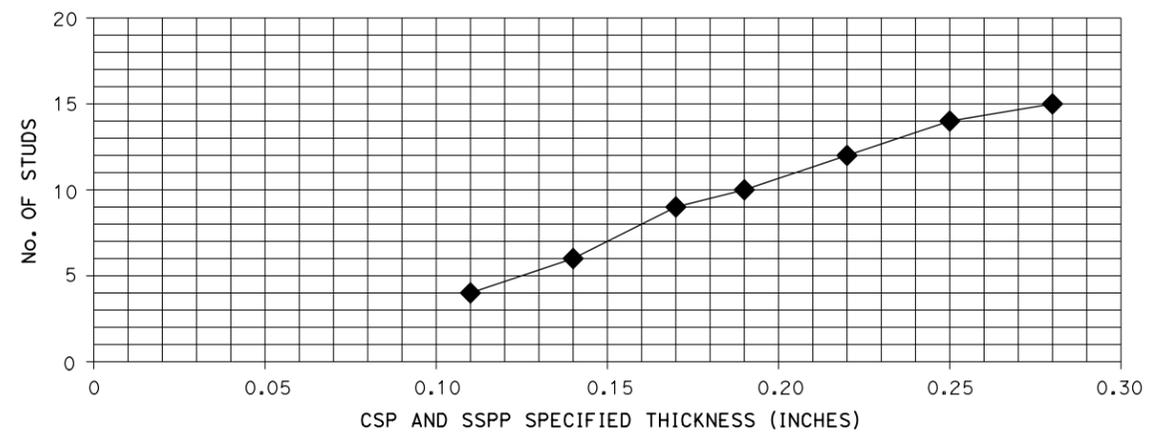


No. OF WELDED HEADED STUDS (3/8" Dia)



No. OF WELDED HEADED STUDS (1/2" Dia)

SHEAR STUD SELECTION CHARTS

Headed Stud Dimension		Concrete Strength, f'c (psi)		
Diameter x Min length (inch)		3000	3500	4000
3/8	x 2	5.37	6.03	6.67
1/2	x 2	9.55	10.72	11.85

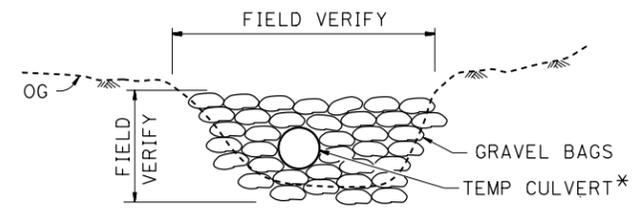
LRFD NOMINAL SHEAR CAPACITY, KIPS

NOTES:

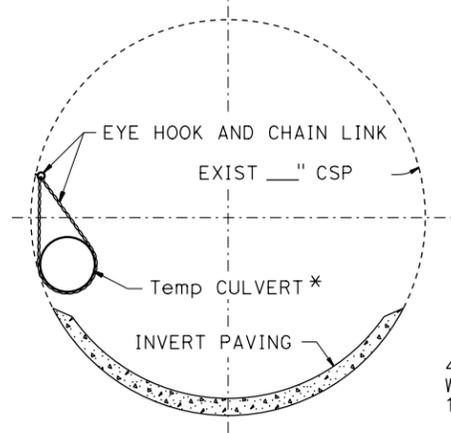
- Minimum number of studs shall be 8 circumferentially, 4 on each side of invert trough.
- Recommended minimum plate thickness without burn-through for a 3/8" ϕ headed stud is 0.0747" (Gage No. 14); for a 1/2" ϕ stud it is 0.1196" (Gage No. 11).
- Seam strengths of 0.170 through 0.280 in thick wall plates exceed the culvert wall strength. Maximum load designs shall be limited by wall strength, and the selected number of studs shall be checked by wall strength.
- The concrete shall be rounded with 3 inch radius on a 1:1 bevel at the ends of the inlet and outlet of the pipe.

PROCEDURES FOR CORRUGATED STEEL PIPE (CSP) CULVERT INVERT REPAIR:

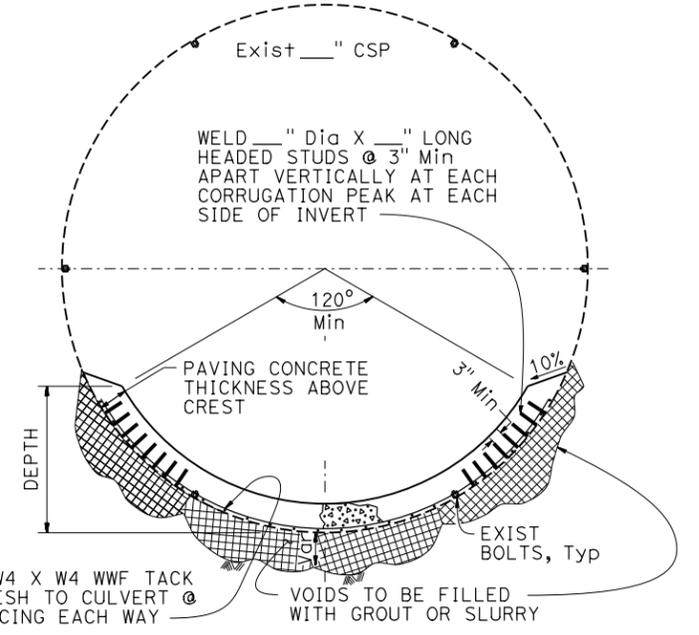
- Choose proper size of stud connectors. Stud connectors shall be welded to the pipe crest equally spaced on both sides of the invert transversely, minimum spacing between studs circumferentially shall be 3".
- In cross section, limits of placement of the repair shall be made to subtend a minimum central angle of 120 degrees (to the 4 o'clock and 8 o'clock positions of a circular culvert), but may be extended up to 180 degrees (to 3 o'clock and 9 o'clock positions), or to a lesser central angle if deemed necessary.
- Minimum concrete cover above shear studs shall be 1 1/2", and studs shall have at least 1 1/2" of lateral concrete cover.
- Provide welded wire fabric (WWF) to meet the temperature and shrinkage requirements for concrete pad. Tack weld or tie WWF to pipe crests at 12" spacing minimum each way.
- WWF shall be placed with a minimum of 4" clear cover from the edge of concrete and shall be lapped 6" minimum.



TEMPORARY GRAVEL BAG HEAD WALL AT INLET
Exact location & dimension to be determined by the Engineer



TEMPORARY CULVERT INSTALLATION IN CORRUGATED METAL PIPE



INVERT PAVING DETAIL
NO SCALE

TEMPORARY DEWATERING DETAIL
NO SCALE

NOTE:
THE CONTRACTOR MUST VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.