Level 1 – Screening Analysis
Idaho Falls Strategic Arterial CIS
KN 13575

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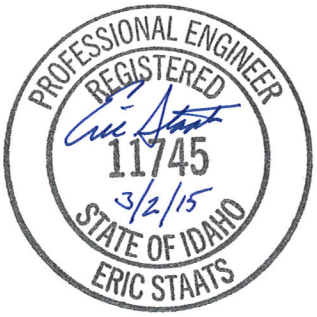

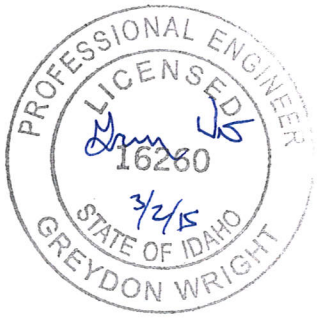

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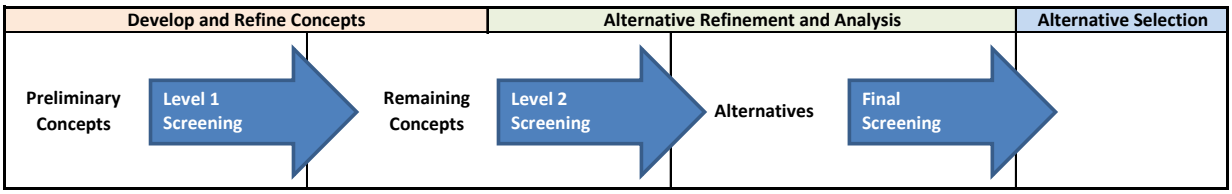
Level 1 – Preliminary Screening Analysis

This document summarizes the range of concepts developed for the Idaho Falls Strategic Arterial Corridor Impact Study and presents preliminary screening criteria used as the Level 1 screening for this project. Based on this Preliminary Screening of the 24 build concepts, 9 concepts should be retained for further development and detailed screening, as well as the No Build concept.



Preliminary Screening Process

Background

In 2011 the Idaho Transportation Department (ITD), in conjunction with the Bonneville Metropolitan Planning Organization (BMPO), completed a Transportation System Alternatives Study, evaluating the transportation investments needed to meet the area's vision for growth and to explore alternative ways to address and support those transportation investments. The study forecast population and traffic growth for the short and long-term, as well as identified transportation system deficiencies and needs to support the forecast growth in the area.

The Transportation System Alternatives Study identified several capacity issues in the Interstate 15/US-20 Interchange area that will require attention prior to the expected growth. It was recommended that a corridor impact study be initiated to explore and evaluate options for improving the interchange performance and the performance of the roadways near the interchange, including the corridor from south of Broadway on I-15 to north of Science Center Drive on US-20. This is the focus of this Preliminary Screening Analysis – to explore and perform an initial screening of concepts to be carried forward for a more detailed operational analysis and screening.

Purpose and Need

The **purpose** of the proposed action is to develop transportation system solutions to address capacity inadequacies and safety of the I-15 / US-20 Idaho Falls urban corridor while enhancing the regional transportation system efficiency and minimizing adverse environmental impacts.

The project is **needed** considering:

- Per ITD's High Accident Location (HAL) reports, I-15 exits 119 and 118 rank 4.5 and 16 respectively in the state for high accident interchange locations.

- Existing access from I-15 (exits 118 and 119) in the Idaho Falls urban area contributes to current and future congestion, as identified by the BMPO's 2035 Long Range Transportation Plan (LRTP).
- BMPO/ITD predicts that the existing I-15/US-20 interchange will become a major bottleneck in the near future and will not accommodate current or projected growth without deterioration of level of service and safety, per the Transportation System Alternatives Study, May 2011.

Screening Criteria

The following criteria were used for the first level (Preliminary) screening analysis:

1. Meets Project Purpose and Need
    a. Would the Project improve access to and from I-15 and/or US-20?
    b. Would the project provide safe and efficient transport of people, goods and services?
2. Environmental Constraints
    a. Would the project minimize adverse environmental effects to built environmental sources?
    b. Would the project minimize adverse environmental effects to selected natural environmental resources?
3. Constructability
    a. Is the scale of the option consistent with the benefits it provides, or can the function be served with a lower cost solution?
4. Effects to the Local System
    a. Would the project improve access to the local area transportation system?

Evaluation Process

Each initial concept was evaluated against the screening criteria.

The results of the evaluation are discussed for both the concepts that were eliminated and retained.

In addition to the retained build concepts, a No Build and an Inner/Outer Belt Route concept were carried forward in the concept refinement process and should be evaluated further at the second level screening.

