

Summary Report

Polk Parkway (SR 570) Resurfacing from MP 8.1 to MP 21.7
FPN's 423199-1-52-01 and 423199-3-52-01
Contract E8L90

CEI Senior Project Engineer: Jeffrey James, P.E.
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Lakeland, FL 33803

FTE Project Manager: Joseph Chinelly

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Traffic Control Plans: William Cook, P.E.
Data Transfer Solutions, LLC
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Project Scope of Work

Polk Parkway (SR 570) Resurfacing and Improvements from MP 8.1 to MP 21.7

Scope of work included full-depth reconstruction of the highway in selected sections to replace failing base and subgrade material. Work also included cross-slope correction, new guardrail, drainage improvements, and lighting upgrades

Contract Time

Original Contract Time:	475 days
Time Extensions for Weather Impacts:	74 days
Time Extensions for Holidays and Special Events:	36 days
Other Time Extensions:	0 days
Total Time Extensions:	110 days
Total Allowable Contract Time:	585 days

Project completed on Day 517 of 585 Allowable Days, **12% ahead of schedule.**

Contract Amount

Original Contract Amount (OCA):	\$15,388,590.26
<i>Supplemental Agreements (SA's)</i>	
SA 09, Supplemental Contingency Fund #1:	\$150,000.00
SA 12, Supplemental Contingency Fund #2:	\$150,000.00
SA 20, Supplemental Contingency Fund #3:	\$150,000.00
SA 14, Add Pay Items for Optional Base Group 9:	\$464,022.90
Total SA's:	\$914,022.90 (5.9% of OCA)
Total OCA + SA's:	\$16,302,613.16

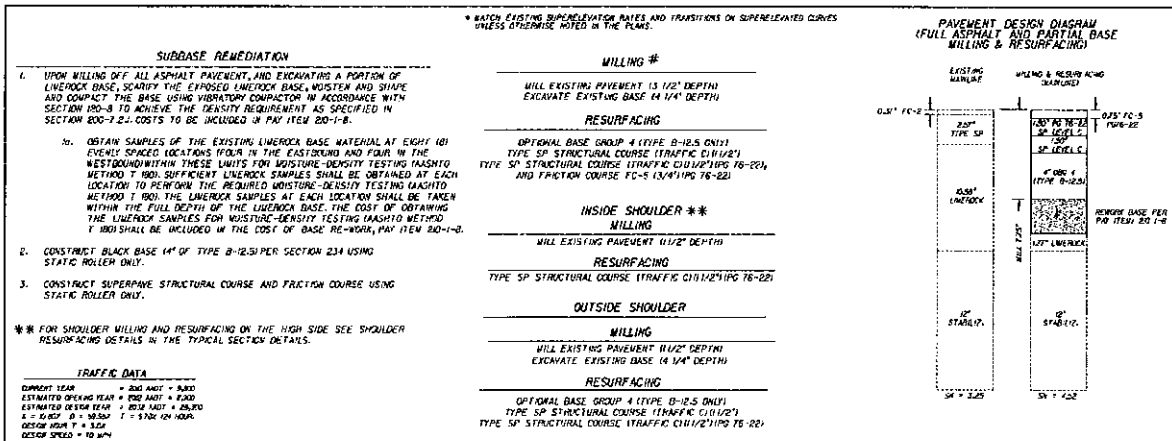
Total Amount Paid to Contractor: \$ 15,849,429.08 3.0% over OCA
 2.8% under OCA + SA's

Lessons Learned

1) Methods Used to Repair Failing Base Material

Issue Summary

In selected sections of the highway, the plans called for milling to a depth of 7.75" in order to remove bad existing base, and then repaving with 4" of OBG-4 asphalt, 3" of SP, and 0.75" of FC-5, as shown in typical section notes on plan Sheet 7:



In several of these areas, it was discovered that the existing base was yielding at a depth of 7.75". The OBG-4 could not be placed in the areas where this condition was encountered. Once an area of failing base was identified, the project personnel would evaluate the situation on a case-by-case basis to determine the most effective method of repair.

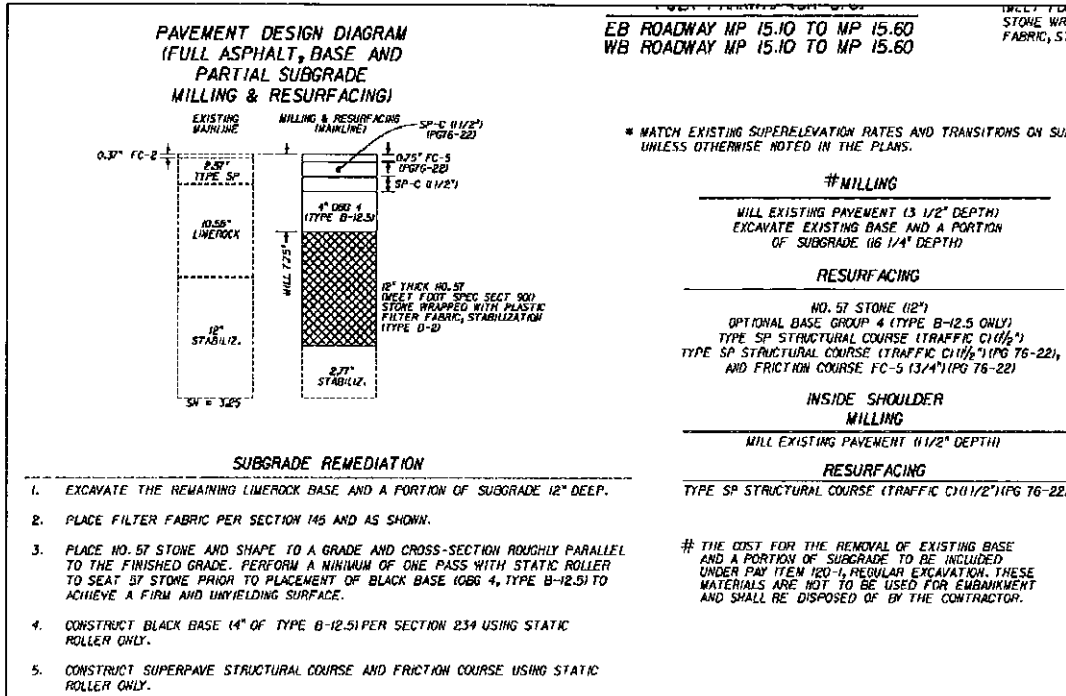
Resolution

We utilized two methods to repair the failing base:

