

WESTWIND DRIVE Alignment Concept Study



Prepared for:



Prepared by:

Kimley»Horn

ATTACHMENTS

Conceptual Plans, Profiles, and Typical Sections
Westwind Alignment Options Comparison Matrix
Project Schedule
Opinion of Probable Costs for all Options
Existing Conditions Memorandum

February 19, 2016

Westwind Drive Extension

State Street to Ladbrook Drive

Project Description

Westwind Drive is planned to be a four-lane divided urban collector on four-lane right-of-way between State Street to Ladbrook Drive. This project completes an important missing link in the regional road network, which was identified as link number 101 in Phase 2 of the Eastern Loudoun Transportation Study. The majority of the right-of-way required for this project is located on private property and has been reserved.

This study identified 3 alignment options for Westwind Drive. The preferred alignment option creates a continuous road from Old Ox Road (VA Route 606) to Loudoun County Parkway. The picture below shows the view looking south from the Northwoods Business Park construction along Ladbrook Drive. The picture to the right shows the view looking north from the project limits along Westwind Drive.



Project Elements (see Conceptual Plans and Profiles for Options 1-3)

Roadway segments:

The proposed project includes approximately 0.5 miles of new roadway alignment that extends Westwind Drive south over Broad Run from its current southern terminus at the intersection of State Street to Ladbrook Drive. The major elements for this project are as follows:

- Approx. 2,800' segment of new roadway (Westwind Drive) from State Street to Ladbrook Drive.
- Approx. 840' length of bridge over the Broad Run floodplain



Cross sections:

Westwind Drive is planned to be an Urban Collector Road per Loudoun County and VDOT standard roadway classifications. The typical section for the proposed roadway will include the following:
(See sheet 1 in Attachment 1 for illustration of proposed typical section)

- 120 feet of Right-of-Way
- 4-lane divided road
- 16' median to allow for a single left-turn lane
- 10' multi-use path on the west side of Westwind Drive
- 6' sidewalk on the east side of Westwind Drive

Alignment Options

1. Continuous Alignment on Westwind Drive – This option is shown on plan sheets #4, 5, & 6, in Attachment 1. This provides a direct connection between Old Ox Road and Loudoun County Parkway. Additional improvements would be required to realign and reconstruct the north end of Ladbrook Drive. This alignment varies from the right-of-way reservation made by Minalter, Inc. but aligns with existing right-of-way dedication from Loudoun Parkway Center. (See Right-of-Way Considerations for more information).
2. Westwind Drive Alignment per Right-of-Way Reservation – This alignment option follows the right-of-way reservation on the Minalter Inc. and Loudoun Parkway Center properties. There are two alternatives for the intersection of Ladbrook Drive and Westwind Drive. Alternative 2A shown on plan sheet 7 in Attachment 1 shows a T-intersection that would likely require a traffic signal. Alternative 2B shown on plan sheet 8 in Attachment 1 shows a roundabout. Additional improvements would be required on Ladbrook Drive to provide splitter islands on the approaches to the roundabout.
3. Continuous Alignment on Westwind Drive (Tangent Bridge) – This alignment option is similar to option 1 except the proposed Broad Run bridge is now within a tangent section that is crowned. This option is shown on plan sheets 11 and 12 in Attachment 1. This alignment requires the acquisition of additional right-of-way within the Loudoun Parkway Center project but shifts the proposed road further away from the existing gas line. (See Utilities for more information).

Intersections Improvements

This study did not complete a traffic signal warrant analysis at key intersections. The intersection improvements noted below were assumed and incorporated in the planning-level costs provided. Additional studies are essential to determine the need and extent of the required improvements. The following list identifies intersection improvements that are assume part of this project.

- New Traffic Signal at Loudoun County Parkway and Westwind Drive (All options)
- Traffic Signal Modification at Route 606 and Ladbrook Drive (All Options)
- New Traffic Signal at Westwind Drive and Ladbrook Drive (Options 1, 2A, & 3)
- New roundabout at Westwind Drive and Ladbrook Drive (Option 2B only)

Drainage/Environmental

Roadway drainage systems and stormwater management facilities will be required along the new roadway. The drainage collection system has not yet been sized. Drainage inlet and pipe quantities are based on road profile and impervious area. Based on topography, proposed impervious area and road profiles, it is assumed that two stormwater management BMP facilities will be required as part of the overall project. Stormwater management BMP facilities were preliminarily sized based on proposed impervious areas. The picture below shows the existing stormwater managemant ponds along the east side of the right-of-way reservation on the Minalter Inc. property. Retaining walls are planned to minimize any impacts to this pond.



The Westwind Drive extension will require the construction of a significant bridge over Broad Run. The bridge is anticipated to be similar in nature to the bridge carrying Gloucester Parkway over Broad Run to the north of this project. The bridge would consist of two separate structures. The eastern bridge would carry the northbound Westwind Drive traffic and the sidewalk, while the western bridge

supports the southbound Westwind Drive traffic and the shared-use path. See bridge transverse section on sheet 1 in Attachment 1 for more details. The proposed bridge would be 840’ in length to span the 100 year FEMA floodplain. If this bridge was aligned to be straight across the broad run floodplain as shown on sheets 11 and 12 in Attachment 1, the proposed length would be 800’.

Observations during a project site visit did not indicate any wetland impacts outside of the Broad Run floodplain. Any impacts to wetlands and the floodplain will require permitting through the Army Corps of Engineers and Virginia Department of Environmental Quality. Additional mitigation may be required depending on future environmental due diligence. Habitats for several threatened and endangered species of plants and animals could be impacted by this project. Northern Long-Eared Bats (NLEB) may be impacted due to the densely forested areas where this future road will be located. If it is found that NLEB habitat within the project area, the construction schedule could be impacted by time of year restrictions on tree clearing. Small whorled pogonia habitat could also be identified based on the presence of densely forested areas. Several species of freshwater mussels could be impacted due to impacts to Broad Run.

Utilities

During the field investigations of this future road corridor, the following utilities were discovered that may become potential conflicts:

- **Electrical** – Overhead power lines (picture on the top left of this page) cross the proposed Westwind Drive just south of the Broad Run crossing on the north end of the Minalter, Inc. Property. These large overhead transmission lines depicted with a linetype marked with an “OHE” on all plan sheets in Attachment 1 are not in direct conflict with the proposed improvements. These high steel post transmission lines will likely need to be relocated on taller posts or buried underground as there are clearance issues with the bridge construction.
- **Gas** – Markers for an underground gas line, like the one pictured on the top right of this page, were found during a site walk for this project. This gas alignment is depicted in yellow by the linetype noted with “GAS” on all conceptual plan sheets in Attachment 1. The gas line runs along the west side of Westwind Drive from State Street to Broad Run. Once it crosses Broad Run the gas line turns east along the Sanitary easement then South again along the property line for Mercure Business Park Assoc. within the Minalter Inc. Property to Route 606.
- **Sanitary** – There is a existing sanitary line that’s depicted on the conceptual plan sheets in Attachment 1 with a green line with an “S”. Sanitary manholes, like the one pictured to the right, were identified in the field and on the Northwoods Buildings – Phase 2 site plans. The sanitary lines runs north under the center of Ladbroke Drive and then follows Westind Drive reservation to Broad Run. Just south of Broad Run this sanitary line ties into another sanitary line that runs east and west along Broad Run. The sanitary alignment along the right-of-way reservation for Westwind Drive will likely need to be relocated as there are direct conflicts with the proposed roadway improvements and bridge construction.
- **Telecommunications/Fiber** – There were a few telecommunication lines serving the Loudoun Parkway HOA on both sides of the of the proposed

road corridor near the limits of the right-of-way reservation. The lines on the east side of Westwind Drive may need to be relocated in order to construct the right turn lane improvements and sidewalk.



Right of Way Considerations

A ninety (90) foot right-of-way reservation on the Minalter Inc property is shown on plan sheets 1 and 2 in Attachment 1. The 90’ right-of-way was reserved as part of SBPR-2007-0016. The deed recorded as part of the subdivision was recorded as document number 20081029-0064436. The following language regarding the reservation was taken directly from the deed:

“This deed further witnesseth, that in consideration of the premises and benefits which will accrue by reason of this subdivision, Owner hereby reserves for a period of forty (40) years from the date hereof for future street dedication to the County, at the County’s request, that certain area shown on the aforesaid Plat, containing 3.5233 acres in Parcel C, as “Hereby Reserved for Public Street Purposes.” Any future dedication or conveyance of the reservation area shall be subject to the Owner, its successors and assigns, being compensated in an amount equal to the fair market value of such area as if it were not reserved for future roadway purposes but taking into account that portions of the reserved area may be subject to Open Space Conservation and other applicable easements. This reservation is subject to the Owner’s right to relocate the reservation area, provided however, that such new reservation area is of equal width as the prior reservation area and connects to the adjacent lot or parcel to the north of the Property in the same location and provided such relocated reservation area satisfies all Virginia Department of Transportation and County requirements with respect to turning radii and horizontal geometry. Any conveyance of such reserved areas shall be subject to all existing easements including those certain open space and conservation easements recorded amongst the Land Records at Instrument Numbers 20080410018961 and 200804010018962 and the Agreement.”

A graphical representation of this reservation can also be found on the Site Plan #STPL2011-0012 for the Northwoods Buildings – Phase 2. On the north end of the project from the Westwind Drive/State Street Intersection to the Minalter/ Loudoun Parkway Center property there is existing dedicated right-of-way (varies 90’-100’) for the Westwind Drive extension. This right-of-way dedication within the Loudoun Parkway Center project between State Street and the proposed bridge is pictured on the bottom left hand corner of page 4. The photo is looking north towards State Street from the northern limits of the Broad Run floodplain.

Alignment Option 3 (Continuous alignment on Westwind Drive (Tangent Bridge)) will require a modification to the right-of-way originally dedicated as part of SBRD-1998-0069. The current owner of the adjacent property on which additional right-of-way acquisition would be necessary is the Loudoun Parkway Homeowners Association care of Resagent, Inc., R/A.

Proffer Analysis

Per proffers associated with Loudoun Parkway Center (ZMAP-1990-0015), construction of Westwind Drive between the Broad Run Spine Road (now named State Street) and the proposed bridge over Broad Run (also defined as the north boundary of the Broad Run flood plain) is the responsibility of the developer of Loudoun Parkway Center. Exhibit C to the proffers describes the portions of the onsite roadway system for which the developer is responsible. Related to the section of Westwind Drive to the south of the Broad Run Spine Road, Exhibit C states the following:

“South of Broad Run Spine Road – Ultimate construction shall be four-lane divided at earlier of bridge by others over Broad Run or issuance of building permit for last development on Property.”

Per proffers associated with the Moorefield Development (ZCPA-2014-0002), construction of Westwind Drive between the north boundary of the Broad Run flood plain (including the bridge over Broad Run) and Route 606 is the responsibility of the developer of Moorefield. Proffer IV.B(vii) of the proffers associated with ZCPA-2014-0002 states the following:

“Prior to the approval of the zoning permit for non-residential space that would result in the aggregate permitted non-residential square footage exceeding 6,000,000 square feet for the portions of the Property not included within any of the Site Dedication sites listed in Proffer II., CMCF shall have constructed or bonded for construction Westwind Drive from its existing terminus north of the Broad Run floodplain to Route 606 as a 120-foot right-of-way 4-lane divided urban section.”

With regard to right-of-way acquisition necessary for the project and potential construction of Westwind Drive prior to CMCF having obtained zoning permit for non-residential space that exceeds 6,000,000 square feet, Proffer IV.B states the following:

“In the event that Loudoun County is not able to provide the necessary off-site right-of-way at no cost to CMCF, then CMCF shall contribute the estimated cost (using VDOT guidelines) of such off-site construction to the County, as Trustee, to be used solely to fund such road construction when the right-of-way becomes available. If others complete any such construction, prior to the time such construction would be required pursuant to this Proffer Statement, CMCF will (at the time it would have been obligated to construct) contribute to the County as a Capital Facility Transportation Improvement contribution, the actual cost of such construction. Any such Capital Facility Transportation Improvement contribution shall be used within the Ashburn Community, or for the Loudoun County Parkway.”



Impacts to Ongoing Private Land Development

The proposed alignments of the Westwind Drive extension utilize a majority of the right-of-way reservation on the Minalter Inc. and Loudoun Parkway HOA Properties. The Minalter Inc. property is currently under development as Ladbroke Drive is being extended and four new industrial buildings are being built. The approved site plan for the Northwoods Buildings – Phase 2 (STPL 2011-0012) provides a 90’ right-of-way reservation from Ladbroke Drive to Broad Run. This reservation is shown on the conceptual plans and the approved plans are referenced on sheets 14-17 in Attachment 1. Retaining walls are assumed to be utilized to minimize impacts to the stormwater management ponds and the parking lot around building #6.

Other Project Elements of Note

In addition to the information provided above, the following additional project elements should be considered as part of this project:

- There are proffers associated with this project. See Attachment 5 for more information on these proffers.
- If Loudoun County decides to build the Southern section of the Westwind Drive extension, the project will require close coordination with all property owners to determine access management and the characteristics of the road.
- Depending on the ultimate plan for the Westwind Drive extensions, additional entrance improvements will be required to access Building #6 from Ladbroke Drive.

Project Status

This project is proposed to be funded in the Loudoun County FY2016 Adopted Fiscal Plan during fiscal year 2018. The 2016 Adopted Fiscal Plan provides funding for a total of 9 million toward the project costs. The 9 million is broken down into 1.35 million for Professional Services and 7.65 million for construction. Loudoun has also submitted a House Bill 2 application for the project. In this application the County’s estimate for the project costs included 4.9 million for Preliminary Engineering, 7.7 million for Right of Way and Utilities, and 31.3 million for construction.

Implementation Actions

This project has been identified and is currently in the planning stage. The next major implementation steps are as follows:

- Finalize scoping and feasibility
 - A comparison table of the alignment options described in the previously sections is included as Attachment 2
- Initiate preliminary design of the southern section

Project Schedule

The proposed schedule followed the current county delivery process for the major project phases. The schedule is based on funding becoming available for this project in July 2017. Major project element durations are as follows: (See Attachment 3 for a detailed proposed project schedule)

■ Preliminary Design	9 Months
■ Intermediate Design	4 months
■ Final Design	5 months
■ Right-of-Way Acquisition	5 months
■ Utility Relocation	14 Months
■ Project Bidding	6 Months
■ Construction	22 Months

Planning-Level Costs

Planning-level cost opinions were performed on the proposed engineering, right-of-way, and construction of Westwind Drive Extension from Ladbroke Drive to State Street. This cost analysis is based on preliminary conceptual layouts and field review of the project area, and is subject to change. This analysis assumes that the County will complete and fund the southern half (Route 606 to the northern limits of the Broad Run floodplain) of this project. The County will receive compensation for project costs from the Claude Moore Charitable Foundation once construction is complete. Per the Proffer Analysis, Loudoun Parkway Center will construct the northern section once the bridge is in place. An opinion of probable costs for each project phase is included below. (See Attachment 4 for additional details to the cost categories)

