

EXECUTION VERSION

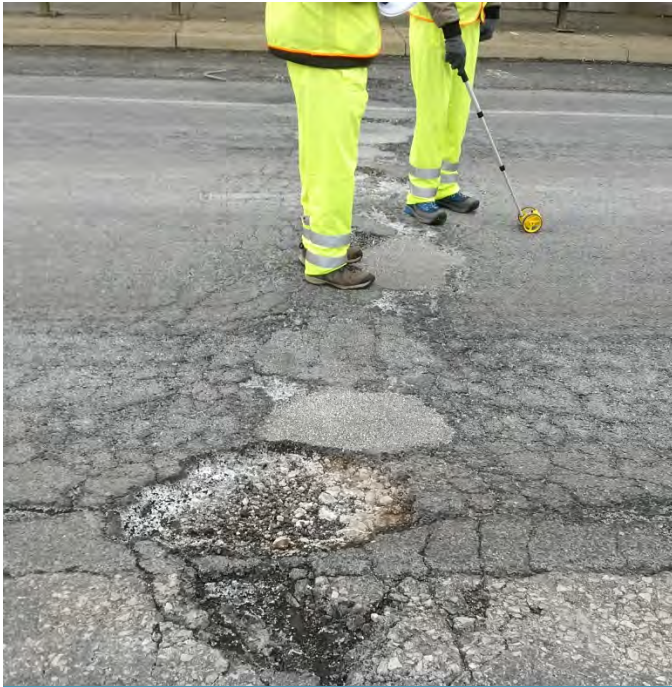
I-395 Project

Exhibit C-3

Technical Requirements

Attachment 3.8

Pavement Condition Assessment Report



Transurban | 395 Express
Lanes Preliminary Design

CONDITION ASSESSMENT
VOLUME I

PAVEMENT CONDITION ASSESSMENT

Summary Report

June 3, 2016





Introduction

HDR, under contract to Transurban (TU), is providing the preliminary engineering services to prepare 30% design plans and Technical Requirements for procurement of the 395 Express Lanes project in northern Virginia. The project extends from the current northern terminus of the 95 Express Lanes at Turkeycock Run near Duke Street in the south, to the vicinity of Boundary Channel Drive near the Pentagon in the north. In general, the two travel lanes and two shoulders that make up the current High Occupancy Vehicle (HOV) lanes along the project alignment will be converted to three travel lanes and two narrower shoulders. The two existing travel lanes have an average total width of approximately 23.5 feet. The shoulders, which are located on either side of the travel lanes over most of the alignment, generally range from approximately 8 feet to 12 feet in width and in limited cases are narrower or wider. The existing shoulder sections will be removed and replaced full depth, while the existing main travel lanes will be milled and overlaid to support the proposed improvements to the HOV facility. The new travel lanes will be 11 feet wide, and the new shoulders will generally be two- and -ten feet wide.

Joints in the existing concrete pavement beneath the main travel lanes will also require repairs during construction. HDR's scope of services for the project includes conducting a condition assessment of the existing pavement joints to characterize the number and type of joint repairs that will be required during the construction phase. HDR subcontracted with Pavement Technical Solutions, Inc. (PTS) of Ashburn, Virginia to conduct the joint condition assessment. In addition to the joint condition assessment, HDR is conducting a multi-faceted approach to evaluation of the existing pavement depths and design of the pavements on the project, including:

- Approximately 170 pavement cores and shallow soil test borings to identify existing pavement thickness and soil subgrade conditions,
- Laboratory testing of selected soils from the test borings to aid in establishing subgrade support parameters for design,
- A Ground Penetrating Radar (GPR) study to aid in determining average pavement section thickness at regular intervals along the project alignment,
- Falling Weight Deflectometer (FWD) testing to evaluate existing pavement section and subgrade soil stiffness properties for design,
- Structural analysis of the existing and proposed sections to provide minimum pavement sections for the project.

The purpose of this report is to summarize the results of HDR's assessment of the existing pavement condition and section thickness. The pavement condition assessment is based on a field-level survey of the existing joints and visible condition of the surface pavement. An inventory of the existing joint conditions is included. Our evaluation of existing section thickness is based on the results of the pavement core explorations and the GPR study. Other services summarized above related to the structural adequacy and design of the pavements (FWD testing and structural analysis) will be reported under separate cover.

Preparation and Team Responsibilities

The joint condition assessment extends from approximate Station 1533+00 on the south end to Station 1941+00 on the north end. At approximate Station 1876+00, the reversible HOV lane facility splits into separate northbound (NB) and southbound (SB) lanes divided by a barrier. The separated lanes extend

to the northern terminus of the project. South of the split, the facility consists of two travel lanes and two shoulders. North of the split, the facility consists of two travel lanes and one outside shoulder in each direction. Figure 1 in Appendix A shows the general site vicinity of the project in addition to approximate stationing referenced at several locations along the alignment.

On February 2, 2016 a conference call was held between TU, HDR, and PTS to discuss the joint condition assessment. TU personnel described challenges they had encountered in the past with projects having similar pavement sections. TU indicated their primary concern for the main travel lanes was the condition of the joints in the underlying concrete pavement. During the call it was decided that a condition survey of the reduced-strength asphalt shoulders was not necessary since they would be fully reconstructed as part of the project.

Prior to the coordination call, TU forwarded repair details used on the 95 Express Lanes project to HDR and PTS for review and discussion. The details included preferred methods of repairing the joints that were categorized into Types 1, 3, and 4, which correspond to conditions observed in the field as reflective cracking in the asphalt concrete surface. Table 1 summarizes the joint repair criteria agreed upon by TU, HDR, and PTS for the joint condition assessment.

Table 1 – Agreed Upon Joint Repair Criteria

Repair Type Number	Repair Description	Field Observation Criteria
Type 1	Low Severity Repair	Observed pavement distress includes a single reflective crack over a joint having a width of ½ inch or less
Type 3	Severe Repair	Observed pavement distress includes a primary reflective crack over a joint surrounded by additional cracking
Type 4	Wide, full-depth pavement Repair	Exhibits signs of extremely bad existing slab conditions, settlement, or a utility crossing

During the conference call, TU, HDR, and PTS decided the joint condition assessment field work would be conducted by a three person team consisting of one TU representative and two PTS employees. The TU representative would provide and operate a hand-held GPS unit to collect the GPS coordinate of each recorded joint, the assigned joint number, and a photograph of each joint. The PTS representatives would be responsible for keeping a field log recording each joint number, station location, lane(s) of the observed distress over the joint, joint type (1, 3, or 4), length of distress/joint, and the width of the observed distress over each joint. PTS would also be responsible for providing and using a measuring wheel to determine the longitudinal location (station) of each joint recorded.

Field Work

Joint Condition Assessment

On February 6, 2016, PTS and TU personnel met at the project site to begin the joint condition assessment field work. Tim Ratcliffe of TU was onsite at the beginning of the work to discuss with the team the joint repair criteria and how it applied to conditions observed in the field. The work was initiated in the northbound travel lanes at the north end of the project (south abutment to bridge over Potomac River); the direction of field data collection was performed in the back-station direction to the south. The south abutment corresponds to approximate Station 1941+00 on the design baseline.



Once the northbound travel lanes were completed, the team returned to the north end of the project and began work in the southbound lanes. Once the end of the southbound lanes was reached at approximate Station 1876+00, the team continued to the south in the reversible HOV lanes to the south end of the project (approximate Station 1533+00). The joint condition assessment required two days to complete.

Transurban collected additional photographs and GPS coordinates for previously identified joint locations during a separate roadway closure on April 16, 2016 and provided the location data to HDR. During the initial field work in February 2016, 1,039 joint locations were identified. Transurban identified 19 additional joint locations in April 2016, bringing the total number of locations to approximately 1,058. The 19 additional locations were given a suffix of "-A" on the closest existing joint number to maintain the initial joint numbering system.

Joint locations referenced to the design baseline were determined by two methods: using a rolling measuring wheel and subtracting the distance from the survey starting point, and GPS way points projected onto the baseline using CAD. The discrepancy between the two measurements varied from approximately 0 to 400 feet, and in general, increased linearly in magnitude as the survey progressed in the southerly direction. This difference could have been induced by the rolling wheel, vertical curvature of the road compared to the horizontal alignment, or a number of other factors. For the purpose of this report, the joint location obtained with the GPS projected onto the design baseline was used, if available. If a GPS point was not taken, the measuring wheel distance between GPS-located joints was used to estimate a location along the design baseline (out of 1,058 total joints, 55 are missing GPS coordinates and have estimated locations). In either case, it should be noted that joint locations are approximate and must be confirmed by the Design-Builder during construction.

Pavement Coring

DMY Engineering Consultants, Inc. of Dulles, Virginia and GET Solutions of Virginia Beach, Virginia drilled 168 test borings in the main travel lanes and shoulders of I-395 within the project extents between January 19 and February 22, 2016. Fifty-eight borings were completed within the main travel lanes and 110 borings were completed within the shoulders. In general, the borings alternated between the east and west shoulders and travel lanes. The existing pavement section was cored and measured at each of the test boring locations using a 6-inch-diameter core barrel.

Once cored, bound pavement materials (asphalt concrete (AC), Portland cement concrete (PCC), and cement-treated aggregate(CTA)) were removed from the hole, measured, labeled, photographed, logged, and retained. Hollow stem augers were used to drill through subbase aggregate below the pavement materials; and, in limited cases, a hand auger was used. The aggregate was measured in place, if possible. After coring the pavement and auguring through the subbase aggregate, the test borings were drilled and sampled to a depth of approximately eight feet below the bottom of the pavement section. The test borings were backfilled with approximately eight feet of pea gravel and two feet of non-shrink grout upon completion of drilling. Excess drill spoils were removed from the pavement section and project site.

A summary of the pavement cores and test borings, including location (station and offset), lane location, and pavement thickness observations is provided as Table A-1 in Appendix A. Test boring logs and detailed pavement core logs, including photographs, are provided with the Geotechnical Engineering Data Report under separate cover.

Ground Penetrating Radar (GPR) Survey

Infrasense, Inc. of Woburn, Massachusetts completed a Ground Penetrating Radar (GPR) survey of the project alignment on February 6, 2016. The study was conducted between approximate Station 1510+30 on the south end to 1941+00 on the north end. The objective of the GPR survey was to aid in determining the AC pavement thickness at regular intervals along the project’s length to assist HDR and TU in repair planning and replacement of the pavements on the project.

The GPR data was collected with a GSSI 1-GHz horn antenna GPR system, center-mounted behind the survey vehicle providing continuous data along the centerline of each lane. The vehicle was equipped with an electronic distance-measuring instrument (DMI) mounted to the rear wheel, providing synchronous distance data as the GPR data was collected. A Trimble GPS unit provided high resolution, differentially corrected geo-spatial information. The data collection and recording was controlled by the SIR-20 GPR system operated from within the survey vehicle. The data was collected at a rate of 1 scan per foot of travel. The pavement layer thicknesses were calculated at 25-foot increments, and represent the average of individual readings calculated over an interval of ± 12 feet on either side of the reported location.

HDR provided the results of the pavement core measurements to Infrasense to ground truth the GPR data before their report was finalized. Infrasense’s report titled “Ground Penetrating Radar (GPR) Pavement Evaluation of the I-395 Corridor HOV Lanes,” dated April 8, 2016 is provided as Appendix C.

Results

Pavement Joint Inventory

Table 2 summarizes the execution and results of the joint condition assessment. During the field work, Sheet 40, which included pre-labeled joint numbers 780 through 799, was inadvertently missed. Therefore, no joints in the inventory are numbered 780 through 799.

Table 2 – Summary of Joint Condition Assessment Results

Lanes	Start	End	Type 1	Type 3	Type 4
Northbound HOV	Joint 1 – 1940+96	Joint 132 – 1873+15	17	115	0
Southbound HOV	Joint 133 – 1941+00	Joint 256 – 1873+72	13	111	0
Reversible HOV	Joint 257 – 1870+05	Joint 1,059 – 1537+34	99	685	18
Repair Type Totals =			129	911	18

In addition to the joint repair type totals summarized in Table 2, the following unit quantities were established by the joint condition assessment:

- Type 1 repairs – 129 locations; total of 3,100 linear feet
- Type 3 repairs – 911 locations; total of 21,955 linear feet

- Type 4 repairs – 18 locations; total of 647 cubic yards consisting of:
 - 407 cubic yards of asphalt (assumes 2 inches of surface mix on 15 inches of base mix, as per standard TU joint repair detail, shown in Figure 5 in Appendix A)
 - 240 cubic yards of VDOT 21a aggregate (assumes 10 inches depth, with 6 inches below pavement section into subgrade)
 - Total depth of repairs is based on average pavement layer thickness plus 6 inches below pavement section into subgrade
 - Repair widths are based on joint widths noted in condition assessment plus minimum 2 feet on either side, as per standard TU joint repair detail

The detailed Joint Condition Assessment forms are provided in Appendix A and include the following columns:

- Joint No. – Recorded joints were numbered sequentially traveling north to south. The joint number was also recorded by the TU GPS device.
- Approximate Station – Obtained by projecting the latitude and longitude of the GPS waypoint onto the design baseline in CAD.
- Y / X – Coordinate points for the joint (lat/long from GPS device converted to VDOT project coordinates).
- Lanes – Designates the lanes the assessment was were conducted (i.e. Southbound, Northbound, Reversible HOV)
- Lane – Designates which lanes there was a recorded joint / distress (i.e. East, West, Both)
- Joint Repair Type – Designates the assigned repair type (i.e. Type 1, 3, or 4)
- Joint Repair Length – Designates approximate length of required joint repair.
- Joint Repair Width – Designates the approximate width of the recorded cracks, as well as any relevant field notes.
- Waypoint # / Picture Folder – Folder name containing the picture of the referenced joint (also the waypoint number from the GPS device)
- Picture Filename – Filename for the photograph of the referenced joint.

Photographs of selected joints are provided in Appendix B. Three representative photos are provided for each of joint repair types 1 and 3. For joint type 4, all photos provided by Transurban are shown, as well as Figures 2-1 through 2-6 in Appendix A, which show the approximate locations of the Type 4 joint repairs.

Pavement Section Thickness

Table 3 summarizes the approximate existing pavement section thicknesses, broken down by the lane or shoulder in which the pavement was cored. In general, the reduced strength shoulders consist of approximately 4 inches of asphalt over an average of 7 to 12 inches of subbase aggregate. The main

Pavement Condition Assessment

travel lanes consist of approximately 4 inches of asphalt over 9 inches of concrete over 7 to 8 inches of cement-treated aggregate over 5 inches of subbase aggregate (average values). The range and average values for the layer thicknesses are provided in Table 3. Figure 3 in Appendix A depicts the typical pavement sections summarized in Table 3.

Table 3 – Summary of Typical Pavement Core Measurements

West Shoulder	West Travel Lane	East Travel Lane	East Shoulder
Asphalt 2.5 to 8.5 inches Average = 3.9 in	Asphalt 2.8 to 6.0 inches Average = 4.2 in	Asphalt 2.8 to 6.1 inches Average = 4.0 in	Asphalt 2.0 to 7.7 inches Average = 3.9 in
Aggregate Subbase 1.5 to 14.2 inches Average = 7.2 in	Concrete 7.8 to 10.0 inches Average = 8.7 in	Concrete 8.0 to 11.0 inches Average = 8.9 in	Aggregate Subbase 1.1 to 31.8 inches Average = 12.2 in
	Cement Treated Aggregate 3.0 to 9.0 inches Average = 7.5 in	Cement Treated Aggregate 4.0 to 9.1 inches Average = 7.0 in	
	Aggregate Subbase 1.2 to 13.0 inches Average = 5.4 in	Aggregate Subbase 0.7 to 9.7 inches Average = 5.3 in	

In a number of pavement cores and within some of the interpreted GPR data, we observed “non-typical” pavement sections that do not represent the generally observed sections summarized in Table 3. Examples include: thicker than usual AC pavement, PCC pavement beneath the AC pavement surface of the shoulder, or the lack of a cement-treated aggregate layer in the main travel lane. Where possible, HDR used the GPR data to determine the extents of the non-typical section and ground-truthed the interpretation with pavement core data obtained within the area.

Non-typical observations are divided up and summarized in Table A-2 in Appendix A as follows:

- Table A-2(a) – Main Travel Lanes: The GPR data indicate four areas of the main travel lanes where no layer of concrete was present beneath the asphalt. In three of the four cases, this was shown to be false based on pavement core data. In all four cases, pavement joint repairs were noted in the condition assessment, indicating the presence of concrete. In one area of the main travel lanes near the new Seminary Road ramp, a thick asphalt layer is shown by the GPR data. This was confirmed by one pavement core in the area, and HDR anticipates the increased thickness is due to recent construction of the ramp encroaching into the main travel lanes.
- Table A-2(b) – Shoulders: The GPR data indicate two areas of thickened asphalt within the east and west shoulders to the south of the project extents. Pavement cores confirm these interpretations; HDR anticipates this data was collected in an area of shoulder reconstruction as part of Segment 4 of the 95 Express Lanes project. Three areas within the project extents indicate concrete beneath the asphalt in the west shoulder. The three areas were confirmed with pavement cores. One area is associated with a number of ramps merging into/out of the main travel lanes.
- Table A-2(c) – Summary of Non-Typical Pavement Core Observations: This table summarizes specific pavement core locations not associated with non-typical GPR interpretations. The first part of the table summarizes main travel lane locations, typically where CTA was not observed beneath the concrete. The second part of the table summarizes pavement core observations at ramp tie-in locations. In general, concrete and CTA, or thickened asphalt layers were observed

at these locations. These data are generally provided for information when connecting the main travel lanes and reconstructed shoulders to the entrance and exit points.

Discussion and Conclusions

General Pavement Condition

Based on the visual condition assessment performed by walking the roadway alignment, as well as a review of the pavement core logs and photographs, the existing AC pavement over the existing PCC pavement is in relatively good condition. The only observed distress, other than weathering of the surface, was reflective cracking exhibited above joints in the underlying PCC pavement. Conditions in the pavement cores were generally good with little to no deterioration observed.

Root Causes of Joint Distress

Reflective cracking of asphalt concrete overlays on concrete pavement is common occurrence. Reflective cracking is generally not structural or load initiated; instead, it is typically caused by discontinuities (existing joints or cracks) in the layers underlying the asphalt surface (in this case, the PCC pavement). Movement of the joints is caused by both by thermal and moisture changes. The movement causes the discontinuities to propagate up through the asphalt concrete surface and present as cracks. Outside of noted Type 4 joint repairs, no signs of structurally related distress such as shattered slabs or faulting of the underlying joints were observed during the visual pavement condition assessment.

Construction considerations include the use of paving fabric over the existing PCC pavement joints, replacing the upper 2 to 4 inches of asphalt concrete, and sawing and sealing the asphalt concrete overlay immediately over the joints to help control the location and geometry, as well as limit future maintenance of the crack.

Joint Repair Details

The majority of the mainline pavements generally have an average thickness of about 4 inches of asphalt concrete on 9 inches of PCC pavement on 7 to 8 inches of cement-treated aggregate base course. While the standard TU joint repair details may have been developed for use where the asphalt surface pavement is 5 inches or thicker, we believe that only slight modifications are required for this project. Example joint repair details provided by Transurban are shown on Figure 5 in Appendix A.

The Type 1 Repair includes the “Sawing and Sealing” of the proposed 2-inch hot mix asphalt (HMA) overlay. We do not recommend any changes to this detail. However, we recommend the Type 3 Repair be modified to include the initial 2-inch mill depth for the entire mainline surface followed by milling the remainder of the asphalt concrete off to the top of the concrete pavement in 2-foot wide trench centered over the joints. The use of fabric placed immediately on the joint would provide additional resistance to crack propagation; however, these benefits could be out-weighted by limiting future remediation strategies.



Impact of Asphalt Thickness on Joint Repairs

Based on the existing average AC pavement thickness (overlying PCC pavement) on the main travel lanes, HDR evaluated general areas where the AC pavement appears to be less than approximately 4 inches thick. The pavement core measurements and the interpreted GPR data were used in the evaluation. We then cross referenced this data to the joint repair inventory to estimate the approximate number and type of joints that may be impacted by the less-than-four-inch asphalt thickness. Table 4 summarizes the results of the evaluation. Figure 4 in Appendix A graphically depicts the data used in the evaluation.

Table 4 – Approximate Areas with Less than 4 inches of Asphalt Surface (using GPR data)

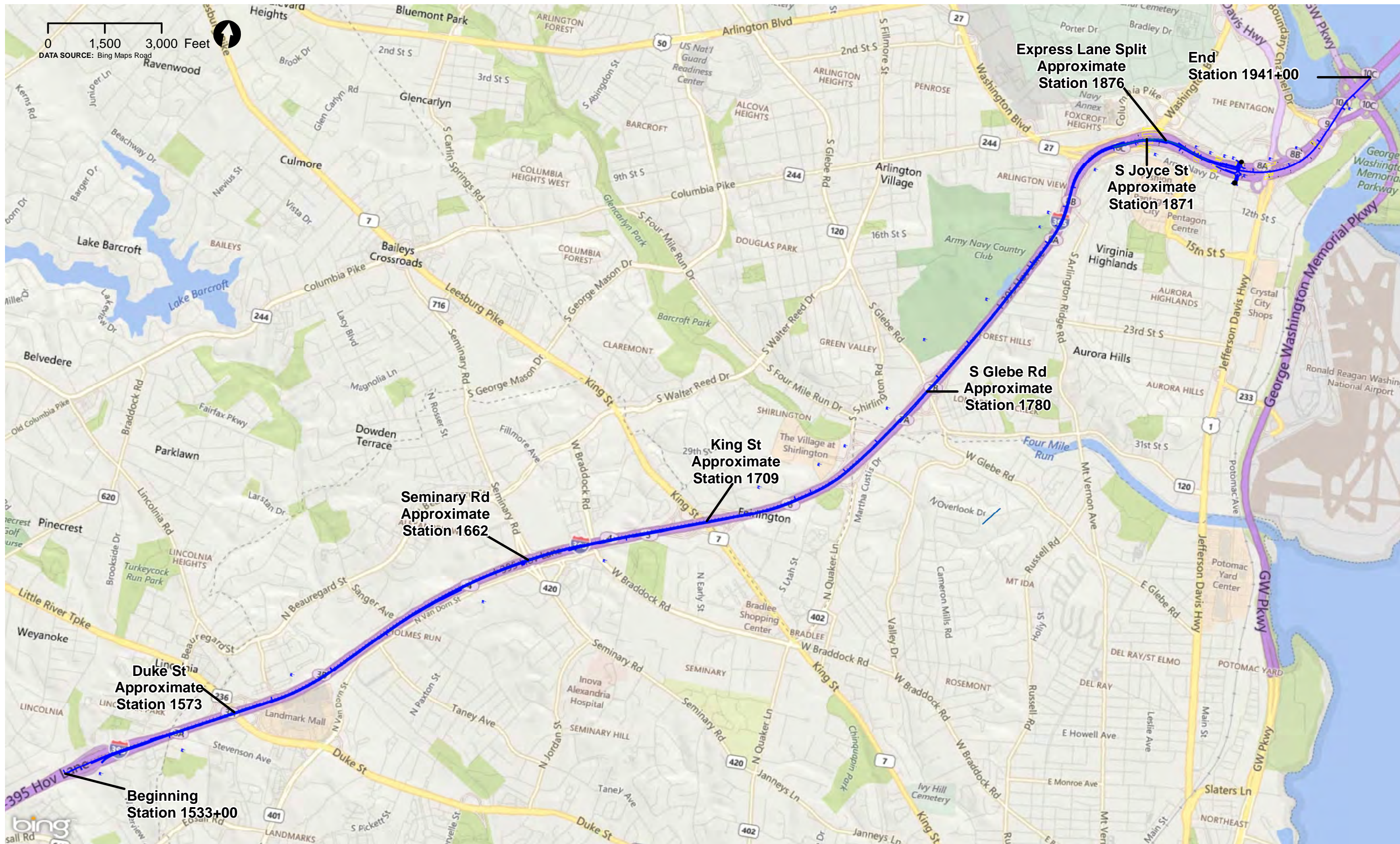
Begin Station	End Station	Length (feet)	Approximate AC Pavement Thickness (in)	Joint Numbers	Type 1 Joints	Type 3 Joints	Type 4 Joints
1535	1590	5,500	2.9 to 4	989-1,060	6	59	6
1600	1615	1,500	2.8 to 4	947-975	0	28	1
1645 ¹	1670 ¹	2,500	2.8 to 4	752-833	6	55	1
1705	1738	3,300	3.2 to 4	547-636	32	78	4
1772	1782	1,000	3.2 to 4	443-455	0	13	0
1820	1875	5,500	2.2 to 4	124-132 250-372	5	125	2
1922	1926	400	3 to 4	28-37 157-164	4	14	0
Totals		19,400			53	372	14

¹ Appears to generally be isolated to west travel lane, based on GPR data.



Appendix A

Figures and Tables



0 1,500 3,000 Feet
 DATA SOURCE: Bing Maps Road



Express Lane Split
 Approximate
 Station 1876

S Joyce St
 Approximate
 Station 1871

S Glebe Rd
 Approximate
 Station 1780

King St
 Approximate
 Station 1709

Seminary Rd
 Approximate
 Station 1662

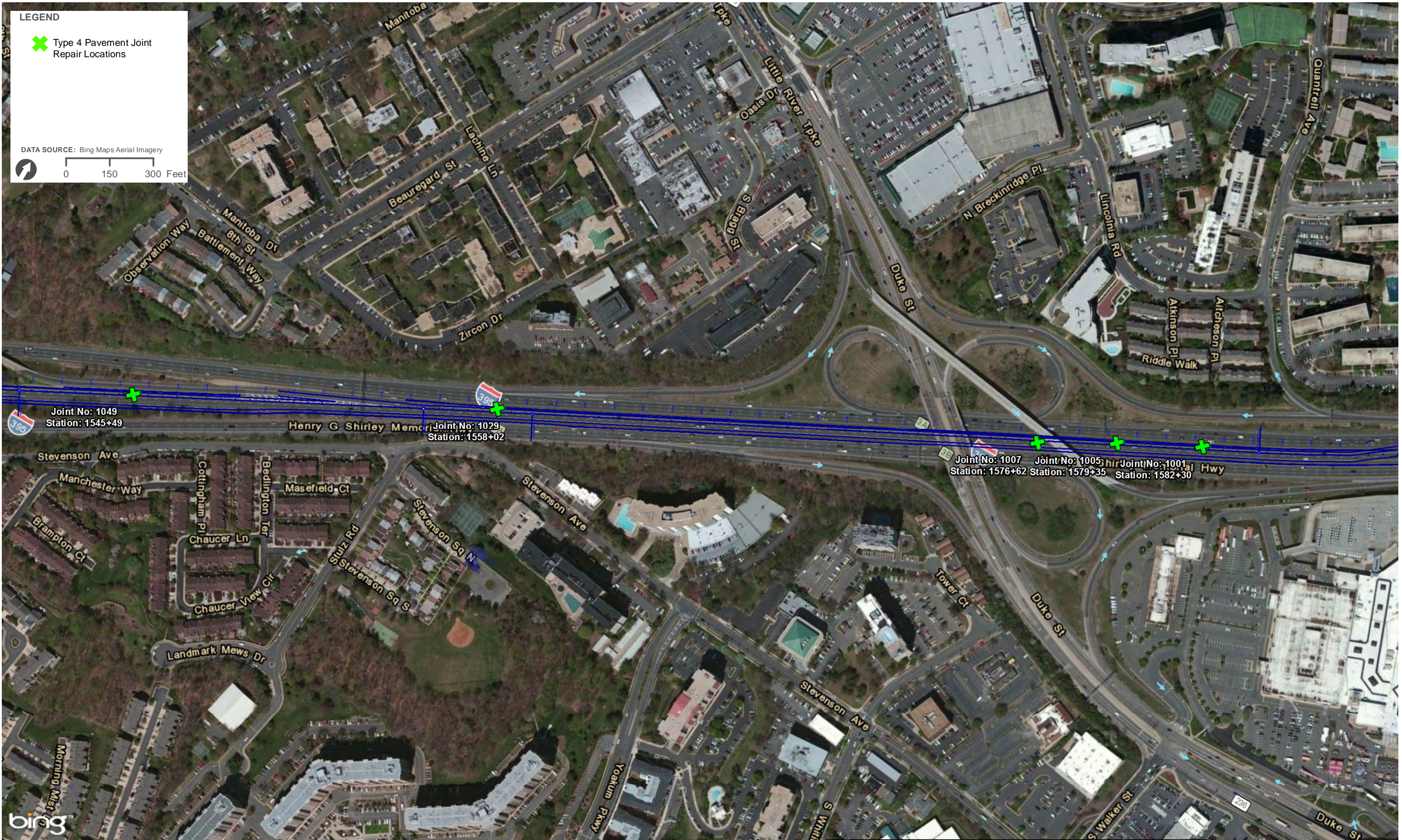
Duke St
 Approximate
 Station 1573

Beginning
 Station 1533+00

End
 Station 1941+00



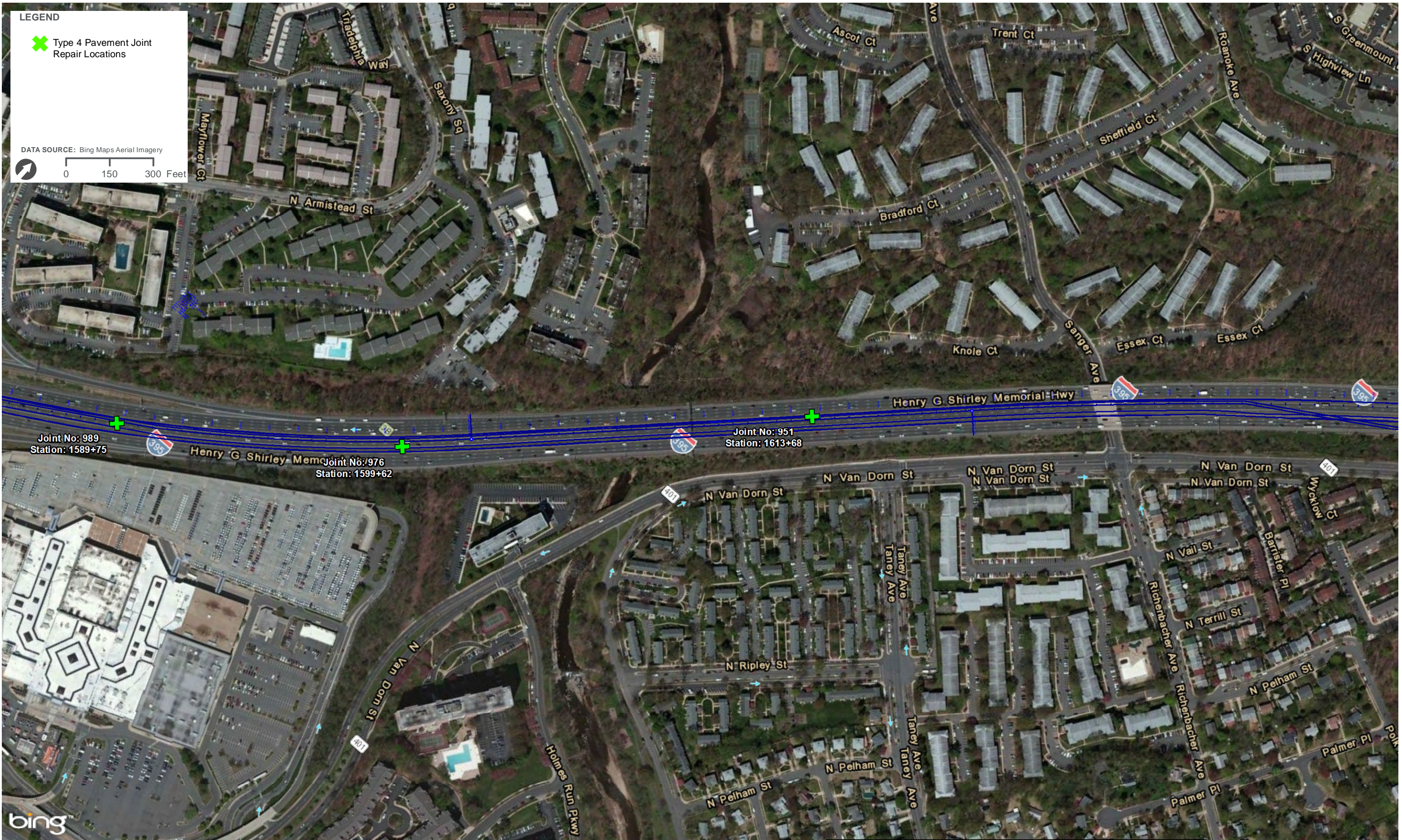
395 EXPRESS LANES
 SITE VICINITY MAP
 FIGURE 1



Joint repair locations were determined by hand-held a GPS unit and should be confirmed in the field prior to completing repairs.



**I-395 EXPRESS LANES
TYPE 4 PAVEMENT JOINTS
REPAIR LOCATIONS**
FIGURE 2-1



LEGEND

Type 4 Pavement Joint Repair Locations

DATA SOURCE: Bing Maps Aerial Imagery

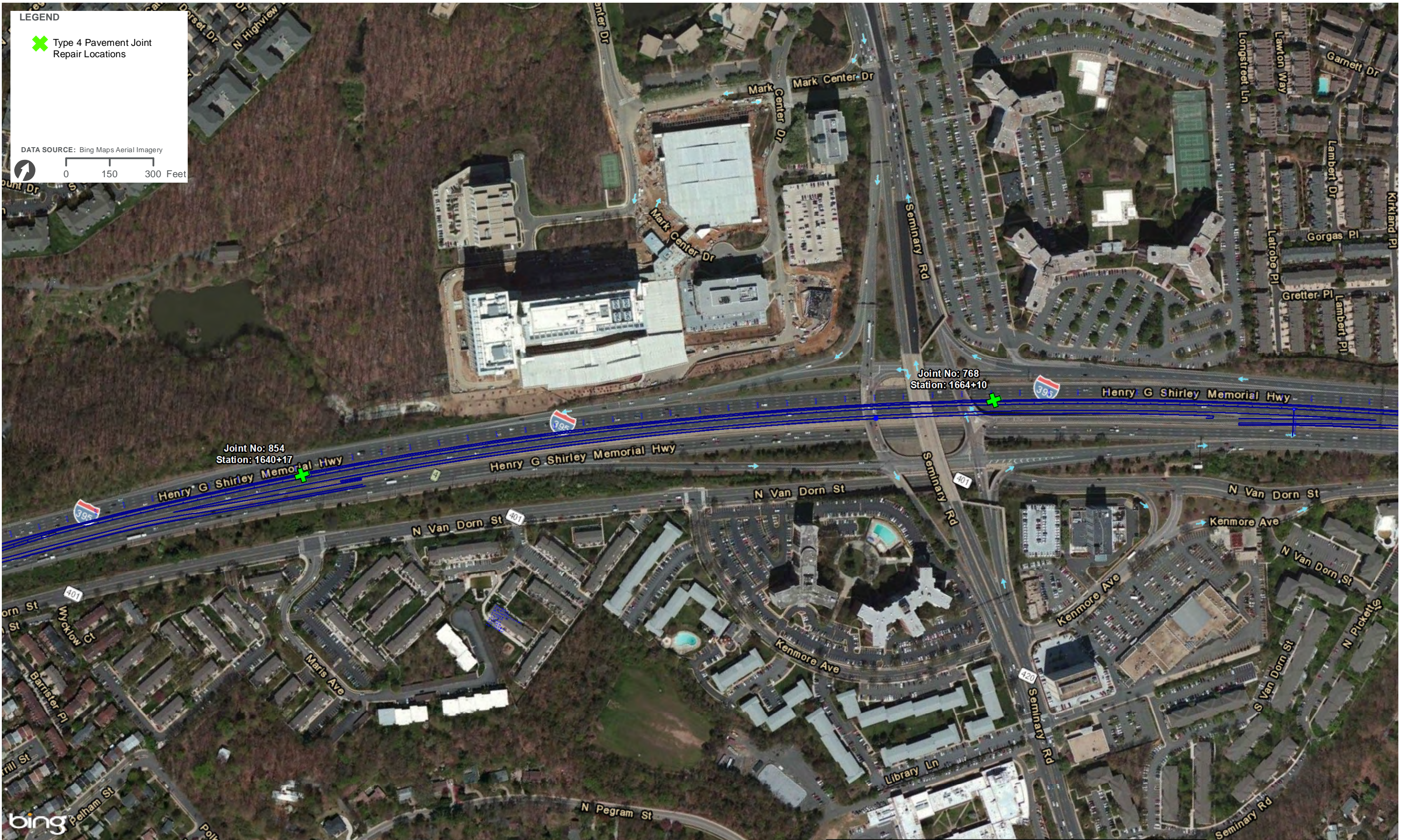
0 150 300 Feet



Joint repair locations were determined by hand-held a GPS unit and should be confirmed in the field prior to completing repairs.



