Project: US 6 over Garrison Street
Project Sub Acct. No: 19478

July 31, 2014

Technical Requirements

Section 16 – Maintenance of Traffic

MAINTENANCE OF TRAFFIC

The Contractor shall conduct all Work necessary to meet the requirements associated with Maintenance of Traffic (MOT), including provisions for the safe and efficient movement of people, goods, and services through and around the Project while minimizing impacts to local residents and business and commuters.

Administrative Requirements

Traffic Operations

Maintenance of Traffic Task Force

The Contractor shall establish a MOT Task Force to assure proper coordination with affected agencies. The MOT Task Force shall include, at a minimum, the Contractor's Public Information Officer, Traffic Control Supervisor, Superintendent, CDOT, and City representatives. The Contractor shall submit the proposed list of task force members to CDOT for Acceptance within 30 Days after NTP.

The MOT Task Force shall meet weekly, and shall be an integrated element of the Public Information Plan (PIP).

In addition to regular MOT Task Force meetings the Contractor schedule and conduct MOT Task Force Meetings to present and discuss Contractor prepared narratives identifying processes and critical elements of all full closures and coordination activities.

Within 14 Days after Acceptance of the MOT Task Force members, the Contractor shall convene a TMP kick-off meeting. The meeting will be used to develop agreement upon the level of detail required for the TMP as identified in this Section 16.

Transportation Management Plan (TMP)

The Contractor shall prepare a TMP that defines the strategic plan for transportation management on the Project. The TMP shall address major aspects of the Work for individual construction areas, phases, and stages. The Contractor shall use the TMP as a planning and policy guide to develop and execute the project MOT program.

These major aspects shall include, but are not limited to:

1. An overview and description of the proposed construction, subdivided as applicable, into the following components:

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A. Area: A specific grouping of Work along the Project defined by the Contractor that creates segments of the Project for the purpose of planning and executing the Work.

B. Phase: A specific sequence of the construction Work in an area during which a major traffic movement is undertaken (e.g., a detour) and left in place until the Work is complete and traffic is redirected to another location. This shall require development of a specific Traffic Control Plan (TCP). In some cases, multiple TCPs may be necessary.

C. Stage: A subdivision of Work within a phase that combines similar components of Work to maintain efficiency.

2. A detailed approach to the development of TCPs and MHTs on the Project

3. A list of known or potential roadway, ramp, and lane closures, including the following information

   A. Description of traffic shift

   B. Description of detour

      a. Identification of detour limits to be used in each construction phase.

      b. Contractors' identification and coordination with other construction projects, within the vicinity of the proposed detour route. The impact of these construction projects shall be incorporated into the detour route planning and scheduling.

   C. Number of shifts expected

   D. Duration of shifts and detours

4. A description of proposed detour routes, including:

5. An approach to Travel Demand Management (TDM) strategies

6. An approach to the use of Intelligent Transportation System/Variable Message Sign (ITS/VMS) boards and traffic signals, including coordination with the affected Local Agency's Traffic Management Center or the CDOT Traffic Operations Center (CTMC), and the Contractor's representative.

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7. The Contractor's plan for coordinating the TMP Activities with those Activities required under Book 2, Section 4 - Public Information.

    A. A checklist identifying specific items that shall be provided both to the Contractor's Public Information Officer, the CDOT Public Information Officer and City Traffic Engineer every Thursday by 10:30 a.m. for public information data collection and management activities on the Project. The checklist shall provide the inclusion of supporting information relevant to coping messages and public awareness and shall be included in the Public Information Plan (PIP) required in Book 2, Section 4.

8. Additional Elements

    A. An approach to coordination and cooperation with construction being performed by projects adjacent to the Project limits.

    B. An approach to coordination with RTD.

    C. An approach to traffic access management, including restrictions, bicycles, pedestrians, and potential impacts to handicapped mobility.

    D. Relevant portions of the Incident Management Plan (IMP), described below.

    E. An approach to special event coordination.

9. Typical section requirements

10. Emergency requirements

    A. Pull-out locations
    B. Emergency access
    C. Courtesy patrol

11. Temporary closure scenarios

    A. Location
    B. Time and Duration

12. Access

    A. Pedestrian/bike
    B. Business
    C. Work Site (area)

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D. Bus/Transit

13. Construction Zone Temporary Speed Reduction

Temporary speed reduction, if warranted, must be authorized by a Form 568 approved by the R6 Traffic Engineer. Temporary speed reduction may be authorized during the construction phasing of the US 6 Project when the following conditions exist:

A. Restricted shoulder widths and TCD placement within 2' of the travel way
B. Lane closures adjacent to live traffic
C. Traffic phasing where corridor geometrics restrict design speed to less than posted speed
D. Other safety concerns as documented by Contractor's Engineer14. MHT Requirements

The Contractor shall use barriers to positively separate traveled lanes and work zones. All work zone traffic control devices, barriers and crash cushions/impact attenuators shall meet NCHRP 350 Test Level 3 requirements.

