

# CITY OF BOULDER

## Department of Public Works/ Utilities Division

P.O. Box 791  
1739 Broadway  
Boulder, Colorado 80306  
(303) 441-3266



---

April 2, 2008

Mr. Peter Fogg, Senior Planner  
Boulder County Land Use Department  
P.O. Box 471  
Boulder, CO. 80306

**SUBJECT:** Docket SI-08-001, Betasso Area Pipeline Replacement Project  
Supplemental Information in Response to Referral Comments

Dear Pete:

The city of Boulder (city) has received and reviewed the referral comments on the above-referenced docket which you forwarded to me on March 21 as well as staff docket review questions emailed on March 26. This letter provides the city's response to the comments and a general update concerning the project.

### **REFERRAL COMMENTS**

**Commenter: Samantha Anderson, 38069 Boulder Canyon Drive**

#### **Issue: Water Supply**

This residence is one of a small number of Boulder Canyon residences and businesses that receive treated water from the city's Boulder Canyon Pipeline. When the Orodell Pipeline is empty above the Orodell Hydroelectric Plant, as will occur during our proposed construction, there is minimal water pressure in the Boulder Canyon Pipeline. Due to the low water pressure, water delivery to most of these residences becomes inadequate. The city is aware of this situation and for past pipeline maintenance efforts has provided a temporary water supply to residences and businesses in Boulder Canyon until the normal water service can be restored. We are currently evaluating alternative ways to address the low water pressure issue during the Betasso Area Pipeline Replacement construction. The city will ensure that all the affected residences and businesses have an adequate water supply during construction. Ample notice will be provided to allow uninterrupted water supply.

Betasso Area Pipelines  
April 2, 2008

Orodell Pipeline removal and replacement will most likely begin in August 2008 under the current project schedule. Therefore, water supply should not be an issue during June. Should an unforeseen outage occur that affects the Boulder Canyon water users, the city will act promptly to provide an emergency supply, and we will note that the Anderson residence should be given high priority.

**Issue: Cabled Boulders above Residence**

On March 26, 2008, I visited the residence at 38069 Boulder Canyon Drive with the city's design engineer and blasting expert for this project. Please see the attached letter from the blasting expert.

The proposed new Betasso Penstock will be located very close to the existing Betasso Penstock. The existing penstock must remain operational and in service during the majority of the construction to ensure adequate municipal water supply to the city. This pipeline will be taken out of service only as needed to complete connections necessary to convert it to its new use and only after municipal water demand drops off in the fall.

Installation of the new penstock will require blasting in close proximity to the existing pipeline. The blasting program will be carefully designed to direct the energy of the blasting away from existing infrastructure to prevent damage to the existing pipelines.

The Anderson residence is located at least 600 feet east of the nearest area where rock blasting is likely to occur. The blasting program will be designed to limit the peak intensity of elastic ground vibration at the Anderson residence and other structures. Notwithstanding, the city will monitor ground motion near the house when blasts occur within 1500 feet of the residence. A similar monitoring program was used for residences within ¼ mile of a blast during Lakewood Pipeline construction. Measurements were not sufficient to cause a concern during that project, even for structures located much closer to the pipeline corridor.

We will also ensure that the contractor provides sufficient advance notice (at least 24 hours) of blasting to allow the residents to leave the property during blasts, should they desire to do so.

I have discussed the project personally with Samantha Anderson and addressed her concerns and questions.

**Commenter: Boulder County Transportation Department**

**Issue: Heavy Equipment Traffic on Sugar Loaf and Betasso Roads**

The contractor will be responsible for determining any height, weight or length limitations on all roads and will be responsible for obtaining any necessary permits to use these roads. The

Betasso Area Pipelines  
April 2, 2008

contractor will also be responsible for any damage to roadways resulting from contractor or subcontractor use.

**Issue: Traffic Control and Traffic Management Plans**

The contractor will be responsible for developing traffic control plans in advance of construction. These traffic control plans will be subject to CDOT and Boulder County review and approval.

The city has completed a draft traffic regulation contract specification and a draft traffic management plan. I have attached the current draft to this letter.

**Commenter: Boulder County Public Health**

**Issue: Land Disturbance**

Land disturbance associated with this project will be less than 15 acres, and the project duration will likely be 3 to 4 months, excluding revegetation monitoring and maintenance. We therefore do not anticipate submitting an Air Pollution Emission Notice for this project. The contractor will be responsible for preparing and submitting a Fugitive Dust Control Plan prior to the commencement of construction.