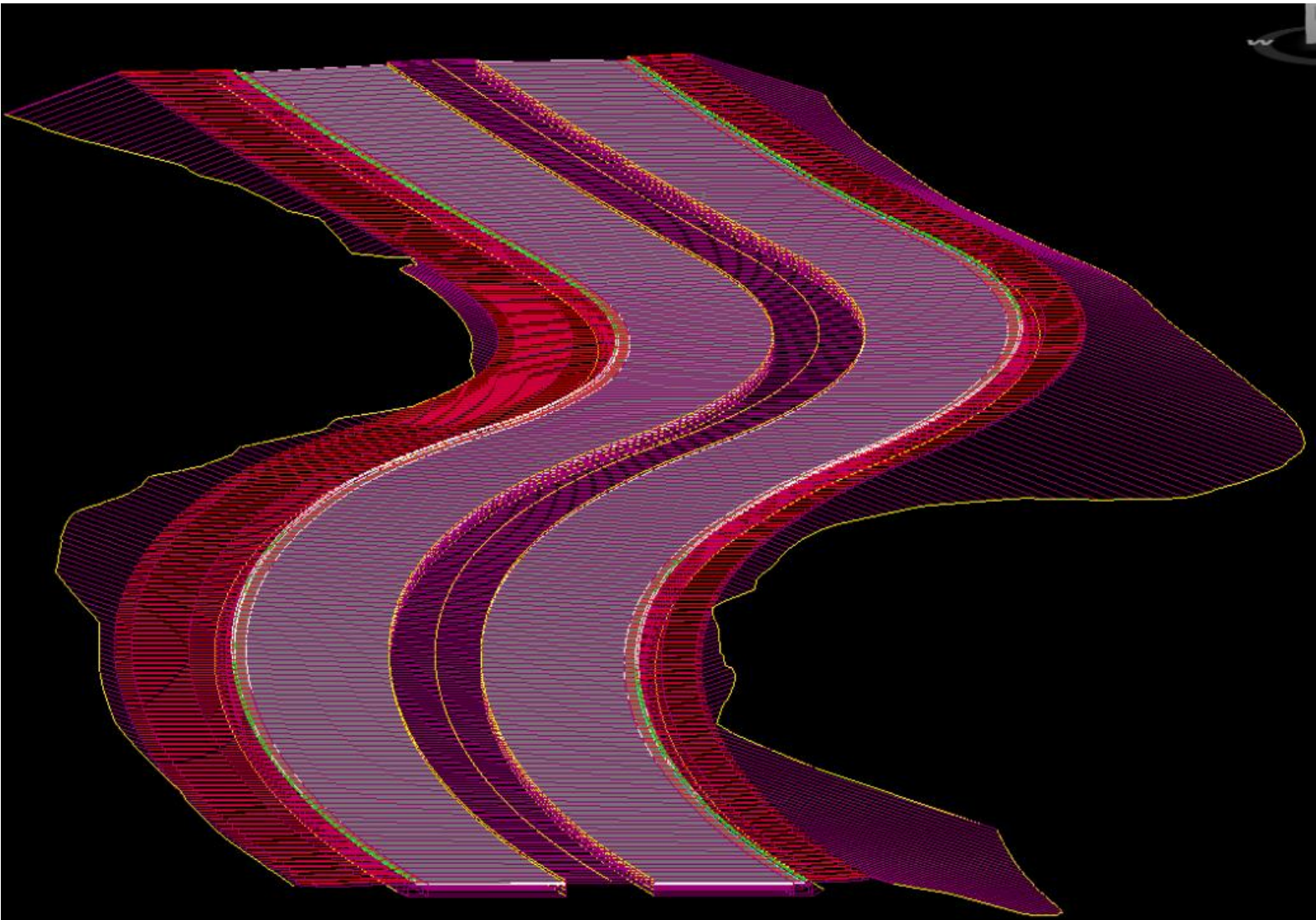
■ Preliminary Engineering:	\$4,500,000 – \$5,200,000
■ Construction (Option 1):	\$29,000,000
■ Construction (Option 2A):	\$28,300,000
■ Construction (Option 2B):	\$29,000,000
■ Construction (Option 3):	\$25,500,000
■ Right-of-Way (Includes Utility Relocations):	\$4,200,000 – \$4,800,000
■ Total Cost:	\$34,200,000 - \$39,000,000

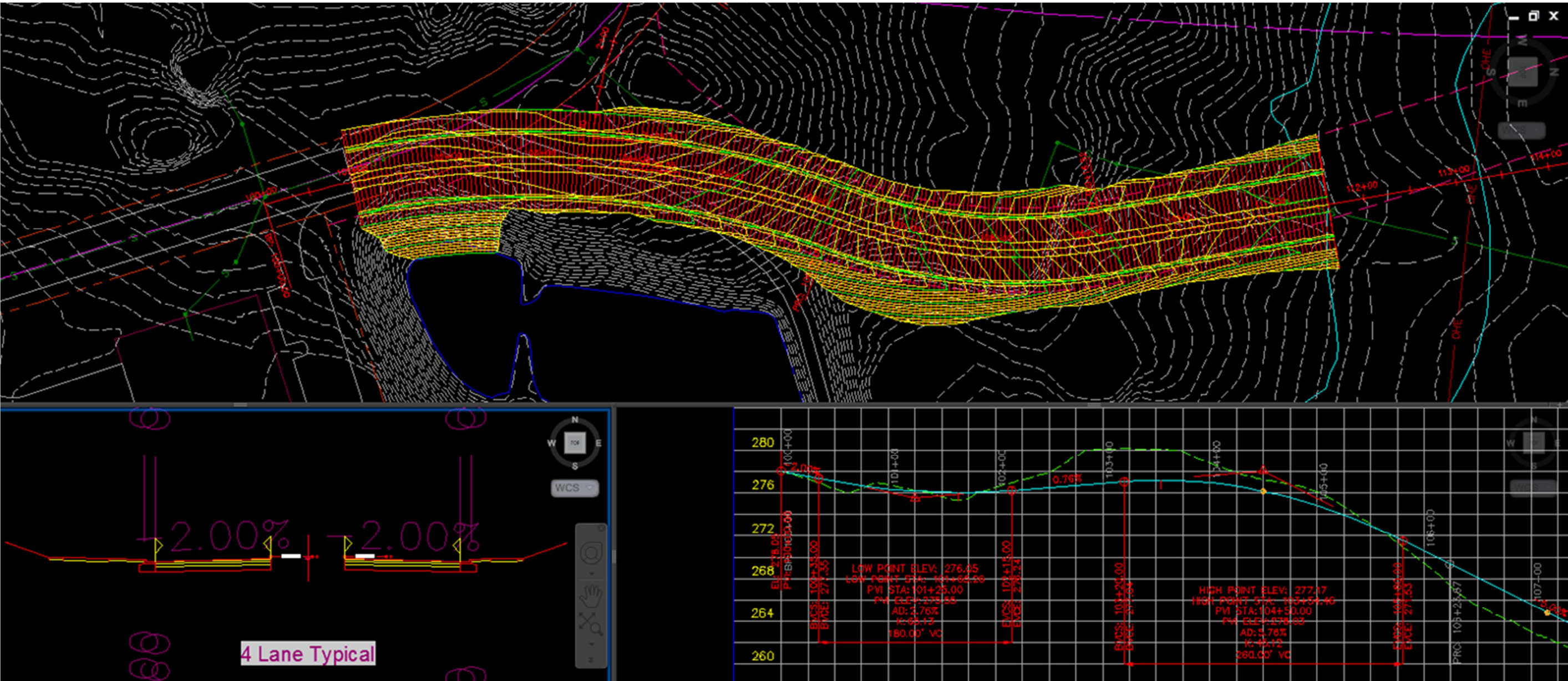
Civil3D

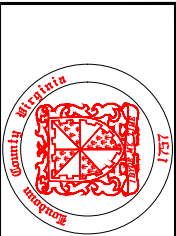
In order to develop a more detailed breakdown of costs for this project, the conceptual design utilized Civil 3D features to determine approximate limits of disturbance and earthwork quantities. Although cross sections were not shown on the attached plans, a corridor model was developed to advance the design based on the GIS survey. The picture to the right shows a screen shot of the Westwind Drive corridor in Civil3D's Object Viewer. This picture was captured looking north from a bird's eye view along option#3 before the Broad Run Bridge. The image on the next page shows different views of the corridor. In the top portion of this image, the plan view of the corridor is shown and section lines (in red) are equally spaced along the alignment to define project limits. The bottom left portion of this image shows the assembly(typical section) used along this corridor and the bottom right image shows the profile of the road. Using Civil 3D tools, its easy for the designer to manituplate the alignment, profile, and assembly so that the corridor automatically rebuilds as changes are made.

Attachments

- 1. Conceptual Plans, Profiles, and Typical Sections
- 2. Westwind Alignment Options Comparison Matrix
- 3. Project Schedule
- 4. Opinion of Probable Costs for all Options
- 5. Existing Conditions Memorandum





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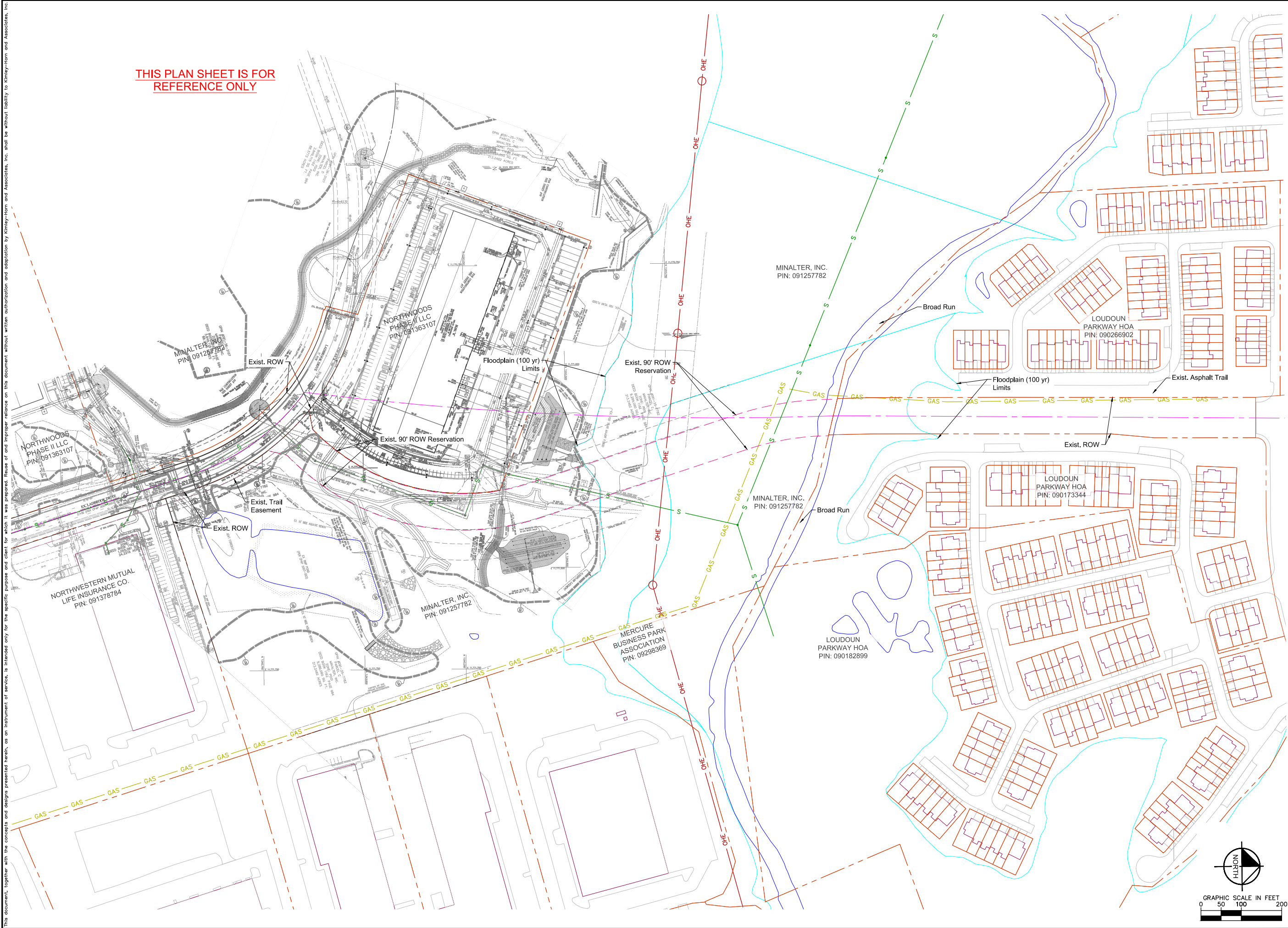
LOUDOUN CO.

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**WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT**
Existing Conditions - Aerial

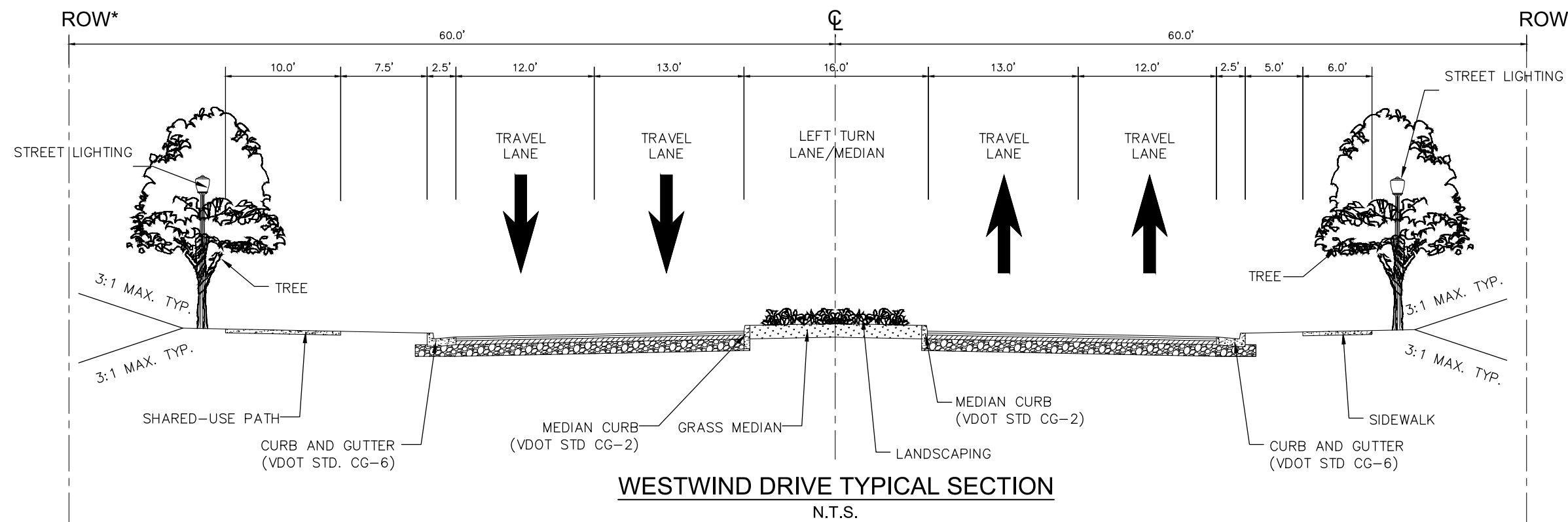
ATTACHMENT 1

SHEET NUMBER
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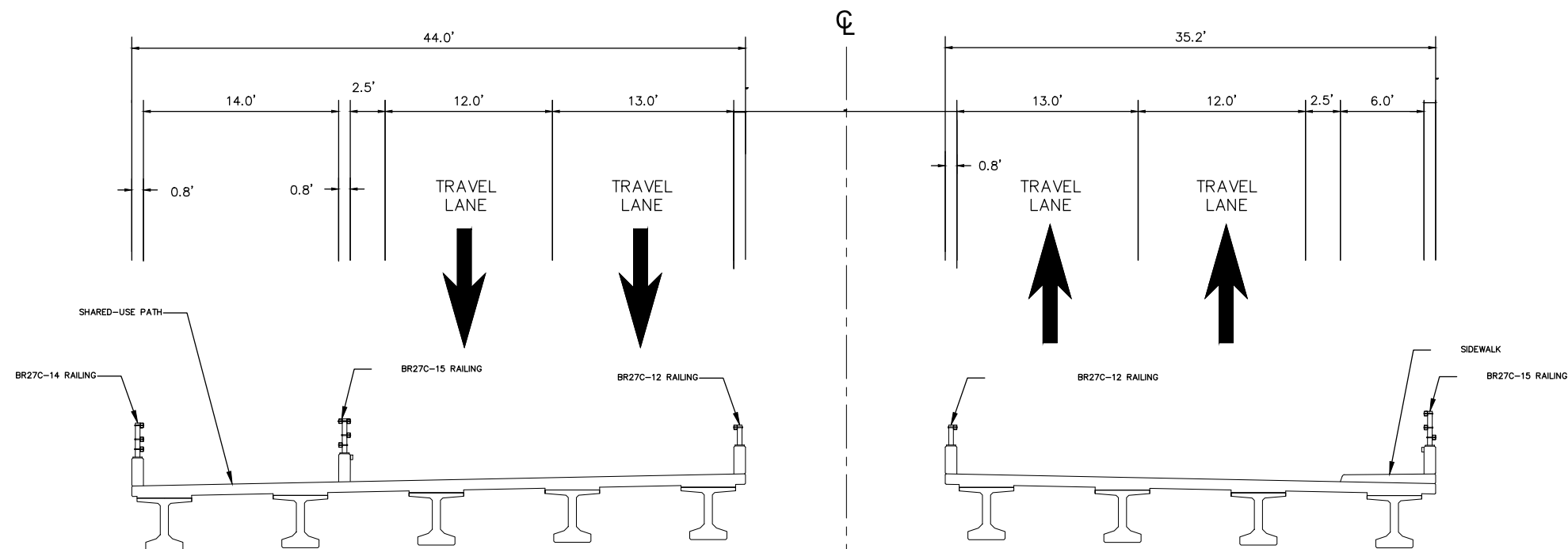


