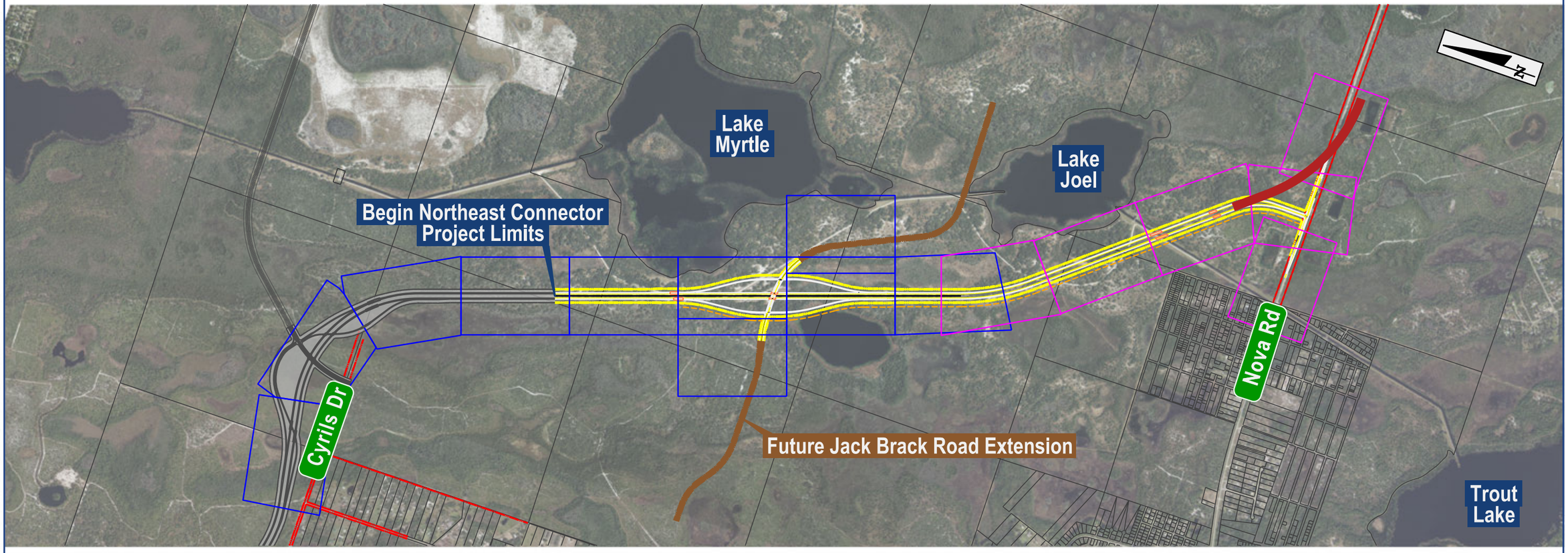
Appendix A

Concept Plans (Build Alternatives)

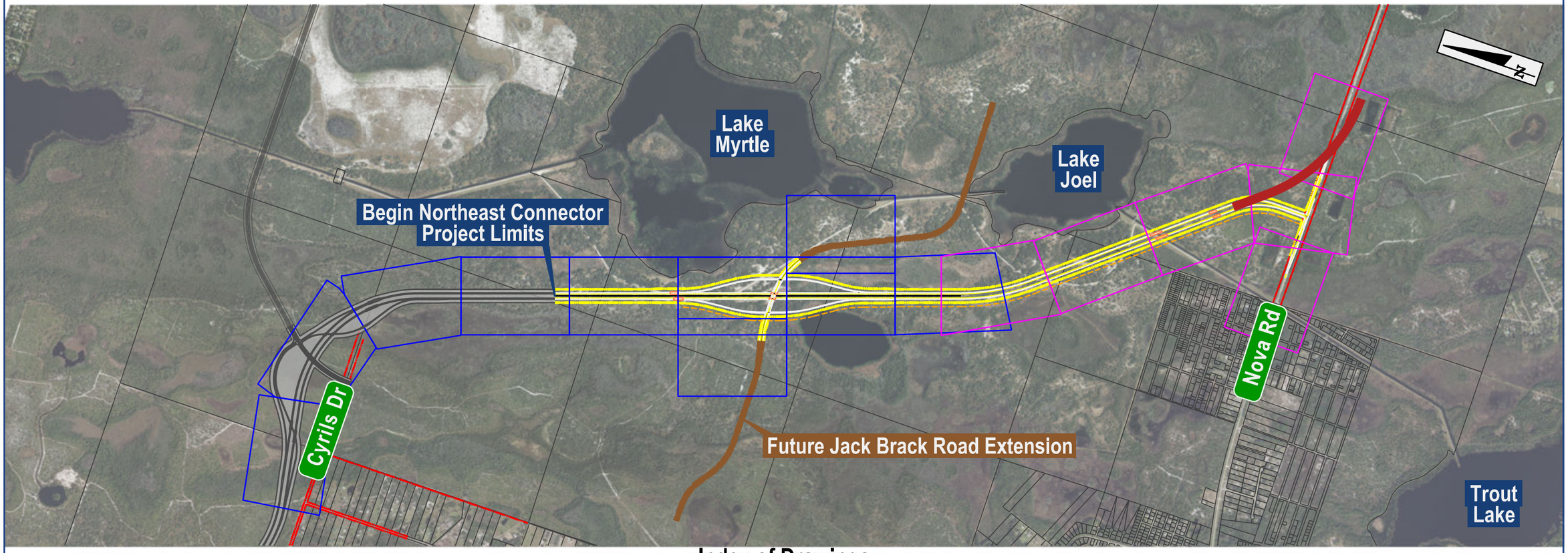
Appendix A: Build Alternatives (200 Scale)



Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

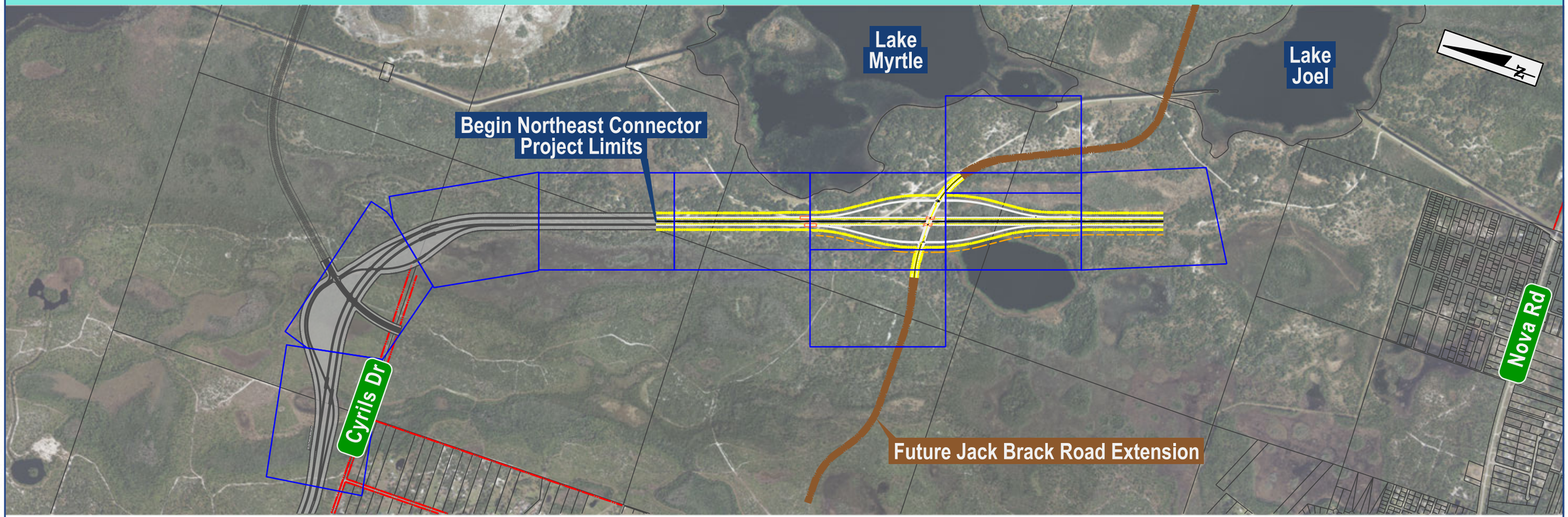
CFX Project No.: 599-228
Contract No.: 001546

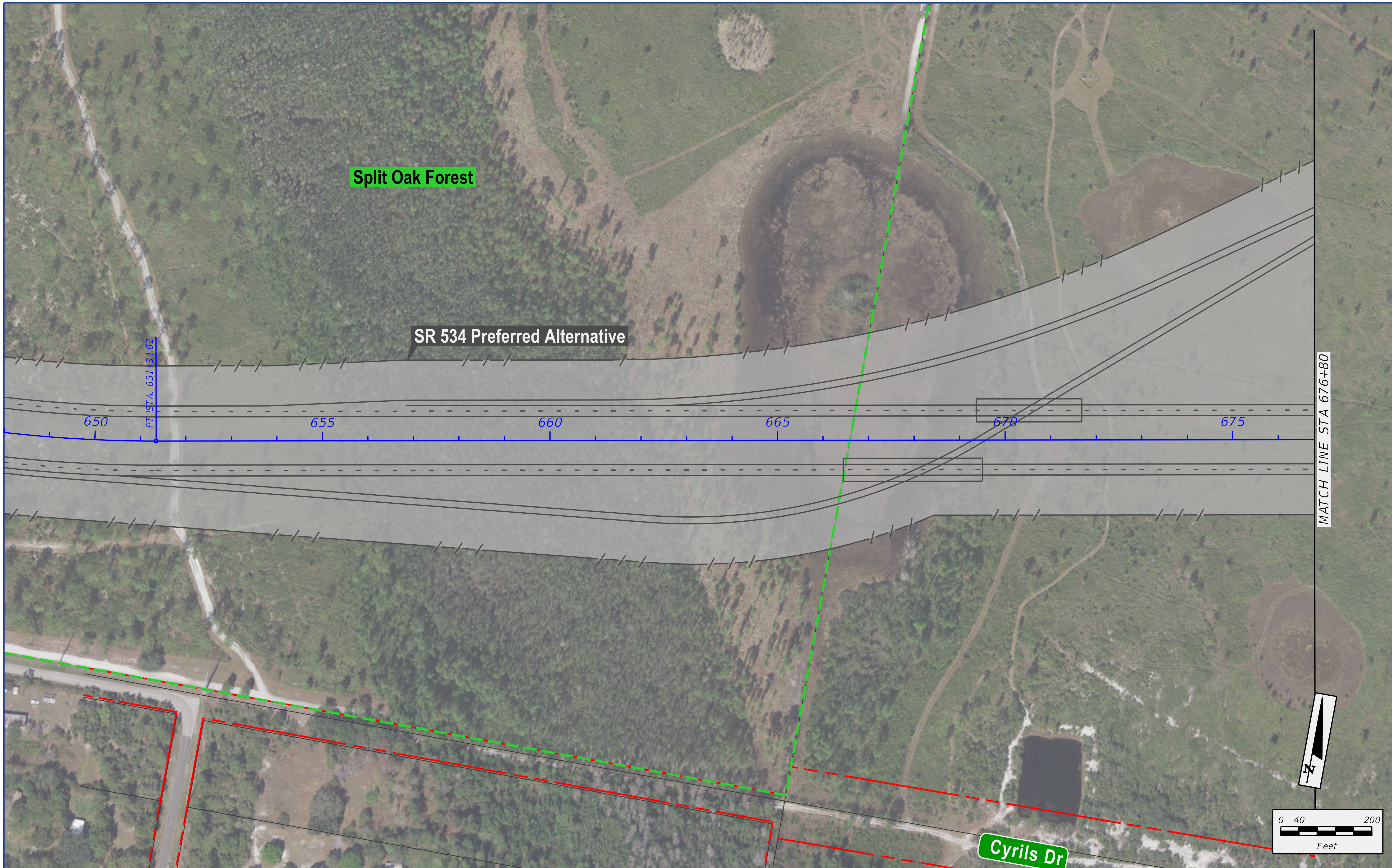
Appendix A: Build Alternatives (200 Scale)



Index of Drawings

Jack Brack Road Diamond Interchange





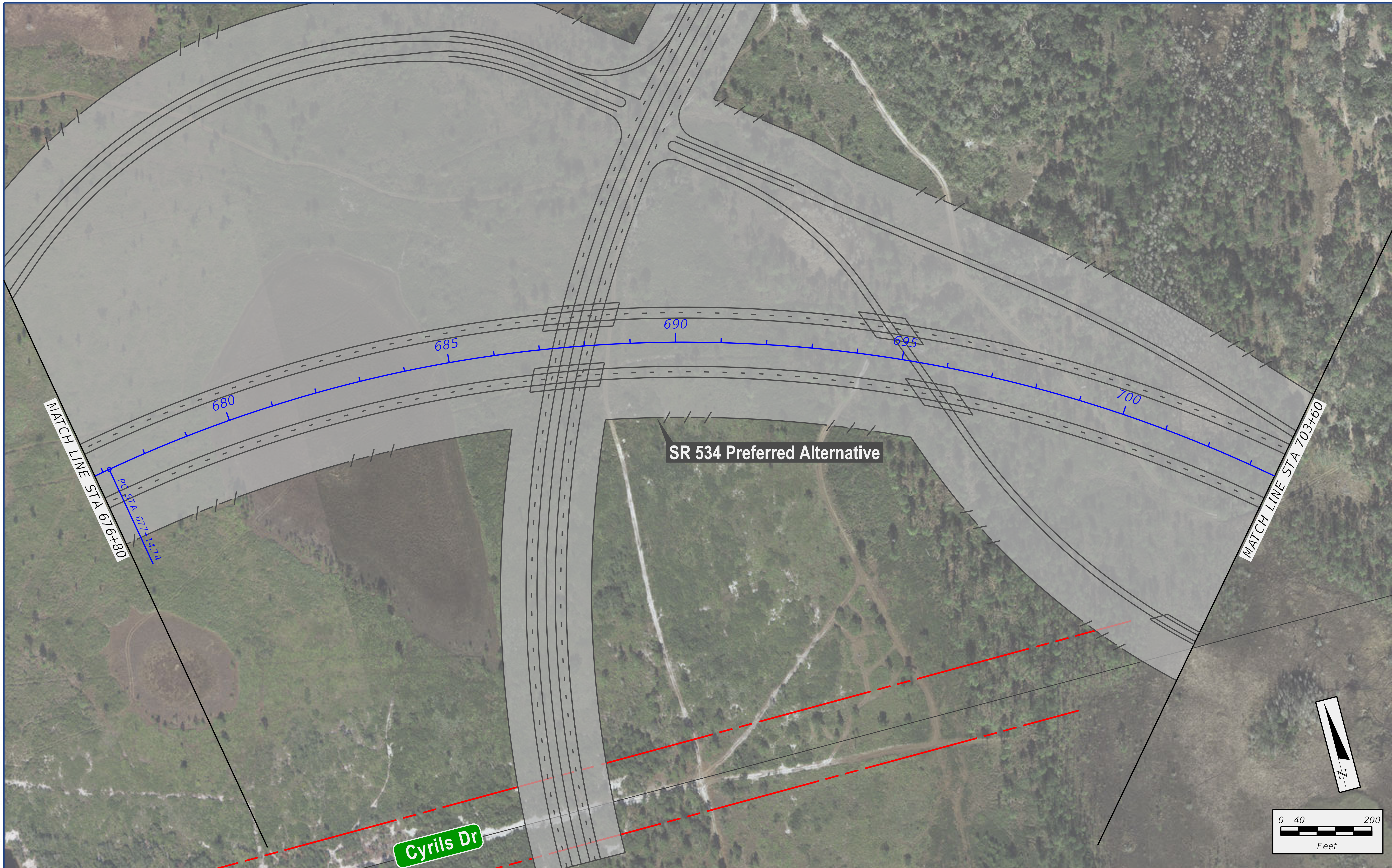
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-1



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend		
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-2

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-3

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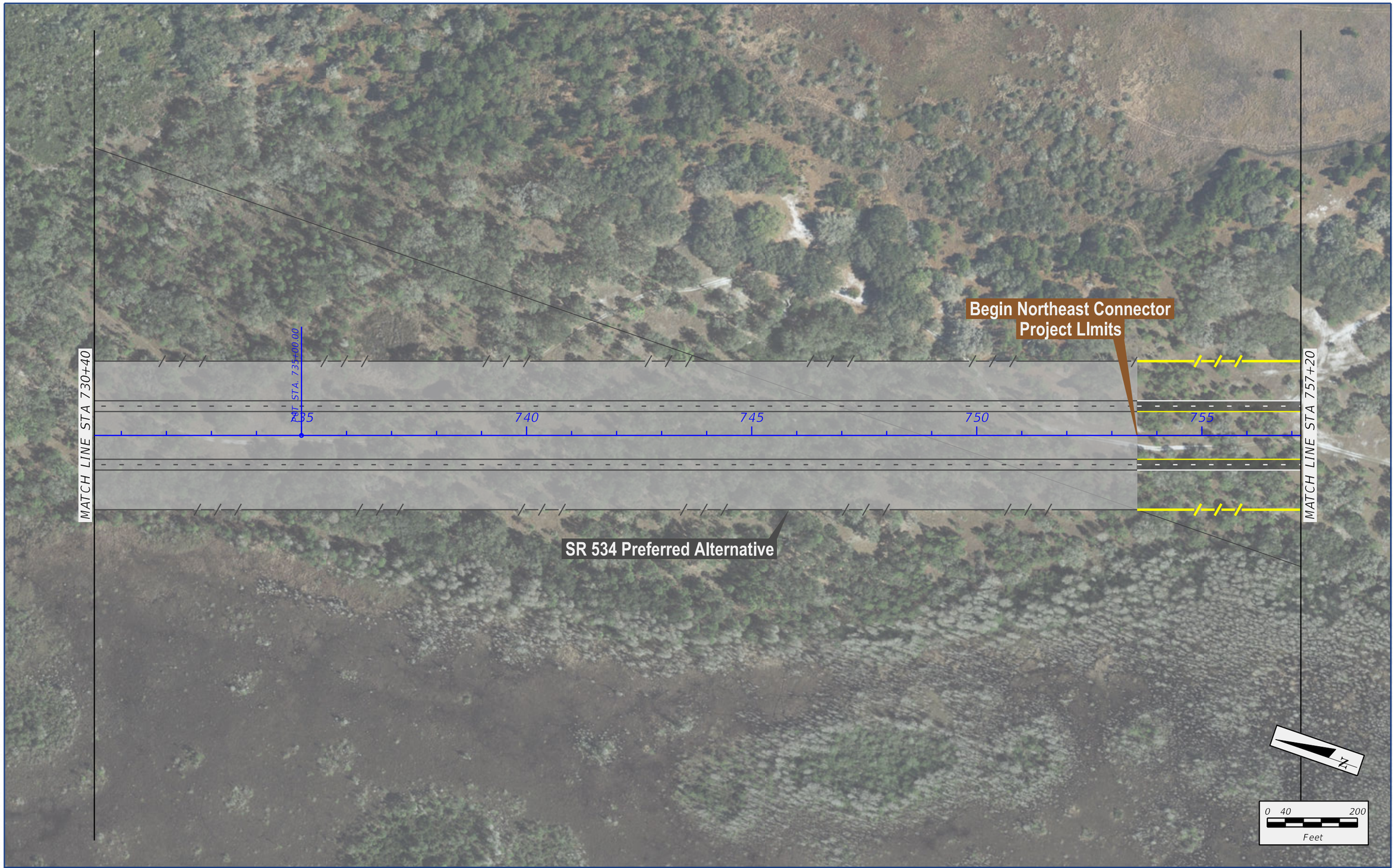


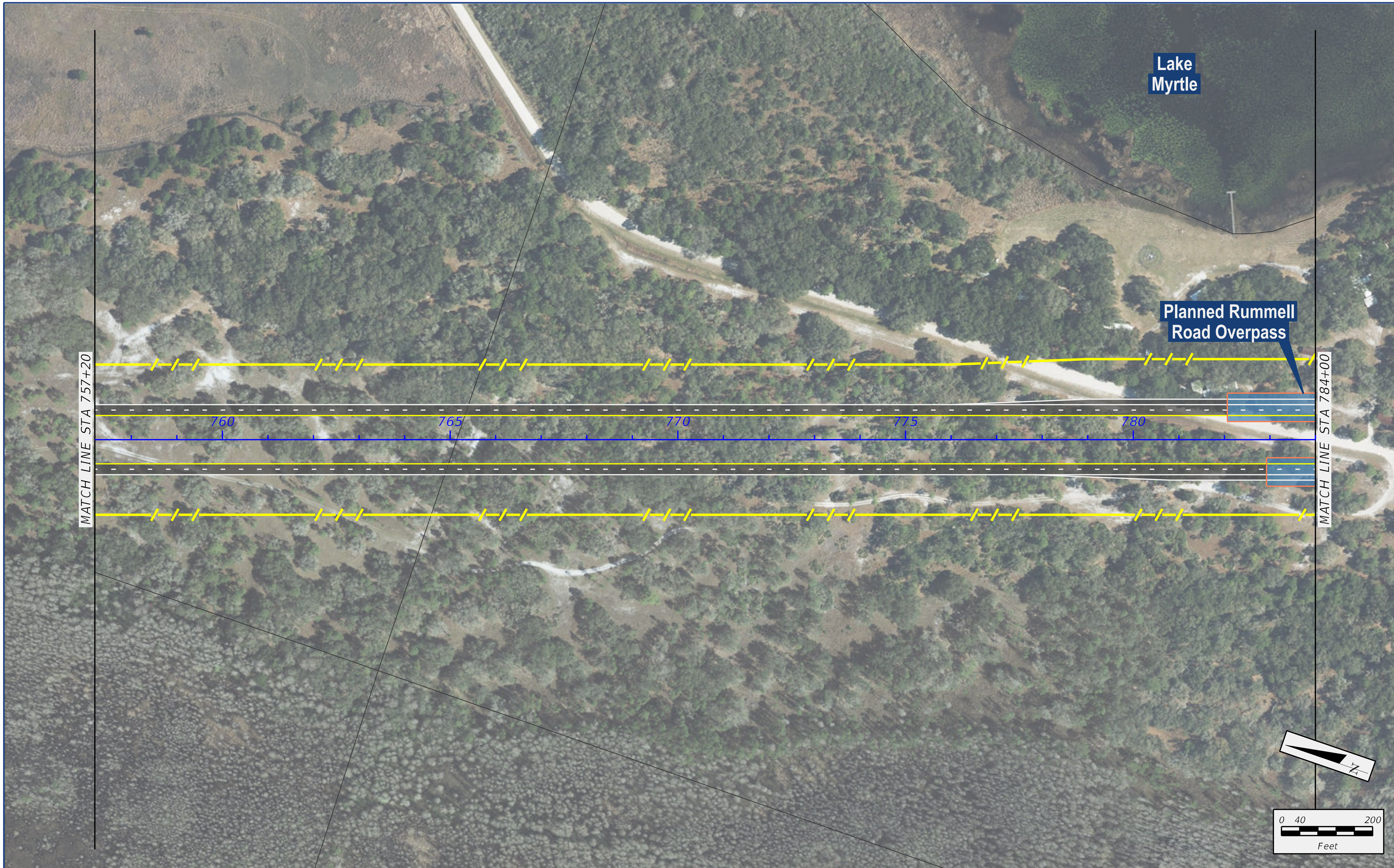
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-4



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend		
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO. A-5

Lake Myrtle

Jack Brack Rd

MATCH LINE STA 784+00

MATCH LINE STA 810+80

785 790 795 800 805 810

Planned Rummell Road Overpass

MATCH LINE STA A-A

N

0 40 200

Feet

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-6

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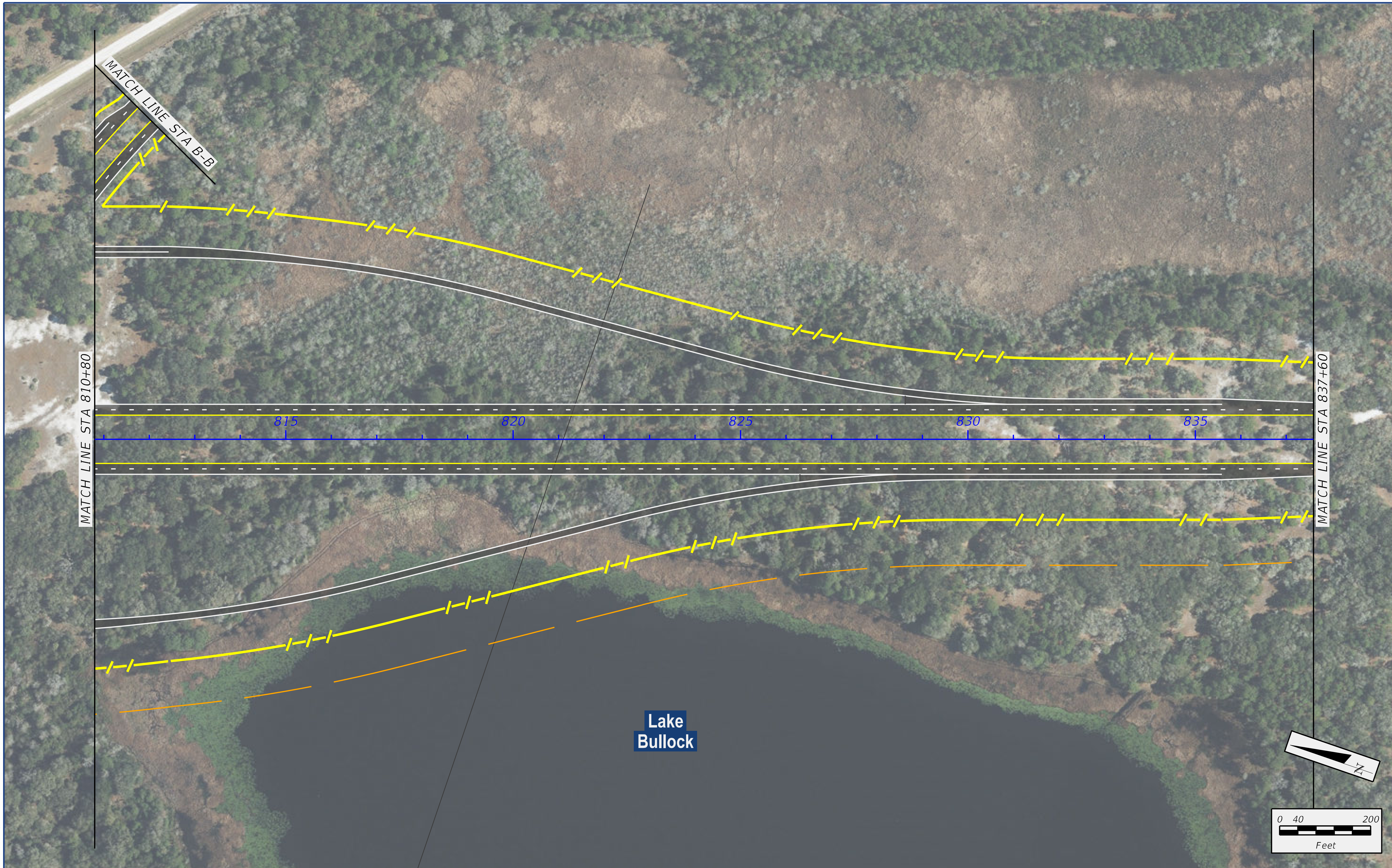

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
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MATCH LINE STA 837+60

840

845

850

855

860

865

PC STA 853+83.68

See Nova Road Alternatives

PI STA 862+97.00

N

0 40 200
Feet

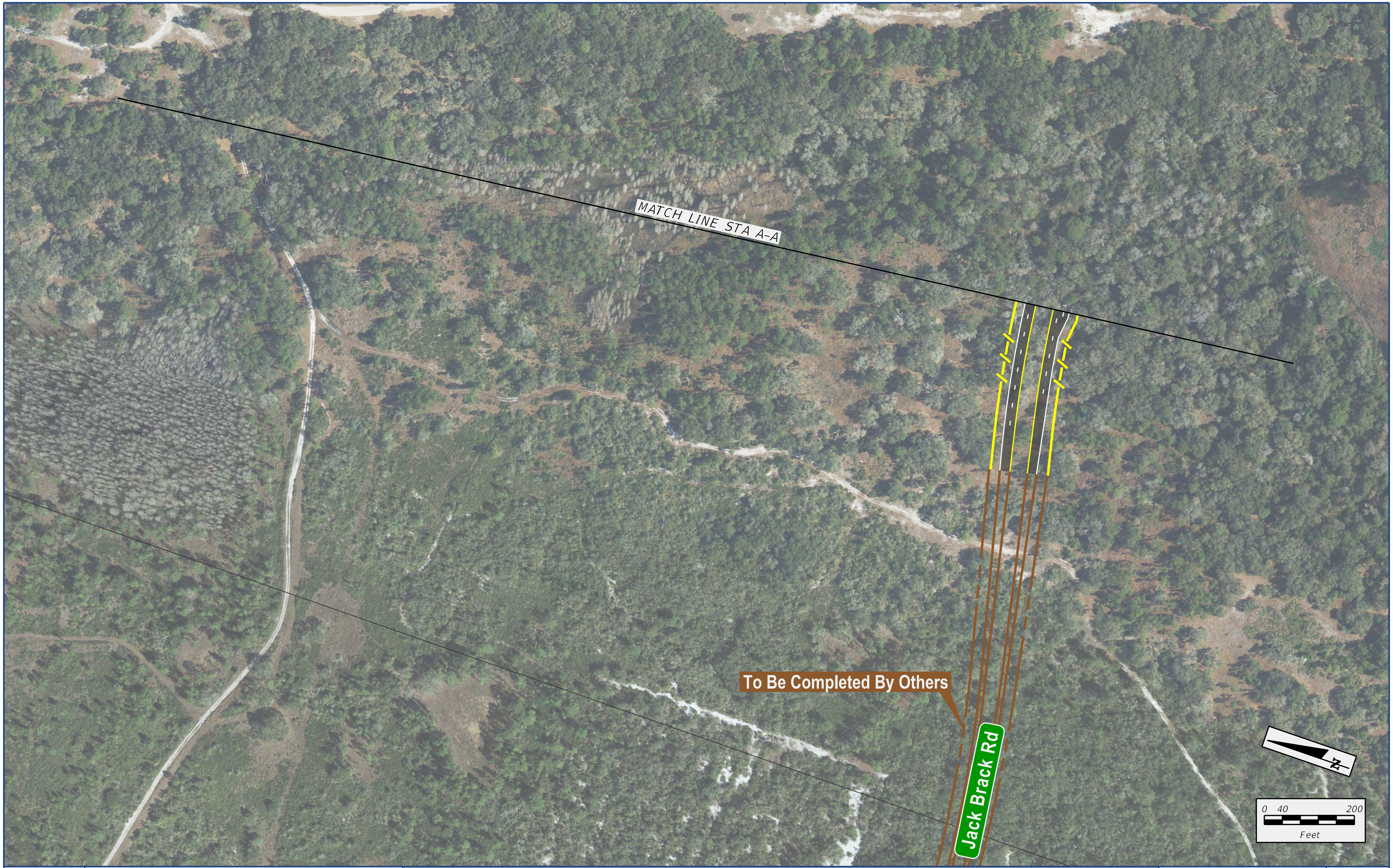
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-8



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO. A-9

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

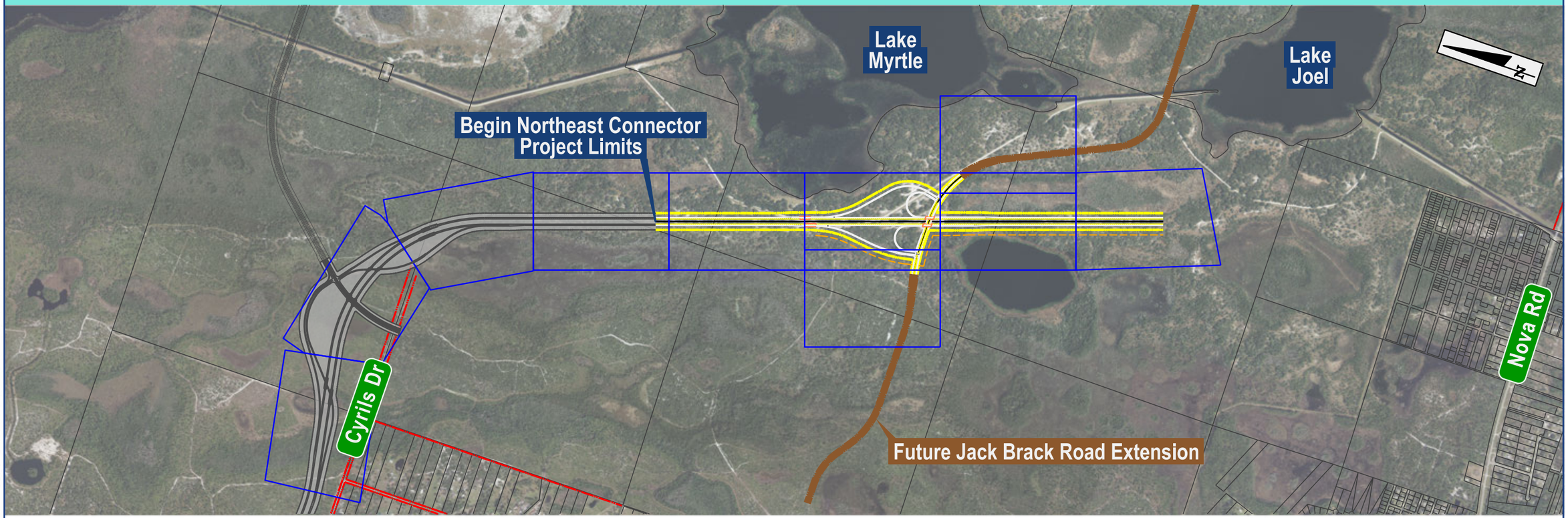
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

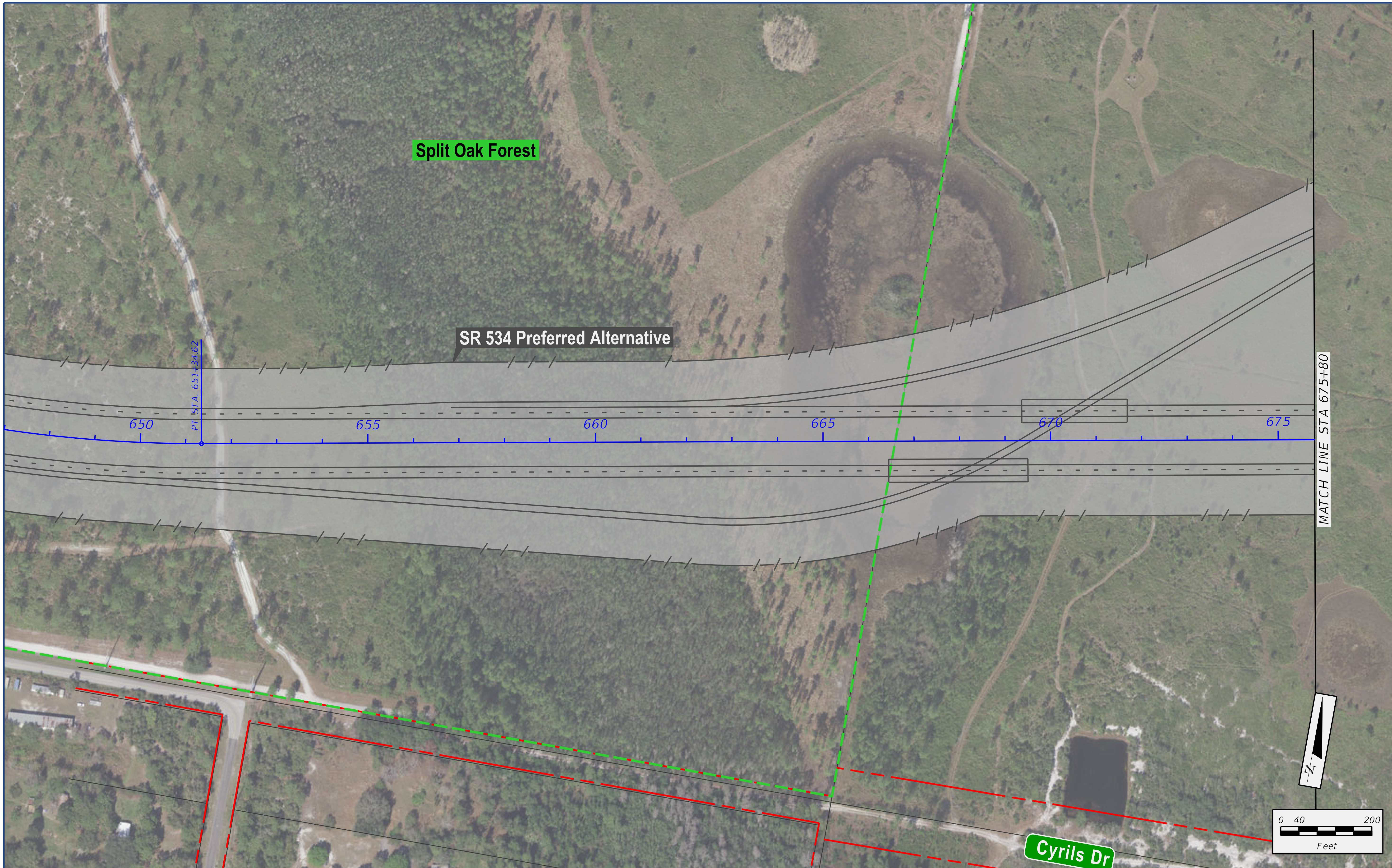
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road
Diamond Interchange

SHEET NO.
A-10

Jack Brack Road Partial Cloverleaf Interchange





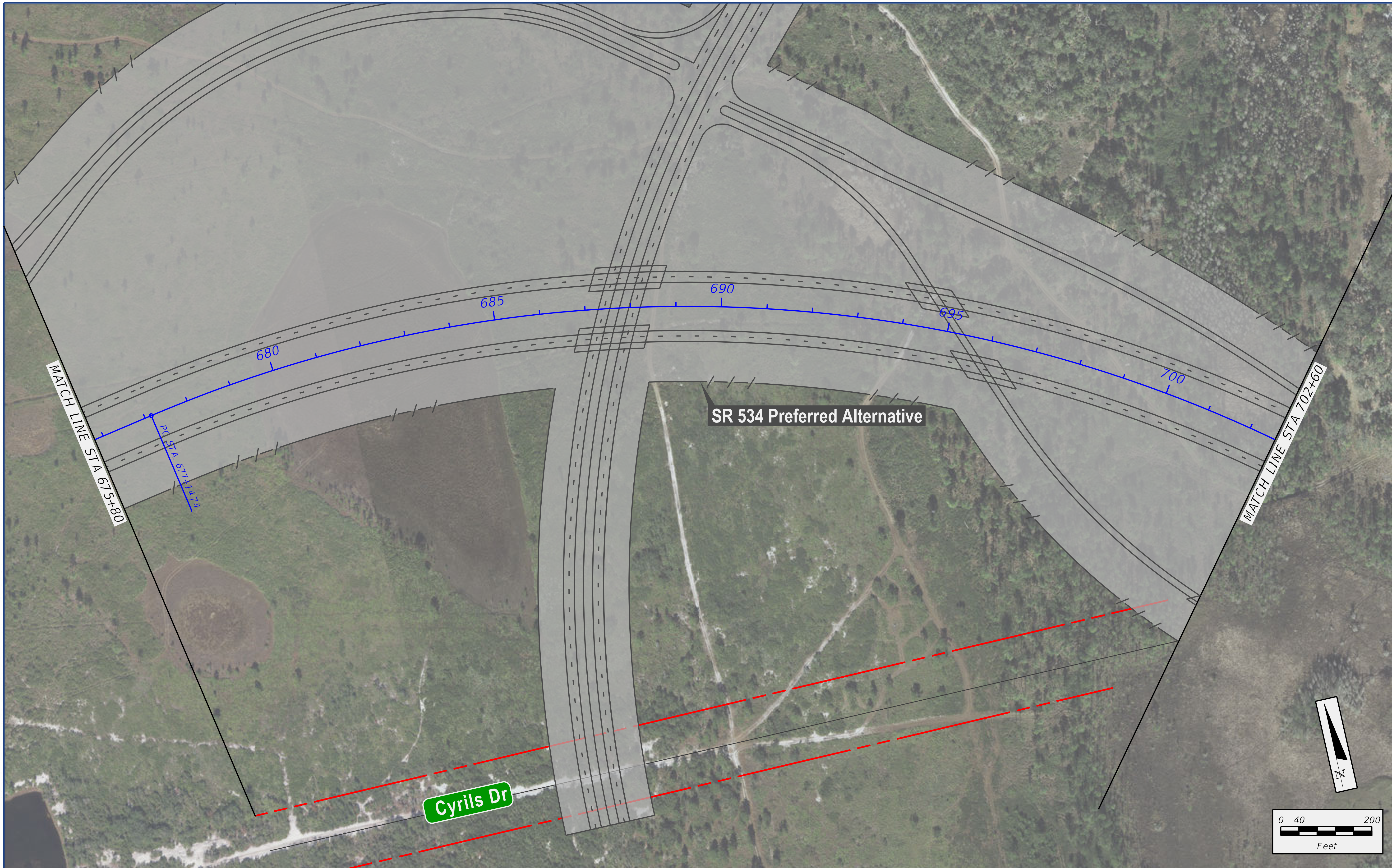
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend		
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO.
A-11



