

**1. WORKSESSION**

2. Public Comments

3. Ivinson Street Project

Final Conceptual Design Report for the Ivinson Street Reconstruction Project

Documents: [IVINSON ST PROJ COVER SHEET.PDF](#),  
[201601\\_FINALCONCDESIGN\\_RPT.PDF](#), [201601\\_COUNCILWORKSESSION.PDF](#)

4. Public Comments



**Agenda Item: Discussion Item**

**Title: Ivinson Avenue Conceptual Design**

**Recommended Council MOTION:**

n/a

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**Administrative or Policy Goal:**

The Ivinson corridor from 9<sup>th</sup> to 15<sup>th</sup> Sts. has been in the City's Capital Construction budget since approx. FY 2009.

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**Background:**

On May 5, 2015, Council approved a contract with Trihydro Corporation to complete a conceptual engineering design for reconstruction of Ivinson Avenue from 9<sup>th</sup> St. to 15<sup>th</sup> St., along with parts of adjoining streets and infrastructure. Work has proceeded for eight months since the contract approval through the first week of January 2016. In addition to various City departments and staff, the University of Wyoming (UW) has been an active participant in the design process. The public have also been involved, especially via an advertised public meeting on Oct. 5, 2015.

The purpose of this work session is to show Council and other stakeholders the conceptual design developed by Trihydro and City/UW participants. The conceptual design is to be summarized in a PowerPoint presentation led by Trihydro at the work session.

Staff anticipates that UW will be present and/or will follow the Jan. 28 discussion via live streaming or on TV. An invitation was provided to UW via email the week of Jan. 18.

It is anticipated that the work session will be followed with a request to Council for approval of a final-design contract in the next two months. Following completion of final design, construction on the project is currently projected to begin in 2017 and finish in 2018.

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**Legal/Statutory Authority:**

Laramie Municipal Code Chapter 12: Streets, Sidewalks and Public Places

**BUDGET/FISCAL INFORMATION:**

**EXPENSE**

Proposed Project Cost.

Project Budget	Amount	Funds
Project Cost	\$182,323.00	Capital: 100-4025-431-7320 / PWS-CP12-006
Loans on Project		
Grants for Project		
Other/Outside Projects		
City's Amount	\$182,323.00	
Contingency 0%	\$0.00	
Total Amount	\$182,323.00	

**Responsible Staff:**

Randy Hunt, Community Development  
Director: 721-5288

Eric Jaap, City Engineer: 721-5345

Future dates are subject to change

Work Session	
Advertised	
Public Hearing (PH) Held	
PH Advertised	
Introduction/1 <sup>st</sup> Reading	January 28, 2016
2 <sup>nd</sup> Reading	
3 <sup>rd</sup> Reading	

Attachments:

OMO City Manager \_\_\_\_\_ City Attorney RAH Community Development

**FINAL CONCEPTUAL DESIGN REPORT**  
**IVINSON STREET RECONSTRUCTION PROJECT**

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**January 19, 2016**

**Project #: 415-023-002**

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**SUBMITTED BY:** Trihydro Corporation

1252 Commerce Drive, Laramie, WY 82070

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**ENGINEERING SOLUTIONS. ADVANCING BUSINESS.**

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# 1.0 INTRODUCTION

This report documents the conceptual design phase activities performed during the Iverson Street Reconstruction Project for the City of Laramie (City), as well as the core elements for the path forward for the final design phase. This section includes the project location, scope of conceptual design, and phasing approach.

## 1.1 PROJECT LOCATION

The Iverson Street Reconstruction Project (the “project”) conceptual design includes Iverson Street between 9<sup>th</sup> Street on the west to 15<sup>th</sup> Street on the east, and 10<sup>th</sup> – 14<sup>th</sup> Streets between Iverson Street and Grand Avenue. In addition, the project includes 15<sup>th</sup> Street, extending from Grand Avenue on the south to Willett Drive on the north. Supplemental work has also been identified outside these limits to accommodate utility upgrades and roadway pavement marking transitions. The project limits and additional work locations are presented on Figure 1.

## 1.2 PROJECT BACKGROUND AND SCOPE

The project includes a full roadway reconstruction. The purpose of the project is to provide a “Complete Street” design for bicycle, pedestrian, and vehicle transportation to meet the long range plans of the City and the University of Wyoming (UW), with the following primary goals in mind:

- Enhance pedestrian and bicycle safety
- Help guide pedestrians to crosswalks
- Maintain vehicular traffic safety and overall streetscape appearance
- Promote a functional multi-modal transit system
- Provide a defined roadway corridor to downtown Laramie

The conceptual phase of the project encompassed preliminary roadway design, traffic data collection and analysis, as well as preliminary analysis of the existing utility infrastructure within the project limits. This included the sanitary sewer system, storm drain system, and water line system.

## 1.3 PROJECT APPROACH

The conceptual design involved a phased approach, which included a 10%, 50%, and a final concept level, where each phase channeled multiple potential streetscape concepts and utility designs from a conceptual level, to a select, more detailed concept for each street. The roadway cross section concepts developed early in the design process utilized

streetmix.net; a web-based application. This simple, yet quick method, allowed the design team to develop and evaluate numerous cross section alternatives effectively and efficiently.

## 2.0 STREETScape DESIGN

This section includes the streetscape design options considered for Ivinson Street, 15<sup>th</sup> Street, and the connecting streets between Ivinson Street and Grand Avenue (10<sup>th</sup> through 14<sup>th</sup> Street). This section also details the elimination process to come to the final conceptual design for each location.

### 2.1 10% CONCEPTUAL DESIGN

Following a project kick-off meeting (Trihydro 2015a) and site walk through, the design team developed the 10% conceptual design memorandum (Trihydro 2015b). This document listed 16 roadway cross sections (8 for Ivinson Street, 8 for 10<sup>th</sup> Street to 15<sup>th</sup> Street) for review and consideration, with recommendations provided. The streetscape concepts displayed variations of three major elements; (1) vehicle travel lanes, (2) bicycle lanes, and (3) parking.

#### Ivinson Street

The conceptual streetscape configurations for Ivinson Street included features such as curbed medians, chicane islands, and shared bicycle-pedestrian lanes. The bicycle facilities also included both a standard “opposite-side” configuration and a cycle-track configuration, where both lanes are located on the same side of the street. Parking arrangements varied between parallel-style, diagonal, back-in diagonal, and no parking. The concepts provided during the 10% level did not include one-way vehicle movement.

#### 15th Street

Two conceptual streetscape configurations were provided for 15<sup>th</sup> Street at the 10% level, as the existing street section did not warrant significant alteration from a vehicular travel or pedestrian perspective. The two concepts involved one vision with bike lanes on opposite sides of the street with the other using a cycle-track configuration, similar to Ivinson Street that if selected would connect to the cycle track on Ivinson Street.

#### 13th Street

13<sup>th</sup> Street was described as the “Gateway to the University” during the project kickoff meeting, as a large percentage of multi-modal traffic uses 13<sup>th</sup> Street to access the core of UW. Three concepts, separate from the remaining side streets were provided at the 10% level. These concepts included one option with a raised center median (no parking), an option with no center median and parallel parking, and an option with diagonal parking on both sides, without separate bike facilities or a median island.

### **Connecting (10th, 11th, 12th, and 14th) Streets**

The connecting streets are classified as local streets, with a lesser volume of vehicle, pedestrian, and bicycle traffic. The options provided at the 10% level for these streets looked to maintain the roadway width and configuration without added traffic or bicycle features, yet provide additional on-street parking.

### **Roadway Enhancement Features**

Additional roadway enhancements were provided at the 10% level to help aid in the vision of a total streetscape design. These elements included raised intersections at 13<sup>th</sup>/Ivinson, and 15<sup>th</sup>/Ivinson, as well as intersection curb bulb-outs where feasible to provide enhanced pedestrian connectivity.

### **10% Conceptual Design Review**

A follow-up meeting was held to discuss the streetscape concepts proposed, understand each stakeholder's preferred alternatives, and decide which alternatives/streetscape features to move forward to the 50% conceptual design. An item of note was to incorporate at least two (2) one-way traffic concepts for Ivinson Street, from east to west going into the 50% conceptual design. Transcription from the 10% review meeting were provided in minutes dated August 10, 2015 (Trihydro 2015c).

## **2.2 50% CONCEPTUAL DESIGN**

The 50% conceptual design included the endorsed alternatives from the 10% design, as well as two one-way options on Ivinson Street. The 50% conceptual design was developed and provided to the City on September 1, 2015 (Trihydro 2015d).

### **Ivinson Street**

The conceptual streetscape alternatives included five options, which provided a mix of bike lane, vehicular movement, and parking configurations. These options included:

- Bike Lanes + Crossing Median (2-way traffic)
- Cycle Track + Parallel Parking (2-way traffic)
- Cycle Track + Diagonal Parking (1-way traffic)
- Bike Lanes + Parallel Parking (1-way traffic)
- Cycle Track + Parallel Parking (1-way traffic)

### **15th Street**

Two conceptual streetscape configurations provided at the 10% level were brought forward to the 50% design, maintaining the same configuration, which included:

- Single Vehicular Travel Lanes + Bike Lanes + Median Islands/Turn Lanes
- Cycle Track + Median Islands/Turn Lanes

### **13th Street**

Two of the three conceptual streetscape configurations provided at the 10% level were brought forward to the 50% design, and included:

- Bike Lanes + Parallel Parking
- Bike Lanes + Center Median + No Parking

### **Connecting (10th, 11th, 12th, and 14th) Streets**

Two conceptual streetscape configurations provided at the 10% level were brought forward to the 50% stage, which included:

- Shared-use + Back-In Diagonal Parking and Parallel Parking
- One-way Couplets + Back-In Diagonal Parking

### **Roadway Enhancement Features**

Potential corridor enhancement features were provided in the 50% design. These elements included raised intersections and crosswalks, curb extension “bulb-outs,” the cycle track concept, back-in diagonal parking, a festival street appearance, bioretention areas, wayfinding signage, and public art.

### **50% Conceptual Design Review**

A follow-up meeting was held to discuss the streetscape concepts proposed, removing concepts that did not fit the project vision, as well as preparation for a public meeting to gather public feedback on the options provided.

## **2.3 PUBLIC MEETING**

A public meeting was held at the University of Wyoming – Union Family Room to present the design team’s chosen streetscape alternatives. These alternatives included a total of four options (2 one-way and 2 two-way vehicular traffic)

for Ivinson Street, as well as the City and UW preferred alternatives for 15<sup>th</sup> Street, 13<sup>th</sup> Street, and the connecting streets. The configurations brought forth to the public meeting included:

Iverson Street:

- Cycle Track + Parallel Parking (2-way traffic)
- Cycle Track + Back-in Diagonal Parking (1-way traffic)
- Bike Lanes + Back-in Diagonal Parking (1-way traffic)
- Cycle Track + Back-in Diagonal Parking (2-way traffic)

15<sup>th</sup> Street:

- Cycle Track + Median Islands/Turn Lanes

13<sup>th</sup> Street:

- Bike Lanes + Center Median + No Parking

Connecting Streets:

- Shared Use + Back-In/Parallel Parking

Based on feedback from the public, the design team could provide better assessment of the configurations, and come to agreement on the preferred alternative.

### 3.0 FINAL CONCEPTUAL DESIGN

A number of streetscape alternatives were evaluated to meet the project goals. The project team held a review meeting subsequent to the public meeting to evaluate public comments and obtain feedback from the City, UW, and the design team (Trihydro, 2015f). It was decided that the one-way Ivinson Street concepts were not favorable, thus eliminating these concepts from further consideration. Moreover, the back-in diagonal parking posed a new concept that is being used in other communities to add additional, safer parking than traditional pull-in angle parking or parallel parking, and all parties (design team and the public) supported. The overall choice was to pursue the two-way, cycle track, back-in angle parking concept. A schematic of this alternative is shown below.

**Ivinson Street Cross Section**



#### 3.1 CONCEPT MODIFICATIONS

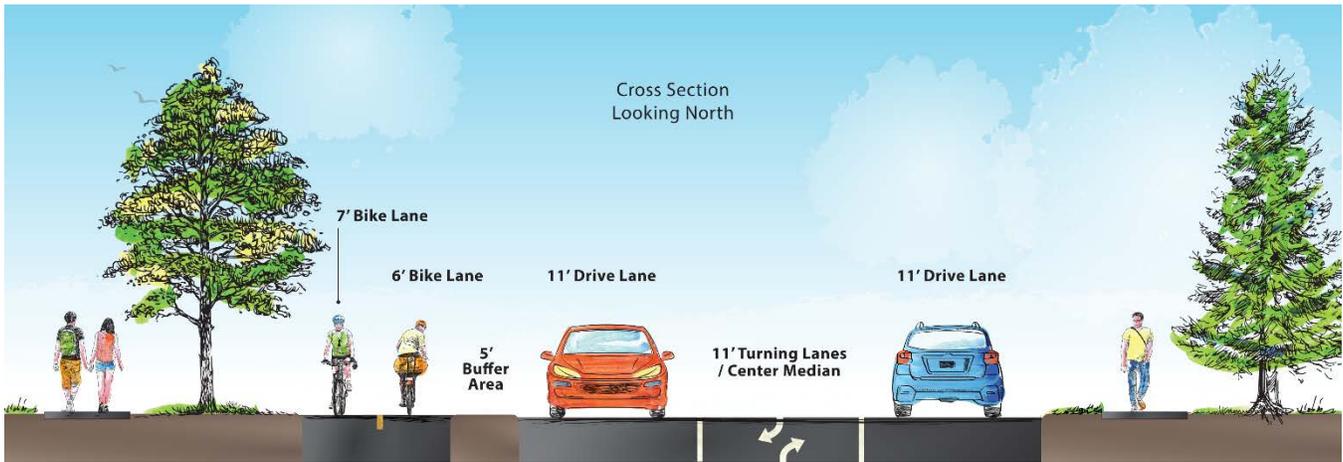
The two-way, cycle track, with back-in diagonal parking alternative presented during the public meeting (shown above) included two (2) six-foot wide bike lanes, two (2) nine-foot wide roadway driving lanes, along with a 16' wide parking area. The City expressed a preference for wider (11-foot preferred) vehicle travel lanes. This is to provide emergency vehicle mobility and give some space cushion for passenger vehicles when driving. The existing roadway survey and features were examined to provide an in-depth cross section and typical roadway sections with greater detail, (see attached Figure 2, each cross section is facing east) and were generally agreed upon.

