Methods and Assumptions Document

Date:	Wednesday, August 19, 2020
Project:	US14A / US85 / Deadwood Box Study and Environmental Study
To:	Study Advisory Team
From:	HDR
Subject:	Methods and Assumptions Documentation

This Methods and Assumptions document was developed in preparation for the Methods and Assumptions Meeting held as part of the project kick-off meeting with representatives from the South Dakota Department of Transportation (SDDOT), Federal Highway Administration (FHWA), and City of Deadwood. This document is intended to serve as a historical record of the process, dates, and decisions made by the study team representatives for the **US14A / US85 / Deadwood Box Study and Environmental Study.**

1.0 Stakeholder Acceptance Page

The undersigned parties concur with the Methods and Assumptions for the **US14A / US85 / Deadwood Box Study and Environmental Study** as presented in this document.

SDDOT:	FHWA:
_____	_____
Signature	Signature
_____	_____
Title	Title
_____	_____
Date	Date

Notes:

1. Participation on the Study Advisory Team (SAT) and/or signing of this document does not constitute approval of the **US14A / US85 / Deadwood Box Study and Environmental Study** Final Reports or conclusions.

2. All members of the Study Advisory Team will accept this document as a guide and reference as the study progresses through the various stages of development. If there are any agreed-upon changes to the assumptions in this document a revision will be created, endorsed, and signed by all the signatories.

2.0 Introduction and Project Description

Project Background, Understanding, and Need for Study

The South Dakota Department of Transportation (SDDOT) in conjunction with the City of Deadwood and the Federal Highway Administration (FHWA) intends to perform a corridor planning study for a portion of the US Highway 14 Alternate (US14A) / US Highway 85 (US85) / Pioneer Way corridor in the City of Deadwood, South Dakota.

The recently completed Major Bridge Investment Study recommended the existing Deadwood Box be replaced when condition warrants. This replacement project is tentatively planned for Federal Fiscal Year 2026. Given the urban development, environmental, and terrain constraints surrounding the current the structure, replacement of the structure while maintaining highway route continuity and access within the City of Deadwood during construction is problematic. In 2008, the Deadwood Pedestrian Circulation and Enhancement Study concluded with some long-term recommendations to adjust the US14A / US85 / Pioneer Way alignment so to improve pedestrian circulation and safety in the pedestrian heavy downtown area of Deadwood. The replacement of the Deadwood Box could provide the opportunity to bring some of those recommendations to fruition.

This study will complete a planning level corridor study, box replacement alternative study and environmental study for the US14A/US85 corridor from the intersection with Upper Main Street to the north intersection of US85. Additional objectives include:

1. Complete a list of transportation issues and needs facing the study corridors within the designated limits.
2. Develop feasible solutions to address those issues and needs that meet current design standards and traffic level of service expectations under both the current and predicted future traffic conditions while promoting a livable community that will enhance the economic and social well-being of all users of the corridor.
3. Create final products for use by the SDDOT and the City of Deadwood which will provide guidance to implement recommended improvements.

Location and Study Area

The US14A / US85 / Deadwood Box Study Area is shown in Figure 1, with the following limits:

- US Highway 14 Alternate (US14A) / Pioneer Way from the intersection with Upper Main Street to the north intersection with US85, approximately 1.9 miles,
- US Highway 85 (US85) / Sherman Street from the intersection with Cemetery Street / Water Street to the intersection with Pine Street, approximately 0.2 miles
- US Highway 85 (US85) / Pine Street from the intersection with Sherman Street to the intersection with US14A/Pioneer Way, approximately 0.1 mile
- Main Street (Upper and Lower) from the intersection with Armory Street to the intersection with US14A/Pioneer Way, approximately 0.7 miles,
- Sherman Street from the intersection with US85/Pine Street to the intersection with US14A/Pioneer Way, approximately 0.2 miles,
- Pine Street from the intersection with US14A to the intersection with Main Street, approximately 0.1 miles,
- Armory Street from the intersection with US14A / Pioneer Way to the intersection with Upper Main Street, approximately 0.1 miles,
- Fire Street from the intersection with US14A / Pioneer Way to the intersection with Upper Main Street, approximately 0.1 miles,
- Siever Street from the intersection with US85/Pine Street to the intersection with Deadwood Street, approximately 0.1 miles,

