



MEMORANDUM

TO: Ryan Flynn, Project Coordinator
City of Portsmouth DPW

DATE: May 31, 2016

FROM: Mike Myers, TEC Project Manager

PROJECT NO.: T0620

RE: Banfield Road Conceptual Design & Master Plan Summary

PURPOSE AND NEED

In January of this year, the City of Portsmouth (City) kicked off the project development process to address an immediate need to replace three (3) existing Banfield Road culverts (BAN-2, BAN-4 and BAN-5). The reconstruction of these culverts require a forward-thinking approach to ensure the culverts are constructed once and do not preclude future corridor improvements. These future improvements will require a context sensitive design solution that is consistent with the City's vision for Complete Streets, "Streets and roadways in the City of Portsmouth will be convenient, safe and accessible for all transportation users, including pedestrians, bicyclists, transit vehicles and riders, children, the elderly, and people with disabilities," while maintaining the existing character of the Banfield Road corridor.

The City held its 1st public informational meeting on February 4, 2016 to collect information that could be incorporated into the Banfield Road Master Plan. The following information has been provided to summarize the conceptual design and recommended alternative based on associated impacts, feasibility, and probable future use. The findings of the alternatives analysis were presented at a 2nd public informational meeting on May 4th, 2016 and the recommended alternative was endorsed by the residents who were in attendance.

EXISTING CONDITIONS

Character: Banfield Road is approximately 2 miles long and runs north/south from Ocean Road to Peverly Hill Road, with Route 1 to the east and Interstate 95 to the west. It is a rural road with a mix of residential and commercial properties and lined with wetland resources areas, large trees, stonewalls, and other private/public features.

Geometrics and Cross Section: The alignment is generally linear both horizontally and vertically other than a few sharp crest curves. The section consists of two 11' travel lanes with 0 to 1' outside shoulders.

Pavement: The pavement surface is in dire need of repair with consistent longitudinal cracking and rutting due to failed sub-base materials caused by washouts and potential culvert failures.

Drainage: The general drainage patterns consist of upland watersheds to the east of Banfield Road that runoff from Route 1 and drain under Banfield Road through nine (9) drainage culverts. The culverts are referenced on the conceptual plans as BAN-0 through BAN-8 for consistency with the City's existing drainage study from September 2011. These culverts consist of the majority of the existing drainage infrastructure with no other catch basins or drainage swales to convey runoff adjacent to the road.

Utilities: Existing underground utilities consist of gas and water mains servicing the adjacent properties and fire hydrants along the road. Utility poles carrying overhead transmission lines, electric and cable services are generally located along the west side of the road but cross over to the east side in a few locations.

Traffic: Data was collected from Thursday March 3rd thru Saturday March 5th, 2016 at the project intersections and along Banfield Road north and south of Constitution Avenue. The counts along the corridor indicated approximately 5,000 vehicles per day traveling at speeds over the 30 MPH posted limit at 38 to 41 MPH. The data also identified approximately 40 bicyclists per day and only 1-2 pedestrians when the weather was approximately 20-degrees.

CONCEPTUAL DESIGN ALTERNATIVES

Alternative 1: 10' Travel / Shared Lanes – 2' Shoulders – 5' Sidewalk

The existing roadway cross section is approximately 22' wide and will be able to accommodate the new 24' wide cross section with minimal box widening along the roadway edge and full-width pavement reconstruction throughout. While the proposed roadway is slightly wider than existing; the reduction in lane width from 11' to 10' will provide vehicular traffic calming. The 2' shoulders will provide consistent separation from the roadway edge and additional space for buses and emergency vehicles to traverse without crossing the centerline. Pavement markings will include a double yellow centerline, white shoulder lines and sharrow's to identify the location that motorists can expect bicyclists within the shared travel way.

The 5' sidewalk is proposed along the east side at Ocean Road because this would be the safest crossing location due to the opportunity to install a pedestrian refuge in the area that currently shadows out the eastbound left-turn lane. Advanced warning signs would be required especially for eastbound vehicles approaching the vertical curve limiting sight distance. A pedestrian push button activated flashing assembly should also be evaluated for supplemental warning at the crosswalk. At the intersection of Peverly Hill Road, a minor retrofit of the existing traffic signal would be required to install push buttons and signals to cross on the easterly side of the intersection.

The 5' sidewalk appears to be feasible along the east side of Banfield Road for its entirety from Ocean Road to Peverly Hill Road, which will avoid impacts to the utility poles and a need for any mid-block crossings. The road alignment may require a slight shift to the west to limit permanent private property impacts. Based on the right-of-way information approximated from GIS data; it appears that the infrastructure can be constructed within the public way but will require temporary access. The treatment along the edge of road and sidewalk in the vicinity of wetland resource areas would



consist of a rock fill slope to maintain the natural terrain, reduce costs and future maintenance associated with retaining walls. The sidewalk will be constructed with 6" high granite curbing for vertical separation from the roadway and requires a closed drainage system and potential stormwater treatment on public land or acquired private property.

The New Hampshire Seacoast Greenway (NHSG) Rail Trail is planned to be constructed along the abandoned Hampton Branch railroad. The NHSG Rail Trail intersects Ocean Road approximately 1,500' east of Banfield Road and intersects Banfield Road near the intersection of Heritage Avenue. Coordinating this project with the Banfield Road improvements will create an opportunity for optimal bicycle access for the 40+ riders observed in March as well as future trail riders. The conceptual plans identify a preliminary layout of a small parking area, rail-trail kiosk, trail and crossing of Banfield Road.

The following is a summary of potential impacts associated with Alternative 1:

- Large Tree Removal (>14" diameter) = 20 to 30 +/-
- Utility Poles = 20 +/-
- Permanent ROW Acquisition = 25,000 SF +/-

Alternative 2: 10' Travel Lanes – 2' Shoulders – 10' Shared-Use Path

This alternative would consist of the same cross section described above with the exception of a 5' wider sidewalk to meet the 10' requirement for a two-directional shared use path. This alternative would provide off-road bicycle access throughout the corridor along the east side. This alternative would result in greater impacts to private property (temporary and permanent), wetland resource areas, large street trees, utility pole and slope impacts requiring larger and additional retaining walls.

The following is a summary of potential impacts associated with Alternative 2:

- Large Tree Removal (>14" diameter) = 10 to 20 +/-
- Utility Poles = 10 +/-
- Permanent ROW Acquisition = 22,500 SF +/-

Alternative 3: 10' Travel Lanes – 5' Bike Shoulders – 5' Sidewalk

This alternative would essentially expand the existing 22' wide roadway section to 30' wide. Despite having a narrower 10' wide lane the wider shoulders are typically perceived to provide a wider roadway for higher speeds to be traveled and the potential to attract future traffic. The linear geometrics of the road and limited opportunity to introduce curvature to slow traffic would certainly support the theory that this road would become more comfortable for motorists to operate at higher speeds than they do today, which was observed to be 10 MPH over the speed limit.

The community voiced their concerns with cut-through traffic and high speeds at the 1st public informational meeting and did not welcome the idea of bicycles lanes resulting in a wider roadway. Details for Alternative 3 were not evaluated further due to the sensitivity to vehicular speeds and cut-through traffic that exists today.

The following is a summary of potential impacts associated with Alternative 3:

- Large Tree Removal (>14" diameter) = 5 to 10 +/-
- Utility Poles = 2 +/-
- Permanent ROW Acquisition = 5,000 SF +/-

