03 - CIVIL
INDEX OF DRAWINGS

DRAWING NUMBER	DRAWING TITLE	DRAWING NUMBER	DRAWING TITLE
INX-01	INDEX OF DRAWINGS		
ALN-01 - ALN-10	ALIGNMENT PLAN		
TYP-01	TYPICAL SECTION		
MDS-01 - MDS-06	MISCELLANEOUS DETAILS		
CIV-01 - CIV-10	CIVIL PLANS		
PRO-01 - PRO-05	ROUTE 72 PROFILE		
DU-01 - DU-10	DRAINAGE AND UTILITY PLANS		
XSC-01 - XSC-46	CROSS-SECTIONS		

DESIGNED BY:
CONSULTANT COMPANY NAME

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: DMD CHECKED BY: PMB

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERISDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

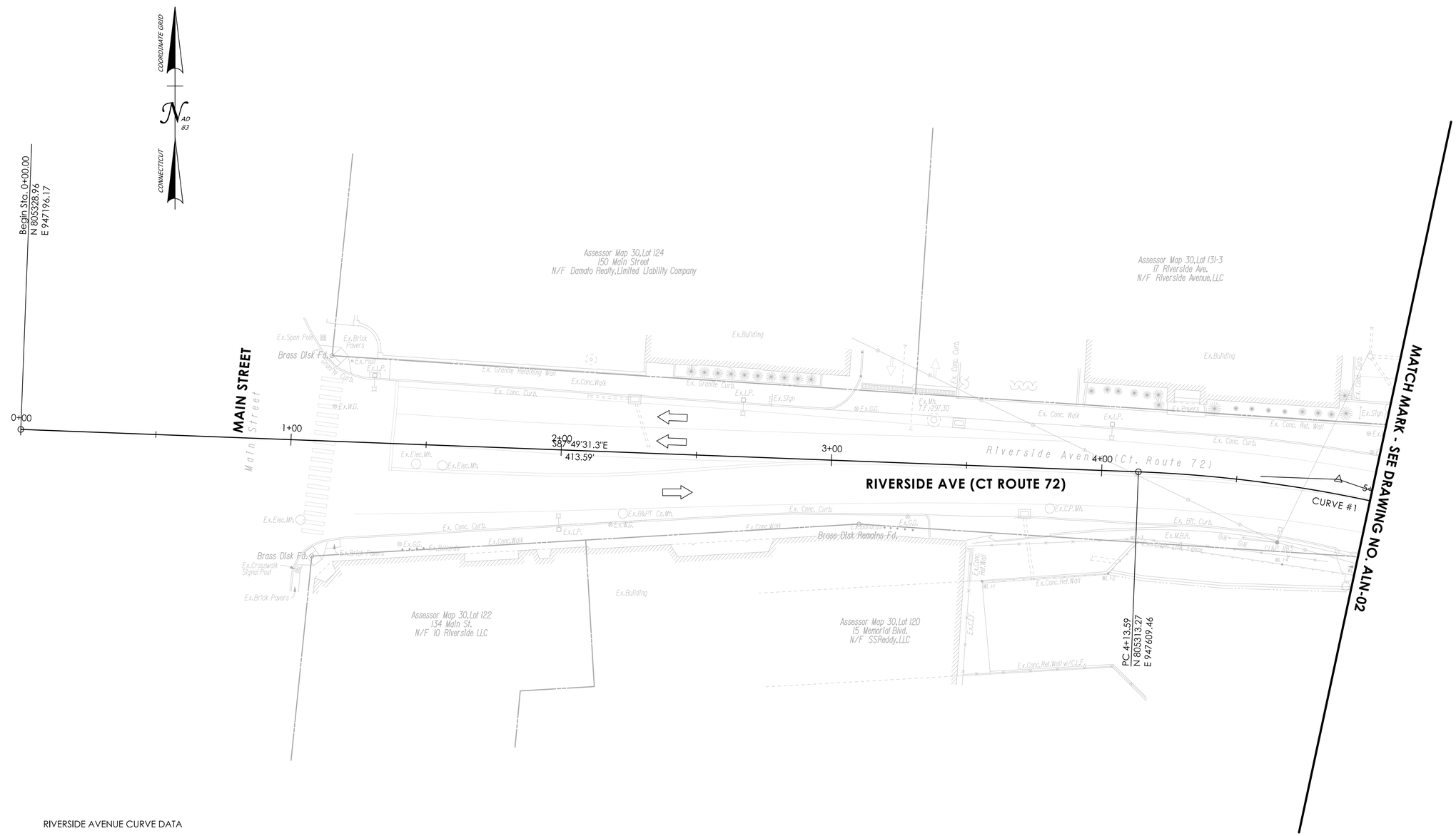
DRAWING TITLE: **INDEX OF DRAWINGS**

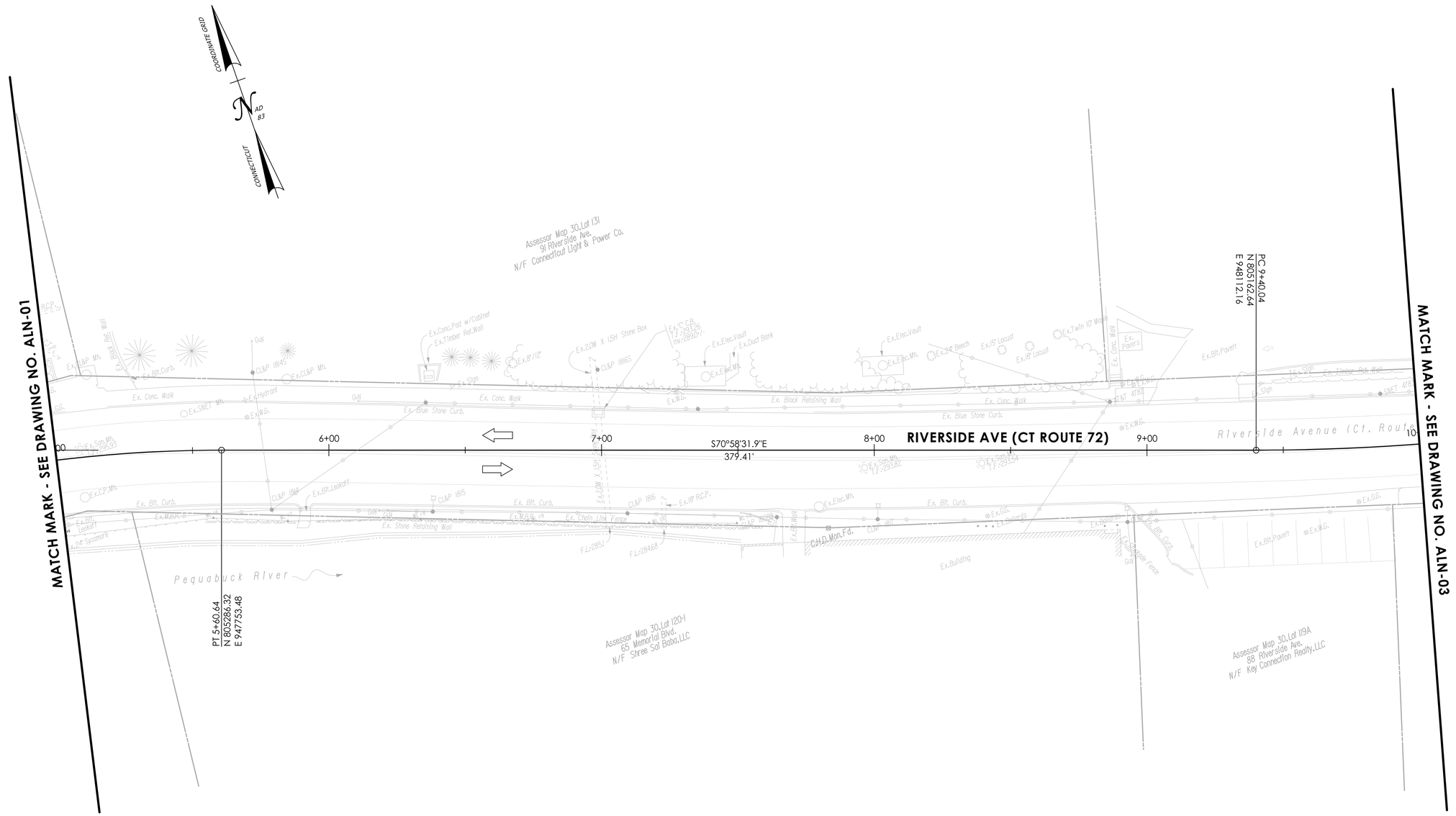
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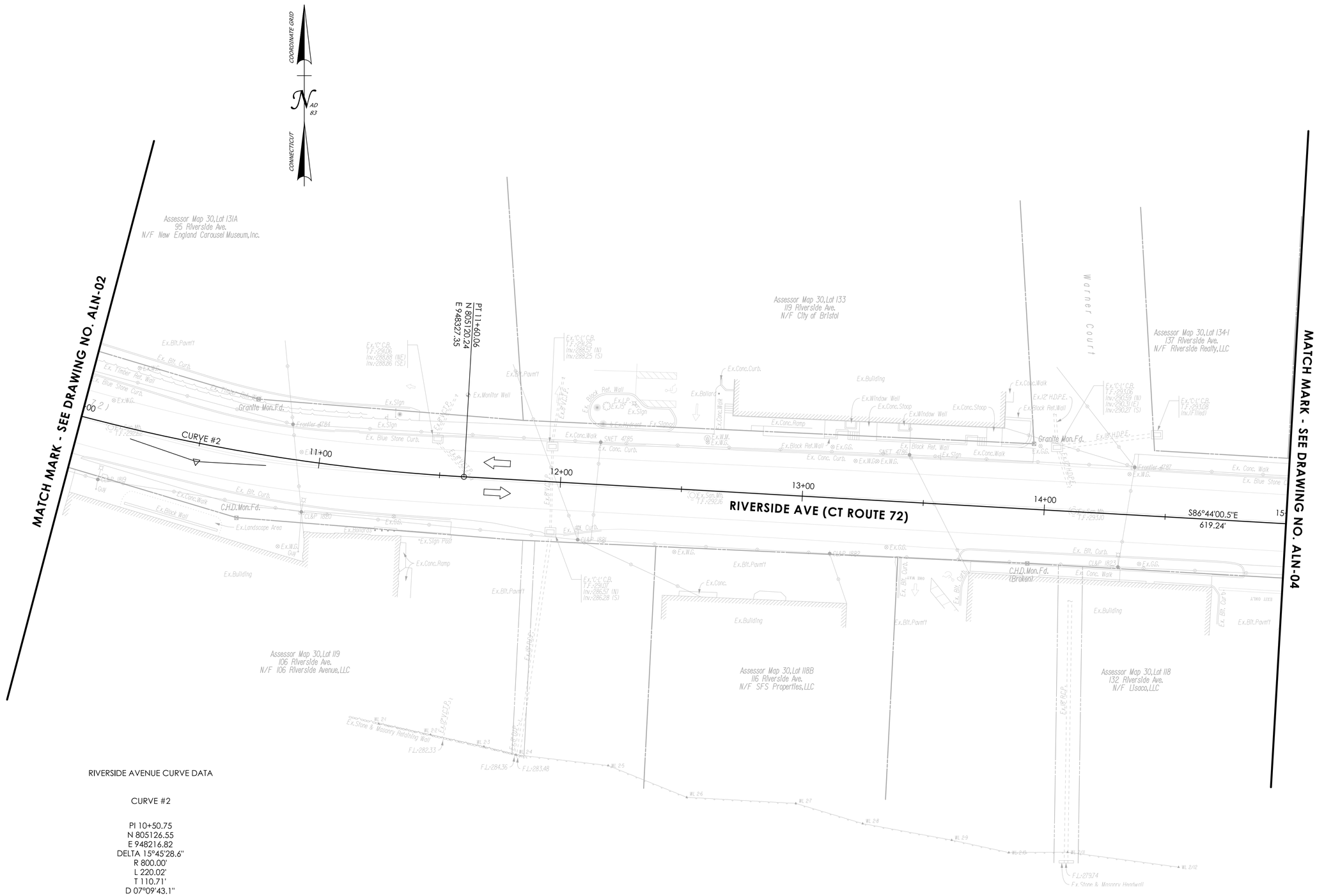
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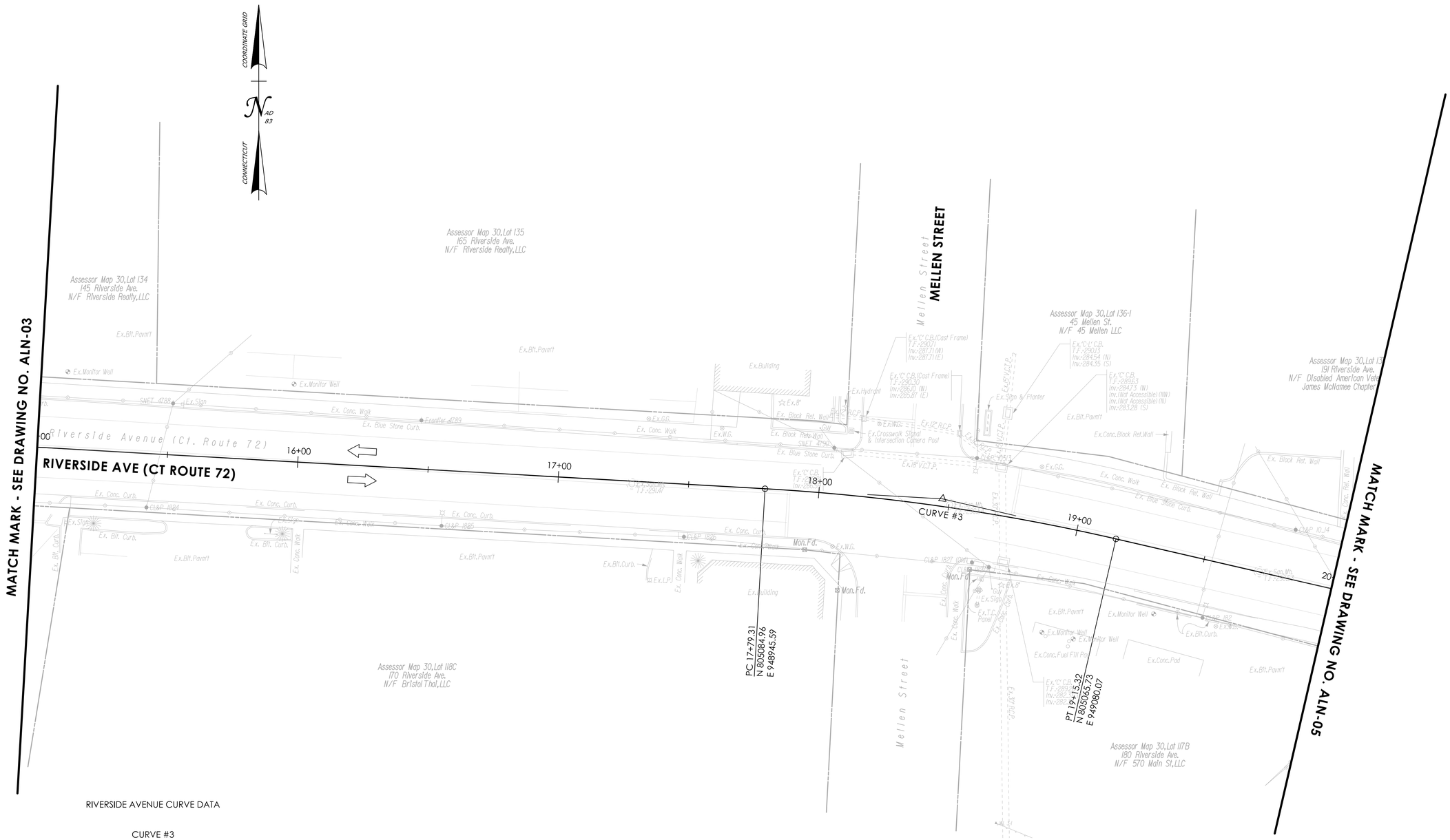
SHEET NO.: 03.01

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PLOTTED DATE: 1/22/2026


COORDINATE GRID
N
NAD 83
CONNECTICUT
Begin Sta. 0+00.00
N 805328.96
E 947196.17
0+00
MAIN STREET
Main Street
1+00
2+00
S87°49'31.3"E
413.59'
3+00
4+00
RIVERSIDE AVE (CT ROUTE 72)
Riverside Avenue (Ct. Route 72)
CURVE #1
MATCH MARK - SEE DRAWING NO. ALN-02
Assessor Map 30, Lot 124
150 Main Street
N/F Damato Realty, Limited Liability Company
Assessor Map 30, Lot 131-3
17 Riverside Ave.
N/F Riverside Avenue, LLC
Assessor Map 30, Lot 122
134 Main St.
N/F 10 Riverside LLC
Assessor Map 30, Lot 120
15 Memorial Blvd.
N/F SSReddy, LLC
Brass Disk Fd.
Brass Disk Remains Fd.
Ex.Span Poles
Ex.Brick Pavers
Ex.Building
Ex. Granite Retaining Wall
Ex.Conc.Walk
Ex. Granite Curb
Ex. Conc. Curb
Ex.L.P.
Ex.Sign
Ex.W.G.
Ex.Elec.Mh.
Ex.Conc. Curb
Ex.Conc.Walk
Ex.B&PT Co.Mh.
Ex.W.G.
Ex.G.G.
Ex.Bollards
Ex.Stone Curb
Ex.Crosswalk Signal Post
Ex.Brick Pavers
Ex.Building
Ex.Conc.Ret.Wall
Ex.C.L.F.
Ex.Conc.Ret.Wall w/C.L.F.
Ex.C.P.
Ex.Elec.Mh.
Ex.Conc. Curb
Ex.Conc.Walk
Ex.G.G.
Ex.Bollards
Ex.Stone Curb
Ex.Conc. Curb
Ex.Conc.Walk
Ex.C.P.Mh.
Ex. Blt. Curb
Ex.M.B.R.
Guy
Gut
C.L.F.
Ex.Conc.Ret.Wall
Ex.Sign
Ex.Conc. Ret. Wall
Ex.Conc. Curb
Ex.Conc. Curb
Ex.Mh. T.F.=247.30
Ex.Conc. Curb
Ex.Conc. Walk
Ex.L.P.
Ex.Bollards
Ex.Conc. Curb
Ex.Conc. Walk
Ex.Conc. Curb
Ex.Conc. Curb
Ex.Conc. Curb


COORDINATE GRID
NAD 83
CONNECTICUT
MATCH MARK - SEE DRAWING NO. ALN-01
MATCH MARK - SEE DRAWING NO. ALN-03
RIVERSIDE AVE (CT ROUTE 72)
S70°58'31.9"E
379.41'
6+00
7+00
8+00
9+00
PC 9+40.04
N 805162.64
E 948112.16
PT 5+40.64
N 805286.32
E 947753.48
Assessor Map 30,Lot 131
91 Riverside Ave.
N/F Connecticut Light & Power Co.
Assessor Map 30,Lot 120-1
65 Memorial Blvd.
N/F Shree Sai Baba,LLC
Assessor Map 30,Lot 119A
88 Riverside Ave.
N/F Key Connection Realty,LLC
Riverside Avenue (Ct. Route 72)
Pequabuck River
Ex.Conc.Pad w/Cabinet
Ex.Timber Ret.Wall
Ex.Block Ret.Wall
Ex.2.0W X 1.5H Stone Box
Ex.Elec.Vault
Ex.Duct Bank
Ex.Elec.MH.
Ex.Blk. Retaining Wall
Ex.Stone Retaining Wall
Ex.Chain Link Fence
Ex.Bituminous Path
Ex.Building
C.H.D.Mon.Fd.
Ex.Blt. Curb.
Ex. Conc. Walk
Ex. Blue Stone Curb.
Ex. Blt. Curb.
Ex.Sign
Ex.Hydrant
Ex.W.G.
Ex.SNET MH.
Ex.C.P.MH.
Ex.Sam.MH.
Ex.G.G.
Ex.Pavers
Ex.Blt.Pavmt
Ex.Conc. MH
Ex.Twin 17" Maple
Ex.24" Beech
Ex.18" Locust
Ex.8" Locust
Ex.Blt.Leaderf
Ex.24" Sycamore
Ex.Blt.Pavmt
Ex.Bituminous Path
Ex.Chain Link Fence
Ex.Guide Rail
Ex.Blt. Curb.
Ex.Sam.MH. F.F.=293.53
Ex.Sam.MH. F.F.=293.82
Ex.Sam.MH. F.F.=293.54
Ex.C.B. F.F.=293.26 Inv.=285.07
Ex.18" R.C.P.
Ex.24"W X 1.5H Stone Box
CL&P 1816
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COORDINATE GRID
NAD 83
CONNECTICUT
MATCH MARK - SEE DRAWING NO. ALN-02
MATCH MARK - SEE DRAWING NO. ALN-04
CURVE #2
PT 11+60.06
N 805120.24
E 948327.35
11+00
12+00
13+00
14+00
RIVERSIDE AVE (CT ROUTE 72)
S86°44'00.5"E
619.24'
Warner Court
Assessor Map 30, Lot 131A
95 Riverside Ave.
N/F New England Carousel Museum, Inc.
Assessor Map 30, Lot 133
119 Riverside Ave.
N/F City of Bristol
Assessor Map 30, Lot 134-1
137 Riverside Ave.
N/F Riverside Realty, LLC
Assessor Map 30, Lot 119
106 Riverside Ave.
N/F 106 Riverside Avenue, LLC
Assessor Map 30, Lot 118B
116 Riverside Ave.
N/F SFS Properties, LLC
Assessor Map 30, Lot 118
132 Riverside Ave.
N/F Lisaco, LLC
Granite Mon.Fd.
C.H.D.Mon.Fd.
C.H.D.Mon.Fd. (Broken)
Ex. Bit. Pavmt
Ex. Bit. Curb
Ex. Blue Stone Curb.
Ex. Timber Ret. Wall
Ex. Conc. Curb.
Ex. Conc. Walk
Ex. Block Ret. Wall
Ex. Sign
Ex. Building
Ex. Conc. Ramp
Ex. Conc. Stoop
Ex. Window Well
Ex. Bollard
Ex. Conc. Wall
Ex. Landscape Area
Ex. Monitor Well
Ex. Hydrant
Ex. Sign Post
Ex. Store & Masonry Retaining Wall
Ex. Store & Masonry Headwall
Ex. Conc. Ramp
Ex. Conc. Stoop
Ex. Conc. Walk
Ex. Block Ret. Wall
Ex. Sign
Ex. Conc. Curb.
Ex. Bit. Pavmt
Ex. Building
Ex. Conc.
Ex. Bit. Curb
Ex. Blue Stone Curb.
Ex. Conc. Walk
Ex. Bit. Curb
Ex. Bit. Pavmt
Ex. Building
Ex. Bit. Pavmt
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Ex. Conc. Walk
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Ex. Conc. Walk
Ex. Blue Stone Curb.



RIVERSIDE AVENUE CURVE DATA

CURVE #3

PI 18+47.48
N 805081.08
E 949013.65
DELTA 09°44'26.6"
R 800.00'
L 136.01'
T 68.17'
D 07°09'43.1"

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC., 115 GLASTONBURY BLVD, GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 20 40
SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

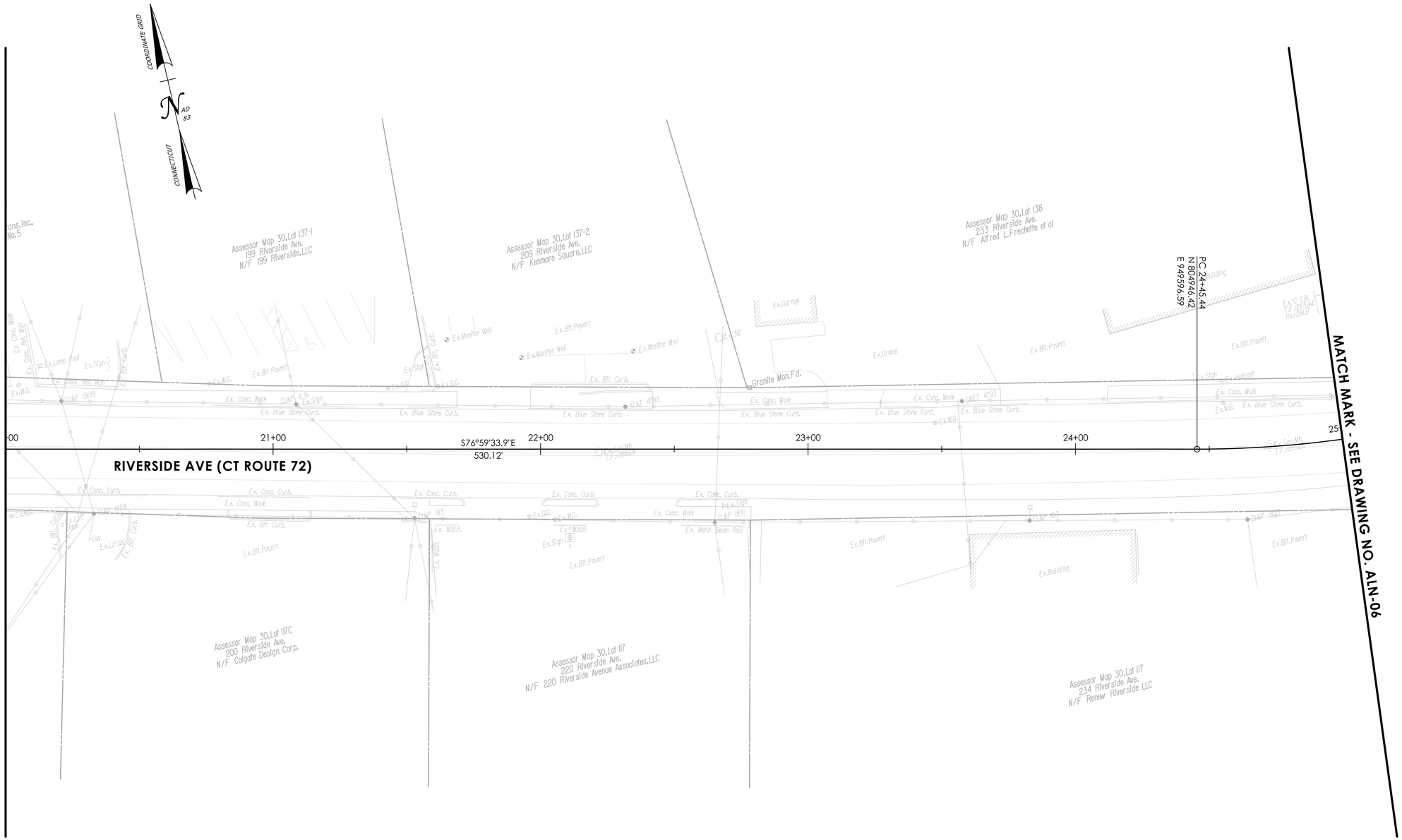
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PROJECT NO.: **0017-0196**

DRAWING NO.: **ALN-04**

SHEET NO.: 03.05

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PLOTTED DATE: 12/5/2025



RIVERSIDE AVENUE CURVE DATA

CURVE #4

PI 25+59.74
N 804920.69
E 949707.95
DELTA 31°53'36.6"
R 400.00'
L 222.66'
T 114.30'
D 14°19'26.2"

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 20 40
SCALE 1" = 20'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

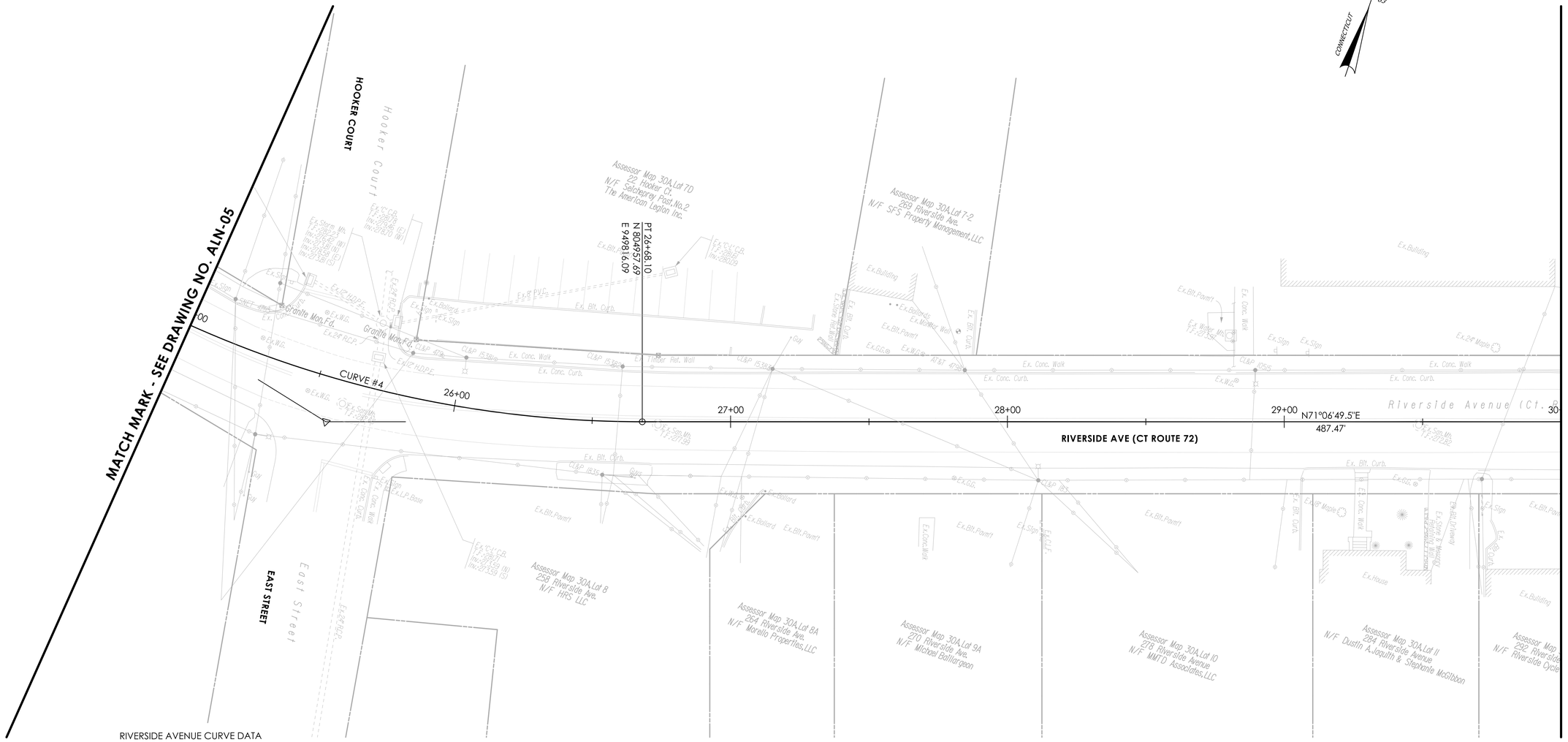
DRAWING TITLE:
ALIGNMENT PLANS

PROJECT NO.:
0017-0196

DRAWING NO.:
ALN-05

SHEET NO.:
03.06

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PLOTTED DATE: 12/5/2025



RIVERSIDE AVENUE CURVE DATA

CURVE #4

PI 25+59.74
N 804920.69
E 949707.95
DELTA 31°53'36.6"
R 400.00'
L 222.66'
T 114.30'
D 14°19'26.2"

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 20 40
SCALE
1" = 20'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

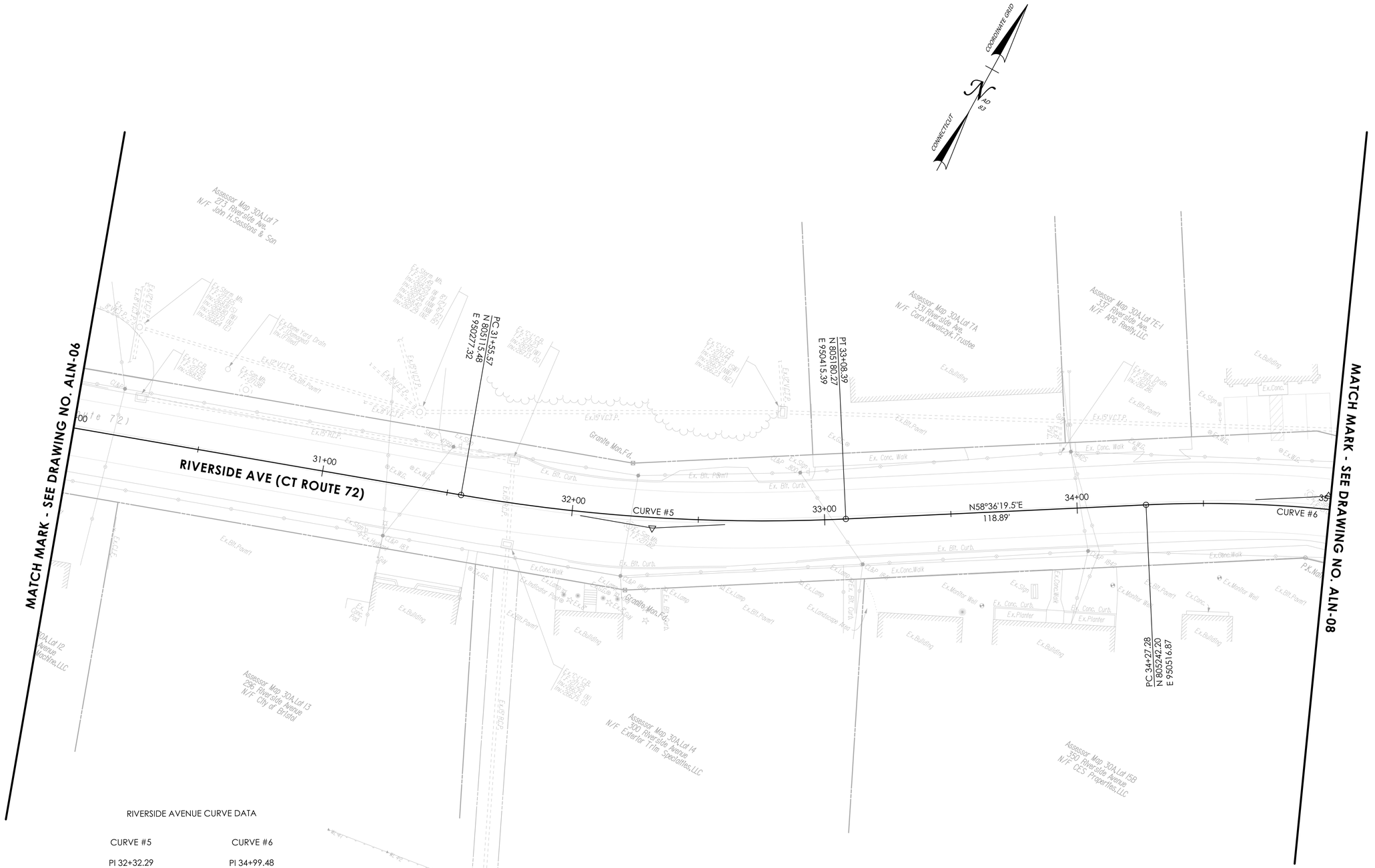
DRAWING TITLE:
ALIGNMENT PLANS

PROJECT NO.:
0017-0196

DRAWING NO.:
ALN-06

SHEET NO.:
03.07

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PLOTTED DATE: 12/5/2025



RIVERSIDE AVENUE CURVE DATA

CURVE #5	CURVE #6
PI 32+32.29	PI 34+99.48
N 805140.31	N 805279.81
E 950349.91	E 950578.50
DELTA 12°30'30.0"	DELTA 16°26'00.0"
R 700.00'	R 500.00'
L 152.82'	L 143.41'
T 76.71'	T 72.20'
D 08°11'06.4"	D 11°27'33.0"

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 20 40
SCALE
1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

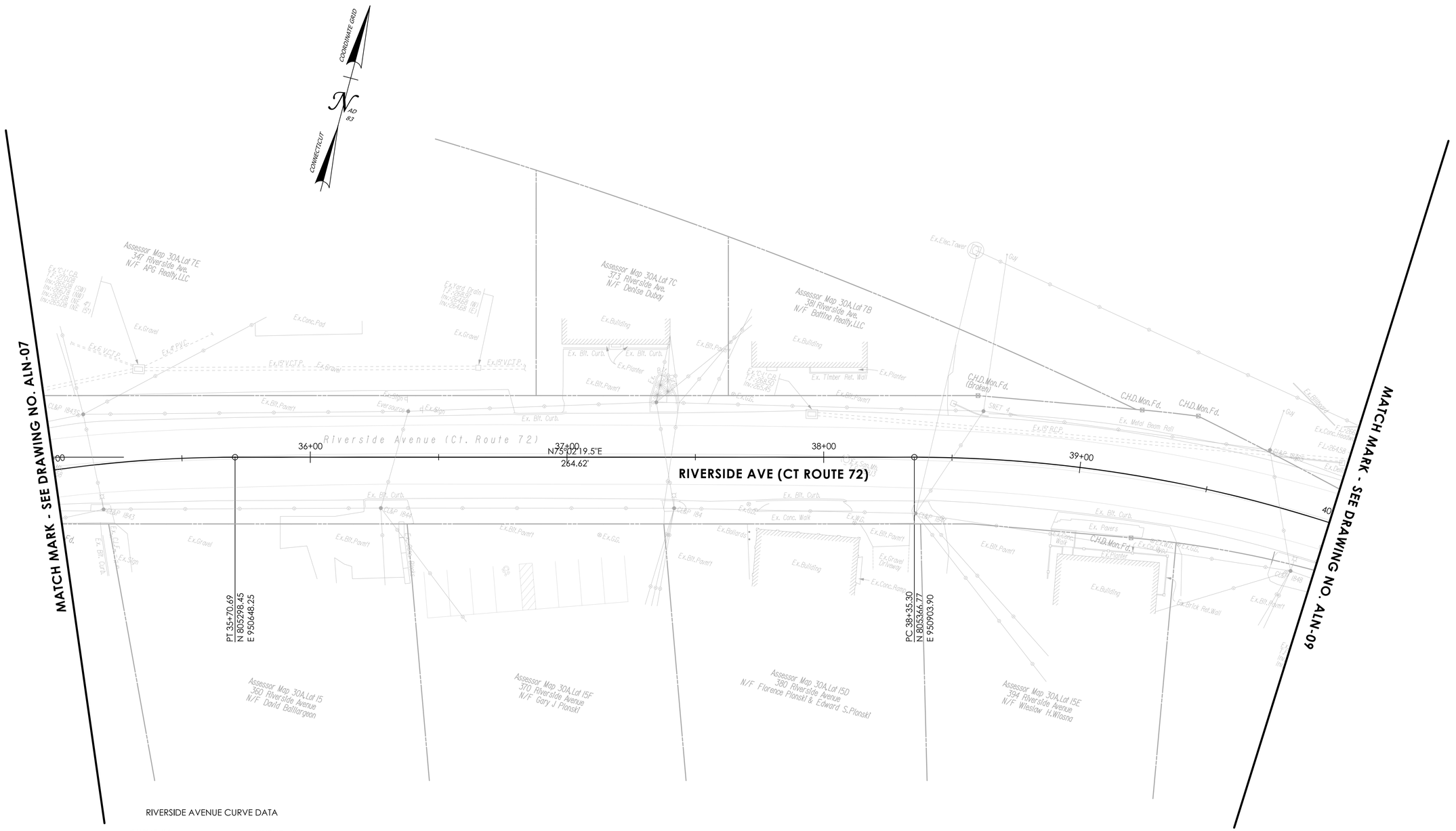
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PROJECT NO.: **0017-0196**

DRAWING NO.: **ALN-07**

SHEET NO.: 03.08

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PLOTTED DATE: 12/5/2025



RIVERSIDE AVENUE CURVE DATA

CURVE #6	CURVE #7
PI 34+99.48	PI 43+04.95
N 805279.81	N 805488.01
E 950578.50	E 951357.63
DELTA 16°26'00.0"	DELTA 83°37'46.1"
R 500.00'	R 525.00'
L 143.41'	L 766.30'
T 72.20'	T 469.65'
D 11°27'33.0"	D 10°54'48.5"

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 20 40
SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

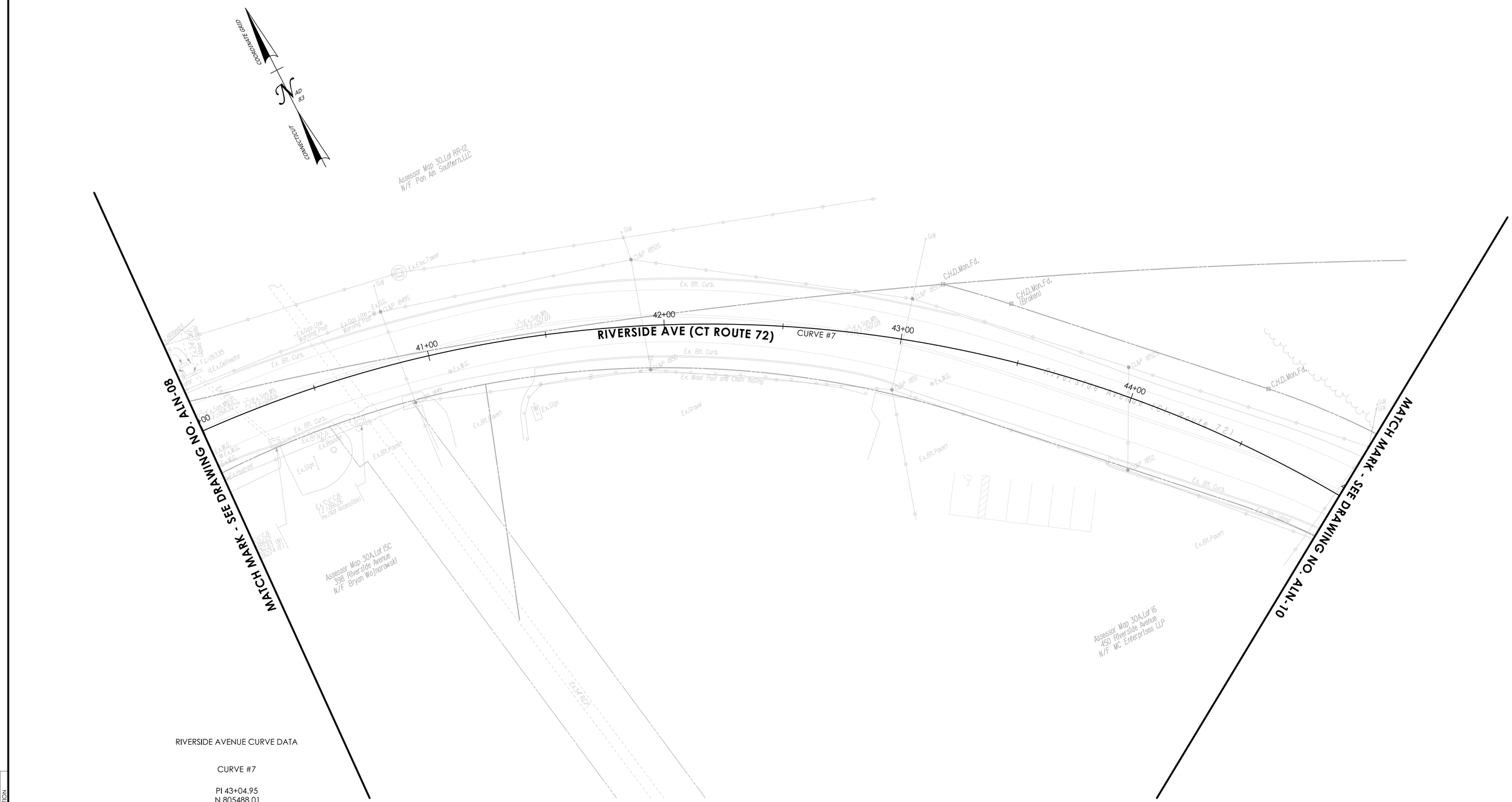
DRAWING TITLE: ALIGNMENT PLANS

PROJECT NO.: 0017-0196

DRAWING NO.: ALN-08

SHEET NO.: 03.09

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PLOTTED DATE: 12/5/2025



RIVERSIDE AVENUE CURVE DATA

CURVE #7

PI 43+04.95
N 805488.01
E 951357.63
DELTA 83°37'46.1"
R 525.00'
L 766.30'
T 469.65'
D 10°54'48.5"

REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:

GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 20 40
SCALE
1" = 20'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

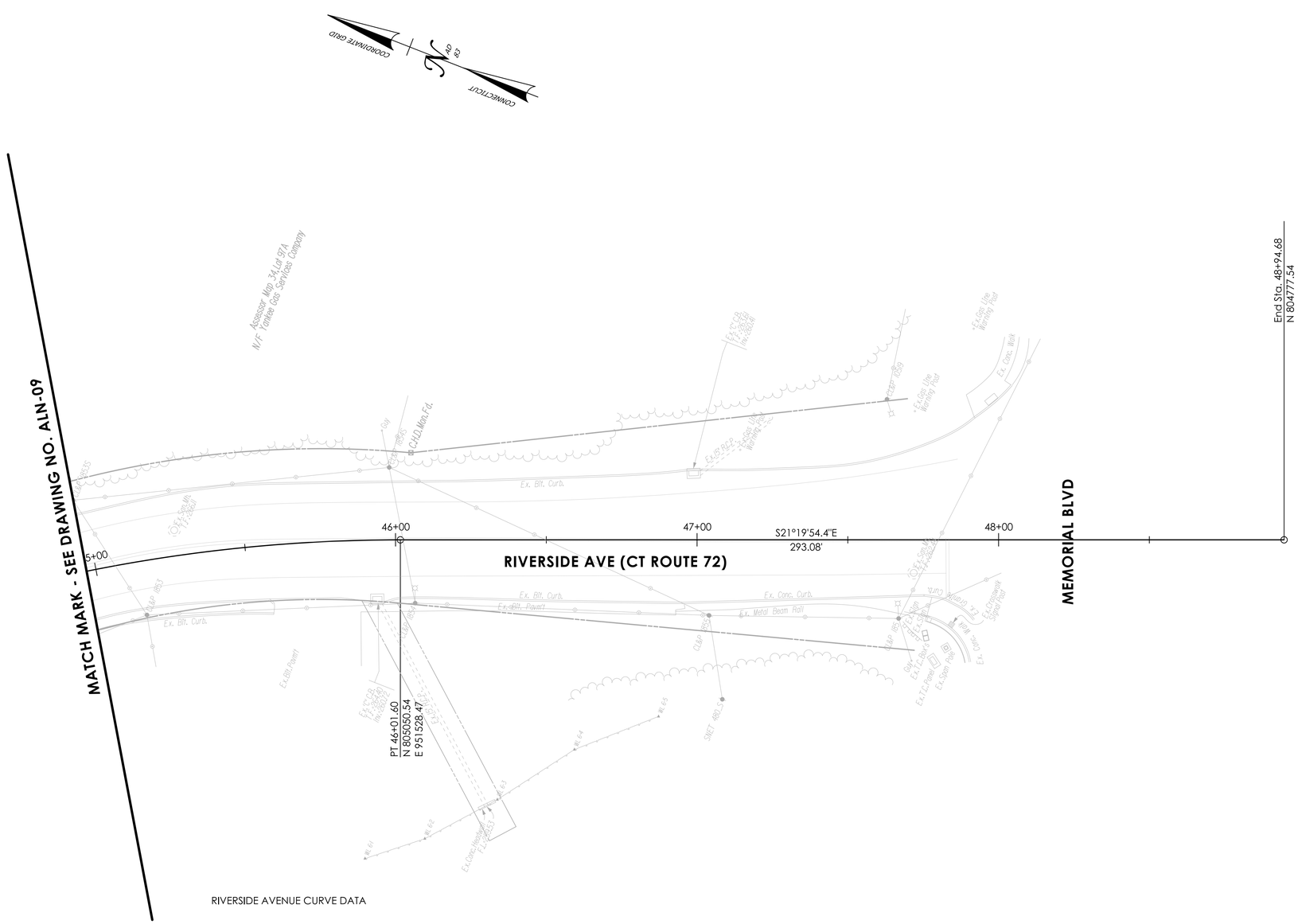
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ALIGNMENT PLANS

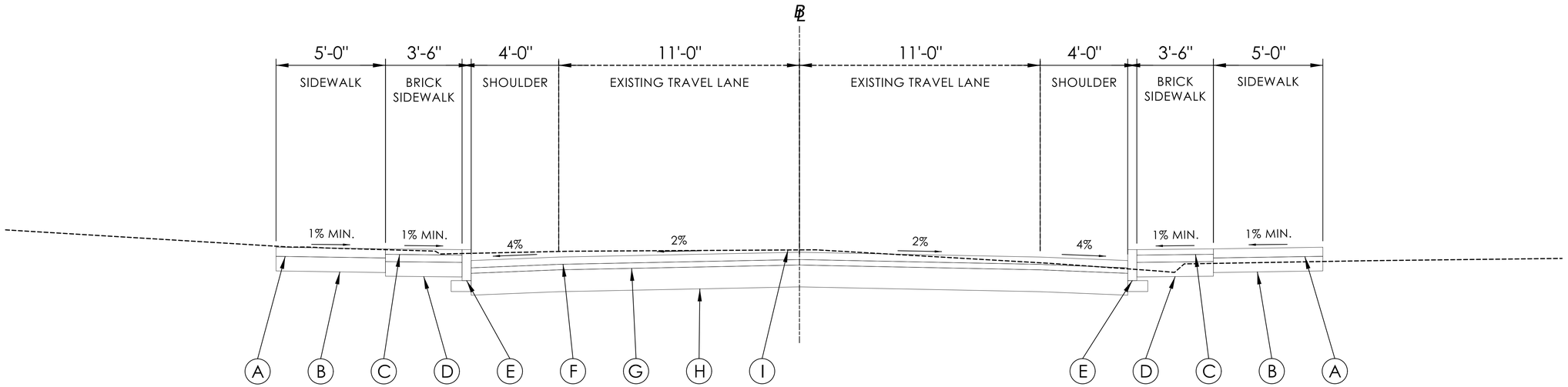
PROJECT NO.:
0017-0196

DRAWING NO.:
ALN-09

SHEET NO.:
03.10

LASTED SAVED BY: SLovely **FILE NAME:** C:\Users\SLovely\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Contract_Plans\HW_CP_40968_ALN-09.dgn
PLOTTED DATE: 12/5/2025


COORDINATE GRID
CONNECTICUT
MATCH MARK - SEE DRAWING NO. ALN-09
RIVERSIDE AVE (CT ROUTE 72)
MEMORIAL BLVD
S21°19'54.4"E
293.08'
PT 46+01.60
N 805050.54
E 951528.47
End Sta. 48+94.68
N 804777.54
E 951635.09
Assessor Map 34 Lot 97A
N/F Yankee Gas Services Company
Ex. Bit. Curb.
Ex. Conc. Curb.
Ex. Metal Beam Rail
Ex. Bit. Paved
Ex. Conc. Walk
Ex. Crosswalk
Ex. Traffic Signal Pole
Ex. Sign Post
Ex. Gas Line Warning Post
Ex. Gas Line Warning Sign
Ex. Gas Line Warning Post
Ex. Gas Valve
Ex. Gas Riser
Ex. Gas Line
Ex. Gas Line Marker
Ex. Gas Line Warning Post
Ex. Gas Line Warning Sign
Ex. Gas Line Warning Post
Ex. Gas Line Warning Post
Ex. Gas Line Warning Post



TYPICAL SECTION
00+00 - 48+00
CIV-01 - CIV-10
NOT TO SCALE

LEGEND

- (A) 5" CONCRETE SIDEWALK
- (B) 8" GRANULAR FILL
- (C) BRICK SIDEWALK
- (D) 8" PROCESSED AGGREGATE
- (E) GRANITE STONE CURBING
- (F) 4" HMA S0.5 (PLACED IN TWO EQUAL LIFTS)
- (G) 3" HMA S1.0 (PLACED IN SINGLE LIFT)
- (H) 12" SUBBASE
- (I) EXISTING GROUND

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033
DESIGNER/DRAFTER: SL CHECKED BY:

NOT TO SCALE

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

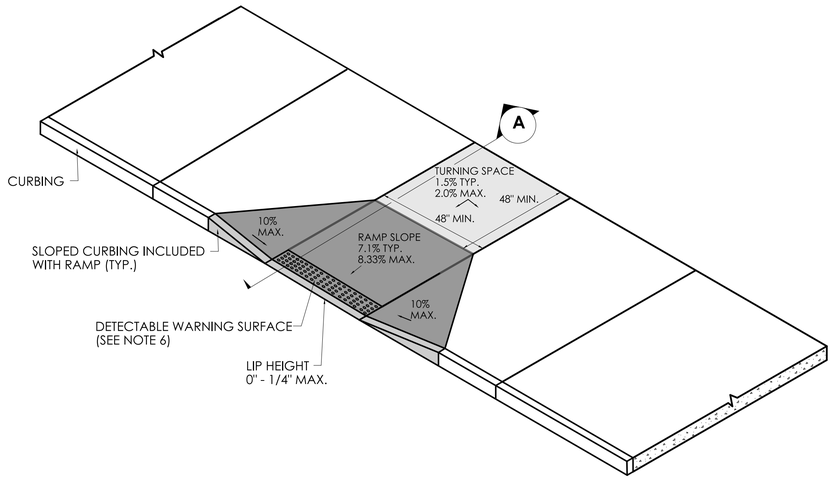
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PROJECT NO.: **0017-0196**

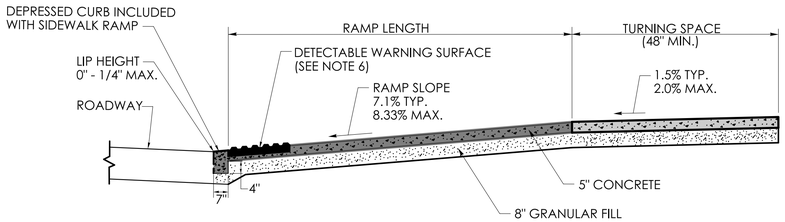
DRAWING NO.: **TYP-01**

SHEET NO.: 03.12

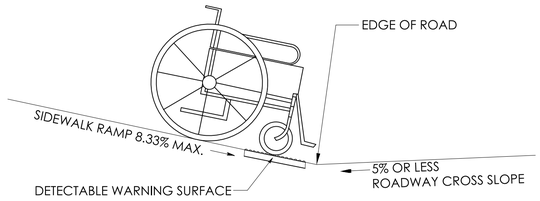
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PLOTTED DATE: 12/5/2025



PERPENDICULAR SIDEWALK RAMP AND SECTION



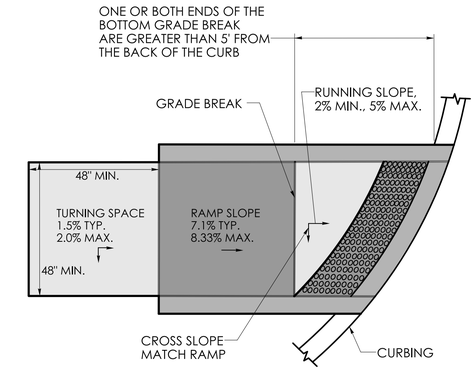
SECTION A



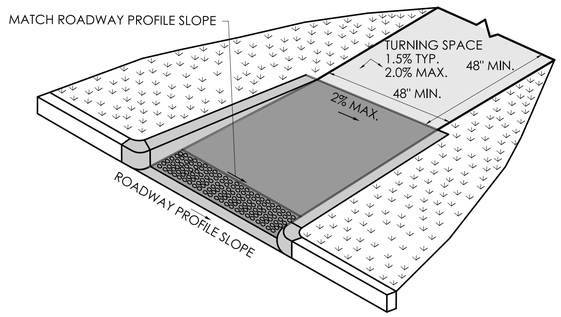
SIDEWALK RAMP GRADE AT ROADWAY CROSS SLOPE OF 5% OR LESS GUTTER COUNTER SLOPE

GENERAL NOTES:

1. SIDEWALK RAMPS SHALL HAVE A COARSE BROOM FINISH TRANSVERSE TO THE SLOPE OF THE RAMP.
2. VERTICAL SURFACE DISCONTINUITIES AT JOINTS SHALL NOT EXCEED ¼" INCH.
3. REMOVAL OF EXISTING SIDEWALK FOR NEW RAMP INSTALLATIONS SHALL BE TO THE NEAREST EXPANSION OR CONTRACTION JOINT.
4. THE RUNNING SLOPE OF THE CURB RAMP SHALL BE 8.33 PERCENT MAXIMUM BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET.
5. DETECTABLE WARNING SURFACES SHALL BE INSTALLED ON SIDEWALK RAMPS AT PEDESTRIAN STREET CROSSINGS, PEDESTRIAN REFUGE ISLANDS AND RAILROAD CROSSINGS ALONG STREETS OR HIGHWAYS.
6. DETECTABLE WARNING SURFACES SHALL EXTEND 2 FEET MIN. IN THE DIRECTION OF PEDESTRIAN TRAVEL AND SPAN THE ENTIRE RAMP OPENING.
7. ALL GUIDESHEET VALUES COMPLY WITH PROWAG DRAFT 2013 GUIDELINES. UPDATED VALUES WILL BE MADE TO COMPLY WITH PROWAG FINAL RULE ONCE OFFICIALLY THE LAW.
8. CTDOT DESIGN STANDARD USE THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) SEE ENGINEERING DIRECTIVE ED-2019-7.
9. CURB RAMPS SHALL BE CONSTRUCTED SO THAT WATER WILL NOT ACCUMLATE WITHIN THE PEDESTRIAN ACCESS ROUTE.

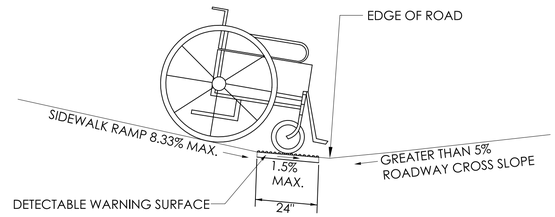


GRADE BREAK GREATER THAN 5' DETECTABLE WARNING SURFACE LOCATION

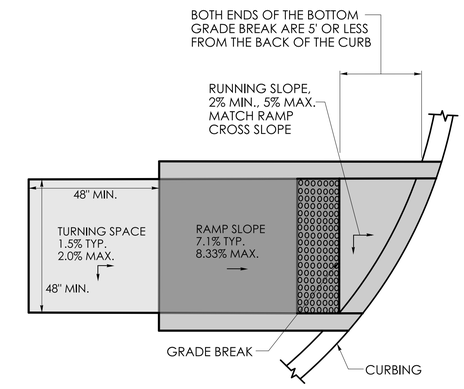


RAMP WARPING DETAIL

1. TRANSITION SIDEWALK RAMP TO MATCH ROADWAY PROFILE AS GRADUALLY AS POSSIBLE. DO NOT EXCEED 3 % PER FOOT CROSS SLOPE RATE OF CHANGE WHEN TRANSITIONING TO ROADWAY PROFILE.
2. COMPLETE TRANSITION TO THE ROADWAY PROFILE BEHIND THE DETECTABLE WARNING SURFACE.



SIDEWALK RAMP GRADE AT ROADWAY CROSS SLOPE OF GREATER THAN 5% GUTTER COUNTER SLOPE



GRADE BREAK OF 5' OR LESS DETECTABLE WARNING SURFACE LOCATION

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

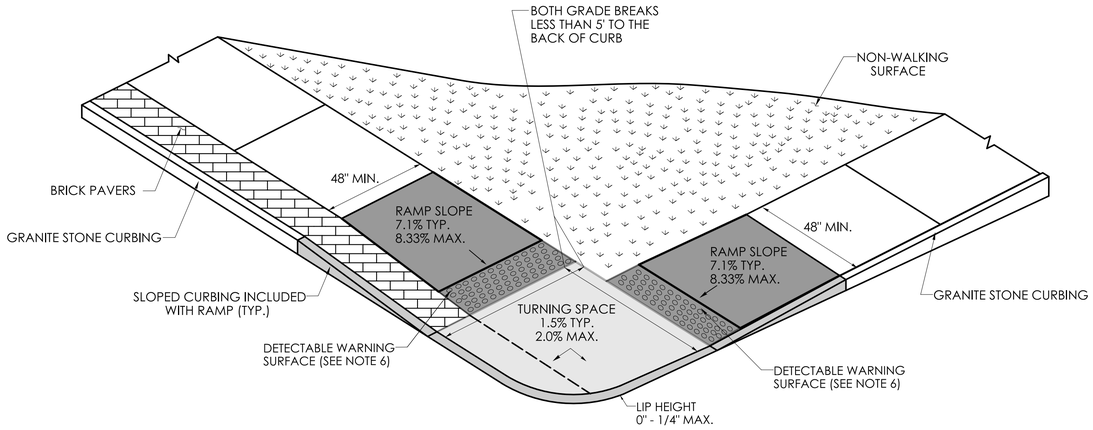
DRAWING TITLE: MISCELLANEOUS DETAIL

PROJECT NO.: 0017-0196

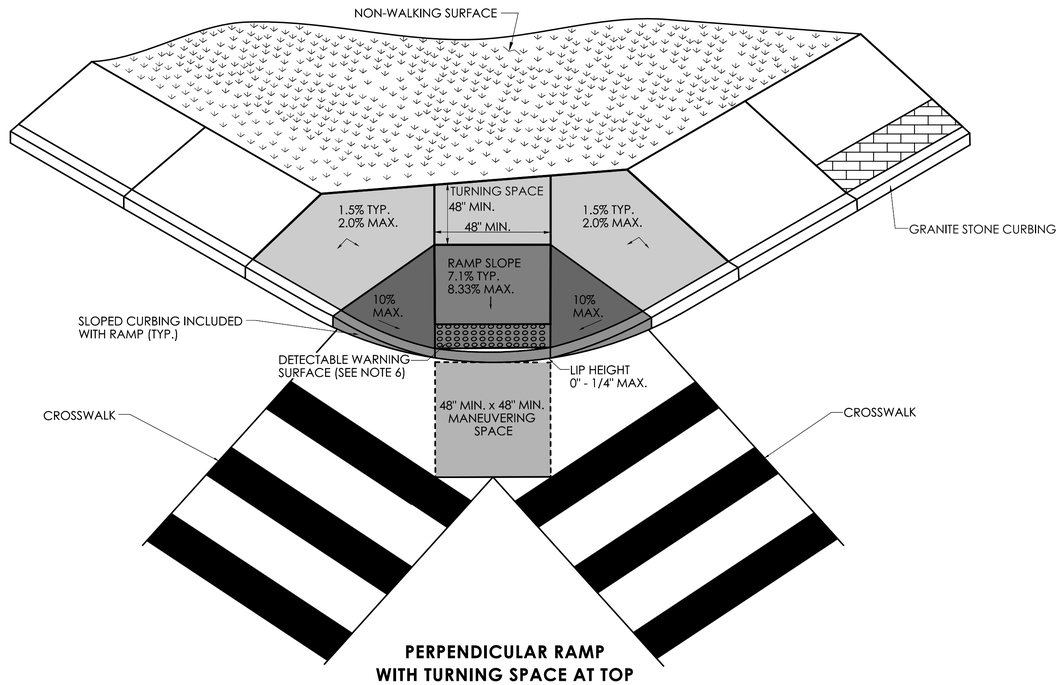
DRAWING NO.: MDS-01

SHEET NO.: 03.13

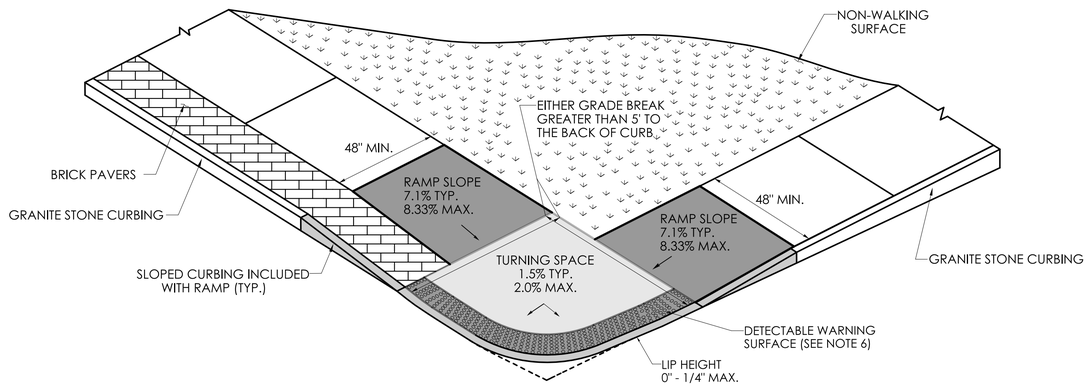
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PLOTTED DATE: 12/5/2025



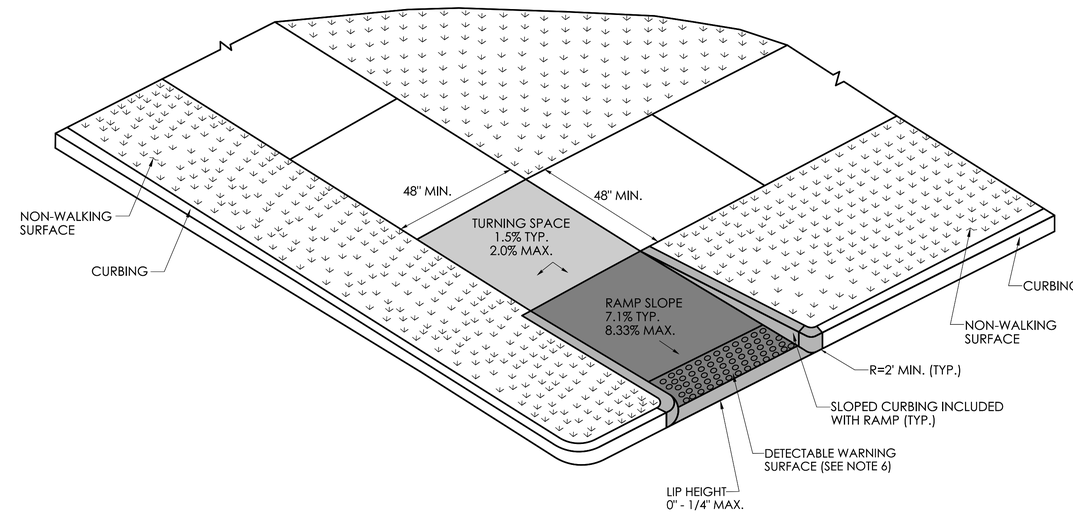
TWO DIRECTIONAL PERPENDICULAR RAMP
WITH A GRADE BREAK
TO BACK OF CURB OF 5' OR LESS
WITH NON-WALKING SURFACE
(TYPE 3)



PERPENDICULAR RAMP
WITH TURNING SPACE AT TOP
(TYPE 7)



TWO DIRECTIONAL PERPENDICULAR RAMP
WITH A GRADE BREAK
TO BACK OF CURB GREATER THAN 5'
WITH NON-WALKING SURFACE
(TYPE 4)



RESTRICTED PEDESTRIAN CROSSING SIDEWALK RAMP
WITH NON-WALKING SURFACE
(TYPE 20)

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

NOT TO SCALE

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

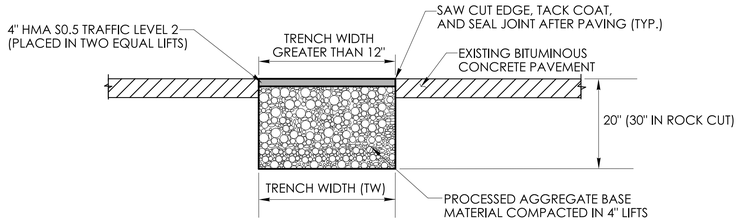
DRAWING TITLE: MISCELLANEOUS DETAIL

PROJECT NO.: 0017-0196

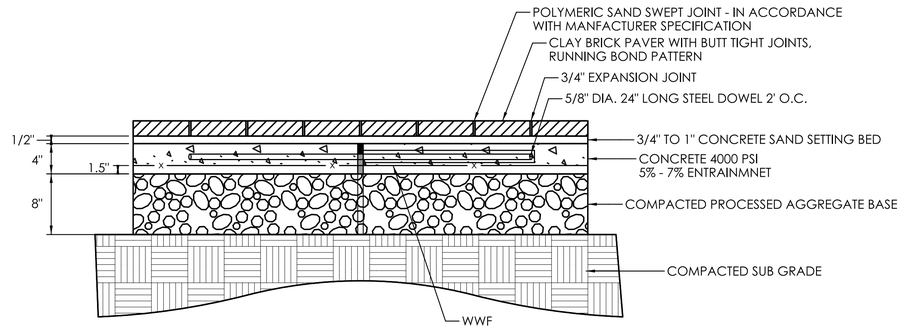
DRAWING NO.: MDS-02

SHEET NO.: 03.14

LASTED SAVED BY: DDixon **FILE NAME:** C:\Users\DDixon\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Contract_Plans\HW_CP_40968_MISC-02.dgn
PLOTTED DATE: 1/21/2026



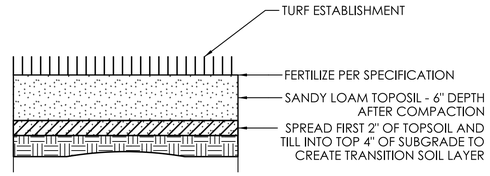
TEMPORARY PAVEMENT FOR TRENCH THROUGH BITUMINOUS CONCRETE (TRENCH WIDTH GREATER THAN 12")



NOTES:

1. EXPANSION JOINT 20" O.C. MAXIUM.
2. CONCRETE BASE SHALL BE SCREEDED WITH A FLOAT FINISH AND PITCHED TO GRADE.
3. DRAINAGE RELEASE BETWEEN GRANITE CURB AND CONCRETE BASE SHALL BE CONTINUOUS ALONG FULL LENGTH OF ALL GRANITE CURBS.
4. BRICK MANUFACTURER, COLOR, FINISH AND LUGS SHALL MATCH CITY OF BRISTIL STREETSCAPE STANDARDS.

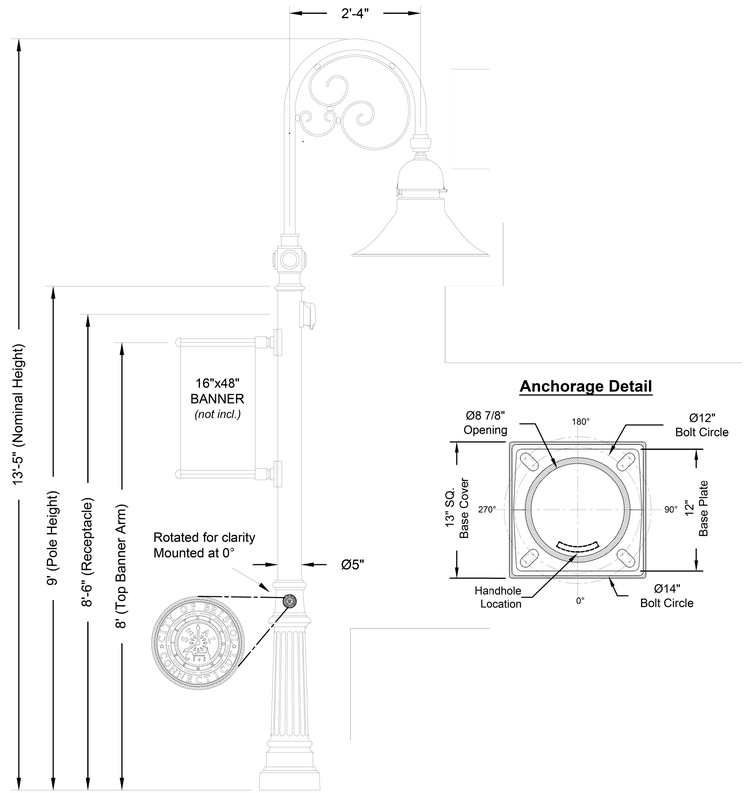
BRICK PAVERS



NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND WATERING OF GRASS UNTIL FINAL ACCEPTANCE.

TOPSOIL/LAWN



PEDESTRIAN LIGHT STANDARD

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

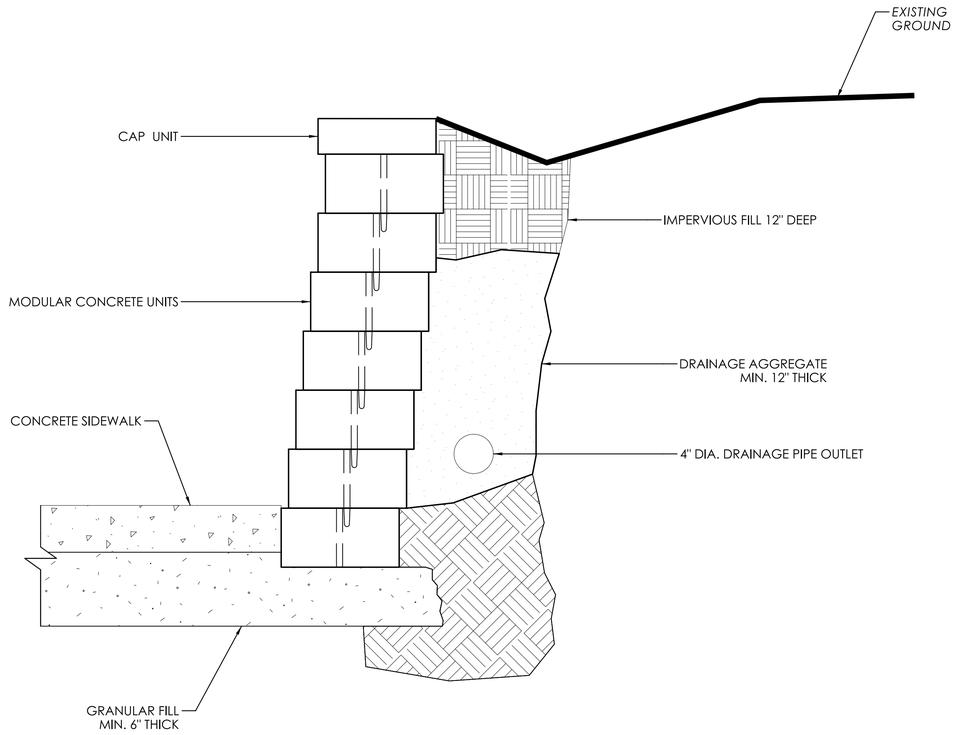
DRAWING TITLE: **MISCELLANEOUS DETAIL**

PROJECT NO.: **0017-0196**

DRAWING NO.: **MDS-03**

SHEET NO.: 03.15

LASTED SAVED BY: SLovely **FILE NAME:** C:\Users\SLovely\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Contract_Plans\HW_CP_40968_MISC-03.dgn
PLOTTED DATE: 12/5/2025



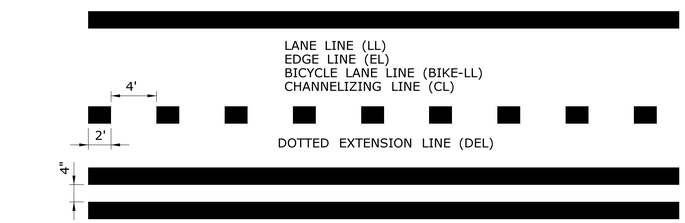
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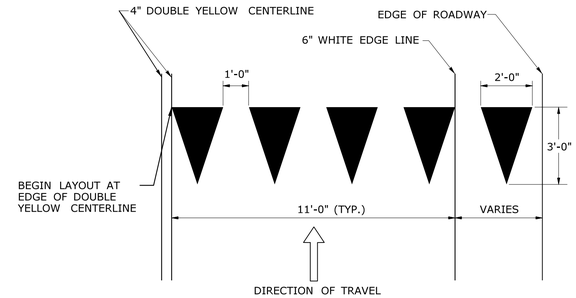
1. THE DRAINAGE PIPE OUTLET SHALL BE INSTALLED AT THE END OF WALL OR AT 40' CENTERS MAX.

2. THE CAP UNIT SHALL BE INSTALED TO THE TOP MODULAR CONCRETE UNIT USING A CONCRETE ADHESIVE.

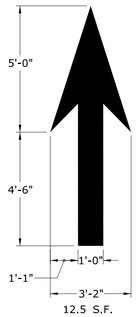
MODULAR BLOCK RETAINING WALL

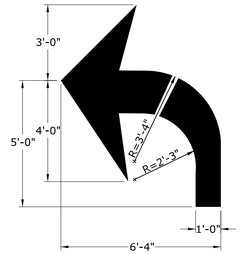
NOT TO SCALE





YIELD LINE DETAIL
(WHITE)



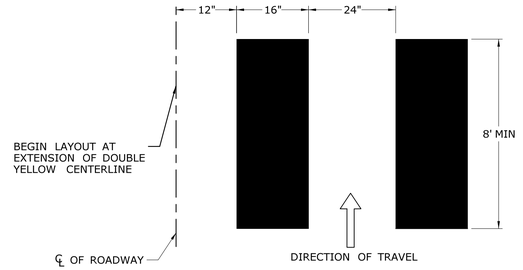


PAVEMENT ARROW DETAILS
(WHITE)

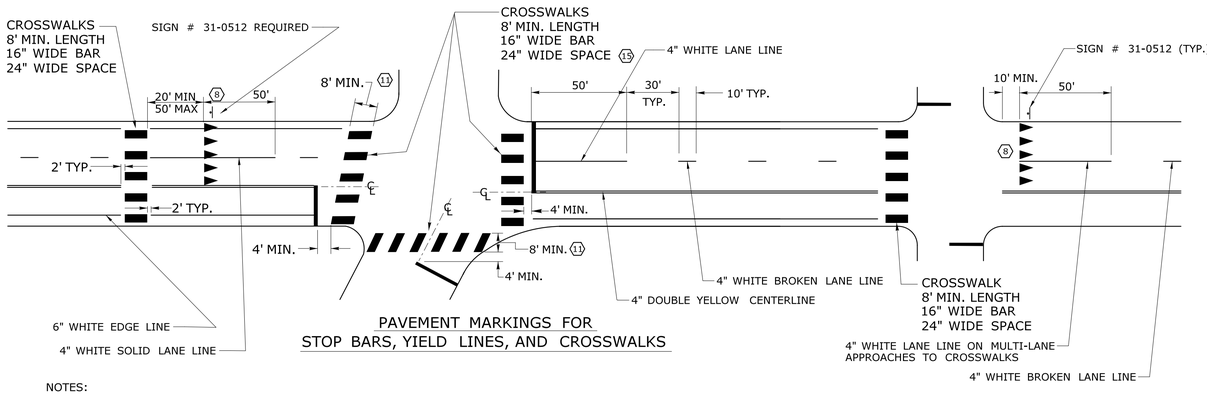
ARROWS SHALL BE CENTERED IN TRAVEL LANE

NOTES :

1. AREA OF PAVEMENT MARKINGS AS INDICATED IS APPROXIMATE.
2. RIGHT TURN PAVEMENT MARKING ARROWS ARE MIRROR IMAGE OF LEFT TURN PAVEMEN MARKING ARROWS.



CROSSWALK DETAIL
(WHITE)



PAVEMENT MARKINGS FOR
STOP BARS, YIELD LINES, AND CROSSWALKS

NOTES:

STOP BARS AND YIELD LINES

1. STOP BARS AND YIELD LINES SHALL BE WHITE.
2. STOP BARS SHALL BE 12" MIN. UNLESS OTHERWISE NOTED ON PLANS.
3. STOP BARS TO BE PLACED A MINIMUM OF 4' IN ADVANCE OF THE NEAREST EDGE OF CROSSWALK AND SHOULD BE PLACED 90° TO THE CENTERLINE OF THE ROADWAY.
4. IN THE ABSENCE OF A MARKED CROSSWALK THE STOP BAR SHOULD BE PLACED 90° THE CENTERLINE OF THE ROADWAY, AT THE DESIRED STOPPING POINT AT LEAST 5' AND NO MORE THAN 30' FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY.
5. THE STOP SIGN SHOULD BE PLACED IN LINE WITH THE STOP BAR. HOWEVER, IF THE STOP SIGN CANNOT BE LOCATED EXACTLY WHERE VEHICLES ARE EXPECTED TO STOP, THE STOP BAR SHOULD BE PLACED AT THE STOPPING POINT.
6. FOR STOP BARS AT RAMPS SEE DETAILS "R", "S", "T", & "U" AND NOTES ON TRAFFIC STANDARD SHEET TR-1210 07 "PAVEMENT MARKINGS FOR DIVIDED HIGHWAYS EXIT RAMPS".
7. FOR YIELD LINE INSTALLATIONS, ONLY FULL TRIANGLES ARE TO BE INSTALLED.

(8) YIELD LINES SHALL ONLY BE INSTALLED ON UNCONTROLLED MULTI-LANE APPROACHES TO CROSSWALKS AND SHOULD BE LOCATED 20 TO 50 FEET IN ADVANCE OF THE NEAREST CROSSWALK LINE OR AS DIRECTED BY THE ENGINEER. WHERE A YIELD LINE EXISTS ON AN APPROACH TO A CROSSWALK, THE "YIELD TO PEDESTRIANS" SIGN IS REQUIRED.

9. THE YIELD SIGN SHOULD BE PLACED IN LINE WITH A YIELD LINE. HOWEVER, IF THE YIELD SIGN CANNOT BE LOCATED EXACTLY WHERE VEHICLES ARE EXPECTED TO YIELD, THE YIELD LINE SHOULD BE PLACED AT THE YIELDING POINT.

CROSSWALKS

10. CROSSWALK MARKINGS SHALL BE WHITE.

(11) AT LOCATIONS WHERE THE CROSSWALK IS SKEWED, BARS TO BE PARALLEL TO ENDS OF BARS TO BE PARALLEL. THE LENGTH OF THE BARS WILL VARY DEPENDING ON THE ANGLE OF SKEW.

12. BARS SHOULD BE NO CLOSER THAN 1' FROM EDGE OF ROAD.
13. ONLY FULL LENGTH BARS ARE TO BE INSTALLED.
14. DECORATIVE CROSSWALKS SHALL BE BANDED FROM CURB TO CURB WITH A MINIMUM 12" WIDE WHITE TRANSVERSE LINE ALONG EACH EDGE.

(15) 24" WIDE SPACE TO BE CENTERED ON YELLOW CENTERLINE.

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD GLASTONBURY, CT 06033
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mm/dd/yy
DESIGNER/DRAFTER: DMD CHECKED BY: PMB

NOT TO SCALE

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

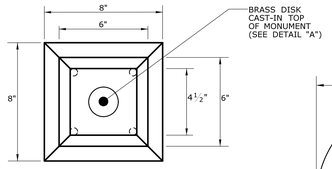
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PROJECT NO.: 0017-0196

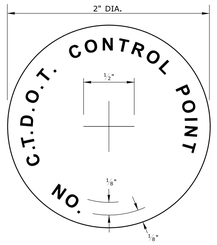
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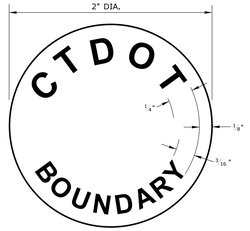
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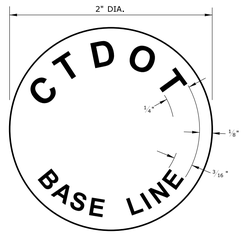
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PLOTTED DATE: 1/21/2026



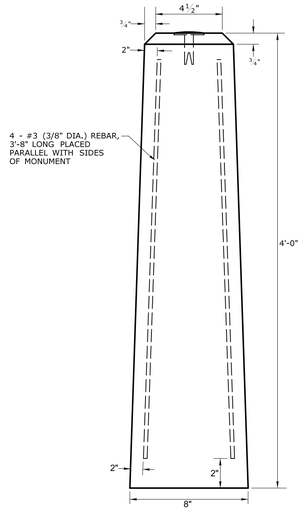
PLAN



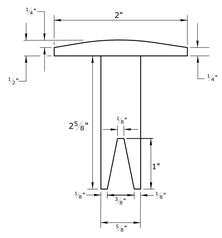




PLAN



ELEVATION



ELEVATION
DETAIL "A"

GENERAL NOTES:

1. REINFORCING STEEL DEFORMED BARS SHALL CONFORM TO LATEST ASTM SPECIFICATION A615, GRADE 60 MIN. COVER 2".
2. USE CLASS PCC 04460 CONCRETE. CONCRETE COMPRESSIVE STRENGTH 4,000 PSI AT 28 DAYS SELF COMPACTING CONCRETE MIX.
3. MANUFACTURER IS TO CONTACT DOT DISTRICT SURVEY - BOUNDARY RIGHT-OF-WAY SURVEY FOR SURVEY DISK.
4. CTSOT DISKS SHALL BE PLACED IN LEDGE AT 3" DEPTH WITH HYDRAULIC CEMENT OR ANCHORING CEMENT.
5. A #6 (3/4" dIA.) REINFORCING BAR WITH ALUMINUM CAP (PROVIDED BY DOT) 3' LONG MAY BE USED AS DIRECTED BY THE SURVEYOR.

CTDOT BOUNDARY MARKER

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:

DESIGNER/DRAFTER: DMD CHECKED BY: PMB

NOT TO SCALE

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

DRAWING TITLE: MISCELLANEOUS DETAIL

PROJECT NO.: 0017-0196

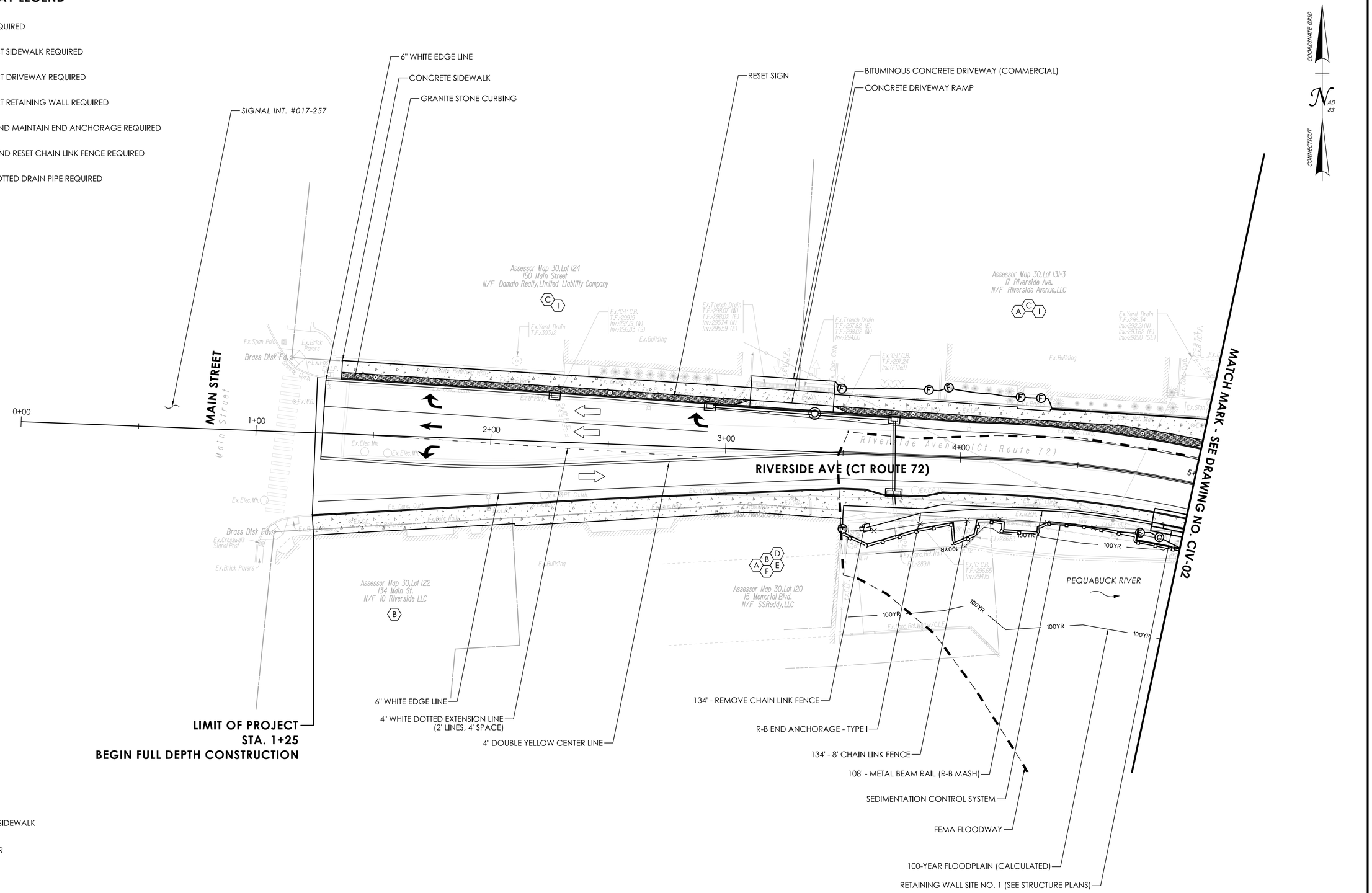
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SHEET NO.: 03.17

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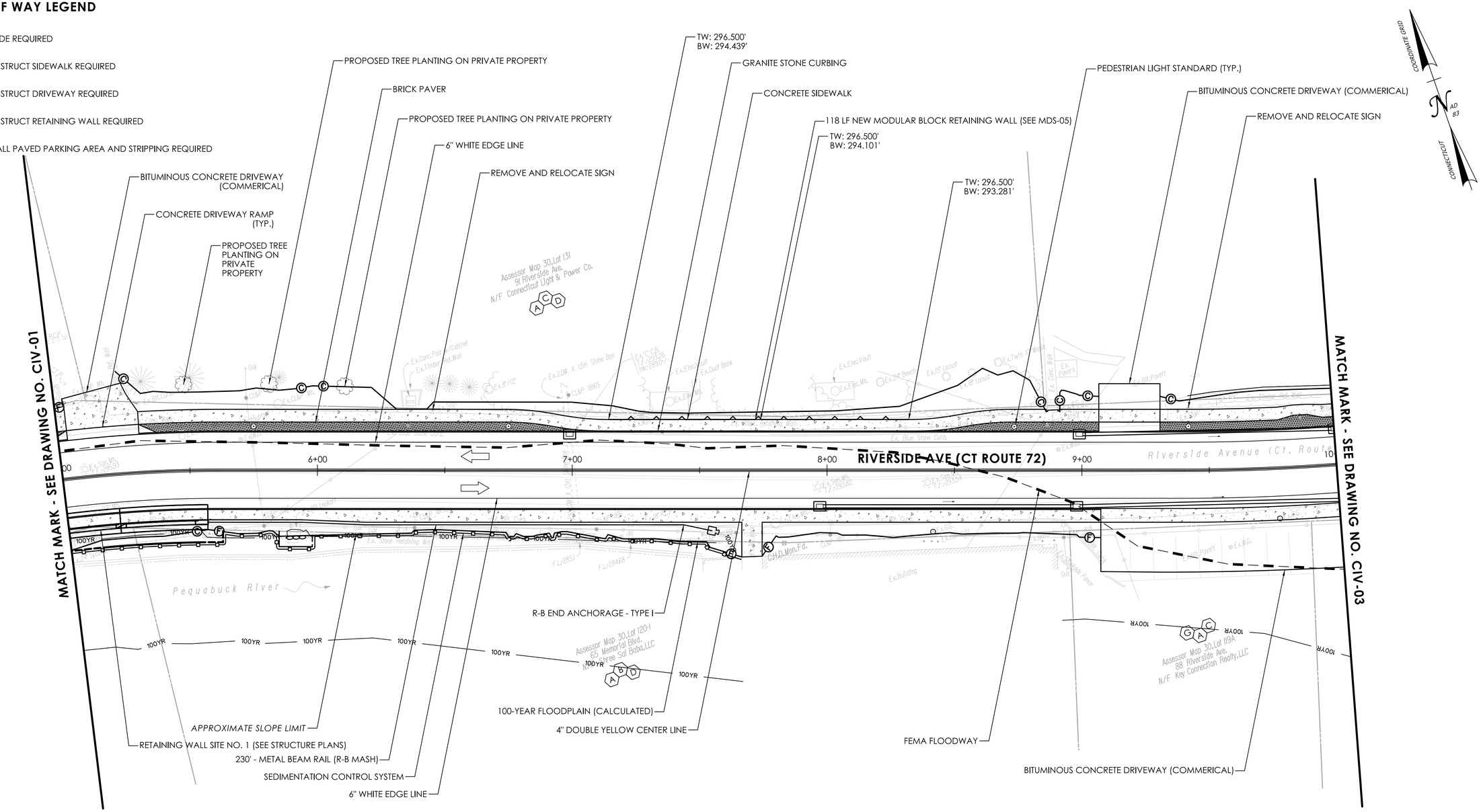
RIGHTS OF WAY LEGEND

- (A) RIGHT TO GRADE REQUIRED
- (B) RIGHT TO CONSTRUCT SIDEWALK REQUIRED
- (C) RIGHT TO CONSTRUCT DRIVEWAY REQUIRED
- (D) RIGHT TO CONSTRUCT RETAINING WALL REQUIRED
- (E) EASEMENT INSTALL AND MAINTAIN END ANCHORAGE REQUIRED
- (F) RIGHT TO REMOVE AND RESET CHAIN LINK FENCE REQUIRED
- (I) RIGHT TO INSTALL SLOTTED DRAIN PIPE REQUIRED


COORDINATE GRID
NAD 83
CONNECTICUT
6" WHITE EDGE LINE
CONCRETE SIDEWALK
GRANITE STONE CURBING
SIGNAL INT. #017-257
RESET SIGN
BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)
CONCRETE DRIVEWAY RAMP
MAIN STREET
Main Street
RIVERSIDE AVE (CT ROUTE 72)
Riverside Avenue (Ct. Route 72)
MATCH MARK - SEE DRAWING NO. CIV-02
0+00
1+00
2+00
3+00
4+00
5+
Assessor Map 30, Lot 124
150 Main Street
N/F Damato Realty, Limited Liability Company
Assessor Map 30, Lot 131-3
17 Riverside Ave.
N/F Riverside Avenue, LLC
Assessor Map 30, Lot 122
134 Main St.
N/F 10 Riverside LLC
Assessor Map 30, Lot 120
15 Memorial Blvd.
N/F SSReddy, LLC
Brass Disk Fd.
Ex.Brick Pavers
Ex.Crosswalk Signal Post
Ex.Span Poles
Ex.Elec.Mh.
Ex.Conc. Curb
Ex.Building
Ex.Sign
Ex.Trench Drain
Ex.Yard Drain
Ex.C.I.C.B.
Ex.Retaining Wall
Ex.Guide Rail
Ex.Chain Link Fence
Ex.Utility Pole
Ex.Fire Hydrant
Ex.W.V.
Ex.Gas Gate
Ex.Gas Line
Ex.Sanitary Manhole
Ex.Sanitary Line
Ex.Drain Manhole
Ex.Drain Line
Ex.Water Line
Ex.Water Manhole
Ex.Water Gate
Ex.Water Valve
Ex.Water Blow Off
Ex.Water Curb Stop
Ex.Water Service
Ex.Gas Manhole
Ex.Gas Valve
Ex.Gas Blow Off
Ex.Gas Curb Stop
Ex.Gas Service
Ex.Gas Meter
Ex.Gas Regulator
Ex.Telephone Manhole
Ex.Telephone Line
Ex.Telephone Pedestal
Ex.Telephone Riser
Ex.Telephone Vault
Ex.Telephone Booth
Ex.Telephone Handhole
Ex.Telephone Pole
Ex.Electric Manhole
Ex.Electric Line
Ex.Electric Pedestal
Ex.Electric Riser
Ex.Electric Vault
Ex.Electric Handhole
Ex.Electric Pole
Ex.Electric Meter
Ex.Electric Transformer
Ex.Electric Generator
Ex.Electric Switch
Ex.Electric Fuse
Ex.Electric Capacitor
Ex.Electric Reactor
Ex.Electric Resistor
Ex.Electric Inductor
Ex.Electric Diode
Ex.Electric Transistor
Ex.Electric Thyristor
Ex.Electric Rectifier
Ex.Electric Inverter
Ex.Electric Converter
Ex.Electric Amplifier
Ex.Electric Oscillator
Ex.Electric Modulator
Ex.Electric Demodulator
Ex.Electric Multiplexer
Ex.Electric Demultiplexer
Ex.Electric Encoder
Ex.Electric Decoder
Ex.Electric Transducer
Ex.Electric Sensor
Ex.Electric Actuator
Ex.Electric Motor

RIGHTS OF WAY LEGEND

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- (C) RIGHT TO CONSTRUCT DRIVEWAY REQUIRED
- (D) RIGHT TO CONSTRUCT RETAINING WALL REQUIRED
- (G) RIGHT TO INSTALL PAVED PARKING AREA AND STRIPPING REQUIRED



LEGEND

- CONCRETE SIDEWALK
- BRICK PAVER

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC., 115 GLASTONBURY BLVD, GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20' (0, 20, 40)

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

DRAWING TITLE: **CIVIL PLANS**

PROJECT NO.: **0017-0196**

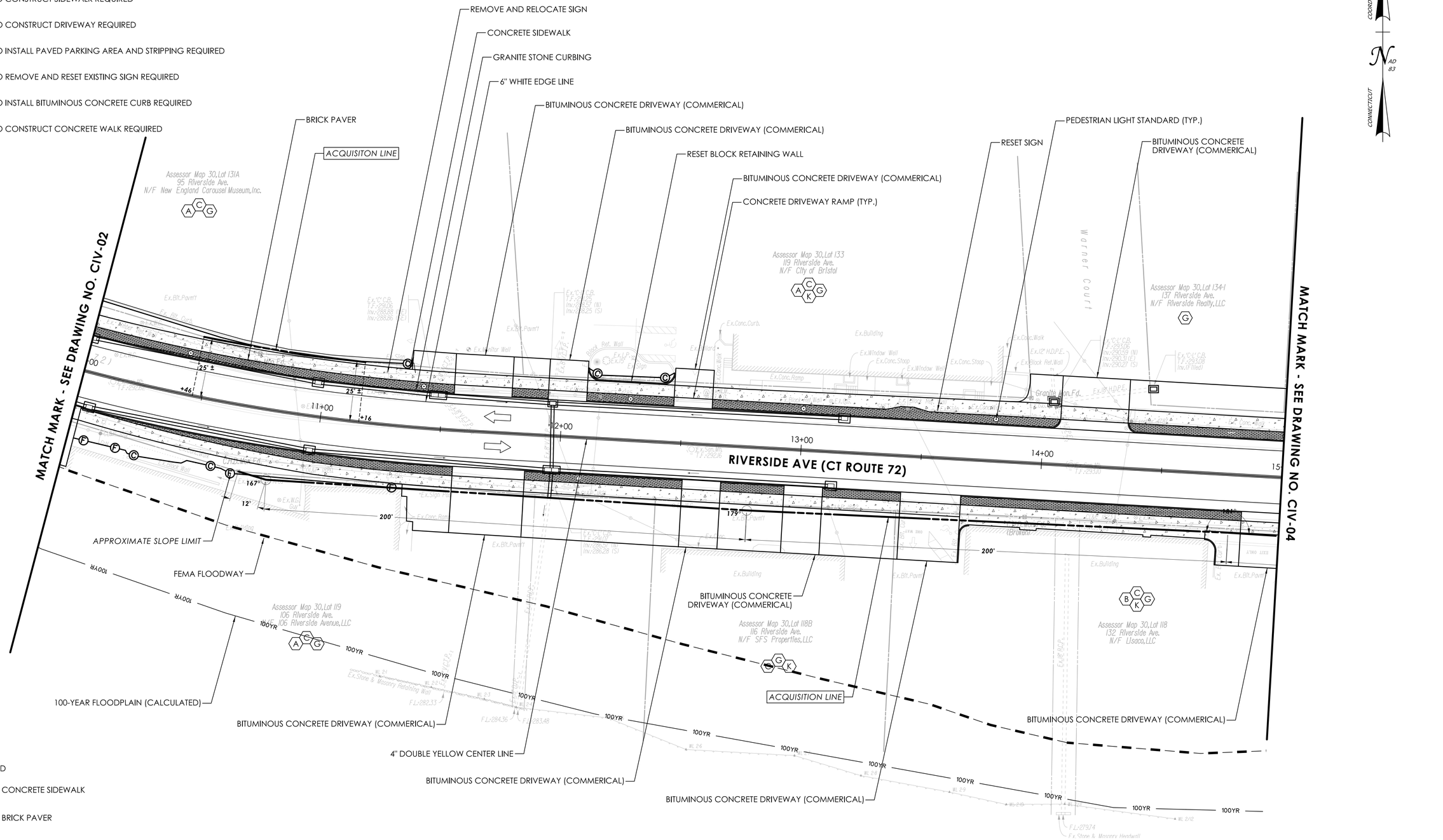
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PLOTTED DATE: 1/21/2026

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- (G) RIGHT TO INSTALL PAVED PARKING AREA AND STRIPPING REQUIRED
- (H) RIGHT TO REMOVE AND RESET EXISTING SIGN REQUIRED
- (K) RIGHT TO INSTALL BITUMINOUS CONCRETE CURB REQUIRED
- (L) RIGHT TO CONSTRUCT CONCRETE WALK REQUIRED



COORDINATE GRID NAD 83 CONNECTICUT

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
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115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

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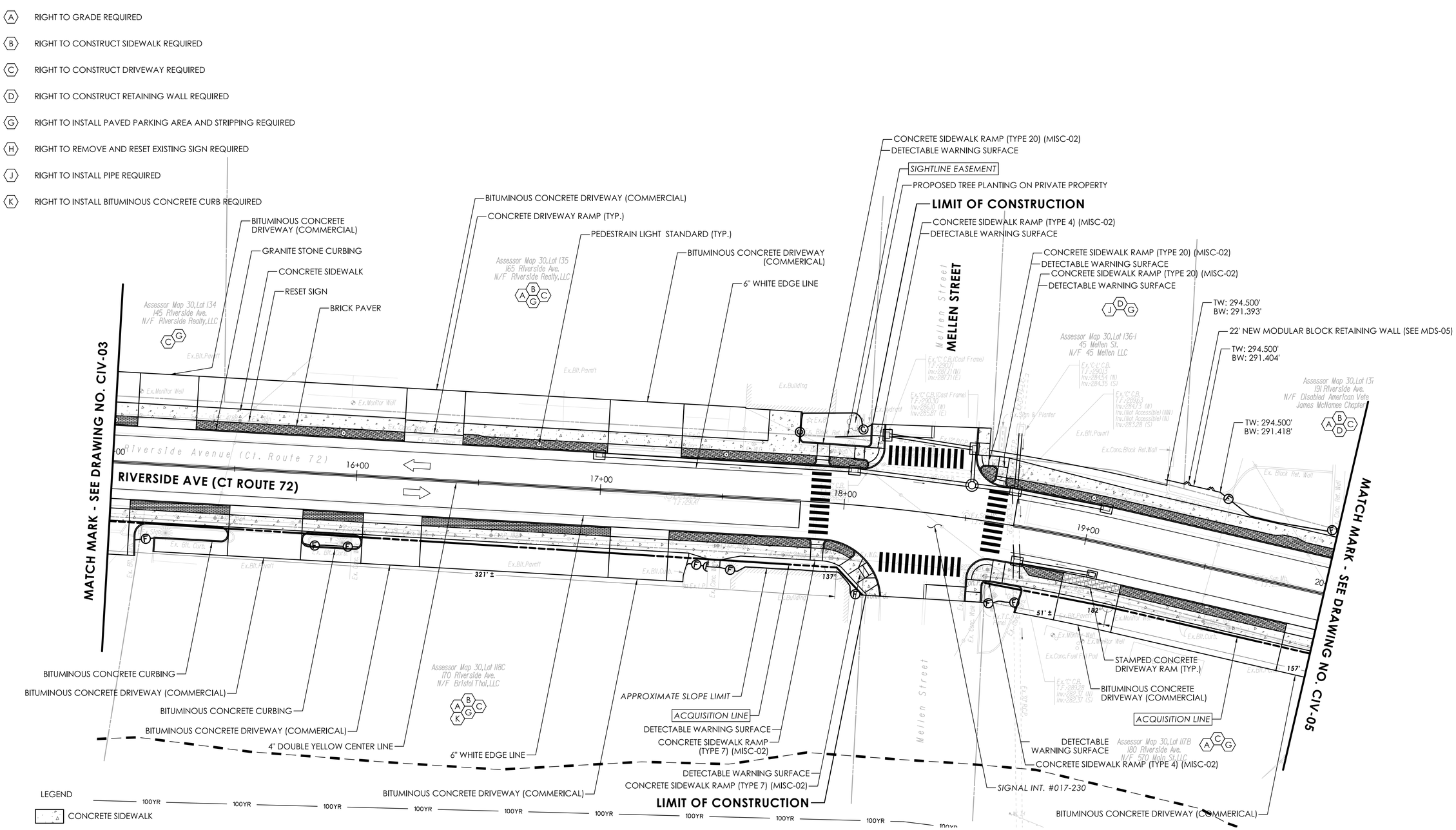
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- (D) RIGHT TO CONSTRUCT RETAINING WALL REQUIRED
- (G) RIGHT TO INSTALL PAVED PARKING AREA AND STRIPPING REQUIRED
- (H) RIGHT TO REMOVE AND RESET EXISTING SIGN REQUIRED
- (J) RIGHT TO INSTALL PIPE REQUIRED
- (K) RIGHT TO INSTALL BITUMINOUS CONCRETE CURB REQUIRED



REV.	DATE	REVISION DESCRIPTION

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SCALE 1" = 20' (0, 20, 40)

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DRAWING TITLE: **CIVIL PLANS**