The TMP shall be submitted to CDOT (and City of Lakewood if Garrison Street is affected) for Acceptance at least 30 Days prior to construction. No Work that impacts traffic shall commence until the TMP is Accepted.

Coordination with CDOT Traffic Management Center (CTMC)

Routine requests for use of the CTMC VMS boards shall be submitted to CDOT by 10:30 a.m. on Thursday of the week prior to when the VMS boards will be needed (Monday through Sunday of the following week). Requests for routine use of the VMS will be reviewed by noon Friday of the same week of the submittal. The Contractor shall coordinate directly with the CTMC following review by CDOT.

For after-hours operations only, the Contractor shall coordinate directly with the CDOT Traffic Management Center (CTMC). The CTMC is available to the Contractor to modify VMS messages 24 hours a day, 7 days a week.

The Contractor shall coordinate with CDOT and the CTMC, and City of Lakewood for emergencies in accordance with the Accepted Incident Management Plan

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Incident Management Plan

The Contractor shall develop a detailed Incident Management Plan (IMP) as a companion to the TMP to manage traffic incidents and emergency operations on the project Site.

The IMP shall, comply with the CDOT *Guidelines for Developing Traffic Incident Management Plans for Work Zones*.

At a minimum, the IMP shall include the following components:

1. Coordination with the Public Information Plan (PIP)
2. Incident detection and identification
3. Incident response
4. Incident site management
5. Incident clearance
6. Dissemination of traveller information regarding incidents
7. Courtesy patrol
8. Emergency services notification, including local area Police Departments, the Colorado State Patrol (CSP), local area fire departments, ambulance services, and any other emergency response providers.
9. Notification of local school districts about possible impacts to school bus routes, student drop-offs, and/or pedestrian facilities
10. Geographic and other special constraints
11. Available resources
12. Operational procedures

The IMP shall be submitted to CDOT for Acceptance at least 30 Days prior to construction. No Work that impacts traffic shall commence until the IMP is Accepted.

Business and Private Access

The Contractor shall maintain public and private access to the local street system at all times.

TCPs and MHTs shall incorporate stakeholder information from the PIP, available surveys, and other pertinent studies relating to business and private access to the local

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street system and the highway facility. At a minimum, the Contractor shall communicate and document the following information relevant to business and private access:

1. Access points impacted by a particular construction phase or stage
2. All notifications of affected businesses and land owners
3. Schedule of closures and estimated durations
4. Site-specific access or delivery requirements for local businesses (deliveries, wide load vehicles, etc.)
5. Proposed mitigation efforts

Maintenance of Traffic Variance Process

The Contractor may request a MOT variance for any closure, detour, or other restriction beyond the specified limits defined herein. The following information shall be included in each MOT variance request:

1. Summary of the variance request
2. Justification for the variance request, including a list of the criteria that cannot be met and the reasons for not being able to meet the criteria
3. Public notification methods and schedule
4. List of affected emergency services and the schedule for notification
5. List of affected agencies or private owners and the method(s) and schedule for notification
6. Description of additional public information surveys to be performed, if required
7. List of any potential safety hazards to which the public may be exposed
8. Proposed revisions to the Accepted TCP or current MHT
9. Proposed duration of closure, detour, or phasing change for which a variance is requested

The Contractor shall allow CDOT a minimum of 14 Days for review and Approval of any MOT variance requests. The Contractor shall obtain Local Agency approval for detours utilizing non-State owned facilities. If Local Agency approvals are necessary, they shall be obtained prior to submittal of the MOT to CDOT.

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Contractor Response Time

The Contractor shall have at least one employee on call, via cellular phone, that can respond to an incident within 30 minutes. Upon arrival at the incident site, that employee shall assess the situation and immediately notify the appropriate personnel to implement the IMP. Upon notification of the incident, the Contractor shall immediately undertake actions necessary to restore traffic operations to the maximum extent practicable.

