Public Information Session #4

McCracken Road Reconstruction
(from Greenwood Street to Route 146)

Robert D. McNeil III, P.E.

Director of Public Works

Millbury, MA

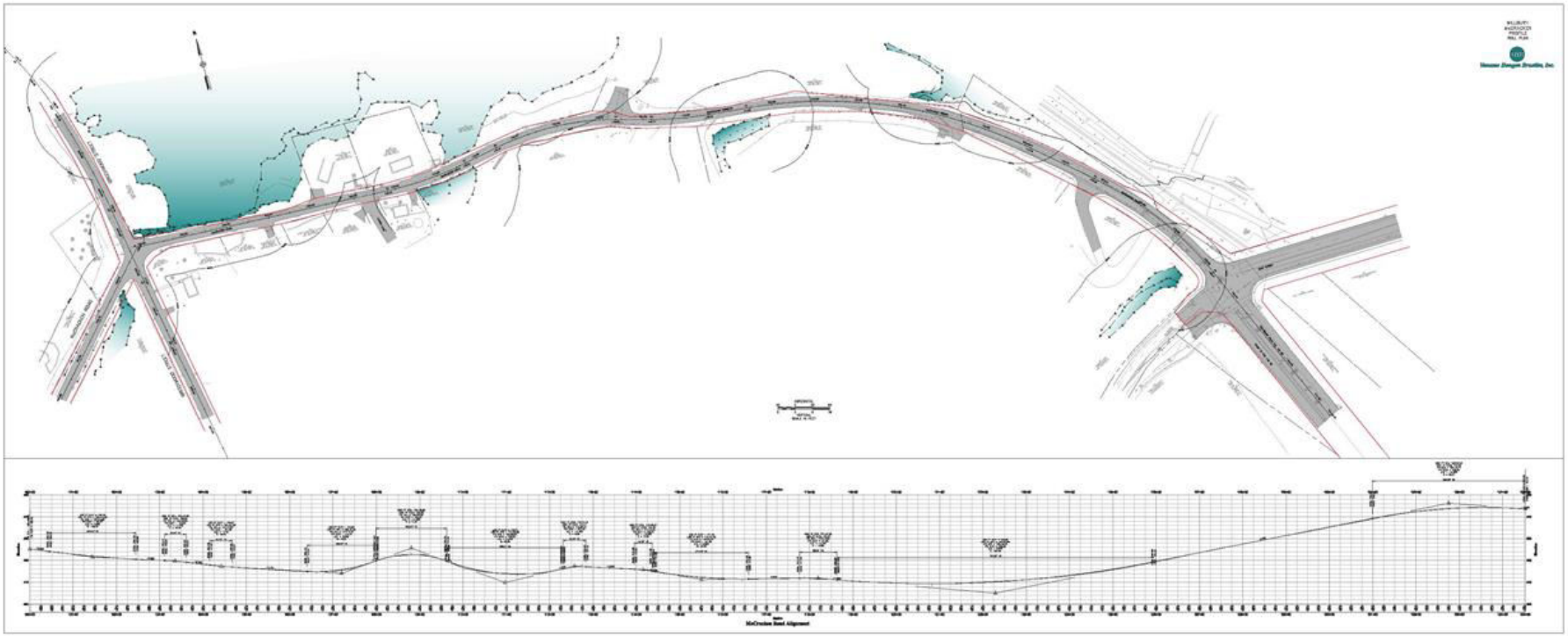
Presented: November 21, 2013 @ 6:00 PM (Millbury Town Hall)

Agenda

- Work Completed to Date
- Conceptual Design Review
  - Roadway Realignments
  - McCracken Road & Greenwood Street Intersection Alternatives
  - McCracken Road & Route 146 Intersection/Bridge Alternatives
- Next Steps

Project Limits

- Route 146 Interchange at the Mall to Greenwood Street bridge limits.



Design Efforts to Date

- Traffic Counts & Preliminary Analysis
- Pavement Testing & Design
- Bridge Survey
- Roadway & Intersection Alternatives
- Preliminary Bridge Layout Alternatives

Traffic Count Summary

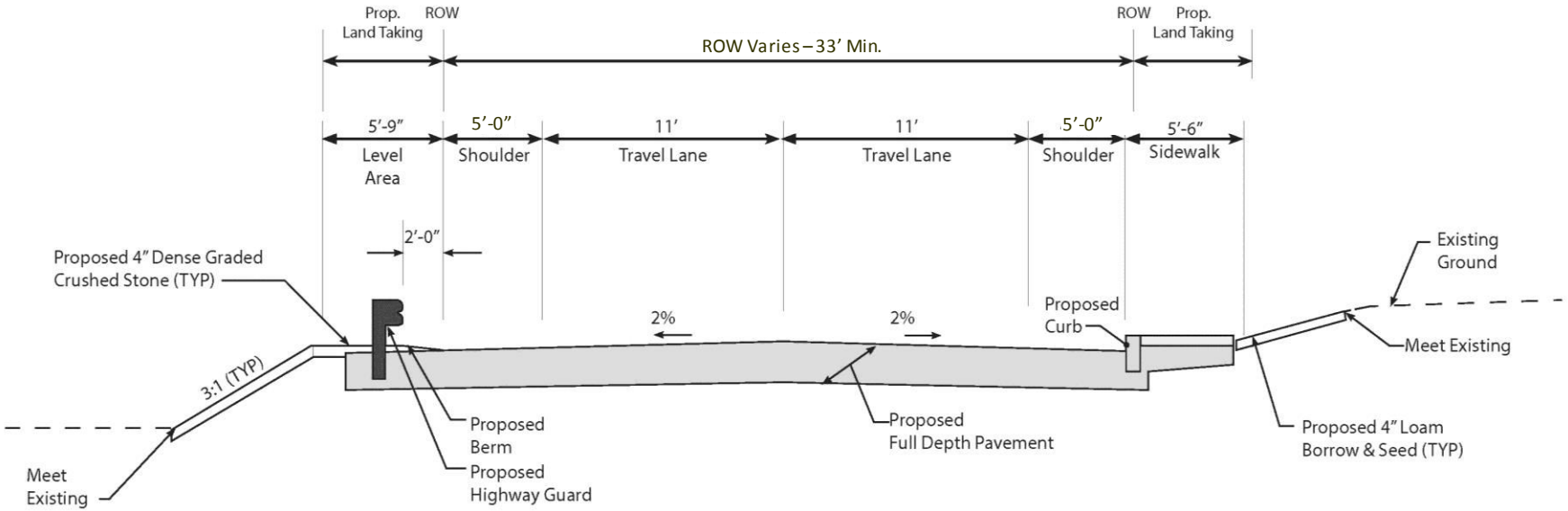
- Traffic Counts
  - Weekday ADT=7,600vpd (10/2013)
  - Friday ADT=10,700vpd (7/2013)
  - Saturday ADT=9,800vpd (7/2013)
  - Truck% ~ 1%
- Traffic Speeds (85th percentile)
  - McCracken Road = 34mph
  - Greenwood Street = 39mph

Pavement Testing & Analysis

- 11 Pavement Cores
- 5 Test Pits
  - 3” to 6” of Existing Pavement
- McCracken Road at Main Street
  - MicroMill 2” with 2” Pavement Overlay
- McCracken Road/Greenwood Street
  - Full Depth Pavement Reclaim
  - Roadway Realignment