- Deadwood Street from the intersection with Sherman Street to the intersection with Main Street, approximately 0.1 miles,
- Lee Street from the intersection with Sherman Street to the intersection with Lower Main Street, approximately 0.1 miles,
- Wall Street from the intersection with US14A / Pioneer Way to the intersection with Lower Main Street, approximately 0.1 miles,
- Railroad Avenue from the intersection with US14A / Pioneer Way to the intersection with Dunlop Avenue, approximately 0.4 miles, and
- Dunlop Avenue from the intersection with Railroad Avenue to the intersection with US14A / Pioneer Way, approximately 0.1 miles
- Water Street from the intersection with US85 / Sherman Street to the intersection with US85/Pine Street, approximately 0.2 miles
- Center Street from the intersection with US85 / Sherman Street to the intersection with Water Street, approximately 0.1 miles.

The corridor limits are located within Lawrence County within the Deadwood city limits.

The study area may expand depending on potential detour routes for analysis identified during the study.

Facilities Affected by the Study

The facilities affected by this project include the sections of the roadway systems identified in the previous "Location and Study Area" section of this memorandum.

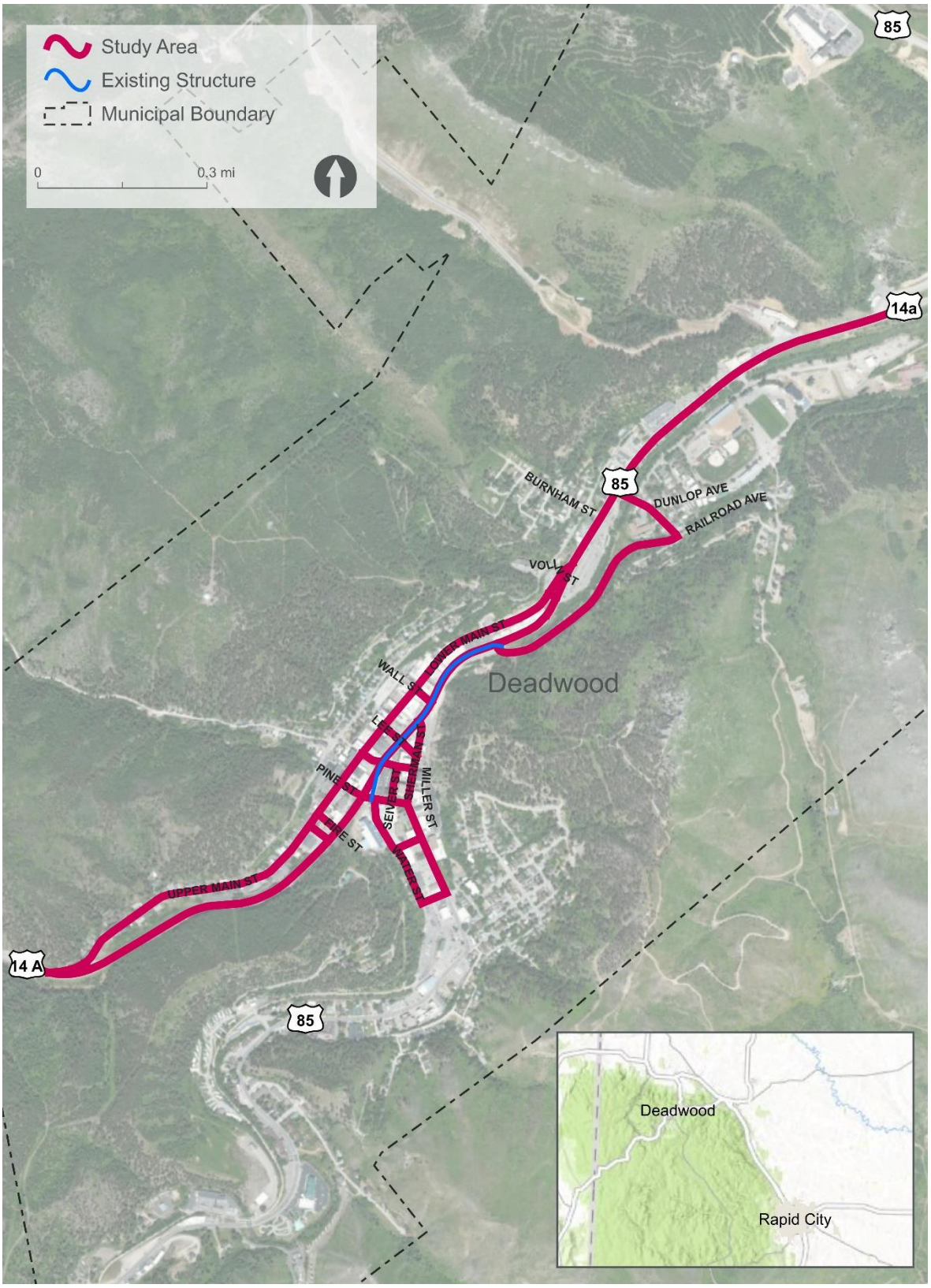

Figure 1: Study Area

Study Schedule

Table 1: Study Schedule

Date	Task/Event
May 2020	Project Kickoff and M&A Document
May 26, 2020	Study Advisory Team Kickoff and M&A Meeting
May 2020 – June 2020	Data Collection (Other than traffic data), Identification of Issues and Needs, Begin Environmental Overview
May 2020 – Jan 2021	Environmental Scan
June 2020 – Sept 2020	Hydraulic/Topographic Survey
July 2020	**Public Meeting #1 (Study Introduction, Issues, and Needs)**
July 2020 – Oct 2020	Utility Coordination and Locating (Phase 1)
Aug 2020	Traffic Data Collection
Aug 2020 - Sept 2020	Existing and Future No-Build Traffic Operations and Analysis
Aug 2020 – Mar 2021	Identification of Solutions and Concept Development / Initial analysis of alternatives
Nov 2020	Draft Environmental Scan Report
Dec 2020	**Public and Stakeholder Meetings #2 (Structure & Corridor Conceptual Options and Preliminary Evaluation)**
