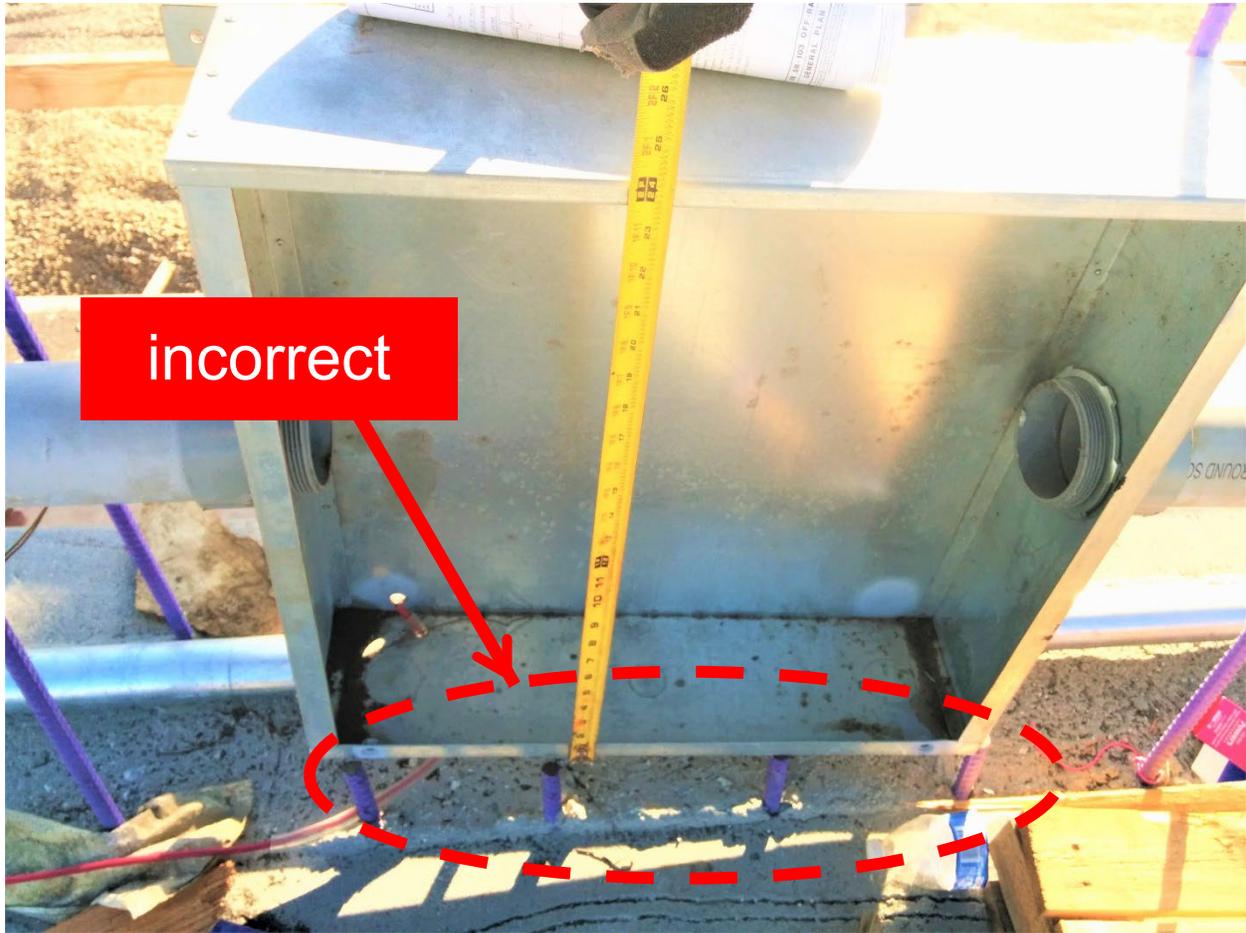


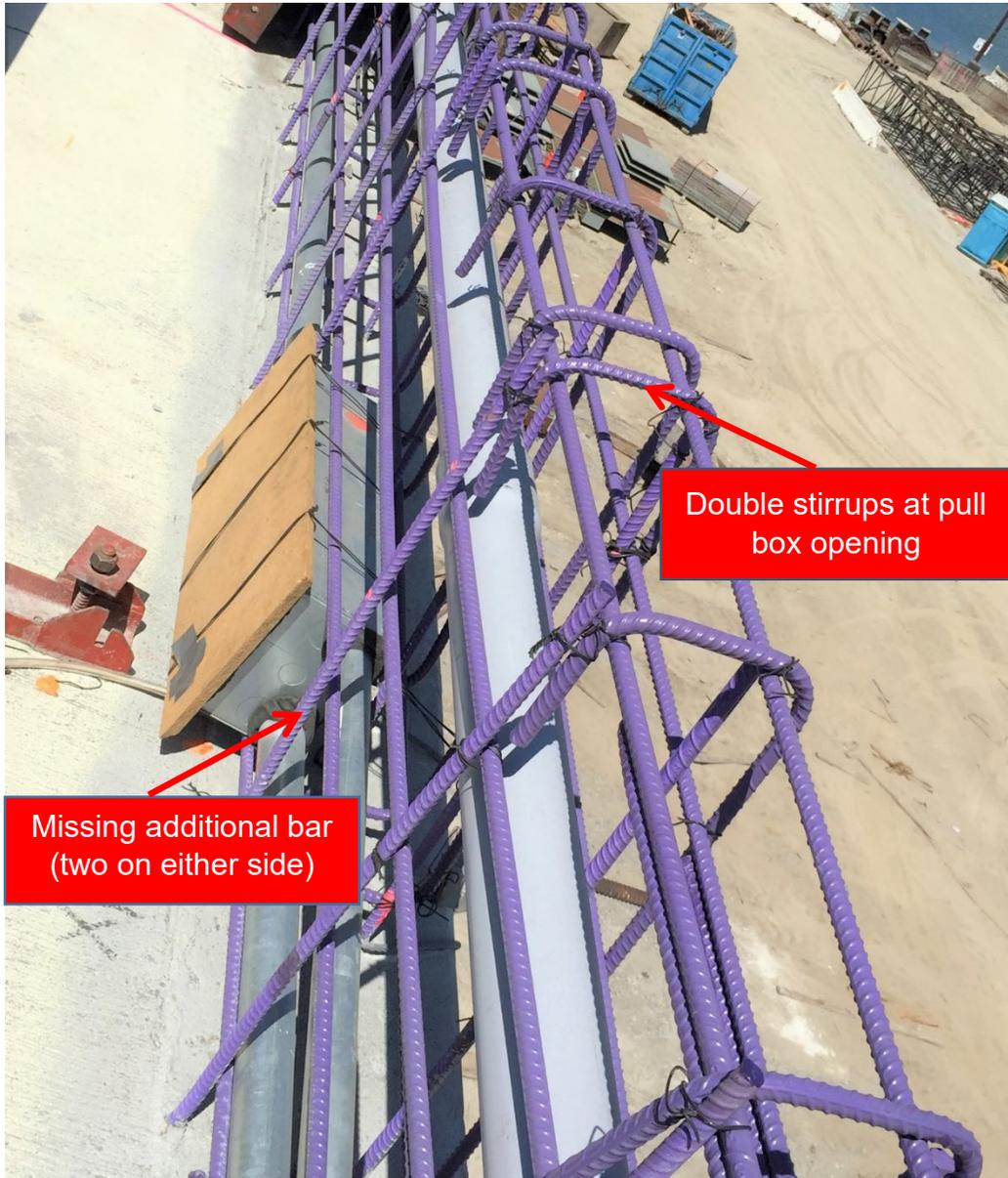
# Common Conflicts for Installing Electrical System Components in Concrete Barriers

This attachment identifies locations where there is a potential spacing conflict when installing electrical system components within concrete barriers. The field engineer should verify that reinforcement details around components meet contract requirements. Concrete cover over the components must be maintained. Conduit at expansion joints require special attention. The following are some common areas that require special attention:

1. Address bar reinforcing steel (rebar) conflicts prior to concrete placement. For example, for conduits and pull boxes within concrete barriers with rebar cast into the bridge deck, leave an appropriate space in the rebar before pouring the deck so that they do not need to be cut later to accommodate the pull boxes (see Figure 1, and the red dashed oval depicting where the erroneously placed rebar needed to be cut). Verify that all additional rebar stirrups and rebar next to pull box openings are added prior to concrete placement per project plans and standard plan details (see Figure 2). Provide sufficient conduit lengths for conduit fittings; plan ahead for elbows protruding out of the concrete barrier and down into an adjacent concrete structure/abutment or earth embankment.
2. Interfering stirrups in structures (e.g., concrete barriers) should be caught ahead of time so that doubled rebar can be added in place of skipped stirrups when accommodating pull boxes. A common fix is to cut off the interfering stirrups, then drill and bond new rebar, as well as to bend rebar which may conflict with an electrical conduit (see Figure 3). It should be noted that when a new bridge deck has transverse prestressing deck tendons, doweling into the bridge deck could interfere with transverse prestressing ducts or tendons (see Figure 4).
3. Conduit runs must be tightly secured to prevent them from being displaced during rebar installation and concrete placement.
4. Provide minimum concrete cover around the embedded electrical system components.
5. Verify that seals around component connections are mortar-tight.
6. Verify that the pull boxes are flush with the face of the concrete (see Figure 5).
7. Verify that expansion couplers are installed for the correct bridge movement range (see Figure 6).



