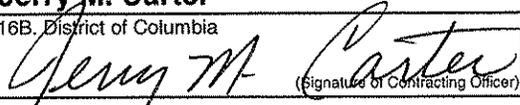


AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. Contract Number	Page of Pages 1 of 57
2. Amendment/Modification Number Amendment No. 3	3. Effective Date See Block 16C	4. Requisition/Purchase Request No.	5. Solicitation Caption: Reconstruction of Pennsylvania Ave, SE from 200Ft. West	
6. Issued By: District Department of Transportation Office of Contracting and Procurement 2000 14th Street, N.W. 6th Floor Washington, D.C. 20009	Code 750-21-61	7. Administered By (If other than line 6) Office of Contracting and Procurement Bid Room Frank D Reeves Municipal Center 2000 14th Street, N.W. 3rd Floor Bid Room Washington, D.C. 20009		
8. Name and Address of Contractor (No. Street, city, country, state and ZIP Code)		(X)	9A. Amendment of Solicitation No. DCKA-2009-B-0090	
			9B. Dated (See Item 11) 5/4/2009	
			10A. Modification of Contract/Order No.	
			10B. Dated (See Item 13)	
Code	Facility			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS				
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers <input checked="" type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning 2 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or fax which includes a reference to the solicitation and amendment number. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or fax, provided each letter or telegram makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. Accounting and Appropriation Data (If Required)				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14				
A. This change order is issued pursuant to: (Specify Authority) The changes set forth in Item 14 are made in the contract/order no. in item 10A.				
B. The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) set forth in item 14, pursuant to the authority of 27 DCMR, Chapter 36, Section 3601.2.				
C. This supplemental agreement is entered into pursuant to authority of:				
D. Other (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input checked="" type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return 2 copies to the issuing office.				
14. Description of amendment/modification (Organized by UCF Section headings, including solicitation/contract subject matter where feasible.) The purpose of this Amendment is to inform interested prospective vendors of the following changes to the 2009 American Recovery and Reinvestment Act (ARRA) Contracting Reporting Requirements (Stimulus Project), entitled "Reconstruction of Pennsylvania Avenue, SE from 200 Feet West of 27th Street, SE to Southern Avenue, SE." <u>"THE BID OPENING DATE HAS BEEN EXTENDED FROM JUNE 5, 2009 TO JUNE 12, 2009."</u> <u>PRE-BID MEETING - 05/15/2009</u> <u>"QUESTIONS & ANSWERS"</u> INSERT , six pages, entitled " <u>Questions & Answers</u> ", dated 05/29/2009, Question No. 1 through 40 per attachment. <u>"BID FORMS AND PROPOSALS"</u> DELETE in its entirety Pay Item Schedule Pages 1 Through 32 and REPLACE with "Pay Item Schedule" Pages 1R through 36R per attachment. <u>"CONTRACT PLANS"</u> DELETE Contract Plans pages 214 through 218 and REPLACE with legible, clear pages 214 through 218. These pages must be pick up from the Office of Contracting & Procurement Bid Room, 2000 14th St, NW, 3rd Floor. <u>"SPECIFICATIONS"</u> INSERT Federal Aid Project Sign (1 page) per attachment. The "Project Funding Source Sign Assembly American Recovery and Reinvestment Act Sign" Layout Details (5 pages) also apply to this contract per attachment. INSERT Typical Sidewalk Detail drawing (1 page) per attachment. INSERT New Special Provisions (SP) items 90 through 93 and modification to SP 43. INSERT New SP 94 (26-pages) entitled, District of Columbia Department of Transportation "Pavement Ride Quality and Equipment Specifications and Test Method" per attachment. <u>"APPLICABLE GENERAL WAGE DECISION/WAGE RATE"</u> DELETE , in its entirety General Wage Decision, DC080001, Modification No.17, dated 05/01/2009 and REPLACE with General Wage Decision, DC080001, Modification No. 18, dated 05/29/2009 (11-pages) as attached. DELETE , Heavy Construction Rates and REPLACE with Paving and Incidental Grading Rates."				
Except as provided herein, all terms and conditions of the document referenced in Item (9A or 10A) remain unchanged and in full force and effect				
15A. Name and Title of Signer (Type or print)		16A. Name of Contracting Officer Jerry M. Carter		
15B. Name of Contractor (Signature of person authorized to sign)	15C. Date Signed	16B. District of Columbia  (Signature of Contracting Officer)	16C. Date Signed 6/1/2009	

“QUESTIONS AND ANSWERS”
PRE-BID MEETING ON MAY 15, 2009
FOR
REONSTRUCTION OF PENNSYLVANIA AVENUE, SE FROM 200 FEET WEST
OF 27TH STREET, SE TO SOUTHERN AVENUE, SE
SOLICITATION NO.: DCKA-2009-B-0090

PLANS

Q1: Paving and Grading Plans (Sheets 38-51) Granite curbs at “bump-outs” have mitered joints. Mitered joints create sharp points which puncture tires. These curbs should be radial.

A1: Granite curb at “Bump Outs” will be radial not mitered.

Q2: Paving and Grading Plans (Sheets 43-49) In PCC roadway section, according to typical sections the proposed pavement is 12” in depth, is this correct?

A2: PCC Pavement depth is 12” per geotechnical recommendations, calculations are shown in Geotechnical Report.

Q3: Paving and Grading Plans (Sheets 38-51) Tree spaces throughout the project are not shown as being sodded. There is no pay item for sod, but there is one for hydro-seeding. Use of hydro-seeding in tree spaces is impractical and inconsistent with standard practices.

A3: No sodding is required. It is either Hydro-seeding for large open areas or seed & straw mulch for smaller areas under same item.

Q4: Paving and Grading Plans (Sheets 38-51) Locations of porous asphalt sidewalk and rubber sidewalk are not shown.

A4: Locations of porous asphalt sidewalk and rubber sidewalk are shown in streetscape plans sheets 186 through 199.

Q5: Paving and Grading Plans (Sheets 38-51) While most curb radii are shown (not all are) there is no curve data to allow determination of curve lengths. This data is required to order curb and to lay out the project.

A5: All radial granite curb quantities are in Bid List and in the summary of quantities in the Plans. Missing radii and curve lengths will be provided to the selected bidder.

Q6: Proposed Typical Sections (Sheets 30-37) Pavement notes C, E, F, I, L & P refer to various depths of “GAB”. Are these references to Pay Item 209 003 – Recycled Crushed Concrete?

A6: Pavement notes C, E, F, I, L and P refer to various depths of “GAB” Graded Aggregate Base Course which is the same item listed in Specification Section 209 – Aggregate Base Course, this item is revised in the Bid List to 209002.

SCHEDULE OF PRICES

- Q7: LINE 0910 – Item 601 006 PCC Pedestrian Islands 0.38 CY?
A7: LINE 0910 – Item 601 006 PCC Directional Island 0.38 C.Y quantity is correct.
- Q8: LINE 0940 – Item 608 001 Granite Pavers on PCC Base 198 CY – Should be SY
A8: LINE 0940 – Item 608 001 Granite Pavers on PCC Base shall be measured in S.Y.
- Q9: LINE 1840 – Item 616 030 Truck Mounted Attenuator 30 Each?
A9: LINE 1840 – Item 616 030 Truck Mounted Attenuator, correct quantity is 3 Each.
- Q10: LINE 0120 – Item 000 513 Partnering: the special provision lacks adequate detail to estimate a price for this item.
A10: LINE 0120 – Item 000 513 Partnering – DDOT to provide SP.
- Q11: LINE 0130 – Item 300 001 15% Contingencies Participating DCWASA WATER & SEWER
A11: LINE 0130 – Item 300 001 15% Contingencies Non-Participating DC-WASA Water & Sewer – Delete this Item.
- Q12: LINE 0140 – Item 300 003 15% Contingencies Non-Participating DCWASA Water & Sewer How are these items to be bid and what do they mean? SP 76 does not address the issues. Shouldn't these be "funding items" and not part of the bid?
A12: LINE 0140 – Item 333 003 15% Contingencies Non-Participating DC-WASA Water & Sewer – Delete this Item.
- Q13: LINE 0210 – Item 108 002 Progress Photographs: There is no SP designating the number of photographs to be taken so the price of this item cannot be estimated.
A13: LINE 0210 - Item 108 002 Progress Photographs – This item it to be addressed by DDOT.
- Q14: LINE 0240 – Item 201 002 Clear and Grub: Areas are not defined in the plans. Therefore a pay quantity is required in order to estimate this item.
A14: CLIN 0240 – Item 201 002 Clear & Grub – Limit of grading is shown on E&S Plans 237 to 250 and defined in Section 201.02 of the Standard Specifications, it is upto the Contractor to figure out the quantities.
- Q15: LINE 0970 – Item 608 023 Porous Asphaltic Walk, 6" Thick Where is the item installed? It is not shown on the plans.
A15: LINE 0970 – Item 608 023 Porous Asphaltic Walk, 6" Thick – This item is shown on Landscape Plans #186 to 199.

Q16: LINE 0980 – Item 608 025 Rubberized Sidewalk Where is the item installed? It is not shown on the plans.

A16: CLIN 0980 – Item 608 025 Rubberized Sidewalk – This item is shown on Landscape Plans #186 to 199

Q17: LINE 1060 – Item 609 090 Salvage Stone There is no SP to define this item. What is the work involved? The pay item is by the linear foot, but shouldn't it be by the cubic foot?

A17: LINE 1060– Item 609 090 Salvage Stone Curb – This item is “Salvage Stone Curb” which is Standard Item and does not require SP units of measures are L.F.

Q18: LINE 1770 – 1810 – Items 616 040, 044, 050, 052 & 054 Thermoplastic Pav't markings SP 43 states that lines should be “high contrast tape”.

A18: CLIN 1770 - 1810 – Item 616 040, 044, 050, 052 & 054 Thermoplastic Pavement Markings are for Asphalt Permanent Pavement only. Paint Markings are for PCC Pavement and 3M Tape is for high visibility mid block cross walk.

Q19: LINE 1830 – Item 616 060 Preformed Lane Marking: Is this possible the pay item for markings on PCC pavement? If so, should it be broken down into various sizes (widths)? Transverse tapes have different specifications that longitudinal tape and the costs of each material vary greatly.

A19: LINE 1830 – Item 616 060 Preformed Lane Marking. These are temporary markings for MOT for asphalt pavement; they are 4-inch in width. (see additional items for other sizes).

Q20: LINE 1860 – Item 616 110 Portable Changeable Message Board: Pay item calls for a quantity of 480 Each. Can that be correct?

A20: LINE 1860 – Item 616 110 Portable Changeable Message Board. Quantity for this item is 8 each.

Q21: LINE 1860 – Item 616 121 Electronic Illuminated Traffic Devices (Arrow Board): Pay item calls for a quantity of 480 Each. Can that be correct?

A21: CLIN 1860 – Item 616 121 Electronic Illuminated Traffic. The quantity for this item is 8 each.

Q22: LINE 2270 – Item 617 130 Remove Traffic Signal Pole and Traffic Signal Equipment – 1 Each Isn't this pay item severely understated?

A22: LINE 2270 – Item 617 130 Remove Traffic Signal Pole and Traffic Signal Equipment. This item is measured and paid as lump sum.

Q23: Missing Pay Item There is no pay item for moving Portable PCC Barrier.

A23: Missing Pay Item. There is no item for Moving Portable PCC Barrier.

The following new item is added:

Item 614 001 “Move Portable Precast PCC Barrier”

Q24: Missing Pay Items The following pay items are listed in the Summary of Quantities but are not in the Schedule of Prices:

601 022	PCC Bus Stop Pad	280 CY
602 010	Standard PCC Coping	3 CY
602 002	PCC Footing (Minor) Structures	282 CY
603 004	PCC Steps – Structures	65 CY
604 002	Underdrain Pipe, 6 Inch	10,500 LF
607 009	Tree Fencing	3,133 LF
608 008	Exposed Aggregate Sidewalk	1,566 SY

A24: All missing Pay Items with the exception of First Item in the list must be added in the “Schedule of Items”. Item 601 002 PCC Bus Stop Pad – 280 CY is not to be included, this item will be installed by “Clear Channel”.

Q25: Missing Pay Items Item 618 999 Payment to Pepco for Connections, Disconnections and inspection. Price fixed by DDOT.

A25: Missing Pay Item 618 999 Payment to PEPCO for Connections, Disconnections and Inspections. This item should be added in the “Schedule of Items” as a fixed price.

SPECIAL PROVISIONS

Q26: SP 7 – page 7 Applicable Wage Decision/Wage Rates: “HEAVY CONSTRUCTION RATES” Does this refer to the title of decision DC080001? Can “Paving and Incidental Grading Rates” (a sub-section of the decision) be used on this project?

A26: SP 7 – Page 7 Applicable Wage Decision/Wage Rates. To be addressed by DDOT.

Q27: SP 36 – page 28 Record of Materials, Supplies & Labor (FHWA-47) The requirement for filing FHWA-47 was removed by memorandum DATED May 22, 2007.

A27: SP 36 – Page 28 Records of Materials, Supplies and Labor. To be address by DDOT.

Q28: SP 37 – Page 29 Item 501 011 PCC Pavement, 12” Depth, Integrally Colored SP’s state that color samples are available at the Chief Engineer’s office. Are mix designs of those samples available or color manufacturer’s mix numbers? Concrete suppliers have told us that visual samples are not adequate to provide accurate concrete pricing.

A28: SP 37 – Page 29 Item 501 011 PCC Pavement, 12” Depth, Integrally Colored. PCC Colored Pavement samples are available at Chief Engineer’s office.

Contractor to match the samples. Samples are from LM Scofield, other brands are Davis Colors or Solomon Colors.

Q29: SP 56 – Page 83 Item 501 013 PCC Integral Colored Sidewalk, 4” Depth SP’s state that color samples are available at the Chief Engineer’s office. Are mix designs of those samples available or color manufacturer’s mix numbers? Concrete suppliers have told us that visual samples are not adequate to provide accurate concrete pricing.

A29: SP 56 – Page 83 Item 501 013 PCC Integral Color Sidewalk, 4” Depth, Colored Concrete Samples for sidewalk are available at Chief Engineer’s office, Contractor to match the samples.

Q30: SP 57 – Page 85 Exposed Aggregate Sidewalk; Section A “Description” The SP calls for Class “E” concrete. Shouldn’t this be Class “F” concrete? Is this the #67 Spec?

A30: SP 57 Page 85 Exposed Aggregate Sidewalk. Concrete is Class ‘E’ and concrete is reinforced with #6 Welded Wire Fabric, see sidewalk detail attached.

Q31: SP 58 – Page partnering: Item 000 513 This SP must describe the exact requirements of the partnering desired so it can be properly priced or DDOT should put a “draw” type fixed unit price.

A31: SP 58 Page 86 Partnering – Item 000 513
This item to be addressed by DDOT

Q32: SP 76 – Page 106 15% Contingencies – DC WASA – Items 300 001 & 300 003 What is the meaning of this SP? It cannot be bid as stated.

A32: SP 76 Page 106 15% contingencies – DC WASA Item 300 001, and Item 200 003
This item should be deleted.

Q33: SP 85 – Insurance Section 6 – Builder’s Risk Insurance company requires DDOT to provide dollar basis for Builder’s Risk Insurance.

A33: SP 85 – Insurance Section 6 – Builder’s Risk
This item to be addressed by DDOT

Q34: Addendum 2 – ARRA Sign The drawings furnished for ARRA signs depict two different sizes. Which size should be utilized on this project?

A34: Addendum 2 – ARRA Sign
This item to be addressed by DDOT.

Q35: Line No. 0090 Root Paths
Line No. 0100 Root Guides –Provide details and recommended manufacturer.

A35: Details are shown on Sheet LD-6 (Sheet #223 of 487), manufacturers are not to be disclosed, root guides are often sold as ‘root barriers’ which can be found online. Also root paths are made from sheet drainage material, which is commonly available from suppliers of perforated drainage pipe and foundation drainage materials.

*Q36: Line 0130 – 15% Participating DC WASA
Line 0140 – 15% Non-Participating DC WASA*

A36: These items are to be addressed by DDOT.

Q37: Line 0940 Granite Pavers

A37: The units of measurement is s.y.

*Q38: Line 0830 Trench Drains with Grate and Filter
Line 0840 Trench Drains with Grate*

A38: Suggested model numbers for grates or equivalent are shown on Plans.