Jan 2021	Final Environmental Scan Report
February 2021	Draft Planning Study Report, Begin NEPA Study
February 2021	**Public and Stakeholder Meetings #3 (Feasible Build Concepts and Environmental Scan Findings)** *Dependent on if EA is necessary*
Apr 2021 – Jun 2021	Refinement of Build Alternatives, Build Analysis (Traffic/Operations/Safety/Constructability)
Aug 2021 – Nov 2021	Utility Coordination and Locating (Phase 2)
Dec 2021	Final Planning Study Report & Environmental Document
Dec 2021	**Public and Stakeholder Meetings #4 (Refined Concepts, Recommendations and Final Environmental Document Findings)**
February 2022	Project Complete

Previous Studies

The agency partners for this study have identified a few previous studies that would appear to benefit or provide background for this study:

- SDDOT Major Bridge Investment Study https://dot.sd.gov/media/documents/SDDOTMajorBridgeStudy.pdf
- 2008 City of Deadwood Pedestrian Circulation and Enhancement Study https://dot.sd.gov/media/documents/DeadwoodPedPlan121808.pdf
- 2018 City of Deadwood Comprehensive Plan https://www.cityofdeadwood.com/vertical/sites/%7BECDE07BE-19F7-4F11-A017-CFDAD3EEEE69%7D/uploads/DeadwoodCompPlan_Draft_November2018.pdf
- 2005 Lawrence County Transportation Plan https://www.lawrence.sd.us/DocumentCenter/View/86/Comprehensive-Plan-PDF
    - Existing Conditions Report: https://www.lawrence.sd.us/DocumentCenter/View/91/Existing-Conditions-Report--PDF
- 2019-2020 City of Deadwood Capital Improvement Program Strategic Plan https://www.cityofdeadwood.com/vertical/sites/%7BECDE07BE-19F7-4F11-A017-CFDAD3EEEE69%7D/uploads/Capital_Improvement_Plan_Final.pdf
- 2012 Lawrence County Flood Insurance Study https://map1.msc.fema.gov/data/46/S/PDF/46081CV000A.pdf?LOC=10a02d0179755cf91aff454e9cadb008
- 2010 SDDOT Long Range Plan https://dot.sd.gov/media/documents/FinalSDLRTP.pdf
- 2019 SDDOT Strategic Highway Safety Plan https://dot.sd.gov/media/documents/SHSP_FINAL_Reduced.pdf
- 2016 Deadwood Lead Housing Study https://www.deadwoodleadedc.com/news/deadwood-lead-housing-study

Study Advisory Team Members

A Study Advisory Team has been formed to guide the study through completion. The Study Advisory Team is comprised of representative parties of the SDDOT, FHWA, and City of Deadwood.