The proposed roadway footprint in Figure 2 shows a roadway width of approximately 6-inches to 1-foot greater than the existing roadway footprint. This extra space will be utilized from the south side of the street. The City has

determined that the power line located on the south side of the street will be relocated underground which will aid in accommodating this extra width.

15<sup>th</sup> Street concept was well received by the public, and no revisions to the conceptual cross section were made following the public meeting. The schematic below shows the cross section chosen to proceed into final design. The cycle track between Ivinson Street and Grand Avenue will remain an item for consideration moving into final design, and discussions with WYDOT will need to occur to better understand the path forward for bicycle facilities in this area.

### 15<sup>th</sup> Street Cross Section



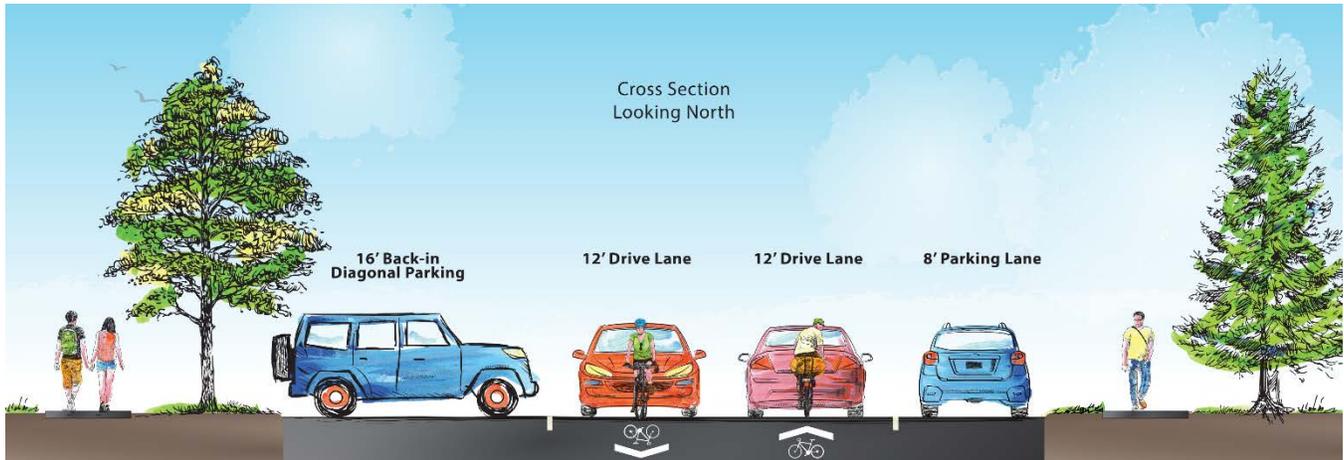
13<sup>th</sup> Street concept was also well received by the public, and no revisions to the conceptual cross section were made following the public meeting. The schematic below shows the cross section chosen to continue into final design.

### 13<sup>th</sup> Street Cross Section



The connecting streets concepts did not have revisions to the conceptual cross section following the public meeting. The schematic below shows the cross section chosen to continue into final design.

### Connecting Streets (10<sup>th</sup> to 14<sup>th</sup>) Cross Sections



## 4.0 UTILITY CONCEPTUAL DESIGN

This section provides the conceptual design for the water system, sanitary sewer system, and storm sewer system upgrades proposed with the project.

### 4.1 WATER SYSTEM

The overall goal for the water system concept is to allow the City of Laramie to install new water lines in conjunction with the proposed street reconstruction project.

The current City of Laramie water system does not include a water main in Iverson Street. The proposed street reconstruction project will provide an opportunity to loop the water system and eliminate the existing dead-end lines on the side streets. This will help improve water quality, equalize pressures, and provide critical system operation redundancy. Existing appurtenances (e.g. fire hydrants) will be replaced, and new installed, where needed.

Figure 3 (Iverson Street/Connecting Streets) and Figure 4 (15<sup>th</sup> Street) show the conceptual plan for water system improvements. There is a pressure zone break in the study area between Zone 1 and Zone 2. Laterals on 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, and 14<sup>th</sup> extend from the water main in Grand Avenue to the north. There is also a parallel 8-inch main in 9<sup>th</sup> Street, which is in pressure Zone 1. An 8-inch main is located on 15<sup>th</sup> Street that partially extends onto Iverson Street which is served by pressure Zone 2, which would be replaced by a 12-inch main, as shown on Figure 4.

The scenario provided includes a connection to the existing main at the intersection of Iverson and 9<sup>th</sup> Streets. This would provide a loop of Zone 1 water to tie in the existing Zone 1 laterals, east through 12<sup>th</sup> Street. Zone 2 could then be connected to the 13<sup>th</sup> Street main that currently serves the campus and extend the new line east to connect at a location near 15<sup>th</sup> Street providing a Zone 2 loop. The 14<sup>th</sup> Street line could be extended to Iverson Street if desired by the City, however it is currently not a dead end. This scenario keeps the pressure zones separated, eliminating the cost of a zone break.

### 4.2 SANITARY SEWER SYSTEM

There are currently up to 4 sanitary sewer lines in the Iverson Street corridor. The goal of this project is to combine these multiple sanitary sewer lines to one line within the corridor. The four existing sanitary sewer lines within the Iverson Street corridor vary in size, between 6- and 15-inches in diameter. Additional pipe details are provided in the 50% Conceptual Design Memorandum dated September 1, 2015 (Trihydro, 2015d).

### **Proposed Sanitary Sewer**

The preferred option selected by the City during the course of the conceptual phase for Ivinson Street included combining all sanitary sewers along Ivinson Street into one 15-inch sanitary sewer. The Wyoming Department of Environmental Quality (WDEQ) requirements will extend the project limits for the sanitary sewer portion from 9<sup>th</sup> Street west to 6<sup>th</sup> Street in order to connect the proposed 15-inch sanitary sewer directly to the City's C-Line Interceptor. It is anticipated that WDEQ might require the replacement of 1.5 blocks of the C-Line Interceptor between 9<sup>th</sup> Street and the mid-block between University Avenue and Fremont Street. The replacement of this section of the C-Line may be required due to the current parallel configuration of the C-Line interceptor which is a 10-inch pipe and a 15-inch pipe. The use of splitter manholes (which would be required at Ivinson and 6<sup>th</sup> Streets) typically requires additional effort to receive DEQ approval, including manhole details, justification for a splitter, and a maintenance plan. Additional discussion with WDEQ, including a response to a memo Trihydro prepared dated October 19, 2015 (Trihydro, 2015g), clarified that no design would be approved without sanitary flow measurements or a sanitary sewer flow study being performed. This study is scheduled to be performed as part of the final design. The layout for the proposed sanitary sewer is shown on Figure 5.

Additional sanitary sewer improvements being completed as part of the project include removal and replacement of the existing 8-inch sanitary sewer between Fraternity Row and Ivinson Street. The construction along 15<sup>th</sup> Street will also include grade modification of the sanitary sewer in order to tie into the proposed 15 inch sanitary sewer at the intersection of 15<sup>th</sup> Street and Ivinson Street.

### **4.3 STORM DRAIN SYSTEM**

At present, the storm drain system in Ivinson Street consists of 18- to 24-inch pipe along with 29"x45" pipe in 15<sup>th</sup> Street, with inlets tied to these main lines. Concurrently with the conceptual design, the City is working to revise its South Laramie Drainage Master Plan which includes this area. City staff conveyed that the analysis of this area indicates the existing storm drain network appears to be sized appropriately within the limits of the project. Based on this information, the storm drain network has been identified to be replaced "in-kind." As the Master Plan remains in draft stage, adjustments in pipe sizes may occur during the final design phase.

## 5.0 SUMMARY

This report represents the final deliverable of the Conceptual Design Phase and the inception of Final Design. The Final Design Phase is projected to encompass 2016, with the project being ready for construction in the Spring 2017. The roadway design will include the base streetscape cross sections listed below:

- **Ivinson Street** – 2-way traffic lanes + cycle track + back-in diagonal parking.
- **13<sup>th</sup> Street** – 2-way traffic lanes + bike lanes + center median (no parking)
- **15<sup>th</sup> Street** – 2-way traffic lanes + cycle track + center median/turn lanes (no parking)
- **Connecting Streets** – 2-way shared traffic/bicycle lanes + parallel/back-in diagonal parking

### 5.1 ENHANCEMENT FEATURES

Enhancement features have been proposed and evaluated thorough the conceptual level design. Features that were not a significant part of the conceptual design but will be involved the final design include:

- Public Art
- Decorative Lighting
- Landscaping

### 5.2 CONCEPTUAL LEVEL COST ESTIMATE

Applying the streetscape conceptual design alternatives chosen, as well as utility construction and additional enhancement feature efforts, a preliminary construction cost estimate of approximately \$10,600,000 was developed. Table 1 provides the cost breakdown and associated quantities.



## 6.0 REFERENCES

Trihydro Corporation. 2015a. *Kickoff Meeting Minutes, Ivinson Street Reconstruction*. June 1, 2015.

Trihydro Corporation. 2015b. *10% Plan Submittal - City of Laramie Ivinson Street Reconstruction*.  
July 9, 2015.

Trihydro Corporation. 2015c. *10% Conceptual Design Meeting Minutes (held July 23, 2015)*.  
August 10, 2015.

Trihydro Corporation. 2015d. *50% Conceptual Design Submittal - City of Laramie Ivinson Street Reconstruction*.  
September 1, 2015.

Trihydro Corporation. 2015e. *50% Conceptual Design Meeting Minutes (held September 23, 2015)*. October 2, 2015.

Trihydro Corporation. 2015f. *Public Meeting Recap Meeting Minutes (held October 8, 2015)*.  
October 15, 2015.

Trihydro Corporation. 2015g. *Memorandum to WDEQ – City of Laramie Ivinson Street Sanitary Sewer Design*.  
October 19, 2015.



