

PLANNING AND ZONING COMMISSION
 JANUARY 9, 2013 MEETING PACKET
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**AGENDA
CITY OF GUNNISON
PLANNING & ZONING COMMISSION
REGULAR MEETING
Rev 1/2/2013**

DATE: WEDNESDAY, JANUARY 9, 2013
TIME: 7:00 P.M.
PLACE: CITY HALL, COUNCIL CHAMBERS, 201 WEST VIRGINIA AVE.

7:00pm

- I. CALL TO ORDER**
- II. PLEDGE OF ALLEGIANCE TO THE FLAG**
- III. UNSCHEDULED CITIZENS**
- IV. PUBLIC HEARING AND ACTION – SB 12-5, PRELIMINARY PLAT, AN APPLICATION BY DRAKE GUNNISON PARTNERS, LLC, TO SUBDIVIDE ONE LOT (4.8 ACRES) INTO FOUR LOTS, LOCATED IN THE COMMERCIAL ZONE DISTRICT.**
- V. CONSIDERATION OF THE DECEMBER 12, 2012 MEETING MINUTES**
- VI. COUNCIL UPDATE**
- VII. COMMISSIONER COMMENTS**
- VIII. PLANNING STAFF UPDATE**
- IX. ADJOURN TO WORK SESSION**

**WORK
SESSION**

**DISCUSSION OF THE DRAFT LAND DEVELOPMENT CODE
Section 10 – Amendments to the Land Development Code and Official
Zoning Map; and,
Section 11 – Nonconformities**

**TO COMPLY WITH ADA REGULATIONS, PEOPLE WITH SPECIAL
NEEDS ARE REQUESTED TO CONTACT THE CITY OF GUNNISON
COMMUNITY DEVELOPMENT DEPARTMENT AT 641.8090**

This agenda is subject to change, including the addition or deletion of items at any time. Regular Meetings and Special Meetings are recorded and action can be taken. Minutes are on the City website at www.cityofgunnison-co.gov. Work sessions are not recorded and formal action cannot be taken. For further information, contact the Community Development Department at 641-8090.

**ALL PLANNING & ZONING COMMISSION MEETINGS
ARE USUALLY BROADCAST LIVE ON LOCAL CABLE CHANNEL 15**

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STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

TO: Planning and Zoning Commission
From: Community Development Staff
Date: January 9, 2013
RE: Major Preliminary Subdivision SB 12-5, VanTuyl Village, Lot 80

CODE PROVISIONS

The City's *Land Development Code (LDC)* Section 15.160.030(A) defines the types of subdivision within the City. This request is classified as a Major Subdivision, which is an application proposing more than eight lots or units, or which subdivides a parent parcel of four acres or greater. Major subdivisions are subject to a four step process:

1. review of sketch plan by Planning Commission at a public hearing;
2. review of the preliminary plat by Planning Commission at a public hearing;
3. review and recommendation of the final plat by Planning Commission (with no public hearing); and
4. action on the final plat by City Council (with no public hearing).

The Planning and Zoning Commission reviewed and approved the Sketch Plan application on November 14, 2012 with the following findings of fact and conditions:

Findings of Fact:

1. The Planning and Zoning Commission finds that the record of this action includes the application contents on file with the City of Gunnison; all comments entered into the Public Hearing record; and provisions of the *City of Gunnison Land Development Code* and the *City of Gunnison Master Plan*.
2. The Planning and Zoning Commission finds that this application is for a Major Subdivision of a 4.8 acre parcel into four lots and the proposed lot configurations comply with minimal lot size and frontage standards established by the *LDC*.
3. The Planning and Zoning Commission finds that the property is located in the Commercial zone district and that the applicant intends to follow the City development standards for this district.
4. The Planning and Zoning Commission finds that all lots are required to be served by all utilities and proper utility line sizes, and that appropriate easements for utilities and access will have to be established at Preliminary and Final subdivision review.
5. The Planning and Zoning Commission finds that an irrigation ditch that is located on the eastern portion of the property will have to be buried within the existing 15 foot easement adjoining the eastern property line.
6. The Planning and Zoning Commission finds that the applicant desires a full movement intersection at VanTuyl Circle and Highway 135 and a Highway Access Permit application has been submitted to CDOT.
7. The Planning and Zoning Commission finds that Bowman Street, located on the south boundary of the proposed subdivision, is a deed restricted parcel with the restriction mandating the real property for use as public right-of-way functions. The Planning and Zoning Commission further finds that the access as conceptually illustrated does not have appropriate alignment with Sydney Street.

STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

8. The Planning and Zoning Commission finds that the 15 foot easement and the Highway 135 right-of-way improvements must allow for an eight foot wide sidewalk, utilities, a landscape buffer and the irrigation ditch.
9. The Planning and Zoning Commission finds that the nine review standards for subdivisions have been or will be met based on the following Conditions:

Conditions

1. The Preliminary Plat application shall comply with all provisions of the City's *Land Development Code*.
2. Use of Bowman Street shall comply with restrictions set forth by the deed and approved by the City Council.
3. The center of the proposed Bowman Street access way shall align with the east/west centerline of VanTuyl Circle.
4. Preliminary Plat submittal shall include plan details (plan view, sections, and profiles) as needed to adequately assess the design and development components along the Highway 135 frontage.

The Planning and Zoning Commission may take action to approve, approve with conditions, remand the application for additional information, or deny the application. Approval of Preliminary Plat shall not constitute final approval of the subdivision, but rather constitutes authorization only to proceed with an application for Final Plat.

APPLICATION

The applicant, Drake Gunnison Partners, LLC, represented by Cole Haberer, is requesting a Major Subdivision (Preliminary Plat) application to subdivide 4.8 acres into four lots. The legal description of the site is Lot 80, Re-plat of Lot 80, VanTuyl Village Subdivision (reception number 580957).

The applicant has complied with application requirements for Preliminary Plat in accordance with Section 15.160.060 of the *LDC*. Public notice was mailed, published, and posted in accordance with Section 15.120.050 of the *LDC*.

The applicants' narrative states:

The proposed project statement will be for the separation of lot 80 which will be consistent with the overall guidelines and will meet the standards addressing various requirements of Title 15 Land Development Code of the Gunnison Municipal Code. We propose to re-plat the overall +4.8 acre lot, 80 Vantuyl Village, into 4 separate lots. This lot is zoned C – Commercial and Use by Right and we plan to comply with the requirements of the Commercial Zoning Designation.

...As for the overall project, each lot will be developed at different times. In phase one, Lot One will be developed first in which all utilities will be run to adjacent lots 2-4. Utility easements will be established and provided on the future Plat showing the four new Lots. For future development, lots 2-4 would also have a commercial use with individual buildings. These lots would have single or multi-tenant buildings and would have front or side loading deliveries due to smaller

STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

sizes of tenants. Building areas and landscaping will be in compliance with the Use by Right and Commercial Zoning allowed. All lots will be designed to provide enough parking to sustain the parking to building SF ratio.

...The vehicular circulation and interior roadway including parking lots and off-street requirements will be developed per the municipal codes/planning and public works department guidelines and criteria. There will be a declaration of covenants, conditions and restrictions recorded against the overall development that regulates utility easements, drainage, cross parking and other rules and regulations for the shopping center. The overall development will have its major primary access off of Vantuyl Circle and secondary access off of Sydney Street. Parking for Lot 1 will be sufficient to satisfy building density requirements. In addition to the landscaping in the city R.O.W. on the southern boundary, the developer would also like to provide additional access to these lots by providing a 30' drive aisle located in the city R.O.W. With this added drive aisle, truck delivery circulation shall be contained within the site which would help prevent noise to the adjacent neighborhood.

Pedestrian circulation paths will be developed along the interior vehicular circulation routes connecting the buildings and different points of entries into the site. A pathway will also connect to a new sidewalk running parallel with Highway 135.

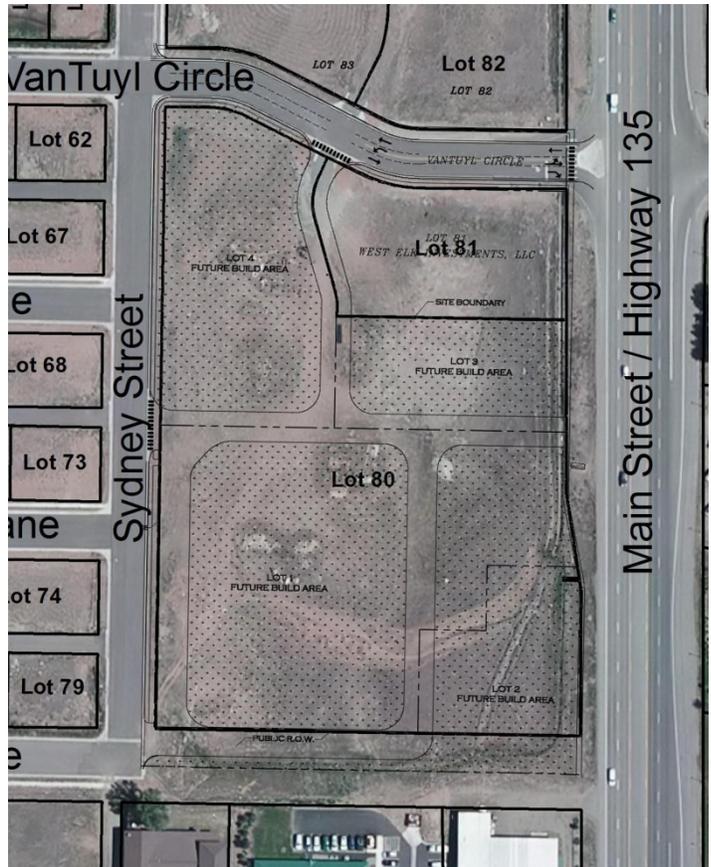
PROPOSED IMPROVEMENTS

The applicant is proposing four lots to be developed in conformance to zoning and dimensional standards of the Commercial district within the LDC. Lot 1 is proposed as a commercial retail with outdoor storage and Lots 2-4 are proposed as future commercial uses to be developed in a separate phase.

The Highway 135 frontage is located in the Entrance Overlay Zone which requires additional standards for setbacks, landscaping, storage, vehicular access, and parking. Site specific zone standards will be applied when building permit applications are submitted.

STREET CIRCULATION

Primary access is off Main Street/Highway 135 to VanTuy Circle from the north. Secondary access is from Spencer Avenue and Pine Street which



**STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC**

connects to VanTuyl Circle and Sydney Street. Bowman Street will be improved as an access-way to the commercial site development.

The intersection of VanTuyl Circle and Main Street/Highway 135 is currently right-in, right-out only. The City staff has submitted an application to the Colorado Department of Transportation (CDOT) requesting a Highway Access Permit for a full movement intersection at this location.

Interior streets will be private and shared maintenance responsibilities will be enforced through a declaration of covenants. The covenants address buildable areas, driveways, common areas and maintenance of all properties including shared costs in the common areas.

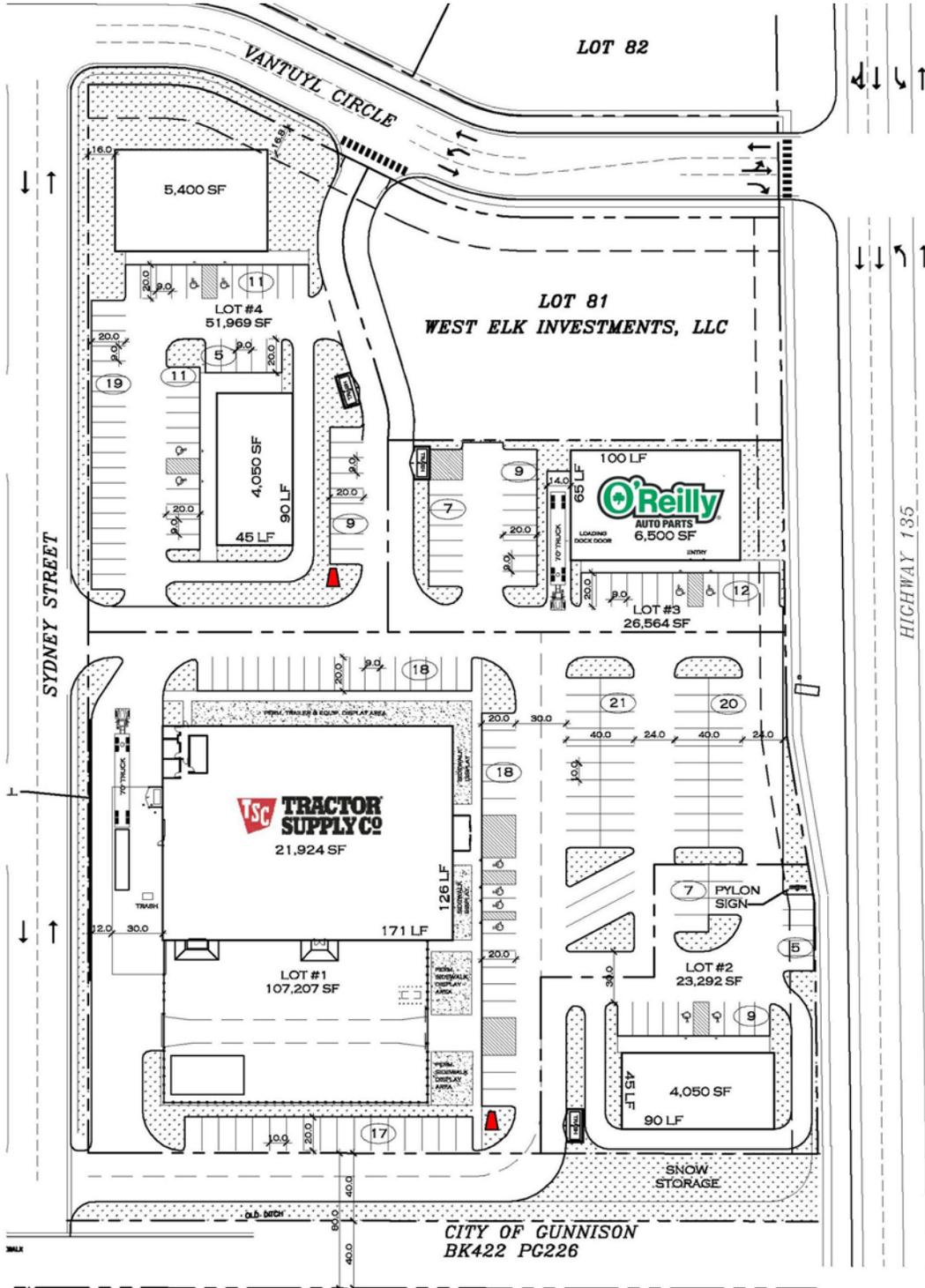
TRIP GENERATION

A Traffic Impact Study was prepared by Aldridge Transportation Consultants, LLC (November 26, 2012) using the *Institute of Transportation Engineering, Trip Generation*, 9th Edition. The uses include the Tractor Supply Store, O’Reilly’s Auto Parts, and projected specialty retail (i.e. quality apparel, professional services, small restaurants, etc.). The report estimates 1,429 trips per day for the four lots when developed.

Trip Generation Worksheet - Opening Day 2013								
ITE CODE	LAND USE	UNIT	QUANTITY	ADT	AM		PM	
					IN	OUT	IN	OUT
810	Tractor Supply Store	KSF	22	est. 200	est. 16	est. 14	0.66 14	0.74 16
210	Automobile Parts Store	KSF	6.6	61.91 409	1.11 7	1.11 7	2.93 19	3.05 20
210	Specialty Retail	KSF	18.5	44.32 820	1.11 20	1.11 20	1.19 22	1.52 28
Total Trips				1429	44	42	56	65

The Traffic Impact Study concludes and recommends removing the traffic island for a full movement intersection at VanTuyl Circle and Highway 135.

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 PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC



CITY OF GUNNISON
 BK422 PC226



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 GREENWOOD VILLAGE, CO 80111
 PHONE: 720.289.0001 www.namapartners.com
 NAMA PROJ. #: 12-123.00 DATE: 10-09-2012
 nama partners, llc. 2012 All Rights Reserved



STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

UTILITIES AND EASEMENTS

Preliminary civil engineer plans were developed by HCI Engineers. The preliminary engineer plans include water, sewer, irrigation, drainage, and dry utilities (electric, gas and phone). The engineered plans have been reviewed by the City Engineer and personnel from the Public Works Department and there are no major issues to report.

Water and Sewer. The Preliminary Engineer Plans indicate that water and sewer trunk mains are located around the perimeter of the existing parcel. Private water/sewer service lines, as shown on the engineer plan extend to the proposed four lots and the adjacent Lot 81. All utility service extensions are located within the 30 foot access-ways, which will also be dedicated utility easements for combined service to the subdivision.

The Fire Marshall has indicated the need for one or two additional fire hydrants for the proposed development. The Fire Marshall has indicated the location of the hydrants (red or cone shaped symbols) in the conceptual site plan above.

Irrigation Ditch. The irrigation ditch adjacent to the highway corridor will be improved as part of this subdivision proposal. The ditch segment along Highway 135 will be buried pipe. The irrigation ditch alignment is shown outside the easement on the utility plan and will either be relocated within the existing easement or an additional easement area will need to be dedicated on the final plat. Additionally, the Bowman Place access drive will be moved further to the south in order to align it with the existing center line of VanTuyl Circle, and therefore, the ditch alignment within Bowman Place will be modified at Final Plat submittal.

Grading and Drainage. The Preliminary Engineer Plans include grading and drainage details. The Preliminary Plans indicate that drainage will sheet flow across the parcels and be conveyed into the stormwater facilities developed for the VanTuyl Village Subdivision. It is not anticipated that stormwater drainage flows will be in excess of historic runoff flows, as contemplated in the VanTuyl Village Master Drainage Plan; however, if excess flows are generated by site specific development, on-site detention facilities will be required.

Dry Utilities. Electrical, phone and natural gas services are shown on the preliminary civil engineer plans. All lots, to include Lot 81 have dry utility services.

Geotechnical Report. A Geotechnical Report has been prepared by Buckhorn Geotech, Inc. The report states “...*Based upon our limited site evaluation and results of our subsurface testing, it appears that the building site on Lot #1 within Lot 80 of VanTuyl Village subdivision is suitable for the proposed construction.*” The report provides recommendations for the long-term performance of foundation soils, foundations, concrete slabs and on-site improvements.

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PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

DEPARTMENTAL COMMENTS

Building Official: No issue.

Fire Marshal: Will need possibly one or two additional fire hydrants as indicated (red or cone shaped symbols) on the conceptual development plan above.

Parks and Recreation Director: No issue.

Police Department: No issue.

City Attorney:

Public Works Director: See comments below.

City Engineer: Cost estimates for construction and paving are low. Specific comments regarding the alignment of the irrigation ditch in Bowman Place, depth of the buried ditch and the need for a splitter.

Water/Sewer Superintendent: No issue.

Electric Superintendent: Three-phase primary power will need to be extended to the lot lines at the customer expense.

STAFF OBSERVATIONS

1. The applicant is proposing commercial uses on four lots varying in size from approximately .5 acres to 2.5 acres. The proposed lot configurations comply with lot size and lot frontage requirements of the Commercial zone district.
2. **Easements.** The applicant proposes 30-foot-wide access and utility easements for the private internal road system. A 15-foot-wide pedestrian, utility, irrigation and drainage easement exists on the eastern boundary of the existing lot.
3. **Highway 135 Frontage.** Specific design of the Highway frontage corridor has been provided as part of the Preliminary Plat submittal.
4. **Proposed Roads and Access.** Interior road sections will be 30 feet wide. These private roads will be regulated by a declaration of covenants addressing maintenance, cross parking and utility easements. Access points are off VanTuyl Circle, Sydney Street and the proposed unimproved Bowman Street. Final Plat documents will move the Bowman access drive to the south and align with the existing center line of VanTuyl Circle. The City has submitted an Access Permit application to CDOT requesting a full movement intersection at VanTuyl Circle and Highway 135.
5. **Emergency Access.** Based on the Preliminary Plat, fire lane designs are compliant with the *International Fire Code*. A fire hydrant exists at the VanTuyl Circle/Highway 135 intersection. Final Plat documents will include two additional fire hydrants for internal service to the development. The location of the new fire hydrants has been specified by the Fire Marshall and indicated on the figure above (red or cone shaped symbols).
6. **Traffic Impact Study.** A Traffic Impact Study was prepared by Aldridge Transportation Consultants, LLC. Based on the proposed commercial uses with existing zoning entitlements, the report estimates approximately 1,429 vehicle trips per day will occur at build-out.
7. **Utilities.** Preliminary civil engineer plans were developed by HCI Engineers and include extensions of water, sewer, irrigation, drainage, and dry utilities (electric, gas and phone). Utilities are proposed within the 30-foot-wide access and utility easements (internal roads). Lot 81, which is not part of this subdivision will be provided utility services.

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8. **Irrigation Ditch.** The irrigation ditch alignment is shown outside the existing 15 easement bordering Highway 135, and the Final Plat documents will locate the ditch within the existing 15 foot easement. The ditch alignment within Bowman Place will also be modified at Final Plat submittal.
9. **Stormwater Control.** There are three open space parcels used for stormwater detention in the VanTuyl Village Subdivision. The historic runoff flows south and then west into the southern open space parcel. Discharge from the site will not exceed historic undeveloped runoff values.
10. **Geotechnical Report.** A Geotechnical Report has been prepared by Buckhorn Geotech that provides recommendations for the long-term performance of foundation soils, foundations, concrete slabs and on-site improvements.
11. Based on the Review Standards, Findings of Fact and Conditions shown below, Staff recommends approval of this Preliminary Plat application.

REVIEW STANDARDS

The LDC Section 15.16.080 contains nine specific standards that are used by the Planning and Zoning Commission and City Council to consider for all subdivision applications. Based on the LDC Section 15.120.060.C, **an application that fails to comply with any applicable review standard shall be denied.**

- A. **Master Plan.** *The proposed subdivision shall carry out the purpose and spirit of the Master Plan and conform with all of the Plan's applicable intent statements, specific directions and recommended actions. It shall be designed to be compatible with surrounding land uses, to protect neighbors from undesirable noise, glare and shadows and shall not cause adverse effects on their privacy, solar access and views.* The following excerpts from the Master Plan are applicable to this subdivision.

No Conflict.

Chapter 2, Community Character, Policy 3: New developments along the City's edges will improve the entrances and complement the City's community character and sense of place.

Chapter 5, Land Use and Growth, Goal: Growth and development will preserve and enhance the quality of life which makes Gunnison unique and attractive. Edges of the community remain clearly defined. New developments will demonstrate high-quality urban design while protecting the rural landscapes surrounding the City. Sprawl will be avoided through effective infill and compact growth.

Chapter 7, Economics, Goal: A diversified local economy will support the economic and employment needs of residents and account for social character, land use patterns and global economic and global energy concerns.

Chapter 7, Economics, Policy 4: Assure attractive and financially strong commercial zone districts.

- B. **Zone District Standards.** *The proposed subdivision shall comply with the use and dimensional standards of the underlying zone district and shall provide off-street parking as required for the use.*

No Conflict. The applicant proposes commercial land use regulated by use and dimensional standards and other criteria contained in the LDC.

STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

- C. **Improvements.** *The proposed subdivision shall be provided with improvements which comply with Article 11, Improvements Standards and landscaping which complies with Section 15-9-4 Landscaping Standards.*

Possible Conflict. A Subdivision Improvements Agreement will have to be executed at Final Plat to ensure all improvements will be installed based on City standards. The fact that the major trunk line utilities are already in place reduces the burden of significant engineering design for the proposed subdivision. Alignment of the irrigation ditch within an easement and in Bowman Street shall be confirmed at Final Plat.

1. **Streets.** *Existing and proposed streets shall be suitable and adequate to carry anticipated traffic within and in the vicinity of the proposed subdivision.*

Possible Conflict: The proposed subdivision is accessed off existing VanTuyl Circle and Sydney Street and the unimproved Bowman Street. Final Plat must show the Bowman access drive further to the south so it aligns with the existing center line of VanTuyl Circle.

Interior circulation is proposed as private access-ways with a pavement width of 30 feet. Internal access-ways are sufficient to provide emergency access to all of the proposed lots. The applicant desires a full movement intersection at VanTuyl Circle and Highway 135, which is contingent upon the outcome of the Highway Access Permit application.

2. **Utilities.** *Existing and proposed utility services shall be suitable and adequate to meet the needs of the proposed subdivision. As a condition of obtaining water service, any water rights which run with the property shall be dedicated to the City.*

Possible Conflict. All utilities are capable of reaching each individual lot, to include Lot 81. Final plan documents will adjust the irrigation ditch so it is located within the existing 15 foot easement adjoining the eastern property line. The irrigation ditch will be 12 inch corrugated metal pipe with access manholes. Additionally, the irrigation ditch alignment in Bowman Street will be moved to accommodate the proposed access-way.

3. **Phases.** *If the subdivision is to be developed in phases, each phase shall contain the required parking spaces, landscape areas, utilities, and streets that are necessary for creating and sustaining a stable environment.*

No Conflict. The applicant proposes to develop Lot 1 in the first phase and Lots 2-4 at a later date. The applicant proposes extending all utilities to all lots in phase one. The Preliminary Plat includes adequate cross easements to serve all proposed lots as well as existing Lot 81.

- D. **Natural Features.** *The layout of lots and blocks shall provide desirable settings for structures by making use of natural contours and maintaining existing views, affording privacy for residents and protecting them from adverse noise and vehicular traffic. The system of roadways and the lot layout shall be designed to take*

STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

advantage of visual qualities of the areas. Natural features and native vegetation shall be preserved whenever possible. Tree masses and individual trees of six inch (6") caliper or greater shall be preserved.

No Conflict. The layout of the lots and private roadway system does not affect the natural features of the site or surrounding area.

- E. **Floodplains.** *Tracts of land or portions thereof lying within the one hundred year floodplain may only be subdivided for open space until the subdivider has shown that compliance with the requirements of the City's floodplain regulations can be met.*

No Conflict. The property is not within a special flood hazard area.

- F. **Noise Reduction.** *Where a subdivision borders on or contains a highway right-of-way, the City shall require adequate provisions of reduction of noise. A parallel street, landscaping, screening, easement, greater lot depth, increased rear yard setbacks and fencing are potentially appropriate solutions, among others.*

No Conflict. The applicant has submitted a plan for a landscape buffer along Highway 135 indicating adequate space for a sidewalk and landscaping along the highway frontage. Additionally, a screening wall structure will be constructed on Sydney Street, behind the Tractor Supply loading dock.

- G. **Future Streets.** *When a tract is subdivided into lot(s) or parcel(s) shall be so arranged so as to permit the logical location and opening of future streets and appropriate re-subdivision, with provision for adequate utility easements and connectors for such re-subdivision.*

No Conflict. Streets surround the property and internal private roads are proposed. Maintenance and operational requirement will be specified within a declaration of covenants to be recorded with the Final Plat.

- H. **Common Recreation Facilities.** *Where a development is proposed to contain common recreation facilities, such facilities shall be so located within the development so as to be easily accessible to the residents and to least interfere with neighboring developments.*

Not Applicable.

- I. **Lots and Blocks**

1. **Pattern.** *The size, shape and orientation of lots shall be appropriate to the design and location of the proposed subdivision and to the type of development contemplated. Where appropriate, lots shall be laid out to respect the existing City pattern. Blocks generally shall not be less than three hundred feet (300') nor more than one thousand two hundred feet (1,200') in length.*

No Conflict. The proposed lot sizes, shapes and orientation are appropriate and consistent with the VanTuyl Village Subdivision.

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PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

2. **Frontage.** *Residential lots should front only on local streets; however, when necessary, lots designated to face a collector street shall provide adequate means for automobile turnaround within the lot.*

Not Applicable.

3. **Right Angles.** *Side lot lines shall be approximately at right angle or radial to street lines.*

No Conflict. Lot lines are appropriately angled.

4. **Double Frontage Lots.** *Double frontage lots are prohibited, except where they are necessary to provide for the separation of residential development from collector or arterial streets or to overcome specific limitations of the topography or orientation. A planting and screening easement of at least ten feet (10”) shall be provided along the portion of the lot which abuts such a collector or arterial street. There shall be no right of access across a planting and screening easement. The screening easement shall be maintained by the property owner.*

No Conflict. Technically, the proposed Lot 1 is a double frontage lot, but the fact that it is part of an integrated shopping center design negates any issues with double frontage lot configuration.

5. **T Intersections.** *The building area of lots shall not face directly into the oncoming traffic of an intersecting street of a “T” intersection.*

No Conflict.

6. **Solar Energy.** *For the purposes of protecting and enhancing the potential for utilizing solar energy in the proposed subdivision, detached single family lots are encouraged to be laid out in such a manner that the houses will be oriented so that their long axis will run east/west and so that the houses will not block the solar access of adjacent houses.*

Not Applicable.

ACTION

During the Planning and Zoning Commission meeting of January 9, 2013 Commissioner _____ moved, Commissioner _____ seconded and the Planning and Zoning Commission voted to APPROVE the Major Subdivision Preliminary Plat, SB 12-5, Blue Mesa Shopping Center with the following findings of fact and conditions:

Findings of Fact:

1. The Planning and Zoning Commission finds that the record of this action includes the application contents on file with the City of Gunnison; all comments entered into the Public Hearing record; and provisions of the *City of Gunnison Land Development Code* and the *City of Gunnison Master Plan*.

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PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

2. The Planning and Zoning Commission finds that this application is for a Major Subdivision of a 4.8 acre parcel into four lots and the proposed lot configurations comply with minimal lot size and frontage standards established by the *LDC*.
3. The Planning and Zoning Commission finds that the property is located in the Commercial zone district and that the applicant intends to follow the City development standards for this district.
4. The Planning and Zoning Commission finds that the Preliminary Plat submittal includes detailed civil engineering plans that have been reviewed by the City Engineer and personnel from the Public Works Department and no major issues were found.
5. The Planning and Zoning Commission finds that the irrigation ditch alignment is shown outside the easement on the utility plan and the final plan will depict it within the existing 15 foot easement adjacent to Highway 135.
6. The Planning and Zoning Commission finds that alignment of the irrigation ditch within Bowman Street will be adjusted on documents submitted for Final Plat submittal.
7. The Planning and Zoning Commission finds that Final Plat documents will include two additional fire hydrants for internal service to the development.
8. The Planning and Zoning Commission finds that appropriate easements for utilities and access have been established and the Declaration of Covenants will be reviewed at Final Plat.
9. The Planning and Zoning Commission finds that a Traffic Impact Study was prepared and the report estimates approximately 1,429 vehicle trips per day will occur at build-out.
10. The Planning and Zoning Commission finds that the applicant desires a full movement intersection at VanTuyl Circle and Highway 135 and a Highway Access Permit application has been submitted to CDOT.
11. The Planning and Zoning Commission finds that Bowman Street, located on the south boundary of the proposed subdivision, is a deed restricted parcel with the restriction mandating the real property will be used as public right-of-way functions. The Planning and Zoning Commission further finds that the access as illustrated does not have appropriate alignment with VanTuyl Circle and the documents for the Final Plat submittal will depict the access in a proper alignment.

STAFF REPORT AND RECOMMENDATION
PRELIMINARY PLAT – DRAKE GUNNISON PARTNERS, LLC

12. The Planning and Zoning Commission finds that the 15 foot easement and the Highway 135 right-of-way improvements allow for an eight foot-wide sidewalk, utilities and landscape buffer.
13. The Planning and Zoning Commission finds that the nine review standards for subdivisions have been or will be met based on the following Conditions:

Conditions

1. The Final Plat application shall comply with all provisions of the City's *Land Development Code*.
2. Use of Bowman Street shall comply with restrictions set forth by the deed and approved by the City Council.
3. The center of the proposed Bowman Street access-way shall align with the east/west centerline of VanTuyt Circle.
4. The irrigation ditch along the eastern boundary of the property shall be relocated within the existing 15 foot easement adjacent to Highway 135.
5. Final Plat documents will include two additional fire hydrants for internal service to the development.

Application Fact Sheet
City of Gunnison Land Development Code
Minimum Application Contents
In Accordance With 15.120.030 C.

City of Gunnison
P.O. Box 239
Gunnison, CO 81230
(970)641-8090

Applicant Name(s): Drake Gunnison Partners LLC

Phone #: 303-825-6200 **Fax #:** 303-825-7200 **E-Mail:** hauser@drakeves.com

Mailing Address: 496 S. Broadway

City: Denver **State:** CO **Zip:** 80209

Summary of Request: Prelim Plat submittal

Disclosure of Ownership- Please provide one of the following:

Assessor Parcel Info Mortgage Deed Judgments

Liens Contract Easement Agreement Other Agreements

Legal Description

Site Address of Property: N. Hwy 135, Gunnison Zoning Commercial

Block: _____ Lot(s): 80 Addition: Vantuyll Village

Attachments: Vicinity Map (8.5"x11") Written Narrative/Description of Proposal

Names, Addresses and Map of Adjoining Property Owners (From Assessor's Office)

Vested Property Rights Letter/Authorization of Agent (from Owner if not applicant)

Site Plan (11"x17") **to scale**, includes dimensions and location of all structures, parking spaces and access, snow storage, landscaping, live cover, utility lines, road/street names, land uses of adjacent properties, setbacks. Includes a table for all dimensional requirements based on 15-7-4. (See attached sample)

YOU ARE REQUIRED TO SUBMIT FOUR (4) COMPLETE COPIES OF YOUR APPLICATION

Signature(s) Cole C. Holman Date 12/14/12

_____ Date _____

For Office Use Only

Conditional Use Variance Zoning Amendment

Major Subdivision Minor Subdivision Subdivision Exemption

Mobile Home/RV Park PUD Vacation

Consolidated Application



Direct: 303.825.6200
Email: hauser@drakeres.com

October 11, 2012

City of Gunnison
Community Development
P.O. Box 239
201 W. Virginia Ave.
Gunnison, CO 81230

RE: *Letter of Authorization for Design and Development of Lot 80, Re-Plat of Lot 80, Vantuyl Village, City and County of Gunnison, Colorado (the "Property")*

To Whom It May Concern:

This letter shall serve to notify all parties of interest that we hereby grant authority to Cole C. Haberer, P.E., representing HCI Engineering, and Mike Brettmann, representing Nama Partners, LLC, to design and submit, on behalf of Drake Gunnison Partners LLC, planning and building documents for the above-referenced Property to the City of Gunnison for review and approval.

Below you will find their addresses and contact information:

Name: Cole C. Haberer, P.E.
Address: HCI Engineering, a division of
Haberer Carpentry, Inc.
810 Brickyard Cir., Unit #3
Golden, CO 80403

Phone: 720.252.3484

Email: ColeH@Haberergroup.com

Name: Mike Brettmann
Address: Nama Partners, LLC
6140 Greenwood Plaza Blvd.
Greenwood Village, CO 80111

Phone: 303.514.3434

Email: mbrettmann@namapartners.com

Please feel free to call me at 303.825.6200 should you have any questions in this regard.

Sincerely,

DRAKE GUNNISON PARTNERS LLC

By: DRAKE DEVELOPMENTS LLC,
its Manager

By: DRAKE REAL ESTATE SERVICES, INC.,
its Manager

By: 
Jon Hauser, General Manager

cc: Cole Haberer (via email - ColeH@Haberergroup.com)
Mike Brettmann (via email - mbrettmann@namapartners.com)

AUTHORIZATION OF AGENT

I/We, the undersigned owner(s) of the following described real property located in the City of Gunnison, Colorado, hereby authorize the following individual(s):

<u>JON HAUSER</u> <u>DRAKE GUNNISON PARTNERS</u>	<u>496 S. BROADWAY</u> <u>DENVER, CO. 80209</u>	<u>303-882-7100</u>
Name	Address <u>LLC</u>	Phone

to act in my/our behalf concerning the application for action under the *Land Development Code* of the City of Gunnison.

Legal description and street address of the property for which application is being made:

LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE

Type/s of permit applied for:

- 1) _____ 3) _____
- 2) _____ 4) _____

FIRST OWNER OF RECORD:

Dawn Clayton, VP of Bank of the West

Printed Name of Property Owner

[Signature]
Signature of Property Owner

10-18-12
Date

SECOND OWNER OF RECORD:

Printed Name of Property Owner

Signature of Property Owner

Date

rev 12/08
approved by City Attorney

Lot 80, Blue Mesa Shopping Center Improvement Plan Narrative

DATE: December 14, 2012

TO: **Community and Development Planning Division**
City of Gunnison, CO

ARCHITECT: **Nama Partners, LLC**
6140 Greenwood Plaza Boulevard
Greenwood Village, CO 80111
720.289.0001

PROJECT: **Lot 80, Re-Plat of Lot 80, Vantuyl Village**
Reception NO 580957
Gunnison, CO

The proposed project statement will be for the separation of lot 80 which will be consistent with the overall guidelines and will meet the standards addressing various requirements of Title 15 Land Development Code of the Gunnison Municipal Code. We propose to re-plat the overall ± 4.8 acre lot, 80 Vantuyl Village, into 4 separate lots. This lot is zoned C – Commercial and Use by Right and we plan to comply with the requirements of the Commercial Zoning Designation.

This application includes a site development request for Lot 1 of about 2.5 acres. This site develops a building area (enclosed) of 21,294 SF plus an outdoor display area of 15,000 SF with a loading area. The loading area will be screened from the public street with both trees and fence. The building materials and design character will meet the standards of commercial architecture described in the Gunnison Municipal Code. The building setbacks for all lots will meet the 15 feet front and 5 feet side commercial building setback requirements. The landscaping for Lot 1 does meet the required 10% coverage for the lot with 60% live vegetation provided. As required by the city ordinance, one tree is required for every 200 SF of landscaping. The developer is requesting a variance on the quantity of trees to be reduced down to one tree per 300 SF for Lot 1 and as a consideration for this variance; more trees will be planted in the R.O.W. to the south.

As for the overall project, each lot will be developed at different times. In phase one, Lot One will be developed first in which all utilities will be run to adjacent lots 2-4. Utility easements will be established and provided on the future Plat showing the four new Lots. For future development, lots 2-4 would also have a commercial use with individual buildings. These lots would have single or multi tenant buildings and would have front or side loading deliveries due to smaller sizes of tenants. Building areas and landscaping will be in compliance with the Use by Right and Commercial Zoning allowed. All lots will be designed to provide enough parking to sustain the parking to building SF ratio.

Improvement Plan Narrative

Blue Mesa Shopping Center

December 14, 2012

Page | 2

Density distribution of the various lots is approximately as follows. Data for lots 2-4 may change in the future due to the nature of undetermined tenants' building and parking requirements:

Lot	Area	Building Density	Parking/Access	Landscaping
Lot 1	2.5 ± ACRES	20%	39%	10%
Lot 2	0.5 ± ACRES	19%	38%	10% minimum
Lot 3	0.3 ± ACRES	24%	19%	10% minimum
Lot 4	2.5 ± ACRES	23%	13%	10% minimum

The vehicular circulation and interior roadway including parking lots and off-street requirements will be developed per the municipal codes/planning and public works department guidelines and criteria. There will be a declaration of covenants, conditions and restrictions recorded against the overall development that regulates utility easements, drainage, cross parking and other rules and regulations for the shopping center. The overall development will have its major primary access off of Vantuyt Circle and secondary access off of Sydney Street. Parking for Lot 1 will be sufficient to satisfy building density requirements. The developer would like to provide additional access to these lots by providing a 30' drive aisle located in the city R.O.W. located to the south of the property. With this added drive aisle, truck delivery circulation shall be contained within the site which would help prevent noise to the adjacent neighborhood. The configuration of the drive aisle in the R.O.W. as shown does not align with Sydney Street. This was done to avoid a conflict with an existing city irrigation ditch. There is currently no full access to the east from this drive aisle. In the future, at full development, this drive aisle could be reconfigured to align with Sydney Street.

The overall landscape concept for the development will be using drought tolerant plants, vegetation and trees for the conservation of water. Our overall landscape of the entire site development will be estimated at 10-12%. The developer will work with the city to provide plants desirable to the area.

Pedestrian circulation paths will be developed along the interior vehicular circulation routes connecting the buildings and different points of entries into the site. A pathway will also connect to a new sidewalk running parallel with Highway 135.

Building signage for this entire project will meet the Gunnison Municipal Code. One monument sign will be placed on Highway 135 which will provide signage for each individual lot. The monument sign will be placed on Lot 2 in a 15' pedestrian, utility, irrigation & drainage easement.

We appreciate your time and care in reviewing this submittal. Please feel free to contact us at Nama Partners to further answer any questions you may have.

Thank you,



Mike Brettmann
Nama Partners



SCALE: N.T.S.

ID	Owner	Address	Parcel I.D.
1	WEST ELK INVESTMENTS LLC	1045 FAIRWAY LN. GUNNISON, CO 81230-4141	3701-362-32-002
2	GRIZZLY INVESTMENT PROPERTIES LLC C/O IM	2955 ELECTRA DR COLORADO SPRINGS, CO 80906-1075	3701-362-11-003
3	LANDRY ENTERPRISES NORTH LLC	963 FAIRWAY LN GUNNISON, CO 81230-4139	3701-362-12-002
4	LANDRY JULIE A LANDRY STEVEN A ETAL	1198 N MAIN ST GUNNISON, CO 81230	3701-362-12-007
5	NEHRER WILLIAM	4465 ESTA LN SOQUEL, CA 95073-2100	3701-362-12-008
6	COMMUNITY BANKS OF COLORADO	127 W 4TH ST PUEBLO, CO 81003-3228	3701-362-12-006
7	MONTANO REVOCABLE TRUST	PO BOX 3826 CRESTEDBUTTE, CO 81224-3826	3701-362-35-046
8	SKYLAR HIGH LLC	112 W SPENCER AVE STE A GUNNISON, CO 81230-2546	3701-362-35-053
9	UPPER GUNNISON RIVER WATER CONSERVANCY D	234 N MAIN ST GUNNISON, CO 81230-2438	3701-360-08-003
10	STANLEY JAMES G ETAL STANLEY JUANITA	220 W SPENCER AVE GUNNISON, CO 81230-2519	3701-362-00-050
11	SW VENTURES LLC	PO BOX 2751 CRESTEDBUTTE, CO 81224-2751	3701-362-27-010
12	SW VENTURES LLC	PO BOX 2751 CRESTEDBUTTE, CO 81224-2751	3701-362-27-001
13	SW VENTURES LLC	PO BOX 2751 CRESTEDBUTTE, CO 81224-2751	3701-362-28-006
14	BIDDISCOMBE WADE LISA A ETAL WADE ALAN	PO BOX 342 WASHOUGAL, WA 98671-0342	3701-362-28-001
15	WADE ALAN BIDDISCOMBE WADE LISA A ETAL	PO BOX 342 WASHOUGAL, WA 98671-0342	3701-362-29-006
16	WADE ALAN BIDDISCOMBE WADE LISA A ETAL	PO BOX 342 WASHOUGAL, WA 98671-0343	3701-362-29-001
17	WEST ELK INVESTMENTS LLC	1045 FAIRWAY LN GUNNISON, CO 81230-4141	3701-362-25-031
18	WEST ELK INVESTMENTS LLC	1045 FAIRWAY LN GUNNISON, CO 81230-4141	3701-362-33-002
19	ALPINE BANKS OF COLORADO ATT: ERIN WIENC	PO BOX 10000 GLENWOODSPRINGS, CO 81602-8001	3701-362-33-005

HCI ENGINEERING

A DIVISION OF
HABERER CARPENTRY INC.

