED:	VICTORIAS CITY					8/8