**TABLE**

**TABLE 1. CONSTRUCTION COST ESTIMATE – CONCEPTUAL DESIGN  
IVINSON STREET RECONSTRUCTION  
LARAMIE, WYOMING**

ITEM NO.	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
<b>GENERAL (1)</b>					
1	CONTRACTOR SURVEYING	LS	LUMP SUM	\$55,000.00	\$55,000.00
2	CONTRACTOR TESTING	LS	LUMP SUM	\$40,000.00	\$40,000.00
3	FORCE ACCOUNT WORK	\$\$	LUMP SUM	\$200,000.00	\$200,000.00
4	TRAFFIC CONTROL	LS	LUMP SUM	\$260,000.00	\$260,000.00
5	MOBILIZATION	LS	LUMP SUM	\$407,000.00	\$407,000.00
6	STORM WATER CONTROL	LS	LUMP SUM	\$30,000.00	\$30,000.00
<b>SUBTOTAL</b>					<b>\$992,000.00</b>
<b>REMOVAL AND RELOCATION (1)</b>					
7	REMOVAL OF SIGNS	LS	LUMP SUM	\$2,800.00	\$2,800.00
8	REMOVAL OF SANITARY SEWER PIPE	FT	7,012	\$15.00	\$105,180.00
9	REMOVAL OF SANITARY SEWER MANHOLE	EA	24	\$1,000.00	\$24,000.00
10	REMOVAL OF SURFACING	SY	24,617	\$3.00	\$73,851.00
11	REMOVAL OF SIDEWALK	SY	5,556	\$10.00	\$55,560.00
12	REMOVAL OF CURB AND GUTTER	FT	9,168	\$5.00	\$45,840.00
13	REMOVAL OF DOUBLE GUTTER	SY	122	\$20.00	\$2,440.00
14	CUTTING ASPHALT PVTM	FT	640	\$4.00	\$2,560.00
15	CUTTING CONCRETE	FT	200	\$8.00	\$1,600.00
16	REMOVAL OF TRAFFIC SIGNALS	LS	LUMP SUM	\$60,000.00	\$60,000.00
17	RELOCATE OVERHEAD ELECTRICAL UNDERGROUND	LS	LUMP SUM	\$800,000.00	\$800,000.00
<b>SUBTOTAL</b>					<b>\$1,173,831.00</b>
<b>ROADWAY CONSTRUCTION (1)</b>					
18	LANDSCAPING (2)	LS	LUMP SUM	\$200,000.00	\$200,000.00
19	PUBLIC ART	LS	LUMP SUM	\$100,000.00	\$100,000.00
20	PAVERS	SF	740	\$15.00	\$11,100.00
21	GEOTEXTILE, MATERIAL SEPARATION (MIRIFI 580i)	SY	21,300	\$4.00	\$85,200.00
22	CRUSHED BASE	CY	3,550	\$50.00	\$177,500.00
23	CONCRETE PVTM (9 in)	SY	21,300	\$60.00	\$1,278,000.00
24	PLANT MIX PAVEMENT	SY	250	\$40.00	\$10,000.00
25	BIKE PATH (CONC)	SY	8,100	\$50.00	\$405,000.00
26	DECORATIVE CONCRETE	SF	32,100	\$7.00	\$224,700.00
27	CURB AND GUTTER TYPE A (ROLLOVER)	FT	3,020	\$30.00	\$90,600.00
28	CURB AND GUTTER TYPE B (HIGHBACK)	FT	7,400	\$50.00	\$370,000.00
29	CURB AND GUTTER TYPE C (MEDIAN)	FT	2,360	\$40.00	\$94,400.00
30	DOUBLE GUTTER	SY	900	\$80.00	\$72,000.00
31	DECORATIVE LIGHTING	LS	LUMP SUM	\$400,000.00	\$400,000.00
32	TRAFFIC SIGNAL SYSTEMS	EA	4	\$200,000.00	\$800,000.00
33	ROADWAY SIGNAGE	LS	LUMP SUM	\$20,000.00	\$20,000.00
34	ROADWAY STRIPING	LS	LUMP SUM	\$75,000.00	\$75,000.00
<b>SUBTOTAL</b>					<b>\$4,413,500.00</b>
<b>WATER LINE CONSTRUCTION</b>					
<b>IVINSON STREET &amp; SIDE STREETS</b>					
35	WATER MAIN (8 INCH PVC)	FT	4,050	\$65.00	\$263,250.00
36	WATER LINE INSULATION	FT	20	\$50.00	\$1,000.00
37	FLOW FILL	CY	10	\$125.00	\$1,250.00
38	INSTALL GATE VALVE (8-INCH)	EA	11	\$4,000.00	\$44,000.00
39	HOT TAP 8-INCH ON 16-INCH	EA	5	\$6,500.00	\$32,500.00
40	HOT TAP 8-INCH ON 12-INCH (AT 9TH STREET)	EA	1	\$6,500.00	\$6,500.00
41	CONNECT TO EXISTING 8-INCH LINE	EA	2	\$1,800.00	\$3,600.00
42	INSTALL FIRE HYDRANT ASSEMBLY	EA	8	\$7,500.00	\$60,000.00
43	CONNECT TO EXISTING SERVICE LINE	EA	19	\$1,500.00	\$28,500.00
44	TEMPORARY WATER SERVICE	LS	LUMP SUM	\$15,000.00	\$15,000.00
<b>15TH STREET</b>					
45	WATER MAIN (12 INCH PVC)	FT	1,800	\$70.00	\$126,000.00
46	WATER MAIN (8 INCH PVC)	FT	150	\$65.00	\$9,750.00
47	WATER LINE INSULATION	FT	20	\$50.00	\$1,000.00
48	FLOW FILL	CY	10	\$125.00	\$1,250.00
49	INSTALL GATE VALVE (12-INCH)	EA	3	\$4,500.00	\$13,500.00
50	INSTALL GATE VALVE (8-INCH)	EA	6	\$4,000.00	\$24,000.00
51	HOT TAP 12-INCH ON 16-INCH	EA	2	\$6,500.00	\$13,000.00
52	CONNECT TO EXISTING 8-INCH LINE	EA	5	\$1,800.00	\$9,000.00
53	INSTALL FIRE HYDRANT ASSEMBLY	EA	1	\$7,500.00	\$7,500.00
<b>SUBTOTAL</b>					<b>\$660,600.00</b>
<b>STORM DRAIN LINE CONSTRUCTION (1)</b>					
54	6' DIAMETER STORM DRAIN MANHOLE	EA	2	\$6,000.00	\$12,000.00
55	7' DIAMETER STORM DRAIN MANHOLE	EA	11	\$6,500.00	\$71,500.00
56	24" RCP	LF	2,351	\$75.00	\$176,325.00
57	18" RCP	LF	1,660	\$70.00	\$116,200.00
58	29" x 45" RCP	LF	835	\$150.00	\$125,250.00
59	SINGLE CURB INLET	EA	33	\$2,600.00	\$85,800.00
60	CONNECT TO EXISTING STORM DRAIN	EA	2	\$1,000.00	\$2,000.00
<b>SUBTOTAL</b>					<b>\$589,075.00</b>
<b>SANITARY SEWER LINE CONSTRUCTION (1)</b>					
61	4' DIAMETER SANITARY SEWER MANHOLE	EA	12	\$5,500.00	\$66,000.00
62	6' DIAMETER SANITARY SEWER MANHOLE	EA	7	\$6,500.00	\$45,500.00
63	15" DIAMETER SDR 35 PVC PIPE	LF	2810	\$130.00	\$365,300.00
64	12" DIAMETER SDR 35 PVC PIPE	LF	40	\$120.00	\$4,800.00
65	10" DIAMETER SDR 35 PVC PIPE	LF	120	\$100.00	\$12,000.00
66	8" DIAMETER SDR 35 PVC PIPE	LF	1003	\$90.00	\$90,270.00
67	6" DIAMETER SDR 35 PVC PIPE	LF	116	\$75.00	\$8,700.00
68	SANITARY SERVICE CONNECTION	EA	32	\$1,000.00	\$32,000.00
69	CONNECT TO EXISTING SANITARY SEWER	EA	16	\$800.00	\$12,800.00
70	TEMPORARY SEWER SERVICE	LS	LUMP SUM	\$15,000.00	\$15,000.00
71	BYPASS PUMPING	DAY	20	\$2,500.00	\$50,000.00
<b>SUBTOTAL</b>					<b>\$702,370.00</b>
<b>CONSTRUCTION ADMIN (10%)</b>					<b>\$853,137.60</b>
<b>CONTINGENCY (15%)</b>					<b>\$1,279,706.40</b>
<b>TOTAL</b>					<b>\$10,664,220.00</b>

Notes:

- (1) - Includes the full project (Ivinson, 15th, and side streets) area
- (2) - Landscaping includes sod, trees, irrigation, and public art areas

## FIGURES

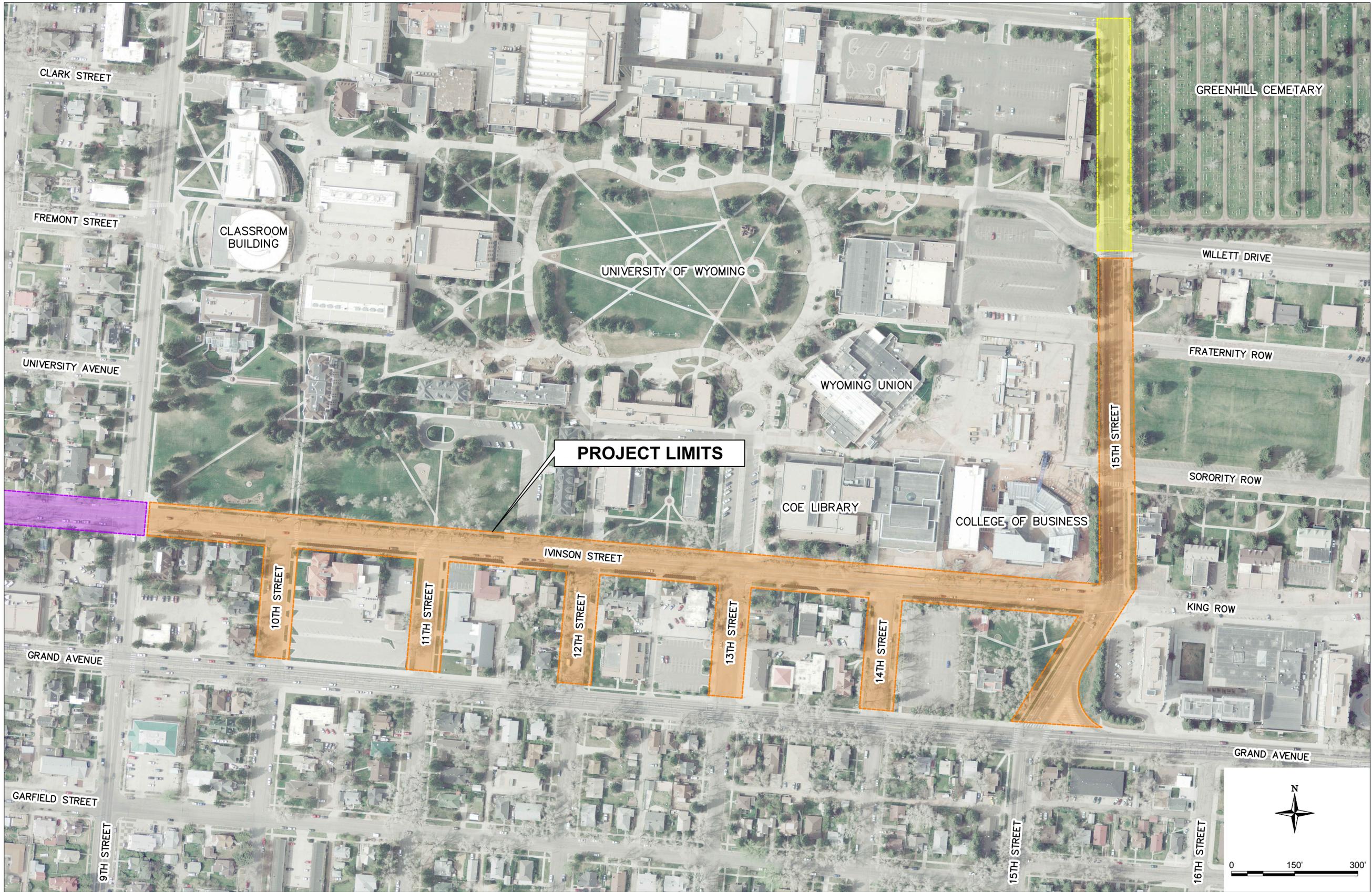


Image Citation: Colored Orthophotos Provided by the City of Laramie, Wyoming, 2010

- ROAD RECONSTRUCTION AND UTILITY IMPROVEMENTS
- SEWER IMPROVEMENTS – TO 6TH STREET
- ROADWAY STRIPING AND WATER LINE IMPROVEMENTS – TO LEWIS STREET

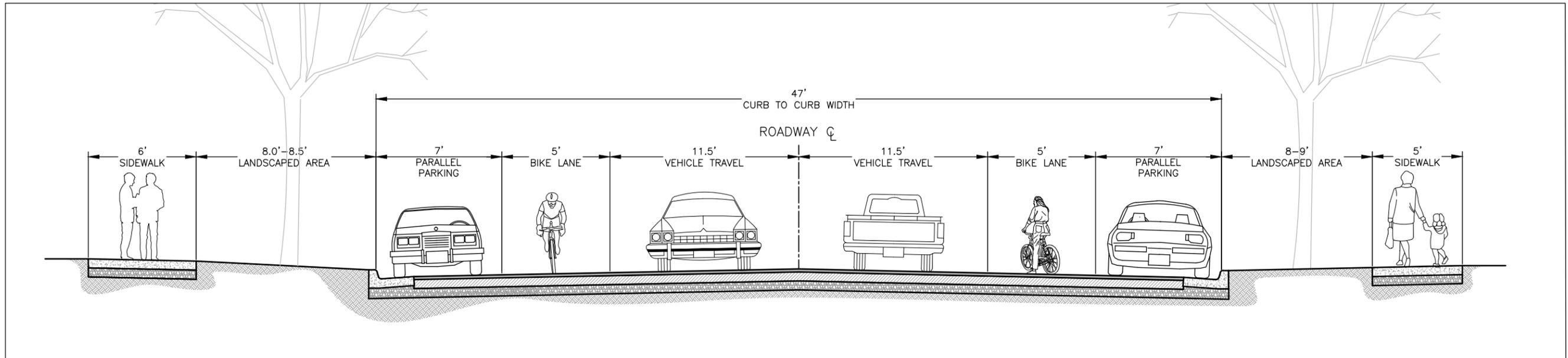
**Trihydro**  
CORPORATION  
1252 Commerce Drive  
Laramie, Wyoming 82070  
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**FIGURE 1**

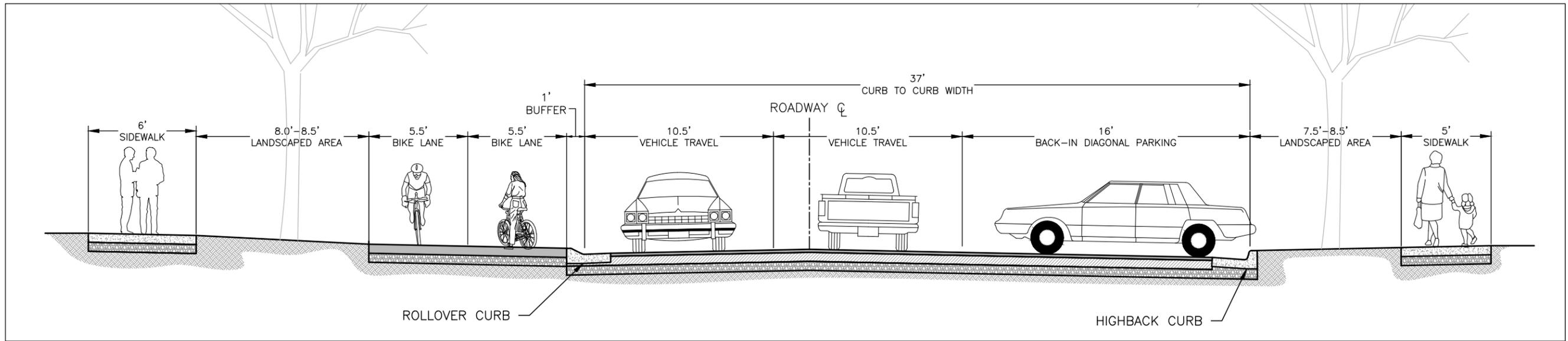
**PROJECT LIMITS**

**IVINSON STREET RECONSTRUCTION  
CITY OF LARAMIE  
LARAMIE, WYOMING**

Drawn By: TM | Checked By: CT | Scale: 1" = 150' | Date: 12/31/15 | File: LISR-PROJLOCATION



