MEMORANDUM

TO: **Laramie County Board of County Commissioners**

FROM: **Cate Cundall, Associate Planner**

DATE: **January 3, 2023**

TITLE: **PUBLIC HEARING regarding a Subdivision Permit and Plat for Terry Ranch Business Park, Laramie County, WY.**

EXECUTIVE SUMMARY

AVI, PC on behalf of Swan Ranch, LLC has submitted an application for a Subdivision Permit and Plat for Terry Ranch Business Park. The project will subdivide a parcel of land in the E1/2 Section 4 and the W1/2 Section 3, T12N., R67W., into 4 tracts ranging in size of 13.37 acres to 27.68 acres.

BACKGROUND

This property is approximately 83.39 acres and located within a LU-Land Use zoning district. Currently, this is vacant agricultural land. The proposed project was the business part of the Terry Ranch Meadows Preliminary Plat Project. The developer has decided to only move forward with development of the commercial portion of the project..

Pertinent Statutes and Land Use Regulations include:

Wyoming State Statutes: Section 18-5-301 through 18-5-315.

Section 1-2-101 governing the requirements for Subdivision Permit and Plat.

Section 1-2-104 governing Public Notice.

Section 4-2-114 governing the LU – Land Use Zoning District.

DISCUSSION

The owner wishes to create four tracts averaging 20.85 acres from the 85.60 parcel.

The subject property is bordered by LU, PUD and A-2 zone districts. The subject property lies between I-25 and Road 223. Union Pacific Railway borders the north boundary of the property.

Public notice was provided as required. Staff received no public comments pertaining to the development action that is taking place. A Traffic Impact Study and a Conceptual Drainage Analysis was completed for this project. Attached are both studies and agency review comments with applicant response.

RECOMMENDATION and FINDINGS

Based on evidence provided, staff and the Planning Commission recommends the Board find that:

a. This application meets the criteria for a subdivision permit and plat pursuant to section 2-1-100 of the Laramie County Land Use Regulations.

Staff and the Planning Commission recommend the Board approve the Subdivision Permit and Plat for Terry Ranch Business Park to the Board of County Commissioners with no conditions.

PROPOSED MOTION

I move to approve the Subdivision Permit and Plat for Terry Ranch Business Park and adopt the finding of fact a of the staff report.

ATTACHMENTS

Attachment 1: Aerial Map
Attachment 2: Narrative
Attachment 3: Terry Ranch Meadows PDP Disclaimer Letter
Attachment 4: Agency Review Comments and Applicant Response
Attachment 5: Traffic Impact Study
Attachment 6: Conceptual Drainage Analysis
Attachment 7: Draft Resolution
Attachment 8: Terry Ranch Business Park Plat

Laramie County, Wyoming

Terry Ranch Business Park

PZ-22-00323

NORTH

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SURVEYING
PC

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October 26, 2022
4490

Laramie County Planning and Development
3966 Archer Parkway
Cheyenne, WY 82009

RE: Terry Ranch Business Park – Project Narrative, Drainage & Traffic Waiver, Community Facility Fee and DEQ acknowledgment.

To Whom It May Concern,

The Terry Ranch Business Park is a subdivision permit and plat for a portion of the approved Terry Ranch Meadows Preliminary Development Plan. This is the commercial portion of the plat south of the Union Pacific railroad tracks. Preliminary Drainage and Traffic were submitted with the Preliminary Development Plan. We would request waivers for the final drainage and traffic studies until such time as the users for the lots are known. Some drainage will be submitted with the ROW permit for Sheep Avenue.

A DEQ study was completed with the Preliminary Development Plan but due to the fact that this portion is under 5 lots additional studies are not necessary.

The owner acknowledges that Community Facility and Public Safety fees will be do prior to signing of the plat by the County.

If you have any questions or would like to discuss this project in greater detail, please contact our office.

Respectfully Submitted,

Brad Emmons

Brad Emmons, AICP

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h:\4490_terry ranch meadows\4490_project narrative waivers and acknowledgements.docx

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November 29, 2022

Laramie County Planning and Development
3966 Archer Parkway
Cheyenne, WY 82009

4490

RE: Terry Ranch Business Park

Dear Laramie County reviewers,

The Terry Ranch Business Park submittal was a small part of the Terry Ranch Meadows preliminary plat project. The developer has decided to not pursue the residential portion of the development and only move forward with the commercial portion. Most of the major comments were from the residential area. In the best interest of design and review I believe it would be best to now separate the two. AVI and the owner would like to let the Terry Ranch Meadows preliminary development plan expire which it will in February knowing that this will cause that area to start over with a new Preliminary Development Plane. Hopefully the Terry Ranch Business Park can move forward on its own. We have submitted a conceptual drainage study and traffic study with the review comments for the subdivision permit. If additional time is needed for review of these documents the subdivision permit may be postponed prior to the Planning Commission meeting to give adequate time to the reviewing agencies for the Terry Ranch Business Park.

If you have any questions or would like to discuss this project in greater detail, please contact our office.

Respectfully Submitted,

Brad Emmons

Brad Emmons, AICP

A.V.I. PROFESSIONAL CORPORATION
h:\4490_terry ranch meadows\4490_split from meadows letter.docx

PZ-22-00323 - Review #1
Subdivision Permit (25 Lots or Less)

Cheyenne MPO: Cheyenne MPO, Christopher Yaney Comments Attached 11/07/2022
1. When each lot is developed, the site may need to perform a traffic impact study based on the number of trips generated by each site.

Cheyenne Planning: Cheyenne Development Services, Seth Lloyd Comments Attached 11/02/2022
1. More than one mile outside of City limits. No Official Letter from the City required.
2. Industrial park appropriate at this location (close to I-25 and railroad and in area designated Mixed-use Employment by the comprehensive plan).
3. No other comments.

County Assessor: County Assessor, Kaycee Eisele Comments Attached 11/03/2022
Please note, our office will reach out to AVI Surveying for a legal description on the remaining portion of the parcel that is NOT included in this plat.

County Engineer: County Engineer, Scott Larson Comments Attached 11/14/2022
Engineer Review
1. The PDP map was never updated to reflect the comments made during the PDP review and should have been as requested/required. Since the map was not updated, it should be updated now, and it should show the phasing of the site since the original PDP map didn't show there would be any phasing of this property and now they are platting different parts/phases of it instead of the entire property.
2. The waiver request letter submitted with this application is incorrect. It states that a preliminary Drainage Study was submitted with the PDP, which was not the case. During the PDP process, a waiver for a Drainage Study was requested and the applicant stated that "a detailed drainage study will be provided at the time of the final plat submittal". In addition, comments were made that the waiver would be granted for the PDP, but a Drainage Study would need to be submitted with the Plat. Therefore, a detailed Drainage Study is required to be submitted with the plat.
3. The PDP map shows a proposed 20' Drainage Easement through the proposed Tract 4, but the plat map submitted does not include that easement. This is another reason why it is important to submit a Drainage Study at this time to determine how much off site runoff will enter this platted area, how much runoff will be generated from these 4 Tracts, where the runoff will be routed, how much runoff will leave this site and where the discharge area(s) will be, what are the impacts to downstream property from the

runoff that leaves this site, are other drainage easements needed/required on this platted property or downstream from this property, etc. There appears to be the potential for a significant amount of runoff entering Tract 4 and the drainage easement shown on the PDP seems like it would be very important and needed since that seems like the natural pathway. But the Drainage Study should discuss that and if the intent is to reroute the drainage to another location instead of going through close to the center of Tract 4.
4. The PDP map shows the property line for Tract 4 adjacent to the UPRR is 888.20', and 680.54' for Tract 3 for a total of 1568.74', but the Plat drawing shows 1095.97' for Tract 4 and 680.43' for Tract 3 for a total of 1776.39'. Where is the 207.65' difference?
5. The PDP map shows a proposed 100' x 100' "Pocket Easement" in the south corner of the proposed Tract 1, but this easement does not show up on the plat drawing. What is/was the purpose of the "Pocket Easement" and does it need to be included on the plat drawing?
6. There were comments made during the PDP process regarding the Traffic Study that were not addressed at that time and the applicant indicated that the Traffic Study would be adjusted but it never was to my knowledge. Therefore, a revised and updated Traffic Study for the entire subdivision shall be submitted with this plat adequately addressing all of the comments made during the PDP process.
7. A detailed Traffic Study does not need to be completed for this platted area, however, a summary outlining the traffic volumes estimated, traffic characteristics, etc. for this specific area from the Traffic Study prepared for the entire subdivision needs to be submitted with this plat and any future plat for this subdivision.
8. Do there need to be utility easements along Terry Ranch Road and Sheep Avenue to bring utilities into this platted area to serve each Tract?
9. Based on the information on the plat drawing, the Net Area is 83.5 acres, and the Gross Area is 85.6 acres. However, the plat application shows a total of 83.39 acres for the Community Facility Fee, and I believe this should be 83.5 acres.

Surveyor Review
1. The title indicates the location of the subdivision to be "A PORTION OF THE NORTHEAST 1/2 OF SECTION 4 AND A PORTION OF THE NORTHWEST 1/4 OF SECTION 3". The LEGAL DESCRIPTION indicates the subdivision to be "A PARCEL OF LAND LOCATED IN THE EAST HALF OF SECTION 4 AND THE WEST HALF OF SECTION 3…". The general description in the title should match the general description in the LEGAL DESCRIPTION.
2. The POINT OF TANGENCY of the curve located on the northeast boundary of the subdivision (C1) and referenced in the eighth line of the LEGAL DESCRIPTION, is not shown on the drawing of the plat.
3. There is a line shown on the plat that is located northwesterly of the northwest boundary of the subdivision, falling a little northwest of the INTERSTATE 25 ROW label. Is this the center line of the INTERSTATE 25 ROW called out in the LEGAL DESCRIPTION? It should be identified.
4. There are 4 RIGHT-OF-WAY MONUMENTS called out in the LEGAL DESCRIPTION and shown on the plat drawing. The RIGHT-OF-WAY MONUMENT symbol and description needs to be added to the LEGEND.

5. The Vicinity Map would be more congruent with the Title Block requirements if one were to add information such as, at a minimum, the Section, Township and Range data with enough detail to indicate the location of the subdivision within the Section.

County Public Works Department: County Public Works Department, Molly Bennett Comments Attached 11/14/2022
1. The request for a waiver of traffic and drainage studies is denied.
2. The comments submitted by the review engineer/surveyor shall be addressed. It is the recommendation from Public Works that these comments are resolved, reviewed and addressed (by all parties) prior to the application going before the Planning Commission.
3. Terry Ranch Road is under State (WYDOT) jurisdiction. Access for Sheep Avenue shall be coordinated through WYDOT.
4. Sheep Avenue is dedicated as ROW. Access permit applications through Public Works will be required for each tract. Call (307-633-4302) or email (permits@laramiecountywy.gov) Public Works for more information.
5. A note shall be added indicating no public maintenance of road/right-of-way.
6. This development will require a right-of-way/grading permit. The subdivision permit and plat flowchart (attached) will apply to this project.

No Comments

County Real Estate Office: County Real Estate Office, Laura Pate Comments Attached 11/07/2022
No Comments

Environmental Health: Environmental Health Department, Tiffany Gaertner Comments Attached 11/14/2022
Regulations:
Laramie County Small Wastewater Systems Regulations

Comments:
Septic permit from Environmental Health is required for each lot. Commercial septic system must be designed by an engineer. Maintain proper setbacks from property lines and keep septic systems out of easements. Septic systems cannot be installed on greater than 15 percent slope.

Fire District No 1: Fire District No. 1, Darrick Mittlestadt Comments Attached

10/31/2022
Meet the intent of the 2021 IFC
Chapter 5, Fire Service Features
Section 503, Fire Apparatus Access Roads: ALL pages 5-1 to 5-2.
Section 505, Premises Identification, page 5-3
Section 507, Fire Protection water Supply, ***REQUIRED*** following this document and or the Laramie County Rural Water regulations. LCFD # 1 has adopted NFPA 1142, Standard on Water Supplies for Surburban and Rural Fire Fighting for additional reference.
Section 510, Emergency Radio Communications Coverage, pages 5-6 to 5-8. *** Radio coverage is limited throughout the project area due to geography and limited line of sight from SoHo and Site 2(radio towers). Each building and or property will be required to install a repeater type system. ***

Intraoffice: Planners, Cambia McCollom Comments Attached 11/10/2022
Sheep Ave intended to be an easement or a public right-of-way? There is no language for it in the dedication for it to be seen as a public right of way.

No Comment
Wyoming Game & Fish Dept.

No Response
Black Hills Energy
CenturyLink
Combined Communications Center
County Attorney
County Clerk
County Conservation District
County Treasurer
Dept of Energy (WAPA)
Emergency Management
Laramie Co School Dist No 1
Laramie County Weed & Pest
Sheriff's Office
WY WState Engineer's Office
WYDOT
Wyoming DEW

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December 1, 2022

Laramie County Planning and Development
3966 Archer Parkway
Cheyenne, WY 82009

4490

RE: Terry Ranch Business Park – Response to Agency Comments

To Whom It May Concern,

Attached for your review is a resubmittal of the Subdivision Permit & Plat for the above referenced project with the noted items addressed. This letter is in response to the County's first round of review comments provided via email on 11/15/2022. The County's review comments are listed below with AVI's response or solution in ***red***.

Cheyenne MPO: Christopher Yaney

1. When each lot is developed, the site may need to perform a traffic impact study based on the number of trips generated by each site. Noted

Cheyenne Planning: Seth Lloyd

1. More than one mile outside of City limits. No Official Letter from the City required.
2. Industrial park appropriate at this location (close to I-25 and railroad and in area designated Mixed-use Employment by the comprehensive plan).
3. No other comments. Noted

County Assessor: Kaycee Eisele

Please note, our office will reach out to AVI Surveying for a legal description on the remaining portion of the parcel that is NOT included in this plat. AVI will provide new legal description to County Assessor.

County Engineer: Scott Larson

Engineer Review

1. The PDP map was never updated to reflect the comments made during the PDP review and should have been as requested/required. Since the map was not updated, it should be updated now, and it should show the phasing of the site since the original PDP map didn't show there would be any phasing of this property and now they are platting different parts/phases of it instead of the entire property.

An updated map was sent in on 8/20/21 with a response letter to agency comments. On 11/14/22 we spoke with planning staff who said they would open a second period of reviews. Furthermore, we do not plan on submitting any other subdivision permits for this property before the 18-month approval time limit is up. This project was recommended for approval by the Planning Commission in August 2021, therefore any associated plats must be submitted by February 2023. It is understood that any intent to develop the property further after February 2023 may require a new PDP to be submitted.

2. The waiver request letter submitted with this application is incorrect. It states that a preliminary Drainage Study was submitted with the PDP, which was not the case. During the PDP process, a waiver for a Drainage Study was requested and the applicant stated that "a detailed drainage study will be provided at the time of the final plat submittal". In addition, comments were made that the waiver would be granted for the PDP, but a Drainage Study would need to be submitted with the Plat. Therefore, a detailed Drainage Study is required to be submitted with the plat. County Engineer is correct and have provided a drainage concept for the plat with these comments. We would like to complete the full drainage study with construction drawings for new roadway.

3. The PDP map shows a proposed 20' Drainage Easement through the proposed Tract 4, but the plat map submitted does not include that easement. This is another reason why it is important to submit a Drainage Study at this time to determine how much off site runoff will enter this platted area, how much runoff will be generated from these 4 Tracts, where the runoff will be routed, how much runoff will leave this site and where the discharge area(s) will be, what are the impacts to downstream property from the runoff that leaves this site, are other drainage easements needed/required on this platted property or downstream from this property, etc. There appears to be the potential for a significant amount of runoff entering Tract 4 and the drainage easement shown on the PDP seems like it would be very important and needed since that seems like the natural pathway. But the Drainage Study should discuss that and if the intent is to reroute the drainage to another location instead of going through close to the center of Tract 4. AVI included a drainage concept for the area with this review. Would request final drainage study with construction drawings.

4. The PDP map shows the property line for Tract 4 adjacent to the UPRR is 888.20', and 680.54' for Tract 3 for a total of 1568.74', but the Plat drawing shows 1095.97' for Tract 4 and 680.43' for Tract 3 for a total of 1776.39'. Where is the 207.65' difference?

The PDP shows a total distance for the north property lines of Tracts 3 and 4 as 1776.39', which is identical to what is shown on the plat drawing. The 888.20' label on the PDP for just the northern property line of Tract 4 is wrong and was corrected to 1095.97' on the plat.

5. The PDP map shows a proposed 100' x 100' "Pocket Easement" in the south corner of the proposed Tract 1, but this easement does not show up on the plat drawing. What is/was the purpose of the "Pocket Easement" and does it need to be included on the plat drawing?

This proposed pocket easement was to be used as a staging area for the construction of the Black Hills Energy pipeline. This pipeline has since been constructed and a new as-built easement recorded, which is shown on the plat.

6. There were comments made during the PDP process regarding the Traffic Study that were not addressed at that time and the applicant indicated that the Traffic Study would be adjusted but it never was to my knowledge. Therefore, a revised and updated Traffic Study for the entire subdivision shall be submitted with this plat adequately addressing all of the comments made during the PDP process. A traffic study is provided with this resubmittal but are estimates at this time.

7. A detailed Traffic Study does not need to be completed for this platted area, however, a summary outlining the traffic volumes estimated, traffic characteristics, etc. for this specific area from the Traffic Study prepared for the entire subdivision needs to be submitted with this plat and any future plat for this subdivision. A traffic study is provided with this resubmittal but are estimates at this time.

8. Do there need to be utility easements along Terry Ranch Road and Sheep Avenue to bring utilities into this platted area to serve each Tract?

Yes, added on the revised plat.

9. Based on the information on the plat drawing, the Net Area is 83.5 acres, and the Gross Area is 85.6 acres. However, the plat application shows a total of 83.39 acres for the Community Facility Fee, and I believe this should be 83.5 acres. 83.5 acres is correct.

Surveyor Review

1. The title indicates the location of the subdivision to be "A PORTION OF THE NORTHEAST 1/2 OF SECTION 4 AND A PORTION OF THE NORTHWEST 1/4 OF

SECTION 3". The LEGAL DESCRIPTION indicates the subdivision to be "A PARCEL OF LAND LOCATED IN THE EAST HALF OF SECTION 4 AND THE WEST HALF OF SECTION 3…". The general description in the title should match the general description in the LEGAL DESCRIPTION.

Corrected on the revised plat

2. The POINT OF TANGENCY of the curve located on the northeast boundary of the subdivision (C1) and referenced in the eighth line of the LEGAL DESCRIPTION, is not shown on the drawing of the plat.
Corrected on the revised plat.

3. There is a line shown on the plat that is located northwesterly of the northwest boundary of the subdivision, falling a little northwest of the INTERSTATE 25 ROW label. Is this the center line of the INTERSTATE 25 ROW called out in the LEGAL DESCRIPTION? It should be identified.

Line was not meant to be there. Removed from plat and legal description updated.

4. There are 4 RIGHT-OF-WAY MONUMENTS called out in the LEGAL DESCRIPTION and shown on the plat drawing. The RIGHT-OF-WAY MONUMENT symbol and description needs to be added to the LEGEND.

Corrected on the revised plat.

5. The Vicinity Map would be more congruent with the Title Block requirements if one were to add information such as, at a minimum, the Section, Township and Range data with enough detail to indicate the location of the subdivision within the Section.

Corrected on the revised plat.

<u>County Public Works Department: Molly Bennett</u>
1. The request for a waiver of traffic and drainage studies is denied. Conceptual drainage and traffic provided with re-submittal documents.
2. The comments submitted by the review engineer/surveyor shall be addressed. It is the recommendation from Public Works that these comments are resolved, reviewed and addressed (by all parties) prior to the application going before the Planning Commission. Noted.
3. Terry Ranch Road is under State (WYDOT) jurisdiction. Access for Sheep Avenue

shall be coordinated through WYDOT. Noted.
4. Sheep Avenue is dedicated as ROW. Access permit applications through Public Works will be required for each tract. Call (307-633-4302) or email (permits@laramiecountywy.gov) Public Works for more information. Noted.
5. A note shall be added indicating no public maintenance of road/right-of-way.

Corrected on the revised plat.

6. This development will require a right-of-way/grading permit. The subdivision permit and plat flowchart (attached) will apply to this project. Noted.

County Real Estate Office: Laura Pate Comments
No Comments

Environmental Health: Tiffany Gaertner
Regulations:
Laramie County Small Wastewater Systems Regulations

Comments:
Septic permit from Environmental Health is required for each lot. Commercial septic system must be designed by an engineer. Maintain proper setbacks from property lines and keep septic systems out of easements. Septic systems cannot be installed on greater than 15 percent slope.

Fire District No 1: Darrick Mittlestadt
Meet the intent of the 2021 IFC
Chapter 5, Fire Service Features
Section 503, Fire Apparatus Access Roads: ALL pages 5-1 to 5-2.
Section 505, Premises Identification, page 5-3
Section 507, Fire Protection water Supply, ***REQUIRED*** following this document and or the Laramie County Rural Water regulations. LCFD # 1 has adopted NFPA 1142, Standard on Water Supplies for Surburban and Rural Fire Fighting for additional reference.
Section 510, Emergency Radio Communications Coverage, pages 5-6 to 5-8. *** Radio coverage is limited throughout the project area due to geography and limited line of sight from SoHo and Site 2(radio towers). Each building and or property will be required to install a repeater type system. ***
Will be the responsibility of builders on sites

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Intraoffice: Cambia McCollom
Sheep Ave intended to be an easement or a public right-of-way? There is no language for it in the dedication for it to be seen as a public right of way

Corrected on the revised plat.