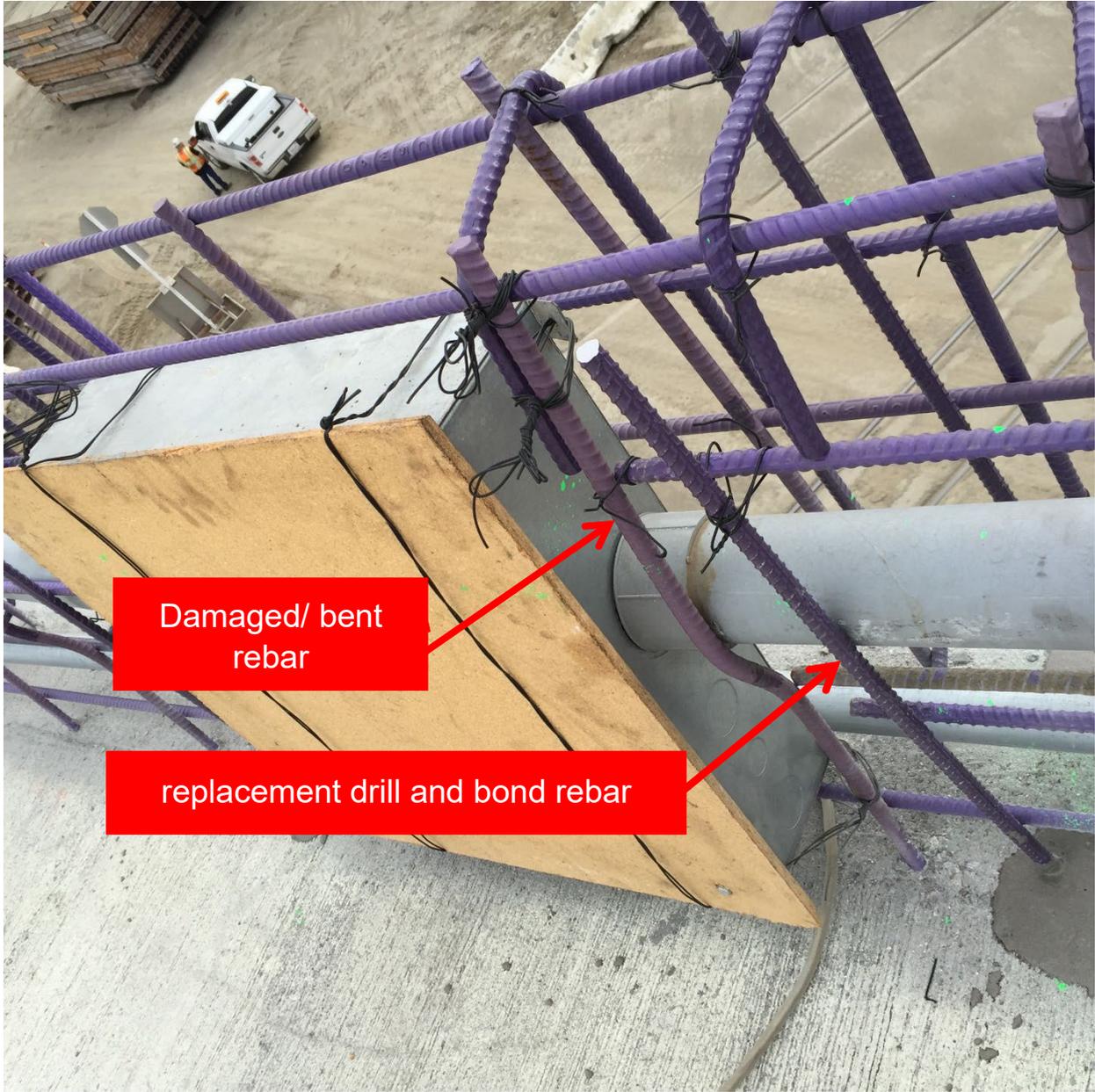
**Figure 1. Concrete Barrier Rail Rebar and Pull Box Placement**



Double stirrups at pull box opening

Missing additional bar (two on either side)

**Figure 2. Additional Rebar at Pull Box Location**



**Figure 3. Field Adjustments to Vertical Rebar at Pull Box**



**Figure 4. Transverse Prestressing Ducts and Tendons in Bridge Deck**



**Figure 5. Check Anticipated Concrete Cover over Rebar and Conduit**



**Figure 6. Conduit Expansion Coupler at Bridge or Wall Joint**