CITY OF
Grand Junction
COLORADO

PUBLIC WORKS
& UTILITIES

October 12, 2005

Vista Engineering Corp.
605 18 ¼ Road, Suite B
Grand Junction, CO 81501

Mr. Larson:

The TEDS Committee has reviewed your request for the Exceptions related to the Arbors Subdivision. While the Committee appreciates and encourages this type of creative subdivision layout, they were uncomfortable with several components of the plan and have denied your request for the Exception. The Committee asked that I provide you some feedback now and encourage you to meet with staff to further discuss options.

The Committee was uncomfortable with any street section that did not provide the Fire Department's minimum requirement for 20 feet of asphalt driving surface (excluding parking). An additional item of concern related to the turning template analysis. Although the plan provided for on -street parking on Walnut and Magnolia, the turning template analysis assumes that all streets are free of parked cars near the intersections. One last discussion issue involved the reduced length of the intersection approach tangents. The committee was unclear how the proposed reduced lengths would impact traffic flow and circulation.

Again, I would encourage you to review this information and schedule some time to discuss the project with staff.

Sincerely,

Tim Moore
Public Works Manager
City of Grand Junction

Cc: Lori Bowers
Eric Hahn

CITY OF Grand Junction COLORADO

PUBLIC WORKS
& UTILITIES

DESIGN EXCEPTION #DE 24-05

To: Mark Relph, Director of Public Works & Utilities
Bob Blanchard, Director of Community Development
Rick Beaty, Fire Chief

From: Tim Moore, Public Works Manager

Copy to: Eric Hahn,, Development Engineer

Cc: Lori Bowers

Date: October 12, 2005

RE: The Arbors Subdivision – Alternate Street Standard

DESCRIPTION OF THE SITUATION

The applicant is proposing to develop approximately 19 acres with 101 single family lots at Orchard Avenue and 29 ¼ Road. The proposal includes interior lots with alleys accessing garages placed in the rear of the houses. The applicant desires to utilize narrow streets with parallel offset parking and sidewalks to create the aesthetically pleasing streetscape found in the core downtown area.

Site Description:
The specific request includes a narrowed street section (two 9' lanes) in front of the lots with an alley in the rear serving as primary access to the lots. The specific Exceptions to the TEDS Manual includes:

1. Narrowed Street sections
2. The approach tangent at intersections is less that minimum of 75'.
3. Garage setback proposed is 20'. TEDS requires 25 '
4. Multipurpose easement is reduced from 14' to 9' on streets with alleys.
5. Alley construction of asphalt with 6' concrete valley

EXCEPTION CONSIDERATIONS

1. **Will the exception compromise safety?**
   Staff does not believe the proposed development and the use of the alternate street standard, reduced alley setbacks, tangent lengths, and 9' multipurpose easements will not compromise safety.

2. **Have other alternatives been considered that would meet the standard?**
   The developer did consider the standard development template but has elected to propose a more traditional approach with alleys and parking in the rear of the houses.

3. **Has the proposed design been used in other areas?**
   The use of alleys and narrower street sections has been used effectively in the core part of Grand Junction

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 approval of the exceptions as follows:

1. For narrowed streets provided roadways are signed with no-parking signs as designed
2. Minimum Stopping Sight Distances as proposed at Walnut & Crestwood, Walnut & Pine Meadows, Walnut & red Cedar Way. LANDSCAPE Clear ZONES
3. Sight distance at Cedar and Walnut of 180' provided subdivision is signed for 25 mph.
4. Garage setback of 20'.
5. 9' multipurpose easements adjacent to lots with alley access provided the Utility Coordinating Committee also approves the request.

Staff does not recommend the exception to the alley construction standard.

Recommended by: _____

Approved as Requested: ____

Approved as Modified: ✓

Denied _____

Dated: 11/29/05

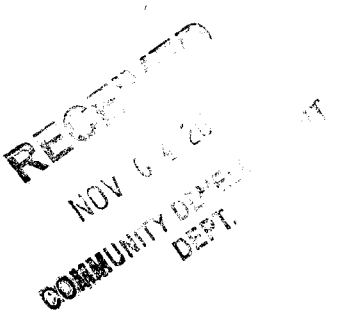
\DE#23-05 Arbors Subdivision – Alternate Street Standards

VISTA ENGINEERING CORP.

