SECTION D

SHELBY COUNTY GOVERNMENT

ENGINEERING DEPARTMENT

SPECIAL PROVISIONS

SHELBY COUNTY
A.D.A.
CURB & RAMP
INSTALLATION PROJECT

STATE OF TENNESSEE
SPECIAL PROVISIONS # 102B
UNBALANCED BIDS

The Department will review all unit prices submitted by the apparently lowest responsible bidder and will decide whether any of the unit prices are excessively above or below a reasonable cost analysis value determined by the Engineer.

In the event any unit prices are determined to be unbalanced and contrary to the interest of the Department, the right is reserved to reject such bid at the discretion of the Department or to award the Contract and limit progress payments on units of work performed on any excessively priced items to costs that are satisfactorily documented by the Contractor plus 20 percent, until 85 percent of the Contract has been completed. Upon completion of 85 percent of the Contract, the Contractor will be reimbursed in accordance with **Subsection 109.06** of the Standard Specifications for the accepted quantities of work performed on the excessively priced items.

SHELBY COUNTY, TENNESSEE
SPECIAL PROVISION #105A
APPROVAL OF SHOP DRAWINGS

As soon as possible after naming the fabricator of a steel structure and before the shop drawings are prepared, the Contractor shall require the fabricator to submit prints of the shop drawing Title Sheet directly to the Shelby County Engineering Department. Shop drawings for all types of structures shall be submitted directly to the Engineering Department for handling with the checking agency and for distribution. A copy of the letter transmitting the shop drawings to the Engineering Department shall be furnished the project engineer.

Each shop drawing sheet shall contain in the title block the following:

The location, project number, and contract number. Shop drawings shall be submitted in sets with the drawing numbers running consecutively in each set, and if more than five (5) sheets in a set, shall be appropriately bound. Shop drawings marked "APPROVED" or "APPROVED AS NOTED" need not be resubmitted unless specifically asked for. The following minimum number of sets of shop drawings shall be submitted for approval.

Strain Poles and Mast Arm Poles - six (6) sets; Conventional Street Lighting Poles - six (6) sets.

It is recommended that a heading similar to the following be used in all correspondence:

Project Number

Location

Contract Number

SHELBY COUNTY, TENNESSEE
SPECIAL PROVISION 105.05
PRE-CONSTRUCTION SUBMITTAL REQUIREMENT

The Contractor shall be responsible for submitting asphalt mix design(s), concrete mix design(s), shop drawing(s), certification report(s), etc. for approval at the preconstruction conference or no later than thirty (30) days after the preconstruction conference. This is to allow sufficient time for review and approval.

Under no circumstances shall any materials be used or construction begin using any mix design or shop drawing prior to approval of submittals.

CONCRETE PLANTS, ASPHALT PLANTS, CEMENT TREATED BASE PLANTS, ETC.:

Regarding mix design submittal(s): The Contractor shall designate the plant location for the item(s) to be produced as per the mix design. The designated location shall not be changed by the Contractor without prior approval of Shelby County. The Contractor shall not be permitted to send any item(s) to the project without this approval. Any approved change(s) in plant location(s) shall require a mix design for that specific location. Any change(s) shall have prior approval and the approved design shall be on file with Shelby County per the requirements for the item(s) being produced per the mix design. Contractor(s) shall not change plant locations at will. Any change(s) shall only be made for an emergency type situation or with prior approval and a notification that such change is to take place. Convenience or poor planning shall not constitute being a valid reason for plant change(s). It shall be the Contractor's responsibility for coordinating the project work with the item(s) being produced and shipped.

REGARDING PROCESS CONTROL PLAN(S):

The Contractor shall submit a process control plan, with mix design submittals, which shall be approved by the Engineer. This process control plan shall be used by the Contractor per the specification requirements of the item being produced or supplied. This plan shall not be changed or otherwise altered without submittal and approval of a "new" plan.

SHELBY COUNTY, TENNESSEE
SPECIAL PROVISIONS 105.06
SCHEDULE OF WORK

The Contractor shall, in coordination with the Engineer, develop a proposed work schedule showing estimated work times for all major construction tasks. The schedule shall be updated as needed to afford the Engineer a view as to the progress and completion time. This schedule shall be submitted at the pre-construction conference and shall include a list of suppliers.

The Contractor shall follow this schedule unless a change is necessary. The Contractor shall notify the Engineer in advance of any deviation from this schedule. The plan of operations shall show the controlling item of work during each phase and a revised schedule shall be submitted when changed conditions warrant.

Sub-contractor notification: The successful Contractor shall submit to the Engineer at the pre-construction conference a list of any and all sub-contractor(s) that will be performing work under his supervision. The contractor shall also notify the Engineer before any change is made in sub-contractor(s) or suppliers of materials to the project.

Notification of sub-contractor(s) or suppliers shall in no way release the Contractor from any or all responsibility relating to work or liabilities relating to this contract.

SHELBY COUNTY, TENNESSEE
SPECIAL PROVISION 105.07A
DAMAGE TO SERVICE LINES

The Contractor shall immediately stop all work to repair any service lines that are damaged during construction. The construction process shall not commence until the damaged lines are satisfactorily repaired and the repair approved by the Engineer or his representative.

The Contractor shall also be responsible for any plumbing damage caused by foreign objects entering a broken water line.

The Contractor shall also be responsible for other damage caused by broken service lines including, but not limited to, damage to equipment due to interrupted service. This does not apply to cable television deemed by the Engineer to have been incorrectly installed.

SHELBY COUNTY, TENNESSEE
SPECIAL PROVISION 107.15
COMPLAINTS

The Contractor shall ensure that all complaints are resolved promptly. Upon notification by the Engineer or his representative, the Contractor shall respond immediately to correct the problem, regardless of severity.

The Contractor shall inform the Engineer in writing as to when and how the complaint was resolved.

If any complaint is not resolved to the satisfaction of the Engineer within 48 hours of receipt of the complaint by the Contractor, then all other work shall cease upon order of the Engineer or his representative until the complaint is resolved to the satisfaction of the Engineer.

It will be the Engineer's responsibility to handle all communication with private property owners and residents.

The Engineer will have the authority to schedule a conference involving the Contractor, the property owner, and the Engineer for the purpose of clarifying the nature of the complaint.

The Engineer will mediate all disputes and his decision will be final. Under no circumstances shall the Contractor negotiate directly with a property owner.

SECTION E

SHELBY COUNTY GOVERNMENT

ENGINEERING DEPARTMENT

TECHNICAL SPECIFICATIONS

SHELBY COUNTY
A.D.A.
CURB & RAMP
INSTALLATION
PROJECT

SECTION 717-MOBILIZATION OF FORCES, SUPPLIES AND EQUIPMENT

717.01-Description 645
717.02-Method of Measurement 645
717.03-Basis of Payment 645

SECTION 717-MOBILIZATION OF FORCES, SUPPLIES AND EQUIPMENT

717.01-Description. This work shall consist of the mobilization and demobilization of the prime Contractor's and all Subcontractors' forces, supplies, equipment and incidentals at the project site. It shall include all Contractor and Subcontractor costs associated with obtaining performance bonds, insurance required by railroads, and other preconstruction costs incurred after award of the contract which are necessary costs to the project and are of a general nature rather than directly attributable to other pay items. All necessary preconstruction costs not attributable to a specific pay item shall be included in the contract lump sum price for Mobilization and not in any other pay item.

717.02-Method of Measurement. Mobilization will be measured by the unit for the completion of the work as described above, and payment will be made on a lump sum basis.

717.03-Basis of Payment. Partial payments for the item of "Mobilization" will be made with the first and second partial pay estimates paid on the contract, and will be made at the rate of 50% lump sum price for "Mobilization" on each of these partial pay estimates provided the amount bid for "Mobilization" does not exceed 5% of the total amount bid for the contract. Where the amount bid for the item of "Mobilization" exceeds 5% of the total amount bid for the contract, 2 ½% of the total amount bid will be paid on each of the first partial payment estimates, and that portion exceeding 5% will be paid on the last partial pay estimate.

As an exception to the above, where the work covered by the contract is limited exclusively to the resurfacing of an existing pavement, including projects involving the milling off of a portion of the existing pavement prior to the laying down of new asphalt cement concrete layer(s), payment of the entire lump sum price for the item of "Mobilization," less the retainage provided for in Title 54-5-121, TCA, will be made with the first partial pay estimate paid on the contract, provided the amount bid for "Mobilization" does not exceed 5% of the total amount bid for the contract. When the amount bid for the item of "Mobilization" exceeds 5% of the total amount bid for the contract, 5% of the total amount bid for the contract will be paid on the first partial pay estimate, and the portion exceeding 5% will be paid on the last partial pay estimate.

CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS
SECTION 01551 TRAFFIC CONTROL FOR CONSTRUCTION WORK ZONES

PART 1 - SCOPE

This work shall consist of furnishing, erecting, illuminating, handling, and maintaining all construction signs (warning, regulatory, and guide), barricades, and other traffic control devices designated for installation at locations specified by the Plans or the approved Traffic Control Plan, or directed or approved by the Owner for the purpose of handling traffic safely through construction work zones. This work shall include the provision of flaggers or special measures necessary to assure the handling of traffic safety through construction work zones.

PART 2 - MATERIALS

2.01 GENERAL REQUIREMENTS

A. All signs, barricades, markers, lights, and other traffic control devices for use in construction work zones shall meet the requirements of Part VI of the Tennessee Manual on Uniform Traffic Control Devices (MUTCD). Materials used in the fabrication, construction, and installation of the construction signs, barricades, and other traffic control devices shall conform to the requirements of the MUTCD, the Plans, and the section of these Specifications as follows"

1. Signs	Specification Section 02891 Para. 2.02
2. Pavement Markings	Specification Section 02760 Para. 2.01
3. Drums, Cones, Barricades, Barriers, and Warning Lights	Specification Section 01550 Para. 2.02

B. Items are not required to be new. Used items may be acceptable provided the following conditions are met:

1. Units are in good repair, clean, and structurally sound.

2. Reflective sheeting on any unit is clean and in good repair.

3. All legends and messages are sharp, clean, and legible.

4. Reflectivity of said units during the hours of darkness shall provide acceptable, clean and uniform delineation without dead spots.

C. No test reports are required, but the Owner will visually inspect all units and accessories for compliance with the various dimensional and material stipulations noted before approving their use in the work. The approval of any unit for use is subject to satisfactory field performance and does not preclude the Owner ordering replacements for deteriorated, damaged or otherwise unsatisfactory performance of units; said replacements for these previously approved units shall be without additional compensation.

2.02 CHANNELIZING AND WARNING DEVICES.
Reflectorization of channelizing and warning devices shall be accomplished using materials meeting the requirements of Specification Section 02891 Paragraph 2.02 F.

A. Traffic Cones.
Traffic cones and tubular markers shall be a minimum of 18 inches in height with a broadened base and shall be made of materials to withstand impact without damage to themselves or to vehicles. Orange shall be the predominant color on cones and tubular markers. For nighttime use they shall be reflectorized or equipped with lighting devices for maximum visibility. The design of traffic cones and tubular markers shall be according to the requirements of Section 6C of the MUTCD.

B. Vertical Panels.
Vertical panels used as channelizing or warning devices shall be 8 to 12 inches in width and a minimum of 24 inches in height. They shall be orange and white striped and reflectorized. The design or vertical panels shall be according to Section 6C of the MUTCD.

C. Drums.
Drums used for traffic warning or channelization shall be approximately 36 inches in height and a minimum of 18 inches in diameter. The markings shall be horizontal, circumferential, orange and white reflectorized stripes meeting the requirements of Section 6C of the MUTCD.

D. Barricades.
A barricade is a portable or fixed device having from one to three rails with alternate orange and white reflectorized stripes used to control traffic by closing, restricting, or delineating all or a portion of the right-of-way. Barricades shall be of one of three types: Type I, Type II, and Type III. The characteristics and design of each type of barricade shall be according to Section 6C of the MUTCD.

E. High Level Warning Devices.
High level warning devices are used to supplement other controls and warning devices and are designed to be seen over the top of preceding vehicles. They shall consist of an orange diamond and three flags. The lowest point of all three flags shall be no less than 8 feet above the roadway. The design shall be according to the requirements of Section 6C of the MUTCD.

F. Warning Lights.
As used herein, warning lights are portable, lens directed, enclosed lights. The color of the light emitted shall be yellow. They may be used either in a steady burn or flashing mode. Warning lights shall be in accordance with the current requirements of ITE Standard for Flashing and Steady Burn Warning Lights (Table 01551-1) and Section 6E of the MUTCD.

TABLE 01551-1

WARNING LIGHTS

	Type A Low Intensity	Type B High Intensity	Type C Steady Burn
Lens Directional Faces	1 or 2	1	1 or 2
Flashing Rate per Minute	55 to 75	55 to 75	Constant
Flash Duration[1]	10%	8%	Constant
Minimum Effective Intensity[2]	4 Candelas	35 Candelas	
Minimum Beam Candle Power[2]			2 Candelas
Hours of Operation	Dusk to Dawn	24 hrs/day	Dusk to Dawn

[1] Length of time that instantaneous intensity is equal to or greater than effective intensity.
[2] These values must be maintained within a solid angle 9^0 on each side of the vertical axis and 5^0 above and 5^0 below the horizontal axis.

2.03 OTHER CONSTRUCTION TRAFFIC CONTROL DEVICES.
Other construction traffic control devices may be required for a project by the Traffic Control Plan or by the Owner including, but not limited to, illumination of signing, illumination of the work zone, provision of special

signs, provision of special lighted variable message signs and advance warning flashing or sequencing arrow panels, and installation of portable concrete or metal barriers. The requirements for such special traffic control devices shall be included in the Plans or Special Provisions for the Project.

PART 3 - CONSTRUCTION REQUIREMENTS

3.01 GENERAL REQUIREMENTS.

A. A Traffic Control Plan shall be developed by the Owner or Contractor and approved by the Owner before any road, street, or highway, or any section or lane thereof is closed to traffic and construction operations that will for any reason render the roadway generally unsuitable for use of the traveling public are started. Where the Plans and Contract Documents for projects involving roads, streets, and highways do not specify a Traffic Control Plan, and where so required by the Contract Documents, the Contractor shall prepare and submit to the Owner for approval a Traffic Control Plan for the project which shall include, but not be limited to, signing; application and removal of pavement markings; construction; scheduling; closure of streets or lanes; detours; methods and devices for delineation and channelization; placement and maintenance of devices for delineation and channelization; roadway lighting; traffic regulations; and surveillance and inspection. The Traffic Control Plan shall define in detail the sequence of construction and the proposed number, type, color, size, and placement of construction traffic control devices for each construction phase, all in accordance with Part VI of the Tennessee Manual on uniform Traffic Control Devices for Streets and Highways (MUTCD).

B. The Contractor shall designate or otherwise provide personnel to furnish continuous surveillance over his traffic control operations. This designee will also be available at night to respond to calls involving damage to barricades, lights, signs, and similar items, either through vandalism or traffic accident. The Contractor shall make known the name of the person providing the surveillance at the preconstruction conference.

C. All traffic control devices necessary for the first stage of construction shall be properly placed and in operation before any construction is allowed to start. When work of a progressive nature is involved, such as resurfacing a road under traffic, the necessary signs shall be moved concurrently with advancing operation.

D. All construction signs shall be erected such that all supports are vertical, sign panels generally perpendicular to the travelway and legends horizontal so that they effectively convey the intended message. These signs shall be mounted on stationary or temporary supports as directed by the Owner and dependent on the type work being performed. In general, work being performed at spot locations and of short duration will necessitate the use of temporary supports properly weighted for stability. If the construction signs are not to be lighted, the supports shall not extend above the top edge of the sign panel.

E. The location, horizontal and vertical placement with respect to the pavement, legends, sheeting, dimensions, and spacing of supports of warning signs, barricades, and other traffic control devices shall be as required by the Plans, the Traffic Control Plan, the MUTCD, and as directed or approved by the Owner. The Contractor must advise and have the approval of the Owner prior to installing or removing traffic control devices from the project.

F. During periods of nonuse, construction signs and other devices shall be removed from the work area, or covered with opaque material, or otherwise positioned so they do not convey their message to the traveling public. If covered, the covering material shall be installed in accordance with the Plans and in such manner that no damage will occur to the sign panel during installation. Covering material shall be maintained in a neat manner during its use.

G. All construction signs, barricades, and other devices which require lighting, as designated by Plans or directed by the Owner, shall be provided with warning lights or electric incandescent or

fluorescent lighting. It will be the Contractor's responsibility to install electric lighting in a safe manner and in accordance with the latest edition of the National Electrical Code, National Electrical Safety Code, and/or all local codes. The Contractor will be responsible for investigating, procuring, and bearing the expense of a continuous power source whether by battery, generator, or commercial A.C. supply.

H. Flaggers with proper attire and flags shall be provided when ordered by the Owner or when the Contractor deems flaggers necessary to safely handle traffic through the construction zone. Flaggers shall wear either an approved uniform or a vest of fluorescent orange color an be equipped with either a red flag of fluorescent material or a paddle with a reflective red and white STOP sign on one side and a reflective orange and black SLOW sign on the other side. Flaggers are considered a general requirement of all traffic control schemes and no direct payment will be made for such.

I. If at any time the Owner determines that proper provisions for safe traffic control are not being provided or maintained, he may order suspension of the work until the proper level is achieved. In cases of serious or willful disregard for safety of the public or his employees by the Contractor, the Owner may proceed forthwith to place the traffic control measures in proper condition and deduct the cost thereof from payment due or becoming due the Contractor.

3.02 MAINTENANCE

A. The Contractor shall assume full responsibility for the continuous and expeditious maintenance of all construction warning signs, barricades, and other traffic control devices. Maintenance shall include but shall not be limited to replacement of sign panels, barricades, and other devices which in the opinion of the Owner are damaged or deteriorated beyond effective use; replacement of broken supports; plumbing of leaning signs; cleaning of dirty signs, barricades, and other devices; repair of defaced signs; and replacement of stolen items.

B. All items used for traffic control shall be generally maintained in its original placement condition and such maintenance will be considered a part of the original installation cost. Failure to maintain all traffic control devices in such manner as to provide adequate continuous safety to the public will be cause for action by the Owner as noted in Specification Section 01551 Paragraph 3.01.I.

PART 4 – MEASUREMENT

Each accepted item related to traffic control for construction work zones shall be measured as described herein. All work not described herein shall be considered incidental to the provision of traffic control for construction work zones.

4.01 TRAFFIC CONTROL PLAN.
Development of a Traffic Control Plan for the construction work zone will be paid for on a lump sum basis and no measurement will be made.

4.02 TRAFFIC CONTOL DEVICES FOR CONSTRUCTION WORK ZONES.
Furnishing, erecting, and maintaining traffic control devices and other incidentals and personnel required for handling traffic safely through construction work zones will be paid for on a lump sum basis and no measurement will be made.