RECOMMENDED ALTERNATIVE

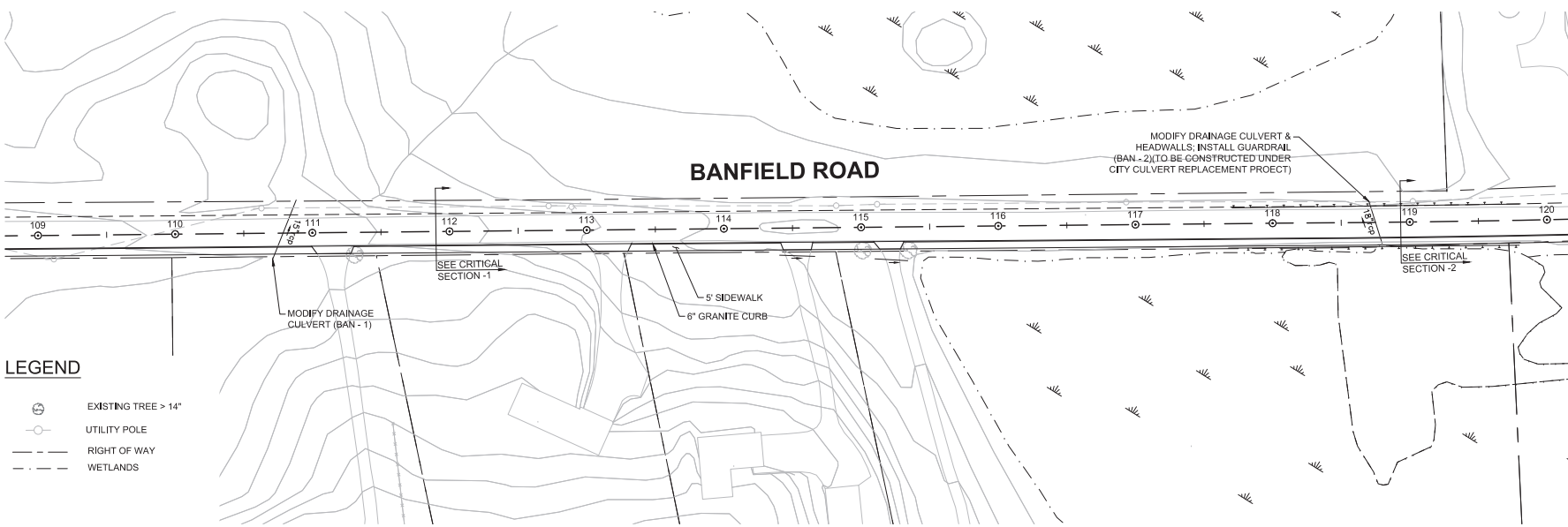
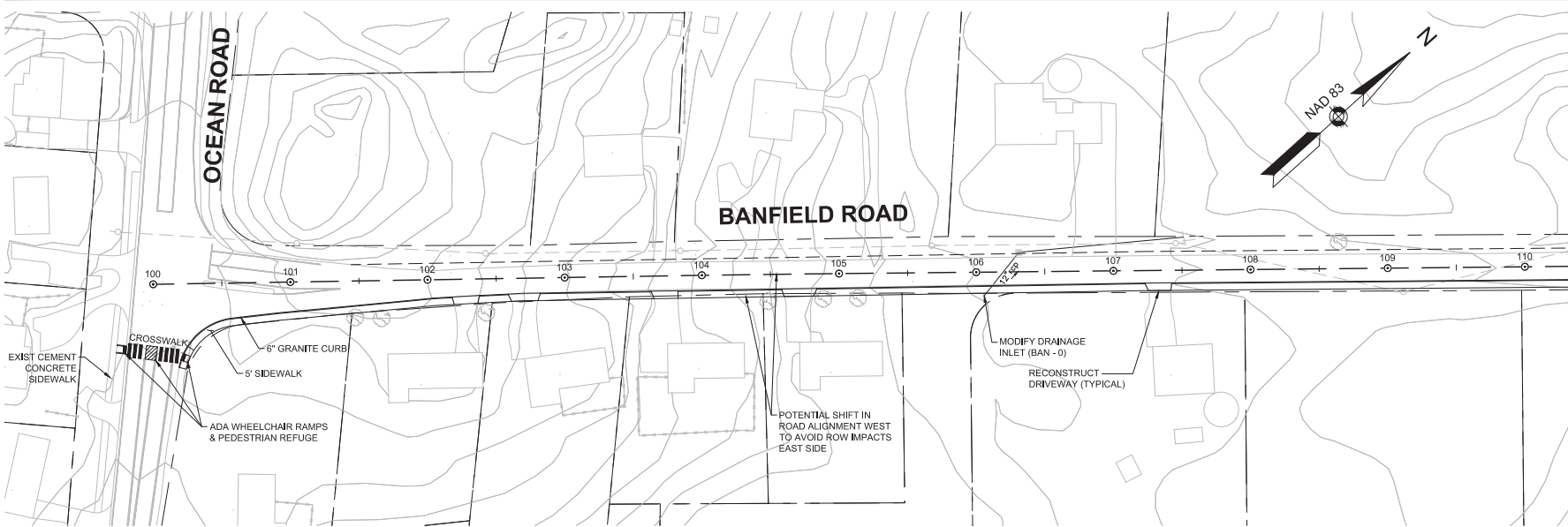
The recommended alternative for incorporation into the Banfield Road master plan is to construct a 5-foot wide sidewalk along the east side. The construction of a 10' wide bi-directional shared use path adjacent to Banfield Road would result in impacts that are disproportionate to the need and potential future use of this facility. The close proximity of the NHGS Rail Trail providing safe off-road access reduces the probable future use of a bicycle facility along Banfield Road.

Based on the above summary and positive feedback from the residents who attended the 2nd public informational meeting; TEC will proceed with the preliminary design of the three (3) culvert replacements to a length that accommodates the recommended Alternative 1 roadway cross section width.


Attachments:

Conceptual Plan Alternative 1 (Sheets 1-5)
Conceptual Plan Alternative 2 (Sheets 6-10)
Critical Cross Sections Alternative 1 (1-3)





- LEGEND**
- EXISTING TREE > 14"
 - UTILITY POLE
 - RIGHT OF WAY
 - WETLANDS



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SCALE	1" = 40'

PREPARED FOR

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 1 Junkins Avenue
 Portsmouth, NH 03801

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For Review

PROJECT TITLE

**Banfield Road
 Alternative 1
 5-Foot Sidewalk**

PROJECT LOCATION

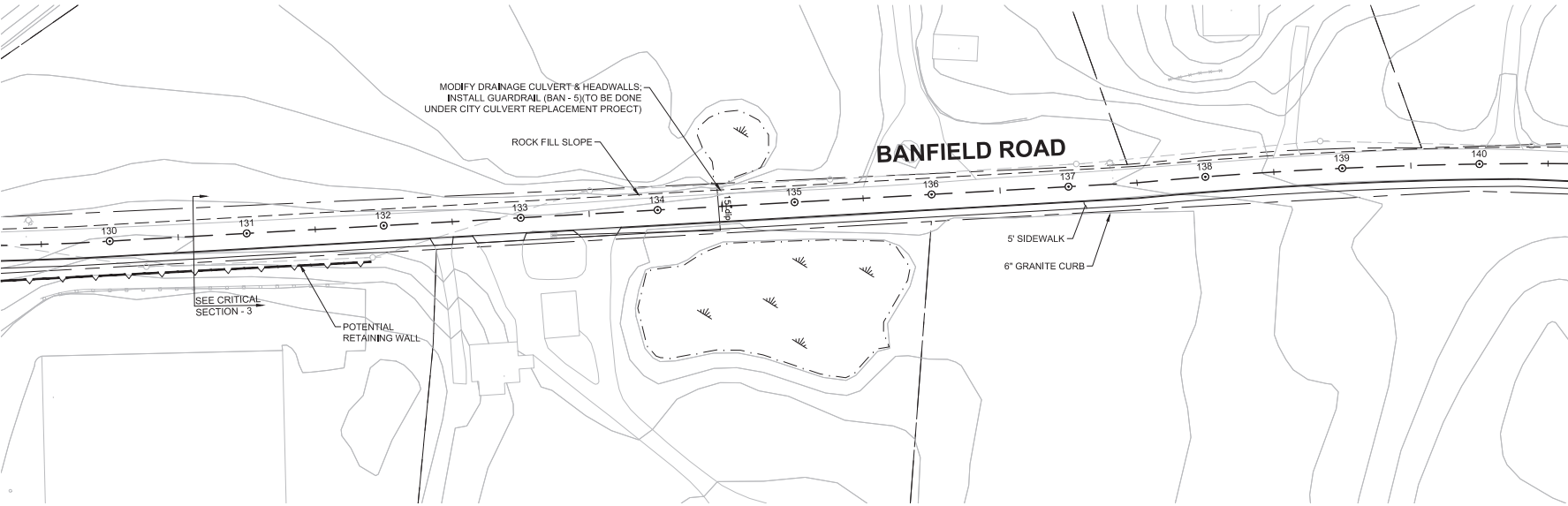
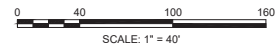
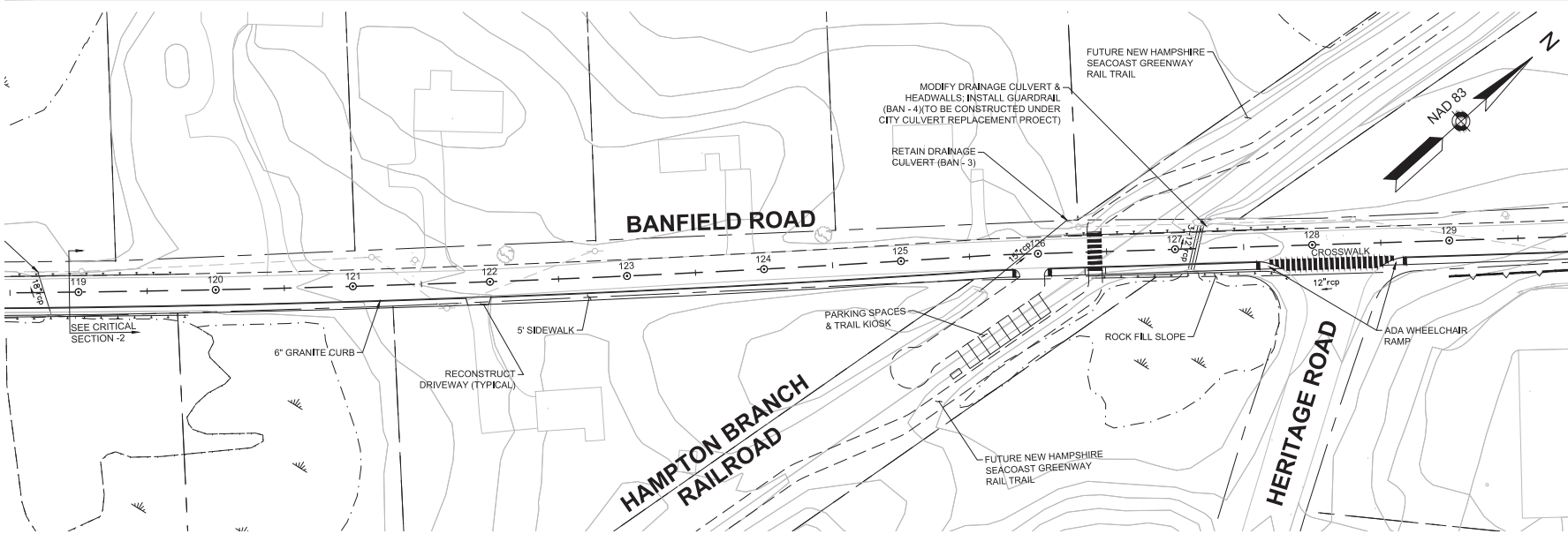
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DRAWING TITLE

