

Preliminary Engineering Study

Rustic Ranches Roads Improvement Project

By:

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Introduction

Rustic Ranches is located in Section 13, Township 44, Range 40 within the Village of Wellington, Palm Beach County, Florida. A location map for Rustic Ranches is shown in Figure 1.

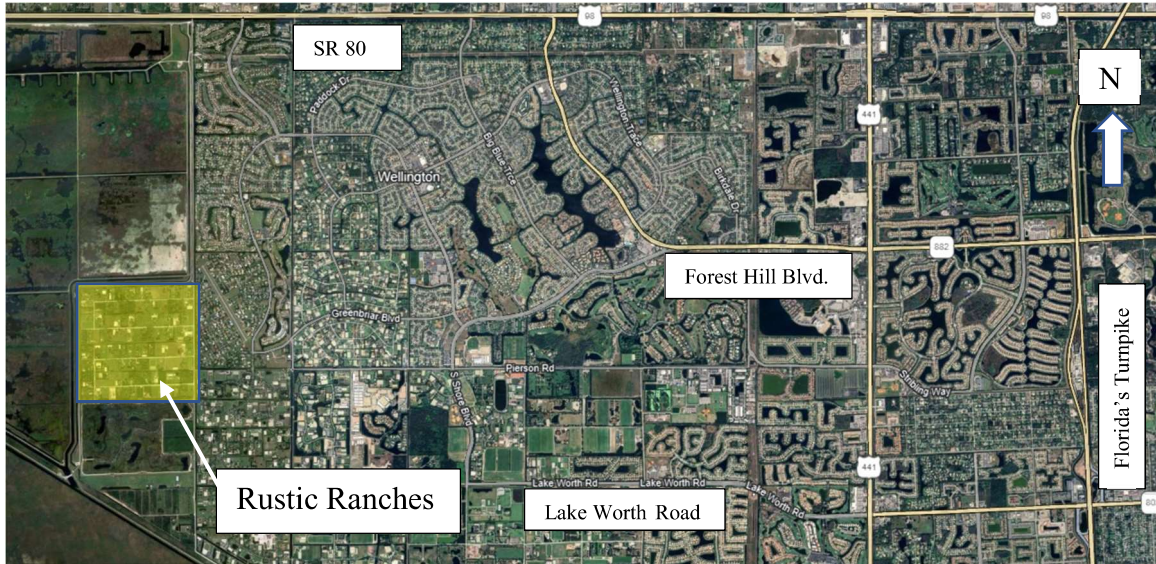


Figure 1 - Location Map

The existing roadways locating within Rustic Ranches are constructed of shellrock. The proposed improvements consist of paving of the roadways with bituminous concrete pavement and the construction of a bridle path on one-side of the roadways. The roadways that will be improved are as follows:

- Rustic Road – 4552 LF
- Hollow Tree Lane – 5124 LF
- Deer Path Lane – 4556 LF
- Norris Road – 4509 LF
- Skipiks Way – 2500 LF
- Cotton Tail Drive – 1228 LF

The roadway layout within Rustic Ranches is shown in Figure 2. These roadways are local roads, are under the jurisdiction of the Village of Wellington and the Pine Tree Water Control District, and are under the management of the residents of Rustic Ranches. The overall length of the roadways to be improved is approximately 22,469 LF or 4.26 miles. The roadways are situated within sixty foot wide easements.



Figure 2 - Roadway Map

Project Requirements and Design Criteria

The roadways within Rustic Ranches are local roadways and as such the design is governed by the design standards contained in the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways, May 2018 (Florida Greenbook). The roadway design criteria for the project will also be based on the following roadway design guidelines:

- FDOT Drainage Manual 2018
- Manual of Uniform Traffic Control Devices for Streets and Highways (MUTCD), dated December 2023
- FDOT Standard Plans and Florida Design Manual
- Village of Wellington Code of Ordinances and design standards

The drainage design requirements will be as required by the South Florida Water Management District (SFWMD) and the Pine Tree Control District. SFWMD generally requires that:

- The post-development 25-year 3-day peak discharge rate does not exceed the pre-development 25-year 3-day peak discharge rate from the project area.
- Water quality treatment in the amount of 1" over the project area or 2.5 times the percent of impervious cover is provided. It is expected that the water quality treatment can be provided as dry detention storage in the roadside swales.

The Pine Tree Water Control District design criteria, as shown in SFWMD permit number 50-00458-S, Application number 140130-2, dated March 7, 2014 is as follows:

- Normal water level – 12.0' NGVD
- Water Quality Detention Storage Stage – 14.9' NGVD (In canal system)
- Minimum Road Elevation – 15.3' NGVD
- Roadside swale elevations – Linear storage from 13.5' to 15.5' NGVD
- SFWMD storage assumption – 0.8 acre feet/acre at elevation 18.0'

The Village of Wellington Engineering Standards Manual includes the following requirements:

- The centerline elevation of the roadway must be above the 5-year water surface elevation. The minimum edge of pavement elevation must be 2' above the control elevation.
- Roadside swales should have a slope of at least 0.30 percent.
- The water surface elevation in the roadside swale for a 3-year design storm shall not be greater than the edge of pavement elevation.
- Inlets shall be provided in the swales at least every 600-feet, and swales should be graded so that no swale run exceeds 400-feet.

Roadway Typical Sections

The existing typical section consists of shellrock roadways with a travel way width of approximately 20-feet. Grass-lined roadside swales exist on both sides of the roadways. The proposed typical section will consist of two 10-foot wide travel lanes with 2-foot wide stabilized shoulders. A 14-foot wide bridle path will be provided on one side of each roadway. The bridle path will be separated from the roadway pavement by a 3-rail wooden fence. The design speed and posted speed limit is 25 MPH.

Two alternative typical sections are shown in Appendix A. Option 1 illustrates a normal crown roadway section and Option 2 illustrates a monopitch section. The benefit of the monopitch section is that all stormwater runoff from the roadway pavement would be directed to a roadside swale located on the north side of Rustic Road, Hollow Tree Lane,

Deer Path Lane and Norris Road. On Skipiks Way the roadway would slope towards the swale located on the east side, and on Cotton Tail Drive the roadway would slope to the swale located on the west side. The need for inlets and cross drains needed to provide suitable drainage for the bridle path areas would be minimized since the runoff from the pavement would be directed to only one side of the roadway.

Preliminary Horizontal Alignment Plans

Preliminary horizontal alignment plans are included in Appendix A of this report. The preliminary horizontal alignment plans depict the general location of the 20' wide paved roadways and the 14' wide bridle path. The preliminary plans are generalized sketches intended to depict the approximate location of the existing 60' wide roadway easement lines and the property lines. It is noted that these plans are sketches for illustrative purposes only and is not based on a survey.

The preliminary horizontal alignment plans depict the location of the proposed bridle path. The location of the bridle path has been shown to be located on the south side of Rustic Road, Hollow Tree Lane, Deer Path Lane, and Norris Road, on the west side of Skipiks Way, and on the east side of Cotton Tail Drive. The location of the bridle path can be modified if desired by Rustic Ranches.

A review of the turning radii at the intersection curve was performed to illustrate the turning wheel paths of large trucks and passenger vehicle-trailer combinations. Autoturn design software was used to evaluate the turning movements for a WB-50 design vehicle and a P-T vehicle combination. The turning movements for these vehicles is shown in Appendix B. As shown in these turning templates a 50' radius would be sufficient to accommodate these design vehicles.

Speed humps for traffic calming are proposed to be installed at 300' +/- spacing along the roadways. Wellington's standard speed hump details are included in Appendix C of this report.

Preliminary Drainage Assessment

Rustic Ranches is located within the SFWMD Water Conservation Area 1. As shown in the Pine Tree Water Control District Manual stormwater runoff is conveyed to the west through an internal canal system. A 48" outfall culvert exists on the west side of Rustic Ranches at the Central Canal and discharges to the Pine Tree Water Control District master drainage system and the SFWMD STA 1E seepage collector canal. Roadside swales currently exist on both sides of the roadways. Construction of the bridle path will result in the filling and regrading of the swales on one side of the roadway. A summary of the existing swale volumes and the required swale storage volumes to provide for water quality treatment is shown in the following table.

Roadway	Existing Roadside Swale Volume (Approximate)	Proposed Roadside Swale Volume	Required Water Quality Treatment Volume
	Acre-Feet	Acre-Feet	Acre-Feet
Rustic Road	3.76	1.65	0.51
Hollow Tree Lane	4.23	2.07	0.58
Deer Path Lane	3.76	1.79	0.52
Norris Road	3.73	1.83	0.52
Skipiks Way	2.07	0.91	0.28
Cotton Tail Drive	1.01	0.33	0.13
Total	18.56	8.58	2.54

As shown in the table above, the proposed roadside swale volume would be reduced to accommodate the construction of the bridle path. An engineering study to determine the impact of the reduction of the roadside swale storage volume is beyond the scope of this report

Flood Zones

Based on the Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) numbers 12099C0543F and 12099C0539F areas of Rustic Ranches are located within a special flood hazard area AE with a base flood elevation of 13.3. Based on these maps it appears that the roadways are all located above the special flood hazard areas.

Right of Way Requirements

As shown in the preliminary plans and typical sections the roadway and bridle path improvements can generally be constructed within the existing easement areas, however some additional easement areas may be required for the bridle path construction at the roadway intersections. 50' radius returns have been shown for the intersection return radii. As shown on the preliminary plans, additional easements may be required to accommodate the improvements at the following locations:

- Rustic Road & Cotton Tail Drive intersection
- Hollow Tree Lane & Cotton Tail Drive intersection
- Skipiks Way & Deer Path Lane intersection
- Skipiks Way & Norris Road intersection

Preliminary Cost Estimates

Preliminary cost estimates for the improvements have been prepared and are included in Appendix D. The unit prices included in the estimates are based on the FDOT's Historical Item Average Cost Reports for Market Area 12 (Broward and Palm Beach counties) between 5-1-2023 and 4-30-2024. The roadway and bridle path improvement costs are summarized below.

Roadway	Estimated Cost
Rustic Road	\$866,522.27
Hollow Tree Lane	\$1,081,585.89
Deer Path Lane	\$867,612.27
Norris Road	\$861,368.24
Skipiks Way	\$460,705.67
Cotton Tail Drive	\$234,454.82
Total Estimated Cost	\$4,372,249.16

The estimated costs shown above are based on utilizing the existing shellrock roadways for the pavement base and placing the new asphalt concrete over the existing shellrock surface. If the existing shellrock roadway is removed and reconstructed with new base course material, the estimated costs would be as follows:

Roadway	Estimated Cost
Rustic Road	\$1,378,293.84
Hollow Tree Lane	\$1,657,634.06
Deer Path Lane	\$1,379,335.55
Norris Road	\$1,366,550.12
Skipiks Way	\$743,509.10
Cotton Tail Drive	\$376,004.27
Total Estimated Cost	\$6,901,326.94

The estimated costs do not include costs associated with survey, engineering design, permit, or construction engineering services.

Permitting Requirements

Permits will be required from the following agencies for the construction of the project:

- Village of Wellington
- SFWMD – Environmental Resource Permit
- Pine Tree Water Control District – General Permit

A pre-design meeting will be held with the Pine Tree Water Control District, the Village of Wellington, and SFWMD to discuss the proposed improvements and solicit any comments that they may have.

Summary of Potential Utility Conflicts

A request for a utility markout on plans showing the location of existing utility facilities was sent to the following utility companies on 4-17-2024:

- ATT
- Comcast
- Florida Power & Light

- Village of Wellington

Marked-up plans showing the location of the existing utilities were received from ATT and the Village of Wellington. The facilities shown on the markups indicate the following:

- ATT has existing overhead telephone lines located along all of the subject roadways. Electronic telecommunications cabinets exist on the west side of Flying Cow Road at the Central Canal.
- The Village of Wellington has existing water mains, fire hydrants, and automatic flushers located on the north side of Rustic Road, Hollow Tree Lane, Deer Path Lane, and Norris Road and on the west side of Skipiks Way, and Cotton Tail Drive.

Although utility markout plans have not been received from FPL or Comcast, utility poles and overhead lines exist along the north side of Rustic Road, Hollow Tree Lane, Deer Path Lane, on the south side of Norris Road, the east side of Cotton Tail Drive, and the west side of Skipiks Way. The overhead lines cross the roadways in several locations to provide service to various properties.

Significant utility relocation requirements are not expected to be required for this project.

Landscaping, Streetlighting, and Related Amenities

Landscaping along the roadways will be limited to sod lining of the drainage swales and bridle path. Streetlighting is not proposed however consideration may be given to providing streetlights at the intersections with Flying Cow Road. As noted in the FHWA's *Intersection Safety: A Manual for Local Road Owners* publication, roadway lighting allows for greater visibility of intersections at night in rural areas and assists motorists by making signs and pavement markings more visible.

Other amenities that may be considered include the installation of equestrian trail bollards along Flying Cow Road and the installation of enhanced signage, pavement markings, and rapid flashing beacons at the equestrian crossings as detailed in the Village of Wellington's Engineering Standards Manual. The Village's details for Bridle Paths are included in Appendix E.

Appendix A

Preliminary Roadway Plans

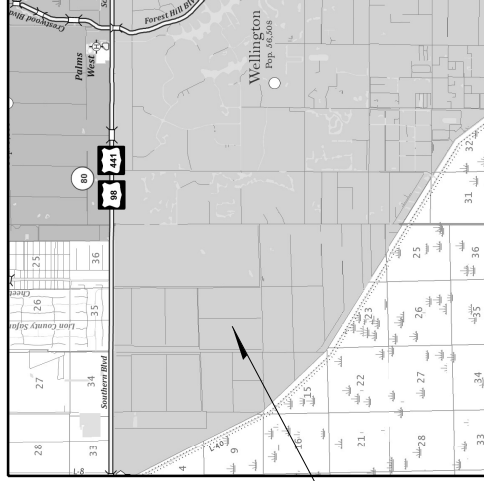
RUSTIC RANCHES ROADS IMPROVEMENT PROJECT

RUSTIC ROAD
HOLLOW TREE LANE
DEER PATH LANE
NORRIS ROAD
SKIPIKS WAY
COTTON TAIL DRIVE

ROADWAY PLANS

SHEET NO. SHEET DESCRIPTION

- | | |
|-------|-------------------------------------|
| 1 | COVER SHEET |
| 2 | TYPICAL SECTIONS |
| 3-10 | CONCEPTUAL PLAN - RUSTIC ROAD |
| 11-19 | CONCEPTUAL PLAN - HOLLOW TREE LANE |
| 20-27 | CONCEPTUAL PLAN - DEER PATH LANE |
| 28-35 | CONCEPTUAL PLAN - NORRIS ROAD |
| 36-40 | CONCEPTUAL PLAN - SKIPIKS WAY |
| 41-43 | CONCEPTUAL PLAN - COTTON TAIL DRIVE |



PROJECT LOCATION



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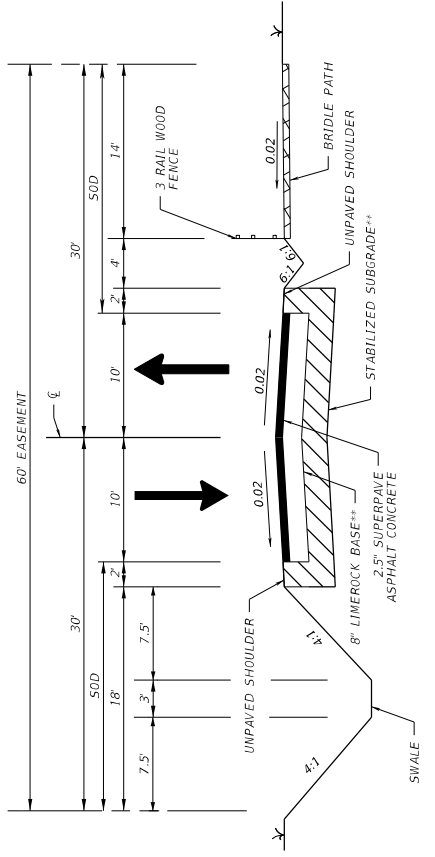
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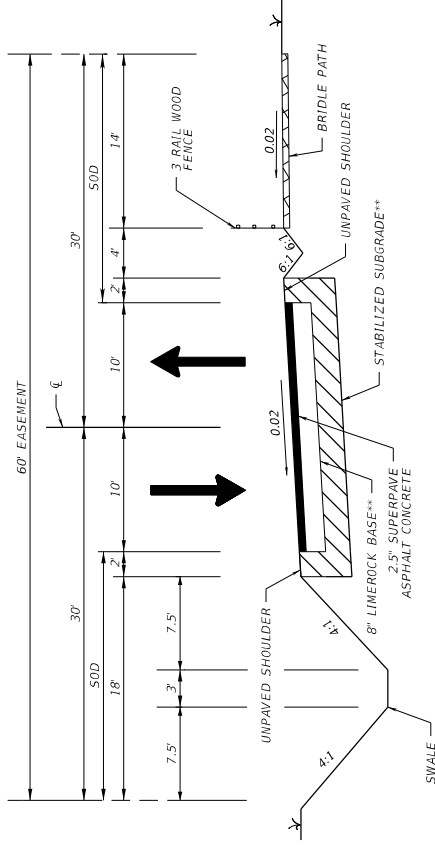
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COVER SHEET

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TYPICAL SECTION (OPTION 1)
NORMAL CROWN SECTION
DESIGN SPEED 25 MPH



TYPICAL SECTION (OPTION 2)
MONO-PITCH SECTION
DESIGN SPEED 25 MPH

NOTES:

- BRIDLE PATH FOOTINGS SHALL HAVE 4" - 6" OF ASPHALT MILLINGS MIXED INTO NATIVE COMPACT SOIL.
- ** - IF REQUIRED.