**I-395 EXPRESS LANES
TYPE 4 PAVEMENT JOINTS
REPAIR LOCATIONS**
FIGURE 2-2




Joint repair locations were determined by hand-held a GPS unit and should be confirmed in the field prior to completing repairs.




**I-395 EXPRESS LANES
TYPE 4 PAVEMENT JOINTS
REPAIR LOCATIONS**
FIGURE 2-3

LEGEND

 Type 4 Pavement Joint Repair Locations

DATA SOURCE: Bing Maps Aerial Imagery




bing

transurban

HR


Joint repair locations were determined by hand-held a GPS unit and should be confirmed in the field prior to completing repairs.




**I-395 EXPRESS LANES
TYPE 4 PAVEMENT JOINTS
REPAIR LOCATIONS
FIGURE 2-4**



LEGEND

 Type 4 Pavement Joint Repair Locations

DATA SOURCE: Bing Maps Aerial Imagery

 0 150 300 Feet

bing

transurban


HR

Joint repair locations were determined by hand-held a GPS unit and should be confirmed in the field prior to completing repairs.




**I-395 EXPRESS LANES
TYPE 4 PAVEMENT JOINTS
REPAIR LOCATIONS**
FIGURE 2-5

LEGEND

 Type 4 Pavement Joint Repair Locations

DATA SOURCE: Bing Maps Aerial Imagery




bing

transurban

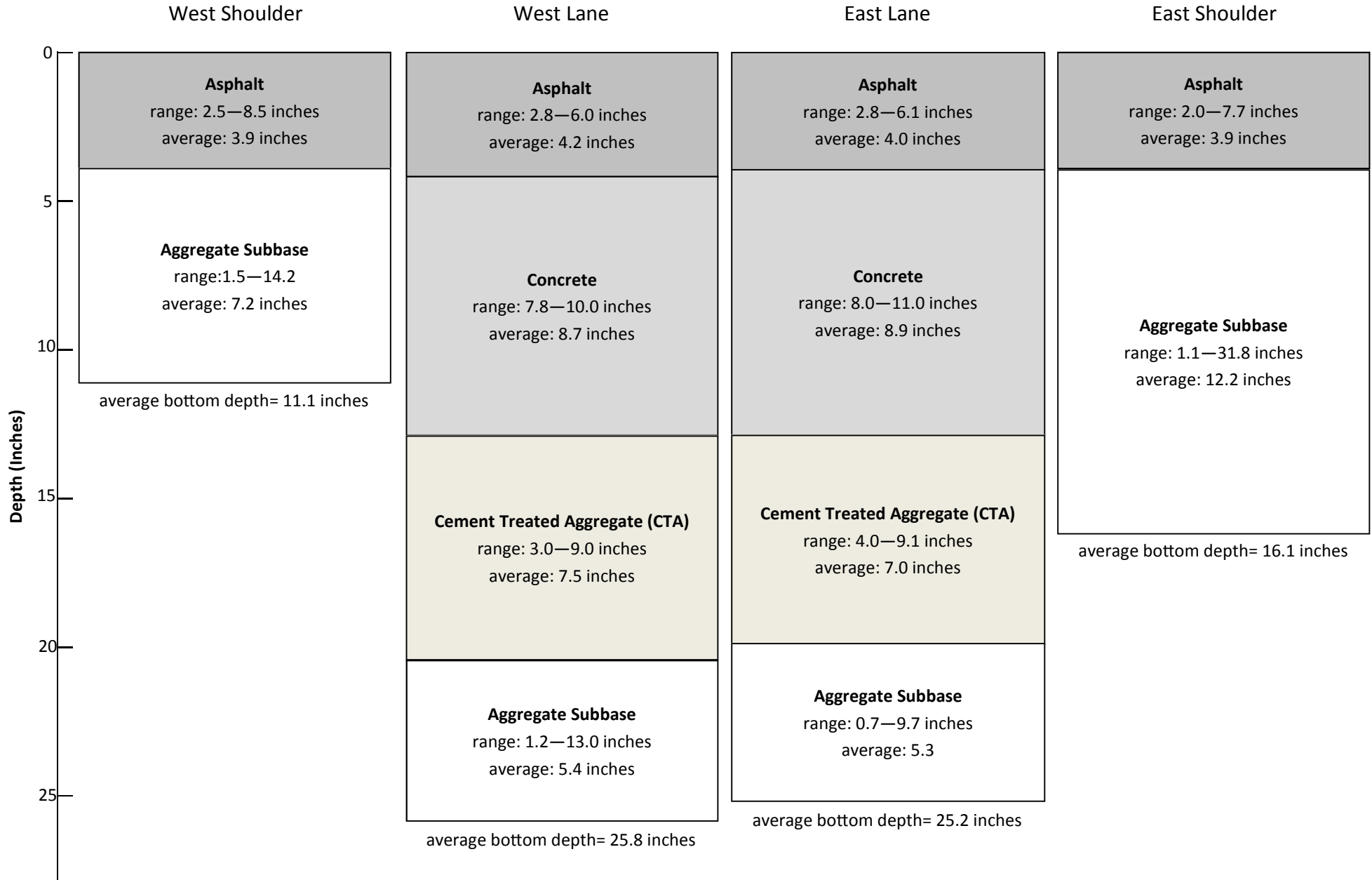
HR

Joint repair locations were determined by hand-held a GPS unit and should be confirmed in the field prior to completing repairs.



**I-395 EXPRESS LANES
TYPE 4 PAVEMENT JOINTS
REPAIR LOCATIONS
FIGURE 2-6**

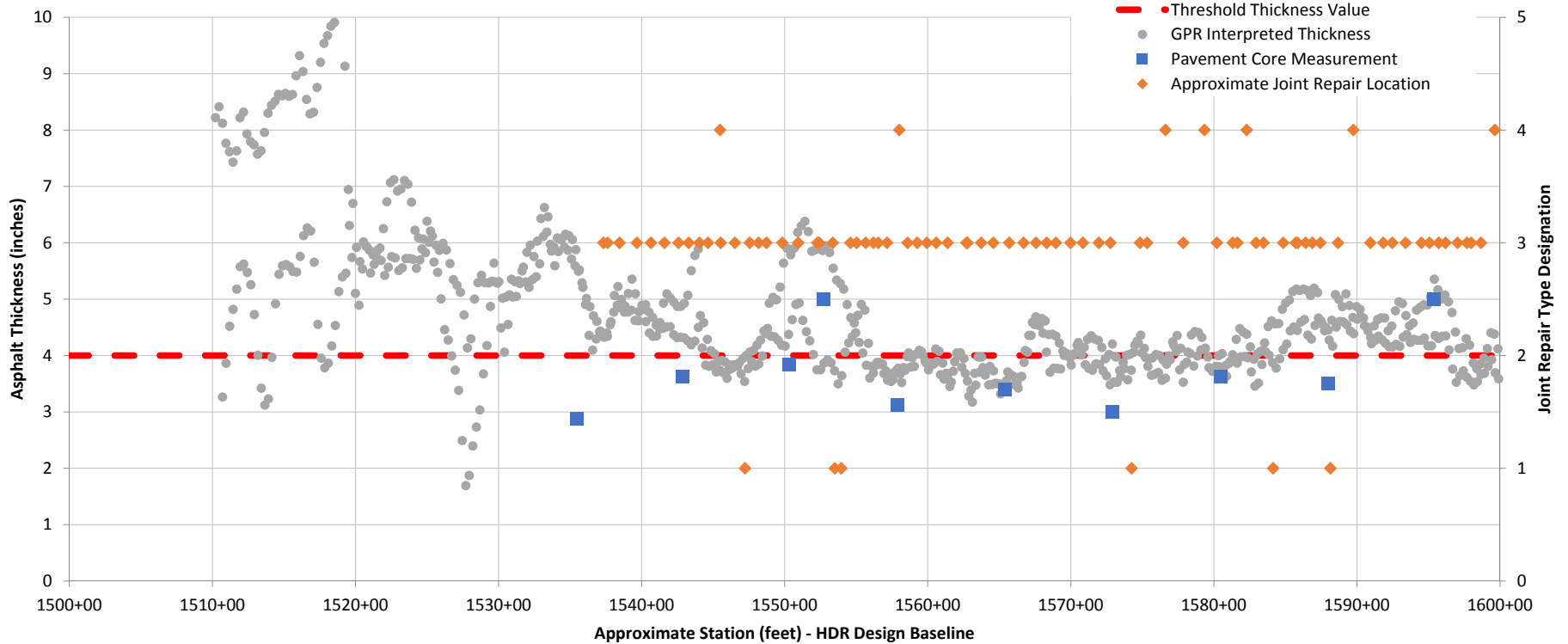
FIGURE 3
Typical Pavement Section Thickness (Looking North)



Note: Pavement layer thicknesses depicted in this drawing are based on the average value, and are drawn to approximate relative scale

Figure 4-1

Asphalt Thickness overlying Concrete in Main Travel Lanes

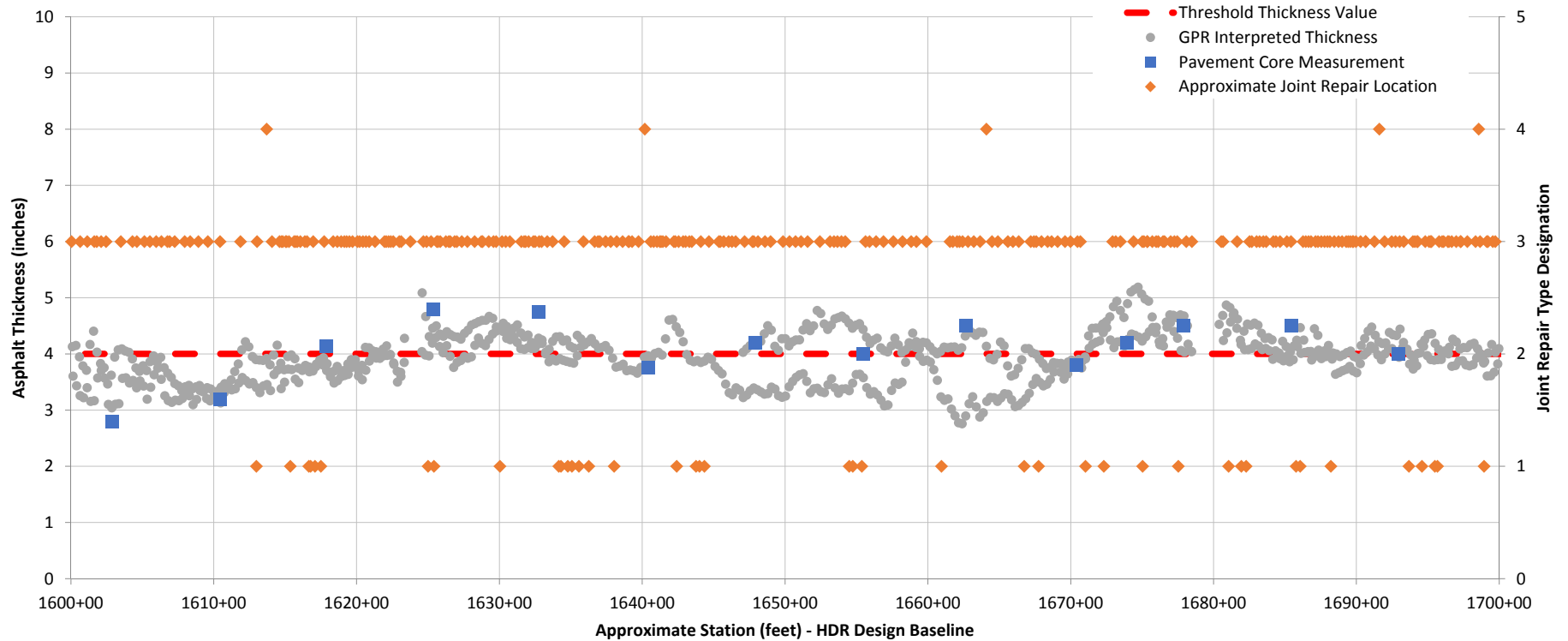


Summary of Asphalt < Approximately 4 inches thick

Begin Station	1535+00	
End Station	1590+00	
Total Length	5,500	feet
No. of Type 1 Joints	6	
No. of Type 3 Joints	59	
No. of Type 4 Joints	6	

Figure 4-2

Asphalt Thickness overlying Concrete in Main Travel Lanes



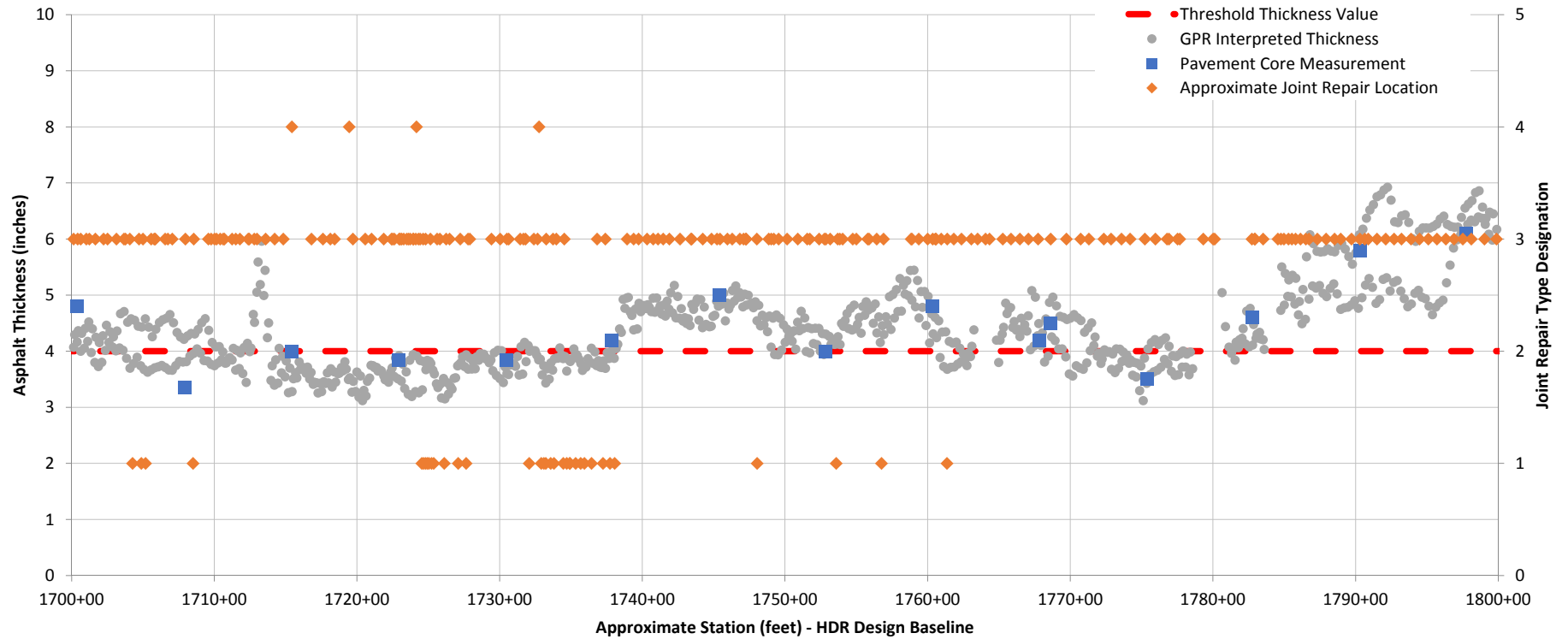
Summary of Asphalt < Approximately 4 inches thick

Begin Station	1600+00	Begin Station	1645+00
End Station	1615+00	End Station	1670+00
Total Length	1,500 feet	Total Length	2,500 feet

No. of Type 1 Joints	0	No. of Type 1 Joints	6
No. of Type 3 Joints	28	No. of Type 3 Joints	55
No. of Type 4 Joints	1	No. of Type 4 Joints	1

Figure 4-3

Asphalt Thickness overlying Concrete in Main Travel Lanes



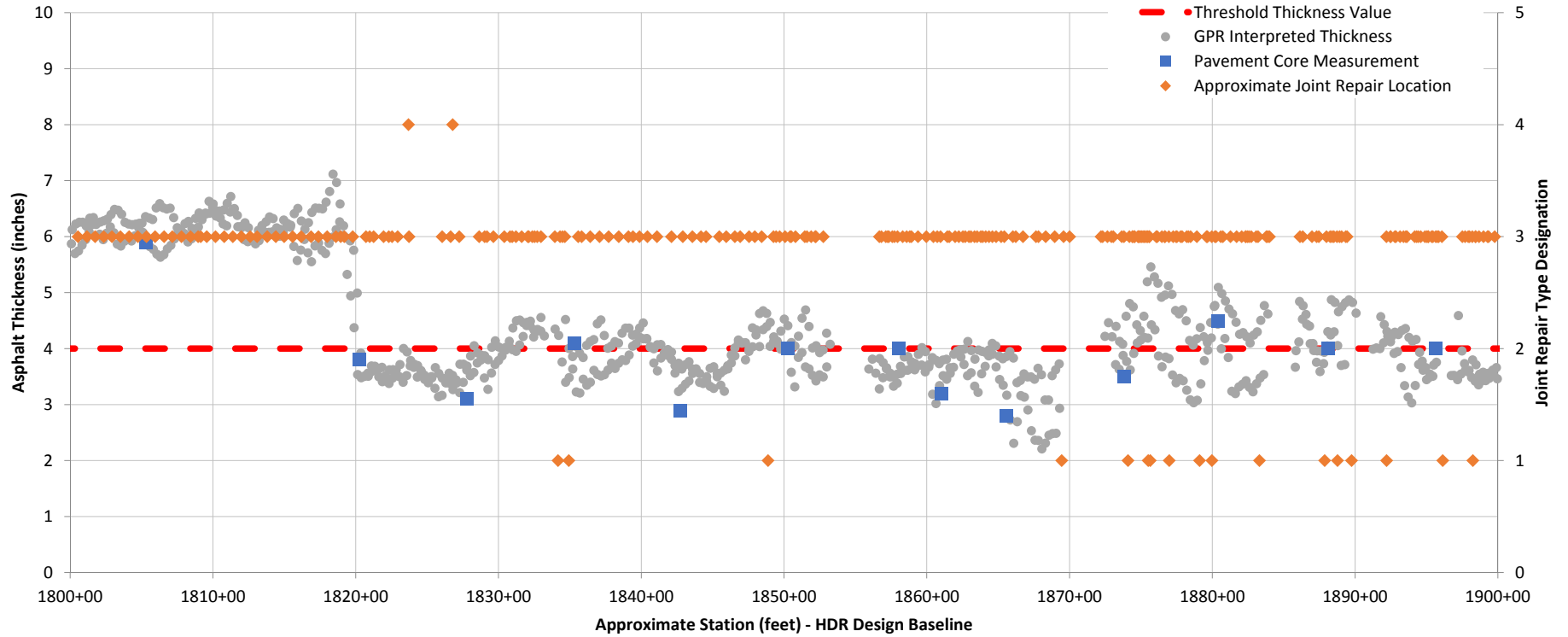
Summary of Asphalt < Approximately 4 inches thick

Begin Station	1705+00	Begin Station	1772+00
End Station	1738+00	End Station	1782+00
Total Length	3,300 feet	Total Length	1,000 feet

No. of Type 1 Joints	32	No. of Type 1 Joints	0
No. of Type 3 Joints	78	No. of Type 3 Joints	13
No. of Type 4 Joints	4	No. of Type 4 Joints	0

Figure 4-4

Asphalt Thickness overlying Concrete in Main Travel Lanes



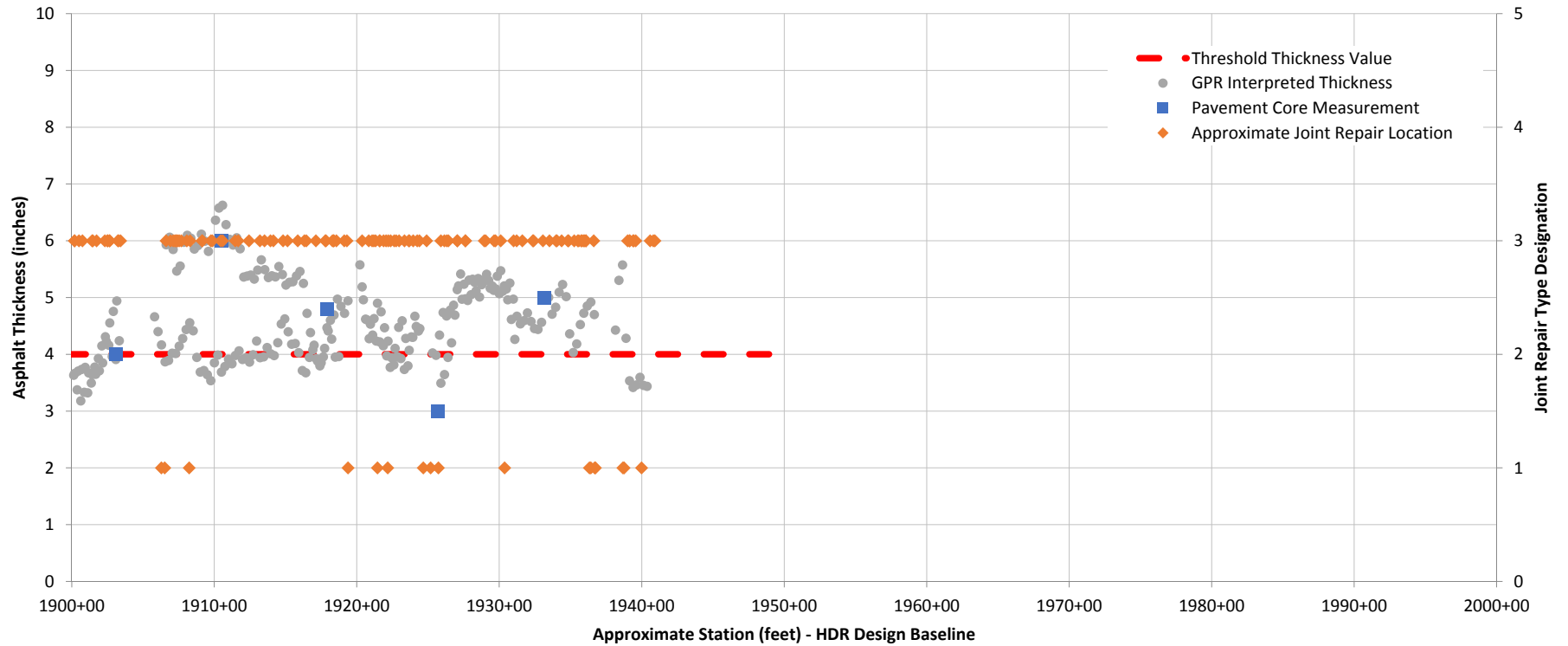
Summary of Asphalt < Approximately 4 inches thick

Begin Station 1820+00
 End Station 1875+00
 Total Length 5,500 feet

No. of Type 1 Joints 5
 No. of Type 3 Joints 125
 No. of Type 4 Joints 2

Figure 4-5

Asphalt Thickness overlying Concrete in Main Travel Lanes

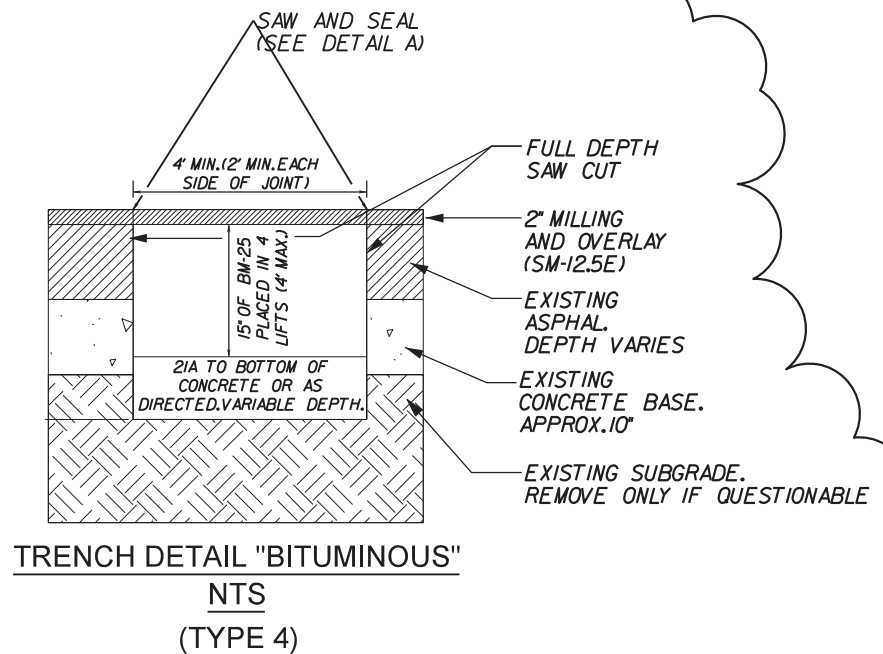


Summary of Asphalt < Approximately 4 inches thick

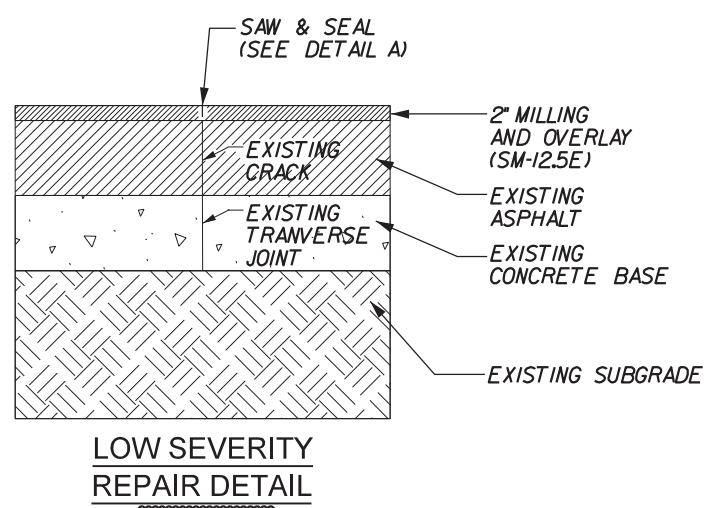
Begin Station 1922+00
 End Station 1926+00
 Total Length 400 feet

No. of Type 1 Joints 4
 No. of Type 3 Joints 14
 No. of Type 4 Joints 0

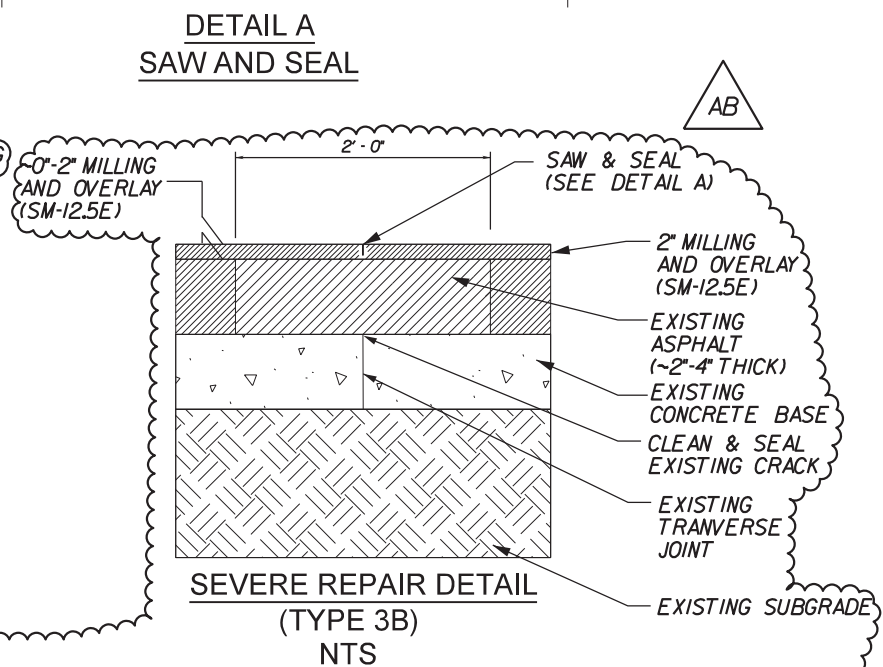
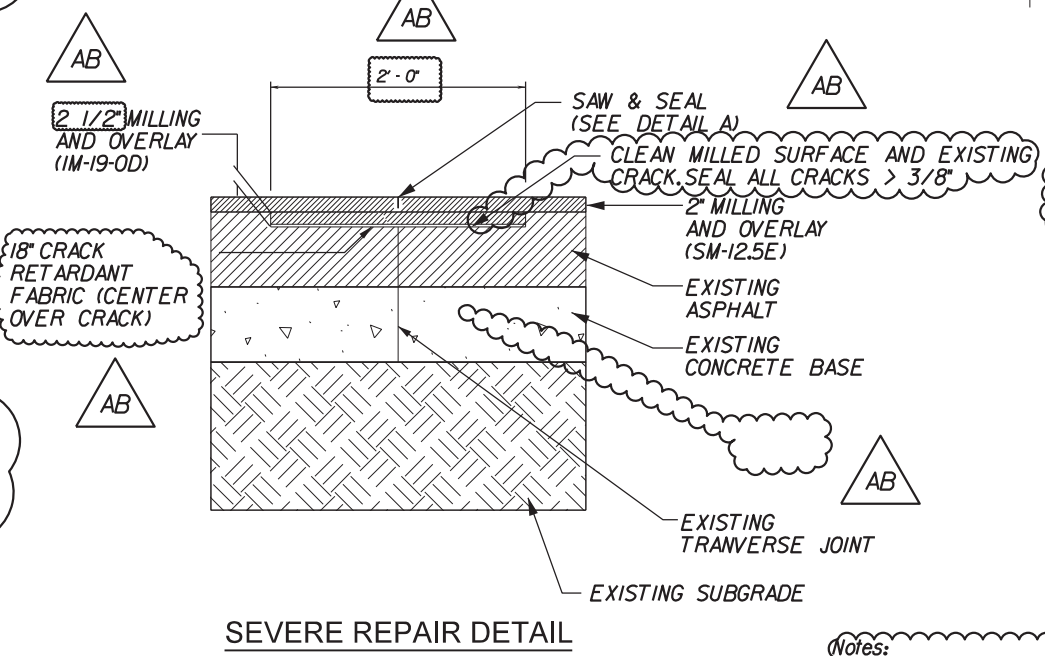
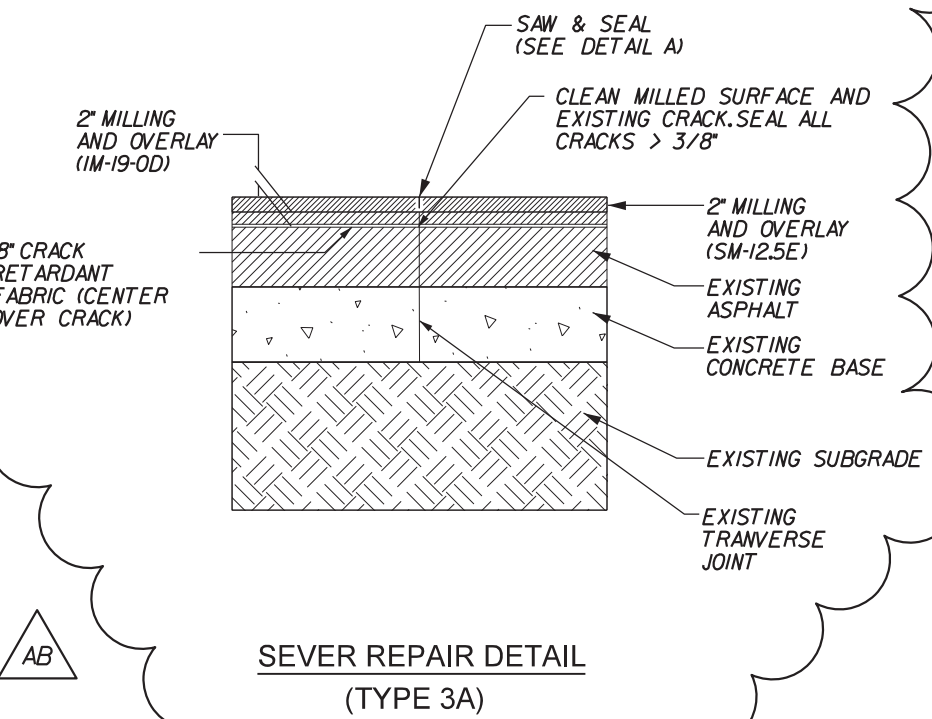
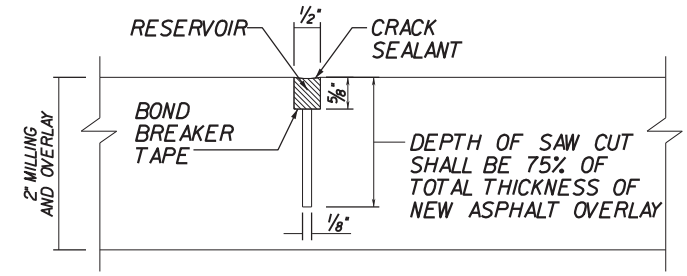
FIGURE 5 - EXAMPLE JOINT REPAIR DETAILS



* WIDTH AND DEPTH OF TRENCH TO BE DETERMINED DURING CONSTRUCTION BY 95 EXPRESS.



- Notes:
1. Reflective crack repair detail to be utilized at locations determined during construction by 95 EXPRESS.
 2. Longitudinal joint patch repair detail to be utilized at locations determined during construction by 95 EXPRESS. The repair method and details to be the same as the Type 3 repair.
 3. Trench repair detail to be utilized at locations determined during construction by 95 EXPRESS.
 4. Crack retardant fabric shall be MIRAFIMTK paving fabric manufactured by TenCate. Crack retardant fabric shall be installed in accordance with the manufacturer's installation guidelines.
 5. The moderate severity repair (Type 2) IS NOT BEING USED.



- Notes:
1. Crack retardant fabric is not used.
 2. Existing asphalt within the 2'-0" trench is removed down to concrete surface of ballast.

Note: Figure provided by Transurban as an example of standard joint repair details on other projects. Details shown here are not to be used for I-395 Express Lanes until finalized in the project documents.