CONSULTING ENGINEERS & LAND SURVEYORS

November 4, 2005

City of Grand Junction
250 North 5th Street
Grand Junction, Colorado 81501
Attn: Tim Moore



Regarding: Arbors Subdivision
TEDS Committee review of exceptions

Dear Sir:

The TEDS Committee's review of the request for an exception for the Arbors Subdivision has been received and reviewed by this office. In the course of reviewing the comments presented and based upon conversations with City staff several minor changes have been made to the Preliminary Plan to address the Committee's concerns. These concerns include the width of asphalt driving surface, the turning template analysis as it relates to on-street parking along Walnut Avenue, and the approach tangent distance on streets intersecting Walnut Avenue.

The TEDs Manual (Chapter 5 - Fire Department Access) states that all access routes shall be at least 20 feet in width. The interior lane width has been increased to 10 feet. This change increases the asphalt driving surface width from 18 feet to 20 feet on all the interior roadways.

The turning template used in the turning analysis has been revised to reflect the 33 foot inside radius and 48 foot outside radius required by for City Fire apparatus. The curb return radii have been increased from 25 feet to 30 feet to accommodate the required turning radii and to allow for on-street parking along the north half of Walnut Avenue. The on-street parking on Walnut Avenue is now 8 feet in width.

The intent of the 75 foot approach tangent distance is to provide adequate sight distance for drivers to see an intersection ahead and react to it. Table III-1 of the AASHTO Greenbook 1990 states that the required stopping sight distance for a 25 mph design speed is 150 feet on wet pavements. As indicated on the revised Turning Template Analysis the sight line from the centerline of the interior streets to the center of the intersection with Walnut Avenue limited to the front of the offset sidewalk provides greater than the required 150 feet of sight distance. The proposed reduced approach tangent lengths should not affect the overall traffic flow and circulation of the subdivision.

As stated in the General Project Report the narrow streets are intended to provide traffic calming within the subdivision as well as providing for an aesthetically pleasing streetscape. The use of narrow streets is intended to discourage or reduce traffic flow through the subdivision thereby enhancing the calm and quiet nature of the subdivision. The revisions discussed will maintain

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the intended nature of the subdivision while providing the appropriate public and emergency access.

In summary, two of the three committee's concerns have been addressed and the Preliminary Plan has been revised to meet the TEDs standards. The last concern, the approach tangent distance, has been addressed in terms of adequate stopping sight distance according to the AASHTO Greenbook. A TEDs exception is requested for the minimum approach tangent distance of 75 feet.

Please contact the undersigned with any questions or comments.

Sincerely:
Vista Engineering Corp

Fredrick L. Larsen, P.E.
Project Manager

Eric's Comments:

1. The remaining primary points of concern regarding the proposed Alternate Residential Street Section (ARSS) are as follows:
   a. *(Original comment) The applicant assumes that "normal" on-street parking can be accommodated on the "typical" side of the combination street section (Section A-A). However, this section is only 26' wide from flowline to flowline. Parking must be somehow restricted to only one side of the street (signage, striping, etc?), and the Fire Dept must specifically approve the street width.*

   (Updated comment)The applicant has increased the width of the combination street section (Section A-A) 1', so that the street is now 27' wide from flowline to flowline. This still assumes that "normal" on-street parking can be accommodated on the "typical" side of the street section. Parking must still be somehow restricted to only one side of the street (signage, striping, etc?), and I believe the Fire Dept still must specifically approve the street width.

   b. *(Original comment) The turning template analysis, on the other hand, assumes that all streets are completely free of parked cars near the intersections.*

   (Updated comment) The Fire Dept's standard turning template (35' interior radius and 48' exterior radius) is accommodated at the intersections and parking need only be restricted on one side of the street, as discussed above.

   c. *(Original comment) All traffic lanes are proposed to be 9' wide (10.5', if you include the gutter width). In areas where these 9' traffic lanes are adjacent to the proposed 9' parking width, it could be argued that the 9' parking width should include the adjacent gutter width, thereby adding an additional 1.5' to the traffic lane.*

   (Updated comment) All traffic lanes have been increased to 10' pavement width.

   d. *(Original comment) The multi-purpose easement is reduced to 9' along most streets, and a 5' sidewalk is included within this reduced easement.*

   (Updated comment) No change to the proposal, the TEDS Committee did not have any comments or concerns regarding this issue.

   e. *(Original comment) Where the m-p easement remains at 14', street trees are proposed within the easement.*

   (Updated comment) No change to the proposal, the TEDS Committee did not have any comments or concerns regarding this issue.

   f. *(Original comment) The alleys are proposed to be asphalt, with a 6' valley pan, rather than the standard all-concrete construction.*

   (Updated comment) No change to the proposal, the TEDS Committee did not have any comments or concerns regarding this issue.

   g. *(Original comment) The setback from the alley to the garage is proposed to be 20', rather than the 25' required in TEDS.*

   (Updated comment) No change to the proposal, the TEDS Committee did not have any comments or concerns regarding this issue.

