



PID 108091, CHP/CLA-29/40-24.31/3.73: QUANTITY CALCULATIONS

Calculated by: *Dan Grilliot, P.E., Date: 3/14/2023*

Checked by: *Lawton Gerlinger, P.E., Date: 4/12/23*

Revised by: *Dan Grilliot, P.E., Date: 7/17/23*

Plan Split #1 = 01/STR/13 = CHP-29-2431 and CLA-40-0373

Erosion Control

1. Item 832-Erosion Control (EA)
 - a. Work considered maintenance with \$1,000 provided for each bridge.
 - b. Plan Split # 1 = \$2,000
 - c. Total = \$2,000

Pavement

2. Item 407-Tack Coat
 - a. CHP-29-2431 on bridge STA. 1283+37.92 to STA. 1283+95.09 just beyond bridge end for waterproofing = 57.17 ft. x width = 44 ft. = 2515.48 sq. ft. = 279.50 sq. yd.; two different tack coat applications, tack coat application = 0.085 gal/sq. yd.; 279.50 sq. yd. x 0.085 gal/sq. yd x 2 applications = 47.5 gal
 - b. CHP-29-2431 Rear Approach to Bridge STA. 1282+90.92 to STA. 1283+37.92, one tack coat application, tack coat application = 0.085 gal/sq. yd., Microstation measured = 2027.58 sq. ft = 225.29 sq. yd., 225.29 sq. yd. x 0.085 gal/sq. yd. x 1 application = 19.15 gal
 - c. CHP-29-2431 Fwd. Approach to Bridge STA. 1283+95.09 to STA. 1284+42.09, one tack coat application, tack coat application = 0.085 gal/sq. yd., Microstation measured = 2068 sq. ft. = 229.78 sq. yd., 229.78 sq. yd. x 0.085 gal./sq. yd. x 1 application = 19.53 gal
 - d. CLA-40-0373 on bridge STA. 196+67.36 to STA. 197+18.64, two tack coat application, tack coat application = 0.085 gal/sq. yd., Microstation measured = 2051.20 sq. ft. = 227.91 sq. yd, 227.91 sq. yd. x 0.085 gal/sq.yd. x 2 applications = 38.74 gal
 - e. CLA-40-0373 Approaches, Rear Approach STA. 196+17.36 to STA. 196+67.36, Fwd. Approach STA. 197+18.64 to STA. 197+68.64, Rear Approach Microstation measured = 2000 sq. ft., Fwd. Approach Microstation measured = 2000 sq. ft., one tack coat application, tack coat application = 0.085 gal/sq. yd., 444.44 sq. yd. x 0.085 gal/sq. yd. x 1 applications = 37.78 gal
 - f. Total = 47.5 gal + 19.15 gal + 19.53 gal + 38.74 gal + 37.78 gal = 162.7 gal == 163 gal
3. Item 441-Asphalt Concrete Surface Course, Type 1, (449), PG70-22M
 - a. CHP-29-2431 on bridge STA. 1283+37.92 to STA. 1283+95.09 just beyond bridge end for waterproofing = 57.17 ft., Area = 57.17 ft. x 44 ft. = 2515.48 sq. ft. = 279.50 sq. yd., Asphalt thickness thickness varies 3"-5", avg. 4", 279.50 sq. yd. x 4 in. x (1 yd./36 in.) = 31.06 cu. yd.
 - b. CHP-29-2431 Rear Approach to bridge STA. 1282+90.92 to STA. 1283+37.92, Microstation measured = 2027.58 sq. ft. = 225.29 sq. yd., 225.29 sq. yd. x 1.5 in. x (1 yd./36 in.) = 9.39 cu. yd.