NEW CONSTRUCTION

- 12" TYPE B STABILIZED SUBGRADE (LBR 40)
- 8" LINEROCK BASE (LBR 100)**
- TYPE SP STRUCTURAL COURSE (TRAFFIC C) (2.5")**



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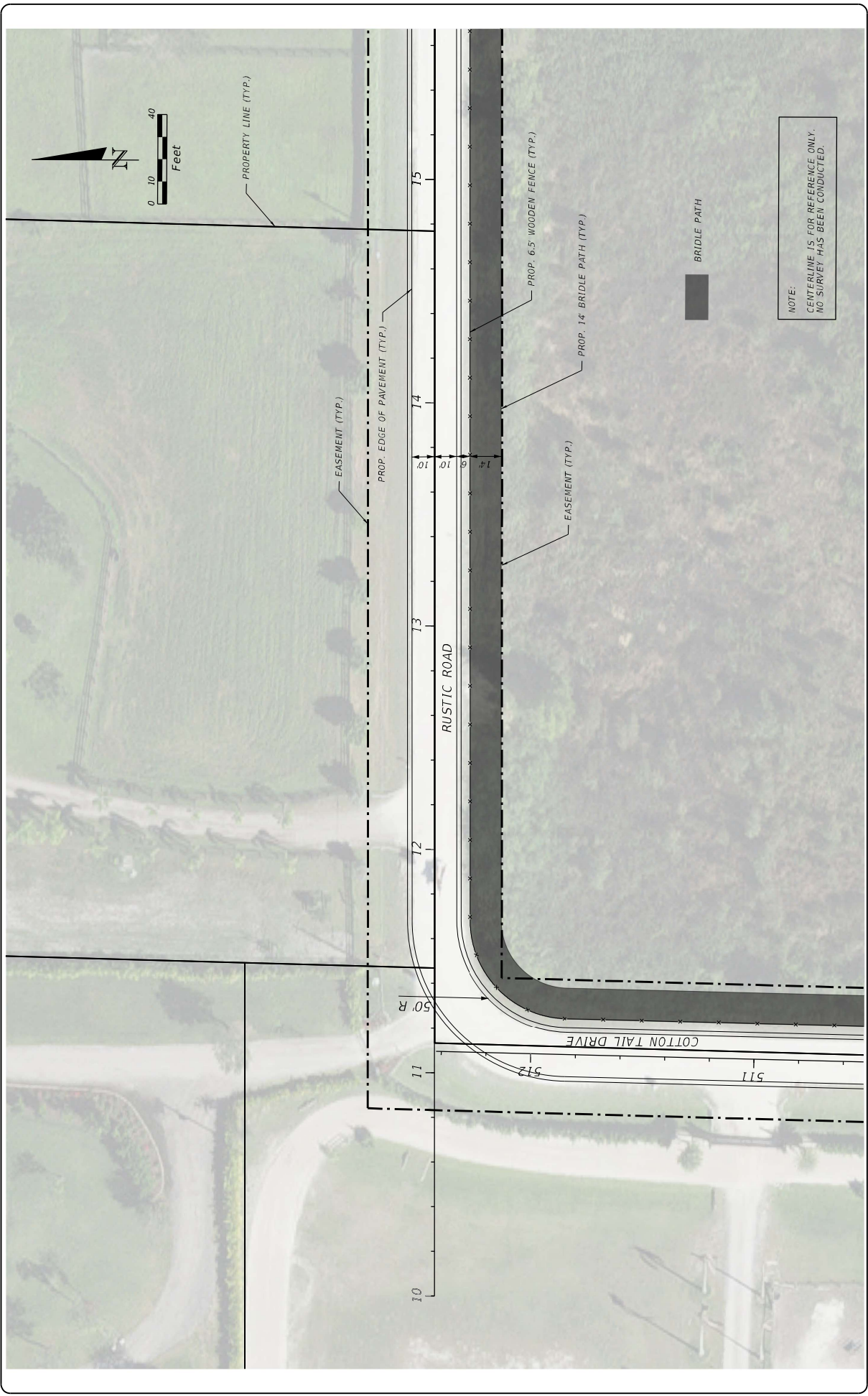
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PRELIMINARY
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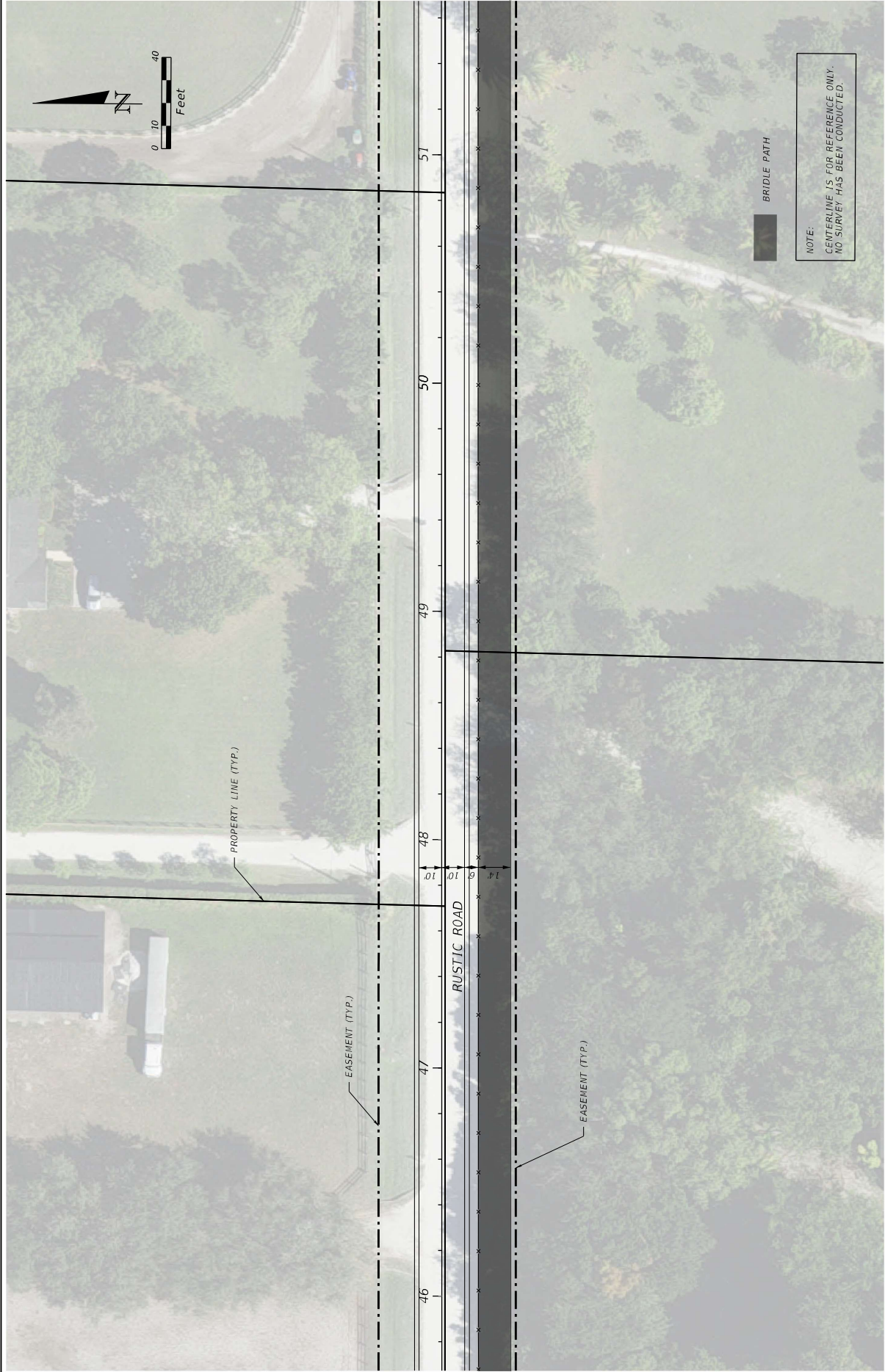
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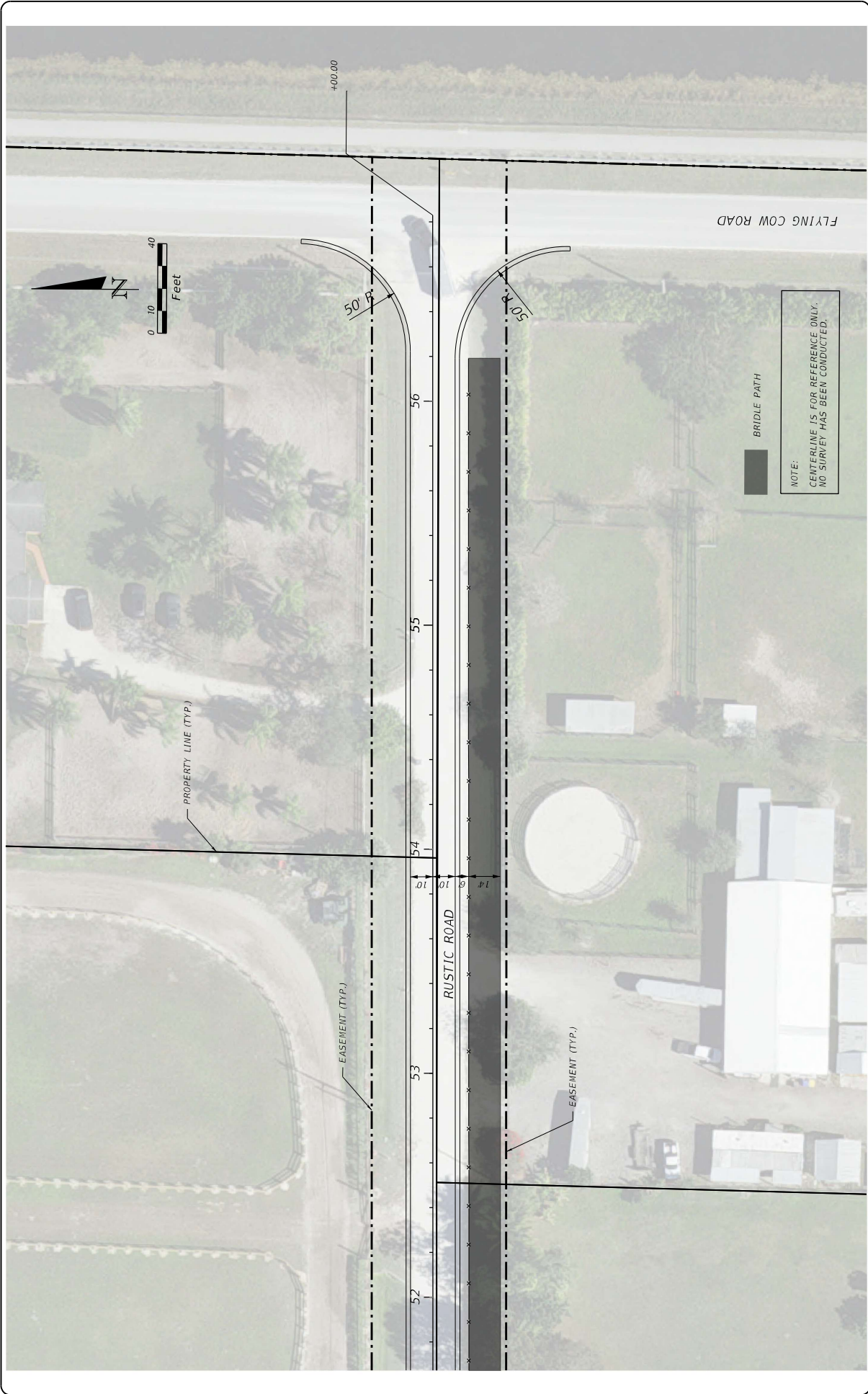
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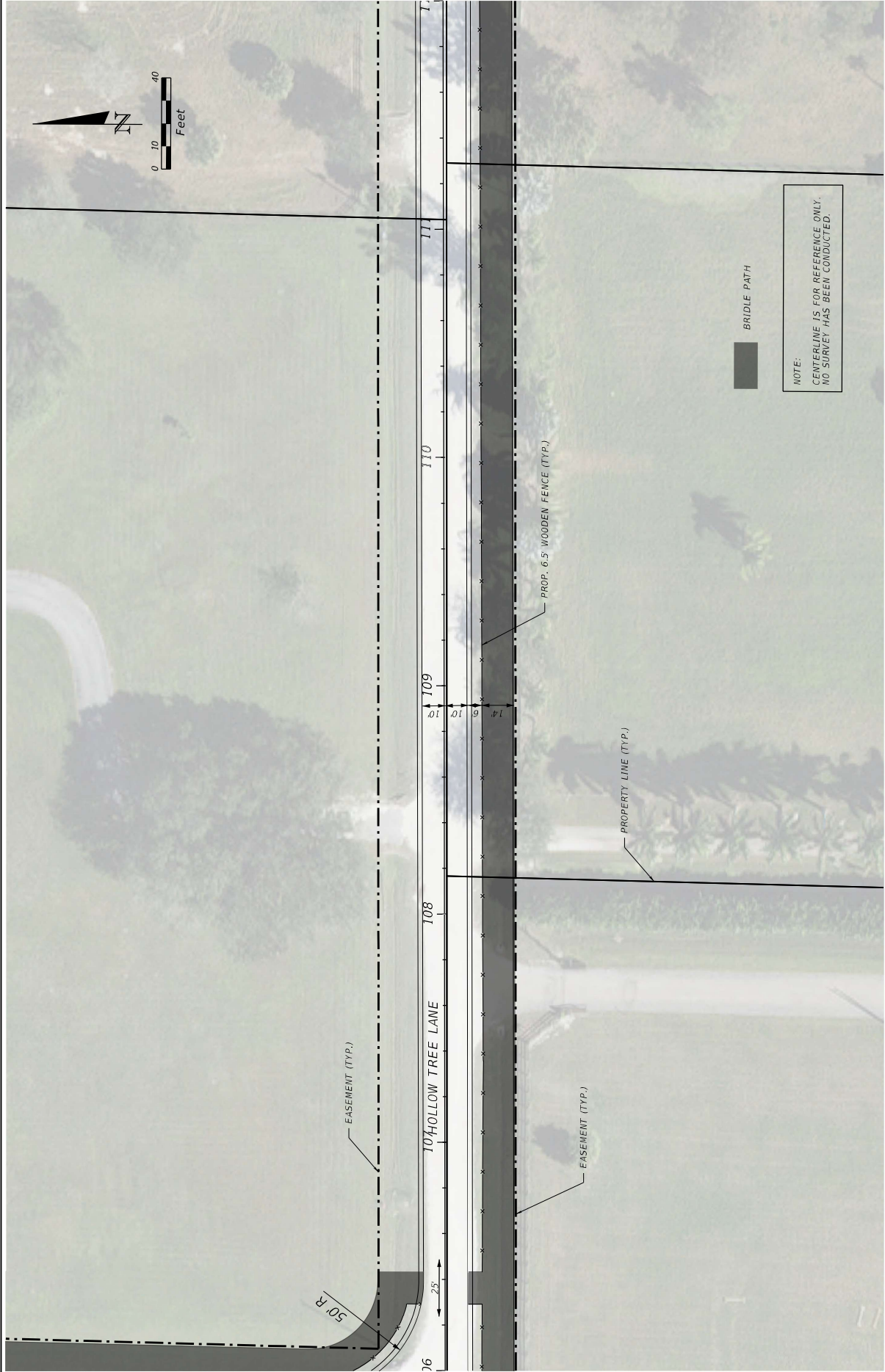
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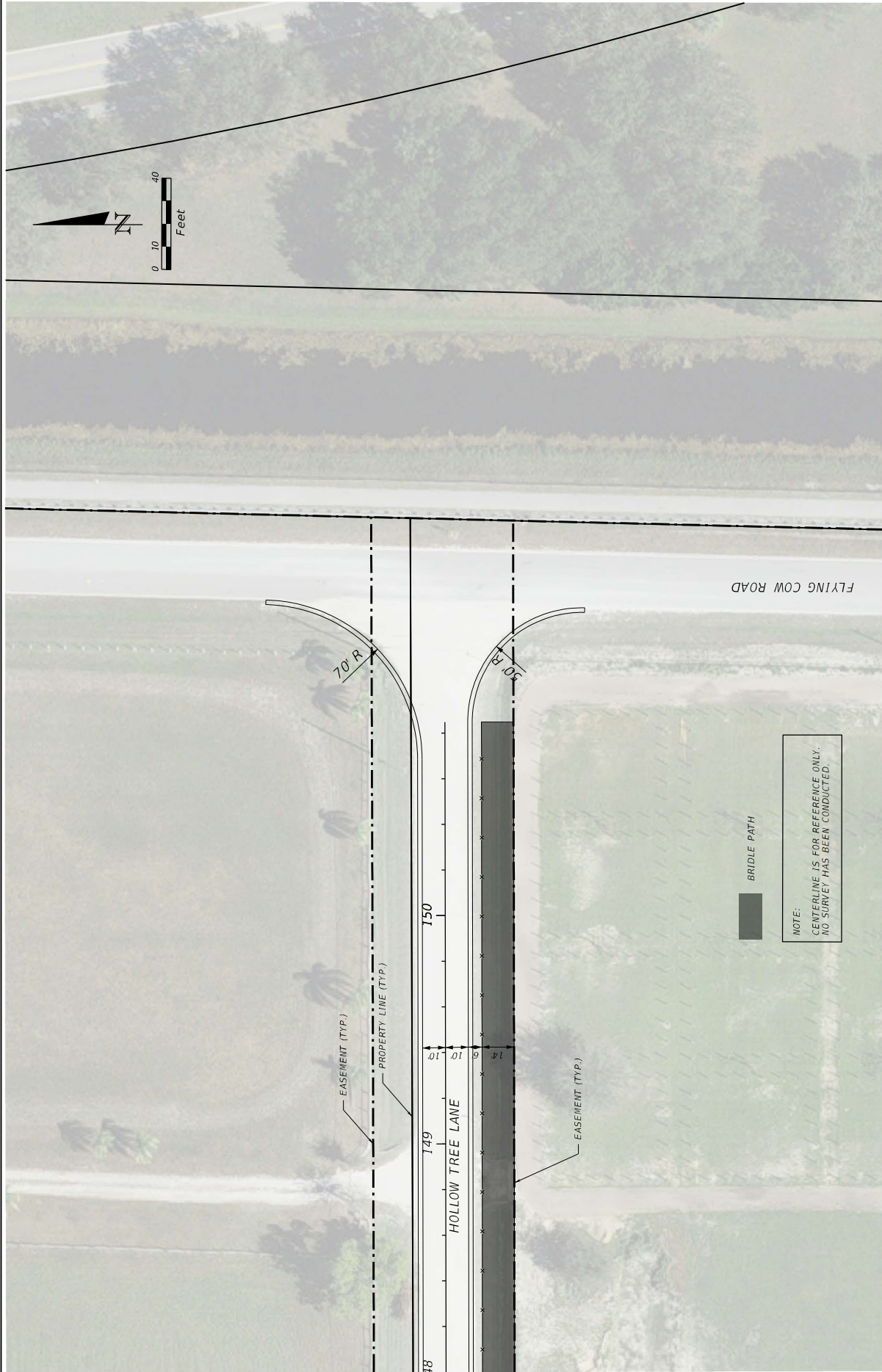
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RUSTIC RANCHES