TABLE A-1: SUMMARY OF PAVEMENT CORES

Pavement Core Designation	Date Extracted	Station	Offset	General Location	Thickness (in.)					
					Asphalt Concrete	Portland Cement Concrete	Cement Treated Aggregate	Asphalt Tack	Aggregate Subbase	Total
16-PC-007-SH	02/22/16	1532+90	34 ft RT	East Shoulder	16.5	--	--	--	4	20.0
16-PC-008-ML	02/22/16	1535+44	16 ft RT	East Lane	2.9	9.6	4.8	--	6	23.5
16-PC-009-SH	02/10/16	1536+67	7 ft LT	West Shoulder	15.1	--	--	--	2	17.0
16-PC-010-SH	02/22/16	1540+31	30 ft RT	East Shoulder	3.6	8.9	2.5	--	--	15.0
16-PC-011-ML	02/22/16	1542+88	15 ft RT	East Lane	3.6	8.0	8.0	--	Not Measured ¹	Not Measured ¹
16-PC-012-SH	02/10/16	1544+11	8 ft LT	West Shoulder	4.2	--	--	--	5	9.5
16-PC-013-SH	02/22/16	1547+87	37 ft RT	East Shoulder	2.9	--	--	--	3	6.0
16-PC-014-ML	02/10/16	1550+33	3 ft RT	West Lane	3.8	7.9	7.2	--	6	24.5
16-PC-015-ML	02/10/16	1552+71	18 ft LT	Southbound Exit Ramp	5.0	8.2	7.3	--	5	25.5
16-PC-016-SH	02/22/16	1555+44	26 ft RT	East Shoulder	3.9	--	--	--	5	9.0
16-PC-017-ML	02/22/16	1557+90	15 ft RT	East Lane	3.1	8.0	8.0	--	--	19.1
16-PC-018-SH	02/04/16	1559+17	7 ft LT	West Shoulder	3.4	--	--	--	6	9.5
16-PC-019-SH	01/19/16	1562+83	28 ft RT	East Shoulder	3.0	--	--	--	Not Measured ¹	Not Measured ¹
16-PC-020-ML	02/04/16	1565+39	4 ft RT	West Lane	3.4	8.0	7.9	--	4	22.8
16-PC-021-SH	02/04/16	1566+64	8 ft LT	West Shoulder	3.0	--	--	--	5	8.0
16-PC-022-SH	01/19/16	1570+45	27 ft RT	East Shoulder	4.0	--	--	--	Not Measured ¹	Not Measured ¹
16-PC-023-ML	02/11/16	1572+93	15 ft RT	East Lane	3.0	9.5	6.1	--	<1	19.0
16-PC-024-SH	02/04/16	1574+60	8 ft LT	West Shoulder	2.6	--	--	--	6	9.0
16-PC-025-SH	01/19/16	1577+92	24 ft RT	East Shoulder	4.0	--	--	--	Not Measured ¹	Not Measured ¹
16-PC-026-ML	02/04/16	1580+46	3 ft RT	West Lane	3.6	8.4	8.2	--	7	27.6
16-PC-027-SH	02/03/16	1581+72	7 ft LT	West Shoulder	3.0	--	--	--	5	8.3
16-PC-028-SH	01/19/16	1585+46	25 ft RT	East Shoulder	4.0	--	--	--	Not Measured ¹	Not Measured ¹
16-PC-029-ML	02/11/16	1587+96	14 ft RT	East Lane	3.5	9.5	7.0	--	2	22.0
16-PC-030-SH	02/03/16	1589+11	9 ft LT	West Shoulder	3.6	--	--	--	5	9.0
16-PC-031-SH	01/19/16	1592+86	23 ft RT	East Shoulder	4.0	--	--	--	Not Measured ¹	Not Measured ¹
16-PC-032-ML	02/03/16	1595+36	2 ft RT	West Lane	5.0	7.8	7.8	--	6	26.0
16-PC-033-SH	02/03/16	1596+62	10 ft LT	West Shoulder	3.0	--	--	--	7	9.8
16-PC-034-SH	02/11/16	1599+94	8 ft LT	West Shoulder	3.5	--	--	--	9	12.0
16-PC-035-ML	02/11/16	1602+92	14 ft RT	East Lane	2.8	9.6	6.4	--	1	19.5
16-PC-036-SH	02/02/16	1604+16	8 ft LT	West Shoulder	3.0	--	--	--	8	11.0
16-PC-037-SH	02/02/16	1606+16	7 ft LT	West Shoulder	3.2	--	--	--	9	12.0
16-PC-038-ML	02/03/16	1610+47	5 ft RT	West Lane	3.2	8.6	8.0	--	8	27.6
16-PC-039-SH	02/02/16	1611+66	7 ft LT	West Shoulder	4.0	--	--	--	7	11.0
16-PC-040-SH	02/02/16	1615+42	6 ft LT	West Shoulder	4.2	--	--	--	4	8.0
16-PC-041-ML	02/11/16	1617+89	17 ft RT	East Lane	4.1	8.8	8.0	--	2	22.5
16-PC-042-SH	02/02/16	1619+15	5 ft LT	West Shoulder	4.5	--	--	--	7	11.0
16-PC-043-SH	02/02/16	1622+91	6 ft LT	West Shoulder	3.5	--	--	--	8	11.0
16-PC-044-ML	02/03/16	1625+34	6 ft RT	West Lane	4.8	8.4	7.0	--	5	25.2
16-PC-045-SH	02/02/16	1626+62	7 ft LT	West Shoulder	3.9	--	--	--	11	15.0
16-PC-046-SH	02/11/16	1630+26	40 ft RT	East Shoulder	7.7	--	--	--	3	11.0
16-PC-047-ML	02/21/16	1632+74	15 ft RT	East Lane	4.8	8.2	7.0	--	7	27.0
16-PC-048-SH	01/21/16	1634+02	8 ft LT	West Shoulder	4.0	--	--	--	6	9.5
16-PC-049-ML	02/22/16	1635+70	32 ft RT	Northbound Exit Ramp	15.2	--	--	--	5	20.0
16-PC-050-ML	02/03/16	1640+44	2 ft RT	West Lane	3.8	8.8	8.4	--	6	26.4
16-PC-051-SH	01/21/16	1641+69	8 ft LT	West Shoulder	3.8	--	--	--	7	11.0
16-PC-052-SH	02/22/16	1645+47	26 ft RT	East Shoulder	16.1	--	--	--	3	19.5
16-PC-053-ML	02/21/16	1647+89	14 ft RT	East Lane	4.2	8.5	7.2	--	3	22.5
16-PC-054-SH	01/21/16	1649+19	8 ft LT	West Shoulder	3.6	--	--	--	6	10.0
16-PC-055-SH	02/21/16	1652+95	8 ft LT	West Shoulder	3.6	--	--	--	6	10.0



TABLE A-1: SUMMARY OF PAVEMENT CORES

Pavement Core Designation	Date Extracted	Station	Offset	General Location	Thickness (in.)					
					Asphalt Concrete	Portland Cement Concrete	Cement Treated Aggregate	Asphalt Tack	Aggregate Subbase	Total
16-PC-056-ML	02/03/16	1655+45	2 ft RT	West Lane	4.0	8.3	8.0	--	4	24.5
16-PC-057-SH	02/16/16	1656+70	9 ft LT	West Shoulder	3.6	--	--	--	10	13.3
16-PC-058-SH	02/20/16	1660+45	9 ft LT	West Shoulder	4.5	--	--	--	13	66.0
16-PC-059-ML	02/20/16	1662+68	10 ft RT	East Lane	4.5	9.0	6.8	--	13	72.0
16-PC-060-SH	02/16/16	1664+18	8 ft RT	West Shoulder	3.6	--	--	--	13	16.2
16-PC-061-SH	02/20/16	1667+90	26 ft RT	East Shoulder	4.2	--	--	--	13	36.0
16-PC-062-ML	02/20/16	1670+43	3 ft RT	West Lane	3.8	8.5	16.8	--	--	29.1
16-PC-063-SH	02/16/16	1671+66	5 ft LT	West Shoulder	3.8	--	--	--	10	14.1
16-PC-064-ML	02/20/16	1673+93	42 ft RT	Southbound Exit Ramp	4.2	8.8	9.1	--	--	22.1
16-PC-065-ML	02/20/16	1677+87	17 ft RT	East Lane	4.5	8.5	8.8	--	7	28.8
16-PC-066-SH	02/16/16	1680+89	4 ft LT	West Shoulder	4.3	--	--	--	8	11.8
16-PC-067-SH	02/20/16	1682+89	38 ft RT	East Shoulder	4.0	--	--	--	20	24.0
16-PC-068-ML	02/20/16	1685+43	5 ft RT	West Lane	4.5	8.5	8.5	--	--	21.5
16-PC-069-SH	02/16/16	1686+70	4 ft LT	West Shoulder	4.6	--	--	--	9	13.5
16-PC-070-SH	02/20/16	1690+43	29 ft RT	East Shoulder	4.0	--	--	--	20	24.0
16-PC-071-ML	02/20/16	1692+92	17 ft RT	East Lane	4.0	10.4	--	0.6	--	15.0
16-PC-072-SH	02/16/16	1694+20	5 ft LT	West Shoulder	3.8	--	--	--	10	13.8
16-PC-073-SH	02/20/16	1697+93	28 ft RT	East Shoulder	3.4	--	--	--	27	30.0
16-PC-074-ML	02/20/16	1700+41	5 ft RT	West Lane	4.8	10.0	--	1.0	--	15.8
16-PC-075-SH	02/17/16	1701+70	6 ft LT	West Shoulder	3.5	--	--	--	9	12.5
16-PC-076-SH	02/20/16	1705+43	28 ft RT	East Shoulder	3.2	--	--	--	13	60.0
16-PC-077-ML	02/20/16	1707+94	16 ft RT	East Lane	3.4	10.5	--	--	--	13.9
16-PC-078-SH	02/17/16	1710+43	6 ft LT	West Shoulder	4.0	--	--	--	8	11.8
16-PC-079-SH	02/20/16	1712+92	27 ft RT	East Shoulder	4.8	--	--	--	13	36.0
16-PC-080-ML	02/20/16	1715+43	3 ft RT	West Lane	4.0	10.0	9.0	--	13	36.0
16-PC-081-SH	02/17/16	1716+70	7 ft LT	West Shoulder	3.2	--	--	--	8	11.6
16-PC-082-SH	02/21/16	1720+48	25 ft RT	East Shoulder	3.2	--	--	--	21	24.0
16-PC-083-ML	02/21/16	1722+91	14 ft RT	East Lane	3.8	8.2	8.2	--	--	20.2
16-PC-084-SH	02/17/16	1724+18	10 ft LT	West Shoulder	3.4	--	--	--	8	10.9
16-PC-085-SH	02/21/16	1727+96	26 ft RT	East Shoulder	4.2	--	--	--	21	25.3
16-PC-086-ML	02/21/16	1730+48	3 ft RT	West Lane	3.8	8.6	9.0	--	--	21.5
16-PC-087-SH	02/17/16	1731+72	7 ft LT	West Shoulder	2.5	--	--	--	6	8.9
16-PC-088-SH	02/21/16	1735+48	27 ft RT	East Shoulder	3.8	--	--	--	20	24.0
16-PC-089-ML	02/21/16	1737+83	15 ft RT	East Lane	4.2	8.0	9.0	--	3	24.0
16-PC-090-SH	02/17/16	1739+23	7 ft LT	West Shoulder	3.8	--	--	--	14	18.0
16-PC-091-SH	02/21/16	1742+90	25 ft RT	East Shoulder	4.5	--	--	--	13	60.0
16-PC-092-ML	02/21/16	1745+39	2 ft RT	West Lane	5.0	9.0	8.2	--	2	24.0
16-PC-093-SH	02/17/16	1746+90	6 ft LT	West Shoulder	3.4	--	--	--	8	11.3
16-PC-094-SH	02/20/16	1750+38	26 ft RT	East Shoulder	3.6	--	--	--	7	10.8
16-PC-095-ML	02/21/16	1752+84	14 ft RT	East Lane	4.0	8.6	4.8	--	6	23.0
16-PC-096-SH	02/17/16	1754+34	6 ft LT	West Shoulder	3.8	--	--	--	8	11.5
16-PC-097-SH	02/20/16	1758+38	23 ft RT	East Shoulder	3.5	--	--	--	10	13.8
16-PC-098-ML	02/21/16	1760+36	2 ft RT	West Lane	4.8	14.5	3.0	--	1	23.5
16-PC-099-SH	02/18/16	1761+63	7 ft LT	West Shoulder	3.2	--	--	--	10	13.5
16-PC-100-SH	02/20/16	1765+36	23 ft RT	East Shoulder	3.6	11.8	--	--	10	25.0
16-PC-101-ML	02/20/16	1767+83	14 ft RT	East Lane	4.2	8.4	6.3	--	6	24.5
16-PC-102-ML	02/20/16	1768+61	40 ft RT	Northbound Entrance Ramp	4.5	9.0	7.0	--	--	20.5
16-PC-103-SH	02/20/16	1772+89	36 ft RT	East Shoulder	3.0	--	--	--	8	11.0
16-PC-104-ML	02/20/16	1775+42	3 ft RT	West Lane	3.5	8.0	4.3	--	8	24.0



TABLE A-1: SUMMARY OF PAVEMENT CORES

Pavement Core Designation	Date Extracted	Station	Offset	General Location	Thickness (in.)					
					Asphalt Concrete	Portland Cement Concrete	Cement Treated Aggregate	Asphalt Tack	Aggregate Subbase	Total
16-PC-105-SH	02/18/16	1776+61	6 ft LT	West Shoulder	3.2	--	--	--	12	15.5
16-PC-106-SH	02/20/16	1781+30	23 ft RT	East Shoulder	3.9	--	--	--	14	17.5
16-PC-107-ML	02/20/16	1782+78	14 ft RT	East Lane	4.6	8.5	4.0	--	7	24.0
16-PC-108-SH	02/18/16	1784+77	7 ft LT	West Shoulder	3.7	9.6	--	0.6	--	13.9
16-PC-109-SH	02/20/16	1787+78	21 ft RT	East Shoulder	3.5	--	--	--	14	17.8
16-PC-110-ML	02/20/16	1790+29	14 ft RT	East Lane	5.8	8.9	--	--	2	17.0
16-PC-111-SH	02/18/16	1791+55	7 ft LT	West Shoulder	4.0	10.2	--	--	2	15.8
16-PC-112-SH	02/20/16	1795+30	22 ft RT	East Shoulder	4.0	--	--	--	13	17.0
16-PC-113-ML	02/20/16	1797+77	14 ft RT	East Lane	6.1	9.5	--	--	4	20.0
16-PC-114-SH	02/18/16	1799+04	6 ft LT	West Shoulder	4.3	--	--	--	8	12.0
16-PC-115-SH	02/20/16	1802+77	23 ft RT	East Shoulder	3.8	--	--	--	12	15.5
16-PC-116-ML	02/20/16	1805+28	2 ft RT	West Lane	5.9	10.0	--	--	--	15.9
16-PC-117-SH	02/18/16	1806+53	6 ft LT	West Shoulder	3.6	10.0	--	--	2	15.1
16-PC-118-SH	02/13/16	1810+28	23 ft RT	East Shoulder	3.7	--	--	--	7	11.0
16-PC-119-SH	02/20/16	1812+78	23 ft RT	East Shoulder	3.4	--	--	--	9	12.0
16-PC-120-SH	02/18/16	1814+04	6 ft LT	West Shoulder	3.6	8.0	--	--	4	16.1
16-PC-121-SH	02/13/16	1817+78	23 ft RT	East Shoulder	3.4	--	--	--	8	11.0
16-PC-122-ML	02/13/16	1820+28	3 ft RT	West Lane	3.8	8.2	7.5	--	4	23.5
16-PC-123-SH	02/13/16	1821+42	6 ft LT	West Shoulder	2.5	--	--	--	10	12.0
16-PC-124-SH	02/13/16	1825+31	23 ft RT	East Shoulder	3.2	--	--	--	8	11.0
16-PC-125-ML	02/13/16	1827+79	15 ft RT	East Lane	3.1	8.1	8.0	--	6	25.0
16-PC-126-SH	02/13/16	1829+07	5 ft LT	West Shoulder	6.0	--	--	--	9	15.0
16-PC-127-SH	02/13/16	1832+28	22 ft RT	East Shoulder	4.0	--	--	--	8	12.0
16-PC-128-ML	02/13/16	1835+29	1 ft RT	West Lane	4.1	8.4	8.0	--	5	25.0
16-PC-129-SH	02/13/16	1836+52	9 ft LT	West Shoulder	5.0	--	--	--	8	13.0
16-PC-130-SH	02/13/16	1840+26	23 ft RT	East Shoulder	2.4	--	--	--	7	9.0
16-PC-131-ML	02/20/16	1842+73	15 ft RT	East Lane	2.9	8.5	4.0	--	9	24.0
16-PC-132-SH	02/13/16	1844+01	7 ft LT	West Shoulder	3.6	--	--	--	6	10.0
16-PC-133-SH	02/13/16	1847+76	29 ft RT	East Shoulder	3.8	--	--	--	8	12.0
16-PC-134-ML	02/13/16	1850+27	13 ft RT	West Lane	4.0	8.0	9.0	--	2	23.0
16-PC-135-SH	02/13/16	1851+55	4 ft LT	West Shoulder	3.2	--	--	--	6	9.0
16-PC-136-SH	02/13/16	1856+98	30 ft RT	East Shoulder	4.6	--	--	--	4	9.0
16-PC-137-ML	02/13/16	1858+01	19 ft RT	East Lane	4.0	9.0	6.5	--	4	23.0
16-PC-138-SH	02/13/16	1859+25	17 ft LT	West Shoulder	3.2	--	--	--	5	8.0
16-PC-139-SH	02/13/16	1863+04	24 ft RT	East Shoulder	3.1	--	--	--	5	8.0
16-PC-140-ML	02/13/16	1865+54	2 ft RT	West Lane	2.8	9.7	7 ²	--	-- ²	19.0
16-PC-141-SH	02/13/16	1866+78	5 ft LT	West Shoulder	4.0	--	--	--	5	9.0
16-PC-142-SH	02/13/16	1869+29	25 ft RT	East Shoulder	3.8	--	--	--	3	6.5
16-PC-143-ML	02/06/16	1873+82	16 ft RT	East Lane	3.5	9.0	8.0	--	10	30.0
16-PC-144-SH	02/06/16	1874+35	18 ft LT	West Shoulder	5.5	--	--	--	6	11.0
16-PC-145-SH	02/06/16	1878+12	31 ft RT	Northbound East Shoulder	3.0	--	--	--	6	8.5
16-PC-146-ML	02/06/16	1880+40	26 ft LT	Southbound West Lane	4.5	8.8	8.2	--	3	24.0
16-PC-147-SH	02/06/16	1880+73	64 ft LT	West Shoulder of Southbound Exit Ramp	4.5	8.3	11 ²	--	-- ²	24.0
16-PC-148-SH	02/06/16	1883+15	35 ft RT	Northbound East Shoulder	4.3	--	--	--	20	24.0
16-PC-149-ML	02/06/16	1888+11	25 ft RT	Northbound East Lane	4.0	9.0	8.5	--	10	31.2
16-PC-150-SH	02/06/16	1889+09	32 ft LT	Southbound West Shoulder	4.8	9.0	6.8	--	5	25.2
16-PC-151-SH	02/06/16	1893+12	29 ft RT	Northbound East Shoulder	4.5	--	--	--	26	30.0
16-PC-152-ML	02/06/16	1895+64	10 ft LT	Southbound East Lane	4.0	8.5	8.0	--	--	20.5
16-PC-153-SH	02/06/16	1898+07	31 ft LT	Southbound West Shoulder	4.5	--	--	--	7	11.0

TABLE A-1: SUMMARY OF PAVEMENT CORES

Pavement Core Designation	Date Extracted	Station	Offset	General Location	Thickness (in.)					
					Asphalt Concrete	Portland Cement Concrete	Cement Treated Aggregate	Asphalt Tack	Aggregate Subbase	Total
16-PC-154-SH	02/06/16	1900+60	32 ft RT	Northbound East Shoulder	3.5	8.5	5.5	--	13	30.0
16-PC-155-ML	02/06/16	1903+08	12 ft RT	Northbound West Lane	4.0	11.0	5.5	--	8	28.0
16-PC-156-SH	02/06/16	1903+48	40 ft LT	Southbound West Shoulder	5.0	10.0	--	--	9	24.0
16-PC-157-SH	02/06/16	1907+76	45 ft RT	Northbound East Shoulder	5.5	9.0	3.5	--	10	27.6
16-PC-158-ML	02/06/16	1910+53	32 ft LT	Southbound West Lane	6.0	10.0	4.5	--	10	30.0
16-PC-159-SH	02/06/16	1911+79	42 ft LT	Southbound West Shoulder	8.5	--	--	--	6	14.0
16-PC-160-SH	02/06/16	1915+46	51 ft RT	Northbound East Shoulder	4.8	--	--	--	8	13.2
16-PC-161-ML	02/06/16	1917+94	28 ft RT	Northbound East Lane	4.8	8.5	7.2	--	7	27.0
16-PC-162-SH	02/06/16	1920+84	36 ft LT	Southbound West Shoulder	5.5	--	--	--	9	14.0
16-PC-163-SH	02/06/16	1923+16	35 ft RT	Northbound East Shoulder	3.8	--	--	--	16	19.5
16-PC-164-ML	02/06/16	1925+66	15 ft LT	Southbound East Lane	3.0	8.8	8.8	--	--	20.6
16-PC-166-SH	02/06/16	1930+66	34 ft RT	Northbound East Shoulder	5.5	--	31 ²	--	-- ²	36.0
16-PC-167-ML	02/06/16	1933+16	14 ft RT	Northbound West Lane	5.0	9.0	10 ²	--	-- ²	24.0
16-PC-169-SH	02/06/16	1939+19	34 ft RT	Northbound East Shoulder	5.2	--	--	--	19	24.0
16-PC-TI-001	02/22/16	1539+19	26 ft RT	East Shoulder, Tie-in to Northbound Entrance Ramp	2.0	8.4	8.0	--	6	24.0
16-PC-TI-002	02/04/16	1552+69	7 ft LT	West Shoulder, Tie-in to Southbound Exit Ramp	5.0	8.1	7.5	--	5	25.2
16-PC-TI-003	02/22/16	1635+69	45 ft RT	East Shoulder, Tie-in to Northbound Exit Ramp	15.2	--	--	--	6	21.0
16-PC-TI-006	02/20/16	1673+91	28 ft RT	East Shoulder, Tie-in to Southbound Exit Ramp	5.2	9.0	4.5	--	--	18.7
16-PC-TI-007	02/20/16	1768+60	27 ft RT	East Shoulder, Tie-in to Northbound Entrance Ramp	4.5	8.9	7.5	--	1	22.0
16-PC-TI-008	02/13/16	1861+02	4 ft LT	West Shoulder, Tie-in to Southbound Entrance Ramp	2.5	9.2	--	--	9	20.5
16-PC-TI-009	02/13/16	1861+02	14 ft LT	Southbound Entrance Ramp	3.2	8.0	--	--	7	18.0

Note: Refer to pavement core photos for additional information.

¹ Pavement was not cored. Boring was advanced though asphalt with auger. Aggregate subbase was not measured.

² Transition from CTA to aggregate subbase could not be discerned due to degredation of CTA. CTA thickness represents composite thickness of CTA and aggregate subbase.



Table A-2(a) – Main Travel Lanes: Non-Typical Observations from GPR

Location	Approximate Station Range	Length (ft)	Anomaly in GPR Data	Pavement cores within range	Pavement Core Observation	Confirmed GPR Anomaly	Comments
East Lane	1635+50 to 1647+00	1,150	No concrete beneath mainline; thick asphalt layer	49 – Sta 1635+70 50 (WL) – Sta 1640+44	15.2 inches of asphalt in 49 50 shows concrete	Yes	Pavement joints within station range. Asphalt thickness is likely due to construction of Seminary ramp
West Lane	1781+00 to 1785+50	450	No concrete beneath mainline	None	None	No	Pavement joints within station range suggest that concrete is present
East Lane	1876+50 to 1940+50	6,400	No concrete beneath mainline	149 – Sta 1888+11 155 – Sta 1903+08 161 – Sta 1917+94 167 – Sta 1933+16	8.5 to 11.0 inches of concrete in cores	No	Borings and pavement joints within station range suggest that concrete is present
West Lane	1906+00 to 1931+50	2,550	No concrete beneath mainline	158 – Sta 1910+53 164 – Sta 1925+66	8.8 to 10.0 inches of concrete in cores	No	Borings and pavement joints within station range suggest that concrete is present
East HOV Lane- Inside Lane	1920+00 To 1941+00	2,100	No concrete beneath mainline	167 – Sta 1933+16	9.0 inches of concrete	No	Boring and pavement joints within station range suggest that concrete is present



Table A-2(b) – Shoulders: Non-Typical Observations from GPR

Location	Approximate Station Range	Length (ft)	Anomaly in GPR Data	Pavement cores within range	Pavement Core Observation	Confirmed GPR Anomaly	Comments
East Shoulder	1510+00 To 1537+00	2,700	High asphalt layer thickness	007 – Sta 1532+90	16.5 inches of asphalt in core	Yes	
West Shoulder	1510+00 To 1536+50	2,650	High asphalt layer thickness	009 – Sta 1536+67	15.1 inches of asphalt in core	Yes	
West Shoulder	1784+50 to 1798+00	1,350	Concrete beneath shoulder	108 – Sta 1784+77 111 – Sta 1791+55	9.6 to 10.2 inches of concrete in cores	Yes	
West Shoulder	1801+50 To 1822+00	2,050	Concrete beneath shoulder	117 – Sta 1806+53 120 – Sta 1814+04	8.0 to 10.0 inches of concrete in cores	Yes	
West Shoulder	1880+50 To 1906+50	2,600	Concrete beneath shoulder	147 – Sta 1880+73 150 – Sta 1889+09 153 – Sta 1898+07 156 – Sta 1903+48	8.3 to 11.0 inches of concrete in cores 147, 150, 156 153 shows no concrete	Yes	Unable to determine extent of concrete beneath shoulder due to core 153 showing no concrete



Table A-2(c) – Summary of Non-Typical Pavement Core Observations

Main Travel Lane Locations			
Boring Designation	Station	Travel Lane Location	Observation
16-PC-049-ML	1635+70	East, near newly constructed south ramp at Seminary Rd	High asphalt layer thickness (15.2 inches), no concrete or CTA layer present
16-PC-062-ML	1670+43	West	High CTA layer thickness (16.8 inches), no subbase aggregate present
16-PC-071-ML	1692+92	East	No CTA layer present, contains "tar" layer
16-PC-074-ML	1700+41	West	No CTA layer present, contains "tar" layer
16-PC-077-ML	1707+94	East	No CTA layer present
16-PC-098-ML	1760+36	West	High concrete layer thickness (14.5 inches)
16-PC-110-ML	1790+29	East	No CTA layer present
16-PC-113-ML	1797+77	East	No CTA layer present
16-PC-116-ML	1805+28	West	No CTA layer present
Ramps/Tie-In Point Locations			
Boring Designation	Station	Tie-In Location	Observation
16-PC-TI-001	1539+19	Between mainline and NB on-ramp from Turkeycock	Concrete and CTA layers present
16-PC-010-SH	1540+31	Located on NB entrance ramp from Turkeycock	Concrete and CTA layers present
16-PC-TI-002	1552+69	Between mainline and SB off-ramp to Turkeycock	Concrete and CTA layers present
16-PC-TI-003	1635+69	East, between mainline and newly constructed south ramp at Seminary Rd	High asphalt layer thickness (15.2 inches)
16-PC-052-SH	1645+47	East, near newly constructed south ramp at Seminary Rd	High asphalt layer thickness (16.1 inches)
16-PC-TI-006	1673+91	East, between mainline and north ramp at Seminary Rd	Concrete and CTA layers present
16-PC-100-SH	1765+36	East, adjacent to north ramp at Shirlington Rotary interchange	Concrete layer present
16-PC-TI-007	1768+60	East, between mainline and north ramp at Shirlington Rotary interchange	Concrete and CTA layers present
16-PC-TI-008	1861+02	West, between mainline and Southbound Entrance Ramp from Washington Blvd	Concrete layer present
16-PC-TI-009	1861+02	West, on Southbound Entrance Ramp from Washington Blvd	Concrete layer present
16-PC-154-SH	1900+60	Adjacent to NB on-ramp from Eads St	Concrete and CTA layers present
16-PC-157-SH	1907+76	Between mainline and NB slip ramp from 95 NB	Concrete and CTA layers present