If you have any questions or would like to discuss this project in greater detail, please contact our office.

Respectfully Submitted,

Brad Emmons, AICP

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Traffic Impact Study

Terry Ranch Business Park

November 2022

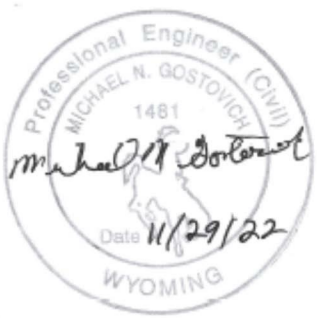
Traffic Impact Study
Terry Ranch Business Park
July 2021

Prepared for:

AVI
Engineering, Planning, Surveying

Prepared by:

Michael Gostovich, P.E.
W2 Traffic Engineering, LLC
11800 Blazer Road
Cheyenne, WY 82009



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Summary

This traffic impact study examines the potential impacts of the Terry Ranch Business Park development on the existing infrastructure.

The Terry Ranch Business Park consists of four tracks that range in size from approximately 13 to 18 acres. This development is located just to the north of the WY 223/Terry Ranch Road intersection. While the exact nature of the development for each lot is not known at this time, the land use was modeled as an industrial park.

The operation of two existing intersections, South Greeley Highway/Terry Ranch Road and WY 223/Terry Ranch Road, were examined as part of this report. The existing levels of service at both intersections currently operate at Level of Service A or B for all movements. With the existing addition of traffic volumes from the Terry Ranch Business Park development, there is no appreciable degradation of the level of service at either intersection. It is estimated that all movements will operate at Levels of Service A or B with the estimated 2046 volume. The Terry Ranch Road/Sheep Avenue intersection will provide access into the development site, and with estimated 2046 volumes, all movements operate at Level of Service A.

The Wyoming Department of Transportation has two projects in the vicinity of this development. One project is for a bridge replacement at the Terry Ranch Road railroad crossing just to the east of the development site, and the second is a pavement rehabilitation project which will begin on WY 223 at I-25 and continue to the US 85 intersection. As part of this construction project, the Wyoming Department of Transportation has agreed to install a left-turn lane for the northbound to westbound movement into the project site.

Sight distances are adequate for all of the existing intersections as well as the new Terry Ranch Road/Sheep Avenue intersection. Since there is more than adequate sight distance at the new intersection, no safety problems are anticipated.

The new Terry Ranch Road/Sheep Avenue intersection meets the access separation requirement policy of the Wyoming Department of Transportation.

A STOP sign should be erected for exiting traffic at the Terry Ranch Road/Sheep Avenue intersection. It is not anticipated that there will be changes in any of the existing speed limits.

Introduction

The original Terry Ranch Meadows project included 179 single-family homes and four commercial lots. Since then, the project has been scaled back to include only the four commercial lots at this time. While the original traffic impact study included the four commercial lots, this traffic impact study uses the data collected in the original study, but only addresses the four commercial tracts in the Terry Ranch Business Park. However, it is being written in the same format as the original so that the reviewing agencies will have a traffic impact study that corresponds to the plat being submitted. Figure 1 is a portion of the Laramie

County GIS map which shows the general location of the Terry Ranch Business Park development.

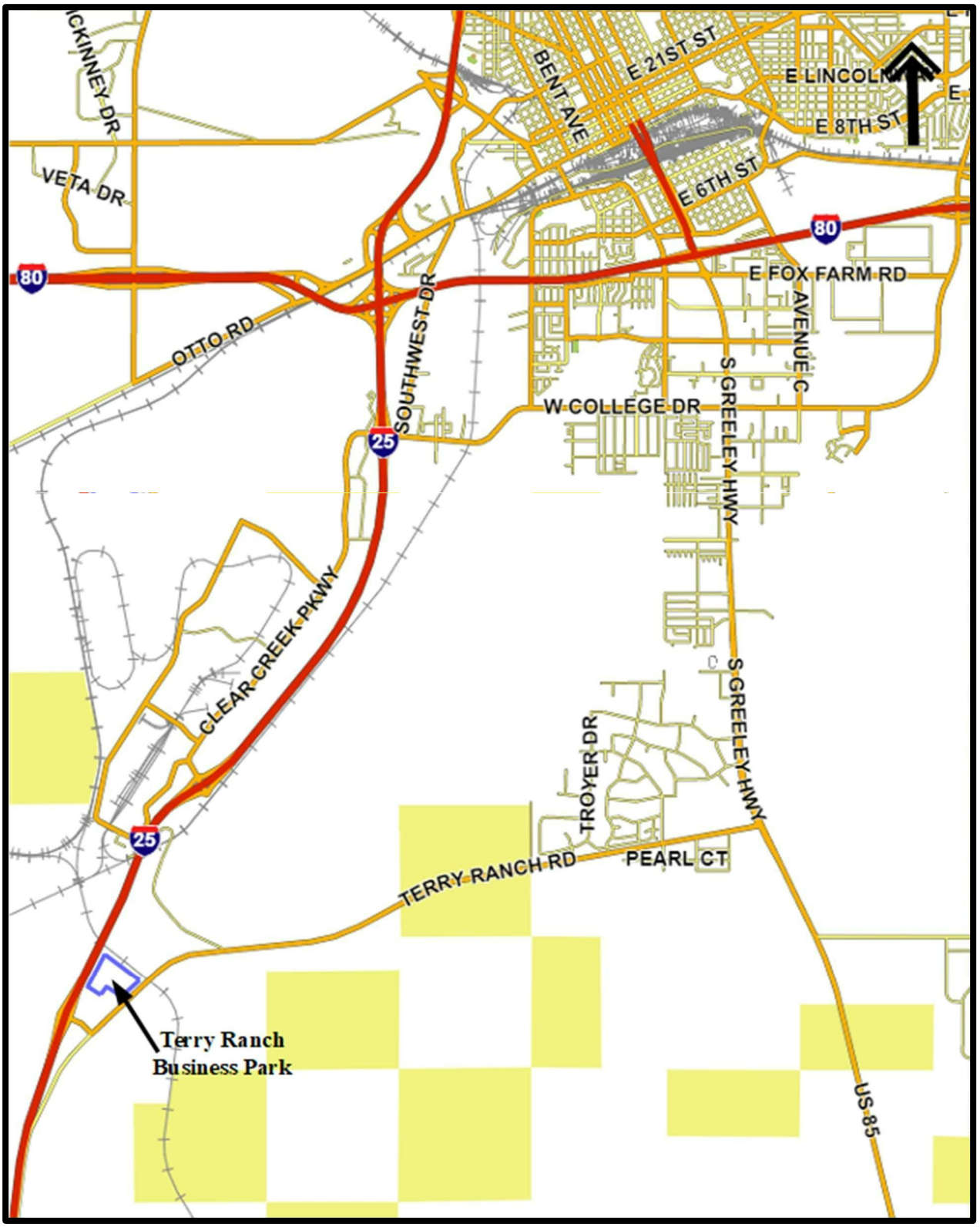


Figure 1. General Area Map

Study Scope

The purpose of this traffic impact study is to document the existing conditions in the vicinity of the proposed development and to review the impacts associated with the new development. The primary focus of this report will be to document the existing and future operation of the US 85/Terry Ranch Road intersection and the Terry Ranch Road/Wyoming 223 intersection. The operation of the access into the new development with the Terry Ranch Road will also be reviewed. The report will quantify the traffic impacts the development will have on the intersections and will document the need for any infrastructure improvements. The crash data from the original traffic impact study is included in this report. The time frames that will be investigated will be the anticipated time of complete subdivision occupancy (build-out) and build-out plus 20 years. Figure 2 is a portion of the Laramie County GIS map with the specific study locations noted.

Figure 2. Study Scope

Existing Conditions

Land Use

The proposed development is currently vacant land. There is a pocket of commercial development next to the I-25 interchange and immediately adjacent to this development site. The land to the north, east, and south is vacant land. To the west, across I-25, is the Swan Ranch Rail

Park which is a commercial/industrial development. Figure 3 is a Google Earth Aerial photo of the proposed development site showing the land use in the vicinity of the proposed project.

Figure 3. Aerial View Showing Adjacent Land Use

Zoning

Typically, zoning is another indication of existing land use. In this case, the development falls just outside the zoned portion of Laramie County. Laramie County, however, does differentiate land use for tax purposes, and the development site is currently listed as agricultural. Figure 4 is a portion of the Laramie County GIS map which shows the zoning adjacent to the proposed development, and the figure also shows the tax classification of surrounding unzoned lands.

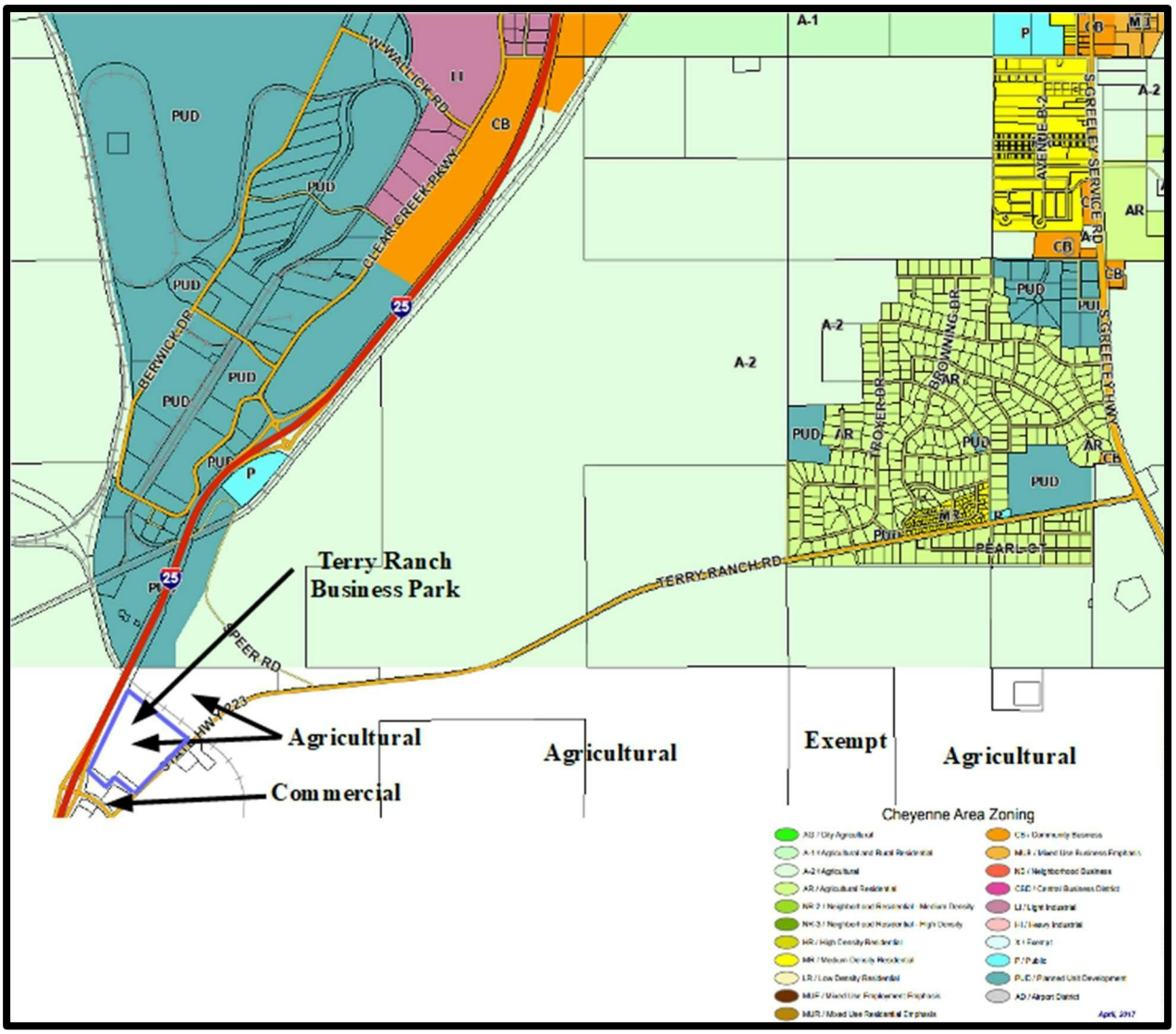


Figure 4. Zoning

Street Infrastructure

There are two intersections that are included in this report. One intersection that is included in this report is the east end of the Terry Ranch Road at the junction with US 85, and the other intersection is the WY 223/Terry Ranch Road intersection.

The US 85/Terry Ranch Road intersection is located at the west end of Terry Ranch Road. A port of entry is constructed immediately to the east, and its access shares the intersection. Because of the port of entry access, this intersection is basically a cross intersection. At this location US 85 is a divided four-lane rural highway. The southbound two lanes continue through the intersection and merge into a single lane to the south. There is a free right turn for the southbound to westbound motorists, and a left-turn lane for drivers turning into the port of entry. The northbound lanes have both a right-turn lane for port of entry traffic and a

left-turn lane for motorists going west on the Terry Ranch Road. The Terry Ranch Road has a single lane entering and leaving the intersection, and the free right turn for southbound to westbound motorists merges west of the intersection. Figures 5 and 6 are Google Earth aerial photographs of the intersection, and Figures 7 through 9 are at-grade photos of the intersection.

Figure 5. Aerial View of the US 85/Terry Ranch Road Intersection

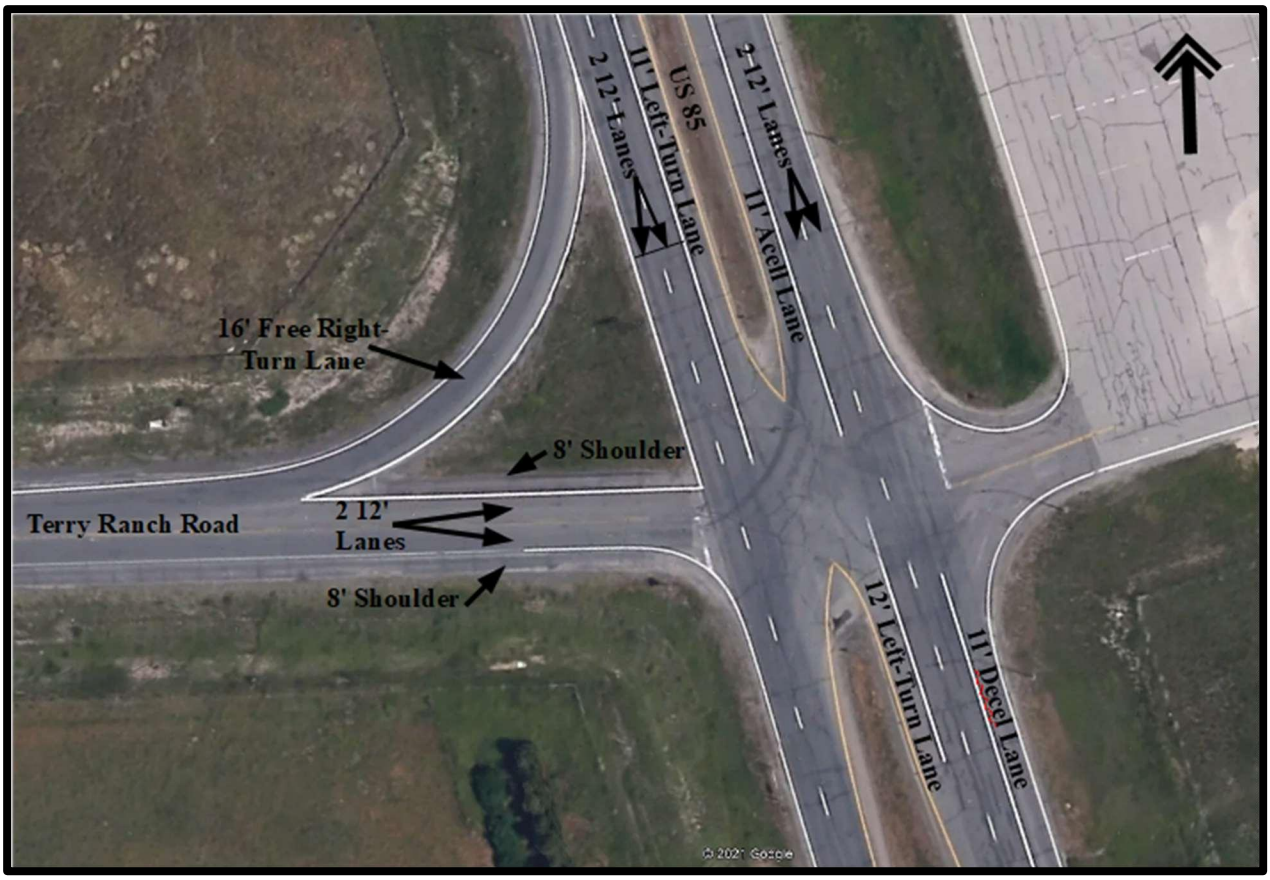


Figure 6. Aerial View of the US 85/Terry Ranch Road Intersection

Figure 7. At-Grade Photo US 85/Terry Ranch Road Intersection Looking South

Figure 8. At-Grade Photo US 85/Terry Ranch Road Intersection Looking North

Figure 9. At-Grade Photo US 85/Terry Ranch Road Intersection Looking East

The second intersection is the WY 223/Terry Ranch Road intersection just to the east of I-25. At this location, the Terry Ranch Road and WY 223 begin their overlap. WY 223 begins at I-25 and continues east to US 85. Its entire length is a Wyoming Department of Transportation highway. The Terry Ranch Road begins to the south at the Wyoming/Colorado state line and is a county road to the junction with WY 223. At this point the road names overlap and continue east to US 85.

This intersection is a T intersection with WY 223 the stem of the T. All the legs of the intersection have a single approach lane and a single exit lane. Figure 10 is a Google Earth aerial view of the intersection, and Figures 11 and 12 are at-grade photos of the eastbound and southbound approaches.

Figure 10. Aerial View WY 223/Terry Ranch Road Intersection

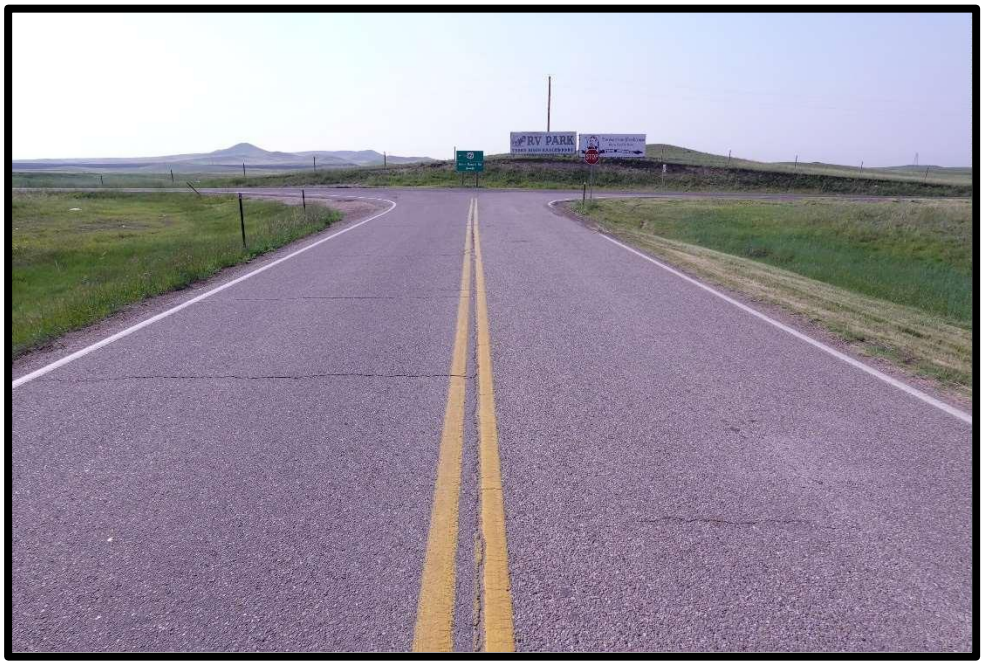


Figure 11. At-Grade Photo WY 223/Terry Ranch Road Intersection Looking East

Figure 12. At-Grade Photo WY 223/Terry Ranch Road Intersection Looking South

Street Functional Classification

The Wyoming Department of Transportation functionally classify their street and highway systems. Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of streets. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network. Arterials link major centers of activity within the urban area. They tend to serve longer trips with higher volumes of traffic. Arterials move traffic (provide mobility) rather than provide land access. The collector street system provides both land access service and traffic circulation. It differs from the arterial system in that streets on the collector system may go into residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system. The local street system comprises all facilities not on one of the higher systems. It serves primarily to provide direct access to abutting land and access to the collectors and arterials. It offers the low level of mobility but the highest level of land access. Service to through traffic movement usually is deliberately discouraged. Figure 13 is a graphical representation of how the various

functionally classified streets interact. This figure is taken from the Wyoming Department of Transportation *Access Manual, 2014 Edition*.

