# BUILD OPTIONS

Eleven Build Concepts and a Major Rehab Concept were initially developed. The Concepts were compared in an Evaluation Matrix ranking them on Eleven factors.

Visit the Resources page of the project website for more detail regarding the Build Concepts including those that are not discussed in this presentation.

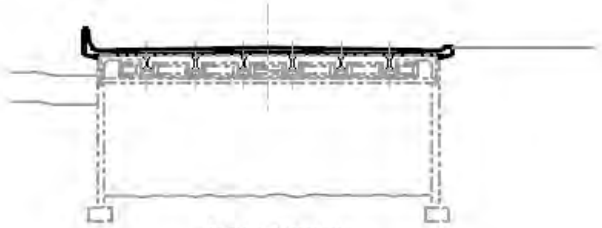
The following slides will focus on Build Options developed.

| Concept No. | Description | Meets Purpose and Need | Hydraulic Impacts | Constructability | ROW Needs and Private Property Impacts | Comparative Costs | Environmental Constraints | Comparative Safety | Geologic Impacts | Multi-modal Impacts | Social Acceptability and Community Context | Utility Impacts | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Scored Out of** | **N/A** | **20** | **20** | **20** | **20** | **20** | **10** | **10** | **10** | **10** | **10** | **150** |
| *NB* | No-Build Option | No | 20 | 5 | 20 | 20 | 20 | 0 | 10 | 0 | 0 | 10 | 105 |
| *MR* | Major Rehab | No | 20 | 5 | 20 | 19 | 20 | 0 | 10 | 0 | 0 | 10 | 104 |
| *1a* | US14A as Thru Movement, Parking to East, Highway to West, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 19 | 13 | 16 | 3 | 10 | 7 | 8 | 10 | **126** |
| *1b* | US14A as Thru Movement, Parking to East, Highway to West, Deadwood Box Partially New Alignment | Yes | 20 | 5 | 19 | 13 | 12 | 3 | 9 | 7 | 8 | 6 | 102 |
| *1c* | US14A as Thru Movement, Parking to West, Highway to East, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 17 | 12 | 14 | 6 | 7 | 10 | 6 | 10 | **122** |
| *1d* | US14A as Thru Movement, Parking to West, Highway to East, Deadwood Box Rebuilt Partially New Alignment | Yes | 20 | 5 | 17 | 12 | 10 | 6 | 6 | 10 | 6 | 6 | 98 |
| *2a* | US85 as Thru Movement, Parking to East, Highway to West and Along Sherman St, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 18 | 12 | 12 | 5 | 10 | 7 | 10 | 10 | **124** |
| *2b* | US85 as Thru Movement, Parking to West, Highway to East and Along Sherman St, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 15 | 11 | 12 | 9 | 5 | 10 | 6 | 8 | 116 |
| *2c* | US85 as Thru Movement, Parking to West, Highway to East and Along Sherman St, Deadwood Box Rebuilt Partially New Alignment | Yes | 20 | 5 | 15 | 11 | 8 | 9 | 4 | 10 | 6 | 2 | 90 |
| *2d* | US85 as Thru Movement, Parking to West, Highway to East and Along Miller Street, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 0 | 8 | 8 | 10 | 1 | 10 | 0 | 2 | **79** |
| *3a* | US14A Overpass | Yes | 20 | 20 | 15 | 11 | 16 | 5 | 7 | 10 | 7 | 2 | 113 |
| *4* | Tunnel System | Yes | 0 | 20 | 8 | 0 | 0 | 7 | 9 | 10 | 0 | 6 | **60** |
| *5* | Highway Rerouted on Local Roadway | Yes | 0 | 5 | 5 | 6 | 0 | 0 | 0 | 4 | 0 | 0 | **20** |

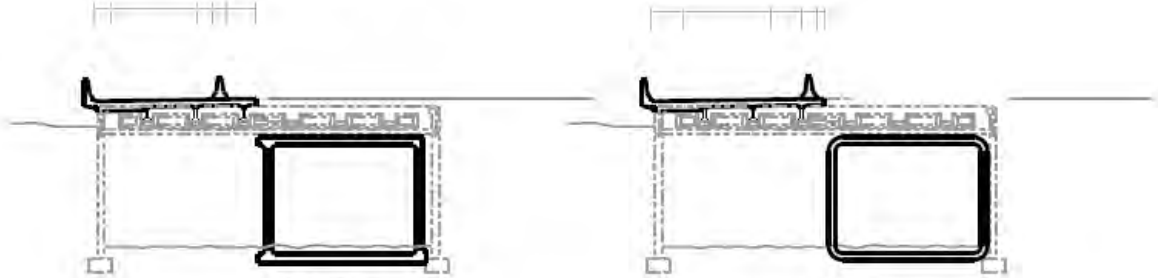
# Options: Evaluation Matrix

| Option No. | Description | Meets Purpose and Need | Hydraulic Impacts | Constructability | ROW Needs and Private Property Impacts | Comparative Costs | Environmental Constraints | Comparative Safety | Geologic Impacts | Multi-modal Impacts | Social Acceptability and Community Context | Utility Impacts | Total Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Scored Out of** | **N/A** | **20** | **20** | **20** | **20** | **20** | **10** | **10** | **10** | **10** | **10** | **150** |
| ***NB*** | No-Build Option | No | 20 | 5 | 20 | 20 | 20 | 0 | 10 | 0 | 0 | 10 | 105 |
| ***MR*** | Major Rehab | No | 20 | 5 | 20 | 19 | 20 | 0 | 10 | 0 | 0 | 10 | 104 |
| ***1a*** | US14A as Thru Movement, Parking to East, Highway to West, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 19 | 13 | 16 | 3 | 10 | 7 | 8 | 10 | **126** |
| ***1b*** | US14A as Thru Movement, Parking to East, Highway to West, Deadwood Box Partially New Alignment | Yes | 20 | 5 | 19 | 13 | 12 | 3 | 9 | 7 | 8 | 6 | 102 |
| ***1c*** | US14A as Thru Movement, Parking to West, Highway to East, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 17 | 12 | 14 | 6 | 7 | 10 | 6 | 10 | **122** |
| ***1d*** | US14A as Thru Movement, Parking to West, Highway to East, Deadwood Box Rebuilt Partially New Alignment | Yes | 20 | 5 | 17 | 12 | 10 | 6 | 6 | 10 | 6 | 6 | 98 |
| ***2a*** | US85 as Thru Movement, Parking to East, Highway to West and Along Sherman St, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 18 | 12 | 12 | 5 | 10 | 7 | 10 | 10 | **124** |
| ***2b*** | US85 as Thru Movement, Parking to West, Highway to East and Along Sherman St, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 15 | 11 | 12 | 9 | 5 | 10 | 6 | 8 | 116 |
| ***2c*** | US85 as Thru Movement, Parking to West, Highway to East and Along Sherman St, Deadwood Box Rebuilt Partially New Alignment | Yes | 20 | 5 | 15 | 11 | 8 | 9 | 4 | 10 | 6 | 2 | 90 |
| ***2d*** | US85 as Thru Movement, Parking to West, Highway to East and Along Miller Street, Deadwood Box Rebuilt within Existing | Yes | 20 | 20 | 0 | 8 | 8 | 10 | 1 | 10 | 0 | 2 | **79** |
| ***3a*** | US14A Overpass | Yes | 20 | 20 | 15 | 11 | 16 | 5 | 7 | 10 | 7 | 2 | 113 |
| ***4*** | Tunnel System | Yes | 0 | 20 | 8 | 0 | 0 | 7 | 9 | 10 | 0 | 6 | **60** |
| ***5*** | Highway Rerouted on Local Roadway | Yes | 0 | 5 | 5 | 6 | 0 | 0 | 0 | 4 | 0 | 0 | **20** |