Conceptual Design Review

- Typical Section



McCracken Road

Typical Section

Conceptual Design Review

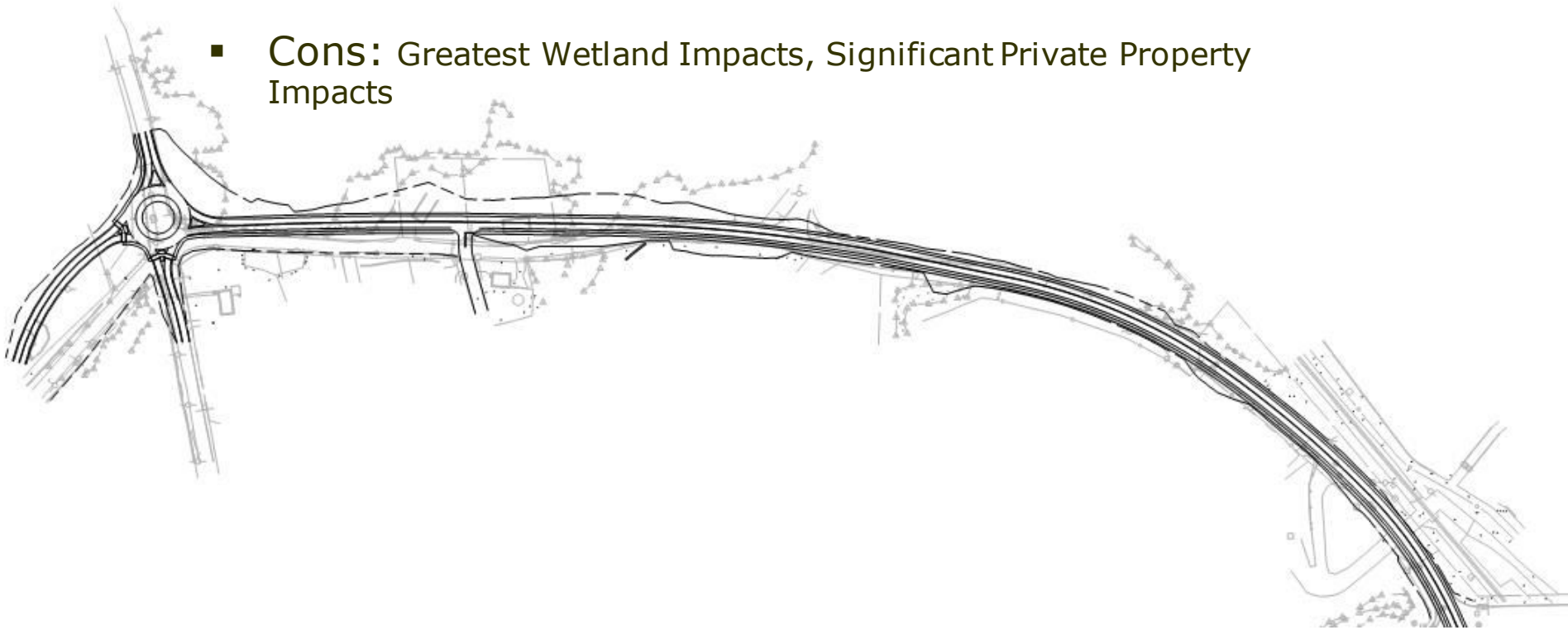
Roadway Realignment Alternatives

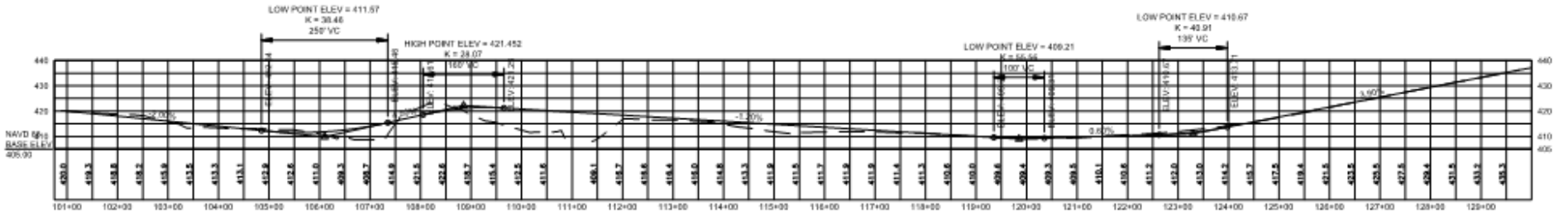
- North Alignment
- Central Alignment
- South Alignment

Conceptual Design Review

North Roadway Realignment

- Pros: Improved Sight Lines at Laura Lane, Most Vertical Flexibility
- Cons: Greatest Wetland Impacts, Significant Private Property Impacts

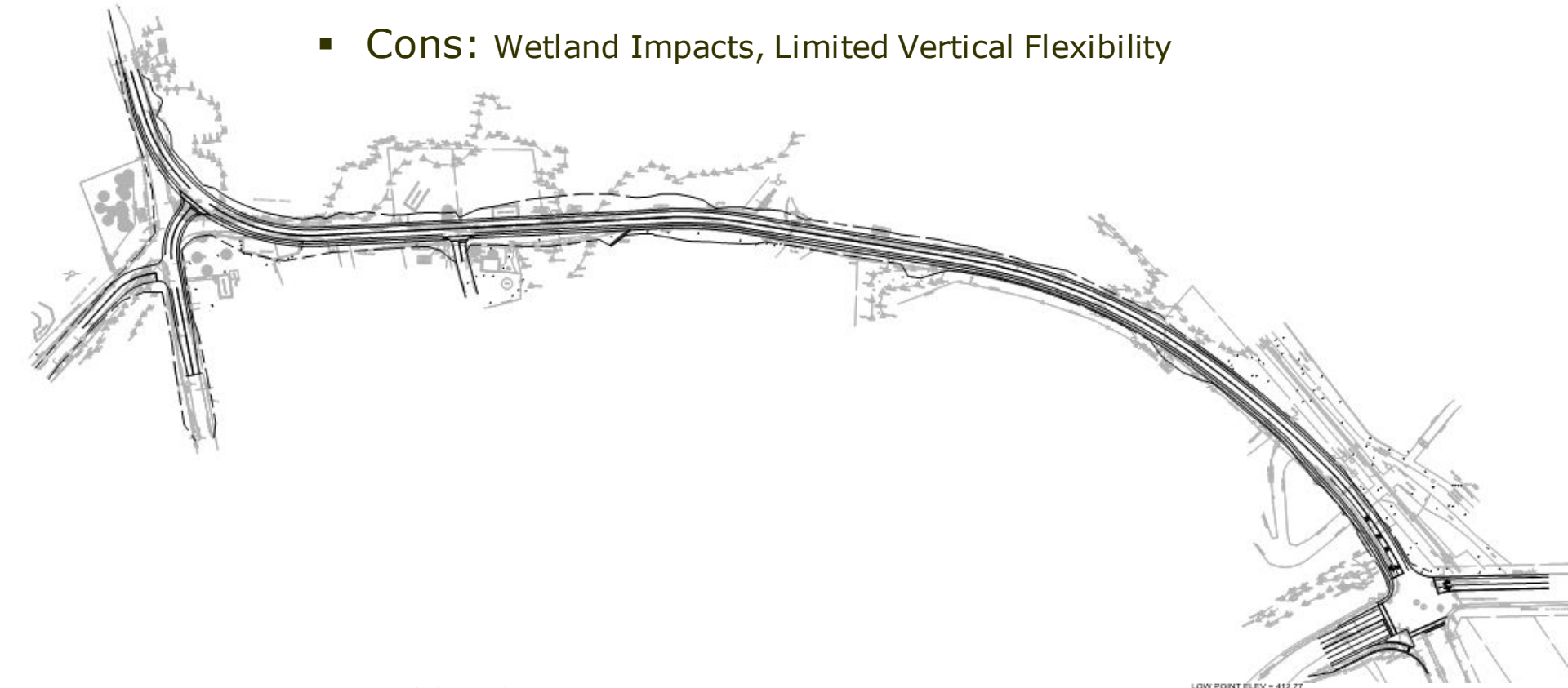


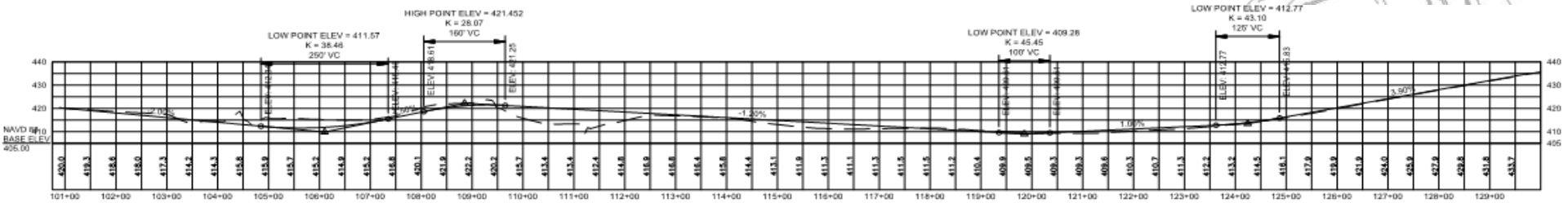


Conceptual Design Review

Central Roadway Realignment

- Pros: Improved Sight Lines at Laura Lane, Least ROW Impacts
- Cons: Wetland Impacts, Limited Vertical Flexibility

