CALL NO. 433
CONTRACT ID NO. 072293
Change # 1

Subject: Bell County, 07GR07P79-FD04-FD05
Letting June 22, 2007

Listed below are the enclosed changes on the subject project:

1. Revised - Special Notes - Pages 9-28 of 111
2. Delete - Special Note - Pages 67-80 of 111
3. Revised - Certification of Bid Proposal - Page 111 of 111

Proposal revisions are available at http://transportation.ky.gov/contract/.

If you have any questions, please contact us at (502) 564-3500.

Steve Waddle
Director
Division of Construction Procurement

SW:ks

Enclosures
SPECIAL NOTE FOR STONE-MATRIX ASPHALT BASE (EXPERIMENTAL) 
AND STONE-MATRIX ASPHALT SURFACE (EXPERIMENTAL)

1. DESCRIPTION. Construct one or more courses of a stone-matrix asphalt (SMA) (a special, hot-mixed, hot-placed asphalt mixture) upon the prepared foundation according to these specifications.

SMA is a “gap-graded” asphalt mixture that features a high degree of stone-to-stone contact. This mixture is intended to provide high-performance wearing and structural courses. SMA has an increased amount of coarse aggregate (retained on the No. 4 sieve), aggregate filler, mineral fibers, and asphalt binder. This mixture contains less fine, or “sand-sized,” aggregate than conventional, dense-graded mixtures. SMA is designed to provide maximum rutting resistance due to a high mixture stability and shear resistance resulting from the interaction and contact between the coarse aggregate particles.

AASHTO PP41 offers guidance for the design of SMA mixtures using the Superpave gyratory compactor (SGC).

Section references herein are to the Department’s 2004 Standard Specifications for Road and Bridge Construction.

For SMA Base (Exp.), conform to all requirements for CL3 ASPH BASE 1.00D PG76-22 unless specifically modified herein. For SMA Surface (Exp.), conform to all requirements for CL3 ASPH SURF 0.50A PG76-22 unless specifically modified herein.

2. MATERIALS AND EQUIPMENT.

2.1 Fine Aggregate.

2.1.1 Polish Resistance. Contrary to Subsection 403.03.03, the Department will not require any of the fine aggregate to be polish-resistant.

2.1.2 Sand. Conform to the quality requirements of AASHTO MP8. Contrary to AASHTO MP8, conform to Subsection 804.04 for soundness.

2.1.3 Mineral Filler. Conform to the quality requirements of AASHTO MP8. Do not use fly ash as the mineral filler component. Do not use collected baghouse fines or other airborne aggregate particles in lieu of mineral filler.

2.2 Coarse Aggregate.

2.2.1 All Aggregate Types Except Slag. Conform to the quality requirements of AASHTO MP8. Contrary to AASHTO MP8, conform to Subsection 805.03 for soundness.

2.2.2 Slag. Conform to AASHTO MP8 for flat-and-elongated particles and crushed content. Conform to Section 805 for wear, absorption, and soundness.

2.3 Asphalt Binder. Provide a performance-graded (PG) 76-22 asphalt binder conforming to Section 806.

2.4 Recycled-Asphalt Pavement (RAP). Use no RAP in the SMA mixture.
2.5 Stabilizing Additive. Select and utilize either cellulose or mineral fiber in the SMA mixture. Conform to the dosage rates and quality requirements of AASHTO MP8. Furnish the fiber manufacturer’s certification to the Engineer stating that the material conforms to all requirements therein.

2.6 Fiber-Supply System. Use a separate feed system to accurately proportion the required quantity of fibers into the mixture in a manner that ensures uniform distribution. Interlock this proportioning device with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes. Add the fiber in such a manner to prevent the material from becoming entrained in the exhaust system of the drier or plant. Control the proportion of fibers to within ± 10 percent of the amount required. Provide flow indicators or sensing devices for the fiber system, interlocked with the plant controls, to interrupt mixture production if the introduction of fiber fails.

Prior to performing the trial demonstration specified in Subsection 3.4 of this note, calibrate the fiber-supply system. Provide the Engineer at least two days notice of the calibration date so that a Department representative may inspect the calibration process and verify that the system operates correctly.

For batch plants, add the fiber to the aggregate in the weigh hopper or as the Engineer directs. Increase the dry mixing time by 8 to 12 seconds, or as the Engineer directs, from the time the aggregate is completely emptied into the mixer. Ensure the fibers are uniformly distributed prior to the injection of asphalt binder into the mixer.

For continuous or drum plants, add the fiber to the aggregate, and ensure the fibers are uniformly dispersed, prior to the injection of asphalt binder.