*Q39 Line 1840 Truck Mounted Attenuator – 30 Each
Line 1860 Changeable Message Sign – 48 Each
Line 1890 Electric Illuminated Traffic Devices – 480 Each*

A39: Units of measure are correct; quantities are revised as shown below:

Q40: Plan Sheet III

Structure P12 to P12B: Plan Shows 15-Inch Pipe and Profile shows 18-inch Pipe

Structure P12 to P12A: Plan shows 12-Inch Pipe and Profile shows 18-Inch Pipe

*Structure P12A to TF 1: Plan shows 21-Inch Pipe and Profile shows 18_Inch
Pipe*

Please clarify sizes of proposed pipes.

A40: Plan size 15-inch is correct, profile size is revised to 15-inch to match Plan.
Plan size is 21-inch, profile size is revised to 21-inch to match Plan.
Plan size of 21-inch is correct, profile size is revised to 21-inch to match Plan.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

SECTION 0001 PARTICIPATING ROADWAY WORK

0010	000003 Employee Training	6000.000				
		HR	.		.	
0020	000111 Materials Special Item - SY - 822090 - GEOTEXTILE FABRIC CLASS ST	47841.000				
		SY	.		.	
0030	000506 Unassigned Special Item -EACH - 611105 - TRASH RECEPTACLE	40.000				
		EACH	.		.	
0040	000506 Unassigned Special Item -EACH - 617119 - FURNISH AND INSTALL ACCESSIBLE PEDESTRIAN SIGNAL (APS) SYSTEM	82.000				
		EACH	.		.	
0050	000506 Unassigned Special Item -EACH - 709001 - BICYCLE RACK	20.000				
		EACH	.		.	
0060	000506 Unassigned Special Item -EACH - 800001- FURN AND INST 336-SS TRAFF SIG C AB W CLASSIFIER/COUNTER & RADIO FR MODEM	1.000				
		EACH	.		.	
0070	000506 Unassigned Special Item -EACH - 800005 - FURN AND INST SPRD SPECTRUM WIR ELESS COMM SYSTEM	1.000				
		EACH	.		.	

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0080	000506 Unassigned Special Item -EACH - 800007 - FURN AND INST MICROWAVE TRAFF F LOW DETECTION SYSTEM (MTFDS)	EACH 2.000	.	.	.	.
0090	000509 Unassigned Special Item -LF - 611009 - ROOT PATHS	LF 6982.000	.	.	.	.
0100	000509 Unassigned Special Item -LF - 611011 - ROOT GUIDES	LF 3700.000	.	.	.	.
0110	000509 Unassigned Special Item -LF - 617053 - FURN AND INST 4 CONDUCTOR 14 AW G STRANDED LOOP DETECTOR LEAD-IN CABLE	LF 1610.000	.	.	.	.
0120	000511 Unassigned Special Item -LS - 000513 - PARTNERING	LUMP	LUMP	.	.	.
0130	000511 Unassigned Special Item -LS - 310001 - LOW IMPACT DEVELOPMENT (LID) NO . 1	LUMP	LUMP	.	.	.
0140	000511 Unassigned Special Item -LS - 310003 - LOW IMPACT DEVELOPMENT (LID) NO . 2	LUMP	LUMP	.	.	.
0150	000511 Unassigned Special Item -LS - 310005 - LOW IMPACT DEVELOPMENT (LID) NO . 3A	LUMP	LUMP	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0160	000511 Unassigned Special Item -LS - 310007- LOW IMPACT DEVELOPMENT (LID) NO. 3B	LUMP	LUMP			.
0170	000511 Unassigned Special Item -LS - 611013 - TREE PROTECTION	LUMP	LUMP			.
0180	000511 Unassigned Special Item -LS - 800059 - FURNISH AND INSTALL DATA VALIDA TION EQUIPMENT	LUMP	LUMP			.
0190	108002 Progress Photographs	LUMP	LUMP			.
0200	108004 As-Built Drawings	LUMP	LUMP			.
0210	200010 Earthwork and Excavation Special Item - SY - 202003 - HARD SURFACE SPECIAL EXCAVATION	SY	1990.000			.
0220	201002 Clear and Grub	LUMP	LUMP			.
0230	202002 Common Excavation	CY	17541.000			.
0240	202004 Hard Surface Pavement Excavation	CY	18001.000			.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0250	204004 Borrow Embankment Fill	2850.000 CY	.	.	.	.
0260	205004 Structure Hard Surface Excavation	515.000 CY	.	.	.	.
0270	205008 Demolition RW1, RW2, & RW3	4660.000 CY	.	.	.	.
0280	207002 Trench Excavation and Backfill	8854.000 CY	.	.	.	.
0290	207004 Trench Undercut Excavation	350.000 CY	.	.	.	.
0300	207006 Gravel for Trench Undercut	350.000 CY	.	.	.	.
0310	207008 Borrow Trench Backfill	550.000 CY	.	.	.	.
0320	209002 Aggregate Base Course	25680.000 CY	.	.	.	.
0330	212002 Test Pit	20.000 EACH	.	.	.	.
0340	300004 Water and Sewer Service Special Item-EACH- 300005 - 18 INCH COUPLING	4.000 EACH	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0350	300004 Water and Sewer Service Special Item-EACH- 309003 - CLEAN EXISTING SEWER STRUCTURE	EACH 51.000	.	.	.	.
0360	300004 Water and Sewer Service Special Item-EACH- 314031 - END-SECTION FOR 15" PCC PIPE	EACH 1.000	.	.	.	.
0370	300004 Water and Sewer Service Special Item-EACH- 320021 - ENDWALL FOR 15" PCC PIPE	EACH 1.000	.	.	.	.
0380	300005 Water and Sewer Service Special Item-LF - 314051 - CLEAN EXISTING STORM DRAIN PIPE - ANY SIZE	LF 9500.000	.	.	.	.
0390	300005 Water and Sewer Service Special Item-LF - UNDERDRAIN CONNECT PIPE 6 INCH (603012)	LF 2000.000	.	.	.	.
0400	302002 Valve Casing	EACH 29.000	.	.	.	.
0410	303002 Abandon Valve Casing	EACH 29.000	.	.	.	.
0420	303004 Remove Fire Hydrant	EACH 19.000	.	.	.	.
0430	304002 Butterfly Valve Manhole	EACH 10.000	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0440	305002 Ductile Iron Pipe, 4 - 8 Inch	1105.000 LF	.	.	.	.
0450	305004 Ductile Iron Pipe, 12 Inch	4050.000 LF	.	.	.	.
0460	305006 Ductile Iron Pipe, 16 Inch	13.000 LF	.	.	.	.
0470	305018 Extra Fittingd - Contractor Furnished	2000.000 LBS	.	.	.	.
0480	305991 Pipe Water Main - Ductile Iron Special Item - LF - 305007 - 18 INCH DUCTILE IRON PIPE	24.000 LF	.	.	.	.
0490	306002 Gate Butterfly Valve, 3 - 12 Inch	38.000 EACH	.	.	.	.
0500	307002 Set Fire Hydrant	19.000 EACH	.	.	.	.
0510	308012 Replace Water Service Pipe	2297.000 LF	.	.	.	.
0520	308014 Furnish and Install Curb Stop/Curb Stop Box	31.000 EACH	.	.	.	.
0530	308016 Furnish&Install Water Meter Housing, Frame& Cover	31.000 EACH	.	.	.	.
0540	308018 Water Service Test Hole	31.000 EACH	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0550	309002 Sewer Manhole on Sewer 48 Inch and Less Dia.	1058.000 VLF	.	.	.	.
0560	309004 Sewer Manhole on Sewer Greater Than 48 In Dia.	30.000 VLF	.	.	.	.
0570	309006 Reinforced PCC Base on Sewers Greater 48 In Dia.	2.000 EACH	.	.	.	.
0580	310002 Standard Basin	1.000 EACH	.	.	.	.
0590	310004 Standard Double Basin	7.000 EACH	.	.	.	.
0600	310006 Standard Triple Basin	7.000 EACH	.	.	.	.
0610	310008 Basin Connect PCC Pipe, Class III, 15 Inch	2218.000 LF	.	.	.	.
0620	310016 Type S Basin	3.000 EACH	.	.	.	.
0630	310992 Catch Basins Special Item -EACH - 310001 - SHALLOW CATCH BASIN WITH CATCHM ENT MANHOLE	10.000 EACH	.	.	.	.
0640	310992 Catch Basins Special Item -EACH - 310003 - SHALLOW CATCH BASIN	1.000 EACH	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0650	310992 Catch Basins Special Item -EACH - 310005 - SINGLE THROAT WATER QUALITY BASIN	EACH 18.000	.		.	
0660	310992 Catch Basins Special Item -EACH - 310007 - DOUBLE THROAT WATER QUALITY BASIN	EACH 92.000	.		.	
0670	311002 Adjust Sewer-Water-Utility Manhole Frame	EACH 167.000	.		.	
0680	311026 Replace Existing Basin with Double Basin	EACH 2.000	.		.	
0690	311028 Replace Existing Basin with Triple Basin	EACH 4.000	.		.	
0700	311991 Adjust, Rebuild&Replace Manhole&Catchbasin- Special Item -EA- 310027 - REPLACE BASIN WITH SINGLE THROA T WATER QUALITY BASIN	EACH 3.000	.		.	
0710	311991 Adjust, Rebuild&Replace Manhole&Catchbasin- Special Item -EA- 310029 - REPLACE BASIN WITH DOUBLE THROA T WATER QUALITY BASIN	EACH 14.000	.		.	
0720	312002 Replace Sewer-Water Manhole Frame	EACH 10.000	.		.	

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0730	313002 Abandon Basin Connecting Pipe	34.000 EACH	.	.	.	.
0740	313006 Abandon Basin	22.000 EACH	.	.	.	.
0750	314004 PCC Pipe, Class III, Gasket, 15 Inch	1527.000 LF	.	.	.	.
0760	314006 PCC Pipe, Class III, Gasket, 18 Inch	2583.000 LF	.	.	.	.
0770	314008 PCC Pipe, Class III, Gasket, 21 Inch	258.000 LF	.	.	.	.
0780	314010 PCC Pipe, Class III, Gasket, 24 Inch	32.000 LF	.	.	.	.
0790	322002 PCC Thrust Block	42.500 CY	.	.	.	.
0800	323002 PCC Collar for Sewers	2.160 CY	.	.	.	.
0810	327991 Sidewalk Interceptor Drain, Connectn, Grating & Trap Special Item -LF - 327001 - TRENCH DRAINS WITH GRATE AND FILTER MEDIA	198.000 LF

SCHEDULE OF ITEMS

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0820	327991 Sidewalk Interceptor Drain, Connectn,Grating & Trap Special I tem -LF - 327003 - TRENCH DRAIN WITH GRATE	12.000 LF	.	.	.	.
0830	402002 Superpave Base Course, 19 mm	18848.000 TON	.	.	.	.
0840	402012 Sperrpave Surface Course, 12.5 mm	4136.000 TON	.	.	.	.
0850	407002 Temporary AC, Superpave Surface Course, 12.5 mm FOR MAINTENANCE OF TRAFFIC	250.000 TON	.	.	.	.
0860	500008 Portland Cement Concrete Construction Special Item - SY - 501001 - GRANITE BANDS THROUGH REINFORCE D PCC PAVEMENT	612.000 SY	.	.	.	.
0870	501992 Portland Cement Concrete Pavement Special Item -SY - 501011 - PCC PAVEMENT, 12 INCH - INTEGRA LLY COLORED	9403.000 SY	.	.	.	.
0880	504002 PCC Driveway-Alley Entrance	405.000 CY
0890	601006 PCC Directional Island	0.380 CY

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			DOLLARS	CTS	DOLLARS	CTS
0900	602002 PCC Footing (Minor) STRUC 2A,2B, 2C&2D +RWS 1,2,3 &5	282.000 CY
0910	602004 PCC Property Wall STRUC 2A,2B,2C &2D_STAIRS 3,4,5&6+ RWS 1	575.000 CY	.	.	.	.
0920	602008 PCC Steps STRUCT 2A,2B,2C&2D+3,4,5 & 6+RWS 1 & 2	65.000 CY	.	.	.	.
0930	602010 Standard PCC Coping	3.000 CY	.	.	.	.
0940	602012 Special PCC Coping TYPE 1	152.000 CY	.	.	.	.
0950	603004 Underdrain Pipe, 6 Inch	10500.000 LF	.	.	.	.
0960	603991 Underdrain Special Item - LF - 603012 - UNDRAIN PIPE CONN PIPE 6 INCH	2000.000 LF	.	.	.	.
0970	604002 Grouted Riprap	54.000 SY	.	.	.	.
0980	606002 Pavement Profiling (Milling)	308.000 SY	.	.	.	.
0990	607991 Misc. Fencing Special Item - LF - 607009-TREE FENCING - LF	3133.000 LF

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1000	608008 Exposed Aggregate Sidewalk, 4 Inch	1556.000 SY	.	.	.	.
1010	608028 Block Sidewalk on PCC Base	129.000 SY	.	.	.	.
1020	608992 Sidwalks & Driveway Special Item - SY - 501013 - PCC SIDEWALK WITH INTEGRAL COLO R, 4" THICK	2508.000 SY	.	.	.	.
1030	608992 Sidwalks & Driveway Special Item - SY - 608001 - GRANITE PAVERS ON REINFORCED PC C BASE	198.000 SY	.	.	.	.
1040	608992 Sidwalks & Driveway Special Item - SY - 608003 - GRANITE PAVERS ON PCC BASE	125.000 SY	.	.	.	.
1050	608992 Sidwalks & Driveway Special Item - SY - 608023 - POROUS ASPHALTIC CONCRETE WALK, 6 INCH THICK	1733.000 SY	.	.	.	.
1060	608992 Sidwalks & Driveway Special Item - SY - 608025 - RUBBERIZED SIDEWALK	343.000 SY	.	.	.	.
1070	609002 PCC Curb and/or Gutter	23.000 CY
1080	609008 PCC Curb and Gutter, 15 to 18 Inch Depth	2209.000 LF

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			DOLLARS	CTS	DOLLARS	CTS
1090	609036 PCC Gutter	507.000 CY	.		.	
1100	609068 Furnish and Set 8"x12" Granite Straight Curb	18150.000 LF	.		.	
1110	609070 Furnish and Set 8"x12" Granite Circular Curb, Radius Under 10 Ft.	574.000 LF	.		.	
1120	609072 Furnish and Set 8"x12" Granite Circular Curb, Radius 10-100 Ft.	1799.000 LF	.		.	
1130	609086 Reset Stone Curb	2550.000 LF	.		.	
1140	609090 Salvage Stone Curb	2550.000 LF	.		.	
1150	609992 Curb, Gutter, & Paved Flume Special Item - SY - 609023 - PCC WHEELCHAIR RAMP	950.000 SY	.		.	
1160	610006 Hydroseed	9872.000 SY	.		.	
1170	610054 Topsoil	877.000 CY	.		.	
1180	610060 Mulch	6020.000 SY	.		.	