**A** EXISTING CROSS SECTION  
NOT TO SCALE



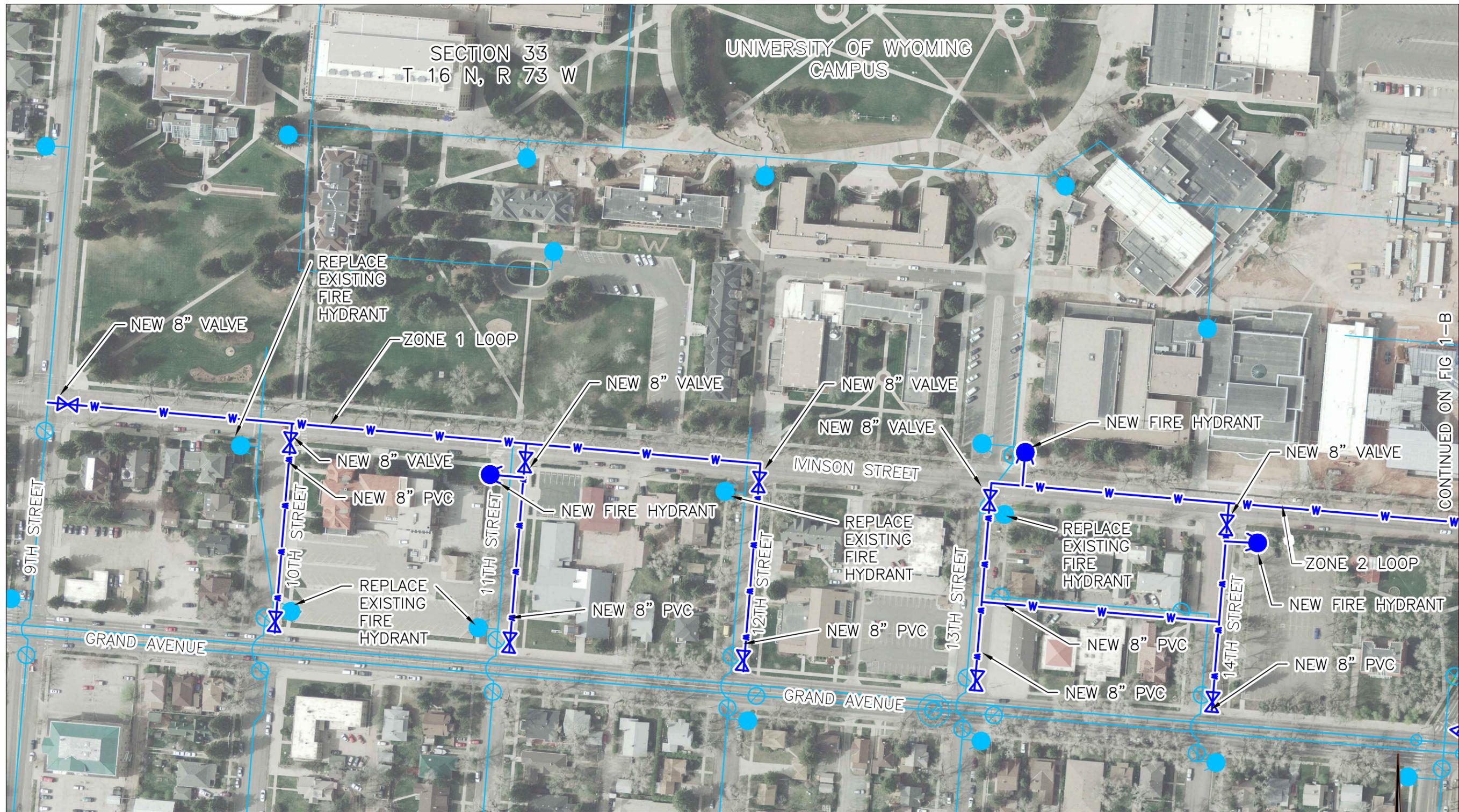
**B** PROPOSED CROSS SECTION  
NOT TO SCALE



**FIGURE 2**  
**IVINSON STREET**  
**TYPICAL CROSS SECTION DETAILS**  
**IVINSON STREET RECONSTRUCTION**  
**CITY OF LARAMIE**  
**LARAMIE, WYOMING**

Drawn By: TM | Checked By: CT | Scale: NONE | Date: 1/18/16 | File: LISR-TYPSECTION

G:\22\26618-01\65CAD\C14-CB-CP-26618-01-65\DESIGN.dwg PLOT DATE 2015-11-16 12:14 SAVED DATE 2015-11-16 12:07 USER: cforesen



CONTINUED ON FIG 1-B

Image Citation: Colored Orthophotos Provided by the City of Laramie, Wyoming, 2010

NOTE: NEW LINES SHOWN OFFSET FROM EXISTING FOR CLARITY  
NEW 8" PVC TO CONNECT TO EXISTING AT NORTH RIGHT OF WAY AT GRAND AVE WITH NEW VALVES



**LEGEND**

-  EXISTING FIRE HYDRANT
-  EXISTING WATER VALVE
-  EXISTING WATER LINE
-  NEW FIRE HYDRANT
-  POTENTIAL WATER VALVE
-  POTENTIAL WATER LINE

**DOWL**  
 WWW.DOWL.COM  
 1575 N. 4th Street, #105  
 Laramie, Wyoming 82072  
 307-742-3816

**IVINSON STREET RECONSTRUCTION**  
**CITY OF LARAMIE**  
**POTENTIAL WATER IMPROVEMENTS ON IVINSON STREET**

PROJECT	26618.01
DATE	NOV 2015
CONCEPT DESIGN	

G:\22\26618-01\65CAD\C14-CB-CP-26618.01-65\DESIGN.dwg PLOT DATE 2015-11-16 12:14 SAVED DATE 2015-11-16 12:07 USER: cfossen

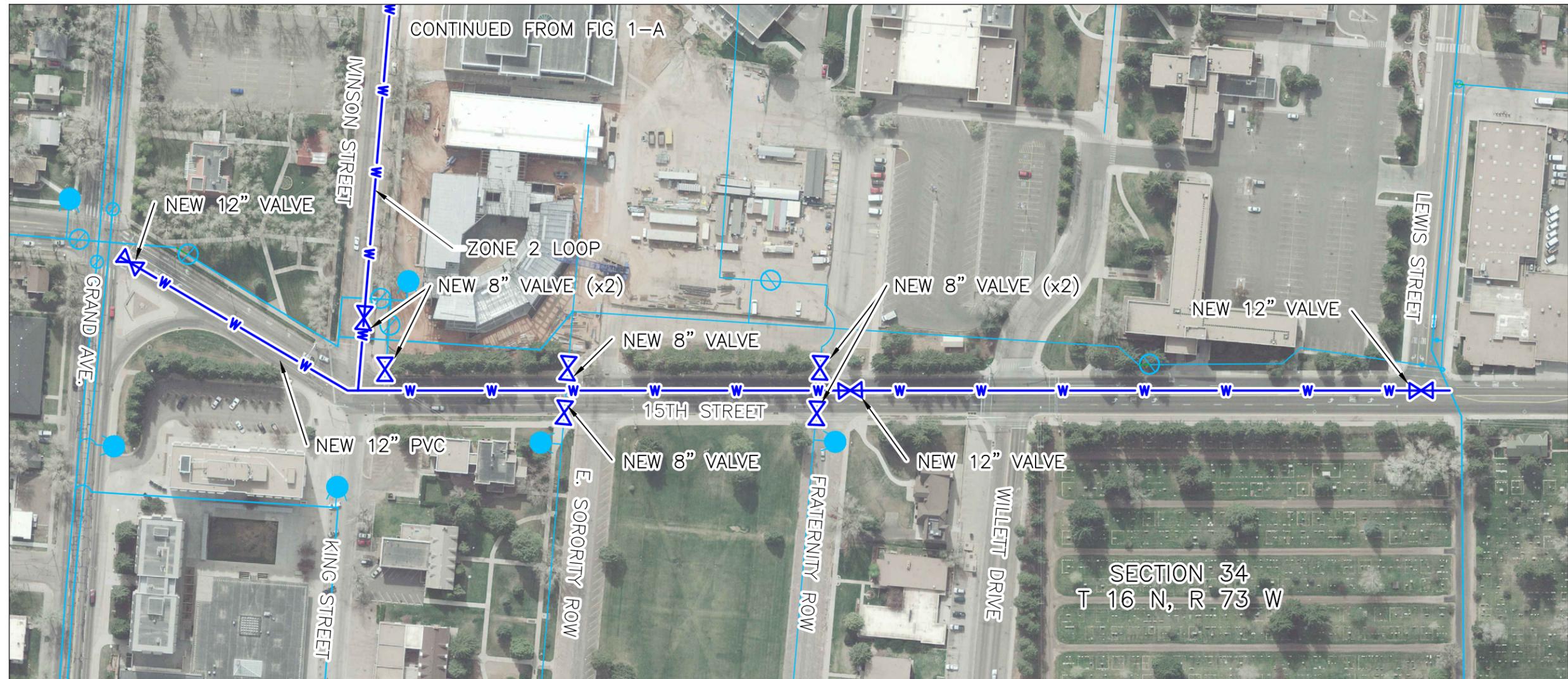


Image Citation: Colored Orthophotos Provided by the City of Laramie, Wyoming, 2010

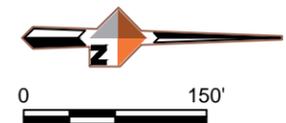
**LEGEND**

- |  |                       |  |                       |
|--|-----------------------|--|-----------------------|
|  | EXISTING FIRE HYDRANT |  | NEW FIRE HYDRANT      |
|  | EXISTING WATER VALVE  |  | POTENTIAL WATER VALVE |
|  | EXISTING WATER LINE   |  | POTENTIAL WATER LINE  |

NOTE: NEW LINES SHOWN OFFSET FROM EXISTING FOR CLARITY

NEW 8" PVC TO CONNECT TO EXISTING AT NORTH RIGHT OF WAY AT GRAND AVE WITH NEW VALVES

CONNECTION SHOWN AT LEWIS AND 15TH MAY NOT REPRESENT AS BUILT CONDITION AND WILL BE MADE TO SYSTEM IMPROVEMENTS MADE IN 2014/2015



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WWW.DOWL.COM  
 1575 N. 4th Street, #105  
 Laramie, Wyoming 82072  
 307-742-3816

**IVINSON STREET RECONSTRUCTION  
 CITY OF LARAMIE  
 POTENTIAL WATER IMPROVEMENTS ON 15TH STREET**

PROJECT	26618.01
DATE	NOV 2015
CONCEPT DESIGN	

**FIGURE 4**

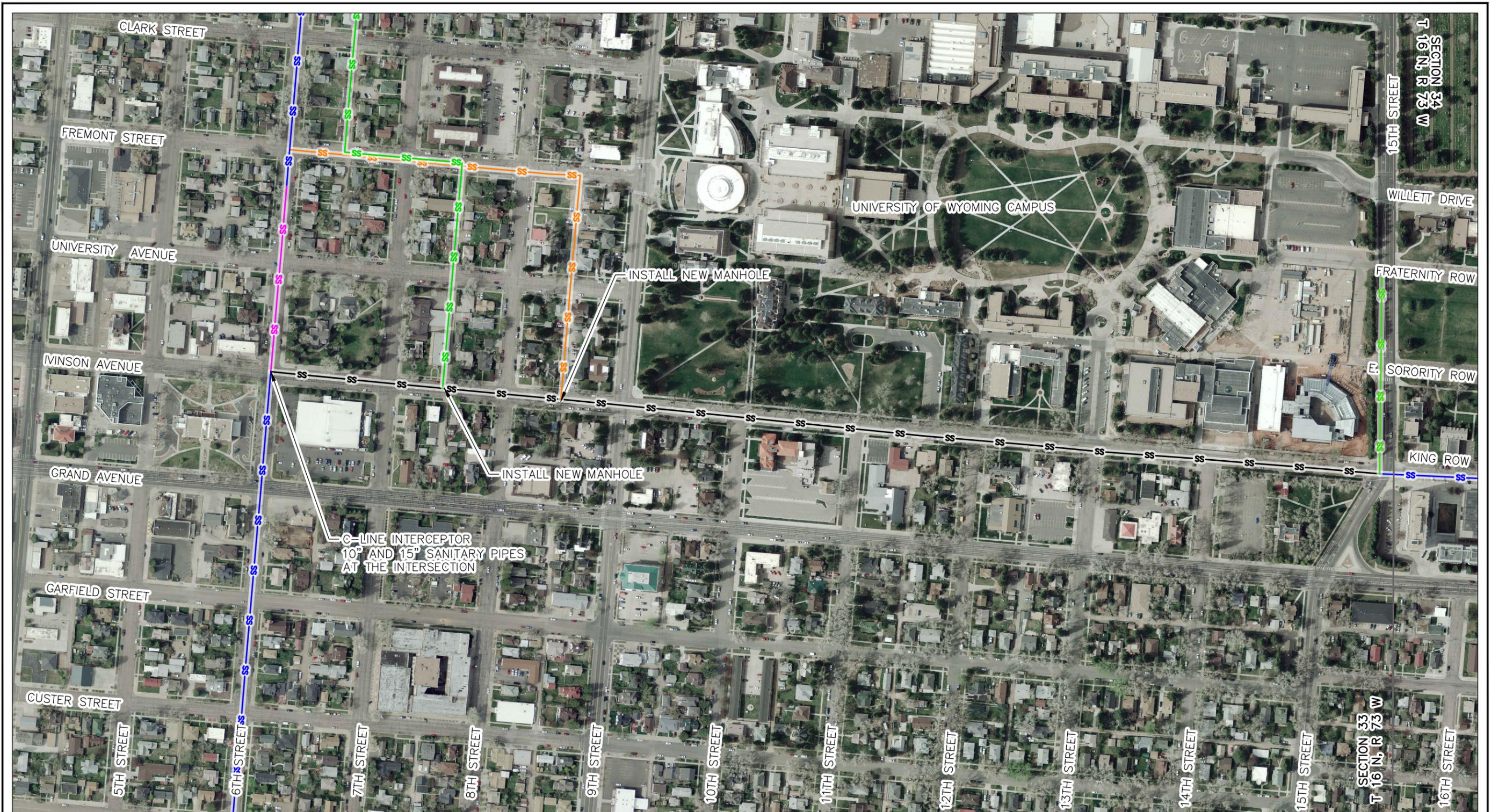
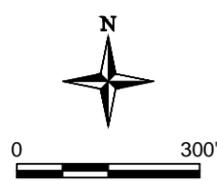