Special Events

The Contractor shall coordinate with CDOT, the City and all other local agencies, along with the Public Information Officer as specified in Book 2 Section 4 to develop a list and schedule of special events. The Contractor shall update the list as events are identified or scheduled. The special event calendar shall be a standing agenda item at the Maintenance of Traffic Task Force meetings.

The Contractor shall identify and implement necessary changes in Work progress to accommodate traffic to and from special events. No lane closures shall be permitted on the day of the event unless Approved by CDOT. Work outside the travel lanes, ramps and shoulders will be permitted during special events.

RTD Transit System

The Contractor shall coordinate with RTD to minimize any impacts to the RTD Transit System including bus routes, station access, bus stop locations, and other RTD services.

The Contractor shall maintain access to all RTD stations within the Project limits during construction. Any modifications to RTD station access or bus stop locations shall be submitted to CDOT for Approval.

Coordination with Adjacent Projects

The Contractor shall coordinate with CDOT, RTD, City of Lakewood, and their contractors to coordinate construction traffic and detour impacts and minimize simultaneous closures or impacts to adjacent or alternate routes.

Design Requirements

The Contractor's Professional Engineer in responsible charge of the MOT design shall prepare, Review, and Approve: field design changes; Released for Construction documents; and TCP and MHT plans.

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Traffic Control Plans (TCP)

The Contractor shall prepare a TCP to control traffic on the Project. The TCP shall conform to the requirements specified herein and the CDOT Standard Specifications for Road and *Bridge* Construction and the most current version of the MUTCD. The TCP shall generally describe all lane and shoulder configurations, including widths, traffic control signing, pavement markings, traffic control devices, temporary signalization, construction access, construction parking, emergency access, work areas, and pedestrian/bicycle requirements necessary for each construction phase. Temporary traffic signals shall be installed in conformance with standards set forth in Book 2, Section 14, Signing, Pavement Marking and Signalization & Lighting.

The TCPs shall be submitted to CDOT for Acceptance 14 Days prior to implementation of the particular TCP.

TCPs for local streets shall be submitted to Lakewood for Acceptance 14 Days prior to implementation of the particular TCP.

Any major revision to the TCP, as determined by CDOT, shall require submission of a new TCP for Acceptance.

Method of Handling Traffic (MHT)

The Contractor shall prepare MHTs in accordance with the Project Special Provisions included in this Section 16.

Temporary traffic signals, if determined necessary by the Contractor, shall be installed in conformance with standards set forth in Book 2, Section 14, Signing, Pavement Marking, and Signalization & Lighting.

Design Vehicle

The design vehicle shall be as described in Book 2, Section 13, Roadways, Exhibit 13-1.

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Design Speed and Posted Speed

Minimum design and posted speeds for Work zones shall conform to Table 16.2.

Table 16.2
DESIGN AND POSTED SPEEDS FOR WORK ZONES

Location	Design Speed (mph)	Posted Speed (mph)
US 6 Mainline	60	55
Ramps and collector-distributor roads	25	25
Local Streets*	25	25

* The Contractor shall provide existing design and posted speed whenever it can be reasonably maintained on the local system.

Minimum Lane Requirements

Lane Restrictions

Before any travel lanes or shoulders are closed, the Contractor shall submit an appropriate MHT or TCP to CDOT for Acceptance. The MHT/TCP shall be developed in accordance with CDOT Regions 6 Lane Closure Strategies and Local Agency guidelines.

Lane restrictions must be submitted to CDOT by the Contractor by Thursday 10:30 a.m. of the week in advance of the work (for work Sunday through Saturday), unless required by construction emergencies or other reasonably unforeseen events.

Lane Restrictions

Minimum lane widths for travel lanes on US 6 shall be 11 feet. Minimum outside shoulder widths on US 6 in the vicinity of Garrison Street are allowed to the minimum shoulder width of 2 feet. Inside shoulder widths shall be a minimum of 2 feet.

Three lanes in each direction of US 6 shall remain open at all times, except as allowed per the Region 6 Lane Closure Strategy. During all non-working hours the contractor shall maintain three through lanes at all times on eastbound and westbound US6.

When travel on US 6 mainline is reduced to a single lane in one direction, the Contractor shall provide a minimum clear width of 16 feet to accommodate oversize vehicles.

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All lane closures on US6 shall be consistent with the Region Six Lane Closure Strategy.

Ramps, Collector-distributor and Frontage Roads

Minimum lane widths for ramps, collector-distributor and frontage roads shall be 11 feet. Minimum shoulder width is 2 feet.