Appendix B

Joint Inspection Forms and Photographs

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
1	1940+96	442891.4070	3695613.8331	Northbound HOV	Both	3	24	12 inches wide	961	
2	1940+75	442873.7404	3695603.0388	Northbound HOV	Both	3	24	9 inches wide	960	
3	1940+17	442824.8275	3695570.4955	Northbound HOV	Both	1	24	0.5 inch wide	956	
4	1939+78	442793.4765	3695548.1752	Northbound HOV	Both	3	24	9 inches wide	957	
5	1939+63	442780.2283	3695540.1747	Northbound HOV	Both	3	24	8 inches wide	958	
6	1939+34	442757.6862	3695521.7243	Northbound HOV	Both	3	24	16 inches wide	959	
7	1938+92	442719.1697	3695503.2409	Northbound HOV	Both	1	24	0.5 inch wide	954	
8	1936+79	442566.3388	3695351.2869	Northbound HOV	Both	1	24	1 inch wide	16	16_2016-02-06 08-47-24.png
9	1936+51	442540.6828	3695340.3324	Northbound HOV	Both	1	24	1 inch wide	17	17_2016-02-06 08-48-31.png
10	1936+42	442533.2543	3695333.5762	Northbound HOV	Both	1	24	4 inches wide	18	18_2016-02-06 08-49-19.png
11	1936+18	442513.7364	3695319.9468	Northbound HOV	Both	3	24	7 inches wide	19	19_2016-02-06 08-50-29.png
12	1936+06	442503.8468	3695313.8979	Northbound HOV	Both	3	24	9 inches wide	20	20_2016-02-06 08-51-01.png
13	1935+84	442485.0200	3695301.8803	Northbound HOV	Both	3	24	9 inches wide	21	21_2016-02-06 08-51-50.png
14	1935+66	442470.6988	3695292.1781	Northbound HOV	Both	3	24	12 inches wide	22	22_2016-02-06 08-52-22.png
15	1935+35	442439.9184	3695281.8777	Northbound HOV	East	3	12	10 inches wide	23	23_2016-02-06 08-53-30.png
16	1934+95	442409.6353	3695254.9572	Northbound HOV	Both	3	24	13 inches wide	24	24_2016-02-06 08-54-04.png
17	1934+08	442335.7040	3695209.7293	Northbound HOV	Both	3	24	12 inches wide	25	25_2016-02-06 08-55-01.png
18	1933+15	442254.4751	3695166.0489	Northbound HOV	Both	3	24	10 inches wide	26	26_2016-02-06 08-55-46.png
19	1932+44	442192.0537	3695133.1450	Northbound HOV	Both	3	24	12 inches wide	27	27_2016-02-06 08-56-26.png
20	1931+31	442087.8924	3695088.3951	Northbound HOV	Both	3	24	12 inches wide	28	28_2016-02-06 08-57-17.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
21	1930+46	442010.1519	3695054.8744	Northbound HOV	Both	1	24	0.25 inch wide	29	29_2016-02-06 08-58-03.png
22	1929+82	441952.8500	3695027.0445	Northbound HOV	Both	3	24	13 inches wide	30	30_2016-02-06 08-59-17.png
23	1929+14	441889.7478	3694999.2107	Northbound HOV	Both	3	24	10 inches wide	31	31_2016-02-06 09-00-06.png
24	1927+72	441759.2633	3694943.5153	Northbound HOV	Both	3	24	13 inches wide	32	32_2016-02-06 09-00-58.png
25	1927+14	441705.6853	3694922.6912	Northbound HOV	Both	3	24	13 inches wide	33	33_2016-02-06 09-01-54.png
26	1926+51	441648.7720	3694895.4272	Northbound HOV	Both	3	24	16 inches wide	34	34_2016-02-06 09-03-03.png
27	1926+23	441623.0928	3694883.0401	Northbound HOV	Both	3	24	12 inches wide	35	35_2016-02-06 09-03-49.png
28	1925+82	441584.6430	3694868.8502	Northbound HOV	Both	1	24	0.5 inch wide	36	36_2016-02-06 09-04-32.png
29	1925+27	441533.7400	3694848.8426	Northbound HOV	Both	1	24	0.5 inch wide	37	37_2016-02-06 09-05-22.png
30	1924+76	441485.7207	3694830.7943	Northbound HOV	Both	1	24	0.75 inch wide	38	38_2016-02-06 09-06-10.png
31	1924+49	441462.4811	3694816.3635	Northbound HOV	Both	3	24	14 inches wide	39	39_2016-02-06 09-06-53.png
32	1924+05	441422.9128	3694797.6083	Northbound HOV	Both	3	24	9 inches wide	40	40_2016-02-06 09-07-30.png
33	1923+77	441397.2514	3694786.3664	Northbound HOV	Both	3	24	9 inches wide	41	41_2016-02-06 09-08-06.png
34	1922+85	441312.8187	3694750.6583	Northbound HOV	Both	3	24	14 inches wide	42	42_2016-02-06 09-08-42.png
35	1922+47	441276.9266	3694735.8549	Northbound HOV	Both	3	24	8 inches wide	43	43_2016-02-06 09-09-10.png
36	1922+26	441258.2364	3694726.5076	Northbound HOV	Both	1	24	0.5 inch wide	44	44_2016-02-06 09-09-47.png
37	1922+14	441248.2500	3694720.3642	Northbound HOV	Both	3	24	10 inches wide	45	45_2016-02-06 09-10-26.png
38	1921+69	441205.7712	3694703.9461	Northbound HOV	Both	3	24	13 inches wide	46	46_2016-02-06 09-10-57.png
39	1921+41	441180.1276	3694693.8497	Northbound HOV	Both	3	24	8 inches wide	47	47_2016-02-06 09-11-30.png
40	1921+16	441157.3525	3694684.7577	Northbound HOV	Both	3	24	14 inches wide	48	48_2016-02-06 09-11-58.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
41	1919+48	441006.1153	3694609.7191	Northbound HOV	Both	1	25	0.5 inch wide	49	49_2016-02-06 09-13-52.png
42	1919+21	440982.8981	3694596.7198	Northbound HOV	Both	3	26	11 inch wide	50	50_2016-02-06 09-14-45.png
43	1918+65	440934.0732	3694569.8993	Northbound HOV	Both	3	24	13 inches wide	51	51_2016-02-06 09-15-37.png
44	1918+48	440919.7319	3694558.9554	Northbound HOV	Both	3	33	28 inches wide	53	53_2016-02-06 09-16-21.png
45	1917+88	440869.6800	3694526.7118	Northbound HOV	Both	3	36	15 inches wide	54	54_2016-02-06 09-17-22.png
46	1917+22	440815.1799	3694489.7648	Northbound HOV	Both	3	36	12 inches wide	55	55_2016-02-06 09-18-17.png
47	1916+41	440750.9738	3694440.3679	Northbound HOV	Both	3	36	14 inches wide	56	56_2016-02-06 09-19-02.png
48	1915+95	440714.4787	3694411.5378	Northbound HOV	Both	3	36	8 inches wide	57	57_2016-02-06 09-20-05.png
49	1915+23	440658.4210	3694366.3083	Northbound HOV	Both	3	36	14 inches wide	58	58_2016-02-06 09-20-48.png
50	1914+23	440589.4595	3694292.8298	Northbound HOV	Both	3	36	14 inches wide	59	59_2016-02-06 09-21-33.png
51	1913+61	440545.0347	3694249.6119	Northbound HOV	Both	3	36	12 inches wide	60	60_2016-02-06 09-22-29.png
52	1912+52	440474.2053	3694166.2326	Northbound HOV	Both	3	36	17 inches wide	61	61_2016-02-06 09-23-15.png
53	1911+56	440416.8725	3694088.4635	Northbound HOV	Both	3	36	17 inches wide	62	62_2016-02-06 09-23-56.png
54	1910+67	440364.6703	3694016.4374	Northbound HOV	Both	3	24	14 inches wide	63	63_2016-02-06 09-25-22.png
55	1909+95	440331.6026	3693951.7474	Northbound HOV	Both	3	38	6 inches wide	64	64_2016-02-06 09-26-44.png
56	1909+24	440293.5551	3693890.8593	Northbound HOV	Both	3	24	12 inches wide	65	65_2016-02-06 09-28-18.png
57	1908+39	440249.4281	3693818.3231	Northbound HOV	Both	3	24	12 inches wide	66	66_2016-02-06 09-29-08.png
58	1908+16	440239.9683	3693797.3714	Northbound HOV	Both	3	48	18 inches wide	67	67_2016-02-06 09-29-35.png
59	1907+63	440226.3940	3693744.6897	Northbound HOV	Both	3	24	12 inches wide	68	68_2016-02-06 09-30-47.png
60	1907+41	440214.4037	3693726.0696	Northbound HOV	Both	3	24	16 inches wide	69	69_2016-02-06 09-31-22.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
61	1907+20	440207.9004	3693705.6438	Northbound HOV	Both	3	28	15 inches wide	70	70_2016-02-06 09-32-50.png
62	1907+02	440197.8567	3693689.8572	Northbound HOV	Both	3	30	16 inches wide	71	71_2016-02-06 09-33-21.png
63	1906+60	440186.2893	3693649.8427	Northbound HOV	Both	1	34	0.75 inch wide	72	72_2016-02-06 09-34-03.png
64	1906+37	440178.2392	3693627.8184	Northbound HOV	Both	1	34	0.5 inch wide	73	73_2016-02-06 09-35-18.png
65	1903+38	440098.6559	3693339.1000	Northbound HOV	Both	3	40	18 inches wide	74	74_2016-02-06 09-38-30.png
66	1902+73	440083.8739	3693276.1252	Northbound HOV	Both	3	46	18 inches wide DOUBLE JOINT	75	75_2016-02-06 09-40-57.png
67	1902+59	440080.3312	3693262.5272	Northbound HOV	Both	3	46	16 inches wide	76	76_2016-02-06 09-41-28.png
68	1901+82	440072.9445	3693186.0683	Northbound HOV	Both	3	24	18 inches wide	77	77_2016-02-06 09-42-45.png
69	1901+51	440067.3215	3693155.1257	Northbound HOV	Both	3	24	16 inches wide	78	78_2016-02-06 09-43-15.png
70	1900+83	440059.0326	3693087.7516	Northbound HOV	Both	3	24	18 inches wide	79	79_2016-02-06 09-43-59.png
71	1900+28	440053.7970	3693033.1235	Northbound HOV	Both	3	24	16 inches wide	80	80_2016-02-06 09-44-35.png
72	1899+36	440047.2233	3692941.8521	Northbound HOV	Both	3	44	18 inches wide	81	81_2016-02-06 09-45-13.png
73	1898+52	440040.8613	3692857.9293	Northbound HOV	Both	3	24	12 inches wide DOUBLE JOINT	82	82_2016-02-06 09-46-17.png
74	1898+33	440042.7560	3692839.3763	Northbound HOV	Both	1	24	0.5 inch wide	83	83_2016-02-06 09-47-12.png
75	1898+01	440042.5253	3692806.6300	Northbound HOV	Both	3	24	15 inches wide	84	84_2016-02-06 09-47-38.png
76	1897+60	440044.4469	3692765.6383	Northbound HOV	Both	3	24	12 inches wide	85	85_2016-02-06 09-48-09.png
77	1896+21	440048.4556	3692627.7013	Northbound HOV	Both	1	24	0.5 inch wide	86	86_2016-02-06 09-49-08.png
78	1895+84	440050.8238	3692590.9037	Northbound HOV	Both	3	24	16 inches wide	87	87_2016-02-06 09-49-38.png
79	1895+45	440052.3839	3692551.0637	Northbound HOV	Both	3	24	14 inches wide	88	88_2016-02-06 09-50-19.png
80	1895+21	440055.2433	3692527.3397	Northbound HOV	Both	3	24	14 inches wide	89	89_2016-02-06 09-50-48.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
81	1894+97	440057.4422	3692503.9122	Northbound HOV	Both	3	24	13 inches wide	90	90_2016-02-06 09-51-15.png
82	1894+50	440058.8939	3692457.1993	Northbound HOV	Both	3	24	13 inches wide	91	91_2016-02-06 09-52-39.png
83	1894+26	440063.2715	3692433.2603	Northbound HOV	Both	3	24	16 inches wide	92	92_2016-02-06 09-55-27.png
84	1893+71	440066.0187	3692378.2202	Northbound HOV	Both	3	24	17 inches wide	93	93_2016-02-06 09-56-21.png
85	1893+23	440068.2179	3692330.6364	Northbound HOV	Both	3	24	16 inches wide	94	94_2016-02-06 09-57-00.png
86	1892+87	440074.9825	3692295.2019	Northbound HOV	Both	3	24	14 inches wide	95	95_2016-02-06 09-57-48.png
87	1892+57	440075.9294	3692264.7287	Northbound HOV	Both	3	24	14 inches wide	96	96_2016-02-06 09-58-40.png
88	1892+28	440087.9447	3692236.6596	Northbound HOV	Both	3	24	12 inches wide	97	97_2016-02-06 09-59-29.png
89	1889+84	440113.8997	3691994.4946	Northbound HOV	Both	1	39	0.75 inch wide	98	98_2016-02-06 10-29-49.png
90	1889+43	440118.7729	3691953.6482	Northbound HOV	Both	3	24	15 inches wide	99	99_2016-02-06 10-30-20.png
91	1888+99	440124.9468	3691910.8712	Northbound HOV	Both	3	24	12 inches wide	100	100_2016-02-06 10-30-50.png
92	1888+81	440129.0336	3691892.5702	Northbound HOV	Both	3	24	16 inches wide	101	101_2016-02-06 10-31-15.png
93	1888+47	440134.7843	3691859.1573	Northbound HOV	Both	3	24	12 inches wide	102	102_2016-02-06 10-31-43.png
94	1888+07	440142.1608	3691820.2764	Northbound HOV	Both	3	36	10 inches wide	103	103_2016-02-06 10-32-12.png
95	1887+54	440152.6594	3691768.2656	Northbound HOV	Both	3	24	13 inches wide	104	104_2016-02-06 10-32-51.png
96	1887+06	440161.3242	3691720.5802	Northbound HOV	Both	3	32	12 inches wide	105	105_2016-02-06 10-33-25.png
97	1886+41	440175.6373	3691657.1476	Northbound HOV	Both	3	28	16 inches wide	106	106_2016-02-06 10-34-05.png
98	1884+08	440244.5875	3691433.6919	Northbound HOV	Both	3	24	14 inches wide	107	107_2016-02-06 10-35-34.png
99	1883+87	440252.3685	3691414.4735	Northbound HOV	Both	3	24	10 inches wide	108	108_2016-02-06 10-36-01.png
100	1883+29	440269.6586	3691358.9192	Northbound HOV	Both	3	24	16 inches wide	109	109_2016-02-06 10-36-32.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
101	1882+80	440284.6255	3691312.8542	Northbound HOV	Both	3	24	19 inches wide	110	110_2016-02-06 10-37-08.png
102	1882+43	440296.0541	3691277.6338	Northbound HOV	Both	3	24	12 inches wide	111	111_2016-02-06 10-37-35.png
103	1882+14	440306.1693	3691249.5949	Northbound HOV	Both	3	24	15 inches wide	112	112_2016-02-06 10-38-01.png
104	1881+36	440329.0634	3691175.4301	Northbound HOV	Both	3	24	7 inches wide	113	113_2016-02-06 10-38-51.png
105	1880+68	440350.6798	3691110.7375	Northbound HOV	Both	3	24	13 inches wide	114	114_2016-02-06 10-39-23.png
106	1880+26	440361.2689	3691070.4700	Northbound HOV	Both	3	24	12 inches wide	115	115_2016-02-06 10-39-53.png
107	1880+05	440367.8912	3691050.1247	Northbound HOV	Both	3	24	12 inches wide	116	116_2016-02-06 10-40-23.png
108	1879+74	440377.3230	3691020.9510	Northbound HOV	Both	3	24	14 inches wide	117	117_2016-02-06 10-40-52.png
109	1878+99	440399.1310	3690950.2406	Northbound HOV	Both	3	24	18 inches wide	118	118_2016-02-06 10-41-35.png
110	1878+55	440410.4449	3690907.6705	Northbound HOV	Both	3	24	12 inches wide	119	119_2016-02-06 10-42-04.png
111	1878+29	440413.7361	3690881.0756	Northbound HOV	Both	3	24	11 inch wide	120	120_2016-02-06 10-43-00.png
112	1877+96	440420.4704	3690849.6531	Northbound HOV	Both	3	24	16 inches wide	121	121_2016-02-06 10-43-30.png
113	1877+54	440429.7198	3690808.8338	Northbound HOV	Both	3	24	13 inches wide	122	122_2016-02-06 10-44-05.png
114	1877+04	440437.3001	3690758.5885	Northbound HOV	Both	3	24	10 inches wide	123	123_2016-02-06 10-44-34.png
115	1876+76	440439.8730	3690730.7544	Northbound HOV	Both	3	24	11 inch wide	124	124_2016-02-06 10-45-03.png
116	1876+16	440442.1044	3690670.7679	Northbound HOV	Both	3	24	9 inches wide	125	125_2016-02-06 10-46-05.png
117	1875+74	440445.4465	3690629.1821	Northbound HOV	Both	1	24	0.5 inch wide	126	126_2016-02-06 10-47-08.png
118	1875+64	440448.2498	3690619.9724	Northbound HOV	West	3	12	8 inches wide	127	127_2016-02-06 10-48-59.png
119	1875+54	440438.5788	3690609.6211	Northbound HOV	East	3	12	8 inches wide	128	128_2016-02-06 10-49-28.png
120	1875+49	440446.2075	3690604.9186	Northbound HOV	West	3	12	7 inches wide	129	129_2016-02-06 10-50-01.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
121	1875+33	440448.4294	3690588.9388	Northbound HOV	Both	3	24	10 inches wide	130	130_2016-02-06 10-50-27.png
122	1875+13	440450.0181	3690568.9587	Northbound HOV	West	3	12	7 inches wide	131	131_2016-02-06 10-51-03.png
123	1875+04	440436.7431	3690559.2368	Northbound HOV	East	3	12	12 inches wide	132	132_2016-02-06 10-51-32.png
124	1874+90	440446.3302	3690546.0062	Northbound HOV	Both	3	24	17 inches wide	133	133_2016-02-06 10-51-58.png
125	1874+63	440448.8482	3690518.5641	Northbound HOV	West	3	12	13 inches wide	134	134_2016-02-06 10-52-35.png
126	1874+49	440448.2538	3690504.9200	Northbound HOV	Both	3	24	13 inches wide	135	135_2016-02-06 10-53-01.png
127	1874+26	440448.9483	3690482.4716	Northbound HOV	Both	3	24	14 inches wide	136	136_2016-02-06 10-53-44.png
128	1873+95	440455.3961	3690450.9579	Northbound HOV	Both	3	24	15 inches wide	141	
129	1873+84	440454.1816	3690440.1879	Northbound HOV	Both	3	24	10 inches wide	140	
130	1873+53	440451.8938	3690409.4795	Northbound HOV	Both	3	24	9 inches wide	139	
131	1873+26	440450.7058	3690382.1911	Northbound HOV	Both	3	24	8 inches wide	138	
132	1873+15	440448.3530	3690371.6297	Northbound HOV	Both	3	24	6 inches wide	137	
133	1941+00	442905.4809	3695601.9624	Southbound HOV	Both	3	24	11 inches wide	145	145_2016-02-06 11-18-13.png
134	1939+48	442786.2543	3695506.4734	Southbound HOV	Both	3	24	18 inches wide	146	146_2016-02-06 11-19-31.png
135	1939+24	442768.5108	3695490.8109	Southbound HOV	Both	3	24	14 inches wide	147	147_2016-02-06 11-19-58.png
136	1939+09	442757.4200	3695480.9623	Southbound HOV	Both	3	24	8 inches wide	148	148_2016-02-06 11-20-25.png
137	1938+84	442735.7247	3695467.9406	Southbound HOV	Both	1	24	0.5 inch wide	149	149_2016-02-06 11-21-16.png
138	1936+83	442574.0023	3695348.8740	Southbound HOV	Both	1	24	0.5 inch wide	150	150_2016-02-06 11-22-21.png
139	1936+72	442564.7648	3695341.9556	Southbound HOV	Both	3	24	12 inches wide	151	151_2016-02-06 11-22-54.png
140	1936+17	442516.9694	3695313.9760	Southbound HOV	Both	3	24	14 inches wide	152	152_2016-02-06 11-23-40.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
141	1936+00	442505.4485	3695300.9835	Southbound HOV	Both	3	24	12 inches wide	153	153_2016-02-06 11-24-10.png
142	1935+90	442497.3562	3695294.3335	Southbound HOV	Both	3	24	12 inches wide	154	154_2016-02-06 11-24-33.png
143	1935+60	442472.2975	3695279.0730	Southbound HOV	Both	3	24	16 inches wide	155	155_2016-02-06 11-25-03.png
144	1934+90	442411.2752	3695244.4291	Southbound HOV	Both	3	24	16 inches wide	156	156_2016-02-06 11-25-50.png
145	1934+46	442375.5841	3695218.2625	Southbound HOV	Both	3	24	8 inches wide	157	157_2016-02-06 11-26-19.png
146	1934+13	442347.2570	3695200.7626	Southbound HOV	Both	3	24	12 inches wide	158	158_2016-02-06 11-27-02.png
147	1933+61	442303.0634	3695172.0573	Southbound HOV	Both	3	24	12 inches wide	159	159_2016-02-06 11-27-38.png
148	1932+49	442201.7994	3695124.1115	Southbound HOV	Both	3	24	14 inches wide	160	160_2016-02-06 11-28-55.png
149	1931+71	442130.9054	3695090.5780	Southbound HOV	Both	3	24	12 inches wide	161	161_2016-02-06 11-29-50.png
150	1931+10	442072.6789	3695070.4009	Southbound HOV	Both	3	24	14 inches wide	162	162_2016-02-06 11-31-03.png
151	1930+19	441991.2218	3695030.3510	Southbound HOV	Both	3	24	16 inches wide	163	163_2016-02-06 11-31-56.png
152	1929+73	441948.2641	3695013.6553	Southbound HOV	Both	3	24	12 inches wide	164	164_2016-02-06 11-32-35.png
153	1929+04	441882.7640	3694990.5378	Southbound HOV	Both	3	24	8 inches wide	165	165_2016-02-06 11-33-17.png
154	1927+72	441762.3865	3694936.5916	Southbound HOV	Both	3	24	18 inches wide	166	166_2016-02-06 11-34-15.png
155	1927+13	441707.6290	3694915.6990	Southbound HOV	Both	3	24	8 inches wide	167	167_2016-02-06 11-34-59.png
156	1926+40	441641.7252	3694882.7451	Southbound HOV	Both	3	24	14 inches wide	168	168_2016-02-06 11-35-44.png
157	1925+98	441605.0046	3694863.6586	Southbound HOV	Both	3	24	12 inches wide	169	169_2016-02-06 11-36-23.png
158	1924+98	441511.5371	3694827.8076	Southbound HOV	Both	3	24	14 inches wide	170	170_2016-02-06 11-37-32.png
159	1924+33	441452.7856	3694798.5675	Southbound HOV	Both	3	24	12 inches wide	171	171_2016-02-06 11-38-16.png
160	1923+73	441398.1126	3694774.7049	Southbound HOV	Both	3	24	12 inches wide	172	172_2016-02-06 11-39-03.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
161	1923+44	441375.5160	3694752.8165	Southbound HOV	Both	3	24	12 inches wide	173	173_2016-02-06 11-39-44.png
162	1923+05	441338.9039	3694740.6023	Southbound HOV	Both	3	24	12 inches wide	174	174_2016-02-06 11-40-18.png
163	1922+72	441306.6906	3694729.9415	Southbound HOV	Both	3	24	14 inches wide	175	175_2016-02-06 11-40-48.png
164	1922+30	441269.6046	3694711.8152	Southbound HOV	Both	3	24	8 inches wide	176	176_2016-02-06 11-41-23.png
165	1921+97	441239.1655	3694699.1212	Southbound HOV	Both	3	24	14 inches wide	177	177_2016-02-06 11-41-47.png
166	1921+71	441213.9388	3694691.3094	Southbound HOV	Both	3	24	14 inches wide	178	178_2016-02-06 11-42-12.png
167	1921+54	441198.5067	3694683.5337	Southbound HOV	Both	1	24	0.5 inch wide	179	179_2016-02-06 11-43-05.png
168	1921+28	441176.0544	3694670.8087	Southbound HOV	Both	3	24	14 inches wide	180	180_2016-02-06 11-43-35.png
169	1920+93	441143.1497	3694658.5355	Southbound HOV	Both	3	24	12 inches wide	181	181_2016-02-06 11-44-05.png
170	1920+46	441100.5483	3694640.4009	Southbound HOV	Both	3	24	8 inches wide	182	182_2016-02-06 11-44-50.png
171	1919+40	441019.9986	3694567.6806	Southbound HOV	Both	3	24	10 inches wide	183	183_2016-02-06 11-46-17.png
172	1918+47	440943.4661	3694520.4844	Southbound HOV	Both	3	24	11 inch wide DOUBLE JOINT	184	184_2016-02-06 11-47-18.png
173	1918+38	440935.7882	3694516.0227	Southbound HOV	Both	3	24	11 inch wide	185	185_2016-02-06 11-47-45.png
174	1917+93	440900.0176	3694490.9051	Southbound HOV	Both	3	24	16 inches wide	186	186_2016-02-06 11-48-24.png
175	1916+56	440793.4692	3694409.7155	Southbound HOV	Both	3	24	16 inches wide	187	187_2016-02-06 11-49-20.png
176	1914+92	440675.5837	3694303.1165	Southbound HOV	Both	3	24	12 inches wide	188	188_2016-02-06 11-50-26.png
177	1914+03	440614.8967	3694241.7282	Southbound HOV	Both	3	24	12 inches wide	189	189_2016-02-06 11-51-04.png
178	1913+29	440566.7114	3694189.2128	Southbound HOV	Both	3	24	12 inches wide	190	190_2016-02-06 11-51-39.png
179	1911+77	440477.7396	3694070.9836	Southbound HOV	Both	3	24	12 inches wide	191	191_2016-02-06 11-52-48.png
180	1910+54	440413.8658	3693970.4028	Southbound HOV	Both	3	36	12 inches wide	192	192_2016-02-06 11-53-45.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
181	1909+85	440382.6844	3693910.7432	Southbound HOV	Both	3	36	8 inches wide	193	193_2016-02-06 11-54-31.png
182	1909+24	440368.9926	3693850.6165	Southbound HOV	Both	3	36	16 inches wide	194	194_2016-02-06 11-55-24.png
183	1908+32	440309.9897	3693781.4661	Southbound HOV	Both	1	36	0.5 inch wide	195	195_2016-02-06 11-56-10.png
184	1907+77	440273.2809	3693739.0799	Southbound HOV	Both	3	36	10 inches wide	196	196_2016-02-06 11-57-06.png
185	1907+52	440268.1309	3693714.0499	Southbound HOV	Both	3	36	10 inches wide	197	197_2016-02-06 11-57-33.png
186	1907+42	440263.6283	3693705.9099	Southbound HOV	Both	3	24	6 inches wide	198	198_2016-02-06 11-57-59.png
187	1907+32	440259.4832	3693696.3318	Southbound HOV	Both	3	36	10 inches wide	199	199_2016-02-06 11-58-23.png
188	1906+71	440247.2252	3693636.6594	Southbound HOV	Both	3	36	9 inches wide	200	200_2016-02-06 11-59-08.png
189	1903+51	440142.0703	3693342.4254	Southbound HOV	Both	3	48	10 inches wide	201	201_2016-02-06 12-00-42.png
190	1903+33	440138.8489	3693325.0988	Southbound HOV	Both	3	24	10 inches wide	202	202_2016-02-06 12-01-17.png
191	1902+76	440123.4467	3693271.0134	Southbound HOV	Both	3	24	11 inch wide DOUBLE JOINT	203	203_2016-02-06 12-02-15.png
192	1902+61	440127.9488	3693254.9969	Southbound HOV	Both	3	24	12 inches wide	204	204_2016-02-06 12-02-55.png
193	1902+41	440119.6756	3693236.8909	Southbound HOV	Both	3	24	12 inches wide	205	205_2016-02-06 12-03-16.png
194	1901+56	440105.6388	3693154.8080	Southbound HOV	Both	3	24	12 inches wide	206	206_2016-02-06 12-03-54.png
195	1900+59	440090.6523	3693060.7094	Southbound HOV	Both	3	24	9 inches wide	207	207_2016-02-06 12-04-41.png
196	1900+28	440091.2088	3693029.6694	Southbound HOV	Both	3	24	8 inches wide	208	208_2016-02-06 12-05-09.png
197	1899+86	440089.5223	3692989.0214	Southbound HOV	Both	3	24	8 inches wide	209	209_2016-02-06 12-05-38.png
198	1899+42	440087.0375	3692945.9987	Southbound HOV	Both	3	24	11 inch wide	210	210_2016-02-06 12-06-17.png
199	1899+07	440084.9748	3692911.6583	Southbound HOV	Both	3	24	1 inch wide	211	211_2016-02-06 12-06-38.png
200	1898+76	440080.1159	3692880.8944	Southbound HOV	West	3	12	11 inch wide	212	212_2016-02-06 12-07-09.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
201	1898+52	440080.1291	3692857.5971	Southbound HOV	Both	3	24	9 inches wide	213	213_2016-02-06 12-07-36.png
202	1898+29	440083.4773	3692834.7244	Southbound HOV	Both	3	24	12 inches wide	214	214_2016-02-06 12-08-10.png
203	1898+09	440068.1467	3692815.2969	Southbound HOV	East	3	12	9 inches wide	215	215_2016-02-06 12-08-53.png
204	1897+79	440076.1369	3692785.2857	Southbound HOV	Both	3	24	9 inches wide	216	216_2016-02-06 12-09-23.png
205	1896+16	440077.2116	3692624.0976	Southbound HOV	Both	3	24	6 inches wide	217	217_2016-02-06 13-41-33.png
206	1895+93	440081.6029	3692601.0175	Southbound HOV	West	3	12	6 inches wide	218	218_2016-02-06 13-42-21.png
207	1895+73	440084.9105	3692581.5829	Southbound HOV	West	3	12	6 inches wide	219	219_2016-02-06 13-42-50.png
208	1895+53	440084.9765	3692561.6263	Southbound HOV	Both	3	24	9 inches wide	220	220_2016-02-06 13-43-15.png
209	1895+21	440087.6980	3692529.1201	Southbound HOV	Both	3	24	9 inches wide	221	221_2016-02-06 13-43-45.png
210	1895+11	440089.0715	3692519.7414	Southbound HOV	Both	3	24	10 inches wide	222	222_2016-02-06 13-44-09.png
211	1894+68	440083.2468	3692475.9120	Southbound HOV	Both	3	24	12 inches wide	223	223_2016-02-06 13-44-46.png
212	1894+39	440085.7550	3692447.9924	Southbound HOV	Both	3	24	8 inches wide	224	224_2016-02-06 13-45-13.png
213	1893+63	440091.1265	3692372.3826	Southbound HOV	Both	3	24	8 inches wide	225	225_2016-02-06 13-45-51.png
214	1893+47	440092.6864	3692356.6993	Southbound HOV	Both	3	24	9 inches wide	226	226_2016-02-06 13-46-15.png
215	1892+94	440095.4623	3692303.4730	Southbound HOV	Both	3	24	16 inches wide	227	227_2016-02-06 13-46-41.png
216	1892+57	440102.8833	3692267.4555	Southbound HOV	Both	3	24	9 inches wide	228	228_2016-02-06 13-47-09.png
217	1892+29	440103.9749	3692240.1309	Southbound HOV	Both	1	24	0.5 inch wide	229	229_2016-02-06 13-47-59.png
218	1889+52	440149.9251	3691969.3901	Southbound HOV	Both	3	24	8 inches wide	230	230_2016-02-06 13-50-12.png
219	1889+13	440156.2694	3691931.3846	Southbound HOV	Both	3	24	7 inches wide	231	231_2016-02-06 13-50-58.png
220	1888+85	440160.9602	3691903.1440	Southbound HOV	Both	1	24	0.75 inch wide	232	232_2016-02-06 13-51-37.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
221	1888+59	440168.1860	3691878.8742	Southbound HOV	Both	3	24	10 inches wide	233	233_2016-02-06 13-52-09.png
222	1888+33	440173.5905	3691853.6778	Southbound HOV	Both	3	24	11 inches wide	234	234_2016-02-06 13-52-34.png
223	1887+95	440182.9048	3691817.0579	Southbound HOV	Both	1	24	0.5 inch wide	235	235_2016-02-06 13-53-19.png
224	1887+39	440192.2099	3691761.7243	Southbound HOV	Both	3	24	6 inches wide	236	236_2016-02-06 13-54-17.png
225	1886+22	440221.4472	3691649.5534	Southbound HOV	Both	3	36	13 inches wide	237	237_2016-02-06 13-55-21.png
226	1883+97	440272.3203	3691431.5378	Southbound HOV	Both	3	24	11 inches wide	238	238_2016-02-06 13-57-28.png
227	1883+38	440320.3751	3691385.2394	Southbound HOV	Both	1	24	0.5 inch wide	239	239_2016-02-06 13-58-16.png
228	1883+15	440329.8494	3691364.8488	Southbound HOV	Both	3	36	12 inches wide	240	240_2016-02-06 13-58-49.png
229	1882+65	440338.5782	3691315.1580	Southbound HOV	Both	3	24	12 inches wide	241	241_2016-02-06 13-59-36.png
230	1882+55	440343.1789	3691305.3470	Southbound HOV	Both	3	24	12 inches wide	242	242_2016-02-06 14-00-00.png
231	1882+41	440347.3422	3691291.9144	Southbound HOV	Both	3	24	10 inches wide	243	243_2016-02-06 14-00-24.png
232	1881+79	440366.0017	3691232.7108	Southbound HOV	Both	3	24	12 inches wide	244	244_2016-02-06 14-00-55.png
233	1880+81	440391.5342	3691138.8360	Southbound HOV	Both	3	24	12 inches wide	245	245_2016-02-06 14-01-59.png
234	1880+34	440407.6604	3691093.8985	Southbound HOV	Both	3	24	12 inches wide	246	246_2016-02-06 14-02-31.png
235	1880+06	440413.3890	3691065.0694	Southbound HOV	Both	1	24	0.5 inch wide	247	247_2016-02-06 14-03-06.png
236	1879+68	440422.6000	3691027.8790	Southbound HOV	Both	3	24	12 inches wide	248	248_2016-02-06 14-03-36.png
237	1879+19	440434.5708	3690978.7104	Southbound HOV	East	1	16	1 inch wide	249	249_2016-02-06 14-05-02.png
238	1878+40	440455.9916	3690901.5139	Southbound HOV	Both	3	24	10 inches wide	250	250_2016-02-06 14-06-43.png
239	1877+85	440465.2971	3690846.0856	Southbound HOV	Both	3	24	11 inches wide	251	251_2016-02-06 14-07-44.png
240	1877+60	440461.2610	3690819.1284	Southbound HOV	East	3	12	8 inches wide	252	252_2016-02-06 14-08-38.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
241	1877+34	440477.6219	3690795.1932	Southbound HOV	Both	3	24	8 inches wide	253	253_2016-02-06 14-09-15.png
242	1877+06	440468.7783	3690764.8741	Southbound HOV	Both	1	24	0.5 inch wide	254	254_2016-02-06 14-10-03.png
243	1876+76	440474.4848	3690734.6131	Southbound HOV	East	3	12	8 inches wide	255	255_2016-02-06 14-10-42.png
244	1876+54	440474.5168	3690712.3661	Southbound HOV	Both	3	24	8 inches wide	256	256_2016-02-06 14-11-25.png
245	1876+22	440483.1433	3690680.3410	Southbound HOV	Both	3	24	9 inches wide	257	257_2016-02-06 14-12-03.png
246	1875+68	440473.1389	3690624.4517	Southbound HOV	Both	3	22	9 inches wide	258	258_2016-02-06 14-12-52.png
247	1875+59	440474.0453	3690615.5579	Southbound HOV	Both	1	16	0.75 inch wide	259	259_2016-02-06 14-13-25.png
248	1875+37	440480.2578	3690593.3095	Southbound HOV	Both	3	14	8 inches wide	260	260_2016-02-06 14-13-48.png
249	1875+23	440477.4638	3690578.8404	Southbound HOV	Both	3	12	8 inches wide	261	261_2016-02-06 14-14-07.png
250	1874+98	440478.9673	3690553.4193	Southbound HOV	Both	3	12	7 inches wide	262	262_2016-02-06 14-14-41.png
251	1874+87	440475.8469	3690542.3927	Southbound HOV	Both	3	10	8 inches wide	263	263_2016-02-06 14-15-06.png
252	1874+63	440478.4184	3690518.3873	Southbound HOV	Both	3	8	8 inches wide	264	264_2016-02-06 14-15-30.png
253	1874+49	440473.8181	3690503.9466	Southbound HOV	Both	3	8	8 inches wide	265	265_2016-02-06 14-15-49.png
254	1874+17	440473.9750	3690471.4813	Southbound HOV	Both	1	8	0.5 inch wide	266	266_2016-02-06 14-16-22.png
255	1873+88	440474.6659	3690442.7313	Southbound HOV	Both	3	6	7 inches wide	267	267_2016-02-06 14-16-49.png
256	1873+72	440470.0476	3690427.1452	Southbound HOV	Both	3	4	7 inches wide	268	268_2016-02-06 14-17-15.png
257	1870+05	440379.8347	3690070.6068	Reversible HOV	Both	3	34	10 inches wide	269	269_2016-02-06 14-20-59.png
258	1869+63	440370.4463	3690029.6976	Reversible HOV	Both	3	24	10 inches wide	270	270_2016-02-06 14-21-39.png
259	1869+50	440379.9751	3690012.7440	Reversible HOV	West	1	12	0.75 inch wide	271	271_2016-02-06 14-22-11.png
260	1869+00	440360.7156	3689966.9290	Reversible HOV	Both	3	24	14 inches wide DOUBLE JOINT	272	272_2016-02-06 14-22-57.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
261	1868+36	440327.7998	3689911.3022	Reversible HOV	Both	3	24	10 inches wide	273	273_2016-02-06 14-24-38.png
262	1867+86	440320.4309	3689859.6676	Reversible HOV	Both	3	24	12 inches wide	274	274_2016-02-06 14-25-11.png
263	1867+68	440312.8567	3689843.5545	Reversible HOV	Both	3	24	12 inches wide	275	275_2016-02-06 14-25-30.png
264	1866+77	440277.3098	3689759.5156	Reversible HOV	Both	3	24	10 inches wide	276	276_2016-02-06 14-26-14.png
265	1866+26	440258.7843	3689711.9701	Reversible HOV	Both	3	24	12 inches wide	277	277_2016-02-06 14-26-42.png
266	1866+06	440251.9304	3689693.2679	Reversible HOV	Both	3	24	12 inches wide	278	278_2016-02-06 14-27-05.png
267	1865+45	440222.2878	3689640.1672	Reversible HOV	Both	3	24	10 inches wide	279	279_2016-02-06 14-27-39.png
268	1865+24	440212.8627	3689621.2184	Reversible HOV	Both	3	24	10 inches wide	280	280_2016-02-06 14-28-00.png
269	1864+89	440202.9078	3689586.6195	Reversible HOV	Both	3	24	10 inches wide	281	281_2016-02-06 14-28-26.png
270	1864+63	440189.4422	3689564.6787	Reversible HOV	Both	3	24	12 inches wide	282	282_2016-02-06 14-28-51.png
271	1864+39	440179.2120	3689542.8781	Reversible HOV	Both	3	24	13 inches wide	283	283_2016-02-06 14-29-19.png
272	1864+16	440171.2678	3689521.3285	Reversible HOV	Both	3	24	10 inches wide	284	284_2016-02-06 14-29-44.png
273	1863+94	440165.1405	3689500.4186	Reversible HOV	Both	3	24	11 inches wide	285	285_2016-02-06 14-30-05.png
274	1863+81	440158.6826	3689488.7755	Reversible HOV	Both	3	24	8 inches wide	286	286_2016-02-06 14-30-21.png
275	1863+56	440145.5928	3689466.5422	Reversible HOV	Both	3	24	13 inches wide	287	287_2016-02-06 14-30-39.png
276	1863+37	440134.1394	3689451.6356	Reversible HOV	Both	3	24	6 inches wide	288	288_2016-02-06 14-31-12.png
277	1863+12	440114.5418	3689432.8456	Reversible HOV	East	3	12	8 inches wide	289	289_2016-02-06 14-32-44.png
278	1862+98	440108.8239	3689419.8541	Reversible HOV	East	3	12	8 inches wide	290	290_2016-02-06 14-33-03.png
279	1862+73	440111.3248	3689391.2666	Reversible HOV	Both	3	24	12 inches wide	291	291_2016-02-06 14-33-27.png
280	1862+56	440101.9760	3689377.1862	Reversible HOV	East	3	12	12 inches wide	292	292_2016-02-06 14-33-47.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
281	1862+28	440090.2542	3689351.2077	Reversible HOV	Both	3	24	10 inches wide	293	293_2016-02-06 14-34-21.png
282	1862+02	440077.1634	3689328.8789	Reversible HOV	East	3	12	12 inches wide	294	294_2016-02-06 14-35-22.png
283	1861+60	440062.3807	3689289.5811	Reversible HOV	Both	3	24	13 inches wide	295	295_2016-02-06 14-35-59.png
284	1861+46	440045.1610	3689282.9754	Reversible HOV	East	3	12	9 inches wide	296	296_2016-02-06 14-36-39.png
285	1860+99	440029.5241	3689237.6754	Reversible HOV	Both	3	36	13 inches wide	297	297_2016-02-06 14-37-05.png
286	1860+75	440019.6833	3689216.4415	Reversible HOV	Both	3	24	10 inches wide	298	298_2016-02-06 14-37-27.png
287	1860+48	440007.9930	3689192.4675	Reversible HOV	Both	3	24	10 inches wide	299	299_2016-02-06 14-37-53.png
288	1859+98	439981.8511	3689150.3868	Reversible HOV	Both	3	24	12 inches wide	300	300_2016-02-06 14-38-33.png
289	1859+39	439968.1431	3689088.5386	Reversible HOV	Both	3	36	12 inches wide	301	301_2016-02-06 14-39-15.png
290	1858+94	439939.5286	3689052.5116	Reversible HOV	Both	3	24	12 inches wide	302	302_2016-02-06 14-39-43.png
291	1858+82	439922.7517	3689049.9091	Reversible HOV	Both	3	24	9 inches wide	303	303_2016-02-06 14-40-05.png
292	1858+59	439921.9454	3689022.6142	Reversible HOV	Both	3	36	10 inches wide	304	304_2016-02-06 14-40-44.png
293	1858+32	439904.8631	3689000.4428	Reversible HOV	Far West	3	12	12 inches wide	305	305_2016-02-06 14-41-18.png
294	1857+95	439881.7865	3688971.9679	Reversible HOV	Both	3	36	12 inches wide	306	306_2016-02-06 14-41-44.png
295	1857+74	439863.4241	3688959.1736	Reversible HOV	Both	3	24	12 inches wide	307	307_2016-02-06 14-42-16.png
296	1857+59	439856.2669	3688945.3452	Reversible HOV	Far West	3	12	12 inches wide	308	308_2016-02-06 14-43-07.png
297	1857+33	439837.0767	3688928.2672	Reversible HOV	Both	3	36	10 inches wide DOUBLE JOINT	309	309_2016-02-06 14-43-35.png
298	1857+25	439823.5905	3688929.3368	Reversible HOV	Both	3	24	10 inches wide	310	310_2016-02-06 14-44-15.png
299	1857+12	439822.5720	3688912.8344	Reversible HOV	Both	3	36	10 inches wide	311	311_2016-02-06 14-44-38.png
300	1856+81	439796.7911	3688893.8541	Reversible HOV	Both	3	36	10 inches wide	312	312_2016-02-06 14-45-15.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
301	1856+67	439787.2199	3688883.7871	Reversible HOV	Both	3	24	6 inches wide	313	313_2016-02-06 14-45-51.png
302	1852+71	439470.6035	3688648.8758	Reversible HOV	Both	3	36	12 inches wide	314	314_2016-02-06 14-48-05.png
303	1852+18	439421.1468	3688630.0731	Reversible HOV	Both	3	24	10 inches wide	315	315_2016-02-06 14-48-56.png
304	1852+14	439423.8883	3688616.8538	Reversible HOV	Both	3	36	20 inches wide	316	316_2016-02-06 14-49-16.png
305	1851+85	439381.8483	3688634.6009	Reversible HOV	East	3	12	12 inches wide	317	317_2016-02-06 14-50-11.png
306	1851+55	439370.9836	3688590.3707	Reversible HOV	Both	3	36	11 inches wide	318	318_2016-02-06 14-50-37.png
307	1851+40	439357.0957	3688583.9989	Reversible HOV	Both	3	36	10 inches wide	319	319_2016-02-06 14-51-07.png
308	1850+74	439297.6218	3688557.0454	Reversible HOV	Both	3	36	10 inches wide	320	320_2016-02-06 14-51-37.png
309	1850+45	439263.4988	3688564.1658	Reversible HOV	East	3	12	10 inches wide	321	321_2016-02-06 14-52-15.png
310	1850+37	439261.0771	3688549.1171	Reversible HOV	Both	3	36	10 inches wide	322	322_2016-02-06 14-52-41.png
311	1850+02	439225.3316	3688543.6591	Reversible HOV	Both	3	24	10 inches wide	323	323_2016-02-06 14-53-08.png
312	1849+63	439191.8359	3688523.9387	Reversible HOV	Both	3	36	10 inches wide	324	324_2016-02-06 14-53-38.png
313	1849+38	439169.1268	3688512.9301	Reversible HOV	Both	3	32	8 inches wide	325	325_2016-02-06 14-54-06.png
314	1849+20	439151.9082	3688507.8716	Reversible HOV	Both	3	24	8 inches wide	326	326_2016-02-06 14-54-29.png
315	1848+81	439111.7908	3688507.2356	Reversible HOV	Both	1	24	0.5 inch wide	327	327_2016-02-06 14-55-10.png
316	1848+36	439072.7393	3688478.8173	Reversible HOV	Both	3	24	11 inches wide	328	328_2016-02-06 14-55-46.png
317	1847+88	439025.2699	3688471.6321	Reversible HOV	Both	3	24	10 inches wide	329	329_2016-02-06 14-56-25.png
318	1847+47	438986.8363	3688458.4817	Reversible HOV	Both	3	24	10 inches wide	330	330_2016-02-06 14-56-54.png
319	1846+84	438924.4047	3688449.2379	Reversible HOV	Both	3	24	10 inches wide	331	331_2016-02-06 14-57-25.png
320	1846+47	438887.2001	3688447.8126	Reversible HOV	Both	3	24	10 inches wide	332	332_2016-02-06 14-57-52.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
321	1845+86	438826.9457	3688437.9620	Reversible HOV	Both	3	24	10 inches wide	333	333_2016-02-06 14-58-38.png
322	1845+38	438778.5089	3688435.8525	Reversible HOV	Both	3	24	12 inches wide	334	334_2016-02-06 14-59-03.png
323	1844+45	438686.2372	3688427.9332	Reversible HOV	Both	3	24	10 inches wide	335	335_2016-02-06 14-59-51.png
324	1844+10	438651.5588	3688423.8902	Reversible HOV	Both	3	24	12 inches wide	336	336_2016-02-06 15-00-19.png
325	1843+50	438591.0563	3688422.5417	Reversible HOV	Both	3	24	12 inches wide	337	337_2016-02-06 15-00-47.png
326	1842+82	438522.2586	3688425.9054	Reversible HOV	Both	3	24	12 inches wide	338	338_2016-02-06 15-01-21.png
327	1842+03	438443.1983	3688423.7004	Reversible HOV	Both	3	24	10 inches wide	339	339_2016-02-06 15-02-00.png
328	1841+01	438343.0812	3688406.7363	Reversible HOV	Both	3	24	11 inches wide	340	340_2016-02-06 15-02-49.png
329	1840+34	438277.5446	3688387.5144	Reversible HOV	Both	3	24	15 inches wide	341	341_2016-02-06 15-03-28.png
330	1839+79	438222.1187	3688382.4580	Reversible HOV	Both	3	24	10 inches wide	342	342_2016-02-06 15-03-59.png
331	1839+34	438177.2622	3688378.2873	Reversible HOV	Both	3	24	12 inches wide	343	343_2016-02-06 15-04-35.png
332	1839+02	438145.9287	3688375.3380	Reversible HOV	Both	3	24	12 inches wide	344	344_2016-02-06 15-05-03.png
333	1838+35	438078.7503	3688366.7406	Reversible HOV	Both	3	24	18 inches wide	345	345_2016-02-06 15-05-38.png
334	1837+64	438008.9196	3688352.7419	Reversible HOV	Both	3	24	16 inches wide	346	346_2016-02-06 15-06-12.png
335	1837+00	437946.8081	3688339.7684	Reversible HOV	Both	3	24	12 inches wide	347	347_2016-02-06 15-06-47.png
336	1836+36	437883.9090	3688325.0885	Reversible HOV	Both	3	24	13 inches wide	348	348_2016-02-06 15-07-22.png
337	1835+75	437824.3638	3688312.0751	Reversible HOV	Both	3	24	13 inches wide	349	349_2016-02-06 15-07-53.png
338	1835+51	437801.3434	3688305.5586	Reversible HOV	Both	3	24	9 inches wide	350	350_2016-02-06 15-08-24.png
339	1835+14	--	--	Reversible HOV	Both	3	24	6 inches wide	No GPS Location	No Photograph
340	1834+86	437742.9358	3688274.0025	Reversible HOV	Both	1	24	0.5 inch wide	351	351_2016-02-06 15-12-58.png