The concept of functional classification allows a governmental jurisdiction the ability, through geometric design and policy regulations, to provide a roadway consistent with the functional intent of the facility. For example, an arterial street conceptually will handle large volumes of traffic over long distances. To do this, major intersections might be signalized while lower functioning side streets would be STOP controlled. Access spacing would be greater to reduce friction from turning vehicles. A local street, on the other hand, would control intersections with STOP signs or no control, and there would be very little control on access to abutting property.

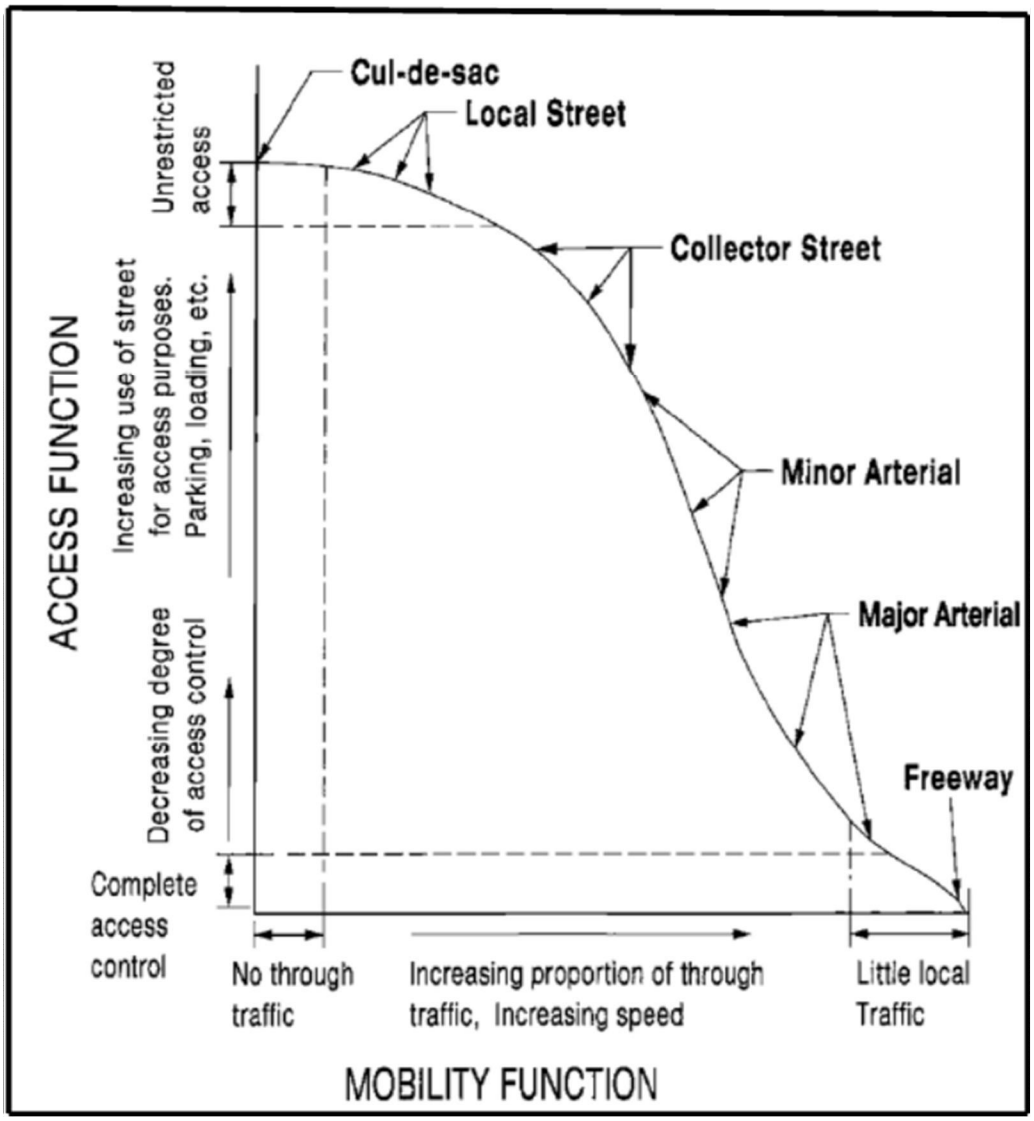


Figure 13. Relationship Among Functionally Classified Roadways

Figure 14 is a portion of the 2021 Urban Boundary and Functional Classification Map from the Cheyenne MPO website. This map is jointly prepared and agreed to by the City of Cheyenne, Laramie County, and the Wyoming Department of Transportation. The three jurisdictions functionally classify all the streets and highways within the urban boundary. As shown on the map, US 85 is classified as a principal arterial, and the Terry Ranch Road is classified as a major collector. Other streets and highways in the vicinity of the proposed subdivision are also shown in the figure. In addition, there is a detached green line representing a future minor arterial, High Plains Road, which would be constructed between I-25 and US 85 at some point in the future.

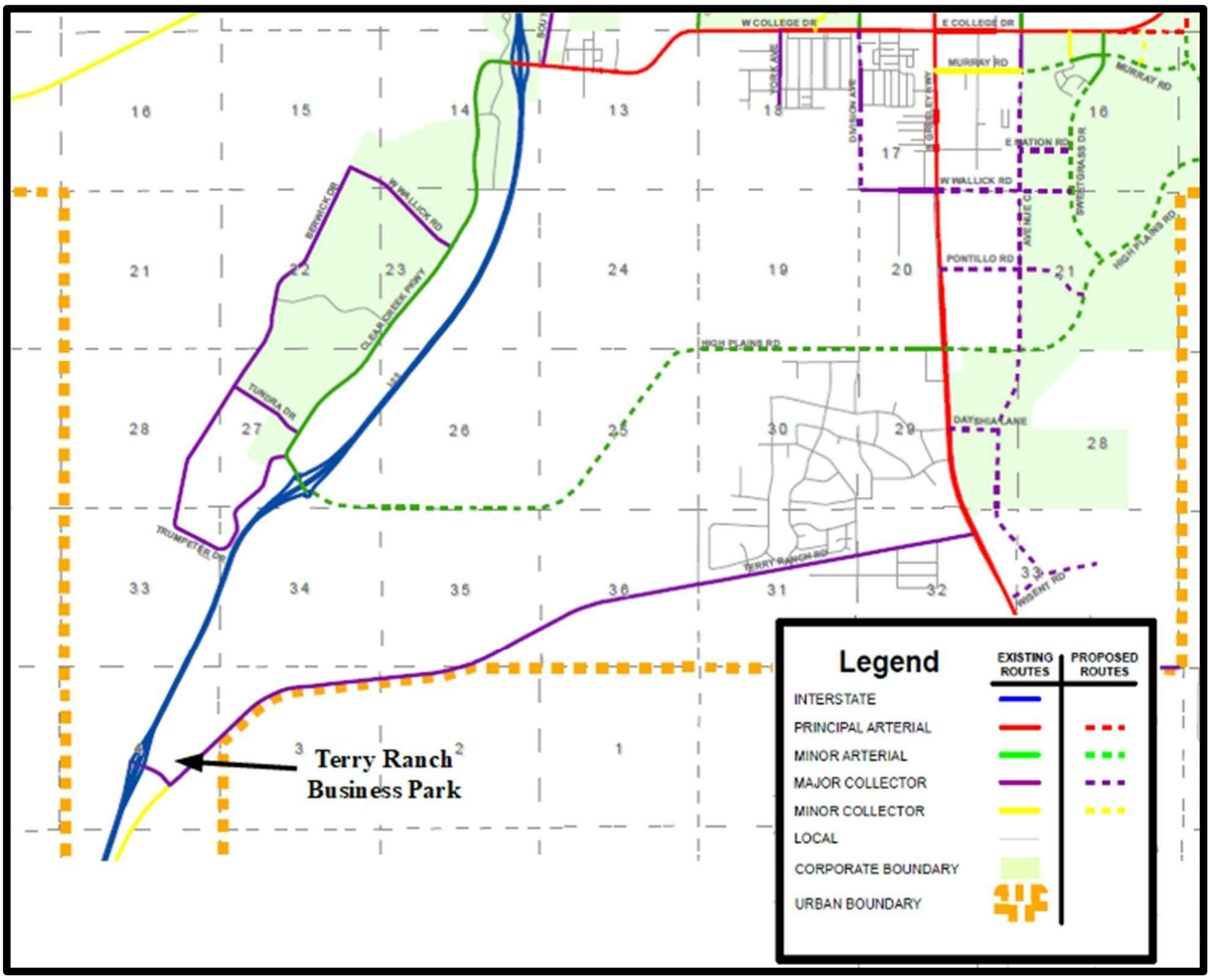


Figure 14. Functional Classification Map

Pedestrian and Bicycle Facilities

The study area for this report is a rural location, and there are no separate pedestrian/bicycle facilities.

Parks

There are no parks in the immediate vicinity of the Terry Ranch Business Park subdivision.

Schools

There are no schools close to this proposed subdivision. The closest school is Afferbach Elementary school which is over five miles away.

Safety

The Safety Program at the Wyoming Department of Transportation reviewed the crash history for US 85/Terry Ranch Road intersection. Table 1 shows the results of a five-year record search for crashes at the intersection. Over the past five years, there have been nine crashes. Because of the high speed at this location, the crashes have been more severe than at other locations. Of the nine crashes, one was a fatality, and two were injury crashes. The rest were property damage only. Based on this data, the intersection operates quite safely, but when there is a crash, there is a higher probability of injuries or fatalities. A copy of the full report prepared by the Wyoming Department of Transportation is included in the Appendix.

	Number Persons Injured	Number Persons Killed	PDO* Crashs	Injuy Crashes	Fatal Crashes	Total Crashes
	US 85/Terry Ranch Road Intersection					
2015	1	1	0	0	1	1
2016	0	0	1	0	0	1
2017	0	0	1	0	0	1
2018	0	0	1	0	0	1
2019	3	0	0	2	0	2
2020	0	0	3	0	0	3
Total	4	1	6	2	1	9
	WY 223/Terry Ranch Road Intersection					
2016	0	0	1	1	0	1
2019	0	0	1	1	0	1
Total	0	0	2	2	0	2

Table 1. Crash History US 85/Terry Ranch Road & WY223/Terry Ranch Road Intersections

Traffic Control

Both US 85 and Terry Ranch Road have full pavement markings with yellow center lines, white edge lines, and white channelizing lines where appropriate. Intersections to both the

state highways are controlled with STOP signs, and residential and field accesses are uncontrolled. The eastbound leg of the WY 223/Terry Ranch Road intersection is STOP controlled.

The speed limit on US 85 is posted at 65 mph through the US 85/Terry Ranch Road intersection. The Terry Ranch Road has a 55-mph speed limit to the east of this intersection through the area with residential development, but the speed limit changes to 65 mph which is carried to the west through the Sheep Avenue intersection

Several of the street intersections have roadway lighting, but it is not consistent through the area.

Sight Distance

For safety reasons, it is very important that all roadways have adequate sight distance. Several forms of sight distance are usually evaluated. The first is stopping sight distance. Stopping sight distance is the distance that is needed for a motorist traveling at a given speed to stop before reaching an object in the roadway. Stopping sight distance is the distance between a vehicle with a given motorist eye height and an object height. Most standards assume an eye height of 3.5 feet and an object height of 2.0 feet for the stopping sight distance related to a vertical curve and an eye height of 3.5 feet and an object height of 3.5 feet or 4.35 feet (the height of an approaching vehicle) for intersection stopping sight distance.

The second sight distance generally evaluated is related to the intersection itself. A motorist making a maneuver, a right turn, a left turn, or straight through movement, needs adequate sight distance to make these movements without impeding through traffic. This sight distance is typically measured with an eye height of 3.5 feet for the stopped vehicle. Technically, the object height associated with an approaching vehicle is the top of the car or 4.25 feet, but many use a height of 3.5 feet, the eye height, to allow for reciprocal sight distances. Both motorists can see each other.

The intersections evaluated in this portion of the report are all under the jurisdiction of the Wyoming Department of Transportation. They require a minimum sight distance equal to the stopping sight distance that is found in Table II-1 of the *Traffic Program Access Manual 2014*. Intersection sight distance is found in Chapter 9 of the AASHTO publication, *A Policy on Geometric Design of Highways and Streets*. Table 2 is compiled from the two references noted, and it shows the sight distances related to speed. The speed limit at both intersections is 65 mph. The Wyoming Department of Transportation prefers to have intersection sight distance that is equal to or greater than the AASHTO values. For rural intersections with a 65-mph speed limit, they would like to have at least 1,200 feet of sight distance. Figure 15 shows the recommended minimum 1,200 feet of sight distance for a motorist stopped at the US 85/Terry Ranch Road intersection, and Figure 16 shows the preferred sight distance at the WY 223/Terry Ranch Road intersection. The sight distances for both intersections exceed 1,200 feet.

	WYDOT	AASHTO	
Speed MPH	Stopping Sight Distance/Feet	Stopping Sight Distance/Feet	Intersection Sight Distance/Feet (Cars)
20	130	115	225
25	175	155	280
30	220	200	335
35	275	250	390
40	330	305	445
45	395	360	500
50	465	425	555
55	535	495	610
60	610	570	665
65	695	645	720
70	780	730	775
75	870	820	830
80	970	910	885

Table 2. Sight Distance Criteria

Figure 15. Sight Distance US 85/Terry Ranch Road Intersection

Figure 16. Sight Distance WY 223/Terry Ranch Road

Access spacing

As noted, the Terry Ranch Road is under the jurisdiction of the Wyoming Department of Transportation, and the access spacing criteria guidelines for state highways are found in the *Access Manual 2014 Edition*. Table 3 is taken from the *Access Manual,* and it shows the minimum separation distances for types of accesses for collectors which is the Terry Ranch Road classification. The existing accesses on WY 223 between I-25 and the Terry Ranch Road do not meet the minimum access separation distances as required by the current Wyoming Department of Transportation policy.

Access Type	Field	Residential	Commercial	Major
Field	220	220	330	660
Residential	220	440	660	660
Commercial	330	660	1320*	1320*
Major	660	660	1320*	1320*

Table 3. Wyoming Department of Transportation Department Access Separation Distances for Rural Collectors and Local Roads

Traffic Volumes

The Wyoming Transportation Department in conjunction with the City of Cheyenne and Laramie County conducts 24-hour traffic counts at various locations in the Cheyenne area. Figure 17 is a portion of the Laramie County GIS map with 24-hour volumes plotted. The 24-hour volume data was taken from the Cheyenne MPO interactive traffic volume map site. The figure shows a volume 1,201 on the west end of the Terry Ranch Road and a volume of 1,569 on the east end.

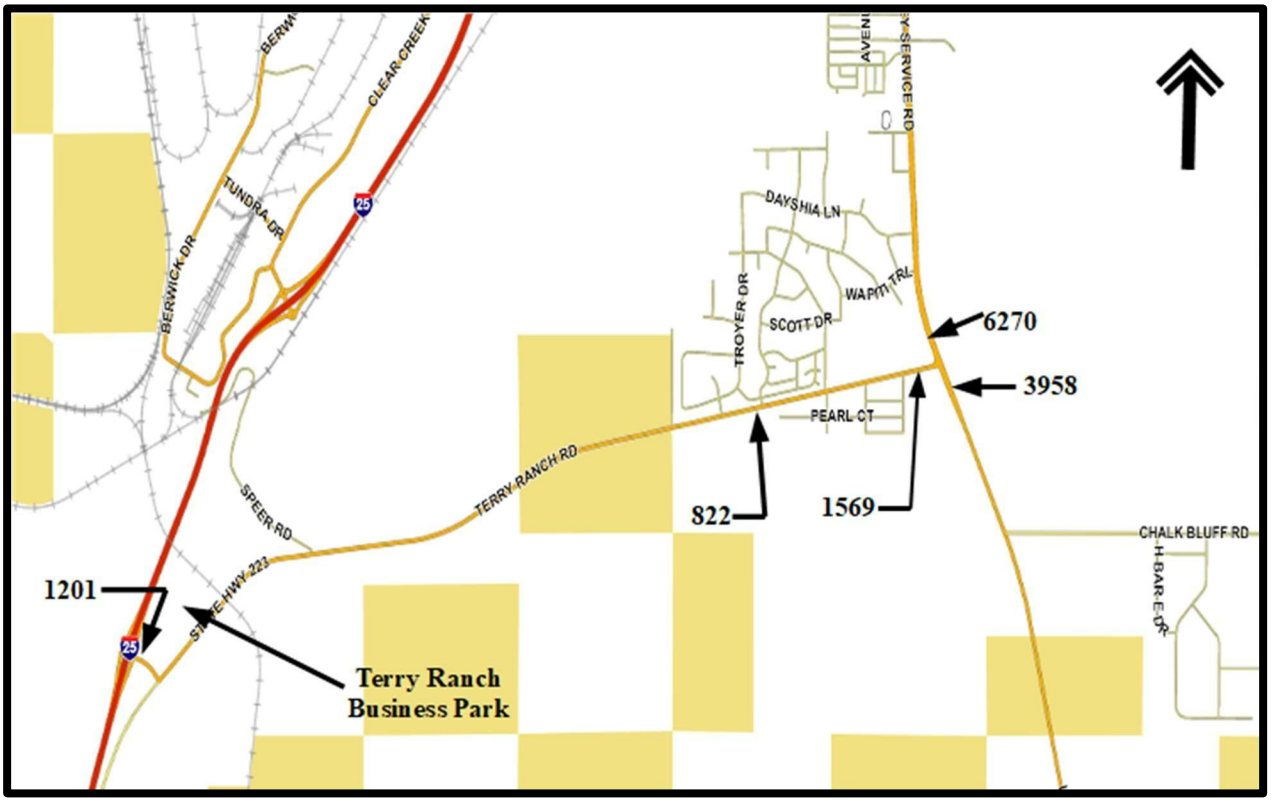


Figure 17. 24-Hour Traffic Volumes

In addition to the 24-hour traffic volumes shown in Figure 17, manual turning-movement counts were obtained for the US 85/Terry Ranch Road intersection and the WY 223/Terry Ranch Road intersection. The manual turning-movement counts were obtained during the AM and PM hours on April 20, April 21, and April 22, 2021. Table 4 shows the peak hour data obtained from the manual turning-movement counts. Tables 5 and 6 show the pedestrian/bicycle and truck volumes during the AM and PM peak hours. Intersection count sheets are included in the Appendix.

Peak	Terry Ranch Road			Port of Entry Access			US 85					
	Eastbound			Westbound			Northbound			Southbound		
Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	56	1	3	1	0	0	6	108	16	6	71	33
PM	47	0	5	6	1	1	6	109	14	7	148	82
Peak	WY 223						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	10	0	18	0	0	0	6	4	0	0	12	18
PM	25	0	23	0	0	0	16	7	0	0	9	12

Table 4. Manual Turning-Movement Volumes

Peak Hour	Ped/Bikes	Trucks
AM	0	48
PM	0	41

Table 5. Ped/Bike/Truck Volumes US 85/Terry Ranch Road Intersection

Peak Hour	Ped/Bikes	Trucks
AM	0	10
PM	0	2

Table 6. Ped/Bike/Truck Volumes WY 223/Terry Ranch Road Intersection

Level of Service

Level of service is a measure used by traffic engineers to determine the effectiveness of elements of transportation infrastructure. Letters A through F are assigned to the operation, with A being the best and F being the worst. In general, the letter values can be defined as:

A=Free flow
B=Reasonably free flow
C=Stable flow
D=Approaching unstable flow
E=Unstable flow
F=Forced or breakdown flow

The level of service for a STOP-controlled intersection is evaluated based on the average total control delay per vehicle. Control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. This includes the time required for the vehicle to travel from the end-of-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue. The average approach delay for all vehicles on a particular approach is computed as the weighted average of the control delay estimates for each individual movement on the approach. Table 7 shows the delay associated with the levels of service for a STOP-controlled intersection.

Level of Service	Average Control Delay (Sec/Veh)
A	0-10
B	10-15
C	15-25
D	25-35
E	35-50
F	50+

Table 7. Level of Service Criteria for STOP-Controlled Intersection

The traffic volumes shown in Table 4 and the algorithms in the *2010 Highway Capacity Manual* were used to calculate the levels of service for the US 85/Terry Ranch Road intersection. The calculations were done for the AM and PM peak hours. Tables 8 and 9 show the results of the level of service calculations. Copies of the level of service calculations are included in the Appendix.

Peak Hour	US 85		Terry Ranch Road	
	Northbound	Southbumd	Westbound	Eastbound
	Left	Left	Left, Thru, Right	Left, Thru, Right
AM	A	A	B	B
PM	A	A	A	B

Table 8. Existing Level of Service US 85/Terry Ranch Road Intersection

Peak Hour	Terry Ranch Road Northbound Left, Thru	WY 223 Eastbound Left, Right
AM	A	A
PM	A	A

Table 9. Existing Level of Service WY 223/Terry Ranch Road Intersection

Proposed Development

Project Description

The Terry Ranch Business Park consists of four tracks that range in size from just over 13 acres to almost 28 acres. Figure 18 is the plat which shows the development layout. Table 10 shows the individual tracts and their sizes. The development will be accessed from the Terry Ranch Road with a single access, Sheep Avenue. Sheep Avenue is a short street that ends in a cul-de-sac between Tracks 2 and 3. Sheep Avenue will be constructed to Laramie County standards for a rural development which will include a paved surface with ditch sections and no provisions for pedestrians.