PART 5 – PAYMENT

Payment for accepted work shall be made at the appropriate contract price which shall be payment in full for all work required under the pay item. Payment will be made under the pay items listed at the end of this Specification Section.

5.01 TRAFFIC CONTROL PLAN.

Payment will be made for the work completed and accepted by the Owner at the contract lump sum price, which shall be full compensation for development of a Traffic Control Plan.

5.02 TRAFFIC CONTROL DEVICES FOR CONSTRUCTION WORK ZONES.

A. Payment will be made for the work completed and accepted by the Owner at the contract lump sum price, which shall be full compensation for furnishing, erecting, illuminating, handling, and maintaining all construction signs (warning, regulatory, and guide), barricades, and other traffic control devices designated for installation at locations specified by the Plans, the Traffic Control Plan, or directed or approved by the Owner for the purpose of handling traffic safety through construction work zones for the duration for the project. Payment shall also include provision for flaggers or special measures necessary to assure the handling of traffic safely through construction work zones.

B. Payment will be made under:

Item No.	Pay Item	Pay Unit
01551-5.01	TRAFFIC CONTROL PLAN	Lump Sum
01551-5.02	TRAFFIC CONTROL DEVICES FOR CONSTRUCTION WORK ZONES	Lump Sum

END OF SECTION 01551

SECTION 411-ASPHALTIC CONCRETE SURFACE (HOT MIX)

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SECTION 411-ASPHALTIC CONCRETE SURFACE (HOT MIX)

411.01-Description. This work shall consist of an asphaltic concrete pavement composed of a mixture of coarse aggregate, fine aggregate, mineral filler if specified or required, and asphalt cement, constructed on a prepared roadbed in accordance with these Specifications and in reasonably close conformity with the lines, grades, typical cross section and rate of application shown on the Plans, or established by the Engineer.

The provisions of **Section 407** of these Specifications shall apply to this construction unless otherwise stipulated.

MATERIALS

411.02-Materials. Materials used in this construction shall meet the requirements of the following Subsections of these Specifications:

Material	Subsection
Mineral Aggregate	**903.11**
Asphalt Cement, PG 64-22, 70-22, 76-22 or 82-22	**904.01**
Mineral Filler	**903.16**
Chemical Additive	**918.09(B)**

The mineral aggregate, bituminous material and plant mix will be accepted as provided for in **Subsection 407.02**.

411.03-Composition of Mixtures.

(a) General Composition of mixtures used in this construction shall meet all applicable requirements of **Subsection 407.03**.

(b) The specified mineral aggregate and asphalt cement shall be combined in such proportions as to produce mixtures within the following master composition limits.

Proportions of Total Mixture, Per Cent by Weight

Surface Courses	Effective Combined Mineral Aggregate	Asphalt Cement
Grading D	93.0-94.7	5.3-7.0*
Grading E	93.0-94.7	5.3-7.0*
Grading E (shoulders)	92.0-94.7	5.3-8.0*

*If the effective combined specific gravity of the aggregate exceeds 2.80, the above proportions may be adjusted as directed by the Engineer. The upper limit for Flow values shall not apply to mixes with modified asphalt liquids.

Grading D

In addition to the other requirements of these specifications the composition of the mineral aggregate shall be such that when combined with the required amount of bitumen the resultant mixture shall have:

All Roads

Mix	Stabil. Min. lbft* (kN)	Flow 0.01 in. (mm) ***	Design Void content %*	Production Void Content %*	Min. VMA %*	Dust-Asphalt Ratio**
411D	2,000 (9.0)	8-16 (2-4)	4.0±0.2	3-5.5	14	0.6-1.2

*Tested in accordance with AASHTO T 245 with 75 blows of the hammer on each side of the test specimen, using a Marshall Mechanical Compactor.

**The dust to asphalt ratio is the percent of the total aggregate sample that passes the 200 mesh(75 μm) sieve as determined by AASHTO T 11 divided by the percent asphalt in the total mix

***Flow will only be required when using a non-modified binder (PG 64-22 or 67-22)

****In order to identify critical mixes and make appropriate adjustments, the mix design shall have these required design properties for the bitumen content range of Optimum Asphalt Cement ±0.25%.

The addition of limestone screenings or agricultural limestone in a maximum amount of 25% by weight of the mineral aggregate may be required to comply with this section. When crushed stone screenings meeting the requirements of **Subsection 903.11 (c)** are used, all additional fines shall be natural or manufactured sand. When natural sand is used as fine aggregate, it shall be limited to a maximum amount of 25% by weight of the mineral aggregate. A maximum of 5% mineral filler meeting the requirements of **Subsection 903.16** may be substituted for an equal quantity of the limestone fines. If the mixture does not comply with the design criteria, another source of aggregate shall be required.

When gravel is used as the coarse aggregate for a 411 Grading D mix, a minimum of 20% by weight limestone screenings, agricultural limestone and/or mineral filler shall be required.

Grading E

In addition to the other requirements of these specifications where Grading E is used for the riding surface the composition of the mineral aggregate shall be such that when combined with the required amount of bitumen the resultant mixture shall have:

High Volume Roads (ADT over 1,000)

Mix	Stability Min. lbft* (kN)	Flow 0.01in. (mm) **	Design Void content %*	Production Void Content %*	Min. % VMA*
411E	2,000 (9.0)	8-16 (2-4)	4.0±0.2	3-5.5	14

Low Volume Roads (ADT 1,000 and below) and shoulders

Mix	Stability Min. lbft* (kN)	Flow 0.01in. (mm)**	Design Void content%*	Production Void Content %*
411E	1,500 (6.75)	8-16 (2-4)	3.5±0.5	2-5

*Tested in accordance with AASHTO T 245 with 75 blows of the hammer on each side of the test specimen, using a Marshall Mechanical Compactor.

**Flow will only be required when using a non-modified binder (PG 64-22 or 67-22)

If the design criteria above cannot be obtained with the aggregate, submitted to the laboratory for design, another source of aggregate will be necessary.

(c) Recycled Asphalt Pavement

The Contractor may utilize asphalt pavement that has been removed from a Department project or other State Highway Agency project by cold planing or other approved means in combination with appropriate aggregate, asphalt cement and anti-stripping additive if required, to produce a mixture which will otherwise meet all the requirements of **Subsection 903.11** and the requirements herein **Section 411**. RAP shall be allowed in each mix listed in the following table:

Mix Type**	%RAP (Non-processed)**	%RAP (Processed)**	Maximum Particle size
411D(PG64-22, PG67-22)	0	15	½ in. (12.5 mm)
411D(PG70-22)	0	10	½ in. (12.5 mm)
411D(PG76-22, PG82-22)	0	10	½ in. (12.5 mm)
411E(Roadway)	0	25	½ in. (12.5 mm)
411E(Shoulder)	15	25	½ in. (12.5 mm)

*RAP that has been crushed and screened or otherwise sized such that the maximum recycled material particle size is less than that listed in the table above prior to entering the dryer drum, shall qualify as "Processed". "Non processed" RAP shall be similar material that has not been crushed and screened or otherwise sized previous to its use.

**All mixes shall contain at least 80% virgin asphalt except for 411E Shoulder Mix which shall have at least 65% virgin asphalt.

The grade of asphalt cement shall be as shown on the plans. The mixture will be accepted for aggregate gradation and asphalt content based on extractions or AASHTO T 308.

The Contractor will be responsible for his own sampling and testing of the RAP as well as new materials for bid purposes, and for the submission of the job mix formula in accordance with **Subsection 407.03**. After mixing, the moisture content of the total mix shall be no more than 0.1% as determined by oven drying, and the provisions for lowering the temperature because of boiling or foaming shall not apply.

The stockpile gradation tolerance for all recycled material on each sieve is listed below.

3/8in. (9.50 mm) sieve and larger .....± 10%
No. 4(4.75 mm) sieve.....± 8%
No. 8(2.36 mm) sieve.....± 6%
No. 30(600 µm) sieve.....± 5%
No. 200(75 µm) sieve.....± 4%

The mixture will be accepted for aggregate gradation and asphalt content based on extractions or in accordance with AASHTO T 308

(d) Anti-Strip Additive - Asphaltic concrete surface mixtures (Grading D & E) shall be checked for stripping by the Ten Minute Boil test for dosage rate and ASTM D 4867(Root-Tunnecliff procedure) for moisture susceptibility.

If moisture susceptibility is indicated, then an approved anti-strip agent shall be mixed with the asphalt cement at the dosage recommended by the respective test and as specified in **Subsection 918.09(B).**

EQUIPMENT

411.04-Equipment. The equipment used in this construction shall meet the requirements of **Subsection 407.04** through **407.08.** All equipment necessary for the satisfactory performance of this construction shall be on the project, and approved, before work will be permitted to begin.

The equipment for the construction of shoulder mixes with recycled material shall comply with **Section 407,** except that the asphalt plant shall be modified as approved by the Engineer to accommodate the asphalt planings which are to be added. If a batch plant is used to produce recycled mix, the aggregate shall be heated to a temperature that will transfer sufficient heat to the cold planings to produce a mix of uniform temperature within the specified range.

CONSTRUCTION REQUIREMENTS

411.05-General Requirements. The construction requirements for this work shall be as prescribed in **Subsections 407.09, 407.11, 407.12,** and **407.14** through **407.17** and the following Subsections.

411.06-Preparing the Designated Surface. Preparation of the designated surface upon which the material is to be placed shall be performed in accordance with the applicable provisions of **Subsection 404.05** of these Specifications.

Loops used for traffic signals shall be installed before the final surface is applied.

411.07-Mixing. Requirements for mixing shall be as prescribed in **Subsection 407.13.** In addition, the mixing cycle for surface course mixtures may require a dry-mixing period.

411.08-Surface Requirements. The surface shall meet the requirements specified under **Subsection 407.18,** and when tested in accordance with the provisions of that Subsection, the deviation of the surface from the testing edge of the straightedge shall not exceed 1/4 in. (6 mm).

COMPENSATION

411.09-Method of Measurement. Mineral Aggregate including Mineral Filler when required, and Asphalt Cement for Asphaltic Concrete Surface (Hot Mix) will be measured as prescribed in **Subsection 407.19**. Mineral Filler when required will not be measured for payment separately, but will be included as mineral aggregate.

If recycled mix is permitted, the completed mix, including new mineral aggregate, planings, asphalt cement and additive, shall be measured by the ton (tonne) in accordance with **Section 109**. For bidding purposes, the asphalt cement content of the specified mix shall be used in the chart below:

Mix Type	Asphalt Content
411-D	5.9%
411-E Roadway	6.3%
411-E Shoulder	6.3%

In the event that the Engineer sets an asphalt content other than that stated above, a price adjustment will be made based on the asphalt content set by the Engineer and the invoice price of the asphalt cement F.O.B. the asphalt plant. The price adjustment will be calculated according to the following formula:

$$PA = [IP \times (DA - BA) \times T]/100$$

Where:
PA = Price Adjustment
IP = Invoice price of asphalt cement
DA = Percent asphalt set on the mix design
BA = Percent asphalt specified above to be used for bidding
T = Total tons(metric tons) asphalt mix for price adjustment

The liquid anti-strip additive will be measured by the gallon(liter) and paid as outlined in **Subsection 411.10**. Hydrated Lime will be measured by the ton(metric ton) and paid as outlined in **Subsection 411.10**.

No direct payment will be made for polymer or latex additives and cost thereof shall be included in the price bid for the modified asphalt cement or modified mixture.

411.10-Basis of Payment. The accepted quantities of Asphaltic Concrete Surface (Hot Mix) or asphaltic Concrete Surface(Hot Mix) (Shoulders) with or without recycled material, complete in place, will be paid for at the contract unit price per ton(metric ton) of the total mix, which will include mineral aggregate, planings, asphalt cement and additives except anti-striping agent Payment will be made to the Contractor for additional asphalt cement as provided for above at the purchase price F.O.B. the asphalt mixing plant, as verified by invoice, and no

compensation will be allowed for further handling or processing. The Department will be reimbursed from monies due the Contractor for a decrease in asphalt cement content in the amount equal to the purchase price F.O.B. the asphalt plant.

The liquid anti-strip additive will be paid for based on certified invoices of material cost not to exceed $15 per gallon($4 per liter). Hydrated Lime anti-strip additive will be paid for based on certified invoices of material cost not to exceed $90 per ton($100 per metric ton). This payment shall be full compensation for all labor, materials, equipment and other incidentals incurred in utilizing the anti-strip additive.

In cases where the effective combined specific gravity of the mineral aggregate exceeds 2.80, the tonnage of mineral aggregate, or plant produced mixture, will be adjusted for payment by multiplying the tonnage of mineral aggregate, or plant produced mixture, used by a specific gravity of 2.80 and dividing by the higher specific gravity.

The work required to prepare the designated surface as provided for under **Subsection 411.06** will be measured and paid for in accordance with the provisions of the applicable Sections or Subsections under which the work is performed.

When the approved job mix formula includes a mixture of limestone with gravel, granite, slag, quartzite or gneiss, tests for the percent loss on ignition of the limestone aggregate in the asphalt paving mix shall be performed according to the provisions of **Subsection 407.03**.

In the event the percent of loss on ignition in the aggregate differs by more than ±2% from the loss on ignition indicated in the job mix formula, a deduction in payment in the price bid for the mix shall be made, not as a penalty but as liquidated damages. The percent of total payment to be deducted shall be 5 times the percent that the loss on ignition exceeds the job mix formula tolerance of ±2%.

All mix produced with aggregate tested and found to have a loss on ignition that differs more than ±6% from the loss on ignition indicated in the job mix formula shall be replaced or overlaid at the expense of the Contractor.

For the purpose of determining the deduction, lots of approximately 5,000s.y.(4,500 m^2) will be used. The sampling and testing to establish the loss on ignition will be performed in accordance with the Department's sampling and testing procedures. In event the initial tests indicates a variation in the loss on ignition of greater than ±2% than the value shown on the mix design, the additional sampling necessary to establish the loss on ignition of the aggregate in each lot shall be performed by the Contractor with the cost of the sampling being included in the contract unit prices bid for the paving items.

Any deduction for excess variation in loss on ignition shall be made under the item for material variation(deduction).

CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATION
SECTION 02220 SITE DEMOLITION

PART 1 – SCOPE

1.01 This work shall consist of the removal and satisfactory disposal of all buildings, structures, old pavements, fences, and abandoned pipe lines. It shall also include the salvaging of designated materials and backfilling the resulting trenches, holes, and pits; the preservation from injury or defacement of all vegetation and objects designated to remain; and all necessary replacement of fences, trees, hedges, shrubs, and flowers.

PART 2 – EQUIPMENT

2.01 All equipment for the satisfactory performance of the Work shall be on the project and approved before the Work will be permitted to begin.

PART 3 – CONSTRUCTION REQUIREMENTS

3.01 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

A. The Contractor shall raze, remove, and dispose of all buildings, foundations, bridges, drainage structures, curbs, curbs and gutters, pavements, sidewalks, and other obstructions not covered under Specification Section 02230 Paragraph 3.01 except for those for which other provisions have been made. Demolition of buildings shall be done in accordance with all applicable sections of the City Building Code.

B. Structures and obstructions shall be removed to a depth of not less than one (1) foot below natural ground except that within construction limits removal shall be to a depth of not less than two (2) feet below subgrade elevation. Basement floors shall be broken up to prevent holding of water and bridges and drainage structures shall be removed or broken up in a manner to prevent voids below subgrade elevation, and the cavities left shall be filled to the level of the surrounding ground and compacted in accordance the provisions of Specification Section 02335 Paragraph 3.01. With the approval of the Owner, sewer and drainage pipes and structures may be abandoned in place and filled with sand or grout. Any blasting or other operations necessary for the removal of an existing structure or obstruction which may damage new work shall be completed prior to placing the new work. Where property line adjustments are required by the Work, existing fencing shall be removed from the original property lines, replaced with in-kind fencing along the new property lines, and tied back to the old fence.

C. When specified on the Plans or Right-of-Way Agreement or so directed by the Owner, all fences removed for construction purposes shall be replaced with salvaged existing materials or with acceptable in-kind new materials to enclose the original enclosed area as nearly as possible and tie back to the old fence.

D. When specified on the Plans, trees, hedges, shrubs, flowers, or other growth shall be replaced or substituted for in-kind as nearly as possible to its original position, and growth established at the completion of the contract.

E. All pavements, base courses, sidewalks, curbs, gutters, and other improvements designated for removal shall be removed and the material disposed.

F. All salvageable pipe, frames and grates, manhole rims and covers, precast manhole sections, cobblestones, or granite curbs shall be carefully removed and every precaution taken to avoid damage. These salvaged items shall be taken to Collins Yard or other designated storage locations as directed by the Owner.

3.02 DISPOSAL OF DEBRIS

A. All material from removal of structures and obstructions except salvaged items shall be disposed of off the Project and it shall be the Contractor's responsibility to secure any permits necessary for the disposal.

PART 4 – MEASUREMENT

4.01 A. This item will be paid from a lump sum basis and no measurement will be made.

PART 5 – PAYMENT

5.01 Payment will be made for the work, completed and accepted by the Owner, at the contract lump sum price, which price will be full compensation for removal and disposal of structures and obstructions; backfilling of depressions below subgrade elevation, protection of trees to remain; restoration of fences, trees, hedges, shrubs, flowers, or other growth as required; and moving salvageable materials to designated storage locations in accordance with the stipulations and provisions of the contract.

5.02 PAYMENT WILL BE MADE UNDER:

Item No.	Pay Item	Pay Unit
02220.01	Removal of Obstructions and Structures	Lump Sum

END OF SECTION 02220

CONSTRUCTION REQUIREMENTS

Part 5-Rigid Pavement

SECTION 501-PORTLAND CEMENT CONCRETE PAVEMENT

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established by the Regional Materials Engineer. All early break cylinders (14 day, etc.) must be delivered to the Regional laboratory or other established satellite laboratories for tests.

A TDOT certified class 2 or higher concrete technician, whose duty is process control, shall be at the ready-mix plant during all batching operations. A TDOT or ACI certified class 1 or higher technician is not required to be at the placement site during all small quantity placing operations but is required to perform one complete set of tests during the life of the project. A delivery ticket must accompany each load delivered to the job site.

Batch weights shall be corrected to compensate for any surface moisture on the aggregate at the time of use. The Contractor may elect to withhold some of the water from the mix at the plant provided the delivery ticket indicates the amount of water withheld. If a portion of the water is withheld at the plant, additional water may be added at the work site provided the design water/cement ratio of the mix is not exceeded.

EQUIPMENT

501.04-Equipment. Equipment and tools necessary for handling materials and performing all parts of the Work shall be approved by the Engineer as to design, capacity, and mechanical condition. The equipment shall be at the job site sufficiently ahead of the start of construction operations to be examined thoroughly and approved.

