16.0 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 and travel delays to local residents, business and commuters.

16.1 Traffic Operations

16.1.1 Maintenance of Traffic

The Contractor shall assure proper coordination with affected agencies to plan, coordinate and communicate Project impacts to local residents, businesses and commuters. These efforts shall include participation and representation from CDOT, Utility Companies, and the City and County of Broomfield.

These efforts shall commence at the start of the project and occur as necessary throughout the duration of the Project, and shall be an integral element of the public information plan (PIP) activities. A Traffic Management Plan (TMP) shall be developed, and provided to the CDOT Project Director, in conformance to the requirements specified herein.

16.1.2 Traffic Management Plan

The Contractor shall prepare a TMP which defines the strategic plan for traffic management on the Project. The TMP shall address major aspects of the Work for individual construction areas, phases, and stages. These aspects shall include, but are not limited to, road closures, construction phasing and staging, numbers and type of major traffic shifts, detours, typical section requirements, pull-out requirements and emergency access. The TMP shall be submitted to the CDOT Project Director for Acceptance at least 30 Days prior to beginning the first phase or stage of construction.

The TMP shall include the following components:

1. Overview and description of the proposed construction:

    A. Area: a specific grouping of Work within the Project area, defined by the Contractor.

    B. Phase: a specific sequence of the construction Work in an area during which a major traffic movement is redirected (e.g., a detour) and left in place until the Work is complete and traffic is redirected to another location.

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

    D. Detailed approach to the development of TCPs and MHTs on the Project.

2. List of known or potential roadway and lane closures.

3. Proposed detour routes.

    A. Identification and, if available, planned schedule of other construction projects, within the vicinity of the proposed detour route. These construction projects shall be incorporated into the detour route planning and scheduling.

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

4. Approach to the use of Intelligent Transportation System / Variable Message Sign (ITS/VMS) boards and traffic signals, including coordination with the City and County of Broomfield or the CDOT Traffic Operations Center (TOC).

5. Approach to Public Information.

    A. A checklist identifying specific items that shall be provided to the Contractor's public information officer on a regular basis for public information data collection.

    B. The Contractor plan for coordinating the Traffic Management Activities with those Activities required under the Public Information Section.

6. Additional Elements.

    A. Approach to coordination and cooperation with construction being performed by Utility companies or other Utility Relocations, as required in the Utility Section.

    B. Approach to coordination with transit, bus stop, and RTD Park-n-Ride relocations.

    C. Approach to traffic access management, including commercial vehicles and restrictions, bicycles, pedestrians, and potential impacts to handicapped mobility.

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

    E. Approach to the use of emergency pullouts and the courtesy patrol.

    F. Approach to special event coordination.

16.1.3 Traffic Operation Center Coordination

The existing traffic signals, VMS boards and ITS system within the Project area are available to assist the Contractor in completing the Work. Any Work required for the existing traffic signals, VMS boards and the ITS system shall be the Contractor's responsibility.

The Contractor shall submit a written request for all support Activities, including the following information:

1. Traffic signals to be modified, either by Broomfield or the Contractor.

2. VMS message text and board location.

3. Implementation dates, times and duration of modifications.

4. Reference TCP or MHT Approval date.

5. Name, title and contact information of person requesting the modification.

16.1.4 CDOT Traffic Operations Center (TOC)

The Contractor may coordinate directly with the CDOT TOC in Denver for after-hours operation of VMS boards and ITS information only (303 512-5830)

16.1.5 Incident Management Plan (IMP)

The Contractor shall develop a detailed IMP to manage traffic incidents and operations on the Project. The IMP shall comply with the CDOT Guidelines for Developing Traffic Incident Management Plans for Work Zones, available at

http://www.dot.state.co.us/Traffic_Manuals_Guidelines/incident_management_guidelines/incident_management_guidelines_20030919.pdf

As a minimum the IMP shall include the following components:

1. Public Information Plan.
2. Incident detection and identification.
3. Incident response.
4. Incident site management.
5. Incident clearance.
6. Motorist information and notification.
7. Courtesy patrol.
8. Emergency services notification (local police departments, Colorado State Patrol (CSP), local fire departments, ambulance services, and other emergency response providers)
9. Notification of school districts about possible impacts to their school bus routes, student drop-offs and/or pedestrian facilities.
10. Available resources.
11. Operational procedures.

The Contractor shall provide coordination with local and regional emergency service providers, law enforcement entities, and other related area users. It is anticipated that this coordination will include timely communication of lane closure plans, detour plans, and other Project elements that may affect the appropriate delivery of time-sensitive services. The Contractor shall Work with emergency service providers to address concerns of emergency access to the area.

The IMP shall be submitted to the CDOT Project Director for Acceptance within 30 Days after NTP2.

16.1.6 Business and Private Access

The Contractor shall make all reasonable efforts to maintain business and private access to the local street system. Access to each property on the project shall be maintained at all times. At a minimum, the Contractor shall communicate and document the following information relevant to business and private access:

1. Identify access points impacted by a particular construction phase or stage.
2. Notify affected land owners and document all communications.
3. Schedule of closures and estimated durations.
4. Identify proposed mitigation efforts.
5. Traffic Control Plans (TCPs) and Methods of Handling Traffic (MHTs) shall be developed incorporating stakeholder information from the Public Information Plan (PIP), available surveys and other pertinent studies relating to business and private access to the local street system and the interstate facility. The PIP identifies communication efforts to be used by the Contractor.