# Box Construction



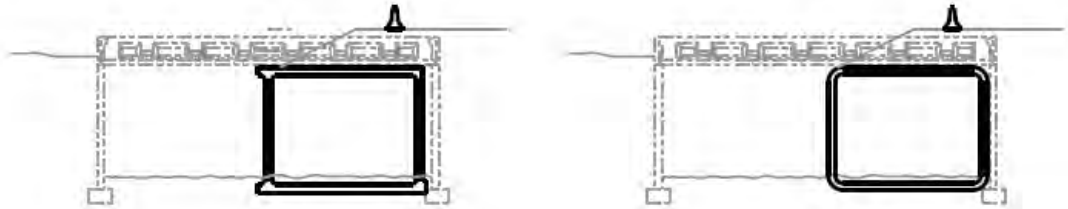
Original Structure



Cast in Place

Precast

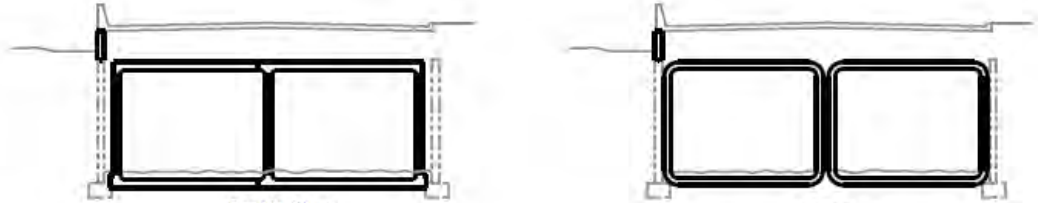
Phase 1: one half of existing superstructure removed traffic carried on remaining half of superstructure one half of new structure build beneath existing



Cast in Place

Precast

Phase 2: Second half of existing superstructure removed traffic carried on fill placed on new box section (existing girders between abutments stay in place)



Cast in Place

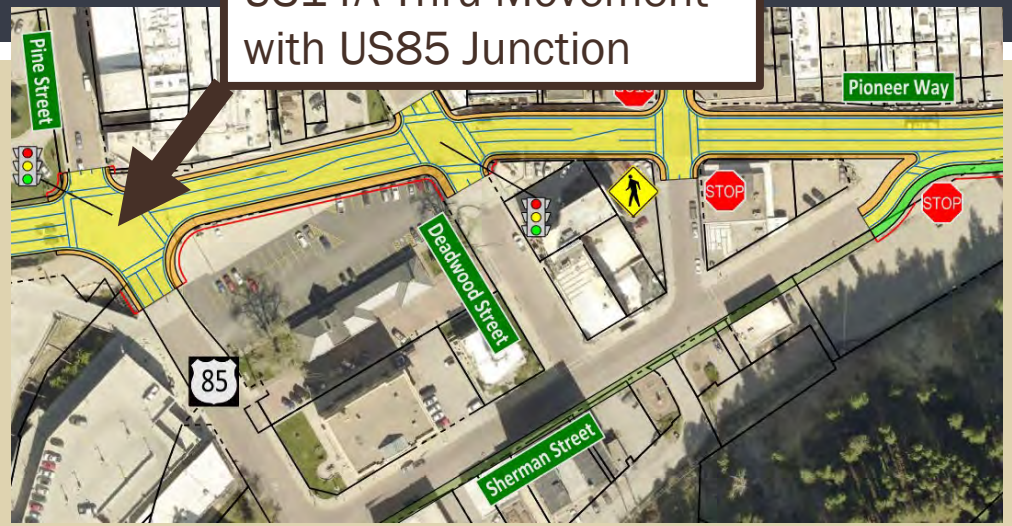
Precast

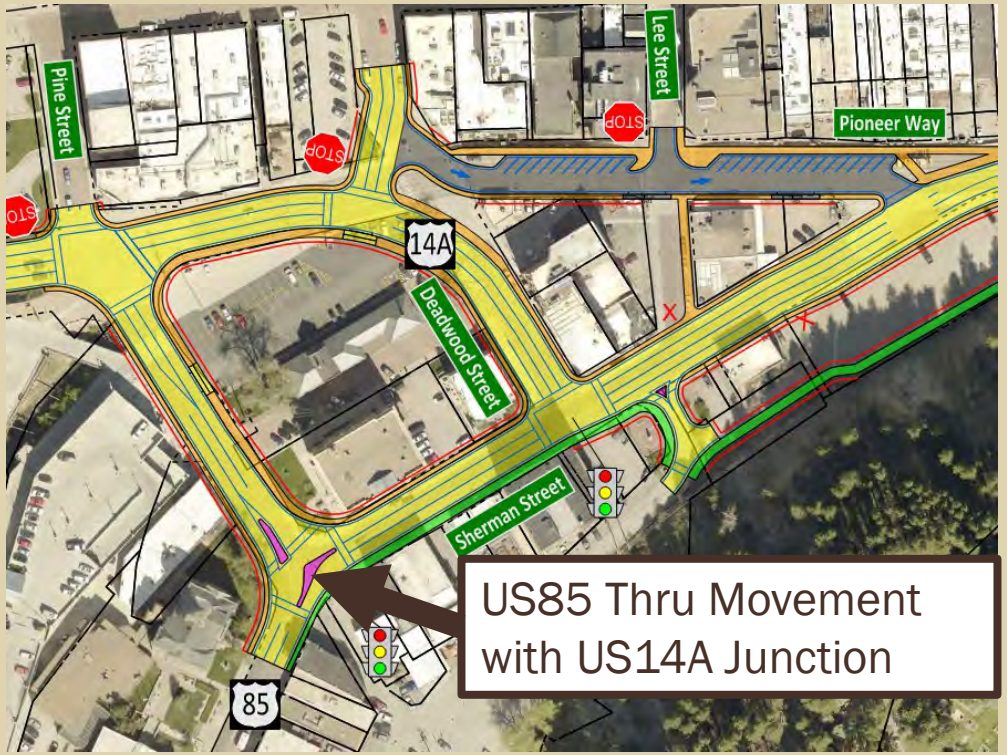
Phase 3: Existing girders removed fill placed on new box section, required retaining walls built and surfacing placed

# Build Option List - Route

| Option No. | Route | | Deadwood Box Construction | | | Location of Transportation Facilities | |
|---|---|---|---|---|---|---|---|
| | | | Closed Cell Box Culvert | | Partial Open Channel | | |
| | Through Movement | Via | Within Existing | Partial New Alignment | Within Existing | Parking Side | Highway Side |
| *NB* | US14A | Pioneer Way | - | - | - | East | West |
| *MR* | US14A | Pioneer Way | - | - | - | East | West |
| *1a* | US14A | Pioneer Way | x | | | East | West |
| *1b* | US14A | Pioneer Way | x | x | | East | West |
| *1c* | US14A | Pioneer Way | x | | | West | East |
| *1d* | US14A | Pioneer Way | | x | | West | East |
| *2a* | US85 | Sherman St./ Pioneer Way | x | | | East | West |
| *2b* | US85 | Sherman St./ Pioneer Way | x | | | West | East |
| *2c* | US85 | Sherman St./ Pioneer Way | | x | | West | East |
| *2d* | US85 | Miller St./ Pioneer Way | x | | | West | East |
| *3a* | US14A | Pioneer Way | x | | | West/East | East |
| *4a* | US14A | Tunnel | x | | x | West/East | N/A |
| *5a* | US14A | Upper Main St./ Williams St. | x | | x | East | N/A |

