

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

The Contractor shall conduct all work necessary to meet the requirements of this Section, including provisions for the safe and efficient movement of people, goods and services through and around the project while minimizing impacts to local residents, businesses and commuters.

All necessary work for Traffic Control Plans (TCP), Method of Handling Traffic (MHT), On-Site Detours, information for Business & Private Access points and Construction Requirements shall be documented for the project.

Traffic Operations

It is anticipated that the Contractor will be able to maintain traffic on the existing SH 92 alignment with minor temporary widening while the proposed bridge and roadway are being constructed.

The contractor shall maintain paved 11 foot lanes in each direction except where temporary one lane traffic during working hours is needed for the Work as approved by the CDOT Project Engineer.

Detour Requirements

Approaches

The Contractor shall maintain access to all driveways and approaches at all times during construction unless otherwise approved by the engineer.

Detour Design Speed

The minimum detour design speed shall be 40 miles per hour.

Detour Pavements

Only paved surfaces shall be used for detours. All detour pavements shall be maintained in good operating condition at all times detours are in use. Detours shall be devoid of potholes, uneven surfaces, rutting and shoulder drop-offs.

Maintenance of detour, including Hot Mix Asphalt for all detours shall be at the Contractor's expense.

Section 16 – Maintenance of Traffic

Temporary Barriers

A Type 7 temporary barrier is required to separate work zones and drop offs. Temporary impact attenuators are required when the end of the temporary barrier is located within the clear zone. A 2-foot shy distance to the Type 7 temporary barrier shall be maintained.

Work zone design criteria shall meet the requirements specified herein:

Transportation Management Plan (TMP)

The contractor shall develop a TMP per 630.10 of the 2011 CDOT Standard Specifications. TMP shall be submitted to CDOT for Acceptance prior to construction.

Traffic Control Plans (TCP)

Traffic Control Plans shall be submitted to CDOT for Acceptance prior to construction.

Method of Handling Traffic (MHT)

Each proposed MHT shall be accepted in writing by the CDOT Project Engineer and Contractor Superintendent before the corresponding stage of construction will be allowed to begin. The Contractor shall submit MHT's at least two working days prior to implementation of the particular MHT. The CDOT Project Engineer may extend review time if revisions are necessary.

Flagging

All flagging on the project required shall be shown on accepted MHT's, and documented in accordance with the contract shall be paid as part of the Contractor's original lump sum bid price. Operations that directly or indirectly impact traffic, the delivery of materials or equipment will require a flagger working under an approved MHT.

Railroad Flagging is required for any work within 25 feet from the UPRR Railroad tracks. ~~It is anticipated that railroad flagging will be approximately 120 days, for a total cost of \$180,000. This will be paid by CDOT out of the Project utility phase. Any payment of flagging hours greater than this amount will become the responsibility of the Contractor.~~

The cost of Railroad flagging, inspection and other Railroad related costs shall be paid by the Contactor and shall be included as part of the Contractor's original lump sum bid price as per Section 6 – Third Party agreements.

Section 16 – Maintenance of Traffic

Public Information

The Contractor shall follow the requirements for Public Information as described in Technical Requirements, Section 4 – Public Information.

Lane Closures

Before any lane is closed or detour implemented, an appropriate MHT shall be accepted by the CDOT Project Engineer and Contractors' Superintendent. Lane restrictions must be acknowledged and Accepted by the CDOT Project Engineer 14 calendar days in advance of the closure, unless required by construction emergencies or other reasonably unforeseen events.

Construction Zone Speed Limits

Construction zone speeds shall be established at a minimum of 35 mph.

Construction Requirements

The Contractor shall remove all temporary traffic control devices when no longer in use.

Construction Signing

Construction signing within the Project limits and all detours shall comply with CDOT Standard Specifications and Standard Plans, the MUTCD, NCHRP 350, and all other applicable standards set forth herein.

The Contractor shall provide a minimum of two variable message signs for the duration of construction.

Deliverables

The Contractor shall submit the following to the CDOT Project Engineer:

Deliverable	Acceptance or Approval	Schedule
Transportation Management Plan	Acceptance	Prior to Construction
Traffic Control Plans	Acceptance	Prior to Construction
Method of Handling Traffic	Acceptance	2 days prior to implementation, 14 days prior to implementation for lane closures/ detours

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

Project Special Provisions

REVISION OF SECTION 621 DETOUR PAVEMENT

Section 621 is hereby added to the Standard Specifications for this project and shall include the following:

621.01 This work consists of constructing detour pavement as shown on the plans.

621.02 The Contractor shall be responsible for quality control required to assure adequate quality of hot mix asphalt and aggregate base course used in the pavement.