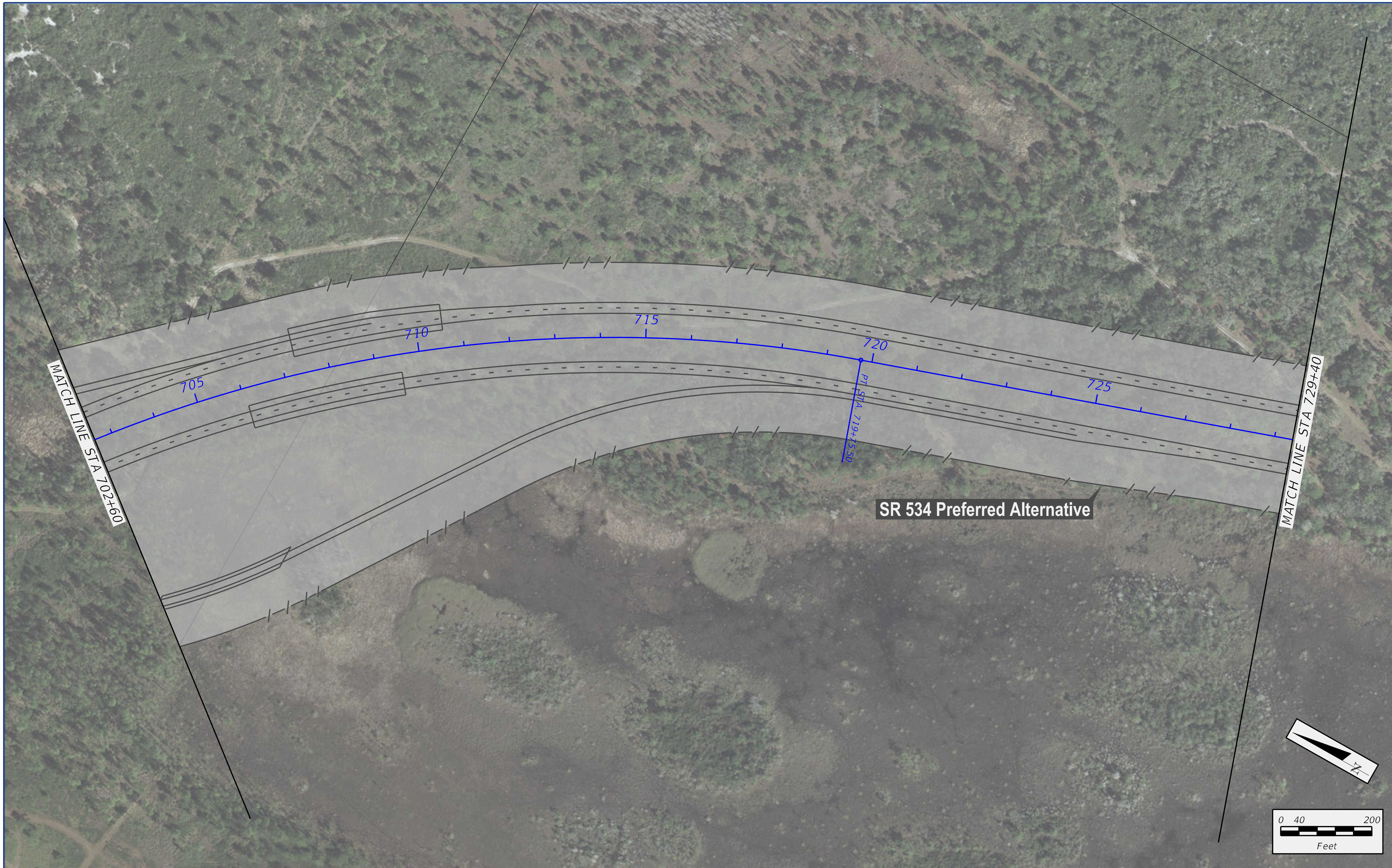
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend		
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO.
A-12



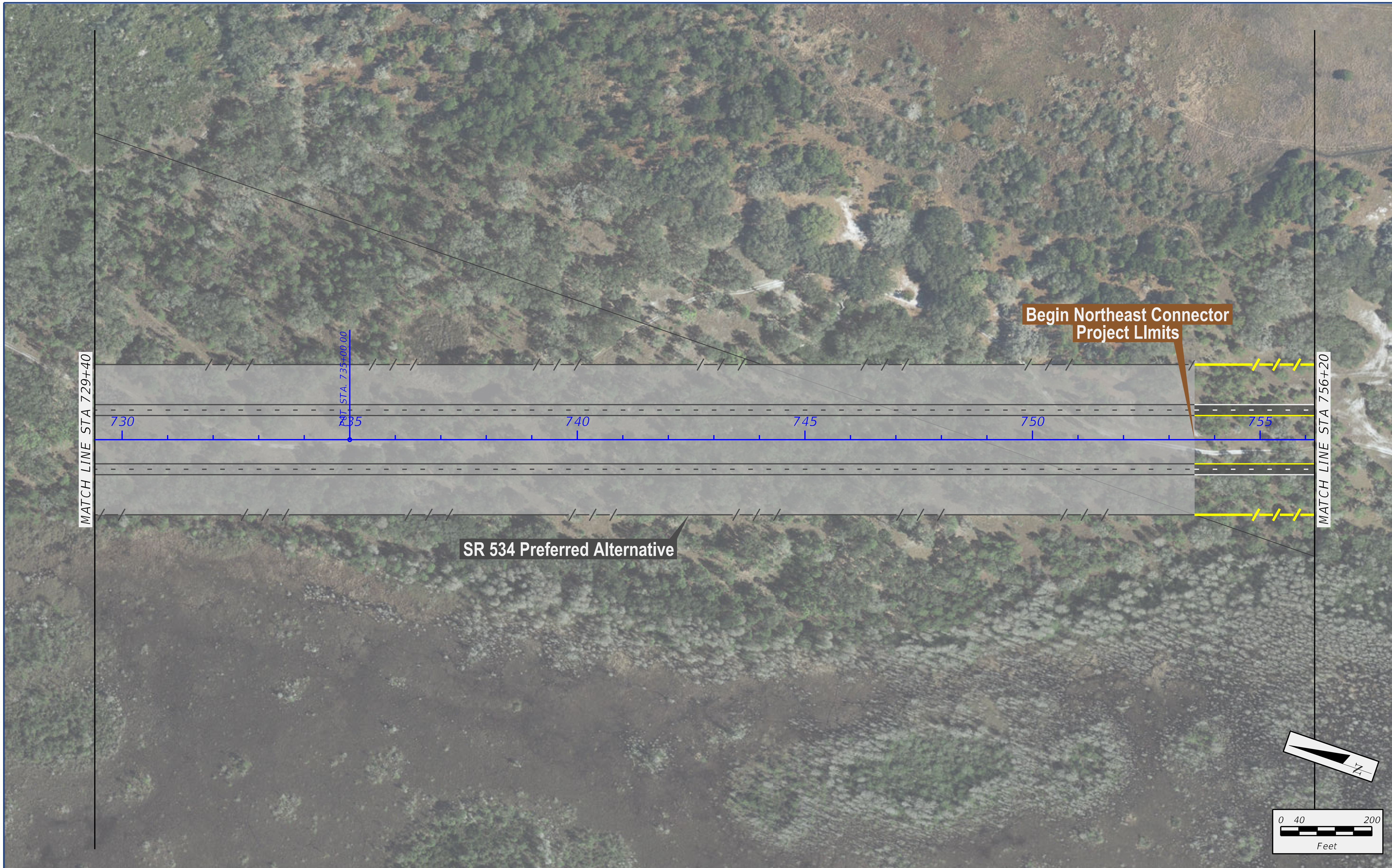
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO.
A-13



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement
Proposed Right-of-Way	Property Lines
Proposed L/A Right-of-Way	Split Oak Forest
Proposed Barrier Wall	
Proposed Pavement	
Proposed Structure	

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO. A-14

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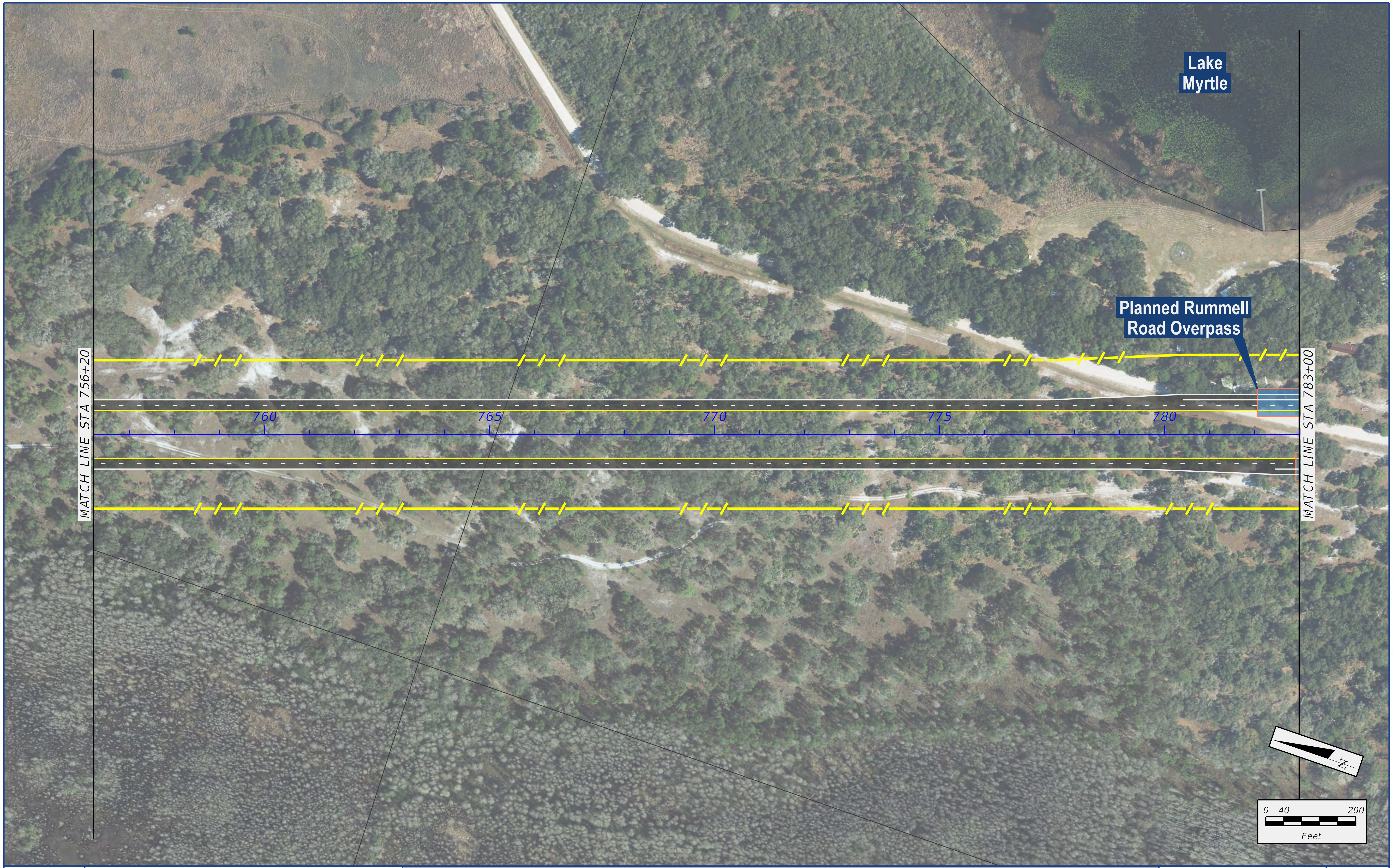


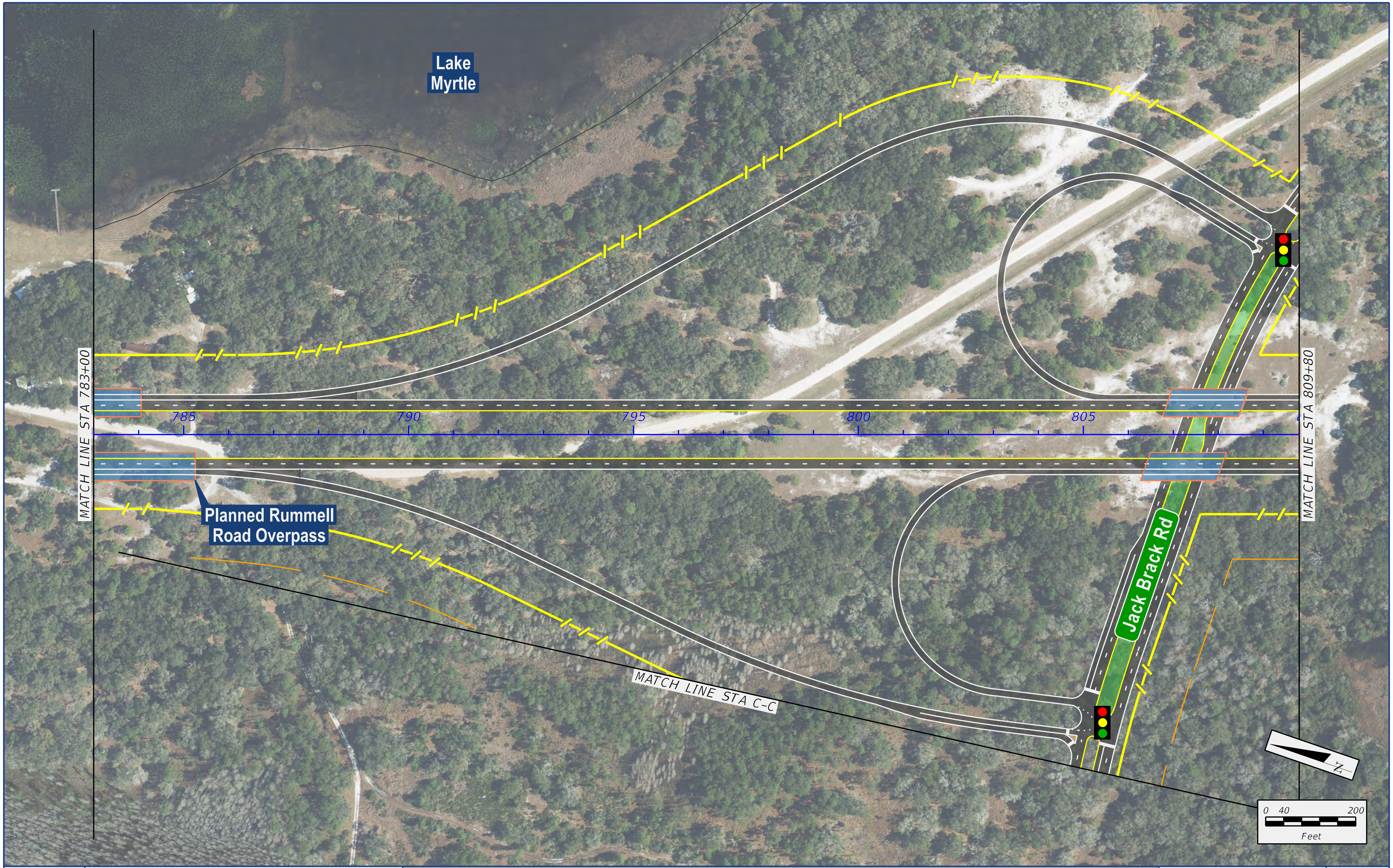
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO.
A-15



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO.
A-16

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road Partial
Cloverleaf Interchange

SHEET NO.
A-17

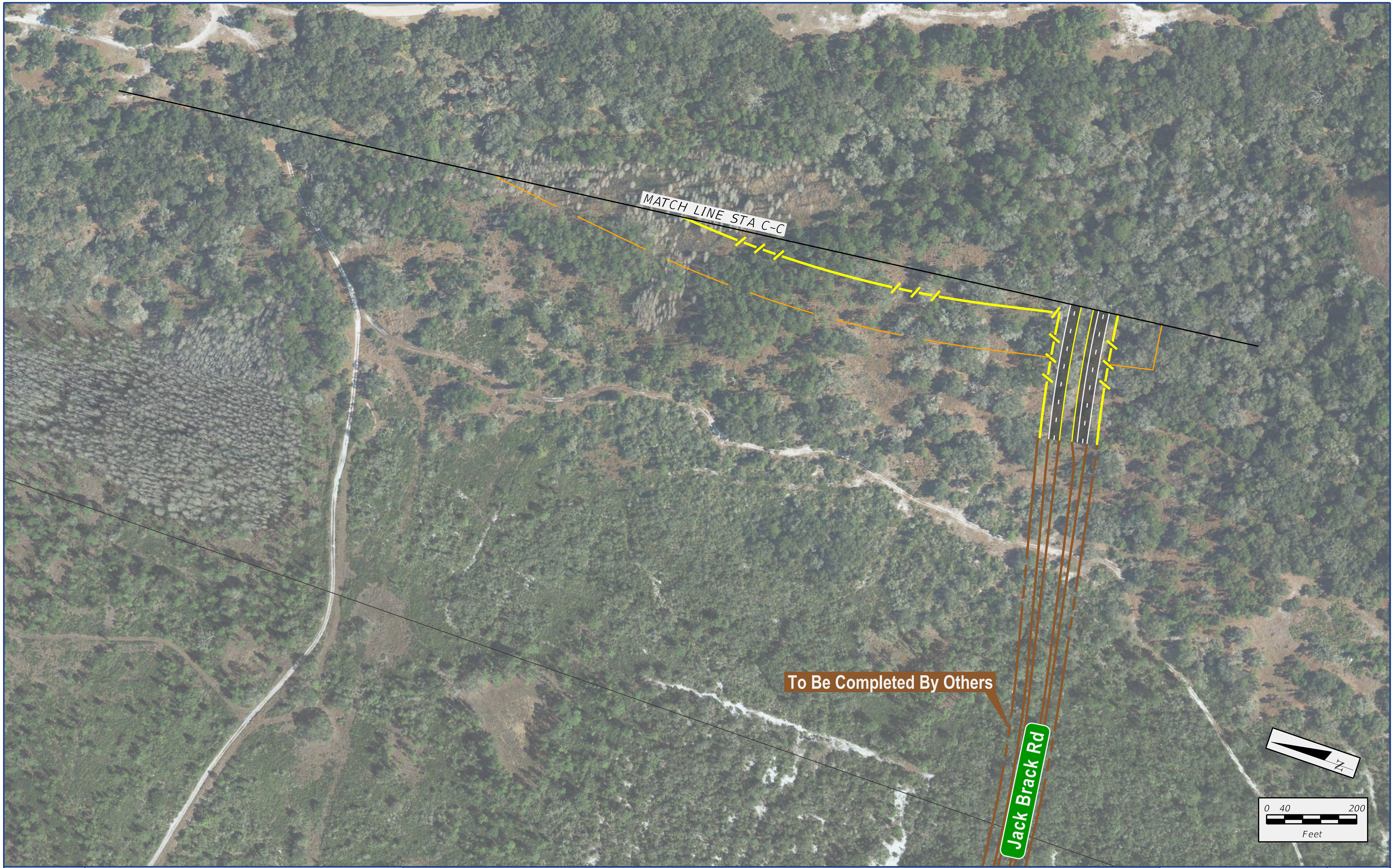
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road Partial Cloverleaf Interchange

SHEET NO.
A-18



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study	Existing Right-of-Way Proposed Right-of-Way Proposed L/A Right-of-Way	Potential OUC Utility Easement Property Lines Split Oak Forest	Proposed Barrier Wall Proposed Pavement Proposed Structure

Appendix A
Jack Brack Road Partial Cloverleaf Interchange

SHEET NO.
A-19

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

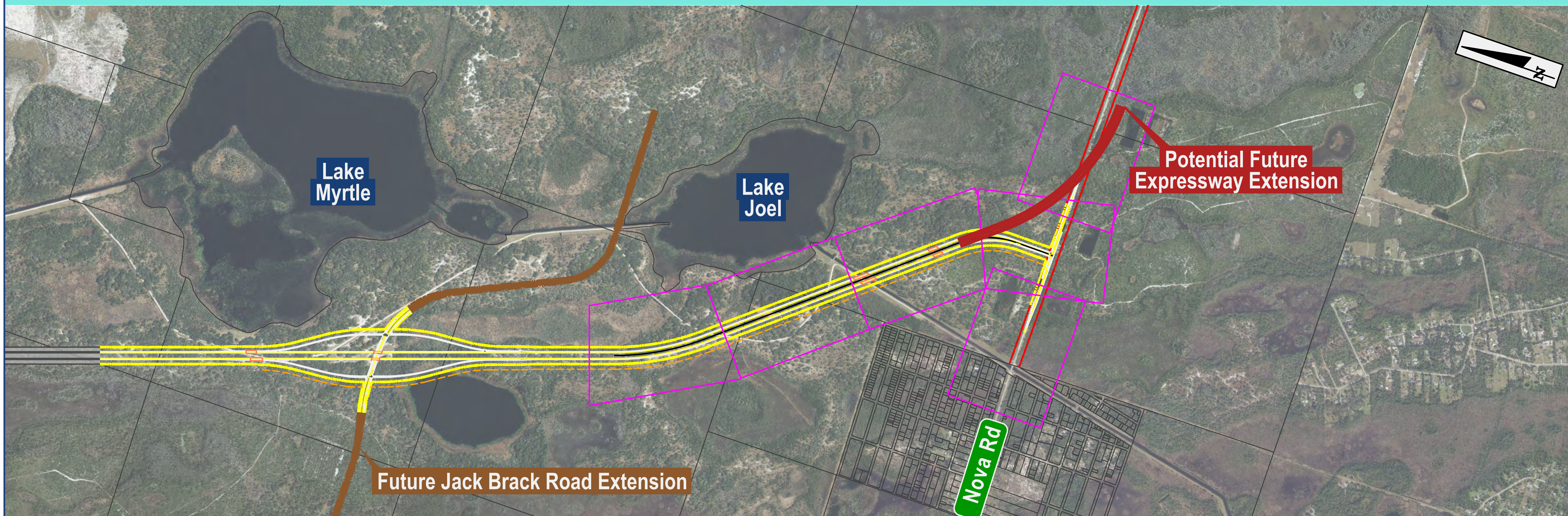
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Jack Brack Road Partial Cloverleaf Interchange

SHEET NO.
A-20

Nova Road Connection Option 1



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend	Legend	Legend
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Nova Road Connection
Option 1

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement
Proposed Right-of-Way	Property Lines
Proposed L/A Right-of-Way	Split Oak Forest
Proposed Barrier Wall	
Proposed Pavement	
Proposed Structure	

Appendix A
Nova Road Connection
Option 1

SHEET NO.
A-22

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MATCH LINE STA 902+60

MATCH LINE STA 929+40

Planned Sunbridge Parkway Overpass

Potential Future Expressway Extension

905 910 915 920 925

PC STA 924+93.67

Canal C-32C

0 40 200
Feet

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study	Existing Right-of-Way Proposed Right-of-Way Proposed L/A Right-of-Way Potential OUC Utility Easement Property Lines Split Oak Forest Proposed Barrier Wall Proposed Pavement Proposed Structure
	Appendix A Nova Road Connection Option 1	SHEET NO. A-23

MATCH LINE STA I-I

Potential Future
Expressway Extension

MATCH LINE STA 929+40

PI STA 930+83.92

930

935

940

120

115

110

MATCH LINE STA H-H

0 40 200
Feet

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Nova Road Connection
Option 1

SHEET NO.
A-24

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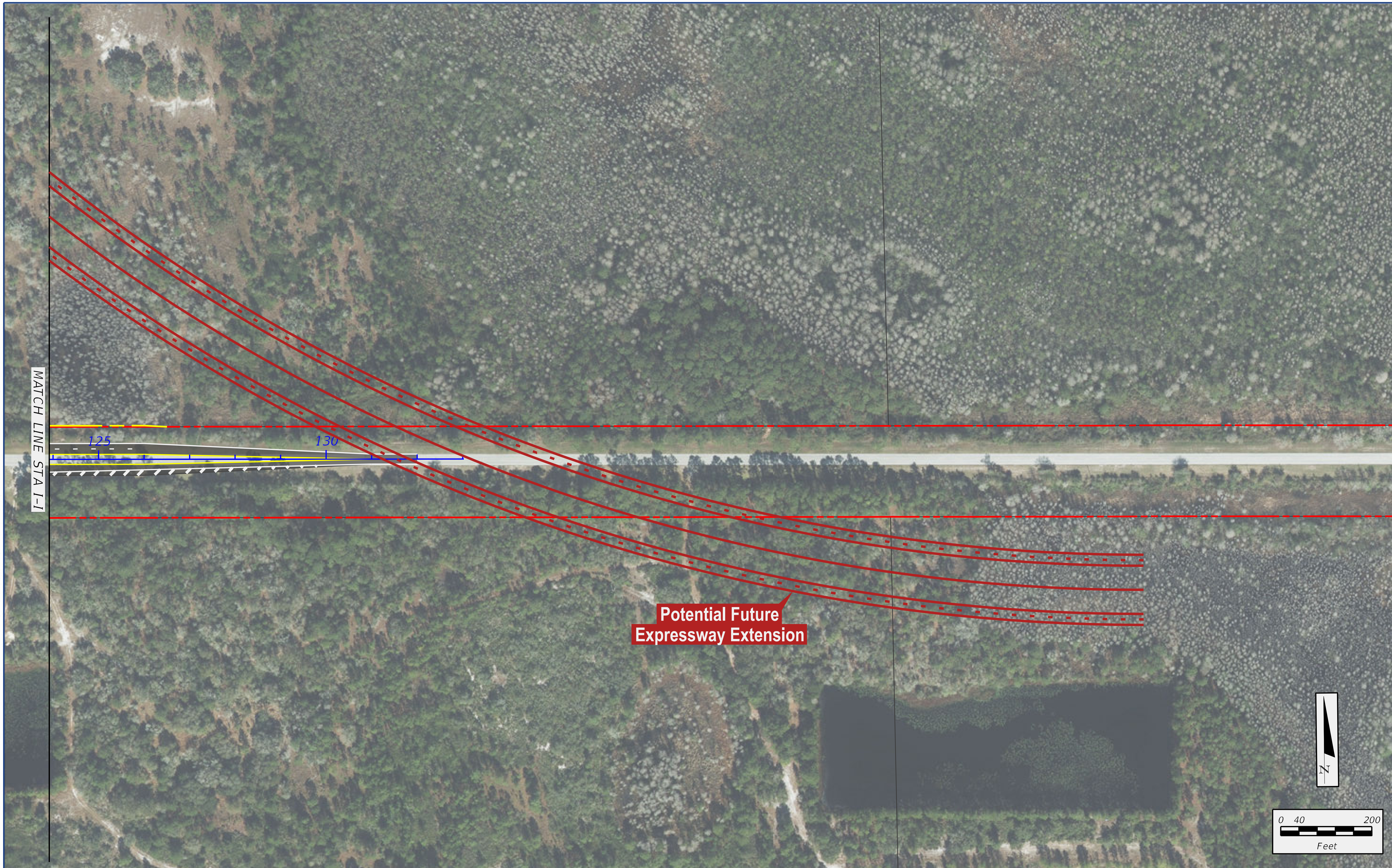
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Nova Road Connection
Option 1

SHEET NO.
A-25



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

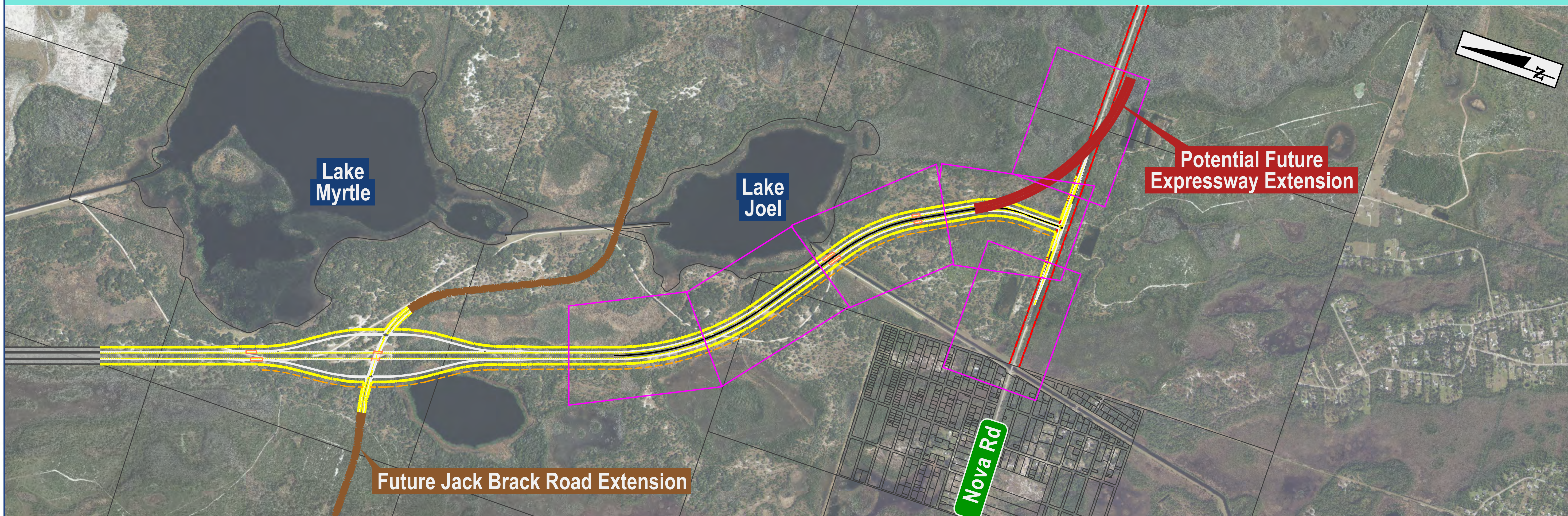
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Nova Road Connection
Option 1

SHEET NO.
A-26

Nova Road Connection Option 2



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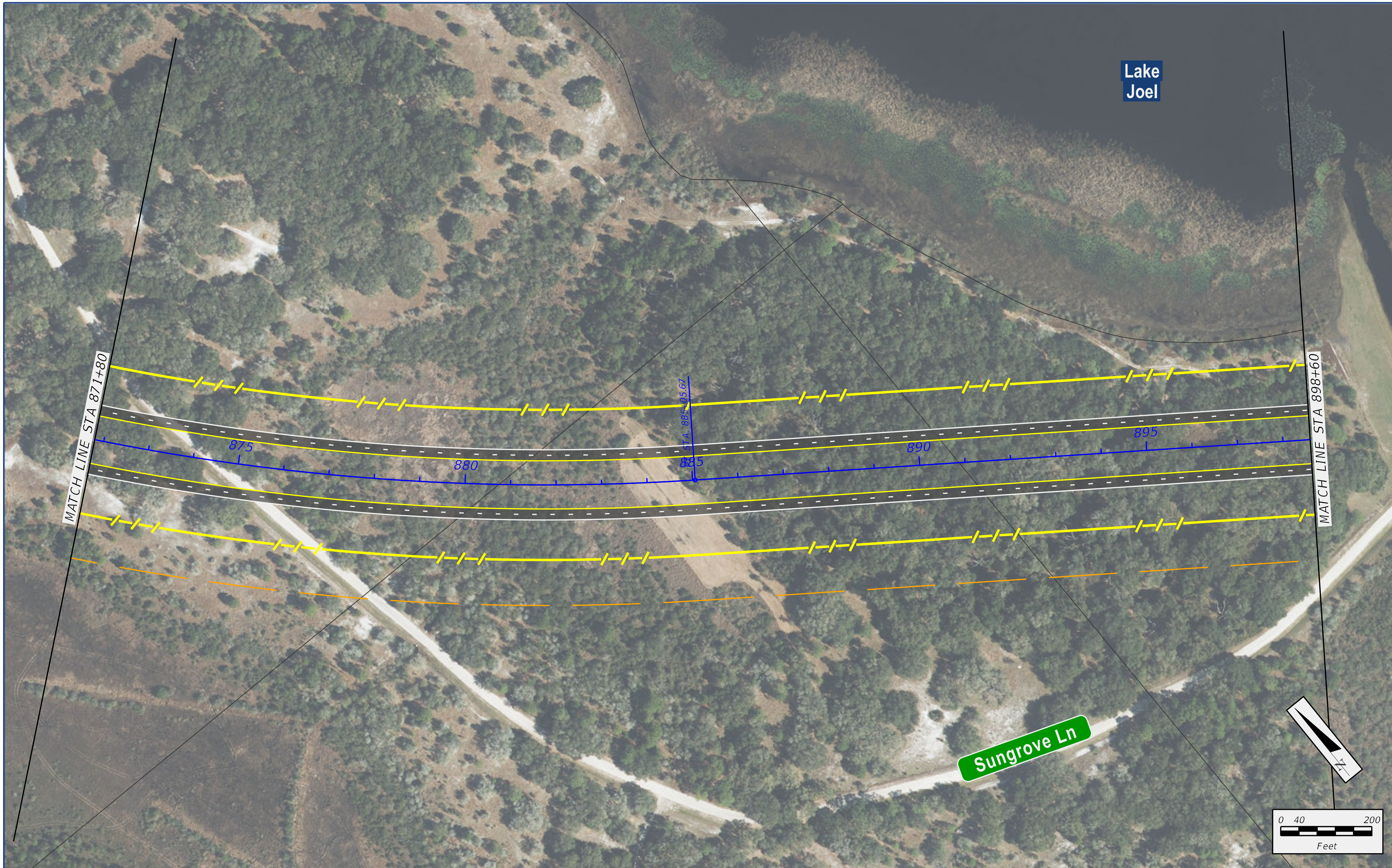
CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A	SHEET NO. vi

845
850
855
860
865
870
PC STA. 853+83.68
PI STA. 869+97.45
MATCH LINE STA 871+80
See Jack Brack Road Alternatives
N
0 40 200
Feet

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study	Existing Right-of-Way Proposed Right-of-Way Proposed L/A Right-of-Way	Potential OUC Utility Easement Property Lines Split Oak Forest	Proposed Barrier Wall Proposed Pavement Proposed Structure	Appendix A Nova Road Connection Option 2	SHEET NO. A-27



Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend		
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Nova Road Connection
Option 2

SHEET NO.
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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

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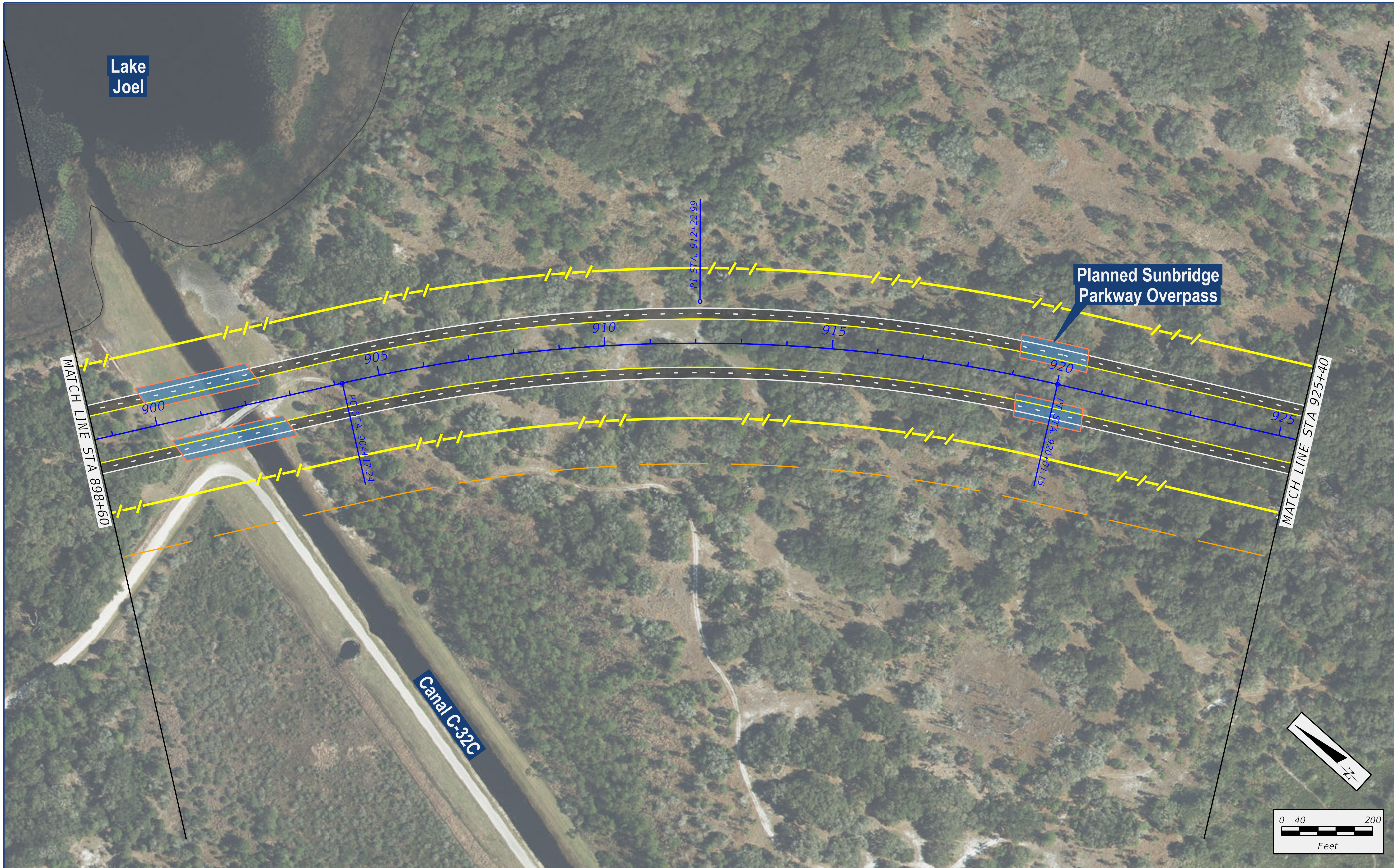
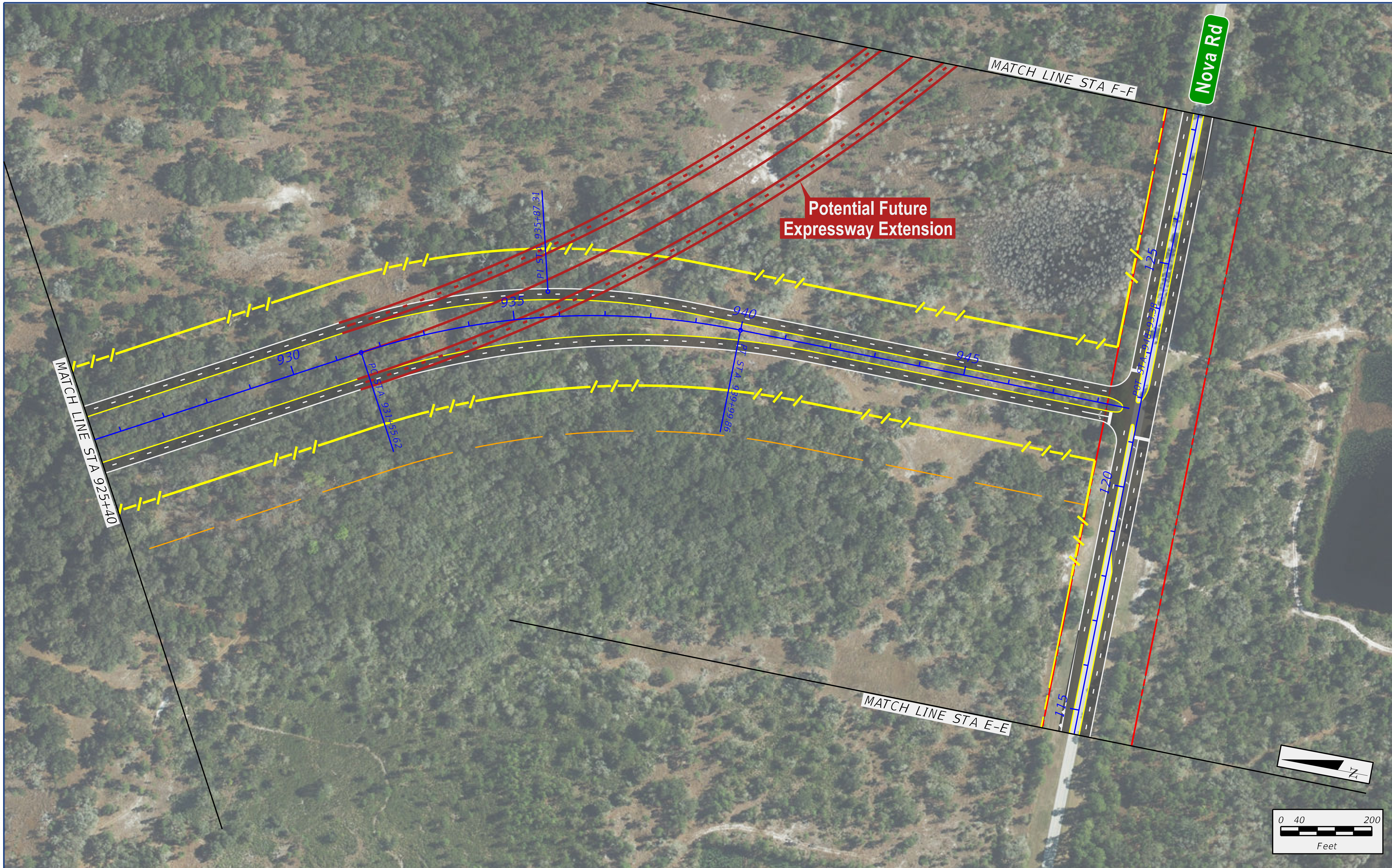


Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement
Proposed Right-of-Way	Property Lines
Proposed L/A Right-of-Way	Split Oak Forest
Proposed Barrier Wall	
Proposed Pavement	
Proposed Structure	

Appendix A
Nova Road Connection
Option 2

SHEET NO. A-29



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Legend		
Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Nova Road Connection
Option 2

SHEET NO. A-30

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Nova Road Connection
Option 2

SHEET NO.
A-31

MATCH LINE STA F-F

Potential Future
Expressway Extension

POI STA 137+71.97

130

135

Nova Rd

N

0 40 200
Feet

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Nova Road Connection
Option 2