- 1) Excavate an additional 6" (for a total depth of 13.75"), and place 6" of OBG-9 asphalt, followed by 4" of asphalt base, 3" of SP, and 0.75" of FC-5. The advantage of this method was time savings. The contractor was able to excavate the failing base and repave the area opening the lane closure with minimal delays. A disadvantage to this method was that it didn't always work. Even after the area was

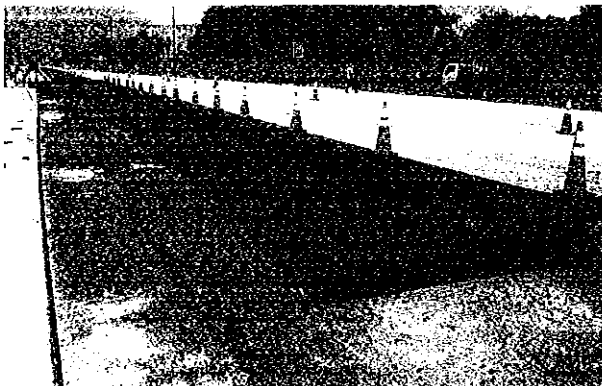
excavated and proof rolled, the additional 6" of asphalt sometimes still failed under the load of the asphalt haul trucks.

- Excavate 19.75" and place 12" of gravel fill to replace the failing base material. Then 4" of OBG-4 asphalt, 3" of SP, and 0.75" of FC-5 are placed on top of the gravel fill. This method is described in the typical section notes on Plan Sheet 8 (shown below):



The advantage to this method is it has worked every time it has been used. The disadvantage was the amount of time it took to perform the operations. When we encountered the first base failure, the contractor's methods to repair the area took 24 hours to repair 350 feet of the roadway. They excavated the failing base with a small capacity loader and placed the gravel fill with a dozer.

When placing the asphalt, they could not back the haul trucks over the gravel fill without disturbing the finish grade of the stone, therefore had to place asphalt in the hopper of the asphalt paving machine with the loader bucket. These methods of excavation and asphalt placement consumed a large amount of time.



Preparing subgrade for placement of gravel fill



Checking final grade of gravel fill

Summary Report

Polk Parkway (SR 570) Resurfacing from MP 8.1 to MP 21.7
FPN's 423199-1-52-01 and 423199-3-52-01
Contract E8L90

Lessons Learned / Recommendations

A lesson learned from this operation has been to use different methods of excavating the failing material and placing the asphalt. After the first repair, the Contractor excavated the failing base material with a milling machine. The milling machine was able to remove the failing base and cut to grade in 2 passes.



Checking cross slope of subgrade following milling of existing limerock base



Milled limerock base

Another measure implemented to reduce the repair time was use of a Motorized Transport Vehicle (MTV) and a track paving machine to place the asphalt. This allowed the asphalt truck to back up to the MTV and dump asphalt while the MTV transferred the asphalt to the paving machine without disturbing the grade of the gravel fill. When the contractor used this method to place the asphalt over top of the gravel fill, they were able to place 2,640 feet in 3 hours compared to 350 feet in 3 hours.



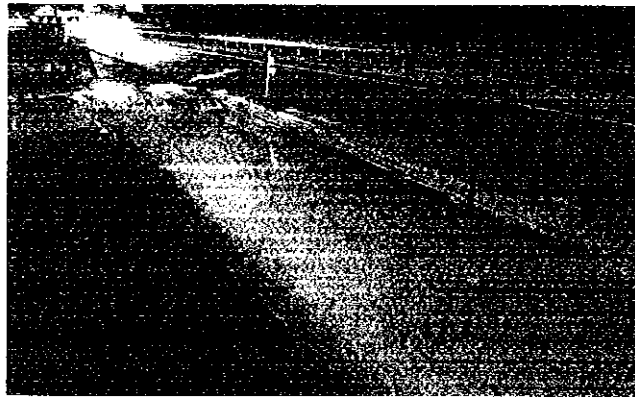
When the base remediation method shown in item (2) above is specified, it is recommended that the EOR require the Contractor to use a milling machine to excavate down to the 19.75" depth, and that the Contractor be required to use the MTV to transport the hot mix asphalt to a track paver when paving over the layer of gravel fill.

2) Construction of "Weep Trenches"

Issue Summary

In isolated areas of the highway, after milling, the existing base was found to be saturated and yielding. In these areas the existing base needed to be replaced before resurfacing could continue. In several of those areas, the contractor was directed to excavate the existing roadway down to a depth of 19.75", place and compact 12" of gravel fill, place 4" of asphalt base, 3" of SP asphalt, and 0.75" of FC-5. The first time this repair method was employed was in a 350-ft long section of lane L-1 at MP 12.4, on the high side of the road. The adjacent lanes L-2 and L-3 were not paved until five months after the base repair work on L-1 had been completed.

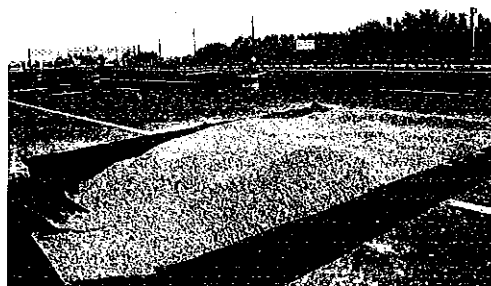
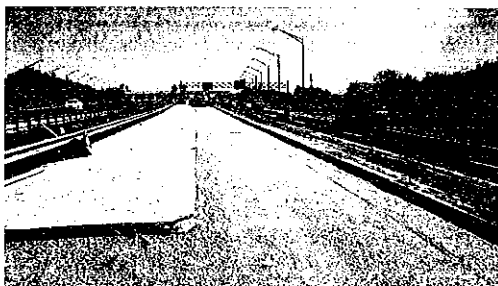
During those five months a considerable amount of water had collected within the 12" thick layer of gravel fill under lane L-1. We anticipated that during the five-month intervening period, the water under the roadway would have percolated into the existing subgrade. However, the water did not percolate due to high clay content in the existing soils, but rather remained trapped within the gravel fill, despite a long dry spell. The accumulation of water was discovered when the Contractor came back to the area and milled out lanes L-2 and L-3. At that time, a large volume of water flowed out from under lane L-1 and onto the milled sections of lanes L-2 and L-3, greatly complicating construction operations in those lanes.