The contractor will be responsible for obtaining a Stormwater Discharge – Construction permit from CDPHE prior to the commencement of construction. Trench dewatering will be required for replacement of the Orodell Pipeline, and the contractor will be responsible for obtaining a Construction Dewatering Permit prior to the commencement of construction.

**DOCKET REVIEW QUESTIONS**

1. Project Duration: We estimate this project will take 3 to 4 months to complete, depending on how the work is sequenced. The city is currently evaluating several options which may affect the project schedule:

- The city may choose to purchase the pipe and/or valves and other appurtenances in advance of the project and store them at Betasso Water Treatment Plant and/or Boulder Canyon Hydro. By doing this, we could avoid some of the delays associated with items that have long lead times.
- The city is considering installing the carrier pipes and highway crossings in advance of pipeline construction (i.e., during June or July), pending CDOT approval. If we do that, it will ensure that there will not be alternating one-way traffic during the Democratic National Convention or after school has resumed in August. Other construction delays may still occur during these times (see attached Traffic Management Plan).
- The city may install the Betasso Penstock Drain during June or July.

Betasso Area Pipelines  
April 2, 2008

The contract specifications will contain a date the contractor may take immediate possession of the project area and a date for final completion of the project. While we have not yet specified these dates, we intend to require that the majority of pipe installation be completed first to allow restoration and seeding of the majority of the disturbed areas prior to the onset of winter.

Revegetation monitoring and maintenance will continue sporadically for a few years following completion of the project.

2. Based on past experience, I estimate that there will be 100 to 130 heavy truck trips in advance of and/or during construction to deliver pipe, valves, concrete, vaults, heavy equipment and other materials to the project area, to haul away old pipe, to repave disturbed portions of the highway, to complete restoration and to demobilize equipment following project completion. Depending on decisions reached concerning advance procurement (see #1), these may occur during a 4- to 7-month period. I am not able to specify delivery locations (i.e., Betasso, Orodell staging area or Link trailhead), because that will depend on the contractor's plan for construction. However, use of the Link trailhead area will occur mostly during highway crossing, repaving and pipe installation on the "black slope."

3. Deliveries will most likely occur throughout construction. Pipe trucks may deliver from one to four pieces of pipe each, so I estimate 35 pipe deliveries during the project. Based on past experience, general mobilization and demobilization are accomplished quickly (from a few days to a few weeks), although this is also determined by the contractor.

As shown in the attached traffic regulation specification, we are limiting pipe and large equipment deliveries to Mondays through Fridays between the hours of 9 a.m. and 3 p.m. to avoid heavy commuter times.

4. Crew size is normally determined by the contractor. However, based upon past experience, I estimate the contractor will have from 18 to 25 managers, engineers, foremen, equipment operators, welders, laborers, etc. on site for the majority of the project (this number generally drops as completion nears). In addition, there will be 1 to 3 city staff, design engineer staff, and city consultants on site throughout the project. Paving, traffic control, and restoration crews may add another 6 people each at various times in the project.

We will ask all project personnel to carpool to the extent it is feasible.

5. We have estimated that the highway crossings will take 5 days to complete. One lane will remain open for alternating one-way traffic. Paving will take another 1 to 2 days to complete. We intend to ask CDOT for permission to complete the highway crossings and repaving at night.

6. We will apply for the necessary CDOT permit(s) immediately following the completion of the 1041 process to ensure that any Boulder County terms and conditions are reflected in the application.

7. Pipe that does not have to be removed will be plugged and will remain in place to reduce the total project disturbance.

8. Technically, the Orodell line is a penstock since it is a pipeline that delivers water to a hydroelectric plant. In practice, we refer to it as either/both.

9. The Orodell Pipeline alignment as depicted in the city's application would require the removal of one large cottonwood tree on the south side of Highway 119. I believe the alignment can be adjusted to avoid this tree. The adjustment would change the highway crossing from a perpendicular orientation to the highway to a diagonal crossing. While CDOT prefers perpendicular installations, I believe they would accept this change. We will follow up with both the design engineer and CDOT and will let you know if for some reason, this minor realignment cannot be made.