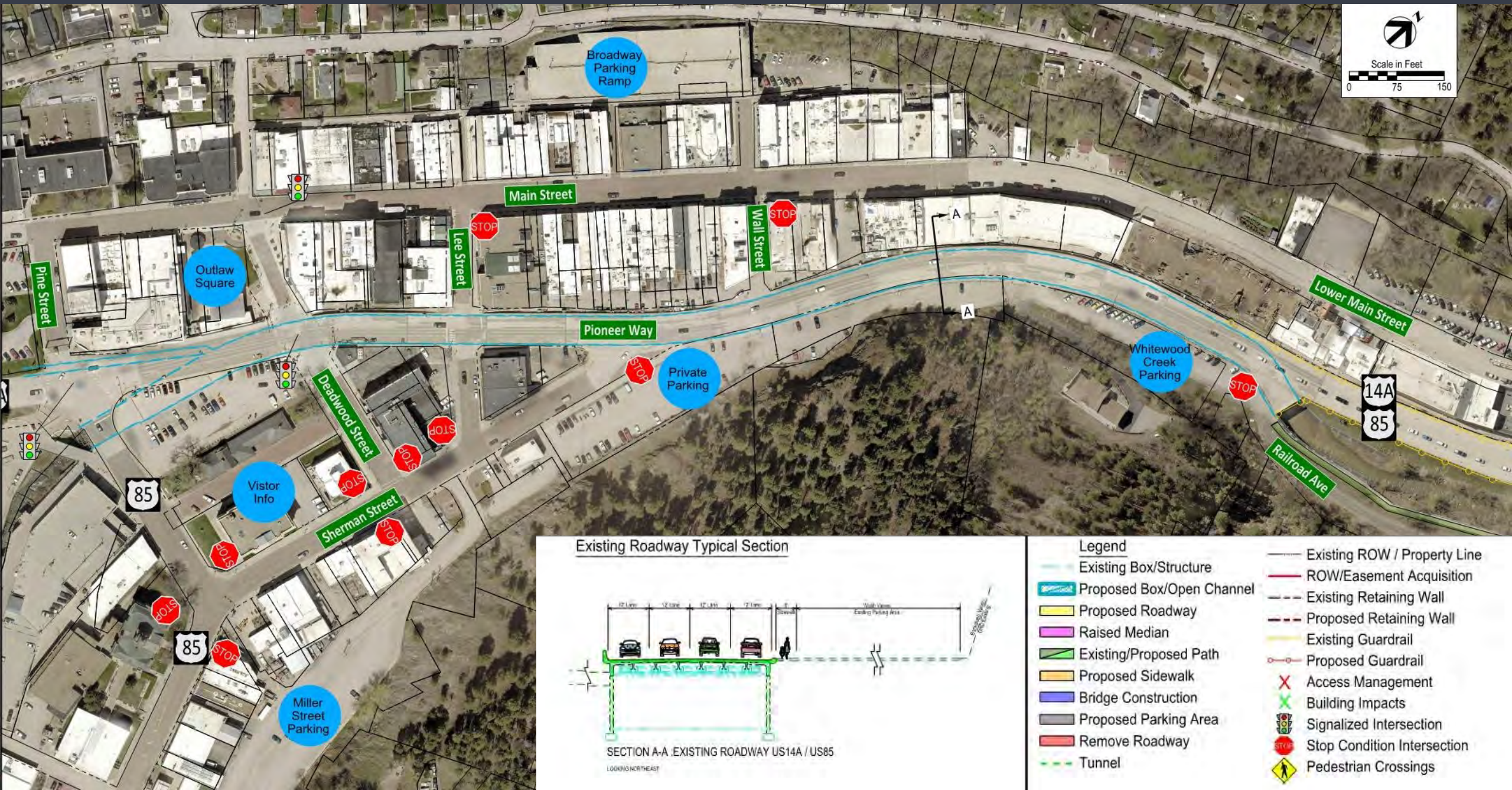
US14A Thru Movement with US85 Junction




US85 Thru Movement with US14A Junction

# Build Options – No Build




Existing Roadway Typical Section



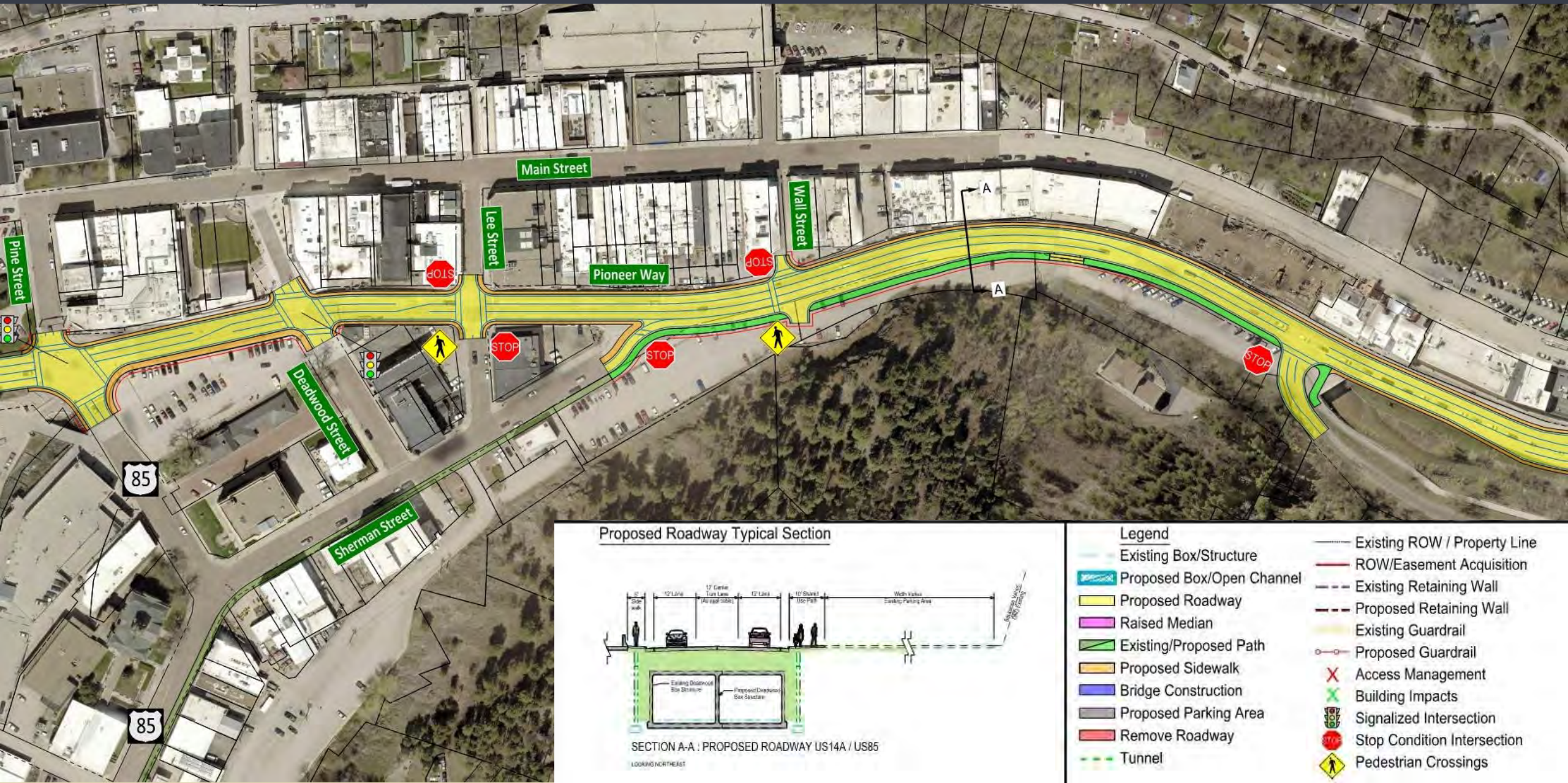
SECTION A-A :EXISTING ROADWAY US14A / US85