810 BRICKYARD CIRCLE, UNIT 3
GOLDEN CO. 80403
PH: 720-252-3484 FAX: 303-278-7814

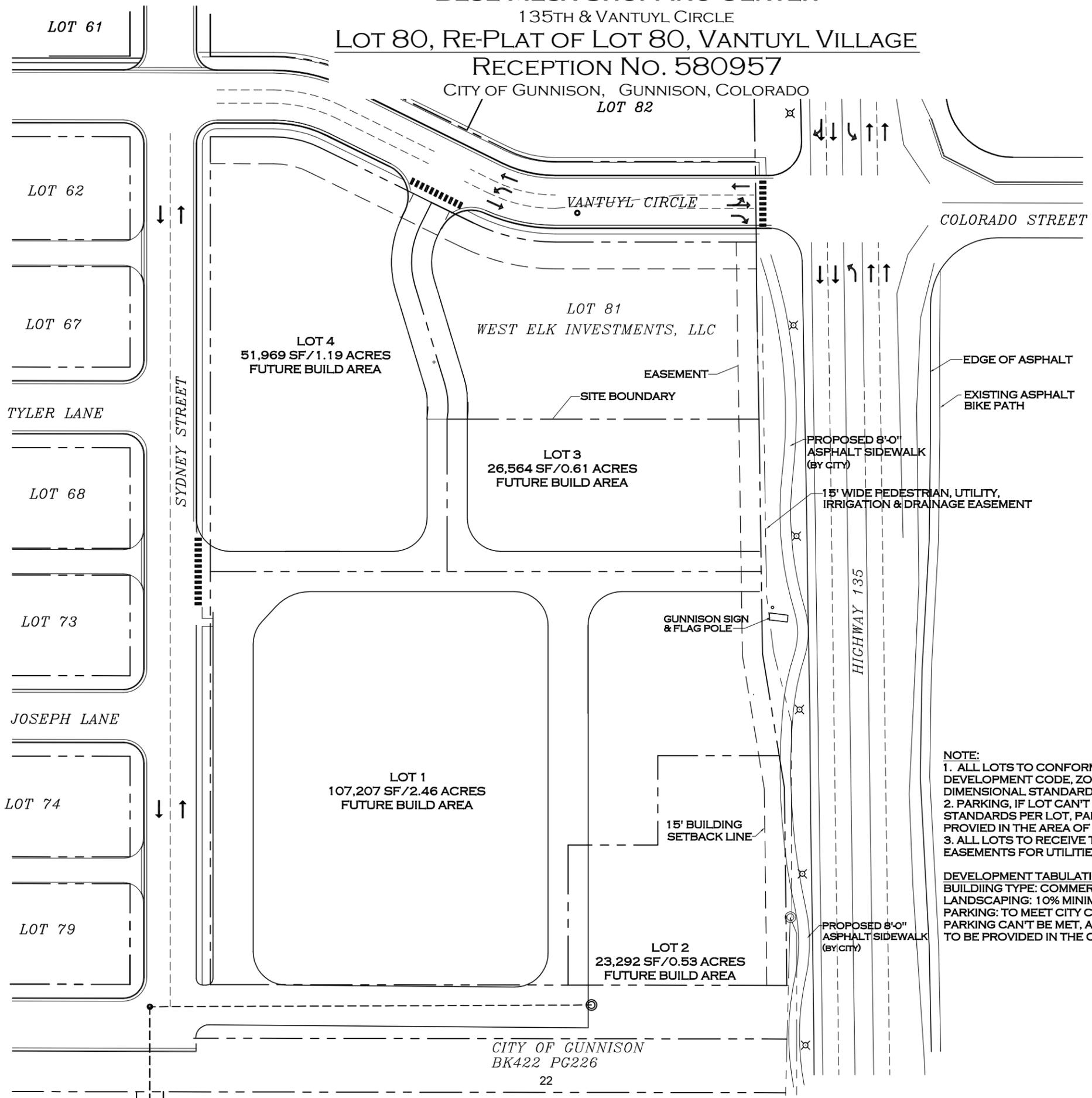
VIN MAP

DATE: 10.12.12 SUBMITTAL: 1ST SUBMITTAL

NOTES:

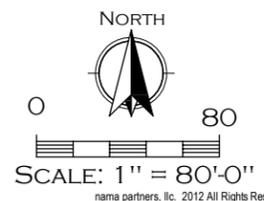
BLUE MESA SHOPPING CENTER
 135TH & VANTUYL CIRCLE
LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE
RECEPTION NO. 580957

CITY OF GUNNISON, GUNNISON, COLORADO



NOTE:
 1. ALL LOTS TO CONFORM WITH THE LAND DEVELOPMENT CODE, ZONING AND DIMENSIONAL STANDARDS.
 2. PARKING, IF LOT CAN'T MEET THE PARKING STANDARDS PER LOT, PARKING SHALL BE PROVIDED IN THE AREA OF THE CITY R.O.W.
 3. ALL LOTS TO RECEIVE THE APPROPRIATE EASEMENTS FOR UTILITIES AND ACCESS.

DEVELOPMENT TABULATION:
 BUILDING TYPE: COMMERCIAL
 LANDSCAPING: 10% MINIMUM PER LOT
 PARKING: TO MEET CITY CODE RATIO, IF PARKING CAN'T BE MET, ADDITIONAL PARKING TO BE PROVIDED IN THE CITY R.O.W.



nama partners llc
 6140 Greenwood Plaza Blvd.
 Greenwood Village, CO 80111
 Phone: 720.289.0001

HCI ENGINEERING
 810 Brickyard Circle, Unit #3
 Golden, CO 80403
 Phone: 720.252.3484
 Fax: 303.278.7814

PROJECT LOCATION:
BLUE MESA SHOPPING CENTER
 135TH & VANTUYL CIRCLE
LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE
 CITY OF GUNNISON
 GUNNISON, COLORADO
RECEPTION NO. 580957

DRAKE
 REAL ESTATE SERVICES
 496 S. BROADWAY
 DENVER, CO 80209
 TEL. 303.825.6200
 WWW.DRAKERES.COM

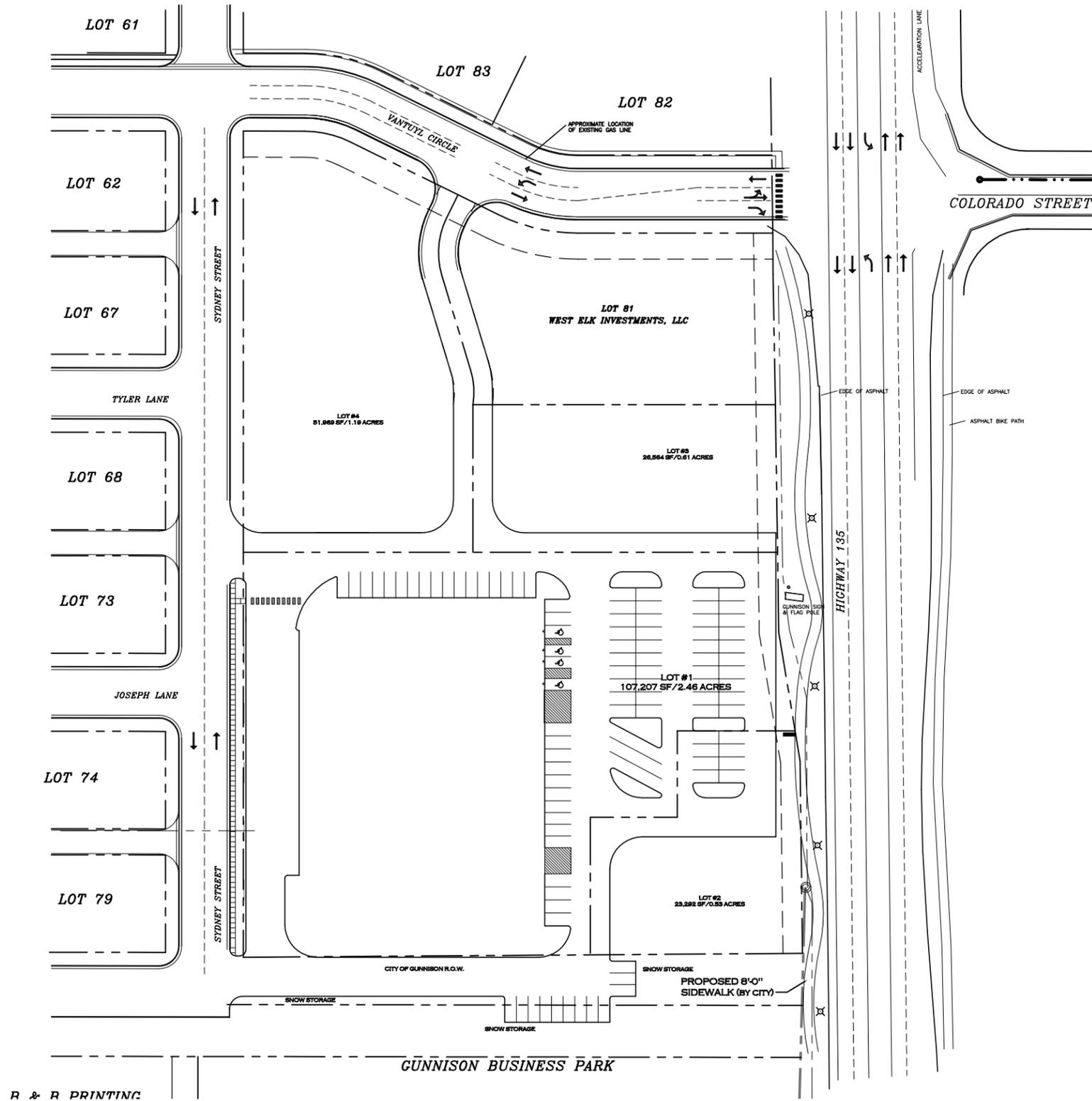
REVISIONS:	DATE:
SKETCH PLAN APP.	10-24-2012
PRELIM. PLAN	11-19-2012

NAMA PROJECT #: 12-123.10
 DATE: 10-17-2012

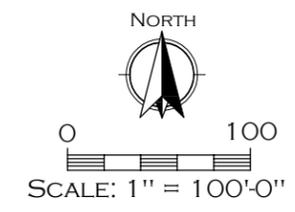
PROJECT TITLE:
SITE DEV. PLAN

SHEET NUMBER:

BLUE MESA SHOPPING CENTER
 135TH & VANTUYL CIRCLE
LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE
 RECEPTION NO. 580957
 CITY OF GUNNISON, GUNNISON, COLORADO



R & R PRINTING



nama
partners llc
 6140 Greenwood Plaza Blvd.
 Greenwood Village, CO 80111
 Phone: 720.289.0001

HCI
ENGINEERING
 810 Brickyard Circle, Unit #3
 Golden, CO 80403
 Phone: 720.252.3484
 Fax: 303.278.7814

PROJECT LOCATION:
BLUE MESA SHOPPING CENTER
 135TH & VANTUYL CIRCLE
LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE
 RECEPTION NO. 580957
 CITY OF GUNNISON
 GUNNISON, COLORADO

DRAKE
 REAL ESTATE SERVICES
 496 S. BROADWAY
 DENVER, CO 80209
 TEL. 303.825.6200
 WWW.DRAKERES.COM

REVISIONS:	DATE:
SKETCH PLAN APP.	10-24-2012
PRELIM. PLAN	11-19-2012

NAMA PROJECT #: 12-123.10
 DATE: 10-17-2012

PROJECT TITLE:
PARKING PLAN

SHEET NUMBER:



nama partners llc
 6140 Greenwood Plaza Blvd.
 Greenwood Village, CO 80111
 Phone: 720.289.0001

HCI ENGINEERING
 810 Brickyard Circle, Unit #3
 Golden, CO 80403
 Phone: 720.252.3484
 Fax: 303.278.7814

PROJECT LOCATION:
BLUE MESA SHOPPING CENTER
 135TH & VANTUYL CIRCLE
LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE
 CITY OF GUNNISON

DRAKE
 REAL ESTATE SERVICES
 496 S. BROADWAY
 DENVER, CO 80209
 TEL. 303.825.6200
 WWW.DRAKERES.COM

REVISIONS: DATE:
 SKETCH PLAN APP. 10-24-2012
 PRELIM. PLAN 11-19-2012

NAMA PROJECT #: 12-123.10
 DATE: 10-17-2012

PROJECT TITLE:
LANDSCAPING PLAN

SHEET NUMBER:

BLUE MESA SHOPPING CENTER
 135TH & VANTUYL CIRCLE
LOT 80, RE-PLAT OF LOT 80, VANTUYL VILLAGE
 RECEPTION No. 580957
 CITY OF GUNNISON, GUNNISON, COLORADO

LEGEND

- ORNAMENTAL/DECIDUOUS TREE
- EVERGREEN TREE

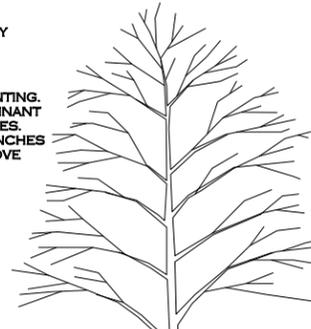
TREE LIST:

KEY	BOTANICAL NAME	COMMON NAME	SIZE	NOTES/REMARKS
DECIDUOUS TREES				
AS	POPULUS TREMULOIDES	ASPEN	2" CAL. MIN.	B&B, FULL, STRAIGHT
EVERGREEN TREES				
WF	ABIES CONCOLOR	WHITE FIR	6' HT. MIN.	B&B, FULL & BUSHY

NOTE:
 ALL LANDSCAPE AREA'S TO RECEIVE NO LESS THAN
 60% VEGETATION. ALL LANDSCAPE AREA'S WILL
 RECEIVE 2" COBBLE, 4" DEEP W/ WEED BLOCK.

NOTE:
 TREES SHOWN ARE AT MAX. SIZE DIA.
 ALL TREE SIZES TO CONFORM TO CITY
 REQUIREMENTS.

DO NOT HEAVILY PRUNE THE TREE AT PLANTING.
 PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT
 LEADERS, AND BROKEN OR DEAD BRANCHES.
 SOME INTERIOR TWIGS AND LATERAL BRANCHES
 MAY BE PRUNED; HOWEVER, DO NOT REMOVE
 THE TERMINAL BUDS OF BRANCHES THAT
 EXTEND TO THE EDGE OF THE CROWN.

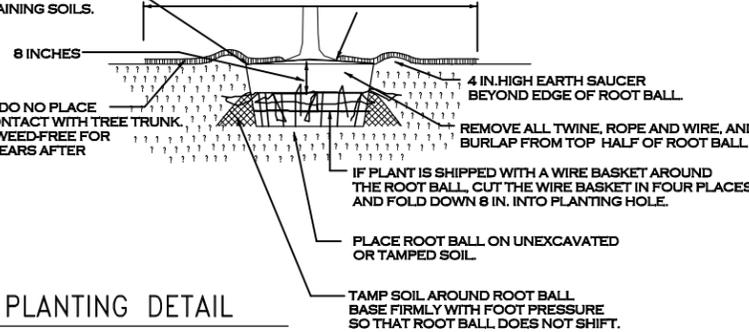


MARK THE NORTH SIDE OF THE TREE
 IN THE NURSERY, AND ROTATE TREE
 TO FACE NORTH AT THE SITE WHEN EVER
 POSSIBLE.

SET TOP OF ROOT BALL FLUSH TO
 GRADE OR 1-2 INCHES
 HIGHER IN SLOWLY DRAINING SOILS.

4 IN. COBBLE/MULCH. DO NO PLACE
 COBBLE/MULCH IN CONTACT WITH TREE TRUNK,
 MAINTAIN THE MULCH WEED-FREE FOR
 A MINIMUM OF THREE YEARS AFTER
 PLANTING.

EACH TREE MUST BE PLANTED SUCH THAT
 THE TRUNK FLARE IS VISIBLE AT THE TOP
 OF THE ROOT BALL. TREES WHERE THE TRUNK
 FLARE IS NOT VISIBLE SHALL BE REJECTED.
 DO NOT COVER THE TOP OF THE ROOT
 BALL WITH SOIL.



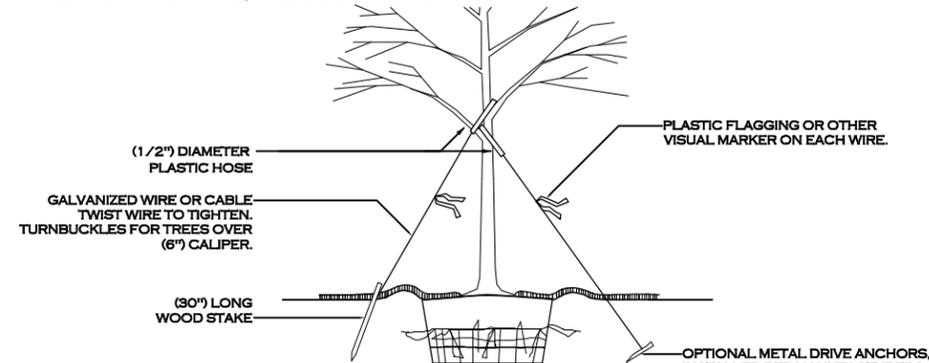
TREE PLANTING DETAIL

WIRE OR CABLE SIZES SHALL BE AS FOLLOWS:
 TREES UP TO (2.5 IN) CALIPER - 14 GAUGE
 TREES (2.5 IN) TO (3 IN) CALIPER - 12 GAUGE

TIGHTEN WIRE OR CABLE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT. PLASTIC HOSE
 SHALL BE LONG ENOUGH TO ACCOMMODATE (1.5 IN) OF GROWTH AND BUFFER ALL BRANCHES FROM THE WIRE.

TUCK ANY LOOSE ENDS OF THE WIRE OR CABLE INTO THE WIRE WRAP SO THAT NO SHARP WIRE ENDS ARE EXPOSED.

INSTALL THREE GUY WIRES PER TREE, SPACED EVENLY AROUND THE TRUNK.



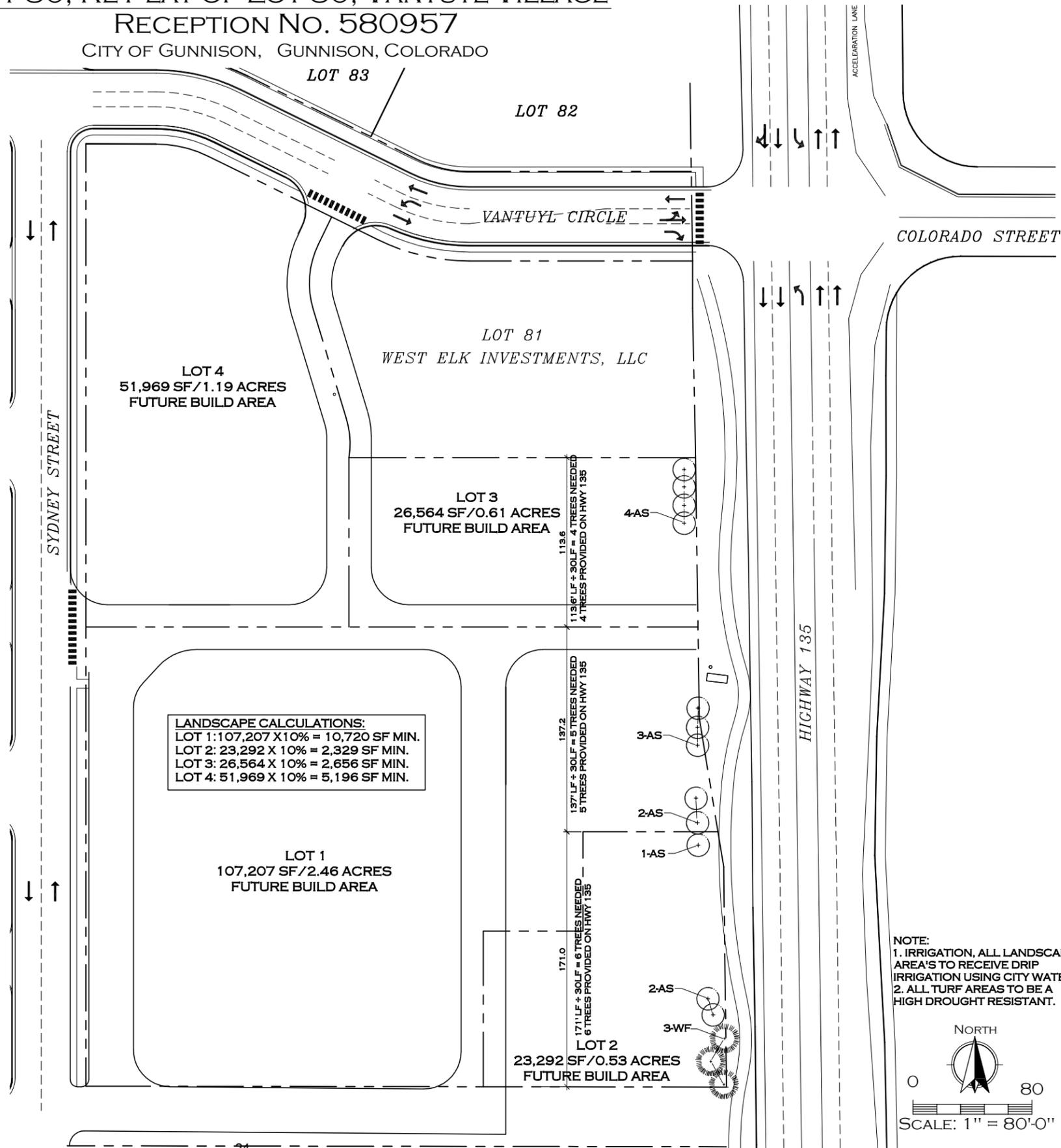
ALL STAKES SHALL BE DRIVEN OUTSIDE
 THE EDGE OF THE ROOT BALL.

ASSURE THAT THE BEARING SURFACE OF THE PROTECTIVE COVERING OF THE WIRE OR CABLE AGAINST THE TREE TRUNK
 IS A MINIMUM OF (0.5 IN).

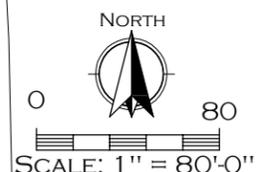
REMOVE ALL STAKING AS SOON AS THE TREE HAS GROWN SUFFICIENT ROOTS TO OVERCOME THE PROBLEM
 THAT REQUIRED THE TREE TO BE STAKED. STAKES SHALL BE REMOVED NO LATER THE END OF THE FIRST
 GROWING SEASON AFTER PLANTING.

TREE STAKING DETAIL

LANDSCAPE CALCULATIONS:
 LOT 1: 107,207 X 10% = 10,720 SF MIN.
 LOT 2: 23,292 X 10% = 2,329 SF MIN.
 LOT 3: 26,564 X 10% = 2,656 SF MIN.
 LOT 4: 51,969 X 10% = 5,196 SF MIN.



NOTE:
 1. IRRIGATION, ALL LANDSCAPE
 AREA'S TO RECEIVE DRIP
 IRRIGATION USING CITY WATE
 2. ALL TURF AREAS TO BE A
 HIGH DROUGHT RESISTANT.



RE-SUBDIVISION OF LOT 80
 ACCORDING TO THE RE-PLAT OF LOT 80, VANTUYL VILLAGE
 (RECEPTION NO. 580957)
 CITY OF GUNNISON
 GUNNISON COUNTY, COLORADO

DEDICATION

Drake Gunnison Partners, LLC, a Colorado limited liability company, being the owner of the land described as follows:
 Lot 80, Vantuyll Village Subdivision, according to the Re-Plat of Lot 80, Reception No. 580957, in Gunnison County, Colorado, have re-subdivided the same the same as shown on this plat and do hereby dedicate to the public at large the streets, alleys, roads and other public areas as shown hereon and hereby dedicate those portions of land labeled as easements for the installation and maintenance of public utilities as shown hereon.

In witness whereof _____ has subscribed (his/her their) name(s) this _____ day of _____, A.D. 20____.

By _____
 Owner(s)

State of Colorado)
) ss.
 County of Gunnison)

The foregoing instrument was acknowledged before me this _____ day of _____, A.D. 20____, by _____

My commission expires _____

Witness my hand and official seal.

 Notary Public

CERTIFICATE OF STREET AND UTILITY MAINTENANCE

Public notice is hereby given that neither the dedicated roads nor the public utilities shown on this plat will be maintained by the City of Gunnison until and unless the subdivider constructs the streets and roads and utilities in accordance with the subdivision agreement, if any, and the subdivision regulations in effect at the date of the recording of this plat and approval of the City has been issued to that effect. When the City approves a street or utility for maintenance, the street or utility shall become public in all senses of the word and the subdivider has no further obligations in regards to that particular street or utility.

LEGEND

- Found 3.25" aluminum cap monument stamped "LS 34979"
- Found rebar with plastic cap stamped "LS 34979"
- Steel ROW fence post
- Fence

NOTES:

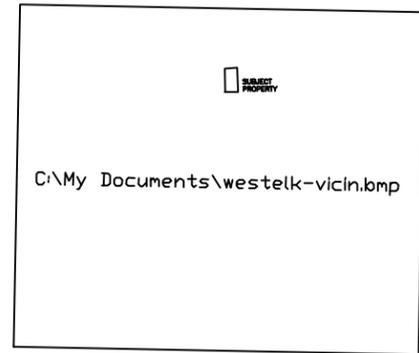
1. Property located by field measurements to found monuments shown. Basis of bearing is N 00°00'00" E between found monument at the southwest corner of Lot 80 and a similar monument at the northwest corner of Lot 84, using information on the record plat of Re-Plat of Lot 80, Vantuyll Village Subdivision, supplemented by information on plot of Supplemental Plat of Vantuyll Village - Suvey Control.

SURVEYOR'S CERTIFICATE

I, Timothy E. Pearson, a registered land surveyor in the State of Colorado, certify that this plat and the survey referred to herein were made under my direction and control and that both are true and correct to the best of my knowledge.

Dated this _____ day of _____, A.D. 20____.

 Timothy E. Pearson
 Colorado L.S. No. 34979



VICINITY MAP (NTS)

ATTORNEY'S OPINION

I, _____, an attorney at law duly licensed to practice in the State of Colorado, hereby certify that I have examined title to all lands herein dedicated and subdivided. Such title is held in the name of _____ and is free and clear of all liens, defects, encumbrances, restrictions and reservations except as follows:

This opinion does not address mortgages, deeds of trust or similar instruments wherein the subject property is utilized as security for a promissory note or other written instrument of debt; nor does it address instruments affecting title but not recorded as of the date of this opinion.

Dated this _____ day of _____, A.D. 20____.

 Attorney-at-Law

PLANNING COMMISSION APPROVAL

This plat is approved by the City of Gunnison Planning Commission this _____ day of _____, 200____.

 Chairman

CITY COUNCIL APPROVAL

This plat is approved for filing and the City hereby accepts the dedication of the streets and roads shown hereon subject to the provisions in "Street Maintenance" set forth above, and further accepts the dedication of the easements shown hereon.

Signed this _____ day of _____, 200____.

CITY OF GUNNISON

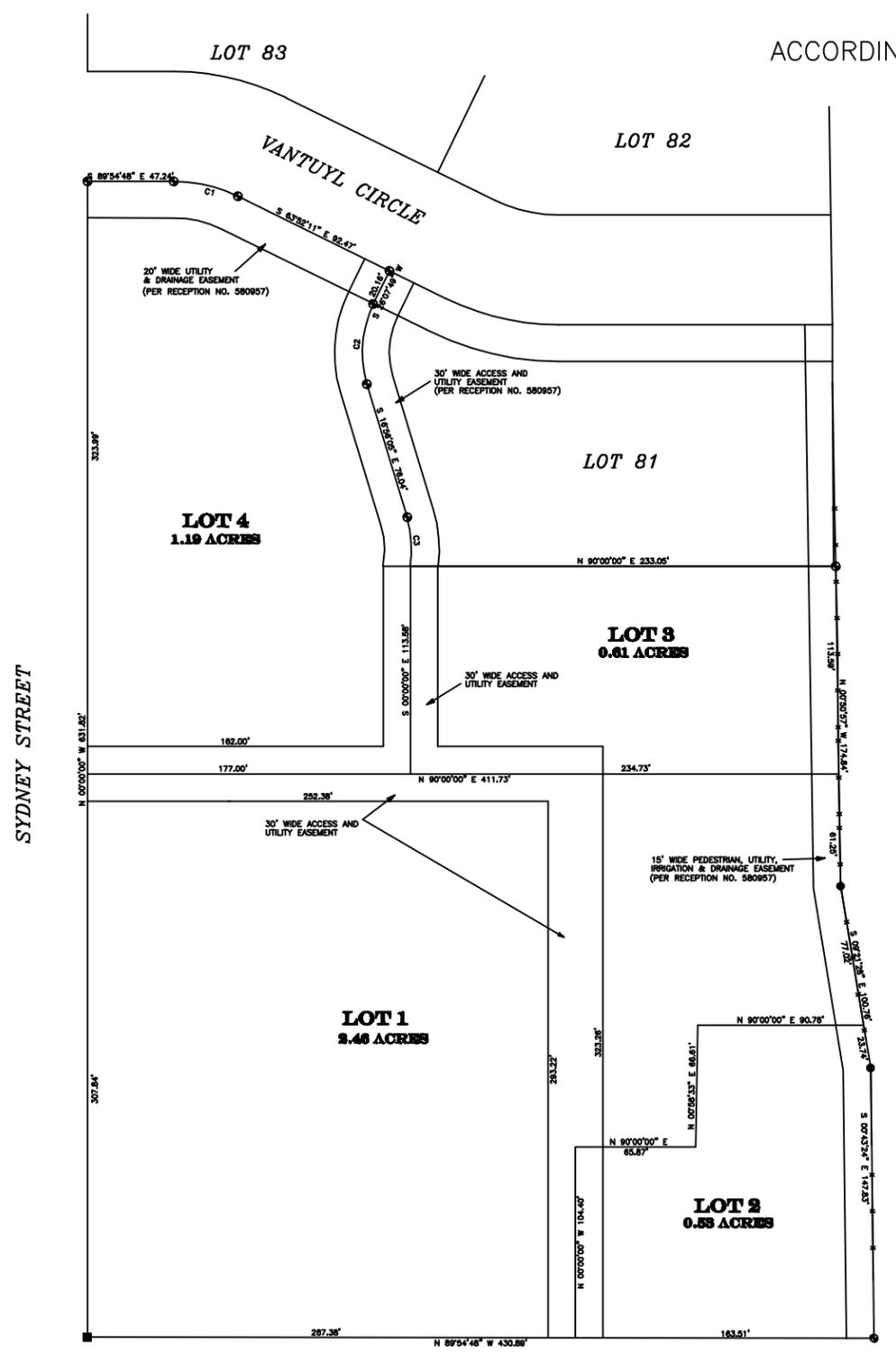
By: _____
 Mayor

RECORDER'S CERTIFICATE

This plat was filed for record in the office of the County Clerk and Recorder of Gunnison County at _____ M on the _____ day of _____, 200____, Reception No. _____

County Clerk and Recorder

By: _____
 Deputy



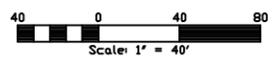
SNOW STORAGE

CITY OF GUNNISON
 BK422 PG226

SNOW STORAGE



NUMBER	ARC LENGTH	RADIUS	CHORD DIRECTION	CHORD LENGTH
C1	36.36	80.00	S 76°53'30" E	36.05
C2	45.10	60.00	S 04°35'52" W	44.04
C3	26.99	60.00	S 04°02'50" E	26.76



B & B PRINTING

GUNNISON BUSINESS PARK

PEARSON SURVEYING
 P.O. BOX 652
 GUNNISON, CO 81230
 970-641-2910
 PROJECT # 12-1-6

DATE : 11/12/12
 LATEST REVISION DATE : 12/10/12

SHEET 1 OF 1

Development Report

FOR:

BLUE MESA SHOPPING CENTER
NORTH WEST OF THE INTESECTION
OF
HIGHWAY 135TH & E. SPENCER AVE.
GUNNISON COLORADO

Owner / Operator(s):

Drake Gunnison Partners LLC
Jon Hauser
496 S. Broadway
Denver, CO, 80209
PH: 303-825-8500
FX: 303-825-7200

Engineer Contact(s):

HCI Engineering
Cole C. Haberer, P.E.
810 Brickyard Cir, unit 3
Golden, CO, 80403
PH: 720-252-3484
FX: 303-979-1675

Architect Contact(s):

Nama Partners LLC
Mike Brettmann
6140 Greenwood Plaza
Greenwood Village, CO, 80111
PH: 303-514-3434

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Floodplain 5
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Irrigation Ditch System 6
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Site Characteristics

Existing:

Blue Mesa Shopping Center subdivision development is located north of the northwest corner of Spencer Ave. and Highway 135. More specifically the site is located on Lot 80, re-plat of lot 80, Vantuyl Village, City of Gunnison, State of Colorado. The following is the latitude/longitude of this project.

Latitude, 38° 33' 25" N – Longitude, 106° 55' 39" W



The current site is approximately 4.80 acres, and is vacant and vegetated with native grasses and weeds. The overall site varies in elevation from a high of 7732 (MSE) to a low 7722 (MSE). The site slopes from the northeast to the southwest boundary at approximately 1.3%. It is bounded on the north by Vantuyl Circle and lot 81 of Vantuyl Village, on the east by Highway 135, on the south by 80 feet of undeveloped city ROW, and on the west by Sydney St. There is an existing concrete irrigation ditch along the east boundary that then ends in an earth ditch that runs west and under Sydney Street in an existing 12" CMP pipe.

Proposed:

The proposed development for this site is to re-plot this lot into 4 lots. The intended development shall comply with the current zoning and approved uses. The following is a breakdown of the proposed lots, areas, and uses.

<i>LOTS</i>	<i>AREAS (AC)</i>	<i>PROPOSED USE</i>
LOT 1	2.46	COMMERCIAL
LOT 2	0.53	COMMERCIAL
LOT 3	0.61	COMMERCIAL
LOT 4	1.91	COMMERCIAL

Soils

A site specific geotechnical report is being completed for this development. This report will identify specific soil classifications, depth, possible hazards and recommended site foundation and pavement design. For the purpose of this report the USDA Soil Survey website was consulted. Per the USDA website the site was found to be 100% Bosler sandy loam. This soil falls within Hydrologic Group B and will have moderate runoff and erosion capacities. The associated soils maps and logs have been included in the appendix for reference.

Geology

This site is not subject to any observable surface geological hazards. Overall the site is relatively flat and is not adjacent to any steep or unstable slopes. A site visit was completed and no surface evidence of faults or subgrade geological hazards were observed.

Water Supply and Sewer Disposal

This proposed subdivision is the re-subdivision of lot 80 re-plat of lot 80 a part of the overall Vantuyl Village Subdivision. The initial use of this site, as intended by the Vantuyl Village Subdivision, was for large to medium commercial development. Based upon this the following water and sewer availability were observed.

Water:

Currently there is an existing 6" DIP water main that runs in the Sydney St. and Vantuyl Cir. that serves this site. A proposed water main loop will be extended through this development to allow for supply of each proposed lot. The proposed water main loop will be enclosed in a 30ft utility easement. Two internal site fire hydrants will be tapped from this new loop and placed for additional fire coverage. Since the intent of this development is to maintain the current zoning and use as approved by the overall subdivision no additional water demand is anticipated.

No water rights are attached with this development.

Sewer:

Currently there is an existing 8" sewer main in the public ROW along the south side of this development that will serve proposed lots 1 and 2 of this subdivision. There is also an existing 8" sewer main that runs along the north side of this site on the south side of Vantuyl Cir. and a sewer stub to this site from an existing main in Sydney St. The existing stub from Sydney St. will serve lot 4 of the proposed subdivision. To provide sewer service to lot 3 and adjacent lot 81 of Vantuyl Village a sewer main extension is proposed from the existing 8" main in Vantuyl Cir. The proposed main will be an 8" PVC and will extend south in a proposed access lane roughly 200 ft. This main will be enclosed in a 30ft wide utility and access easement. A 6 inch sewer service stub will then be provided to both proposed lot 3 and lot 81 for future development. Since the intent of this development is to maintain the current zoning and use as approved by the overall subdivision no additional sewer loading is anticipated from the proposed development.

Storm Drainage

Storm Drainage for this development shall maintain the approved patterns set forth from the overall Vantuyl Village Subdivision. Currently runoff from this site surface flows via sheet flow and channel flow from the northeast to the southwest. Runoff then concentrates in an existing drainage V-pan at the southwest corner of this site and runs west across Sydney St. and in the exiting curb and gutter to a regional detention and water quality pond located roughly 450ft east of this site. Per the master drainage study for Vantuyl Village Subdivision, runoff from the commercial lots was based upon the maximum allowable surface coverage. Based upon this it was determined that a maximum allowable percent impervious of 95% is to be used for future development of lots 1-4. As each lot is developed a drainage conformance letter shall be submitted showing site development is less than or equal to 95% impervious. If proposed percent impervious is greater than the amount set forth, on site drainage and water quality shall be provided to offset the excess flow.

All proposed runoff from lots 1-4 shall flow south and east through surface structure and outfall into the existing curb and gutter of Sydney St. and then concentrate at the southwest corner of the site in the drainage pan per the approved study.

Cost of Improvements

The proposed development will consist mostly of private internal drive lanes and infrastructure. The following is a breakdown of proposed public improvements associated with this development.

<i>PUBLIC IMPROVEMENT</i>	<i>APPROXIMATE COST</i>
SEWER MAIN EXTENSTION	\$13,281.00
WATER MAIN LOOP	\$23,288.00
IRRIGATION DITCH IMPROVEMENTS	\$12,595.50
BOWMAN STREET IMPROVEMENTS	\$41,472.00

The following cost estimates have been included in the appendix.

Solar Energy

The dimensions of each lost and building will be such that adequate solar access will be available throughout this site. There will be no perpetual dark spots or shaded areas on this development.

Floodplain

Per the FEMA Floodplain map, panel number 0800800002C no portion of this development is within a flood plain zone. The FEMA FIRMettes has been included in the appendix for reference.

Wetlands

There are no wetlands found on this development and no wetlands will be impacted by this development.

Traffic Analysis

A separate traffic study for this development addressing full build out loading impacts on adjacent streets has been submitted under separate cover.

Internal circulation of access lanes has been laid out to allow for safe and efficient use of this site. A declaration of covenants will govern internal drive lanes, cross access, maintenance and other responsibilities as shared by the proposed lots.

Irrigation Ditch System

The existing irrigation ditch that runs along the east and south boundaries of this site will be improved with this development. The intent is to improve the eastern 450ft of this site by providing a 12" CMP irrigation pipe with respective manholes and headwalls. Once the pipe runs south it will flow into a new irrigation ditch that will flow east to west along the south side of this site. Once reaching the southern side of the development the ditch will then flow through 50ft of pipe north to a new irrigation manhole and into the existing irrigation system. The system has been laid out in the improvement plans.

Conclusion

This development report addresses the technical aspects of the proposed development. A subdivision narrative addressing site tabulations, landscaping, and parking has been provided under separate cover.

Based upon the above findings it is the conclusion of the development team that Blue Mesa Shopping Center Subdivision will comply with the zoning and city standards as set forth by the Gunnison Municipal Code. We feel that the above project will be an enhancement to the existing community and provide safe and beneficial service to the city.

References

1. USDA Soils Survey Website
2. FEMA flood plain maps
3. Portions of the Vantuyl Village Improvement plans and reports.

Appendix

Figures and tables

Soil Map—Gunnison Area, Colorado, Parts of Gunnison, Hinsdale, and Saguache Counties



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

 Very Stony Spot

 Wet Spot

 Other

Special Line Features

-  Gully
-  Short Steep Slope
-  Other

Political Features

 Cities

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:1,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 13N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gunnison Area, Colorado, Parts of Gunnison, Hinsdale, and Saguache Counties
 Survey Area Data: Version 6, Feb 1, 2008

Date(s) aerial images were photographed: 7/2/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Gunnison Area, Colorado, Parts of Gunnison, Hinsdale, and Saguache Counties (CO662)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BsB	Bosler sandy loam, 1 to 8 percent slopes	4.2	100.0%
Totals for Area of Interest		4.2	100.0%

Gunnison Area, Colorado, Parts of Gunnison, Hinsdale, and Saguache Counties

BsB—Bosler sandy loam, 1 to 8 percent slopes

Map Unit Setting

Elevation: 7,800 to 8,500 feet

Frost-free period: 50 to 70 days

Map Unit Composition

Bosler and similar soils: 85 percent

Description of Bosler

Setting

Landform: Drainageways, streams, alluvial fans, stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Mixed sandy and gravelly alluvium

Properties and qualities

Slope: 1 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Available water capacity: Low (about 4.4 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance

Land capability classification (irrigated): 6s

Land capability (nonirrigated): 6c

Hydrologic Soil Group: B

Ecological site: Mountain Outwash (R048AY281CO)

Typical profile

0 to 10 inches: Sandy loam

10 to 22 inches: Sandy loam

22 to 26 inches: Very gravelly sandy clay loam

26 to 32 inches: Very gravelly sandy clay loam

32 to 48 inches: Very cobbly loamy sand

48 to 72 inches: Cobbly sand

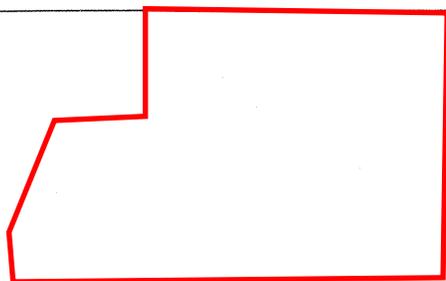
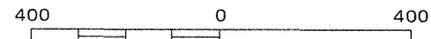
Data Source Information

Soil Survey Area: Gunnison Area, Colorado, Parts of Gunnison, Hinsdale, and
Saguache Counties

Survey Area Data: Version 6, Feb 1, 2008



APPROXIMATE SCALE IN FEET



ZONE C

VULCAN

DORCHESTER

BOWMAN

FLORESTA

TINCUP DRIVE

SPENGER

ELIZABETH

LEROY

IRWIN

QUARTZ

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
GUNNISON,
COLORADO
GUNNISON COUNTY

PANEL 2 OF 2
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
080080 0002 C

MAP REVISED:
SEPTEMBER 18, 1985



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

HCI ENGINEERING

A division of
HABERER CARPENTRY INC.

PUBLIC IMPROVEMENT COST SUMMARY

DESCRIPTION	QTY	UNIT	COST/UNIT	TOTAL AMOUNT
<u>SEWER MAIN</u>				
New 4' M.H.	3	EA	\$2,500.00	\$7,500.00
8" SDR 35 PVC	293	LF	\$17.00	\$4,981.00
Grout Ex main tie	1	LS	\$800.00	\$800.00
<u>TOTAL</u>				<u>\$13,281.00</u>
<u>WATER MAIN LOOP</u>				
New Fire Hydrants	2	EA	\$4,000.00	\$8,000.00
6" DIP	858	LF	\$22.00	\$18,876.00
6" Tee	2	EA	\$800.00	\$1,600.00
6" 45 Deg Bend	4	EA	\$450.00	\$1,800.00
6" G.V.	3	EA	\$950.00	\$2,850.00
<u>TOTAL</u>				<u>\$33,126.00</u>
<u>IRRIGATION DITCH</u>				
New Irrigation Manhole	2	EA	\$2,500.00	\$5,000.00
12" CMP	500	LF	\$12.00	\$6,000.00
Irrigation Ditch	397	LF	\$1.50	\$595.50
Irrigation Head Wall	2	EA	\$500.00	\$1,000.00
<u>TOTAL</u>				<u>\$12,595.50</u>
<u>BOWMAN ST.</u>				
Earthwork	1	LS	\$4,500.00	\$4,500.00
Cross Pan	1	EA	\$2,500.00	\$2,500.00
4' V-Pan	85	LF	\$22.00	\$1,870.00
Curb and Gutter	559	LF	\$18.00	\$10,062.00
Pavement	9266	SF	\$4.00	\$37,064.00
<u>TOTAL</u>				<u>\$55,996.00</u>
Subtotal				\$114,998.50
10% Contingency				\$11,499.85
<u>GRAND TOTAL</u>				<u>\$126,498.35</u>

Note: the above cost estimate numbers are based on best available info. These number do not reflect a contractors bid or actual installation cost. The above are strictly the engineers opinion of cost and shall not be used for budgets or other development purposes.

HCI ENGINEERING

A division of
HABERER CARPENTRY INC.

December 11th 2012

Attn: Terry Zerger,
City of Gunnison

Re: Drainage Conformance Letter for subdivision of lot 80, Re-plat of Lot 80, VanTuyl Village, RECP# 580957

The following letter is written on behalf of Drake Real Estate Services, LLC with respect to the proposed EntryPoint Plaza subdivision development, located north of the northwest corner of Spencer Ave. and Highway 135. More specifically the site is located on Lot 80, re-plat of lot 80, Vantuyl Village, City of Gunnison, State of Colorado. The intent of this letter is to discuss drainage patterns and design conformance with respect to the above mentioned site.

The “*Drainage Plan for Van Tuyl Village Subdivision, Dated July 25th 2006, Prepared By Williams Engineering, LLC,*” hereto referred to as master drainage study, was referenced during the final grading and drainage design for this site.

The current site is approximately 4.80 acres, and is vacant and vegetated with native grasses and weeds. The overall site varies in elevation from a high of 7732 (MSE) to a low 7722 (MSE). The site drains from the northeast to the southwest boundary at approximately 1.3%, to an existing drainage cross pan and then down street curb and gutter into an existing regional detention and water quality pond located approximately 450ft to the west of southwest property corner. The site is bounded on the north by Vantuyl Circle and lot 81 of Vantuyl Village, on the east by Highway 135, on the south by 80 feet of undeveloped city ROW, and on the west by Sydney St. Currently lot 81 and a portion of highway 135 are tributary to this site and drain across it to the existing regional pond.

The proposed development consists of the re-plat of lot 80 into 4 separate lots with associated internal drive lanes and utility infrastructure. The following table list each proposed lot and their associated area.

<i>LOT</i>	<i>AREA AC</i>
LOT 1	2.47
LOT 2	0.53
LOT 3	0.61
LOT 4	1.19

The intent of this subdivision drainage design is to conform to the historic and approved master drainage study. Per the approved master drainage study the runoff coefficient for this site was computed using the maximum allowable coverage values for the multifamily and commercial lots. Based upon this statement a surface conditions comparison was made. For the proposed subdivision the following surface conditions were used.