SHEET NO.
A-32

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

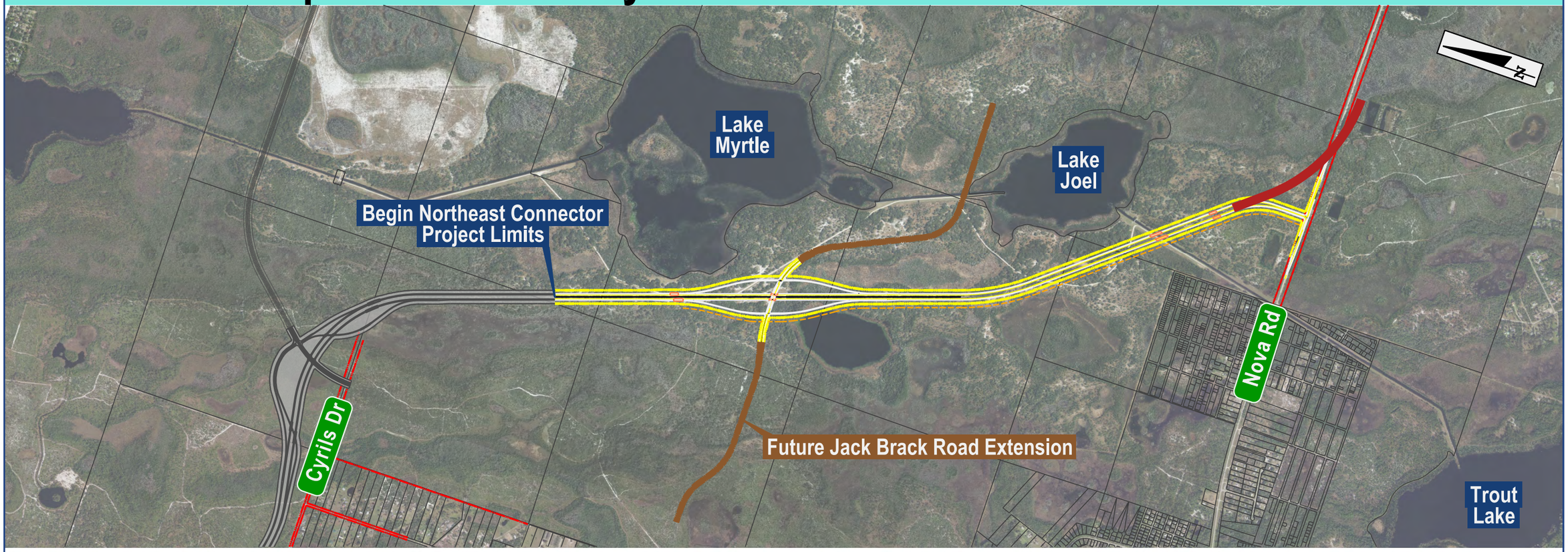
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix A
Nova Road Connection
Option 2

SHEET NO.
A-33

Jack Brack Road Interchange and Nova Road Connection Option 1 Geometry Data



Beginning Jack Brack Road Interchange and Nova Road Connection Option 1 Chain Description
==========

Point 412 N 1,457,516.2925 E 588,480.2519 Sta 600+00.00

Course from 412 to PC 4121 S 15° 55' 36.89" E Dist 855.7695

Curve Data

Curve 4121
P.I. Station 634+90.39 N 1,454,159.8913 E 589,438.0527
Delta = 84° 27' 02.36" (LT)
Degree = 1° 58' 25.23"
Tangent = 2,634.6190
Length = 4,278.8536
Radius = 2,903.0000
External = 1,017.2839
Long Chord = 3,901.9107
Mid. Ord. = 753.3065
P.C. Station 608+55.77 N 1,456,693.3739 E 588,715.0844
P.T. Station 651+34.62 N 1,454,634.4760 E 592,029.5748
C.C. N 1,457,489.9889 E 591,506.6455
Back = S 15° 55' 36.89" E
Ahead = N 79° 37' 20.75" E
Chord Bear = S 58° 09' 08.07" E

Course from PT 4121 to PC 4122 N 79° 37' 20.75" E Dist 2,580.1137

Curve Data

Curve 4122
P.I. Station 702+93.99 N 1,455,563.8532 E 597,104.5418
Delta = 81° 22' 28.52" (RT)
Degree = 1° 54' 35.49"
Tangent = 2,579.2498
Length = 4,260.7635
Radius = 3,000.0000
External = 956.3278
Long Chord = 3,911.5816
Mid. Ord. = 725.1632
P.C. Station 677+14.74 N 1,455,099.2424 E 594,567.4831
P.T. Station 719+75.50 N 1,453,125.1683 E 597,944.3903
C.C. N 1,452,148.3162 E 595,107.8854
Back = N 79° 37' 20.75" E
Ahead = S 19° 00' 10.73" E
Chord Bear = S 59° 41' 24.99" E

Course from PT 4122 to 413 S 19° 00' 10.73" E Dist 1,524.4998

Point 413 N 1,451,683.7513 E 598,440.7939 Sta 735+00.00

Course from 413 to PC 4123 S 19° 00' 10.73" E Dist 11,883.6847

Curve Data

Curve 4123
P.I. Station 862+97.00 N 1,439,584.1665 E 602,607.7194
Delta = 20° 42' 12.26" (LT)
Degree = 1° 08' 45.30"
Tangent = 913.3158
Length = 1,806.7131
Radius = 5,000.0000
External = 82.7301
Long Chord = 1,796.9000
Mid. Ord. = 81.3836
P.C. Station 853+83.68 N 1,440,447.7080 E 602,310.3280
P.T. Station 871+90.40 N 1,438,881.5268 E 603,191.1945
C.C. N 1,442,075.7948 E 607,037.8361
Back = S 19° 00' 10.73" E
Ahead = S 39° 42' 23.00" E
Chord Bear = S 29° 21' 16.87" E

Course from PT 4123 to PC 4124 S 39° 42' 23.00" E Dist 5,303.2727

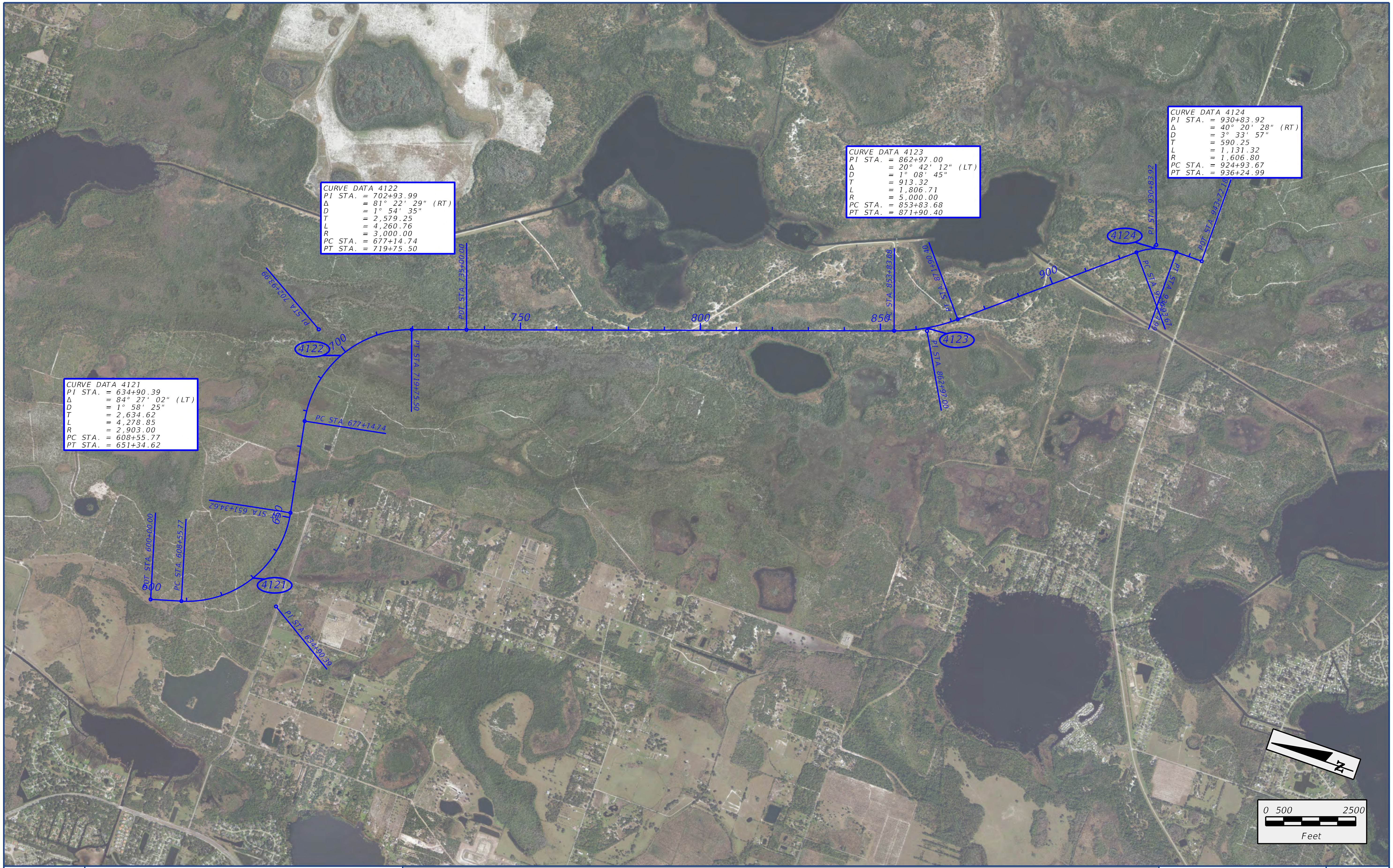
Curve Data

Curve 4124
P.I. Station 930+83.92 N 1,434,347.4728 E 606,956.2927
Delta = 40° 20' 27.94" (RT)
Degree = 3° 33' 56.99"
Tangent = 590.2501
Length = 1,131.3244
Radius = 1,606.8010
External = 104.9830
Long Chord = 1,108.1005
Mid. Ord. = 98.5445
P.C. Station 924+93.67 N 1,434,801.5689 E 606,579.2094
P.T. Station 936+24.99 N 1,433,757.2590 E 606,949.7542
C.C. N 1,433,775.0583 E 605,343.0519
Back = S 39° 42' 23.00" E
Ahead = S 0° 38' 04.94" W
Chord Bear = S 19° 32' 09.03" E

Course from PT 4124 to 414 S 0° 38' 04.94" W Dist 747.1871

Point 414 N 1,433,010.1177 E 606,941.4773 Sta 943+72.18

==========
Ending chain description



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

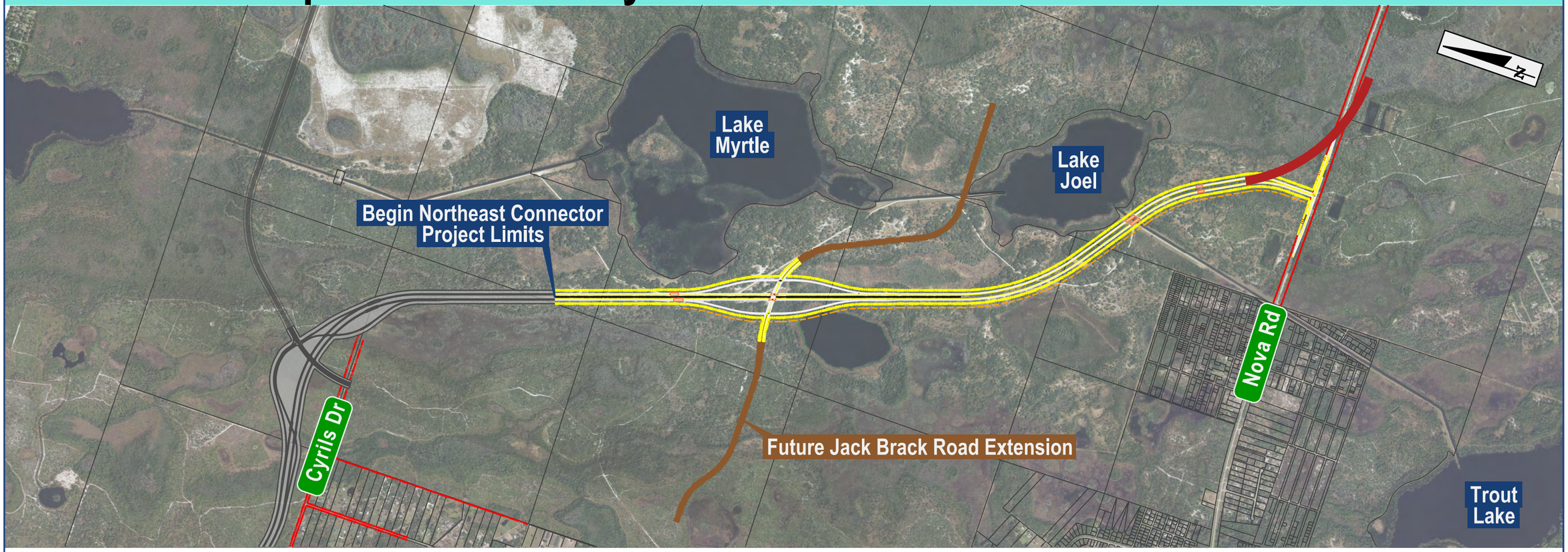
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement	Proposed Barrier Wall
Proposed Right-of-Way	Property Lines	Proposed Pavement
Proposed L/A Right-of-Way	Split Oak Forest	Proposed Structure

Appendix A
Jack Brack Road Interchange and Nova Road Connection Option 1 Geometry

SHEET NO.
A-35

Jack Brack Road Interchange and Nova Road Connection Option 2 Geometry Data



Beginning Jack Brack Road Interchange and Nova Road Connection Option 2 Chain Description

==========

Point 456 N 1,457,516.2925 E 588,480.2519 Sta 600+00.00

Course from 456 to PC 4531 S 15° 55' 36.89" E Dist 855.7695

Curve Data

Curve 4531

P.I. Station 634+90.39 N 1,454,159.8913 E 589,438.0527

Delta = 84° 27' 02.36" (LT)

Degree = 1° 58' 25.23"

Tangent = 2,634.6190

Length = 4,278.8536

Radius = 2,903.0000

External = 1,017.2839

Long Chord = 3,901.9107

Mid. Ord. = 753.3065

P.C. Station 608+55.77 N 1,456,693.3739 E 588,715.0844

P.T. Station 651+34.62 N 1,454,634.4760 E 592,029.5748

C.C. N 1,457,489.9889 E 591,506.6455

Back = S 15° 55' 36.89" E

Ahead = N 79° 37' 20.75" E

Chord Bear = S 58° 09' 08.07" E

Course from PT 4531 to PC 4532 N 79° 37' 20.75" E Dist 2,580.1137

Curve Data

Curve 4532

P.I. Station 702+93.99 N 1,455,563.8532 E 597,104.5418

Delta = 81° 22' 28.52" (RT)

Degree = 1° 54' 35.49"

Tangent = 2,579.2498

Length = 4,260.7635

Radius = 3,000.0000

External = 956.3278

Long Chord = 3,911.5816

Mid. Ord. = 725.1632

P.C. Station 677+14.74 N 1,455,099.2424 E 594,567.4831

P.T. Station 719+75.50 N 1,453,125.1683 E 597,944.3903

C.C. N 1,452,148.3162 E 595,107.8854

Back = N 79° 37' 20.75" E

Ahead = S 19° 00' 10.73" E

Chord Bear = S 59° 41' 24.99" E

Course from PT 4532 to 457 S 19° 00' 10.73" E Dist 1,524.4998

Point 457 N 1,451,683.7513 E 598,440.7939 Sta 735+00.00

Course from 457 to PC 4533 S 19° 00' 10.73" E Dist 11,883.6847

Curve Data

Curve 4533

P.I. Station 869+97.45 N 1,438,921.8884 E 602,835.7986

Delta = 35° 46' 31.18" (LT)

Degree = 1° 08' 45.30"

Tangent = 1,613.7673

Length = 3,121.9864

Radius = 5,000.0000

External = 253.9742

Long Chord = 3,071.5173

Mid. Ord. = 241.6972

P.C. Station 853+83.68 N 1,440,447.7080 E 602,310.3280

P.T. Station 885+05.67 N 1,437,991.1617 E 604,154.1280

C.C. N 1,442,075.7948 E 607,037.8361

Back = S 19° 00' 10.73" E

Ahead = S 54° 46' 41.92" E

Chord Bear = S 36° 53' 26.33" E

Course from PT 4533 to PC 4534 S 54° 46' 41.92" E Dist 1,911.5653

Curve Data

Curve 4534

P.I. Station 912+22.99 N 1,436,423.9694 E 606,373.9802

Delta = 25° 55' 44.53" (RT)

Degree = 1° 38' 13.28"

Tangent = 805.7560

Length = 1,583.9147

Radius = 3,500.0000

External = 91.5516

Long Chord = 1,570.4333

Mid. Ord. = 89.2179

P.C. Station 904+17.24 N 1,436,888.6824 E 605,715.7366

P.T. Station 920+01.15 N 1,435,718.2141 E 606,762.7632

C.C. N 1,434,029.4392 E 603,697.1410

Back = S 54° 46' 41.92" E

Ahead = S 28° 50' 57.38" E

Chord Bear = S 41° 48' 49.65" E

Course from PT 4534 to PC 4535 S 28° 50' 57.38" E Dist 1,154.4679

Curve Data

Curve 4535

P.I. Station 935+87.31 N 1,434,328.9137 E 607,528.0942

Delta = 29° 29' 02.33" (RT)

Degree = 3° 29' 32.57"

Tangent = 431.6869

Length = 844.2371

Radius = 1,640.5933

External = 55.8441

Long Chord = 834.9529

Mid. Ord. = 54.0058

P.C. Station 931+55.62 N 1,434,707.0248 E 607,319.8022

P.T. Station 939+99.86 N 1,433,897.2532 E 607,523.3122

C.C. N 1,433,915.4269 E 605,882.8195

Back = S 28° 50' 57.38" E

Ahead = S 0° 38' 04.94" W

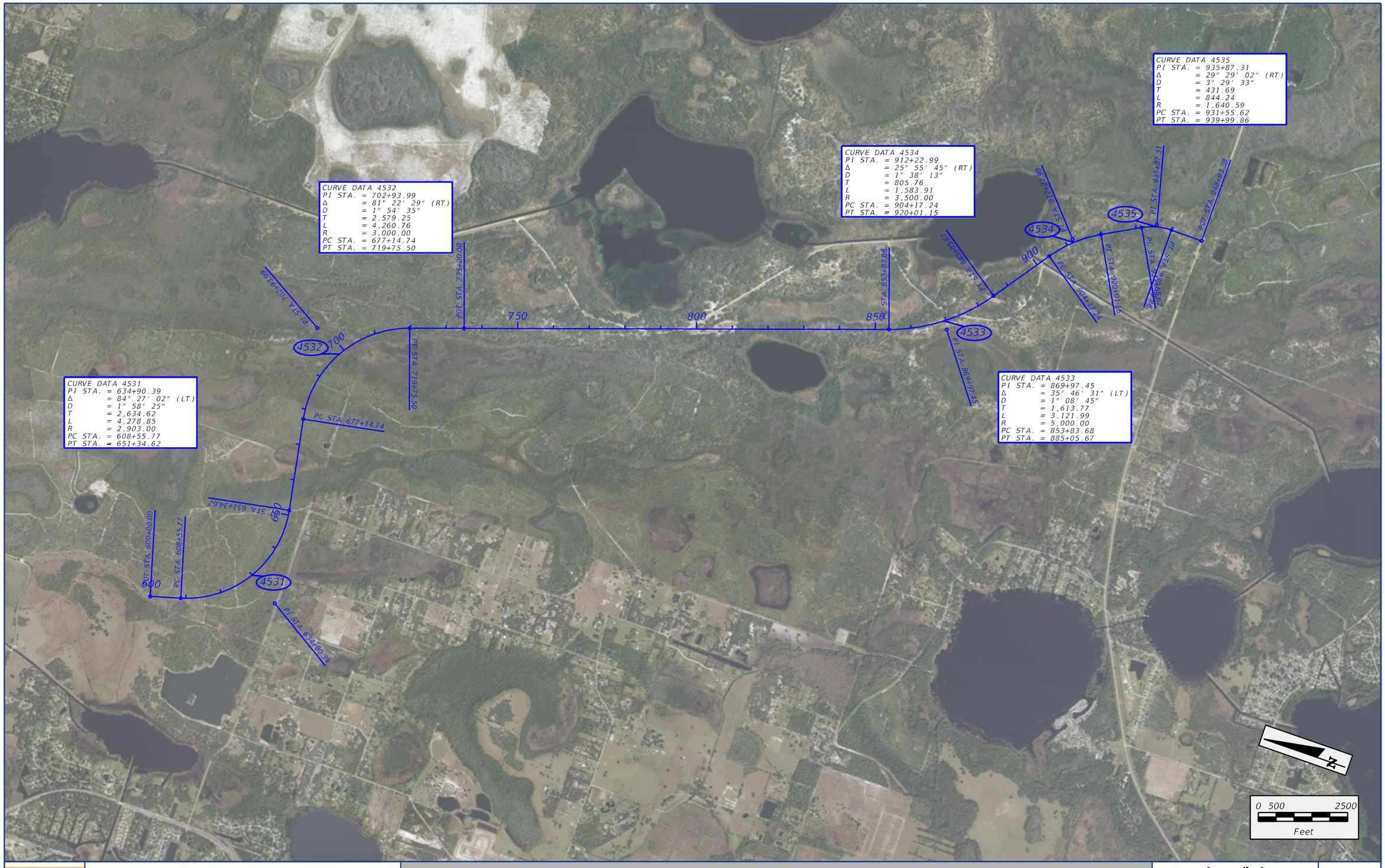
Chord Bear = S 14° 06' 26.22" E

Course from PT 4535 to 458 S 0° 38' 04.94" W Dist 893.5263

Point 458 N 1,433,003.7817 E 607,513.4141 Sta 948+93.38

==========

Ending chain description



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

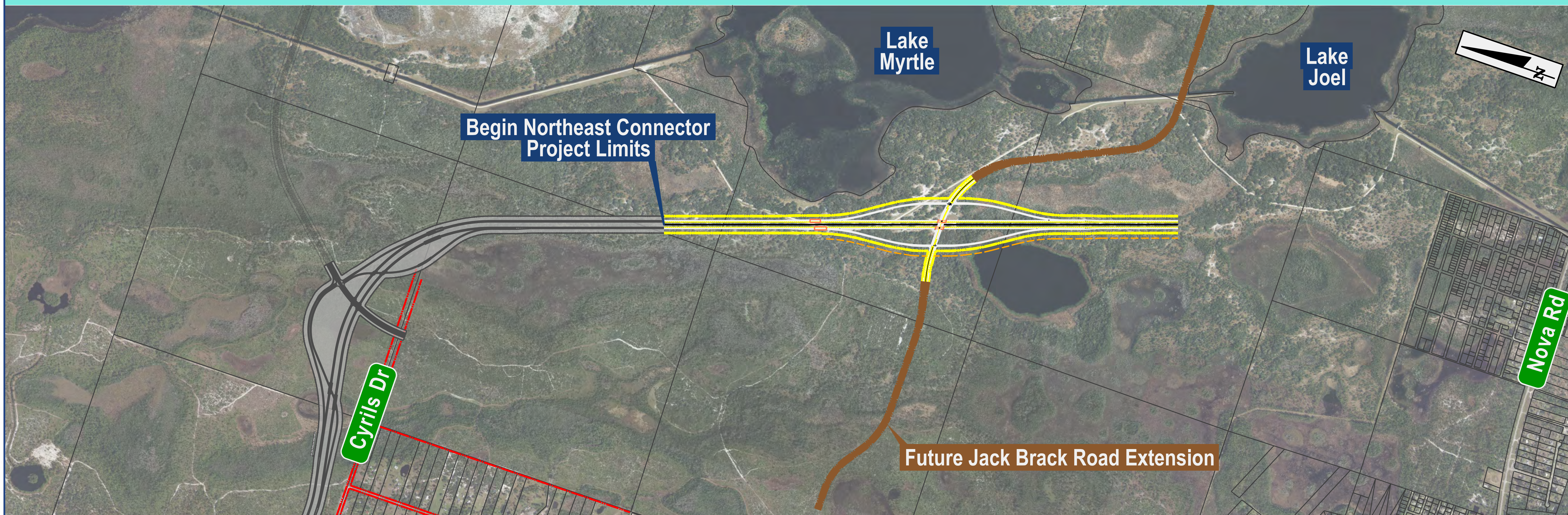
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

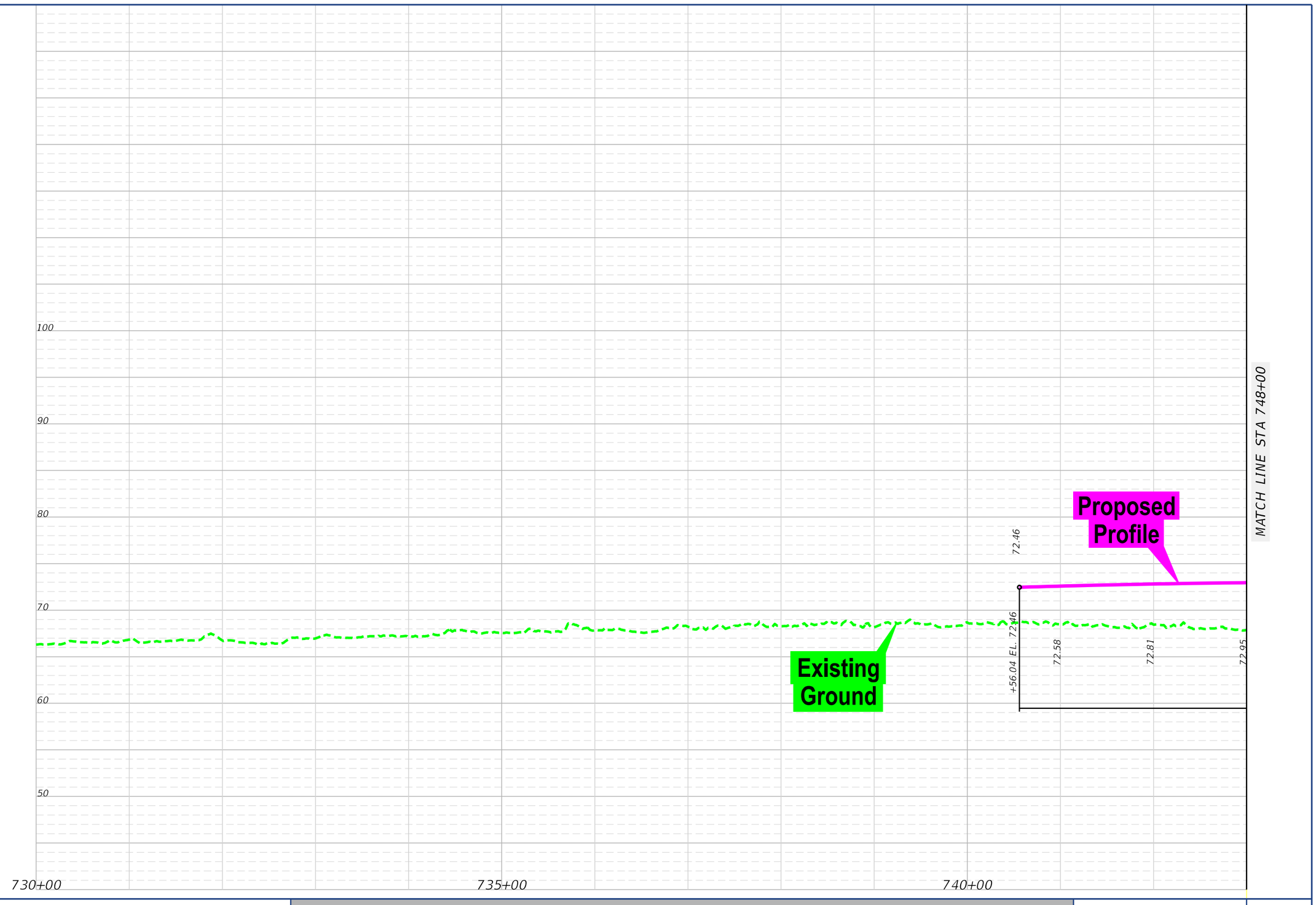
- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed L/A Right-of-Way
- Potential OUC Utility Easement
- Property Lines
- Split Oak Forest
- Proposed Barrier Wall
- Proposed Pavement
- Proposed Structure

Appendix A
Jack Brack Road Interchange and Nova Road Connection Option 2 Geometry

SHEET NO.
A-37

Jack Brack Road Diamond Interchange
Profile Sheets





CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study	Appendix A Jack Brack Road Interchange Profile	SHEET NO. A-38

MATCH LINE STA 748+00

MATCH LINE STA 762+00

100
90
80
70
60
50
40

750+00
755+00
760+00

P.I. +56.04
EL. 73.96

(+) 0.300%
(-) 0.500%

K = 1250
1,000' V.C.

+56.04 EL. 71.46
+04.43 EL. 70.72

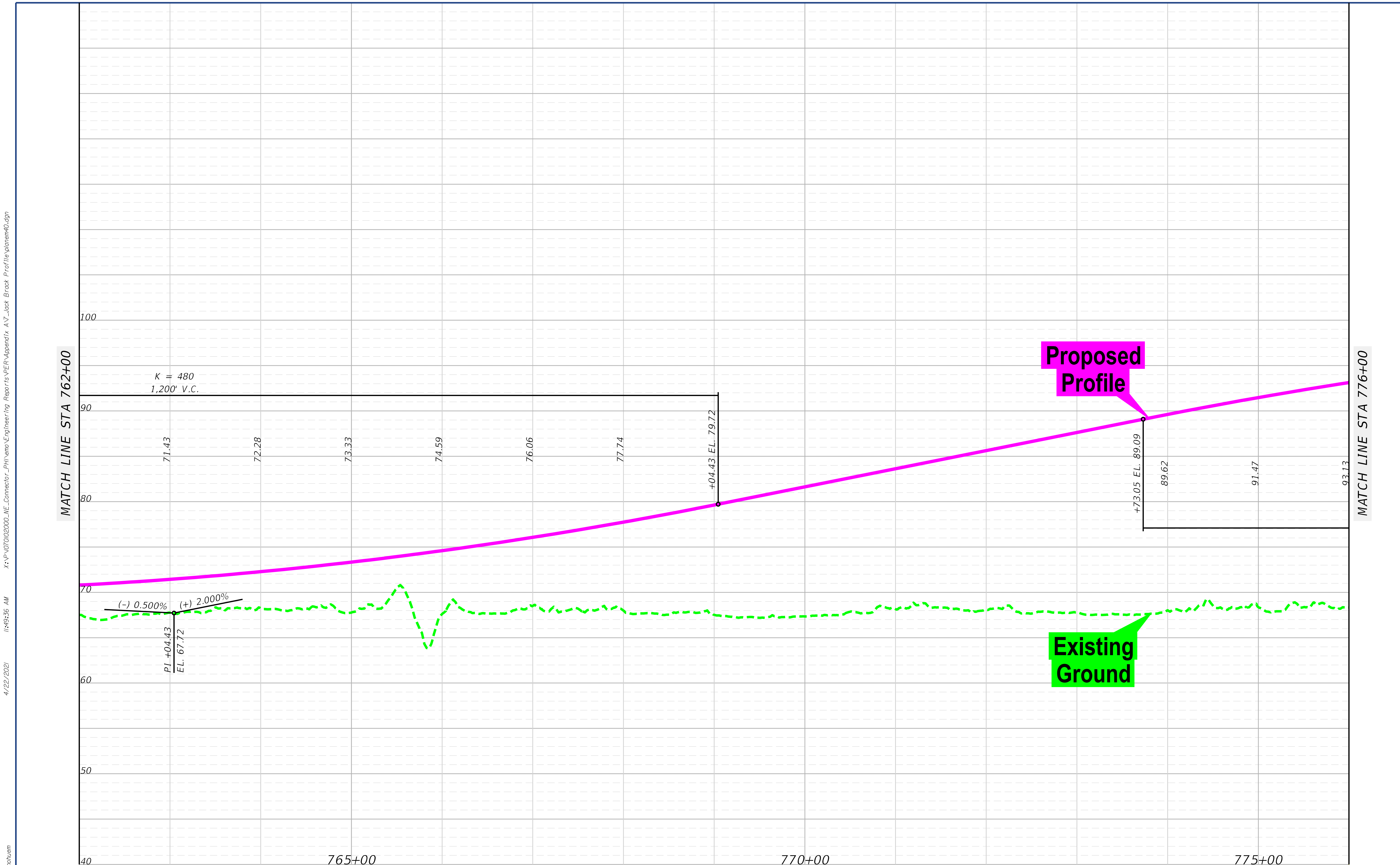
73.02
73.00
72.91
72.73
72.48
72.11
71.73

70.33
70.14
70.15
70.37
70.80

Proposed Profile

Existing Ground

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Jack Brack Road Interchange Profile	SHEET NO. A-39

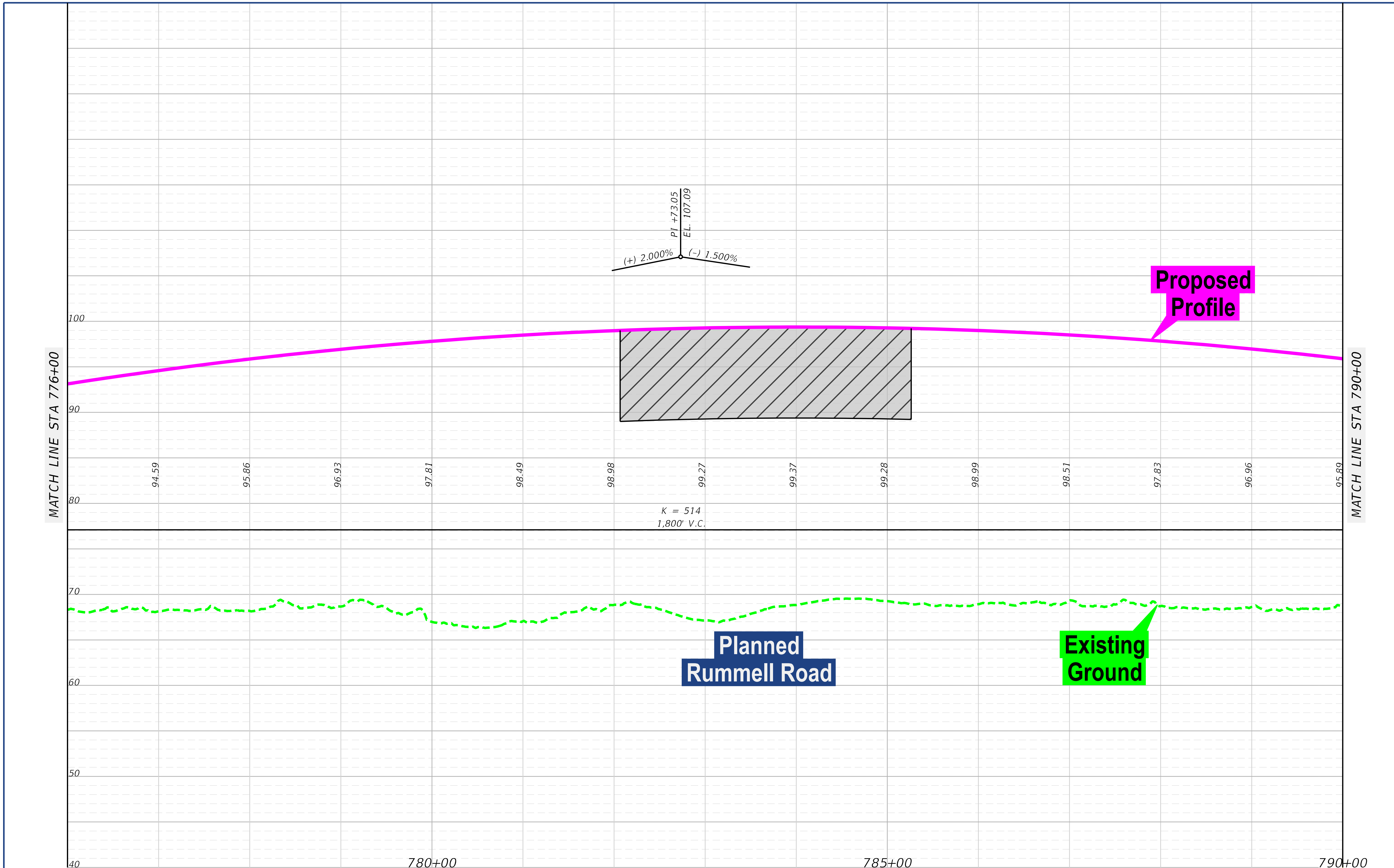


CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Jack Brack Road
Interchange Profile

SHEET NO.
A-40



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Jack Brack Road
Interchange Profile

SHEET NO.
A-41

K = 286
800' V.C.

Proposed Profile

Existing Ground

MATCH LINE STA 790+00

MATCH LINE STA 804+00

+76.04 EL. 92.04

91.70

90.45

89.56

89.02

88.83

88.99

89.50

90.36

+76.04 EL. 91.24

(-) 1.500%

(+) 1.300%

PI +76.04
EL. 86.04

94.63

+73.05 EL. 93.59

+87.88 EL. 92.70

92.85

94.02

94.98

100

90

80

70

60

50

790+00

795+00

800+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Jack Brack Road Interchange Profile	SHEET NO. A-42

MATCH LINE STA 804+00

MATCH LINE STA 818+00

P1 +87.88
EL. 104.40

(+) 1.300%

(-) 2.500%

Proposed Profile

100

90

80

95.73 96.26 96.59 96.70 96.60 96.29 95.77 95.04 94.10 92.95 91.58 90.01 88.22 86.22

K = 474
1,800' V.C.

70

Jack Brack Road

Existing Ground

60

50

40

805+00 810+00 815+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study	Appendix A Jack Brack Road Interchange Profile	SHEET NO. A-43

MATCH LINE STA 818+00

MATCH LINE STA 832+00

100
90
80
70
60
50
40

820+00
825+00
830+00

Proposed Profile

Existing Ground

K = 286
800' V.C.

+87.88 EL. 81.90
84.01
+82.86 EL. 77.02
76.60
74.34
72.42
70.86
69.64
68.78
68.26
68.10
+82.86 EL. 68.22
(-) 2.500%
(+) 0.300%
PI +82.86
EL. 67.02
+96.04 EL. 68.16
68.56
68.81

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Jack Brack Road Interchange Profile	SHEET NO. A-44

MATCH LINE STA 832+00

MATCH LINE STA 846+00

100
90
80
70
60
50
40

Proposed Profile

Existing Ground

PI +96.04
EL. 70.96

(+) 0.300% (-) 0.300%

K = 3000
1,800' V.C.

69.02 69.20 69.35 69.47 69.55 69.60 69.61 69.60 69.54 69.46 69.34 69.19 69.01 68.79

835+00 840+00 845+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Jack Brack Road
Interchange Profile

SHEET NO.
A-45

MATCH LINE STA 846+00

MATCH LINE STA 860+00

Jack Brack Road Interchange

Nova Road Connection Option 1 and Option 2

K = 1000
800' V.C.

Proposed Profile

Existing Ground

+34.79 EL. 66.95

66.77 66.59 66.50 66.52 66.63 66.85 67.16 67.58

(-) 0.300% (+) 0.500%

PI +34.79
EL. 65.75

68.54

+96.04 EL. 68.26

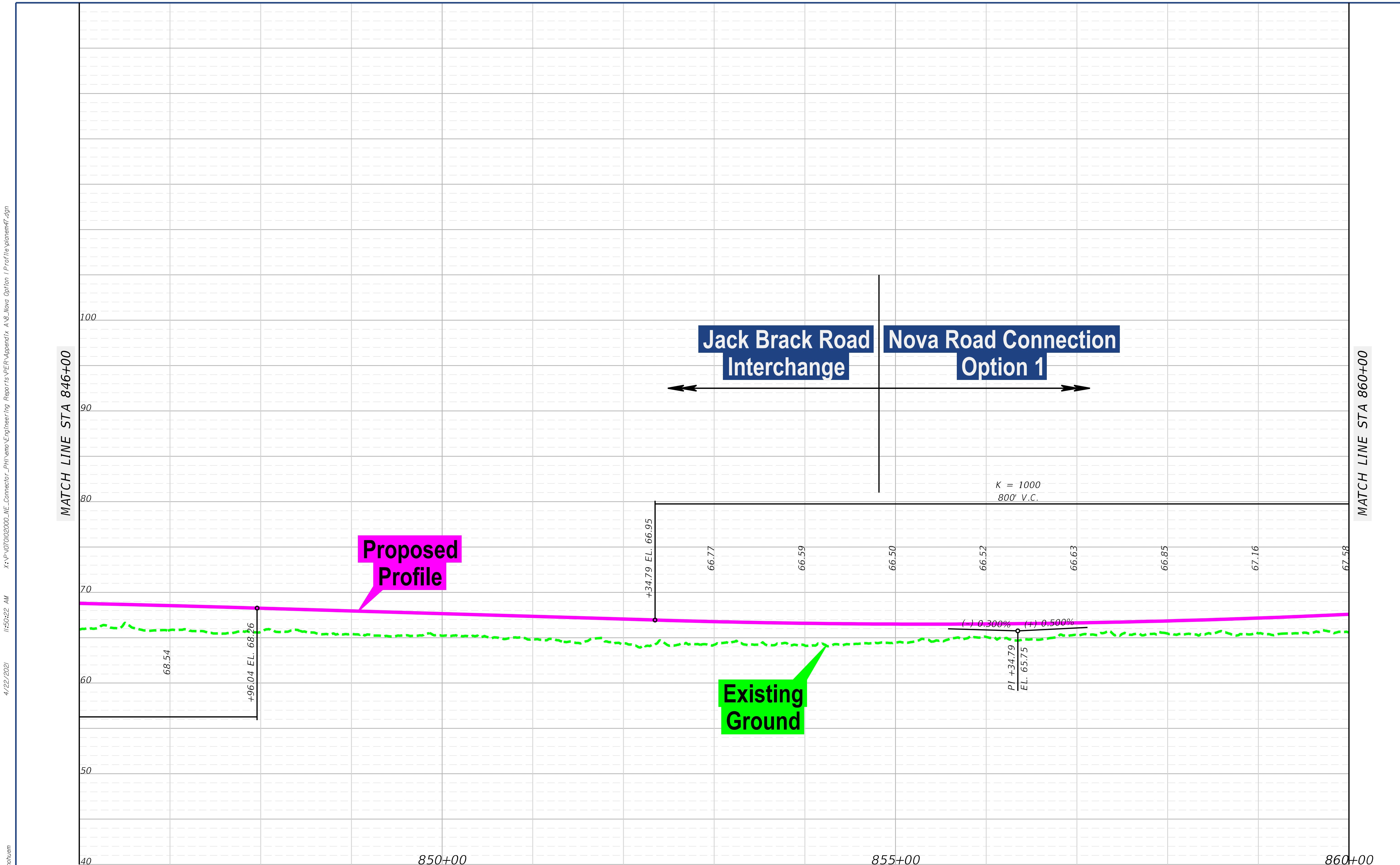
100
90
80
70
60
50
40

850+00 855+00 860+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Jack Brack Road Interchange Profile	SHEET NO. A-46

Nova Road Connection Option 1
Profile Sheets

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A	SHEET NO. x



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 1 Profile

SHEET NO.
A-47

MATCH LINE STA 860+00

MATCH LINE STA 874+00

100

90

80

70

60

50

+34.79 EL. 67.75

Proposed Profile

P1 +21.04
EL. 70.68

(+) 0.500%

(–) 0.300%

+21.04 EL. 68.18

68.55

68.95

69.26

69.50

69.66

69.73

69.73

69.65

69.48

69.24

+21.04 EL. 69.18

Existing Ground

K = 1250
1,000' V.C.