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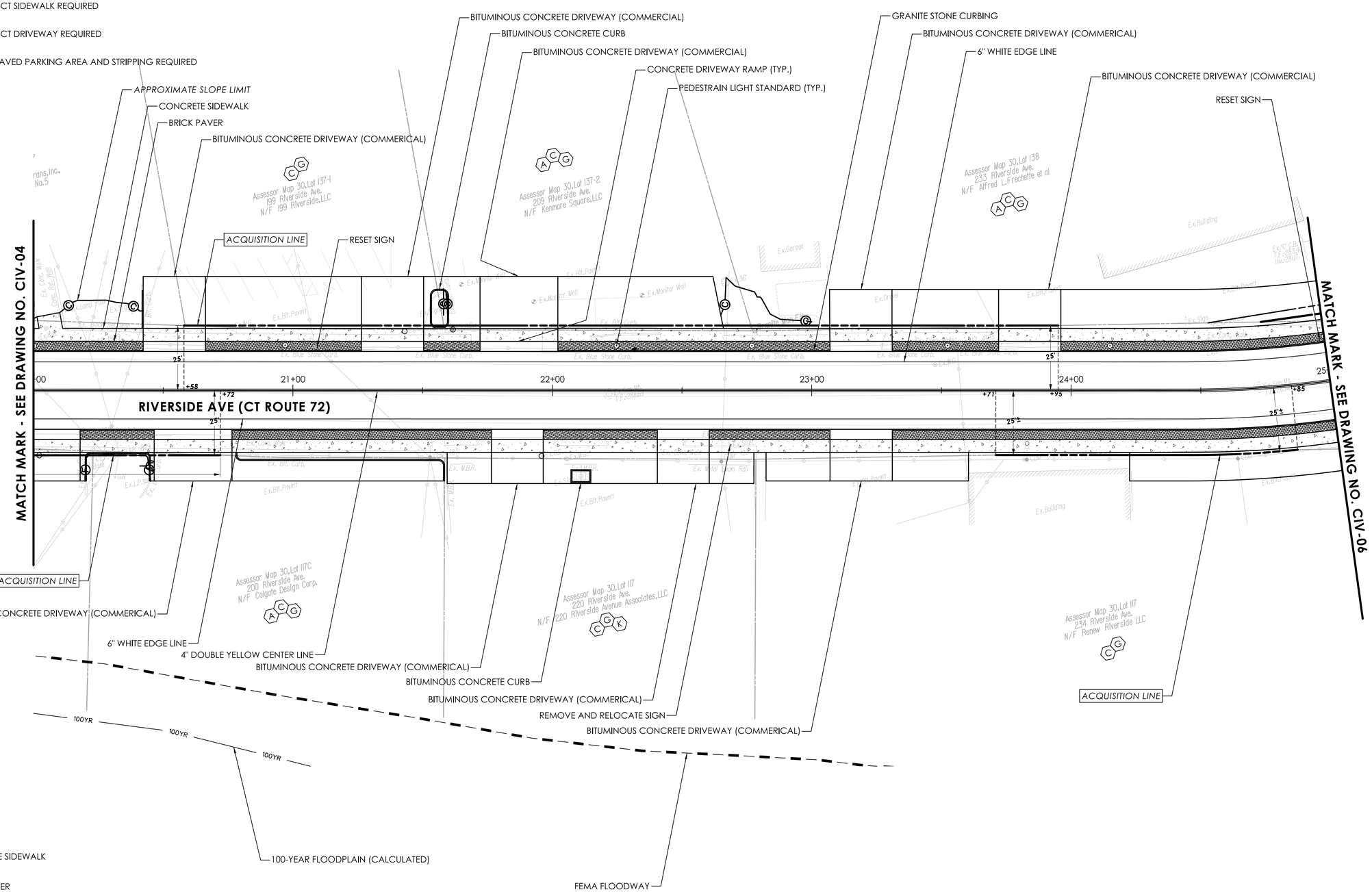
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SHEET NO.: 03.21

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RIGHTS OF WAY LEGEND

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REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
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GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

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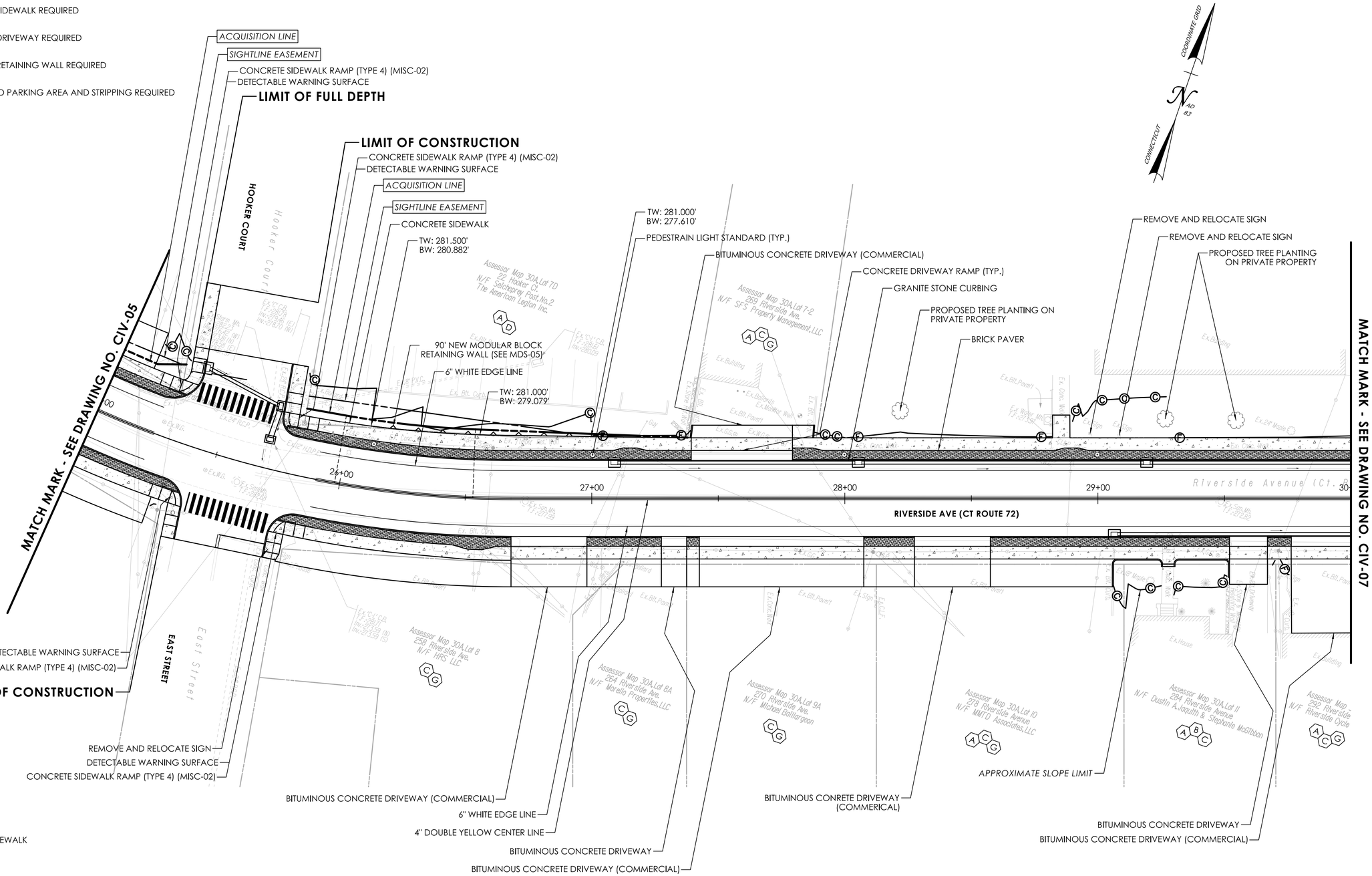
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PLOTTED DATE: 1/21/2026

RIGHTS OF WAY LEGEND

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LEGEND

- CONCRETE SIDEWALK
- BRICK PAVER

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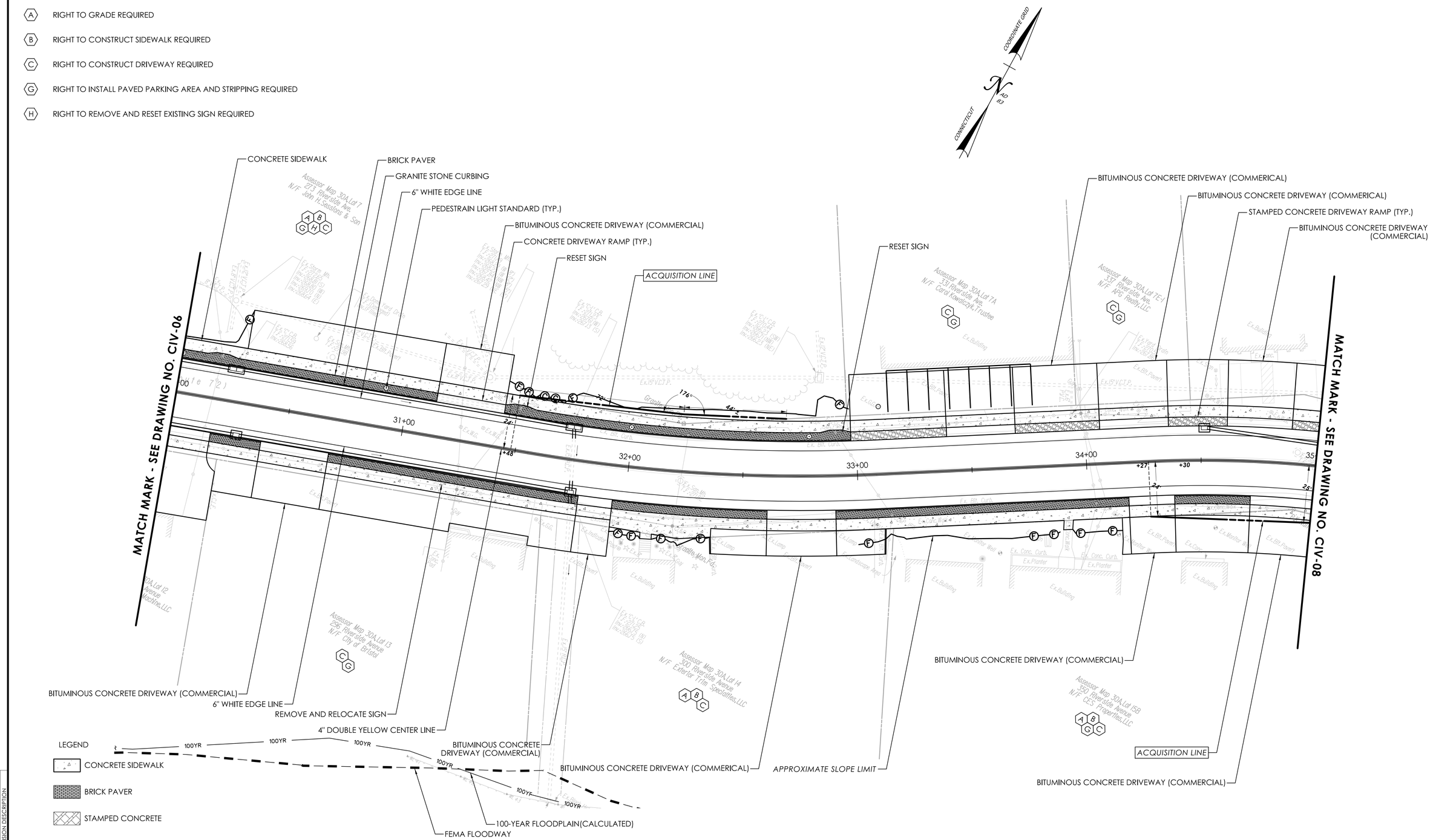
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PLOTTED DATE: 1/21/2026

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- (G) RIGHT TO INSTALL PAVED PARKING AREA AND STRIPPING REQUIRED
- (H) RIGHT TO REMOVE AND RESET EXISTING SIGN REQUIRED



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

0 20 40 SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

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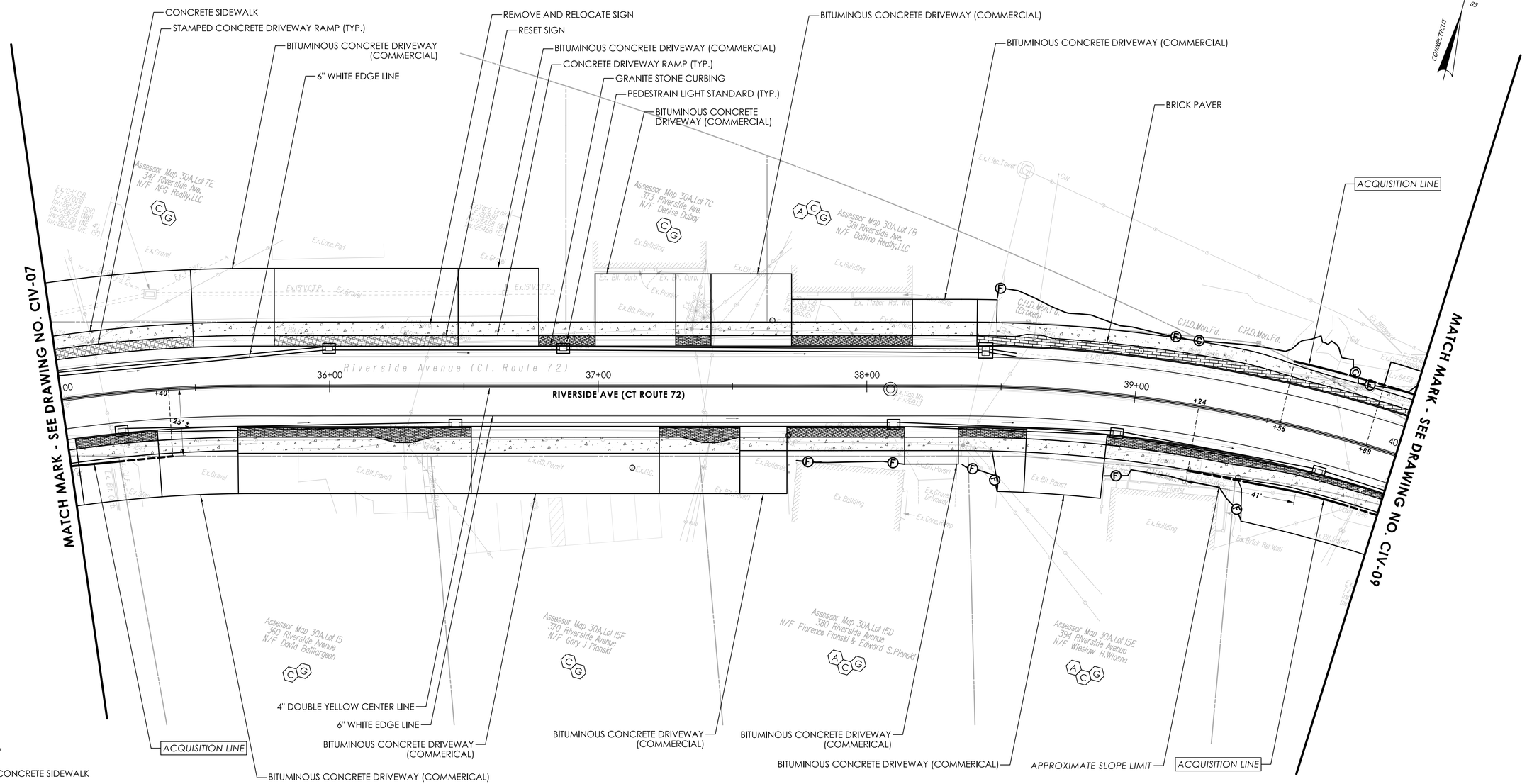
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PLOTTED DATE: 1/21/2026

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- (G) RIGHT TO INSTALL PAVED PARKING AREA REQUIRED



REV.	DATE	REVISION DESCRIPTION

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DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20'

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PROJECT NO.: **0017-0196**

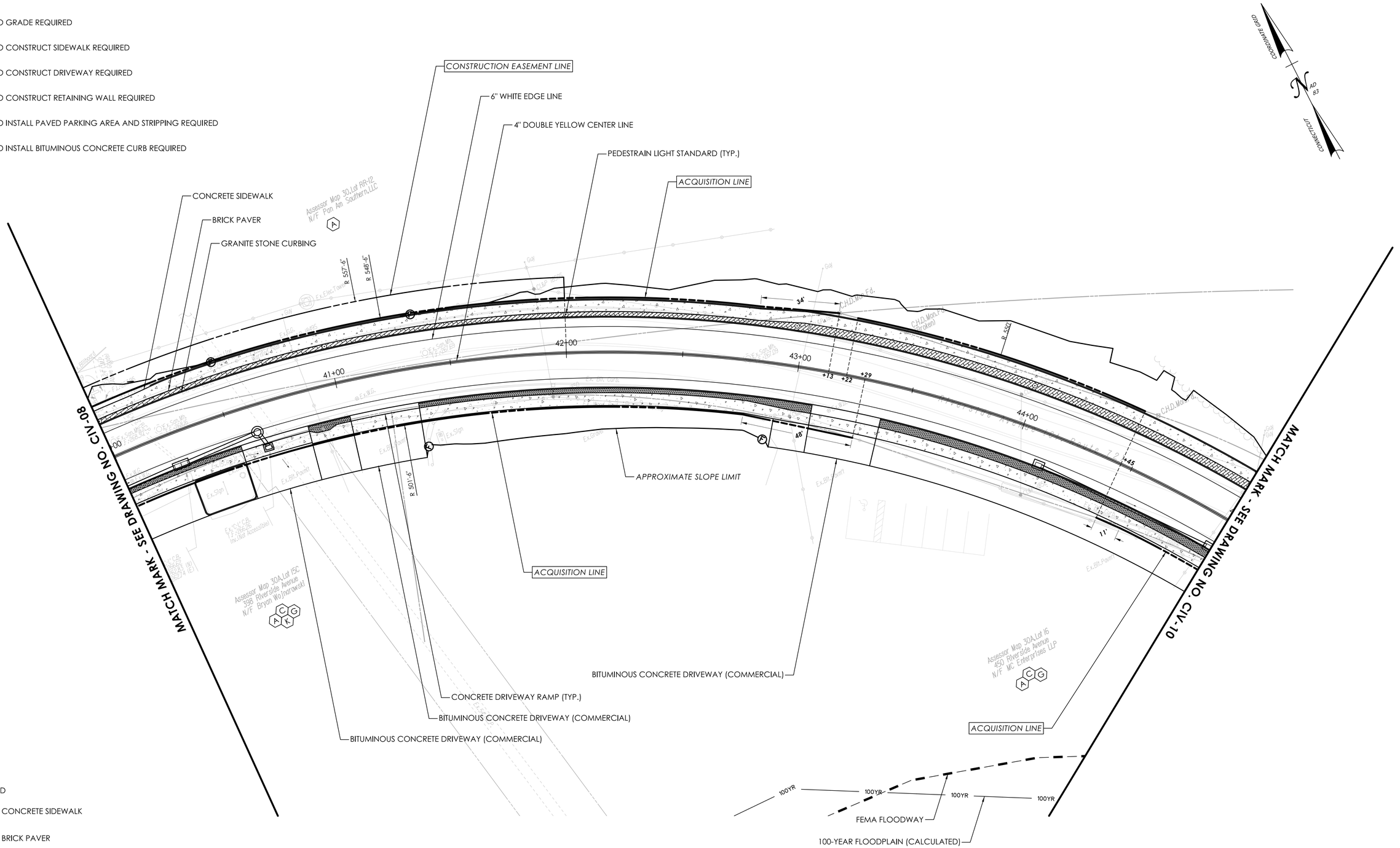
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SHEET NO.: 03.25

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PLOTTED DATE: 1/21/2026

RIGHTS OF WAY LEGEND

- (A) RIGHT TO GRADE REQUIRED
- (B) RIGHT TO CONSTRUCT SIDEWALK REQUIRED
- (C) RIGHT TO CONSTRUCT DRIVEWAY REQUIRED
- (D) RIGHT TO CONSTRUCT RETAINING WALL REQUIRED
- (G) RIGHT TO INSTALL PAVED PARKING AREA AND STRIPPING REQUIRED
- (K) RIGHT TO INSTALL BITUMINOUS CONCRETE CURB REQUIRED



LEGEND

- CONCRETE SIDEWALK
- BRICK PAVER

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20' (0, 20, 40)

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

DRAWING TITLE: **CIVIL PLANS**

PROJECT NO.: **0017-0196**

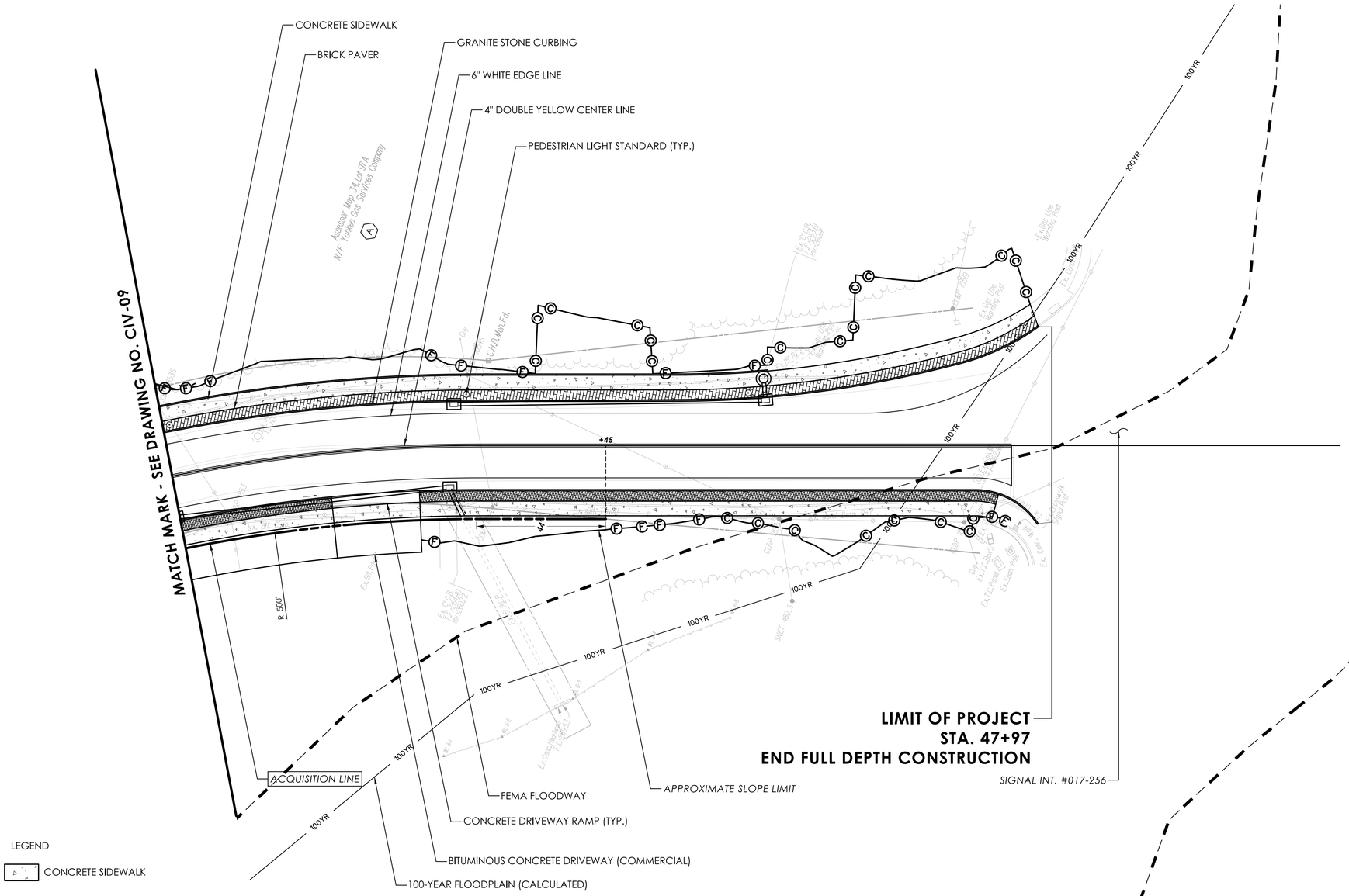
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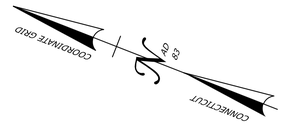
SHEET NO.: 03.26

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PLOTTED DATE: 1/21/2026

RIGHTS OF WAY LEGEND

- (A) RIGHT TO GRADE REQUIRED
- (B) RIGHT TO CONSTRUCT SIDEWALK REQUIRED
- (D) RIGHT TO CONSTRUCT RETAINING WALL REQUIRED





REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC., 115 GLASTONBURY BLVD., GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

0 20 40 SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

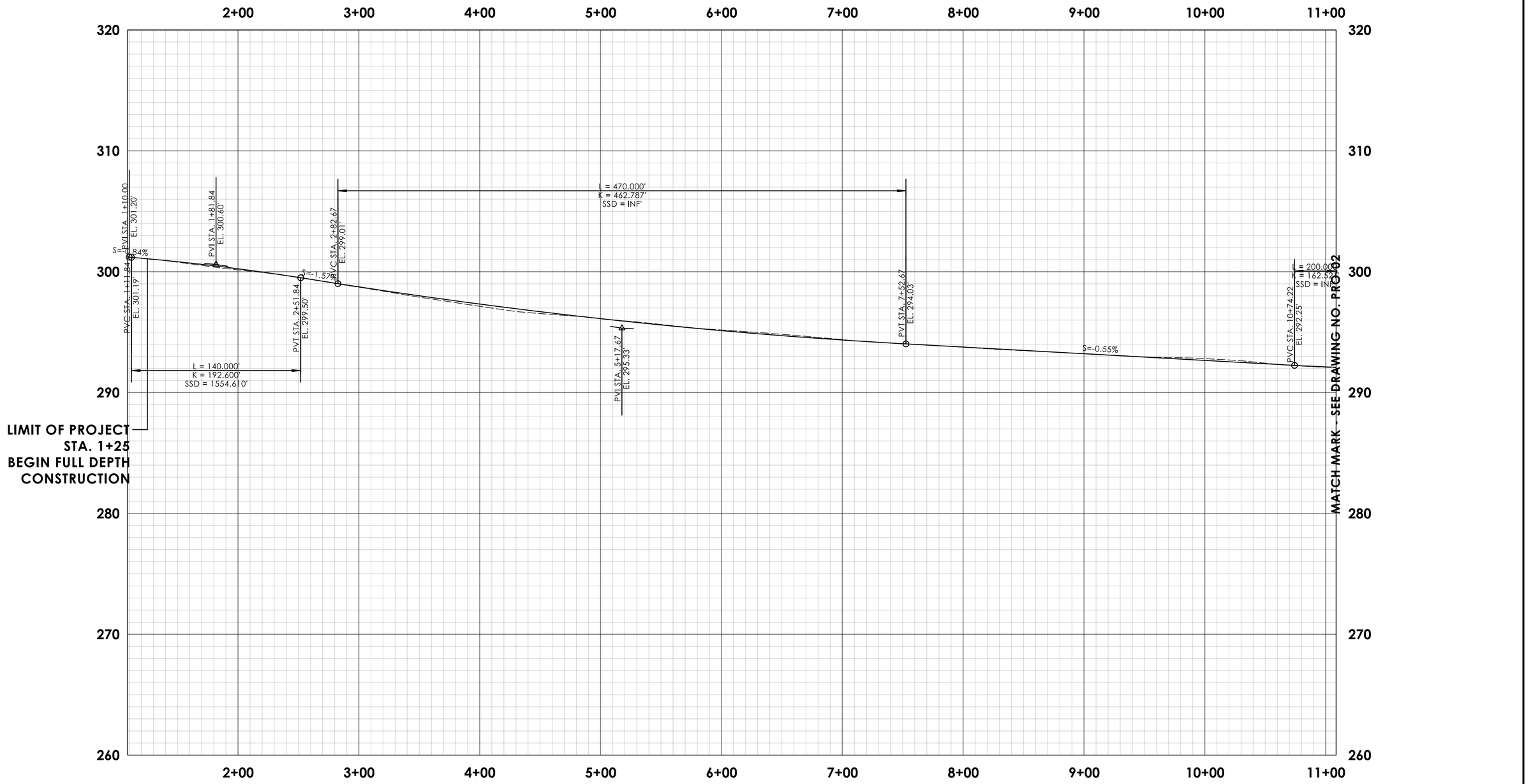
DRAWING TITLE: **CIVIL PLANS**

PROJECT NO.: **0017-0196**

DRAWING NO.: **CIV-10**

SHEET NO.: 03.27

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PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 40 80
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

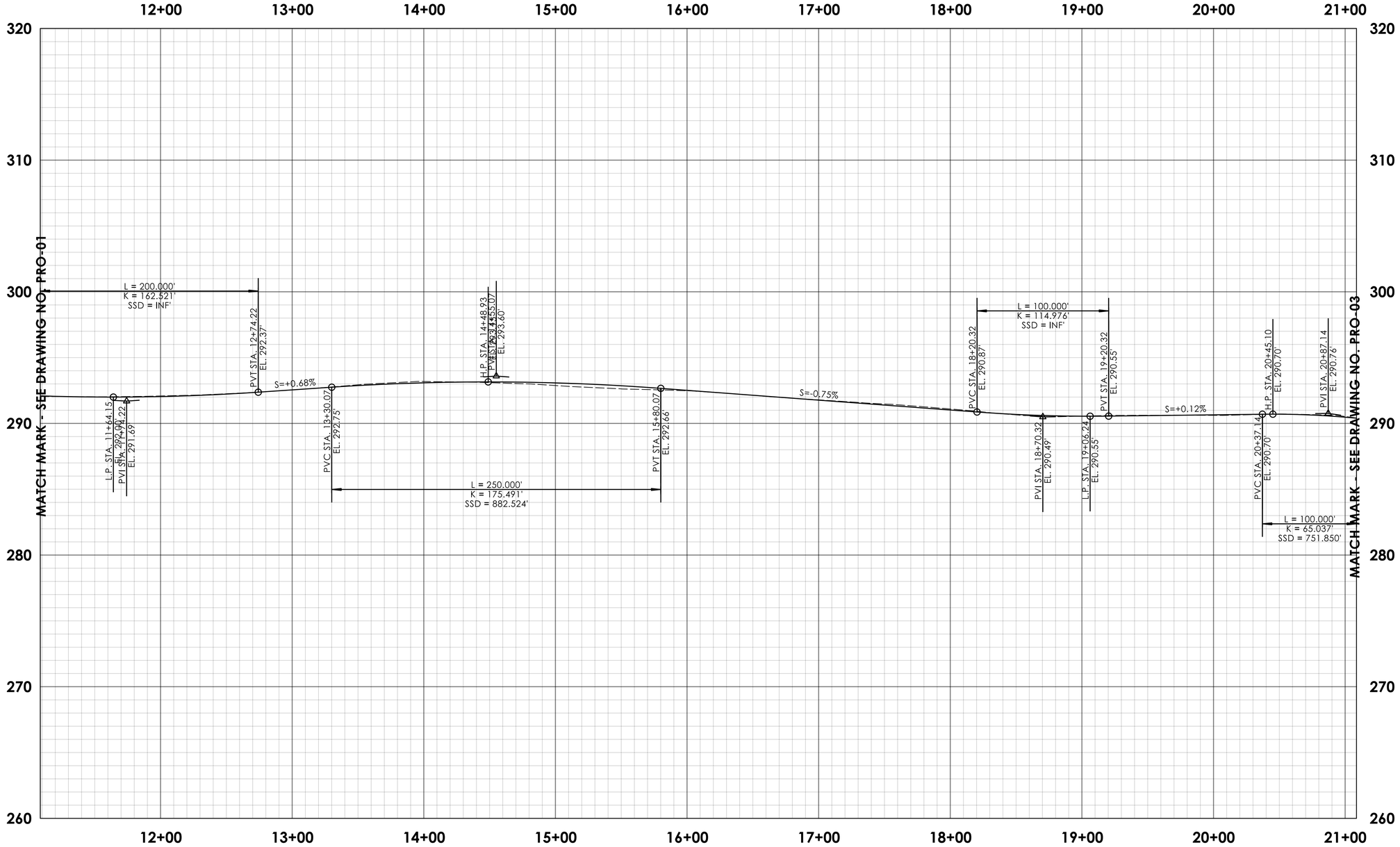
DRAWING TITLE:
RIVERSIDE PROFILE

PROJECT NO.:
0017-0196

DRAWING NO.:
PRO-01

SHEET NO.:
03.28

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PLOTTED DATE: 12/5/2025



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 40 80
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

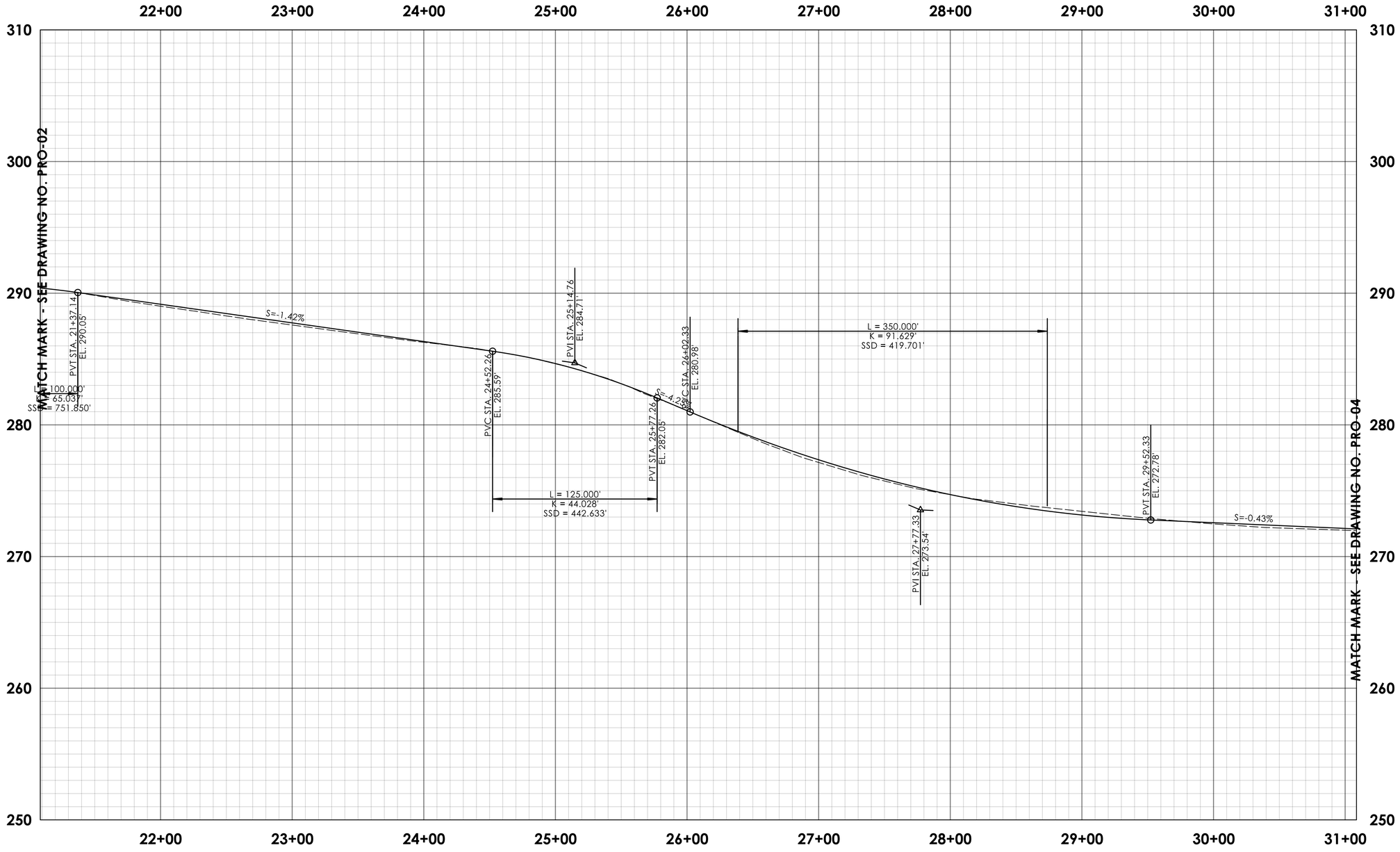
DRAWING TITLE: RIVERSIDE PROFILE

PROJECT NO.: 0017-0196

DRAWING NO.: PRO-02

SHEET NO.: 03.29

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PLOTTED DATE: 12/5/2025



REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:

GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 40 80
HORIZONTAL SCALE IN FEET

0 4 8
VERTICAL SCALE IN FEET

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

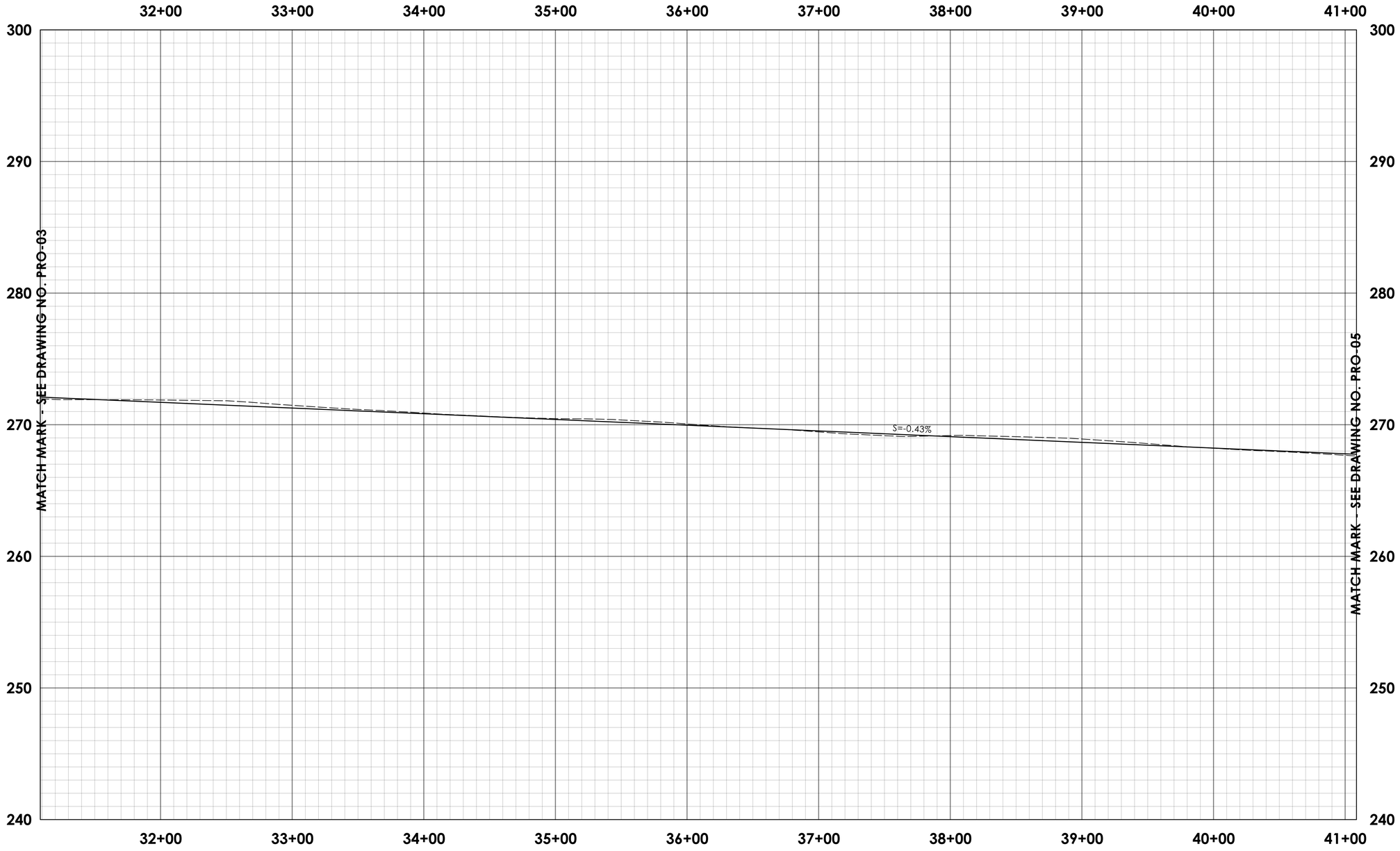
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RIVERSIDE PROFILE

PROJECT NO.:
0017-0196

DRAWING NO.:
PRO-03

SHEET NO.:
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PLOTTED DATE: 12/5/2025



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 40 80
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

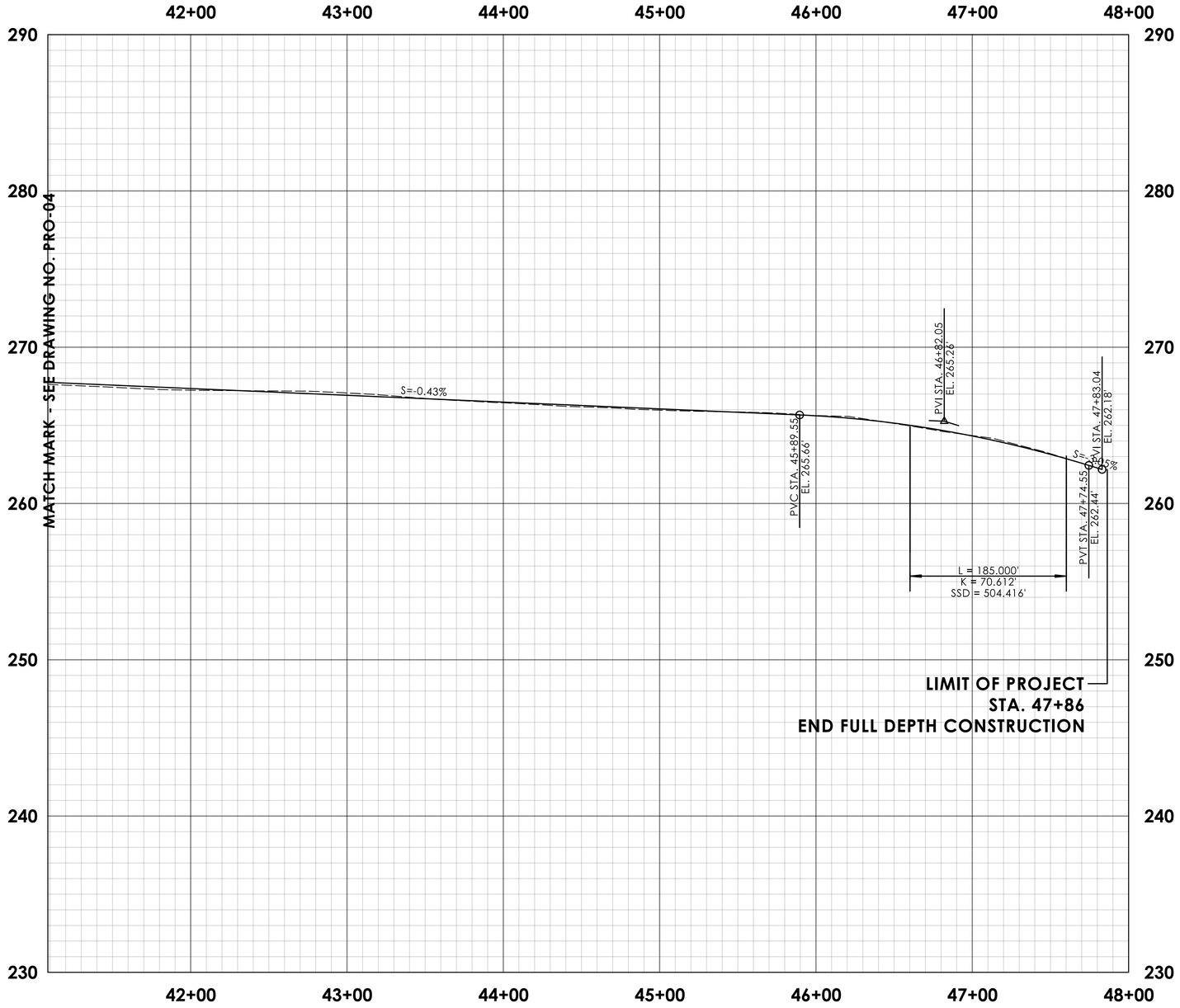
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RIVERSIDE PROFILE

PROJECT NO.:
0017-0196

DRAWING NO.:
PRO-04

SHEET NO.:
03.31

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PLOTTED DATE: 12/5/2025



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY:

0 40 80
HORIZONTAL SCALE IN FEET
0 4 8
VERTICAL SCALE IN FEET

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

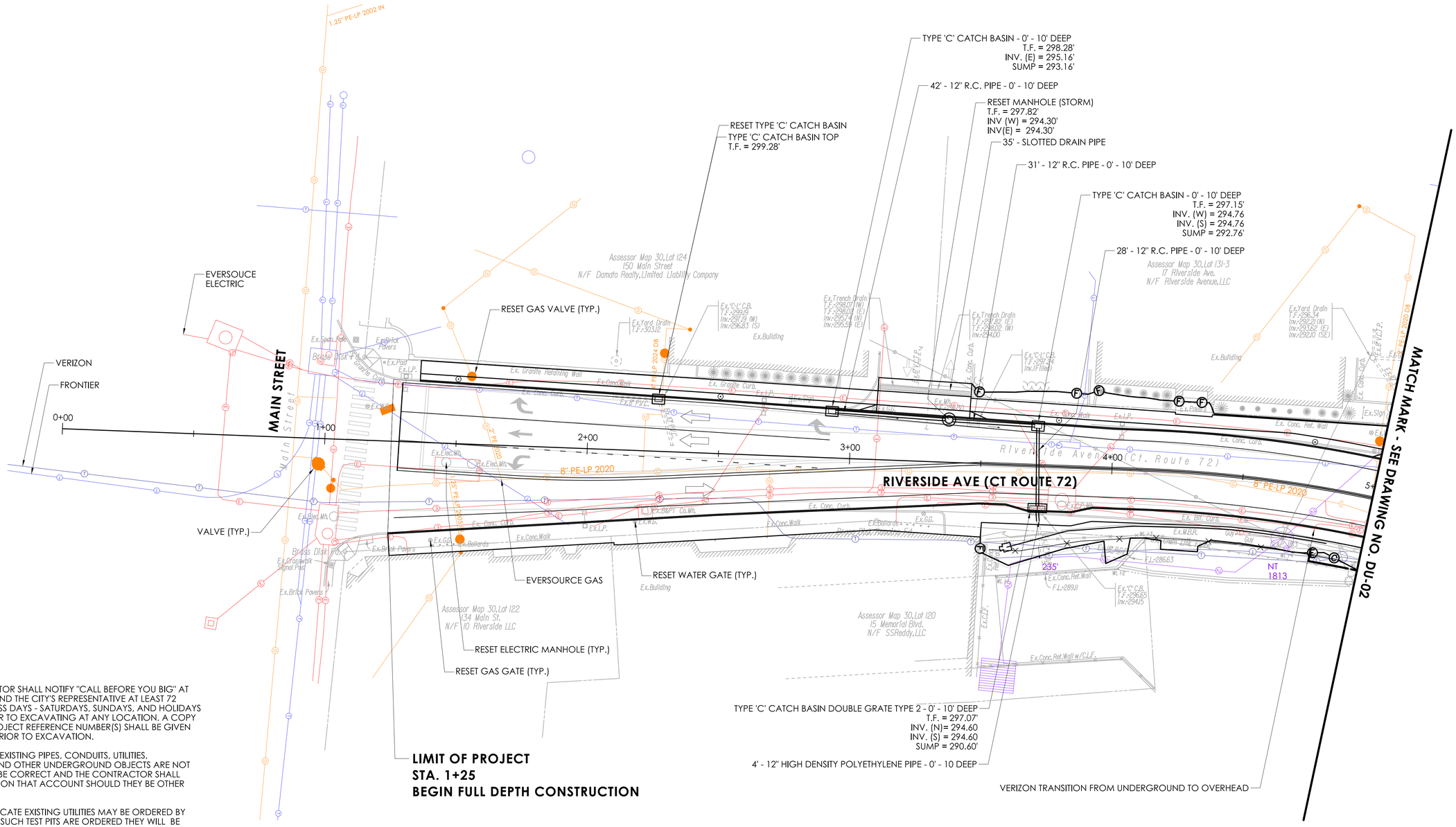
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RIVERSIDE PROFILE

PROJECT NO.:
0017-0196

DRAWING NO.:
PRO-05

SHEET NO.:
03.32

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PLOTTED DATE: 12/5/2025



GENERAL NOTES:

1. THE CONTRACTOR SHALL NOTIFY "CALL BEFORE YOU BIG" AT 1-800-922-4455 AND THE CITY'S REPRESENTATIVE AT LEAST 72 HOURS (3 BUSINESS DAYS - SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED) PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE CBYD PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE OWNER PRIOR TO EXCAVATION.

2. LOCATION OF EXISTING PIPES, CONDUITS, UTILITIES, FOUNDATIONS AND OTHER UNDERGROUND OBJECTS ARE NOT WARRANTED TO BE CORRECT AND THE CONTRACTOR SHALL HAVE NO CLAIM ON THAT ACCOUNT SHOULD THEY BE OTHER THAN SHOWN.

3. TEST PITS TO LOCATE EXISTING UTILITIES MAY BE ORDERED BY THE ENGINEER. IF SUCH TEST PITS ARE ORDERED THEY WILL BE PAID FOR AS A CHANGE ORDER ON A TIME AND MATERIAL BASIS.

4. THE CONTRACTOR SHALL COORDINATE THE WORK AND WORK SCHEDULE WITH UTILITY COMPANIES. PROVIDE ADEQUATE NOTICE TO UTILITIES TO PREVENT DELAYS IN CONSTRUCTION.

5. THE RESETTING OF PRIVATELY OWNED FRAMES, GRATES, AND VALVE BOXES TO FINISH GRADE SHALL BE COMPLETED BY THE INDIVIDUAL UTILITY COMPANY OWNERS.

6. RIM ELEVATIONS FOR MANHOLES, VALVE COVERS, GATE AND PULL BOXES, AND OTHER STRUCTURES SHALL BE SET OR RESET TO FINISH GRADE.

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

0 20 40 SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

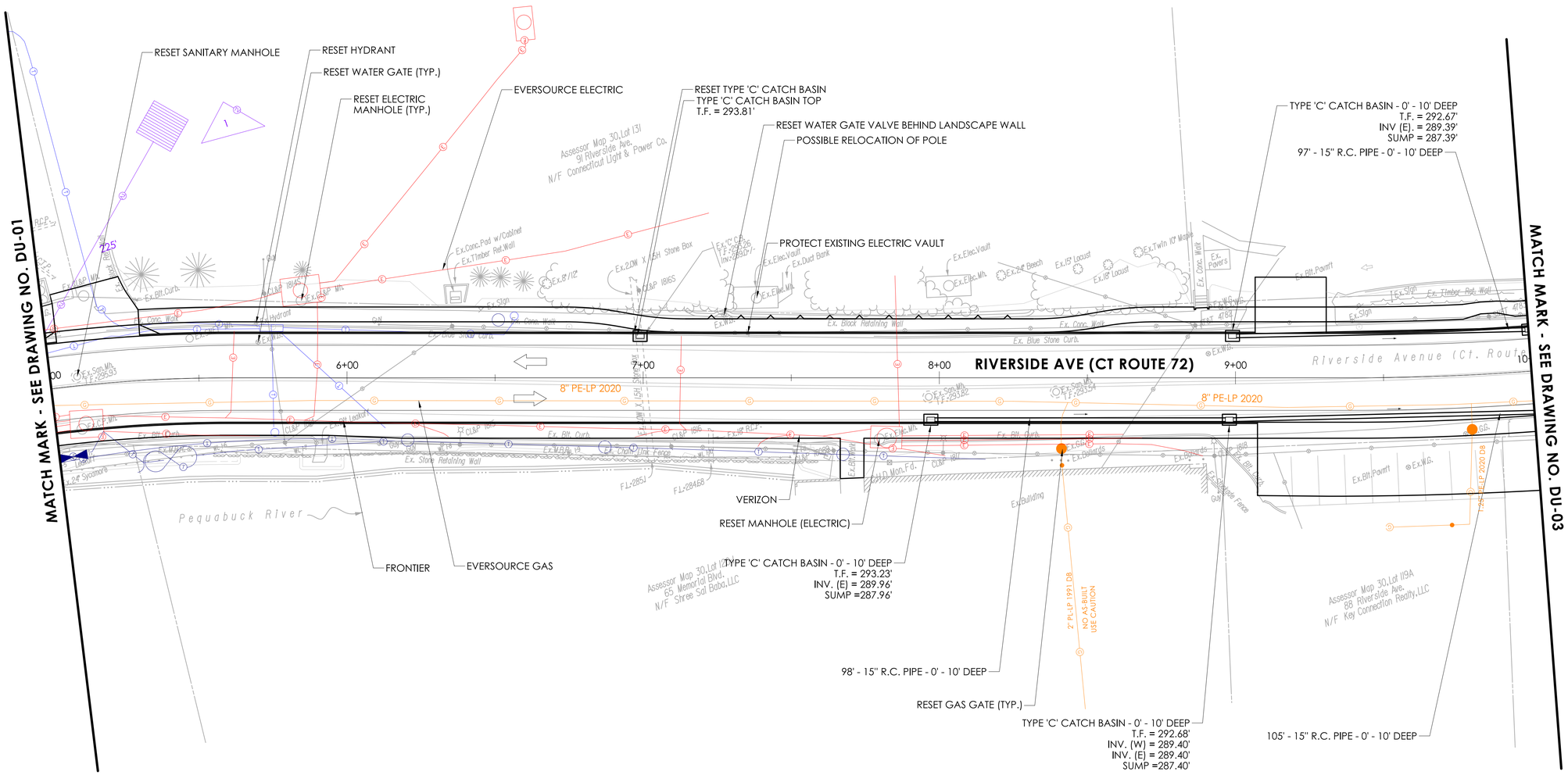
DRAWING TITLE: **DRAINAGE AND UTILITY PLANS**

PROJECT NO.: **0017-0196**

DRAWING NO.: **DU-01**

SHEET NO.: 03.33

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PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20'

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

DRAWING TITLE: DRAINAGE AND UTILITY PLANS

PROJECT NO.: 0017-0196

DRAWING NO.: DU-02

SHEET NO.: 03.34

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PLOTTED DATE: 1/22/2026

COORDINATE GRID
NAD 83
CONNECTICUT

MATCH MARK - SEE DRAWING NO. DU-02

MATCH MARK - SEE DRAWING NO. DU-04

RIVERSIDE AVE (CT ROUTE 72)

Marner Court

92' - 15" R.C. PIPE - 0' - 10' DEEP
POSSIBLE RELOCATION OF POLE #4784
TYPE 'C' CATCH BASIN - 0' - 10' DEEP
T.F. = 291.59
INV. (W) = 288.00'
INV. (E) = 288.00'
SUMP = 286.00'
RESET GAS VALVE (TYP.)
TYPE 'C' CATCH BASIN - 0' - 10' DEEP
T.F. = 292.11'
INV. (W) = 288.82'
INV. (E) = 288.82'
SUMP = 286.82'
46' - 15" R.C. PIPE - 0' - 10' DEEP
TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2 - 0' - 10' DEEP
T.F. - 291.46'
INV. (W) = 287.50'
INV. (E) = 287.50'
SUMP = 285.50'
43' - 15" R.C. PIPE - 0' - 10' DEEP
TYPE 'C-L' CATCH BASIN - 0' - 10' DEEP
T.F. = 291.63'
INV. (W) = 287.00'
INV. (E) = 287.00'
SUMP = 285.00'
HEAVY DUTY TOP
RESET HYDRANT
RESET VALVE BOX
(WATER MAIN) (TYP.)
RESET WATER GATE (TYP.)
119' - 15" R.C. PIPE - 0' - 10' DEEP
TYPE 'C' CATCH BASIN - 0' - 10' DEEP
T.F. = 292.12'
INV. (W) = 288.88'
SUMP = 286.88'
RESET TYPE 'C-L' CATCH BASIN
TYPE 'C-L' CATCH BASIN TOP
T.F. = 293.06'
RESET SANITARY MANHOLE (TYP.)
POSSIBLE RELOCATION OF POLE #4787
RESET TYPE 'C-L' CATCH BASIN
TYPE 'C-L' CATCH BASIN TOP
T.F. = 293.10'

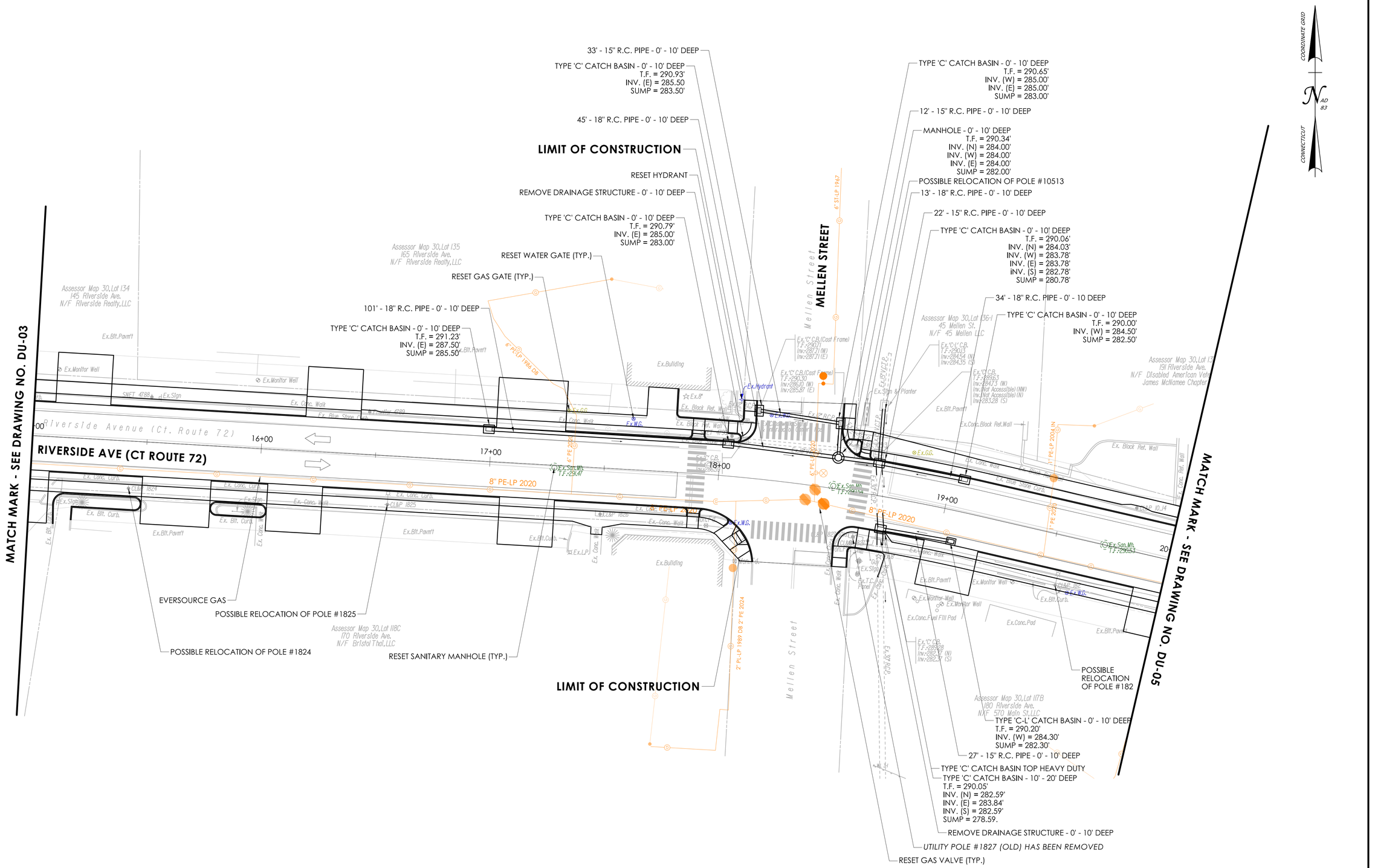
EVERSOURCE
GAS
TYPE 'C' CATCH BASIN - 0' - 10' DEEP
T.F. = 292.08'
INV. (W) = 288.80'
INV. (E) = 288.80'
SUMP = 286.80'
90' - 15" R.C. PIPE - 0' - 10' DEEP
POSSIBLE RELOCATION OF POLE #1820
TYPE 'C' CATCH BASIN - 0' - 10' DEEP
T.F. = 291.59'
INV. (W) = 288.09'
INV. (E) = 288.09'
SUMP = 286.09'
97' - 15" R.C. PIPE - 0' - 10' DEEP
26' - 15" R.C. PIPE - 0' - 10' DEEP
TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2 - 0' - 10' DEEP
T.F. = 291.49'
INV. (W) = 286.54'
INV. (E) = 286.54'
INV. (S) = 286.54
SUMP = 282.54'
10' - 15" R.C. PIPE
112' - 15" R.C. PIPE - 0' - 10' DEEP
TYPE 'C' CATCH BASIN - 0' - 10' DEEP
T.F. = 292.09'
INV. (W) = 288.85'
SUMP = 286.85'

Assessor Map 30,Lot 131A
95 Riverside Ave.
N/F New England Carousel Museum,Inc.
Assessor Map 30,Lot 133
119 Riverside Ave.
N/F City of Bristol
Assessor Map 30,Lot 134-1
137 Riverside Ave.
N/F Riverside Realty,LLC
Assessor Map 30,Lot 119
106 Riverside Ave.
N/F 106 Riverside Avenue,LLC
Assessor Map 30,Lot 118B
116 Riverside Ave.
N/F SFS Properties,LLC
Assessor Map 30,Lot 118
132 Riverside Ave.
N/F Lisaco,LLC

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033
DESIGNER/DRAFTER: SL CHECKED BY: PMB
SCALE 1" = 20' (0 20 40)
CONNECTICUT DEPARTMENT OF TRANSPORTATION
PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS
TOWN(S): BRISTOL
DRAWING TITLE: DRAINAGE AND UTILITY PLANS
PROJECT NO.: 0017-0196
DRAWING NO.: DU-03
SHEET NO.: 03.35

LASTED SAVED BY: DDixon **FILE NAME:** C:\Users\DDixon\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Contract_Plans\HW_CP_40968_DU-03.dgn
PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20' (0 20 40)

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

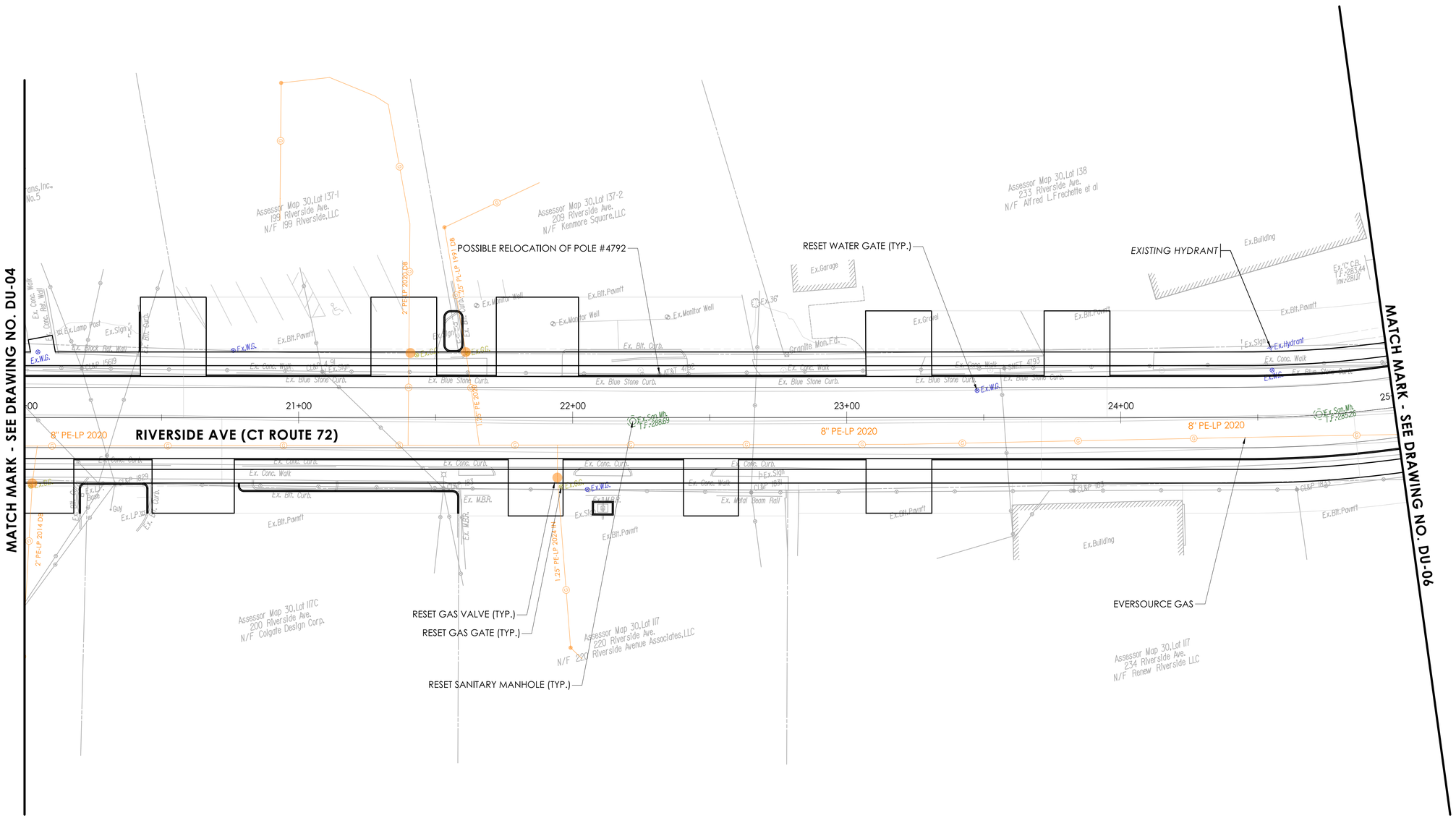
DRAWING TITLE: **DRAINAGE AND UTILITY PLANS**

PROJECT NO.: **0017-0196**

DRAWING NO.: **DU-04**

SHEET NO.: 03.36

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PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

0 20 40
SCALE 1" = 20'

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

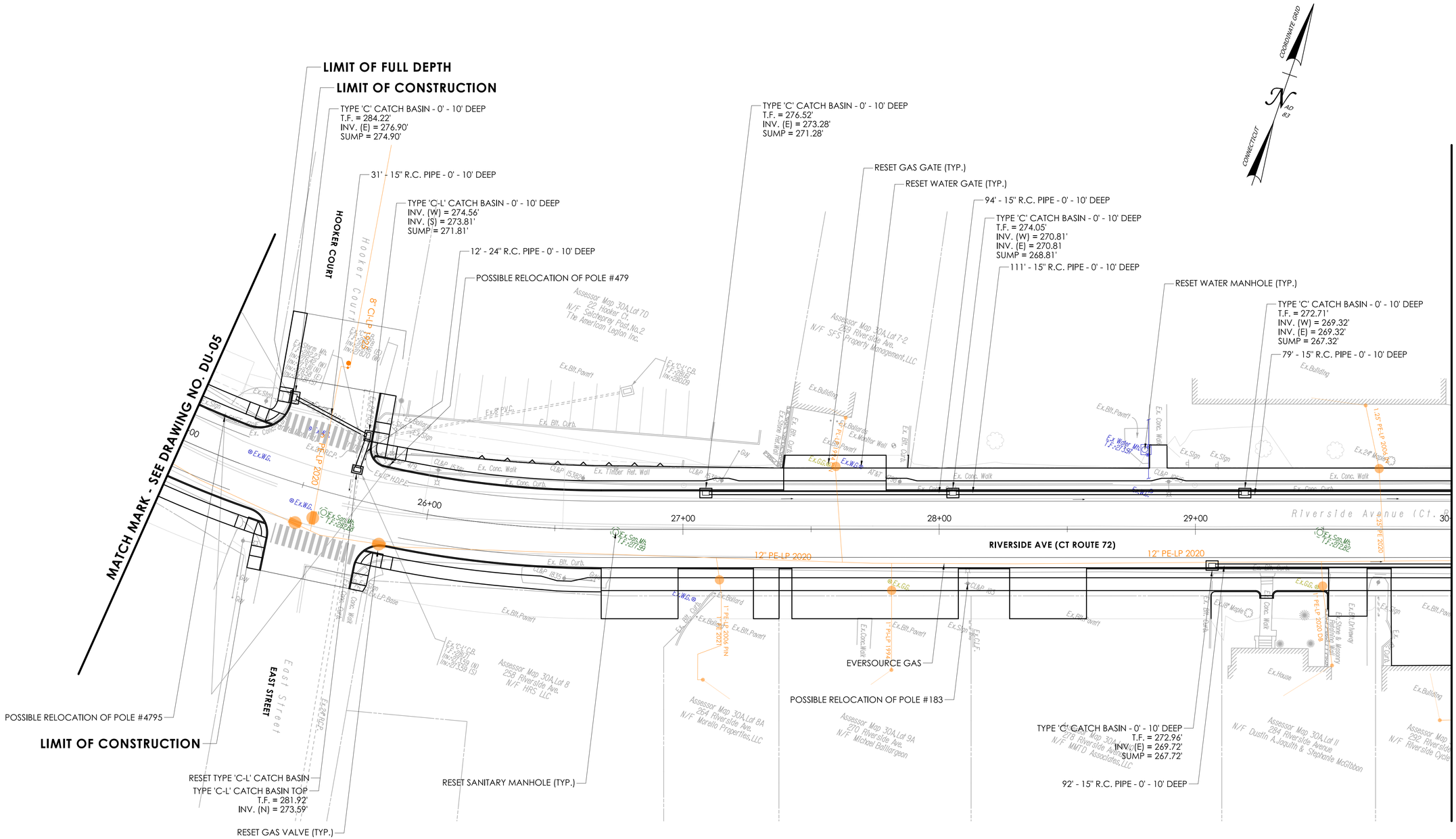
DRAWING TITLE: **DRAINAGE AND UTILITY PLANS**

PROJECT NO.: **0017-0196**

DRAWING NO.: **DU-05**

SHEET NO.: 03.37

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PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20'

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

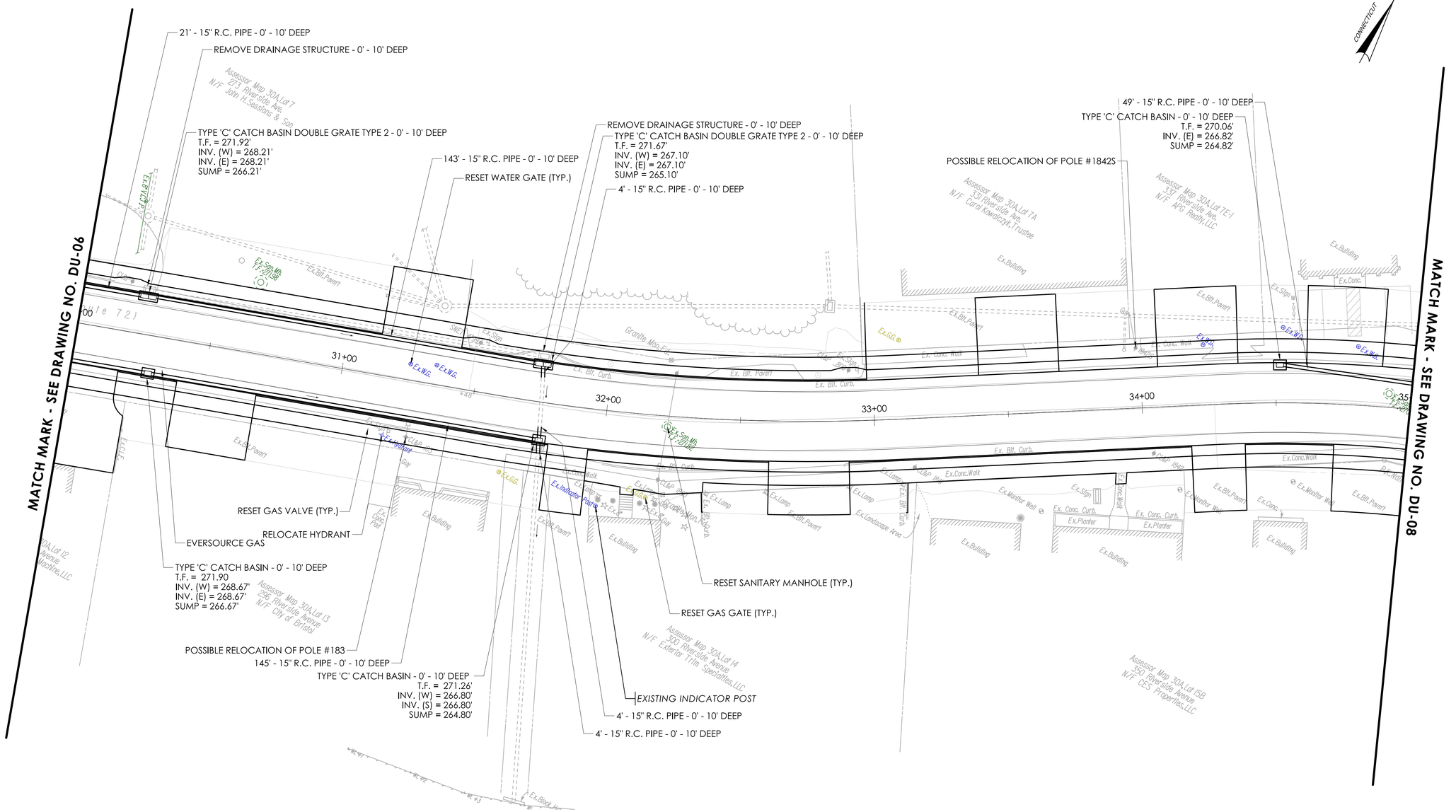
DRAWING TITLE: DRAINAGE AND UTILITY PLANS

PROJECT NO.: 0017-0196

DRAWING NO.: DU-06

SHEET NO.: 03.38

LASTED SAVED BY: DDixon **FILE NAME:** C:\Users\DDixon\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Contract_Plans\HW_CP_40968_DU-06.dgn
PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

0 20 40
SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

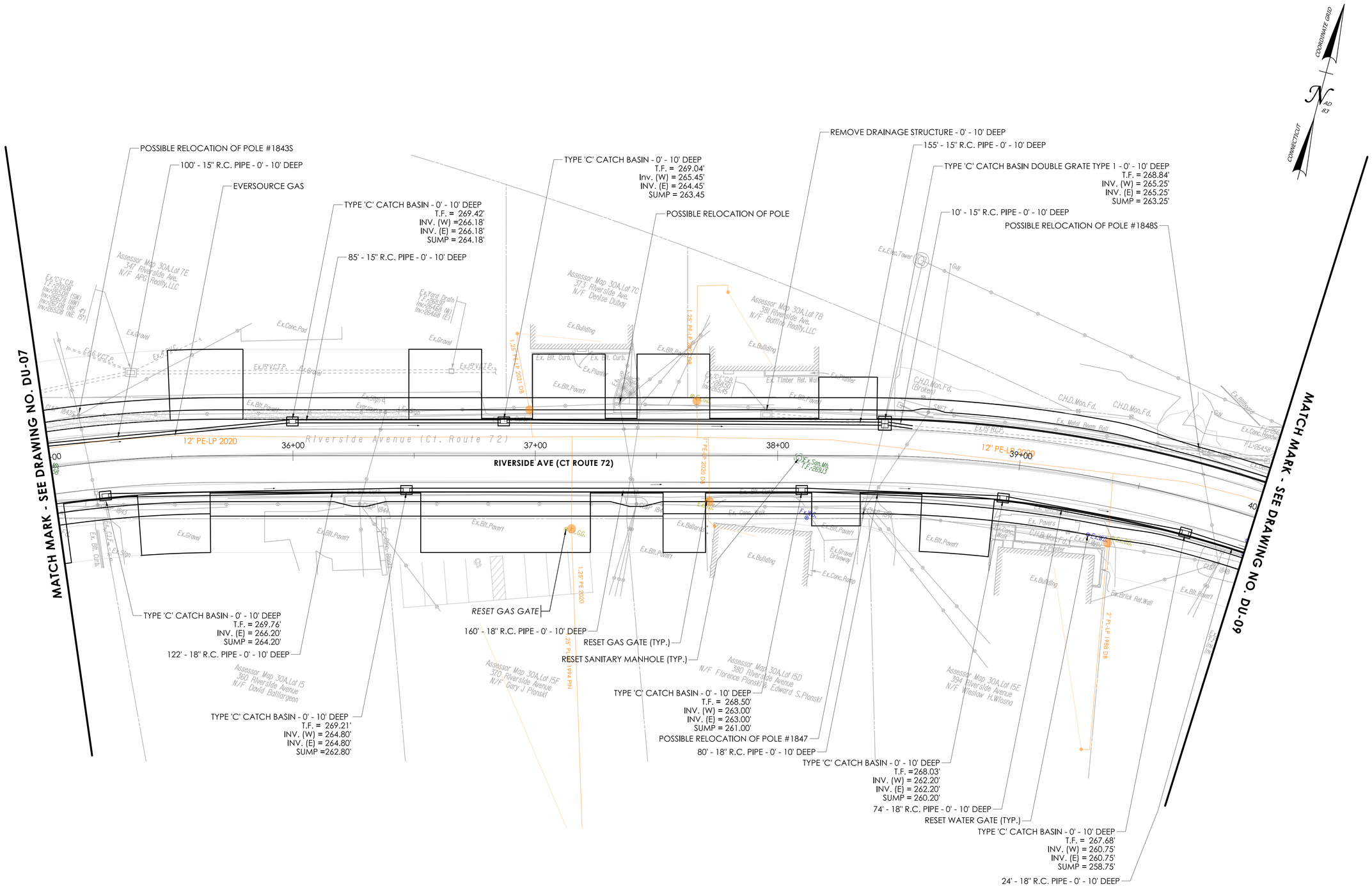
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DRAINAGE AND UTILITY PLANS

PROJECT NO.:
0017-0196

DRAWING NO.:
DU-07

SHEET NO.:
03.39

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PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK: GM2 ASSOCIATES, INC. 115 GLASTONBURY BLVD. GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

0 20 40
SCALE 1" = 20'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

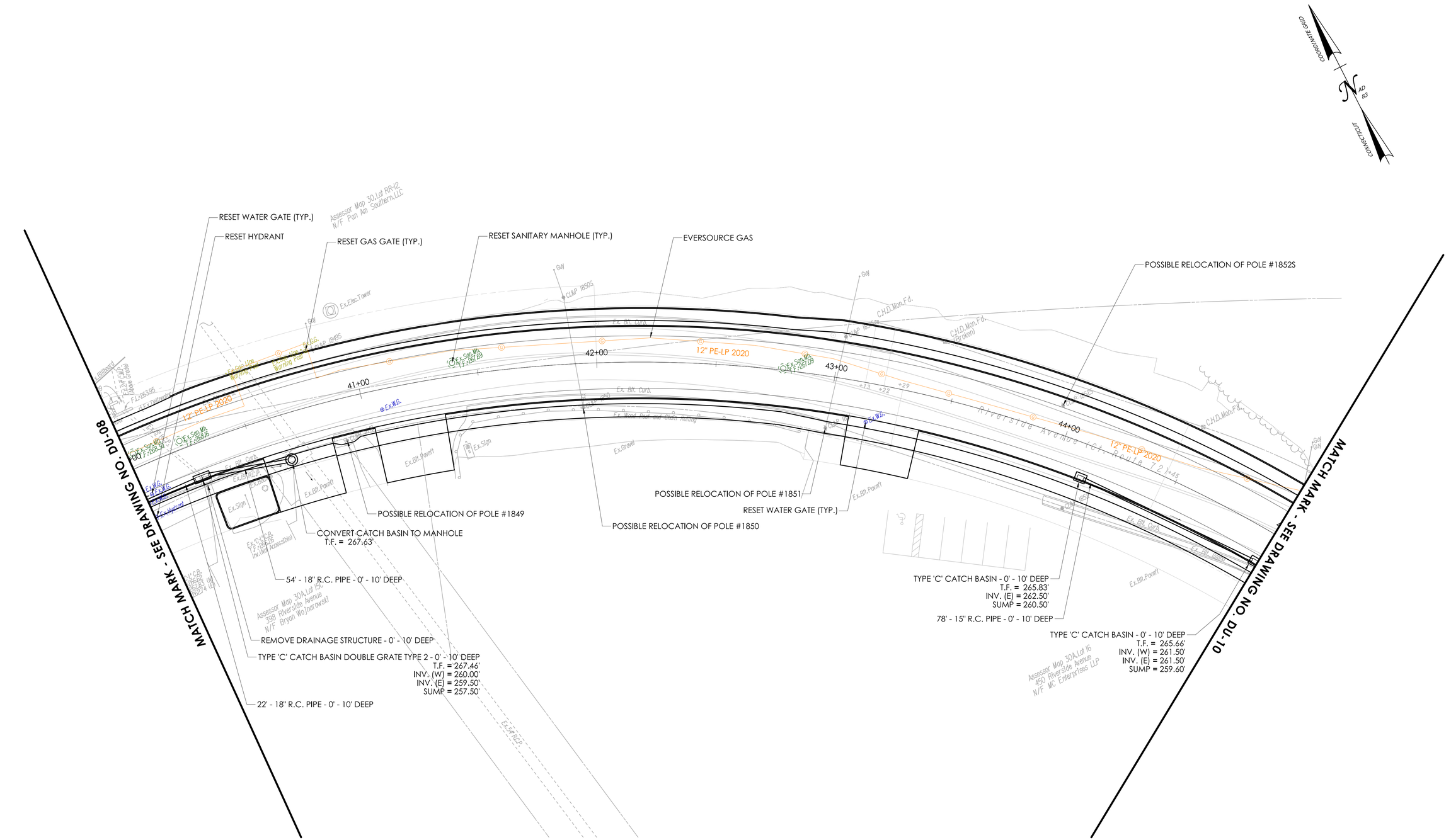
DRAWING TITLE: **DRAINAGE AND UTILITY PLANS**

PROJECT NO.: **0017-0196**

DRAWING NO.: **DU-08**

SHEET NO.: 03.40

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PLOTTED DATE: 1/22/2026



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20' (0, 20, 40)

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

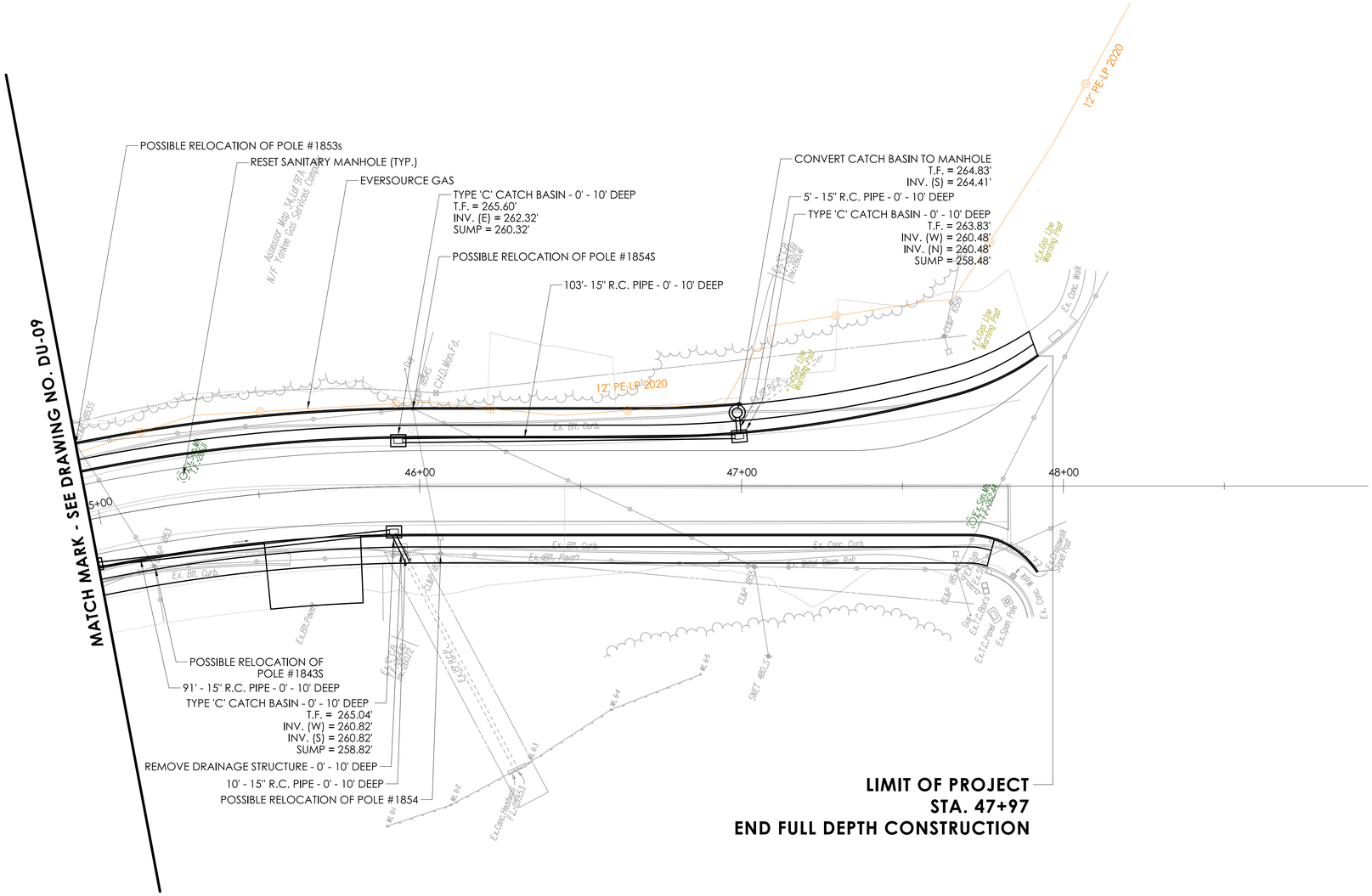
DRAWING TITLE: **DRAINAGE AND UTILITY PLANS**

PROJECT NO.: **0017-0196**

DRAWING NO.: **DU-09**

SHEET NO.: 03.41

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PLOTTED DATE: 1/22/2026



REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: PMB

SCALE 1" = 20' (0 — 20 — 40)

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

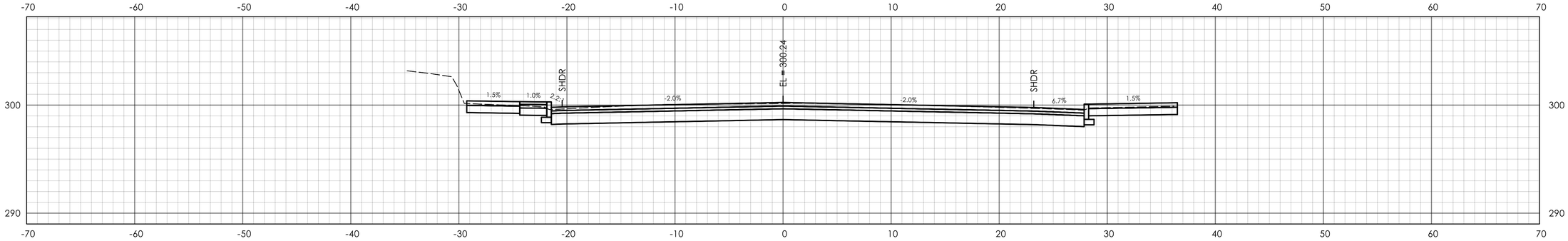
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PROJECT NO.: 0017-0196

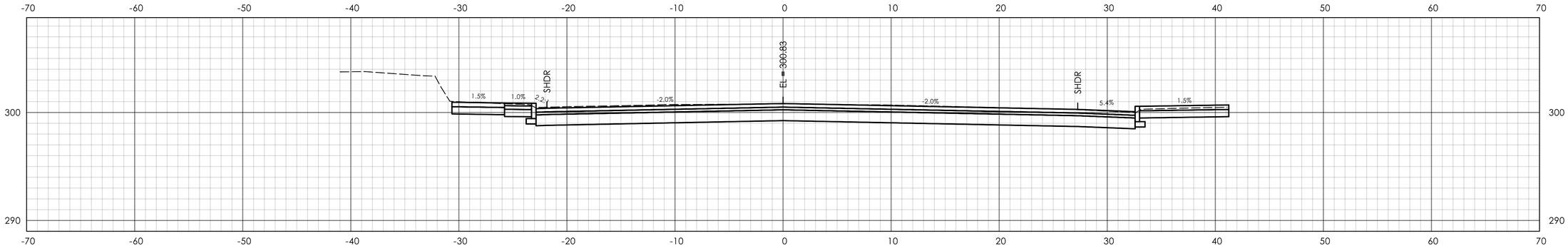
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SHEET NO.: 03.42

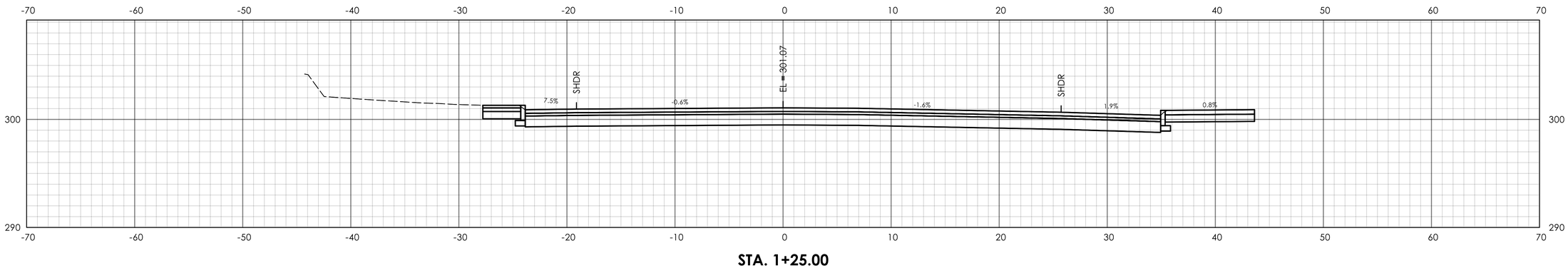
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PLOTTED DATE: 1/22/2026



STA. 2+00.00



STA. 1+50.00



STA. 1+25.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

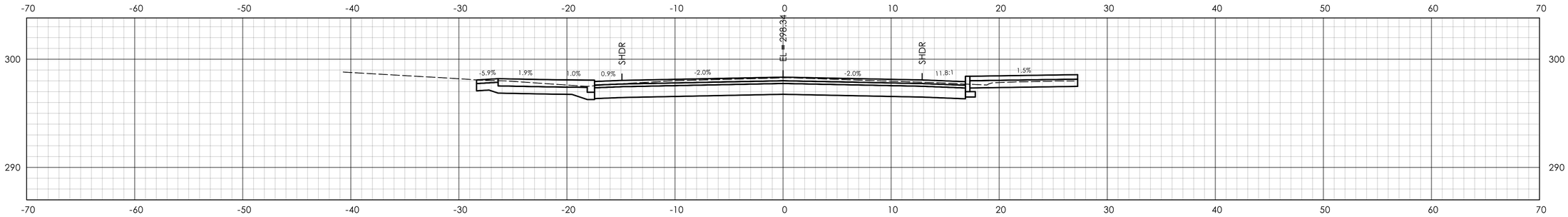
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PROJECT NO.: **0017-0196**

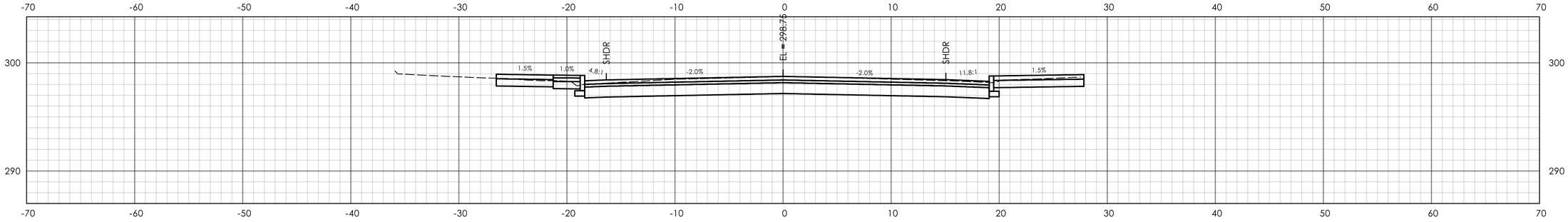
DRAWING NO.: **XSC-01**

SHEET NO.: 03.43

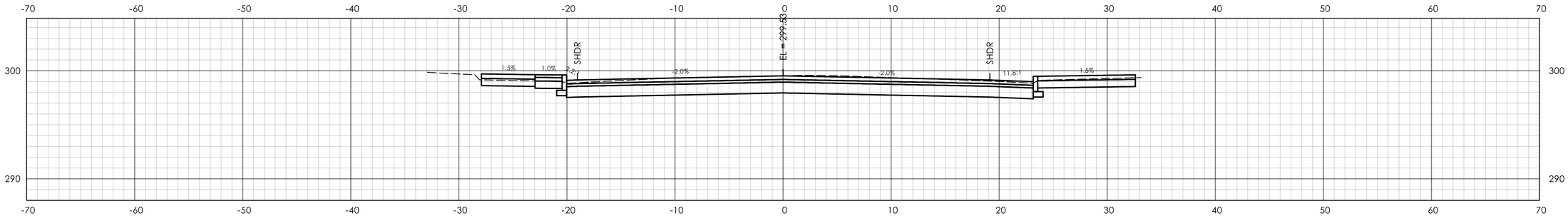
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PLOTTED DATE: 1/22/2026



STA. 3+27.00



STA. 3+00.00



STA. 2+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

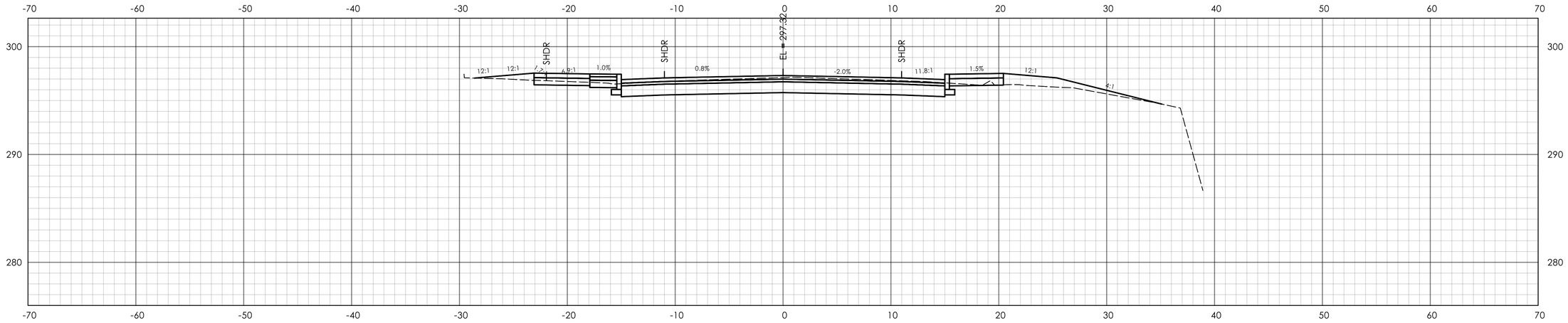
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PROJECT NO.: 0017-0196

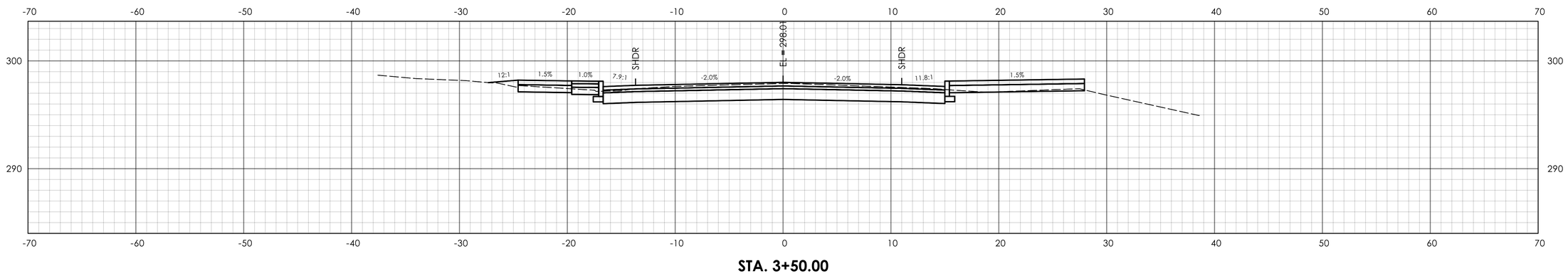
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SHEET NO.: 03.44

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PLOTTED DATE: 1/22/2026



STA. 4+00.00



STA. 3+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

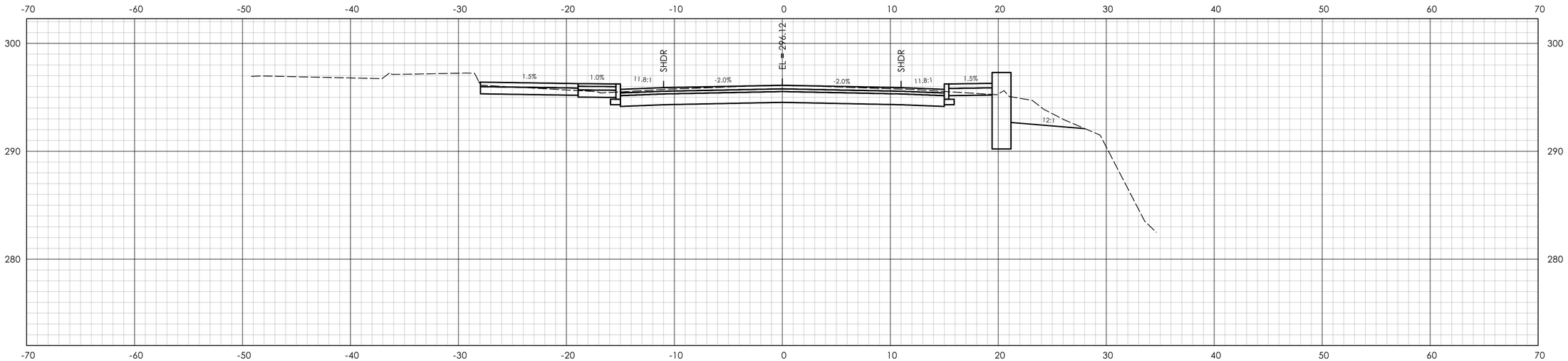
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

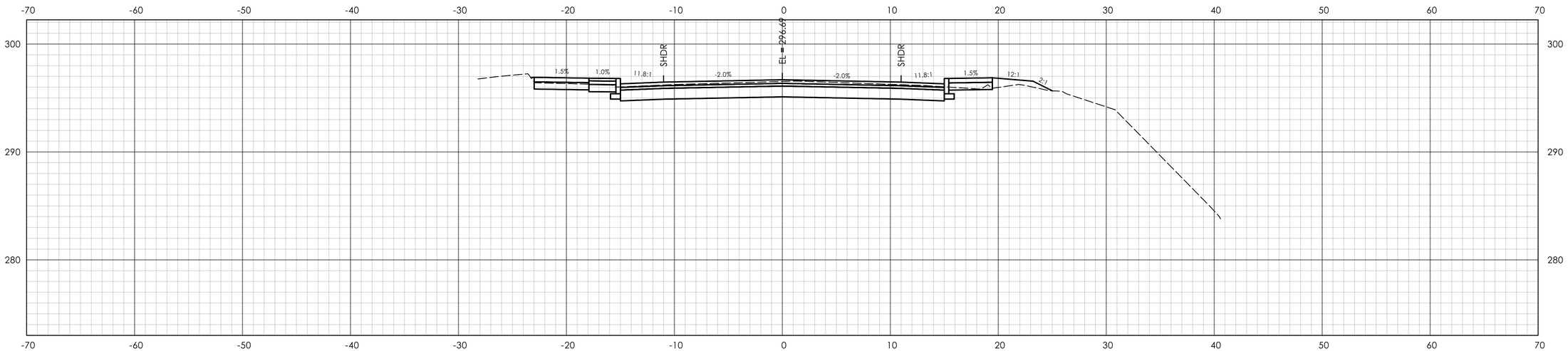
DRAWING NO.:
XSC-03

SHEET NO.:
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PLOTTED DATE: 1/22/2026



STA. 5+00.00



STA. 4+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

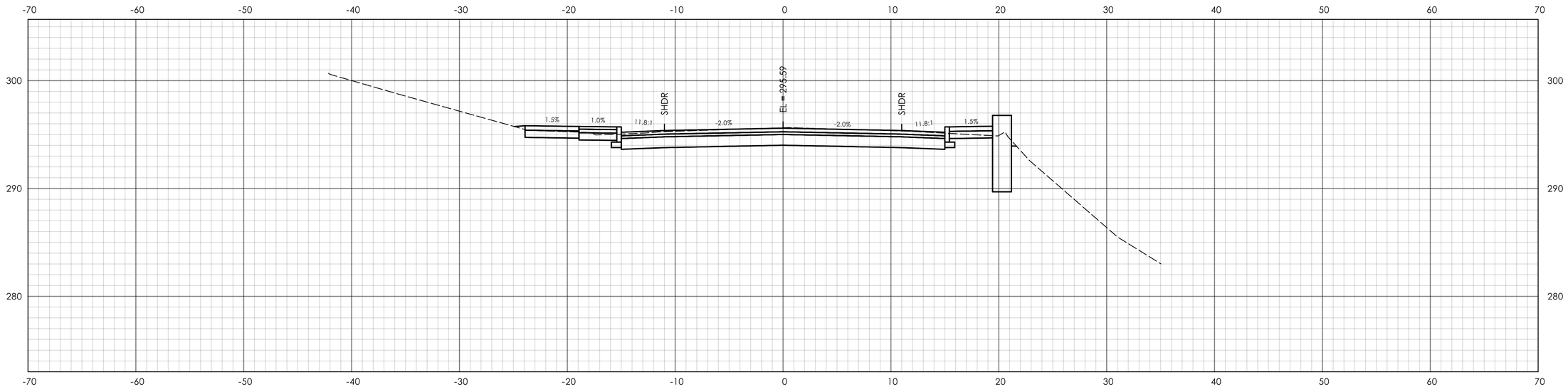
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

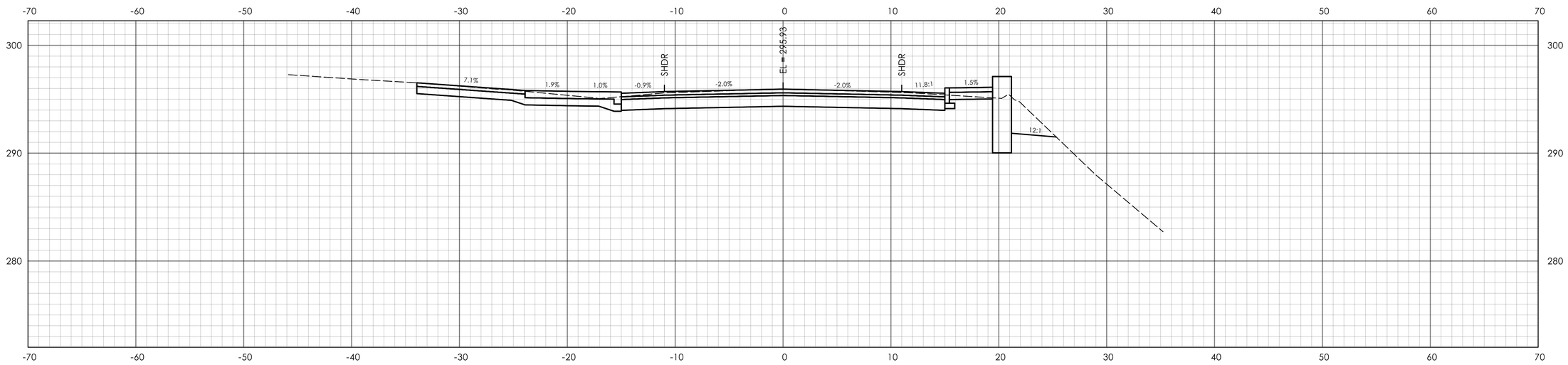
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SHEET NO.:
03.46

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PLOTTED DATE: 1/22/2026



STA. 5+50.00



STA. 5+17.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

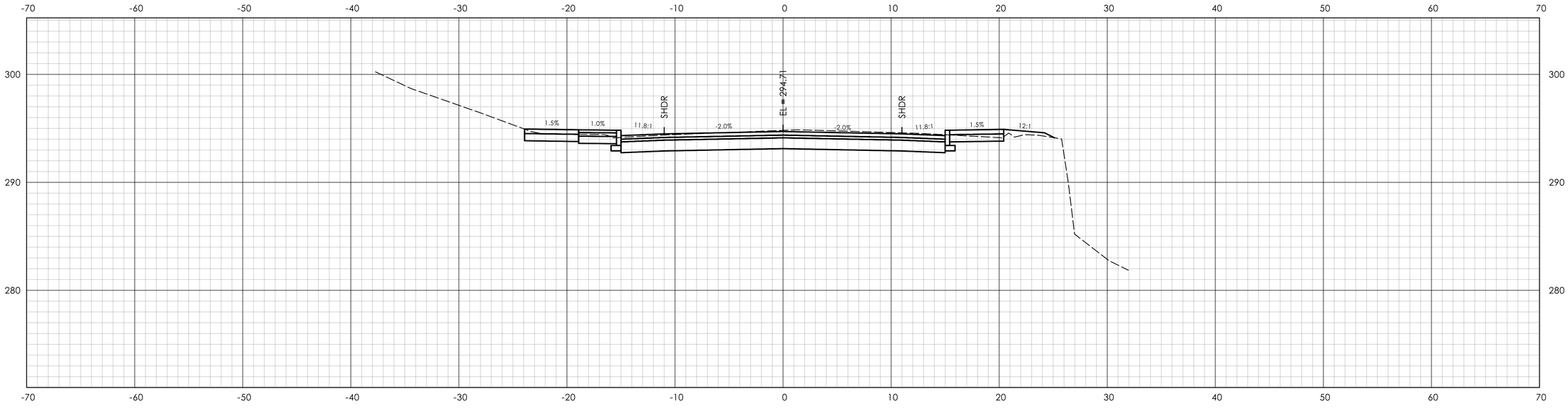
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