395 Express Lanes
Detailed Joint Condition Assessment Forms

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
341	1834+58	437715.9175	3688267.2617	Reversible HOV	Both	3	24	10 inches wide	352	352_2016-02-06 15-13-22.png
342	1834+42	437701.5280	3688259.2740	Reversible HOV	Both	3	24	10 inches wide	353	353_2016-02-06 15-13-41.png
343	1834+25	437684.7231	3688254.9522	Reversible HOV	Both	3	24	10 inches wide	354	354_2016-02-06 15-13-59.png
344	1834+10	437667.0373	3688261.2437	Reversible HOV	Both	1	24	0.5 inch wide	355	355_2016-02-06 15-15-03.png
345	1832+92	437551.7511	3688229.1410	Reversible HOV	Both	3	24	10 inches wide	356	356_2016-02-06 15-35-39.png
346	1832+65	437535.5798	3688198.3588	Reversible HOV	Both	3	24	14 inches wide	357	357_2016-02-06 15-36-04.png
347	1832+48	437519.1328	3688192.5993	Reversible HOV	Both	3	24	13 inches wide	358	358_2016-02-06 15-36-25.png
348	1832+31	437505.0879	3688182.3140	Reversible HOV	Both	3	24	11 inches wide	359	359_2016-02-06 15-36-49.png
349	1832+06	437478.5390	3688181.2952	Reversible HOV	Both	3	24	8 inches wide	360	360_2016-02-06 15-37-37.png
350	1831+99	437471.9475	3688179.3926	Reversible HOV	Both	3	24	20 inches wide	361	361_2016-02-06 15-37-57.png
351	1831+57	437432.4363	3688164.3478	Reversible HOV	Both	3	24	12 inches wide	362	362_2016-02-06 15-38-29.png
352	1831+16	437396.3806	3688145.2384	Reversible HOV	Both	3	24	12 inches wide	363	363_2016-02-06 15-38-54.png
353	1830+90	437372.5382	3688134.8194	Reversible HOV	Both	3	24	10 inches wide	364	364_2016-02-06 15-39-14.png
354	1830+74	437359.6372	3688124.7074	Reversible HOV	Both	3	24	12 inches wide	365	365_2016-02-06 15-39-33.png
355	1830+34	437325.4398	3688102.7997	Reversible HOV	Both	3	24	14 inches wide	366	366_2016-02-06 15-39-58.png
356	1829+58	437255.7261	3688071.9916	Reversible HOV	Both	3	24	10 inches wide	367	367_2016-02-06 15-40-28.png
357	1829+13	437216.1302	3688051.5048	Reversible HOV	Both	3	24	11 inches wide	368	368_2016-02-06 15-40-54.png
358	1828+97	437203.2260	3688041.2019	Reversible HOV	Both	3	24	10 inches wide	369	369_2016-02-06 15-41-15.png
359	1828+59	437169.3703	3688022.9172	Reversible HOV	Both	3	24	10 inches wide	370	370_2016-02-06 15-41-45.png
360	1828+06	437115.6153	3688011.8917	Reversible HOV	Both	4	24	24 feet wide	371	

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
361	1827+19	437041.0724	3687967.6200	Reversible HOV	Both	3	24	12 inches wide	373	373_2016-02-06 15-44-42.png
362	1826+59	436986.7506	3687942.0147	Reversible HOV	Both	3	24	9 inches wide	374	374_2016-02-06 15-45-11.png
363	1826+00	436933.4659	3687915.8200	Reversible HOV	Both	3	24	9 inches wide	375	375_2016-02-06 15-45-40.png
364	1825+02	436846.5179	3687871.5283	Reversible HOV	Both	4	24	11 feet wide	376	
365	1823+67	436726.0185	3687810.1878	Reversible HOV	Both	3	24	33 inches wide	378	378_2016-02-06 15-47-54.png
366	1822+88	436655.1816	3687774.5256	Reversible HOV	Both	3	24	10 inches wide	379	379_2016-02-06 15-48-28.png
367	1822+49	436621.0462	3687756.6264	Reversible HOV	Both	3	24	10 inches wide	380	380_2016-02-06 15-48-54.png
368	1822+27	436598.0516	3687751.8278	Reversible HOV	Both	3	24	12 inches wide	381	
369	1821+90	436572.3723	3687721.1921	Reversible HOV	Both	3	24	12 inches wide	730	730_2016-02-13 12-10-18.png
370	1821+20	436509.9741	3687689.9818	Reversible HOV	Both	3	24	12 inches wide	731	731_2016-02-13 12-10-59.png
371	1820+92	436485.3210	3687676.4231	Reversible HOV	Both	3	24	11 inches wide	732	732_2016-02-13 12-11-26.png
372	1820+67	436463.2655	3687664.7343	Reversible HOV	Both	3	24	12 inches wide	733	733_2016-02-13 12-11-52.png
373	1819+74	436381.3704	3687621.3170	Reversible HOV	West	3	12	13 inches wide	734	734_2016-02-13 12-12-27.png
374	1819+14	436327.4147	3687594.8450	Reversible HOV	Both	3	24	12 inches wide	735	735_2016-02-13 12-13-04.png
375	1818+90	436305.7435	3687583.4363	Reversible HOV	Both	3	24	12 inches wide	736	736_2016-02-13 12-13-28.png
376	1818+56	436276.0024	3687566.8056	Reversible HOV	Both	3	24	12 inches wide	737	737_2016-02-13 12-13-51.png
377	1817+94	436222.0019	3687537.4693	Reversible HOV	Both	3	24	30 inches wide	738	738_2016-02-13 12-14-18.png
378	1817+33	436167.2629	3687509.5768	Reversible HOV	Both	3	24	10 inches wide	739	739_2016-02-13 12-14-46.png
379	1816+81	436121.4288	3687485.5563	Reversible HOV	Both	3	24	12 inches wide	740	740_2016-02-13 12-15-13.png
380	1816+12	436060.0876	3687455.0923	Reversible HOV	Both	3	24	12 inches wide	741	741_2016-02-13 12-15-42.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
381	1815+53	436006.8740	3687427.4622	Reversible HOV	Both	3	24	10 inches wide	742	742_2016-02-13 12-16-12.png
382	1814+93	435953.9459	3687399.8276	Reversible HOV	Both	3	24	10 inches wide	743	743_2016-02-13 12-16-41.png
383	1814+35	435902.5434	3687372.4554	Reversible HOV	Both	3	24	12 inches wide	744	744_2016-02-13 12-17-09.png
384	1813+75	435849.6046	3687344.1522	Reversible HOV	Both	3	24	11 inches wide	745	745_2016-02-13 12-17-41.png
385	1813+04	435786.7993	3687311.3229	Reversible HOV	Both	3	24	9 inches wide	746	746_2016-02-13 12-18-12.png
386	1812+55	435744.5811	3687287.4366	Reversible HOV	Both	3	24	9 inches wide	747	747_2016-02-13 12-18-39.png
387	1811+93	435689.4611	3687259.5489	Reversible HOV	Both	3	24	12 inches wide	748	748_2016-02-13 12-19-09.png
388	1811+34	435636.2547	3687232.3953	Reversible HOV	Both	3	24	10 inches wide	749	749_2016-02-13 12-19-36.png
389	1810+73	435583.3985	3687203.3264	Reversible HOV	Both	3	24	8 inches wide	750	750_2016-02-13 12-20-06.png
390	1810+13	435529.4151	3687175.1341	Reversible HOV	Both	3	24	10 inches wide	751	751_2016-02-13 12-20-35.png
391	1809+51	435475.0419	3687146.3748	Reversible HOV	Both	3	24	11 inches wide	752	752_2016-02-13 12-21-04.png
392	1809+09	435440.0676	3687123.5216	Reversible HOV	East	3	12	10 inches wide	753	753_2016-02-13 12-21-31.png
393	1808+91	435423.2050	3687115.5707	Reversible HOV	Both	3	24	10 inches wide	754	754_2016-02-13 12-21-53.png
394	1808+37	435375.4670	3687091.4829	Reversible HOV	East	3	12	11 inches wide	755	755_2016-02-13 12-22-19.png
395	1807+75	435320.6956	3687061.5835	Reversible HOV	Both	3	24	11 inches wide	756	756_2016-02-13 12-22-47.png
396	1807+10	435263.0760	3687032.0148	Reversible HOV	East	3	12	10 inches wide	757	757_2016-02-13 12-23-15.png
397	1806+52	435198.1786	3687029.8713	Reversible HOV	Both	3	24	11 inches wide	758	758_2016-02-13 12-23-48.png
398	1805+89	435159.7554	3686968.6808	Reversible HOV	Both	3	24	12 inches wide	759	759_2016-02-13 12-24-22.png
399	1805+29	435106.7128	3686939.9002	Reversible HOV	Both	3	24	10 inches wide	760	760_2016-02-13 12-25-12.png
400	1804+69	435053.8829	3686912.5483	Reversible HOV	Both	3	24	11 inches wide	761	761_2016-02-13 12-25-42.png



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Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
401	1804+08	435000.5314	3686882.2442	Reversible HOV	Both	3	24	12 inches wide	762	762_2016-02-13 12-26-09.png
402	1803+47	434946.5425	3686853.7645	Reversible HOV	Both	3	24	12 inches wide	763	763_2016-02-13 12-26-37.png
403	1802+87	434894.7227	3686824.1048	Reversible HOV	Both	3	24	10 inches wide	764	764_2016-02-13 12-27-06.png
404	1802+30	434845.4703	3686794.4048	Reversible HOV	Both	3	24	14 inches wide	765	765_2016-02-13 12-27-32.png
405	1801+70	434793.2789	3686765.3238	Reversible HOV	Both	3	24	11 inches wide	766	766_2016-02-13 12-28-00.png
406	1801+12	434742.2507	3686737.6570	Reversible HOV	Both	3	24	24 inches wide	767	767_2016-02-13 12-28-27.png
407	1800+50	434687.8484	3686707.0819	Reversible HOV	Both	3	24	9 inches wide	768	768_2016-02-13 12-28-57.png
408	1799+83	434630.1582	3686673.0242	Reversible HOV	Both	3	24	10 inches wide	769	769_2016-02-13 12-29-25.png
409	1798+98	434558.0521	3686629.3534	Reversible HOV	Both	3	24	12 inches wide	770	770_2016-02-13 12-30-11.png
410	1798+07	434478.6898	3686583.8850	Reversible HOV	Both	3	24	12 inches wide	771	771_2016-02-13 12-30-45.png
411	1797+47	434427.6122	3686553.0668	Reversible HOV	Both	3	24	10 inches wide	772	772_2016-02-13 12-41-01.png
412	1796+86	434373.2553	3686525.4508	Reversible HOV	Both	3	24	9 inches wide	773	773_2016-02-13 12-41-28.png
413	1796+28	434322.8702	3686496.3404	Reversible HOV	Both	3	24	12 inches wide	774	774_2016-02-13 12-41-54.png
414	1795+66	434268.8535	3686466.1402	Reversible HOV	Both	3	24	13 inches wide	775	775_2016-02-13 12-42-20.png
415	1795+05	434215.6096	3686436.6922	Reversible HOV	Both	3	24	19 inches wide	776	776_2016-02-13 12-42-48.png
416	1794+43	434162.2318	3686404.7629	Reversible HOV	Both	3	24	13 inches wide	777	777_2016-02-13 12-43-14.png
417	1793+84	434110.4155	3686375.3879	Reversible HOV	West	3	12	11 inches wide	778	778_2016-02-13 12-43-40.png
418	1793+17	434054.1181	3686339.2061	Reversible HOV	East	3	12	8 inches wide	779	779_2016-02-13 12-44-07.png
419	1792+66	434010.4289	3686312.5698	Reversible HOV	Both	3	24	10 inches wide	780	780_2016-02-13 12-44-31.png
420	1792+07	433959.0014	3686283.7613	Reversible HOV	West	3	12	10 inches wide	781	781_2016-02-13 12-44-58.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
421	1791+45	433906.3886	3686252.1060	Reversible HOV	Both	3	24	12 inches wide	782	782_2016-02-13 12-45-24.png
422	1790+84	433853.7843	3686221.0235	Reversible HOV	West	3	12	12 inches wide	783	783_2016-02-13 12-45-55.png
423	1790+61	433827.8666	3686217.9871	Reversible HOV	East	3	12	9 inches wide	784	784_2016-02-13 12-46-16.png
424	1790+26	433804.5087	3686189.8894	Reversible HOV	Both	3	24	13 inches wide	785	785_2016-02-13 12-46-41.png
425	1789+67	433754.4764	3686159.0531	Reversible HOV	Both	3	24	13 inches wide	786	786_2016-02-13 12-47-10.png
426	1788+91	433690.1287	3686118.9841	Reversible HOV	Both	3	24	10 inches wide	787	787_2016-02-13 12-47-40.png
427	1788+49	433653.7281	3686096.2452	Reversible HOV	Both	3	24	11 inches wide	788	788_2016-02-13 12-48-03.png
428	1787+89	433603.3065	3686064.8417	Reversible HOV	Both	3	24	13 inches wide	789	789_2016-02-13 12-48-29.png
429	1787+28	433551.4319	3686031.7416	Reversible HOV	Both	3	24	11 inches wide	790	790_2016-02-13 12-48-55.png
430	1786+69	433501.1361	3686002.3416	Reversible HOV	Both	3	24	12 inches wide	791	791_2016-02-13 12-49-21.png
431	1786+47	433482.6833	3685990.0211	Reversible HOV	Both	3	24	11 inches wide	792	792_2016-02-13 12-49-40.png
432	1786+10	433450.3425	3685971.5167	Reversible HOV	Both	3	24	12 inches wide	793	793_2016-02-13 12-50-04.png
433	1785+75	433420.9532	3685953.1574	Reversible HOV	Both	3	24	12 inches wide	794	794_2016-02-13 12-50-29.png
434	1785+49	433399.2284	3685938.4044	Reversible HOV	Both	3	24	10 inches wide	795	795_2016-02-13 12-50-50.png
435	1785+25	433378.5928	3685926.4038	Reversible HOV	Both	3	24	10 inches wide	796	796_2016-02-13 12-51-09.png
436	1784+93	433351.0500	3685910.5946	Reversible HOV	Both	3	24	10 inches wide	797	797_2016-02-13 12-51-33.png
437	1784+73	433332.3576	3685901.2381	Reversible HOV	Both	3	24	10 inches wide	798	798_2016-02-13 12-51-54.png
438	1784+52	433313.5727	3685892.0742	Reversible HOV	Both	3	24	10 inches wide	799	799_2016-02-13 12-52-15.png
439	1784+33	--	--	Reversible HOV	Both	3	24	11 inches wide	No GPS Location	No Photograph
440	1783+48	433227.0724	3685834.2008	Reversible HOV	Both	3	24	11 inches wide	950	950_2016-02-13 15-29-01.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
441	1782+91	433178.2026	3685804.7777	Reversible HOV	Both	3	24	10 inches wide	949	949_2016-02-13 15-28-37.png
442	1782+69	433158.3692	3685795.4387	Reversible HOV	Both	3	24	11 inches wide	948	948_2016-02-13 15-28-19.png
443	1781+77	--	--	Reversible HOV	West	3	12	8 inches wide	No GPS Location	No Photograph
444	1781+65	433071.1284	3685738.9132	Reversible HOV	Both	3	24	10 inches wide	947	
445	1780+99	433013.8283	3685705.6091	Reversible HOV	Both	3	24	9 inches wide	946	
446	1778+58	--	--	Reversible HOV	Both	3	24	5 inches wide	No GPS Location	No Photograph
447	1777+63	432732.3931	3685522.2950	Reversible HOV	Both	3	24	8 inches wide	945	945_2016-02-13 15-24-35.png
448	1777+49	432721.0255	3685513.0156	Reversible HOV	Both	3	24	9 inches wide	944	944_2016-02-13 15-24-17.png
449	1776+74	432658.1046	3685473.0167	Reversible HOV	Both	3	24	8 inches wide	943	943_2016-02-13 15-23-48.png
450	1775+93	432589.3326	3685429.8607	Reversible HOV	Both	3	24	10 inches wide	942	942_2016-02-13 15-23-19.png
451	1775+19	432529.6003	3685386.9467	Reversible HOV	Both	3	24	12 inches wide	941	941_2016-02-13 15-22-48.png
452	1774+15	432439.1959	3685335.0517	Reversible HOV	Both	3	24	7 inches wide	940	940_2016-02-13 15-22-13.png
453	1773+55	432389.4848	3685300.4825	Reversible HOV	Both	3	24	7 inches wide	939	939_2016-02-13 15-21-48.png
454	1772+82	432328.1027	3685261.6049	Reversible HOV	Both	3	24	7 inches wide	938	938_2016-02-13 15-21-20.png
455	1772+32	432285.7294	3685234.0849	Reversible HOV	Both	3	24	11 inches wide	937	937_2016-02-13 15-20-57.png
456	1771+27	432199.2127	3685175.2524	Reversible HOV	Both	3	24	10 inches wide	936	936_2016-02-13 15-20-21.png
457	1770+69	432151.7196	3685142.6538	Reversible HOV	East	3	12	8 inches wide	935	935_2016-02-13 15-19-55.png
458	1769+69	432068.9347	3685085.2910	Reversible HOV	Both	3	36	11 inches wide	934	934_2016-02-13 15-19-21.png
459	1768+58	431976.2154	3685025.2159	Reversible HOV	West	3	12	7 inches wide	933	933_2016-02-13 15-18-43.png
460	1767+71	431904.3851	3684975.0370	Reversible HOV	Both	3	38	11 inches wide	932	932_2016-02-13 15-18-08.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
461	1767+02	431848.7839	3684934.8270	Reversible HOV	Both	3	46	10 inches wide	931	931_2016-02-13 15-17-37.png
462	1766+43	431800.5167	3684901.3801	Reversible HOV	Both	3	24	9 inches wide	930	930_2016-02-13 15-17-07.png
463	1765+81	431745.7318	3684870.8989	Reversible HOV	Both	3	24	8 inches wide	929	929_2016-02-13 15-16-40.png
464	1765+69	--	--	Reversible HOV	West	3	12	10 inches wide	No GPS Location	No Photograph
465	1764+76	--	--	Reversible HOV	Both	3	24	10 inches wide	No GPS Location	No Photograph
466	1764+49	--	--	Reversible HOV	Both	3	24	9 inches wide	No GPS Location	No Photograph
467	1763+93	--	--	Reversible HOV	East	3	12	7 inches wide	No GPS Location	No Photograph
468	1763+49	--	--	Reversible HOV	Both	3	24	8 inches wide	No GPS Location	No Photograph
469	1761+78	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
470	1761+02	--	--	Reversible HOV	Both	3	24	8 inches wide	No GPS Location	No Photograph
471	1760+79	--	--	Reversible HOV	Both	3	24	12 inches wide DOUBLE JOINT	No GPS Location	No Photograph
472	1762+34	431457.8442	3684676.7779	Reversible HOV	Both	3	24	8 inches wide	928	928_2016-02-13 15-15-22.png
472-A	1762+12	431447.3997	3684653.3479	Reversible HOV	Both	1	24	Not Measured	963	
473	1761+80	431413.9777	3684644.9812	Reversible HOV	Both	3	24	8 inches wide	927	927_2016-02-13 15-14-53.png
474	1761+34	431377.8806	3684617.3627	Reversible HOV	Both	3	24	8 inches wide	926	926_2016-02-13 15-14-19.png
475	1761+05	--	--	Reversible HOV	Both	3	24	6 inches wide	No GPS Location	No Photograph
476	1760+92	431340.0855	3684596.8380	Reversible HOV	Both	3	24	10 inches wide	925	925_2016-02-13 15-10-59.png
477	1760+51	431308.3847	3684570.5842	Reversible HOV	Both	3	24	8 inches wide	924	924_2016-02-13 15-10-23.png
478	1759+97	431263.8875	3684541.0890	Reversible HOV	Both	3	24	14 inches wide	923	923_2016-02-13 15-09-58.png
479	1759+34	431215.5093	3684500.4791	Reversible HOV	Both	3	24	11 inches wide	922	922_2016-02-13 15-09-31.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
480	1759+03	--	--	Reversible HOV	Both	1	24	0.75 inch wide	No GPS Location	No Photograph
481	1758+86	431177.8591	3684470.8783	Reversible HOV	Both	3	24	8 inches wide	921	921_2016-02-13 15-09-08.png
481-A	1758+60	431153.7008	3684458.7387	Reversible HOV	Both	1	24	Not Measured	964	
482	1758+33	431131.5949	3684443.9890	Reversible HOV	Both	3	24	6 inches wide	965	
483	1757+80	431088.8781	3684412.7467	Reversible HOV	Both	3	24	9 inches wide	966	
484	1756+87	431015.7862	3684354.8477	Reversible HOV	Both	3	24	9 inches wide	920	920_2016-02-13 15-08-14.png
485	1756+40	430978.2401	3684325.8178	Reversible HOV	Both	3	24	10 inches wide	919	919_2016-02-13 15-07-52.png
486	1756+17	--	--	Reversible HOV	Both	3	24	8 inches wide	No GPS Location	No Photograph
487	1756+07	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
488	1755+77	430929.2105	3684286.1720	Reversible HOV	West	3	12	8 inches wide	918	918_2016-02-13 15-07-27.png
489	1755+53	--	--	Reversible HOV	Both	3	24	8 inches wide	No GPS Location	No Photograph
490	1754+97	430865.0221	3684238.1638	Reversible HOV	Both	3	24	10 inches wide	917	917_2016-02-13 15-06-58.png
491	1754+72	430846.2357	3684222.7891	Reversible HOV	East	3	12	7 inches wide	916	916_2016-02-13 15-06-40.png
492	1753+81	430772.9199	3684168.9039	Reversible HOV	Both	3	24	10 inches wide	915	915_2016-02-13 15-06-10.png
493	1753+14	430719.4847	3684127.3198	Reversible HOV	Both	3	24	10 inches wide	914	914_2016-02-13 15-05-43.png
494	1752+74	430688.4655	3684102.1049	Reversible HOV	Both	3	24	9 inches wide	913	913_2016-02-13 15-05-22.png
495	1752+36	430659.3768	3684078.6748	Reversible HOV	East	3	12	7 inches wide	912	912_2016-02-13 15-05-01.png
496	1751+72	430608.4344	3684038.3889	Reversible HOV	Both	3	24	8 inches wide	911	911_2016-02-13 15-04-37.png
497	1751+53	430593.6998	3684026.6766	Reversible HOV	Both	3	24	8 inches wide	910	910_2016-02-13 15-04-18.png
498	1750+87	430542.0742	3683985.2549	Reversible HOV	Both	3	24	10 inches wide	909	909_2016-02-13 15-03-51.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
499	1750+12	430483.8173	3683939.4461	Reversible HOV	Both	3	24	10 inches wide	908	908_2016-02-13 15-03-24.png
500	1749+96	--	--	Reversible HOV	East	1	12	0.5 inch wide	No GPS Location	No Photograph
501	1749+53	430438.0388	3683900.8951	Reversible HOV	Both	3	24	10 inches wide	907	907_2016-02-13 15-02-59.png
502	1749+19	--	--	Reversible HOV	Both	3	24	10 inches wide	No GPS Location	No Photograph
503	1749+01	--	--	Reversible HOV	Both	3	24	8 inches wide	No GPS Location	No Photograph
504	1749+19	430410.0561	3683881.3635	Reversible HOV	Both	3	24	8 inches wide	906	906_2016-02-13 15-02-37.png
505	1749+01	430397.4955	3683868.7581	Reversible HOV	East	3	12	6 inches wide	905	905_2016-02-13 15-02-20.png
506	1748+84	430384.1948	3683857.5012	Reversible HOV	Both	3	24	8 inches wide	904	904_2016-02-13 15-02-03.png
507	1748+01	430320.6842	3683804.1316	Reversible HOV	Both	3	24	12 inches wide	903	903_2016-02-13 15-01-35.png
508	1747+61	--	--	Reversible HOV	Both	3	24	12 inches wide	No GPS Location	No Photograph
509	1747+23	430259.8110	3683755.2103	Reversible HOV	Both	3	24	10 inches wide	902	902_2016-02-13 15-01-07.png
510	1746+82	430229.5084	3683727.1177	Reversible HOV	Both	3	24	11 inches wide	901	901_2016-02-13 15-00-44.png
511	1746+49	--	--	Reversible HOV	Both	3	24	10 inches wide	No GPS Location	No Photograph
512	1746+28	430202.2128	3683678.0610	Reversible HOV	Both	3	24	10 inches wide	900	900_2016-02-13 15-00-20.png
513	1745+94	430178.1496	3683653.5974	Reversible HOV	Both	3	24	12 inches wide	899	899_2016-02-13 14-40-20.png
514	1745+42	430139.7494	3683618.5613	Reversible HOV	Both	3	24	8 inches wide	898	898_2016-02-13 14-39-54.png
515	1745+21	430126.7511	3683602.2371	Reversible HOV	Both	3	24	10 inches wide	897	897_2016-02-13 14-39-31.png
515-A	1744+79	430095.6718	3683573.1059	Reversible HOV	Both	1	24	Not Measured	896	
515-B	1744+46	430074.9122	3683546.9674	Reversible HOV	Both	1	24	Not Measured	895	
516	1744+21	430059.3153	3683528.6775	Reversible HOV	Both	3	24	10 inches wide	894	894_2016-02-13 14-38-30.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
517	1743+39	430004.8114	3683467.1444	Reversible HOV	Both	3	24	11 inches wide	893	893_2016-02-13 14-37-59.png
518	1742+63	429955.1142	3683408.8800	Reversible HOV	Both	3	24	10 inches wide	892	892_2016-02-13 14-37-28.png
519	1742+19	--	--	Reversible HOV	Both	3	24	11 inches wide	No GPS Location	No Photograph
520	1741+88	429905.0824	3683353.5817	Reversible HOV	Both	3	24	20 inches wide	891	891_2016-02-13 14-37-00.png
521	1741+46	429881.2293	3683318.0344	Reversible HOV	Both	3	24	8 inches wide	890	890_2016-02-13 14-36-39.png
522	1741+09	429860.0321	3683288.1772	Reversible HOV	Both	3	24	9 inches wide	889	889_2016-02-13 14-36-16.png
523	1740+76	429841.7218	3683260.4725	Reversible HOV	Both	3	24	10 inches wide	888	888_2016-02-13 14-35-57.png
524	1740+51	429820.7524	3683245.4167	Reversible HOV	Both	1	24	0.75 inch wide	967	
525	1740+44	--	--	Reversible HOV	Both	1	24	0.75 inch wide	No GPS Location	No Photograph
526	1740+33	429816.7333	3683225.3245	Reversible HOV	Both	3	24	6 inches wide	887	887_2016-02-13 14-35-33.png
527	1740+10	429795.7973	3683212.4652	Reversible HOV	East	3	12	6 inches wide	968	
528	1739+93	--	--	Reversible HOV	West	1	12	0.5 inch wide	No GPS Location	No Photograph
529	1739+73	429781.7492	3683177.3400	Reversible HOV	East	3	12	6 inches wide	886	886_2016-02-13 14-35-05.png
530	1739+53	--	--	Reversible HOV	Both	3	24	8 inches wide	No GPS Location	No Photograph
531	1738+92	429735.2604	3683111.1930	Reversible HOV	East	3	12	8 inches wide	885	885_2016-02-13 14-34-34.png
532	1738+80	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
533	1738+55	429714.3339	3683080.3758	Reversible HOV	Both	1	24	0.5 inch wide	969	
534	1738+29	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
535	1738+08	429685.6920	3683042.7048	Reversible HOV	Both	1	24	0.5 inch wide	970	
535-A	1737+92	429676.8318	3683029.4688	Reversible HOV	Both	1	24	Not Measured	971	

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
536	1737+68	429663.0198	3683009.7179	Reversible HOV	Both	1	24	0.5 inch wide	972	
537	1737+46	429651.0458	3682991.9446	Reversible HOV	Both	1	24	0.5 inch wide	975	
537-A	1737+33	429645.0478	3682979.2375	Reversible HOV	Both	1	24	Not Measured	974	
538	1737+18	429636.4977	3682967.6202	Reversible HOV	Both	1	24	0.5 inch wide	973	
539	1736+71	429611.4388	3682927.8880	Reversible HOV	Both	1	24	0.5 inch wide	976	
540	1736+51	429597.8016	3682913.2923	Reversible HOV	Both	1	24	0.5 inch wide	977	
541	1736+28	429585.7836	3682892.6542	Reversible HOV	Both	1	24	0.5 inch wide	978	
542	1736+06	429561.6550	3682882.5182	Reversible HOV	Both	1	24	0.5 inch wide	979	
543	1735+87	429552.8757	3682865.8646	Reversible HOV	Both	1	24	0.5 inch wide	980	
544	1735+68	429542.5021	3682849.4766	Reversible HOV	Both	1	24	0.5 inch wide	981	
545	1735+29	429521.6505	3682817.3208	Reversible HOV	Both	3	24	8 inches wide	982	
546	1735+03	--	--	Reversible HOV	Both	3	24	11 inches wide	No GPS Location	No Photograph
547	1734+53	429483.0503	3682750.6693	Reversible HOV	Both	3	24	13 inches wide	884	
548	1734+24	--	--	Reversible HOV	Both	3	24	10 inches wide	884	884_2016-02-13 14-33-04.png
549	1733+96	429451.4187	3682704.1603	Reversible HOV	Both	3	24	12 inches wide	883	883_2016-02-13 14-32-39.png
550	1733+73	429442.7034	3682681.7519	Reversible HOV	Both	3	24	14 inches wide	882	882_2016-02-13 14-32-22.png
551	1733+25	429413.6752	3682643.7039	Reversible HOV	Both	3	24	14 inches wide	881	881_2016-02-13 14-31-58.png
552	1732+83	--	--	Reversible HOV	Both	3	24	12 inches wide	No GPS Location	No Photograph
553	1732+76	429385.3653	3682602.8746	Reversible HOV	Both	4	7	10 feet wide	880	880_2016-02-13 14-31-34.png
554	1732+07	429350.2134	3682543.9063	Reversible HOV	Both	1	24	0.5 inch wide	879	879_2016-02-13 14-31-07.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
555	1731+67	429334.0292	3682505.9475	Reversible HOV	Both	3	24	16 inches wide	878	878_2016-02-13 14-30-45.png
556	1731+43	429327.4925	3682482.9323	Reversible HOV	Both	3	24	13 inches wide	877	877_2016-02-13 14-30-27.png
557	1731+09	--	--	Reversible HOV	Both	3	24	12 inches wide	No GPS Location	No Photograph
558	1730+96	--	--	Reversible HOV	Both	3	24	13 inches wide	No GPS Location	No Photograph
559	1730+83	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
560	1730+63	429283.8346	3682415.2110	Reversible HOV	Both	3	24	9 inches wide	876	876_2016-02-13 14-29-58.png
561	1730+51	429279.5748	3682404.1962	Reversible HOV	Both	3	24	6 inches wide	875	875_2016-02-13 14-29-40.png
562	1730+39	--	--	Reversible HOV	Both	3	24	6 inches wide	No GPS Location	No Photograph
563	1730+24	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
564	1730+03	429259.3101	3682360.6643	Reversible HOV	Both	3	24	8 inches wide	874	874_2016-02-13 14-29-17.png
564-A	1729+81	429244.3878	3682342.9358	Reversible HOV	Both	1	24	Not Measured	983	
564-B	1729+69	429239.5622	3682332.2162	Reversible HOV	Both	1	24	Not Measured	984	
565	1729+62	429234.3426	3682326.8517	Reversible HOV	Both	3	24	9 inches wide	985	
565-A	1729+50	429228.0025	3682316.6329	Reversible HOV	Both	1	24	Not Measured	986	
566	1729+39	429222.0616	3682307.6498	Reversible HOV	Both	3	24	8 inches wide	987	
567	1729+26	429215.9772	3682295.5166	Reversible HOV	Both	1	24	0.5 inch wide	988	
567-A	1729+06	429205.5428	3682278.8655	Reversible HOV	Both	1	24	Not Measured	989	
568	1728+81	429192.8508	3682257.6639	Reversible HOV	Both	3	24	8 inches wide	990	
569	1728+61	429182.4076	3682240.4397	Reversible HOV	Both	3	24	8 inches wide	991	
570	1728+40	429170.4337	3682222.6658	Reversible HOV	Both	1	24	0.25 inch wide	992	