Preliminary Concepts

A short description of each build concept considered in this evaluation is given in Table 1. Diagrams of each build concept are included in Appendix A.

Table 1 – Preliminary Concepts

	Concept	Description
1	**Eliminate West Fremont Ramps**	• Closes EB Exit and WB Entrance Ramps • Goal is to reduce weave and congestion between Lindsay and Fremont IC's
2	**Collector-Distributor b/w 118 and 119**	• Creates Flyover Ramp for I-15 NB 119 Exiting Traffic • Places barrier between I-15 NB through lanes and 118 NB Entrance lane • Goal is to reduce weave and congestion between Exits 118 and 119
3	**Modified Collector-Distributor b/w 118 and 119**	• Creates C-D Road b/w NB Exit 118 and 119 • NB 119 Exit Traffic now exits at 118 and travels through signal • Places barrier between I-15 NB through lanes and 118 NB Entrance lane • Goal is to reduce weave and congestion between Exits 118 and 119
4	**Alternative Interchange (DDI/SPUI) at 118 and 119**	• Replaces Broadway and John's Hole Interchanges with SPUI or DDI • Goal is to increase interchange capacity, as both innovative designs allow near free-flow turning movements
5a	**Add Capacity - Add Lanes from 118 to Lewisville Interchange**	• Adds additional capacity in form of lanes • Adds lane on I-15 b/w Exit 118 and 119 • Adds lanes in each direction on US-20 from John's Hole IC to Lewisville Interchange
5b	**Add Capacity - Add Lanes from 118 to Science Center Interchange**	• Adds additional capacity in form of lanes • Adds lane on I-15 b/w Exit 118 and 119 • Adds lanes in each direction on US-20 from John's Hole IC to Science Center Interchange
5c	**Add Capacity - Add Lanes from 118 to Fremont Interchange**	• Adds additional capacity in form of lanes • Adds lane on I-15 b/w Exit 118 and 119 • Adds lanes in each direction on US-20 from John's Hole IC to Fremont Interchange
6	**Convert Fremont Interchange to At-Grade Continuous Flow Intersection**	• Converts grade-separated interchange to an at-grade CFI
7a	**Convert Exit 119 to a Roundabout Interchange**	• Converts traditional parclo interchange to a roundabout interchange • Create dedicated right-turn slip lanes for each right-turn movement
7b	**Convert Exit 119 to a Teardrop Roundabout Interchange**	• Converts traditional parclo interchange to a teardrop roundabout interchange • Create dedicated right-turn slip lanes for each exit ramp

Table 1 – Preliminary Concepts

	Concept	Description
8	**Convert Exit 118 to an Overpass SPUI Interchange**	• Place Broadway over I-15 in a SPUI configuration • Simplifies signals and removes cloverleaf ramp • May increase capacity
9	**I-15 Realignment to West (Idaho Falls Bypass)**	• Creates limited-access Idaho Falls Bypass • Can eliminate existing grade-separated interchanges and convert to innovative signalized intersections (fewer structures to maintain)
10	**Eliminate Lindsay Interchange**	• Removes Lindsay Interchange from existance
11	**Eliminate Lindsay Interchange and Add Lane b/w 118 and 119**	• Removes Lindsay Interchange from existance • Adds capacity b/w 118 and 119 with extra lane(s)
12	**Close Broadway Interchange and Create Pancheri Interchange**	• Closes Broadway Interchange • Creates Pancheri Interchange • Creates greater distance between consecutive interchanges
13	**Southbound Flyover at 119 and Modified Westbound Exit for Lindsay Interchange**	• Eliminates Existing Lindsay Westbound Exit Ramp • Creates New River Crossing for US-20 WB traffic to exit and reach Lindsay Blvd • US-20 WB Lindsay Exit traffic uses existing Fremont Exit • Also Eliminates Parclo ramp and creates new I-15 Southbound Entrance ramp
14a	**Create Diamond Interchange at 119, Close Select Ramps on US-20, and Develop Skyline Drive as Portion of US-20**	• Creates Full Diamond/Tight Diamond IC at I-15 Exit 119 • Eliminates Existing I-15 NB Entrance Ramp, SB Exit Ramp, and SB Parclo Entrance Ramp at Broadway IC • Eliminates Existing US-20 WB Exit Ramp and EB Entrance Ramp at Lindsay IC • Eliminates Existing US-20 EB Exit Ramp and WB Entrance Ramp at Fremont IC • Improves Skyline Drive and Designates it as US-20 • Improves Portion of Grandview Drive and Designates it as US-20 • Goal is to reduce traffic using 119 via 118 and alleviate existing weaving movements
14b	**Create Diamond Interchange at 119, Close Select Ramps on US-20, Limit NB Exit 119 to Right Turn Only, and Develop Skyline Drive as Portion of US-20**	• Same as 14a, but limits I-15 NB Exit 119 to right-only turning movement • Traffic desiring to reach Grandview west of I-15 will be routed via Exit 118, Broadway, and Skyline Drive
15	**Designate Alternate Southern Route for US-20 Eastbound Traffic on Existing Surface Roadways**	• Use new signage to direct some EB US-20 traffic via alternate southern/eastern route on existing surface streets • Goal is to reduce traffic using I-15 NB Exit 119
16	**Create New Northbound Exit Ramp at 119 with 2-Phase Signal**	• Creates separate NB I-15 Exit Ramps at Exit 119, one for Eastbound and one for Westbound • Simplifies signal to 2-phase operation, allowing more time alotted to the US-20 through movements