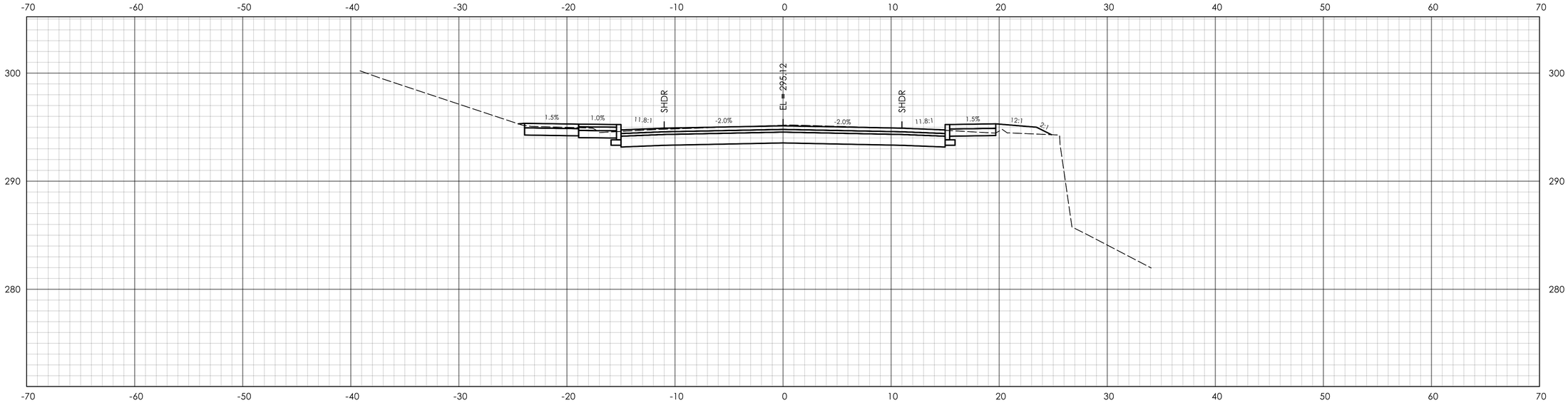
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SHEET NO.:
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PLOTTED DATE: 1/22/2026



STA. 6+50.00



STA. 6+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

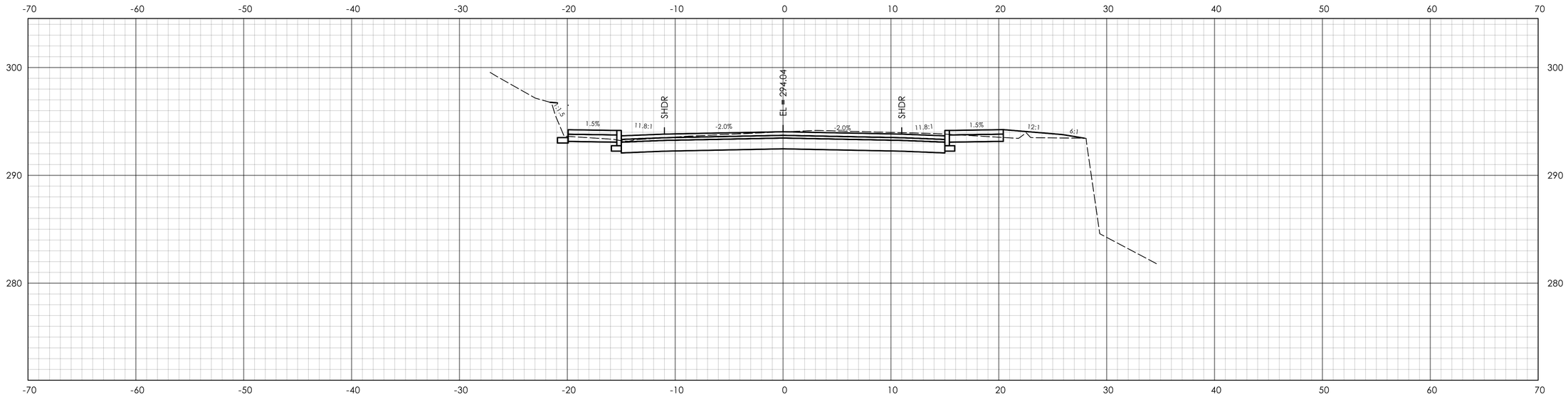
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

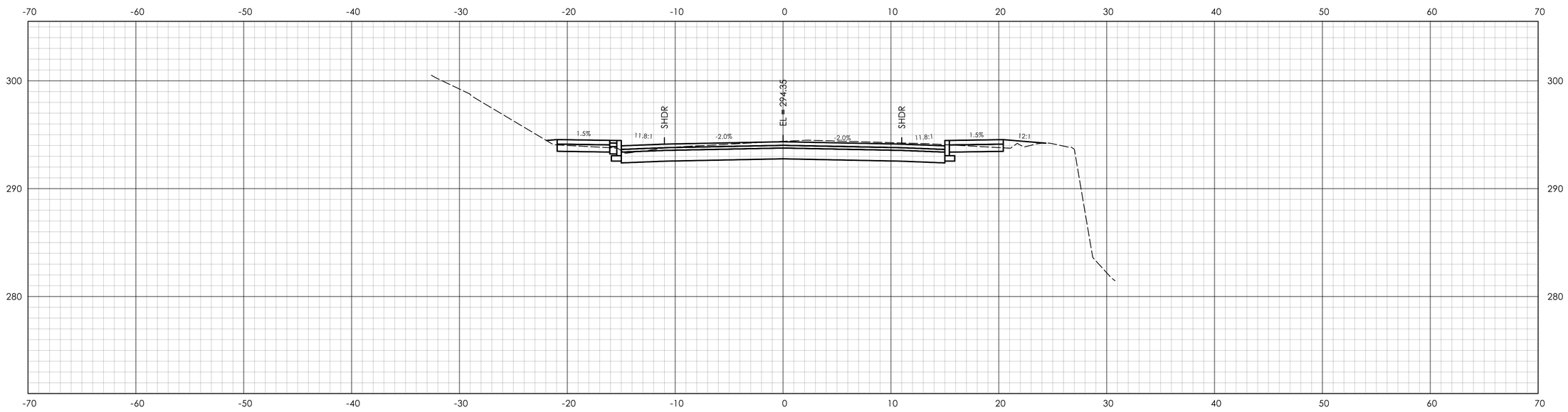
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SHEET NO.:
03.48

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PLOTTED DATE: 1/22/2026



STA. 7+50.00



STA. 7+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
1" = 5'
0 5' 10'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

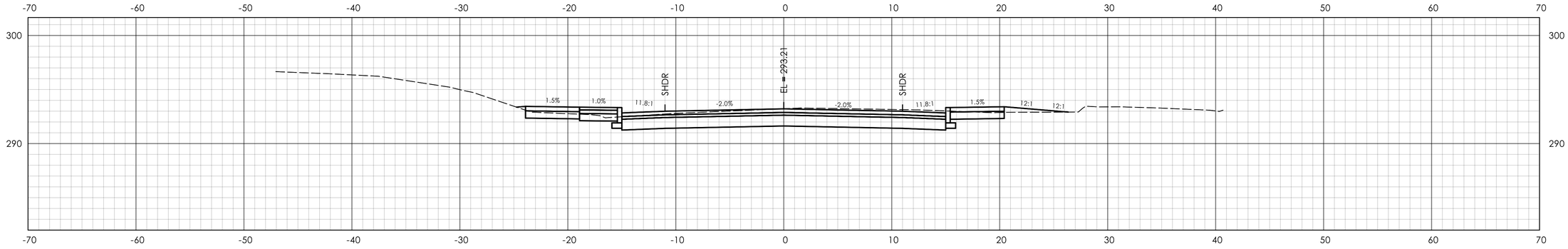
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

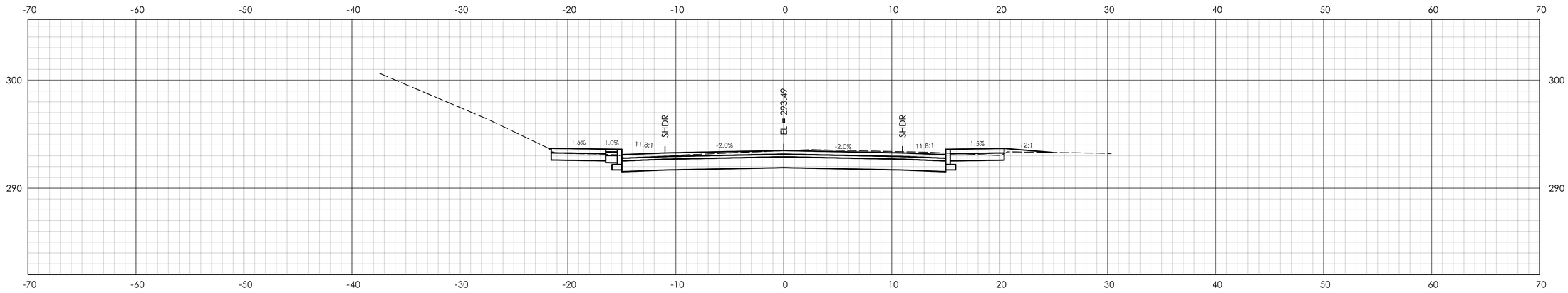
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SHEET NO.:
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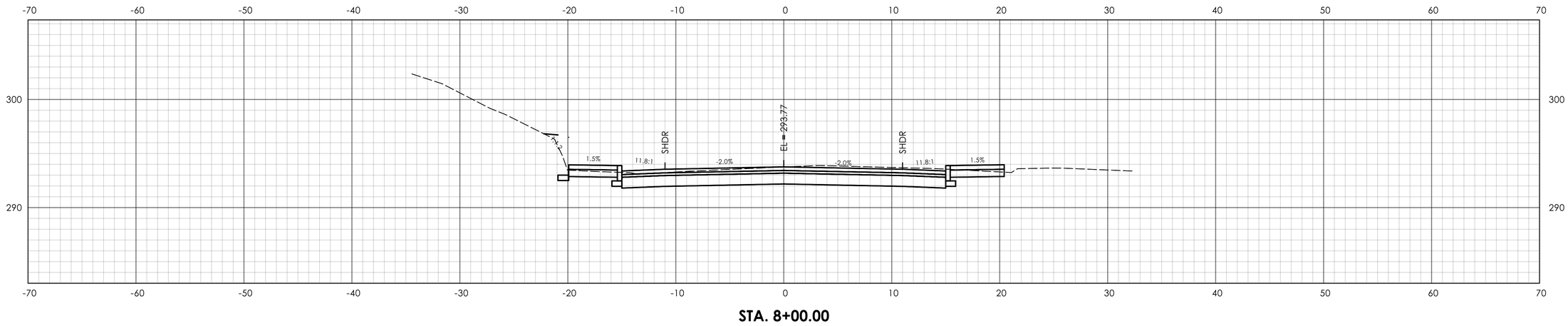
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PLOTTED DATE: 1/22/2026



STA. 9+00.00



STA. 8+50.00



STA. 8+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

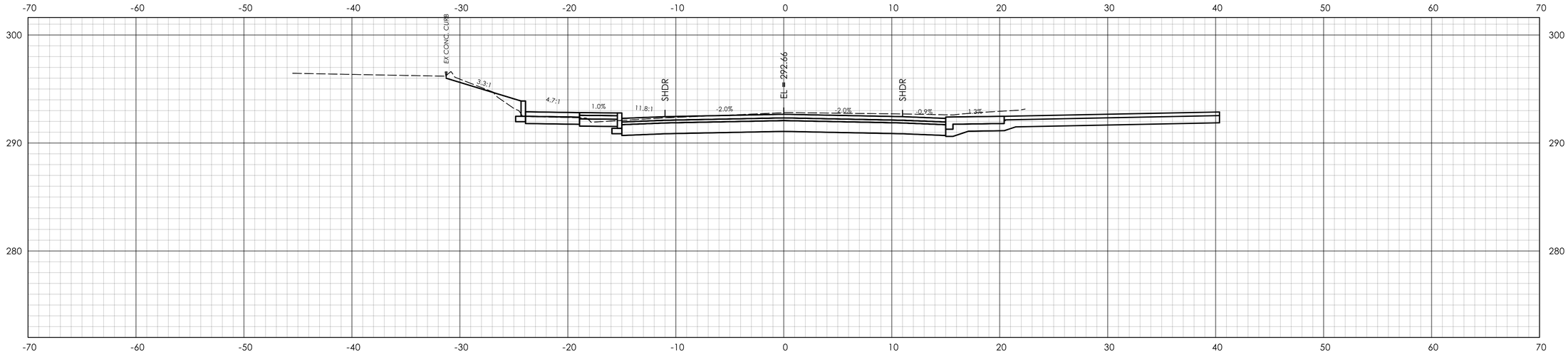
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PROJECT NO.: **0017-0196**

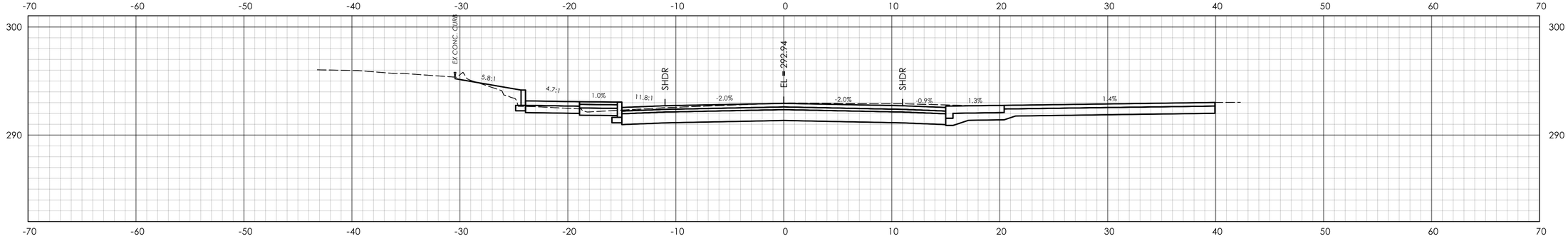
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SHEET NO.: 03.50

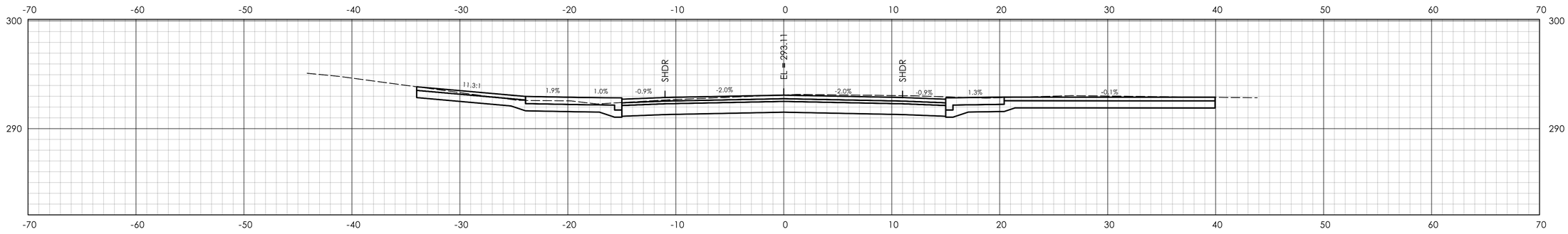
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PLOTTED DATE: 1/22/2026



STA. 10+00.00



STA. 9+50.00



STA. 9+19.00

REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:

GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

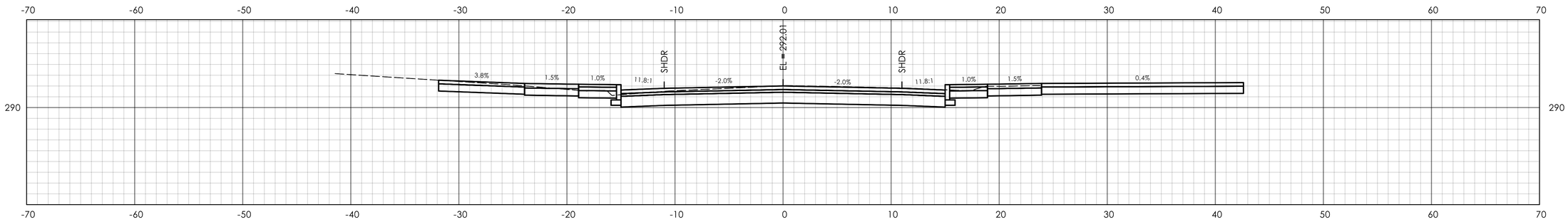
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

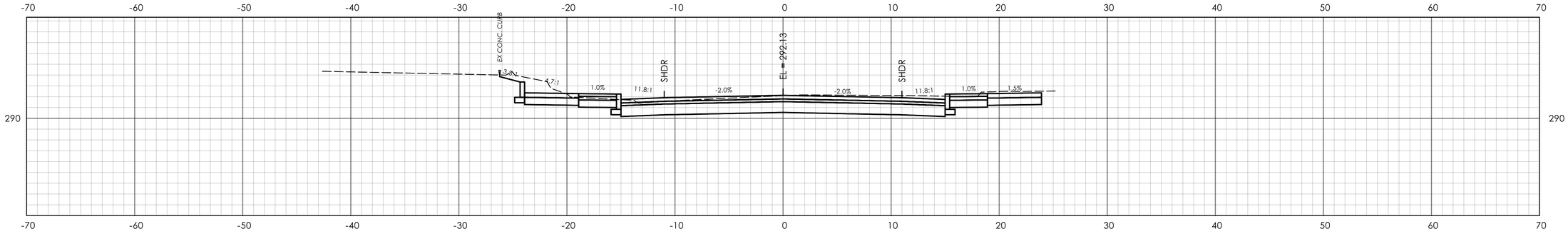
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SHEET NO.:
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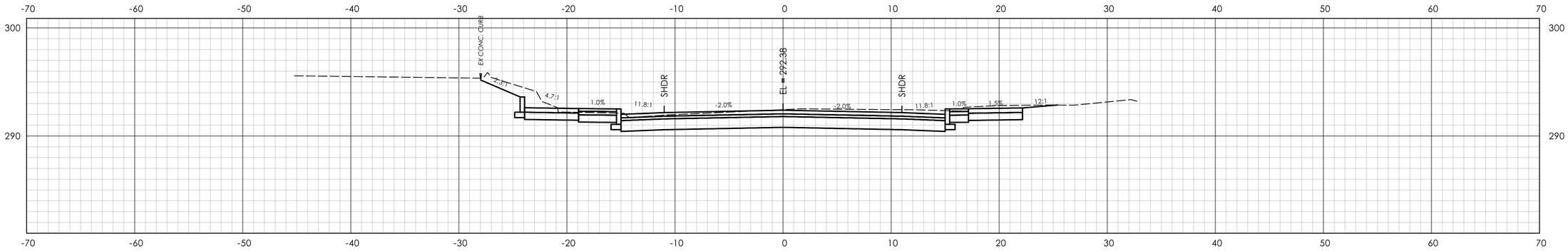
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PLOTTED DATE: 1/22/2026



STA. 11+50.00



STA. 11+00.00



STA. 10+50.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

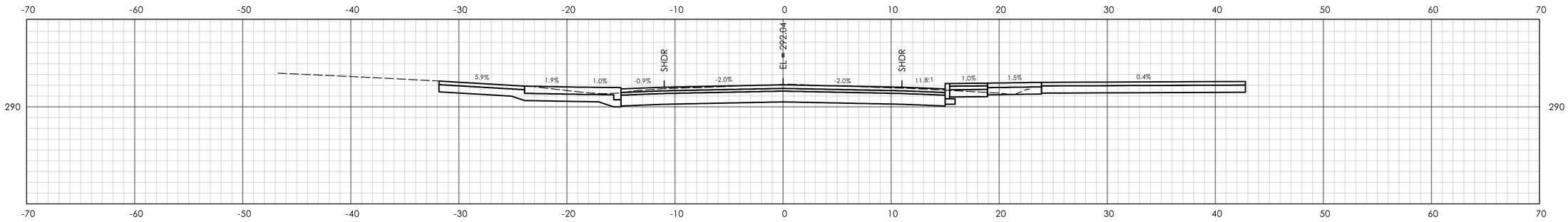
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PROJECT NO.: **0017-0196**

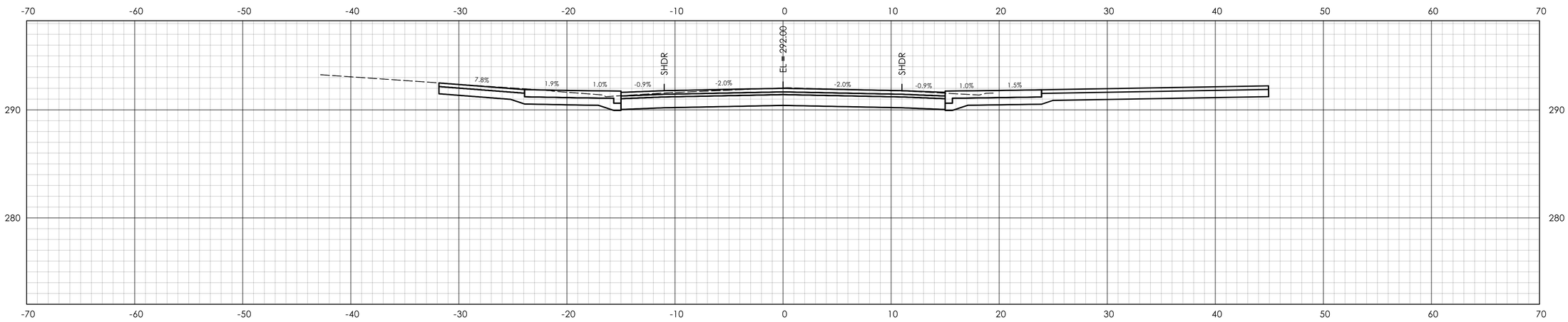
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SHEET NO.: 03.52

LASTED SAVED BY: SLovely **FILE NAME:** C:\Users\SLovely\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Base_Models\HW_CB_0017-0196_XSC_Riverside.dgn
PLOTTED DATE: 1/22/2026



STA. 12+00.00



STA. 11+70.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

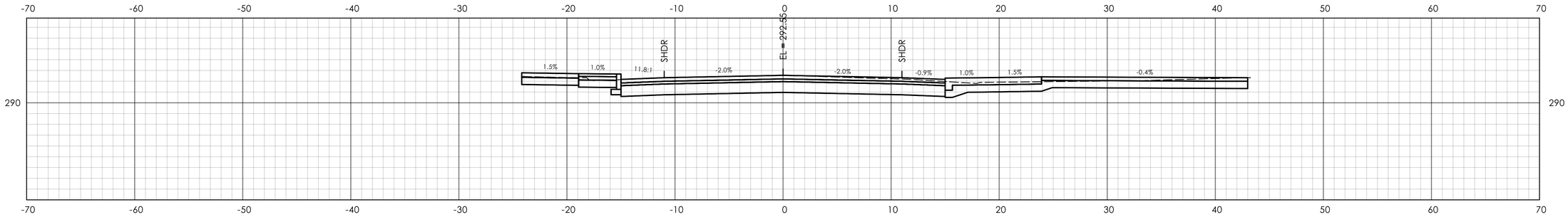
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PROJECT NO.: **0017-0196**

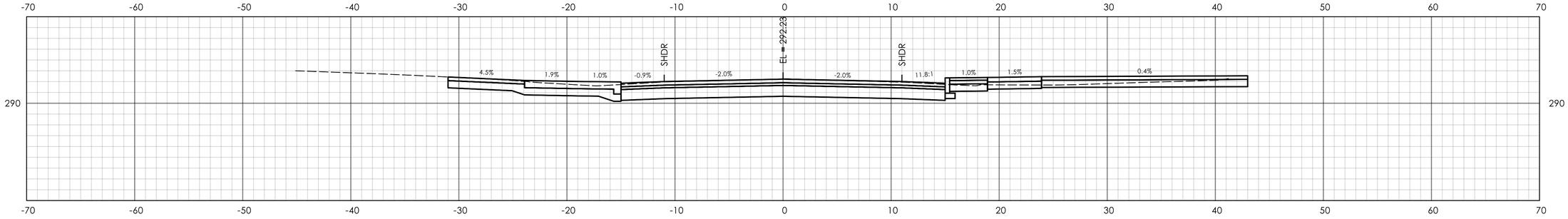
DRAWING NO.: **XSC-11**

SHEET NO.: 03.53

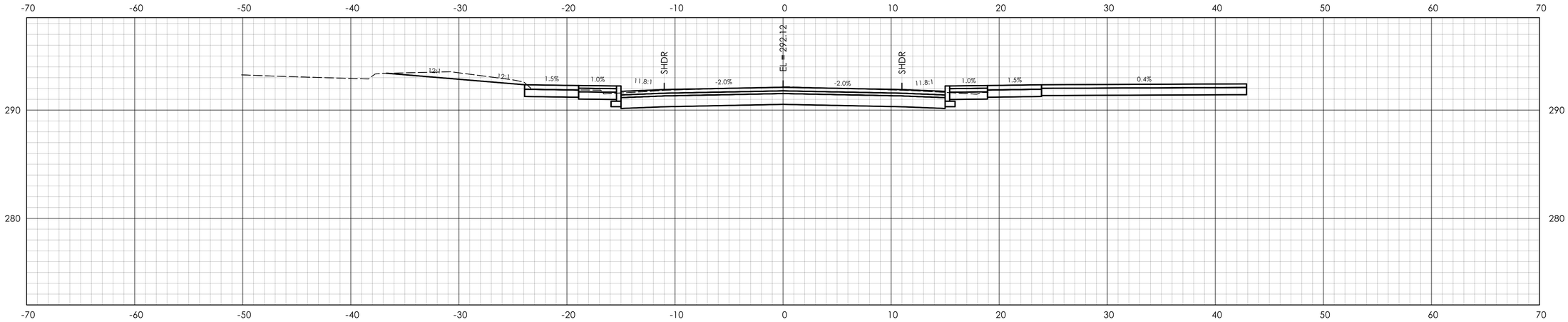
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PLOTTED DATE: 1/22/2026



STA. 13+00.00



STA. 12+50.00



STA. 12+26.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

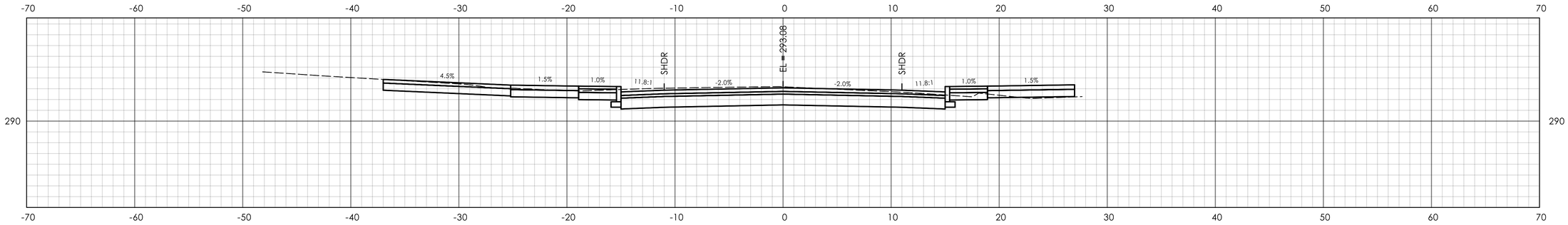
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PROJECT NO.: **0017-0196**

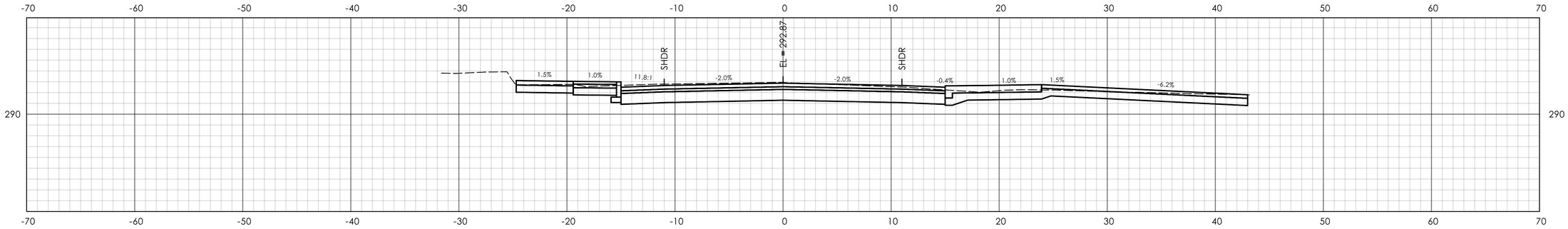
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SHEET NO.: 03.54

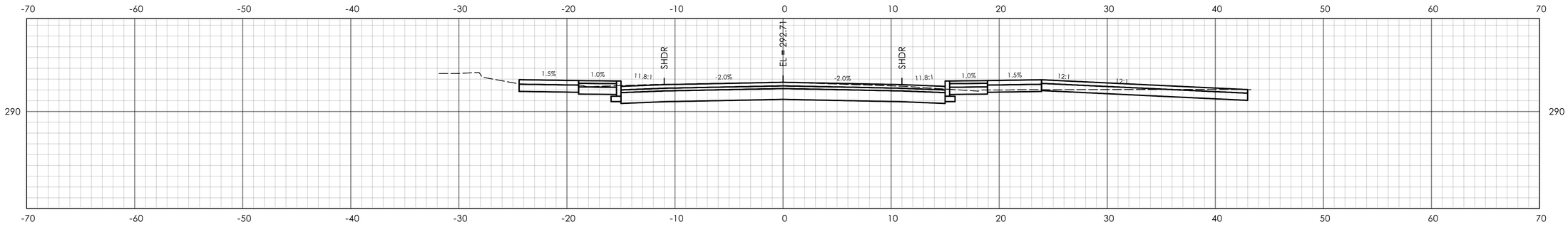
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PLOTTED DATE: 1/22/2026



STA. 14+00.00



STA. 13+50.00



STA. 13+24.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

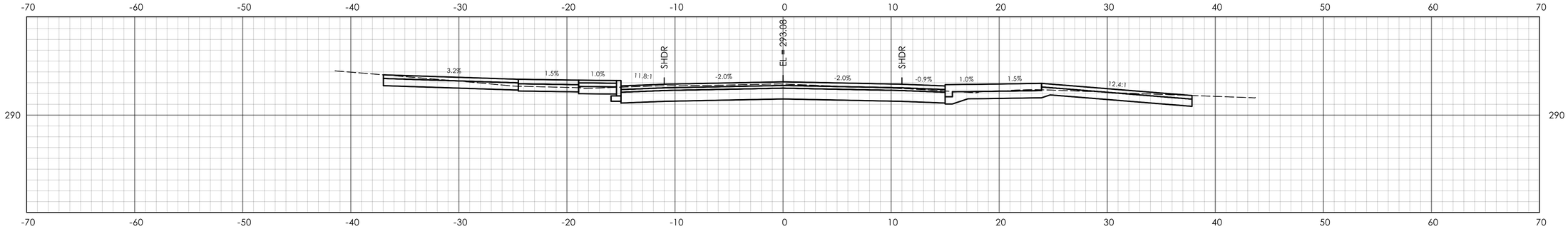
DRAWING TITLE:
CROSS-SECTIONS

PROJECT NO.:
0017-0196

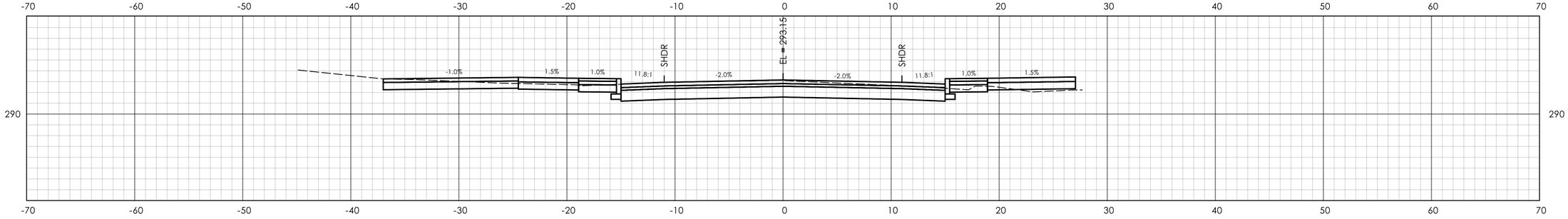
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SHEET NO.:
03.55

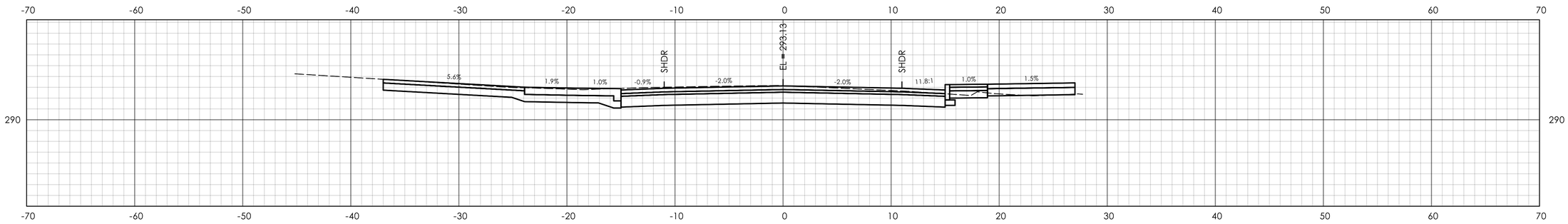
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PLOTTED DATE: 1/22/2026



STA. 15+00.00



STA. 14+50.00



STA. 14+20.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

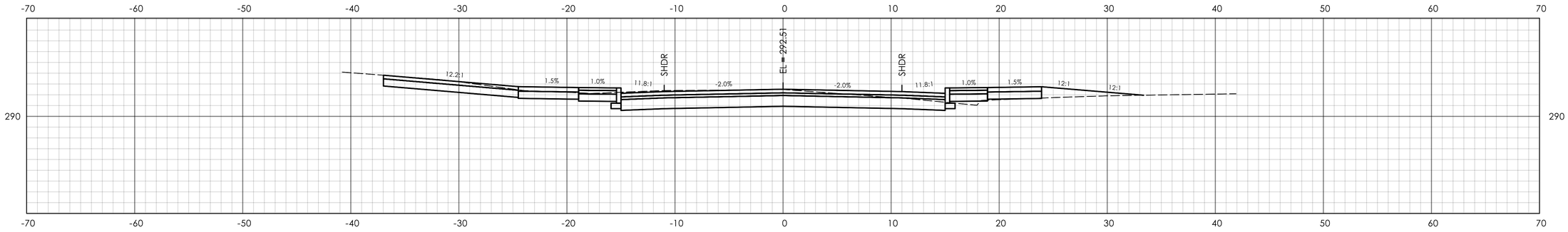
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

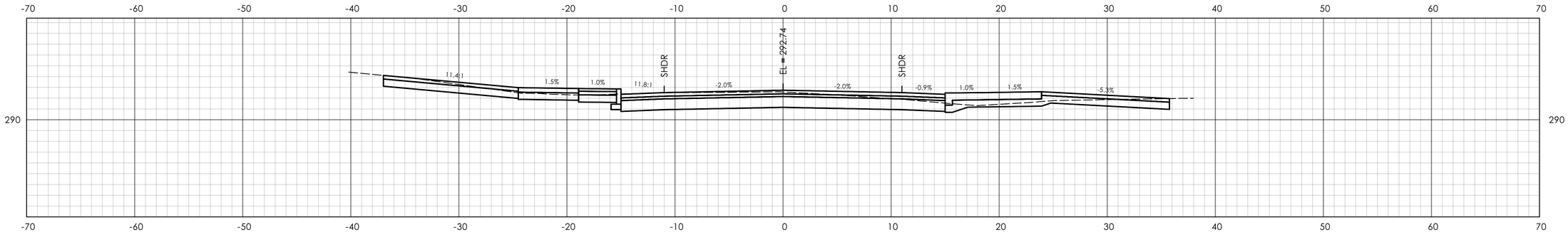
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XSC-14

SHEET NO.:
03.56

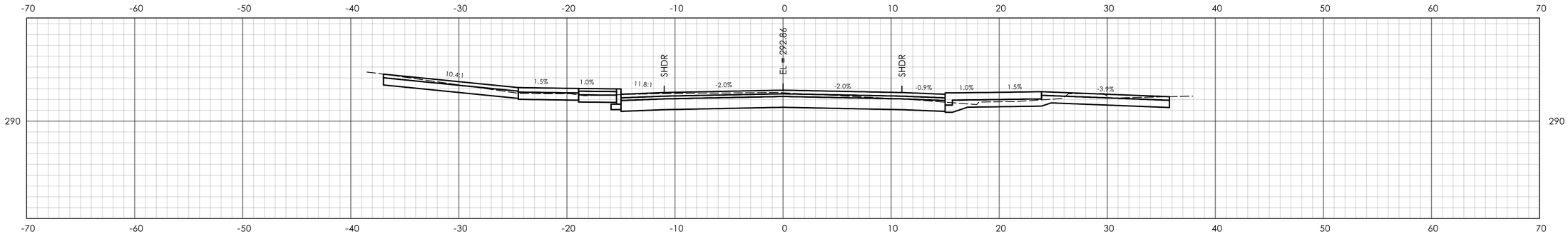
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PLOTTED DATE: 1/22/2026



STA. 16+00.00



STA. 15+70.00



STA. 15+50.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

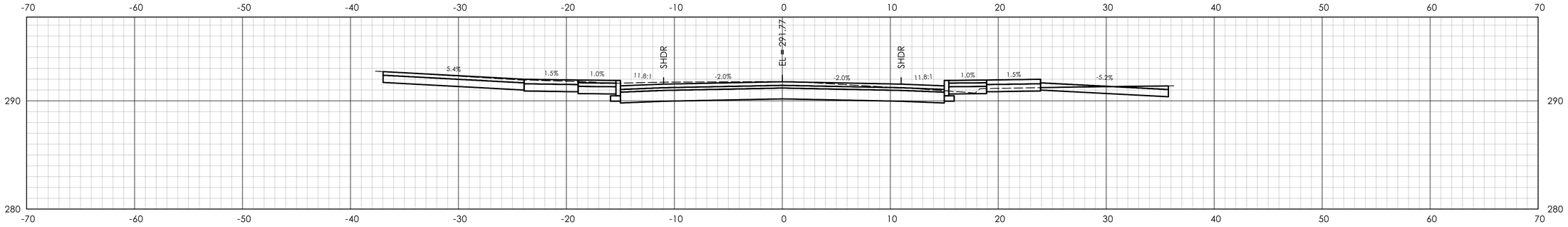
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PROJECT NO.: **0017-0196**

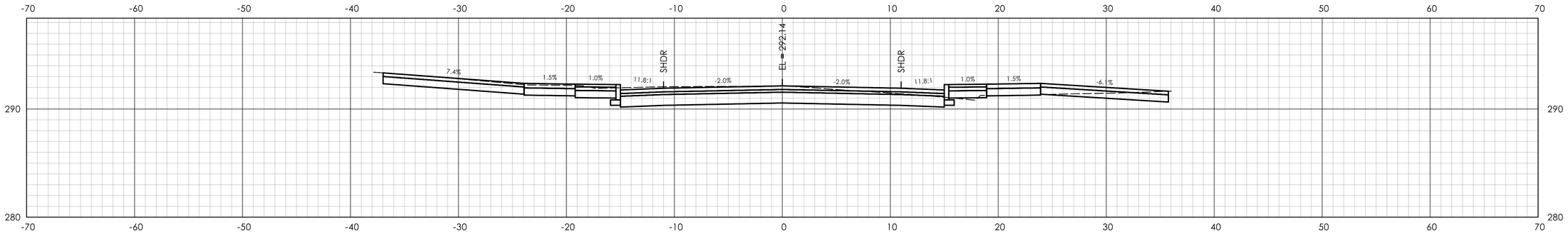
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SHEET NO.: 03.57

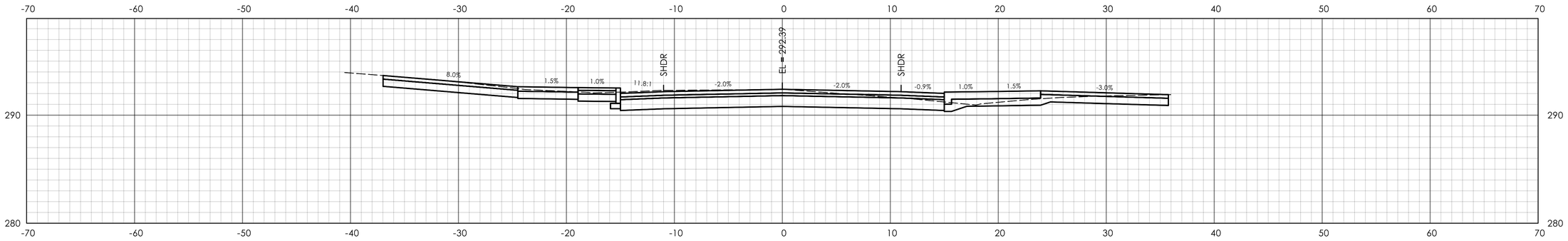
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PLOTTED DATE: 1/22/2026



STA. 17+00.00



STA. 16+50.00



STA. 16+16.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

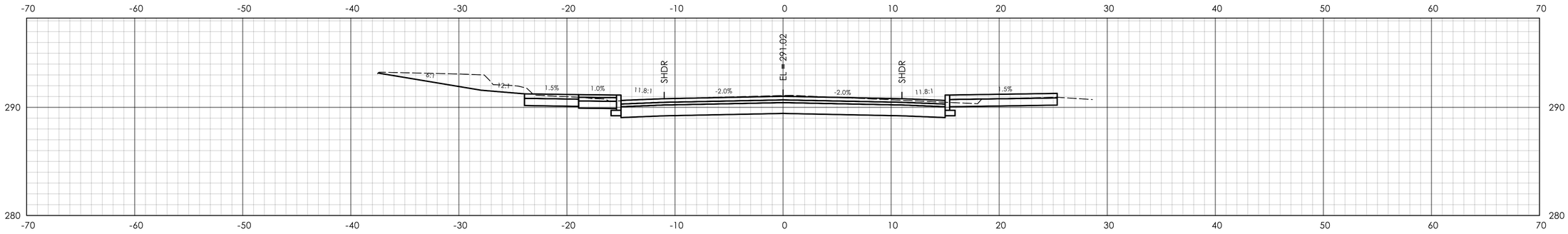
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PROJECT NO.: **0017-0196**

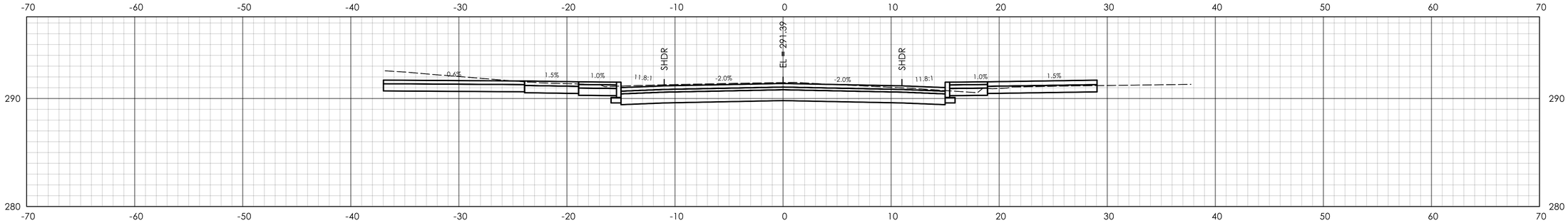
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SHEET NO.: 03.58

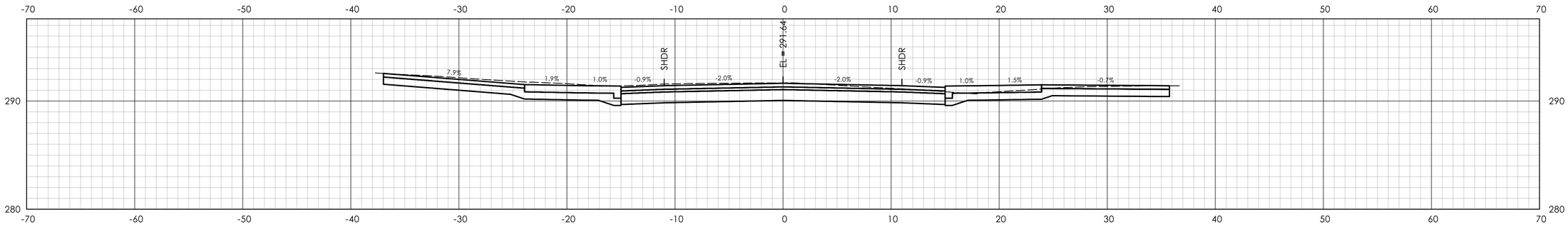
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PLOTTED DATE: 1/22/2026



STA. 18+00.00



STA. 17+50.00



STA. 17+17.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
0 5' 10'
1" = 5'

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

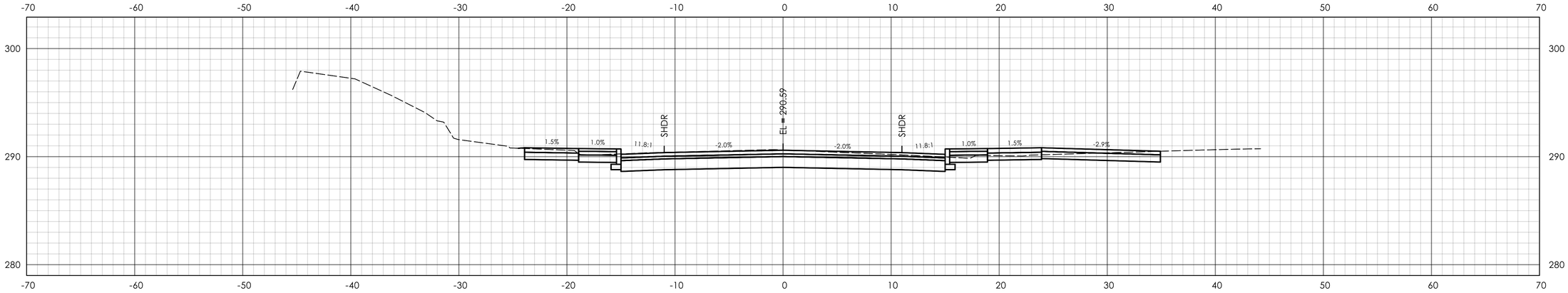
DRAWING TITLE: **CROSS-SECTIONS**

PROJECT NO.: **0017-0196**

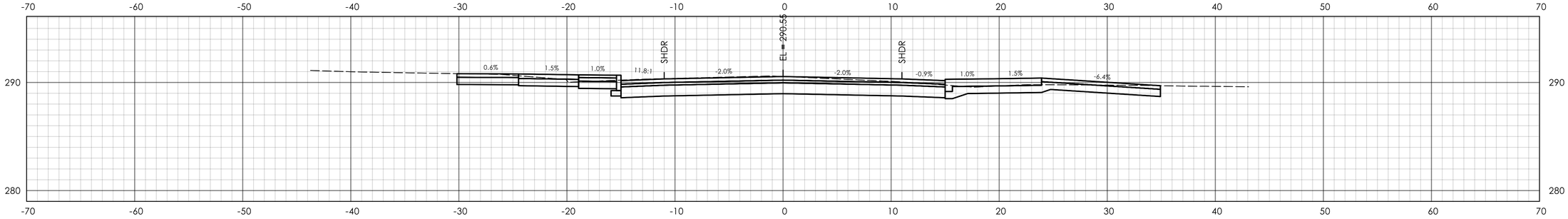
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SHEET NO.: 03.59

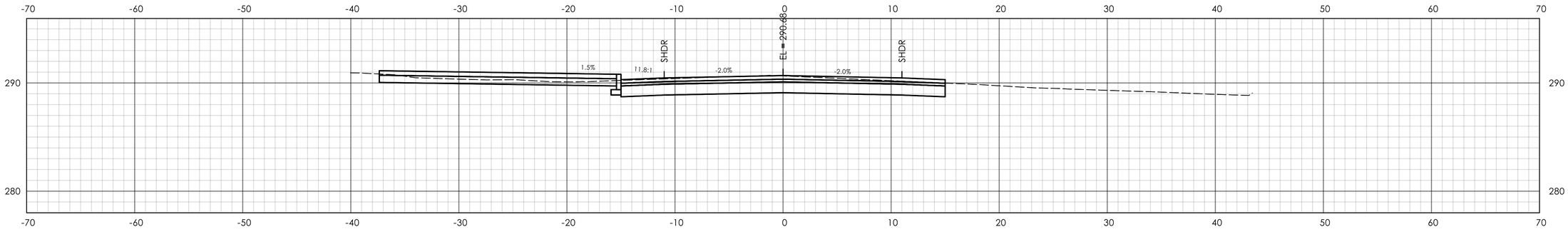
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PLOTTED DATE: 1/22/2026



STA. 19+50.00



STA. 19+00.00



STA. 18+50.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

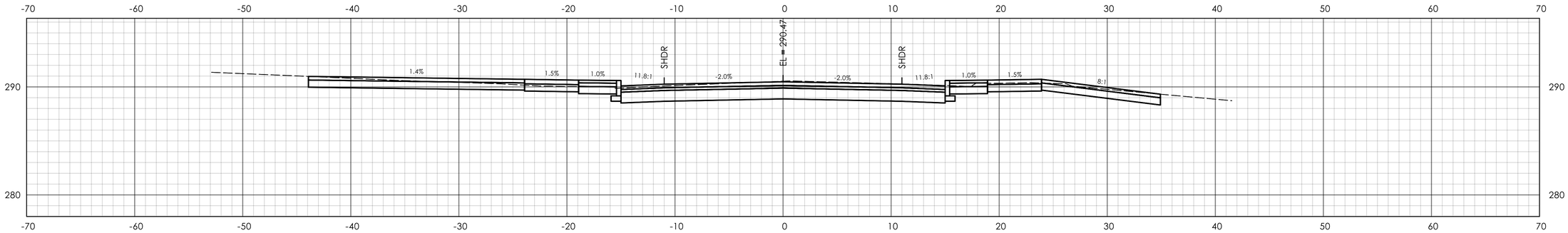
DRAWING TITLE: **CROSS-SECTIONS**

PROJECT NO.: **0017-0196**

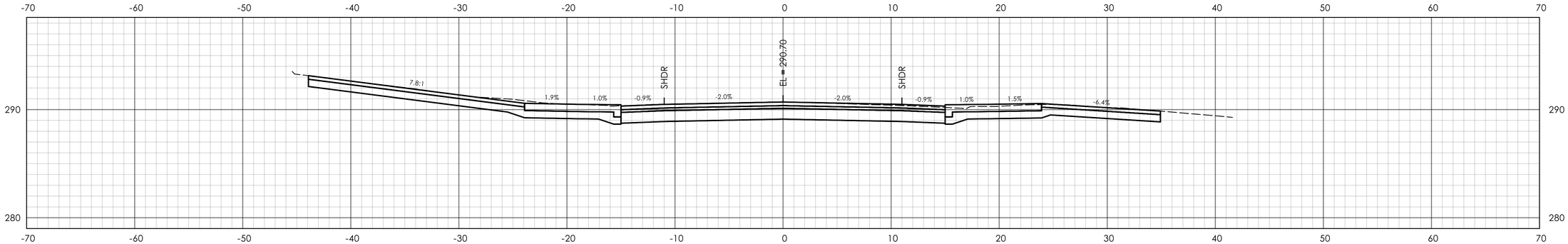
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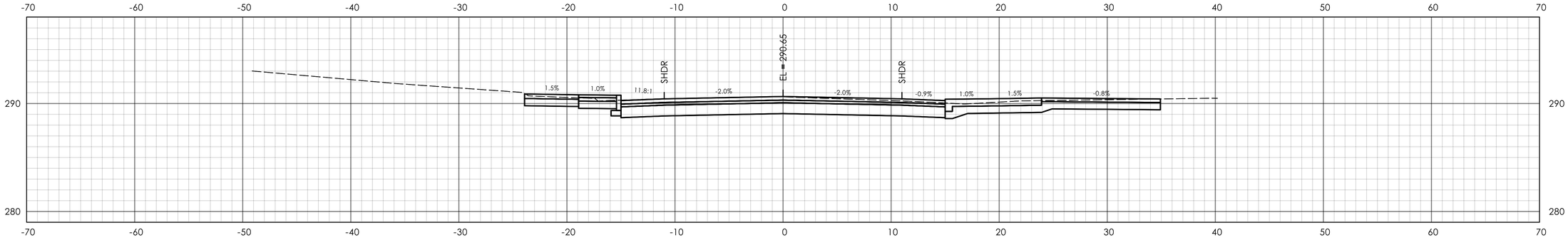
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PLOTTED DATE: 1/22/2026



STA. 21+00.00



STA. 20+50.00



STA. 20+00.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

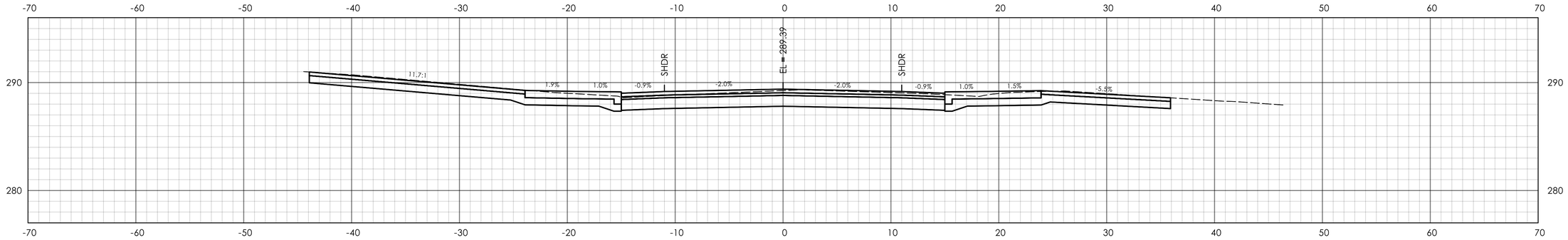
DRAWING TITLE:
CROSS-SECTIONS

PROJECT NO.:
0017-0196

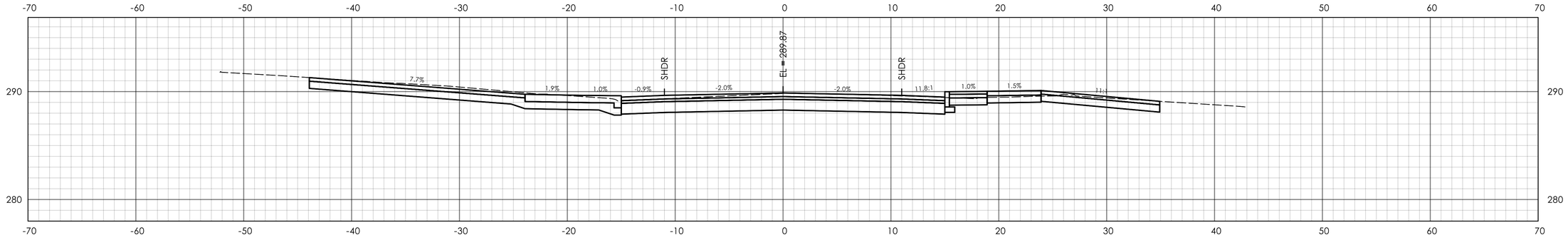
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SHEET NO.:
03.61

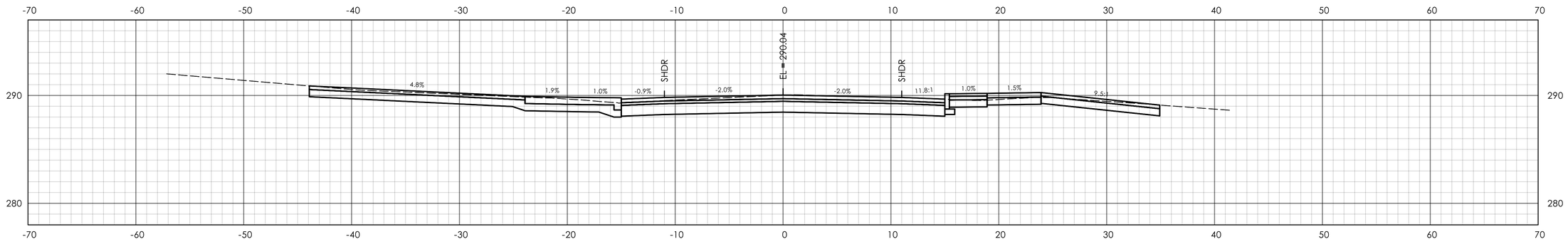
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PLOTTED DATE: 1/22/2026



STA. 21+84.00



STA. 21+50.00



STA. 21+38.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

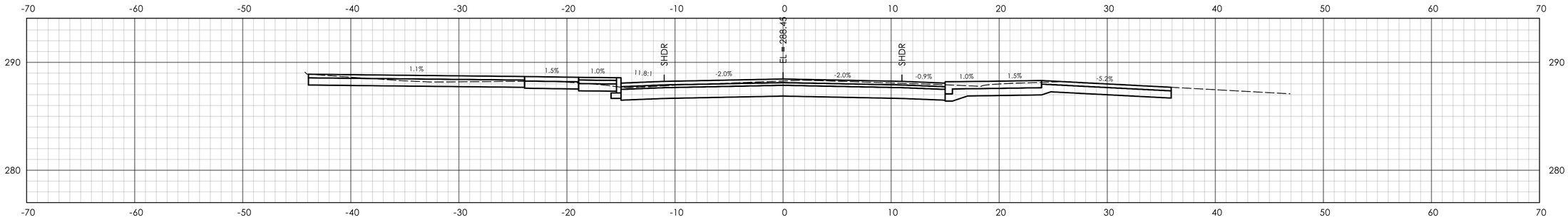
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PROJECT NO.: **0017-0196**

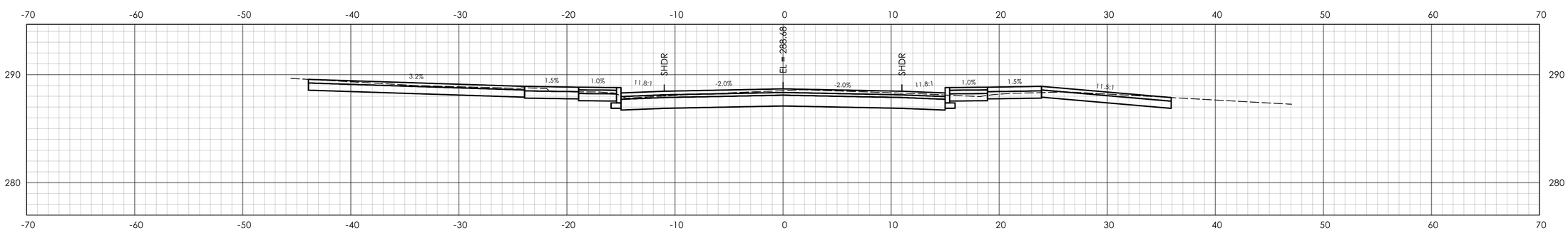
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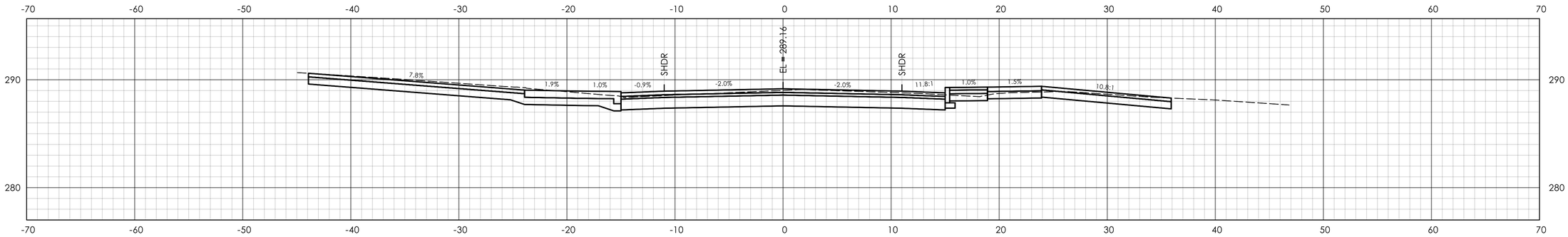
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PLOTTED DATE: 1/22/2026



STA. 22+50.00



STA. 22+34.00



STA. 22+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

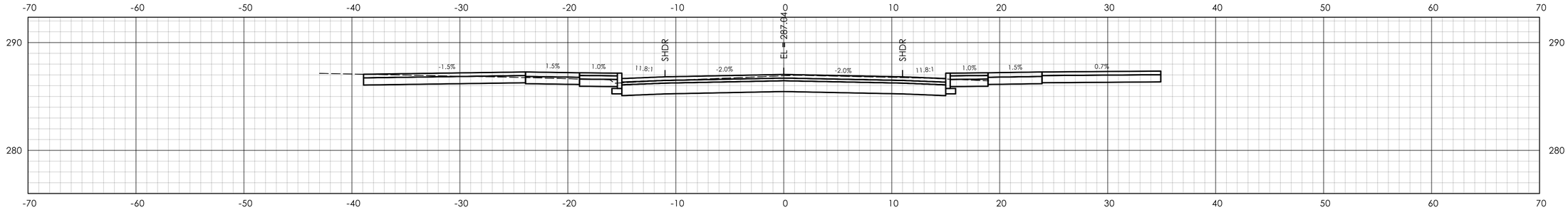
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

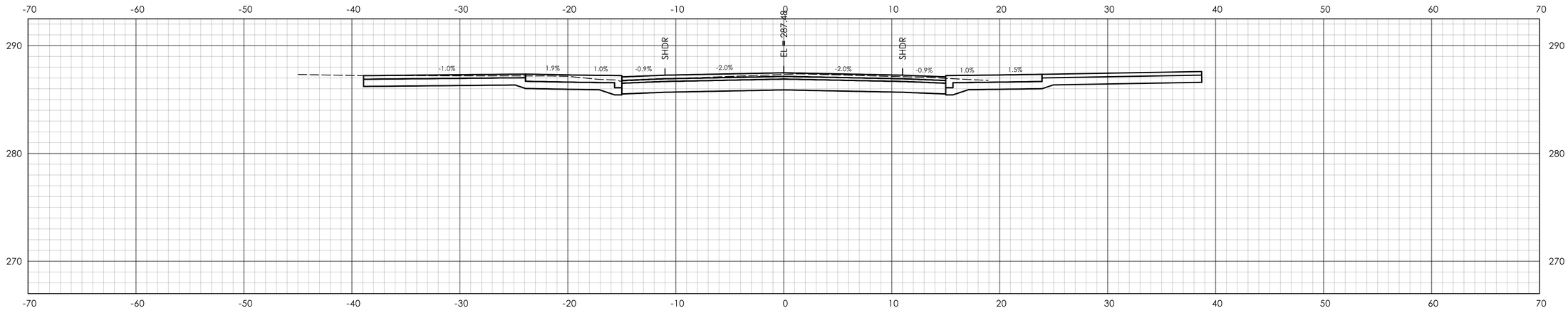
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XSC-21

SHEET NO.:
03.63

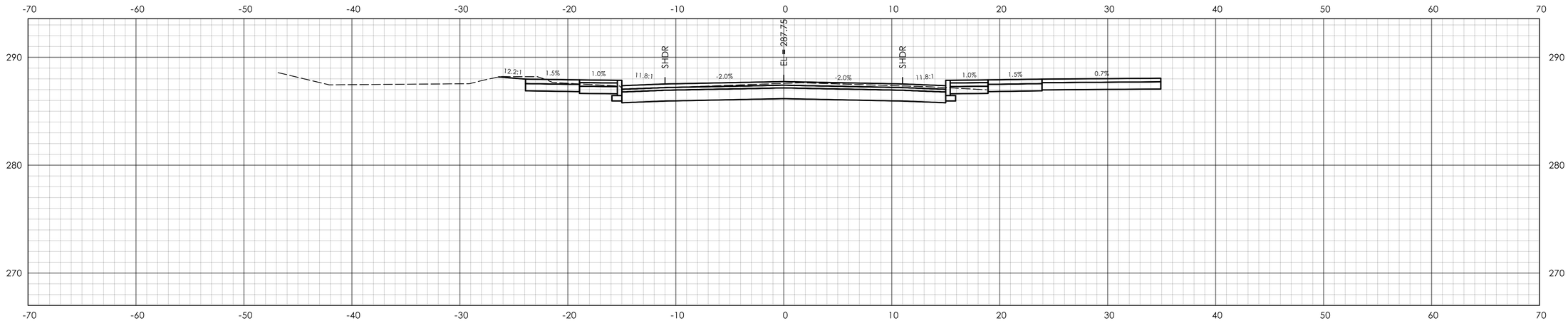
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PLOTTED DATE: 1/22/2026



STA. 23+50.00



STA. 23+19.00



STA. 23+00.00

REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

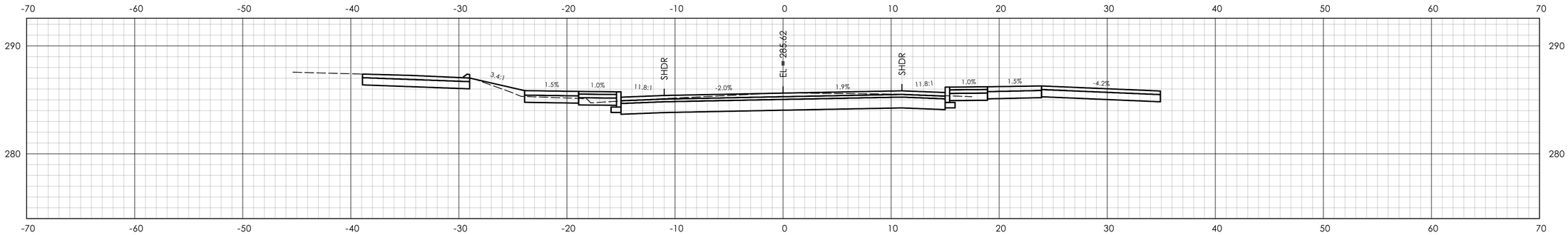
DRAWING TITLE:
CROSS-SECTIONS

PROJECT NO.:
0017-0196

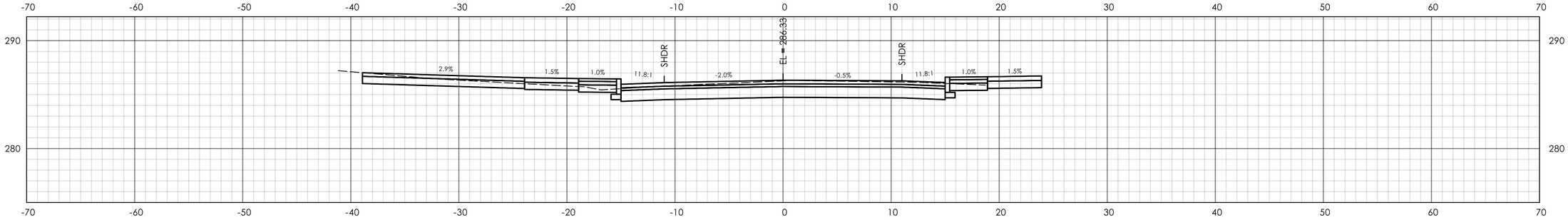
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XSC-22

SHEET NO.:
03.64

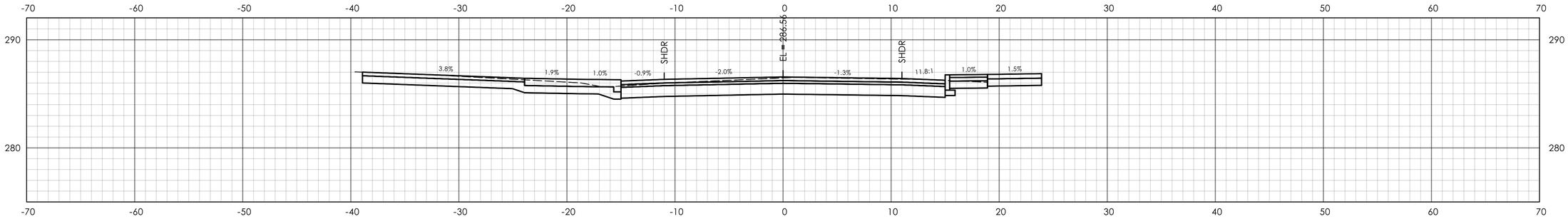
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PLOTTED DATE: 1/22/2026



STA. 24+50.00



STA. 24+00.00



STA. 23+84.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

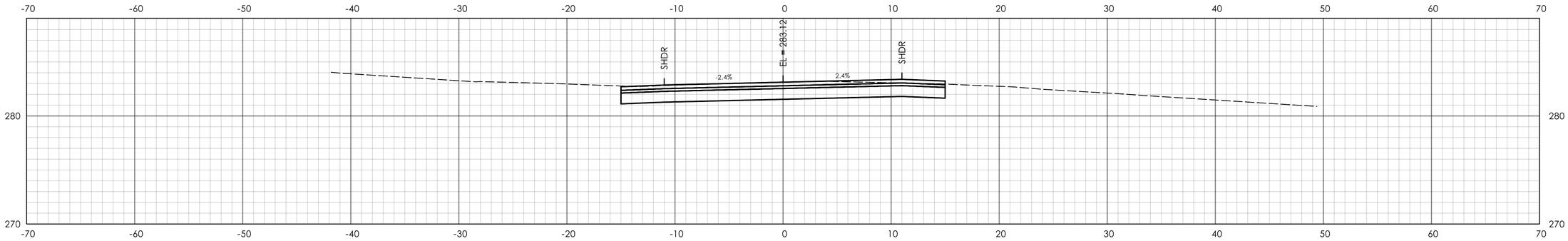
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CROSS-SECTIONS

PROJECT NO.: **0017-0196**

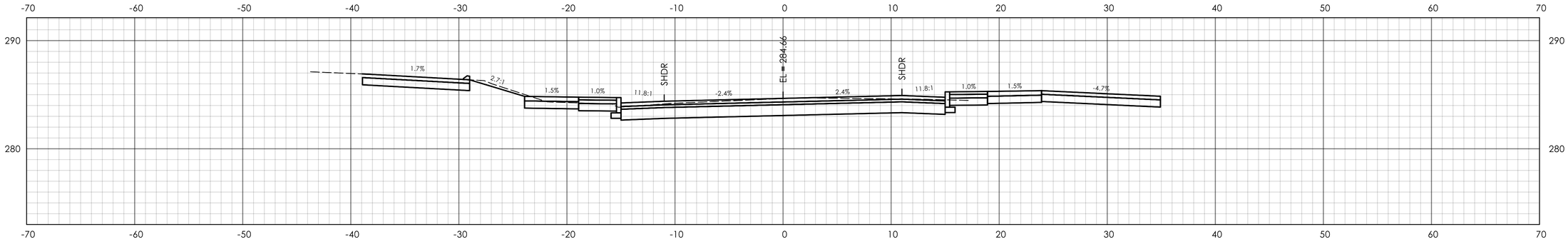
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SHEET NO.: 03.65

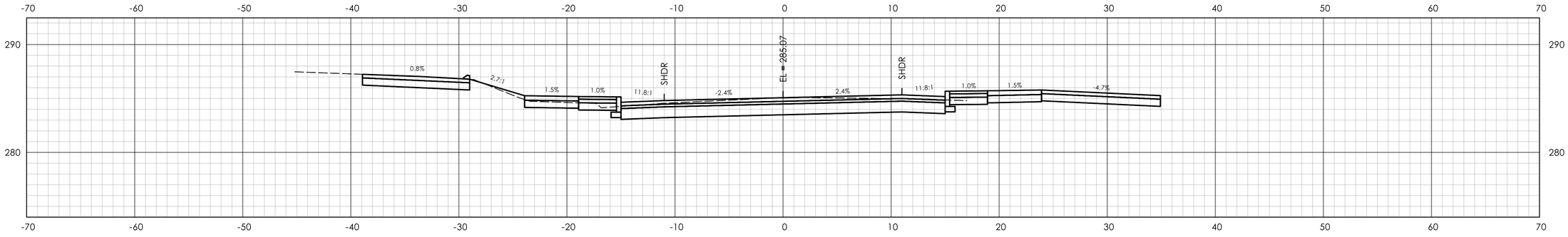
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PLOTTED DATE: 1/22/2026



STA. 25+50.00



STA. 25+00.00



STA. 24+82.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
1" = 5'
0 5' 10'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

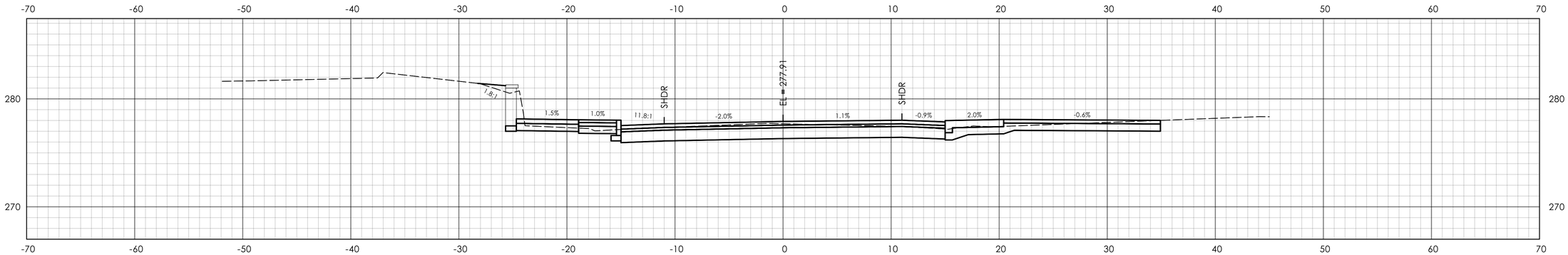
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PROJECT NO.: **0017-0196**

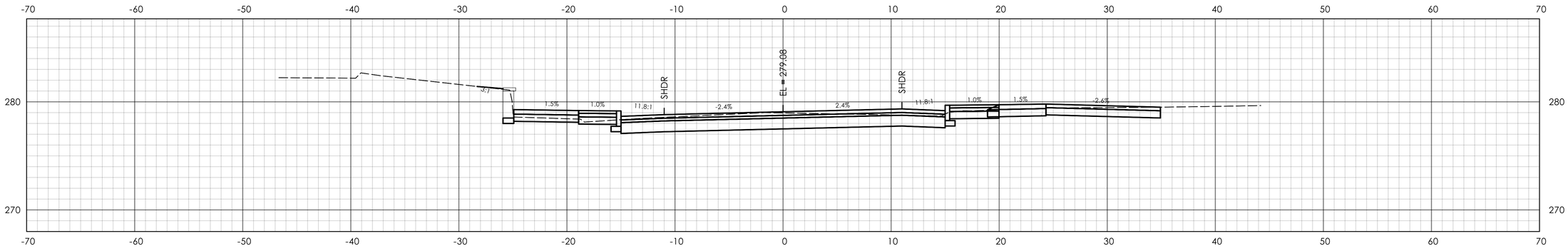
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SHEET NO.: 03.66

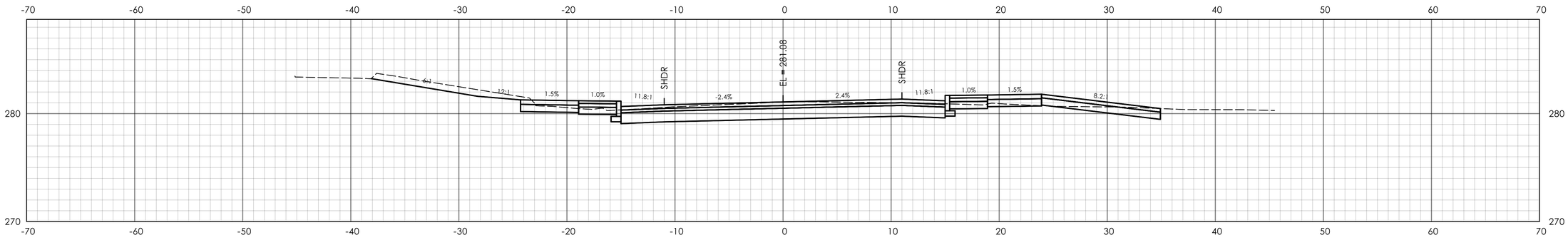
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PLOTTED DATE: 1/22/2026



STA. 26+83.00



STA. 26+50.00



STA. 26+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

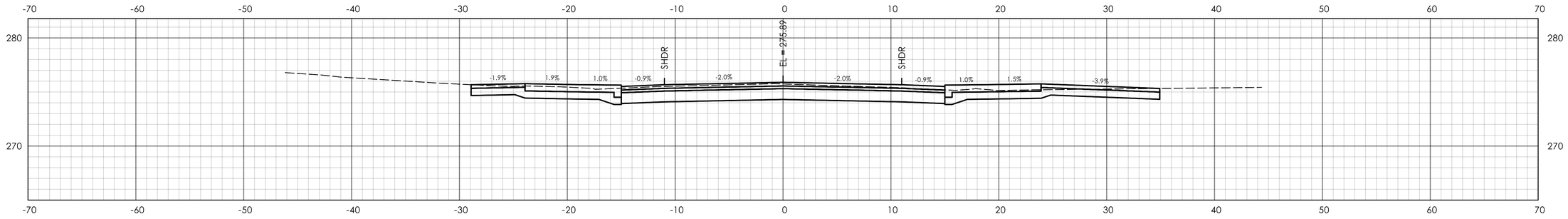
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

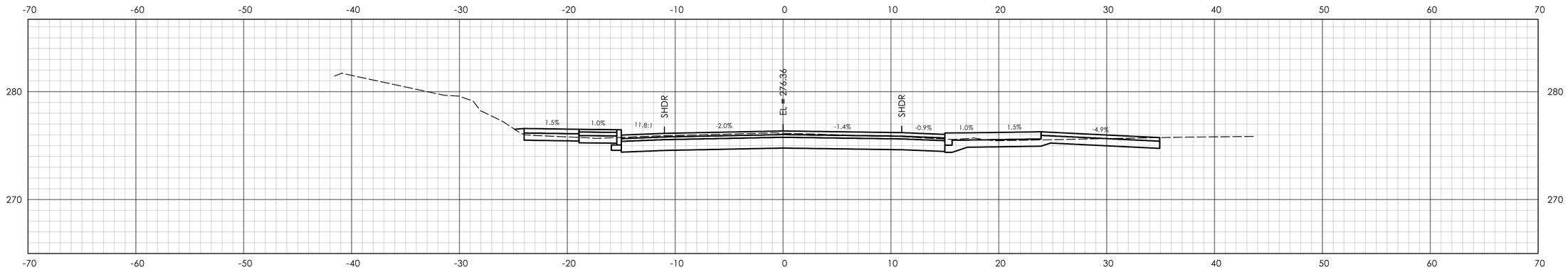
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XSC-25

SHEET NO.:
03.67

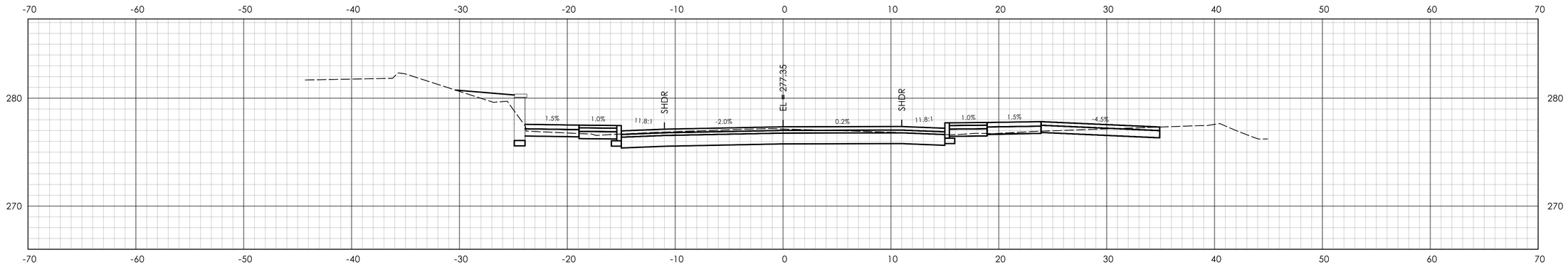
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PLOTTED DATE: 1/22/2026



STA. 27+50.00



STA. 27+33.00



STA. 27+00.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5'

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

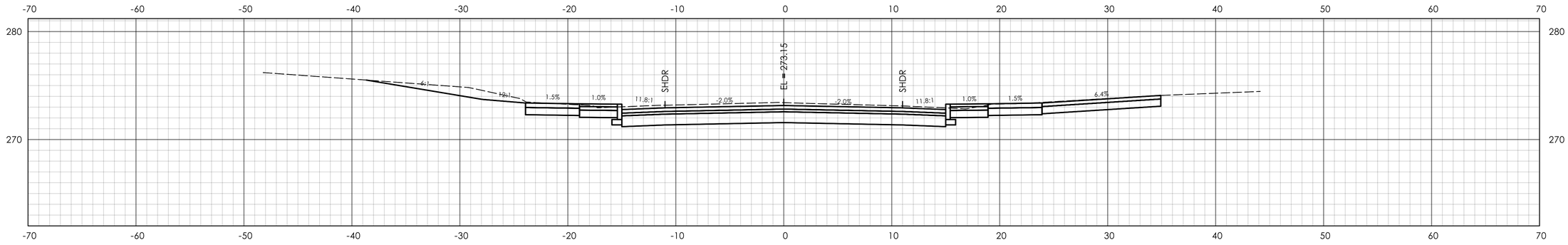
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PROJECT NO.: **0017-0196**

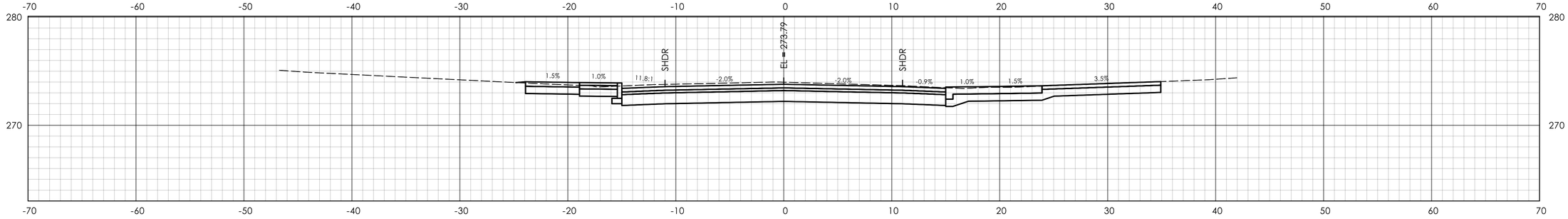
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SHEET NO.: 03.68

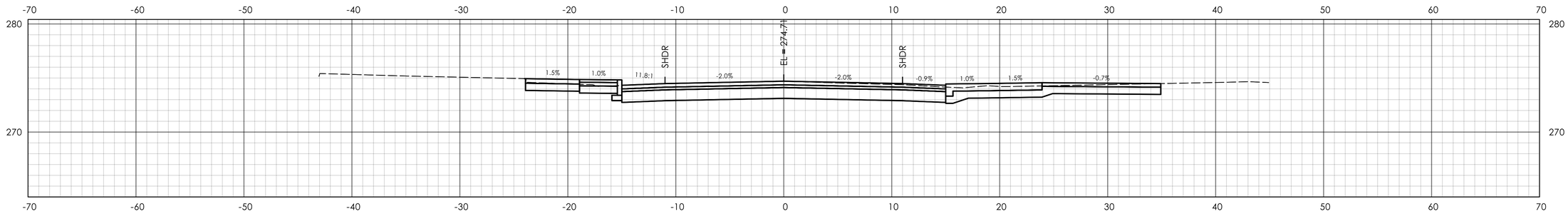
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PLOTTED DATE: 1/22/2026



STA. 29+00.00



STA. 28+50.00



STA. 28+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

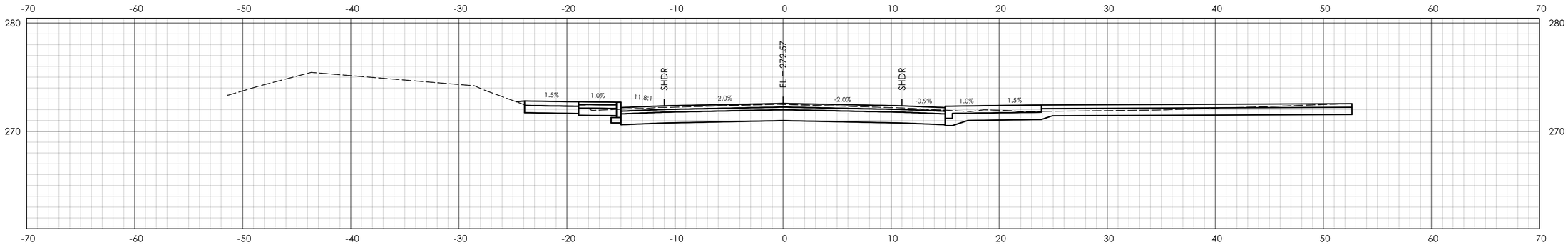
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

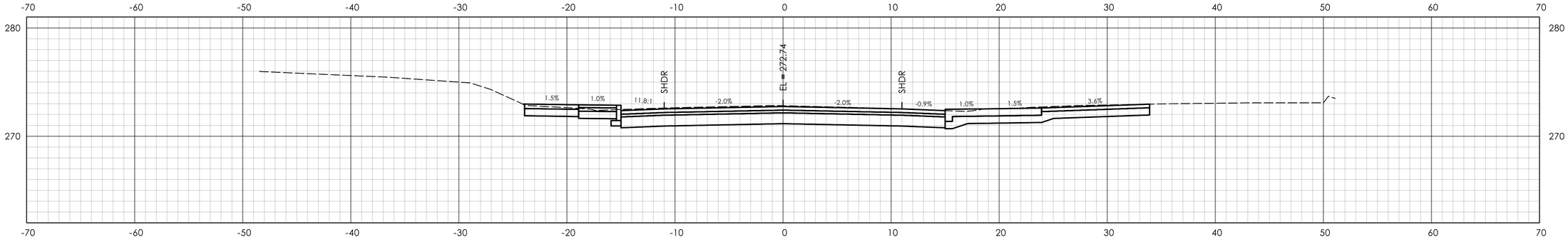
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XSC-27

SHEET NO.:
03.69

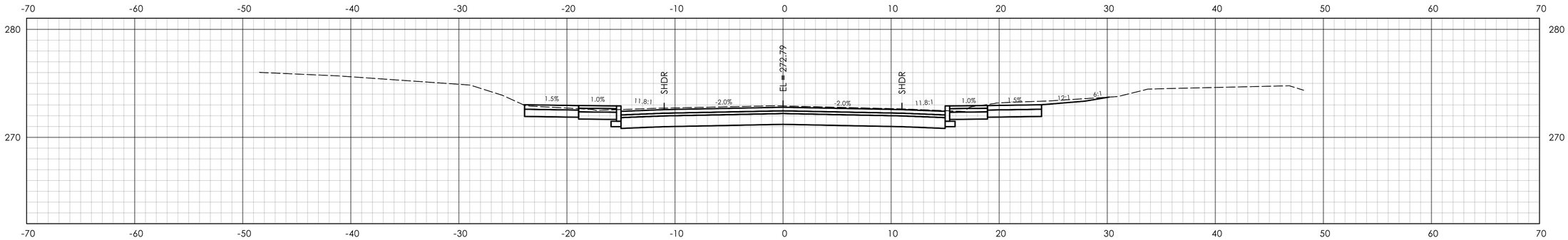
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PLOTTED DATE: 1/22/2026



STA. 30+00.00



STA. 29+60.00



STA. 29+50.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
1" = 5'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

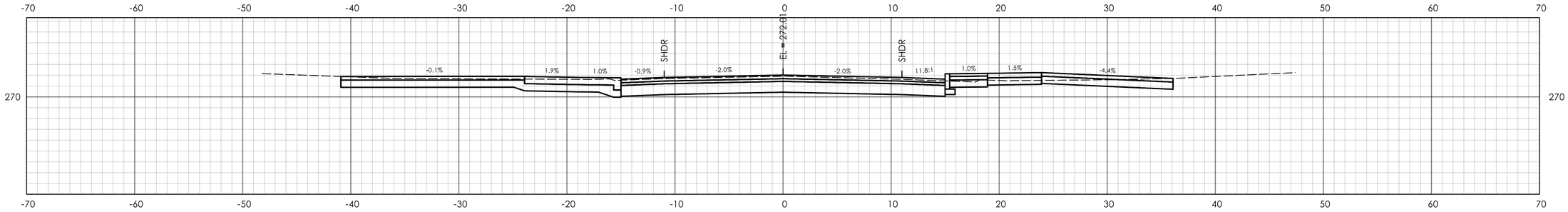
DRAWING TITLE: CROSS-SECTIONS

PROJECT NO.: 0017-0196

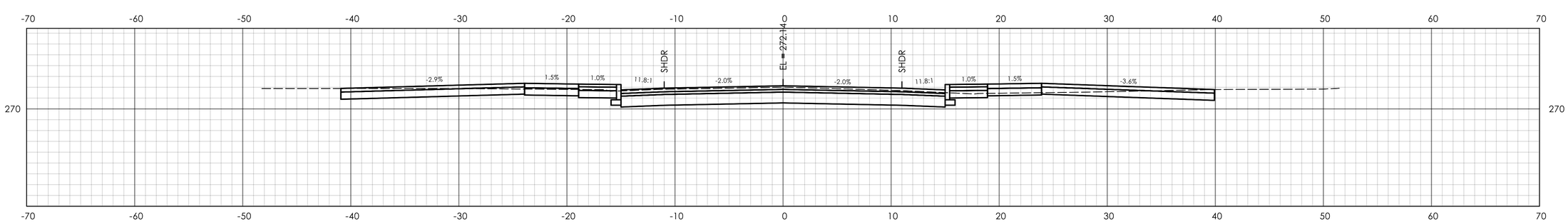
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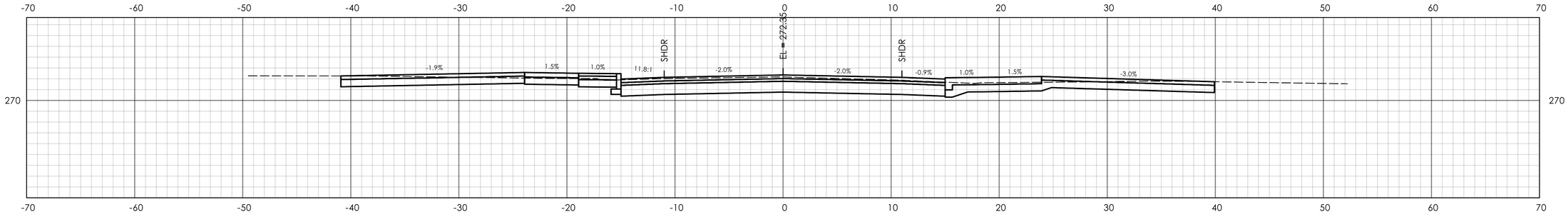
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PLOTTED DATE: 1/22/2026



STA. 31+28.00



STA. 31+00.00



STA. 30+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
0 5' 10'
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

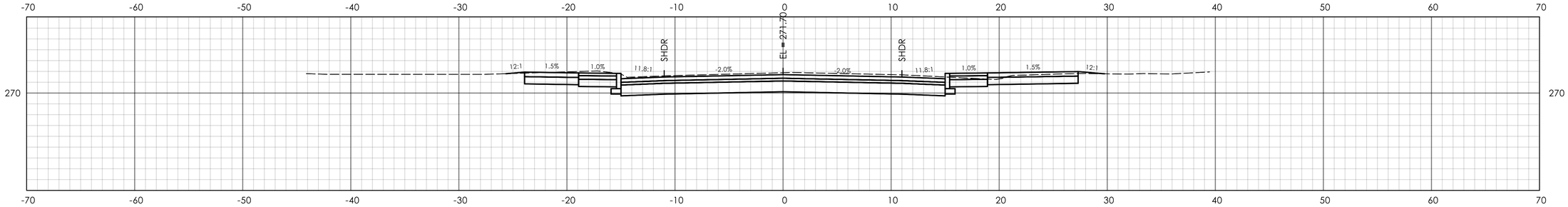
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

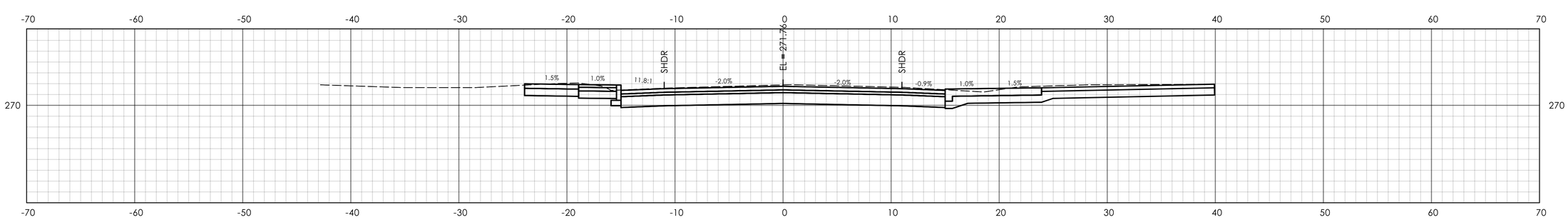
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SHEET NO.:
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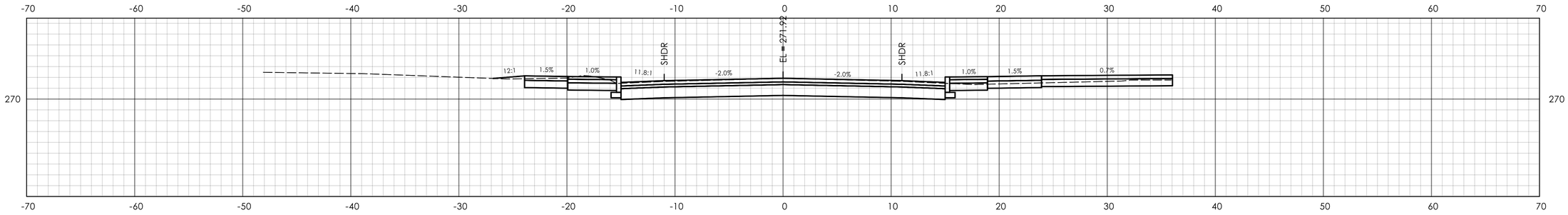
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PLOTTED DATE: 1/22/2026



STA. 32+00.00



STA. 31+87.00



STA. 31+50.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

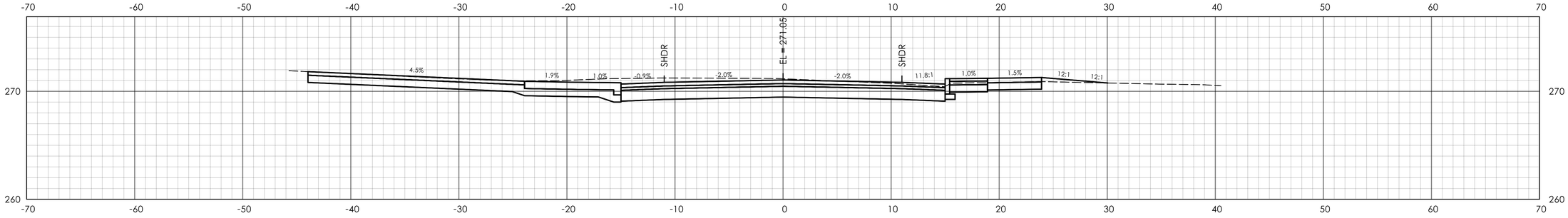
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

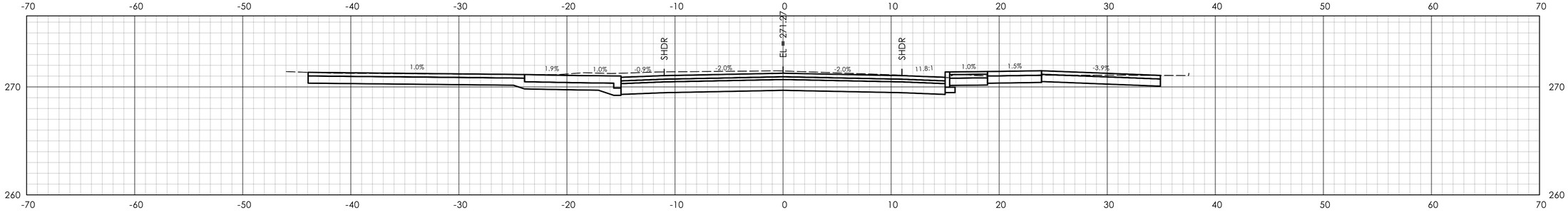
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SHEET NO.:
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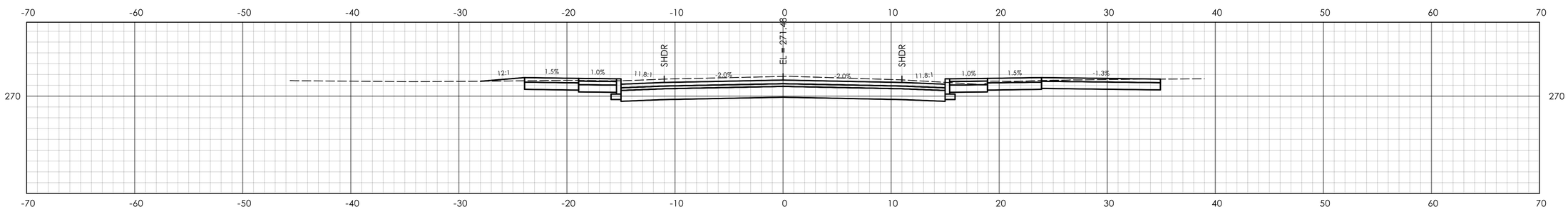
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PLOTTED DATE: 1/22/2026



STA. 33+50.00



STA. 33+00.00



STA. 32+50.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

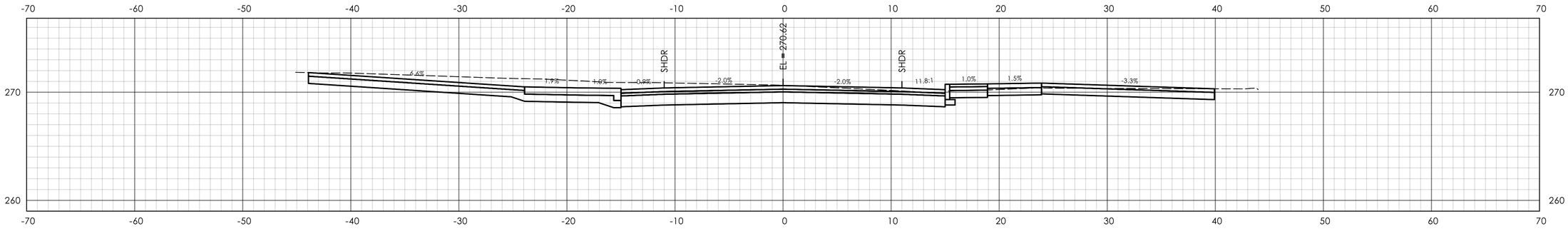
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

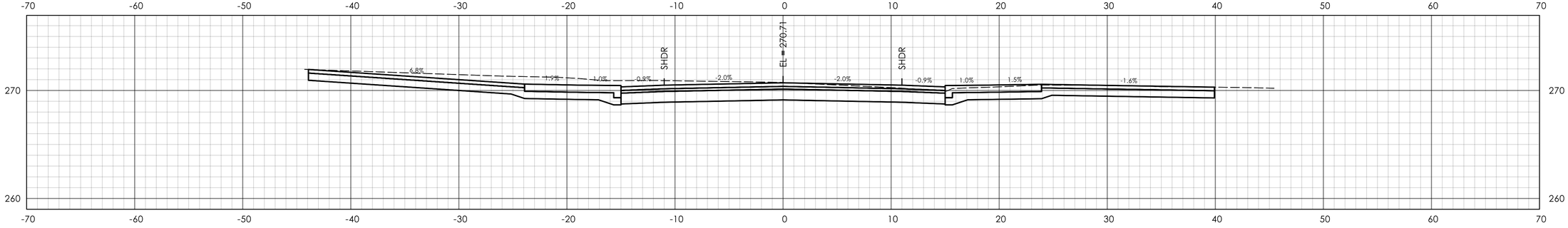
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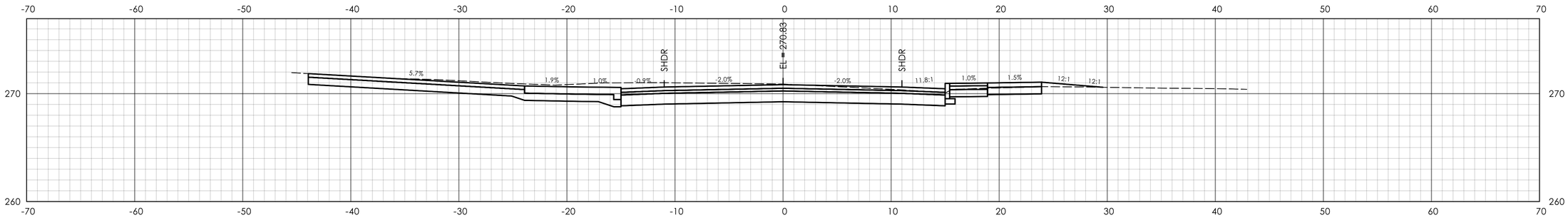
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PLOTTED DATE: 1/22/2026



STA. 34+50.00



STA. 34+28.00



STA. 34+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

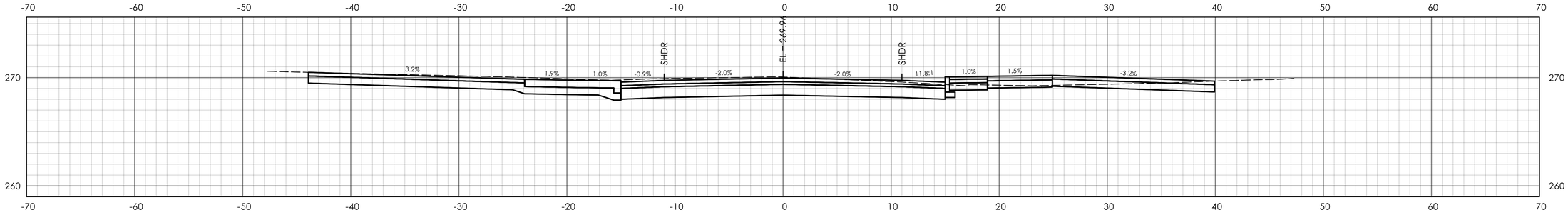
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PROJECT NO.: **0017-0196**

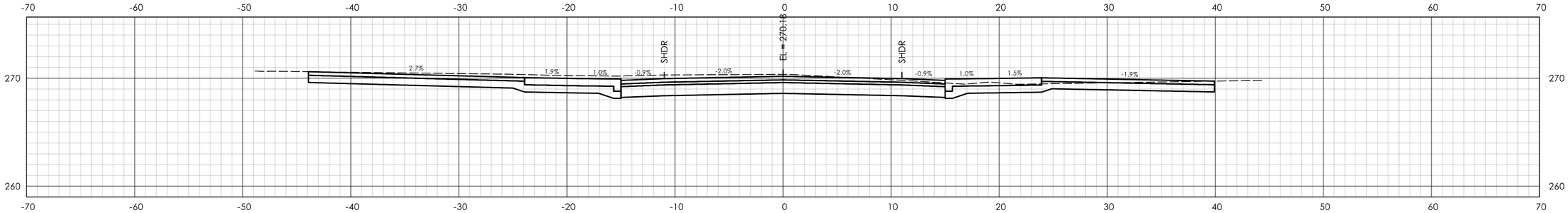
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SHEET NO.: 03.74

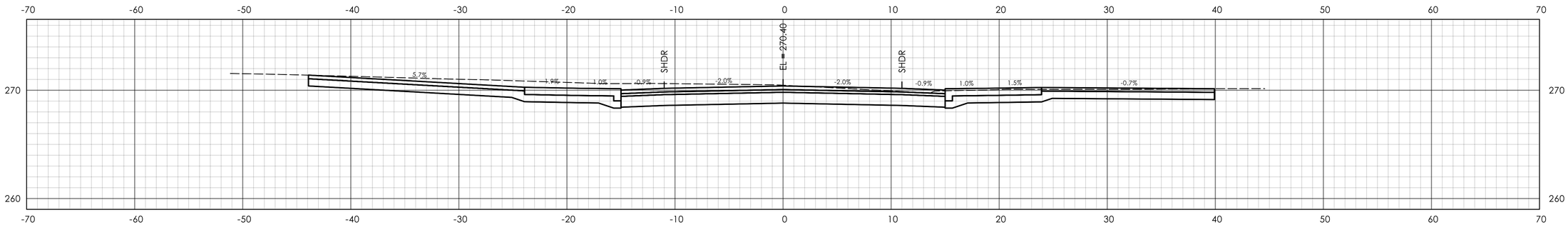
LASTED SAVED BY: SLovely **FILE NAME:** C:\Users\SLovely\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Base_Models\HW_CB_0017-0196_XSC_Riverside.dgn
PLOTTED DATE: 1/22/2026



STA. 36+00.00



STA. 35+50.00



STA. 35+00.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033
DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE 1" = 5' (0, 5', 10')

CTDOT — CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: **ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS**

TOWN(S): **BRISTOL**

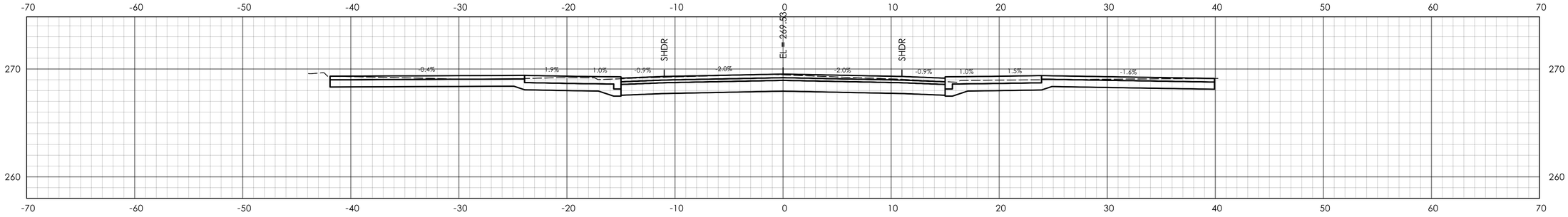
DRAWING TITLE: **CROSS-SECTIONS**

PROJECT NO.: **0017-0196**

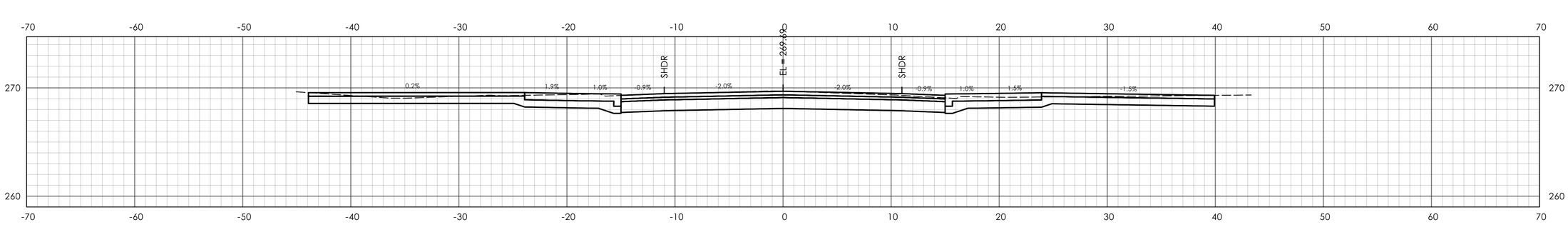
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SHEET NO.: 03.75