LOOKING NORTHEAST

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Options 1a: Roadway




Proposed Roadway Typical Section



SECTION A-A : PROPOSED ROADWAY US14A / US85

LOOKING NORTHEAST

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 1a: Box Location

**ROW Impacts = 0.34 Acres**
**Total Cost = $59.5 M**
**Net Parking Impacts = (-) 9 spaces**

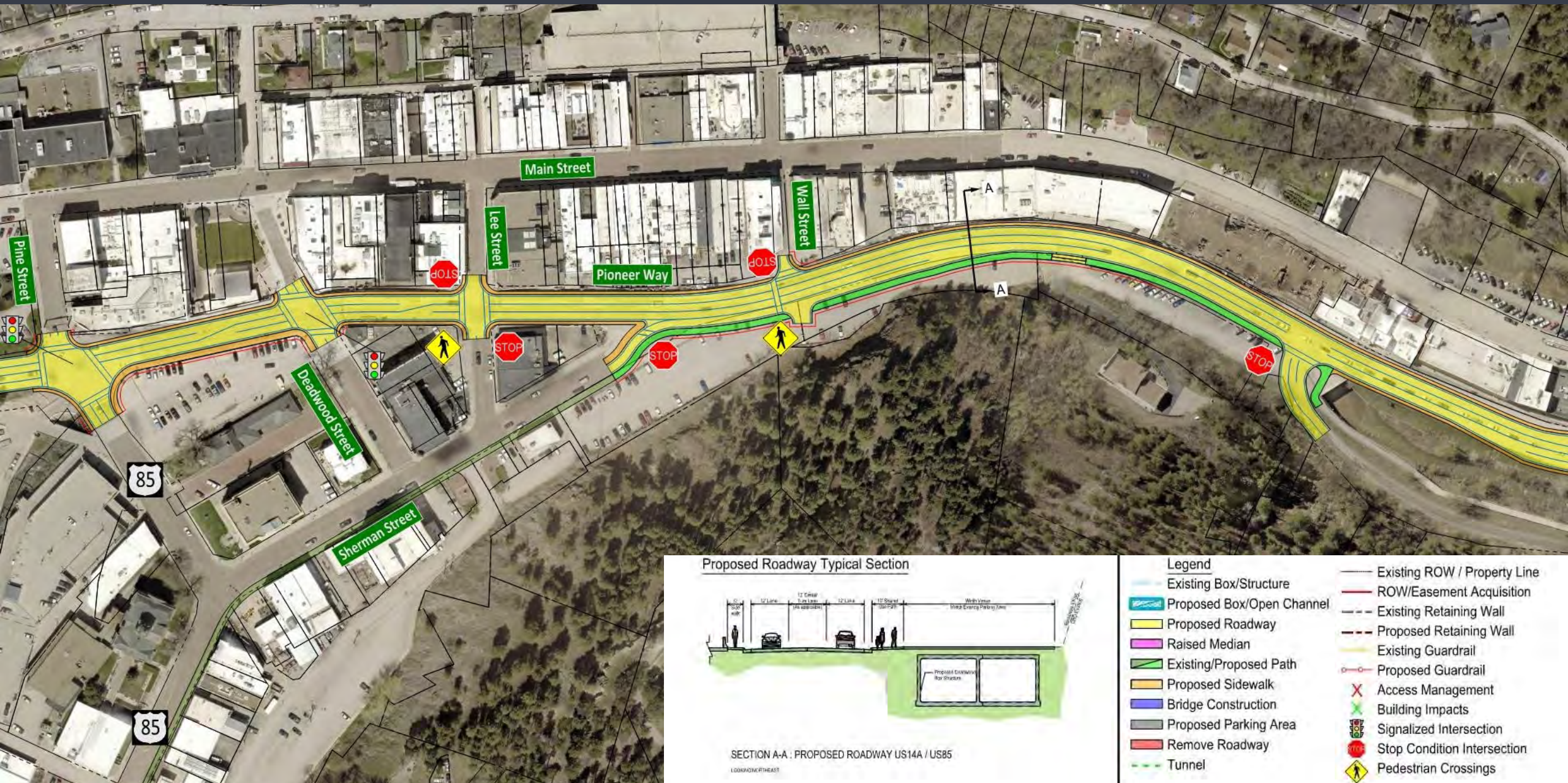
Proposed Roadway Typical Section

SECTION A-A : PROPOSED ROADWAY US14A / US85

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 1b: Roadway





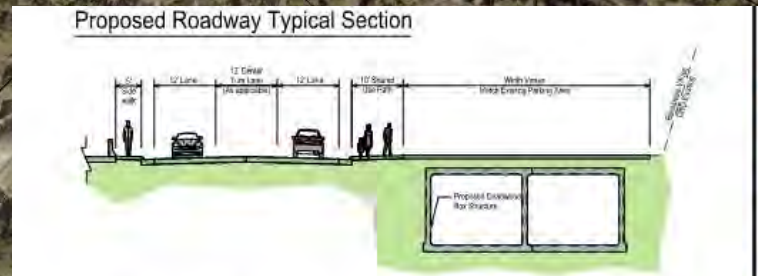


Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 1b: Box Location

**ROW Impacts = 0.34 Acres**
**Total Cost = $60.6 M**
**Net Parking Impacts = (-) 9 spaces**



# Build Option 1c: Roadway

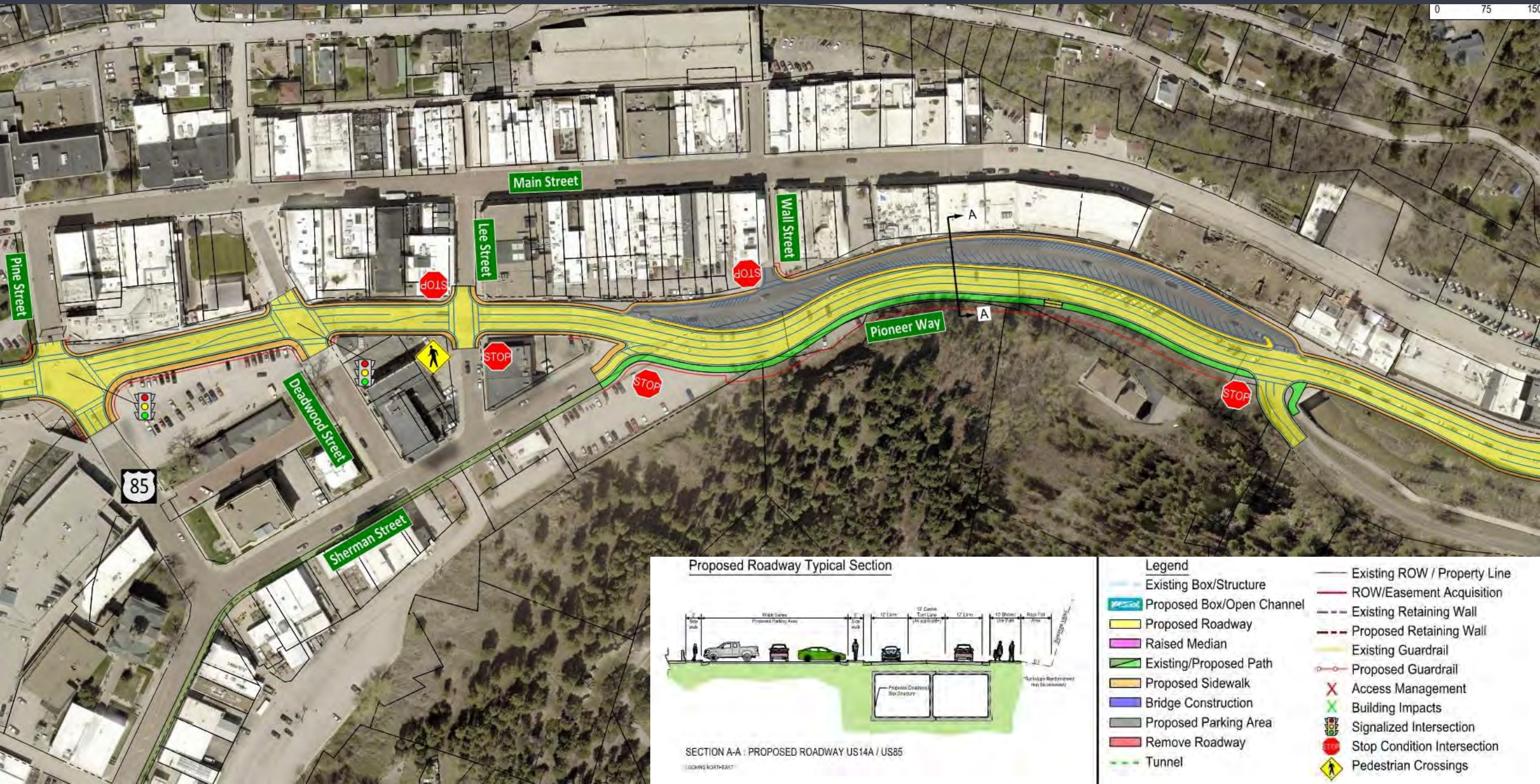
Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 1c: Box Location