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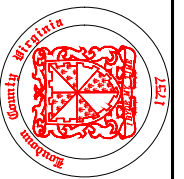
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OPTION 2: STA. 100+00 TO STA. 108+50 AND STA. 116+50 TO STA. 125+50
OPTION 3: STA. 100+00 TO STA. 111+50 AND STA. 119+50 TO STA. 128+00



CLASSIFICATION: U4M
40 MPH DESIGN SPEED
OPTION 1: STA. 111+00 TO STA. 119+50
OPTION 2: STA. 108+50 TO STA. 116+50
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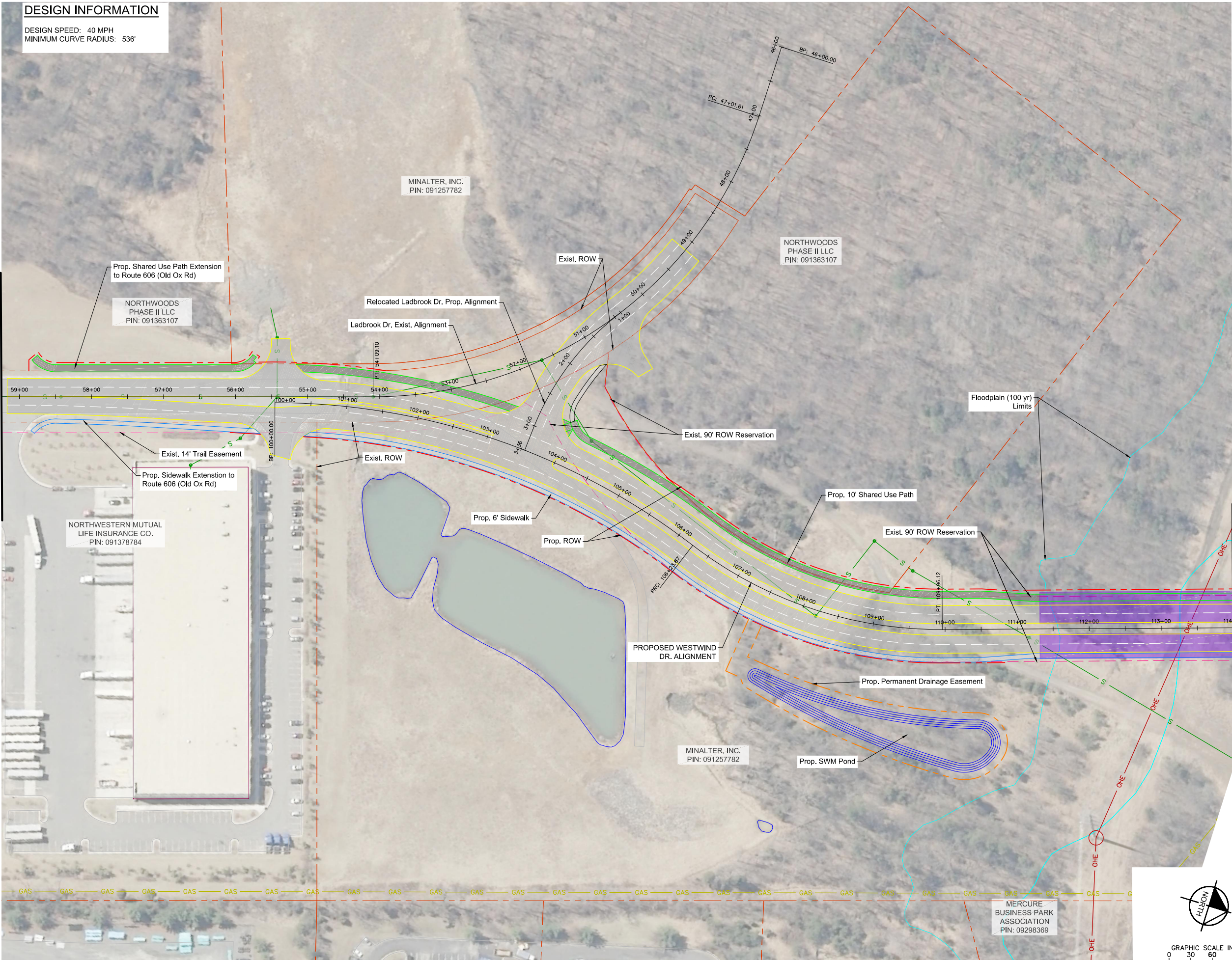
WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
Typical Sections

ATTACHMENT 1

SHEET NUMBER
3

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Matchline Sta. 59+25 - See Sheet 14



Matchline Sta. 114+00 - See Sheet 5

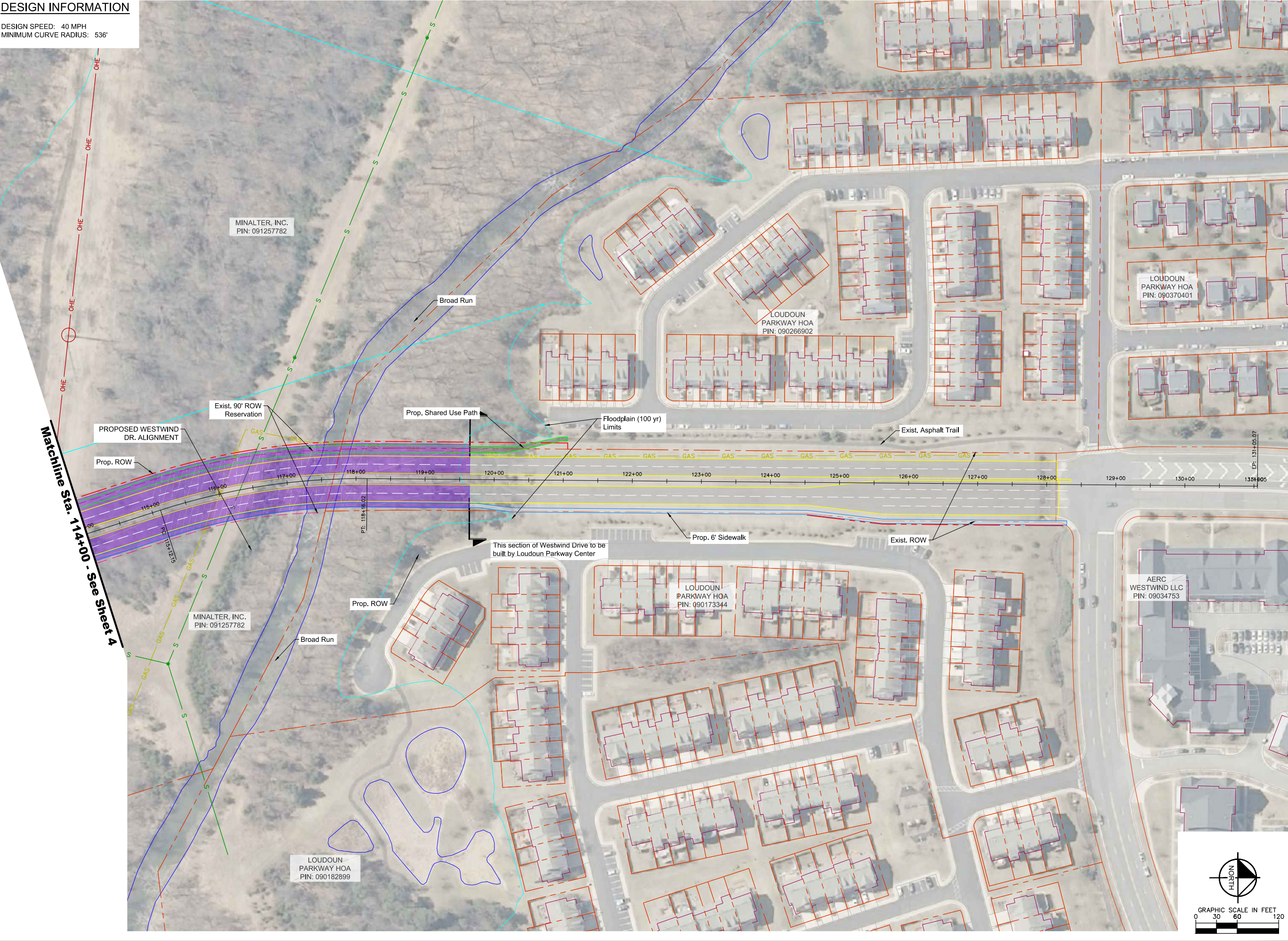
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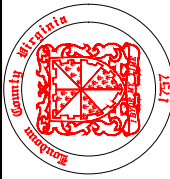
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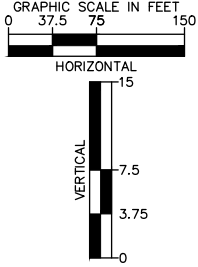
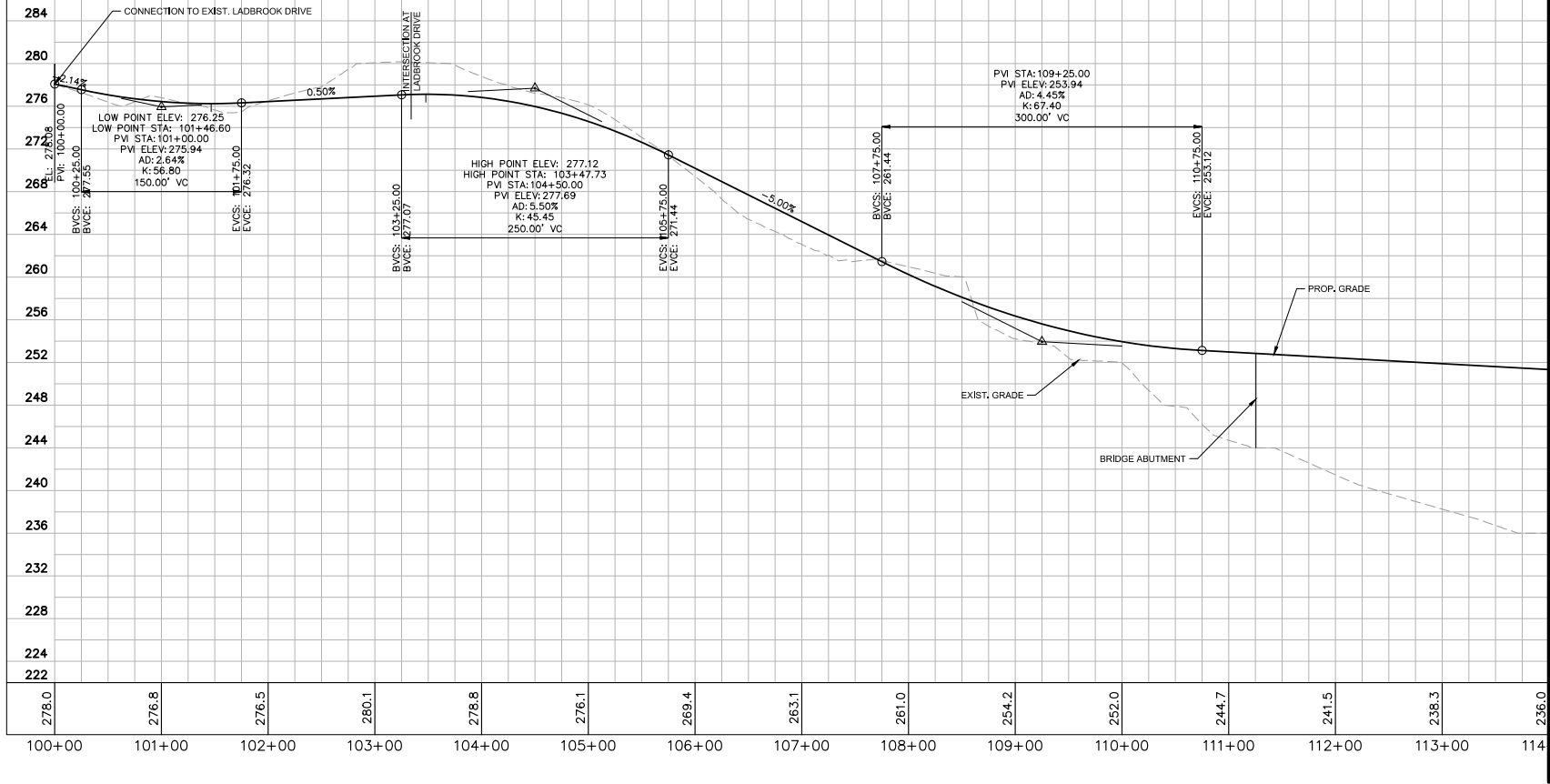
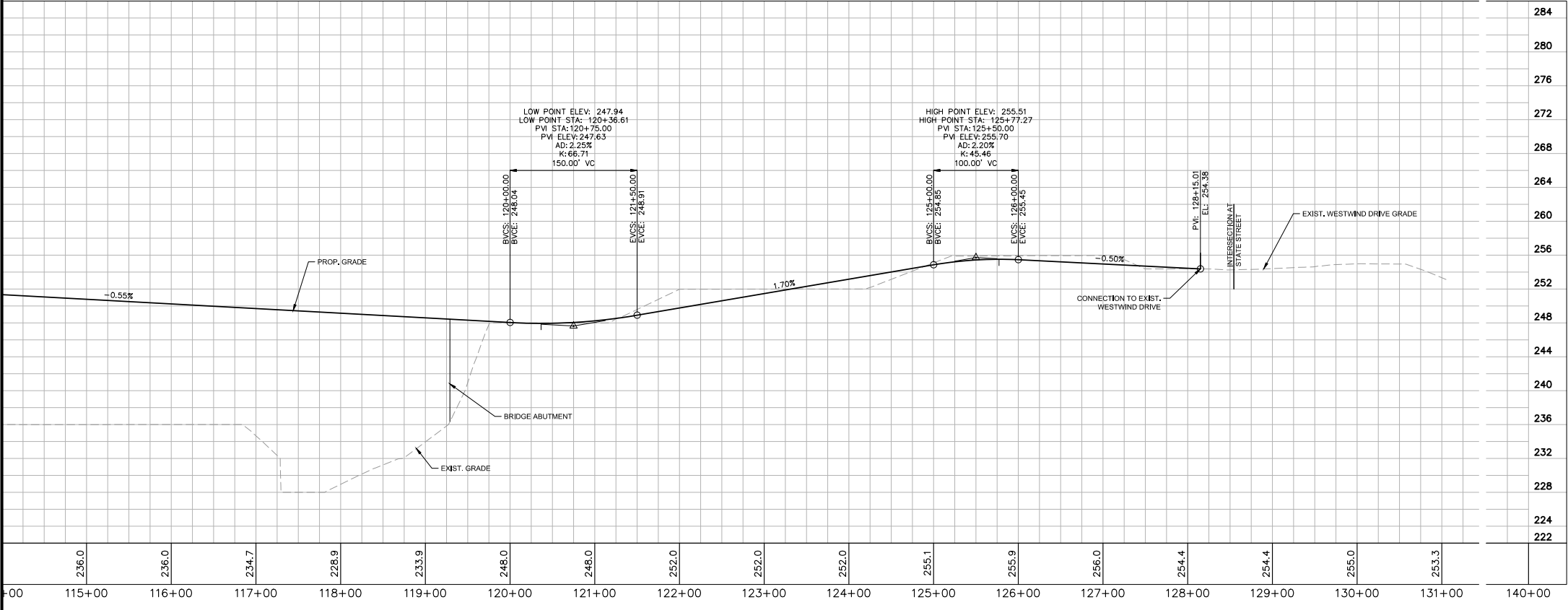
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ATTACHMENT 1	WESTWIND DRIVE EXTENSION CONCEPTUAL LAYOUT OPTION 1 - PLAN	Kimley»Horn	LOUDOUN COUNTY DTCI	LOUDOUN CO. VIRGINIA	
					SHEET NUMBER 5

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Matchline Sta. 59+25 - See Sheet 14