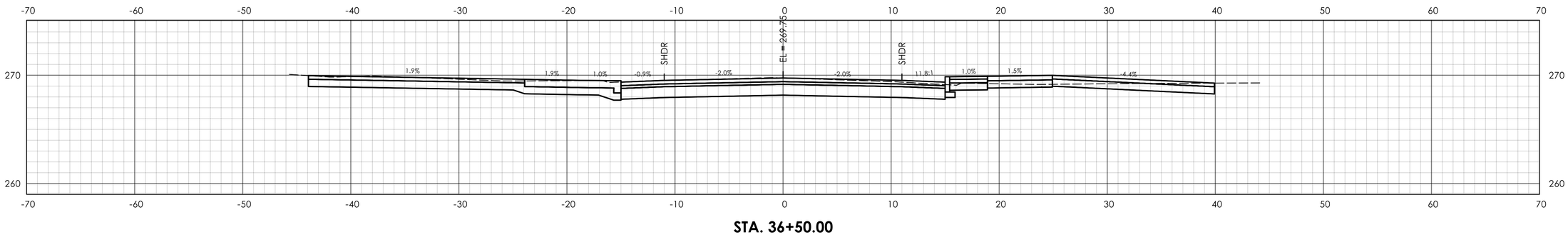
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PLOTTED DATE: 1/22/2026



STA. 37+00.00



STA. 36+63.00



STA. 36+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

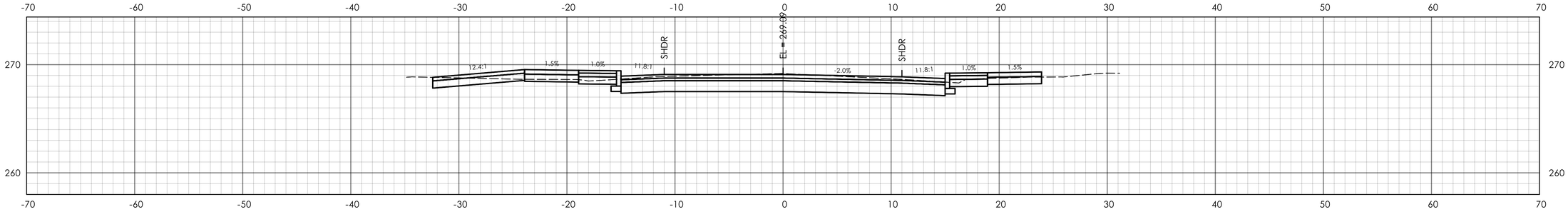
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

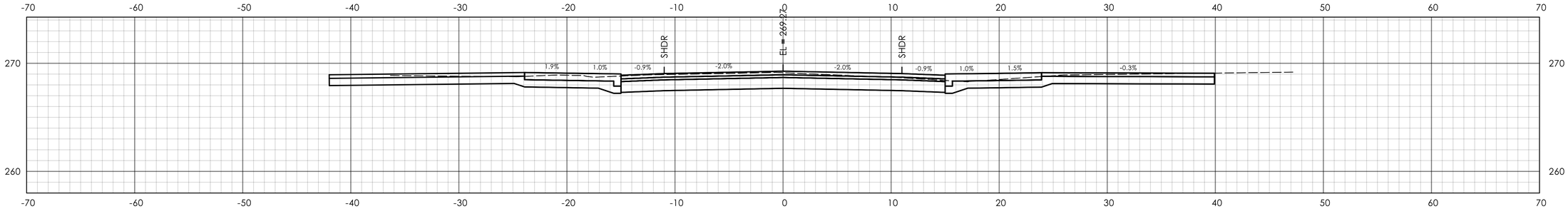
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SHEET NO.:
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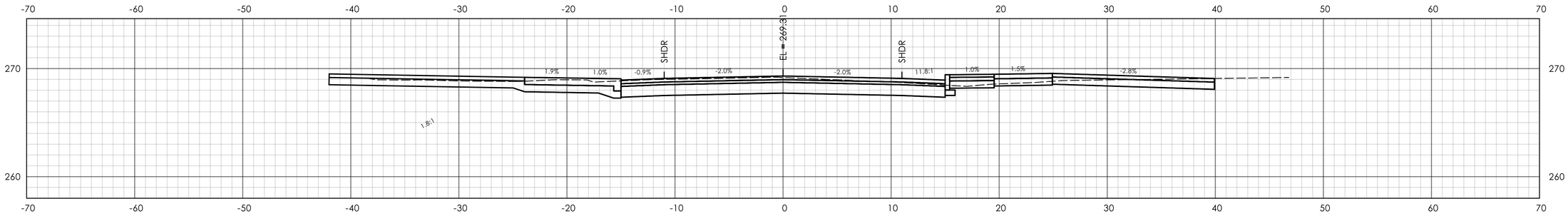
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PLOTTED DATE: 1/22/2026



STA. 38+00.00



STA. 37+60.00



STA. 37+50.00

REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:

GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
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1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

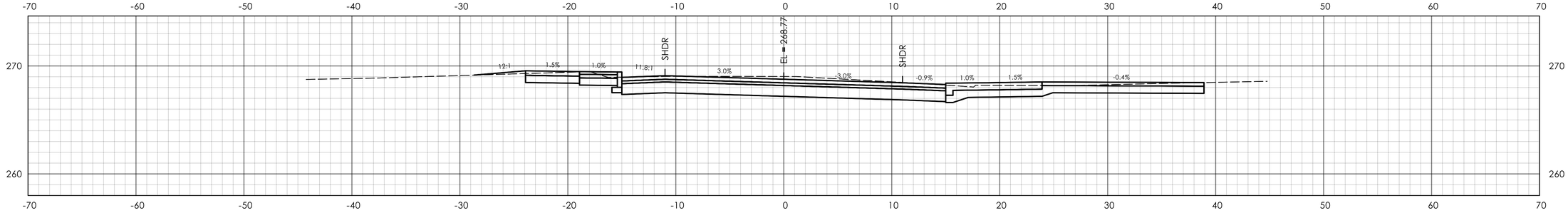
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

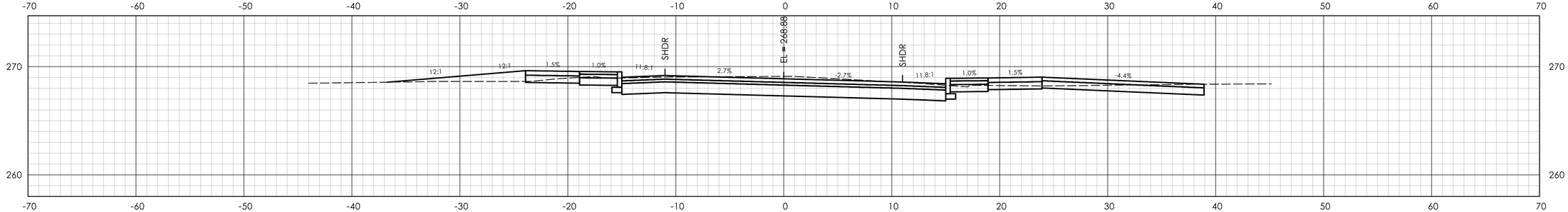
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SHEET NO.:
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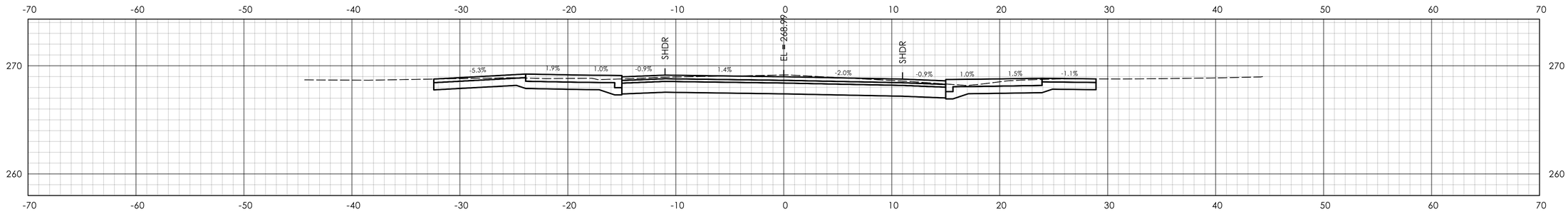
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PLOTTED DATE: 1/22/2026



STA. 38+75.00



STA. 38+50.00



STA. 38+25.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:

GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
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1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

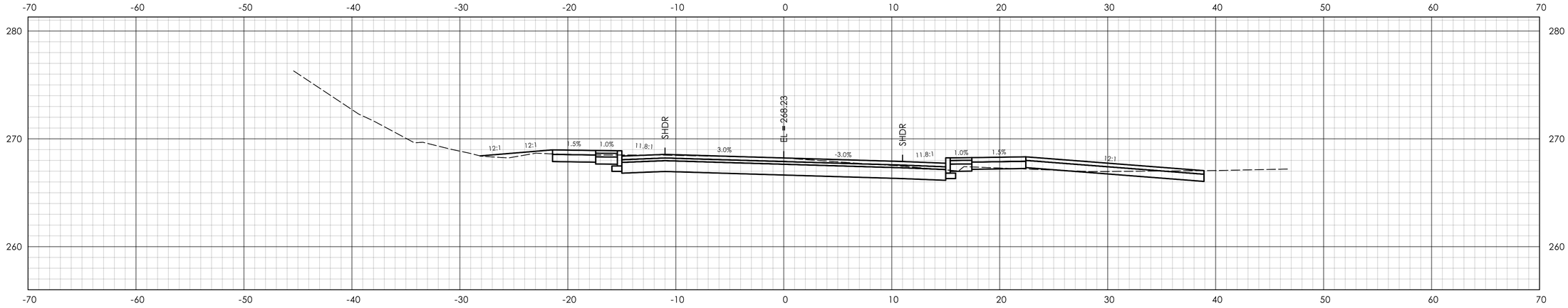
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

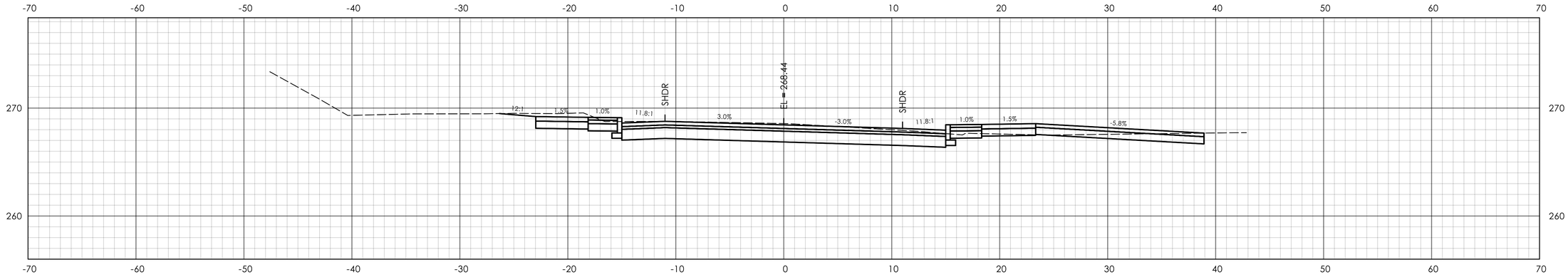
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SHEET NO.:
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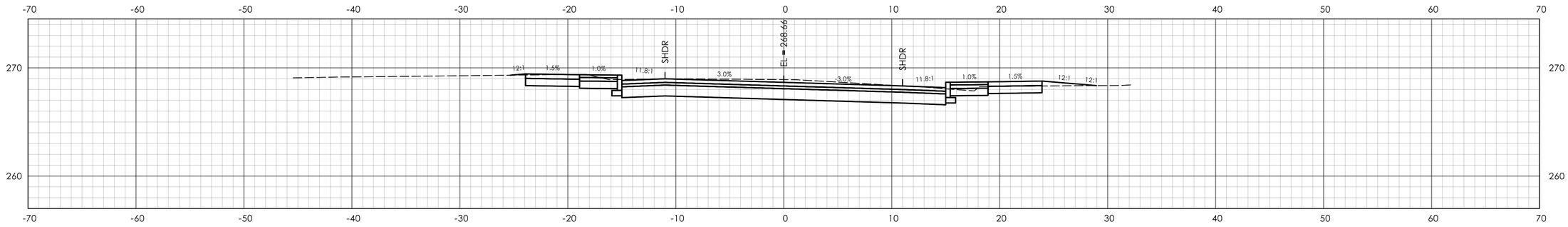
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PLOTTED DATE: 1/22/2026



STA. 40+00.00



STA. 39+50.00



STA. 39+00.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

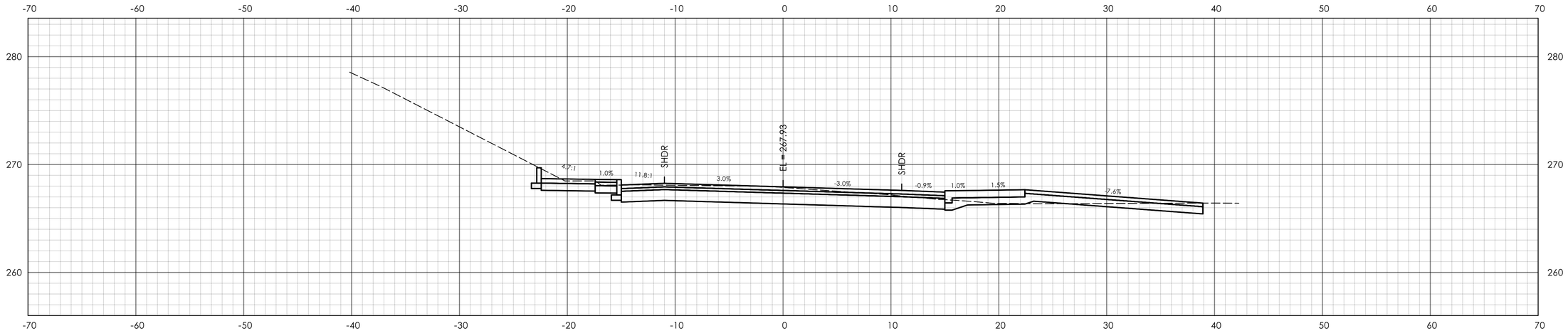
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

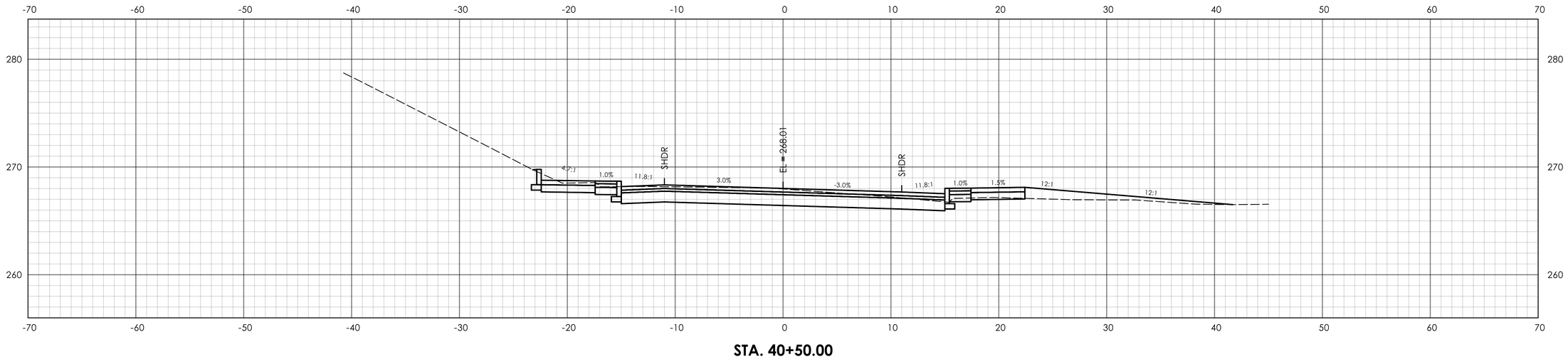
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SHEET NO.:
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PLOTTED DATE: 1/22/2026



STA. 40+68.00



STA. 40+50.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

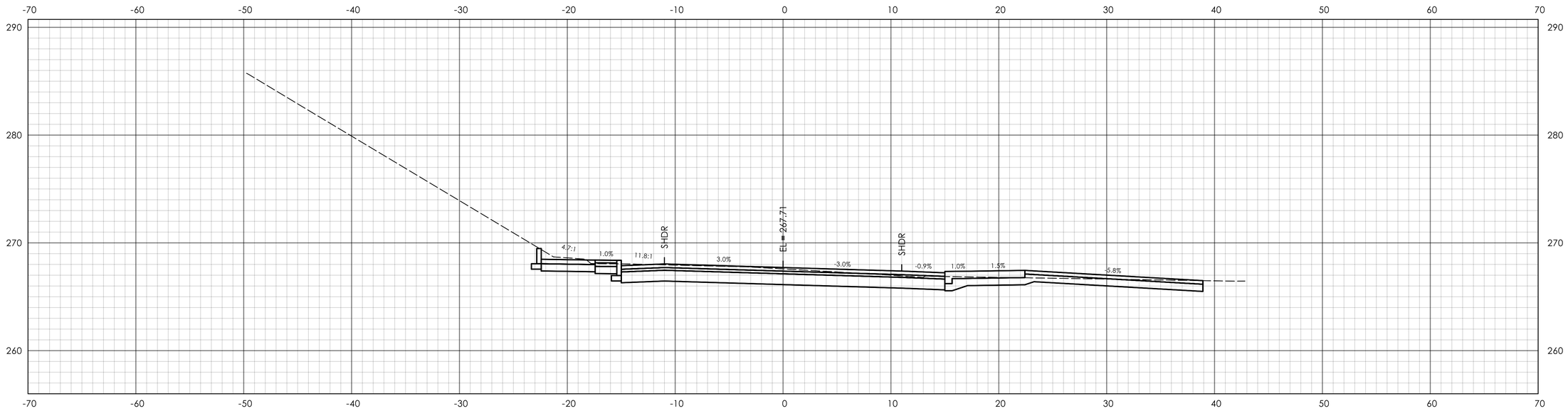
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PROJECT NO.:
0017-0196

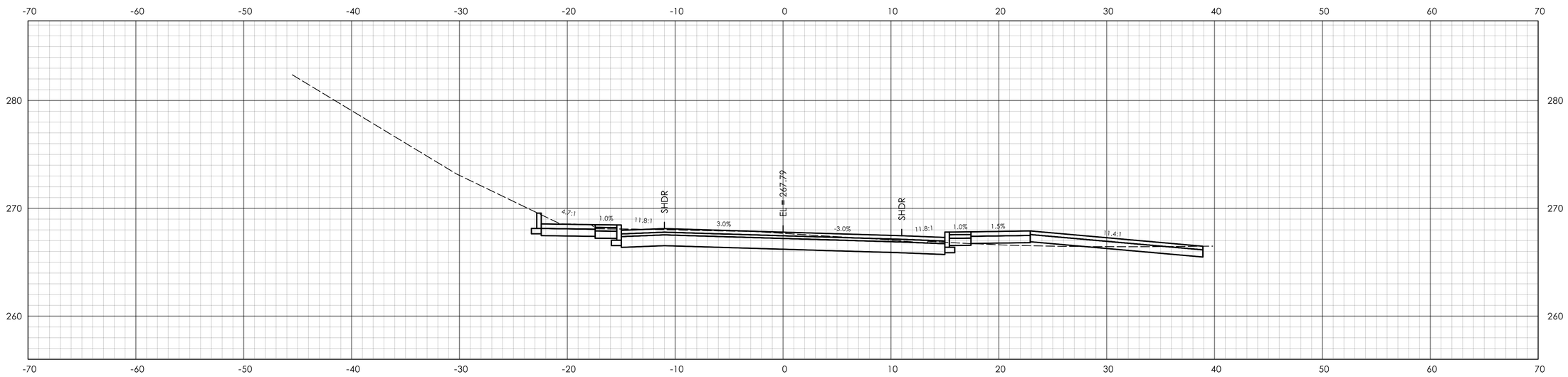
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PLOTTED DATE: 1/22/2026



STA. 41+18.00



STA. 41+00.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
0 5' 10'
1" = 5'

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
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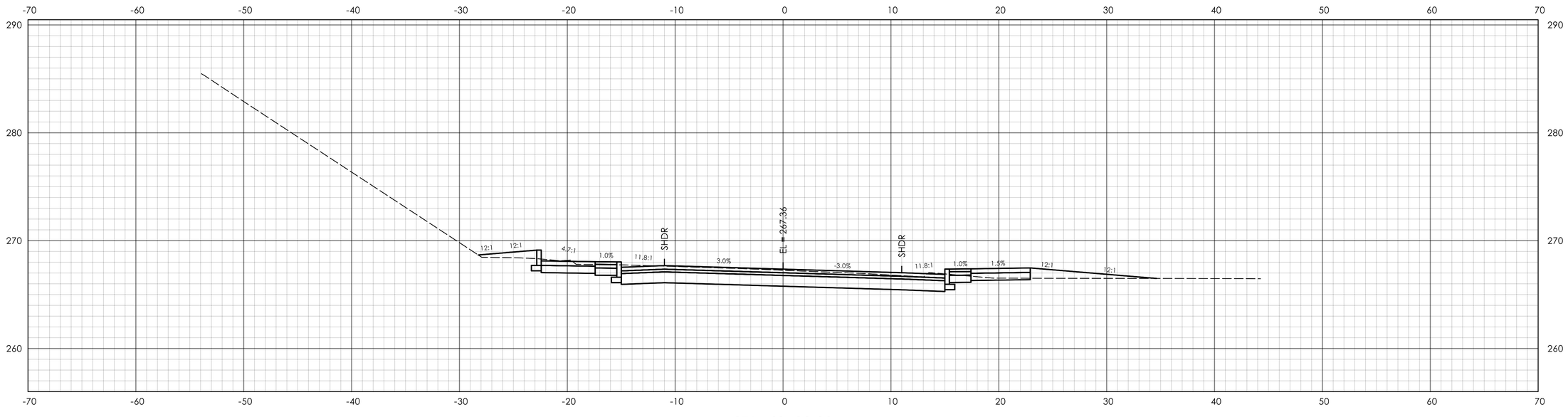
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PROJECT NO.:
0019-0196

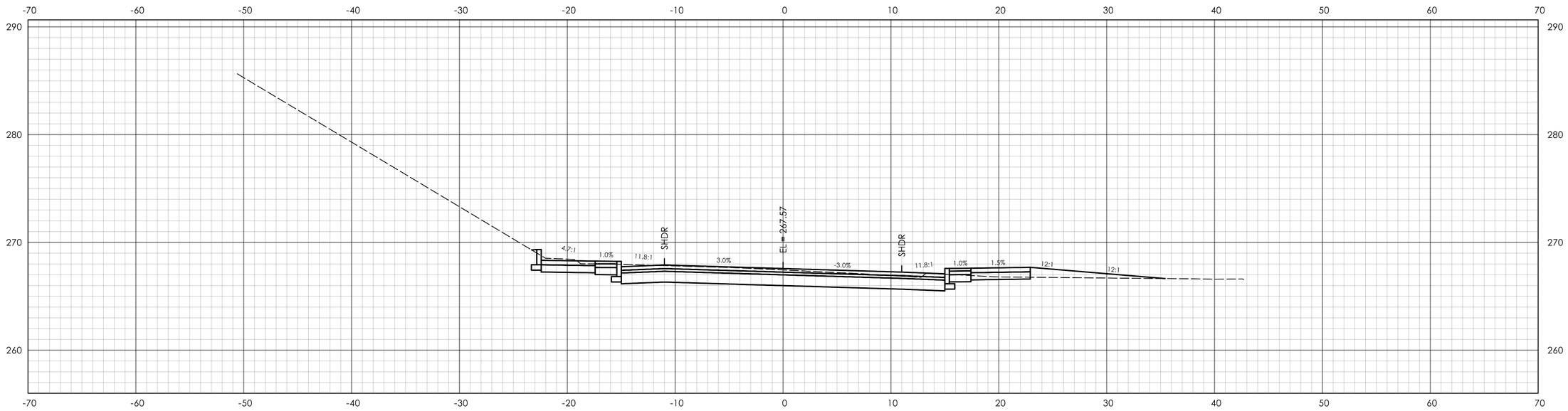
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SHEET NO.:
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PLOTTED DATE: 1/22/2026



STA. 42+00.00



STA. 41+50.00

REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

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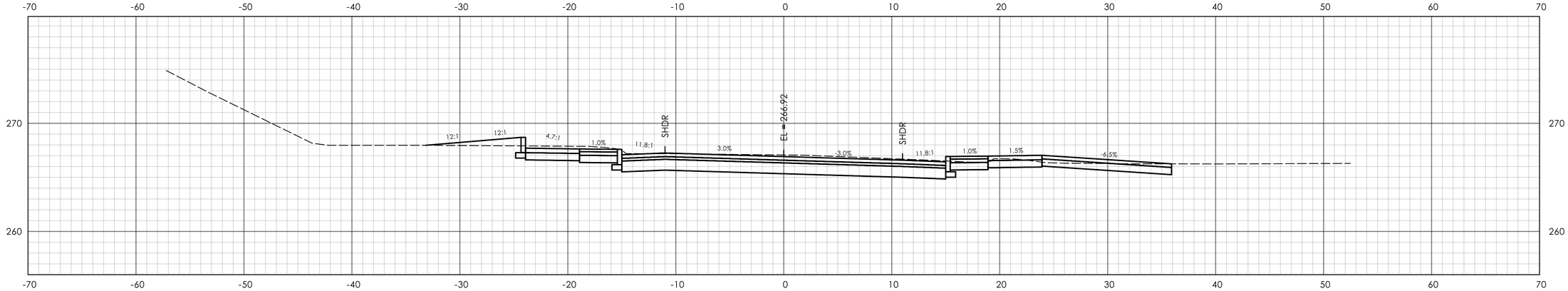
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

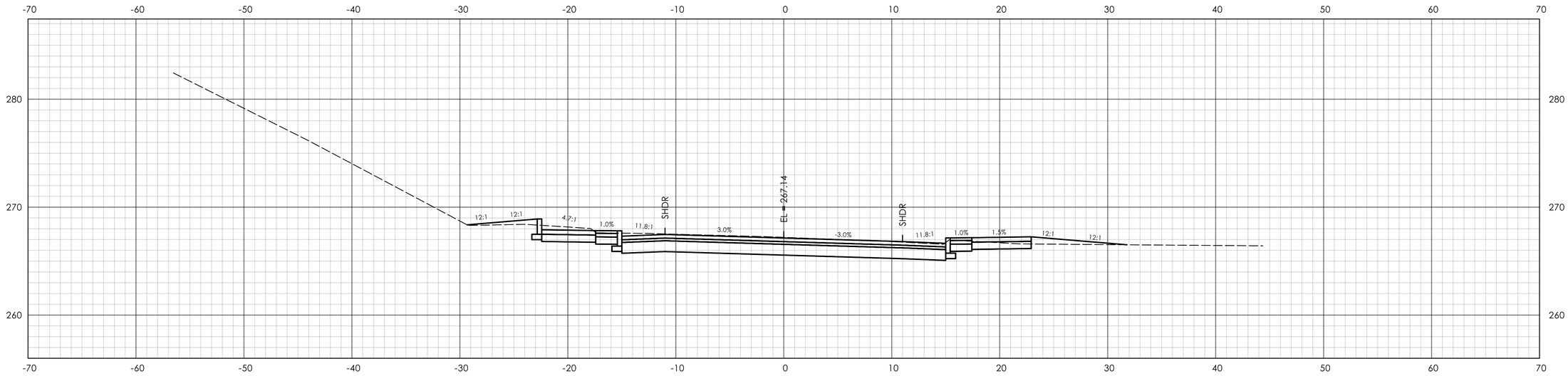
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SHEET NO.:
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PLOTTED DATE: 1/22/2026



STA. 43+00.00



STA. 42+50.00

REVISION DESCRIPTION

DATE

REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
1" = 5'
0 5' 10'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

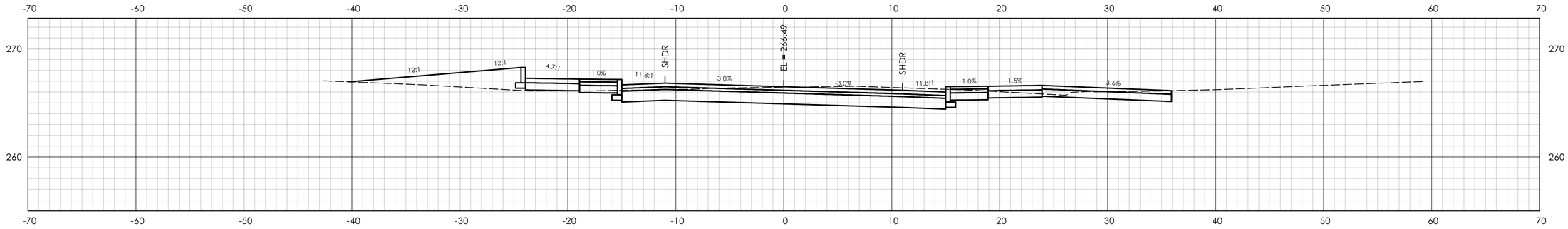
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PROJECT NO.:
0017-0196

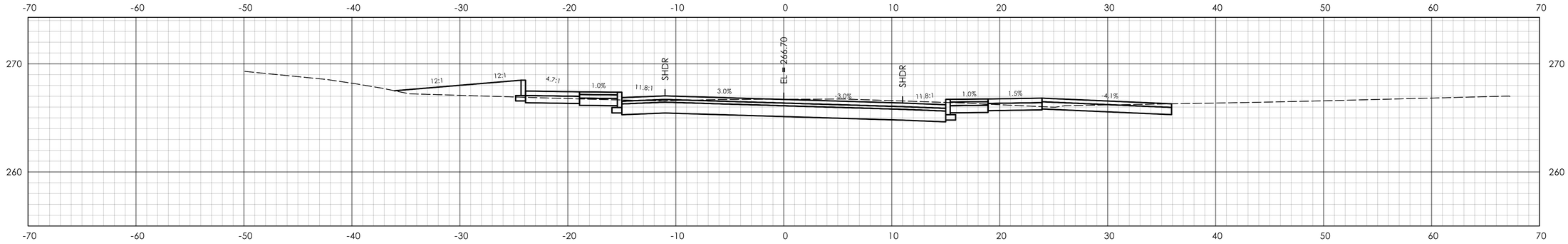
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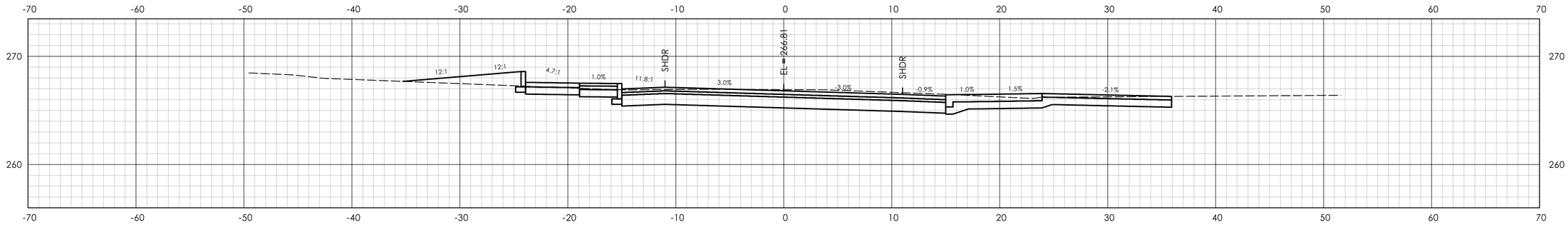
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PLOTTED DATE: 1/22/2026



STA. 44+00.00



STA. 43+50.00



STA. 43+25.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

HORIZONTAL SCALE
0 5' 10'
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

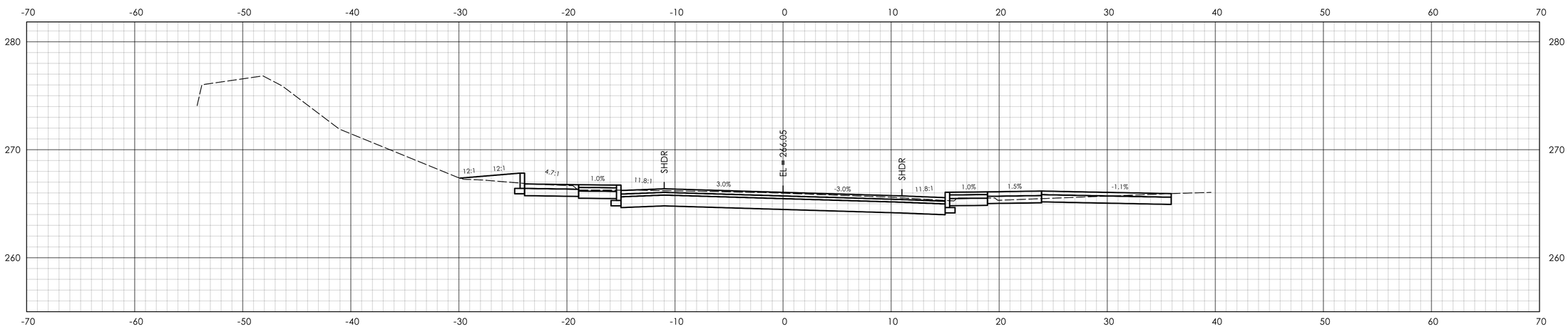
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PROJECT NO.:
0017-0196

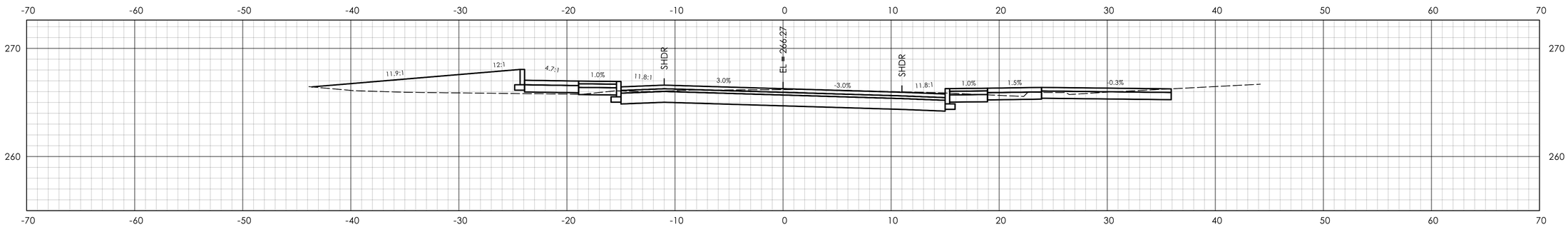
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SHEET NO.:
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LASTED SAVED BY: DDixon **FILE NAME:** C:\Users\DDixon\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Base_Models\HW_CB_0017-0196_XSC_Riverside.dgn
PLOTTED DATE: 1/22/2026



STA. 45+00.00



STA. 44+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

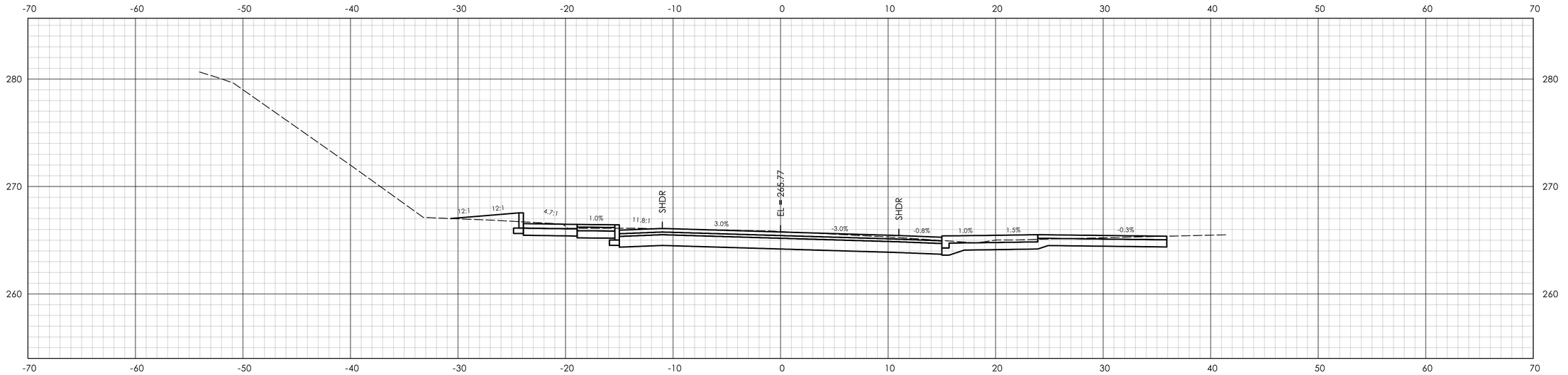
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

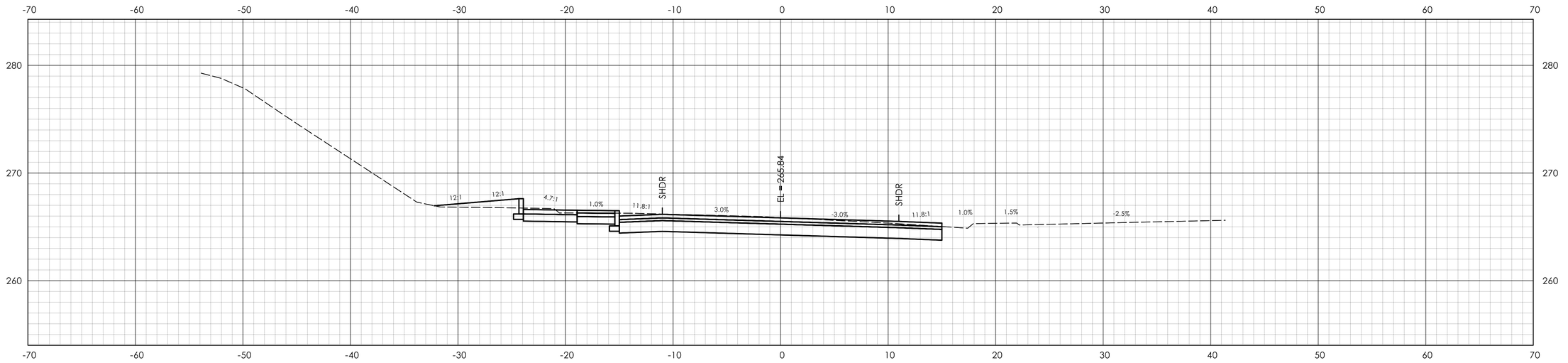
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SHEET NO.:
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PLOTTED DATE: 1/22/2026



STA. 45+66.00



STA. 45+50.00

REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
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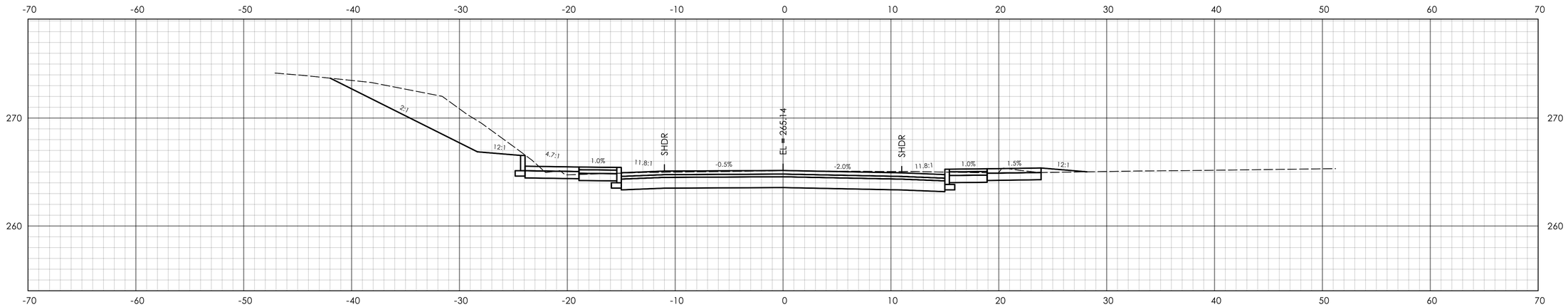
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

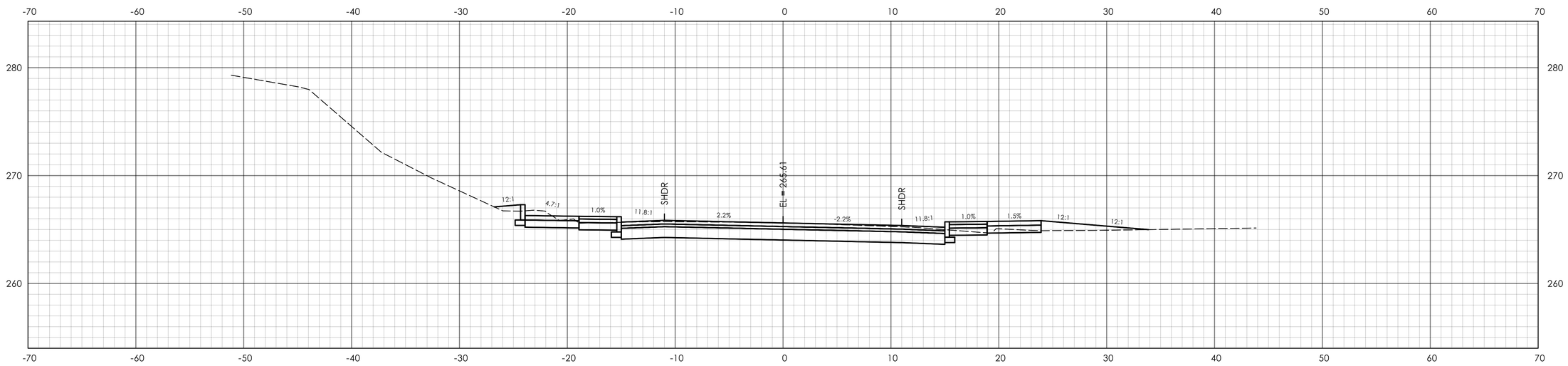
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XSC-44

SHEET NO.:
03.86

LASTED SAVED BY: DDixon **FILE NAME:** C:\Users\DDixon\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Base_Models\HW_C8_0017-0196_XSC_Riverside.dgn
PLOTTED DATE: 1/22/2026



STA. 46+50.00



STA. 46+00.00

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

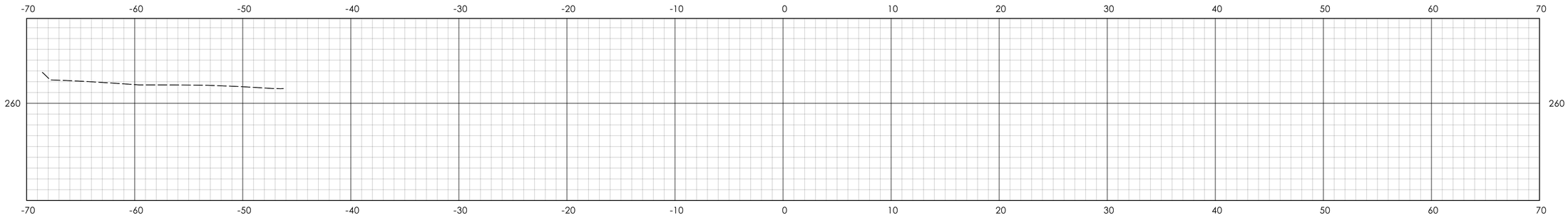
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CROSS-SECTIONS

PROJECT NO.:
0017-0196

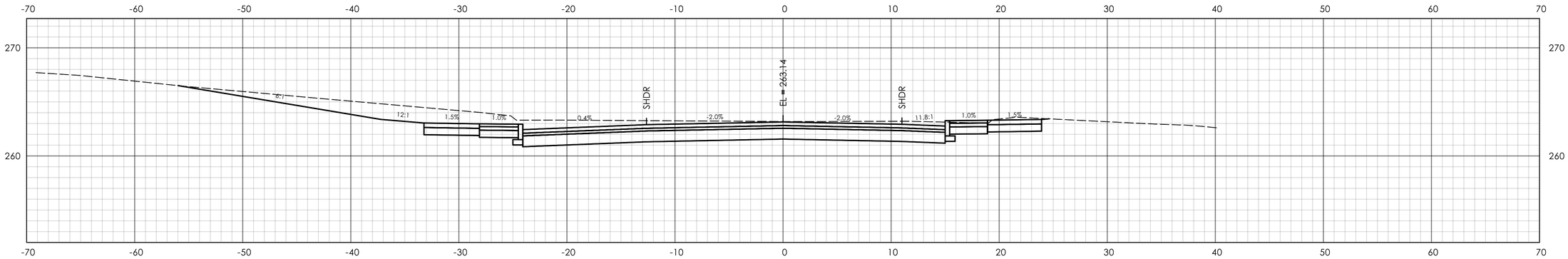
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XSC-45

SHEET NO.:
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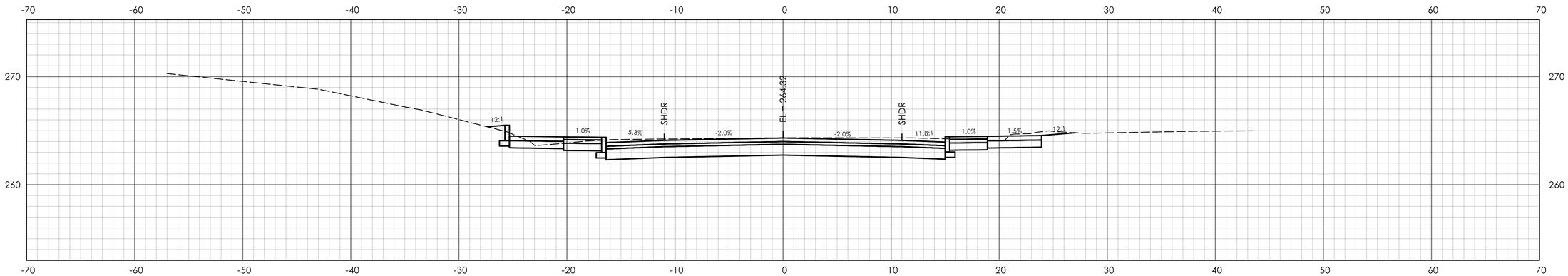
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PLOTTED DATE: 1/22/2026



STA. 48+00.00



STA. 47+50.00



STA. 47+00.00

REVISION DESCRIPTION | DATE | REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: SL CHECKED BY: DMD

0 5' 10'
HORIZONTAL SCALE
1" = 5'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

DRAWING TITLE:
CROSS-SECTIONS

PROJECT NO.:
0017-0196

DRAWING NO.:
XSC-46

SHEET NO.:
03.88

LASTED SAVED BY: DDixon **FILE NAME:** C:\Users\DDixon\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Base_Models\HW_C8_0017-0196_XSC_Riverside.dgn
PLOTTED DATE: 1/22/2026

04 - STRUCTURES
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S-02	WALL TYPICAL SECTION		
S-03	METAL BRIDGE RAIL		
S-04	RAIL LAYOUT		

DESIGNED BY:
CONSULTANT COMPANY NAME

REV. | DATE | REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: ABC CHECKED BY: ABC

CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

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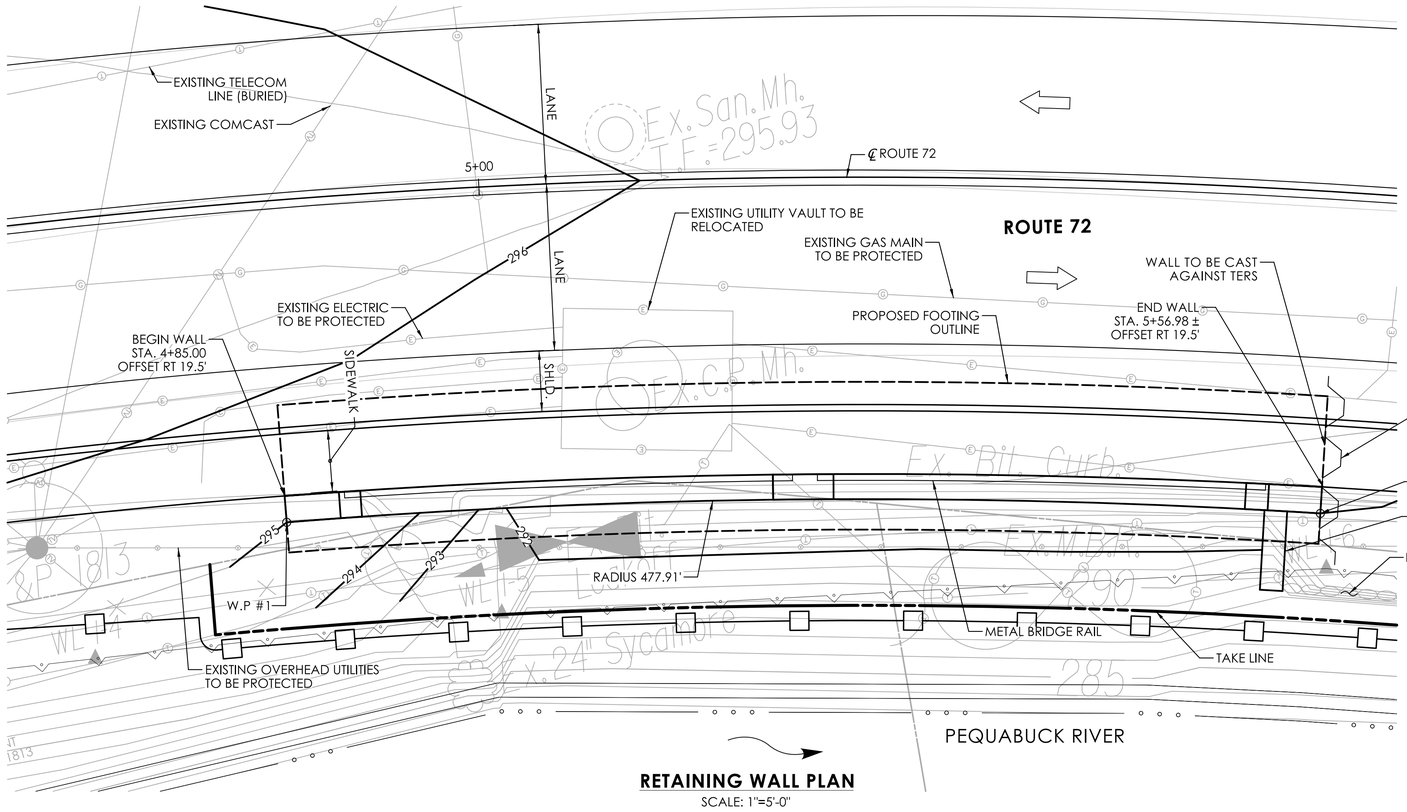
DRAWING TITLE: INDEX OF DRAWINGS

PROJECT NO.: 0017-0196

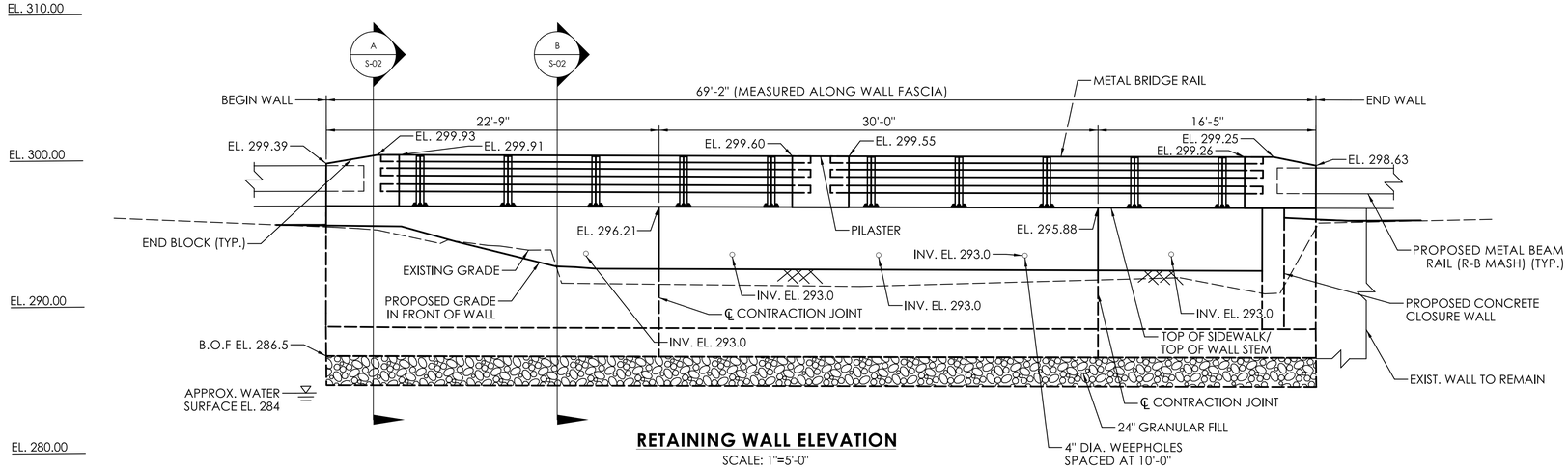
DRAWING NO.: INX-01

SHEET NO.: 04.01

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PLOTTED DATE: 1/22/2026



RETAINING WALL PLAN
SCALE: 1"=5'-0"



RETAINING WALL ELEVATION
SCALE: 1"=5'-0"

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 819 DATED 2024 WITH SUPPLEMENTAL SPECIFICATIONS DATED JANUARY 2025.

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (10TH EDITION - 2024). AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE AND ROADWAY STRUCTURES DESIGN MANUAL (2025), WITH THE LATEST REVISIONS.

MATERIAL STRENGTHS:
CONCRETE:
CLASS PCC 03340 . . . . . f'c=3,000 PSI
CLASS PCC 04462 . . . . . f'c=4,000 PSI

THE CONCRETE STRENGTH, f'c, USED IN DESIGN OF THE CONCRETE COMPONENTS IS NOTED ABOVE. THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THE CONSTRUCTED COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF 6.01 - CONCRETE FOR STRUCTURES AND M.03-PORTLAND AND HYDRAULIC CEMENT CONCRETE.

REINFORCEMENT: (ASTM A615 GRADE 60, GALVANIZED) . . . . . fy=60,000 PSI

LIVE LOAD: LIVE LOAD SURCHARGE IN ACCORDANCE WITH AASHTO LRFD.

FUTURE PAVING ALLOWANCE: NONE.

FOUNDATION PRESSURES: THE LIMIT STATES NOTED ON THE SECTION DETAIL SHEETS REFER TO LOAD COMBINATIONS AS GIVEN IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

DIMENSIONS: WHEN DECIMAL DIMENSIONS ARE GIVEN LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED AS ZEROES.

ELECTRICAL: ELECTRICAL CONDUIT SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE BEND ANGLES AND NUMBER OF BENDS BETWEEN ANY TWO CABLE PULLING POINTS. TOTAL BENDS IN ANY GIVEN CONDUIT RUN BETWEEN CABLE PULING POINTS SHALL NOT EXCEED 360 DEGREES AS PER N.E.C.

MASH TEST LEVEL: THE REINFORCED CONCRETE PARAPET AND METAL BRIDGE RAIL MEETS THE TL-3 CRITERIA FOR MASH.

CONCRETE NOTES:

THE FOLLOWING CONCRETE CLASSES ARE REQUIRED FOR CAST-IN-PLACE WALL COMPONENTS

WALL COMPONENTS	CLASS
WALL STEM, WALL FOOTING	PCC 03340
END BLOCK, PILASTER	PCC 04462

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1" UNLESS DIMENSIONED OTHERWISE.

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE A 2" COVER UNLESS DIMENSIONED OTHERWISE.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE GALVANIZED AFTER FABRICATION UNLESS NOTED OTHERWISE. GALVANIZING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A767, CLASS 1, INCLUDING SUPPLEMENTAL REQUIREMENTS. THE COST OF FURNISHING AND PLACING REINFORCEMENT SHALL BE INCLUDED IN THE LUMP SUM COST OF THE WALL.

CONSTRUCTION JOINTS: CONSTRUCTION JOINTS, OTHER THAN THOSE SHOWN ON THE PLANS, WILL NOT BE ALLOWED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

ALTERNATIVE WALLS: ALTERNATIVE WALL TYPES ARE NOT ALLOWED AT THIS SITE.

WORKING POINT COORDINATES

WORKING POINT	EASTING	NORTHING
1	947677.12	805284.48
2	947743.15	805267.39

REVISION DESCRIPTION | DATE | REV.

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CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

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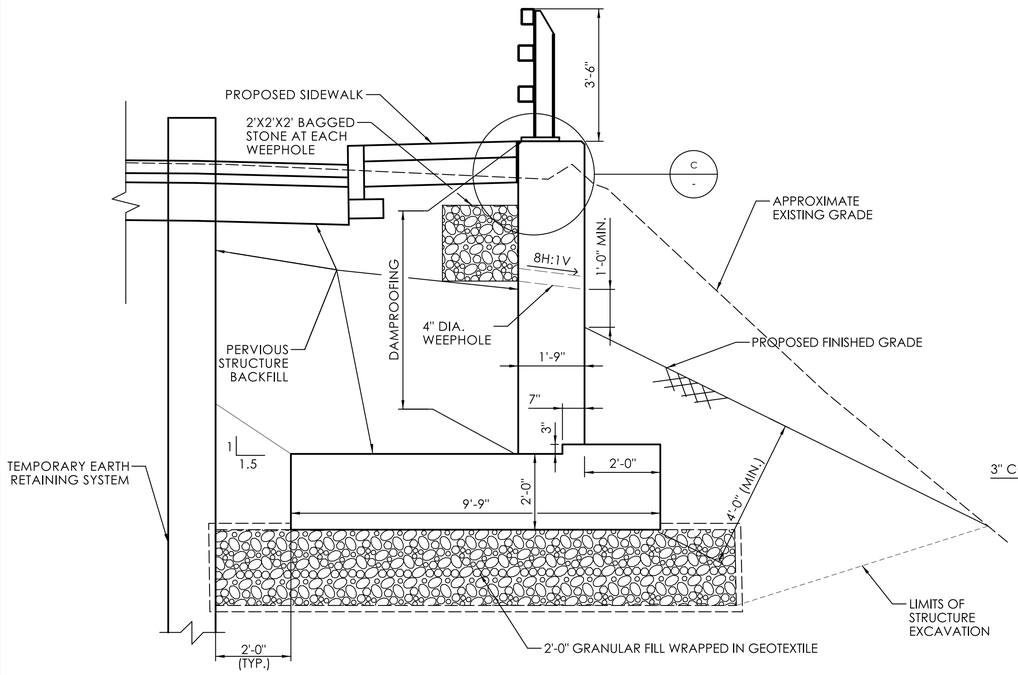
DRAWING TITLE: GENERAL PLAN AND ELEVATION

PROJECT NO.: 0017-0196

DRAWING NO.: S-01

SHEET NO.: 04.02

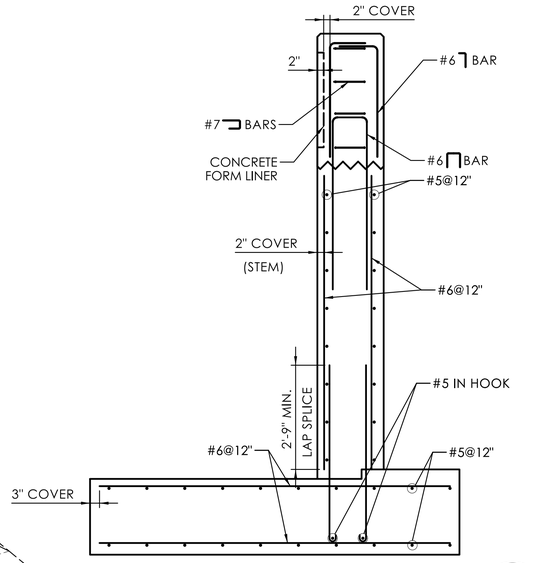
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PLOTTED DATE: 1/21/2026



WALL TYPICAL SECTION

SCALE: 1/2"=1'-0"

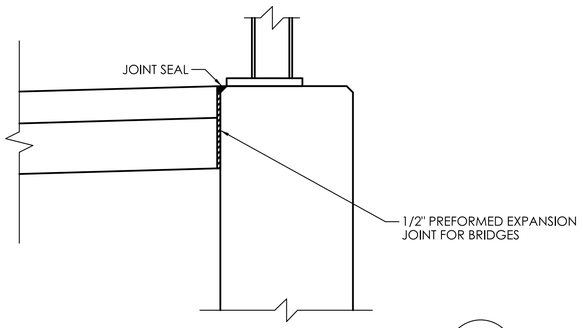
MAXIMUM DESIGN BEARING PRESSURE:
STR-1: 1.64 KSF
SER-1: 1.14 KSF
EXT-II: 2.95 KSF



TYPICAL WALL REINFORCEMENT DETAIL AT END BLOCK AND PILASTER

SCALE: 1/2"=1'-0"

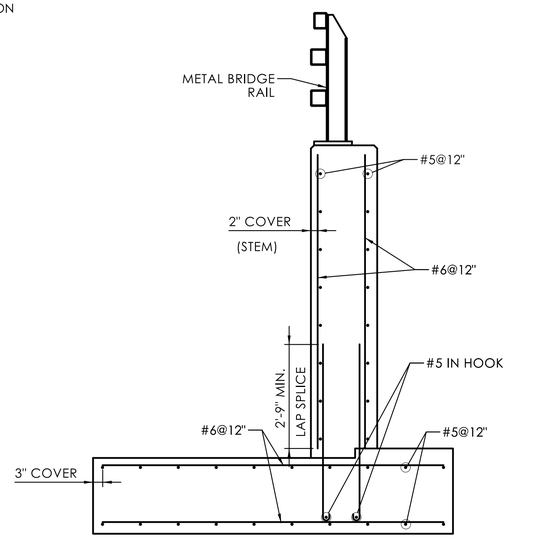
A / S-01



SIDEWALK EXPANSION JOINT DETAIL

SCALE: 1"=1'-0"

C / -



TYPICAL WALL REINFORCEMENT DETAIL AT BRIDGE RAIL

SCALE: 1/2"=1'-0"

B / S-01

NOTES:

1. NO REINFORCEMENT SHALL PASS THROUGH EXPANSION OR CONTRACTION JOINTS. REINFORCEMENT SHALL PASS THROUGH CONSTRUCTION JOINTS.
2. COST FOR STRUCTURE EXCAVATION GRANULAR FILL, GEOTEXTILE, CONCRETE FOR FOOTINGS, STEM, AND PARAPET, REINFORCING STEEL, JOINT MATERIAL, DAMPPROOFING, BAGGED STONE, AND WEEPHOLES ARE INCLUDED IN THE LUMP SUM COST OF THE WALL.
3. COST FOR APPLYING PENETRATING SEALER TO THE ENDBLOCKS IS ALSO INCLUDED IN THE LUMP SUM COST OF THE WALL.
4. COST FOR INSTALLING PERVIOUS STRUCTURE BACKFILL BEHIND THE WALL AND ANY FILL IN FRONT OF THE WALL SHALL BE INCLUDED IN THE LUMP SUM COST OF THE WALL.
5. ANY PREVIOUS STRUCTURES BACKFILL REQUIRED OUTSIDE OF THESE LIMITS SHALL ALSO BE INCLUDED IN THE LUMP SUM COST OF THE WALL.
6. ALL COSTS ASSOCIATED WITH THE RETAINING WALL AS NOTED ABOVE IS INCLUDED UNDER THE PAY ITEM "RETAINING WALL (SITE NO. XX)".
7. COST FOR FURNISHING AND INSTALLING TEMPORARY EARTH RETAINING SYSTEM IS INCLUDED IN THE LUMP SUM COST OF THE WALL.
8. COST OF MATERIAL FOR TEMPOREY EARTH RETAINING SYSTEM LEFT IN PLACE IS TO BE PAID FOR UNDER THE ITEM "EARTH RETAINING SYSTEM LEFT IN PLACE".

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DESIGNER/DRAFTER: CHECKED BY:

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

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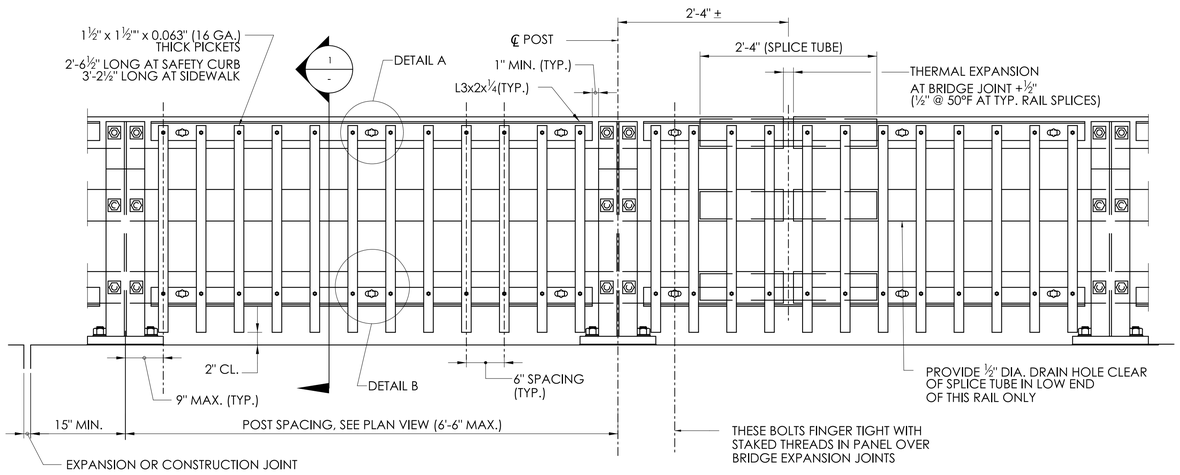
DRAWING TITLE: WALL TYPICAL SECTION

PROJECT NO.: 0017-0196

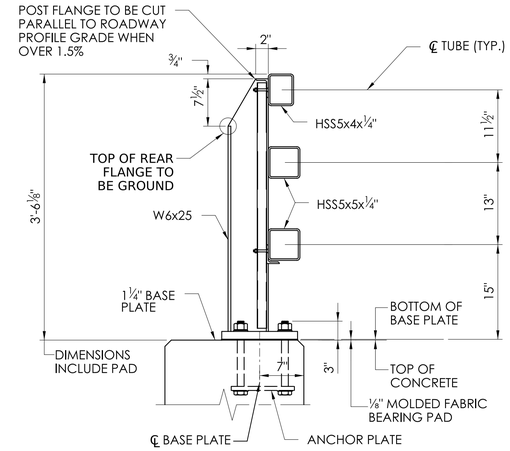
DRAWING NO.: S-02

SHEET NO.: 04.03

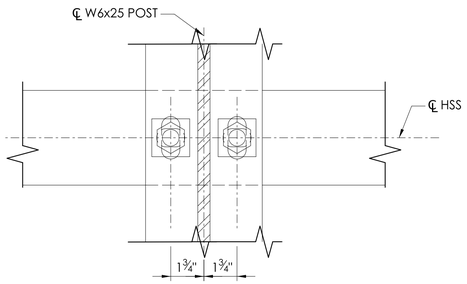
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PLOTTED DATE: 1/21/2026



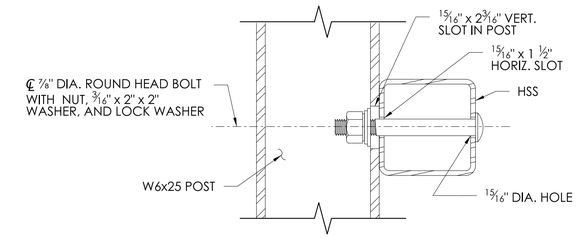
BRIDGE RAILING ELEVATION
SCALE: 1" = 1'-0"



SECTION 1
SCALE: 1" = 1'-0"



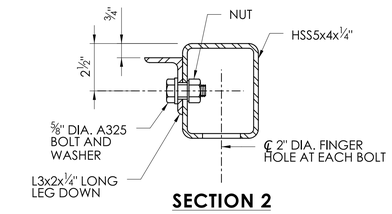
SECTION THRU POST WEB



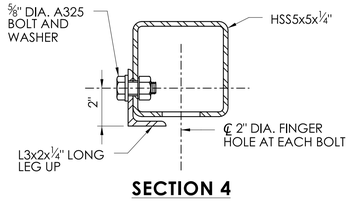
SECTION THRU RAIL

NOTE:
CONNECTIONS AT LOWER RAIL SHOWN.
CONNECTIONS AT TOP RAIL SIMILAR.

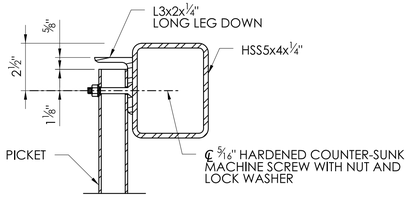
TYPICAL RAIL TO POST CONNECTIONS
SCALE: 3" = 1'-0"



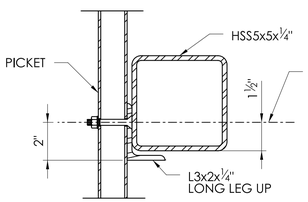
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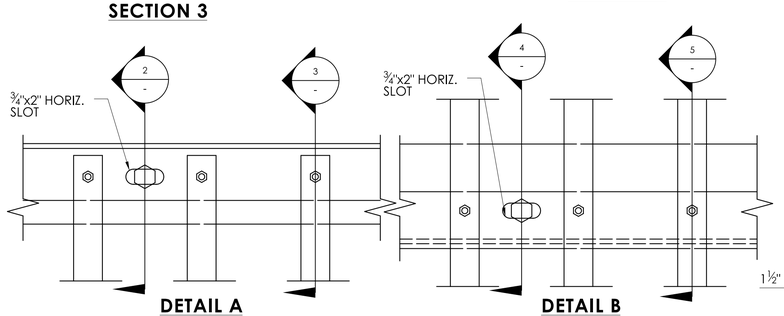
SECTION 4



SECTION 3



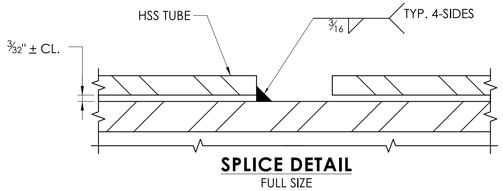
SECTION 5



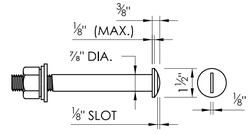
DETAIL A

DETAIL B

TYPICAL PICKET TO RAIL DETAILS
SCALE: 3" = 1'-0"

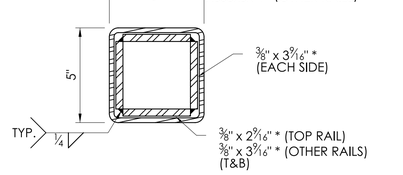


SPLICE DETAIL
FULL SIZE

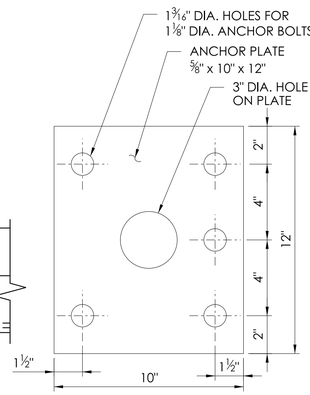


7/8" DIA. ROUND HEAD BOLT
SCALE: 3" = 1'-0"

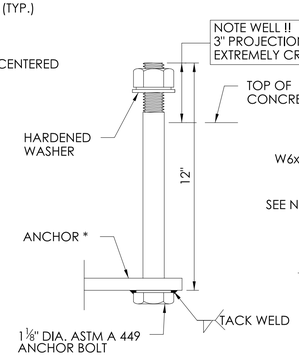
TYPICAL SPLICE
SCALE: 1" = 1'-0"



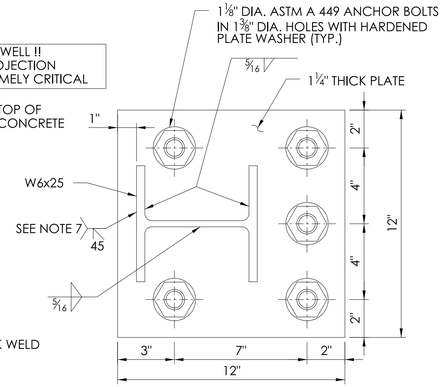
SPLICE TUBE DETAILS
SCALE: 3" = 1'-0"



ANCHOR PLATE
SCALE: 3" = 1'-0"



ANCHOR BOLT
SCALE: 3" = 1'-0"



BASE PLATE
SCALE: 3" = 1'-0"

RAILING NOTES:

1. FOR MATERIAL REQUIREMENTS SEE SPECIAL PROVISION FOR ITEM "METAL BRIDGE RAIL".
2. ALL STEEL (EXCEPT THE 5/8" ANCHOR PLATE AND FASTENERS) SHALL BE GALVANIZED AND PAINTED BLACK (FEDERAL STD. 595B COLOR NO. 17038). ANCHOR PLATE SHALL BE GALVANIZED ONLY. HEADS OF 7/8" DIA. ROUND HEAD BOLTS SHALL BE PAINTED TO MATCH RAIL.
3. ANCHOR BOLTS SHALL BE SET WITH TEMPLATES. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN AFTER STEEL IS IN PLACE.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF FOUR (4) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN THE PANELS OVER EXPANSION JOINT.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. ALL POSTS TO BE PLUMB WHEN PROFILE GRADE EXCEEDS 1.5%. FOR PROFILE GRADES LESS THAN 1.5%, POSTS SHALL BE SET PERPENDICULAR TO GRADE.
7. POST FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING. WELD SHALL BE BACK-GOUGED ON BACK SIDE EXCEPT AT WEB. WELD IS THE SAME ON BOTH FLANGES.
8. 7/8" DIA. ROUND HEAD BOLTS SHALL CONFORM TO THE CHEMICAL AND PHYSICAL REQUIREMENTS OF AASHTO M 164.

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TOWN(S): BRISTOL

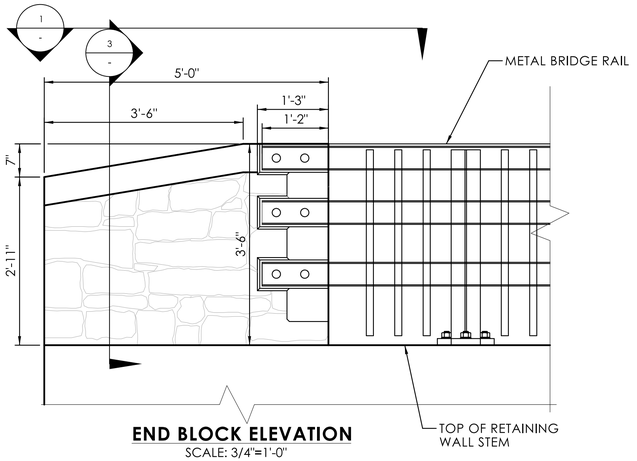
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PROJECT NO.: 0017-0196

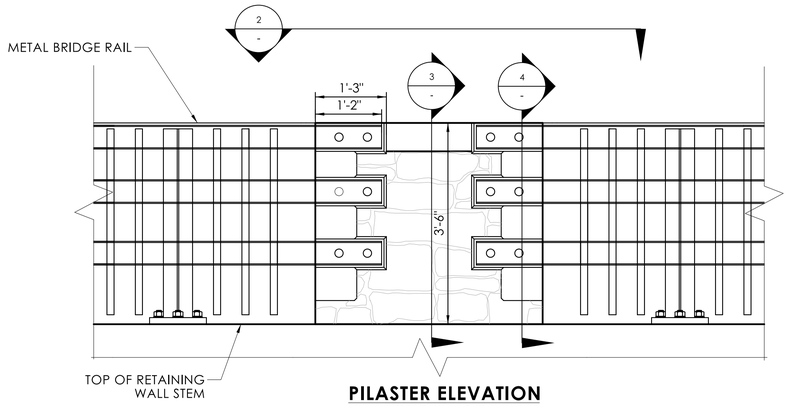
DRAWING NO.: S-03

SHEET NO.: 04.04

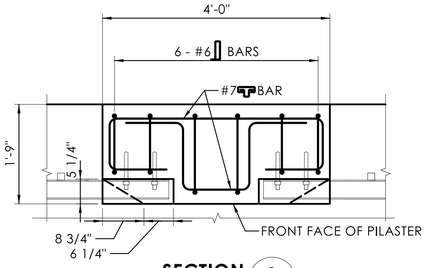
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PLOTTED DATE: 1/20/2026



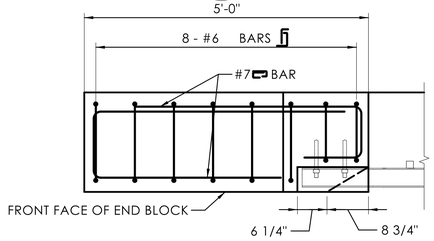
END BLOCK ELEVATION
SCALE: 3/4"=1'-0"



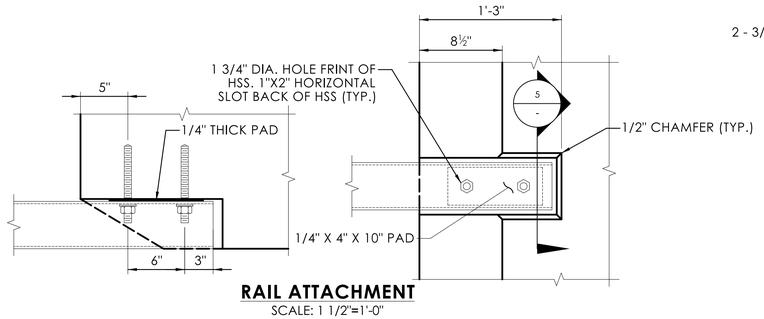
PILASTER ELEVATION
SCALE: 3/4"=1'-0"



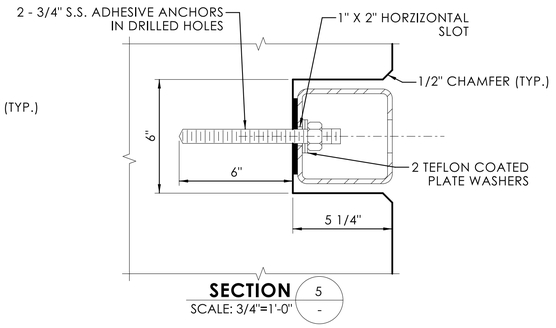
SECTION 2
SCALE: 3/4"=1'-0"



SECTION 1
SCALE: 3/4"=1'-0"
ONE END SHOWN,
OTHER END SIMILAR



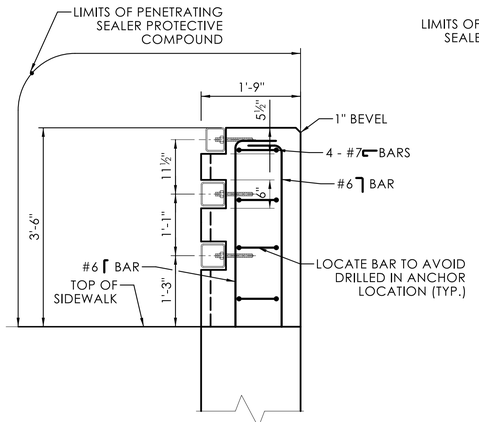
RAIL ATTACHMENT
SCALE: 1 1/2"=1'-0"



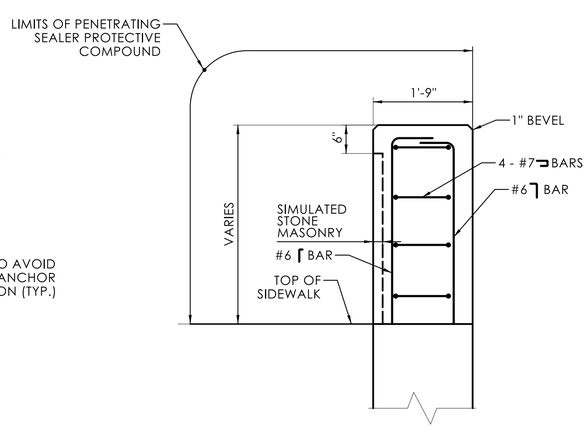
SECTION 5
SCALE: 3/4"=1'-0"

SIMULATED STONE MASONRY NOTES:

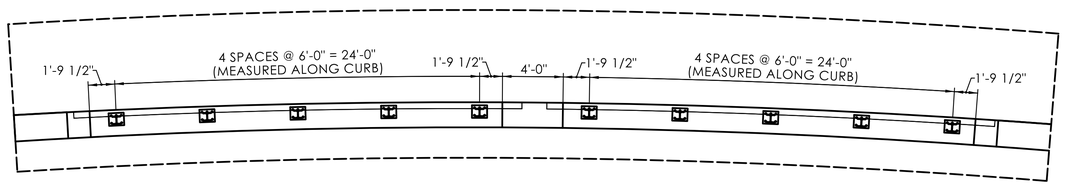
1. WHERE SHOWN ON THE PLANS, THE CONTRACTOR SHALL UTILIZE CONCRETE FORM LINERS TO SIMULATE STONE MASONRY CONSTRUCTION. THE COST OF THIS WORK SHALL BE PAID FOR UNDER THE ITEM "SIMULATED STONE MASONRY".
2. THE SIMULATED STONE MASONRY PATTERN PROVIDED SHAL BE DETERMINED BASED ON THE LENGTH AND HEIGHT OF THE PILASTERS AND BARRIER WALLS.
3. IN ADDITION TO THE DETAILS SHOWN, ALL EXPOSED EDGES SHALL RECEIVE A 1" X 1" BEVEL UNLESS DIMENSIONED OTHERWISE.



SECTION 4
SCALE: 3/4"=1'-0"



SECTION 3
SCALE: 3/4"=1'-0"



RAIL LAYOUT
SCALE: 1"=5'-0"

REVISION DESCRIPTION
DATE
REV.

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: CHECKED BY:

CTDOT CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S): BRISTOL

DRAWING TITLE: RAIL LAYOUT

PROJECT NO.: 0017-0196

DRAWING NO.: S-04

SHEET NO.: 04.05

LASTED SAVED BY: MFitzsimonds **FILE NAME:** C:\Users\mfitzsimonds\GM2 Associates, Inc\40968 - Riverside Ave Bristol - Documents\330_Design_Data\Highways\Contract_Plans\HW_CP_40968_Rail Layout.dgn
PLOTTED DATE: 1/21/2026

***ONLY STANDARD SHEETS MARKED WITH AN "✓" ARE IN THIS PROJECT #** 0017-0196 ****REVISED OR ADDED**

✓*	SHEET NO.	TITLE	APPROVAL DATE**
	HW-211_01	ANTI-TRACKING PAD	11-09-22
	HW-286_01	DRAINAGE TRENCH EXCAVATION	11-09-22
	HW-505 01a	STRAIGHT ENDWALLS	01-21-25
	HW-505 01b	STEEL REINFORCING FOR STRAIGHT ENDWALLS (2" DIFF BASE TO FLOW LINE)	01-05-24
	HW-505 01c	STEEL REINFORCING FOR STRAIGHT ENDWALLS (STANDARD RIPRAP APPLICATION)	01-05-24
	HW-505_02	TYPE "D-G" & "L" ENDWALLS	01-05-24
✓	HW-586_01	CATCH BASIN AND DROP INLET TYPES "C" AND "C-L" STRUCTURES	01-05-24
	HW-586_02	CATCH BASIN (TYPES "C" AND "C-L") FOR DOUBLE GRATE TYPE I STRUCTURES	01-05-24
✓	HW-586_03	CATCH BASIN (TYPES "C" AND "C-L") FOR DOUBLE GRATE TYPE II STRUCTURES	01-05-24
	HW-586_04	PRECAST CATCH BASIN AND ROUND STRUCTURE	10-17-24
	HW-586_05	PRECAST CATCH BASIN TYPES FOR DOUBLE GRATE TYPE I	10-17-24
	HW-586_06	PRECAST CATCH BASIN TYPES FOR DOUBLE GRATE TYPE II	10-17-24
✓	HW-586 07a	CATCH BASIN TYPE "C" AND "C-L" TOPS	01-05-24
	HW-586 07b	CATCH BASIN TYPE "C" AND "C-L" DOUBLE GRATE TYPE I TOPS	11-09-22
✓	HW-586 07c	CATCH BASIN TYPE "C" AND "C-L" DOUBLE GRATE TYPE II TOPS	11-08-22
	HW-586 07d	CATCH BASIN TYPE "C-G" AND "C-M" BARRIER CURB TOPS	11-09-22
✓	HW-586_08	CATCH BASIN FRAMES AND GRATES	11-09-22
✓	HW-586_09	CATCH BASIN LOCK DOWN TOPS	11-09-22
✓	HW-586_10a	MANHOLE FRAME AND COVER	01-05-24
	HW-586_10b	MANHOLE FRAME AND GRATE	01-05-24
	HW-586_10c	REINFORCED PRECAST CONCRETE MANHOLE	11-08-22
	HW-586_10d	MANHOLE NON-PRECAST CONCRETE UNIT	11-08-22
	HW-686_01a	CONCRETE PIPE CONNECTION SHEET 1	11-08-22
	HW-686_01b	CONCRETE PIPE CONNECTION SHEET 2	11-08-22
	HW-686_02a	DRAINANGE PIPE ENDS SHEET 1 [CORRUGATED METAL PIPE]	11-08-22
	HW-686_02b	DRAINAGE PIPE ENDS SHEET 2 [CONCRETE PIPE]	11-08-22
	HW-751_01	UNDERDRAINS AND UNDERDRAIN OUTLETS	10-17-24
	HW-803_01	PAVED APRONS	11-08-22
	HW-811_01	CONCRETE CURBING	11-08-22
	HW-813_01	GRANITE STONE TRANSITION CURBING	11-08-22
✓	HW-813_02	STONE CURBING	11-08-22
✓	HW-815_01	BITUMINOUS CONCRETE CURBING	11-08-22

✓*	SHEET NO.	TITLE	APPROVAL DATE**
	HW-821_01a	TRANSITION - 45" F-SHAPE TO 45" VERTICAL SHAPE SHEET 1	11-08-22
	HW-821_01b	TRANSITION - 45" F-SHAPE TO 45" VERTICAL SHAPE SHEET 2	11-08-22
	HW-821_01c	TRANSITION - 45" F-SHAPE TO 45" VERTICAL SHAPE SHEET 3	11-08-22
	HW-821_02a	45" F-SHAPE PRECAST CONCRETE BARRIER CURB SHEET 1	11-08-22
	HW-821_02b	45" F-SHAPE PRECAST CONCRETE BARRIER CURB SHEET 2	11-08-22
	HW-821_03a	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 1	11-08-22
	HW-821_03b	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 2	11-08-22
	HW-821_03c	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 3	11-08-22
	HW-821_03d	TRANSITION - 32" JERSEY SHAPE TO 45" VERTICAL SHAPE SHEET 4	11-08-22
	HW-821_03e	TRANSITION - 32" JERSEY SHAPE TO 45" F-SHAPE	11-08-22
	HW-821_04a	MERRITT PARKWAY NARROW MEDIAN BARRIER	11-08-22
	HW-821_04b	MERRITT PARKWAY - 2' WIDE MEDIAN BARRIER AND ROADSIDE BARRIER	11-08-22
	HW-821_05a	TRANSITION - 45" F-SHAPE TO 54" VERTICAL SHAPE SHEET 1	11-08-22
	HW-821_05b	TRANSITION - 45" F-SHAPE TO 54" VERTICAL SHAPE SHEET 2	11-08-22
	HW-821_06	54" VERTICAL SHAPE BARRIER	11-08-22
	HW-821_07	MISCELLANOUS DETAILS FOR BARRIER TRANSITIONS	08-20-25
	HW-821_08a	F-SHAPE CONC. BARRIER CURB (21"x45") TRANSITION FOR THRIE-BEAM	10-17-24
	HW-821_08b	F-SHAPE CONC. BARRIER CURB (21"x45") TRANSITION FOR THRIE-BEAM - REINF.	11-08-22
	HW-821_09a	SINGLE SLOPE CONC. BARRIER CURB (20"x42") TRANS. FOR THRIE-BEAM	11-08-22
	HW-821_09b	SINGLE SLOPE CONC. BARRIER CURB (20"x42") TRANS. FOR THRIE-BEAM - REINF.	11-08-22
	HW-821_10a	VERTICAL FACE CONC. (21"x54") TRANSITION FOR THRIE-BEAM	11-08-22
	HW-821 10b	VERTICAL FACE CONC. (21"x54") TRANSITION FOR THRIE-BEAM REINF.	11-08-22
	HW-821_11a	42" SINGLE SLOPE PRECAST CONCRETE BARRIER CURB -SHEET 1	01-05-24
	HW-821_11b	42" SINGLE SLOPE PRECAST CONCRETE BARRIER CURB -SHEET 2	01-05-24
	HW-822_01	TEMPORARY PRECAST CONCRETE BARRIER CURB	11-08-22
	HW-822 02a	TEMPORARY TRAFFIC BARRIER - DETAILS	11-08-22
	HW-822 02b	TEMPORARY TRAFFIC BARRIER (BOLTED)	01-23-25
	HW-822 02c	TEMPORARY TRAFFIC BARRIER & TEMPORARY TRAFFIC BARRIER (PINNED)	01-23-25
	HW-905_01	STONE WALL FENCE	11-09-22
	HW-906_01	WIRE FENCE	11-08-22

NOT TO SCALE

SIGNATURE BLOCK:
OFFICE OF ENGINEERING
2800 BERLIN TURNPIKE
NEWINGTON, CT 06111

CONNECTICUT DEPARTMENT OF TRANSPORTATION

CTDOT STANDARD SHEET

STANDARD SHEET TITLE:
HIGHWAY STANDARD SHEET INDEX

STANDARD SHEET NO.:
1 of 2

PLOTTED DATE: 1/23/2025

*ONLY STANDARD SHEETS MARKED WITH AN " ✓ " ARE IN THIS PROJECT # 0017-0196 **REVISED OR ADDED

✓*	SHEET NO.	TITLE	APPROVAL DATE**
	HW-910_01	W-BEAM METAL BEAM RAIL HARDWARE	11-08-22
	HW-910_02	METAL BEAM RAIL (TYPE R-B 350) GUIDERAIL	11-08-22
	HW-910_03	METAL BEAM RAIL (TYPE MD-B 350) GUIDERAIL	11-08-22
	HW-910_04	METAL BEAM RAIL (TYPE R-B 350) SYSTEMS 5, 5A, & 6	11-08-22
	HW-910_05	METAL BEAM RAIL R-B 350 SPAN TYPE I, II, III SECTIONS	11-08-22
	HW-910_06	R-B 350 BRIDGE ATTACHMENT SAFETY SHAPE PARAPET	11-08-22
	HW-910_07	R-B 350 BRIDGE ATTACHMENT VERTICAL SHAPE PARAPET	11-08-22
	HW-910_09a	MISCELLANEOUS GUIDERAIL TRANSITIONS SHEET 1	11-08-22
	HW-910_09b	MISCELLANEOUS GUIDERAIL TRANSITIONS SHEET 2	11-08-22
	HW-910_10	METAL BEAM RAIL 8" x 6" BOX BEAM	11-08-22
	HW-910_11	CURVED GUIDERAIL TREATMENT DETAIL	11-08-22
	HW-910_12a	MERRITT PARKWAY GUIDERAIL LEADING END ATTACHMENTS AND SYSTEMS 2&3	11-08-22
	HW-910_12b	MERRITT PARKWAY GUIDERAIL HARDWARE DETAILS	11-08-22
	HW-910_12c	MERRITT PARKWAY GUIDERAIL TRAILING END ATTACHMENTS	11-02-22
	HW-910_12d	MERRITT PARKWAY MEDIAN GUIDERAIL AND END ANCHOR	10-17-24
	HW-910_13a	THRIE-BEAM METAL BEAM RAIL HARDWARE	11-08-22
	HW-910_13b	THRIE-BEAM TRANSITIONS	11-08-22
	HW-910_14a	THRIE-BEAM 350 BRIDGE ATTACHMENT	11-08-22
	HW-910_14b	THRIE-BEAM 350 GUIDERAIL TRANSITION TO R-B 350 GUIDERAIL	11-08-22
	HW-910_15	MD-B 350 MEDIAN BARRIER SAFETY SHAPE ATTACHMENT TYPE I	11-08-22
	HW-910_16	MD-B 350 MEDIAN BARRIER SAFETY SHAPE ATTACHMENT TYPE II	11-08-22
	HW-910_17	R-B TERMINAL SECTION	11-08-22
	HW-910_18	METAL BEAM RAIL (TYPE MD-I) GUIDERAIL	11-08-22
	HW-910_19a	METAL BEAM RAIL (MODIFIED TYPE R-I) AND END ANCHORAGE TYPE I	10-17-24
	HW-910_19b	METAL BEAM RAIL (MODIFIED TYPE R-I) AND END ANCHORAGE TYPE II	10-17-24
	HW-910_19c	METAL BEAM RAIL (MODIFIED TYPE R-I) SYSTEMS 2 AND 3	11-08-22
✓	HW-910_20	MASH W-BEAM HARDWARE	10-17-24
✓	HW-910_21	METAL BEAM RAIL (R-B MASH) GUIDERAIL	01-05-24
	HW-910_22	METAL BEAM RAIL (MD-B MASH) GUIDERAIL	11-08-22
	HW-910_23	METAL BEAM RAIL (R-B MASH) HALF & QUARTER POST SPACING GUIDERAIL	11-08-22
	HW-910_24	METAL BEAM RAIL SPAN SECTION TYPES II AND III	11-08-22

✓*	SHEET NO.	TITLE	APPROVAL DATE**
	HW-910_25a	METAL BEAM RAIL TRANSITION 350 TO MASH	10-17-24
	HW-910_25b	METAL BEAM RAIL MEDIAN APPLICATION TRANSITION 350 TO MASH GUIDERAIL	01-05-24
	HW-910_26	THRIE-BEAM ATTACHMENT HARDWARE	11-08-22
	HW-910_27	THRIE-BEAM ATTACHMENT	11-08-22
	HW-910_29	THRIE-BEAM BRIDGE ATTACHMENT TRAILING END	02-02-24
	HW-910_30a	METAL BEAM RAIL (6 X 6 BOX BEAM) GUIDERAIL - HARDWARE	01-28-25
	HW-910_30b	METAL BEAM RAIL (6 X 6 BOX BEAM) GUIDERAIL	01-28-25
✓	HW-911_01	R-B END ANCHORAGE TYPE I AND II	10-17-24
	HW-911_02	MD-B END ANCHORAGE TYPE I	10-17-24
	HW-911_03	ANCHOR IN EARTH CUT SLOPE & ANCHOR IN ROCK CUT SLOPE	01-05-24
	HW-911_06a	METAL BEAM RAIL (6 x 6 BOX BEAM) END ANCHORAGE TYPE I - HARDWARE	01-28-25
	HW-911_06b	METAL BEAM RAIL (6 x 6 BOX BEAM) END ANCHORAGE TYPE I	01-28-25
	HW-911_05	MERRITT PARKWAY GUIDERAIL END ANCHORS	11-08-22
✓	HW-913_01a	CHAIN LINK FENCE	11-08-22
	HW-913_01b	CHAIN LINK FENCE HARDWARE	11-08-22
	HW-913_02	CHAIN LINK FENCE GATES	11-08-22
	HW-918_01a	THREE CABLE GUIDERAIL (I-BEAM POSTS) SHEET 1	11-08-22
	HW-918_01b	THREE CABLE GUIDERAIL (I-BEAM POSTS) SHEET 2	11-08-22
	HW-918_01c	THREE CABLE GUIDERAIL (I-BEAM POSTS) SHEET 3	11-08-22
✓	HW-921_01	CONCRETE SIDEWALKS	11-08-22
✓	HW-922_01	BITUMINOUS CONCRETE SIDEWALK AND BITUMINOUS CONCRETE DRIVEWAY	11-08-22
✓	HW-924_01	CONCRETE DRIVEWAY RAMPS	10-17-24
	HW-930_01	OBJECT MARKER (MAINTENANCE)	10-17-24
	HW-949_01a	LANDSCAPE PLANTING	11-09-22
	HW-949_01b	TREE STAKING	11-02-22
	HW-1800_01	GRADING PLAN FOR IMPACT ATTENUATION SYSTEMS (FLARED AND TANGENTIAL)	10-17-24
	HW-1800_02	GRADING PLAN FOR IMPACT ATTENUATION SYSTEMS (MEDIAN/GORE)	10-17-24

NOT TO SCALE

SIGNATURE BLOCK:
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NEWINGTON, CT 06111

CONNECTICUT DEPARTMENT OF TRANSPORTATION

CTDOT STANDARD SHEET

STANDARD SHEET TITLE:
HIGHWAY STANDARD SHEET INDEX

STANDARD SHEET NO.:
2 OF 2

PROJECT NO. 0017-0196
ROUTE 72 (RIVERSIDE AVE) STREETSCAPE IMPROVEMENTS
CITY OF BRISTOL
SEMI FINAL DESIGN ESTIMATE

Anticipated year of expenditure	2026
Base year (cost based on expenditure in this year):	2025
Phase of Development:	Semi-Final Design (60%)

Construction Cost Summary						
			ROADWAY		$	5,986,323
			STRUCTURES		$	429,105
			ENV. COMPLIANCE/Landscape		$	704,821
			TRAFFIC		$	500,000
			Subtotal of Known Items =	77%	$	7,620,249
% of Base Estimate			**Equivalent % of Known Items**			
10%			MINOR ITEMS	13%	$	989,643
1%	0201001		CLEARING AND GRUBBING	1%	$	98,964
4%	0971001	**A**	MAINTENANCE AND PROTECTION OF TRAFFIC	5%	$	395,857
1%	0980020		CONSTRUCTION SURVEYING	1%	$	98,964
7%	0975004		MOBILIZATION AND PROJECT CLOSEOUT	9%	$	692,750
			Contract Items (Base Estimate) =		$	9,896,427
			INFLATION FACTOR	4%		
			YEARS TO OBLIGATION	1		
			Contract Items Corrected for Inflation =		**$**	**10,293,000**
			UTILITIES		**$**	**149,279.02**
			CONTINGENCIES	10%	**$**	**1,029,300**
			INCIDENTALS	25%	**$**	**2,573,250**
			TOTAL CONSTRUCTION COST	**$**		**14,044,829**

Project No. 0017-0196

SECTION A - ROADWAY ITEMS

ITEM NO.	A	Construction Items	UNIT	QUANTITY	UNIT PRICE	COST
0107090	A	CTDOT BOUNDARY MARKER - (SURVEY MONUMENT)	ea.	27	$ 1,483.69	$ 40,059.63
0201214	A	RESET SIGN	ea.	8	$ 500.00	$ 4,000.00
0202000		EARTH EXCAVATION	c.y.	15593	$ 24.84	$ 387,330.12
0202452	A	TEST PIT	ea.	15	$ 2,534.20	$ 38,013.00
0202529		CUT BITUMINOUS CONCRETE PAVEMENT	l.f.	9758	$ 3.50	$ 34,151.77
0209001		FORMATION OF SUBGRADE	s.y.	17271	$ 3.00	$ 51,813.00
0212000		SUBBASE	c.y.	5761	$ 58.58	$ 337,479.38
0216012	A	CONTROLLED LOW STRENGTH MATERIAL	c.y.	1	$ 264.00	$ 264.00
0219001		SEDIMENTATION CONTROL SYSTEM	l.f.	916	$ 5.87	$ 5,376.92
0406170		HMA S1	ton	2891	$ 138.35	$ 399,969.85
0406171		HMA S0.5	ton	4046	$ 173.51	$ 702,021.46
0409001		FINE MILLING OF BITUMINOUS CONCRETE (0" TO 4")	s.y.	101	$ 4.22	$ 426.22
0586001.10		TYPE 'C' CATCH BASIN - 0' - 10' DEEP	ea.	38	$ 5,345.67	$ 203,135.46
0586002.20		TYPE 'C' CATCH BASIN (4'SUMP) - 0' - 20' DEEP	ea.	1	$ 6,746.33	$ 6,746.33
0586003.10		TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 1 - 0' - 10' DEEP	ea.	1	$ 6,415.10	$ 6,415.10
0586005.10		TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2 - 0' - 10' DEEP	ea.	4	$ 7,140.39	$ 28,561.56
0586006.10		TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2 (4' SUMP) - 0' - 10' DEEP	ea.	5	$ 9,939.23	$ 49,696.15
0586009.20		SPECIAL TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 1 - 0' - 20' DEEP	ea.	1	$ 7,800.00	$ 7,800.00
0586040.10		TYPE 'C-L' CATCH BASIN - 0' - 10' DEEP	ea.	2	$ 5,714.26	$ 11,428.52
0586500.10		MANHOLE - 0' - 10' DEEP	ea.	3	$ 6,328.31	$ 18,984.93
0586601		RESET TYPE 'C' CATCH BASIN	ea.	19	$ 1,658.60	$ 31,513.40
0586602		RESET TYPE 'C' CATCH BASIN (4' SUMP)	ea.	1	$ 1,658.60	$ 1,658.60
0586605		RESET TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2	ea.	1	$ 2,195.44	$ 2,195.44
0586606		RESET TYPE 'C' CATCH BASIN DOUBLE GRATE TYPE 2 (4' SUMP)	ea.	2	$ 2,195.44	$ 4,390.88
0586620		RESET TYPE 'C-L' CATCH BASIN	ea.	4	$ 2,032.06	$ 8,128.24
0586703		CONVERT CATCH BASIN TO MANHOLE	ea.	1	$ 2,851.69	$ 2,851.69
0586750		TYPE 'C' CATCH BASIN TOP	ea.	2	$ 860.43	$ 1,720.86
0586753		TYPE 'C' CATCH BASIN TOP HEAVY DUTY	ea.	1	$ 1,274.53	$ 1,274.53
0586760		TYPE 'C-L' CATCH BASIN TOP	ea.	4	$ 668.70	$ 2,674.80
0586763		TYPE 'C-L' CATCH BASIN TOP HEAVY DUTY	ea.	1	$ 1,262.36	$ 1,262.36
0586790.10		REMOVE DRAINAGE STRUCTURE - 0' - 10' DEEP	ea.	9	$ 1,192.20	$ 10,729.80
0601020		STAMPED CONCRETE	s.f.	1076	$ 27.12	$ 29,181.12
0653001		CLEAN EXISTING CATCH BASIN	ea.	23	$ 463.27	$ 10,655.21
0653100		CLEAN EXISTING CULVERT - 12" TO 42" DIAMETER	l.f.	939	$ 11.17	$ 10,488.63
0653102		VIDEO AND DYE TEST DRAINAGE SYSTEM	ea.	5	$ 600.00	$ 3,000.00
0686000.12		12" R.C. PIPE - 0' - 10' DEEP	l.f.	101	$ 105.00	$ 10,605.00
0686000.15		15" R.C. PIPE - 0' - 10' DEEP	l.f.	2150	$ 108.36	$ 232,974.00
0686000.18		18" R.C. PIPE - 0' - 10' DEEP	l.f.	990	$ 99.09	$ 98,099.10
0686000.24		24" R.C. PIPE - 0' - 10' DEEP	l.f.	28	$ 142.51	$ 3,990.28
0686000.30		30" R.C. PIPE - 0' - 10' DEEP	l.f.	12	$ 177.63	$ 2,131.56
0686200.08		8" POLYVINYL CHLORIDE PIPE - 0' - 10' DEEP	l.f.	4	$ 71.72	$ 286.88
0686230.12		12" HIGH DENSITY POLYETHYLENE PIPE - 0' - 10' DEEP	l.f.	4	$ 86.66	$ 346.64
0686860.12	A	12" SLOTTED DRAIN PIPE	l.f.	35	$ 320.00	$ 11,200.00
0686900		CONCRETE PIPE CONNECTION	ea.	12	$ 1,773.42	$ 21,281.04
		ROADWAY ITEM SUBTOTAL				**$ 2,836,313.46**

Project No. 0017-0196

SECTION A - ROADWAY ITEMS

ITEM NO.	A	Construction Items	UNIT	QUANTITY	UNIT PRICE	COST
06016XXX		MODULAR BLOCK LANDSCAPE WALL	s.f.	740	$ 125.00	$ 92,500.00
06016XXX		RESET BLOCK RETAINING WALL	s.f.	86	$ 75.00	$ 6,450.00
0653XXX		CLEAN EXISTING CULVERT - 0" TO 12" DIAMETER	l.f.	111	$ 11.17	$ 1,239.87
0686950.10		REMOVE EXISTING PIPE - 0' - 10' DEEP	l.f.	107	$ 29.75	$ 3,183.25
0813021		6" GRANITE STONE CURBING	l.f.	8448	$ 68.66	$ 580,039.68
0815001		BITUMINOUS CONCRETE LIP CURBING	l.f.	213	$ 9.74	$ 2,074.62
0822100.01		TEMPORARY TRAFFIC BARRIER	l.f.	500	$ 72.21	$ 36,105.00
0822101.01		RELOCATED TEMPORARY TRAFFIC BARRIER	l.f.	500	$ 12.71	$ 6,355.00
0910300		METAL BEAM RAIL (R-B MASH)	l.f.	338	$ 31.23	$ 10,555.74
0911923		R-B END ANCHORAGE-TYPE I	ea.	2	$ 2,017.35	$ 4,034.70
0913000		REMOVE CHAIN LINK FENCE	l.f.	145	$ 8.59	$ 1,245.55
0913041		8' CHAIN LINK FENCE	l.f.	145	$ 60.27	$ 8,739.15
0921001		CONCRETE SIDEWALK	s.f.	49130	$ 15.33	$ 753,162.90
0921005		CONCRETE SIDEWALK RAMP	s.f.	1186	$ 32.34	$ 38,355.24
0921008	A	BRICK SIDEWALK	s.f.	21455	$ 33.22	$ 712,735.10
0921048		DETECTABLE WARNING SURFACE	s.f.	204	$ 47.68	$ 9,726.72
0922500		BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)	s.y.	7181	$ 72.77	$ 522,561.37
0922501		BITUMINOUS CONCRETE DRIVEWAY	s.y.	70	$ 69.37	$ 4,855.90
0924002		BITUMINOUS CONCRETE DRIVEWAY (COMMERCIAL)	c.y.	176	$ 585.07	$ 102,972.32
0944000		FURNISHING AND PLACING TOPSOIL	s.y.	2576	$ 6.73	$ 17,336.48
0950005		TURF ESTABLISHMENT	s.y.	2576	$ 2.43	$ 6,259.68
0969062		CONSTRUCTION FIELD OFFICE, MEDIUM	mo.	24	$ 4,568.83	$ 109,651.92
0970006		TRAFFICPERSON (MUNICIPAL POLICE OFFICER) (ESTIMATED C(	est.	1	$ 15,000.00	$ 15,000.00
0970007		TRAFFICPERSON (UNIFORMED FLAGGER)	hr	200	$ 46.65	$ 9,330.00
0981100		42" TRAFFIC CONE	ea.	50	$ 44.21	$ 2,210.50
1002110	A	DECORATIVE LIGHT POLE FOUNDATION	ea.	43	$ 1,565.23	$ 67,304.89
1002300		LIGHT STANDARD	ea.	43	$ 2,000.00	$ 86,000.00
1206036	A	REMOVE AND RELOCATE SIGN	ea.	9	$ 485.00	$ 4,365.00
1210102		4" YELLOW EPOXY RESIN PAVEMENT MARKINGS	l.f.	9004	$ 0.48	$ 4,321.92
1210103		6" WHITE EPOXY RESIN PAVEMENT MARKINGS	l.f.	9711	$ 0.70	$ 6,797.70
1210118		EPOXY RESIN PAVEMENT MARKINGS SYMBOLS AND LEGEND	s.f.	915	$ 5.70	$ 5,215.50
1220027	A	CONSTRUCTION SIGNS	s.f.	198	$ 21.61	$ 4,278.78
0924XXX		CONCRETE DRIVEWAY	s.f.	23	$ 69.37	$ 1,595.51
0949XXX		STREET TREE	LS	7	$ 850.00	$ 5,950.00
		ROADWAY ITEMS SUBTOTAL				$ 3,150,009.99
		ROADWAY ITEMS TOTAL				**$ 5,986,323.45**

Project No. 0017-0196

SECTION B - STRUCTURE/TRAFFIC ITEMS

ITEM NO.	A	Construction Items	UNIT	QUANTITY	UNIT PRICE	COST
AUP00010		Traffic Signals	LS	1	$ 500,000.00	$ 500,000.00
0601091	A	SIMULATED STONE MASONRY	s.y.	5	$ 76.00	$ 380.00
0601651		RETAINING WALL (SITE NO. 1)	LS	1	$ 400,000.00	$ 400,000.00
0717000		EARTH RETAINING SYSTEM LEFT IN PLACE	s.f.	121	$ 6.00	$ 726.00
0904051		3 TUBE CURB MOUNTED BRIDGE RAIL	l.f.	61	$ 459.00	$ 27,999.00

STRUCTURES ITEMS SUBTOTAL		$ 429,105.00
	SAY	**$ 430,000.00**

Project No. 0017-0196

SECTION C - ENV. COMPLIANCE/LANDSCAPE/ILLUMINATION

ITEM NO.	A	Construction Items	UNIT	QUANTITY	UNIT PRICE	COST
0101000	A	ENVIRONMENTAL HEALTH AND SAFETY	LS	1	$ 50,000.00	$ 50,000.00
0101117	A	CONTROLLED MATERIALS HANDLING	c.y.	3898	$ 12.18	$ 47,480.69
0101128	A	SECURING, CONSTRUCTION AND DISMANTLING OI	LS	1	$ 315,000.00	$ 315,000.00
0202315	A	DISPOSAL OF CONTROLLED MATERIALS	ton	5068	$ 56.70	$ 287,340.01
0915000	A	TREE PROTECTION	LS	1	$ 5,000.00	$ 5,000.00

Project No. 0017-0196

SECTION D. - UTILITIES

ITEM NO.	A	Construction Items	UNIT	QUANTITY	UNIT PRICE	COST
1302046	A	RESET MANHOLE (WATER)	ea.	1	$ 1,375.00	$ 1,375.00
1302051	A	RESET VALVE BOX (WATER MAIN)	ea.	1	$ 369.90	$ 369.90
1302053	A	RESET WATERGATE	ea.	41	$ 600.00	$ 24,600.00
1302XXX	A	RESET GAS VALVE	ea.	37	$ 600.00	$ 22,200.00
1302062	A	ADJUST GATE BOX (GAS)	ea.	28	$ 629.79	$ 17,634.12
1303189	A	RESET EXISTING FIRE HYDRANT	ea.	6	$ 5,500.00	$ 33,000.00
1403501	A	RESET MANHOLE (SANITARY SEWER)	ea.	24	$ 1,375.00	$ 33,000.00
1500209	A	RESET MANHOLE (ELECTRIC)	ea.	9	$ 1,900.00	$ 17,100.00

SEMI-FINAL DESIGN DRAINAGE REPORT

for the

ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

City of Bristol,

Hartford County, Connecticut

Prepared for

City of Bristol

Prepared By:

GM2 Associates, Inc.
115 Glastonbury Boulevard
Glastonbury, CT 06033

Submitted: January 2026

Semi-Final Drainage Report – Route 72 (Riverside Avenue) Streetscape Improvements

Bristol, Hartford County, Connecticut

January 2026

Section

Project Description **1**

Existing Drainage Conditions **1**

Proposed Drainage Conditions **5**

Conclusions & Recommendations **9**

Attachments

A Site Location Map & Drainage Area Maps

B Supporting Calculations

C NRCS Web Soil Survey

Project Description

This project is located on a 0.9-mile section of Connecticut State Route 72 (Riverside Avenue) between its intersection with Main Street to the west and Memorial Boulevard to the east in the City of Bristol, Connecticut. Along this portion of Route 72, the railroad is just to the north and Memorial Boulevard and Veterans Memorial Park are to the south. Within the project limits, Riverside Avenue is a two-lane bidirectional roadway classified as an Urban Principal Arterial running in the west-east direction.