(A) Batching Plant and Equipment.

1. General.

The batching plant shall include bins, weighing hoppers, and scales. If cement is used in bulk, a bin, hopper, and separate scale for cement shall be included. The Contractor shall provide adequate means for cement cut off checks. The weighing hoppers shall be properly sealed and vented to preclude dusting during operation. The bulk cement storage bin or hopper shall be provided with adequate means for sampling the cement in storage.

2. Bins and Hoppers.

Bins with adequate separate compartments for fine aggregates, each size of coarse aggregate, and cement shall be provided in the batching plant. Each compartment shall discharge efficiently and freely into the weighing hopper. Means of control shall be provided so that as the quantity desired in the weighing hopper is being approached, the material may be added slowly and shut off with precision. A port or other opening shall be provided for removing an overload of any one of the several materials from the hopper. Weighing hoppers shall be constructed so as to eliminate

accumulations of tare materials and to discharge fully without jarring the scales. Partitions between compartments, both in bins and in hoppers, shall be ample to prevent spilling under any working conditions.

3. Scales.

The scales for weighing aggregates, cement and pozzolans shall be of the beam type, springless, dial type or load cell type. Scales shall be accurate within 0.5% throughout the range of use. Scale dial faces or digital readouts are to be graduated such that loads of 0.1% or less of scale capacity are indicated.

When beam type scales are used, an indicator such as a "tell-tale" dial shall be provided to inform the operator that the required load in the weighing hopper is being approached. The "tell-tale" device on weighing beams shall indicate the critical position clearly. Poises shall be designed so that they cannot be easily removed from the beam and can be held firmly in place. The weigh beams and "tell-tale" device shall be in full view of the operator while charging the hopper, and he shall have convenient access to all controls.

Scales shall be inspected and checked as often as the Engineer may deem necessary to assure their continued accuracy. The Contractor shall have available not less than 10 standard 50 lbs(25 kgs) weights meeting the requirements of the U. S. Bureau of Standards for calibrating and testing weighing equipment.

(B) Mixers.

1. General.

Concrete may be mixed at the site of construction or at a central point or wholly or in part in truck mixers. Each mixer shall have attached in a prominent place a manufacturer's plate showing the capacity of the drum, in terms of mixing and agitating capacity, and the speed of rotation of the mixing drum or blades for both mixing and agitation.

Mixers shall be capable of combining the aggregates, cement, additives when specified, and water into a thoroughly mixed and uniform mass within the specified mixing period. They shall have a minimum capacity sufficient to comply with minimum production requirements.

Mixers shall be equipped with an approved device for accurately measuring water within a range of error of not more than 1%. The amount of water used in each batch shall be shown by an indicator that is accurately calibrated and easily read.

Central plant mixers and mixers at the site of construction shall be equipped with an approved batch meter and timing device which will automatically lock the discharge lever during the full time of mixing and release it at the end of the mixing period. This device shall be equipped with a bell or other suitable warning device that will give a clearly audible signal each time the lock is released. In case of failure of the timing device, the mixer may be used for the balance of the day while it is being repaired, providing the Contractor furnishes a satisfactory means of determining the mixing time.

The pickup and throw-over blades in the drum or drums shall be repaired when the blade wear reaches the blade wear indicator or when holes are worn through the blades. The top of the blade wear indicator is to be placed at 90% of the total height of the radial part of the blade. The Contractor shall have available at the job site or central plant a copy of the manufacturer's design showing dimensions and arrangements of blades. The blade wear indicator is to be made of ¼ min. thick steel 2 in. wide and 6 in. long. They shall be located as shown in the Department of Transportation's "Division of Materials and Test, circular D-9. All mixers shall have blade wear indicators.

2. Mixers at Site of Construction.

In addition to the above requirements, mixers at the site of construction, unless otherwise stipulated, shall be of the boom and bucket type and shall be capable of discharging and distributing the mix without segregation on the prepared subgrade or sub-base.

3. Truck Mixers and Truck Agitators.

Truck mixers used for mixing and hauling concrete and truck agitators used for hauling central-mixed concrete shall meet all the applicable requirements under 1. above, and in addition, the manufacturer's plate shall indicate the various uses for which the equipment is designed, the gross volume of the drum, and the minimum and maximum speed of rotation of the drum or blades for charging, mixing and agitating. Trucks equipped for mixing shall be equipped with an approved device for recording the number of revolutions of the drum or blades. Mixers or agitators used to mix and transport paving concrete shall be of the hydraulic drum lift type or other especially designed types which will discharge low slump concrete 1/2 to 1 1/2 ins(13 to 38 mm) at a satisfactory rate without segregation. Approved conventional or standard truck mixers or truck agitators may be used for mixing and hauling concrete under **Section 604**; for projects that contain 10,000 yd^2 (m^2) or less of concrete paving.

4. Nonagitator Trucks.

Bodies of nonagitator hauling equipment for concrete shall be smooth, mortar-tight, metal containers, and shall be capable of discharging the concrete at a satisfactorily controlled rate without segregation. Covers shall be provided for protection of the concrete.

(c) Forms.

Straight side forms shall be made of metal having a thickness of not less than 7/32 in.(5 mm) and shall be furnished in sections not less than 10 ft(3 m) in length. Forms shall have a depth at least equal to the prescribed edge thickness of the concrete, without horizontal joint, and a base width equal to not less than the depth of the forms. Flexible or curved forms of wood or metal and of proper radius shall be used for curves of 100-ft(30 m) radius or less. Flexible or curved forms shall be of a design acceptable to the Engineer. Forms shall be provided with adequate devices for secure setting so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Flange braces shall extend outward on the base not less than 2/3 the height of the form. The top face of the form shall not vary from a true plane more than 1/8 in. in 10 ft(3 mm in 3 m), and the face of the form shall not vary more than 1/4 in(6 mm). The forms shall contain provisions for locking the ends of abutting form sections together tightly, and for secure setting. Metal pins shall be of proper size and length to hold the forms rigidly and securely in place.

Built-up forms shall not be used except where the total area of pavement of any specified thickness on the project is less than 10,000 yards.y.(m^2). Build-up forms shall have a minimum base width of 8 in.(200 mm).

Forms with battered top surfaces, and bent, twisted, or broken forms shall be removed from the Work. Repaired forms shall not be used until inspected and approved.

The supply of forms, provided and maintained in satisfactory condition, shall not be less than that required for a full day's run.

(d) Spreading and Finishing Equipment.

Equipment shall include a paving machine designed to uniformly vibrate and finish the concrete full width and to its final grade.

1. Vibrators.

Vibrators for full-width and full-depth vibration of concrete paving slabs shall be multiple spuds or other types

approved by the Engineer. They may be attached to the spreader or the finishing machine, or may be mounted on a separate carriage. The frequency of the vibrators shall be that recommended by the manufacturer, subject to approval of the Engineer. The Contractor shall furnish the Engineer the manufacturer's recommendations for installing and operating vibrators.

2. Longitudinal Floats.

The mechanical longitudinal float shall be of a design approved by the Engineer, and shall be in good working condition. It shall be so constructed as to provide for accurate adjustment to the required crown.

3. Bridges.

The Contractor shall furnish a minimum of 2 individual work bridges.

4. Finishing Straightedge.

Straightedges, not less than two, with handles at least 3 ft(1 m) longer than 1/2 the width of the slab, shall be constructed of light metal; shall be not less than 10 ft(3 m) long; and shall be maintained clean and straight.

5. Straightedge Templates.

Straightedge templates, not less than 2, shall be provided for testing the completed surface. They may be of wood or metal; shall not be less than 12 ft(3.6 m) long; and shall be maintained clean, straight, and free from warp.

6. Water Supply Equipment.

Water supply equipment shall include pumps, or tanks mounted on trucks, of adequate capacity to furnish more than sufficient water to accommodate this construction and at the required and necessary pressure. A pipe line appropriate to the requirements of the construction may be used.

7. Small Tools.

Small tools, such as edgers, trowels, hand floats, brushes, etc., shall be such as will produce the results required.

8. Special Equipment and Tools.

Equipment and tools necessary for the Construction of special features as indicated on the Plans shall be such as will produce the results required.

9. Transverse Grooving Equipment.

Mechanical Transverse grooving equipment shall consist of a steel tine comb with a minimum width of 6 ft(1.8 m), a vibrating beam roller, or other approved devices.

10. Concrete Saw.

When sawed joints are elected or specified, the Contractor shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions and at the required rate. The saws shall be equipped with water-cooled diamond edge blades. Saws used for sawing longitudinal joints shall be equipped with guides to assure proper alignment of the joints.

The Contractor shall provide at least one standby saw in good working order. An ample supply of saw blades shall be maintained at the site of the Work at all times during sawing operations. The Contractor shall provide adequate artificial lighting facilities for night sawing. All of this equipment shall be on the job both before and continuously during concrete placement.

11. Slip-form Paver.

The slip-form paver shall be an approved self-propelled type, equipped with a crawler type track of sufficient area to prevent track slippage under load. Length of ground contact per track and arrangement of track units shall be adequate to insure the established straightedge tolerance. When this method of construction is used, all provisions and requirements of these Specifications, which are not in conflict, shall be applicable.

Pavement alignment shall be controlled by means of an electronic sensing device in continuous contact with a sensing guide. The Contractor shall furnish equipment with electronic controls for the vertical adjustment of the paver strike-off and finishing components. Electronic controls, sensing devices, and sensing guides shall be furnished, installed, and maintained at the expense of the Contractor.

CONSTRUCTION REQUIREMENTS

501.05-Subgrade Preparation. Subgrade preparation shall be performed as provided for under **Section 207** of these Specifications.

CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS
SECTION 02775 PORTLAND CEMENT CONCRETE SIDEWALKS AND DRIVEWAYS

PART 1 – SCOPE

1.01 This work shall consist of constructing sidewalks, wheelchair ramps, and driveways of portland cement concrete on a prepared subgrade, in accordance with these Specifications and in conformity with the lines, grades, and typical cross-sections shown on the Plans or directed by the Owner. Wheelchair ramps and commercial and residential driveways shall be constructed in accordance with the Design Standards.

PART 2 – MATERIALS AND EQUIPMENT

2.01 MATERIALS

A. Concrete Materials: Concrete materials shall meet the requirements of Specification Section 03050, Portland Cement Concrete for Class A concrete.

B. Curing Materials: Curing materials shall conform to the applicable provisions of Specification Section 02750 Paragraph 2.01 C.

C. Preformed Joint Fillers: Preformed joint fillers shall be of the bituminous type and shall conform to the requirements of AASHTO M 213 and shall not be more than 1 inch or less than 1/2 inch in thickness. Their width shall be at least equal to the full thickness of the slab, and their length shall be sufficient to eliminate any splicing.

2.02 EQUIPMENT

A. Forms shall be of wood, metal, or other suitable material and shall be true to line, free from warp, and of sufficient strength to resist springing out of shape during placing, consolidating, and finishing the concrete. Curved forms of proper radius or flexible forms acceptable to the Owner shall be used on all radial sections.

B. Satisfactory floats, templates, straightedges, edgers, spades, tamps, and all other equipment necessary for the satisfactory performance of this construction shall be on the Project and approved before work will be permitted to begin.

PART 3 – CONSTRUCTION REQUIREMENTS

3.01 SUBGRADE PREPARATION

Subgrade preparation for sidewalks and driveways shall be made to the required configuration to conform to the slab thicknesses shown on the Plans. The subgrade shall be shaped and compacted in conformance with Specification Section 02335 Paragraph 3.03 and to a width that will permit satisfactory installation and bracing of forms. Density requirements may be waived if approved by the Owner.

3.02 FORMS

Forms shall be well staked or otherwise held to the established lines and grades, and their grade shall be such that finished sidewalks shall have one-quarter of tan inch per foot fall toward the curb for drainage unless shown otherwise on the Plans or directed by the Owner. Driveway forms shall be of such width and slope that the finished driveway will conform to the slope of the adjacent sidewalk, grass plot, parking lot, or drive.

3.03 JOINTS

A. Unless otherwise indicated on the Plans or directed by the Owner, preformed expansion joint filler, 1/2 inch in thickness, shall be placed in sidewalks at the locations of and in line with expansion joints in the adjoining pavement, curb, or curb and gutter, but at spacings not to exceed 25 feet. When expansion joints have not been installed in the adjoining pavement or

gutter, a 1/2 inch preformed expansion joint filler shall be placed transversely at intervals of not over 25 feet. Preformed expansion joint filler shall be placed at all abutting concrete such as driveways, buildings, or walls. Transverse expansion joints with 1/2 inch preformed expansion joint filler shall be placed to match existing joints in abutting facilities but not to exceed 25 feet between joints. Preformed expansion joint filler shall be placed at each intersection of sidewalk and street curb, longitudinally between sidewalks and street curb, and at such other points as may be shown on the Plans or directed by the Owner. Preformed expansion joint filler, 1 inch in thickness, shall be placed around all appurtenances such as manholes, valve, utility poles, fire hydrants, and signs extending into or through the sidewalk or driveway area, forming an isolated square or rectangular slab around the appurtenance with a minimum of 4 inches clearance of the appurtenance.

B. The surface of sidewalks shall be divided into blocks by use of a grooving tool. The grooves shall be spaced approximately 5 feet apart and the blocks shall be rectangular unless otherwise ordered by the Owner. The grooves shall be cut to a depth of 1/2 inch. The edges of the grooves shall be edged with an edging tool having a radius of 1/4 inch.

C. Expansion joint filler material shall not be placed at sidewalk drains. Driveway joints shall be placed as shown on the Design Standards.

3.04 PLACING AND FINISHING CONCRETE

A. Concrete shall be placed only on a moist subgrade and shall not be placed unless the ambient temperature is 35° F and rising. In no case shall concrete be placed on a frozen or frosty subgrade. After the concrete is placed in the forms, it shall be spaded along the forms (including cross forms for joints), tamped, and struck off in an approved manner to required section and grade and shall be finished with floats and straightedges until the surface requirements have been obtained. When the surface of the concrete is free from water and just before the concrete obtains its initial set, it shall be finished with a wooden float and swept lightly at right angles to the street centerline to produce a sandy texture. The longitudinal surface variations shall not be more than 1/4 inch under a 12 foot straightedge nor more than 1/8 inch on a 5 foot transverse section, or as approved by the Owner.

B. The edges of sidewalks and driveways shall be carefully finished and rounded with an eging tool have a 1/2 inch radius. An edge having a 1/4 inch radius shall be placed adjacent to and on both sides of all intermediate transverse expansion joints in sidewalks, and all marks caused by the edging tool shall be removed with a wetted brush or wooden float. The top of all expansion joint material shall be cleaned of all concrete, and the expansion joint material shall be trimmed if necessary as to be left slightly below the surface of the concrete.

3.05 TESTING CONCRETE

Concrete for sidewalks and driveways shall be tested by test specimens made and cured in accordance with AASHTO Designation T 23. The frequency and specific test method will be determined by the Owner. The Contractor shall furnish the concrete necessary for casting test specimens in the field. The City will supply all molds and labor necessary to cast and test the specimens.

3.06 CURING AND PROTECTION

A. Curing and cold weather protection shall be performed as provided for under Specification Section 02750 Paragraph 3.11 "Curing".

B. Forms may be removed and the slab backfilled at any time that removal will not damage the concrete. Pedestrians will not be allowed upon sidewalks or driveways until 72 hours after finishing the concrete, and no vehicles or loads shall be permitted on any sidewalk or driveway until the Owner has determined that the concrete has attained sufficient strength for such loads. The Contractor shall construct and place such barricades and protection devices as are

necessary to protect the concrete. Any sidewalk or driveway damaged prior to final acceptance of the work shall be removed within joint or groove limits and replaced with concrete of the type and finish of the original construction.

3.07 WHEELCHAIR RAMPS
Wheelchair ramps shall be installed at each intersection at locations as reflected in the Design Standards or as directed by the Owner. For purposes of payment, wheelchair ramps shall be considered as sidewalk area in new construction areas. Where wheelchair ramps are to be installed at locations where curb and gutter is in place, wheelchair ramps will be paid as a unit in place, including removal of curb.

3.08 THICKNESS
Thickness of sidewalks and driveways shall be as shown on the Plans and Design Standards. Where a washed surface is specified for the concrete surface, and additional 1/2 inch thickness is required over that for the above specified finish.

PART 4 – MEASUREMENT

4.01 CONCRETE SIDEWALK
Concrete sidewalks will be measured for payment by the square foot at specified thickness, complete in place.

4.02 CONCRETE DRIVEWAY
Concrete driveways will be measured for payment by the square foot at specified thickness, complete in place.

4.03 WHEELCHAIR RAMP, EXISTING CONDITIONS
Wheel ramps placed in areas where curb and gutters exist will be measured by the unit, per each, complete in place.

PART 5 – PAYMENT

5.01 CONCRETE SIDEWALK
The accepted quantities of concrete sidewalk, including area of wheelchair ramps in new construction areas, will be paid for at the contract unit price per square foot of each specified thickness, which price will be full compensation for excavating and preparing the subgrade; forming; furnishing, placing, finishing, and curing the concrete; providing all joints; and protecting the concrete until final acceptance, complete in place.

5.02 CONCRETE DRIVEWAY
The accepted quantities of concrete driveway will be paid for at the contract unit price per square foot of each specified thickness, which price will be full compensation for excavating and preparing the subgrade; forming; furnishing, placing, finishing, and curing the concrete; providing all joints; and protection of concrete until final acceptance, complete in place.

5.03 WHEELCHAIR RAMP, EXISTING CONDITIONS
The accepted quantities of wheelchair ramps placed in areas where curb and gutter exist will be paid for at the contract unit price per each, which price will be full compensation for removing existing curb and, if required, gutter and sidewalk; excavating and preparing the subgrade; furnishing, placing, and finishing the concrete; and protecting the concrete until final acceptance, complete in place.

5.04 PAYMENT WILL BE MADE UNDER:

Item No.	Pay Item	Pay Unit
02775-01	Concrete Sidewalk	Square Foot
02775-01.____	_____" Thickness	Square Foot

02775-02	Concrete Driveway	Square Foot
02775-02.____	_____ " Thickness	Square Foot
02775-03	Wheelchair Ramp (Existing Conditions)	Each

END OF SECTION 02775

CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS
SECTION 02830 CONCRETE RETAINING WALLS, COPING WALLS, AND STEPS

PART 1 – SCOPE

This work shall consist of constructing retaining walls, coping walls, and steps of Portland cement concrete in accordance with these Specifications and in conformity with the dimensions, lines, and grades shown on the Plans, or as directed by the Owner.

PART 2 – MATERIALS AND EQUIPMENT

2.01 MATERIALS

A. Concrete Materials: Concrete materials shall meet the requirements of Specification Section 03050, Portland Cement Concrete for Class A concrete.