Accumulation of water in the gravel fill layer beneath lane L-1

Resolution

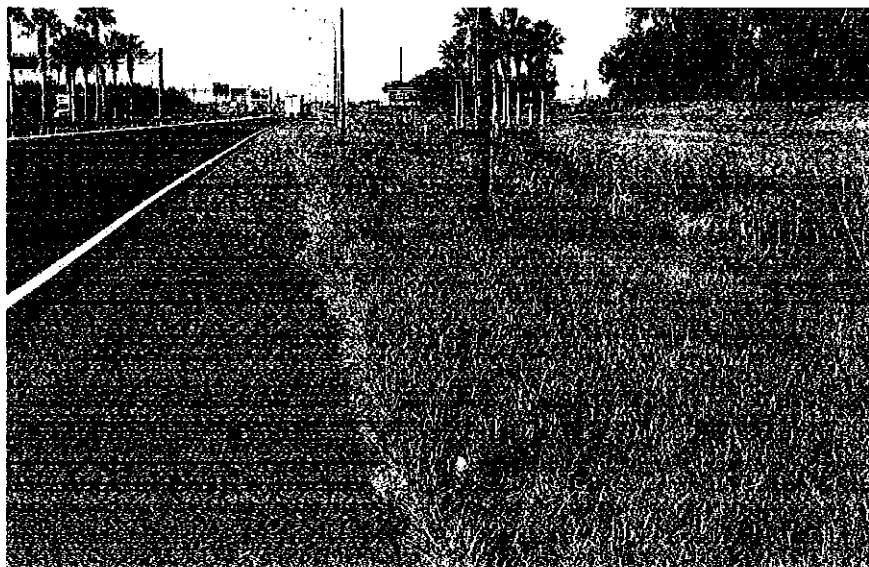
During the five-month period between the work on lanes L-1 and L-2 at MP 12.4 we had employed the base repair method described above on numerous occasions. One of the lessons learned by performing these repairs was the importance of giving the water a pathway to flow through the gravel fill, and drain out into either the grassed median or the grassed shoulder. This was accomplished through the construction of "Weep Trenches" across the paved shoulder. These weep trenches consist of the same 12" of gravel fill and 7" of asphalt as is placed on the travel lane. The trenches were typically 10' to 15' long and located at the lowest point along the section being repaired, to ensure that water flowed toward the trench. If the adjacent soils in the grassed median or shoulder were found to be clayey, then that material would be removed to a radius of about 20 feet and replaced with select A-3 material to allow the water to drain better.



Construction of Weep Trenches

In the case of the base repair done at MP 12.4 described above, because the existing base beneath lanes L-2 and L-3 became saturated with the water that had been trapped under lane L-1, it was necessary to remove all of the base material from those lanes and employ the full-depth gravel fill repair described above. Two weep trenches along with select A-3 material were constructed on the shoulder to ensure that the water would not get trapped there again.

I recently visited one of the areas where a weep trench had been constructed 10 months ago. I noticed that the grass is growing extremely well in the area immediately adjacent to the location of the weep trench; the grass is green and is about 6 – 8 inches high. Whereas the grass on other areas of the shoulder is brownish and about 1 inch high.



This demonstrates that the weep trench is continuing to effectively drain the water from under the highway, even in the middle of the dry season

Lessons Learned / Recommendations

It is recommended that when the reconstruction of a roadway involves the placement of a layer of gravel fill beneath the pavement, the EOR specify in the plans the construction of weep trenches to allow a pathway for water to flow from under the roadway and into the grassed shoulder or grassed median.

3) Reconfiguration of the Existing Striping.

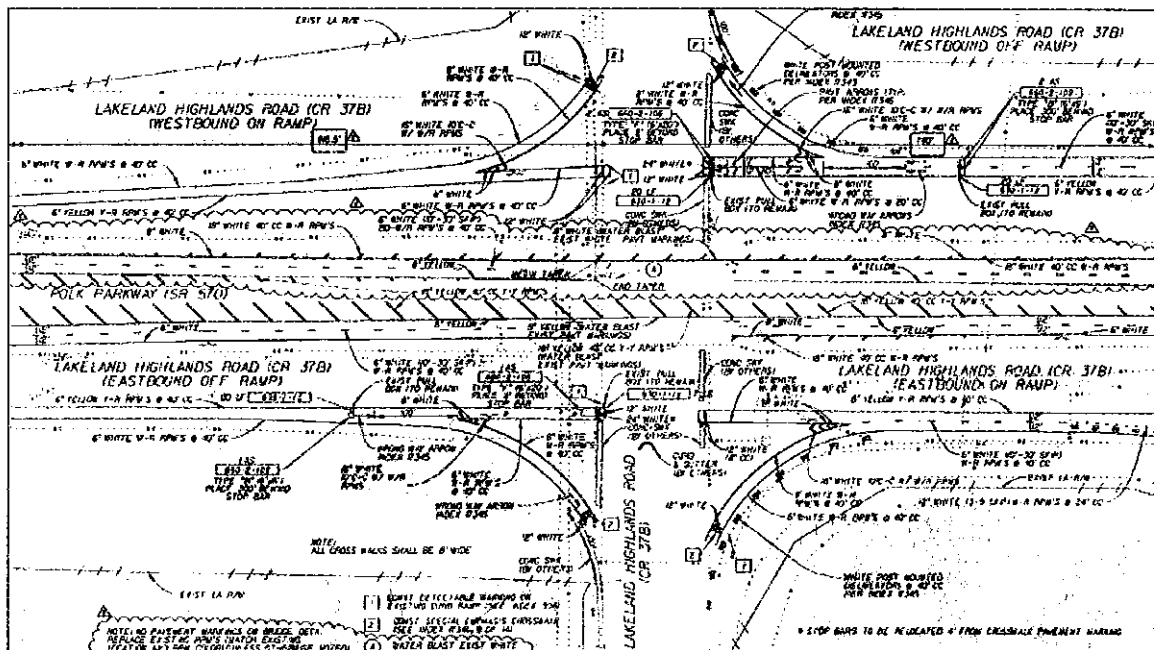
Issue Summary

After milling and resurfacing the section of the highway between the Western Toll Plaza and the intersection with Lakeland Highlands Road, the Contractor re-striped the final lift of the structural course as it had been prior to the milling operation. This was done in accordance with the striping plan given in the bid plans.