Table 2: Study Advisory Team

Participant	Agency
Mike Carlson	SDDOT – Rapid City Area
Dave Coley	SDDOT – Bridge Design
Sonia Downs	SDDOT – Project Development
Joel Gengler	SDDOT – Right of Way
John Gerlach	SDDOT – Rapid City Area
Sam Gilkerson	SDDOT – Road Design
Steve Gramm	SDDOT – Project Development
Kevin Griese	SDDOT – Materials & Surfacing
Joanne Hight	SDDOT – Administration
Marc Hoelscher	FHWA
Mark Hoines	FHWA
Tom Horan	SDDOT – Rapid City Region
Steve Johnson	SDDOT – Bridge Design
Steve Kamarainen	SDDOT – Rapid City Region
Andrea Kramer	SDDOT - Administration
Tom Kruzel	City of Deadwood
Tom Lehmkuhl	FHWA
Kevin Marton	SDDOT – Bridge Design
Bob Nelson	City of Deadwood
Mark Malone	SDDOT – Road Design
Bruce Outka	Lawrence County
Jay Tople	SDDOT – Materials & Surfacing
Kelly VanDeWiele	SDDOT – Road Design
Patrick Wellner	SDDOT – Bridge Design

Additional team members may be added as the study progresses.

3.0 Analysis Years/Periods

The study will evaluate traffic operations during the following time periods:

- Existing Conditions – Year 2020 or Year 2021
- Future-Year Conditions
    - First Possible Year of Project Completion – Year 2027
    - Planning Horizon Year – Year 2050

4.0 Data Collection

Proposed Approach to Data Collection

Due to the COVID 19 pandemic, there is concern that traffic volumes may not be at their normal levels. The following approach will be used to determine if traffic counts should commence this year. The permanent automatic traffic recorder (ATR Station 202) near the intersection of US14A and US85 in Deadwood was not operational prior to October 2019. Therefore, this station will not be used for comparison purposes between year 2019 and 2020. Instead, stations within the Black Hills Area will be used to determine if traffic volumes have stabilized and data collection can commence based on the following factors:

- No large scale businesses have closed
- Daily traffic volumes are greater than or equal to 80% of their average levels in year 2019 recorded at the ATR Station 161 (US16 East of Hill City), Station 193 (I90 East of Spearfish), and Station 901 (I90 West of Tilford).

Update: After monitoring the traffic during the Summer of 2020, traffic volumes have remained close to normal levels based on 2019 ADTs. During the month of June, average daily traffic volumes at stations 161, 193, and 901 ranged from a decrease of 14% to an increase of 2% compared to June 2019 ADT. During the month of July, traffic volumes ranged from a decrease of 1% to an increase of 7% compared to July 2019 ADT. During the first nine days of August, average daily traffic volumes have remained above the August 2019 ADT. Traffic volumes will continue to be monitored leading up to the traffic counts, but it is anticipated that the traffic counts will be collected in August and September 2019.

Intersection Turning Movement Counts

Intersection turning movement counts will be collected at intersections shown in Table 3 and Figure 2.

Intersection turning movement counts will be collected in 15-minute intervals for a 12-hour duration. FHWA vehicle classification and pedestrian/bicycle crosswalk data will be included in these counts. Event (Occasions when Main Street is closed to traffic) turning movement counts will also need to be obtained at intersections indicated by an asterisk (*)

Table 3: Intersection Turning Movement Count Locations

Ref #	Street #1	Street #2
1	US14A / Pioneer Way	Upper Main Street (South Junction)
2	US14A / Pioneer Way	Upper Main Street (North Junction)
3	US14A / Pioneer Way	Armory Street
4*	US14 A / Pioneer Way	US85 / Pine Street
5	US14 A / Pioneer Way	Deadwood Street
6	US14 A / Pioneer Way	Lee Street
7*	US14 A / Pioneer Way	Sherman Street
8*	US14 A / Pioneer Way	Wall Street
9	US14 A / Pioneer Way	Railroad Avenue
10	US14 A / Pioneer Way	Lower Main Street (South Junction)
11	US14 A / Pioneer Way	Lower Main Street (North Junction)
12	US14 A / Lower Main Street	Burnham Avenue
13	US14 A / Lower Main Street	Dunlap Avenue
14	US14 A / Lower Main Street	US85
15	US85 / Sherman Street	Cemetery Street / Water Street
16*	US85 / Pine Street	Sherman Street
17	Upper Main Street	Pine Street
18	Railroad Avenue	Dunlap Avenue