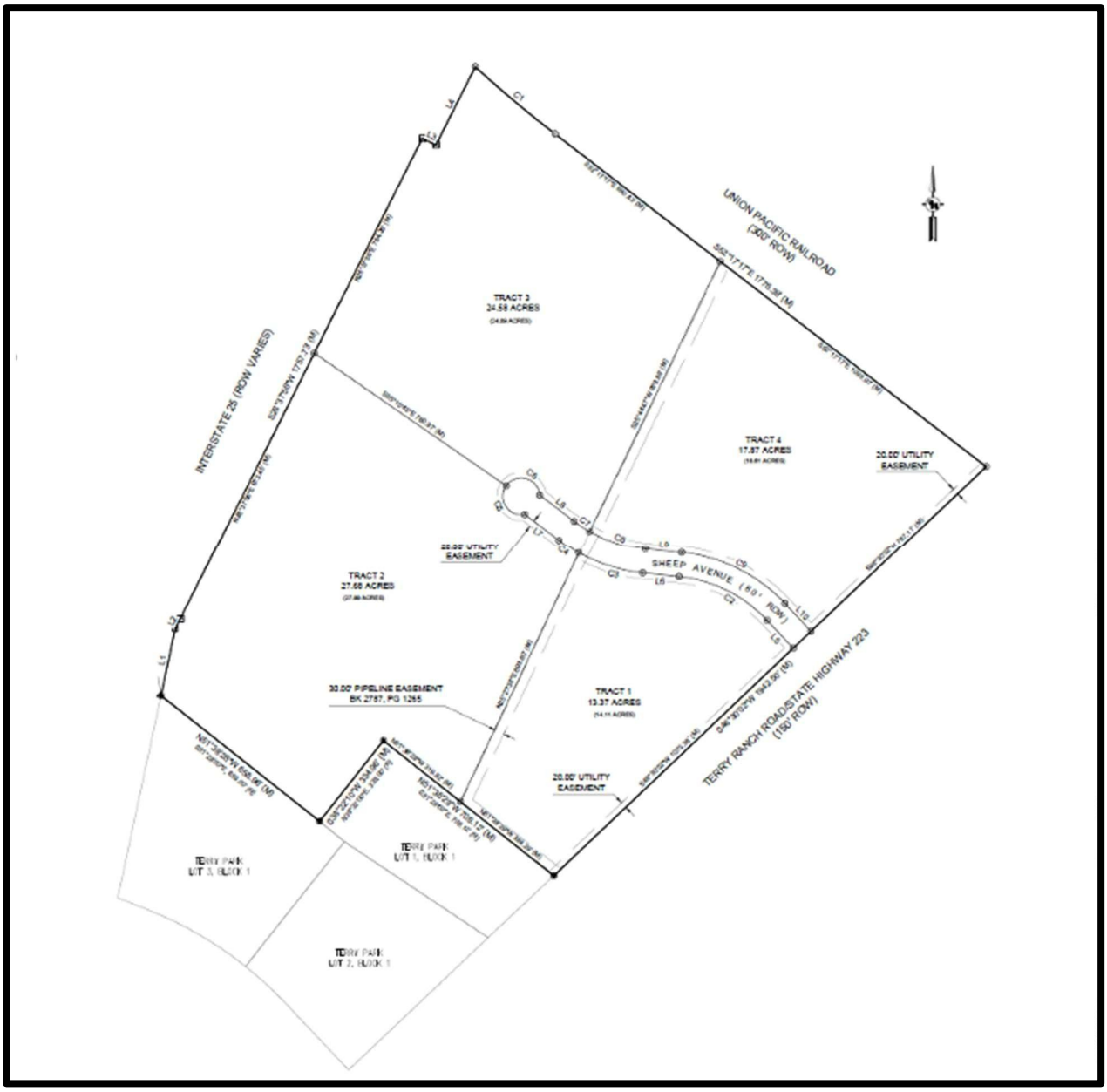


Figure 18. Site Plan Terry Ranch Business Park

Tract	Size (Acres)
1	13.37 (14.11)
2	27.68 (27.99)
3	24.58 (24.89)
4	17.87 (18.61)
Total	83.50 (85.51)

Table 10. Tract Size

Zoning

While the development is outside the zoned area, the proposed development land use will change from agricultural to commercial.

Infrastructure Improvements

The initial planning for this subdivision provides for access roads for the individual lots, but no additional roadway improvements were planned.

Other Developments

No other developments were considered in the preparation of this traffic impact study.

Construction Projects

The Wyoming Department of Transportation currently has two projects in the vicinity of the Terry Ranch Business Park. The first is a bridge replacement over the Union Pacific railroad tracks just north of the proposed development, and the second is a pavement rehabilitation project for WY 223 which will begin at I-25 and end at the South Greeley Highway. Both projects are scheduled for 2023.

Pedestrian and Bicycle Facilities

This is a rural subdivision, and there are no separate pedestrian or bicycle facilities that will be constructed as part of the subdivision.

Schools

The anticipated land use for this project is commercial and will have no impact on Laramie County schools.

Traffic Control

A STOP sign will be required at the Terry Ranch Road/Sheep Avenue intersection.

Intersection Spacing

The Wyoming Department of Transportation access separation distance criteria is shown in Table 3. Intersections must be separated by a distance of 1,320 feet, and the separation distance for the Terry Ranch Road/Sheep Avenue intersection is greater than 1,320 feet.

Sight Distance

The Wyoming Department of Transportation sight distance criteria is shown in Table 2. To meet the Wyoming Department of Transportation and AASHTO criterion, the intersection would need at least 720 feet of sight distance. However, the Wyoming Department of Transportation prefers 1,200 feet of sight distance. The location of Sheep Avenue was scaled from the site plan and located on Google Earth. At this point on the Terry Ranch Road there are

no no-passing restrictions which by default indicates there is 1,200 feet of sight distance for each direction. Figure 19 is a Google Earth aerial photograph with 1,200 feet of sight distance from the Terry Ranch Road/Sheep Avenue intersection indicated.

Figure 19. Sight Distance Sheep Avenue

Site-Generated Traffic

The number of trip ends (a trip end is a trip that either has an origin or destination in the proposed development) associated with the development is usually estimated using information from the ITE publication *Trip Generation Manual, 11th Edition.* The trip generation manual categorizes different land uses and estimates the number of trip ends assigned to each land use.

The four lots shown on the site plan are assumed an industrial park. The ITE trip generation data for Land Use 1300, Industrial Park was used to calculate the estimated trip ends associated with these four lots. The *Trip Generation Manual, 11th Edition* uses building size as the basis for trip end estimation, and the building sizes are not known at this time. However, there are several similar developments in the Cheyenne area. The general area around the Christensen Road/Campstool Road/Venture Boulevard intersection was used to estimate building size. The lot sizes are known from Laramie County information, building sizes were estimated from Google Earth, and an average building-to-lot-size ratio was calculated. This ratio was then used to estimate building sizes on the four lots that are commercial. Table 11 shows the trip end

estimates Terry Ranch Business Park. The spreadsheet calculations for the trip end estimations are included in the Appendix, and the trip end calculations are included in the Appendix.

Industrial Park									
	Vehicle Trips on a Weekday Total			Vehicle Trips on a Weekday AM Peak Hour Adjacent Street Traffic			Vehicle Trips on a Weekday PM Peak Hour Adjacent Street Traffic		
Tract	Entering	Exiting	Total	Entering	Exiting	Total	Entering	Exiting	Total
1	118	118	236	19	5	24	5	19	24
2	244	244	488	40	9	49	11	38	49
3	216	216	433	35	8	44	10	34	44
4	157	157	315	26	6	32	7	25	32
Total	735	735	1471	120	28	148	33	116	148

Table 11. Terry Ranch Business Park Estimated Trip Ends

Distribution and Assignment of Traffic

All of the trip ends associated with the Terry Ranch Business Park will use a single access to the Terry Ranch Road, the Terry Ranch Road/Sheep Avenue intersection. It is estimated that 75 percent of the trip ends will use the I-25 interchange, and 25 percent of the trip ends will go east to the South Greeley Highway/Terry Ranch Road intersection. Figure 20 shows the estimated trip distribution by percent at all of the intersections.

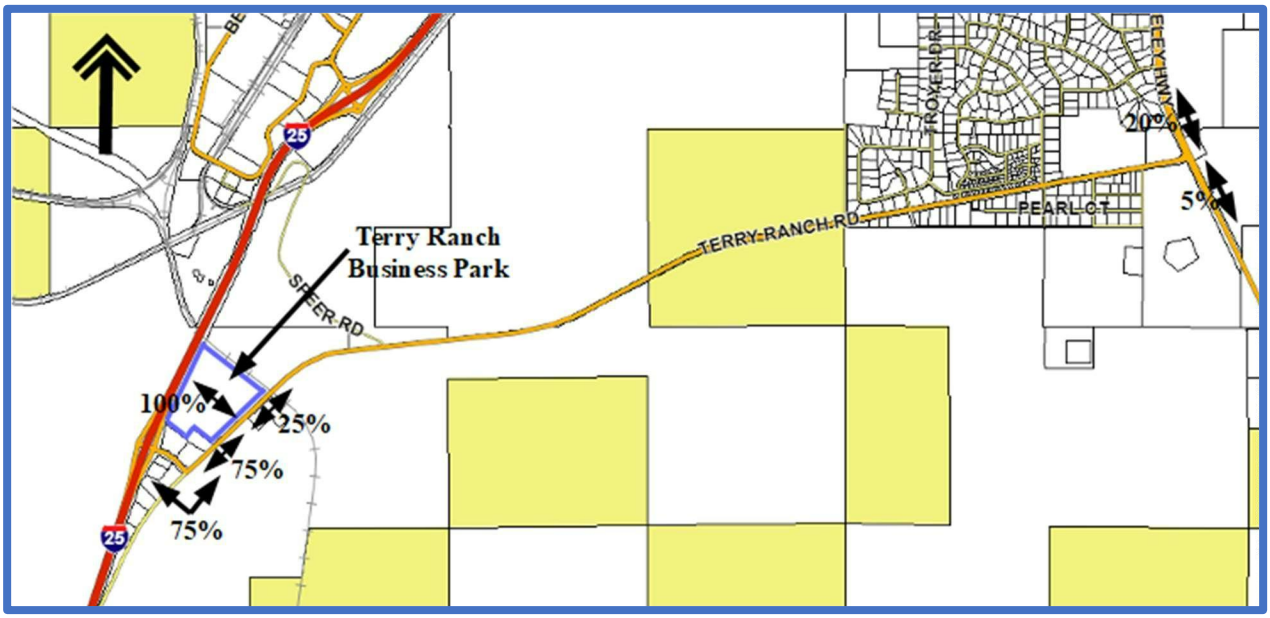


Figure 20. Terry Ranch Business Park Trip Distribution by Percent

Table 12 shows the estimated trip ends generated by the proposed Terry Ranch Business Park assigned to the various intersections. These volumes were calculated by using the estimated trip ends shown in Table 11 and the trip distribution information shown in Figure 20.

Peak Hour	Terry Ranch Road			Port of Entry Access			US 85					
	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	6		1				6					24
PM	23		6				1					7
Peak Hour	WY 223						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	90											21
PM	25											87
Peak Hour	Sheep Avenue						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	7		21				90					30
PM	29		87				25					8

Table 12. Estimated Site Generated Volumes at Build-Out

Traffic Volumes at Build-Out (2026)

It will take a number of years for the Terry Ranch Business Park to completely populate all four lots in the development. A short-term evaluation of the traffic impacts will be calculated for 2026. It is anticipated that all the lots will have operating businesses by that time. This may not be a correct assumption, but it does provide an evaluation of the traffic impacts for the short term.

To estimate the future traffic volumes consistent with the analysis year, the turning-movement counts shown in Table 4 were inflated to represent future traffic volumes, and an annual growth rate of 2.5 percent per year was used to estimate future traffic volumes. Please note that the 2.5 percent growth rate is only an estimate, and it may not represent future traffic volumes depending upon the growth rate of the Cheyenne area. Table 13 shows the estimated 2026 volumes with the site traffic for the three intersections.

Peak Hour	Terry Ranch Road			Port of Entry Access			US 85					
	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	69	1	4	1	0	0	13	122	18	7	80	61
PM	76	0	12	7	1	1	8	123	16	8	167	100
Peak Hour	WY 223						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	101	0	20	0	0	0	7	5	0	0	14	41
PM	53	0	26	0	0	0	18	8	0	0	10	101
Peak Hour	Sheep Avenue						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	7	0	21	0	0	0	90	16	0	0	34	30
PM	29	0	87	0	0	0	25	36	0	0	24	8

Table 13. 2026 Estimated Volumes with Site Trip Ends

Level of Service at Build-Out (2026)

The level of service for the intersections and accesses included in this report were recalculated using the algorithms described earlier and the volumes shown in Table 13. Results of those calculations are shown in Tables 14 through 16.

Peak Hour	US 85	Terry Ranch Road		
	Northbound	Southbumd	Westbound	Eastbound
	Left	Left	Left, Thru, Right	Left, Thru, Right
AM	A	A	B	B
PM	A	A	A	B

Table 14. 2026 Level of Service US 85/Terry Ranch Road

Peak Hour	Terry Ranch	WY 223
	Northbound	Eastbound
	Left, Thru	Left, Right
AM	A	B
PM	A	A

Table 15. 2026 Level of Service WY 223/Terry Ranch Road

Peak Hour	Terry Ranch Road Northbound Left	Sheep Avenue Eastbound Left, Right
AM	A	A
PM	A	A

Table 16. 2026 Level of Service Terry Ranch Road/Sheep Avenue

Traffic Volumes at Build-Out plus 20 Years (2046)

A second analysis of the traffic impacts, a long-term analysis, was calculated for the intersections included in this study. The time frame for the long-term analysis is build-out plus 20 years, or 2046. The volumes from Table 4 were increased at 2.5 percent per year as an estimate of the background volumes, and the estimated traffic volumes from the Terry Ranch Business Park were added to the estimated background volumes. The results of those calculations are shown in Table 17.

Peak	Terry Ranch Road			Port of Entry Access			US 85					
	Eastbound			Westbound			Northbound			Southbound		
Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	110	2	7	2	0	0	17	200	30	11	131	85
PM	110	0	15	11	2	2	12	202	26	13	274	159
Peak	WY 223						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	109	0	33	0	0	0	11	7	0	0	22	54
PM	71	0	43	0	0	0	30	13	0	0	17	109
Peak	Sheep Avenue						Terry Ranch Road					
	Eastbound			Westbound			Northbound			Southbound		
Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
AM	7	0	21	0	0	0	90	26	0	0	56	30
PM	29	0	87	0	0	0	25	59	0	0	39	8

Table 17. 2046 Estimated Volumes with Site Trip Ends

Level of Service at Build-Out Plus 20 Years (2046)

The level of service for the intersections included in this report were recalculated using the algorithms described earlier and the volumes shown in Table 17. Results of those calculations are shown in Tables 18 through 20.

Peak Hour	US 85	Terry Ranch Road		
	Northbound	Southbumd	Westbound	Eastbound
	Left	Left	Left, Thru, Right	Left, Thru, Right
AM	A	A	B	B
PM	A	A	B	B

Table 18. 2046 Level of Service US 85/Terry Ranch Road

Peak Hour	Terry Ranch	WY 223
	Northbound	Eastbound
	Left, Thru	Left, Right
AM	A	B
PM	A	B

Table 19. 2046 Level of Service WY 223/Terry Ranch Road

Peak Hour	Terry Ranch Road	Sheep Avenue
	Northbound	Eastbound
	Left, Thru	Left, Right
AM	A	A
PM	A	A

Table 20. 2046 Level of Service Terry Ranch Road/Sheep Avenue

Auxiliary Lanes

The US 85/Terry Ranch Road intersection currently has a lane in the eastbound direction, and additional lanes are not warranted at this time because the level of service operates adequately. The WY 223/Terry Ranch Road intersection is a T intersection and currently has a single lane in the eastbound direction. The Level of Service is A for all movements with the estimated 2046 traffic volumes, and an additional lane at this intersection is not warranted. The Wyoming Department of Transportation will be constructing a left-turn lane for the northbound to westbound movement into Sheep Avenue.

The Wyoming Department of Transportation uses a graphical solution as a warrant for a right-turn lane. In Figure 21, the X ordinate is the major road volume in one direction, and the Y ordinate is the right-turn volume in the same direction. Figure 21 is the graphical solution for the Terry Ranch Road/sheep Avenue intersection in the Terry Ranch Business Park development. The X ordinate is less than 100, and the graphical solution begins with an X ordinate of 200. It is assumed that a right-turn lane is not warranted at this location.

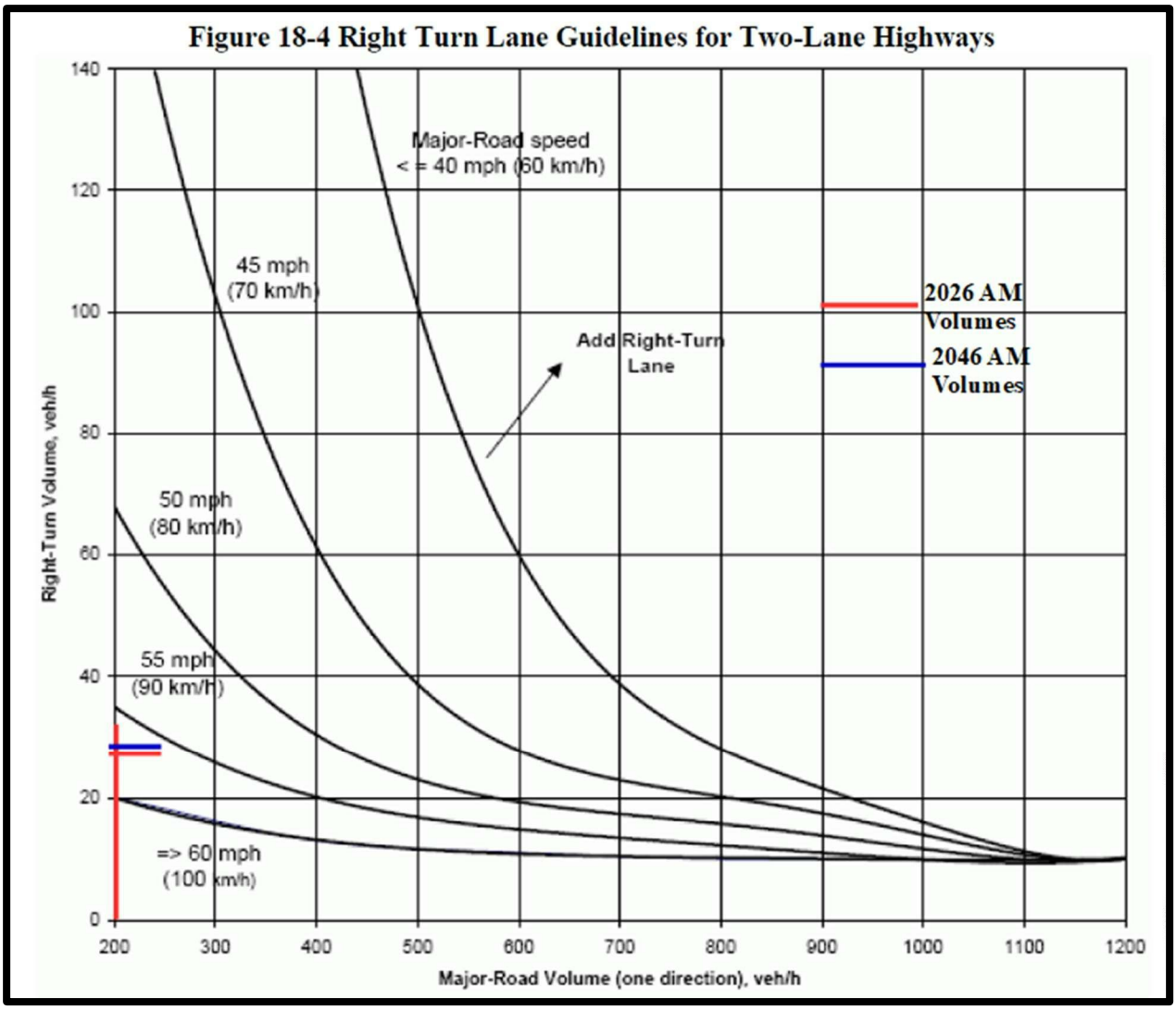


Figure 21. Right-Turn Lane Analysis Terry Ranch Road/Avenue Intersection

Traffic Analysis and Mitigation

This study examines the impacts that the Terry Ranch Business Park development will have on the existing infrastructure, and makes mitigation recommendations.

There are two existing intersections and a single new intersection that are included in this report. The two existing intersections, US 85/Terry Ranch Road and WY 223/Terry Ranch Road, currently all operate at Level of Service A or B for all movements. With the additional traffic from the Terry Ranch Business Park, these two intersections continue to operate at Level of Service A or B with both the estimated 2026 volumes and the estimated 2046 volumes. The Terry Ranch Road/Sheep Avenue intersection will provide access into the development site, and all movements operate at Level of Service A in both the short-term and long-term analysis. The

Terry Ranch Business Park development will not significantly degrade the operation of any of the intersections.