<i>PROPOSED SURFACE CONDITIONS</i>	<i>PERCENT OF TOTAL SITE</i>
TOTAL SUBDIVISION LANDSCAPING	10%
TOTAL SUBDIVISION ROOF	25% (MAX)
TOTAL SUBDIVISION PAVEMENT AREA	65%

From the above surface conditions a maximum percent impervious for the overall subdivision was found. (percent impervious values per table RO-3 of UDFCD volume 1)

Composite Percent Impervious:

Element	Area (AC)	% Impervious
Paved	3.12	100
Roof	1.20	90
Landscape	0.48	0

$$\%I = \frac{(3.12 \times 100) + (1.20 \times 90) + (0.48 \times 0)}{4.80} = 87.5$$

Using this value the following comparison was made

<i>PROPOSED % I</i>	<i>APPROVED % I</i>
87.5	95

From the above comparison we can see that the proposed site developed conditions will be less than the maximum allowable coverage conditions as stated in the master drainage study.

Runoff from each lot will be conveyed through the site by curb and gutter and drainage pans. All flows will be channeled into the curb and gutter of Sydney St. and then directed south and southwest into the existing regional detention pond.

Based upon the above observations the proposed development complies with the master drainage study for this site. As each lot is developed a drainage conformance letter must be provided indicating a percent impervious of less than 95%. In summary, it is the opinion of HCI Engineering that the proposed site runoff and drainage patterns are in compliance with the above referenced drainage report. As mentioned above both detention and water quality are already provided per the master drainage study for this site. HCI Engineering does not foresee adverse impacts to downstream or adjacent properties due to the development of this site.

See the attached calculations and feel free to contact me at any time.

Sincerely

Cole C Haberer, P.E. #43259
HCI Engineering

Attachments:
Excerpts from the master drainage study

Rainfall Intensity

$I_{10} = 0.40 \text{ in/hr}$

Runoff Coefficient

Area:

$A = 29.93 \text{ acs}$

Meadow Condition Runoff Coefficient:

$C = 0.25$

Runoff Flows

Runoff Flow:

$Q_p = CAI = 0.25(29.93)(.40)$
 $Q_p = 3.99 \text{ cfs}$

2. Developed Condition

Time of Concentration

Sheet Flow, Paved

$L = 300 \text{ ft}$

$s = 0.01 \text{ ft/ft}$

$n = 0.011$

$P_2 = 1.5 \text{ in}$

$T_t = \frac{0.007(nL)^{0.8}}{(P_2)^{0.5}s^{0.4}}$

$T_t = 0.36 \text{ hr} = 21 \text{ min}$

Shallow Concentrated Flow

$L = 1924 \text{ ft Paved}$

$s = 0.006 \text{ ft/ft}$

$V = 1.49 \text{ ft/sec}$

$T_t = \frac{L}{3600V} = \frac{1924}{3600(1.49)} = 0.10 \text{ hr} = 6 \text{ min}$

$T_c = 21 + 6$

$T_c = 27 \text{ min}$

Rainfall Intensity

$I_{10} = 0.70 \text{ in/hr}$

Runoff Coefficient

The runoff coefficient is computed using the maximum allowable coverage values for the multifamily and commercial lots and an assumed 2000 SF coverage of home and driveway on single family lots.

a. Detained Flows

Area:

$A = 24.32 \text{ acs}$

Composite Runoff Coefficient:

Element	Area (SF)	C	CA
Paved Parking	4.17	.80	3.336
Concrete Sidewalks	0.03	.85	0.025
Roads	3.69	.80	2.953
Building Roof	6.61	0.90	5.949
Grass Lawn	9.82	0.20	1.964
Totals:	24.32		14.227

$C = \frac{CA}{A} = .58$



ALDRIDGE TRANSPORTATION CONSULTANTS, LLC

Advanced Transportation Planning and Traffic Engineering

TRAFFIC IMPACT STUDY *for* ***Tractor Supply Company*** GUNNISON, COLORADO

Prepared for:
Drake Real Estate Services, Inc.
496 S. BROADWAY
DENVER, CO 80209

Prepared by:
JOHN M.W. ALDRIDGE, PE, PTOE, AICP
Aldridge Transportation Consultants, LLC
1082 CHIMNEY ROCK ROAD
HIGHLANDS RANCH, COLORADO 80120
303-703-9112

November 26, 2012



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- 2: PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES**
- 3: TRIP DISTRIBUTION**
- 4: TRIP ASSIGNMENT**
- 5: EXISTING AND PROJECTED TRAFFIC VOLUMES**
- 6: CAPACITY AND LEVEL OF SERVICE ANALYSIS**
- 7: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

- APPENDIX**



1. INTRODUCTION AND EXECUTIVE SUMMARY

This report provides a study of the traffic impact occasioned by the proposed development of property adjacent to the west side of SH-135 and south of Van Tuyl Circle North in Gunnison. The property is currently vacant. The development plan proposes a Tractor Supply Company store a



General Vicinity and Project Study Area



and an O'Reilly's Auto parts store. The graphic shows the location of the site and surrounding area on an aerial photo. The site plan attached shows the layout and access locations.

Directly to the west of the site is a planned residential area with 61 single-family and 82 multi-family units. Currently, only ten units have been constructed. Construction of the remainder is unknown as the property is now in receivership. To the north is a vacant lot, which is also in receivership. It could be developed commercially, possibly with a bank. To the south and east across the highway is fully developed with commercial uses including a bank, small inline retail, and an auto dealership. On the northeast corner of Colorado St. and SH-135 there is a vacant lot with no known development plans.

Note that LSC Transportation Consultants, Inc. studied this commercial site and a potential residential project to the west in August 2006 and June 2007. Their study, "*Van Tuyl Village*," was gleaned for useable information in this report.

EXISTING AND PROPOSED CONDITIONS

SH-135 is a state highway and the State Highway Access Code governs access. SH-135 in this section is a four-lane highway with a traversable two-way center left-turn lane. It carries approximately 8,600 ADT according to CDOT 2011 traffic data on the OTISS website. CDOT's 20-year growth factor is 1.47 on this section. This would bump the traffic up to 12,600 ADT in twenty years.



The Code classifies SH-135 as an NR-B highway. Note that LSC erroneously reported it as an NR-A. Generally, the NR-A classification is for high volume highways in larger urban areas. NR-A typically prohibits direct access if access is reasonably available on the local street system and the design requirements, especially allowance on turning movements, are more stringent. NR-B highways allow more direct access locations and turning movements at these locations to occur.

Major improvements to SH-135 in this section have not been planned or programmed.

ACCESS LOCATIONS

Access to the site will be from Van Tuyl Circle North on the northern border of the site. A driveway into the site from Van Tuyl Circle North located 280 feet west from SH-135 will serve as the main entry. Secondary access from a backage road, Sydney St., will be available via CR-13 or Spencer Ave.

The intersection of Van Tuyl Circle North and SH-135 is currently restricted to right in/right movement by a raised traffic island. This site development plan proposes to remove the island and allow full-movement access.



2. PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES

The conceptual site plan shows a new Tractor Supply Store and an O'Reilly's Auto Parts Store. The uses on the other pads are unknown at this time but likely fall into the Specialty Retail category i.e. quality apparel, hard goods, and services such as real estate offices, dance studios, florists and small restaurants. In the 2013 opening day scenario, the trip generation assumes the build-out of the TSC parcel. In the 2033 build-out scenario, the trip generation assumes build-out of the residential area to the west, a drive-through bank on the parcel to the north, and specialty retail on the northeast corner of Colorado St. and SH-135. The trip generation rates for these land uses are from the *ITE Trip Generation Manual, 9th Edition*. The following worksheet provides the ADT and AM/PM Peak Hour traffic volumes for the 2013 and 2033 scenarios.

It is important to note that the LSC report assumed that the TSC site would contain 162,000 square feet of shopping center use. The TSC site plan including the parcel on the northeast corner of the site is 47,100 square feet. The LSC report indicated that the site would generate 9,296 daily trips. The TSC site plan per the ITE trip generation rates will generate considerably less at 1,429 daily trips. In the 20-year scenario, LSC estimated 10,423 daily trips including the residential area. This report estimates 2,913 daily trips including the same number of residential units.



GUNNISON SITE FOR TRACTOR SUPPLY COMPANY
Transportation Impact Study

Trip Generation Worksheet - Opening Day 2013								
ITE CODE	LAND USE	UNIT	QUANTITY	ADT	AM		PM	
					IN	OUT	IN	OUT
810	Tractor Supply Store	KSF	22	est. 200	est. 16	est. 14	0.66 14	0.74 16
210	Automobile Parts Store	KSF	6.6	61.91 409	1.11 7	1.11 7	2.93 19	3.05 20
210	Speciality Retail	KSF	18.5	44.32 820	1.11 20	1.11 20	1.19 22	1.52 28
Total Trips				1429	44	42	56	65

Trip Generation Worksheet - Build Out 2033								
ITE CODE	LAND USE	UNIT	QUANTITY	ADT	AM		PM	
					IN	OUT	IN	OUT
810	Tractor Supply Store	KSF	22	est. 200	est. 16	est. 14	0.66 14	0.74 16
210	Automobile Parts Store	KSF	6.6	61.91 409	1.11 7	1.11 7	2.93 19	3.05 20
210	Speciality Retail	KSF	18.5	44.32 820	1.11 20	1.11 20	1.19 22	1.52 28
912	Drive-In Bank	KSF	3	148.15 444	6.89 21	5.19 16	12.15 36	12.15 36
210	Single Family	DU	52	9.52 495	0.19 10	0.56 29	0.63 33	0.37 19
220	Apartments	DU	82	6.65 545	0.10 8	0.40 33	0.40 33	0.22 18
Total Trips				2913	82	119	158	138

The PM peak hour is the highest time of travel on the adjacent streets and at the intersections and therefore considered the design hour volume (DHV) for operations analysis and geometric design purposes.



3. TRIP DISTRIBUTION

With regard to distribution, 20 percent originates from the north and 75 percent from the south and the east/west directions on US-50. A nominal five percent assigned to the west on Spencer Ave. via Sydney, Vulcan, and Pine Streets. A visual inspection of the aerial maps shows that virtually 100 percent of Gunnison is south of the site and that any traffic from US-50 will also come and go from south of the site. These assumptions are consistent with directional splits determined in the LSC report.

The 2033 analysis assumes further development of the site and immediate areas with similar uses. To the north of this site is a vacant parcel that could be a site for a new bank. In this case though, traffic to and from the north would likely use CR-13. Seventy-five percent of the bank trips were assigned to the Van Tuyl Circle/SH-135 intersection. Trips from the residential area to the west of the site are likely to gravitate to the south and Spencer Ave. to access schools, shopping, and attractions on the main artery, US-50. Twenty percent of the residential trip generation was assigned to the SH-135 intersection. The distribution percentages are shown in the following figure.



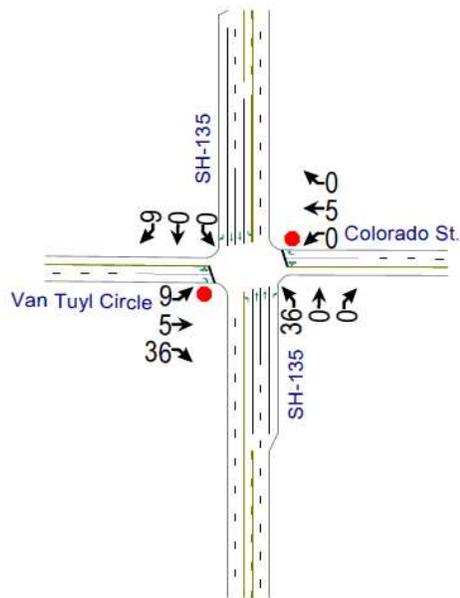
GUNNISON SITE FOR TRACTOR SUPPLY COMPANY
Transportation Impact Study





4. TRIP ASSIGNMENT

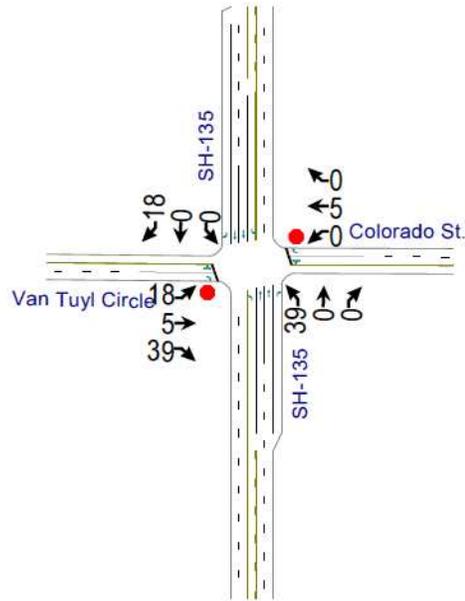
The following graphics show the trip assignment based on the trip generation, growth factors, and trip distribution for the 2013 and 2033 design years.



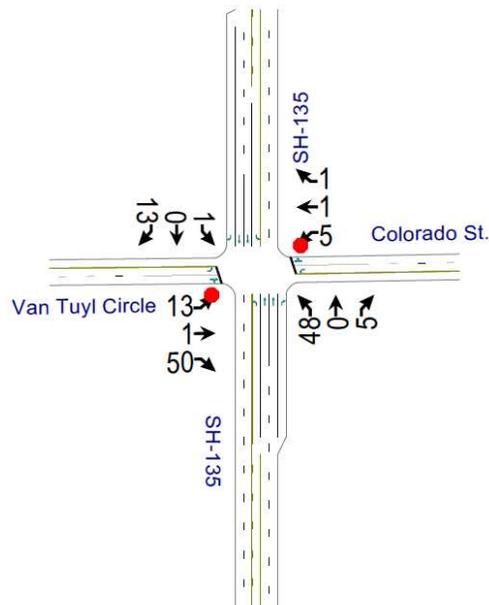
2013 AM Peak Hour



GUNNISON SITE FOR TRACTOR SUPPLY COMPANY
Transportation Impact Study



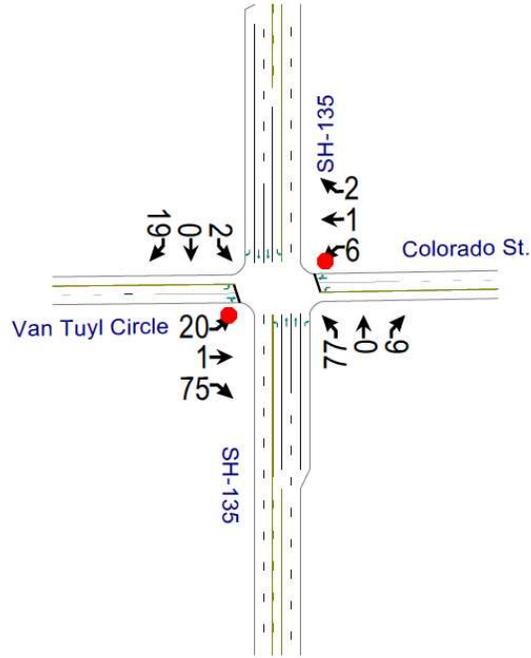
2013 PM Peak Hour



2033 AM Peak Hour



GUNNISON SITE FOR TRACTOR SUPPLY COMPANY
Transportation Impact Study



2033 PM Peak Hour



5. EXISTING AND PROJECTED TRAFFIC VOLUMES

During the AM peak hour, the highway carries 275 vph in the northbound direction and 402 in the southbound. In the PM peak hour, it carries 417 in the northbound direction and 584 in the southbound. Again, the volumes are from CDOT's 2011 traffic database (OTISS). The attached Synchro graphics and reports include the existing AM and PM peak hours. The turning movement counts for Colorado St. (opposite Van Tuyl Circle North) are from the LSC report. A check of the 2006 and 2011 aerial photos show that nothing has changed in the Colorado St. traffic shed, consequently it is reasonable to assume that the LSC counts are valid for this analysis. Even though it is open, there is only very small or zero traffic using Van Tuyl Circle North now.

The 2013 Opening Day scenario includes a proportionate increase for the mainline traffic on SH-135 and the 2013 trip assignment. Similarly, the 2033 Build-Out scenario includes the CDOT 20-year growth factor on mainline SH-135 and the 2033 trip assignment.



6. CAPACITY AND LEVEL OF SERVICE (LOS) ANALYSIS

ATC uses Synchro v.8 for operations analysis. Synchro is based on procedures in the Highway Capacity Manual 2010 (HCM) and rates intersection operations by level of service (LOS). LOS is letter rating from A to F. LOS A indicates free-flow traffic conditions and no delay at intersections. LOS F is heavy traffic congestion with significant delay. LOS is provided for the overall operations at signalized intersections. LOS D is generally the benchmark for acceptable signalized intersection operations during the weekday peak hours. The LOS rating for unsignalized intersections is provided by the critical movement - not the overall - which is generally a left turn. Caution must be used when evaluating the LOS at unsignalized intersections particularly when LOS F is shown. In case of an LOS F, the HCM¹ suggests that other evaluation measures should be considered such as the volume over capacity ratio and 95th percentile queue length to make the most effective traffic control decision. LOS F at unsignalized intersections is often normal for the AM or PM peak hour.

The chart summarizes the forecast 2013 and 2033 performance measures from the HCM 2010 unsignalized intersection reports. The focus of the analysis is the EB approach and the EBL lane.

¹ Highway Capacity Manual 2010 ch. 19 p. 40

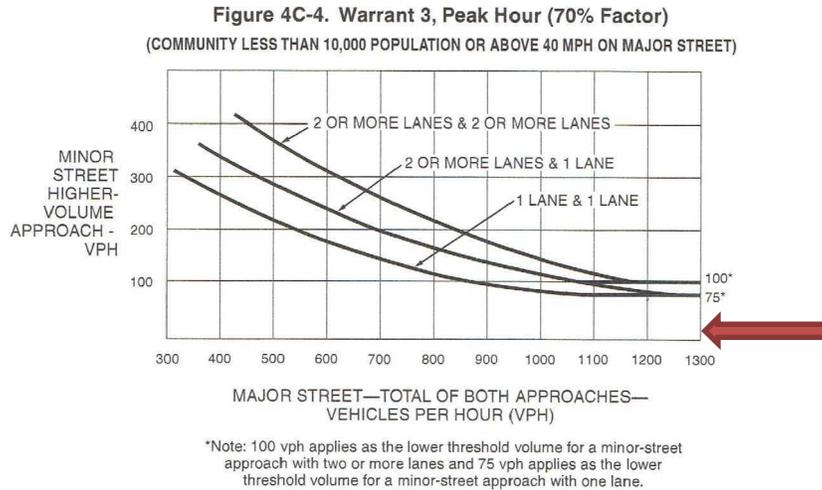


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UNSIGNALIZED INTERSECTION ANALYSIS SH-135 / VAN TUYL CIRCLE NORTH						
Performance Measure	Existing		2013		2033	
	AM	PM	AM	PM	AM	PM
Intersection Delay (sec/veh)	0.7	0.9	1.5	1.9	1.8	3.2
EB Approach Control Delay (s)	n/a	n/a	11.8	15.7	15.2	31.7
EB Approach LOS	n/a	n/a	B	C	C	D
EBL Lane Capacity (vph)	n/a	n/a	273	146	158	59
EBL HCM Control Delay (s)	n/a	n/a	18.6	32.3	30	98
EBL HCM VC Ratio	n/a	n/a	0.032	0.097	0.089	0.368
EBL HCM Lane LOS	n/a	n/a	C	D	D	F
EBL HCM 95th Percentile Queue (veh)	n/a	n/a	0.098	0.315	0.29	1.356

The analysis demonstrates that the intersection will perform acceptably in the 2013 and 2033 AM and PM peak hours. Note that the only LOS F is shown in the 2033 PM peak hour. However, according to the HCM this is acceptable as the VC Ratio is low at .368 and the 95th Percentile Queue is only 1.356 vehicles. Note that the 1.356 vehicle queue will not back up into the left turn lane at the main entrance to the site on Van Tuyl Circle. Moreover, the traffic opposing the left turn into the site on Van Tuyl Circle is too light to create a left turn queue.

The volumes are below thresholds for a signal warrant. The red arrow on the chart shows the place of Signal Warrant #3 in the 2033 PM peak hour. The major street approaches total over 1,500 vph. The minor street approach is two-lanes (shared left and thru and an exclusive right). However, the right turn and through movement is minimally conflicted (LOS B and 14.2 seconds of delay), thus the volume and the lane are not considered in determining the warrant. The left lane total of 20 vph is well below the 75 vph threshold for a one-lane approach.



However, in order to have an unsignalized full-movement access at Van Tuyl Circle North the Code requires that it must be able to provide a signal progression efficiency of 30 percent or better. A test of signals at Van Tuyl Circle and Spencer Ave. with 2033 volumes shows that 51 percent efficiency is achievable. Progression efficiency is determined by adding the NB and SB bandwidths and dividing the total by two times the cycle length $[(49 + 33) / (2 \times 80)] = .51$. The appendix includes the progression analysis and timing worksheets. The progression analysis assumed protected/permitted phasing on the mainline left turn movements and an 80-second cycle length.

Note that the signals at US-50 and West Virginia St. are too far away (+/- 3,500 feet) to be included in the progression analysis and, further, there is too much interference with the in between unsignalized intersections and driveways to establish platoons of traffic necessary for progression.



6. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

STATE HIGHWAY ACCESS CODE

According to the Code, one direct access shall (mandatory) be allowed per parcel. However, city officials would prefer to have a conventional “grid” street system and maintain the site frontage free of access. This means placing the main access on Van Tuyl Circle North and removing the traffic island on Van Tuyl Circle North/SH-135 to establish a full-movement access. This would also allow east/west through movement on Colorado St. and Van Tuyl Circle North to complete the grid street system.

The Code allows a full-movement access at this location in Section 3.11 (2), *“Where it is shown that the location will be able to meet appropriate design criteria, full-movement access shall be granted at one-half mile spacing, or where a signal progression analysis indicates good progression of 30 percent efficiency or better, or does not degrade the existing signal progression.”*

One-half mile spacing of full-movement intersections is wholly unrealistic in this area and context. It would put the intersection in a low-density rural area. Moreover, directing the left turn traffic to CR-13 is not a good choice as it is in very poor condition, out-of-direction, and would not provide a cross street through movement to Colorado St. The City has no plans to improve CR-13 or add an eastern leg through private property. The Van Tuyl intersection is complete with a southbound right-turn deceleration lane of 350 feet and the right-turn acceleration lane is extendable to 435 feet when warranted.



As mentioned earlier the signal progression analysis shows that if a signal were installed at this location it would provide a progression efficiency of 51 percent, thus qualifying Van Tuyl Circle for a full-movement access.

CONCLUSIONS & RECOMMENDATIONS

This project is important to the City of Gunnison to enhance its economic vibrancy and to improve commercial land that has been vacant for many years. However, retailers such Tractor Supply Store and O'Reilly's depend upon adequate access to the main street system. Backage roads and out-of-direction travel simply is not acceptable to them and consequently they would choose not to locate there.

The Code recognizes in the section on Purpose, that it is the intent of the Department to work closely with property owners and local governments to provide reasonable access to the general street system that is safe, enhances the movement of traffic, and considers the vision and values that local communities have established for themselves.

In addition, the Department through the Chief Engineer Policy Memo 26 and the CDOT Design Guide, Chapter 20, promotes and instructs Department personnel to develop Context Sensitive Solutions (CSS) that allows flexibility in design standards provided there is no compromising safety and mobility of the street system.

The recommendation to remove the traffic island at Van Tuyl Circle and install a full-movement intersection is made with the understanding that the intersection will operate safely and efficiently. It also meets the value

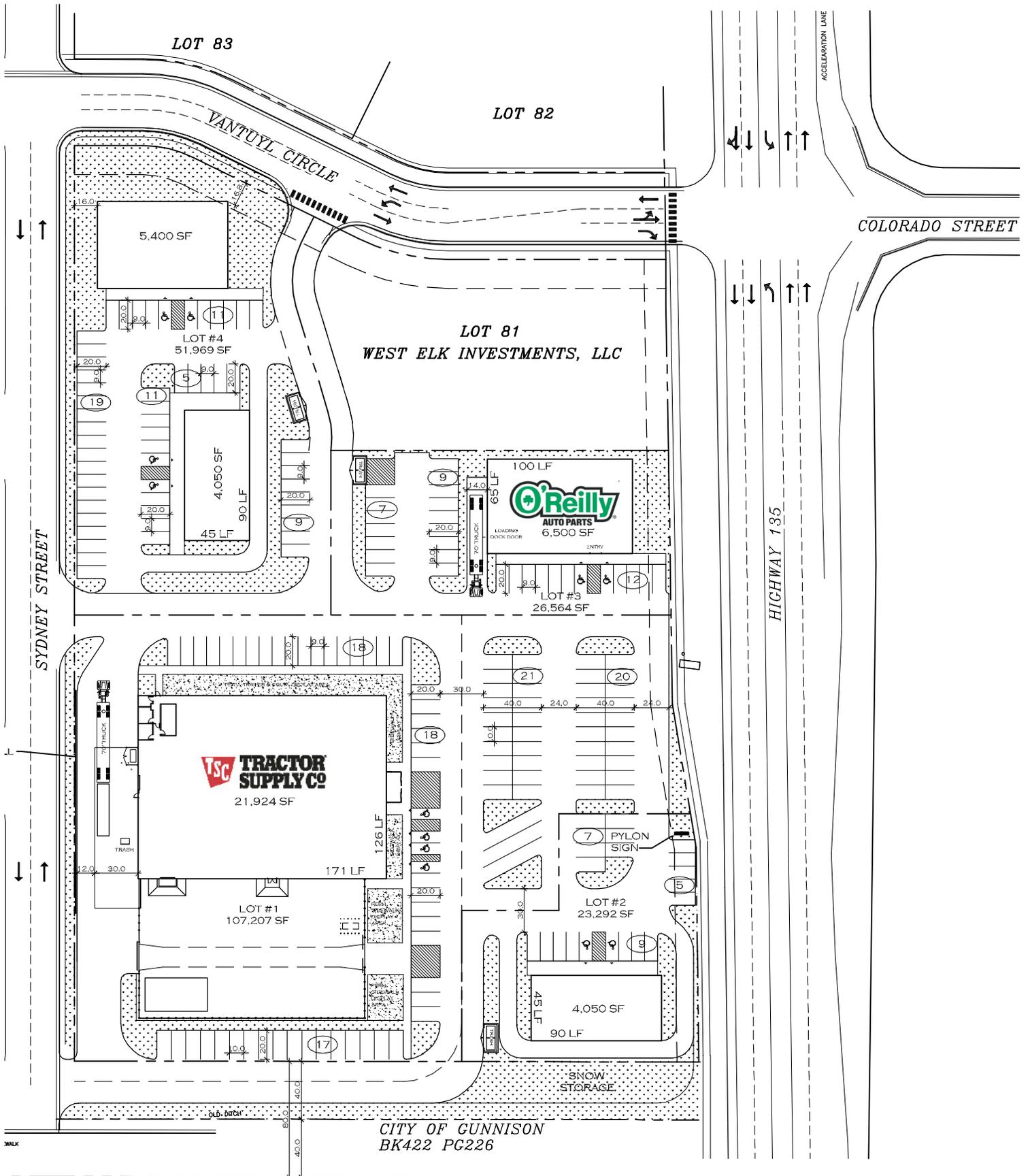


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and vision of the City for a grid street system and enhancement of its economic vibrancy.



APPENDIX



CITY OF GUNNISON
BK422 PG226

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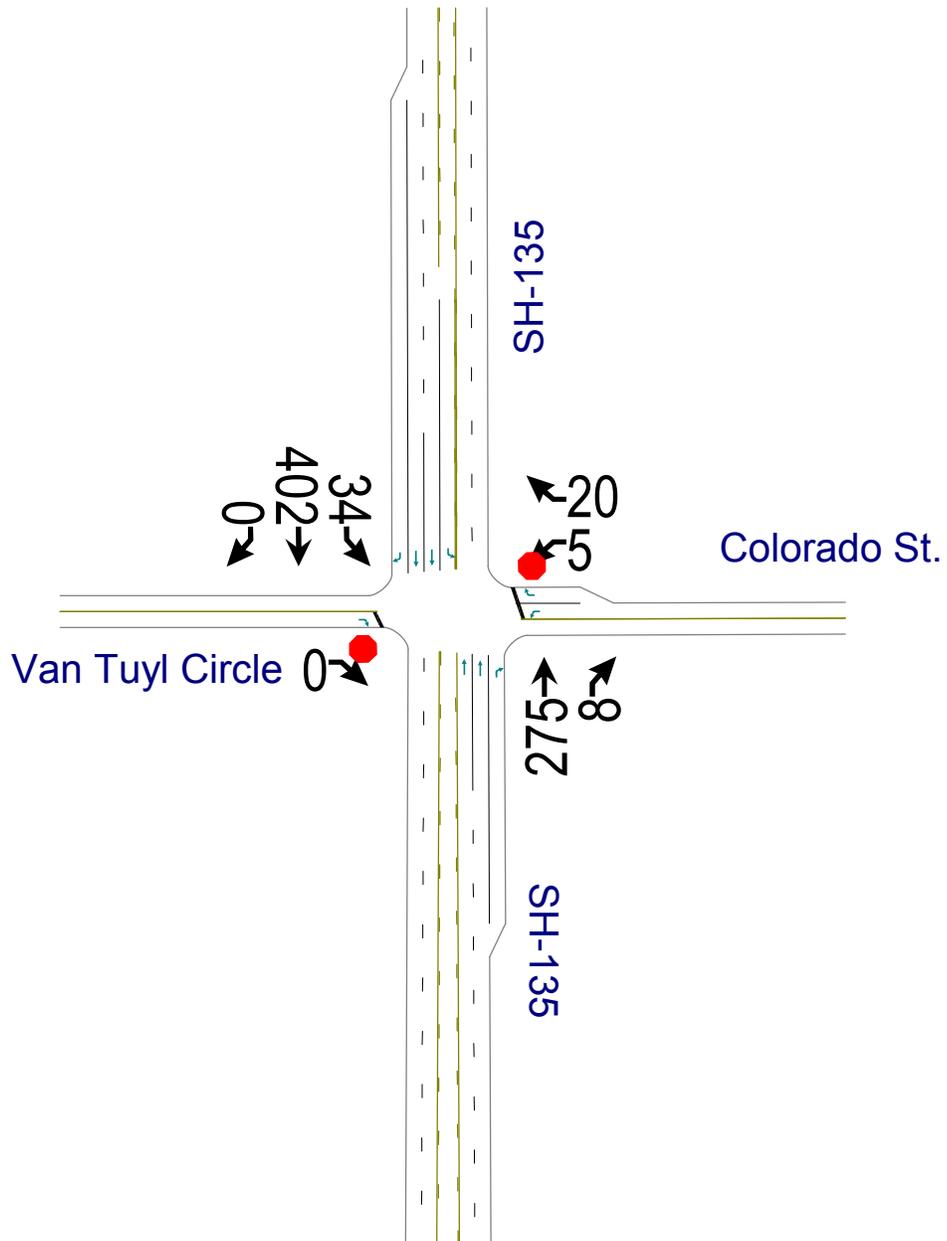
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Intersection

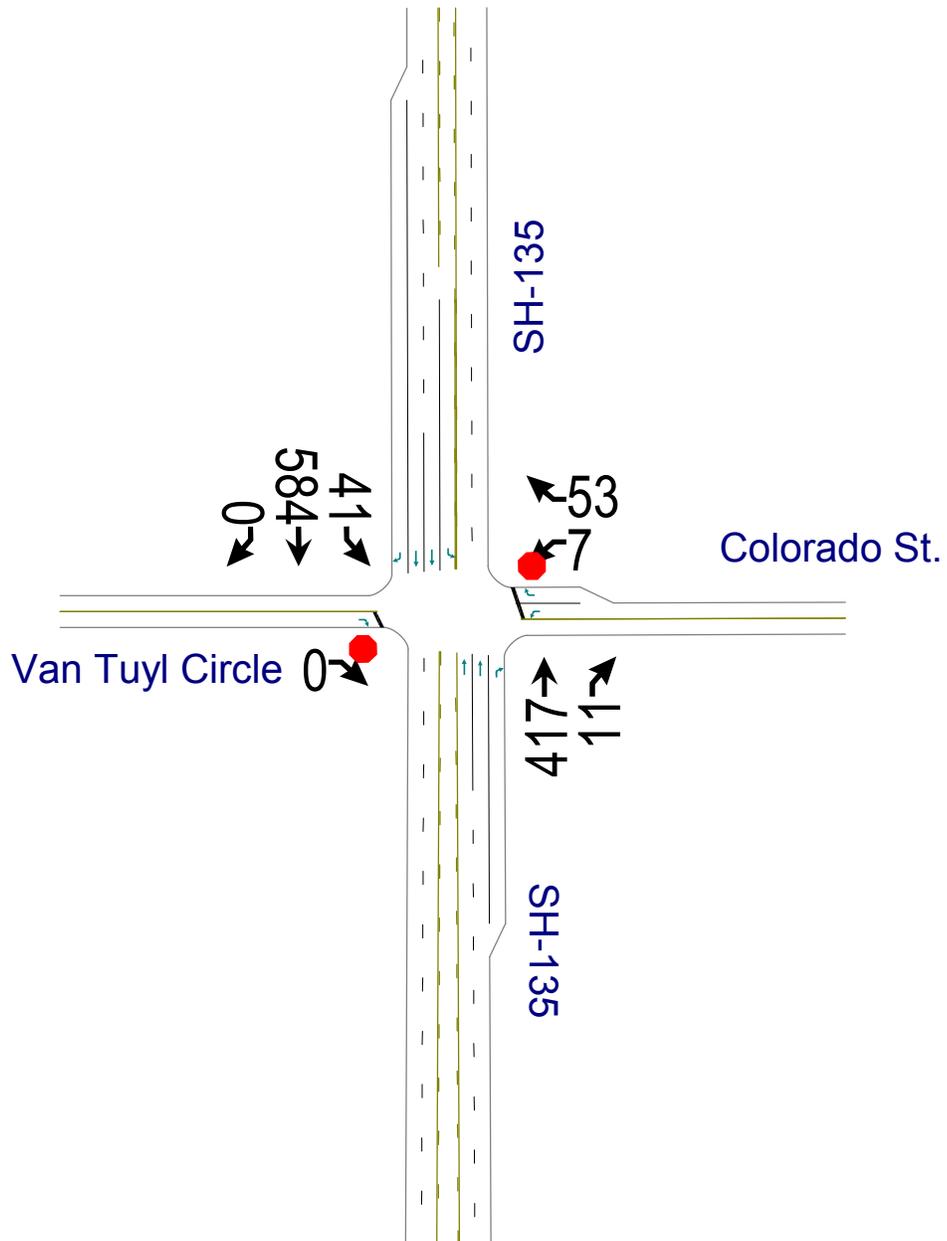
Intersection Delay (sec/veh): 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	5	0	20	0	275	8	34	402	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		40	200		200	200		350
Median Width		0			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2	2	7	2	2	7	2
Movement Flow Rate	0	0	0	5	0	22	0	299	9	37	437	0
Number of Lanes	0	0	1	1	0	1	0	2	1	1	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	~	~	219	597	~	155	-	0	0	308	0	0
Stage 1	-	-	-	304	-	-	-	-	-	-	-	-
Stage 2	-	-	-	293	-	-	-	-	-	-	-	-
Follow-up Headway	0	0	3.32	3.52	0	3.32	0	-	-	2.22	-	-
Pot Capacity-1 Maneuver	0	0	785	387	0	863	0	-	-	1249	-	-
Stage 1	0	0	-	681	0	-	0	-	-	-	-	-
Stage 2	0	0	-	691	0	-	0	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	0	-	785	378	-	863	-	-	-	1249	-	-
Mov Capacity-2 Maneuver	0	-	-	378	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	0	-	-	671	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	10.4	0	0.6
HCM LOS	A	B	A	A

Lane	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (vph)			0	378	863			
HCM Control Delay (s)	-	-	0	14.7	9.3	7.97	-	-
HCM Lane VC Ratio	-	-	-	0.014	0.025	0.03	-	-
HCM Lane LOS	-	-	A	B	A	A	-	-
HCM 95th Percentile Queue (veh)	-	-	-	0.044	0.077	0.091	-	-



Intersection

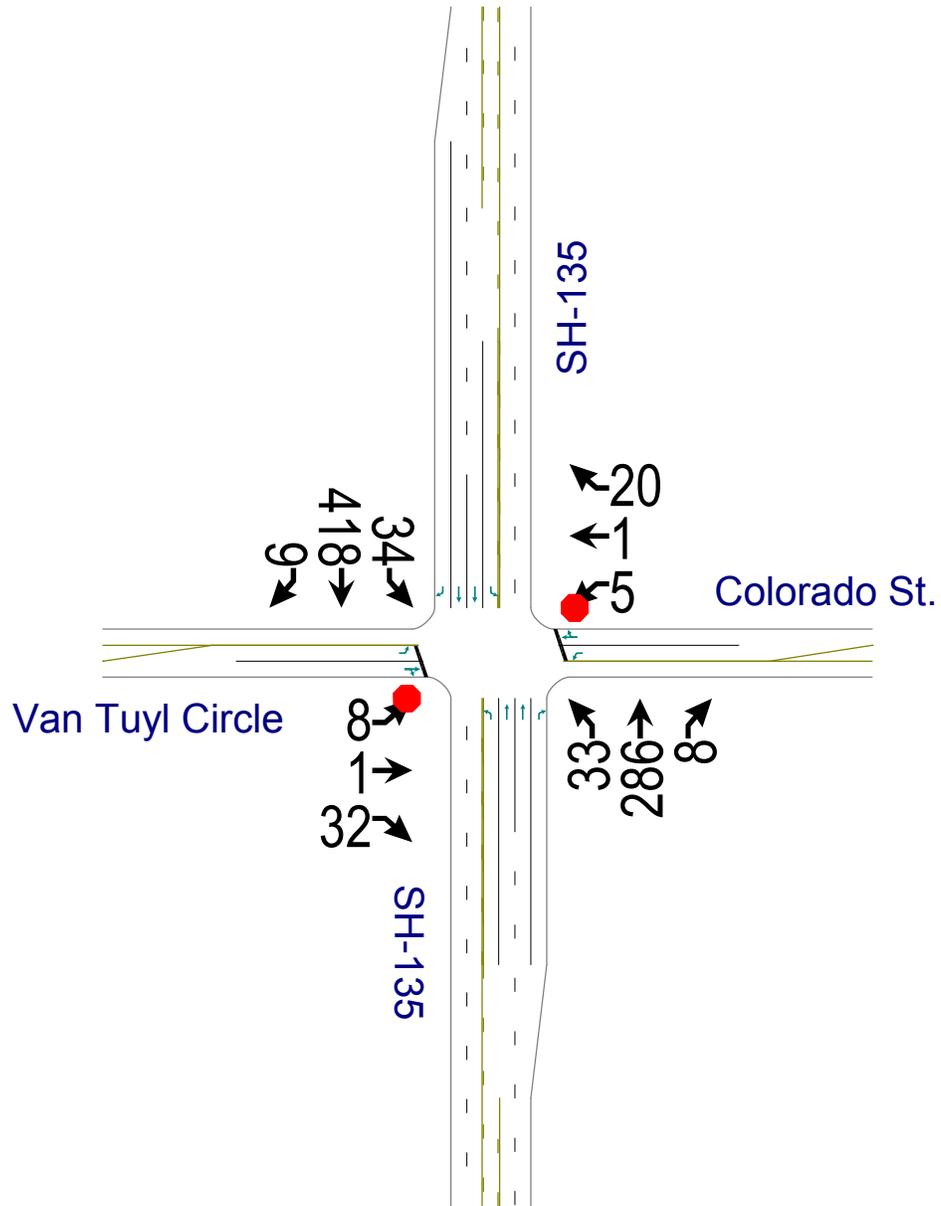
Intersection Delay (sec/veh): 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	0	0	0	7	0	53	0	417	11	41	584	0
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	0		0	0		40	200		200	200		350
Median Width		0			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2	2	7	2	2	7	100
Movement Flow Rate	0	0	0	8	0	58	0	453	12	45	635	0
Number of Lanes	0	0	1	1	0	1	0	2	1	1	2	1

Major/Minor	Minor 2		Minor 1			Major 1		Major 2				
Conflicting Flow Rate - All	~	~	318	867	~	233	-	0	0	465	0	0
Stage 1	-	-	-	459	-	-	-	-	-	-	-	-
Stage 2	-	-	-	408	-	-	-	-	-	-	-	-
Follow-up Headway	0	0	3.32	3.52	0	3.32	0	-	-	2.22	-	-
Pot Capacity-1 Maneuver	0	0	678	247	0	769	0	-	-	1093	-	-
Stage 1	0	0	-	551	0	-	0	-	-	-	-	-
Stage 2	0	0	-	591	0	-	0	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	0	-	678	239	-	769	-	-	-	1093	-	-
Mov Capacity-2 Maneuver	0	-	-	239	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	0	-	-	567	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	0	11.3	0	0.6
HCM LOS	A	B	A	A

Lane	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (vph)			0	239	769			
HCM Control Delay (s)	-	-	0	20.6	10.1	8.434	-	-
HCM Lane VC Ratio	-	-	-	0.032	0.075	0.041	-	-
HCM Lane LOS	-	-	A	C	B	A	-	-
HCM 95th Percentile Queue (veh)	-	-	-	0.098	0.242	0.127	-	-



Intersection

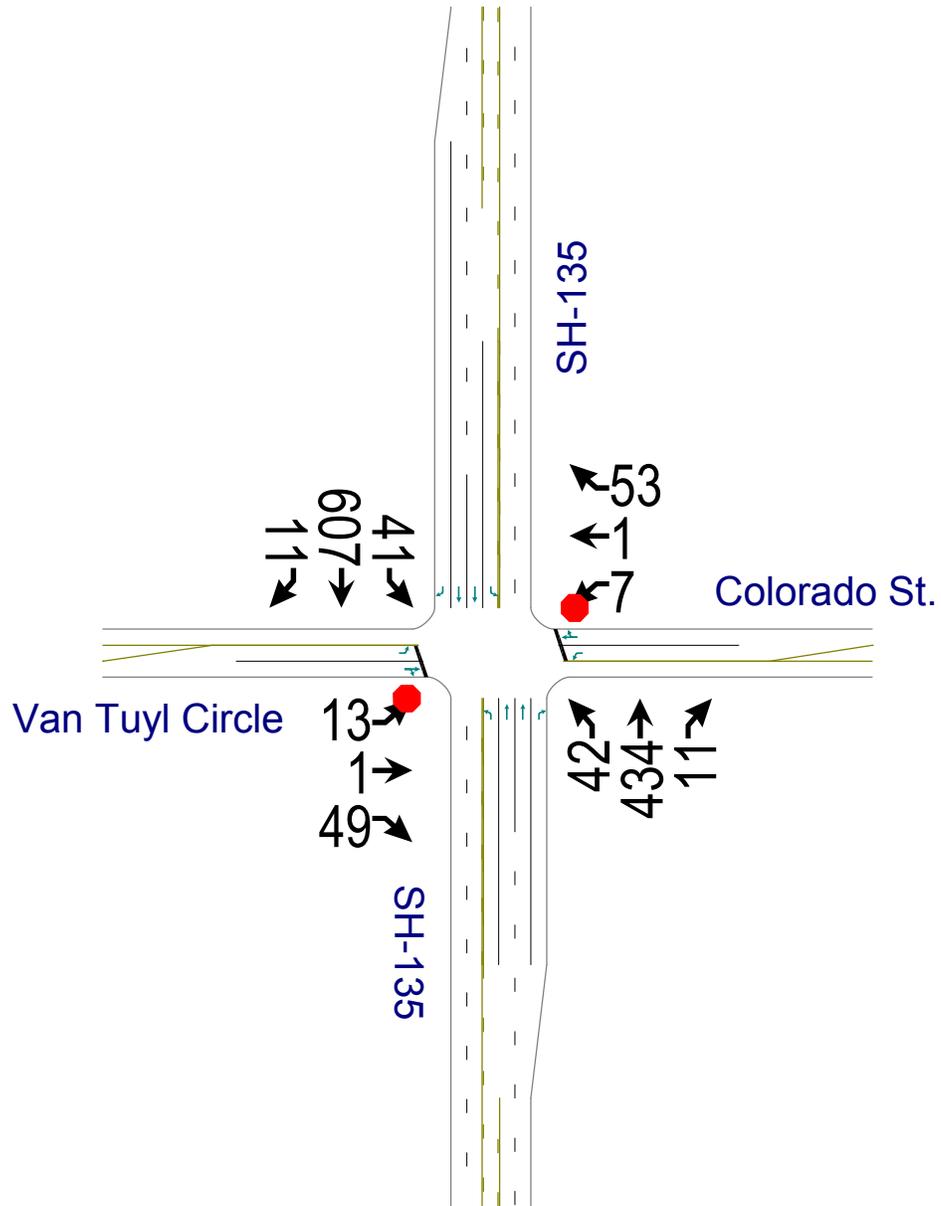
Intersection Delay (sec/veh): 1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	8	1	32	5	1	20	33	275	8	34	402	9
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	150		40	150		40	200		200	200		350
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2	2	7	2	2	7	2
Movement Flow Rate	9	1	35	5	1	22	36	311	9	37	454	10
Number of Lanes	1	1	0	1	1	0	1	2	1	1	2	1