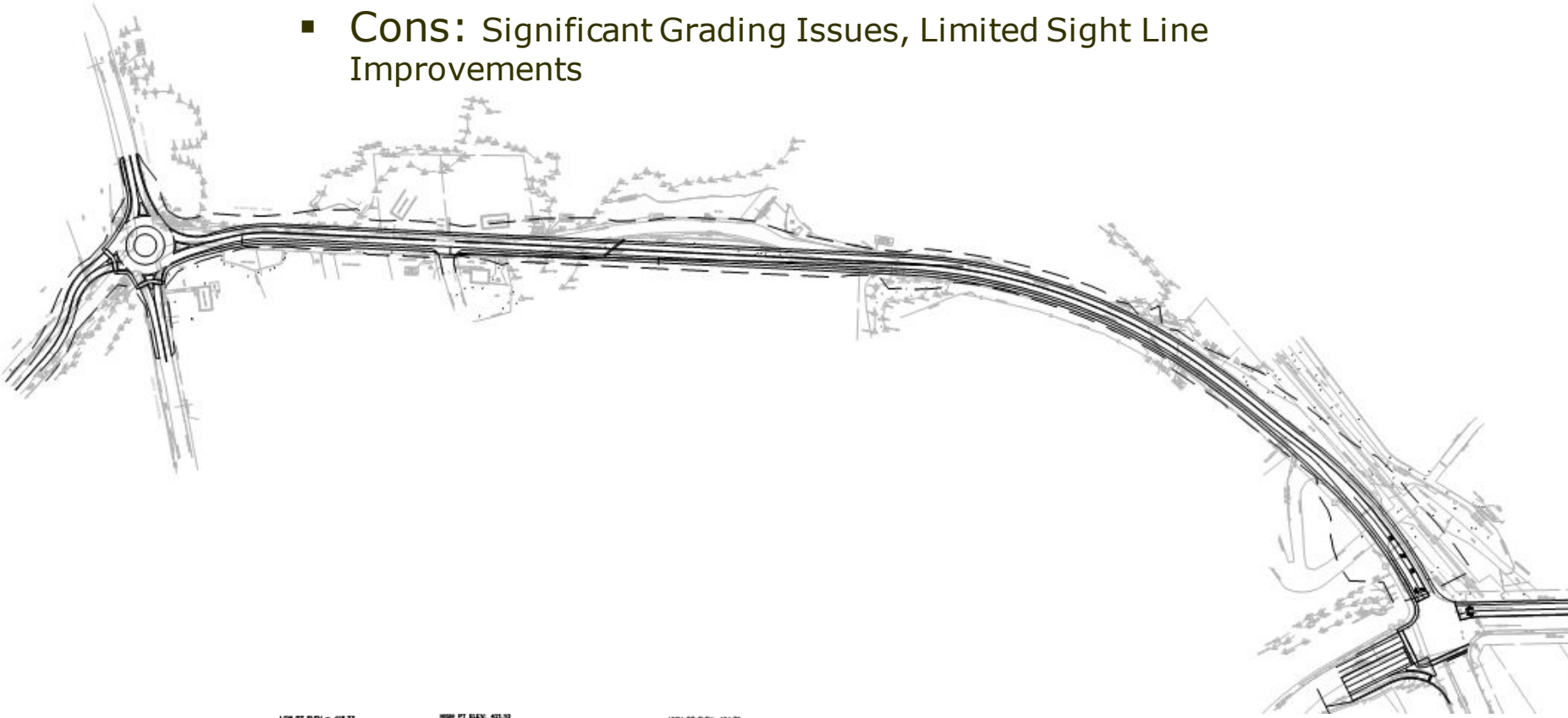


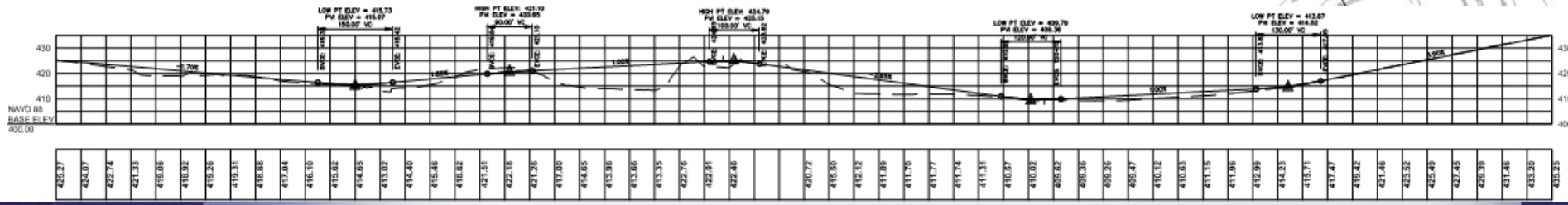


Conceptual Design Review

South Roadway Realignment

- Pros: Least Wetland Impacts
- Cons: Significant Grading Issues, Limited Sight Line Improvements





Laura Lane Sight Distance

INTERSECTION SIGHT DISTANCE ANALYSIS SUMMARY

Intersection	Looking	Existing Alignment		North Alignment		Central Alignment		South Alignment	
		Desired[a]	Measured	Desired	Measured	Desired	Measured	Desired	Measured
Laura Lane	Right	390′	> 350′	390	> 400′[c]	390′	560′	390′	> 400′[c]
	Left	390′	< 20′	390	520′[b]	390′	520′[b]	390′	390′

Source: Based on guidelines established in A Policy on the Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO) 2004.

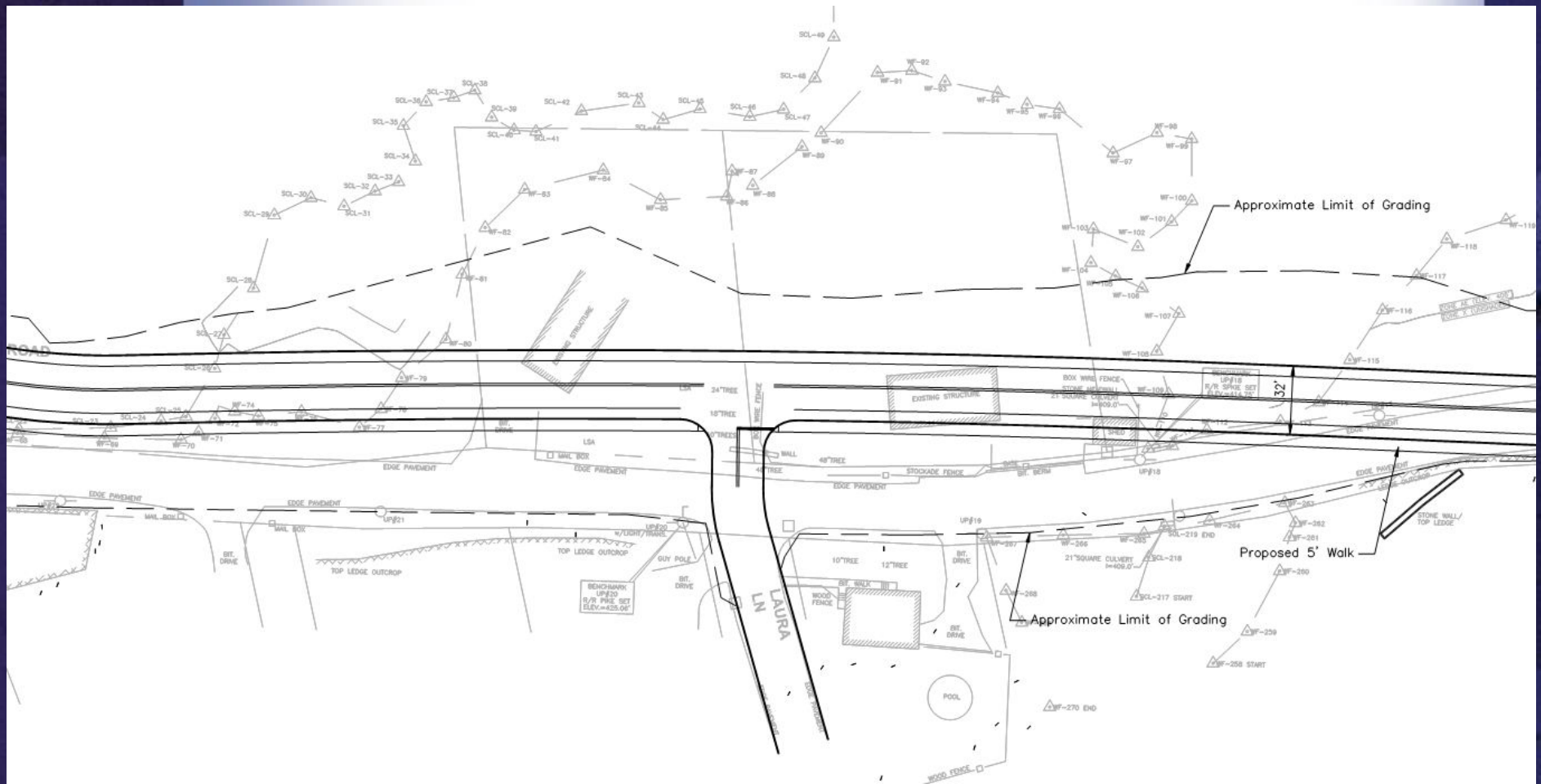
Note: Sight lines were measured using AutoCAD, thus all values are approximate. Sight lines assume a sidewalk will be constructed on the south side of McCracken Road, and that said sidewalk will be free of vegetation and other sight obstructions.

a Calculated sight distance based on recorded 85th percentile speeds on McCracken Road east of Greenwood Street

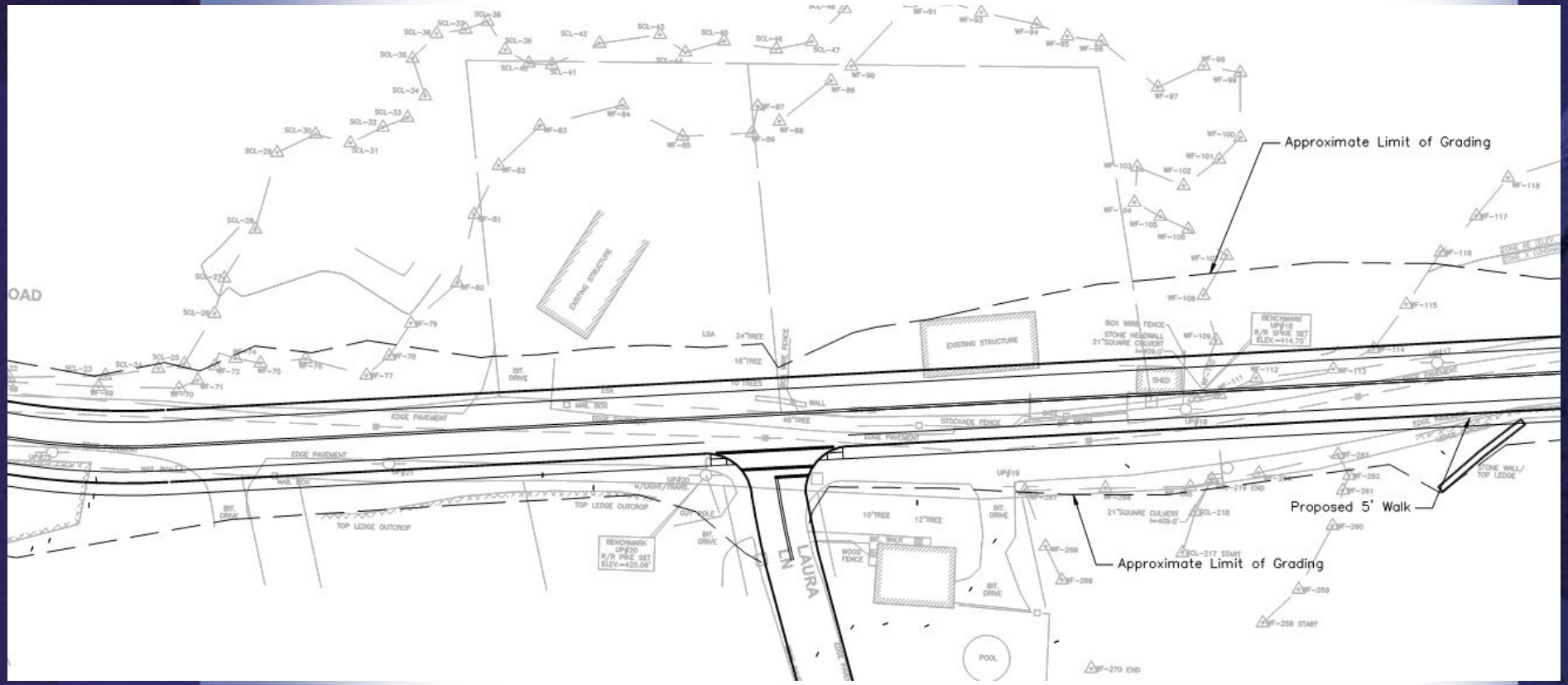
b Clear sight lines are provided to the intersection of McCracken Road and Greenwood Street

c Sight lines are restricted by vertical curvature of the roadway.