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1190	611002 Remove Tree and Stump up to 6 Inch Dia.	60.000 EACH	.	.	.	.
1200	611004 Remove Tree and Stump 6 to 12 Inch Dia.	16.000 EACH	.	.	.	.
1210	611006 Remove Tree and Stump 12 to 18 Inch Dia.	9.000 EACH	.	.	.	.
1220	611008 Remove Tree and Stump 18 to 24 Inch Dia.	20.000 EACH	.	.	.	.
1230	611012 Remove Tree and Stump 30 to 36 Inch Dia.	4.000 EACH	.	.	.	.
1240	611014 Remove Tree and Stump 36 to 42 Inch Dia.	1.000 EACH	.	.	.	.
1250	611036 Remove Tree Stumps, All Sizes	4.000 EACH	.	.	.	.
1260	611286 Amelanchier canadensis (Shadblow Serviceberry) 6 - 8 Ft. Ht. , B&B	4.000 EACH	.	.	.	.
1270	611352 Cercis canadensis (Eastern Redbud) 8 - 10 Ft. Ht., B&B	15.000 EACH
1280	611537 Ilex opaca (American Holly) 8 - 10 Ft. Ht., B&B	20.000 EACH

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			DOLLARS	CTS	DOLLARS	CTS
1290	611625 Liquidambar styraciflua (American Sweetgum) 2 - 2 1/2 Inch Cal., B&B	5.000 EACH
1300	611631 Liriodendron tulipifera (Tuliptree) 2 - 2 1/2 Inch Cal., B&B	5.000 EACH	.	.	.	.
1310	611696 Myrica Pennsylvanica (Northern Bayberry) 2 1/2 - 3 Ft. Ht., B&B	25.000 EACH	.	.	.	.
1320	611704 Nyssa sylvatica (Blackgum) 1 3/4 - 2 Inch Cal., B&B	5.000 EACH	.	.	.	.
1330	611722 Parthenocissus quinquefolia (Virginia Creeper) 2 Yr. No. 1, 18 - 24 Inch Long Runners, B.R. 2YR NO. 1, 18-24 INCH LONG RUNNER B.R.	5480.000 EACH	.	.	.	.
1340	611724 Parthenocissus tricuspidata veichi (Boston Ivy) 2 Yr. No. 1, 18 - 24 Inch Long Runners, B.R. PARTHENOCISSUS TRICUS VEICHI BOSTON IVY 1YR NO. 1, 18-24 INCH LONG RUNNERS B.R.	930.000 EACH	.	.	.	.
1350	611770 Platanus acerifolia (London Planetree) 2 1/2 - 3 Inch Cal., B&B	4.000 EACH

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			DOLLARS	CTS	DOLLARS	CTS
1360	611771 Platanus acerifolia (London Planetree) 3 - 3 1/2 Inch Cal., B&B	22.000 EACH
1370	611810 Quercus acutissima (Sawtooth Oak) 1 3/4 - 2 Inch Cal., B&B	2.000 EACH	.	.	.	.
1380	611818 Quercus bicolor (Swamp White Oak) 2 - 2 1/2 Inch Cal., B&B	21.000 EACH	.	.	.	.
1390	611831 Quercus coccinea (Scarlet Oak) 2 - 2 1/2 Inch Cal., B&B	4.000 EACH	.	.	.	.
1400	611833 Quercus coccinea (Scarlet Oak) 3 - 3 1/2 Inch Cal., B&B	11.000 EACH	.	.	.	.
1410	611838 Quercus falcata (Southern Red Oak) 2 - 2 1/2 Inch Cal., B&B	3.000 EACH	.	.	.	.
1420	611853 Quercus phellos (Willow Oak) 3 - 3 1/2 Inch Cal., B&B	89.000 EACH	.	.	.	.
1430	611960 Ulmus parvifolia (Chinese Elm) 2 -2 1/2 Inch Cal., B&B	67.000 EACH	.	.	.	.
1440	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611041 - PRUNE TREE 6 INCH TO 12 INCH DIA.	1.000 EACH

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			DOLLARS	CTS	DOLLARS	CTS
1450	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611043 - PRUNE TREE 18 INCH TO 24 INCH DIA.	1.000 EACH	.		.	
1460	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611045 - PRUNE TREE 24 INCH TO 30 INCH DIA.	3.000 EACH	.		.	
1470	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611047 - PRUNE TREE 30 INCH TO 36 INCH DIA.	3.000 EACH	.		.	
1480	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611201 - LIRIOPE SPICATA (LILLY TURF)	11980.000 EACH	.		.	
1490	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611203 - SPIRAEA NIPPONICA 'SNOWMOUND' (SNOWMOUND SPIREA) 36 INCH HEIGHT	11980.000 EACH	.		.	
1500	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611205 - OPHIOPOGON JAPONICUS (MONDO GRASS)	8460.000 EACH	.		.	
1510	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611207 - RHUS AROMATICA 'GRO-LOW' (GROW LOW FRAGRANT SUMA) 18 INCH HEIGHT	3069.000 EACH	.		.	

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1520	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611209 - PENNESETUM ALOPECUROIDES 'HAMEL N' (FOUNTAIN GRASS)	3050.000 EACH	.	.	.	.
1530	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611211 - HYPERICUM FRONDOSUM (GOLDEN ST. JOHN'S WORT) 18 INCH HEIGHT	1621.000 EACH	.	.	.	.
1540	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611213 - IRIS VERSICOLOR (BLUE FLAG)	1610.000 EACH	.	.	.	.
1550	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611215 - HEMEROCALLIS 'STELL D' ORO' ('S TELL D' ORO' DAYLILLY)	1140.000 EACH	.	.	.	.
1560	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611217 - CALLICARPA AMERICANA (PURPLE BE AUTYBERRY) 24 INCH HEIGHT	900.000 EACH	.	.	.	.
1570	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611219 - PROVIDE AND PLANT "RFC"	625.000 EACH

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
1580	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611221 - ILEX VERTICILLATA "RED SPRITE" (RED SPRITE WINTERBERRY) 24 INCH HEIGHT	483.000 EACH	.	.	.	.
1590	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611223 - SCENECIO AUREUS (GOLDEN RAGWORT)	415.000 EACH	.	.	.	.
1600	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611225 - IRIS GERMANICA (BEARDED GERMAN IRIS)	350.000 EACH	.	.	.	.
1610	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611227 - PHYSOCARPUS OPULIFOLIUS (NINEBARCK) 36 INCH HEIGHT	100.000 EACH	.	.	.	.
1620	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611229 - CORNUS SERICEA 'FLAVIRAMEA' (YELLOW TWIG DOGWOOD) 36 INCH HEIGHT	30.000 EACH	.	.	.	.
1630	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611231 - PROVIDE AND PLANT "IVJ"	55.000 EACH

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			DOLLARS	CTS	DOLLARS	CTS
1640	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611233 - QUERCUS FALCATA (SOUTHERN RED O AK) 3 INCH CAL., B&B	EACH 49.000
1650	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611235 - CLETHRA ALNIFOLIA (SUMMERSWEET) 24 INCH HEIGHT	EACH 40.000	.	.	.	.
1660	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611237 - CORNUS SERICEA (RED TWIG DOGWOOD) 36 INCH HEIGHT	EACH 63.000	.	.	.	.
1670	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611239 - ULMUS AMERICANA 'PRINCETON' (PR INCETON AMERICAN ELM) 3 INCH CAL., B&B	EACH 27.000	.	.	.	.
1680	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611241 - FORSYTHIA X INTERMEDIA (FORSYTH IA) 36 INCH HEIGHT	EACH 25.000	.	.	.	.
1690	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611243 - ROSA 'FLOWER CARPET SCARLET' (F LOWER CARPET ROSE) 18 INCH HEIGHT	EACH 20.000

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			DOLLARS	CTS	DOLLARS	CTS
1700	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611245 - ROSA 'RADRAZZ' (KNOCKOUT ROSE)	20.000 EACH	.		.	
1710	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611247 - TAXODIUM DISTICHUM (BALD CYPRES S) 2 INCH CAL., B&B	14.000 EACH	.		.	
1720	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611249 - CORNUS FLORIDA 'ALBA' (WHITE FL OWERING DOGWOOD) 2 INCH CAL., B&B	13.000 EACH	.		.	
1730	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611251 - ASIMINA TRILOBA (PAW-PAW TREE) 2" CAL., B&B	8.000 EACH	.		.	
1740	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611253 - DIOSPYRUS VIRGINIANA (COMMON PE RSIMMON) 2 INCH CAL., B&B	8.000 EACH	.		.	
1750	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611255 - LAGERSTOEMIA X 'NATCHEZ' (CRAPE MYRTLE) 10 FT. HT	2.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1760	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611257 - PRUNUS 'OKAME' (OKAME FLOWERING CHERRY)	2.000 EACH	.		.	
1770	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611259 - CLADASTRIC LUTEA (YELLOWWOOD) 2 INCH CAL., B&B	1.000 EACH	.		.	
1780	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611261 - KERRIA JAPONICA 30 INCH HEIGHT	180.000 EACH	.		.	
1790	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611263 - RHODODENDRON VASEYI (PINKSHELL AZALEA) 24 INCH SPREAD	191.000 EACH	.		.	
1800	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611265 - RHODODENDRON VISCOSUM (SWAMP AZ ALEA) 24 INCH SPREAD	177.000 EACH	.		.	
1810	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611267 - ABELIA GRANDIFLORA 'PROSTRATA' (PROTRATE ABELIA) 24 INCH SPREAD	340.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1820	611999 Tree, Shrub, Vine, & Ground Cover Special Item - EACH - 611269 - BACCHARIS HALIMIFOLIA (EASTERN BACCHARIS) 18 INCH HEIGHT	208.000 EACH
1830	612002 Mobilization	LUMP	LUMP	.	.	.
1840	614012 Portable Precast PCC Barrier	1200.000 LF	.	.	.	.
1850	614992 PCC Traffic Barriers Special Item - LF - 614001-MOVE PORTABLE PRECAST PCC BARRIER	6000.000 LF	.	.	.	.
1860	616001 Maintenance of Highway Traffic	LUMP	LUMP	.	.	.
1870	616006 Remove Lane Markings	20000.000 SF	.	.	.	.
1880	616008 Temporary Construction Sign Supports	100.000 EACH	.	.	.	.
1890	616012 Construction Warning and Detour Signs	1000.000 SF	.	.	.	.
1900	616024 Type III PVC Barricade	15.000 EACH
1910	616028 Traffic Drums	200.000 EACH

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			DOLLARS	CTS	DOLLARS	CTS
1920	616036 Double-Faced Yellow Raised Reflective Pavement Markers	400.000 EACH
1930	616040 Thermoplastic Pavement Marking, 4 Inch	28330.000 LF	.	.	.	.
1940	616044 Thermoplastic Pavement Marking, 6 Inch	6400.000 LF	.	.	.	.
1950	616050 Thermoplastic Pavement Marking, 12 Inch	3985.000 LF	.	.	.	.
1960	616052 Thermoplastic Pavement Letter	400.000 EACH	.	.	.	.
1970	616054 Thermoplastic Pavement Arrow	129.000 EACH	.	.	.	.
1980	616060 Painted Lane Marking, 4 Inch	2240.000 LF	.	.	.	.
1990	616062 Painted Lane Marking, 6 Inch	3280.000 LF	.	.	.	.
2000	616080 Truck Mounted Attenuator	3.000 EACH	.	.	.	.
2010	616090 Construction Zone Attenuator	6.000 EACH
2020	616110 PORTABLE CHANGABLE MESSAGE SIGN	8.000 EACH

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			DOLLARS	CTS	DOLLARS	CTS
2030	616991 Traffic Control Special Item - LS - 616009 - FURNISH AND INSTALL TEMPORARY L ANE CONTROL SYSTEM	LUMP	LUMP			.
2040	616992 Traffic Control Special Item - EACH - 616003 - FURNISH AND INSTALL CCTV CAMERA SYSTEM	EACH	2.000			.
2050	616992 Traffic Control Special Item - EACH - 616021 - ELECTRONIC ILLUMINATED TRAFFIC DEVICES (ARROW PANEL)	EACH	8.000			.
2060	616992 Traffic Control Special Item - EACH - 800023 - FURNISH AND INSTALL CLASS I PIE ZOELECTRIC SENSOR (9')	EACH	8.000			.
2070	616992 Traffic Control Special Item - EACH - 800037 - FURNISH AND INSTALL LEAD-IN CAB LE FOR PIEZO P1 (50')	EACH	4.000			.
2080	616992 Traffic Control Special Item - EACH - 800039 - FURNISH AND INSTALL LEAD-IN CAB LE FOR PIEZO P2 (100')	EACH	4.000			.
2090	616994 Traffic Control Special Item - LF - 607045 - TEMPORARY ORANGE CONSTRUCTION FENCE	LF	5000.000			.

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			DOLLARS	CTS	DOLLARS	CTS
2100	616994 Traffic Control Special Item - LF - 616005-PREFORM LANE MARKING 10 INCH -LF	LF 3500.000
2110	616994 Traffic Control Special Item - LF - 616007 PREFORM LANE MARKING 24 INCH - LF	LF 2200.000	.	.	.	.
2120	616994 Traffic Control Special Item - LF - 616011-PREFORM LANE MARKING 4 INCH - LF	LF 30000.000	.	.	.	.
2130	616994 Traffic Control Special Item - LF - 616013- 3M HIGH VISIBILITY TAPE	LF 96.000	.	.	.	.
2140	617002 Furnish And Install Inductive Loop Detector	LF 7208.000	.	.	.	.
2150	617006 Remove Abandoned Traffic Signal Or Street Light Pole Foundat ion	EACH 46.000	.	.	.	.
2160	617024 Furnish And Install Galvanized Steel Transformer Base	EACH 129.000	.	.	.	.
2170	617028 Furnish And Install Handbox	EACH 45.000	.	.	.	.
2180	617032 Furnish And Install One 2 Inch And One 4 Inch Pvc Encased El ectrical Conduits	LF 1375.000

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2190	617038 Furnish And Install Pcc Foundation For Controller Cabinet	11.000 EACH	.	.	.	.
2200	617040 Furnish Temporary, Portable, Concrete Base For Model 336-S A nd Model 336-Ss Traffic Signal Controller Cabinet	9.000 EACH	.	.	.	.
2210	617042 Furnish Temporary, Portable, Concrete Base For 20 Foot Steel Traffic Signal Pole Mounted On A Transformer Base	95.000 EACH	.	.	.	.
2220	617044 Relocate Any Temporary, Portable, Concrete Base	95.000 EACH	.	.	.	.
2230	617046 Furnish And Install 20 Foot Tall Steel Traffic Signal Pole	140.000 EACH	.	.	.	.
2240	617048 Furnish And Install 8 Foot Long Mast Arm With Clamp And Removable End Cap	60.000 EACH	.	.	.	.
2250	617050 Furnish And Install 7 Conductor 14 Awg Stranded Electrical Traffic Signal Cable	24414.000 LF	.	.	.	.
2260	617052 Furnish And Install 4 Conductor 18 Awg Shielded, Stranded Electrical Traffic Signal Cable	31268.000 LF

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			DOLLARS	CTS	DOLLARS	CTS
2270	617054 Furnish And Install 12 Pair 19 Awg Underground Communication s Cable	LF 750.000	.		.	
2280	617058 Furnish And Install 25 Pair 19 Awg Underground Communication s Cable	LF 13044.000	.		.	
2290	617060 Furnish And Install 25 Pair 19 Awg Overhead Communications C able	LF 3930.000	.		.	
2300	617068 Furnish Red Ball Led Module	EACH 208.000	.		.	
2310	617070 Furnish Yellow Ball Led Module	EACH 208.000	.		.	
2320	617072 Furnish Green Ball Led Module	EACH 208.000	.		.	
2330	617074 Furnish Red Arrow Led Module	EACH 2.000	.		.	
2340	617076 Furnish Yellow Arrow Led Module	EACH 31.000	.		.	
2350	617078 Furnish Green Arrow Led Module	EACH 35.000	.		.	