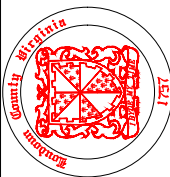
Matchline Sta. 111+00 - See Sheet 9

**WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
OPTION 2A - PLAN**

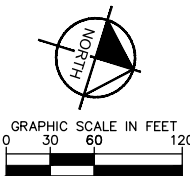
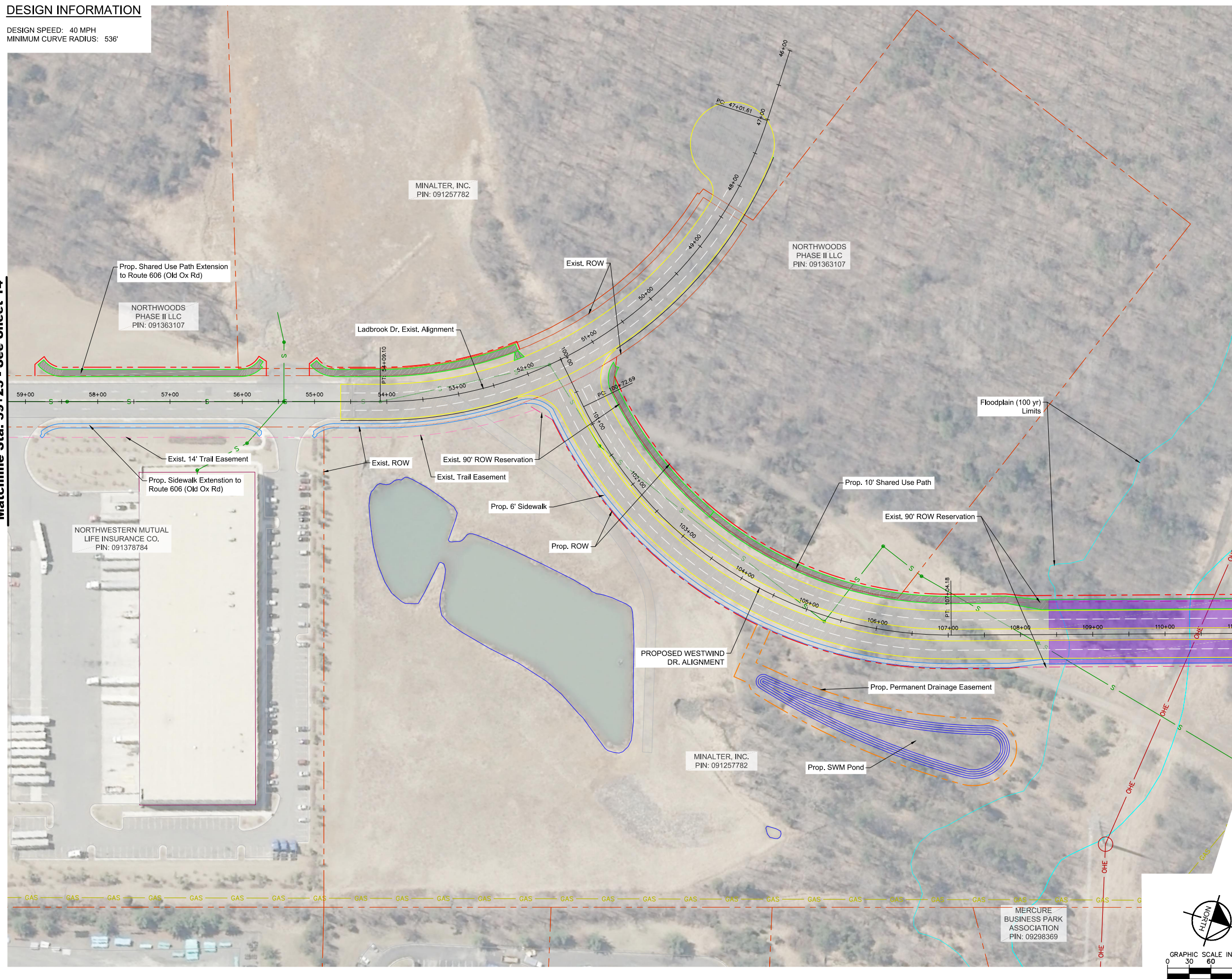
ATTACHMENT 1

LOUDOUN COUNTY
DTCI

LOUDOUN CO. VIRGINIA

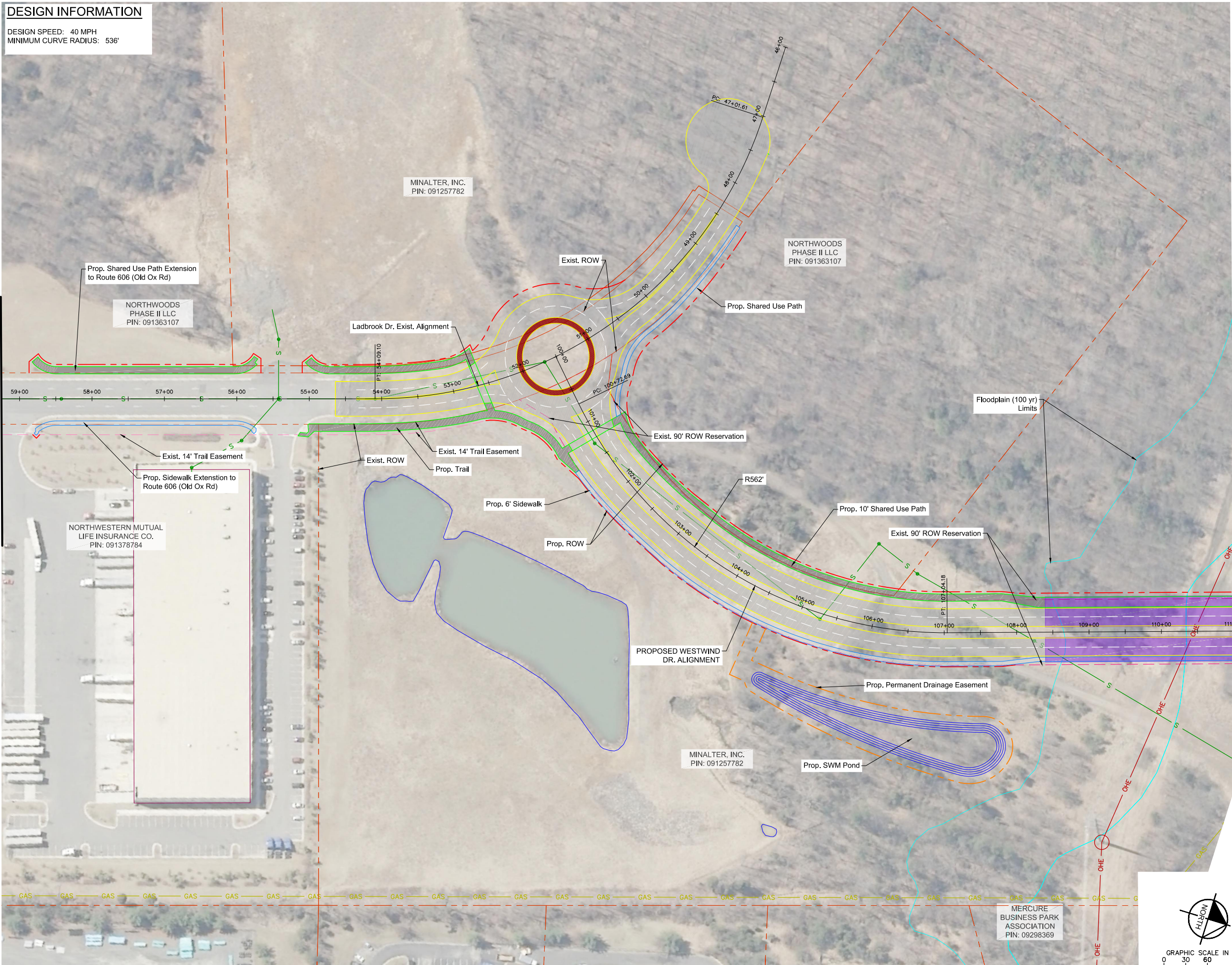


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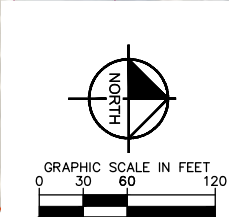
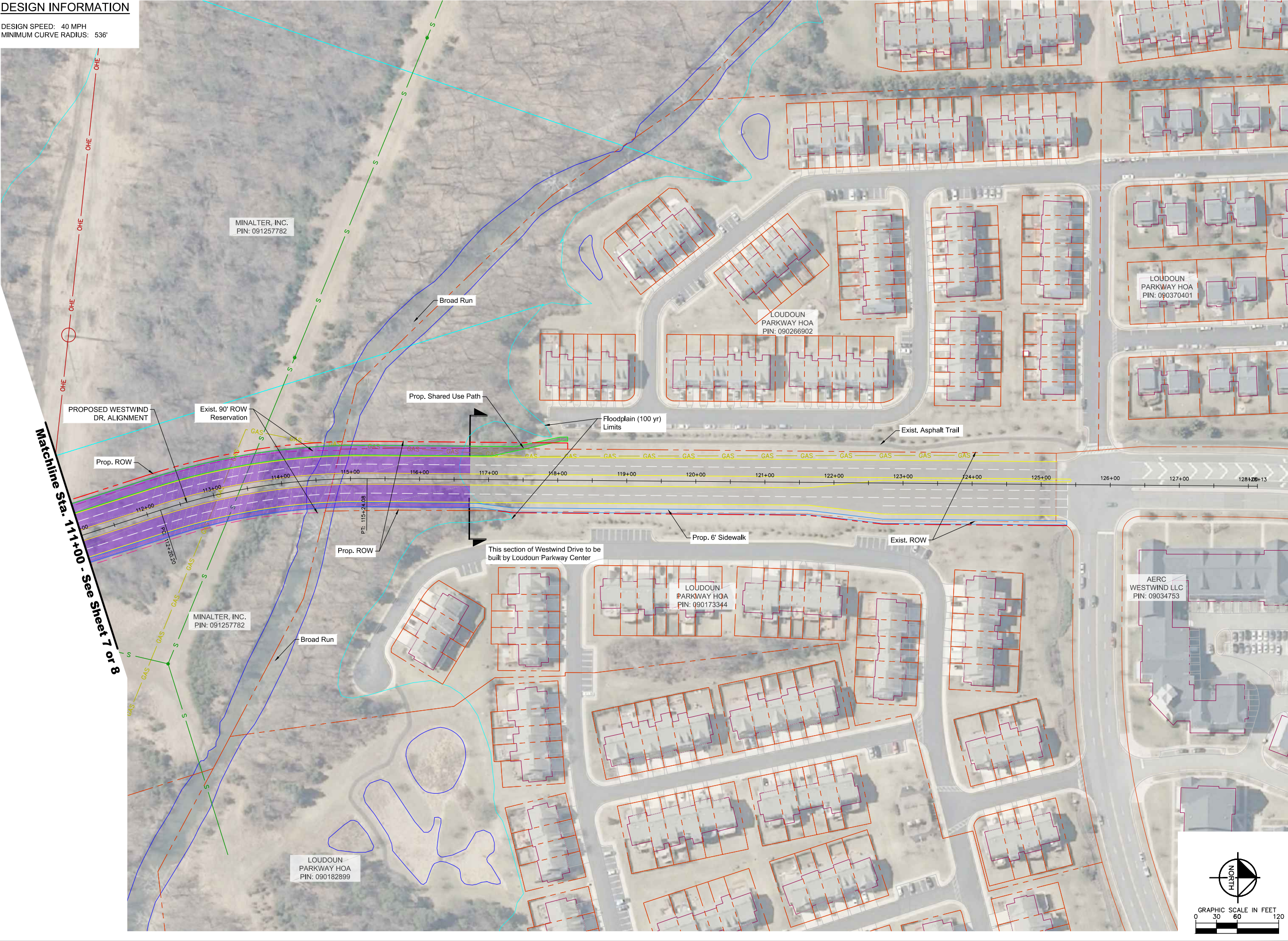
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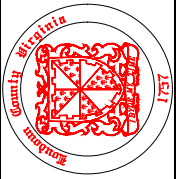
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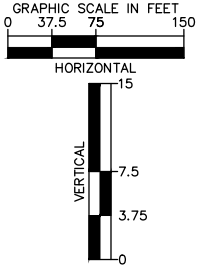
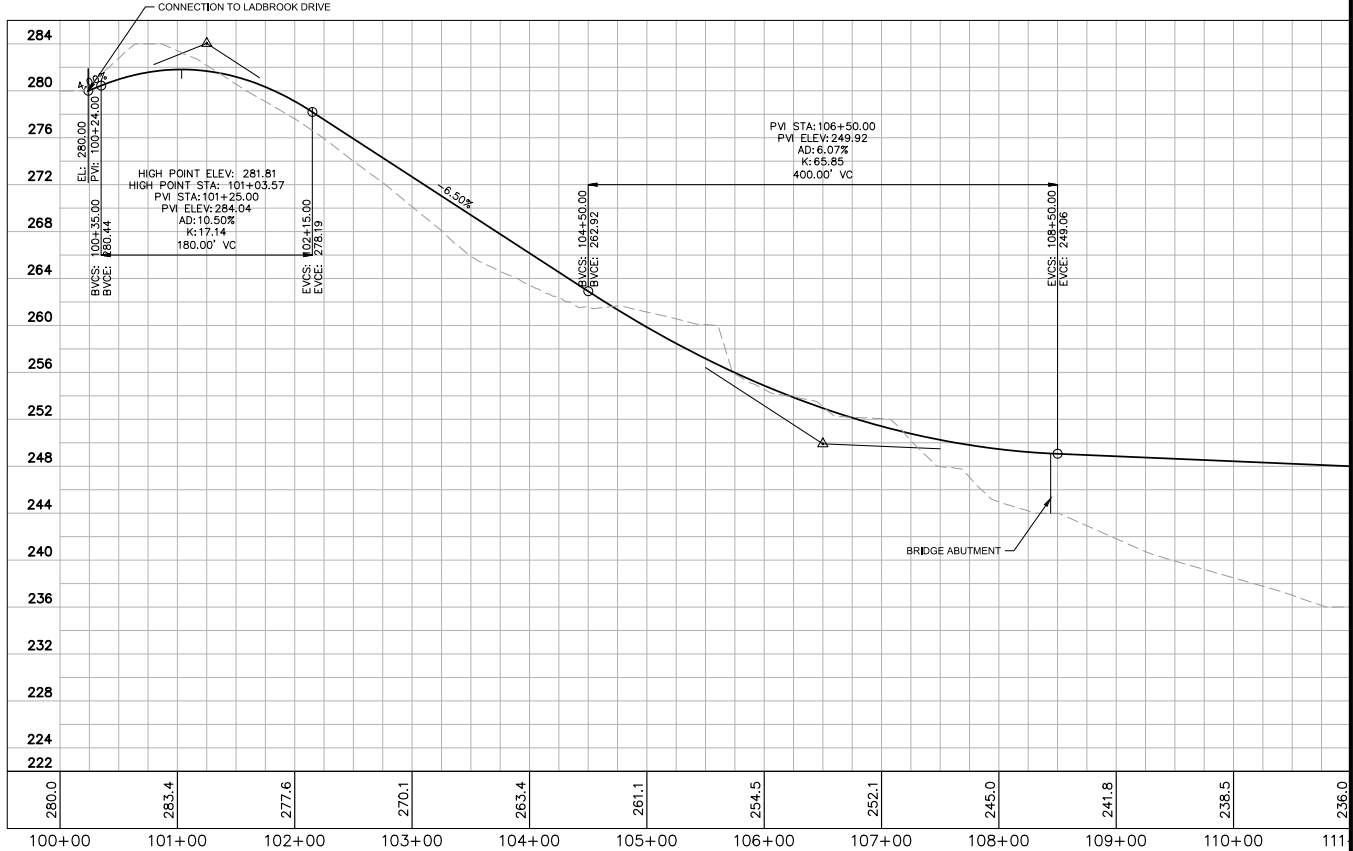
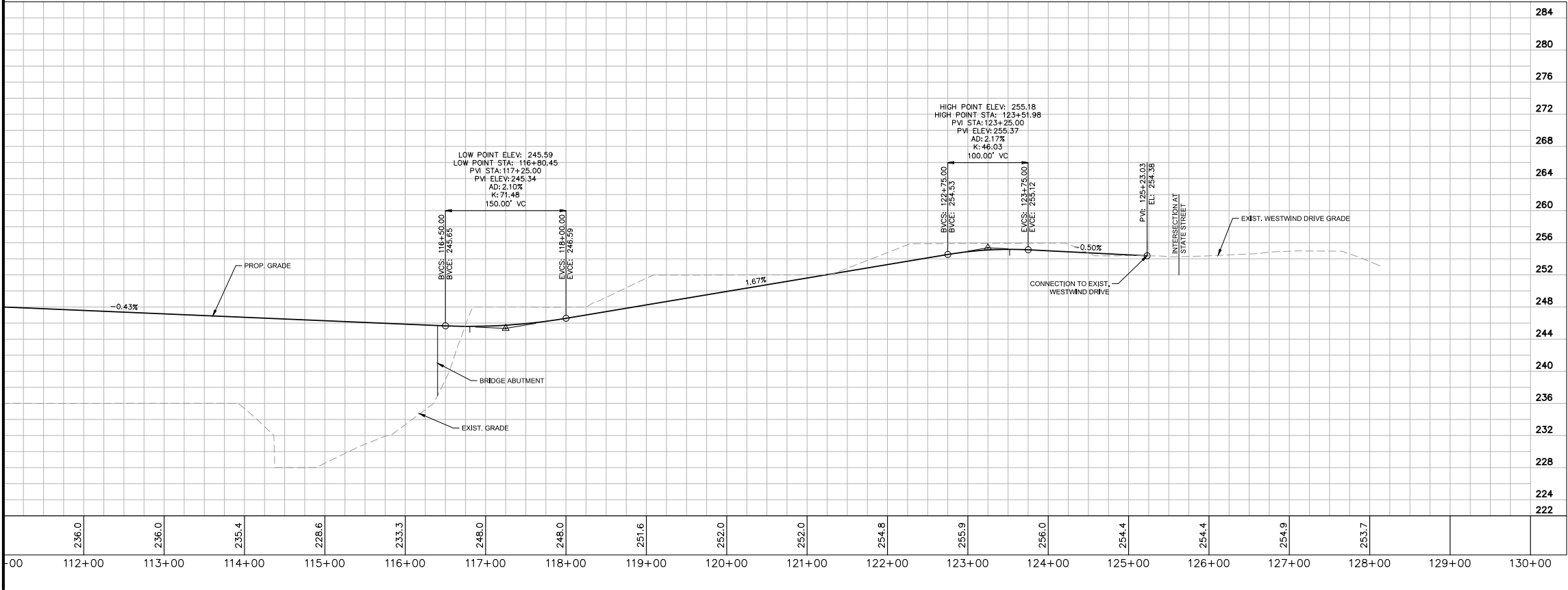
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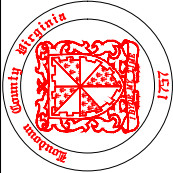
ATTACHMENT 1	WESTWIND DRIVE EXTENSION CONCEPTUAL LAYOUT OPTION 2 - PLAN	Kimley»Horn	LOUDOUN COUNTY DTCI	
				LOUDOUN CO. VIRGINIA