- c. CHP-29-2431 Fwd. Approach to bridge STA. 1283+95.09 to STA. 1284+42.09, Microstation measured = 2068 sq. ft. = 229.78 sq. yd., $229.78 \text{ sq. yd.} \times 1.5 \text{ in.} \times (1 \text{ yd./}36 \text{ in.}) = 9.57 \text{ cu. yd.}$
- d. CLA-40-0373 on bridge STA. 196+67.36 to STA. 197+18.64, Microstation measured = 2051.20 sq. ft. = 227.91 sq. yd., asphalt thickness varies 3"-4.319", avg. 3.6595", $227.91 \text{ sq. yd.} \times 3.6595 \text{ in.} \times (1 \text{ yd./}36 \text{ in.}) = 23.17 \text{ sq. yd.}$
- e. CLA-40-0373 Approaches, Rear Approach STA. 196+17.36 to STA. 196+67.36, Fwd. Approach STA. 197+18.64 to STA. 197+68.64, Rear Approach Microstation measured = 2000 sq. ft., Fwd. Approach Microstation measured = 2000 sq. ft., asphalt thickness (both approaches) = 1.5 in., $444.44 \text{ sq. yd.} \times 1.5 \text{ in.} \times (1 \text{ yd./}36 \text{ in.}) = 18.5 \text{ cu. yd.}$
- f. Total = 31.06 cu. yd. + 9.39 cu. yd. + 9.57 cu. yd. + 23.17 cu. yd. + 18.5 cu. yd. = 91.69 cu. yd. == 92 cu. yd.

Traffic Control

- 4. Item 621-Raised Pavement Marker Removed
 - a. CHP-29-2431 - STA. 1282+90.92 to STA. 1284+42.09 = 2 Each
 - b. CLA-40-0373 - STA. 196+17.36 to STA. 197+68.64 = 2 Each
 - c. Total = 4 each
- 5. Item 642-Edge Line, 6", Type 1
 - a. CHP-29-2431 - Assume 10' beyond asphalt limits, STA. 1282+80.92 to STA. 1284+52.09, 171.17 ft. x 2 edges x (1 mile/5280 ft.) = 0.065 mile
 - b. CLA-40-0373 - Assume 10' beyond asphalt limits, STA. 196+07.36 to STA. 197+78.64, 171.28 ft. x 2 edges x (1 mile/5280 ft.) = 0.065 mile
 - c. Total = Plan Split #1 = 0.13 mile
- 6. Item 642-Center Line, Type 1
 - a. CHP-29-2431 - Assume 10' beyond asphalt limits, STA. 1282+80.92 to STA. 1284+52.09, 171.17 ft. x (1 mile/5280 ft.) = 0.032 mile
 - b. CLA-40-0373 - Assume 10' beyond asphalt limits, STA. 196+07.36 to STA. 197+78.64, 171.28 ft. x (1 mile/5280 ft.) = 0.032 mile
 - c. Total = Plan Split #1 = 0.07 mile

Structure Repair (CHP-29-2431) Plan Split #1

- 7. Item 202-Wearing Course Removed
 - a. On bridge STA. 1283+37.92 to STA. 1283+95.09 just beyond bridge end for waterproofing = 57.17 ft. x 44 ft. width = 2515.48 sq. ft. = 279.50 sq. yd.
 - b. Rear Approach to Bridge = STA. 1282+90.92 to STA. 1283+37.92, Microstation measured = 2027.58 sq. ft. = 225.29 sq. yd.
 - c. Fwd. Approach to Bridge STA. 1283+95.09 to STA. 1284+42.09, Microstation measured = 2068 sq. ft. = 229.78 sq. yd.
 - d. Total = 279.50 sq. yd. + 225.29 sq. yd. + 229.78 sq. yd. = 735.57 sq. yd. == 735 sq. yd.
- 8. Item 409-Sawing and Sealing Asphalt Concrete Pavement Joints
 - a. 44 ft. x 2 ends = 88 ft.
- 9. Item 512-Type 3 Waterproofing, As Per Plan
 - a. 44 ft. x (51.167 ft. + 2 ft. + 2 ft.) x (1 sq. yd/9 sq. ft.) = 269.7 sq. yd. == 270 sq. yd.
- 10. Item 518-Steel Drip Strip
 - a. (51.167 ft./edge x 2 edges) + (1.5 ft./post x 8 posts/edge x 2 edges) = 126.33 ft. == 127 ft.

