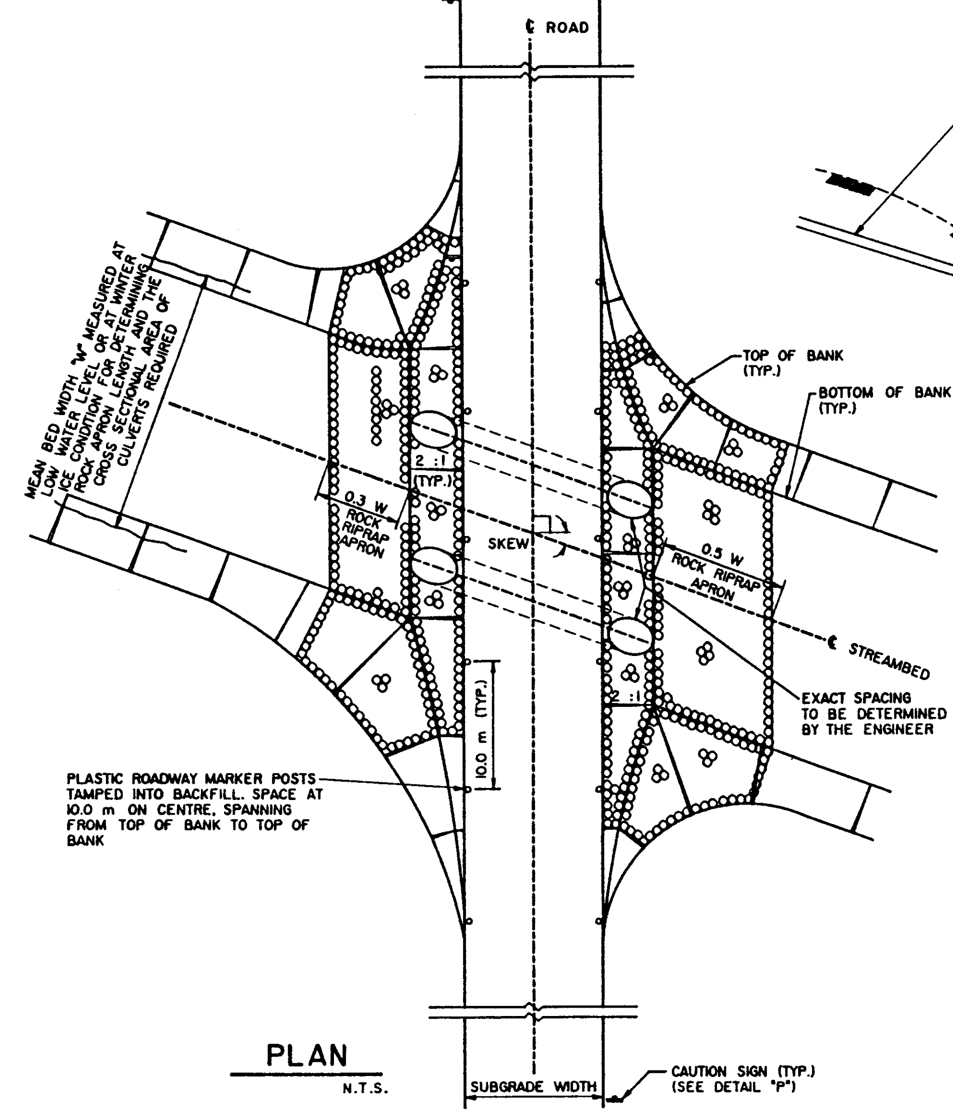
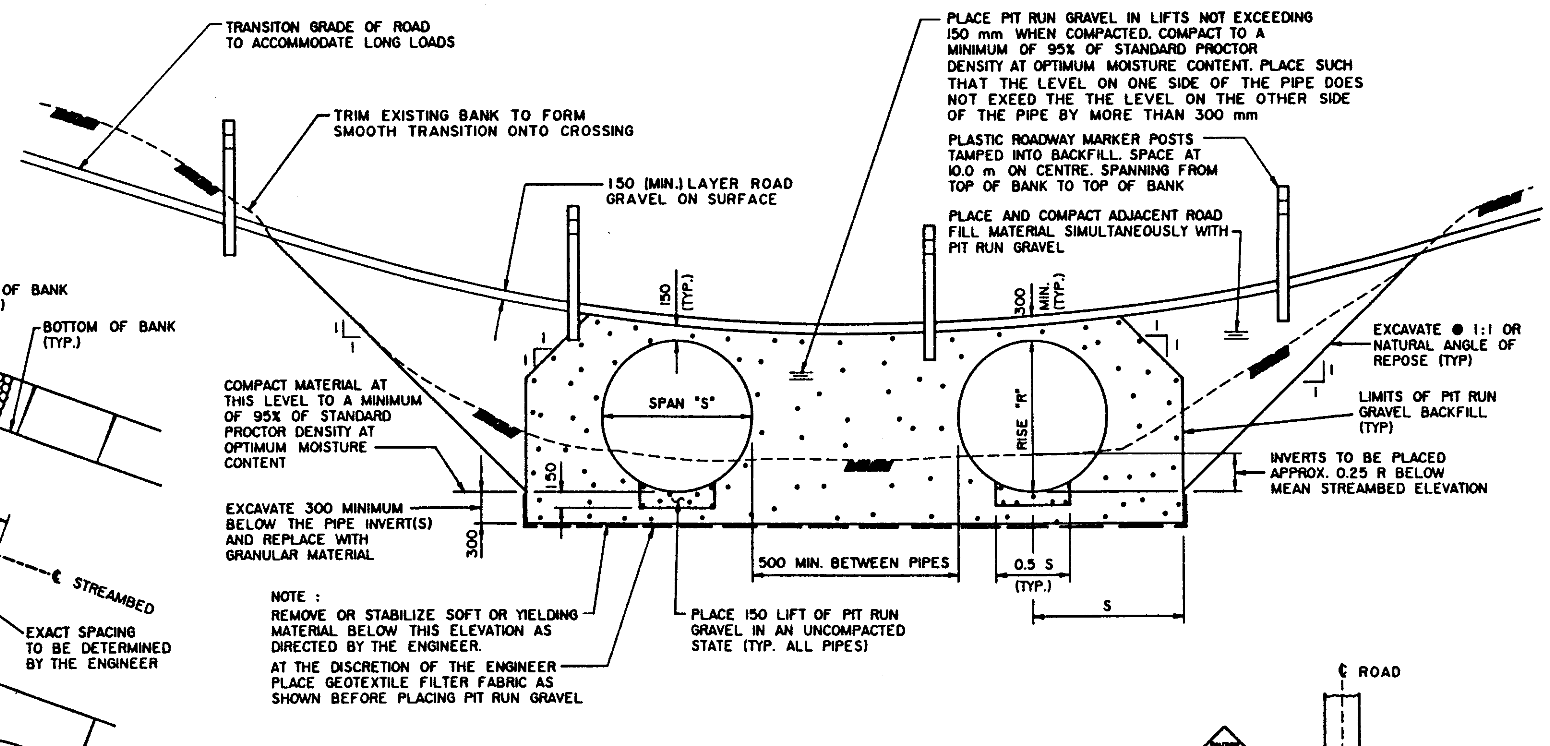
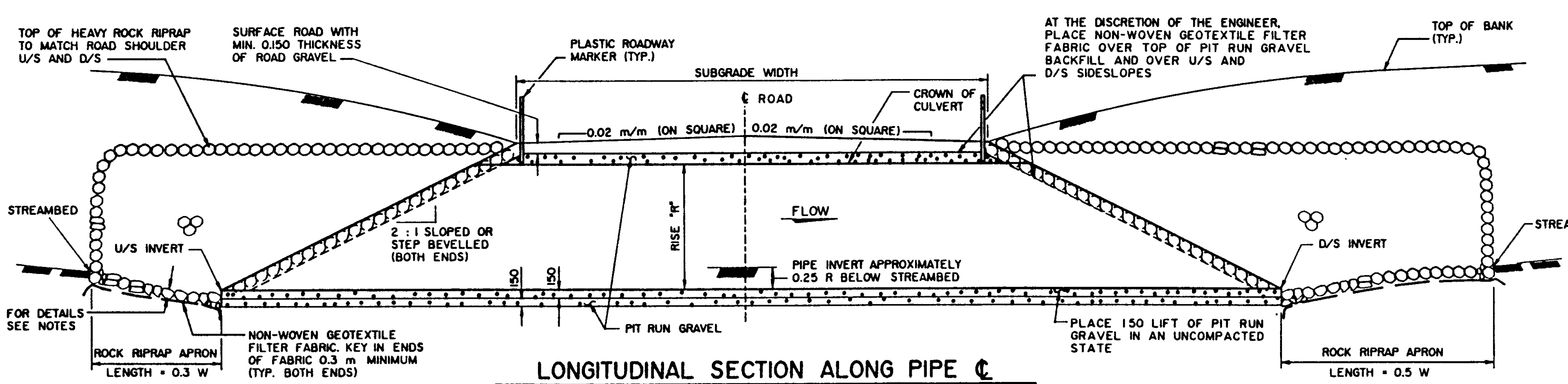


