



LESSONS LEARNED

SUMMARY REPORT

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C. LESSONS LEARNED SUMMARY

- 1) AT&T – Manhole Adjustments
- 2) Box Culvert – Crack Repairs
- 3) Box Culvert – Lining and Guniting Treatment
- 4) Plan Legends – Indicating Pavement Construction
- 5) Rumble Strips – Filling for TCP Purposes
- 6) Shoulder Treatment - Designations

SUMMARY OF QUANTITY DISCREPANCIES

LESSON LEARNED

1) AT&T – Manhole Adjustments:

ISSUE SUMMARY: The Plans and Pay Items showed adjustment of manholes to be performed by the Contractor. When coordinating with AT&T, they informed the contractor that if they performed the adjustments, they would need to have an insurance policy in place, since the cost would be substantial if anything should go wrong. Also, not all manholes in the shoulder were identified.

RESOLUTION: AT&T agreed to perform any adjustments needed. Manholes were not raised and are 1-1/2” or lower in the shoulder area. Maintenance will get with AT&T if they ever need them adjusted.

COST IMPACT:

Underrun: 2 EA x \$825.00/EA = (- \$1,650.00)

Total Cost Impact: (- \$1,650.00)

TIME IMPACT: 0 DAYS

LESSON LEARNED: Check with utility regarding adjustments being needed during construction and provide information as to their requirements to determine if the utility company should perform the work versus the Contractor.



LESSON LEARNED

2) Box Culverts – Crack Repair:

ISSUE SUMMARY: Once the inside surface of the double boxed culvert was hydro blasted and/or chipped away, the quantity crack repair far exceeded the Plan Quantity.

There were no crack repairs designated for the lined box culverts. One of the box culverts, once desilted, it was determined that there were cracks which were allowing water/soils to enter into the box culvert.

RESOLUTION: All cracks for the one double barrel box culvert (gunite) and one lined box culvert were repaired. The other box culverts were removed from this contract due to other issues.

COST IMPACT:

Box Culvert (Gunite):

Overrun: 0411-1 Epoxy Material for Crack Injection 8 X \$220.00/GA = \$1,760.00

Overrun: 0411-2 Crack Injection 8 LF x \$110.00/LF = \$880.00

Box Culvert (Liner):

Work Order: \$9,893.38 Lined Box.

Total Cost Impact: \$12,553.38

TIME IMPACT: 0 DAYS

LESSON LEARNED: The quantity for bid is based on only cracks which are found during design. There can be substantially more cracks found after culverts are desilted and/or after removal of the unsound layer. Crack repair estimates need to be based on anticipated cracking rather than observed. Desilting during design will help improve quantities but may still remain lower than needed.



LESSON LEARNED

3) Box Culvert repairs, access, cleanup:

ISSUE SUMMARY: The contractor requested additional compensation due to access for the box culverts being repaired.

Since this project was designed, the effort required to access each box culvert changed as water levels have increased significantly. In addition, dense vegetation and steep slopes were not considered in the plans. Due to steep slopes at some locations, the gunite trucks would have to be located on the edge of the roadway to be able to pump into the box culverts, requiring barrier wall and traffic shifts.

RESOLUTION: Deleted repair of 13 box culverts due to access issues.

COST IMPACT:

Underrun of \$669,443

TIME IMPACT: None

LESSON LEARNED:

- 1) Provide cross-section from face of box culvert out 20 plus feet.
- 2) Provide clearing and grubbing limits and for restoration both sides of the box culvert to assure access is possible.
- 3) Include guardrail removal/replacement and placing barrier wall, which would include a lane shift for culverts which are inaccessible from below.
- 4) Identify whether the front face is included in the repair.

LESSON LEARNED

4) Legends for Identifying Work:

ISSUE SUMMARY: The designer created a Legend to identify differences in milling and resurfacing depths. The Legend identified mainline milling as “Standard” or “Full Depth”, but with 21 milling depths provided in the Plans the Legend led to confusion. This confusion was compounded as the allowable the lane closure times varied based on milling depths.

RESOLUTION: Contractor and CEI worked together to assure work matched the Stationing in the Plans.