2.7 Mineral Filler-Supply System. Use a totally enclosed, separate feed system to accurately proportion the mineral filler into the mixture in a manner that ensures uniform distribution. Do not introduce the mineral filler through the cold-feed system.

Prior to performing the trial demonstration specified in Subsection 3.4 of this note, calibrate the mineral filler-supply system. Provide the Engineer at least two days notice of the calibration date so that a Department representative may inspect the calibration process and verify that the system operates correctly.

2.8 Rollers. Do not use pneumatic-tired rollers. Use vibratory rollers for breakdown rolling only.

2.9 Material Transfer Vehicle (MTV). Provide and utilize a MTV conforming to the Special Note for Material Transfer Vehicle (9Y).

3. CONSTRUCTION.

3.1 Seasonal and Weather Limitations. Do not place the SMA mixture when the ambient air temperature and existing surface temperatures on the project are less than 50 °F.
3.2 **Preparation of Mixture.** Conform to the following aggregate composition limits.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>SMA Base (Exp.)</th>
<th>SMA Surface (Exp.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2 in.</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>1 in.</td>
<td>85-100</td>
<td>100</td>
</tr>
<tr>
<td>3/4 in.</td>
<td>------</td>
<td>100</td>
</tr>
<tr>
<td>1/2 in.</td>
<td>50-70</td>
<td>85-100</td>
</tr>
<tr>
<td>No. 4</td>
<td>20-36</td>
<td>20-36</td>
</tr>
<tr>
<td>No. 8</td>
<td>15-25</td>
<td>15-25</td>
</tr>
<tr>
<td>No. 200</td>
<td>7.0-11.0</td>
<td>7.0-11.0</td>
</tr>
</tbody>
</table>

3.3 **Mix Design Criteria.** Using a compaction effort of $N_{des} = 100$ gyrations, submit a preliminary mix design conforming to the following mixture specifications.

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Air Voids (AV)</td>
<td>4.0</td>
</tr>
<tr>
<td>% Voids-in-Mineral Aggregate (VMA), SMA Base (Exp.)</td>
<td>16.0 (minimum)</td>
</tr>
<tr>
<td>% VMA, SMA Surface (Exp.)</td>
<td>17.0 (minimum)</td>
</tr>
<tr>
<td>% Voids-in-Coarse Aggregate ($VCA_{mix}$) of Compacted Mixture</td>
<td>$&lt; VCA$ of Dry Aggregate ($VCA_{DRC}$)¹</td>
</tr>
<tr>
<td>% Retained Tensile Strength (TSR)</td>
<td>80 (minimum)</td>
</tr>
<tr>
<td>% Draindown at Production Temperature</td>
<td>0.30 (maximum)</td>
</tr>
<tr>
<td>% Asphalt Binder Content, SMA Surface (Exp.)</td>
<td>6.0 (minimum)</td>
</tr>
</tbody>
</table>

¹ Determine according to AASHTO PP41.
² Determine according to AASHTO T305.

3.4 **Trial Demonstrations.** At least two days prior to beginning mainline paving, demonstrate that satisfactory production and placement of the SMA mixture is possible. Furnish at least 200 tons each of two or more different asphalt binder contents (AC’s) for the trial demonstration. The Engineer will determine the site, outside of the driving lanes, and exact quantity of the trial placement and trial AC’s. Perform a minimum of one volumetric analysis (two SGC specimens and two maximum-specific-gravity tests), one AC determination, and one gradation determination for each of the different AC’s demonstrated. Document that the SMA mixture meets a 1.00 minimum pay value for AC, AV, and VMA prior to beginning mainline paving. The Resident will coordinate with the Maintenance Engineer to find a suitable location for this material on a road in Bell County. No additional payment will be allowed for the placement of this 400 tons of SMA.

3.5 **Optimum AC Selection.** The Engineer will select the optimum AC based on the results of the trial demonstration(s). Contrary to Subsection 402.03.02, obtain the Engineer’s approval prior to adjusting the AC during the setup period or thereafter.
3.6 Mixture Handling.

3.6.1 Mixing Temperatures. Maintain the temperature of the component materials for the SMA mixture according to the instructions of the respective manufacturer(s). However, do not exceed the maximum temperatures indicated in Subsection 401.03.01 for the PG binder specified.