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Matchline B - Sta. 111+00



Matchline B - Sta. 111+00

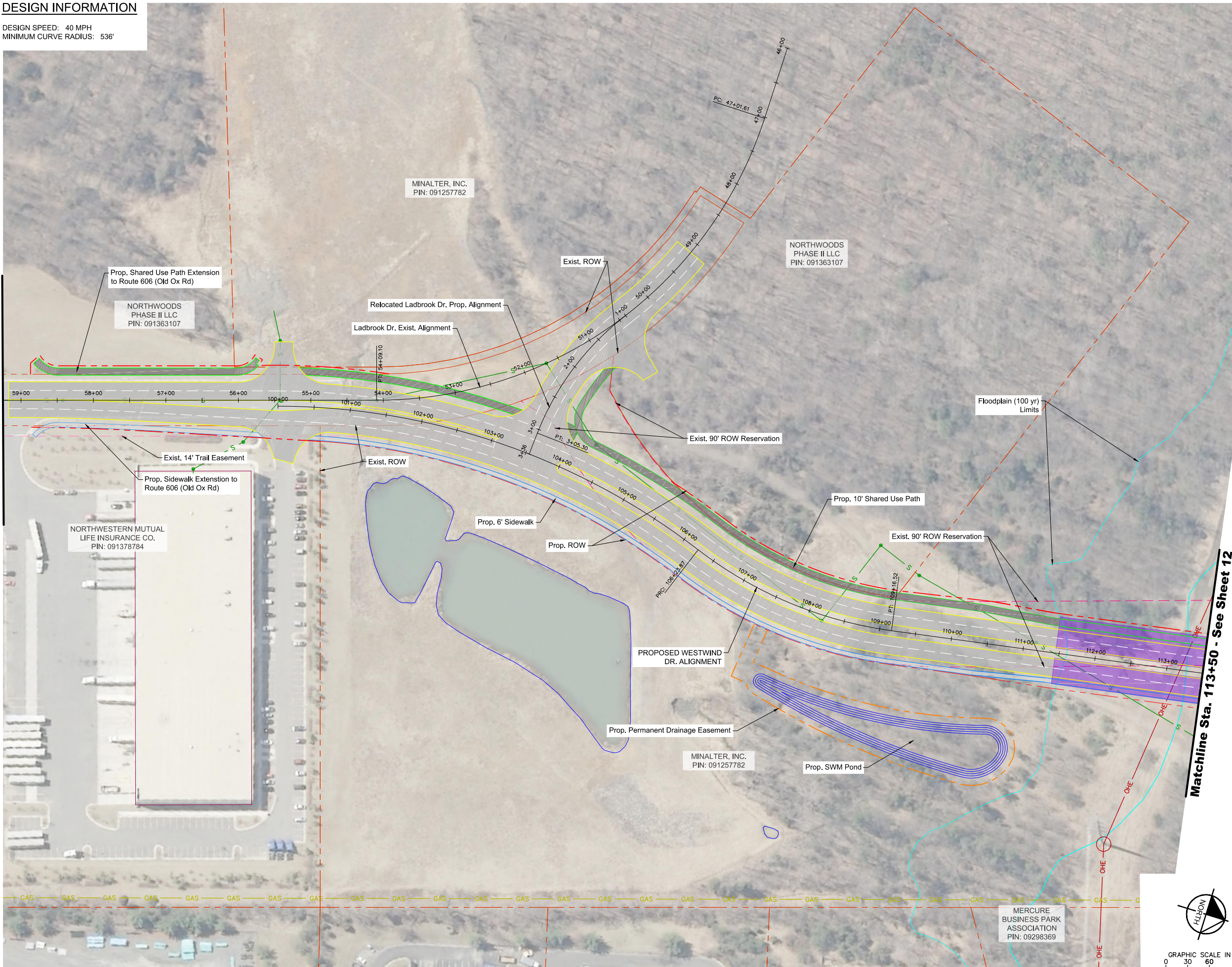


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DESIGN INFORMATION

DESIGN SPEED: 40 MPH
MINIMUM CURVE RADIUS: 536'

Matchline Sta. 59+25 - See Sheet 14



Matchline Sta. 113+50 - See Sheet 12

WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
OPTION 3 - PLAN

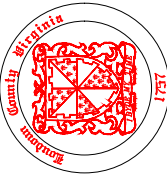
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SHEET NUMBER
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LOUDOUN COUNTY
DTCI

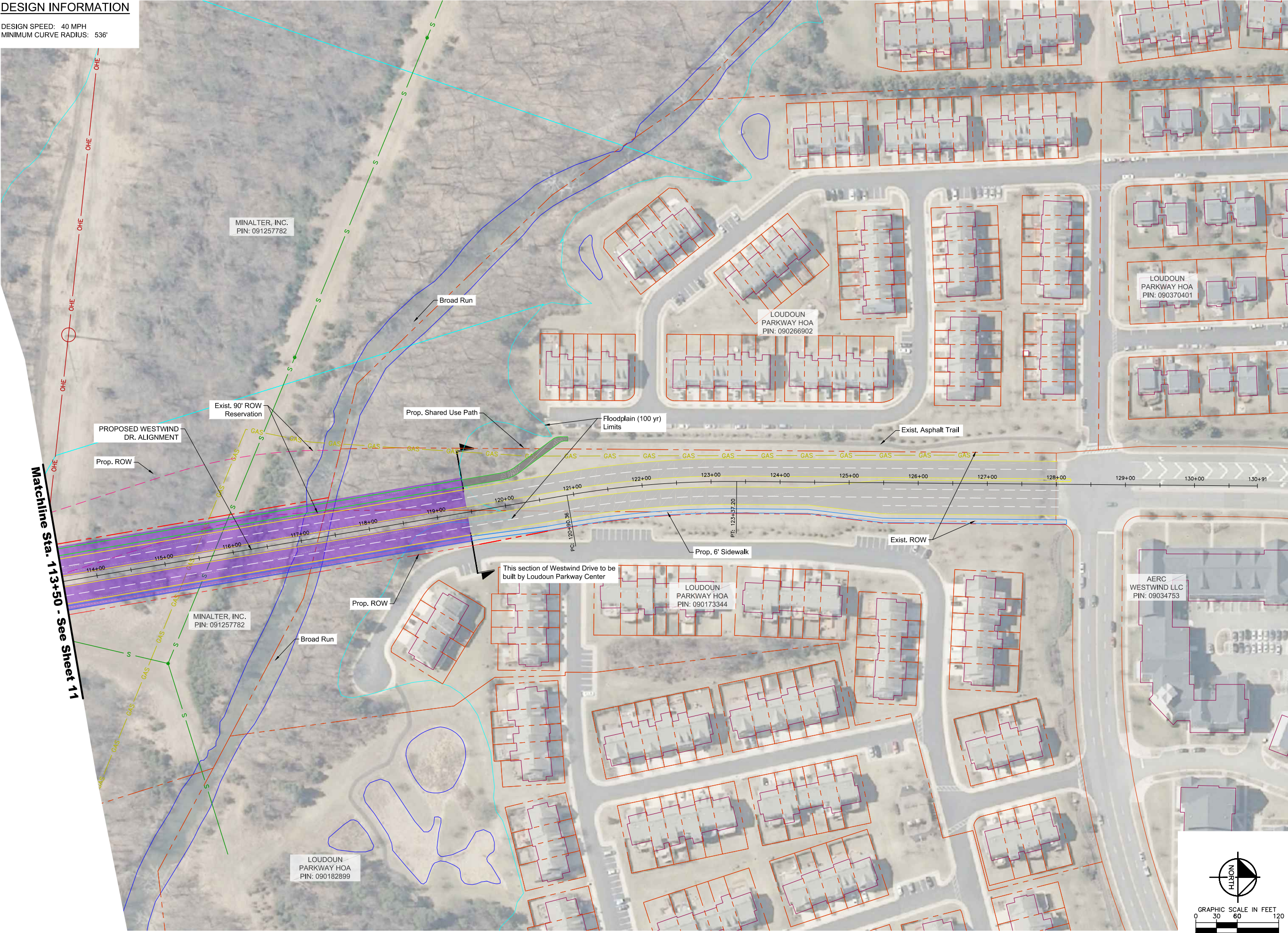
LOUDOUN CO. VIRGINIA


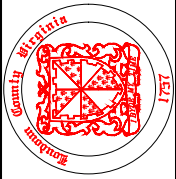


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DESIGN INFORMATION

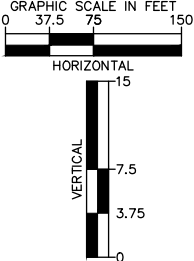
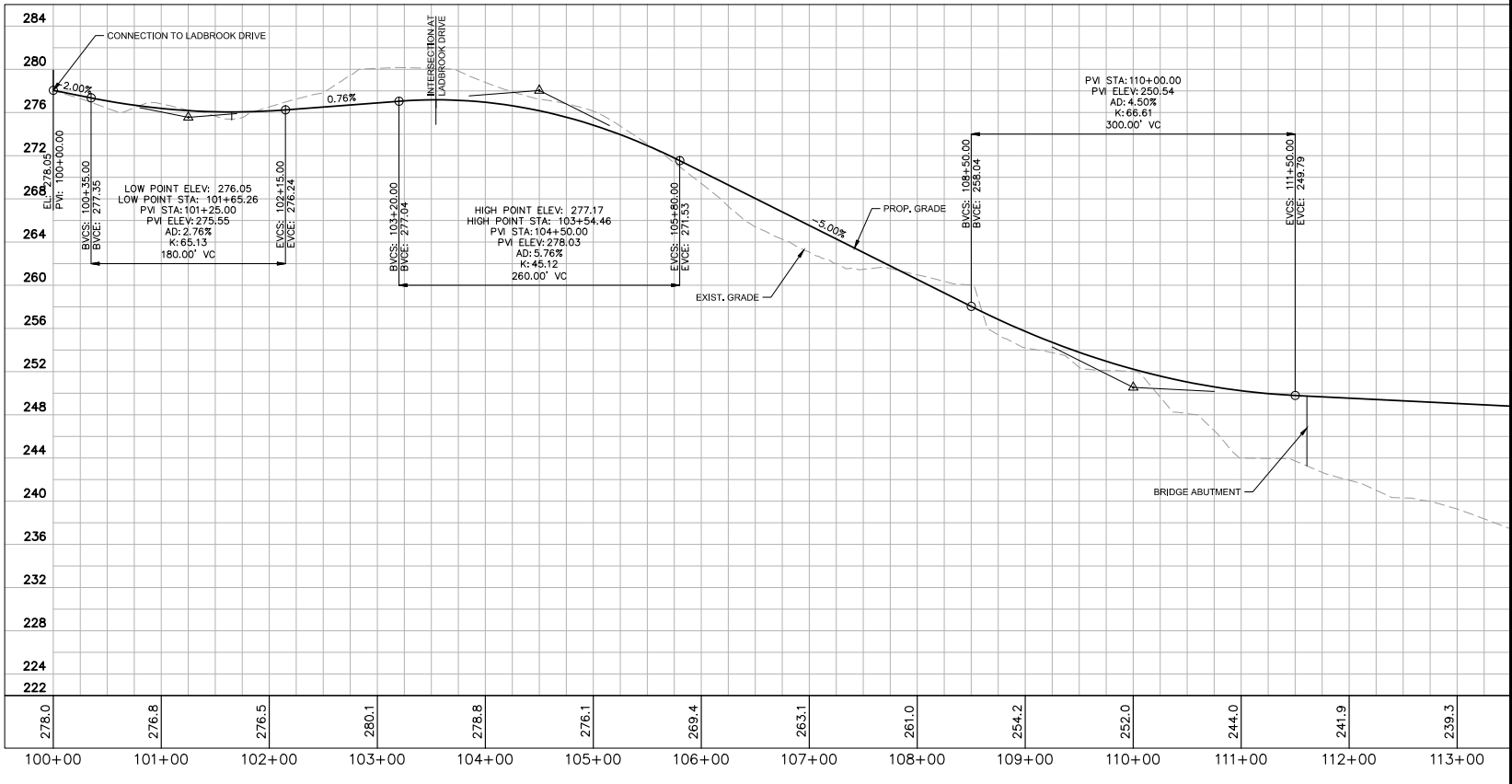
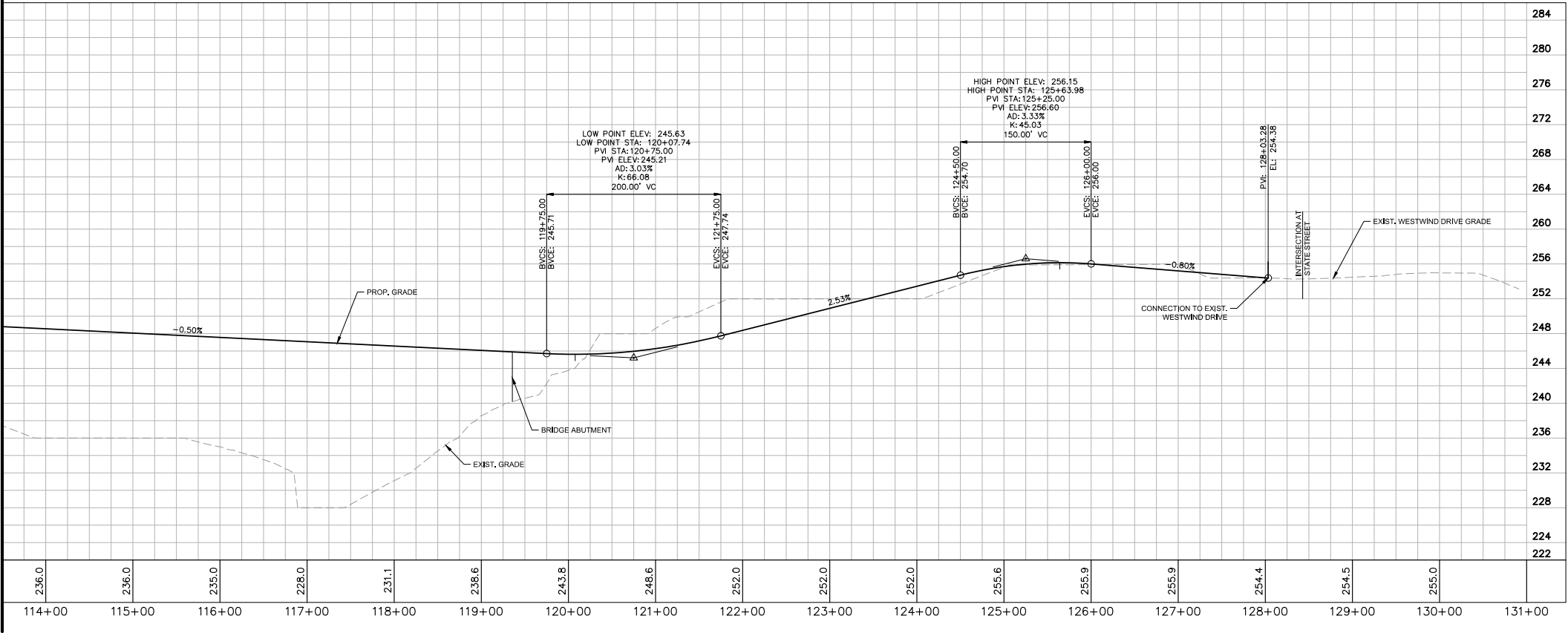
DESIGN SPEED: 40 MPH
MINIMUM CURVE RADIUS: 536'