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RUSTIC RANCHES

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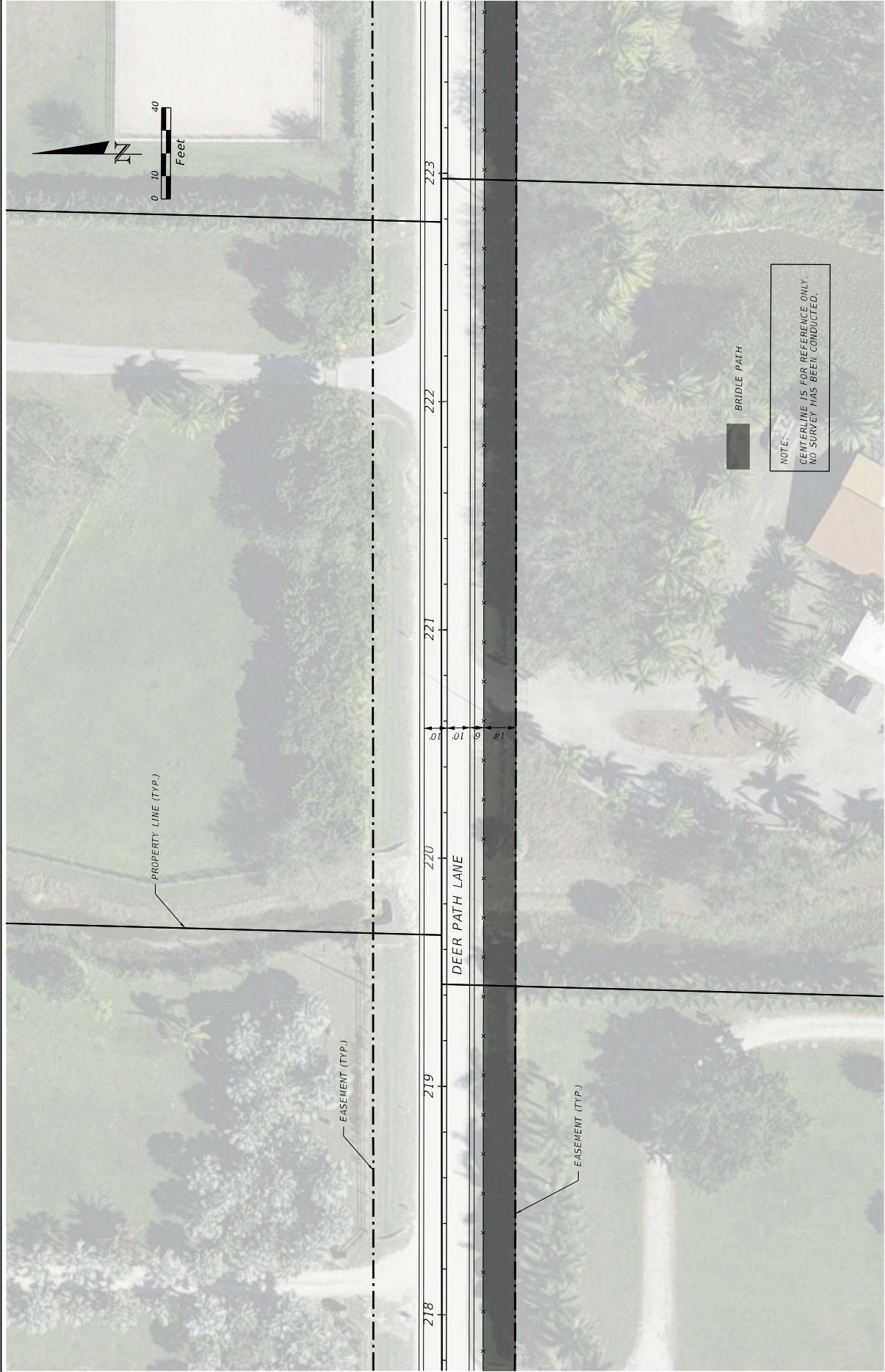


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RUSTIC RANCHES

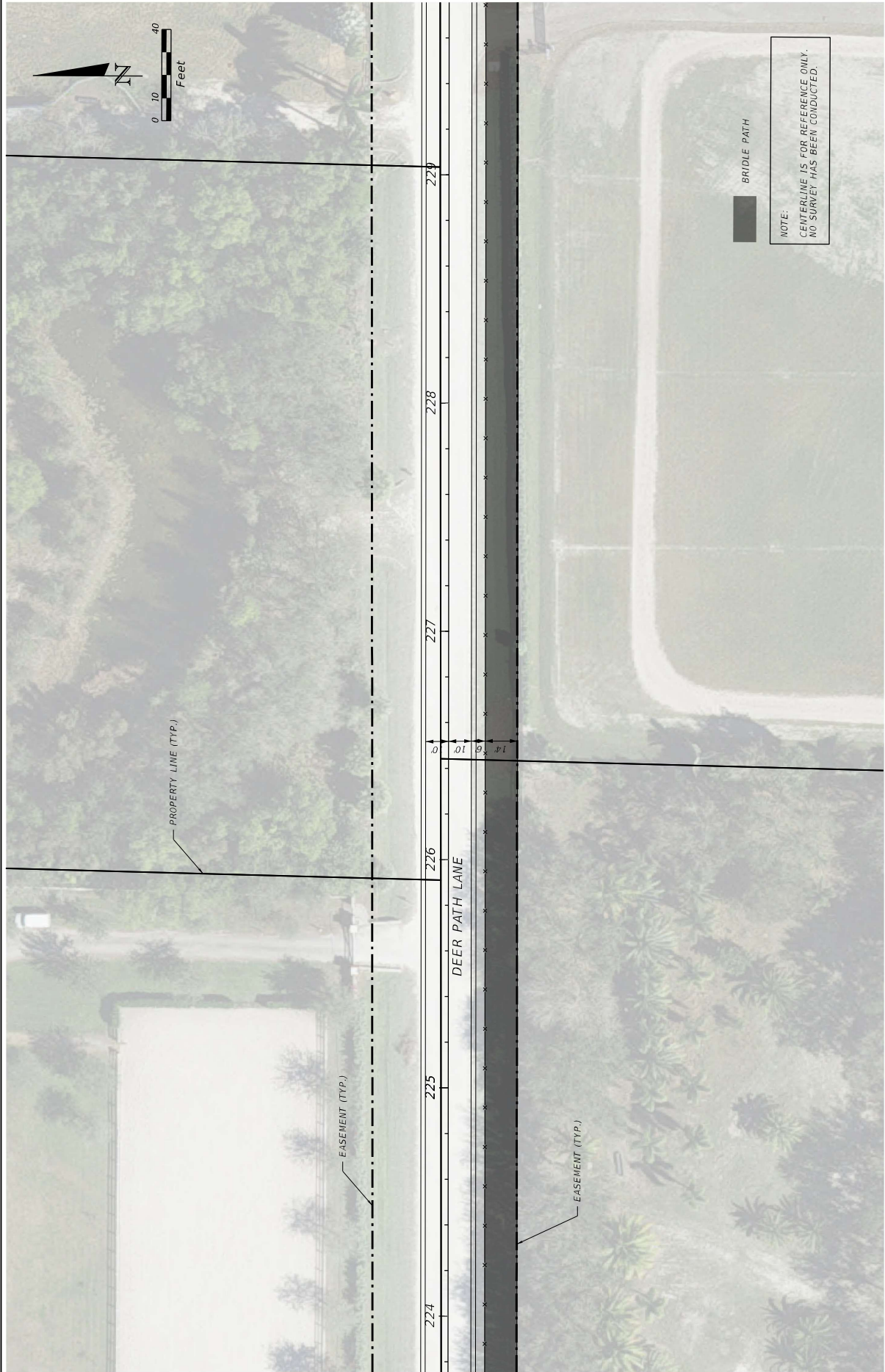
CONCEPTUAL PLAN

SHEET: 23
OF: 43
PROJECT NO.: 240139

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OF: 43
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SHEET: 23
OF: 43
PROJECT NO.: 240139



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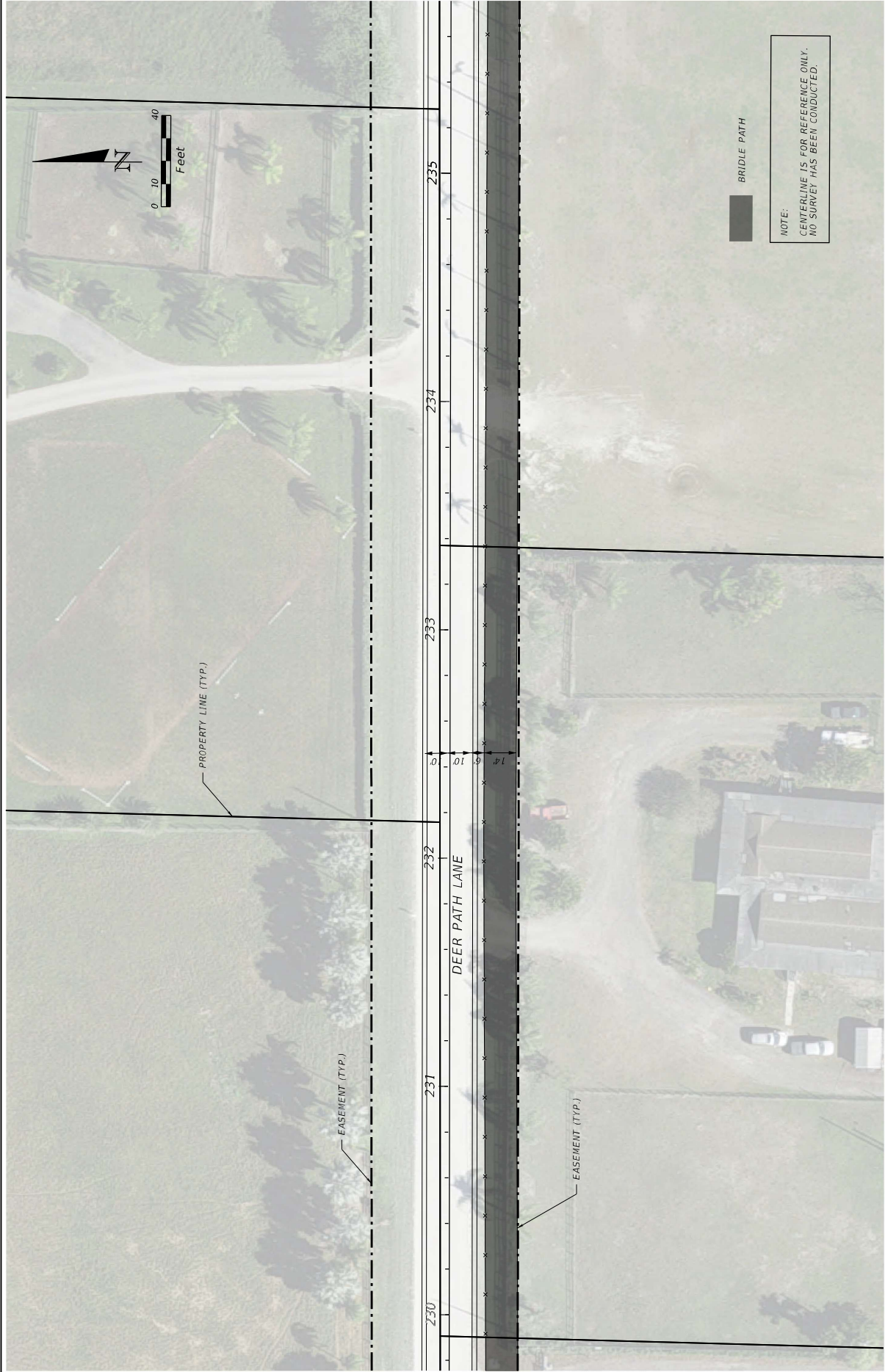
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SHEET: 24
OF: 43
PROJECT NO.: 240139

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PROJECT NO.
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OF: 43
PROJECT NO.: 240439

CONCEPTUAL PLAN

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CONSTRUCTION

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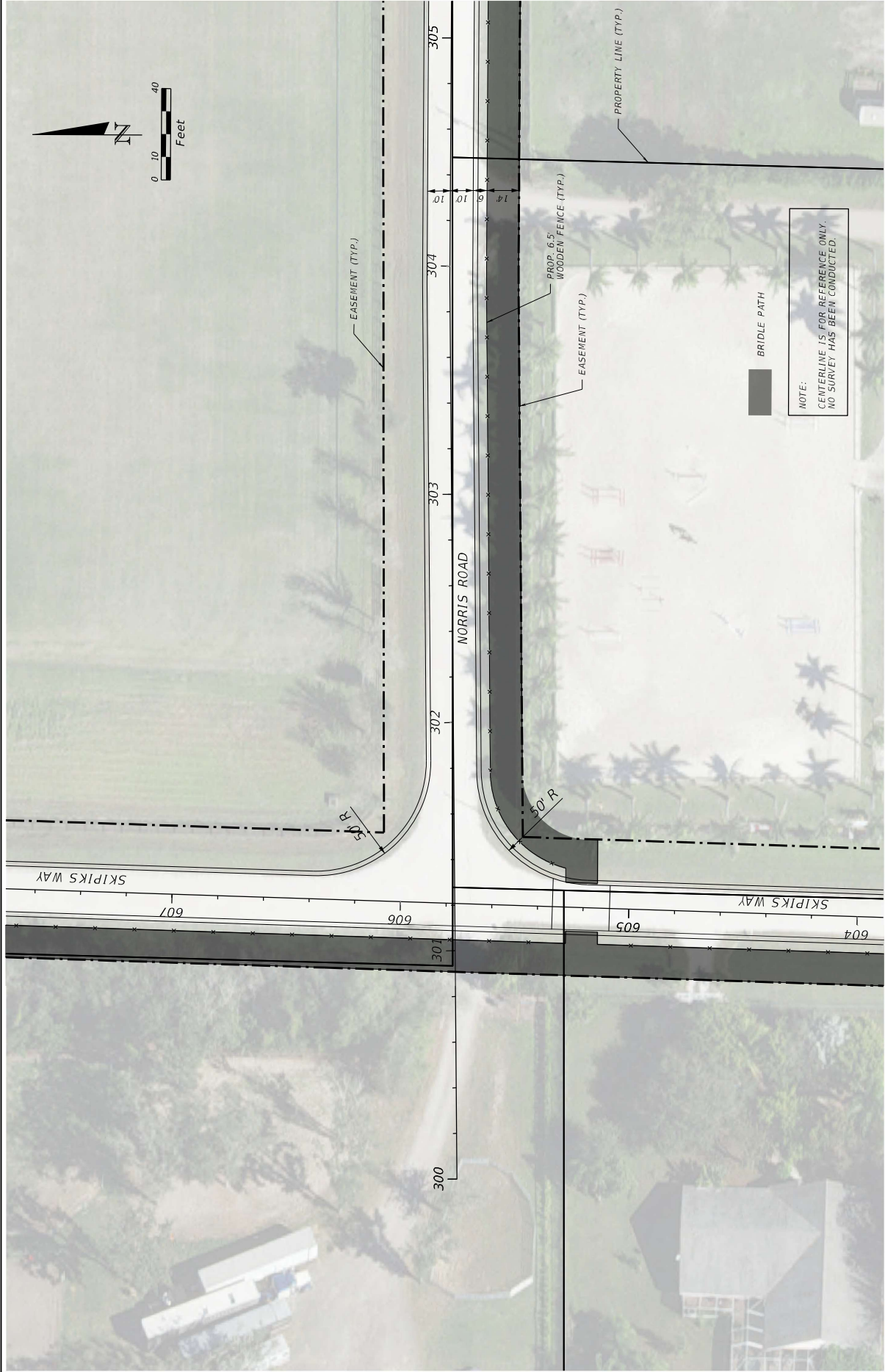
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SHEET: 27
OF: 43
PROJECT NO.: 240139

SUSERS
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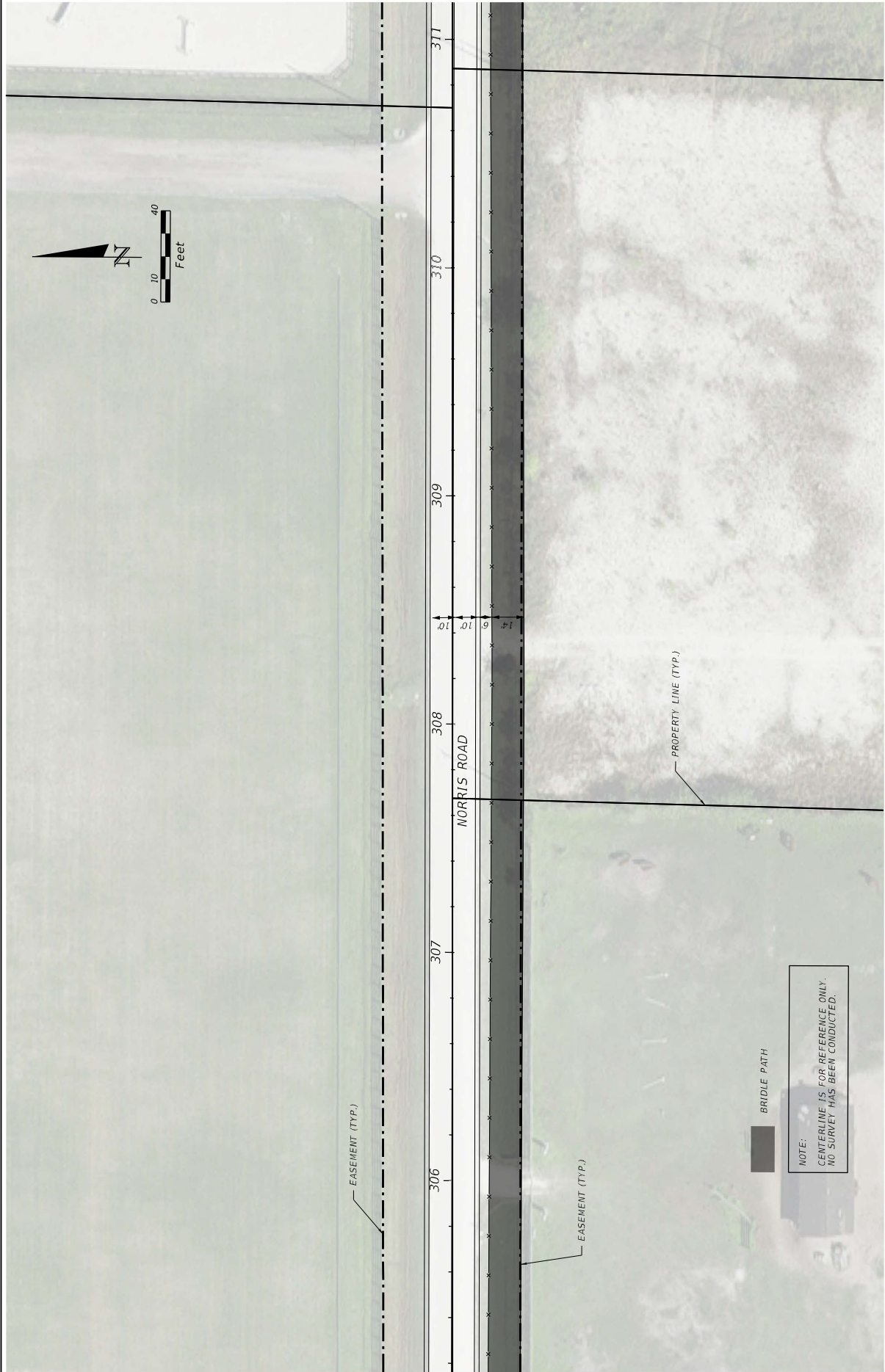
RUSTIC RANCHES