3.6.2 Mixture Storage. Due to the possibility of binder draindown, do not store the SMA mixture overnight.

3.7 Placement and Compaction. When constructing driving lanes, use a MTV to place the SMA mixtures.

Compact the SMA mixtures by Option A. Do not allow traffic on the compacted mixture until it has cooled sufficiently to withstand traffic without damage (normally about 140 °F). To expedite opening the pavement to construction equipment or traffic, the Department will allow the mat to be cooled by dousing it with water after compaction is complete.

4. MEASUREMENT.

4.1 Trial Demonstrations. The Department will measure up to 400 tons of mixture used in the Trial Demonstration. The Department will measure the quantity as SMA Base (Exp.) or SMA Surface (Exp.), as appropriate. The Department will not measure quantities exceeding 400 tons for payment and will consider them incidental to the SMA Base (Exp.) or SMA Surface (Exp.).

4.2 SMA Base (Exp.) and SMA Surface (Exp.). The Department will measure both the SMA Base (Exp.) and SMA Surface (Exp.) by the ton.

5. PAYMENT.

5.1 Trial Demonstrations. The Department will pay for the measured quantities at the Contract unit bid price for SMA Base (Exp.) or SMA Surface (Exp.), as appropriate, with no adjustments.

5.2 SMA Base (Exp.). The Department will calculate payment by the Lot Pay Adjustment Schedule for Compaction Option A Base and Binder Mixtures in Subsection 402.05 except for the Lane Density schedule. The Department will apply the following schedule for Lane Density.

<table>
<thead>
<tr>
<th>Pay Value</th>
<th>Lane Density Result (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.05</td>
<td>95.0-96.5</td>
</tr>
<tr>
<td>1.00</td>
<td>93.0-94.9</td>
</tr>
<tr>
<td>0.95</td>
<td>92.0-92.9 or 96.6-97.0</td>
</tr>
<tr>
<td>0.90</td>
<td>91.0-91.9 or 97.1-97.5</td>
</tr>
</tbody>
</table>
The Department will require removal and replacement only when the results for all 4 cores in a sublot are less than 91.0 percent, or greater than 97.5 percent, of solid density. The Department will require removal and replacement of the entire sublot of material in this case. The Department will apply a 0.65 pay factor to individual cores with these results for sublots allowed to remain in place.

5.3 **SMA Surface (Exp.).** The Department will calculate payment by the Lot Pay Adjustment Schedule for Compaction Option A Surface Mixtures in Subsection 402.05 except for the Lane Density and Joint Density schedules. The Department will apply the following schedules for Lane Density and Joint Density.

<table>
<thead>
<tr>
<th>Pay Value</th>
<th>Lane Density Result (%)</th>
<th>Joint Density Result (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.05</td>
<td>95.0-96.5</td>
<td>92.0-96.0</td>
</tr>
<tr>
<td>1.00</td>
<td>93.0-94.9</td>
<td>90.0-91.9</td>
</tr>
<tr>
<td>0.95</td>
<td>92.0-92.9 or 96.6-97.0</td>
<td>89.0-89.9 or 96.1-96.5</td>
</tr>
<tr>
<td>0.90</td>
<td>91.0-91.9 or 97.1-97.5</td>
<td>88.0-88.9 or 96.6-97.0</td>
</tr>
<tr>
<td>0.75</td>
<td>----</td>
<td>&lt; 88.0 or &gt; 97.0</td>
</tr>
</tbody>
</table>

The Department will require removal and replacement only when the results for all 4 cores in a sublot are less than 91.0 percent, or greater than 97.5 percent, of solid density. The Department will require removal and replacement of the entire sublot of material in this case. The Department will apply a 0.65 pay factor to individual cores with these results for sublots allowed to remain in place.

5.4 **Pay Items and Units.** The Department will make payment for the completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>-----</td>
<td>SMA Base (Exp.)</td>
<td>Ton</td>
</tr>
<tr>
<td>-----</td>
<td>SMA Surface (Exp.)</td>
<td>Ton</td>
</tr>
</tbody>
</table>

May 4, 2007
SPECIAL NOTES FOR 10" PCC PAVEMENT INLAY

I. DESCRIPTION

Except as specified in these notes, perform all work according to the Department’s 2004 Standard Specifications, applicable Special Provisions and Special Notes, Standard Drawings and Sepia Drawings, and the drawings elsewhere in this proposal. Article references are to the Standard Specifications.

Furnish all materials, labor, and equipment for the following work: (1) Asphalt Milling and Texturing of existing pavement; (2) Placing 10" PCC Pavement Inlay and Joint Sealing; (3) Maintaining and controlling traffic; and (4) All other work specified as part of this contract.