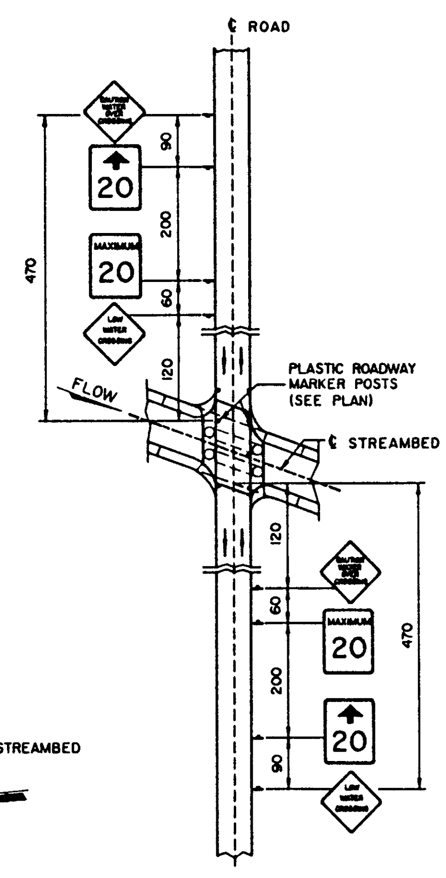
PLAN
N.T.S.