In the past we have assessed monetary penalties if specified trees are damaged or destroyed by the contractor, and we anticipate including similar provisions in this contract.

## **OTHER ISSUES**

### **Contractor Compliance**

While many of the plans and permits associated with this project will be developed and obtained by the contractor, the city will have construction management personnel present on-site throughout the construction to monitor contractor compliance with all contract specifications and permit terms and conditions. In addition, CDOT will designate an inspector for all work within the highway right-of-way. As the city's Project Manager, I anticipate being directly involved in the project throughout the construction.

### **Four Mile Fire Protection District**

I met with Bret Gibson, 4 Mile Fire Protection District Chief and Boulder Fire Department Deputy Chief David Cain on March 28 to discuss project safety and hazards. Chief Gibson's primary concern was related to trench collapse incidents, since 4 Mile Fire Department does not have the necessary equipment or a response plan in place for trench rescues. The city maintained trench rescue supplies on site for Lakewood Pipeline construction. That equipment will be made available for this project. In addition, Boulder Fire and 4 Mile Fire will continue to pre-plan and coordinate concerning emergency response to the project. Following contractor selection, Boulder Fire will conduct a site hazards assessment with the contractor, and Boulder and 4 Mile may conduct a joint trench collapse response training exercise. We also discussed fire protection features being incorporated into existing city facilities. Chief Gibson is generally satisfied with the city's plans.

Betasso Area Pipelines  
April 2, 2008

### **Sugar Loaf Community Meeting**

The city is planning to hold a community meeting with interested members of the public in April. The meeting will probably be held at Sugar Loaf Fire Station 2. In addition to posting a meeting notice through Sugar Loaf Community, Inc., we will notice the meeting in the *Daily Camera* and *Nederland Mountain Ear* so that any commuters using Highway 119 may attend, if they so desire. We will invite the Boulder County Land Use Department, Boulder County Transportation Department, CDOT and 4 Mile Fire to attend this meeting.

### **Visual Impact Mitigation**

The 1041 permit application proposes tree thinning in certain areas to feather forest edges and lessen the visual impact of the current pipeline corridor. We anticipate beginning some of this tree thinning along the west side of the existing corridor in the next few weeks. This will allow us to use the city's Wildland Fire Division Mitigation Team to accomplish some of the work. By doing the work now, the logs needed for grade stabilization and erosion control will be available at the start of construction. All tree thinning will be on city property. This is an effort that would likely be completed even without this project to improve forest health and lessen the visual impact of the corridor. The Wildland Fire Division will coordinate with 4 Mile and Sugar Loaf Fire Protection Districts concerning completion of the work.

Thank you for allowing the city the opportunity to respond to comments on the Betasso Area Pipeline Project 1041 permit application. Should additional issues arise, or if you have questions or concerns regarding our responses, please contact me at 303 441-3205 or [taddeucci@bouldercolorado.gov](mailto:taddeucci@bouldercolorado.gov).

Sincerely,

Joe Taddeucci, P.E.  
Utilities Project Manager

attachments: March 27, 2008 Revey Associates, Inc. letter  
Draft 01570 Traffic Regulation

# REVEY Associates, Inc.

---

Gordon F. Revey  
Principal

9250 E. Morning Star Place  
Parker, CO 80134-5611

Phone: (303) 470-0416

Fax: (303) 791-0140

Email: grevey@earthlink.net

March 27, 2008

## RE: Impacts of Betasso Pipeline Replacement Project Blasting on Boulder Stability

Attention: Joe Taddeucci, P.E.  
Utility Projects Manager  
City of Boulder  
1739 Broadway Street  
Boulder, CO 80306-0791

### Introduction

In a letter, dated March 13, 2008, to Mr. Peter Fogg, a senior planner with the County of Boulder, Ms. Samantha Anderson expressed concern that rock blasting at the upcoming Betasso Pipeline Replacement Project could potentially dislodge boulders on the slope above her home.

At the request of Mr. Joseph Taddeucci, the City of Boulder Utilities Project Manager, I visited The Anderson residence located 38069 Boulder Canyon Drive on March 26, 2008. The purpose of my inspection was to evaluate the condition of the boulders on the slope behind the Anderson residence and render an opinion about any potential impacts that blast-induced ground vibration might have on their stability. My evaluation and findings follow.