The Wyoming Department of Transportation has two construction projects included in the 2023 program. One is a bridge replacement over the Terry Ranch Road/Union Pacific Railroad, and the other is a pavement rehabilitation project that begins on WY 223 at I-25 and ends at US 85. As part of this project the Wyoming Department of Transportation has agreed to construct a left-turn lane for northbound motorists entering the project site.

The sight distances associated with the two existing intersections meet the Wyoming Department of Transportation preferred 1,200-foot standard, and the new intersection, Terry Ranch Road/Sheep Avenue, also meets the 1,200-foot sight distance criteria.

The new Terry Ranch Road/Sheep Avenue intersection meets the minimum access separation distances in the Wyoming Department of Transportation policy.

There does not appear to be an existing safety problem at either of the two existing intersections, and since sight distance is adequate at the Terry Ranch Road/Sheep Avenue intersection, a safety problem is not anticipated at that intersection.

A STOP should be erected for exiting traffic at the Terry Ranch Road/Sheep Avenue intersection. No changes in speed limits are anticipated.

Appendix

Crash Data

INTERSECTION CRASH HISTORY FOR
TERRY RANCH ROAD/WY 223 & I 25 SERVICE ROAD (13226)
(2016 - 2020)

DATE/TIME	REPORT NUMBER	CRASH LOCATION/MP	INJURIES	FATALITIES	JUNCTION RELATION	MANNER OF COLLISION	FIRST HARMFUL EVENT	TRAVEL DIRECTION	ACTIVITY PRIOR	ROAD CONDITION	DRIVER ACTION
2016											
8/30/16 18:45	201610423	TERRY RANCH RD I 25 SVRD	0.25 1	0	Intersection Related	Rear End (Front to Rear)	Motor Vehicle in Transport on Roadway	Northeast Northeast	Turning Left Straight Ahead	Dry	No Improper Driving Following too Close
2019											
11/25/19 15:35	201915246	I 25 SVRD TERRY RANCH DR | WY 223	2.66 1	0	Intersection	Angle Right (Front to Side, includes Broadside)	Motor Vehicle in Transport on Roadway	North East	Straight Ahead Slowing	Ice/Frost Snow	No Improper Driving Swerve Due to Wind/Slippery Surface Avoiding MV

INTERSECTION CRASH HISTORY FOR
TERRY RANCH ROAD/WY 223 & I 25 SERVICE ROAD (13226)
(2016 - 2020)

YEAR	FATAL CRASHES	FATALITIES	INJURY CRASHES	INJURIES	PDO* CRASHES	TOTAL CRASHES
2016	0	0	1	1	0	1
2019	0	0	1	1	0	1
TOTAL	**0**	**0**	**2**	**2**	**0**	**2**

*PDO = Property Damage Only

Created by: Lorie W. Chesnut, WYDOT Highway Safety | 307-777-3910 | lorie.chesnut1@wyo.gov

CRASH HISTORY FOR INTERSECTION 11914
(S GREELEY HWY | US 85@TERRY RANCH DR | WY 223)
For the Year: 2015 TO 2020

DATE	TIME	CRASH LOCATION	MILEPOST	NUM INJ	NUM KIL	JUNCTION RELATION	MANNER_OF COLLISION	Vehicle #	DIRECTION	ACTIVITY PRIOR	RUMBLE STRIPS	RSTRPS APPLICABLE	FIRST HARMFUL EVENT	LIGHT COND	ROAD COND	PERSON TYPE	SAFETY EQUIPMENT USED	VEH#	INJURY STATUS	Alc Inv.	Drugs Inv	DRIVER ACTION
2015																						
12/10/2015 WHP	2220	S GREELEY HWY	4.12	1	1	Intersection Related	Not a Collision w/2 Vehicles In Transport	1	East	Straight Ahead	No	No	Overturn/Rollover	Darkness Lighted	Dry	Driver	None Used	1	Fatal Injury	Y	N	Speeding
		TERRY RANCH RD														Passenger	Shoulder and Lap Belt	1	No Apparent Injury			Erratic/Reckless/Carele
																Passenger	Shoulder and Lap Belt	1	Possible Injury			Disregarded Traffic Sig
2016																						
03/17/2016 WHP	732	S GREELEY HWY	4.12	0	0	Intersection	Angle Right (Front to Side, Includes Broadside)	1	East	Slowing	No	No	Motor Vehicle In Transport on Roadway	Daylight	Ice/Frost	Driver	Shoulder and Lap Belt	1	No Apparent Injury	N	N	Drove too Fast for Con
		TERRY RANCH RD						2	South	Straight Ahead	No	No			Snow	Driver	Shoulder and Lap Belt	2	No Apparent Injury			Disregarded Traffic Sig
																						No Improper Driving
2017																						
08/29/2017 WHP	1813	S GREELEY HWY	4.14	0	0	Intersection Related	Sideswipe Same Direction (Passing)	1	North	Straight Ahead	No	No	Motor Vehicle In Transport on Roadway	Daylight	Dry	Driver	Shoulder and Lap Belt	1	No Apparent Injury	N	N	No Improper Driving
		TERRY RANCH RD						2	North	Entering a Traffic Lane	No	No				Driver	Shoulder and Lap Belt	2	No Apparent Injury			Failed to Yield ROW
2018																						
03/11/2018 WHP	156	S GREELEY HWY	4.11	0	0	Non-Junction	Angle Same Direction (Front to Side)	1	South	Straight Ahead	Yes	No	Motor Vehicle In Transport on Roadway	Darkness Unlighted	Dry	Driver	Shoulder and Lap Belt	1	No Apparent Injury	Y	N	Disregarded Traffic Sig
								2	South	Driverless Motor Vehicle	Yes	No										Erratic/Reckless/Carele
																						Other Improper Action
2019																						
06/23/2019 WHP	1200	S GREELEY HWY	4.03	2	0	Intersection	Angle Right (Front to Side, Includes Broadside)	1	South	Straight Ahead	No	No	Motor Vehicle In Transport on Roadway	Daylight	Dry	Driver	Shoulder and Lap Belt	1	Possible Injury	N	N	No Improper Driving
		85 TERRY RANCH DR | W						2	East	Turning Left	No	No				Driver	Shoulder and Lap Belt	2	Suspected Minor Injury			Disregarded Traffic Sig
																						Failed to Yield ROW
12/18/2019 WHP	1715	S GREELEY HWY	4.03	1	0	Intersection	Angle (Front to Side), Opposing Direction	1	South	Straight Ahead	No	No	Motor Vehicle In Transport on Roadway	Darkness Lighted	Dry	Driver	Shoulder and Lap Belt	1	Suspected Minor Injury	N	N	No Improper Driving
		85 BUS TERRY RANCH DR | W						2	East	Turning Left	No	No				Driver	Shoulder and Lap Belt	2	No Apparent Injury			Failed to Yield ROW
2020																						
01/21/2020 WHP	1005	S GREELEY HWY	4.02	0	0	Intersection	Angle Right (Front to Side, Includes Broadside)	1	South	Straight Ahead	No	No	Motor Vehicle In Transport on Roadway	Daylight	Dry	Driver	Shoulder and Lap Belt	1	No Apparent Injury	N	N	No Improper Driving
		85 TERRY RANCH RD | W						2	East	Turning Left	No	No				Driver	Shoulder and Lap Belt	2	No Apparent Injury			Failed to Yield ROW
03/06/2020 WHP	1048	S GREELEY HWY	4.03	0	0	Intersection	Angle Right (Front to Side, Includes Broadside)	1	East	Straight Ahead	No	No	Motor Vehicle In Transport on Roadway	Daylight	Dry	Driver	Shoulder and Lap Belt	1	No Apparent Injury	N	N	Failed to Yield ROW
		85 TERRY RANCH DR | W						2	North	Straight Ahead	No	No				Driver	Shoulder and Lap Belt	2	No Apparent Injury			No Improper Driving

CREATED BY: Tracy Romero; WYDOT Highway Safety; (307) 777-4274; tracy.romero1@wyo.gov

DATE	TIME	CRASH LOCATION	MILEPOST	NUM INJ	NUM KIL	JUNCTION RELATION	MANNER_OF COLLISION	Vehicle # DIRECTION	ACTIVITY PRIOR	RUMBLE STRIPS	RSTRIPS APPLICABLE	FIRST HARMFUL EVENT	LIGHT COND	ROAD COND	PERSON TYPE	SAFETY EQUIPMENT USED	VEH#	INJURY STATUS	Alc Inv.	Drugs Inv	DRIVER ACTION
05/27/2020 WHP	1745	S GREELEY HWY 85	4.08	0	0	Business Entrance	Sideswipe Same Direction (Passing)	1 North	Straight Ahead	No	No	Motor Vehicle in Transport on Roadway	Daylight	Dry	Driver	Shoulder and Lap Belt	1	No Apparent Injury	N	N	No Improper Driving
								2 Northeast	Turning Right	No	No				Driver	Shoulder and Lap Belt	2	No Apparent Injury			No Improper Driving

TOTAL CRASHES IN THIS REPORT 9

PDO CRASHES 6
INJURY CRASHES 2
FATAL CRASHES 1

TOTAL PERSONS INJURED 4
TOTAL PERSONS KILLED 1

	NUMBER PERSONS INJURED	NUMBER PERSONS KILLED	PDO* CRASHES	INJURY CRASHES	FATAL CRASHES	TOTAL CRASHES
2015	1	1	0	0	1	1
2016	0	0	1	0	0	1
2017	0	0	1	0	0	1
2018	0	0	1	0	0	1
2019	3	0	0	2	0	2
2020	0	0	3	0	0	3
TOTAL	4	1	6	2	1	9

*PDO = Property Damage Only Crashes; No Injuries, No Fatalities

CREATED BY: Tracy Romero; WYDOT Highway Safety; (307) 777-4274; tracy.romero1@wyo.gov

Turning-Movement Counts

W2 Traffic Engineering, LLC

Standard Report

Location: AM WY 223 & Terry Ranch Road
Unit ID: 001
Study Date: Thursday April 22, 2021
Interval: 15 minutes

Vehicles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
07:00	0	5	4	**9**	0	0	0	**0**	0	0	0	**0**	3	0	0	**3**	**12**
07:15	0	1	2	**3**	0	0	0	**0**	0	0	0	**0**	2	0	3	**5**	**8**
07:30	0	0	5	**5**	0	0	0	**0**	1	0	0	**1**	5	0	1	**6**	**12**
07:45	0	0	3	**3**	0	0	0	**0**	1	1	0	**2**	1	0	3	**4**	**9**
Subtotal	**0**	**6**	**14**	**20**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**3**	**11**	**0**	**7**	**18**	**41**
08:00	0	0	6	**6**	0	0	0	**0**	1	0	0	**1**	3	0	3	**6**	**13**
08:15	0	5	3	**8**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	**9**
08:30	0	1	3	**4**	0	0	0	**0**	2	0	0	**2**	3	0	5	**8**	**14**
08:45	0	6	6	**12**	0	0	0	**0**	2	4	0	**6**	4	0	10	**14**	**32**
Subtotal	**0**	**12**	**18**	**30**	**0**	**0**	**0**	**0**	**6**	**4**	**0**	**10**	**10**	**0**	**18**	**28**	**68**
09:00	0	0	3	**3**	0	0	0	**0**	0	0	0	**0**	0	0	1	**1**	**4**
Total	**0**	**18**	**35**	**53**	**0**	**0**	**0**	**0**	**8**	**5**	**0**	**13**	**21**	**0**	**26**	**47**	**113**
Peak Hour	-	08:00	08:00	**08:00**	-	-	-	-	08:00	08:00	-	**08:00**	07:00	-	08:00	**08:00**	**08:00**
Peak Total	0	12	18	**30**	0	0	0	**0**	6	4	0	**10**	11	0	18	**28**	**68**
Peak Factor (PHF)	-	0.5	0.8	**0.6**	-	-	-	-	0.8	0.3	-	**0.4**	0.6	-	0.4	**0.5**	**0.4**

W2 Traffic Engineering, LLC

Standard Report

Location: AM WY 223 & Terry Ranch Road
Unit ID: 001
Study Date: Thursday April 22, 2021
Interval: 15 minutes

Peds & Bicycles - Peds & Bicycles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
07:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
08:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
08:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
08:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
09:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peak Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Peak Factor (PHF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

W2 Traffic Engineering, LLC
Standard Report

Location: AM WY 223 & Terry Ranch Road
Unit ID: 001
Study Date: Thursday April 22, 2021
Interval: 15 minutes

Trucks - Trucks

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
07:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	3	**3**	**3**
07:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	**1**
07:45	0	0	1	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**1**
Subtotal	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**3**	**4**	**5**
08:00	0	0	1	**1**	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	**2**
08:15	0	1	0	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**1**
08:30	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	1	0	0	**1**	**2**
08:45	0	1	1	**2**	0	0	0	**0**	2	0	0	**2**	1	0	0	**1**	**5**
Subtotal	**0**	**2**	**2**	**4**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**3**	**0**	**0**	**3**	**10**
09:00	0	0	1	**1**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**1**
Total	**0**	**2**	**4**	**6**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**4**	**0**	**3**	**7**	**16**
Peak Hour	-	08:00	07:15	**08:00**	-	-	-	-	08:00	-	-	**08:00**	08:00	-	07:00	**07:15**	**08:00**
Peak Total	0	2	2	**4**	0	0	0	**0**	3	0	0	**3**	3	0	3	**5**	**10**
Peak Factor (PHF)	-	0.5	0.5	**0.5**	-	-	-	-	0.4	-	-	**0.4**	0.8	-	0.3	**0.4**	**0.4**

W2 Traffic Engineering, LLC
Standard Report

Location: PM WY 223 & Terry Ranch Road
Unit ID: 001
Study Date: Wednesday April 21, 2021
Interval: 15 minutes

Vehicles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
16:00	0	1	3	**4**	0	0	0	**0**	5	0	0	**5**	4	0	6	**10**	**19**
16:15	0	0	2	**2**	0	0	0	**0**	3	2	0	**5**	5	0	2	**7**	**14**
16:30	0	1	7	**8**	0	0	0	**0**	4	3	0	**7**	5	0	2	**7**	**22**
16:45	0	0	3	**3**	0	0	0	**0**	6	0	0	**6**	4	0	3	**7**	**16**
Subtotal	**0**	**2**	**15**	**17**	**0**	**0**	**0**	**0**	**18**	**5**	**0**	**23**	**18**	**0**	**13**	**31**	**71**
17:00	0	2	4	**6**	0	0	0	**0**	2	3	0	**5**	6	0	7	**13**	**24**
17:15	0	2	2	**4**	0	0	0	**0**	3	0	0	**3**	5	0	4	**9**	**16**
17:30	0	2	2	**4**	0	0	0	**0**	6	1	0	**7**	8	0	7	**15**	**26**
17:45	0	3	4	**7**	0	0	0	**0**	5	3	0	**8**	6	0	5	**11**	**26**
Subtotal	**0**	**9**	**12**	**21**	**0**	**0**	**0**	**0**	**16**	**7**	**0**	**23**	**25**	**0**	**23**	**48**	**92**
18:00	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	**1**
Total	**0**	**11**	**27**	**38**	**0**	**0**	**0**	**0**	**35**	**12**	**0**	**47**	**43**	**0**	**36**	**79**	**164**
Peak Hour	-	17:00	16:15	**16:30**	-	-	-	-	16:00	16:15	-	**16:00**	17:00	-	17:00	**17:00**	**17:00**
Peak Total	0	9	16	**21**	0	0	0	**0**	18	8	0	**23**	25	0	23	**48**	**92**
Peak Factor (PHF)	-	0.8	0.6	**0.7**	-	-	-	-	0.8	0.7	-	**0.8**	0.8	-	0.8	**0.8**	**0.5**

W2 Traffic Engineering, LLC
Standard Report

Location: PM WY 223 & Terry Ranch Road
Unit ID: 001
Study Date: Wednesday April 21, 2021
Interval: 15 minutes

Peds & Bicycles - Peds & Bicycles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
16:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
18:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peak Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Peak Factor (PHF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

W2 Traffic Engineering, LLC
Standard Report

Location: PM WY 223 & Terry Ranch Road
Unit ID: 001
Study Date: Wednesday April 21, 2021
Interval: 15 minutes

Trucks - Trucks

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
16:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:15	0	0	0	**0**	0	0	0	**0**	1	0	0	**1**	0	0	0	**0**	**1**
17:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:45	0	0	0	**0**	0	0	0	**0**	0	1	0	**1**	0	0	0	**0**	**1**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**2**
18:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**2**
Peak Hour	-	-	-	-	-	-	-	-	16:30	17:00	-	**17:00**	-	-	-	-	**17:00**
Peak Total	0	0	0	**0**	0	0	0	**0**	1	1	0	**2**	0	0	0	**0**	**2**
Peak Factor (PHF)	-	-	-	-	-	-	-	-	0.3	0.3	-	**0.5**	-	-	-	-	**0.5**

W2 Traffic Engineering, LLC
Standard Report

Location: AM US 85 & Terry Ranch Road
Unit ID: 001
Study Date: Wednesday April 21, 2021
Interval: 15 minutes

Vehicles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
07:00	2	12	5	**19**	3	1	0	**4**	1	34	2	**37**	11	0	1	**12**	**72**
07:15	1	17	8	**26**	1	1	0	**2**	1	28	2	**31**	19	1	0	**20**	**79**
07:30	1	19	6	**26**	2	0	0	**2**	1	15	1	**17**	18	0	0	**18**	**63**
07:45	0	12	7	**19**	0	0	0	**0**	3	30	2	**35**	20	0	1	**21**	**75**
Subtotal	**4**	**60**	**26**	**90**	**6**	**2**	**0**	**8**	**6**	**107**	**7**	**120**	**68**	**1**	**2**	**71**	**289**
08:00	3	17	4	**24**	0	0	0	**0**	2	34	7	**43**	8	1	0	**9**	**76**
08:15	2	18	10	**30**	0	0	0	**0**	1	32	5	**38**	14	0	1	**15**	**83**
08:30	1	24	12	**37**	1	0	0	**1**	0	12	2	**14**	14	0	1	**15**	**67**
08:45	2	14	6	**22**	0	1	0	**1**	0	11	4	**15**	8	1	0	**9**	**47**
Subtotal	**8**	**73**	**32**	**113**	**1**	**1**	**0**	**2**	**3**	**89**	**18**	**110**	**44**	**2**	**2**	**48**	**273**
09:00	1	3	2	**6**	1	0	0	**1**	0	8	3	**11**	1	0	0	**1**	**19**
Total	**13**	**136**	**60**	**209**	**8**	**3**	**0**	**11**	**9**	**204**	**28**	**241**	**113**	**3**	**4**	**120**	**581**
Peak Hour	08:00	08:00	07:45	**08:00**	07:00	07:00	-	**07:00**	07:15	07:30	08:00	**07:30**	07:00	07:15	07:45	**07:00**	**07:45**
Peak Total	8	73	33	**113**	6	2	0	**8**	7	111	18	**133**	68	2	3	**71**	**301**
Peak Factor (PHF)	0.7	0.8	0.7	**0.8**	0.5	0.5	-	**0.5**	0.6	0.8	0.6	**0.8**	0.9	0.5	0.8	**0.8**	**0.5**

W2 Traffic Engineering, LLC
Standard Report

Location: AM US 85 & Terry Ranch Road
Unit ID: 001
Study Date: Wednesday April 21, 2021
Interval: 15 minutes

Peds & Bicycles - Peds & Bicycles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
07:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
07:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
08:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
08:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
08:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
08:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
09:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peak Total	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Peak Factor (PHF)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

W2 Traffic Engineering, LLC
Standard Report

Location: AM US 85 & Terry Ranch Road
Unit ID: 001
Study Date: Wednesday April 21, 2021
Interval: 15 minutes

Trucks - Trucks

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
07:00	2	0	2	**4**	3	1	0	**4**	0	4	2	**6**	0	0	0	**0**	**14**
07:15	1	0	1	**2**	1	1	0	**2**	0	0	2	**2**	5	1	0	**6**	**12**
07:30	1	3	1	**5**	2	0	0	**2**	0	1	1	**2**	0	0	0	**0**	**9**
07:45	0	2	1	**3**	0	0	0	**0**	0	2	2	**4**	0	0	0	**0**	**7**
Subtotal	**4**	**5**	**5**	**14**	**6**	**2**	**0**	**8**	**0**	**7**	**7**	**14**	**5**	**1**	**0**	**6**	**42**
08:00	1	3	0	**4**	0	0	0	**0**	0	4	7	**11**	0	1	0	**1**	**16**
08:15	2	1	0	**3**	0	0	0	**0**	0	2	5	**7**	0	0	0	**0**	**10**
08:30	0	6	0	**6**	1	0	0	**1**	0	2	2	**4**	0	0	0	**0**	**11**
08:45	1	4	0	**5**	0	1	0	**1**	0	0	4	**4**	0	1	0	**1**	**11**
Subtotal	**4**	**14**	**0**	**18**	**1**	**1**	**0**	**2**	**0**	**8**	**18**	**26**	**0**	**2**	**0**	**2**	**48**
09:00	0	1	0	**1**	1	0	0	**1**	0	2	3	**5**	0	0	0	**0**	**7**
Total	**8**	**20**	**5**	**33**	**8**	**3**	**0**	**11**	**0**	**17**	**28**	**45**	**5**	**3**	**0**	**8**	**97**
Peak Hour	07:00	08:00	07:00	**08:00**	07:00	07:00	-	**07:00**	-	07:45	08:00	**07:45**	07:00	07:15	-	**07:15**	**08:00**
Peak Total	4	14	5	**18**	6	2	0	**8**	0	10	18	**26**	5	2	0	**7**	**48**
Peak Factor (PHF)	0.5	0.6	0.6	**0.8**	0.5	0.5	-	**0.5**	-	0.6	0.6	**0.6**	0.3	0.5	-	**0.3**	**0.4**

