Subject: Partial Payment for Structural Concrete, Bridge

Section 51-1.23, “Payment” of the Standard Specifications Section 51, “Concrete Structures,” states that “the contract prices paid per cubic yard for the various types and classes of concrete in structures and structure approach slabs shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete work, complete in place, as shown on the plans, and as specified in these specifications and the special provisions….”

A partial payment for work done is allowed per the Caltrans Standard Specifications Section 9-1.06, “Partial Payments” by stating that the “estimate shall include the total amount of work done and acceptable materials furnished…” Very few items on a Caltrans project require the extent of effort and time to produce a unit of the contract item, as does “Structural Concrete, Bridge.”

Analysis has shown falsework costs can easily be 35 – 50% of the “Structural Concrete, Bridge” item. This bulletin is intended to provide uniform guidelines for payment of the contract item “Structural Concrete, Bridge” during various stages of bridge construction that utilize falsework.

When supported on falsework partial payments will be allowed for the contract item, “Structural Concrete, Bridge,” as a portion of the supported volume of concrete in the superstructure of box girder or slab bridges as follows:

35% - Falsework – A partial payment will be made when soffit plywood is in place. The partial payment will be equivalent to 35% of the projected concrete volume to be supported by the soffit plywood.

5% will be paid upon complete removal of falsework materials and final finishing of concrete.
The balance of the quantity under consideration above will be paid in accordance with existing practices.

There will be no change to payment methods for Precast Girder or Steel Girder bridges. Concrete for elements not supported by falsework will continue to be paid for in accordance with current processes.

**Example:**

Consider the following for determining a partial pay quantity of the “Structural Concrete, Bridge” item for falsework.

A two span box girder bridge with the following characteristics:
- Distance between abutment faces – 187.1 feet
- Distance abutment face to face of bent – 89.55 feet
- Width of deck – 41.9 feet

Volume of concrete in:

<table>
<thead>
<tr>
<th>Element</th>
<th>Volume</th>
<th>Volume Rate</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>soffit/stems</td>
<td>225.9 CY</td>
<td>1.26 CY/ft</td>
<td>179.10 Feet</td>
</tr>
<tr>
<td>bent cap</td>
<td>34.4 CY</td>
<td>4.30 CY/ft</td>
<td>8.00 Feet</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>260.3 CY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck</td>
<td>200.8 CY</td>
<td>1.07 CY/ft</td>
<td>187.10 Feet</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>461.1 CY</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For simplicity only the concrete supported by falsework will be considered in this example. In real life concrete placed for abutments and columns would be part of the “previously paid” quantity but not included in calculations for determining partial payment for falsework. The bridge is constructed over a four month period.

**Month X** estimate shows that the contractor has erected falsework and placed soffit plywood full width for 48 feet (26.8%) of the soffit/stems. In accordance with this BCB, pay the contractor for the falsework that has been erected.

48 feet of soffit plywood would support the following concrete volumes:

\[
(1.26 \text{ CY/ft})(48 \text{ ft}) = 60.5 \text{ CY for soffit/stems}
\]

\[
(1.07 \text{ CY/ft})(48 \text{ ft}) = 51.4 \text{ CY for deck}
\]

Payment for falsework would be 35% of this supported volume of concrete or:

\[
\begin{align*}
(0.35)(60.5 \text{ CY}) & = 21.2 \text{ CY stems/soffit} \\
(0.35)(51.4 \text{ CY}) & = 18.0 \text{ CY deck} \\
\text{Total} & = 39.2 \text{ CY}
\end{align*}
\]

Pay this estimate 39.2 CY
Previously paid 0.0 CY
Total to date 39.2 CY
**Month X+1** estimate, the contractor has placed all soffit plywood between abutments and the concrete for the soffit/stems.

<table>
<thead>
<tr>
<th>Soffit/stems/ bent cap</th>
<th>260.3 CY</th>
<th>- 128-8-20-0277</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less amount paid previously for soffit/stem falsework</td>
<td>- 21.2 CY</td>
<td></td>
</tr>
<tr>
<td>Less 5% for removal and finishing</td>
<td>- 13.0 CY</td>
<td>(5%)(260.3)</td>
</tr>
<tr>
<td>Remainder for falsework supporting deck</td>
<td>52.3 CY</td>
<td>(.35)(200.8)-18.0</td>
</tr>
<tr>
<td>Total</td>
<td>278.4 CY</td>
<td></td>
</tr>
</tbody>
</table>

Pay this estimate 278.4 CY  
Previously paid 39.2 CY  
Total to date 317.6 CY

**Month X+2** estimate, the contractor has placed the deck concrete.

<table>
<thead>
<tr>
<th>Deck</th>
<th>200.8 CY</th>
<th>- 128-9-20-0277</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less amount paid previously for deck falsework</td>
<td>- 70.3 CY</td>
<td></td>
</tr>
<tr>
<td>Less 5% for removal and finishing</td>
<td>- 10.0 CY</td>
<td>(5%)(200.8)</td>
</tr>
<tr>
<td>Total</td>
<td>120.5 CY</td>
<td></td>
</tr>
</tbody>
</table>

Pay this estimate 120.5 CY  
Previously paid 317.6 CY  
Total to date 438.1 CY

**Month X+3** estimate, the contractor has applied the final finish to all concrete surfaces of the superstructure concrete and removed the falsework.

<table>
<thead>
<tr>
<th>Falsework removed and concrete finished</th>
<th>23.0 CY</th>
</tr>
</thead>
</table>

Pay this estimate 23.0 CY  
Previously paid 438.1 CY  
Total to date 461.1 CY