II. MATERIALS

The Department will sample and test all materials according to Department’s Sampling Manual and the Contractor shall have the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing, unless otherwise specified in these notes.


B. 10" PCC Pavement/24. Conform to Section 502. Use PCC mixtures capable of attaining 3500 psi compressive strength and being opened to traffic within 24 hours. At Contractor’s option with no additional cost to the Department, other high early strength rapid setting concrete can be used; however, obtain the Engineer’s approval prior to use.

C. Synthetic Fibers. Use graded, fibrillated, polypropylene fibers.

D. Joint Seals. Use Dow Corning Silicone 890 SL or equivalent.

III. CONSTRUCTION METHODS


B. Asphalt Milling and Texturing. After milling the depth required for adjacent resurfacing, mill pavement areas to receive the PCC inlay the additional depth required to construct the final grade of the 10" PCC inlay to match the final grade of the asphalt resurfacing. See drawings for dimensions and location. Transitions between milled and unmilled areas which traffic may cross shall be wedged with asphalt material. The wedge shall be removed prior to placement of the 10" PCC Pavement or the asphalt surface course.
C. 10" PCC Pavement Inlay. Prior to placement of PCC Pavement/24, saw cut asphalt pavement to provide a neat clean edge. See drawings for the dimensions and location of PCC pavement inlay. The nominal depth of the PCC Pavement shall be 10 inches; however, transition the finished grade of the PCC Pavement to match the asphalt resurfacing and any adjacent pavement that is to remain in place; therefore, the actual thickness of the pavement may be greater than 10 inches in some areas. The Engineer will allow either central mixing or truck mixing and hand finishing. Whenever the ambient air temperature is below 60 degrees F, cover the PCC Pavement/24 with insulated blankets during initial curing. No other insulation will be permitted.

Add Synthetic Fibers at a dosage rate of 3 pounds per cubic yard to the PCC Pavement/24 mixture at the plant as recommended by the Manufacturer.

D. Joint Construction and Sealing. Construct all transverse contraction and expansion joints according to Section 502.

Seal all joints with Dow Corning Silicone 890 SL or equivalent. See Section 501.03.17 for additional requirements. The Contractor shall be responsible for replacement/repair of damaged seals until final curing is complete (21 days).

Do not allow traffic on newly sealed joints until the silicone seal is sufficiently "skinned over" to prevent tracking due to traffic. The "skin over time" for silicone seals typically is one hour; however, longer times may be required depending upon specific weather conditions.

E. Shoulder and Other Restoration. Restore any areas of the existing shoulders or other roadway features disturbed by the work or the Contractor’s operations in like kind materials and design as directed by the Engineer.

F. On-Site Inspection. Make a thorough inspection of the site prior to submitting bid and thoroughly evaluate existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of bid as certification of this inspection having been made. Any claims resulting from site conditions will not be honored by the Department.

G. Property Damage. Be responsible for all damage to public and/or private property resulting from the work.

H. Utility Clearance. It is not anticipated that utility facilities will need to be relocated and/or adjusted; however, in the event that it is discovered that the work does require that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities, and working days will not be charged for those days on which work on the controlling item is delayed, as provided in the Specifications. If the total delay exceeds ten working days, an extension of the specified completion date will be negotiated with the Contractor for delay to the Contractor's work.
IV. METHOD OF MEASUREMENT


B. Joint Sealing. The Department will not measure Joint Sealing for payment, but shall be incidental to the bid item 10" PCC Pavement/24.

C. Asphalt Milling and Texturing. See Section 408.

IV. BASIS OF PAYMENT


B. 10" PCC Pavement/24. Payment at the contract unit price per square yard shall be full compensation for the addition of Synthetic Fibers to the 10" PCC Pavement/24 mixture at the plant as recommended by the Manufacturer, constructing the 10" PCC inlay, and sawing and sealing joints, tie bars, hook bolts, and dowel bars.

C. Asphalt Milling and Texturing. See Section 408.
REFERENCES


2. FHWA Manual on Uniform Traffic Control Devices.

3. Kentucky Department of Highways Standard Drawings:
   - RPN-015 Non-Reinforced Concrete Pavement
   - RPN-020 Cement Concrete Pavement Joints Types & Spacing
   - RPS-010 Cement Concrete Pavement Joint Details
   - RPX-020 Silicone Rubber Seals for Portland Cement Concrete Pavement
   - TSC-200 Lane Closure Case I
   - TSC-201 Lane Closure Case I-A
   - TSC-205 Lane Closure Case II
   - TSC-221 Shoulder Closure
   - TSC-265 Post Splicing Detail
   - TSC-270 Portable Flashing Arrows

4. Kentucky Department of Highways Sepia Drawings:
   - Miscellaneous Traffic Control Devices (sheet 1)
   - Miscellaneous Traffic Control Devices (sheet 2)
SPECIAL NOTE FOR ASPHALT MILLING AND TEXTURING AND PLACING PCC INLAY AND LIQUIDATED DAMAGES
FD04 007-025E-013-014

Material obtained from the milling operations shall become the property of the Department. Deliver this material to the State Maintenance Facility in Bell County.