W2 Traffic Engineering, LLC
Standard Report

Location: PM US 85 & Terry Ranch Road
Unit ID: 001
Study Date: Tuesday April 20, 2021
Interval: 15 minutes

Vehicles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
16:00	2	23	13	**38**	0	0	0	**0**	4	22	4	**30**	13	0	1	**14**	**82**
16:15	1	40	14	**55**	1	0	1	**2**	0	28	2	**30**	17	0	1	**18**	**105**
16:30	0	30	16	**46**	0	0	1	**1**	0	39	0	**39**	13	0	0	**13**	**99**
16:45	2	29	16	**47**	2	1	0	**3**	3	29	3	**35**	18	0	2	**20**	**105**
Subtotal	**5**	**122**	**59**	**186**	**3**	**1**	**2**	**6**	**7**	**118**	**9**	**134**	**61**	**0**	**4**	**65**	**391**
17:00	2	37	14	**53**	0	0	0	**0**	0	20	1	**21**	11	0	0	**11**	**85**
17:15	1	51	29	**81**	2	0	1	**3**	2	29	7	**38**	9	0	1	**10**	**132**
17:30	2	31	23	**56**	2	0	0	**2**	1	31	3	**35**	9	0	2	**11**	**104**
17:45	3	20	17	**40**	1	0	0	**1**	1	30	7	**38**	6	0	0	**6**	**85**
Subtotal	**8**	**139**	**83**	**230**	**5**	**0**	**1**	**6**	**4**	**110**	**18**	**132**	**35**	**0**	**3**	**38**	**406**
18:00	1	9	3	**13**	1	0	2	**3**	0	2	0	**2**	4	0	0	**4**	**22**
Total	**14**	**270**	**145**	**429**	**9**	**1**	**5**	**15**	**11**	**230**	**27**	**268**	**100**	**0**	**7**	**107**	**819**
Peak Hour	17:00	16:45	17:00	**16:45**	16:45	16:00	17:15	**17:15**	16:00	16:00	17:00	**16:00**	16:00	-	16:45	**16:00**	**16:45**
Peak Total	8	148	83	**237**	6	1	3	**9**	7	118	18	**134**	61	0	5	**65**	**426**
Peak Factor (PHF)	0.7	0.7	0.7	**0.7**	0.8	0.3	0.4	**0.8**	0.4	0.8	0.6	**0.9**	0.8	-	0.6	**0.8**	**0.4**

W2 Traffic Engineering, LLC
Standard Report

Location: PM US 85 & Terry Ranch Road
Unit ID: 001
Study Date: Tuesday April 20, 2021
Interval: 15 minutes

Peds & Bicycles - Peds & Bicycles

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
16:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
16:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
17:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:15	0	0	0	**0**	0	0	0	**0**	0	2	0	**2**	0	0	0	**0**	**2**
17:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
17:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**2**
18:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**2**
Peak Hour	-	-	-	-	-	-	-	-	-	16:30	-	**16:30**	-	-	-	-	**16:30**
Peak Total	0	0	0	**0**	0	0	0	**0**	0	2	0	**2**	0	0	0	**0**	**2**
Peak Factor (PHF)	-	-	-	-	-	-	-	-	-	0.3	-	**0.3**	-	-	-	-	**0.3**

W2 Traffic Engineering, LLC
Standard Report

Location: PM US 85 & Terry Ranch Road
Unit ID: 001
Study Date: Tuesday April 20, 2021
Interval: 15 minutes

Trucks - Trucks

	Southbound				Westbound				Northbound				Eastbound				Grand
	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	Left	Thru	Right	**Total**	**Total**
15:03	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
15:15	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
15:30	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
15:45	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Subtotal	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
16:00	1	2	0	**3**	1	0	0	**1**	0	2	5	**7**	0	0	0	**0**	**11**
16:15	1	1	0	**2**	0	0	1	**1**	0	1	1	**2**	0	0	0	**0**	**5**
16:30	0	2	0	**2**	0	0	1	**1**	0	2	0	**2**	0	0	0	**0**	**5**
16:45	1	2	2	**5**	2	0	0	**2**	0	0	2	**2**	1	0	0	**1**	**10**
Subtotal	**3**	**7**	**2**	**12**	**3**	**0**	**2**	**5**	**0**	**5**	**8**	**13**	**1**	**0**	**0**	**1**	**31**
17:00	2	1	1	**4**	2	0	0	**2**	0	0	4	**4**	0	0	0	**0**	**10**
17:15	1	4	0	**5**	1	0	0	**1**	0	0	3	**3**	1	0	0	**1**	**10**
17:30	1	3	0	**4**	1	0	0	**1**	0	0	4	**4**	0	0	0	**0**	**9**
17:45	2	2	1	**5**	2	0	1	**3**	0	0	4	**4**	0	0	0	**0**	**12**
Subtotal	**6**	**10**	**2**	**18**	**6**	**0**	**1**	**7**	**0**	**0**	**15**	**15**	**1**	**0**	**0**	**1**	**41**
18:00	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	0	0	0	**0**	**0**
Total	**9**	**17**	**4**	**30**	**9**	**0**	**3**	**12**	**0**	**5**	**23**	**28**	**2**	**0**	**0**	**2**	**72**
Peak Hour	17:00	16:45	16:15	**16:45**	16:45	-	15:45	**17:00**	-	15:45	17:00	**17:00**	16:30	-	-	**16:30**	**17:00**
Peak Total	6	10	3	**18**	6	0	2	**7**	0	5	15	**15**	2	0	0	**2**	**41**
Peak Factor (PHF)	0.8	0.6	0.4	**0.9**	0.8	-	0.5	**0.6**	-	0.6	0.9	**0.9**	0.5	-	-	**0.5**	**0.5**

Level of Service

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2021 AM US 85 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/4/2021
Time Analyzed:	AM Peak
Jurisdiction:	
Analysis Year:	2021
Project Description:	Terry Ranch Meadows
Units:	U.S. Customary
Intersection Name:	US 85 & Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	Terry Ranch Road
North/South Street Name:	US 85
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume	0	6	108	16	0	6	71	0
Peak Hour Factor, PHF				0.91				
Hourly Flow Rtae, HFR		7	119	18		7	78	0
Percent Heavy Vehicles	19	19			19	19		
Number of Lanes	0	1	2	1	0	1	2	1
Lane Configuration		L	T	R		L	T	R
Median Type				Left + Thru				
Median Storage				1				
RT channelized?				No				Yes
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound			EastBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	0	56	1	3
Peak Hour Factor, PHF			0.91			
Hourly Flow Rtae, HFR	1	0	0	62	1	3
Percent Heavy Vehicles	19	19	19	19	19	19
Number of Lanes	0	1	0	0	1	0
Lane Configuration		LTR			LTR	
RT channelized?						
Flared Approach | Storage	No	|		No	|
Percent Grade		0			0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound	
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L		L		LTR			LTR	
Flow Rate		7		7		1			66	
Lane Capacity		1403		1330		704			736	
v/c		0.00		0.00		0.00			0.09	
95% Queue Length		0.0		0.0		0.0			0.3	
Control Delay		7.6		7.7		10.1			10.4	
LOS		A		A		B			B	
Approach Delay		0.3		0.6		10.1			10.4	
Approach LOS						B			B	
Intersction Delay		2.7								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2021 PM US 85 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/4/2021
Time Analyzed:	PM Peak Hour
Jurisdiction:	
Analysis Year:	2021
Project Description:	
Units:	U.S. Customary
Intersection Name:	US 85 & Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	Terry Ranch Road
North/South Street Name:	US 85
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume	0	6	109	14	0	7	148	0
Peak Hour Factor, PHF				0.81				
Hourly Flow Rtae, HFR		7	135	17		9	183	0
Percent Heavy Vehicles	11	11			11	11		
Number of Lanes	0	1	2	1	0	1	2	1
Lane Configuration		L	T	R		L	T	R
Median Type				Left + Thru				
Median Storage				5				
RT channelized?				No				Yes
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound			EastBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6	1	1	47	0	5
Peak Hour Factor, PHF			0.81			
Hourly Flow Rtae, HFR	7	1	1	58	0	6
Percent Heavy Vehicles	11	11	11	11	11	11
Number of Lanes	0	1	0	0	1	0
Lane Configuration		LTR			LTR	
RT channelized?						
Flared Approach | Storage	No	|		No	|	
Percent Grade		0			0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound		EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L		L		LTR			LTR	
Flow Rate		7		9		10			64	
Lane Capacity		1326		1363		781			751	
v/c		0.01		0.01		0.01			0.09	
95% Queue Length		0.0		0.0		0.0			0.3	
Control Delay		7.7		7.7		9.7			10.2	
LOS		A		A		A			B	
Approach Delay		0.4		0.3		9.7			10.2	
Approach LOS						A			B	
Intersction Delay		2.1								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	TWSC1.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/27/2021
Time Analyzed:	AM Peak Hour
Jurisdiction:	
Analysis Year:	2021
Project Description:	Terry Ranch Meadows
Units:	U.S. Customary
Intersection Name:	WY 223/Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	WY 223
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:									
Approach		NorthBound					SouthBound		
Movement	1U	1	2	3	4U	4	5	6	
	U	L	T	R	U	L	T	R	
Volume		6	4				12	18	
Peak Hour Factor, PHF				0.53					
Hourly Flow Rtae, HFR		11	8				23	34	
Percent Heavy Vehicles		17							
Number of Lanes	0	0	1	0	0	0	1	0	
Lane Configuration		LT						TR	
Median Type				Undivided					
Median Storage									
RT channelized?									
Left-Turn Lane Storage									
Upstream Signal?				Not Present					

Minor Street:							
Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					10		18
Peak Hour Factor, PHF				0.53			
Hourly Flow Rtae, HFR					19		34
Percent Heavy Vehicles					17		17
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		LT							LR	
Flow Rate		11							53	
Lane Capacity		1457							953	
v/c		0.01							0.06	
95% Queue Length		0.0							0.2	
Control Delay		7.5							9.0	
LOS		A							A	
Approach Delay		4.5							9.0	
Approach LOS									A	
Intersction Delay		4.4								

Step 1: MOVEMENT PRIORITIES

Major Street:									
Approach		NorthBound					SouthBound		
Priority	1U	1	2	3	4U	4	5	6	
Movement	U	L	T	R	U	L	T	R	
Minor Street:									

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	TWSC1.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/27/2021
Time Analyzed:	PM Peak
Jurisdiction:	
Analysis Year:	2021
Project Description:	Terry Ranch Meadows
Units:	U.S. Customary
Intersection Name:	WY 223/Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	WY 223
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		16	7				9	12
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		18	8				10	14
Percent Heavy Vehicles		2						
Number of Lanes	0	0	1	0	0	0	1	0
Lane Configuration		LT						TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					25		23
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					28		26
Percent Heavy Vehicles					2		2
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		LT							LR	
Flow Rate		18							55	
Lane Capacity		1591							991	
v/c		0.01							0.06	
95% Queue Length		0.0							0.2	
Control Delay		7.3							8.8	
LOS		A							A	
Approach Delay		5.1							8.8	
Approach LOS									A	
Intersction Delay		5.9								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2026 AM US 85 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/21
Time Analyzed:	AM Peak
Jurisdiction:	
Analysis Year:	2026
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	US 85 & Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	Terry Ranch Road
North/South Street Name:	US 85
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume	0	13	122	18	0	7	80	61
Peak Hour Factor, PHF				0.91				
Hourly Flow Rtae, HFR		14	134	20		8	88	67
Percent Heavy Vehicles	19	19			19	19		
Number of Lanes	0	1	2	1	0	1	2	1
Lane Configuration		L	T	R		L	T	R
Median Type				Left + Thru				
Median Storage				1				
RT channelized?				No				Yes
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound			EastBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	0	69	1	4
Peak Hour Factor, PHF			0.91			
Hourly Flow Rtae, HFR	1	0	0	76	1	4
Percent Heavy Vehicles	19	19	19	19	19	19
Number of Lanes	0	1	0	0	1	0
Lane Configuration		LTR			LTR	
RT channelized?						
Flared Approach | Storage	No	|		No	|
Percent Grade		0			0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound		EastBound	
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L		L		LTR			LTR	
Flow Rate		14		8		1			81	
Lane Capacity		1390		1308		667			706	
v/c		0.01		0.01		0.00			0.12	
95% Queue Length		0.0		0.0		0.0			0.4	
Control Delay		7.6		7.8		10.4			10.8	
LOS		A		A		B			B	
Approach Delay		0.6		0.4		10.4			10.8	
Approach LOS						B			B	
Intersction Delay		2.6								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2026 PM US 85 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/21
Time Analyzed:	PM Peak Hour
Jurisdiction:	
Analysis Year:	2026
Project Description:	Terry Ranch Business park
Units:	U.S. Customary
Intersection Name:	US 85 & Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	Terry Ranch Road
North/South Street Name:	US 85
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume	0	8	123	16	0	8	167	100
Peak Hour Factor, PHF				0.81				
Hourly Flow Rtae, HFR		10	152	20		10	206	123
Percent Heavy Vehicles	11	11			11	11		
Number of Lanes	0	1	2	1	0	1	2	1
Lane Configuration		L	T	R		L	T	R
Median Type				Left + Thru				
Median Storage				5				
RT channelized?				No				Yes
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound			EastBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	1	1	76	0	12
Peak Hour Factor, PHF			0.81			
Hourly Flow Rtae, HFR	9	1	1	94	0	15
Percent Heavy Vehicles	11	11	11	11	11	11
Number of Lanes	0	1	0	0	1	0
Lane Configuration		LTR			LTR	
RT channelized?						
Flared Approach | Storage	No	|		No	|
Percent Grade		0			0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound		EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L		L		LTR			LTR	
Flow Rate		10		10		11			109	
Lane Capacity		1299		1340		753			731	
v/c		0.01		0.01		0.01			0.15	
95% Queue Length		0.0		0.0		0.0			0.5	
Control Delay		7.8		7.7		9.9			10.8	
LOS		A		A		A			B	
Approach Delay		0.4		0.2		9.9			10.8	
Approach LOS						A			B	
Intersction Delay		2.2								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2026 AM WY 223 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/30/21
Time Analyzed:	AM Peak Hour
Jurisdiction:	
Analysis Year:	2026
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	WY 223/Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	WY 223
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:									
Approach		NorthBound					SouthBound		
Movement	1U	1	2	3		4U	4	5	6
	U	L	T	R		U	L	T	R
Volume		7	5					14	41
Peak Hour Factor, PHF					0.53				
Hourly Flow Rtae, HFR		13	9					26	77
Percent Heavy Vehicles		17							
Number of Lanes	0	0	1	0		0	0	1	0
Lane Configuration		LT							TR
Median Type					Undivided				
Median Storage									
RT channelized?									
Left-Turn Lane Storage									
Upstream Signal?					Not Present				

Minor Street:								
Approach	WestBound				EastBound			
Movement	7	8	9		10	11	12	
	L	T	R		L	T	R	
Volume					101		20	
Peak Hour Factor, PHF				0.53				
Hourly Flow Rtae, HFR					191		38	
Percent Heavy Vehicles					17		17	
Number of Lanes	0	0	0		0	1	0	
Lane Configuration						LR		
RT channelized?								
Flared Approach | Storage		|			No	|	
Percent Grade						0		

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		LT							LR	
Flow Rate		13							228	
Lane Capacity		1399							870	
v/c		0.01							0.26	
95% Queue Length		0.0							1.1	
Control Delay		7.6							10.6	
LOS		A							B	
Approach Delay		4.5							10.6	
Approach LOS									B	
Intersction Delay		7.1								

Step 1: MOVEMENT PRIORITIES

Major Street:									
Approach		NorthBound					SouthBound		
Priority	1U	1	2	3		4U	4	5	6
Movement	U	L	T	R		U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2026 PM WY 223 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/21
Time Analyzed:	PM Peak
Jurisdiction:	
Analysis Year:	2026
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	WY 223/Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	WY 223
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		18	8				10	101
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		20	9				11	115
Percent Heavy Vehicles		2						
Number of Lanes	0	0	1	0	0	0	1	0
Lane Configuration		LT						TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					53		26
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					60		30
Percent Heavy Vehicles					2		2
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		LT							LR	
Flow Rate		20							90	
Lane Capacity		1460							903	
v/c		0.01							0.10	
95% Queue Length		0.0							0.3	
Control Delay		7.5							9.4	
LOS		A							A	
Approach Delay		5.2							9.4	
Approach LOS									A	
Intersction Delay		4.1								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2026 AM Terry Ranch Road & Sheep Avenue.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/2021
Time Analyzed:	AM Peak Hour
Jurisdiction:	
Analysis Year:	2026
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	Terry Ranch Road/Road 1
Major Street Direction:	North-South
East/West Street Name:	Sheep Avenue
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		90	16				34	30
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		102	18				39	34
Percent Heavy Vehicles		10						
Number of Lanes	0	1	1	0	0	0	1	0
Lane Configuration		L	T					TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					7		21
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					8		24
Percent Heavy Vehicles					10		10
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L							LR	
Flow Rate		102							32	
Lane Capacity		1478							873	
v/c		0.07							0.04	
95% Queue Length		0.2							0.1	
Control Delay		7.6							9.3	
LOS		A							A	
Approach Delay		6.5							9.3	
Approach LOS									A	
Intersction Delay		4.8								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2026 PM Terry Ranch Road & Commercial Access.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/2021
Time Analyzed:	PM Peak Hour
Jurisdiction:	
Analysis Year:	2026
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	Terry Ranch Road/Road 1
Major Street Direction:	North-South
East/West Street Name:	Sheep Avenue
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		25	36				24	8
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		28	41				27	9
Percent Heavy Vehicles		10						
Number of Lanes	0	1	1	0	0	0	1	0
Lane Configuration		L	T					TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					29		87
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					33		99
Percent Heavy Vehicles					10		10
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L							LR	
Flow Rate		28							132	
Lane Capacity		1524							965	
v/c		0.02							0.14	
95% Queue Length		0.1							0.5	
Control Delay		7.4							9.3	
LOS		A							A	
Approach Delay		3.0							9.3	
Approach LOS									A	
Intersction Delay		6.1								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2046 AM US 85 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/4/2021
Time Analyzed:	AM Peak
Jurisdiction:	
Analysis Year:	2046
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	US 85 & Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	Terry Ranch Road
North/South Street Name:	US 85
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume	0	17	200	30	0	11	131	85
Peak Hour Factor, PHF				0.91				
Hourly Flow Rtae, HFR		19	220	33		12	144	93
Percent Heavy Vehicles	19	19			19	19		
Number of Lanes	0	1	2	1	0	1	2	1
Lane Configuration		L	T	R		L	T	R
Median Type				Left + Thru				
Median Storage				1				
RT channelized?			No					Yes
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	2	0	0		110	2	7
Peak Hour Factor, PHF				0.91			
Hourly Flow Rtae, HFR	2	0	0		121	2	8
Percent Heavy Vehicles	19	19	19		19	19	19
Number of Lanes	0	1	0		0	1	0
Lane Configuration		LTR				LTR	
RT channelized?							
Flared Approach | Storage	No	|			No	|	
Percent Grade		0				0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound		EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L		L		LTR			LTR	
Flow Rate		19		12		2			131	
Lane Capacity		1320		1195		565			616	
v/c		0.01		0.01		0.00			0.21	
95% Queue Length		0.0		0.0		0.0			0.8	
Control Delay		7.8		8.0		11.4			12.4	
LOS		A		A		B			B	
Approach Delay		0.5		0.4		11.4			12.4	
Approach LOS						B			B	
Intersction Delay		2.9								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2046 PM US 85 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/4/2021
Time Analyzed:	PM Peak Hour
Jurisdiction:	
Analysis Year:	2046
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	US 85 & Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	Terry Ranch Road
North/South Street Name:	US 85
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume	0	12	202	26	0	13	274	159
Peak Hour Factor, PHF				0.81				
Hourly Flow Rtae, HFR		15	249	32		16	338	196
Percent Heavy Vehicles	11	11			11	11		
Number of Lanes	0	1	2	1	0	1	2	1
Lane Configuration		L	T	R		L	T	R
Median Type				Left + Thru				
Median Storage				5				
RT channelized?				No				Yes
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	11	2	2		110	0	15
Peak Hour Factor, PHF				0.81			
Hourly Flow Rtae, HFR	14	2	2		136	0	19
Percent Heavy Vehicles	11	11	11		11	11	11
Number of Lanes	0	1	0		0	1	0
Lane Configuration		LTR				LTR	
RT channelized?							
Flared Approach | Storage	No	|		No	|	
Percent Grade		0				0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound		EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L		L		LTR			LTR	
Flow Rate		15		16		19			154	
Lane Capacity		1155		1215		644			598	
v/c		0.01		0.01		0.03			0.26	
95% Queue Length		0.0		0.0		0.1			1.0	
Control Delay		8.2		8.0		10.8			13.1	
LOS		A		A		B			B	
Approach Delay		0.4		0.2		10.8			13.1	
Approach LOS						B			B	
Intersction Delay		2.4								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2046 AM WY 223 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/27/2021
Time Analyzed:	AM Peak Hour
Jurisdiction:	
Analysis Year:	2046
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	WY 223/Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	WY 223
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		11	7				22	54
Peak Hour Factor, PHF				0.53				
Hourly Flow Rtae, HFR		21	13				42	102
Percent Heavy Vehicles		17						
Number of Lanes	0	0	1	0	0	0	1	0
Lane Configuration		LT						TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					109		33
Peak Hour Factor, PHF				0.53			
Hourly Flow Rtae, HFR					206		62
Percent Heavy Vehicles					17		17
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		LT							LR	
Flow Rate		21							268	
Lane Capacity		1352							825	
v/c		0.02							0.32	
95% Queue Length		0.0							1.4	
Control Delay		7.7							11.5	
LOS		A							B	
Approach Delay		4.8							11.5	
Approach LOS									B	
Intersction Delay		7.3								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2046 PM WY 223 & Terry Ranch Road.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/27/2021
Time Analyzed:	PM Peak
Jurisdiction:	
Analysis Year:	2046
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	WY 223/Terry Ranch Road
Major Street Direction:	North-South
East/West Street Name:	WY 223
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		30	13				17	109
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		34	15				19	124
Percent Heavy Vehicles		2						
Number of Lanes	0	0	1	0	0	0	1	0
Lane Configuration		LT						TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					71		43
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					81		49
Percent Heavy Vehicles					2		2
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		LT							LR	
Flow Rate		34							130	
Lane Capacity		1439							864	
v/c		0.02							0.15	
95% Queue Length		0.1							0.5	
Control Delay		7.6							9.9	
LOS		A							A	
Approach Delay		5.3							9.9	
Approach LOS									A	
Intersction Delay		4.8								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2046 AM Terry Ranch Road & Sheep Avenue.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/2021
Time Analyzed:	AM Peak Hour
Jurisdiction:	
Analysis Year:	2046
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	Terry Ranch Road/Road 1
Major Street Direction:	North-South
East/West Street Name:	Sheep Avenue
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		90	26				56	30
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		102	30				64	34
Percent Heavy Vehicles		10						
Number of Lanes	0	1	1	0	0	0	1	0
Lane Configuration		L	T					TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					7		21
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					8		24
Percent Heavy Vehicles					10		10
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L							LR	
Flow Rate		102							32	
Lane Capacity		1447							841	
v/c		0.07							0.04	
95% Queue Length		0.2							0.1	
Control Delay		7.7							9.5	
LOS		A							A	
Approach Delay		6.0							9.5	
Approach LOS									A	
Intersction Delay		4.2								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