**ROW Impacts = 1.56 Acres**
**Total Cost = $66.2 M**
**Net Parking Impacts = (-) 22 spaces**

# Build Option 1d: Roadway





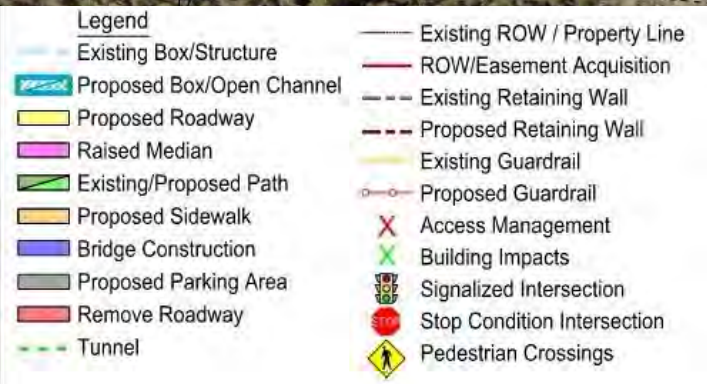


Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 1d: Box Location

**ROW Impacts = 1.56 Acres**
**Total Cost = $67.2 M**
**Net Parking Impacts = (-) 22 spaces**



# Build Option 2a: Roadway

Proposed Roadway Typical Section

SECTION A-A : PROPOSED ROADWAY US14A / US85

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 2a: Box Location

**ROW Impacts = 1.04 Acres**
**Total Cost = $65.3 M**
**Net Parking Impacts =(+) 26 spaces**

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 2b: Roadway

Proposed Roadway Typical Section



SECTION A-A : PROPOSED ROADWAY US14A / US85

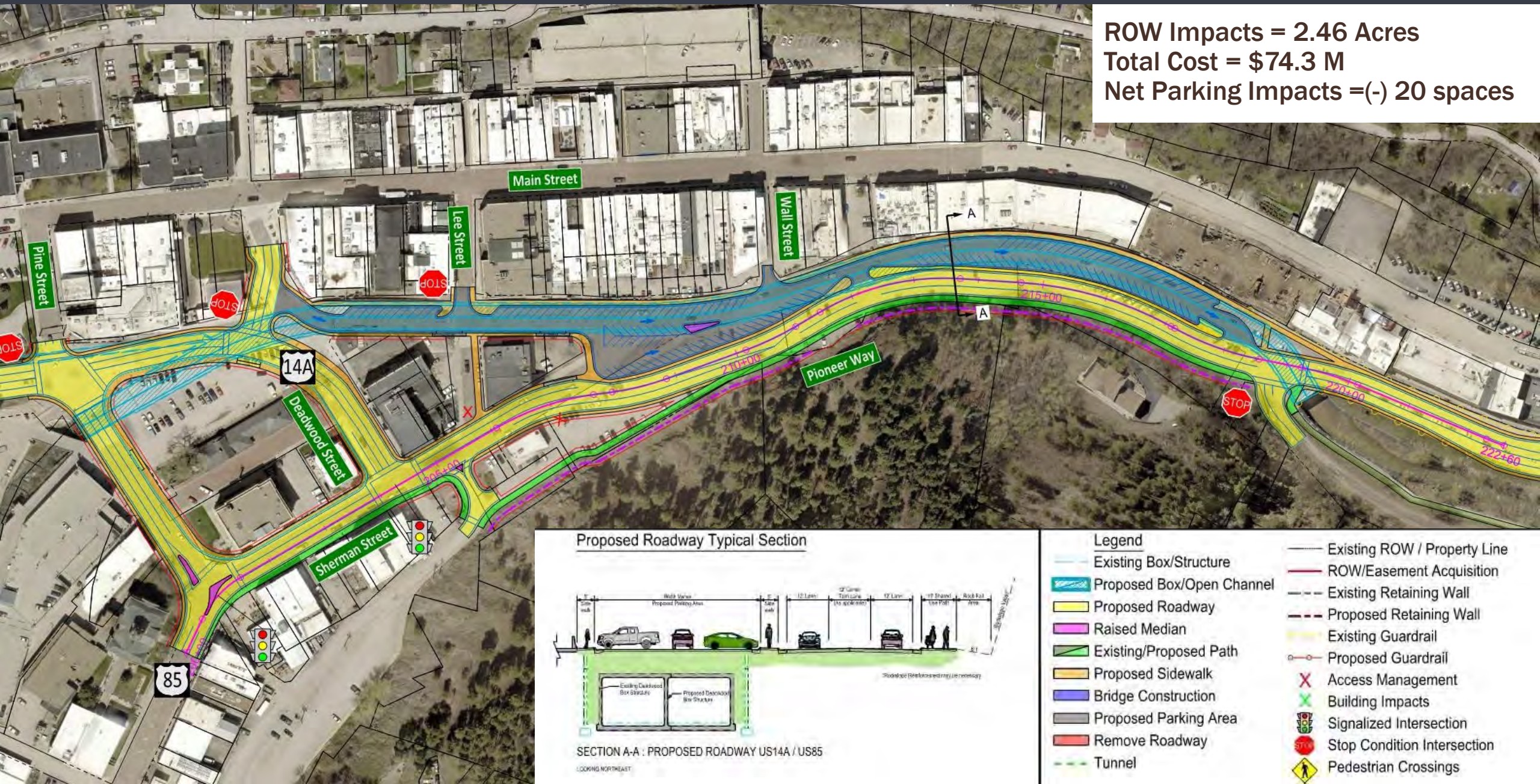
LOOKING NORTHEAST

Legend

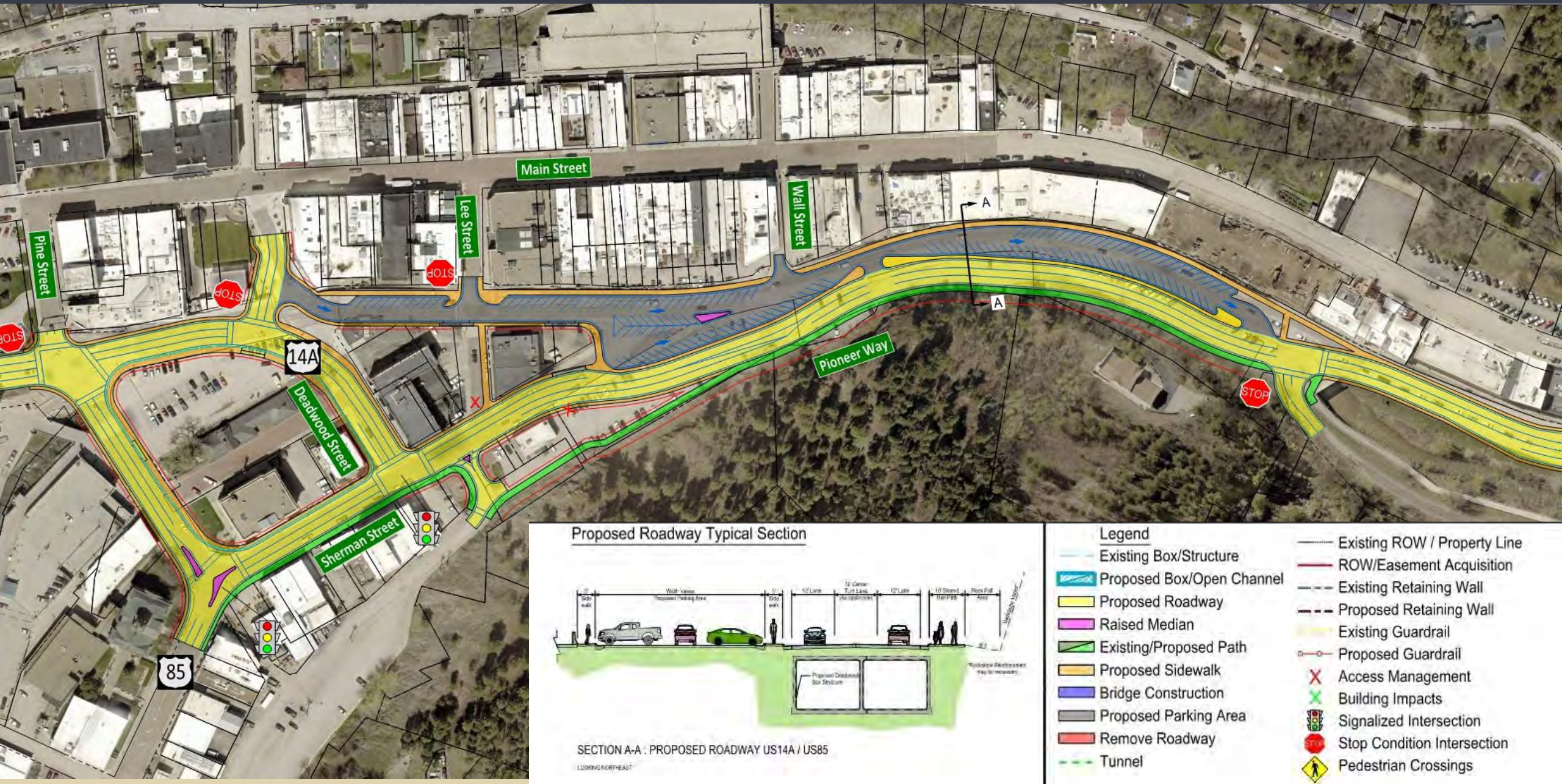
- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 2b: Box Location