Conceptual Plan

PROJECT NO.	N0620
TEC CAD FILE	
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SHEET 1 OF 10	

EXISTING CONDITIONS ESTABLISHED FROM AVAILABLE CITY OF PORTSMOUTH AND GRANIT GIS INFORMATION





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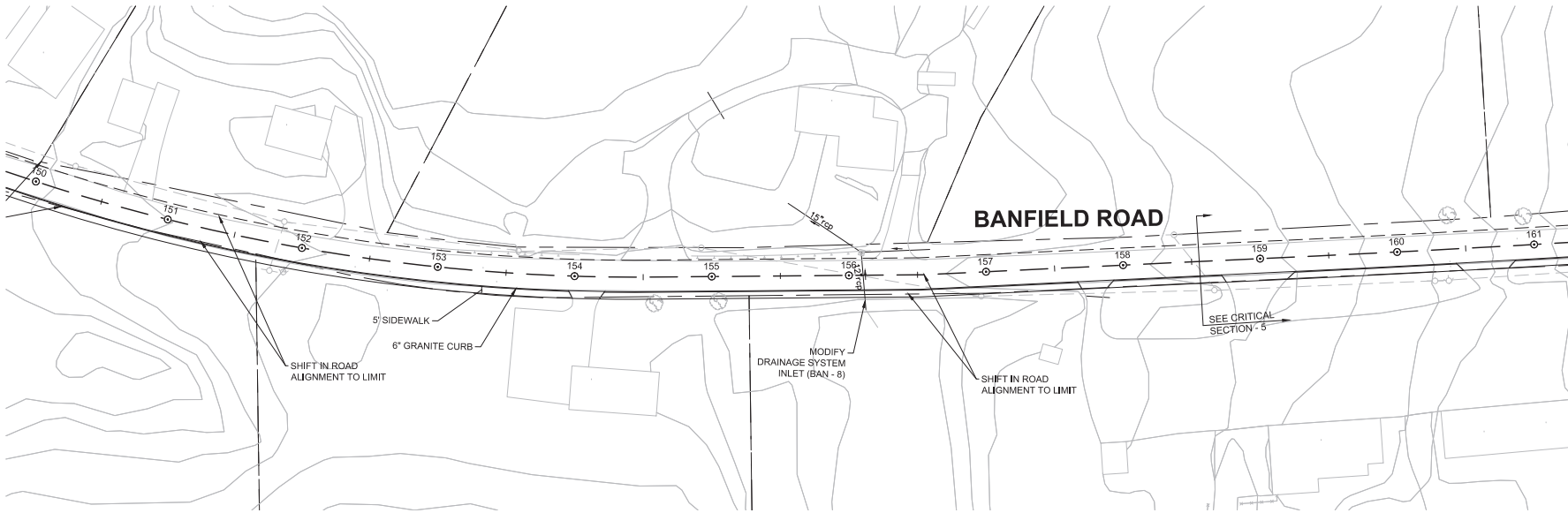
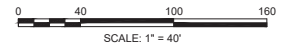
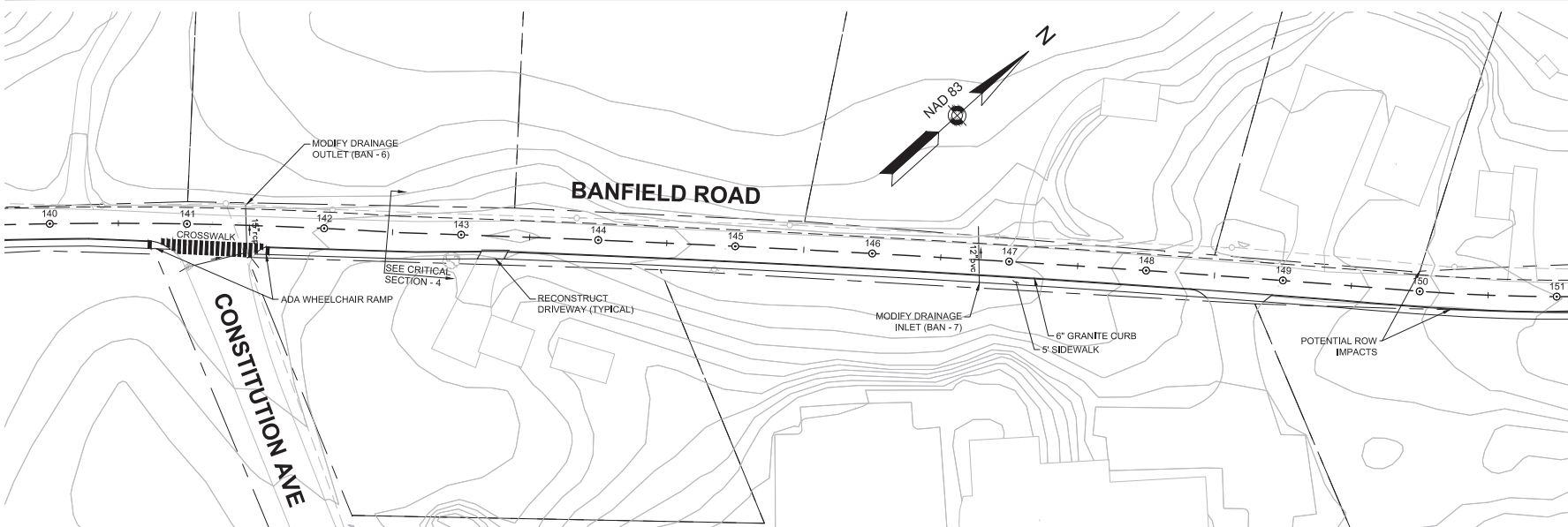
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PROJECT NO. N0620
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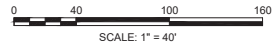
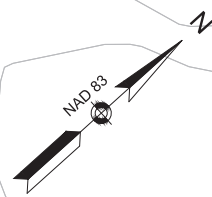
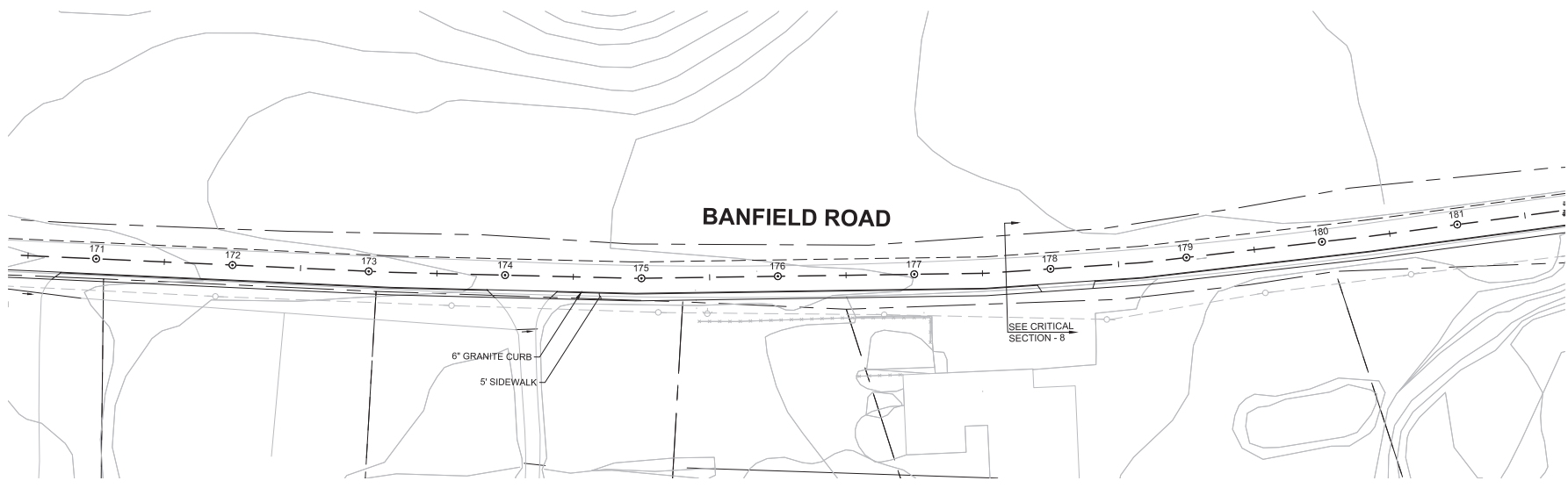
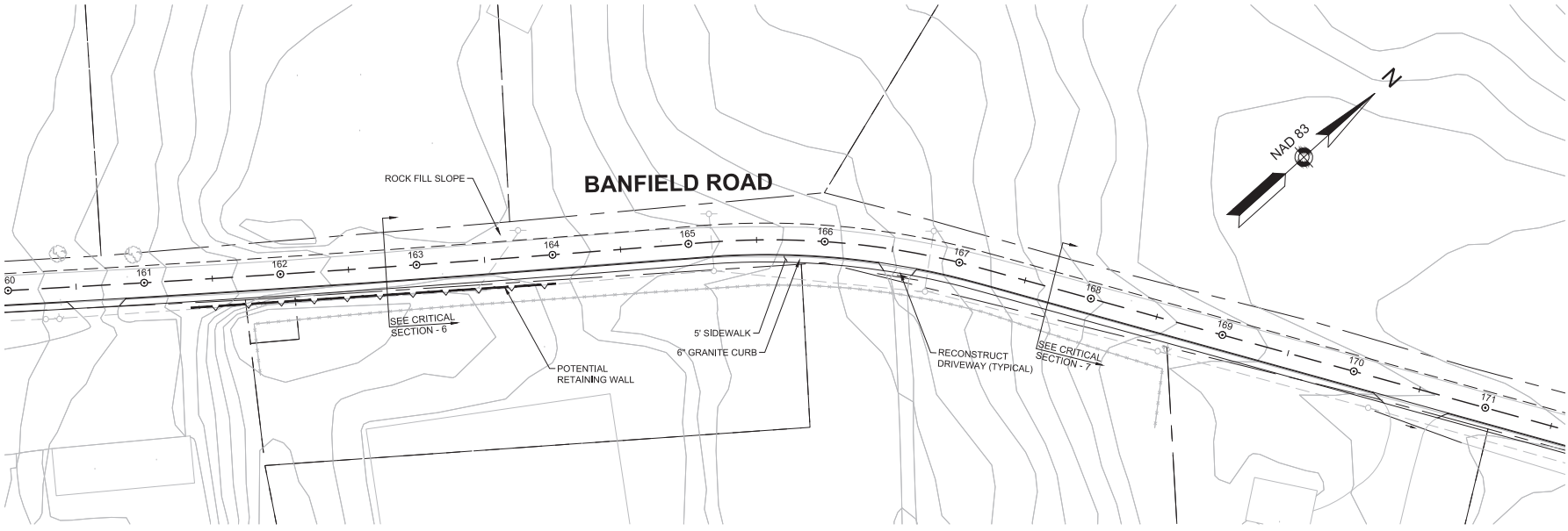