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
571	1728+30	429165.9240	3682213.9471	Reversible HOV	Both	1	24	0.25 inch wide	993	
572	1728+12	--	--	Reversible HOV	Both	1	24	0.25 inch wide	No GPS Location	No Photograph
573	1728+05	429157.5670	3682190.1000	Reversible HOV	Both	1	24	0.25 inch wide	994	
574	1727+85	429147.1194	3682172.5893	Reversible HOV	Both	1	24	0.5 inch wide	995	
575	1727+58	429136.5679	3682148.2981	Reversible HOV	Both	1	24	0.5 inch wide	996	
576	1727+43	429129.0396	3682135.0411	Reversible HOV	Both	1	24	0.5 inch wide	997	
577	1727+24	429116.0550	3682119.5749	Reversible HOV	Both	3	24	11 inches wide	998	
578	1727+12	429113.3110	3682108.1547	Reversible HOV	Both	3	24	10 inches wide	999	
579	1727+04	429110.3317	3682099.9859	Reversible HOV	Both	3	24	10 inches wide	1000	
580	1726+89	429103.5730	3682087.2900	Reversible HOV	Both	3	24	10 inches wide	1001	
580-A	1726+76	429096.0740	3682075.9424	Reversible HOV	Both	1	24	Not Measured	1002	
581	1726+52	429086.6128	3682054.5002	Reversible HOV	Both	3	24	8 inches wide	1003	
582	1726+37	429079.8277	3682040.0853	Reversible HOV	Both	3	24	12 inches wide	1004	
583	1726+22	--	--	Reversible HOV	Both	3	24	10 inches wide	No GPS Location	No Photograph
584	1726+19	429073.3994	3682024.1367	Reversible HOV	Both	3	24	14 inches wide	1005	
584-A	1725+94	429061.0717	3682001.8786	Reversible HOV	Both	1	24	Not Measured	1006	
585	1725+72	429046.2450	3681984.1483	Reversible HOV	Both	3	24	13 inches wide	1007	
586	1725+49	429041.8960	3681961.0991	Reversible HOV	Both	3	24	13 inches wide	1008	
587	1725+30	429032.5168	3681945.0046	Reversible HOV	Both	3	24	13 inches wide	873	873_2016-02-13 14-27-34.png
588	1725+16	429034.4420	3681927.8772	Reversible HOV	Both	3	24	15 inches wide	872	872_2016-02-13 14-27-13.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
589	1724+83	429021.2262	3681897.3224	Reversible HOV	Both	3	24	14 inches wide	871	871_2016-02-13 14-26-56.png
589-A	1724+65	429014.0343	3681881.1943	Reversible HOV	Both	3	24	Not Measured	871	
590	1724+45	429006.7985	3681862.2013	Reversible HOV	Both	3	24	14 inches wide	870	870_2016-02-13 14-26-39.png
591	1724+19	428995.5947	3681838.7794	Reversible HOV	Both	4	24	15 feet wide	869	869_2016-02-13 14-26-21.png
592	1723+95	428986.1366	3681817.5282	Reversible HOV	East	3	12	10 inches wide	868	868_2016-02-13 14-26-04.png
593	1723+63	428972.5532	3681787.8385	Reversible HOV	Both	3	24	40 inches wide, Large Area	867	867_2016-02-13 14-25-43.png
594	1723+06	428956.3889	3681732.4935	Reversible HOV	Both	3	24	17 inches wide	866	866_2016-02-13 14-25-16.png
595	1722+51	428929.1249	3681685.3425	Reversible HOV	Both	3	24	16 inches wide	865	865_2016-02-13 14-24-52.png
596	1721+89	428903.4295	3681628.8061	Reversible HOV	Both	3	24	18 inches wide	864	864_2016-02-13 14-24-25.png
597	1721+03	428871.2890	3681548.9660	Reversible HOV	Both	3	24	13 inches wide	863	863_2016-02-13 14-23-56.png
598	1720+60	428857.1458	3681507.5359	Reversible HOV	Both	3	24	28 inches wide	862	862_2016-02-13 14-23-35.png
599	1719+73	428824.9966	3681427.1225	Reversible HOV	Both	3	24	14 inches wide	861	861_2016-02-13 14-23-08.png
600	1719+47	428818.4269	3681401.9102	Reversible HOV	Both	4	24	19 feet wide	860	860_2016-02-13 14-22-47.png
601	1718+45	428775.0483	3681308.7730	Reversible HOV	Both	3	24	18 inches wide	859	859_2016-02-13 14-22-09.png
602	1718+15	428770.9675	3681278.3644	Reversible HOV	Both	3	24	22 inches wide	858	858_2016-02-13 14-21-44.png
603	1717+64	428750.1804	3681231.6867	Reversible HOV	Both	3	24	20 inches wide	857	857_2016-02-13 14-21-20.png
604	1716+83	428719.9268	3681156.9747	Reversible HOV	Both	3	24	48 inches wide	856	856_2016-02-13 14-20-51.png
605	1716+22	--	--	Reversible HOV	Both	3	24	14 inches wide	No GPS Location	No Photograph
606	1715+46	428682.6014	3681024.1988	Reversible HOV	Both	4	24	19 feet wide	855	855_2016-02-13 14-20-04.png
607	1714+86	428661.2896	3680968.0720	Reversible HOV	Both	3	24	13 inches wide	854	854_2016-02-13 14-19-39.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
607-A	1714+78	428651.4202	3680963.4468	Reversible HOV	Both	3	24	Not Measured	1010	
607-B	1714+74	428650.5937	3680959.1609	Reversible HOV	Both	3	24	Not Measured	1011	
607-C	1714+53	428641.5472	3680939.9085	Reversible HOV	Both	3	24	Not Measured	1012	
608	1714+25	428636.4604	3680912.0943	Reversible HOV	Both	3	24	12 inches wide	853	853_2016-02-13 14-19-14.png
609	1713+62	428615.4852	3680853.0963	Reversible HOV	Both	3	24	12 inches wide	852	852_2016-02-13 14-18-48.png
610	1713+02	--	--	Reversible HOV	Both	3	24	10 inches wide	No GPS Location	No Photograph
611	1713+01	428593.1159	3680796.2213	Reversible HOV	Both	3	24	20 inches wide	851	851_2016-02-13 14-18-22.png
612	1712+82	428588.4574	3680777.7613	Reversible HOV	East	3	12	14 inches wide	850	850_2016-02-13 14-18-06.png
613	1712+57	428565.9187	3680759.5749	Reversible HOV	Both	3	24	19 inches wide	1013	
614	1712+40	428574.0610	3680738.3402	Reversible HOV	West	3	12	12 inches wide	849	849_2016-02-13 14-17-43.png
615	1712+20	428555.1973	3680724.1093	Reversible HOV	West	3	12	13 inches wide	1015	
615-A	1712+12	428552.8841	3680715.9297	Reversible HOV	Both	3	24	Not Measured	1014	
616	1711+82	428551.7396	3680684.6161	Reversible HOV	Both	3	24	24 inches wide	848	848_2016-02-13 14-17-18.png
617	1711+53	428540.7724	3680657.9424	Reversible HOV	Both	3	24	12 inches wide	847	847_2016-02-13 14-16-59.png
618	1711+27	428529.8461	3680633.9425	Reversible HOV	Both	3	24	16 inches wide	846	846_2016-02-13 14-16-37.png
619	1710+97	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
620	1710+72	428509.7549	3680582.9545	Reversible HOV	Both	3	24	13 inches wide	845	845_2016-02-13 14-16-13.png
621	1710+44	428500.5963	3680556.3483	Reversible HOV	Both	3	24	11 inches wide	844	844_2016-02-13 14-15-53.png
622	1710+18	428492.8889	3680531.3441	Reversible HOV	Both	3	24	14 inches wide	843	843_2016-02-13 14-15-33.png
623	1709+60	428472.0929	3680477.7875	Reversible HOV	Both	3	24	13 inches wide	842	842_2016-02-13 14-15-07.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
624	1709+39	428472.0356	3680455.3408	Reversible HOV	Both	3	24	10 inches wide	1016	
625	1709+31	428462.9168	3680450.0353	Reversible HOV	Both	3	24	12 inches wide	841	841_2016-02-13 14-14-30.png
626	1708+89	428436.1222	3680414.8150	Reversible HOV	Both	3	24	10 inches wide	1018	
627	1708+58	428437.4202	3680381.4582	Reversible HOV	Both	3	24	12 inches wide	840	840_2016-02-13 14-14-06.png
628	1708+28	428390.9529	3680366.2157	Reversible HOV	Both	1	24	0.25 inch wide	1019	
629	1707+99	428421.2385	3680324.7742	Reversible HOV	Both	1	24	0.5 inch wide	840	
630	1707+68	428393.9690	3680302.0746	Reversible HOV	Both	3	24	12 inches wide	839	839_2016-02-13 14-13-37.png
631	1707+08	428391.5641	3680238.0159	Reversible HOV	Both	1	24	0.5 inch wide	839	
632	1706+57	428373.7182	3680190.7186	Reversible HOV	Both	3	24	19 inches wide	838	838_2016-02-13 14-13-14.png
633	1706+33	428355.5416	3680171.6051	Reversible HOV	Both	3	24	7 inches wide	1021	
634	1705+88	428343.5631	3680128.5165	Reversible HOV	Both	3	24	16 inches wide	837	837_2016-02-13 14-12-46.png
635	1705+60	428331.5585	3680102.4311	Reversible HOV	Both	3	24	11 inches wide	836	836_2016-02-13 14-12-28.png
636	1705+02	428311.0503	3680048.9650	Reversible HOV	Both	3	24	17 inches wide	835	835_2016-02-13 14-12-06.png
637	1704+74	428300.8528	3680022.8520	Reversible HOV	Both	3	24	13 inches wide	834	834_2016-02-13 14-11-48.png
637-A	1704+41	428288.3003	3679991.9990	Reversible HOV	Both	1	24	Not Measured	1022	
638	1704+10	428279.4787	3679962.5216	Reversible HOV	Both	3	24	10 inches wide	833	833_2016-02-13 14-11-26.png
639	1703+79	428269.2264	3679932.7794	Reversible HOV	Both	3	24	16 inches wide	832	832_2016-02-13 14-11-08.png
640	1703+51	428255.3418	3679908.1556	Reversible HOV	Both	3	24	14 inches wide	1023	
641	1703+16	428249.7706	3679873.4704	Reversible HOV	Both	3	24	8 inches wide	831	831_2016-02-13 14-10-46.png
642	1702+91	428233.3765	3679852.7054	Reversible HOV	Both	3	24	12 inches wide	1024	

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
643	1702+54	428227.3812	3679815.1613	Reversible HOV	Both	3	24	12 inches wide	830	830_2016-02-13 14-10-22.png
644	1702+26	428216.0488	3679789.4475	Reversible HOV	Both	3	24	12 inches wide	829	829_2016-02-13 14-10-05.png
645	1702+02	428200.8078	3679769.4290	Reversible HOV	Both	3	24	12 inches wide	1025	
646	1701+69	428195.1636	3679736.1778	Reversible HOV	Both	3	24	8 inches wide	828	828_2016-02-13 14-09-41.png
647	1701+41	428183.8426	3679711.2279	Reversible HOV	Both	3	24	15 inches wide	1026	
648	1701+05	428176.4399	3679674.9467	Reversible HOV	Both	3	24	9 inches wide	827	827_2016-02-13 14-09-18.png
649	1700+80	--	--	Reversible HOV	Both	4	24	10 feet wide	No GPS Location	No Photograph
650	1700+45	428150.1203	3679620.9001	Reversible HOV	Both	3	24	16 inches wide	826	826_2016-02-13 14-08-49.png
651	1700+16	428143.4999	3679592.2487	Reversible HOV	Both	3	24	14 inches wide	825	825_2016-02-13 14-08-29.png
652	1699+75	428129.6926	3679553.9633	Reversible HOV	Both	3	24	9 inches wide	1027	
653	1699+56	428124.3781	3679536.0860	Reversible HOV	Both	3	24	18 inches wide	824	824_2016-02-13 14-08-06.png
654	1699+22	428114.0826	3679503.4788	Reversible HOV	Both	3	24	24 inches wide	823	823_2016-02-13 14-07-47.png
655	1699+86	--	--	Reversible HOV	Both	3	24	15 inches wide	No GPS Location	No Photograph
656	1699+56	--	--	Reversible HOV	Both	3	24	14 inches wide	No GPS Location	No Photograph
657	1699+25	--	--	Reversible HOV	Both	3	24	13 inches wide	No GPS Location	No Photograph
658	1698+95	--	--	Reversible HOV	Both	1	24	0.25 inch wide	No GPS Location	No Photograph
659	1698+65	--	--	Reversible HOV	Both	3	24	22 inches wide	No GPS Location	No Photograph
660	1698+95	428104.5619	3679478.0238	Reversible HOV	Both	1	24	0.5 inch wide	822	822_2016-02-13 14-07-28.png
661	1698+68	428095.7919	3679451.8886	Reversible HOV	Both	3	24	16 inches wide	821	821_2016-02-13 14-07-10.png
662	1698+54	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
663	1698+36	428085.5441	3679422.4325	Reversible HOV	Both	3	24	16 inches wide	820	820_2016-02-13 14-06-52.png
664	1697+94	428067.0811	3679384.5048	Reversible HOV	Both	3	24	10 inches wide	1028	
665	1697+78	428066.8178	3679367.2191	Reversible HOV	Both	3	24	15 inches wide	819	
666	1697+31	428049.0244	3679323.2630	Reversible HOV	Both	3	24	14 inches wide	819	819_2016-02-13 14-06-28.png
667	1697+13	428037.8521	3679308.0538	Reversible HOV	Both	1	24	0.75 inch wide	1029	
668	1697+01	428038.8029	3679295.5258	Reversible HOV	Both	3	24	15 inches wide	818	818_2016-02-13 14-06-07.png
669	1696+69	428029.8653	3679264.6169	Reversible HOV	Both	3	24	15 inches wide	817	817_2016-02-13 14-05-49.png
670	1696+50	428022.7483	3679247.0535	Reversible HOV	Both	3	24	10 inches wide	816	816_2016-02-13 14-05-30.png
671	1696+32	428006.4750	3679234.2149	Reversible HOV	Both	3	24	10 inches wide	815	815_2016-02-13 14-05-13.png
672	1696+14	428000.0237	3679216.6414	Reversible HOV	Both	3	24	12 inches wide	1031	
673	1696+02	428006.3655	3679202.0253	Reversible HOV	Both	3	24	14 inches wide	814	814_2016-02-13 14-04-52.png
674	1695+70	427992.4118	3679172.8164	Reversible HOV	Both	1	24	0.75 inch wide	813	813_2016-02-13 14-04-27.png
675	1695+27	427978.7618	3679132.3315	Reversible HOV	Both	3	24	16 inches wide	812	812_2016-02-13 14-04-03.png
676	1695+12	427975.5750	3679116.7143	Reversible HOV	Both	3	24	20 inches wide	811	811_2016-02-13 14-03-42.png
677	1694+83	427965.3712	3679090.1229	Reversible HOV	Both	3	24	9 inches wide	810	810_2016-02-13 14-03-23.png
678	1694+66	427947.3113	3679078.6484	Reversible HOV	Both	3	24	12 inches wide	1032	
679	1694+26	427946.6616	3679035.9595	Reversible HOV	Both	3	24	16 inches wide	809	809_2016-02-13 14-02-59.png
680	1693+97	427936.7390	3679009.0775	Reversible HOV	Both	3	24	16 inches wide	808	808_2016-02-13 14-02-38.png
681	1693+74	427916.8814	3678991.9942	Reversible HOV	Both	3	24	10 inches wide	1033	
682	1693+47	427900.4514	3678968.8412	Reversible HOV	Both	3	24	8 inches wide	1034	