Laura Lane – North Realignment



Laura Lane – Central Realignment



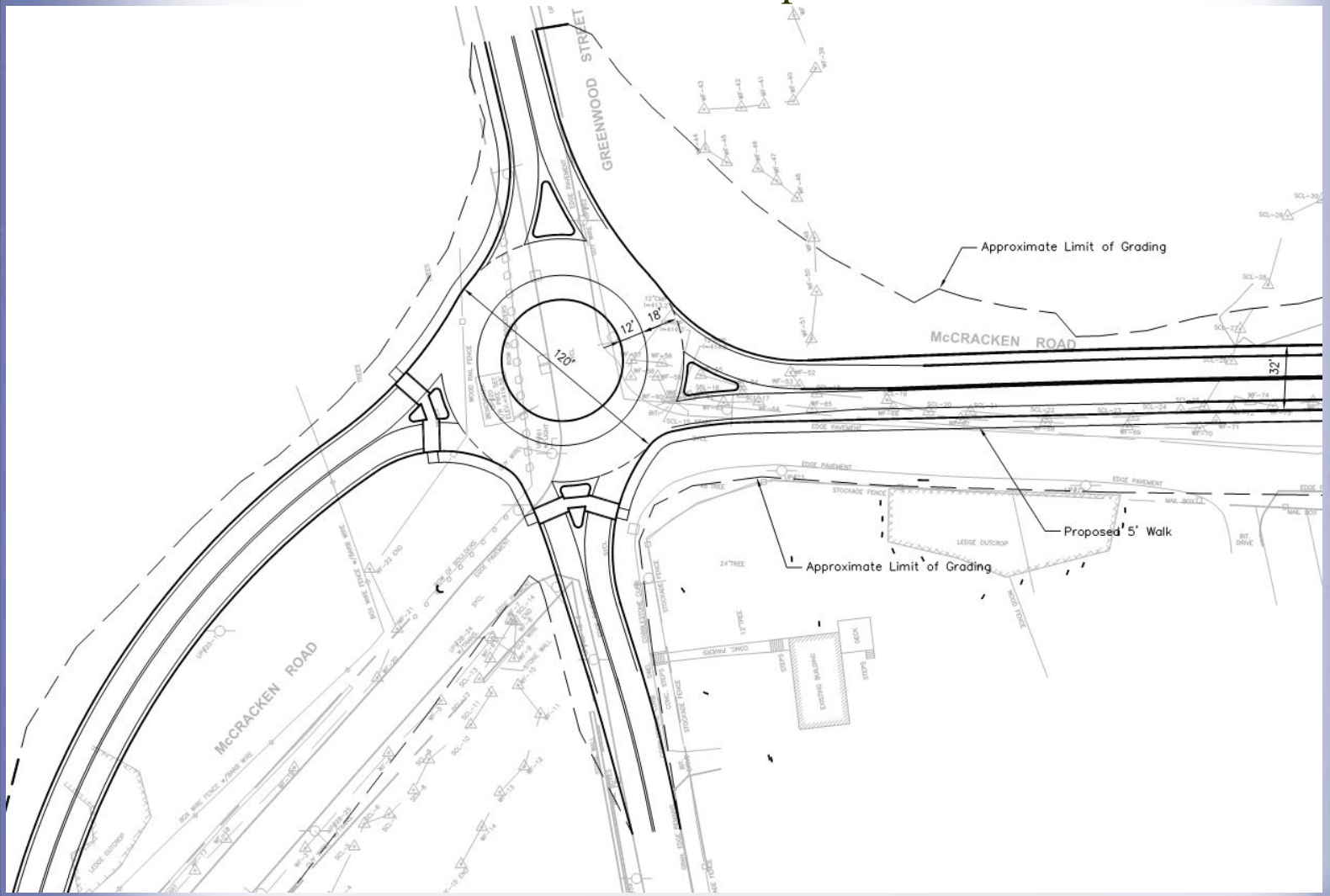
Laura Lane – South Realignment

McCracken Road at Greenwood Street

- Alternatives
  - 4-Leg Roundabout (North)
  - 4-Leg Roundabout (South)
  - T-Intersection (Stop Sign)
  - 3-Leg Roundabout