Major/Minor	Minor 2		Minor 1			Major 1			Major 2			
Conflicting Flow Rate - All	761	925	232	690	926	161	464	0	0	320	0	0
Stage 1	533	533	-	388	388	-	-	-	-	-	-	-
Stage 2	228	392	-	302	538	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	295	268	770	331	267	855	1094	-	-	1237	-	-
Stage 1	498	523	-	607	608	-	-	-	-	-	-	-
Stage 2	754	605	-	682	521	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	273	251	770	300	250	855	1094	-	-	1237	-	-
Mov Capacity-2 Maneuver	273	251	-	300	250	-	-	-	-	-	-	-
Stage 1	482	507	-	587	588	-	-	-	-	-	-	-
Stage 2	709	585	-	630	505	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	11.8	11.2	0.8	0.6
HCM LOS	B	B	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (vph)				273	725	300	767			
HCM Control Delay (s)	8.402	-	-	18.6	10.2	17.2	9.8	8	-	-
HCM Lane VC Ratio	0.033	-	-	0.032	0.049	0.018	0.03	0.03	-	-
HCM Lane LOS	A	-	-	C	B	C	A	A	-	-
HCM 95th Percentile Queue (veh)	0.102	-	-	0.098	0.156	0.055	0.092	0.092	-	-



Intersection

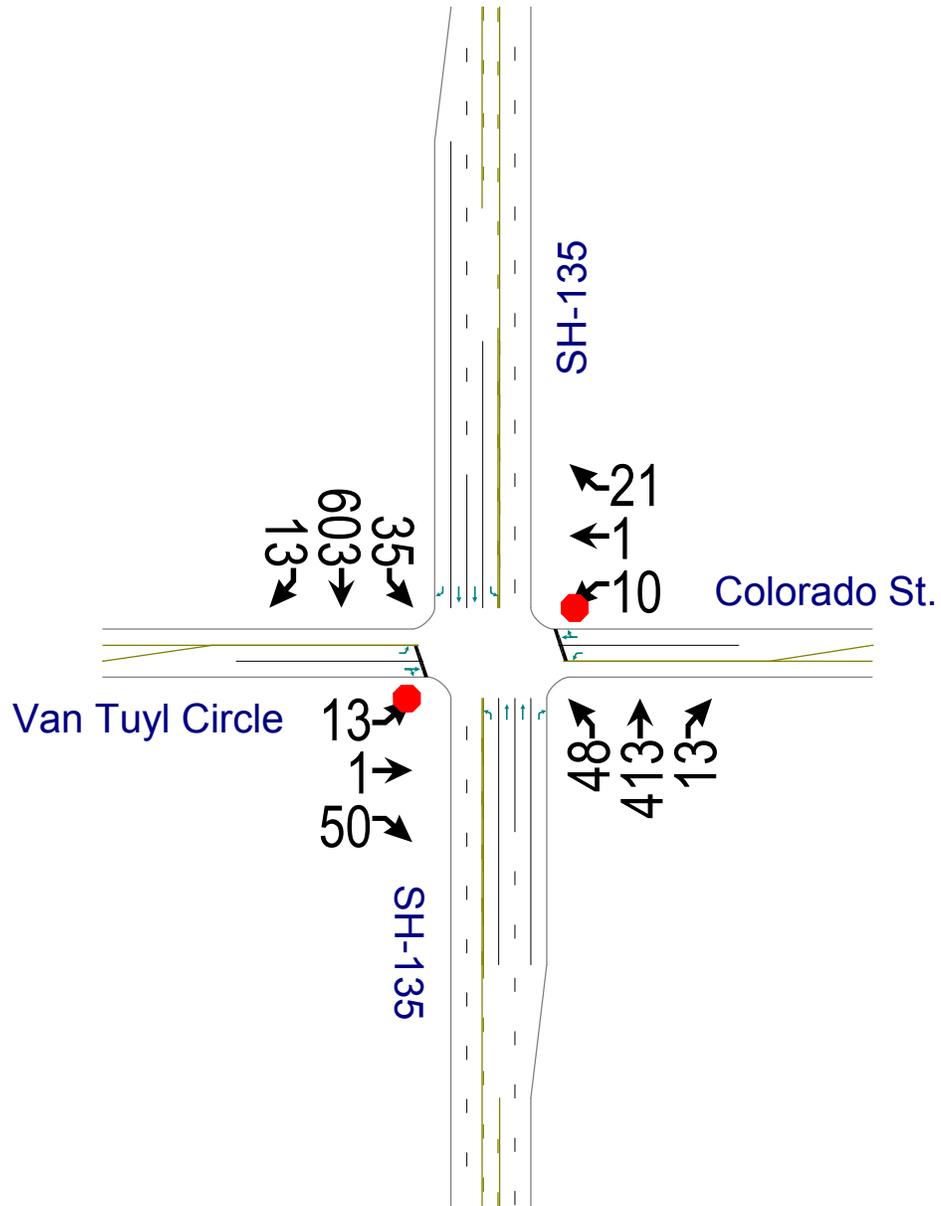
Intersection Delay (sec/veh): 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	13	1	49	7	1	53	42	417	11	41	584	11
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	150		40	150		40	200		200	200		350
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2	2	7	2	2	7	2
Movement Flow Rate	14	1	53	8	1	58	46	471	12	45	660	12
Number of Lanes	1	1	0	1	1	0	1	2	1	1	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1084	1331	336	990	1331	242	672	0	0	483	0	0
Stage 1	756	756	-	569	569	-	-	-	-	-	-	-
Stage 2	328	575	-	421	762	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	171	153	660	201	153	759	915	-	-	1076	-	-
Stage 1	366	414	-	474	504	-	-	-	-	-	-	-
Stage 2	659	501	-	581	412	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	146	139	660	171	139	759	915	-	-	1076	-	-
Mov Capacity-2 Maneuver	146	139	-	171	139	-	-	-	-	-	-	-
Stage 1	348	397	-	450	479	-	-	-	-	-	-	-
Stage 2	577	476	-	510	395	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	15.7	12.5	0.8	0.5
HCM LOS	C	B	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (vph)				146	614	171	701			
HCM Control Delay (s)	9.141	-	-	32.3	11.4	27	10.6	8.49	-	-
HCM Lane VC Ratio	0.05	-	-	0.097	0.089	0.044	0.084	0.041	-	-
HCM Lane LOS	A	-	-	D	B	D	B	A	-	-
HCM 95th Percentile Queue (veh)	0.157	-	-	0.315	0.29	0.139	0.273	0.129	-	-



Intersection

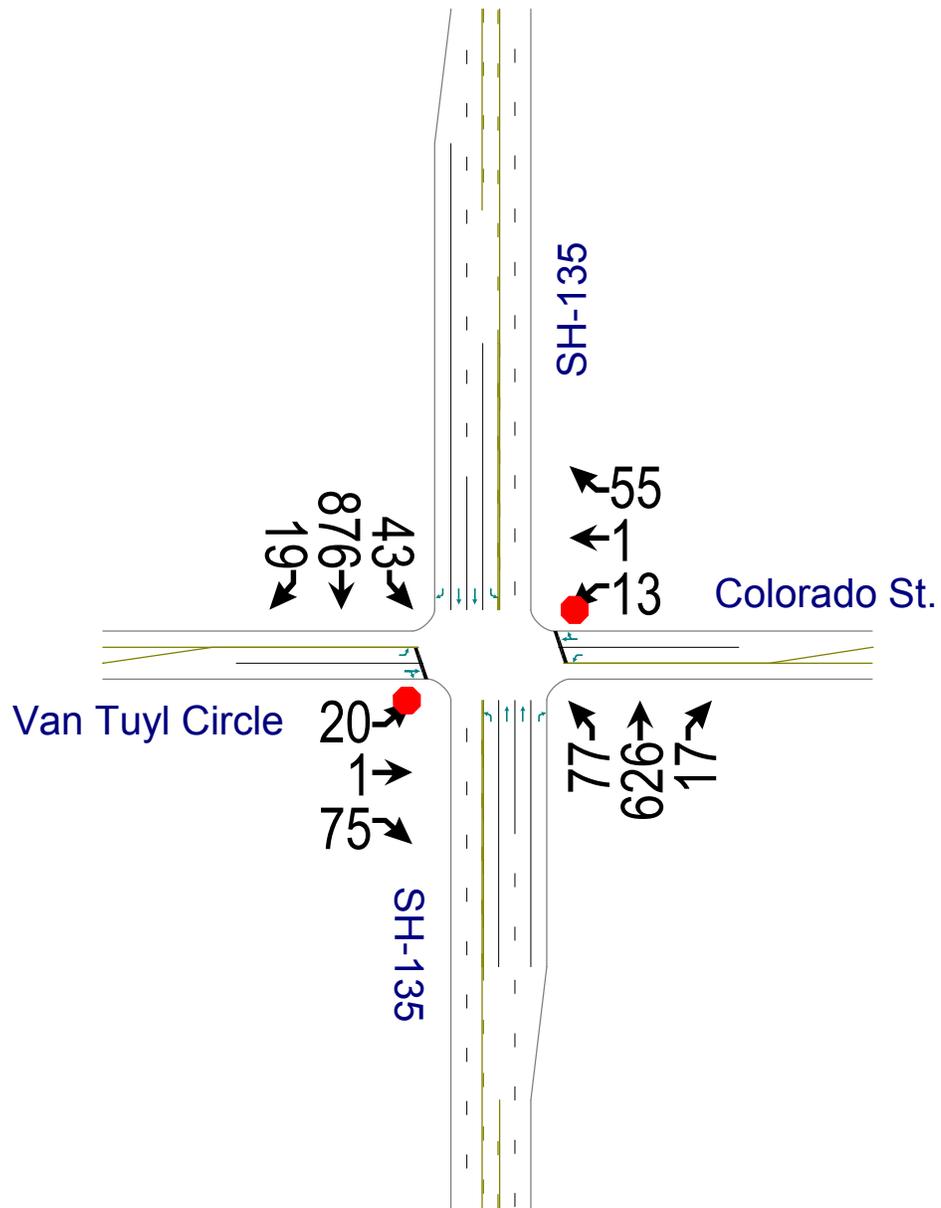
Intersection Delay (sec/veh): 1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	13	1	50	10	1	21	48	275	13	35	402	13
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	150		40	150		40	200		200	200		350
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2	2	7	2	2	7	2
Movement Flow Rate	14	1	54	11	1	23	52	448	14	38	655	14
Number of Lanes	1	1	0	1	1	0	1	2	1	1	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1067	1304	335	963	1304	231	669	0	0	462	0	0
Stage 1	738	738	-	559	559	-	-	-	-	-	-	-
Stage 2	329	566	-	404	745	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	176	159	661	210	159	771	917	-	-	1095	-	-
Stage 1	376	422	-	481	509	-	-	-	-	-	-	-
Stage 2	658	506	-	594	419	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	158	145	661	179	145	771	917	-	-	1095	-	-
Mov Capacity-2 Maneuver	158	145	-	179	145	-	-	-	-	-	-	-
Stage 1	355	407	-	454	480	-	-	-	-	-	-	-
Stage 2	601	477	-	525	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	15.2	15.7	0.9	0.5
HCM LOS	C	C	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (vph)				158	618	179	645			
HCM Control Delay (s)	9.163	-	-	30	11.4	26.4	10.8	8.406	-	-
HCM Lane VC Ratio	0.057	-	-	0.089	0.09	0.061	0.037	0.035	-	-
HCM Lane LOS	A	-	-	D	B	D	B	A	-	-
HCM 95th Percentile Queue (veh)	0.181	-	-	0.29	0.294	0.192	0.115	0.108	-	-



Intersection

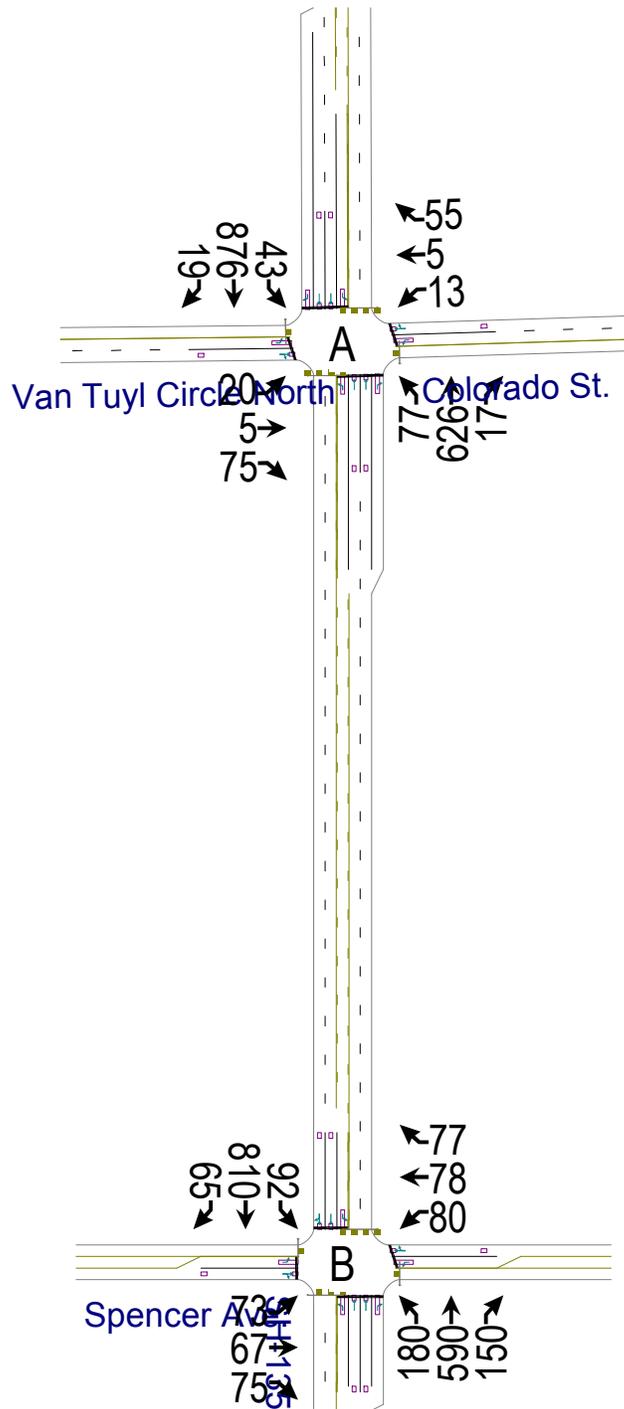
Intersection Delay (sec/veh): 3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	20	1	75	13	1	55	77	417	17	43	584	19
Conflicting Peds.(#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
Right Turn Channelized	None											
Storage Length	150		40	150		40	200		200	200		350
Median Width		12			12			12			12	
Grade (%)		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles(%)	2	2	2	2	2	2	2	7	2	2	7	2
Movement Flow Rate	22	1	82	14	1	60	84	680	18	47	952	21
Number of Lanes	1	1	0	1	1	0	1	2	1	1	2	1

Major/Minor	Minor 2			Minor 1			Major 1			Major 2		
Conflicting Flow Rate - All	1566	1923	487	1428	1924	349	973	0	0	698	0	0
Stage 1	1057	1057	-	857	857	-	-	-	-	-	-	-
Stage 2	509	866	-	571	1067	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	75	66	526	95	66	647	704	-	-	894	-	-
Stage 1	240	300	-	318	372	-	-	-	-	-	-	-
Stage 2	515	369	-	473	297	-	-	-	-	-	-	-
Time blocked-Platoon(%)	0	0	0	0	0	0	0	-	-	0	-	-
Mov Capacity-1 Maneuver	59	55	526	69	55	647	704	-	-	894	-	-
Mov Capacity-2 Maneuver	59	55	-	69	55	-	-	-	-	-	-	-
Stage 1	211	284	-	280	328	-	-	-	-	-	-	-
Stage 2	410	325	-	377	281	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay (s)	31.7	23.4	1.2	0.4
HCM LOS	D	C	A	A

Lane	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (vph)				59	473	69	543			
HCM Control Delay (s)	10.802	-	-	98	14.2	70.1	12.5	9.249	-	-
HCM Lane VC Ratio	0.119	-	-	0.368	0.175	0.205	0.112	0.052	-	-
HCM Lane LOS	B	-	-	F	B	F	B	A	-	-
HCM 95th Percentile Queue (veh)	0.403	-	-	1.356	0.627	0.701	0.376	0.165	-	-



												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	67	75	80	78	77	180	590	150	92	810	65
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Lanes	1	1	0	1	1	0	1	2	1	1	2	0
Lane Assignment												
Capacity, veh/h	222	155	173	233	166	164	474	2126	951	581	1964	158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Proportion Arriving On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.07	0.60	0.60	0.05	0.58	0.58
Lane Group Delay, s/veh	33.1	0.0	27.9	32.8	0.0	28.3	6.8	7.7	7.0	5.9	10.3	10.3
Lane Group LOS	C		C	C		C	A	A	A	A	B	B
Approach Volume, veh/h		234			255			1000			1051	
Approach Delay, s/veh		29.7			29.8			7.4			9.9	
Approach LOS		C			C			A			A	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase		1	2		4	5	6		8			
Case No		1.1	3.0		6.0	1.1	4.0		6.0			
Phase Duration (G+Y+Rc), s		7.50	49.00		18.41	9.29	47.21		18.41			
Change Period (Y+Rc), s		4.00	4.00		4.00	4.00	4.00		4.00			
Max. Allowable Headway (MAH), s		3.73	4.93		4.99	3.73	4.93		4.99			
Maximum Green Setting (Gmax), s		5.00	45.00		18.00	14.00	36.00		18.00			
Max. Queue Clearance Time (g_c+I1), s		3.68	8.62		13.30	5.05	13.06		13.10			
Green Extension Time (g_e), s		0.02	14.17		1.11	0.33	11.58		1.14			
Probability of Phase Call (p_c)		0.875	1.000		1.000	0.983	1.000		1.000			
Probability of Max Out (p_x)		1.000	0.209		1.000	0.026	0.391		1.000			
Left-Turn Movement Data												
Assigned Movement		1			7	5			3			
Mvmt. Sat Flow, veh/h		1774.04			1211.88	1774.04			1227.55			
Through Movement Data												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			1583.33		803.97		3404.12		861.83			
Right-Turn Movement Data												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			1583.33		899.96		273.17		850.78			
Left Lane Group Data												
Assigned Movement		1	0	0	7	5	0	0	3			
Lane Assignment		L (Pr/Pm)			LL (Pr/Pm)				L			
Lanes in Group		1	0	0	1	1	0	0	1			
Group Volume (v), veh/h		100.0	0.0	0.0	79.3	195.7	0.0	0.0	87.0			
Group Sat. Flow (s), veh/h/ln		1774.0	0.0	0.0	1211.9	1774.0	0.0	0.0	1227.5			
Queue Serve Time (g_s), s		1.7	0.0	0.0	4.7	3.1	0.0	0.0	5.1			

Cycle Queue Clear Time (g_c), s	1.7	0.0	0.0	11.3	3.1	0.0	0.0	11.1
Perm LT Sat Flow Rate (s_l), veh/h/ln	784.8	0.0	0.0	1211.9	587.5	0.0	0.0	1227.5
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	43.2	0.0	0.0	14.4	45.0	0.0	0.0	14.4
Perm LT Serve Time (g_u), s	38.4	0.0	0.0	7.8	32.1	0.0	0.0	8.4
Perm LT Que Serve Time (g_ps), s	0.7	0.0	0.0	4.7	6.4	0.0	0.0	5.1
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	1.000	0.000	0.000	1.000	1.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	581.1	0.0	0.0	222.4	473.6	0.0	0.0	233.5
Volume-to-Capacity Ratio (X)	0.172	0.000	0.000	0.357	0.413	0.000	0.000	0.372
Available Capacity (c_a), veh/h	616.6	0.0	0.0	280.5	679.8	0.0	0.0	292.3
Upstream Filter Factor (I)	0.933	0.000	0.000	1.000	1.000	0.000	0.000	1.000
Uniform Delay (d1), s/veh	5.8	0.0	0.0	32.2	6.2	0.0	0.0	31.8
Incremental Delay (d2), s/veh	0.1	0.0	0.0	1.0	0.6	0.0	0.0	1.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	5.9	0.0	0.0	33.1	6.8	0.0	0.0	32.8
First-Term Queue (Q1), veh/ln	0.5	0.0	0.0	1.3	0.8	0.0	0.0	1.5
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	1.000	0.000	0.000	1.000	1.000	0.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.5	0.0	0.0	1.4	0.8	0.0	0.0	1.5
Percentile Storage Ratio (RQ%)	0.13	0.00	0.00	0.35	0.21	0.00	0.00	0.39
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment	T		T					
Lanes in Group	0	2	0	0	0	1	0	0
Group Volume (v), veh/h	0.0	641.3	0.0	0.0	0.0	481.8	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1769.6	0.0	0.0	0.0	1862.7	0.0	0.0
Queue Serve Time (g_s), s	0.0	6.6	0.0	0.0	0.0	11.1	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	6.6	0.0	0.0	0.0	11.1	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	2126.1	0.0	0.0	0.0	1074.4	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.302	0.000	0.000	0.000	0.448	0.000	0.000
Available Capacity (c_a), veh/h	0.0	2126.1	0.0	0.0	0.0	1074.4	0.0	0.0
Upstream Filter Factor (I)	0.000	1.000	0.000	0.000	0.000	0.933	0.000	0.000
Uniform Delay (d1), s/veh	0.0	7.3	0.0	0.0	0.0	9.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.0	1.3	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	7.7	0.0	0.0	0.0	10.3	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	1.9	0.0	0.0	0.0	3.6	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	2.1	0.0	0.0	0.0	3.9	0.0	0.0

Percentile Storage Ratio (RQ%)	0.00	0.44	0.00	0.00	0.00	0.11	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		R		T+R		T+R		T+R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	163.0	0.0	154.3	0.0	469.3	0.0	168.5
Group Sat. Flow (s), veh/h/ln	0.0	1583.3	0.0	1703.9	0.0	1814.5	0.0	1712.6
Queue Serve Time (g_s), s	0.0	3.4	0.0	6.0	0.0	11.1	0.0	6.6
Cycle Queue Clear Time (g_c), s	0.0	3.4	0.0	6.0	0.0	11.1	0.0	6.6
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	1.000	0.000	0.528	0.000	0.151	0.000	0.497
Lane Group Capacity (c), veh/h	0.0	951.1	0.0	327.8	0.0	1046.6	0.0	329.4
Volume-to-Capacity Ratio (X)	0.000	0.171	0.000	0.471	0.000	0.448	0.000	0.511
Available Capacity (c_a), veh/h	0.0	951.1	0.0	409.4	0.0	1046.6	0.0	411.5
Upstream Filter Factor (I)	0.000	1.000	0.000	1.000	0.000	0.933	0.000	1.000
Uniform Delay (d1), s/veh	0.0	6.7	0.0	26.9	0.0	9.0	0.0	27.1
Incremental Delay (d2), s/veh	0.0	0.4	0.0	1.1	0.0	1.3	0.0	1.2
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	7.0	0.0	27.9	0.0	10.3	0.0	28.3
First-Term Queue (Q1), veh/ln	0.0	0.9	0.0	2.4	0.0	3.5	0.0	2.6
Second-Term Queue (Q2), veh/ln	0.0	0.1	0.0	0.1	0.0	0.4	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	1.0	0.0	2.5	0.0	3.8	0.0	2.7
Percentile Storage Ratio (RQ%)	0.00	0.13	0.00	0.27	0.00	0.11	0.00	0.32
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Control Delay	12.7
HCM 2010 Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	5	75	13	5	55	77	417	17	43	584	19
Movement Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Queue, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj. Factor (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking, Bus Adj. Factors	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Sat. Flow Rate, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1776	1863	1863	1776	1863
Lanes	1	1	0	1	1	0	1	2	1	1	2	1
Lane Assignment												
Capacity, veh/h	189	10	149	170	13	146	512	2317	1087	679	2275	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Proportion Arriving On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.09	1.00	1.00	0.03	0.67	0.67
Lane Group Delay, s/veh	30.3	0.0	31.6	30.9	0.0	30.0	3.2	0.3	0.0	3.0	5.5	3.6
Lane Group LOS	C		C	C		C	A	A	A	A	A	A
Approach Volume, veh/h		109			79			782			1020	
Approach Delay, s/veh		31.4			30.2			0.6			5.4	
Approach LOS		C			C			A			A	
Timer:		1	2	3	4	5	6	7	8			
Assigned Phase		1	2		4	5	6		8			
Case No		1.1	3.0		6.0	1.1	3.0		6.0			
Phase Duration (G+Y+Rc), s		6.32	50.00		10.67	7.16	49.17		10.67			
Change Period (Y+Rc), s		4.00	4.00		4.00	4.00	4.00		4.00			
Max. Allowable Headway (MAH), s		3.73	5.00		5.25	3.73	5.00		5.25			
Maximum Green Setting (Gmax), s		4.00	46.00		18.00	8.00	42.00		18.00			
Max. Queue Clearance Time (g_c+I1), s		2.53	2.00		5.60	2.88	10.58		6.17			
Green Extension Time (g_e), s		0.01	15.94		0.72	0.06	14.08		0.71			
Probability of Phase Call (p_c)		0.581	1.000		0.970	0.789	1.000		0.970			
Probability of Max Out (p_x)		1.000	0.107		0.047	0.071	0.218		0.047			
Left-Turn Movement Data												
Assigned Movement		1			7	5			3			
Mvmt. Sat Flow, veh/h		1774.04			1330.93	1774.04			1304.98			
Through Movement Data												
Assigned Movement			2		4		6		8			
Mvmt. Sat Flow, veh/h			1583.33		99.89		1583.33		133.61			
Right-Turn Movement Data												
Assigned Movement			12		14		16		18			
Mvmt. Sat Flow, veh/h			1583.33		1498.42		1583.33		1469.76			
Left Lane Group Data												
Assigned Movement		1	0	0	7	5	0	0	3			
Lane Assignment		L (Pr/Pm)			LL (Pr/Pm)				L			
Lanes in Group		1	0	0	1	1	0	0	1			
Group Volume (v), veh/h		46.7	0.0	0.0	21.7	83.7	0.0	0.0	14.1			
Group Sat. Flow (s), veh/h/ln		1774.0	0.0	0.0	1330.9	1774.0	0.0	0.0	1305.0			
Queue Serve Time (g_s), s		0.5	0.0	0.0	1.0	0.9	0.0	0.0	0.7			

Cycle Queue Clear Time (g_c), s	0.5	0.0	0.0	3.6	0.9	0.0	0.0	4.2
Perm LT Sat Flow Rate (s_l), veh/h/ln	757.1	0.0	0.0	1330.9	586.9	0.0	0.0	1305.0
Shared LT Sat Flow (s_sh), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Eff. Green (g_p), s	45.2	0.0	0.0	6.7	46.0	0.0	0.0	6.7
Perm LT Serve Time (g_u), s	45.2	0.0	0.0	4.1	36.6	0.0	0.0	3.2
Perm LT Que Serve Time (g_ps), s	0.0	0.0	0.0	1.0	1.5	0.0	0.0	0.7
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion LT Inside Lane (P_L)	1.000	0.000	0.000	1.000	1.000	0.000	0.000	1.000
Lane Group Capacity (c), veh/h	679.5	0.0	0.0	189.1	511.6	0.0	0.0	169.7
Volume-to-Capacity Ratio (X)	0.069	0.000	0.000	0.115	0.164	0.000	0.000	0.083
Available Capacity (c_a), veh/h	723.9	0.0	0.0	414.3	639.9	0.0	0.0	390.5
Upstream Filter Factor (I)	1.000	0.000	0.000	1.000	0.959	0.000	0.000	1.000
Uniform Delay (d1), s/veh	2.9	0.0	0.0	30.0	3.1	0.0	0.0	30.7
Incremental Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.2
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	3.0	0.0	0.0	30.3	3.2	0.0	0.0	30.9
First-Term Queue (Q1), veh/ln	0.1	0.0	0.0	0.3	0.2	0.0	0.0	0.2
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	1.000	0.000	0.000	1.000	1.000	0.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.1	0.0	0.0	0.3	0.2	0.0	0.0	0.2
Percentile Storage Ratio (RQ%)	0.01	0.00	0.00	0.04	0.03	0.00	0.00	0.02
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data

Assigned Movement	0	2	0	4	0	6	0	8
Lane Assignment	T		T					
Lanes in Group	0	2	0	0	0	2	0	0
Group Volume (v), veh/h	0.0	679.9	0.0	0.0	0.0	952.2	0.0	0.0
Group Sat. Flow (s), veh/h/ln	0.0	1686.9	0.0	0.0	0.0	1686.9	0.0	0.0
Queue Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0
Lane Group Capacity (c), veh/h	0.0	2316.7	0.0	0.0	0.0	2274.7	0.0	0.0
Volume-to-Capacity Ratio (X)	0.000	0.293	0.000	0.000	0.000	0.419	0.000	0.000
Available Capacity (c_a), veh/h	0.0	2316.7	0.0	0.0	0.0	2274.7	0.0	0.0
Upstream Filter Factor (I)	0.000	0.959	0.000	0.000	0.000	1.000	0.000	0.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0
Incremental Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.0	0.6	0.0	0.0
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.3	0.0	0.0	0.0	5.5	0.0	0.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0
Second-Term Queue (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.1	0.0	0.0	0.0	2.0	0.0	0.0

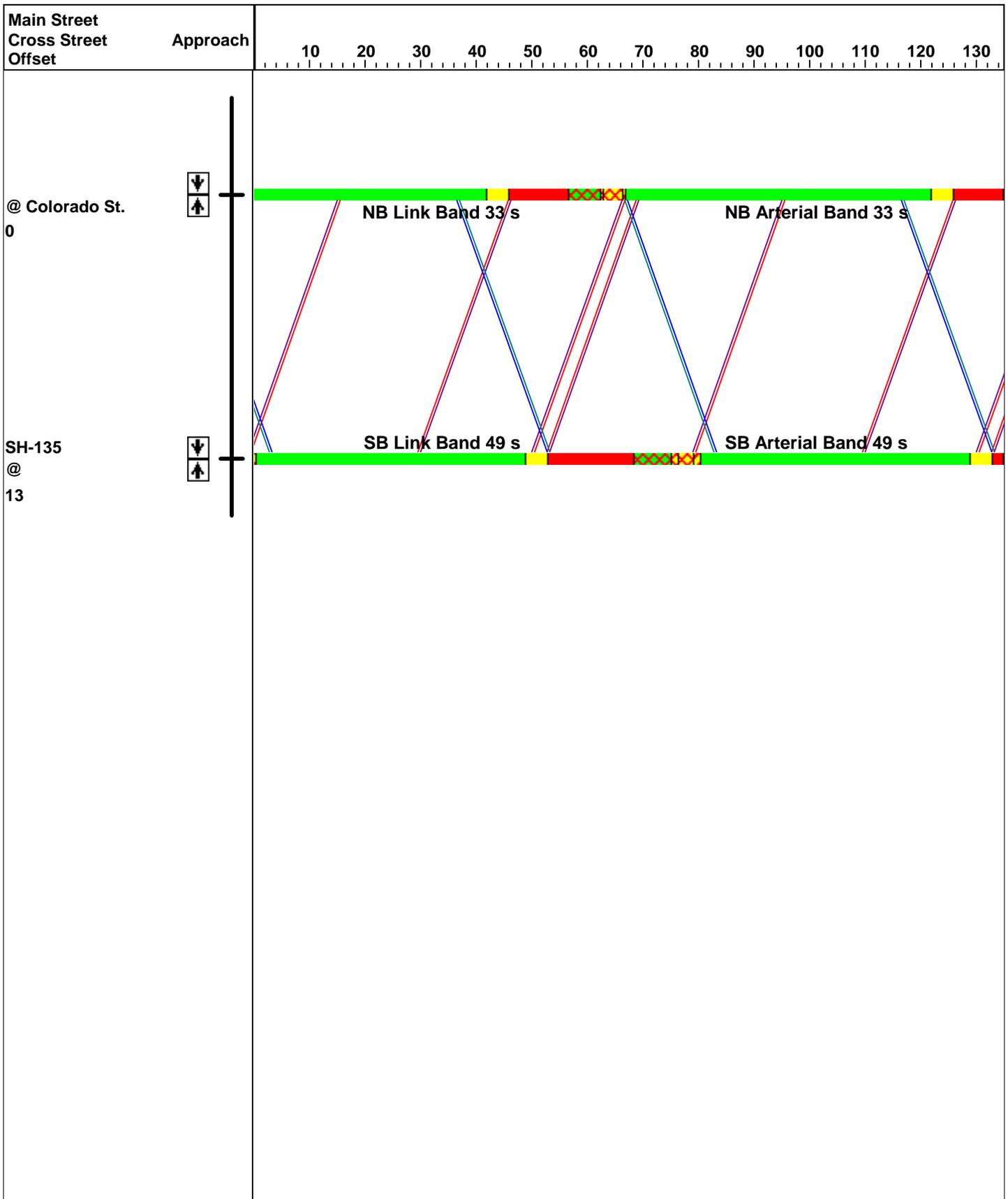
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Movement	0	12	0	14	0	16	0	18
Lane Assignment		R		T+R		R		T+R
Lanes in Group	0	1	0	1	0	1	0	1
Group Volume (v), veh/h	0.0	18.5	0.0	87.0	0.0	20.7	0.0	65.2
Group Sat. Flow (s), veh/h/ln	0.0	1583.3	0.0	1598.3	0.0	1583.3	0.0	1603.4
Queue Serve Time (g_s), s	0.0	0.0	0.0	3.5	0.0	0.3	0.0	2.6
Cycle Queue Clear Time (g_c), s	0.0	0.0	0.0	3.5	0.0	0.3	0.0	2.6
Prot RT Sat Flow Rate (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff. Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proportion RT Outside Lane (P_R)	0.000	1.000	0.000	0.938	0.000	1.000	0.000	0.917
Lane Group Capacity (c), veh/h	0.0	1087.2	0.0	159.1	0.0	1067.5	0.0	159.6
Volume-to-Capacity Ratio (X)	0.000	0.017	0.000	0.547	0.000	0.019	0.000	0.409
Available Capacity (c_a), veh/h	0.0	1087.2	0.0	429.5	0.0	1067.5	0.0	430.8
Upstream Filter Factor (I)	0.000	0.959	0.000	1.000	0.000	1.000	0.000	1.000
Uniform Delay (d1), s/veh	0.0	0.0	0.0	28.7	0.0	3.6	0.0	28.3
Incremental Delay (d2), s/veh	0.0	0.0	0.0	2.9	0.0	0.0	0.0	1.7
Initial Queue Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	31.6	0.0	3.6	0.0	30.0
First-Term Queue (Q1), veh/ln	0.0	0.0	0.0	1.3	0.0	0.1	0.0	0.9
Second-Term Queue (Q2), veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Third-Term Queue (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentile bk-of-que factor (f_B%)	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000
Percentile Back of Queue (Q%), veh/ln	0.0	0.0	0.0	1.4	0.0	0.1	0.0	1.0
Percentile Storage Ratio (RQ%)	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.11
Initial Queue (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Queue (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Queue (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saturated Capacity (cs), veh/h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Control Delay	5.9
HCM 2010 Level of Service	A



**GEOTECHNICAL REPORT
DRAKE REAL ESTATE SERVICES
LOT #1 TRACTOR SUPPLY COMPANY
LOT 80 VANTUYL VILLAGE
GUNNISON, COLORADO**

December 11, 2012

Prepared for:

***Drake Real Estate Services
496 South Broadway
Denver, CO 80209***

Prepared by:

***Buckhorn Geotech, Inc.
222 South Park Ave.
Montrose, CO 81401***

Introduction

Buckhorn Geotech, Inc. conducted an evaluation of shallow subsurface and site conditions on November 12th and 13th, 2012 at the proposed building site on Lot #1 within Lot 80 of VanTuyl Village in Gunnison, , Colorado. This work was performed at the request of Jon Hauser of Drake Real Estate Services. The purpose of our services was to evaluate the building site for construction of a 22,000 square foot Tractor Supply Company building, a 15,000 square foot concrete slab, and associated driveways and parking areas. The evaluation consisted of a site reconnaissance, excavation of four test pits, drilling three boreholes, logging and testing of representative materials found, and analysis of available data. Our services did not include an evaluation of deep subsurface conditions, beyond a depth of 15 feet. A more comprehensive scope of services would be required for such an evaluation. This report presents the findings of our evaluation and our geotechnical engineering recommendations for site preparation, foundation design, concrete slab on-grade design, management of drainage, and pavement section design.

Construction Plans

The proposed construction on Lot #1 within Lot 80 VanTuyl Village consists of a 21,924-square foot single story above grade Tractor Supply Company building, with an approximately 15,000 square feet concrete slab. The remainder of Lot #1 is proposed to have asphalt driveways and parking areas.

Based on information provided to us by Drake Real Estate Services, we understand typical floor loads for the building will be approximately 125 pounds per square foot (psf), maximum column loads will be 40,000 pounds, and typical wall loads will be 1,000 pounds per linear foot. Traffic count and/or ESAL information for pavement design was not provided. If these assumptions are incorrect or change, we should be notified to review the recommendations contained herein.

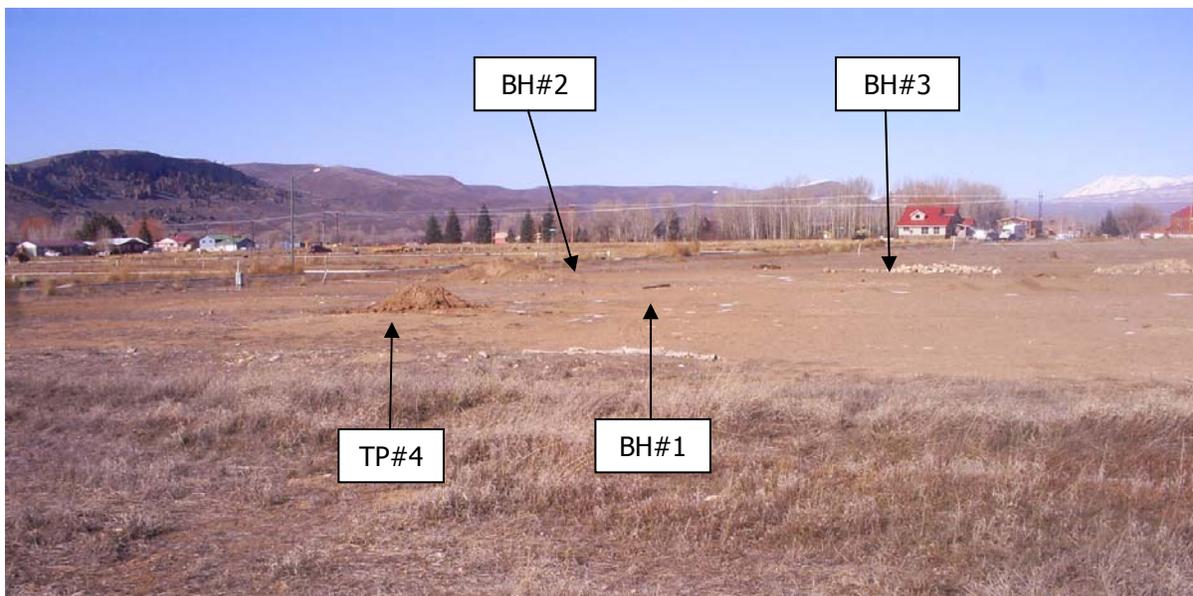
Site Conditions

Lot 80 of VanTuyl Village Subdivision is a 4.80 acre parcel located in the northern portion of the City of Gunnison, Colorado (see Vicinity Map in Appendix A). The lot is bound on the east by Highway 135, on the north by VanTuyl Circle and Lot 81, on the west by Sydney Street and on the south by the Gunnison Business Park. According to the ALTA/ACSM Survey of the property provided to us, dated 9/20/12, the site is at an approximate elevation of 7,730 feet and the terrain is gently sloping at grades less than 2% generally to the west. The site is currently undeveloped, with little vegetation existing on the ground surface. An abandoned ditch is located along the eastern edge of the property near Highway 135 and there is another abandoned lateral ditch along the southern edge the property. There are some dirt jumps created for dirt bike riding and there are also some piles of miscellaneous construction debris, boulder, cobbles, and gravel on the property. Lot 80 is proposed to be subdivided into four lots. The Site Plan (in Appendix A) shows the proposed four lot subdivision boundaries. As shown, Lot #1 consists of 107,207 square feet within the southern portion of Lot 80. The proposed Tractor Supply Company building is shown at a size of 21, 924 square feet and south

of the building the proposed 15,000 square foot concrete slab area is outlined. The associated driveway and parking areas are also shown. The following photographs were taken of the site at the time of our field evaluation.



Looking east-northeast across a portion of Lot#1, this photograph shows the vegetative cover, the local topography, the approximate locations of two of our test pits, and the surface conditions at the time of our site visit.



Looking northwest across a portion of Lot#1, this photograph shows the vegetative cover, the local topography, the approximate locations of one of our test pits and three of our boreholes, and the surface conditions at the time of our site visit.

We excavated four test pits at the site, two (TP#1 and TP#2) within the proposed parking area and two (TP#3 and TP#4) within the proposed concrete slab area. We drilled three boreholes (BH#1, BH#2, and BH#3) at the site within the proposed Tractor Supply Company building footprint. The approximate locations of our four test pits and three boreholes are shown on the Site Plan. The results of our field and laboratory testing are discussed in the *Subsurface Conditions* and *Laboratory Testing sections* of this report.

Geology

The open expanse of the Gunnison Valley region encompasses some of the oldest and the youngest rock in Colorado. As indicated in *Geology and Mineral Resources of Gunnison County, Colorado* (Colorado Geological Survey Resource Series 37, Streufert, 1999), Precambrian crystalline rock including felsic and hornblende gneiss, biotite gneiss, mafic intrusive rocks and granitic rocks outcrop in the hills and mountains south and east of the City of Gunnison. These rocks are the oldest rock in the region and date from 1,800 million years ago. The ancient formations were uplifted during the Laramide Orogeny as the Sawatch Uplift in eastern part of Gunnison County and the Gunnison Uplift in southern Gunnison County. The Sawatch Uplift, extending from the Gunnison River east to beyond the Gunnison County line, is highly faulted and fractured. The crest of this uplift coincides with the Continental Divide and contains many of the regions productive mining districts. Younger Paleozoic and Mesozoic rock were eroded off this uplift, exposing the older Precambrian rock underneath, east and south of Gunnison (Streufert, 1999).

To the north and west of Gunnison, eroded remnants of the younger Paleozoic and Mesozoic bedrock units remain. These sedimentary bedrock units outcrop along the East River from Almont up to Crested Butte and in the vicinity of Blue Mesa Reservoir. Much of this sedimentary rock is completely covered by the West Elk Breccia, an extensive volcanic deposit that mantles an area north from Blue Mesa Reservoir and east from Ohio Creek. This volcanic rock is composed of lava flows and ejected rubble mixed with mud and debris flows derived from the West Elk volcanic field approximately 20 miles northwest of Gunnison. Subsequent to this episode of volcanic deposition, extensive ash flow tuffs were deposited from the San Juan volcanic field to the south. These ash flow deposits feather out to the north across the surface of the underlying West Elk Breccia. The ash flows also extend to the east where they directly overlie the older Precambrian metamorphic and intrusive rock, south of Gunnison (Streufert, 1999).

Erosion and re-deposition of eroded material created the landscape seen today. Glacial meltwater from at least four episodes of glaciation in the alpine regions surrounding Gunnison incised the valleys of the present East, Taylor, and Gunnison Rivers and Tomichi Creek. Tributary drainages cut canyons into the volcanic rock and softer sedimentary rock. Surficial runoff and sheet flow transported weathered rock down slope to the drainage systems, redepositing the material as river alluvium. Where steeper slopes of weathered bedrock became saturated, mass wasting occurred in the form of landslides, debris flows, and smaller earthflows.

According to the *Geologic Map of the Gunnison Quadrangle* (USGS Open File Report 06-04: Stork et al., 2006), Lot 80 of VanTuyl Village subdivision is mapped as upper Pleistocene stream

terrace alluvium (*Qt1*). The stream terrace alluvium is described in the report as sand, silt, clay, and gravel in terraces above flood plains. The soil and rock materials found in our test pits and borings are consistent with the geologic mapping of alluvial deposits. Further discussion of the subsurface conditions is presented in the *Subsurface Conditions* and *Laboratory Testing* sections of this report.

Geologic Hazards

This section of the report is included so that the potential property and building owner is aware that construction in the area comes with certain risks. Modern development in the region can be considered to be only about 40 years old, with most occurring in the past 25 years. Because of this relatively short period of time, useful empirical data are limited. Some buildings and roadways throughout the local mountains and valleys have experienced negative impacts due to slope movement, sensitive soils, and shallow groundwater. Typical accepted structural engineering practice for design and construction of buildings and roadways can be used to reduce the potential for undesirable performance related to troublesome climate and soil conditions. However, because of the overall dynamic characteristics of the area, almost every structure is subject to at least some degree of potential risk. These risks are discussed below.