ATTACHMENT 1	WESTWIND DRIVE EXTENSION CONCEPTUAL LAYOUT OPTION 3 - PLAN		LOUDOUN COUNTY DTCI	
SHEET NUMBER 12				

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Matchline C - Sta. 113+50



WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
OPTION 3 - PROFILE

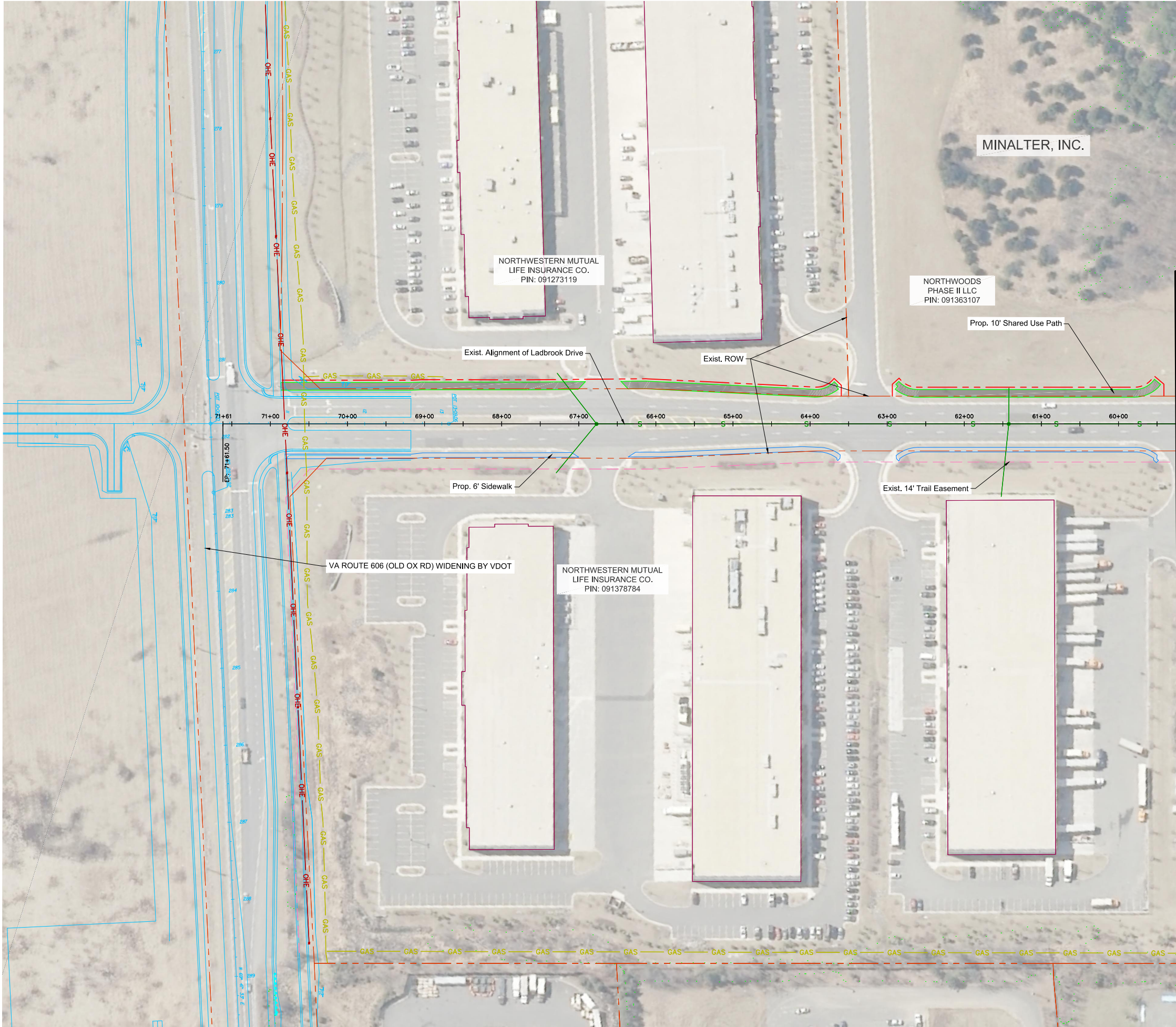
ATTACHMENT 1



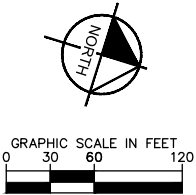
LOUDOUN COUNTY
DTCI

Kimley»Horn

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Matchline Sta. 59+25 - See Sheets 4, 7, 8, 11



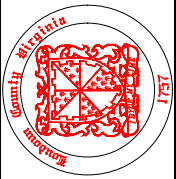
Matchline Sta. 59+25 - See Sheet 19



WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
OPTION 1 - Reference Plan



LOUDOUN COUNTY
DTCI



VIRGINIA

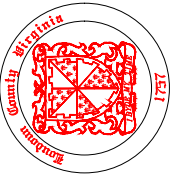
LOUDOUN CO.

Matchline Sta. 59+25 - See Sheet 19



EXTENSION
CONCEPTUAL LAYOUT
OPTION 2A - Reference Plan

LOUDOUN COUNTY
DTCI



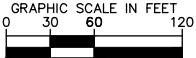
VIRGINIA

LOUDOUN CO

SHEET NUMBER

16

THIS PLAN SHEET IS FOR
REFERENCE ONLY

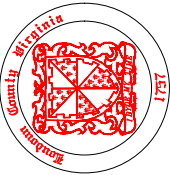


Matchline Sta. 111+00 - See Sheet 9

**WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT**
OPTION 2B - Reference Plan

ATTACHMENT 1

LOUDOUN COUNTY
DTCI



VIRGINIA

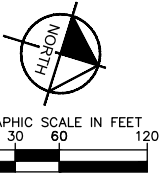
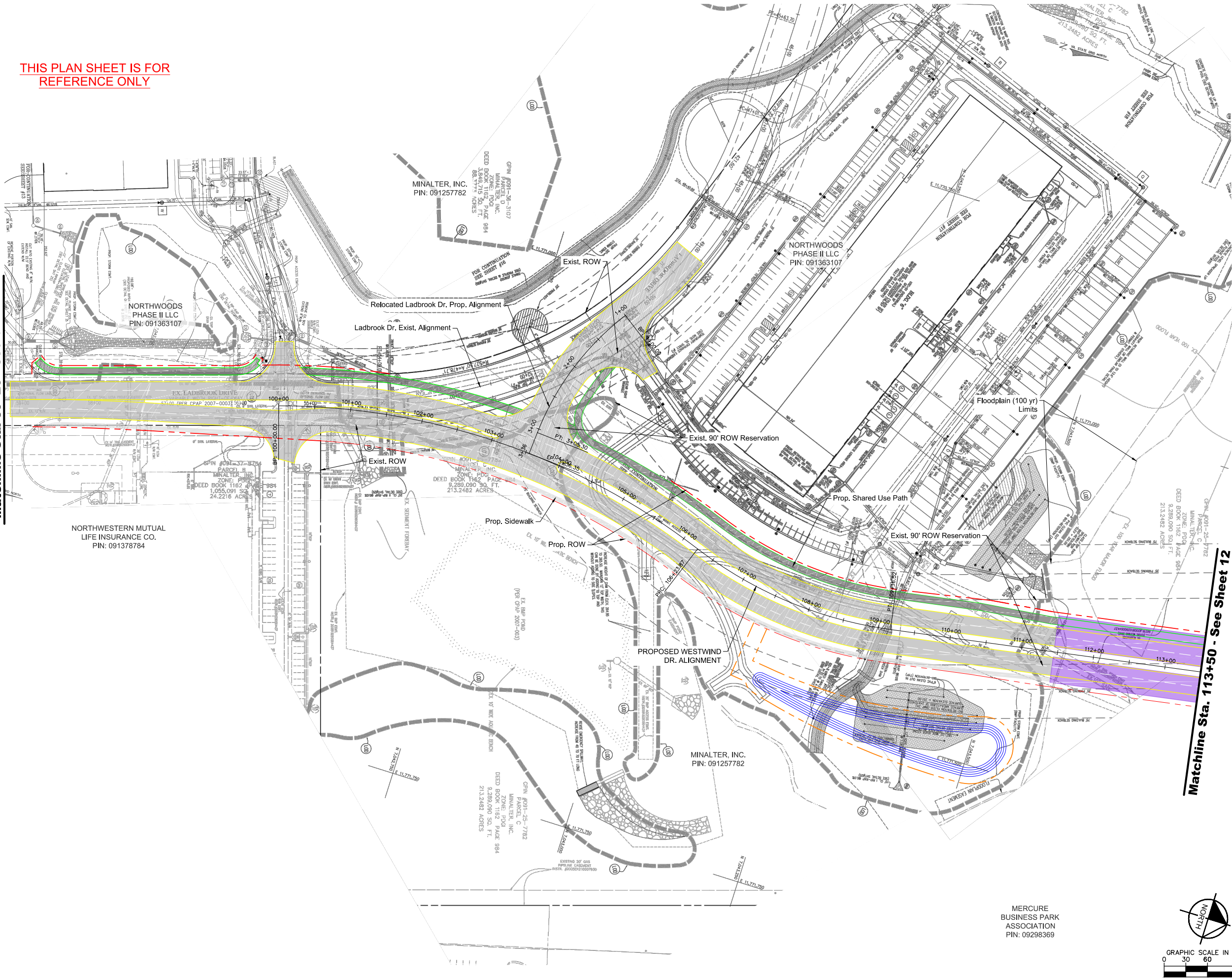
LOUDOUN CO.

SHEET NUMBER
17

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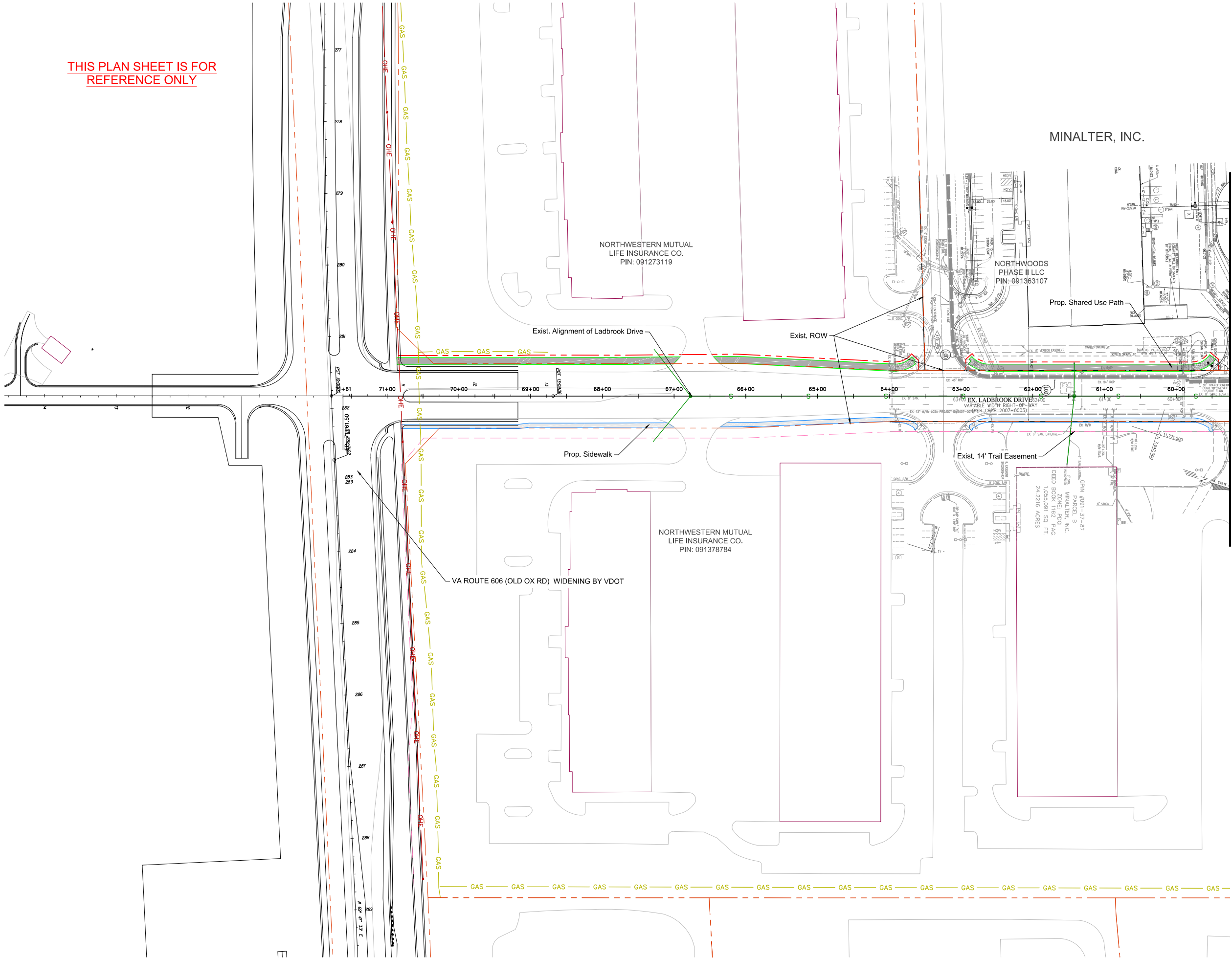
Matchline Sta. 59+25 - See Sheet 19

THIS PLAN SHEET IS FOR
REFERENCE ONLY

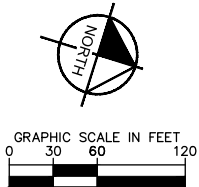


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REFERENCE ONLY



Matchline Sta. 59+25 - See Sheets 15, 16, 17, 18



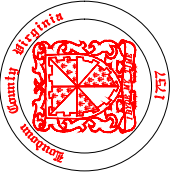
WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
Sidewalk & Path Extension - Reference