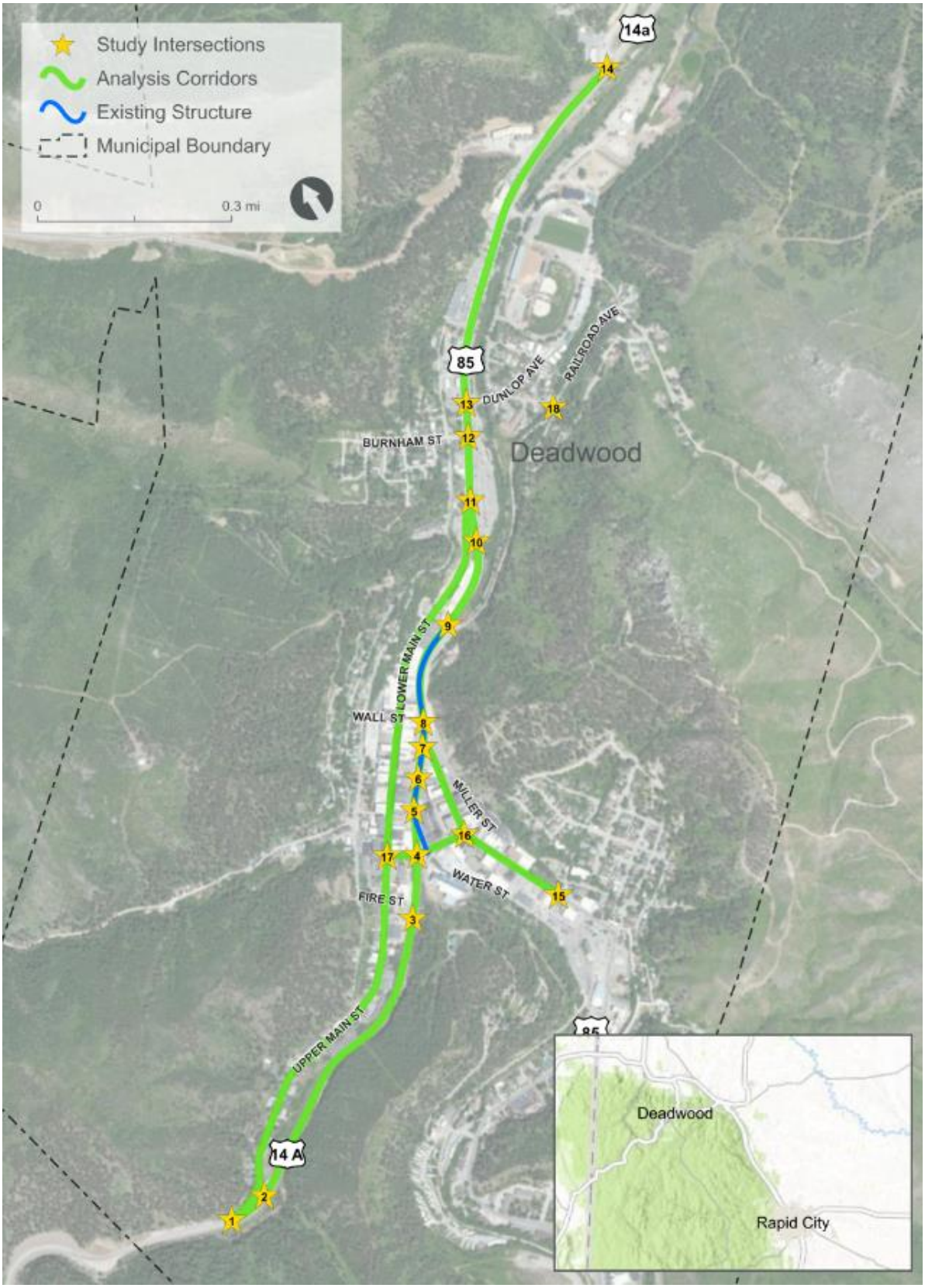

Figure 2: Intersection Turning Movement County Locations 1-18

Segment Counts

The SDDOT will collect 24-hour segment counts along the US14A/US85 corridor. Collected data will include mainline per vehicle record, which provides time, class, and speed for each vehicle at the following locations:

- Pioneer Way/US14A between
  - Upper Main Street and Pine Street
  - Pine Street and Deadwood Street
  - Deadwood Street and Sherman Street
  - Sherman Street and Railroad Ave
  - Lower Main Street and US85
- Pine Street/US85 between
  - Pioneer Way/US14A and Sherman Street
- Sherman Street between
  - Pine Street and US 14A
- Sherman Street/US85 between
  - Cemetery Street/Water Street and Pine Street
- Volumes across bridge at Deadwood Mountain Grand

Free Flow Speeds

Where speed information is available, free flow speeds will be estimated using procedures documented in HCM6. Required data in this process will be obtained from field visits, available construction plans, and /or future concept geometrics.

