Appendix K
Metal Stay-In-Place Forms

If Stay-In-Place (SIP) deck forms are utilized, the following limitations will apply:

a. Coating- SIP forms shall be galvanized conforming to CMS 508.01 thru 508.03.
b. Forms shall not be installed at overhangs, within approximately eight feet of expansion joints, and within approximately four feet of all through deck drainage systems. Full unit width forms are expected to be provided within the approximate limits given.
c. Design- SIP forms shall support the self weight of the SIP forms, reinforcement, wet concrete for the deck, and construction equipment loads, and at least 50 PSF load for construction liveloads. The deflection criteria of 508.02 shall met.
d. The depth of the corrugations shall be filled with concrete.
e. Materials- Furnish form, support materials and hardware conforming to the following:
    i. Form and support material, ASTM A653 having a coating designation of G235, and conforming to the mechanical properties the design requires.
    ii. Provide deck forms with a 2 inch minimum form depth.
    iii. Provide minimum material thickness as follows: SIP forms (20 gage), support angles (12 gage) and support bars (12 gage).
    iv. Supply deck, self drilling fasteners with cadium plating per ASTM B766 with minimum thickness of 5, ten thousands.(0.0005 inch). The heads of these fasteners will be highly visible color, red or other, to aid inspection.
f. Welding- do not weld sip forms or their supports to the steel bridge members. SIP supports may be welded to anchors cast into precast concrete bridge members. Perform welding per 513.21
g. <u>Installation limitations:</u>
    i. Field cut sip forms using mechanical cutting methods. Thermal cutting is not permitted.
    ii. Place forms on form supports. Do not install sip forms directly to the bridge's structural members.
    iii. Set the height of the form supports to develop the specified deck thickness and plan profile.
    iv. Place slip forms on form supports to achieve minimum bearing length per manufactures design.
    v. Connect SIP forms to form supports before using the SIP as a working surface and before the end of each work shift.
    vi. Provide safety stops to eliminate hazards from sudden uplift and lateral movement.
    vii. Coatings damaged caused by mechanical cutting or field welding shall be repaired per 711.02.

h. Contractor sip construction plan: at least 7 days before any forming begins, provide the engineer two copies of your construction plan with at least the following information:
    i. Design calculations.
    ii. Material specification and grade (yield strength and grade) required by design. Included certified mill tests for the materials.
    iii. Physical properties of the sip forms (gage, section modulus, weight, depth and pitch)
    iv. Cross section view and dimensions of: SIP forms, clips, plates and hardware, support angles, channel closures and safety stops.
    v. Include an overall layout plan with
        1. Working points or control elevations necessary to set support angles.
        2. Typical and specific cross sections or details: support connections to the structural members, sip form connections to supports, form laps and closure sections.
        3. Minimum bearing lengths (edge distances) of sip forms to the support angles.
        4. Welding details: size, length, locations, electrodes and process.
    vi. Worker safety restrictions.
    vii. Installation inspection check lists.
i. Inspection: the engineer will check SIP materials to ensure they meet design requirements and evaluate installation based on construction plan.