B. Reinforcing Steel: Reinforcing steel, unless otherwise specified shall be billet steel bars conforming to the requirements of ASTM A 615, Grade 60.

2.02 EQUIPMENT

Equipment, tools, and form materials necessary for the satisfactory performance of this construction shall be on the Project and approved before work will be permitted to begin.

PART 3 – CONSTRUCTION REQUIREMENTS

3.01 FINAL GRADE PREPARATION

All major excavation for retaining walls, coping walls, and steps shall be performed under other Sections of these Specifications. Only the final grade preparation for this Work shall be included in this Section. It shall be performed to the satisfaction of the Owner and will be considered incidental to the Work.

3.02 FORMING FOR RETAINING WALLS

Forming for retaining walls, either reinforced or gravity, shall be in accordance with the applicable provisions of Specification Section 03310, "Structural Concrete", or as directed by the Owner.

3.03 FORMING FOR COPING WALLS

Forming for coping walls shall be in accordance with the applicable provisions of Specification Section 03310, "Structural Concrete", or as directed by the Owner.

3.04 FORMING FOR STEPS

Forming for steps shall be in accordance with the applicable provisions of Specification Section 03310, "Structural Concrete", or as directed by the Owner.

3.05 REINFORCEMENT FOR RETAINING WALLS

Reinforcement for retaining walls shall be in accordance with the applicable provisions of Specification Section 03310, "Concrete Structures".

3.06 WEEP HOLES – RETAINING WALLS

Weep holes for retaining walls shall be as shown on the Plans and Design Standards or as directed by the Owner.

3.07 PLACING AND CONSOLIDATING CONCRETE

Placing and consolidating concrete shall be performed in accordance with the applicable provisions of Specification Section 03310, "Concrete Structures".

3.08 EXPOSED SURFACES

Exposed surfaces of retaining walls, coping walls, and steps shall be given a Class 2, Rubbed Finish and surfaces to be backfilled shall be given a Class1, Ordinary Surface Finish, as specified in Specification Section 00310 Paragraph 3.11.

3.09 TESTING CONCRETE

Concrete for retaining walls, coping walls, and steps shall be tested by test specimens made and cured in accordance with AASHTO Designation T 23 for cylinders at the frequency stipulated in the Plans or as directed by the Owner. The Contractor shall furnish the concrete necessary for casting test specimens in the field. The City will supply all molds and labor necessary to cast and test specimens.

3.10 CURING CONCRETE
Concrete for retaining walls, coping walls, and steps shall be cured in accordance with the applicable provisions of Specification Section 03310 Paragraph 3.13, "Curing Concrete", or as directed by the Owner.

3.11 DRAINAGE SYSTEM FOR CONCRETE RETAINING WALLS
Weep hole inserts of P.V.C. pipe, granular material for weep hole backfill, expansion joint material, fence inserts, handrail inserts, guard rail inserts, and corner bars for plain concrete (gravity) retaining walls shall be considered incidental to the Work. Where the Plans indicate a drainage system behind the wall (s) consisting of perforated pipe, filter cloth, and granular backfill, such system(s) shall be considered incidental to the Work.

PART 4 – MEASUREMENT

4.01 CONCRETE RETAINING WALLS
Concrete for Concrete Retaining Walls will be measured for payment by the cubic yard, complete in place. Reinforcing steel will not be measured but shall be considered incidental to the Work.

4.02 CONCRETE COPING WALLS
Concrete for Concrete Coping Walls will be measured for payment by the cubic yard, complete in place.

4.03 CONCRETE STEPS
Concrete steps will be measured for payment by the linear feet of tread for the type shown on the Plans, complete in place.

PART 5 – PAYMENT

5.01 CONCRETE RETAINING WALLS
The accepted quantities of concrete for Concrete Retaining Walls will be paid for at the contract unit price per cubic yard, which price will be full compensation for preparing the grade; forming; furnishing, placing, finishing, and curing the concrete; furnishing and placing reinforcing steel; providing weep holes and specified drainage systems behind the walls; providing and placing fence inserts, guard rail inserts, and handrail inserts when shown on the Plans; and protection until final acceptance.

5.02 CONCRETE COPING WALLS
The accepted quantities of concrete for concrete coping walls will be paid for at the contract unit price per cubic yard, which price will be full compensation for preparing the grade; forming; furnishing, placing, finishing, and curing the concrete; and protection until final acceptance, complete in place.

5.03 CONCRETE STEPS
The accepted quantities of concrete steps will be paid for at the contract unit price per linear foot of tread for the type shown on the Plans, which price will be full compensation for forming; furnishing, placing, finishing, and curing the concrete; providing and placing railing when shown on the Plans (unless specified as a separate pay item for the project); and protection until final acceptance, complete in place.

5.04 PAYMENT WILL BE MADE UNDER:

Item No.	Pay Item	Pay Unit
02830-01	Concrete Retaining Walls	Cubic Yard

02830-02	Concrete Coping Walls	Cubic Yard
02830-03	Concrete Steps	Foot
02830-03.____	Description _____	Foot

END OF SECTION 02830

CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS
SECTION 02950 REMOVAL AND REPLACEMENT OF PAVEMENTS AND INCIDENTALS

PART 1 – SCOPE

This Work shall consist of the removal and replacement of pavements, sidewalks, driveway aprons, curbs and gutters, driveways, paved areas, and curbs made necessary by the construction of drainage facilities, sanitary sewers, traffic control conduit, and other items of construction that require temporary cuts. Such replacement shall be to a condition at least equal to the condition existing prior to removal and of in-kind material and shall be compliance with the Plans, these Specifications, or as directed by the Owner. The Work which will be included in the Contract and for which the Contractor shall be compensated therefore is limited to that area within the rights-of-way and construction easements for the Project. The Contractor will not be compensated for the removal and replacement of facilities outside the rights-of-way, easements, and limits of construction of the Project.

PART 2 – MATERIALS AND EQUIPMENT

2.01 MATERIALS

A. Concrete: Concrete materials shall meet the requirements of Specification Section 03050, Portland Cement Concrete for Class A concrete.

B. Curing Material: Curing materials shall conform to the applicable provisions of Specification Section 02750 Paragraph 2.01 C.

C. Asphaltic Concrete Wearing Surface and Asphalt Curb: Asphaltic concrete wearing surfaces and asphalt curb shall meet the requirements of Specification Section 02741 Paragraph 2.01 D., "Composition of Mixtures", for Mix No. 1.

D. Asphalt Driveway Pavement: Asphalt driveway pavement shall meet the requirements of Specification Section 02741 Paragraph 2.01 D., "Composition of Mixtures", for Mix No. 2.

E. Expansion Joint Filler: Preformed expansion joint filler shall be of the bituminous type, shall conform to eh requirements of AASHTO M 213 and shall not be more than 1 inch or less than 1/2 inch in thickness. The filler shall be cut to the full depth of pavement, curb and gutter, sidewalk, or driveway being replaced.

F. Gravel Pavement or Base: Camden gravel or crushed limestone meeting the requirements of Specification Section 02720 Paragraph 2.01, Aggregates for Gradation No. 1, 2 or 3 shall be used to replace graveled areas disturbed by construction.

2.02 EQUIPMENT

A. Equipment and tools necessary for cutting, removal, and hauling of existing items; handling and placement of new material; and all equipment necessary to perform all parts of the Work shall be at the job site sufficiently ahead of the start of construction operations to be examined and approved by the Owner.

B. When saws are used to cut pavement, the Contractor shall provide sawing equipment adequate in power to complete the sawing to a minimum of 1-1/2 inches below the pavement surface in one pass. An ample supply of saw blades shall be maintained at the site of the Work at all times during sawing operations.

C. Other types of pavement cutting equipment shall be capable of cutting the pavement to a neat straight line of 1-1/2 inch minimum depth below the pavement surface in one pass.

D. The Contractor shall provide equipment capable of removal of pavements, sidewalks, driveway aprons, curbs and gutters, driveways, paved areas, and curbs without disturbance of adjacent items to remain in place.

E. Equipment necessary for the handling, placement, and finishing of concrete shall meet the applicable requirements of Specification Section 02750 Paragraph 2.02, "Portland Cement Concrete Pavement"; Specification Section 02775 Paragraph 2.02, "Portland Cement Concrete Sidewalks and Driveways"; and Specification Section 02770 Paragraph 2.02, "Curb, Curb and Gutter, and Water Table".

F. Equipment necessary for the handling, placement, and compaction of asphalt shall meet the requirements of Specification Section 02741 Paragraph 2.02.

PART 3 – CONSTRUCTION REQUIREMENTS

3.01 REMOVAL OF ASPHALT PAVEMENT

Asphalt pavement shall be removed to a clean straight line as detailed on the Plans. Pavement shall be cut by saw or other equipment approved by the Owner in advance. Edges of existing asphalt pavement adjacent to trenches where damaged shall be recut in a clean straight line within the limits of damaged pavement only. Such recuts shall be parallel to the original cuts and perpendicular to the pavement surface.

3.02 REMOVAL OF CONCRETE PAVEMENT

A. Concrete pavement shall be removed to a neat straight line as detailed on the Plans. Care shall be used to avoid damage to pavements and to the pavement base remaining in place.

B. Concrete pavement may, at the Contractor's option, be removed by saw cutting to a neat straight line. Saw cuts shall be made to a minimum depth of 1-1/2 inches and at a location to provide a cutback edge in accordance with the Design Standards. The edges of the existing concrete pavement adjacent to trenches where damaged subsequent to saw cutting of pavement shall again be saw cut in a neat straight line to remove the damaged pavement areas. Such saw cuts shall be parallel to the original saw cuts and perpendicular to the pavement surface.

3.03 REMOVAL OF CONCRETE SIDEWALK, CURB AND GUTTER, AND DRIVEWAY

Concrete sidewalks, curbs and gutters, and driveways shall be removed to the nearest contraction or expansion joint. Care shall be used to avoid damage to sidewalks, curbs and gutters, and driveways remaining in place.

3.04 REMOVAL OF GRAVEL PAVEMENT

Gravel surfaces encountered in construction shall be removed to the limits shown on the Plans.

3.05 REPLACEMENT OF PAVEMENT

A. Asphalt or Surface Treated Pavements: Replacement of asphalt or surface treated pavement and base shall consist of 8 inches of Class A concrete base and 1 inch of asphaltic concrete surface course Mix No. 1 for the entire cross-section of pavement removal area, including all areas where pavement was re-cut subsequent to the initial pavement removal.

B. Concrete Pavements

1. Concrete pavement shall be replaced with Class A concrete pavement equal in thickness to the pavement removed but not less than 8 inches thick. Concrete pavement and base replacement shall be constructed for the entire cross-section of pavement removal area including all areas where pavement was re-cut subsequent to the initial pavement removal.

2. Reasonable efforts shall be made to avoid contrast in the color and texture of existing and restored surfaces.

C. Placing, Curing, and Protection of Concrete

1. After the backfill in the trench has been brought to the appropriate subgrade elevation shown on the Plans, compacted to the specified density, and permission has been given by the Owner, a concrete slab of the appropriate thickness shall be placed within the entire disturbed area.

2. Any loose or disturbed pavement or base shall be removed prior to placement of the concrete. Concrete shall be placed only on a moist subgrade and shall not be placed unless the ambient temperature is 35° F and rising. In no case shall concrete be placed on a frozen or frosty subgrade. After the concrete is placed, it shall be struck off in an approved manner to the appropriate grade as shown on the Plans and shall be finished with floats and straight edges until the required surface texture has been obtained.

3. Curing and cold weather protection shall be performed as provided for under Specification Section 02750 Paragraph 3.11. No vehicles or loads shall be permitted on any concrete until the Owner has determined that the concrete has obtained sufficient strength for such loads. The contractor shall construct and place such barricades and protection devices as are necessary to protect the concrete.

D. Placing Asphaltic Concrete Wearing Surface: After the concrete base has been placed and adequately cured, an asphaltic concrete wearing surface of the minimum specified thickness shall be placed and compacted as specified in Specification Section 02710.4 Paragraphs 3.01 – 3.11, Asphaltic Concrete, Construction Requirements.

3.06 REPLACEMENT OF SIDEWALKS, DRIVEWAY APRONS, CURBS AND GUTTERS, DRIVEWAYS AND OTHER PAVED AREAS, AND CURBS

A. Concrete sidewalks and driveway aprons shall be replaced in accordance with the requirements of Specification Section 02775 Paragraphs 3.01 – 3.08, "Portland Cement Concrete Sidewalks and Driveways, Construction Requirements". Any expansion joint material removed shall be replaced at the original locations. Existing concrete edges shall be cleaned prior to placement of concrete. The finished concrete elevation, texture, and color shall conform to the adjacent concrete surfaces.

B. Unless otherwise directed, curb and gutter shall be replaced with new concrete curb and gutter of the same cross-section and at the same top of curb elevation and flow line as that removed. Where curb and gutter of a different type than existing is to be used for replacement, the replacement flow line shall match existing and a transitions section provided between the existing and replacement cross-sections. Curb heights shall be transitioned at a trate of 1 inch in 5 feet. Granite curb shall be replaced with new concrete curb whose height matches existing adjacent curb top elevations. New concrete curb and gutter construction shall conform to the requirements of Specification Section 02770 Paragraphs 3.01 – 3.10, "Curb, Curb and Gutter, and Water Table, Construction Requirements". Any expansion joint material removed shall be replaced at the original locations. Existing concrete edges shall be cleaned prior to placement of concrete. The finished curb and gutter cross-section, elevations, texture, and color shall conform to the adjacent concrete surfaces.

C. Replacement of paved areas other than street pavement; concrete, asphalt, or gravel driveways; and asphalt or concrete curb within the right-of-way or construction easement limits shall be in kind for those cross-sections removed, unless directed otherwise by the Owner.

3.07 DAMAGE DUE TO SETTLEMENT

A. The Contractor shall be responsible for any damage caused by settlement of backfill placed beneath pavements, sidewalks, driveway aprons, curbs, curbs and gutters, driveways, paved areas other than street pavement, and asphalt or concrete curb within the right-of-way or construction easement limits. This includes any damage which may occur at any time prior to,

and during a period of one year from and after the date of Final Acceptance of the Work covered by the Contract.

B. During such period, the Contractor shall at his own cost and expense refill all excavations where settlement damage has occurred and replace damaged pavements, sidewalks, driveway aprons, curbs, curbs and gutters, paved areas, driveways, and all other damaged items to the satisfaction of the City. Should the Contractor fail to repair settlement damage which may occur as described above within 30 days after being given notice thereof, the City shall have the right to repair such settlement and charge the cost of such repairs to the Contractor.

3.08 DAMAGE OUTSIDE CONSTRUCTION EASEMENT LIMITS

A. The Contractor will be held responsible for all damage to roads, highways, shoulders, curbs and gutters, ditches, embankments, bridges, culverts, and other property, caused by him or any of this Subcontractors in hauling or otherwise transporting materials to and from the several sites of Work, regardless of the location of such damage. The Contractor shall make arrangements relative to the payment for, or repair or replacement of, such damage or damaged surfaces or structures which are satisfactory and acceptable to the owner or owners of such damaged surfaces or structures, or to their legally responsible officers, agents, or other representatives, at the Contractor's cost and expense.

PART 4 – MEASUREMENT

4.01 PAVEMENT REMOVAL AND REPLACEMENT
Pavement removal and replacement shall be measured for payment by the square yard, complete in place.

4.02 CONCRETE SIDEWALK REMOVAL AND REPLACEMENT
Sidewalk removal and replacement shall be measured for payment by the square foot, complete in place.

4.03 CONCRETE DRIVEWAY APRON REMOVAL AND REPLACEMENT
Driveway apron removal and replacement shall be measured for payment by the square foot, complete in place.

4.04 CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT
Curb and gutter removal and replacement shall be measured for payment by the linear foot, complete in place.

4.05 ASPHALT OR CONCRETE DRIVEWAY AND PAVED AREA REMOVAL AND REPLACEMENT
Asphalt or concrete driveway and paved area removal and replacement shall be measured for payment by the square foot, complete in place.

4.06 GRAVEL DRIVEWAY AND GRAVEL AREA REMOVAL AND REPLACEMENT
Gravel driveways and gravel area removal and replacement shall be measured for payment by the ton of Camden gravel or crushed limestone, complete in place.

4.07 ASPHALT AND CONCRETE CURB REMOVAL AND REPLACMENT
Asphalt and concrete curb removal and replacement shall be measured for payment by the linear foot along the face of curb, complete in place.

PART 5 – PAYMENT

5.01 PAVEMENT REMOVAL AND REPLACEMENT
The accepted quantities of pavement removal and replacement shall be paid for at the contract unit price per square yard for the type specified, which price will be full compensation for cutting and recutting pavement; removal and disposal of pavement and base; preparing the subgrade; placing, finishing,

curing, and protection of concrete; and placing and compacting asphaltic concrete wearing surfaces, complete in place.

5.02 CONCRETE SIDEWALK REMOVAL AND REPLACEMENT
The accepted quantities of sidewalk removal and replacement shall be paid for at the contract unit price per square foot, which price will be full compensation for removal and disposal of sidewalk; preparing the subgrade; and placing, finishing, curing and protection of concrete, complete in place.

5.03 CONCRETE DRIVEWAY APRON REMOVAL AND REPLACEMENT
The accepted quantities of driveway apron removal and replacement shall be paid for at the contract unit price per square foot for the type specified, which price will be full compensation for removal and disposal of driveway apron; preparing the subgrade; and placing, finishing, curing, and protection of concrete, complete in place.

5.04 CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT.
The accepted quantities of curb and gutter removal and replacement shall be paid for at the contract unit price per linear foot for the type specified, which price will be full compensation for removal and disposal of curb and gutter; preparing the subgrade; and placing, finishing, curing and protection of concrete, complete in place.

5.05 ASPHALT OR CONCRETE DRIVEWAY AND PAVED AREA REMOVAL AND REPLACMENT
The accepted quantities of asphalt or concrete driveway and paved area removal and replacement shall be paid for at the contract unit price per square foot for the type specified, which price will be full compensation for cutting and recutting; pavement removal and disposal of pavement and base; preparing the subgrade; placing, finishing, curing, and protection of concrete; and placing and compacting asphalt, complete in place.

5.06 GRAVEL DRIVEWAY AND GRAVEL AREA REMOVAL AND REPLACEMENT
The accepted quantities of gravel driveway and gravel area removal and replacement shall be paid for at the contract unit price per ton of Camden gravel or crushed limestone, which price will be full compensation for preparing the subgrade and replacing the gravel, complete in place.

5.07 ASPHALT AND CONCRETE CURB REMOVAL AND REPLACEMENT
The accepted quantities of asphalt and concrete curb removal and replacement shall be paid for at the contract unit price per linear foot, which price will be full compensation for removal and disposal of curb and placing new curb, complete in place.