Table 1 – Preliminary Concepts

	Concept	Description
17	**Eliminate Lindsay Interchange and Create New Local-System Snake River Crossing**	• Completely Eliminates Lindsay Interchange • Creates new local-system river crossing structure for utilization of existing Fremont Interchange for US-20 access
18	**High-Speed Flyover Ramp from Northbound I-15 to Eastbound US-20**	• Creates grade-separated high-speed fly-over ramp for EB US-20 Traffic • Still allows for I-15 NB Entrance at 118 at ground-level
19	**Separate Eastbound and Westbound US-20 Lanes at John's Hole Interchange**	• Separates US-20 EB and WB traffic in vicinity of I-15/Lindsay IC/Fremont IC • Eliminates WB US-20 Lindsay Entrance and Exit Ramps • Goal is to allow NB I-15 119 Exit traffic to free-flow while eliminating signals and weaving movements
20	**Develop Complete Inner and Outer Belt Routes (From TSA Report)**	• Creates Outer Belt Loop and Inner Belt Loop, as detailed in ITD/BMPO Transportation System Alternatives Study

Evaluation of Concepts

Each of the concepts was evaluated and results are presented in the following sections for retained and eliminated concepts.

Retained Concepts

A total of 9 build concepts were retained through the first level preliminary screening analysis. The retained concepts are listed below in Table 2, along with comments from the screening process. The No Build concept should be retained through the second level screening. The Outer/Inner Belt Route concept should be retained through the second level screening as well.

Schematic diagrams of all concepts are included in Appendix A for visual reference. The Evaluation Matrix is included in Appendix B.

Table 2 – Retained Concepts

Concept		Description
2	**Collector-Distributor b/w 118 and 119**	Creates a flyover ramp for NB I-15 traffic exiting at IC 119. Would place raised concrete barrier between mainline I-15 and the ramp traffic between IC 118 and IC 119, effectively creating a collector-distributor roadway. NB I-15 traffic would still be allowed to enter mainline north of the gore area of IC 119. An additional lane between the two interchanges could be considered as well.
3	**Modified Collector-Distributor b/w 118 and 119**	Similar to #2, this places the same concrete barrier between mainline I-15 and the ramp traffic between IC 118 and IC 119. All NB exiting traffic for IC 118 and IC 119 would exit at 118. The NB exit ramp at 118 would require modifications, mainly to increase capacity.
4	**Alternative Interchange (DDI/SPUI) at 118 and 119**	This concept would look at innovative interchange ideas at both IC 118 and IC 119. It is anticipated that DDIs and SPUIs would be considered at both, due to their ability to potentially add capacity and add free-flow turning movements.
5a	**Add Capacity - Add Lanes from 118 to Lewisville Interchange**	The three #5 concepts are simple capacity improvements to I-15 and US-20. Each would add another lane between I-15 IC 118 and IC 119, as well as adding a lane in each direction to US-20 for the limits shown.
5b	**Add Capacity - Add Lanes from 118 to Science Center Interchange**	
5c	**Add Capacity - Add Lanes from 118 to Fremont Interchange**	
6	**Convert Fremont Interchange to At-Grade Continuous Flow Intersection**	#6 explores the idea of converting the Fremont IC to an at-grade CFI to help move left turning traffic through this area more efficiently.
16	**Create New Northbound Exit Ramp at 119 with 2-Phase Signal**	#16 separates the NB I-15 traffic exiting at IC 119 by creating a new loop ramp for the exiting traffic intending to travel WB on US-20/Grandview Drive. By creating this ramp, both exit ramps become right-only movements, simplifying the signalization to a 2-phase cycle, thus allowing more time to be devoted to the "through" movement.
20	**Develop Complete Inner and Outer Belt Routes (From TSA Report)**	While not passing this initial screening process, it is suggested that this option be further explored, as it is a viable forward-thinking solution to combat projected future traffic congestion. The belt routes detailed in the TSA Report should be further refined and modeled to determine their effects both seperately and together.