After this work had been completed, FTE implemented a plan revision to reconfigure the striping of the Parkway between the Western Toll Plaza and the intersection with Lakeland Highlands Road. The existing configuration was such that the on-ramp from Lakeland Highlands Road became one of the two through-lanes, while the inside lane of the Parkway was forced to merge to the right. Thus, traffic on the two westbound lanes of the Parkway was being forced to merge just before entering the Western Toll Plaza.



The plan revision reconfigured the striping so that the two WB through-lanes did NOT merge, but remained as through-lanes all the way to the Western Toll Plaza, while the WB on-ramp from Lakeland Highlands Road was forced to merge into the outside WB through-lane.



Since the revision was implemented prior to the placement of FC-5, the plan revision called for the Friction Course to be striped in accordance with the plan revision. However, since the Contractor only placed FC-5 on one lane at a time, it would mean that after the first night's operation one lane would be striped according to the new configuration and the other would still be striped according to the old configuration. This would have created conflicting striping in several areas.

Resolution

A Work Order was processed to have the Contractor hydro-blast the striping form the final lift of structural course and have it re-striped according to the new configuration. This prevented the striping conflicts following the placement of the FC-5.

Lessons Learned / Recommendations

It is recommended that the EOR specify in the plans that any reconfigurations of the existing striping patterns should be implemented immediately following the initial milling and resurfacing of the structural course. Since the contractor must re-stripe the road at that point, they can implement the new configuration without having to hydro-blast the stripe first.

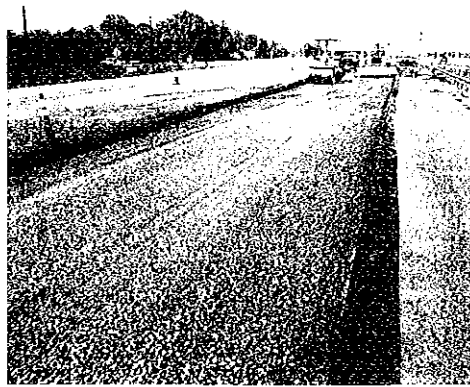
4) Settlement of the 12" layer of gravel fill in an unconfined space

Issue Summary

During the subgrade remediation operations, after placing the 12" layer of gravel fill, the rock was "seated" by having a steel-wheeled roller make several passes over the surface of the stone layer. In the areas where the stone layer was boxed in by select fill (sand), it settled between 1/2" and 1" upon seating with the roller. This was due to the movement of the adjacent sand when subjected to the lateral pressure of the gravel fill during the rolling. In areas where the stone was boxed in by either compacted limerock or compacted clayey subgrade, there was no measurable settlement in the stone layer after rolling.



Unconfined Edge



Confined Edges

Resolution

In the areas where there was a slight settlement of the stone layer, the thickness of the overlying asphalt was increased to bring the final grade of the asphalt up to the required height.

The settlement of the stone layer was observed during the initial placement of the gravel fill; thereafter, if the stone was to be placed adjacent select fill (or other sandy soils), the Contractor was instructed to increase the thickness of stone by 0.75" in order to achieve an average thickness of 12" after rolling.

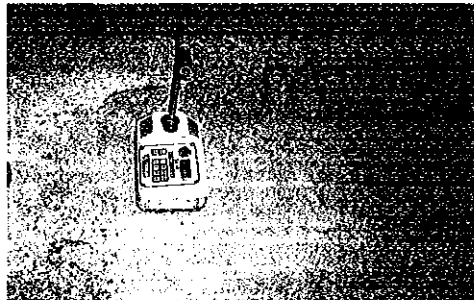
Lessons Learned / Recommendations

When the placement of a 12" thick layer of gravel fill is specified, the CEI and the EOR should review the plans to see if the gravel is to be placed adjacent to select fill or other sandy soils. If so, it is recommended that the loose thickness of the gravel fill layer be increased by ½" to 1" in order to achieve a compacted thickness of 12".

5) High Moisture Content in the Existing Limerock Base.

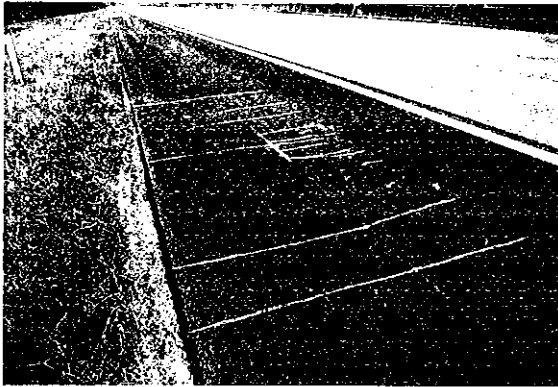
Issue Summary

In several sections of the project, the plans called for the existing roadway to be excavated to a depth of 7.75" and repaved with 4" of asphalt base, 3" of SP asphalt, and 0.75" of FC-5. In the area between MP 12.0 and 12.6 where this method of construction was called for, after the initial excavation it was discovered that the remaining existing limerock base had an in-situ moisture content several percent above optimum. At first, this was not considered to be a problem, because the limerock was very hard and unyielding, and density tests indicated that the material had achieved the required compaction. Furthermore, all limerock used on FDOT projects must pass the LBR (Limerock Bearing Ratio) test which demonstrates the material's ability to sustain the required load while completely saturated.