CONCEPTUAL PLAN

SHEET: 28
 OF: 43
 PROJECT NO.: 240439

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SHEET: 29
OF: 43
PROJECT NO.: 240439

CONCEPTUAL PLAN

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RUSTIC RANCHES

No.	Revisions	By	Date

Scale:
NORTH ARROW
1" = 40'

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SURVEY

DESIGN

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RUSTIC RANCHES

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CONCEPTUAL PLAN

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SHEET: 30
OF: 43
PROJECT NO.: 240439





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No.	Revisions	By	Date

RUSTIC RANCHES

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CONCEPTUAL PLAN

SHEET: 31
OF: 43
PROJECT NO.: 240439





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C26255 • L261624

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OF: 43
PROJECT NO.: 240439

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SHEET: 33
OF: 43
PROJECT NO.: 240439

CONCEPTUAL PLAN

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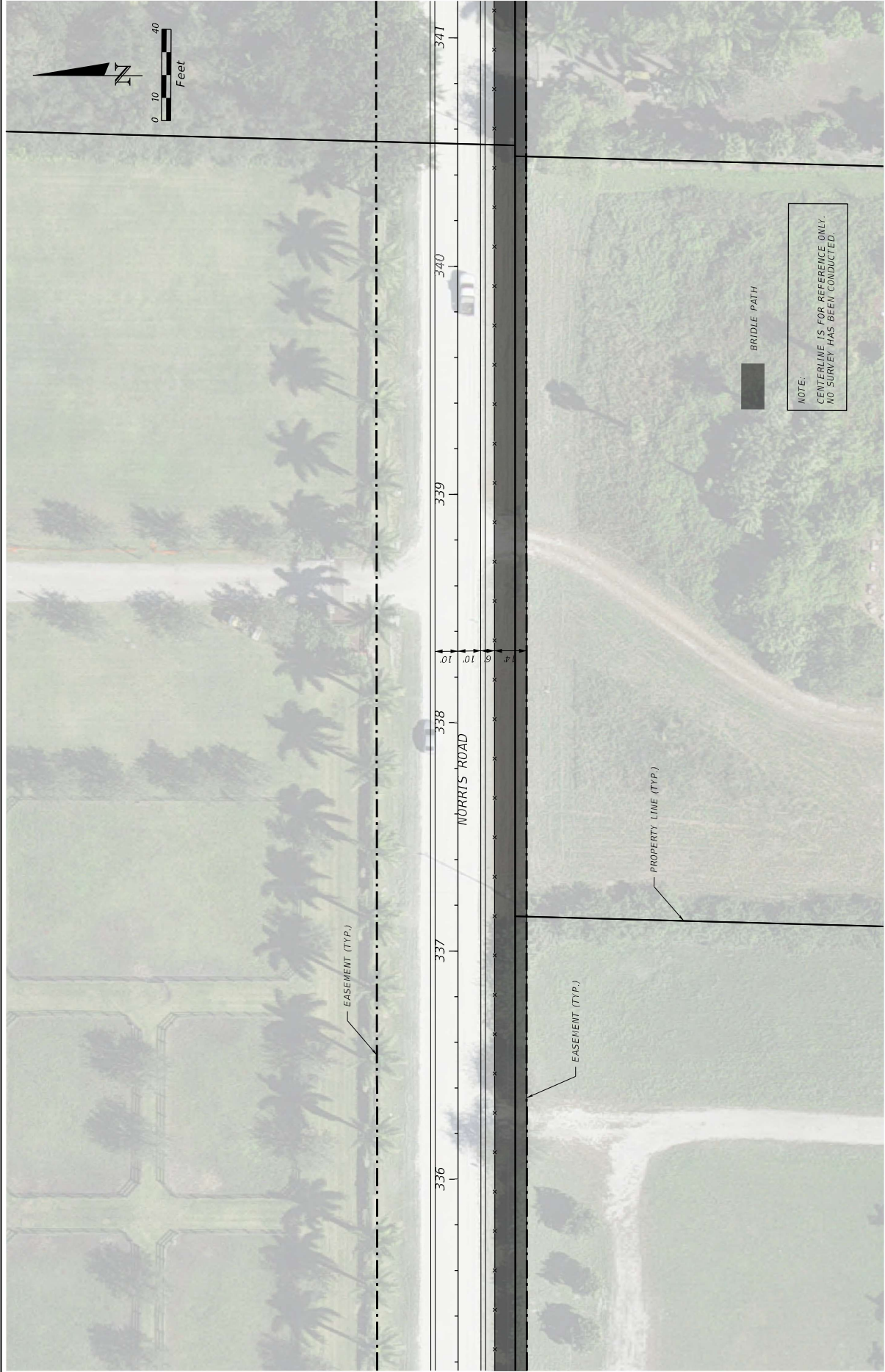
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Scale:
NORRIS ROAD
1" = 40'

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SFILES SUSERS STINES





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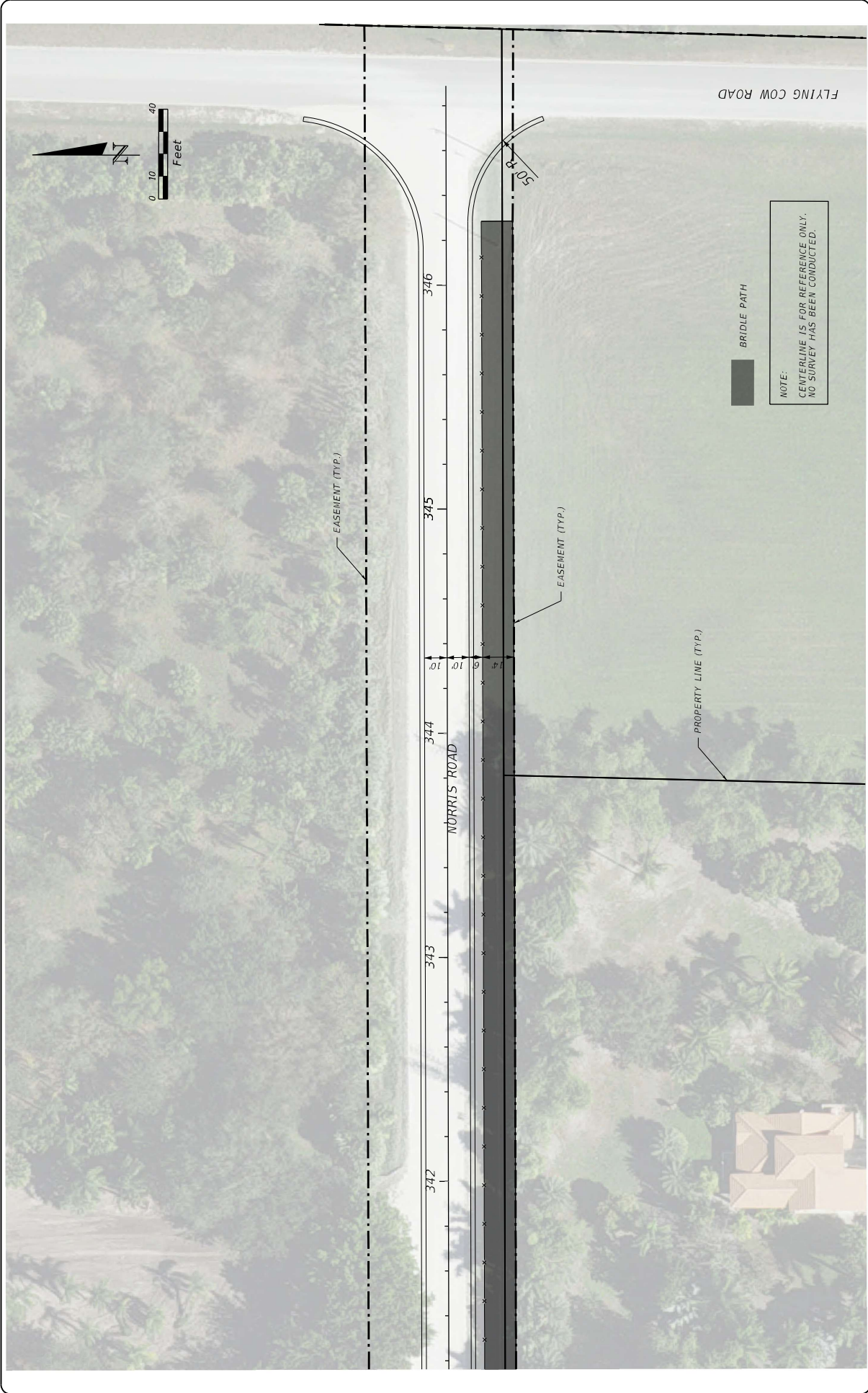
CONCEPTUAL PLAN

SHEET: 34
OF: 43
PROJECT NO.: 240439

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SUSERS

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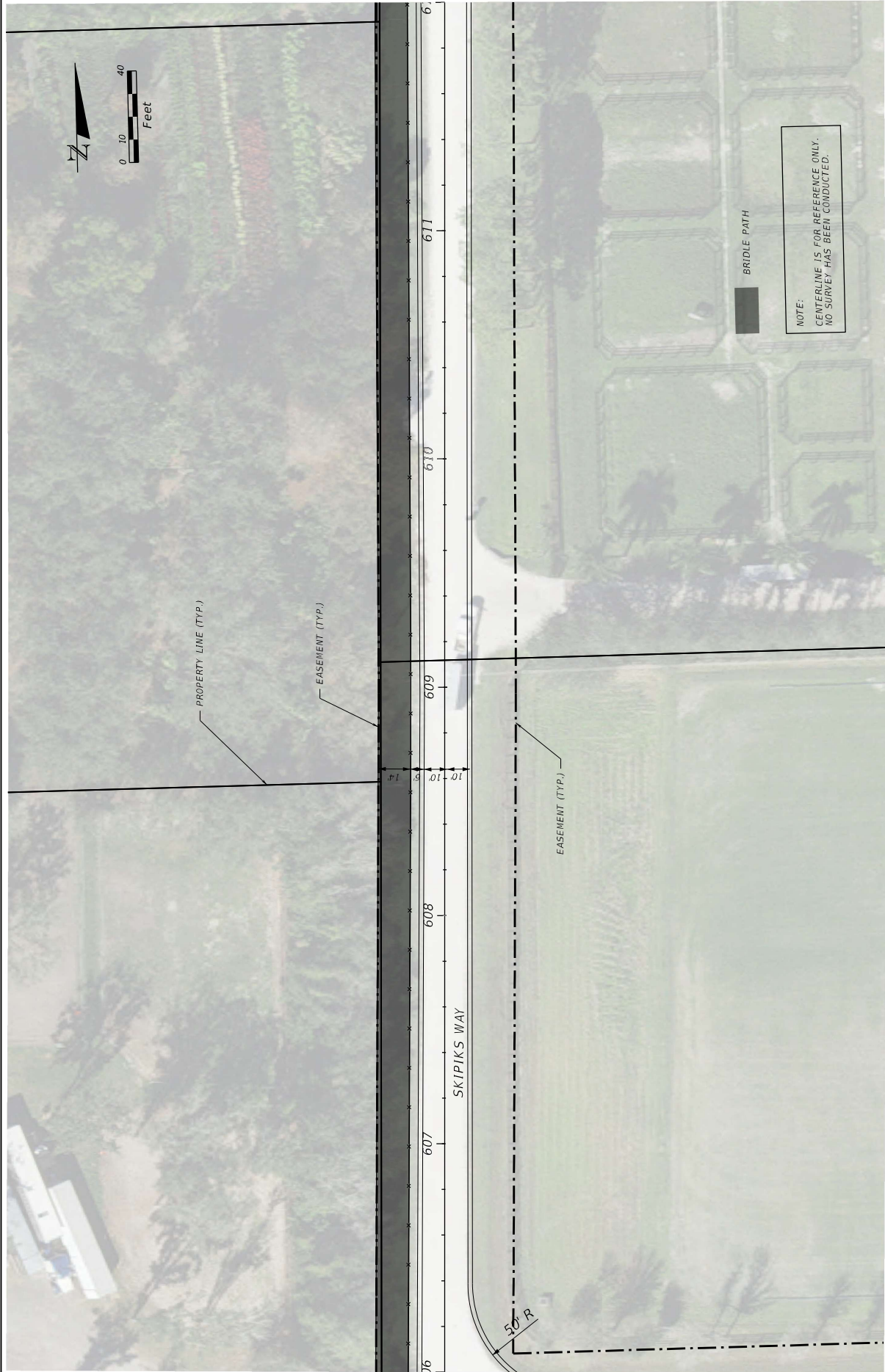
RUSTIC RANCHES

SUSERS

CONCEPTUAL PLAN

SUSERS

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OF: 43
PROJECT NO.: 240139



SHEET: 37
OF: 43
PROJECT NO. 240139

CONCEPTUAL PLAN

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RUSTIC RANCHES

No.	Revisions	By	Date

Scale:
NORTH ARROW
1" = 40'

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ST/RES

SUSERS

SFILES



SHEET: 38
OF: 43
PROJECT NO.: 240139

CONCEPTUAL PLAN

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RUSTIC RANCHES

No.	Revisions	By	Date

Scale:
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Datum: NAD 83
Units: Feet

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SHEET: 39
OF: 43
PROJECT NO.: 240439

CONCEPTUAL PLAN

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RUSTIC RANCHES

No.	Revisions	By	Date

Scale:
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Datum: NAD 83
Units: Feet



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SFILES

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SHEET: 40
OF: 43
PROJECT NO.
240439

CONCEPTUAL PLAN

SCALE:
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CHECKED:
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C26258-1281624



SURVEY

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SURVEY



SHEET: 42
OF: 43
PROJECT NO.: 240439

CONCEPTUAL PLAN

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APPROVED:
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RUSTIC RANCHES

No.	Revisions	By	Date

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RUSTIC RANCHES

CONCEPTUAL PLAN

SCALE: 1"=40'

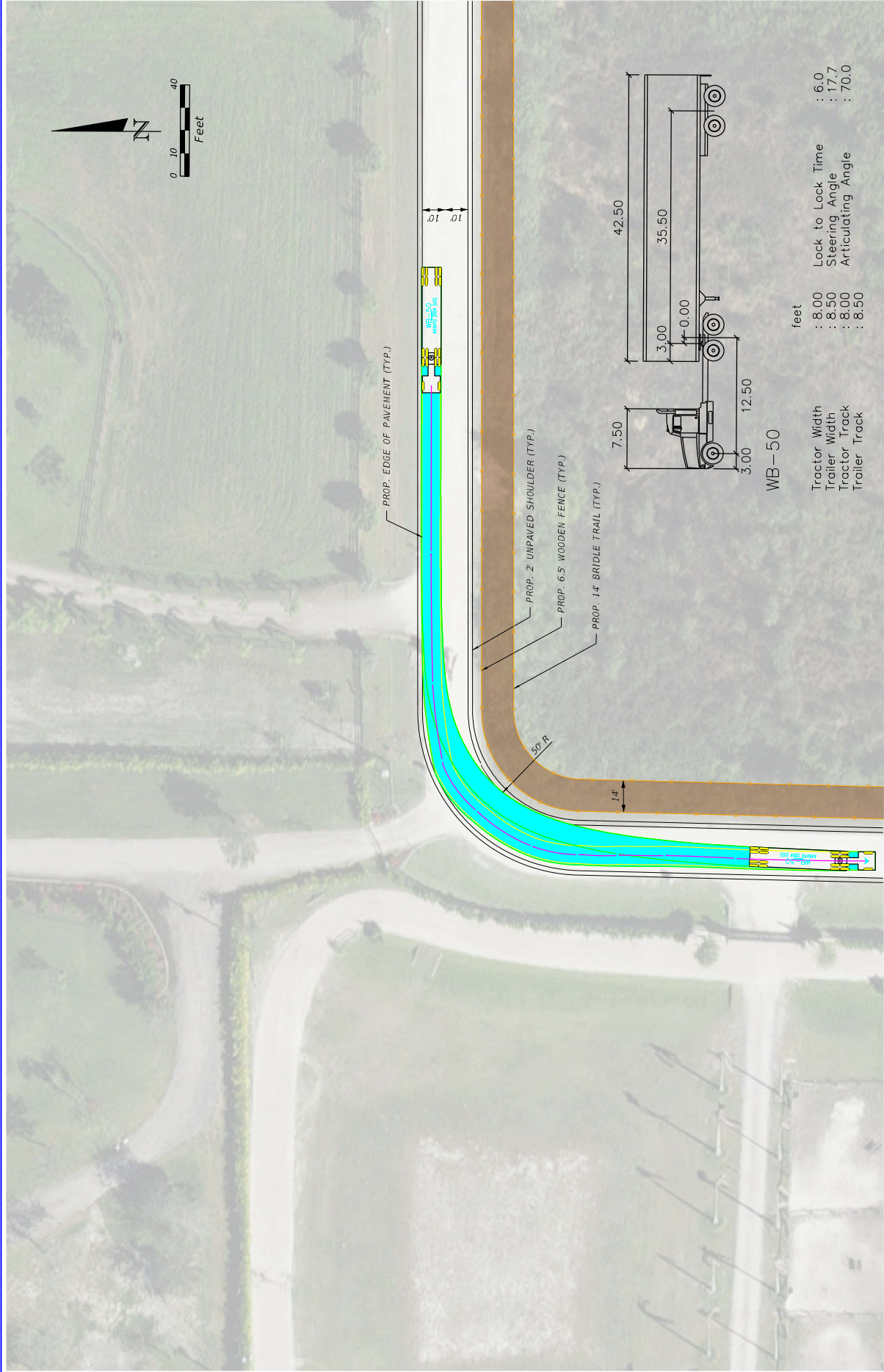
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OF: 43
PROJECT NO.: 240439