16.1.7 Maintenance of Traffic Variance Process

The Contractor may request a Maintenance of Traffic (MOT) variance for any closure, detour or other restriction beyond the specified limits defined herein. Variance requests should be submitted when safety is a concern and/or other Project goals and criteria can be maximized. 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 which cannot be met and the reasons for not meeting that criteria.
3. Public notification methods and schedule.
4. List of emergency services and the schedule for their notification, if required.
5. List of affected agencies or private owners and the method(s) and schedule for their notification, if impacted.
6. Description of additional public information surveys to be performed, if required.
7. List of potential safety hazards to which motorists and citizens may be exposed, if any.
8. Proposed revisions to the Accepted TCP or current MHT, if required.

The Contractor shall submit any such request to the CDOT Project Director for Approval, and shall allow 14 Days for CDOT's response. CDOT may extend the review time if additional public information surveys are required or if revisions are requested. City approval will be required for detours utilizing local streets not specified within this Section.

16.1.8 Contractor Response Time

The Contractor shall have one representative on call, via cellular phone, to respond to all incidents within 30 minutes. Upon arrival at the incident site, the Contractor's representative shall assess the situation and immediately notify the appropriate personnel to implement the

Incident Management Plan. Upon notification of the incident, the Contractor shall immediately undertake actions necessary to restore safe traffic operations.

16.1.9 Special Events

The Contractor shall identify and implement necessary changes in Work progress to accommodate traffic to and from special events. Any events will be determined in coordination with CDOT and the City and County of Broomfield. No lane closures will be permitted on the day of the event. However, work outside the travel lanes and shoulders will be permitted during special events.

16.2 Design Requirements

Work zone design criteria shall meet the requirements specified herein.

16.2.1 Traffic Control Plans

The Traffic Control Plan shall conform to the requirements specified herein and shall generally describe all traffic-control signing, pavement markings and traffic-control devices, and temporary signalization, including pedestrian and bicycle requirements necessary for each construction phase. Temporary traffic signals shall be installed in conformance with standards set forth in the Signal Section.

16.2.2 Design Vehicle

The design vehicle shall be as described in the Roadways Section.

16.2.3 Design Speed and Posted Speed

Contractor shall provide existing design and posted speed whenever it can be reasonably maintained on the state and local system. Any alteration shall be approved by CDOT or the City and County of Broomfield.

16.2.4 Minimum Lane Requirements

16.2.4.1 Mainline US-36

Two lanes in each direction of mainline US-36 shall remain open between the hours of 5:00 AM and 9:00 PM, unless otherwise allowed herein. This work time window shall allow for permitted highway closures and progressive lane closures. Failure to fully comply with the requirements of this subsection shall result in progressive actions as identified in Book 2, Section 19 (105 - Violation of Working Time Limitations).

Minimum lane widths for travel lanes on the mainline shall be 11 feet. Minimum outside shoulder widths on mainline shall be 8 feet.

Outside shoulder widths of less than 8 feet may be used, to a minimum shoulder width of 2 feet, provided that emergency pullouts and a courtesy patrol are provided.

Inside shoulder widths shall be a minimum of 2 feet.

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

16.2.4.2 SH-121 (Wadsworth Parkway)

Existing through-lanes and left turn lanes on SH-121 shall remain open between the hours of 5:00 AM and 9:00 PM, unless otherwise allowed herein. This Work time window shall allow for permitted highway closures and progressive lane closures. Failure to fully comply with the requirements of this subsection shall result in progressive actions as identified in Book 2, Section 19 (105 - Violation of Working Time Limitations).

Minimum lane widths for travel lanes on SH-121 shall be 11 feet.

Once RTD Park-n-Ride has been relocated, the right-most acceleration lane from the existing south Park-n-Ride access may be closed for the pavement tie-in and island construction.

16.2.4.3 Local Roads

For the purpose of this Section, local roads are defined as any portion of roadway excluding mainline US-36 or SH-121 (Wadsworth Parkway). Minimum lane widths for local roads shall be 11 feet. Minimum shoulder width is 2 feet. One lane in each direction shall remain open at all times.

16.2.5 Road Closures

Road closures must be acknowledged and Accepted by CDOT at least 14 Days in advance of the closure.

16.2.5.1 Allison Street

Allison Street may be closed once the following requirements are met:

1. The cul-de-sac at 119th Avenue is constructed

2. A temporary or permanent cul-de-sac is constructed at the Commerce Street and 118th Avenue intersection, or a paved two lane connection is provided along the permanent roadways to provide connectivity to Wadsworth Boulevard.

16.2.5.2 US-36 South Frontage Road

Access from SH-121 to the frontage road southwest of US-36 may be closed once the connection from Transit Way to the frontage road at the southeast end is constructed and operational. Provide Road Closed barriers at limits of road removal within project limits.