**ROW Impacts = 2.46 Acres**
**Total Cost = $74.3 M**
**Net Parking Impacts =(-) 20 spaces**



# Build Option 2c: Roadway




Proposed Roadway Typical Section



SECTION A-A : PROPOSED ROADWAY US14A / US85

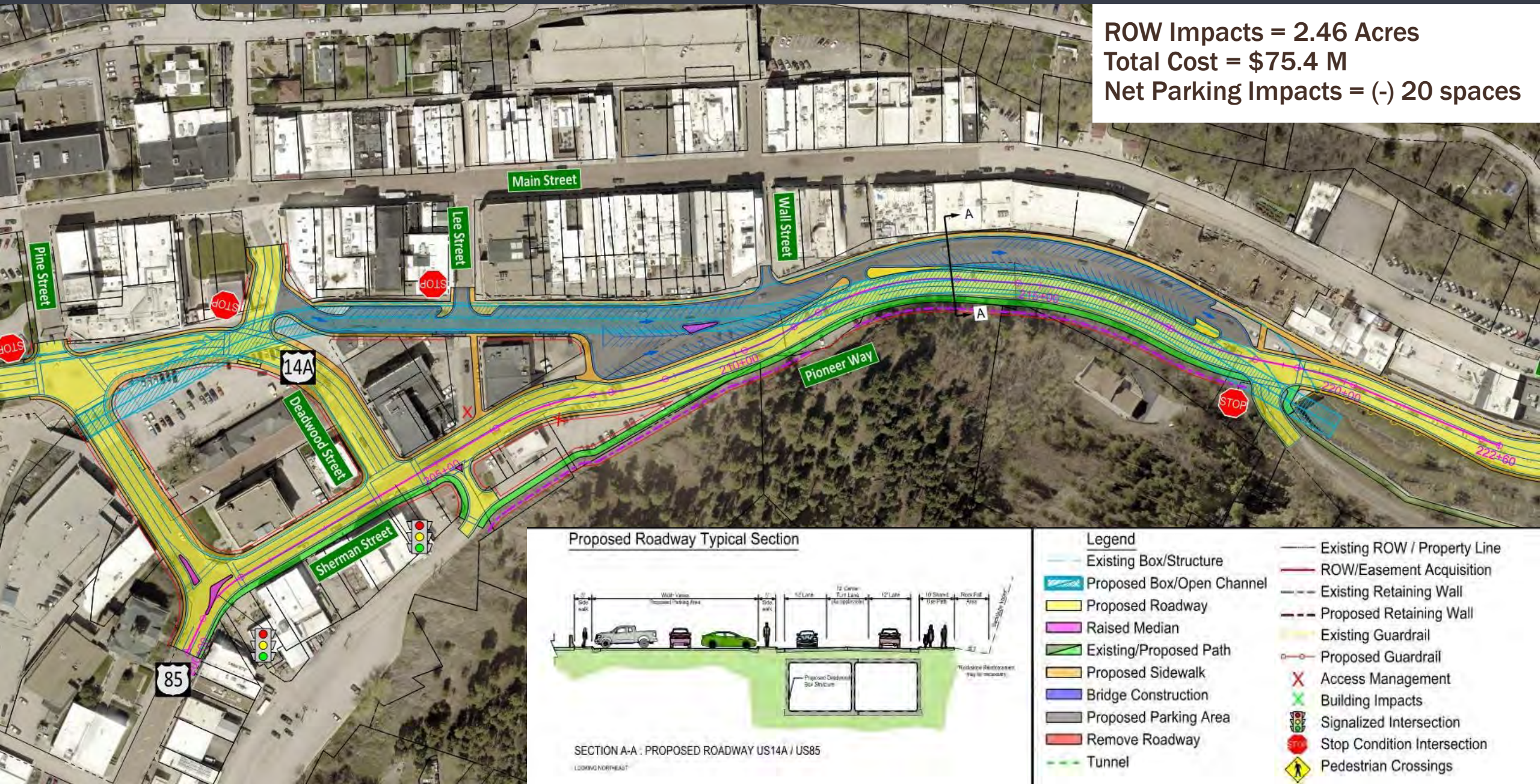
LOOKING NORTHEAST

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 2c: Box Location

**ROW Impacts = 2.46 Acres**
**Total Cost = $75.4 M**
**Net Parking Impacts = (-) 20 spaces**




Proposed Roadway Typical Section