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OF: 43
PROJECT NO.: 240439

SFILES 37/11/25 SUSERS 37/11/25

Appendix B

Autoturn Sketches

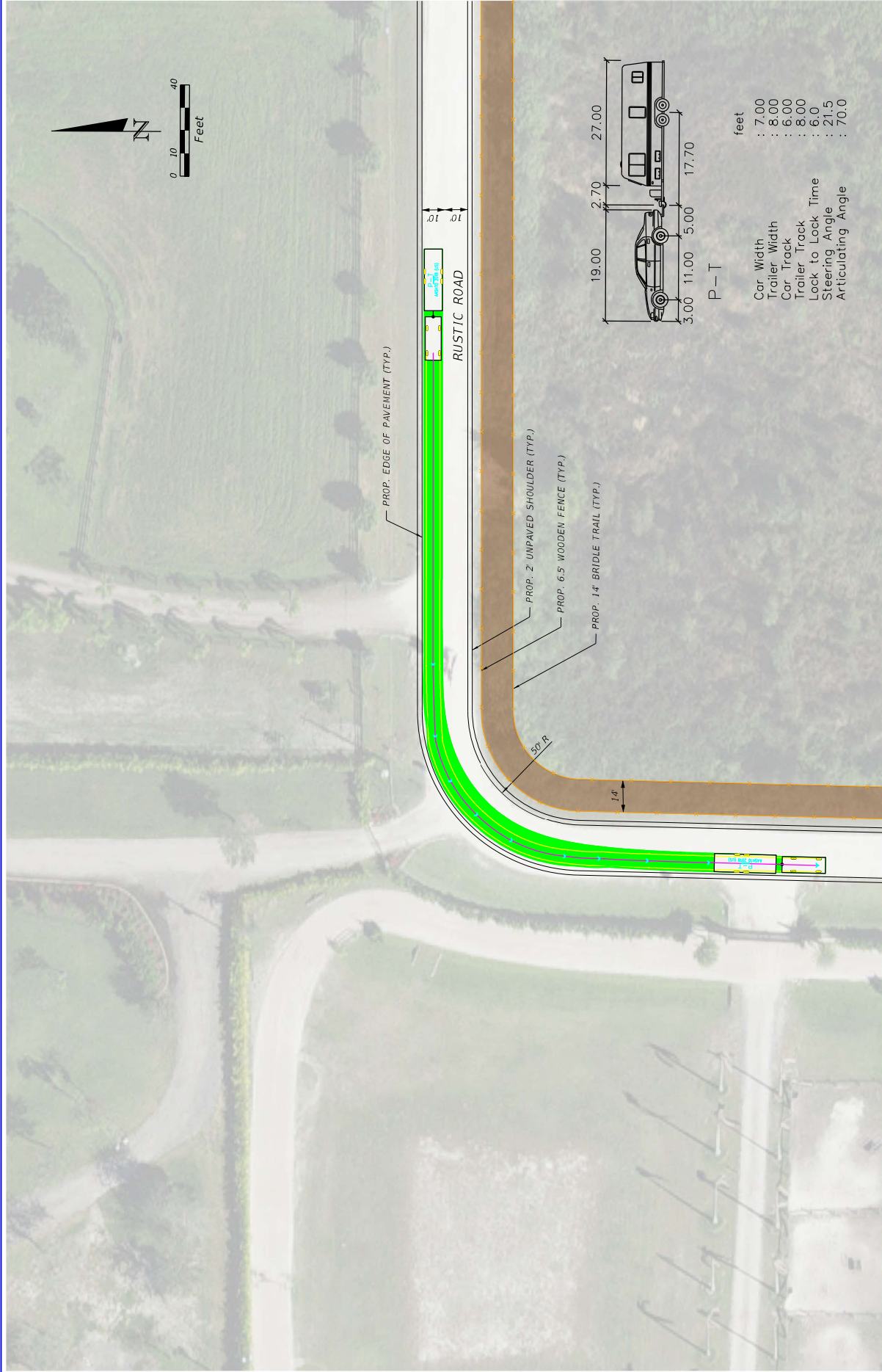


No.	Revisions	By	Date

RUSTIC RANCHES

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APPROVED:
DRAWN:
CHECKED:
DATE:

**AUTOTURN WB-50
EXHIBIT**

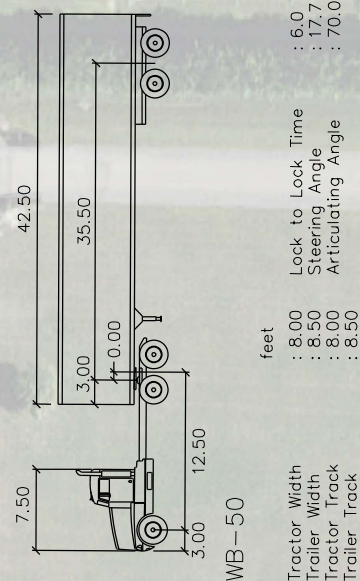
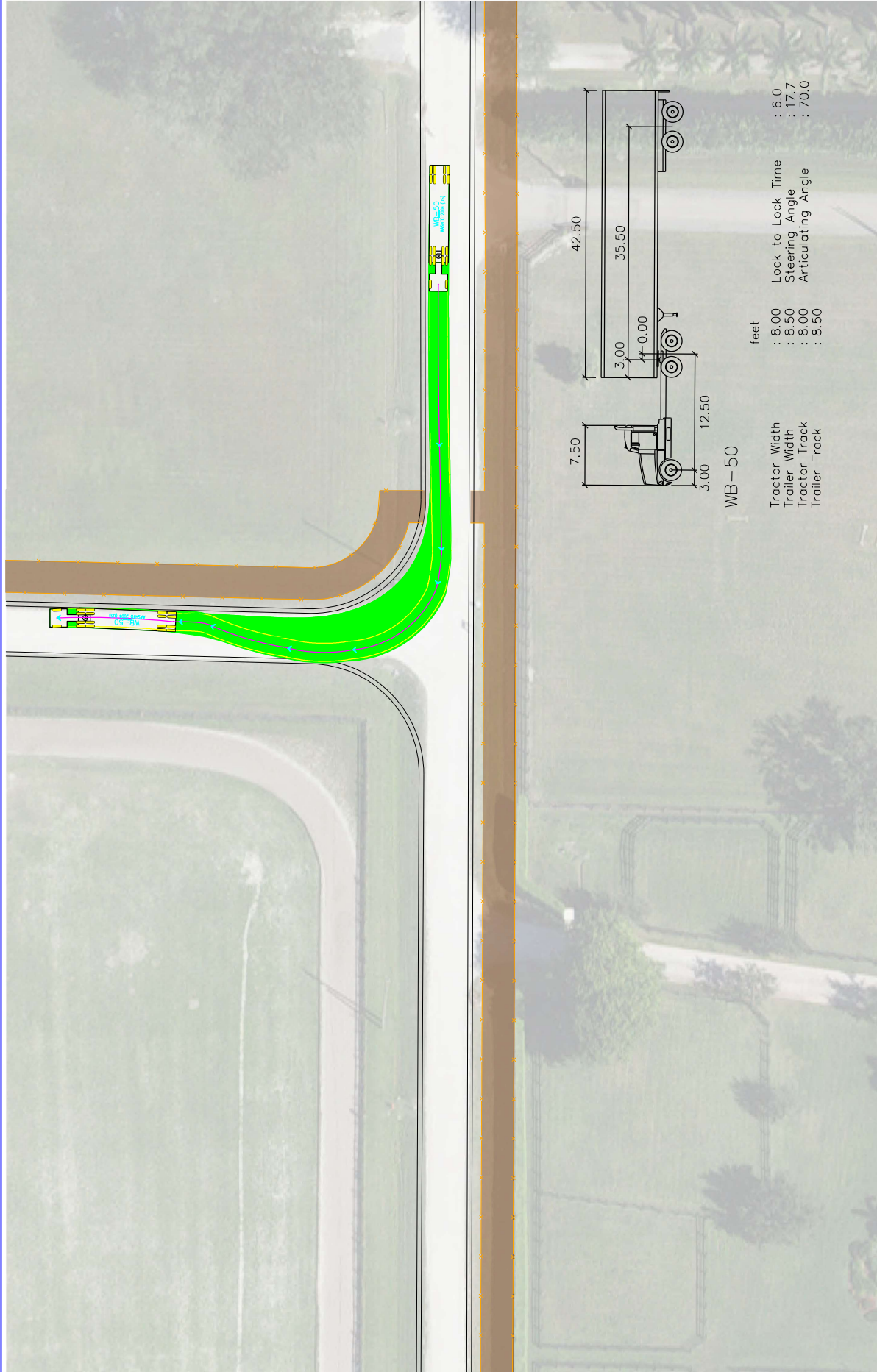


No.	Revisions	By	Date

RUSTIC RANCHES

SCALE:
APPROVED:
DRAWN:
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DATE:

**AUTOTURN WB-50
EXHIBIT**



feet

Lock to Lock Time : 8.00

Steering Angle : 17.7

Articulating Angle : 70.0

WB-50



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Scale:
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RUSTIC RANCHES

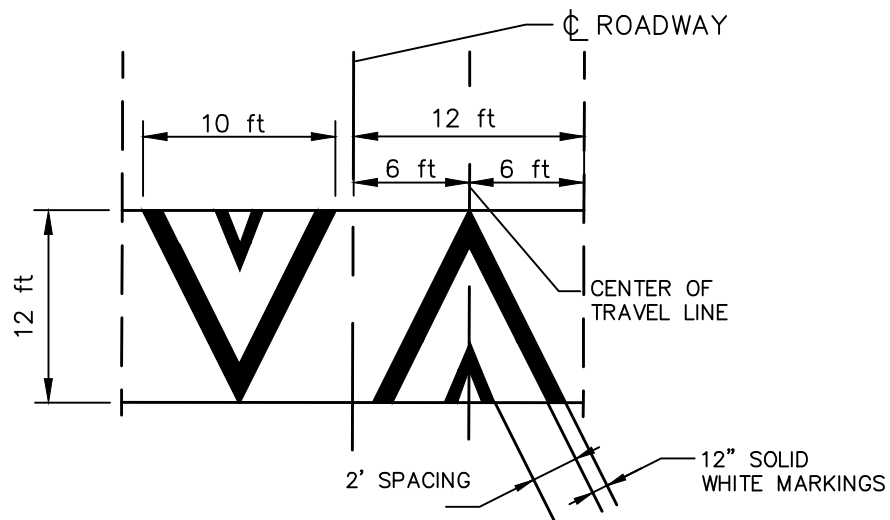
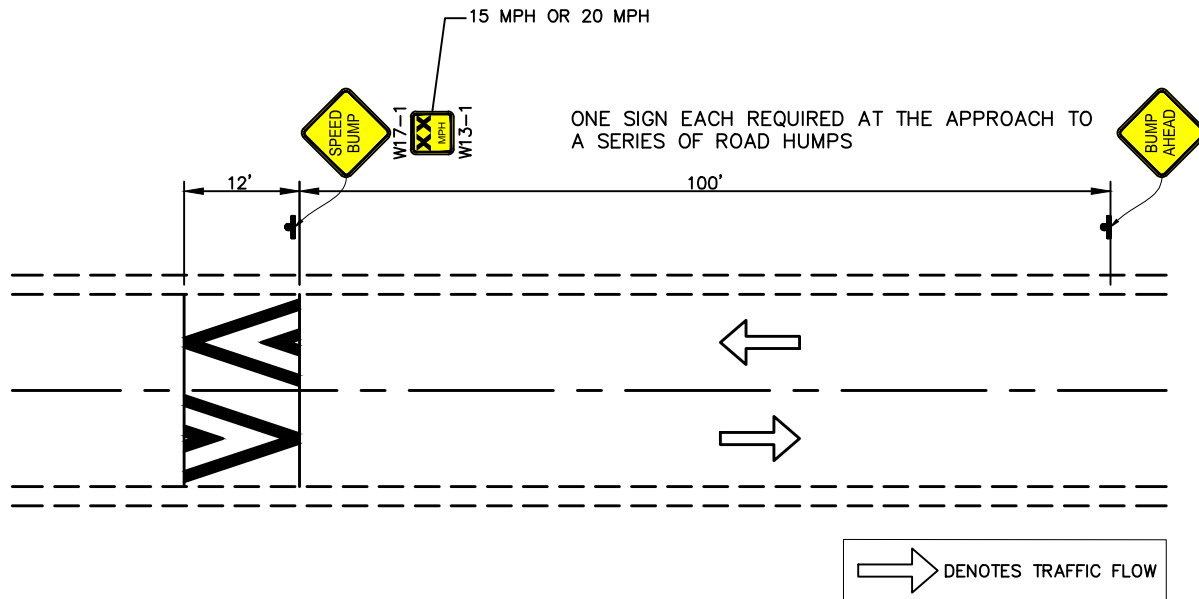
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ROADWAY IMPROVEMENT
EXHIBIT

SHEET: 5
OF: 18
PROJECT NO.: 240139

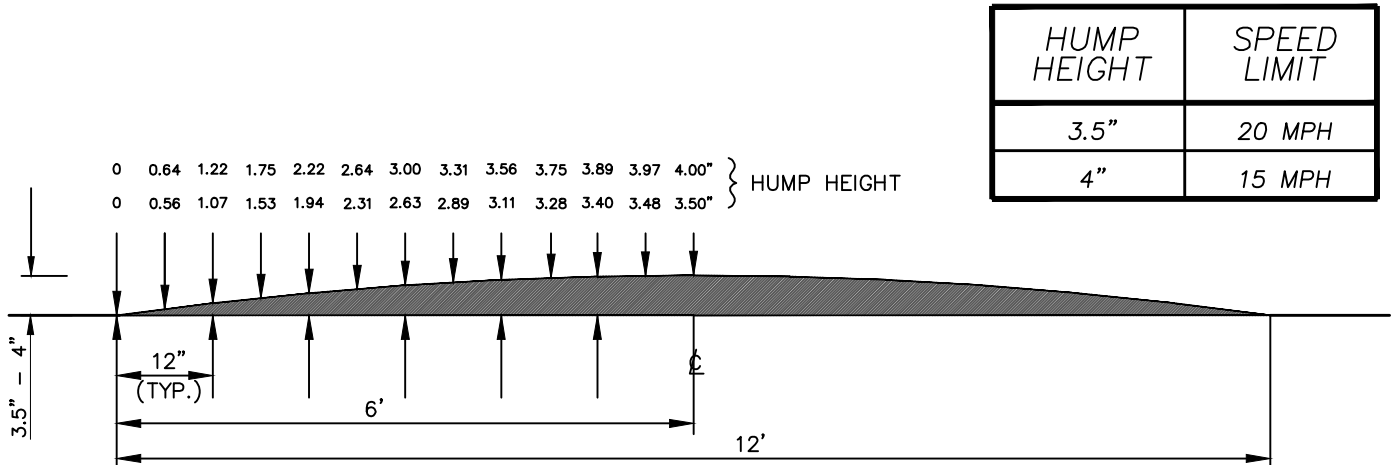
Appendix C

Speed Hump Details



ROAD HUMP SIGNING AND MARKING

VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				TRAFFIC CALMING STANDARD SPEED HUMP CONSTRUCTION DETAILS		DRAWING NO.
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	500.1
J.R.R.	07/12/17			JONATHAN REINSVOLD, PE VILLAGE ENGINEER	07/26/23	
REVISED BY:	DATE:					
A.T.D.	03/31/20					



CROSS SECTION AND TYPICAL SPEED HUMP DIMENSIONS

CONSTRUCTION NOTES

GOVERNING SPECIFICATIONS:

VILLAGE OF WELLINGTON RESOLUTION NO. R2018-15 AND THE VILLAGE OF WELLINGTON ENGINEERING STANDARDS MANUAL

1. COORDINATION WITH STREET GEOMETRY
A THOROUGH ON-SITE ANALYSIS OF ROADWAY GEOMETRICS SHALL BE PERFORMED TO ENSURE THAT SPEED HUMPS WILL NOT BE INTRODUCED AT A CRITICAL POINT IN THE ROADWAY SYSTEM, E.G. A SEVERE COMBINATION OF HORIZONTAL, VERTICAL CURVATURE AND/OR STREET GRADIENT.
2. COORDINATION WITH TRAFFIC OPERATIONS
SPEED HUMPS SHALL NOT BE INSTALLED WITHIN 400' OF A TRAFFIC SIGNAL OR STOP SIGN OR WITHIN AN INTERSECTION OR DRIVEWAY, MIN. DISTANCE BETWEEN ROAD HUMPS IS 400' AND THE MAXIMUM SHOULD BE 800'. TO BE CONSTRUCTED ONLY WHEN APPROVED BY THE VILLAGE OF WELLINGTON ENGINEER.
3. CONSTRUCTION PROCEDURES
IT IS RECOMMENDED THAT A TEMPLATE BE CONSTRUCTED TO VERIFY THE ACCURACY OF THE HUMP PROFILE AND TO ENSURE THAT THE DESIRED VERTICAL DIMENSIONS ARE ATTAINED WITHIN REASONABLE TOLERANCES (NORMALLY ONE-HALF INCH OR LESS, PROVIDED THE HUMP DOES NOT EXCEED 4 INCHES).
IF THE PROFILE IS INCORRECT, HUMP CHARACTERISTICS WILL BE CHANGED THAT MIGHT IMPACT TRAFFIC SAFETY OR CREATE INEFFECTIVE SPEED CONTROL.
IT IS RECOMMENDED THAT THE ROAD SURFACE BE EXCAVATED AT TAPERING EDGES TO PREVENT SPALLING.
HUMPS MAY BE INSTALLED IN TWO LIFTS TO IMPROVE ACCURACY AND SHAPE.
4. IF MANUFACTURED SPEED HUMPS ARE TO BE USED, SHOP DRAWINGS MUST BE SUBMITTED FOR APPROVAL TO CONFIRM COMPLIANCE WITH THE OUTLINED SPECIFICATIONS.

VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				TRAFFIC CALMING STANDARD SPEED HUMP CONSTRUCTION DETAILS		DRAWING NO.
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	500.2
J.R.R.	07/12/17			JONATHAN REINSVOLD, PE VILLAGE ENGINEER		
REVISED BY:	DATE:				07/26/23	
A.T.D.	03/31/20					

Appendix D

Preliminary Cost Estimates

Rustic Ranches Roads Improvement Project
Skipiks Way

Cost Estimate Utilizing Existing Shellrock Base

Item No.	Item Description	Unit	Quantity	Unit Cost	Total
ROADWAY ITEMS					
1	MOBILIZATION	LS	1	\$ 38,100.00	\$ 38,100.00
2	MAINTENANCE OF TRAFFIC (INCLUDING PED. MOT)	LS	1	\$ 19,050.00	\$ 19,050.00
3	CLEARING AND GRUBBING	LS	1	\$ 19,050.00	\$ 19,050.00
4	STAKED SILT FENCE	LF	5000	\$ 1.60	\$ 8,000.00
5	EXCAVATION & GRADING	SY	5600	\$ 5.00	\$ 28,000.00
6	EMBANKMENT (COMPACTED IN PLACE)	CY	1670	\$ 17.62	\$ 29,425.40
7	BRIDLE PATH	SY	3900	\$ 3.00	\$ 11,700.00
8	SUPERPAVE ASPHALT CONCRETE (TRAFFIC LEVEL C) (1.5")	TN	470	\$ 157.81	\$ 74,170.70
9	SPEED HUMPS	EA	8	\$ 1,000.00	\$ 8,000.00
10	INLETS (DITCH BOTTOM) (TYPE C) (<10')	EA	8	\$ 7,291.40	\$ 58,331.20
11	PIPE CULVERT (18")	LF	280	\$ 115.00	\$ 32,200.00
12	3 RAIL WOODEN FENCE	LF	2500	\$ 30.00	\$ 75,000.00
13	SODDING	SY	11100	\$ 3.40	\$ 37,740.00
14	SIGNING AND PAYMENT MARKINGS	LS	1	\$ 17,500.00	\$ 17,500.00
15	EQUESTRIAN SOLAR FLASHER ASSEMBLIES	EA	8	\$ 20,000.00	\$ 160,000.00
		Subtotal Roadway Items		\$	438,767.30
		Contingency (5%)		\$	21,938.37
		Grand Total Roadway & Contingency Items		\$	460,705.67

Rustic Ranches Roads Improvement Project
Skipiks Way

Cost Estimate With Pavement Base Reconstruction

Item No.	Item Description	Unit	Quantity	Unit Cost	Total
ROADWAY ITEMS					
1	MOBILIZATION	LS	1	\$ 61,450.00	\$ 61,450.00
2	MAINTENANCE OF TRAFFIC (INCLUDING PED. MOT)	LS	1	\$ 30,750.00	\$ 30,750.00
3	CLEARING AND GRUBBING	LS	1	\$ 30,750.00	\$ 30,750.00
4	STAKED SILT FENCE	LF	5000	\$ 1.60	\$ 8,000.00
5	REGULAR EXCAVATION	CY	1620	\$ 17.93	\$ 29,046.60
6	EMBANKMENT (COMPACTED IN PLACE)	CY	1670	\$ 17.62	\$ 29,425.40
7	TYPE B STABILIZATION (LBR 40) (12")	SY	6700	\$ 5.40	\$ 36,180.00
8	LIMEROCK, LBR 100 (8" THICK)	SY	5600	\$ 33.10	\$ 185,360.00
9	BRIDLE PATH	SY	3900	\$ 3.00	\$ 11,700.00
10	SUPERPAVE ASPHALT CONCRETE (TRAFFIC LEVEL C) (1.5")	TN	470	\$ 157.81	\$ 74,170.70
11	SPEED HUMPS	EA	8	\$ 1,000.00	\$ 8,000.00
12	INLETS (DITCH BOTTOM) (TYPE C) (<10')	EA	8	\$ 7,291.40	\$ 58,331.20
13	PIPE CULVERT (18")	LF	280	\$ 115.00	\$ 32,200.00
14	3 RAIL WOODEN FENCE	LF	2500	\$ 30.00	\$ 75,000.00
15	SODDING	SY	11100	\$ 3.40	\$ 37,740.00
16	SIGNING AND PAVMENT MARKINGS	LS	1	\$ 17,500.00	\$ 17,500.00
17	EQUESTRIAN SOLAR FLASHER ASSEMBLIES	EA	8	\$ 20,000.00	\$ 160,000.00
		Subtotal Roadway Items		\$	708,103.90
		Contingency (5%)		\$	35,405.20
		Grand Total Roadway & Contingency Items		\$	743,509.10

Appendix E

Bridle Path Details

1100 EQUESTRIAN TRAILS & BEST MANAGEMENT PRACTICES

SECTION 1100: EQUESTRIAN TRAILS AND BEST MANAGEMENT PRACTICES

EQUESTRIAN CROSSING WITH SOLAR FLASHERS (TYPE 1)	1100.1.1
EQUESTRIAN CROSSING WITH SOLAR FLASHERS (TYPE 2)	1100.1.2
TYPICAL BRIDLE TRAIL CROSS SECTIONS	1100.2.1
TYPICAL BRIDLE TRAIL CROSS SECTIONS	1100.2.2
3-RAIL FENCE DETAIL	1100.3
EQUESTRIAN TRAIL BOLLARD DETAIL	1100.4
RESERVED	1100.5
RESERVED	1100.6
RESERVED	1100.7
MANURE BIN DETAIL	1100.8

EQUESTRIAN/PEDESTRIAN CROSSING ADVANCE WARNING FLASHER ASSEMBLY SPECIFICATIONS

COMPLETE 15-FT SPUN POLE KIT TO INCLUDE ALL MOUNTING HARDWARE TO INCLUDE 15-FT CRASH TESTED 4" ROUND ALUMINUM SPUN POLE WITH PEDESTAL BASE, TOP CAP, ANCHOR BOLTS, SIGNAL HEAD MOUNT ARM, CONTROL BOX MOUNT.

PUSH BUTTON/CROSSWALK SYSTEM TO INCLUDE DOUBLE 12" YELLOW/AMBER LED'S INSTALLED IN 12" LIGHT HOUSING PLASTIC INJECTED MOLDED POLYSTYRENE TUFEN U.V. IMPREGNATED MATERIAL FOR ULTRA VIOLET RAYS, POLYCARBONATE HEADS, 20-WATT SOLAR PANEL WITH MOUNTING BRACKET, PROGRAMMABLE TIMER MODULE, ALUMINUM BATTERY BOX, CONTROLLER SOLAR POWER PACKAGE INCLUDING 2-18 AMP BATTERIES (12V-DC, 18 AMP) MOUNTING HARDWARE TO MOUNT TO EXISTING POLE AND RADIO. CONTROL CABINET IS 7-1/2" X 11-1/4" X4", .063 ALUMINUM, LOCATED BELOW SOLAR PANEL.

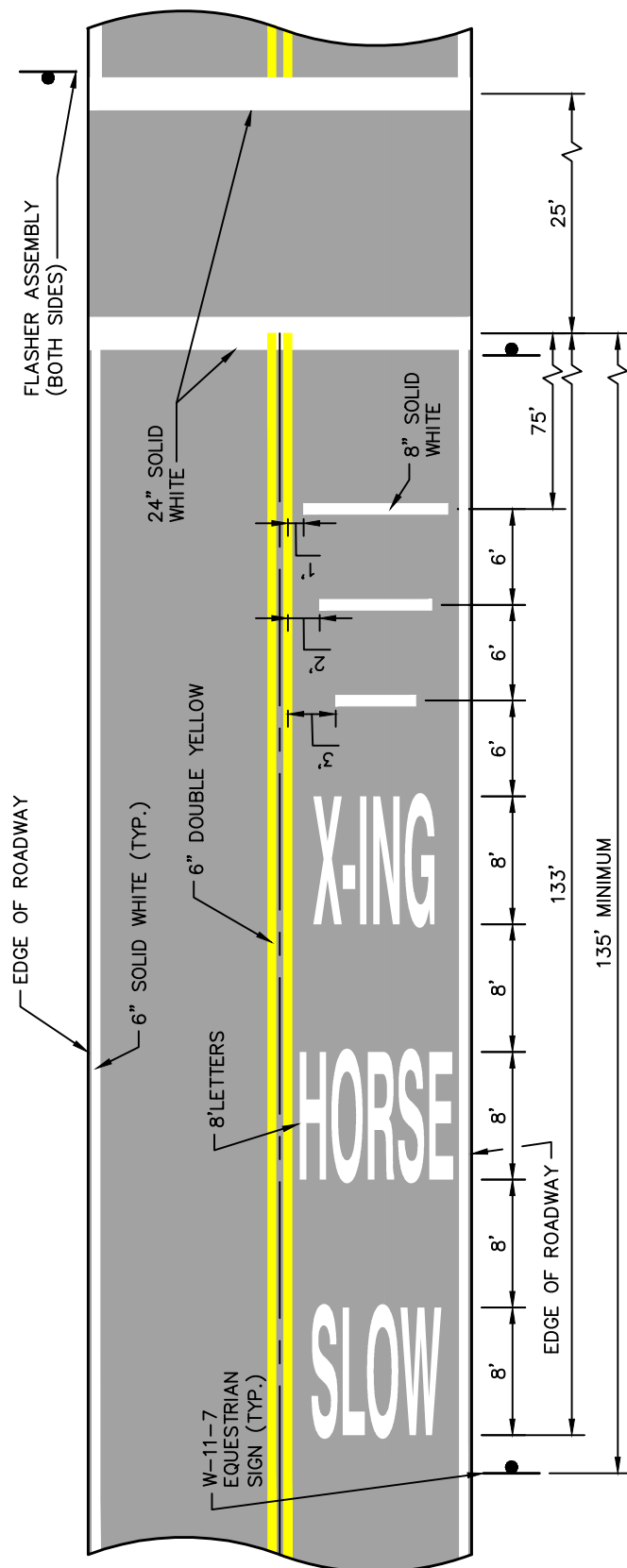
CROSSWALK PUSH BUTTON SYSTEM CONSISTING OF 2" BUTTON WITH MOMENTARY SWITCH RATED AT 36VDC AND 5"X7" BUTTON FIXTURE WITH CROSSING SIGN INSERTED; HEAVY DUTY LONG LIFE SWITCH. SUBASSEMBLY (FOR CrossTalk OR SPLasher). 4 PUSH BUTTONS REQUIRED, 2 PER POLE. ON EACH POLE, ONE PUSH BUTTON SHALL BE INSTALLED AT 40" ABOVE GRADE FOR PEDESTRIAN USAGE AND ONE PUSH BUTTON SHALL BE INSTALLED AT 70" ABOVE GRADE FOR HORSE RIDER USAGE.

30"X30" INTERNATIONAL (PICTURE) HORSE CROSSING SIGN WITH HIGH INTENSITY REFLECTIVITY.

ASSEMBLY SHALL BE AS MANUFACTURED BY K&K INC. MODEL NO. ECO-132-12, OR EQUAL.



**W-11-07 EQUESTRIAN
CROSSING SIGN**
N.T.S.



VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				EQUESTRIAN CROSSING WITH SOLAR FLASHERS (TYPE 1)		DRAWING NO.
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	1100.1.1
J.R.R.	07/12/17			JONATHAN REINSVOLD, PE VILLAGE ENGINEER	07/26/23	
REVISED BY:	DATE:					
J.R.R.	04/01/2020					

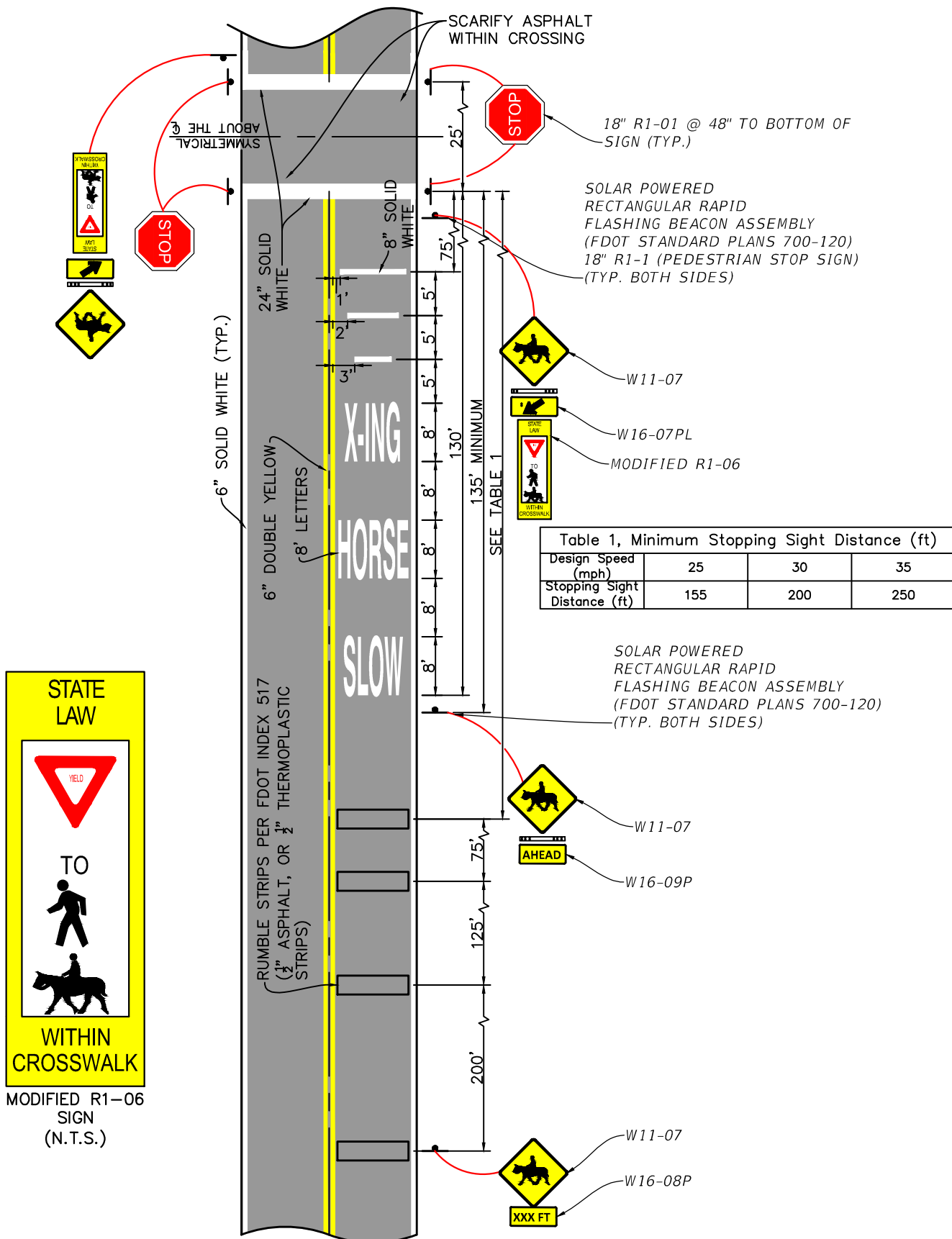
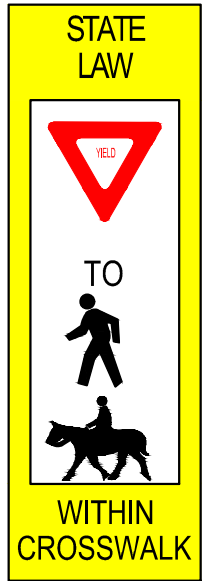


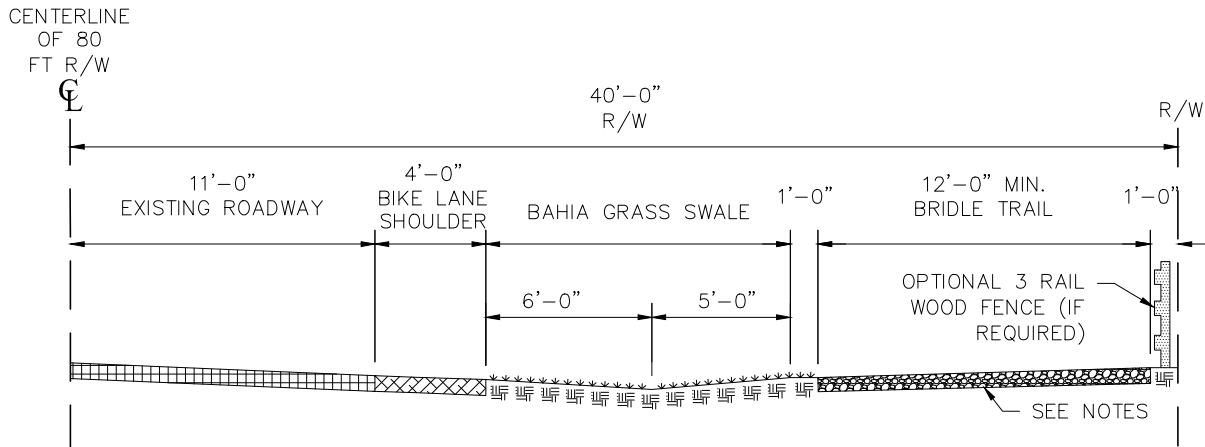
Table 1, Minimum Stopping Sight Distance (ft)

Design Speed (mph)	25	30	35
Stopping Sight Distance (ft)	155	200	250



MODIFIED R1-06
SIGN
(N.T.S.)