HCS7 Two-Way Stop-Control Text Report

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	2046 PM Terry Ranch Road & Sheep Avenue.xtw
Analyst:	MG
Agency:	W2 Traffic Engineering
Date Performed:	5/31/2021
Time Analyzed:	PM Peak Hour
Jurisdiction:	
Analysis Year:	2046
Project Description:	Terry Ranch Business Park
Units:	U.S. Customary
Intersection Name:	Terry Ranch Road/Road 1
Major Street Direction:	North-South
East/West Street Name:	Sheep Avenue
North/South Street Name:	Terry Ranch Road
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	NorthBound				SouthBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume		25	59				39	8
Peak Hour Factor, PHF				0.88				
Hourly Flow Rtae, HFR		28	67				44	9
Percent Heavy Vehicles		10						
Number of Lanes	0	1	1	0	0	0	1	0
Lane Configuration		L	T					TR
Median Type				Undivided				
Median Storage								
RT channelized?								
Left-Turn Lane Storage								
Upstream Signal?				Not Present				

Minor Street:

Approach	WestBound				EastBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume					29		87
Peak Hour Factor, PHF				0.88			
Hourly Flow Rtae, HFR					33		99
Percent Heavy Vehicles					10		10
Number of Lanes	0	0	0		0	1	0
Lane Configuration						LR	
RT channelized?							
Flared Approach | Storage		|			No |	
Percent Grade						0	

Pedestrian Volumes and Adjustments

Approach	NB	SB	WB	EB
Movement	13	14	15	16
Flow (ped/hr)	0	0		0
Lane Width (ft)				
Walking Speed (ft/sec)				
Pedestrian Blockage Factor, f_pb				

Delay, Queue Length, and Level of Service

Approach	NB		SB		WestBound			EastBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Configuration		L							LR	
Flow Rate		28							132	
Lane Capacity		1502							934	
v/c		0.02							0.14	
95% Queue Length		0.1							0.5	
Control Delay		7.4							9.5	
LOS		A							A	
Approach Delay		2.2							9.5	
Approach LOS									A	
Intersction Delay		5.2								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	NorthBound				SouthBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

Trip Generation Calculations

Building size calculations, 12% of lot size is estimate for building size
1 Acre = 43,560 sq ft

Tract #	Acres	Sq Ft	Building Size
1	13.37	582397.2	69888
2	27.68	1205741	144689
3	24.58	1070705	128485
4	17.87	778417.2	93410
	83.5		

Trip Generation

				Vehicle Trip Ends on a Weekday						Vehicle Trips on a Weekday Peak Hour of Adjacent Street Traffic One Hour Between 7 and 9 AM						Vehicle Trips on a Weekday Peak Hour of Adjacent Street Traffic One Hour Between 4 and 6 PM					
Tract Number	Land Use	Building Size	ITE Land Use	Average Rate	% Entering	% Exiting	Total Volume	Volume Entering	Volume Exiting	Average Rate	% Entering	% Exiting	Total Volume	Volume Entering	Volume Exiting	Average Rate	% Entering	% Exiting	Total Volume	Volume Entering	Volume Exiting
1	Industrial Park	69888	130	3.37	50	50	236	118	118	0.34	81	19	24	19	5	0.34	22	78	24	5	generatio
2	Industrial Park	144689	130	3.37	50	50	488	244	244	0.34	81	19	49	40	9	0.34	22	78	49	11	38
3	Industrial Park	128485	130	3.37	50	50	433	216	216	0.34	81	19	44	35	8	0.34	22	78	44	10	34
4	Industrial Park	93410	130	3.37	50	50	315	157	157	0.34	81	19	32	26	6	0.34	22	78	32	7	25
							1471	735	735				148	120	28				148	33	97

CONCEPTUAL DRAINAGE ANALYSIS

TERRY RANCH BUSINESS PARK

December 12, 2022

Prepared For:

AVI Professional Corporation

1103 Old Town Lane, Suite 101

Cheyenne, WY 82009

FRONT RANGE
Stormwater & Floodplain Consulting

236 F Quarter Circle Loop | Cheyenne, WY 82007

www.frstormflood.com

TABLE OF CONTENTS

Conceptual Drainage Analysis
Terry Ranch Business Park

Cheyenne, Wyoming
December 12, 2022

1.0 INTRODUCTION

1.1 Objective

This conceptual drainage report serves to summarize conceptual drainage analysis for both existing and developed conditions for the proposed development site, the Terry Ranch Business Park, located in Cheyenne, Wyoming. Drainage design will conform to the Laramie County Land Use Regulations(Ref. 1). We understand that the County has adopted, as its primary reference, the Laramie County Land Use Regulations, Title 3, Chapter 1 – Drainage and Stormwater Management, and as a secondary reference, the Urban Drainage and Flood Control District's Design Criteria (recently renamed Mile High Flood District).

1.2 Mapping and Surveying

AVI Professional Corporation provided a topographic map of existing conditions with a contour interval of one (1) foot for the overall development site. Additionally, the Laramie County GIS department has made LiDAR topography available for the majority of the overall County. Front Range Stormwater & Floodplain Consulting shows this topographic data on exhibits associated with this drainage report for reference purposes only. Elevation data shown in this report or associated exhibits should not be utilized for design.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location and Description

The project site is located just southwest of the intersection of Speer Road and Terry Ranch Road (Please see Figure 1, below). The land is currently undeveloped and consists of sparse ground cover. Surrounding property to the north and east, west is undeveloped. There are several fireworks retailers located just southwest of the project site. The majority of the historic acreage of the project site drains east to Terry Ranch Road Right of Way, where flows travel southwest towards an existing irrigation ditch.

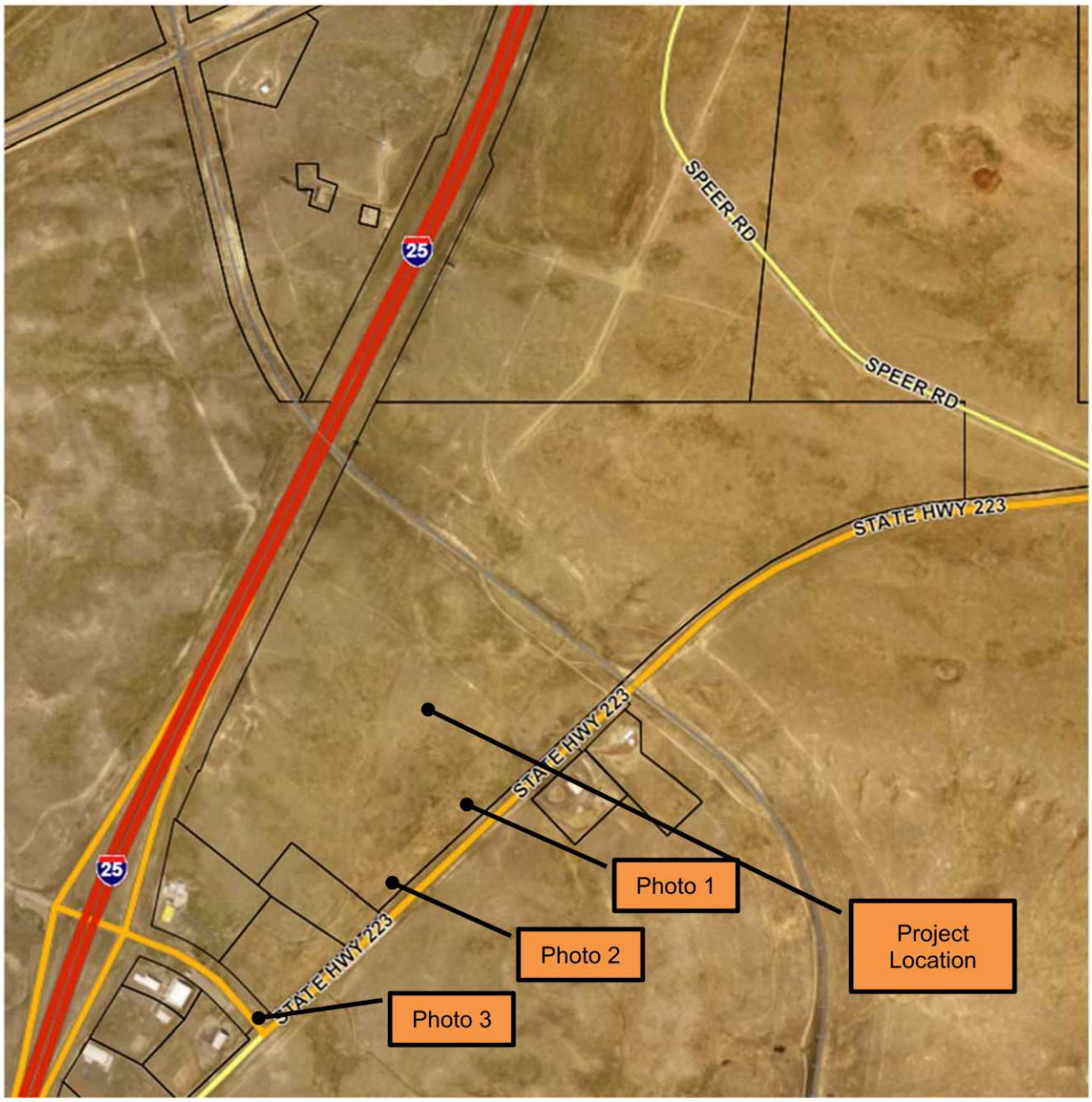


FIGURE 1 – Vicinity Map
(Source: Laramie County Interactive Mapping https://greenwoodmap.com/laramie/)

2.2 Field Work and Historic Drainage

Site field work was conducted in November of 2022. The project engineer investigated existing outfall points and other drainage features, as well as providing general visual confirmation of existing survey data and topography. Figure 2, below, provides an overall view of the general outfall points for the project site. General drainage patterns direct historic surface flows to the

southeast corner of the site, where flows enter Terry Ranch Road Right of Way. Historic flows travel southeast into an existing irrigation ditch, where flows are conveyed east, under Terry Ranch Road.

We plan to follow historic flow paths and to maintain the historic release point from the site at the southeast corner of the property. Individual lot detention and water quality treatment will be provided. Stormwater from the site's ultimate release point will be directed southeast into Terry Ranch Road Right of Way. The development will follow Laramie County criteria, and release flow at or below historic 50-year discharge rates; thus, any downstream capacity issue will not be adversely affected by the development. Additionally, individual lot detention ponds will include a water quality component in the lower stages of each pond which will provide water quality treatment, further aiding in any downstream issues.

Table 1, below, summarizes historic 2-, 50-, and 100-year discharges for the site.

DESIGN POINT	BASIN(S)	AREA (AC)	Q2	Q50	Q100	100-YR CFS/AC
H1	H1	85.72	3.2	98.78	115.4	1.35

TABLE 1 – Historic Discharge Summary

FIGURE 2 – Outfall Point, Historic Basins 1

PHOTO 1 – Outfall
(Photo Perspective: Looking Northeast from West Side of Terry Ranch Road)

PHOTO 2 – Outfall
(Photo Perspective: Looking Southwest from West Side of Terry Ranch Road)

PHOTO 3 – Irrigation Culvert
(Photo Perspective: Looking Southeast from West Side of Terry Ranch Road)

3.0 POST-DEVELOPMENT CONDITIONS

3.1 Proposed Development

The proposed site plan consists of a breakout of the overall property into several large lots and associated access drives, parking areas, and utilities. Detention pond will be located at the discretion of individual lot owners, but will be respective of the overall historic release point as noted above. Please see the proposed site plan for the development provided by AVI Professional Corporation, provided in **Appendix A.**

3.2 Developed Runoff Analysis

Rational Method Modeling criteria contained in the Urban Storm Drainage Criteria Manual, (Runoff "RO") by the Urban Drainage and Flood Control District will be followed for sub-basin analysis. The Rational Method will be used to model peak stormwater runoff within the developed site for the 2-year, and 50-year (initial) design storms, and the 100-year (major) design storm. The project is in Laramie County, however we will utilize rainfall data from City of Cheyenne criteria outlined in the Cheyenne Unified Development Code (UDC Page 3-14, Intensity-Duration-Frequency curves) for all Rational Method modeling.

3.3 Conceptual Detention Analysis

The FAA method will be utilized for the computation of required detention volumes. No retaining walls are currently anticipated within ponds. Should any retaining walls within the pond areas become necessary, we will notify the City as soon as possible to work through site-specific issues.

Extended detention water quality capture volume will be incorporated in the lower stages of the detention ponds along with the proposed retention component within each pond. Please see Section 4.0 for further discussion of water quality provisions for the development site.

3.4 Conceptual Swale Analysis

There is an existing flowpath directing offsite historic flow from areas to the northeast through the property. We have determined a 100-year discharge of 45.40 cfs entering the site from this offsite area. Based on conceptual swale calculations provided in **Appendix B**, we have determined a conceptual swale section and topwidth, as the basis for an easement to be provided for a future swale. Final level design of the swale section, as well as a future alignment will be based on lot-specific design and layout of future features with the lot. The conceptual swale section provided in this report does not constitute a final design calculation for the swale.

4.0 WATER QUALITY

4.1 Water Quality Measures and Criteria

Water quality capture volume is to be provided in the lower stages of the proposed ponds. The ponds will provide treatment for the majority of the site with design based on criteria for a 40-hour dry extended detention basin as outlined in the Urban Storm Drainage Criteria Manual, Volume 3 – Best Management Practices by the Urban Drainage and Flood Control District. At Final Design, we will determine required water quality capture volume per this criteria for the two ponds and account for retention volumes to be designed in the lower stages of the ponds, which may reduce required water quality capture volumes.

5.0 CONCLUSIONS

5.1 Compliance with Standards

Drainage design conforms to criteria outlined in Laramie County Land Use Regulations, Laramie County, Wyoming. Adopted February 15, 2011. As a secondary reference, the Urban Drainage and Flood Control District's Design Criteria (recently renamed Mile High Flood District) has been utilized. All calculations herein conform to these standards.

I hereby attest that this report for the Conceptual Drainage for Terry Ranch Business Park was prepared by me or under my direct supervision, in accordance with the provisions of Laramie County Road Street, and Site Planning Design Standards for the responsible parties thereof. I understand that Laramie County does not and shall not assume liability for drainage facilities designed by others.

12/12/22

Aaron Cvar, PE
Registered Professional Engineer

State of Wyoming No. 14045

REFERENCES

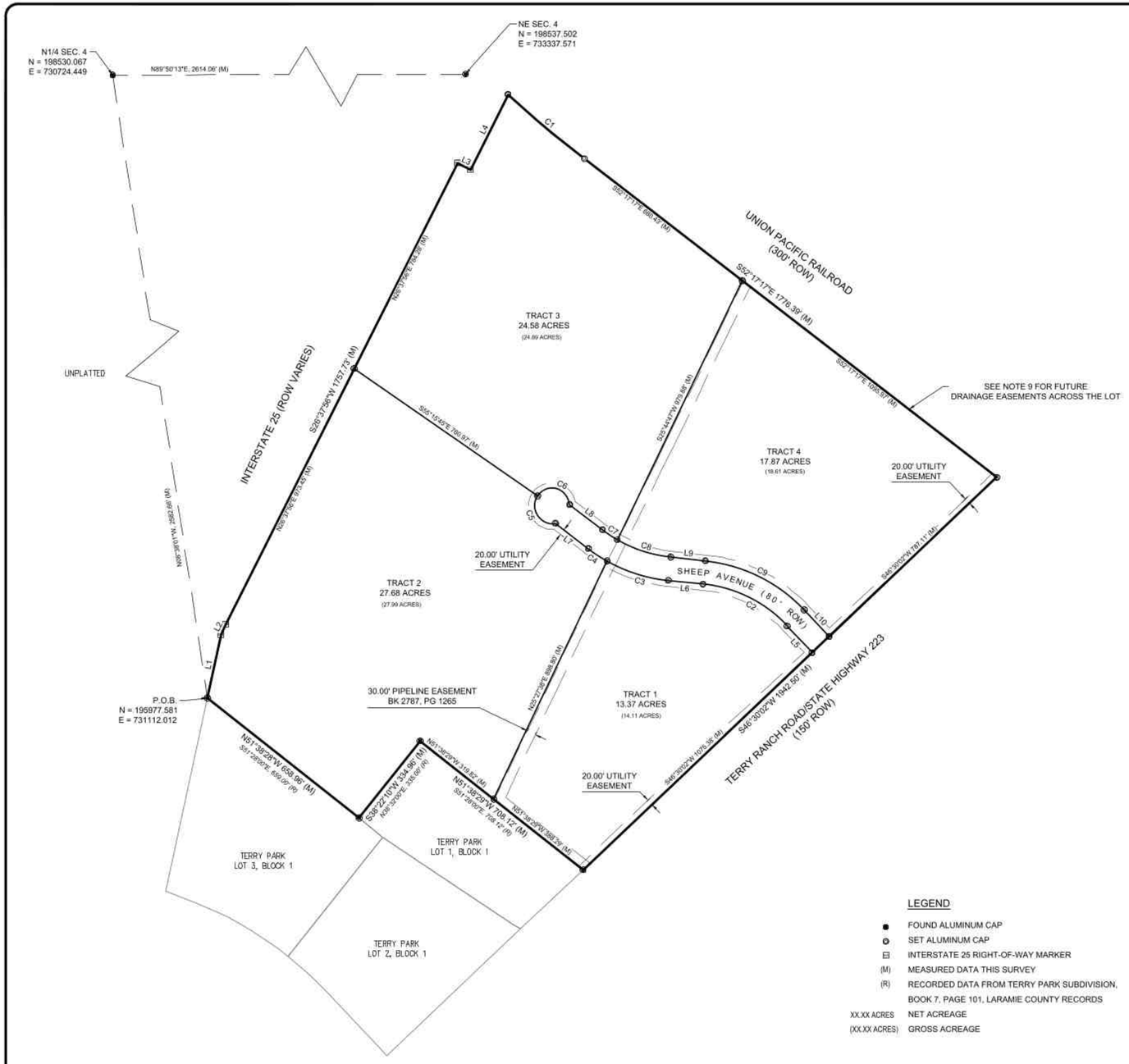
1. Laramie County Land Use Regulations, Laramie County, Wyoming. Adopted February 15, 2011.