Image Citation: Colored Orthophotos Provided by the City of Laramie, Wyoming, 2010

**EXPLANATION**

- **SS** 10-INCH AND 15-INCH EXISTING SANITARY SEWER
- **SS** EXISTING 15-INCH SEWER LINE
- **SS** EXISTING 12-INCH SEWER LINE
- **SS** EXISTING 8-INCH SEWER LINE
- **SS** PROPOSED 15-INCH SEWER LINE
- SECTION LINE



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**FIGURE 5**  
**PROPOSED SANITARY SEWER IMPROVEMENTS**  
**IVINSON STREET RECONSTRUCTION PROJECT**  
**CITY OF LARAMIE**  
**LARAMIE, WYOMING**

Drawn By: NE	Checked By: CT	Scale: 1" = 300'	Date: 12/31/15   File: IVINSONST-SANSEWERFIG1-2
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## IVINSON STREET RECONSTRUCTION PROJECT

Laramie, Wyoming

Thursday, January 28, 2016

Presented by:

Claudia Torrence, P.E.  
Tyson Markham, P.E.  
Rick Plenge, P.E., PTOE

# PRESENTATION OUTLINE

- Overview
- What Are Complete Streets?
- Complete Street Considerations
- How Does it Apply to Ivinson?
- Proposed Ivinson Improvements



# RETHINKING OUR STREETS



# WHAT ARE COMPLETE STREETS?



Complete Streets are about reestablishing a better balance and providing better choices

# WHAT ARE COMPLETE STREETS?

Safe



Comfortable



Convenient



# WHAT ARE COMPLETE STREETS?



# COMPLETE STREETS DESIGN CONSIDERATIONS

- Design Vehicles
- Capital Cost
- Long Term Maintenance
- Parking Impacts
- Operational Impacts
- Accessibility
- Placemaking
- Landscaping
- Ped/Bike Conflicts
- Termini



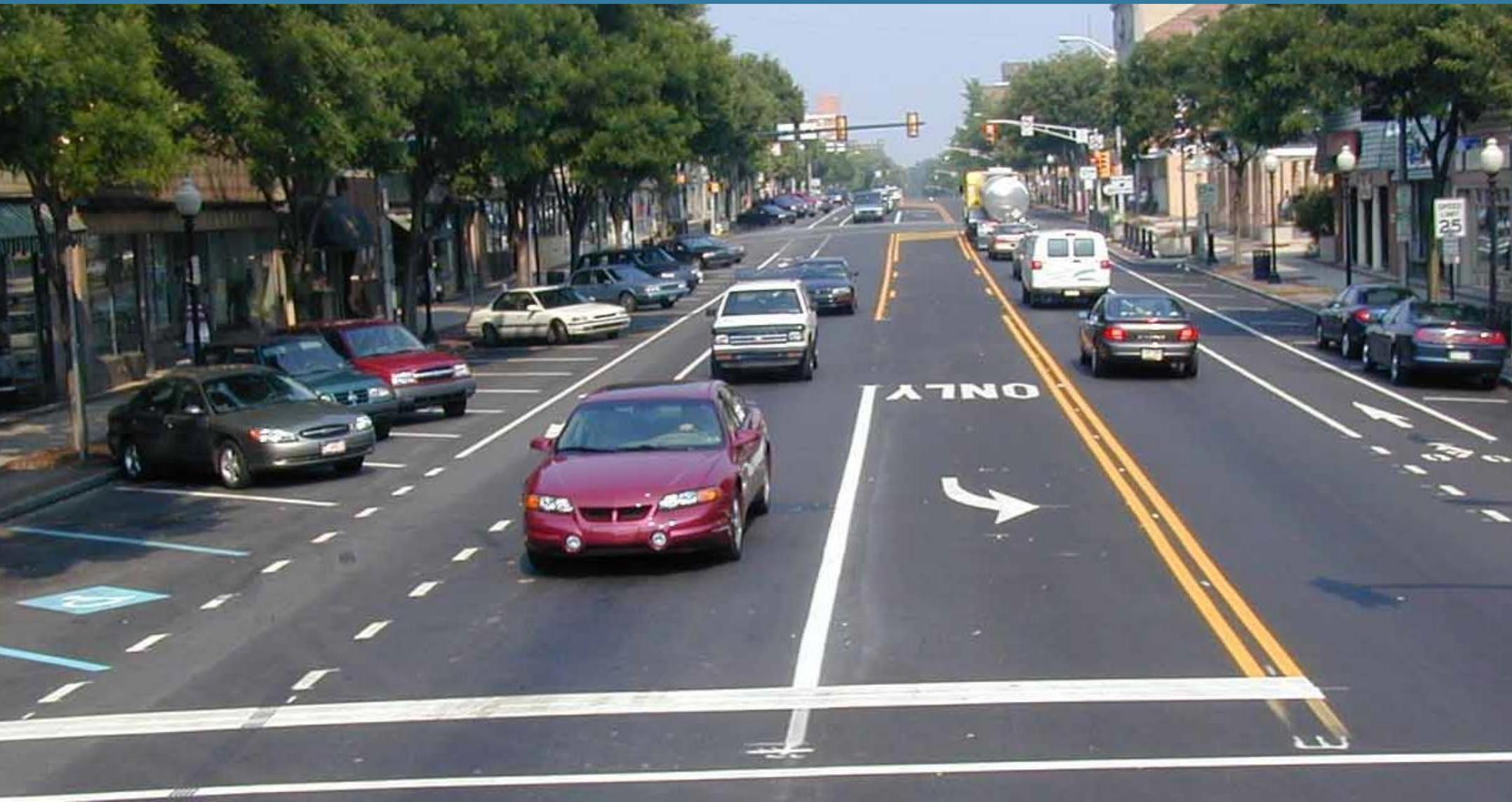
# OUR CHALLENGES



# STREETS ARE INADEQUATE



# WE KNOW HOW TO BUILD RIGHT



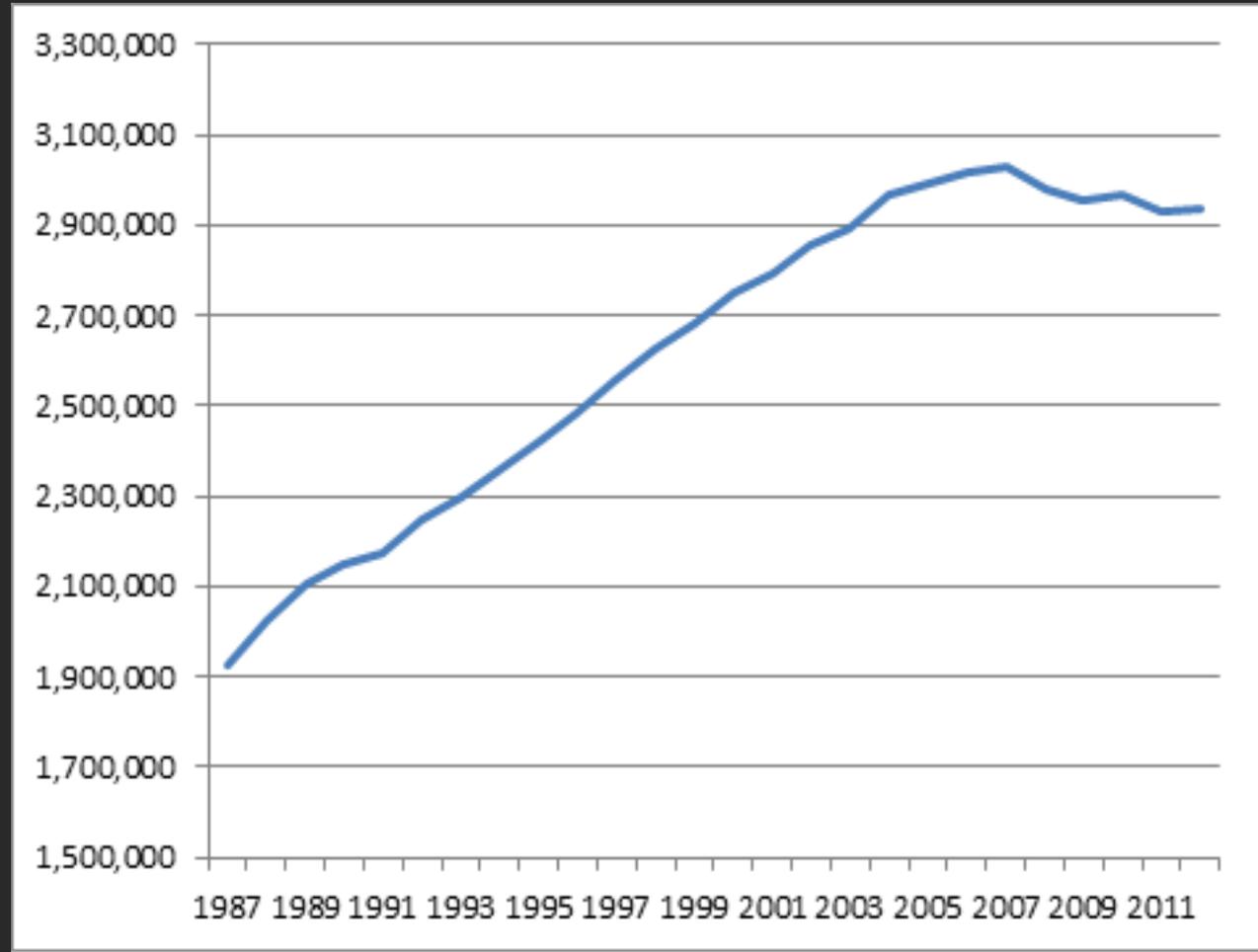
# CHANGING PREFERENCES

- Aging population: by 2025, 1 in 5 will be 65+
- Younger generation prefers multimodal travel
- More demand for “in town” living



# TOTAL VMT IS DECLINING

Total VMT (in millions)



# WHO ARE WE DESIGNING FOR?

- Aging population
- 33% of population doesn't drive
- 20% of population has some sort of disability
- 8 to 80 Target Audience



# HEALTH

- We are moving without moving - 60% are at risk for diseases associated with inactivity:
- Residents more likely to walk in a neighborhood with sidewalks.
- Bike lanes → More bicycling
- 1/3 of regular transit users meet minimum daily physical activity requirement during their commute



# ECONOMIC DEVELOPMENT

Lancaster, California:

- Reconstruction project
- \$10m public investment
- 50 new businesses
- 800 new jobs
- Vacancy rate: 4%
- Sales tax revenue: ↑ 26%