If speed information is available, free flow speeds will be based on measured speeds.

Traffic Data Collection Techniques

All traffic data will be collected using standard traffic data collection techniques, which may consist of digital count boards and/or video cameras at intersections and tube counters on roadway segments.

All eighteen count locations should be collected on a weekday (Tuesday/Wednesday/Thursday) and event turning movement counts will also need to be obtained at intersections indicated by an asterisk in table 3. The weeks during the Days of 76 (July 21, 2020 through July 25, 2020) and before/during/after the Sturgis Motorcycle Rally (July 31, 2020 through August 23, 2020) will be avoided.

Event turning movement counts can be obtained during the following events:

- Wild Bill Days - 4 days - Second weekend in June
- Kool Deadwood Nites - 4 days - Fourth weekend in August

5.0 Volume Development and Traffic Forecasting

Existing Volumes

The following process will be used to develop the study area Existing Conditions (2020 or 2021) AM and PM peak hour traffic volumes:

- Identify AM and PM peak hours at each study intersection.
- Factor counts to a design season (factor provided by SDDOT).
- Balance and smooth volumes across study area intersections/roadway segments to 5-vehicle increments.
- For low-volume movements, presented movement volume may be less than 5 vehicles.

Heavy vehicle percentages (trucks and RVs) will be based on collected 2020 or 2021 vehicle classification counts.

Traffic Forecasts

AVAILABLE DATA SOURCES

Multiple sources of data are available along the US14A/US85 corridor to develop traffic forecasts, including:

- Historical Daily Traffic Counts – historical daily counts along the US14A/US85 corridor collected as part of SDDOT traffic data collection programs.
- County Growth Factors – SDDOT-developed growth factors.

FORECASTING METHODOLOGY

The following methodology will be used to develop 2027 (first possible year of project completion) and 2050 Planning Horizon Year traffic forecasts. Two methods will be compared for reasonableness:

- Growth rate developed from historical daily traffic counts
- SDDOT-provided growth factor

Findings and conclusions regarding which method is used will be documented. Growth rates/factors will be applied to existing counts to determine 2027 and 2050 forecasts.

Counts collected prior to 2020 to be used as part of this study will be factored forward to year 2020.

For study corridors, AM and PM peak hour traffic volumes will be balanced across study intersections to create coherent volume networks for the forecast years 2027 and 2050.

Heavy vehicle percentages will be based on collected 2020 or 2021 vehicle classification counts.

Construction Detour Volumes

The following process will be used to develop the study area Construction Conditions (2026) AM and PM peak hour traffic volumes:

- Utilize 2027 forecasts for AM and PM peak hours.
- Develop possible detour routes and appropriately re-route traffic based on alternative routes provided.
- For study corridors, AM and PM peak hour traffic volumes will be balanced across study

intersections to create coherent volume networks for the forecast year 2027.

6.0 Traffic Operations Analysis

Analysis of existing, future-year No-Build, and future-year Build conditions traffic operations will be conducted using Synchro/SimTraffic (Synchro 10) and Highway Capacity Software Release 7.8.5 (HCS7) based on Highway Capacity Manual 6th Edition (HCM6) Methodology. All analysis measures will be reported using HCM 6th Edition methodology output. The following summarizes the type of analysis, HCM6 methodology, and applicable Synchro or HCS7 module.

- Urban street corridors (HCM6 Chapters 16 & 18 methodology)
    - HCS7 Streets Module
- Multilane highway segments (HCM6 Chapter 12)
    - HCS7 Multilane Module
- Two-lane highways (HCM6 Chapter 15)
    - HCS7 Two-Lane Module (new 2019 methodology)
- Signalized intersections (HCM6 Chapter 19)
    - Synchro 10
- Two-way stop-controlled (TWSC) Intersections (HCM6 Chapter 20)
    - Synchro 10
- All-way stop-controlled (AWSC) intersections (HCM6 Chapter 21)
    - Synchro 10

Bicycle and pedestrian segment and/or intersection LOS scores will be obtained from the applicable modules when available.