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2360	617084 Furnish 12 Inch Overlay Lunar White Walking Person And Portl and Orange Raised Hand Led Module	138.000 EACH	.	.	.	.
2370	617086 Furnish 12 Inch Portland Orange Countdown Led Module	138.000 EACH	.	.	.	.
2380	617088 Furnish And Install 1 Section Conventional Traffic Signal He ad On A Pole (All Lenses 12?) SCHOOL FLASHING BEACONS	2.000 EACH	.	.	.	.
2390	617090 Furnish And Install 3 Section Conventional Traffic Signal He ad On A Pole (All Lenses 12?)	139.000 EACH	.	.	.	.
2400	617092 Furnish And Install 4 Section Conventional Traffic Signal He ad On A Pole (All Lanes 12?)	4.000 EACH	.	.	.	.
2410	617094 Furnish And Install 5 Section Conventional Traffic Signal He ad On A Pole (All Lenses 12?)	25.000 EACH	.	.	.	.
2420	617096 Furnish And Install 3 Section Conventional Traffic Signal He ad On A Mast Arm (All Lenses 12?)	40.000 EACH	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2430	617114 Furnish And Install 2 Section Conventional Pedestrian Signal Head On A Pole (12?)	138.000 EACH	.	.	.	.
2440	617120 Furnish And Install Microwave Vehicle Detector	20.000 EACH	.	.	.	.
2450	617124 Furnish And Install Traffic Signal Controller And Cabinet	11.000 EACH	.	.	.	.
2460	617126 Remove Abandoned Traffic Signal Controller Cabinet Foundatio n	9.000 EACH	.	.	.	.
2470	617130 REMOVE TRAFFIC SIGNAL POLE AND TRAFFIC SIGNAL EQUIPMENT	1.000 EACH	.	.	.	.
2480	617132 Remove Traffic Signal Controller And Cabinet	9.000 EACH	.	.	.	.
2490	618016 Furnish and Install 36" x 36" x 36" Manhole	27.000 EACH	.	.	.	.
2500	618022 Furnish and Install 48" x 48" x 48" Manhole	63.000 EACH	.	.	.	.
2510	618054 Repair Electrical Manhole/Handhole	12.000 EACH	.	.	.	.
2520	618072 Furnish and Install 1-2" Schedule 40 Rigid PVC Conduit	2370.000 LF	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2530	618100 Furnish and Install 1-4" Schedule 40 Rigid PVC Conduit	1260.000 LF	.	.	.	.
2540	618148 Furnish and Install 6-4" Schedule 40 Rigid PVC Conduits (duc t bank)	5602.000 LF	.	.	.	.
2550	618150 Furnish and Install 6-4" and 1-2" Schedule 40 Rigid PVC Cond uits (duct bank)	1815.000 LF	.	.	.	.
2560	618152 Furnish and Install 6-4" and 2-2" Schedule 40 Rigid PVC Cond uits (duct bank)	420.000 LF	.	.	.	.
2570	618154 Furnish and Install 4-4" Schedule 40 Rigid PVC Conduit (duct bank)	2360.000 LF	.	.	.	.
2580	618160 Furnish and Install 2-4" Schedule 40 Rigid PVC Conduit (duct bank)	320.000 LF	.	.	.	.
2590	618162 Furnish and Install 2-4" and 1-2" Schedule 40 Rigid PVC Cond uit (duct bank)	295.000 LF	.	.	.	.
2600	618190 Furnish and Install #10 Stranded Wire	26918.000 LF	.	.	.	.
2610	618202 Furnish and Install #6 Stranded Wire	9828.000 LF	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2620	618250 Furnish and Install #0000 Stranded Wire	42475.000 LF	.	.	.	.
2630	618292 Furnish and Install #8 Stranded Ground Wire	17798.000 LF	.	.	.	.
2640	618310 Furnish and Install #2 Stranded Ground Wire	14158.000 LF	.	.	.	.
2650	618394 Furnish and Install 15" B.C. Street Light Foundation	152.000 EACH	.	.	.	.
2660	618534 Furnish and Install Twin 20 Steel/Aluminum Pole	23.000 EACH	.	.	.	.
2670	618554 Furnish and Install 28'-6" Aluminum Pendant Pole with up to 8' Arm	88.000 EACH	.	.	.	.
2680	618676 Furnish and Install 8 ft. Arm on Wood Pole	49.000 EACH	.	.	.	.
2690	618688 Remove arm from wood pole over 8 ft. in Length	77.000 EACH	.	.	.	.
2700	618720 Remove Luminaire from Wood Pole	77.000 EACH	.	.	.	.
2710	618760 Furnish and Install 250 Watt HPS Tear Drop Fixture	137.000 EACH	.	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2720	618796 Furnish and Install 150 Watt HPS Conversion Kit	46.000 EACH	.	.	.	.
2730	618860 Furnish and Install 118 Plastic Globe	46.000 EACH	.	.	.	.
2740	618999 Payment to PEPCO for Connection, Disconnection, Inspection OF SERV TO STREET LIGHT & TRAF SIGNALS	LUMP	LUMP	.	.	105550.00
2750	620014 Traffic Sign Panels	1400.000 SF	.	.	.	.
2760	620991 Traffic Signing Special Item - LF - 620001 - METAL SIGN POST	1716.000 LF	.	.	.	.
2770	620993 Traffic Signing Special Item - EACH - 616013 - IDENTIFICATION SIGN	4.000 EACH	.	.	.	.
2780	620993 Traffic Signing Special Item - EACH - 616015 - MULTISPACE PARKING METER	6.000 EACH	.	.	.	.
2790	624002 Engineer's Field Facilities	LUMP	LUMP	.	.	.
2800	625002 Field Layout	LUMP	LUMP	.	.	.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2810	628002 Erosion and Sediment Control	LUMP	LUMP			.
2820	700007 Structures Construction Special Item - LS - 708001 - DRIVEWAY RETAINING WALLS - DESIGN/BUILD	LUMP	LUMP			.
2830	700009 Structures Construction Special Item - SF - 701001 - SOLDIER PILE RETAINING WALL, RW 4	SF 6550.000		.		.
2840	700009 Structures Construction Special Item - SF - 719001 - SEGMENTAL RETAINING WALL SYSTEM - RW 6, 7, & 8	SF 5820.000		.		.
2850	708002 Stone Masonry, Class A STONE WALL COPING STONES, 8 INCH THICK B Y 12 INCH WIDE	CF 345.000		.		.
2860	708002 Stone Masonry, Class A STONE WALL COPING STONES, 8 INCH THICK B Y 24 INCH WIDE	CF 1212.000		.		.
2870	708002 Stone Masonry, Class A STONE WALL COPING STONES, 8 INCH THICK B Y 8 INCH WIDE	CF 89.000		.		.
2880	708004 Stone Masonry, Class B STONE FACING	CF 4613.000		.		.

SCHEDULE OF ITEMS

DATE:

REVISED:

CONTRACT ID: KA2009B0090

PROJECT(S): ARA-1300(015)

CONTRACTOR : _____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
2890	709991 Railing Special Item - LF - 607001 - RAILING TYPE 1	1979.000 LF	.		.	
2900	709991 Railing Special Item - LF - 607003 - RAILING TYPE 2	445.250 LF	.		.	
2910	709991 Railing Special Item - LF - 607005 - RAILING TYPE 3	191.000 LF	.		.	
2920	709991 Railing Special Item - LF - 607007 - RAILING TYPE 4	105.000 LF	.		.	
	SECTION 0001 TOTAL				.	
	TOTAL BID				.	



RECONSTRUCTION
PROJECT



FEDERAL HIGHWAY
TRUST FUNDS

DISTRICT
OF COLUMBIA
FUNDS

\$

\$

U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

D.C. DEPARTMENT OF
TRANSPORTATION

NOTE: BOARD SIZE APPROX.
4' x 6'

FEDERAL-AID PROJECT SIGN

D. C. DEPARTMENT OF TRANSPORTATION

**PROJECT FUNDING SOURCE SIGN ASSEMBLY
AMERICAN RECOVERY AND REINVESTMENT ACT
SIGN LAYOUT DETAILS**



PROJECT FUNDING SOURCE
SIGN ASSEMBLY

PROJECT FUNDING SOURCE SIGN ASSEMBLY AMERICAN RECOVERY AND REINVESTMENT ACT SIGN LAYOUT DETAILS



PROJECT FUNDING SOURCE SIGN

NOTE: SIGN SHALL NOT BE INSTALLED WITHOUT PROJECT FUNDING SOURCE PLAQUE (SEE SHEET 3).

Dimensions in inches

A	B	C	D	E	F	G	H	J	K	L	M	N	P
120	84	1.5	6	5 D	4.5	8 D*	3.75	6 D*(45LC)	14.5	10	27.917	5	10.831
84	60	1	5	4 C	3.5	6 C*	3	4 D*(3 LC)	9.25	7	19.047	4	7.362

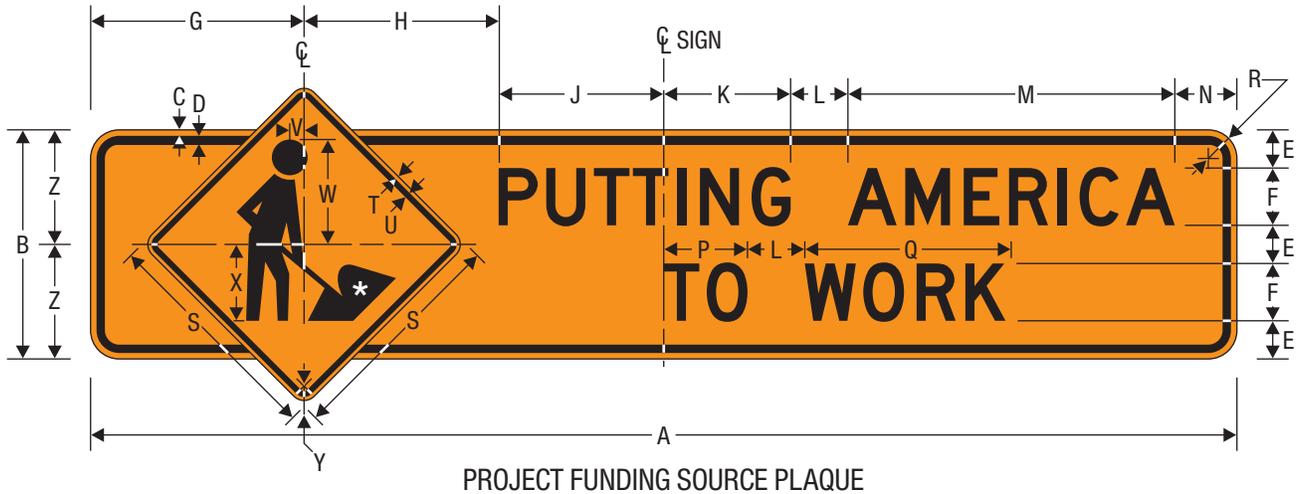
Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD
14.087	8.106	11.556	49.42	2.742	5.258	46.904	6.812	46.76	22.472	8	16.288	5	30
9.484	5.162	7.763	31.722	2.415	3.585	30.552	4.542	30.911	14.737	6	10.175	4	21

EE	FF	GG
11	4.5	3
7.5	2.25	2.25

- * Increase character spacing 50%
- ** See Pictograph page 4
- *** See Pictograph page 5

COLORS: LEGEND, BORDER — WHITE (RETROREFLECTIVE)
BACKGROUND — GREEN (RETROREFLECTIVE)

PROJECT FUNDING SOURCE SIGN ASSEMBLY AMERICAN RECOVERY AND REINVESTMENT ACT SIGN LAYOUT DETAILS



NOTE: PLAQUE SHALL NOT BE INSTALLED WITHOUT SIGN (SEE SHEET 2).

* See *Standard Highway Signs* Page 6-59 for symbol design.

Dimensions in inches

A	B	C	D	E	F	G	H	J	K	L	M	N	P
120	24	0.625	0.875	4	6 D	22.349	20.370	17.281	13.28	6	34.22	6.5	8.765
84	18	0.375	0.625	3.5	4 D	16.607	15.686	9.707	10.667	4	22.813	5	5.843

Q	R	S	T	U	V	W	X	Y	Z
21.013	3	24	0.375	0.625	1.5	11	8	1.5	12
14.009	2.25	18	0.375	0.625	1	7	6	1.5	9

COLORS: LEGEND, BORDER — BLACK
BACKGROUND — ORANGE (RETROREFLECTIVE)

PROJECT FUNDING SOURCE SIGN ASSEMBLY AMERICAN RECOVERY AND REINVESTMENT ACT SIGN LAYOUT DETAILS



RECOVERY
Vector-Based, Vinyl-Ready Pictograph

- | | |
|--------------------------|---------------------------|
| COLORS: LEGEND, OUTLINE | — WHITE (RETROREFLECTIVE) |
| BORDER | — BLUE (RETROREFLECTIVE) |
| BACKGROUND (UPPER) | — BLUE (RETROREFLECTIVE) |
| BACKGROUND (LOWER RIGHT) | — RED (RETROREFLECTIVE) |
| BACKGROUND (LOWER LEFT) | — GREEN (RETROREFLECTIVE) |

**PROJECT FUNDING SOURCE SIGN ASSEMBLY
AMERICAN RECOVERY AND REINVESTMENT ACT
SIGN LAYOUT DETAILS**

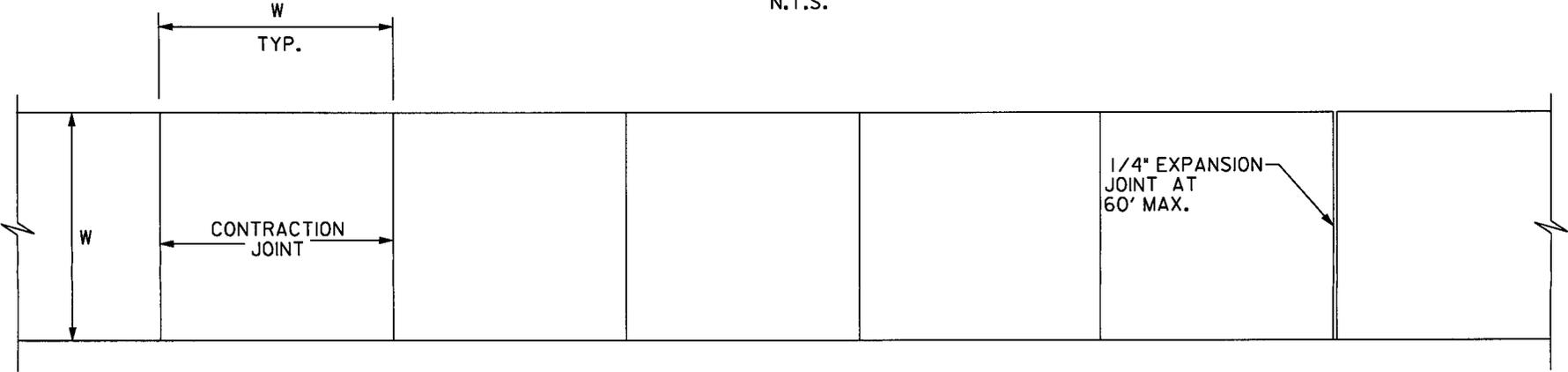


USDOT TIGER
Vector-Based, Vinyl-Ready Pictograph

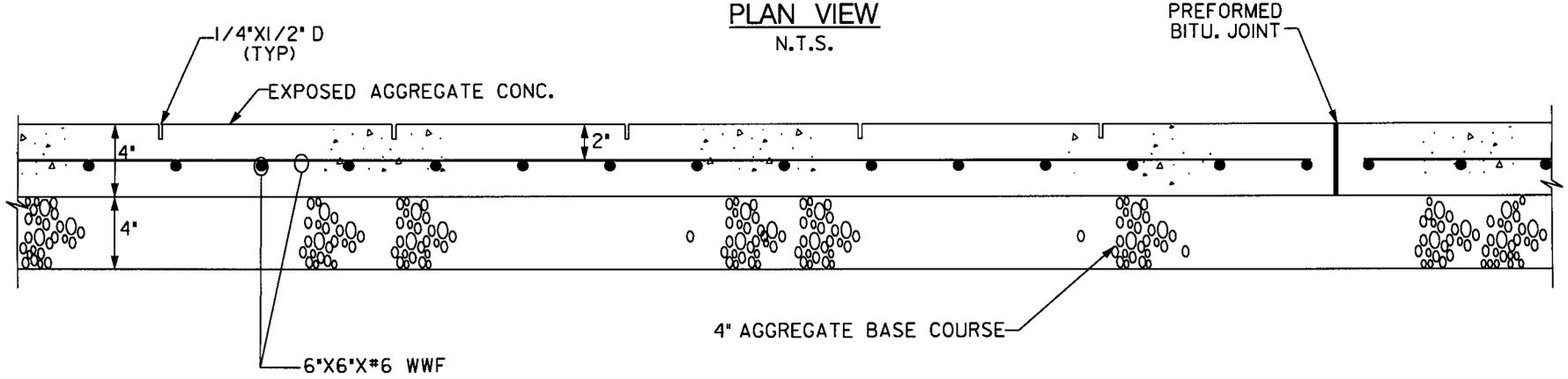
COLORS: OUTLINE — WHITE (RETROREFLECTIVE)
USDOT LEGEND — BLACK
TIGER DIAGONALS — BLACK,
ORANGE (RETROREFLECTIVE)

PENN. AVE S.E. PROJECT
TYPICAL SIDEWALK DETAIL

N.T.S.



PLAN VIEW
N.T.S.



LONGITUDINAL SECTION
N.T.S.

NOTE:
THE COST OF WELDED WIRE
FABRIC IS INCIDENTAL TO
THE COST OF EXPOSED
AGGREGATE SIDEWALK.

**DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION**

**SP 94 - PAVEMENT RIDE QUALITY AND
EQUIPMENT SPECIFICATIONS AND TEST METHOD**

1 DESCRIPTION

This special provision describes pavement surface smoothness construction and quality control, using the International Roughness Index (IRI), for concrete and asphalt paved surfaces. It includes incentives and disincentives. The Contractor shall use an inertial profiler or rolling inclinometer to collect Quality Control (QC) data on pavement ride quality. The profiler shall conform to ASTM E 950 and Equipment Specification and Test Method for Ride Quality Data Collection.

This work shall consist of:

1. Furnishing and operating a certified profiler to measure ride quality according to the International Roughness Index (IRI).
2. Maintaining the profiler in calibration and good working order.
3. Providing a certified profiler operator.
4. Preparing and submitting a Ride Quality Measurement Plan and, if required, a corrective action plan to the Engineer for acceptance.
5. Ensuring that the pavement on which ride quality measurements are taken is sufficiently clean prior to ride quality measurements.
6. Performing all ride quality measurements as required by this special provision.
7. Completing all corrective action.

This special provision supersedes the longitudinal tolerances specified in subsection 401.14, Surface Tolerances, of the Standard Specifications for Construction, with the exception as noted in Section 3. Subsections *501.13 (F)*, *Surface Correction*, and *501.16, Surface Testing*, of the Standard Specification for Construction shall remain in force.

