

SECTION 905 TRAFFIC SIGNS, STRIPING AND RAISED MARKERS

Delete this Section in its entirety and replace with the following:

SECTION 905 TRAFFIC SIGNS, STRIPING AND RAISED MARKERS

905-1 DESCRIPTION: This work consists of furnishing, installing, maintaining and removing traffic signs, barricades, channelizing devices, striping, and raised markers in accordance with the MUTCD; providing flaggers; and complying with all other requirements regarding the protection of the work, workers and safety of the public.

905-2 MATERIALS: Materials shall conform to the following Sections and Subsections.

| | |
|---------------------------------------|-------------|
| Sign Backing (Blanks) | 1020-1 |
| Reflective Sign Sheeting | 1020-1 |
| Sign Posts | 1020-1 |
| Barricade Warning Lights | 1020-1.1 |
| Structural Aluminum | 1020-1.2 |
| Timber | 1013 |
| Hardware | 1020-1.2(e) |
| Pavement Striping Tape | 1020-2.1(a) |
| Traffic Paint | 1020-2.2.3 |
| Thermoplastic Pavement Markings | 1020-2.2.1 |
| Preformed Plastic Pavement Markings | 1020-2.2.2 |
| Raised Pavement Markers and Adhesives | 1020-3 |

905-3 CONSTRUCTION:

905-3.1 Signs:

905-3.1.1 Temporary Signs and Barricades: The contractor shall furnish and install temporary construction signs and barricades before construction begins. When construction signs are in place and approved, existing permanent signs that are in conflict with construction signs shall be covered or removed. The Contractor shall furnish and install additional signs as necessary during construction, relocate signs on the project when required, maintain signs by cleaning or replacing as necessary, and remove construction signs upon completion of the work.

Contractor shall provide and maintain project signs for the duration of the project. Two (2) project signs shall be constructed, painted, lettered and erected in accordance with the details shown at the end of this Section. If paint or lettering is damaged it shall be touched up after erection. The project signs shall be installed at each end of the project at locations satisfactory to the Engineer and so not to cause a sight or safety problem. Upon completion of the project, the signs shall be removed by the Contractor.

905-3.1.2 Permanent Roadside Signs: Removal of existing signs shall be coordinated with new sign construction to provide adequate signing at all times.

- a. **Posts:** The Contractor shall determine length of post required at each sign location. Posts shall be driven vertical by methods that will not damage posts. Minimum ground penetration shall be 2 feet for delineator and object marker signs, and 3 feet for other signs.
- b. **Sign Faces:** Signs shall be mounted 7 feet above pavement edge to bottom of sign, except that a secondary sign below another sign shall be mounted 4 feet from pavement edge to bottom of sign. Signs shall have a lateral clearance of 2 feet from pavement edge (or face of curb) to edge of sign, except that delineators and object markers on open ditch sections shall have a lateral clearance of 2 feet from shoulder

edge to sign. Sign shall be oriented at a 93° angle from roadway centerline to avoid specular glare.

- c. **Dead End Installations:** Timber barricades shall be constructed in accordance with Section 603. Beam guardrail shall be installed in accordance with Section 901.

905-3.2 Pavement Striping:

905-3.2.1 Temporary Striping: Temporary centerline and lane line striping shall be placed at end of each day's asphalt pavement removal or surfacing operations on all lanes that are open to traffic. Centerlines and lane lines shall be marked with 4-foot long stripes on 40-foot centers.

Temporary striping for surfaces other than final surface may be made with striping tape, traffic paint or plastic markings. Temporary striping for final surface shall be striping tape placed to avoid conflict with permanent striping. Temporary striping shall be removed after completion of permanent striping (when specified).

905-3.2.2 Permanent Striping: This subsection is hereby deleted and Section 1195 Pavement Markings substituted therefore.

905-3.3 Raised Pavement Markers:

- a. **Surface Preparation:** Surfaces on which markers are to be applied shall be cleaned of materials that may reduce bond of adhesive. Surfaces shall be cleaned by blast cleaning or other methods which do not damage surface; however, blast cleaning equipment shall be provided with positive cutoff controls. Surfaces shall be blown dry immediately prior to marker placement.
- b. **Weather Limitations:** Markers shall not be applied when air temperature is below 50° F.
- c. **Marker Application:** Markers shall be placed with bituminous adhesive on asphalt surfaces and epoxy adhesive on concrete surfaces.
 - 1. **Bituminous Adhesive:** Adhesive shall be applied to surface at approximately 400°F and marker immediately embedded in adhesive.
 - 2. **Epoxy Adhesive:** Adhesive shall be applied to surface at approximately 95°F and marker immediately embedded in adhesive. Voids in bottom of marker shall be filled with adhesive just before marker placement.