Eliminated Concepts

The concepts eliminated in the screening process generally did not meet the preliminary screening criteria or may potentially negatively impact existing and planned development and traffic patterns through the I-15/US-20 Idaho Falls area.

While the initial screening process did prioritize other concepts over these, it is still possible to move any of these options, in part or whole, forward to the Level 2 screening process for a more detailed analysis.

Table 3 lists the concepts eliminated and a brief explanation as to why each was eliminated.

Schematic diagrams of all concepts are included in Appendix A for visual reference. The Evaluation Matrix is included in Appendix B.

Table 3 – Eliminated Concepts

Concept		Description
1	**Eliminate West Fremont Ramps**	Eliminating the West Fremont IC ramps may help solve some of the present and future weave patterns on US-20, but it would greatly reduce access to and from the highway.
7a	**Convert Exit 119 to a Roundabout Interchange**	Both #7 concepts were consistent with with the evaluation criteria, but there is considerable footprint uncertainty, as well as future projected capacity uncertainty.
7b	**Convert Exit 119 to a Teardrop Roundabout Interchange**	
8	**Convert Exit 118 to an Overpass SPUI Interchange**	FHWA does have guidance suggesting to place the stop-condition roadway over the Interstate to use gravity to the advantage of stopping/accelerating vehicles. However, this concept does little to solve the capacity problems that are more focused north and east.
9	**I-15 Realignment to West (Idaho Falls Bypass)**	While this concept may provide more uninterrupted Interstate service, it would be very costly, likely have considerable environmental hurdles, and has to potential to fundamentally change not only traffic patterns, but also development in the area.
10	**Eliminate Lindsay Interchange**	This concept would be relatively simple to implement, but would greatly disrupt the access to Lindsay Blvd, since there is no other easily accessible local-system river-crossing structure.
11	**Eliminate Lindsay Interchange and Add Lane b/w 118 and 119**	This concept attempts to reduce weave movents on US-20 whlie increasing capacity between I-15 NB between IC 118 and IC 119. However, like number 10, this concept would limit the accessibility of Lindsay Blvd.

Table 3 – Eliminated Concepts

Concept		Description
12	**Close Broadway Interchange and Create Pancheri Interchange**	This concept apears to be consistent with most of the evaluation criteria, but still may fundamentally change access to the heart of Idaho Falls.
13	**Southbound Flyover at 119 and Modified Westbound Exit for Lindsay Interchange**	This concept does little to improve access to and from either I-15 or US-20 and the minimal benefit would not justify the cost.
14a	**Create Diamond Interchange at 119, Close Select Ramps on US-20, and Develop Skyline Drive as Portion of US-20**	The two #14 concepts appear to be consistent with the evaluation criteria, but would have major impacts to the way traffic accesses US-20, I-15, and the City of Idaho Falls. If carried forward for further evaluation, these concepts could be modeled with various ramp closures and capacity improvements included.
14b	**Create Diamond Interchange at 119, Close Select Ramps on US-20, Limit NB Exit 119 to Right Turn Only, and Develop Skyline Drive as Portion of US-20**	
15	**Designate Alternate Southern Route for US-20 Eastbound Traffic on Existing Surface Roadways**	This is a very low-capital-cost investment, but there would be questions as to compliance, delay, and impacts to local route infrastructure.
17	**Eliminate Lindsay Interchange and Create New Local-System Snake River Crossing**	Similar to #10, the closure of the interchange would have questionable affects on the local system and a major river-crossing structure may have significant environmental impacts at this wide portion of the Snake River.
18	**High-Speed Flyover Ramp from Northbound I-15 to Eastbound US-20**	This concept would have extensive structure and right-of-way costs, as well as significant potential displacements.
19	**Separate Eastbound and Westbound US-20 Lanes at John's Hole Interchange**	This concept would also have extensive structure and right-of-way costs, as well as significant displacements/damages to the build environment.

Summary

From the Level 1 screening process, it is recommended that, at a minimum, the 9 retained concepts be carried forward to the Level 2 Screening and analysis, along with the No Build scenario. Additionally, at the discretion of the District, additional concepts may be moved forward for more detailed analysis.

The concepts presented in this report are only schematic representations of the potential configurations – they are not actual "design-level" alternatives. The Level 2 Screening process should refine each retained concept to better reflect approximate proposed alignment and location. The detailed screening analysis should also perform a thorough operational analysis of each retained concept, quantifying the effects to both the I-15 and US-20 corridors, as well as the effects to the local system.