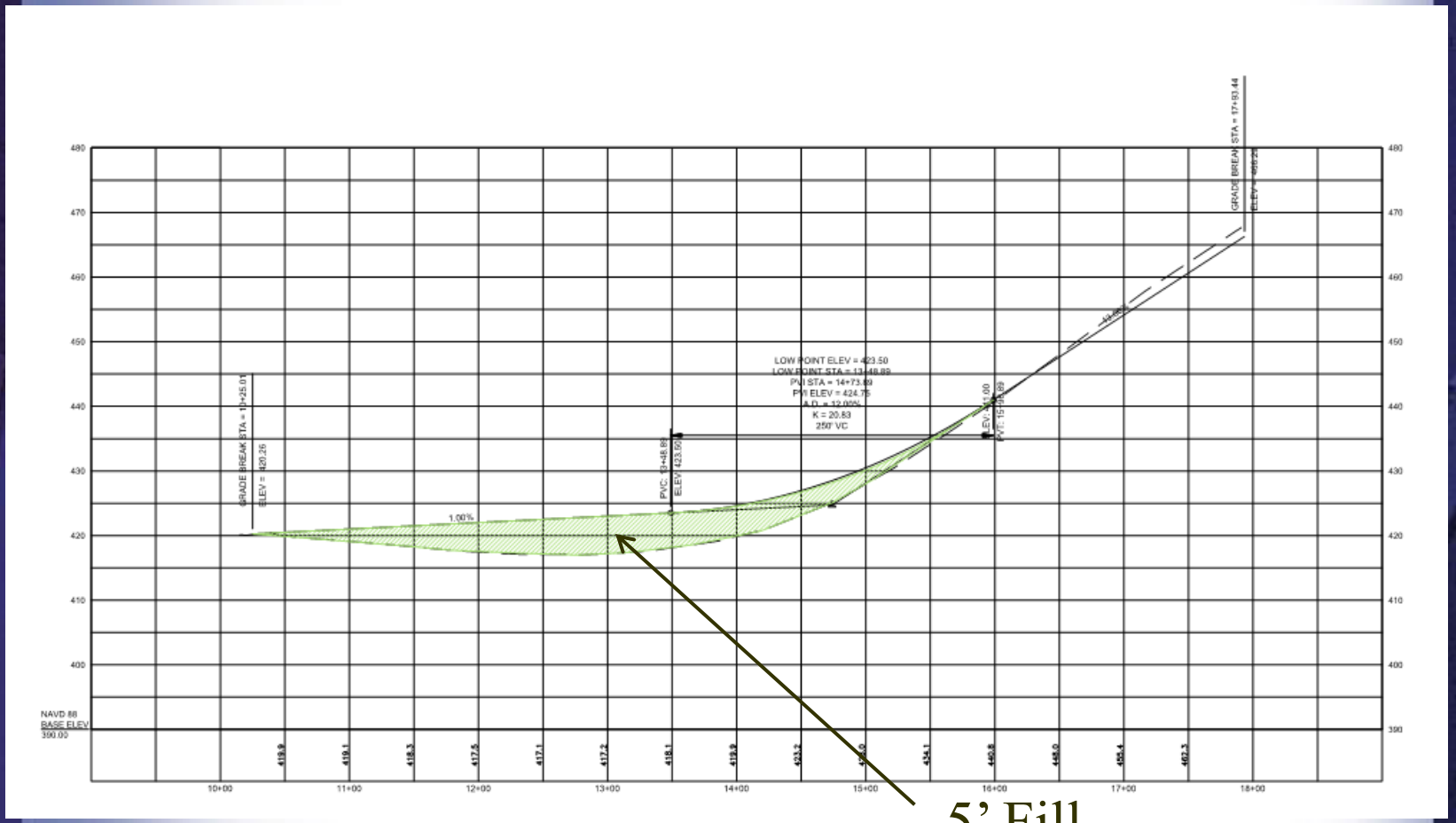
North Roundabout

- Pros: Potential to reduce grade on Greenwood
- Cons: Greatest wetland impacts



North Roundabout

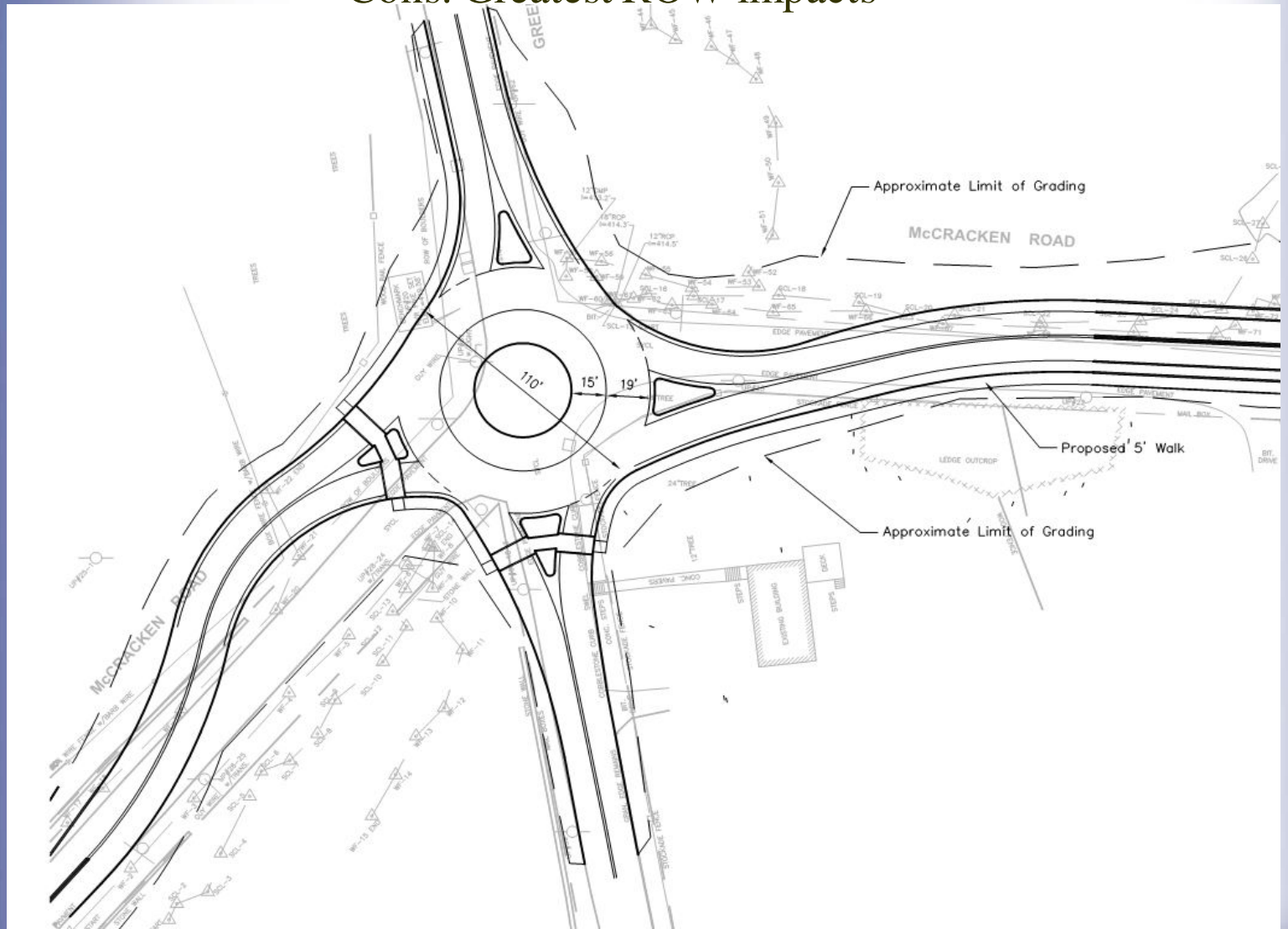
Greenwood Profile



5' Fill

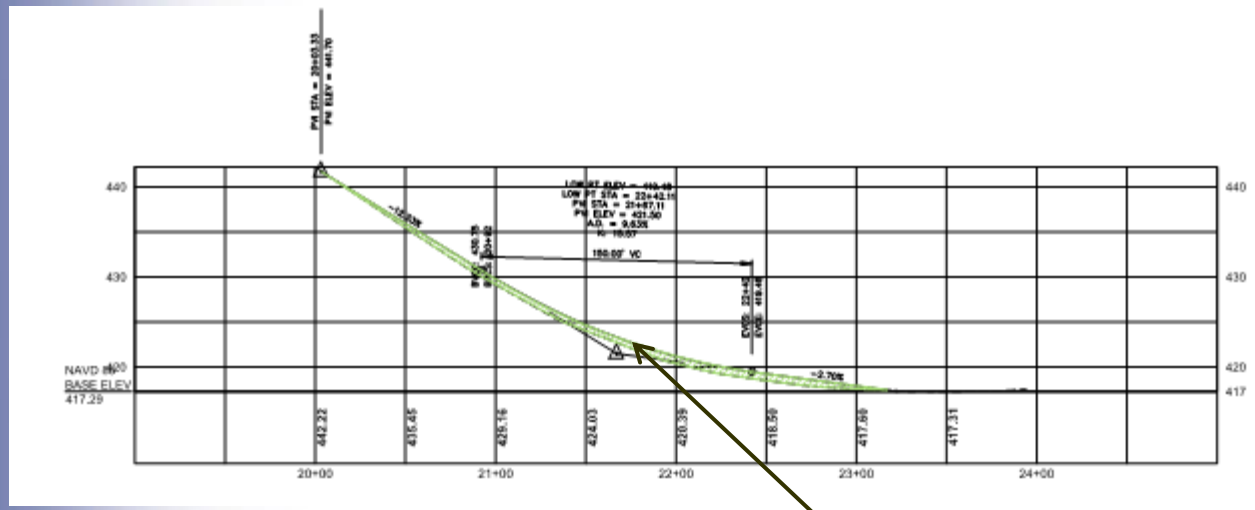
South Roundabout

- Pros: Better Utilizes existing roadway
- Cons: Greatest ROW impacts



South Roundabout

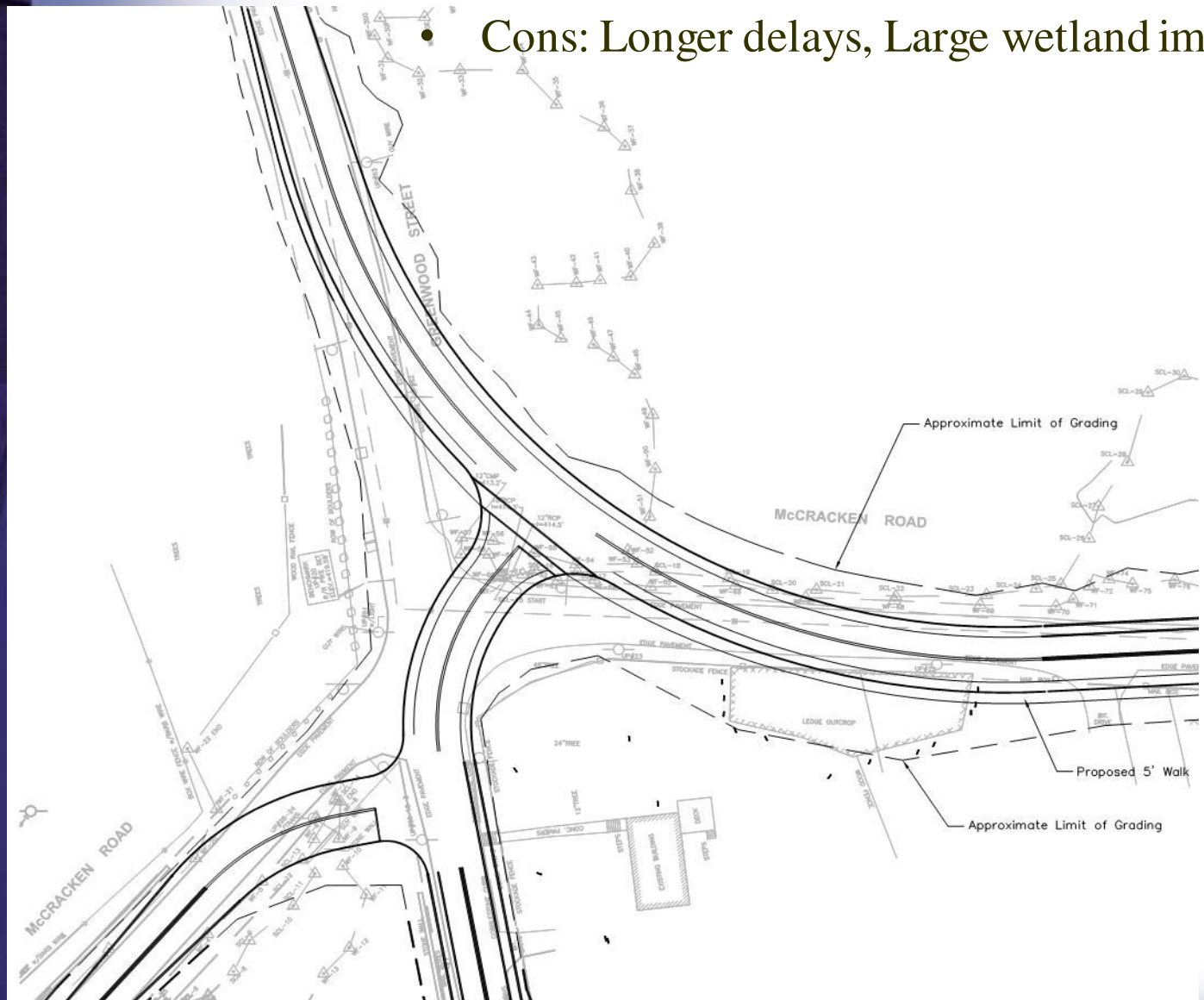
Greenwood Profile



1’ Fill

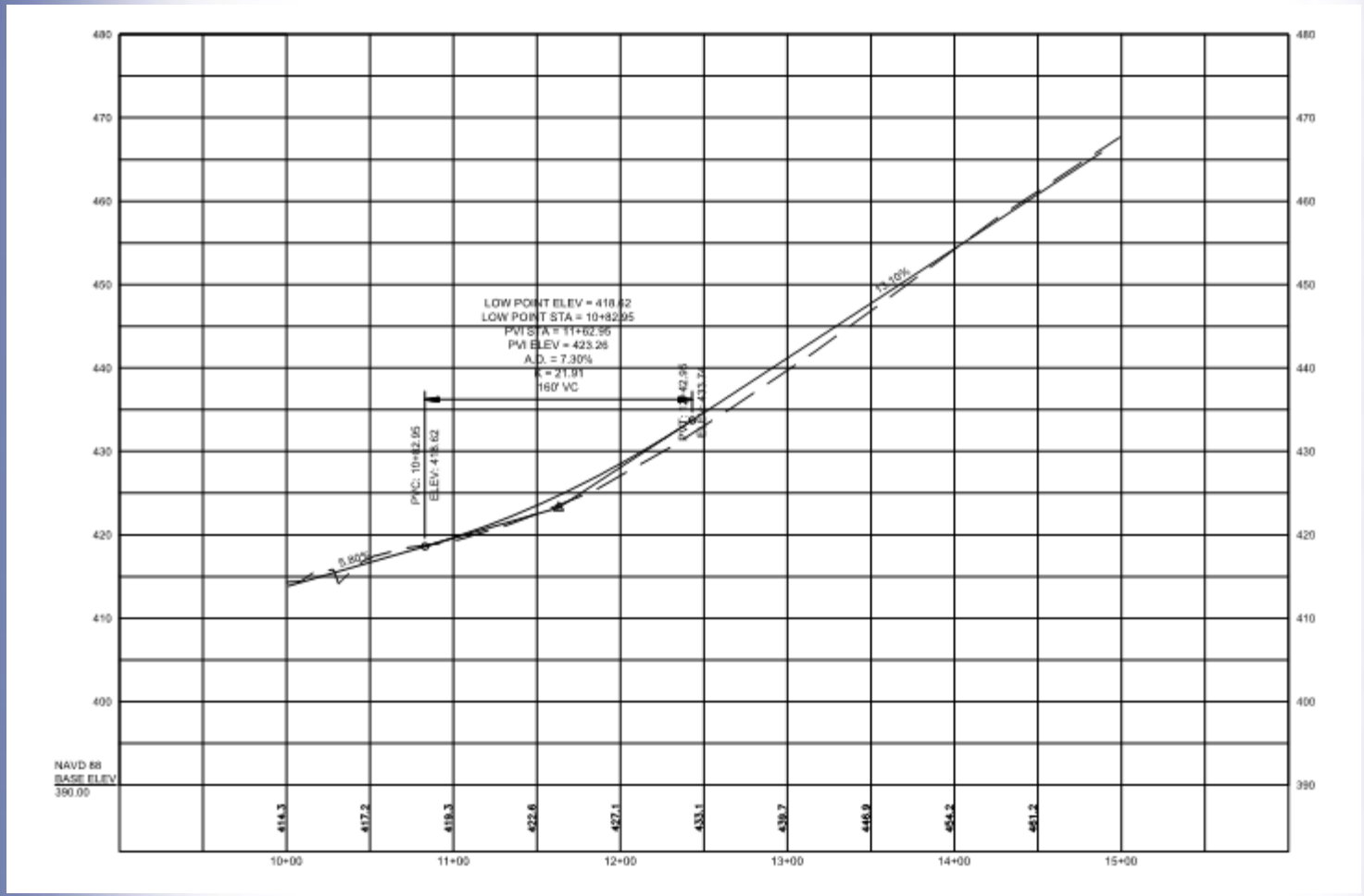
Unsignalized Intersection

- Pros: Better defines main traffic movement
- Cons: Longer delays, Large wetland impacts



Unsignalized Intersection

Greenwood Profile

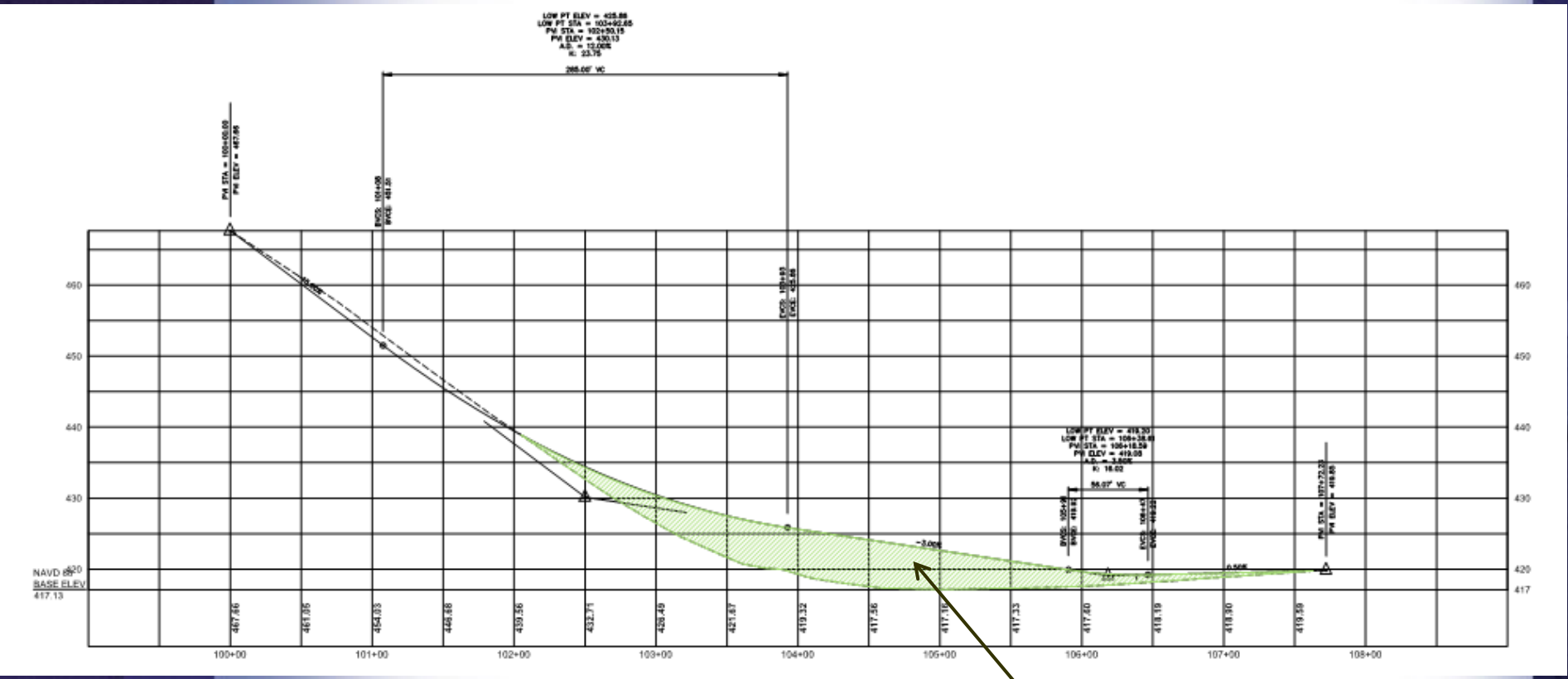


3-Leg Roundabout

- Pros: Least ROW impacts
- Cons: Leaves McCracken Road EB under stop control

3-Leg Roundabout

Greenwood Profile



7’ Fill

Conceptual Bridge Design

Bridge Alternatives

1. Widening to the East
2. Widening to the West
3. Max build Widening to the West
4. Max Build Central Alignment

Conceptual Bridge Design

Existing Conditions

- Original Design
  - 32’ wide roadway
  - 2 – 12’ lanes
  - 2 – 4’ shoulders
- Post Mall Construction – Traffic Congestion Mitigation
  - 3 – 10’ lanes
  - 2 – 1’ shoulders
- Minimum Vertical Clearance
  - 15’-10”

Conceptual Bridge Design

Proposed Conditions

- Complete Streets Design
  - 42’ wide roadway
  - 2 – 11’ lanes
  - 1 – 10’ turn lane
  - 2 – 5’ shoulders (bike lanes)
  - 1’ – 6 sidewalk
- Max Build Design
  - 52’ wide roadway
  - 2 – 11’ lanes
  - 2 – 10’ turn lane
  - 2 – 5’ shoulders (bike lanes)
  - 1’ – 6 sidewalk

Conceptual Bridge Design

Bridge Alternatives

- Widening to the East
- Widening to the West
- Max Build Widening to the West
- Max Build Central Alignment