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
683	1693+33	427917.6310	3678947.4691	Reversible HOV	Both	3	24	16 inches wide	807	807_2016-02-13 14-02-11.png
684	1693+04	427905.5337	3678921.4796	Reversible HOV	Both	3	24	11 inches wide	806	806_2016-02-13 14-01-48.png
685	1692+75	427898.2527	3678893.1245	Reversible HOV	Both	3	24	14 inches wide	805	805_2016-02-13 14-01-23.png
686	1692+28	427859.7205	3678857.3055	Reversible HOV	Both	1	24	0.75 inch wide	1035	
687	1691+99	427869.8760	3678822.5822	Reversible HOV	Both	3	24	17 inches wide	804	804_2016-02-13 14-00-57.png
688	1691+62	427851.1161	3678790.1029	Reversible HOV	Both	4	24	9 feet wide	803	803_2016-02-13 14-00-30.png
689	1691+27	427849.5149	3678753.6371	Reversible HOV	Both	3	24	8 inches wide	802	802_2016-02-13 13-59-05.png
689-A	1691+06	427820.8817	3678741.2724	Reversible HOV	Both	3	24	Not Measured	1036	
690	1690+67	427827.1581	3678697.3318	Reversible HOV	Both	3	24	17 inches wide	801	801_2016-02-13 13-58-37.png
691	1690+31	427814.2867	3678664.1895	Reversible HOV	Both	3	24	14 inches wide	800	800_2016-02-13 13-58-12.png
692	1689+99	427811.2074	3678630.6120	Reversible HOV	Both	3	24	12 inches wide	384	384_2016-02-07 08-31-11.png
693	1689+80	427800.0356	3678615.4027	Reversible HOV	Both	3	24	14 inches wide	385	385_2016-02-07 08-31-37.png
694	1689+59	427793.5455	3678595.2502	Reversible HOV	Both	3	24	14 inches wide	386	386_2016-02-07 08-32-01.png
695	1689+30	427777.8417	3678569.7931	Reversible HOV	Both	3	24	40 Double	387	387_2016-02-07 08-32-25.png
696	1689+01	427764.7032	3678544.1058	Reversible HOV	Both	3	24	10 inches wide	388	388_2016-02-07 08-32-46.png
697	1688+76	427749.8258	3678522.9345	Reversible HOV	Both	3	24	30 inches wide	389	389_2016-02-07 08-33-10.png
698	1688+47	427737.7162	3678496.0853	Reversible HOV	Both	3	24	36 inches wide	390	390_2016-02-07 08-33-34.png
699	1688+16	427723.1248	3678468.7006	Reversible HOV	Both	3	24	18 inches wide	391	391_2016-02-07 08-34-00.png
700	1687+99	427714.8971	3678453.1598	Reversible HOV	Both	3	24	12 inches wide	392	392_2016-02-07 08-34-19.png
701	1687+79	427709.8470	3678433.8451	Reversible HOV	Both	3	24	12 inches wide	393	393_2016-02-07 08-34-39.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
702	1687+56	427702.9461	3678411.6930	Reversible HOV	Both	3	24	24 inches wide	394	394_2016-02-07 08-35-01.png
703	1687+33	427694.9139	3678390.2264	Reversible HOV	East	3	12	14 inches wide	395	395_2016-02-07 08-35-24.png
704	1687+15	427689.2414	3678373.7868	Reversible HOV	Both	3	24	24 inches wide	396	396_2016-02-07 08-35-51.png
705	1686+84	427679.2742	3678343.9439	Reversible HOV	Both	3	24	18 inches wide	397	397_2016-02-07 08-36-14.png
706	1686+66	427665.2753	3678330.4965	Reversible HOV	Both	3	24	14 inches wide	398	398_2016-02-07 08-36-34.png
707	1686+47	427664.9677	3678310.2501	Reversible HOV	Both	3	24	16 inches wide	399	399_2016-02-07 08-36-52.png
708	1686+28	427660.3038	3678291.3116	Reversible HOV	Both	3	24	12 inches wide	400	400_2016-02-07 08-37-11.png
709	1686+08	427653.0749	3678272.6030	Reversible HOV	Both	1	24	0.5 inch wide	401	401_2016-02-07 08-37-31.png
710	1685+79	427646.4629	3678244.4284	Reversible HOV	Both	1	24	0.5 inch wide	402	402_2016-02-07 08-37-58.png
711	1685+43	427636.5202	3678209.9039	Reversible HOV	Both	3	24	20 inches wide	403	403_2016-02-07 08-38-19.png
712	1685+15	427628.0279	3678183.1907	Reversible HOV	Both	3	24	16 inches wide	404	404_2016-02-07 08-38-40.png
713	1684+67	427613.9165	3678137.2665	Reversible HOV	Both	3	24	14 inches wide	405	405_2016-02-07 08-39-10.png
714	1684+39	427605.7889	3678109.4970	Reversible HOV	Both	3	24	12 inches wide	406	406_2016-02-07 08-39-35.png
715	1684+20	427599.3467	3678092.4958	Reversible HOV	Both	3	24	12 inches wide	407	407_2016-02-07 08-39-53.png
716	1683+70	427581.5130	3678045.7687	Reversible HOV	Both	3	24	14 inches wide	408	408_2016-02-07 08-40-20.png
717	1683+50	427573.9901	3678026.4912	Reversible HOV	Both	3	24	16 inches wide	409	409_2016-02-07 08-40-42.png
718	1683+24	427564.1147	3678002.6645	Reversible HOV	Both	3	24	20 inches wide	410	410_2016-02-07 08-41-03.png
719	1683+03	427558.7678	3677982.5900	Reversible HOV	Both	3	24	12 inches wide	411	411_2016-02-07 08-41-21.png
720	1682+69	427545.5328	3677950.5037	Reversible HOV	Both	3	24	20 inches wide	412	412_2016-02-07 08-41-47.png
721	1682+54	427542.3593	3677935.7455	Reversible HOV	Both	3	24	14 inches wide	413	413_2016-02-07 08-42-06.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
722	1682+29	427533.6358	3677912.5697	Reversible HOV	Both	1	24	0.5 inch wide	414	414_2016-02-07 08-42-26.png
723	1681+95	427523.2556	3677880.5354	Reversible HOV	Both	1	24	0.25 inch wide	415	415_2016-02-07 08-42-52.png
724	1681+66	427513.4101	3677852.4097	Reversible HOV	Both	3	24	12 inches wide	416	416_2016-02-07 08-43-15.png
725	1681+07	427487.1080	3677799.3148	Reversible HOV	Both	1	24	0.5 inch wide	417	417_2016-02-07 08-43-47.png
726	1680+67	427471.9933	3677762.4805	Reversible HOV	Both	3	24	12 inches wide	418	418_2016-02-07 08-44-12.png
727	1680+55	427465.9329	3677751.7782	Reversible HOV	Both	3	24	8 inches wide	419	419_2016-02-07 08-44-32.png
728	1678+49	427386.2845	3677562.3179	Reversible HOV	Both	3	24	14 inches wide	420	420_2016-02-07 08-46-35.png
729	1678+10	427371.4654	3677526.1475	Reversible HOV	Both	3	24	12 inches wide	421	421_2016-02-07 08-47-03.png
730	1677+81	--	--	Reversible HOV	Both	3	24	14 inches wide	No GPS Location	No Photograph
731	1677+49	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
732	1677+55	427348.5393	3677476.0577	Reversible HOV	Both	1	24	0.75 inch wide	422	422_2016-02-07 08-47-39.png
733	1677+47	427344.4317	3677468.6692	Reversible HOV	Both	3	24	12 inches wide	423	423_2016-02-07 08-47-59.png
734	1677+27	427337.8644	3677449.6637	Reversible HOV	Both	3	24	18 inches wide	424	424_2016-02-07 08-48-18.png
735	1677+01	427328.4622	3677425.6383	Reversible HOV	Both	3	24	12 inches wide	425	425_2016-02-07 08-48-40.png
736	1676+58	427311.1257	3677386.5445	Reversible HOV	Both	3	24	12 inches wide	426	426_2016-02-07 08-49-04.png
737	1676+48	427306.6086	3677377.2515	Reversible HOV	Both	3	24	14 inches wide	427	427_2016-02-07 08-49-24.png
738	1676+14	427291.2138	3677347.0122	Reversible HOV	Both	3	24	16 inches wide	428	428_2016-02-07 08-49-47.png
739	1675+99	427287.6634	3677332.4507	Reversible HOV	Both	3	24	14 inches wide	429	429_2016-02-07 08-50-05.png
740	1675+73	427280.0510	3677307.2518	Reversible HOV	Both	3	24	16 inches wide	430	430_2016-02-07 08-50-26.png
741	1675+38	427265.3050	3677275.8561	Reversible HOV	Both	3	24	16 inches wide	431	431_2016-02-07 08-50-48.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
742	1675+14	427255.5470	3677253.4599	Reversible HOV	Both	3	24	22 inches wide	432	432_2016-02-07 08-51-09.png
743	1675+03	427253.1958	3677242.7012	Reversible HOV	Both	3	24	22 inches wide	433	433_2016-02-07 08-51-25.png
744	1674+41	427227.5116	3677186.3481	Reversible HOV	Both	3	24	14 inches wide	434	434_2016-02-07 08-52-40.png
745	1673+49	427182.9959	3677105.2521	Reversible HOV	Both	3	24	14 inches wide	435	435_2016-02-07 09-10-51.png
746	1673+16	427173.0099	3677074.0710	Reversible HOV	Both	3	24	12 inches wide	436	436_2016-02-07 09-11-19.png
747	1672+95	427164.3345	3677054.0465	Reversible HOV	Both	3	24	12 inches wide	437	437_2016-02-07 09-11-38.png
748	1672+33	427140.1721	3676997.6699	Reversible HOV	Both	1	24	0.5 inch wide	438	438_2016-02-07 09-12-07.png
749	1671+04	427092.1257	3676878.1298	Reversible HOV	Both	1	24	0.5 inch wide	439	439_2016-02-07 09-13-04.png
750	1670+69	427077.0860	3676846.1652	Reversible HOV	Both	3	24	24 inches wide	440	440_2016-02-07 09-13-55.png
751	1670+48	427068.0465	3676827.1968	Reversible HOV	Both	3	24	14 inches wide	441	441_2016-02-07 09-14-14.png
752	1669+99	427046.9244	3676783.0965	Reversible HOV	Both	3	24	16 inches wide	442	442_2016-02-07 09-14-39.png
753	1669+60	427028.6159	3676748.8888	Reversible HOV	Both	3	24	22 inches wide	443	443_2016-02-07 09-15-07.png
754	1669+09	427005.6522	3676702.5235	Reversible HOV	Both	3	24	24 inches wide	444	444_2016-02-07 09-15-32.png
755	1668+66	426985.1086	3676665.1971	Reversible HOV	Both	3	24	48 DOUBLE	445	445_2016-02-07 09-16-38.png
756	1668+39	426979.1788	3676637.9662	Reversible HOV	Both	3	24	14 inches wide	446	446_2016-02-07 09-17-20.png
757	1667+95	426960.7852	3676598.1232	Reversible HOV	Both	3	24	16 inches wide	447	447_2016-02-07 09-17-44.png
758	1667+75	426950.2543	3676581.1831	Reversible HOV	Both	1	24	0.5 inch wide	448	448_2016-02-07 09-18-03.png
759	1667+59	426944.2269	3676566.3721	Reversible HOV	Both	3	24	16 inches wide	449	449_2016-02-07 09-18-23.png
760	1667+43	426938.5725	3676551.0780	Reversible HOV	Both	3	24	20 inches wide	450	450_2016-02-07 09-18-39.png
761	1667+21	426927.7185	3676531.6590	Reversible HOV	Both	3	24	20 inches wide	451	451_2016-02-07 09-18-57.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
762	1666+75	426908.4375	3676489.7278	Reversible HOV	Both	1	24	0.5 inch wide	452	452_2016-02-07 09-19-33.png
763	1666+36	426892.3040	3676454.6269	Reversible HOV	Both	3	24	10 inches wide	453	453_2016-02-07 09-19-58.png
764	1665+96	426874.2613	3676419.0769	Reversible HOV	Both	3	24	24 inches wide	454	454_2016-02-07 09-20-33.png
765	1665+61	426858.4639	3676387.3144	Reversible HOV	Both	3	24	30 inches wide	455	455_2016-02-07 09-21-00.png
766	1664+90	426827.6330	3676323.9682	Reversible HOV	Both	3	24	14 inches wide	456	456_2016-02-07 09-21-27.png
767	1664+49	426809.2789	3676286.7036	Reversible HOV	Both	3	24	24 inches wide	457	457_2016-02-07 09-21-54.png
768	1664+10	426793.4178	3676250.7384	Reversible HOV	Both	4	24	7 feet wide	458	458_2016-02-07 09-22-28.png
769	1663+66	426772.7538	3676211.6937	Reversible HOV	Both	3	24	18 inches wide	459	459_2016-02-07 09-23-10.png
770	1663+21	426746.3321	3676175.6968	Reversible HOV	Both	3	24	20 inches wide	460	460_2016-02-07 09-23-53.png
771	1662+81	426727.2506	3676140.6400	Reversible HOV	Both	3	24	14 inches wide	461	461_2016-02-07 09-24-21.png
772	1662+43	426709.9936	3676106.7019	Reversible HOV	Both	3	24	22 inches wide	462	462_2016-02-07 09-24-44.png
773	1662+22	426704.5297	3676085.0999	Reversible HOV	Both	3	24	10 inches wide	463	463_2016-02-07 09-25-04.png
774	1662+04	426698.8539	3676068.3726	Reversible HOV	Both	3	24	10 inches wide	464	464_2016-02-07 09-25-21.png
775	1661+75	426679.5738	3676045.3552	Reversible HOV	Both	3	24	10 inches wide	465	465_2016-02-07 09-25-42.png
776	1661+55	426668.0053	3676029.0036	Reversible HOV	Both	3	24	10 inches wide	466	466_2016-02-07 09-26-05.png
777	1660+95	426637.8221	3675977.0147	Reversible HOV	Both	1	24	0.5 inch wide	467	467_2016-02-07 09-26-40.png
778	1659+90	426586.8628	3675884.8358	Reversible HOV	Both	3	24	10 inches wide	468	468_2016-02-07 09-27-18.png
779	1659+20	426553.1232	3675824.1117	Reversible HOV	Both	3	24	10 inches wide	469	469_2016-02-07 09-27-48.png
800	1658+84	426539.8526	3675789.5397	Reversible HOV	Both	3	24	20 inches wide	470	470_2016-02-07 09-28-29.png
801	1658+22	426514.2672	3675733.2776	Reversible HOV	Both	3	24	14 inches wide	471	471_2016-02-07 09-28-59.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
802	1657+58	426481.3739	3675678.1768	Reversible HOV	Both	3	24	16 inches wide	472	472_2016-02-07 09-29-27.png
803	1656+88	426448.0107	3675617.1599	Reversible HOV	Both	3	24	14 inches wide	473	473_2016-02-07 09-29-55.png
804	1656+37	426425.8094	3675570.7815	Reversible HOV	Both	3	24	12 inches wide	474	474_2016-02-07 09-30-17.png
805	1655+91	426405.2022	3675529.1554	Reversible HOV	Both	3	24	12 inches wide	475	475_2016-02-07 09-30-39.png
806	1655+63	426395.2955	3675503.1299	Reversible HOV	Both	3	24	8 inches wide	476	476_2016-02-07 09-30-59.png
807	1655+37	426380.4069	3675481.0964	Reversible HOV	Both	1	24	0.5 inch wide	477	477_2016-02-07 09-31-30.png
808	1654+73	426342.8098	3675429.5047	Reversible HOV	Both	1	24	0.5 inch wide	478	478_2016-02-07 09-31-57.png
809	1654+49	426334.0921	3675406.6136	Reversible HOV	Both	1	24	0.5 inch wide	479	479_2016-02-07 09-32-18.png
810	1654+21	426320.5828	3675381.6852	Reversible HOV	Both	3	24	12 inches wide	480	480_2016-02-07 09-32-37.png
811	1653+94	426307.5808	3675358.2936	Reversible HOV	Both	3	24	14 inches wide	481	481_2016-02-07 09-32-56.png
812	1653+66	426293.3232	3675333.9577	Reversible HOV	Both	3	24	14 inches wide	482	482_2016-02-07 09-33-15.png
813	1653+43	426281.4105	3675313.6941	Reversible HOV	Both	3	24	14 inches wide	483	483_2016-02-07 09-33-34.png
814	1653+15	426264.9873	3675290.8239	Reversible HOV	Both	3	24	12 inches wide	484	484_2016-02-07 09-34-00.png
815	1652+44	426229.4327	3675229.5525	Reversible HOV	Both	3	24	14 inches wide	485	485_2016-02-07 09-34-28.png
816	1651+58	426184.6473	3675155.5236	Reversible HOV	Both	3	24	40 inches wide	486	486_2016-02-07 09-34-58.png
817	1651+11	426161.7678	3675114.5998	Reversible HOV	Both	3	24	16 inches wide	487	487_2016-02-07 09-35-26.png
818	1650+63	--	--	Reversible HOV	Both	3	24	16 inches wide	No GPS Location	No Photograph
819	1650+73	426140.5469	3675082.7261	Reversible HOV	Both	3	24	12 inches wide	488	488_2016-02-07 09-35-46.png
820	1650+31	426116.3428	3675048.6046	Reversible HOV	Both	3	24	14 inches wide	489	489_2016-02-07 09-36-26.png
821	1649+86	426093.9635	3675009.2968	Reversible HOV	Both	3	24	12 inches wide	490	490_2016-02-07 09-36-48.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
822	1648+98	426038.9808	3674940.3886	Reversible HOV	Both	3	24	14 inches wide	491	491_2016-02-07 09-37-24.png
823	1648+59	426009.7423	3674913.1253	Reversible HOV	Both	3	24	12 inches wide	492	492_2016-02-07 09-37-52.png
824	1647+80	425962.9212	3674849.1566	Reversible HOV	Both	3	24	10 inches wide	493	493_2016-02-07 09-38-27.png
825	1647+72	425957.6867	3674842.7393	Reversible HOV	Both	3	24	10 inches wide	494	494_2016-02-07 09-38-43.png
826	1647+16	425922.8731	3674799.0330	Reversible HOV	Both	3	24	14 inches wide	495	495_2016-02-07 09-39-07.png
827	1646+54	425888.5065	3674747.1045	Reversible HOV	Both	3	24	12 inches wide	496	496_2016-02-07 09-39-30.png
828	1646+28	425874.7654	3674725.4347	Reversible HOV	Both	3	24	12 inches wide	497	497_2016-02-07 09-39-46.png
829	1646+03	425859.5311	3674705.6983	Reversible HOV	Both	3	24	12 inches wide	498	498_2016-02-07 09-40-04.png
830	1645+70	425839.8062	3674678.3869	Reversible HOV	Both	3	24	14 inches wide	499	499_2016-02-07 09-40-24.png
831	1645+43	--	--	Reversible HOV	Both	3	24	13 inches wide	499	499_2016-02-07 09-40-24.png
832	1645+46	425826.7509	3674658.0441	Reversible HOV	Both	3	24	10 inches wide	501	501_2016-02-07 09-40-41.png
833	1645+36	425819.7080	3674651.5585	Reversible HOV	Both	3	24	10 inches wide	502	502_2016-02-07 09-40-59.png
834	1644+66	425778.7888	3674594.0920	Reversible HOV	Both	3	24	12 inches wide	503	503_2016-02-07 09-41-22.png
835	1644+34	425762.0214	3674567.3089	Reversible HOV	Both	1	24	0.5 inch wide	504	504_2016-02-07 09-41-44.png
836	1644+10	425744.2531	3674549.9030	Reversible HOV	Both	3	24	6 inches wide	505	505_2016-02-07 09-42-08.png
837	1644+00	425737.5778	3674542.5522	Reversible HOV	Both	1	24	0.5 inch wide	506	506_2016-02-07 09-42-24.png
838	1643+76	425723.3986	3674523.3728	Reversible HOV	Both	1	24	0.5 inch wide	507	507_2016-02-07 09-42-44.png
839	1643+46	425705.9089	3674499.1800	Reversible HOV	Both	3	24	12 inches wide	508	508_2016-02-07 09-43-03.png
840	1643+28	425697.6746	3674483.0636	Reversible HOV	Both	3	24	12 inches wide	509	509_2016-02-07 09-43-18.png
841	1643+03	425683.9322	3674461.2983	Reversible HOV	Both	3	24	12 inches wide	510	510_2016-02-07 09-43-35.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
842	1642+86	425674.5864	3674447.2045	Reversible HOV	Both	3	24	12 inches wide	511	511_2016-02-07 09-43-53.png
843	1642+40	425648.9085	3674409.9517	Reversible HOV	Both	1	24	0.5 inch wide	512	512_2016-02-07 09-44-23.png
844	1642+31	425645.0668	3674401.2205	Reversible HOV	Both	3	24	16 inches wide	513	513_2016-02-07 09-44-40.png
845	1642+20	425639.4984	3674391.5601	Reversible HOV	Both	3	24	8 inches wide	514	514_2016-02-07 09-45-01.png
846	1642+03	--	--	Reversible HOV	Both	3	24	10 inches wide	No GPS Location	No Photograph
847	1641+65	425607.5313	3674347.3323	Reversible HOV	Both	3	24	10 inches wide	515	515_2016-02-07 09-45-39.png
848	1641+43	425594.8871	3674328.9893	Reversible HOV	Both	3	24	10 inches wide	516	516_2016-02-07 09-46-01.png
849	1641+31	425585.9994	3674320.0475	Reversible HOV	Both	3	24	10 inches wide	517	517_2016-02-07 09-46-19.png
850	1641+23	425580.7722	3674314.1077	Reversible HOV	Both	3	24	10 inches wide	518	518_2016-02-07 09-46-47.png
851	1641+03	425571.0853	3674296.2935	Reversible HOV	Both	3	24	12 inches wide	519	519_2016-02-07 09-47-06.png
852	1640+79	425559.8306	3674275.4457	Reversible HOV	Both	3	24	10 inches wide	520	520_2016-02-07 09-47-24.png
853	1640+59	425547.1254	3674259.3964	Reversible HOV	Both	3	24	12 inches wide	521	521_2016-02-07 09-47-41.png
854	1640+17	425521.1404	3674227.0197	Reversible HOV	Both	4	24	10 feet wide	522	522_2016-02-07 09-48-25.png
855	1639+73	425494.4381	3674191.2148	Reversible HOV	Both	3	24	13 inches wide	523	523_2016-02-07 09-48-54.png
856	1639+28	425468.7646	3674154.2478	Reversible HOV	Both	3	24	14 inches wide	524	524_2016-02-07 09-49-20.png
857	1639+07	425456.0512	3674137.6252	Reversible HOV	Both	3	24	12 inches wide	525	525_2016-02-07 09-49-36.png
858	1638+61	425429.3314	3674100.6738	Reversible HOV	Both	3	24	14 inches wide	526	526_2016-02-07 09-49-59.png
859	1638+21	425405.5257	3674067.6910	Reversible HOV	Both	3	24	20 inches wide	527	527_2016-02-07 09-50-19.png
860	1638+02	425391.8174	3674054.5224	Reversible HOV	Both	1	24	0.5 inch wide	528	528_2016-02-07 09-50-36.png
861	1637+79	425380.5657	3674033.8656	Reversible HOV	Both	3	24	12 inches wide	529	529_2016-02-07 09-51-04.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
862	1637+43	425359.7605	3674004.2765	Reversible HOV	Both	3	24	12 inches wide	530	530_2016-02-07 09-51-24.png
863	1637+02	425332.3745	3673973.6402	Reversible HOV	Both	3	24	14 inches wide	531	531_2016-02-07 09-51-48.png
864	1636+89	425321.7011	3673966.1580	Reversible HOV	Both	3	24	20 inches wide	532	532_2016-02-07 09-52-12.png
865	1636+66	425306.4928	3673948.1398	Reversible HOV	Both	3	24	10 inches wide	533	533_2016-02-07 09-52-28.png
866	1636+25	425281.5632	3673916.3199	Reversible HOV	Both	1	24	0.5 inch wide	534	534_2016-02-07 09-52-49.png
867	1635+87	425255.2737	3673889.0104	Reversible HOV	Both	3	24	14 inches wide	535	535_2016-02-07 09-53-34.png
868	1635+56	425238.8830	3673861.9343	Reversible HOV	Both	1	24	0.5 inch wide	536	536_2016-02-07 09-53-53.png
869	1635+07	425212.3770	3673820.2024	Reversible HOV	Both	1	24	0.75 inch wide	537	537_2016-02-07 09-54-23.png
870	1634+78	425195.6603	3673796.7615	Reversible HOV	Both	1	24	0.5 inch wide	538	538_2016-02-07 09-54-42.png
871	1634+52	425178.2473	3673777.6298	Reversible HOV	Both	3	24	14 inches wide	539	539_2016-02-07 09-55-00.png
872	1634+30	425163.7221	3673760.7474	Reversible HOV	Both	1	24	0.75 inch wide	540	540_2016-02-07 09-55-18.png
873	1634+14	425152.9885	3673749.2535	Reversible HOV	Both	1	24	0.5 inch wide	541	541_2016-02-07 09-55-34.png
874	1633+71	425125.1793	3673715.7569	Reversible HOV	Both	3	24	14 inches wide	542	542_2016-02-07 09-56-03.png
875	1633+33	425099.6354	3673687.3850	Reversible HOV	Both	3	24	18 inches wide	543	543_2016-02-07 09-56-24.png
876	1633+17	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
877	1632+94	425076.2405	3673656.4015	Reversible HOV	Both	3	24	12 inches wide	544	544_2016-02-07 09-56-43.png
878	1632+77	425064.0629	3673643.7829	Reversible HOV	Both	3	24	14 inches wide	545	545_2016-02-07 09-57-00.png
879	1632+49	425045.4822	3673622.9489	Reversible HOV	Both	3	24	14 inches wide	546	546_2016-02-07 09-57-17.png
880	1632+36	425037.3416	3673613.0401	Reversible HOV	Both	3	24	12 inches wide	547	547_2016-02-07 09-57-31.png
881	1632+03	425016.2205	3673587.7542	Reversible HOV	Both	3	24	12 inches wide	548	548_2016-02-07 09-57-50.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
882	1631+81	425002.8371	3673570.8545	Reversible HOV	Both	3	24	14 inches wide	549	549_2016-02-07 09-58-14.png
883	1631+71	424995.7740	3673563.0312	Reversible HOV	Both	3	24	10 inches wide	550	550_2016-02-07 09-58-31.png
884	1631+52	424982.8124	3673548.8958	Reversible HOV	Both	3	24	14 inches wide	551	551_2016-02-07 09-58-48.png
885	1630+71	424926.9428	3673490.5035	Reversible HOV	Both	3	24	12 inches wide	552	552_2016-02-07 09-59-21.png
886	1630+42	424910.2260	3673467.0618	Reversible HOV	Both	3	24	14 inches wide	553	553_2016-02-07 09-59-40.png
887	1630+16	424893.4628	3673446.8691	Reversible HOV	Both	3	24	12 inches wide	554	554_2016-02-07 10-00-01.png
888	1629+75	424867.4915	3673415.3506	Reversible HOV	Both	3	24	16 inches wide	555	555_2016-02-07 10-00-21.png
889	1629+57	424853.5220	3673403.8095	Reversible HOV	East	3	12	12 inches wide	556	556_2016-02-07 10-00-37.png
890	1629+23	424830.8748	3673378.2595	Reversible HOV	Both	3	24	16 inches wide	557	557_2016-02-07 10-00-55.png
891	1628+81	424801.2973	3673347.3681	Reversible HOV	Both	3	24	48 inches wide	558	558_2016-02-07 10-01-20.png
892	1628+72	424795.7762	3673340.8588	Reversible HOV	Both	3	24	10 inches wide	559	559_2016-02-07 10-01-36.png
893	1628+25	424766.2914	3673303.4696	Reversible HOV	Both	3	24	12 inches wide	560	560_2016-02-07 10-02-11.png
894	1627+74	424733.6445	3673264.5991	Reversible HOV	Both	3	24	12 inches wide	561	561_2016-02-07 10-02-35.png
895	1627+35	424708.0875	3673235.3668	Reversible HOV	Both	3	24	12 inches wide	562	562_2016-02-07 10-02-55.png
896	1627+00	424683.6317	3673209.7482	Reversible HOV	Both	3	24	12 inches wide	563	563_2016-02-07 10-03-15.png
897	1626+85	424671.8818	3673200.2754	Reversible HOV	Both	3	24	12 inches wide	564	564_2016-02-07 10-03-32.png
898	1626+54	424650.4306	3673178.3373	Reversible HOV	Both	3	24	10 inches wide	565	565_2016-02-07 10-03-52.png
899	1626+44	424642.9913	3673170.8060	Reversible HOV	Both	3	24	10 inches wide	566	566_2016-02-07 10-04-06.png
900	1626+24	424630.3948	3673155.6139	Reversible HOV	Both	3	24	12 inches wide	567	567_2016-02-07 10-04-23.png
901	1625+84	424604.8121	3673124.6620	Reversible HOV	Both	3	24	10 inches wide	568	568_2016-02-07 10-04-48.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
902	1625+69	424593.7183	3673114.5107	Reversible HOV	Both	3	24	10 inches wide	569	569_2016-02-07 10-05-05.png
903	1625+60	424587.4337	3673107.8219	Reversible HOV	Both	3	24	12 inches wide	570	570_2016-02-07 10-05-22.png
904	1625+40	424573.4271	3673093.7972	Reversible HOV	Both	1	24	0.25 inch wide	571	571_2016-02-07 10-05-46.png
905	1625+19	424559.3155	3673079.1053	Reversible HOV	Both	3	24	10 inches wide	572	572_2016-02-07 10-06-03.png
906	1624+98	424544.5353	3673064.2322	Reversible HOV	Both	1	24	0.5 inch wide	573	573_2016-02-07 10-06-21.png
907	1624+88	424535.6950	3673058.4416	Reversible HOV	Both	3	24	12 inches wide	574	574_2016-02-07 10-06-39.png
908	1624+66	424520.1366	3673042.4338	Reversible HOV	Both	3	24	12 inches wide	575	575_2016-02-07 10-06-56.png
909	1623+75	424461.2501	3672973.1934	Reversible HOV	Both	3	24	12 inches wide	576	576_2016-02-07 10-30-37.png
910	1623+10	424414.2458	3672928.6139	Reversible HOV	Both	3	24	8 inches wide	577	577_2016-02-07 10-30-59.png
911	1622+97	424406.8488	3672917.5472	Reversible HOV	Both	3	24	12 inches wide	578	578_2016-02-07 10-31-16.png
912	1622+55	424374.7415	3672889.2721	Reversible HOV	Both	3	24	12 inches wide	579	579_2016-02-07 10-31-36.png
913	1622+38	424361.8329	3672878.6700	Reversible HOV	Both	3	24	12 inches wide	580	580_2016-02-07 10-31-53.png
914	1622+22	424350.7274	3672867.7543	Reversible HOV	Both	3	24	12 inches wide	581	581_2016-02-07 10-32-07.png
915	1622+06	424339.6079	3672855.8833	Reversible HOV	Both	3	24	10 inches wide	582	582_2016-02-07 10-32-21.png
916	1621+93	424330.3399	3672846.9463	Reversible HOV	Both	3	24	12 inches wide	583	583_2016-02-07 10-32-35.png
917	1621+27	424284.5164	3672798.6227	Reversible HOV	Both	3	24	12 inches wide	584	584_2016-02-07 10-32-59.png
918	1620+86	424255.6303	3672769.4394	Reversible HOV	Both	3	24	14 inches wide	585	585_2016-02-07 10-33-31.png
919	1620+63	424239.7000	3672754.0099	Reversible HOV	East	3	12	8 inches wide	586	586_2016-02-07 10-33-50.png
920	1620+42	424225.6679	3672738.2655	Reversible HOV	Both	3	24	12 inches wide	587	587_2016-02-07 10-34-07.png
921	1620+19	424208.6867	3672722.5654	Reversible HOV	Both	3	24	12 inches wide	588	588_2016-02-07 10-34-24.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
922	1620+03	424197.5046	3672711.0773	Reversible HOV	Both	3	24	10 inches wide	589	589_2016-02-07 10-34-37.png
923	1619+69	424172.4809	3672687.4725	Reversible HOV	Both	3	24	12 inches wide	590	590_2016-02-07 10-34-54.png
924	1619+47	424157.5970	3672672.0275	Reversible HOV	Both	3	24	14 inches wide	591	591_2016-02-07 10-35-11.png
925	1619+28	424144.3475	3672657.7044	Reversible HOV	Both	3	24	10 inches wide	592	592_2016-02-07 10-35-28.png
926	1619+12	424133.8806	3672644.9635	Reversible HOV	Both	3	24	12 inches wide	593	593_2016-02-07 10-35-47.png
927	1618+90	424117.3015	3672630.6901	Reversible HOV	Both	3	24	10 inches wide	594	594_2016-02-07 10-36-07.png
928	1618+63	424095.9276	3672613.9092	Reversible HOV	Both	3	24	10 inches wide	595	595_2016-02-07 10-36-31.png
929	1618+34	424075.9291	3672593.6684	Reversible HOV	Both	3	24	12 inches wide	596	596_2016-02-07 10-36-50.png
930	1617+70	424030.8186	3672548.4859	Reversible HOV	Both	3	24	8 inches wide	597	597_2016-02-07 10-37-21.png
931	1617+48	424015.9998	3672531.0334	Reversible HOV	Both	1	24	0.5 inch wide	598	598_2016-02-07 10-37-39.png
932	1617+07	423985.7125	3672503.5899	Reversible HOV	Both	1	24	0.5 inch wide	599	599_2016-02-07 10-38-04.png
933	1616+94	423978.9702	3672491.7488	Reversible HOV	Both	3	24	12 inches wide	600	600_2016-02-07 10-38-22.png
934	1616+76	423967.1688	3672478.8368	Reversible HOV	Both	1	24	0.5 inch wide	601	601_2016-02-07 10-38-42.png
935	1616+63	423957.1469	3672470.3884	Reversible HOV	Both	1	24	0.5 inch wide	602	602_2016-02-07 10-38-57.png
936	1616+51	423948.6358	3672461.1532	Reversible HOV	Both	3	24	8 inches wide	603	603_2016-02-07 10-39-17.png
937	1616+36	423937.9225	3672450.9954	Reversible HOV	Both	3	24	16 inches wide	604	604_2016-02-07 10-39-33.png
938	1616+22	--	--	Reversible HOV	Both	1	24	0.5 inch wide	No GPS Location	No Photograph
939	1616+04	423912.5158	3672431.7907	Reversible HOV	Both	3	24	12 inches wide	605	605_2016-02-07 10-40-00.png
940	1615+83	423897.3451	3672416.2539	Reversible HOV	Both	3	24	12 inches wide	606	606_2016-02-07 10-40-21.png
941	1615+72	423888.2151	3672410.1806	Reversible HOV	Both	3	24	10 inches wide	607	607_2016-02-07 10-40-38.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
942	1615+61	423881.5183	3672401.3961	Reversible HOV	Both	3	24	10 inches wide	608	608_2016-02-07 10-40-54.png
943	1615+34	423861.9362	3672383.5368	Reversible HOV	Both	1	24	0.5 inch wide	609	609_2016-02-07 10-41-15.png
944	1615+25	423856.2985	3672375.5961	Reversible HOV	Both	3	24	12 inches wide	610	610_2016-02-07 10-41-32.png
945	1615+08	423844.8820	3672362.9649	Reversible HOV	Both	3	24	10 inches wide	611	611_2016-02-07 10-41-48.png
946	1615+02	423840.0701	3672359.3108	Reversible HOV	Both	3	24	12 inches wide	612	612_2016-02-07 10-42-02.png
947	1614+81	423825.2942	3672344.7235	Reversible HOV	Both	3	24	8 inches wide	613	613_2016-02-07 10-42-22.png
948	1614+72	423820.4263	3672337.3446	Reversible HOV	Both	3	24	13 inches wide	614	614_2016-02-07 10-42-37.png
949	1614+59	423811.1413	3672327.2608	Reversible HOV	Both	3	24	14 inches wide	615	615_2016-02-07 10-42-56.png
950	1614+05	423772.3414	3672290.4860	Reversible HOV	Both	3	24	14 inches wide	616	616_2016-02-07 10-43-21.png
951	1613+68	423748.2288	3672262.3765	Reversible HOV	Both	4	24	15 feet wide	617	617_2016-02-07 10-43-55.png
952	1613+01	423697.3286	3672218.1395	Reversible HOV	Both	3	24	14 inches wide	618	618_2016-02-07 10-44-25.png
953	1611+85	423613.4441	3672137.8998	Reversible HOV	Both	3	24	18 inches wide	619	619_2016-02-07 10-45-05.png
954	1610+42	423510.7281	3672039.1201	Reversible HOV	Both	3	24	16 inches wide	620	620_2016-02-07 10-45-50.png
955	1609+56	423449.3068	3671978.5115	Reversible HOV	Both	3	24	12 inches wide	621	621_2016-02-07 10-46-23.png
956	1608+90	423402.7352	3671931.0557	Reversible HOV	Both	3	24	14 inches wide	622	622_2016-02-07 10-46-51.png
957	1608+32	423362.0682	3671890.2952	Reversible HOV	Both	3	24	16 inches wide	623	623_2016-02-07 10-47-15.png
958	1607+94	423336.1525	3671862.4982	Reversible HOV	Both	3	24	16 inches wide	624	624_2016-02-07 10-47-34.png
959	1607+24	423285.2005	3671814.8210	Reversible HOV	Both	3	24	12 inches wide	625	625_2016-02-07 10-47-59.png
960	1606+89	423263.2661	3671786.0092	Reversible HOV	Both	3	24	84 inches wide DOUBLE JOINT	626	626_2016-02-07 10-48-47.png
961	1606+73	423252.5455	3671775.3735	Reversible HOV	Both	3	24	12 inches wide	627	627_2016-02-07 10-49-08.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
962	1606+31	423222.8773	3671744.7662	Reversible HOV	Both	3	24	12 inches wide	628	628_2016-02-07 10-49-31.png
963	1605+94	423198.8686	3671717.2274	Reversible HOV	Both	3	24	10 inches wide	629	629_2016-02-07 10-49-50.png
964	1605+51	423168.5254	3671686.0568	Reversible HOV	Both	3	24	14 inches wide	630	630_2016-02-07 10-50-16.png
965	1605+13	423139.3217	3671661.0794	Reversible HOV	Both	3	24	12 inches wide	631	631_2016-02-07 10-50-42.png
966	1604+60	423100.9065	3671624.5836	Reversible HOV	Both	3	24	10 inches wide	632	632_2016-02-07 10-51-06.png
967	1604+29	423080.8667	3671601.5709	Reversible HOV	Both	3	24	14 inches wide	633	633_2016-02-07 10-51-29.png
968	1603+47	423016.7271	3671550.0772	Reversible HOV	Both	3	24	8 inches wide	634	634_2016-02-07 10-52-01.png
969	1602+44	422943.8851	3671476.5473	Reversible HOV	Both	3	24	14 inches wide	635	635_2016-02-07 10-52-37.png
970	1602+10	422920.5794	3671451.4815	Reversible HOV	Both	3	24	14 inches wide	636	636_2016-02-07 10-52-59.png
971	1601+78	422900.1463	3671427.6146	Reversible HOV	Both	3	24	10 inches wide	637	637_2016-02-07 10-53-17.png
972	1601+61	422887.2233	3671416.0560	Reversible HOV	Both	3	24	8 inches wide	638	638_2016-02-07 10-53-33.png
973	1601+13	422853.5960	3671381.5899	Reversible HOV	Both	3	24	12 inches wide	639	639_2016-02-07 10-53-55.png
974	1600+63	422818.1557	3671346.7686	Reversible HOV	Both	3	24	16 inches wide	640	640_2016-02-07 10-54-18.png
975	1600+03	422775.2706	3671304.0327	Reversible HOV	Both	3	24	10 inches wide	641	641_2016-02-07 10-54-45.png
976	1599+62	422746.0255	3671276.2844	Reversible HOV	Both	4	24	19 feet wide	642	642_2016-02-07 10-55-07.png 642_2016-02-07 10-55-07.png
977	1598+66	422678.6646	3671206.5885	Reversible HOV	Both	3	24	14 inches wide	643	643_2016-02-07 10-57-00.png
978	1597+97	422632.4279	3671156.0678	Reversible HOV	Both	3	24	12 inches wide	645	645_2016-02-07 10-58-29.png
979	1597+67	422614.9210	3671130.6282	Reversible HOV	Both	3	24	10 inches wide	646	646_2016-02-07 10-58-50.png
980	1597+02	422570.1570	3671083.1427	Reversible HOV	Both	3	24	12 inches wide	647	647_2016-02-07 10-59-15.png
981	1596+17	422512.7015	3671020.4638	Reversible HOV	Both	3	24	12 inches wide	648	648_2016-02-07 10-59-59.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
982	1595+70	422484.4571	3670983.2415	Reversible HOV	Both	3	24	48 inches wide	649	649_2016-02-07 11-00-26.png
983	1595+06	422444.4113	3670933.1053	Reversible HOV	Both	3	24	18 inches wide	650	650_2016-02-07 11-01-00.png
984	1594+50	422410.6391	3670888.8949	Reversible HOV	Both	3	24	14 inches wide	651	651_2016-02-07 11-01-31.png
985	1593+39	422347.7001	3670796.6785	Reversible HOV	Both	3	24	14 inches wide	652	652_2016-02-07 11-02-24.png
986	1592+46	422289.4337	3670724.2655	Reversible HOV	Both	3	24	6 inches wide	653	653_2016-02-07 11-02-57.png
987	1591+84	422253.2760	3670673.2109	Reversible HOV	Both	3	24	8 inches wide	654	654_2016-02-07 11-03-24.png
988	1590+94	422200.5162	3670599.9508	Reversible HOV	Both	3	24	44 inches wide	655	655_2016-02-07 11-03-59.png
989	1589+75	422128.7829	3670504.9977	Reversible HOV	Both	4	24	13 feet wide	656	656_2016-02-07 11-05-00.png
990	1588+68	422076.0059	3670411.3862	Reversible HOV	Both	3	24	22 inches wide	657	657_2016-02-07 11-05-36.png
991	1588+14	422045.8447	3670366.8341	Reversible HOV	Both	1	24	0.5 inch wide	658	658_2016-02-07 11-06-05.png
992	1587+45	422009.2881	3670308.1410	Reversible HOV	Both	3	24	10 inches wide	659	659_2016-02-07 11-06-37.png
993	1586+88	421977.2728	3670260.4632	Reversible HOV	Both	3	24	10 inches wide	660	660_2016-02-07 11-07-11.png
994	1586+41	421952.2378	3670221.4715	Reversible HOV	Both	3	24	16 inches wide	661	661_2016-02-07 11-07-36.png
995	1585+85	421927.1202	3670170.5380	Reversible HOV	Both	3	24	28 inches wide	662	662_2016-02-07 11-08-01.png
996	1585+73	421923.9888	3670158.3547	Reversible HOV	Both	3	24	10 inches wide	663	663_2016-02-07 11-08-17.png
997	1584+86	421882.4090	3670081.7734	Reversible HOV	Both	3	24	12 inches wide	664	664_2016-02-07 11-08-49.png
998	1584+15	421850.1650	3670018.7160	Reversible HOV	Both	1	24	0.5 inch wide	665	665_2016-02-07 11-09-18.png
999	1583+47	421815.0428	3669960.4783	Reversible HOV	Both	3	24	12 inches wide	666	666_2016-02-07 11-09-47.png
1000	1582+95	421790.3915	3669915.2699	Reversible HOV	Both	3	24	16 inches wide	667	667_2016-02-07 11-10-11.png
1001	1582+30	421763.2368	3669855.2894	Reversible HOV	Both	4	24	16 feet wide	668	668_2016-02-07 11-10-52.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
1002	1581+65	421729.9695	3669800.1767	Reversible HOV	Both	3	24	16 inches wide	669	669_2016-02-07 11-11-25.png
1003	1581+33	421715.7433	3669771.3424	Reversible HOV	Both	3	24	16 inches wide	670	670_2016-02-07 11-11-44.png
1004	1580+22	421663.6583	3669672.9404	Reversible HOV	Both	3	24	16 inches wide	671	671_2016-02-07 11-12-27.png
1005	1579+35	421619.9107	3669597.7275	Reversible HOV	Both	4	24	19 feet wide	672	672_2016-02-07 11-13-15.png 672_20'
1006	1577+87	421548.2011	3669467.8720	Reversible HOV	Both	3	24	20 inches wide	673	673_2016-02-07 11-14-11.png
1007	1576+62	421479.7812	3669363.0466	Reversible HOV	Both	4	24	18 feet wide	674	674_2016-02-07 11-15-06.png 674_20'
1008	1575+34	421427.4262	3669246.3979	Reversible HOV	Both	3	24	36 inches wide	675	675_2016-02-07 11-15-53.png
1009	1574+85	421405.2621	3669202.0110	Reversible HOV	Both	3	24	14 inches wide	676	676_2016-02-07 11-16-21.png
1010	1574+26	421378.6892	3669149.0906	Reversible HOV	Both	1	24	0.5 inch wide	677	677_2016-02-07 11-16-48.png
1011	1572+77	421298.1353	3669023.7825	Reversible HOV	Both	3	24	14 inches wide	678	678_2016-02-07 11-17-35.png
1012	1571+96	421275.8275	3668944.0452	Reversible HOV	Both	3	24	20 inches wide	679	679_2016-02-07 11-18-07.png
1013	1570+85	421220.4446	3668847.6954	Reversible HOV	Both	3	24	18 inches wide	680	680_2016-02-07 11-18-46.png
1014	1569+99	421178.2125	3668771.8843	Reversible HOV	Both	3	24	40 inches wide	681	681_2016-02-07 11-19-20.png
1015	1568+95	421129.0989	3668681.1736	Reversible HOV	Both	3	24	14 inches wide	682	682_2016-02-07 11-20-37.png
1016	1568+32	421102.3637	3668623.6683	Reversible HOV	Both	3	24	24 inches wide	683	683_2016-02-07 11-21-05.png
1017	1567+57	421065.0546	3668558.9622	Reversible HOV	Both	3	24	8 inches wide	684	684_2016-02-07 11-21-41.png
1018	1566+71	421027.0720	3668480.8895	Reversible HOV	Both	3	24	24 inches wide	685	685_2016-02-07 11-22-15.png
1019	1565+71	420978.7669	3668393.3191	Reversible HOV	Both	3	24	12 inches wide	686	686_2016-02-07 11-22-49.png
1020	1564+58	420915.4345	3668299.8557	Reversible HOV	Both	3	24	45 inches wide DOBLE JOINT	687	687_2016-02-07 11-23-43.png
1021	1563+74	420887.3170	3668219.6295	Reversible HOV	Both	3	24	22 inches wide	688	688_2016-02-07 11-24-19.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
1022	1562+78	420838.4131	3668136.5578	Reversible HOV	Both	3	24	30 inches wide	689	689_2016-02-07 11-24-53.png
1023	1562+71	420833.9576	3668131.2729	Reversible HOV	Both	3	24	12 inches wide	690	690_2016-02-07 11-25-10.png
1024	1561+39	420771.7166	3668015.0519	Reversible HOV	Both	3	24	45 inches wide DOBLE JOINT	691	691_2016-02-07 11-25-59.png
1025	1560+60	420739.7088	3667941.9531	Reversible HOV	Both	3	24	10 inches wide	692	692_2016-02-07 11-26-35.png
1026	1559+95	420710.3992	3667884.0067	Reversible HOV	Both	3	24	24 inches wide	693	693_2016-02-07 11-27-05.png
1027	1559+28	420677.8407	3667825.1523	Reversible HOV	Both	3	24	12 inches wide	694	694_2016-02-07 11-27-34.png
1028	1558+60	420643.1084	3667767.2856	Reversible HOV	Both	3	24	18 inches wide	695	695_2016-02-07 11-28-10.png
1029	1558+02	420617.2119	3667714.9256	Reversible HOV	Both	4	24	15 feet wide	696	696_2016-02-07 11-28-42.png
1030	1557+16	420577.1721	3667639.1738	Reversible HOV	Both	3	24	16 inches wide	697	697_2016-02-07 11-29-21.png
1031	1556+54	420548.6692	3667584.2724	Reversible HOV	Both	3	24	12 inches wide	698	698_2016-02-07 11-29-50.png
1032	1556+21	420530.3665	3667556.3557	Reversible HOV	Both	3	24	14 inches wide	699	699_2016-02-07 11-30-13.png
1033	1555+67	420511.4329	3667505.0389	Reversible HOV	Both	3	30	10 inches wide	700	700_2016-02-07 11-30-39.png
1034	1555+03	420474.2154	3667452.8457	Reversible HOV	Both	3	36	16 inches wide	701	701_2016-02-07 11-31-05.png
1035	1554+61	420447.8283	3667418.7421	Reversible HOV	Both	3	36	10 inches wide	702	702_2016-02-07 11-31-39.png
1036	1553+96	420431.2617	3667353.7264	Reversible HOV	Both	1	36	0.5 inch wide	703	703_2016-02-07 11-32-05.png
1037	1553+51	420396.1510	3667321.7580	Reversible HOV	Both	1	24	0.5 inch wide	704	704_2016-02-07 11-32-31.png
1038	1553+36	420386.1881	3667310.8214	Reversible HOV	Both	3	36	10 inches wide	705	705_2016-02-07 11-32-45.png
1039	1552+29	420363.4395	3667200.8931	Reversible HOV	Both	3	24	18 inches wide	706	706_2016-02-07 11-33-32.png
1040	1552+42	420341.9394	3667227.1046	Reversible HOV	All	3	46	10 inches wide	708	708_2016-02-07 11-34-01.png
1041	1550+96	420277.6669	3667095.5257	Reversible HOV	All	3	48	24 inches wide	709	709_2016-02-07 11-34-47.png

Joint No.	Approximate Station	Y	X	Location	Lane	Joint Repair Type	Joint Repair Length (feet)	Joint Repair Width	Waypoint # / Picture Folder	Picture Filename
1042	1549+84	420219.8237	3666999.7779	Reversible HOV	All	3	30	12 inches wide	710	710_2016-02-07 11-35-29.png
1043	1548+72	420172.4651	3666898.7155	Reversible HOV	All	3	36	14 inches wide	711	711_2016-02-07 11-36-08.png
1044	1548+19	420139.0031	3666855.9248	Reversible HOV	All	3	36	12 inches wide	712	712_2016-02-07 11-36-37.png
1045	1547+57	420109.8354	3666801.0312	Reversible HOV	All	3	36	10 inches wide	713	713_2016-02-07 11-37-05.png
1046	1547+24	420092.6753	3666773.0969	Reversible HOV	All	1	36	0.75 inch wide	714	714_2016-02-07 11-37-25.png
1047	1546+53	420062.2237	3666708.5714	Reversible HOV	All	3	36	14 inches wide	715	715_2016-02-07 11-37-55.png
1048	1545+54	420006.2911	3666626.1714	Reversible HOV	West	3	12	10 inches wide	716	716_2016-02-07 11-38-34.png
1049	1545+49	420010.5590	3666618.7508	Reversible HOV	Both	4	24	12 feet wide	717	717_2016-02-07 11-40-03.png 717_20
1050	1544+64	419964.7754	3666546.9980	Reversible HOV	All	3	36	12 inches wide	718	718_2016-02-07 11-40-46.png
1051	1544+05	419935.1792	3666495.2632	Reversible HOV	All	3	36	14 inches wide	719	719_2016-02-07 11-41-14.png
1052	1543+30	419893.8204	3666433.1910	Reversible HOV	All	3	36	14 inches wide	720	720_2016-02-07 11-41-45.png
1053	1542+58	419849.6711	3666375.4595	Reversible HOV	All	3	36	24 inches wide	721	721_2016-02-07 11-42-22.png
1054	1541+59	419813.6621	3666282.4450	Reversible HOV	All	3	36	16 inches wide	722	722_2016-02-07 11-43-02.png
1055	1540+65	419760.4661	3666204.8761	Reversible HOV	All	3	36	12 inches wide	723	723_2016-02-07 11-43-43.png
1056	1539+67	419720.5009	3666114.5945	Reversible HOV	All	3	36	24 inches wide	724	724_2016-02-07 11-44-31.png 724_20
1057	1538+47	419674.4046	3666002.1394	Reversible HOV	Both	3	24	14 inches wide	725	725_2016-02-07 11-46-01.png
1058	1537+64	419632.5231	3665930.3273	Reversible HOV	Both	3	24	10 inches wide	726	726_2016-02-07 11-46-33.png
1059	1537+34	419616.1777	3665906.0108	Reversible HOV	Both	3	24	30 inches wide	727	727_2016-02-07 11-46-53.png
1060	1536+76	419580.5689	3665859.5229	Reversible HOV	--	--	--	END CONDITION ASSESSMENT	728	728_2016-02-07 11-47-30.png

Joint Condition Assessment Example Photographs for Type 1 Joint Repairs



Joint Number: 1046

Station: 1547+24

Width: 0.75"



Joint Number: 344

Station: 1834+10

Width: 0.50"



Joint Number: 137

Station: 1938+84

Width: 0.50"

Joint Condition Assessment Example Photographs for Type 3 Joint Repairs



Joint Number: 1057
Station: 1538+47
Width: 14"



Joint Number: 498
Station: 1750+87
Width: 10"



Joint Number: 135
Station: 1939+24
Width: 14"

Joint Condition Assessment Photographs for Type 4 Joint Repairs



Joint Number: 553

Station: 1732+76

Width: 10'



Joint Number: 591

Station: 1724+19

Width: 15'



Joint Number: 600

Station: 1719+47

Width: 19'

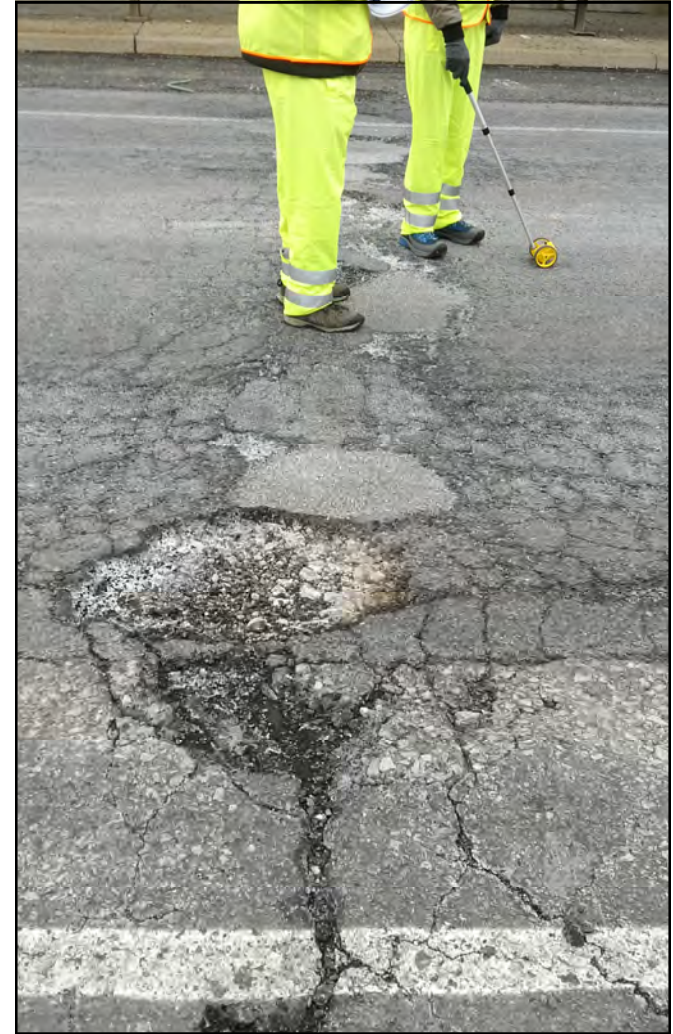
Joint Condition Assessment Photographs for Type 4 Joint Repairs



Joint Number: 606
Station: 1715+46
Width: 19'



Joint Number: 688
Station: 1691+62
Width: 9'



Joint Number: 768
Station: 1664+10
Width: 7'

Joint Condition Assessment Photographs for Type 4 Joint Repairs



Joint Number: 854
Station: 1640+17
Width: 10'



Joint Number: 951
Station: 1613+68
Width: 15'



Joint Number: 976
Station: 1599+62
Width: 19'

Joint Condition Assessment Photographs for Type 4 Joint Repairs



Joint Number: 989
Station: 1589+75
Width: 13'



Joint Number: 1001
Station: 1582+30
Width: 16'



Joint Number: 1005
Station: 1579+35
Width: 19'

Joint Condition Assessment Photographs for Type 4 Joint Repairs



Joint Number: 1005
Station: 1579+35
Width: 19'



Joint Number: 1007
Station: 1576+62
Width: 18'



Joint Number: 1007
Station: 1576+62
Width: 18'

Joint Condition Assessment Photographs for Type 4 Joint Repairs



Joint Number: 1029

Station: 1558+02

Width: 15'



Joint Number: 1049

Station: 1545+49

Width: 12'



Joint Number: 1049

Station: 1545+49

Width: 12'



Appendix C

Ground Penetrating Radar (GPR) Survey Report

Ground Penetrating Radar (GPR) Pavement Evaluation of the I-395 Corridor HOV lanes



Revised Final Report

submitted to

HDR, Inc

4470 Cox Road, Suite 200
Glen Allen, VA

by

Infrasense, Inc.

21-G Olympia Avenue, Suite 45
Woburn, MA 01801

May 2, 2016

1. Introduction

Ground penetrating radar (GPR) was utilized to measure the thickness of the pavement layers in the shoulders and the travel lanes along 7.5 miles of the I-395 HOV corridor between MP 1.4 and the Potomac River Bridge leading into the District of Columbia. The overall objective is to use the layer thickness information to plan the repair and replacement of the asphalt within the HOV lanes.