The equipment specification and test method for Ride Quality Data Collection defines the required attributes of a high-speed inertial profiling system, lightweight inertial profiling system or a rolling inclinometer profiling system used to measure longitudinal pavement profiles for construction quality control and acceptance. The system shall be able to measure and record pavement surface profiles, calculate International Roughness Index (IRI), flag roadway features such as manholes and intersections, and provide other features necessary to meet DDOT pavement smoothness quality control specifications.

2 RELATED STANDARDS

2.1 AASHTO Standards

- *PP 37-04, Determination of International Roughness Index (IRI) to Quantify Roughness of Pavements*
- *PP 49-03, Certification of Inertial Profiling Systems*
- *PP 50-03, Operating Inertial Profilers and Evaluating Pavement Profiles*
- *PP 51-03, Pavement Ride Quality When Measured Using Inertial Profiling Systems*
- *MP 11-03, Inertial Profiler*

2.2 ASTM Standards

- *ASTM E 950-98, Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference*
- *ASTM E 1926-98, Standard Practice for Computing International Roughness Index of Roads from Longitudinal Profile*

2.3 DDOT Standards

- *Equipment Specification and Test Method for Ride Quality Data Collection*
- *Subsection 401.14, Surface Tolerances*
- *Subsection 501.13 (F), Surface Correction*
- *Subsection 501.16, Surface Testing*

3 TERMINOLOGY

Defect Segment – Any 25-foot segment with measured IRI greater than the IRI threshold for defect penalty/correction (IRI_e) (section 9.4(b)).

Contractor Quality Control Measurement of Ride Quality -- Informational run(s) made by the Contractor to determine the ride quality acceptability, the need for corrective action, or the need for a process change. It can also include runs made after corrective action to determine if corrective action has been sufficient.

Correction Segment – Any 25-foot segment with measured IRI greater than the IRI threshold for defect correction (IRI_f) (section 9.4(b)).

International Roughness Index (IRI) – A statistic used to determine the amount of roughness in a measured longitudinal profile. Computer programs to calculate the IRI statistic from a longitudinal profile are referenced in AASHTO PP 37-00.

Predetermined Exempt Areas – Pavement within the project where this Pavement Ride Quality special provision does not apply, but straightedge requirements of subsection 401.14 or 501.16 of the Standard Specifications will be in force as applicable. Predetermined exempt areas include:

- Ramps other than freeway-to-freeway ramps
- All ramp tapers
- Shoulders

- Drainage grates in the wheelpath
- Railroad crossings and pavement within 50 feet thereof
- Bridges – The predetermined exempt areas is that areas between the two end references lines or between the outermost limits of any structure expansion joint devices and pavement within 50 feet thereof
- Brick crosswalks.
- Bus pads (unless constructed by the same contractor)

Profile – The elevation of a pavement surface along a line parallel to the centerline of the pavement. Also defined as a two-dimensional plot of the elevation of a pavement surface, taken in a longitudinal direction. Profiles are measured separately along each wheelpath of a lane.

Profiler – In general, a device that measures the elevation of a pavement surface and creates a profile. In particular, a device that meets the requirements of Equipment Specification and Test Method.

Project Feature Areas – The 25-ft segments associated with pavement features such as manholes and intersections. The IRI values from these segments are not included in computing the section IRI_{AVG}. However, they are used to determine defect costs and correction areas.

Ride Quality Certification – A formal process required by the Department to assure that ride quality measuring equipment and operators are capable of measuring ride quality to the standards established in Equipment Specification and Test Method. The equipment shall display the equipment certification sticker indicating the expiration date of certification. The operator shall provide a copy of the operator certification to the Engineer.

Ride Quality Measurement Area – The local, collector, and arterial roadways, freeway-to-freeway ramps, and other areas as shown on the project plans.

Run of Record – The formal ride quality measurement submitted by the Contractor that includes all data files associated with the profile run, IRI values for every 25 foot segment, and the IRI_{AVG} (section 8.1) value for the submittals listed in section 8.3.1. A Run of Record is measured in the direction of travel. Each Run of Record must be labeled using a format approved by the Engineer.

Quality Assurance Run – A ride quality measurement made by the Engineer on a project, or portion of a project, to determine the ride quality. A verification run is conducted and the quality assurance (QA) results are compared to the Contractor Run of Record on the same pavement area to determine if the Contractor's entire Run of Record may be used as part of the acceptance decision.

Test Lot – A continuous segment of roadway as defined by the street name, direction, lane number, and from and to stations. Profile measurement shall be performed and recorded for each individual test lot as *Run of Record*.

Verification Limit – The allowable variation between the QA and the quality control (QC) data. This limit accounts for the expected variability of ride quality measurements taken by the same operator using the same piece of equipment on the same test lot. The Verification Limit is defined in section 6.2 of this specification.

Wheelpath – The longitudinal locations 33 to 35 inches on either side of the centerline of each lane. The spacing between the right and the left wheelpath shall be between 67 and 70 inches, especially near roadway features such as manholes.

Accelerometer: transducer that provides an output proportional to vertical acceleration.

Aliasing: the error that can result when a signal is sampled at a rate less than twice the frequency of the various sinusoidal components that compose the signal. It is also described as the error that results from sampling a long wavelength signal that is mixed with a short wavelength noise signal.

Anti-aliasing filter: a low-pass filter that suppresses short wavelength contamination of longer wavelength measurements to improve the accuracy of the sampling process.

Filtering: a procedure to extract desired information from a signal that also contains unwanted information (commonly called noise). Digital filtering is a calculation procedure that takes one set of numbers and transforms them into another set in which the noise is reduced. Moving averages are one type of such transform or filter.

High-pass filter: reduces the effect of long wavelengths that are associated with gradual elevation changes such as hills.

Index: measure or standard. Within the context of this test method, a suitably chosen index quantifying the ride quality of a pavement.

Infrared laser sensor: non-contacting transducer that provides an output proportional to the distance from the sensor to a reflecting surface. These sensors are mounted at a nominal height, or standoff distance, above the roadway surface when the test vehicle is in a static position.

Low-pass filter: smoothing type filter that reduces the effect of short wavelengths that are associated with rapid elevation changes such as expansion joint ribs.

Measurement range: the detectable range of heights measurable by the laser sensor.

Moving average: filtering process whereby each data point is replaced with the average value of several adjacent points or elevations. It is a smoothing process because the changes from one elevation point to the next will not be as significant because the difference has been divided by the total number of data points in the averaging scheme. It is a type of low-pass filter.

Profile: two-dimensional slice of the roadway surface taken along an imaginary line, such as the wheelpath, in the longitudinal or travel direction. It represents the perpendicular deviations of the pavement surface from an established reference parallel to the horizontal.

Reference line: the imaginary line formed by the infrared laser sensor and the accelerometer in a static mode.

Repeatability: consistency in successive measurements of the same quantity over time. It is a quantifier of the variability in measurement error.

Reporting interval: the travel distance between the outputs of a profile elevation or index value.

Reproducibility: the ability of two independent measurement systems to accurately, and with precision, measure and record a known or fixed value.

Roughness: according to ASTM E 867, the deviation of a surface from a true planar surface with characteristic dimensions that affect vehicle dynamics and ride quality.

Run of Record: The formal ride quality measurement submitted by the Contractor that includes all data files associated with the profile run, IRI values for every 25 foot segment, and the IRIAVG (section 8.1) value for the submittals listed in section 8.3.1. A Run of Record is measured in the direction of travel. Each Run of Record must be labeled using a format approved by the Engineer.

Running interval: set travel distance that is stepped through a test segment by an increment shorter than its length.

Sampling or sample interval: the longitudinal distance between data capture points. The data includes location, height, and accelerometer values. These data points are combined to create one profile data point. These points may be averaged to create a final value on the reported profile.

Sampling rate: the rate at which the height sensor measures vertical displacement. This sampling rate and the vehicle operating speed determine the sample interval.

Sensors: devices that measure physical quantities. They are responsive to changes in a physical measurement such as distance, temperature, and acceleration.

Standoff distance: the distance from the light source to a point in the center of the measurement range.

Test Lot: A continuous segment of roadway as defined by the street name, direction, lane number, and from and to stations. Profile measurement shall be performed and recorded for each individual test lot as Run of Record.

Transducer: device that converts variables of one type (i.e., voltage) into those of another type (e.g., distance). These conversions must conform to a known transformation (i.e., are proportional) to be useful.

4 RIDE QUALITY MEASUREMENT PLAN

A QC Ride Quality Measurement Plan shall be submitted to the Engineer for review at least 14 calendar days before the start of paving operations for major construction projects, as determined by the Engineer. For minor construction projects, a QC Ride Quality Measurement Plan shall be submitted to the Engineer for review at **least 7 calendar days** before the start of paving operations. Do not begin paving operations before receiving written acceptance from the Engineer. All paved lanes shall be tested for smoothness. All exempted areas shall be documented as to the location and reason for exemption in all data reports submitted to the engineer in charge. The Engineer will notify the Contractor of any objections to the plan within 5 calendar days of receipt of the plan.

Include the following minimum requirement details in the Ride Quality Measurement Plan:

1. Equipment used to measure ride quality on the project.
2. Equipment certification or verification records for profiling equipment scheduled to be used in the QC measurements. This should include more than one device (additional one as backup) and should include the certification agency, certifying agency contact information, certification number, and expiration date.
3. A signed statement shall be provided that no changes to the profiling system have been made since the certification.
4. Certification records for any operator that might conduct the QC measurements. The records should include the certifying agency contact information and the operator(s) certification expiration date(s)
5. Planned locations for profile run of record data collection
6. Planned length of the profile run of record data collection
7. Planned method(s) to correct surface irregularities, when necessary
8. Planned method(s) to correct surface irregularities, when necessary
9. Ride quality testing and reporting time frames in relation to paving and staging operations
10. Feature labeling format description and other relevant notes for the run of record

GENERAL SYSTEM REQUIREMENTS

4.1 General

The high-speed and lightweight inertial profiling systems shall meet the general system requirements of AASHTO MP-11 with the following additions and modifications:

4.2 Measuring Profiles

- The profiling system shall satisfy the following conditions: collect accurate profile data at testing speeds ranging from 10 to 30 mi/hr for lightweight profilers, 15 to 70 mi/hr for high-speed profilers, and up to 2.4 mi/hr for a rolling inclinometer; collect accurate profile data on pavements having roughness values (IRI's) that range from 5 in/mi to 400 in/mi, and collect accurate profile data on asphalt surfaced, surface treated (chip seal) and non-longitudinally grooved, tined, or ground portland cement concrete surfaces. The profile data shall not be affected by pavement markings that are traversed by the sensors. The collected profile data shall not be affected by pavement color, texture, or ambient lighting.
- The triggering system shall be capable of repeatability within ± 3 in over the range of operating speeds. Manual triggering is allowed for the rolling inclinometer.
- The System shall be capable of accurately collecting surface profile wavelengths from 2 in to 300 ft when operated between 10 and 70 mi/hr for the high-speed profilers, 10 to 30 mi/hr for the low-speed profilers, and up to 2.4 mi/hr for a rolling inclinometer.
- The system shall be capable of determining a profile value (sampling interval) every 1 in or less with a recording interval of no more than 2 in at the maximum collection speed of the vehicle.

4.3 Calculating Roughness Indices

- The system shall compute International Roughness Index (IRI) in real time at 25-ft intervals.

4.4 Calibration

- Calibration of the distance and acceleration sensors and checks of the height sensors shall be easily and quickly achievable using the equipment and software provided by the manufacturer.
- The hardware required for checking the calibration of the height sensors, such as leveling plates and gage blocks, and/or other calibration devices shall be provided with each profiler.

5 GENERAL RIDE QUALITY MEASUREMENT REQUIREMENTS

Testing procedures, equipment, operators, and reporting shall be in accordance with Equipment Specification and Test Method for Ride Quality Data Collection. Notify the Engineer at least 24 hours before measuring a profile Run of Record or performing any pavement corrections.

6 RIDE QUALITY DETERMINATION

6.1 Units of Measurement

Calculate and report ride quality as International Roughness Index (IRI) in units of inches/mile.

6.2 Calculation Method

Calculate and report an IRI value, according to ASTM E 1926, for the left and right wheelpath of each 25-foot segment of the project. Compute the IRI_{AVG} from each run as the average IRI from both wheelpaths for all 25-ft segments that do not contain features. A run is defined as a day's product, or a pre-determined test lot length no longer than 1 mile, as approved by the DDOT representative.

Report all ride quality values rounded down to the nearest whole number. Segments shorter than 25 feet (due to exempt areas or the project end) shall be ignored. A full 25-foot segment shall be started after each exempt area. Segments less than 25 ft that precede exempt areas shall not be included in the IRI_{AVG} calculations.

6.3 Correction Method

When the IRI of any 25-foot segment (IRI_{25}) is greater than the IRI threshold for defect penalty/correction (IRI_e , see section 9.4(b)), that segment is deemed *defective*, and one of the following corrective actions shall be taken, as directed and approved by the Engineer. The Contractor shall take corrective action(s) at no additional cost to the Department.

6.3.1 Actions for Segment with $IRI_e < IRI_{25} \leq IRI_f$

- (1) For hot mix asphalt (HMA) pavement, remove and replace a minimum of 1½ inches of HMA one full lane width wide for the defective segments, or

- (2) For Portland cement concrete (PCC) pavement, grind the segment to bring the segment IRI into conformance with these specifications, i.e. $IRI_{25} < IRI_e$, or
- (3) For either HMA or PCC pavements, accept the Defect Cost (P_{defect}) for any defect segment where corrective action is not performed. This is applicable only when the IRI of any 25-foot segment is within the IRI threshold for defects correction (IRI_f) (section 9.4(b)).

One of these corrective actions shall be applied to each defective segment as directed by the Engineer. Any approval from the Engineer to waive action 1 or 2 shall not constitute a waiver of action No. 3 unless explicitly stated in writing by the Engineer. The Contractor shall re-profile all the corrected segments and 50 feet of length before and after each corrected segment. The re-profiled data shall be used for pay calculations regarding defect segments.

6.3.2 Actions for Segments with $IRI_{25} > IRI_f$

- (1) For hot mix asphalt (HMA) pavement, remove and replace a minimum of 1½ inches of HMA one full lane width wide for the defective segments, or
- (2) For either HMA or Portland cement concrete (PCC) pavement, grind the segment to bring the segment IRI into conformance with these specifications, i.e. $IRI_{25} < IRI_e$

One of these corrective actions shall be applied to each defective segment as directed by the Engineer. The Contractor shall re-profile all the corrected segments and 50 feet of length before and after each corrected segment. The re-profiled data shall be used for pay calculations regarding defect segments.

If the resulting IRI_{25} is still greater than IRI_f , after corrective action was applied, with DDOT Engineer's approval, the contractor may accept the Failed Segment cost (P_{failed} , section 9.4(d)).

7 RIDE QUALITY MEASUREMENT VERIFICATION

7.1 General

At DDOT's discretion, DDOT may perform QA testing on sections of the pavement to verify the Contractor's QC data. If the QA testing by DDOT has not been performed within 14 calendar days from the date that the final, 100 percent QC data submittal is received by the Engineer, the QC data shall be used for pay adjustments on the project, if any.

Testing procedures, equipment, operators, and reporting of the QA profile testing shall be in accordance with the requirements set forth in this specification, as well as the Equipment Specification and Test Method for Ride Quality Data Collection, with the following exception:

If the first QA run, along with the QC data, meets the criteria specified in section 7.2.1 below, then no additional QA profile runs are required. Otherwise, the Department will carry out a total of three QA runs on all 25-foot segments of the project. The coefficient of variation of the QA IRI_{AVG} for the entire project should be less than or equal to 5 percent for all three runs. When the three QA runs do not meet this criterion, additional three runs shall be performed until three measured QA runs meet this criterion. The QA run that yield the median IRI_{AVG} value shall be used as the QA results.

7.2 Verification Limit

7.2.1 QC data acceptance

The QA and QC results will be compared to determine acceptance of the Contractor's QC data. For each test lot, the verification limit for IRI_{AVG}, the number of defective segments, and the number of tested segments are as follows:

PARAMETER	UNIT	QC DATA TOLERANCE WITH RESPECT TO QA DATA
IRI _{AVG}	Inches/mile	± (5 %)
Number of Defective Segment	25-ft Segments	± (10 %)
Number of Tested Segments	25-ft Segments	Same

If the Contractor's QC data fall within all the above tolerances, the contractor's QC data shall be used for all pay adjustments.

7.2.2 QC data resolution

When the Contractor's QC data do not agree with the initial DDOT QA data as described above, both profilers shall be retested on a DDOT verification section to determine if either profiler does not conform to Ride Quality Equipment and Data Collection.