Begin PCC Inlay operations within the same day as commencement of the asphalt milling operation and continue inlay operations continuously until completed. If inlay operations are not begun within this time period, additional liquidated damages in the amount specified in Section 108.09 will be assessed for each day, or part of a day until the PCC Inlay operations begin.

Additional Liquidated damages in the amount of $1,150 per day will be assessed for each day or part of a day, a lane closure remains in place during prohibited periods specified in the Traffic Control Plan, excluding delays caused by inclement weather. If work is delayed by inclement weather, the work required to allow the lane closure to be removed shall be resumed immediately as soon as weather permits.

All liquidated damages will be applied accumulatively.

All other applicable portions of Section 108 apply.
SPECIAL NOTES

1) Some superelevated sections have slotted drains located at centerline. Milling must not be performed to within 8 inches of the slotted drain riser. Material within 8 inches of the riser must be removed in a manner that will not result in damage to the slotted drain.

2) The entire roadway surface to be re-paved with bituminous concrete shall be milled to a depth of 1.25 inches below original grade. Base failure areas shall be milled an additional 4 inches below the milled surface.

3) Approximate locations of base failure areas are as follows:

<table>
<thead>
<tr>
<th>Beg Milepost</th>
<th>End Milepost</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Right SouthBound Lane</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.260</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>13.344</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>13.310</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>Left Northbound Lanes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.100</td>
<td>13.125</td>
<td>100</td>
</tr>
<tr>
<td>13.200</td>
<td>13.219</td>
<td>100</td>
</tr>
<tr>
<td>13.271</td>
<td>132.304</td>
<td>175</td>
</tr>
<tr>
<td>13.592</td>
<td>13.728</td>
<td>700</td>
</tr>
<tr>
<td>13.931</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>14.013</td>
<td>14.035</td>
<td>115</td>
</tr>
<tr>
<td>14.100</td>
<td>14.114</td>
<td>75</td>
</tr>
<tr>
<td>14.240</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>14.257</td>
<td>14.3</td>
<td>275</td>
</tr>
<tr>
<td>14.322</td>
<td>14.36</td>
<td>200</td>
</tr>
</tbody>
</table>
SPECIAL NOTES FOR TRAFFIC SIGNAL PREFORMED LOOP REPLACEMENT

I. DESCRIPTION. Loop replacement shall be performed in accordance with the Department's 2004 Standard Specifications, applicable Standard Drawings, and applicable Special Provisions except as hereafter specified. Article references are to the Standard Specifications.

The Contractor shall furnish all materials, labor, and equipment for the replacement of traffic signal loop(s), and junction boxes (if the contract specifies quantities for this bid item elsewhere), and maintaining and controlling traffic, and all other work specified as part of this contract.

II. MATERIALS. All wire and cable shall be plainly marked in accordance with the provisions of the national electrical code.

Conduit shall be rigid steel. All rigid steel conduit shall be galvanized inside and out and shall conform to the Underwriters' Laboratories requirements for rigid metallic conduit.

All preformed loop wire shall be 16-gauge THWN stranded copper, single conductor in a 2-4-2 configuration for Quadrapole and 3 turns for a standard as shown on the Quadrapole and Standard Loop detail. The loop and home run shall be housed in a class A oil resistant heavy-duty reinforced rubber hose with a 250-PSI internal pressure rating. Hose for the loop and home run assembly shall be one continuous piece. The 3/8” I.D. (5/8” O.D.) hose shall be factory assembled. Preformed loops and home runs shall be pre-wired. The loop configurations and home run lengths shall be assembled for the specific application.

Hose tee connections shall be high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing the glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking.

Loop lead-in cable shall be #14 AWG stranded, paired conductors, electrically shielded and conforming to IMSA 19-2-1984.

III. CONSTRUCTION. All wiring shall conform to the provisions of the National Electrical Code unless otherwise shown on the details. Where more than one circuit is installed within the same conduit, permanent circuit identification numbers shall be affixed to the wires. All wires shall be permanently labeled within 6 inches of the input file.