860+00

865+00

870+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 1 Profile

SHEET NO.
A-48

MATCH LINE STA 874+00

MATCH LINE STA 888+00

100
90
80
70
60
50
40

875+00
880+00
885+00

+80.41 EL. 65.70
65.65
65.48
65.52
65.76
66.20
66.84

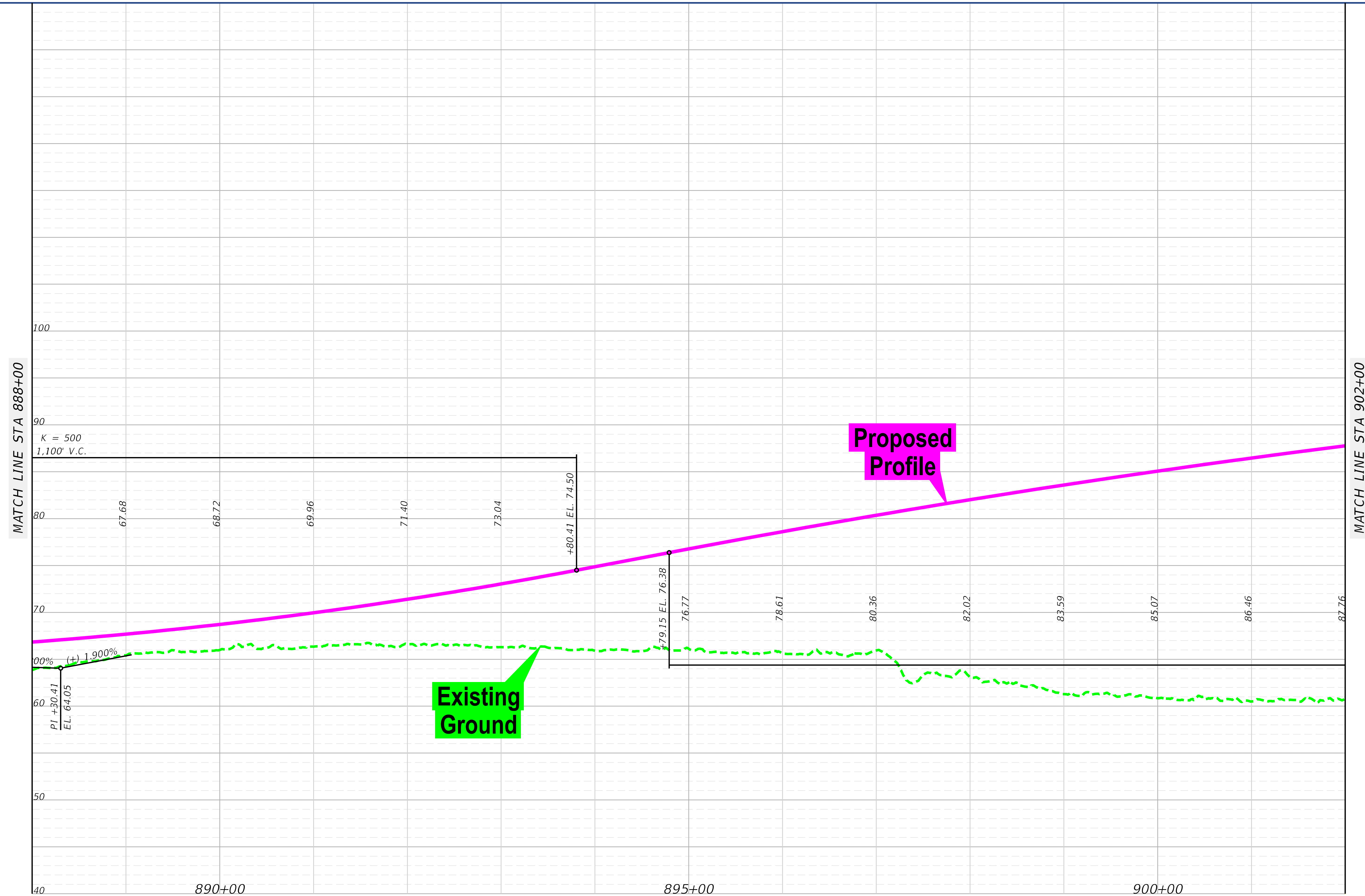
Proposed Profile

Existing Ground

(~) 0.3

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Nova Road Connection Option 1 Profile

SHEET NO.
A-49



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 1 Profile

SHEET NO.
A-50

MATCH LINE STA 902+00

MATCH LINE STA 916+00

100

90

80

70

60

50

40

PI +79.15
EL. 93.48

(+) 1.900%

(+) 0.300%

K = 1125
1,800' V.C.

88.98

90.10

91.14

92.09

92.95

93.72

94.40

94.99

95.50

95.91

PI +79.15 EL. 96.18

Proposed Profile

Canal 32C

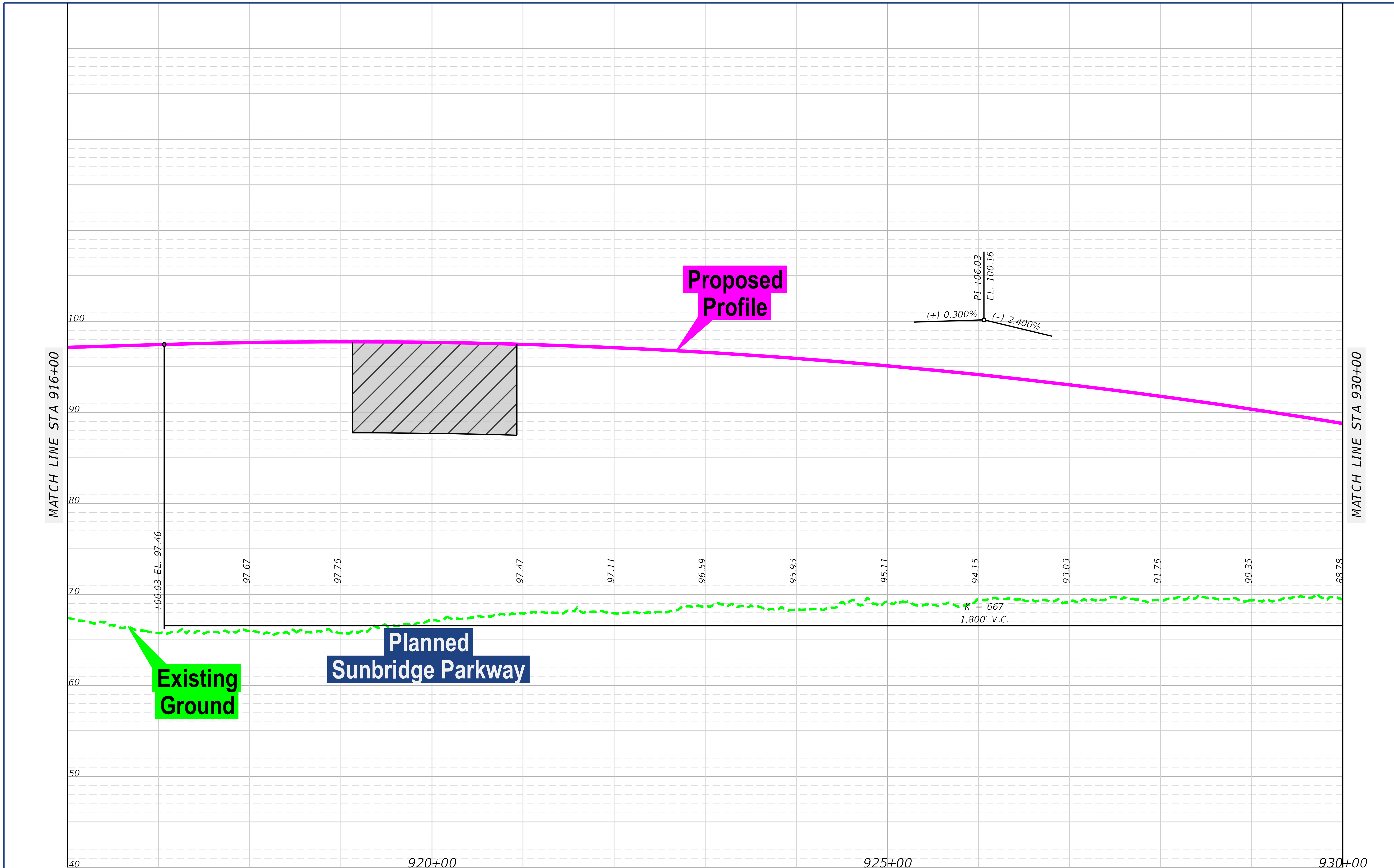
Existing Ground

905+00

910+00

915+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Nova Road Connection Option 1 Profile	SHEET NO. A-51



Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Appendix A
Nova Road Connection
Option 1 Profile

SHEET NO.
A-52

MATCH LINE STA 930+00

100
90
80
70
60
50

Proposed Profile

Existing Ground

K = 182
800' V.C.

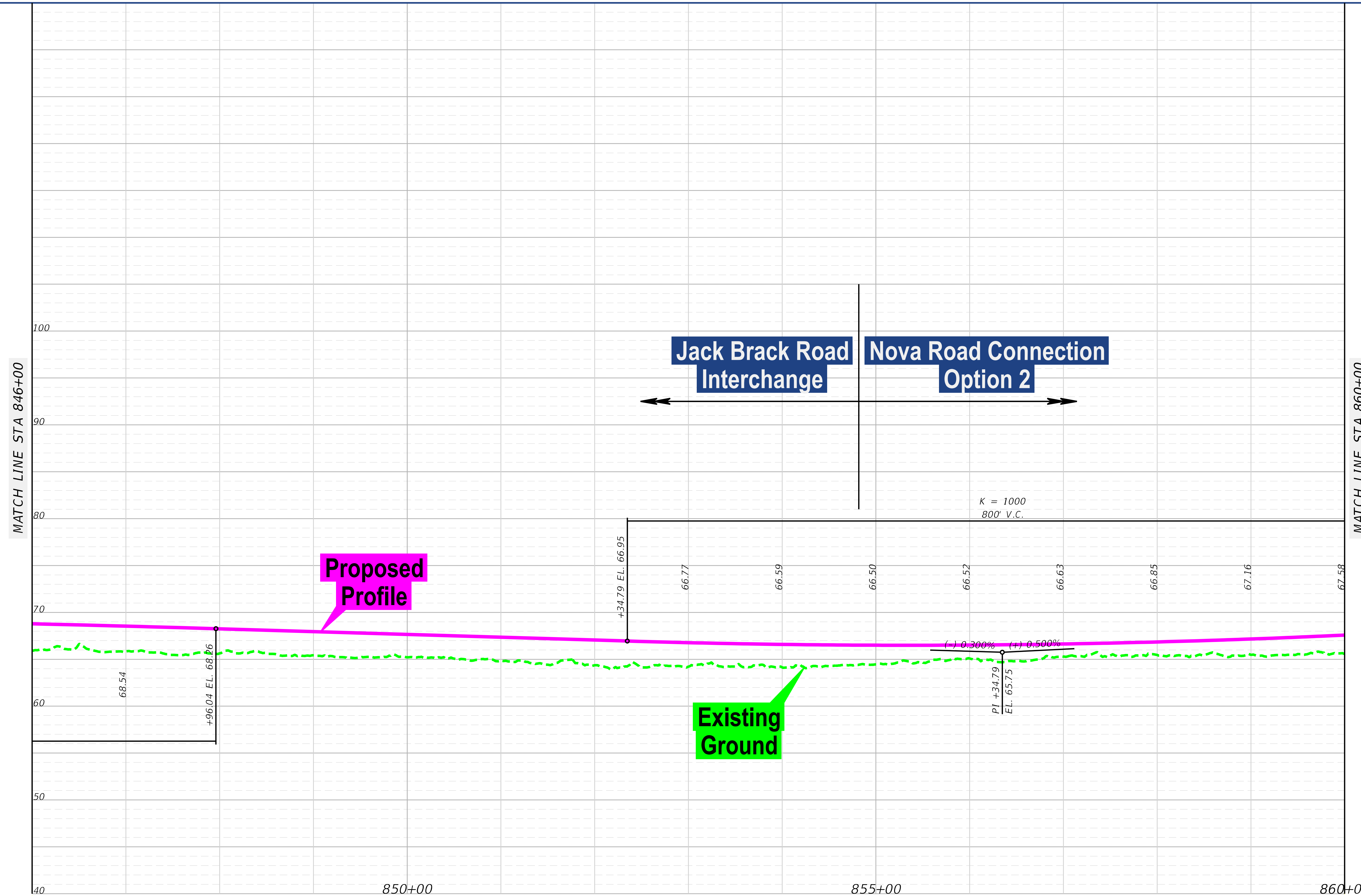
+24.61 EL. 78.11
+06.03 EL. 78.56
87.07
85.20
83.18
81.02
76.46
74.75
73.59
72.98
72.92
73.41
74.45
76.04
+24.61 EL. 76.51
77.44

(-) 2.400%
(+) 2.000%
PI +24.61
EL. 68.51

930+00
935+00
940+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Nova Road Connection Option 1 Profile	SHEET NO. A-53

Nova Road Connection Option 2
Profile Sheets

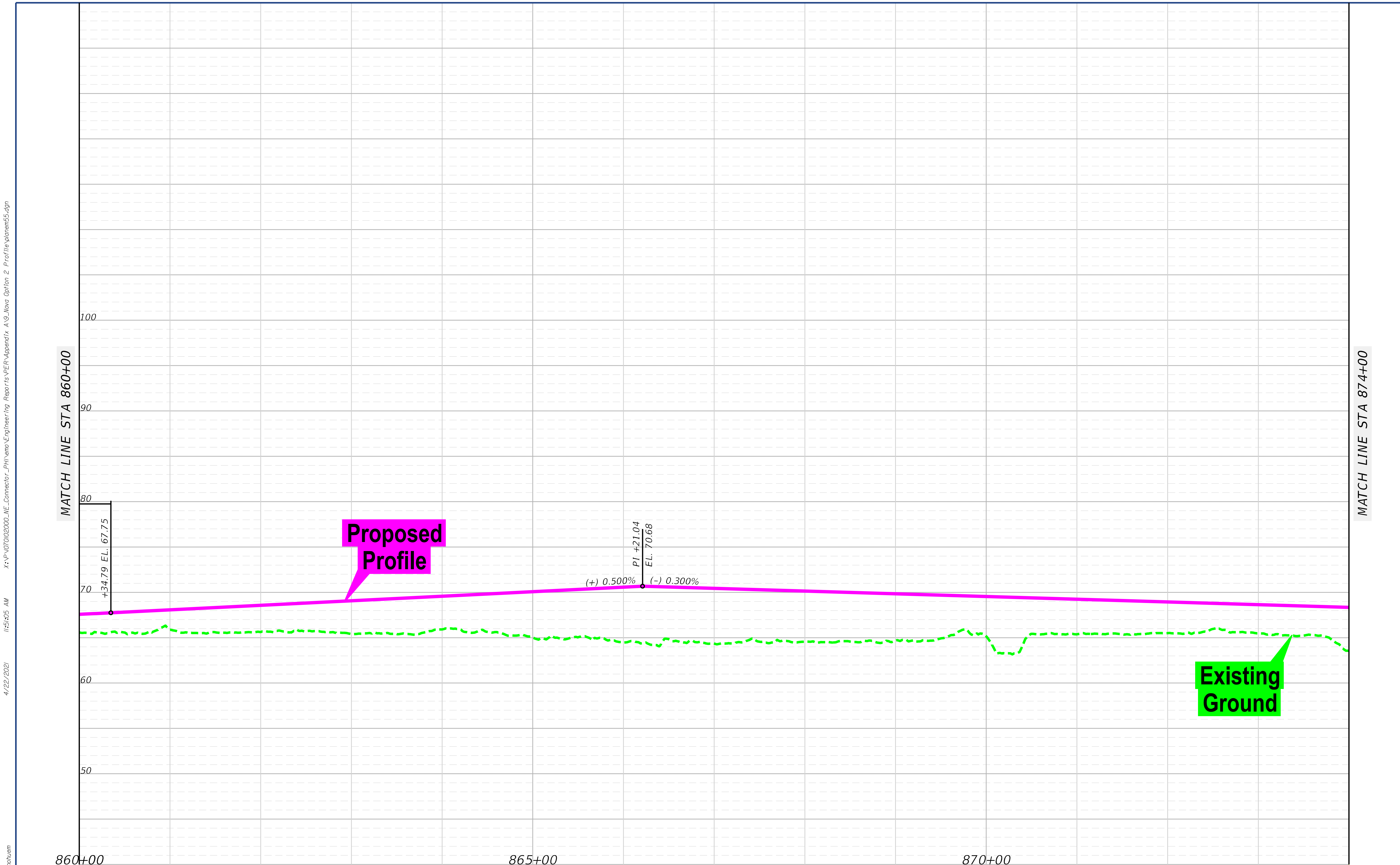


CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 2 Profile

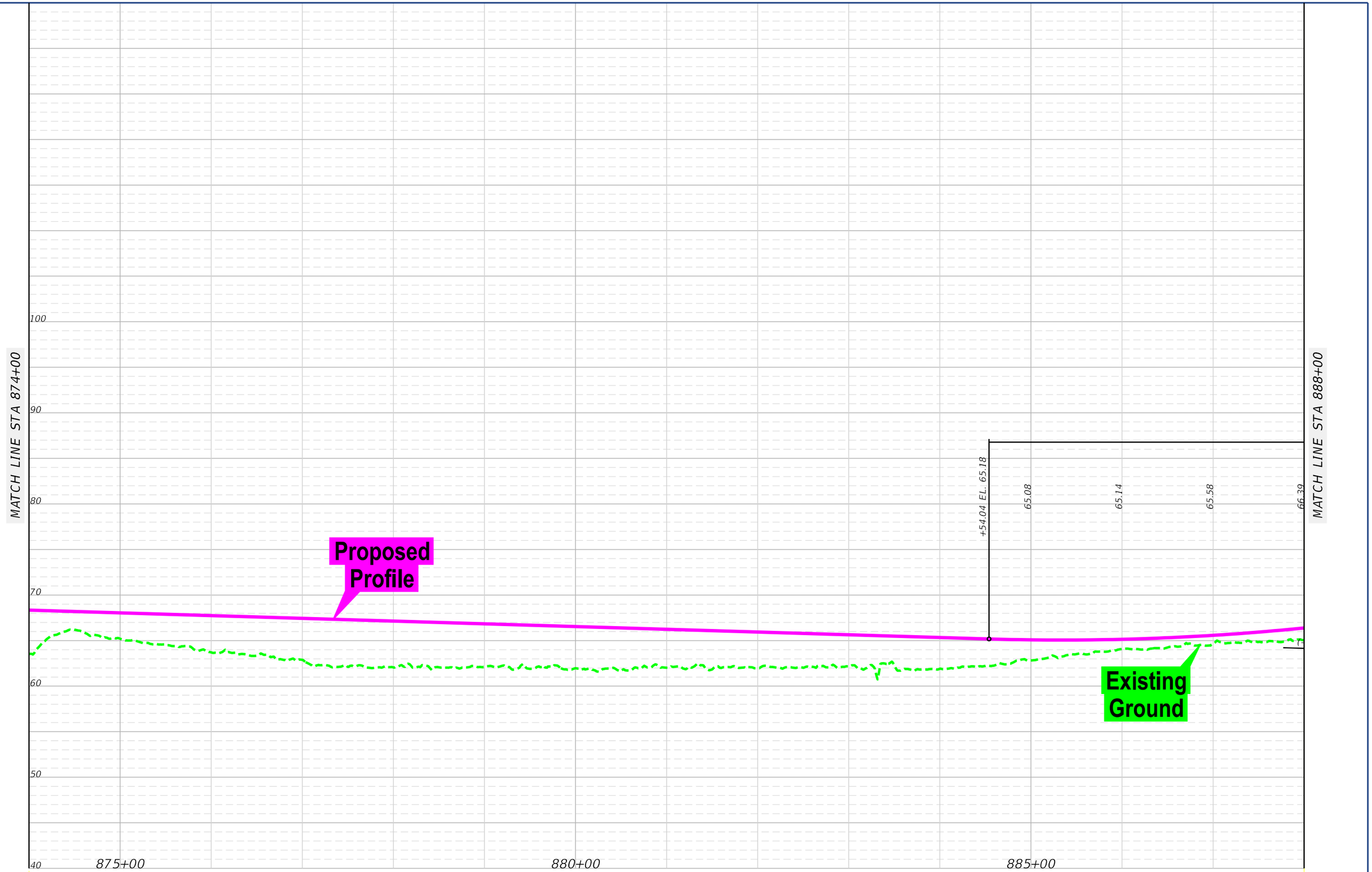
SHEET NO.
A-54



Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 2 Profile

SHEET NO. A-55



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 2 Profile

SHEET NO.
A-56

MATCH LINE STA 888+00

MATCH LINE STA 902+00

K = 267
800' V.C.

(-) 0.300%

(+) 2.700%

PI +54.04
EL. 63.98

+54.04 EL. 74.78

+50.83 EL. 82.79

Proposed Profile

Existing Ground

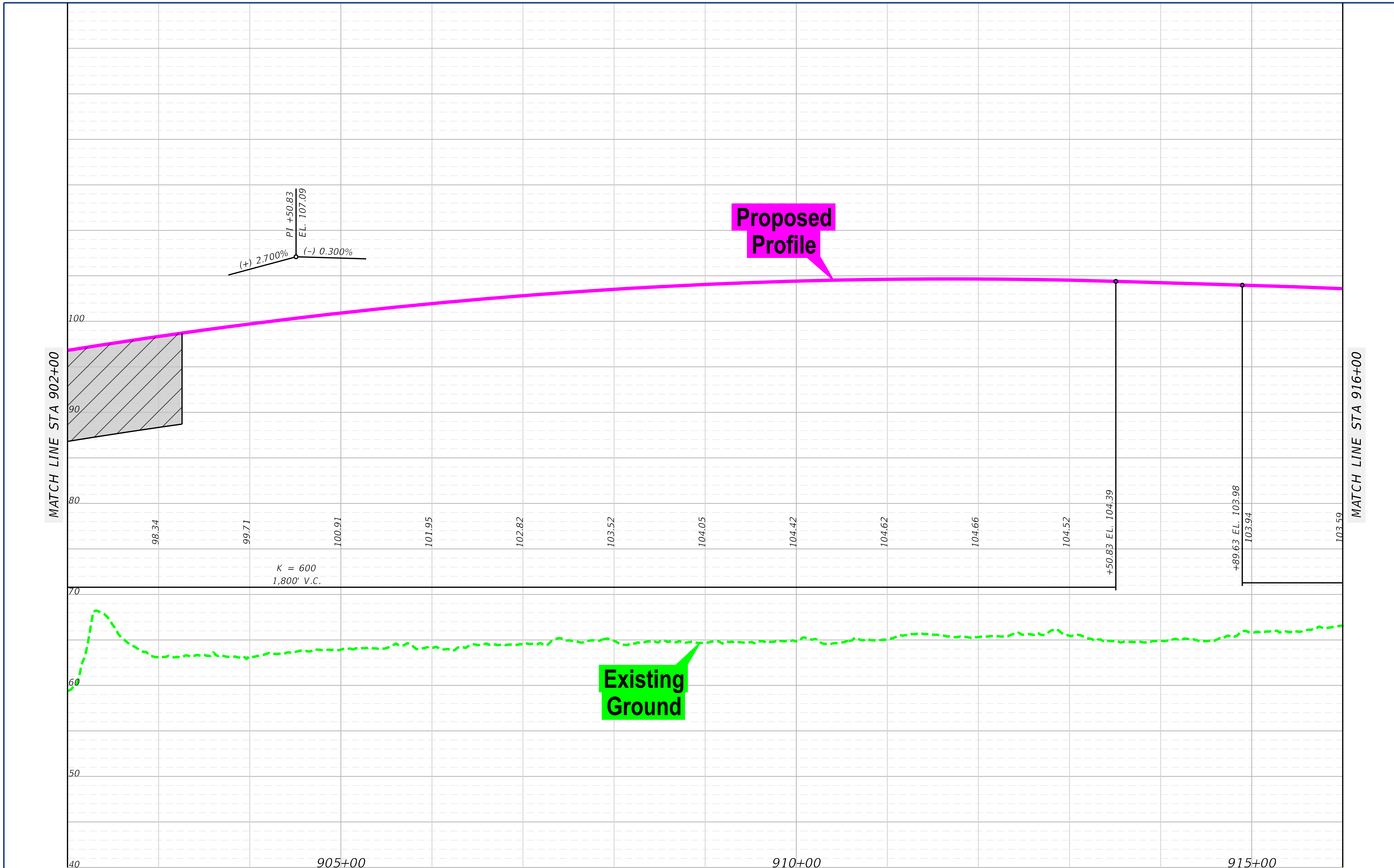
Canal 32C

100
90
80
70
60
50
40

67.57
69.13
71.07
73.38
84.10
86.63
89.00
91.20
93.24
95.11
96.81

890+00
895+00
900+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Nova Road Connection Option 2 Profile	SHEET NO. A-57



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix A
Nova Road Connection
Option 2 Profile

SHEET NO.
A-58

MATCH LINE STA 916+00

MATCH LINE STA 930+00

Proposed Profile

PI +89.63
EL. 101.28

(–) 0.300%

(–) 2.000%

K = 1059
1,800' V.C.

103.14 102.59 101.95 101.22 100.39 99.46 98.44 97.33 96.12 94.82 93.43 91.94 90.35 88.67

100
90
80
70
60
50
40

Existing Ground

Future Sunbridge Parkway

920+00 925+00 930+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Nova Road Connection Option 2 Profile	SHEET NO. A-59

MATCH LINE STA 930+00

MATCH LINE STA 944+00

100
90
80
70
60
50

Proposed Profile

Existing Ground

K = 275
1,100' V.C.

+89.63 EL. 83.28

86.90 | 85.03

+47.16 EL. 74.13

73.12 | 71.49 | 70.23 | 69.33 | 68.80 | 68.63 | 68.82

(-) 2.000% (+) 2.000%

PI +97.16
EL. 63.13

930+00 | 935+00 | 940+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix A Nova Road Connection Option 2 Profile	SHEET NO. A-60

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

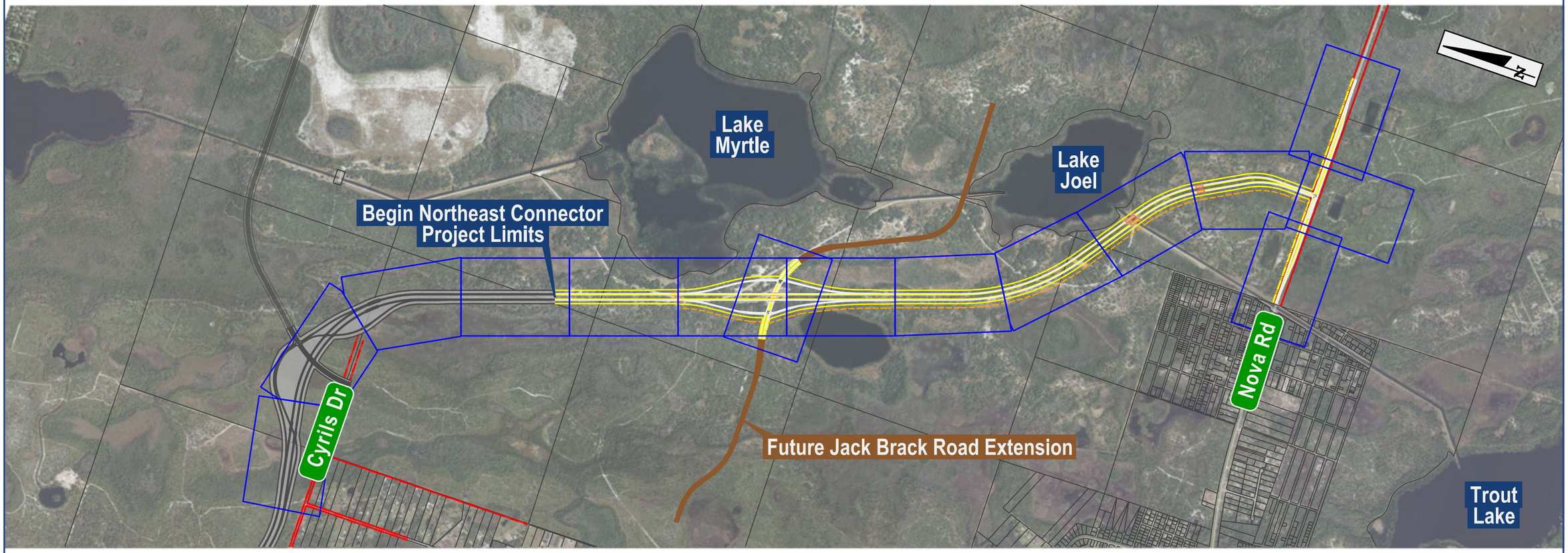
Appendix A
Nova Road Connection
Option 2 Profile

SHEET NO.
A-61

Appendix B

Concept Plans (Preferred Alternative)

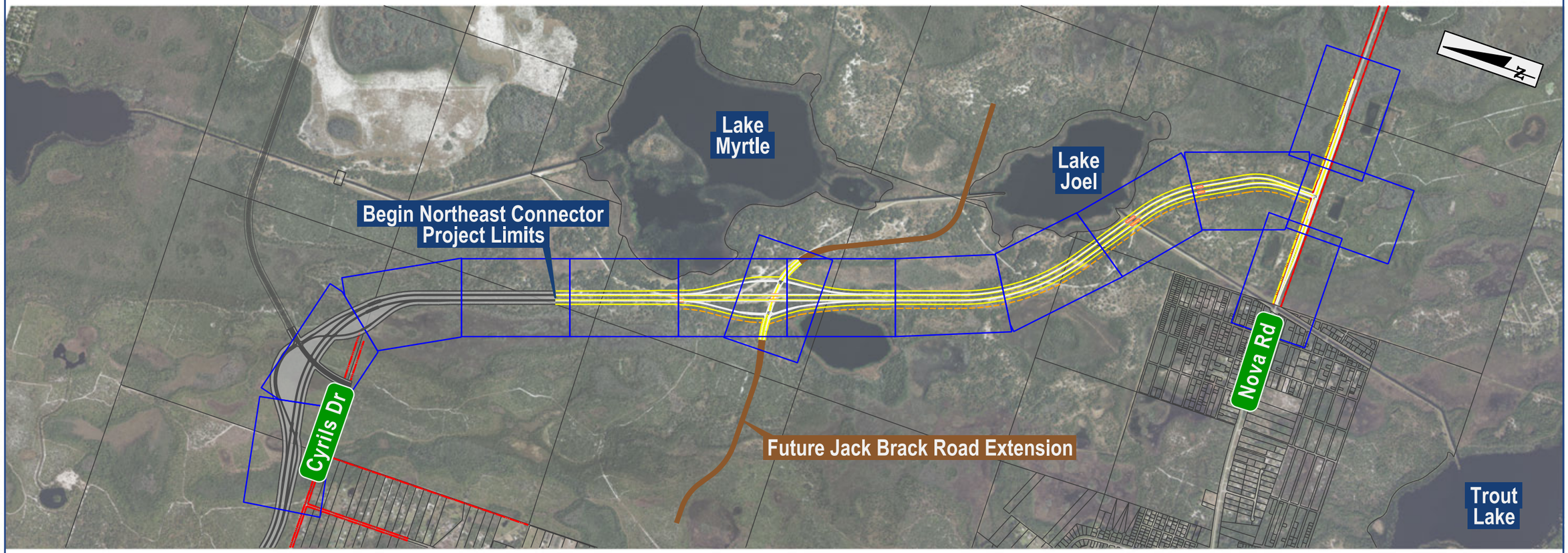
Appendix B: Preferred Alternative (200 Scale)



Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

CFX Project No.: 599-228
Contract No.: 001546

Appendix B: Preferred Alternative (200 Scale)



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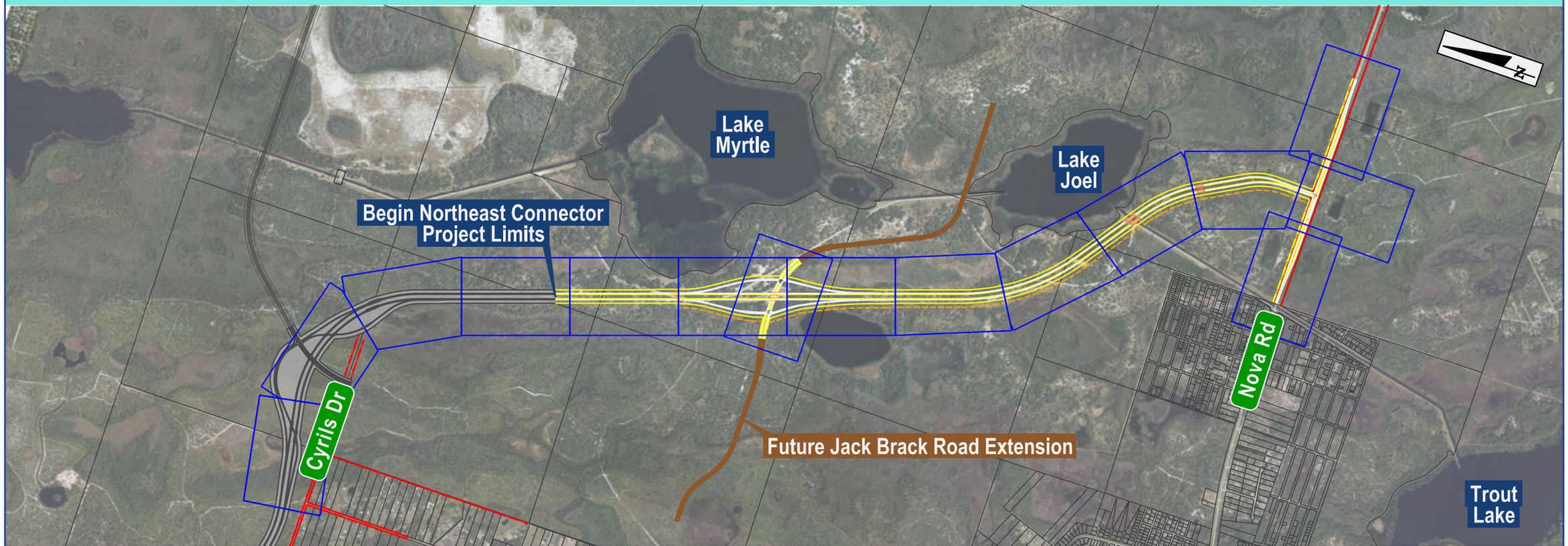
Index of Drawings

Sheet Number	Sheet Description
1-15	Preferred Alternative Plan Sheets
16-17	Preferred Alternative Geometry Data
18-32	Preferred Alternative Profile Sheets

Preferred Alternative
Plan Sheets



Split Oak Forest

SR 534 Preferred Alternative

PT STA. 651+34.62

650 655 660 665 670 675

MATCH LINE STA 676+80

Cyrils Dr

N

0 40 200

Feet

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$USER$

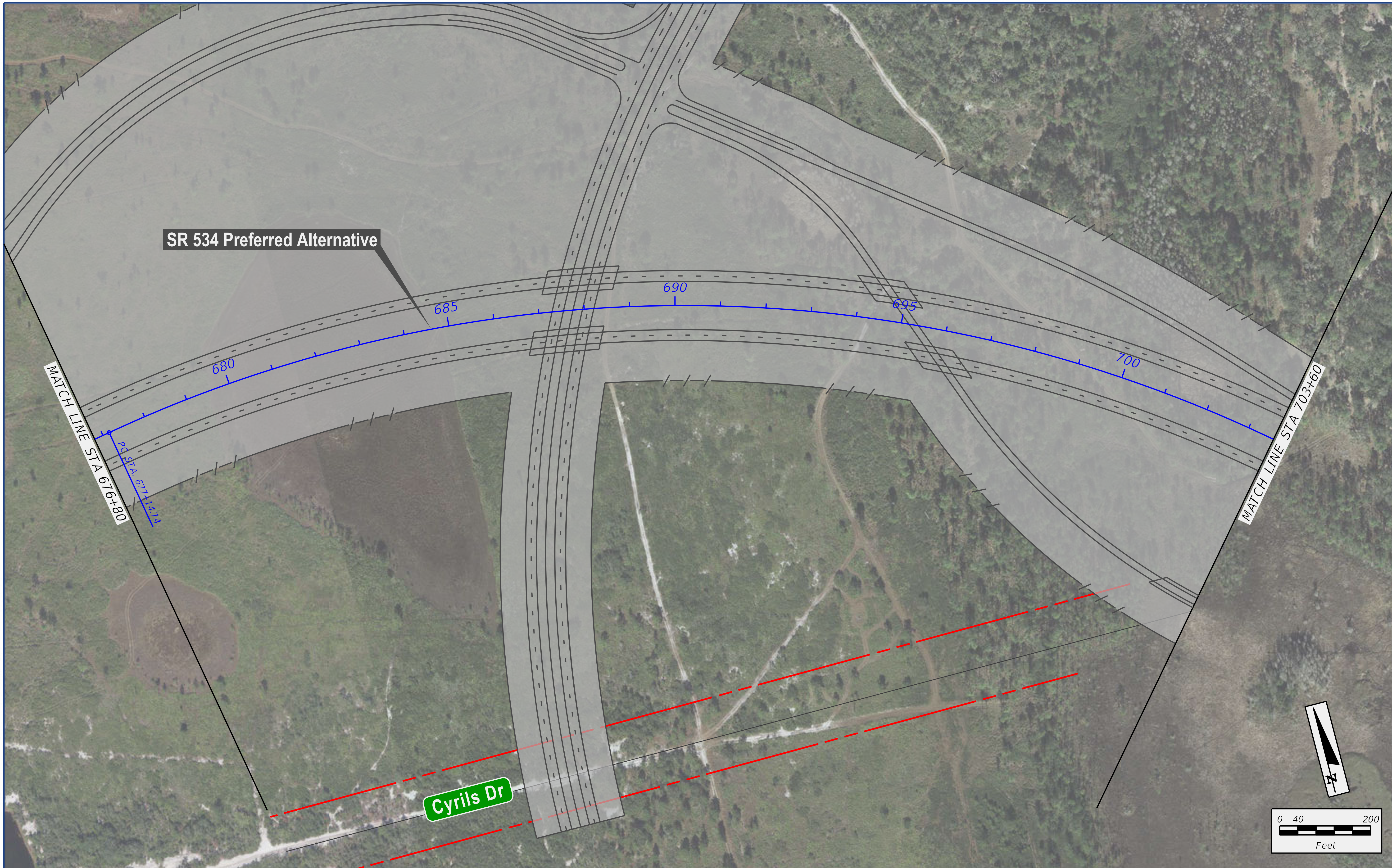
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed L/A Right-of-Way
- Potential OUC Utility Easement
- Property Lines
- Split Oak Forest
- Proposed Barrier Wall
- Proposed Pavement
- Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-1



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way	Potential OUC Utility Easement
Proposed Right-of-Way	Property Lines
Proposed L/A Right-of-Way	Split Oak Forest
Proposed Barrier Wall	
Proposed Pavement	
Proposed Structure	

Appendix B
Preferred Alternative

SHEET NO.
B-2

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed L/A Right-of-Way
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- Property Lines
- Split Oak Forest
- Proposed Barrier Wall
- Proposed Pavement
- Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-3

MATCH LINE STA 730+40

PT STA 731+00.00

735 740 745 750 755

MATCH LINE STA 757+20

Begin Northeast Connector Project Limits

SR 534 Preferred Alternative

N

0 40 200
Feet

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-4

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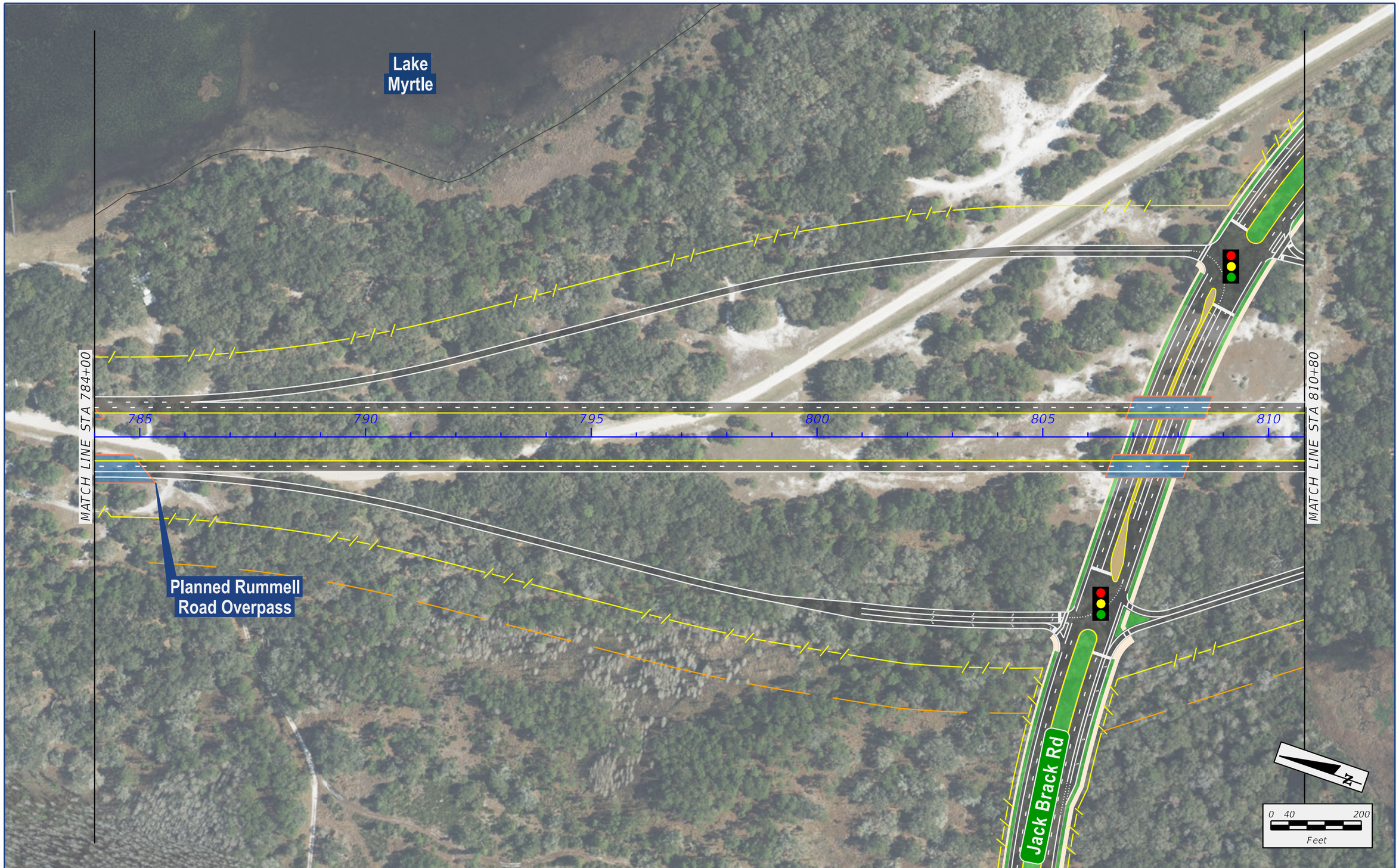
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-5



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-6

Jack Brack Rd

MATCH LINE STA 810+80

MATCH LINE STA 837+60

815 820 825 830 835

Lake Bullock

N

0 40 200
Feet

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$DATE$
$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-7

MATCH LINE STA 837+60

MATCH LINE STA 864+40

840

845

850

855

860

PC STA. 852+93.68

$FILE$

$TIME$

$DATE$

$USER$

0 40 200

Feet

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.