621.03 The minimum thickness of detour pavement shall be 6" base course (Class 6) plus 3" hot mix asphalt. If the materials used require that the Contractor provide thicknesses greater than minimum to serve for the life of the detour pavement, these shall be provided at no additional cost. The detour pavement construction shall include grading, sawing existing pavement and pavement appurtenances, embankment material, planing, and other items of work necessary for the construction of detour pavement.

The removal of the Detour Pavement shall be accomplished in accordance with the applicable sub-sections of Section 202. The Contractor shall remove the detour pavement when it is no longer needed to maintain traffic.

The Contractor shall construct temporary ditches, temporary culvert pipe, and maintain existing storm drains necessary for the control of storm drainage.

The Contractor shall be responsible for ensuring all embankment construction for Detour Pavement is constructed in accordance with applicable portions of Section 203 of the Standard Specifications for Road and Bridge Construction, 2011.

Section 16 – Maintenance of Traffic

-2-

REVISION OF SECTION 621 DETOUR PAVEMENT

The Contractor shall provide smooth pavement transitions between new and existing roadways. Transverse joints between new and existing pavement shall be constructed with Hot Mix Asphalt. Grade differences shall not exceed 4 percent break-over. Transverse joint tapers shall be 20' horizontal to 1" vertical or flatter. Longitudinal joints which have a vertical drop-off shall be tapered with Hot Mix Asphalt. Tapers shall be 8 horizontal to 1 vertical or flatter.

621.04 The Contractor shall maintain the detour for the entire period that it is required. Any distress which affects the ride, safety, or serviceability of the detour roadway shall be corrected to the satisfaction of the Engineer at the expense of the Contractor. Correction/repairs shall be made within 48 hours from which it has been observed and reported. Failure to implement repair within the given time frame shall allow CDOT to acquire services from either CDOT Maintenance Program or from a private firm capable of performing repair work. Costs incurred for repair services rendered shall be subtracted from monies owed to the Contractor.

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL DEVICES

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.14 shall include the following:

The Contractor shall provide each flagger and the Project Engineer with a minimum 5-watt VHF radio in order to provide adequate communications during construction. The radios shall have sufficient range to communicate a minimum of 5 miles.

Subsection 630.10 shall include the following:

The method of handling traffic (MHT) submitted by the Contractor shall address radio communications.

Subsection 630.15 shall include the following:

Providing VHF radios and all costs associated with their use will not be paid for separately but shall be included in the work.

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

REVISION OF SECTION 630 PORTABLE MESSAGE SIGN PANEL

Section 630 of the Standard Specifications is hereby revised for this project as follows:

Subsection 630.01 shall include the following:

This work shall consist of furnishing, operating, and maintaining portable message sign panels. The panels shall be in place on the project site at least 7 days prior to the start of active roadway construction, or as approved by the Engineer.

Subsection 630.031 is added following subsection 630.03 as follows:

630.031 Portable Message Sign Panel. Portable message sign panel shall be furnished as a device fully self contained on a portable trailer, capable of being licensed for normal highway travel, and shall include leveling and stabilization jacks. The panel shall display a minimum of three eight-character lines. The panel shall be a dot matrix type with either fluorescent yellow flip disks legend and/or LED legend on a flat black background. LED signs shall have a pre-default message that activates before a power failure. The sign shall have its own separate power source with independent back up battery-powered source. The sign shall be capable of 360 degrees rotation and be able to be elevated to a height of at least five feet above the ground to the bottom of the sign. The sign should be visible from one half mile under both day and night conditions. The message should be legible from a minimum of 650 feet. The sign shall automatically adjust its light source to meet the legibility requirements during the hours of darkness. The sign enclosure shall be weather tight and provide a clear polycarbonate front cover.

Message signs that are diesel generator powered shall be provided with a 20-gallon minimum capacity fuel tank. Solar powered message signs shall be capable of operating continuously for 10 days without any sun. All instrumentation and controls shall be contained in a lockable enclosure. The sign shall be capable of changing and displaying sign messages and other sign features such as flash rates, moving arrows, etc.

Section 16 – Maintenance of Traffic

-2-
**REVISION OF SECTION 630
PORTABLE MESSAGE SIGN PANEL**

Each sign shall also conform to the following:

1. Flip-disks legend signs shall have fluorescent ultraviolet blacklight bulbs.
2. In addition to the onboard solar/generator power operation with battery back-up, each sign shall be capable of operating on a hard wire, 100 110V AC, external power source.
3. All electrical wiring, including connectors and switch controls necessary to allow all sign functions required by the specification, shall be provided with each sign.
4. Each sign shall include an operating and parts manual, wiring diagrams, and trouble shooting guide.
5. The portable message sign shall be capable of maintaining all required operations under Colorado mountain winter weather conditions.
6. Each sign shall be furnished with an attached license plate and mounting bracket.
7. Each sign shall be wired with a 7 prong male electric plug for the brake light wiring system. NAPA Part number TC 6215 Trailer Connector or equivalent will be suitable to fulfill the requirements of this specification.