2. Urban Storm Drainage Criteria Manual, Urban Drainage and Flood Control District (Mile High Flood District), Denver, Colorado.

3. Soils Resource Report for Laramie County Area, Wyoming, Natural Resources Conservation Service, United States Department of Agriculture.

Appendix A

Site Plan (Provided by AVI Professional Corporation, November 2022)



BASIS OF BEARING

COORDINATES ARE GROUND COORDINATES BASED ON WYOMING STATE PLANE NAD 1983, EAST FIP ZONE 4901.
TO CONVERT TO STATE PLANE COORDINATES ADD 100,000 FT TO THE NORTHING AND 200,000 FT TO THE EASTING AND MULTIPLY BY A PROJECT SCALE FACTOR OF 0.999645269.
EXAMPLE POINT POB
GROUND NORTHING = 96047.125
GROUND EASTING = 531371.452
N = (96047.125 + 100000)*SF = 195977.581
E = (531371.452 + 200000)*SF = 731112.012
STATE PLANE NORTHING = 195977.581
STATE PLANE EASTING = 731112.012

LEGAL DESCRIPTION

A PARCEL OF LAND SITUATED IN THE EAST HALF OF SECTION 4 AND THE WEST HALF OF SECTION 3, TOWNSHIP 12 NORTH, RANGE 67 WEST OF THE SIXTH PRINCIPAL MERIDIAN, LARAMIE COUNTY, WYOMING, SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTH CORNER OF LOT 3 BLOCK 1 OF THE TERRY PARK SUBDIVISION , ALSO BEING A POINT ON THE EAST INTERSTATE 25 RIGHT-OF-WAY; THENCE ALONG THE EAST INTERSTATE 25 RIGHT-OF-WAY FOR THE FOLLOWING COURSES AND DISTANCES N11°55'45"E A DISTANCE OF 221.51 FEET TO A RIGHT-OF-WAY MONUMENT; THENCE N26°18'44"E A DISTANCE OF 39.44 FEET TO A RIGHT OF WAY MONUMENT STA. 394+57.6; THENCE N26°37'56"E A DISTANCE OF 1757.73 FEET TO A RIGHT OF WAY MONUMENT STA. 377+00 ; THENCE S63°00'59"E 49.83 FEET TO A RIGHT-OF-WAY MONUMENT STA. 377+00; THENCE N26°37'16"E A DISTANCE OF 286.13 FEET TO A POINT INTERSECTING THE SOUTH RIGHT-OF-WAY OF THE UNION PACIFIC RAILROAD; THENCE LEAVING THE INTERSTATE 25 RIGHT-OF-WAY AND ALONG THE UNION PACIFIC RIGHT-OF-WAY ON A NON-TANGENT CURVE TO THE LEFT SAID CURVE HAVING A RADIUS OF 4132.32 FEET, A CHORD BEARING OF S49°56'00"E, CHORD DISTANCE OF 339.54 FEET, A CENTRAL ANGLE OF 4°42'33", THENCE ALONG THE ARC OF SAID CURVE A DISTANCE OF 339.64 FEET TO A POINT OF TANGENCY; THENCE S52°17'17"E A DISTANCE 1776.39 FEET TO A POINT INTERSECTING THE NORTHWEST RIGHT-OF-WAY OF THE TERRY RANCH ROAD (STATE HWY 223); THENCE LEAVING THE SAID UNION PACIFIC RAILROAD RIGHT-OF-WAY AND ALONG THE SAID TERRY RANCH ROAD (STATE HWY 223) S46°30'02"W A DISTANCE OF 1942.50 FEET TO THE NORTHEAST CORNER OF LOT 1 BLOCK 1 OF THE SAID TERRY PARK SUBDIVISION; THENCE ALONG THE NORTH LINE OF SAID TERRY PARK SUBDIVISION FOR THE FOLLOWING COURSES AND DISTANCES N51°38'29"W A DISTANCE OF 708.12 FEET TO AN ALUMINUM CAP LS 2927; THENCE S38°22'10"W A DISTANCE OF 334.96 FEET TO AN ALUMINUM CAP LS 2927; THENCE N51°38'28"W A DISTANCE OF 658.96 FEET MORE OR LESS TO THE POINT OF BEGINNING.

SAID PARCEL OF LAND CONTAINS 85.60 ACRES MORE OR LESS.

DEDICATION

KNOW ALL PERSONS BY THESE PRESENTS THAT: DOUG SAMUELSON, MANAGING MEMBER OF SWAN RANCH, LLC, OWNER IN FEE SIMPLE OF THE LAND EMBRACED IN THIS FINAL PLAT OF TERRY RANCH BUSINESS PARK, DOES HEREBY DECLARE THAT THE SUBDIVISION OF SAID LAND IS WITH THEIR FREE ACT AND DEED AND IN ACCORDANCE WITH THEIR DESIRES, AND GRANTS TO THE PUBLIC THE RIGHT-OF-WAY AND THE EASEMENTS SHOWN HEREON FOR THE PURPOSES INDICATED ON THIS PLAT.

_____
DOUG SAMUELSON, MANAGING MEMBER
SWAN RANCH, LLC

ACKNOWLEDGEMENTS

STATE OF WYOMING)
)SS
COUNTY OF LARAMIE)

THE FOREGOING DEDICATION WAS EXECUTED BEFORE ME ON THIS ___ DAY OF _____, 2022, BY DOUG SAMUELSON, MANAGING MEMBER OF SWAN RANCH, LLC, OWNER IN FEE SIMPLE OF THE LAND EMBRACED IN THIS PLAT, AND THAT THE EXECUTION OF SAID INSTRUMENT WAS THEIR OWN FREE ACT AND DEED.

_____
NOTARY PUBLIC, LARAMIE COUNTY, WYOMING

MY COMMISSION EXPIRES: _____

APPROVALS

APPROVED BY THE LARAMIE COUNTY PLANNING COMMISSION THIS ____ DAY OF_____, 2022.

_____
CHAIR PERSON, LARAMIE COUNTY PLANNING COMMISSION

APPROVED BY THE LARAMIE COUNTY BOARD OF COMMISSIONERS THIS ____ DAY OF _____, 2022.

_____
CHAIR PERSON, BOARD OF COUNTY COMMISSIONERS

_____
COUNTY CLERK

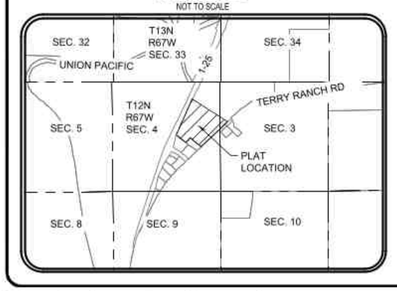
NOTES:

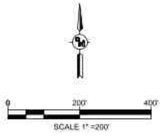
1. A 5/8" REBAR 24" LONG WITH A 2" ALUMINUM CAP STAMPED AVI PC PLS 12045 WILL BE PLACED AT ALL PROPERTY BOUNDARY CORNERS, INCLUDING BUT NOT LIMITED TO, POINTS OF CURVATURE, POINTS OF TANGENCY AND ANGLE POINTS.
2. NO PORTION OF THE SUBJECT PROPERTY FALLS WITHIN A FEMA 100-YEAR SPECIAL FLOOD HAZARD AREA AS SHOW ON FIRM PANEL 56021C0795F DATED 1/17/2007.
3. FIRE PROTECTION WILL BE PROVIDED BY LARAMIE COUNTY FIRE DISTRICT 1.
4. NO PUBLIC WATER SYSTEM.
5. NO PUBLIC SEWER SYSTEM.
6. NO PUBLIC MAINTENANCE OF ROAD OR RIGHT-OF-WAY.
7. THE SURFACE ESTATE OF THE LAND TO BE SUBDIVIDED IS SUBJECT TO FULL AND EFFECTIVE DEVELOPMENT OF THE MINERAL ESTATE.
8. 30' PIPELINE EASEMENT FOR BLACK HILLS ENERGY RECORDED AT BOOK 2787, PAGE 1265 OF THE LARAMIE COUNTY RECORDS.
9. EACH LOT SHALL BE RESPONSIBLE FOR THE PROPER HANDLING OF OFFSITE AND ON SITE DRAINAGE FLOWS THROUGH THE USE OF EXISTING AND/OR PROPOSED DITCHES. ANY DRAINAGE EASEMENTS REQUIRED FOR THE PROPER HANDLING OF THE DRAINAGE SHALL BE ESTABLISHED AND RECORDED DURING THE SITE PLAN PROCESS FOR EACH LOT/TRACT.

LEGEND

- ● FOUND ALUMINUM CAP
- ⊙ SET ALUMINUM CAP
- ⊟ INTERSTATE 25 RIGHT-OF-WAY MARKER
- (M) MEASURED DATA THIS SURVEY
- (R) RECORDED DATA FROM TERRY PARK SUBDIVISION, BOOK 7, PAGE 101, LARAMIE COUNTY RECORDS
- XX.XX ACRES NET ACREAGE
- (XX.XX ACRES) GROSS ACREAGE

VICINITY MAP
NOT TO SCALE





FILING RECORD

LINE TABLE		
LINE #	BEARING	DISTANCE
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L3	S63°00'59"E	49.83
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L5	S43°12'48"E	124.64
L6	S83°56'16"E	119.00
L7	S52°26'15"E	141.42
L8	N52°26'15"W	141.42
L9	N83°56'16"W	119.00
L10	N43°12'48"W	124.24

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	339.64	4132.32	4°42'33"	S49°56'00"E	339.54
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C4	77.22	540.00	8°11'37"	S56°32'04"E	77.16
C5	141.75	60.00	135°21'53"	S32°56'41"E	111.01
C6	147.67	60.00	141°00'53"	N74°45'19"W	113.12
C7	60.32	460.00	7°30'45"	N56°11'38"W	60.27
C8	192.59	460.00	23°59'16"	N71°56'38"W	191.18
C9	383.82	540.00	40°43'29"	N83°34'32"W	375.79

CERTIFICATE OF SURVEYOR

I, ADAM E. DESCHLER, A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF WYOMING DO HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM THE RECORDS AND FIELD NOTES OF A SURVEY CONDUCTED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

FINAL PLAT
FOR
TERRY RANCH BUSINESS PARK

FOR A PORTION OF THE EAST 1/2 OF SECTION 4,
AND A PORTION OF THE WEST 1/2 OF SECTION 3
T12N, R67W OF THE 6TH PRINCIPAL MERIDIAN,
LARAMIE COUNTY, WYOMING

PREPARED NOVEMBER 2022

NO.	REVISION	DATE

PREPARED FOR:
SWAN RANCH, LLC
1961 US HWY 85
CHEYENNE, WY 82009

PROJECT:
TERRY RANCH BUSINESS PARK

DRAWING TITLE:
FINAL PLAT

AVI ENGINEERING PLANNING SURVEYING PC
307.637.6017
1103 OLD TOWN LANE, SUITE 101
CHEYENNE, WY. 82009
AVI@AVIPC.COM

DATE: Dec 13, 2022
DRAWN BY: KS
DESIGNED BY: KS
CHECKED BY: AED
JOB NO.: 4490
DRAWING NO.: OF

Appendix B

Conceptual Swale Calculations

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Dec 12 2022

CONCEPTUAL SWALE DESIGN

Triangular

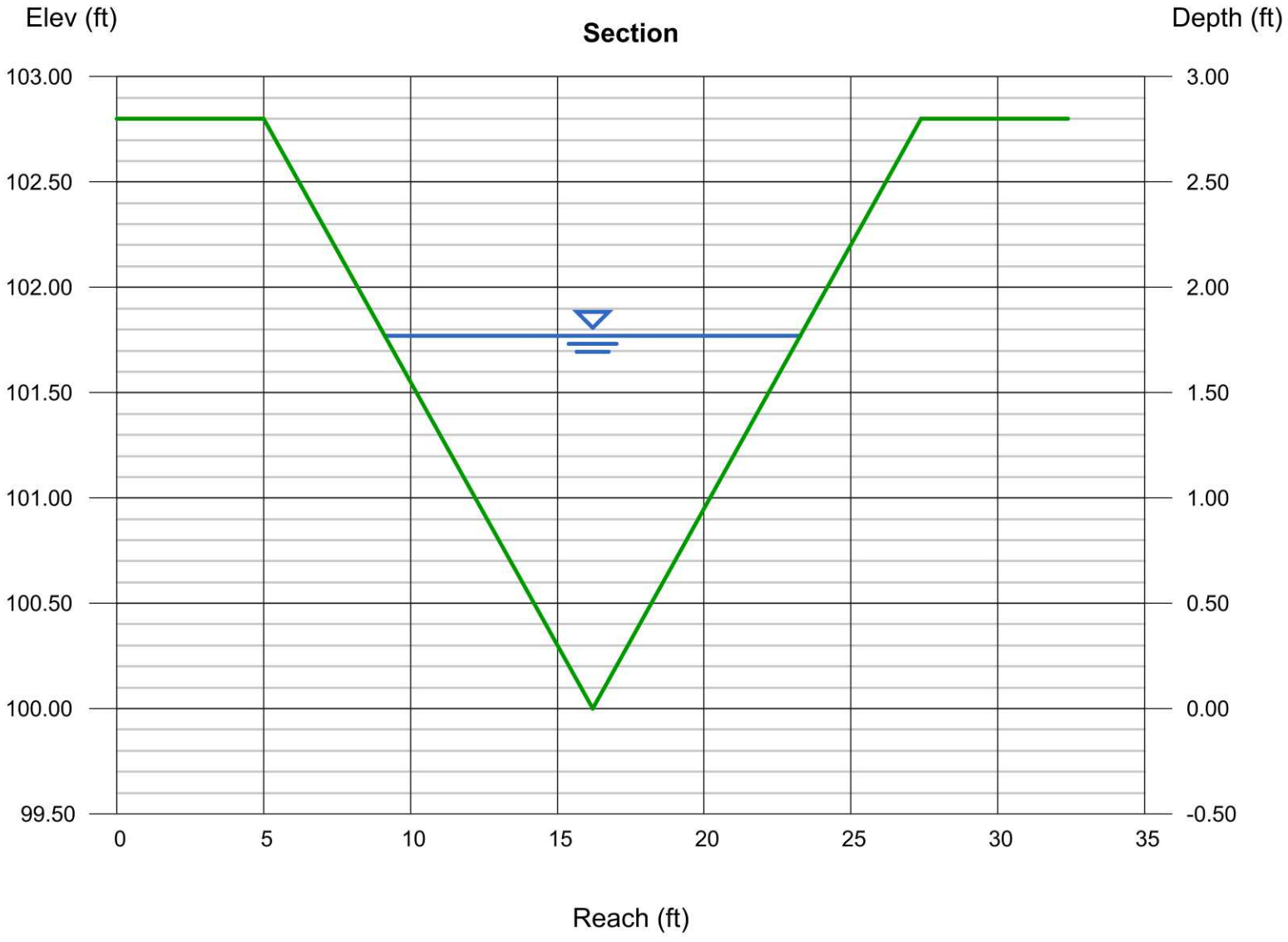
Side Slopes (z:1)	= 4.00, 4.00
Total Depth (ft)	= 2.80
Invert Elev (ft)	= 100.00
Slope (%)	= 1.50
N-Value	= 0.045

Calculations

Compute by:	Known Q
Known Q (cfs)	= 45.40

Highlighted

Depth (ft)	= 1.77
Q (cfs)	= 45.40
Area (sqft)	= 12.53
Velocity (ft/s)	= 3.62
Wetted Perim (ft)	= 14.60
Crit Depth, Yc (ft)	= 1.52
Top Width (ft)	= 14.16
EGL (ft)	= 1.97



Depth	Q	Area	Veloc
(ft)	(cfs)	(sqft)	(ft/s)
0.14	0.053	0.078	0.67
0.28	0.335	0.314	1.07
0.42	0.988	0.706	1.40
0.56	2.127	1.254	1.70
0.70	3.857	1.960	1.97
0.84	6.272	2.822	2.22
0.98	9.461	3.842	2.46
1.12	13.51	5.018	2.69
1.26	18.49	6.350	2.91
1.40	24.49	7.840	3.12
1.54	31.58	9.486	3.33
1.68	39.83	11.29	3.53
1.82	49.31	13.25	3.72
1.96	60.09	15.37	3.91
2.10	72.23	17.64	4.09
2.24	85.79	20.07	4.27
2.38	100.8	22.66	4.45
2.52	117.5	25.40	4.62
2.66	135.7	28.30	4.79
2.80	155.6	31.36	4.96

Wp	Yc	TopWidth	Energy
(ft)	(ft)	(ft)	(ft)
1.15	0.11	1.12	0.15
2.31	0.22	2.24	0.30
3.46	0.33	3.36	0.45
4.62	0.45	4.48	0.60
5.77	0.57	5.60	0.76
6.93	0.69	6.72	0.92
8.08	0.81	7.84	1.07
9.24	0.94	8.96	1.23
10.39	1.06	10.08	1.39
11.54	1.19	11.20	1.55
12.70	1.32	12.32	1.71
13.85	1.44	13.44	1.87
15.01	1.57	14.56	2.04
16.16	1.70	15.68	2.20
17.32	1.83	16.80	2.36
18.47	1.96	17.92	2.52
19.63	2.09	19.04	2.69
20.78	2.22	20.16	2.85
21.93	2.35	21.28	3.02
23.09	2.49	22.40	3.18

RESOLUTION NO. _____

A RESOLUTION TO APPROVE A SUBDIVISION PERMIT AND PLAT FOR A PORTION OF E1/2 SECTION 4 LYING SOUTH AND EAST OF I-25 ALSO LYING NORTH AND WEST OF TERRY RANCH ROAD, T12N., R67W., LARAMIE COUNTY, WY, TO BE PLATTED AND KNOWN AS "TERRY RANCH BUSINESS PARK".

WHEREAS, Wyoming State Statutes §18-5-201 to 18-5-208; §18-5-301 to 18-5-315 authorize Laramie County, in promoting the public health, safety, morals and general welfare of the county, to regulate the use of land through zoning in unincorporated Laramie County; and

WHEREAS, the Laramie County Board of Commissioners adopted the Laramie County Land Use Regulations; and

WHEREAS, the proposed subdivision and plat is in accordance with section 2-1-101 (a-e) of the Laramie County Land Use Regulations; and

WHEREAS, the application is in conformance with the LU – Land Use zone district; and

WHEREAS, this resolution is the subdivision permit for Terry Ranch Business Park.

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF LARAMIE COUNTY, WYOMING, as follows:

The Laramie County Board of Commissioners finds that:

- **a.** This application is in conformance with section 2-1-101 (a-e) of the Laramie County Land Use Regulations.
- **b.** This application is in conformance with section 4-2-104 governing the LU - Land Use zone district.

And the Board approves the Subdivision Permit and Plat for Terry Ranch Business Park.

PRESENTED, READ AND ADOPTED THIS _____DAY OF

_____, 2023.

LARAMIE COUNTY BOARD OF COMMISSIONERS

_____

Troy Thompson, Chairman

ATTEST:

_____

Debra K. Lee, Laramie County Clerk

Reviewed and approved as to form:

_____

Laramie County Attorney's Office

BASIS OF BEARING

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_____
DOUG SAMUELSON, MANAGING MEMBER
SWAN RANCH, LLC

ACKNOWLEDGEMENTS

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)SS
COUNTY OF LARAMIE)

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_____
NOTARY PUBLIC, LARAMIE COUNTY, WYOMING

MY COMMISSION EXPIRES: _____

APPROVALS

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_____
CHAIR PERSON, LARAMIE COUNTY PLANNING COMMISSION

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_____
CHAIR PERSON, BOARD OF COUNTY COMMISSIONERS

_____
COUNTY CLERK

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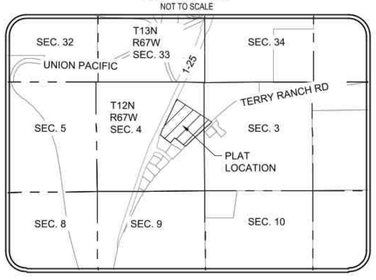

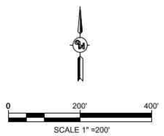

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Professional Land Surveyor
ADAM E. DESCHLER
12045
Date
WYOMING

CERTIFICATE OF SURVEYOR

I, ADAM E. DESCHLER, A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF WYOMING DO HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM THE RECORDS AND FIELD NOTES OF A SURVEY CONDUCTED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DIMENSIONS AND OTHER DETAILS ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

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FOR
TERRY RANCH BUSINESS PARK

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AND A PORTION OF THE WEST 1/2 OF SECTION 3
T12N, R67W OF THE 6TH PRINCIPAL MERIDIAN,
LARAMIE COUNTY, WYOMING

PREPARED NOVEMBER 2022

NO.	REVISION	DATE

PREPARED FOR:
SWAN RANCH, LLC
1961 US HWY 85
CHEYENNE, WY 82009

PROJECT:
TERRY RANCH BUSINESS PARK

DRAWING TITLE:
FINAL PLAT

ENGINEERING
PLANNING
SURVEYING
PC
307.637.6017
1103 OLD TOWN LANE, SUITE 101
CHEYENNE, WY 82009
AVI@AVIPC.COM

DATE: Nov 15, 2022
DRAWN BY: KS
DESIGNED BY: KS
CHECKED BY: AED

JOB NO.: 4490

DRAWING NO.
OF