If either profiler is out of specification, that equipment shall be recalibrated or repaired as necessary, and it shall be retested to bring the device back into compliance with Ride Quality Equipment and Data Collection. When the Contractor's out of specification profiler is not re-standardized and brought into compliance with Equipment Specification and Test Method within three paving days, the Contractor shall cease paving operations or use another standardized profiler for QC data collection. Once the Contractor's profiler complies with Equipment Specification and Test Method, the Contractor may retest sections for comparison with DDOT's data or accept the DDOT QA data as the basis for any pay adjustment on all sections.

If only DDOT's profiler is out of specification, the Contractor's QC data for all sections will be accepted, from the point the conflict arose until DDOT profiler is brought to compliance. When both profilers are found to be in noncompliance with Equipment Specification and Test Method, both profilers shall be repaired or recalibrated as necessary, and all QC and QA testing since the previous QC/QA comparison shall be repeated.

8 MEASUREMENT AND REPORTING

The contractor shall compute and report the IRI average and 25-ft feature area segment IRI values as define below.

8.1 IRI_{AVG}

The IRI_{AVG} (overall average IRI for the project) shall be calculated as the average of the left and right wheelpath IRI value of all tested 25-foot segments on the project, with the following exceptions. The IRI values for the 25-foot feature area segments (section 8.2) shall not be used to compute IRI_{AVG}.

8.2 Feature 25-foot segments excluded while computing IRI_{AVG} for the project

The IRI values from the following 25-foot feature area segments shall not be included in computing the section IRI_{AVG}. They will, however, be used to determine the defect costs as well as correction area, as described in section 10.

- Pavement within 25 feet of the transverse joints that separate these joints from the existing pavement. Note that the last segment before the end of the project may be a partial segment (i.e. a length less than 25 feet). This does not apply when a transverse joint is paved on both sides as part of one contract.
- Segments with manholes or other approved roadway features (whose edges are within 1 foot of the wheelpath).
- If a feature is identified within 2.5 feet of the bordering segment, the bordering segment shall also be labeled as a feature segment.
- Major at-grade intersections with part width or staged construction (where traffic flow is maintained during construction) may be considered for exclusion from IRI_{AVG} computation. In such cases, the excluded area shall extend 25 feet on either side of the intersection.

8.3 Quality control reporting

8.3.1 Submittal timing requirements

Results of QC testing shall be submitted to the DDOT Engineer in conformance with the following schedule:

Submittal	Percentage of paving completed ¹	Reporting time limit ²
Field	Any	On the day of testing
First	10 %	Within 72 hr of completion
Interim	50 %	Within 72 hr of completion
Draft Final	100 %	Within 72 hr of completion
Re-profiled data for corrected segments	ALL	Within 72 hr of completion

¹ The percentage of all pavement requiring profiling that has been paved. Areas not required to be profiled are not considered in the percentage computation.

² Completion is defined as opening to traffic following paving or corrections for HMA pavement and curing sufficiently to support traffic following paving or corrections for PCC pavement. Official 25-ft segment IRI values must be submitted immediately following data collection.

When any profile testing and data submission has not been completed within the specified times and in conformance with Equipment Specification and Test Method and Ride Quality Equipment and Data Collection Specification for all segments on the project, the tested pavement will not be eligible for incentive payment as stated in section 9.

When any profile testing and data submission has not been completed within 7 days and in conformance with Equipment Specification and Test Method and Ride Quality Specification for all segments on the project, the tested pavement will not be eligible for payment.

8.3.2 Submittal information requirements

The contractor shall submit the data and reports according to both the draft DDOT Equipment Specification and Test Method, and the schedule defined in section 8.3.1.

9 PAYMENT

All costs associated with ride quality measurements, including all measurements required for construction and final acceptance, are included in Other Items of Work and will not be paid for separately. All corrections within the limits of ride quality shall be carried out at the Contractor's expense.

9.1 Pay Adjustments

Incentive, full pay, and disincentive pay adjustments for the project shall be computed according to the following methods. Descriptions of the abbreviations used in these computations are included in table 1.

(a) Incentive

$PF = P_{max}$, when IRI_{AVG} is less than or equal to IRI_a

$PF = P_{max} \times (IRI_b - IRI_{AVG}) / (IRI_b - IRI_a)$, when IRI_{AVG} is greater than IRI_a and less than IRI_b

$INCENTIVE = PF \times NS_{nonfeat} * BP_{seg}$

$DISINCENTIVE = 0$

(b) Full Pay

When IRI_{AVG} is greater than or equal to IRI_b and less than or equal to IRI_c

$INCENTIVE = 0$

$DISINCENTIVE = 0$

(c) Disincentive

$PF = P_{min} \times (IRI_{AVG} - IRI_c) / (IRI_d - IRI_c)$, when IRI_{AVG} is greater than IRI_c and less than IRI_d ,

$PF = P_{min}$, when IRI_{AVG} is greater than or equal to IRI_d

$INCENTIVE = 0$

$DISINCENTIVE = PF \times NS_{nonfeat} * BP_{seg}$

Table 1. Factors used in payment computations.

	DESCRIPTION	VALUE	UNITS
P_{max}	Maximum Incentive for Overall IRI	+	Percent
P_{min}	Maximum Disincentive for Overall IRI	+	Percent
P_{defect}	Defect Segment Cost	+	Percent
P_{failed}	Failed Segment Cost	+	Percent
PF	Pay Adjustment Factor for Overall IRI	*	Percent
INCENTIVE	Incentive for Overall IRI	*	Dollars
DISINCENTIVE	Disincentive for Overall IRI	*	Dollars
DEFECT COST	Cost for Defects	*	Dollars
FAILURE COST	Cost for Failures	*	Dollars
IRI_a	Threshold IRI_{AVG} for Maximum Incentive	+	Inches per mile
IRI_b	Minimum IRI_{AVG} for Full Pay	+	Inches per mile
IRI_c	Maximum IRI_{AVG} for Full Pay	+	Inches per mile
IRI_d	Threshold IRI_{AVG} for Maximum Disincentive	+	Inches per mile
IRI_e	IRI_{25} threshold for Defects correction/penalty	+	Inches per mile
IRI_f	IRI_{25} threshold for Defects correction	+	Inches per mile
IRI_{AVG}	Overall average IRI for the project, excluding 25-foot feature segments	*	Inches per mile
IRI_{25}	IRI for individual 25-foot segments	*	Inches per mile
$NS_{nonfeat}$	Number of tested 25-foot non-feature segments	*	Segments
NS_{feat}	Number of tested 25-foot feature segments	*	Segments
NS_{TT}	Number of ALL tested 25-foot segments: $NS_{TT} = NS_{nonfeat} + NS_{feat}$	*	Segments
NS_{defect}	Number of 25-foot defect segments	*	Segments
NS_{failed}	Number of the failed 25-foot defect segments	*	Segments
BP_{Lot}	Bid price of the entire test lot	*	Dollars
BP_{seg}	Bid price of each 25-foot segment	*	Dollars
TPA	Total Pay Adjustment	*	Dollars

* Value to be determined on the test lot or contract.

+ The ride specification limits for P_{max} , P_{min} , P_{defect} , P_{failed} , IRI_a , IRI_b , IRI_c , IRI_d , and IRI_e for roadways will be determined by the Engineer in conformance with this specification.

9.2 Defects

A separate deduction will be assessed for all 25-foot segments within the project with IRI₂₅ levels greater than the defect level. The pay adjustment for defects (Defect Cost) shall be calculated based on the factors shown below. This pay adjustment applies only to the pavement within the tested segments, including the feature area 25-foot segments, but not including the predetermined exempt areas.

(a) Defect Cost

NS_{defect} = Number of segments with an IRI₂₅ greater than or equal to IRI_e and less than IRI_f.

$$\text{DEFECT COST} = P_{\text{defect}} \times NS_{\text{defect}} \times BP_{\text{seg}}$$

(b) Correction Required

Segments with an IRI₂₅ greater than or equal to IRI_f will need to be corrected to reach an IRI₂₅ that is less than IRI_f as defined in section 6.3.

(c) Failure Cost

NS_{failed} = Number of segments with an IRI₂₅ greater than or equal to IRI_f and not able to be corrected.

$$\text{FAILURE COST} = P_{\text{failed}} \times NS_{\text{failed}} \times BP_{\text{seg}}$$

9.3 Total Pay Adjustment

The Total Pay Adjustment (TPA) for pavement surface profile on the Contract shall be the total of any incentive or disincentive for overall IRI minus any cost for defects.

$$\text{TPA} = (\text{INCENTIVE} - \text{DISINCENTIVE} - \text{DEFECT COST} - \text{FAILURE COST})$$

This Total Pay Adjustment shall be subject to conditions (a) and (b) below:

- (a) Regardless of the measured profile of any test section, incentive payments shall not be permitted for the project when the Contractor's QC data were not submitted within 14 days of the scheduled submittal date. All other sections of this specification shall still apply. In this case, the Total Pay Adjustment is calculated as follows:

$$\text{TPA} = (0 - \text{DISINCENTIVE} - \text{DEFECT COST} - \text{FAILURE COST})$$

- (b) The total value of Overall IRI Disincentive and Defect Cost shall not be more than the Maximum Disincentive pay adjustment (section 9.4c) for all of the profiled 25-foot segments.

$$\text{Max. Disincentive} = - P_{\text{min}} \times NS_{\text{TT}} \times BP_{\text{seg}}$$

If TPA is negative and smaller than Max. Disincentive, then $\text{TPA} = \text{Max. Disincentive}$.

9.4 Pay Limit Determination

The pay limits and levels will be determined in conformance with the following tables:

(a) Select specification limits for IRI_a, IRI_b, IRI_c & IRI_d

Functional Class	IRI _a (in/mi)	IRI _b (in/mi)	IRI _c (in/mi)	IRI _d (in/mi)
Interstates, Freeways/Expressways, and Principal Arterials with Posted Speed Limit \geq 45 mph	40	60	80	100
Principal Arterials with Posted Speed Limit < 45 mph; Minor Arterials, and Collectors	80	130	160	200
Local Roads	100	160	180	220

Note: IRI_a – Threshold IRI_{AVG} for Maximum Incentive; IRI_b – Minimum IRI_{AVG} for Full Pay; IRI_c – Maximum IRI_{AVG} for Full Pay; IRI_d – Threshold IRI_{AVG} for Maximum Disincentive.

(b) Select defect threshold for correction/penalty (IRI_e) and only correction (IRI_f)

Functional Class	IRI _e (in/mi)	IRI _f (in/mi)
Interstates, Freeways/Expressways, and Principal Arterials with Posted Speed Limit \geq 45 mph	120	160
Principal Arterials with Posted Speed Limit < 45 mph; Minor Arterials, and Collectors	250	300
Local Roads	300	350

Note: IRI_e – IRI₂₅ threshold for Defects correction/penalty; IRI_f – IRI₂₅ threshold for Defects correction.

(c) Select the appropriate pay level for IRI_{AVG}

Functional Class	Maximum incentive (P _{max} in % of total cost)	Maximum disincentive (P _{min} in % of total cost)
Interstates, Freeways/Expressways, and Principal Arterials with Posted Speed Limit \geq 45 mph	3%	2%
Principal Arterials with Posted Speed Limit < 45 mph; Minor Arterials, and Collectors	1.5%	1%
Local Roads	1.2%	0.8%

(d) Select the appropriate pay level for defective and failed segments

Functional Class	Defect Segment Cost (P_{defect} in % of segment cost)	Failed Segment Cost (P_{failed} in % of segment cost)
Interstates, Freeways/Expressways, and Principal Arterials with Posted Speed Limit ≥ 45 mph	15%	60%
Principal Arterials with Posted Speed Limit < 45 mph; Minor Arterials, and Collectors	12%	50%
Local Roads	10%	40%

10. EQUIPMENT REQUIREMENTS

10.1 General

- The high-speed and lightweight inertial profiling system shall meet the equipment requirements of AASHTO MP-11 with the following additions and modifications.

10.2 Functional Hardware Modules

- Initiation control – The inertial profiler shall be capable of initiating data collection with manual initiation by striking a key on the computer keyboard or provided event marker board or by using an automated photo-triggering device. The procedure used shall be user selectable, with the automated method being the default and the manual method being the secondary option. A mechanism for automatically initiating profile measurements shall be mounted on the front bumper of the vehicle. The photo-triggering device shall be mounted to a protected case that can be swiveled to face the pavement surface or to the side of the roadway. The operator shall be able to select one of the following methods to initiate data collection: (1) the mechanism shall be triggered by reflective highway marking tape that is placed on the middle of the travel lane or (2) by tape on a cone or other device that is placed adjacent to the test lane at distances up to 10 ft from the outside lane edge. Manual initiation of the rolling inclinometer is allowed.
- Event marker system – The event marker system shall allow the operator to mark measurement limits using both the photocell and reflective cones or manual triggering. The event marker system shall also allow the operator to mark feature locations through manual triggering.
- Distance transducer – A DMI display unit shall be placed at a position that is easily visible to the operator. The DMI shall be capable of automatically displaying distance and system speed in either English or SI (metric) units, as selected by the operator. In addition, the running DMI stationing shall be displayed on the inertial profiler computer monitor during data collection. The measured distance using this system shall be accurate to at least ± 0.1 percent. Accuracy of the rolling inclinometer transducer shall be ± 0.25 percent or below.

- Height sensor – The inertial profiler reference height of the vehicle above the pavement shall be obtained through a laser module as required. The laser should be equivalent to a Selcom laser, which has a resolution of 0.002 inches. The laser shall have a measurement range of at least 7.5 in and provide continuous coverage of the roadway at up to 65 mi/hr. Each height sensor shall be mounted on the vehicle with its measuring axis perpendicular to the traveled surface and in line with the sensitive axis of the accelerometer. The height sensor shall be mounted such that the center of the measurement range is at the surface of the pavement when the vehicle is at rest. The spacing between the right and the left sensors shall be between 67 and 70 inches. No laser height sensors are required with the rolling inclinometer.
- Inclinometer sensor – The inclinometer sensors shall provide the profile and IRI accuracy required in section 6.
- Vertical acceleration sensor – The accelerometers used to measure the vertical acceleration shall be of high quality, capable of measuring accelerations in the range of $\pm 5g$. The accelerometer shall have a resolution of at least 5 micro-g, and a bandwidth of at least 150 Hz. The accelerometer shall be biased to account for 1g acceleration of gravity and capable of being quickly calibrated using a 1g signal. The accelerometer shall be mounted such that its sensitive axis is perpendicular to the traveled surface. No accelerometers are required with the rolling inclinometer.

10.3 Functional Software Module

- Calibration software – Calibration software that will perform calibration of the accelerometer, inclinometer, and distance measuring system (DMI) and calibration checks on the height sensors. Calibration software shall be menu driven and complete, not requiring manual adjustment to any system component. Calibration constants shall be automatically computed. At the operator's request, a new calibration constant shall replace the previous inaccurate constant, and the old constant shall be recorded in a log file along with the time, date, and operator's comments, if feasible.
- Accelerometer calibration software – The inertial profiler accelerometers shall have internal or external calibration features. After calibration, a measure of the accelerometer's error and the computed calibration factor shall be displayed on the computer monitor. The software shall be capable of replacing the inaccurate constant with the new calibration constant at the operator's keyboard command, and recording the old constant in a log file along with the time, date, and operator's comments, if feasible
- Distance measuring software – The distance measuring system shall be capable of being calibrated by measuring a predetermined distance on a straight section of roadway. The distance measuring system shall be capable of calibration at measuring speeds that will be used for profiling. The inertial profiler calibration software shall be capable of detecting two marks that are at a known distance apart with the aid of a photocell. These two marks may be placed on the pavement surface (e.g., white pavement marking tape or reflective tape) or on the shoulder of the pavement (e.g., cones with reflective markings). Manual triggering is allowed for the rolling inclinometer. The system software shall be capable of recording the distance traveled between the two specified marks to three decimal places in meters. The software shall be capable of automatically computing the calibration constant based on the actual distance between these two markings. At the

operator's keyboard command, the new calibration constant shall replace the inaccurate constant and the old constant shall be recorded in a log file along with the time, date, and operator's comments, if feasible. The DMI calibration software shall be capable of indicating whether the measurements obtained on the section are within a user-defined tolerance limit.

- The system shall output profile elevation data in ERD format that is immediately readable by the current FHWA ProVAL software.
- The system shall have an alarm system that alerts the operator if speed or height signals are out of range.