Runoff & Erosion

Surface runoff from rainfall and snowmelt drains as sheetflow across the property generally to the west at a very slight gradient (<2%). As mentioned previously, there are two abandoned ditches on the property. No other natural or man made drainages were observed on the property. No signs of erosion (as may be indicated by gulying or piping) were observed on the property. Erosion can be a hazard due to sparse vegetation, low organic content, and/or weak soil structure. During medium- to high-intensity precipitation events, large volumes of runoff can drain from the surrounding areas. Runoff can erode surface sediments. Careful and conscientious construction practices should be used when developing the property to minimize the potential for erosion.

Shallow Groundwater

We did not encounter groundwater in any of our test pits or boreholes at the time of our evaluation. Since we performed our evaluation during a time of the year when groundwater levels are cyclically low (fall), it is possible that there could be shallower groundwater at the site during the spring and early summer snowmelt season. During that time, local soils are usually saturated as melting snow percolates through the soil, and recharges the groundwater.

Shallow groundwater can be problematic as it weakens foundation soils, creates hydraulic pressure, and can seep into the interior of the building if foundation components are not properly waterproofed. It should be noted that groundwater levels may not remain static due to permeability of soils, seasonal variations, and drilling/excavating effects. We should be contacted to prescribe appropriate recommendations if groundwater is encountered during development of the property.

Flooding

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the City of Gunnison, Community-Panel Number 080080 0008 C, all of Lot 80 is located in Zone C, areas of minimal flooding, where no special precautions are required to mitigate potential flood hazards.

Compressible Soil

Compressible soils are those that have generally been deposited rapidly, have a loose particle structure, have a weak matrix containing voids, and/or are not naturally in a dense or compacted state. Compressible soils typically have a large proportion of fines (i.e., silt and clay).

The shallow fine grained soils at this site were found to be moderately to highly compressible under all loads tested. The potential hazard from compressible soil is excessive settlement or differential settlement of foundation soils under loads applied through the foundation. Reduction of the hazard depends on the nature and extent of the compressible soil. However, settlement can be minimized by treatment of foundation soils, management of on-site drainage, foundation systems that extend to more competent soil or bedrock, design of foundation systems that have sufficient strength to resist differential movements, or removal and recompaction of native soil or replacement with compacted structural fill. These methods are discussed in further detail below in the *Recommendations* Section.

Seismicity

According to the *Geologic Map of the Gunnison Quadrangle* (USGS Open File Report 06-04: Stork et al., 2006), the Gunnison fault is located approximately 2.5 miles south-southwest of the subject site. This fault is mapped as a high-angle reverse fault. There are numerous other faults mapped in Gunnison County, but most of these, including the Gunnison fault, are considered to be ancient and inactive, associated with the Tertiary volcanics to the west and north of the Slate River valley and the Laramide Sawatch Uplift to the east. According to the *Geology and Mineral Resources of Gunnison County, Colorado* (CGS Resource Series 37, by R. Streufert: 1999), there are dozens of north- to northwest-trending faults located east of State Highway 135 and extending from Highway 50, southeast of Gunnison, north towards Aspen and Marble. None of these are identified as geologically recent (Quaternary-aged) or potentially active faults in the Colorado Geological Survey (CGS) reports relating to earthquake potential [*Earthquake Potential in Colorado—A Preliminary Evaluation* (Bulletin #43: Kirkham and Rogers, 1981) and *Preliminary Quaternary Fault and Fold Map and Database of Colorado* (Open-file Report 98-8: Widmann et al., 1998)]. The only mapped potentially active faults in Gunnison County belong to the Cimarron Fault group, a segmented fault zone located 22 miles southwest of Gunnison and continuing for roughly 35 miles to the northwest. The Cimarron Fault group consists of five distinct sections with apparently different ages and amounts of movement associated with the Laramide Gunnison Uplift that was later reactivated in the Quaternary. The maximum credible earthquake inferred for the Cimarron Fault group is M6.75.

Gunnison is located in Western Mountain Seismotectonic Province in Colorado, where maximum credible earthquakes are estimated to be on the order of magnitude 6 to 6.5, equivalent to Modified Mercalli (MM) VI to VIII (CGS Bulletin #43). Please refer to the *Seismic Design Criteria*

Section of the *Recommendations* section for site-specific seismic design recommendations interpreted from the *2003 International Building Code* (IBC).

Radon Gas

Radon gas is produced by decay of radioactive minerals contained in subsurface rock and soil. The U.S. Environmental Protection Agency (EPA) has determined that radon is the second leading cause of lung cancer and that radon can accumulate in buildings and homes if the gas is not properly ventilated. The EPA map of Radon Zones indicates that virtually all of western Colorado, including Gunnison County, is in Zone 1 (www.epa.gov/radon/zonemap.html). Although there is no known safe level of radon, Zone 1 is the zone of highest risk for exposure to radon gas [i.e., greater than 4 picoCuries per Liter (pCi/L)].

The EPA does not specifically address testing and management of radon in commercial structures. However owners should be aware of the potential health implications of constructing upon radon emitting soils, assess risks, and take appropriate action. Additional information about radon gas can be found on the EPA radon website www.epa.gov/radon/ or the CDPHE radon website www.cdphe.state.co.us/hm/rad/radon.

Other geologic hazards are not known to be present in the vicinity of Lot 80 VanTuyl Village based on our site observations and the readily available published information reviewed.

Subsurface Conditions

Four test pits were excavated within Lot #1 using a backhoe. Test Pits #1 and #2 (TP#1 and TP#2) were located in the proposed driveway and parking areas and Test Pits #3 and #4 (TP#3 and TP#4) were located in the proposed concrete slab area. Three boreholes (BH#1, BH#2, and BH#3) were drilled within the proposed Tractor Supply Company building footprint. The borings were drilled with a Simco 2800 HS truck-mounted drill rig using 4¼-inch continuous flight augers. Soil samples were obtained at discrete depths by withdrawing the 4¼-inch drill string and inserting either a standard 1.375-inch inside diameter (I.D.) split-spoon sampler without liners or a 2-inch I.D. split-spoon "California" sampler to perform in-situ Standard Penetration Tests (SPTs) in general accordance with ASTM Standard D-1586. The number of blows required to drive the sampler 12 inches in 6-inch increments were recorded (SPT "N" penetration resistance values) and, when properly evaluated, indicate the relative density or consistency of the soils. The locations of the test pits and boreholes are shown on the Site Plan.

The soil and groundwater conditions were observed and logged, and representative samples of soils found were brought back to our laboratory for detailed classification and testing. The subsurface conditions found in the test pits and boreholes and the laboratory results are shown on the attached Test Pit Logs and Borehole Logs. Laboratory test results are shown on the attached laboratory test sheets, and summarized on the attached *Summary of Laboratory Test Results*.

Our test pits and boreholes reached depths ranging from 5 to 14.5 feet. Our findings and recommendations are based on materials found within these profile depths. Soil conditions may change between test pits/boreholes and below these depths. If deeper excavations are contemplated or if soil/rock materials different than those found in the evaluation test pits and boreholes are encountered during construction, Buckhorn should be called to verify soil continuity and validity of our recommendations. This may require drilling, excavation of additional test pits into the subgrade material below foundation grade, or other typical excavation verification.

In summary, the conditions found in the test pits and boreholes at the site consist of 2 to 4 feet of damp to dry, loose to moderately dense, sandy silt to silty sand with little rounded to subrounded gravel. Below depths ranging from 2 to 4 feet, we found dry, moderately dense to dense, sandy rounded to subrounded gravel and cobbles, with occasional boulders. This material was estimated to contain 50 to 90% rock. No bedrock or groundwater was observed to depths ranging from 5 to 14.5 feet. Boreholes were terminated due to auger refusal on boulders or in very dense cobbles and gravel. The following photograph was taken of the Test Pit #1 excavation and spoils pile.



This photograph, taken of TP#1, shows the fine grained soils found generally in the upper 2 to 4 feet, in the wall of the excavation and near the rock hammer, while the sandy rounded to subrounded gravel and cobbles are shown above the rock hammer in the spoils pile.

Laboratory Testing

A summary table of laboratory test results is presented in Table 5 contained in Appendix C. The individual laboratory test results for each of the tests are also included in Appendix C. Both Table 5 and the individual laboratory test results are organized with the test pit samples first, followed by the borehole samples, progressing from TP#1 to BH#3. Results of Corrosivity Series testing on Sample BS2 are not summarized in Table 5, but the individual laboratory test results are included in Appendix C.

RECOMMENDATIONS

Based upon our limited site evaluation and results of our subsurface testing, it appears that the building site on Lot#1 within Lot 80 of VanTuyl Village subdivision is suitable for the proposed construction. The following recommendations are offered to enhance the long-term performance of the foundation soils, foundations, concrete slabs on-grade, and site improvements. It should be noted that the measures offered address only the construction at the building site. They cannot and will not arrest or prevent large-scale geologic processes that may be on-going elsewhere on the property and within the Gunnison area.

This report does not contain project specifications. The recommendations given are provided to guide the design process. We anticipate these recommendations, together with site-specific geotechnical information, will be used by the design team to formulate specifications for construction of buildings, infrastructure, and grading.

General Design Criteria

1. Based on the elevation of 7,730 feet, the Structural Engineers Association of Colorado recommends that the Basic Roof Snow Design Load be a minimum of 52 psf. It is recommended that the local building official be contacted to verify the required snow design load for this property.
2. Shallow components of the foundation system should be extended into the soil a minimum depth below finished grade as prescribed by the local building official to reduce the negative effects of frost heave.

Seismic Design Criteria

In accordance the *2009 International Building Code* (IBC) and our knowledge of the site, we conservatively recommend that this site be designated as Site Class C. This classification is based on limited shallow exploratory data and assumes that subsurface conditions similar to those encountered during our site evaluation extend to a depth of 100 feet. For Site Class B, the mapped spectral response acceleration at short periods (0.2 second, S_s) is 0.354g and at one second (S_1) is 0.087g. ***These values should be adjusted for the proper site class given above.*** The values are taken from the USGS website based on the latitude and longitude coordinates for the site, and are referenced to the National Earthquake Hazard Reduction Program (NEHRP) 1997 and 2000 maps, reproduced in the IBC.

Foundation

The shallow spread footing foundation components should rest upon relatively uniform firm soil conditions (like material), usually indicated by similar color, gradation, and consistency. Footings should extend into the dense to very dense sandy gravel and cobbles, anticipated at depths of 2 to 4 feet below existing grade. Footings founded within the overlying sandy

silt/silty sand are not recommended. The following recommendations are provided to guide foundation design and construction.

1. The footings, bearing pads, and retaining walls to be placed on the prepared native sandy gravel and cobbles should be designed using an allowable bearing capacity (q_a) of 3,000 psf. Minimum width of footings supporting one story should be 12 inches whether or not the allowable bearing capacity is achieved.
2. After excavation to foundation depth, the exposed soil surface should be proof-compacted using vibratory or roller compaction equipment to provide a uniformly dense surface prior to placement of footing forms. If the presence of large rocks makes disturbing the native soils below footing elevation unavoidable, then the rocks should be removed and replaced with compacted structural fill. If soft or yielding soils are encountered, Buckhorn Geotech should be contacted to assess the soil conditions and recommend remedial measures. Typical procedures involve removing soft/yielding subgrade soils to firm material and replacing them with compacted structural fill or gravelly, native soil.
3. Once the excavation is exposed, but prior to placement of any fill or footing forms, a representative of Buckhorn Geotech must be called out to verify the nature and density of the foundation excavations, to ensure that uniform soil conditions are present and to confirm that our recommendations are consistent with actual conditions. If we do not verify the soil conditions, Buckhorn Geotech cannot be held responsible for recommendations that may be inconsistent with actual conditions.
4. Observation and testing during construction is essential to ensure that the geotechnical recommendations are consistent with conditions and that the project is constructed in general compliance with project design and specifications. Any geotechnical observations or testing will be provided at additional charge and we should be contacted at least 2 days in advance for scheduling site visits. In addition to excavation observations, we can provide observation and testing of soil density, concrete and grout, foundation forms and rebar, pile installation, steel, welds, grading features, and drain systems.
5. Foundation walls should be designed with sufficient strength to resist lateral earth pressures and to bridge an unsupported span of at least 10 feet. The components of the foundations should be sufficiently interconnected to ensure that they act as a unit. This will provide some degree of resistance to the forces associated with some unanticipated minor soil movement and will provide some degree of unity to the foundation systems.
6. All concrete used in foundation components at this site in contact with native soil should comply with the recommendations in the *Concrete* Section of these recommendations.

Floor Systems

Slabs on-grade may be used at the site for interior or exterior floor slabs.

1. Below concrete slabs on-grade, the compressible silty sand subgrade soil (encountered to depths of 2 to 4 feet in our test pits and boreholes) must be removed and recompacted in 6-inch lifts to a minimum 95% Standard Proctor maximum dry density. Alternatively, structural fill compacted in 6-inch lifts could be used above the native sandy gravel and cobbles to reach the desired bottom of slab elevation. The floor slab should be completely isolated from all partition walls and foundation support structures. Due to the light loading of a slab, even with the prescribed over-excavation and recompaction, it may be possible for differential settlement to occur between slab and foundation components.
2. To provide a capillary break and/or radon under-slab mitigation collection, slabs on-grade should be placed on 4 inches of $\frac{3}{4}$ -inch to 1½-inch washed rock on the prepared subgrade. Where moisture-sensitive interior floor finishes are applied to the slab, an unpunctured vapor barrier between the gravel and the floor slab is also recommended.
3. Under-slab plumbing should be avoided to minimize the potential for leakage under the slab. When necessary, under-slab plumbing should be provided with flexible couplings and should be leak-tested prior to being placed in service.
4. All concrete slabs used at this site in contact with native soil should comply with the recommendations in the *Concrete* Section of these recommendations.
5. Suspended floors (framed floors over a crawlspace) may be considered for use at this site. Suspended floors can consist of conventionally-framed wood flooring systems, thin concrete slabs supported on steel or wood decking, or prestressed slabs. These systems have historically performed well, but may be susceptible to moisture accumulation in the crawlspaces that can not only cause environmental concerns but also compromise the structural integrity of the flooring system over time. To enhance the long-term performance of these systems, site grading and drainage plans must be appropriate and a properly-vented crawlspace is recommended.

Retaining Structures

We are unaware of any retaining structures that will be constructed on this site other than the footing stemwalls. The following recommendations apply only to these stemwalls and assume the final height of soil acting against them is 3 feet or less and that stemwalls are backfilled on only one side. If retaining walls are to be constructed at this site that do not meet these criteria, we should be contacted to provide appropriate design criteria.

1. Walls acting to restrain soil should be designed using the lateral earth pressures given in Table 1 below. These values assume a level backslope (slope behind the walls) or outboard slope (slope below the toe of wall), no hydraulic pressures behind the wall, the use of native soil or structural fill, and no surcharge loads applied within the backslope zone (as defined on the attached Foundation Excavation Sketch). We should be contacted to recommend modified lateral earth pressure values for increased backslope angles, decreased outboard slope angles or loading within the backslope zone.

Table 1. Lateral Earth Pressures

	Native Silty Sand to Sandy Silt Soil	Structural Fill or Native Sandy Gravel and Cobbles
Active Earth Pressure	37 pcf*	34 pcf*
Passive Earth Pressure	330 pcf*	400 pcf*
At-Rest Earth Pressure	63 pcf*	64 pcf*
Unit weight of soil	110 pcf**	120 pcf**
Coefficient of Friction	0.32 ***	0.32 ***
* pounds per cubic foot (fluid equivalent)		
** pounds per cubic foot		
*** concrete on dry soil conditions		

- Fill material placed behind the walls should consist of free-draining granular material (specified below) compacted as per the structural design engineer’s specifications. Clean native soil material (less than 10% passing the #200 sieve and rocks larger than 6-inches removed) can be used for this purpose if approved by the structural design engineer. Compaction of 85 to 90% of Standard Proctor maximum dry density is typically used to minimize post-construction settlement of the backfill. Over-compaction of the backfill should be avoided so that excessive pressures are not placed against the stemwalls. Unless expressly approved by the structural design engineer, only hand-operated light-duty compaction equipment should be used within three feet of the wall. The upper one foot of backfill should consist of clayey (i.e., less permeable) soil to create a barrier against infiltration of surface runoff.
- All concrete used for retaining structures at this site in contact with native soil should comply with the recommendations in the *Concrete* Section of these recommendations.

Foundation Drainage and Ventilation

It is important to minimize moisture penetration into the soil beneath or adjacent to the structure. Moisture can accumulate as a result of such items as: poor surface drainage, over-irrigation of landscaped areas, waterline leaks, melting snow, subsurface seepage, or condensation from vapor transport.

- Roof drainage should be captured by eave gutters. Downspouts should be fitted with extensions to discharge a minimum of 10 feet away from the structure or piped into a closed underground drain system and evacuated off-site. These points of discharge should be identified in the site drainage plan so that water is readily removed from the site. Note that these should not be employed unless gates and/or heat traces are used for ice and/or snowpack.
- If desired, floor systems and confined areas above concrete floor slabs should be properly ventilated to allow for the release of radon gas. See the *Radon Gas* Section of this report for more radon information.

Site Preparation and Grading

1. The upper silty sand/sandy silt soils are loose and were dry at the time of our exploration. However, they will be soft and difficult to work with when moist or wet. As such, equipment may cause rutting and the soils may be difficult to compact when over optimum moisture.
2. The site drainage plan, in tandem with the landscape and grading plans, should ensure that the construction does not impede natural drainage patterns. Surface water should be removed and not allowed to accumulate or stand anywhere near the building foundation either during or after completion of construction. This includes water from landscaped areas, patios, decks, and roofs. Drainage plans should ensure that precipitation, snowmelt, and runoff are conveyed around and away from the building as well as the driveway. This runoff should be dispersed (not concentrated) in a manner consistent with the natural, pre-construction drainage pattern.
3. Final grading around the perimeter of the foundation should slope downward with at least one foot of drop within the first 10 feet of horizontal distance. Concrete flatwork adjacent to the foundation should slope away at a grade of at least ¼-inch per foot.
4. Development should utilize "best practices" for design and construction so that on-site erosion is minimized. This may include selective thinning of vegetation, construction of temporary diversion ditches, silt fencing, and/or dust suppression. If the cumulative area of disturbance equals or exceeds one acre, on-site erosion management should be planned and executed in conformance with Colorado Department of Public Health and Environment (Water Quality Control Division) stormwater discharge regulations. The local building official will be able to provide specific details regarding these requirements.
5. Grading of all permanent cut and fill slopes should not exceed 2H:1V. Existing or created permanent slopes greater than 2H:1V and over 3 feet in vertical height upon which permanent improvements are constructed and/or where retention or enhancement of current slope stability is desired, should be restrained by an engineered retaining structure/system.
6. Irrigation of lawn and landscaped areas should be kept at a distance of at least 5 feet from the perimeter of the building and sprinkler heads should be set to spray away from and not towards the foundation.
7. Backfill placed in utility trenches leading to the structure should be densely compacted in accordance with project specifications to inhibit surface water infiltration and migration towards the foundation, as well as minimize post-construction settlement of the trench backfill. We recommend low-permeability check-dams be installed in the trenches at the lot line and the structure to inhibit water flow along any utility trenches.
8. Disturbed areas should be revegetated as soon as practical to reduce soil erosion.
9. Fill used at this site should meet the gradational and compaction requirements listed in Tables 2 and 3 below. Fill should be placed and compacted in **maximum 6-inch lifts**,

unless otherwise directed by the structural design engineer. Structural fill should not be placed on frozen or wet existing soil or fill material. It is recommended that the foundation excavation be open a minimum period of time to avoid degradation of the foundation soils. Clean native sandy gravel with all deleterious material and over-size rock removed may be used as structural fill if approved by the structural design engineer.

Table 2. Gradation Requirements for Fill Material

Type	Sieve	%Passing, by weight
Structural Fill (CDOT Class 6 roadbase)	3/4" (19.0 mm)	100
	#4 (4.75 mm)	30-65
	#8 (2.36 mm)	25-55
	#200 (0.075 mm)	3-12
Structural Fill (CDOT Class 1)	2.5" (63.5 mm)	100
	2" (50 mm)	95-100
	#4 (4.75 mm)	30-65
	#200 (0.075 mm)	3-15
Fill under exterior concrete flatwork	3" (75 mm)	100
	#200 (0.075 mm)	0-5
Free-draining fill	3" (75 mm)	100
	3/4" (19 mm)	20-90
	#4 (4.75 mm)	0-20
	#200 (0.075 mm)	0-3

Note: The Plasticity Index for all fill soils should be less than 6.

Table 3. Compaction Requirements for Fill Material

Application	Compaction Requirement	Proctor	Moisture
Under footings and slabs	95% max. dry density	Modified	±2% of optimum
Under exterior flatwork	90% max. dry density	Modified	±2% of optimum
Road Subgrade	95% max. dry density	Standard	0-4% above optimum
Road Subbase	95% max. dry density	Modified	±2% of optimum
Road base course	95% max. dry density	Modified	±2% of optimum
Behind retaining walls	Per project specifications*		
Utility Trenches	Per project specifications*		
General landscaping	Per project specifications*		

*As specified by the structural design engineer on project documents or in accordance with local municipal requirements.

10. Any soils containing organics, debris, topsoil, frozen soil, snow, ice, and other deleterious materials shall not be used for anything other than landscaping.
11. A representative of Buckhorn Geotech should be called out to the site to observe placement of structural fill and verify the compacted density. The owner should contact Buckhorn Geotech in advance of the excavations to discuss the specific testing requirements, budget, and scheduling needed for these services.

Concrete

Because of the potential sulfates in the soil and their corrosive qualities, Type I/II sulfate-resistant cement should be used in all concrete at this site.

Exterior Concrete Flatwork

1. Flatwork may be placed on undisturbed native soil with the topsoil and organic material removed. If fill is needed, it should consist of washed rock or structural fill (see Tables 2 and 3), placed and compacted in accordance with project specifications.
2. Flatwork adjacent to buildings should be placed on properly compacted fill. To minimize future settlement and damage to the flatwork and/or adjacent foundations, the fill should consist of approved material placed and compacted per project specifications.
3. Flatwork adjacent to exterior doorways should be dowelled into the foundation to reduce long-term differential movement between the flatwork and structure.
4. Exterior concrete flatwork should be designed and constructed so that it drains freely away from the structure. Concrete flatwork adjacent to the foundation should slope away at a grade of at least ¼-inch per foot.
5. All concrete used at this site in contact with native soil should comply with the recommendations in the *Concrete* Section of these recommendations.

Excavation and Shoring

1. Temporary excavations should be in accordance with Occupational Safety and Health Administration (OSHA) regulations and with worker safety in mind.
2. Construction equipment, materials, and soil stockpiles should be located a minimum horizontal distance equal to the height of the excavation from the crest of the excavation unless otherwise approved by the structural design engineer.
3. Based upon our evaluation, the silty sand found in the upper 2 to 4 feet of our test pits and boreholes would be most nearly represented by an OSHA Type B soil. The sandy gravel and cobbles found below 2 to 4 feet would be most nearly represented by an

OSHA Type C soil. Our assessment is based upon the soil and groundwater conditions found in our limited evaluation and sampling. The contractor's "competent person" (defined by OSHA as "an individual capable of identifying existing and predictable hazards...and who has the authorization to take prompt corrective measures to eliminate or manage these hazards and conditions) should evaluate the soil materials exposed during excavation based on composition, structure, and environmental conditions per 29 CFR 1926 and recommend appropriate slope laybacks or shoring, as required. Refer to OSHA's Technical Manual Section V: Chapter 2 on *Excavations: Hazard Recognition in Trenching and Shoring* (available on-line at: www.osha.gov) for further excavation guidelines. We can provide these services, as requested.

4. If the excavations will be made or remain open during wet weather, it is recommended that polyethylene sheeting be secured over the excavation face to minimize sediment runoff and deterioration of the foundation soils. Surface runoff above the cuts should be directed away from the excavation using berms or diversion ditches. Large rocks exposed in the excavation face should be removed for worker safety.
5. We anticipate that the excavation of the site soils can be accomplished by conventional excavating equipment.

Pavement Section Design

A five step process was used to identify the pavement section recommended for the proposed parking lot and truck loading area for the Tractor Supply Company commercial development.

(1) ESAL Calculation

Daily traffic volumes have been estimated based on the Institute of Transportation Engineers (ITE) *Trip Generation*, 7th edition for Land Use Code 814 Specialty Retail Center. The ITE trip generation method analyzes peak hour and peak day trip generations into and out of Specialty Retail Centers. Based on the ITE information, Saturdays are the peak use day, at 42 trips per day per 1,000 square feet of building space. Using the approximate square footage of 22,000 square feet for the Tractor Supply Company building, we used that figure to calculate an average daily trip (ADT) total of 924 trips per day. We estimate that 75% of the projected traffic will come from light duty cars and trucks, 20% was attributed to medium duty, single axle trucks, and 5% was attributed to heavy, multi-axle trucks. We estimated the following ADT's by vehicle classification:

75% light duty cars and trucks x 924 = 693
20% single axle trucks x 924 = 184.8
5% multi axle trucks x 924 = 46.2

Each of these classification totals was multiplied by the appropriate Colorado Equivalency Factor for pavement from the Colorado Department of Transportation's (CDOT) 2013 Pavement Design Manual to obtain a total daily ESAL count. Those results are:

693 passenger car/pickup truck ADT x 0.003 = 2.079

$$184.8 \text{ single axle trucks} \times 0.249 = 46.015$$

$$46.2 \text{ multi axle trucks} \times 1.087 = 50.219$$

The total of these three classifications is $2.079 + 46.015 + 50.219 = 98.313$, rounded to 100 daily ESAL's. The daily ESAL total was then multiplied by 365 days per year and by a pavement design life of 20 years to get the total number of 18-kip ESAL's.

$$100 \times 365 \times 20 = 730,000 \text{ 18-Kip Total ESAL's}$$

As a double-check, we also calculated the 20-year design ESAL's using the following CDOT formula:

$$18\text{-kip ESAL's} = 62000 + 80R + 260000C_A$$

Where: R = residential units
C_A = Commercial acreage

$$\text{Therefore: 18-kip ESALS} = 62000 + 260,000 (2.46) = 701,600 \text{ total ESAL's}$$

For conservancy, we used 730,000 18-kip ESAL's for design purposes. If ESAL's are available and differ from that assumed we should be notified to review our pavement design recommendations.

(2) Soil Sample Data

Test Pits #1 and #2 were excavated in the proposed driveway and parking lot areas and are described in the *Subsurface Conditions* section of this report. A representative sample of subgrade soil (sample BS1) was obtained and tested to determine the California Bearing Ratio (CBR), which is used to estimate the native subgrade soil's modulus of resistance or strength. If imported fill is required to bring the parking area to the desired subgrade elevation, the appropriate CBR value for that soil should be used.

(3) Soil Sample Classification

Laboratory test results for sample BS1, obtained from a depth of 0-1 feet in Test Pit #, are presented in the Table 5 in Appendix C. A Standard Proctor test (ASTM D 698) was performed on sample BS1 and indicated a maximum dry density of 115.3 pcf at an optimum moisture content of 11.3%. At 95% of the maximum dry density, the CBR of the native subgrade soil was calculated to be 8.3. For pavement design calculations, that value of 8.3 was used to calculate the Resilient Modulus (M_R) of the site soils using CDOT equation 2.1 which states:

$$M_r = \text{CBR} \times 1,500 = 8.3 \times 1,500 = 12,450 \text{ psi}$$

(4) Subgrade Support Characteristics

Table 4 below summarizes the typical subgrade support characteristics for the soils encountered in Test Pits #1 and #2 excavated in the parking area. Assumptions for choosing the subgrade characteristics listed in Table 4 are:

(a) The pavement structures on site will be exposed to moisture levels approaching saturation more than 25% of the time and that these areas of potential saturation will be have a “good” quality of drainage. No typical drainage information was available for the soils encountered on the Tractor Supply Company site at the time of this report, therefore a CDOT recommended drainage coefficient of $m_1 = 1.0$ was used.

(b) From CDOT’s Table 5.6 Drainage Quality (2013 Edition), it was assumed that water would be removed from all pavement structures within one day and so an overall drainage quality of “good” was used.

(c) A reliability factor of 75% was assumed due to the conservative ESAL count in Section (1) above. CDOT’s Table 1.3 – Reliability (Risk) recommends a range of reliability of 50-85 % for roads, but does not provide reliability factors for parking lots. However, 75% reliability was used to represent a long-term service life.

(d) A standard normal deviate (Z_R) of -0.674 and a standard deviation of 0.44, as required by CDOT for all designs, was used.

(e) Per CDOT recommendations, initial and terminal Serviceability Indexes were assumed to be 4.5 and 2.5 respectively, thus a Design Serviceability Loss (ΔPSI) of 2.0 was calculated by subtracting the terminal serviceability index from the initial serviceability index.

TABLE 4. PAVEMENT THICKNESS DESIGN FACTORS

Parameter	Subgrade
Resilient Modulus (psi)	12,450
Drainage coefficient	1.0
Reliability (%)	75
Standard Normal Deviate (Z_R)	-0.674
Standard Deviation	0.44
Serviceability Loss	2.0
Strength coefficients:	
HMA	0.44
ABC	0.12
SOIL-CEMENT	0.13
SUBGRADE	0.10

CDOT Equation 3.2 in conjunction with Tensar’s SpectraPave, version 4.0™ was used to calculate the required pavement section for flexible (asphalt) pavement. Output for the SpectraPave 4.0™ model is attached in Appendix C.

Equation 3.2 states:

$$SN = a_1D_1 + a_2D_2m_2 + a_3D_3m_3$$

Where:

$a_1, a_2, a_3 =$ structural layer coefficients
 $D_1 =$ thickness of bituminous surface course (inches)

$D_2 =$	thickness of base course (inches)
$D_3 =$	thickness of sub base (inches)
$m_2 =$	drainage coefficient of base course
$m_3 =$	drainage coefficient of sub base

The minimum recommended structural number (SN) was calculated to be = 2.41 (see attached spreadsheet in Appendix E).

As a confirmation, the structural sections for the structural pavement section were also calculated using SpectraPave 4.0™ software from Tensar Earth Technologies. The computed structural sections are presented in Appendix E. These calculations indicated that several options provided structural numbers that would also accommodate the 730,000 design ESAL's. Three of these options are presented below.

(5) Structural Section Selection

Based on the design criteria and calculations presented above, we identified three options for the structural pavement section on Lot #1 for the proposed Tractor Supply Company. Alternatives #1 and #2 use hot mix asphalt (HMA) flexible pavement and Alternative #3 uses concrete or rigid pavement.

Alternate Pavement Section #1 – Traditional section using hot mix asphalt (HMA) over Class 6 aggregate base course. SN = 2.44 Total section thickness = 11 inches

HMA Thickness (in.)	Base Course Thickness (in.)	Sub-base Course Thickness (in.)
3.0	8.0	-

Alternate Pavement Section #2 – Traditional section using hot mix asphalt (HMA) over Class 6 aggregate base course. SN = 2.60 Total section thickness = 10 inches

HMA Thickness (in.)	Base Course Thickness (in.)	Sub-base Course Thickness (in.)
4.0	6.0	-

Alternate Pavement Section #3 – Rigid pavement (concrete) section
Total section thickness = 12 inches

Concrete Thickness (in.)	Base Course Thickness (in.)	Sub-base Course Thickness (in.)
6.0	6.0	-

Due to the high traffic and repeated turning movements by heavy trucks in the truck loading area, we recommend option #3 with rigid pavement (concrete) for the best long term durability surface for the truck loading area. Due to the high number of turning vehicles at critical points across the parking lot, we recommend that flexible pavement option #2 be used to help assure a more consistent pavement section using aggregate base course and hot mix asphalt. Two 2-

inch sections of HMA should be paved on top of 6 inches of CDOT Class 6 ABC compacted to 95% of a Modified Proctor maximum density as recommended below.

Pavement Design Conclusions and Recommendations

1. To provide a stable base for construction of the recommended pavement sections presented above, we recommend that the upper 12 inches of the existing native subgrade soil be scarified and re-compacted to 95% of Standard Proctor (ASTM D 698) maximum density, at +/- 2% of optimum moisture content. We then recommend the installation of CDOT Class 6 aggregate base course (ABC), thickness to be determined from the pavement alternative section selected. The ABC should be compacted to 95% of a Modified Proctor maximum density at +/- 2% of optimum moisture content.
2. We recommend that the rigid pavement (concrete) structural section presented in Alternative #3 above be used for the truck loading area. Per CDOT, the minimum section shall be 6 inches. The civil engineer responsible for design will provide details regarding steel or fiber mesh alternatives for structural reinforcement and jointing diagrams. Concrete shall have a minimum 28-day compressive strength of 4,500 psi and be a minimum of 6 inches thick.
3. Design and construction of the parking lot should promote drainage away from the paved areas and into the proposed curb and gutter drainage system. Where needed, sub-drains and/or drain pans should be installed to keep water from standing on the parking lot surface. Concrete mix designs should follow the specifications given in the *CDOT Standards and Specifications for the Construction of Roads and Bridges (latest edition)*.
4. All paving construction activities should be monitored and tested by a competent civil/geotechnical engineering firm for compliance with the recommendations contained in this report and with the specifications in the latest edition of the *CDOT Standards and Specifications for Roads and Bridges, (latest edition)*.
5. Because of the potential sulfates in the soil and their corrosive qualities, Type I/II sulfate-resistant cement should be used in all concrete at this site.

Closing Considerations

Standard of Care and Interpretation of Subsurface Data

This report has been prepared in a manner consistent with local standards of professional geotechnical engineering practice. As previously noted, we did not perform an evaluation of deep subsurface conditions. Evaluation of environmental contaminants was not part of our scope of services performed at this site. The classification of soils and interpretation of subsurface conditions is based on our training and years of experience, but is necessarily based on limited subsurface observation and testing. As such, inferred ground conditions cannot be guaranteed to be exact. No other warranty, express or implied, is made.

Observations of the excavation(s) subgrade by Buckhorn Geotech prior to erection of the foundation system are integral parts of these recommendations. If subsurface conditions differing from those described herein are discovered during excavation, construction should be stopped until the situation has been assessed by a representative of Buckhorn Geotech. Construction should be resumed only when remedies or design adjustments, as necessary, have been prescribed.

Use of This Report

This report is intended for use by Drake Real Estate Services specifically to address the site and subsurface conditions as they relate to the proposed structure(s) described in the *Construction Plans* Section. Changes to the site or proposed development plans may alter or invalidate the recommendations contained herein.

Buckhorn Geotech retains an ownership and property interest in this report. Consistent with the industry, copies of this document that may be relied upon by Drake Real Estate Services are limited to those that are signed and sealed by the Geotechnical Engineer (*Standard Form of Agreement Between Owner and Geotechnical Engineer for Professional Services*, Engineer's Joint Contract Documents Committee, 1996). This report together with ancillary data, analyses, test results, and other components and/or supporting parts are not intended or represented to be suitable for reuse by Drake Real Estate Services or others on extensions to this project or on any other project. Any such reuse or modification invalidates all aspects of the report and excuses the Geotechnical Engineer for all responsibility and liability or legal exposure.

This report is considered valid for a period of two years from the date of issue provided the site conditions and development plans have not changed from what is referenced in this report. Changes to the site may occur due to development or natural processes. Additionally, technological advances made in construction and changes in legislation may alter the recommendations made herein. Depending upon the site and proposed development changes, Buckhorn Geotech may require additional evaluation (at additional cost) to update the recommendations contained herein.

Retention of Samples

Samples of soil and rock collected during the course of our geotechnical evaluation(s) are routinely held in our laboratory for a period of three months from the date of the evaluation, and then discarded. A written request by Drake Real Estate Services is required for samples to be stored for a longer period.

Additional Services

To provide continuity and consistency from project start to finish, we should be retained to make observations and carry out material testing as a service to the owner. As noted above, we recommend the owner contact us to discuss required services and scheduling in advance of the construction phase.

Buckhorn Geotech is a full-service engineering firm providing foundation, on-site wastewater system, site drainage, structural and retaining structure design services, as well as surveying, construction materials testing, and inspections. Please visit www.buckhorngeo.com for a full description of our services.

Thank you for the opportunity to perform this geotechnical evaluation for you. If you require any of the above services or have any questions regarding this report, please contact us.

Respectfully Submitted
ELECTRONICALLY,
Buckhorn Geotech, Inc.



Kari D. Roberts, E.I.
Project Manager

Reviewed by



Wayne Pandorf, P.E.
Professional Engineer



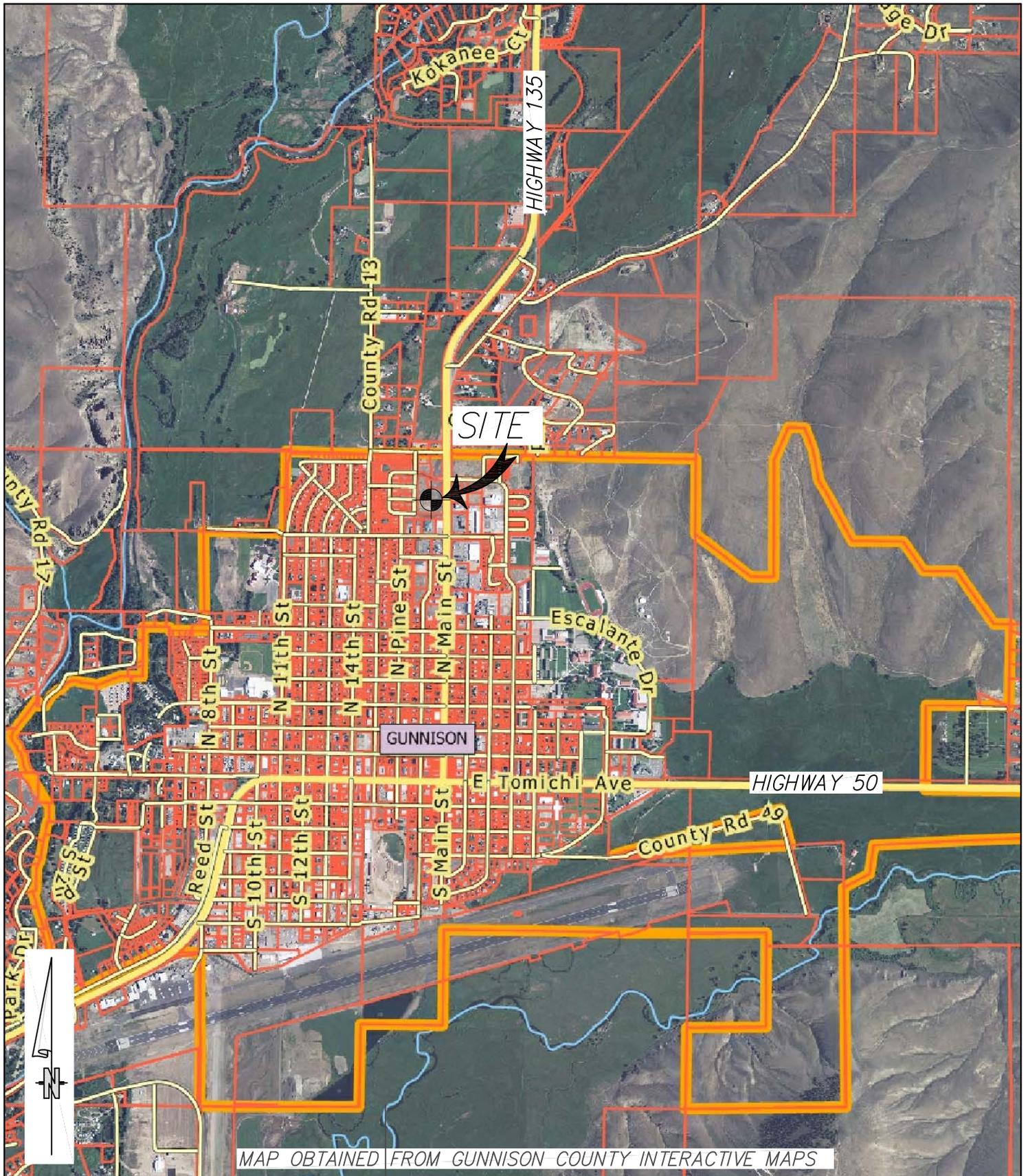
Daniel C. Quigley, P.E., P.G.
Professional Engineer

- Enclosures:
- Appendix A - Maps
 - Appendix B - Test Pits and Borehole Logs
 - Appendix C - Laboratory Results
 - Appendix D - Foundation Excavation Sketch
 - Appendix E - Pavement Design Calculations
 - Appendix F - Glossary of Engineering and Soil Terms

APPENDIX A

MAPS

VICINITY MAP



MAP OBTAINED FROM GUNNISON COUNTY INTERACTIVE MAPS

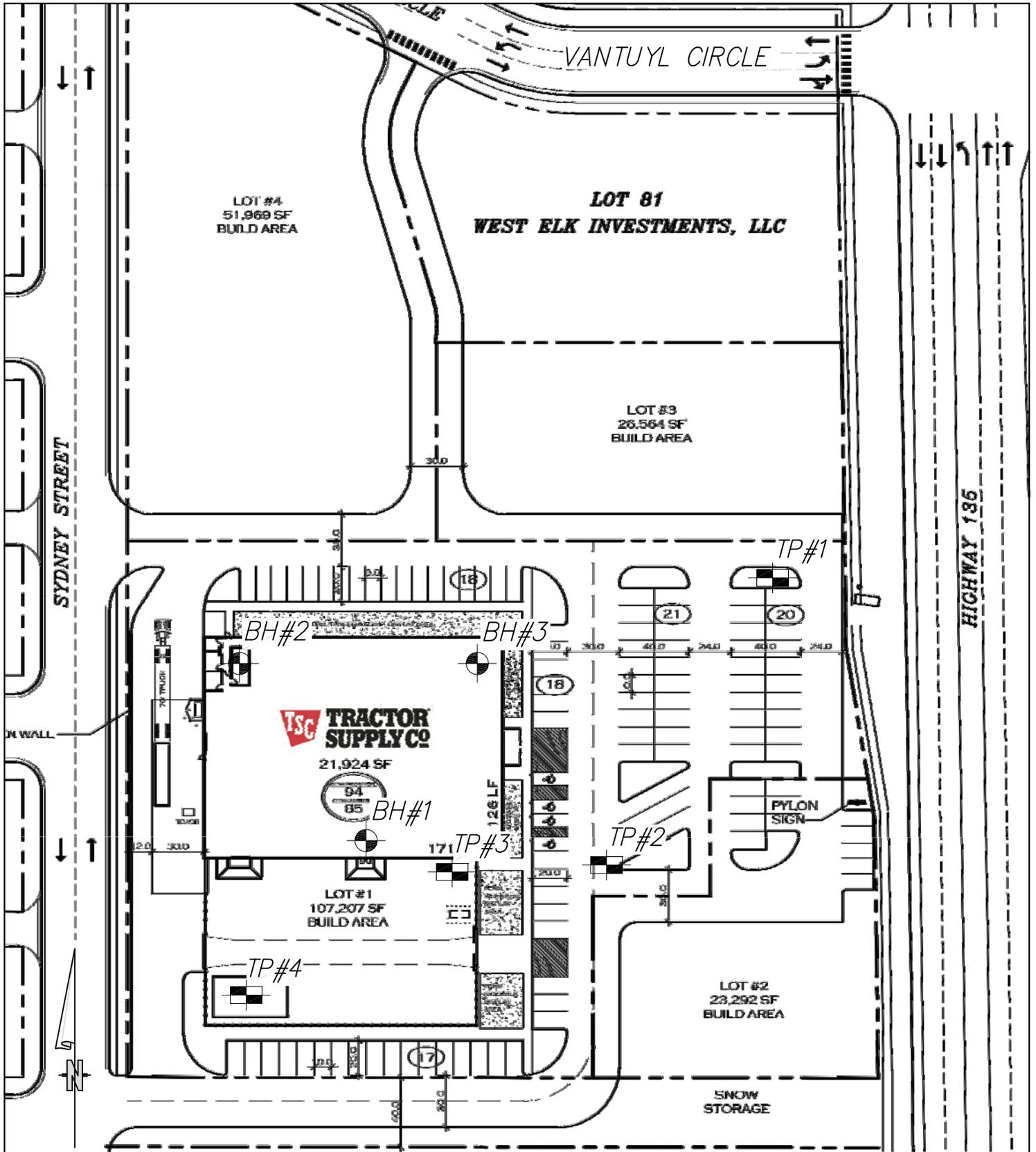
MAP NUMBER	FIELD STAFF	KR/WP
	DRAFTING STAFF	JLH
1	FIELD DATE	11/12/12 11/13/12
OF 2	PROJECT #	12-266-GEO-01

LOT 80 VAN TUYL VILLAGE
 LOT #1 TRACTOR SUPPLY COMPANY
 GUNNISON, COLORADO



Civil, Structural, and Geotechnical Engineers, Inc.
 222 South Park Avenue
 Montrose, Colorado 81401
 Phone (970) 249-6828 Fax (970) 249-0945

SITE PLAN



BASE MAP COURTESY OF NAMA PARTNERS, LLC.