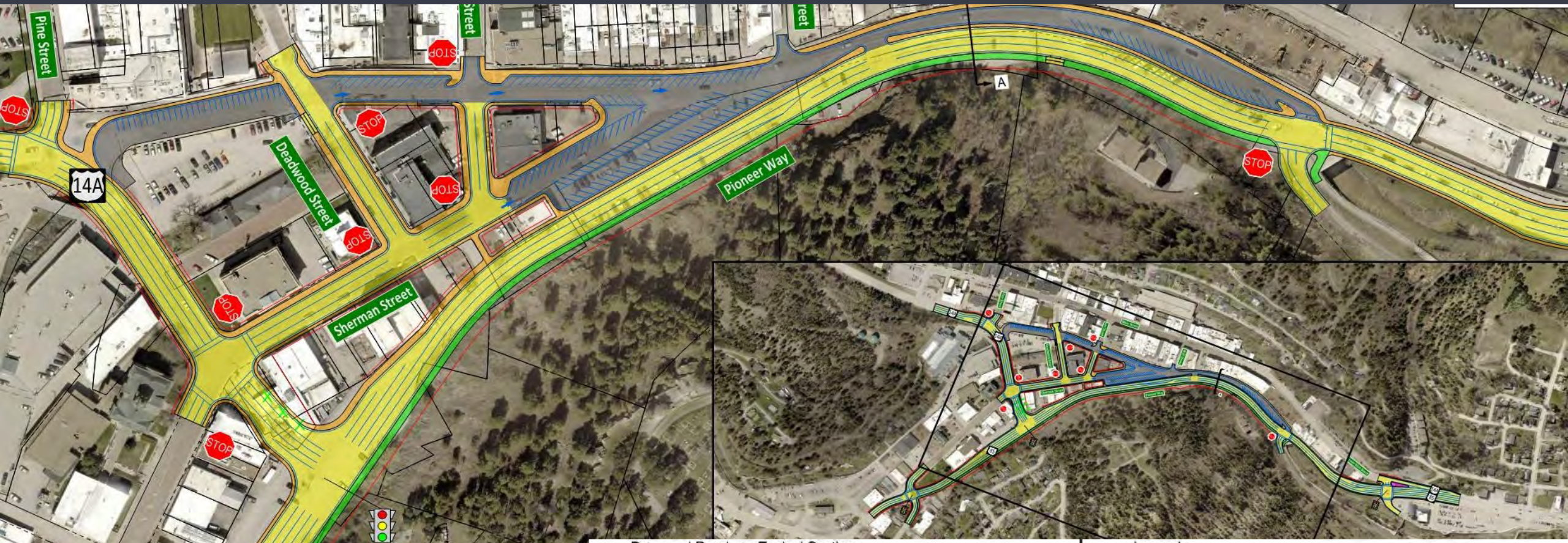


SECTION A-A : PROPOSED ROADWAY US14A / US85

Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 2d: Roadway

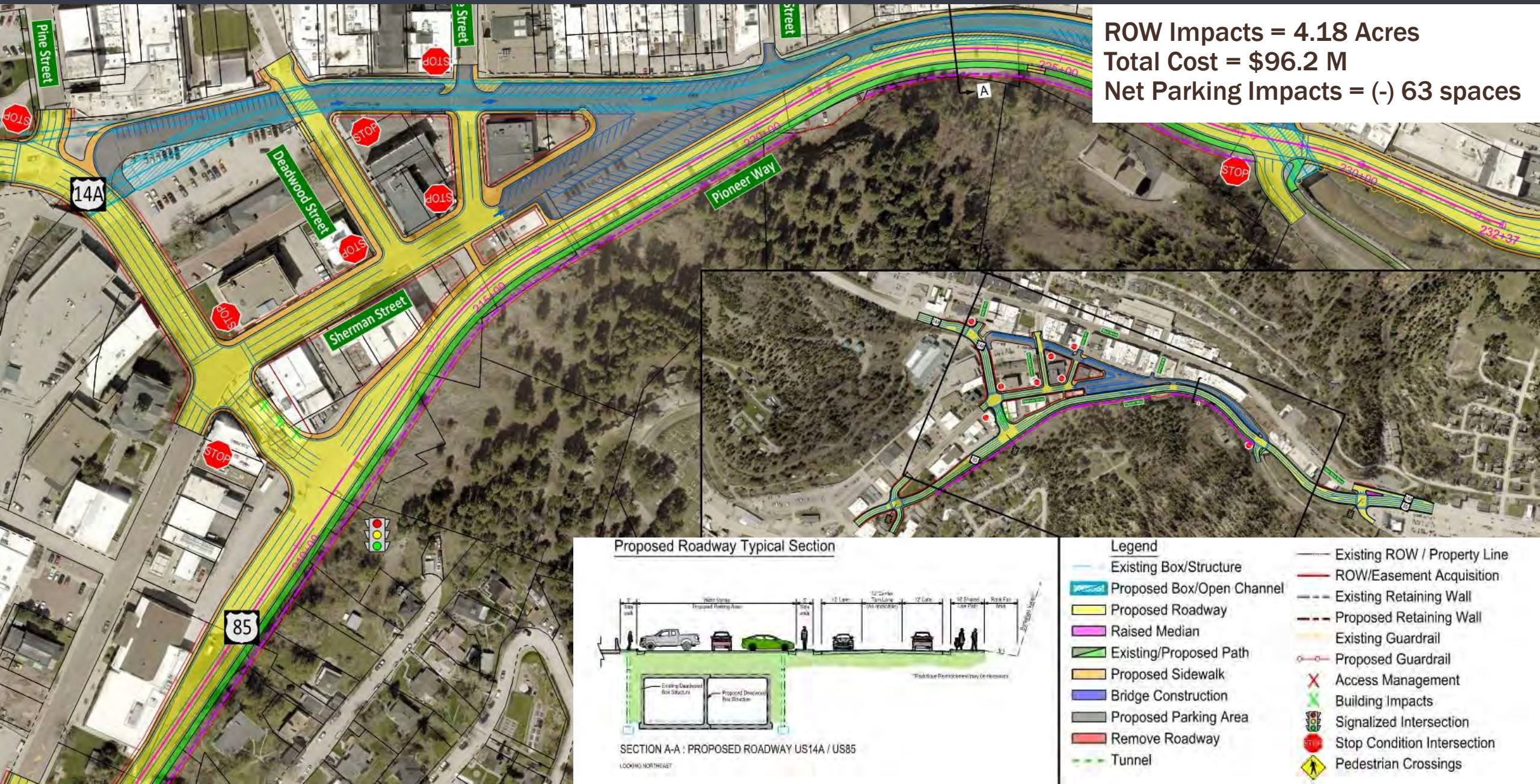


Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 2d: Box Location

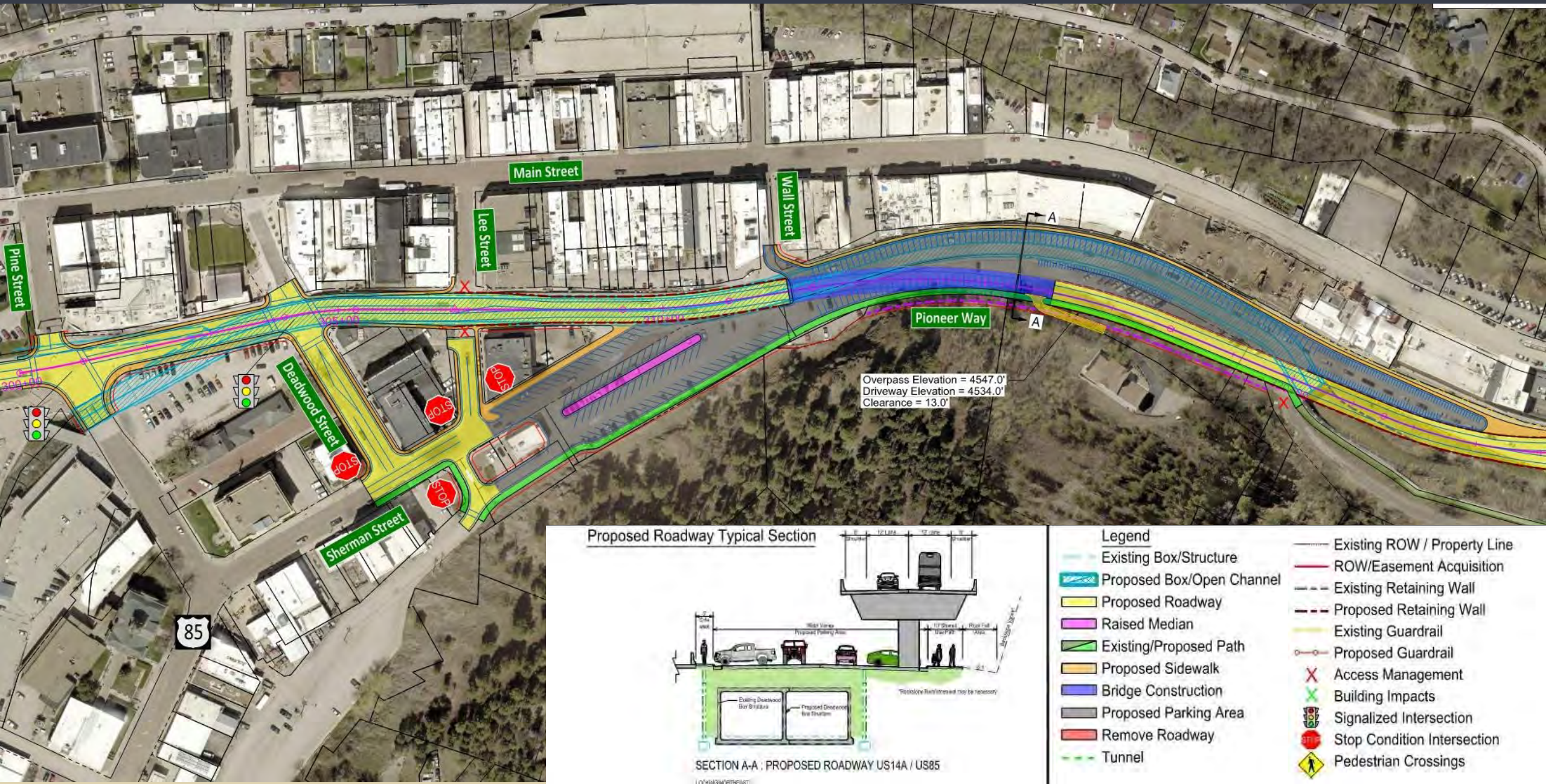
**ROW Impacts = 4.18 Acres**
**Total Cost = $96.2 M**
**Net Parking Impacts = (-) 63 spaces**