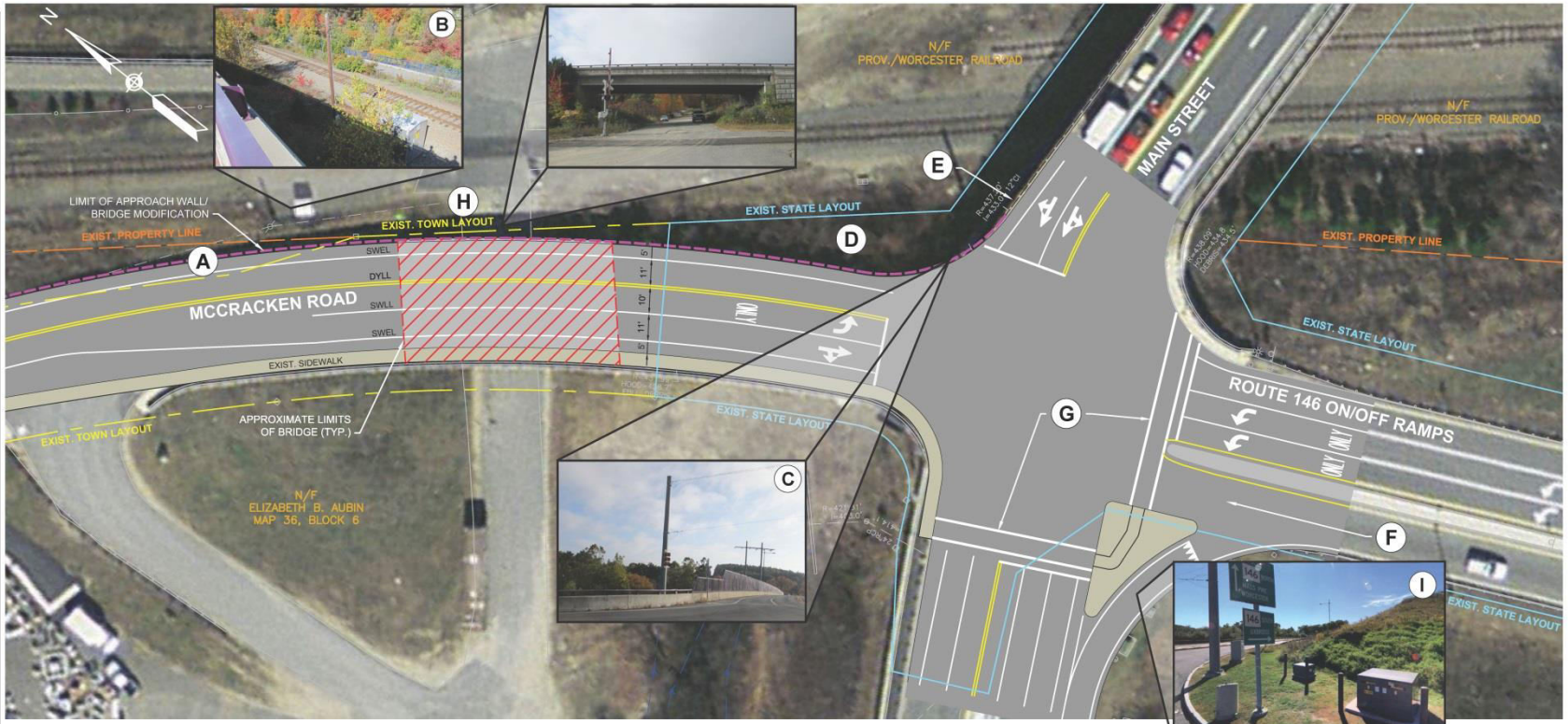
Conceptual Bridge Design

Considerations

- Existing Structures / Obstructions
- Right of Way Impacts
- Wetland Impacts
- Vertical Clearance Restrictions
- Construction Work Areas
- Lane Restrictions and Closures

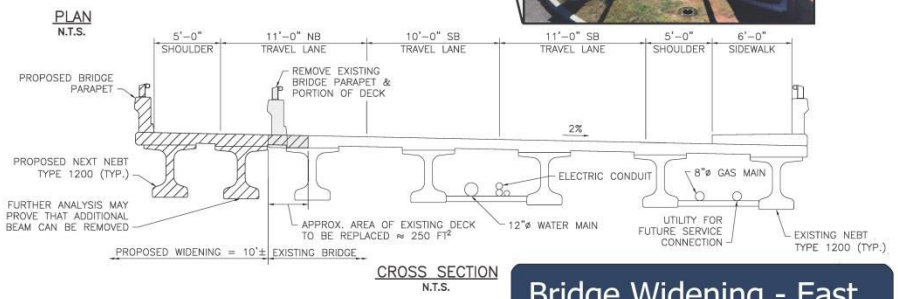
Bridge Alternatives

- Widening to the East



POTENTIAL IMPACTS

- (A) POTENTIAL LAYOUT ALTERATION NORTHEAST OF McCRACKEN ROAD BRIDGE
- (B) MAY NEED TO REMOVE AND RESET SHED AND UTILITY POLE NORTHEAST OF McCRACKEN ROAD BRIDGE
- (C) REMOVE AND RESET SPAN WIRE POLE – DIFFICULT TO RESET/INSTALL
- (D) RESTRICTED CONSTRUCTION LAYDOWN AREA WITHIN STATE AND TOWN LAYOUTS
- (E) POTENTIAL SUBSTRUCTURE MODIFICATION OF ADJACENT BRIDGE ON MAIN STREET OVER THE RAILROAD
- (F) LANE ALIGNMENT PROBLEMATIC AT ADJACENT INTERSECTION
- (G) RECONFIGURE CROSSWALKS AT ADJACENT INTERSECTION
- (H) TEMPORARY CONSTRUCTION EASEMENTS TO WIDEN THE BRIDGE AND CONSTRUCT THE APPROACH RETAINING WALLS
- (I) REMOVE AND RELOCATE ALL SIGNAL EQUIPMENT WITHIN PROPOSED RIGHT TURN LANE AREA



Bridge Widening - East

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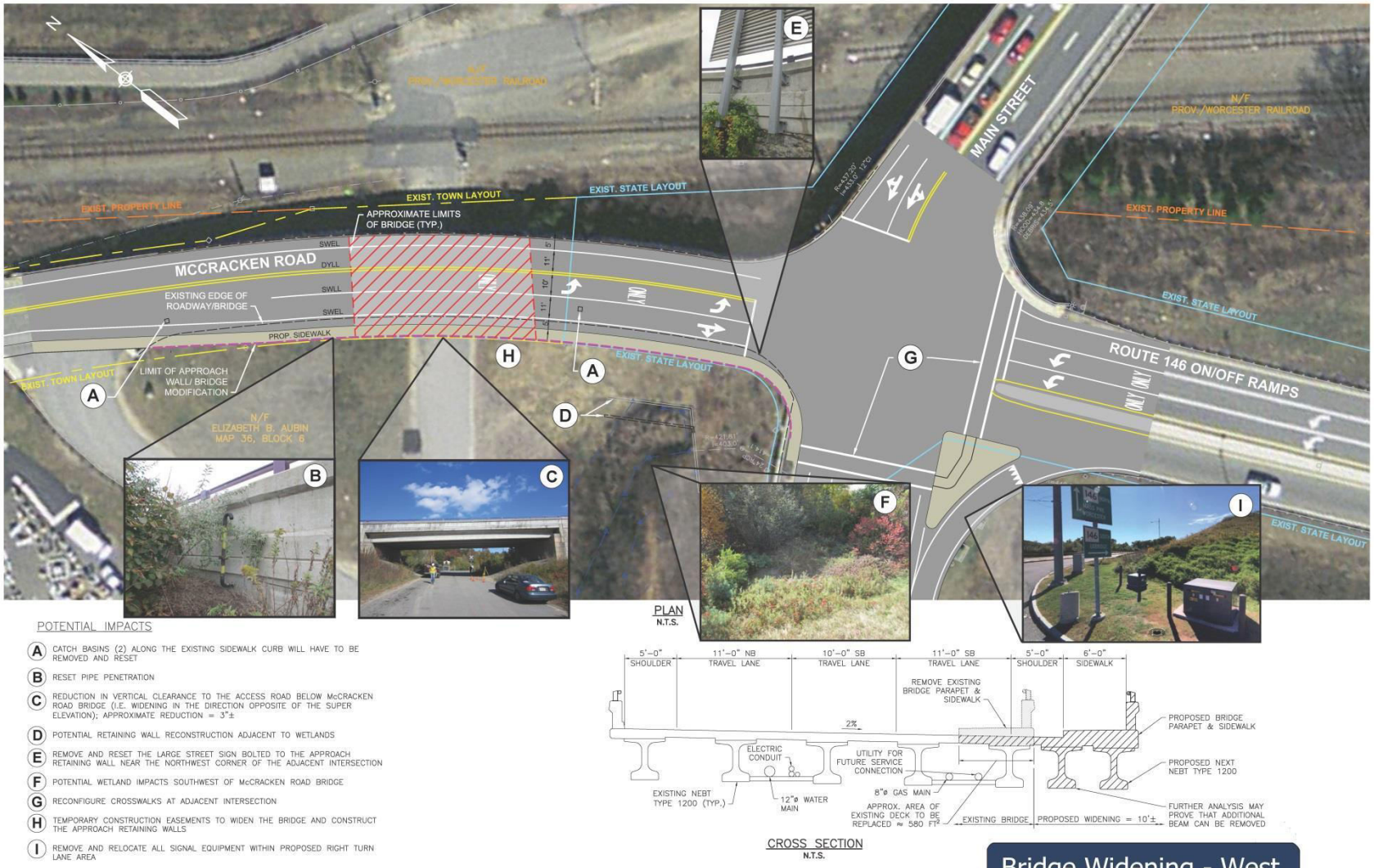
Millbury, Massachusetts
November 21, 2013

Bridge Alternatives

- Widening to the West



POTENTIAL IMPACTS

- (A) CATCH BASINS (2) ALONG THE EXISTING SIDEWALK CURB WILL HAVE TO BE REMOVED AND RESET
- (B) RESET PIPE PENETRATION
- (C) REDUCTION IN VERTICAL CLEARANCE TO THE ACCESS ROAD BELOW McCRACKEN ROAD BRIDGE (I.E. WIDENING IN THE DIRECTION OPPOSITE OF THE SUPER ELEVATION); APPROXIMATE REDUCTION ≈ 3"±
- (D) POTENTIAL RETAINING WALL RECONSTRUCTION ADJACENT TO WETLANDS
- (E) REMOVE AND RESET THE LARGE STREET SIGN BOLTED TO THE APPROACH RETAINING WALL NEAR THE NORTHWEST CORNER OF THE ADJACENT INTERSECTION
- (F) POTENTIAL WETLAND IMPACTS SOUTHWEST OF McCRACKEN ROAD BRIDGE
- (G) RECONFIGURE CROSSWALKS AT ADJACENT INTERSECTION
- (H) TEMPORARY CONSTRUCTION EASEMENTS TO WIDEN THE BRIDGE AND CONSTRUCT THE APPROACH RETAINING WALLS
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PLAN
N.T.S.