# SLOWER TRAVEL SPEEDS



20mph



AT 20 MPH, THE RISK OF DEATH IS 6%



30mph



THE RISK OF DEATH AT 30 MPH IS 19%  
3 TIMES GREATER THAN 20 MPH



45mph



THE RISK OF DEATH AT 45 MPH IS 65%  
11 TIMES GREATER THAN 20 MPH

# HOW SPEED AFFECTS DRIVER PERCEPTION



PERIPHERAL VISION AT 10-15 MPH

# HOW SPEED AFFECTS DRIVER PERCEPTION



PERIPHERAL VISION AT 20-25 MPH

# HOW SPEED AFFECTS DRIVER PERCEPTION



PERIPHERAL VISION AT 40+ MPH

# PEDESTRIAN SAFETY TOOLBOX



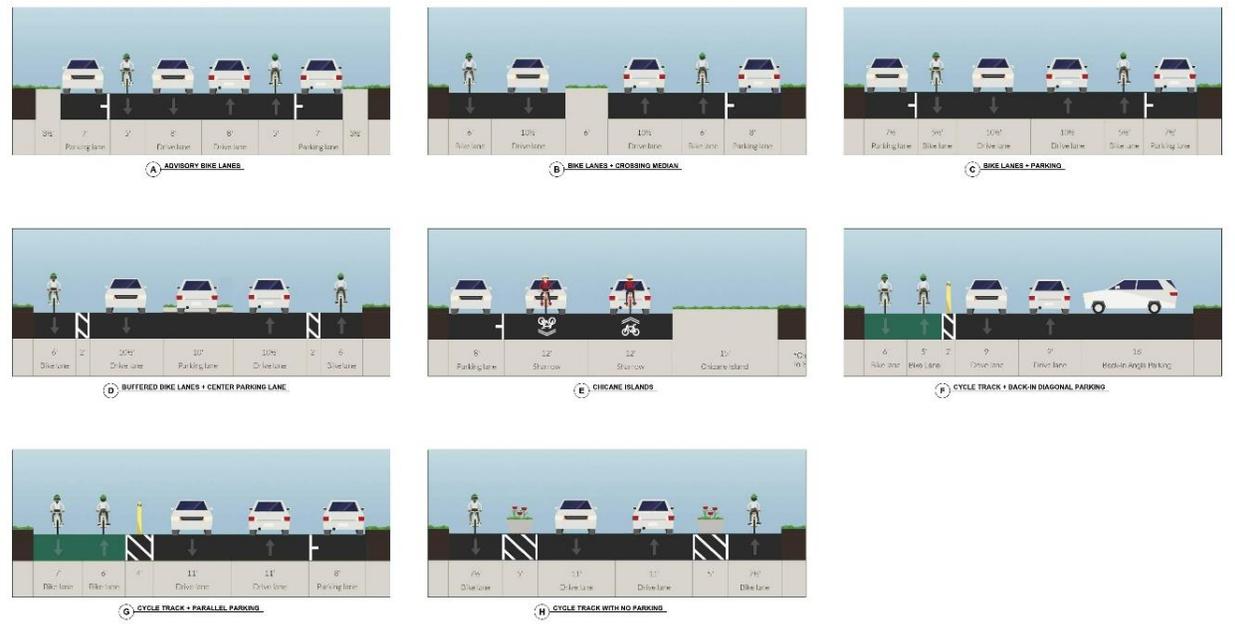
# BICYCLE CORRIDOR TOOLBOX



# IVINSON STREET – PROJECT OVERVIEW



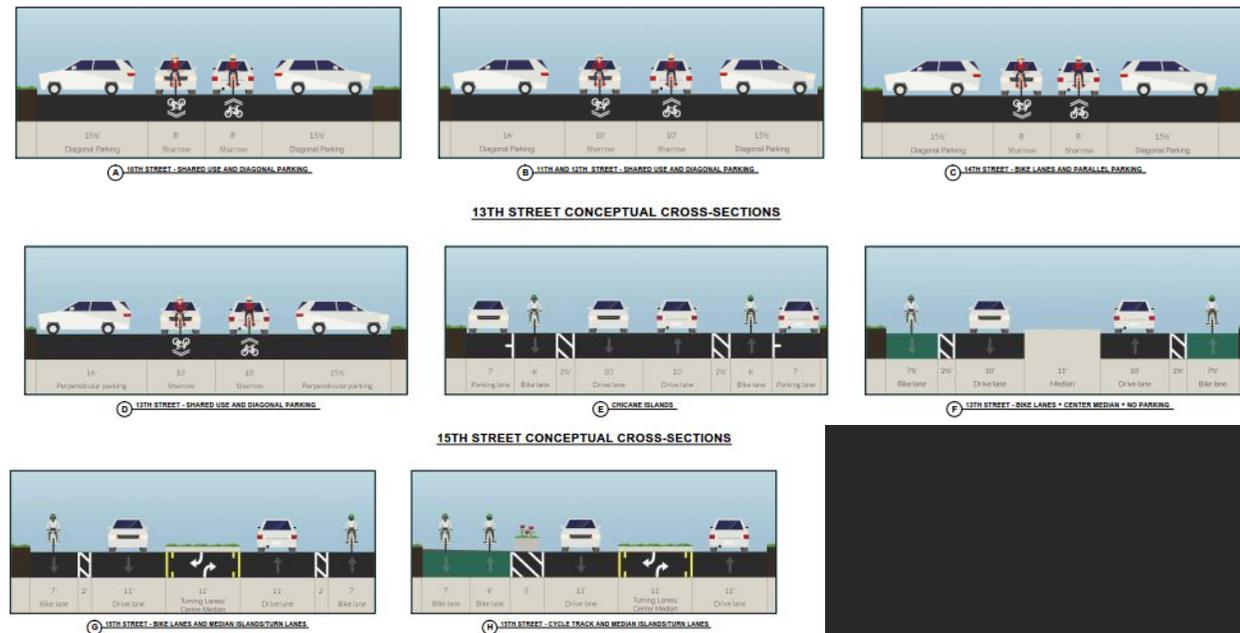
# CONCEPTUAL DESIGN PROCESS – 10% DESIGN



Presented many concepts for consideration

- 8 concepts for Iverson St.
- 3 concepts for 13<sup>th</sup> St.
- 2 concepts for 15<sup>th</sup> St.
- 3 concepts for other connecting streets

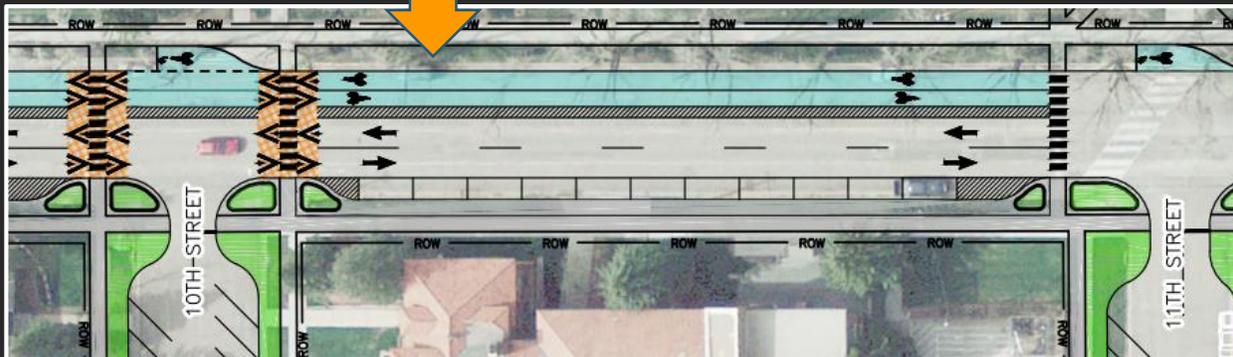
## CONNECTING STREET (10TH, 11TH, 12TH, AND 14TH STREET) CONCEPTUAL CROSS-SECTIONS



# CONCEPTUAL DESIGN PROCESS – 50% DESIGN

Narrowed concepts and presented plan view detail

- 5 concepts for Ivinson St.
- 2 concepts for 13th St.
- 2 concepts for 15th St.
- 2 concepts for other connecting streets





# PUBLIC MEETING RESULTS

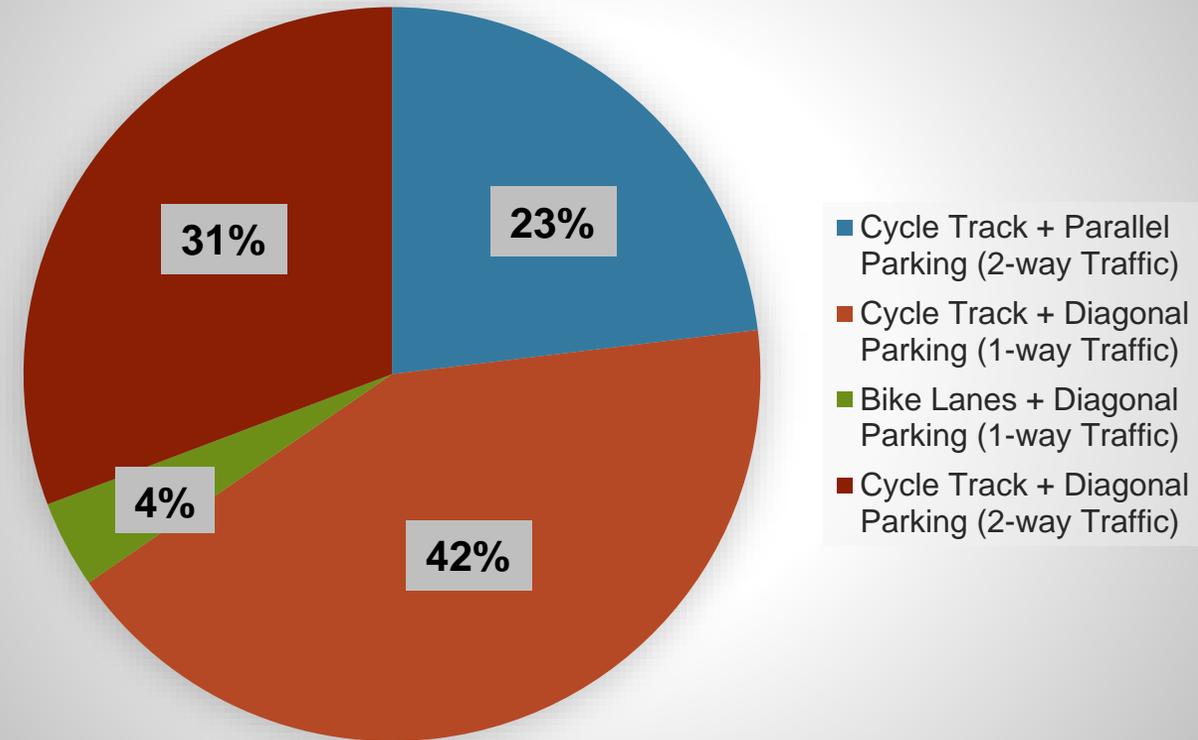
## Positive Feedback

- Cycle track
- Back-in diagonal parking
- Public art

## Concerns

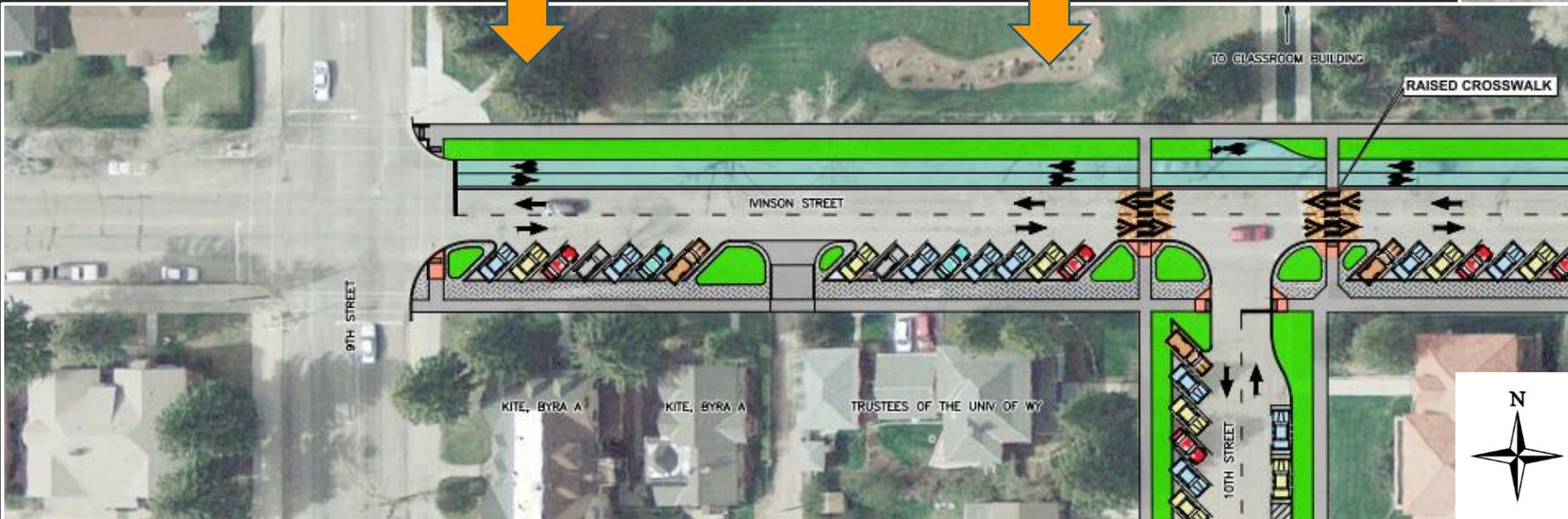
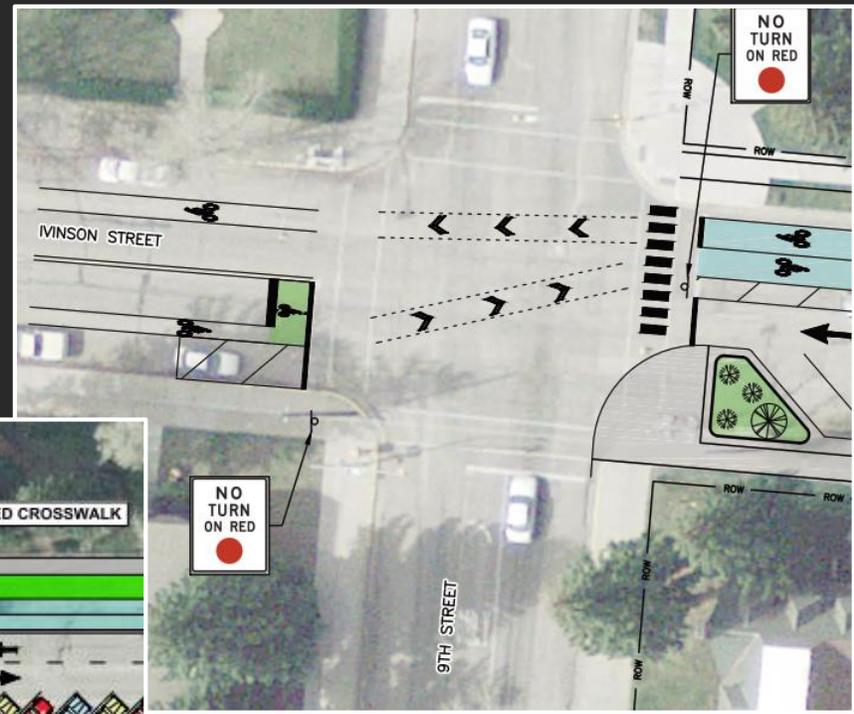
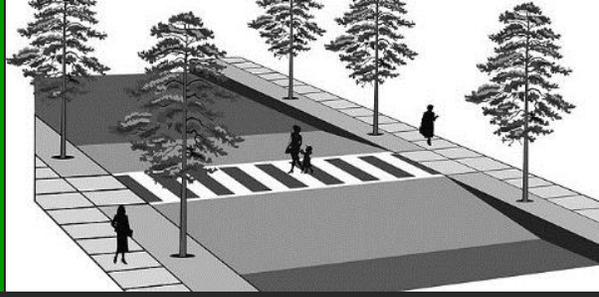
- One-way traffic
- Concerned with amount of parking
- Tree removal