BACKFILL DETAIL
(ON SQUARE TO PIPES) N.T.S.



LONGITUDINAL SECTION ALONG PIPE ℄
N.T.S.



P DETAIL
TYPICAL SIGNING DETAILS FOR LOW LEVEL CROSSINGS
N.T.S.

NOTES

GENERAL

- DIMENSIONS ARE GIVEN IN MILLIMETRES UNLESS NOTED OTHERWISE.
- A TEMPORARY LOW LEVEL CROSSING IS MEANT TO BE AN INEXPENSIVE STREAM CROSSING FOR USE ON TRAILS AND UNDEVELOPED ROAD ALLOWANCES WHERE THE DAILY TRAFFIC VOLUMES ARE LESS THAN 20 VEHICLES PER DAY. IT IS TEMPORARY IN THE SENSE THAT THE BACKFILL IS EXPECTED TO WASH OUT EVERY FEW YEARS, AS OPPOSED TO A PERMANENT LOW LEVEL CROSSING WHICH HAS FEATURES MEANT TO MAKE IT LAST FOR 10 YEARS OR MORE WITHOUT EXTENSIVE MAINTENANCE. ALL LOW LEVEL CROSSINGS ARE MEANT FOR LOW VOLUME, LOW SPEED TRAVEL AND MAY NOT BE OPEN YEAR ROUND DUE TO FLOODING, ICING, OR SEVERE WEATHER.
- THIS DRAWING PROVIDES GENERAL INFORMATION ONLY. IT WILL BE SUPPLEMENTED WITH/OR SUPERSEDED BY DETAILS IN THE BRIDGE AUTHORIZATION AND WHERE NECESSARY BY SPECIAL PROVISIONS.

  DESIGN DRAWINGS, CULVERT ASSEMBLY DRAWINGS, AND ENVIRONMENTAL PERMITS OR LICENSES.
- ALL PIPES SHALL HAVE A DIAMETER NOT GREATER THAN 1400 mm AND NOT LESS THAN 600 mm.
- CULVERT ASSEMBLY AND GRANULAR MATERIAL SPECIFICATION TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF DWG. S-1418 REFER TO THE CURRENT VERSION OF SPECIFICATION B269 " INSTALLATION OF LARGE STEEL PIPES" SECTION 21 OF THE BRIDGE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- CONTACT THE ENGINEER IF ADDITIONAL DIRECTION IS REQUIRED.

C.S.P.