The purpose of this project is to improve safety, access management, pedestrian accommodations and streetscape elements along Route 72 (Riverside Avenue) throughout the corridor.

The existing condition throughout the corridor consists of many areas with wide curb cuts for driveways and paved areas that have little actual or implied separation between the roadway and adjacent parking area giving the appearance of a wide sea of pavement. The existing sidewalk system on Riverside Avenue is poorly developed on both the north and south side of the street, with gaps along significant portions of the corridor. In areas with sidewalk, most are in disrepair and have no buffer between the sidewalk and roadway.

Full depth reconstruction of Riverside Avenue is proposed within the project limits to improve the existing substandard design elements as well as to standardize the existing varying road width to a uniform 30'. Generally, this will be achieved by pulling in the edge of the roadway towards the centerline between 2' – 4' on both sides of the roadway resulting in 11' travel lanes and 4' shoulders in both directions. 5' wide sidewalks are proposed throughout the corridor on both the north and south side of the roadway, each with a 4' wide brick buffer to provide separation between the travel way and pedestrian space. Additionally, existing driveway aprons will be consolidated to more standard widths and new commercial concrete driveway aprons will be installed to delineate ingress and egress from adjacent properties.

Design Basis

- Estimated flows by the Rational Method: Q=CiA
    - Q = Flow in cubic feet per second (cfs)
    - C = Weighted imperviousness coefficient
    - i = Rate of Rainfall
    - A = Catchment area in acres
- Gutter Flow, pipe flow and inlet analysis
    - Suda
    - CT DOT Drainage Manual 2000
- Proposed Design Storm
    - 10-year frequency of occurrence
    - Check for 25-year frequency of occurrence

Existing Drainage Conditions

According to the NRCS Web Soil Survey, the underlying soils in the project area are characterized as 30B – Branford silt loam, 3 to 8 percent slopes, 45B – Woodbridge fine sandy loam 3 to 8 percent slopes, 101 – Occum fine sandy loam, 109 – Fluvaquents-Udifluvents complex, frequently flooded, 306 – Udorthents-Urban land complex, and 307 – Urban land. Branford Silt loam, Udorthents, and Occum fine sandy loam are assigned to the hydraulic soil group B. Woodbridge fine sandy loam is assigned to the hydraulic soil group C/D. Fluvaquents is assigned to the hydraulic soil group B/D. Udifluvents is assigned to the hydraulic soil group A. Urban land is assigned to the hydraulic soil group D. The soils in the project area will have moderate to high infiltration rates.

The existing drainage patterns are a combination of sheet flow and gutter flow. There are no known drainage issues along Riverside Avenue identified by the City or CTDOT District 1. The are two existing paved leak offs approximately 400

feet and 500 feet from the intersection of Riverside Avenue and Main Street. The water that reaches these paved leak offs sheet flows down the slope and into the Pequabuck River. The topography of the road generally runs West to East from Main Street until it reaches the low point approximately 220 feet to the left of Warner Court. At the intersection of Warner Court and Riverside Avenue, there is an existing high point where water flows to the left to the existing catch basin at the sag or to the right where it flows along the gutter until reaching the low point and entering catch basins at the intersection of Riverside Avenue and Mellen Street. Approximately 200 feet to the right of Mellen Street there is a high point so the water flows to the left reaching the existing catch basins at Mellen Street or to the right along the gutter reaching the drainage system at the intersection of East Street and Riverside Avenue. After East Street, the water flows along the gutter until it reaches the catch basins located along the curb line.

A field walk confirmed that some properties along the north side of the roadway maintain private drainage systems that collect runoff in the parking lots and convey it to the systems in Route 72. Therefore, runoff from these properties typically does not contribute to the gutter flow along the north side of the roadway. Where information wass available and systems were confirmed, an effort was made to include assumed discharges to the Route 72 drainage system in the model.

There are twelve different drainage systems within Riverside Avenue. The water that does not flow to the paved leak offs is intercepted by one of the catch basins along Riverside Avenue or flows along the gutter until it reaches the catch basins at the intersections. The water that reaches the inlets is conveyed through the drainage system that outlet through existing channel walls that line the north side of the Pequabuck River. The pipes connected to the outlets would be difficult to replace due to many of them running underneath buildings and through the channel walls.

On the South side of Riverside Avenue outside the roadway, the water sheet flows towards the buildings and parking lots, eventually reaching the river either through sheet flow or through private drainage.

Some of the existing drainage systems and patterns had to be assumed using the City of Bristol GIS, aerial images, and lidar. At station 40+34 there is an existing catch basin where the location has been assumed. The pipe leaving the catch basin has been modelled to assume it is flowing half full.

Table 1: Existing Drainage Areas

Drainage Area	Outfall ID	Area (Ac.)	Runoff Coeff.	Description
eCM-1A	EO-1	0.237	0.9	West most catch basin in the project limits at sta. 2+27, water on the north side flows from the intersection at Main Street to the catch basin.
eCM-2A	EO-2	0.211	0.9	West most catch basin on the south side of Riverside Ave. Gutter flow and water from the sidewalk will reach the Catch basin located at 3+72.
eCM-2B	EO-2	0.076	0.9	Gutter Flow from the north side of Riverside Ave will enter eCB-2B at sta. 3+47.
eCM-3A	EO-3	2.128	0.729	Gutter flow and sheet flow from the north will reach eCB-3A located at sta. 6+99.
eCM-4A	EO-4	2.179	0.782	Gutter flow, bypass from eCB-3A and eCB-5B, and sheet flow from the north will reach eCB-4A located at sta. 11+48. This catch basin is located at the low point on the north side.
eCM-5A	EO-5	0.465	0.9	Gutter flow from both the left and right of eCB-5A at sta. 11+97. This catch basin is located at the low point on the south side.
eCM-5B	EO-5	1.219	0.9	Gutter flow from the intersection of Warner Court to eCB-5B at sta. 11+96.

eCM-6A	EO-6	0.131	0.775	Sheet flow from the parking lot that reaches eCB-6A at the intersection of Warner Court and Riverside Ave at Sta. 14+04.
eCM-6B	EO-6	0.068	0.788	Sheet flow from the parking lot that reaches eCB-6B at Sta. 14+45.
eCM-6C	EO-6	0.104	0.765	Sheet flow from the parking lot that reaches eCB-6C at Sta. 13+96.
eCM-6D	EO-6	0.043	0.730	Sheet flow in the parking lot that reaches eCB-6D at Sta. 13+94.
eCM-6E	EO-6	5.430	0.560	Water on the north side of the railroad that enters system 6.
eCM-7A	EO-7	0.104	0.9	Gutter flow that reaches eCB-7A at sta. 18+74 on the south side of Riverside Ave. Catch basin is located at a low point.
eCM-7B	EO-7	0.773	0.801	Gutter flow and sheet flow that reaches eCB-7B at sta. 18+68 on the north side of Riverside Ave. Catch basin is located at a low point.
eCM-7C	EO-7	1.608	0.787	Gutter flow and sheet flow that reaches eCB-7C at sta. 18+09 on the north side of Riverside Ave.
eCM-7D	EO-7	0.063	0.9	Gutter flow that reaches eCB-7D on Mellen Street at sta. 18+50 on the north side of Riverside Ave.
eCM-7E	EO-7	0.416	0.9	Gutter flow and sheet flow that reaches eCB-7E on Mellen Street at sta. 18+14 on the north side of Riverside Ave.
eCM-7F	EO-7	0.313	0.713	Sheet flow from water in the parking lot east of Mellen St that reaches eCB7-H at sta. 18+66.
eCM-7H	EO-7	15.82	0.434	Water on the north side of the railroad tracks that enters system 7.
eCM-8A	EO-8	0.085	0.9	Gutter flow from East St that reaches eCB-8A located on East St.
eCM-8B	EO-8	0.045	0.9	Gutter flow from Riverside Ave and Hooker Court that reaches eCB-8B at sta. 25+69.
eCM-8D	EO-8	3.457	0.789	Gutter flow from Riverside Ave and sheet flow from the parking lots to the west that reaches eCB-8D.
eCM-8E	EO-8	14.382	0.449	Gutter flow from Hooker Court that reaches eCB-8E at sta. 25+74.
eCM-8F	EO-8	0.031	0.785	Sheet flow from the parking lot and adjacent property that reaches eCB-8F at sta. 26+78 located in the parking lot to the east of Hooker Court.
eCM-9A	EO-9	0.418	0.9	Gutter flow that reaches eCB-9A at sta. 31+76 on the south side of Riverside Ave.
eCM-9B	EO-9	2.586	0.775	Gutter flow and sheet flow to the north that reaches eCB-9B at sta. 31+74 on the north side of Riverside Ave.
eCM-9C	EO-9	2.736	0.812	Gutter flow and sheet flow to the north that reaches eCB-9c at sta. 30+24 on the north side of Riverside Ave.
eCM-10A	EO-10	0.028	0.9	Gutter flow from Riverside Ave that reaches eCB-10A located in the driveway at sta. 40+64.
eCM-10B	EO-10	0.56	0.9	Gutter flow from Riverside Ave that reaches eCB-10B at sta. 40+26.

eCM-10C	EO-10	0.931	0.76	Sheet flow from the north and the water that is conveyed in system 10 from the west.
eCM-10E	EO-10	2.816	0.791	Gutter flow and sheet flow that reaches eCB-10E at sta. 37+95.
eCM-11A	EO-11	0.404	0.9	Gutter flow from the south side of Riverside Ave that reaches eCB-11A located at sta. 45+94.
eCM-12A	EO-12	0.15	0.9	Gutter flow that reaches eCB-12A that is located on Memorial Blvd.
eCM-12C	EO-12	0.092	0.9	Gutter flow and sheet flow that reaches eCB-12C located on the south side of Blakeslee St.
eCM-12D	EO-12	0.200	0.9	Gutter flow that reaches eCB-12D located on the north side of Blakeslee St.
eCM-12E	EO-12	0.798	0.565	Gutter flow and sheet flow that reaches eCB-12E located at sta. 46+99 on the north side of Riverside Ave.

Proposed Drainage Conditions

The proposed drainage will maintain existing drainage patterns as much as possible. There will be negligible increase in impervious surfaces, as new sidewalks and hardscape elements are replacing existing impervious features. The paved leak-offs, located approximately at Station 5+00 and 5+91, will be closed off with new curbing. With closing the paved leak offs additional catch basins have been added to accommodate the increase in gutter flow. No new outlets will be added along Riverside Avenue. Outlet pipes will not be upsized. Existing pipes will only be upsized if they are smaller than the downstream pipe. Existing pipes and crossings shall be cleaned and maintained if the pipe is in good condition. The existing catch basins will either be replaced, relocated, or reset depending on condition and location. The curb line will be shifted 2' – 4' towards the centerline on both sides of the road. The existing catch basins along the gutter will need to be replaced to accommodate this shift. Additional catch basins have been added along Riverside Avenue to decrease spread.

At approximately station 11+50, there is an existing 12" V.C.T. pipe and outlet that will be abandoned. The existing catch basin connected to that outlet will be rerouted to connect into the system located at approximately station 12+00. Double grate catch basins will be used as necessary. In system 10, a catch basin located at approximately station 38+00 will be removed due to being located where the brick buffer is proposed. A new Type C catch basin double grate type 1 will be placed approximately 50' away, using the same pipe as the removed catch basin. A portion of that pipe will be removed, and the rest will be cleaned. This pipe will not be replaced due to an existing headwall being downstream.

The proposed catchment areas only account for the water from the sidewalks and roadway unless the catch basin is located outside of Riverside Avenue.

No significant drainage modifications are proposed outside of Riverside Avenue. At Mellen and East Street, catch basins will be replaced to match the new gutter line. The pipe crossing the roadway on the north side of Mellen and East Street will be upsized from 12" to 15". No changes to drainage will occur at Main Street or Memorial Boulevard.

Table 3: Proposed Drainage Areas

Drainage Area	Outfall ID	Area (Ac.)	Runoff Coeff.	Description
CM-1A	O-1	0.237	0.9	West most catch basin in the project limits at sta. 2+27, water on the north side flows from the intersection at Main Street to the catch basin.
CM-2A	O-2	0.212	0.9	West most catch basin on the south side of Riverside Ave. Gutter flow and water from the sidewalk will reach the Catch basin located at 3+72.
CM-2B	O-2	0.047	0.9	Gutter flow that reaches CB-2B located on the north side of Riverside Ave at sta. 3+71.
CM-2D	O-2	0.042	0.9	Gutter flow that reaches CB-2D located on the north side of Riverside Ave at sta. 2+93.
CM-3A	O-3	0.188	0.9	Gutter flow that reaches CB-3A located on the north side of Riverside Ave at sta. 6+99.
CM-4A	O-4	0.161	0.9	Gutter flow that reaches CB-4A located on the south side of Riverside Ave at sta. 7+23.
CM-4B	O-4	0.035	0.9	Gutter flow that reaches CB-4B located on the south side of Riverside Ave at sta. 7+97.
CM-4C	O-4	0.047	0.9	Gutter flow that reaches CB-4c located on the south side of Riverside Ave at sta. 8+98.

CM-4D	O-4	0.095	0.9	Gutter flow that reaches CB-4D located on the south side of Riverside Ave at sta. 10+06.
CM-5A	O-5	0.161	0.9	Gutter flow the east and west that reaches CB-5A located on the south side of Riverside Ave at sta. 11+97. CB-5A is located at the low point.
CM-5B	O-5	0.079	0.9	Gutter flow that reaches CB-5B located on the north side of Riverside Ave at sta. 11+96.
CM-5C	O-5	0.088	0.9	Gutter flow that reaches CB-5C located on the north side of Riverside Ave at sta. 13+17.
CM-5D	O-5	0.080	0.9	Gutter flow that reaches CB-5C located on the north side of Riverside Ave at sta. 13+17.
CM-5E	O-5	0.074	0.9	Gutter flow that reaches CB-5E located on the south side of Riverside Ave at sta. 11+48. CB-5E is located at the low point.
CM-5F	O-5	0.089	0.9	Gutter flow that reaches CB-5F located on the north side of Riverside Ave at sta. 10+97.
CM-5G	O-5	0.060	0.9	Gutter flow that reaches CB-5F located on the north side of Riverside Ave at sta. 10+00.
CM-5H	O-5	0.097	0.9	Gutter flow that reaches CB-5H located on the north side of Riverside Ave at sta. 8+99.
CM-5I	O-5	0.047	0.9	Gutter flow that reaches CB-5I located on the south side of Riverside Ave at sta. 10+97.
CM-6A	O-6	0.131	0.775	Sheet flow from the parking lot that reaches eCB-6A at the intersection of Warner Court and Riverside Ave at Sta. 14+04.
CM-6B	O-6	0.048	0.9	Sheet flow from the parking lot that reaches eCB-6B at Sta. 14+45.
CM-6C	O-6	0.104	0.765	Sheet flow from the parking lot that reaches eCB-6C at Sta. 13+96.
CM-6D	O-6	0.043	0.730	Sheet flow in the parking lot that reaches eCB-6D at Sta. 13+94.
CM-7A	O-7	0.009	0.9	Gutter flow that reaches CB-7A located on the south side of Riverside Ave at sta. 18+74.
CM-7B	O-7	0.093	0.9	Gutter flow that reaches CB-7B located on the south side of Riverside Ave at sta. 19+06. CB-7B is located at a low point.
CM-7C	O-7	0.054	0.9	Gutter flow that reaches CB-7C located on the north side of Riverside Ave at sta. 18+68.
CM-7D	O-7	0.120	0.9	Gutter flow that reaches CB-7D located on the north side of Riverside Ave at sta. 19+06. CB-7D is located at a low point.
CM-7F	O-7	0.089	0.9	Gutter flow that reaches CB-7F located on the north side of Riverside Ave at sta. 18+03.
CM-7G	O-7	0.209	0.9	Gutter flow that reaches CB-7G located on the north side of Riverside Ave at sta. 16+99.

CM-7H	O-7	0.064	0.9	Gutter flow that reaches CB-7H on Mellen Street at sta. 18+50 on the north side of Riverside Ave.
CM-7I	O-7	0.414	0.9	Gutter flow and sheet flow that reaches CB-7I on Mellen Street at sta. 18+14 on the north side of Riverside Ave.
CM-7J	O-7	0.313	0.713	Sheet flow from water in the parking lot east of Mellen St that reaches CB7-J at sta. 18+66.
CM-8A	O-8	0.085	0.9	Gutter flow from East St that reaches CB-8A located on East St.
CM-8B	O-8	0.435	0.9	Gutter flow from Riverside Ave and Hooker Court that reaches eCB-8B at sta. 25+69.
CM-8C	O-8	0.199	0.9	Gutter flow from Hooker Court that reaches CB-8C at sta. 25+70.
CM-8D	O-8	3.084	0.789	Gutter flow and sheet flow from Hooker Court that reaches CB-8C at sta. 25+35.
CM-8F	O-8	0.031	0.785	Sheet flow from the parking lot and adjacent property that reaches eCB-8F at sta. 26+78 located in the parking lot to the east of Hooker Court.
CM-9A	O-9	0.095	0.9	Gutter flow that reaches CB-9A at sta. 31+76 on the south side of Riverside Ave.
CM-9B	O-9	0.082	0.9	Gutter flow that reaches CB-9B at sta. 31+74 on the north side of Riverside Ave.
CM-9C	O-9	0.058	0.9	Gutter flow that reaches CB-9c at sta. 30+24 on the north side of Riverside Ave.
CM-9D	O-9	0.065	0.9	Gutter flow that reaches CB-9D at sta. 29+19 on the north side of Riverside Ave.
CM-9E	O-9	0.055	0.9	Gutter flow that reaches CB-9E at sta. 28+05 on the north side of Riverside Ave.
CM-9F	O-9	0.107	0.9	Gutter flow that reaches CB-9F at sta. 27+09 on the north side of Riverside Ave.
CM-9G	O-9	0.124	0.9	Gutter flow that reaches CB-9G at sta. 30+29 on the south side of Riverside Ave.
CM-9H	O-9	0.182	0.9	Gutter flow that reaches CB-9H at sta. 29+06 on the south side of Riverside Ave.
CM-10A	O-10	0.006	0.9	Flow from the sidewalk that reaches CB-10A located on the south side of Riverside Ave at sta. 40+64
CM-10B	O-10	0.039	0.9	Gutter flow that reaches CB-10B located on the south side of Riverside Ave at sta. 40+25. The road is superelevated at this location and most of Riverside Ave flows toward the south.
CM-10C	O-10	0.854	0.76	Sheet flow from the north and the water that is conveyed in system 10 from the west.
CM-10E	O-10	0.068	0.9	Gutter flow that reaches CB-10E located on the north side of Riverside Ave at sta. 38+44.

CM-10F	O-10	0.062	0.9	Gutter flow that reaches CB-10F located on the north side of Riverside Ave at sta. 36+97.
CM-10G	O-10	0.104	0.9	Gutter flow that reaches CB-10G located on the north side of Riverside Ave at sta. 36+00.
CM-10H	O-10	0.169	0.9	Gutter flow that reaches CB-10H located on the north side of Riverside Ave at sta. 34+51.
CM-10I	O-10	0.063	0.9	Gutter flow that reaches CB-10I located on the south side of Riverside Ave at sta. 39+74. The road is superelevated at this location and most of Riverside Ave flows toward the south.
CM-10J	O-10	0.064	0.9	Gutter flow that reaches CB-10J located on the south side of Riverside Ave at sta. 38+95. The road is superelevated at this location and most of Riverside Ave flows toward the south.
CM-10K	O-10	0.101	0.9	Gutter flow that reaches CB-10K located on the south side of Riverside Ave at sta. 38+10.
CM-10L	O-10	0.069	0.9	Gutter flow that reaches CB-10L located on the south side of Riverside Ave at sta. 36+47.
CM-10M	O-10	0.214	0.9	Gutter flow that reaches CB-10M located on the south side of Riverside Ave at sta. 35+21.
CM-11A	O-11	0.075	0.9	Gutter flow that reaches CB-11C is located on the south side of Riverside Ave at sta. 44+92. The road is superelevated at this location and most of the water flows toward the south.
CM-11B	O-11	0.065	0.9	Gutter flow that reaches CB-11B that is located on the south side of Riverside Ave at sta. 44+96. The road is superelevated at this location and most of the water flows toward the south.
CM-11C	O-11	0.286	0.9	Gutter flow that reaches CB-11C that is located on the south side of Riverside Ave at sta. 44+12. The road is superelevated at this location and most of the water flows toward the south.
CM-12A	O-12	0.150	0.9	Gutter flow that reaches CB-12A that is located on Memorial Blvd.
CM-12C	O-12	0.092	0.9	Gutter flow and sheet flow that reaches CB-12C located on the south side of Blakeslee St.
CM-12D	O-12	0.200	0.9	Gutter flow that reaches CB-12D located on the north side of Blakeslee St.
CM-12F	O-12	0.547	0.405	Gutter flow and sheet flow that reaches CB-12F that is located at sta. 46+99.
CM-12G	O-12	0.233	0.9	Gutter flow that reaches CB-12G that is located at sta. 45+94.

Assumptions: Some assumptions had to be made based on limited information about the drainage facilities outside the project area and survey. All drainage areas outside the project limits are approximate based on available topography, City of Bristol GIS, and aerial photos. Some runoff coefficients are approximated based on best available information from aerial photos. Top of frame elevations, inverts, pipe diameters, and the outlet of the existing drainage outside the project limits were assumed where the information was not available or where they could not be field verified.

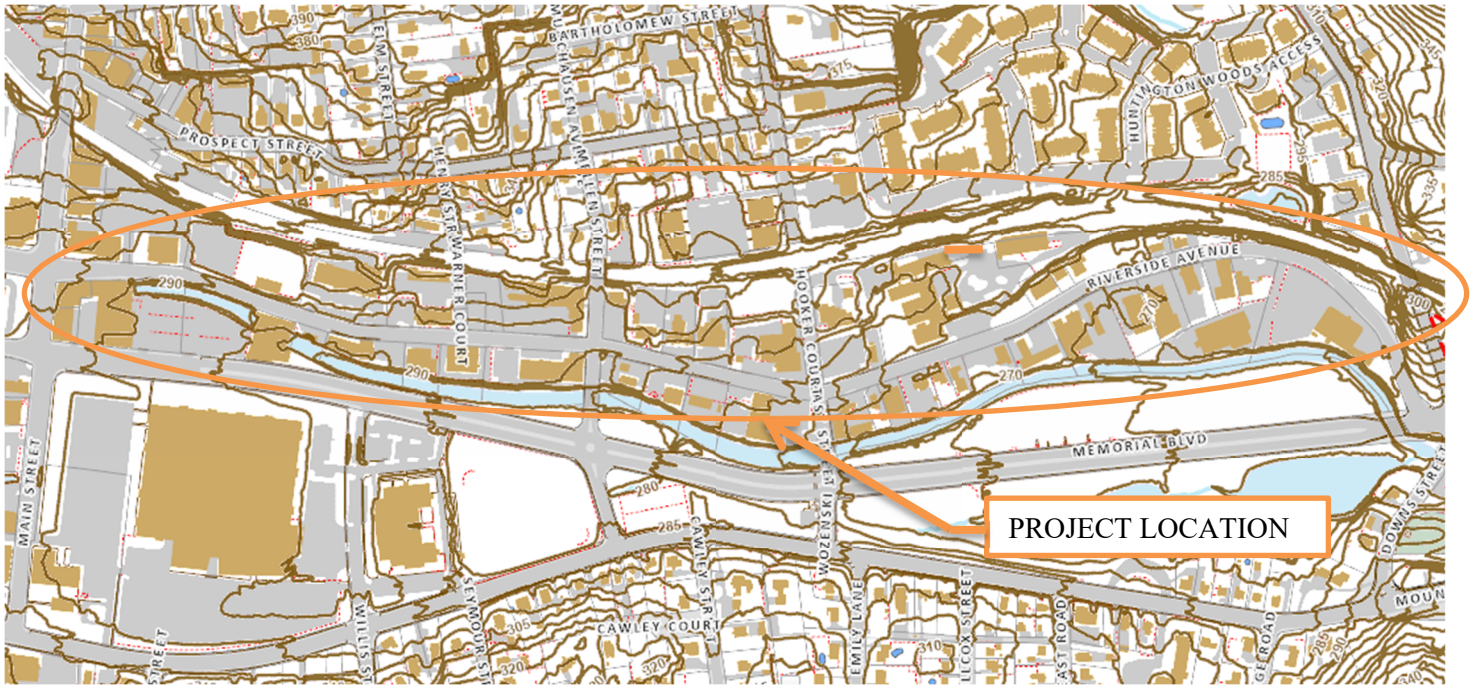
Runoff Calculations: OpenRoads Designer Drainage and Utilities 2023 was used to model the drainage systems, and the NOAA Atlas 14 rainfall intensity data was utilized to determine peak runoff.

Conclusions & Recommendations

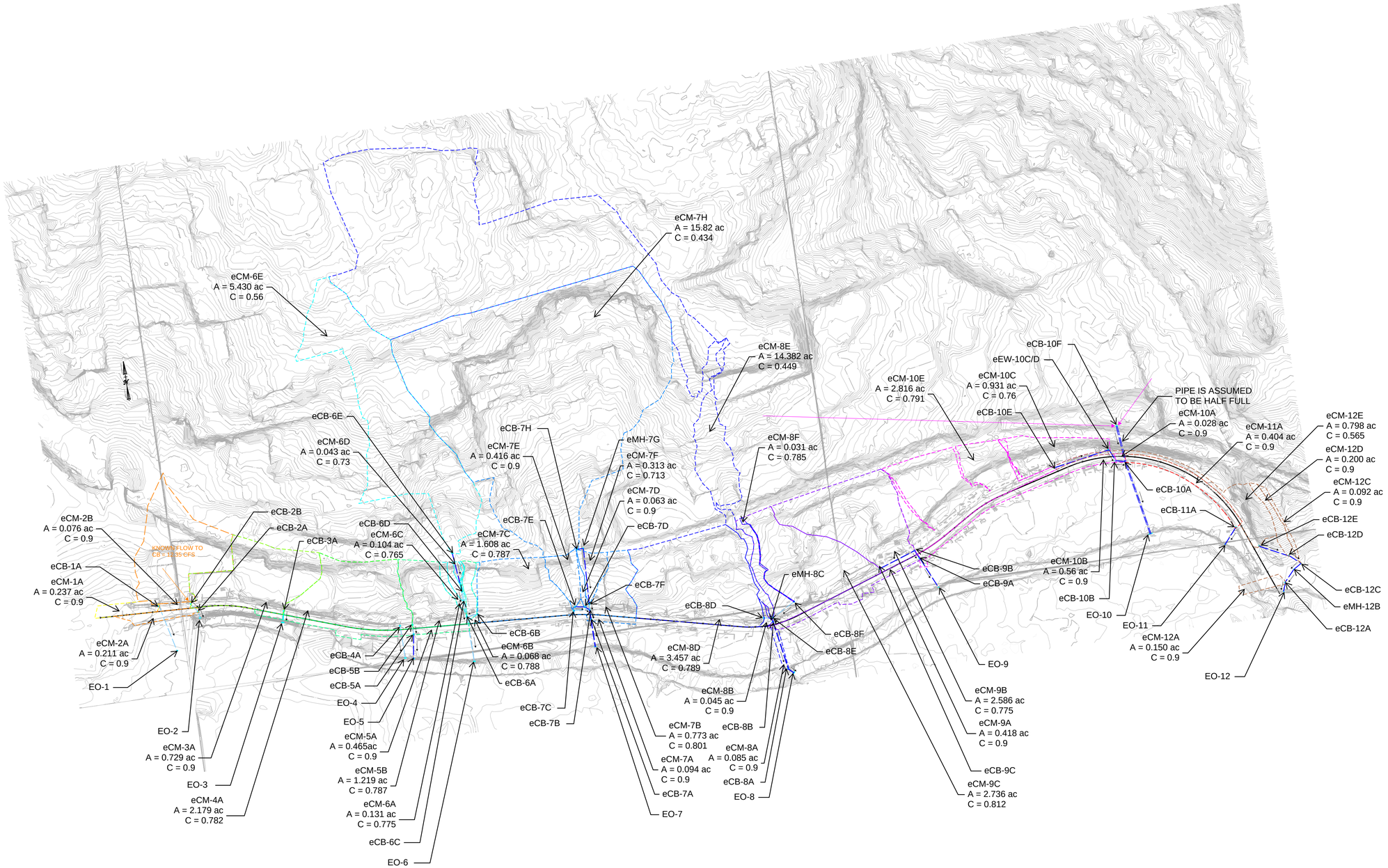
Based on the calculations provided in Attachment B, it is recommended to add additional catch basins along Riverside Avenue to decrease the amount of spread in the roadway. The existing pipes will not be upsized due to the pipes running underneath existing features such as buildings. Existing outlets will also not be replaced.

Attachment A

Site Location Map & Drainage Area Maps



Site Location Map Route 72 (Riverside Avenue)	**Figure 1** Reference: City of Bristol GIS
City of Bristol Hartford County, Connecticut	SCALE: Not to Scale



REVISION DESCRIPTION

REV. | DATE

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: NAB CHECKED BY: PMB

0 200 400
HORIZONTAL SCALE
1" = 200'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

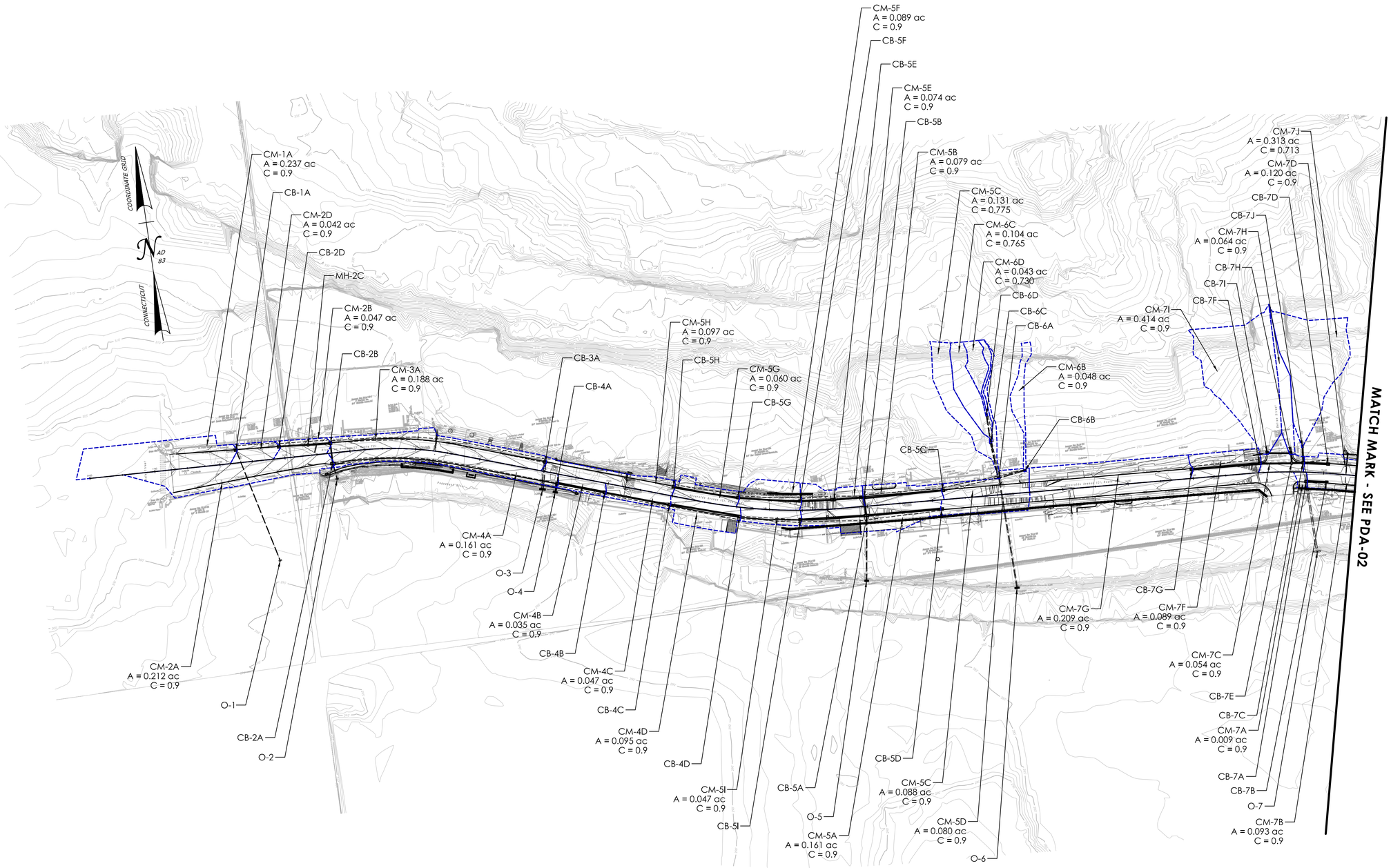
DRAWING TITLE:
EXISTING DRAINAGE AREA MAP

PROJECT NO.:
0017-0196

DRAWING NO.:
EDA-01

SHEET NO.:

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PLOTTED DATE: 10/23/2025



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: NAB CHECKED BY: PMB

0 80' 160'
HORIZONTAL SCALE
1" = 80'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

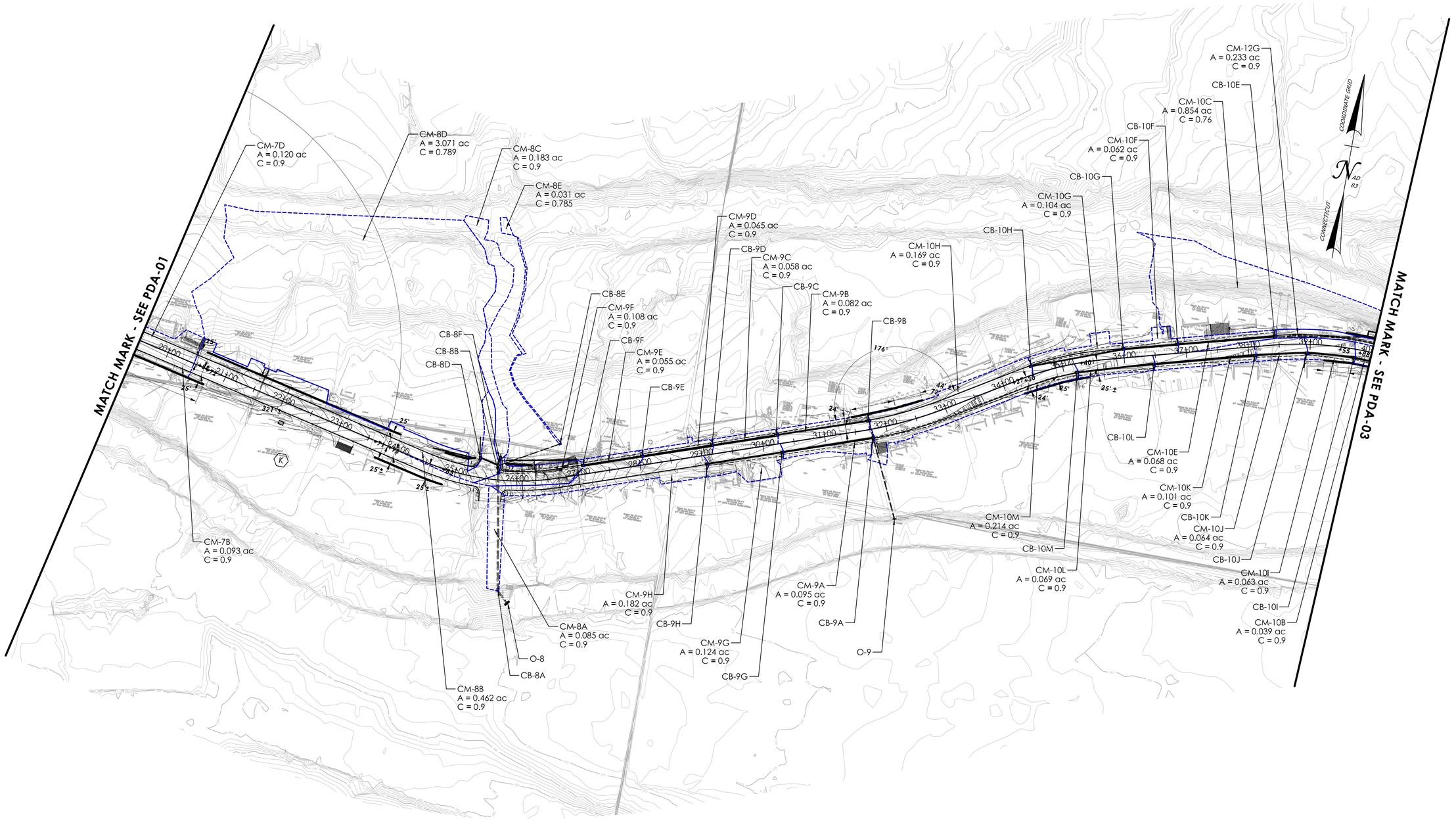
DRAWING TITLE:
PROPOSED DRAINAGE AREA MAP

PROJECT NO.:
0017-0196

DRAWING NO.:
PDA-01

SHEET NO.:

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PLOTTED DATE: 11/3/2025



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: NAB CHECKED BY: PMB

0 80' 160'
HORIZONTAL SCALE
1" = 80'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

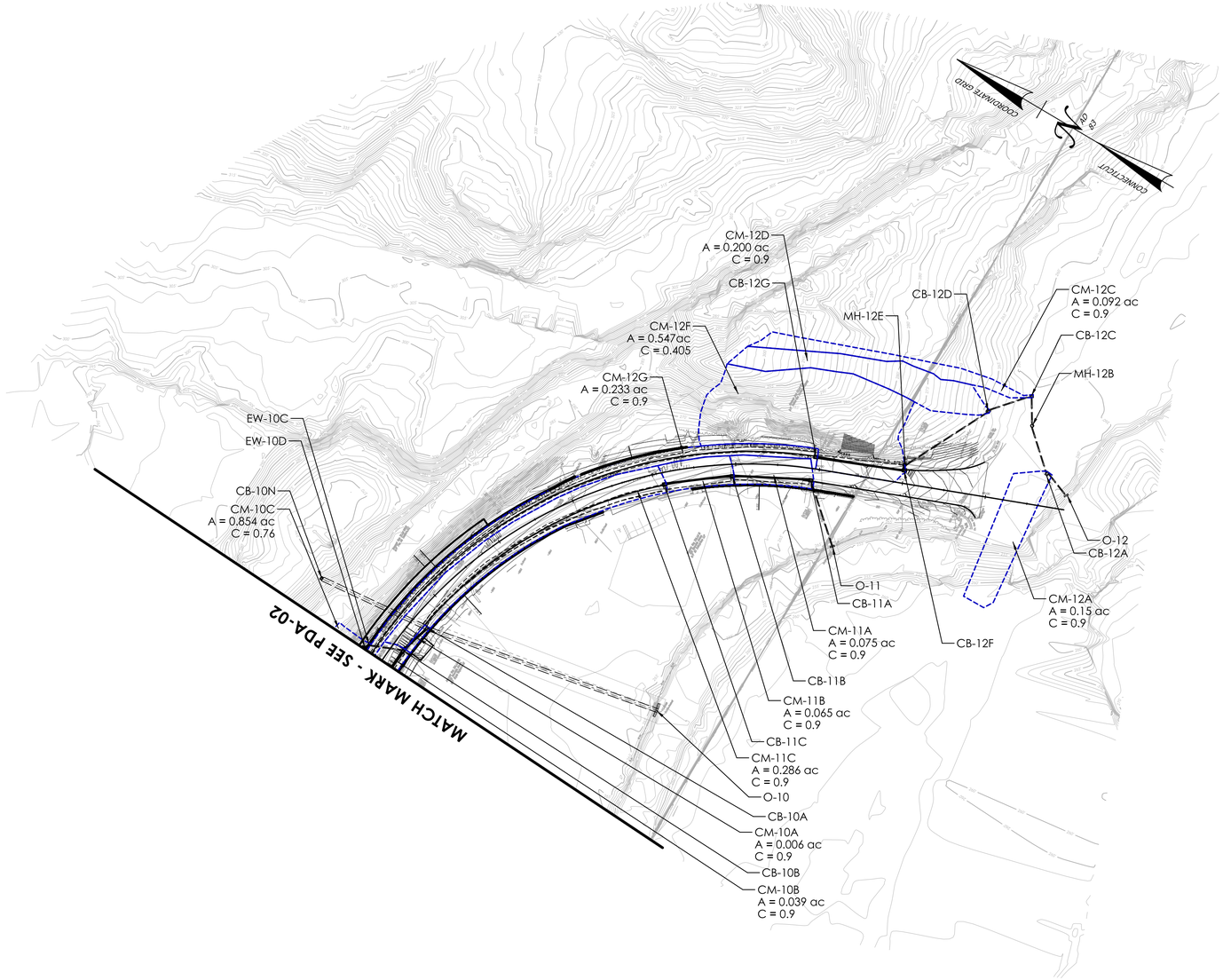
DRAWING TITLE:
PROPOSED DRAINAGE AREA MAP

PROJECT NO.:
0017-0196

DRAWING NO.:
PDA-02

SHEET NO.:

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PLOTTED DATE: 11/3/2025



REV.	DATE	REVISION DESCRIPTION

SIGNATURE BLOCK:
GM2 ASSOCIATES, INC.
115 GLASTONBURY BLVD.
GLASTONBURY, CT 06033

DESIGNER/DRAFTER: NAB CHECKED BY: PMB

0 80' 160'
HORIZONTAL SCALE
1" = 80'

CTDOT
CONNECTICUT DEPARTMENT OF TRANSPORTATION

PROJECT TITLE:
ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

TOWN(S):
BRISTOL

DRAWING TITLE:
PROPOSED DRAINAGE AREA MAP

PROJECT NO.:
0017-0196

DRAWING NO.:
PDA-03

SHEET NO.:

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PLOTTED DATE: 11/3/2025

Attachment B

Supporting Calculations

EXISTING DRAINAGE MODEL

Catch Basin FlexTable: CTDOT Gutter Flow Analysis - 10 Year

ID	Label	Inlet	X (ft)	Y (ft)	Inlet Drainage Area (acres)	Inlet C	Total Inlet Tc (hours)	Total Inlet Intensity (in/h)	Local CA (acres)	Total Inlet CA (acres)	Total Rational Flow to Inlet (cfs)	Longitudinal Slope (Inlet) (%)	Depth (Gutter) (ft)	Road Cross Slope (%)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Bypassed CA (acres)	Intercepted CA (acres)	Capture Efficiency (Calculated) (%)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)
513	eCB-1A	"C-L" CB	947,425.14	805,341.76	0.237	0.900	0.084	7.622	0.214	0.214	1.64	1.60	0.147	2.00	7.354	0.89	0.116	0.098	45.9	297.39	297.24
506	eCB-2A	"C" CB - 6in Bit Conc Lip Curb	947,569.27	805,299.27	0.211	0.900	0.084	7.622	0.190	0.190	1.46	1.40	0.144	2.00	7.215	0.77	0.100	0.090	47.1	294.89	294.70
509	eCB-2B	"C-L" CB	947,545.00	805,332.92	0.076	0.900	0.084	7.622	0.068	0.184	1.41	1.63	0.138	2.00	6.924	0.73	0.095	0.088	48.1	294.95	294.89
517	eCB-3A	"C" CB - 6in Bit Conc Lip Curb	947,890.51	805,255.92	2.128	0.729	0.084	7.622	1.551	1.647	12.65	1.11	0.339	2.00	16.936	9.76	1.270	0.377	22.9	289.76	289.56
519	eCB-4A	"C" CB - 6in Bit Conc Lip Curb	948,318.47	805,137.49	2.179	0.782	0.084	7.622	1.704	3.673	28.22		6.881	2.00	344.059	0.00	0.000	3.673	100.0	311.12	291.06
521	eCB-5A	"C-L" CB	948,364.95	805,099.12	0.465	0.900	0.084	7.622	0.419	0.519	3.99		0.465	2.00	23.274	0.00	0.000	0.519	100.0	287.96	287.45
520	eCB-5B	"C-L" CB	948,365.83	805,134.34	1.219	0.787	0.084	7.622	0.959	0.959	7.37	0.40	0.335	2.00	16.746	5.37	0.698	0.261	27.2	289.52	288.98
530	eCB-6A	"C-L" CB	948,574.15	805,133.98	0.131	0.775	0.084	7.622	0.102	1.694	13.01	6.41	0.246	2.00	12.320	9.67	1.258	0.435	25.7	292.64	291.83
531	eCB-6B	"C-L" CB	948,615.38	805,139.19	0.068	0.788	0.084	7.622	0.053	0.053	0.41	3.60	0.075	2.00	3.754	0.11	0.015	0.038	72.0	292.64	292.64
556	eCB-6C	"C-L" CB	948,569.45	805,188.98	0.104	0.765	0.084	7.622	0.079	2.062	15.84	6.85	0.262	2.00	13.099	12.23	1.592	0.469	22.8	298.84	296.11
557	eCB-6D	"C-L" CB	948,569.45	805,231.78	0.043	0.730	0.084	7.622	0.032	2.471	18.98	1.06	0.398	2.00	19.884	15.23	1.982	0.489	19.8	300.91	299.55
593	eCB-6E	"C-L" CB	948,553.76	805,381.68	5.430	0.560	0.118	6.716	3.041	3.041	20.59	1.56	0.382	2.00	19.083	16.51	2.439	0.602	19.8	317.07	316.71
535	eCB-7A	"C" CB - 6in Bit Conc Lip Curb	949,038.85	805,058.51	0.104	0.900	0.084	7.622	0.094	0.094	0.72		0.163	2.00	8.133	0.00	0.000	0.094	100.0	284.14	283.67
558	eCB-7B	"C" CB - 6in Bit Conc Lip Curb	949,038.16	805,094.73	0.773	0.801	0.084	7.622	0.619	0.619	4.76		0.521	2.00	26.049	0.00	0.000	0.619	100.0	285.11	284.66
534	eCB-7C	"C" CB - 6in Bit Conc Lip Curb	948,979.01	805,100.13	1.608	0.787	0.084	7.622	1.266	2.524	19.39	2.00	0.356	2.00	17.801	15.93	2.074	0.450	17.8	287.63	287.36
563	eCB-7D	"C" CB - 6in Conc or Stone Curb	949,021.54	805,107.76	0.063	0.900	0.084	7.622	0.057	0.057	0.44	3.75	0.076	2.00	3.821	0.13	0.017	0.041	71.1	286.67	286.47
533	eCB-7E	"C" CB - 6in Bit Conc Lip Curb	948,985.82	805,113.35	0.416	0.900	0.084	7.622	0.374	0.374	2.87	3.46	0.157	2.00	7.849	1.70	0.221	0.153	40.9	288.38	288.20
532	eCB-7F	"C-L" CB	949,040.53	805,115.51	0.313	0.713	0.084	7.622	0.223	0.223	1.72	3.17	0.132	2.00	6.577	0.89	0.115	0.108	48.3	285.60	285.26
595	eCB-7H	"C" CB - 6in Conc or Stone Curb	949,025.77	805,327.87	15.820	0.434	0.110	6.930	6.866	6.866	47.96	5.97	0.407	2.00	20.363	44.80	6.414	0.452	6.6	295.80	295.50
540	eCB-8A	"C" CB - 6in Conc or Stone Curb	949,752.50	804,765.72	0.085	0.900	0.084	7.622	0.077	0.077	0.59	8.22	0.074	2.00	3.683	0.17	0.022	0.055	71.7	274.81	274.45
539	eCB-8B	"C-L" CB	949,720.41	804,950.54	0.045	0.900	0.084	7.622	0.041	6.043	46.43	3.63	0.442	2.00	22.085	39.96	5.201	0.842	13.9	275.14	275.01
537	eCB-8D	"C" CB - 6in Conc or Stone Curb	949,687.96	804,968.96	3.457	0.789	0.084	7.622	2.728	2.728	20.96	7.31	0.287	2.00	14.373	18.45	2.402	0.326	12.0	282.26	281.96
538	eCB-8E	"C" CB - 6in Conc or Stone Curb	949,722.67	804,964.82	14.382	0.449	0.278	4.097	6.457	6.457	26.66	10.50	0.294	2.00	14.698	24.79	6.003	0.455	7.0	279.62	279.37
566	eCB-8F	"C-L" CB	949,810.21	805,013.69	0.031	0.785	0.084	7.622	0.024	0.024	0.19	1.00	0.071	2.00	3.560	0.04	0.005	0.019	78.1	280.34	280.28
543	eCB-9A	"C-L" CB	950,304.60	805,108.75	0.418	0.900	0.084	7.622	0.377	0.377	2.89	0.33	0.245	2.00	12.228	1.81	0.236	0.141	37.4	273.74	271.25
542	eCB-9B	"C-L" CB	950,290.80	805,139.40	2.586	0.775	0.084	7.622	2.004	8.584	65.95	0.24	0.838	2.00	41.921	57.50	7.484	1.100	12.8	273.41	271.23
541	eCB-9C	"C" CB - 6in Conc or Stone Curb	950,149.69	805,090.03	2.736	0.812	0.084	7.622	2.221	7.422	57.03	1.06	0.601	2.00	30.047	50.55	6.579	0.843	11.4	272.02	271.59
546	eCB-10A	"C-L" CB	951,129.55	805,359.11	0.028	0.900	0.084	7.622	0.025	0.025	0.19	5.00	0.062	3.00	2.073	0.01	0.001	0.024	94.7	268.91	264.38
545	eCB-10B	"C-L" CB	951,093.63	805,367.41	0.560	0.900	0.084	7.622	0.504	0.740	5.69	1.00	0.298	3.00	9.932	3.58	0.467	0.274	37.0	270.01	266.62
544	eCB-10E	"C-L" CB	950,862.88	805,374.35	2.816	0.791	0.084	7.622	2.227	9.711	74.61	0.44	0.912	3.00	30.416	63.54	8.269	1.441	14.8	269.77	268.50
603	eCB-10F	"C-L" CB	951,116.55	805,497.14	(N/A)	(N/A)	0.000	7.640	0.000	0.000	0.00		0.000	3.00	0.000	0.00	0.000	0.000	100.0	272.02	269.14
547	eCB-11A	"C" CB - 6in Bit Conc Lip Curb	951,508.85	805,051.93	0.404	0.900	0.084	7.622	0.364	0.830	6.38	0.56	0.298	2.00	14.893	4.57	0.595	0.235	28.3	261.50	261.30
662	eCB-12A	"C" CB - 6in Bit Conc Lip Curb	951,663.92	804,818.26	0.150	0.900	0.084	7.622	0.135	0.135	1.04	1.60	0.124	2.00	6.197	0.49	0.064	0.071	52.6	257.56	257.29
661	eCB-12C	"C" CB - 6in Bit Conc Lip Curb	951,733.64	804,881.20	0.092	0.900	0.084	7.622	0.083	0.083	0.63	2.04	0.098	2.00	4.920	0.25	0.032	0.051	61.4	258.41	258.17
660	eCB-12D	"C" CB - 6in Bit Conc Lip Curb	951,692.07	804,916.38	0.200	0.900	0.084	7.622	0.180	0.180	1.38	13.53	0.092	2.00	4.621	0.69	0.090	0.090	50.1	260.03	259.82
659	eCB-12E	"C" CB - 6in Bit Conc Lip Curb	951,586.32	804,969.59	0.798	0.565	0.084	7.622	0.450	0.450	3.46	1.80	0.190	2.00	9.513	2.12	0.276	0.174	38.7	260.86	260.70

EXISTING DRAINAGE MODEL

Catch Basin FlexTable: CTDOT Gutter Flow Analysis - 25 Year

ID	Label	Inlet	X (ft)	Y (ft)	Inlet Drainage Area (acres)	Inlet C	Total Inlet Tc (hours)	Total Inlet Intensity (in/h)	Local CA (acres)	Total Inlet CA (acres)	Total Rational Flow to Inlet (cfs)	Longitudinal Slope (Inlet) (%)	Depth (Gutter) (ft)	Road Cross Slope (%)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Bypassed CA (acres)	Intercepted CA (acres)	Capture Efficiency (Calculated) (%)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)
513	eCB-1A	"C-L" CB	947,425.14	805,341.76	0.237	0.900	0.084	9.198	0.214	0.214	1.98	1.60	0.158	2.00	7.891	1.12	0.121	0.093	43.4	297.43	297.27
506	eCB-2A	"C" CB - 6in Bit Conc Lip Curb	947,569.27	805,299.27	0.211	0.900	0.084	9.198	0.190	0.190	1.76	1.40	0.155	2.00	7.742	0.98	0.105	0.085	44.5	294.97	294.76
509	eCB-2B	"C-L" CB	947,545.00	805,332.92	0.076	0.900	0.084	9.198	0.068	0.189	1.75	1.63	0.150	2.00	7.512	0.96	0.104	0.085	45.1	295.02	294.97
517	eCB-3A	"C" CB - 6in Bit Conc Lip Curb	947,890.51	805,255.92	2.128	0.729	0.084	9.198	1.551	1.655	15.35	1.11	0.364	2.00	18.209	12.11	1.306	0.349	21.1	289.82	289.61
519	eCB-4A	"C" CB - 6in Bit Conc Lip Curb	948,318.47	805,137.49	2.179	0.782	0.084	9.198	1.704	3.725	34.54		10.305	2.00	515.228	0.00	0.000	3.725	100.0	321.12	291.06
521	eCB-5A	"C-L" CB	948,364.95	805,099.12	0.465	0.900	0.084	9.198	0.419	0.524	4.86		0.528	2.00	26.405	0.00	0.000	0.524	100.0	288.17	287.54
520	eCB-5B	"C-L" CB	948,365.83	805,134.34	1.219	0.787	0.084	9.198	0.959	0.959	8.89	0.40	0.359	2.00	17.969	6.63	0.715	0.244	25.5	289.70	289.03
530	eCB-6A	"C-L" CB	948,574.15	805,133.98	0.131	0.775	0.084	9.198	0.102	1.803	16.72	6.41	0.271	2.00	13.533	12.97	1.399	0.403	22.4	292.91	291.88
531	eCB-6B	"C-L" CB	948,615.38	805,139.19	0.068	0.788	0.084	9.198	0.053	0.053	0.49	3.60	0.081	2.00	4.028	0.15	0.017	0.037	68.8	292.91	292.91
556	eCB-6C	"C-L" CB	948,569.45	805,188.98	0.104	0.765	0.084	9.198	0.079	2.127	19.72	6.85	0.284	2.00	14.222	15.77	1.701	0.426	20.0	299.55	296.11
557	eCB-6D	"C-L" CB	948,569.45	805,231.78	0.043	0.730	0.084	9.198	0.032	2.509	23.27	1.06	0.429	2.00	21.461	18.99	2.048	0.462	18.4	301.70	299.97
593	eCB-6E	"C-L" CB	948,553.76	805,381.68	5.430	0.560	0.118	8.101	3.041	3.041	24.83	1.56	0.409	2.00	20.472	20.23	2.478	0.563	18.5	317.18	316.78
535	eCB-7A	"C" CB - 6in Bit Conc Lip Curb	949,038.85	805,058.51	0.104	0.900	0.084	9.198	0.094	0.094	0.87		0.182	2.00	9.084	0.00	0.000	0.094	100.0	284.27	283.76
558	eCB-7B	"C" CB - 6in Bit Conc Lip Curb	949,038.16	805,094.73	0.773	0.801	0.084	9.198	0.619	0.619	5.74		0.588	2.00	29.389	0.00	0.000	0.619	100.0	285.23	284.74
534	eCB-7C	"C" CB - 6in Bit Conc Lip Curb	948,979.01	805,100.13	1.608	0.787	0.084	9.198	1.266	2.665	24.71	2.00	0.390	2.00	19.494	20.81	2.244	0.421	15.8	287.70	287.41
563	eCB-7D	"C" CB - 6in Conc or Stone Curb	949,021.54	805,107.76	0.063	0.900	0.084	9.198	0.057	0.057	0.53	3.75	0.082	2.00	4.100	0.17	0.018	0.039	67.9	286.75	286.52
533	eCB-7E	"C" CB - 6in Bit Conc Lip Curb	948,985.82	805,113.35	0.416	0.900	0.084	9.198	0.374	0.374	3.47	3.46	0.168	2.00	8.423	2.16	0.233	0.141	37.8	288.42	288.23
532	eCB-7F	"C-L" CB	949,040.53	805,115.51	0.313	0.713	0.084	9.198	0.223	0.223	2.07	3.17	0.141	2.00	7.057	1.13	0.121	0.102	45.7	285.61	285.27
595	eCB-7H	"C" CB - 6in Conc or Stone Curb	949,025.77	805,327.87	15.820	0.434	0.110	8.359	6.866	6.866	57.85	5.97	0.437	2.00	21.847	54.74	6.497	0.369	5.4	295.79	295.49
540	eCB-8A	"C" CB - 6in Conc or Stone Curb	949,752.50	804,765.72	0.085	0.900	0.084	9.198	0.077	0.077	0.71	8.22	0.079	2.00	3.952	0.23	0.025	0.052	67.9	274.84	274.47
539	eCB-8B	"C-L" CB	949,720.41	804,950.54	0.045	0.900	0.084	9.198	0.041	6.145	56.97	3.63	0.477	2.00	23.846	49.96	5.388	0.756	12.3	275.18	275.04
537	eCB-8D	"C" CB - 6in Conc or Stone Curb	949,687.96	804,968.96	3.457	0.789	0.084	9.198	2.728	2.728	25.29	7.31	0.308	2.00	15.422	22.70	2.448	0.280	10.2	282.28	281.97
538	eCB-8E	"C" CB - 6in Conc or Stone Curb	949,722.67	804,964.82	14.382	0.449	0.278	4.935	6.457	6.457	32.12	10.50	0.315	2.00	15.762	30.37	6.104	0.353	5.5	279.59	279.35
566	eCB-8F	"C-L" CB	949,810.21	805,013.69	0.031	0.785	0.084	9.198	0.024	0.024	0.23	1.00	0.076	2.00	3.821	0.06	0.006	0.018	75.1	280.36	280.29
543	eCB-9A	"C-L" CB	950,304.60	805,108.75	0.418	0.900	0.084	9.198	0.377	0.377	3.49	0.33	0.262	2.00	13.121	2.26	0.244	0.133	35.2	274.44	271.25
542	eCB-9B	"C-L" CB	950,290.80	805,139.40	2.586	0.775	0.084	9.198	2.004	8.840	81.97	0.24	0.910	2.00	45.482	72.29	7.796	1.044	11.8	274.02	271.23
541	eCB-9C	"C" CB - 6in Conc or Stone Curb	950,149.69	805,090.03	2.736	0.812	0.084	9.198	2.221	7.610	70.56	1.06	0.651	2.00	32.544	63.38	6.836	0.774	10.2	272.12	271.59
546	eCB-10A	"C-L" CB	951,129.55	805,359.11	0.028	0.900	0.084	9.198	0.025	0.025	0.24	5.00	0.067	3.00	2.224	0.02	0.002	0.023	92.6	269.07	264.43
545	eCB-10B	"C-L" CB	951,093.63	805,367.41	0.560	0.900	0.084	9.198	0.504	0.748	6.94	1.00	0.321	3.00	10.702	4.53	0.489	0.259	34.7	271.25	266.62
544	eCB-10E	"C-L" CB	950,862.88	805,374.35	2.816	0.791	0.084	9.198	2.227	10.023	92.94	0.44	0.991	3.00	33.028	80.21	8.651	1.372	13.7	270.17	268.50
603	eCB-10F	"C-L" CB	951,116.55	805,497.14	(N/A)	(N/A)	0.000	9.220	0.000	0.000	0.00		0.000	3.00	0.000	0.00	0.000	0.000	100.0	272.02	269.14
547	eCB-11A	"C" CB - 6in Bit Conc Lip Curb	951,508.85	805,051.93	0.404	0.900	0.084	9.198	0.364	0.853	7.90	0.56	0.323	2.00	16.141	5.82	0.628	0.225	26.3	261.56	261.34
662	eCB-12A	"C" CB - 6in Bit Conc Lip Curb	951,663.92	804,818.26	0.150	0.900	0.084	9.198	0.135	0.135	1.26	1.60	0.133	2.00	6.649	0.63	0.068	0.067	49.8	257.66	257.36
661	eCB-12C	"C" CB - 6in Bit Conc Lip Curb	951,733.64	804,881.20	0.092	0.900	0.084	9.198	0.083	0.083	0.77	2.04	0.106	2.00	5.279	0.32	0.034	0.048	58.4	258.52	258.26
660	eCB-12D	"C" CB - 6in Bit Conc Lip Curb	951,692.07	804,916.38	0.200	0.900	0.084	9.198	0.180	0.180	1.67	13.53	0.099	2.00	4.958	0.90	0.097	0.083	46.0	260.09	259.86
659	eCB-12E	"C" CB - 6in Bit Conc Lip Curb	951,586.32	804,969.59	0.798	0.565	0.084	9.198	0.450	0.450	4.18	1.80	0.204	2.00	10.208	2.66	0.286	0.164	36.4	260.91	260.73

EXISTING DRAINAGE MODEL

Conduit FlexTable: CTDOT Storm Drain Computation Sheet - 10 Year

Label	Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet Tc (hours)	Time (Pipe Flow) (hours)	System Flow Time (min)	System CA (acres)	System Intensity (in/h)	Upstream Structure Flow (Total Surface) (cfs)	System Rational Flow (cfs)	Diameter (in)	Material	Manning's n	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)
eP-2A	eCB-2A	EO-2	0.211	0.084	0.001	5.271	0.178	7.520	1.46	1.35	12.0	Corrugated HDPE (Smooth Interior)	0.013	24.000	294.15	289.11	21.00	16.33	12.57
eP-2B	eCB-2B	eCB-2A	0.076	0.084	0.004	5.040	0.088	7.622	0.52	0.68	12.0	Corrugated HDPE (Smooth Interior)	0.013	41.000	294.41	294.15	0.63	2.82	2.96
eP-1A	eCB-1A	EO-1	0.237	0.084	0.014	5.040	0.098	7.622	1.64	0.75	10.0	PVC	0.010	183.000	296.83	295.67	0.64	2.27	3.74
eP-3A	eCB-3A	EO-3	2.128	0.084	0.001	5.040	0.377	7.622	11.92	2.89		Concrete	0.013	42.000	289.00	285.10	9.29	59.40	9.21
eP-5A	eCB-5A	EO-5	0.465	0.084	0.003	5.097	0.780	7.597	3.22	5.97	15.0	Concrete	0.013	94.000	286.28	283.48	2.98	11.15	9.24
eP-5B	eCB-5B	eCB-5A	1.219	0.084	0.001	5.040	0.261	7.622	7.37	2.00	8.0	PVC	0.010	35.000	288.25	286.57	4.80	3.44	10.23
eP-4A	eCB-4A	EO-4	2.179	0.084	0.001	5.040	3.673	7.622	13.09	28.22	12.0	PVC	0.010	125.000	288.86	282.33	5.22	10.59	35.93
eP-6A	eCB-6A	EO-6	0.131	0.084	0.003	9.233	2.033	5.761	0.78	11.81	18.0	Corrugated HDPE (Smooth Interior)	0.013	172.000	290.27	279.74	6.12	25.99	14.36
eP-6B	eCB-6B	eCB-6A	0.068	0.084	0.070	5.040	0.038	7.622	0.41	0.30	18.0	Corrugated HDPE (Smooth Interior)	0.013	42.000	290.60	290.31	0.69	8.74	0.17
eP-7A	eCB-7A	EO-7	0.104	0.084	0.002	7.144	1.917	6.688	0.72	12.92	30.0	Concrete	0.013	107.000	282.37	277.97	4.11	83.18	12.31
eP-7B	eCB-7B	eCB-7A	0.773	0.084	0.001	7.086	1.823	6.714	4.76	12.34	30.0	Concrete	0.013	36.000	283.28	282.37	2.53	65.21	10.21
eP-7F	eCB-7F	eCB-7B	0.313	0.084	0.000	7.057	0.560	6.727	1.72	3.80	15.0	PVC	0.010	21.000	284.35	283.28	5.10	18.95	12.07
eP-7C	eCB-7C	eCB-7B	1.608	0.084	0.002	5.040	0.450	7.622	9.72	3.46	18.0	PVC	0.010	59.000	286.59	284.73	3.15	24.25	9.73
eP-7E	eCB-7E	eCB-7D	0.416	0.084	0.001	5.040	0.153	7.622	2.87	1.18	12.0	Concrete	0.013	36.000	287.71	286.10	4.47	7.54	6.98
eP-7D	eCB-7D	eCB-7B	0.063	0.084	0.001	5.126	0.194	7.584	0.44	1.48	12.0	Concrete	0.013	21.000	285.87	284.73	5.43	8.30	8.00
eP-8F	eCB-8F	eCB-8E	0.031	0.084	0.009	5.040	0.019	7.622	0.19	0.15	8.0	PVC	0.010	100.000	280.09	278.70	1.39	1.85	3.17
eP-8D	eCB-8D	eMH-8C	3.457	0.084	0.001	5.040	0.326	7.622	20.96	2.51	12.0	Corrugated HDPE (Smooth Interior)	0.013	30.000	281.17	276.42	15.84	14.18	13.62
eP-8E	eCB-8E	eMH-8C	14.382	0.278	0.000	16.680	0.474	4.097	26.66	1.96	12.0	Corrugated HDPE (Smooth Interior)	0.013	5.000	278.70	278.58	2.41	5.53	6.43
eP-8C	eMH-8C	eCB-8B	(N/A)	0.000	0.001	16.693	0.800	4.095	0.00	3.30	24.0	Concrete	0.013	12.000	273.81	273.59	1.83	30.63	6.37
eP-8B	eCB-8B	eCB-8A	0.045	0.084	0.019	16.724	1.642	4.093	0.31	6.78	24.0	Concrete	0.013	188.000	273.59	273.36	0.12	7.88	2.82
eP-8A	eCB-8A	EO-8	0.085	0.084	0.000	17.836	1.697	3.991	0.59	6.83	24.0	Concrete	0.013	27.000	273.36	266.57	25.14	113.43	19.90
eP-9C	eCB-9C	eCB-9B	2.736	0.084	0.008	5.040	0.843	7.622	17.07	6.48	15.0	Concrete	0.013	149.000	268.56	267.61	0.64	5.16	5.28
eP-9B	eCB-9B	eCB-9A	2.586	0.084	0.001	5.510	1.943	7.413	15.40	14.52	15.0	Concrete	0.013	34.000	267.13	266.75	1.12	6.83	11.83
eP-9A	eCB-9A	EO-9	0.418	0.084	0.003	5.558	2.084	7.392	2.89	15.53	15.0	Concrete	0.013	133.000	266.75	264.82	1.45	7.78	12.65
eP-10E	eCB-10E	EO-10D	2.816	0.084	0.007	5.040	1.441	7.622	17.11	11.07	15.0	Concrete	0.013	213.000	265.45	264.58	0.41	4.13	9.02
eP-10C	EO-10C	eCB-10B	0.931	0.084	0.001	5.441	2.149	7.444	5.44	16.12	15.0	Concrete	0.013	45.000	263.95	262.83	2.49	10.19	13.14
eP-10B	eCB-10B	eCB-10A	0.560	0.084	0.001	5.498	2.423	7.419	3.87	18.12	15.0	Concrete	0.013	37.000	262.74	258.84	10.53	20.96	14.76
eP-10A	eCB-10A	EO-10	0.028	0.084	0.003	5.540	2.447	7.400	0.19	18.25	54.0	Concrete	0.013	291.000	258.84	249.89	3.08	344.93	23.97
eP-11A	eCB-11A	EO-11	0.404	0.084	0.004	5.040	0.235	7.622	2.79	1.81	15.0	Concrete	0.013	77.000	260.72	259.53	1.55	8.03	5.28
eP-6C	eCB-6C	eCB-6A	0.104	0.084	0.001	7.298	1.560	6.619	0.61	10.41	12.0	Corrugated HDPE (Smooth Interior)	0.013	55.000	292.60	290.59	3.66	6.81	13.25
eP-6D	eCB-6D	eCB-6C	0.043	0.084	0.001	7.264	1.090	6.635	0.24	7.29	12.0	PVC	0.010	43.000	298.20	292.60	13.02	16.71	20.56
eP-6E	eCB-6E	eCB-6D	5.430	0.118	0.003	7.080	0.602	6.716	20.59	4.07	15.0	Concrete	0.013	151.000	315.77	298.20	11.64	22.03	13.71
eP-7H	eCB-7H	eMH-7G	15.820	0.110	0.000	6.600	0.452	6.930	47.96	3.16	15.0	Concrete	0.013	22.000	294.70	292.00	12.29	22.64	13.00
eP-7G	eMH-7G	eCB-7F	(N/A)	0.000	0.007	6.628	0.452	6.917	0.00	3.15	15.0	Concrete	0.013	213.000	292.00	284.54	3.50	12.09	8.29
eP-10F	eCB-10F	eCB-10A	(N/A)	0.000	0.002	0.000	0.000	7.640	0.00	0.00	60.0	Concrete	0.013	139.000	264.00	258.84	3.71	501.58	25.53
eP-10D	EO-10D	EO-10C	(N/A)	0.000	0.000	5.433	1.441	7.448	0.00	10.82	15.0	Concrete	0.013	4.000	264.58	263.95	15.75	25.64	8.82
eP-12A	eCB-12A	EO-12A	0.150	0.084	0.001	6.008	0.386	7.193	1.04	2.80	15.0	Concrete	0.013	35.000	256.50	255.26	3.55	12.17	8.06
eP-12B	eMH-12B	eCB-12A	(N/A)	0.000	0.004	5.786	0.315	7.291	0.00	2.32	15.0	Concrete	0.013	60.000	257.00	256.50	0.83	5.90	4.51
eP-12C	eCB-12C	eMH-12B	0.092	0.084	0.002	5.668	0.315	7.343	0.63	2.33	15.0	Concrete	0.013	35.000	257.37	257.00	1.06	6.64	4.94
eP-12D	eCB-12D	eCB-12C	0.200	0.084	0.002	5.542	0.264	7.399	1.38	1.97	15.0	Concrete	0.013	54.000	259.20	257.37	3.39	11.89	7.17
eP-12E	eCB-12E	eCB-12D	0.798	0.084	0.008	5.040	0.174	7.622	3.46	1.34	15.0	Concrete	0.013	118.000	260.20	259.20	0.85	5.96	3.92

EXISTING DRAINAGE MODEL

Conduit FlexTable: CTDOT Storm Drain Computation Sheet - 25 Year

Label	Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet Tc (hours)	Time (Pipe Flow) (hours)	System Flow Time (min)	System CA (acres)	System Intensity (in/h)	Upstream Structure Flow (Total Surface) (cfs)	System Rational Flow (cfs)	Diameter (in)	Material	Manning's n	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)
eP-2A	eCB-2A	EO-2	0.211	0.084	0.001	5.262	0.170	9.079	1.76	1.55	12.0	Corrugated HDPE (Smooth Interior)	0.013	24.000	294.15	289.11	21.00	16.33	13.10
eP-2B	eCB-2B	eCB-2A	0.076	0.084	0.004	5.040	0.085	9.198	0.63	0.79	12.0	Corrugated HDPE (Smooth Interior)	0.013	41.000	294.41	294.15	0.63	2.82	3.08
eP-1A	eCB-1A	EO-1	0.237	0.084	0.013	5.040	0.093	9.198	1.98	0.86	10.0	PVC	0.010	183.000	296.83	295.67	0.64	2.27	3.88
eP-3A	eCB-3A	EO-3	2.128	0.084	0.001	5.040	0.349	9.198	14.38	3.23		Concrete	0.013	42.000	289.00	285.10	9.29	59.40	9.58
eP-5A	eCB-5A	EO-5	0.465	0.084	0.003	5.095	0.768	9.169	3.88	7.10	15.0	Concrete	0.013	94.000	286.28	283.48	2.98	11.15	9.63
eP-5B	eCB-5B	eCB-5A	1.219	0.084	0.001	5.040	0.244	9.198	8.89	2.27	8.0	PVC	0.010	35.000	288.25	286.57	4.80	3.44	10.53
eP-4A	eCB-4A	EO-4	2.179	0.084	0.001	5.040	3.725	9.198	15.80	34.54	12.0	PVC	0.010	125.000	288.86	282.33	5.22	10.59	43.98
eP-6A	eCB-6A	EO-6	0.131	0.084	0.003	8.674	1.891	7.244	0.94	13.81	18.0	Corrugated HDPE (Smooth Interior)	0.013	172.000	290.27	279.74	6.12	25.99	14.93
eP-6B	eCB-6B	eCB-6A	0.068	0.084	0.061	5.040	0.037	9.198	0.49	0.34	18.0	Corrugated HDPE (Smooth Interior)	0.013	42.000	290.60	290.31	0.69	8.74	0.19
eP-7A	eCB-7A	EO-7	0.104	0.084	0.002	7.145	1.785	8.066	0.87	14.51	30.0	Concrete	0.013	107.000	282.37	277.97	4.11	83.18	12.73
eP-7B	eCB-7B	eCB-7A	0.773	0.084	0.001	7.088	1.691	8.097	5.74	13.80	30.0	Concrete	0.013	36.000	283.28	282.37	2.53	65.21	10.54
eP-7F	eCB-7F	eCB-7B	0.313	0.084	0.000	7.059	0.471	8.112	2.07	3.85	15.0	PVC	0.010	21.000	284.35	283.28	5.10	18.95	12.12
eP-7C	eCB-7C	eCB-7B	1.608	0.084	0.002	5.040	0.421	9.198	11.73	3.90	18.0	PVC	0.010	59.000	286.59	284.73	3.15	24.25	10.07
eP-7E	eCB-7E	eCB-7D	0.416	0.084	0.001	5.040	0.141	9.198	3.47	1.31	12.0	Concrete	0.013	36.000	287.71	286.10	4.47	7.54	7.20
eP-7D	eCB-7D	eCB-7B	0.063	0.084	0.001	5.123	0.180	9.154	0.53	1.66	12.0	Concrete	0.013	21.000	285.87	284.73	5.43	8.30	8.26
eP-8F	eCB-8F	eCB-8E	0.031	0.084	0.008	5.040	0.018	9.198	0.23	0.17	8.0	PVC	0.010	100.000	280.09	278.70	1.39	1.85	3.31
eP-8D	eCB-8D	eMH-8C	3.457	0.084	0.001	5.040	0.280	9.198	25.29	2.59	12.0	Corrugated HDPE (Smooth Interior)	0.013	30.000	281.17	276.42	15.84	14.18	13.73
eP-8E	eCB-8E	eMH-8C	14.382	0.278	0.000	16.680	0.372	4.935	32.12	1.85	12.0	Corrugated HDPE (Smooth Interior)	0.013	5.000	278.70	278.58	2.41	5.53	6.34
eP-8C	eMH-8C	eCB-8B	(N/A)	0.000	0.001	16.693	0.651	4.934	0.00	3.24	24.0	Concrete	0.013	12.000	273.81	273.59	1.83	30.63	6.34
eP-8B	eCB-8B	eCB-8A	0.045	0.084	0.018	16.725	1.407	4.930	0.38	6.99	24.0	Concrete	0.013	188.000	273.59	273.36	0.12	7.88	2.83
eP-8A	eCB-8A	EO-8	0.085	0.084	0.000	17.831	1.459	4.809	0.71	7.07	24.0	Concrete	0.013	27.000	273.36	266.57	25.14	113.43	20.11
eP-9C	eCB-9C	eCB-9B	2.736	0.084	0.007	5.040	0.774	9.198	20.60	7.18	15.0	Concrete	0.013	149.000	268.56	267.61	0.64	5.16	5.85
eP-9B	eCB-9B	eCB-9A	2.586	0.084	0.001	5.465	1.818	8.970	18.59	16.44	15.0	Concrete	0.013	34.000	267.13	266.75	1.12	6.83	13.40
eP-9A	eCB-9A	EO-9	0.418	0.084	0.003	5.507	1.951	8.947	3.49	17.59	15.0	Concrete	0.013	133.000	266.75	264.82	1.45	7.78	14.34
eP-10E	eCB-10E	EO-10D	2.816	0.084	0.006	5.040	1.372	9.198	20.65	12.72	15.0	Concrete	0.013	213.000	265.45	264.58	0.41	4.13	10.37
eP-10C	EO-10C	eCB-10B	0.931	0.084	0.001	5.389	2.080	9.011	6.56	18.89	15.0	Concrete	0.013	45.000	263.95	262.83	2.49	10.19	15.39
eP-10B	eCB-10B	eCB-10A	0.560	0.084	0.001	5.438	2.339	8.985	4.68	21.19	15.0	Concrete	0.013	37.000	262.74	258.84	10.53	20.96	17.26
eP-10A	eCB-10A	EO-10	0.028	0.084	0.003	5.473	2.363	8.965	0.24	21.35	54.0	Concrete	0.013	291.000	258.84	249.89	3.08	344.93	24.02
eP-11A	eCB-11A	EO-11	0.404	0.084	0.004	5.040	0.225	9.198	3.37	2.08	15.0	Concrete	0.013	77.000	260.72	259.53	1.55	8.03	5.50
eP-6C	eCB-6C	eCB-6A	0.104	0.084	0.001	7.291	1.451	7.987	0.74	11.68	12.0	Corrugated HDPE (Smooth Interior)	0.013	55.000	292.60	290.59	3.66	6.81	14.87
eP-6D	eCB-6D	eCB-6C	0.043	0.084	0.001	7.257	1.025	8.006	0.29	8.27	12.0	PVC	0.010	43.000	298.20	292.60	13.02	16.71	21.23
eP-6E	eCB-6E	eCB-6D	5.430	0.118	0.003	7.080	0.563	8.101	24.83	4.60	15.0	Concrete	0.013	151.000	315.77	298.20	11.64	22.03	14.19
eP-7H	eCB-7H	eMH-7G	15.820	0.110	0.000	6.600	0.369	8.359	57.85	3.11	15.0	Concrete	0.013	22.000	294.70	292.00	12.29	22.64	12.94
eP-7G	eMH-7G	eCB-7F	(N/A)	0.000	0.007	6.628	0.369	8.344	0.00	3.10	15.0	Concrete	0.013	213.000	292.00	284.54	3.50	12.09	8.25
eP-10F	eCB-10F	eCB-10A	(N/A)	0.000	0.002	0.000	0.000	9.220	0.00	0.00	60.0	Concrete	0.013	139.000	264.00	258.84	3.71	501.58	25.53
eP-10D	EO-10D	EO-10C	(N/A)	0.000	0.000	5.382	1.372	9.014	0.00	12.47	15.0	Concrete	0.013	4.000	264.58	263.95	15.75	25.64	10.16
eP-12A	eCB-12A	EO-12A	0.150	0.084	0.001	5.975	0.362	8.696	1.26	3.18	15.0	Concrete	0.013	35.000	256.50	255.26	3.55	12.17	8.34
eP-12B	eMH-12B	eCB-12A	(N/A)	0.000	0.004	5.760	0.295	8.811	0.00	2.62	15.0	Concrete	0.013	60.000	257.00	256.50	0.83	5.90	4.66
eP-12C	eCB-12C	eMH-12B	0.092	0.084	0.002	5.646	0.295	8.873	0.77	2.64	15.0	Concrete	0.013	35.000	257.37	257.00	1.06	6.64	5.10
eP-12D	eCB-12D	eCB-12C	0.200	0.084	0.002	5.525	0.247	8.938	1.67	2.22	15.0	Concrete	0.013	54.000	259.20	257.37	3.39	11.89	7.42
eP-12E	eCB-12E	eCB-12D	0.798	0.084	0.008	5.040	0.164	9.198	4.18	1.52	15.0	Concrete	0.013	118.000	260.20	259.20	0.85	5.96	4.06

EXISTING DRAINAGE MODEL

FlexTable: CTDOT Catch Basin Table - 10 Year

ID	Label	Inlet	Inlet Location	Clogging Factor (%)	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Total Rational Flow to Inlet (cfs)	Flow (Captured) (cfs)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)	Elevation (Invert in 1) (ft)	Elevation (Invert in 2) (ft)	Elevation (Invert in 3) (ft)	Elevation (Invert in 4) (ft)
513	eCB-1A	"C-L" CB	On Grade	20.0	299.19	299.19	296.83	1.64	0.75	7.354	0.89	297.39	297.24	(N/A)	(N/A)	(N/A)	(N/A)
506	eCB-2A	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	296.65	296.65	294.15	1.46	0.69	7.215	0.77	294.89	294.70	294.15	(N/A)	(N/A)	(N/A)
509	eCB-2B	"C-L" CB	On Grade	20.0	297.24	297.24	294.41	1.41	0.68	6.924	0.73	294.95	294.89	(N/A)	(N/A)	(N/A)	(N/A)
517	eCB-3A	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	293.26	293.26	289.00	12.65	2.89	16.936	9.76	289.76	289.56	(N/A)	(N/A)	(N/A)	(N/A)
519	eCB-4A	"C" CB - 6in Bit Conc Lip Curb	In Sag	20.0	291.06	291.06	288.86	28.22	28.22	344.059	0.00	311.12	291.06	(N/A)	(N/A)	(N/A)	(N/A)
521	eCB-5A	"C-L" CB	In Sag	20.0	291.07	291.07	286.28	3.99	3.99	23.274	0.00	287.96	287.45	286.57	(N/A)	(N/A)	(N/A)
520	eCB-5B	"C-L" CB	On Grade	20.0	291.25	291.25	288.25	7.37	2.00	16.746	5.37	289.52	288.98	(N/A)	(N/A)	(N/A)	(N/A)
530	eCB-6A	"C-L" CB	On Grade	20.0	293.06	293.06	290.27	13.01	3.34	12.320	9.67	292.64	291.83	290.31	290.59	(N/A)	(N/A)
531	eCB-6B	"C-L" CB	On Grade	20.0	293.07	293.07	290.60	0.41	0.30	3.754	0.11	292.64	292.64	(N/A)	(N/A)	(N/A)	(N/A)
556	eCB-6C	"C-L" CB	On Grade	20.0	296.11	296.11	292.60	15.84	3.61	13.099	12.23	298.84	296.11	292.60	(N/A)	(N/A)	(N/A)
557	eCB-6D	"C-L" CB	On Grade	20.0	301.70	301.70	298.20	18.98	3.75	19.884	15.23	300.91	299.55	298.20	(N/A)	(N/A)	(N/A)
593	eCB-6E	"C-L" CB	On Grade	20.0	319.18	319.18	315.77	20.59	4.07	19.083	16.51	317.07	316.71	(N/A)	(N/A)	(N/A)	(N/A)
535	eCB-7A	"C" CB - 6in Bit Conc Lip Curb	In Sag	20.0	289.28	289.28	282.37	0.72	0.72	8.133	0.00	284.14	283.67	282.37	(N/A)	(N/A)	(N/A)
558	eCB-7B	"C" CB - 6in Bit Conc Lip Curb	In Sag	20.0	289.63	289.63	283.28	4.76	4.76	26.049	0.00	285.11	284.66	283.28	284.73	284.73	(N/A)
534	eCB-7C	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	290.21	290.21	286.59	19.39	3.46	17.801	15.93	287.63	287.36	(N/A)	(N/A)	(N/A)	(N/A)
563	eCB-7D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	290.30	290.30	285.87	0.44	0.31	3.821	0.13	286.67	286.47	286.10	(N/A)	(N/A)	(N/A)
533	eCB-7E	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	290.71	290.71	287.71	2.87	1.18	7.849	1.70	288.38	288.20	(N/A)	(N/A)	(N/A)	(N/A)
532	eCB-7F	"C-L" CB	On Grade	20.0	290.13	290.13	284.35	1.72	0.83	6.577	0.89	285.60	285.26	284.54	(N/A)	(N/A)	(N/A)
595	eCB-7H	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	298.37	298.37	294.70	47.96	3.16	20.363	44.80	295.80	295.50	(N/A)	(N/A)	(N/A)	(N/A)
540	eCB-8A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	277.57	277.57	273.36	0.59	0.42	3.683	0.17	274.81	274.45	273.36	(N/A)	(N/A)	(N/A)
539	eCB-8B	"C-L" CB	On Grade	20.0	281.71	281.71	273.59	46.43	6.47	22.085	39.96	275.14	275.01	273.59	(N/A)	(N/A)	(N/A)
537	eCB-8D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	283.44	283.44	281.17	20.96	2.51	14.373	18.45	282.26	281.96	(N/A)	(N/A)	(N/A)	(N/A)
538	eCB-8E	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	281.78	281.78	278.70	26.66	1.88	14.698	24.79	279.62	279.37	278.70	(N/A)	(N/A)	(N/A)
566	eCB-8F	"C-L" CB	On Grade	20.0	281.61	281.61	280.09	0.19	0.15	3.560	0.04	280.34	280.28	(N/A)	(N/A)	(N/A)	(N/A)
543	eCB-9A	"C-L" CB	On Grade	20.0	271.25	271.25	266.75	2.89	1.08	12.228	1.81	273.74	271.25	266.75	(N/A)	(N/A)	(N/A)
542	eCB-9B	"C-L" CB	On Grade	20.0	271.23	271.23	267.13	65.95	8.45	41.921	57.50	273.41	271.23	267.61	(N/A)	(N/A)	(N/A)
541	eCB-9C	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	271.59	271.59	268.56	57.03	6.48	30.047	50.55	272.02	271.59	(N/A)	(N/A)	(N/A)	(N/A)
546	eCB-10A	"C-L" CB	On Grade	20.0	266.26	266.26	258.84	0.19	0.18	2.073	0.01	268.91	264.38	258.84	258.84	(N/A)	(N/A)
545	eCB-10B	"C-L" CB	On Grade	20.0	266.62	266.62	262.74	5.69	2.10	9.932	3.58	270.01	266.62	262.83	(N/A)	(N/A)	(N/A)
544	eCB-10E	"C-L" CB	On Grade	20.0	268.50	268.50	265.45	74.61	11.07	30.416	63.54	269.77	268.50	(N/A)	(N/A)	(N/A)	(N/A)
603	eCB-10F	"C-L" CB	In Sag	20.0	277.21	277.21	264.00	0.00	0.00	0.000	0.00	272.02	269.14	(N/A)	(N/A)	(N/A)	(N/A)
547	eCB-11A	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	264.40	264.40	260.72	6.38	1.81	14.893	4.57	261.50	261.30	(N/A)	(N/A)	(N/A)	(N/A)
662	eCB-12A	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	263.61	263.61	256.50	1.04	0.55	6.197	0.49	257.56	257.29	256.50	(N/A)	(N/A)	(N/A)
661	eCB-12C	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	260.81	260.81	257.37	0.63	0.39	4.920	0.25	258.41	258.17	257.37	(N/A)	(N/A)	(N/A)
660	eCB-12D	"C" CB - 6in Bit Conc Lip Curb	On Grade	20.0	264.42	264.42	259.20	1.38	0.69	4.621	0.69	260.03	259.82	259.20	(N/A)	(N/A)	(N/A)
659	eCB-12E	"C" CB - 6in Bit Conc Lip Curb	On Grade	0.0	263.61	263.61	260.20	3.46	1.34	9.513	2.12	260.86	260.70	(N/A)	(N/A)	(N/A)	(N/A)

EXISTING DRAINAGE MODEL

FlexTable: CTDOT Catchment Table- 10 Year

ID	Label	Outflow Element	Runoff Coefficient (Rational)	Area (Unified) (acres)	Catchment CA (acres)	Time of Concentration (hours)	Catchment Rational Flow (cfs)	Notes
590	eCM-1A	eCB-1A	0.900	0.237	0.214	0.084	1.64	
592	eCM-2A	eCB-2A	0.900	0.211	0.190	0.084	1.46	
591	eCM-2B	eCB-2B	0.900	0.076	0.068	0.084	0.52	
651	eCM-3A	eCB-3A	0.729	2.128	1.551	0.084	11.92	
613	eCM-4A	eCB-4A	0.782	2.179	1.704	0.084	13.09	
674	eCM-5A	eCB-5A	0.900	0.465	0.419	0.084	3.22	
614	eCM-5B	eCB-5B	0.787	1.219	0.959	0.084	7.37	
615	eCM-6A	eCB-6A	0.775	0.131	0.102	0.084	0.78	
617	eCM-6B	eCB-6B	0.788	0.068	0.053	0.084	0.41	
618	eCM-6C	eCB-6C	0.765	0.104	0.079	0.084	0.61	
616	eCM-6D	eCB-6D	0.730	0.043	0.032	0.084	0.24	
619	eCM-6E	eCB-6E	0.560	5.430	3.041	0.118	20.59	
629	eCM-7A	eCB-7A	0.900	0.104	0.094	0.084	0.72	
628	eCM-7B	eCB-7B	0.801	0.773	0.619	0.084	4.76	
626	eCM-7C	eCB-7C	0.787	1.608	1.266	0.084	9.72	
622	eCM-7D	eCB-7D	0.900	0.063	0.057	0.084	0.44	
623	eCM-7E	eCB-7E	0.900	0.416	0.374	0.084	2.87	
627	eCM-7F	eCB-7F	0.713	0.313	0.223	0.084	1.72	
621	eCM-7H	eCB-7H	0.434	15.820	6.866	0.110	47.96	
647	eCM-8A	eCB-8A	0.900	0.085	0.077	0.084	0.59	
610	eCM-8B	eCB-8B	0.900	0.045	0.041	0.084	0.31	
611	eCM-8D	eCB-8D	0.789	3.457	2.728	0.084	20.96	
609	eCM-8E	eCB-8E	0.449	14.382	6.457	0.278	26.66	
649	eCM-8F	eCB-8F	0.785	0.031	0.024	0.084	0.19	
648	eCM-9A	eCB-9A	0.900	0.418	0.377	0.084	2.89	
607	eCM-9B	eCB-9B	0.775	2.586	2.004	0.084	15.40	
608	eCM-9C	eCB-9C	0.812	2.736	2.221	0.084	17.07	
601	eCM-10A	eCB-10A	0.900	0.028	0.025	0.084	0.19	
606	eCM-10B	eCB-10B	0.900	0.560	0.504	0.084	3.87	
602	eCM-10C	EO-10C	0.760	0.931	0.708	0.084	5.44	
605	eCM-10E	eCB-10E	0.791	2.816	2.227	0.084	17.11	
599	eCM-11A	eCB-11A	0.900	0.404	0.364	0.084	2.79	
670	eCM-12A	eCB-12A	0.900	0.150	0.135	0.084	1.04	
671	eCM-12C	eCB-12C	0.900	0.092	0.083	0.084	0.63	
672	eCM-12D	eCB-12D	0.900	0.200	0.180	0.084	1.38	
673	eCM-12E	eCB-12E	0.565	0.798	0.450	0.084	3.46	

FlexTable: CTDOT Conduit Table - 10 Year

ID	Label	Start Node	Start Invert (ft)	Stop Node	Stop Invert (ft)	Length (Unified) (ft)	Slope (%)	Diameter (in)	Material	Manning's "n"	Flow (cfs)	Velocity (Avg.) (ft/s)	Depth - Out (ft)	Capacity Full (cfs)	Flow/Capacity (Design) (%)	Depth (Normal)/Rise (%)	Energy Grade Line (Out) (ft)	Hydraulic Grade Line (Out) (ft)
515	eP-1A	eCB-1A	296.83	EO-1	295.67	183.000	0.64	10.0	PVC	0.010	0.75	3.74	0.33	2.27	33.2	39.7	296.22	296.00
507	eP-2A	eCB-2A	294.15	EO-2	289.11	24.000	21.00	12.0	Corrugated HDPE (Smooth Interior)	0.013	1.35	12.57	0.19	16.33	8.3	19.4	291.76	289.30
510	eP-2B	eCB-2B	294.41	eCB-2A	294.15	41.000	0.63	12.0	Corrugated HDPE (Smooth Interior)	0.013	0.68	2.96	0.73	2.82	24.1	33.4	294.90	294.88
518	eP-3A	eCB-3A	289.00	EO-3	285.10	42.000	9.29		Concrete	0.013	2.89	9.21	0.16	59.40	4.9	10.5	286.57	285.26
528	eP-4A	eCB-4A	288.86	EO-4	282.33	125.000	5.22	12.0	PVC	0.010	28.22	35.93	1.00	10.59	266.6	(N/A)	303.39	283.33
523	eP-5A	eCB-5A	286.28	EO-5	283.48	94.000	2.98	15.0	Concrete	0.013	5.97	9.24	0.65	11.15	53.6	52.1	285.46	284.13
524	eP-5B	eCB-5B	288.25	eCB-5A	286.57	35.000	4.80	8.0	PVC	0.010	2.00	10.23	1.09	3.44	58.2	54.8	288.17	287.66
554	eP-6A	eCB-6A	290.27	EO-6	279.74	172.000	6.12	18.0	Corrugated HDPE (Smooth Interior)	0.013	11.81	14.36	0.71	25.99	45.4	47.3	283.65	280.45
555	eP-6B	eCB-6B	290.60	eCB-6A	290.31	42.000	0.69	18.0	Corrugated HDPE (Smooth Interior)	0.013	0.30	0.17	2.33	8.74	3.4	12.6	292.64	292.64
587	eP-6C	eCB-6C	292.60	eCB-6A	290.59	55.000	3.66	12.0	Corrugated HDPE (Smooth Interior)	0.013	10.41	13.25	0.99	6.81	152.8	(N/A)	293.74	291.58
589	eP-6D	eCB-6D	298.20	eCB-6C	292.60	43.000	13.02	12.0	PVC	0.010	7.29	20.56	3.51	16.71	43.6	46.2	299.55	296.11
594	eP-6E	eCB-6E	315.77	eCB-6D	298.20	151.000	11.64	15.0	Concrete	0.013	4.07	13.71	2.60	22.03	18.5	29.1	300.98	300.81
559	eP-7A	eCB-7A	282.37	EO-7	277.97	107.000	4.11	30.0	Concrete	0.013	12.92	12.31	0.67	83.18	15.5	26.6	280.99	278.64
560	eP-7B	eCB-7B	283.28	eCB-7A	282.37	36.000	2.53	30.0	Concrete	0.013	12.34	10.21	1.67	65.21	18.9	29.5	284.21	284.04
562	eP-7C	eCB-7C	286.59	eCB-7B	284.73	59.000	3.15	18.0	PVC	0.010	3.46	9.73	0.39	24.25	14.3	25.5	285.71	285.12
565	eP-7D	eCB-7D	285.87	eCB-7B	284.73	21.000	5.43	12.0	Concrete	0.013	1.48	8.00	0.30	8.30	17.8	28.6	285.45	285.03
564	eP-7E	eCB-7E	287.71	eCB-7D	286.10	36.000	4.47	12.0	Concrete	0.013	1.18	6.98	0.51	7.54	15.6	26.7	286.71	286.61
561	eP-7F	eCB-7F	284.35	eCB-7B	283.28	21.000	5.10	15.0	PVC	0.010	3.80	12.07	1.74	18.95	20.0	30.4	285.17	285.02
598	eP-7G	eMH-7G	292.00	eCB-7F	284.54	213.000	3.50	15.0	Concrete	0.013	3.15	8.29	0.98	12.09	26.1	34.8	285.65	285.52
597	eP-7H	eCB-7H	294.70	eMH-7G	292.00	22.000	12.29	15.0	Concrete	0.013	3.16	13.00	1.30	22.64	13.9	25.2	293.40	293.30
574	eP-8A	eCB-8A	273.36	EO-8	266.57	27.000	25.14	24.0	Concrete	0.013	6.83	19.90	0.36	113.43	6.0	16.6	271.89	266.93
572	eP-8B	eCB-8B	273.59	eCB-8A	273.36	188.000	0.12	24.0	Concrete	0.013	6.78	2.82	1.37	7.88	86.0	71.5	274.86	274.74
571	eP-8C	eMH-8C	273.81	eCB-8B	273.59	12.000	1.83	24.0	Concrete	0.013	3.30	6.37	1.54	30.63	10.8	22.2	275.15	275.13
569	eP-8D	eCB-8D	281.17	eMH-8C	276.42	30.000	15.84	12.0	Corrugated HDPE (Smooth Interior)	0.013	2.51	13.62	0.29	14.18	17.7	28.4	279.46	276.71
570	eP-8E	eCB-8E	278.70	eMH-8C	278.58	5.000	2.41	12.0	Corrugated HDPE (Smooth Interior)	0.013	1.96	6.43	0.48	5.53	35.4	41.1	279.49	279.06
567	eP-8F	eCB-8F	280.09	eCB-8E	278.70	100.000	1.39	8.0	PVC	0.010	0.15	3.17	0.92	1.85	7.9	19.0	279.62	279.62
577	eP-9A	eCB-9A	266.75	EO-9	264.82	133.000	1.45	15.0	Concrete	0.013	15.53	12.65	1.24	7.78	199.5	(N/A)	268.55	266.06
576	eP-9B	eCB-9B	267.13	eCB-9A	266.75	34.000	1.12	15.0	Concrete	0.013	14.52	11.83	4.50	6.83	212.6	(N/A)	277.11	271.25
575	eP-9C	eCB-9C	268.56	eCB-9B	267.61	149.000	0.64	15.0	Concrete	0.013	6.48	5.28	3.62	5.16	125.6	(N/A)	275.32	271.23
585	eP-10A	eCB-10A	258.84	EO-10	249.89	291.000	3.08	54.0	Concrete	0.013	268.25	23.97	3.12	344.93	77.8	66.3	261.09	253.01
584	eP-10B	eCB-10B	262.74	eCB-10A	258.84	37.000	10.53	15.0	Concrete	0.013	18.12	14.76	7.42	20.96	86.4	71.8	270.27	266.26
583	eP-10C	EO-10C	263.95	eCB-10B	262.83	45.000	2.49	15.0	Concrete	0.013	16.12	13.14	3.79	10.19	158.2	(N/A)	273.63	266.62
645	eP-10D	EO-10D	264.58	EO-10C	263.95	4.000	15.75	15.0	Concrete	0.013	10.82	8.82	2.25	25.64	42.2	45.4	267.41	266.20
582	eP-10E	eCB-10E	265.45	EO-10D	264.58	213.000	0.41	15.0	Concrete	0.013	11.07	9.02	1.73	4.13	268.1	(N/A)	267.58	266.31
604	eP-10F	eCB-10F	264.00	eCB-10A	258.84	139.000	3.71	60.0	Concrete	0.013	250.00	25.53	7.42	501.58	49.8	49.9	269.92	266.26
586	eP-11A	eCB-11A	260.72	EO-11	259.53	77.000	1.55	15.0	Concrete	0.013	1.81	5.28	0.40	8.03	22.5	32.3	260.37	259.93
665	eP-12A	eCB-12A	256.50	EO-12A	255.26	35.000	3.55	15.0	Concrete	0.013	2.80	8.06	0.42	12.17	23.0	32.6	256.62	255.68
666	eP-12B	eMH-12B	257.00	eCB-12A	256.50	60.000	0.83	15.0	Concrete	0.013	2.32	4.51	1.01	5.90	39.3	43.5	257.58	257.51
667	eP-12C	eCB-12C	257.37	eMH-12B	257.00	35.000	1.06	15.0	Concrete	0.013	2.33	4.94	0.87	6.64	35.1	40.9	257.96	257.87
668	eP-12D	eCB-12D	259.20	eCB-12C	257.37	54.000	3.39	15.0	Concrete	0.013	1.97	7.17	1.01	11.89	16.6	27.5	258.43	258.38
669	eP-12E	eCB-12E	260.20	eCB-12D	259.20	118.000	0.85	15.0	Concrete	0.013	1.34	3.92	0.81	5.96	22.5	32.2	260.04	260.01