5.08 PAYMENT WILL BE MADE UNDER:

Item No.	Pay Item	Pay Unit
02950-01	PAVEMENT REMOVAL AND REPLACEMENT	Square Yard
02950-01.01	Asphaltic Concrete Pavement	Square Yard
02950-01-02	Concrete Pavement	Square Yard
02950-02	CONCRETE SIDEWALK REMOVAL AND REPLACEMENT	Square Foot
02950-03	CONCRETE DRIVEWAY APRON REMOVAL AND REPLACEMENT	Square Foot
02950-03.___	(Description)	Square Foot
02950-04	CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT	Linear Foot
02950-04.___	(Description)	Linear Foot

02950-05	ASPHALT OR CONCRETE DRIVEWAY AND PAVED AREA REMOVAL AND REPLACEMENT	Square Foot
02950-05.01	Asphalt Driveway and Paved Area	Square Foot
02950-05.02	Concrete Driveway and Paved Area	Square Foot
02950-06	GRAVEL DRIVEWAY AND GRAVEL AREA REMOVAL AND REPLACEMENT	Ton
02950-06.01	Replacement with Camden Gravel	Ton
02950-06.02	Replacement with Crushed Stone	Ton
02950-07	ASPHALT AND CONCRETE CURB REMOVAL AND REPLACEMENT	Linear Foot
02950-07.01	Concrete Curb	Linear Foot
02950-07.02	Asphalt Curb	Linear Foot

END OF SECTION 02950

SECTION 803-SODDING

803.01-Description 706
803.02-Sod 706
803.03-Fertilizer Grade 706
803.04-Ammonium Nitrate 706
803.05-Agricultural Limestone 707
803.06-Equipment 707
803.07-Weather Limitations 707
803.08-Removing and Storing Sod for Resetting 707
803.09-Sodding 707
803.10-Care and Establishment 708
803.11-Disposal of Surplus Material 709
803.12-Method of Measurement 709
803.13-Basis of Payment 709

SECTION 803-SODDING

803.01-Description. Sodding shall consist of furnishing and placing sod at all locations shown on the Plans or where directed, and in conformity with these Specifications.

Ordinarily, the Work will consist of the furnishing and placing of new sod originating from sources outside the rights-of-way. In some cases, however, the Work will include removing sod from areas where the requirements of the improvement would destroy existing sod, storing the sod so removed, and resetting it in areas shown on the Plans or designated by the Engineer.

MATERIALS

803.02-Sod. New sod shall consist of live, dense, well-rooted growth of permanent grasses, free from Johnson grass, nut-grass, and other undesirable grasses or weeds, well-suited for the intended purpose and for the soil in which it is to be planted.

All sod shall be cleanly cut in strips having a reasonably uniform soil thickness of not less than 1 in.(25 mm) and a reasonably uniform width of not less than 8 inc in.hes(200 mm) and a length of not less than 12 in.(300 mm).

The sale or movement of turf grass or sod for propagation is controlled by **Tennessee Plant Pest Act of 1955, TCA 43-515**, et. seq. It requires inspection during the growing season and authorization by the Tennessee Department of Agriculture prior to removal. The authorization may be certificates for "Tennessee Certified Premium" sod, or "Tennessee Certified" sod. If the sod offered for use will not meet the requirements for certified sod but will meet the requirements of this Subsection, a "Permit for Movement of Non-certified Turf Grass Sod" will be required.

The Contractor should request the inspection from the Tennessee Department of Agriculture as early as possible to avoid any undue delay. The request for inspection should provide the following information: project number, county, name and address of the owner or seller, name and address of purchaser, kind or variety, exact location of sod, location where sod will be used and approximate date movement of sod will begin. The Contractor shall furnish a copy of the Department of Agriculture authorization to the Project Engineer prior to removing sod.

Request for inspection should be directed to Division of Plant Industries, Tennessee Department of Agriculture, Ellington Agricultural Center, Melrose Station 40627, Nashville, Tennessee 37204, Telephone (615) 360-0130.

803.03-Fertilizer Grade. Fertilizer shall conform to the requirements of **Subsection 918.15**, and shall be Grade 10-10-10 or 1-1-1 formula unless otherwise specified on the Plans or in the Special Provisions.

803.04-Ammonium Nitrate. Ammonium nitrate shall conform to the requirements of **Subsection 918.16**.

803.05-Agricultural Limestone. Agricultural limestone shall conform to the requirements of **Subsection 918.17.**

EQUIPMENT

803.06-Equipment. All equipment necessary for satisfactory performance of this work shall be on the project, and approved before work will be permitted to begin.

CONSTRUCTION REQUIREMENTS

803.07-Weather Limitations. Sod shall be set or reset only when the soil is moist and favorable to growth. No setting or resetting shall be done between December 1 and February 1, unless weather and soil conditions are considered favorable and permission is granted by the Engineer.

803.08-Removing and Storing Sod for Resetting. Sod removed from such areas as lawns, yards, lots, etc., shall be so cut, handled, and stored that the sod can be reset in the same locations from which it was removed. No interchange of sod will be permitted unless approved by the Engineer. Unless reset immediately after cutting, sod shall be stacked in piles and kept moist until reset. Sod shall be reset within 7 days after removal, unless specifically permitted by the Engineer.

803.09-Sodding. The area to be sodded shall be brought to the lines and grades shown on the Plans, care should be taken when laying sod adjacent to structures, ditch paving, sidewalks, etc. that water does not pond, but allowed to flow as designed. The surface of the ground to be sodded shall be loosened to a depth of not less than 1 in.(25 mm) with a rake or other device. If necessary, it shall be sprinkled until saturated for a minimum depth of 1 in.(25 mm) and kept moist until the sod is placed. Immediately before placing the sod, fertilizer and lime shall be applied uniformly to the prepared surface of the ground. Fertilizer shall be applied at the rate of 12 lbs(6 kgs) of Grade 10-10-10, or equivalent per 1,000 s.f.(100 m^2). Agricultural limestone shall be applied at the rate of 100 lbs(50 kgs s) per 1,000 s.f.(100 m^2).

Sod shall be placed as soon as practicable after removal from the point of origin, and shall be kept in a moist condition during the interim. On urban projects the sod shall be placed on all newly graded cut and fill slopes as work progresses to prevent damage to adjacent facilities and property due to erosion. Care shall be exercised to retain the soil on the root system during excavating, hauling and planting. All sod shall be in an acceptable condition upon delivery and placement at the work site. Sod damaged by heat or dry conditions shall not be used.

The sod shall be carefully placed by hand on the prepared ground surface with the edges in close contact and, as far as possible, in a position to break joints. Each strip of sod laid shall be fitted into place, thoroughly wetted and rolled with an approved roller or hand-tamped, as approved by the Engineer. On slopes of two to one or steeper, pinning or pegging may be required to hold the sod in place.

803.10-Care and Establishment. The Contractor shall provide all labor and arrange for all watering necessary for rooting of the sod. In the absence of adequate rainfall, watering shall be performed as deemed necessary by the Contractor and approved by the Engineer during the first 14 days of the period of establishment so as to maintain a moist soil. After 14 days ammonium nitrate at the rate of 3.5 lbs/1,000 s.f.(1.7 kgs/100 m^2) will be applied and the sod re-watered.

All water applied during the first 14 days after sodding work is complete, including the water used in the re-watering of the sod after the application of the ammonium nitrate, will be paid for at the contract unit price for Water applied after the above described period will not be paid for and shall be included in the cost of other items.

An inspection to determine the acceptability of the sodding will be made by an authorized representative of the Department no less than 90 days but not more than 150 days after completion of the sod work or at the acceptance of the entire project, whichever is later, except that the Engineer may delay the inspection when conditions are such that the acceptability of the sodding cannot be determined at the end of the 150 days period or at the time the entire project is accepted. The Contractor shall guarantee, at the time of this inspection, a minimum of 95% live sod on the sodded areas and that there are no vacant areas of dead sod larger than 100 s.f.(15 m^2). This guarantee shall apply to all permanent sodding performed in conjunction with the project, regardless of the type protection used or the season in which the sodding is performed.

When the sodding does not meet the guarantee requirements at the time of inspection, the Contractor will be required to repair all defective areas. Additional work required may include preparation of sod bed, refertilizing, resodding, or any erosion control items that were originally required. The Contractor shall perform all additional work as soon as favorable working conditions occur after being advised of the additional work required. The additional work and materials required to fulfill the guarantee requirements will not be paid for.

From the time sodding and protection work begins until the date the entire project is accepted, the Contractor shall keep all sodded areas in good condition at all times. Any damage to sodded areas shall be promptly repaired as directed. All work and materials necessary to protect, maintain, and/or restore sodded areas during the life of the contract shall be performed at no additional cost to the Department, except additional work caused by changes in the project by the Department. When it becomes necessary to disturb previously sodded areas due to slope changes, addition of paved ditches not previously located by the Engineer, or other changes made at the direction of the Engineer, payment for a reasonable amount of additional work, as determined by the Engineer, will be made at the original contract unit prices. No payment will be made for additional work due to changes made for the benefit of the Contractor, such as slope changes to obtain balance excavation in lieu of borrow excavation, nor will payment be made for additional work required because the Contractor has failed to properly coordinate his entire erosion control schedule thus causing

previously sodded areas to be disturbed by operations that could have been performed prior to sodding.

If the work is completed on the entire project, except for the expiration of the guarantee period, and the project is ready for final inspection and acceptance, the Contractor may provide the Department with a performance surety bond in the amount of the unaccepted work to guarantee establishment of the sod as described above.

The Contractor shall not allow any equipment or material placed on any planted area and shall erect suitable barricades and guards to prevent his equipment, labor, or the public from traveling on or over any area planted with sod.

If, on Contracts involving sodding and other items of construction, the other items have already been completed, the time required for establishment under this item will not be charged against the time stipulated in the Contract for completion of the project.

803.11-Disposal of Surplus Material. All surplus material shall be disposed of as directed by the Engineer.

COMPENSATION

803.12-Method of Measurement. Sod will be measured for payment by the s.y.(m^2) in accordance with the provisions of **Section 109**, Measurement and Payment. Only areas upon which the sod has been set or reset will be measured for payment.

Water will be measured by the M. G.(1,000 gallons)(m^3)by means of calibrated tanks or distributors, or by means of accurate water meter.

803.13-Basis of Payment. The accepted quantities of sodding will be paid for at the contract unit price per s.f.(m^2) for Sodding (New Sod), and/s.f.(m^2) for Removing, Storing and Resetting Sod, complete in place. Water applied as ordered by the Engineer will be paid for at the contract unit price/M. G.(1,000 gallons)(m^3).

CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS
SECTION 03051 CONCRETE FOR GENERAL USE

PART 1 - SCOPE

This work shall consist of the furnishing and placing of portland cement concrete for general purposes not defined on the Plans, but as directed at the site by the Owner. Uses might include but not be limited to subgrade patching and use in patching pavement for utility cuts, bulkheads, pipe collars, underpinning, spillways, or such other uses as might be required by conditions encountered at the site.

PART 2 - MATERIALS AND EQUIPMENT

2.01 MATERIALS.

A. Concrete.
Concrete shall meet the requirements of Specification Section 03050, Portland Cement Concrete, for Class A Concrete.

2.02 EQUIPMENT.
All equipment necessary for the satisfactory performance of this work shall be on hand and inspected before work will be permitted to begin.

PART 3 - CONSTRUCTION REQUIREMENTS

3.01 GENERAL.

A. Concrete for general use shall be provided as directed by the Owner for such purposes as may occur during the construction of a project that are not defined on the Plans but result from field conditions encountered. Concrete shall be nonreinforced. Concrete shall be placed at the locations and in the amounts directed by the Owner.

B. Concrete shall be placed only on a moist subgrade or other surface material and shall not be placed unless the temperature is 35^{0}F and rising. In no case shall concrete be placed on a frozen or frosty surface. After the concrete has been placed, it shall be struck off to an appropriate grade or shape and finished as directed by the Owner.

PART 4 – MEASUREMENT

4.01 CONCRETE FOR GENERAL USE.
Concrete for general use shall be measured for payment by the cubic yard, to the nearest one-half cubic yard, complete in place.

PART 5 – PAYMENT

5.01 CONCRETE FOR GENERAL USE.
The accepted quantities of concrete for general use will be paid for at the contract unit price per cubic yard, which price will be full payment for preparing the area to receive the concrete, including excavation and form work and for furnishing, placing, finishing, and protecting the concrete, compete in place, to the satisfaction of the Owner.

5.02 PAYMENT WILL BE MADE UNDER:

Item No.	Pay Item	Pay Unit
03051-5.01	CONCRETE FOR GENERAL USE (CLASS A)	Cubic Yard

END OF SECTION 03051

SECTION F

SHELBY COUNTY GOVERNMENT

ENGINEERING DEPARTMENT

GENERAL REQUIREMENTS
AND
CONDITIONS

SHELBY COUNTY
A.D.A.
CURB & RAMP
INSTALLATION
PROJECT

SHELBY COUNTY GOVERNMENT
ENGINEERING DEPARTMENT
GENERAL REQUIREMENTS AND CONDITIONS

SECTION 1. DEFINITION OF TERMS

Whenever in the Specifications and Contract the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

1.01 County:

Shall be interpreted to mean THE COUNTY OF SHELBY, TENNESSEE, or its authorized representative.

1.02 Director

Shall be interpreted to mean THE SHELBY COUNTY DIRECTOR OF PUBLIC WORKS.

1.03 Engineer

Shall be interpreted to mean The SHELBY COUNTY ENGINEER, and/or the Project Manager delegated by the County Engineer to act as the County's authorized representative.

1.04 Project Manager:

The representative of the SHELBY COUNTY ENGINEER who has been delegated to act with the authority of the Engineer.

1.05 Bidder:

Any individual, firm, joint venture, or corporation submitting a proposal for work contemplated, acting directly or through a duly authorized representative.

1.06 Contractor:

The successful bidder to whom the contract is awarded.

1.07 Sub-contractor:

Any individual, firm, partnership, or corporation to whom the Contractor, with the written consent of the County, sublets, assigns, or otherwise disposes of any part of the work governed by the contract.

1.08 Surety:

Any corporation, individual or individuals, who engage to be responsible for the bidder's action in the execution of the contract upon the award of such; or who are bound with and for the Contractor to insure acceptable performance of the contract, payment of all obligations pertaining to the work, and fulfillment of such other conditions as may be specified or otherwise required by law.

1.09 Notice of Letting:

The official notice, sent to all prospective bidders, inviting proposals for all proposed improvements included in any one letting.

1.10 Notice to Bidder:

The official notice, included with the proposal form, inviting bids for the proposed improvement.

1.11 Plans:

All official drawings or reproductions of drawings detailing the work to be performed by the Contractor.

1.12 Proposal:

The written offer of the Bidder to perform the proposed work.

1.13 Specifications:

The collection of general directions, provisions, requirements and any supplements duly authorized and distributed by the County. This shall include written agreements, bonding requirements, quantities of materials to be furnished, and other documents detailing the methods or manner to be used to perform the work in a satisfactory manner.

1.14 Special Provisions:

Any and all directions, details, and requirements prepared to govern the method or manner of performing work of a specific nature which may not be adequately covered by the specifications. The special provisions shall govern the work and shall take precedence over the specifications and plans wherever they conflict therewith, but they shall not operate to annul those portions of the specifications with which they are not in conflict.

1.15 Proposal Guarantee:

Security required as assurance that the bidder, if determined to be the lowest, responsive and responsible bidder, will post the required bond and enter into a contract with the County for the acceptable performance of the work.

1.16 Award:

The acceptance of the lowest, responsive and responsible bidder subject to the execution and approval of a satisfactory contract, bonding to secure the performance thereof, submittal of the required certifications of insurance, and adherence to any and all other conditions as may be specified or otherwise required by law.

1.17 Contract:

The written agreement covering the performance of the work and the furnishing of labor and materials for the construction of the work. The contract includes the proposal, contract bond, plans, specifications, general requirements and conditions, special provisions, and all other material bound herewith, and any and all supplemental agreements.

1.18 Supplemental Agreement:

The written agreement executed by the County and the Contractor, with the assent of the surety, governing modifications or alterations of the terms of the original contract.

1.19 The Work:

The total construction process necessary to satisfactorily complete the contract including any and all authorized alterations, extensions, and deductions. Also included are all labor, tools, equipment, materials and incidentals necessary for the satisfactory completion of the contracted improvement.

1.20 Word Usage and Gender:

Except where the context clearly indicates to the contrary, words in the present tense include the future, words in the singular include the plural and words in the plural include the singular.

The masculine gender shall include the feminine, the feminine gender shall include the masculine, and the neuter gender shall include both masculine and feminine.

The word "shall" refers to mandatory requirements.

The words "Authorization" and "Authorized" shall mean authorization in writing by the appropriate authority.

1.21 Latent Defect:

A defect that existed at the time of County acceptance but could not be discovered by a reasonable inspection.

SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 Contents of Proposal Form:

The County shall furnish a set of contract documents to each potential Bidder upon receipt of a non-refundable deposit as set forth in the official notice to bidders. All documents bound with or attached to the contract shall be included as part of the Bidder's proposal form and shall not be detached or altered. Any subsequently issued addenda shall be attached to the set of contract documents and shall become part of the contract bid documents.

2.02 Interpretation of Estimate of Quantities:

A table of estimated quantities of materials to be furnished by the Contractor shall be included as part of the contract documents. The estimated quantities are given only as a basis for comparison of the proposals and the award of the contract. The County does not expressly or by implication agree that the actual quantities shall correspond to the estimated quantities. The Bidder shall not plead misunderstanding or deception because of errors or discrepancies in said estimates of quantities, or in the character, locations, or other conditions pertaining to the work.

Final payment shall be based upon actual quantities used to complete the work at the contract unit prices as bid, but in no case shall payment be made for quantities over and above those specified by the plans, specifications, or special provisions unless otherwise directed by the Engineer. In the event of disputes over actual quantities to be paid, the Engineer's decision shall be final. The County reserves the right to omit bid items entirely or to increase or decrease any or all bid items. No allowance shall be made for any change in anticipated profits due to an increase, decrease, or deletion in the original estimated quantities.

2.03 Examination of Plans, Specifications, Special Provisions, and Site of Work:

Each Bidder shall, before submitting a bid, carefully examine the proposal, plans, specifications, special provisions, and contract and bonding forms. The Bidder shall inspect, in detail, the site of the proposed work and shall become familiar with any local conditions or detailed requirements of construction that may affect the progress of the work. The Bidder shall be responsible for proposal errors resulting from failure or neglect to comply with these instructions. The County shall not be responsible for any circumstances, events, or interpretations that cause or may cause a change in anticipated profits resulting from such failure or neglect.