- THE REQUIRED LENGTH OF EACH PIPE SHALL BE CALCULATED THUS:

$$L = \frac{\text{(SUBGRADE WIDTH)} + 4\ \text{(HEIGHT COVER)} + 4\ (R)}{\cos\ \text{(SKEW ANGLE)}}$$

LENGTH SHALL BE ROUNDED UP TO THE NEAREST 1.0 m
FOR EXAMPLE :
PROPOSED 8.0 m CLEAR ROADWAY, 0.4 m COVER ABOVE CROWN OF OF 1200 mm PIPE ON 15° SKEW

$$L = \frac{8.0 + 4\ (0.4) + 4\ (1.2)}{\cos\ (15)} = 14.9\ \text{m}$$

REQUIRED LENGTH = 15.0 m.

HYDROTECHNICAL

- THE NUMBER, SIZE AND SPACING OF CULVERTS TO BE DETERMINED BY THE ENGINEER. PIPES SHOULD BE CAPABLE OF PASSING AT LEAST THE 1 IN 2 YEAR FLOOD WITH NOMINAL FREEBOARD.
- TO ENSURE FISH PASSAGE CONSULT WITH FISH & WILDLIFE PRIOR TO FINALIZING DESIGN.
- IN THE ABSENCE OF ANY DEFINITIVE HYDRAULIC INFORMATION, USE: AREA OF CULVERTS = MEAN BEDWIDTH, W, (IN METRES) TIMES 1m, DIVIDED BY 3.

EXAMPLE : $A = \frac{6\ \text{m} \times 1\text{m}}{3} = 2\ \text{m}^2$

FOR THIS CHANNEL, SAY REQUIRED MINIMUM NUMBER OF PIPES = ONE CALCULATE THE DIAMETER (D) OF ONE PIPE :

$$A = \frac{\pi D^2}{4},\ 2\ \text{m}^2 = \frac{\pi D^2}{4},\ D = \sqrt{\frac{2 \times 4}{\pi}},\ = 1\ 600\ \text{mm}$$

BUT : D = 1 600 mm EXCEEDS MAXIMUM SIZE OF 1 400 mm, TRY TWO CULVERTS, AREA OF EACH ONE $= \frac{2\ \text{m}^2}{2\ \text{(PIPES)}} = 1\text{m}^2$

$$A = \frac{\pi D^2}{4},\ 1\ \text{m}^2 = \frac{\pi D^2}{4},\ D = \sqrt{\frac{1 \times 4}{\pi}},\ D = 1\ 128\ \text{mm}$$

ROUND UP TO 1 200 mm. USE TWO 1 200 mm DIAMETER PIPES. ALTERNATIVELY REDOING THIS EXAMPLE FOR THREE PIPES , SHOULD REQUIRE THREE 920 mm DIAMETER PIPES. THE MORE PIPES USED , THE LOWER THE CROSSING CAN BE.

HEAVY ROCK RIPRAP

- HEAVY ROCK RIPRAP SHALL COVER THE AREA SHOWN ON THIS DRAWING AND SHALL BE PLACED TO THE FOLLOWING MINIMUM THICKNESS:

CLASS OF ROCK	1M	1	2	3
THICKNESS (mm)	300	450	800	1100
OUTLET VELOCITY m/s	<2.0	<3.0	<4.0	<4.7

- REFER TO THE CURRENT VERSION OF B354 "HEAVY ROCK RIPRAP" SECTION 10 OF THE BRIDGE CONSTRUCTION SPECIFICATIONS FOR FOR ADDITIONAL INFORMATION.
- GRANULAR MATERIAL SHALL MEET THE FOLLOWING GRADATION SPECIFICATION :

PIT RUN GRAVEL DESIGNATION 6, CLASS 80	
μm SIEVE SIZE	% BY WEIGHT PASSING
80 000	100%
50 000	55 - 100
25 000	38 - 100
16 000	32 - 85
5 000	20 - 65
315	6 - 30
80	2 - 10

①

REV	DATE	REVISIONS	BY
7			
6			
5			
4			
3			
2			
1	92-10-03	REDRAWN FROM S-975	C.T.C.

APPROVED
[signature]
for EXECUTIVE DIRECTOR BRIDGE ENGINEERING
DATE Oct 13 1992

Alberta TRANSPORTATION AND UTILITIES
REGIONAL TRANSPORTATION

TEMPORARY LOW LEVEL CROSSING

DESIGNED	DRAWN	DATE	CHECKED	DATE	STREAM	LOCATION	HIGHWAY	FILE	SHEET	DRAWING
M.E.K.	H.W.M.	92-08-11	C.T.C.	92-10-03					1 of 1	S-1614

PLOTTED OCT 13, 1992