B-8

Sungrove Ln

Lake Joel

MATCH LINE STA 864+40

MATCH LINE STA 891+20

865

870

875

880

885

890

PI STA 869+97.45

PI STA 885+05.67

N

0 40 200

Feet

$FILE$

$TIME$

$DATE$

$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-9

Lake Joel

MATCH LINE STA 891+20

MATCH LINE STA 918+00

Sungrove Ln

Canal C-32C

PI STA 904+17.24

PI STA 912+22.99

895 900 905 910 915

0 40 200
Feet

$FILE$
$TIME$
$DATE$
$USER$

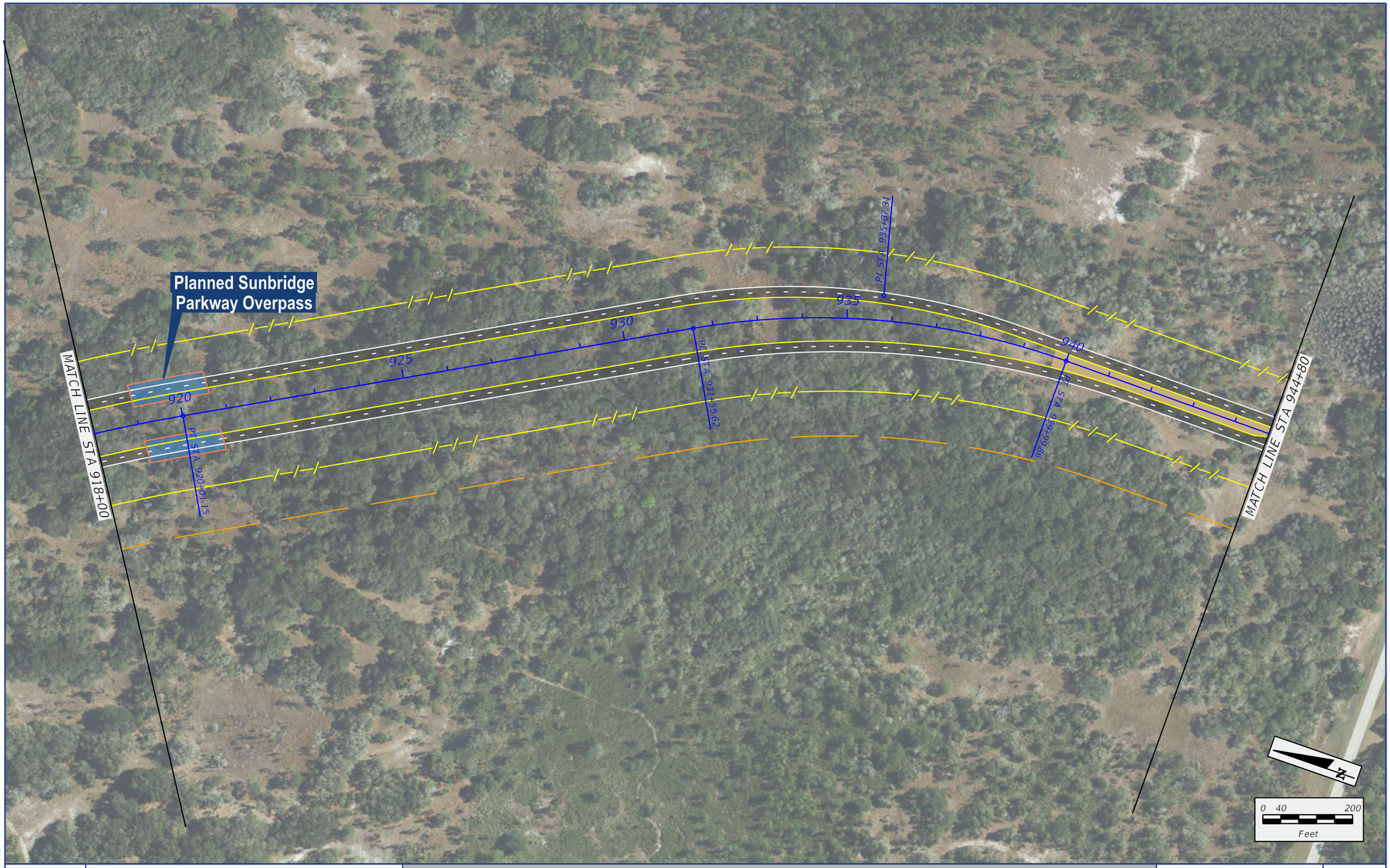
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-10



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-11

MATCH LINE STA 140+00

Nova Rd

Nova Road Alignment

135

STA 949+16

945

MATCH LINE STA 944+80

130

MATCH LINE STA 125+00

N

0 40 200

Feet

$FILE$

$TIME$

$DATE$

$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

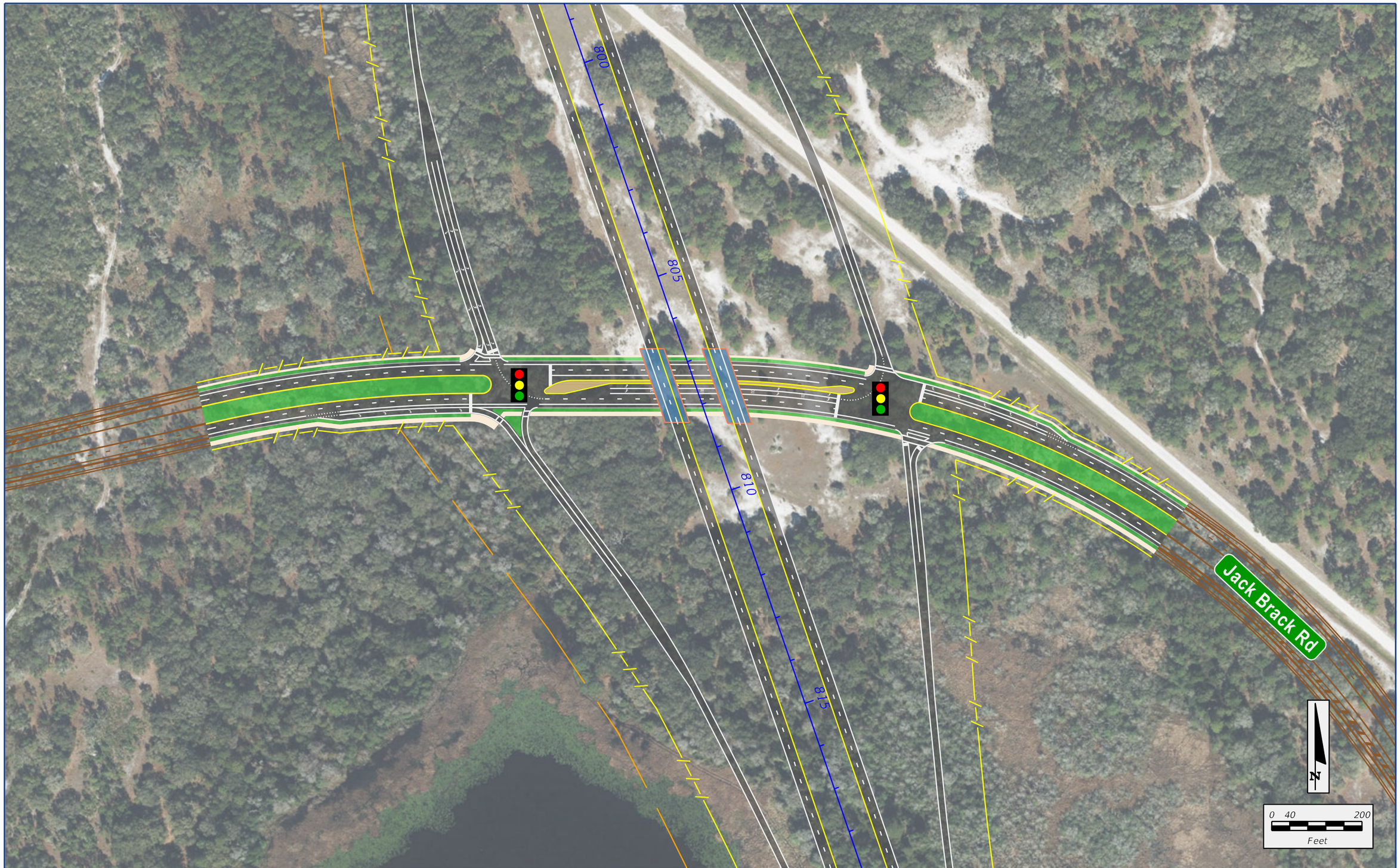
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.

B-12



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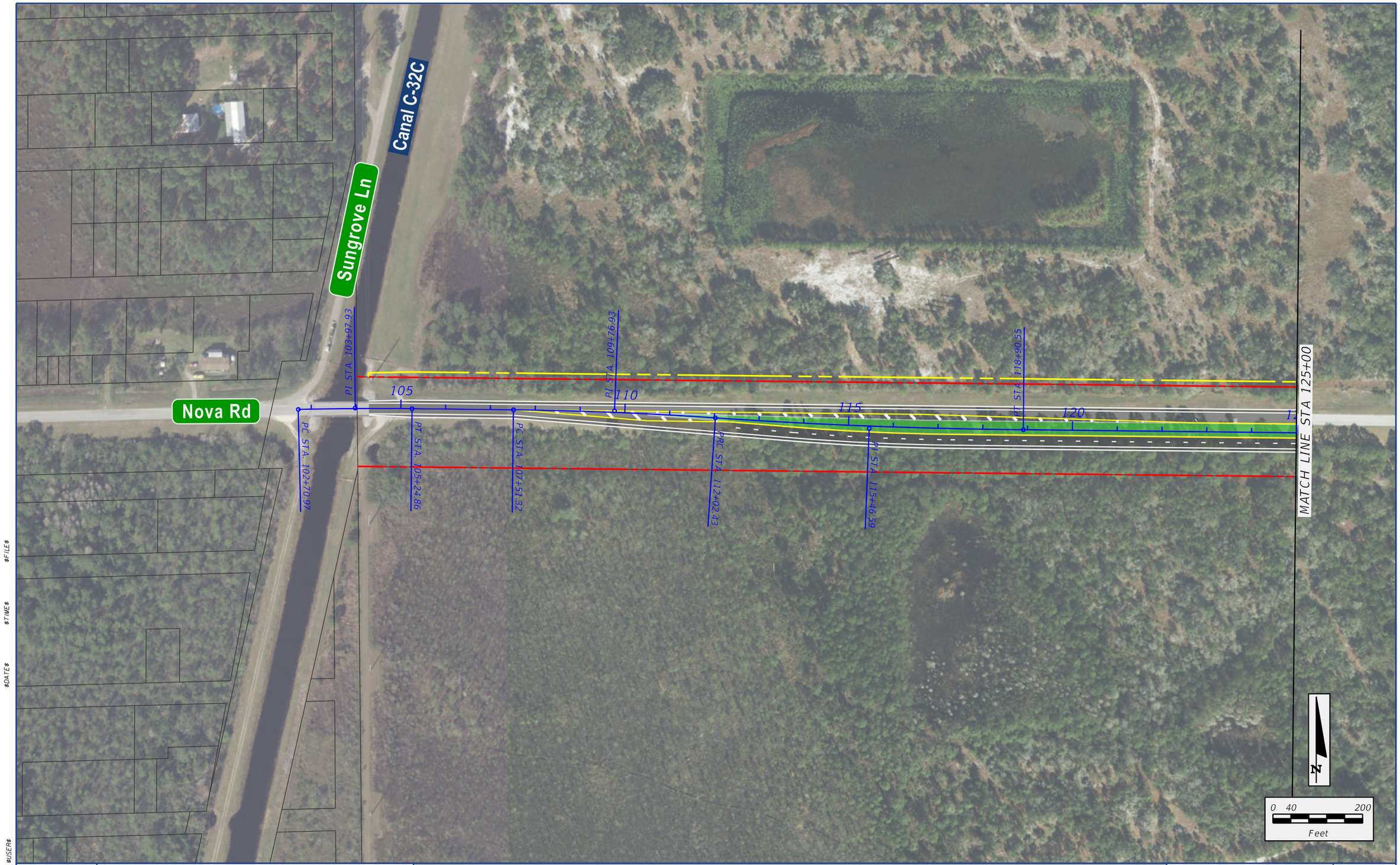
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-13



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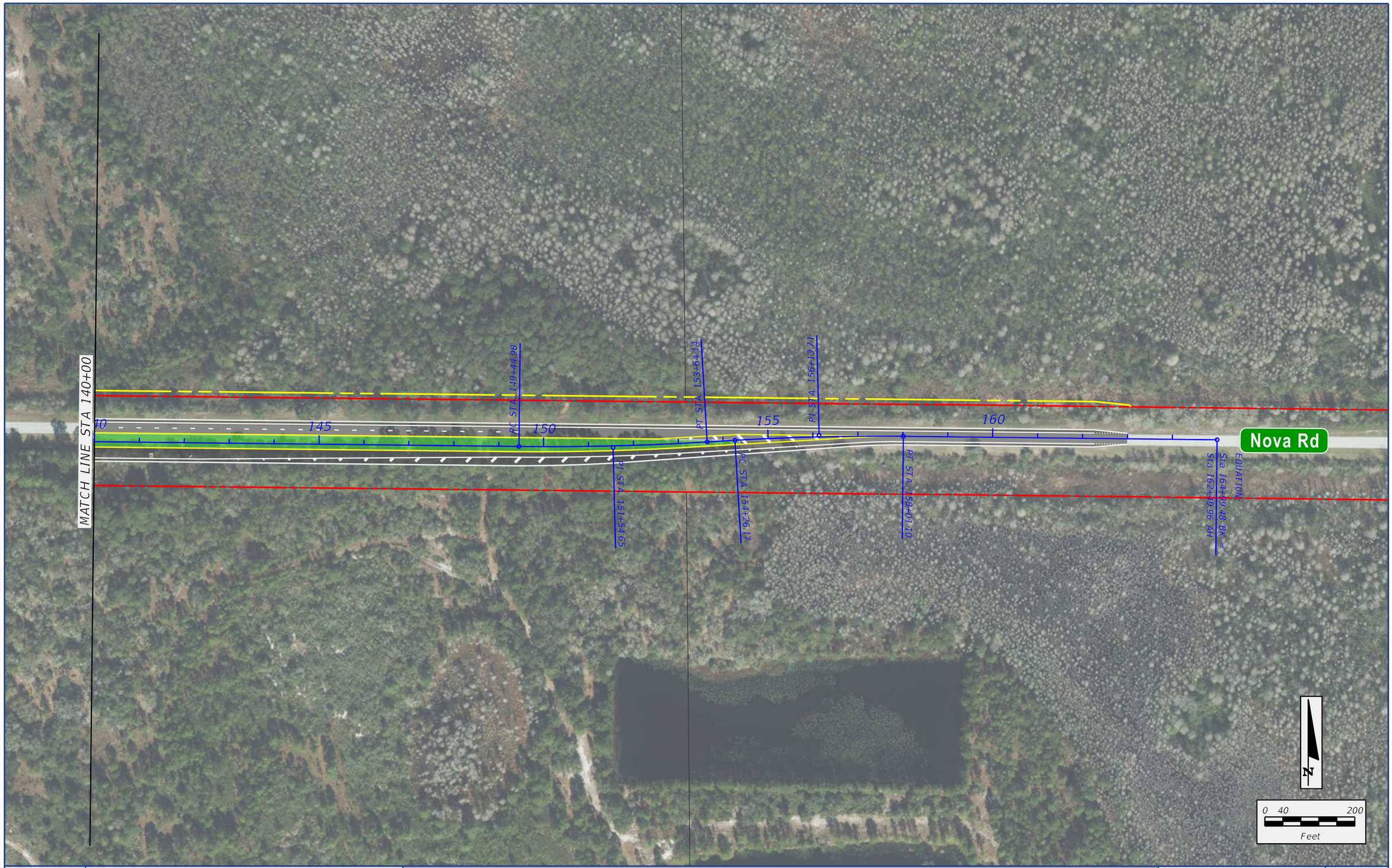
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed L/A Right-of-Way
- Potential OUC Utility Easement
- Property Lines
- Split Oak Forest
- Proposed Barrier Wall
- Proposed Pavement
- Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-14



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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

- Existing Right-of-Way
- Proposed Right-of-Way
- Proposed L/A Right-of-Way
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- Property Lines
- Split Oak Forest
- Proposed Barrier Wall
- Proposed Pavement
- Proposed Structure

Appendix B
Preferred Alternative

SHEET NO.
B-15

Preferred Alternative

Geometry Data

$FILE$
$TIME$
$DATE$
$USER$

Beginning Preferred Alternative Chain Description
==========
Point 456 N 1,457,516.2925 E 588,480.2519 Sta 600+00.00

Course from 456 to PC 4531 S 15° 55' 36.89" E Dist 855.7695

Curve Data

Curve 4531
P.I. Station 634+90.39 N 1,454,159.8913 E 589,438.0527
Delta = 84° 27' 02.36" (LT)
Degree = 1° 58' 25.23
Tangent = 2,634.6190
Length = 4,278.8536
Radius = 2,903.0000
External = 1,017.2839
Long Chord = 3,901.9107
Mid. Ord. = 753.3065
P.C. Station 608+55.77 N 1,456,693.3739 E 88,715.0844
P.T. Station 651+34.62 N 1,454,634.4760 E 592,029.5748
C.C. N 1,457,489.9889 E 591,506.6455
Back = S 15° 55' 36.89" E
Ahead = N 79° 37' 20.75" E
Chord Bear = S 58° 09' 08.07" E

Course from PT 4531 to PC 4532 N 79° 37' 20.75" E Dist 2,580.1137

Curve Data

Curve 4532
P.I. Station 702+93.99 N 1,455,563.8532 E 597,104.5418
Delta = 81° 22' 28.52" (RT)
Degree = 1° 54' 35.49"
Tangent = 2,579.2498
Length = 4,260.7635
Radius = 3,000.0000
External = 956.3278
Long Chord = 3,911.5816
Mid. Ord. = 725.1632
P.C. Station 677+14.74 N 1,455,099.2424 E 594,567.4831
P.T. Station 719+75.50 N 1,453,125.1683 E 597,944.3903
C.C. N 1,452,148.3162 E 595,107.8854
Back = N 79° 37' 20.75" E
Ahead = S 19° 00' 10.73" E
Chord Bear = S 59° 41' 24.99" E

Course from PT 4532 to 457 S 19° 00' 10.73" E Dist 1,524.4998

Point 457 N 1,451,683.7513 E 598,440.7939 Sta 735+00.00

Course from 457 to PC 4533 S 19° 00' 10.73" E Dist 11,883.6847

Curve Data

Curve 4533
P.I. Station 869+97.45 N 1,438,921.8884 E 602,835.7986
Delta = 35° 46' 31.18" (LT)
Degree = 1° 08' 45.30"
Tangent = 1,613.7673
Length = 3,121.9864
Radius = 5,000.0000
External = 253.9742
Long Chord = 3,071.5173
Mid. Ord. = 241.6972
P.C. Station 853+83.68 N 1,440,447.7080 E 602,310.3280
P.T. Station 885+05.67 N 1,437,991.1617 E 604,154.1280
C.C. N 1,442,075.7948 E 607,037.8361
Back = S 19° 00' 10.73" E
Ahead = S 54° 46' 41.92" E
Chord Bear = S 36° 53' 26.33" E

Course from PT 4533 to PC 4534 S 54° 46' 41.92" E Dist 1,911.5653

Curve Data

Curve 4534
P.I. Station 12+22.99 N 1,436,423.9694 E 606,373.9802
Delta = 25° 55' 44.53" (RT)
Degree = 1° 38' 13.28"
Tangent = 805.7560
Length = 1,583.9147
Radius = 3,500.0000
External = 91.5516
Long Chord = 1,570.4333
Mid. Ord. = 89.2179
P.C. Station 904+17.24 N 1,436,888.6824 E 605,715.7366
P.T. Station 920+01.15 N 1,435,718.2141 E 606,762.7632
C.C. N 1,434,029.4392 E 603,697.1410
Back = S 54° 46' 41.92" E
Ahead = S 28° 50' 57.38" E
Chord Bear = S 41° 48' 49.65" E

Course from PT 4534 to PC 4535 S 28° 50' 57.38" E Dist 1,154.4679

Curve Data

Curve 4535
P.I. Station 935+87.31 N 1,434,328.9137 E 607,528.0942
Delta = 29° 29' 02.33" (RT)
Degree = 3° 29' 32.57"
Tangent = 431.6869
Length = 844.2371
Radius = 1,640.5933
External = 55.8441
Long Chord = 834.9529
Mid. Ord. = 54.0058
P.C. Station 931+55.62 N 1,434,707.0248 E 607,319.8022
P.T. Station 939+99.86 N 1,433,897.2532 E 607,523.3122
C.C. N 1,433,915.4269 E 605,882.8195
Back = S 28° 50' 57.38" E
Ahead = S 0° 38' 04.94" W
Chord Bear = S 14° 06' 26.22" E

Course from PT 4535 to 459 S 0° 38' 04.94" W Dist 924.3006

End Region 1
Equation: Sta 949+24.16 (BK) = Sta 0+00.00 (AH) ----------

Begin Region 2

Point 459 N 1,432,973.0094 E 607,513.0732 Sta 0+00.00

==========
Ending chain 600 description

CURVE DATA 4532
PI STA. = 702+93.99
Δ = 81° 22' 29" (RT)
D = 1° 54' 35"
T = 2,579.25
L = 4,260.76
R = 3,000.00
PC STA. = 677+14.74
PT STA. = 719+75.50

CURVE DATA 4534
PI STA. = 912+22.99
Δ = 25° 55' 45" (RT)
D = 1° 38' 13"
T = 805.76
L = 1,583.91
R = 3,500.00
PC STA. = 904+17.24
PT STA. = 920+01.15

CURVE DATA 4535
PI STA. = 935+87.31
Δ = 29° 29' 02" (RT)
D = 3° 29' 33"
T = 431.69
L = 844.24
R = 1,640.59
PC STA. = 931+55.62
PT STA. = 939+99.86

CURVE DATA 4531
PI STA. = 634+90.39
Δ = 84° 27' 02" (LT)
D = 1° 58' 25"
T = 2,634.62
L = 4,278.85
R = 2,903.00
PC STA. = 608+55.77
PT STA. = 651+34.62

CURVE DATA 4533
PI STA. = 869+97.45
Δ = 35° 46' 31" (LT)
D = 1° 08' 45"
T = 1,613.77
L = 3,121.99
R = 5,000.00
PC STA. = 853+83.68
PT STA. = 885+05.67

PI STA 702+93.99
POT STA 795+00.00
PT STA 719+75.50
PC STA 677+14.74
POT STA 600+00.00
PC STA 608+55.77
PT STA 651+34.62
PI STA 634+90.39
PI STA 869+97.45
PC STA 853+83.68
PT STA 885+05.67
PI STA 912+22.99
PC STA 904+17.24
PT STA 920+01.15
PI STA 935+87.31
PC STA 931+55.62
PT STA 939+99.86
POT STA 948+93.38
4531
4532
4533
4534
4535
600
700
750
800
850
900

N

0 500 2500
Feet

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$DATE$
$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

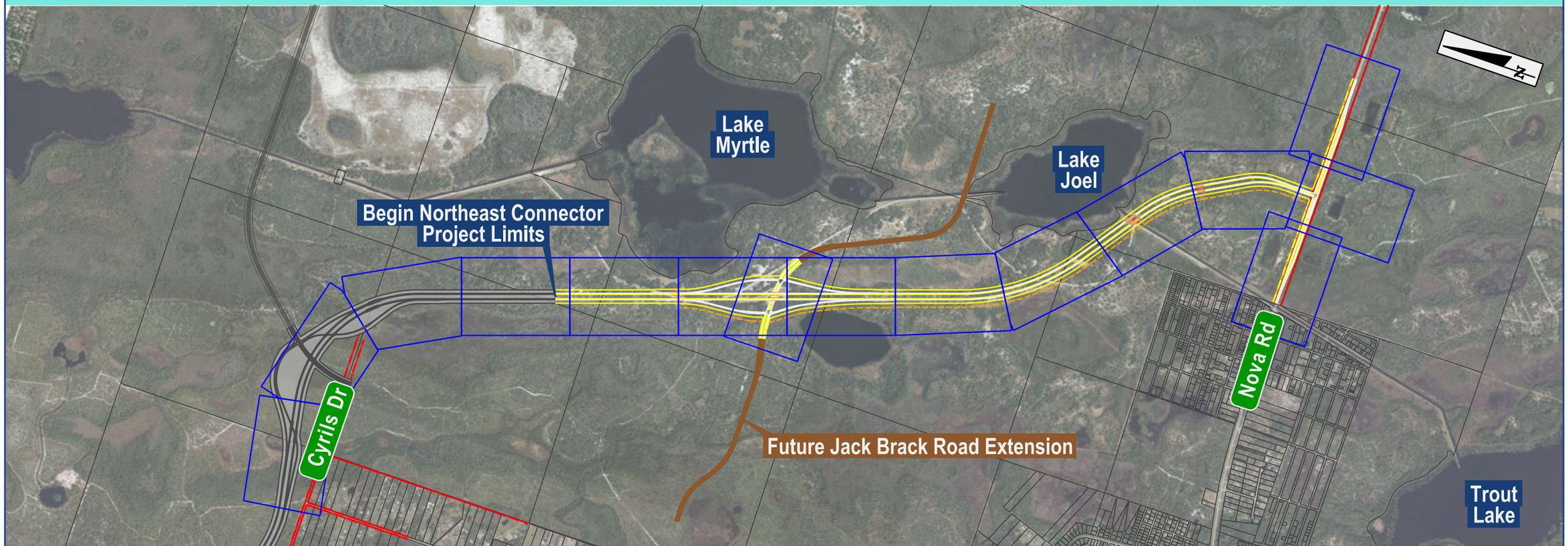
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Existing Right-of-Way
Proposed Right-of-Way
Proposed L/A Right-of-Way
Potential OUC Utility Easement
Property Lines
Split Oak Forest
Proposed Barrier Wall
Proposed Pavement
Proposed Structure

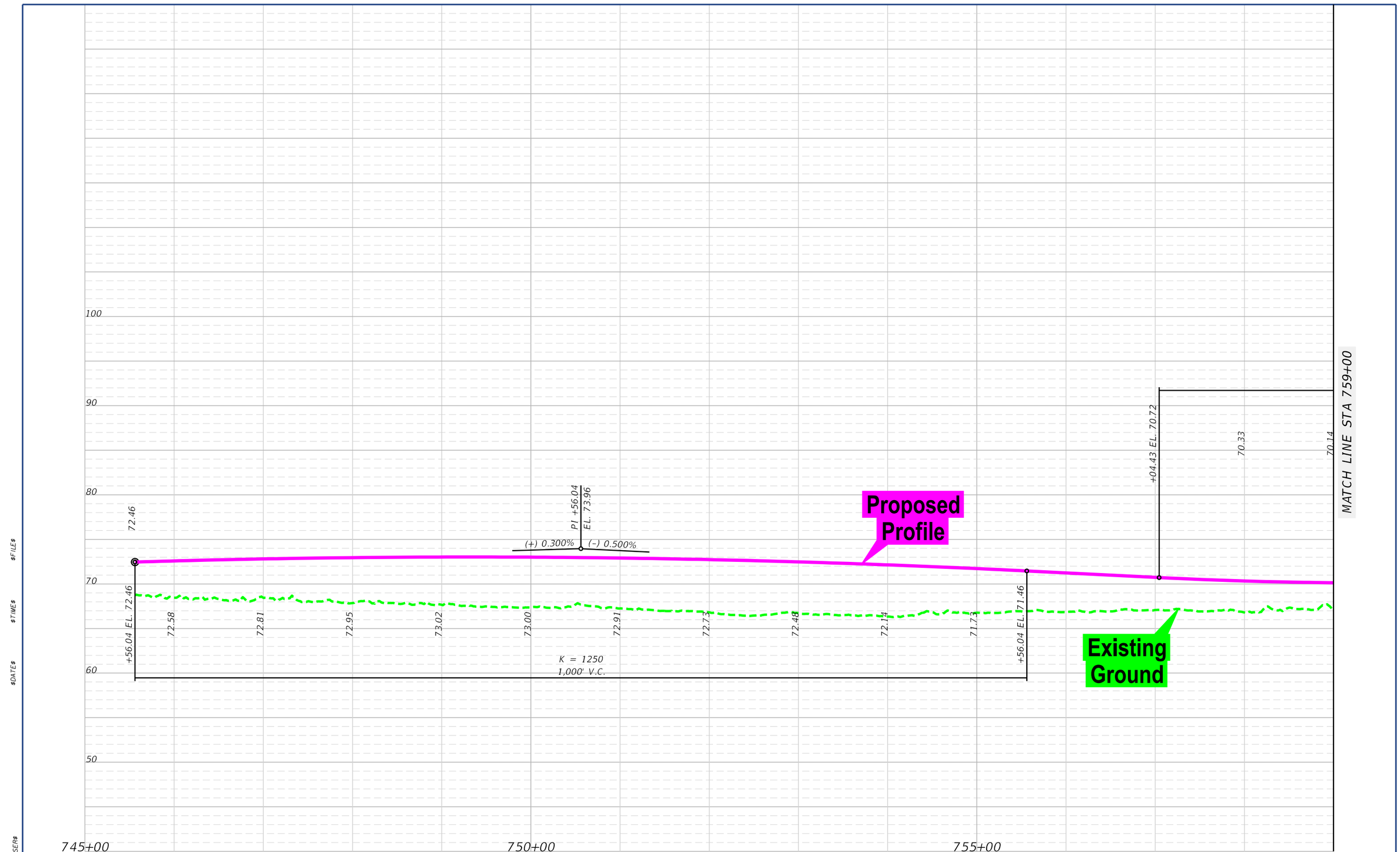
Appendix B
Preferred Alternative
Geometry

SHEET NO.
B-17

Preferred Alternative
Profile Sheets



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B	SHEET NO. V



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-18

MATCH LINE STA 759+00

MATCH LINE STA 773+00

100

90

80

70

60

50

K = 480
1,200' V.C.

70.15 70.37 70.80 71.43 72.28 73.33 74.59 76.06 77.74

PI +04.43
EL. 67.72

(-) 0.500% (+) 2.000%

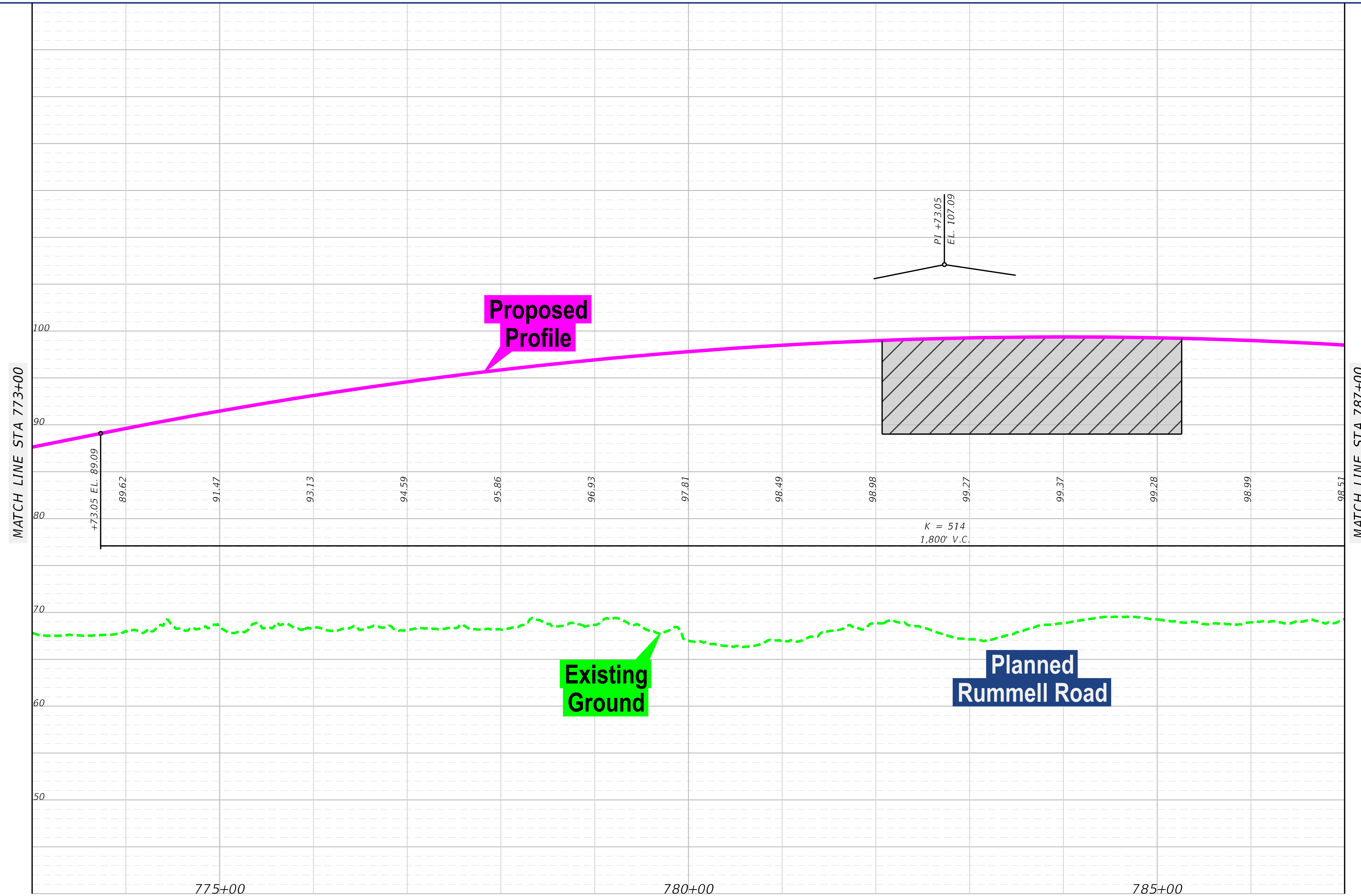
PI +04.43
EL. 79.72

Proposed Profile

Existing Ground

760+00 765+00 770+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-19

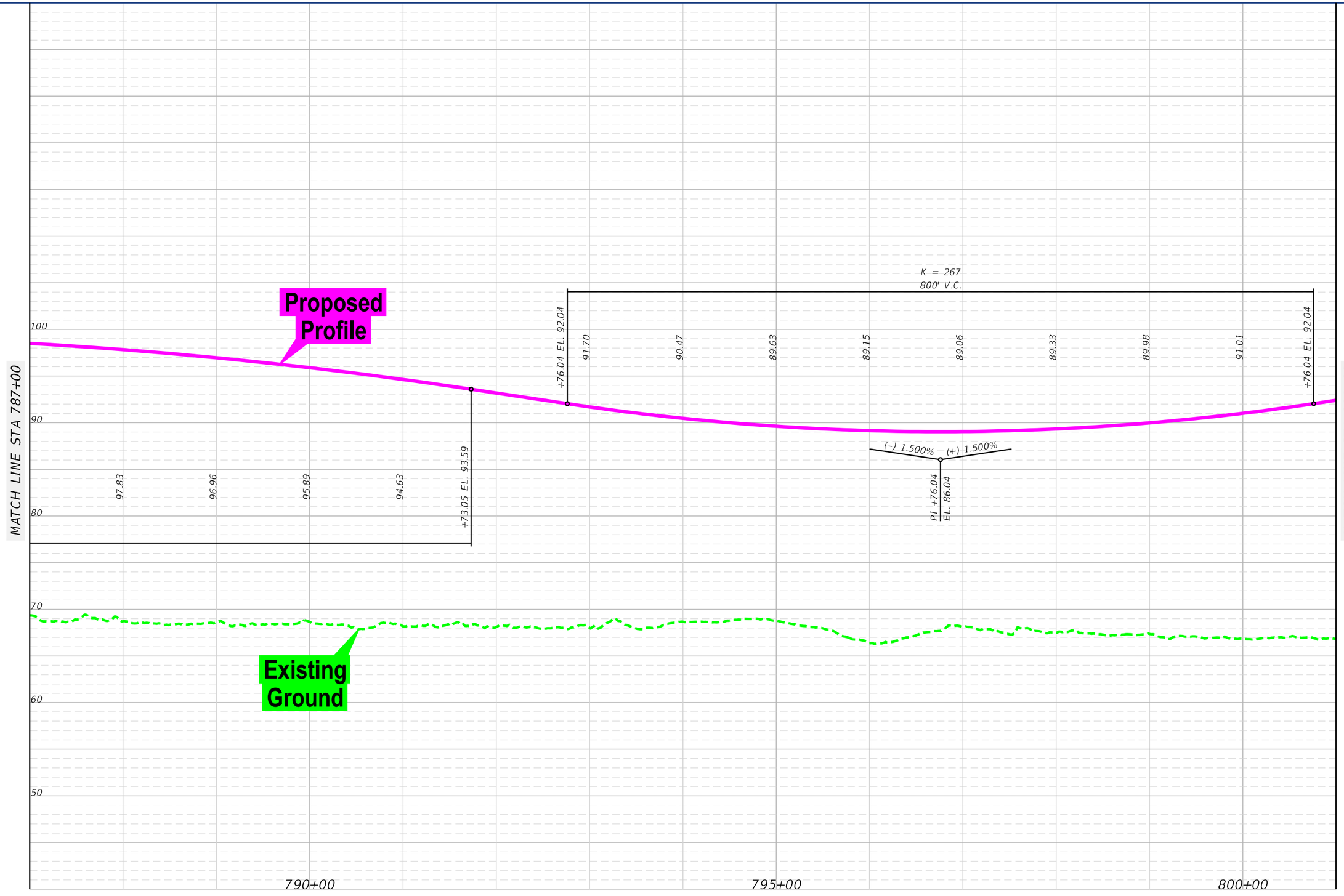


CENTRAL FLORIDA EXPRESSWAY AUTHORITY

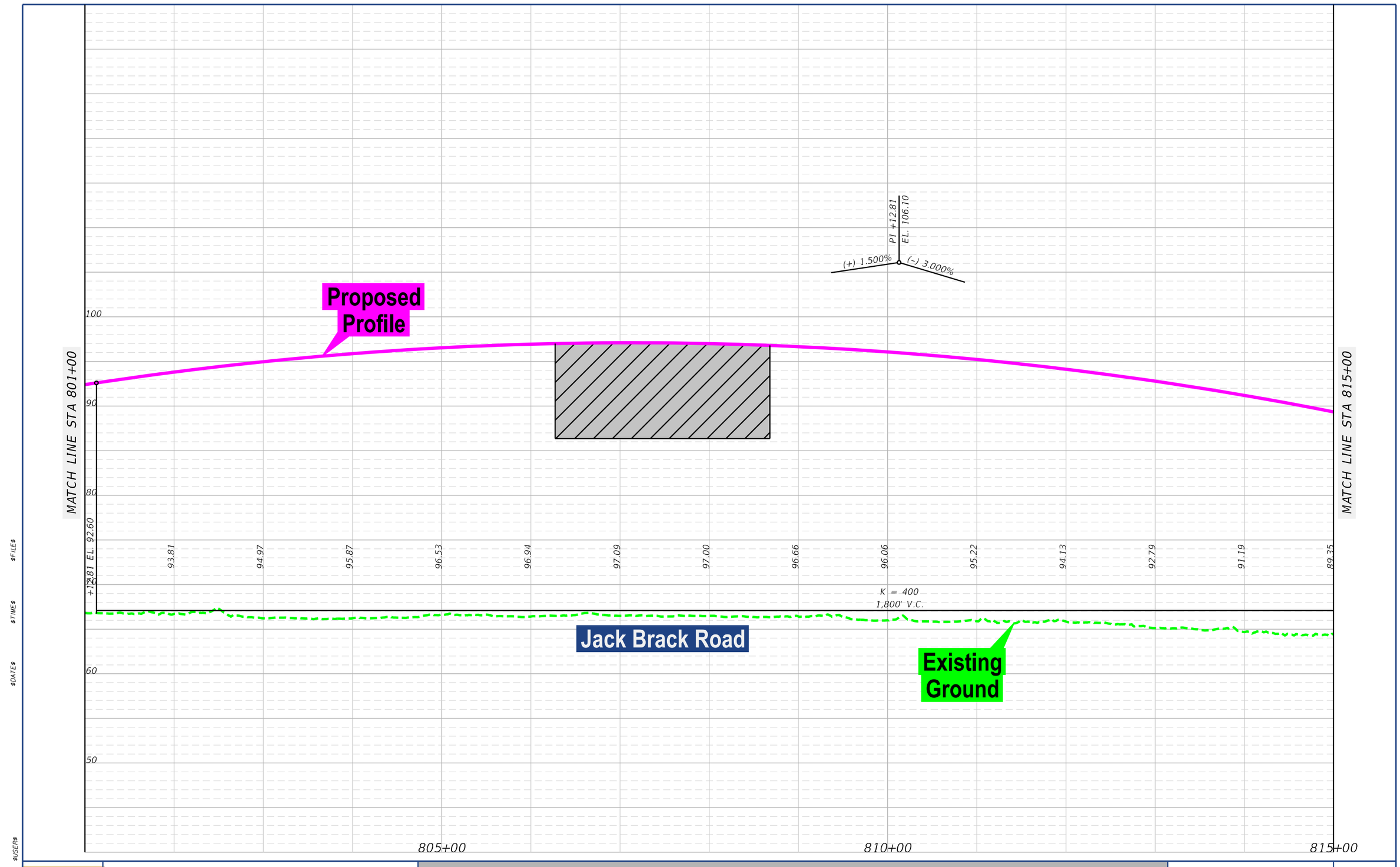
Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix B
Preferred Alternative
Profile