2.04 Preparation of the Proposal:

Each Bidder's proposal shall be submitted on the form furnished by the County. The proposal shall be executed properly and bids shall be made for all items indicated on the proposal form. Except where requested or allowed by the special provisions, alternate bids will not be required, nor will alternate bids be used in the bid evaluation process. The Bidder shall indicate, in figures, a lump sum for the entire work or a unit price for each of the separate items stipulated in the proposal. For unit price contracts, the Bidder shall calculate the products of the respective quantities and unit prices in the column provided for

that purpose. The gross sum of the proposal shall be the summation of the said products and shall be entered on the proposal form in the space provided. All bids shall be conditional upon furnishing of a bid bond executed by a corporate surety company satisfactory to the County. All writing shall be printed in ink or by typewriter except the signature of the Bidder, which shall be written with the printed name beneath. Unit prices shall govern and any errors found in the product of a unit price and quantity shall be corrected and the correction reflected in the gross sum.

2.05 Proposal Guaranty:

Each proposal shall be accompanied by a bank draft, a cashier's check, a properly certified check, a letter of credit by a national bank or certificate of deposit therein, duly assigned, or an approved bid bond for not less than the percentage designated in the Notice to Bidders of the amount of the bid made payable to the County. In no case shall a bank cashier's check, bank draft, certified check, or other indemnity, as set out above, for less than $300 be accepted.

2.06 Delivery of Proposals:

Proposals shall be delivered prior to the time of opening, to the place indicated in the Notice to Bidders. Each proposal shall be placed in a sealed envelope, plainly marked to indicate its contents including the sealed bid number and project name. Only sealed proposals shall be accepted.

Proposals sent by mail or special courier service shall not be opened, unless received at the place of letting prior to the time of opening proposals. Envelopes postmarked prior to the time of opening proposals but not received at the place of letting prior to the time of opening proposals shall not be accepted.

2.07 Withdrawal of Proposals:

Permission shall be given a Bidder to withdraw a proposal if a request is made in writing and received by the County before the time for opening proposals. If a proposal is withdrawn, the Bidder shall not be permitted to submit a proposal for the same work section at the same letting.

2.08 Public Opening of Proposals:

Proposals shall be opened and read publicly at the time and place specified in the Notice to Bidders. Bidders, their authorized agents, and other interested parties are invited to be present.

2.09 Rejection of Proposals:

Proposals not accompanied by an approved form of proposal guaranty or which contain omissions, erasures, alterations, additions or alternates not specified by the original contract documents or other irregularities, may be rejected by the County as informal or insufficient.

2.10 Disqualification of Bidders:

All bidders are hereby advised that no award of contract will be made to any firm or individual that is currently debarred by the STATE OF TENNESSEE or the FEDERAL HIGHWAY ADMINISTRATION.

Any one or more of the following reasons may be considered sufficient for rejection of bids and disqualification of a Bidder:

(a) More than one proposal for the same work from an individual, firm, partnership, or corporation under the same or different names.

(b) Evidence of collusion among Bidders. Participants in such collusion shall receive no recognition as Bidders for any future lettings by the County.

(c) Unbalanced proposals in which the prices for items are not in proportion to prices for other items.

(d) Failure to submit a unit price for each item of work listed in the proposal.

(e) Unsatisfactory performance record as shown by past work for the County, judged from the standpoint of workmanship and progress.

(f) Contractor's uncompleted workload, which, in the judgment of the County, might hinder or prevent the prompt completion of work covered by these contract documents.

(g) Lack of competency as revealed by financial statement or experience questionnaire, which may be required.

2.11 Competency of Bidders:

The bidder, if a corporation, shall show the name of the state in which the corporation is chartered.

Each Bidder, upon request, shall furnish the County with satisfactory evidence of competency to perform the work contemplated. The Bidder, upon request, shall submit to the County a financial statement prepared by a public accountant attesting to the overall financial state of the Bidder.

Before an award is made, the Bidder shall, at the request of the County, be required to file a statement of inventory of all equipment available to perform the work contemplated. This statement shall include an assessment of the condition and operational status of each piece of equipment. This statement shall also include an outline stipulating how the work will be conducted.

Before an award is made, the Bidder shall, at the request of the County, be required to furnish a statement showing the value of all uncompleted contract work for which the Bidder is committed. For complex projects, the County reserves the right to require a construction schedule showing major tasks to be completed and duration of the various activities.

SECTION 3. AWARD AND EXECUTION OF CONTRACTS

3.01 Consideration of Proposals:

The unit price proposals received shall be compared on the basis of the summation of the products of the items of work listed and the unit prices offered. In case of a discrepancy between the gross sum shown in the proposal and that obtained by the summation of the products of the quantities of work and the unit prices, the unit prices shall govern, and any errors found in said products shall be corrected by the County. This corrected gross sum shall be the amount used to evaluate the proposal.

The County reserves the absolute right to reject any or all proposals, to advertise for new proposals, or to proceed to do the work otherwise, if, in the judgment of the County, the best interest of the County will be promoted thereby.

3.02 Award of Contract:

Except in cases where the County exercises the right reserved to reject any or all proposals, the contract will be awarded by the County, as soon as practicable after the opening of the bids, to the Bidder who has submitted the lowest, responsive and responsible bid.

If a contract is not awarded within 120 days of the opening of proposals, a Bidder may withdraw bids upon written notification to the County.

3.03 Return of Proposal Guaranty:

The proposal guarantees of all except the two lowest responsible Bidders shall be returned promptly after the proposals have been checked, tabulated, and the relation of the proposals established. Proposal

guarantees of the two lowest responsible Bidders will be returned as soon as the contract and bond of the successful Bidder have been properly executed and approved.

3.04 Requirement of Contract Bond:

The successful Bidder, at the time of the execution of the Contract, shall deposit with the County a surety bond for the full amount of the contract. The form of bond and the surety shall be acceptable to the County.

3.05 Execution of Contract:

The Contract, executed by the Bidder, and the bond, executed by the principal and the sureties, shall be presented to the County within 14 days after the date of written notification of the award of the Contract.

3.06 Failure to Execute Contract:

Failure on the part of the successful Bidder to execute a contract and an acceptable bond, as provided herein, within 14 days from the date of notice of the award of the Contract, shall be considered as just cause for annulment of the award and forfeiture of the proposal guaranty to the County. This forfeiture of proposal guaranty shall not be considered a penalty, but, rather, as payment of liquidated damages sustained as a result of such failure.

3.07 Government Funding Clause:

This Contract is subject to annual appropriations of funds by the County. In the event the County does not appropriate funds for any fiscal period, this Contract may be terminated. In the event of such termination, Contractor shall be entitled to receive just and equitable compensation for any satisfactory work performed as of the termination date. Any retainage being held or payments due the Contractor will be paid to the Contractor within sixty (60) days of termination.

SECTION 4. SCOPE OF THE WORK

4.01 Intent of the Plans and Specifications:

The intent of the plans and specifications is to define the complete works contemplated by the County, which are to be undertaken by the Contractor in full compliance with the contract.

The Contractor shall perform all specified construction and such additional, extra, and incidental construction as may be necessary to complete the work to the finished lines, grades, cross-section and descriptions in a substantial and acceptable manner. The Contractor shall furnish all required materials, equipment, tools, labor and incidentals, unless otherwise provided in the contract, and shall include the cost of these items in the bid.

Unless otherwise specified in the plans, specifications or special provisions, all applicable site, road and bridgework will be performed in accordance with the latest edition of the Tennessee Department of Transportation Standard Specifications for Road and Bridge Construction.

4.02 Special Work:

Should any construction or requirements not covered by the specifications be anticipated on any proposed work, special provisions for the same shall be prepared and included in the proposal form. These special provisions shall be considered as part of specifications, the same as though fully contained therein.

4.03 Alterations, Cancellations, Extensions and Deductions:

The County reserves the right to alter the plans, increase or decrease the improvement, add such incidental work as may be necessary, and increase or decrease the quantities of work to be performed in accordance with such changes, including, in the case of Unit Price contracts, the deduction or cancellation of any one or more of the unit price items. Such changes shall not be considered as a waiver of any conditions of the contract nor to invalidate any of the provisions thereof. If an increase in cost and/or time is necessary, it will be agreed upon prior to beginning any work on the change except when the project will be unduly delayed. In such case, the work will be started on a force account until final agreement is reached and confirmed in writing.

In Lump Sum contracts, a negotiated supplemental agreement between the Contractor and the County shall be required for any change increasing or decreasing contract price and/or time. The negotiations will be based on a proposal submitted by the Contractor to the Engineer detailing the elements that require contract modification in cost and/or time.

In Unit Price contracts, a written supplemental agreement between the Contractor and the County shall be required for each individual change which involves a net increase or a net decrease in the amount of the contract of more than 25 per cent of the original total contract price. A series of separate changes amounting to more than 25 percent of the original total contract price over the duration of the contract are not subject to this requirement.

Should such changes in the plans result in an increase or decrease in the quantities of the work to be performed, the Contractor shall accept payment as follows:

(1) All work that appears in the contract as specific items accompanied by unit prices shall, except as provided in Paragraph (2) below, be paid for at the contract unit prices. No allowance shall be made for delays or decreases of anticipated profits.

(2) All such work not appearing in the contract under specific unit prices shall be designated as extra work and paid for as specified in Section 9, Measurement and Payment. This shall include work, which involves a substantial change in the location or in the nature of the design or in the type of construction which materially increases or decreases the cost of the work and which is not included in the prices bid for other items in the contract.

(3) In cases where the total value of the work involved in the changes requires a supplementary agreement and the nature and scope of such work is such to require working methods or equipment at variance with and more costly than those required for the original quantities as shown on the plans and stated in the proposal, the Contractor may ask for an adjustment in unit prices which may be made by a negotiated agreement between the Contractor and the Engineer. No adjustment of prices shall be approved by the County without submittal of a cost/time proposal from the Contractor satisfactory to the Engineer.

If directed by the Engineer, the Contractor's cost proposal will be broken down into direct and indirect labor, overhead and profit, material costs, and equipment rental or ownership costs and other such factors as may be necessary to properly evaluate any cost proposal.

Once a supplemental agreement is agreed upon, it will be confirmed in writing and forwarded with a "Notice to Proceed" for the changed work. If an adjusted price cannot be thus agreed upon, the work may, by agreement between the Contractor and the Engineer, be done as extra work on a force account basis as provided in Section 9.07 (3), Payment for Extra Work.

Claims for extra work that have not been authorized in writing by the County shall be rejected.

4.04 Maintenance of Detours:

If and when detours are authorized, the Contractor shall, at the direction of the Engineer, set up, mark, and maintain suitable detour signs. The responsibility for maintenance of detours, including all traffic control devices, shall specifically be the responsibility of the Contractor, at no additional compensation, except as otherwise provided for in the special provisions or as noted on the plans. All road signs, pavement markings or other traffic control devices shall be in conformance with the latest edition of the Manual on Uniform Traffic Control Devices.

4.05 Removal and Disposal of Structures and Obstructions:

Existing structures, such as manholes, sewer pipes, culverts, fences and buildings, which are not to remain in place, shall be removed by the Contractor in accordance with the special provisions. Salvageable material shall be transported or stored as directed by the Engineer.

4.06 Final Cleanup and General Surface Restoration:

Before final acceptance of the work to be done under this contract, the Contractor shall restore the job site to its original or better condition and shall repair or replace all private and public property damaged, moved or otherwise displaced in the construction of the improvement. No additional compensation shall be allowed for this work.

4.07 Closing of Traveled Ways:

No public or private thoroughfare including, but not limited to, entrances, exits, pedestrian walkways, or other established routes of transportation shall be closed, diverted, or otherwise restricted without prior written authorization of the Engineer.

If and when authorized by the Engineer, the closing of roads, driveways, sidewalks and parking areas required for the construction of the improvement including the placement and maintenance of any barricades or traffic control devices shall be the sole responsibility of the Contractor as noted in Paragraph 4.04 Maintenance of Detours, above, and in Paragraph 7, Barricades and Warning Signs, at no additional compensation.

When authorized by the Engineer, the Contractor shall, within no less than seven (7) days prior to the closure of the road, notify the following individuals or agencies completely describing the affected roads and the approximate duration of the construction. These parties include, but are not limited to:

1). County Sheriffs Department
2). County Fire Department
3). Ambulance service(s)
4). County School Superintendent
5). United States Postal Service
6). County Road Department
7). Civil Defense/Emergency Management Agency
8). Shelby County Public Affairs Office

4.08 Schedule of Prices-Lump Sum Contracts:

The Contractor shall submit a Schedule of Prices to the Engineer prior to the first request for payment. The Schedule of Prices shall breakdown the contract to major line item elements for the purposes of estimating progress payments. Each line item will show, with as much accuracy and balance as possible, the quantity, unit, and unit price. The Schedule of Prices will not be used as a firm basis in estimating future additive and deductive supplemental agreements.

SECTION 5. CONTROL OF WORK

5.01 Contractor to Supervise the Work:

The Contractor shall have control and be in charge of the work under this contract. The Contractor shall have and retain full and complete responsibility for construction means, methods, techniques, sequences or procedures; and for all safety precautions and programs for all employees, agents, servants or representatives, including all sub-contractors and for the public in general. The Contractor specifically agrees to assume these responsibilities. The Engineer shall not be responsible for any of the above procedures.

5.02 Authority of the Engineer:

The Engineer shall be the interpreter of the requirements of the contract and associated documents and shall be the sole judge of the performance and acceptability of the Contractor's work. The Engineer shall have the right to reject defective work so that the completed project will conform to the requirements of the contract. The Engineer shall also be the final authority in deciding any and all disputes involving quality and acceptability of materials furnished, interpretation of the plans, specifications and special provisions, acceptable fulfillment of the contract, compensation, disputes and mutual rights of the Contractors under the contract.

In case of failure on the part of the Contractor to execute work ordered by the Engineer, the Engineer may, at the expiration of a period of 48 hours after delivering notice in writing to the Contractor, proceed to execute such work as may be deemed necessary, and the cost thereof shall be deducted from compensation due or which may become due the Contractor under the contract.

5.03 Contractor's Representative:

The Contractor shall designate a management representative to be on the job site whenever construction work is being performed. This representative shall have the authority to make any and all decisions pertaining to the completion of all contracted responsibilities and shall be responsible for the supervision of all Contractor's and sub-contractor's work crews.

The Contractor's management representative shall also have the authority to deviate from normal procedures as needed, satisfy complaints in a timely manner, and respond to any unforeseen circumstances which would require direct management decisions. If a situation arises that would require decisions that the Contractor's management representative cannot make, then all work shall cease until the Contractor designates a new management representative capable of making the decisions necessary to satisfactorily complete the work. This new management representative will then assume all duties and responsibilities of the previous representative.

5.04 Plans and Shop Drawings:

Five (5) copies of the plans and two (2) copies of the specifications and special provisions will be furnished to the Contractor by the County.

The Contractor shall submit to the Engineer, for approval, four (4) copies of each shop, working, or layout drawing pertaining to the construction of the work as required in the contract documents. All such documents shall be stamped and signed by a Licensed Professional Engineer registered by the State of Tennessee. Any work done or materials ordered prior to the approval of such plans or drawings shall be at the Contractor's risk.

The Engineer will approve or reject said shop drawings or similar documents and return two (2) annotated copies to the contractor. Engineer's approval of the shop drawings or similar documents shall in no way relieve the Contractor from responsibility for errors, omissions, or other irregularities in said shop drawings or documents. It shall specifically be the responsibility of the Contractor to verify all dimensions, coordinate with job site conditions, review and approve all information which relates to the process of fabrication or techniques of construction, and be responsible for the coordination of the work of all trades.

The cost of furnishing such drawings shall be incidental to the contract and no additional compensation shall be allowed the Contractor for any delays resulting therefrom.

5.05 Conformity With Plans:

The finished work shall conform to the plans, with the exception of such deviations as may be authorized by the Engineer.

5.06 Coordination of Specifications, Plans, Proposal and Special Provisions:

The specifications, the accompanying plans, the proposal, the special provisions, the general requirements and conditions, easement agreements, permit requirements and all supplementary documents are intended to describe a complete work and are essential parts of the contract.

A requirement occurring in any of them shall be binding. In case of discrepancy, dimensions shown in figures shall govern over scaled dimensions, specifications shall govern over plans, special provisions shall govern over both specifications and plans, and quantities shown on the plans shall govern over those shown in the proposal. Conditions of easement agreements and permit requirements shall govern over all other documents providing their requirements exceed the requirements of said other documents. The Contractor shall take no advantage of any apparent error or omission in the plans or specifications, and the Engineer shall be permitted and shall have the final authority to make such corrections and interpretations as deemed necessary for the fulfillment of the intent of the plans and specifications.

5.07 Cooperation by Contractor:

The Contractor shall notify the Engineer, in writing, a minimum of two working days in advance, of intention to begin work on the proposed improvement.

The Contractor will be furnished five (5) copies of the plans, and two (2) copies of the specifications and special provisions at no cost to the contractor. The Contractor shall keep one legible copy (field copy) of each available on the work site at all times during its prosecution. The Contractor shall make available to the Engineer or his representative the field copy of the plans and/or specifications for review. The Contractor shall be responsible for supplying sub-contractors, materials suppliers and others with copies of plans and specifications as needed.

The Contractor shall give attention to the work sufficient to produce optimum progress thereof and shall fully cooperate with representatives of the County. There shall be on the work site at all times a competent English speaking representative authorized to receive orders and act for the Contractor, as designated in Section 5.03, Contractor's Representative, above.

5.08 Cooperation with Utilities:

The Contractor shall notify all utility companies, public and private, in advance of commencing work. The responsibility for moving water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cable ways, signals and all other utility appurtenances which are located within the limits of the proposed construction shall be assumed by the Contractor at no additional compensation, except as otherwise provided for in the special provisions or as noted on the plans.

It is understood and agreed that the Contractor has considered all of the permanent and temporary utility appurtenances in their present or relocated positions and that no additional compensation shall be allowed for any delays, inconvenience, or damage sustained due to any interference from the said utility appurtenances or the operation of moving them either by the utility companies or by said Contractor, or on account of any special construction methods required in prosecuting the work due to the existence of said appurtenances either in their present or relocated positions. The Contractor shall be liable for any and all damage done to utilities by his forces.

Where water lines and sewer lines conflict, water lines shall be placed over sewer lines unless otherwise directed by the Engineer and shall conform to requirements of the State of Tennessee, Department of Public Health, Division of Sanitary Engineering and the Shelby County Health Department.

5.09 Encroachment on Rights-of-Way and Easements:

Except where otherwise specified in the plans, specifications or special provisions, the Contractor shall be responsible for following any special instructions or requirements to work within the rights-of-way or easements of any public or private utilities, railroad companies, gas transmission companies, or any other public or privately owned entities where work may occur. The Contractor shall also be responsible for fully complying with the established procedures of the above applicable entities including, but not limited

to, obtaining permits, notification of when work is to be performed, providing any required insurance coverage, providing any required special construction procedures, and payment of any fees required by the above mentioned entities. No additional compensation shall be allowed for the expense involved in following the above instructions and any and all costs shall be included with the contract unit prices. The Contractor shall not be responsible for obtaining rights-of-way or easements for the County in order to perform the work described in the contract documents.