Rigid steel conduit encasement shall be provided for all conductors except for overhead installations, where conductors are run inside poles or cabinets and induction loop conductors sealed within pavements. All conduit installations shall conform to the provisions of the National Electrical Code except where directed otherwise. Bonded slip
joints will be permitted for joining rigid conduit to junction boxes. Where a standard coupling cannot be used, an approved threaded union coupling shall be used.

All conduit ends shall be reamed to remove burrs and sharp edges. Damaged portions of the galvanized surfaces and untreated threads resulting from field cuts shall be painted with a rust inhibitive paint. Conduit bends shall have a radius of not less than 12 times the nominal diameter of the conduit, unless otherwise shown on the plans. See Typical Grounding Detail.

Conduit which will not be subjected to regular pressure from traffic shall be laid to a depth of not less than 18 inches. At crossings under roadway surfaces and shoulders, the conduit shall be placed at a depth of not less than 24 inches below grade. See Conduit Under Existing Pavement detail. The contractor will not be permitted to cut any pavement in carrying out conduit installations. After the conduit has been installed and prior to backfilling, the conduit installation shall be inspected and approved by the Engineer.

Contractor shall install underground utility warning tape above the circuit cables as shown on the detail sheets. The tapes shall conform to the APWA-ULCC national color code with black lettering on a red background. The tape shall continuously read "Caution: Electric Line Buried Below" alternating with a 'No Digging' symbol.

The tape shall be durable and colorfast to withstand years of underground burial and easily direct buried. The tape shall be 6" wide and 7 mils (nominal) thick. The tape shall have a minimum tensile strength of 600 lbs./6" width. It shall be color code impregnated with alkali and acid stable, lead-free, organic pigments for direct burial. It shall be ultraviolet colorfast. The tape shall be nondistorting with no elongation.

When backfilling trenches, the backfill material shall be placed and compacted in lifts of 9 inches or less. Any area disturbed as a result of the contractor's operations shall be restored to the satisfaction of the Engineer.

Loop lead-in wire, exclusive of shielded cable, shall be twisted with three to five turns per foot before placement in saw slot, conduit or junction box. Unshielded loop wiring to field terminal connections in cabinet and unshielded loop wiring in loop amplifier connector harness shall also be twisted three to five turns per foot.

Except for the connection of the loop wires to the loop lead-in wires, loops shall be extended splice-free to the controller. Loop wires shown as extended to poles or junction boxes shall be spliced into loop lead-in cable at the poles or boxes. Loop lead-in cable shall be extended splice-free from pole or junction box to controller. Each loop shall have a separate lead-in cable installed. Multiple loops on the same lead-in cable will not be accepted. Splices shall be placed to minimize possibility of water intrusion. The electrical contractor shall coordinate the installation of traffic loops with the paving contractor and the Engineer prior to milling.
Junction boxes shall conform to ANSI/SCTE 77 "Specifications for Underground Enclosure Integrity" for Tier 15. Covers shall have a minimum coefficient of friction of 0.05 in accordance with ASTM C1028, shall be marked "TRAFFIC" and be attached with 3/8" stainless hex bolts. Junction boxes shall be installed flush with finished grade. See Junction Box Type B detail.

All splices shall be made with butt splices. Butt splices shall be copper and of the correct wire range. Butt splices shall be covered with a 3M Mastic Pad or approved equal and then taped with a 3M brand # 33 electrical tape. Mastic pad must cover at least 3 inches past each end of butt splice. Underground splices include splices in junction boxes and pole bases. Each conductor shall be encased in a separate splice kit. Cost of the splices shall be incidental to the cost of wire or cable. The splicing specification listed here takes precedence over any other splicing specifications listed in the Standard Specifications for Road and Bridge Construction.

Induction loop conductors shall test free of shorts and unauthorized grounds and shall have an insulating resistance of at least 100 megohms when tested with a 500 volt direct current potential in a reasonably dry atmosphere between conductors and ground.

Preformed Quadruple Loops, Preformed Loops and Preformed Loop Lead-In locations shall be coordinated with the Contractor and the Engineer prior to any work being performed. The Contractor shall be careful to avoid pavement sections where potholes, cracks, or any other roadway flaws exist.

Hose for the preformed loops and home run assembly shall be one continuous piece and shall be extended splice-free to the controller or junction box. Preformed loop cables shown as extended to junction boxes by means of preformed home run cables shall be spliced into loop lead-in cable at the boxes. Loop lead-in cable shall be extended splice-free from the junction box to controller. Splices shall conform to above note and be placed to minimize possibility of water intrusion.