SHEET NO.
B-20



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-21

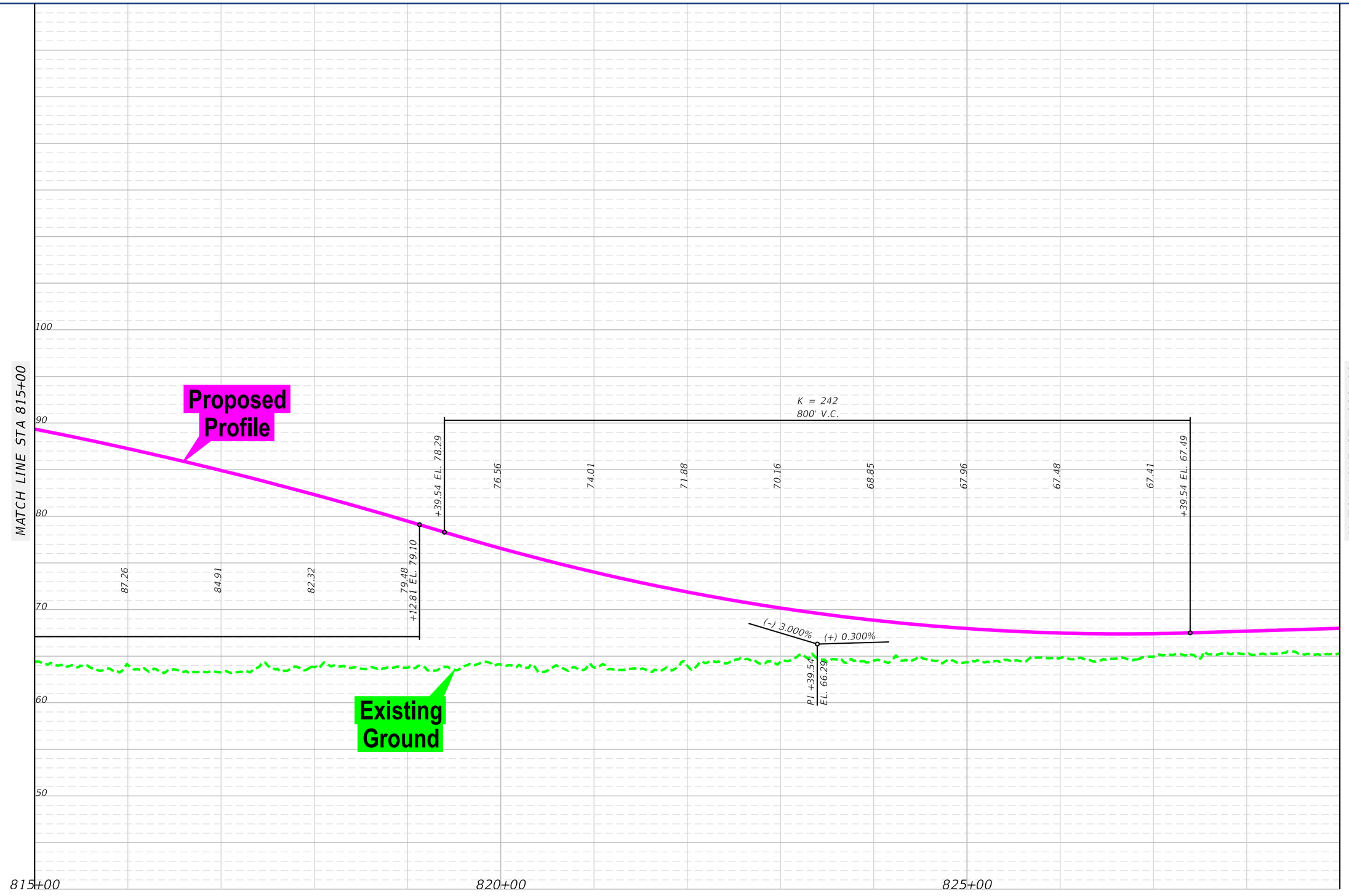


CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix B
Preferred Alternative
Profile

SHEET NO.
B-22



CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-23

MATCH LINE STA 829+00

MATCH LINE STA 843+00

100
90
80
70
60
50

Proposed Profile

Existing Ground

PI +96.04
EL. 70.96

(+) 0.300% (-) 0.300%

+96.04 EL. 68.26

68.28 68.56 68.81 69.02 69.20 69.35 69.47 69.55 69.60 69.61 69.60 69.54 69.46 69.34

K = 3000
1,800' V.C.

830+00 835+00 840+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix B
Preferred Alternative
Profile

SHEET NO.
B-24

MATCH LINE STA 843+00

MATCH LINE STA 857+00

100
90
80
70
60
50

K = 1000
800' V.C.

+34.79 EL. 66.95

66.77 66.59 66.50 66.52 66.63

Proposed Profile

Existing Ground

(-) 0.300% (+) 0.500%

+96.04 EL. 68.26

69.19 69.01 68.79 68.54

PI +34.79
EL. 65.75

845+00 850+00 855+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix B
Preferred Alternative
Profile

SHEET NO.
B-25

MATCH LINE STA 857+00

MATCH LINE STA 871+00

100
90
80
70
60
50

66.85
67.16
67.58
+34.79 EL. 67.75
+21.04 EL. 68.18
68.55
68.95
69.26
69.50
69.66
69.73
69.73
69.65
69.48
69.24
PI +21.04
EL. 70.68
(+) 0.500%
(-) 0.300%
K = 1250
1,000' V.C.

Proposed Profile

Existing Ground

860+00
865+00
870+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study	Appendix B Preferred Alternative Profile	SHEET NO. B-26

MATCH LINE STA 871+00

MATCH LINE STA 885+00

100

90

80

70

60

50

+21.84 EL. 69.18

+54.04 EL. 65.18

65.08

Proposed Profile

Existing Ground

875+00

880+00

885+00

$FILE$

$TIME$

$DATE$

$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile
			SHEET NO. B-27

MATCH LINE STA 885+00

MATCH LINE STA 899+00

100

90

80

70

60

50

K = 267
800' V.C.

65.14 | 65.58 | 66.39 | 67.57 | 69.13 | 71.07 | 73.38 | +54.04 EL. 74.78

+50.83 EL. 82.79 | 84.10 | 86.63 | 89.00 | 91.20

(-) 0.300% (+) 2.700%

PI +54.04
EL. 63.98

Proposed Profile

Existing Ground

885+00 890+00 895+00

$FILE$
$TIME$
$DATE$
$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix B
Preferred Alternative
Profile

SHEET NO.
B-28

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8/2/2021 3:43:37 PM
KentJM

MATCH LINE STA 899+00

MATCH LINE STA 913+00

PI +50.83
EL. 107.09

Proposed Profile

100
90
80
70
60
50

93.24 95.11 96.81 98.34 99.71 100.91 101.95 102.82 103.52 104.05 104.42 104.62 104.66 104.52

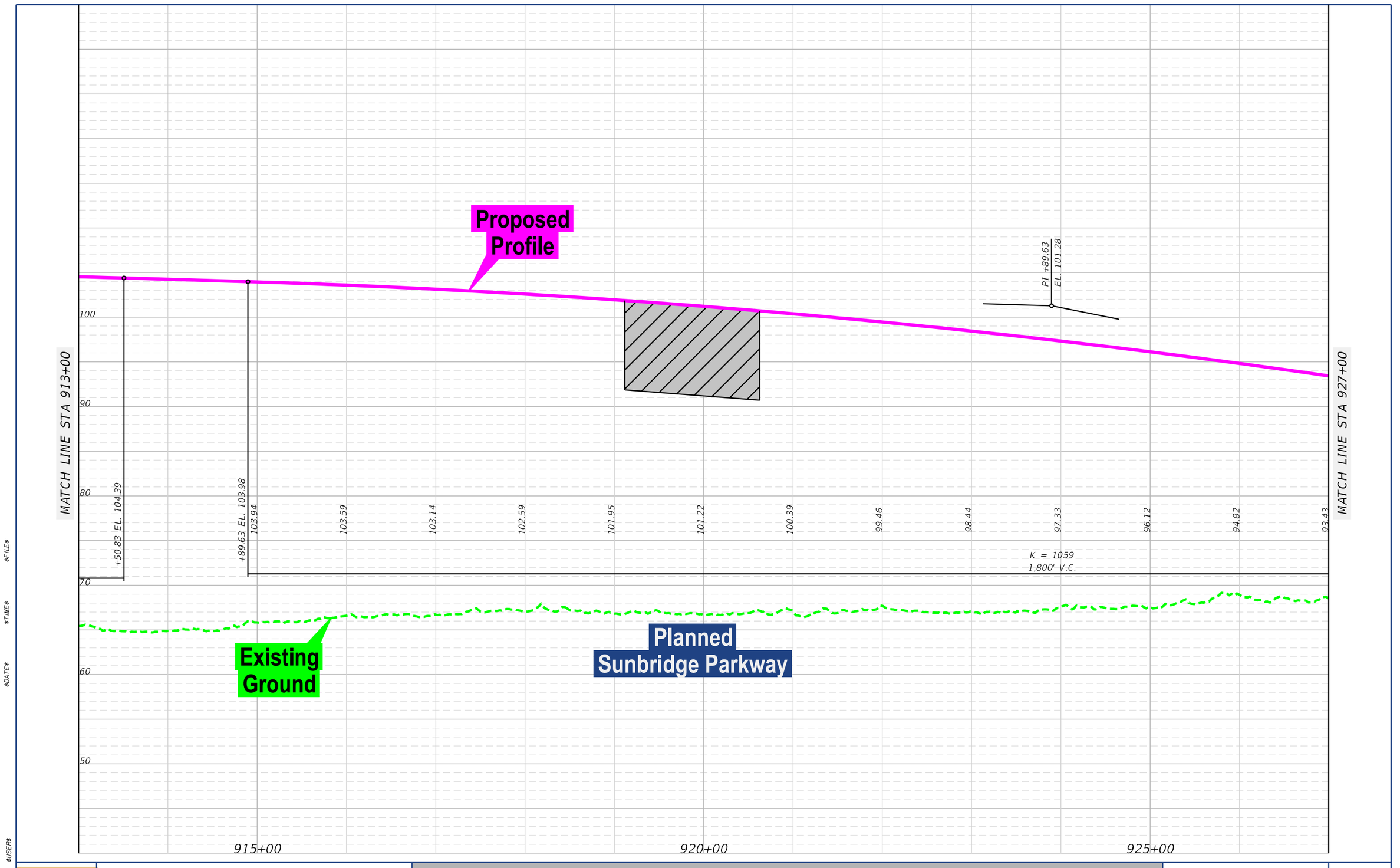
K = 600
1,800' V.C.

Canal 32C

Existing Ground

900+00 905+00 910+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-29



CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Northeast Connector Expressway - Phase 1
From Cyrils Drive to Nova Road (CR 532)
Project Development and Environment Study

Appendix B
Preferred Alternative
Profile

SHEET NO.
B-30

MATCH LINE STA 927+00

MATCH LINE STA 941+00

100
90
80
70
60
50

Proposed Profile

Existing Ground

91.94
90.35
88.67
86.90
85.03
+89.63 EL. 83.28

+47.16 EL. 74.13
73.12
71.49
70.23
69.33

930+00
935+00
940+00

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-31

MATCH LINE STA 941+00

100

90

80

70

60

50

K = 275
1,100' V.C.

℄ Nova Road

68.80 68.63 68.82 69.37 70.29 71.58 73.22 +47.16 EL. 74.13 75.02

Proposed Profile

Existing Ground

(-) 2.000% (+) 2.000%

PI +97.16
EL. 63.13

945+00 950+00 955+00

$FILE$
$TIME$
$DATE$
$USER$

CENTRAL FLORIDA EXPRESSWAY AUTHORITY	Northeast Connector Expressway - Phase 1 From Cyrils Drive to Nova Road (CR 532) Project Development and Environment Study		Appendix B Preferred Alternative Profile	SHEET NO. B-32

Appendix C

Cost Estimates

Jack Brack Road – Diamond Interchange

SUMMARY

ESTIMATED PROBABLE PROJECT COST

Northeast Connector Phase I - Segment A
Jack Brack Diamond Interchange Option

PREPARED BY RS&H

PROJECT CENTERLINE MILES:	1.899
NUMBER OF BRIDGES:	4

NE Connector Mainline				$53,435,164
Jack Brack Diamond Interchange				$9,825,738
TOTAL (2021 CONSTRUCTION COST)				**$63,260,902**
ENGINEERING / ADMINISTRATION / LEGAL (24%)				$15,182,616
RIGHT - OF - WAY	123	ACRES		$11,100,000
MITIGATION	15.0	ACRES	$ 150,000	$2,250,000
TOLL COLLECTION EQUIPMENT	4	LANES @	$ 275,000	$1,100,000
GRAND TOTAL PROJECT COST				**$92,893,518**

ESTIMATED PROBABLE CONSTRUCTION COST

NE Connector - Jack Brack Diamond Interchange (Mainline Roadway)

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** EXPRESSWAYS ****					
MAINLINE ROADWAY TYPICAL - Segment 1	2894 lf	0.548	MI	$4,899,924	$2,685,678
MAINLINE ROADWAY TYPICAL - Segment 2	2210 lf	0.419	MI	$4,899,924	$2,050,915
MAINLINE ROADWAY TYPICAL - Segment 3	4551 lf	0.862	MI	$4,899,924	$4,223,400
MAINLINE ADDITIONAL LANE - Segment 1	390 lf	0.074	MI	$425,592	$31,436
MAINLINE ADDITIONAL LANE - Segment 2	665 lf	0.126	MI	$425,592	$53,602
MAINLINE ADDITIONAL LANE - Segment 3	864 lf	0.164	MI	$425,592	$69,642
MAINLINE ADDITIONAL LANE - Segment 4	622 lf	0.118	MI	$425,592	$50,136
**** BRIDGES ****					
BRIDGE 1A (234 lf x 63 lf)					
SB NE CONNECTOR OVER FUTURE ROAD NETWORK	14,634 sf	14,634	SF	$125	$1,829,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$681,671	$681,671
BRIDGE 1B (200 lf x 63 lf)					
NB NE CONNECTOR OVER FUTURE ROAD NETWORK	12,475 sf	12,475	SF	$125	$1,559,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$673,391	$673,391
BRIDGE 2A (157 lf x 51 lf)					
SB NE CONNECTOR OVER JACK BRACK ROAD	7,930 sf	7,930	SF	$125	$991,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$567,431	$567,431
BRIDGE 2B (160 lf x 51 lf)					
NB NE CONNECTOR OVER JACK BRACK ROAD	8,056 sf	8,056	SF	$125	$1,007,000
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$569,115	$569,115
RETAINING WALLS (MSE & ABUTMENTS)	28,696 sf	28,696	SF	$34	$975,660
**** ADDITIONAL ITEMS ****					
ADDITIONAL EARTHWORK FOR FILL OVER 3 FT	1,232,838 cy	1,232,838	CY	$8	$9,862,704
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING)	10,028 lf	1.899	MI	$554,800	$1,053,700
OVERHEAD TRUSS SIGNS	8 ea	8	EA	$250,000	$2,000,000
OVERHEAD CANTILEVER SIGNS	6 ea	6	EA	$80,000	$480,000
MULTIPOST SIGNS	8 ea	8	EA	$5,500	$44,000
FIBER OPTIC NETWORK (FON) (CONDUIT, 72 WIRE, PULL BOXES, SPLICE, ETC.)	10,028 lf	1.899	MI	$350,000	$664,735
DYNAMIC MESSAGE SIGNS	0 ea	0	EA	$250,000	$0
RETENTION POND CONSTRUCTION	47.5 ac	47.50	AC	$77,141	$3,664,181
RETENTION POND EXCAVATION	188,191 cy	188,190.50	CY	$5	$997,410
RETENTION POND SODDING	138,424 sy	138,424.00	SY	$3	$346,060
RETENTION POND CLEARING & GRUBBING	36 ac	36.20	AC	$17,000	$615,400
RETENTION POND ADDITIONAL DRAINAGE	1 ea	1.00	EA	$1,288,259	$1,288,259
REMOVE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	12977 cy	12,977	CY	$5	$68,778
REPLACE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	12977 cy	12,977	CY	$8	$107,709
MAINLINE TOLL GANTRY (2 LANE, 2 TRUSSES AND EQUIP. BLDG)	0 ea	-	EA	$1,750,000	$0

SUB-TOTAL	$39,211,887
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$196,059
MAINTENANCE OF TRAFFIC (1%)	$392,119
MOBILIZATION (9.5%)	$3,725,129
SUB-TOTAL ROADWAY	$34,671,053
ROADWAY CONTINGENCY (20%)	$6,934,211
SUB-TOTAL BRIDGES	$8,854,142
BRIDGE CONTINGENCY (10%)	$885,414
SUB-TOTAL	$51,344,820
AESTHETICS CONTINGENCY (3%)	$1,540,345
RELOCATE UTILITIES	$0
ALLOWANCE FOR DISPUTES REVIEW BOARD	$50,000
WORK ORDER ALLOWANCE	$500,000
TOTAL (2019 CONSTRUCTION COST)	**$53,435,164**

ESTIMATED PROBABLE CONSTRUCTION COST

Jack Brack Diamond Interchange

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** RAMPS ****					
ONE LANE RAMPS (OPEN DRAINAGE) - SB EXIT RAMP	1385 lf	0.262	MI	$1,223,837	$321,025
ONE LANE RAMPS (OPEN DRAINAGE) - SB ENTRANCE RAMP	1646 lf	0.312	MI	$1,223,837	$381,522
ONE LANE RAMPS (OPEN DRAINAGE) - NB EXIT RAMP	1580 lf	0.299	MI	$1,223,837	$366,224
ONE LANE RAMPS (OPEN DRAINAGE) - NB ENTRANCE RAMP	1530 lf	0.290	MI	$1,223,837	$354,634
TWO LANE RAMPS (OPEN DRAINAGE) - SB EXIT RAMP	527 lf	0.100	MI	$1,661,517	$165,837
TWO LANE RAMPS (OPEN DRAINAGE) - SB ENTRANCE RAMP	436 lf	0.083	MI	$1,661,517	$137,201
TWO LANE RAMPS (OPEN DRAINAGE) - NB EXIT RAMP	396 lf	0.075	MI	$1,661,517	$124,614
TWO LANE RAMPS (OPEN DRAINAGE) - NB ENTRANCE RAMP	638 lf	0.121	MI	$1,661,517	$200,767
TYPICAL 1 LANE ON-RAMP TAPER W/GORE - MAINLINE UNCHANGED	2 ea	2	EA	$219,329	$438,659
TYPICAL 1 LANE OFF-RAMP TAPER W/GORE - MAINLINE UNCHANGED	2 ea	2	EA	$129,358	$258,716
**** ARTERIAL ROADS ****					
Jack Brack Road					
4-LANE DIVIDED	2213 lf	0.419	MI	$4,429,390	$1,856,485
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 1	355 lf	0.067	MI	$406,857	$27,355
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 2	358 lf	0.068	MI	$406,857	$27,586
ADDITIONAL LANES MEDIAN WIDENING - Segment 1	764 lf	0.145	MI	$389,257	$56,324
ADDITIONAL LANES MEDIAN WIDENING - Segment 2	707 lf	0.134	MI	$389,257	$52,122
MEDIAN CROSSOVER - NEW CONSTRUCTION	2 ea	2	EA	$8,080	$16,160.00
DEMOLISH EXISTING ARTERIAL ROAD	0 lf	0.000	MI	$305,760	$0
**** INTERSECTION SIGNALIZATION ****					
SIGNALIZATION PER INTERCHANGE	2 ea	2	EA	$269,948	$539,896
**** ADDITIONAL ITEMS ****					
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING)	8,138 lf	1.541	MI	$277,400	$427,553
MULTIPOST SIGNS	8 ea	8	EA	$5,500	$44,000
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	1 int	1	INT	$330,000	$330,000
RETENTION POND CONSTRUCTION	0 sf	0.00	AC	$177,813	$0
RAMP TOLL GANTRY (2 RAMPS @ 1 LANE EA, 1 TRUSS AND EQUIP. BLDG)	1 ea	1	EA	$1,250,000	$1,250,000

SUB-TOTAL	$7,376,680
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$36,883
MAINTENANCE OF TRAFFIC (1%)	$73,767
MOBILIZATION (9.5%)	$700,785
SUB-TOTAL	$8,188,115
ROADWAY CONTINGENCY (20%)	$1,637,623
TOTAL (2019 CONSTRUCTION COST)	**$9,825,738**

Bridge Development Report Cost Estimating

Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot. These total cost numbers are calculated exclusively for the bridge cost as defined in the General Section of this chapter. Price computed by Steps 1 and 2 should be generally within the range of cost as supplied herein. If the cost falls outside the provided range, good justification must be provided.

Bridge Superstructure Type	Total Cost per Square Foot Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab- Simple Span [1]	$115	$160
Pre-cast Concrete Slab - Simple Span [1]	$110	$200
Medium Span Bridges:		
Concrete Deck / Steel Girder - Simple Span [1]	$125	$142
Concrete Deck / Steel Girder - Continuous Span [1]	$135	$170
Concrete Deck / Prestressed Girder - Simple Span [1]	$90	$145
Concrete Deck / Prestressed Girder - Continuous Span [1]	$95	$211
Concrete Deck / Steel Box Girder [1] -	$140	$180
Span range from 150' to 280' (for curvature, add 15% premium)		
Segmental Concrete Box Girders - Cantilever Construction	$140	$160
Span range from 150' to 280'		
Demolition Costs:		
Typical	$35	$60
Bascule	$60	$70
Project Type		
Widening (Construction Only)	$85	$160

[1] Increase the cost by twenty percent for phased construction

TYPICAL XWAY / CROSSROAD — Bridge 1A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	31.25	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$681,671**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			Use 94 for 3 lanes (82+12)
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,614	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	400	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,214	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	31.25			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	N		0 SF	
TOTAL RE-WALL >>>>>>>	**7,196**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE — DRAINAGE SIDES: 2

BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	1,128	LF	$35.00	$39,480.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	27,383	SY	$1.50	$41,074.50
SHOULDER GUTTER (LESS S INLETS)	4,729	LF	$24.00	$113,495.59
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,857	LF	$4.00	$19,428.57
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$681,670.66

TYPICAL XWAY / CROSSROAD — Bridge 1B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.35	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$673,391**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,563	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	400	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,163	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.35			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	N		0 SF	
TOTAL RE-WALL >>>>>>>	**6,861**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE — DRAINAGE SIDES: 2

BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	1,128	LF	$35.00	$39,480.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	25,703	SY	$1.50	$38,554.50
SHOULDER GUTTER (LESS S INLETS)	4,523	LF	$24.00	$108,558.45
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,651	LF	$4.00	$18,605.71
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$673,390.66

TYPICAL XWAY / CROSSROAD — Bridge 2A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.05	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$567,431**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,424	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,056	LF		
APPROACH SLAB WIDTH >>>>>>>	50.66	FT		

ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.05			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,051	SF
TOTAL RE-WALL >>>>>>>	**7,201**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00	$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	23,177	SY	$1.50	$34,765.50
SHOULDER GUTTER (LESS S INLETS)	4,116	LF	$24.00	$98,782.48
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,223	LF	$4.00	$16,890.95
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$567,430.93

TYPICAL XWAY / CROSSROAD — Bridge 2B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.25	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$569,115**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,434	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,066	LF		
APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.25			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,060	SF
TOTAL RE-WALL >>>>>>>	**7,278**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00	$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	23,514	SY	$1.50	$35,271.00
SHOULDER GUTTER (LESS S INLETS)	4,158	LF	$24.00	$99,793.01
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,265	LF	$4.00	$17,059.37
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$569,115.38

Bridge End Bents and Wing Walls

Segment 1	Avg Height	Area (sf)
Bridge 1A - Begin Bridge	32.1	4072
Bridge 1A - End Bridge	30.4	3753
Bridge 1B - Begin Bridge	30.2	3716
Bridge 1B - End Bridge	30.5	3772
Bridge 2A - Begin Bridge	29.7	3269
Bridge 2A - End Bridge	30.4	3388
Bridge 2B - Begin Bridge	30.1	3337
Bridge 2B - End Bridge	30.4	3388
Segment 1 Total		**28696**

Formula for Mainline: (62.66(H) + 2H^2)
62.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation

Formula for Mainline: (50.66(H) + 2H^2)
50.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation

*Adjusted to remove wingwall(s) where MSE walls are used

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

MSE Walls

Segment 3	Measured Area (sf)
Bridge 1A - Begin Bridge (one side)	
Bridge 1A - End Bridge (one side)	
Bridge 1B - Begin Bridge (one side)	
Bridge 1B - End Bridge (one side)	
Bridge 2A - Begin Bridge	
Bridge 2A - End Bridge	
Bridge 2B - Begin Bridge	
Bridge 2B - End Bridge	
Segment 3 Total	0

Additional Earthwork for Retaining Walls				
Segment 3	Width (lf)	Measured Area (sf)	Volume (cf)	Volume (cy)
Bridge 1A Begin Bridge (Northside Only)	0	0	0	0
Bridge 1A End Bridge (Northside Only)	0	0	0	0
Bridge 1B Begin Bridge (Southside Only)	0	0	0	0
Bridge 1B End Bridge (Southside Only)	0	0	0	0
Segment 3 Total				**0**

Formula: Width * Measured Area
Measured Area in MicroStation

Input area sf as measured in MicroStaion
Output

Additional Earthwork over 3 ft Fill

Jack Brack Parclo				Area (sf)	Length	Avg Height	Volume (cf)	Volume (cy)
Area 1	753+56.04	to	758+47.03	675	490.99	1.37	150862	5588
Area 2	760+53.58	to	782+49.63	30089	2196.05	13.70	8208450	304017
Area 3	784+65.94	to	806+75.17	50557	2209.23	22.88	15649301	579604
Area 4	808+32.94	to	828+14.48	32413	1981.54	16.36	9186814	340253
Area 5	833+40.11	to	843+62.24	415	1022.13	0.41	91144	3376
Jack Brack Diamond Total								**1232838**

Formula for Mainline: (218(H) + 4H^2)*Length
218 is the width of roadway from WB outside shoulder to EB outside shoulder
assumes a 4:1 front slope

H = Height of Fill
218 is the width of typical section at a 3 ft fill depth which is taken into account in the cost per mile calculations

Formula for 1-Lane Ramp: (31(H) + 2H^2)*Length
31 is the width of 15 lane, 2 6-foot shoulders, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (46(H) + 2H^2)*Length
46 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

*Adjust for Wall Earthwork

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

Additional Earthwork for Muck				
Segment 3	Area (sf)	Avg Height	Volume (cf)	Volume (cy)
Area 1	87593.66	4	350375	12977
Segment 3 Total				**12977**

Formula: Area*Avg Height

Input area sf as measured in MicroStaion

Jack Brack Road – Partial Cloverleaf Interchange

SUMMARY

ESTIMATED PROBABLE PROJECT COST

Northeast Connector Phase I - Segment A
Jack Brack Partial Cloverleaf Interchange Option

PREPARED BY RS&H

PROJECT CENTERLINE MILES:	1.899
NUMBER OF BRIDGES:	4

NE Connector Mainline				$54,298,395
Jack Brack Partial Cloverleaf Interchange				$8,928,101
TOTAL (2021 CONSTRUCTION COST)				**$63,226,496**
ENGINEERING / ADMINISTRATION / LEGAL (24%)				$15,174,359
RIGHT - OF - WAY	116	ACRES		$10,500,000
MITIGATION	13.0	ACRES @	$ 150,000	$1,950,000
TOLL COLLECTION EQUIPMENT	4	LANES @	$ 275,000	$1,100,000
GRAND TOTAL PROJECT COST				**$91,950,855**

ESTIMATED PROBABLE CONSTRUCTION COST

NE Connector - Jack Brack Partial Cloverleaf Interchange (Mainline Roadway)

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** EXPRESSWAYS ****					
MAINLINE ROADWAY TYPICAL - Segment 1	2894 lf	0.548	MI	$4,899,924	$2,685,678
MAINLINE ROADWAY TYPICAL - Segment 2	2197 lf	0.416	MI	$4,899,924	$2,038,851
MAINLINE ROADWAY TYPICAL - Segment 3	4552 lf	0.862	MI	$4,899,924	$4,224,328
MAINLINE ADDITIONAL LANE - Segment 1	256 lf	0.048	MI	$425,592	$20,635
MAINLINE ADDITIONAL LANE - Segment 2	630 lf	0.119	MI	$425,592	$50,781
MAINLINE ADDITIONAL LANE - Segment 3	2960 lf	0.561	MI	$425,592	$238,589
MAINLINE ADDITIONAL LANE - Segment 4	1498 lf	0.284	MI	$425,592	$120,746
**** BRIDGES ****					
BRIDGE 1A (234 lf x 63 lf)					
SB NE CONNECTOR OVER FUTURE ROAD NETWORK	14,634 sf	14,634	SF	$125	$1,829,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$681,208	$681,208
BRIDGE 1B (200 lf x 63 lf)					
NB NE CONNECTOR OVER FUTURE ROAD NETWORK	12,475 sf	12,475	SF	$125	$1,559,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$673,391	$673,391
BRIDGE 2A (170 lf x 63 lf)					
SB NE CONNECTOR OVER JACK BRACK ROAD	10,604 sf	10,604	SF	$125	$1,325,500
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$586,872	$586,872
BRIDGE 2B (170 lf x 63 lf)					
NB NE CONNECTOR OVER JACK BRACK ROAD	10,806 sf	10,806	SF	$125	$1,350,750
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$586,872	$586,872
RETAINING WALLS (MSE & ABUTMENTS)	30,125 sf	30,125	SF	$34	$1,024,233
**** ADDITIONAL ITEMS ****					
ADDITIONAL EARTHWORK FOR FILL OVER 3 FT	1,218,448 cy	1,218,448	CY	$8	$9,747,584
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING)	10,028 lf	1.899	MI	$554,800	$1,053,700
OVERHEAD TRUSS SIGNS	8 ea	8	EA	$250,000	$2,000,000
OVERHEAD CANTILEVER SIGNS	6 ea	6	EA	$80,000	$480,000
MULTIPOST SIGNS	8 ea	8	EA	$5,500	$44,000
FIBER OPTIC NETWORK (FON) (CONDUIT, 72 WIRE, PULL BOXES, SPLICE, ETC.)	10,028 lf	1.899	MI	$350,000	$664,735
DYNAMIC MESSAGE SIGNS	0 ea	0	EA	$250,000	$0
RETENTION POND CONSTRUCTION	47.5 ac	47.50	AC	$77,141	$3,664,181
RETENTION POND EXCAVATION	188,191 cy	188,190.50	CY	$5	$997,410
RETENTION POND SODDING	138,424 sy	138,424.00	SY	$3	$346,060
RETENTION POND CLEARING & GRUBBING	36 ac	36.20	AC	$17,000	$615,400
RETENTION POND ADDITIONAL DRAINAGE	1 ea	1.00	EA	$1,288,259	$1,288,259
REMOVE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	0 cy	-	CY	$5	$0
REPLACE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	0 cy	-	CY	$8	$0
MAINLINE TOLL GANTRY (2 LANE, 2 TRUSSES AND EQUIP. BLDG)	0 ea	-	EA	$1,750,000	$0

SUB-TOTAL	$39,898,388
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$199,492
MAINTENANCE OF TRAFFIC (1%)	$398,984
MOBILIZATION (9.5%)	$3,790,347
SUB-TOTAL ROADWAY	$34,669,759
ROADWAY CONTINGENCY (20%)	$6,933,952
SUB-TOTAL BRIDGES	$9,617,452
BRIDGE CONTINGENCY (10%)	$961,745
SUB-TOTAL	$52,182,908
AESTHETICS CONTINGENCY (3%)	$1,565,487
RELOCATE UTILITIES	$0
ALLOWANCE FOR DISPUTES REVIEW BOARD	$50,000
WORK ORDER ALLOWANCE	$500,000
TOTAL (2019 CONSTRUCTION COST)	**$54,298,395**

ESTIMATED PROBABLE CONSTRUCTION COST

Jack Brack Partial Cloverleaf Interchange

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** RAMPS ****					
ONE LANE RAMPS (OPEN DRAINAGE) - SB EXIT RAMP	1550 lf	0.294	MI	$1,223,837	$359,270
ONE LANE RAMPS (OPEN DRAINAGE) - SB ENTRANCE RAMP	900 lf	0.170	MI	$1,223,837	$208,608
ONE LANE RAMPS (OPEN DRAINAGE) - NB EXIT RAMP	847 lf	0.160	MI	$1,223,837	$196,324
ONE LANE RAMPS (OPEN DRAINAGE) - NB ENTRANCE RAMP	2417 lf	0.458	MI	$1,223,837	$560,230
TWO LANE RAMPS (OPEN DRAINAGE) - SB EXIT RAMP	426 lf	0.081	MI	$1,661,517	$134,054
TWO LANE RAMPS (OPEN DRAINAGE) - NB EXIT RAMP	238 lf	0.045	MI	$1,661,517	$74,894
TYPICAL 1 LANE ON-RAMP TAPER W/GORE - MAINLINE UNCHANGED	2 ea	2	EA	$219,329	$438,659
TYPICAL 1 LANE OFF-RAMP TAPER W/GORE - MAINLINE UNCHANGED	2 ea	2	EA	$129,358	$258,716
**** ARTERIAL ROADS ****					
Jack Brack Road					
4-LANE DIVIDED	2204 lf	0.417	MI	$4,429,390	$1,848,935
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 1	348 lf	0.066	MI	$406,857	$26,816
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 2	276 lf	0.052	MI	$406,857	$21,268
ADDITIONAL LANES MEDIAN WIDENING - Segment 1	387 lf	0.073	MI	$389,257	$28,531
ADDITIONAL LANES MEDIAN WIDENING - Segment 2	425 lf	0.080	MI	$389,257	$31,332
MEDIAN CROSSOVER - NEW CONSTRUCTION	2 ea	2	EA	$8,080	$16,160.00
DEMOLISH EXISTING ARTERIAL ROAD	0 lf	0.000	MI	$305,760	$0
**** INTERSECTION SIGNALIZATION ****					
SIGNALIZATION PER INTERCHANGE	2 ea	2	EA	$269,948	$539,896
**** ADDITIONAL ITEMS ****					
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING)	6,378 lf	1.208	MI	$277,400	$335,087
MULTIPOST SIGNS	8 ea	8	EA	$5,500	$44,000
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	1 int	1	INT	$330,000	$330,000
RETENTION POND CONSTRUCTION	0 sf	0.00	AC	$177,813	$0
RAMP TOLL GANTRY (2 RAMPS @ 1 LANE EA, 1 TRUSS AND EQUIP. BLDG)	1 ea	1	EA	$1,250,000	$1,250,000

SUB-TOTAL	$6,702,779
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$33,514
MAINTENANCE OF TRAFFIC (1%)	$67,028
MOBILIZATION (9.5%)	$636,764
SUB-TOTAL	$7,440,084
ROADWAY CONTINGENCY (20%)	$1,488,017
TOTAL (2019 CONSTRUCTION COST)	**$8,928,101**

Bridge Development Report Cost Estimating

Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot. These total cost numbers are calculated exclusively for the bridge cost as defined in the General Section of this chapter. Price computed by Steps 1 and 2 should be generally within the range of cost as supplied herein. If the cost falls outside the provided range, good justification must be provided.