A minimum of one lane in each direction shall remain open on all frontage roads. At the Garrison Street intersections of the ramps/frontage roads, in the EB and WB directions, a minimum of two approach lanes to each signal shall remain open at all times to provide for a separate left turn lane and a thru-right lane at the signal. The two lanes shall be minimum 11 ft. width extending 250 ft. back from the intersection stop line.

Local Roads

The contractor shall maintain one through lanes of traffic on Garrison Street at all times.

Minimum lane widths for through lanes and turn lanes on Garrison shall be 10.5 feet with additional 1 foot inside and outside shoulders.

A left turn lane from Garrison to each US6 frontage roads shall be provided for at all times.

Any and all variances for Garrison Street lane closures and lane reductions shall be Approved by the City of Lakewood.

One lane in each direction shall remain open on all Local Streets at all times. Minimum lane widths shall be 11 feet with minimum shoulder widths of 2 feet.

Queue Lengths During Construction

The Contractor shall monitor queue lengths on all roads within the Project limits whenever a lane closure is in effect. The Contractor shall adjust the traffic control devices, including advance signing; to provide advance warning to motorists, of stopped traffic.

Working Time Violations Incidents (WTVI)

If there is a violation of the working time limitations for traffic control as allowed for in this Section 16, a written notice to stop Work will be imposed on the Contractor at the start of the next Working Day. Work shall not resume until the Contractor assures CDOT, in writing, that there will not be a reoccurrence of the working time violation. If more violations take place, CDOT will notify the Contractor in writing that there will be a price reduction charge for each WTVI. This WTVI price reduction charge shall be reflected on the Contractor's monthly invoice. This price reduction will not be considered

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a penalty, but will be a price reduction for failure to perform traffic control in compliance with the Contract.

A WTVI is any violation up to 30 minutes in duration. Each 30 minutes or increment thereof will be considered as a WTVI. A price reduction will be assessed for each successive or cumulative 30-minute period in violation of the working time limitations, as determined by CDOT. A 15-minute grace period will be allowed at the beginning of the second WTVI on the Project before the price reduction is applied. This 15-minute grace period applies only to the second WTVI.

WTVI charges shall be as follows:

1. US 6 - $4,600 per WTVI
2. All local street WTVI charges will be consistent with the Local Agency policy

Interchange Closures

Interchanges

1. Construction at all interchanges shall be consistent with the CDOT Region 6 Lane Closure Strategies.

2. The Contractor shall coordinate phasing of the construction at Garrison Street interchange ramps so as to provide full access movements at all times to and from US6 during construction. Detours may be utilized to provide full access requirements to and from US6. Local Streets shall not be utilized as detours. Detour routes shall be state highways including Alameda Avenue, Colfax Avenue, Kipling Street, and Wadsworth Blvd.

Ramp Closures

The CDOT Region 6 Lane Closure Strategy and Ramp Closure Policy shall be adhered to for all ramp closures at Interchanges.

1. The Garrison Street eastbound off-ramp closure for final grading and paving will be allowed for up to one week, and a temporary detour shall be required.
2. If the contractor requires a closure of the EB Frontage Road, the contractor shall place additional signs at the intersections of Garrison Street and:

- West 5th Place
- West 5th Avenue
- West 4th Place
- West 4th Avenue
- West 3rd Place

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- West 2nd Avenue

The legend of these signs shall contain a message similar to "ROAD CLOSED TO THRU TRAFFIC" and "NO ACCESS TO 6TH AVENUE". Additional ""NO ACCESS TO EAST 6TH AVENUE" signs shall be placed at the intersection of Garrison and 1st Street, Garrison and Alameda, and Garrison and 10th Streets.

Detour Routes

Unless otherwise specified, only State Highways shall be used for detour routes and haul routes. Local Agency local streets shall not be used as detours, haul routes, staging areas or for parking of contractor personal or work vehicles. Use of Local Agency non-local streets for detours, haul routes or staging areas shall be approved by the Local Agency.

All detour routes shall be the shortest length possible utilizing the State Highway System including Alameda Avenue, Colfax Avenue, Kipling Street, and Wadsworth Blvd.

Trail and Pedestrian Impacts

Existing trail systems, temporary trails, sidewalks, and pedestrian routes must be maintained at all times. The Contractor shall meet all requirements of ADA as specified in Book 1 Section 2.2.