CROSS SECTION
N.T.S.

Bridge Widening - West

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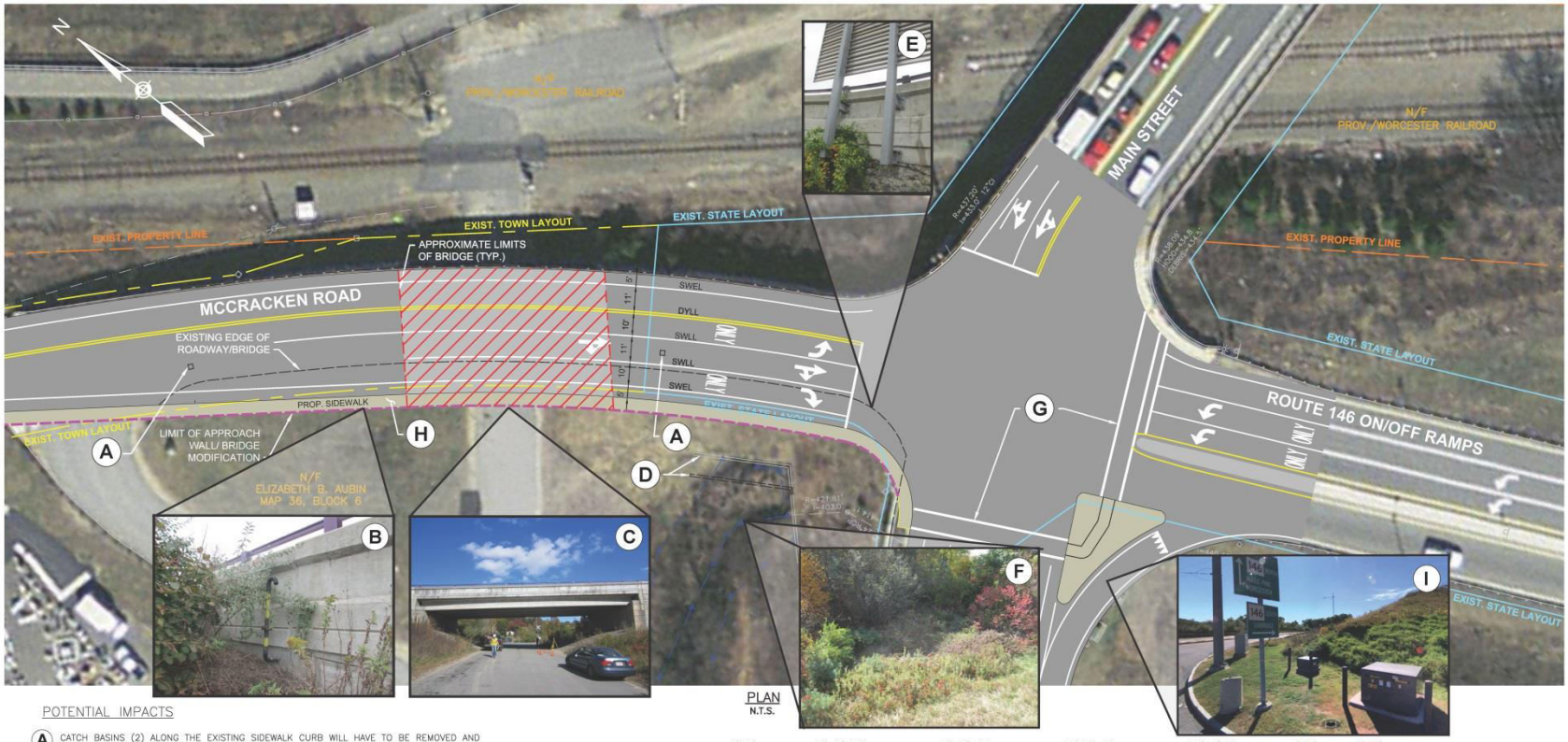
Bridge Alternatives

- Max Build Widening to the West



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PLAN
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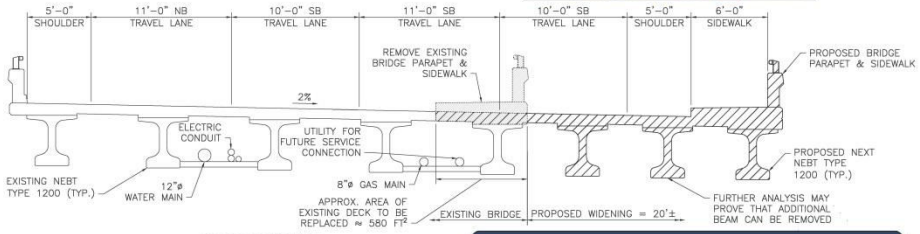

CROSS SECTION
N.T.S.

Bridge Widening - Max Build

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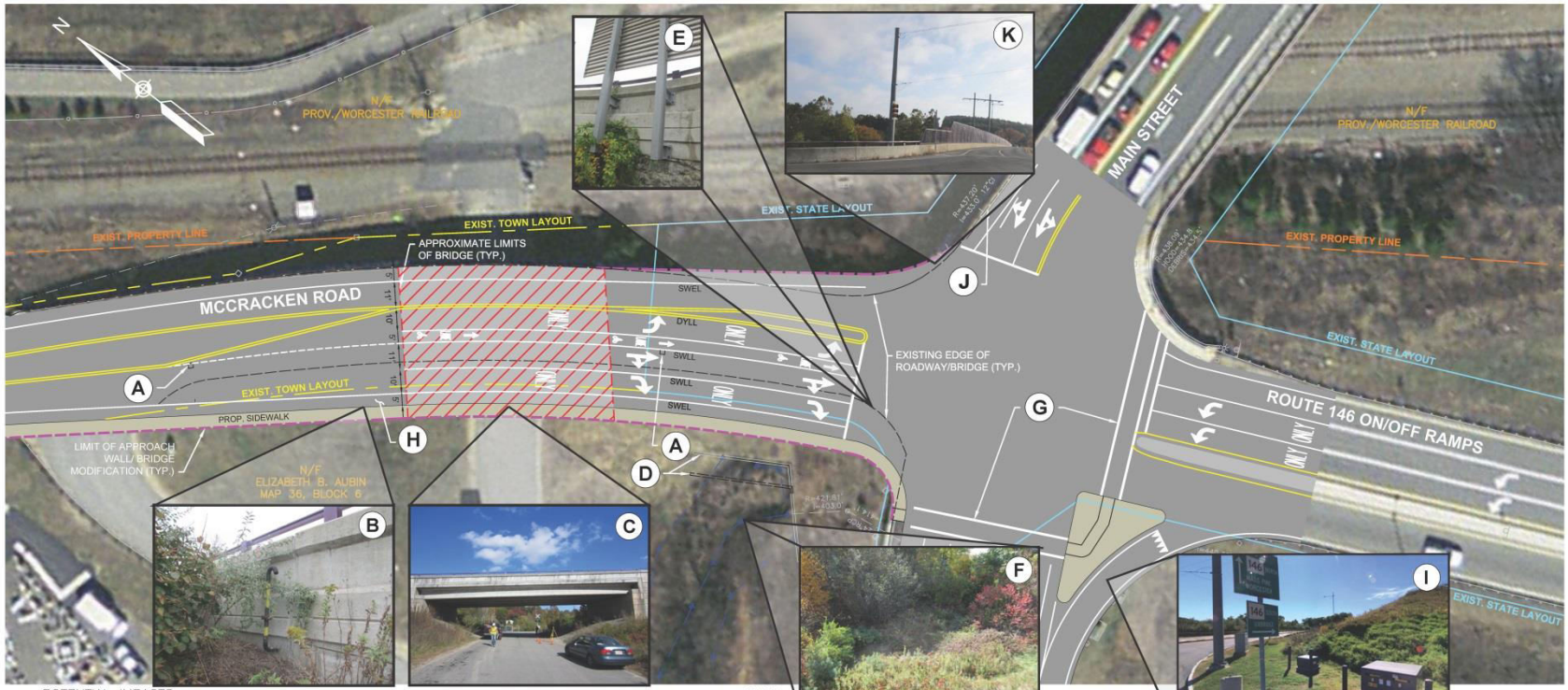
Bridge Alternatives

- Max Build Central Alignment



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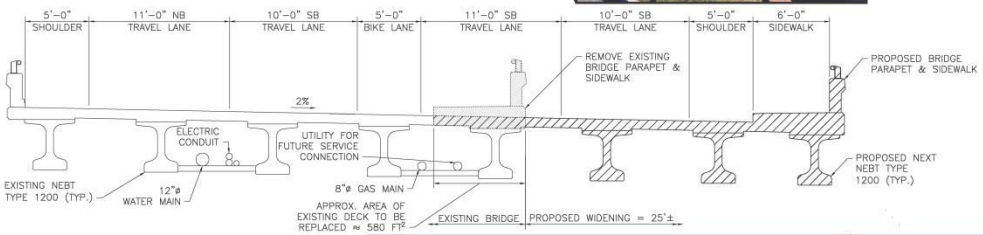

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Bridge Widening - Max Build Central Alignment

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Project Design Schedule

- Next steps
  - Discuss Alternatives with MassDOT
    - (December 2013)
  - 25% Design Effort
    - (December 2013 – June 2014)
  - MassDOT Review