Subsection 630.13 shall include the following:

The Contractor shall provide, operate, and maintain two complete Portable Message Sign Panels.

Maintenance, storage, operation, relocation to different sites during the project, and all repairs of portable message sign panels shall be the responsibility of the Contractor.

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

REVISION OF SECTION 630 TRAFFIC CONE

Section 630 of the Standard Specifications is hereby revised for this project as follows:

In Subsection 630.05, second paragraph, the reflectorized material shall be AP 1000 Polyester (Reflexite Corp.), 3M Type III, Transparent (Reflexite Corp.), or 2010 Vinyl Cone Collar (Reflexite Corp.). Any other material is not acceptable unless its brightness is equivalent or greater than the types named.

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

REVISION OF SECTION 630 IMPACT ATTENUATOR (TEMPORARY)

Section 630 of the Standard Specifications is hereby revised for this project to include the following:

DESCRIPTION

This work consists of furnishing, installing, certifying, moving, repairing, maintaining, and removing temporary impact attenuators in accordance with these specifications and in conformity with the lines and details shown on the plans or established.

MATERIALS

Each impact attenuator shall be selected from the Crash Cushion and End Treatment Application Chart as listed in the Safety Selection Guide on the CDOT Design and Construction Project Support web site. Impact attenuators shall conform to the requirements of the manufacturer and be capable of bi-directional shielding of the objects detailed and located on the plans. Filler materials shall be treated according to the manufacturer's recommendations to prevent freezing to a temperature of -50 °F.

The design speed of the impact attenuators for this project shall be 50 MPH. The attenuator shall meet the appropriate requirements for that design speed.

CONSTRUCTION REQUIREMENTS

If sand barrel arrays are used, the Contractor shall paint, with white epoxy paint, an outline and the weight of each barrel on the pavement prior to final placement. All numbers shall be a minimum of 6 inches high. Barrel type shall be one of those listed in the Safety Selection Guide.

The site shall be prepared to receive the impact attenuator by filling, excavating, smoothing, constructing the paved foundation pad, installing approved transition and anchoring, and all other work necessary for the proper installation of the attenuator.

The impact attenuator shall be fabricated and installed in accordance with the manufacturer's recommendations. The Contractor shall provide a copy of the manufacturer's installation instructions and parts list to the Engineer prior to installation of the device.

Project: SH 92 Stengel's Hill
Project Sub Acct. No: 17772
January 16, 2014
Technical Requirements

Section 16 – Maintenance of Traffic

-2-

REVISION OF SECTION 630 IMPACT ATTENUATOR (TEMPORARY)

Each installation shall be supervised and certified as correct upon completion by a representative of the device manufacturer or by an employee of the Contractor who is a certified installer. The certified installer shall have completed device training and shall be registered with the manufacturer as a certified installer. The Contractor shall submit all appropriate documentation to validate that the certified installer has completed device training and has been registered with the manufacturer as a certified installer.

Section 16 – Maintenance of Traffic

TRAFFIC CONTROL PLAN - GENERAL

The key elements of the Contractor's method of handling traffic (MHT) are outlined in subsection 630.09.

The components of the Traffic Control Plan (TCP) for this project are included in the following:

1. Subsection 104.04 and Section 630 of the specifications.
2. Latest revised Standard Plan S-630-1 (3/26/2012), Traffic Controls for Highway Construction and Standard Plan S-630-2.
3. Schedule of Construction Traffic Control Devices.
4. Tabulation of Traffic Engineering Items included in the plans for this project.
5. Construction Traffic Control details included in the plans for this project.

Special Traffic Control Plan requirements for this project are as follows:

For construction impacting SH 92:

1. A total of two mainline traffic lanes shall be maintained on SH 92 at most times throughout the duration of this project. Except as noted below and approved by the Engineer. The Contractor's MHT submittals shall include information regarding construction access from the SH 92 mainline lanes or ramps to construction areas.
2. For certain portions of the work, closure of one mainline traffic lane on SH 92 may be required during work hours with flagging and approved MHT. All lane closures shall follow the current CDOT Region 3 Lane Closure Policy for this section of SH 92.
 - a. No work on Holidays
 - b. Contractor shall not close lanes during special events
 - c. Contractor shall coordinate lane closures with adjacent projects
 - d. Maximum delay time to the traveling public shall not exceed 10 minutes.
3. The Contractor shall install construction traffic control devices where they do not block or impede other existing traffic control devices or sidewalks for pedestrians, disabled persons or bicyclists. The Contractor is restricted from storing any materials, construction traffic control devices, signs, etc. in any median area.
4. Vertical cuts or fills greater than 1 inch resulting from construction operations adjacent to traffic lanes, or within the clear zone shall be temporarily sloped at a 6:1 or flatter slope, and delineated at 55 foot intervals immediately after removal operations to safeguard the traveling public.