EXISTING DRAINAGE MODEL

FlexTable: CTDOT Gutter Table - 10 Year

ID	Label	Start Node	Stop Node	Length (Unified) (ft)	Gutter Shape	Road Cross Slope (%)	Slope (Calculated) (%)	Manning's n (Gutter)	Spread / Top Width (Start) (ft)	Spread / Top Width (Stop) (ft)	Notes
631	GUT1A	eCB-1A	eCB-2B	120.000	Conventional	2.00	1.63	0.013	5.824	6.924	
635	GUT2A	eCB-2A	eCB-5A	824.000	Conventional	2.00	0.68	0.013	6.510	23.274	
632	GUT2B	eCB-2B	eCB-3A	357.000	Conventional	2.00	1.11	0.013	5.811	16.936	
633	GUT3A	eCB-3A	eCB-4A	446.000	Conventional	2.00	0.49	0.013	17.889	344.059	
634	GUT5B	eCB-5B	eCB-4A	47.000	Conventional	2.00	0.40	0.013	14.866	344.059	
640	GUT6A	eCB-6A	eCB-7C	406.000	Conventional	2.00	0.70	0.013	16.688	17.801	
638	GUT6C	eCB-6C	eCB-6A	55.000	Conventional	2.00	5.55	0.013	12.378	12.320	
637	GUT6D	eCB-6D	eCB-6C	43.000	Conventional	2.00	12.99	0.013	11.437	13.099	
636	GUT6E	eCB-6E	eCB-6D	151.000	Conventional	2.00	11.57	0.013	12.054	19.884	
642	GUT8B	eCB-8B	eCB-9C	452.000	Conventional	2.00	2.24	0.013	22.851	30.047	
641	GUT8E	eCB-8E	eCB-8B	14.000	Conventional	2.00	0.50	0.013	25.463	22.085	
653	GUT9A	eCB-9A	eCB-10B	844.000	Conventional	3.00	0.55	0.013	7.239	9.932	
644	GUT9B	eCB-9B	eCB-10E	623.000	Conventional	3.00	0.44	0.013	27.605	30.416	
643	GUT9C	eCB-9C	eCB-9B	149.000	Conventional	2.00	0.24	0.013	37.918	41.921	
646	GUT10B	eCB-10B	eCB-11A	552.000	Conventional	3.00	0.40	0.013	9.908	14.893	

EXISTING DRAINAGE MODEL

FlexTable: CTDOT Headwall Table - 10 Year

ID	Label	Inlet Description	Size	Material	X (ft)	Y (ft)	Boundary Condition Type	Flow (Total Out) (cfs)	System Rational Flow (cfs)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (Out) (ft)
514	EO-1	<None>	<None>	<None>	947,468.60	805,163.99	Free Outfall	0.72	0.72	295.67	296.00	296.00
504	EO-2	<None>	<None>	<None>	947,572.39	805,275.00	Free Outfall	1.35	1.35	289.11	289.30	289.30
516	EO-3	<None>	<None>	<None>	947,880.65	805,214.76	Free Outfall	2.88	2.88	285.10	285.26	285.26
525	EO-4	<None>	<None>	<None>	948,320.61	805,012.92	Free Outfall	28.12	28.12	282.33	283.33	283.33
522	EO-5	<None>	<None>	<None>	948,351.52	805,005.85	Free Outfall	5.91	5.91	283.48	284.13	284.13
529	EO-6	<None>	<None>	<None>	948,577.84	804,962.35	Free Outfall	11.63	11.63	279.74	280.45	280.45
553	EO-7	<None>	<None>	<None>	949,039.86	804,951.93	Free Outfall	12.80	12.80	277.97	278.64	278.64
573	EO-8	<None>	<None>	<None>	949,771.46	804,746.15	Free Outfall	6.82	6.82	266.57	266.93	266.93
552	EO-9	<None>	<None>	<None>	950,360.43	804,987.85	Free Outfall	15.36	15.36	264.82	266.06	266.06
550	EO-10	<None>	<None>	<None>	951,185.14	805,073.07	Free Outfall	268.03	18.03	249.89	253.01	253.01
580	EO-10C	<None>	<None>	<None>	951,076.22	805,409.17	Free Outfall	16.12	16.12	263.95	266.20	268.88
581	EO-10D	<None>	<None>	<None>	951,072.84	805,411.42	Free Outfall	10.82	10.82	264.58	266.31	267.52
549	EO-11	<None>	<None>	<None>	951,458.38	804,993.29	Free Outfall	1.78	1.78	259.53	259.93	259.93
664	EO-12A	<None>	<None>	<None>	951,652.55	804,784.66	Free Outfall	2.79	2.79	255.26	255.68	255.68

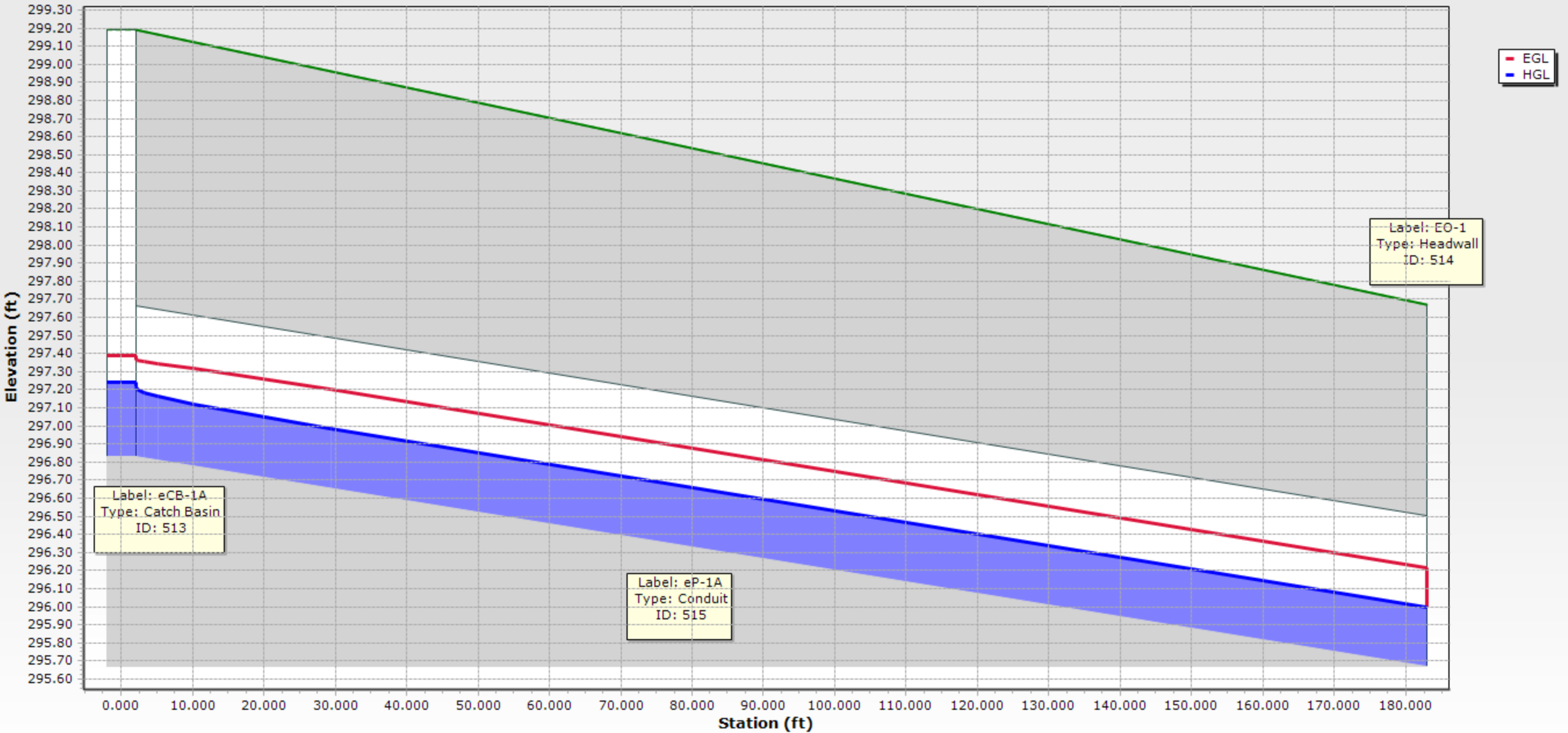
EXISTING DRAINAGE MODEL

FlexTable: CTDOT Manhole Table- 10 Year

ID	Label	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert in 1) (ft)	Elevation (Invert in 2) (ft)	Elevation (Invert in 3) (ft)	Flow (Total In) (cfs)	Elevation (Invert Out) (ft)	Flow (Total Out) (cfs)	Depth (Out) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	X (ft)	Y (ft)
568	eMH-8C	282.23	282.23	276.42	278.58	(N/A)	4.46	273.81	3.30	1.32	275.14	275.13	275.17	275.16	949,717.79	804,962.74
596	eMH-7G	308.56	308.56	292.00	(N/A)	(N/A)	3.16	292.00	3.15	0.80	293.07	292.80	293.36	293.09	949,047.79	805,328.60
663	eMH-12B	260.85	260.85	257.00	(N/A)	(N/A)	2.33	257.00	2.32	0.66	257.68	257.66	257.92	257.89	951,703.87	804,862.77

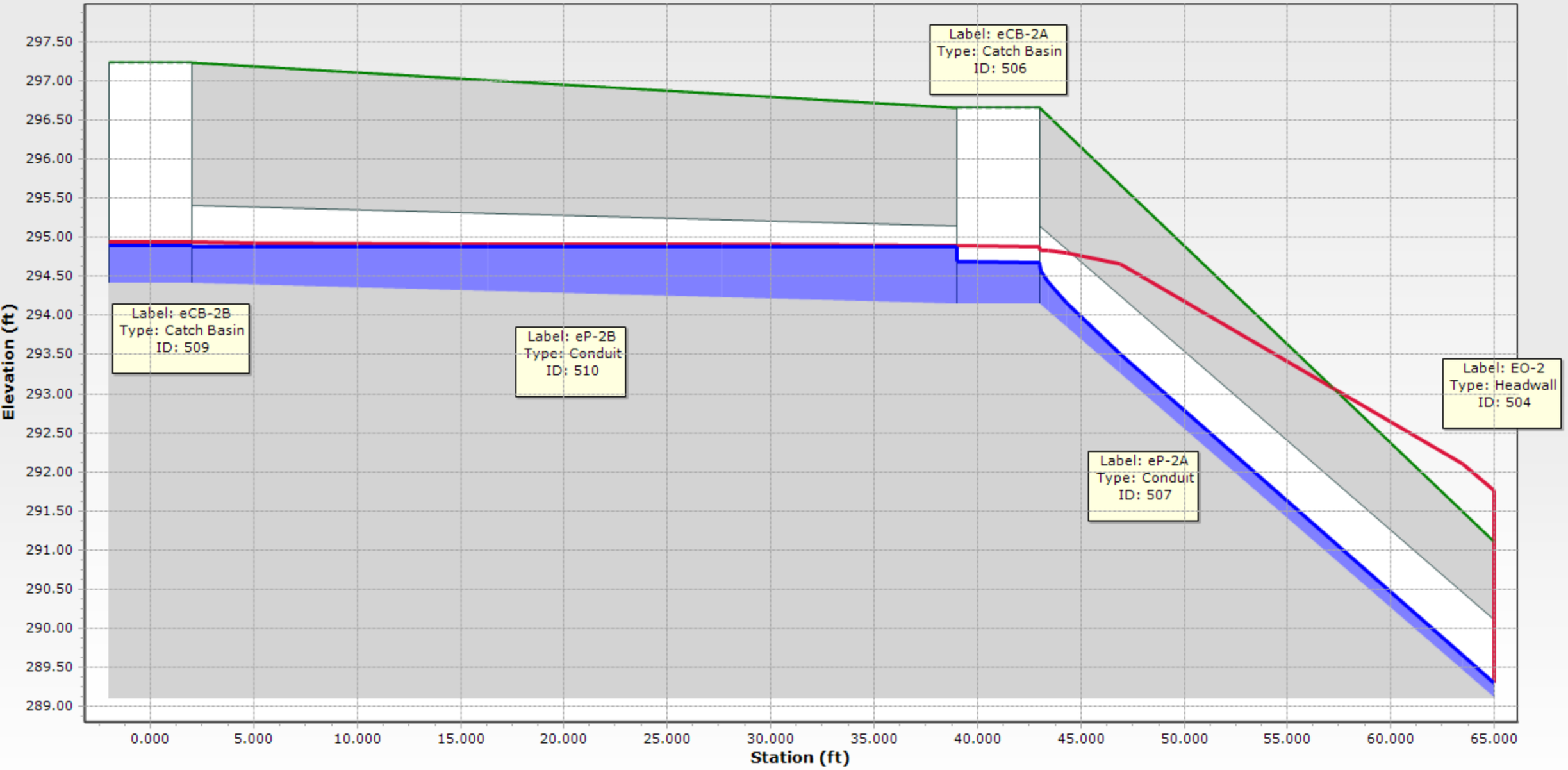
EO-1 - Base Analysis

SYSTEM EO-1 STA 2+77



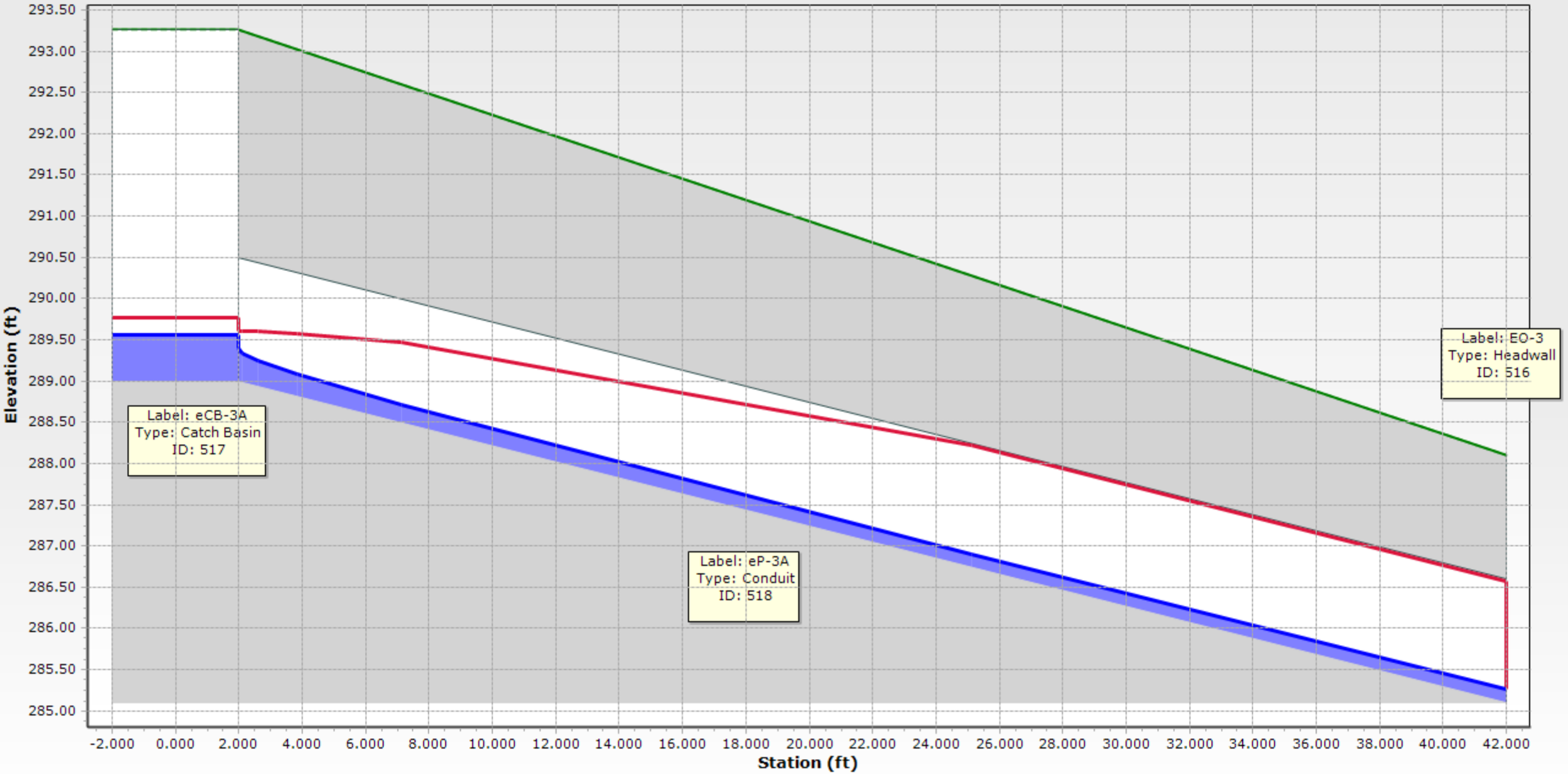
EO-2 - Base Analysis

SYSTEM EO-2 STA 3+76



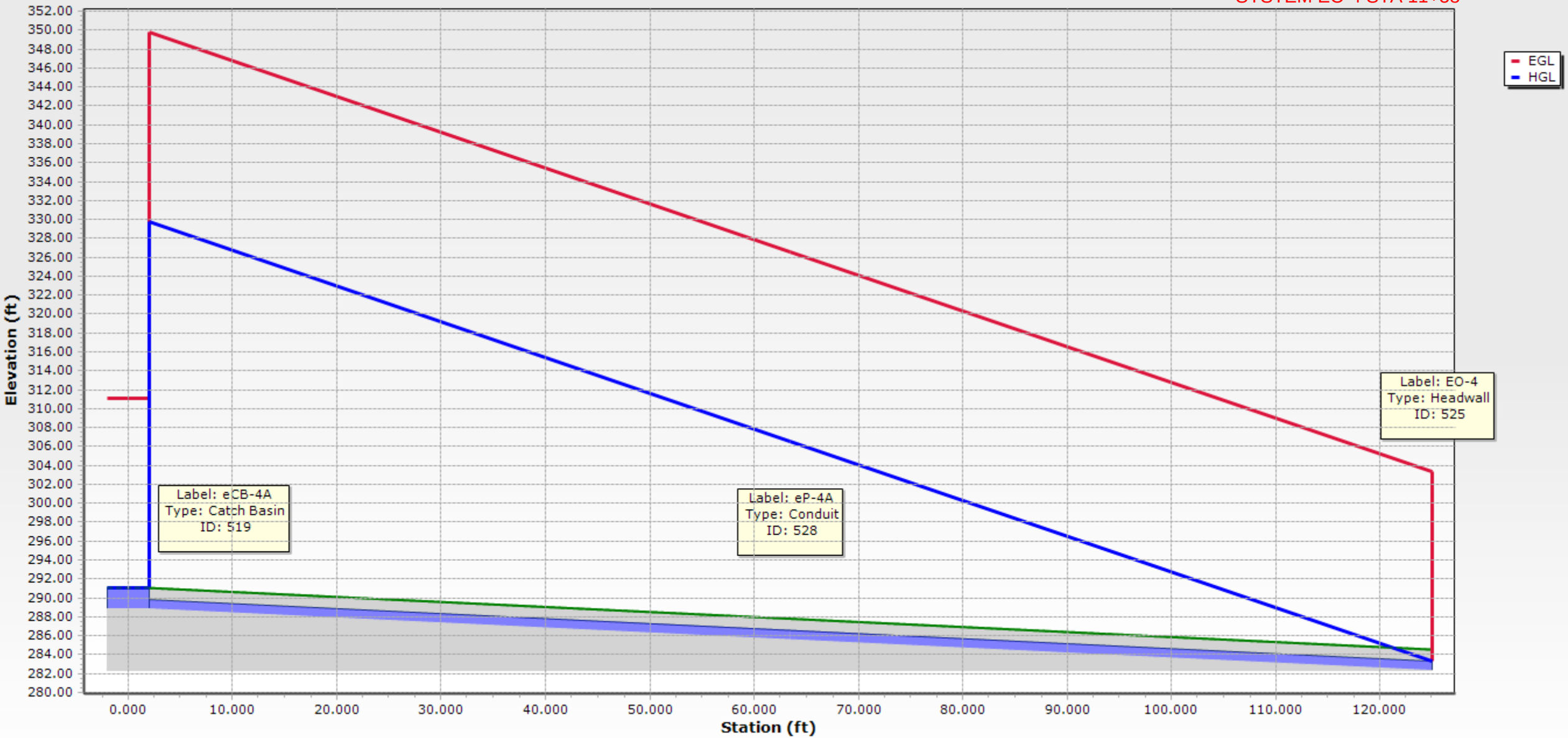
EO-3 - Base Analysis

SYSTEM EO-3 STA 7+03



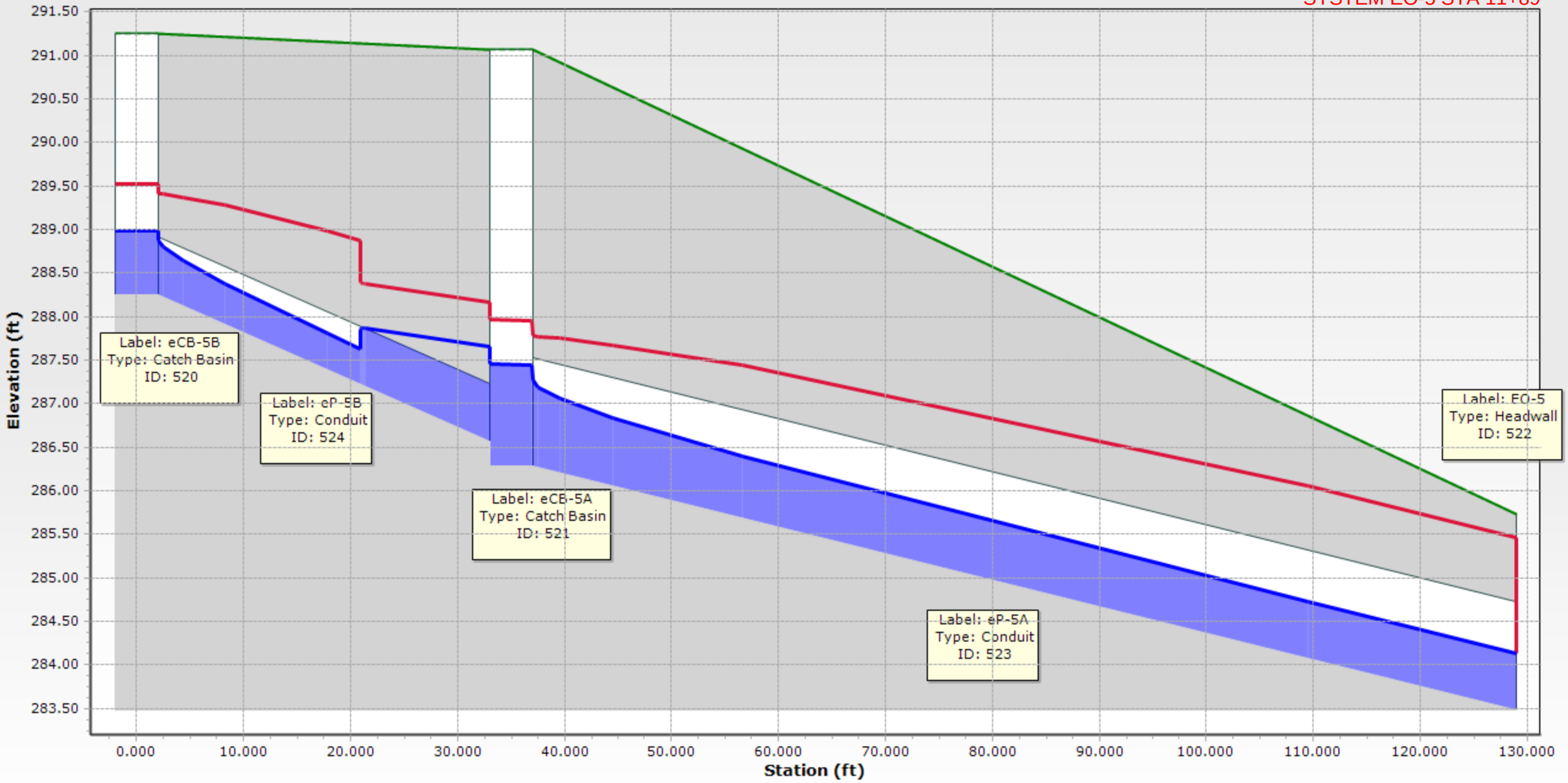
EO-4 - Base Analysis

SYSTEM EO-4 STA 11+58



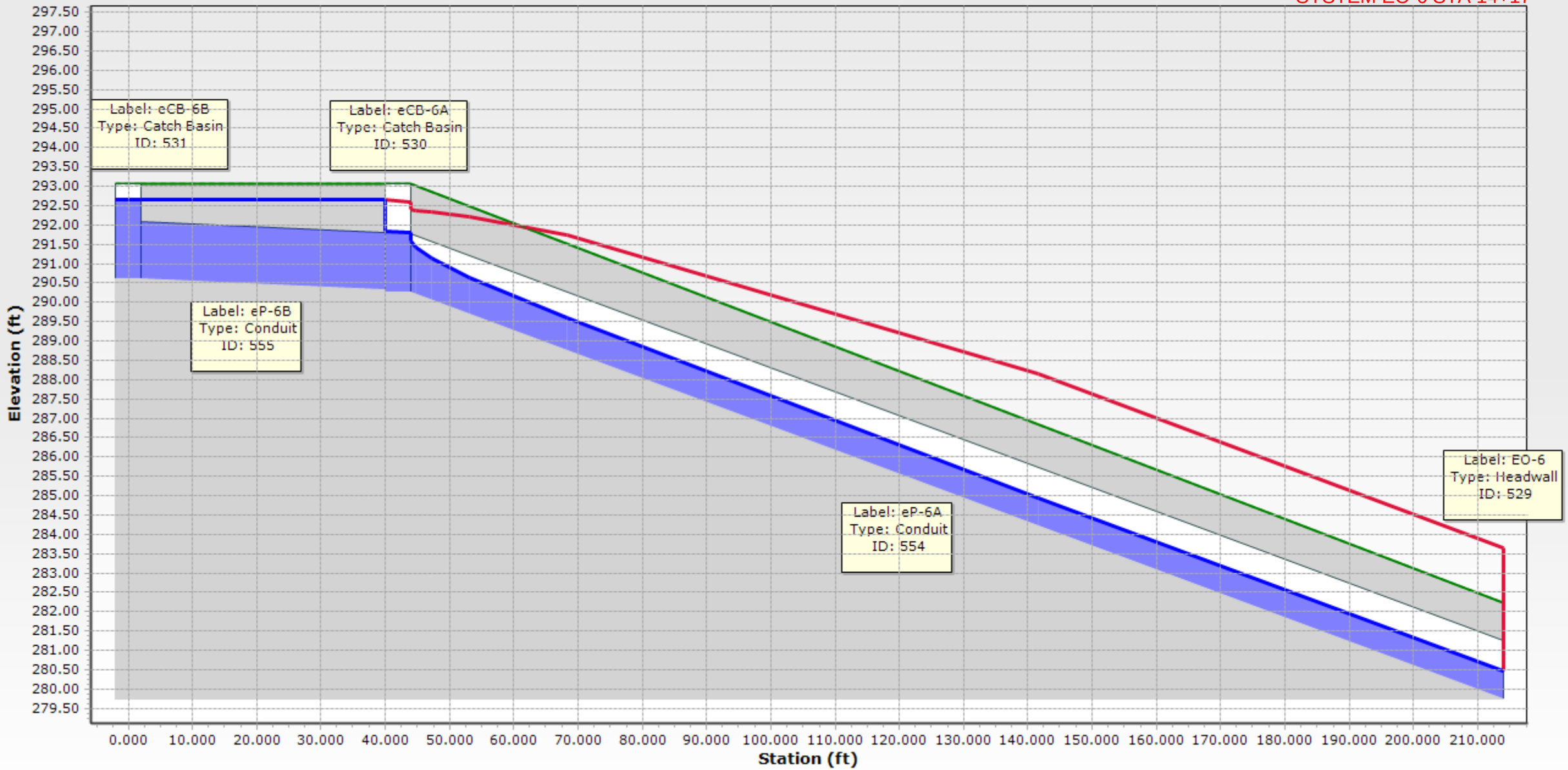
EO-5 - Base Analysis

SYSTEM EO-5 STA 11+89



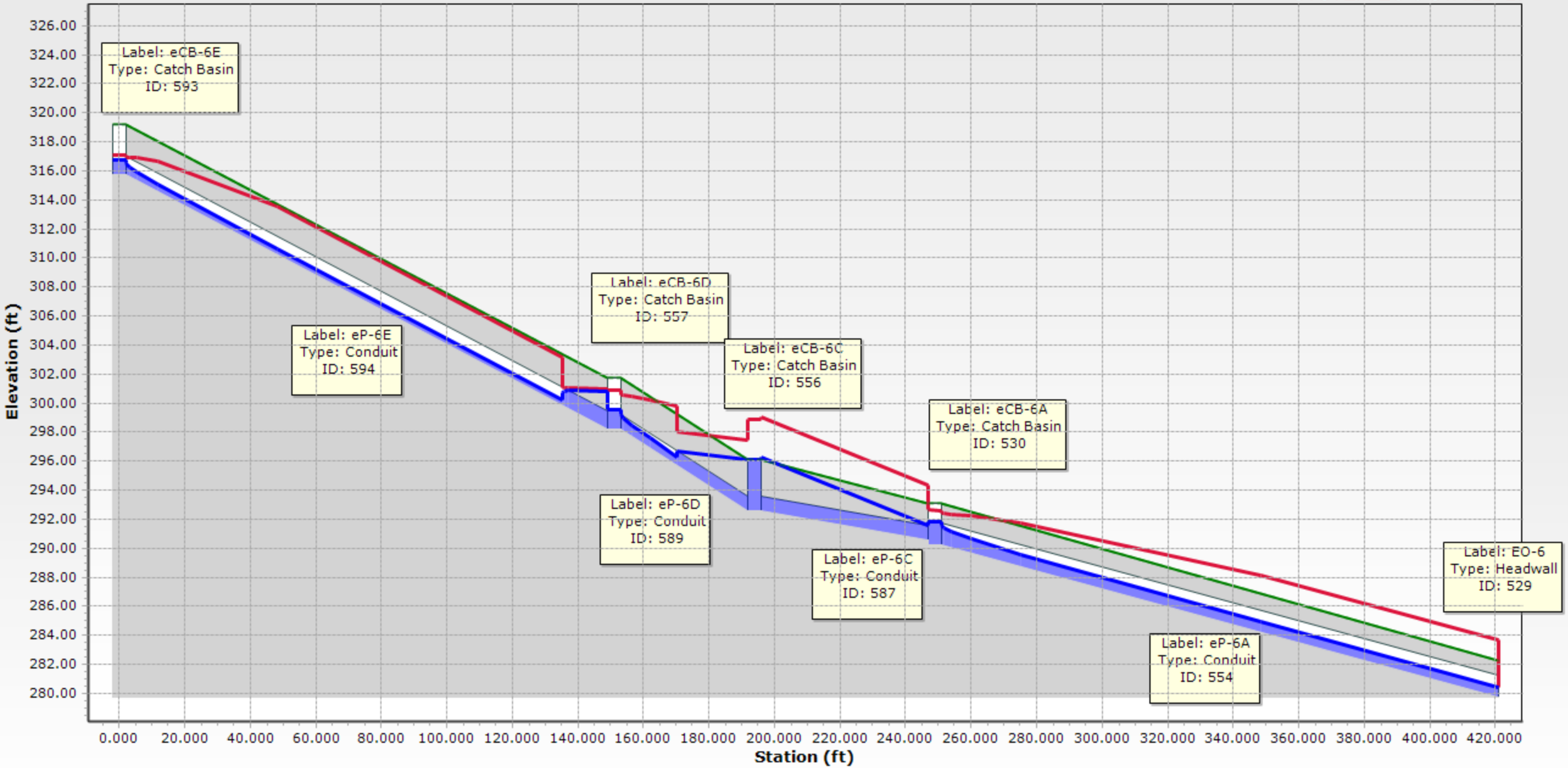
EO-6 - Base Analysis

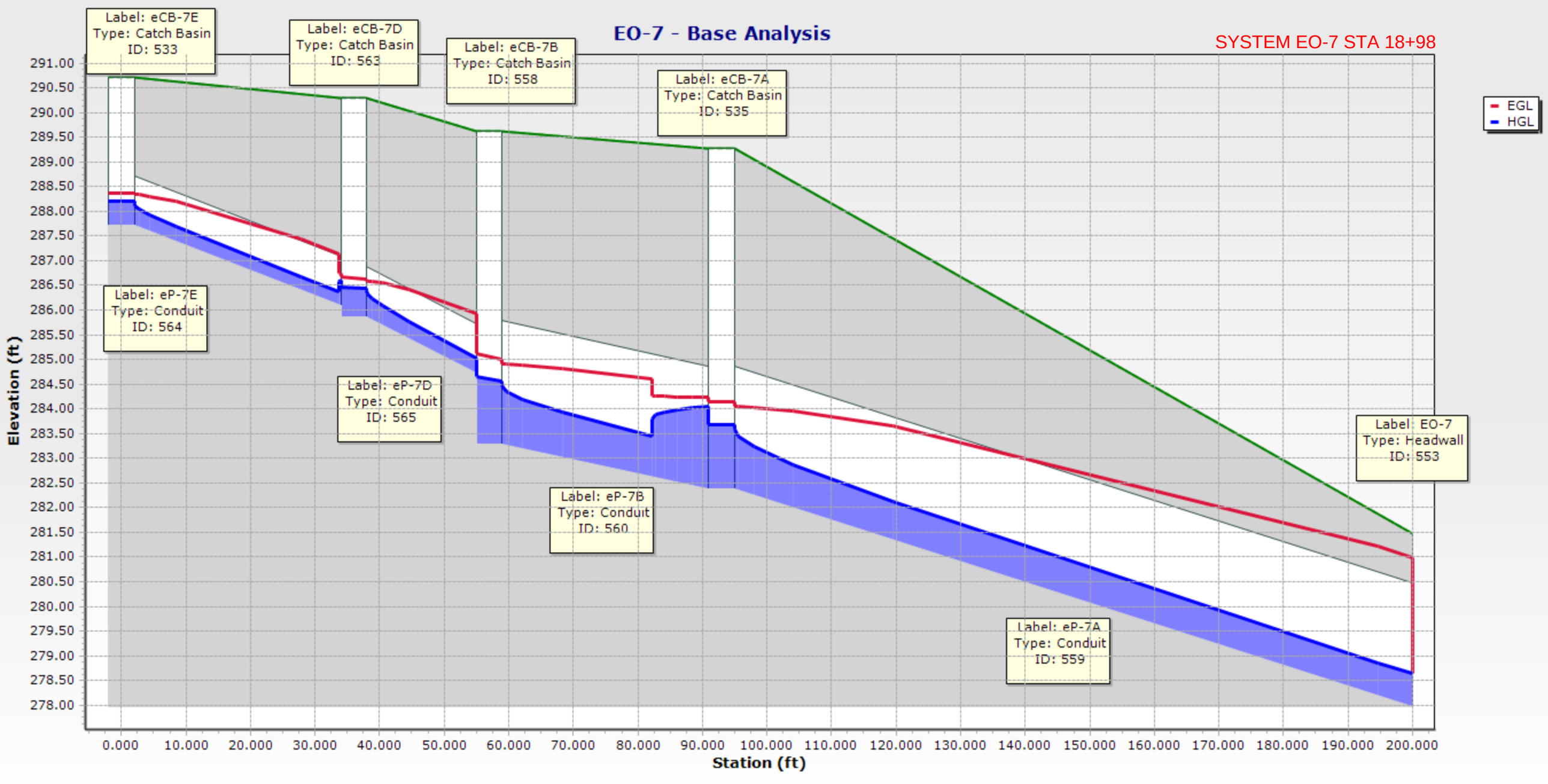
SYSTEM EO-6 STA 14+17

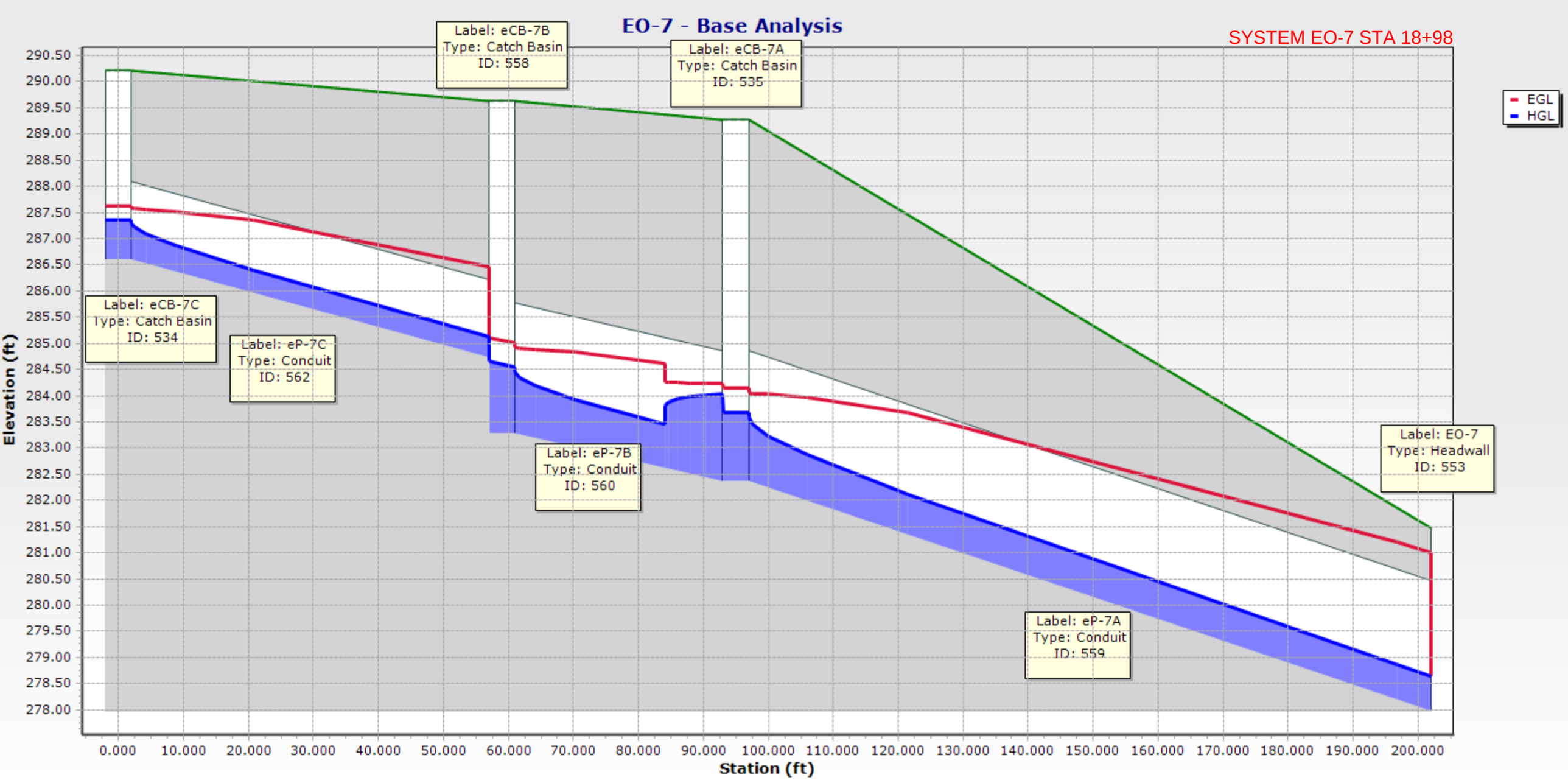


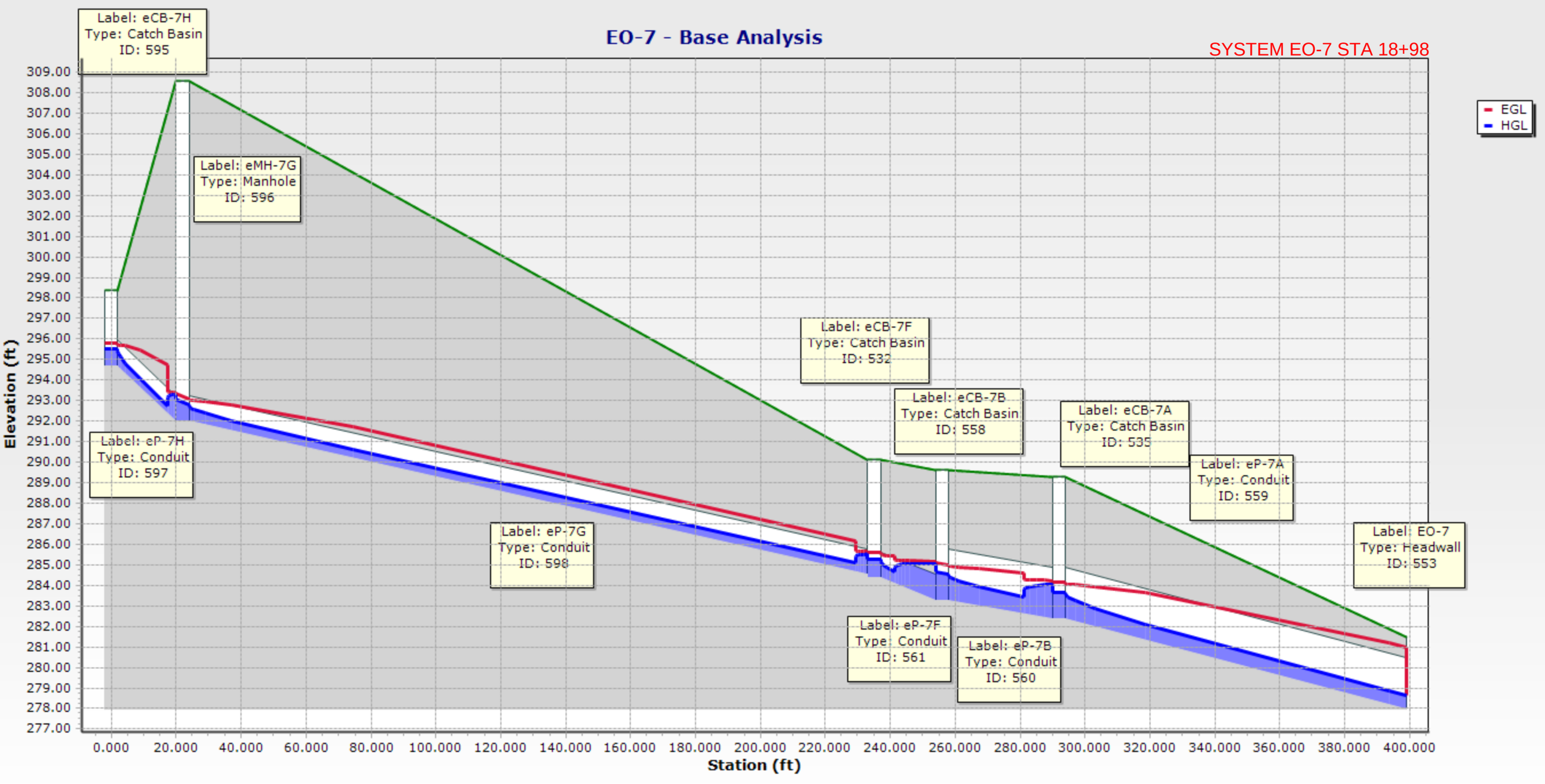
EO-6 - Base Analysis

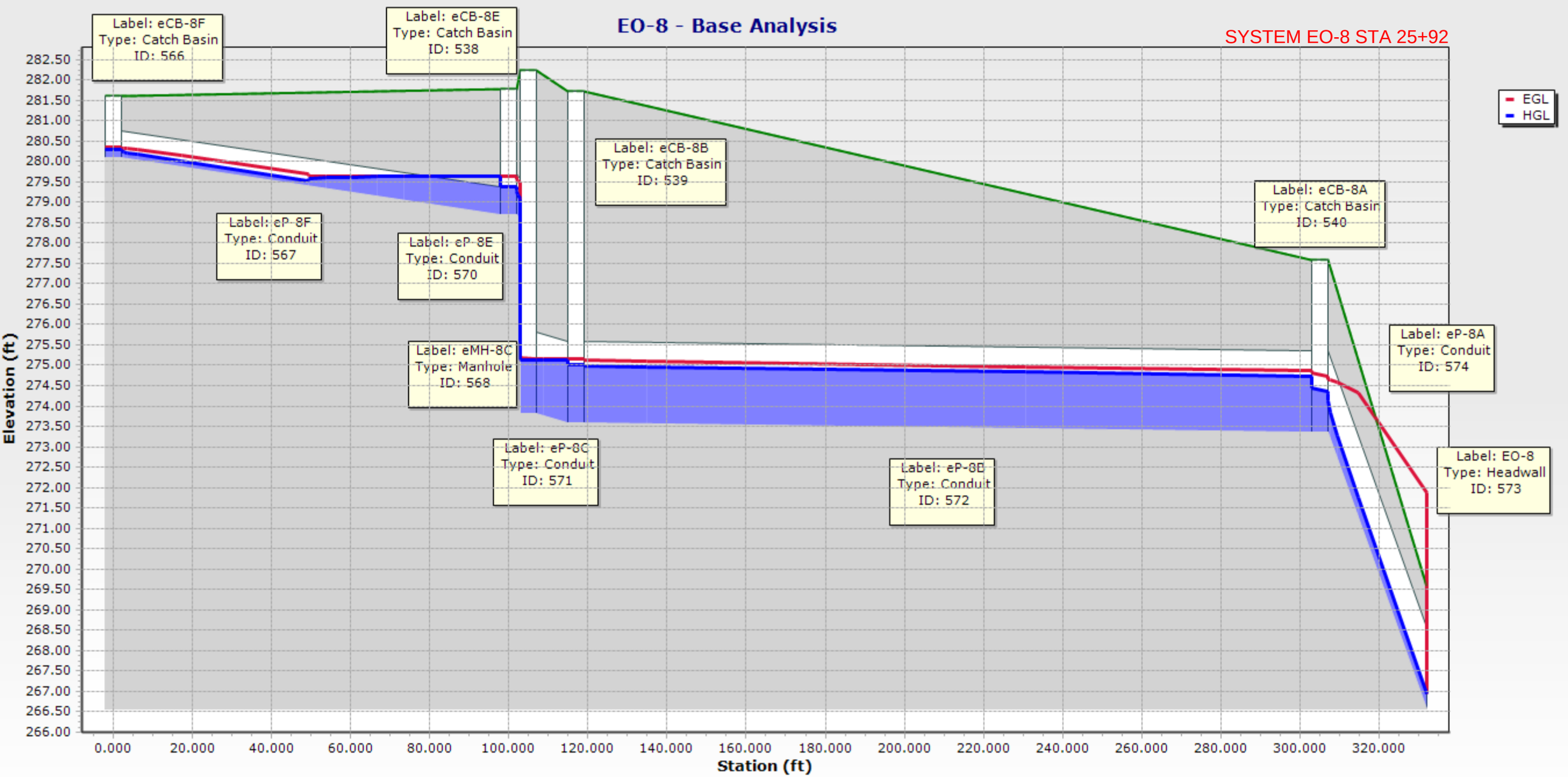
SYSTEM EO-6 STA 14+17

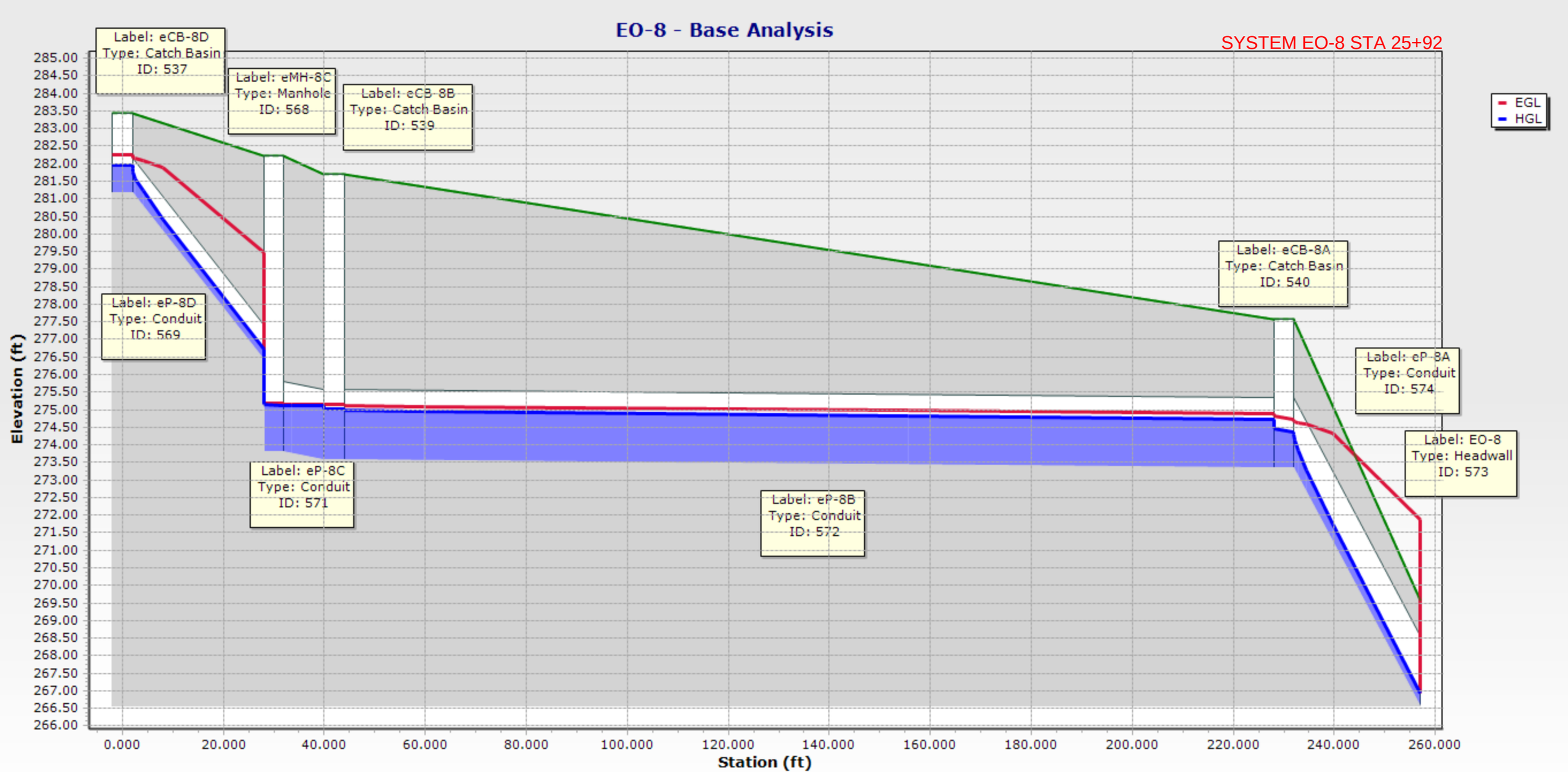



EO-7 - Base Analysis
SYSTEM EO-7 STA 18+98
Label: eCB-7E
Type: Catch Basin
ID: 533
Label: eCB-7D
Type: Catch Basin
ID: 563
Label: eCB-7B
Type: Catch Basin
ID: 558
Label: eCB-7A
Type: Catch Basin
ID: 535
Label: eP-7E
Type: Conduit
ID: 564
Label: eP-7D
Type: Conduit
ID: 565
Label: eP-7B
Type: Conduit
ID: 560
Label: eP-7A
Type: Conduit
ID: 559
Label: EO-7
Type: Headwall
ID: 553
EGL
HGL
Elevation (ft)
291.00
290.50
290.00
289.50
289.00
288.50
288.00
287.50
287.00
286.50
286.00
285.50
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
0.000
10.000
20.000
30.000
40.000
50.000
60.000
70.000
80.000
90.000
100.000
110.000
120.000
130.000
140.000
150.000
160.000
170.000
180.000
190.000
200.000
Station (ft)


EO-7 - Base Analysis
SYSTEM EO-7 STA 18+98
Label: eCB-7B
Type: Catch Basin
ID: 558
Label: eCB-7A
Type: Catch Basin
ID: 535
Label: eCB-7C
Type: Catch Basin
ID: 534
Label: eP-7C
Type: Conduit
ID: 562
Label: eP-7B
Type: Conduit
ID: 560
Label: eP-7A
Type: Conduit
ID: 559
Label: EO-7
Type: Headwall
ID: 553
EGL
HGL
Elevation (ft)
290.50
290.00
289.50
289.00
288.50
288.00
287.50
287.00
286.50
286.00
285.50
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
0.000
10.000
20.000
30.000
40.000
50.000
60.000
70.000
80.000
90.000
100.000
110.000
120.000
130.000
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150.000
160.000
170.000
180.000
190.000
200.000
Station (ft)

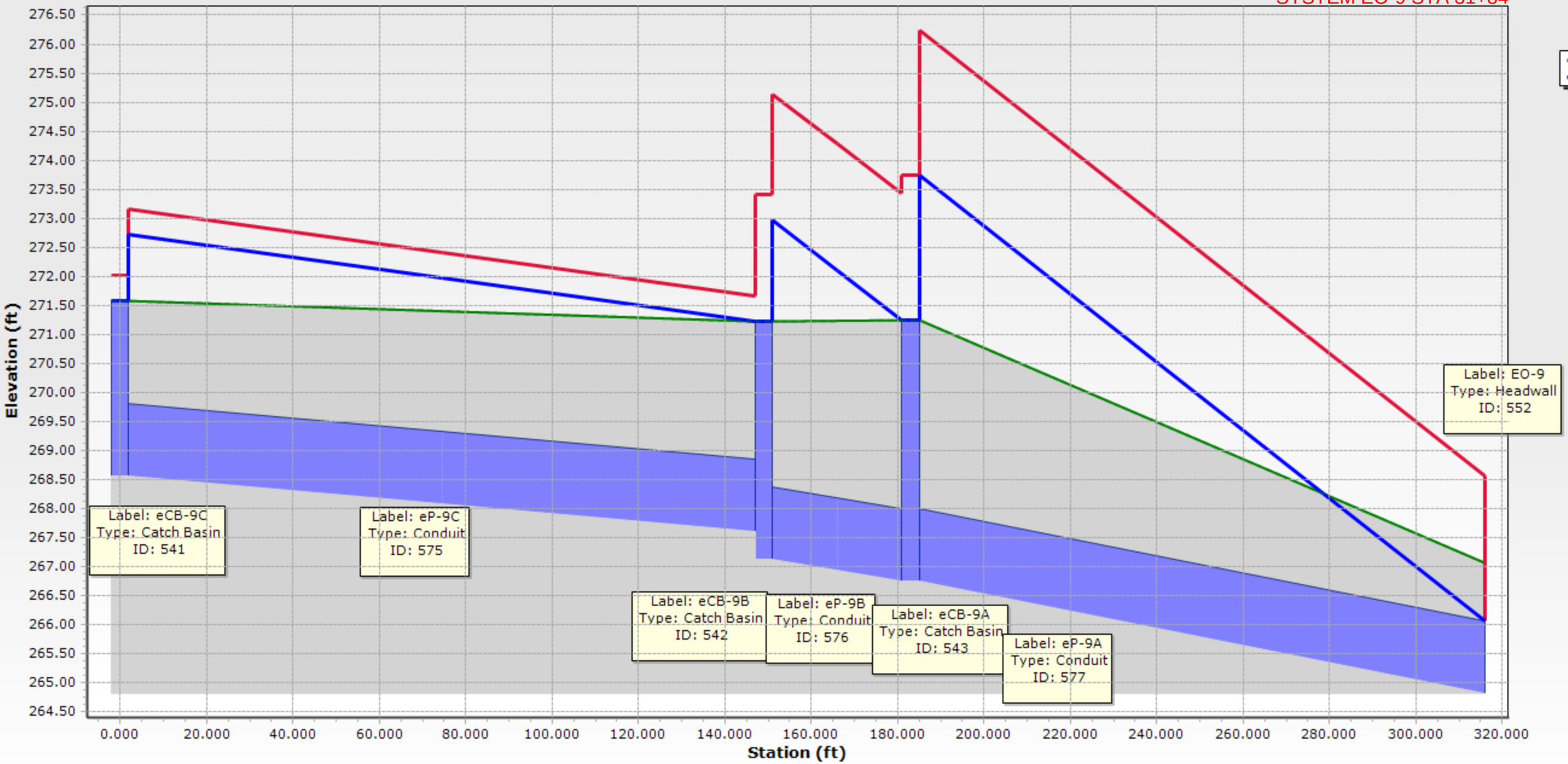

EO-7 - Base Analysis
SYSTEM EO-7 STA 18+98
EGL
HGL
Label: eCB-7H
Type: Catch Basin
ID: 595
Label: eMH-7G
Type: Manhole
ID: 596
Label: eP-7H
Type: Conduit
ID: 597
Label: eP-7G
Type: Conduit
ID: 598
Label: eCB-7F
Type: Catch Basin
ID: 532
Label: eCB-7B
Type: Catch Basin
ID: 558
Label: eCB-7A
Type: Catch Basin
ID: 535
Label: eP-7A
Type: Conduit
ID: 559
Label: EO-7
Type: Headwall
ID: 553
Label: eP-7F
Type: Conduit
ID: 561
Label: eP-7B
Type: Conduit
ID: 560
Elevation (ft)
309.00
308.00
307.00
306.00
305.00
304.00
303.00
302.00
301.00
300.00
299.00
298.00
297.00
296.00
295.00
294.00
293.00
292.00
291.00
290.00
289.00
288.00
287.00
286.00
285.00
284.00
283.00
282.00
281.00
280.00
279.00
278.00
277.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000
280.000
300.000
320.000
340.000
360.000
380.000
400.000
Station (ft)


EO-8 - Base Analysis
SYSTEM EO-8 STA 25+92
Label: eCB-8F
Type: Catch Basin
ID: 566
Label: eCB-8E
Type: Catch Basin
ID: 538
Label: eCB-8B
Type: Catch Basin
ID: 539
Label: eCB-8A
Type: Catch Basin
ID: 540
Label: eP-8F
Type: Conduit
ID: 567
Label: eP-8E
Type: Conduit
ID: 570
Label: eMH-8C
Type: Manhole
ID: 568
Label: eP-8C
Type: Conduit
ID: 571
Label: eP-8B
Type: Conduit
ID: 572
Label: eP-8A
Type: Conduit
ID: 574
Label: EO-8
Type: Headwall
ID: 573
EGL
HGL
Elevation (ft)
Station (ft)
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
277.00
276.50
276.00
275.50
275.00
274.50
274.00
273.50
273.00
272.50
272.00
271.50
271.00
270.50
270.00
269.50
269.00
268.50
268.00
267.50
267.00
266.50
266.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000
280.000
300.000
320.000


EO-8 - Base Analysis
SYSTEM EO-8 STA 25+92
Label: eCB-8D
Type: Catch Basin
ID: 537
Label: eMH-8C
Type: Manhole
ID: 568
Label: eCB-8B
Type: Catch Basin
ID: 539
Label: eCB-8A
Type: Catch Basin
ID: 540
Label: eP-8D
Type: Conduit
ID: 569
Label: eP-8A
Type: Conduit
ID: 574
Label: EO-8
Type: Headwall
ID: 573
Label: eP-8C
Type: Conduit
ID: 571
Label: eP-8B
Type: Conduit
ID: 572
EGL
HGL
Elevation (ft)
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
277.00
276.50
276.00
275.50
275.00
274.50
274.00
273.50
273.00
272.50
272.00
271.50
271.00
270.50
270.00
269.50
269.00
268.50
268.00
267.50
267.00
266.50
266.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000
Station (ft)

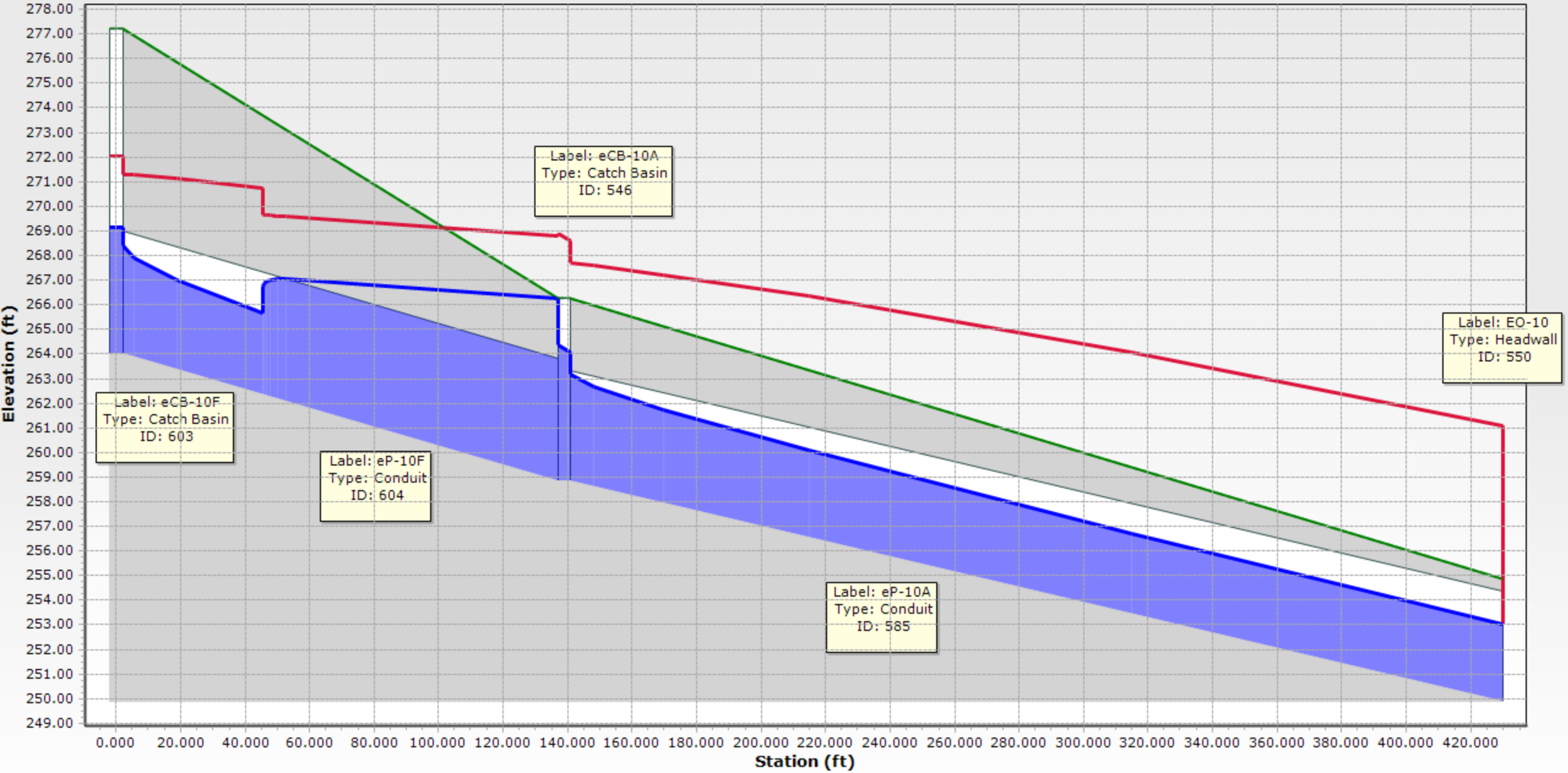
EO-9 - Base Analysis

SYSTEM EO-9 STA 31+84



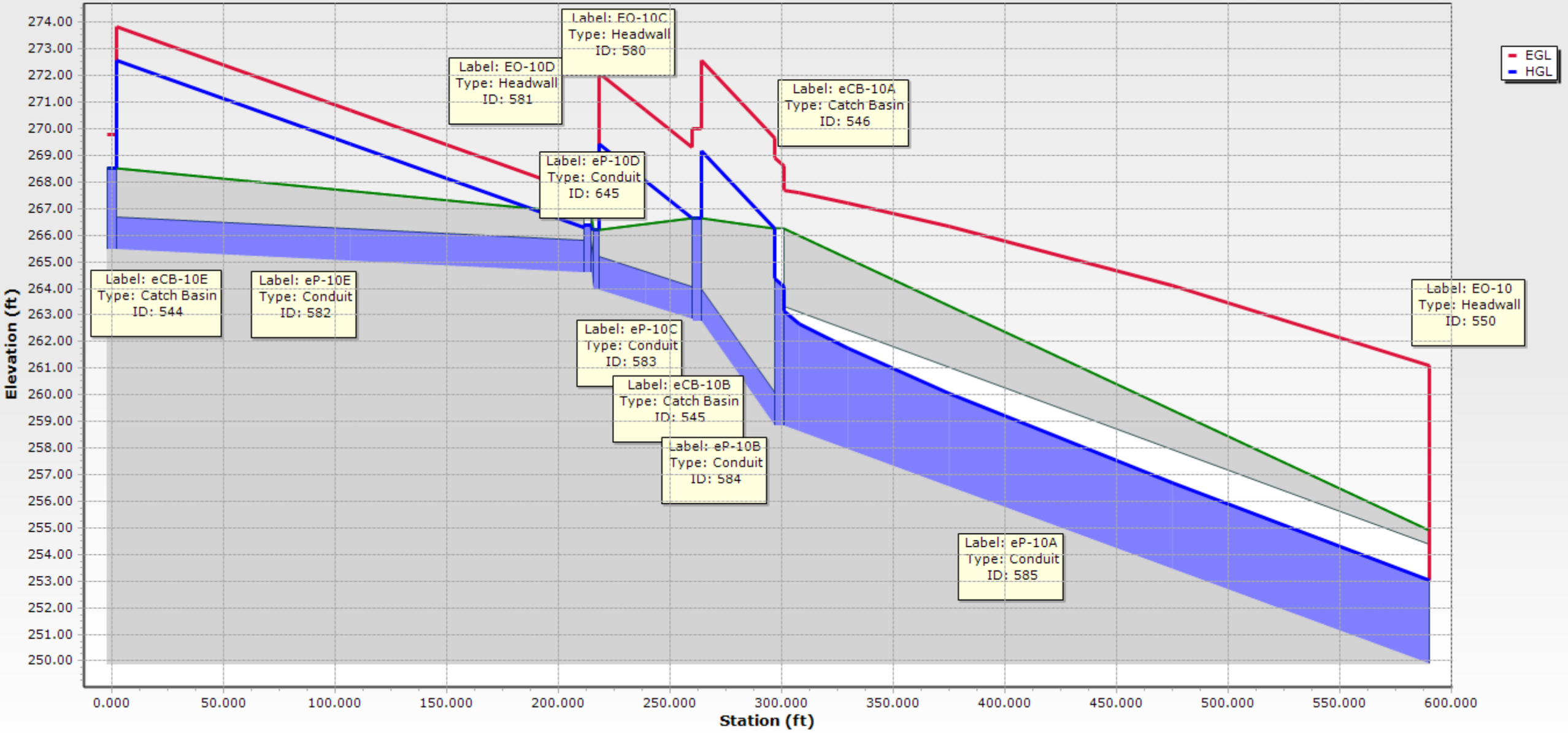
EO-10 - Base Analysis

SYSTEM EO-10 STA 42+85



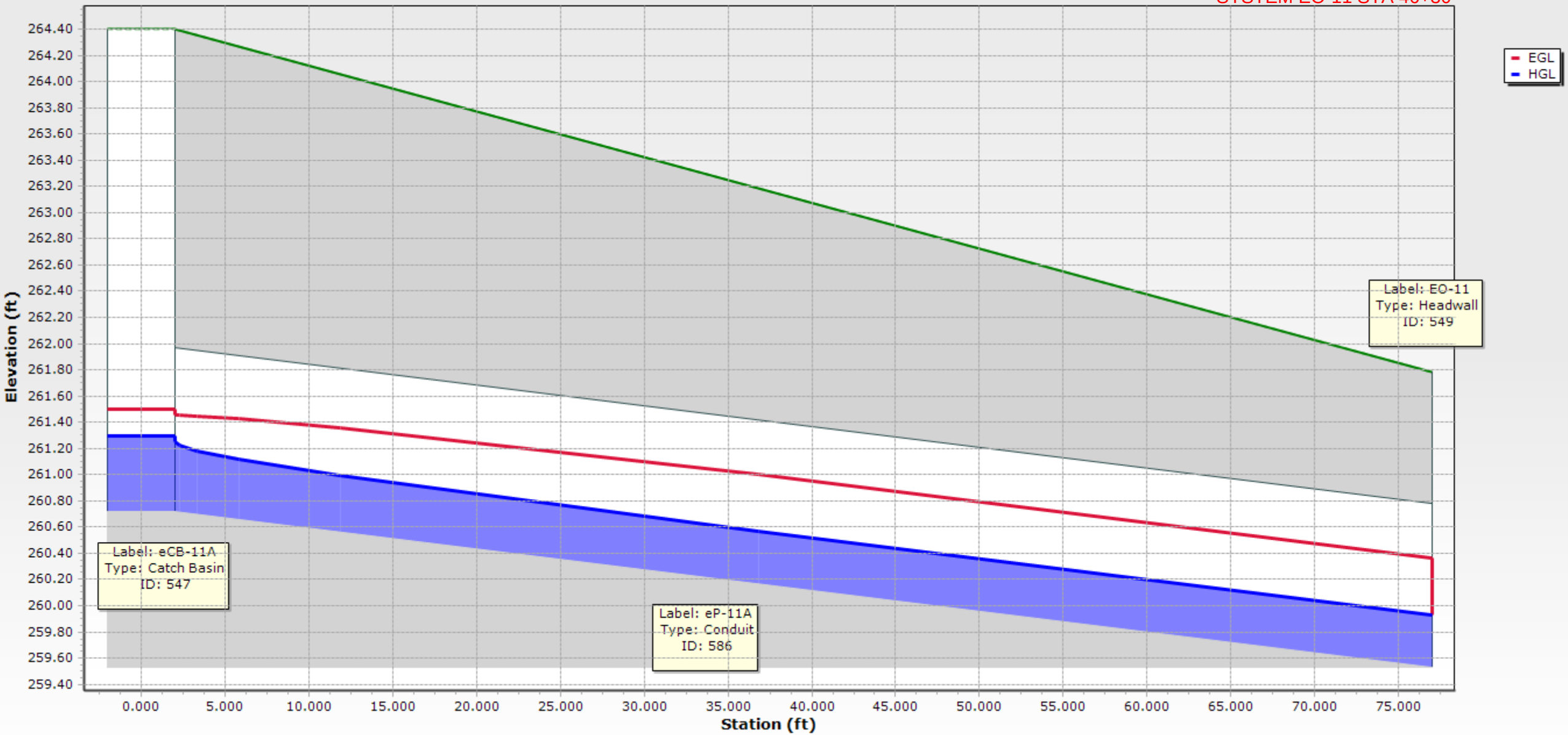
EO-10 - Base Analysis

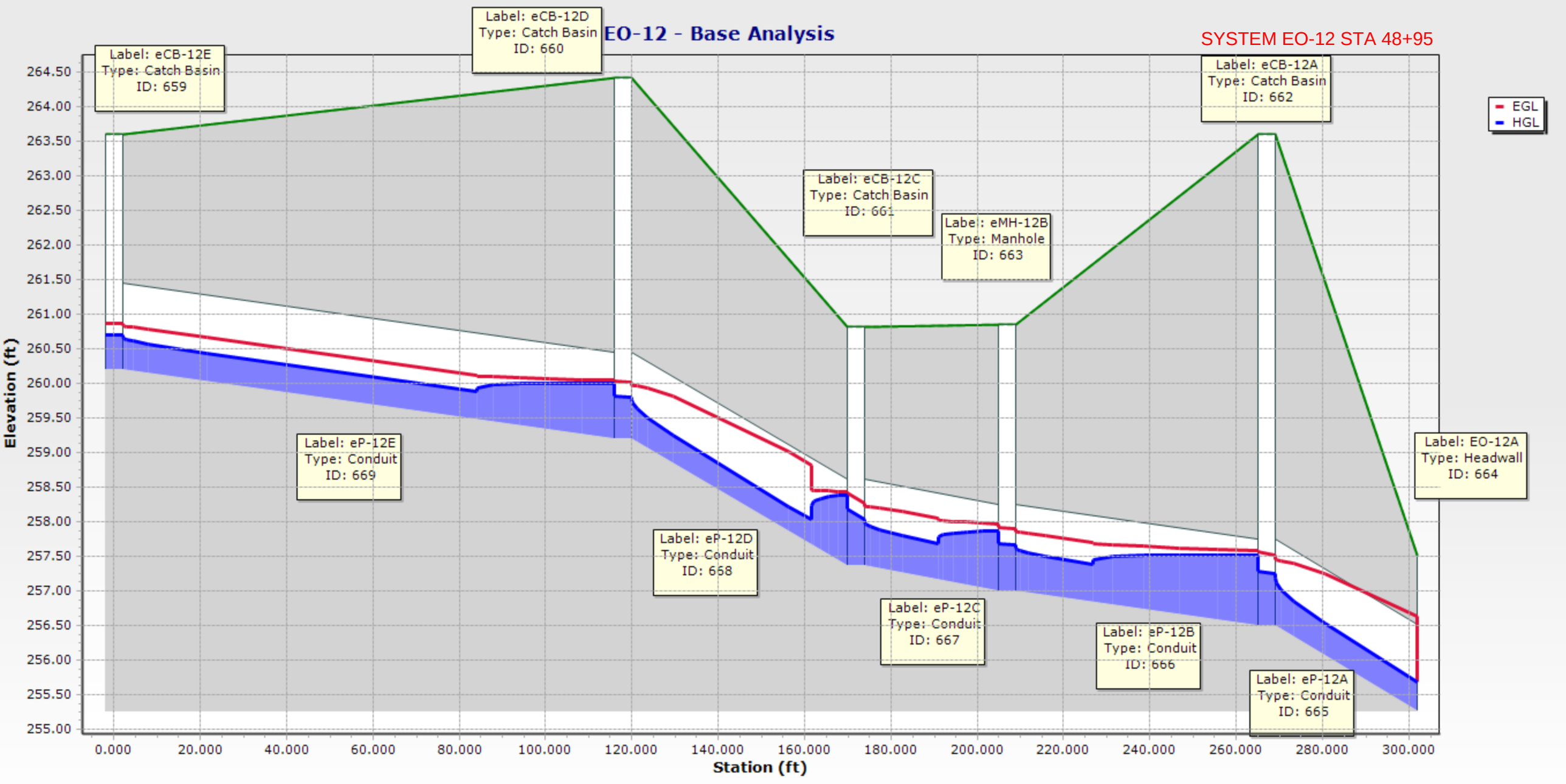
SYSTEM EO-10 STA 42+85



EO-11 - Base Analysis

SYSTEM EO-11 STA 46+30




EO-12 - Base Analysis
SYSTEM EO-12 STA 48+95
Label: eCB-12E
Type: Catch Basin
ID: 659
Label: eCB-12D
Type: Catch Basin
ID: 660
Label: eCB-12C
Type: Catch Basin
ID: 661
Label: eMH-12B
Type: Manhole
ID: 663
Label: eCB-12A
Type: Catch Basin
ID: 662
Label: eP-12E
Type: Conduit
ID: 669
Label: eP-12D
Type: Conduit
ID: 668
Label: eP-12C
Type: Conduit
ID: 667
Label: eP-12B
Type: Conduit
ID: 666
Label: eP-12A
Type: Conduit
ID: 665
Label: EO-12A
Type: Headwall
ID: 664
EGL
HGL
Elevation (ft)
Station (ft)
264.50
264.00
263.50
263.00
262.50
262.00
261.50
261.00
260.50
260.00
259.50
259.00
258.50
258.00
257.50
257.00
256.50
256.00
255.50
255.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000
280.000
300.000

PROPOSED DRAINAGE MODEL

Catch Basin FlexTable: CTDOT Gutter Flow Analysis 10 Year

ID	Label	Inlet	X (ft)	Y (ft)	Inlet Drainage Area (acres)	Inlet C	Total Inlet Tc (hours)	Total Inlet Intensity (in/h)	Local CA (acres)	Total Inlet CA (acres)	Total Rational Flow to Inlet (cfs)	Longitudinal Slope (Inlet) (%)	Depth (Gutter) (ft)	Road Cross Slope (%)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Bypassed CA (acres)	Intercepted CA (acres)	Capture Efficiency (Calculated) (%)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)
513	CB-1A	"C" CB - 6in Conc or Stone Curb	947,425.10	805,341.81	0.237	0.900	0.084	7.622	0.214	0.214	1.64	1.27	0.154	2.00	7.679	0.90	0.117	0.097	45.2	297.38	297.24
506	CB-2A	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	947,569.34	805,300.31	0.212	0.900	0.084	7.622	0.191	0.191	1.47	1.70	0.181	2.00	4.527	0.37	0.048	0.143	74.9	295.58	295.31
509	CB-2B	"C" CB - 6in Conc or Stone Curb	947,569.66	805,331.58	0.047	0.900	0.084	7.622	0.042	0.119	0.92	1.47	0.120	2.00	6.002	0.42	0.055	0.065	54.2	295.63	295.60
686	CB-2D	"C" CB - 6in Conc or Stone Curb	947,491.17	805,337.21	0.042	0.900	0.084	7.622	0.038	0.155	1.19	1.44	0.133	2.00	6.651	0.59	0.077	0.078	50.1	295.70	295.66
517	CB-3A	"C" CB - 6in Conc or Stone Curb	947,890.78	805,256.21	0.188	0.900	0.084	7.622	0.169	0.224	1.72	1.60	0.194	2.00	5.691	0.79	0.103	0.121	53.8	289.56	289.46
920	CB-4A	"C" CB - 6in Conc or Stone Curb	947,904.32	805,221.60	0.161	0.900	0.084	7.622	0.145	0.193	1.48	0.98	0.201	2.00	6.027	0.67	0.087	0.106	54.9	285.69	285.49
834	CB-4B	"C" CB - 6in Conc or Stone Curb	947,974.35	805,197.45	0.035	0.900	0.084	7.622	0.031	0.118	0.91	0.91	0.170	2.00	4.509	0.35	0.045	0.073	61.7	286.25	286.09
821	CB-4C	"C" CB - 6in Conc or Stone Curb	948,069.64	805,164.60	0.047	0.900	0.084	7.622	0.043	0.088	0.67	0.55	0.167	2.00	4.364	0.23	0.030	0.058	65.9	287.12	286.99
819	CB-4D	"C" CB - 6in Conc or Stone Curb	948,173.42	805,131.71	0.095	0.900	0.084	7.622	0.085	0.115	0.89	0.53	0.186	2.00	5.310	0.34	0.044	0.072	62.1	288.24	288.14
521	CB-5A	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	948,365.38	805,105.62	0.161	0.900	0.084	7.622	0.145	0.196	1.51		0.222	2.00	7.076	0.00	0.000	0.196	100.0	288.35	287.82
520	CB-5B	"C-L" CB	948,365.95	805,133.29	0.079	0.900	0.084	7.622	0.071	0.110	0.84	0.57	0.180	2.00	5.025	0.31	0.041	0.069	62.7	288.66	288.49
845	CB-5C	"C" CB - 6in Conc or Stone Curb	948,487.07	805,127.02	0.088	0.900	0.084	7.622	0.079	0.106	0.82	0.41	0.189	2.00	5.462	0.30	0.039	0.068	63.7	289.28	289.18
840	CB-5D	"C" CB - 6in Conc or Stone Curb	948,481.35	805,099.00	0.080	0.900	0.084	7.622	0.072	0.072	0.55	0.41	0.164	2.00	4.193	0.17	0.022	0.050	69.1	289.19	289.11
519	CB-5E	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	948,318.40	805,136.73	0.074	0.900	0.084	7.622	0.067	0.163	1.25		0.201	2.00	6.037	0.00	0.000	0.163	100.0	288.83	288.72
691	CB-5F	"C" CB - 6in Conc or Stone Curb	948,268.59	805,141.92	0.089	0.900	0.084	7.622	0.080	0.137	1.05	0.46	0.203	2.00	6.159	0.42	0.055	0.082	60.0	288.91	288.83
692	CB-5G	"C" CB - 6in Conc or Stone Curb	948,175.25	805,160.47	0.060	0.900	0.084	7.622	0.054	0.140	1.08	0.58	0.196	2.00	5.821	0.44	0.057	0.083	59.3	289.50	289.33
701	CB-5H	"C" CB - 6in Conc or Stone Curb	948,079.87	805,191.01	0.097	0.900	0.084	7.622	0.087	0.191	1.47	0.58	0.219	2.00	6.955	0.66	0.086	0.105	55.1	289.89	289.77
823	CB-5I	"C" CB - 6in Conc or Stone Curb	948,264.77	805,113.88	0.047	0.900	0.084	7.622	0.043	0.086	0.66	0.53	0.167	2.00	4.368	0.22	0.029	0.057	66.1	288.36	288.35
530	CB-6A	"C-L" CB	948,574.15	805,133.98	0.131	0.775	0.084	7.622	0.102	0.132	1.02	6.41	0.123	2.00	3.079	0.21	0.027	0.106	79.8	291.00	290.82
531	CB-6B	"C-L" CB	948,615.38	805,139.19	0.048	0.900	0.084	7.622	0.043	0.043	0.33	4.49	0.086	2.00	2.157	0.02	0.003	0.040	93.6	291.01	291.00
556	CB-6C	"C-L" CB	948,569.45	805,188.98	0.104	0.765	0.084	7.622	0.079	0.088	0.67	6.85	0.080	2.00	4.009	0.22	0.028	0.060	68.1	293.08	292.96
557	CB-6D	"C-L" CB	948,569.45	805,231.78	0.043	0.730	0.084	7.622	0.032	0.032	0.24	1.06	0.078	2.00	3.885	0.06	0.008	0.024	74.1	298.45	298.39
535	CB-7A	"C" CB - 6in Conc or Stone Curb	949,038.82	805,061.70	0.009	0.900	0.084	7.622	0.008	0.008	0.06	0.50	0.070	2.00	1.754	0.00	0.000	0.008	99.1	283.70	283.42
753	CB-7B	"C-L" CB	949,069.62	805,056.27	0.093	0.900	0.084	7.622	0.084	0.084	0.64		0.173	2.00	4.639	0.00	0.000	0.084	100.0	284.75	284.64
558	CB-7C	"C" CB - 6in Conc or Stone Curb	949,038.37	805,090.50	0.054	0.900	0.084	7.622	0.048	0.048	0.37	0.61	0.131	2.00	3.279	0.06	0.008	0.040	82.9	283.91	283.73
712	CB-7D	"C" CB - 6in Conc or Stone Curb	949,075.61	805,083.27	0.120	0.900	0.084	7.622	0.108	0.116	0.89		0.205	2.00	6.244	0.00	0.000	0.116	100.0	285.00	284.88
534	CB-7F	"C" CB - 6in Conc or Stone Curb	948,972.45	805,098.96	0.089	0.900	0.084	7.622	0.080	0.164	1.26	0.74	0.199	2.00	5.951	0.54	0.070	0.094	57.0	285.66	285.49
706	CB-7G	"C" CB - 6in Conc or Stone Curb	948,867.90	805,105.29	0.209	0.900	0.084	7.622	0.188	0.188	1.44	0.56	0.219	2.00	6.964	0.64	0.084	0.104	55.4	287.97	287.86
563	CB-7H	"C" CB - 6in Conc or Stone Curb	949,021.50	805,107.97	0.064	0.900	0.084	7.622	0.057	0.057	0.44	3.83	0.076	2.00	3.810	0.13	0.016	0.041	71.2	285.77	285.59
533	CB-7I	"C" CB - 6in Conc or Stone Curb	948,985.91	805,113.34	0.414	0.900	0.084	7.622	0.373	0.373	2.86	2.27	0.170	2.00	8.483	1.72	0.224	0.149	39.9	286.11	285.95
532	CB-7J	"C-L" CB	949,040.53	805,115.51	0.313	0.713	0.084	7.622	0.223	0.223	1.72	3.17	0.132	2.00	6.577	0.89	0.115	0.108	48.3	284.86	284.73
540	CB-8A	"C" CB - 6in Conc or Stone Curb	949,752.50	804,765.72	0.085	0.900	0.084	7.622	0.077	0.077	0.59	8.22	0.074	2.00	3.683	0.17	0.022	0.055	71.7	270.43	270.16
539	CB-8B	"C-L" CB	949,720.41	804,950.54	0.462	0.900	0.084	7.622	0.416	0.489	3.76	3.63	0.184	2.40	7.675	2.17	0.282	0.207	42.3	274.63	274.36
537	CB-8D	"C" CB - 6in Conc or Stone Curb	949,688.10	804,969.18	3.072	0.789	0.084	7.622	2.424	2.424	18.62	10.48	0.257	2.00	12.852	16.68	2.171	0.253	10.4	277.71	277.50
566	CB-8E	"C-L" CB	949,810.21	805,013.69	0.031	0.785	0.084	7.622	0.024	0.024	0.19	1.66	0.065	2.00	3.239	0.04	0.005	0.020	80.2	280.34	280.28
955	CB-8F	"C" CB - 6in Conc or Stone Curb	949,719.29	804,974.70	0.183	0.900	0.084	7.622	0.165	0.165	1.27	5.49	0.106	2.00	5.293	0.56	0.073	0.092	55.8	274.72	274.72
543	CB-9A	"C" CB - 6in Conc or Stone Curb	950,303.77	805,110.86	0.095	0.900	0.084	7.622	0.086	0.164	1.26	0.44	0.218	2.00	6.906	0.53	0.069	0.095	57.7	268.64	268.11
542	CB-9B	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	950,291.77	805,136.59	0.082	0.900	0.084	7.622	0.074	0.105	0.81	0.44	0.186	2.00	5.321	0.14	0.019	0.087	82.3	268.96	268.78
541	CB-9C	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	950,150.39	805,087.96	0.058	0.900	0.084	7.622	0.052	0.129	0.99	1.12	0.169	2.00	4.448	0.24	0.032	0.097	75.3	269.53	269.37
717	CB-9D	"C" CB - 6in Conc or Stone Curb	950,051.09	805,054.00	0.065	0.900	0.084	7.622	0.059	0.177	1.36	1.42	0.182	2.00	5.090	0.59	0.076	0.100	56.8	270.38	270.10
718	CB-9E	"C" CB - 6in Conc or Stone Curb	949,943.27	805,017.11	0.055	0.900	0.084	7.622	0.049	0.255	1.96	2.57	0.186	2.00	5.323	0.91	0.118	0.137	53.6	271.71	271.47
719	CB-9F	"C" CB - 6in Conc or Stone Curb	949,852.06	804,985.91	0.108	0.900	0.084	7.622	0.097	0.379	2.91	3.40	0.204	2.00	6.220	1.58	0.206	0.173	45.7	273.94	273.77
758	CB-9G	"C" CB - 6in Conc or Stone Curb	950,163.92	805,062.68	0.124	0.900	0.084	7.622	0.111	0.178	1.37	0.68	0.208	2.00	6.401	0.60	0.079	0.100	55.9	269.35	269.17
763	CB-9H	"C" CB - 6in Conc or Stone Curb	950,048.12	805,023.07	0.183	0.900	0.084	7.622	0.164	0.164	1.26	2.16	0.164	2.00	4.186	0.51	0.067	0.097	59.3	270.12	270.00
546	CB-10A	"C-L" CB	951,129.55	805,359.11	0.006	0.900	0.084	7.622	0.006	0.006	0.04	1.57	0.050	3.00	1.238	0.00	0.000	0.006	100.0	265.58	261.35
545	CB-10B	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	951,092.73	805,369.44	0.039	0.900	0.084	7.622	0.035	0.076	0.58	0.56	0.158	3.00	3.943	0.07	0.009	0.067	88.2	266.13	265.79
665	CB-10E	"C" CB - DblGrt Typ1 - 6in Conc or Stone Curb	950,911.00	805,383.61	0.068	0.900	0.084	7.622	0.061	0.110	0.85	0.13	0.238	4.00	5.957	0.09	0.012	0.098	89.0	266.51	266.44
730	CB-10F	"C" CB - 6in Conc or Stone Curb	950,758.86	805,343.76	0.062	0.900	0.084	7.622	0.056	0.127	0.97	0.43	0.200	2.00	5.995	0.38	0.049	0.078	61.2	266.65	266.61

PROPOSED DRAINAGE MODEL

Catch Basin FlexTable: CTDOT Gutter Flow Analysis - 10 Year

ID	Label	Inlet	X (ft)	Y (ft)	Inlet Drainage Area (acres)	Inlet C	Total Inlet Tc (hours)	Total Inlet Intensity (in/h)	Local CA (acres)	Total Inlet CA (acres)	Total Rational Flow to Inlet (cfs)	Longitudinal Slope (Inlet) (%)	Depth (Gutter) (ft)	Road Cross Slope (%)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Bypassed CA (acres)	Intercepted CA (acres)	Capture Efficiency (Calculated) (%)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)
735	CB-10G	"C" CB - 6in Conc or Stone Curb	950,674.61	805,321.25	0.104	0.900	0.084	7.622	0.094	0.167	1.28	0.43	0.220	2.00	7.020	0.55	0.071	0.096	57.5	266.86	266.68
741	CB-10H	"C" CB - 6in Conc or Stone Curb	950,532.89	805,268.31	0.169	0.900	0.084	7.622	0.152	0.171	1.31	0.44	0.221	2.00	7.062	0.56	0.073	0.098	57.2	267.30	267.20
768	CB-10I	"C" CB - 6in Conc or Stone Curb	951,042.43	805,372.02	0.063	0.900	0.084	7.622	0.056	0.110	0.84	0.50	0.185	3.00	4.834	0.31	0.041	0.069	62.8	266.18	266.15
773	CB-10J	"C" CB - 6in Conc or Stone Curb	950,966.10	805,366.45	0.064	0.900	0.084	7.622	0.058	0.133	1.02	0.59	0.193	3.00	5.095	0.41	0.053	0.080	59.9	266.24	266.21
778	CB-10K	"C" CB - 6in Conc or Stone Curb	950,884.96	805,348.16	0.101	0.900	0.084	7.622	0.091	0.175	1.35	0.43	0.226	3.00	6.195	0.58	0.076	0.100	56.8	266.29	266.27
779	CB-10L	"C" CB - 6in Conc or Stone Curb	950,727.38	805,306.05	0.069	0.900	0.084	7.622	0.062	0.190	1.46	0.44	0.229	2.00	7.464	0.64	0.084	0.106	55.8	266.34	266.33
789	CB-10M	"C" CB - 6in Conc or Stone Curb	950,607.95	805,271.67	0.214	0.900	0.084	7.622	0.192	0.262	2.01	4.02	0.173	2.00	4.671	0.98	0.128	0.134	51.2	266.74	266.61
603	CB-10N	"C-L" CB	951,116.55	805,497.14	(N/A)	(N/A)	0.000	7.640	0.000	0.000	0.00		0.000	3.00	0.000	0.00	0.000	0.000	100.0	272.02	269.14
547	CB-11A	"C" CB - 6in Conc or Stone Curb	951,513.62	805,055.90	0.075	0.900	0.084	7.622	0.067	0.150	1.15	0.44	0.212	2.63	5.990	0.48	0.062	0.088	58.8	261.83	261.59
795	CB-11B	"C" CB - 6in Conc or Stone Curb	951,470.25	805,138.68	0.065	0.900	0.084	7.622	0.059	0.188	1.45	0.44	0.231	3.00	6.362	0.64	0.083	0.105	55.8	262.29	262.08
799	CB-11C	"C" CB - 6in Conc or Stone Curb	951,420.88	805,203.10	0.286	0.900	0.084	7.622	0.257	0.266	2.05	0.43	0.263	3.00	7.425	0.99	0.129	0.137	51.4	263.08	262.93
896	CB-12A	"C" CB - 6in Conc or Stone Curb	951,663.92	804,818.26	0.150	0.900	0.084	7.622	0.135	0.135	1.04	1.60	0.124	2.00	6.197	0.49	0.064	0.071	52.6	257.17	257.01
895	CB-12C	"C" CB - 6in Conc or Stone Curb	951,733.64	804,881.20	0.092	0.900	0.084	7.622	0.083	0.083	0.63	2.04	0.098	2.00	4.922	0.25	0.032	0.051	61.4	258.07	257.92
894	CB-12D	"C" CB - 6in Conc or Stone Curb	951,692.07	804,916.37	0.200	0.900	0.800	2.244	0.180	0.180	0.41	13.53	0.058	2.00	2.921	0.08	0.037	0.143	79.3	259.81	259.66
892	CB-12F	"C" CB - 6in Conc or Stone Curb	951,580.52	804,966.35	0.547	0.405	0.084	7.622	0.222	0.272	2.09	1.65	0.206	2.00	6.325	1.02	0.133	0.139	51.2	261.51	261.41
911	CB-12G	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	951,540.50	805,064.95	0.233	0.900	0.084	7.622	0.210	0.222	1.71	0.42	0.249	4.00	6.217	0.39	0.050	0.172	77.4	262.98	262.81

Catch Basin FlexTable: CTDOT Gutter Flow Analysis - 25 Year

ID	Label	Inlet	X (ft)	Y (ft)	Inlet Drainage Area (acres)	Inlet C	Total Inlet Tc (hours)	Total Inlet Intensity (in/h)	Local CA (acres)	Total Inlet CA (acres)	Total Rational Flow to Inlet (cfs)	Longitudinal Slope (Inlet) (%)	Depth (Gutter) (ft)	Road Cross Slope (%)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Bypassed CA (acres)	Intercepted CA (acres)	Capture Efficiency (Calculated) (%)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)
513	CB-1A	"C" CB - 6in Conc or Stone Curb	947,425.10	805,341.81	0.237	0.900	0.084	9.198	0.214	0.214	1.98	1.27	0.165	2.00	8.240	1.14	0.123	0.091	42.7	297.43	297.27
506	CB-2A	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	947,569.34	805,300.31	0.212	0.900	0.084	9.198	0.191	0.191	1.77	1.70	0.194	2.00	4.858	0.49	0.053	0.138	72.2	295.69	295.39
509	CB-2B	"C" CB - 6in Conc or Stone Curb	947,569.66	805,331.58	0.047	0.900	0.084	9.198	0.042	0.127	1.18	1.47	0.132	2.00	6.596	0.58	0.063	0.064	50.4	295.76	295.72
686	CB-2D	"C" CB - 6in Conc or Stone Curb	947,491.17	805,337.21	0.042	0.900	0.084	9.198	0.038	0.161	1.49	1.44	0.145	2.00	7.229	0.79	0.085	0.075	46.9	295.82	295.79
517	CB-3A	"C" CB - 6in Conc or Stone Curb	947,890.78	805,256.21	0.188	0.900	0.084	9.198	0.169	0.232	2.15	1.60	0.210	2.00	6.495	1.06	0.114	0.118	50.7	289.60	289.49
920	CB-4A	"C" CB - 6in Conc or Stone Curb	947,904.32	805,221.60	0.161	0.900	0.084	9.198	0.145	0.198	1.84	0.98	0.216	2.00	6.815	0.88	0.095	0.103	52.0	285.79	285.56
834	CB-4B	"C" CB - 6in Conc or Stone Curb	947,974.35	805,197.45	0.035	0.900	0.084	9.198	0.031	0.126	1.17	0.91	0.187	2.00	5.344	0.49	0.053	0.073	58.1	286.32	286.14
821	CB-4C	"C" CB - 6in Conc or Stone Curb	948,069.64	805,164.60	0.047	0.900	0.084	9.198	0.043	0.096	0.89	0.55	0.185	2.00	5.246	0.34	0.036	0.059	62.0	287.18	287.03
819	CB-4D	"C" CB - 6in Conc or Stone Curb	948,173.42	805,131.71	0.095	0.900	0.084	9.198	0.085	0.122	1.13	0.53	0.203	2.00	6.151	0.46	0.050	0.072	58.8	288.28	288.17
521	CB-5A	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	948,365.38	805,105.62	0.161	0.900	0.084	9.198	0.145	0.204	1.89		0.250	2.00	8.504	0.00	0.000	0.204	100.0	288.59	287.92
520	CB-5B	"C-L" CB	948,365.95	805,133.29	0.079	0.900	0.084	9.198	0.071	0.115	1.07	0.57	0.197	2.00	5.837	0.43	0.047	0.069	59.4	289.05	288.80
845	CB-5C	"C" CB - 6in Conc or Stone Curb	948,487.07	805,127.02	0.088	0.900	0.084	9.198	0.079	0.112	1.04	0.41	0.206	2.00	6.313	0.41	0.044	0.068	60.5	289.32	289.21
840	CB-5D	"C" CB - 6in Conc or Stone Curb	948,481.35	805,099.00	0.080	0.900	0.084	9.198	0.072	0.072	0.67	0.41	0.176	2.00	4.786	0.22	0.024	0.048	66.4	289.22	289.13
519	CB-5E	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	948,318.40	805,136.73	0.074	0.900	0.084	9.198	0.067	0.178	1.65		0.232	2.00	7.612	0.00	0.000	0.178	100.0	289.31	289.16
691	CB-5F	"C" CB - 6in Conc or Stone Curb	948,268.59	805,141.92	0.089	0.900	0.084	9.198	0.080	0.147	1.37	0.46	0.223	2.00	7.125	0.59	0.064	0.083	56.5	289.41	289.35
692	CB-5G	"C" CB - 6in Conc or Stone Curb	948,175.25	805,160.47	0.060	0.900	0.084	9.198	0.054	0.152	1.41	0.58	0.216	2.00	6.793	0.62	0.067	0.084	55.7	289.57	289.41
701	CB-5H	"C" CB - 6in Conc or Stone Curb	948,079.87	805,191.01	0.097	0.900	0.084	9.198	0.087	0.202	1.87	0.58	0.238	2.00	7.914	0.90	0.097	0.105	51.8	289.95	289.81
823	CB-5I	"C" CB - 6in Conc or Stone Curb	948,264.77	805,113.88	0.047	0.900	0.084	9.198	0.043	0.093	0.86	0.53	0.184	2.00	5.205	0.32	0.035	0.058	62.5	288.60	288.60
530	CB-6A	"C-L" CB	948,574.15	805,133.98	0.131	0.775	0.084	9.198	0.102	0.137	1.27	6.41	0.134	2.00	3.343	0.30	0.033	0.104	76.2	291.07	290.87
531	CB-6B	"C-L" CB	948,615.38	805,139.19	0.048	0.900	0.084	9.198	0.043	0.043	0.40	4.49	0.093	2.00	2.314	0.03	0.004	0.039	91.4	291.07	291.07
556	CB-6C	"C-L" CB	948,569.45	805,188.98	0.104	0.765	0.084	9.198	0.079	0.089	0.82	6.85	0.086	2.00	4.319	0.29	0.031	0.057	64.7	293.12	292.99
557	CB-6D	"C-L" CB	948,569.45	805,231.78	0.043	0.730	0.084	9.198	0.032	0.032	0.29	1.06	0.083	2.00	4.168	0.09	0.009	0.023	71.1	298.47	298.40
535	CB-7A	"C" CB - 6in Conc or Stone Curb	949,038.82	805,061.70	0.009	0.900	0.084	9.198	0.008	0.008	0.08	0.50	0.075	2.00	1.882	0.00	0.000	0.008	98.3	283.80	283.49
753	CB-7B	"C-L" CB	949,069.62	805,056.27	0.093	0.900	0.084	9.198	0.084	0.084	0.78		0.191	2.00	5.525	0.00	0.000	0.084	100.0	284.79	284.67
558	CB-7C	"C" CB - 6in Conc or Stone Curb	949,038.37	805,090.50	0.054	0.900	0.084	9.198	0.048	0.048	0.45	0.61	0.141	2.00	3.518	0.09	0.010	0.039	80.2	284.01	283.83
712	CB-7D	"C" CB - 6in Conc or Stone Curb	949,075.61	805,083.27	0.120	0.900	0.084	9.198	0.108	0.118	1.09		0.228	2.00	7.410	0.00	0.000	0.118	100.0	285.06	284.92
534	CB-7F	"C" CB - 6in Conc or Stone Curb	948,972.45	805,098.96	0.089	0.900	0.084	9.198	0.080	0.169	1.57	0.74	0.215	2.00	6.740	0.72	0.077	0.091	54.1	285.71	285.53
706	CB-7G	"C" CB - 6in Conc or Stone Curb	948,867.90	805,105.29	0.209	0.900	0.084	9.198	0.188	0.188	1.74	0.56	0.234	2.00	7.697	0.82	0.089	0.099	52.9	288.01	287.88
563	CB-7H	"C" CB - 6in Conc or Stone Curb	949,021.50	805,107.97	0.064	0.900	0.084	9.198	0.057	0.057	0.53	3.83	0.082	2.00	4.088	0.17	0.018	0.039	68.0	285.83	285.64
533	CB-7I	"C" CB - 6in Conc or Stone Curb	948,985.91	805,113.34	0.414	0.900	0.084	9.198	0.373	0.373	3.45	2.27	0.182	2.00	9.103	2.16	0.233	0.140	37.6	286.15	285.98
532	CB-7J	"C-L" CB	949,040.53	805,115.51	0.313	0.713	0.084	9.198	0.223	0.223	2.07	3.17	0.141	2.00	7.057	1.13	0.121	0.102	45.7	284.90	284.76
540	CB-8A	"C" CB - 6in Conc or Stone Curb	949,752.50	804,765.72	0.085	0.900	0.084	9.198	0.077	0.077	0.71	8.22	0.079	2.00	3.952	0.23	0.025	0.052	67.9	270.48	270.19
539	CB-8B	"C-L" CB	949,720.41	804,950.54	0.462	0.900	0.084	9.198	0.416	0.495	4.59	3.63	0.199	2.40	8.276	2.77	0.299	0.197	39.7	274.67	274.39
537	CB-8D	"C" CB - 6in Conc or Stone Curb	949,688.10	804,969.18	3.072	0.789	0.084	9.198	2.424	2.424	22.47	10.48	0.276	2.00	13.791	20.54	2.215	0.209	8.6	277.71	277.50
566	CB-8E	"C-L" CB	949,810.21	805,013.69	0.031	0.785	0.084	9.198	0.024	0.024	0.23	1.66	0.070	2.00	3.475	0.05	0.006	0.019	77.3	280.37	280.30
955	CB-8F	"C" CB - 6in Conc or Stone Curb	949,719.29	804,974.70	0.183	0.900	0.084	9.198	0.165	0.165	1.53	5.49	0.114	2.00	5.679	0.73	0.079	0.085	51.9	274.76	274.75
543	CB-9A	"C" CB - 6in Conc or Stone Curb	950,303.77	805,110.86	0.095	0.900	0.084	9.198	0.086	0.172	1.59	0.44	0.236	2.00	7.812	0.72	0.078	0.094	54.6	268.87	268.20
542	CB-9B	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	950,291.77	805,136.59	0.082	0.900	0.084	9.198	0.074	0.116	1.08	0.44	0.206	2.00	6.314	0.22	0.023	0.093	79.8	269.34	269.07
541	CB-9C	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	950,150.39	805,087.96	0.058	0.900	0.084	9.198	0.052	0.148	1.37	1.12	0.190	2.00	5.521	0.39	0.042	0.106	71.4	270.20	269.99
717	CB-9D	"C" CB - 6in Conc or Stone Curb	950,051.09	805,054.00	0.065	0.900	0.084	9.198	0.059	0.201	1.86	1.42	0.204	2.00	6.180	0.89	0.095	0.105	52.4	270.61	270.46
718	CB-9E	"C" CB - 6in Conc or Stone Curb	949,943.27	805,017.11	0.055	0.900	0.084	9.198	0.049	0.279	2.59	2.57	0.206	2.00	6.295	1.32	0.142	0.137	49.0	271.81	271.54
719	CB-9F	"C" CB - 6in Conc or Stone Curb	949,852.06	804,985.91	0.108	0.900	0.084	9.198	0.097	0.396	3.67	3.40	0.222	2.00	7.078	2.13	0.230	0.166	41.9	273.99	273.81
758	CB-9G	"C" CB - 6in Conc or Stone Curb	950,163.92	805,062.68	0.124	0.900	0.084	9.198	0.111	0.183	1.70	0.68	0.224	2.00	7.205	0.80	0.086	0.097	53.0	269.41	269.22
763	CB-9H	"C" CB - 6in Conc or Stone Curb	950,048.12	805,023.07	0.183	0.900	0.084	9.198	0.164	0.164	1.52	2.16	0.176	2.00	4.778	0.66	0.071	0.093	56.5	270.16	270.03
546	CB-10A	"C-L" CB	951,129.55	805,359.11	0.006	0.900	0.084	9.198	0.006	0.006	0.05	1.57	0.053	3.00	1.329	0.00	0.000	0.006	100.0	265.68	261.39
545	CB-10B	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	951,092.73	805,369.44	0.039	0.900	0.084	9.198	0.035	0.084	0.78	0.56	0.176	3.00	4.532	0.15	0.016	0.068	81.3	266.54	266.00
665	CB-10E	"C" CB - DblGrt Typ1 - 6in Conc or Stone Curb	950,911.00	805,383.61	0.068	0.900	0.084	9.198	0.061	0.118	1.09	0.13	0.262	4.00	6.558	0.15	0.017	0.101	85.9	266.64	266.55
730	CB-10F	"C" CB - 6in Conc or Stone Curb	950,758.86	805,343.76	0.062	0.900	0.084	9.198	0.056	0.135	1.25	0.43	0.218	2.00	6.922	0.53	0.057	0.078	57.9	266.87	266.82