2. There are two TEDS Exception items that are discussed in the ARSS request that probably should be considered separately:
   a. *(Original comment) The approach tangent at intersections is less than the minimum required distance of 75'.*
   (Updated comment) The applicant demonstrates that, although the approach tangent does not meet the minimum distance of 150' as required in TEDS, the actual stopping sight distance (as required by Table III-1 of the 1990 AASHTO "Greenbook") is maintained.

   b. *(Original comment) The intersection sight distance at the east leg of Red Cedar and Walnut is less than the minimum required distance of 275'.*
   (Updated comment) No change to the proposal, the TEDS Committee did not have any comments or concerns regarding this issue.

CITY OF
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PUBLIC WORKS
& UTILITIES

December 2, 2005

Vista Engineering Corp.
605 18 ¼ Road, Suite B
Grand Junction, CO 81501

RE: The Arbors Subdivision TEDS Exception (Design Exception #DE 24-05

Mr. Larson:

The TEDS Committee reviewed your revised request dated November 4, 2005 for the Exceptions related to the Arbors Subdivision. The Committee approved your requests as follows:

1. Narrowed Street Sections
   - ***Approved as submitted***
2. Approach tangent at intersections –
   - ***Approved, provided appropriate controls are developed to limit the landscaping to 30" or shorter (no street trees) in the affected areas between the curb & gutter and detached sidewalk.***
3. Garage setback of 20'
   - ***Approved as submitted***
4. Multipurpose easement reduced from 14' to 9'
   - ***Approved provided the Utility Coordinating Committee also approves.***

The Committee did not approve the request to modify the standard concrete alley section. The group did mention they would be willing to review a life cycle cost analysis for the asphalt/concrete section you proposed and contrast it with the standard concrete section. If you want to explore this option in more detail, just give me a call.

If you have any questions or need additional clarification, please let me know.

Sincerely,

Tim Moore
Public Works Manager
City of Grand Junction

FP-2006-254

VISTA ENGINEERING CORP.

CONSULTING ENGINEERS & LAND SURVEYORS

March 28, 2007

City of Grand Junction
250 North 5th Street
Grand Junction, Colorado 81501
Attn: Tim Moore

Regarding: Arbors Subdivision Alleyways - Life Cycle Cost Analysis

Dear Tim:

As mentioned in the TEDS Exception Committee letter dated December 2, 2005 (enclosed) the committee would be willing to review a life cycle cost analysis for the asphalt/concrete alleyway sections proposed for the Arbors Subdivision.

I have performed a simple life cycle cost analysis comparing the over all lifetime maintenance and replacement costs for the asphalt alleyways proposed for the Arbors Subdivision and the standard City concrete alleyway typical section. The individual unit costs were provided by several local contractors (see Life Cycle Cost Analysis enclosed).

I assumed that the alleyway width is 16 feet (Residential Alleyway section) for both the concrete and the asphalt sections (see enclosed typical sections) and that the underlying subgrade and preparation was the same for both sections. I assumed an annual discount rate of 5% for the duration of the analysis and I assumed that the asphalt alleys would be milled and receive a 1" overlay applied every 4 years. It is assumed that the concrete alleyway will have be replaced at 20 years. These assumptions are based upon information from city staff as well as local experience in the design of residential subdivisions.

The proposed asphalt alleyway structural section is adequate for 160,000 ESAL's as indicated in the letter dated January 10, 2006 from Huddleston-Berry (enclosed). It should be noted that the same pavement section proposed for the alleyways shall be installed on the subdivision roadways. The alleyway section also features a 3 ft concrete v-pan to prevent damage from storm water damage.

The proposed asphalt alleyways can be expected to perform adequately given the assumptions above. I request that the committee review the attached life cycle cost analysis and approve the alternative alleyway sections proposed for the Arbors Subdivision.

Please contact the undersigned with any questions or comments.

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Sincerely:
VISTA ENGINEERING CORP.