ATTACHMENT 1



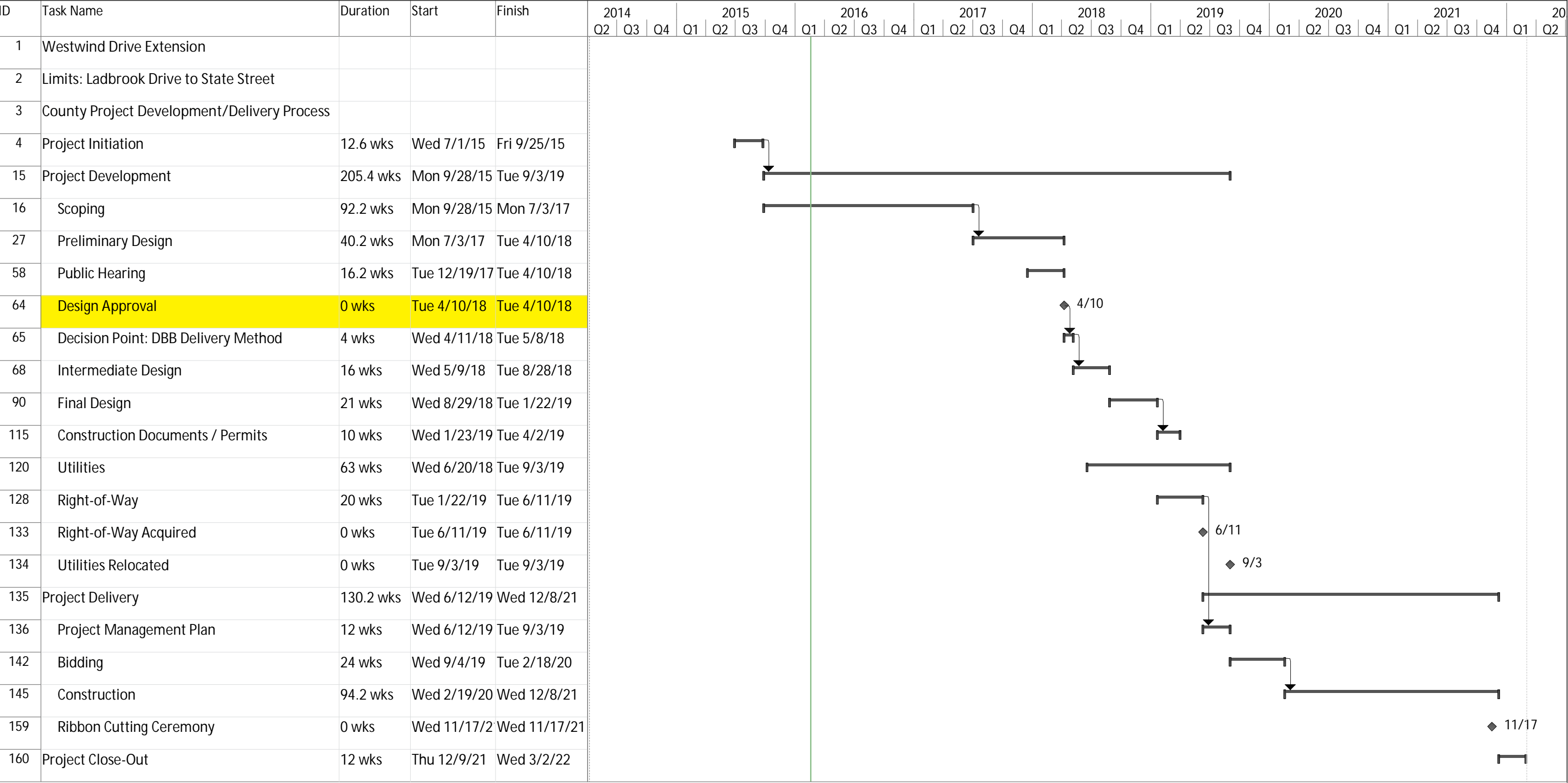
LOUDOUN COUNTY
DTCI

LOUDOUN CO. VIRGINIA



SHEET NUMBER
19

Alignment Option		1	2A	2B	3
Elements					
Total Project Cost Estimate		\$ 38,900,000	\$ 37,900,000	\$ 39,000,000	\$ 34,200,000
Traffic	Ladbrook Drive/Westwind Drive Intersection	T-intersection. Westwind Continuous	T-intersection. Ladbrook Continuous	Roundabout	T-intersection. Westwind Continuous
Design Components	Bridge	On a Curve			Tangent
	Bridge Length	840'			800'
	Estimated Area of Retaining Wall Required	706 SY	795 SY	1,110 SY	915 SY
	Bicycle & Pedestrian Improvements	10' Shared Use Path on west side & 6' Sidewalk on east side of Westwind Drive & Ladbrook Drive			
	Bicycle & Pedestrian Connectivity	Shared Use Path and Sidewalk Connection from State Street to Route 606 Trail			
Utilities	Overhead Electric	Clearance Issue with proposed bridge			
	Gas	Proposed bridge and storm line may conflict with gas line			With proposed road shifted east away from gas line, conflicts could be avoided
	Sanitary	Sanitary line will likely need to be relocated			
Property Impacts	Loudoun HOA Parkway	Within Dedicated ROW			Approx 1.0 Acres of Additional ROW needed
	Minalter Inc.	Approx 1.9 Acres of Additional ROW needed	Approx 1.8 Acres of Additional ROW needed	Approx 2.2 Acres of Additional ROW needed	Approx 3.1 Acres of Additional ROW needed



Project: Westwind Drive Extension
Date: Thu 2/18/16

Task

Split

Milestone

Summary

Project Summary

External Tasks

External Milestone

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Deadline

Progress

Manual Progress

Project:	Westwind Dr Extension (Option 1)			
Limits:	State St to Ladbrook Dr			
Scope:	Approx. 2000 LF Extension of Westwind Dr 4-lane divided roadway 120' Right-of-Way 10' shared-use path & 6' sidewalk			
Item	Quantity	Unit	Unit Cost	Cost
Construction (CN)				
Mobilization	1	LS	\$ 1,050,500	\$ 1,050,500
Construction Surveying	1	LS	\$ 202,500	\$ 202,500
Clearing & Grubbing -	5	AC	\$ 8,500	\$ 42,500
Excavation	8,200	CY	\$ 15	\$ 123,000
Borrow	1,500	CY	\$ 35	\$ 52,500
Retaining Wall	706	SY	\$ 750	\$ 529,500
Embankment Fill	1,200	CY	\$ 40	\$ 48,000
Asphalt Concrete (SM-9.5A)	1,276	TON	\$ 100	\$ 127,607
Asphalt Concrete (IM-19.0)	2,552	TON	\$ 85	\$ 216,932
Asphalt Concete (BM-25.0)	3,828	TON	\$ 80	\$ 306,258
Subbase	6,264	TON	\$ 65	\$ 407,183
Pavement Milling	500	SY	\$ 20	\$ 10,000
Pavement Demo	4,800	SY	\$ 15	\$ 72,000
VDOT Std. Curb & Gutter	6,200	LF	\$ 40	\$ 248,000
Curb Demo	350	LF	\$ 10	\$ 3,500
Sidewalk/Multi-use path	3,045	SY	\$ 30	\$ 91,350
Concrete Barrier	100	LF	\$ 70	\$ 7,000
Impact Attenuator	1	EA	\$ 7,000	\$ 7,000
Guardrail	100	LF	\$ 30	\$ 3,000
Guardrail Terminal	2	EA	\$ 3,000	\$ 6,000
Drainage Inlet	7	EA	\$ 5,000	\$ 35,000
RCP Drainage Pipe	2,200	LF	\$ 80	\$ 176,000
SWM Basin	1	EA	\$ 225,000	\$ 225,000
Traffic Signal Improvements	3	EA	\$ 300,000	\$ 900,000
Signing & Marking	0.3	Mi	\$ 140,000	\$ 42,424
Maintenance of Traffic	1.0	%	Total Constr.	\$ 212,343.57
Lighting	1,100	LF	\$ 20	\$ 22,264
Trees	22	EA	\$ 250	\$ 5,500
Seed, Fertilizer, & Mulch	3,911	SY	\$ 0.70	\$ 2,738
E&S Control	1,100	LF	\$ 6	\$ 6,600
Bridge 1	65,110	SF	\$ 250	\$ 16,277,500
Construction Cost Subtotal				\$ 21,459,700
Additional Const. Costs				
Contingency	25	%	-	\$ 5,364,925
Construction Admin	10	%	-	\$ 2,145,970
CN Total				\$ 28,970,000
Right-of-Way (RW)				
RW Dedicated from HOA	134,700	SF	\$ -	\$ -
Additional RW from HOA	20,402	SF	\$ 4	\$ 81,608
RW Reserved from Minalter	134,700	SF	\$ 10	\$ 1,347,000
Additional RW from Minalter	42,171	SF	\$ 10	\$ 421,712
Drainage Easement from Minalter	26,600	SF	\$ 10	\$ 266,000
Additional RW from Minalter for Bike & Ped Improvements	13,300	SF	\$ 10	\$ 133,000
Utilities	12	%	-	\$ 2,575,164
RW Total				\$ 4,740,000
Preliminary Engineering (PE)				
Environmental	4	%	-	\$ 858,388
Coord. w/Stakeholders	2	%	-	\$ 429,194
Engineering Design & PM	16	%	-	\$ 3,433,552
Permits	2	%	-	\$ 429,194
PE Cost Total				\$ 5,150,000
Total Cost				\$ 38,860,000
			Rounded:	\$ 38,900,000

Notes:
¹ Cost opinion is based on preliminary concept design and is subject to change.
² Percentage (%) unit is calculated as a percentage of the Construction Cost Subtotal.

Project:	Westwind Dr Extension (Option 2A)			
Limits:	State St to Ladbroke Dr			
Scope:	Approx. 2800 LF Extension of Westwind Dr 4-lane divided roadway 120' Right-of-Way 10' shared-use path & 6' sidewalk			
Item	Quantity	Unit	Unit Cost	Cost
Construction (CN)				
Mobilization	1	LS	\$ 1,027,500	\$ 1,027,500
Construction Surveying	1	LS	\$ 197,500	\$ 197,500
Clearing & Grubbing -	5	AC	\$ 8,500	\$ 45,320
Excavation	5,500	CY	\$ 15	\$ 82,500
Borrow	1,700	CY	\$ 35	\$ 59,500
Retaining Wall	795	SY	\$ 750	\$ 596,250
Embankment Fill	1,200	CY	\$ 40	\$ 48,000
Asphalt Concrete (SM-9.5A)	594	TON	\$ 100	\$ 59,421
Asphalt Concrete (IM-19.0)	1,188	TON	\$ 85	\$ 101,015
Asphalt Concete (BM-25.0)	1,783	TON	\$ 80	\$ 142,610
Subbase	2,917	TON	\$ 65	\$ 189,606
Pavement Milling	4,300	SY	\$ 20	\$ 86,000
VDOT Std. Curb and Gutter	4,950	LF	\$ 40	\$ 198,000
Curb Demo	155	LF	\$ 10	\$ 1,550
Sidewalk/Multi-use path	3,978	SY	\$ 30	\$ 119,340
Concrete Barrier	100	LF	\$ 70	\$ 7,000
Impact Attenuator	1	EA	\$ 7,000	\$ 7,000
Guardrail	100	LF	\$ 30	\$ 3,000
Guardrail Terminal	2	EA	\$ 3,000	\$ 6,000
Drainage Inlet	10	EA	\$ 5,000	\$ 50,000
RCP Drainage Pipe	2,900	LF	\$ 80	\$ 232,000
SWM Basin	1	EA	\$ 225,000	\$ 225,000
Traffic Signal Improvements	3	EA	\$ 300,000	\$ 900,000
Signing & Marking	0.4	Mi	\$ 140,000	\$ 51,705
Maintenance of Traffic	1.0	%	Total Constr.	\$ 207,497.23
Lighting	1,450	LF	\$ 20	\$ 29,348
Trees	29	EA	\$ 250	\$ 7,250
Seed, Fertilizer, & Mulch	5,156	SY	\$ 0.70	\$ 3,609
E&S Control	1,450	LF	\$ 6	\$ 8,700
Bridge 1	65,110	SF	\$ 250	\$ 16,277,500
Construction Cost Subtotal				\$ 20,969,721
Additional Const. Costs				
Contingency	25	%	-	\$ 5,242,430
Construction Admin	10	%	-	\$ 2,096,972
CN Total				\$ 28,310,000
Right-of-Way (RW)				
RW Dedicated from HOA	97,297	SF	\$ -	\$ -
Additional RW from HOA	24,267	SF	\$ 4	\$ 97,069
RW Reserved from Minalter	130,564	SF	\$ 10	\$ 1,305,640
Additional RW from Minalter	37,411	SF	\$ 10	\$ 374,111
Drainage Easement from Minalter	26,600	SF	\$ 10	\$ 266,000
Additional RW from Minalter for Bike & Ped Improvements	13,300	SF	\$ 10	\$ 133,000
Utilities	12	%	-	\$ 2,516,366
RW Total				\$ 4,600,000
Preliminary Engineering (PE)				
Environmental	4	%	-	\$ 838,789
Coord. w/Stakeholders	2	%	-	\$ 419,394
Engineering Design & PM	16	%	-	\$ 3,355,155
Permits	2	%	-	\$ 419,394
PE Cost Total				\$ 5,033,000
Total Cost				\$ 37,940,000
			Rounded:	\$ 37,900,000

Notes:
¹ Cost opinion is based on preliminary concept design and is subject to change.
² Percentage (%) unit is calculated as a percentage of the Construction Cost Subtotal.

Project:	Westwind Dr Extension (Option 2B)			
Limits:	State St to Ladbrook Dr			
Scope:	Approx. 2800 LF Extension of Westwind Dr 4-lane divided roadway 120' Right-of-Way 10' shared-use path & 6' sidewalk			
Item	Quantity	Unit	Unit Cost	Cost
Construction (CN)				
Mobilization	1	LS	\$ 1,051,500	\$ 1,051,500
Construction Surveying	1	LS	\$ 202,500	\$ 202,500
Clearing & Grubbing -	6	AC	\$ 8,500	\$ 47,759
Excavation	5,800	CY	\$ 15	\$ 87,000
Borrow	2,050	CY	\$ 35	\$ 71,750
Retaining Wall	1,110	SY	\$ 750	\$ 832,500
Embankment Fill	1,200	CY	\$ 40	\$ 48,000
Asphalt Concrete (SM-9.5A)	1,194	TON	\$ 100	\$ 119,359
Asphalt Concrete (IM-19.0)	2,387	TON	\$ 85	\$ 202,910
Asphalt Concete (BM-25.0)	3,581	TON	\$ 80	\$ 286,461
Subbase	5,859	TON	\$ 65	\$ 380,862
Pavement Milling	500	SY	\$ 20	\$ 10,000
VDOT Std. Curb & Gutter	4,850	LF	\$ 40	\$ 194,000
Pavement Demo	3,940	SY	\$ 15	\$ 59,100
Curb Demo	1,315	LF	\$ 10	\$ 13,150
Sidewalk/Multi-use path	4,394	SY	\$ 30	\$ 131,820
Concrete Barrier	100	LF	\$ 70	\$ 7,000
Impact Attenuator	1	EA	\$ 7,000	\$ 7,000
Guardrail	100	LF	\$ 30	\$ 3,000
Guardrail Terminal	2	EA	\$ 3,000	\$ 6,000
Drainage Inlet	10	EA	\$ 5,000	\$ 50,000
RCP Drainage Pipe	3,100	LF	\$ 80	\$ 248,000
SWM Basin	1	EA	\$ 225,000	\$ 225,000
Traffic Signal Improvements	2	EA	\$ 300,000	\$ 600,000
Signing & Marking	0.4	Mi	\$ 140,000	\$ 54,356
Maintenance of Traffic	1.0	%	Total Constr.	\$ 212,563.06
Lighting	1,550	LF	\$ 20	\$ 31,372
Trees	31	EA	\$ 250	\$ 7,750
Seed, Fertilizer, & Mulch	5,511	SY	\$ 0.70	\$ 3,858
E&S Control	1,550	LF	\$ 6	\$ 9,300
Bridge 1	65,110	SF	\$ 250	\$ 16,277,500
Construction Cost Subtotal				\$ 21,481,369
Additional Const. Costs				
Contingency	25	%	-	\$ 5,370,342
Construction Admin	10	%	-	\$ 2,148,137
CN Total				\$ 29,000,000
Right-of-Way (RW)				
RW Dedicated from HOA	97,297	SF	\$ -	\$ -
Additional RW from HOA	24,267	SF	\$ 4	\$ 97,069
RW Reserved from Minalter	130,564	SF	\$ 10	\$ 1,305,640
Additional RW from Minalter	54,802	SF	\$ 10	\$ 548,023
Drainage Easement from Minalter	26,600	SF	\$ 10	\$ 266,000
Additional RW from Minalter for Bike & Ped Improvements	13,300	SF	\$ 10	\$ 133,000
Utilities	12	%	-	\$ 2,577,764
RW Total				\$ 4,830,000
Preliminary Engineering (PE)				
Environmental	4	%	-	\$ 859,255
Coord. w/Stakeholders	2	%	-	\$ 429,627
Engineering Design & PM	16	%	-	\$ 3,437,019
Permits	2	%	-	\$ 429,627
PE Cost Total				\$ 5,156,000
Total Cost				\$ 38,990,000
			Rounded:	\$ 39,000,000

Notes:
¹ Cost opinion is based on preliminary concept design and is subject to change.
² Percentage (%) unit is calculated as a percentage of the Construction Cost Subtotal.