Traffic Signal Warrants

A signal warrant analysis will be completed at study area intersections along the corridor as determined by the SAT.

If results of a signal warrant analysis indicates a signal may be warranted in one of the study analysis years, an approximate year in which the warrant(s) is/are met will be determined based on a straight-line interpolation of traffic volumes between the Existing Conditions and Planning Horizon Year.

Turn Lane Warrants

A turn lane warrant analysis will be completed at study area unsignalized intersections along the corridor as determined by the SAT. This analysis will be based on guidance provided in the SDDOT Road Design Manual, Chapter 15. Turn lanes at signalized intersections will be determined from operational analysis.

Traffic Variables

Specific operational variables are listed below:

- Peak Hour Factor (PHF) –
    - Existing Conditions – Use peak hour factors developed from turning movement counts.
    - Future Conditions – The future condition peak hour factor will be developed from a sampling of the AM and PM peak hour counts. The future condition peak hour factor will be presented to the study advisory team for concurrence.
- Saturation Flow Rate – SDDOT Design Manual (Chapter 15) requires the use of up to 1,700 vph in rural areas and up to 1,900 vph in urban and suburban areas.
    - 1,700 vph will be used in all locations within Deadwood urban boundary (Deadwood city limits).
- Right Turn on Red percentage – Based on sampling of actual operations.
- Heavy Vehicle Percentage – Based on intersection turning movement counts and SDDOT classification data.
- Heaviest Lane Volume (Lane Utilization) – Default HCS7/Synchro values will be used except where uncommon lane utilization is documented during field review. Collected traffic counts will be used to review current lane utilization.
- Phase Change Intervals and Pedestrian Clearance Times – Based on existing timings or proposed modifications. For future-year conditions, phase change intervals will be calculated for existing and proposed signalized intersections using MUTCD and ITE methodologies.
- Free Flow Speeds (FFS) –
    - Field measured where available.
    - If field measured speeds are not available, estimation based on HCM6 methodologies.
        - Base FFS based on design speed or an adjustment to posted speed limit.
- Study Period and Analysis Period –
    - Existing and Future-Year Conditions analyses shall use the 1-hour demand volume divided by a peak hour factor approach (Approach A.(b). on HCM6 page 16-11).

Design input data for HCS7/Synchro analysis:

- Existing Conditions and future No-Build Conditions will use design features based on construction plans and/or available GIS roadway characteristic data.
- Build Conditions will correspond to respective Build Alternative design.
- Terrain – Corridor will be segmented based on HCM6 methodology and review of Construction plans.
- Driver Population Factor – Balanced Mix to account for mix of local and visitor traffic.

7.0 Safety Issues

Review records of state-reportable crashes within the study area and identify crash concentrations and potential issues that may be remedied with roadway improvements.

Crash history review will include the most recent, complete five years of data: 2015 – 2019.

Crash data source: GIS crash database provided by SDDOT and nonreportable crashes provided by the Deadwood Police Department.

The following information will be provided for the crash history review:

- Segment and intersection crash rates.
- Segment and intersection weighted crash rates (using SDDOT weighting methodology) and critical crash rates (Highway Safety Manual methodology).
- Crash trends including a comparison between winter weather conditions and normal conditions.
- Potential mitigation measures to improve locations above a critical crash rate or weighted crash rate.

A predictive safety analysis will be completed for the following scenarios using FHWA's Interactive Highway Safety Design Model's (IHSDM) Crash Prediction Module in accordance with the Highway Safety Manual:

- No-Build Conditions for time period 2027 to 2050
- Feasible Scenario Build Conditions for time period 2027 to 2050
- Construction Detours for year 2027

SDDOT-provided calibration data, if available, will be incorporated into the model.

8.0 Selection of Measures of Effectiveness (MOE)

The effectiveness of traffic operations in the study area will be based on the appropriate HCM6-based level of service measurement. Additional MOE's will supplement the analysis to evaluate and compare alternatives as noted in the following tables. During event related peak periods, the measures of effectiveness may not be feasibility obtained. Thus, the tables that follow are not applicable for event related traffic.

Minimum allowable HCM6-based LOS goals for this study are also provided in the following tables.