Fredrick L. Larsen, P.E.
President

Enclosures

Life Cycle Cost Analysis

Concrete Vs AC pavement Alleyways

(16 ft Residential Alleyway)

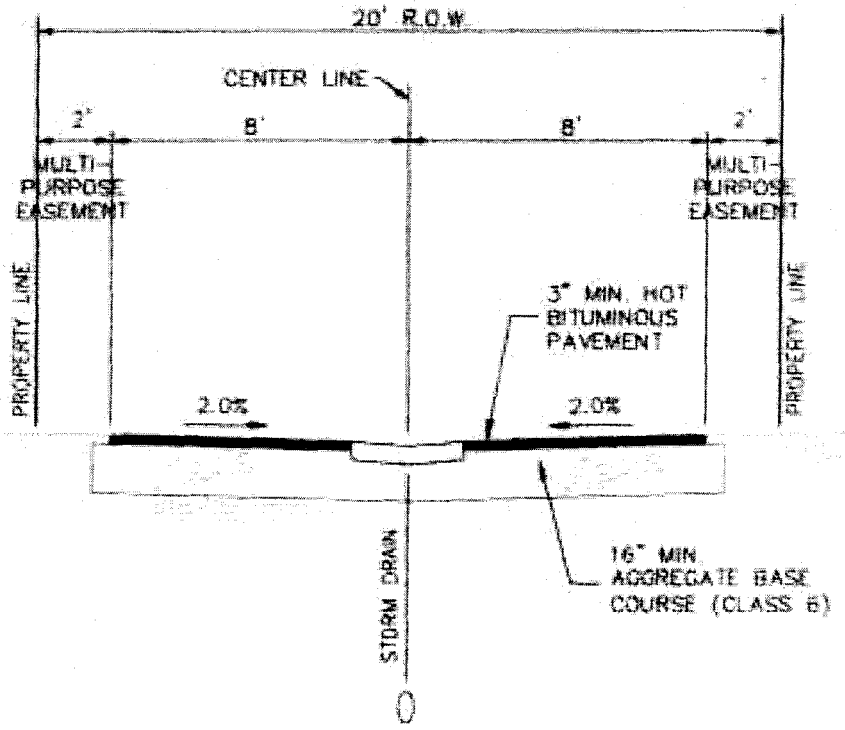
Assumptions:	20	Year (life time)
	5%	Annural discount rate
	15.76%	4 Year discount rate
	100	Length of alley (ft)
		Replacement of Concrete Alleyway required at 20 years

				Initial Costs		Future Maintenance and Replacement Costs									
						4 Years		8 Years		12 Years		16 Years		20 Years	
Description	Unit Price	Unit	Quantity	Asphalt	Concrete	Asphalt	Concrete	Asphalt	Concrete	Asphalt	Concrete	Asphalt	Concrete	Asphalt	Concrete
Clearing and Grubbing	$ 2.50	SY	178	$ 445.00	$ 445.00										$ 1,124.49
Subgrade Preperation	$ 2.50	SY	178	$ 445.00	$ 445.00										$ 1,124.49
Subgrade Stabilization	$ 3.00	SY	50	$ 150.00	$ 150.00										$ 379.04
16" Class 6 Aggregate Base	$ 15.00	Ton	144	$ 2,160.00	$ 2,160.00										$ 5,458.21
3" AC Paving	$ 75.00	Ton	24	$ 1,800.00											
3' Wide Concrete V-pan	$ 4.40	SF	300	$ 1,320.00											
6" Concrete paving	$ 4.40	SF	1600		$ 7,040.00										$ 17,789.73
Milling Asphalt Alley	$ 9.00	SY	178			$ 1,854.52		$ 2,254.17		$ 2,739.96		$ 3,330.44		$ 4,048.17	
1" AC Paving overlay	$ 79.00	Ton	10			$ 914.52		$ 1,111.61		$ 1,351.17		$ 1,642.35		$ 1,996.29	
Total				$ 6,320.00	$ 10,240.00	$ 2,769.04	$ -	$ 3,365.78	$ -	$ 4,091.13	$ -	$ 4,972.80	$ -	$ 6,044.46	$ 25,875.97