MAP NUMBER 2 OF 2	FIELD STAFF	KR/WP	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	<div style="border: 1px solid black; padding: 5px; font-weight: bold;">BUCKHORN GEOTECH</div> Civil, Structural, and Geotechnical Engineers, Inc. 222 South Park Avenue Montrose, Colorado 81401 Phone (970) 249-6828 Fax (970) 249-0945
	DRAFTING STAFF	JLH		
	FIELD DATE	11/12/12 11/13/12		
	PROJECT #	12-266-GEO-01		

APPENDIX B

TEST PITS AND BOREHOLES LOGS

TEST PIT LOG – TEST PIT #1 (TP#1)

TEST PIT LOCATION: See Site Plan, Northeast parking area - Lot #1

EXCAVATION COMPANY: Schmalz Construction

GPS ELEVATION: 7757'

OPERATOR: Jim Acre

GPS LAT/LONG: 38.55693°N, 106.92731°W

EQUIPMENT: Backhoe

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	WEATHERING INDEX	STRENGTH INDEX	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0								
1	(Symbol for silty sand)		X	BS1 DS1			<p>light brown to light reddish brown, damp to dry, loose to moderately dense, sandy SILT to silty SAND with vesicular pores and with little rounded to subrounded, gravel (0-0.7/2.0')</p> <p>bulk sample BS1 @1.0-2.0' drive sample DS1 @0.5'</p>	<p>BS1 (SM) LL=NP PL=NP PI=NP NP=NON PLASTIC GF=12.2% SF=55.3% SILT=20.2% CLAY=12.4% MC=3.5% CBR=8.3 STANDARD PROCTOR MAX DD=115.3pcf OPTIMUM MC=11.3%</p>
2								
3	(Symbol for gravel and cobbles)		X	BS2			<p>light brown to tan and light gray, dry, moderately dense to dense, sandy rounded to subrounded GRAVEL AND COBBLES; estimated 60-80% rock (0.7/2.0-5.0')</p> <p>bulk sample BS2 @2.0-4.0'</p>	<p>BS2 (GP-GM) LL=NP PL=NP PI=NP NP=NON-PLASTIC GF=56.2% SF=35.6% F200=8.2% MC=1.4% Sulfates=0.000% Chlorides=10ppm Electro-conductivity=14µS/cm pH=8.72 MODIFIED PROCTOR MAX DD=130.3pcf OPTIMUM MC=7.7%</p>
4								
5							end of excavation @5.0' no bedrock, no groundwater	
6								
7								
8								
9								
10								
11								
12								

TEST PIT LOG 1 OF 4	FIELD STAFF	KR	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	<div style="border: 2px solid black; padding: 5px; font-weight: bold; font-size: 1.2em;">BUCKHORN GEOTECH</div> Civil, Structural, and Geotechnical Engineers, Inc. 222 South Park Avenue Montrose, Colorado 81401 Phone (970) 249-6828 Fax (970) 249-0945
	DRAFTING STAFF	JLH		
	FIELD DATE	11/12/12		
	PROJECT #	12-266-GEO-01		

TEST PIT LOG – TEST PIT #2 (TP#2)

TEST PIT LOCATION: See Site Plan, southwest parking area - Lot #1

EXCAVATION COMPANY: Schmalz Construction

GPS ELEVATION:

OPERATOR: Jim Acre

GPS LAT/LONG:

EQUIPMENT: Backhoe

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	WEATHERING INDEX	STRENGTH INDEX	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS	
0							<p>medium brown to reddish brown, damp to dry, moderately dense, sandy SILT to silty SAND, with little to some rounded to subrounded gravel and cobbles (0-0.25/0.5')</p>		
1							<p>medium brown to tan and light gray, dry, dense to very dense, sandy rounded to subrounded GRAVEL & COBBLES; estimated 60-90% rock (0.25/0.5-5.0')</p>		
2					GS1			<p>bulk sample GS1 @2.0-3.0'</p>	
3									
4									
5							<p>end of excavation @5.0' no bedrock, no groundwater</p>		
6									
7									
8									
9									
10									
11									
12									

TEST PIT LOG 2 OF 4	FIELD STAFF	KR	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNSON, COLORADO	
	DRAFTING STAFF	JLH		
	FIELD DATE	11/12/12		
	PROJECT #	12-266-GEO-01		
Civil, Structural, and Geotechnical Engineers, Inc. 222 South Park Avenue Montrose, Colorado 81401 Phone (970) 249-6828 Fax (970) 249-0945				

TEST PIT LOG – TEST PIT #3 (TP#3)

TEST PIT LOCATION: See Site Plan, northeast corner of building area - Lot #1

EXCAVATION COMPANY: Schmalz Construction

GPS ELEVATION:

OPERATOR: Jim Acre

GPS LAT/LONG:

EQUIPMENT: Backhoe

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	WEATHERING INDEX	STRENGTH INDEX	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0								
1	○			DS2			reddish brown to light reddish brown, damp, loose to moderately dense, silty SAND, with trace to little rounded to subrounded gravel & cobbles (0-4.0')	DS2 (SM) LL=NP PL=NP PI=NP NP=NON-PLASTIC GF=5.5% SF=65.8% SILT=21.2% CLAY=7.5% 4.35% collapse @100psf +H ₂ O TM=14.9% @1600psf +H ₂ O DD=86.2pcf MC=5.7%
2	○						drive sample DS2 @1.0-2.0'	
3								
4								
5	○						light brown to tan and light gray, damp, moderately dense to dense, sandy, rounded to subrounded GRAVEL & COBBLES; estimated 50-70% rock (4.0-6.0')	
6	○						end of excavation @6.0' no bedrock, no groundwater	
7								
8								
9								
10								
11								
12								

TEST PIT LOG 3 OF 4	FIELD STAFF	KR	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	
	DRAFTING STAFF	JLH		
	FIELD DATE	11/12/12		
	PROJECT #	12-266-GEO-01		
			Civil, Structural, and Geotechnical Engineers, Inc. 222 South Park Avenue Montrose, Colorado 81401 Phone (970) 249-6828 Fax (970) 249-0945	

TEST PIT LOG – TEST PIT #4 (TP#4)

TEST PIT LOCATION: See Site Plan, southwest corner of building area- Lot #1

EXCAVATION COMPANY: Schmalz Construction

GPS ELEVATION:

OPERATOR: Jim Acre

GPS LAT/LONG:

EQUIPMENT: Backhoe

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	WEATHERING INDEX	STRENGTH INDEX	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0							<p><i>light brown to light reddish brown, damp, moderately dense, silty SAND to sandy SILT with trace of rounded to subrounded gravel (0–4.0')</i></p> <p><i>drive sample DS3 @1.0–2.0'</i></p> <p><i>light brown, to tan and light gray, dry to damp, moderately dense to very dense, sandy, rounded to subrounded GRAVEL & COBBLES; estimated 60–80% rock (4.0–6.0')</i></p> <p><i>end of excavation @6.0' no bedrock, no groundwater</i></p>	<p>DS3 (SM) LL=NP PL=NP PI=NP NP=NON-PLASTIC GF=0.5% SF=61.2% SILT=28.2% CLAY=10.2% 1.05% collapse @100psf +H₂O TM=11.6% @3200psf +H₂O DD=88.8pcf MC=6.6%</p>
1				DS3				
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

TEST PIT LOG 4 OF 4	FIELD STAFF	KR	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	
	DRAFTING STAFF	JLH		
	FIELD DATE	11/12/12		
	PROJECT #	12-266-GEO-01		

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 222 South Park Avenue
 Montrose, Colorado 81401
 Phone (970) 249-6828 Fax (970) 249-0945

TEST PIT LOG KEY

TEST PIT LOCATION:
NOTES:

EXCAVATION COMPANY:
OPERATOR:
EQUIPMENT:

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	STRENGTH INDEX	WEATHERING INDEX	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0							dark gray, moist, firm to stiff, sandy CLAY with gravel (CL) (2-4')	<p>Notes in this column indicate tests performed and test results</p> <p>DD: dry density MC: moisture content LL: liquid limit PL: plastic limit PI: plasticity index GF: gravel fraction (%) SF: sand fraction (%) F200: silt/clay (%) Sh: shear resistance P: penetration resistance SP: swelling pressure TM: total movement under constant pressure pcf: pounds/cubic foot psf: pounds/square foot psi: pounds/square inch</p>
1							drive sample	
2				DS1			Unified Soil Classification (see definitions below) range in depth of soil unit	
3				GS1	W2/W3	R3	bulk sample degree of weathering and rock strength	
4							location of free subsurface water	
5							fill	
6							topsoil	
7							clay	
8							silt	
9							sand	
10							gravel	
11							shale/siltstone	
12							hard bedrock	
							sandstone	
							Intact Rock Strength Classification	
							Rock Weathering Classification	

Unified Soil Classification System (ASTM D-2487)

CL = lean clay to sandy/gravelly lean clay
ML = silt to sandy/gravelly silt
CH = high plasticity clay to sandy/gravelly high plasticity clay
MH = high elasticity silt to sandy/gravelly high elasticity silt
SW = well-graded sand or well-graded sand with gravel
SP = poorly graded sand or poorly graded sand with gravel
SM = silty sand to silty sand with gravel
SC = clayey sand to clayey sand with gravel
GW = well-graded gravel or well-graded gravel with sand
GP = poorly graded gravel or poorly graded gravel with sand
GM = silty gravel or silty gravel with sand
GC = clayey gravel or clayey gravel with sand

Intact Rock Strength Classification

R0 = Extremely weak rock, 35 - 150 psi
R1 = Very weak rock, 150 - 725 psi
R2 = Weak rock, 725 - 3625 psi
R3 = Medium strong rock, 3625 - 7250 psi
R4 = Strong rock, 7250 - 14500 psi
R5 = Very strong rock, 14500 - 36000 psi
R6 = Extremely strong rock, >36000 psi

Rock Weathering Classification

W1 = Fresh
W2 = Slightly weathered
W3 = Moderately weathered
W4 = Highly weathered
W5 = Completely weathered
W6 = Residual soil, no structure

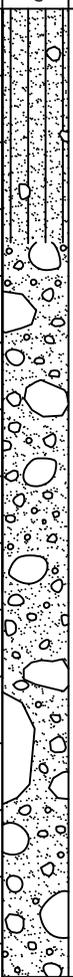
TEST PIT LOG KEY	FIELD STAFF	TEST PIT LOG KEY	122
1	DRAFTING STAFF		
OF 1	FIELD DATE		
	PROJECT #		

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Phone (970) 249-6828 Fax (970) 249-0945

BOREHOLE LOG – BOREHOLE #1 (BH#1)

BOREHOLE LOCATION: See Site Plan, south-center of Tractor Supply Company building
 SURFACE ELEVATION:
 NOTES:

DRILLER: S. McCracken
 DRILL RIG: Simco 2800 HS
 DRILL STEM: 3 1/4" I.D. Hollow-stem & 4 1/4" O.D. Solid-stem continuous flight auger
 SAMPLER: 1.375" I.D. Standard and 2" I.D. California split spoon

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	SPT BLOW COUNTS	*SPT 'N' VALUE (bpf)	*CORRECTED SPT 'N' VALUE (bpf)	RECOVERY (in.)	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0									<p>light reddish brown, damp, loose to moderately dense, silty SAND with little rounded to subrounded gravel (0–3.5')</p> <p>drive sample DS4 @1.0–2.5'</p> <p>drive sample DS5 @2.5–4.0'</p> <p>light brown to tan and light gray, moderately dense to dense, sandy rounded to subrounded GRAVEL & COBBLES with occasional boulders (3.5–14.5')</p> <p>very difficult drilling with hollow stem auger, drilled with hollow stem to 9.5', after sampling pulled hollow stem and hole caved to approximately 4', solid stem auger inserted and continued drilling, with much difficulty</p> <p>drive sample DS6 @9.5–11.0'</p> <p>refusal on large boulder @ 14.5'</p> <p>end of borehole @14.5' no bedrock, no groundwater</p>	<p>DS4 (SM) LL=NP PL=NP PI=NP GF=1.1% SF=65.7% SILT=27.2% CLAY=6.0% MC=2.4%</p>
		CA	DS4	7 7 8	15	11	18			
		CA	DS5	7 9 30	39	27	17			
5										
10				STD	DS6	17 19 21	40	13		
15										
20										

* SPT N-values not corrected for energy or depth; stratigraphic transitions are approximate and are inferred from cuttings & drillers comments

BOREHOLE LOG 1 OF 3	FIELD STAFF	KR/WP	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	<div style="border: 2px solid black; padding: 5px; font-weight: bold; font-size: 1.2em;">BUCKHORN GEOTECH</div> Civil, Structural, and Geotechnical Engineers, Inc. 222 South Park Avenue Montrose, Colorado 81401 Phone (970) 249-6828 Fax (970) 249-0945
	DRAFTING STAFF	JLH		
	FIELD DATE	11/13/12		
	PROJECT #	12-266-GEO-01		

BOREHOLE LOG – BOREHOLE #2 (BH#2)

BOREHOLE LOCATION: See Site Plan, northwest corner of Tractor Supply Company building
 SURFACE ELEVATION:
 NOTES:

DRILLER: S. McCracken
 DRILL RIG: Simco 2800 HS
 DRILL STEM: 4 1/4" O.D. Solid-stem continuous flight auger
 SAMPLER: 1.375" I.D. Standard and 2" I.D. California split spoon

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	SPT BLOW COUNTS	*SPT 'N' VALUE (ppf)	*CORRECTED SPT 'N' VALUE (ppf)	RECOVERY (in.)	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0									<p>light reddish brown, damp, loose, silty SAND with little rounded to subrounded gravel (0–1.0')</p> <p>drive sample DS7 @1.0–2.5'</p>	
5			CA	DS7	22 32 32	64	45	18	<p>light brown to tan to light gray (rock), damp to dry, moderately dense to dense, sandy, rounded to subrounded GRAVEL & COBBLES with occasional boulders (1.0–13.0')</p>	
10									<p>auger refusal on boulder @13.0' end of borehole @13.0' no bedrock, no groundwater hole caved to 2.5' after removing auger</p>	
15										
20										

* SPT N-values not corrected for energy or depth; stratigraphic transitions are approximate and are inferred from cuttings & drillers comments

BOREHOLE LOG 2 OF 3	FIELD STAFF	KR/WP	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	
	DRAFTING STAFF	JLH		
	FIELD DATE	11/13/12		
	PROJECT #	12-266-GEO-01		

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 Phone (970) 249-6828 Fax (970) 249-0945

BOREHOLE LOG – BOREHOLE #3 (BH#3)

BOREHOLE LOCATION: See Site Plan, northeast corner of Tractor Supply Company building

DRILLER: S. McCracken

SURFACE ELEVATION:

DRILL RIG: Simco 2800 HS

NOTES:

DRILL STEM: 4 1/4" O.D. Solid-stem continuous flight auger

SAMPLER: 1.375" I.D. Standard and 2" I.D. California split spoon

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	SPT BLOW COUNTS	*SPT N VALUE (blf)	*CORRECTED SPT N VALUE (blf)	RECOVERY (in.)	SUBSURFACE DESCRIPTION	FIELD & LABORATORY TEST RESULTS
0			CA	DS8	8 6 4	10	7	18	drive sample DS8 @0–1.5' light reddish brown to tan, loose to moderately dense, silty SAND with little rounded to subrounded gravel (0–2.0')	
			CA	DS9	7 23 30	53	37	18	drive sample DS9 @1.5–3.0'	
5										light brown to tan to light gray, sandy, subrounded to rounded GRAVEL & COBBLES with occasional boulders (2.0–12.0')
10									auger refusal on boulder @12.0' end of borehole @12.0' no bedrock, no groundwater	
15										
20										

* SPT N-values not corrected for energy or depth; stratigraphic transitions are approximate and are inferred from cuttings & drillers comments

BOREHOLE LOG 3 OF 3	FIELD STAFF	KR/WP	LOT 80 VAN TUYL VILLAGE LOT #1 TRACTOR SUPPLY COMPANY GUNNISON, COLORADO	
	DRAFTING STAFF	JLH		
	FIELD DATE	11/13/12		
	PROJECT #	12-266-GEO-01		

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222 South Park Avenue
Montrose, Colorado 81401
Phone (970) 249-6828 Fax (970) 249-0945

BOREHOLE LOG KEY

BOREHOLE LOCATION:
SURFACE ELEVATION:
NOTES:

DRILLER:
DRILL RIG:
DRILL STEM:
SAMPLER:

DEPTH (ft.)	GRAPHIC	WATER LEVEL	SAMPLE TYPE	SAMPLE NUMBER	SPT BLOW COUNTS	SPT 'N' VALUE (bpf)	RECOVERY (in.)	SOIL DESCRIPTION <i>(stratigraphic transitions are approximate and are inferred from cuttings and driller's comments)</i>	FIELD & LABORATORY TEST RESULTS																												
0								drive sample	<p>Notes in this column indicate tests performed and test results:</p> <p>DD: dry density in pcf MC: % moisture content LL: Liquid Limit PL: Plastic Limit PI: Plasticity Index GF: Gravel fraction (%) SF: Sand fraction (%) F200: Silt/Clay (%) Sh: Shear resistance P: Penetration resistance CBR: California Bearing Ratio SP: swelling pressure TM: total movement under constant pressure UCS: unconfined compressive strength psf: pounds/square foot pcf: pounds/cubic foot psi: pounds/square inch</p> <p>SPT N value vs. density: <table style="font-size: small; margin-left: 20px;"> <tr><td>N</td><td>rel. density</td></tr> <tr><td colspan="2">sands (non-cohesive):</td></tr> <tr><td>0-4</td><td>very loose</td></tr> <tr><td>4-10</td><td>loose</td></tr> <tr><td>10-30</td><td>medium</td></tr> <tr><td>30-50</td><td>dense</td></tr> <tr><td>>50</td><td>v. dense</td></tr> <tr><td colspan="2">clays (cohesive):</td></tr> <tr><td><2</td><td>v. soft</td></tr> <tr><td>2-4</td><td>soft</td></tr> <tr><td>4-8</td><td>medium</td></tr> <tr><td>8-15</td><td>stiff</td></tr> <tr><td>15-30</td><td>v. stiff</td></tr> <tr><td>>30</td><td>hard</td></tr> </table> </p>	N	rel. density	sands (non-cohesive):		0-4	very loose	4-10	loose	10-30	medium	30-50	dense	>50	v. dense	clays (cohesive):		<2	v. soft	2-4	soft	4-8	medium	8-15	stiff	15-30	v. stiff	>30	hard
N	rel. density																																				
sands (non-cohesive):																																					
0-4	very loose																																				
4-10	loose																																				
10-30	medium																																				
30-50	dense																																				
>50	v. dense																																				
clays (cohesive):																																					
<2	v. soft																																				
2-4	soft																																				
4-8	medium																																				
8-15	stiff																																				
15-30	v. stiff																																				
>30	hard																																				
5								bulk sample																													
10								core sample																													
15				DS1				Sample identifier: DS = Drive sample GS = Grab (bulk) sample from augers CS = Core sample																													
18					9 10 11			Blows required to drive sampler 6 inches each First 6 inches is considered to be the "seating" drive																													
20						21/12		indicates 21 blows required to drive the sampler 12 inches with a 140-lb hammer falling 30 inches																													
25							12	length of intact soil plug recovered from the sampler																													
28								free water depth at time of drilling																													
30																																					
35								clay																													
40								silt																													
45								sand																													
50								gravel																													
55								shale																													
60								hard bedrock																													

Unified Soil Classification System (ASTM D-2487)

CL = lean clay to sandy/gravelly lean clay
ML = silt to sandy/gravelly silt
CH = high plasticity clay to sandy/gravelly high plasticity clay
MH = high elasticity silt to sandy/gravelly high elasticity silt
SW = well-graded sand or well-graded sand with gravel
SP = poorly graded sand or poorly graded sand with gravel
SM = silty sand to silty sand with gravel
SC = clayey sand to clayey sand with gravel
GW = well-graded gravel or well-graded gravel with sand
GP = poorly graded gravel or poorly graded gravel with sand
GM = silty gravel or silty gravel with sand
GC = clayey gravel or clayey gravel with sand

Rock Weathering Classification	Intact Rock Strength Classification
W1 = Fresh	R0 = Extremely weak rock, 35 - 150 psi
W2 = Slightly weathered	R1 = Very weak rock, 150 - 725 psi
W3 = Moderately weathered	R2 = Weak rock, 725 - 3625 psi
W4 = Highly weathered	R3 = Medium strong rock, 3625 - 7250 psi
W5 = Completely weathered	R4 = Strong rock, 7250 - 14500 psi
W6 = Residual soil, no structure	R5 = Very strong rock, 14500 - 36000 psi
	R6 = Extremely strong rock, >36000 psi

RQD = Rock Quality Designation

BOREHOLE LOG KEY 1 OF 1	FIELD STAFF
	DRAFTING STAFF
	FIELD DATE
	PROJECT #

BOREHOLE LOG KEY



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APPENDIX C

LABORATORY RESULTS

Sieve / Hydrometer Analysis and Atterberg Limits

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#1 @0-1' - Lot #1
 Sample # BS1

Date 11/27/2012
 Project # 12-266-GEO
 Sample by KR
 Tested by SJ

Hydrometer Analysis

ASTM D422

Sieve	Opening (mm)	% Passing
3"	76.2	100.0
3/4"	19.1	91.7
3/8"	9.5	89.5
#4	4.75	87.8
#10	2.0	85.0
#40	0.425	73.8
#200	0.075	32.5

Atterberg Limits

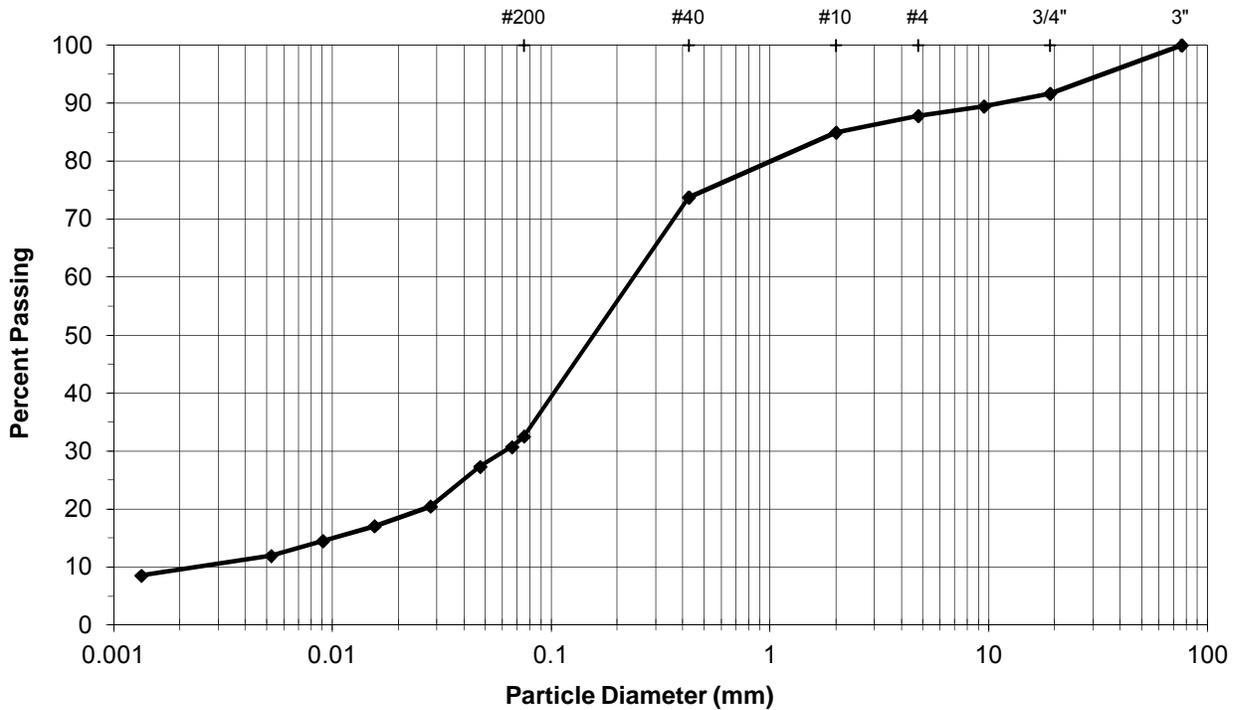
ASTM D4318

Liquid Limit (LL)	<u>NP</u>
Plastic Limit (PL)	<u>NP</u>
Plasticity Index (PI)	<u>NP</u>

NP = Non-Plastic

Natural Moisture Content (%) = 3.5%

Soil Description dark reddish brown silty SAND
 USCS Classification SM



Clay size	Silt size	Fine	Medium	Coarse	Fine	Coarse
FINES		SAND			GRAVEL	

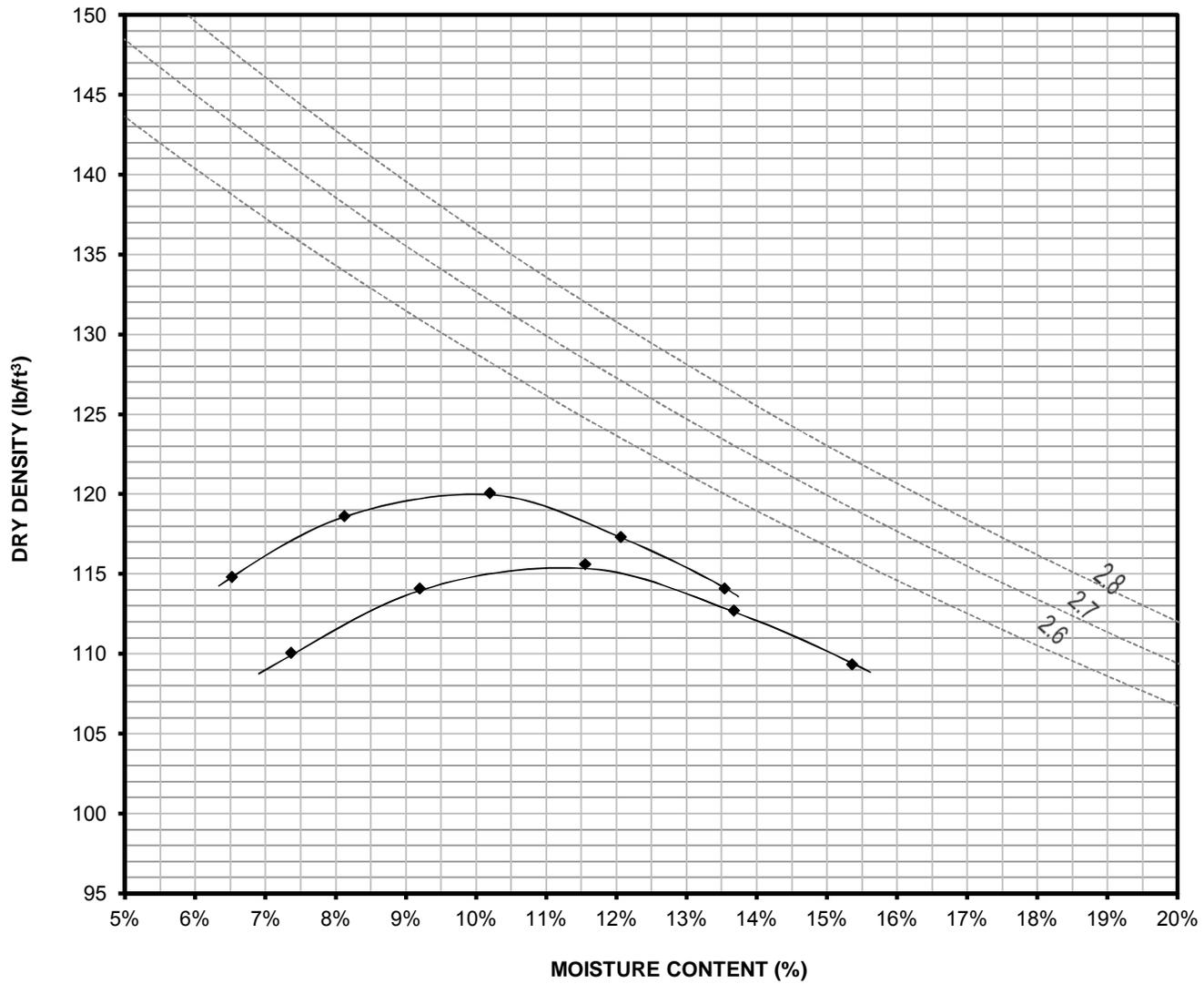
% Clay = 12.4 % Silt = 20.2 % Sand = 55.3 % Gravel = 12.2

STANDARD PROCTOR ASTM D 698. ASTM D 4718 METHOD A

Project Name	<u>Lot 80 Van Tuyl Village</u>	Date	<u>11/21/2012</u>
Project Location	<u>Gunnison, CO</u>	Project #	<u>12-266-GEO</u>
Client	<u>Drake Real Estate</u>	Sample by	<u>KR</u>
Test Location	<u>TP#1 @0-1', Lot 1</u>	Test by	<u>SJ</u>
Sample ID	<u>BS1</u>		
Soil Description	<u>dark reddish brown silty SAND (SM)</u>		

Oversize Particles Determined by Sieve:	<u>#4</u>
Percentage Oversize Particles (by weight):	<u>12.1</u>
Bulk Specific Gravity (G_M):	<u>2.67</u>

Max. Dry Density (fine fraction) (pcf):	<u>115.3</u>
Optimum Moisture Content (fine fraction)(%):	<u>11.3</u>
Corrected Max. Dry Density (pcf):	<u>120.0</u>
Corrected Optimum Moisture Content (%):	<u>9.9</u>



California Bearing Ratio

ASTM D1883

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#1 @0-1'
 Sample # BS1
 Soil Description dark reddish brown silty SAND (SM)

Date 12/1/12
 Project # 12-266-GEO
 Sample by KR
 Test by SJ/CH

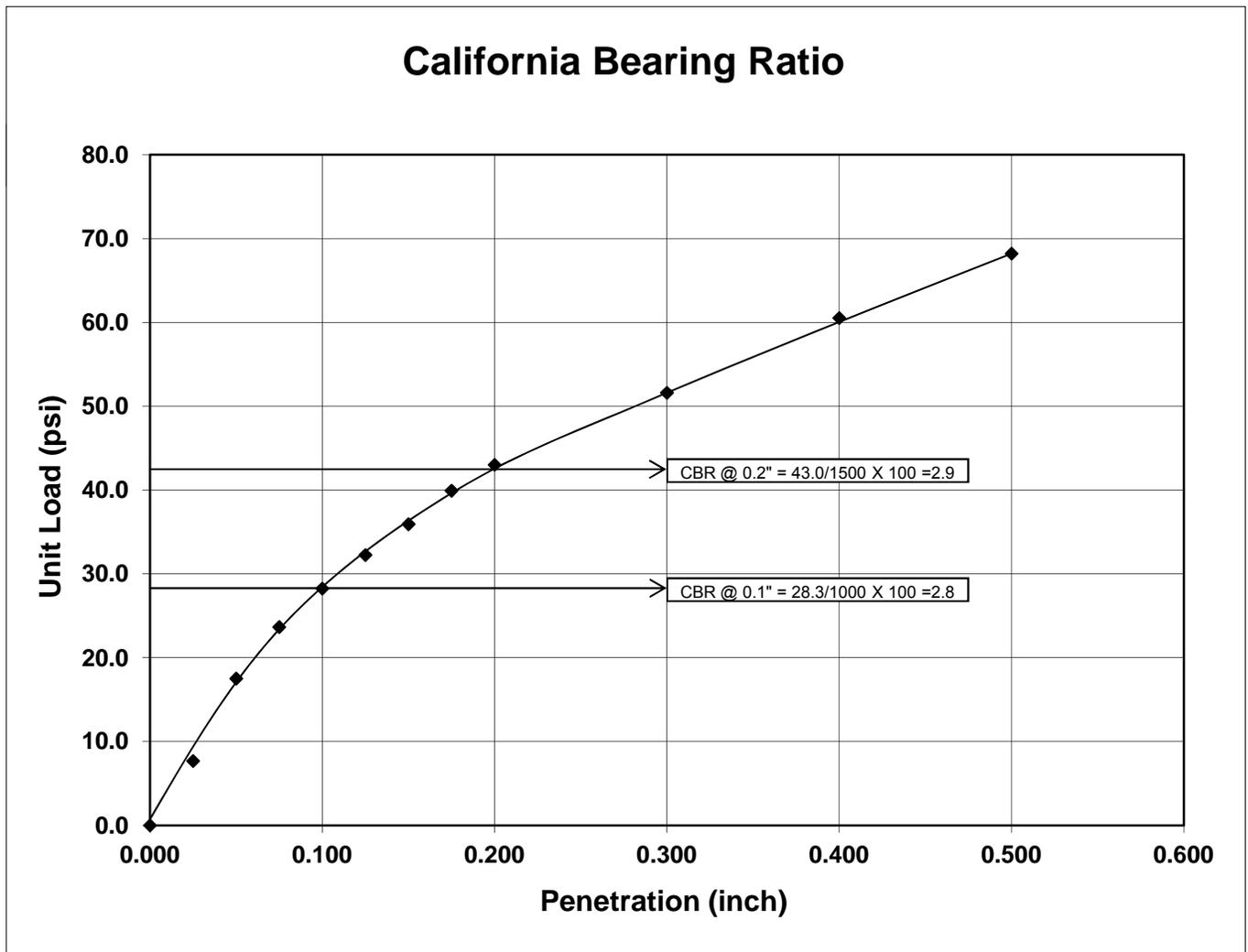
CBR @0.1 inch penetration: 2.8

CBR @0.2 inch penetration: 2.9

Target moisture content: 11.3%
 Surcharge weight: 10.0 lbs

Test dry density: 101.0 pcf
 Test moisture content before soaking: 11.0%
 Average moisture content after soaking: 17.0%
 Top 1-inch moisture content after soaking: 18.7%
 Swell: 0.5%

10 BLOWS



California Bearing Ratio

ASTM D1883

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#1 @0-1'
 Sample # BS1
 Soil Description dark reddish brown silty SAND (SM)

Date 12/1/12
 Project # 12-266-GEO
 Sample by KR
 Test by SJ/CH

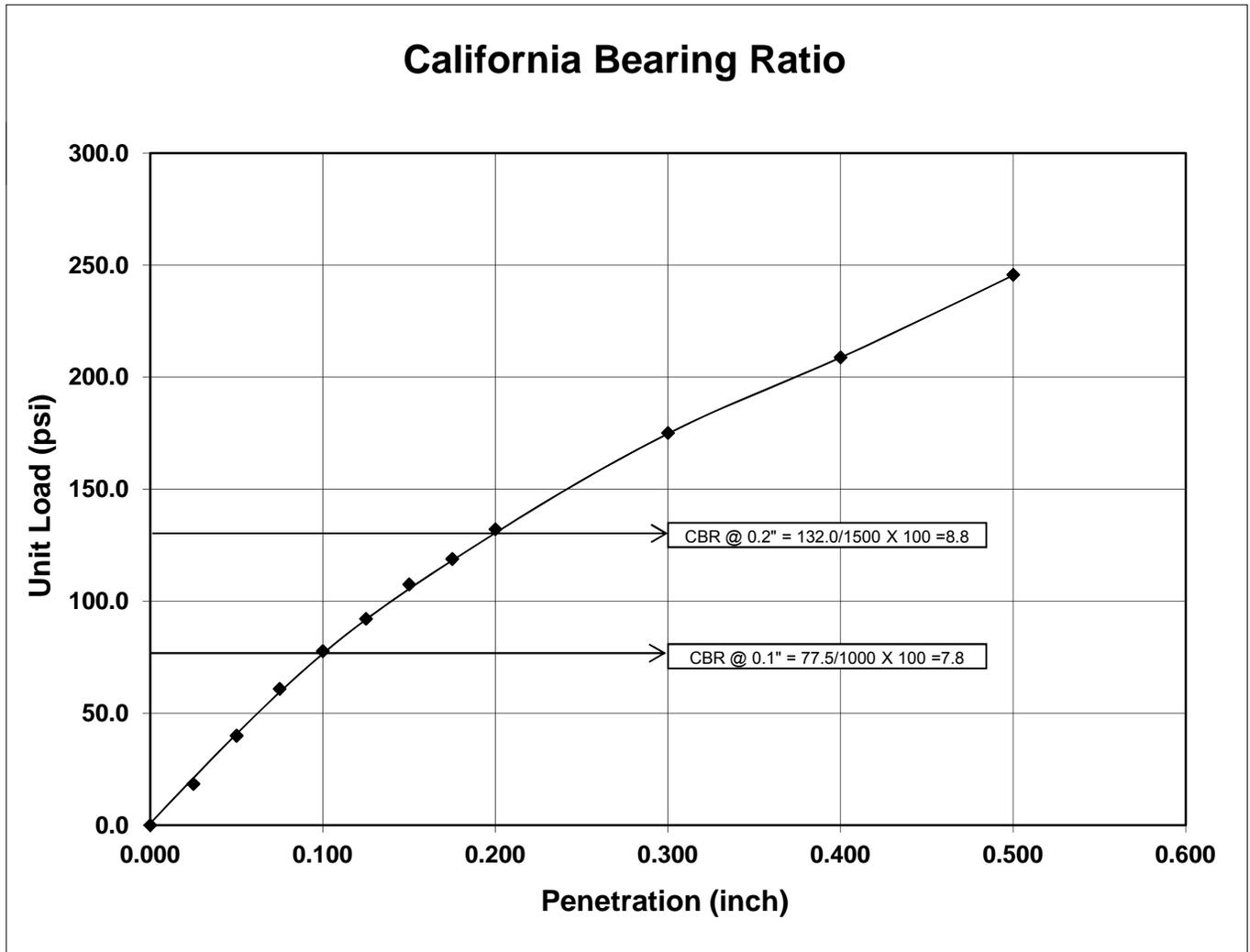
CBR @0.1 inch penetration: 7.8

CBR @0.2 inch penetration: 8.8

Target moisture content: 11.3%
 Surcharge weight: 10.0 lbs

Test dry density: 109.8 pcf
 Test moisture content before soaking: 11.3%
 Average moisture content after soaking: 13.6%
 Top 1-inch moisture content after soaking: 16.7%
 Swell: 0.5%

25 BLOWS



California Bearing Ratio

ASTM D1883

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#1 @0-1'
 Sample # BS1
 Soil Description dark reddish brown silty SAND (SM)

Date 12/1/12
 Project # 12-266-GEO
 Sample by KR
 Test by SJ/CH

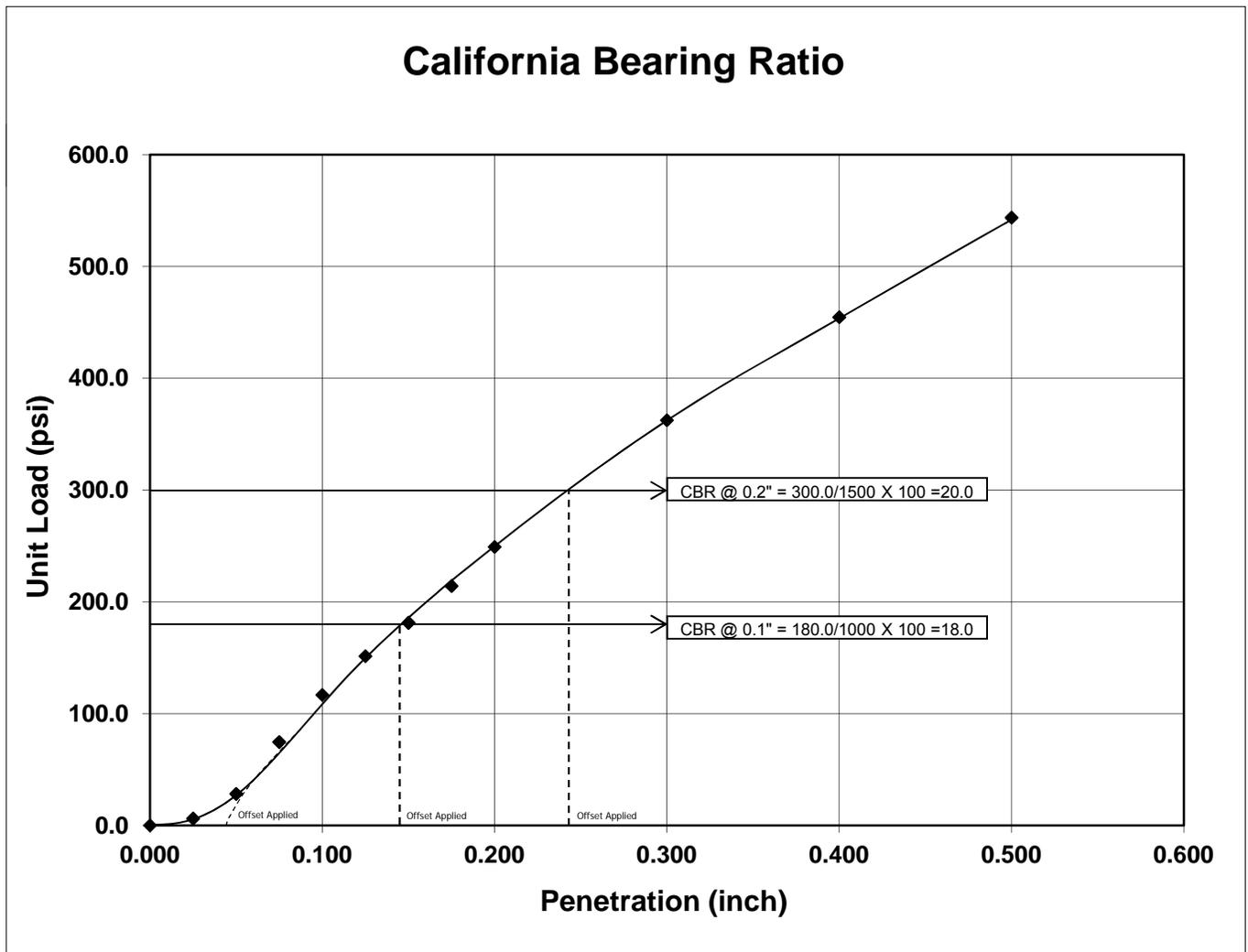
CBR @0.1 inch penetration: 18.0

CBR @0.2 inch penetration: 20.0

Target moisture content: 11.3%
 Surcharge weight: 10.0 lbs

Test dry density: 116.3 pcf
 Test moisture content before soaking: 11.1%
 Average moisture content after soaking: 12.7%
 Top 1-inch moisture content after soaking: 14.5%
 Swell: 0.6%

56 BLOWS

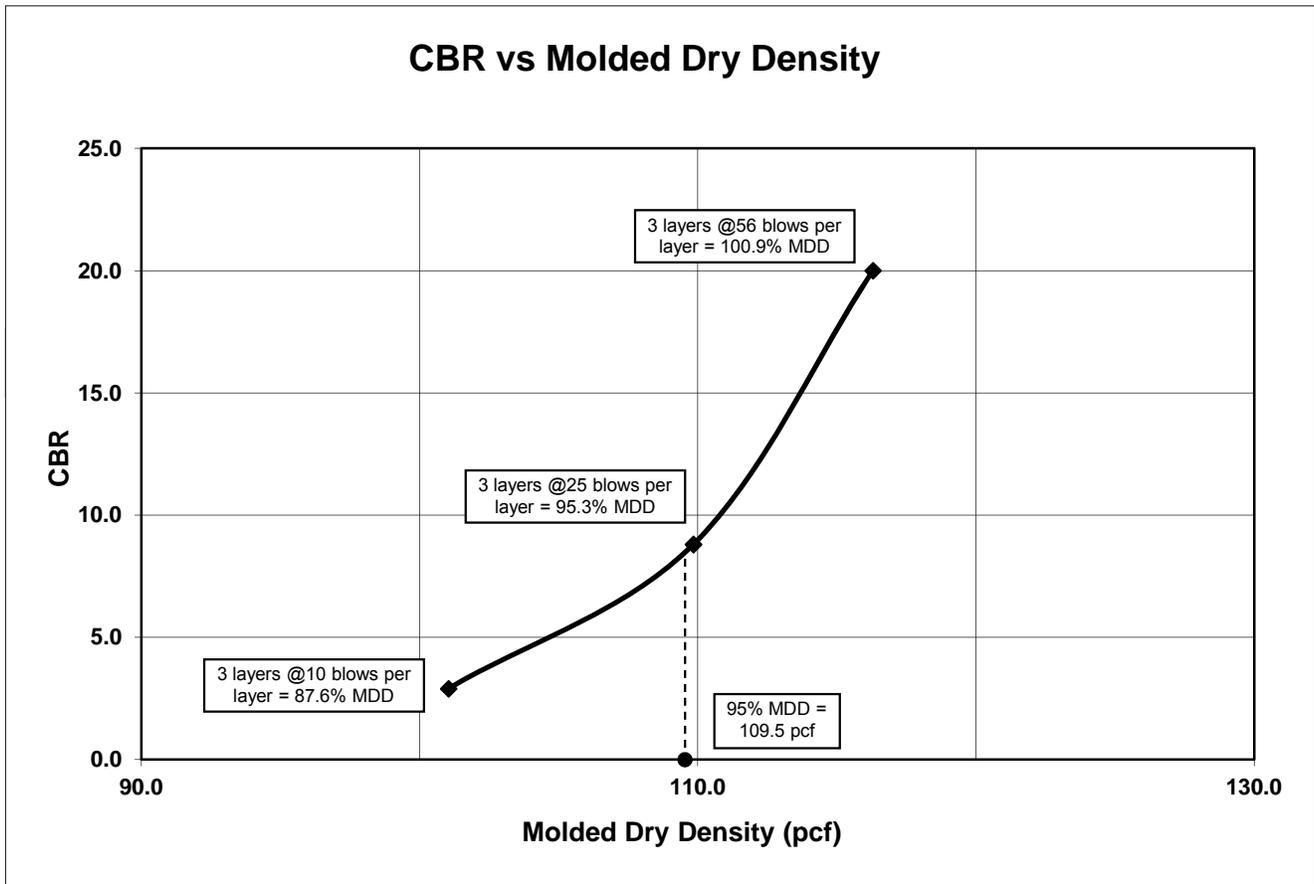


California Bearing Ratio

ASTM D1883

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#1 @0-1'
 Sample # BS1
 Soil Description dark reddish brown silty SAND (SM)