The following restrictions shall apply to existing trail systems in the vicinity of the Project:

1. No trail closures shall be allowed from 5:00 a.m. to 8:00 p.m. any day of the week.
2. Temporary trail detours will be allowed under the following conditions:

    A. PIP requirements shall be identified and appropriate public notifications provided.

    B. The Contractor shall comply with the CDOT *Construction Detour Standards for Multi-Use Trails*.

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Emergency Pullouts

Section deleted

Courtesy Patrols

Section deleted

Construction Requirements

The Contractor shall provide installation, maintenance, and removal of all temporary traffic control devices.

Temporary Traffic Control Devices

Construction Signing

Construction signing within the Project limits and all detours shall comply with CDOT *Standard Specifications*, the MUTCD and all other applicable standards set forth herein. Construction signing and construction signing maintenance shall be the responsibility of the Contractor.

Wood signposts conforming to CDOT *Standard Specifications* will be allowed for installation of temporary signs.

Temporary Traffic Signals

Temporary traffic signals, if determined necessary by the Contractor, shall comply with Book 2, Section 14, Signing, Pavement Marking, Signalization & Lighting. The Contractor shall operate the temporary signals and respond to malfunctions during the duration of the project.

Temporary signal timing shall be designed and submitted to CCD TES 14 days prior to implementation for their approval. Timing for the temporary signal(s) will be provided by CCD TES. Maintenance of the temporary signal(s) shall be the responsibility of the Contractor.

Temporary Marking Paint and Signs

The Contractor shall furnish, apply and remove temporary pavement marking paint in accordance with CDOT *Standard Specifications*. Temporary paint striping shall meet the conformity of lines (including no overspray), dimensions, patterns, locations and details established in the Contractor's TCP and MHT.

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1. Temporary pavement paint striping shall be re-striped once a month, or as required to maintain safe traffic operations.
2. Epoxy-based paint shall not be allowed on concrete pavement surfaces for temporary striping.
3. Hydro blasting, or other methods that do not result in scaring of permanent pavements shall be used for removal of temporary striping.

Glare Screens

Glare Screens shall be designed and installed on all opposing traffic permanent median barrier within the project construction limits on US6. Glare screens shall be of industry standards.

Glare screen shall be designed and installed on all opposing traffic temporary barrier through sections where opposing traffic lanes are shifted.

The Contractor shall evaluate the applicability of glare shields in all cross overs.

All work zone traffic control devices shall meet NCHRP 350 Test Level 3 requirements.

Maintenance of Temporary Traffic Control Devices

The Contractor shall be responsible for the maintenance of all temporary traffic control devices within the Project limits, including the local street system.

Detour Pavement

The Contractor shall provide a paved surface for all detours. Detour pavement locations shall be generally described in the Contractor's TMP and detailed in the Accepted TCP. The Contractor shall determine the type and thickness of pavement that shall be used to accommodate existing traffic loadings.

The Contractor shall maintain the detour pavement for the entire period that it is open to the traveling public, including all temporary approaches, accesses, crossings, and intersections with adjacent roads and streets. Detour pavements shall be maintained in good operating condition devoid of potholes, uneven surfaces, and rutting. CDOT may direct the Contractor to repair or replace detour pavements if, in CDOT's sole discretion, detour pavements are determined to be in poor condition.

Detours that use existing streets pavements shall be subject to pavement repair or replacement where it is determined that the condition of the existing pavement has noticeably deteriorated over the duration of its use as a detour. The Contractor shall obtain written approval from the affected Local Agency prior to use of any local streets for detours.

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The Contractor shall be responsible for the complete removal and disposal of all temporary detour pavement.

Deliverables

The Contractor shall submit the following to CDOT (and CCD TES when applicable) for review, Approval, and/or Acceptance:

Deliverable	review, Acceptance, or Approval	Schedule
List of MOT Task Force members	Acceptance	Within 30 Days following NTP
Transportation Management Plan (TMP)	Acceptance	30 Days prior to Construction
Requests to CDOT CTMC and Local Agencies for modifications to traffic signals, timing, and VMS messages	review	14 Days prior to the requested date for modifications
Incident Management Plan (IMP)	Acceptance	30 Days prior to Construction
MOT variance request	Approval	14 Days prior to the requested date for the change
Traffic Control Plan (TCP)	Acceptance	At least 14 Days prior to implementation of the TCP
Method of Handling Traffic (MHT)	Acceptance	At least 2 Days prior to implementation of the MHT requiring a lane closure
Temporary Signal Timing	Approval	At least 14 days prior to implementation of timing

All deliverables shall also conform to the requirements of Book 2, Section 3, and Quality Management.