The preformed loop dimension shall be 6' x 30' Quadruple or 6' x 6', as specified. Center and mark each loop in the lane such that its sides are parallel and perpendicular to the direction of traffic.

Each Contractor submitting a bid for this work shall make a thorough inspection of the site prior to submitting his bid and shall thoroughly familiarize himself with existing conditions so that the work can be expeditiously performed after a Contract is awarded. Submission of a bid will be considered evidence of this inspection having been made. Any claims resulting from site conditions will not be honored by the Department.

Information provided in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusion as to the conditions encountered. The Department does not give any guarantee as to the accuracy
of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information shown.

It is not anticipated that utility facilities will need to be relocated and/or adjusted; however, in the event that it is discovered that the work does require that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities.

The Contractor will be responsible for all damage to public and/or private property resulting from his work. Upon completion of the work, restore all disturbed highway features in like kind design and materials. Clean the site and dispose of all waste and debris off the right-of-way at sites obtained by the Contractor at no additional cost to the Department. Sow all disturbed earthen areas with Seed Mixture No. 1.

**Asphalt or Concrete (4 inches or less) Installation**

Starting at the tee joint, saw-cut a $\frac{3}{4}$” wide slot to a depth of 6” below the final surface of pavement for three sides of the loop leaving the center leg and the shortest and farthest leg from the home run tee joint for the last saw-cuts. After the three sides have been saw-cut, lay loop in slot to mark the center leg and the fourth side. Pull the loop out of the slot to saw-cut the center leg and the fourth side. Saw-cut a $\frac{3}{4}$” wide slot for the center leg and the fourth side. Clean any debris, water and loose particles from the slot with compressed air.

Make the saw-cut for the home run slot from each loop to the transition conduit $\frac{3}{4}$” wide and 6” deep. Clean any debris, water, and loose particles from the slot with compressed air.

Insert the preformed loop wire and home run lead-in into the bottom of the loop slot. Extend the preformed home run lead-in cable splice-free to the junction box or cabinet. No exceptions to this shall be considered.

There shall be a minimum of 6’ between loops in adjacent lanes for 12’ wide lanes. Once the preformed loop is installed in the roadway, hand place 1” backer rod in the saw slot to ensure preformed loop will not rise out of slot. Contractor shall then fill the saw slot with non-shrink grout until level with road surface. The non-shrink grout shall be incidental to the Loop Saw, Slot and Fill bid item. See Asphalt saw slot detail.

**Concrete (with more than 4 inches) Installation**

Lay the preformed loop wire and home run lead-in on the compacted aggregate prior to pouring the new concrete. There shall be a minimum of six feet between loops in adjacent lanes for 12 foot wide lanes.
IV. MEASUREMENT.

Conduit shall include furnishing and installing specified conduit in accordance with specifications. This item includes conduit fittings, expansion joints, clamps, and weatherheads.

Junction box shall include furnishing and installing specified junction box in accordance with the specifications and shown on the Junction Box Type B detail. This item includes #57 aggregate, backfilling, and the restoration of disturbed areas to the satisfaction of the Engineer.

Trenching and backfilling shall include excavation, backfilling, concrete (if required) and the restoration of disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing underground utility warning tape as shown on the Depth of Conduit detail.

Wire or cable shall include furnishing and installing specified wire or cable within conduit, saw slot, or overhead as required. Incidental to this item shall be furnishing and installing splice boots, cable rings or other hardware required for installing cable. Wire installed in saw slots shall be installed as shown on the Saw Slot detail. The contractor shall install all cable runs splice-free from the controller to each loop wire the cable is feeding. Exceptions to this must be approved by the Engineer. The removal of existing lead-in cable shall be incidental to this item.

Loop saw slot and fill shall include sawing, cleaning saw slot as well as furnishing and installing loop sealant, backer rod and non-shrink grout as shown on the details. The contractor shall saw according to the dimensions shown on the detail sheets and not cut out any sections of pavement by over-sawing any slot. The .75” conduit referenced in the Loop Wire Transition details is incidental to this project and not a separate pay item.