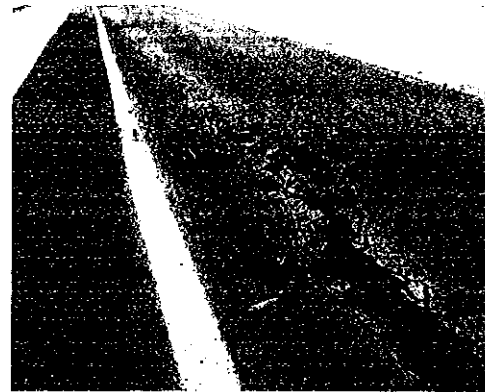


Testing density and in-situ moisture content of existing limerock base

However, this particular limerock turned out to be extremely sensitive to moisture, and would begin "pumping" when its moisture content was a few percent above optimum. This became evident after attempting to place the first lift of hot mix asphalt (HMA) over the layer of remaining limerock. Even if the existing limerock was very hard and unyielding prior to the placement of the asphalt, the heat from the 300-degree HMA would cause the moisture in the limerock to rise to its surface and the limerock would subsequently fail.



"Weeping" Asphalt



Pavement failure due to high moisture content of the existing limerock base

Resolution

In the areas where a partial removal of the limerock was attempted and the base subsequently failed, the Contractor was directed to remove all asphalt and remaining limerock to a depth of 19.75". The highway section was then rebuilt with 12" of gravel fill, 4" of asphalt base, 3" of SP Asphalt, and 0.75" of FC-5.

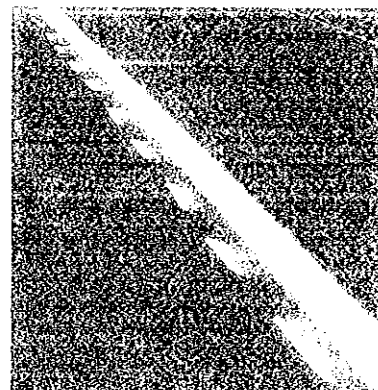
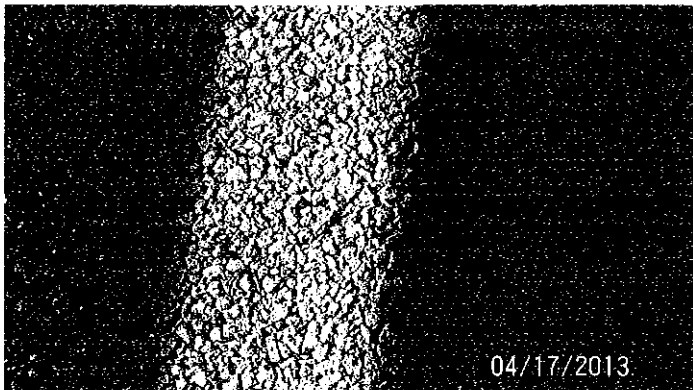
Lessons Learned / Recommendations

In areas where the existing moisture content of the limerock base is over the optimum by more than 4%, it is recommended that the CEI direct the Contractor to remove all of the base down to subgrade, rather than attempting a partial removal of the limerock followed by resurfacing with HMA.

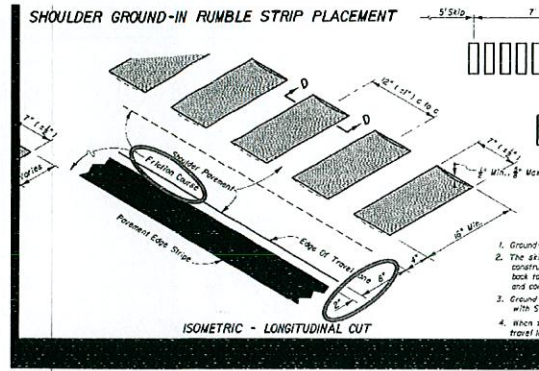
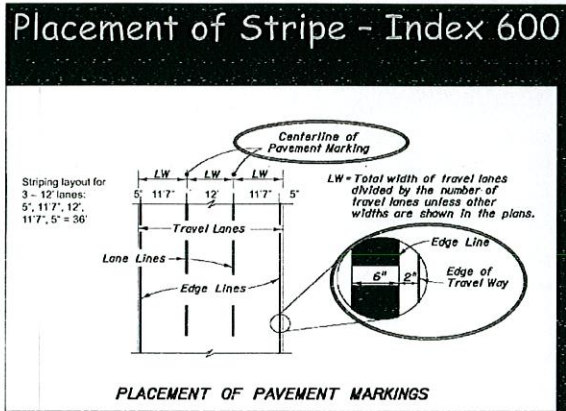
6) Contractor's Quality Control of Striping Operations

Issue Summary

Following the initial placement of Friction Course, multiple instances of incorrect striping were noted by the inspection staff. Striping deficiencies included placing the outside solid stripe too close to the edge of the FC-5 mat, and the failure to install all RPM's, skip lines, and chevron striping as indicated in the Plans. In some areas, the stripe had been laid out correctly, but the striping crew had failed to follow the lay-out.



During the Pre-Activity meeting for Striping Operations, the Contractor had been given clear direction as to the proper location of the stripes relative to the outside edge of the travel lane.



Placement of Stripe – Index 518

Slides from a presentation handed out at the Striping Pre-Activity meeting

It was obvious to the CEI staff that LANE was not exercising adequate Quality Control (QC) over their striping sub-contractor. Only one QC inspector was on site, and he was dedicated to covering the paving operations, which left the striping subcontractor on their own when it came to making field decisions regarding the placement of the stripe.

Resolution

A CPPR Deficiency Warning Letter was issued based upon LANE's failure to perform proper QC over the striping operation. In the letter, LANE was directed to stop all milling and resurfacing operations until they could demonstrate their ability to maintain proper control over the striping operation. LANE responded by stating that every striping crew would have a member of their QC staff assigned specifically to that crew who would stay with the crew for the duration of the striping operations.

Additionally, Metric assigned an inspector to each striping crew to ensure that proper QC was being performed. Either the Sr. Project Engineer or the P.A. reviewed the striping layout prior to the placement of the paint to ensure conformance with the Plans.