Bridge Superstructure Type	Total Cost per Square Foot Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab- Simple Span [1]	$115	$160
Pre-cast Concrete Slab - Simple Span [1]	$110	$200
Medium Span Bridges:		
Concrete Deck / Steel Girder - Simple Span [1]	$125	$142
Concrete Deck / Steel Girder - Continuous Span [1]	$135	$170
Concrete Deck / Prestressed Girder - Simple Span [1]	$90	$145
Concrete Deck / Prestressed Girder - Continuous Span [1]	$95	$211
Concrete Deck / Steel Box Girder [1] -	$140	$180
Span range from 150' to 280' (for curvature, add 15% premium)		
Segmental Concrete Box Girders - Cantilever Construction	$140	$160
Span range from 150' to 280'		
Demolition Costs:		
Typical	$35	$60
Bascule	$60	$70
Project Type		
Widening (Construction Only)	$85	$160

[1] Increase the cost by twenty percent for phased construction

TYPICAL XWAY / CROSSROAD — Bridge 1A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	31.2	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$681,208**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			Use 94 ft since this is a 3 lane bridge (82 lf +12 lf)
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,611	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	400	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,211	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	31.2			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	N		0 SF	
TOTAL RE-WALL >>>>>>>	**7,177**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	1,128	LF	$35.00	$39,480.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	27,288	SY	$1.50	$40,932.00
SHOULDER GUTTER (LESS S INLETS)	4,718	LF	$24.00	$113,221.30
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,846	LF	$4.00	$19,382.86
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$681,208.16

TYPICAL XWAY / CROSSROAD — Bridge 1B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.35	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$673,391**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,563	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	400	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,163	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.35			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	N		0 SF	
TOTAL RE-WALL >>>>>>>	**6,861**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	1,128	LF	$35.00	$39,480.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	25,703	SY	$1.50	$38,554.50
SHOULDER GUTTER (LESS S INLETS)	4,523	LF	$24.00	$108,558.45
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,651	LF	$4.00	$18,605.71
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$673,390.66

TYPICAL XWAY / CROSSROAD — Bridge 2A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.15	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$586,872**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,429	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,061	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		

ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.15			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,306	SF
TOTAL RE-WALL >>>>>>>	**8,093**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	940	LF	$35.00	$32,900.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	23,345	SY	$1.50	$35,017.50
SHOULDER GUTTER (LESS S INLETS)	4,137	LF	$24.00	$99,287.75
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,244	LF	$4.00	$16,975.16
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$586,872.41

TYPICAL XWAY / CROSSROAD — Bridge 2B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.15	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$586,872**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	94		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,429	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,061	LF	
APPROACH SLAB WIDTH >>>>>>>	62.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	30.15		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	Y		1,306 SF
TOTAL RE-WALL >>>>>>>	**8,093**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	940	LF	$35.00	$32,900.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	23,345	SY	$1.50	$35,017.50
SHOULDER GUTTER (LESS S INLETS)	4,137	LF	$24.00	$99,287.75
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,244	LF	$4.00	$16,975.16
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$586,872.41

Bridge End Bents and Wing Walls

Segment 1	Avg Height	Area (sf)
Bridge 1A - Begin Bridge	32.1	4072
Bridge 1A - End Bridge	30.3	3735
Bridge 1B - Begin Bridge	30.2	3716
Bridge 1B - End Bridge	30.5	3772
Bridge 2A - Begin Bridge	29.9	3662
Bridge 2A - End Bridge	30.4	3753
Bridge 2B - Begin Bridge	29.9	3662
Bridge 2B - End Bridge	30.4	3753
Segment 1 Total		**30125**

Formula for Mainline: (62.66(H) + 2H^2)
62.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation

Formula for 1-Lane Ramp: (29.66(H) + 2H^2)*Length
29.66 is the width of 15 lane, 2 6-foot shoulders, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (44.66(H) + 2H^2)*Length
44.66 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

*Adjusted to remove wingwall(s) where MSE walls are used

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

MSE Walls

Segment 3	Measured Area (sf)
Bridge 1A - Begin Bridge (one side)	
Bridge 1A - End Bridge (one side)	
Bridge 1B - Begin Bridge (one side)	
Bridge 1B - End Bridge (one side)	
Bridge 2A - Begin Bridge	
Bridge 2A - End Bridge	
Bridge 2B - Begin Bridge	
Bridge 2B - End Bridge	
Segment 3 Total	0

Additional Earthwork for Retaining Walls				
Segment 3	Width (lf)	Measured Area (sf)	Volume (cf)	Volume (cy)
Bridge 1A Begin Bridge (Northside Only)	0	0	0	0
Bridge 1A End Bridge (Northside Only)	0	0	0	0
Bridge 1B Begin Bridge (Southside Only)	0	0	0	0
Bridge 1B End Bridge (Southside Only)	0	0	0	0
Segment 3 Total				**0**

Formula: Width * Measured Area
Measured Area in MicroStation

Input area sf as measured in MicroStaion
Output

Additional Earthwork over 3 ft Fill

Jack Brack Parclo				Area (sf)	Length	Avg Height	Volume (cf)	Volume (cy)
Area 1	753+56.04	to	758+47.03	675	490.99	1.37	150862	5588
Area 2	760+53.58	to	785+49.63	30089	2496.05	12.05	8010251	296676
Area 3	784+65.94	to	806+62.48	50218	2196.54	22.86	15539924	575553
Area 4	808+31.73	to	828+14.48	32446	1982.75	16.36	9197032	340631
Area 5	833+40.11	to	843+62.24	415	1022.13	0.41	91144	3376
Jack Brack Parclo Total								**1218448**

Formula for Mainline: (218(H) + 4H^2)*Length
218 is the width of roadway from WB outside shoulder to EB outside shoulder
assumes a 4:1 front slope

H = Height of Fill
218 is the width of typical section at a 3 ft fill depth which is taken into account in the cost per mile calculations

Formula for 1-Lane Ramp: (31(H) + 2H^2)*Length
31 is the width of 15 lane, 2 6-foot shoulders, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (46(H) + 2H^2)*Length
46 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

*Adjust for Wall Earthwork

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

Additional Earthwork for Muck				
Segment 3	Area (sf)	Avg Height	Volume (cf)	Volume (cy)
Area 1	0	4	0	0
Segment 3 Total				**0**

Formula: Area*Avg Height

Input area sf as measured in MicroStaion

Nova Road Connection – Option 1

SUMMARY

ESTIMATED PROBABLE PROJECT COST

Northeast Connector Phase I - Segment B
Nova Road Connection Option 1

PREPARED BY RS&H

PROJECT CENTERLINE MILES:	1.702
NUMBER OF BRIDGES:	4

NE Connector Mainline	$38,238,490
Nova Road Interchange	$4,117,298
TOTAL (2021 CONSTRUCTION COST)	**$42,355,788**

ENGINEERING / ADMINISTRATION / LEGAL (24%)				$10,165,389
RIGHT - OF - WAY	66	ACRES		$6,000,000
MITIGATION	11.0	ACRES	$ 150,000	$1,650,000
TOLL COLLECTION EQUIPMENT	6	LANES @	$ 275,000	$1,650,000

GRAND TOTAL PROJECT COST	**$61,821,178**

ESTIMATED PROBABLE CONSTRUCTION COST

NE Connector - Nova Road Connection Option 1 (Mainline Roadway)

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** EXPRESSWAYS ****					
MAINLINE ROADWAY TYPICAL - Segment 1	4998 lf	0.947	MI	$4,899,924	$4,638,223
MAINLINE ROADWAY TYPICAL - Segment 2	1240 lf	0.235	MI	$4,899,924	$1,150,740
MAINLINE ROADWAY TYPICAL - Segment 3	2279 lf	0.432	MI	$4,899,924	$2,114,948
**** BRIDGES ****					
BRIDGE 3A (292 lf x 51 lf)					
SB NE CONNECTOR OVER CANAL C-32C	14,787 sf	14,787	SF	$125	$1,848,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$558,199	$558,199
BRIDGE 3B (292 lf x 51 lf)					
NB NE CONNECTOR OVER CANAL C-32C	14,787 sf	14,787	SF	$125	$1,848,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$544,520	$544,520
BRIDGE 4A (181 lf x 51 lf)					
SB NE CONNECTOR OVER SUNBRIDGE PKWY	9,155 sf	9,155	SF	$125	$1,144,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$567,446	$567,446
BRIDGE 4B (181 lf x 51 lf)					
NB NE CONNECTOR OVER SUNBRIDGE PKWY	9,155 sf	9,155	SF	$125	$1,144,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$549,433	$549,433
RETAINING WALLS (MSE & ABUTMENTS)	27,015 sf	27,015	SF	$34	$918,507
**** ADDITIONAL ITEMS ****					
ADDITIONAL EARTHWORK FOR FILL OVER 3 FT	461,284 cy	461,284	CY	$8	$3,690,272
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING)	8,989 lf	1.702	MI	$554,800	$944,526
OVERHEAD TRUSS SIGNS	4 ea	4	EA	$250,000	$1,000,000
OVERHEAD CANTILEVER SIGNS	3 ea	3	EA	$80,000	$240,000
MULTIPOST SIGNS	4 ea	4	EA	$5,500	$22,000
FIBER OPTIC NETWORK (FON) (CONDUIT, 72 WIRE, PULL BOXES, SPLICE, ETC.)	8,989 lf	1.702	MI	$350,000	$595,862
DYNAMIC MESSAGE SIGNS	0 ea	0	EA	$250,000	$0
RETENTION POND CONSTRUCTION	22.9 ac	22.90	AC	$77,141	$1,766,521
RETENTION POND EXCAVATION	82,877 cy	82,876.90	CY	$5	$439,248
RETENTION POND SODDING	55,999 sy	55,998.80	SY	$3	$139,997
RETENTION POND CLEARING & GRUBBING	14 ac	13.80	AC	$17,000	$234,600
RETENTION POND ADDITIONAL DRAINAGE	1 ea	1.00	EA	$304,960	$304,960
REMOVE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	0 cy	-	CY	$5	$0
REPLACE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	0 cy	-	CY	$8	$0
MAINLINE TOLL GANTRY (2 LANE, 2 TRUSSES AND EQUIP. BLDG)	1 ea	1	EA	$1,750,000	$1,750,000

SUB-TOTAL	$28,155,501
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$140,778
MAINTENANCE OF TRAFFIC (1%)	$281,555
MOBILIZATION (9.5%)	$2,674,773
SUB-TOTAL ROADWAY	$22,129,001
ROADWAY CONTINGENCY (20%)	$4,425,800
SUB-TOTAL BRIDGES	$9,123,605
BRIDGE CONTINGENCY (10%)	$912,360
SUB-TOTAL	$36,590,767
AESTHETICS CONTINGENCY (3%)	$1,097,723
RELOCATE UTILITIES	$0
ALLOWANCE FOR DISPUTES REVIEW BOARD	$50,000
WORK ORDER ALLOWANCE	$500,000
TOTAL (2019 CONSTRUCTION COST)	**$38,238,490**

ESTIMATED PROBABLE CONSTRUCTION COST

Nova Road Connection Option 1

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT		UNIT PRICE	TOTAL
**** RAMPS ****						
**** ARTERIAL ROADS ****						
Nova Road						
2-LANE UNDIVIDED	200	LF	0.038	MI	$2,212,699	$83,814
4-LANE DIVIDED	2503	lf	0.474	MI	$4,429,390	$2,099,766
MEDIAN CROSSOVER - NEW CONSTRUCTION	1	ea	1	EA	$8,080	$8,080
DEMOLISH EXISTING ARTERIAL ROAD	2703	lf	0.512	MI	$305,760	$156,528
BOX CULVERT EXTENSION - CONCRETE IV	92	cy		EA	$1,032	$94,925
BOX CULVERT EXTENSION - REBAR WEIGHT	12772	lb		EA	$1	$11,878
**** INTERSECTION SIGNALIZATION ****						
SIGNALIZATION PER INTERCHANGE	1	ea	1	EA	$142,064	$142,064
**** ADDITIONAL ITEMS ****						
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING)	2,703	lf	0.512	MI	$277,400	$142,010
MULTIPOST SIGNS	4	ea	4	EA	$5,500	$22,000
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	1	int	1	INT	$330,000	$330,000
RETENTION POND CONSTRUCTION	0	sf	0.00	AC	$177,813	$0
RAMP TOLL GANTRY (2 RAMPS @ 1 LANE EA, 1 TRUSS AND EQUIP. BLDG)	-	ea	-	EA	$1,250,000	$0

SUB-TOTAL	$3,091,065
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$15,455
MAINTENANCE OF TRAFFIC (1%)	$30,911
MOBILIZATION (9.5%)	$293,651
SUB-TOTAL	$3,431,082
ROADWAY CONTINGENCY (20%)	$686,216
TOTAL (2019 CONSTRUCTION COST)	**$4,117,298**

\\rsandh.com\files\Transportation\P\1070102000_NE_Connector_PH1\estimates\2021-09-29_Updated Cost Estimates\[Cost Estimate - Nova Road - Option 1.xlsx]Nova Road Intch 01-Oct-21

Bridge Development Report Cost Estimating

Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot. These total cost numbers are calculated exclusively for the bridge cost as defined in the General Section of this chapter. Price computed by Steps 1 and 2 should be generally within the range of cost as supplied herein. If the cost falls outside the provided range, good justification must be provided.

Bridge Superstructure Type	Total Cost per Square Foot Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab- Simple Span [1]	$115	$160
Pre-cast Concrete Slab - Simple Span [1]	$110	$200
Medium Span Bridges:		
Concrete Deck / Steel Girder - Simple Span [1]	$125	$142
Concrete Deck / Steel Girder - Continuous Span [1]	$135	$170
Concrete Deck / Prestressed Girder - Simple Span [1]	$90	$145
Concrete Deck / Prestressed Girder - Continuous Span [1]	$95	$211
Concrete Deck / Steel Box Girder [1] -	$140	$180
Span range from 150' to 280' (for curvature, add 15% premium)		
Segmental Concrete Box Girders - Cantilever Construction	$140	$160
Span range from 150' to 280'		
Demolition Costs:		
Typical	$35	$60
Bascule	$60	$70
Project Type		
Widening (Construction Only)	$85	$160

[1] Increase the cost by twenty percent for phased construction

TYPICAL XWAY / CROSSROAD — Bridge 3A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.75	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$558,199**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,321	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	333	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	988	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	30.75		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	Y		1,081 SF
TOTAL RE-WALL >>>>>>>	**7,472**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00	$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	22,044	SY	$1.50	$33,066.00
SHOULDER GUTTER (LESS S INLETS)	3,847	LF	$24.00	$92,325.94
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,954	LF	$4.00	$15,814.86
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$558,198.80

TYPICAL XWAY / CROSSROAD — Bridge 3B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	28.95	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$544,520**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,236	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	333	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	903	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	28.95		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	Y		1,005 SF
TOTAL RE-WALL >>>>>>>	**6,784**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00	$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	19,325	SY	$1.50	$28,987.50
SHOULDER GUTTER (LESS S INLETS)	3,504	LF	$24.00	$84,097.37
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,611	LF	$4.00	$14,443.43
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$544,520.30

TYPICAL XWAY / CROSSROAD — Bridge 4A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	31.95	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$567,446**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,379	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	333	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,046	LF	

APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	31.95			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,131	SF
TOTAL RE-WALL >>>>>>>	**7,945**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES	2	
BORROW EMBANKMENT	0	CY	$8.30		$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)		$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30		$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00		$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00		$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00		$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00		$50,000.00
INLET (TYPE S)	20	EA	$3,500.00		$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00		$50,000.00
SOD	23,942	SY	$1.50		$35,913.00
SHOULDER GUTTER (LESS S INLETS)	4,075	LF	$24.00		$97,811.66
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,182	LF	$4.00		$16,729.14
APPROACH SLABS	2	EA	$30,396.00		$60,792.00
			TOTAL $ EA		$567,445.80

TYPICAL XWAY / CROSSROAD — Bridge 4B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	29.6	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$549,433**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,267	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	333	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	934	LF		
APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.10%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	29.6			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,032	SF
TOTAL RE-WALL >>>>>>>	**7,030**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES	2	
BORROW EMBANKMENT	0	CY	$8.30		$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)		$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30		$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00		$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00		$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00		$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00		$50,000.00
INLET (TYPE S)	20	EA	$3,500.00		$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00		$50,000.00
SOD	20,289	SY	$1.50		$30,433.50
SHOULDER GUTTER (LESS S INLETS)	3,628	LF	$24.00		$87,068.80
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,735	LF	$4.00		$14,938.67
APPROACH SLABS	2	EA	$30,396.00		$60,792.00
			TOTAL $ EA		$549,432.97

Bridge End Bents and Wing Walls

Segment 1	Avg Height	Area (sf)
Bridge 1A - Begin Bridge	29.4	3218
Bridge 1A - End Bridge	32.1	3687
Bridge 1B - Begin Bridge	28.9	3134
Bridge 1B - End Bridge	29.0	3151
Bridge 2A - Begin Bridge	31.9	3651
Bridge 2A - End Bridge	29.5	3235
Bridge 2B - Begin Bridge	32.0	3669
Bridge 2B - End Bridge	29.7	3269
Segment 1 Total		**27015**

Formula for Mainline: (50.66(H) + 2H^2)
50.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation
Formula for 1-Lane Ramp: (29.66(H) + 2H^2)*Length
29.66 is the width of 15 lane, 2 6-foot shoulders, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (44.66(H) + 2H^2)*Length
44.66 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

*Adjusted to remove wingwall(s) where MSE walls are used

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

MSE Walls

Segment 3	Measured Area (sf)
Bridge 1A - Begin Bridge (one side)	
Bridge 1A - End Bridge (one side)	
Bridge 1B - Begin Bridge (one side)	
Bridge 1B - End Bridge (one side)	
Bridge 2A - Begin Bridge	
Bridge 2A - End Bridge	
Bridge 2B - Begin Bridge	
Bridge 2B - End Bridge	
Segment 3 Total	0

Additional Earthwork for Retaining Walls				
Segment 3	Width (lf)	Measured Area (sf)	Volume (cf)	Volume (cy)
Bridge 1A Begin Bridge (Northside Only)	0	0	0	0
Bridge 1A End Bridge (Northside Only)	0	0	0	0
Bridge 1B Begin Bridge (Southside Only)	0	0	0	0
Bridge 1B End Bridge (Southside Only)	0	0	0	0
Segment 3 Total				**0**

Formula: Width * Measured Area
Measured Area in MicroStation

Input area sf as measured in MicroStaion
Output

Additional Earthwork over 3 ft Fill

Jack Brack Parclo				Area (sf)	Length	Avg Height	Volume (cf)	Volume (cy)
Area 1	+1.00	to	888+86.54	2868	88885.54	0.03	625594	23171
Area 2	889+53.47	to	903+88.77	20005	1435.3	13.94	5476397	202830
Area 3	906+72.65	to	919+12.61	19109	1239.96	15.41	5343716	197916
Area 4	920+93.31	to	943+37.29	4465	2243.98	1.99	1008907	37367
Nova Road Connection Option 1 Total								**461284**

Formula for Mainline: (218(H) + 4H^2)*Length

218 is the width of roadway from WB outside shoulder to EB outside shoulder (first 3 ft are 6:1)
218 is the width of typical section at a 3 ft fill depth which is taken into account in the cost per mile calculations

Formula for 1-Lane Ramp: (31(H) + 2H^2)*Length
31 is the width of 15 lane, 2 6-foot shoulders, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (46(H) + 2H^2)*Length
46 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

*Adjust for Wall Earthwork

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

Additional Earthwork for Muck				
Segment 3	Area (sf)	Avg Height	Volume (cf)	Volume (cy)
Area 1	0	4	0	0
Segment 3 Total				**0**

Formula: Area*Avg Height

Input area sf as measured in MicroStaion

Nova Road Connection – Option 2

SUMMARY

ESTIMATED PROBABLE PROJECT COST

Northeast Connector Phase I - Segment B
Nova Road Connection Option 2

PREPARED BY RS&H

PROJECT CENTERLINE MILES:	1.801
NUMBER OF BRIDGES:	4

NE Connector Mainline				$47,393,740
Nova Road Interchange				$4,117,298
TOTAL (2021 CONSTRUCTION COST)				**$51,511,039**
ENGINEERING / ADMINISTRATION / LEGAL (24%)				$12,362,649
RIGHT - OF - WAY	70	ACRES		$6,300,000
MITIGATION	7.0	ACRES	$ 150,000	$1,050,000
TOLL COLLECTION EQUIPMENT	6	LANES @	$ 275,000	$1,650,000
GRAND TOTAL PROJECT COST				**$72,873,688**

ESTIMATED PROBABLE CONSTRUCTION COST

NE Connector - Nova Road Connection Option 2 (Mainline Roadway)

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** EXPRESSWAYS ****					
MAINLINE ROADWAY TYPICAL - Segment 1	4625 lf	0.876	MI	$4,899,924	$4,292,073
MAINLINE ROADWAY TYPICAL - Segment 2	1654 lf	0.313	MI	$4,899,924	$1,534,938
MAINLINE ROADWAY TYPICAL - Segment 3	2831 lf	0.536	MI	$4,899,924	$2,627,213
**** BRIDGES ****					
BRIDGE 3A (250 lf x 51 lf)					
SB NE CONNECTOR OVER CANAL C-32C	12,652 sf	12,652	SF	$125	$1,581,500
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$659,440	$659,440
BRIDGE 3B (250 lf x 51 lf)					
NB NE CONNECTOR OVER CANAL C-32C	12,652 sf	12,652	SF	$125	$1,581,500
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$569,536	$569,536
BRIDGE 4A (152 lf x 51 lf)					
SB NE CONNECTOR OVER CANAL C-32C	7,653 sf	7,653	SF	$125	$956,625
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$674,629	$674,629
BRIDGE 4B (152 lf x 51 lf)					
NB NE CONNECTOR OVER CANAL C-32C	7,651 sf	7,651	SF	$125	$956,375
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$677,257	$677,257
RETAINING WALLS (MSE & ABUTMENTS)	30,766 sf	30,766	SF	$34	$1,046,047
**** ADDITIONAL ITEMS ****					
ADDITIONAL EARTHWORK FOR FILL OVER 3 FT	1,265,176 cy	1,265,176	CY	$8	$10,121,408
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING)	9,510 lf	1.801	MI	$554,800	$999,270
OVERHEAD TRUSS SIGNS	4 ea	4	EA	$250,000	$1,000,000
OVERHEAD CANTILEVER SIGNS	3 ea	3	EA	$80,000	$240,000
MULTIPOST SIGNS	4 ea	4	EA	$5,500	$22,000
FIBER OPTIC NETWORK (FON) (CONDUIT, 72 WIRE, PULL BOXES, SPLICE, ETC.)	9,510 lf	1.801	MI	$350,000	$630,398
DYNAMIC MESSAGE SIGNS	0 ea	0	EA	$250,000	$0
RETENTION POND CONSTRUCTION	22.9 ac	22.90	AC	$77,141	$1,766,521
RETENTION POND EXCAVATION	82,877 cy	82,876.90	CY	$5	$439,248
RETENTION POND SODDING	55,999 sy	55,998.80	SY	$3	$139,997
RETENTION POND CLEARING & GRUBBING	13 ac	13.30	AC	$17,000	$226,100
RETENTION POND ADDITIONAL DRAINAGE	1 ea	1.00	EA	$304,960	$304,960
REMOVE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	0 cy	-	CY	$5	$0
REPLACE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	0 cy	-	CY	$8	$0
MAINLINE TOLL GANTRY (2 LANE, 2 TRUSSES AND EQUIP. BLDG)	1 ea	1	EA	$1,750,000	$1,750,000

SUB-TOTAL	$34,797,035
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$173,985
MAINTENANCE OF TRAFFIC (1%)	$347,970
MOBILIZATION (9.5%)	$3,305,718
SUB-TOTAL ROADWAY	$29,921,800
ROADWAY CONTINGENCY (20%)	$5,984,360
SUB-TOTAL BRIDGES	$8,702,909
BRIDGE CONTINGENCY (10%)	$870,291
SUB-TOTAL	$45,479,359
AESTHETICS CONTINGENCY (3%)	$1,364,381
RELOCATE UTILITIES	$0
ALLOWANCE FOR DISPUTES REVIEW BOARD	$50,000
WORK ORDER ALLOWANCE	$500,000
TOTAL (2019 CONSTRUCTION COST)	**$47,393,740**

ESTIMATED PROBABLE CONSTRUCTION COST

Nova Road Connection Option 2

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT		UNIT PRICE	TOTAL
**** RAMPS ****						
**** ARTERIAL ROADS ****						
Nova Road						
2-LANE UNDIVIDED	200	LF	0.038	MI	$2,212,699	$83,814
4-LANE DIVIDED	2503	lf	0.474	MI	$4,429,390	$2,099,766
MEDIAN CROSSOVER - NEW CONSTRUCTION	1	ea	1	EA	$8,080	$8,080
DEMOLISH EXISTING ARTERIAL ROAD	2703	lf	0.512	MI	$305,760	$156,528
BOX CULVERT EXTENSION - CONCRETE IV	92	cy		EA	$1,032	$94,925
BOX CULVERT EXTENSION - REBAR WEIGHT	12772	lb		EA	$1	$11,878
**** INTERSECTION SIGNALIZATION ****						
SIGNALIZATION PER INTERCHANGE	1	ea	1	EA	$142,064	$142,064
**** ADDITIONAL ITEMS ****						
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING)	2,703	lf	0.512	MI	$277,400	$142,010
MULTIPOST SIGNS	4	ea	4	EA	$5,500	$22,000
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	1	int	1	INT	$330,000	$330,000
RETENTION POND CONSTRUCTION	0	sf	0.00	AC	$177,813	$0
RAMP TOLL GANTRY (2 RAMPS @ 1 LANE EA, 1 TRUSS AND EQUIP. BLDG)	-	ea	-	EA	$1,250,000	$0

SUB-TOTAL	$3,091,065
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$15,455
MAINTENANCE OF TRAFFIC (1%)	$30,911
MOBILIZATION (9.5%)	$293,651
SUB-TOTAL	$3,431,082
ROADWAY CONTINGENCY (20%)	$686,216
TOTAL (2019 CONSTRUCTION COST)	**$4,117,298**

\\rsandh.com\files\Transportation\P\1070102000_NE_Connector_PH1\estimates\2021-09-29_Updated Cost Estimates\[Cost Estimate - Nova Road - Option 2.xlsx]Nova Road Intch 01-Oct-21

Bridge Development Report Cost Estimating

Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot. These total cost numbers are calculated exclusively for the bridge cost as defined in the General Section of this chapter. Price computed by Steps 1 and 2 should be generally within the range of cost as supplied herein. If the cost falls outside the provided range, good justification must be provided.

Bridge Superstructure Type	Total Cost per Square Foot Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab- Simple Span [1]	$115	$160
Pre-cast Concrete Slab - Simple Span [1]	$110	$200
Medium Span Bridges:		
Concrete Deck / Steel Girder - Simple Span [1]	$125	$142
Concrete Deck / Steel Girder - Continuous Span [1]	$135	$170
Concrete Deck / Prestressed Girder - Simple Span [1]	$90	$145
Concrete Deck / Prestressed Girder - Continuous Span [1]	$95	$211
Concrete Deck / Steel Box Girder [1] -	$140	$180
Span range from 150' to 280' (for curvature, add 15% premium)		
Segmental Concrete Box Girders - Cantilever Construction	$140	$160
Span range from 150' to 280'		
Demolition Costs:		
Typical	$35	$60
Bascule	$60	$70
Project Type		
Widening (Construction Only)	$85	$160

[1] Increase the cost by twenty percent for phased construction

TYPICAL XWAY / CROSSROAD — Bridge 3A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	32.55	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$659,440**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,555	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,187	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	32.55		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	y		1,156 SF
TOTAL RE-WALL >>>>>>>	**8,186**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	984	LF	$35.00	$34,440.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	27,540	SY	$1.50	$41,310.00
SHOULDER GUTTER (LESS S INLETS)	4,621	LF	$24.00	$110,901.42
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,749	LF	$4.00	$18,996.21
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$659,439.63

TYPICAL XWAY / CROSSROAD — Bridge 3B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.3	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$569,536**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,437	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,069	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	30.3		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	y		1,062 SF
TOTAL RE-WALL >>>>>>>	**7,298**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00	$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00	$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00	$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00	$50,000.00
INLET (TYPE S)	20	EA	$3,500.00	$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00	$50,000.00
SOD	23,598	SY	$1.50	$35,397.00
SHOULDER GUTTER (LESS S INLETS)	4,169	LF	$24.00	$100,045.64
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,275	LF	$4.00	$17,101.47
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$569,536.12

TYPICAL XWAY / CROSSROAD — Bridge 4A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	34.3	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$674,629**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,647	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,279	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	

ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	34.3			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	y		1,230	SF
TOTAL RE-WALL >>>>>>>	**8,904**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	984	LF	$35.00	$34,440.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	30,789	SY	$1.50	$46,183.50
SHOULDER GUTTER (LESS S INLETS)	4,989	LF	$24.00	$119,743.53
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	5,117	LF	$4.00	$20,469.89
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$674,628.92

TYPICAL XWAY / CROSSROAD — Bridge 4B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	34.6	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$677,257**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,663	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	368	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,295	LF		
APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.90%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	34.6			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	y		1,242	SF
TOTAL RE-WALL >>>>>>>	**9,030**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	984	LF	$35.00	$34,440.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	31,362	SY	$1.50	$47,043.00
SHOULDER GUTTER (LESS S INLETS)	5,052	LF	$24.00	$121,259.32
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	5,181	LF	$4.00	$20,722.53
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$677,256.84

Bridge End Bents and Wing Walls

Segment 1	Avg Height	Area (sf)
Bridge 1A - Begin Bridge	31.2	3527
Bridge 1A - End Bridge	33.9	4016
Bridge 1B - Begin Bridge	30.8	3458
Bridge 1B - End Bridge	29.8	3286
Bridge 2A - Begin Bridge	35.0	4223
Bridge 2A - End Bridge	33.6	3960
Bridge 2B - Begin Bridge	35.3	4280
Bridge 2B - End Bridge	33.9	4016
Segment 1 Total		**30766**

Formula for Mainline: (50.66(H) + 2H^2)
50.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation
Formula for 1-Lane Ramp: (29.66(H) + 2H^2)*Length
29.66 is the width of 15 lane, 2 6-foot shoulders, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (44.66(H) + 2H^2)*Length
44.66 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

*Adjusted to remove wingwall(s) where MSE walls are used

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

MSE Walls

Segment 3	Measured Area (sf)
Bridge 1A - Begin Bridge (one side)	
Bridge 1A - End Bridge (one side)	
Bridge 1B - Begin Bridge (one side)	
Bridge 1B - End Bridge (one side)	
Bridge 2A - Begin Bridge	
Bridge 2A - End Bridge	
Bridge 2B - Begin Bridge	
Bridge 2B - End Bridge	
Segment 3 Total	0

Additional Earthwork for Retaining Walls				
Segment 3	Width (lf)	Measured Area (sf)	Volume (cf)	Volume (cy)
Bridge 1A Begin Bridge (Northside Only)	0	0	0	0
Bridge 1A End Bridge (Northside Only)	0	0	0	0
Bridge 1B Begin Bridge (Southside Only)	0	0	0	0
Bridge 1B End Bridge (Southside Only)	0	0	0	0
Segment 3 Total				**0**

Formula: Width * Measured Area
Measured Area in MicroStation

Input area sf as measured in MicroStaion
Output

Additional Earthwork over 3 ft Fill

Jack Brack Parclo				Area (sf)	Length	Avg Height	Volume (cf)	Volume (cy)
Area 1	864+88.90	to	884+48.58	2420	1959.68	1.23	539514	19982
Area 2	889+54.62	to	900+16.78	14314	1062.16	13.48	3892052	144151
Area 3	902+57.70	to	919+11.72	57523	1654.02	34.78	20542083	760818
Area 4	920+62.75	to	940+92.98	32181	2030.23	15.85	9055851	335402
Area 5	945+42.04	to	948+60.97	578	318.93	1.81	130194	4823
Nova Road Connection Option 2 Total								**1265176**

Formula for Mainline: (218(H) + 4H^2)*Length

218 is the width of roadway from WB outside shoulder to EB outside shoulder (first 3 ft are 6:1)

218 is the width of roadway from WB outside shoulder to EB outside shoulder (first 3 ft are 6:1)
218 is the width of typical section at a 3 ft fill depth which is taken into account in the cost per mile calculations

Formula for 1-Lane Ramp: (31(H) + 2H^2)*Length
31 is the width of 15 lane, 2 6-foot shoulders, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (46(H) + 2H^2)*Length
46 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

*Adjust for Wall Earthwork

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

Additional Earthwork for Muck				
Segment 3	Area (sf)	Avg Height	Volume (cf)	Volume (cy)
Area 1	0	4	0	0
Segment 3 Total				**0**

Formula: Area*Avg Height

Input area sf as measured in MicroStaion

Preferred Alternative

SUMMARY

ESTIMATED PROBABLE PROJECT COST

NE Connector - Preferred Alternative

PREPARED BY RS&H

PROJECT CENTERLINE MILES:	3.706
NUMBER OF BRIDGES:	8

NE Connector Mainline				$102,436,030
Jack Brack Interchange				$9,855,213
Nova Road Interchange				$7,407,046
TOTAL (2021 CONSTRUCTION COST)				**$112,291,243**
ENGINEERING / ADMINISTRATION / LEGAL (24%)				$26,949,898
RIGHT - OF - WAY	193	ACRES		$21,105,000
MITIGATION	18.0		$ 150,000	$2,700,000
TOLL COLLECTION EQUIPMENT	10	LANES @	$ 275,000	$2,750,000
GRAND TOTAL PROJECT COST				**$165,796,141**

ESTIMATED PROBABLE CONSTRUCTION COST

NE Connector Preferred Alternative (Mainline Roadway)

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** EXPRESSWAYS ****					
MAINLINE ROADWAY TYPICAL - Segment 1	2922 lf	0.553	MI	$4,899,924	$2,711,662
MAINLINE ROADWAY TYPICAL - Segment 2	2219 lf	0.420	MI	$4,899,924	$2,059,267
MAINLINE ROADWAY TYPICAL - Segment 3	9159 lf	1.735	MI	$4,899,924	$8,499,698
MAINLINE ROADWAY TYPICAL - Segment 4	1639 lf	0.310	MI	$4,899,924	$1,521,018
MAINLINE ROADWAY TYPICAL - Segment 5	1898 lf	0.359	MI	$4,899,924	$1,761,374
MAINLINE ROADWAY - 4 LANES UNDIVIDED - Segment 1	954 lf	0.181	MI	$2,618,087	$473,041
MAINLINE ADDITIONAL LANE - Segment 1	448 lf	0.085	MI	$425,592	$36,111
MAINLINE ADDITIONAL LANE - Segment 2	1139 lf	0.216	MI	$425,592	$91,809
MAINLINE ADDITIONAL LANE - Segment 3	731 lf	0.138	MI	$425,592	$58,922
MAINLINE ADDITIONAL LANE - Segment 4	491 lf	0.093	MI	$425,592	$39,577
MAINLINE ADDITIONAL LANE - Segment 5	344 lf	0.065	MI	$425,592	$27,728
MAINLINE ADDITIONAL LANE - Segment 6	369 lf	0.070	MI	$425,592	$29,743
BRIDGE 1A (175 lf x 63 lf)					
SB NE CONNECTOR OVER FUTURE ROAD NETWORK	10,946 sf	10,946	SF	$125	$1,368,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$680,286	$680,286
BRIDGE 1B (175 lf x 63 lf)					
NB NE CONNECTOR OVER FUTURE ROAD NETWORK	10,946 sf	10,946	SF	$125	$1,368,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$674,307	$674,307
BRIDGE 2A (173 lf x 51 lf)					
SB NE CONNECTOR OVER JACK BRACK ROAD	8,734 sf	8,734	SF	$125	$1,091,750
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$546,799	$546,799
BRIDGE 2B (175 lf x 51 lf)					
NB NE CONNECTOR OVER JACK BRACK ROAD	8,860 sf	8,860	SF	$125	$1,107,500
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$546,799	$546,799
BRIDGE 3A (261 lf x 51 lf)					
SB NE CONNECTOR OVER FUTURE ROAD NETWORK	13,202 sf	13,202	SF	$125	$1,650,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$466,038	$466,038
BRIDGE 3B (261 lf x 51 lf)					
NB NE CONNECTOR OVER FUTURE ROAD NETWORK	13,202 sf	13,202	SF	$125	$1,650,250
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$453,738	$453,738
BRIDGE 4A (172 lf x 51 lf)					
SB NE CONNECTOR OVER JACK BRACK ROAD	8,672 sf	8,672	SF	$125	$1,084,000
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$667,177	$667,177
BRIDGE 4B (172 lf x 51 lf)					
NB NE CONNECTOR OVER JACK BRACK ROAD	8,670 sf	8,670	SF	$125	$1,083,750
APPROACH SLABS (BEGIN & END BRIDGE) (DOES NOT INCLUDE EARTHWORK)	1 ea	1	EA	$665,928	$665,928
RETAINING WALLS (MSE & ABUTMENTS)	59,742 sf	59,742	SF	$34	$2,031,216
**** ADDITIONAL ITEMS ****					
ADDITIONAL EARTHWORK FOR FILL OVER 3 FT	2,444,965 cy	2,444,965	CY	$8	$19,559,720
OVERHEAD LIGHTING (INCLUDES WIRING) (2 SIDES, 200' SPACING)	19,536 lf	3.700	MI	$0	$0
OVERHEAD TRUSS SIGNS	12 ea	12	EA	$250,000	$3,000,000
OVERHEAD CANTILEVER SIGNS	9 ea	9	EA	$80,000	$720,000
MULTIPOST SIGNS	12 ea	12	EA	$5,500	$66,000
FIBER OPTIC NETWORK (FON) (CONDUIT, 72 WIRE, PULL BOXES, SPLICE, ETC.)	19,536 lf	3.700	MI	$350,000	$1,295,000
DYNAMIC MESSAGE SIGNS	0 ea	0	EA	$250,000	$0
RETENTION POND CONSTRUCTION	70.4 ac	70.40	AC	$77,141	$5,430,702
RETENTION POND EXCAVATION	271,067 cy	271,067.40	CY	$5	$1,436,657
RETENTION POND SODDING	194,423 sy	194,422.80	SY	$3	$486,057
RETENTION POND CLEARING & GRUBBING	50 ac	49.50	AC	$17,000	$841,500
RETENTION POND ADDITIONAL DRAINAGE	1 ea	1.00	EA	$1,288,259	$1,288,259
REMOVE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	2029 cy	2,029	CY	$5	$10,754
REPLACE A-8 MATERIAL (ASSUME 4 FT PER SF OF MUCK)	2029 cy	2,029	CY	$8	$16,841
MAINLINE TOLL GANTRY (2 LANE, 2 TRUSSES AND EQUIP. BLDG)	1 ea	1	EA	$1,750,000	$1,750,000

SUB-TOTAL	$70,347,727
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)	$351,739
MAINTENANCE OF TRAFFIC (1%)	$703,477
MOBILIZATION (9.5%)	$6,683,034
SUB-TOTAL ROADWAY	$68,585,748
ROADWAY CONTINGENCY (20%)	$13,717,150

SUB-TOTAL BRIDGES	$15,105,071
BRIDGE CONTINGENCY (10%)	$1,510,507
SUB-TOTAL	$98,918,476
AESTHETICS CONTINGENCY (3%)	$2,967,554
RELOCATE UTILITIES	$0
ALLOWANCE FOR DISPUTES REVIEW BOARD	$50,000
WORK ORDER ALLOWANCE	$500,000
TOTAL (2019 CONSTRUCTION COST)	**$102,436,030**

ESTIMATED PROBABLE CONSTRUCTION COST

Jack Brack Tighter Diamond Interchange

PREPARED BY *RS&H*

ITEM	QUANTITY		UNIT	UNIT PRICE	TOTAL
**** RAMPS ****					
ONE LANE RAMPS (OPEN DRAINAGE) - SB EXIT RAMP	1384 lf	0.262	MI	$1,223,837	$320,794
ONE LANE RAMPS (OPEN DRAINAGE) - SB ENTRANCE RAMP	1555 lf	0.295	MI	$1,223,837	$360,429
ONE LANE RAMPS (OPEN DRAINAGE) - NB EXIT RAMP	1232 lf	0.233	MI	$1,223,837	$285,562
ONE LANE RAMPS (OPEN DRAINAGE) - NB ENTRANCE RAMP	1530 lf	0.290	MI	$1,223,837	$354,634
TWO LANE RAMPS (OPEN DRAINAGE) - SB ENTRANCE RAMP	459 lf	0.087	MI	$1,661,517	$144,439
TWO LANE RAMPS (OPEN DRAINAGE) - SB EXIT RAMP	648 lf	0.123	MI	$1,661,517	$203,913
TWO LANE RAMPS (OPEN DRAINAGE) - NB EXIT RAMP	590 lf	0.112	MI	$1,661,517	$185,662
THREE LANE RAMPS (OPEN DRAINAGE) - NB ENTRANCE RAMP	525 lf	0.099	MI	$2,206,997	$219,446
TYPICAL 1 LANE ON-RAMP TAPER W/GORE - MAINLINE UNCHANGED	2 ea	2	EA	$219,329	$438,659
TYPICAL 1 LANE OFF-RAMP TAPER W/GORE - MAINLINE UNCHANGED	2 ea	2	EA	$129,358	$258,716
**** ARTERIAL ROADS ****					
Jack Brack Road					
4-LANE DIVIDED	2213 lf	0.419	MI	$4,429,390	$1,856,485
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 1	315 lf	0.060	MI	$406,857	$24,273
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 2	324 lf	0.061	MI	$406,857	$24,966
ADDITIONAL LANES MEDIAN WIDENING - Segment 1	622 lf	0.118	MI	$389,257	$45,856
ADDITIONAL LANES MEDIAN WIDENING - Segment 2	560 lf	0.106	MI	$389,257	$41,285
ADDITIONAL LANES MEDIAN WIDENING - Segment 3	507 lf	0.096	MI	$389,257	$37,378
MEDIAN CROSSOVER - NEW CONSTRUCTION	2 ea	2	EA	$8,080	$16,160.00
DEMOLISH EXISTING ARTERIAL ROAD	0 lf	0.000	MI	$305,760	$0
**** INTERSECTION SIGNALIZATION ****					
SIGNALIZATION PER INTERCHANGE	2 ea	2	EA	$269,948	$539,896
**** ADDITIONAL ITEMS ****					
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING)	7,923 lf	1.501	MI	$277,400	$416,258
MULTIPOST SIGNS	8 ea	8	EA	$5,500	$44,000
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	1 int	1	INT	$330,000	$330,000
RETENTION POND CONSTRUCTION	0 sf	0.00	AC	$177,813	$0
RAMP TOLL GANTRY (2 RAMPS @ 1 LANE EA, 1 TRUSS AND EQUIP. BLDG)	1 ea	1	EA	$1,250,000	$1,250,000
SUB-TOTAL					$7,398,809
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)					$36,994
MAINTENANCE OF TRAFFIC (1%)					$73,988
MOBILIZATION (9.5%)					$702,887
SUB-TOTAL					$8,212,678
ROADWAY CONTINGENCY (20%)					$1,642,536
TOTAL (2019 CONSTRUCTION COST)					**$9,855,213**

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ESTIMATED PROBABLE CONSTRUCTION COST

Nova Road Interchange

PREPARED BY *RS&H*

ITEM	QUANTITY			UNIT	UNIT PRICE	TOTAL
**** RAMPS ****						
**** ARTERIAL ROADS ****						
Nova Road						
2-LANE UNDIVIDED						
Segment 1	324	lf	0.061	MI	$3,194,262	$196,012
Segment 2	499	lf	0.095	MI	$3,194,262	$301,882
4-LANE DIVIDED	4375	lf	0.829	MI	$4,429,390	$3,670,186
ADDITIONAL LANES WIDENING TO OUTSIDE - Segment 1	344	lf	0.065	MI	$406,857	$26,507
ADDITIONAL LANES MEDIAN WIDENING - Segment 1	568	lf	0.108	MI	$389,257	$41,875
ADDITIONAL LANES MEDIAN WIDENING - Segment 2	518	lf	0.098	MI	$389,257	$38,188
MEDIAN CROSSOVER - NEW CONSTRUCTION	1	ea	1	EA	$8,080	$8,080.00
DEMOLISH EXISTING ARTERIAL ROAD	5198	lf	0.984	MI	$305,760	$301,012
BOX CULVERT EXTENSION - CONCRETE IV	177	cy		EA	$1,032	$182,627
BOX CULVERT EXTENSION - REBAR WEIGHT	29378	lb		EA	$1	$27,322
**** INTERSECTION SIGNALIZATION ****						
SIGNALIZATION PER INTERCHANGE	1	ea	1	EA	$142,064	$142,064
**** ADDITIONAL ITEMS ****						
OVERHEAD LIGHTING (INCLUDES WIRING) (1 SIDE, 200' SPACING)	5,198	lf	0.984	MI	$277,400	$273,092
MULTIPOST SIGNS	4	ea	4	EA	$5,500	$22,000
ITS EQUIPMENT / DEVICES PER INTERCHANGE (CCTV, TMS, ETC.)	1	int	1	INT	$330,000	$330,000
RETENTION POND CONSTRUCTION	0	sf	0.00	AC	$177,813	$0
RAMP TOLL GANTRY (2 RAMPS @ 1 LANE EA, 1 TRUSS AND EQUIP. BLDG)	-	ea	-	EA	$1,250,000	$0
SUB-TOTAL						$5,560,845
EROSION CONTROL / TEMPORARY DRAINAGE (0.5%)						$27,804
MAINTENANCE OF TRAFFIC (1%)						$55,608
MOBILIZATION (9.5%)						$528,280
SUB-TOTAL						$6,172,538
ROADWAY CONTINGENCY (20%)						$1,234,508
TOTAL (2019 CONSTRUCTION COST)						**$7,407,046**

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Bridge Development Report Cost Estimating

Step Three: Cost Estimate Comparison to Historical Bridge Cost

The final step is a comparison of the cost estimate by comparison with historic bridge cost based on a cost per square foot. These total cost numbers are calculated exclusively for the bridge cost as defined in the General Section of this chapter. Price computed by Steps 1 and 2 should be generally within the range of cost as supplied herein. If the cost falls outside the provided range, good justification must be provided.