Preformed Quadruple Loops, Preformed Loops and Preformed Loop Lead-In shall include furnishing and installing preformed quadruple loops, preformed loops and preformed loop lead-in. Items installed in saw slots shall be installed as shown on the Saw Slot detail. All connections and fittings required for a full and complete installation of the loops are incidental to this item.
V. PAYMENT. The Department will make payment for completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>4793</td>
<td>Conduit 1¼”</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>4795</td>
<td>Conduit 2”</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>4811</td>
<td>Junction Box Type B</td>
<td>Each</td>
</tr>
<tr>
<td>4820</td>
<td>Trenching and Backfilling</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>4850</td>
<td>Cable-No. 14/1 Pair</td>
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</tr>
<tr>
<td>4894</td>
<td>Preformed Loop Lead-In</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>20453ES835</td>
<td>Preformed Quadruple Loops</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>20452ES835</td>
<td>Preformed Loops</td>
<td>Linear Foot</td>
</tr>
</tbody>
</table>
PROPOSED FINISHED SURFACE.
NON-SHRINK GROUT IN 3/4" SAW SLOT.
1" BACKER ROD IN 3/4" SAW SLOT.
PREFORMED LOOP IN 3/4" SAW SLOT.

ASPHALT SAW SLOT DETAIL
*Use detail if concrete is four inches or less

DRILL HOLE AND INSTALL 3/4" RIGID STEEL CONDUIT FROM END OF SAW SLOT TO BE CONNECTED TO R. S. CONDUIT TO JUNCTION BOX OR CONTROLLER.

LOOP WIRE TRANSITION - CONCRETE CURB

LOOP WIRE TRANSITION - FLAT SHOULDER
CONDUIT UNDER EXISTING PAVEMENT DETAIL

2" CONDUIT MINIMUM OR AS REQUIRED BY CODE. CONDUIT SHALL BE INSTALLED WITHOUT DISTURBING PAVEMENT. CONDUIT SHALL EXTEND A MINIMUM OF 2' PAST THE EDGE OF SUB-BASE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

PREFORMED LOOP LEAD-IN SHALL BE TWISTED WITH THREE TO FIVE TURNS PER FOOT UNTIL TERMINATED AT FIELD CONNECTIONS IN THE CABINET OR CONNECTED TO SHIELDED CABLE.

STANDARD LOOP

*ALL LOOPS THAT ARE NOT QUADRAPOLES SHALL BE STANDARD AND HAVE 3 TURNS

PREFORMED LOOP LEAD-IN SHALL BE TWISTED WITH THREE TO FIVE TURNS PER FOOT UNTIL TERMINATED AT FIELD CONNECTIONS IN THE CABINET OR CONNECTED TO SHIELDED CABLE.

QUADRAPOLE LOOP

*ALL 6'x30' LOOPS SHALL BE QUADRAPOLE AND SHALL HAVE A 2-4-2 CONFIGURATION
JUNCTION BOXES SHALL CONFORM TO ANSI/SCITE 77 "SPECIFICATIONS FOR UNDERGROUND ENCLOSURE INTEGRITY" FOR TIER IV. COVERS SHALL HAVE A MINIMUM COEFFICIENT OF FRICTION OF 0.05 IN ACCORDANCE WITH ASTM C1028, SHALL BE MARKED "TRAFFIC" AND BE ATTACHED WITH 3/4 STAINLESS HEX BOLTS. JUNCTION BOXES SHALL BE INSTALLED FLUSH WITH FINISHED GRADE.

JUNCTION BOX TYPE B

DEPTH OF CONDUIT

TYPICAL GROUNDING DETAIL
CERTIFICATION OF BID PROPOSAL

We (I) propose to furnish all labor, equipment and materials necessary to construct and/or improve the subject project in accordance with the plans, the Transportation Cabinet's Standard Specifications for Road and Bridge Construction, current edition, special provisions, notes applicable to the project as indicated herein and all addenda issued on this project subsequent to purchase of proposal.

We (I) attach a bid proposal guaranty as provided in the special provisions in an amount not less than 5% of the total bid. We agree to execute a contract in accordance with this bid proposal within 15 calendar days after the receipt of the notice of award for the project.

We (I) have examined the site of proposed work, project plans, specifications, special provisions, and notes applicable to the project referred to herein. We understand that the quantities shown herein are estimated quantities subject to increase or decrease as provided in the specifications.

We (I) acknowledge receipt of all addendum(s) (if applicable) and have made the necessary revisions to the bid proposal. We have considered all addendum(s) in the calculation of the submitted bid and applied the updated bid items, which are included.

- Addendum # 1 – Proposal sheets – Revised Special note, Delete special note – June 20, 2007

_________________________________________________   ______________________   _______   _______
Authorized Agent (Signature)   Title

________________________________________________________   _______________________________
Address   City   State   Zip Code

When two or more organizations bid as a joint venture, enter names of each organization and an authorized agent for each organization must sign above.