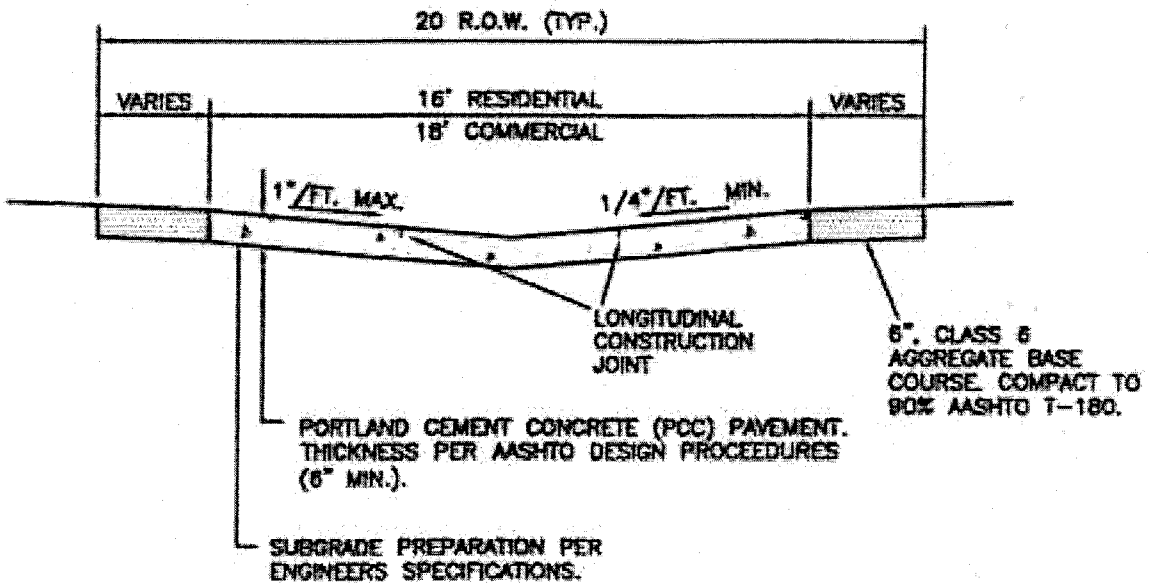
Net Present Value of AC Alleyways			$19,538.19	
Net Present Value of Concrete Alleyways				$20,480.00
Net Present Value of AC Alleyways	SF	1600	$12.21	
Net Present Value of Concrete Alleyways	SF	1600		$12.80

Vista Engineering Corporation
605 28 1/4 Road
Suite B
Grand Junction, CO 81506

3/28/2007



TYPICAL ALLEY SECTION F-F



1. SAW CUT LONGITUDINAL CONTRACTION JOINTS SPACED AT 1/3 PAVEMENT WIDTH. (SEE DETAIL ON PAGE C-29)
2. SAW CUT TRANSVERSE CONTRACTION JOINTS AT 10' SPACING (SEE DETAIL ON PAGE C-29)
3. SEE PAGE C-06 FOR EXPANSION JOINT SPACING.
4. ALL EXPANSION AND CONTRACTION JOINTS SHALL BE SEALED IN ACCORDANCE WITH DETAILS ON PAGE C-28.
5. PCC PAVEMENT SHALL BE DESIGNED IN ACCORDANCE WITH THE AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURES.

ALLEY

DEPARTMENT OF PUBLIC WORKS AND UTILITIES ENGINEERING AND TECHNICAL SERVICES DIVISIONS CITY OF GRAND JUNCTION, COLORADO	STANDARD STREET DETAIL	APPROVED: DN REV: JAN. 2002 DRAWN: DPW	PAGE ST-10

Huddleston-Berry
Engineering & Testing, LLC

640 White Avenue, Unit B
Grand Junction, CO 81501
Phone: 970-255-8005
Fax: 970-255-6818
HuddlestonBerry@bresnan.net

January 10, 2007
Project# 013-07

Vista Engineering Corp.
605 28¼ Road, Suite B
Grand Junction, CO 81506

Attention: Paco Larsen

Subject: Pavement Recommendations
2910 Orchard Avenue

Reference: *Geotechnical Engineering Study, 2910 Orchard Avenue Development, Grand Junction, Colorado* for The Greedy Group by Lambert and Associates, June 9, 2004.

Dear Mr. Larsen,

This letter is in response to your request for pavement section recommendations for the 2910 Orchard Avenue project in Grand Junction, Colorado. Huddleston-Berry Engineering & Testing LLC (HBET) understands that the referenced geotechnical report did not address the truck traffic in the proposed alleys.

Based upon the subgrade information provided in the referenced report, and anticipated traffic loading, pavement section alternatives were developed in accordance with the *Guideline for the Design and Use of Asphalt Pavements for Colorado Roadways* by the Colorado Asphalt Pavement Association (CAPA). Using the widely accepted methodology in the CAPA publication, the alternative sections in the referenced report for 160,000 ESAL's are more applicable to as high as 500,000 ESAL's. Therefore, the alternative sections in the referenced report for 160,000 ESAL's are appropriate for the proposed alleys.

It is important to note that HBET did not conduct a subsurface investigation at the site. The pavement section recommendations are based solely on the geotechnical data provided in the referenced report and HBET makes no warranty as to the validity of this data.

We are pleased to be of service to your project. Please contact us if you have any questions or comments regarding the contents of this report.

Respectfully Submitted,
Huddleston-Berry Engineering and Testing, LLC

Michael A. Berry, P.E.
Vice President of Engineering