Structure Repair (CLA-40-0373) Plan Split #1

- 11. Item 202-Portions of Structure Removed, Over 20 Foot Span, As Per Plan
 - a. LUMP SUM
- 12. Item 202-Wearing Course Removed

- a. On bridge STA. 196+67.36 to STA. 197+18.64, Microstation measured = 2051.20 sq. ft. = 227.91 sq. yd.
- b. Approaches, Rear Approach STA. 196+17.36 to STA. 196+67.36, Fwd. Approach STA. 197+18.64 to STA. 197+68.64, Rear Approach Microstation measured = 2000 sq. ft., Fwd. Approach Microstation measured = 2000 sq. ft., Total = 444.44 sq. yd.
- c. Total = 227.91 sq. yd. + 444.44 sq. yd. = 672.35 sq. yd. = 673 sq. yd.
- 13. Item 409-Sawing and Sealing Asphalt Concrete Pavement Joints
 - a. $\cos 23.75 = 40/x$, $x = 43.7$ ft., 43.7 ft. x 2 ends = 87.4 ft. == 88 ft.
- 14. Item 509-Uncoated Steel Reinforcement
 - a. Rear Approach Slab Rebuild = 668 lbs from rebar table in plans
- 15. Item 510-Dowel Holes with Nonshrink, Nonmetallic Grout
 - a. Rear Approach Slab Rebuild = 39 each from rebar table in plans
- 16. Item 511-Class QC2 Concrete, Superstructure
 - a. Rear Approach Slab Rebuild, Microstation measured end view of rebuild = 5.20 sq. ft. x 13'-1 5/16" (13.16' rebuild length) x (1 cu. yd. / 27 cu. ft.) = 2.53 cu. yd. = 3 cu. yd.
- 17. Item 512-Type 3 Waterproofing, As Per Plan
 - a. 40 ft. x (51.28125 ft. + 2 ft. + 2 ft.) x (1 sq. yd./9 sq. ft.) = 245.69 sq. yd. == 246 sq. yd.
- 18. Item 515-Prestressed Concrete Non-Composite Box Beam Bridge Members, Level 1, B21-48, As Per Plan (Beam Length = 51'-1 1/8")
 - a. Total = 3 each
- 19. Item 516-1" Preformed Expansion Joint Filler
 - a. Rear Abutment @ end of beam = 21.5 in. tall x 13.11 ft. x (1 ft./12 in.) = 23.49 sq. ft. x 2 ends = 46.98 sq. ft. == 47 sq. ft.
- 20. Item 516-Joint Sealer, As Per Plan
 - a. 51.09375 ft./keyway x 9 keyways = 459.84 ft. == 460 ft.
- 21. Item 516-1/8" Preformed Bearing Pad
 - a. 2 pads/beam x 3 beams = 6 each
- 22. Item 516-1/2" Elastomeric Bearing Pad (1/2" x 5" x 10")
 - a. 3 beams x 4 pads/beam = 12 each
- 23. Item 518-Steel Drip Strip
 - a. (51.28125 ft./edge x 2 edges) + (1.5 ft./post x 8 posts/edge x 2 edges) = 126.56 ft. == 127 ft.

Maintenance of Traffic

- 24. Item 614-Detour Signing
 - a. CHP-29-2431 - Detour
 - b. CLA-40-0373 - Detour
 - c. LUMP SUM
- 25. Item 614-Portable Changeable Message Sign, As Per Plan
 - a. Total = 1 sign month

Incidentals

- 26. Item 614-Maintaining Traffic (LS)
 - a. Lump Sum (LS)
- 27. Item 623-Construction Layout Stakes and Surveying (LS)
 - a. Lump Sum (LS)
- 28. Item 624-Mobilization (LS)
 - a. Lump Sum (LS)

END OF CALCULATIONS