Date 12/1/12
 Project # 12-266-GEO
 Sample by KR
 Test by SJ/CH



MDD = Maximum Dry Density

Sieve Analysis and Atterberg Limits

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#1 @2-4'
 Sample # BS2

Date 11/21/2012
 Project # 12-266-GEO
 Sample by KR
 Tested by CH

Sieve Analysis
ASTM C136 / C117

Sieve	Opening (mm)	% Passing
6"	152.4	100%
3"	76.2	91.6
3/4"	19.0	56.5
3/8"	9.5	48.5
#4	4.75	43.8
#10	2.00	37.2
#40	0.425	23.2
#200	0.075	8.2

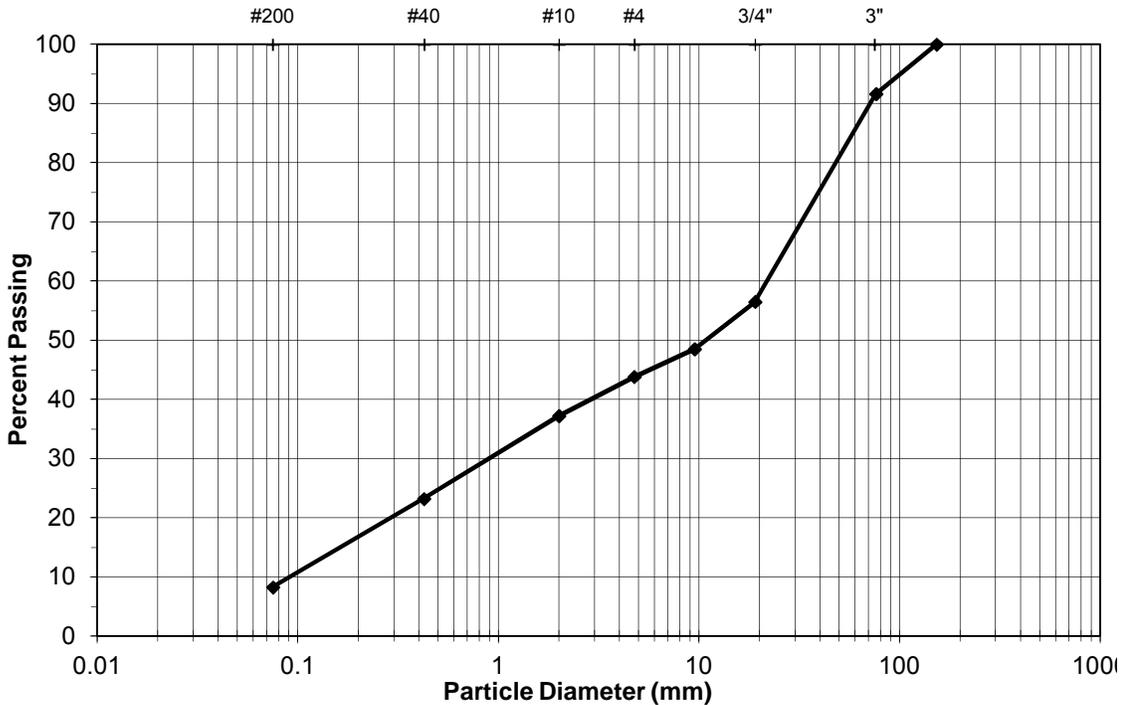
Atterberg Limits
ASTM D4318

Liquid Limit (LL)	<u>NP</u>
Plastic Limit (PL)	<u>NP</u>
Plasticity Index (PI)	<u>NP</u>

NP = Non-Plastic

Natural Moisture Content (%) = 1.4%

Soil Description brown poorly-graded GRAVEL with silt and sand
 USCS Classification GP-GM



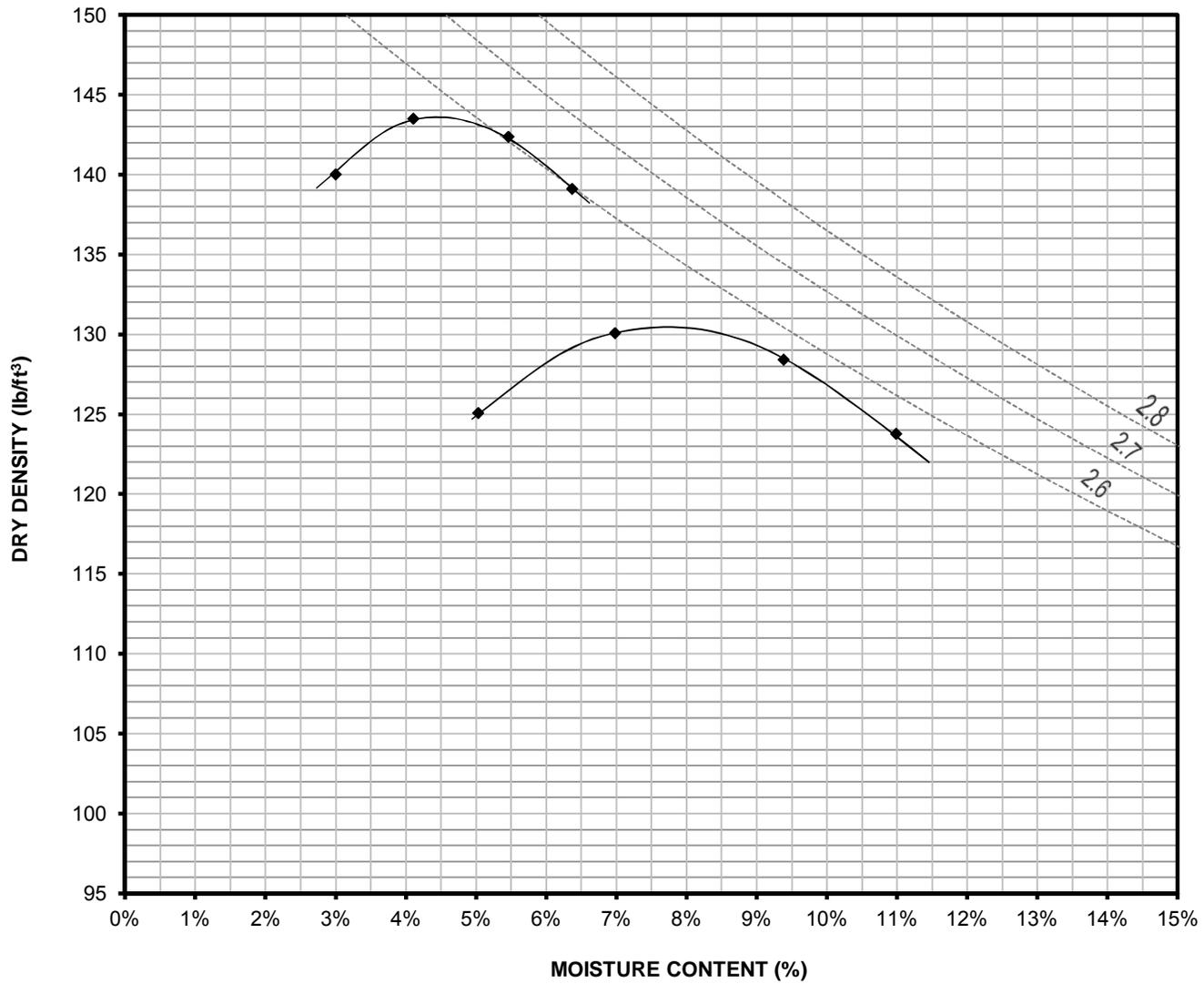
Clay/Silt	Fine	Medium	Coarse	Fine	Coarse	
FINES	SAND			GRAVEL		COBBLES

% Fines = 8.2 % Sand = 35.6 % Gravel / Cobbles = 56.2

MODIFIED PROCTOR ASTM D 1557. ASTM D 4718 METHOD C

Project Name	<u>Lot 80 Van Tuyl Village</u>	Date	<u>11/29/2012</u>
Project Location	<u>Gunnison, CO</u>	Project #	<u>12-266-GEO</u>
Client	<u>Drake Real Estate Services</u>	Sample by	<u>KR</u>
Test Location	<u>TP#1 @2-4' - Lot #1</u>	Test by	<u>SJ</u>
Sample ID	<u>BS2</u>		
Soil Description	<u>brown poorly-graded GRAVEL with silt and sand (GP-GM)</u>		

Oversize Particles Determined by Sieve:	<u>3/4</u>	Max. Dry Density (fine fraction) (pcf):	<u>130.3</u>
Percentage Oversize Particles (by weight):	<u>43.5</u>	Optimum Moisture Content (fine fraction)(%):	<u>7.7</u>
Bulk Specific Gravity (G_M):	<u>2.66</u>	Corrected Max. Dry Density (pcf):	<u>143.6</u>
		Corrected Optimum Moisture Content (%):	<u>4.5</u>



Corrosivity Series

Based on HACH methods

Project Name	<u>Lot 80 Van Tuyl Village</u>	Date Tested	<u>11/27/2012</u>
Project Location	<u>Gunnison, CO</u>	Project #	<u>12-266-GEO</u>
Client	<u>Drake Real Estate Services</u>	Sample by	<u>KR</u>
Test Location	<u>TP#1 @2-4' - Lot #1</u>	Tested by	<u>CH</u>
Sample #	<u>BS2</u>		
Soil Description	<u>brown poorly-graded GRAVEL with silt and sand (GP-GM)</u>		

In-situ Moisture Content	1.4 %
Water-soluble sulfates, dry soil basis	0.000 %
Chlorides	10 ppm
Electro-conductivity	14 μS/cm
pH	8.72

Sieve / Hydrometer Analysis and Atterberg Limits

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#3 @1-2' - Lot #1
 Sample # DS2

Date 11/21/2012
 Project # 12-266-GEO
 Sample by KR
 Tested by SJ

Hydrometer Analysis

ASTM D422

Sieve	Opening (mm)	% Passing
3"	76.2	100.0
3/4"	19.1	97.9
3/8"	9.5	96.1
#4	4.75	94.5
#10	2.0	91.9
#40	0.425	78.9
#200	0.075	28.7

Atterberg Limits

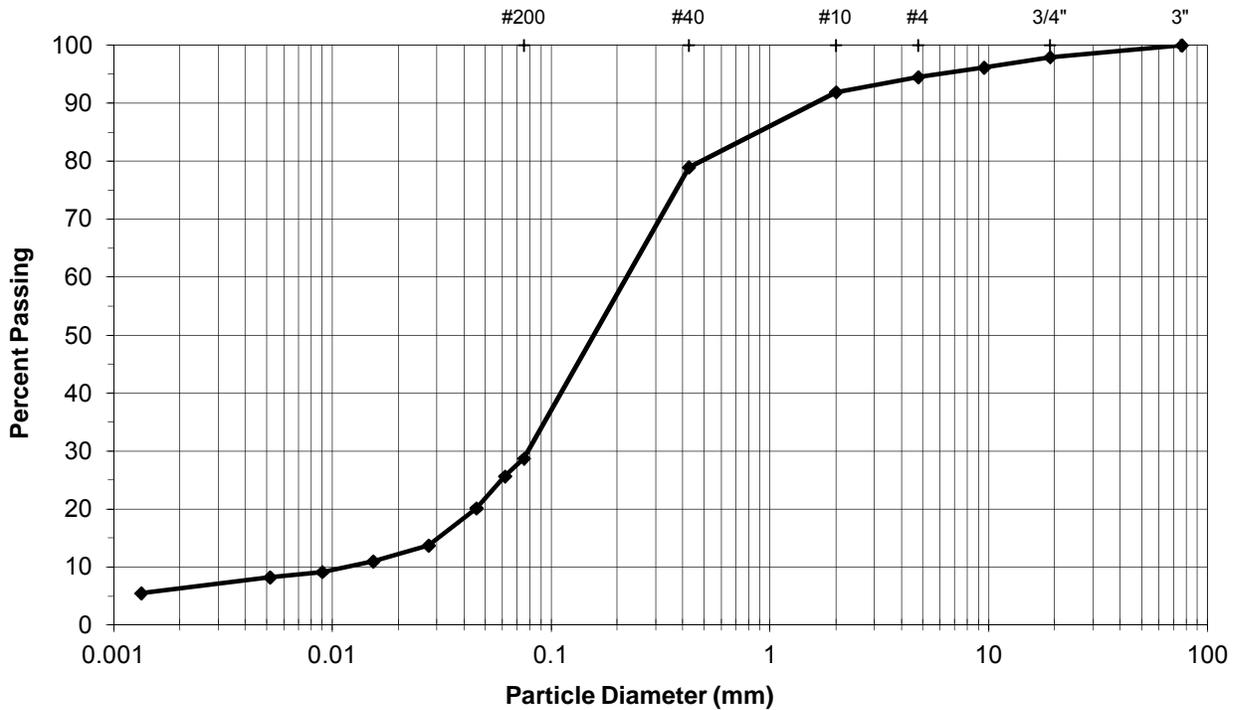
ASTM D4318

Liquid Limit (LL)	<u>NP</u>
Plastic Limit (PL)	<u>NP</u>
Plasticity Index (PI)	<u>NP</u>

NP = Non-Plastic

Natural Moisture Content (%) = 4.7%

Soil Description reddish brown silty SAND
 USCS Classification SM



Clay size	Silt size	Fine	Medium	Coarse	Fine	Coarse
FINES		SAND			GRAVEL	

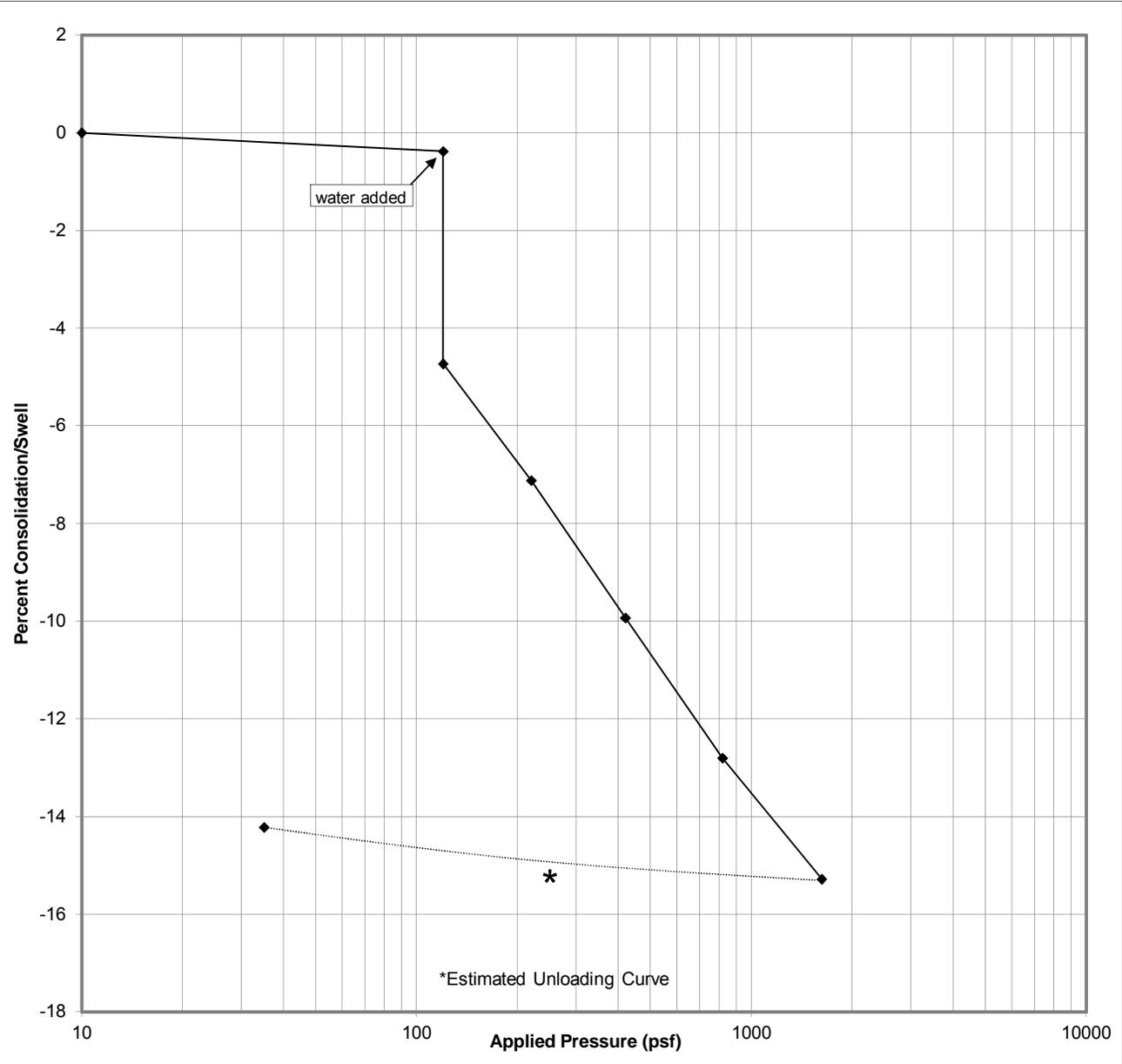
% Clay = 7.5 % Silt = 21.2 % Sand = 65.8 % Gravel = 5.5

Swell/Consolidation Test
 ASTM D4546

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Sample Location TP#3 @1-2' - Lot #1
 Sample # DS2
 Soil Description reddish brown silty SAND (SM)

Date 11/19/12
 Project # 12-266-GEO
 Sampled by KR
 Tested by SJ

Initial compression due to 100 psf pressure = 0.38%			
Collapse potential due to water and 100 psf pressure = 4.35%			
Total consolidation due to water and 1600 psf pressure = 14.9%			
Initial Moisture Content	5.7 %	Final Moisture Content	21.5 %
Initial Dry Density	86.2 pcf	Final Dry Density	99.8 pcf
Initial Wet Density	91.1 pcf	Final Saturated Density	121.3 pcf



Sieve / Hydrometer Analysis and Atterberg Limits

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Test Location TP#4 @1-2' - Lot #1
 Sample # DS3

Date 11/21/2012
 Project # 12-266-GEO
 Sample by KR
 Tested by SJ

Hydrometer Analysis

ASTM D422

Sieve	Opening (mm)	% Passing
3"	76.2	100.0
3/4"	19.1	100.0
3/8"	9.5	100.0
#4	4.75	99.5
#10	2.0	99.1
#40	0.425	92.4
#200	0.075	38.3

Atterberg Limits

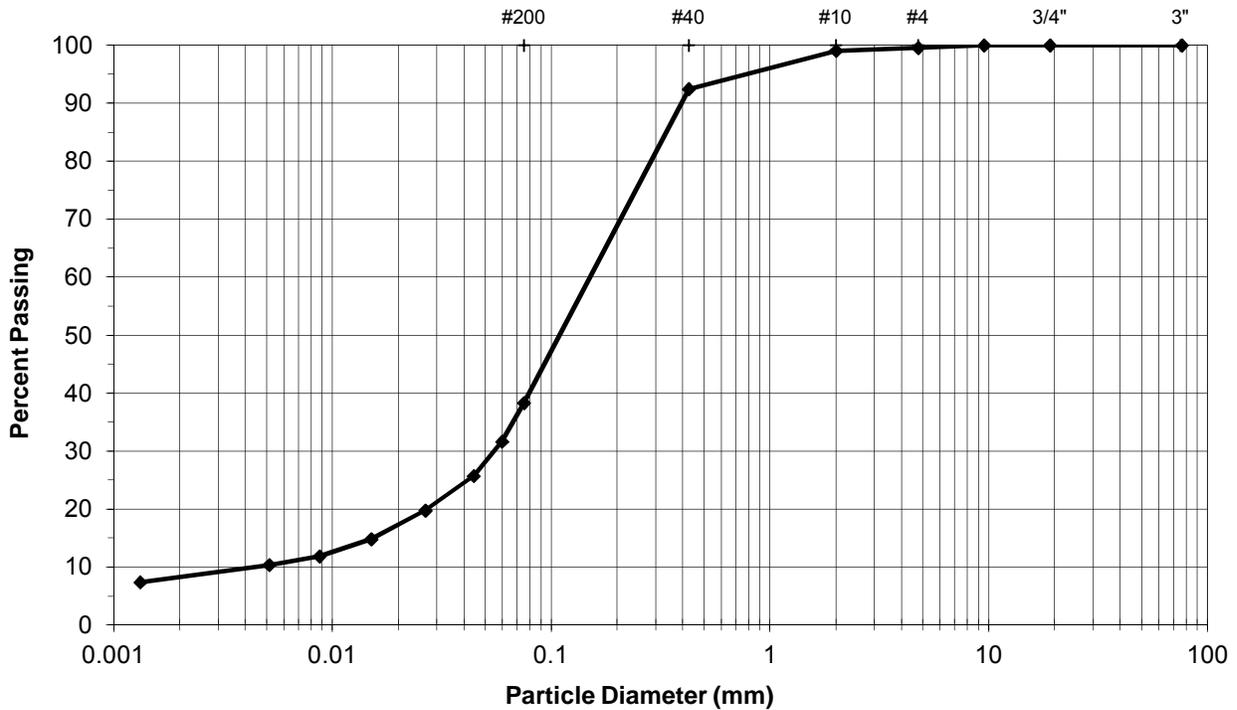
ASTM D4318

Liquid Limit (LL)	<u>NP</u>
Plastic Limit (PL)	<u>NP</u>
Plasticity Index (PI)	<u>NP</u>

NP = Non-Plastic

Natural Moisture Content (%) = 5.2%

Soil Description reddish brown silty SAND
 USCS Classification SM



Swell/Consolidation Test

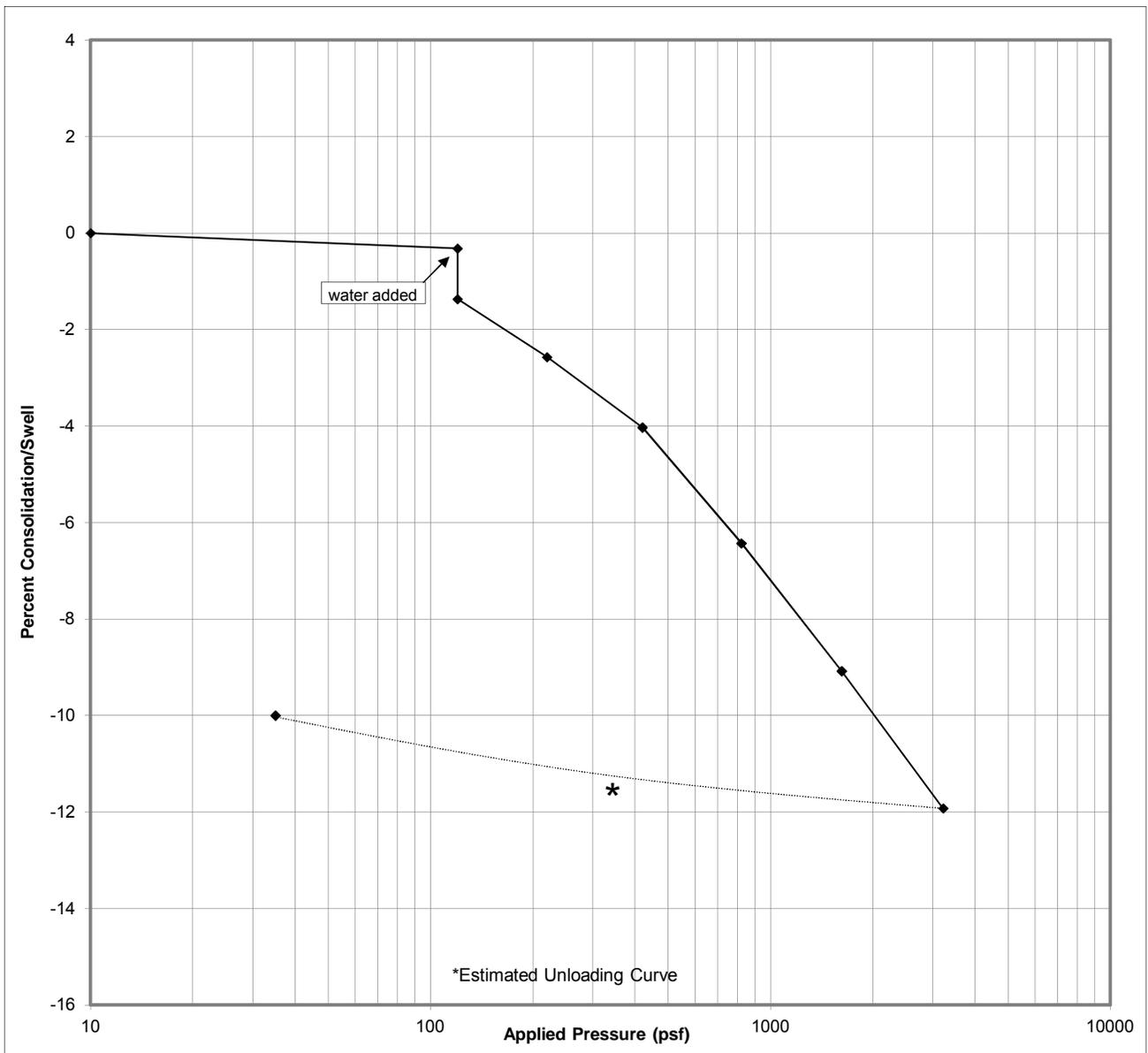
ASTM D4546

Project Name Lot 80 Van Tuyl Village
 Project Location Gunnison, CO
 Client Drake Real Estate Services
 Sample Location TP#4 @1-2' - Lot #1
 Sample # DS3
 Soil Description reddish brown silty SAND (SM)

Date 11/19/12
 Project # 12-266-GEO
 Sampled by KR
 Tested by SJ

Initial compression due to 100 psf pressure = 0.32%
 Collapse potential due to water and 100 psf pressure = 1.05%
 Total consolidation due to water and 3200 psf pressure = 11.6%

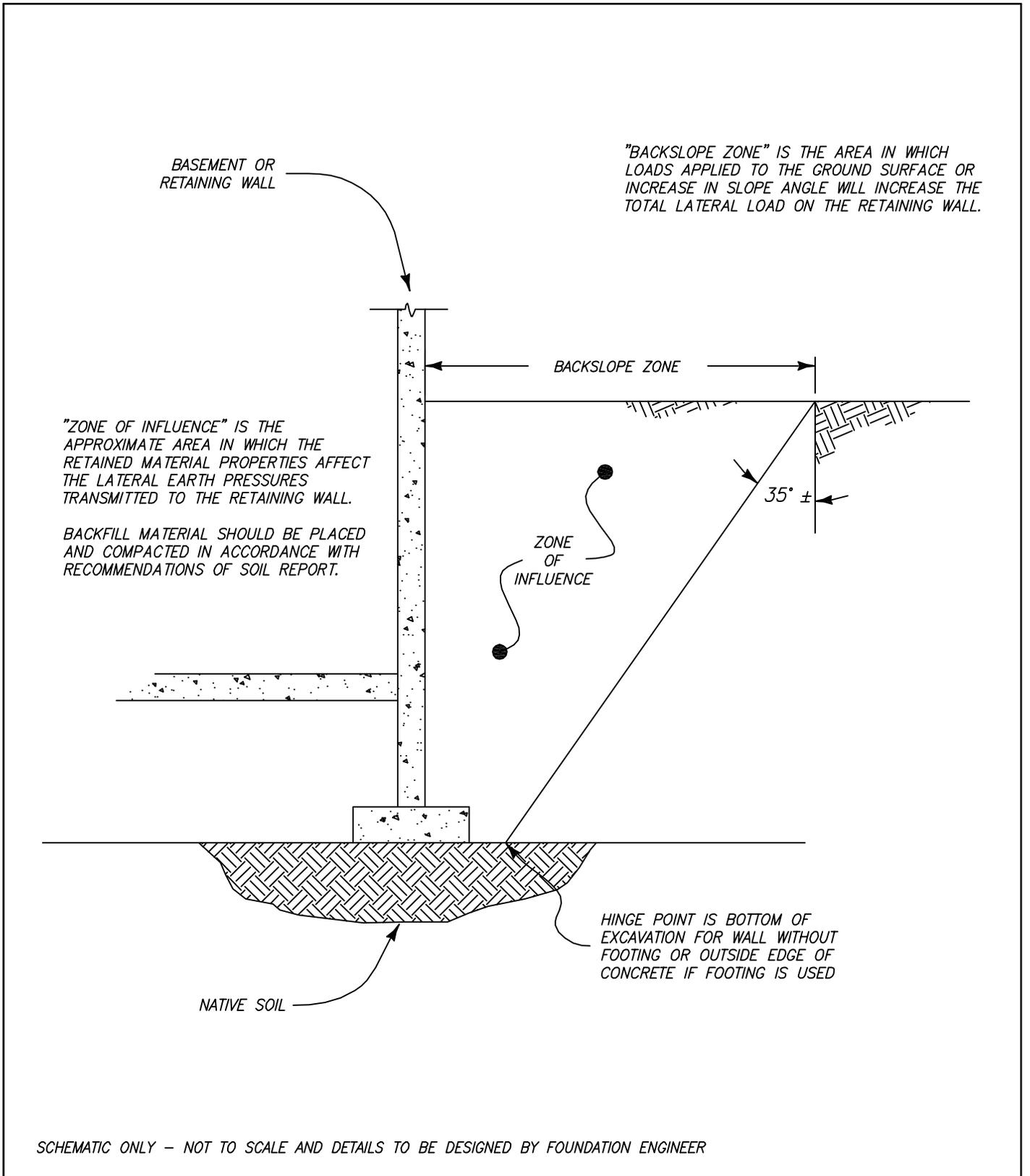
Initial Moisture Content	6.6 %	Final Moisture Content	23.3 %
Initial Dry Density	88.8 pcf	Final Dry Density	98.0 pcf
Initial Wet Density	94.6 pcf	Final Saturated Density	120.9 pcf



APPENDIX D

FOUNDATION EXCAVATION SKETCH

FOUNDATION EXCAVATION SKETCH



DRAWING NUMBER 1 OF 1	<i>INVESTIGATION</i>	FOOTING ON NATIVE SOIL NO DRAIN	<div style="border: 2px solid black; padding: 5px; font-weight: bold; font-size: 1.2em;">BUCKHORN GEOTECH</div> Civil, Structural & Geotechnical Engineers 222 So. Park Ave. Montrose, Colorado 81401 970-249-6828 Fax. No. 970-249-0945 www.buckhorngeo.com
	<i>DRAFTING</i>		
	<i>FIELD DATE</i>		
	<i>JOB NO.</i>		

APPENDIX E

PAVEMENT DESIGN CALCULATIONS

Pavement Section Thicknesses for SM subgrade

Project Lot #1 Tractor Supply Company, Lot 80 VanTuyl Village, Gunnison, Colorado
 Project # 12-266-GEO-01
 Scenario parking lot for commercial building, Tractor Supply Company
 Date 10 Dec 2012
 Engineer KR, reviewed by DQ

Structural Number basis: $SN = a_1D_1 + a_2D_2 + a_3D_3m_3 + a_4D_4m_3$

a_1	0.44	Hot Mix Asphalt (HMA) structural coefficient
a_2	0.14	Aggregate Base Course (ABC) structural coefficient, R-value > 83
a_3	0.1	Subbase (SUB) structural coefficient
a_4	0.13	Treated subbase, 7-day Unconfined Compressive Strength (UCS) ~ 300 psi
m_2	1	Aggregate Base Course (ABC) drainage coefficient
m_3	0.6	Subbase (SUB) drainage coefficient

18K ESAL ₂₀	M_R^1	Req'd SN ²	Thicknesses				SN ³	Subgrade	Application
			Asphalt (in.)	Base (in.)	Subbase (in.)	Treated Subbase (in.)			
0.73M	12,450	2.41	3	8		2.44	SM	typical road section	
0.73M	12,450	2.41	4	6		2.60	SM	thicker asphalt section	
0.73M	12,450	2.41	6			2.64	SM	full-depth asphalt	

1. M_R = Subgrade Resilient Modulus, calculated from CBR or R-value
2. Req'd SN = required structural number (measure of required structural strength of pavement section)
3. SN = structural number, as calculated from the pavement section
4. M = million



Civil, Structural & Geotechnical Engineers

SpectraPave4 PRO™ Paved Road Application *** Design Analysis Report ***

Table 1a) Material Properties

Layer	Description	Cost (\$/CY)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	140	0.44	N/A
ACC2	Dense-graded Asphalt Course	140	0.40	N/A
ABC	Aggregate Base Course	36	0.14	1.0
SBC	Subbase Course	30	0.10	1.0

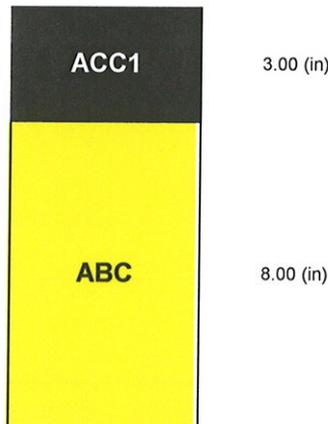
Table 1b) Input Parameters for AASHTO (1993) Equation

Parameter	Value
Reliability (%)	75
Standard Normal Deviate	-0.674
Standard Deviation	0.44
Initial Serviceability	4.5
Terminal Serviceability	2.5
Change in Serviceability	2

Table 1c) Input Parameters for Tensar Geogrid

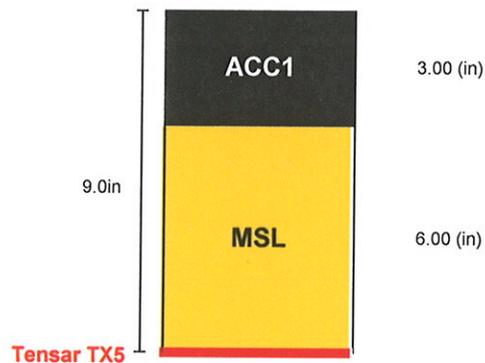
Parameter	Value
Supply cost for Tensar TX5 (\$/SY)	3.00

Unreinforced Section



Subgrade Modulus = 12,450 (psi)
 Structural Number = 2.44
 Calculated Traffic (ESALs) = 789,000

Tensor TriAx® Reinforced Section



Subgrade Modulus = 12,450 (psi)
 Structural Number = 2.71
 Calculated Traffic (ESALs) = 1,523,000

LIMITATIONS OF THE REPORT

The designs, illustrations, information and other content included in this report are necessarily general and conceptual in nature, and do not constitute engineering advice or any design intended for actual construction. Specific design recommendations can be provided as the project develops.

Printed on: 12-10-2012 12:00:33 server\geo-working\12-266-GEO Drake Real Estate Services Lot 80_VanTuyl Village Gummison\pavement design Lot #1\Lot #1 PDR.sp4p

Project Name	Lot #1 Van Tuyl Village - Tractor Supply
Designer	DCQ
Date	12/10/12

APPENDIX F

GLOSSARY OF ENGINEERING AND SOIL TERMS

Glossary of Engineering & Soils Terms

active earth pressure	The pressure that a soil exerts against a vertical surface which is allowed a certain degree of flexure or rotational freedom.
allowable soil bearing capacity	The recommended maximum contact stress developed at the interface of the foundation and the supporting soil. Given in psf (pounds per square foot).
alluvial fan	A cone-shaped deposit of water-transported material (alluvium). They typically form at the base of topographic features where there is a distinct decrease in gradient. Consequently, alluvial fans tend to be coarse-grained near their mouths and relatively fine-grained at their edges.
alluvium	Rock and soil material deposited by moving water. Rocks are generally rounded and sorted by size as they are worked by water. Found in river channels or alluvial fans.
ASTM	American Society for Testing and Materials (a national non-profit organization which writes testing standards for materials, products, systems and services).
at-rest earth pressure	The pressure that soil exerts upon a vertical surface which is restrained from any movement.
Atterberg limits	Named for a Swedish scientist, Atterberg limits are defined by the water content that produces a specified soil consistency. See <i>liquid limit</i> and <i>plastic limit</i> .
auger-cast pile (ACP)	A deep foundation system that consists of an auger-advanced hole, followed by grouting of the hole through the auger during withdrawal. A reinforcement cage is lowered into the wet grout.
backfill	A specified material placed and compacted in a confined area.
backslope zone	The area in which loads applied to the ground surface or increase in slope angle will increase the total lateral force against a retaining wall.
base course	A layer of specified material placed on a subgrade or subbase.
bedrock	Sedimentary, igneous, or metamorphic rock that has not been weathered or broken down by the elements of water, ice, wind, or gravity. Also referred to as "formational" material, as bedrock is known as a particular formation for the region.
bench	A horizontal or near-horizontal surface in a sloped deposit.
calcareous	Containing calcium carbonate (lime). A distinct layer of calcium carbonate hardpan is called caliche.
clay	A fine-grained soil (<0.002 mm) composed of very small platy (flat) particles that are smaller than silt particles. Forms lumps or clods when dry and is plastic (Plasticity Index > 4) and sticky when wet.
cohesionless soil	Non-plastic granular soils (silt, sand, gravel) composed of bulky grains that are not attracted to each other with the addition of water.
cohesive soil	Soils (i.e., clays and some silts) in which adsorbed water and particle attraction work together to produce a mass which holds together and deforms plastically.

collapse	Soil Settlement due to wetting at constant vertical stress.
colluvium	Rock and soil material deposited by gravity. Rocks are generally angular to subangular, loose and not sorted. Found below steep slopes and at the mouth of canyons; talus and cliff debris are included.
compaction	The decrease in volume of an unsaturated soil mass due to a decrease in the void spaces, usually by mechanical means.
consolidation	The decrease in soil volume due to a release of water when a saturated soil is subjected to stress increase. As a soil consolidates, its void ratio decreases. Loosely, the term is used to describe time-dependent compression of a fine-grained soil.
crawlspace	The space beneath the house that has a raised stemwall foundation and is typically 18 to 36 inches in height.
creep	A slow, nearly continuous movement of soil caused by changes in soil moisture and the downhill force of gravity.
dead load	Static loads transferred to the foundation, usually the weight of building materials, but can also be the loads imposed by retained soil or a constructed slope.
debris flow	Debris flows are rapid flood-like events consisting of mud, water, rock and organic debris and that have 20 to 80% particles coarser than sand sizes. Steep slopes, weak or weathered rock, a lack of vegetative cover, and abnormal precipitation contribute to debris flows. (See mud flow)
differential settlement	Unequal settlement between or within foundation elements of a structure.
dispersive soils	Fine-grained soils whose clays have been neutralized by an abundance of cations which are then susceptible to removal (dispersion) from the soil matrix. This weakens soil strength; piping and gullyng are common features in this soil.
drilled pier	A deep foundation system that consists of reinforced concrete piers cast into a drilled hole that extends into bedrock or other suitable material.
driven pile	A deep foundation system that consists of steel, concrete, or timber that is driven into bedrock or other suitable material.
existing fill	Materials placed by man prior to geotechnical exploration of the site.
existing grade	The ground surface at the time of field exploration.
expansive soil	A soil containing clay which expands (increases in volume) when exposed to an increase in moisture.
fine grained soil	Soils composed of silt and/or clay-sized particles.
flowing avalanche	The turbulent cascade of slabs and blocks of relatively high-density (>25 pcf) snow and air downslope.
fluvial	Deposited or transported by a stream or river.
fluvioglacial	Alluvial deposits derived from the rivers originating from the melting of glaciers. Glacial outwash is the term used to describe fluvioglacial deposits.
formational material	See bedrock. Also known as the "R" horizon.

grade beam	Typically, concrete beams that are constructed at or just below ground elevation that are used to transfer building loads to deep foundation elements. Walls and floor systems are then built upon the grade beams.
groundwater	Water that is resident beneath the ground surface in porous soil and rock. This level can fluctuate due to seasonal changes and irrigation.
heave	Upward movement of soil or foundation components.
helical piers	Helical piers typically consist of 5- to 10-foot long sections of solid square high-strength steel bar with the lead (deepest) section having one or more 6- or 8-inch diameter helixes welded to the bar. These piers are “screwed” into the ground using a torque head which stops driving the pier when the head reaches a design torque pre-selected by the engineer based on correlations with bearing capacity.
hinge point	Toe of excavated wall without footing or outside edge of concrete if footing is used.
hummocky	The uneven, bumpy or chaotic terrain typically resulting from a landslide or glacial deposit. The rock and soil materials are unsorted and often jumbled.
hydrocompactive soils	Soils that have considerable voids, thus making it susceptible to consolidation in the presence of water.
jumping jack	A construction machine, used to compact both cohesive and cohesionless soils, that consists of a curved shoe that tamps the soil in an up and down motion.
landslide	The general term for the downward and outward movement (flow, slide or fall) of slope-forming bedrock, rock debris and soil (fine-grained fragmental debris). See "slump," a type of landslide.
lifts	Horizontal layers of fill, generally 6 to 8-inches thick.
liquid limit (LL)	The water content above which a soil behaves as a liquid.
live load	Transient loads introduced onto a structure and its foundation due to occupancy, wind, snow and rain, earthquakes, changes in groundwater, and other environmental factors.
loam	A mixture of sand, silt and clay. It is easily crumbled when dry and has a slightly gritty, yet fairly smooth feel, and is often slightly plastic.
micropile	A deep foundation system consisting of small diameter piles, typically 1- to 4-inch diameter steel bars (solid or hollow), that are drilled and grouted into place. Micropiles are designed as friction elements and must be drilled deep enough to provide resistance to anticipated uplift pressures.
monolithic slab	A shallow foundation system that consists of a single unit of reinforced concrete with downturned edges and may include thickened ribs on the underside of the slab.
moraine	Deposits formed by direct glacial action. There are many forms of moraines, but they generally consist of unsorted, unstratified, and subrounded to subangular materials deposited by glacial ice. Also generally known as “drift” or “till.”
mottling	The discoloration of a soil due to the reaction of water with clay minerals during prolonged periods of saturation. Red colors indicate the presence of iron oxides in an oxidized state and gray indicate the removal of free iron in reducing conditions.
mud flow	Mud flows are flood-like events that have 80% or more mud and sand. Over-saturation of fine-grained soils triggers mud flows, which are a rapid failure or slippage of mud and other debris entrained in the movement. (See debris flow)

native grade	The naturally occurring ground surface (before disturbance).
native soil	Naturally occurring on-site soil.
parent material	The formational material from which a soil is derived.
passive earth pressure	The resistance of a soil against movement when a lateral force is exerted upon it.
pipng	A feature in fine-grained soils whereby water preferentially follows root zones, animal burrows and surface soil cracks, and carries soil particles downwards through voids, leaving behind weak vertical planes, voids, and/or tunnels in the soil structure.
pistol butting	When the base of tree trunk is widened and bent upwards due to soil creep, snow loading, or slope movement. The tree continues to grow vertically despite the ground moving downslope, thus creating a shape like a "pistol butt" in the expanded trunk.
plastic index (PI)	The difference between Liquid and Plastic Limits (LL - PL). This represents the moisture content range that the soil is in the plastic state. The larger the PI, the more plastic a soil is.
plastic limit (PL)	The water content at which a soil becomes brittle after being in the plastic state. The soil breaks apart or crumbles when its moisture content is equal to or less than its PL.
plastic soil	A predominately silt or clay soil that exhibits plastic (deformable) behavior.
post-tensioned slab	A post-tensioned slab is a stiffened raft foundation system that has a grid of tensioned cables running through the concrete slabs and in thickened "ribs." The cables or tendons are tightened after the concrete has partially cured. This system minimizes differential movement because it allows the foundation to act as a rigid unit.
powder avalanche	The relatively low-density (12.5 pcf), high velocity, turbulent force of snow, air and entrained debris that precedes and extends beyond a dry-snow avalanche. The powder and air blast can travel at speeds in excess of 100 mph.
Proctor compaction test (standard & modified)	A laboratory compaction procedure to determine the maximum dry density and optimum moisture content of soil. The standard Proctor procedure uses a 5.5-lb hammer and 3 lifts, while the modified Proctor procedure uses a 10-lb hammer and 5 lifts.
raft foundation	Also called "mat" foundations, these comprise a single slab that supports an entire structure. The slab is generally stiffened to resist excessive differential movement.
refusal	When very dense native material is encountered that cannot be excavated or penetrated further by whatever equipment is being used.
scarify	To mechanically loosen, roughen or break down existing soil surface, usually to improve bonding to subsequent fill.
settlement	Downward movement of foundation components due to compression of a soil mass.
shale	A thinly-bedded rock formation composed of clay or silt muds that have been solidified into rock. The Mancos Shale Formation in Colorado is of marine origin.
silt	Fine-grained soil particles measuring 0.002 to 0.075mm, which are larger than clay but smaller than sand. Silt can exhibit plastic characteristics.

slab-on-grade	A concrete layer cast directly upon a base, subbase or subgrade.
slope	The angle of a hillside, usually expressed in degrees or percent (elevation drop per given distance).
slump	A type of landslide that has a rotational slip along a concave-up surface of rupture. The resulting "main scarp" is the crescent shaped failure plane formed at the source of the slump.
soil	Any unconsolidated, excavatable earth material composed of discrete solid particles, with air or liquids between, that is the result of the chemical and mechanical weathering of rock.
soil (excavation or borehole) log	A graphic representation of a column of soil indicating textural changes and general properties of soil or rock types encountered in a test pit or boring.
spread footing	A shallow foundation system that consists of a wide (typically from 12 to 48 inches) "foot" of reinforced concrete upon which vertical wall components are built.
stemwall	A vertical concrete foundation component, normally 6 to 12 inches wide, that rests on the spread footing and extends up to the floor level.
subbase	A layer of specified material between the subgrade and base course.
subbase grade	Top of subbase elevation.
subgrade	Prepared native soil surface.
subsoil	The layer of soil below the topsoil and above the substratum that has undergone pedogenesis (soil formation). The "B" horizons.
substratum	The layer of soil below the subsoil that has not undergone soil genesis. It contains weathered parent material. The "C" horizons.
swell potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
tension cracks	Transverse cracks (linear openings) in the soil due to soil movement.
topsoil	The surface layer of soil containing organic material and roots. The "A" horizons.
transverse	A feature (like a crack or ridge) that is at right angles to the slope of a hillside or the general trend of a valley.
vesicular pores	In a fine-grained soil, the sponge-like openings that are the result of the solution and dispersal of clay particles. The pores are discontinuous and vary in size.
vibratory roller	A construction machine with a heavy vibrating drum, used to compact soil and aggregate material.
void ratio	A ratio of the volume of voids (pore spaces) to the volume of solids.
waffle slab	A waffle slab is a stiffened raft foundation system that is a monolithic slab with a tight network or grid of reinforced stemwalls that resemble a waffle from underneath. This system minimizes differential movement because it allows the foundation to act as a rigid unit.
water table	The relatively continuous and consistent level of groundwater below the ground surface.
weathering	The breakdown of intact masses of rock into smaller pieces by mechanical or chemical processes.