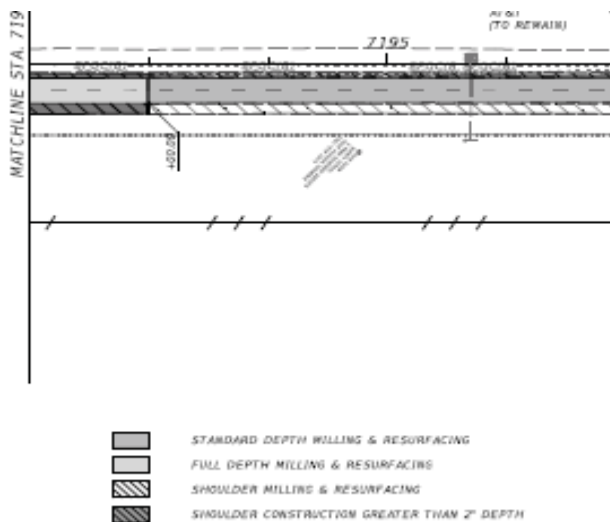
COST IMPACT: None

TIME IMPACT: 0 DAYS

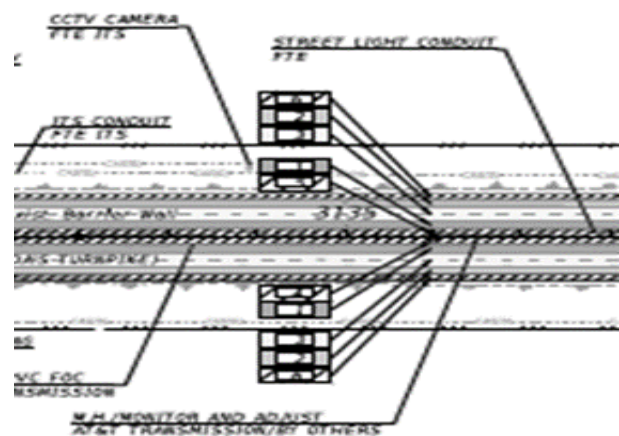
LESSON LEARNED: In future Plans, where there are multiple thicknesses for milling and resurfacing, use additional numbering system to depict depths. At least in the Legend, state the range of thicknesses for area being represented. In another project, a box was utilized with a number representing depth and then a leader was shown to the area it represented.

Example:

E8Q92 – Legend



Other Project – Legend.



LESSON LEARNED

5) Temporary Asphalt / Rumble Strips:

ISSUE SUMMARY: The Contractor submitted an RFI for how covering Rumble Strips would be paid and what satisfies the requirement for covering of the rumble strips. Our initial response that it should be included in the Lump Sum MOT. However, the Estimates Bulletin 14-06 and the most recent Basis of Estimates prohibits temporary asphalt to be paid under Lump Sum MOT and requires the payment through a Special Detour.

RESOLUTION: It was fairly clear that the Contractor did not have enough in the contract under Lump Sum MOT to cover this cost. The cost of covering the rumble strips was handled in a Lump Sum Supplemental Agreement.

COST IMPACT:

SA No. 6 : \$200,000.00

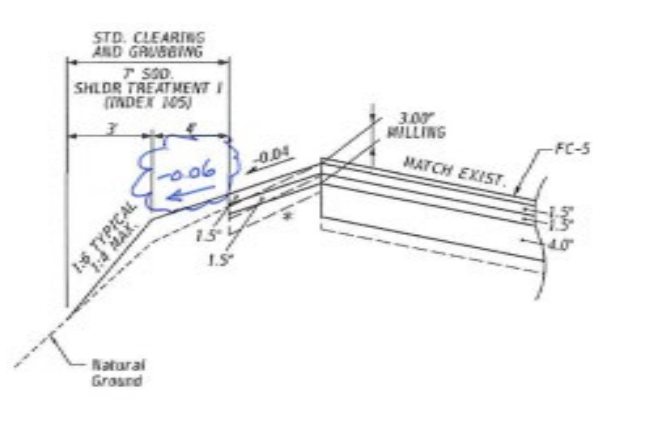
Total Cost Impact: \$200,000.00

TIME IMPACT: 8 DAYS

LESSON LEARNED: Specify the cost of the of filling in the Rumble Strips under 102-2 Special Detour (Lump Sum). The plans should not quantify temporary asphalt tonnage; however, the Plans need to provide width, length, and thickness information so that the Contractor knows the work required by this Special Detour.

6) Shoulder Treatment, Grading, Filling and Sod:

ISSUE SUMMARY: On the inside shoulder, for a major portion of the project length, the Plans called for Shoulder Treatment per Standard Index 105, Type 1. Much of this area, the non-paved shoulder was being adjusted and required additional fill. This additional fill would not be part of a Type 1 treatment and was not quantified in the Plans. Since the quantity of embankment in the Plans was very low, the cost was extremely high.



RESOLUTION: The Contractor submitted an NOI for additional shoulder work. The EOR provided information as to the existing shoulder slopes to identify where additional fill would be required. In addition, the EOR changed the -0.04 slope to -0.06 reducing the quantity of embankment needed. The contractor will be paid; however, the contractor has yet to provide an accurate and justifiable quantity of material placed.

COST IMPACT:

SA/WO: Outstanding

Total Cost Impact: Unknown – Still need to negotiate with Contractor and is listed as an unresolved NOI. Note: The Engineer's Estimate is approximately \$37,080.00

TIME IMPACT: 0 DAYS

LESSON LEARNED: Need to specify Type II Treatment when the area requires fill. When there is embankment shown for shoulder work, need to quantify an amount and list it as embankment.