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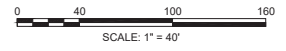
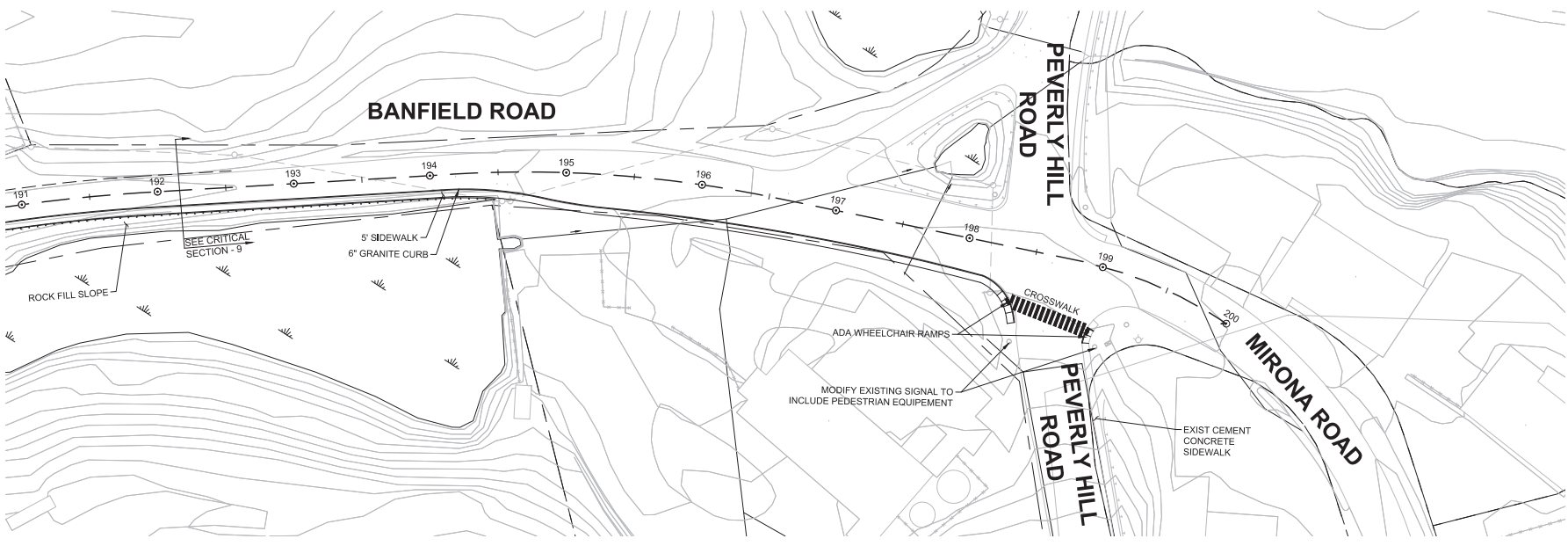
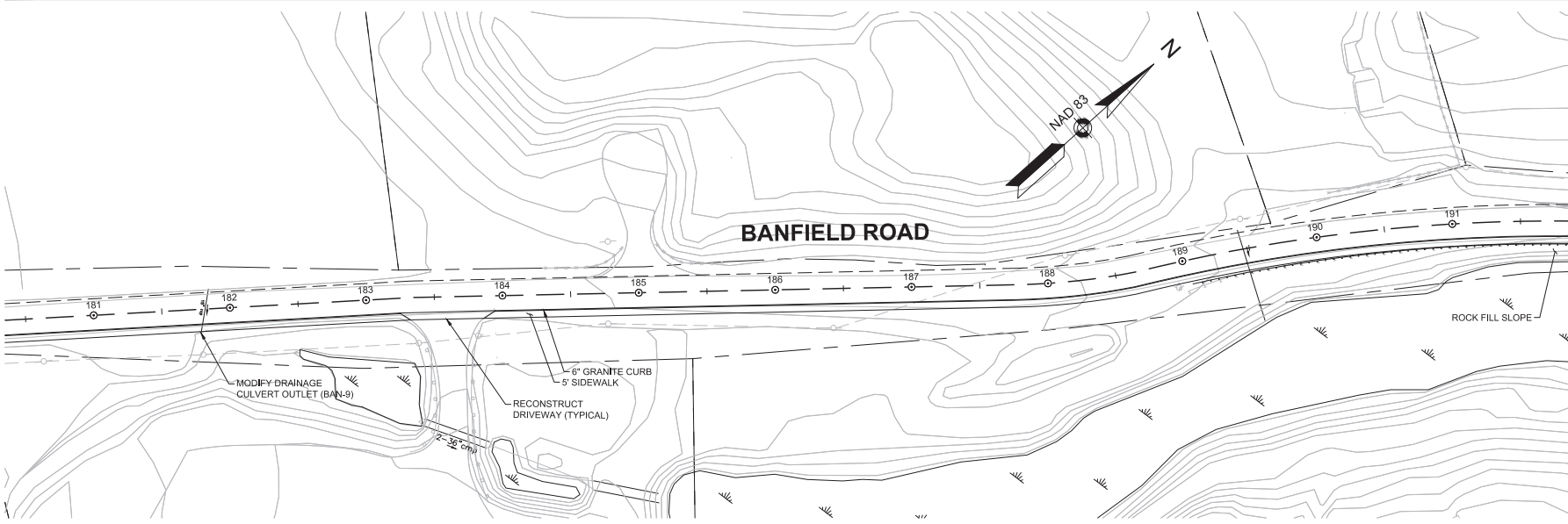
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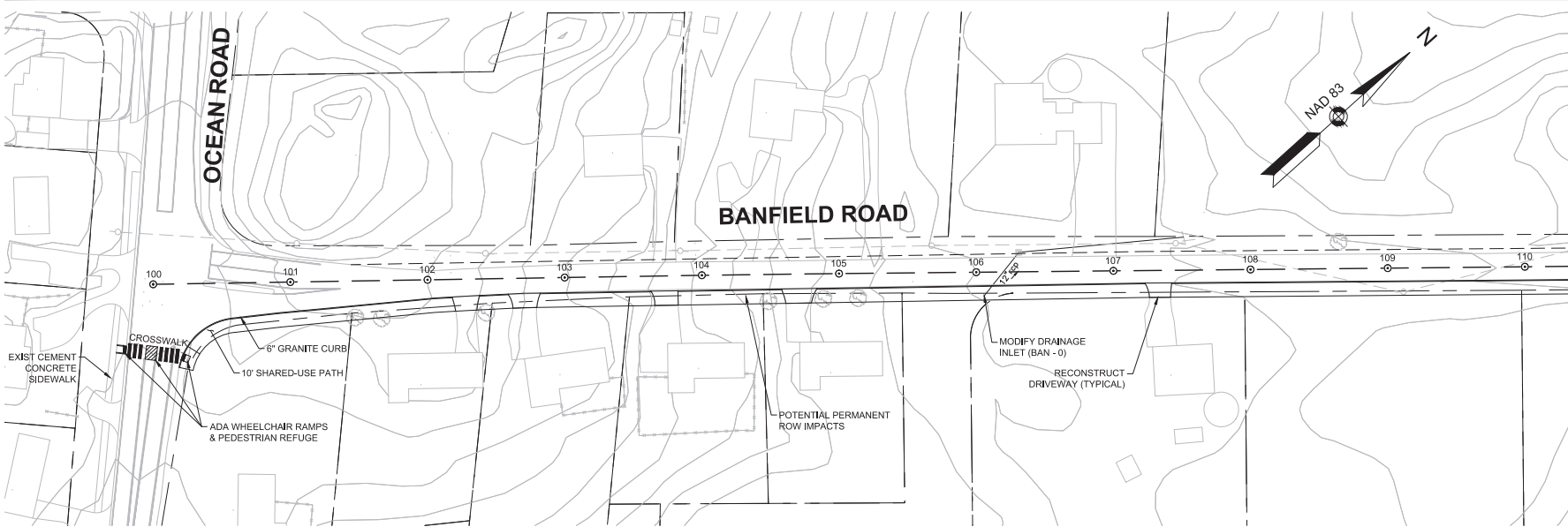
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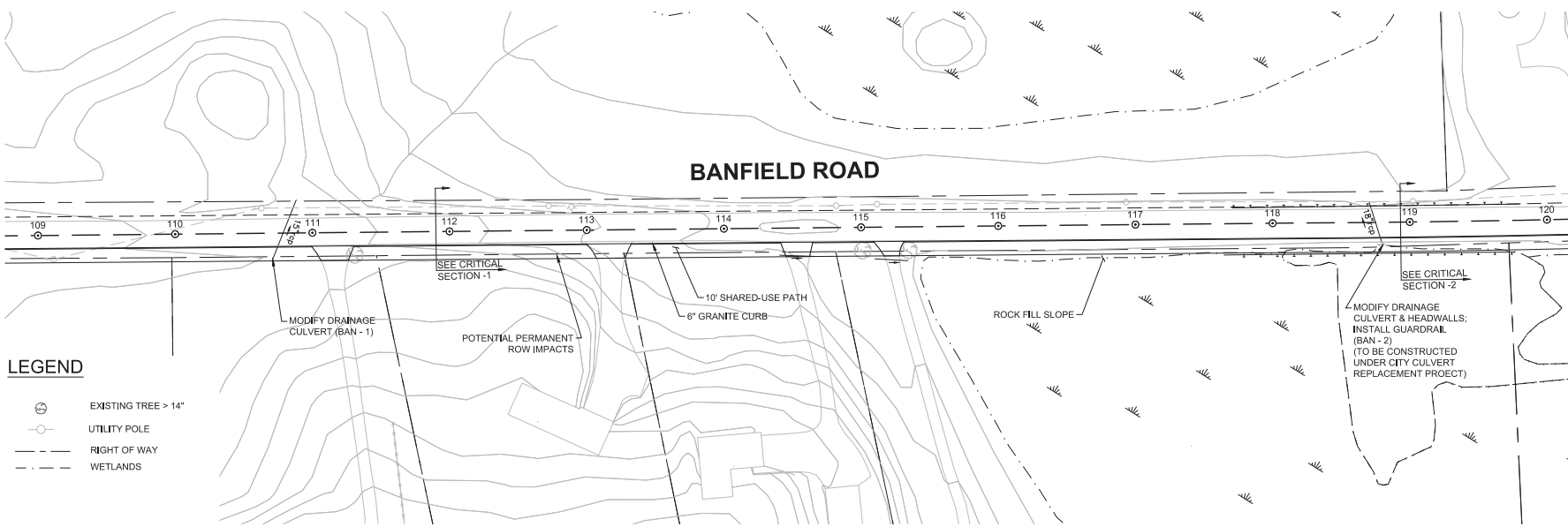
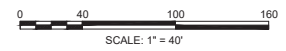
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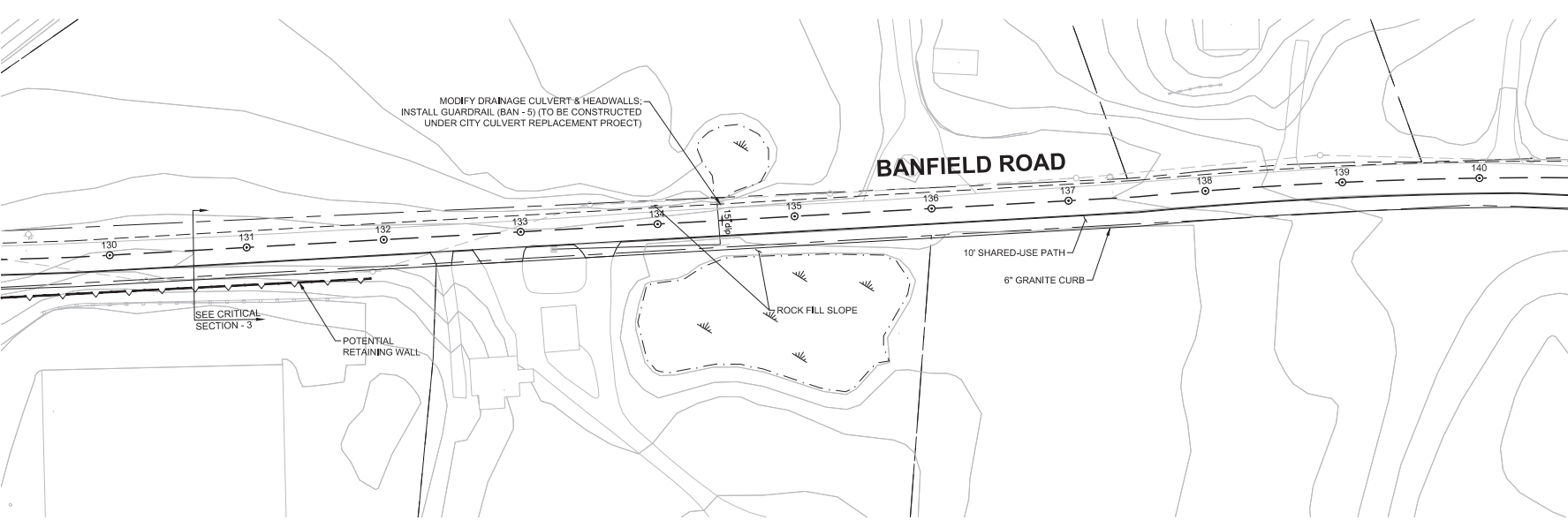
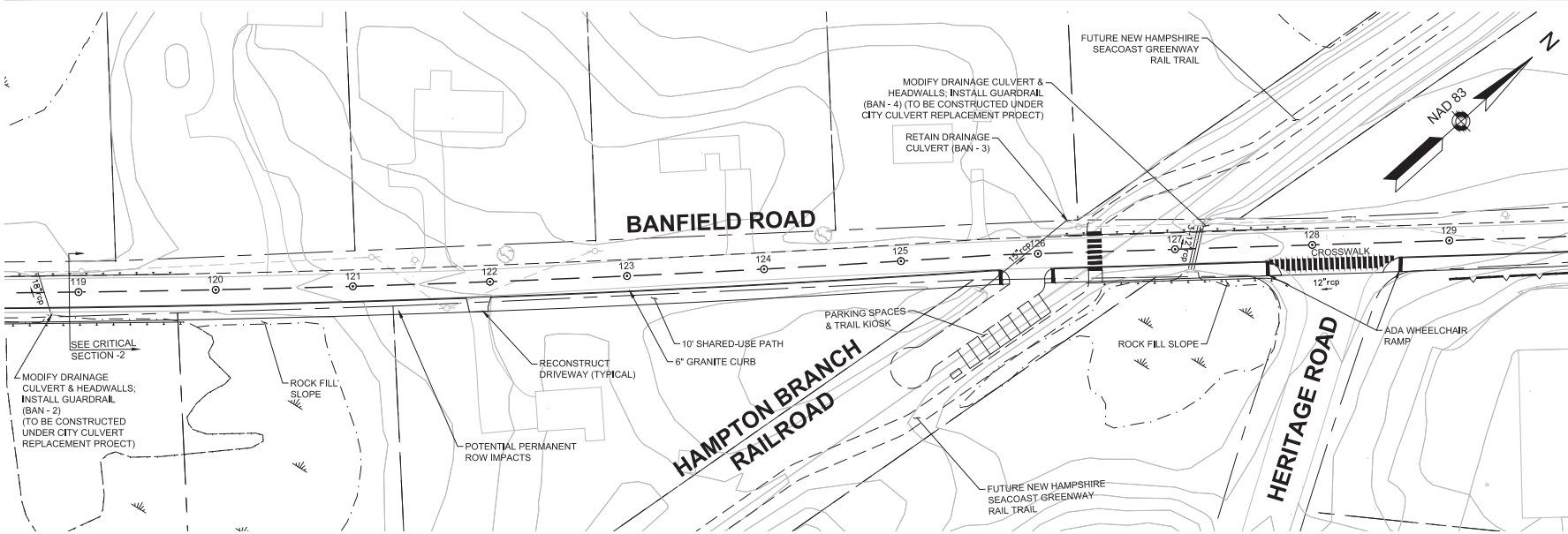
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PROJECT TITLE
**Banfield Road
 Alternative 2
 10-Foot Shared-Use Path**