### Ivinson Street Options





# FINAL CONCEPTUAL DESIGN IVINSON STREET

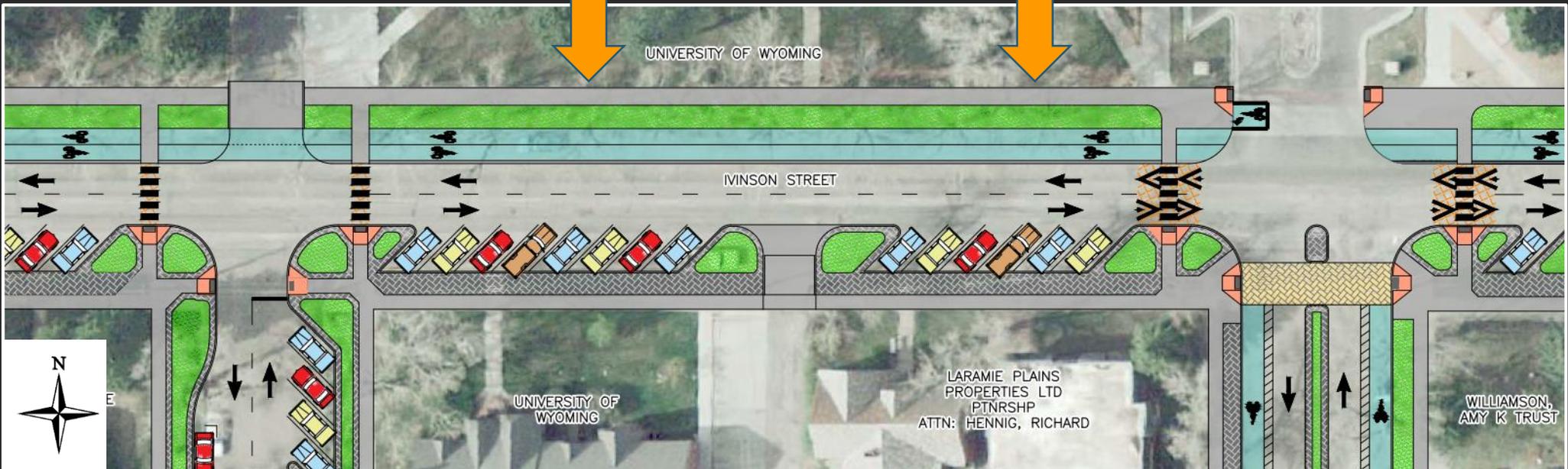
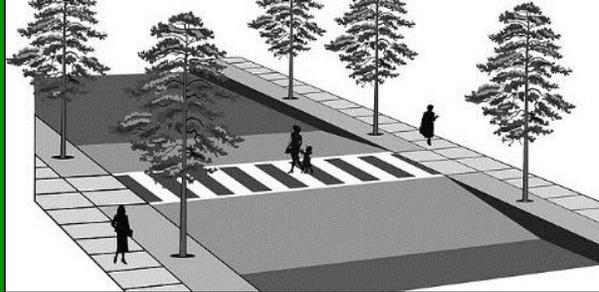


- Total On-Street Parking:**
- Proposed Parking Stalls: 196
  - Existing Parking (Iverson Street): 140
  - Existing Parking (Side Streets)  
58 + 9 City Permit = 67
  - Parking Gain/Loss: -11

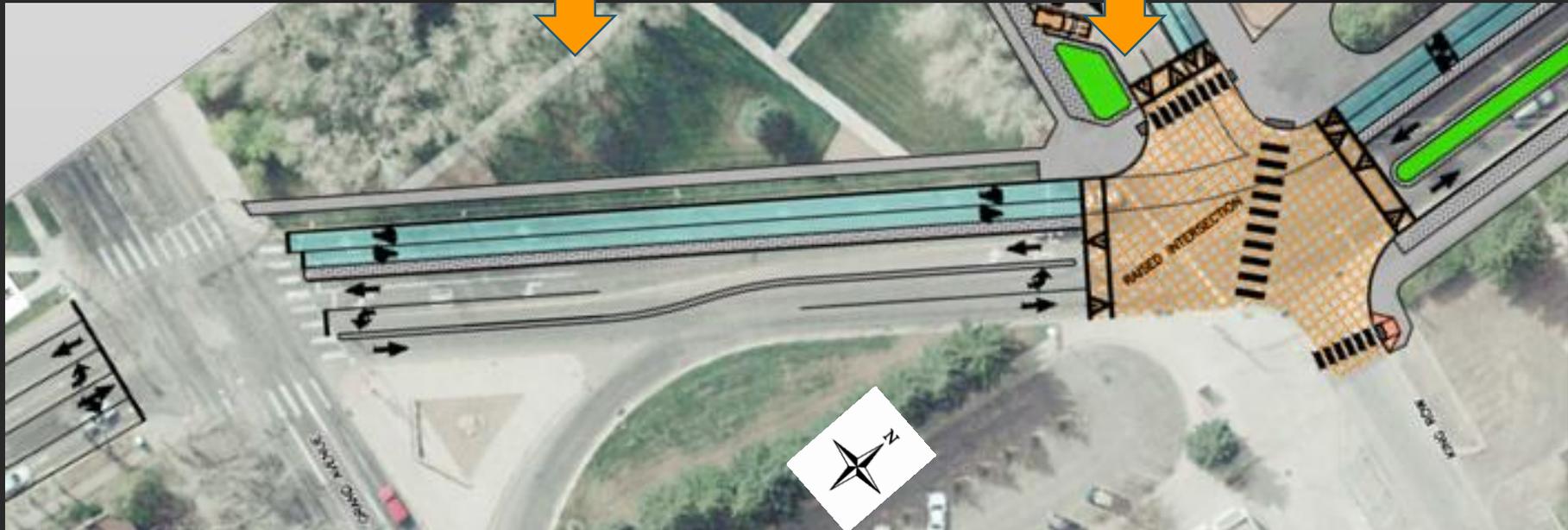
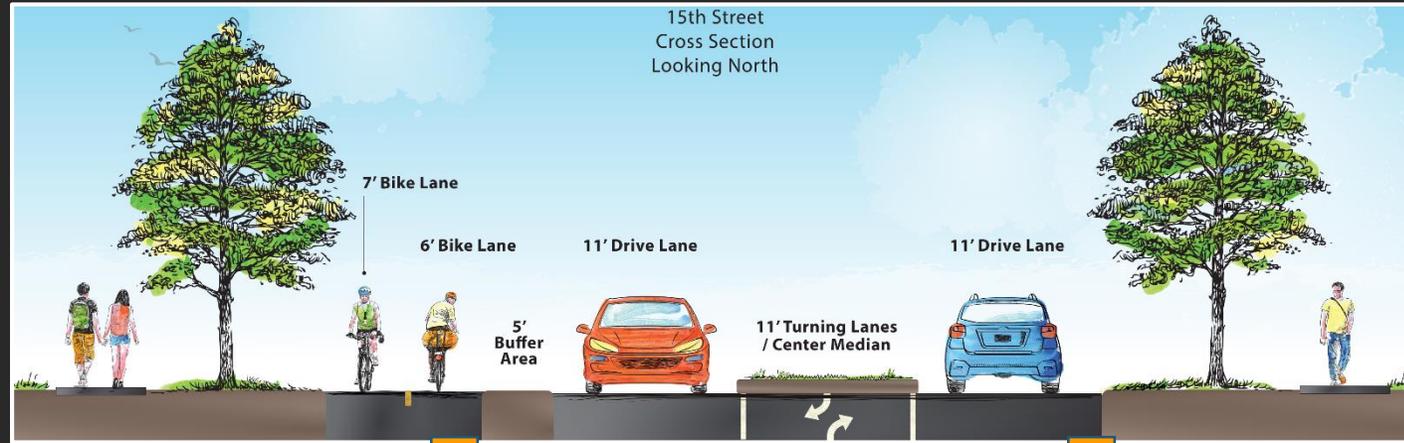




