**Designer Notes for Precast Concrete Structure**

Red Dew shall be "three-sided precast concrete structure".

Precast Bridges will be limited to spans not to exceed 42'-0".

Secure interlock box and gusset details (facing engineers) approval before incorporating precast bridges in any project.

Check foundation pressure, scour and settlement to ensure that no foundation failure occurs.

Preferably provide footing on non-yielding foundation material, however, allow differential settlement for footing. On soil, supporting the structure's dead load, the max. of the gusset design structure components to resist forces caused by the differential settlement. Adequately reinforce the entire footing as required by the design.

When a beam guard post is to be embedded in fill, above the precast arch unit, provide a depth of fill measured from top of arch crown to top of roadway, at least equal to the minimum embedment depth shown on soil map plus 6".

For shorter span culverts, when a beam guard crosses the length of the structure, consideration shall be given to the details shown on soil map. Provide all requirements in this standard can be met.

When a concrete barrier (single slope) crosses the length of the structure, the fill depth must be adequate to accommodate the required footing depth, refer to soil map 3 for concrete barrier details.

Provide a suitable drain line along the barrier and wingwall to release hydrostatic pressure. Where significant surface or subsurface water accumulation near the wall requires drainage along the barrier, place a drain line at the base of the wall and along the drain, and drain away from the wall. Provide a drain line along the barrier and wingwall to release gravity pressure. Place a drain line at an angle between vertical legs of the precast segment and footing as indicated on the standard detail drawings.

Provide suitable joint system between vertical legs of the precast segment and footing as indicated on the standard detail drawings.

Sizing of reinforcement for precast bridge units - the outside and inside circumferential reinforcing steel for the corners of the bridge shall be bent to such an angle that is approximately equal to the configuration of the bridge's outside corner.

**LRFD Design Loads**

Vertical loads -

- Horizontal Earth Pressure (unit weight) + 125 psf
- Vertical Earth Pressure (unit weight) = 120 psf

- Live Load: HL-93
- Vertical Earth Pressure: Unit Weight = 120 psf
- Horizontal Earth Pressure: Unit Weight = 125 psf