MEMBERS	PRESENT	ABSENT	EXCUSED
Carolyn Riggs, Chair	X		
Erik Niemeyer	X		
Erich Ferchau	X		
Andy Tocke	X		
Bob Beda	X		
Greg Larson	X		
Councilor Ellen Harriman	X		

OTHERS PRESENT: Community Development Director Steve Westbay, Planner Andie Ruggera, Planning Technician Pam Cunningham, Jerry Kowal, Richard Hagan, Julie Robinson, Mike Fightmaster, Victoria Fightmaster, Jim Gelwicks, Ronda Connaway, Dianne Haberman, and City Manager Ken Coleman.

I. CALL TO ORDER AT 7:02 PM BY CHAIR CAROLYN RIGGS

II. PLEDGE OF ALLEGIANCE TO THE FLAG

III. ZA 12-3 BY THE CITY OF GUNNISON AND THE GUNNINSON COUNTY LIBRARY DISTRICT TO ESTABLISH PUD ZONING FOR THE VANTUYL RANCH AND LIBRARY SITE.

Open Public Hearing. Chair Riggs opened the public hearing at 7:03 p.m.

Review of Process. This is a public hearing for a Map Amendment. Director Westbay gave an overview of the zoning process and entered into the public record the following documents:

- *VanTuyl Ranch PUD Map Amendment Application, ZA 12-3;*
- *VanTuyl Ranch Annexation Phasing and Scoping Files, City document files;*
- *City of Gunnison and Gunnison County Library Annexation Petition, City document file;*
- *VanTuyl Ranch Annexation Impact Report, City document files;*
- minutes, public hearing comments, and written correspondences submitted by the public for the record;
- *VanTuyl Ranch Management Plan;*
- *City of Gunnison Land Development Code;*
- *City of Gunnison Master Plan;* and,
- *City of Gunnison Trails Master Plan.*

Director Westbay then gave an overview of the application, including:

- Adjacent Uses
- Utilities
 - water
 - wastewater
 - electric
 - irrigation
 - phone, gas, cable
- Transportation / Access
- Natural Resources

Director Westbay focused the discussion on the General Development Components:

- Zoning Districts. He stated that the overarching concept is that the Land Development Standards in the *LDC* will apply to the majority of development within the Ranch, except:
 - PUD Library District Site – uses must be in compliance with the deed which is for a library. Director Westbay gave an overview of the dimensional standards and explained the building envelope concept and the nature’s envelope, which is a transition between the urban setting and open setting using natural vegetation.
- Standards for a PUD

Director Westbay then reviewed the Findings.

Public Input. Chair Riggs asked for public comments.

Jim Gelwicks, who lives adjacent to the VanTuyl property on Tincup, addressed the Commission. He said he is in favor of the annexation. He inquired about the zoning code, stating that there used to be a Government zone and asked if it is still in effect. Director Westbay responded that it is not.

Mr. Gelwicks stated that there was a long period of time where the City was trying to eliminate agricultural zoning in the City limits. Director Westbay replied that the agricultural piece is interesting and that occasionally it does arise and create conflict. He said that currently there is not an agricultural zone, but there are provisions for livestock in the Animal Code. He went on to explain that in the case of the Ranch, the PUD will create an Agriculture/Open Space district. One of the primary functions on the Ranch is agriculture, which includes management of livestock, the ranch house, and the irrigation system. The Ranch will be operated in its historic use with modern resource management techniques.

Director Westbay explained the land uses allowed on the Ranch.

Mr. Gelwicks asked if there are there setbacks on the Ranch, as there are on the Library site. Director Westbay replied that there are setbacks from the residential areas, but there will be no development in the Agriculture / Open Space district, except perhaps an additional residence in the headquarters area, so setbacks aren’t needed.

Mr. Gelwicks asked what the advantage of the PUD is, above and beyond the planning documents that exist. Director Westbay responded that there is not an Open Space or Agricultural district established in the existing *Code*. The Ranch was purchased to protect the water quality for the domestic water source and the PUD is a way to address the contents of the *Management Plan* as well as allow the provisions of zoning for quasi-urban uses such as the library and public facilities.

Mr. Gelwicks asked if there is a deed restriction on the library. Director Westbay replied that several lawyers have reviewed the title. There was a misperception that it was deed restricted and would go back to the estate in 21 years. In reality, the deed restriction is that the library will be built in 21 years, but the estate will never be reopened. The Library Board has been explicit in honoring the deed and wanted the exact language from the deed to be in the zoning.

Mr. Gelwicks asked if it is fair to say that the PUD in this instance constitutes an intergovernmental agreement. Director Westbay replied that there is no intergovernmental agreement. He said that one of the most important things the City can do is ensure that the future of the Ranch site is under the direct control of the City. He continued, saying that the City has

been working closely with the Colorado Division of Parks and Wildlife (CPW) because they own the river corridor. The CPW and the City have agreements regarding trails on the Ranch. There is not an IGA with the Library District, but there is a draft Annexation Agreement which addresses the intersection of Spencer, 11th, and Quartz. The provision of the Agreement is that the Library District and City Council will have to come to terms on the cost of the changing of the intersection and the Library is granting a right-of-way to move Quartz.

Commission Discussion

Councilor Harriman asked about the statement in the application that says, “Facilities **will** include: a barn; community garden; dog park; greenhouse and garden area; pasture and horse arena; horse training area; large animal pens; restroom; small animal pens; storage building; and, trailhead shelter/interpretive area.” Director Westbay replied that future facilities will not be constructed until they are on a capital construction plan and in the budget, which probably won’t be in the very near future. The statement Councilor Harriman mentioned is in the application but not the Findings or *Management Plan*.

Commissioner Niemeyer suggested correcting a typographical error in Finding 5.

Chair Riggs noted that Larry Meredith, who is retiring as Executive Director of the Library Board, has sent a letter stating that the Library Board is comfortable with the zoning application. She asked if the new Executive Director is in support of the zoning application. Director Westbay responded that the Library Board is in support, so he assumes the new Executive Director will be.

Councilor Harriman asked if the portion of CR13 that is not included in the annexation will be deeded to the County. Director Westbay said that ambiguities exist from historic surveys. He explained that a section line goes down the middle of CR13. The original Ranch deed is to the section line and the deeds to the properties along CR13 are also to the section line. He said that CR13 is therefore, in a prescriptive easement. He said that the major users of the road are the agricultural and residential uses in the unincorporated area; the Ranch doesn’t use the road that much so the City decided to leave it under County jurisdiction.

Commissioner Ferchau asked if the setbacks and height restrictions are consistent with the draft LDC. The 35 foot height restriction is consistent. Director Westbay stated that additional wetlands setbacks are appropriate since there will be no development in the Habitat Protection Area.

Close Public Hearing. Chair Riggs closed the public hearing at 7:48 p.m.

Commission Action. During the Planning & Zoning Commission meeting held on December 12, 2012, Commissioner Larson moved, Councilor Harriman seconded, and the Planning and Zoning Commission voted to recommend APPROVAL of Zoning Amendment application ZA 12-3 based on the following findings of fact as amended:

FINDINGS OF FACT:

1. The Planning and Zoning Commission finds that the record of this action includes the application contents on file with the City of Gunnison; all comments entered into the Public Hearing record; public comments and application contents of the VanTuyl Ranch Annexation Petition; and provisions of the *City of Gunnison Land Development Code* and the *City of Gunnison Master Plan*.

2. The Planning and Zoning Commission finds that this PUD zoning meets all criteria standards cited in the *LDC* for such zoning.
3. The Planning and Zoning Commission finds that this Map Amendment application is being processed on a parallel track with the Annexation Application, and this process is consistent with the City's adopted annexation policy (Resolution 15, Series 2007).
4. The Planning and Zoning Commission finds that this zoning application is submitted in conjunction with an annexation petition for the VanTuyl Ranch and Gunnison Library, to create two PUD districts: the Agriculture and Open Space district and the Library district.
5. The Planning and Zoning Commission finds that Larry Meredith, from the Gunnison County Library District has provided written comments and is in support of the Zoning Application as presented.
6. The Planning and Zoning Commission finds that the VanTuyl Ranch PUD Development Standards implement the directives set forth in the *VanTuyl Ranch Management Plan* that was adopted by City Council in August, 2010.
7. The Planning and Zoning Commission finds that the Ranch and library site uses are limited to habitat protection, passive recreation activity, public education facilities, agriculture production, snow storage and the public library.
8. The Planning and Zoning Commission finds that the PUD zoning will serve to enhance the community's health, safety and welfare.

Roll Call Yes: Niemeyer, Ferchau, Tocke, Riggs, Beda, Harriman, Larson
Roll Call No:
Roll Call Abstain:
Motion carried

IV. STREET DEVIATION REQUEST FROM HABITAT FOR HUMANITY FOR THEIR PROJECT LOCATED AT 6TH STREET AND WEST NEW YORK AVENUE.

Staff Presentation. Director Westbay stated that he followed the Commission's directive to address a recommendation to remand. Subsequent to that, the applicant, Habitat for Humanity, provided a revised proposal.

Applicant Presentation. Jerry Kowal, of Habitat for Humanity addressed the Commission and gave an overview of the revised proposal. He thanked the Commission and explained that he received the staff response on Thursday and the Board spent the weekend looking it over. The new proposal has three basic components: existing conditions, the revised proposal incorporating a "non-disturb easement," and a response to the staff recommendation.

Dr. Kowal stated that, "We are all trying to provide homes for people in need. We like the compromise [from City Manager Coleman] that is proposed. Our concerns, which we believe are legitimate, are: the neighbors, water, and fire mitigation. In light of what is here, it makes sense to follow through with what we have here. It will be a big help for the City to help. We are willing to accept the proposal from Ken. Where utilities are relocated is a concern."

City Manager Ken Coleman addressed the Commission: He stated that he felt it important to consider other options and that the City has to apply the rules equitably across the board. He continued, by saying that the oversight [by the City] on the West Haven condo development should not be a burden on Habitat. He said he felt a partnership on developing the alley is important to make the area functional and effective. There is uncertainty about the substructure [where the alley would be] and the City has the best means to address that. [This proposal] would have to be approved by City Council. The Director of Public Works estimates that removing the substructure in the developable zone will be about \$25-\$30,000. The sub-base is the majority of the cost; the road base and asphalt will probably be a \$6,000 split. He recommended moving forward on making a recommendation to Council.

Director Westbay said there are two options. We can move forward on the deviation application and make a recommendation. Or, if the applicants withdraw the application there could be a general review by staff to determine expenditures. There is a new proposal on the table, which has not been addressed by staff to develop new findings.

Dr. Kowal said he is ok with withdrawing.

City Manager Coleman said it falls on the City to pick up part of the development cost because of the oversight.

Commissioner Niemeyer commended City Manager Coleman for finding a compromise. He said he was glad the City is able to balance the needs of the *LDC* and the needs of Habitat.

Commissioner Ferchau stated, for the record, he disagrees with Mr. Coleman; that despite the error that occurred with West Haven, affordable housing is an exception that should be granted because there is a broader community interest. [This is in regard to Mr. Coleman's statement about applying rules equitably]. Commissioner Ferchau said, "I think you should waive the bonding too." City Manager Coleman responded that the equity statement was meant in terms of not requiring Habitat to build the alley when West Haven wasn't required to. He said that if the City is administering the development of the alley bonding won't be required; Habitat will be sent a bill for their portion.

Dr. Kowal stated, "We withdraw our request."

All agreed it was a useful discussion and Chair Riggs thanked everyone for coming.

V. COUNCIL UPDATE. Councilor Harriman updated the Commission on recent Council business. The Council:

- heard an interesting presentation from student intern, Mick Knudsen, about his water quality study on VanTuyl Ranch;
- appointed Sharon Cave to City Council, she will be seated on January 8th;
- finished the second reading on the budget ordinances;
- cancelled the December 25th meeting;
- reviewed the City Manager's contract; and,
- upon recommendation from the auditors, transferred a large amount of money from the insurance reserve fund to the general fund.

Councilor Harriman also reported that:

- Next Tuesday's meeting will be about how Amendment 64 impacts the City and what must be done for enforcement. If the City has their rules in effect before the State sets its regulations it will give the City more control. Director Westbay explained the three-step process the City will follow in developing codes: 1) criminal; 2) an ordinance restricting the commercial components; and, 3) land use provisions. He said that staff is recommending that cultivation, laboratory processing, and retail sales will not be allowed in any zone district in the City. However, the Constitution says that individuals may grow up to six plants on their premises and persons over 21 can possess less than one ounce.
 - Commissioner Ferchau observed that [a possible] justification for passage of Amendment 64 was that it will generate sales tax. He asked how the City will collect taxes if it doesn't allow sales. Commissioner Larson stated that a community could make the decision to forfeit the revenue to maintain the character of the community. Director Westbay added that the Attorney General has issued an opinion that the amendment had provisions in place that a portion of the retail sales tax would go to schools. The opinion is that that provision is subject to TABOR and therefore schools won't get any funding until the state or local jurisdictions vote to allow sales tax to go to schools. Commissioner Larson added that it is still illegal under federal law and any funds generated from an illegal activity can't be deposited in a bank. Commissioner Niemeyer added that until federal laws are changed, it is a liability for municipalities.
- Staff had a long day with CDOT looking at the Highway Access Control Plan for Highway and about the pork chop at VanTuyl Village. There is a deadline for CDOT to respond.
- City sales tax is down .04% through October;
- the High Country Service Station is closed and a location for a new bus stop is needed.

VI. CONSIDERATION OF THE NOVEMBER 28, 2012 MEETING MINUTES. Commissioner Larson moved and Councilor Harriman seconded to approve the November 28, 2012 meeting minutes as corrected.

Roll Call Yes: Niemeyer, Ferchau, Tocke, Riggs, Beda, Harriman, Larson

Roll Call No:

Roll Call Abstain:

Motion carried

VII. UNSCHEDULED CITIZENS. There were none

VIII. COMMISSIONER COMMENTS

- Commissioner Niemeyer advised that there is an interesting article in the *APA Newsletter* "Planning for Food Access and Community-Based Food Systems". It has interesting ideas that could be included in future discussions. Director Westbay provided some information about Mountain Roots and the City providing space on City property for gardens.
- Commissioner Beda thanked the City for the Christmas party.
- Commissioner Larson added his thanks and asked how the meeting with CDOT went; Director Westbay responded that he is cautiously optimistic.
- Councilor Harriman informed the Commission that the wireless installation is underway at the Community Center. Commissioner Niemeyer asked if the City will offer free wireless to guests of the facility. Commissioner Larson responded that the Community Center used to have free wireless but when they had to switch to DSL it was turned off because there was not enough band width. He said that once it is tested guest access will be turned back on. There should also be enough bandwidth for the ice rink for scoring and for public use.

- Chair Riggs thanked the City for the Christmas party as well. She reported that she had an interesting conversation with a constituent about who is liable if a surveyor makes an error on an elevation certificate. Subsequently, Chair Riggs spoke with Director Westbay about it. The answer is that surveyors are held accountable. Discussion followed about FIRM maps, elevations, and discrepancies between surveys.
- Chair Riggs said she would like to challenge the Commission to crank out the rest of the *LDC* in the next 3 months.

IX. PLANNING STAFF UPDATE. Director Westbay updated the Commission on recent activity in the Community Development Department:

- staff is working on ordinances for the VanTuyl zoning and annexation;
- work continues on the Highway Access Control Plans for Highway 50 and Highway 135;
- the *Non-motorized Transportation Plan* is moving forward and Director Westbay will make a presentation to the Sage-Grouse Strategic Committee next week;
- the Medical Marijuana Code is a daily staff topic;
- student intern Mick Knudsen is wrapping up his report. Director Westbay stated that it was an interesting experience; it is nice to provide mentoring to someone who is enthusiastic and has ambitions.

X. ADJOURN. Chair Riggs adjourned the meeting at 8:40 p.m.

Carolyn Riggs, Chair

Attest:

Pam Cunningham, Secretary

Section 10. Amendments to the Land Development Code and Official Zoning Map

§10.1 GENERAL

The text of this *LDC* and the boundaries of zone districts, as depicted on the official zoning map, may be amended, supplemented or repealed pursuant to the procedures and standards of this Section.

§10.2 INITIATION

- A. Initiation of Text Amendment.** An amendment to the text of this *LDC* may be initiated by the City Council, the Planning and Zoning Commission, the Community Development Director, a resident of the city, any person who holds a recognized interest in real property within the city, and/or the property owner's Authorized Agent as specified in §6.3.A.
- B. Initiation of Zoning Map Amendment.** An amendment to the Official Zoning Map may be initiated by the City Council, the Planning and Zoning Commission, the Community Development Director or the owner/authorized agent of, or holder of, a recognized interest in that real property whose zoning is proposed to be amended.

§10.3 PROCEDURE

An applicant requesting an amendment shall follow the stages of the City of Gunnison land development process outlined below.

- A. Preapplication Conference.** Attendance at a preapplication conference is optional, but recommended, for a private applicant intending to submit an application for an amendment to the text of this *LDC* or the boundaries of zoning districts as depicted on the official zoning map.
- B. Submit Application.** The applicant shall submit a complete development application to the Community Development Director which contains those materials listed in §10.4, Application Contents. The Community Development Director shall be responsible for submitting the application materials for an amendment initiated by the City Council or Commission.
- C. Staff Review.** The Community Development Director shall review the application to determine whether it is complete, as specified in §6.6 A, Completeness Review. The Community Development Director shall forward a report to the Commission which summarizes the application's compliance with the applicable review standards contained in §10.5, or §10.6, and other applicable provisions of this *LDC*. The technical comments and professional recommendations of other agencies and organizations may be solicited in drafting the report.
- D. Public Notice.** Public notice that the Planning and Zoning Commission will conduct a hearing to consider the application for an amendment to the text of this title or the boundaries of zoning districts, as depicted on the official zoning map, shall be provided as specified in §6.7.
- E. Action by Commission.** The Commission shall hold a public hearing to review the conformance of the development application with all applicable provisions of this *LDC*. The Commission shall make a recommendation that the City Council approve, approve with conditions, or deny the application, or shall remand the application to the applicant with instructions for modification or

additional information or action.

F. Public Notice and Action by Council. The City Council shall consider the recommendations of the Commission at a public hearing. Public notice that the City Council will conduct a hearing to consider the recommendations of the Commission shall be provided as specified in §6.7. The Council shall, by ordinance, approve or deny the proposed amendment or shall remand it to the applicant with instructions for modification or additional information or action.

G. Actions Following Approval. Upon approval of the amendment, and the filing and, if applicable, recordation of any documents required by the approval, the Community Development Director shall place the amendment on the official zoning map or shall cause the amended text of this *LDC* to be officially codified. Each amendment shall be noted on the official zoning map, together with the ordinance number and date, date of correction, and initials of the Community Development Director affirming the accuracy of the map change.

§10.4 APPLICATION CONTENTS

An application for amendment to the text of this *LDC* or the boundaries of zone districts, as depicted on the official zoning map, shall contain the following:

A. Minimum Contents. The minimum contents for all applications specified in §6.5 C, Minimum Application Contents.

B. Text Amendment. In addition to the required Minimum Contents, a Text Amendment application to the *LDC* shall include:

1. A citation of the specific section/sub-section of the *LDC* that is proposed to be amended;
2. The precise amended working, tabular data, or equations/measures that constitute the proposed amendment;
3. A written statement by the applicant identifying the intended consequences of the amendment and how the application for amendment meets the review standards cited in §10.5.

C. Zoning Map Amendment. If the application requests an amendment to the official zoning map, it shall include:

1. **Zone Districts.** The present zone district designation(s) of the property and the zoning of all adjacent properties.
2. **Survey Map.** A stamped survey map and legal description created under the direction of a surveyor licensed in the State of Colorado of the property proposed for amendment, stating the area of the property proposed to be amended in square feet or acres.
3. **Existing Uses.** A description of existing uses on the property and on all adjacent properties.
4. **Statement of Intended Development.** A written statement by the applicant identifying the intended use or development of the subject parcel and the timing of said development, describing the community need for the change in zoning, and explaining the effect the change in zoning would have on surrounding uses, and how the application meets the review

standards cited in §10.6. Review Standards for Zoning Map Amendments.

§10.5 REVIEW STANDARDS FOR TEXT AMENDMENTS

An application for an amendment to the text of this *LDC* shall comply with the following standards:

- A. Consistent with Purposes.** The proposed amendment shall be consistent with the purposes of this *LDC*.
- B. No Conflict with Other Provisions.** The proposed amendment shall not conflict with any other applicable provisions of this *LDC*, or shall repeal or amend provisions of this *LDC* which are inconsistent, unreasonable or out-of-date.
- C. Consistent with Master Plan.** The proposed amendment shall be consistent with the *City of Gunnison Master Plan*, or shall implement a new portion of the *Master Plan*, or shall implement portions of the *Master Plan* which have proven difficult to achieve under the existing provisions of this *LDC*.
- D. Public Health, Safety and Welfare.** The proposed amendment shall preserve and enhance the public health, safety, general welfare and environment and contribute to the orderly development of the city.

§10.6 REVIEW STANDARDS FOR ZONING MAP AMENDMENTS

An application for an amendment to the Official Zoning Map shall comply with the following standards:

- A. Consistent with Master Plan.** The proposed amendment shall be consistent with the *City of Gunnison Master Plan*.
- B. Consistent with Purpose of Zone District.** The proposed amendment shall be consistent with the purpose of the zone district to which the property is to be designated.
- C. Compatibility with Surrounding Zone Districts and Uses.** The development permitted by the proposed amendment shall be compatible with surrounding zone districts, land uses, and neighborhood character.
- D. Changed Conditions or Error.** The applicant shall demonstrate that conditions affecting the subject parcel or the surrounding neighborhood have changed, or that due to incorrect assumptions or conclusions about the property, one or more errors in the boundaries shown on the official zoning map have occurred.

§10.7 ESTABLISHED REVIEW PROCESS, REQUIREMENTS AND STANDARDS FOR PLANNED UNIT DEVELOPMENT ZONING DISTRICTS

- A. Purposes.** In that the public health, safety and general welfare may be furthered in an era of increasing urbanization, commercial and industrial development, and growing demand for housing of all types and design, these procedures are intended to encourage Planned Unit Developments (PUDs) in the City for the following purposes:
 - 1. allow and encourage compatible uses to be developed in a manner sensitive to natural features and processes, and are compatible with surrounding land uses;

2. promote greater flexibility in the placement of structures so as to preserve and take advantage of the site's unique, natural resource or scenic features and to avoid or mitigate any hazardous area;
3. encourage more efficient use of land, public streets, utilities, and governmental services;
4. provide quality open space and recreational amenities, and create interesting public spaces and neighborhoods through exceptional and innovative design;
5. achieve a compatible land use relationship with surrounding areas;
6. promote architectural variety and design, focusing on enhancing the character and quality of the development; and,
7. incorporate streetscape designs, landscaping, public spaces, and multi-modal transportation facilities, and building facades that enhance the community's built environment.

B. Planned Unit Development Types. Two types of PUDs, summarized below may be contemplated by the City.

1. **Planned Unit Development - District Overlay.** A PUD District Overlay is intended to promote infill and redevelopment. It permits greater flexibility in the application of §2.6, Base District Dimensional Standards and Section 4, General Development Standards, established for the City's traditional zone districts. Permitted uses in a PUD-District Overlay are restricted to those permitted and conditional uses of the underlying base district.
2. **Planned Unit Development Mixed-Use District.** A PUD – Mixed-Use (PUD-M) is created to provide for the residential development in conjunction with Civic/Institutional or Accommodation/Retail/Service land use categories established in Table 2-3 (Principal Use Table) of the *LDC*. It is intended to promote developments with a balanced mix of residential use and compatible non-residential uses that provide services and employment opportunities in close proximity to housing. Planned Mixed-Use districts are only allowed in existing RMU, R-3 and Commercial district zones.

C. Established Review Process. The initial application for PUD zoning or a Major Change to an existing PUD shall constitute a Zoning Amendment and will follow §10.3 (Procedure) of the *LDC*.

D. PUD Zoning Amendment Application Submittal

1. **PUD Plan Submittal.** Along with the submission of the application as defined in §10.3 B, the applicant shall provide to the Community Development Director:
 - a. the minimum contents listed in §10.4 A, and the map amendment information in §10.4 C;
 - b. twenty copies of the PUD zoning plan map which shall be 24 inches by 36 inches in size; with north arrow and scale; with title and date in lower right corner at a scale of one inch equals 50 feet, or larger, depicting the area within the boundaries of the proposed PUD; and, which depicts all of the information as follows:

- i.** a zoning plan indicating the broad concept of the proposed development, the location of each use and the location of existing lots, blocks or other parcels within each area. The plan shall indicate:

 - a) generally, where each type of use is located within the PUD and an indication of the total acreage which will be devoted to each use;
 - b) proposed districts labeled on the plan with the symbol of the most similar zoning classification in the *LDC*. In the case of residential zone districts, the symbol shall be followed by a hyphen and a numerical representation of the maximum density allowed in that district. For example: a single-family residential district with a minimum lot size of 12,000 square feet would be labeled R1-12,000.
 - c) for areas designated for residential uses, the maximum number of dwelling units per gross acre permitted for each residential area including sizes of building lots and types of dwellings anticipated;
 - d) the minimum acreage which will be dedicated to common open space, the proposed use and location of open space;
 - e) internal circulation systems including locations of arterial streets, collector streets, pedestrian and bike trails;
 - f) the acreage and location of areas to be dedicated for school sites or other public uses;
 - g) descriptions of the general character of all proposed land use districts in the PUD and plans showing the location and size of each district within the PUD;
 - h) provisions for water, irrigation ditches, sewer, refuse collection, stormwater collection, telephone, electricity, gas and cable television, if applicable;
 - i) development standards and other restrictions to be applied to each proposed district or reference to standards in similar zone districts contained in the *LDC* which shall apply to each proposed use in particular areas, such as: building setbacks, height limits, access requirement and grade or slope restrictions, special provision addressing the Entrance Overlay district or other overlay districts, parking, landscaping and snow storage requirements and sign regulations; and,
 - j) written and graphic material demonstrating to the Planning and Zoning Commission and City Council how modifications will produce a living environment, landscape quality and lifestyle better than that produced by the existing standards.
- ii.** a site topographic map showing at least two-foot contour intervals for slopes of 10 percent or less; five-foot contour intervals for slopes over 10 percent; major vegetation elements; streams, rivers, ditches and areas subject to 100-year flooding;
- iii.** a written statement of concept for the PUD containing the following information:

- a) an explanation of the objectives to be achieved by the PUD and a statement of purpose for each zone district within the PUD;
- b) a development schedule indicating the improvements included in each phase and the approximate dates when construction of the various stages of the PUD are anticipated to begin and be completed;
- c) copies of any special covenants, conditions and restrictions which will govern the use or occupancy of the PUD; provided, that the applicant may impose additional covenants, conditions and restrictions on any particular area in connection with the platting of such area;
- d) the written statement shall include a detailed PUD Development Standards document, which will include by not be limited to defined permitted uses; dimensional standards; design standards, special use standards; general development standards, natural resource protection standards; and other technical code standards;
- e) a report containing detailed statements and data relevant to §4.1 (Adequate Public Facilities), prepared by a Colorado licensed engineer, which shall provide evidence of the following:
 - i) based on anticipated demand, the proposed water source is adequate to serve the PUD;
 - ii) based on anticipated demand, the proposed method of sewage treatment and existing sewage treatment facilities are adequate to serve the PUD;
- f) a report and detailed statements and data relevant to Section 5 (Natural Resource Protection Standards), which shall provide evidence to the following:
 - i) the general manner in which storm drainage will be handled in a manner shall meet or exceed policies and standard of the *City of Gunnison Stormwater Management Manual*;
 - ii) based on existing soils and geology data and the proposed land use, that adequate slope protection standards are in place to accommodate future development;
 - iii) based on existing land uses, buffer standards and other mitigation measures, the proposed land use and future development meet minimum standards for the protection of wetlands and stream corridors;
 - iv) the general manner in which provision will be made for any potential natural hazards in the area such as steep slopes, erosive soils, avalanche areas, landslide areas, floodplain areas and unstable soils.
- g) easements showing vested legal access for ingress and egress from a public road to the PUD in accordance with Section 4 (General Development Standards).
- h) evidence that the PUD has been designed with consideration of the site's natural

environment and the surrounding area and does not unreasonably destroy or displace wildlife, natural vegetation or unique natural or historic features; and,

- i) any other information or exhibits which the applicant or the Community Development Director deems pertinent in evaluating the proposed PUD.

E. PUD Requirements and Standards. All requirements and standards identified herein shall be applied to PUD applications, regardless of the type of PUD and are subject to approval by the decision-making body.

- 1. Permitted/Conditional Uses.** Uses in a PUD District Overlay shall only include permitted and conditional uses contemplated by the underlying district. Uses within a PUD-M district shall be limited to residential uses contemplated in the RMU and Commercial districts.
- 2. Dimensional Standards.** Dimensional standards may be amended but must comply with the following provisions:
 - a. the maximum height of any building, structure or facility shall be 35 feet;
 - b. setbacks may be amended but provisions providing solar access to all lots and/or occupied buildings must be made in the PUD district development standards;
 - c. the maximum residential density shall only be that of the RMU district in the PUD-M.
- 3. Landscaping Standards.** Amendment to the City’s landscaping standards must comply with the following provisions:
 - a. **Percent Coverage.** The minimum landscape area percent coverage (§2.6, Base District Dimensional Standards) may not be reduced.
 - b. **Landscaping.** Excepting the minimum percent coverage, buffering and landscaping standards may be amended only if they are determined by the decision making body to be a higher standard than those established by §4.6 of this *LDC*.
- 4. Special Use Regulations.** Specific Use Regulations (Section 3.) shall be maintained.
- 5. Road Standards.** Street section dimensions may be modified. The designated width of rights-of-way and other geometric designs established in §4.2 shall not be amended for dedicated public rights-of-way.
- 6. Off-Street Parking.** The standards for minimum off-street parking may be amended, but only if they are justified by a parking study prepared by the applicant as contemplated in §4.4 D.2 of this *LDC*. Disabled access parking ratios may not be reduced.
- 7. Pedestrian Circulation.** Pedestrian circulation standards may be amended only if they are determined by the decision making body to be a higher standard than those established by §4.5 of this *LDC*.
- 8. Subdivision Regulations.** The requirements of Section 12, Subdivision, shall apply to all PUDs unless otherwise specifically exempted by this Section of the *LDC*.

9. Open Space Areas. Open space in a PUD zone district shall be limited to indoor and outdoor recreation and community facilities characterized by potentially light or moderate impact on traffic, the natural environment, and surrounding neighborhoods. Such facilities include, but are not limited to country clubs; golf courses; athletic fields; skateboard parks; swimming, bathing, wading, and other therapeutic facilities; tennis, handball, and basketball courts and ice skating rinks. Open space land area may also include natural areas such as public parks, trails, greenbelts or natural land preservation areas. Open space land area may not be used for high intensity commercial recreation such as aerial tramway; alpine or water slides; amusement rides; auto, cycle and go-cart race tracks; campgrounds; stadiums; drive-in theaters; horse or dog racing tracks; shooting ranges; stables; zoos or other similar commercial recreation uses.

10. Required Open Space Area. At a minimum, a PUD development shall set aside 15 percent of the site's total gross area for open areas, plazas, courtyards, sitting areas and other similar public-accessible spaces. At its discretion, the decision-making authority may require additional private open areas or public trail dedications based on a review of the following factors:

- a. the *City of Gunnison Master Plan* and adopted sub-area master plans;
- b. unique drainage, topographic, vegetation or other such physical conditions;
- c. type and density of development; or
- d. overall need for open space and recreational facilities.

11. Open Space Ownership and Maintenance. All open areas or trails provided in a PUD shall be owned and maintained as common (private) open areas by the developer, owner of the property or an organization established for the ownership and maintenance of common open areas, unless the City Council accepts public dedication of the open areas.

12. Phased Development and Open Space. When a PUD is developed in phases, a proportional amount of any required open space, recreation areas and other community benefits shall be included in each phase such that the project, as it is built, will comply with the overall density and open space requirements of this *LDC* at the completion of each phase of development.

F. PUD Review Criteria. In addition to meeting the Review Standards for a zoning amendment (§10.6), PUD zoning applications must meet the following review criteria:

1. The proposed PUD encourages innovation in residential, commercial and industrial development so that the needs of the population may be met by greater variety in type, design and layout of buildings and land uses and by the conservation and more efficient use of open space.
2. The proposed PUD encourages land development that, to the greatest extent possible, preserves natural vegetation; respects natural topographic and geologic conditions; incorporates the unique, natural and scenic features of the landscape; and refrains from adversely affecting flood corridors, soil, drainage, and other natural ecological conditions.
3. The proposed PUD design standards combine and coordinate architectural styles, building forms, and structural/visual relationships within an environment that allows mixing of

different land uses in an innovative and functionally efficient manner.

4. The proposed PUD allows efficient design and use of solar access.
5. The PUD provides for adequate, accessible, and properly located open and recreation space, schools or other facilities.
6. The PUD promotes the efficient use of land resulting in a network of utilities, streets and other infrastructure features that maximize the allocation of fiscal and natural resources.
7. The PUD proposes specific uses permitted within a PUD zone land use district must be of a type and so located as to be compatible with surrounding neighborhoods, community character, the *City of Gunnison Master Plan* and other adopted plans.
8. The PUD plan protects environmentally sensitive areas, and occurs on land physically suited to construction.
9. The PUD proposes residential density and maximum non-residential floor area that will be compatible with the internal neighborhood design and will not have an adverse effect on the adjacent community area.
10. The PUD plan proposes at least 15 percent of the total gross area for common open space, and at least one half of this common open space shall be developed for recreation which may include playing fields, tennis courts, picnic sites, trails, fishing access and similar recreation sites.
11. The PUD plan provides a higher quality development than found in traditional zone districts.
12. The boundary between a PUD and adjacent land uses shall provide an adequate transition between land uses.

G. Development Plan. If a PUD zoning plan falls within Section 12, Subdivision, and requires subdivision approval as defined in §12.3, within one year of a PUD zoning plan approval the applicant shall submit a Land Use Development for the PUD according to the requirements of Section 6, Development Review Procedures. If the developer cannot submit a development plan within one year of the zoning plan approval, the developer shall submit a letter requesting an extension of time to the Community Development Director prior to expiration of the one-year period. The Community Development Director may grant extensions for reasonable waiver requests for up to a total of three years from the date of the zoning plan approval. Should a developer not be able to submit a development plan in a timely manner, the City has the right to rezone the property in accordance with this *LDC*.

H. Changes. The PUD shall be developed only according to the approved zoning plan and development plan and all supporting data. The final PUD zoning plan and development plan and supporting data, together with all recorded amendments, shall be binding on the applicants, their successors, grantees, and assigns and shall limit and control the use of premises and location of structures in the PUD as set forth therein. Changes to the final PUD zoning plan may be made as follows:

1. **Major Changes.** Changes which alter the concept or intent of the planned unit development including increases in density, changes in the height of buildings, reductions in proposed

open space, changes in the development sequencing, changes in road standards, or changes in the final governing agreements, provisions, or covenants may be approved only by submission and reconsideration of a new PUD zoning plan and supporting data.

- a.** If major changes are proposed, a new public hearing shall be required during resubmission of the PUD zoning plan.
 - b.** All changes to the first recorded final PUD zoning plan shall be recorded with the Gunnison County Clerk and Recorder as amendments to the final PUD zoning plan except as provided in §10.7 H.2, below. (Talk to Attorney)
- 2. Insubstantial Changes.** The Community Development Director may approve changes in the planned unit development which insubstantially change the concept, intent or substance of the development. Insubstantial changes shall be limited to changes addressing the engineering or technical constraints discovered during the development which could not be anticipated during the original approval process, or any other change which has no material effect on the character of the approved PUD zoning plan, the representations made by the applicant or the conditions of the approval.

Section 11. Nonconformities

§11.1 PURPOSE

Within the city there exist uses, structures and lots which were lawfully established pursuant to the zoning and building regulations in effect at the time of their development which do not now conform to the provisions of this *LDC*. The purpose of this Section is to regulate and limit the continued existence of these nonconforming uses, structures and lots. It is the intent of the City to permit these nonconformities to continue, but not to allow them to be enlarged or expanded, so as to preserve the integrity of the zone districts and the other provisions of this *LDC*.

§11.2 NONCONFORMING USES

- A. Authority to Continue.** Nonconforming uses may continue in accordance with the provisions of this chapter.
- B. Maintenance and Reconstruction**
- 1. Normal Maintenance.** Normal maintenance, repairs or alterations may be performed to permit continuation of a nonconforming use.
 - 2. Reconstruction.** If a nonconforming use is damaged by fire or other cause to the extent of more than 80 percent of its replacement cost as determined by the zoning administrator, it shall only be reconstructed in compliance with the provisions of this *LDC*.
- C. Extensions.** A nonconforming use shall not be extended or enlarged. This limitation shall be construed so as to prevent:
- 1. Extension of Area.** Enlargement of a nonconforming use by extension of the area of the structure which it occupies or by extension of the structure itself.
 - 2. Additional Land Area.** Occupancy of additional land area by the nonconforming use.
 - 3. Exceptions.** An exception to the limitations on extension of a nonconforming use may be permitted by the zoning administrator to comply with the provisions of the Americans with Disabilities Act (ADA), provided it is demonstrated that the only way to comply with the ADA would be through an extension which increases the use's nonconformity, and that the extension is the minimum necessary to comply with the ADA.
- D. Relocation.** A structure containing a nonconforming use shall not be moved to another location unless it shall thereafter conform to the provisions of the zone district into which it is moved.
- E. Change in Use.** A nonconforming use shall not be changed to another use unless the new use shall conform to the provisions of the zone district in which it is located. If a nonconforming use is changed to a conforming use for any period of time, it may not thereafter be changed back to any nonconforming use.
- F. Discontinuance.** If a nonconforming use is discontinued for a period of 12 consecutive months, then such use may not be reestablished or resumed, and any subsequent use must conform to the provisions of this *LDC*.

§11.3 NONCONFORMING STRUCTURES

- A. **Authority to Continue.** Nonconforming structures may continue in accordance with the provisions of this chapter.
- B. **Maintenance and Reconstruction**
 - 1. **Normal Maintenance.** Normal maintenance, repairs and alterations may be performed to permit continuation of a nonconforming structure.
 - 2. **Reconstruction.** If a nonconforming structure is damaged by fire or other cause to the extent of more than 80 percent of its replacement cost as determined by the zoning administrator, it shall only be reconstructed in compliance with the provisions of this *LDC*.
- C. **Extensions.** A nonconforming structure shall not be extended by an enlargement or expansion that increases its nonconformity.
 - 1. **Permitted Extensions.** A nonconforming structure may be extended or altered in a manner that does not increase its nonconformity.
 - 2. **Americans with Disabilities Act.** An extension to a nonconforming structure may be permitted by the zoning administrator to comply with the provisions of the Americans with Disabilities Act (ADA), provided it is demonstrated that the only way to comply with the ADA would be through an extension which increases the structure’s nonconformity, and that the extension is the minimum necessary to comply with the ADA.
- D. **Relocation.** A nonconforming structure shall not be moved to another location unless it shall thereafter conform to the provisions of the zone district into which it is moved.

§11.4 NONCONFORMING LOTS

- A. **Development Permitted.** A building containing uses permitted in the zone district may be developed on a lot which is nonconforming as to minimum lot size or minimum lot frontage, provided it can be located on the lot so that all other dimensional standards are met, or a variance from such dimensional standards is obtained pursuant to Section 8, Variances, and provided the development complies with all other standards of this *LDC*.
- B. **Conforming Lots Shall Not Be Made Nonconforming.** No lot that is conforming as to minimum lot size or minimum lot frontage as of the effective date of this *LDC* may be reduced in size or subdivided in such a way that it creates a nonconforming lot or causes any structure or use to become nonconforming.
- C. **Lot Reduction Shall Not Increase Nonconformity.** No lot that is nonconforming as to minimum lot size or minimum lot frontage as of the effective date of this *LDC* may be reduced in size in such a way that its nonconformity would increase, or that causes the nonconformity of any use to increase.
- D. **Nonconforming Lots Shall Not Be Subdivided.** No lot that is nonconforming as to minimum lot size or minimum lot frontage as of the effective date of this *LDC* may be subdivided.

§11.5 NONCONFORMING SIGNS

- A. Authority to Continue.** Any sign in existence on the effective date of this *LDC* which does not conform with any provisions of the *LDC* shall be allowed to remain and to be maintained in good repair, so long as the sign is used in conjunction with an existing business.

- B. Discontinuance.** In the event a nonconforming sign refers to a business which ceases to exist, or if the nonconforming sign is taken out of service for any period of time as a result of either an intentional act of the owner (other than for maintenance), an unintentional act of another or an Act of God, the replacement sign shall be constructed in conformance with the provisions of this *LDC*.

§11.6 NONCONFORMING MOBILE HOME PARKS

- A. Authority to Continue.** Nonconforming mobile home parks may continue in accordance with the terms of this chapter.

- B. Replacement of Mobile Homes.** A mobile home within a nonconforming mobile home park may be replaced with another mobile home, even if the dimensions of the replacement mobile home result in an increase in the degree of nonconformity of the mobile home park with respect to the minimum setbacks set forth in §3.3 I.4; provided, however, that the installation of the replacement mobile home shall not result in any of the following:
 - 1. International Fire Code.** A violation of the fire safety separation requirements of the *International Fire Code* as adopted by the City.
 - 2. Encroachment.** Encroachment of the mobile home into any adjoining street, alley, or property not a part of the mobile home park.
 - 3. Off-Street Parking.** Reduction in the number of required off-street parking spaces which existed prior to the replacement of the home.

- C. Discontinuance.** In the event a nonconforming mobile home park is not occupied by any inhabited mobile homes for a period of 12 consecutive months, then its use as a mobile home park may not be reestablished or resumed except in conformance with the provisions of this land development code. The discontinuance of the use of one or more, but less than all, of the mobile home lots in a nonconforming mobile home park for inhabited mobile homes shall not prohibit the replacement of a mobile home upon said mobile home lot in accordance with the terms of this section.