Project:	Westwind Dr Extension (Option 3)			
Limits:	State St to Ladbroke Dr			
Scope:	Approx. 2800 LF Extension of Westwind Dr 4-lane divided roadway 120' Right-of-Way 10' shared-use path & 6' sidewalk			
Item	Quantity	Unit	Unit Cost	Cost
Construction (CN)				
Mobilization	1	LS	\$ 927,500	\$ 927,500
Construction Surveying	1	LS	\$ 178,000	\$ 178,000
Clearing & Grubbing -	4	AC	\$ 8,500	\$ 36,783
Excavation	7,800	CY	\$ 15	\$ 117,000
Borrow	1,100	CY	\$ 35	\$ 38,500
Retaining Wall	915	SY	\$ 750	\$ 686,250
Embankment Fill	1,200	CY	\$ 40	\$ 48,000
Asphalt Concrete (SM-9.5A)	1,284	TON	\$ 100	\$ 128,420
Asphalt Concrete (IM-19.0)	2,568	TON	\$ 85	\$ 218,314
Asphalt Concete (BM-25.0)	3,853	TON	\$ 80	\$ 308,208
Subbase	6,304	TON	\$ 65	\$ 409,777
Pavement Milling	500	SY	\$ 20	\$ 10,000
Pavment Demo	4,682	SY	\$ 15	\$ 70,230
VDOT Std. Curb and Gutter	6,450	LF	\$ 40	\$ 258,000
Curb Demo	1,315	LF	\$ 10	\$ 13,150
Sidewalk/Multi-use path	4,350	SY	\$ 30	\$ 130,500
Concrete Barrier	100	LF	\$ 70	\$ 7,000
Impact Attenuator	1	EA	\$ 7,000	\$ 7,000
Guardrail	100	LF	\$ 30	\$ 3,000
Guardrail Terminal	2	EA	\$ 3,000	\$ 6,000
Drainage Inlet	7	EA	\$ 5,000	\$ 35,000
RCP Drainage Pipe	2,200	LF	\$ 80	\$ 176,000
SWM Basin	1	EA	\$ 225,000	\$ 225,000
Traffic Signal Improvements	3	EA	\$ 300,000	\$ 900,000
Signing & Marking	0.3	Mi	\$ 140,000	\$ 42,424
Maintenance of Traffic	1.0	%	Total Constr.	\$ 186,792.58
Lighting	1,100	LF	\$ 20	\$ 22,264
Trees	22	EA	\$ 250	\$ 5,500
Seed, Fertilizer, & Mulch	3,911	SY	\$ 0.70	\$ 2,738
E&S Control	1,100	LF	\$ 6	\$ 6,600
Bridge 1	65,110	SF	\$ 210	\$ 13,673,100
Construction Cost Subtotal				\$ 18,877,051
Additional Const. Costs				
Contingency	25	%	-	\$ 4,719,263
Construction Admin	10	%	-	\$ 1,887,705
CN Total				\$ 25,480,000
Right-of-Way (RW)				
RW Dedicated from HOA	97,297	SF	\$ -	\$ -
Additional RW from HOA	44,822	SF	\$ 4	\$ 179,286
RW Reserved from Minalter	98,577	SF	\$ 10	\$ 985,770
Additional RW from Minalter	96,055	SF	\$ 10	\$ 960,547
Drainage Easement form Minalter	26,600	SF	\$ 10	\$ 266,000
Additional RW from Minalter for Bike & Ped Improvements	13,300	SF	\$ 10	\$ 133,000
Utilities	10	%	-	\$ 1,887,705
RW Total				\$ 4,230,000
Preliminary Engineering (PE)				
Environmental	4	%	-	\$ 755,082
Coord. w/Stakeholders	2	%	-	\$ 377,541
Engineering Design & PM	16	%	-	\$ 3,020,328
Permits	2	%	-	\$ 377,541
PE Cost Total				\$ 4,530,000
Total Cost				\$ 34,240,000
			Rounded:	\$ 34,200,000

Notes:

¹ Cost opinion is based on preliminary concept design and is subject to change.

² Percentage (%) unit is calculated as a percentage of the Construction Cost Subtotal.



MEMORANDUM

To: Ronald Mallory, Loudoun County DTCI

From: Kimley-Horn and Associates

Date: February 3, 2016

Subject: WO 24 – Westwind Drive: Summary of Existing Conditions

This memorandum serves to document Kimley-Horn's review of existing conditions for the Westwind Drive extension to Ladbroke Drive (Work Order 24). The Westwind Drive Extension is an important missing link in the regional road network, identified as link #101 in Phase 2 of the Eastern Loudoun Transportation Study.

The review area covered the likely Westwind Drive extension corridor, following the existing and reserved Right-of-Way for the project from the existing terminus of Ladbroke Drive on the south to the existing southern terminus of Westwind Drive on the north. The purpose of this review was to identify all existing conditions along the proposed Westwind Drive extension corridor. A site walk took place on November 17, 2015 and was performed by Kimley-Horn accompanied by Ronald Mallory from Loudoun County's Department of Transportation and Capital Infrastructure.

This review of the existing conditions identified the following right-of-way, proffer, environmental, planned development, and utility considerations for this project.

Right-of-Way:

- A ninety (90) foot right-of-way reservation on the Minalter Inc property is shown on Attachments 1 & 2. The 90' right-of-way was reserved as part of SBPR-2007-0016. The deed recorded as part of the subdivision was recorded as document number 20081029-0064436. The following language regarding the reservation was taken directly from the deed:
"This deed further witnesseth, that in consideration of the premises and benefits which will accrue by reason of this subdivision, Owner hereby reserves for a period of forty (40) years from the date hereof for future street dedication to the County, at the County's request, that certain area shown on the aforesaid Plat, containing 3.5233 acres in Parcel C, as "Hereby Reserved for Public Street Purposes." Any future dedication or conveyance of the reservation area shall be subject to the Owner, its successors and assigns, being compensated in an amount equal to the fair market value of such area as if it were not reserved for future roadway purposes but taking into account that portions of the reserved area may be subject to Open Space Conservation and other applicable easements. This reservation is subject to the Owner's right to relocate the reservation area, provided however, that such new reservation area is of equal width as the prior reservation area and connects to the adjacent lot or parcel to the north of the Property in

the same location and provided such relocated reservation area satisfies all Virginia Department of Transportation and County requirements with respect to turning radii and horizontal geometry. Any conveyance of such reserved areas shall be subject to all existing easements including those certain open space and conservation easements recorded amongst the Land Records at Instrument Numbers 20080410018961 and 200804010018962 and the Agreement.”

A graphical representation of the reservation can also be found on the Site Plan #STPL2011-0012 for the Northwoods Buildings – Phase 2.

- Ninety (90) feet of right-of-way (varies 90'-100') has been dedicated on the north end of the project from the Minalter/Loudoun Parkway Center property line north to the intersection of Westwind Drive and State Street.

Proffer Analysis

- Per proffers associated with Loudoun Parkway Center (ZMAP-1990-0015), construction of Westwind Drive between the Broad Run Spine Road (now named State Street) and the proposed bridge over Broad Run (also defined as the north boundary of the Broad Run flood plain) is the responsibility of the developer of Loudoun Parkway Center. Exhibit C to the proffers describes the portions of the onsite roadway system for which the developer is responsible. Related to the section of Westwind Drive to the south of the Broad Run Spine Road, Exhibit C states the following:

“South of Broad Run Spine Road – Ultimate construction shall be four-lane divided at earlier of bridge by others over Broad Run or issuance of building permit for last development on Property.”

- Per proffers associated with the Moorefield Development (ZCPA-2014-0002), construction of Westwind Drive between the north boundary of the Broad Run flood plain (including the bridge over Broad Run) and Route 606 is the responsibility of the developer of Moorefield. Proffer IV.B(vii) of the proffers associated with ZCPA-2014-0002 states the following:

“Prior to the approval of the zoning permit for non-residential space that would result in the aggregate permitted non-residential square footage exceeding 6,000,000 square feet for the portions of the Property not included within any of the Site Dedication sites listed in Proffer II., CMCF shall have constructed or bonded for construction Westwind Drive from its existing terminus north of the Broad Run floodplain to Route 606 as a 120-foot right-of-way 4-lane divided urban section.”

With regard to right-of-way acquisition necessary for the project and potential construction of Westwind Drive prior to CMCF having obtained zoning permit for non-residential space that exceeds 6,000,000 square feet, Proffer IV.B states the following:

“In the event that Loudoun County is not able to provide the necessary off-site right-of-way at no cost to CMCF, then CMCF shall contribute the estimated cost (using VDOT guidelines) of such off-site construction to the County, as Trustee, to be used solely to fund such road construction when the right-of-way becomes available. If others

complete any such construction, prior to the time such construction would be required pursuant to this Proffer Statement, CMCF will (at the time it would have been obligated to construct) contribute to the County as a Capital Facility Transportation Improvement contribution, the actual cost of such construction. Any such Capital Facility Transportation Improvement contribution shall be used within the Ashburn Community, or for the Loudoun County Parkway.”

Planned Development:

- Northwoods Buildings – Phase 2 (STPL2011-0012) currently under construction as of November 17, 2015. The extents of this development can be seen on Attachment 2.

Environmental:

- Existing retention pond north of Northwestern Mutual Insurance Co. and east of the reserved Right-of-Way. Existing Retention pond lies 10-15 feet below existing grade within reserved Right-of-Way. This retention pond can be seen in the aerial photo of the site on Attachment 1.
- A detention pond under construction as part of the new Northwoods Buildings east of the reserved Right-of-Way and north of the existing Stormwater retention pond. This detention pond can be seen on Attachment 2.
- The Broad Run 100-year floodplain, shown in a light blue on Attachments 1 & 2, stretches from the northern end of the Northwoods Buildings to the limits of the forest just south of the Loudoun Parkway HOA property, some 800’ across following the Westwind Drive extension alignment. Several areas of potential wetlands were observed during the site visit.
- The grassy area of the dedicated Right-of-Way through the Loudoun Parkway HOA property drains south towards the Broad Run 100-year floodplain.

Utilities:

- Multiple water lines and valves at the existing northern terminus of Ladbrook Drive. These water lines are labeled and shaded gray on Attachment 2.
- Multiple storm sewers being built around the reserved Right-of-Way as part of the Northwoods Buildings. These storm sewers are labeled and shaded gray on Attachment 2. One of these storm sewers outfalls to a location within the reserved Right-of-Way. There is also a large drop inlet on the western edge of the reserved Right-of-Way just south of existing Westwind Drive.
- Sanitary sewer within the reserved Right-of-Way from Ladbrook Drive to just south of the Broad Run 100-year floodplain. The sanitary sewer can be seen as a green line on both Attachments 1 & 2.

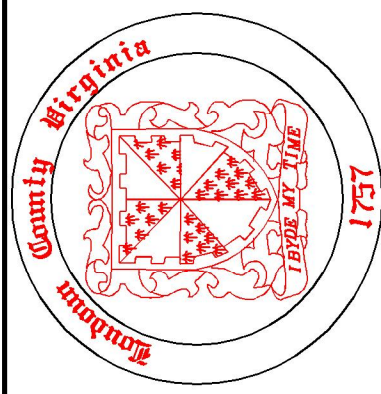
- Overhead high-voltage electric lines crossing the reserved Right-of-Way near the south end of the Broad Run 100-year floodplain. The overhead electric can be seen as a red line on both Attachments 1 & 2.
- Gas line entering reserved Right-of-Way within the Broad Run 100-year floodplain and following the west edge of the reserved Right-of-Way north towards existing Westwind Drive. The gas line can be seen as a yellow line on both Attachment 1 & 2.
- Multiple telecommunications boxes along outside of reserved Right-of-Way through Loudoun Parkway HOA property.

The information summarized in this memorandum was used for the development of conceptual plans for the Westwind Drive Extension (Work Order 24).

Attachments:

1. Existing Condition Basemap consisting of aerial imagery, surveyed utilities, GIS parcel boundaries and floodplain limits.
2. Existing Conditions Basemap consisting of surveyed utilities, GIS parcel boundaries and floodplain limits, shown above the referenced plans for the Northwoods Buildings – Phase 2.

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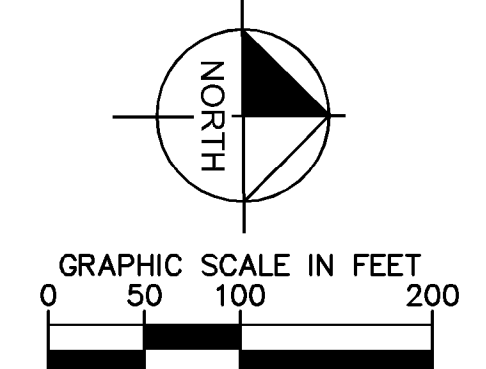
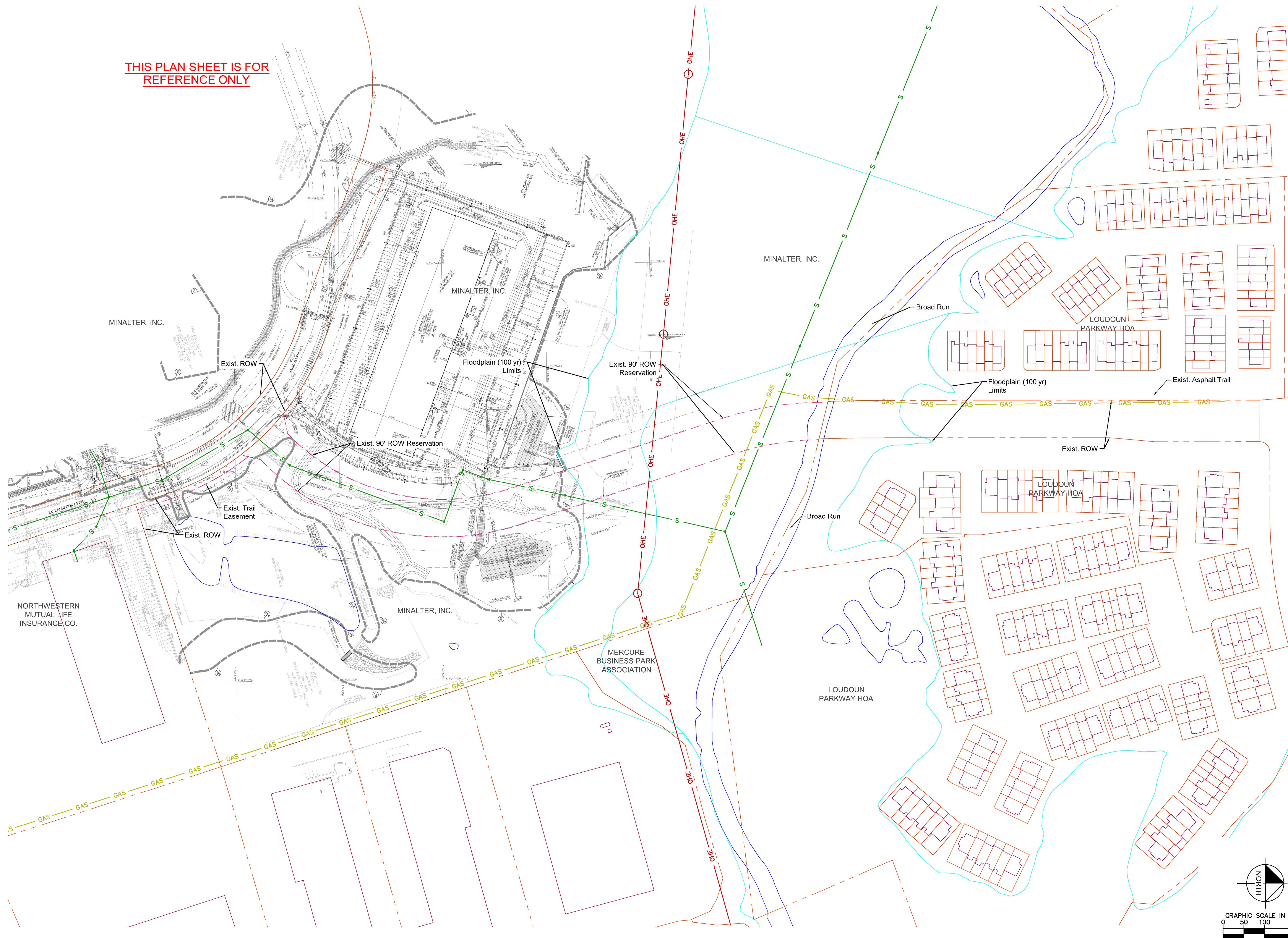
WESTWIND DRIVE
EXTENSION
CONCEPTUAL LAYOUT
Existing Conditions - Aerial


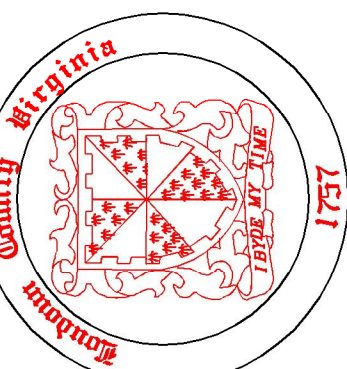
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VIRGINIA
LOUDOUN CO.

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LOUDOUN COUNTY DTCI	LOUDOUN CO. VIRGINIA	WESTWIND DRIVE EXTENSION CONCEPTUAL LAYOUT Existing Conditions - NB Phase 2 Plan		
SHEET NUMBER 2				