PROPOSED DRAINAGE MODEL

Catch Basin FlexTable: CTDOT Gutter Flow Analysis - 25 Year

ID	Label	Inlet	X (ft)	Y (ft)	Inlet Drainage Area (acres)	Inlet C	Total Inlet Tc (hours)	Total Inlet Intensity (in/h)	Local CA (acres)	Total Inlet CA (acres)	Total Rational Flow to Inlet (cfs)	Longitudinal Slope (Inlet) (%)	Depth (Gutter) (ft)	Road Cross Slope (%)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Bypassed CA (acres)	Intercepted CA (acres)	Capture Efficiency (Calculated) (%)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)
735	CB-10G	"C" CB - 6in Conc or Stone Curb	950,674.61	805,321.25	0.104	0.900	0.084	9.198	0.094	0.174	1.62	0.43	0.239	2.00	7.925	0.74	0.079	0.095	54.4	266.98	266.89
741	CB-10H	"C" CB - 6in Conc or Stone Curb	950,532.89	805,268.31	0.169	0.900	0.084	9.198	0.152	0.176	1.63	0.44	0.238	2.00	7.911	0.75	0.080	0.095	54.3	267.35	267.23
768	CB-10I	"C" CB - 6in Conc or Stone Curb	951,042.43	805,372.02	0.063	0.900	0.084	9.198	0.056	0.120	1.11	0.50	0.205	3.00	5.501	0.46	0.049	0.071	59.0	266.63	266.57
773	CB-10J	"C" CB - 6in Conc or Stone Curb	950,966.10	805,366.45	0.064	0.900	0.084	9.198	0.058	0.146	1.35	0.59	0.214	3.00	5.785	0.59	0.064	0.082	56.2	266.72	266.68
778	CB-10K	"C" CB - 6in Conc or Stone Curb	950,884.96	805,348.16	0.101	0.900	0.084	9.198	0.091	0.189	1.75	0.43	0.248	3.00	6.950	0.82	0.088	0.101	53.4	266.79	266.76
779	CB-10L	"C" CB - 6in Conc or Stone Curb	950,727.38	805,306.05	0.069	0.900	0.084	9.198	0.062	0.204	1.89	0.44	0.251	2.00	8.536	0.91	0.098	0.107	52.2	266.87	266.85
789	CB-10M	"C" CB - 6in Conc or Stone Curb	950,607.95	805,271.67	0.214	0.900	0.084	9.198	0.192	0.270	2.50	4.02	0.188	2.00	5.397	1.32	0.142	0.128	47.3	266.91	266.87
603	CB-10N	"C-L" CB	951,116.55	805,497.14	(N/A)	(N/A)	0.000	9.220	0.000	0.000	0.00		0.000	3.00	0.000	0.00	0.000	0.000	100.0	272.02	269.14
547	CB-11A	"C" CB - 6in Conc or Stone Curb	951,513.62	805,055.90	0.075	0.900	0.084	9.198	0.067	0.161	1.50	0.44	0.233	2.63	6.777	0.67	0.072	0.089	55.4	261.99	261.71
795	CB-11B	"C" CB - 6in Conc or Stone Curb	951,470.25	805,138.68	0.065	0.900	0.084	9.198	0.059	0.199	1.85	0.44	0.252	3.00	7.072	0.87	0.094	0.105	52.6	262.37	262.14
799	CB-11C	"C" CB - 6in Conc or Stone Curb	951,420.88	805,203.10	0.286	0.900	0.084	9.198	0.257	0.273	2.53	0.43	0.284	3.00	8.122	1.30	0.140	0.133	48.6	263.13	262.97
896	CB-12A	"C" CB - 6in Conc or Stone Curb	951,663.92	804,818.26	0.150	0.900	0.084	9.198	0.135	0.135	1.26	1.60	0.133	2.00	6.650	0.63	0.068	0.067	49.8	257.23	257.05
895	CB-12C	"C" CB - 6in Conc or Stone Curb	951,733.64	804,881.20	0.092	0.900	0.084	9.198	0.083	0.083	0.77	2.04	0.106	2.00	5.281	0.32	0.034	0.048	58.4	258.13	257.97
894	CB-12D	"C" CB - 6in Conc or Stone Curb	951,692.07	804,916.37	0.200	0.900	0.800	2.702	0.180	0.180	0.49	13.53	0.063	2.00	3.132	0.12	0.045	0.135	74.7	259.86	259.70
892	CB-12F	"C" CB - 6in Conc or Stone Curb	951,580.52	804,966.35	0.547	0.405	0.084	9.198	0.222	0.279	2.58	1.65	0.222	2.00	7.120	1.33	0.144	0.135	48.4	261.66	261.55
911	CB-12G	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	951,540.50	805,064.95	0.233	0.900	0.084	9.198	0.210	0.227	2.10	0.42	0.269	4.00	6.722	0.53	0.057	0.170	74.9	263.04	262.85

PROPOSED DRAINAGE MODEL

Conduit FlexTable: CTDOT Storm Drain Computation Sheet 10 Year

Label	Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet Tc (hours)	Time (Pipe Flow) (hours)	System Flow Time (min)	System CA (acres)	System Intensity (in/h)	Upstream Structure Flow (Total Surface) (cfs)	System Rational Flow (cfs)	Diameter (in)	Material	Manning's n	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)
P-2A	CB-2A	O-2	0.212	0.084	0.000	5.698	0.285	7.330	1.47	2.11	12.0	Corrugated HDPE (Smooth Interior)	0.013	25.000	294.60	289.11	21.96	16.70	14.54
P-2B	CB-2B	CB-2A	0.047	0.084	0.003	5.531	0.142	7.404	0.32	1.06	12.0	Concrete	0.013	31.000	294.76	294.60	0.52	2.56	3.11
P-1A	CB-1A	O-1	0.237	0.084	0.014	5.040	0.097	7.622	1.64	0.74	10.0	PVC	0.010	183.000	296.83	295.67	0.64	2.27	3.72
P-3A	CB-3A	O-3	0.188	0.084	0.002	5.040	0.121	7.622	1.30	0.93		Concrete	0.013	43.000	289.20	285.10	9.54	60.19	6.07
P-5A	CB-5A	O-5	0.161	0.084	0.003	6.477	0.872	6.984	1.11	6.14	15.0	Concrete	0.013	101.000	286.54	283.48	3.03	11.24	9.37
P-5B	CB-5B	CB-5A	0.079	0.084	0.002	6.336	0.570	7.047	0.55	4.05	15.0	Concrete	0.013	28.000	287.00	286.54	1.64	8.28	3.30
P-6A	CB-6A	O-6	0.131	0.084	0.006	5.362	0.229	7.479	0.78	1.73	18.0	Corrugated HDPE (Smooth Interior)	0.013	172.000	290.27	279.74	6.12	25.99	8.34
P-6B	CB-6B	CB-6A	0.048	0.084	0.005	5.040	0.040	7.622	0.33	0.31	18.0	Corrugated HDPE (Smooth Interior)	0.013	42.000	290.55	290.31	0.57	7.94	2.17
P-7A	CB-7A	O-7	0.009	0.084	0.003	5.709	0.743	7.325	0.06	5.49	30.0	Concrete	0.013	110.000	282.59	277.97	4.20	84.06	9.66
P-7C	CB-7C	CB-7A	0.054	0.084	0.002	5.609	0.651	7.370	0.37	4.84	30.0	Concrete	0.013	29.000	282.78	282.59	0.65	33.15	4.82
P-7J	CB-7J	CB-7C	0.313	0.084	0.002	5.040	0.108	7.622	1.72	0.83	15.0	Concrete	0.013	25.000	284.35	284.03	1.28	7.31	3.95
P-7I	CB-7I	CB-7H	0.414	0.084	0.002	5.040	0.149	7.622	2.86	1.14	15.0	Concrete	0.013	36.000	285.50	285.00	1.39	7.61	4.46
P-8E	CB-8E	MH-8C	0.031	0.084	0.012	5.040	0.020	7.622	0.19	0.15	8.0	PVC	0.010	105.000	280.09	279.43	0.63	1.25	2.42
P-8B	CB-8B	CB-8A	0.462	0.084	0.007	5.802	0.571	7.284	3.20	4.19	24.0	Concrete	0.013	188.000	273.59	269.29	2.29	34.21	7.38
P-8A	CB-8A	O-8	0.085	0.084	0.001	6.226	0.626	7.096	0.59	4.48	24.0	Concrete	0.013	27.000	269.29	266.57	10.06	71.75	12.72
P-9C	CB-9C	CB-9B	0.058	0.084	0.009	6.003	0.507	7.195	0.40	3.68	15.0	Concrete	0.013	150.000	268.22	267.10	0.74	5.57	4.85
P-9B	CB-9B	CB-9A	0.082	0.084	0.002	6.518	0.594	6.966	0.57	4.17	15.0	Concrete	0.013	28.000	267.10	266.80	1.07	6.69	3.40
P-9A	CB-9A	O-9	0.095	0.084	0.005	6.656	0.886	6.905	0.66	6.17	15.0	Concrete	0.013	135.000	266.80	264.82	1.47	7.82	7.07
P-10C	EW-10C	CB-10B	0.854	0.084	0.002	8.440	1.019	6.113	4.99	6.28	15.0	Concrete	0.013	43.000	263.95	262.84	2.58	10.37	5.12
P-10B	CB-10B	CB-10A	0.039	0.084	0.002	10.911	1.574	5.207	0.27	8.26	18.0	Concrete	0.013	38.000	260.00	259.50	1.32	12.05	4.67
P-10A	CB-10A	O-10	0.006	0.084	0.004	11.046	1.579	5.175	0.04	8.24	54.0	Concrete	0.013	291.000	256.00	249.89	2.10	284.93	20.29
P-11A	CB-11A	O-11	0.075	0.084	0.004	5.747	0.330	7.308	0.52	2.43	15.0	Concrete	0.013	83.000	260.82	259.53	1.56	8.06	5.75
P-6C	CB-6C	CB-6A	0.104	0.084	0.003	5.142	0.083	7.577	0.61	0.64	12.0	Corrugated HDPE (Smooth Interior)	0.013	55.000	292.60	290.59	3.66	6.81	5.43
P-6D	CB-6D	CB-6C	0.043	0.084	0.002	5.040	0.024	7.622	0.24	0.18	12.0	PVC	0.010	43.000	298.20	292.60	13.02	16.71	7.03
P-10N	CB-10N	CB-10A	(N/A)	0.000	0.001	0.000	0.000	7.640	0.00	0.00	60.0	Concrete	0.013	139.000	264.00	256.00	5.76	624.78	30.05
P-10D	EW-10D	EW-10C	(N/A)	0.000	0.001	8.404	0.370	6.129	0.00	2.28	15.0	Concrete	0.013	4.000	264.58	263.95	15.75	25.64	1.86
P-7H	CB-7H	MH-7E	0.064	0.084	0.001	5.174	0.189	7.563	0.44	1.44	15.0	Concrete	0.013	16.000	285.00	284.25	4.69	13.99	7.36
P-7F	CB-7F	MH-7E	0.089	0.084	0.002	5.408	0.198	7.459	0.62	1.49	18.0	Concrete	0.013	48.000	285.00	284.00	2.08	15.16	5.45
P-7E	MH-7E	CB-7C	(N/A)	0.000	0.001	5.554	0.387	7.394	0.00	2.88	18.0	Concrete	0.013	18.000	284.00	283.78	1.23	11.63	5.46
P-8C	MH-8C	CB-8B	(N/A)	0.000	0.001	5.765	0.364	7.301	0.00	2.68	24.0	Concrete	0.013	13.000	273.81	273.59	1.69	29.43	5.83
P-8D	CB-8D	MH-8C	3.072	0.084	0.001	5.040	0.253	7.622	18.62	1.94	15.0	Concrete	0.013	30.000	276.90	274.56	7.80	18.04	9.61
P-10E	CB-10E	EW-10D	0.068	0.084	0.013	7.622	0.370	6.476	0.47	2.41	15.0	Concrete	0.013	164.000	265.25	264.58	0.41	4.13	3.50
P-5G	CB-5G	CB-5F	0.060	0.084	0.007	5.607	0.188	7.371	0.42	1.40	15.0	Concrete	0.013	95.000	288.82	288.00	0.86	6.00	3.98
P-5F	CB-5F	CB-5E	0.089	0.084	0.003	6.004	0.271	7.194	0.62	1.96	15.0	Concrete	0.013	50.000	288.00	287.50	1.00	6.46	4.62
P-5H	CB-5H	CB-5G	0.097	0.084	0.009	5.040	0.105	7.622	0.67	0.81	15.0	Concrete	0.013	100.000	289.39	288.82	0.57	4.88	2.94
P-7G	CB-7G	CB-7F	0.209	0.084	0.006	5.040	0.104	7.622	1.44	0.80	18.0	Concrete	0.013	105.000	287.50	285.00	2.38	16.21	4.76
P-7D	CB-7D	CB-7C	0.120	0.084	0.002	5.040	0.116	7.622	0.83	0.89	18.0	Concrete	0.013	38.000	284.50	283.78	1.90	14.46	4.54
P-9F	CB-9F	CB-9E	0.108	0.084	0.005	5.040	0.173	7.622	0.75	1.33	15.0	Concrete	0.013	96.000	273.28	270.81	2.58	10.37	5.81
P-9E	CB-9E	CB-9D	0.055	0.084	0.006	5.315	0.310	7.500	0.38	2.34	15.0	Concrete	0.013	114.000	270.81	269.32	1.31	7.39	5.34
P-9D	CB-9D	CB-9C	0.065	0.084	0.006	5.671	0.410	7.342	0.45	3.04	15.0	Concrete	0.013	105.000	269.32	268.22	1.05	6.62	5.28
P-10F	CB-10F	CB-10E	0.062	0.084	0.021	6.377	0.271	7.029	0.43	1.92	15.0	Concrete	0.013	157.000	265.45	265.25	0.13	2.31	2.10
P-10G	CB-10G	CB-10F	0.104	0.084	0.006	6.010	0.194	7.192	0.72	1.41	15.0	Concrete	0.013	87.000	266.18	265.45	0.83	5.90	3.95
P-10H	CB-10H	CB-10G	0.169	0.084	0.016	5.040	0.098	7.622	1.17	0.75	15.0	Concrete	0.013	151.000	266.82	266.18	0.43	4.22	2.60
P-7B	CB-7B	CB-7A	0.093	0.084	0.002	5.040	0.084	7.622	0.64	0.64	15.0	Concrete	0.013	31.000	284.30	283.84	1.49	7.87	3.87
P-9G	CB-9G	CB-9A	0.124	0.084	0.009	5.666	0.197	7.344	0.86	1.46	15.0	Concrete	0.013	148.000	268.66	266.80	1.26	7.24	4.62
P-9H	CB-9H	CB-9G	0.183	0.084	0.010	5.040	0.097	7.622	1.26	0.75	15.0	Concrete	0.013	122.000	269.64	268.66	0.80	5.78	3.25
P-10I	CB-10I	CB-10B	0.063	0.084	0.009	10.350	0.488	5.338	0.43	2.63	18.0	Concrete	0.013	50.000	260.75	260.00	1.50	12.86	1.49
P-10J	CB-10J	CB-10I	0.064	0.084	0.016	9.406	0.419	5.684	0.44	2.40	18.0	Concrete	0.013	77.000	262.20	260.75	1.88	14.41	1.36

PROPOSED DRAINAGE MODEL

Conduit FlexTable: CTDOT Storm Drain Computation Sheet - 10 Year

Label	Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet Tc (hours)	Time (Pipe Flow) (hours)	System Flow Time (min)	System CA (acres)	System Intensity (in/h)	Upstream Structure Flow (Total Surface) (cfs)	System Rational Flow (cfs)	Diameter (in)	Material	Manning's n	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)
P-10L	CB-10L	CB-10K	0.069	0.084	0.045	5.564	0.240	7.390	0.48	1.79	18.0	Concrete	0.013	163.000	264.80	263.00	1.10	11.04	1.01
P-10K	CB-10K	CB-10J	0.101	0.084	0.019	8.252	0.339	6.196	0.70	2.12	18.0	Concrete	0.013	83.000	263.00	262.20	0.96	10.31	1.20
P-10M	CB-10M	CB-10L	0.214	0.084	0.009	5.040	0.134	7.622	1.48	1.03	18.0	Concrete	0.013	124.000	266.20	264.80	1.13	11.16	3.94
P-11B	CB-11B	CB-11A	0.065	0.084	0.006	5.363	0.242	7.479	0.45	1.82	15.0	Concrete	0.013	93.000	261.50	260.82	0.73	5.52	4.04
P-11C	CB-11C	CB-11B	0.286	0.084	0.005	5.040	0.137	7.622	1.98	1.05	15.0	Concrete	0.013	81.000	262.50	261.50	1.23	7.18	4.18
P-4D	CB-4D	CB-4C	0.095	0.084	0.009	5.040	0.072	7.622	0.66	0.55	18.0	Concrete	0.013	109.000	287.85	286.60	1.15	11.25	3.30
P-4C	CB-4C	CB-4B	0.047	0.084	0.008	5.591	0.129	7.377	0.33	0.96	18.0	Concrete	0.013	101.000	286.60	285.60	0.99	10.45	3.69
P-5D	CB-5D	CB-5A	0.080	0.084	0.009	5.040	0.050	7.622	0.55	0.38	15.0	Concrete	0.013	116.000	288.85	286.54	1.99	9.12	3.66
P-5C	CB-5C	CB-5B	0.088	0.084	0.009	5.040	0.068	7.622	0.61	0.52	15.0	Concrete	0.013	121.000	288.88	287.00	1.55	8.05	3.69
P-5I	CB-5I	CB-5A	0.047	0.084	0.009	5.040	0.057	7.622	0.33	0.44	15.0	Concrete	0.013	101.000	287.80	286.54	1.25	7.21	3.25
P-5E	CB-5E	CB-5B	0.074	0.084	0.003	6.184	0.433	7.114	0.51	3.11	15.0	Concrete	0.013	48.000	287.50	287.00	1.04	6.59	5.29
P-2D	CB-2D	MH-2C	0.042	0.084	0.005	5.040	0.078	7.622	0.29	0.60	12.0	Concrete	0.013	44.000	295.16	294.93	0.52	2.58	2.67
P-2C	MH-2C	CB-2B	(N/A)	0.000	0.004	5.315	0.078	7.500	0.00	0.59	12.0	Concrete	0.013	34.000	294.93	294.76	0.50	2.52	2.61
P-12F	CB-12F	MH-12E	0.547	0.084	0.000	5.391	0.311	7.467	1.70	2.34	15.0	Concrete	0.013	7.000	260.48	260.41	1.00	6.46	4.85
P-12E	MH-12E	CB-12D	(N/A)	0.000	0.007	5.415	0.311	7.456	0.00	2.34	15.0	Concrete	0.013	118.000	260.41	259.20	1.03	6.54	4.88
P-12D	CB-12D	CB-12C	0.200	0.800	0.003	48.000	0.454	2.244	0.41	1.03	15.0	Concrete	0.013	54.000	259.20	257.37	3.39	11.89	5.94
P-12A	CB-12A	O-12	0.150	0.084	0.002	48.565	0.576	2.224	1.04	1.29	15.0	Concrete	0.013	35.000	256.50	255.26	3.55	12.17	6.45
P-12C	CB-12C	MH-12B	0.092	0.084	0.002	48.152	0.505	2.239	0.63	1.14	15.0	Concrete	0.013	35.000	257.37	257.00	1.06	6.64	4.05
P-12B	MH-12B	CB-12A	(N/A)	0.000	0.004	48.296	0.505	2.234	0.00	1.14	15.0	Concrete	0.013	60.000	257.00	256.50	0.83	5.90	3.71
P-12G	CB-12G	CB-12F	0.233	0.084	0.006	5.040	0.172	7.622	1.61	1.32	15.0	Concrete	0.013	106.000	262.32	260.48	1.74	8.51	5.04
P-4A	CB-4A	O-4	0.161	0.084	0.001	6.334	0.308	7.048	1.11	2.19	18.0	Concrete	0.013	15.000	284.80	284.68	0.80	9.39	4.33
P-4B	CB-4B	CB-4A	0.035	0.084	0.005	6.047	0.202	7.175	0.24	1.46	18.0	Concrete	0.013	74.000	285.60	284.80	1.08	10.92	4.30
P-8F	CB-8F	MH-8C	0.183	0.084	0.001	5.040	0.092	7.622	1.27	0.71	24.0	Concrete	0.013	12.000	273.95	273.81	1.17	24.43	3.44

PROPOSED DRAINAGE MODEL

Conduit FlexTable: CTDOT Storm Drain Computation Sheet - 25 Year

Label	Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet Tc (hours)	Time (Pipe Flow) (hours)	System Flow Time (min)	System CA (acres)	System Intensity (in/h)	Upstream Structure Flow (Total Surface) (cfs)	System Rational Flow (cfs)	Diameter (in)	Material	Manning's n	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)
P-2A	CB-2A	O-2	0.212	0.084	0.000	5.670	0.277	8.860	1.77	2.47	12.0	Corrugated HDPE (Smooth Interior)	0.013	25.000	294.60	289.11	21.96	16.70	15.24
P-2B	CB-2B	CB-2A	0.047	0.084	0.003	5.510	0.139	8.945	0.39	1.26	12.0	Concrete	0.013	31.000	294.76	294.60	0.52	2.56	3.25
P-1A	CB-1A	O-1	0.237	0.084	0.013	5.040	0.091	9.198	1.98	0.85	10.0	PVC	0.010	183.000	296.83	295.67	0.64	2.27	3.85
P-3A	CB-3A	O-3	0.188	0.084	0.002	5.040	0.118	9.198	1.57	1.09		Concrete	0.013	43.000	289.20	285.10	9.54	60.19	6.43
P-5A	CB-5A	O-5	0.161	0.084	0.003	6.754	0.896	8.277	1.34	7.47	15.0	Concrete	0.013	101.000	286.54	283.48	3.03	11.24	9.80
P-5B	CB-5B	CB-5A	0.079	0.084	0.002	6.637	0.586	8.339	0.66	4.93	15.0	Concrete	0.013	28.000	287.00	286.54	1.64	8.28	4.02
P-6A	CB-6A	O-6	0.131	0.084	0.005	5.347	0.223	9.033	0.94	2.03	18.0	Corrugated HDPE (Smooth Interior)	0.013	172.000	290.27	279.74	6.12	25.99	8.76
P-6B	CB-6B	CB-6A	0.048	0.084	0.005	5.040	0.039	9.198	0.40	0.36	18.0	Corrugated HDPE (Smooth Interior)	0.013	42.000	290.55	290.31	0.57	7.94	2.28
P-7A	CB-7A	O-7	0.009	0.084	0.003	5.682	0.720	8.853	0.08	6.42	30.0	Concrete	0.013	110.000	282.59	277.97	4.20	84.06	10.13
P-7C	CB-7C	CB-7A	0.054	0.084	0.002	5.586	0.628	8.905	0.45	5.64	30.0	Concrete	0.013	29.000	282.78	282.59	0.65	33.15	5.03
P-7J	CB-7J	CB-7C	0.313	0.084	0.002	5.040	0.102	9.198	2.07	0.95	15.0	Concrete	0.013	25.000	284.35	284.03	1.28	7.31	4.11
P-7I	CB-7I	CB-7H	0.414	0.084	0.002	5.040	0.140	9.198	3.45	1.30	15.0	Concrete	0.013	36.000	285.50	285.00	1.39	7.61	4.63
P-8E	CB-8E	MH-8C	0.031	0.084	0.012	5.040	0.019	9.198	0.23	0.17	8.0	PVC	0.010	105.000	280.09	279.43	0.63	1.25	2.52
P-8B	CB-8B	CB-8A	0.462	0.084	0.007	5.772	0.510	8.805	3.86	4.52	24.0	Concrete	0.013	188.000	273.59	269.29	2.29	34.21	7.55
P-8A	CB-8A	O-8	0.085	0.084	0.001	6.187	0.562	8.582	0.71	4.86	24.0	Concrete	0.013	27.000	269.29	266.57	10.06	71.75	13.03
P-9C	CB-9C	CB-9B	0.058	0.084	0.011	5.961	0.513	8.703	0.49	4.50	15.0	Concrete	0.013	150.000	268.22	267.10	0.74	5.57	3.67
P-9B	CB-9B	CB-9A	0.082	0.084	0.002	6.643	0.606	8.336	0.68	5.09	15.0	Concrete	0.013	28.000	267.10	266.80	1.07	6.69	4.15
P-9A	CB-9A	O-9	0.095	0.084	0.005	6.755	0.889	8.276	0.79	7.42	15.0	Concrete	0.013	135.000	266.80	264.82	1.47	7.82	7.25
P-10C	EW-10C	CB-10B	0.854	0.084	0.002	8.900	1.019	7.122	6.02	7.32	15.0	Concrete	0.013	43.000	263.95	262.84	2.58	10.37	5.96
P-10B	CB-10B	CB-10A	0.039	0.084	0.002	9.946	1.576	6.559	0.32	10.42	18.0	Concrete	0.013	38.000	260.00	259.50	1.32	12.05	5.89
P-10A	CB-10A	O-10	0.006	0.084	0.004	10.054	1.581	6.515	0.05	10.38	54.0	Concrete	0.013	291.000	256.00	249.89	2.10	284.93	20.31
P-11A	CB-11A	O-11	0.075	0.084	0.004	5.716	0.327	8.835	0.62	2.91	15.0	Concrete	0.013	83.000	260.82	259.53	1.56	8.06	6.04
P-6C	CB-6C	CB-6A	0.104	0.084	0.003	5.138	0.080	9.146	0.74	0.74	12.0	Corrugated HDPE (Smooth Interior)	0.013	55.000	292.60	290.59	3.66	6.81	5.68
P-6D	CB-6D	CB-6C	0.043	0.084	0.002	5.040	0.023	9.198	0.29	0.21	12.0	PVC	0.010	43.000	298.20	292.60	13.02	16.71	7.30
P-10N	CB-10N	CB-10A	(N/A)	0.000	0.001	0.000	0.000	9.220	0.00	0.00	60.0	Concrete	0.013	139.000	264.00	256.00	5.76	624.78	30.05
P-10D	EW-10D	EW-10C	(N/A)	0.000	0.001	8.869	0.370	7.138	0.00	2.66	15.0	Concrete	0.013	4.000	264.58	263.95	15.75	25.64	2.17
P-7H	CB-7H	MH-7E	0.064	0.084	0.001	5.170	0.179	9.129	0.53	1.65	15.0	Concrete	0.013	16.000	285.00	284.25	4.69	13.99	7.64
P-7F	CB-7F	MH-7E	0.089	0.084	0.002	5.392	0.191	9.009	0.74	1.73	18.0	Concrete	0.013	48.000	285.00	284.00	2.08	15.16	5.70
P-7E	MH-7E	CB-7C	(N/A)	0.000	0.001	5.533	0.370	8.933	0.00	3.33	18.0	Concrete	0.013	18.000	284.00	283.78	1.23	11.63	5.68
P-8C	MH-8C	CB-8B	(N/A)	0.000	0.001	5.735	0.313	8.825	0.00	2.78	24.0	Concrete	0.013	13.000	273.81	273.59	1.69	29.43	5.89
P-8D	CB-8D	MH-8C	3.072	0.084	0.001	5.040	0.209	9.198	22.47	1.93	15.0	Concrete	0.013	30.000	276.90	274.56	7.80	18.04	9.59
P-10E	CB-10E	EW-10D	0.068	0.084	0.019	7.710	0.370	7.762	0.57	2.89	15.0	Concrete	0.013	164.000	265.25	264.58	0.41	4.13	2.36
P-5G	CB-5G	CB-5F	0.060	0.084	0.006	5.578	0.189	8.909	0.50	1.70	15.0	Concrete	0.013	95.000	288.82	288.00	0.86	6.00	4.21
P-5F	CB-5F	CB-5E	0.089	0.084	0.007	5.954	0.272	8.707	0.74	2.39	15.0	Concrete	0.013	50.000	288.00	287.50	1.00	6.46	1.95
P-5H	CB-5H	CB-5G	0.097	0.084	0.009	5.040	0.105	9.198	0.81	0.97	15.0	Concrete	0.013	100.000	289.39	288.82	0.57	4.88	3.10
P-7G	CB-7G	CB-7F	0.209	0.084	0.006	5.040	0.099	9.198	1.74	0.92	18.0	Concrete	0.013	105.000	287.50	285.00	2.38	16.21	4.96
P-7D	CB-7D	CB-7C	0.120	0.084	0.002	5.040	0.118	9.198	1.00	1.09	18.0	Concrete	0.013	38.000	284.50	283.78	1.90	14.46	4.81
P-9F	CB-9F	CB-9E	0.108	0.084	0.004	5.040	0.166	9.198	0.90	1.54	15.0	Concrete	0.013	96.000	273.28	270.81	2.58	10.37	6.06
P-9E	CB-9E	CB-9D	0.055	0.084	0.006	5.304	0.302	9.056	0.46	2.76	15.0	Concrete	0.013	114.000	270.81	269.32	1.31	7.39	5.59
P-9D	CB-9D	CB-9C	0.065	0.084	0.005	5.644	0.408	8.873	0.54	3.65	15.0	Concrete	0.013	105.000	269.32	268.22	1.05	6.62	5.52
P-10F	CB-10F	CB-10E	0.062	0.084	0.023	6.316	0.268	8.512	0.52	2.30	15.0	Concrete	0.013	157.000	265.45	265.25	0.13	2.31	1.88
P-10G	CB-10G	CB-10F	0.104	0.084	0.006	5.965	0.190	8.701	0.87	1.67	15.0	Concrete	0.013	87.000	266.18	265.45	0.83	5.90	4.14
P-10H	CB-10H	CB-10G	0.169	0.084	0.015	5.040	0.095	9.198	1.41	0.88	15.0	Concrete	0.013	151.000	266.82	266.18	0.43	4.22	2.72
P-7B	CB-7B	CB-7A	0.093	0.084	0.002	5.040	0.084	9.198	0.78	0.78	15.0	Concrete	0.013	31.000	284.30	283.84	1.49	7.87	4.09
P-9G	CB-9G	CB-9A	0.124	0.084	0.009	5.641	0.190	8.875	1.03	1.70	15.0	Concrete	0.013	148.000	268.66	266.80	1.26	7.24	4.82
P-9H	CB-9H	CB-9G	0.183	0.084	0.010	5.040	0.093	9.198	1.52	0.86	15.0	Concrete	0.013	122.000	269.64	268.66	0.80	5.78	3.38
P-10I	CB-10I	CB-10B	0.063	0.084	0.007	9.506	0.488	6.796	0.52	3.34	18.0	Concrete	0.013	50.000	260.75	260.00	1.50	12.86	1.89
P-10J	CB-10J	CB-10I	0.064	0.084	0.012	8.757	0.417	7.199	0.54	3.03	18.0	Concrete	0.013	77.000	262.20	260.75	1.88	14.41	1.71

Conduit FlexTable: CTDOT Storm Drain Computation Sheet - 25 Year

Label	Start Node	Stop Node	Upstream Inlet Area (acres)	Upstream Inlet Tc (hours)	Time (Pipe Flow) (hours)	System Flow Time (min)	System CA (acres)	System Intensity (in/h)	Upstream Structure Flow (Total Surface) (cfs)	System Rational Flow (cfs)	Diameter (in)	Material	Manning's n	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (%)	Capacity (Full Flow) (cfs)	Velocity (ft/s)
P-10L	CB-10L	CB-10K	0.069	0.084	0.038	5.543	0.234	8.928	0.57	2.11	18.0	Concrete	0.013	163.000	264.80	263.00	1.10	11.04	1.19
P-10K	CB-10K	CB-10J	0.101	0.084	0.016	7.818	0.335	7.704	0.85	2.60	18.0	Concrete	0.013	83.000	263.00	262.20	0.96	10.31	1.47
P-10M	CB-10M	CB-10L	0.214	0.084	0.008	5.040	0.128	9.198	1.78	1.18	18.0	Concrete	0.013	124.000	266.20	264.80	1.13	11.16	4.11
P-11B	CB-11B	CB-11A	0.065	0.084	0.006	5.349	0.237	9.032	0.54	2.16	15.0	Concrete	0.013	93.000	261.50	260.82	0.73	5.52	4.22
P-11C	CB-11C	CB-11B	0.286	0.084	0.005	5.040	0.133	9.198	2.39	1.23	15.0	Concrete	0.013	81.000	262.50	261.50	1.23	7.18	4.37
P-4D	CB-4D	CB-4C	0.095	0.084	0.009	5.040	0.072	9.198	0.79	0.66	18.0	Concrete	0.013	109.000	287.85	286.60	1.15	11.25	3.48
P-4C	CB-4C	CB-4B	0.047	0.084	0.007	5.562	0.131	8.918	0.39	1.18	18.0	Concrete	0.013	101.000	286.60	285.60	0.99	10.45	3.91
P-5D	CB-5D	CB-5A	0.080	0.084	0.008	5.040	0.048	9.198	0.67	0.44	15.0	Concrete	0.013	116.000	288.85	286.54	1.99	9.12	3.84
P-5C	CB-5C	CB-5B	0.088	0.084	0.009	5.040	0.068	9.198	0.74	0.63	15.0	Concrete	0.013	121.000	288.88	287.00	1.55	8.05	3.90
P-5I	CB-5I	CB-5A	0.047	0.084	0.008	5.040	0.058	9.198	0.39	0.54	15.0	Concrete	0.013	101.000	287.80	286.54	1.25	7.21	3.45
P-5E	CB-5E	CB-5B	0.074	0.084	0.004	6.382	0.450	8.476	0.62	3.85	15.0	Concrete	0.013	48.000	287.50	287.00	1.04	6.59	3.13
P-2D	CB-2D	MH-2C	0.042	0.084	0.004	5.040	0.075	9.198	0.35	0.70	12.0	Concrete	0.013	44.000	295.16	294.93	0.52	2.58	2.79
P-2C	MH-2C	CB-2B	(N/A)	0.000	0.003	5.303	0.075	9.057	0.00	0.69	12.0	Concrete	0.013	34.000	294.93	294.76	0.50	2.52	2.73
P-12F	CB-12F	MH-12E	0.547	0.084	0.000	5.374	0.304	9.019	2.05	2.77	15.0	Concrete	0.013	7.000	260.48	260.41	1.00	6.46	5.06
P-12E	MH-12E	CB-12D	(N/A)	0.000	0.006	5.397	0.304	9.007	0.00	2.76	15.0	Concrete	0.013	118.000	260.41	259.20	1.03	6.54	5.10
P-12D	CB-12D	CB-12C	0.200	0.800	0.002	48.000	0.439	2.702	0.49	1.20	15.0	Concrete	0.013	54.000	259.20	257.37	3.39	11.89	6.21
P-12A	CB-12A	O-12	0.150	0.084	0.001	48.541	0.555	2.679	1.26	1.50	15.0	Concrete	0.013	35.000	256.50	255.26	3.55	12.17	6.74
P-12C	CB-12C	MH-12B	0.092	0.084	0.002	48.145	0.487	2.696	0.77	1.32	15.0	Concrete	0.013	35.000	257.37	257.00	1.06	6.64	4.22
P-12B	MH-12B	CB-12A	(N/A)	0.000	0.004	48.283	0.487	2.690	0.00	1.32	15.0	Concrete	0.013	60.000	257.00	256.50	0.83	5.90	3.87
P-12G	CB-12G	CB-12F	0.233	0.084	0.006	5.040	0.170	9.198	1.95	1.57	15.0	Concrete	0.013	106.000	262.32	260.48	1.74	8.51	5.30
P-4A	CB-4A	O-4	0.161	0.084	0.001	6.262	0.307	8.541	1.34	2.65	18.0	Concrete	0.013	15.000	284.80	284.68	0.80	9.39	4.57
P-4B	CB-4B	CB-4A	0.035	0.084	0.005	5.992	0.204	8.687	0.29	1.79	18.0	Concrete	0.013	74.000	285.60	284.80	1.08	10.92	4.56
P-8F	CB-8F	MH-8C	0.183	0.084	0.001	5.040	0.085	9.198	1.53	0.79	24.0	Concrete	0.013	12.000	273.95	273.81	1.17	24.43	3.56

FlexTable: CTDOT Catch Basin Table - 10 Year

ID	Label	Inlet	Inlet Location	Clogging Factor (%)	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Total Rational Flow to Inlet (cfs)	Flow (Captured) (cfs)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)	Elevation (Invert in 1) (ft)	Elevation (Invert in 2) (ft)	Elevation (Invert in 3) (ft)
513	CB-1A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	299.45	299.45	295.82	1.64	0.74	7.679	0.90	297.38	297.24	(N/A)	(N/A)	(N/A)
506	CB-2A	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	On Grade	20.0	297.24	297.24	293.70	1.47	1.10	4.527	0.37	295.58	295.31	294.60	(N/A)	(N/A)
509	CB-2B	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	297.32	297.32	293.87	0.92	0.50	6.002	0.42	295.63	295.60	294.76	(N/A)	(N/A)
686	CB-2D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	298.45	298.45	295.04	1.19	0.60	6.651	0.59	295.70	295.66	(N/A)	(N/A)	(N/A)
517	CB-3A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	293.98	293.98	289.20	1.72	0.93	5.691	0.79	289.56	289.46	(N/A)	(N/A)	(N/A)
920	CB-4A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	293.82	293.82	284.80	1.48	0.81	6.027	0.67	285.69	285.49	284.80	(N/A)	(N/A)
834	CB-4B	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	293.40	293.40	285.60	0.91	0.56	4.509	0.35	286.25	286.09	285.60	(N/A)	(N/A)
821	CB-4C	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	292.84	292.84	286.60	0.67	0.44	4.364	0.23	287.12	286.99	286.60	(N/A)	(N/A)
819	CB-4D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	292.25	292.25	287.85	0.89	0.55	5.310	0.34	288.24	288.14	(N/A)	(N/A)	(N/A)
521	CB-5A	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	In Sag	20.0	291.65	291.65	286.54	1.51	1.51	7.076	0.00	288.35	287.82	286.54	286.54	286.54
520	CB-5B	"C-L" CB	On Grade	20.0	291.80	291.80	287.00	0.84	0.53	5.025	0.31	288.66	288.49	287.00	287.00	(N/A)
845	CB-5C	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	292.28	292.28	288.88	0.82	0.52	5.462	0.30	289.28	289.18	(N/A)	(N/A)	(N/A)
840	CB-5D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	292.26	292.26	288.85	0.55	0.38	4.193	0.17	289.19	289.11	(N/A)	(N/A)	(N/A)
519	CB-5E	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	In Sag	20.0	291.69	291.69	287.50	1.25	1.25	6.037	0.00	288.83	288.72	287.50	(N/A)	(N/A)
691	CB-5F	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	291.76	291.76	288.00	1.05	0.63	6.159	0.42	288.91	288.83	288.00	(N/A)	(N/A)
692	CB-5G	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	292.28	292.28	288.82	1.08	0.64	5.821	0.44	289.50	289.33	288.82	(N/A)	(N/A)
701	CB-5H	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	292.84	292.84	289.39	1.47	0.81	6.955	0.66	289.89	289.77	(N/A)	(N/A)	(N/A)
823	CB-5I	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	291.80	291.80	287.80	0.66	0.44	4.368	0.22	288.36	288.35	(N/A)	(N/A)	(N/A)
530	CB-6A	"C-L" CB	On Grade	20.0	293.07	293.07	289.89	1.02	0.81	3.079	0.21	291.00	290.82	290.31	290.59	(N/A)
531	CB-6B	"C-L" CB	On Grade	20.0	293.10	293.10	289.93	0.33	0.31	2.157	0.02	291.01	291.00	(N/A)	(N/A)	(N/A)
556	CB-6C	"C-L" CB	On Grade	20.0	296.11	296.11	292.60	0.67	0.46	4.009	0.22	293.08	292.96	292.60	(N/A)	(N/A)
557	CB-6D	"C-L" CB	On Grade	20.0	301.70	301.70	298.20	0.24	0.18	3.885	0.06	298.45	298.39	(N/A)	(N/A)	(N/A)
535	CB-7A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	290.21	290.21	282.59	0.06	0.06	1.754	0.00	283.70	283.42	282.59	283.84	(N/A)
753	CB-7B	"C-L" CB	In Sag	20.0	290.20	290.20	284.30	0.64	0.64	4.639	0.00	284.75	284.64	(N/A)	(N/A)	(N/A)
558	CB-7C	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	290.23	290.23	282.78	0.37	0.31	3.279	0.06	283.91	283.73	284.03	283.78	283.78
712	CB-7D	"C" CB - 6in Conc or Stone Curb	In Sag	20.0	290.17	290.17	284.50	0.89	0.89	6.244	0.00	285.00	284.88	(N/A)	(N/A)	(N/A)
534	CB-7F	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	290.62	290.62	285.00	1.26	0.72	5.951	0.54	285.66	285.49	285.00	(N/A)	(N/A)
706	CB-7G	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	291.40	291.40	287.50	1.44	0.80	6.964	0.64	287.97	287.86	(N/A)	(N/A)	(N/A)
563	CB-7H	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	290.81	290.81	285.00	0.44	0.31	3.810	0.13	285.77	285.59	285.00	(N/A)	(N/A)
533	CB-7I	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	291.10	291.10	285.50	2.86	1.14	8.483	1.72	286.11	285.95	(N/A)	(N/A)	(N/A)
532	CB-7J	"C-L" CB	On Grade	20.0	290.13	290.13	284.35	1.72	0.83	6.577	0.89	284.86	284.73	(N/A)	(N/A)	(N/A)
540	CB-8A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	277.57	277.57	269.29	0.59	0.42	3.683	0.17	270.43	270.16	269.29	(N/A)	(N/A)
539	CB-8B	"C-L" CB	On Grade	20.0	282.08	282.08	273.59	3.76	1.59	7.675	2.17	274.63	274.36	273.59	(N/A)	(N/A)
537	CB-8D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	284.39	284.39	276.90	18.62	1.94	12.852	16.68	277.71	277.50	(N/A)	(N/A)	(N/A)
566	CB-8E	"C-L" CB	On Grade	20.0	281.61	281.61	280.09	0.19	0.15	3.239	0.04	280.34	280.28	(N/A)	(N/A)	(N/A)
955	CB-8F	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	282.85	282.85	273.95	1.27	0.71	5.293	0.56	274.72	274.72	(N/A)	(N/A)	(N/A)
543	CB-9A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	271.42	271.42	266.80	1.26	0.73	6.906	0.53	268.64	268.11	266.80	266.80	(N/A)
542	CB-9B	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	On Grade	20.0	271.43	271.43	267.10	0.81	0.67	5.321	0.14	268.96	268.78	267.10	(N/A)	(N/A)
541	CB-9C	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	On Grade	20.0	272.09	272.09	268.22	0.99	0.74	4.448	0.24	269.53	269.37	268.22	(N/A)	(N/A)
717	CB-9D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	272.88	272.88	269.32	1.36	0.77	5.090	0.59	270.38	270.10	269.32	(N/A)	(N/A)
718	CB-9E	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	274.22	274.22	270.81	1.96	1.05	5.323	0.91	271.71	271.47	270.81	(N/A)	(N/A)
719	CB-9F	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	277.00	277.00	273.28	2.91	1.33	6.220	1.58	273.94	273.77	(N/A)	(N/A)	(N/A)
758	CB-9G	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	272.07	272.07	268.66	1.37	0.77	6.401	0.60	269.35	269.17	268.66	(N/A)	(N/A)
763	CB-9H	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	273.01	273.01	269.64	1.26	0.75	4.186	0.51	270.12	270.00	(N/A)	(N/A)	(N/A)
546	CB-10A	"C-L" CB	On Grade	20.0	267.63	267.63	256.00	0.04	0.04	1.238	0.00	265.58	261.35	259.50	256.00	(N/A)
545	CB-10B	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	On Grade	20.0	267.63	267.63	260.00	0.58	0.51	3.943	0.07	266.13	265.79	262.84	260.00	(N/A)
665	CB-10E	"C" CB - DblGrt Typ1 - 6in Conc or Stone Curb	On Grade	20.0	269.01	269.01	265.25	0.85	0.75	5.957	0.09	266.51	266.44	265.25	(N/A)	(N/A)
730	CB-10F	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	269.21	269.21	265.45	0.97	0.60	5.995	0.38	266.65	266.61	265.45	(N/A)	(N/A)

FlexTable: CTDOT Catch Basin Table - 10 Year

ID	Label	Inlet	Inlet Location	Clogging Factor (%)	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Total Rational Flow to Inlet (cfs)	Flow (Captured) (cfs)	Spread / Top Width (ft)	Bypassed Rational Flow (cfs)	Energy Grade Line (In) (ft)	Hydraulic Grade Line (In) (ft)	Elevation (Invert in 1) (ft)	Elevation (Invert in 2) (ft)	Elevation (Invert in 3) (ft)
735	CB-10G	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	269.58	269.58	266.18	1.28	0.74	7.020	0.55	266.86	266.68	266.18	(N/A)	(N/A)
741	CB-10H	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	270.23	270.23	266.82	1.31	0.75	7.062	0.56	267.30	267.20	(N/A)	(N/A)	(N/A)
768	CB-10I	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	267.85	267.85	260.75	0.84	0.53	4.834	0.31	266.18	266.15	260.75	(N/A)	(N/A)
773	CB-10J	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	268.19	268.19	262.20	1.02	0.61	5.095	0.41	266.24	266.21	262.20	(N/A)	(N/A)
778	CB-10K	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	269.00	269.00	263.00	1.35	0.77	6.195	0.58	266.29	266.27	263.00	(N/A)	(N/A)
779	CB-10L	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	269.38	269.38	264.80	1.46	0.81	7.464	0.64	266.34	266.33	264.80	(N/A)	(N/A)
789	CB-10M	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	269.93	269.93	266.20	2.01	1.03	4.671	0.98	266.74	266.61	(N/A)	(N/A)	(N/A)
603	CB-10N	"C-L" CB	In Sag	20.0	277.21	277.21	264.00	0.00	0.00	0.000	0.00	272.02	269.14	(N/A)	(N/A)	(N/A)
547	CB-11A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	265.21	265.21	260.82	1.15	0.68	5.990	0.48	261.83	261.59	260.82	(N/A)	(N/A)
795	CB-11B	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	265.58	265.58	261.50	1.45	0.81	6.362	0.64	262.29	262.08	261.50	(N/A)	(N/A)
799	CB-11C	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	266.00	266.00	262.50	2.05	1.05	7.425	0.99	263.08	262.93	(N/A)	(N/A)	(N/A)
896	CB-12A	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	260.95	260.95	256.50	1.04	0.55	6.197	0.49	257.17	257.01	256.50	(N/A)	(N/A)
895	CB-12C	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	260.81	260.81	257.37	0.63	0.39	4.922	0.25	258.07	257.92	257.37	(N/A)	(N/A)
894	CB-12D	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	264.42	264.42	259.20	0.41	0.32	2.921	0.08	259.81	259.66	259.20	(N/A)	(N/A)
892	CB-12F	"C" CB - 6in Conc or Stone Curb	On Grade	20.0	263.97	263.97	260.48	2.09	1.07	6.325	1.02	261.51	261.41	260.48	(N/A)	(N/A)
911	CB-12G	"C" CB - DblGrt Typ2 - 6in Conc or Stone Curb	On Grade	20.0	265.86	265.86	262.32	1.71	1.32	6.217	0.39	262.98	262.81	(N/A)	(N/A)	(N/A)

PROPOSED DRAINAGE MODEL

FlexTable: CTDOT Catchment Table 10 Year

ID	Label	Outflow Element	Runoff Coefficient (Rational)	Area (Unified) (acres)	Catchment CA (acres)	Time of Concentration (hours)	Catchment Rational Flow (cfs)	Notes
590	CM-1A	CB-1A	0.900	0.237	0.214	0.084	1.64	
592	CM-2A	CB-2A	0.900	0.212	0.191	0.084	1.47	
689	CM-2B	CB-2B	0.900	0.047	0.042	0.084	0.32	
688	CM-2D	CB-2D	0.900	0.042	0.038	0.084	0.29	
668	CM-3A	CB-3A	0.900	0.188	0.169	0.084	1.30	
927	CM-4A	CB-4A	0.900	0.161	0.145	0.084	1.11	
926	CM-4B	CB-4B	0.900	0.035	0.031	0.084	0.24	
838	CM-4C	CB-4C	0.900	0.047	0.043	0.084	0.33	
832	CM-4D	CB-4D	0.900	0.095	0.085	0.084	0.66	
843	CM-5A	CB-5A	0.900	0.161	0.145	0.084	1.11	
848	CM-5B	CB-5B	0.900	0.079	0.071	0.084	0.55	
849	CM-5C	CB-5C	0.900	0.088	0.079	0.084	0.61	
844	CM-5D	CB-5D	0.900	0.080	0.072	0.084	0.55	
816	CM-5E	CB-5E	0.900	0.074	0.067	0.084	0.51	
697	CM-5F	CB-5F	0.900	0.089	0.080	0.084	0.62	
703	CM-5G	CB-5G	0.900	0.060	0.054	0.084	0.42	
702	CM-5H	CB-5H	0.900	0.097	0.087	0.084	0.67	
855	CM-5I	CB-5I	0.900	0.047	0.043	0.084	0.33	
615	CM-6A	CB-6A	0.775	0.131	0.102	0.084	0.78	
676	CM-6B	CB-6B	0.900	0.048	0.043	0.084	0.33	
618	CM-6C	CB-6C	0.765	0.104	0.079	0.084	0.61	
616	CM-6D	CB-6D	0.730	0.043	0.032	0.084	0.24	
757	CM-7A	CB-7A	0.900	0.009	0.008	0.084	0.06	
756	CM-7B	CB-7B	0.900	0.093	0.084	0.084	0.64	
715	CM-7C	CB-7C	0.900	0.054	0.048	0.084	0.37	
862	CM-7D	CB-7D	0.900	0.120	0.108	0.084	0.83	
710	CM-7F	CB-7F	0.900	0.089	0.080	0.084	0.62	
709	CM-7G	CB-7G	0.900	0.209	0.188	0.084	1.44	
622	CM-7H	CB-7H	0.900	0.064	0.057	0.084	0.44	
623	CM-7I	CB-7I	0.900	0.414	0.373	0.084	2.86	
627	CM-7J	CB-7J	0.713	0.313	0.223	0.084	1.72	
647	CM-8A	CB-8A	0.900	0.085	0.077	0.084	0.59	
683	CM-8D	CB-8D	0.789	3.072	2.424	0.084	18.62	
649	CM-8E	CB-8E	0.785	0.031	0.024	0.084	0.19	
957	CM-8F	CB-8F	0.900	0.183	0.165	0.084	1.27	
762	CM-9A	CB-9A	0.900	0.095	0.086	0.084	0.66	
681	CM-9B	CB-9B	0.900	0.082	0.074	0.084	0.57	
729	CM-9C	CB-9C	0.900	0.058	0.052	0.084	0.40	
728	CM-9D	CB-9D	0.900	0.065	0.059	0.084	0.45	
726	CM-9E	CB-9E	0.900	0.055	0.049	0.084	0.38	
959	CM-9F	CB-9F	0.900	0.108	0.097	0.084	0.75	
765	CM-9G	CB-9G	0.900	0.124	0.111	0.084	0.86	
766	CM-9H	CB-9H	0.900	0.183	0.164	0.084	1.26	
798	CM-10A	CB-10A	0.900	0.006	0.006	0.084	0.04	
771	CM-10B	CB-10B	0.900	0.039	0.035	0.084	0.27	
672	CM-10C	EW-10C	0.760	0.854	0.649	0.084	4.99	
734	CM-10E	CB-10E	0.900	0.068	0.061	0.084	0.47	
739	CM-10F	CB-10F	0.900	0.062	0.056	0.084	0.43	
746	CM-10G	CB-10G	0.900	0.104	0.094	0.084	0.72	
745	CM-10H	CB-10H	0.900	0.169	0.152	0.084	1.17	

PROPOSED DRAINAGE MODEL

FlexTable: CTDOT Catchment Table 10 Year

ID	Label	Outflow Element	Runoff Coefficient (Rational)	Area (Unified) (acres)	Catchment CA (acres)	Time of Concentration (hours)	Catchment Rational Flow (cfs)	Notes
776	CM-10I	CB-10I	0.900	0.063	0.056	0.084	0.43	
786	CM-10J	CB-10J	0.900	0.064	0.058	0.084	0.44	
787	CM-10K	CB-10K	0.900	0.101	0.091	0.084	0.70	
793	CM-10L	CB-10L	0.900	0.069	0.062	0.084	0.48	
792	CM-10M	CB-10M	0.900	0.214	0.192	0.084	1.48	
805	CM-11A	CB-11A	0.900	0.075	0.067	0.084	0.52	
804	CM-11B	CB-11B	0.900	0.065	0.059	0.084	0.45	
803	CM-11C	CB-11C	0.900	0.286	0.257	0.084	1.98	
910	CM-12A	CB-12A	0.900	0.150	0.135	0.084	1.04	
907	CM-12C	CB-12C	0.900	0.092	0.083	0.084	0.63	
908	CM-12D	CB-12D	0.900	0.200	0.180	0.800	0.41	
919	CM-12F	CB-12F	0.405	0.547	0.222	0.084	1.70	
917	CM-12G	CB-12G	0.900	0.233	0.210	0.084	1.61	
958	CM3	CB-8B	0.900	0.462	0.416	0.084	3.20	

PROPOSED DRAINAGE MODEL

FlexTable: CTDOT Conduit Table - 10 Year

ID	Label	Start Node	Start Invert (ft)	Stop Node	Stop Invert (ft)	Length (Unified) (ft)	Slope (%)	Diameter (in)	Material	Manning's "n"	Flow (cfs)	Velocity (Avg.) (ft/s)	Depth - Out (ft)	Capacity Full (cfs)	Flow/Capacity (Design) (%)	Depth (Normal)/Rise (%)	Energy Grade Line (Out) (ft)	Hydraulic Grade Line (Out) (ft)
589	P-6D	CB-6D	298.20	CB-6C	292.60	43.000	13.02	12.0	PVC	0.010	0.18	7.03	0.47	16.71	1.1	7.3	293.08	293.08
518	P-3A	CB-3A	289.20	O-3	285.10	43.000	9.54		Concrete	0.013	0.93	6.07	0.08	60.19	1.5	5.1	285.75	285.18
960	P-8F	CB-8F	273.95	MH-8C	273.81	12.000	1.17	24.0	Concrete	0.013	0.71	3.44	0.90	24.43	2.9	11.7	274.72	274.72
555	P-6B	CB-6B	290.55	CB-6A	290.31	42.000	0.57	18.0	Corrugated HDPE (Smooth Interior)	0.013	0.31	2.17	0.69	7.94	3.9	13.4	291.00	291.00
841	P-5D	CB-5D	288.85	CB-5A	286.54	116.000	1.99	15.0	Concrete	0.013	0.38	3.66	1.81	9.12	4.2	14.0	288.35	288.35
822	P-4D	CB-4D	287.85	CB-4C	286.60	109.000	1.15	18.0	Concrete	0.013	0.55	3.30	0.51	11.25	4.9	15.0	287.13	287.11
708	P-7G	CB-7G	287.50	CB-7F	285.00	105.000	2.38	18.0	Concrete	0.013	0.80	4.76	0.65	16.21	4.9	15.1	285.66	285.65
885	P-5I	CB-5I	287.80	CB-5A	286.54	101.000	1.25	15.0	Concrete	0.013	0.44	3.25	1.81	7.21	6.1	16.7	288.35	288.35
713	P-7D	CB-7D	284.50	CB-7C	283.78	38.000	1.90	18.0	Concrete	0.013	0.89	4.54	0.25	14.46	6.2	16.8	284.35	284.03
574	P-8A	CB-8A	269.29	O-8	266.57	27.000	10.06	24.0	Concrete	0.013	4.48	12.72	0.36	71.75	6.2	16.9	269.04	266.93
846	P-5C	CB-5C	288.88	CB-5B	287.00	121.000	1.55	15.0	Concrete	0.013	0.52	3.69	1.65	8.05	6.5	17.2	288.66	288.65
559	P-7A	CB-7A	282.59	O-7	277.97	110.000	4.20	30.0	Concrete	0.013	5.49	9.66	0.43	84.06	6.5	17.3	279.85	278.40
554	P-6A	CB-6A	290.27	O-6	279.74	172.000	6.12	18.0	Corrugated HDPE (Smooth Interior)	0.013	1.73	8.34	0.26	25.99	6.6	17.5	281.08	280.00
754	P-7B	CB-7B	284.30	CB-7A	283.84	31.000	1.49	15.0	Concrete	0.013	0.64	3.87	0.24	7.87	8.2	19.3	284.31	284.08
900	P-12D	CB-12D	259.20	CB-12C	257.37	54.000	3.39	15.0	Concrete	0.013	1.03	5.94	0.68	11.89	8.6	19.9	258.09	258.06
645	P-10D	EW-10D	264.58	EW-10C	263.95	4.000	15.75	15.0	Concrete	0.013	2.28	1.86	2.25	25.64	8.9	20.2	266.25	266.20
663	P-8C	MH-8C	273.81	CB-8B	273.59	13.000	1.69	24.0	Concrete	0.013	2.68	5.83	1.01	29.43	9.1	20.4	274.64	274.60
839	P-4C	CB-4C	286.60	CB-4B	285.60	101.000	0.99	18.0	Concrete	0.013	0.96	3.69	0.63	10.45	9.2	20.5	286.26	286.23
794	P-10M	CB-10M	266.20	CB-10L	264.80	124.000	1.13	18.0	Concrete	0.013	1.03	3.94	1.54	11.16	9.2	20.5	266.35	266.34
587	P-6C	CB-6C	292.60	CB-6A	290.59	55.000	3.66	12.0	Corrugated HDPE (Smooth Interior)	0.013	0.64	5.43	0.37	6.81	9.3	20.6	291.03	290.96
661	P-7F	CB-7F	285.00	MH-7E	284.00	48.000	2.08	18.0	Concrete	0.013	1.49	5.45	1.01	15.16	9.8	21.2	285.03	285.01
660	P-7H	CB-7H	285.00	MH-7E	284.25	16.000	4.69	15.0	Concrete	0.013	1.44	7.36	0.74	13.99	10.3	21.7	285.04	284.99
902	P-12A	CB-12A	256.50	O-12	255.26	35.000	3.55	15.0	Concrete	0.013	1.29	6.45	0.27	12.17	10.6	22.0	256.18	255.53
664	P-8D	CB-8D	276.90	MH-8C	274.56	30.000	7.80	15.0	Concrete	0.013	1.94	9.61	0.28	18.04	10.8	22.2	276.23	274.84
561	P-7J	CB-7J	284.35	CB-7C	284.03	25.000	1.28	15.0	Concrete	0.013	0.83	3.95	0.28	7.31	11.3	22.7	284.56	284.31
567	P-8E	CB-8E	280.09	MH-8C	279.43	105.000	0.63	8.0	PVC	0.010	0.15	2.42	0.16	1.25	12.1	23.5	279.68	279.59
572	P-8B	CB-8B	273.59	CB-8A	269.29	188.000	2.29	24.0	Concrete	0.013	4.19	7.38	1.09	34.21	12.3	23.7	270.46	270.38
507	P-2A	CB-2A	294.60	O-2	289.11	25.000	21.96	12.0	Corrugated HDPE (Smooth Interior)	0.013	2.11	14.54	0.24	16.70	12.6	24.0	292.50	289.35
723	P-9F	CB-9F	273.28	CB-9E	270.81	96.000	2.58	15.0	Concrete	0.013	1.33	5.81	0.88	10.37	12.8	24.2	271.72	271.69
767	P-9H	CB-9H	269.64	CB-9G	268.66	122.000	0.80	15.0	Concrete	0.013	0.75	3.25	0.68	5.78	13.0	24.3	269.36	269.34
923	P-4B	CB-4B	285.60	CB-4A	284.80	74.000	1.08	18.0	Concrete	0.013	1.46	4.30	0.88	10.92	13.4	24.7	285.70	285.68
560	P-7C	CB-7C	282.78	CB-7A	282.59	29.000	0.65	30.0	Concrete	0.013	4.84	4.82	1.06	33.15	14.6	25.8	283.73	283.65
802	P-11C	CB-11C	262.50	CB-11B	261.50	81.000	1.23	15.0	Concrete	0.013	1.05	4.18	0.77	7.18	14.6	25.9	262.30	262.27
564	P-7I	CB-7I	285.50	CB-7H	285.00	36.000	1.39	15.0	Concrete	0.013	1.14	4.46	0.75	7.61	15.0	26.2	285.78	285.75
913	P-12G	CB-12G	262.32	CB-12F	260.48	106.000	1.74	15.0	Concrete	0.013	1.32	5.04	1.02	8.51	15.5	26.6	261.52	261.50
781	P-10L	CB-10L	264.80	CB-10K	263.00	163.000	1.10	18.0	Concrete	0.013	1.79	1.01	3.28	11.04	16.2	27.2	266.29	266.28
704	P-5H	CB-5H	289.39	CB-5G	288.82	100.000	0.57	15.0	Concrete	0.013	0.81	2.94	0.67	4.88	16.6	27.5	289.51	289.49
775	P-10J	CB-10J	262.20	CB-10I	260.75	77.000	1.88	18.0	Concrete	0.013	2.40	1.36	5.41	14.41	16.7	27.6	266.19	266.16
904	P-12C	CB-12C	257.37	MH-12B	257.00	35.000	1.06	15.0	Concrete	0.013	1.14	4.05	0.59	6.64	17.1	28.0	257.64	257.59
742	P-10H	CB-10H	266.82	CB-10G	266.18	151.000	0.43	15.0	Concrete	0.013	0.75	2.60	0.67	4.22	17.8	28.6	266.86	266.84
905	P-12B	MH-12B	257.00	CB-12A	256.50	60.000	0.83	15.0	Concrete	0.013	1.14	3.71	0.64	5.90	19.3	29.8	257.19	257.15
760	P-9G	CB-9G	268.66	CB-9A	266.80	148.000	1.26	15.0	Concrete	0.013	1.46	4.62	1.83	7.24	20.2	30.5	268.65	268.63
769	P-10I	CB-10I	260.75	CB-10B	260.00	50.000	1.50	18.0	Concrete	0.013	2.63	1.49	6.11	12.86	20.4	30.7	266.14	266.11
782	P-10K	CB-10K	263.00	CB-10J	262.20	83.000	0.96	18.0	Concrete	0.013	2.12	1.20	4.03	10.31	20.6	30.8	266.25	266.23
890	P-2D	CB-2D	295.16	MH-2C	294.93	44.000	0.52	12.0	Concrete	0.013	0.60	2.67	0.71	2.58	23.2	32.8	295.66	295.64
699	P-5G	CB-5G	288.82	CB-5F	288.00	95.000	0.86	15.0	Concrete	0.013	1.40	3.98	0.89	6.00	23.3	32.9	288.93	288.89
922	P-4A	CB-4A	284.80	O-4	284.68	15.000	0.80	18.0	Concrete	0.013	2.19	4.33	0.50	9.39	23.3	32.9	285.46	285.18
891	P-2C	MH-2C	294.93	CB-2B	294.76	34.000	0.50	12.0	Concrete	0.013	0.59	2.61	0.87	2.52	23.3	32.9	295.64	295.63
738	P-10G	CB-10G	266.18	CB-10F	265.45	87.000	0.83	15.0	Concrete	0.013	1.41	3.95	1.19	5.90	23.8	33.2	266.66	266.64
662	P-7E	MH-7E	284.00	CB-7C	283.78	18.000	1.23	18.0	Concrete	0.013	2.88	5.46	0.53	11.63	24.8	33.9	284.73	284.31

FlexTable: CTDOT Conduit Table - 10 Year

ID	Label	Start Node	Start Invert (ft)	Stop Node	Stop Invert (ft)	Length (Unified) (ft)	Slope (%)	Diameter (in)	Material	Manning's "n"	Flow (cfs)	Velocity (Avg.) (ft/s)	Depth - Out (ft)	Capacity Full (cfs)	Flow/Capacity (Design) (%)	Depth (Normal)/Rise (%)	Energy Grade Line (Out) (ft)	Hydraulic Grade Line (Out) (ft)
586	P-11A	CB-11A	260.82	O-11	259.53	83.000	1.56	15.0	Concrete	0.013	2.43	5.75	0.47	8.06	30.2	37.7	260.51	260.00
700	P-5F	CB-5F	288.00	CB-5E	287.50	50.000	1.00	15.0	Concrete	0.013	1.96	4.62	1.30	6.46	30.4	37.8	288.84	288.80
724	P-9E	CB-9E	270.81	CB-9D	269.32	114.000	1.31	15.0	Concrete	0.013	2.34	5.34	1.02	7.39	31.7	38.7	270.41	270.34
515	P-1A	CB-1A	296.83	O-1	295.67	183.000	0.64	10.0	PVC	0.010	0.74	3.72	0.33	2.27	32.7	39.4	296.21	296.00
796	P-11B	CB-11B	261.50	CB-11A	260.82	93.000	0.73	15.0	Concrete	0.013	1.82	4.04	0.98	5.52	33.0	39.6	261.85	261.80
899	P-12E	MH-12E	260.41	CB-12D	259.20	118.000	1.03	15.0	Concrete	0.013	2.34	4.88	0.52	6.54	35.8	41.3	260.05	259.72
898	P-12F	CB-12F	260.48	MH-12E	260.41	7.000	1.00	15.0	Concrete	0.013	2.34	4.85	0.95	6.46	36.3	41.6	261.44	261.36
604	P-10N	CB-10N	264.00	CB-10A	256.00	139.000	5.76	60.0	Concrete	0.013	250.00	30.05	8.07	624.78	40.0	44.0	266.59	264.07
510	P-2B	CB-2B	294.76	CB-2A	294.60	31.000	0.52	12.0	Concrete	0.013	1.06	3.11	0.96	2.56	41.5	44.9	295.59	295.56
725	P-9D	CB-9D	269.32	CB-9C	268.22	105.000	1.05	15.0	Concrete	0.013	3.04	5.28	1.26	6.62	45.9	47.6	269.57	269.47
886	P-5E	CB-5E	287.50	CB-5B	287.00	48.000	1.04	15.0	Concrete	0.013	3.11	5.29	1.60	6.59	47.1	48.3	288.70	288.60
524	P-5B	CB-5B	287.00	CB-5A	286.54	28.000	1.64	15.0	Concrete	0.013	4.05	3.30	1.71	8.28	48.9	49.3	288.42	288.25
523	P-5A	CB-5A	286.54	O-5	283.48	101.000	3.03	15.0	Concrete	0.013	6.14	9.37	0.66	11.24	54.6	52.7	285.50	284.14
667	P-10E	CB-10E	265.25	EW-10D	264.58	164.000	0.41	15.0	Concrete	0.013	2.41	3.50	1.63	4.13	58.4	54.9	266.26	266.20
583	P-10C	EW-10C	263.95	CB-10B	262.84	43.000	2.58	15.0	Concrete	0.013	6.28	5.12	3.04	10.37	60.5	56.1	266.29	265.88
576	P-9B	CB-9B	267.10	CB-9A	266.80	28.000	1.07	15.0	Concrete	0.013	4.17	3.40	1.73	6.69	62.4	57.2	268.71	268.53
575	P-9C	CB-9C	268.22	CB-9B	267.10	150.000	0.74	15.0	Concrete	0.013	3.68	4.85	1.78	5.57	66.1	59.4	269.02	268.88
584	P-10B	CB-10B	260.00	CB-10A	259.50	38.000	1.32	18.0	Concrete	0.013	8.26	4.67	5.88	12.05	68.5	60.8	265.72	265.38
577	P-9A	CB-9A	266.80	O-9	264.82	135.000	1.47	15.0	Concrete	0.013	6.17	7.07	0.84	7.82	78.8	66.9	266.43	265.66
731	P-10F	CB-10F	265.45	CB-10E	265.25	157.000	0.13	15.0	Concrete	0.013	1.92	2.10	1.23	2.31	83.4	69.8	266.52	266.48
585	P-10A	CB-10A	256.00	O-10	249.89	291.000	2.10	54.0	Concrete	0.013	258.24	20.29	3.46	284.93	90.6	74.6	259.37	253.35

FlexTable: CTDOT Gutter Table - 10 Year

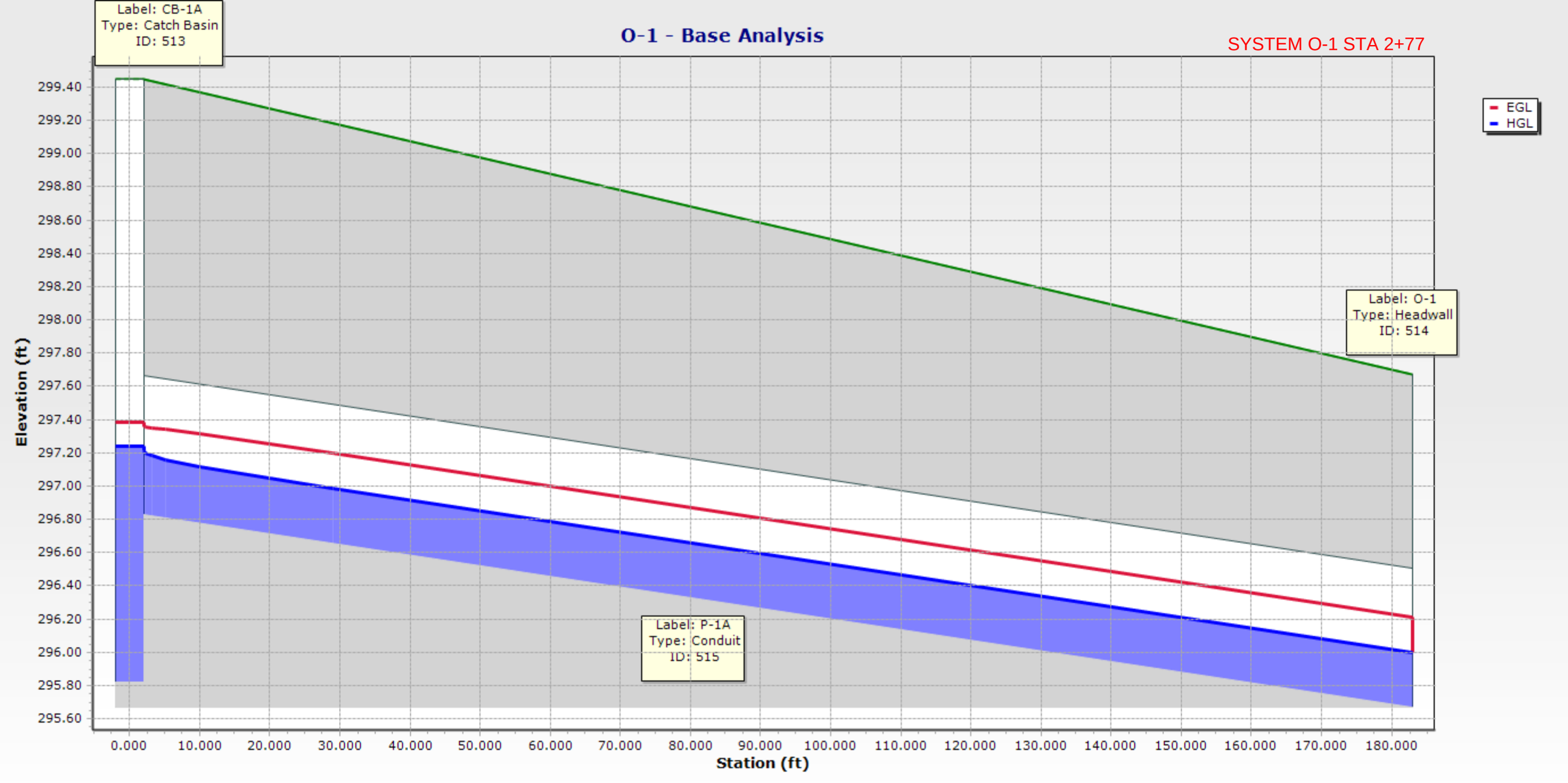
ID	Label	Start Node	Stop Node	Length (Unified) (ft)	Gutter Shape	Road Cross Slope (%)	Slope (Calculated) (%)	Manning's n (Gutter)	Spread / Top Width (Start) (ft)	Spread / Top Width (Stop) (ft)	Notes
631	GUT-1A	CB-1A	CB-2D	66.000	Conventional	2.00	1.51	0.013	5.938	6.651	
925	GUT-2A	CB-2A	CB-4A	347.000	Conventional	2.00	0.98	0.013	2.986	6.027	
632	GUT-2B	CB-2B	CB-3A	332.000	Conventional	2.00	1.01	0.013	3.126	5.691	
690	GUT-2D	CB-2D	CB-2B	79.000	Conventional	2.00	1.43	0.013	5.127	6.002	
705	GUT-3A	CB-3A	CB-5H	200.000	Conventional	2.00	0.57	0.013	4.832	6.955	
924	GUT-4A	CB-4A	CB-4B	74.000	Conventional	2.00	0.57	0.013	4.286	4.509	
835	GUT-4B	CB-4B	CB-4C	101.000	Conventional	2.00	0.55	0.013	3.260	4.364	
828	GUT-4C	CB-4C	CB-4D	109.000	Conventional	2.00	0.55	0.013	2.798	5.310	
827	GUT-4D	CB-4D	CB-5I	93.000	Conventional	2.00	0.48	0.013	3.308	4.368	
810	GUT-5B	CB-5B	CB-5E	48.000	Conventional	2.00	0.22	0.013	3.724	6.037	
847	GUT-5C	CB-5C	CB-5B	121.000	Conventional	2.00	0.40	0.013	3.263	5.025	
842	GUT-5D	CB-5D	CB-5A	116.000	Conventional	2.00	0.52	0.013	2.524	7.076	
695	GUT-5F	CB-5F	CB-5E	50.000	Conventional	2.00	0.13	0.013	5.229	6.037	
694	GUT-5G	CB-5G	CB-5F	95.000	Conventional	2.00	0.55	0.013	3.560	6.159	
693	GUT-5H	CB-5H	CB-5G	100.000	Conventional	2.00	0.56	0.013	4.261	5.821	
856	GUT-5I	CB-5I	CB-5A	101.000	Conventional	2.00	0.15	0.013	3.538	7.076	
860	GUT-6A	CB-6A	CB-5C	87.000	Conventional	2.00	0.90	0.013	2.445	5.462	
861	GUT-6B	CB-6B	CB-6A	42.000	Conventional	2.00	0.08	0.013	1.651	3.079	
638	GUT-6C	CB-6C	CB-6A	55.000	Conventional	2.00	5.53	0.013	2.722	3.079	
637	GUT-6D	CB-6D	CB-6C	43.000	Conventional	2.00	12.99	0.013	1.462	4.009	
755	GUT-7A	CB-7A	CB-7B	31.000	Conventional	2.00	0.03	0.013	0.535	4.639	
714	GUT-7C	CB-7C	CB-7D	38.000	Conventional	2.00	0.16	0.013	2.164	6.244	
707	GUT-7G	CB-7G	CB-7F	105.000	Conventional	2.00	0.74	0.013	3.884	5.951	
867	GUT-8B	CB-8B	CB-9F	137.000	Conventional	2.40	3.71	0.013	4.874	6.220	
866	GUT-8F	CB-8F	CB-8B	24.000	Conventional	2.00	3.21	0.013	4.316	7.675	
791	GUT-9A	CB-9A	CB-10M	345.000	Conventional	2.00	0.43	0.013	4.006	4.671	
744	GUT-9B	CB-9B	CB-10H	275.000	Conventional	2.00	0.44	0.013	2.442	7.062	
643	GUT-9C	CB-9C	CB-9B	150.000	Conventional	2.00	0.43	0.013	2.985	5.321	
720	GUT-9D	CB-9D	CB-9C	105.000	Conventional	2.00	0.76	0.013	3.740	4.448	
721	GUT-9E	CB-9E	CB-9D	114.000	Conventional	2.00	1.17	0.013	4.113	5.090	
722	GUT-9F	CB-9F	CB-9E	96.000	Conventional	2.00	2.90	0.013	4.435	5.323	
759	GUT-9G	CB-9G	CB-9A	148.000	Conventional	2.00	0.43	0.013	4.387	6.906	
764	GUT-9H	CB-9H	CB-9G	122.000	Conventional	2.00	0.78	0.013	3.541	6.401	
859	GUT-10A	CB-10A	CB-11C	339.000	Conventional	2.63	0.48	0.013	0.000	7.425	
646	GUT-10B	CB-10B	CB-11C	378.000	Conventional	2.63	0.43	0.013	1.861	7.425	
916	GUT-10E	CB-10E	CB-12G	769.000	Conventional	4.00	0.41	0.013	2.101	6.217	
732	GUT-10F	CB-10F	CB-10E	157.000	Conventional	4.00	0.13	0.013	4.423	5.957	
736	GUT-10G	CB-10G	CB-10F	87.000	Conventional	2.00	0.44	0.013	4.075	5.995	
743	GUT-10H	CB-10H	CB-10G	152.000	Conventional	2.00	0.42	0.013	4.201	7.020	
772	GUT-10I	CB-10I	CB-10B	50.000	Conventional	3.00	0.45	0.013	3.265	3.943	
774	GUT-10J	CB-10J	CB-10I	77.000	Conventional	3.00	0.44	0.013	3.610	4.834	
783	GUT-10K	CB-10K	CB-10J	83.000	Conventional	3.00	0.97	0.013	3.556	5.095	
784	GUT-10L	CB-10L	CB-10K	163.000	Conventional	3.00	0.23	0.013	5.098	6.195	
790	GUT-10M	CB-10M	CB-10L	124.000	Conventional	2.00	0.44	0.013	5.988	7.464	
797	GUT-11B	CB-11B	CB-11A	93.000	Conventional	3.00	0.41	0.013	4.455	5.990	
801	GUT-11C	CB-11C	CB-11B	81.000	Conventional	3.00	0.51	0.013	5.202	6.362	
912	GUT-12G	CB-12G	CB-12F	106.000	Conventional	2.00	1.78	0.013	2.724	6.325	

FlexTable: CTDOT Headwall Table - 10 Year

ID	Label	Inlet Description	Size	Material	X (ft)	Y (ft)	Boundary Condition Type	Flow (Total Out) (cfs)	System Rational Flow (cfs)	Elevation (Invert) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (Out) (ft)
580	EW-10C	<None>	<None>	<None>	951,076.22	805,409.17	Free Outfall	6.28	6.28	263.95	266.20	266.61
581	EW-10D	<None>	<None>	<None>	951,072.84	805,411.42	Free Outfall	2.28	2.28	264.58	266.20	266.26
514	O-1	<None>	<None>	<None>	947,468.60	805,163.99	Free Outfall	0.71	0.71	295.67	296.00	296.00
504	O-2	<None>	<None>	<None>	947,572.39	805,275.00	Free Outfall	2.10	2.10	289.11	289.35	289.35
516	O-3	<None>	<None>	<None>	947,880.65	805,214.76	Free Outfall	0.92	0.92	285.10	285.18	285.18
921	O-4	<None>	<None>	<None>	947,899.30	805,207.75	Free Outfall	2.18	2.18	284.68	285.18	285.18
522	O-5	<None>	<None>	<None>	948,351.52	805,005.85	Free Outfall	6.07	6.07	283.48	284.14	284.14
529	O-6	<None>	<None>	<None>	948,577.84	804,962.35	Free Outfall	1.69	1.69	279.74	280.00	280.00
553	O-7	<None>	<None>	<None>	949,039.86	804,951.93	Free Outfall	5.43	5.43	277.97	278.40	278.40
573	O-8	<None>	<None>	<None>	949,771.46	804,746.15	Free Outfall	4.47	4.47	266.57	266.93	266.93
552	O-9	<None>	<None>	<None>	950,360.43	804,987.85	Free Outfall	6.04	6.04	264.82	265.66	265.66
550	O-10	<None>	<None>	<None>	951,185.14	805,073.07	Free Outfall	258.15	8.15	249.89	253.35	253.35
549	O-11	<None>	<None>	<None>	951,458.38	804,993.29	Free Outfall	2.40	2.40	259.53	260.00	260.00
897	O-12	<None>	<None>	<None>	951,652.55	804,784.66	Free Outfall	1.29	1.29	255.26	255.53	255.53

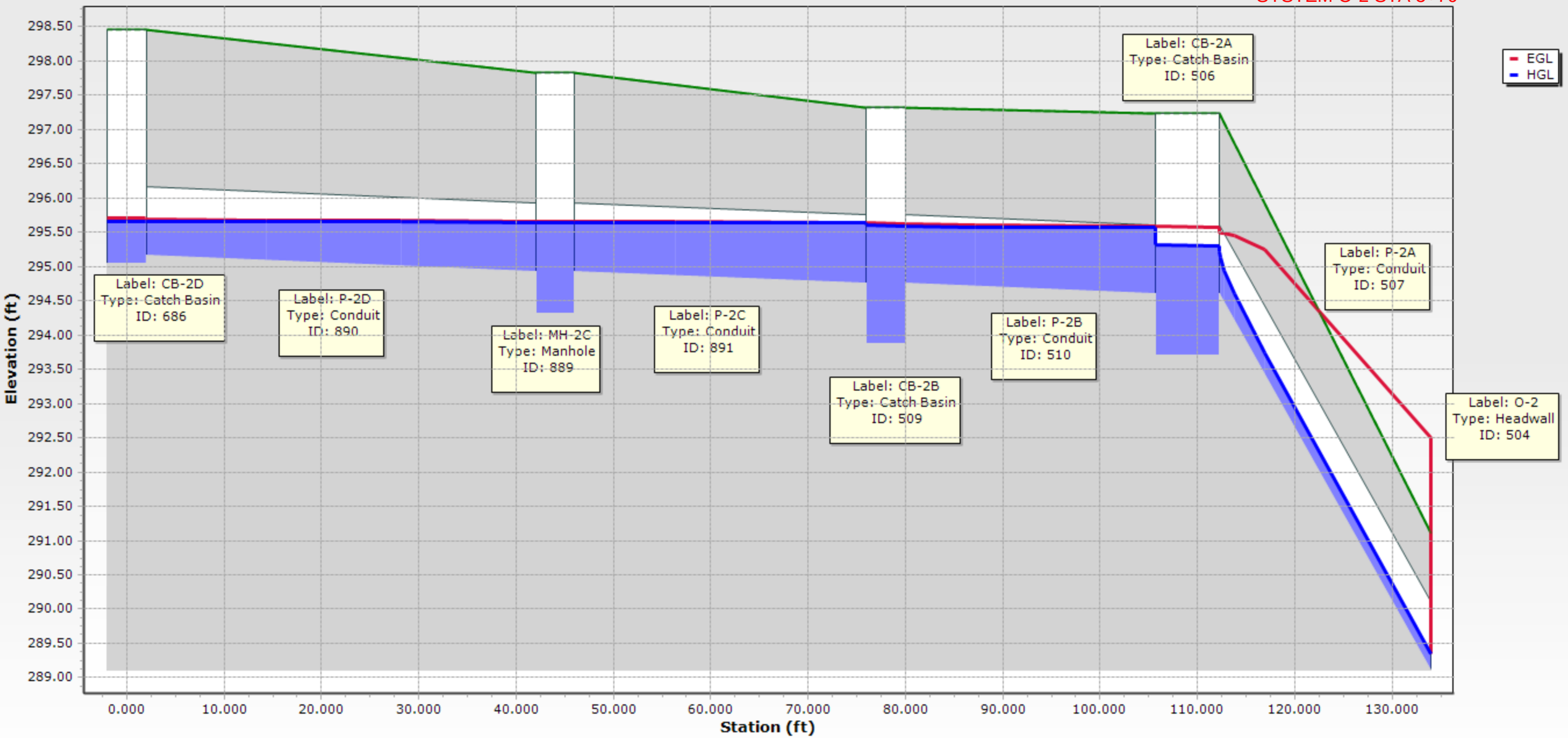
FlexTable: CTDOT Manhole Table - 10 Year

ID	Label	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert in 1) (ft)	Elevation (Invert in 2) (ft)	Elevation (Invert in 3) (ft)	Flow (Total In) (cfs)	Elevation (Invert Out) (ft)	Flow (Total Out) (cfs)	Depth (Out) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	X (ft)	Y (ft)
659	MH-7E	290.34	290.34	284.25	284.00	(N/A)	2.93	284.00	2.88	0.69	284.78	284.69	285.02	284.94	949,020.49	805,092.43
889	MH-2C	297.82	297.82	294.93	(N/A)	(N/A)	0.60	294.93	0.59	1.31	295.64	295.64	295.65	295.65	947,535.41	805,333.94
893	MH-12E	264.67	264.67	260.41	(N/A)	(N/A)	2.34	260.41	2.34	0.66	261.17	261.07	261.41	261.31	951,586.53	804,969.56
903	MH-12B	260.85	260.85	257.00	(N/A)	(N/A)	1.14	257.00	1.14	0.45	257.47	257.45	257.62	257.60	951,703.69	804,862.78
954	MH-8C	282.86	282.86	279.43	274.56	273.81	2.80	273.81	2.68	0.77	274.62	274.58	274.72	274.68	949,717.93	804,962.87


O-1 - Base Analysis
SYSTEM O-1 STA 2+77
Label: CB-1A
Type: Catch Basin
ID: 513
Label: O-1
Type: Headwall
ID: 514
Label: P-1A
Type: Conduit
ID: 515
EGL
HGL
Elevation (ft)
299.40
299.20
299.00
298.80
298.60
298.40
298.20
298.00
297.80
297.60
297.40
297.20
297.00
296.80
296.60
296.40
296.20
296.00
295.80
295.60
0.000
10.000
20.000
30.000
40.000
50.000
60.000
70.000
80.000
90.000
100.000
110.000
120.000
130.000
140.000
150.000
160.000
170.000
180.000
Station (ft)

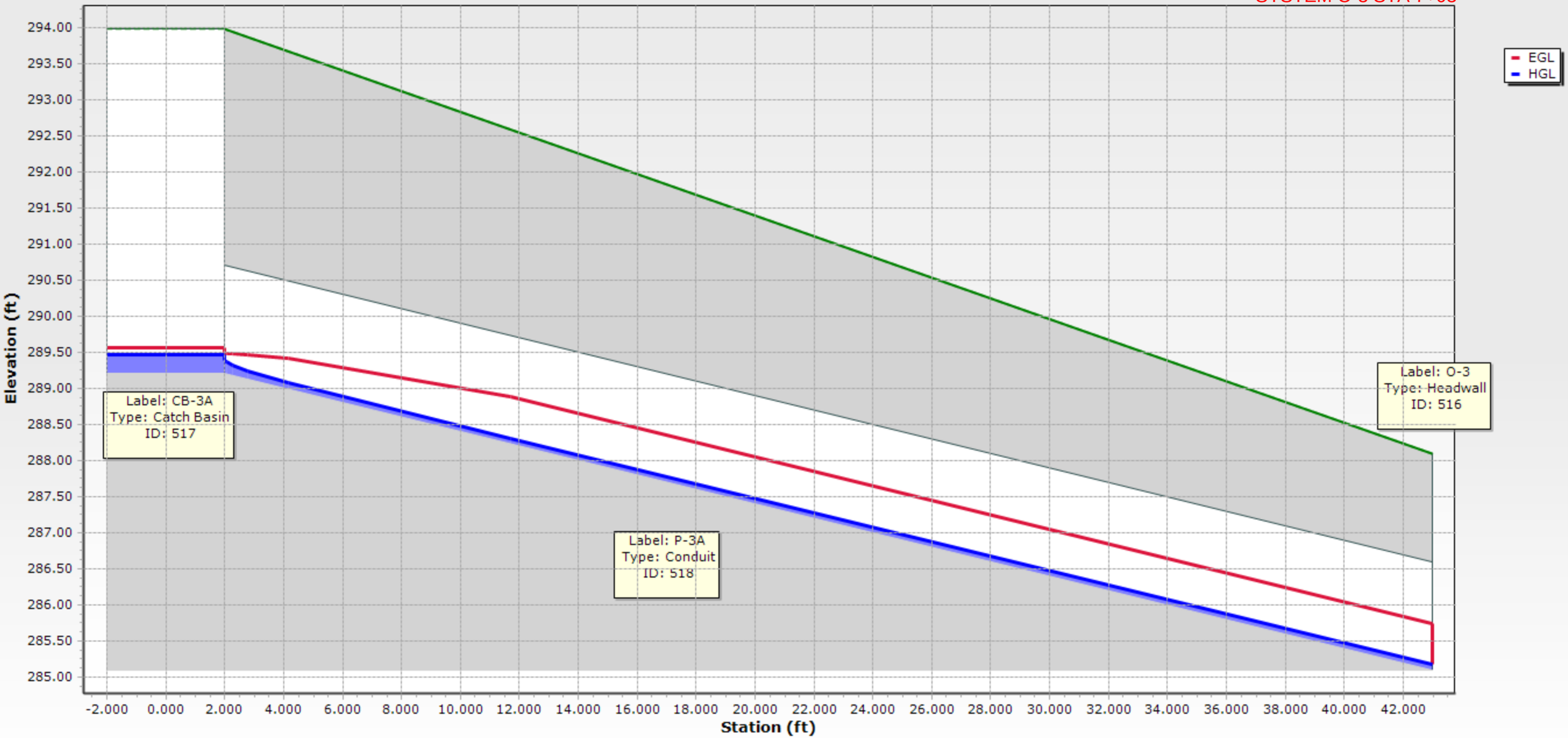
O-2 - Base Analysis

SYSTEM O-2 STA 3+76

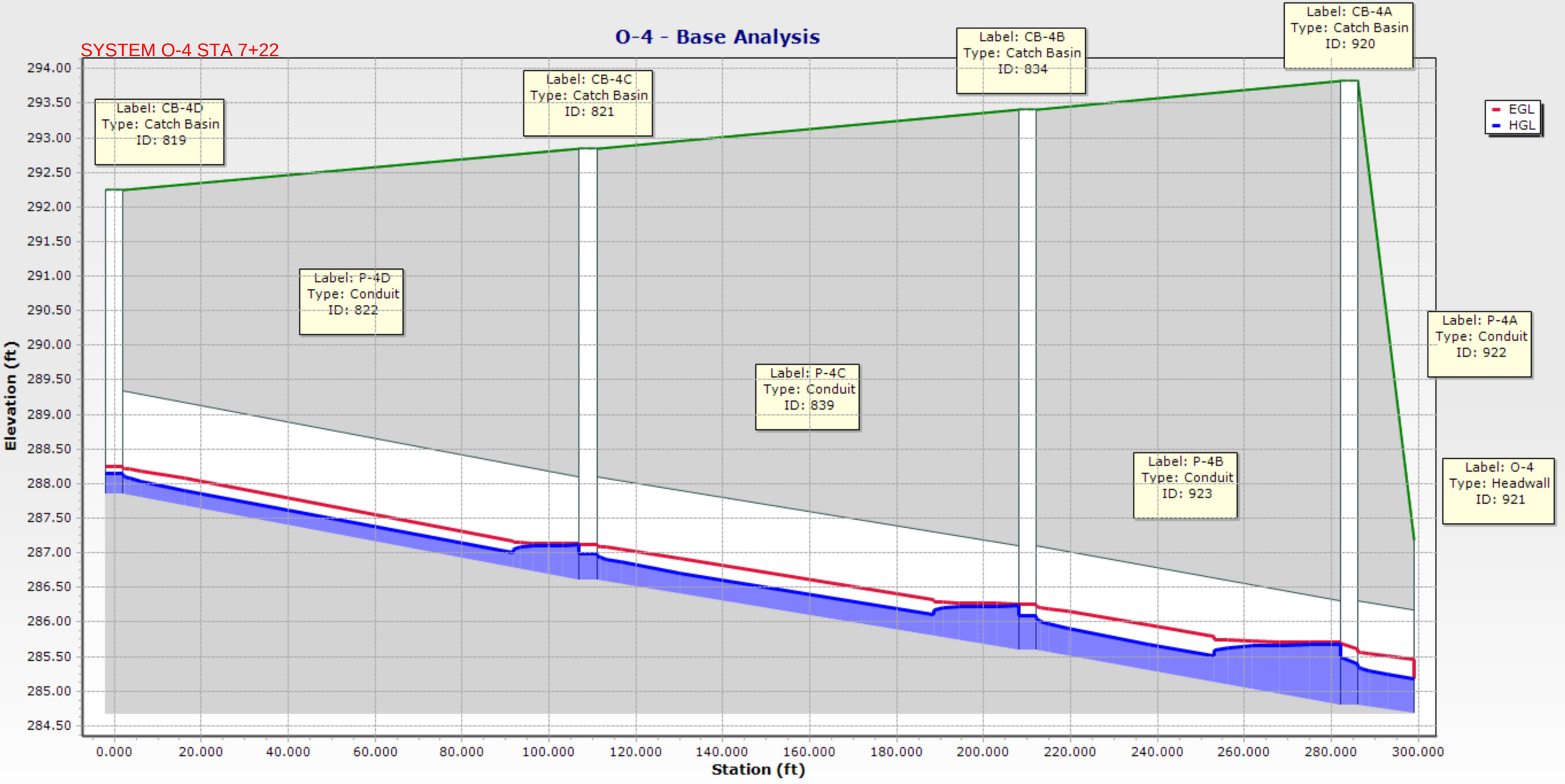


O-3 - Base Analysis

SYSTEM O-3 STA 7+03

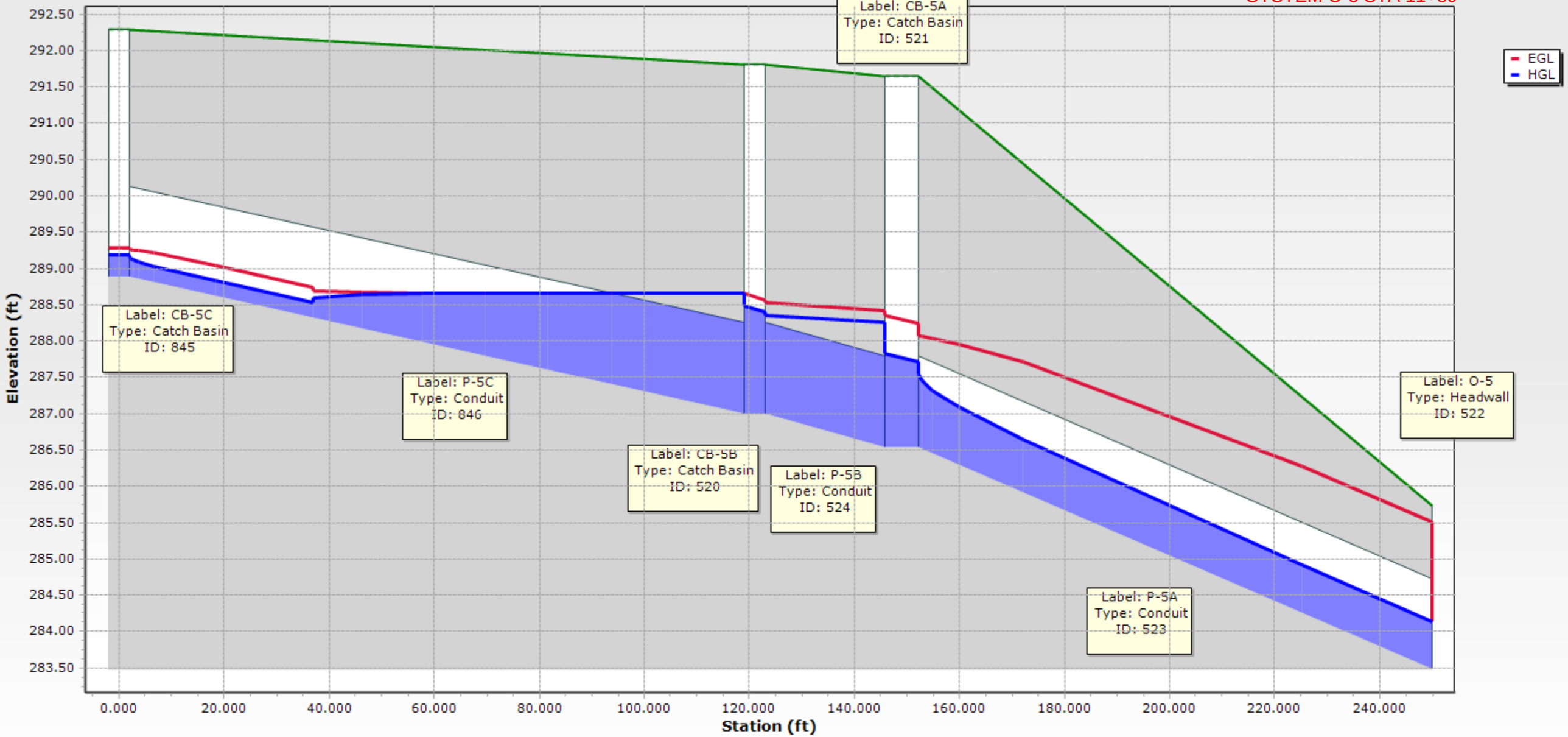


SYSTEM O-4 STA 7+22



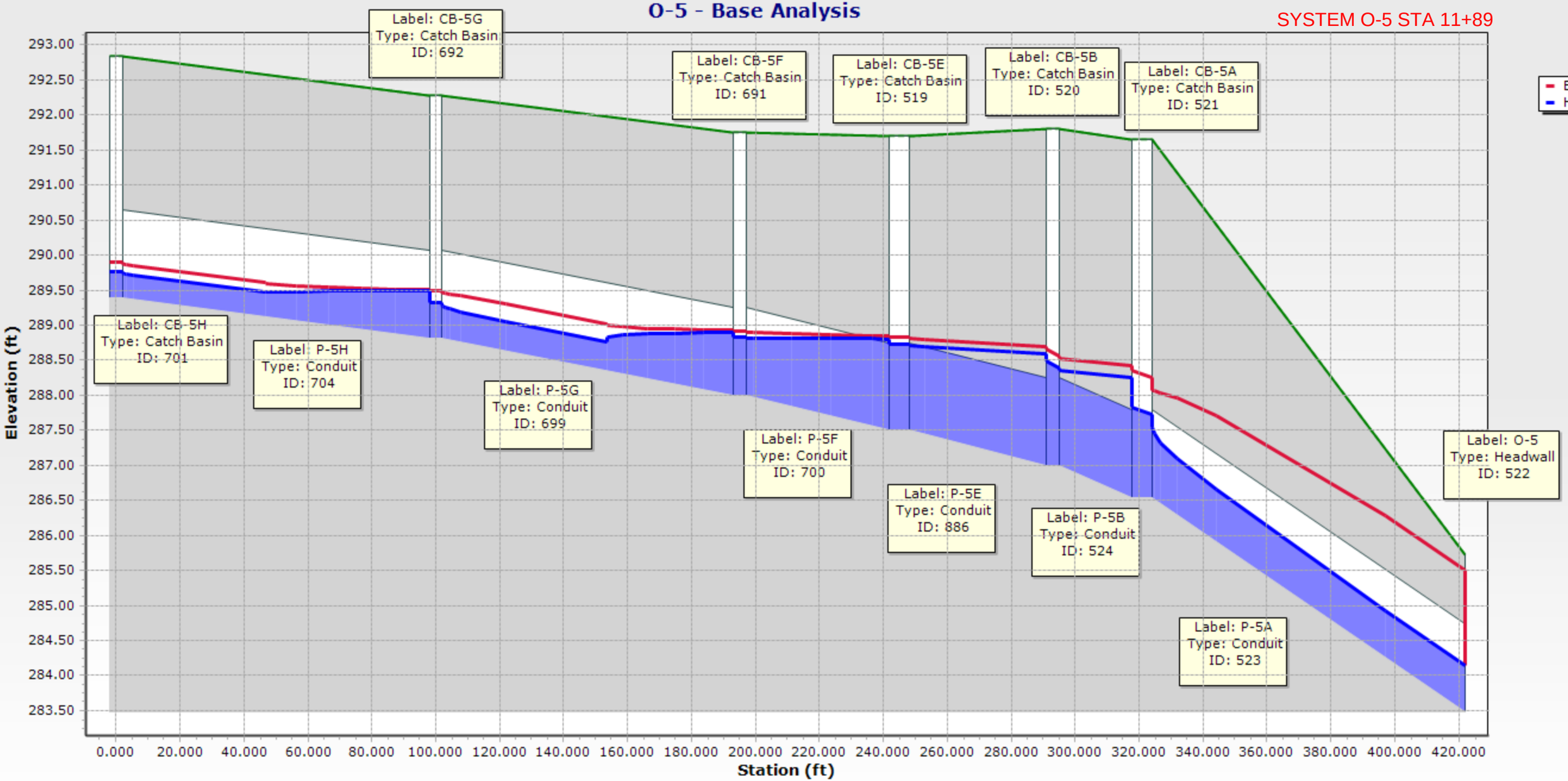
O-5 - Base Analysis

SYSTEM O-5 STA 11+89



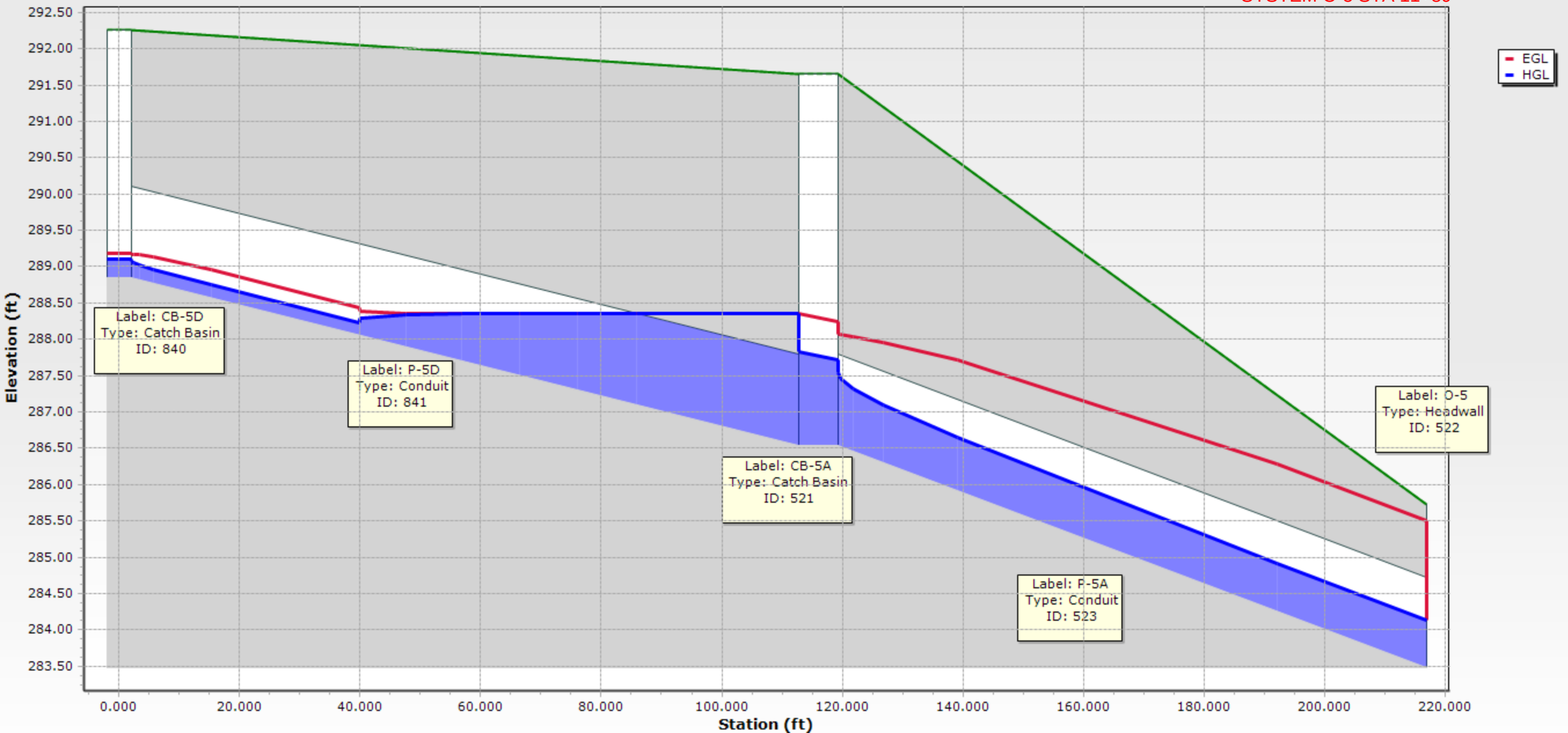
O-5 - Base Analysis

SYSTEM O-5 STA 11+89



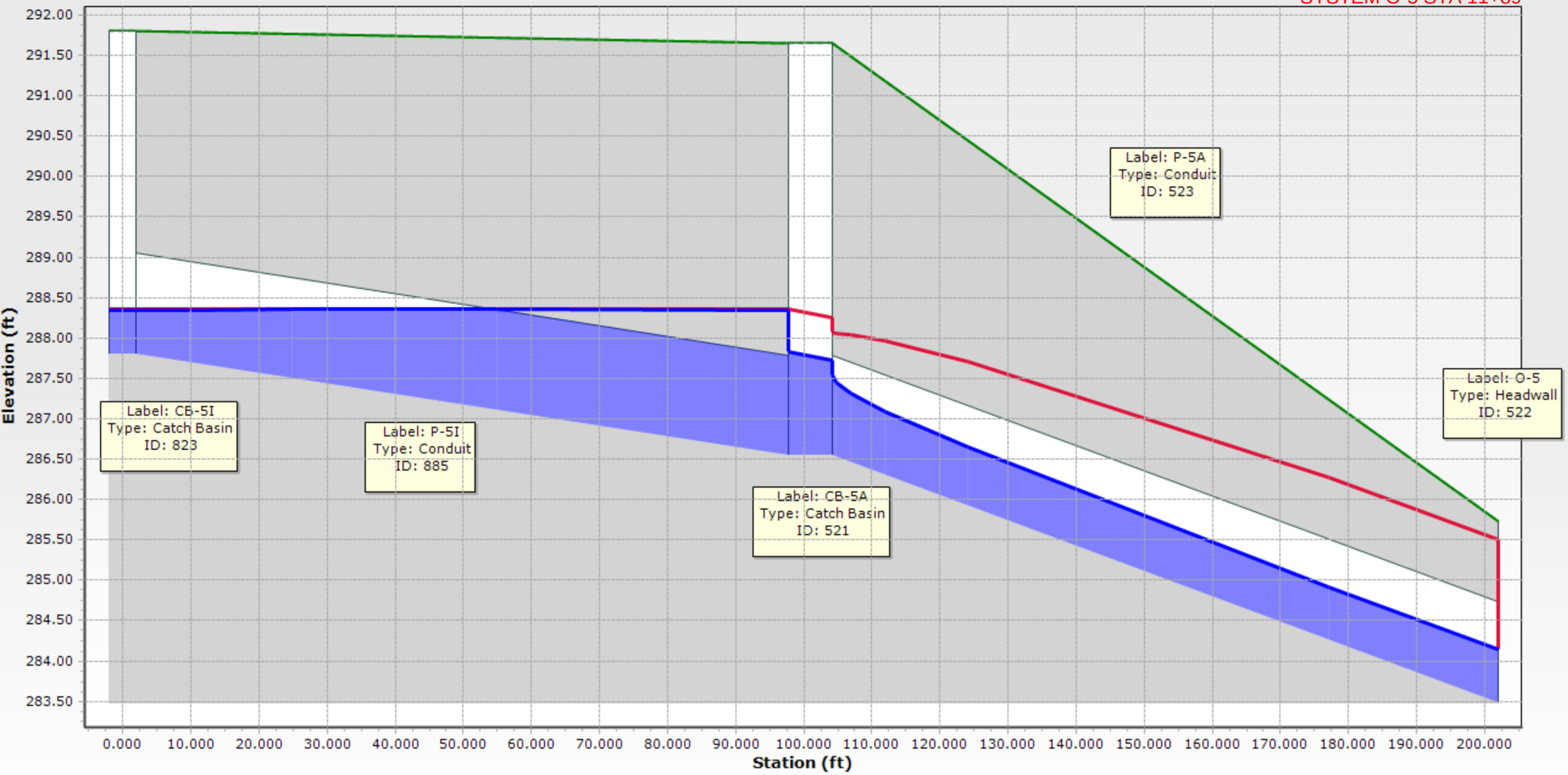
O-5 - Base Analysis

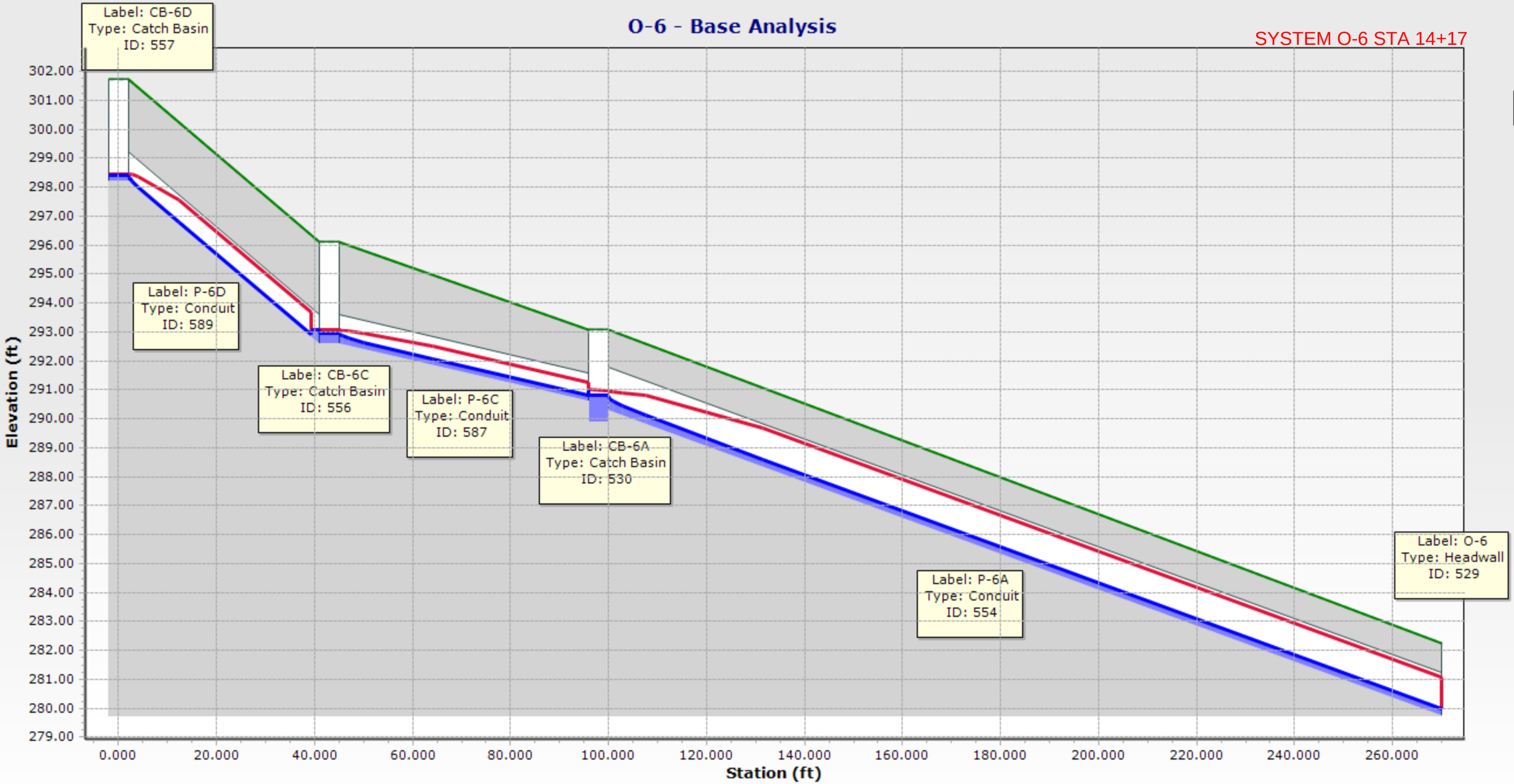
SYSTEM O-5 STA 11+89



O-5 - Base Analysis

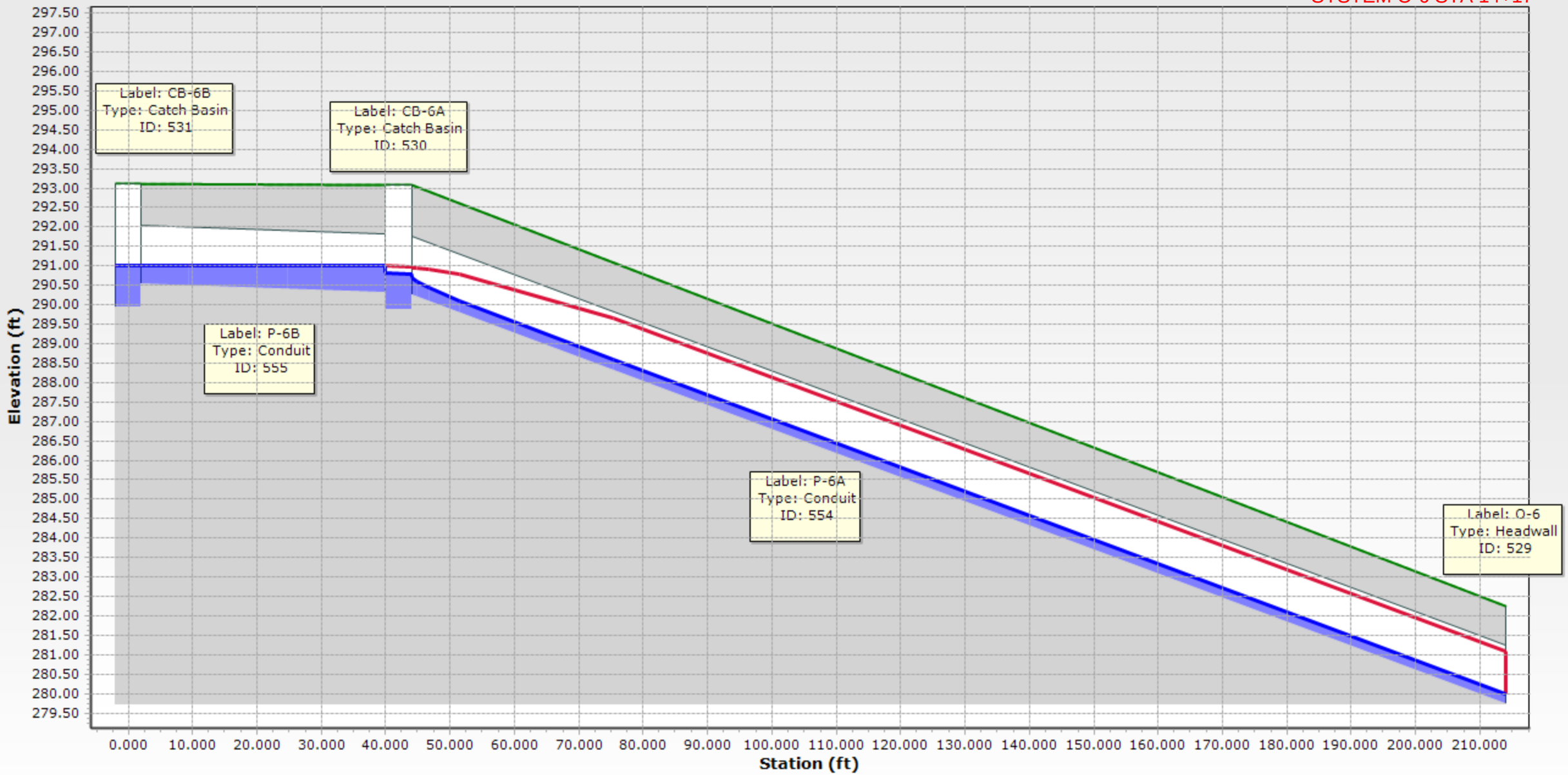
SYSTEM O-5 STA 11+89

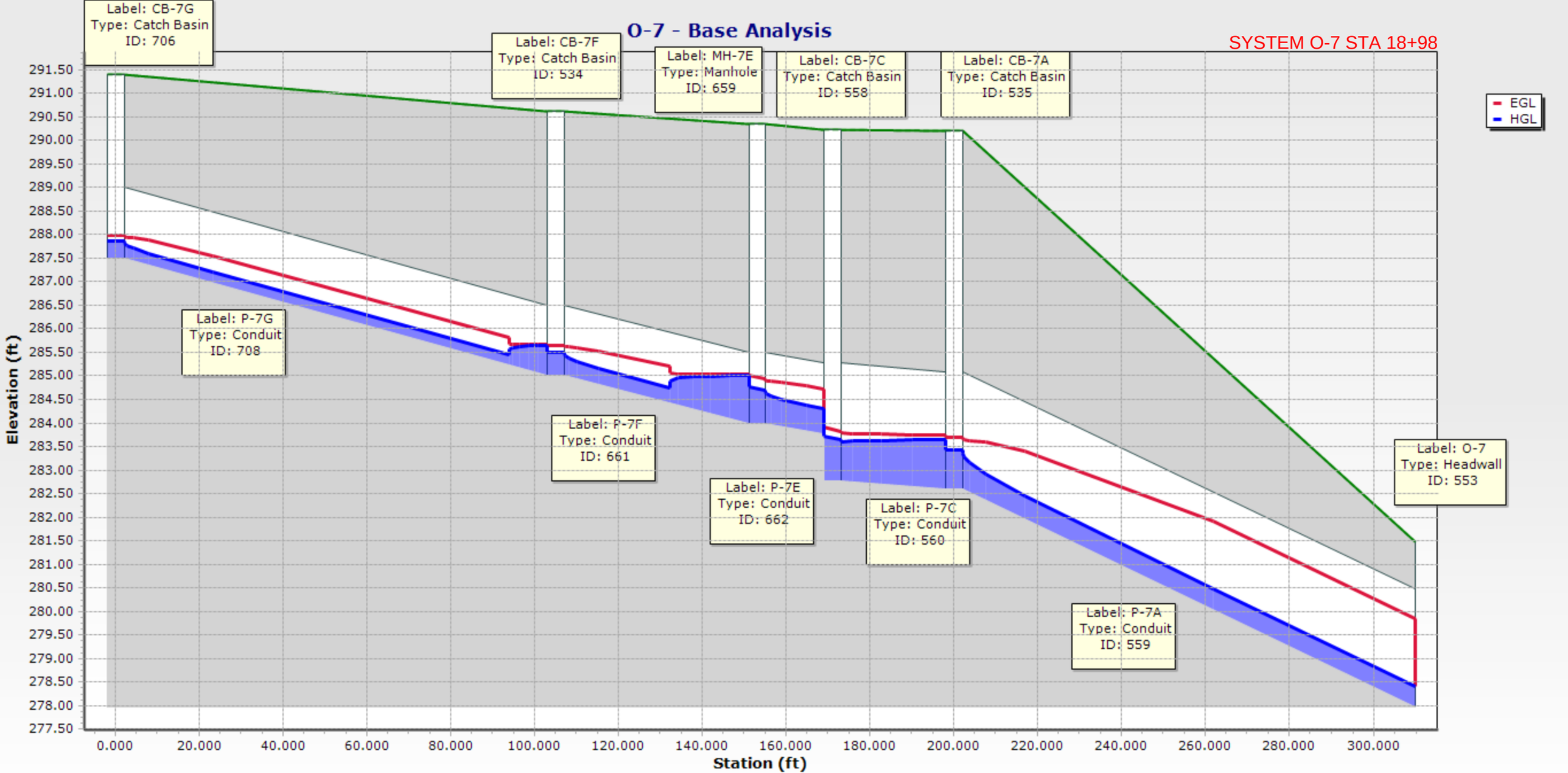


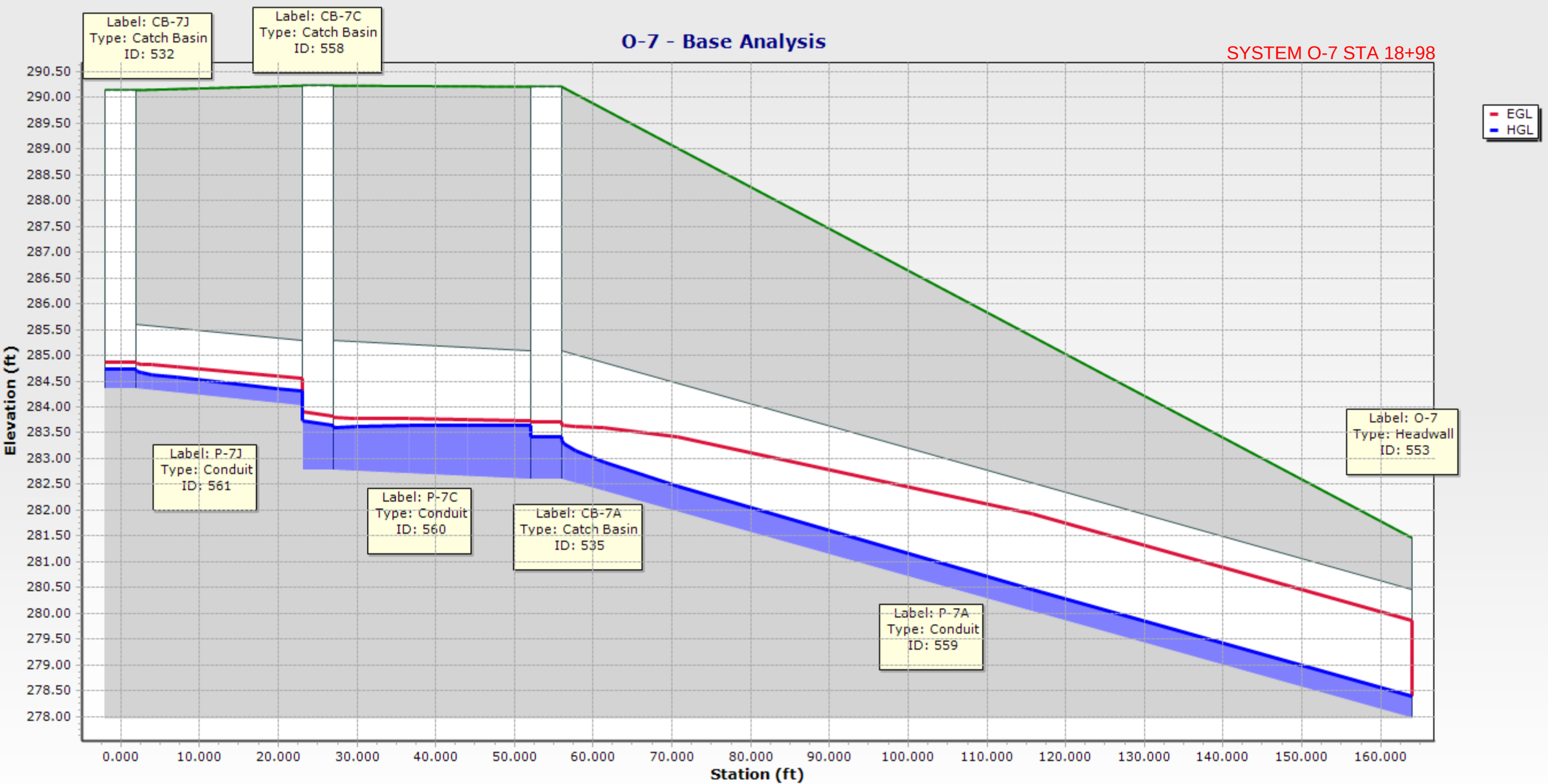

O-6 - Base Analysis
SYSTEM O-6 STA 14+17
Label: CB-6D
Type: Catch Basin
ID: 557
Label: P-6D
Type: Conduit
ID: 589
Label: CB-6C
Type: Catch Basin
ID: 556
Label: P-6C
Type: Conduit
ID: 587
Label: CB-6A
Type: Catch Basin
ID: 530
Label: P-6A
Type: Conduit
ID: 554
Label: O-6
Type: Headwall
ID: 529
EGL
HGL
Elevation (ft)
Station (ft)
302.00
301.00
300.00
299.00
298.00
297.00
296.00
295.00
294.00
293.00
292.00
291.00
290.00
289.00
288.00
287.00
286.00
285.00
284.00
283.00
282.00
281.00
280.00
279.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000