The following sections describe the GPR data collection procedures, analysis methods, and results obtained. *Updated asphalt and concrete thickness tables provided by HDR were used to further ground truth the GPR data, the resulting change in the values are represented in this report.*

2. Data Collection

The GPR data collection was carried out on February 6th, 2015. GPR data was collected with a GSSI 1 GHz horn antenna GPR system, center mounted behind the survey vehicle providing continuous data along the center line of each lane. The vehicle was equipped with an electronic distance-measuring instrument (DMI) mounted to the rear wheel, providing synchronous distance data as the GPR data was collected; and a Trimble GPS unit, providing high resolution, differentially corrected geo-spatial information. The data collection and recording was controlled by the SIR-20 GPR system operated from within the survey vehicle. The data was collected at a rate of 1 scan per foot of travel. The equipment is shown in Figure 1.

The data collection was carried out on the weekend during daytime hours within a traffic closure, alongside technicians completing complementary data collection. In the interest of safety, vehicle speed was limited to 35-mph within the closure, and less than 10-mph in the presence of people evaluating the road outside of their vehicles.



Figure 1. Field setup of GPR equipment

3. Pavement Layer Thickness Analysis and Results

A thorough description of the GPR principles used to analyze this data is presented in Attachment C. The GPR data, when displayed in a gray scale "B-scan", reveals the pavement cross-section including the individual pavement layers. Figure 2 shows a representative sample of the data and identifies the layers detected and reported for this project section. The individual asphalt and concrete layers are "picked" by the GPR analyst, and the software carries out the dielectric and thickness calculations on this picked data. Asphalt thickness values obtained by HDR's coring program were used to calibrate the pavement and concrete thickness values.

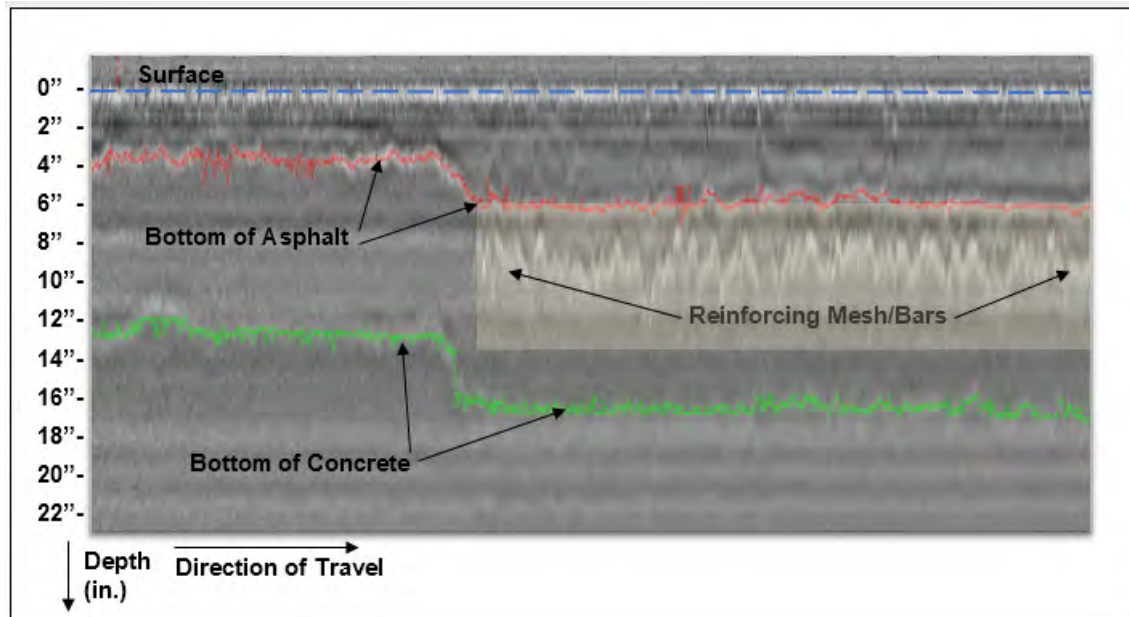


Figure 2. Sample raw GPR data showing asphalt and concrete layers (mainline near station 320+32, I-395 SB)

The pavement layer thicknesses were calculated at 25-foot increments and reported with corresponding stationing, milepost, and GPS coordinates for location referencing. The reported values represent the average of individual readings calculated over an interval ± 12 feet on either side of the reported location. The reported stationing is scaled to align with stationing values as presented in the boring plan provided by HDR.

The layer thickness data has been provided in Excel spreadsheet format in the files described in Attachment A and accompanying this report. Note that occasionally reinforcing mesh/bars were identified in the data (shown in Figure 2.), and are highlighted blue in the results tables.

A comparison of 130 cores with the GPR thickness values shows an average difference of 15.1% when including all of the cores, as shown in Attachment B. The average difference is reduced to 11.3% when removing the statistically defined outliers (*i.e.* $>75^{\text{th}}$ percentile + $1.5 \cdot IQR$). The outliers are likely a result of discrepancies between the core extraction and GPR measurement locations. The implications of location discrepancies are typically more significant along the shoulders as the pavement structure is relatively variable.

ATTACHMENT A

TABULAR PAVEMENT THICKNESS RESULTS

transmitted electronically as

I-395 HOV Pavement Thickness Analysis.xlsx
Including the following Tabs:

Summary

Plots

- A – Westside Shoulder
- B – Westside Mainline
- C – Westside Inside HOV
- D – Eastside Inside HOV
- E – Eastside Mainline
- F – Eastside Shoulder

ATTACHMENT B

COMPARISON OF GPR AND CORE THICKNESS VALUES

Boring	Station	HDR Cored Asphalt Thickness	GPR Asphalt Thickness	% Difference (Corrected)	HDR Cored Concrete Thickness	GPR Concrete Thickness	% Difference (Corrected)
16-PC-007-SH	1532+90	16.5	4.2	74.5%			
16-PC-008-ML	1535+44	2.9	6.0	107.9%	9.6	9.8	2.01%
16-PC-009-SH	1536+67	15.1	5.0	67.2%			
16-PC-010-SH	1540+31	3.6	4.2	16.7%	8.9		
16-PC-011-ML	1542+88	3.6	5.0	37.9%	8.0	11.2	39.76%
16-PC-012-SH	1544+11	4.2	3.5	16.4%			
16-PC-013-SH	1547+87	2.9	4.5	55.1%			
16-PC-014-ML	1550+33	3.8	5.9	53.6%	7.9		
16-PC-015-ML	1552+71	5.0	5.3	6.9%	8.2	8.7	5.50%
16-PC-016-SH	1555+44	3.9	4.0	3.4%			
16-PC-017-ML	1557+90	3.1	3.8	22.8%	8.0	10.6	32.51%
16-PC-018-SH	1559+17	3.4	3.8	12.0%			
16-PC-019-SH	1562+83	3.0	3.5	15.9%			
16-PC-020-ML	1565+39	3.4	3.7	7.8%	8.0	10.0	24.46%
16-PC-021-SH	1566+64	3.0	3.3	8.4%			
16-PC-022-SH	1570+45	4.0	3.8	3.9%			
16-PC-023-ML	1572+93	3.0	3.6	21.2%	9.5	10.5	10.73%
16-PC-024-SH	1574+60	2.6	3.2	23.0%			
16-PC-025-SH	1577+92	4.0	3.6	10.6%			
16-PC-026-ML	1580+46	3.6	3.3	8.2%	8.4	8.6	2.01%
16-PC-027-SH	1581+72	3.0	3.4	12.9%			
16-PC-028-SH	1585+46	4.0	3.6	11.1%			
16-PC-029-ML	1587+96	3.5	4.4	25.9%	9.5	10.6	11.33%
16-PC-030-SH	1589+11	3.6	3.7	2.8%			
16-PC-031-SH	1592+86	4.0	3.5	12.9%			
16-PC-032-ML	1595+36	5.0	5.3	5.4%	7.8	8.6	10.57%
16-PC-033-SH	1596+62	3.0	3.4	11.7%			
16-PC-034-SH	1599+94	3.5	3.3	6.8%			
16-PC-035-ML	1602+92	2.8	3.2	14.3%	9.6	11.1	16.12%
16-PC-036-SH	1604+16	3.0	2.8	5.9%			
16-PC-037-SH	1606+16	3.2	3.0	5.9%			
16-PC-038-ML	1610+47	3.2	3.2	0.5%	8.6	8.3	3.21%
16-PC-039-SH	1611+66	4.0	3.8	3.9%			
16-PC-040-SH	1615+42	4.2	3.8	8.5%			
16-PC-041-ML	1617+89	4.1	3.7	10.4%	8.8	8.0	9.12%
16-PC-042-SH	1619+15	4.5	4.5	0.9%			
16-PC-043-SH	1622+91	3.5	3.2	9.1%			
16-PC-044-ML	1625+34	4.8	4.4	8.8%	8.4	7.4	11.59%
16-PC-045-SH	1626+62	3.9	4.1	5.9%			
16-PC-046-SH	1630+26	7.7	3.8	51.3%			

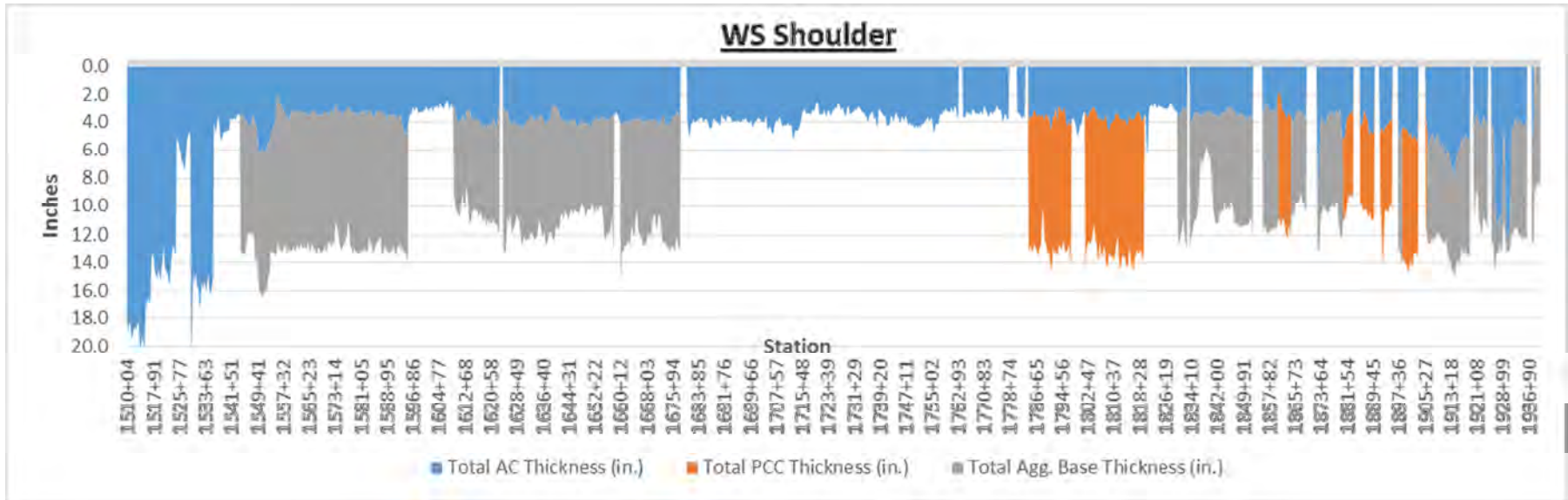
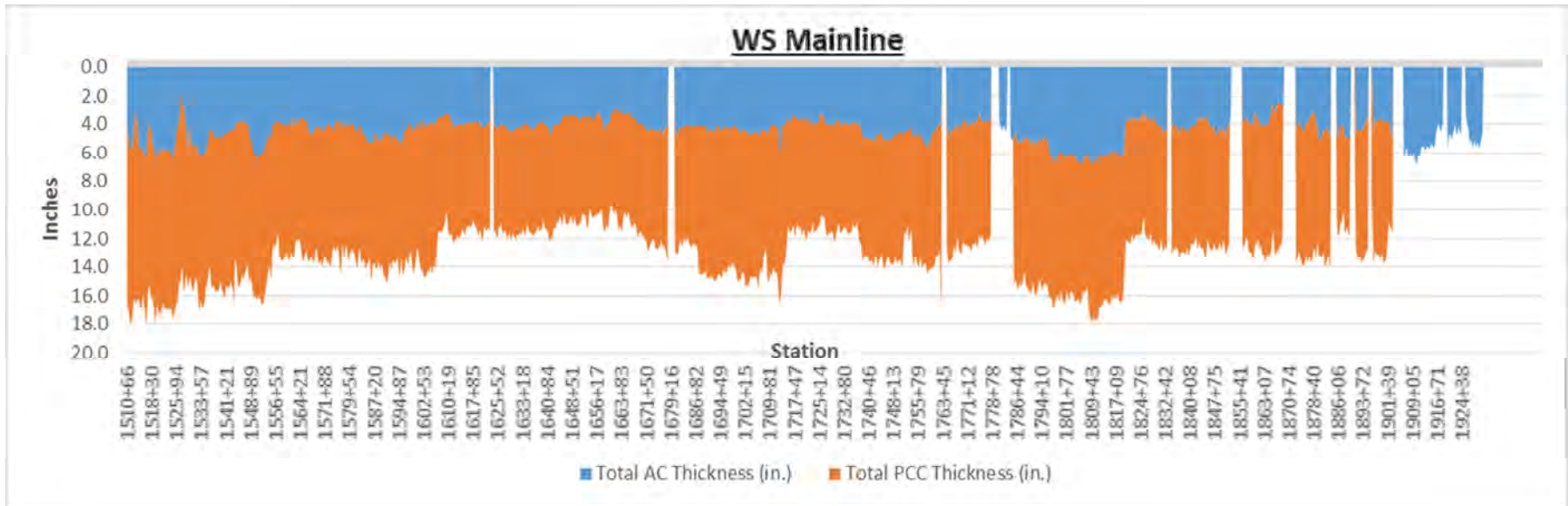
Boring	Station	HDR Cored Asphalt Thickness	GPR Asphalt Thickness	% Difference (Corrected)	HDR Cored Concrete Thickness	GPR Concrete Thickness	% Difference (Corrected)
16-PC-047-ML	1632+74	4.8	4.3	9.7%	8.2	7.6	6.99%
16-PC-048-SH	1634+02	4.0	3.8	3.9%			
16-PC-050-ML	1640+44	3.8	4.0	5.8%	8.8	6.9	20.72%
16-PC-051-SH	1641+69	3.8	3.8	0.8%			
16-PC-052-SH	1645+47	16.1	3.8	76.1%			
16-PC-053-ML	1647+89	4.2	4.3	2.1%	8.5	7.4	12.63%
16-PC-054-SH	1649+19	3.6	3.9	8.3%			
16-PC-056-ML	1655+45	4.0	3.7	8.4%	8.3	6.8	18.39%
16-PC-059-ML	1662+68	4.5	4.6	1.3%	9.0	8.1	10.23%
16-PC-061-SH	1667+90	4.2	3.7	12.8%			
16-PC-062-ML	1670+43	3.8	4.0	5.8%	8.5	7.6	10.92%
16-PC-065-ML	1677+87	4.5	4.6	3.3%	8.5	8.6	0.81%
16-PC-067-SH	1682+89	4.0	3.4	15.1%			
16-PC-068-ML	1685+43	4.4	4.3	3.8%	8.5	8.3	2.36%
16-PC-070-SH	1690+43	4.0	3.8	3.9%			
16-PC-071-ML	1692+92	4.0	4.1	2.8%	10.4	10.4	0.06%
16-PC-073-SH	1697+93	3.4	4.0	19.1%			
16-PC-074-ML	1700+41	4.8	4.5	6.2%	10.0	10.6	6.03%
16-PC-076-SH	1705+43	3.2	3.0	5.1%			
16-PC-077-ML	1707+94	3.4	3.9	17.0%	10.5	10.0	4.40%
16-PC-079-SH	1712+92	4.8	4.4	8.8%			
16-PC-080-ML	1715+43	4.0	3.6	9.5%	10.0	9.2	7.86%
16-PC-082-SH	1720+48	3.2	3.1	2.3%			
16-PC-083-ML	1722+91	3.8	3.6	6.9%	8.2	7.3	11.52%
16-PC-085-SH	1727+96	4.2	3.8	10.6%			
16-PC-086-ML	1730+48	3.8	3.7	4.6%	8.6	8.1	6.49%
16-PC-088-SH	1735+48	3.8	3.7	3.6%			
16-PC-089-ML	1737+83	4.2	4.2	1.1%	8.0	8.1	0.99%
16-PC-091-SH	1742+90	4.5	4.2	6.7%			
16-PC-092-ML	1745+39	5.0	5.1	1.9%	9.0	8.6	4.79%
16-PC-094-SH	1750+38	3.6	3.8	6.7%			
16-PC-095-ML	1752+84	4.0	4.2	3.9%	8.6	8.7	0.12%
16-PC-097-SH	1758+38	3.5	3.6	2.1%			
16-PC-098-ML	1760+36	4.8	4.7	1.3%	14.5	9.0	38.09%
16-PC-100-SH	1765+36	3.6	3.8	4.3%	11.8		
16-PC-101-ML	1767+83	4.2	4.5	6.2%	8.4	8.5	1.04%
16-PC-102-ML	1768+61	4.5	5.1	13.2%	9.0	8.3	7.51%
16-PC-103-SH	1772+89	3.0	4.1	36.1%			
16-PC-104-ML	1775+42	3.5	3.7	4.7%	8.0	8.5	6.09%
16-PC-106-SH	1781+30	3.9	4.0	3.1%			
16-PC-107-ML	1782+78	4.6	4.4	3.5%	8.5	8.3	2.07%
16-PC-109-SH	1787+78	3.5	3.5	0.4%			
16-PC-110-ML	1790+29	5.8	6.4	9.9%	8.9	8.3	6.47%
16-PC-112-SH	1795+30	4.0	4.9	22.9%			
16-PC-113-ML	1797+77	6.1	6.9	12.8%	9.5	8.7	8.17%
16-PC-115-SH	1802+77	3.8	3.4	10.6%			

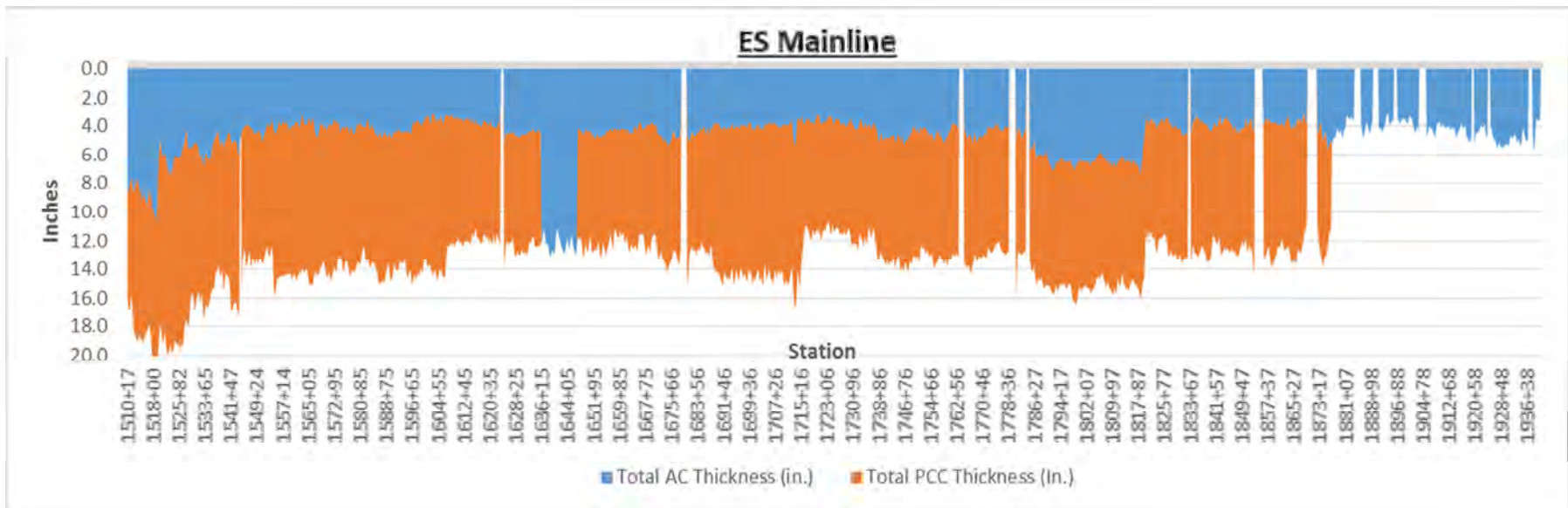
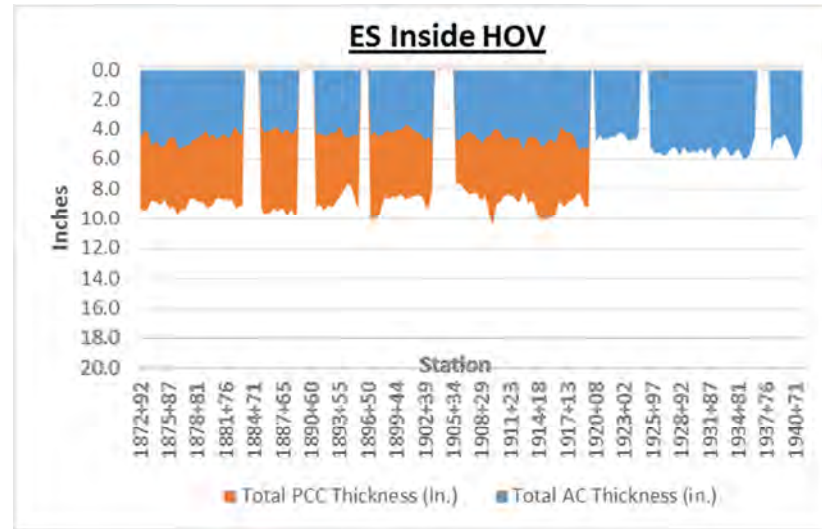
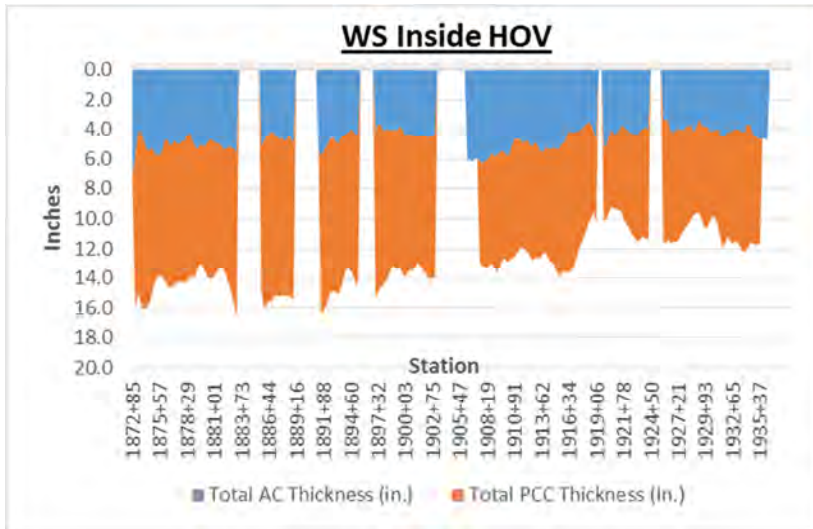
Boring	Station	HDR Cored Asphalt Thickness	GPR Asphalt Thickness	% Difference (Corrected)	HDR Cored Concrete Thickness	GPR Concrete Thickness	% Difference (Corrected)
16-PC-116-ML	1805+28	5.9	6.5	10.6%	10.0	9.9	1.25%
16-PC-118-SH	1810+28	3.7	3.6	4.0%			
16-PC-121-SH	1817+78	3.4	4.2	23.9%			
16-PC-122-ML	1820+28	3.8	3.4	11.8%	8.2	8.8	7.49%
16-PC-123-SH	1821+42	2.5	2.8	13.0%			
16-PC-124-SH	1825+31	3.2	3.3	4.1%			
16-PC-125-ML	1827+79	3.1	4.0	28.6%	8.1	9.3	14.86%
16-PC-126-SH	1829+07	6.0	3.1	47.9%			
16-PC-127-SH	1832+28	4.0	3.9	3.2%			
16-PC-128-ML	1835+29	4.1	3.7	10.6%	8.4	8.7	3.37%
16-PC-129-SH	1836+52	5.0	3.4	32.1%			
16-PC-130-SH	1840+26	2.4	3.8	57.1%			
16-PC-131-ML	1842+73	2.9	3.8	32.5%	8.5	8.8	3.40%
16-PC-132-SH	1844+01	3.6	3.5	3.0%			
16-PC-133-SH	1847+76	3.8	3.7	1.9%			
16-PC-135-SH	1851+55	3.2	3.6	12.8%			
16-PC-136-SH	1856+98	4.6	3.3	27.4%			
16-PC-137-ML	1858+01	4.0	3.8	5.1%	9.0	9.1	1.56%
16-PC-138-SH	1859+25	3.2	3.1	3.1%			
16-PC-139-SH	1863+04	3.1	3.0	3.0%			
16-PC-140-ML	1865+54	2.8	3.2	14.9%	9.7		
16-PC-141-SH	1866+78	4.0	3.2	18.9%			
16-PC-142-SH	1869+29	3.8	3.6	6.5%			
16-PC-143-ML	1873+82	3.5	4.2	20.3%	9.0	9.5	5.73%
16-PC-144-SH	1874+35	5.5	3.9	28.2%			
16-PC-145-SH	1878+12	3.0	3.7	23.6%			
16-PC-147-SH	1880+73	4.5	5.2	15.4%	8.3	8.0	3.64%
16-PC-148-SH	1883+15	4.3	4.1	3.5%			
16-PC-149-ML	1888+11	4.0	4.2	4.3%	9.0	9.0	0.25%
16-PC-150-SH	1889+09	4.8	4.7	1.9%	9.0		
16-PC-151-SH	1893+12	4.5	3.5	21.4%			
16-PC-153-SH	1898+07	4.5	4.6	3.3%			
16-PC-154-SH	1900+60	3.5	4.3	21.5%	8.5		
16-PC-155-ML	1903+08	4.0	4.0	0.8%	11.0		
16-PC-156-SH	1903+48	5.0	5.0	0.3%	10.0	8.9	11.00%
16-PC-157-SH	1907+76	5.5	4.1	25.6%	9.0		
16-PC-159-SH	1911+79	8.5	6.7	21.3%			
16-PC-160-SH	1915+46	4.8	4.2	11.8%			
16-PC-161-ML	1917+94	4.8	4.7	1.1%	8.5		
16-PC-162-SH	1920+84	5.5	4.1	25.3%			
16-PC-163-SH	1923+16	3.8	4.8	25.3%			
16-PC-166-SH	1930+66	5.5	4.7	14.6%			
16-PC-169-SH	1939+19	5.2	4.9	5.5%			
16-PC-TI-008	1861+02	3.2	2.0	38.7%	9.2	9.6	4.35%

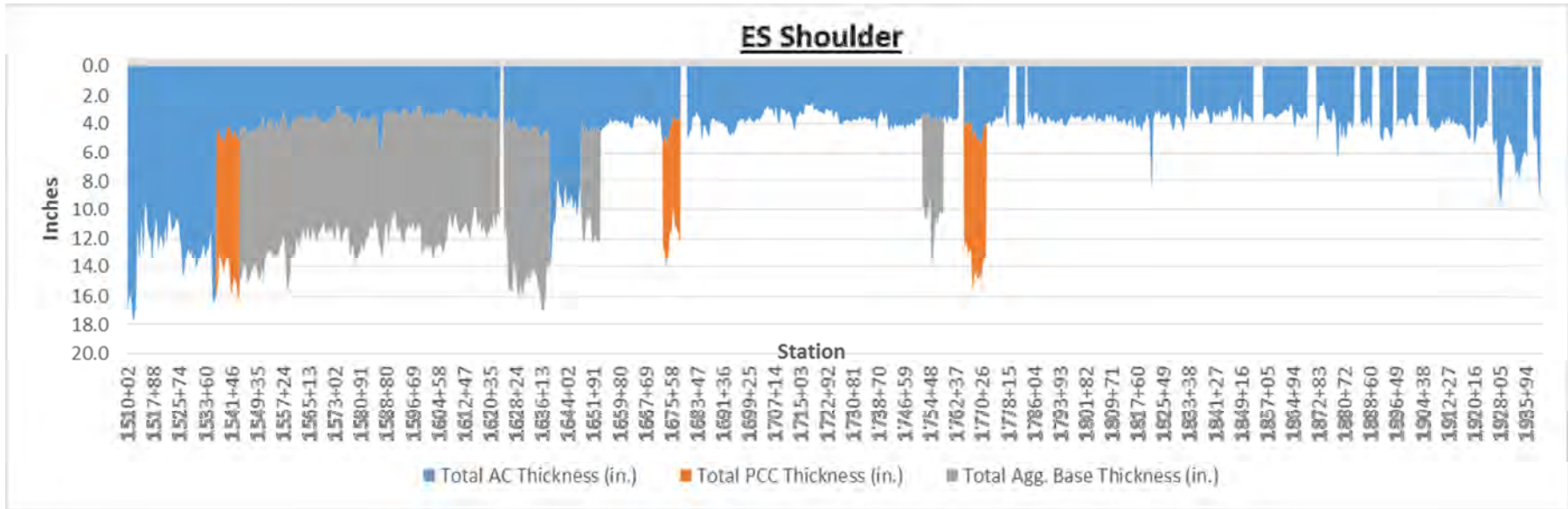
Average:	<u>14.5%</u>	Average:	<u>8.97%</u>
*Average (no outliers)	<u>10.71%</u>	*Average (no outliers)	<u>6.72%</u>

ATTACHMENT C

GPR PAVEMENT STRUCTURE PLOTS







ATTACHMENT D

PRINCIPLES OF GPR FOR PAVEMENT EVALUATION

Ground penetrating radar operates by transmitting short pulses of electromagnetic energy into the pavement using an antenna attached to a survey vehicle. These pulses are reflected back to the antenna with an arrival time and amplitude that is related to the location and nature of dielectric discontinuities in the material (air/asphalt or asphalt/concrete, reinforcing steel, etc). The reflected energy is captured and may be displayed on an oscilloscope to form a series of pulses that are referred to as the radar waveform. The waveform contains a record of the properties and thicknesses of the layers within the pavement (Figure D-1).

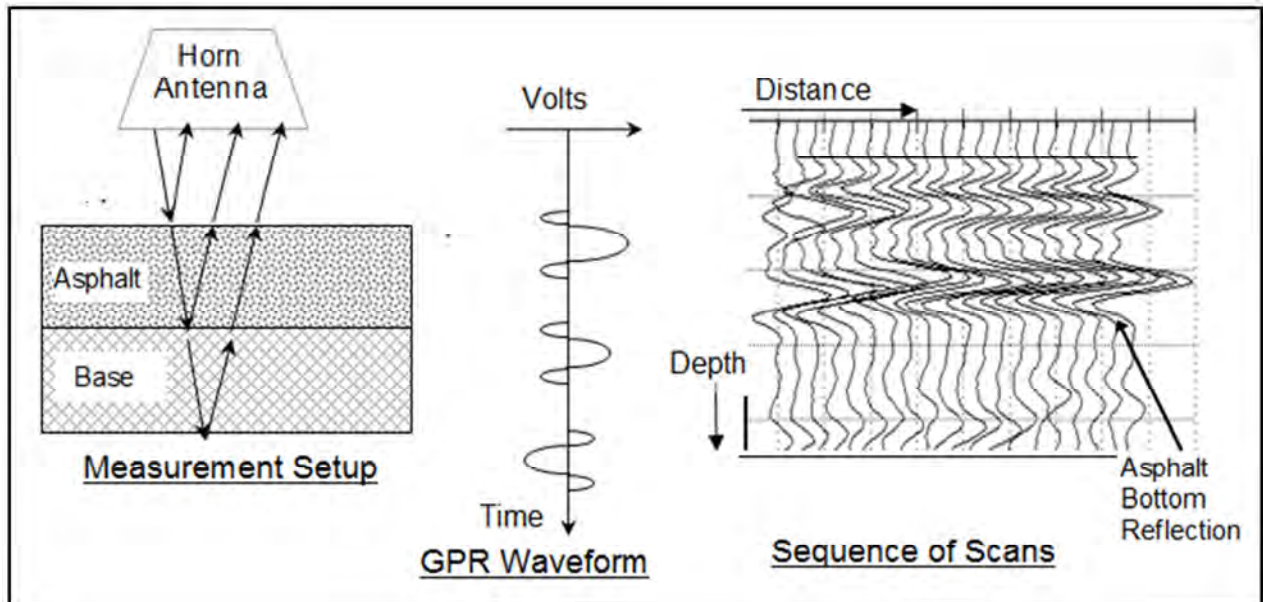


Figure D-1. Structure of the GPR signal for pavements

The sequence of scans shown on the right of Figure D-1 is frequently coded in color or gray scale to produce the "B-scan" representation, examples of which have been shown in the body of the report. The B-scan provides the equivalent of a cross sectional view of the pavement, with the individual pavement layers showing up as colored horizontal bands. The white and black bands indicate stronger reflections, positive and negative respectively, and occur when the dielectric contrast is greater. The grey regions indicate weaker reflections and occur when there is little dielectric contrast.

Layer thickness is calculated from the arrival time of the reflection from the top and bottom of each layer as follows:

$$\text{Thickness (in.)} = \frac{(5.9t)}{\sqrt{\epsilon_a}} \quad (1)$$

where time (t) is measured in nanoseconds and ϵ_a is the relative dielectric permittivity or “dielectric constant” of the pavement layer (Roddis, et. al., 1992).

Computation of the dielectric constant of the surface layer can be made by measuring the ratio of the radar reflection from the pavement surface to the radar amplitude incident on the pavement. The incident amplitude on the pavement is determined by measuring the reflection from a metal plate on the pavement surface, since the metal plate reflects 100% of the incident energy. Using this data, one obtains the asphalt dielectric constant, ϵ_a as follows:

$$\epsilon_a = \left[\frac{A_{pl}+A}{A_{pl}-A} \right]^2 \quad (2)$$

where A = amplitude of reflection from asphalt, and A_{pl} = amplitude of reflection from metal plate (= negative of incident amplitude) (Roddis, et. al., 1992). Table D.1 shows typical dielectric constants and associated GPR velocities for pavement materials. Note that the range of dielectric constant for asphalt is large, due to the variations in density and aggregate composition.

Table D.1 – GPR Velocities and Dielectric Constants for Pavement Materials

VELOCITY			DIELECTRIC CONSTANT	NOTES
METRIC		ENGLISH		
M/NS	CM/NS	IN/NS		
0.90	9.0	3.54	11.00	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">typical for PCC</div> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100px; position: relative;"> <div style="position: absolute; top: 0; left: -5px;">↑</div> <div style="position: absolute; bottom: 0; left: -5px;">↓</div> </div> <div style="margin-left: 10px;">typical for AC</div> </div>
0.100	10.0	3.94	9.00	
0.105	10.5	4.13	8.16	
0.110	11.0	4.33	7.44	
0.115	11.5	4.53	6.81	
0.120	12.0	4.72	6.25	
0.125	12.5	4.92	5.76	
0.130	13.0	5.12	5.33	
0.135	13.5	5.31	4.94	
0.140	14.0	5.51	4.59	
0.145	14.5	5.71	4.28	
0.150	15.0	5.90	4.00	
0.155	15.5	6.10	3.75	

A similar calculation can be made for the dielectric constant of the base material. Changes in base moisture content have a strong effect on the base dielectric constant, and thus the base dielectric constant can be used as an indicator of high moisture content.

The calculations described above are automated in Infrasense's *winDecar*® data analysis software program for computing pavement layer thickness and changes in pavement layer properties. The analytical techniques described above serve as the basis for data analysis carried out during this project, as described in Section 3 of the report.

References

- ASTM D 4748–10, “Standard Test Method for Determining the Thickness of Bound Pavement Layers Using Short-Pulse Radar.” Annual Book of ASTM Standards, American Society for Testing and Materials (2010).
- Maser, K.R., Scullion, T., “Influence of Asphalt Layering and Surface Treatments on Asphalt and Base Layer Thickness Computations Using Radar.” Texas DOTPD Report TX-92-1923-1, Austin, TX (1992b).
- Roddis, W.M., Kim, Maser, K.R., and Gisi, A.J., “Radar Pavement Thickness Evaluations for Varying Base Conditions,” Transportation Research Record No. 1355, TRB National Research Council, pp. 90-98, 1992.