Lessons Learned / Recommendations

In is recommended that the CEI ensure that the Prime Contractor has a person experienced in the proper layout and placement of pavement markings assigned to oversee the operations of their striping subcontractor. During the initial striping operations, the CEI should closely monitor the layout and placement of pavement markings to verify that the Contractor is exhibiting proper Quality Control over the operations. - WATERBLASTING CORRECTIONS

7) Pinning of the Temporary K-Wall

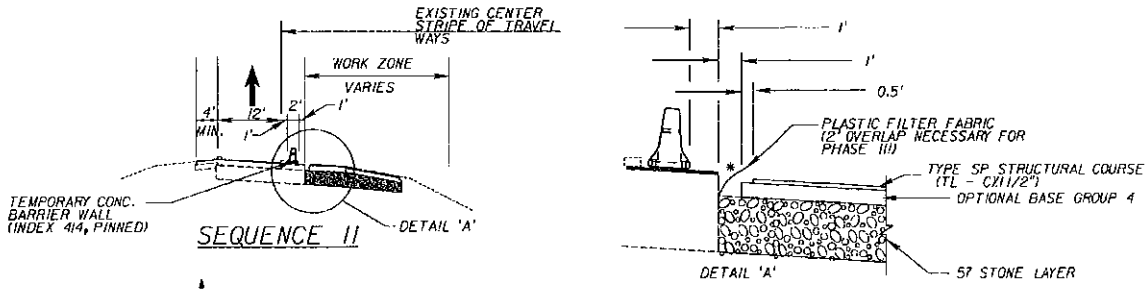
Issue Summary

The Traffic Control Plan (TCP) requires the installation of temporary K-wall from MP 15.1 to 15.6 to allow for the reconstruction of the roadway in this area. The outside lane and shoulder were to be constructed

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first, then traffic was to be shifted onto the reconstructed outside lane so that the inside lane could be constructed.

The TCP requires that the temporary K-wall be pinned per index 414 before the demolition of the existing outside lane and shoulder. The MOT phasing shown in the TCP would require that the pinning be performed in a live traffic lane, thus creating a safety issue. Also, the pinning would result in large pin holes being created in the newly placed asphalt in the outside lane.

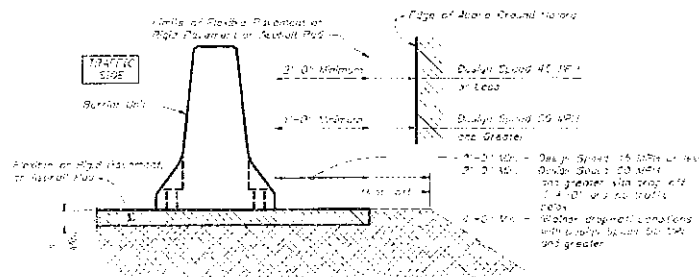


Detail from Traffic Control Plan

Resolution

FTE and the CEI agreed that having a pinning crew working in a live lane would create an unacceptably unsafe condition. Since the highway in that section was already been reduced down to single lane, setting up a lane closure to allow for the pinning operation was not acceptable. The possibility of detouring traffic off of the Parkway in that section was considered. However, the detour idea was rejected because of the negative impact to the traveling public, and the loss of toll revenue.

The CEI worked with the EOR to develop an alternate TCP for this phase whereby the need to pin the wall was eliminated. The solution involved moving the work zone one foot towards the outside shoulder. Doing so provided a two-foot wide buffer zone between the temporary K-wall to the pavement repair drop off. Per Standard Index 414, pinning of the barrier wall is not required where there is offset of at least two feet, and the drop off is less than four feet.



TYPICAL SECTION

NOTES FOR FREE STANDING ROADWAY INSTALLATION:

1. INSTALLATION OF SPAN: This installation technique can only be used on flexible or rigid pavement or on a 4\"/>

2. SPAN: SPAN: Span: This is a minimum requirement for a span that will be installed. (unless equipment is accordance with Specification Section 329 with the exception that the use of a pre-tensioned barrier is not required. The resurface pavement will be made for the span also.

===== FREESTANDING ROADWAY INSTALLATION =====

Detail from Standard Index 414

This solution required an additional 2-foot width of shoulder pavement to the outside of the existing 10-foot paved shoulder, as the temporary travel lane was located 6" from the edge of the existing paved shoulder. This additional 2-foot width of asphalt remained as part of the permanent paved shoulder.

Lessons Learned / Recommendations

It is recommended that the EOR and CEI closely review Traffic Control Plans to determine if an additional "sub-phase" might need to be added to the MOT sequence to account for activities such as the pinning of the temporary K-Wall on the traffic side of the wall. SAVE THE PIN HOLES,

8) Use of Falling Weight Deflectometer Test

Issue Summary

During the design phase, the EOR used the Falling Weight Deflectometer (FWD) test as one of the methods to analyze the condition of the pavement and base. During the course of the construction, the State Materials Office again had the FWD testing performed on the Polk Parkway. The SMO testing was done at more frequent intervals than had been done during the design phase. Once the milling and resurfacing operations were complete, we were able to review the project as a whole to compare those areas predicted to have weak base by the FWD testing with those areas where failure of the existing base actually occurred.

Lessons Learned

There were several areas where we had to extend the limits of the base and subgrade remediation beyond the limits called for in the Plans. This was primarily due to the discovery, after milling, that the existing base was saturated and yielding.

While it is true that the FWD testing did accurately identify areas as having weak base material, it is also true that there were many areas of weak base that were not identified by the FWD testing.

During the course of the project, we discovered that distresses in the surface of the pavement (cracking, rutting, raveling, etc.) proved to be a much better indicator of weak base than the FWD testing. However, the ultimate test of the base occurred when the fully loaded asphalt trucks were backed up onto it during the resurfacing operations. Any area where the base did not yield under the weight of the trucks has successfully held up under normal traffic

It is recommended that the EOR does not rely solely upon the FWD test results as an indicator of the areas where base remediation is required. It should be used along with detailed surveys of pavement distress patterns, measurement of the in-situ moisture content of the base, and (if possible) proof rolling of the base.