5.10 Construction Permits:

All construction permits such as grading, road cuts and other necessary and related permits, shall be obtained by the Contractor from the County Engineering Department prior to commencing the pertinent phase of the work.

5.11 Authority and Duties of Project Manager:

The Project Manager has been delegated authority by the County Engineer to act as the "Engineer" (see Section 5.02). This authority has been limited only as to final resolution of disputes. The Project Manager has full authority to permit changes in cost and time. Any cost or time increase authorized by anyone other than the Project Manager or the County Engineer will be disallowed. Any such increase will be authorized in writing except in unusual cases in which undue delay or cost may be occasioned in which a verbal "Notice to Proceed" will be issued followed as soon as possible by written confirmation.

5.12 Authority and Duties of Inspector:

Inspectors employed or contracted by the County shall be authorized to inspect work and materials, and to perform such other duties as may be designated by the Engineer. The inspector shall have the authority to accept or reject any and all work to insure proper compliance to the plans and specifications except matters involving changes in cost or time will be referred to the Project Manager.

5.13 Removal of Defective and Unauthorized Work:

All work that has been rejected or condemned shall be remedied or removed and replaced in a manner approved by the Engineer, at the Contractor's expense. Upon failure on the part of the Contractor to comply promptly with any order of the Engineer made under the provisions of this article, the Engineer will, after giving notice to the Contractor, have the authority to cause defective work to be remedied, or removed and replaced, or to cause unauthorized work to be removed and to deduct the cost thereof from any compensation due, or to become due, the Contractor.

Work done without lines and grades being given, or beyond the lines shown on the plans, or any extra work done without authority, shall be considered as unauthorized and at the expense of the Contractor, and shall not be measured or paid for. Work so done may be ordered removed or replaced at the Contractor's expense.

5.14 Orderly Work Site Conditions:

The Contractor shall, at all times, keep the work site free from waste material and rubbish, which may accumulate during the construction process. All stored materials and equipment shall be placed so as to cause a minimum of inconvenience to other contractors and/or the public.

5.15 Final Inspection:

The Engineer, or his representative(s), shall make final inspection of all work included in the contract, or any portion thereof, as soon as practicable after notification by the Contractor that the work is complete and ready for acceptance. If the work is not acceptable to the Engineer at the time of such inspection, the Contractor shall be informed in writing as to the particular defects to be remedied before final acceptance can be made.

SECTION 6. CONTROL OF MATERIALS AND EQUIPMENT

6.01 Quality of Materials:

It is the specific intent of this contract to insure that only materials and/or equipment which conform to the requirements of the plans, specifications, and special provisions be used in all aspects of the construction process. All work shall be performed in such a matter as to produce a completed project that is workmanlike and acceptable in every detail. Copies of all tests shall be furnished to the Engineer.

6.02 Defective Materials or Equipment:

All materials or equipment not conforming to the plans, specifications, and special provisions shall be considered defective and shall be removed from the work and, if in place, they shall be removed at the Contractor's expense and replaced with acceptable materials or equipment meeting the said specifications. Any and all work done to correct defective construction shall proceed only after the corrective procedures have been approved by the Engineer. Upon failure of the Contractor to comply with any order of the Engineer pursuant to these provisions, the Engineer shall have authority to remove and replace defective materials and/or equipment and to deduct the cost of the removal and replacement from any monies due or to become due the Contractor.

6.03 Submittal and Testing Plan:

The Contractor shall carefully review all contract provisions, plans and specifications and prepare, for submittal at the pre-construction conference, a list of all submittals required by this contract. Additionally, a separate list shall be provided of all testing to be performed by the Contractor or his laboratory.

6.04 Sampling, Testing, Cited Specifications:

When requested by the County, the Contractor shall furnish a completed written statement of the origin, composition, and manufacture of any or all materials (manufactured or produced), which are to be incorporated in the work.

Unless otherwise provided, all materials shall be sampled and tested in accordance with the latest published standard methods of the American Society for Testing Materials (A.S.T.M) and/or the American Association of State Highway and Transportation Officials (AASHTO) and revisions thereof, in effect on the date of the invitation of bids, where such standard methods exist. In case there are no A.S.T.M. or AASHTO standards that apply, applicable standard methods of other recognized standardizing agencies shall be used as directed by the Engineer. The Contractor shall furnish an affidavit from the manufacturer or material supplier that the materials meet the specified requirements and tests.

The Engineer or his authorized representative shall have full authority to decide the sampling or testing methods to be used, and shall have the power to reject any and all materials or equipment which fails to meet the terms of the specifications. Such materials or equipment shall be removed from the work hereunder at the Contractor's expense. All materials or equipment that develop defects during the storage or construction period shall be removed and replaced, notwithstanding that they may have previously passed prescribed inspections or tests.

6.05 Inspection and Testing of Materials:

Unless otherwise provided, all testing shall be made by an independent testing laboratory designated or approved by the Engineer. The Contractor shall pay for the costs of tests, unless otherwise provided in the Special Provisions and/or in the Specifications. The Contractor shall furnish the materials to be tested, incidental materials and labor required at the site in connection with the tests and the transportation of materials to be tested to the laboratory. Any and all costs involved in the inspection and testing of materials shall be included in the unit prices as set forth in the contract and no additional compensation shall be allowed.

6.06 Stored Materials:

If it is necessary to store materials, they shall be protected in such a manner as to insure the preservation of their quality and suitability for the work. All stored materials shall be inspected at the time of use in the work, even though they may have been inspected and approved before being placed in storage. The Contractor shall be responsible for the loss, theft, or damage of all stored material on the job site even if partial payment has been made for said stored materials.

6.07 Warranty and Guarantees:

All work performed under this contract shall be constructed in accordance with the plans, specifications, general requirements and conditions, special provisions, and/or standard construction codes, and shall be guaranteed against defective material and workmanship by the Contractor and the Surety for a period of one year from the date of final acceptance.

The Contractor and the Surety shall guarantee that the type, quality, design, and performance of all items and equipment to be incorporated into the completed project meet all requirements of the contract documents and any other provisions provided by the Engineer.

The Contractor shall require of all equipment and material manufacturers and suppliers a written guarantee that all equipment and material shall function satisfactorily as an integral part of the completed project in accordance with the contract documents and any and all other provisions as supplied by the Engineer. This guarantee shall insure that the manufacturer or supplier will replace or repair, to the satisfaction of the Engineer, any and all defects in equipment and materials, which may develop within a period of one year from the date of final acceptance. This guarantee shall be submitted to the Engineer prior to incorporation of the equipment, material or supplies into the project.

This guarantee shall in no way relieve the Contractor of any responsibility for providing for satisfactory completion of the project in accordance with the contract documents and any other provisions as supplied by the Engineer. Enforcement of this guarantee shall be the responsibility of the Contractor.

SECTION 7. LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

7.01 Laws to be Observed:

The Contractor shall, at all times, observe and comply with all Federal and State laws, local laws, ordinances, and regulations which in any manner affect the conduct of the work, and all such orders or decrees as exist at the present and which may be enacted later, of legislative bodies or tribunals having legal jurisdiction or authority over the work. No plea of misunderstanding or ignorance thereof shall be considered. The Contractor shall indemnify and save harmless the County and all of its officers, agents, employees, and servants against any claims or liability arising from or based on the violation of such law, ordinance, regulation, order, or decrees whether by said Contractor, its' employees or its sub-contractors. No additional compensation shall be allowed for increased costs due to enacting of laws, ordinances, or regulations during the time of the contract.

7.02 Workmen's Compensation Insurance:

Prior to the approval of the contract by the County, the Contractor shall furnish to the County, certificates of insurance covering Workmen's Compensation or satisfactory evidence that this liability is otherwise satisfactorily addressed in accordance with the Tennessee Code Annotated, 50-6-101 et. seq., State of Tennessee.

Such insurance or other means of protection as herein provided shall remain in force until all work to be performed under the terms of the contract has been completed and accepted in accordance with the contract. It is hereby understood and agreed that the maintenance of such insurance or other protection, until acceptance of the work by the County, is a part of the contract. Failure to maintain such insurance, cancellation by the Industrial Commission of its approval of such other means of protection as might have been elected, or any other act which results in lack of protection under said "Workmen's Compensation Act" may be considered as a breach of the Contract.

7.03 Patented Devices, Material and Processes:

The Contractor shall provide suitable legal agreements with patentees or owners of any device, material, or process covered by letter, patent, or copyright for the use of such device, material or process. The agreement shall guarantee to hold harmless the County from and against all claims for infringement. Any and all costs for registration and certification to use protected devices, materials, or processes shall be included in the appropriate unit prices for the work.

It shall be the duty of the Contractor, if so demanded by the County, to furnish said County with a copy of the legal agreement with the patentee or owner, and, if such copy is not furnished when demanded, the County may, if it so elects, withhold any and all payments to the said Contractor until said legal agreement is furnished. If a suitable legal agreement with the patentee or owner is not made as required herein, the Contractor and surety shall indemnify and save harmless the County from any and all claims for infringement by reason of the use of such patented design, device, materials, or process, or any trademark or copyright in connection with the work agreed to be performed under the contract, and shall indemnify the County for any cost, expense, and damages which it may be obliged to pay by reason of any such infringement at any time during the prosecution or after the completion of the work.

7.04 Permits and Licenses:

The Contractor shall procure all required permits and licenses, pay all charges, taxes and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work. No additional compensation or reimbursements shall be paid to the Contractor for procurement of such licenses, charges, taxes, or fees.

7.05 Sanitary Provisions:

The Contractor shall observe all rules and regulations of the State or local Health Departments and shall take precautions to avoid creating unsanitary conditions.

7.06 Barricades and Warning Signs:

It shall be the sole responsibility of the Contractor to provide, erect and maintain all traffic control devices used on road or street construction or maintenance work and to maintain the project in such a manner as to adequately provide for the safety of the traveling public at all times. Any detour or interruption of normal traffic patterns or flow shall be approved in advance by the Engineer or the County Traffic Engineer acting for the Engineer.

All such traffic control devices shall conform to the applicable specifications set forth in the latest edition of the Manual on Uniform Traffic Control Devices and revisions to date. Prior to placing any such devices, the Contractor shall prepare and submit to the Engineer a traffic control plan, unless such a plan has been prepared as a part of the plans and specifications.

Traffic control devices shall be installed by the Contractor for all maintenance operations, and shall be properly maintained and/or operated during times as such special conditions require.

Traffic control devices shall remain in place only as long as needed and shall be immediately removed by the Contractor thereafter.

During stage operations, there shall be in place only those devices that apply to the conditions present. Signs not applicable to existing conditions shall be removed, covered, or turned so as not to be readable by oncoming traffic.

Barricade and sign supports shall be constructed and erected in a manner acceptable to the Engineer.

Weeds, shrubbery, construction materials or equipment, spoil, etc. shall not be allowed to obscure any traffic control device.

7.07 Use of Fire Hydrants:

If the Contractor desires to use water from fire hydrants, application shall be made by the Contractor to the proper authorities and shall conform to the municipal ordinances, rules or regulations concerning their use. Metering devices shall be used unless specifically exempted by the appropriate authorities.

Access to fire hydrants shall be maintained at all times for the use of the Fire Department. No material or other obstruction shall be placed closer to a fire hydrant than permitted by municipal ordinances, rules or regulations, or within 5 feet of a fire hydrant, in the absence of such ordinances, rules or regulations. Under no circumstances shall metering devices or other connectors remain affixed to fire hydrants except when the hydrant is actually being used.

7.08 Protection and Restoration of Property:

If public, corporate or private property interferes with the work, the Contractor shall notify, in writing, the owners of such property, advising them of the nature of the interference and shall arrange to cooperate with them for the protection or disposition of such property. The Contractor shall furnish the Engineer with copies of such notifications and with copies of any agreements between the Contractor and the property owners concerning such protection or disposition.

The Contractor shall be responsible for and shall take all necessary precautions for the protection of corporate or private property, including but not limited to walls and foundations of buildings, vaults, underground structures of public utilities, underground drainage and fences contiguous to the work, of which the contract does not provide for removal. The Contractor shall protect and carefully preserve all official survey monuments, property marks, section markers, and Geological Survey Monuments, and other similar monuments until the owner or an authorized surveyor or agent has witnessed or otherwise referenced their location or relocation. The Contractor shall take reasonable precautions to avoid disturbing any archaeological and other historic remains encountered during construction. The Contractor shall notify the Engineer of the presence of any such survey or property monuments or archaeological and historic remains, as soon as they are discovered.

The Contractor shall be responsible for any and all damage to public and private property, which may result from the following causes:

1) Neglect or misconduct
2) Omission of required special procedures
3) Failure to execute work properly
4) Failure to execute required work
5) Defective workmanship
6) Use of unsatisfactory materials
7) Any other action, whether willful or not, which results in damage.

The Contractor shall be required to repair all damage and to replace items deemed by the Engineer not able to be repaired. Upon failure of the Contractor to repair or replace damaged property within a period of 48 hours of notification by the County, the Engineer shall have the option of otherwise restoring the damaged property as necessary, and the cost thereof shall be deducted from any compensation due, or which may become due, the Contractor under the terms of the contract. The Contractor's responsibility shall continue until the Engineer's final acceptance of the work.

The Contractor shall remove all mailboxes within the limits of construction, which interfere with construction operations and shall erect them at temporary locations, maintaining suitable access for the delivery of mail.

As soon as construction operations permit, the Contractor shall set the mailboxes at their permanent location. This work shall be performed as directed by the Engineer. Damaged mailboxes, posts, or other associated items shall be replaced at the Contractor's expense.

The cost of all materials required and all labor necessary to comply with the above provisions shall not be paid for separately, but shall be considered as incidental to the contract.

7.09 Responsibility for Damage Claims:

The Contractor shall indemnify, defend and hold harmless Shelby County Government including, but not limited to, the Shelby County Division of Public Works, the Engineering Department, and all officers, agents, servants or employees of Shelby County Government, from all suits, actions, or claims of any character brought because of any injuries or damages received or sustained by any person, persons or property on account of the operations of the said Contractor, its employees, agents or anyone directly or indirectly employed by it or its Sub-contractors; or on account of, or in consequence of, any neglect in safeguarding the work, or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered for any infringements of patent, trademark or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act" or any other law, ordinance, order or decree. It is agreed that the Contractor shall be responsible for these provisions regardless of whether or not the loss for which indemnity is sought is caused in part by the County. While not limiting the amount recoverable, an amount of money due said Contractor, under and by virtue of the contract as shall be considered necessary by the County for such purposes, may be retained until such suit(s), action(s), claim(s) for injuries or damages shall have been settled and suitable evidence to that effect furnished to the County.

7.10 Contractors Insurance - Amounts

The Contractor shall carry Commercial General Liability Insurance with limits of not less than $1,000,000 per occurrence, $2,000,000 general aggregate premises/operations; $2,000,000 aggregate products/completed operations; $1,000,000 personal and advertising injury limit; $500,000 fire damage limit (any one fire), and $5,000 medical expenses limit (any one person). Broad Form Endorsement is to apply. Coverage for explosion, collapse and underground hazards is to be included.

The Contractor shall carry, during the life of this contract, Commercial Automobile Liability Insurance in amounts not less than $1,000,000 combined single limit on any motor vehicles engaged in operations within the terms of this contract.

The Contractor shall carry Workers' Compensation insurance as required by statute, including $500,000 employer's liability.

The Contractor shall furnish to the County satisfactory proof of compliance with the insurance requirements, by insurers acceptable to the County, before commencing any work. Such proof shall consist of Certificates of Insurance executed by the representative insurance companies and filed with the County. Said Certificates shall contain a clause to the effect that, for the duration of the contract, the insurance coverages shall be cancelled or materially changed only after written notification thirty (30) days in advance to the County. In the event the County Engineer determines that increased limits or additional coverage is necessary for certain projects, the Contractor will be notified in writing by the County Engineer allowing for compliance with the request within fourteen (14) days.

The Contractor's liability insurance shall specifically cover, among other things, claims arising out of installation of barricades, signs, other traffic control devices, excavations, stored materials and equipment, and all other similar facilities in connection with this contract, with Shelby County shown as an additional insured.

The Contractor shall require Sub-contractors, if any, not protected under the Contractor's insurance policies, to take out and maintain insurance of the same nature and amounts as required of the Contractor. The Contractor shall provide to the County proof of insurance of all sub-contractors retained to perform work in conjunction with this contract.

7.11 Personal Liability of Public Officials:

In carrying out any of the provisions of this contract or in exercising any granted power or authority thereby, the Contractor waives any claims, and agrees that there shall be no personal liability upon the Director of Public Works, the Engineer or any of their authorized representatives, it being understood that in such matters the above mentioned act as agents and representatives of the County.

7.12 Waiver of Legal Rights:

The County shall not be precluded or estopped by a measurement, estimate, or certificate made either before or after the completion and acceptance of the work and payment therefore, from showing the true amount and character of the work performed and materials furnished by the Contractor, or from showing that any such measurement, estimate or certificate is untrue or incorrectly made, or that the work or materials do not conform in fact to the contract. The County shall not be precluded or estopped, notwithstanding any such measurement, estimate or certificate and payment in accordance therewith, from recovering from the Contractor and his sureties such damages as it may sustain by reason of the Contractor's failure to comply with the terms of the contract. Neither the acceptance by the County or any representative of the County, nor any extension of time, nor any possession taken by the County, shall operate as a waiver of any portion of the contract, any power herein reserved, or any right to damages herein provided. A waiver of any breach of the contract shall not be held to be a waiver of any other or subsequent breach.

7.13 Right-of-Way:

The County will be responsible for securing all necessary rights-of-way in advance of construction. The Contractor waives any and all claims for interference, delay or damage upon acceptance of an order to proceed with the construction with the knowledge that the rights-of-way are still encumbered.

7.14 Load Restrictions on Project Under Construction:

The operation of equipment of such weight or so loaded as to cause damage to structures or the roadway or to any other type of construction shall not be permitted. Hauling of materials over the base course or surface under construction shall be limited as directed by the Engineer. No loads shall be permitted on a concrete pavement, base or structure before the expiration of the curing period. The Contractor shall be responsible for all damages done by any equipment including, but not limited to, that of the Contractor, sub-contractors, and materials suppliers.