PROJECT LOCATION
**Portsmouth
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 DRAWING TITLE
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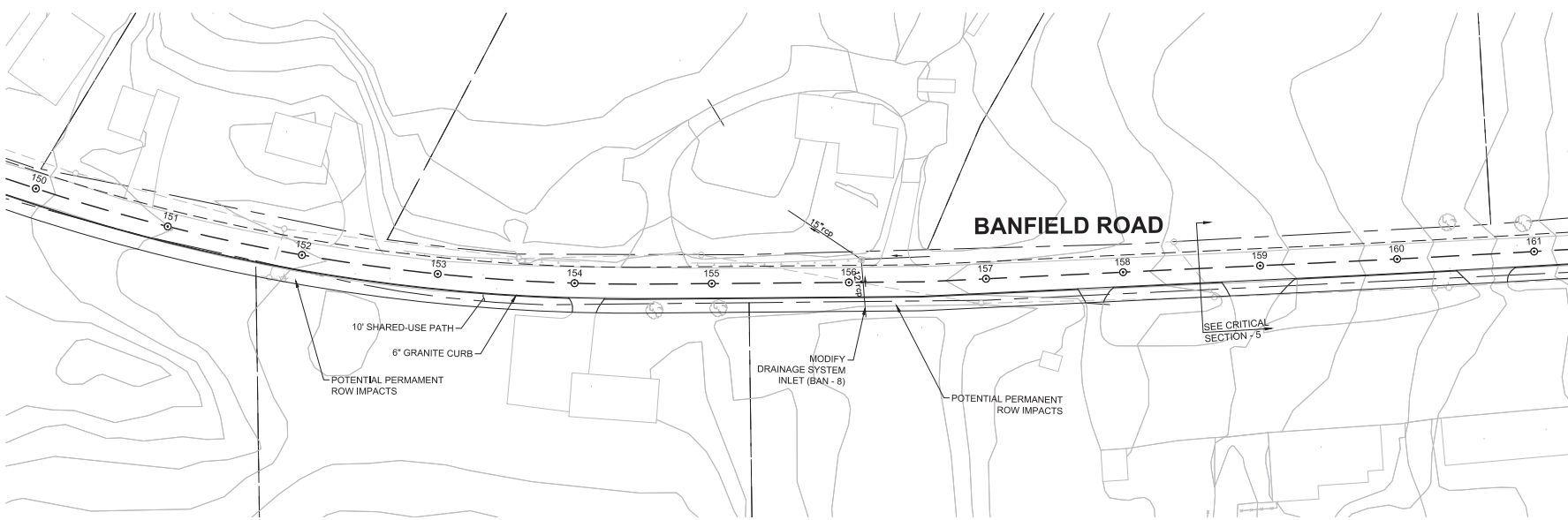
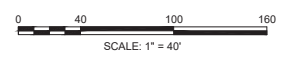
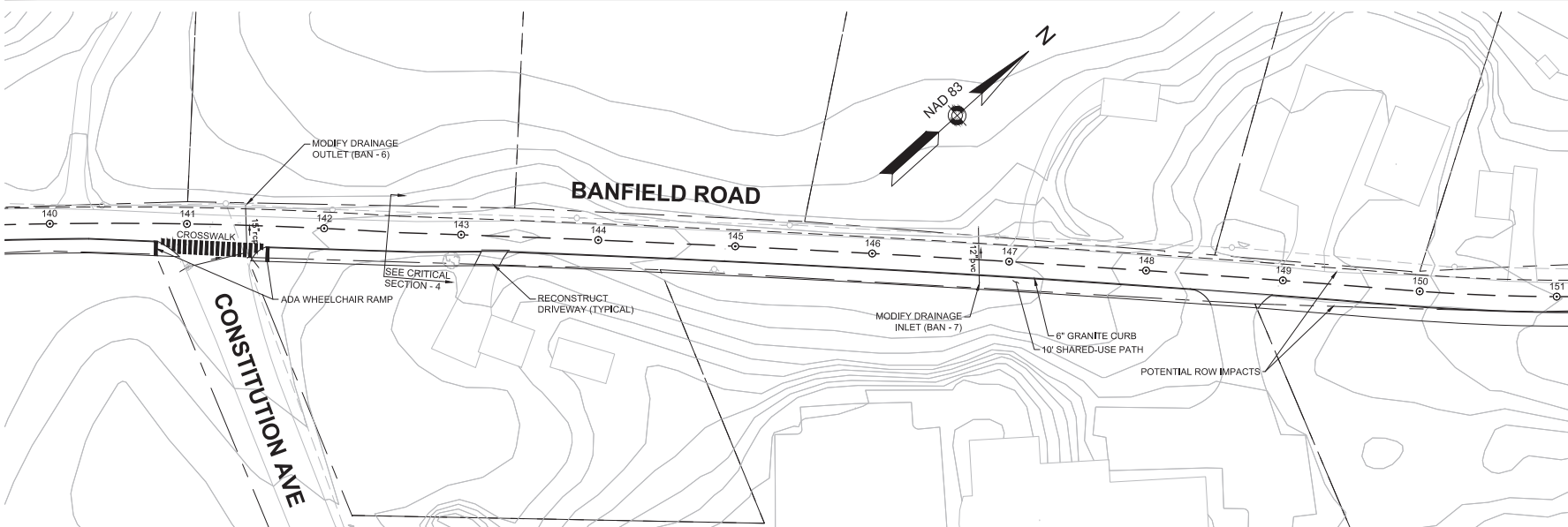
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 Alternative 2
 10-Foot Shared-Use Path**