GEOTECH INVESTIGATION \$

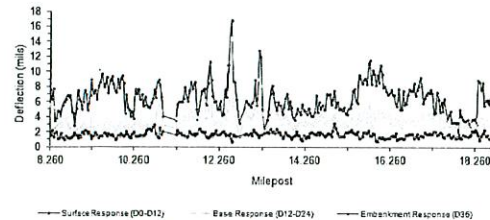


Figure 5. Response profile of westbound inside lane

Table 2. Weakest surface locations (≥ 8 mils deflection)

Direction	Wheel path	Milepost
Eastbound	Left	11.781
		12.143
		12.427
		15.498 to 15.852
	Right	11.823
		12.108
		12.395
		15.467 to 15.752
Westbound	Left	9.266 to 10.026
		10.808 to 10.881
		11.607 to 11.674
		11.998 to 12.073
		12.470 to 12.601
		13.083 to 13.218
		13.479
		15.530 to 16.143
		16.823 to 17.007
18.311 to 18.439		

Excerpt from FWD test report

Appendix A - Summary of Contract Changes

Supplemental Agreements

FPN 423199-1-52-01	Amount
SA 09, Supplemental Contingency Fund #1	\$ 150,000.00
SA 12, Supplemental Contingency Fund #2	\$ 150,000.00
SA 20, Supplemental Contingency Fund #3	\$ 150,000.00
SA 14, Add Pay Items for Optional Base Group 9	\$ 464,022.90

Work Orders

FPN 423199-1-52-01

Original Contingency Fund

Work Order 1 - Increase Acquisition Time to 55 Calendar days	\$ -
Work Order 2 - Incorporate DCE Memos 02-12 and 09-12	\$ -
Work Order 3 - Sample Existing Base Between MP 12.0 and 12.6, R-1	\$ 3,064.72
Work Order 4 - Emergency Base Repair MP 12.4, Lane L-1	\$ 94,867.00
Work Order 5 - Base Repair STA 216+52 to 217+26.81, Lanes R-2 and R-3	\$ 27,067.46

Supplemental Contingency Fund #1

WO 09-01 - Base Repairs STA 217+26.81 to 238+26, R-2 & R-3	\$ 149,998.30
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Supplemental Contingency Fund #2

WO 12-01 - Base Repairs STA 238+97 to 239+55, lane R-3	\$ 13,344.08
WO 12-02 - Base Repairs STA 234+93 to 245+46, lanes R-2 & R-3	\$ 96,570.31
WO 12-03 - Subbase Remediation in EB lanes MP 12.0 to 12.6	\$ 31,561.70
WO 12-04 - Striping Changes from MP 12.5 to 12.6 (WB)	\$ 8,509.75

Supplemental Contingency Fund #3

WO 20-01 - Striping changes resulting from Plan Change 02	\$ 14,729.81
WO 20-02 - Additional Cost for gravel fill during emergency repairs	\$ 4,243.39
WO 20-03 - Shoulder repair 204+50 to 206+50 WB (MP 11.7)	\$ 15,579.13
WO 20-04 - Additional Costs for Base Repairs, MOT, and Paving	\$ 115,372.61

FPN 423199-3-52-01

Original Contingency Fund

Work Order 1 - Remove Existing Inlet Top at MP 15.4	\$ 1,915.94
Work Order 2 - Replace Inlet Top at MP 15.5	\$ 10,909.48
Work Order 3 - Replace Wireless Detectors at DeCastro Rd	\$ 7,457.94

Appendix B - Summary of Notices of Intent (NOI's)

Letter No.	Date	Description	Status	Time	Compensation
1	8/31/2012	Temporary K-Wall Constructability	Contractor Rescinded	0	\$0.00
9	1/24/2013	Request for 21 Contract days for delays to Paving Operations	Contractor Rescinded	0	\$0.00
10	1/24/2013	Request for compensation for idle crew and equipment on 1/10/13 and 1/22/13	Contractor Rescinded	0	\$0.00
13	1/24/2013	Request for compensation for idle crew and equipment on 1/07/13	Contractor Rescinded	0	\$0.00
14	2/1/2013	Request for compensation for material costs associated with base repair at MP 13.1	Contractor agreed to accept the Engineer's Estimate as full compensation for this issue. Paid as part of Work Order 20-02.	0	\$2,132.35
16	2/6/2013	Request for compensation for idle crew and equipment on 1/28/13 and 1/31/13	Contractor Rescinded	0	\$0.00
21	5/10/2013	Request for compensation for loss of production on 5/8/13	Contractor Rescinded	0	\$0.00
22	5/17/2013	Request for compensation to repair of deficient structural asphalt, MP 21.3 - 21.7	Contractor agreed to accept the Engineer's Estimate as full compensation for this issue. Paid as part of Work Order 20-04.	0	\$15,940.52

Appendix C - Summary of RFI's

RFI 01 – Request to extend lane closure hours

Submitted 09/27/2012

Lane Construction is requesting to be allowed to set up mainline and ramp lane closures from 7 pm to 6 am (Sunday through Thursday). Please advise as to whether this will be acceptable to the Turnpike Enterprise.

Senior Project Engineer's Response:

The Turnpike Enterprise has approved the requested 7:00 PM early start time for lane closures on those nights when Deep Milling (7¾") operations are scheduled.

Based upon the impact of the earlier lane closure, Metric and FTE will evaluate the possibility of allowing the early start for the remainder of the project.

Lane must submit their lane closure requests showing the early start time through Project Solve, and take all possible actions to ensure that lanes are re-opened to traffic before the morning rush hour.

RFI 02 - Pinning of temporary K-wall MP15.1 - 15.6

Submitted 09/27/2012

Sheet 116, Sequence II requires the temporary K-wall to be pinned per index 414 before the demolition of the existing outside lane and shoulder.

The MOT phasing shown in the plans would require the work of pinning to be performed in a live traffic lane, thus creating a safety issue.

Lane Construction is requesting direction on how to proceed.

Senior Project Engineer's Response:

FTE, Metric Engineering, and the EOR consider the temporary concrete barrier wall with pins to be constructible. However, the method proposed by Lane Construction to install the pins is unsafe for the worker on the traffic side of the barrier. After review of Lane's proposed method of installing the K-wall pins, alternate Temporary Traffic Control layouts were evaluated in order to facilitate the installation of the temporary concrete barrier wall.