SECTION 8. PROSECUTION AND PROGRESS

8.01 Subletting or Assignment of Contract:

No less than fifty percent (50%) of the total contract cost of the work shall be performed by the Contractor's own organization, thus limiting the total allowable amount of subletting to no more than fifty percent (50%) of the total contract cost of the work to be performed. All transactions, negotiations, and correspondence of the County shall be with the Contractor. The County will refer all matters regarding payments, changes, scheduling, work progress, etc. of sub-contractors to the Contractor. Sub-contractors shall be recognized only in the capacity of employees or work crews of the Contractor and shall be subject to the same requirements as to character and competence. The Contractor shall not assign, transfer, convey, sell, or otherwise dispose of the whole or any part of the contract to any person, firm, or corporation without the written consent of the County. Subletting any part of the work to be done under the contract shall not, under any circumstances, relieve the Contractor of any liabilities or obligations.

8.02 Progress Schedule:

During the pre-construction conference, the Contractor shall submit to the Engineer, in a form acceptable to the Engineer, a satisfactory progress schedule, which shall show the proposed sequence of work, and how the Contractor proposes to complete the various items of work within the number of calendar days set up in the contract. Monthly updates of this schedule will be required if deviations have occurred. This schedule shall be used as a basis of establishing major construction operations, and for checking the progress of the work.

8.03 Prosecution of the Work:

The Contractor shall prosecute in such a manner and with such a supply of materials, equipment, and labor as is considered necessary to insure completion of the work in accordance with the progress schedule.

8.04 Limitations of Operations:

The Contractor shall conduct all work so as to create a minimum amount of inconvenience to vehicular and pedestrian traffic. At any time when, in the judgment of the Engineer, the Contractor has obstructed or closed a road or is carrying on operations on a greater portion of a road than is necessary for the proper prosecution of the work, the Engineer may require the Contractor to finish the section on which work is in progress before work is started on an additional section

Any closure of a roadway or detour shall be requested in writing and expressly approved by the County Engineer before any action is taken to divert traffic.

8.05 Character of Workmen:

The Contractor shall be responsible for efficient completion of the work and shall be responsible for control and discipline of all employees. The Contractor shall employ only competent and efficient laborers, mechanics, or artisans. Whenever, in the opinion of the Engineer, any employee is careless, incompetent, obstructs the progress of the work, acts contrary to instruction, or acts improperly, the Contractor shall, upon request of the Engineer, remove said employee from the work and shall not permit the employee to return to the project, except with the written consent of the Engineer.

8.06 Completion Dates:

The Contract Completion Date (CCD) shall be calculated on a calendar day basis, which shall consist of the number of calendar days stated in the Contract beginning with the effective date of the Engineer's order to commence work, including all Sundays, holidays and non-work days but not including the day notice is given. All calendar days elapsing between the effective dates of any orders of the Engineer to suspend work and to resume work for suspensions not the fault of the Contractor shall be excluded from the contract time.

The contract completion time shall be a fixed calendar date and it shall be the date of final acceptance of all work as specified under the contract including any and all additions, changes, and/or deletions as directed by the Engineer.

The number of days for performance allowed in the contract as awarded is based on the original of materials as defined in Sub-Section 2.02, "Interpretation of Estimate of Quantities". If satisfactory fulfillment of the contract requires performance of work in greater quantities than those set forth in the proposal, the contract time allowed for performance shall be increased on a basis commensurate with the amount and difficulty of the added work as determined by the Engineer.

If the Contractor finds it impossible for reasons beyond his control to complete the work within the contract time as specified or as extended in accordance with the provisions of this sub-section, he may, at any time prior to the expiration of the contract time specified or as extended, make a written request to the Engineer for an extension of time setting forth therein the reasons for the request. The Contractor's plea that insufficient time was specified shall not be a valid reason for extension of time. It is expressly understood and agreed that the said Contract time described herein is a reasonable time for the completion of the work.

Extension of time will not be granted for delays caused by unsuitable weather or ground condition unless it can be shown that the weather for the construction period was unusually harsh-that the number of inclement days was above annual averages for the period. The burden of proof is on the Contractor to obtain National Weather Service or other data to support his plea.

If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Engineer may extend the time for completion by a properly executed Supplemental Agreement in such amount as the conditions justify. The extended time for completion shall be in full force and effect the same as though it were the original time for completion.

The daily time charge will cease when the Engineer has duly made final acceptance, as prescribed above in Section 5.14, "Final Inspection".

Nothing in this section shall be deemed to authorize the Contractor to incur expense on behalf of the County, or to authorize compensation to the Contractor in excess of the original contract price for the work.

8.07 Liquidated Damages:

Should the Contractor fail to complete the work within the time specified in the contract or within such extended time as may be allowed, the Contractor shall be liable to the County for all costs incurred for engineering and inspection, and such other expenses directly attributed by reason of the Contractor's failure to complete the work within the specified time, not as a penalty but as damages sustained. For each calendar day that any construction shall remain incomplete after the Contract Completion Date, the sum specified in the proposal form or as calculated from the following table, shall be deducted by the Engineer from monies due the Contractor.

Amount of Original Contract Proposal	Amount of Liquidating Damages per Calendar Day
$0 to $25,000	$ 30.00
$25,000 to $50,000	$ 50.00
$50,000 to $100,000	$ 75.00
$100,000 to $200,00	$100.00
over $200,000	$100.00 plus $50.00 for each additional $100,000 or fraction thereof.

8.08 Termination of the Contract:

The County reserves the right to terminate the contract if the Contractor:

(1) Fails to begin construction in accordance with the terms of the order to begin work.

(2) Fails to furnish proper materials, or to utilize proper construction methods and equipment.

(3) Fails to remove and replace portions of the work, which are found to be unsatisfactory.

(4) Discontinues prosecution of the work without the consent of the Engineer, or fails to resume operations at any time the Engineer directs.

(5) Fails to maintain traffic in a safe and efficient manner, or to maintain completed portions of the work effectively.

(6) Fails to maintain a rate of construction progress that, in the opinion of the Engineer, is sufficient to assure completion of the work within the specified time.

(7) Fails, in any degree, to maintain the same financial responsibility on the basis of which the Contractor was prequalified for submitting the proposal for the work and of which award of this contract was made.

(8) Fails or refuses to follow the proper orders of the Engineer.

Under any circumstances, the Engineer will serve written notice of intent to terminate the contract to the Contractor and the surety for reasons that will be set forth therein. If, within fifteen days of delivery of such notice, the surety, or the Contractor and the surety, have not taken sufficient steps to correct the circumstance(s) at fault to the satisfaction of the Engineer, the County may, in its absolute discretion, order the contract terminated.

The County may then appropriate or use any or all stockpiled materials and equipment on the ground or job site as may be suitable in accordance with Section 9.03, "Stockpiled Material and Equipment". The County may, at its' sole discretion, enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said contract in an acceptable manner.

In the event of termination, the Contractor shall be paid for work satisfactorily completed through the effective date of termination. All costs and charges incurred by the County, together with the cost of completing the work under contract, shall be deducted from any monies due or which may become due said Contractor. If such expense exceeds the sum which would have been payable under the contract, the Contractor and the Surety shall be liable and shall pay to the County the amount of such excess.

8.09. General Compliance with Laws

If required, the Contractor certifies that it is qualified or will take steps necessary to qualify to do business in the State of Tennessee and that it will take such action as, from time to time, may be necessary to remain so qualified and it shall obtain, at its expense all licenses, permits, insurance, and governmental approvals, if any, necessary to the performance of its obligations under this Contract.

The Contractor is assumed to be familiar with and agrees that at all times it will observe and comply with all federal, state, and local laws, ordinances, and regulations in any manner affecting the conduct of the work. The preceding shall include, but is not limited to, compliance with all Equal Employment Opportunity laws, the Fair Labor Standards Act, Occupational Safety and Health Administration (OSHA) requirements, and the Americans with Disabilities Act (ADA).

This Contract will be interpreted in accordance with the laws of the State of Tennessee. By execution of this contract the Contractor agrees that all actions, whether sounding in contract or in tort, relating to the validity, construction, interpretation and enforcement of this contract will be instituted and litigated in the courts of the State of Tennessee, located in Shelby County, Tennessee, and in no other. In accordance herewith, the parties to this contract submit to the jurisdiction of the courts of the State of Tennessee located in Shelby County, Tennessee.

8.10 Nondiscrimination

The Contractor hereby agrees, warrants, and assures that no person shall be excluded from participation in, be denied benefits of, or be otherwise subject to discrimination in the performance of this Contract or in the employment practices of the Contractor on the grounds of handicap, age, race, color, religion, sex, national origin or any other classification protected by Federal, Tennessee State Constitutional, or statutory law. The Contractor shall upon request show proof of such non-discrimination, and shall post in conspicuous places available to all employees and applicants notices of non-discrimination.

8.11. Severability

If any provision of this Contract is held to be unlawful, invalid or unenforceable under any present or future laws, such provision shall be fully severable; and this Contract shall then be construed and enforced as if such unlawful, invalid or unenforceable provision had not been a part hereof. The remaining provisions of this Contract shall remain in full force and effect and shall not be affected by such unlawful, invalid or unenforceable provision or by its severance here from. Furthermore, in lieu of such unlawful, invalid, or unenforceable provision, there shall be added automatically as a part of this Contract a provision as similar in terms to such unlawful, invalid or unenforceable provision as may be possible, and be legal, valid and enforceable.

SECTION 9. MEASUREMENT AND PAYMENT

9.01 Payment to Contractor:

The County will pay the Contractor for satisfactory work completed. Such payment will be based upon monthly estimates prepared by the Engineer in accordance with procedures set forth as herein provided.

9.02 Partial Payments:

Payments to the Contractor will be estimated by the Engineer based upon statements consisting of the Inspector's Daily Progress Reports, itemized job delivery or materials tickets, or other documents showing the quantity of work completed or materials supplied. These statements shall be prepared in a format satisfactory to the Engineer. Such estimates shall be approximate only and may not necessarily be based on detailed measurement. Lump sum items shall be estimated in accordance with the percentage of completion of the lump sum item. Following approval by the Engineer, monthly progress payments shall be made to the Contractor in an amount equal to ninety (90%) of the earned amount, said earned amount being defined as the portion of the project work completed in accordance with the contract as determined by the Engineer. Upon satisfactory completion of seventy (70%) percent of the work, the Engineer may, at his discretion, reduce the retainage to five (5%) percent. Progress payments shall not be deemed as final acceptance of the work performed by the Contractor. The retainage shall be retained until completion of the entire work to the satisfaction of the Engineer.

9.03 Stockpiled Material and Equipment:

An estimate may, at the discretion of the County and upon presentation of receipted bills and freight bills, be made for payment of the value of acceptable materials and equipment delivered and suitably stored on the work site and not used at the time of such estimate. The Engineer will determine items eligible for partial payment upon delivery. Payment will be made as a percentage of either the unit price of the item or the invoice price of the material. From the value of such material or equipment estimate, there will be deducted a retainage of up to ten percent (10%) as provided in 9.02, "Partial Payments". Such materials and equipment, when so paid for by the County, shall become the property of the County, and, in case of default on the part of the Contractor, the County may use, or cause to be used, such materials in the construction of the work provided in the contract. The amount thus paid by the County shall be deducted from estimates due the Contractor as the materials or equipment are used in the work.

9.04 Measurement of Quantities:

All work completed under the contract will be measured by the Engineer according to United States Measures. Quantities will be calculated from measurements made in accordance with requirements set forth under the basis of payment for each item.

9.05 Scope of Payment:

The Contractor shall receive and accept the compensation as herein provided in full payment for furnishing all materials, labor, tools, and equipment; for performing all work contemplated and embraced under the contract; for all loss or damage arising out of the nature of the work or from the action of the elements; for any unforeseen difficulties or obstructions which may arise or be encountered during the prosecution of the work until its final acceptance by the Engineer; for all expense incurred by or in consequence of suspension or discontinuance of such prosecution of the work herein specified; for any infringement of patents, trademarks or copyrights; and for completing the work in an acceptable manner according to the plans and specifications.

The payment of any current estimate prior to final acceptance of the work by the County shall not constitute an acknowledgment of the acceptance of the work and shall not be deemed as final acceptance of any work performed by the Contractor. The payment of any estimate shall in no way abrogate or affect the obligation of the Contractor to repair, correct, or replace any defects or imperfections in the construction due to quality of materials or workmanship. The Contractor shall, regardless of any estimates paid, continue to be responsible for any and all damage discovered on or before final inspection and acceptance of the work. The Engineer will be the sole judge of any and all defects, imperfections, or damage, and the Contractor shall be liable to the County for failure to correct the same.

9.06 Increased or Decreased Quantities:

In the event of an increase or decrease in any item or work as given in the proposal, payment will be made according to the revised quantities as calculated by the Engineer. In no case, however, shall the actual pay quantities exceed that which is actually used to perform the work.

9.07 Payment for Extra Work-Unit Price Contract:

Extra work will be paid for under the following classifications:

(1) Lump Sum - This classification shall include all qualified extra work on which unit prices are not practical, and on which a fair price can be established agreeable to the Engineer and the Contractor in accordance with the provisions of Section 4.03, above or on proposals from not less than two sub-contractors qualified and acceptable to do the particular work. The contractor will be allowed reasonable mark-ups for overhead and profit on subcontract work.

Payment shall be made only after the Contractor has submitted a bill to the County and this bill has been approved by the Engineer.

(2) Unit Price - This classification shall include all qualified extra work that can be broken down or divided into units or work similar, in the opinion of the Engineer, to units on which bid prices have been received in this contract or on units based on a fair price agreeable to the Engineer and the Contractor in accordance with the provisions of Section 4.03, above. Work shall not be paid from over-runs or under-runs of unrelated quantities shown on the bid items of the proposal sheet in this contract.

Payment for this classification shall not include any markup or percentage increase if the contract unit price is used as the contract unit price already contains such increases. Payment shall be made only after the Contractor has submitted a bill to the County and this bill has been approved by the Engineer.

(3) Force Account - This classification shall include all qualified work that cannot be identified in either lump sum or unit price classifications.

The Contractor is warned that payment for this classification of extra work cannot be paid unless the following requirements have been fulfilled:

The Engineer's representative or inspector shall be furnished with a book or pad titled, "FORCE ACCOUNT", on which a complete record shall be recorded in triplicate. This record shall show the date and identity of the project, the Contractor, location, and shall describe the work to be done. All labor, material and equipment essential to the completion of the work shall be recorded, showing the actual time or quantity used. The Contractor's supervision of labor shall be limited to a foreman, and the time of said foreman shall be recorded only during the actual supervision of the laborers. The inspector and the Contractor's representative shall both sign all three copies of this record. Immediately after the completion of this record, the original copy shall be submitted to the County, the first carbon shall be retained by the Contractor, and the second carbon shall be retained in the record book for the inspector's job record.

Before the end of the pay period, the Contractor shall submit a bill to the County for the force account described on the inspector's report. The Contractor's bill shall show the rate of pay on labor and foremen (if used), the unit price or lump sum cost of the material, and the size and rate of rental on the equipment. The rate on the equipment shall conform to those included in the monthly rates of the Rental Rate Blue Book for Construction Equipment published by Dataquest, Incorporated, latest edition. Hourly rates shall be obtained by dividing the monthly rate by 176. The weekly, daily, or hourly rates published in the Blue Book shall not be used. No allowances or pay shall be allowed for fuel, lubricants, repairs, transportation, or any other incidental costs.

To the net total of labor, material and equipment costs, the Contractor will be allowed to add eighteen percent (18%) of the labor cost only. This addition is estimated to cover the total average mandatory labor costs.

The Contractor shall furnish the County with a certified copy of the month's payroll and material billing to support the prices shown on this bill.

Before payment is made, this bill shall be approved by the Engineer.

In the event the accumulated cost of extra work on this contract exceeds the allowable on the proposal sheet, all excess payment due the Contractor for extra work will be deferred until the final estimate.

9.08 Payment for Items Omitted When Partially Completed:

Should the County cancel or alter any portion of the contract which results in the elimination or noncompletion of any portions of the work partially completed, the Contractor shall be allowed a fair and equitable amount covering all items of work incurred prior to the date of cancellation, alteration, or suspension of such work. Should the County cancel or alter any portion of the contract which results in a total decrease of not more than 25 percent of the original contract price, the Contractor shall not be allowed any extra compensation other than the unit price extensions of the work actually completed. When such elimination or noncompletion involves a net decrease in the amount of the contract of more than twenty five percent (25%) of the original contract price, a supplemental agreement between the Contractor and the County shall be required.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of its cancellation, alteration, or suspension by the Engineer shall be purchased from the Contractor by the County at actual cost and shall thereupon become the property of the County, or, at the option of the Engineer, the unused acceptable material shall remain the property of the Contractor and such shall be paid the actual cost including freight, unloading, and hauling costs less the actual salvage value as determined by the Engineer. Materials ordered after the date of cancellation, alteration, or suspension shall not be eligible for any compensation and shall remain the Contractor's property.

9.09 As-Built Drawings:

The Contractor shall, prior to request for final payment, provide the Engineer one set of the construction plans amended to indicate the actual improvements constructed during the term of this Contract. The "as-built" drawings will depict any changes made in plan or elevation and will be sealed by a Professional Engineer licensed by the State of Tennessee and acceptable to the Engineer. The Engineer will review these plans within thirty (30) days of receipt to determine whether any corrections or re-work will be required prior to final payment and release of retainage.

9.10 Acceptance and Final Payment:

Whenever the improvement(s) provided for, and all conditions called for, by the contract have been completely performed and/or met on the part of the Contractor, and all parts of the improvement have been approved by the Engineer and accepted by the County, a final estimate showing the value of the work will be prepared by the Engineer as soon as the necessary measurements and computations can be made. All prior estimates upon which approximate payments have been made shall be corrected in the final payment. The amount of this estimate less any sums that have been deducted or retained under the provisions of the contract, will be paid the Contractor as soon as practicable after the final acceptance and the period of necessary advertisement has expired; provided the Contractor has furnished the County satisfactory evidence that all sums of money due for labor, materials, equipment, fixtures, or machinery furnished for the purpose of such improvements have been paid or that the person or persons to whom the same may be due have consented to such final payment.

The acceptance by the Contractor of the final payment shall constitute a release and waiver of any and all rights and privileges under the terms of the contract; further, the acceptance by the Contractor of final payment shall relieve the County from any and all claims or liabilities from any person or entity, regardless of where situated, for anything done or furnished to the work or in connection with the work or any act or neglect on the part of the County relating to or connected with the contract.

9.11 Latent Defects:

Neither the final payment on this contract nor any provision in these specifications shall relieve the Contractor of the responsibility of faulty materials or faulty workmanship which may show up within the extent and period provided by law or within the guarantee period of one year from final acceptance of the work performed under this contract, whichever is greater, nor of the responsibility of remedying such faulty workmanship, materials and/or equipment.

9.12 Audit and Inspection of Records:

The Contractor agrees to maintain books, records and accounts pertaining to the contracted improvements for a period of not less than three (3) years from the date of final payment, and to make these records available to authorized representatives of the County. Should State or Federal funds be used in the project, Contractor agrees to make these records available to the authorized representatives of the State of Tennessee or the Federal Government as necessary.

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