PROJECT LOCATION
**Portsmouth
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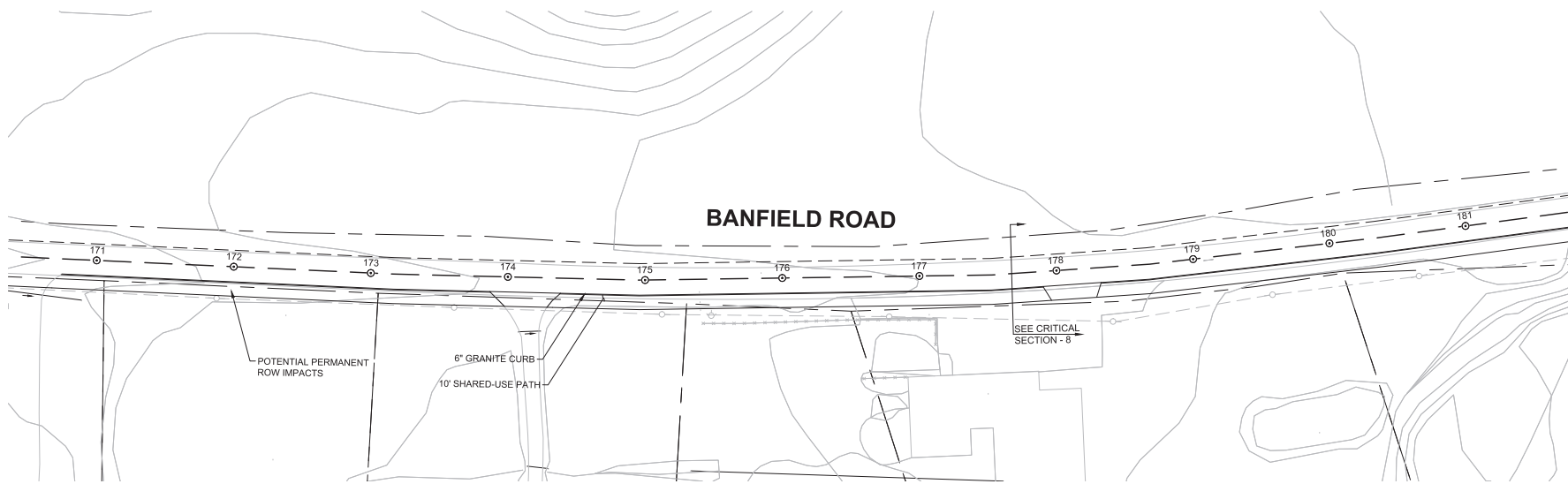
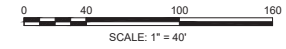
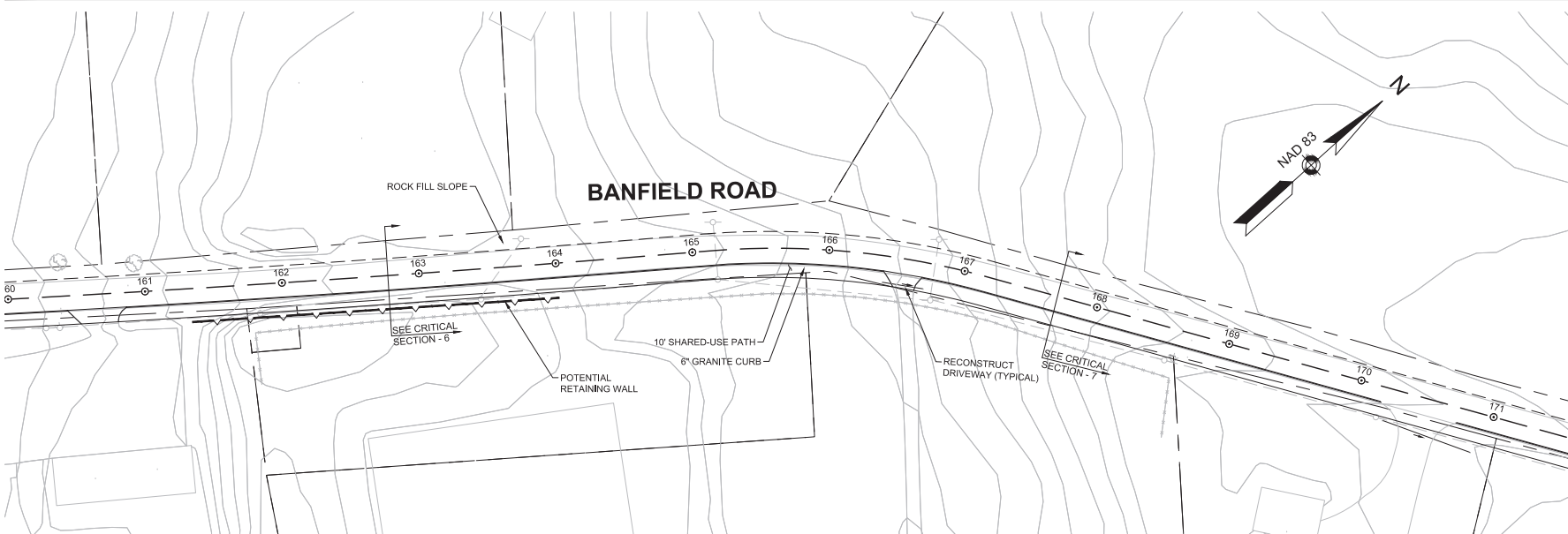
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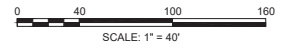
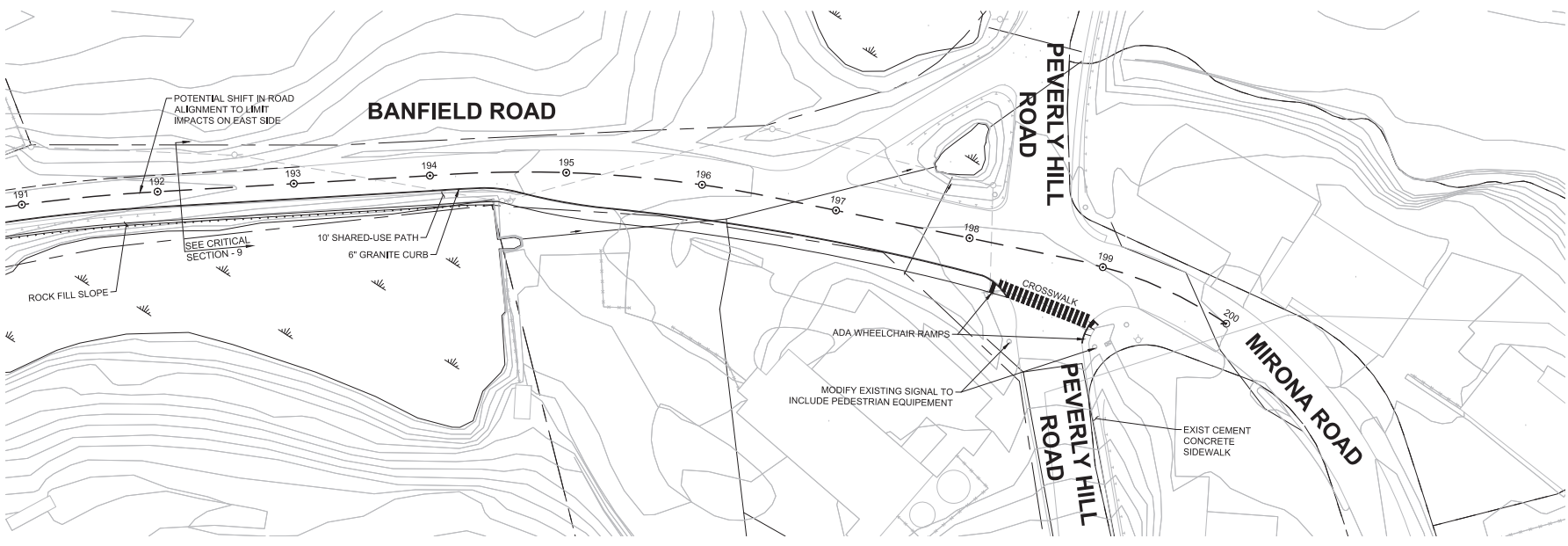
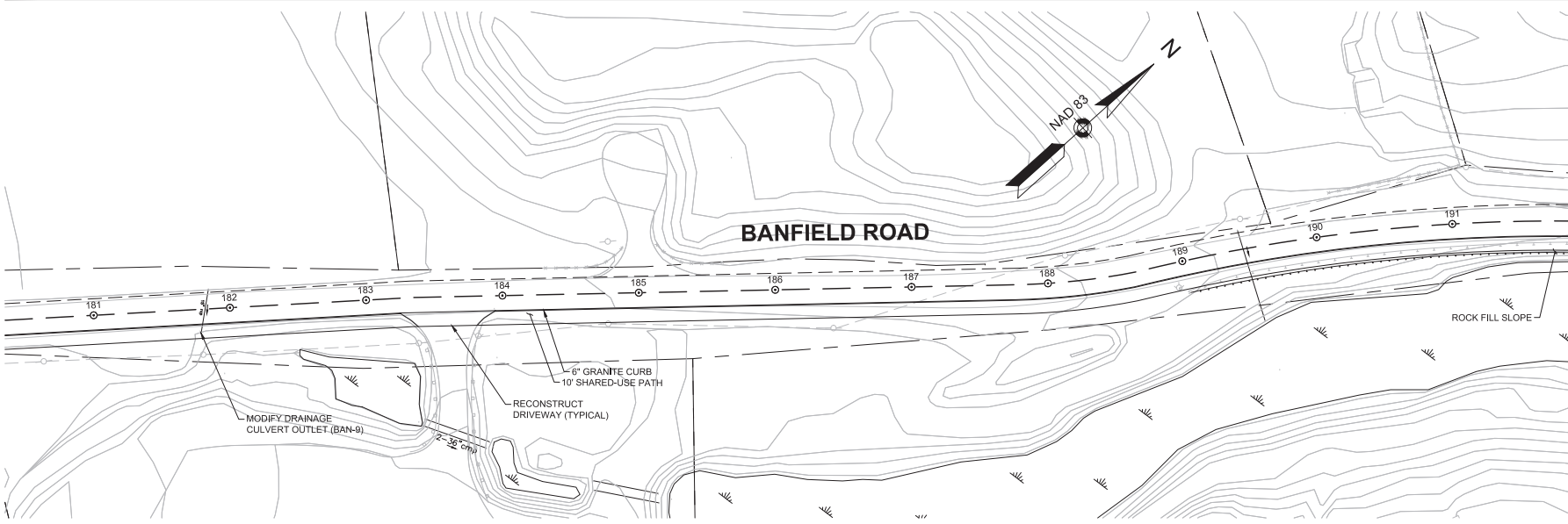
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EXISTING CONDITIONS ESTABLISHED FROM AVAILABLE CITY OF PORTSMOUTH AND GRANIT GIS INFORMATION