Bridge Superstructure Type	Total Cost per Square Foot Low	High
Short Span Bridges:		
Reinforced Concrete Flat Slab- Simple Span [1]	$115	$160
Pre-cast Concrete Slab - Simple Span [1]	$110	$200
Medium Span Bridges:		
Concrete Deck / Steel Girder - Simple Span [1]	$125	$142
Concrete Deck / Steel Girder - Continuous Span [1]	$135	$170
Concrete Deck / Prestressed Girder - Simple Span [1]	$90	$145
Concrete Deck / Prestressed Girder - Continuous Span [1]	$95	$211
Concrete Deck / Steel Box Girder [1] -	$140	$180
Span range from 150' to 280' (for curvature, add 15% premium)		
Segmental Concrete Box Girders - Cantilever Construction	$140	$160
Span range from 150' to 280'		
Demolition Costs:		
Typical	$35	$60
Bascule	$60	$70
Project Type		
Widening (Construction Only)	$85	$160

[1] Increase the cost by twenty percent for phased construction

TYPICAL XWAY / CROSSROAD — Bridge 1A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	31.1	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$680,286**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			Use 94 ft since this is a 3 lane bridge (82 lf +12 lf)
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,606	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	400	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,206	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	31.1			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,355	SF
TOTAL RE-WALL >>>>>>>	**8,495**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	1,128	LF	$35.00	$39,480.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	27,100	SY	$1.50	$40,650.00
SHOULDER GUTTER (LESS S INLETS)	4,695	LF	$24.00	$112,672.73
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,823	LF	$4.00	$19,291.43
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$680,286.16

TYPICAL XWAY / CROSSROAD — Bridge 1B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	62.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.45	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	53.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$674,307**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	94			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,569	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	400	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,169	LF		
APPROACH SLAB WIDTH >>>>>>>	62.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	1.75%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.45			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	62.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,321	SF
TOTAL RE-WALL >>>>>>>	**8,219**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	1,128	LF	$35.00	$39,480.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	25,887	SY	$1.50	$38,830.50
SHOULDER GUTTER (LESS S INLETS)	4,546	LF	$24.00	$109,107.02
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,674	LF	$4.00	$18,697.14
APPROACH SLABS	2	EA	$37,596.00	$75,192.00
			TOTAL $ EA	$674,306.66

TYPICAL XWAY / CROSSROAD — Bridge 2A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.5	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.25%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$546,799**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,222	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	311	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	911	LF		

APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.25%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.5			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,070	SF
TOTAL RE-WALL >>>>>>>	**7,375**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES	2	
BORROW EMBANKMENT	0	CY	$8.30		$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)		$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30		$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00		$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00		$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00		$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00		$50,000.00
INLET (TYPE S)	20	EA	$3,500.00		$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00		$50,000.00
SOD	20,209	SY	$1.50		$30,313.50
SHOULDER GUTTER (LESS S INLETS)	3,538	LF	$24.00		$84,914.13
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,645	LF	$4.00		$14,579.56
APPROACH SLABS	2	EA	$30,396.00		$60,792.00
			TOTAL $ EA		$546,799.19

TYPICAL XWAY / CROSSROAD — Bridge 2B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.5	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.25%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$546,799**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,222	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	311	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	911	LF		
APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.25%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	30.5			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,070	SF
TOTAL RE-WALL >>>>>>>	**7,375**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES	2	
BORROW EMBANKMENT	0	CY	$8.30		$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)		$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30		$0.00
COLLECTOR PIPE (24" RCP)	2000	LF	$70.00		$140,000.00
CMP OUTLET PIPE (18" CMP)	500	LF	$35.00		$17,500.00
CROSSDRAINS (18" RCP)	820	LF	$35.00		$28,700.00
DITCH BOTTOM INLETS	10	EA	$5,000.00		$50,000.00
INLET (TYPE S)	20	EA	$3,500.00		$70,000.00
MITERED END SECTIONS	10	EA	$5,000.00		$50,000.00
SOD	20,209	SY	$1.50		$30,313.50
SHOULDER GUTTER (LESS S INLETS)	3,538	LF	$24.00		$84,914.13
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,645	LF	$4.00		$14,579.56
APPROACH SLABS	2	EA	$30,396.00		$60,792.00
			TOTAL $ EA		$546,799.19

TYPICAL XWAY / CROSSROAD — Bridge 3A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	32.5	FT	1.37% = 1314'	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.70%		3.00% = 600'	
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT		
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$466,038**	
MEDIAN? (ENTER Y OR N) >>>>>>>	Y			
CROSSDRAIN WIDTH >>>>>>>	82			
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,093	LF		
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	259	LF		
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	834	LF		
APPROACH SLAB WIDTH >>>>>>>	50.66	FT		
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT		
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT		
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.70%			
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT		
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF		
**** RETAINING WALL AUTOMATIC CALCULATION ****				
BRIDGE HEIGHT >>>>>>>	32.5			
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW	
SKEW? (ENTER Y or N) >>>>>>>	Y		1,154	SF
TOTAL RE-WALL >>>>>>>	**8,165**	SF		

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES	2

BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	1600	LF	$70.00	$112,000.00
CMP OUTLET PIPE (18" CMP)	400	LF	$35.00	$14,000.00
CROSSDRAINS (18" RCP)	656	LF	$35.00	$22,960.00
DITCH BOTTOM INLETS	8	EA	$5,000.00	$40,000.00
INLET (TYPE S)	16	EA	$3,500.00	$56,000.00
MITERED END SECTIONS	8	EA	$5,000.00	$40,000.00
SOD	19,316	SY	$1.50	$28,974.00
SHOULDER GUTTER (LESS S INLETS)	3,249	LF	$24.00	$77,974.33
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,334	LF	$4.00	$13,337.48
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$466,037.81

TYPICAL XWAY / CROSSROAD — Bridge 3B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	30.45	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.70%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$453,738**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,017	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	259	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	758	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.70%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	30.45		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	Y		1,068 SF
TOTAL RE-WALL >>>>>>>	**7,355**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE — DRAINAGE SIDES: 2

BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	1600	LF	$70.00	$112,000.00
CMP OUTLET PIPE (18" CMP)	400	LF	$35.00	$14,000.00
CROSSDRAINS (18" RCP)	656	LF	$35.00	$22,960.00
DITCH BOTTOM INLETS	8	EA	$5,000.00	$40,000.00
INLET (TYPE S)	16	EA	$3,500.00	$56,000.00
MITERED END SECTIONS	8	EA	$5,000.00	$40,000.00
SOD	16,785	SY	$1.50	$25,177.50
SHOULDER GUTTER (LESS S INLETS)	2,945	LF	$24.00	$70,685.44
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	3,031	LF	$4.00	$12,122.67
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$453,737.61

TYPICAL XWAY / CROSSROAD — Bridge 4A

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	34.55	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.00%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$667,177**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,578	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	350	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,228	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.00%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	34.55		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	Y		1,240 SF
TOTAL RE-WALL >>>>>>>	**9,009**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE — DRAINAGE SIDES: 2

BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	984	LF	$35.00	$34,440.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	29,694	SY	$1.50	$44,541.00
SHOULDER GUTTER (LESS S INLETS)	4,782	LF	$24.00	$114,764.16
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,910	LF	$4.00	$19,640.00
APPROACH SLABS	2	EA	$30,396.00	$60,792.00

		TOTAL $ EA	$667,177.16

TYPICAL XWAY / CROSSROAD — Bridge 4B

BRIDGE APPROACH - RURAL - 2:1 SLOPE

TOTAL OUT-TO-OUT WIDTH OF BRIDGE APPROACH >>>>>>>	50.66	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	34.4	FT	1.37% = 1314'
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.00%		3.00% = 600'
ROADWAY WIDTH AT GRADE >>>>>>>	41.66	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	3	FT	
COST OF BRIDGE APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>			**$665,928**
MEDIAN? (ENTER Y OR N) >>>>>>>	Y		
CROSSDRAIN WIDTH >>>>>>>	82		
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	1,570	LF	
FEET FROM TOUCHDOWN TO 10' HEIGHT >>>>>>>	350	LF	
DISTANCE OF APPROACH ABOVE 10' HEIGHT (GR & SHO GUT L) >>>>>>>	1,220	LF	
APPROACH SLAB WIDTH >>>>>>>	50.66	FT	
ORIGINAL BRIDGE APPROACH WIDTH >>>>>>>	0	FT	
TOTAL BRIDGE EMBANKMENT HEIGHT >>>>>>>	0.0	FT	
AVERAGE % OF APPROACH SLOPE >>>>>>>	2.00%		
ROADWAY WIDTH AT GRADE >>>>>>>	0	FT	
TOTAL EMBANKMENT HEIGHT AT GRADE >>>>>>>	0.0	FT	
LENGTH OF APPROACH (AUTOMATICALLY CALCULATED) >>>>>>>	0	LF	
**** RETAINING WALL AUTOMATIC CALCULATION ****			
BRIDGE HEIGHT >>>>>>>	34.4		
BRIDGE WIDTH (OUT-TO-OUT INCLUDING MEDIAN) >>>>>>>	50.66		EXTRA FOR SKEW
SKEW? (ENTER Y or N) >>>>>>>	Y		1,234 SF
TOTAL RE-WALL >>>>>>>	**8,946**	SF	

CUSTOM BRIDGE APPROACH - RURAL 2:1 SLOPE			DRAINAGE SIDES 2	
BORROW EMBANKMENT	0	CY	$8.30	$0.00
LESS EXISTING EMBANKMENT	0	CY	($8.30)	$0.00
EXCAVATE EXCESS FILL (IF > 0)	0	CY	$5.30	$0.00
COLLECTOR PIPE (24" RCP)	2400	LF	$70.00	$168,000.00
CMP OUTLET PIPE (18" CMP)	600	LF	$35.00	$21,000.00
CROSSDRAINS (18" RCP)	984	LF	$35.00	$34,440.00
DITCH BOTTOM INLETS	12	EA	$5,000.00	$60,000.00
INLET (TYPE S)	24	EA	$3,500.00	$84,000.00
MITERED END SECTIONS	12	EA	$5,000.00	$60,000.00
SOD	29,421	SY	$1.50	$44,131.50
SHOULDER GUTTER (LESS S INLETS)	4,752	LF	$24.00	$114,044.16
GUARDRAIL (OUTSIDE ONLY, NOT IN MEDIAN)	4,880	LF	$4.00	$19,520.00
APPROACH SLABS	2	EA	$30,396.00	$60,792.00
			TOTAL $ EA	$665,927.66

Bridge End Bents and Wing Walls

Segment 1	Avg Height	Area (sf)
Bridge 1A - Begin Bridge	32.3	4110
Bridge 1A - End Bridge	29.9	3662
Bridge 1B - Begin Bridge	30.7	3809
Bridge 1B - End Bridge	30.2	3716
Bridge 2A - Begin Bridge	30.4	3388
Bridge 2A - End Bridge	30.6	3423
Bridge 2B - Begin Bridge	30.5	3406
Bridge 2B - End Bridge	30.5	3406
Bridge 3A - Begin Bridge	30.8	3458
Bridge 3A - End Bridge	34.2	4072
Bridge 3B - Begin Bridge	30.4	3388
Bridge 3B - End Bridge	30.5	3406
Bridge 4A - Begin Bridge	35.2	4261
Bridge 4A - End Bridge	33.9	4016
Bridge 4B - Begin Bridge	35.2	4261
Bridge 4B - End Bridge	33.6	3960
Segment 1 Total		**59742**

Formula for Mainline: (62.66(H) + 2(H^2)
62.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation

Formula for Mainline: (50.66(H) + 2(H^2)
50.66 is the width of bridge out-to-out (includes barrier wall)
assumes a 2:1 front slope
H = Height of Fill as measured in MicroStation

Formula for 1-Lane Ramp: (29.66(H) + 2H^2)*Length
29.66 is the width of 15 lane, 2 6-foot shoulders, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (44.66(H) + 2H^2)*Length
44.66 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 - 1.33 ft barrier wall per side
assumes a 2:1 front slope
H = Height of Fill

*Adjusted to remove wingwall(s) where MSE walls are used

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

MSE Walls

Segment 3	Measured Area (sf)
Bridge 1A - Begin Bridge (one side)	
Bridge 1A - End Bridge (one side)	
Bridge 1B - Begin Bridge (one side)	
Bridge 1B - End Bridge (one side)	
Bridge 2A - Begin Bridge	
Bridge 2A - End Bridge	
Bridge 2B - Begin Bridge	
Bridge 2B - End Bridge	
Bridge 3A - Begin Bridge	
Bridge 3A - End Bridge	
Bridge 3B - Begin Bridge	
Bridge 3B - End Bridge	
Bridge 4A - Begin Bridge	
Bridge 4A - End Bridge	
Bridge 4B - Begin Bridge	
Bridge 4B - End Bridge	
Segment 3 Total	0

H = Height of Fill as measured in MicroStation

Additional Earthwork for Retaining Walls				
Segment 3	Width (lf)	Measured Area (sf)	Volume (cf)	Volume (cy)
Bridge 1A Begin Bridge (Northside Only)	0	0	0	0
Bridge 1A End Bridge (Northside Only)	0	0	0	0
Bridge 1B Begin Bridge (Southside Only)	0	0	0	0
Bridge 1B End Bridge (Southside Only)	0	0	0	0
Segment 3 Total				**0**

Formula: Width * Measured Area
Measured Area in MicroStation

Input area sf as measured in MicroStaion
Output

Additional Earthwork over 3 ft Fill

Jack Brack Parclo				Area (sf)	Length	Avg Height	Volume (cf)	Volume (cy)
Area 1	753+56.04	to	758+47.03	677	490.99	1.38	151320	5605
Area 2	760+53.58	to	782+77.53	30878	2223.95	13.88	8446282	312826
Area 3	784+51.66	to	806+69.88	51514	2218.22	23.22	16015316	593160
Area 4	808+43.51	to	825+65.14	27149	1721.63	15.77	7630971	282629
Area 5	833+40.11	to	843+62.24	415	1022.13	0.41	91144	3376
Area 6	862+26.70	to	884+48.58	2558	2221.88	1.15	569424	21090
Area 7	889+54.62	to	900+02.54	13917	1047.92	13.28	3773210	139749
Area 8	902+63.13	to	919+01.67	57039	1638.54	34.81	20376810	754697
Area 9	920+72.82	to	940+92.98	31872	2020.16	15.78	8959470	331833
Area 10	945+42.07	to	948+92.00	578	349.93	1.65	129823	4809
Jack Brack Parclo Total								**2444965**

Formula for Mainline: (218(H) + 4H^2)*Length
218 is the width of roadway from WB outside shoulder to EB outside shoulder
assumes a 4:1 front slope

H = Height of Fill
Formula for Mainline: (218(H) + 4H^2)*Length
218 is the width of roadway from WB outside shoulder to EB outside shoulder
assumes a 4:1 front slope

H = Height of Fill
218 is the width of typical section at a 3 ft fill depth which is taken into account in the cost per mile calculations

Formula for 1-Lane Ramp: (31(H) + 2H^2)*Length
31 is the width of 15 lane, 2 6-foot shoulders, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

Formula for 2-Lane Ramp: (46(H) + 2H^2)*Length
46 is the width of 24 lanes, 8 ft inside shoulder, 10 ft outside shoulder, and 2 ft per side for guardrail
assumes a 2:1 front slope
H = Height of Fill

*Adjust for Wall Earthwork

Forumlas (DO NOT INPUT VALUES)

Input station range (numerical only)
Input area sf as measured in MicroStaion

Output mainline segments

Additional Earthwork for Muck				
Segment 3	Area (sf)	Avg Height	Volume (cf)	Volume (cy)
Area 1	13694	4	54776	2029
Segment 3 Total				**2029**

Formula: Area*Avg Height

Input area sf as measured in MicroStaion

Appendix D

Typical Section Package

CENTRAL FLORIDA EXPRESSWAY AUTHORITY (CFX)

TYPICAL SECTION PACKAGE

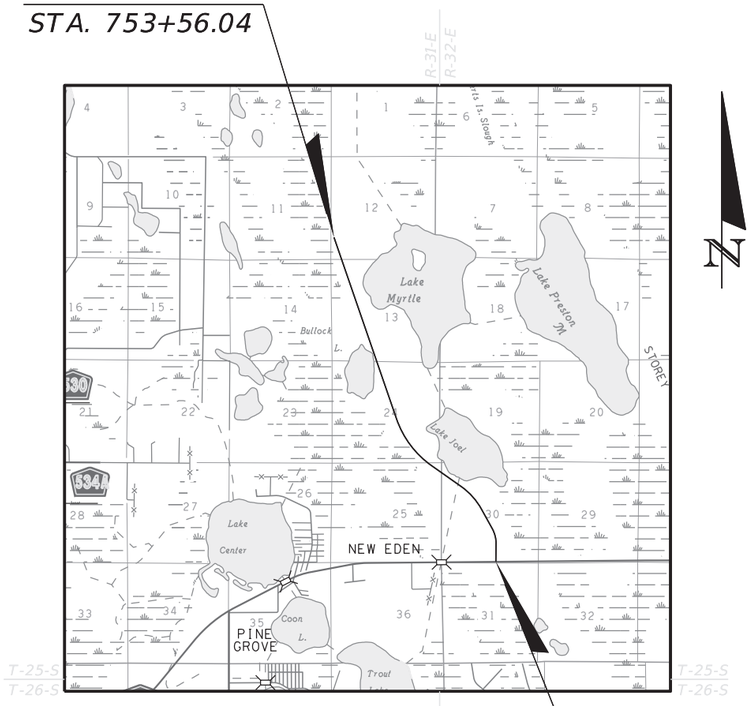
OSCEOLA COUNTY

STATE ROAD NO. N/A

Northeast Connector Expressway (SR 534) - Phase 1
From Cyrils Drive to Nova Road (CR 532)

CFX PROJECT NO. 599-228

BEGIN PROJECT
STA. 753+56.04



END PROJECT
STA. 949+24.15

DANIEL KRISTOFF JR. LICENSE No 30379 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY:

ON THE DATE ADJACENT TO THE SEAL

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

RS&H, INC.
10748 DEERWOOD PARK BLVD SOUTH
JACKSONVILLE, FL 32256
CERTFICATE OF AUTHORIZATION: 5620
DANIEL KRISTOFF, JR, P.E. NO. 30379

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

TYPICAL SECTION PACKAGE

SHEET NO. 1

$DATE$ $TIME$

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
(X)	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES
- ( ) N/A

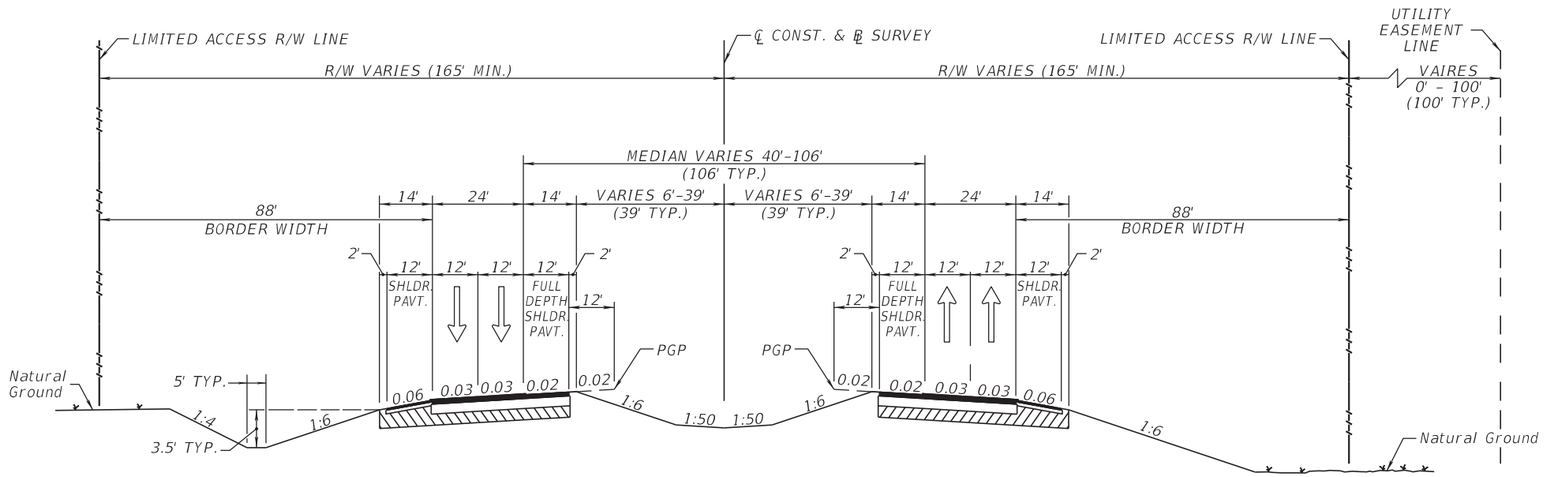
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. BORDER WIDTH

TYPICAL SECTION No. 1



INTERIM TYPICAL SECTION
NORTHEAST CONNECTOR EXTENSION (SR 534)

STA. 753+56.04 TO STA. 939+70.66

TRAFFIC DATA
STA. 753+56.04 TO STA. 807+53.43

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 19,800
ESTIMATED DESIGN YEAR = 2045 AADT = 35,900
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

TRAFFIC DATA
STA. 807+53.43 TO STA. 939+70.66

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 5,800
ESTIMATED DESIGN YEAR = 2045 AADT = 19,000
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

SHEET NO.
2

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
(X)	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES
- ( ) N/A

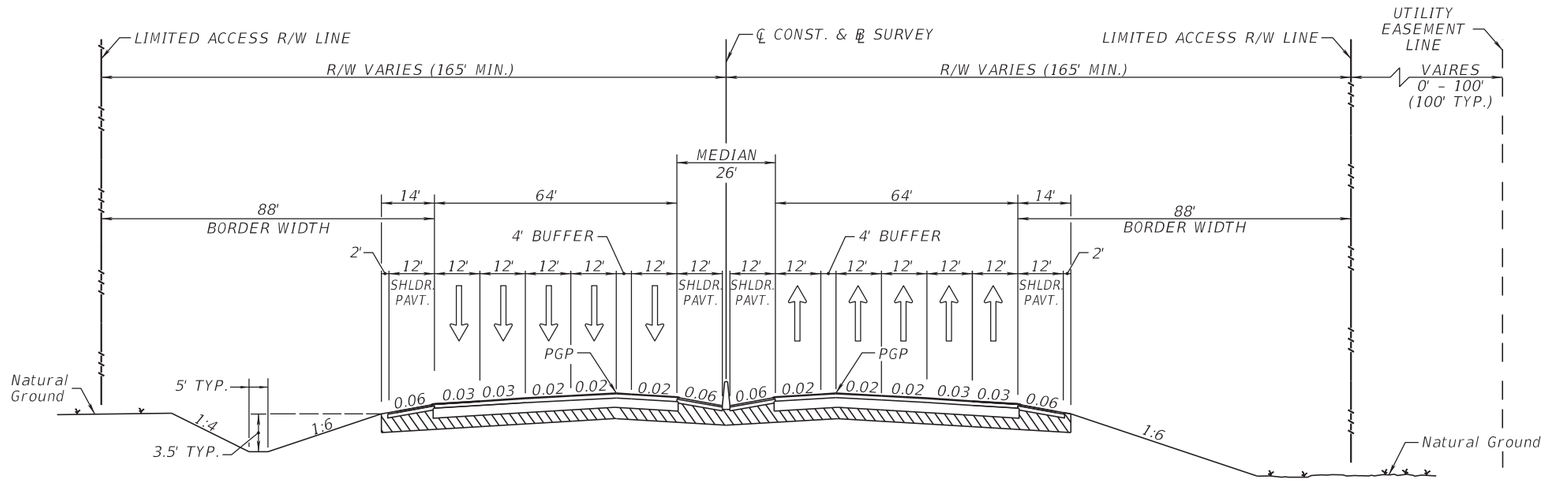
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. BORDER WIDTH

TYPICAL SECTION No. 2



ULTIMATE TYPICAL SECTION
NORTHEAST CONNECTOR EXTENSION (SR 534)

STA. 753+56.04 TO STA. 939+70.66

TRAFFIC DATA
STA. 753+56.04 TO STA. 807+53.43

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 19,800
ESTIMATED DESIGN YEAR = 2045 AADT = 35,900
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

TRAFFIC DATA
STA. 807+53.43 TO STA. 939+70.66

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 5,800
ESTIMATED DESIGN YEAR = 2045 AADT = 19,000
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

SHEET NO.
3

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
(X)	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES
- ( ) N/A

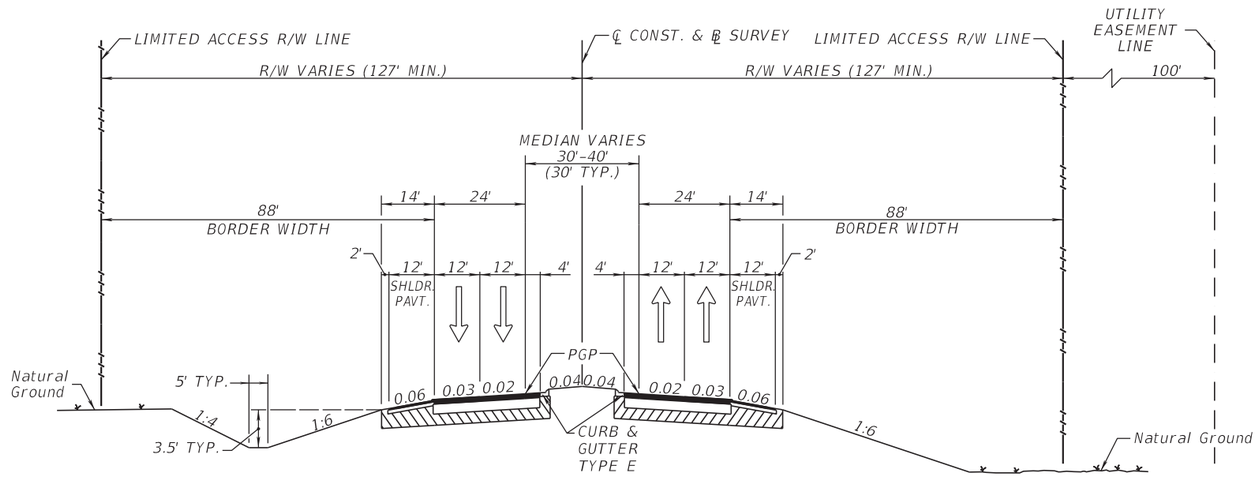
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. BORDER WIDTH

TYPICAL SECTION No. 3



TYPICAL SECTION
NORTHEAST CONNECTOR EXTENSION (SR 534)

STA. 939+70.66 TO STA. 949+24.15

TRAFFIC DATA

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 5,800
ESTIMATED DESIGN YEAR = 2045 AADT = 19,000
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

SHEET NO.
4

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
(X) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

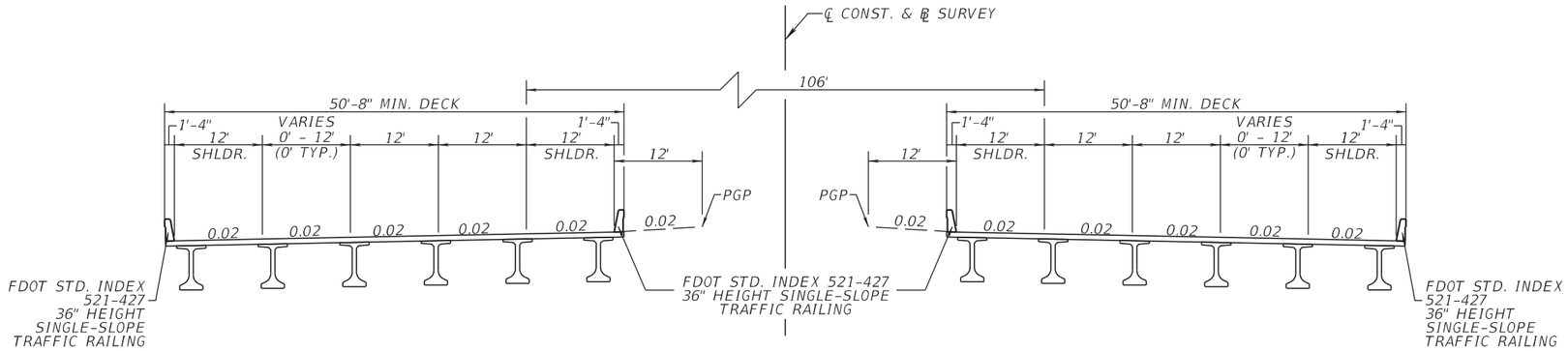
(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES
( ) N/A

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 4



BRIDGE TYPICAL SECTION

NORTHEAST CONNECTOR EXTENSION (SR 534)

OVER FUTURE PLANNED LOCAL ROAD
OVER JACK BRACK ROAD
OVER CANAL 32C
OVER FUTURE SUNBRIDGE PARKWAY

TRAFFIC DATA
STA. 753+56.04 TO STA. 807+53.43

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 19,000
ESTIMATED DESIGN YEAR = 2045 AADT = 35,900
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

TRAFFIC DATA
STA. 807+53.43 TO STA. 939+70.66

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 5,800
ESTIMATED DESIGN YEAR = 2045 AADT = 19,000
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 70 MPH
POSTED SPEED = 70 MPH

SHEET NO.
5

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
(X)	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( )	NATIONAL HIGHWAY SYSTEM
( )	STRATEGIC INTERMODAL SYSTEM
(X)	STATE HIGHWAY SYSTEM
( )	OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X)	1 - FREEWAY
( )	2 - RESTRICTIVE w/Service Roads
( )	3 - RESTRICTIVE w/660 ft. Connection Spacing
( )	4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( )	5 - RESTRICTIVE w/440 ft. Connection Spacing
( )	6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( )	7 - BOTH MEDIAN TYPES
( )	N/A

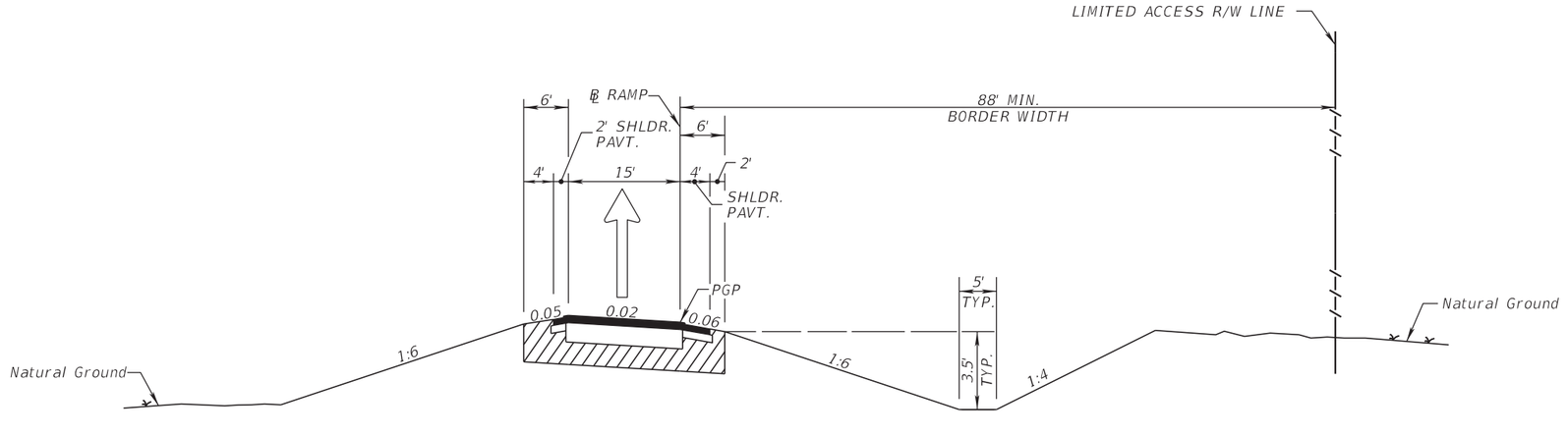
CRITERIA

(X)	NEW CONSTRUCTION / RECONSTRUCTION
( )	RESURFACING (LA FACILITIES)
( )	RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. BORDER WIDTH

TYPICAL SECTION No. 5



TYPICAL SECTION
SINGLE LANE RAMP

NB & SB EXIT RAMPS FROM NORTHEAST CONNECTOR TO JACK BRACK ROAD
NB & SB ENTRANCE RAMPS TO NORTHEAST CONNECTOR FROM JACK BRACK ROAD

TRAFFIC DATA
SB EXIT RAMP &
NB ENTRANCE RAMP

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 15,500
ESTIMATED DESIGN YEAR = 2045 AADT = 18,600
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

TRAFFIC DATA
NB EXIT RAMP &
SB ENTRANCE RAMP

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 1,500
ESTIMATED DESIGN YEAR = 2045 AADT = 1,700
K = 11% D = 60% T = 4 % (24 HOUR)
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

SHEET NO.
6

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- ( ) STATE HIGHWAY SYSTEM
- (X) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

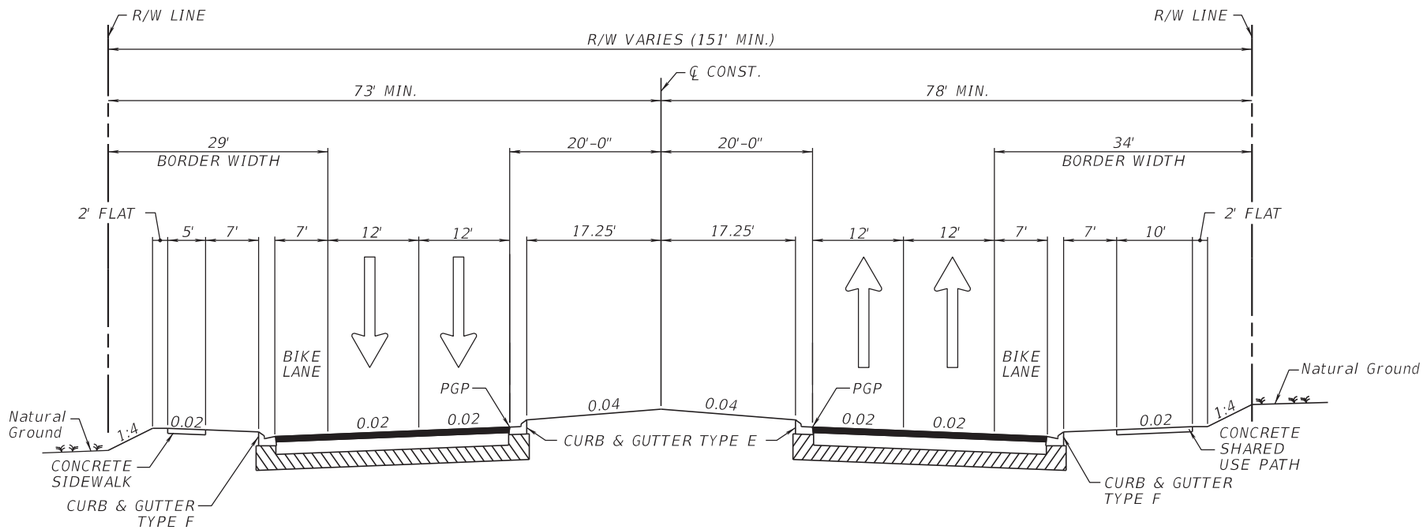
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES
- (X) N/A

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 6



TYPICAL SECTION
JACK BRACK ROAD

TRAFFIC DATA
WEST JACK BRACK ROAD

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 12,600
ESTIMATED DESIGN YEAR = 2045 AADT = 22,300
K = 9 % D = 55% T = 4 % (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

TRAFFIC DATA
EAST JACK BRACK ROAD

CURRENT YEAR = 2020 AADT = N/A
ESTIMATED OPENING YEAR = 2025 AADT = 12,800
ESTIMATED DESIGN YEAR = 2045 AADT = 22,800
K = 9 % D = 55% T = 4 % (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

SHEET NO.
7

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- ( ) STATE HIGHWAY SYSTEM
- (X) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

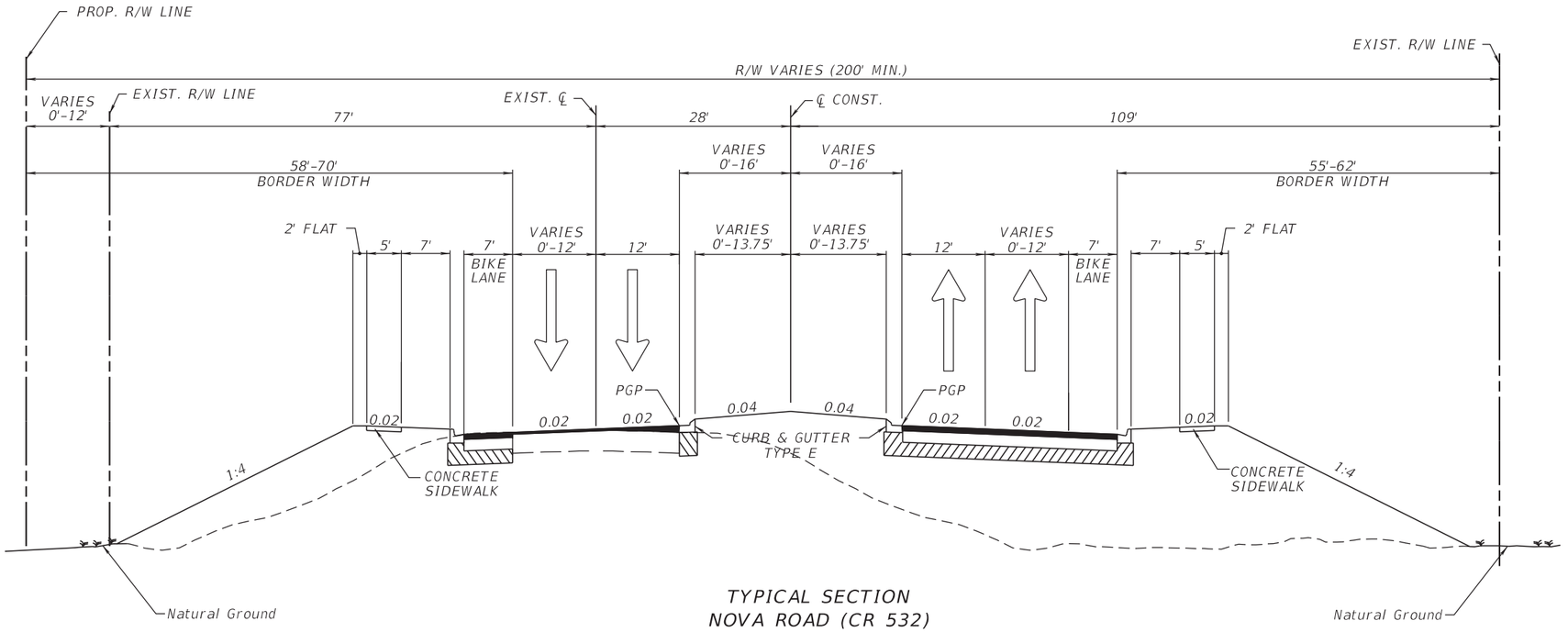
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES
- (X) N/A

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 7



TYPICAL SECTION
NOVA ROAD (CR 532)

STA. 104+51.73 TO STA. 162+99.48

TRAFFIC DATA
STA. 104+51.73 TO STA. 132+51.16

CURRENT YEAR = 2020 AADT = 8,600
ESTIMATED OPENING YEAR = 2025 AADT = 9,600
ESTIMATED DESIGN YEAR = 2045 AADT = 21,500
K = 9 % D = 55% T = 6 % (24 HOUR)
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

TRAFFIC DATA
STA. 132+51.16 TO 162+99.48

CURRENT YEAR = 2020 AADT = 2,000
ESTIMATED OPENING YEAR = 2025 AADT = 8,300
ESTIMATED DESIGN YEAR = 2045 AADT = 16,900
K = 9 % D = 55% T = 6 % (24 HOUR)
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

SHEET NO.
8