16.2.6 Lane Closures

Before any lanes are closed, an appropriate MHT shall be approved by the Engineer and Accepted by the CDOT Project Director. Lane closure requests and MHTs shall be submitted to the CDOT Project Director at least 14 Days in advance of the closure, unless required by

construction emergencies or other reasonably unforeseen events. All lane closures shall base upon the guidance in the current edition of Region 6 Lane Closure Strategy, a copy of which may be found at:

www.dot.state.co.us/Traffic_Manuals_Guidelines/Lane_Closure_Policies/R6_Lane_Closure_Report.pdf

16.2.7 Detour Routes

State highways shall be used for detour routes, where ever feasible. Local routes available for use as detours must be approved by the City and County of Broomfield and other affected Local Agencies. Detour routes shall be the shortest length possible.

The Contractor may propose detour routes within the MOT variance process.

16.2.8 Pedestrian Impacts

1. PIP requirements shall be identified and appropriate public notifications provided.
2. Contractor shall allow exiting pedestrian movements, when ever possible.

16.3 Construction Requirements

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

16.3.1 Temporary Traffic Control Devices

16.3.1.1 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.

16.3.1.2 Temporary Traffic Signals

Temporary Traffic Signals shall comply with the Book 2, Section 14. Upon discovery of a signal malfunction, the Contractor shall immediately notify the entity responsible for the signals.

16.3.1.3 Temporary Marking Paint and Signs

The Contractor shall furnish, apply and remove temporary pavement-marking paint in accordance with Book 2, Section 19. Temporary paint striping shall meet the conformity of lines, dimensions, patterns, locations and details established in the Contractor's TCP and MHT.

1. Temporary pavement paint striping shall be re-striped once a month, or as required to maintain safe traffic operations.
2. No epoxy-based paint shall 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.

Wood signposts will be allowed for installation of temporary signs. Temporary wood light poles will be allowed for installation of temporary lighting.

16.3.2 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.

16.3.3 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 street 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 be responsible for the complete removal and disposal of all temporary detour pavement.

16.3.4 Temporary Lighting

The Contractor shall maintain temporary lighting at a level equivalent to existing lighting provided on US-36, SH-121, and local Streets.

16.3.5 Project Special Provisions

The following specifications modify and take precedence over the Standard Specifications.

16.3.5.1 Construction Zone Traffic Control

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

Subsection 630.09 shall be deleted and replaced with the following:

630.09 Traffic Control Plan. The Contractor shall prepare a Traffic Control Plan (TCP) to control traffic on the Project. To implement the TCP, the Contractor shall develop and submit a Method for Handling Traffic (MHT), described below, for each different stage of construction which shows the Contractor's proposed construction staging and proposed traffic control devices consistent with the TCP. If at any time the Contractor desires to change the MHT, it shall be considered a different stage requiring a new MHT. The TCP shall be submitted to the CDOT Project Director for Acceptance at least 14 Days prior to implementation of the particular TCP. CDOT may extend review time if revisions are necessary.

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

Except where lane closures are not proposed, each proposed MHT shall be approved in writing by the CDOT Project Director before the corresponding stage of construction will be allowed to begin. Those stages of construction which require a lane closure, as defined herein, shall also require an MHT Accepted by the CDOT Project Director. The Contractor shall submit MHTs requiring the CDOT Project Director's Acceptance at least 14 Days prior to implementation of the particular MHT. CDOT may extend review time if revisions are necessary.

The proposed MHT shall include as a minimum the following:

1. A detailed diagram which shows the location of all traffic control devices, including advance-construction signs and speed-limit signs; method, length and time duration for lane closures; and location of flaggers and time duration of the flagging operation. Lane closures shall be kept to a minimum in both length and duration, and cause a minimum of interference to the traveling public, consistent with the Work being performed.

2. A listing of all traffic control devices shown in the detailed diagram including, but not limited to: construction signs; vertical panels; vertical panels with light; type 1 and type 2 barricades; type 3 barricades; cones, drum channelizing devices; concrete barrier (temporary); advance warning flashing or sequencing arrow panels.

3. The Contractor shall furnish supporting references from documents such as the MUTCD, Standard Plans, etc. for any devices incorporated into the MHT which are not consistent with the Accepted TCP for that phase of the Work.

4. An access-maintenance plan for all properties requiring access during construction. This plan shall also indicate the areas where equipment will be stored, vehicles parked, and construction signs and materials stored, if within the Project limits. The Contractor shall ingress and egress the project at existing access points, including median crossings, shown on the Accepted TCP, unless otherwise Approved by CDOT.

5. A plan for maintaining and controlling pedestrian, bicycle and other non-vehicular traffic, including ADA requirements

6. A plan for emergency vehicle access.

16.4 Deliverables

The Contractor shall submit the following to CDOT for Approval and/or Acceptance:

Deliverable	Acceptance or Approval	Schedule
Traffic Management Plan (TMP)	Acceptance	30 days prior to start of first phase or stage of work
Incident Management Plan (IMP)	Acceptance	30 days after NTP2
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 14 days prior to implementation of the MHT requiring a lane closure