Table 4: Signalized Intersection MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Intersection Delay Other MOEs Individual Movement Delay 95th Percentile Queues	Intersection LOS • LOS C ○ Individual movements will be allowed to operate at LOS E, but the overall intersection shall be C or better • Individual movements will not be allowed to operate with a v/c ratio greater than 1.0. • Queue storage ratio will not be allowed to exceed 1.0 for any movements.

Table 5: TWSC and AWSC Intersection MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Intersection Delay Other MOEs Individual Movement Delay 95th Percentile Queues	Intersection LOS • LOS C* * TWSC intersection LOS will be based on weighted average intersection delay. The worst-case stop-controlled approach delay and LOS may be lower than the minimum allowable LOS.

Table 6: Intersections Outside of Project Area/Not Modified by Project MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Intersection Delay Other MOEs Individual Movement Delay 95th Percentile Queues	Intersections outside of the project area may be evaluated if needed to determine impacts of the proposed modifications or construction delay. The need to modify an intersection outside of the project area is based on a degradation in LOS between the No-Build and Build conditions due to a proposed improvement as part of this study.

Table 7: Multi-lane Highway MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Density Other MOEs n/a	Segment LOS • LOS C; LOS B desirable

Table 8: 2-Lane Highway MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Follower Density Other MOEs n/a	Segment LOS • LOS C; LOS B desirable Based on HCM6 Chapter 15 version 6.1 Two-Lane Highway methodology.

Table 9: Arterial Corridor Segment MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Travel Speed Other MOEs Travel Time	Segment LOS • n/a MOEs used for comparison of build alternatives and construction detours at the segment and facilities levels. MOEs may also be used to evaluate potential speed limit changes.

Table 10: Multimodal (Pedestrian and Bicycle) MOEs

MOE	Minimum Allowable HCM6 LOS
LOS Measure Pedestrian LOS Score Bicycle LOS Score	MOEs used for comparison of alternatives, where applicable.

9.0 Data Provided

The following will be provided by the participating agencies to aid the consultant in performing the study:

- Crash History
    - Database of reported crashes – SDDOT
    - Includes crash records for the most recent five years of available data (2015-2019)
- Mainline US14A/US85 24-hour volume counts – SDDOT
- Existing Structure Condition Data – SDDOT
- SDDOT Road Design Manual
- All applicable access ordinances and guidelines
- All Current City Development Standards and Ordinances (Planning/Engineering)
- US14A/US85 Corridor Study Area Construction and As-Built Plans – SDDOT
- Current Signal Timings of Signalized Study Intersections
- GIS Base Mapping Data – SDDOT, City of Deadwood, and other agencies as requested
    - Aerial Imagery
    - Major Street Plan
    - Existing Functional Classifications
    - Transit Routes and Stops
    - Existing and Future Land Uses
    - Existing and proposed pedestrian and bicycle facilities (bike lanes, paved shoulders, cycle tracks/separated bikeways, recreational trails, side paths, signed routes, shared lane marking, crossing features such as RRFBs, pedestrian signals, etc.)
    - Parking Facilities
    - Right of Way and Parcel Data
    - Environmental constraint mapping files (floodplains, wetlands, historic properties, etc) if available
    - Traffic Data
    - Crash Data
- Available site plans of future development within one mile radius of the study area
- Available hydraulic reports and modeling files of Whitewood Creek from the City of Deadwood
- Available data and reports from previously completed and on-going studies, including:
    - 2020 Draft City of Deadwood Main Street Master Plan
- Available Environmental Data

10.0 Deviations/Justifications

No deviations from standards are currently known. If it is determined during the study that deviations are required, the methods and assumptions document will be amended prior to proceeding.

11.0 Traffic Variables for Design

- Average Annual Daily Traffic for the year of construction (AADT 2026)
- Average Annual Daily Traffic for the future year (AADT 2050)
- Design Hour Volume, 30th highest hour of the year (DHV)
- Truck Percentage of DHV (T DHV)
- Truck Percentage of AADT (T ADT)
- Design speed(s) (V)

Traffic variables listed above should be provided for:

- Pioneer Way/US14A between
    - South of the Box Culvert (South of Pine Street)
    - Within the limits of the Box Culvert
    - North of the Box Culvert
- Pine Street/US85 between
    - Pioneer Way/US14A and Sherman Street

12.0 Conclusion

All sections contained in this document will guide the traffic data collection, traffic assessment, and structural evaluation for this study.

13.0 Appendices

The appendix includes the following:

A. Methods and Assumptions Meeting Minutes

Appendix A. Methods and Assumptions Meeting Minutes