### Evaluation and Findings

An inspection of the relatively steep rock slope behind the Anderson home revealed that three or four granitic rock boulders were secured to trees with steel rope cables. The general condition of the slope and the largest tabular-shaped boulder located nearest the home are shown in attached photos.

A scaled aerial photograph of the area indicates that the Anderson home is located at least 600 feet east of the nearest area where rock blasting is likely to occur. Due to the restrictions that will be specified to protect the existing water line located close to the new pipe trench, the weight of explosive charges fired at any individual firing time will not exceed 5.0 pounds. At a distance of 600 feet, the peak intensity of elastic ground vibration induced by a 5-pound charge will not exceed 0.1 in/s.

Motion of this intensity is well below the 0.75-in/s safe threshold level where cosmetic cracks could occur in drywall. More importantly, motion of this intensity that will occur at

frequencies of motion greater than 20 hertz, will create temporary elastic ground displacements that will not exceed 0.0008 inches. It is extremely unlikely that this motion, which is ten times less than the thickness of a human hair, would have any impact on the stability of boulders on the slope above the Anderson residence.

Expansions and contractions of the rock caused by temperature changes, freeze-thaw cycles, and washout of supporting soils by heavy rains will have much greater impact on the stability of the boulders. The property owner did mention that some boulders have rolled down the slope in the past and these forces are the likely causes of those events.

Based on these findings, I am confident that vibrations caused by the planned blasting will not have any impact on the stability of boulders behind the Anderson home. To assure that vibrations are indeed as low as expected, in my revisions to the blasting specifications I will require the Contractor to monitor ground motions at the Anderson residence.

I hope my evaluation is helpful.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Gordon Revey', with a stylized flourish at the end.

Gordon Revey, P. Eng.



SECTION 01570

TRAFFIC REGULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. CONTRACTOR requirements related to traffic regulation.

1.02 RELATED SECTIONS

All sections with special reference to the following:

- A. Section 00700 - General Conditions, Section 404
- B. Section 01010 - Summary of Work

1.03 REFERENCES

- A. MUTCD - Manual, U.S. Department of Transportation
- B. ATSSA - American Traffic Safety Services Association
- C. CDOT – Colorado Department of Transportation

1.04 CONTRACTOR SUBMITTALS

- A. A traffic control plan shall be prepared by an ATSSA certified traffic control engineer for the CONTRACTOR and shall meet the requirements of the County and the State. No work shall commence until this plan has been submitted to, and approved by, the appropriate agencies and has been provided to the ENGINEER. The Traffic Control submittal shall include the layout for each sign required and proposed for WORK.
- B. Prior to commencing work, the Contractor shall prepare and submit to CDOT for approval a Traffic Control Plan (and Methods of Handling Traffic included therein) in conformance with the Manual on Uniform Traffic Control (MUTCD), the Colorado Supplement to the MUTCD and CDOT specifications for traffic control and signing. The TCP shall include provisions for allowing passage of emergency vehicles and shall conform to the Americans with Disabilities Act.

1.05 TRAFFIC CONTROL MANAGEMENT AND INSPECTION

- A. CONTRACTOR shall follow the traffic requirements of the MUTCD and CDOT specifications for signage, barricades, cones, flagging and traffic control and meet all requirements of the CDOT Utility/Special Use Permit for the project, Boulder County 1041 Permit, the attached Traffic Management Plan and a Traffic Control Plan as defined in part 1.04 of this specification section. In addition to the MUTCD requirements, the CONTRACTOR must provide and maintain the traffic control signs required by the

## SECTION 01570 - TRAFFIC REGULATION

Traffic Control Plan or identified by the ENGINEER as necessary during the course of the work.

- B. The CONTRACTOR shall provide all traffic control inspection, including night and weekend inspections as required by CDOT or Boulder County.

### 1.06 WORK HOURS

- A. The CONTRACTOR's work hours on Highway 119 and use of Boulder County roads for site access shall be in accordance with the requirements of Attachment 1 to Section 00800 – Special Conditions, of these Specifications. Work may be suspended on the road system if the road is wet, icy, snow packed, foggy, cloud covered, or if there is not enough light to safely work the area. Work hours for all other locations shall be as required in Section 00700- General Conditions, Section 404.

### 1.07 ROAD CLOSURES

- A. Temporary lane closures of Highway 119 shall be in accordance with the requirements of Attachment 1 to Section 00800 – Special Conditions, of these Specifications; the CDOT Utility/Special Use Permit for the project and; the requirements of this specification section and attachment. The CONTRACTOR shall coordinate lane closures with the work conducted by other contractors. Road closures will not be allowed on this project, except for short delays of traffic in both directions associated with blasting (see Traffic Management Plan). Closure of a single lane of Highway 119 will be allowed to complete pipeline highway crossings, subject to CDOT requirements. Additional allowable traffic delays including those associated with blasting are described in the Traffic Management Plan,

### 1.08 TRAFFIC CONTROL SUPERVISOR

- A. The CONTRACTOR shall provide the services of a full-time traffic control supervisor. The traffic control supervisor shall be on-site during working hours and shall be on call 24 hours a day. The CONTRACTOR may assign other duties to the traffic control supervisor, subject to the condition that traffic control will be the supervisor's main job and the supervisor shall respond to all traffic related work and emergencies in a timely manner. Assignment of other work shall not be an excuse for neglect of traffic related work. The traffic control supervisor shall be certified as a worksite traffic supervisor by an agency recognized and accepted by the State of Colorado.

### 1.09 TRAFFIC CONTROL PERSONNEL

- A. Traffic control personnel shall be certified in work zone traffic control by an agency recognized and accepted by the State of Colorado.

### 1.10 LAW ENFORCEMENT OFFICER

- A. The CONTRACTOR shall provide the services of a Colorado State Patrol officer for up to 5 shifts during work within the highway right-of-way to monitor adherence to traffic regulations and controls.

## SECTION 01570 - TRAFFIC REGULATION

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

PART 4 MEASUREMENT AND PAYMENT

### 4.01 TRAFFIC CONTROL AND REGULATION

- A. No measurement for payment shall be made for traffic control. The costs of all traffic control shall be included in the lump sum bid price per the respective item on the bid schedule. The bid price shall include all measures covered by the requirements for traffic control specified herein and contained in the entire document.
- B. Payment for Traffic control shall be made per the following schedule based on the lump sum price bid therefor in the Bid Schedule:
- 40% of the lump sum price per the bid schedule shall be paid on completion of repaving of Highway 119 Highway crossings.
  - 40% of the lump sum price per the bid schedule shall be paid on complete laying of 80% of the pipeline.
  - 20% of the lump sum price per the bid schedule shall be paid on completion of the project.

### 4.02 GENERAL

- A. All other items specified herein shall be considered incidental to the Work. No special measurement or payment shall be made for these items.

END OF SECTION

SECTION 01570 - TRAFFIC REGULATION

**CITY OF BOULDER DEPARTMENT OF PUBLIC WORKS-  
UTILITIES DIVISION  
BETASSO AREA PIPELINES PROJECT  
Draft Traffic Management Plan**

**March 18, 2008**

This traffic management plan pertains to vehicular use of Sugar Loaf and Betasso Roads associated with this project. No construction within or disturbance of Boulder County road rights-of-way is proposed or anticipated. Construction within Colorado Highway 119 right-of-way is subject to Colorado Department of Transportation (CDOT) approval and a separate permitting process. Because work within the Colorado Highway 119 right-of-way will affect County Roads users, this document also includes a summary of traffic impacts to and public notification procedures concerning construction within the highway right-of way.

**Description of County Road Use**

The city is proposing replacement of two existing pipelines between the Betasso Water Treatment Facility and Boulder Canyon Hydro property and Orodell Hydroelectric Facility. It will be necessary to use Sugar Loaf and Betasso Roads for delivery of materials and equipment and for general construction contractor access to the project area.

**Responsibilities**

**A. City Responsibilities**

1. The city shall maintain a telephone hotline and Web site for this project. Information concerning traffic delays shall be available from both sources. The city shall update the website and hotline daily on work days to provide current project information.
2. The city shall designate one person with primary responsibility for updates, with sufficient alternates to ensure adequate coverage is achieved. The city's Web site shall be updated during the working hours of staff authorized to access the site, normally between the hours of 8 a.m. and 5 p.m., Monday through Friday excluding holidays.
3. Hotline and Web site updates shall be transmitted to subscribers to an email list. The city shall continuously update the list and shall provide information concerning subscription to the email list via the hotline and Web site.
4. The city shall coordinate the pipeline project schedule with CDOT. Information from city/CDOT coordination shall be relayed to the Boulder County Transportation Department.
5. The city shall advise emergency services providers of pertinent project information via weekly Incident Action Plans, with more frequent updates as necessary.

## SECTION 01570 - TRAFFIC REGULATION

6. The city shall keep CDOT advised in advance of any construction activities which will affect traffic on Highway 119, and CDOT shall determine whether to post project information on the CDOT variable message board at the mouth of Boulder Canyon.
7. The city shall provide pagers and radios to project personnel as necessary to ensure that the Boulder Regional Communications Center can contact project personnel to facilitate passage of emergency vehicles through the project area.

### **B. Contractor Responsibilities**

1. Project access is via Colorado Highway 119 and Sugar Loaf and Betasso Roads. The contractor shall be aware of traffic height, weight and length limitations on all roads and shall be responsible for obtaining any necessary permits to use these roads.
2. The Contractor shall conduct and document a pre-construction investigation of the conditions of the project access roads.
3. The Contractor and its traffic control subcontractor shall ensure that a qualified Traffic Control Supervisor (TCS) is on site during all working hours and on call 24 hours per day.
4. The Contractor shall be responsible for ensuring safe passage through the work zone for pedestrians and bicycles. The Contractor shall maintain public use of the Link Trail (roughly coincident with the existing Orodell Pipeline) to the maximum extent possible by providing alternate trail access along the highway and provisions for safe trail access during construction. Temporary trail closures may be necessary during some blasting, construction of highway crossings and construction of the discharge line within the Highway 119 right-of-way. The Contractor shall provide 7 days advance notice of any proposed trail closure.
5. The Contractor shall post signs advising of blast times at the upper and lower trailheads of the Link Trail at least 24 hours in advance of blasting.
6. The Contractor shall maintain three (3) variable message boards to advise Sugar Loaf and Betasso road users and west- and eastbound Highway 119 users of any traffic delays. One of these message boards will be placed along Sugar Loaf Road just below Betasso Road. The other two will be placed to inform east- and westbound Highway 119 traffic. The messages will be updated by 4:30 p.m. each work day to advise of anticipated traffic delays for the following day.
7. If unforeseen circumstances cause traffic delays in excess of those anticipated (see Traffic Delays below), the Contractor shall immediately advise the city of the anticipated length of delay and as rapidly as possible, post anticipated delay information on the variable message boards.

SECTION 01570 - TRAFFIC REGULATION

8. The Contractor shall provide public notice of blasting 24 hours in advance of the blast. Blasting will be limited to the times specified in the table below, and as required by specification section 02201.

9. If at any time it becomes necessary to stop traffic on Highway 119 other than has been approved by CDOT and noticed to the public, the Contractor shall immediately notify the Boulder County Sheriff and CDOT.

10. If at any time it becomes necessary to stop traffic on Sugar Loaf or Betasso Roads other than has been approved by Boulder County and noticed to the public, the Contractor shall immediately notify the Boulder County Sheriff and Boulder County Transportation Department.

11. The road shall be inspected daily and cleaned immediately as necessary and as directed by the Engineer. The Contractor shall be responsible for the regular removal of any debris (trash, mud, etc.) deposited on project access roads as a result of Contractor or subcontractor use.

12. The Contractor shall be responsible for any damage to roadways resulting from Contractor or subcontractor use.

**Traffic Delays**

Normal working hours will be 7 a. m. to 7 p. m., Mondays through Fridays. Work shall not be performed on CDOT right-of-way on Saturdays, Sundays or holidays without prior authorization from CDOT. Work shall not be performed on city property on Saturdays, Sundays or holidays with prior authorization from the city's Project Manager.

The types and duration of traffic delays which can be anticipated during construction are listed in Table 1, below.