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PROJECT TITLE

**Banfield Road
 Alternative 2
 10-Foot Shared-Use Path**

PROJECT LOCATION

**Portsmouth
 New Hampshire**

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PROJECT NO.	N0620
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EXISTING CONDITIONS ESTABLISHED FROM AVAILABLE CITY OF PORTSMOUTH AND GRANIT GIS INFORMATION

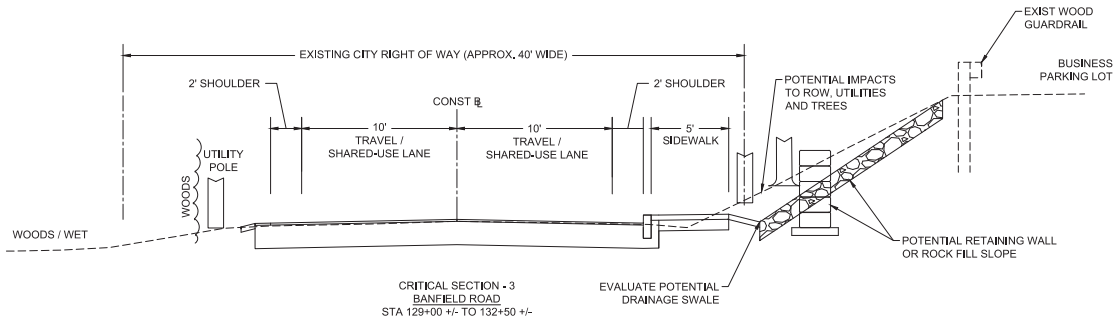


PHOTO 3 - BANFIELD RD AT APPROX STA130+00
LOOKING NORTH

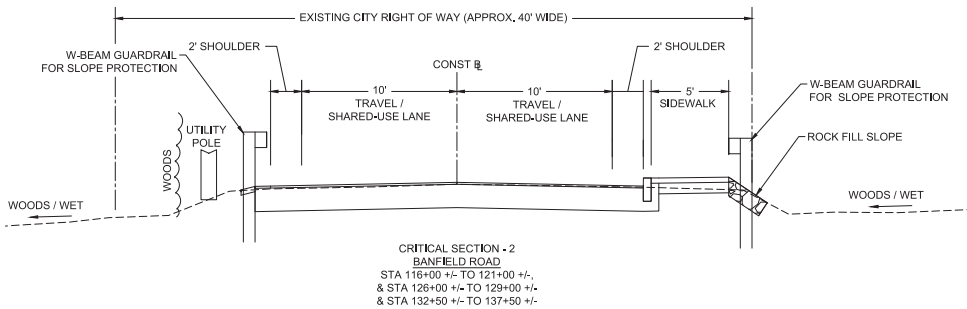


PHOTO 2 - BANFIELD RD AT APPROX STA 126+00 (BAN-4)
LOOKING NORTH

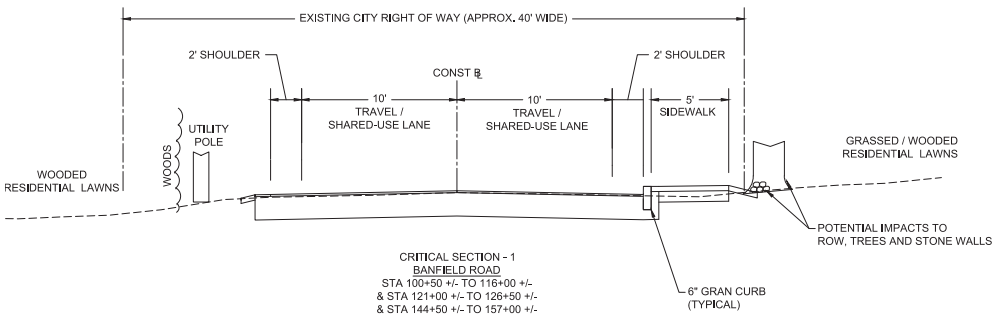


PHOTO 1 - BANFIELD RD AT APPROX STA 110+00
LOOKING NORTH



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SCALE 1" = 20'