The recommended solution for the installation of the temporary concrete barrier wall involves moving the work zone for sequence II shown on sheet 116 one foot towards the outside shoulder which will provide an additional one foot offset of the temporary concrete barrier wall to the pavement repair drop off. By providing the additional one foot of offset, per Standard Index 414 page 6, pinning of the barrier wall will not be required to mitigate an offset less than two feet, to a drop off less than 4 feet, for a design speed greater than 50 mph.

This solution will require an additional 2-foot width of shoulder pavement to the outside of the existing 10-foot paved shoulder, as the travel lane will be located half a foot from the existing paved shoulder edge with this solution. This additional 2-foot width of asphalt will remain as part of the permanent paved shoulder.

RFI 03 – Base Re-Work

Submitted 09/27/2012

Per typical section 3B, pg 7, the plans call to rework 4" of existing lime rock. Per specs 210-1 the rework involves bringing new material as required by the plans to bring the base into compliance with the Specifications. Is Lane to bring new lime rock to rework these sections? Is the rework necessary if the existing base is dense and unyielding? Please advise so Lane can plan appropriately.

Senior Project Engineer's Response:

Re-working of the existing base can be omitted if, upon proof rolling with a static roller, the base is found to be in a good condition (firm and unyielding). Lane will also be required to run field density tests on the existing base to ensure that it meets the requirements of the specifications. In accordance with Note 1a on plan Sheet 7, Lane will be required to obtain eight (8) samples of the existing base (4 from the EB lanes and 4 from the WB) and have them tested for a modified proctor (AASHTO T-180).

If, upon exposure, the existing base is not found to be in good condition, then the re-working of the existing base will be necessary. If the base is found to be deficient due to excessively high moisture content, then the deficient base material will need to be removed down to a depth where good material is encountered. In no case will the roadway be excavated to a depth greater than 19.75 inches.

In the areas where deficient base is discovered, the type of material that will be used to replace the deficient material will be determined on a case-by-case basis. The deficient base will be replaced with one of the following materials: new limerock, asphalt base, or 57-stone. The determination as to the type of replacement material will be made by the Engineer or his designee.

RFI 04 - limits of lane closures

Submitted 09/27/2012

Per the Traffic Control Plan, lane closures are not to exceed 2 miles for active work zones. The Contractor is requesting that an exemption be made for the permanent lane closures between MP 14.88 to 17.25 (EB and WB); They would like to extend the limit of a single lane closure to 2.25 miles in order to facilitate the reconstruction of the existing base. Please advise if this is acceptable.

EOR's Response:

Since this limitation was set in accordance with Turnpike's policy, Turnpike Construction and Traffic Operation should be consulted. (FTE Construction and Traffic Operations were subsequently consulted and approved extending the lane closure to 2.25 miles between MP 14.88 and 17.25.)

RFI 05 - Daytime Lane Closures

Submitted 03/18/2013

Lane is requesting to be allowed to do day light lane closures to meet with the 65 degrees temperature requirement for friction course in standard specifications 337-7.3.1. Currently, the temperature at night is between 51-56 degrees, please advise if this is acceptable.

Senior Project Engineer's Response:

Approved. (This response was elaborated upon at the Progress meeting, where the contractor was informed that daytime lane closures would be allowed only for the placement of FC-5, and only for days when the nighttime temperature was forecast to fall below 65 degrees.)

RFI 06 - Location of Rumble Strips

Submitted 06/23/2013

The index isn't clear regarding rumble strips for certain situations on the job:

1. On EB at the Western toll plaza, coming out of the outside toll lane you are in the exit lane to Lakeland Highlands, should this get rumble strips?
2. On EB, from the Lakeland Highlands on ramp to the US98 off ramp, should that 3rd lane get rumble strips, and if so, where to begin and end?
3. There are several long acceleration lanes throughout, like WB 92 on ramp or the WB 98 circular on ramp, should these locations get rumble strips?

EOR's Response:

1. No rumble strips are necessary. This section of shoulder is adjacent to an auxiliary lane between toll plaza and exit ramp. Drivers coming out of a toll plaza would have been alerted and pay attention for the next exit point.
2. Yes. The begin and end shall be per Index 518 (sheet 2).
3. Yes, we need to provide rumble strips for long auxiliary lanes, but none on ramps.

Appendix D - Summary of Shop Drawings

No.	Spec Section / Pay Item	Division	Date Submitted	Title	Resolution Date	Days Elapsed
1	715 Highway Lighting System	DIV II Traffic Control	10/24/12	715 Roadway Lighting Conductors Insulated, #4 & #6 Product Data	11/13/12	20
2	715 Highway Lighting System	DIV II Traffic Control	10/24/12	715 Conduit, Underground for Roadway Lighting Product Data	11/13/12	20
3	715 Highway Lighting System	DIV II Traffic Control	10/24/12	715 Pull Box (Roadside) Product Data	11/13/12	20
4	715 Highway Lighting System	DIV II Traffic Control	10/24/12	715 Pole Cable Distribution System Product Data	11/14/12	21
5	715 Highway Lighting System	DIV II Traffic Control	10/24/12	715 Light Pole, Aluminum, 45' Product Data	11/14/12	21
6	660 Inductive Loop Detectors	DIV II Traffic Control	10/24/12	660 Loop Assembly for Signals Product Data	11/12/12	19
5.1	715 Highway Lighting System	DIV II Traffic Control	01/30/13	715 Light Pole, Aluminum, 45' Memorandum with Correspondence	02/06/13	7
7	715 Highway Lighting System	DIV II Traffic Control	09/05/13	715 Roadway Lighting Conductors Insulated, #4 & #6 (South wire) Product Data	09/06/13	1
8	715 Highway Lighting System	DIV II Traffic Control	09/05/13	715 Conduit, Underground for Roadway Lighting (Cantex) Product Data	09/06/13	1
9	715 Highway Lighting System	DIV II Traffic Control	09/05/13	715 Light Pole, Aluminum, 45' (GE) Product Data	09/06/13	1