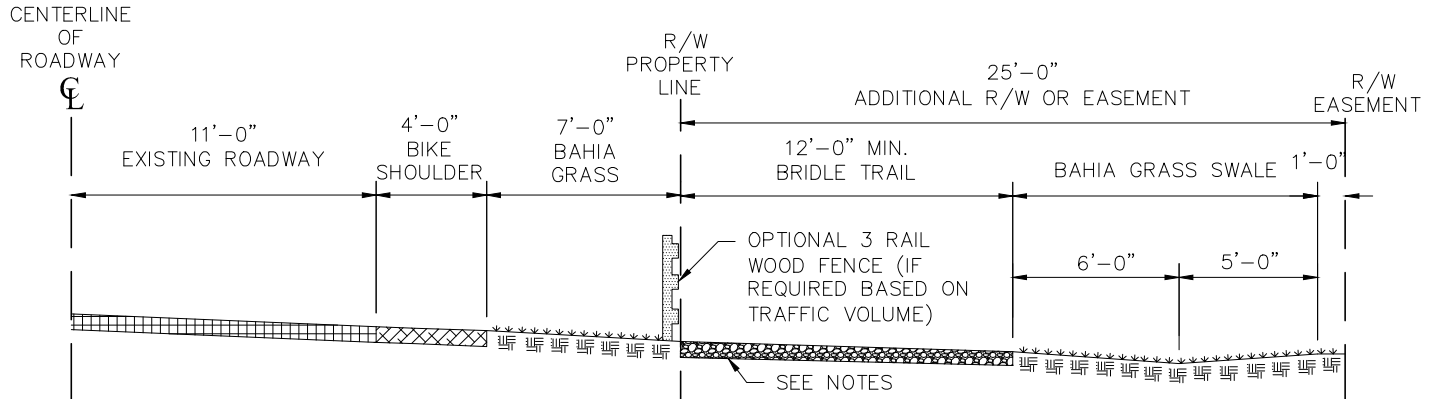
VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				EQUESTRIAN CROSSING WITH SOLAR FLASHERS (TYPE 2)		DRAWING NO. 1100.1.2
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	
J.R.R.	04/01/20			 JONATHAN REINSVOLD, PE VILLAGE ENGINEER	07/26/23	
REVISED BY:	DATE:					
JRR	07/21/22					



TYPICAL 80 FT R/W BRIDLE TRAIL SECTION
(OPTION #1)

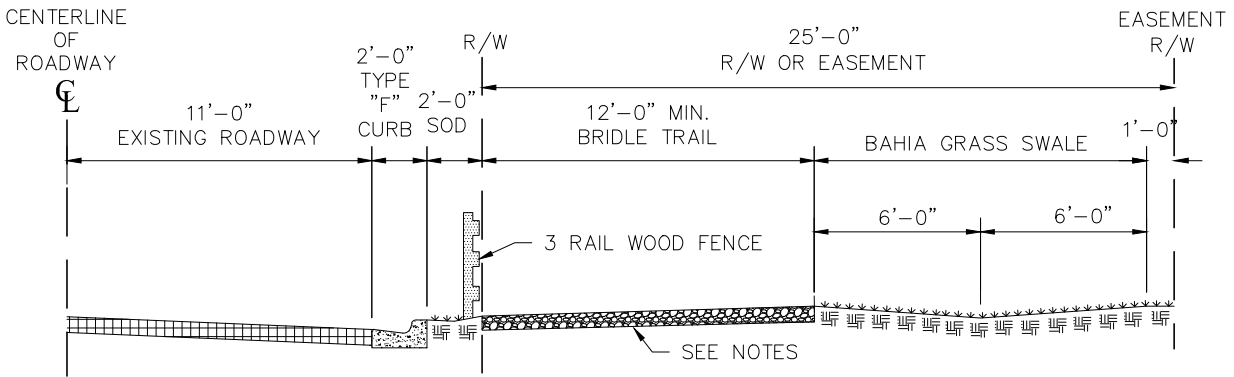
NOTES

1. BRIDLE TRAIL FOOTING WITH MINIMAL USE SHALL HAVE COMPACTED STABILIZED SOIL WITH BAHIA SOD.
2. BRIDLE TRAIL FOOTINGS WITH HEAVY TRAFFIC USE SHALL HAVE 4"–6" OF ASPHALT MILLINGS MIXED INTO NATIVE COMPACTED SOIL.
3. BRIDLE TRAIL FOOTINGS WITH EXCEPTIONAL HEAVY TRAFFIC USE SHALL HAVE 4"–6" OF ASPHALT MILLINGS MIXED WITH COMPACTED STABILIZED SOIL.



TYPICAL ROADWAY BRIDLE TRAIL SECTION W/ LIMITED
R/W
(OPTION #2)

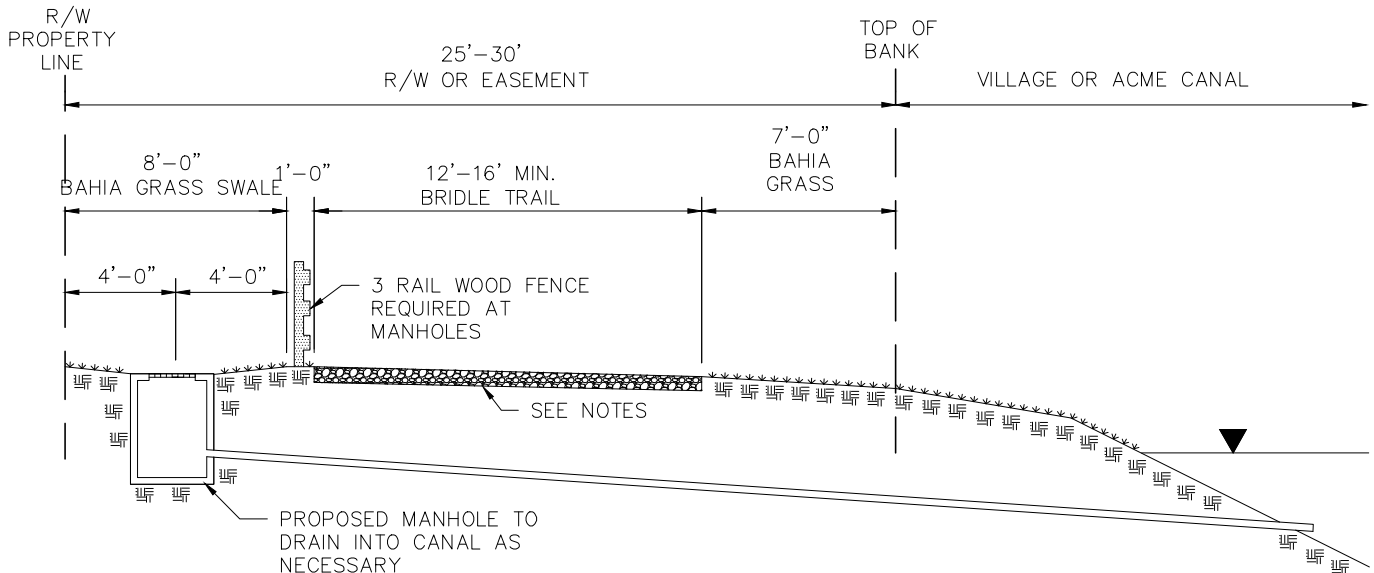
VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				TYPICAL BRIDLE TRAIL CROSS-SECTIONS		DRAWING NO. 1100.2.1
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	
J.R.R.	07/12/17			 JONATHAN REINSVOLD, PE VILLAGE ENGINEER	07/26/23	
REVISED BY:	DATE:					
J.R.R.	04/01/2020					



TYPICAL ROADWAY BRIDLE TRAIL SECTION W/ LIMITED
R/W
(OPTION #3)

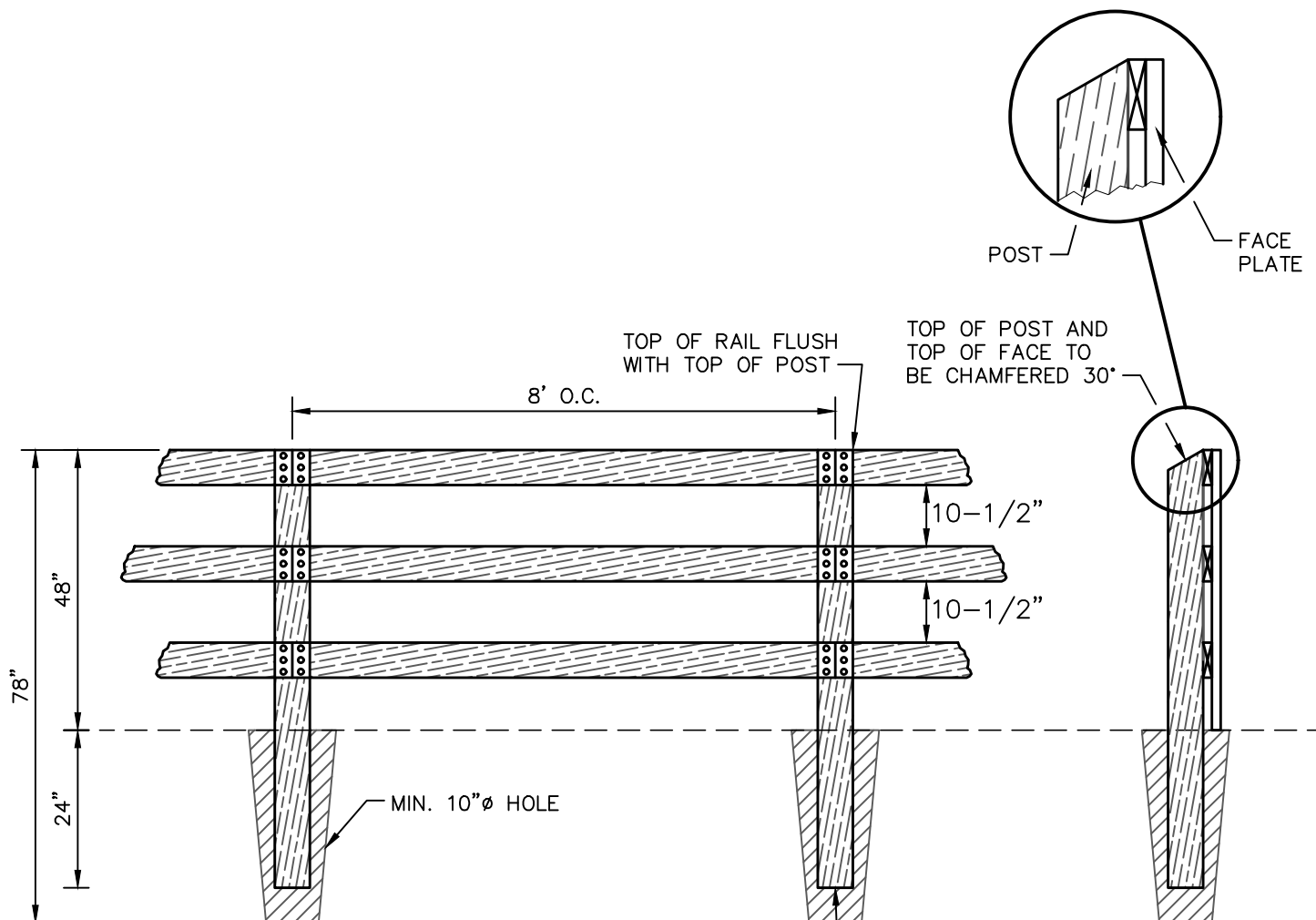
NOTES

1. BRIDLE TRAIL FOOTING WITH MINIMAL USE SHALL HAVE COMPACTED STABILIZED SOIL WITH BAHIA SOD.
2. BRIDLE TRAIL FOOTINGS WITH HEAVY TRAFFIC USE SHALL HAVE 4"-6" OF ASPHALT MILLINGS MIXED INTO NATIVE COMPACTED SOIL.
3. BRIDLE TRAIL FOOTINGS WITH EXCEPTIONAL HEAVY TRAFFIC USE SHALL HAVE 4"-6" OF ASPHALT MILLINGS MIXED WITH COMPACTED STABILIZED SOIL.



TYPICAL BRIDLE TRAIL W/ A CANAL R/W
(OPTION #4)

VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				TYPICAL BRIDLE TRAIL CROSS-SECTIONS		DRAWING NO.
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	1100.2.2
J.R.R.	07/12/17			JONATHAN REINSVOLD, PE VILLAGE ENGINEER	07/26/23	
REVISED BY:	DATE:					
J.R.R.	04/01/2020					



NOTES:

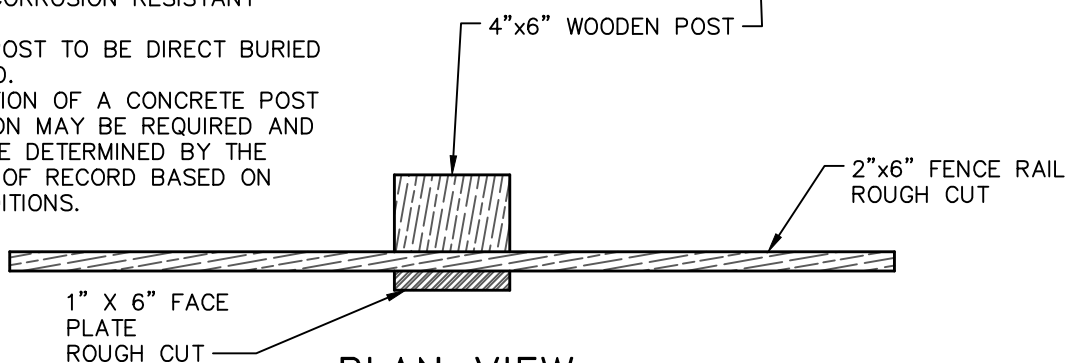
1. ALL WOOD SHALL BE PRESSURE TREATED
2. ALL FACE PLATES & FENCE RAILS SHALL FACE THE 'STREET SIDE' OF THE POSTS.
3. FASTENERS TO BE 3-1/2", T-25 STAR DRIVE, EXTERIOR SCREWS W/ LIFETIME CORROSION RESISTANT COATING.
4. WOODEN POST TO BE DIRECT BURIED IN GROUND.
5. THE ADDITION OF A CONCRETE POST FOUNDATION MAY BE REQUIRED AND SHOULD BE DETERMINED BY THE ENGINEER OF RECORD BASED ON SITE CONDITIONS.

PROFILE VIEW

N.T.S.

SECTION VIEW

N.T.S.



PLAN VIEW

N.T.S.

VILLAGE OF WELLINGTON DEPARTMENT
OF ENGINEERING AND CONSTRUCTION

3-RAIL FENCE DETAIL

DRAWING NO.

1100.3

DRAWN BY: DATE: REVISED BY: DATE:

J.R.R. 07/12/17

REVISED BY: DATE:

APPROVED:

EFFECTIVE:

JONATHAN REINSVOLD, PE

07/26/23

VILLAGE ENGINEER

DECORATIVE CONCRETE CAP

DECORATIVE STONE
FACADE. PATTERN TO
BE PROVIDED AT
TIME OF SHOP
DRAWING SUBMITTAL

TRAIL SIGN AND
WELLINGTON LOGO
(TO BE PROVIDED)

12"

48"

18"

GROUND ELEVATION

ISOMETRIC VIEW

N.T.S.

**VILLAGE OF WELLINGTON DEPARTMENT
OF ENGINEERING AND CONSTRUCTION**

**EQUESTRIAN TRAIL
BOLLARD DETAIL
(ISOMETRIC VIEW)**

DRAWING NO.

1100.4
1 OF 3

DRAWN BY:

DATE:

REVISED BY:

DATE:

J.R.R.

07/12/17

REVISED BY:

DATE:

J.R.R.

04/01/20

APPROVED:

EFFECTIVE:

