

**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”

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| 1. Signs   | Specification Section 02891 Para. 2.02 |
| 2. Pavement Markings   | Specification Section 02760 Para. 2.01 |
| 3. Drums, Cones, Barricades,<br>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.

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

<sup>1</sup> Length of time that instantaneous intensity is equal to or greater than effective intensity.

<sup>2</sup> These values must be maintained within a solid angle 9<sup>0</sup> on each side of the vertical axis and 5<sup>0</sup> above and 5<sup>0</sup> 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

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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

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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 and 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 CONTROL 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.**

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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:

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

**END OF SECTION 01551**