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PROJECT TITLE

Recommended
Alternative
5 - Foot Sidewalk

PROJECT LOCATION

Portsmouth
New Hampshire

DRAWING TITLE

Critical Sections

PROJECT NO. N0620
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SHEET 1 OF 3

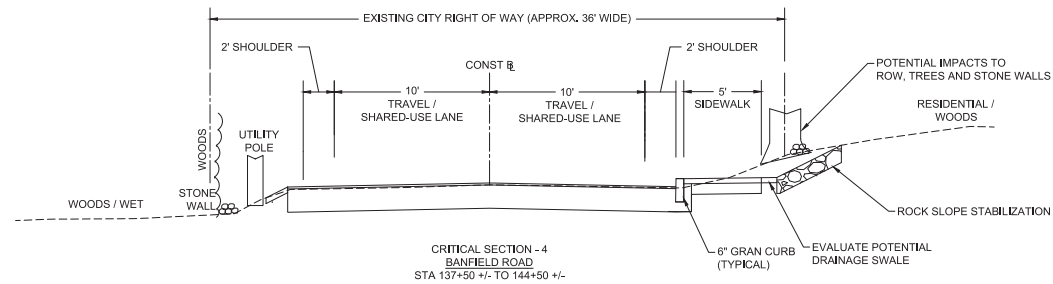
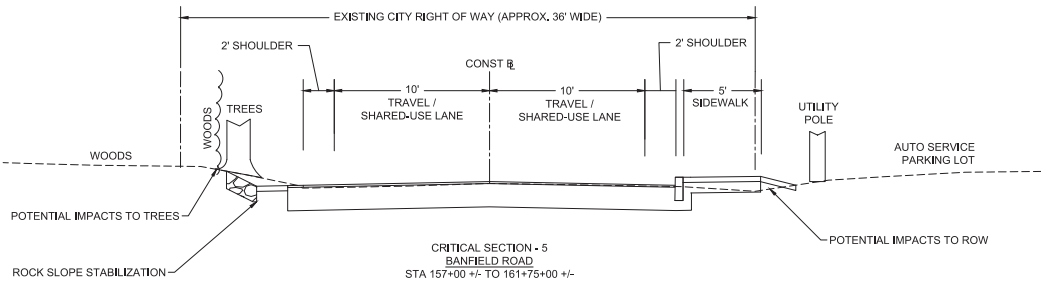
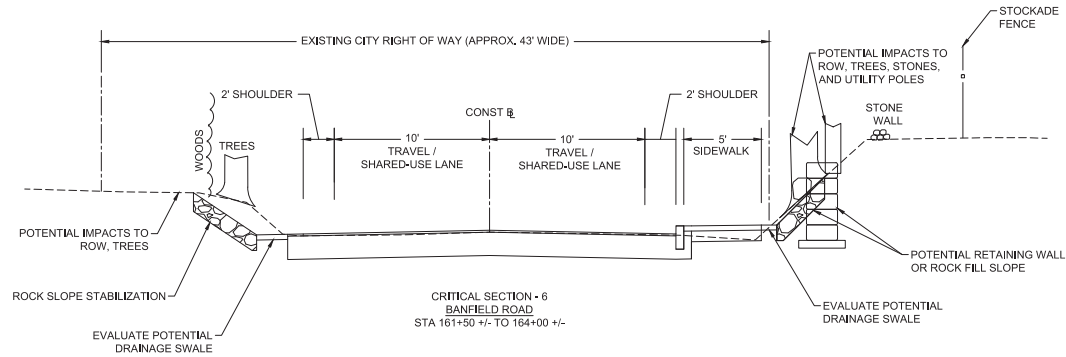


PHOTO 6 - BANFIELD RD AT APPROX STA 162+00
LOOKING NORTH



PHOTO 5 - BANFIELD RD AT APPROX STA 158+00
LOOKING NORTH



PHOTO 4 - BANFIELD RD AT APPROX STA 143+00
LOOKING NORTH



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CHECKED BY HCM
DATE 3/11/16
SCALE 1" = 20'

PREPARED FOR

City of Portsmouth
1 Junkins Avenue
Portsmouth, NH

REVISIONS

ISSUED FOR

For Review

PROJECT TITLE

Recommended
Alternative
5 - Foot Sidewalk

PROJECT LOCATION

Portsmouth
New Hampshire

DRAWING TITLE

Critical Sections

PROJECT NO. N0620
TEC CAD FILE
DRAWING NO.
SHEET 2 OF 3

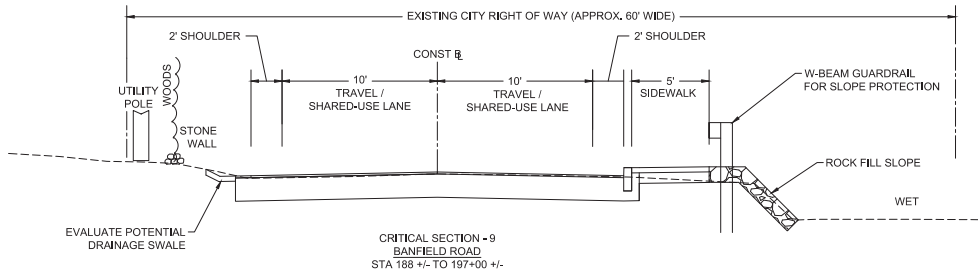


PHOTO 9 - BANFIELD RD AT APPROX STA 192+00
LOOKING NORTH AT PEVERLY HILL ROAD

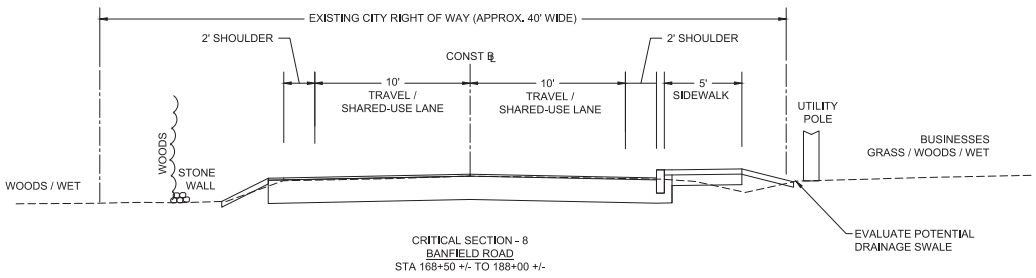


PHOTO 8 - BANFIELD RD AT APPROX STA 171+00
LOOKING NORTH

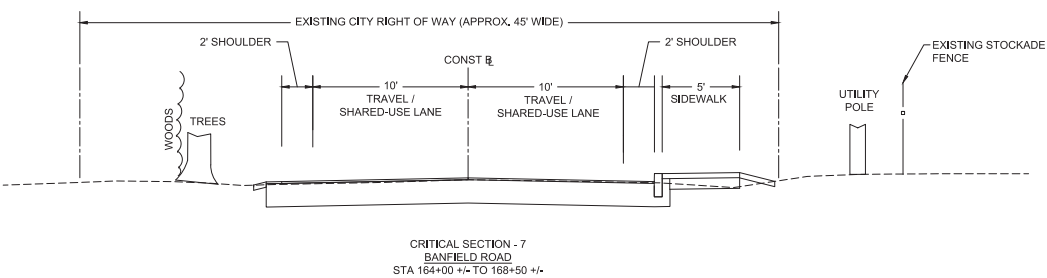


PHOTO 7 - BANFIELD RD AT APPROX STA 165+00
LOOKING NORTH



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DESIGNED BY	ADC
DRAWN BY	CPR
CHECKED BY	HCM
DATE	3/11/16
SCALE	Not To Scale

PREPARED FOR
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH

REVISIONS

ISSUED FOR
For Review

PROJECT TITLE
**Recommended
Alternative
5 - Foot Sidewalk**

PROJECT LOCATION
**Portsmouth
New Hampshire**

DRAWING TITLE
Critical Sections

PROJECT NO.	N0620
TEC CAD FILE	
DRAWING NO.	
SHEET	3 OF 3