



**GENERAL NOTES**

- ALL DIMENSIONS ARE GIVEN IN MILLIMETRES UNLESS NOTED OTHERWISE
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION SECTION 18
- THIS DRAWING PROVIDES GENERAL INFORMATION ONLY AND IS APPLICABLE TO CULVERTS WITH A DIAMETER OF 3.0 METRES OR LESS. SITE SPECIFIC DETAILS ARE REQUIRED FOR CULVERTS WITH A DIAMETER GREATER THAN 3.0 METRES
- THIS DRAWING WILL BE SUPPLEMENTED OR SUPERSEDED BY THE SITE SPECIFIC DESIGN DRAWING(S), ASSEMBLY DRAWINGS, SPECIAL PROVISIONS, AND ENVIRONMENTAL REQUIREMENTS WHERE APPLICABLE
- ADDITIONAL NON-STANDARD NOTES (NOTES:) HAVE ALSO BEEN PROVIDED ON THE DRAWING TO SERVE AS REMINDERS WHERE A SPECIFIC DETAIL MAY NEED TO BE DEVELOPED FOR THE DESIGN DRAWINGS
- THE SHAPE OF CSP AND SPCS STRUCTURES SHALL BE WITHIN 2% OF DESIGN DIMENSIONS DURING ALL PHASES OF THE WORK

**ASSEMBLY**

- CSP SECTIONS SHALL BE POSITIONED SO THAT THE ENDS ARE IN CLOSE CONTACT. COUPLERS SHALL BE WELL FITTED AND EVENLY TIGHTENED ALL AROUND THE PIPE. COUPLERS SHALL BE COMPLETELY WRAPPED WITH A 2 000 WIDE LAYER OF NON-WOVEN GEOTEXTILE CENTERED ON THE JOINT
- SPCSP SHALL BE ASSEMBLED AS SHOWN ON THE ASSEMBLY DRAWINGS AND AS OUTLINED BELOW:
  - ASSEMBLY, LOOSE BOLTING AND RING CLOSURE SHALL PROGRESS FROM ONE END WITH EACH RING CHECKED AND ADJUSTED TO DESIGN GEOMETRY WITH FULLY NESTED PLATES IMMEDIATELY UPON CLOSURE OF INDIVIDUAL RINGS. WHERE TEMPORARY SUPPORTS OR TIE CABLES ARE USED, ADEQUATE MEANS SHALL BE TAKEN TO DISTRIBUTE LOADS ALONG THE PIPE WALL, TO PREVENT LOCAL DISTORTION AND MAINTAIN DESIGN SHAPE
  - ALL BOLTED SEAMS SHALL BE PROPERLY LAPPED AND PLATES SHALL BE IN CONTACT FOR THE FULL WIDTH AND LENGTH OF THE LAP. THE BOLTS IN THE VALLEY OF EACH LONGITUDINAL SEAM SHALL BE NEAREST TO THE VISIBLE EDGE OF THE PLATE
  - THE VERTICAL AXIS SHALL BE UPRIGHT AND THE LONGITUDINAL SEAMS SHALL BE STRAIGHT. ROTATION OF THE PIPE AND/OR SPIRALING OF THE LONGITUDINAL SEAMS SHALL NOT BE PERMITTED
  - BOLTS SHALL BE TORQUED TO AND MAINTAINED AT NOT LESS THAN 200 N m AND NOT MORE THAN 340 N m
  - DISTORTION OF BOLT HOLES CAUSED BY OVER-TORQUING, OR POOR ASSEMBLY METHODS WILL NOT BE PERMITTED. WHERE ADDITIONAL HOLES ARE REQUIRED, THEY SHALL BE DRILLED
  - BOLTS ON PEDESTRIAN OR STOCK UNDERPASSES SHALL BE INSTALLED WITH THE BOLT HEADS INSIDE THE STRUCTURE
- USE SOFT SLINGS AND HANDLE WITH CARE TO AVOID SCRATCHING, BRUISING, AND DISTORTION OF THE PIPE