# Build Option 3a: Roadway

**ROW Impacts = 2.53 Acres**
**Total Cost = $78.8 M**
**Net Parking Impacts =(+) 14 spaces**

# Build Option 3a: Box Location




Proposed Roadway Typical Section

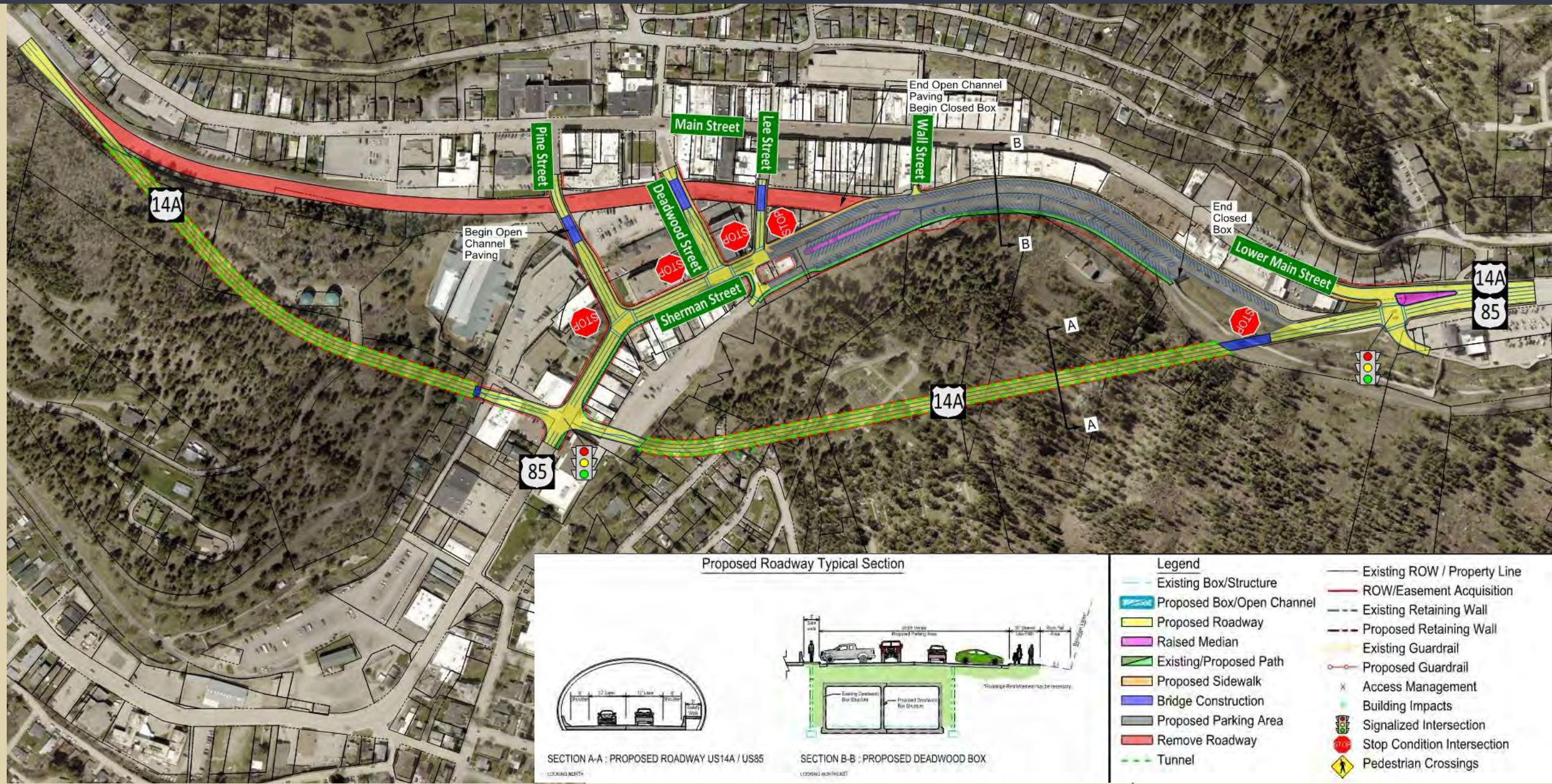


SECTION A-A ; PROPOSED ROADWAY US14A / US85

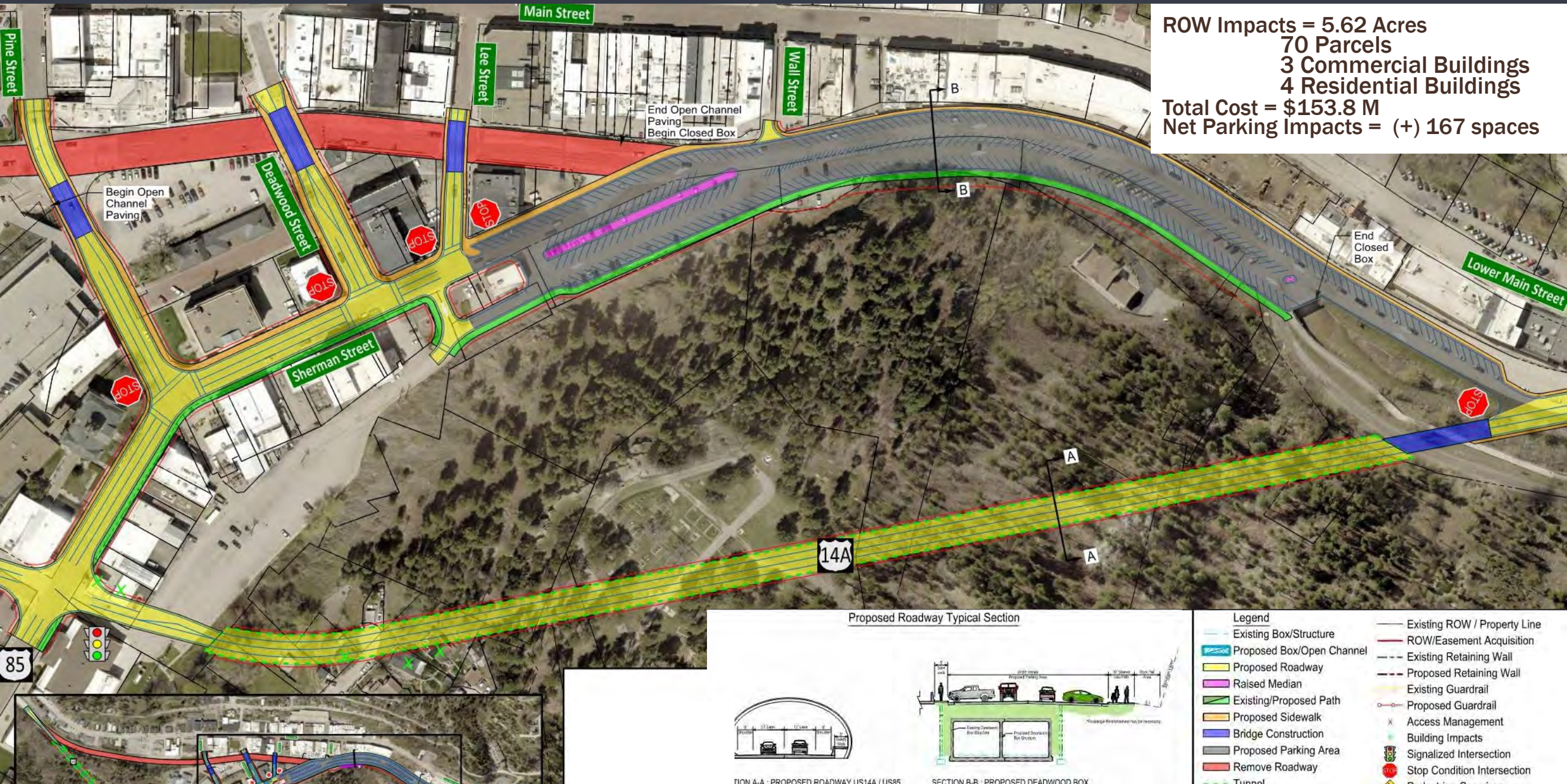
Legend

- Existing Box/Structure
- Proposed Box/Open Channel
- Proposed Roadway
- Raised Median
- Existing/Proposed Path
- Proposed Sidewalk
- Bridge Construction
- Proposed Parking Area
- Remove Roadway
- Tunnel
- Existing ROW / Property Line
- ROW/Easement Acquisition
- Existing Retaining Wall
- Proposed Retaining Wall
- Existing Guardrail
- Proposed Guardrail
- Access Management
- Building Impacts
- Signalized Intersection
- Stop Condition Intersection
- Pedestrian Crossings

# Build Option 4a: Roadway



# Build Option 4a: Box Location




ROW Impacts = 5.62 Acres
70 Parcels
3 Commercial Buildings
4 Residential Buildings
Total Cost = $153.8 M
Net Parking Impacts = (+) 167 spaces