11. SYSTEM ACCURACY REQUIREMENTS

11.1 General Component Requirements

- Profile accuracy – The profile precision of lightweight and high-speed inertial profilers shall be confirmed at least yearly by an independent review, and shall meet the AASHTO PP 49 point-to-point requirements. AASHTO PP 49 requires no more than ± 20 mils for 10 repeated measurements sampled at intervals 2 in or less. Equipment profile bias shall meet the AASTHO PP 49 point-to-point requirements that allow a maximum deviation of the average elevations from 10 runs versus the average of 3 reference profile runs to be no more than ± 60 mils.
- IRI Ride Statistic accuracy – The IRI precision of the lightweight profilers shall be confirmed by the Pennsylvania DOT certification program. PA DOT requires single sensor IRI standard deviation of five repeat runs to be within ± 3 percent on the PA DOT test tracks. PA DOT also requires the mean wheelpath IRI values, based on the five repeat runs, to be within ± 5 percent of the reference wheelpath IRI value. They use a long wavelength cutoff of 100 ft for analysis. High speed profiler and rolling inclinometer IRI accuracy using a 300-ft long wavelength cutoff shall be confirmed in the DDOT profiler verification program under section 11.2.2.
- Distance measurement accuracy – The inertial profiler distance measuring instrument accuracy shall be measured in accordance with AASHTO PP 49 over a 1,000-ft test site. The distance obtained from the distance measuring system shall be capable of satisfying the following criteria over a reference distance of 1,000 ft (± 3 in) over the range of equipment's operating speeds. Three runs over a distance of 1,000 ft are required to verify the distance measurement accuracy. Accuracy of the average value within ± 1 ft per 1,000 ft is required.

11.2 Equipment Certification or Accuracy Verification

Profile equipment shall either be certified in accordance with section 11.2.1, or verified in accordance with section 11.2.2.

11.2.1 Equipment Certification

- Annual certification is required for the lightweight profiler equipment. Additional recertification may be required for equipment due to repairs, replacement, and/or

upgrades to the equipment's hardware or software, or questionable results on a construction or maintenance project. Certification obtained for lightweight profilers in the following manner will be recognized by the agency:

- 1) From a state agency that has a DDOT approved equipment and operator certification program based on AASHTO PP 49 criteria; or
- 2) Certification carried out by The Bureau of Maintenance and Operations, Roadway Management Division, Pennsylvania Department of Transportation, in accordance with the *Light Weight Profiling System Calibration Verification & Operator Certification Program Manual* and *Pennsylvania Test Method (PTM) # 428, Method of Test for Measuring Pavement Profile Using A Light Weight Profiler*.

11.2.2 Equipment Accuracy Verification

- Verification Testing Requirement Verification of the equipment profiles and indices shall be completed at least annually, within the same construction season, prior to any QC or QA testing using high-speed or lightweight profilers or rolling inclinometers. The same construction season is defined as from March to November of any calendar year. DDOT verification shall include collecting profile and IRI data from a DDOT approved reference test section. The results of this testing shall be submitted to DDOT for review. Upon approval, the equipment can be used for QC/QA testing. A copy of the DDOT approval document shall be included with the results of all QC or QA testing.
- Reference Site Description – DDOT will maintain at least two baseline profile testing sites during the paving season, within or outside the District. One will allow for low-speed, off-road testing and the other will allow for high-speed testing. These sites shall be 1,000 (± 0.25) ft long, straight, on a grade less than 1 percent, and with minimal variation in the transverse pavement profile. The pavement surfaces shall be asphalt that is in good condition with IRI values no more than 135 in/mi. The lightweight inertial profiler off-road test site shall allow test speeds of 15 and 30 mph. The high-speed profiler test site shall allow test speeds of 45 to 55 mph without traffic control. Rolling inclinometers shall be used at 0.1 to 2.4 mi/hr.
- Reference Site Baseline Testing – DDOT will conduct reference testing for these sections in the first weeks of March and July of each year, weather permitting. Reference testing shall include the collection of three profiles in each wheelpath using an approved, calibrated rolling inclinometer with a sampling interval of 1.0 in and high accuracy in wavelengths from 2 inches to at least 300 feet. During the March testing, the reference profiles shall be checked and adjusted using high accuracy rod and level measurements at 50-ft intervals. The accuracy of the site length will also be confirmed during the March testing.
- Verification Testing – This shall include collecting three sets of profiles from both wheelpaths, at both of the verification test sites. These profiles shall be filtered using a 300-ft high-pass filter and the manufacturer's recommended low-pass filters. If needed, traffic control and associated permits must be provided and obtained by the contractor for such testing. The contractor shall also ensure that the Verification Test site is clean of debris for profile testing purpose.

- Verification Test Reporting – Contractors shall submit to DDOT profiler field printouts of left and right wheelpath IRI values at 25-ft intervals beginning at the start of the test site. Profiler provider shall submit electronic copies on CD of their verification profile data to DDOT within 7 days of verification testing in approved ERD format. Paper reports shall be submitted at the same time that include, at a minimum, the following information:
 - Section information – List the verification test site number and location.
 - Testing date and conditions – List the testing date and times and average air temperature.
 - Calibration Confirmation Form – A signed Profiler Calibration Form, as shown in Appendix A, list the results of all pretesting calibration activities.
 - Filter settings – Note the long and short wavelength cutoff values.
 - Software version – List the software version used for collecting and processing the profile data.
 - Sampling and recording intervals – List the sampling and reporting intervals used in data collection.
 - Profile printouts – Print and include the profiles from each run and wheelpath.
 - IRI Summary Data – List the overall IRI values (in/mi) for each run and wheelpath on the verification site. Also list the IRI average and standard deviation for each wheelpath.
 - IRI Detail Data – List the 25-ft IRI values (in/mi) for each run and wheelpath of the verification test site. Also include IRI average and standard deviation values for each 25-ft segment.
- Verification Testing Acceptance – DDOT will review the precision and bias of the submitted IRI values. Evaluation results will be provided in writing within 7 working days of submittal. DDOT will evaluate the overall IRI values to ensure that the mean of the three runs is within 5 percent of the reference average IRI. DDOT will also ensure that the coefficient of variation (standard deviation/mean) of the overall IRI in each wheelpath is no more than 3 percent.

11.3 Operator Certification

- The profiler operators are required to be certified, and must be recertified a minimum of every 3 years. Certification obtained for the profiler operators in the following manner will be recognized by the agency:
 - 1) From a state agency that has a DDOT approved equipment and operator certification program based on AASHTO PP 49 criteria; or
 - 2) Certification carried out by The Bureau of Maintenance and Operations, Roadway Management Division, Pennsylvania Department of Transportation, in accordance with the *Light Weight Profiling System Calibration Verification & Operator Certification Program Manual* and *Pennsylvania Test Method (PTM) # 428, Method of Test for Measuring Pavement Profile Using A Light Weight Profiler*.

12. TESTING PROCEDURE

Quality control and quality assurance testing shall include the following procedures and any additional manufacturer's recommendations that are not in conflict with these specifications. In addition, ride quality testing shall be consistent with the Ride Quality Measurement Plan as defined in draft DDOT XXXX Ride Quality Specification.

12.1 Project test area setup

- Boundary marking – Mark on the pavement surface with temporary marking paint the beginning and end of the area to be tested, designated by the project stationing, the words “Begin” or “End,” and a test date, e.g., 9/16/2007. Mark on the pavement the boundaries of all exempt areas, as defined in draft DDOT Ride Quality Specification.
- Feature location identification and wheelpath marking – It is strongly recommended that each roadway feature be identified before testing, and that a reflective cone be placed at each feature location to allow automatic feature event triggering during profile testing. It is further recommended that temporary marks be placed in one or both of the wheelpaths where roadway features are present, and at every 150- ft interval. Wheelpaths shall be marked at manholes, especially where lateral offset needs to be measured in order to determine whether the manhole should be considered as a feature or not.
- Exempt area event marking – Place event triggers on the side of the pavement at the start of each exempt area. Event marks at each of these locations shall be included in the profile data.

12.2 Daily Equipment Checks

- Equipment settings – A certified operator shall ensure that the long wavelength filter setting on the profiler is set at 300 feet and the short wavelength filter is set at no greater than 0.5 feet.
- All maintenance, repair, cleaning, and calibration should be completed as recommended by the equipment manufacturer.
- Pretest calibration and calibration checks shall be completed prior to testing. Any problems noted in these daily calibration checks shall be resolved prior to official data collection. The Pretest Calibration Report in Appendix A shall be completed, signed, and provided to the Engineer prior to leaving the test site.
- Static height measurement calibration – Certified operators shall complete inertial profiler static height measurement testing according to AASHTO PP 49, Section 6.2. The average of the absolute difference between the measured and certified height of 0.25, 0.5, and 1.0 inch blocks shall be no more than 0.01 in.
- Accelerometer calibration – Accelerometer calibration of inertial profilers shall be calibrated using the manufacturer's automated calibration software.
- Bounce testing – Certified operators shall complete inertial profiler static and dynamic bounce testing following calibration of the accelerometers and vertical height sensors. The

average static (on bounce) IRI from each wheelpath sensor for at least 300 ft shall be no more than 4 in/mi. For dynamic bounce testing, the vehicle shall be bounced from the rear or the front to produce 0.5 in of total vertical displacement of the height sensors. Average dynamic bounce test IRI for at least 300 ft of simulated data collection shall be no more than 7 in/mi for lightweight profilers and 9 in/mi for high speed profilers, unless approved by the Engineer.

12.3 Data Acquisition

- Prior to data collection, the operator shall update the profile software to include the project number, direction of travel, operator, test date, test time, beginning station, and equipment parameters.
- Project profile data shall be collected in the direction of travel using a constant speed that is within the allowable range confirmed during certification. The system shall be brought to the desired testing speed for enough in advance of the beginning mark to ensure accurate profile and IRI data. Collect profile data on a length of pavement as long as practical and between predetermined exempt areas. Label each Run of Record according to the Engineer's approved format.
- The operator shall activate all inertial profiler testing and recording equipment so that it is stabilized at the test speed prior to reaching the project test location. The test speed shall be maintained throughout the length of the project test area.
- The inertial profiler equipment shall trigger data collection automatically at the beginning of the project test location using a photocell and reflective device. The operator shall maintain a smooth driving pattern with the height sensors centered in the wheelpaths, particularly ensuring wheelpath positioning over pavement features. The equipment shall also automatically place an event mark at the end of the measured project test location using a photocell and reflective device. Rolling inclinometer operators shall manually insert an event marks at the end of the section.
- The profiler operator shall conduct a single run of profile testing and data acquisition. If the computed IRI_{AVG} is within 15 in/mi from an IRI threshold value (i.e. IRI_a , IRI_b , IRI_c , IRI_d , IRI_e , & IRI_f) and defined in Ride Quality Specification, and with approval of the on-site DDOT personnel, the contractor may choose to conduct additional error-free two runs. The test run that yields the median IRI_{AVG} shall be used as the run of record.

13 REPORTING

The operator shall submit to the Engineer Operator and Equipment Certification Records, a Pretest Calibration Report, and a Field Data Report prior to leaving the site, unless approved by the Engineer.

Operator Certification and Equipment Certification or Verification Records – A copy of the current operator certification, and a copy of the current equipment certification, or DDOT approved verification report approving the testing equipment shall be provided to the Engineer prior to data collection. The verification testing shall have been done at least annual and within the same construction season.

Pretest Calibration Report – All pretest calibration shall be completed and reported on the form in Appendix A. One signed original of the Pretest Calibration Report shall be submitted to the Engineer for each day of testing on one project. The operator shall provide equipment and operator certification information, and verification reports sufficient to confirm their adequacy for testing.

Field Data Report – A field IRI printout from all runs of record shall be submitted to the Engineer. The printout shall include the left and right wheelpath IRI values for each full 25-ft segment between predetermined exempt areas or from the end of an exempt area and the end of the testing area. The field data report shall define the project stations for all exempt areas and project feature location, as defined in Ride Quality Specification. Descriptions or explanations shall be provided for each exempt area. All 25-ft segments that include features shall be marked on the Field Data Report with a description or code for the feature type.

Within 72 hours of profile QC data collection, the contractor shall submit an electronic copy in Microsoft[®] Excel format, and if requested by the Engineer a printed copy, of the test results for the pavement being measured as generated by the test equipment performing the test. This report shall be for project-level QC or QA data and shall include:

- (a) Header information including the equipment identification and approval date, site description (route, lane, limits, and direction), date and time of testing, equipment filter and sampling settings, the operator's name, profile collection equipment software versions, and test speed data (if not given for each segment)
- (b) A column identifying the project station number for each measured 25-ft segment
- (c) Columns associated with (b) for the left, right, and average wheelpath 25-ft segment IRI values for each run of record
- (d) The exact stationing limits and description for all feature segments which are not included in IRI_{AVG} computations but are subject to defect evaluation
- (e) The exact stationing limits and a description of all exempt areas which are not to be included in pay adjustment calculations

These data shall be provided in the Microsoft Excel format shown in Appendix B: Electronic Data Format.

Raw profile data (distance and elevation values) shall be saved and archived by the contractor and shall be available for all project QC data review until the project is closed.

Appendix A: Pretest Calibration Report

Date: _____
Contractor: _____
Job Location: _____
Operator (print): _____
Operator Certification Date: _____
Operator Certification Expiration Date: _____
Test Vehicle Certification Number: _____
Test Vehicle Certification / Expiration Date: _____ / _____
Test Vehicle Verification Date: _____

DMI check:

Test Site Length, ft	Measured Length, ft			
	Run 1	Run 2	Run 3	Average

Note: Average measured length must be within 0.1 percent (0.1%) of the test section length

Height Sensor Calibration Block Check:

Left	Block height, in		Right	Block height, in	
Nominal	Actual	Measured	Nominal	Actual	Measured
0.25 inch			0.25 inch		
0.5 inch			0.5 inch		
1.0 inch			1.0 inch		

Note: Average measured block height must be within 0.01 in of the actual block

Accelerometer Calibrated (circle one): Yes / No

Selected Long Wavelength Cutoff (ft) _____

Bounce Test:

Left Sensor		Right Sensor	
Static IRI, in/mi	Dynamic IRI, in/mi	Static IRI, in/mi	Dynamic IRI, in/mi

Note: Static IRI must be ≤ 4 in/mi. Bounce 0.5 in. .Dynamic IRI must be ≤ 7 in/mi (lightweight) ≤ 9 in/mi (high-speed)

Operator (sign) _____
 Contractor (sign) _____
 Inspector (print) _____
 Inspection Agency (print) _____
 Inspector (sign) _____

Appendix B: Electronic Data Format

Each page described in this appendix shall be a separate worksheet in the delivered Microsoft EXCEL Workbook. The expected worksheet name, or an example of a worksheet name, is shown in parenthesis.

Contract Information Page (Contract Info)

This page contains general contract information used in the DDOT ride specification software utility.

Field Names	Information
Contract Name	ARA01
Functionl Class	Minor Arterial
Work Description	resurface
Street	17th st
From Street	Constitution Ave
To Street	C St
Year	2007
Quad	NE
Ward	1
Width, ft	36
Length, mile	0.09
No. Blocks	1
Start SISID	20170020
End SISID	20170020
Total Bid Price, \$	
Bid Price for each 25-ft segment, \$	500
DC Ride Spec Lot Information	
Field Names	Information
Test Lot	N_1_1
From Street	Constitution Ave
To Street	C St

Master Page (Master)

This worksheet contains the worksheet names for the worksheets contains the header, feature and IRI data for the lot tested.

Work Sheet Names	Description
17ST1_Header	
17STS1_IRI_File_1	QCRun1
17STS1_IRI_File_2	QCRun2
17STS1_IRI_File_3	QCRun3
17STS1_IRI_File_4	QCRun4
end	

Header/Features Page (example: 17ST1_Header)

This page contains the header information for the data files collected with the inertial profiler and required for the DDOT ride specification software utility. It also contains the locations and descriptions of the feature items located within the lot tested.

Header Information

File Name	Vehicle Identification	Approval Date	Route	Lane	From Station	To Station	Dir	Test Date	Test Time
17STS1.E01	MULE	11/01/2007	17 TH ST NE	1	0	437	South(+)	11/4/2007	16:40:42
end									

Wave Long	Wave Short	Contractor	Driver	Reporting Software Version	Vehicle Software Version	Speed (mph)	Sample Rate (ft)
300 ft.	None	ARA/MAD	Brian	RP090L v3.42 – 12 AUG 2003	MD0906	12	25

(Please note that the header information needs to be on the same line in the EXCEL Worksheet)

Feature Information

SrcFile	Station Location	Event Code	Feature Description
17STS1	0	Section	Section Start
17STS1	0	EVNT	Construction Joint
17STS1	399	EVNT	Manhole
17STS1	413	EVNT	Manhole
17STS1	419	EVNT	Manhole
17STS1	437	SEC_END	/
end			

General Decision Number: DC080001 05/29/2009 DC1

Superseded General Decision Number: DC20070001

State: District of Columbia

Construction Types: Heavy (Heavy and Sewer and Water Line)
and Highway

County: District of Columbia Statewide.