Section 16 – Maintenance of Traffic

-2-

TRAFFIC CONTROL PLAN – GENERAL

5. Construction equipment used on this project shall meet the same minimum exhaust requirements as those specified by the manufacturer of the equipment.
6. The Contractor and subcontractors shall equip their construction vehicles with flashing amber lights. Flashing amber lights on vehicles and equipment shall be visible from all directions.
7. The Contractor shall maintain access to all roadways, side streets, walkways, alleyways, driveways, and hike/bike paths at all times unless otherwise directed by the Engineer. Parking areas temporarily disturbed by construction activities shall be restored to a useable condition during non-working hours. Such temporary parking shall utilize an all-weather surface. The Contractor shall develop an Access Maintenance Plan in coordination with, and based on the requirements of, the affected property owners and tenants, and submit it to the Engineer for approval prior to commencement of work. This plan shall detail all barricades, ramps, signs, and temporary means of access required by the property owners or tenants. Prior to commencing any work which affects access to a property, the Access Maintenance Plan for that property must be submitted and approved by the Engineer.
8. The Access Maintenance Plan shall be coordinated with all affected owners and tenants. The Access Maintenance Plan shall include documentation of this coordination, including the approval signature of each affected owner or tenant. Should the Contractor be unable to obtain approval and signatures, documentation of the efforts made to obtain said approval and signatures must be submitted. All access shall be maintained on surfaces equal to or better than those existing at the time the access is first disturbed. For short periods of time only as allowed by the Engineer, access may be maintained on an aggregate base course surfaces.
9. The Contractor shall maintain continuous access throughout the project for pedestrians and bicyclists.
10. The costs of maintaining access will not be paid for separately, unless otherwise provided, but shall be included in the work. Utilization of materials to be incorporated into the work may be permitted. However, any degradation or other contamination or destruction shall be corrected at the Contractor's expense prior to acceptance.

Section 16 – Maintenance of Traffic

-3-

TRAFFIC CONTROL PLAN – GENERAL

11. During non-construction periods (evenings, weekends, holidays, etc.) all work shall be adequately protected to insure the safety of vehicular and pedestrian traffic, as detailed in the Contractor's MHT. Excavations or holes shall be filled in or fenced when unattended. Drop-offs within the 18 ft. construction clearzone shall be protected by barrier or filled in during non-construction periods.
12. Whenever the Contractor removes, obliterates, or overlays any pavement markings, he /she shall replace them on a daily basis prior to opening the affected areas to traffic. All temporary pavement markings shall fully comply with the Standard Specifications and Special Provisions.
13. The Contractor shall not have construction equipment or materials in the lanes open to traffic any time unless directed by the Engineer.
14. All personal vehicle and construction equipment parking is prohibited where it conflicts with safety, access, or the flow of traffic. Landscaped areas and roadway shoulders shall be kept clear of parking and storage of all personal and construction equipment except where approved by the Engineer.
15. The Contractor shall not place tack coat on any surface to be paved where traffic will be forced to travel upon fresh bituminous materials.
16. The Contractor shall be required to maintain temporary drives at any existing establishment that has singular access off of the roadways, unless otherwise approved in writing by the property owner.
17. All lane closures shall be subject to the approval of the Engineer. Request for each closure shall be made at least 24 hours in advance of the time the lane closure is to be implemented. Lane closures will not be allowed to remain unless being utilized in continuum for the intended purpose for which they were set up.

Section 16 – Maintenance of Traffic

-4-

TRAFFIC CONTROL PLAN - GENERAL

18. During no-working hours, the roadways shall be restored to a safe travel conditions for the free flow of traffic. Any maintenance required restoring the roadways to this condition, including the pavement patching and grading, shall be done prior to opening the areas to traffic or completing work for the day.
19. The Contractor shall clean the roadway of all construction debris before opening it to traffic.
20. All flagging stations used at night shall be illuminated with floodlights. Street, highway lights and "high mast lighting" may be used for flagging station illumination when approved by the Engineer. Floodlights shall be located and directed so as not to interfere with the sight of any motorists, and the cost to be included in the work. Night work will not be permitted unless prior approval is received by the Project Engineer. However, the Contractor shall provide a MHT for night work in cases of emergencies.
21. Prior to removal and resetting of any sign, the Contractor and Engineer shall prepare an inventory. Any signs damaged due to the Contractor's operations shall be replaced in kind or repaired by the Contractor at no additional cost to the project.