Adhesive bed area shall be equal to the bottom area of markers, and adhesive shall be applied in sufficient quantity to cause excess adhesive to be forced out around the perimeter of the marker. Voids in markers with an open grid pattern on bottom shall be filled with adhesive during placement.

Unless otherwise directed, the raised pavement markers shall be installed prior to the placement of the thermoplastic striping.

- d. **Blue Markers:** Blue raised reflective markers shall be placed at the locations of the existing markers or as directed. Unless otherwise directed, a blue marker shall be placed in the center of the closest lane opposite each fire hydrant.

905-3.4 Traffic Control Management: The Contractor shall assign one or more authorized Traffic Control Supervisors (TCS) to provide traffic control management for the project. If more than one TCS is assigned, then a weekly schedule identifying who will be in charge of providing traffic control management on a daily basis shall be submitted to the Engineer. The TCS shall have a set of all contract documents relating to traffic control or traffic staging and a current copy of the MUTCD and

a current copy of Louisiana Work Zone Traffic Control Details readily available at all times.

If the Contractor utilizes a subcontractor to provide traffic control management, the subcontractor's TCS shall meet all the requirements set forth herein. The Contractor may assign one or more Traffic Control Technicians (TCT) to assist the TCS in inspection and maintenance of Traffic Control Devices.

905-4 TRAFFIC CONTROL MAINTENANCE:

905-4.1 Traffic Control Supervisor:

- a. **Authorization:** Prior to commencing work requiring traffic control management, the Contractor shall submit to the Engineer proof of the Traffic Control Supervisor's (TCS) and Traffic Control Technician's (TCT) current authorizations.
 1. The following minimum requirements must be met for approved TCS authorization:
 - i. Successful completion of a work zone traffic control supervisor course approved by the LaDOTD.
 - ii. Passing a written examination on the work zone traffic control supervisor course.
 - iii. A minimum of one year full-time field experience, verified by the agency or firm, in work zone traffic control. This experience may be verified by the Owner at its discretion.
 - iv. A TCS refresher course is required every 4 years.
 2. The following minimum requirements must be met for approved TCT authorization:
 - i. Successful completion of a work zone traffic control technician course approved by LaDOTD.
 - ii. Passing a written examination on the work zone traffic control technician course.
 - iii. A TCS refresher course is required every 4 years.
- b. **Traffic Control Supervisor (TCS) Duties:** The TCS's responsibility shall be traffic control management, and the TCS shall be available to the Engineer to address traffic control management issues as needed. The following is a listing of the TCS's primary duties:
 1. The TCS shall personally provide traffic control management and supervision services at the project site. The TCS may have other assigned duties, but shall be readily available at all times to perform TCS duties as required in the contract. A minimum of one TCT shall be required on site during working hours.
 2. The TCS shall be responsible for observing and evaluating both the day and night time performance of all traffic control devices installed on the Project to ensure that the devices are performing effectively as planned for both safety and traffic operations. This shall be done upon the initial installation of the devices and when any modifications and/or changes are made, in addition to the inspection of traffic control required in Subsection 905-4.1e.

3. The TCS shall be responsible for revisions requested by the Contractor to the traffic control plan established in the contract and shall submit the new traffic control plan in accordance with Subsection 905-4.1c.
 4. The TCS shall be responsible for the training of flagging personnel. This training will ensure that all flagging done on the project is in compliance with the MUTCD Part VI and Louisiana Work Zone Traffic Control Details.
 5. The TCS shall coordinate all traffic control operations for the duration of the contract, including those of subcontractors, utility companies, and suppliers, to ensure that all traffic control is in place and fully operational prior to the commencement of any work. The Owner recognizes that the Contractor does not have direct control over the traffic control operations of the utility companies. The coordination provided by the TCS when dealing with utility companies is specifically for the purpose of coordinating concurrent utility traffic control with any other construction traffic control to avoid conflicts.
 6. The TCS shall coordinate, in writing, all project activities with the appropriate law enforcement, fire control agencies, and other appropriate public agencies as determined at the pre-construction conference by the Engineer.
 7. The TCS shall prepare and submit statements concerning road closures, delays, and other project activities to the Engineer on a weekly basis or more often as needed. News releases shall be submitted to the Engineer for review and approval prior to the Owner's submittal to the news media.
 8. The TCS shall be responsible for notifying the Engineer, immediately of all vehicular accidents and/or incidents related to the project traffic control. The time and date of notification shall be documented in the traffic control diary. The TCS shall also monitor and document queues that occur as necessary.
 9. The TCS assigned to the project shall attend the pre-construction conference and all project meetings.
 10. The TCS shall be responsible for the maintenance, cleanliness, replacement and removal of traffic control devices of the existing traffic control plan during working and non-working hours.
- c. **Traffic Control Plan Revisions:** Requests for revision in the traffic control plan must be made in writing to the Engineer a minimum of 14 calendar days in advance of the needed revision. If the requested revision falls within the scope of the existing Contract Documents, the Engineer may approve the revision. If the Engineer determines that the requested revision is outside the scope of the Contract Documents, the Contractor will be required to submit a change order. The change order drawings shall conform to the following:
1. Letter size original contract drawings --The change order drawings shall be submitted on high quality white 8 1/2 x 11 inch letter size paper. The drawings may be hand drafted or computer drafted and arranged in landscape format on the page. The text and drawings must be legible after reproduction on standard reproduction equipment. Left, bottom and right hand margins shall be at least 1/2 inch and the top margin shall be 1 inch.
 2. Full size original contract drawings -- The change order drawings shall be submitted on high-quality, 4-mil, double-matte film using a plotting or reproduction process that fuses the graphics to ensure durability. Repeated handling and friction due to stacking of plans shall not smear, flake or rub off the graphics. Improper plotter settings and plotter wear may cause inconsistent

durability of the drawings. The Contractor shall test samples of the submitted drawings for durability. Advance samples of matte films may be submitted for approval; however, the contract plans will be tested separately. Failures will result in rejection of the submittal.

Lettering on change order drawings shall be of adequate size to facilitate a 50 percent reduction of plans. Additions or changes shall be made with a permanent type of waterproof ink made for this purpose.

Regardless of size, all change order drawings and documents required shall be identified with the DPW project title and project number. All plans and calculations shall be signed and sealed by a professional civil engineer currently registered to practice in Louisiana.

All plans submitted by the Contractor shall conform to these specifications and standards. The Engineer may reject any plans not conforming to these standards.

Revisions to the TCP that are determined to be outside the scope of the original contract drawings must be approved by the DPW Traffic Engineer or LaDOTD District Traffic Engineering Division (depending on governing agency) prior to implementation of the requested revision. In some cases on high traffic state routes, the revisions must be approved by the LaDOTD HQ Traffic Operations Engineer.

- d. **Traffic Control Diary:** The TCS shall maintain a project traffic control diary in a bound book. The Contractor shall obtain a sufficient number of the diaries from the Louisiana Associated General Contractors (LAGC). The TCS shall keep the traffic control diary current on a daily basis, and shall sign each daily entry. Entries shall be made in ink and there shall be no erasures or white-outs. Incorrect entries shall be struck out and then replaced with the correct entry. Approval of the daily diaries in accordance with the plans and specifications is subject to the La. R.S. "Filing or Maintaining False Public Records." Photographs and videotapes may be used to supplement the written text.

The traffic control diary shall be available at all times for inspection by the Engineer; and the diary shall be reviewed with the Engineer on a weekly basis and a copy submitted to the Engineer on a monthly basis. Failure to complete the diary on a daily basis or make the diary available for review shall result in a deduction from payments for the work of \$150.00 per calendar day, not as a penalty, but as stipulated damages for each day the diary is not maintained or is not available for review. Failure to submit the monthly copy of the diary to the engineer shall result in the withholding of the next partial payment until the past due copies of the diary are submitted. Submitted diaries that indicate that contemporary daily record keeping has not been maintained, as determined by the Engineer, shall result in a deduction of \$150.00 for each such deficiency as stipulated damages from for the work. The lack of a weekly review by the engineer shall not relieve the Contractor from the assessment of stipulated damages for its failure to maintain a daily traffic control diary. The traffic control diary shall become the property of the Department at the completion of the project.

- e. **Inspection of Traffic Control:** The TCS shall be responsible for the inspection of all traffic control devices every calendar day that traffic control devices are in use. This inspection may be delegated to the TCT. The "Quality Guidelines for Work Zone Traffic Control Devices" standard by the American Traffic Safety Services Association (ATSSA) shall be used to evaluate the condition of the traffic control devices to determine if acceptable for use. The TCS shall provide for the immediate repair, cleaning, or replacement of any traffic control devices not functioning as required to ensure the safety of the motorist and construction personnel and/or not meeting the ATSSA standard.

- f. Inspection of the traffic control devices shall be conducted by the TCS at the beginning and end of each workday, and as scheduled or directed by the Engineer during the workday. The traffic control devices shall be inspected by the TCS on weekends, holidays, or other non-work days at least once per day. Traffic control devices shall be inspected by the TCS at least once a week during nighttime periods and the same night after any modifications or changes have been made in the traffic control devices.
- g. **Failure to Comply:** The Engineer may suspend all or part of the Contractor's operation(s) for failure to comply with the approved "Traffic Control Plan" or failure to correct unsafe traffic conditions within a reasonable period of time after such notification is given to the Contractor in writing. If there are major traffic control deficiencies that require immediate corrective action for the safety of the travelling public, the Engineer may completely suspend the Contractor's operations. This suspension can either be verbal or written, but shall be followed up in writing as soon as practical.

In the event that the Contractor does not take appropriate action to bring the deficient traffic control into compliance with the approved traffic control plan or to correct the unsafe traffic conditions, the Department may proceed with the corrective action using its own forces, and such costs will be deducted from payments owed to the Contractor.

If the Contractor's operations are suspended, the normal assessment of contract time will not cease for the period required to correct these unsafe conditions and traffic control deficiencies. The Contractor shall not be relieved of the responsibility to provide traffic control safety to the traveling public when a project is under full or partial project suspension. When a project is under suspension due to the Contractor's failure to comply with this section, or when the contract is under stipulated damages, the Contractor shall continue to provide traffic control management and no additional measurement or payment will be made. If suspensions or partial suspensions are requested by the Contractor, the additional traffic control management costs will be at the Contractor's expense.

905-4.2 Traffic Control Officer: With the agreement of the Engineer, a Traffic Control Officer (TCO) may be utilized onsite where equipment is in or near to a roadway to assist in alerting or directing traffic near the work area. In certain cases the DPW Traffic Division, LaDOTD, or other agency having jurisdiction may require a TCO.

905-5 MEASUREMENT:

a. Signing:

1. **Temporary Signs and Barricades:** When the contract does not include a pay item for "Temporary Signs and Barricades," the providing of temporary construction signs and barricades will not be measured for payment.

When a pay item for "Temporary Signs and Barricades" is included in the contract, the furnishing, erecting, maintaining and removing of temporary construction signs and barricades will be measured on a lump sum basis.

2. **Permanent Signs:** Signs will be measured by the square foot. No measurement will be made for posts.
3. **Delineators and Object Markers:** Delineators and object markers will be measured per each, including post.
4. **Dead End Installations:** Dead end road installations will be measured per each,

including piling, posts, sign materials, reflectors, barricades and guardrail.

b. Striping:

1. **Temporary Traffic Striping:** When the contract does not include a pay item for "Temporary Traffic Striping" the providing of these markings will not be measured for payment.

When the contract includes an item for "Temporary Traffic Striping", the furnishing, placing, maintaining and removing these markings will be measured on a lump sum basis.

2. **Permanent Markings:** Striping will be measured by the linear foot, exclusive of gaps. Legends and symbols will be measured per each.

c. Raised Pavement Markers: Raised pavement markers will be measured per each.

- d. **Traffic Control Officer:** The Traffic Control Officer (TCO) shall be one or more uniformed law enforcement officer(s). The TCO will work on an hourly basis for only those times that their services are required. The number of TCOs necessary will be determined by joint agreement of the Contractor, Engineer and the law enforcement agency involved as indicated in the Traffic Control Plan.

905-6 PAYMENT: Payment for traffic signs, striping and raised markers will be made at the contract prices.

Partial payments for temporary signs and barricades will be made in accordance with the following schedule;

| <u>% of Total Contract Amount Earned</u> | <u>Allowable % of Lump Sum Price for Item</u> |
|--|---|
| 1st Partial Estimate | 20 |
| 25 | 40 |
| 50 | 60 |
| 75 | 80 |
| 100 | 100 |

Traffic Control Officer: This item is shown as a Lump Sum Unit Item, but will included in the bid form as an allowance to be applied to all costs associated with this item. Contractor will be required to provide detailed documentation for all costs associated with this item, which shall be reviewed and approved prior to authorization by the Owner to proceed with the Work. Payment of the allowance for this item will be on the basis of documented and approved expenses plus ten percent (10%). Should the final cost of this item exceed the amount of the allowance, additional payments will only be authorized by a properly executed change order.

No direct payment will be made for removing existing pavement markings, project signs, Traffic Control Supervisors, or Traffic Control Technicians.

905-7 PAY ITEMS:

| <u>Item No.</u> | <u>Item</u> | <u>Unit</u> |
|-----------------|---------------------------------------|-------------|
| 9050100 | Temporary Signs and Barricades | Lump Sum |
| 9050200 | Traffic Signs | Square Foot |
| 9050300 | Delineator | Each |
| 9050400 | Object Marker | Each |
| 90505-- | (Type) Dead End Installation | Each |
| 9050600 | Temporary Traffic Striping | Lump Sum |
| 90507-- | Painted Traffic Striping (___" Width) | Linear Foot |

| | | |
|---------|---------------------------------------|-------------|
| 90508-- | Plastic Traffic Striping (___" Width) | Linear Foot |
| 90509-- | Painted Legends and Symbols (Type) | Each |
| 90510-- | Plastic Legends and Symbols (Type) | Each |
| 9051100 | Raised Pavement Markers | Each |
| 9059000 | Traffic Control Officer | Lump Sum |