JONATHAN REINSVOLD, PE

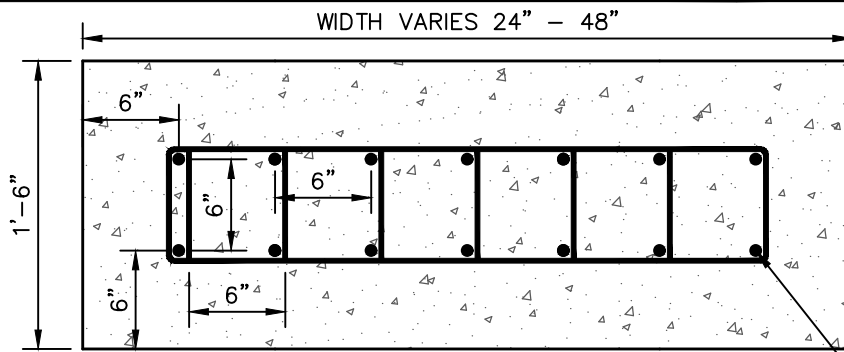
07/26/23

VILLAGE ENGINEER

GENERAL NOTES

1. ALL DESIGN AND CONSTRUCTION IN ACCORDANCE WITH THE 5TH EDITION (2014) FLORIDA BUILDING CODE.
2. CONTRACTOR SHALL VERIFY ALL THE LOCATION OF ALL THE UNDERGROUND UTILITIES PRIOR TO STARTING CONSTRUCTION.
3. CONTRACTOR SHALL CALL 811 SUNSHINE FOR LOCATES.
4. CONTRACTOR SHALL TAKE THE NECESSARY ACTIONS TO PROTECT THE PROPERTY. CONTRACTOR SHALL REPAIR OR REPLACE PROPERTY DAMAGED BY THE CONTRACTOR AT ITS OWN EXPENSE.
5. CONTRACTOR SHALL KEEP WORK SITE FREE OF DEBRIS AND CONSTRUCTION WASTE DAILY.
6. CONTRACTOR SHALL REMOVE ALL VEGETATION, UNSATISFACTORY SOILS AND OTHER DELETERIOUS MATERIAL UNDERNEATH THE PROPOSED FOUNDATION.
7. CONTRACTOR SHALL COMPACT THE EXISTING SUBGRADE TO 98% ASTM D1557 MODIFIED PROCTOR MAXIMUM DENSITY. CONTRACTOR SHALL PROVIDE SOIL TREATMENT PER THE FLORIDA BUILDING CODE.
8. CONTRACTOR SHALL PROVIDE DENSITY TESTS TO THE OWNER AND THE BUILDING DEPARTMENT PRIOR TO PLACEMENT OF THE PROPOSED SLAB, AS APPLICABLE.
9. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI, AND WATER/CEMENT RATIO SHALL NOT EXCEED 0.50.
10. MINIMUM CONCRETE COVER SHALL BE: SLAB: $\frac{3}{4}$ "; BEAMS AND COLUMNS: $1-1\frac{1}{2}$ "; TIE COLUMNS: $\frac{3}{4}$ "; EXPOSED UNPROTECTED CONCRETE: $1-1\frac{1}{2}$ "; FORMED CONCRETE BELOW GRADE: 2"; UNFORMED CONCRETE BELOW GRADE: 3".
11. CONCRETE WORK, INCLUDING FORM WORK AND TESTING SHALL BE IN ACCORDANCE WITH ACI STANDARDS, LATEST EDITION.
12. CONCRETE TESTING:
 - 12.1. AN INDEPENDENT TESTING LAB SHALL PERFORM THE FOLLOWING TESTS ON CAST IN PLACE CONCRETE:
 - 12.1.1. ASTM C143 "STANDARD TEST METHOD FOR SLUMP OF PORTLAND CEMENT CONCRETE"
 - 12.1.2. ASTM C39 "STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS". A SEPARATE TEST SHALL BE CONDUCTED FOR EACH CLASS FOR EVERY 50 CUBIC YARDS PLACED PER DAY. REQUIRED CYLINDER QUANTITIES AND TEST AGE AS FOLLOWS: 1 AT 3 DAYS, 1 AT 7 DAYS, 2 AT 28 DAYS.
13. REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE, LATEST EDITION.
14. REINFORCING BARS SHALL BE ASTM A615 STEEL AND SHALL BE FREE OF RUST AND OTHER DEBRIS.
15. WHERE APPLICABLE, REINFORCING BAR HOOKS SHALL BE AS FOLLOWS: #3=6", #4=8", #5=10", #6=12", #7=14", #8=16", #9=19", #10=22", #11=24", #14=31", AND #18=41".
16. REINFORCED CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES" (A.C.I. 530).
17. CONCRETE MASONRY 28-DAY NET AREA COMPRESSIVE STRENGTH OF INDIVIDUAL UNITS SHALL BE 1,500 PSI. MASONRY UNITS SHALL CONFORM TO A.S.T.M. C90.
18. MASONRY GROUT SHALL CONFORM TO A.S.T.M. C476.
19. MASONRY GROUT SLUMP SHALL BE NO LESS THAN 8 INCHES AND NO GREATER THAN 11 INCHES.
20. MORTAR TYPE M OR S SHALL CONFORM TO A.S.T.M. C270.
21. VERTICAL CELLS TO BE GROUTED SHALL HAVE VERTICAL ALIGNMENT SUFFICIENT TO MAINTAIN A CLEAR, UNOBSTRUCTED CONTINUOUS CELL.
22. REINFORCING STEEL SHALL BE LAPPED 48 BAR DIAMETERS MINIMUM WHERE SPLICED AND SHALL BE WIRED TOGETHER.
23. STUCCO OVER CONCRETE OR MASONRY SURFACES: ALL EXPOSED CONCRETE SURFACES SHALL RECEIVE A STUCCO FINISH.
 - 23.1. SURFACES SHALL BE CLEAN OF DUST, OIL, GREASE, AND OTHER FOREIGN MATERIALS.
 - 23.2. LAITANCE AND EFFLORESCENCE SHALL BE REMOVED BY WASHING WITH 10% MURIATIC ACID SOLUTION.
 - 23.3. SURFACES SHALL BE LIGHTLY WETTED IMMEDIATELY BEFORE STUCCO APPLICATION.
 - 23.4. BASE COAT SHALL BE 1 PART CEMENT, 3 PARTS SAND AND NOT OVER $\frac{1}{4}$ PART HYDRATED LIME. MIX SHALL BE APPLIED TO FORM A GOOD BOND AND THEN UNIFORMLY SCRATCHED. THICKNESS SHALL BE $\frac{3}{8}$ ".
 - 23.5. FINISH COAT SHALL BE 1 PART CEMENT, 2 PARTS SAND, NOT OVER $\frac{1}{4}$ PART HYDRATED LIME AND 1 QUART SEC NO. 1 WATERPROOFING PER BAG OF CEMENT. FINISH COAT SHALL BE APPLIED NOT LESS THAN $\frac{3}{8}$ " THICK NO SOONER THAN 4 DAYS FOLLOWING BASE COAT. FINISH COAT SHALL BE FLOATED TO TRUE AND EVEN SURFACES AND SHALL BE KEPT DAMP 2 DAYS FOLLOWING APPLICATION.
24. CONTRACTOR SHALL PAINT STUCCO AS FOLLOWS:
 - 24.1. WALL STUCCO: 1 PRIMER COAT (WHITE); 2 FINISH COATS.
 - 24.2. ALL PAINT TO BE MANUFACTURED BY BENJAMIN MOORE AND SHALL BE INTENDED FOR THE INTENDED PURPOSE.
 - 24.3. CONTRACTOR SHALL PREPARE THE SURFACES PRIOR TO APPLYING COATINGS AND SHALL APPLY COATINGS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - 24.4. COLOR: BY OWNER.
25. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT ALL IRREGULARITIES OR DISCREPANCIES TO THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
26. THE CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS, & COORDINATION OF ALL TRADES WITH THE OWNER. CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING FOR ALL BRACING, BRIDGING, AND SHORING OF STRUCTURAL AND NON-STRUCTURAL COMPONENTS DURING CONSTRUCTION.
27. FOUNDATIONS ARE DESIGNED FOR A MINIMUM SOIL BEARING VALUE OF 2,000 PSF.

VILLAGE OF WELLINGTON DEPARTMENT OF ENGINEERING AND CONSTRUCTION				EQUESTRIAN TRAIL BOLLARD DETAIL (GENERAL NOTES)		DRAWING NO.
DRAWN BY:	DATE:	REVISED BY:	DATE:	APPROVED:	EFFECTIVE:	1100.4 3 OF 3
J.R.R.	07/12/17			JONATHAN REINSVOLD, PE VILLAGE ENGINEER	07/26/23 DATE:	
REVISED BY:	DATE:					
J.R.R.	04/01/20					

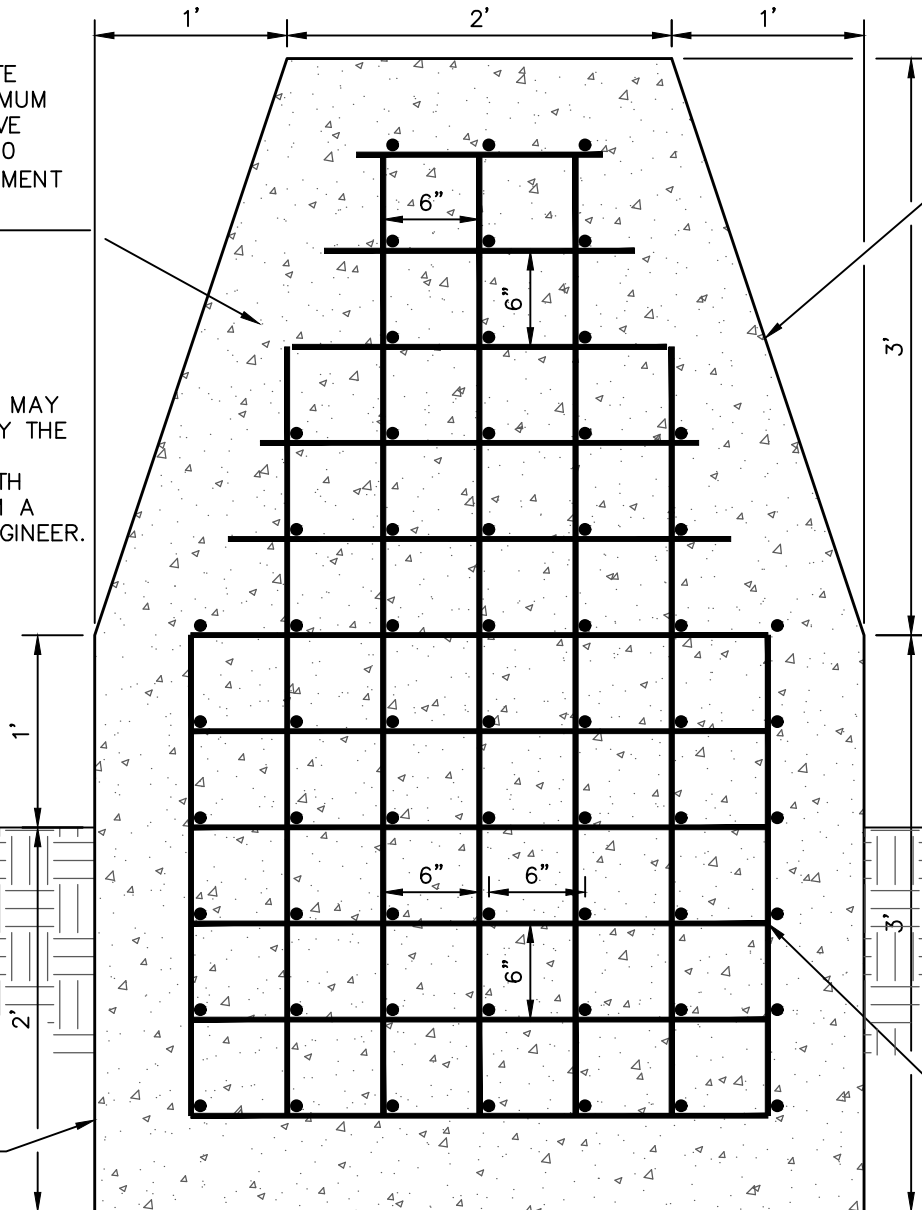


HORIZONTAL SECTION VIEW
N.T.S.

NO. 5 REBAR
SPACED @ 6" O.C.
ALL DIRECTIONS

PRE-CAST CONCRETE
SHALL HAVE A MINIMUM
28 DAY COMPRESSIVE
STRENGTH OF 3,000
PSI, AND WATER/CEMENT
RATIO SHALL NOT
EXCEED 0.50.

NOTE:
1. REBAR SPACING MAY
BE ADJUSTED BY THE
PRE-CAST
FABRICATOR, WITH
APPROVAL FROM A
STRUCTURAL ENGINEER.



VERTICAL SECTION VIEW
N.T.S.

APPLY DECORATIVE
FACADE PER
MANUFACTURERS
SPECIFICATIONS

ADJACENT GROUND
COMPACTED TO
98% WITHIN 5FT
OF STRUCTURE

NO. 5 REBAR
SPACED @ 6" O.C.
ALL DIRECTIONS

0.00

24" MIN.
BURIAL DEPTH

**VILLAGE OF WELLINGTON DEPARTMENT
OF ENGINEERING AND CONSTRUCTION**

**EQUESTRIAN TRAIL
BOLLARD DETAIL
(SECTION VIEW)**

DRAWING NO.

1100.4
2 OF 3

DRAWN BY: DATE: REVISED BY: DATE:

J.R.R. 07/12/17

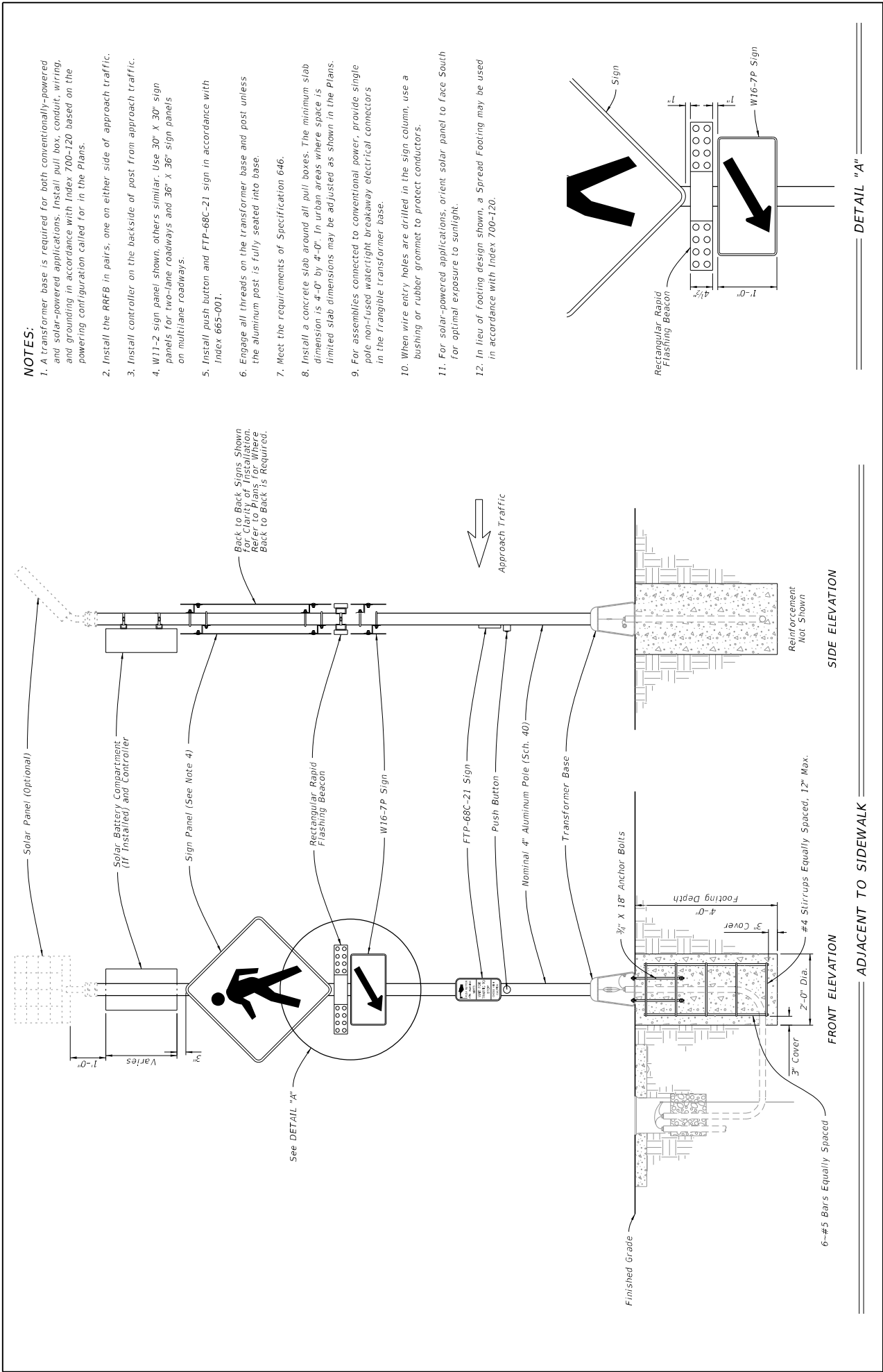
REVISED BY: DATE:

J.R.R. 04/01/20

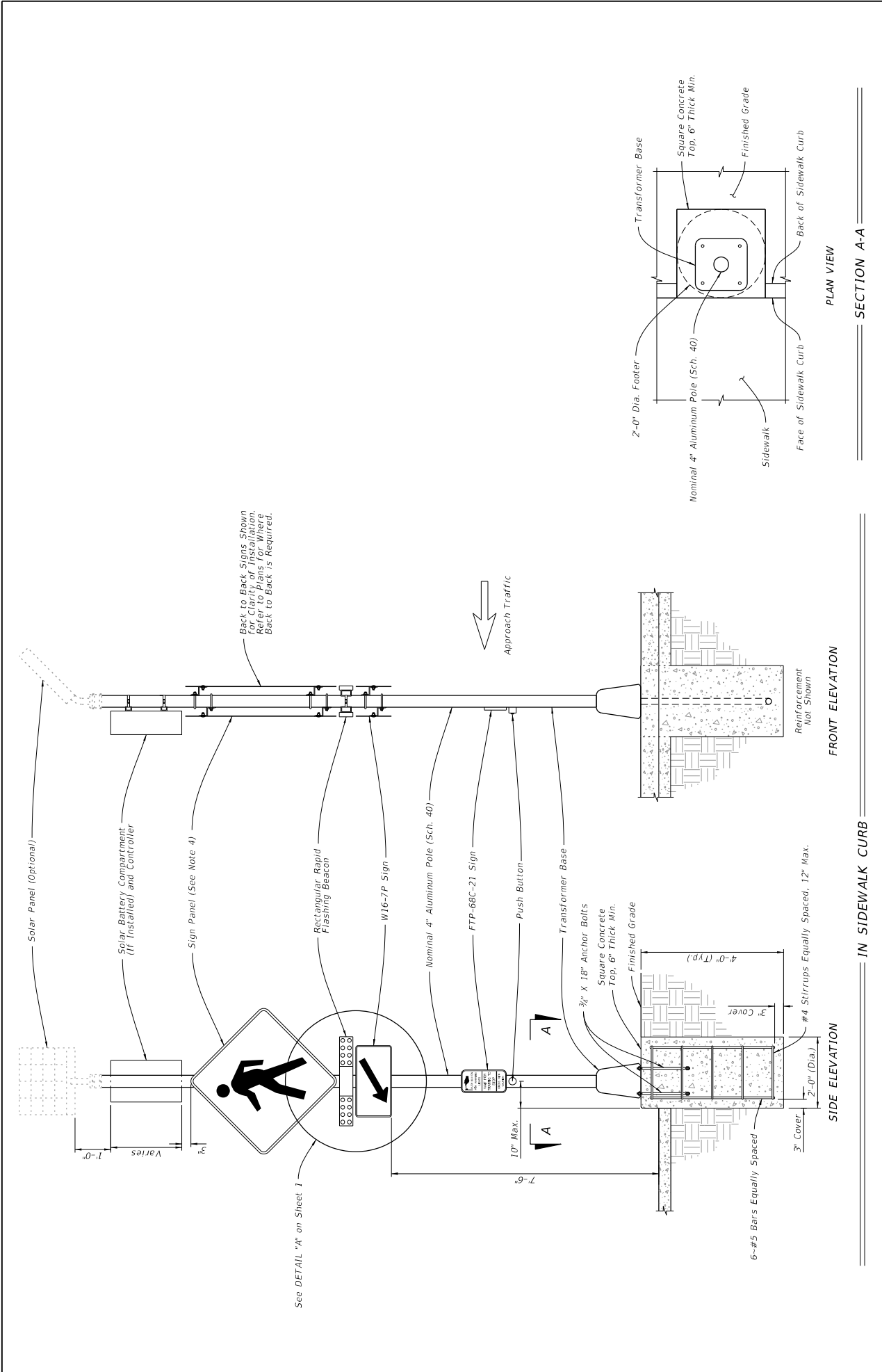
APPROVED: EFFECTIVE:

JONATHAN REINSVOLD, PE 07/26/23

VILLAGE ENGINEER



LAST REVISION	DESCRIPTION:	ADJACENT TO SIDEWALK	RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	INDEX	SHEET
11/01/23				654-001	1 of 2



LAST REVISION 11/01/23	DESCRIPTION:	IN SIDEWALK CURB	FRONT ELEVATION	PLAN VIEW	SECTION A-A
FY 2024-25 STANDARD PLANS			RECTANGULAR RAPID FLASHING BEACON ASSEMBLY		
FDOT			INDEX	654-001	SHEET 2 of 2