HEAVY CONSTRUCTION PROJECTS (Including Sewer and Water Lines);
HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	02/08/2008
1	04/18/2008
2	05/02/2008
3	05/09/2008
4	05/30/2008
5	06/06/2008
6	07/04/2008
7	07/18/2008
8	07/25/2008
9	08/15/2008
10	09/05/2008
11	09/12/2008
12	09/19/2008
13	11/07/2008
14	12/19/2008
15	02/20/2009
16	03/20/2009
17	05/01/2009
18	05/29/2009

ASBE0024-001 10/01/2008

	Rates	Fringes
Asbestos Worker/Heat and Frost Insulator Includes the application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.....	\$ 29.18	14.18

ASBE0024-002 10/01/2008

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all		

insulation materials,
 whether they contain
 asbestos or not, from
 mechanical systems.....\$ 17.85 6.60

ASBE0024-003 10/01/2008

	Rates	Fringes
Asbestos Workers/Insulator Includes application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems (does not include removal).....\$ 29.18		14.18

ASBE0024-005 10/01/2008

	Rates	Fringes
Fire Stop Technician.....\$ 22.85		6.59

Includes the application of materials or devices within or
 around penetrations and openings in all rated wall or floor
 assemblies, in order to prevent the passage of fire, smoke
 of other gases. The application includes all components
 involved in creating the rated barrier at perimeter slab
 edges and exterior cavities, the head of gypsum board or
 concrete walls, joints between rated wall or floor
 components, sealing of penetrating items and blank openings.

BOIL0193-001 10/01/2008

	Rates	Fringes
Boilermakers:.....\$ 36.61		15.46

BRDC0001-001 11/01/2008

	Rates	Fringes
Bricklayer.....\$ 26.70		6.77

CARP0132-001 05/01/2009

	Rates	Fringes
Carpenter/Lather.....\$ 26.38		7.00
Piledriver.....\$ 24.48		7.70

CARP1831-001 04/01/2009

	Rates	Fringes
Carpenters: Millwrights.....\$ 29.39		6.55

CARP2311-002 05/01/2009

	Rates	Fringes
DIVER TENDER.....	\$ 24.48	7.80
DIVER.....	\$ 36.13	7.80

ELEC0026-001 11/03/2008

	Rates	Fringes
Electricians.....	\$ 36.65	11.45+a

a. PAID HOLIDAYS: New Year's Day, Martin Luther King Jr.'s Birthday, Inauguration Day, Memorial Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day or days designated as legal holidays by the Federal Government.

ELEC0026-008 07/01/2003

	Rates	Fringes
Motor Repairmen Removal and reinstallation of electrical motors.....	\$ 23.69	7.73+3%+a

a. PAID HOLIDAYS:

New Year's Day, Martin Luther King Jr.'s Birthday, Inauguration Day, Memorial Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day or days designated as legal holidays by the Federal Government.

ELEC0070-001 09/02/2007

	Rates	Fringes
Line Construction:		
Cable Splicers.....	\$ 30.29	19.75%+4.81
Equipment Mechanic.....	\$ 21.82	19.75%+4.81
Equipment Operators.....	\$ 25.78	19.75%+4.81
Groundman/Truck Driver.....	\$ 15.34	19.75%+4.81
Line Truck with Auger.....	\$ 20.09	19.75%+4.81
Linemen.....	\$ 28.86	19.75%+4.81

* ENGI0077-001 05/01/2009

	Rates	Fringes
Power equipment operators: (HEAVY AND HIGHWAY CONSTRUCTION)		
GROUP 1.....	\$ 30.89	7.52+a+b
GROUP 2.....	\$ 29.89	7.52+a+b
GROUP 3.....	\$ 29.43	7.52+a
GROUP 4.....	\$ 28.72	7.52+a
GROUP 5.....	\$ 26.69	7.52+a
GROUP 6.....	\$ 22.15	7.52+a
GROUP 7.....	\$ 31.26	7.52+a

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Tower Cranes and Cranes 100 ton and over.

GROUP 2: 35 ton cranes & above, tower & climbing cranes, derricks, concrete boom pump, drill rigs (equivalent to L & Double L), mole.

GROUP 3: Backhoes, cableways, cranes, cherry pickers, elevating graders, hoists, paving mixers, power shovels, tunnel shovels, batch plants, shields, tunnel mining machines, gradalls, front end loaders, 3 1/2 cu. yds. and above, power driven wheel scoops and scrapers (50 cu. yds. struck capacity or above), rail tamper, draglines, boomcat, mucking machines, graders in tunnels, pile driving engines.

GROUP 4: Front end loaders below 3 1/2 cu. yds, boom trucks, hydraulic backhoes 1/2 yds. capacity or below rubber or track mounted, tug boats, power driven wheel scoops & scrapers, blade graders, motor graders, bulldozers, trenching machines, concrete mixer, speed swing pettibone, ballast regulator, concrete pump, mechanic, welder, mechanic welder, shotcrete machines, Hoeram, locomotive (standard, narrow gauge), tuggers.

GROUP 5: High lifts above 10 feet, boilers (skelton), asphalt spreaders, bullfloat finishing machines, concrete finishing machines, concrete spreaders, fine graders, air compressors, welding machines, pumps, generators, well points, deep wells, hydraulic pumps, elevators, freeze uniits, tunnel motorman or dinky operator, roller, conveyors, well drilling machines, grout pump, fireman.

GROUP 6: Fork lifts, ditch witch, bobcat 1/3 cu. yd. and below, space heaters, sweepers, assistant engineers, oilers.

GROUP 7: Master mechanic.

a. PAID HOLIDAYS: New Years Day, Inaugural Day, Decoration Day, Independence Day, Labor Day, Martin Luther King's Birthday, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving and Christmas Day.

b. PREMIUM PAY:

Tower crane and cranes 100-ton and over to receive \$1.00 per hour premium over Group One.

ENGI0077-002 06/01/2008

Rates

Fringes

Power equipment operators:

(PAVING AND INCIDENTAL

GRADING)

GROUP 1.....	\$ 23.75	5.75
GROUP 2.....	\$ 20.80	5.75
GROUP 3.....	\$ 17.84	5.75
GROUP 4.....	\$ 16.35	5.75
GROUP 5.....	\$ 24.26	5.55

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Gradall operator, Crane.

GROUP 2: Boom Truck, Milling Machine, Excavator, Rubber Tire Backhoe, Asphalt Paver, Asphalt Plant Engineer, Motor Grader, Track Loader, Rubber Tire Loader, Track Dozer, Concrete Paver.

GROUP 3: Broom Truck, Asphalt Roller.

GROUP 4: Air Compressor, Grade Rollers.

GROUP 5: Mechanic.

ENGI0077-003 07/01/2008

	Rates	Fringes
Power equipment operators: (SEWER, GAS AND WATER LINE CONSTRUCTION)		
GROUP 1.....	\$ 21.58	5.62+a
GROUP 2.....	\$ 21.18	5.62+a
GROUP 3.....	\$ 20.67	5.62+a
GROUP 4.....	\$ 20.35	5.62+a
GROUP 5.....	\$ 19.53	5.62+a

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Excavators, Cranes, Gradalls.

GROUP 2: Backhoes, Front-end Loaders, Fork alift/Lull, Bulldozers, Motor Graders. Qualified Mechanics, Hydraulic Tamper and Hoe Pack, Paving Mixers, Pile Driving Engines, Batch Plant, Concrete Pumps, Low-Boy Driver, Lube Truck.

GROUP 3: Trenching Machine, Well Drilling Machines, Concrete Mixers, Motor Graders, Truck Driver.

GROUP 4. Roller, Air Compressors, Pumps, Welding Machines, Well Points, Firemen.

GROUP 5: Oiler

a.PAID HOLIDAYS: New Year's Day, Inaugural Day, Washington's Birthday, Decoration Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day and Martin Luther King's Birthday.

IRON0005-001 06/01/2008

	Rates	Fringes
Ironworkers: Structural, Ornamental and Chain Link Fence.....	\$ 27.83	12.595

IRON0201-001 05/01/2008

	Rates	Fringes
Ironworkers: Reinforcing.....	\$ 26.15	12.08

LABO0657-003 06/01/2008

	Rates	Fringes
Laborers: (HEAVY AND HIGHWAY AND SEWER & WATER LINES CONSTRUCTION)		
GROUP 1.....	\$ 20.42	4.68
GROUP 2.....	\$ 20.72	4.68
GROUP 3.....	\$ 20.88	4.68
GROUP 4.....	\$ 21.04	4.68
GROUP 5.....	\$ 21.47	4.68
GROUP 6.....	\$ 22.01	4.68
GROUP 7.....	\$ 22.53	4.68
GROUP 8.....	\$ 23.23	4.68

LABORERS CLASSIFICATIONS:

GROUP 1: Carloaders, choker setter, concrete crewman, crushed feeder, demolition laborers, including salvaging all material, loading, cleaning up, wrecking, dumpmen, flagmen, fence erector and installer (other than chain link), including installation and erection of fence, guard rails, medial rails, reference posts, guide posts and right-of-way markers, form strippers, general laborers, railroad track laborers, riprap man, scale man, stake jumper, structure mover, includes foundation, separation, preparation, cribbing, shoring, jacking and unloading of structures, water nozzleman, timber buckler and faller, truck loader, water boys, tool room men.

GROUP 2: Combined air and water nozzleman, cement handler, dope pot fireman (nonmechanical), form cleaning machine, mechanical railroad equipment (includes spiker, puller, tile cleaner, tamper, pipe wrapper, power driven wheelbarrows, operators of hand derricks, towmasters, scootcretes, buggymobiles and similar equipment), tamper or rammer operator, trestle scaffold builders over one tier high, power tool operator (gas, electric or pneumatic), sandblast or gunnite tailhose man, scaffold erector, (steel or wood), vibrator operator (up to 4 feet), asphalt cutter, mortar men, shorer and lagger, creosote material handler, corrosive enamel or equl, paver breaker and jackhammer operators.

GROUP 3: Multi-section pipe layer, non-metallic clay and concrete pipe layer (including caulker, collarman, jointer, rigger and jacker, thermal welder and corrugated metal culvert pipe layer.

GROUP 4: Asphalt block pneumatic cutter, asphalt roller, walker, chainsaw operator with attachment, concrete saw (walking), high scalers, jackhammer operator (using over 6 feet of steel), vibrator operator (4 feet and over), well point installer, air trac operator.

GROUP 5: Asphalt screeder, big drills, cut of the hole drills (1 1/2 " piston or larger), down the hole drills (3 1/2" piston or larger) gunnite or sandblaster nozzleman, asphalt raker, asphalt tamper, form setter, demolition torch operator, shotcrete nozzlelemen and potman.

GROUP 6: Powderman, master form setters.

GROUP 7: Brick paver (asphalt block paver, asphalt block sawman, asphalt block grinder, hastings block or similar type)

GROUP 8: Licensed powdermen.

LABO0657-004 06/01/2008

	Rates	Fringes
Laborers: (HAZARDOUS WASTE REMOVAL, EXCEPT ON MECHANICAL SYSTEMS: Preparation for, removing and encapsulation of hazardous materials from non-mechanical systems)		
Skilled Asbestos Abatement Laborers.....	\$ 16.93	4.68
Skilled Toxic and Hazardous Waste Removal Laborers.....	\$ 19.80	4.68

LABO0657-005 06/01/2008

	Rates	Fringes
Laborers: (TUNNEL, RAISE & SHAFT (FREE AIR) FOR HEAVY AND SEWER & WATER LINES CONSTRUCTION)		
GROUP 1.....	\$ 21.11	4.68
GROUP 2.....	\$ 21.74	4.68
GROUP 3.....	\$ 23.34	4.68
GROUP 4.....	\$ 24.02	4.68
LABORERS CLASSIFICATIONS:		

GROUP 1: Brakeman, Bull Gang, Dumper, Trackmen, Concrete Man.

GROUP 2: Chuck Tender, Powdermen in Prime House, Form Setters and Movers, Nippers, Cableman, Houseman, Groutman, Bell or Signalman, Top or Bottom Vibrator Operator.

GROUP 3: Miners, Re-Bar Underground, Concrete or Gunnite Nozzlemen, Powdermen, Timbermen and Re-Timbermen, Wood Steel Including Liner plate or Other Support, Material Motorman, Caulkers, Diamond Drill Operators, Riggers, Cement Finishers-Underground, Welders and Burners, Shield Driver, Air Trac Operator, Shotcrete Nozzlemen and Potman.

GROUP 4: Mucking Machine Operator (Air).

LABO0657-006 06/01/2008

	Rates	Fringes
Laborers: (TUNNEL, RAISE AND SHAFT (COMPRESSED AIR) FOR HEAVY CONSTRUCTION ONLY		

Gauge Pressure Work Period

(Pounds)	(Hours)		
1-14	7.....	\$ 26.39	4.68
14-18	6.....	\$ 31.05	4.68

FOOTNOTE: On any requirement for air pressure in excess of 18 PSI, work periods and rates should be negotiated at a pre-bid conference.

LABO0657-007 06/01/2007

	Rates	Fringes
Laborers: (PAVING AND INCIDENTAL GRADING)		
Asphalt Raker & Concrete		
Saw Operator.....	\$ 17.14	4.30
Asphalt Shoveler.....	\$ 16.59	4.30
Asphalt Tammer & Concrete		
Shoveler.....	\$ 16.84	4.30
Jack Hammer.....	\$ 17.03	4.30
Laborer.....	\$ 16.48	4.30
Sand Setter & Form Setter...	\$ 17.76	4.30

LABO0657-008 06/01/2008

	Rates	Fringes
LABORERS (BRICK MASONRY WORK)		
Mason Tenders.....	\$ 14.65	4.68
Scaffold Builders, Mortarmen and Small Equipment Operators.....	\$ 15.45	4.68

MARB0002-003 05/01/2008

	Rates	Fringes
Marble & Stone Mason		
Includes Pointing, Caulking and Cleaning of All Types of Masonry, Brick, Stone and Cement Structures.....	\$ 32.00	12.07

MARB0003-001 05/01/2008

	Rates	Fringes
Mosaic & Terrazzo Worker, Tile Layer		
Marble Mason and Tile Layer.	\$ 25.01	8.82
Terrazzo Worker.....	\$ 25.76	8.82

MARB0003-004 05/01/2008

	Rates	Fringes
Marble, Tile & Terrazzo		

Finisher.....\$ 20.15 7.97

PAIN0051-001 06/01/2008

Rates Fringes

Painters:

All Industrial Work.....\$ 25.73	7.56
Bridges, Heavy Highway, Lead Abatement and Flame/Thermal Spray.....\$ 29.12	7.56
Commercial and Mold Remediation, Painters, Wallcovers and Drywall Finishers.....\$ 24.31	7.56
Metal Polishing and Refinishing.....\$ 25.31	7.56

PLAS0891-001 05/01/2008

Rates Fringes

Cement Masons:

HEAVY CONSTRUCTION ONLY.....\$ 27.15	6.47
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PLAS0891-002 06/01/2007

Rates Fringes

Cement Masons: (PAVING &
INCIDENTAL GRADING)

Cement Masons.....\$ 17.35	4.35
Concrete Saw Operators.....\$ 17.35	4.35
Form Setters.....\$ 17.35	4.35

PLUM0005-001 08/01/2008

Rates Fringes

Plumbers.....\$ 36.24 13.37+a

a. PAID HOLIDAYS: Labor Day, Veterans' Day, Thanksgiving Day and the day after Thanksgiving, Christmas Day, New Year's Day, Martin Luther King's Birthday, Memorial Day and the Fourth of July.

PLUM0602-005 08/01/2008

Rates Fringes

Steamfitter, Refrigeration &
Air Conditioning Mechanic.....\$ 35.12 14.47+a

a. PAID HOLIDAYS: New Year's Day, Martin Luther King's Birthday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and the day after Thanksgiving and Christmas Day.

SHEE0100-001 01/01/2009

	Rates	Fringes
Sheet Metal Worker.....	\$ 33.04	12.12

TEAM0639-001 06/01/2008

	Rates	Fringes
Truck drivers: (HEAVY & HIGHWAY CONSTRUCTION)		
Tractor-trailer, Low Boy....	\$ 19.50	2.00+a
Truck Drivers.....	\$ 17.50	2.00+a

a. VACATION: Employees will receive one (1) week's paid vacation after one (1) year of service.

TEAM0639-005 09/01/2006

	Rates	Fringes
Truck drivers: (PAVING & INCIDENTAL GRADING)		
All paving projects where the grading is incidental to the paving.....	\$ 14.05	3.69

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted

because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION