

# Clavonne, Roberts & Associates, Inc.

SITE PLANNING • LANDSCAPE ARCHITECTURE

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June 23, 2006

Eric Hahn, Development Engineer  
City of Grand Junction Community Development Department  
250 N. 5<sup>th</sup> Street  
Grand Junction, CO 81501

RE: Request for a TEDS Exception for the First and Patterson Planned Development

Dear Eric,

The applicant, Constructors West, is requesting staff approval of an exception to the Transportation Engineering Design Standards (TEDS) manual for the North 1<sup>st</sup> Street and Patterson Planned Development. The project is located in the southwestern corner of the First and Patterson Road intersection.

Over the last three years, the Planning Commission and the City Council approved and then reaffirmed that a commercial designation is suitable for this property. In 2003, both the Planning Commission and City Council unanimously approved amending the Growth Plan to change the land use designation of this parcel from straight residential to a mix of commercial and residential uses.

Earlier this year the commercial and residential land use designation layouts were reviewed and approved by both the Planning Commission and City Council under a Growth Plan Consistency Review application. Both the Planning Commission and City Council agreed with the applicant and staff that the plan, and more importantly that the commercial designation as shown on the ODP, was consistent with the Growth Plan in the form shown on the ODP.

As you are aware the applicant has worked with city staff on creating the safest and most viable access for this property and surrounding undeveloped properties. Beginning with a Pre-Application meeting last year, the concept plan has been amended and revised multiple times to best meet the access demands and traffic issues related to this section of Patterson Road. These revisions ultimately led to relocating the most intense commercial uses further west in order to lessen the development's impacts on the intersection of North First Street and Patterson Road.

Since the initial TIS scoping meeting with staff, the traffic study has been revised three times to address city staff concerns about safety, the progression of traffic along Patterson Road, and the impacts of the development on the North First Street and Patterson Road intersection. The final revision of the TIS states that the proposed TEDS exception will provide the necessary access to serve this parcel and surrounding parcels in a safe, suitable, and efficient manner without negatively impacting the progression of Patterson Road.

Through a cooperative effort with city staff and the applicant's traffic engineer (Kimley-Horn), the applicant maintains that the proposed TEDS exception promotes the least amount of adverse impact to surrounding traffic, provides the safest access point

along this section of Patterson Road, and provides the best and most direct access point for the 37 acres of this property combined with the adjacent Baughman parcels.

### **Requested Exception**

The applicant is requesting that a traffic signal be located at ¼ mile signal spacing between 25 ½ Road and 26 Road along Patterson Road. This would require exception to TEDS Section 6.2.8.1 Principal Arterials which reads as follows:

*“Signalized intersections shall be spaced at ½ mile intervals. Unsignalized intersections must be T-intersections at least 600 feet, measured centerline to centerline. Unsignalized four legged intersection may be allowed on arterial streets provided that the design of the intersection precludes left turns onto and through movements across the arterial. If the overlap of left turn storage requirements for two T-intersections exceeds 600 feet, the minimum spacing must be increased to provide adequate left turn storage in both directions.”*

If granted, secondary TEDS exceptions will follow. One such request will be in regards intersection spacing between Cider Mill Road and the newly approved signalized intersection at 25 ¾ Road.

### **Alternatives Considered**

Multiple alternatives addressing site access have been considered by the applicant. These alternatives have considered principals of traffic engineering, site design, and the development potential of the 37 undeveloped acres in this quadrant of North First Street and Patterson Road. The alternatives considered are as follows:

#### **Alternative 1 – Initial Plan**

Proposed - June 2005

The applicant and his representatives met with staff prior to the Pre-Application meeting to determine the most suitable access for the project. The site access was scoped at a full movement unsignalized intersection at Meander Drive and Patterson Road and a full movement unsignalized intersection with Park Drive and North First Street. Street stubs were proposed to the western and southern property lines. At the Pre-Application meeting city staff favored the proposed full movement intersection aligned with Meander Drive in conjunction with a TEDS Exception for a shorter distance to the First Street and Patterson signalized intersection as evident in the following staff comment: *“A TEDS exception is required allowing a full motion intersection at Meander. It doesn't meet the TEDS manual spacing or the motion requirements. TEDS states it should be limited to right/in right out movements only. The TEDS exception should only be a formality, since it is probably the only location on Patterson where City staff will allow an intersection.”*

Following the Pre-Application meeting the client commissioned the initial TIS in fall 2005. The Outline Development Plan was submitted in January 2006

### Alternative Dismissed Because

In February 2006, after receipt of the ODP comments the full movement unsignalized intersection access alternative at Meander Drive was dismissed because the LOS (level of service) for northbound to westbound left turns at Meander Drive proved to be unacceptable.

### Alternative 2 – follow up idea based on rejection of Alt. 1

#### Proposed

The applicant and his representatives' revised plan to create a ¾ movement intersection at Meander Drive and Patterson Road and a full movement unsignalized intersection with Park Drive and North First Street. Street stubs were proposed to the western and southern property lines.

#### Alternative 2 Dismissed – follow up idea based on rejection of Alt. 1

Based on additional traffic analysis, this alternative was dismissed due to adverse impact on LOS created at the Park Drive and North First Street intersection and the impact to the westbound to southbound left turn bay at North First Street and Patterson Road.

### Alternative 3– follow up idea based on rejection of Alt. 1

#### Proposed

The applicant and his representatives revised the plan to create a ¾ movement intersection at Meander Drive and Patterson Road, a full movement unsignalized intersection with Park Drive and North First Street, and a connection to the south to Knollwood. A street stub was proposed to the western property line.

#### Alternative 3 Dismissed Because

Based on additional traffic analysis, this alternative was dismissed due to adverse impact on LOS created at the Park Drive and North First Street intersection and the impact to the westbound to southbound left turn bay at North First Street and Patterson Road. Also the single most important issue to the surrounding neighborhood was the potential connection to Knollwood (as determined through a well attended neighborhood meeting). Staff agreed that the Knollwood connection was not necessary at the time of this development proposal.

#### Alternative 4 – follow up idea based on rejection of Alts. 1, 2, and 3

##### Proposed

The applicant and his representatives revised the plan to create a ¾ movement intersection at Meander Drive and Patterson Road, a full movement unsignalized intersection with 25 ¾ Road and Patterson, and a full movement unsignalized intersection at Park Drive and North First Street. A street stub was proposed to the southern property line. The site plan was reconfigured and the uses were modified to move the more intense traffic generating uses to the western most side of the site. The site plan adjustment was anticipated to lessen the development's impact on the North First Street and Patterson intersection.

##### Alternative 4 Dismissed Because

Based on additional traffic analysis, this alternative was dismissed due to adverse impact on LOS created at the 25 ¾ Road and Patterson unsignalized intersection for northbound to westbound left turns. This movement resulted in a LOS F in the in the PM Peak hour.

#### Alternative 5 – follow up idea based on rejection of Alt. 4

##### Proposed

The applicant and his representatives reviewed the alternative of a 3/4 movement intersection at Meander Drive and Patterson Road, a full movement signalized intersection with 25 ¾ Road and Patterson and a full movement unsignalized intersection at Park Drive and North First Street. A street stub was proposed to the southern property line.

##### Alternative 5 is Acceptable

This alternative is acceptable due to short and long term acceptable LOS created at all impacted intersections. Per the TIS by Kimley-Horn, the signalization of the 25 ¾ Road intersection also is the only alternative that provides "*adequate storage necessary to accommodate the northbound to westbound left turn storage demand at the intersection of First Street and Patterson Road in the near term 2007 horizon.*"

#### Alternative 6

##### Proposed

The applicant and his representatives reviewed the alternative of a 3/4 movement intersection at Meander Drive and Patterson Road, a roundabout at the intersection of 25 ¾ Road and Patterson and a full movement unsignalized intersection at Park Drive and North First Street. A street stub was proposed to the southern property line.

### Alternative 6 Dismissed Because

Although this alternative is acceptable for short and long term LOS, this alternative was dismissed due to excessive acquisition of right-of-way for a two lane roundabout and the costs associated with the construction. A two lane roundabout at this intersection does not markedly improve the LOS of the intersection when compared to a signalized intersection and, as shown in the second paragraph on Page 61 of the TIS; “ *signalization of the western full movement access (25 ¾ Road) does not impact corridor progression during either the AM or PM Peak hours.*” Since the progression is not negatively impacted by a signal, a signalized intersection at 25 ¾ Road is the preferred option (Alternative 5).

### **Proposed Design**

The applicant, working with city staff and Kimley-Horn, and based on exhausting all other access alternatives proposes a signalized intersection at approximately 25 ¾ Road and Patterson Road – Alternative 5. The proposed intersection will be a “T” or 3 legged intersection. The most recently revised TIS for this project recommends that this alternative, coupled with the intensity of uses pushed to the western side of the site, is the best alternative for the progression and LOS along Patterson Road, North First Street, and the surrounding intersections. A signalized intersection is also requires little if any additional right-of-way acquisition from neighboring properties.

The proposed intersection will serve the 37 undeveloped acres in this area (Gormley and Baughman Properties). The calculations used within the TIS assume the currently zoned residential densities on the Baughman parcel (consistent with the Growth Plan) since no other access alternatives exist for the Baughman parcels.

The proposed intersection at a ¼ mile spacing is the most suitable location for an intersection between the existing 25 ½ Road and 26 Road intersections with Patterson Road. This proposed signal creates the maximum allowable distance between these two existing intersections while serving some of the largest undeveloped properties (Gormley and Baughman) which require access along this stretch of Patterson Road. Recent decisions regarding development along 25 ½ Road have limited the Baughman parcel access to Patterson Road.

### **Impacts of Change**

Without consideration of the proposed project, the 2025 background traffic alone results in unacceptable LOS at 25 ½ Road, North First Street, and 7<sup>th</sup> Street. Subsequently, the TIS recommends amending the progression and timing of signalization along this corridor of Patterson Road prior to the 2025 horizon with or without the inclusion of the project traffic.

The proposed design will impact the intersection of North First Street and Patterson Road to a lesser degree than the other alternatives as shown in the TIS. The progression analysis performed by Kimley-Horn also shows minimal impact to this section of Patterson Road. Without a signalized intersection at 25 ¾ Road, excessive delays occurred in the left turning movements onto Patterson Road.

Although economics are not necessarily considered at the time of a TEDS exception, the development will probably not occur on these parcels without controlled signalized access at this location. The viability of developing both the Gormley and Baughman properties depend on the installation of a signalized intersection at this location.

### **Staff Review**

#### If granted, will the exception compromise safety?

The concept of adding an intersection to Patterson Road does not compromise safety. A signalized intersection is the safest alternative for access serving these 37 undeveloped acres (Gormley and Baughman.) An unsignalized intersection with unacceptable LOS levels could lead to dangerous left turn movements exiting the 25 ¾ Road intersection and will result in excessive Northbound to Westbound Left turn storage bay demands at First and Patterson.

The proposed condition increases the safety of the intersection by controlling access with a signal and allowing for full movement fire access into and out of the project site. This signal will eventually serve a significant number of residential dwelling units on the Gormley and Baughman properties.

#### Have other alternatives been considered that would meet current standard?

Numerous alternatives have been considered as listed above and discounted due to LOS issues. A roundabout at this location is another alternative and it is not signalized. This solution was considered and dismissed due to right-of-way acquisition and construction costs. The TIS also states that the *“signalization of the western full movement access (25 ¾) does not impact corridor progression during either AM or PM peak hours.”*

#### Has the proposed design been used in other areas – locally, state or national?

The most applicable example of signals at ¼ mile spacing within Grand Junction occurs along Patterson Road. A stretch of Patterson Road north of the mall is one example. A second example is along Patterson Road between 27 Road and 27 ½ Road. The City of Grand Junction has traffic data on both of these examples. Other examples can be provided upon request.

#### Will the exception require CDOT or FHWA coordination?

To the best of our knowledge CDOT or FHWA coordination will not be required.

#### Is this a one-time exception based upon unique circumstances – location, topography, traffic flow, etc?

The requested signal at ¼ mile spacing along a Principal Arterial is a one time exception based upon unique circumstances of these properties. Due to the proximity of the site to the North First Street and Patterson Road intersection and the quantity and intensity of potential development within the 37 acres of undeveloped land this exception is unique. The land was been designated as commercially viable in 2003 by the City of

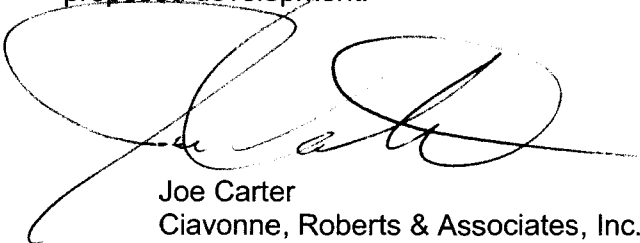
Grand Junction Planning Commission and the City Council. With those recommendations and approvals, the governing bodies of the City of Grand Junction agree that commercial and residential development on these properties is reasonable.

### **Conclusion**

Through great expense and exhaustive efforts, revisions of concept plans, multiple revisions to the TIS, the applicant and his consultant team agree that a TEDS exception should be granted for approximately 25  $\frac{3}{4}$  Road and Patterson Road in Grand Junction. This signalized intersection is the safest alternative to serving 37 acres of future intense residential and commercial development. Unsignalized access would be irresponsible, would most likely lead to no development occurring in this location although the Growth Plan amendment to include commercial development at this location was unanimously approved by both Planning Commission and City Council in 2003.

It should be noted here that considerable time and expense could be saved by all future parties if an access control plan were commissioned for the Patterson Road corridor. An access control plan can provide the city with short term and long term access solutions along the corridor. It is our belief that such a study should consider existing and future land use and the potential intensity of development along this corridor. Lastly, this would serve as an excellent tool for city staff in determining and regulating access points along this ever growing corridor.

Thank you for the opportunity to submit this TEDS exception request to you and we look forward to a positive recommendation from staff so we can proceed with the proposed development.

A handwritten signature in black ink, appearing to read 'Joe Carter', written over a faint circular stamp or watermark.

Joe Carter  
Ciavonne, Roberts & Associates, Inc.

TEDS Exception Request 1<sup>st</sup> & Patterson Development  
Jody Kliska, City Transportation Engineer  
June 30, 2006

**The Effects of Compromising ½ Mile Signal Spacing on Patterson Road:**

As Grand Junction grows, a number of transportation planning studies have indicated that Patterson Road is a critical part of the Valley's transportation system. Particularly in this segment of Patterson Road, there are no other arterial alternatives for east-west travel and the segment immediately east of this section is the most heavily traveled today.

*Delay:*

- The Colorado Access Demonstration Project concluded that ½ mile signal spacing could reduce vehicle-hours of delay by over 60% and vehicle-hours of travel by over 50% compared with signals at ¼ mile intervals with full-median openings between signals.
- Other national studies have concluded that a four-lane divided arterial having signals at uniform ½ mile spacing could carry the same volume of traffic as a six-lane divided roadway with ¼ mile spacing.

*Safety:*

- Crashes per million VMT increase from 3.53 with less than 2 signals per mile to 6.89 with 2-4 signals per mile, according to a study by the Transportation Research Board.
- The City's Crash Report for 2005 shows that 772 of the 1495 accidents occurred at intersections, with an additional 188 intersection-related crashes. An additional 131 crashes occurred at driveway intersections. Intersections in the city with the highest frequency of crashes are all signalized intersections.

*Capacity:*

- The current Transcad model for the Grand Valley makes assumptions of arterial capacity based on travel speed and signal spacing. Changing the signal spacing will reduce the capacity that is modeled, likely resulting in failing conditions in future modeling.

*Progression:*

- It is possible to achieve progression in the heaviest direction of traffic movement on Patterson Road with the addition of a signal at 25 ¾ Road operating as a T-intersection. However, as you add signals, the travel time decreases and ultimately capacity decreases. In effect, adding signals to Patterson Road will change its operating characteristics so that it is similar to North Avenue in operations.

**Response to Request for TEDS Exception:**

The developer's representative and engineer were encouraged on several occasions to investigate all possible alternatives, including the consideration of constructing dual left turn lanes northbound at 1<sup>st</sup> Street to accommodate the development traffic. At this time, the development team has not looked at this. The City Transportation Engineering office did look at a signal analysis of the intersection with the development traffic and concluded that it could work from a signal timing perspective. The geometric requirements have not been explored to see if additional ROW is required. This alternative would negate the need for compromising signal spacing on Patterson Road.



The developer dismissed the option of a full movement driveway at Meander and did not consider a full-movement, unsignalized access at 25 ¾ Road, based primarily on the LOS F for the northbound left turn movement out of the site. The HCM recognizes that LOS F will occur in almost all situations where the access is on a heavily traveled street and suggests that other criteria be evaluated such as queuing and volume/capacity ratios for the affected movement. The traffic study analysis indicates that the NB left turn movement at 25 ¾ Road would result in a 95<sup>th</sup> percentile queue length of 2.2 vehicles in the pm peak hour in 2007 with a v/c ratio of 0.49. A TEDS exception for St. Mary's hospital was granted in 2003 to allow left turns out after the analysis showed that adequate gaps existed and that the driveway would not be blocked by the upstream signal queues. This intersection at 25 ¾ is midway between existing signals which should result in gaps created and should not be affected by queuing from the upstream signal. This would not be an exception to TEDS, as the manual does not prohibit full movement intersections at appropriate spacing.

July 24, 2006

# COPY

Joe Carter  
Ciavonne, Roberts & Associates, Inc.  
844 Grand Avenue  
Grand Junction, CO 81501

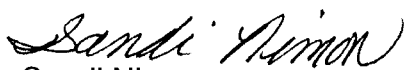
Re: #DE 26-06 – 2503 N. 1<sup>st</sup> St. – 1<sup>st</sup> & Patterson Planned Development Traffic Signal Spacing

Dear Mr. Carter:

Please find attached the committee's decision for the above referenced request. This design exception has been **denied**.

If you have any questions concerning this decision, please feel free to contact the Development Engineer in charge of your project or Tim Moore, Public Works Manager at (970) 244-1557.

Sincerely,

  
Sandi Nimon,  
Sr. Administrative Assistant

Xc: Eric Hahn, Development Engineer (244-1443)  
Jody Kliska, Transportation Engineer  
File

## DESIGN EXCEPTION #DE 26-06

To: Mark Relph, Public Works & Utilities  
Kathy Portner, Community Development  
Jim Bright, Interim Fire Chief

From: Tim Moore, Public Works Manager

Copy to: Eric Hahn  
Jody Kliska

Date: July 18, 2006

RE: 2503 N. 1<sup>st</sup> St. – 1<sup>st</sup> & Patterson Planned Development Traffic Signal Spacing

### DESCRIPTION OF THE SITUATION

The owners of the property located at the southwest corner of 1<sup>st</sup> Street and Patterson Road (2503 North First Street) desire to develop approximately 17 acres as a Planned Development.

The applicant is requesting an exception to TEDS Section 6.2.8.1 to allow a traffic signal be located at ¼ mile spacing between 25 ½ and 26 Roads. TEDS requires signalized intersections to be spaced no closer than ½ mile apart.

#### Site Description:

The site plan proposes mixed use consisting of 111 townhomes, a 14490 SF pharmacy, 13000 SF of medical/dental offices, 34200 SF retail, a 7000 SF restaurant and 49000 SF of general office.

### EXCEPTION CONSIDERATIONS

**1. Will the exception compromise safety?**

According to national and local data, accidents increase as the number of intersections increase. Signalized intersections have higher frequencies of accidents.

**2. Have other alternatives been considered that would meet the standard?**

The applicant has considered a number of alternatives as described on the attached letter from Ciavonne, Roberts & Associates, Inc.

**3. Has the proposed design been used in other areas – locally, state or national?**

The installation of ¼ mile signal spacing on principal arterials is generally not considered, as it decreases the roadway capacity and mobility function for which the arterial is intended.

4. Will the exception require CDOT or FHWA coordination?

No

5. Is this a one-time exception or a manual revision?

This would be a one-time exception.

**Staff Recommendation**

Staff recommends denial of the exception. Staff recommends consideration of a full-movement un-signalized intersection at 25 ¾ Road, coupled with construction of dual NB left-turn lanes on 1<sup>st</sup> Street to handle the increased traffic volume. The analysis of the proposal by City Transportation Engineering is attached.

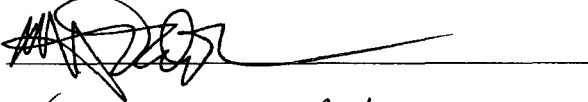
Recommended by: \_\_\_\_\_

Approved as Requested: \_\_\_\_\_

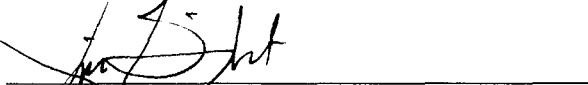
Approved as Modified:

Denied \_\_\_\_\_

Dated: 7-19-06

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 \_\_\_\_\_

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DE#26-06 2503 N. 1<sup>st</sup> St. – Signal Spacing

## CIAVONNE, ROBERTS & ASSOCIATES, INC.

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July 14, 2006

Eric Hahn, Development Engineer  
City of Grand Junction Community Development Department  
250 N. 5<sup>th</sup> Street  
Grand Junction, CO 81501

RE: Addendum to a Request for a TEDS Exception for the First and Patterson Planned Development

Dear Eric,

Three weeks ago on Friday June 23, we submitted a request for a TEDS Exception on behalf of the North First Street and Patterson Road Planned Development. As you are aware, our request seeks approval of an exception to the ½ mile signal spacing along Major Arterials by allowing a signal at a ¼ mile spacing between 26 Road and 25 ½ Road at approximately 25 ¾ Road. The proposed signal would be constructed as a "T" intersection. Based on discussions with you this week, you recommended that we address the scenario of double left turns (northbound to westbound) at the intersection of First and Patterson Road. Please find our discussion of this alternative below.

### Alternatives Considered

Multiple alternatives addressing site access have been considered by the applicant. Six of these alternatives were presented in the original request. Two additional alternatives are presented herein. These alternatives have considered principals of traffic engineering, site design, and the development potential of the 37 undeveloped acres in this quadrant of North First Street and Patterson Road. The alternatives considered are as follows:

Alternative 7 – Double Left Turn Bays # 1 (northbound to westbound) at First and Patterson with a ¾ movement intersection at 25 ¾ Road

### Proposed

The proposed access points for this alternative are a full movement intersection at Park Drive and N. First Street, double left turn bays northbound to westbound at N. First Street and Patterson Road, a ¾ movement intersection at Meander Drive and Patterson Road, and a ¾ movement intersection at 25 ¾ Road and Patterson Road. A street stub is proposed to the southern property line.

### Alternative Dismissed Because

This alternative was dismissed because no alternative west bound turning movements are allowed. Restricting the project to only ¾ movement intersections onto Patterson Road directs all Gormley project traffic and all traffic related to the Baughman property to N. First Street and Park Drive.

The project traffic coupled with the background traffic creates long double left turn bays at North First Street and Patterson Road. During the peak hour these double left turn bays block the entrance to the development at Park Drive and N. First Street.

Alternative 8 – Double Left Turn Bays # 1 (northbound to westbound) at First and Patterson with a full movement unsignalized intersection at 25 ¾ Road

Proposed

The proposed access points for this alternative are a full movement intersection at Park Drive and N. First Street, double left turn bays northbound to westbound at N. First Street and Patterson Road, a ¾ movement intersection at Meander Drive and Patterson Road, and a full movement unsignalized intersection at 25 ¾ Road and Patterson Road. A street stub is proposed to the southern property line.

Alternative Dismissed Because

This alternative was dismissed because the L.O.S. for northbound to westbound (left turns) at the unsignalized intersection of 25 ¾ was unacceptable. An L.O.S. of "F" was created at peak hour.

In conclusion we believe these two alternatives are unacceptable and don't provide the best or safest access alternatives for the future 37 acres of development. We maintain that the best, safest and most efficient access scenario would allow for multiple accesses entering and exiting the project site. The proposed Alternatives 7 and 8 effectively send all, or a large majority, of westbound Patterson trips to North First Street.

Thank you for the opportunity to provide you with this addendum to our TEDS Exception request. We look forward to hearing a positive result early next week.

Sincerely,



Joe Carter  
Ciavonne, Roberts & Associates.