**Table 1: Betasso Area Pipelines Project  
Anticipated Traffic Delays**

ROADWAY	ACTIVITY	LENGTH OF DELAY	ANTICIPATED DURATION OF ACTIVITY	COMMENTS
Colorado Highway 119	Two open trench highway crossings	5 minutes	5 days	One lane will remain open at all times to accommodate alternating one-way traffic. Traffic may be briefly stopped in both directions to allow passage of emergency vehicles. City will request CDOT approval for night work between 8 p.m. and 4:30 a.m. If restricted to daylight hours,

SECTION 01570 - TRAFFIC REGULATION

ROADWAY	ACTIVITY	LENGTH OF DELAY	ANTICIPATED DURATION OF ACTIVITY	COMMENTS
				work will occur between 9:30 a.m. and 3:30 p.m. to avoid heavy traffic times. During non-working hours, the Contractor shall restore normal, two-way traffic on the highway.
Colorado Highway 119	Paving	5 – 10 minutes	2 days	City will request CDOT approval for night work between 8 p.m. and 4:30 a.m. If restricted to daylight hours, work will occur between 9:30 a.m. and 3:30 p.m. to avoid heavy traffic times.
Colorado Highway 119	Construction adjacent to the paved road	None		Flaggers and/or signs will warn motorists to reduce speed when there are barricades adjacent to the lanes of travel.
Colorado Highway 119	Blasting <ul style="list-style-type: none"> <li>Within 50 feet of roadway</li> <li>Within 500 feet of the north side</li> </ul>	20 minutes <sup>1</sup> (9:30-11:30 a.m. and 1:00-2:30 p.m.) Mondays through Fridays  10 minutes <sup>1</sup> (9:30-11:30 a.m. and 1:00-2:30 p.m.) Mondays through Fridays	2-3 discrete blasts (no more than 2 per day)  As needed for safety (no more than 2 per day)	As required by OSHA, all traffic must be stopped when loading explosives within 50 feet of the roadway.  Traffic in both directions will be stopped during a blast and until the all clear signal is sounded as a safety precaution against falling rock.

<sup>1</sup> This is the length of time all traffic will be stopped. An individual vehicle may experience a slightly longer delay due to the time required to clear traffic in both directions.

SECTION 01570 - TRAFFIC REGULATION

ROADWAY	ACTIVITY	LENGTH OF DELAY	ANTICIPATED DURATION OF ACTIVITY	COMMENTS
Colorado Highway 119	Blasting malfunctions within 500 feet of the north side	Situation dependent, up to 60 minutes		The licensed blaster has the sole authority under state law to determine when traffic may safely pass through the blasting zone.
Colorado Highway 119	Pipe and large equipment deliveries	Less than 5 minutes	9 a.m. – 3 p.m. Mondays through Fridays sporadically throughout construction	Flaggers will temporarily halt traffic in both directions to allow large trucks to turn onto or off Highway 119. Flaggers will temporarily halt all traffic through the tunnel to allow large trucks the full road width in the tunnel.
Sugar Loaf/ Betasso Roads	Pipe and large equipment deliveries	Less than 10 minutes	9 a.m. – 3 p.m. Mondays through Fridays throughout construction	Flaggers will temporarily halt traffic in the oncoming direction to allow trucks to negotiate sharp bends. Pipe delivery vehicles will be preceded and followed by a pilot vehicle.
Colorado Highway 119 Sugar Loaf/ Betasso Roads	General construction traffic	Less than 1 minute	During working hours	Signs will warn of construction traffic on all roads. Contractor personnel will observe speed limits and use common courtesy. Flaggers may halt traffic to allow ingress / egress in locations with limited sight distance.

**Discouraging Public Use of Unauthorized Detours**

The city wishes to discourage unauthorized detours on narrow, unmaintained roads are to be closed to all but local traffic. An example of such a road is the Logan Mill Road (County road 118S) also known as the Escape Route. This road branches off from Arkansas Mountain Road and descends to Four Mile Canyon Road. Signs and barricades will advise the public not to use this road unless they live along the road. Signs and barricades will be placed at the intersection of Four Mile Canyon Road and Logan Mill Road, at the intersection of Arkansas Mountain Road and Mountain Meadows Road and at the unmarked saddle transition from Arkansas Mountain Road to Logan Mill Road. Local traffic will be able to navigate around the barricades as will the public in a fire emergency. In the event of an

## SECTION 01570 - TRAFFIC REGULATION

emergency, Sugar Loaf Fire Protection District or other incident command may remove or direct the Contractor to remove barricades.

Similar signs and barricades will be placed at the intersection of County Road 122N and Mountain Pines Road.

### **Dust Control on Unpaved Roads**

The Contractor shall obtain and comply with all specifications of an Air Pollution Emission Notice/Dust Control Plan approved by Boulder County Public Health, including dust control on unpaved roads used in the completion of this project.