**BACKFILL**

- BACKFILL SHALL CONSIST OF CRUSHED AGGREGATE MATERIAL. NON-ORGANIC CLAY SHALL BE USED FOR THE CLAY SEALS AT EACH END OF THE PIPE.
- CRUSHED AGGREGATE MATERIAL SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS:

CRUSHED AGGREGATE MATERIAL DESIGNATION 2, CLASS 25	
µm SIEVE SIZE	% BY WEIGHT PASSING
25 000	100
20 000	82-97
16 000	70-94
10 000	52-79
5 000	35-64
1 250	18-43
630	12-34
315	8-26
160	5-18
80	2-10
% FRACTURES BY WEIGHT (2 FACES) 60+	
PLASTICITY INDEX NP-6	
LA ABRASION LOSS PERCENT MAXIMUM 50	

CRUSHED AGGREGATE MATERIAL DESIGNATION 2, CLASS 40	
µm SIEVE SIZE	% BY WEIGHT PASSING
40 000	100
25 000	70-94
16 000	55-85
10 000	44-74
5 000	32-62
1 250	17-43
630	12-34
315	8-26
160	5-18
80	2-10
% FRACTURES BY WEIGHT (2 FACES) 50+	
PLASTICITY INDEX NP-6	
LA ABRASION LOSS PERCENT MAXIMUM 50	

**HEAVY ROCK RIPRAP**

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

CLASS OF ROCK	1 M	1	2	3
THICKNESS (mm)	300	450	800	1 000

- HEAVY ROCK RIPRAP SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION SECTION 10
- PLACE NON-WOVEN GEOTEXTILE FILTER FABRIC UNDER ALL HEAVY ROCK RIPRAP

**UNDERPASSES**

- CRUSHED AGGREGATE MATERIAL SHALL BE PLACED TO A THICKNESS OF 200 ON THE APPROACHES FROM THE PIPE TO THE EDGE OF RIGHT OF WAY. DO NOT USE HEAVY ROCK RIPRAP UNLESS SPECIFIED
- CONCRETE FLOOR WITH ROUGH TEXTURED SURFACE OR COMPACTED CRUSHED AGGREGATE FLOOR SHALL BE PLACED TO A DEPTH OF 150 AT THE INVERT. ACP FLOORS MAY BE CONSIDERED FOR PEDESTRIAN OR VEHICLE UNDERPASSES
- CLAY SEALS ARE NOT REQUIRED FOR UNDERPASS STRUCTURES
- LOCATE AND SLOPE UNDERPASS STRUCTURES TO PROVIDE POSITIVE DRAINAGE AND TO PREVENT PONDING OF WATER

WOVEN GEOTEXTILE FILTER FABRIC SPECIFICATIONS AND PHYSICAL PROPERTIES	
GRAB STRENGTH	1275 N
ELONGATION (FAILURE)	15%
CBR PUNCTURE STRENGTH	275 N
TRAPEZOIDAL TEAR	475 N
MINIMUM FABRIC LAP TO BE 1 000	

NON-WOVEN GEOTEXTILE FILTER FABRIC SPECIFICATIONS AND PHYSICAL PROPERTIES	
CLASS 1M, 1, 2, 3	
GRAB STRENGTH	900 N
ELONGATION (FAILURE)	50%
CBR PUNCTURE STRENGTH	550 N
TRAPEZOIDAL TEAR	350 N
MINIMUM FABRIC LAP TO BE 400	

RECOMMENDED DIRECTOR BRIDGE ENGINEERING			
APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH			
REV	DATE	REVISION	BY
DESIGNER	JT	CHECKER	MC MT
DATE 2021.3.2		DATE 2020-09-04	

**Alberta Transportation**

**INSTALLATION OF CSP AND SPCS STRUCTURES**

DATE 2020-09-04 SHEET 1 OF 1 DRAWING S-1418-20