# FINAL CONCEPTUAL DESIGN IVINSON STREET

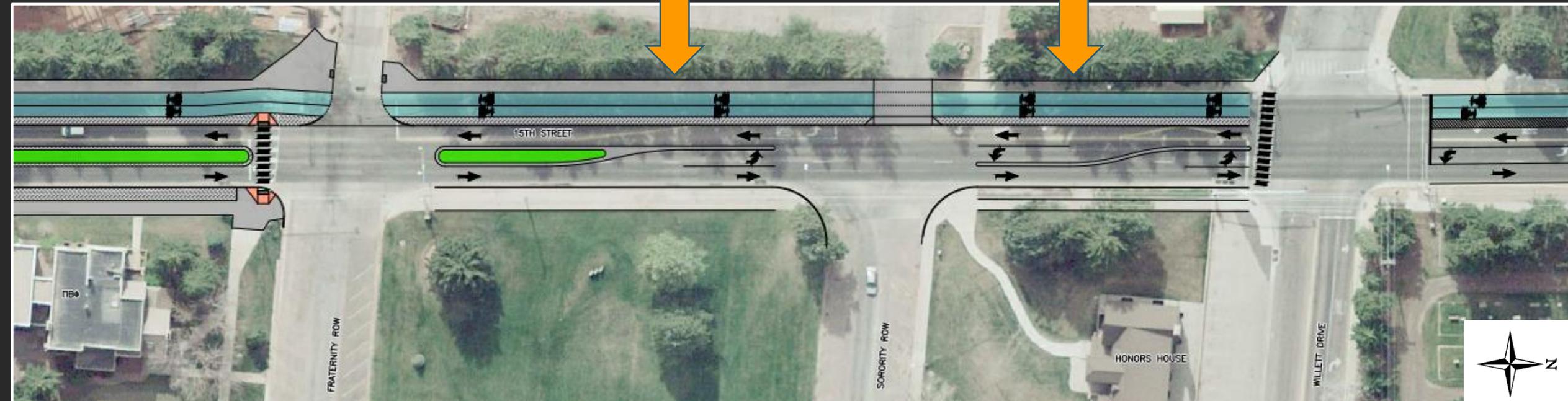


# FINAL CONCEPTUAL DESIGN 15<sup>TH</sup> STREET



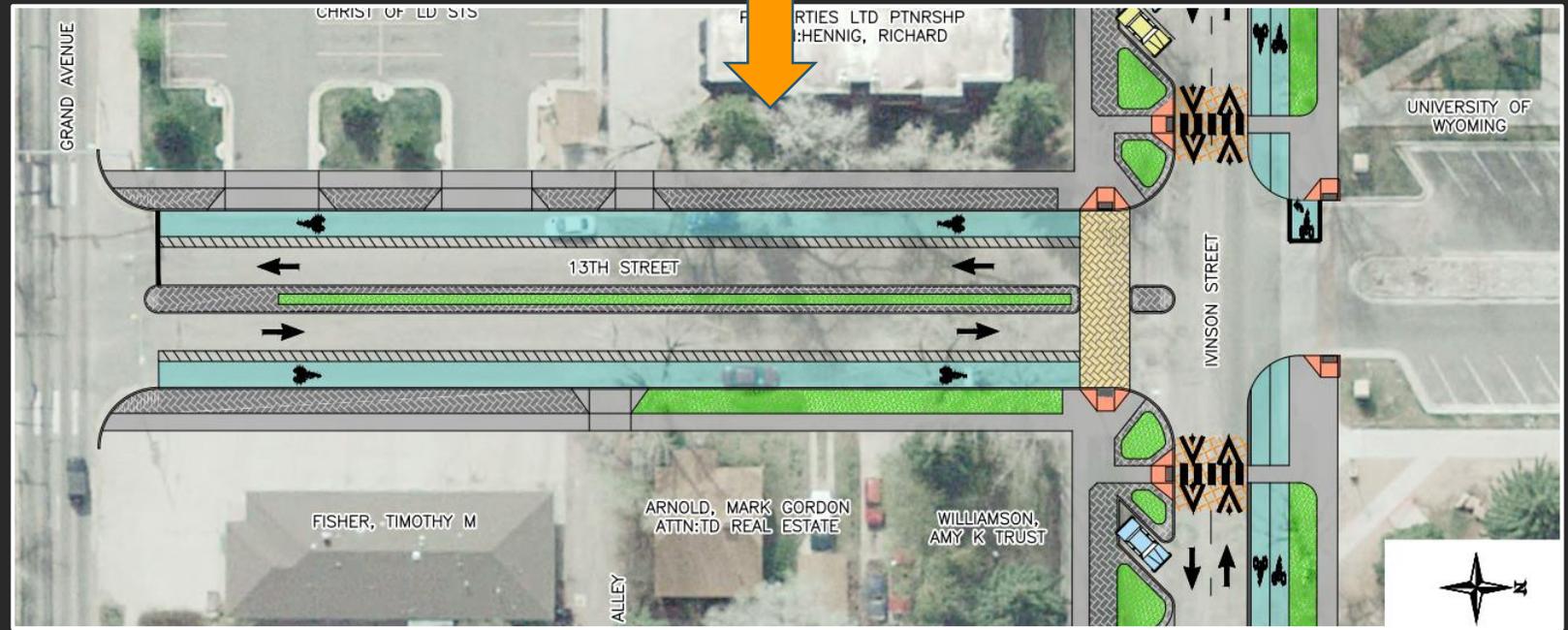
# FINAL CONCEPTUAL DESIGN

## 15<sup>TH</sup> STREET

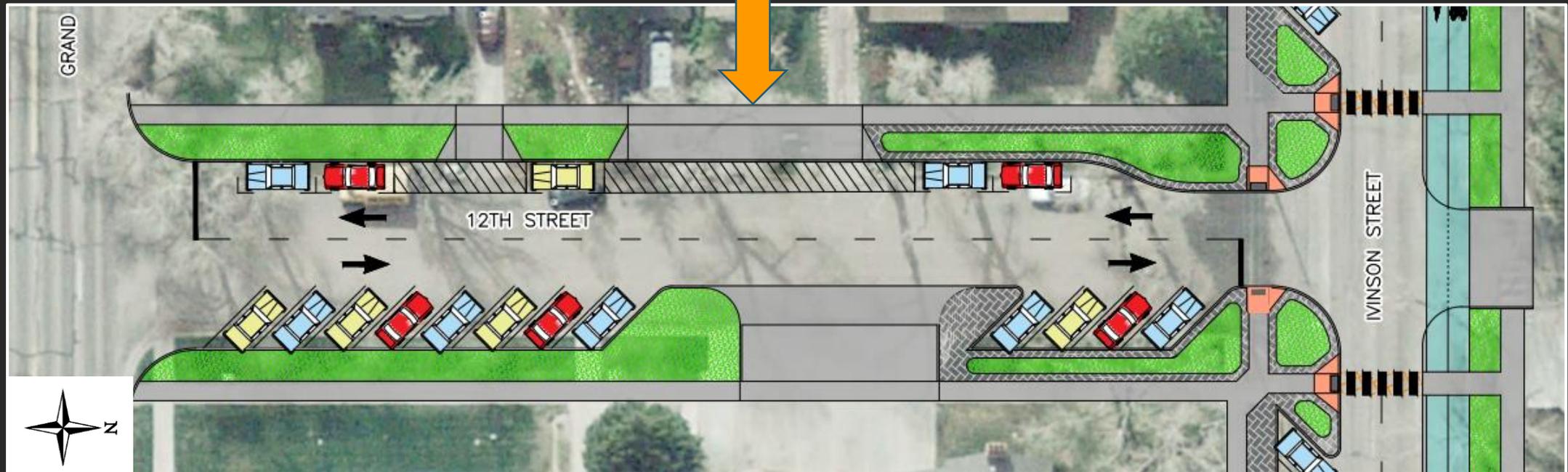
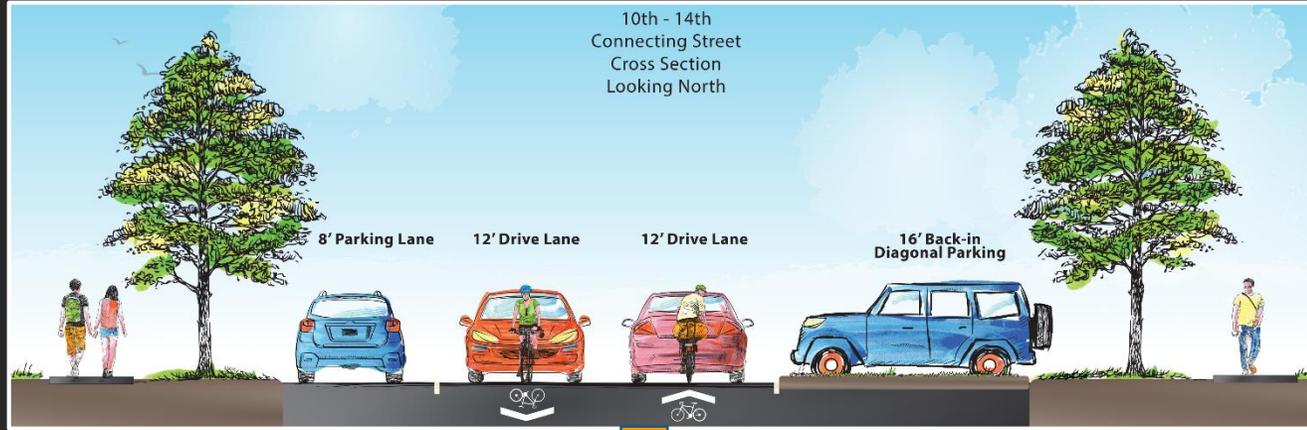




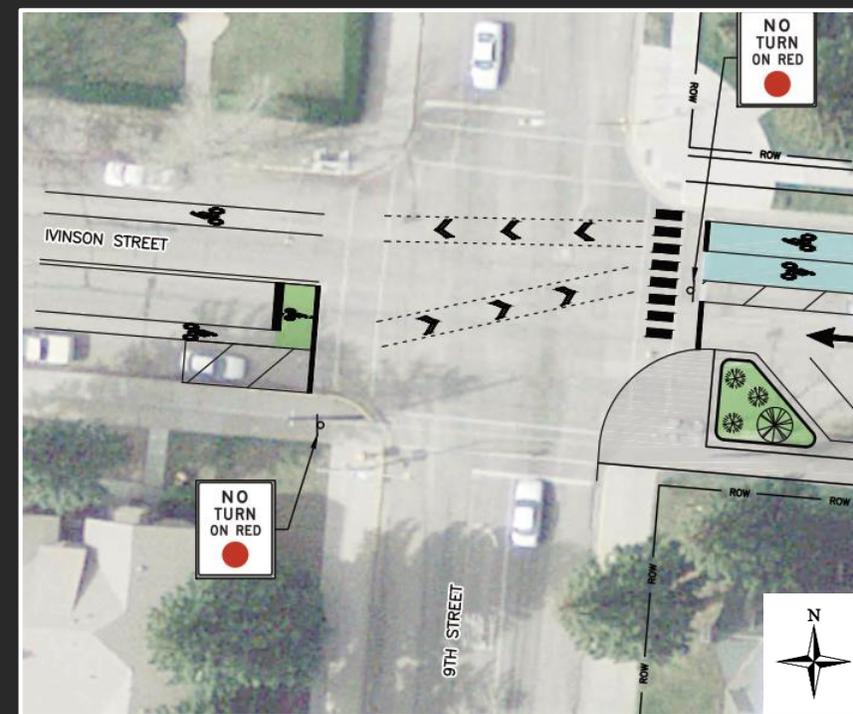
# FINAL CONCEPTUAL DESIGN 13<sup>TH</sup> STREET



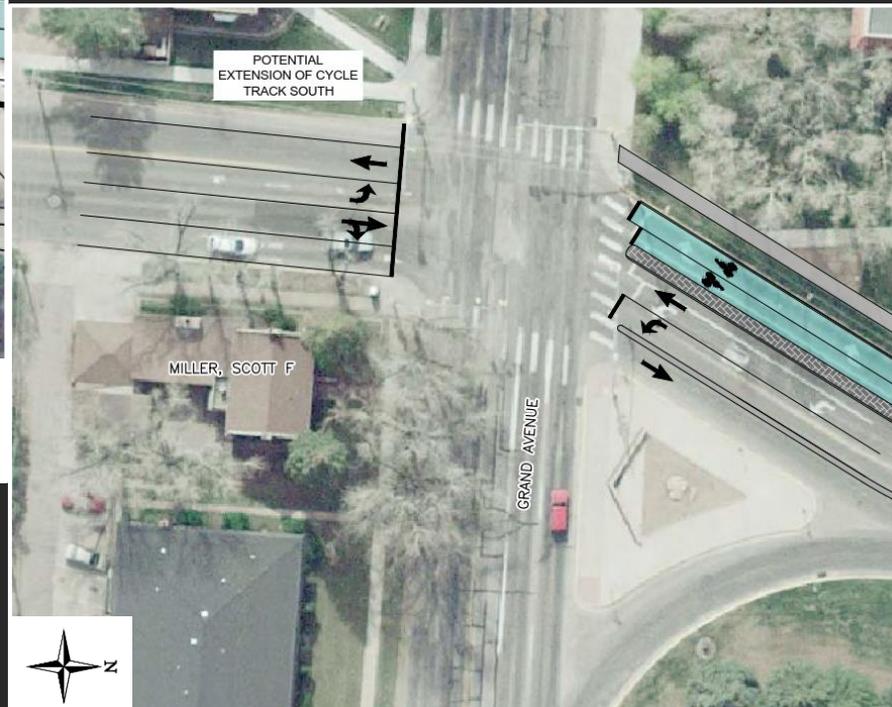
# FINAL CONCEPTUAL DESIGN 10<sup>TH</sup> – 14<sup>TH</sup> CROSS STREETS



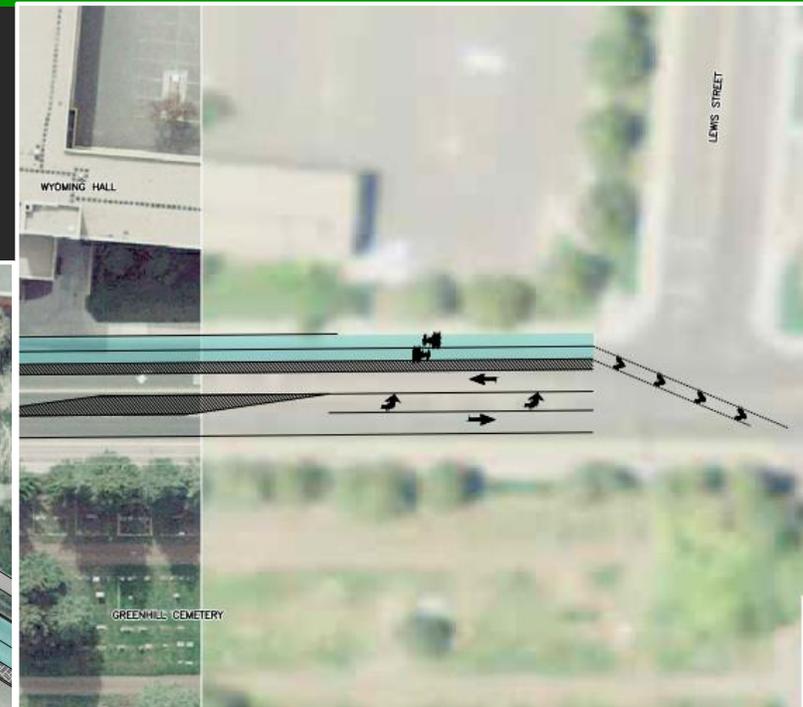
# CYCLE TRACK TRANSITION AREAS



9<sup>TH</sup> STREET/IVINSON STREET

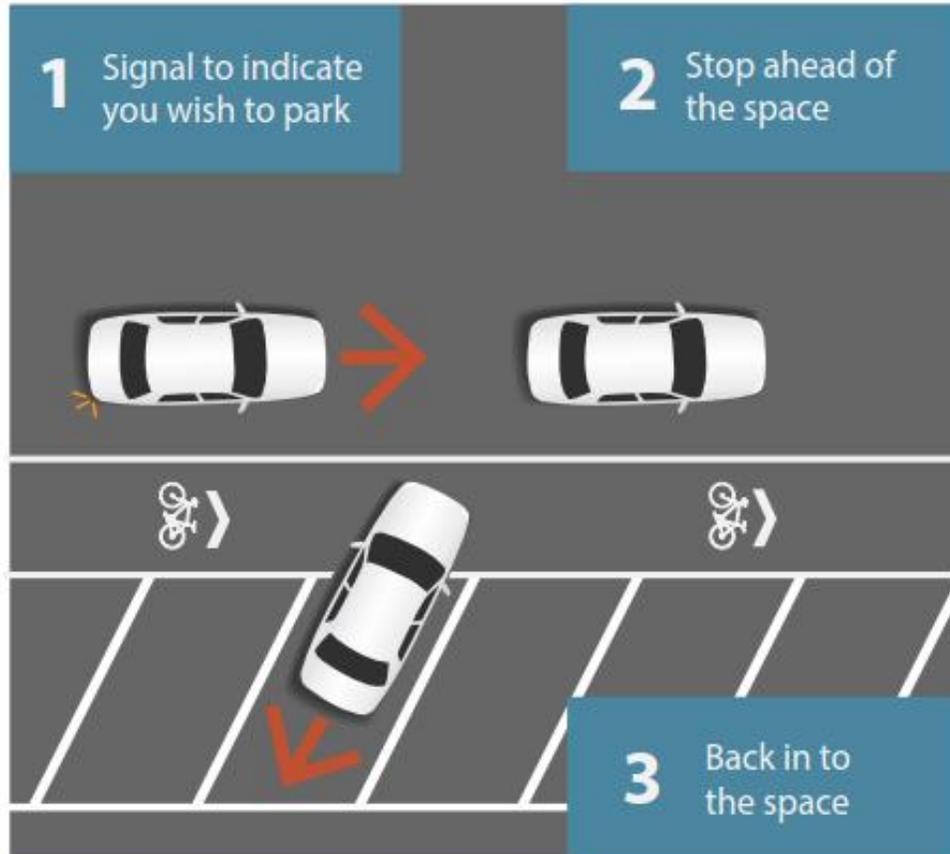


15<sup>TH</sup> STREET/GRAND AVENUE



15<sup>TH</sup> STREET/LEWIS STREET

# BACK-IN DIAGONAL PARKING



**EASY IN:** Follow the 3 easy steps above. It's easier than parallel parking

**SAFER OUT:** When you are ready to leave, pull out head first. It's safer and easier to see.

## BENEFITS

- » Provides safe area for loading/unloading cargo
- » Clearer sight line when exiting parking stall
- » Directs children to a point of safety
- » Increases parking capacity
- » Faster and easier than parallel parking
- » Safer than head-in diagonal parking
- » Facilitates loading and unloading of trunk



# Questions?

WHAT

WHY

WHERE

WHEN

WHO

HOW