O-6 - Base Analysis

SYSTEM O-6 STA 14+17

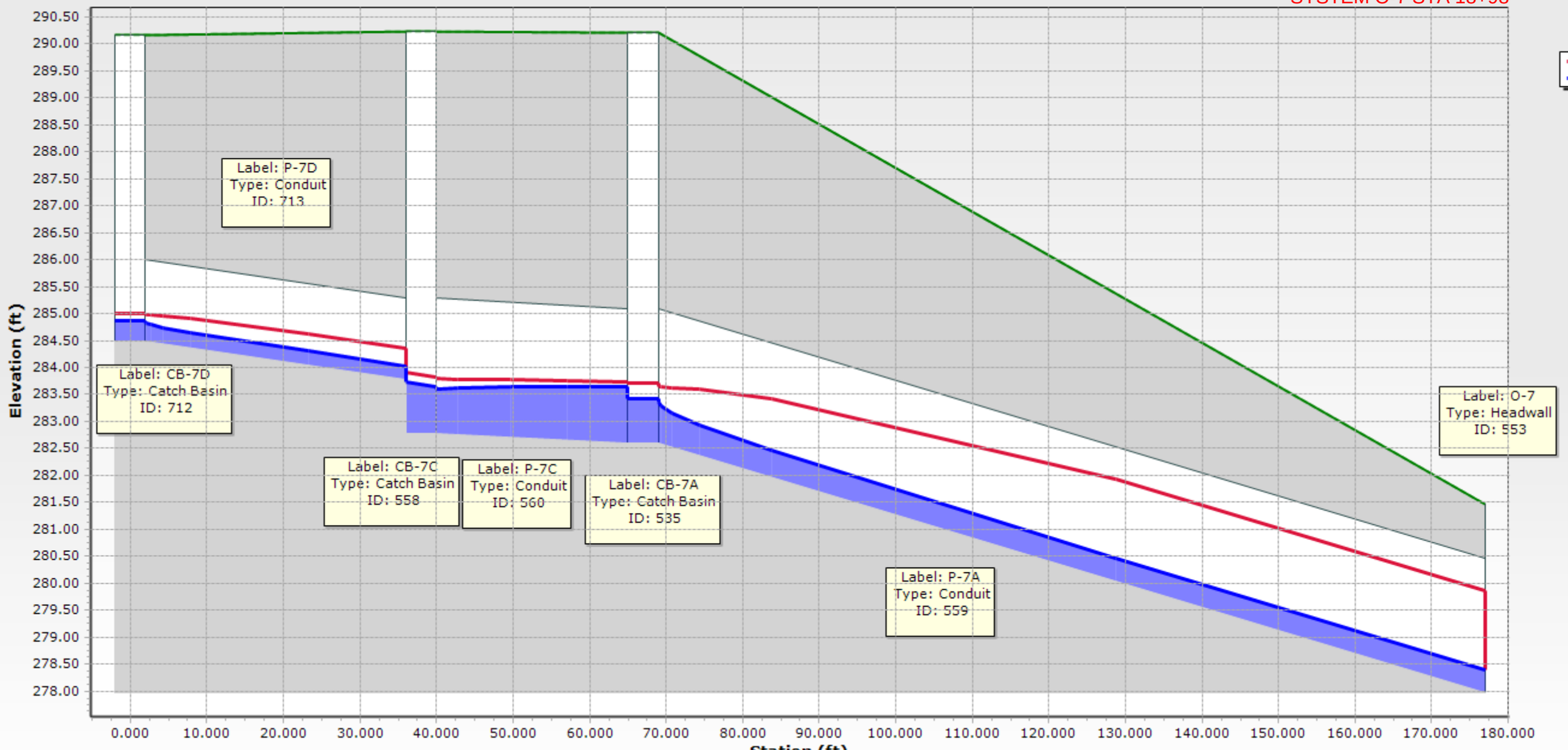



O-7 - Base Analysis
SYSTEM O-7 STA 18+98
Label: CB-7G
Type: Catch Basin
ID: 706
Label: CB-7F
Type: Catch Basin
ID: 534
Label: MH-7E
Type: Manhole
ID: 659
Label: CB-7C
Type: Catch Basin
ID: 558
Label: CB-7A
Type: Catch Basin
ID: 535
EGL
HGL
Label: P-7G
Type: Conduit
ID: 708
Label: P-7F
Type: Conduit
ID: 661
Label: P-7E
Type: Conduit
ID: 662
Label: P-7C
Type: Conduit
ID: 560
Label: P-7A
Type: Conduit
ID: 559
Label: O-7
Type: Headwall
ID: 553
Elevation (ft)
291.50
291.00
290.50
290.00
289.50
289.00
288.50
288.00
287.50
287.00
286.50
286.00
285.50
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000
280.000
300.000
Station (ft)


O-7 - Base Analysis
SYSTEM O-7 STA 18+98
Label: CB-7J
Type: Catch Basin
ID: 532
Label: CB-7C
Type: Catch Basin
ID: 558
Label: P-7J
Type: Conduit
ID: 561
Label: P-7C
Type: Conduit
ID: 560
Label: CB-7A
Type: Catch Basin
ID: 535
Label: P-7A
Type: Conduit
ID: 559
Label: O-7
Type: Headwall
ID: 553
EGL
HGL
Elevation (ft)
290.50
290.00
289.50
289.00
288.50
288.00
287.50
287.00
286.50
286.00
285.50
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
0.000
10.000
20.000
30.000
40.000
50.000
60.000
70.000
80.000
90.000
100.000
110.000
120.000
130.000
140.000
150.000
160.000
Station (ft)

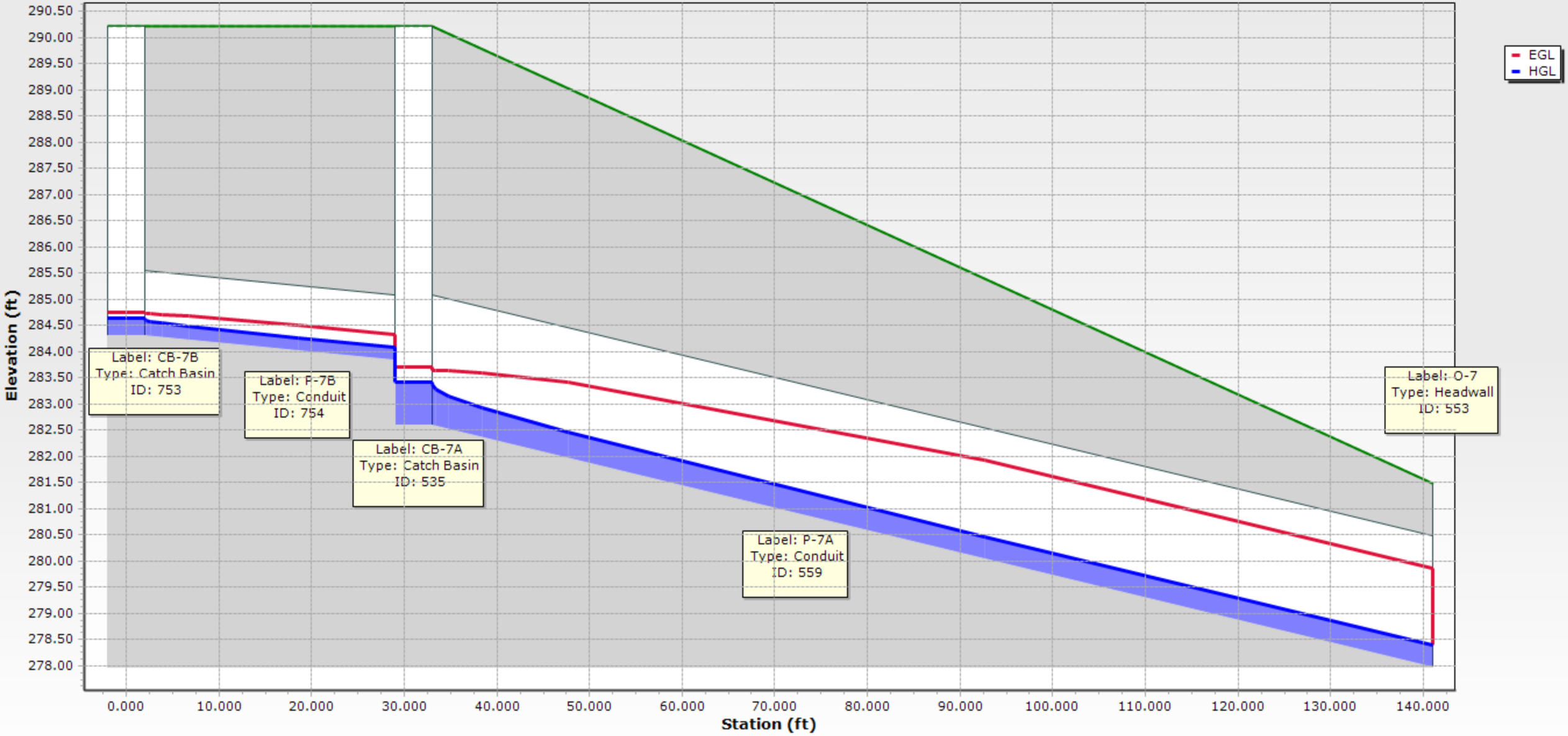
O-7 - Base Analysis

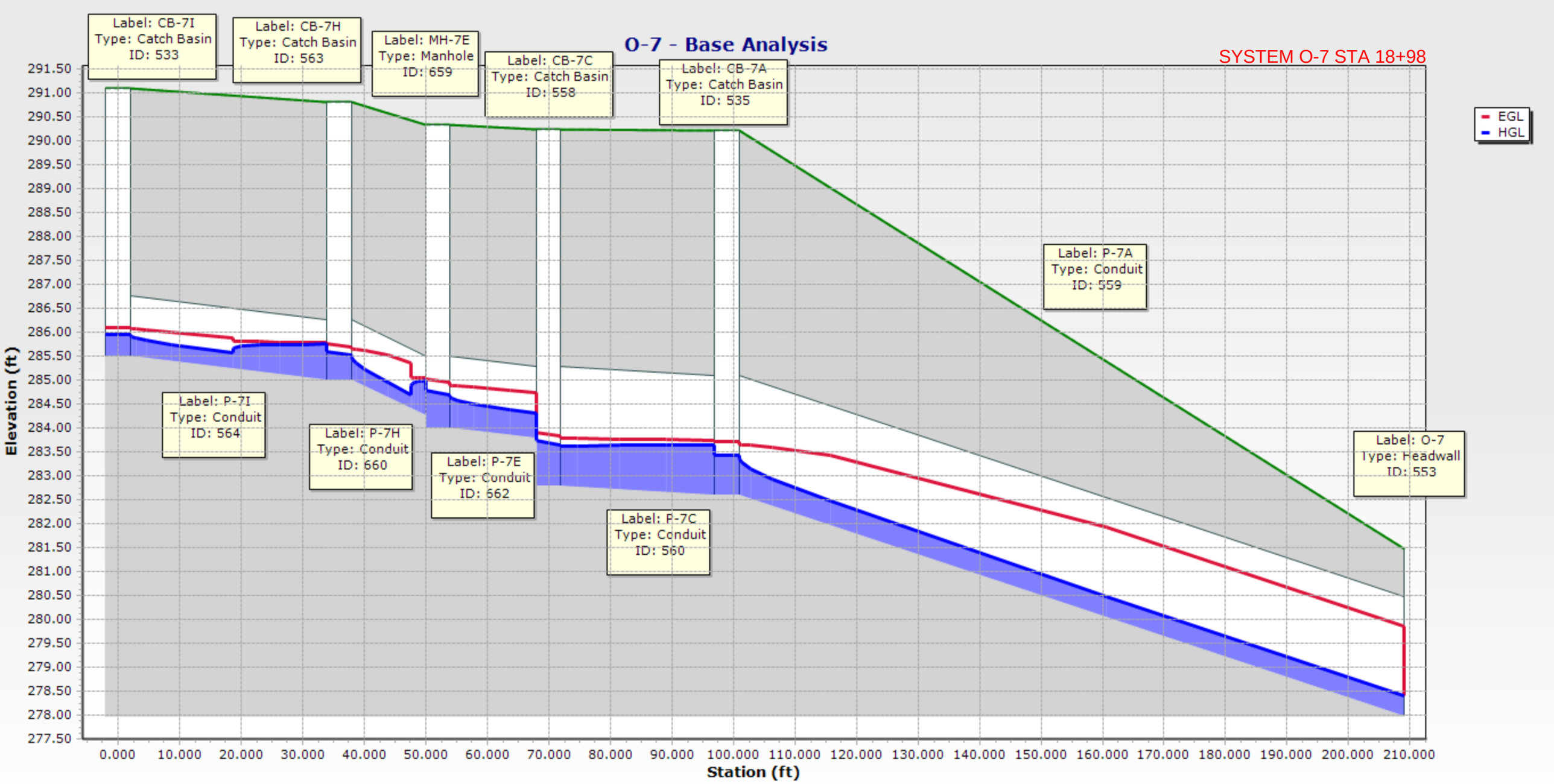
SYSTEM O-7 STA 18+98

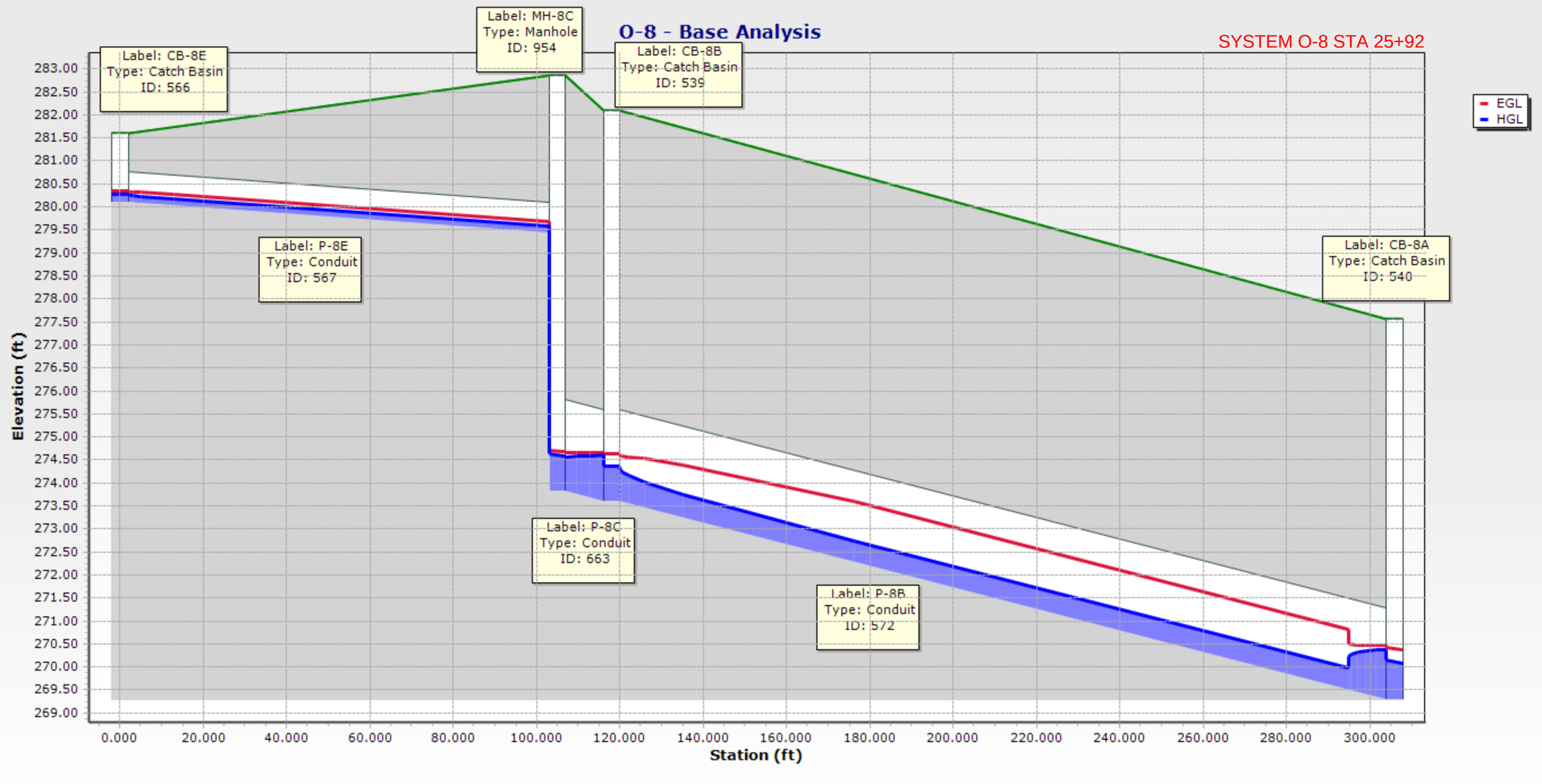


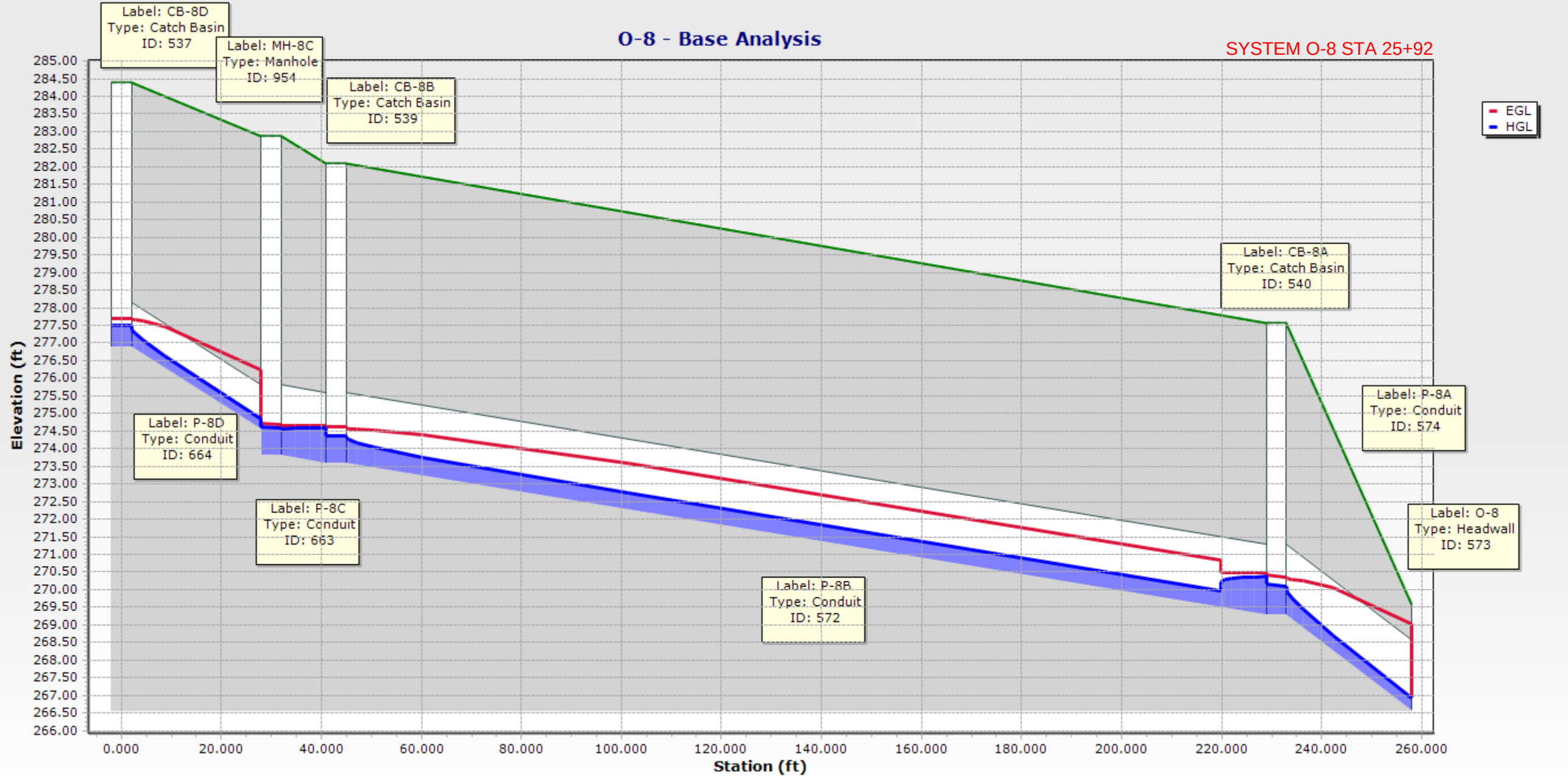
O-7 - Base Analysis

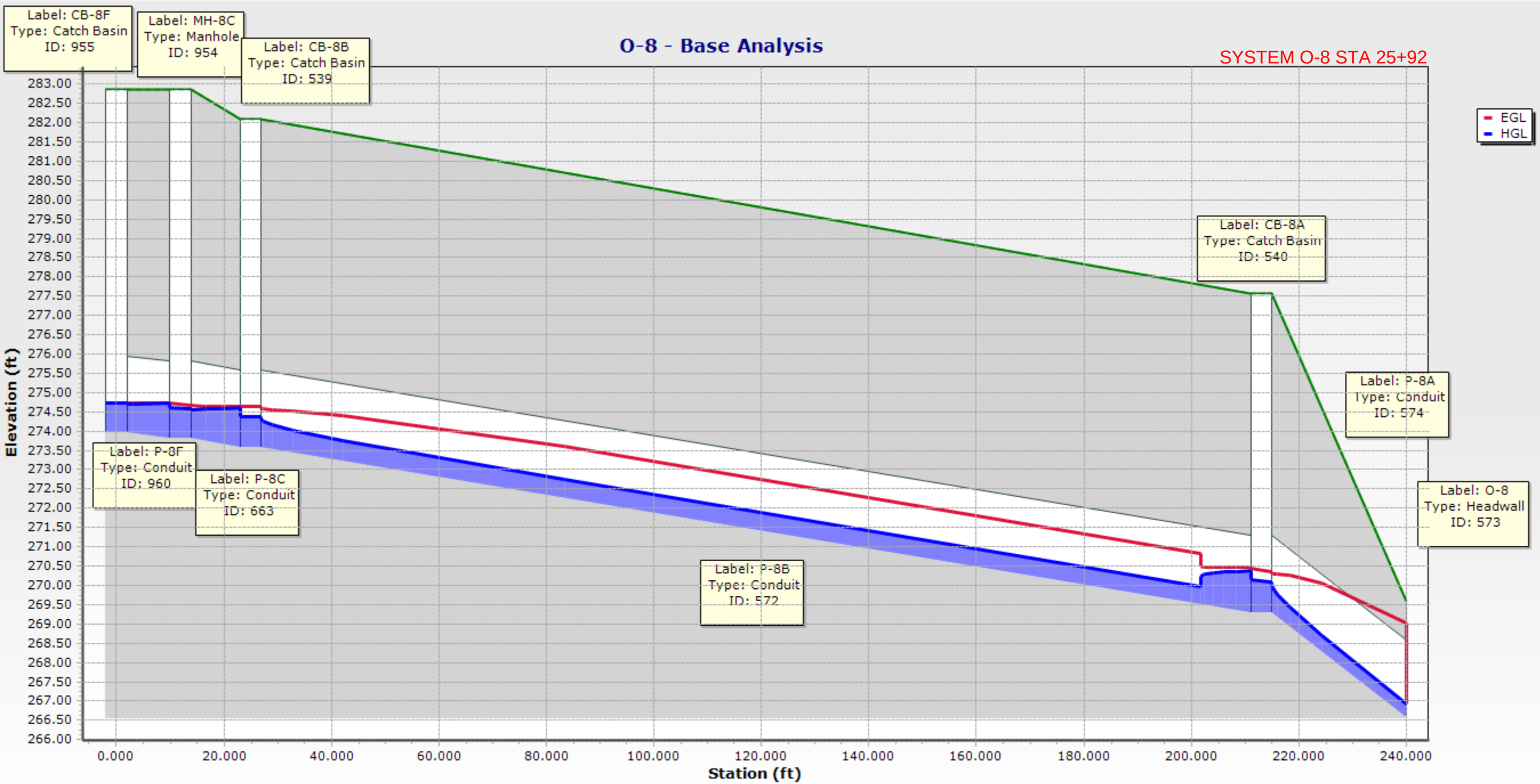
SYSTEM O-7 STA 18+98




O-7 - Base Analysis
SYSTEM O-7 STA 18+98
Label: CB-7I
Type: Catch Basin
ID: 533
Label: CB-7H
Type: Catch Basin
ID: 563
Label: MH-7E
Type: Manhole
ID: 659
Label: CB-7C
Type: Catch Basin
ID: 558
Label: CB-7A
Type: Catch Basin
ID: 535
Label: P-7A
Type: Conduit
ID: 559
Label: P-7I
Type: Conduit
ID: 564
Label: P-7H
Type: Conduit
ID: 660
Label: P-7E
Type: Conduit
ID: 662
Label: P-7C
Type: Conduit
ID: 560
Label: O-7
Type: Headwall
ID: 553
EGL
HGL
Elevation (ft)
291.50
291.00
290.50
290.00
289.50
289.00
288.50
288.00
287.50
287.00
286.50
286.00
285.50
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
0.000
10.000
20.000
30.000
40.000
50.000
60.000
70.000
80.000
90.000
100.000
110.000
120.000
130.000
140.000
150.000
160.000
170.000
180.000
190.000
200.000
210.000
Station (ft)

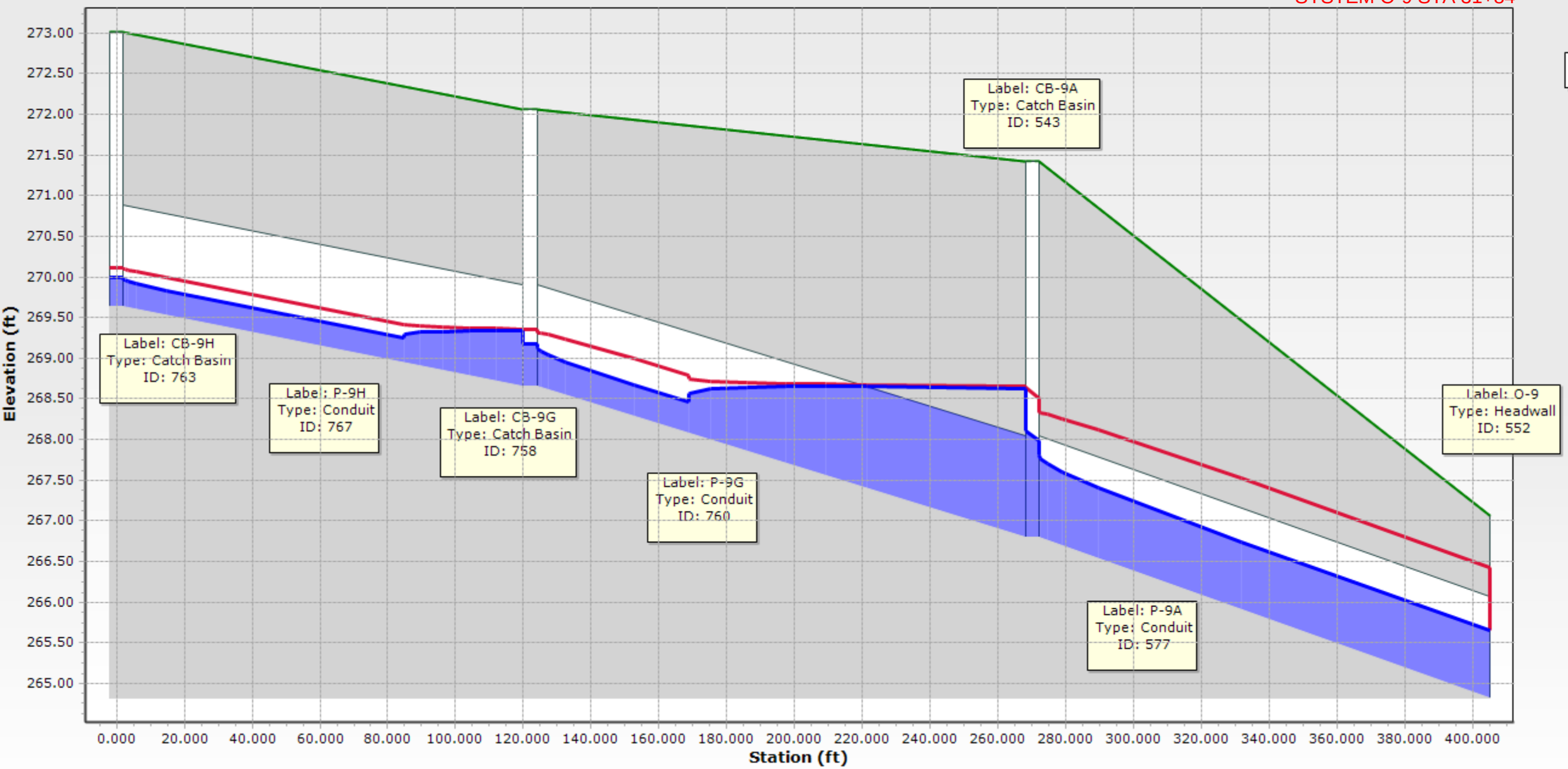

O-8 - Base Analysis
SYSTEM O-8 STA 25+92
Label: CB-8E
Type: Catch Basin
ID: 566
Label: MH-8C
Type: Manhole
ID: 954
Label: CB-8B
Type: Catch Basin
ID: 539
Label: CB-8A
Type: Catch Basin
ID: 540
Label: P-8E
Type: Conduit
ID: 567
Label: P-8C
Type: Conduit
ID: 663
Label: P-8B
Type: Conduit
ID: 572
EGL
HGL
Elevation (ft)
Station (ft)
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
277.00
276.50
276.00
275.50
275.00
274.50
274.00
273.50
273.00
272.50
272.00
271.50
271.00
270.50
270.00
269.50
269.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000
280.000
300.000

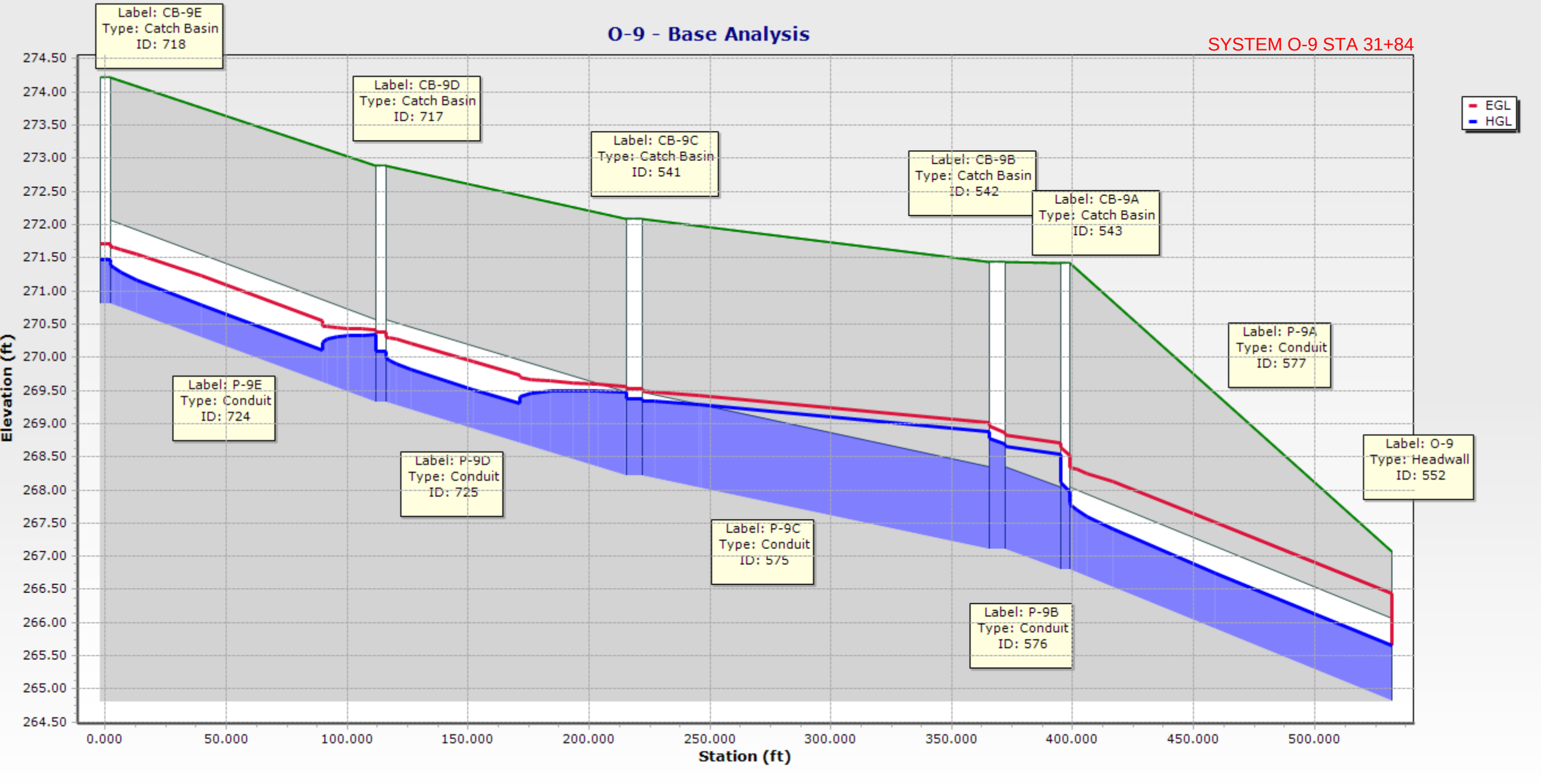

O-8 - Base Analysis
SYSTEM O-8 STA 25+92
Label: CB-8D
Type: Catch Basin
ID: 537
Label: MH-8C
Type: Manhole
ID: 954
Label: CB-8B
Type: Catch Basin
ID: 539
Label: CB-8A
Type: Catch Basin
ID: 540
Label: P-8A
Type: Conduit
ID: 574
Label: O-8
Type: Headwall
ID: 573
Label: P-8D
Type: Conduit
ID: 664
Label: P-8C
Type: Conduit
ID: 663
Label: P-8B
Type: Conduit
ID: 572
EGL
HGL
Elevation (ft)
Station (ft)
285.00
284.50
284.00
283.50
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
277.00
276.50
276.00
275.50
275.00
274.50
274.00
273.50
273.00
272.50
272.00
271.50
271.00
270.50
270.00
269.50
269.00
268.50
268.00
267.50
267.00
266.50
266.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
260.000

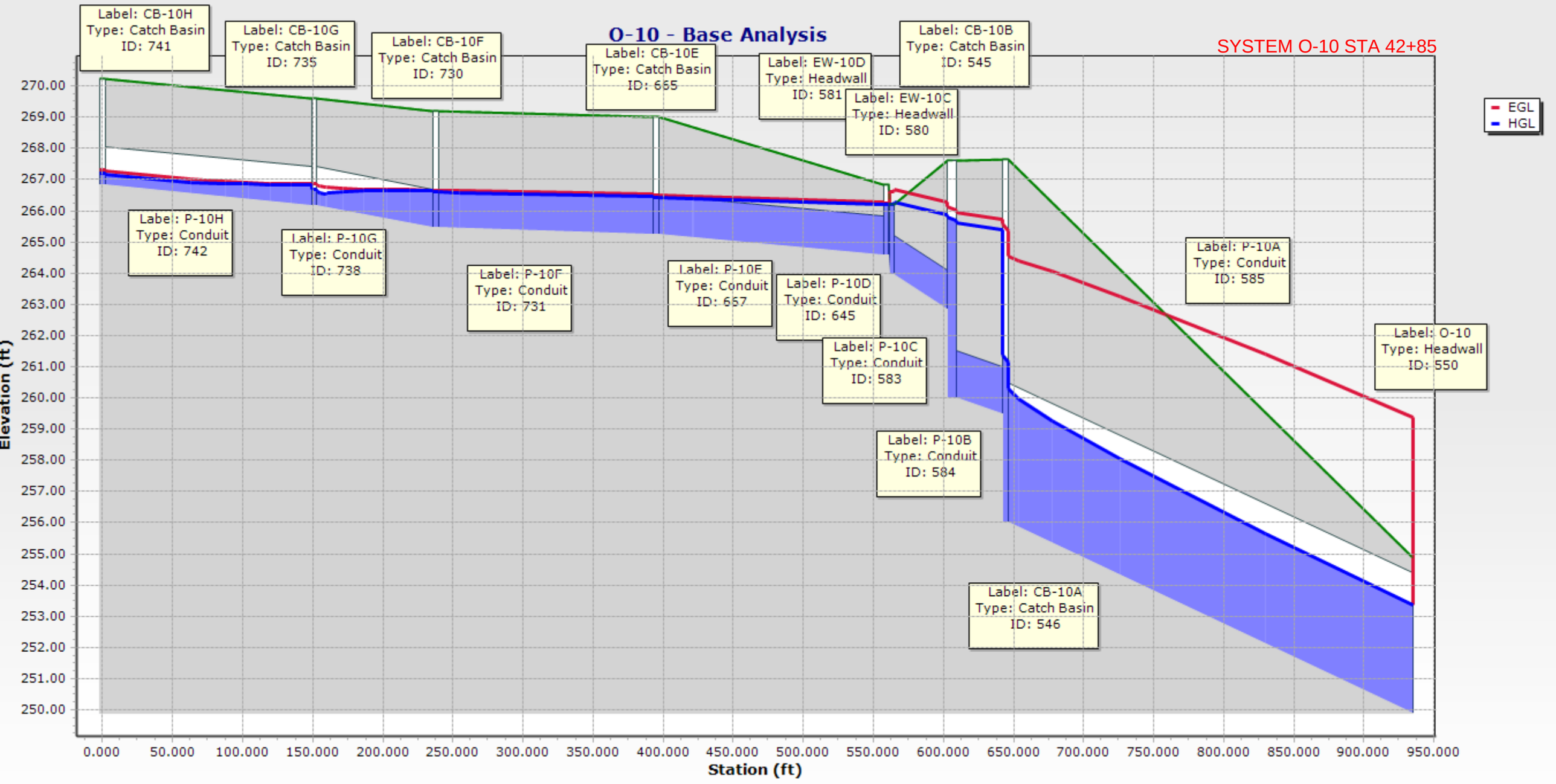

O-8 - Base Analysis
SYSTEM O-8 STA 25+92
Label: CB-8F
Type: Catch Basin
ID: 955
Label: MH-8C
Type: Manhole
ID: 954
Label: CB-8B
Type: Catch Basin
ID: 539
Label: CB-8A
Type: Catch Basin
ID: 540
Label: P-8A
Type: Conduit
ID: 574
Label: O-8
Type: Headwall
ID: 573
Label: P-8F
Type: Conduit
ID: 960
Label: P-8C
Type: Conduit
ID: 663
Label: P-8B
Type: Conduit
ID: 572
EGL
HGL
Elevation (ft)
283.00
282.50
282.00
281.50
281.00
280.50
280.00
279.50
279.00
278.50
278.00
277.50
277.00
276.50
276.00
275.50
275.00
274.50
274.00
273.50
273.00
272.50
272.00
271.50
271.00
270.50
270.00
269.50
269.00
268.50
268.00
267.50
267.00
266.50
266.00
0.000
20.000
40.000
60.000
80.000
100.000
120.000
140.000
160.000
180.000
200.000
220.000
240.000
Station (ft)

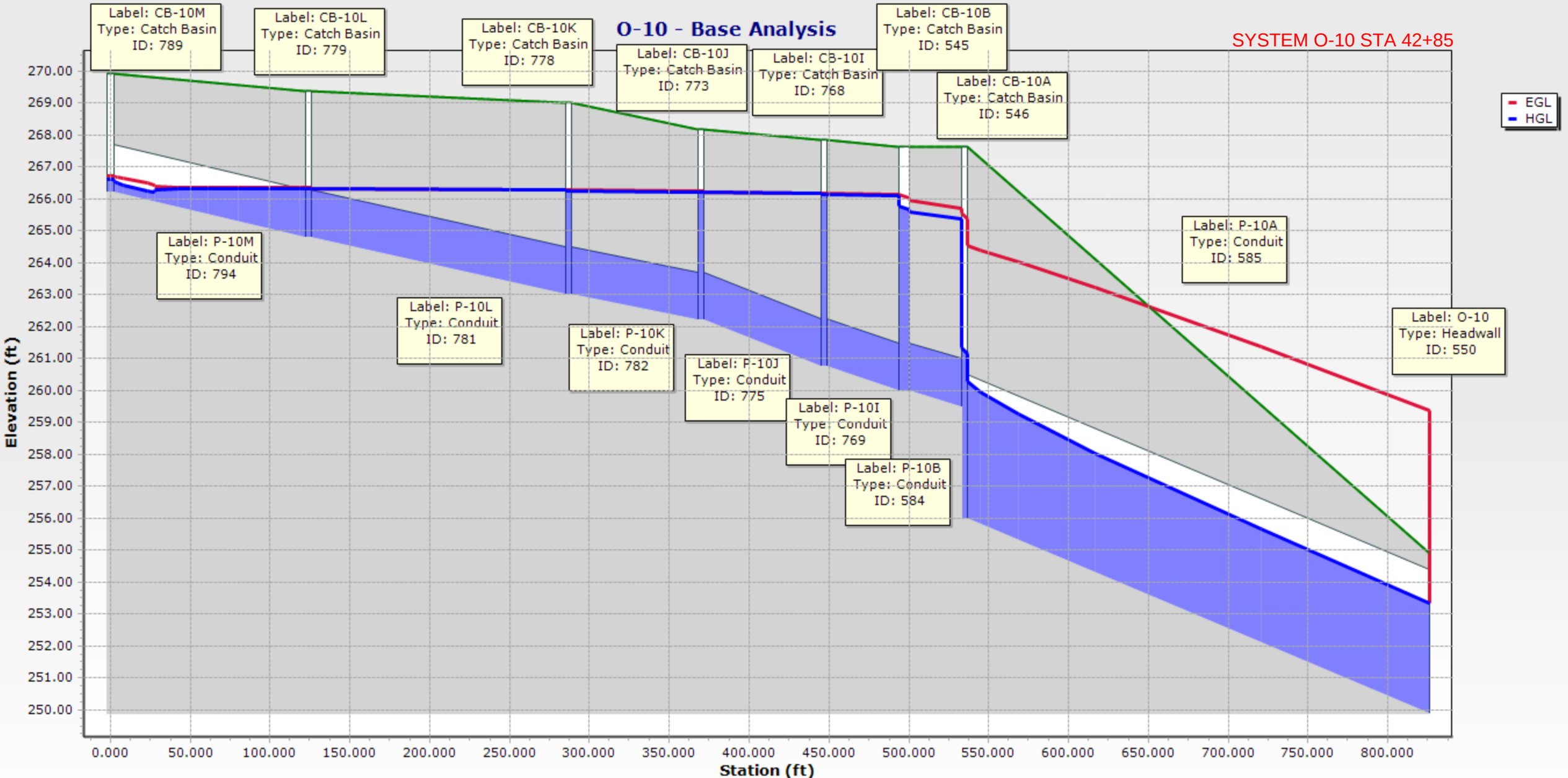
O-9 - Base Analysis

SYSTEM O-9 STA 31+84



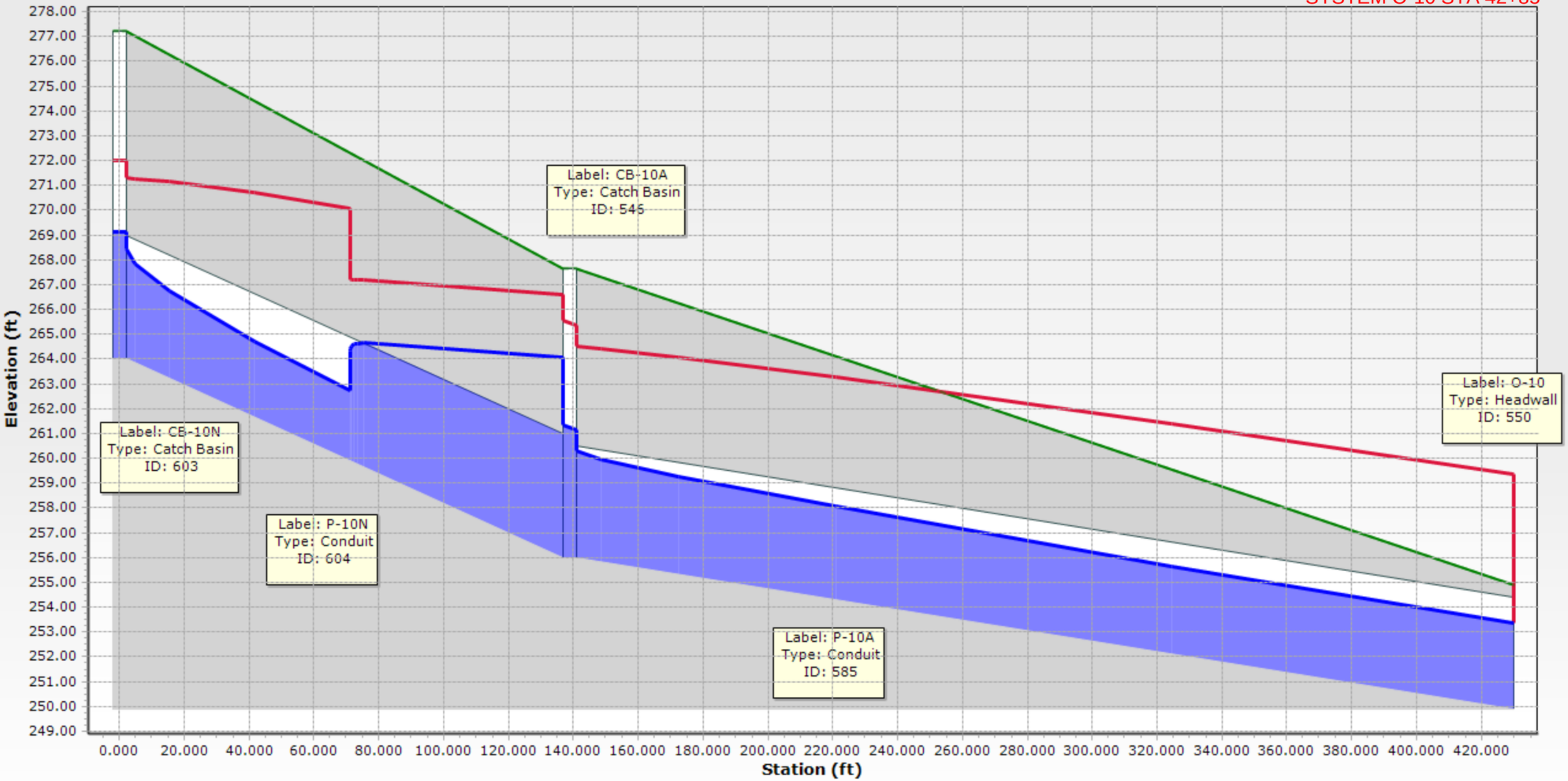

O-9 - Base Analysis
SYSTEM O-9 STA 31+84
Label: CB-9E
Type: Catch Basin
ID: 718
Label: CB-9D
Type: Catch Basin
ID: 717
Label: CB-9C
Type: Catch Basin
ID: 541
Label: CB-9B
Type: Catch Basin
ID: 542
Label: CB-9A
Type: Catch Basin
ID: 543
Label: P-9A
Type: Conduit
ID: 577
Label: O-9
Type: Headwall
ID: 552
Label: P-9E
Type: Conduit
ID: 724
Label: P-9D
Type: Conduit
ID: 725
Label: P-9C
Type: Conduit
ID: 575
Label: P-9B
Type: Conduit
ID: 576
EGL
HGL
Elevation (ft)
274.50
274.00
273.50
273.00
272.50
272.00
271.50
271.00
270.50
270.00
269.50
269.00
268.50
268.00
267.50
267.00
266.50
266.00
265.50
265.00
264.50
0.000
50.000
100.000
150.000
200.000
250.000
300.000
350.000
400.000
450.000
500.000
Station (ft)


O-10 - Base Analysis
SYSTEM O-10 STA 42+85
Label: CB-10H
Type: Catch Basin
ID: 741
Label: CB-10G
Type: Catch Basin
ID: 735
Label: CB-10F
Type: Catch Basin
ID: 730
Label: CB-10E
Type: Catch Basin
ID: 665
Label: EW-10D
Type: Headwall
ID: 581
Label: CB-10B
Type: Catch Basin
ID: 545
Label: EW-10C
Type: Headwall
ID: 580
Label: P-10H
Type: Conduit
ID: 742
Label: P-10G
Type: Conduit
ID: 738
Label: P-10F
Type: Conduit
ID: 731
Label: P-10E
Type: Conduit
ID: 657
Label: P-10D
Type: Conduit
ID: 645
Label: P-10C
Type: Conduit
ID: 583
Label: P-10B
Type: Conduit
ID: 584
Label: P-10A
Type: Conduit
ID: 585
Label: O-10
Type: Headwall
ID: 550
Label: CB-10A
Type: Catch Basin
ID: 546
EGL
HGL
Elevation (ft)
270.00
269.00
268.00
267.00
266.00
265.00
264.00
263.00
262.00
261.00
260.00
259.00
258.00
257.00
256.00
255.00
254.00
253.00
252.00
251.00
250.00
0.000
50.000
100.000
150.000
200.000
250.000
300.000
350.000
400.000
450.000
500.000
550.000
600.000
650.000
700.000
750.000
800.000
850.000
900.000
950.000
Station (ft)


O-10 - Base Analysis
SYSTEM O-10 STA 42+85
Label: CB-10M
Type: Catch Basin
ID: 789
Label: CB-10L
Type: Catch Basin
ID: 779
Label: CB-10K
Type: Catch Basin
ID: 778
Label: CB-10J
Type: Catch Basin
ID: 773
Label: CB-10I
Type: Catch Basin
ID: 768
Label: CB-10B
Type: Catch Basin
ID: 545
Label: CB-10A
Type: Catch Basin
ID: 546
Label: P-10M
Type: Conduit
ID: 794
Label: P-10L
Type: Conduit
ID: 781
Label: P-10K
Type: Conduit
ID: 782
Label: P-10J
Type: Conduit
ID: 775
Label: P-10I
Type: Conduit
ID: 769
Label: P-10B
Type: Conduit
ID: 584
Label: P-10A
Type: Conduit
ID: 585
Label: O-10
Type: Headwall
ID: 550
EGL
HGL
Elevation (ft)
270.00
269.00
268.00
267.00
266.00
265.00
264.00
263.00
262.00
261.00
260.00
259.00
258.00
257.00
256.00
255.00
254.00
253.00
252.00
251.00
250.00
0.000
50.000
100.000
150.000
200.000
250.000
300.000
350.000
400.000
450.000
500.000
550.000
600.000
650.000
700.000
750.000
800.000
Station (ft)

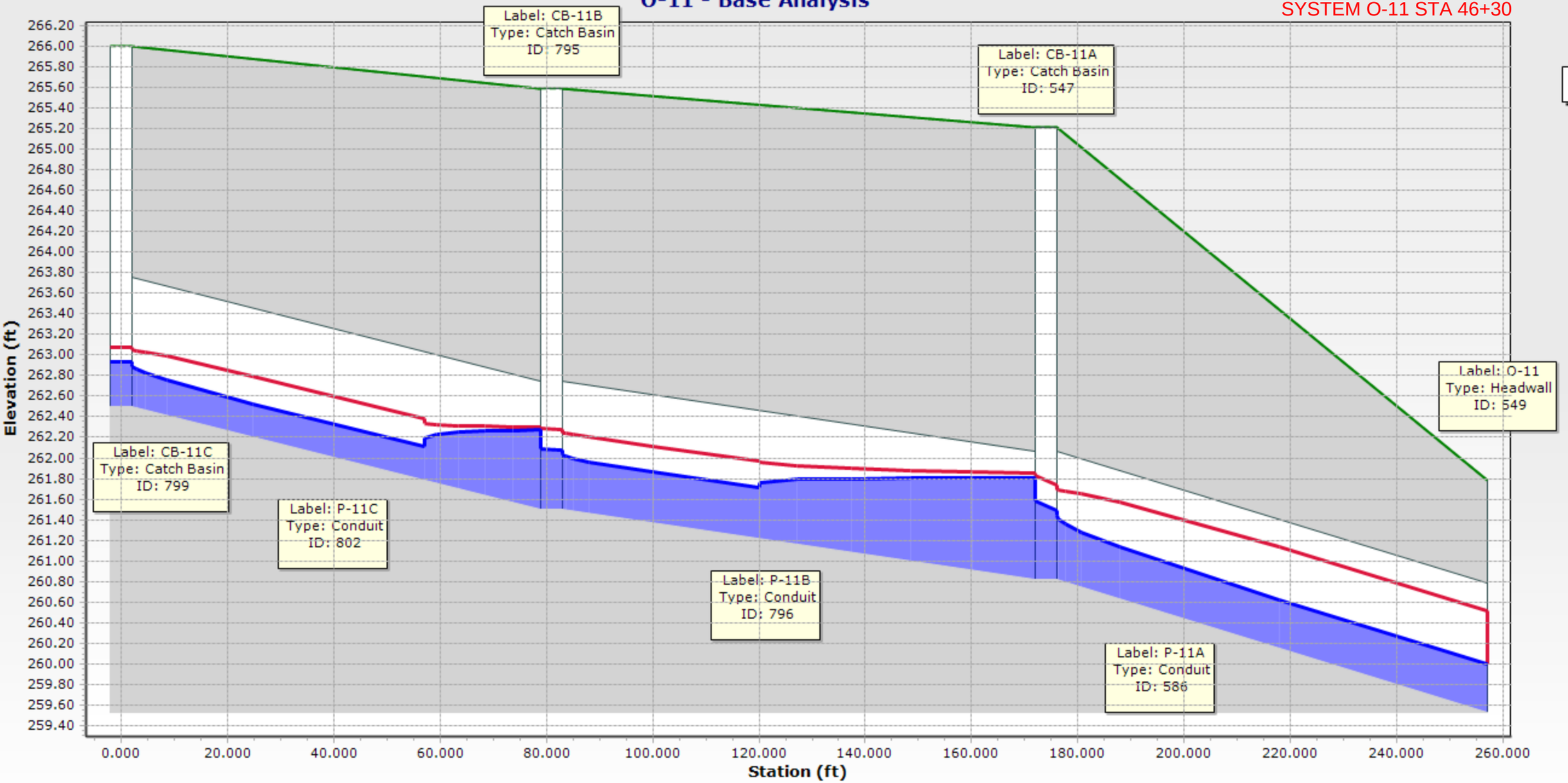
O-10 - Base Analysis

SYSTEM O-10 STA 42+85



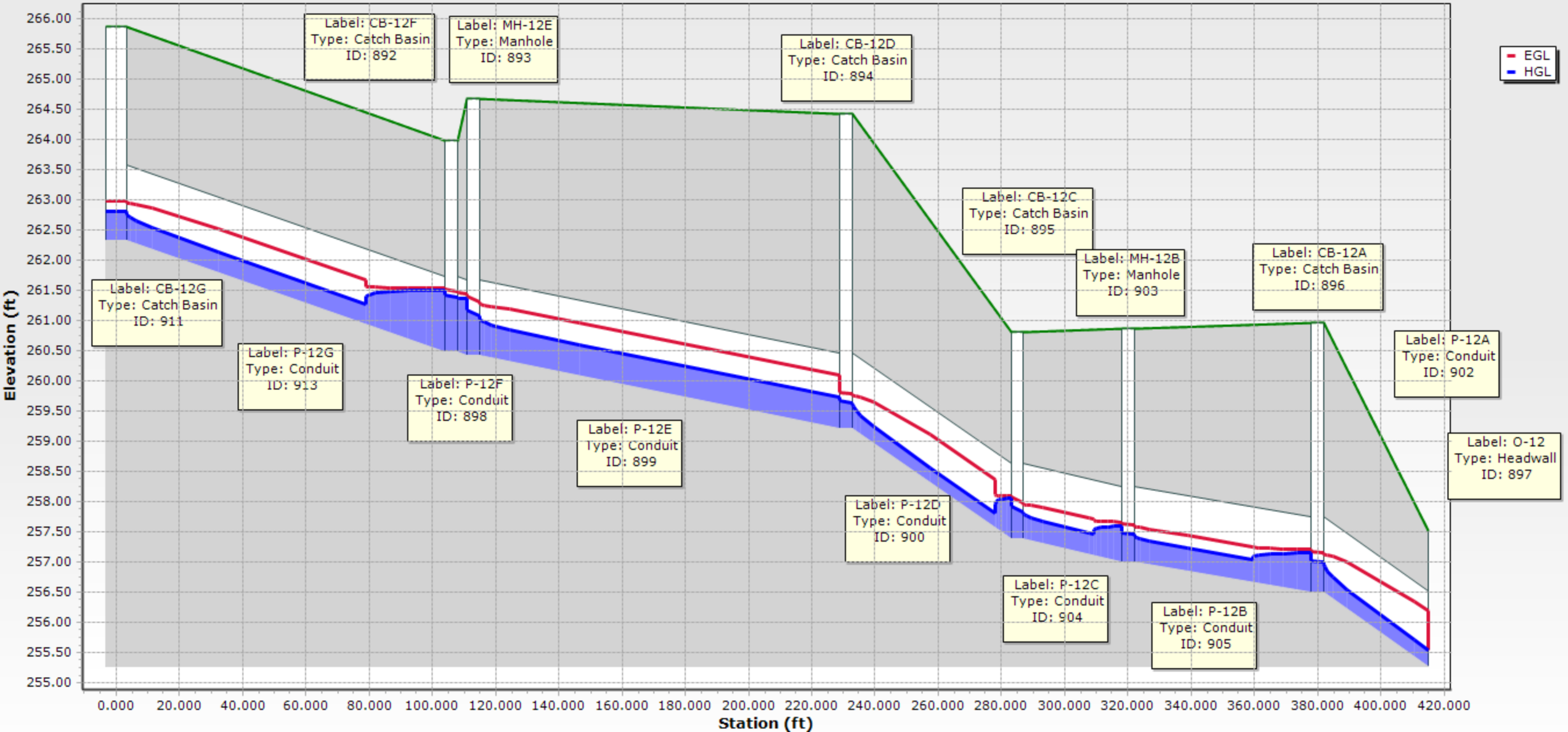
O-11 - Base Analysis

SYSTEM O-11 STA 46+30



O-12 - Base Analysis

SYSTEM O-12 STA 48+94



NOAA Atlas 14, Volume 10, Version 3
Location name: Bristol, Connecticut, USA*
Latitude: 41.6702°, Longitude: -72.9335°
Elevation: 277 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.30** (3.29-5.58)	**5.14** (3.92-6.68)	**6.50** (4.97-8.52)	**7.64** (5.81-10.0)	**9.22** (6.78-12.6)	**10.4** (7.51-14.6)	**11.6** (8.16-16.8)	**13.0** (8.69-19.3)	**14.8** (9.59-22.8)	**16.3** (10.3-25.6)
10-min	**3.04** (2.33-3.95)	**3.64** (2.78-4.73)	**4.61** (3.51-6.02)	**5.42** (4.11-7.12)	**6.53** (4.81-8.95)	**7.37** (5.32-10.3)	**8.24** (5.78-11.9)	**9.18** (6.16-13.7)	**10.5** (6.78-16.2)	**11.5** (7.29-18.2)
15-min	**2.39** (1.83-3.10)	**2.85** (2.18-3.71)	**3.61** (2.76-4.72)	**4.25** (3.22-5.58)	**5.12** (3.77-7.02)	**5.78** (4.17-8.09)	**6.46** (4.54-9.36)	**7.20** (4.83-10.7)	**8.22** (5.32-12.7)	**9.04** (5.72-14.2)
30-min	**1.62** (1.24-2.11)	**1.94** (1.48-2.52)	**2.45** (1.87-3.20)	**2.88** (2.19-3.78)	**3.47** (2.55-4.76)	**3.92** (2.83-5.48)	**4.38** (3.07-6.34)	**4.88** (3.27-7.26)	**5.58** (3.61-8.60)	**6.13** (3.88-9.66)
60-min	**1.02** (0.785-1.33)	**1.22** (0.936-1.59)	**1.55** (1.18-2.02)	**1.82** (1.38-2.39)	**2.19** (1.61-3.00)	**2.47** (1.78-3.46)	**2.76** (1.94-4.00)	**3.08** (2.06-4.58)	**3.52** (2.28-5.43)	**3.87** (2.45-6.10)
2-hr	**0.671** (0.516-0.867)	**0.795** (0.611-1.03)	**0.998** (0.765-1.30)	**1.17** (0.889-1.52)	**1.40** (1.03-1.91)	**1.57** (1.14-2.19)	**1.76** (1.24-2.54)	**1.96** (1.32-2.90)	**2.24** (1.45-3.44)	**2.47** (1.57-3.87)
3-hr	**0.518** (0.400-0.667)	**0.615** (0.473-0.793)	**0.772** (0.593-0.999)	**0.903** (0.689-1.18)	**1.08** (0.803-1.47)	**1.22** (0.887-1.69)	**1.36** (0.964-1.96)	**1.52** (1.02-2.25)	**1.74** (1.14-2.68)	**1.93** (1.23-3.02)
6-hr	**0.329** (0.255-0.422)	**0.394** (0.305-0.506)	**0.501** (0.386-0.645)	**0.589** (0.452-0.763)	**0.711** (0.530-0.965)	**0.802** (0.588-1.11)	**0.898** (0.642-1.30)	**1.01** (0.683-1.49)	**1.18** (0.768-1.80)	**1.32** (0.841-2.06)
12-hr	**0.201** (0.157-0.256)	**0.246** (0.191-0.313)	**0.319** (0.247-0.408)	**0.379** (0.292-0.488)	**0.462** (0.347-0.626)	**0.524** (0.387-0.728)	**0.591** (0.426-0.857)	**0.672** (0.455-0.987)	**0.797** (0.521-1.21)	**0.904** (0.578-1.40)
24-hr	**0.118** (0.092-0.149)	**0.147** (0.115-0.187)	**0.195** (0.152-0.248)	**0.235** (0.182-0.301)	**0.290** (0.219-0.393)	**0.330** (0.246-0.459)	**0.375** (0.274-0.546)	**0.431** (0.293-0.631)	**0.522** (0.342-0.792)	**0.601** (0.386-0.930)
2-day	**0.066** (0.052-0.083)	**0.084** (0.066-0.106)	**0.113** (0.089-0.143)	**0.138** (0.107-0.175)	**0.172** (0.131-0.232)	**0.196** (0.147-0.273)	**0.224** (0.165-0.328)	**0.260** (0.177-0.380)	**0.321** (0.211-0.485)	**0.375** (0.241-0.578)
3-day	**0.047** (0.037-0.060)	**0.061** (0.048-0.076)	**0.083** (0.065-0.104)	**0.101** (0.078-0.128)	**0.125** (0.096-0.169)	**0.143** (0.108-0.199)	**0.164** (0.121-0.240)	**0.191** (0.130-0.278)	**0.237** (0.155-0.357)	**0.278** (0.179-0.427)
4-day	**0.038** (0.030-0.048)	**0.049** (0.038-0.061)	**0.066** (0.052-0.083)	**0.081** (0.063-0.102)	**0.100** (0.077-0.135)	**0.115** (0.087-0.159)	**0.131** (0.097-0.192)	**0.153** (0.104-0.222)	**0.189** (0.125-0.285)	**0.222** (0.143-0.341)
7-day	**0.026** (0.020-0.032)	**0.033** (0.026-0.041)	**0.044** (0.034-0.055)	**0.053** (0.042-0.067)	**0.066** (0.050-0.088)	**0.075** (0.057-0.103)	**0.085** (0.063-0.124)	**0.099** (0.068-0.144)	**0.122** (0.080-0.183)	**0.142** (0.092-0.217)
10-day	**0.021** (0.017-0.026)	**0.026** (0.021-0.032)	**0.034** (0.027-0.043)	**0.041** (0.032-0.052)	**0.050** (0.039-0.067)	**0.057** (0.043-0.078)	**0.065** (0.048-0.093)	**0.075** (0.051-0.108)	**0.091** (0.060-0.136)	**0.105** (0.068-0.160)
20-day	**0.015** (0.012-0.019)	**0.018** (0.014-0.022)	**0.022** (0.017-0.027)	**0.025** (0.020-0.032)	**0.030** (0.023-0.040)	**0.034** (0.025-0.046)	**0.038** (0.028-0.054)	**0.043** (0.029-0.061)	**0.050** (0.033-0.075)	**0.057** (0.037-0.086)
30-day	**0.012** (0.010-0.015)	**0.014** (0.011-0.018)	**0.017** (0.014-0.021)	**0.019** (0.015-0.024)	**0.023** (0.017-0.030)	**0.025** (0.019-0.034)	**0.028** (0.020-0.039)	**0.031** (0.021-0.044)	**0.035** (0.023-0.053)	**0.039** (0.025-0.060)
45-day	**0.010** (0.008-0.013)	**0.012** (0.009-0.014)	**0.013** (0.011-0.017)	**0.015** (0.012-0.019)	**0.017** (0.013-0.023)	**0.019** (0.014-0.025)	**0.021** (0.015-0.029)	**0.023** (0.016-0.032)	**0.025** (0.017-0.038)	**0.027** (0.018-0.042)
60-day	**0.009** (0.007-0.011)	**0.010** (0.008-0.012)	**0.011** (0.009-0.014)	**0.013** (0.010-0.016)	**0.014** (0.011-0.019)	**0.016** (0.012-0.021)	**0.017** (0.012-0.023)	**0.018** (0.013-0.026)	**0.020** (0.013-0.030)	**0.021** (0.014-0.032)

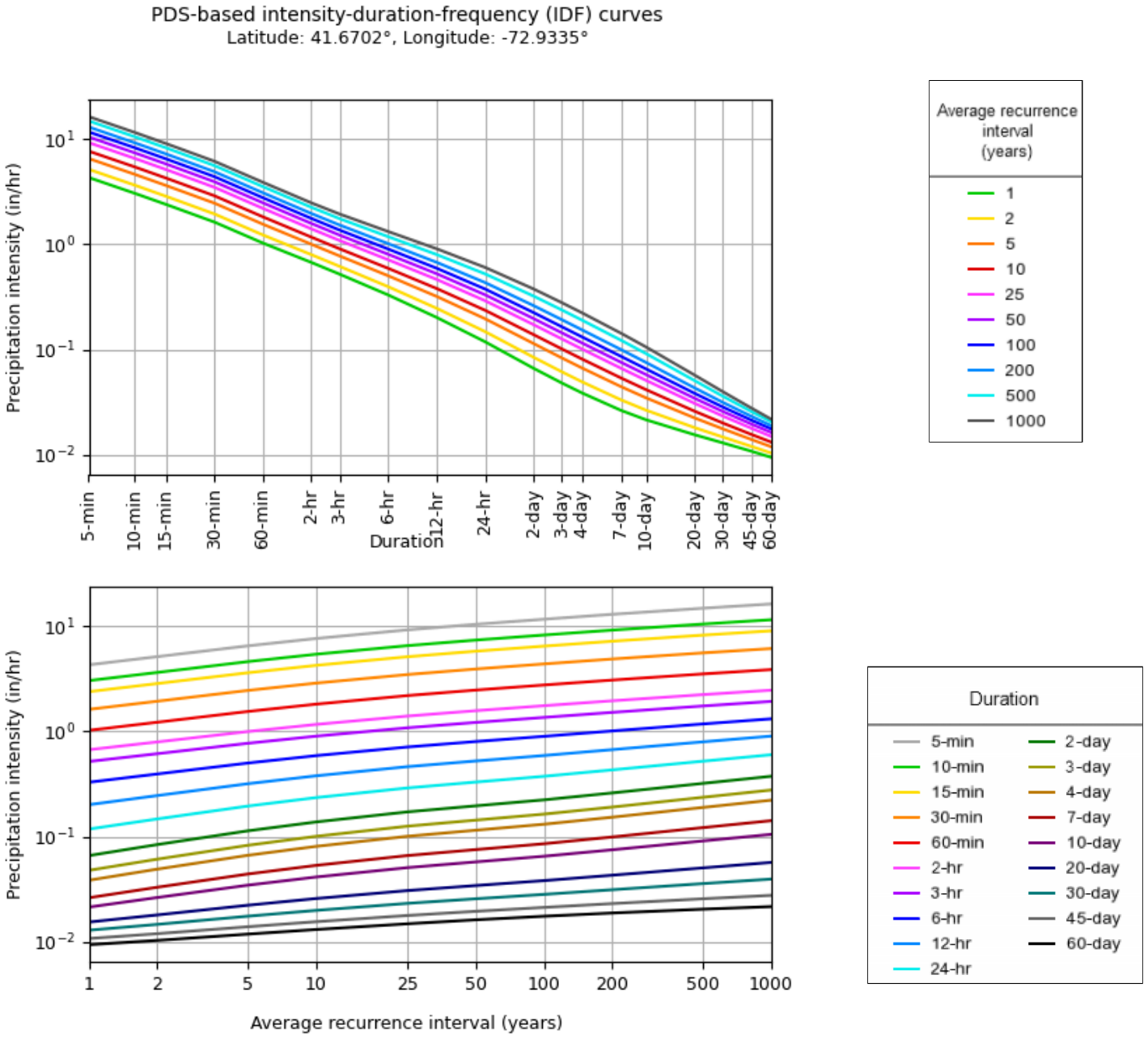
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



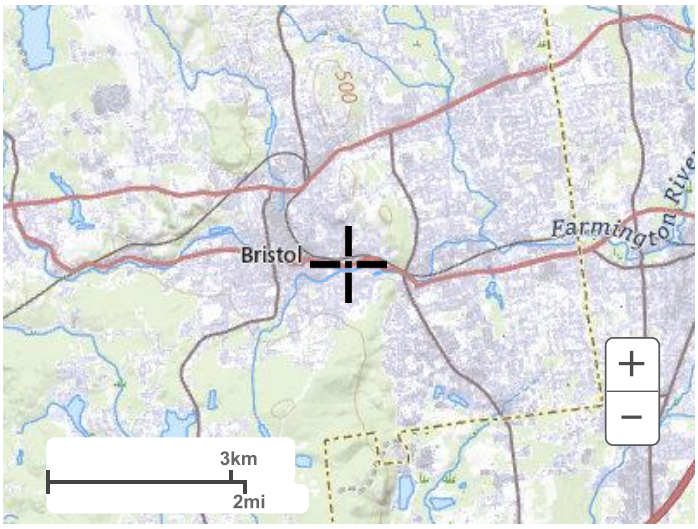
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Mon Jun 9 20:13:16 2025

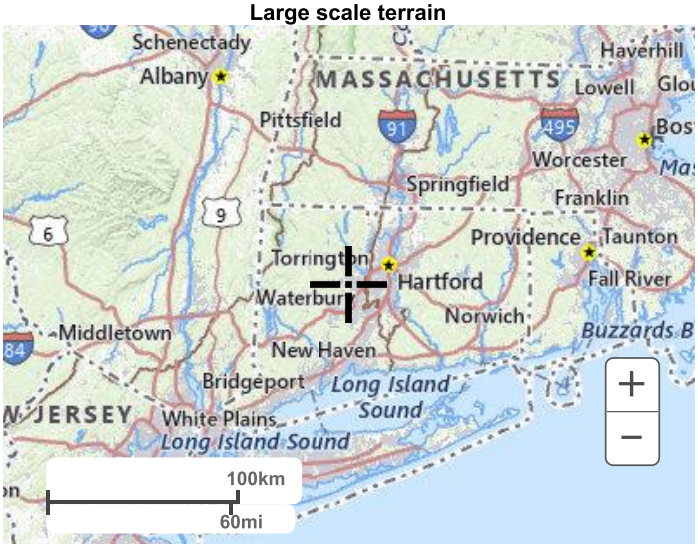
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Maps & aerials

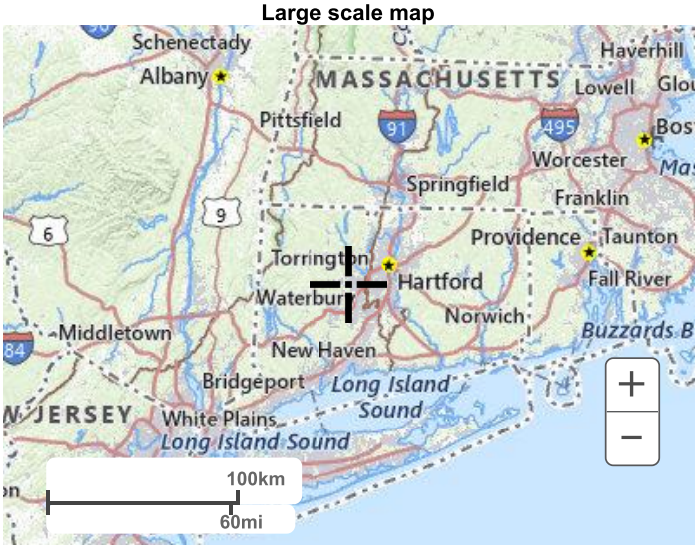
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
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Disclaimer

Attachment C

NRCS Web Soil Survey

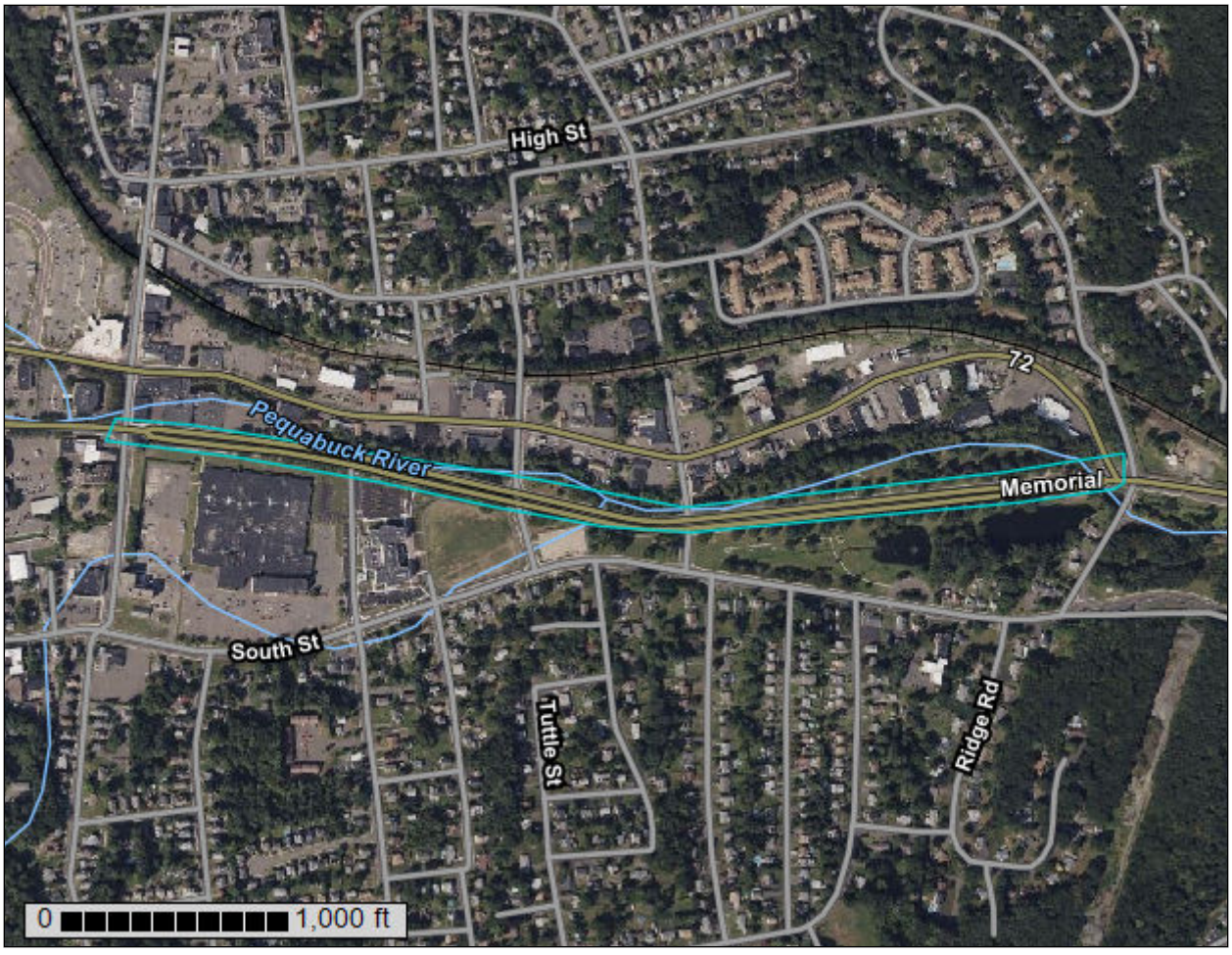
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut, Western Part



October 22, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut, Western Part
Survey Area Data: Version 6, Sep 16, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
30B	Branford silt loam, 3 to 8 percent slopes	0.0	0.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	0.0	0.0%
101	Occum fine sandy loam	2.7	20.4%
109	Fluvaquents-Udifluvents complex, frequently flooded	5.1	38.1%
306	Udorthents-Urban land complex	0.3	2.4%
307	Urban land	4.8	35.8%
W	Water	0.4	3.3%
Totals for Area of Interest		**13.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut, Western Part

30B—Branford silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lml
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Branford and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Branford

Setting

Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 18 inches: loam
Bw2 - 18 to 24 inches: gravelly loam
2C - 24 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F145XY009CT - Well Drained Outwash
Hydric soil rating: No

Minor Components

Haven

Percent of map unit: 5 percent
Landform: Terraces, outwash plains

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Enfield

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Ellington

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Manchester

Percent of map unit: 3 percent
Landform: Terraces, outwash plains, kames, eskers
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hartford

Percent of map unit: 2 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

45B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2ql
Elevation: 0 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge, fine sandy loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Ground moraines, drumlins, hills

Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

101—Occum fine sandy loam

Map Unit Setting

National map unit symbol: 9ljm
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Occum and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Occum

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy alluvium

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: sandy loam
C1 - 28 to 32 inches: stratified very gravelly coarse sand to loamy fine sand
C2 - 32 to 42 inches: stratified very gravelly coarse sand to loamy fine sand
C3 - 42 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 60 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F144AY010NH - Sandy High Floodplain
Hydric soil rating: No

Minor Components

Suncook
Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Agawam
Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pootatuck
Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Rippowam
Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

109—Fluvaquents-Udifluvents complex, frequently flooded

Map Unit Setting
National map unit symbol: 9ljw
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Fluvaquents, frequently flooded, and similar soils: 50 percent
Udifluvents, frequently flooded, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fluvaquents, Frequently Flooded

Setting
Landform: Flood plains

Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

A - 0 to 4 inches: silt loam
Cg1 - 4 to 14 inches: fine sand
Cg2 - 14 to 21 inches: very fine sand
Ab1 - 21 to 38 inches: silt loam
Ab2 - 38 to 45 inches: fine sandy loam
C'g3 - 45 to 55 inches: sand
A'b3 - 55 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Udifluvents, Frequently Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 2 inches: fine sandy loam
C - 2 to 4 inches: loamy fine sand
Ap - 4 to 12 inches: fine sandy loam
AC - 12 to 18 inches: fine sandy loam
C1 - 18 to 35 inches: loamy sand
C2 - 35 to 38 inches: very gravelly loamy sand
C3 - 38 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 35.99 in/hr)
Depth to water table: About 72 inches
Frequency of flooding: Frequent

Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Saco

Percent of map unit: 3 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Rippowam

Percent of map unit: 3 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Pootatuck

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Occum

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 39 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Human-transported material

Typical profile

^A - 0 to 5 inches: loam
^C1 - 5 to 21 inches: gravelly loam
^C2 - 21 to 79 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 6 inches: cemented material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Udorthents, wet substratum

Percent of map unit: 9 percent
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Landform: Hills
Down-slope shape: Convex

Across-slope shape: Convex
Hydric soil rating: No

307—Urban land

Map Unit Setting

National map unit symbol: 9lmh
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Udorthents, wet substratum

Percent of map unit: 10 percent
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, undisturbed soils

Percent of map unit: 10 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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Project No. 0017-0196
Route 72 (Riverside Avenue)
Streetscape Improvements

City of Bristol

SPECIAL PROVISIONS

Prepared by:
GM2 Associates
115 Glastonbury Blvd.
Glastonbury, CT 06033
860-659-1416

JANUARY 2026

NOTICE TO CONTRACTOR – HISTORIC PROPERTIES

The Contractor is hereby notified that the following properties have been found by Connecticut State Historic Preservation Office (SHPO) to possess historic and/or engineering significance within the project limits. A Historic Properties Protection Plan will be required as described in Section 1.10 – Environmental Compliance.

150 Main Street
22 Hooker Court
95 Riverside Avenue
106 Riverside Avenue
89 / 119 Riverside Avenue
165 Riverside Avenue
273 Riverside Avenue
284 Riverside Avenue
300 Riverside Avenue
380 Riverside Avenue

SECTION 1.07 – LEGAL RELATIONS AND RESPONSIBILITIES

Article 1.07.13 – Contractor's Responsibility for Adjacent Property, Facilities and Services is supplemented as follows:

The following company and representative shall be contacted by the Contractor to coordinate the protection of their utilities on this project 30 days prior to the start of any work on this project involving their utilities:

Mr. Britton Wilson
District 1 Electrical Supervisor
Department of Transportation
Hartford, Connecticut
(860) 566-3156/3157

Mr. Robert Longo
City of Bristol Water and Sewer Department
Superintendent
Bristol, CT 06010
(860) 582-7431

Mr. Christopher Simeone
Comcast of Connecticut
Construction Manager CT/NY
Berlin, CT 06037
(860) 491-6701

Mr. Mark Bonjuklian
Eversource Energy
Manager – Distribution Projects and Programs
Norwalk, CT 06851
(203) 845-3456

Ms. Lynne DeLucia
Frontier Communications
Manager – Engineering and Construction
Meriden, CT 06450
(230) 238-500

Mr. Kenneth Cook
Eversource Gas
Lead Engineer, Gas Project Engineering
Berlin, CT 06037
(860) 978-5465

The following Department representative shall be contacted by the Inspector or Field Engineer to coordinate an inspection of the service entrance into the controller/flasher cabinet for controllers within the State right-of-way. When ready for inspection, the Contractor should be present for the release of the connection of electrical service. The local Building Department shall be contacted for electrical service inspections for controllers located on Town roads located within the respective municipality.

Property & Facilities
Department of Transportation
Newington, CT 06111
DOT.BUILDINGCODEINSP@CT.GOV

Please provide the electrical service request number provided by the power company. This is a Work Request (WR) Number provided by Eversource (formerly Northeast Utilities [CL&P]) or a Work Order Number provided by United Illuminating (UI). For State-owned traffic signals in Eversource territory, contact the Department's Traffic Electrical Unit to obtain the WR Number. For State-owned traffic signals in UI territory, contact the Department's Traffic Electrical Unit to obtain a Request for Metered Service to provide to UI to obtain the Work Order Number. The street address is required for release to local power companies (Groton Utilities or Wallingford Electric).

SECTION 1.08 - PROSECUTION AND PROGRESS

Article 1.08.03 - Prosecution of Work:

The Contractor shall stake the limits of the concrete sidewalks and ramps in conjunction with staking the locations of foundations to ensure that pedestrian push buttons will be located appropriately and will be accessible from a landing area.

The Contractor will not be allowed to install traffic signal or pedestrian heads until the controllers are on hand and ready for installation. Once installation of this equipment commences, the Contractor shall complete this work in a most expeditious manner.

The Contractor shall notify the project engineer on construction projects, or the district permit agent on permit jobs, when all traffic signal related work is completed. The project engineer or district permit agent will notify the Town to coordinate a field inspection of the work. Refer to Section 10.00 – General Clauses for Highway Illumination and Traffic Signal Projects, Article 10.00.10 and corresponding special provision.

Article 1.08.04 – Limitations of Operations – Add the following

The Contractor shall coordinate with the City of Bristol and Engineer prior to roadway restrictions.

In order to provide for traffic operations as outlined in the Special Provision "Maintenance and Protection of Traffic", the Contractor shall not perform any work that will interfere with traffic operations on all project roadways as follows:

Route 72 (Riverside Avenue):

The Contractor shall not interfere with 1 lane of traffic in each direction on:
Monday through Friday between 6:00 a.m. and 7:00 p.m.
Saturday and Sunday between 10:00 a.m. and 7:00 p.m.

Additional Limitations:

A. The contractor will be allowed to halt traffic at the intersection of Route 72 and Main Street, Route 72 and Mellen Street, Route 72 and East, and Route 72 and Memorial Boulevard for a period not to exceed 10 minutes between 12:01 a.m. and 5:00 a.m. on all non-Holidays days.

All Other Roadways:

The Contractor shall not interfere with 1 lane of traffic in each direction on:
Monday through Friday between 6:00 a.m. and 7:00 p.m.
Saturday and Sunday between 10:00 a.m. and 7:00 p.m.

Holiday Schedule:

New Year's Day (Observed)	Labor Day
Martin Luther King Jr. Day	Columbus Day
Presidents Day	Veteran's Day (Observed)
Good Friday	Thanksgiving Day
Memorial Day	Day After Thanksgiving
Juneteenth Day	Christmas Eve
Independence Day	Christmas Day

SECTION 1.10 – ENVIRONMENTAL COMPLIANCE

In Article 1.10.03-Water Pollution Control:
REQUIRED BEST MANAGEMENT PRACTICES

Add the following after Required Best Management Practices Number 13:

14. The Contractor is hereby notified that one or more State and/or federally listed species of bat has been documented within the Project limits. In Connecticut, the Eastern small-footed bat (*Myotis leibii*), tri-colored bat (*Perimyotis subflavus*), little brown bat (*Myotis lucifugus*), Northern long-eared bat (*Myotis septentrionalis*) and the Indiana bat (*Myotis sodalis*) are listed as State endangered; while the silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*) and the red bat (*Lasiurus borealis*) are listed as State species of special concern. The Northern long-eared bat, tri-colored bat, and the Indiana bat are also federally listed endangered species. Bats are the only mammals capable of actual flight and are primarily nocturnal. During the daylight, bats roost in trees and caves, but many have now adapted to roost in or on buildings including barns, houses, tunnels, and bridges. Within the Project limits, bats will use the snags, cavities, and underside of bark to roost and raise young. **This Project will have a Time of Year restriction for tree clearing, trimming and removal to protect the bat species listed.**

    The Contractor shall, through the Engineer and at least 10 days prior to the commencement of any construction activities, arrange a meeting with the District Environmental Coordinator (DEC) and Office of Environmental Planning (OEP) (or their authorized delegate) to discuss proper protocol for maintaining environmental commitments made for the protection of these bat species and their habitat. OEP will provide oversight through the DEC and Engineer to ensure that the following protocols are followed and maintained during the Project:

    a. The Contractor, through the Engineer, shall arrange a pre-construction tree-clearing Site walk to review all trees proposed to be removed for the Project.
    b. Clearing, trimming or removal of any tree three (3) inches diameter at breast height (DBH) or greater will be prohibited between April 15 and October 31.
    c. This restriction shall also apply to invasive species removal work and shall be reflected in the Contractor's Invasive Vegetation Removal Plan, if applicable.

    These practices will be applied to the entire Project unless a specified location is identified within the Project plans, which denotes specific areas of concern.

    If any bats are observed in or around the Project area, the Engineer will notify the DEC to facilitate further coordination with OEP's Environmental Resource Compliance Unit. If the DEC is unable to be reached, notify OEP at Andrew.Piraneo@ct.gov or at Marilyn.Gould@ct.gov.

The OEP will be responsible for completing and submitting the Natural Diversity Data Base (NDDB) Vertebrate Sheet (Contribute Data to the NDDB). This completed document allows CTDEEP to update their database.

All listed bat species are protected by federal and/or State laws which prohibit killing, harming, taking, harassing, or keeping them in your possession. A CTDEEP fact sheet(s) for the listed bats noted above shall be posted in the Contractor's and Inspection field offices and can be downloaded at the link below.

CTDEEP's Fact Sheet for Bats:
Bat Fact Sheet

Article 1.10.06 – Protection of Archaeological and Paleontological Remains and Materials:

Add the following after the last paragraph:

The Contractor is hereby notified that the following properties (hereafter, historic properties) have been found by Connecticut State Historic Preservation Office (SHPO) to possess historic and/or engineering significance within the project limits:

150 Main Street
22 Hooker Court
95 Riverside Avenue
106 Riverside Avenue
89 /119 Riverside Avenue
165 Riverside Avenue
273 Riverside Avenue
284 Riverside Avenue
300 Riverside Avenue
380 Riverside Avenue

The Contractor shall be expected to implement the following Historic Properties Protection Plan safeguards prior to and during construction:

1. The Contractor shall use extreme caution within and around the historic properties during construction to avoid damage to the structure and the property.
2. A pre-construction condition survey will be prepared by the Contractor and submitted to the Engineer for review and approval as described in 0202911A – Condition Survey.
3. The Contractor shall avoid staging in the direct vicinity of the historic properties.
4. Within the project limits, no trees located within the historic properties shall be removed or impacted and shall be identified and separated from work areas with protective fencing in advance of construction.
5. At least 10 days prior to the start of any construction activities, the Contractor shall meet with the Engineer to discuss proper protocols for work being performed within and around the historic properties, including, but not limited to, the following:

a. Informing the Engineer with regard to issues of cultural resource concerns within the project limits.

b. Review and approve the placement of protective fencing within the project limits.

In the event the Contractor is found to have damaged any of the historic components of these properties, the costs of remediation, including any coordination with historic resource consultants, if so required, shall be at the sole expense of the Contractor.

ITEM #0101000A - ENVIRONMENTAL HEALTH AND SAFETY

Description:

Under this item, the Contractor shall establish protocols and provide procedures to protect the health and safety of its employees and subcontractors as related to the proposed construction activities performed within the Project AOEC(s). Work under this Item consists of the development and implementation of a written HASP that addresses the relative risk of exposure to documented hazards present within Project limits. The HASP shall establish health and safety protocols that address the relative risk of exposure to regulated substances in accordance with 29 CFR 1910.120 and 29 CFR 1926.65. Such protocols shall only address those concerns directly related to site conditions.

Note: The Engineer will prepare a site-specific health and safety plan which is compatible with the Contractor's plan and will be responsible for the health and safety of all Project Inspectors, Department employees and consulting engineers.

Materials:

The Contractor must provide chemical protective clothing (CPC) and personal protective equipment (PPE) as stipulated in the Contractor's HASP during the performance of work in areas identified as potentially posing a risk to worker health and safety for workers employed by the Contractor and all subcontractors.

Construction Methods:

1-Existing Information: The Contractor shall utilize all available information and existing records and data pertaining to chemical and physical hazards associated with any of the regulated substances identified in the environmental site investigations to develop the HASP. A list of documents containing this data is found in "Notice to Contractor – Environmental Investigations".

2-General: The requirements set forth herein pertain to the provision of workers' health and safety as it relates to proposed Project activities when performed in the presence of hazardous or regulated materials or otherwise environmentally sensitive conditions. THE PROVISION OF WORKER HEALTH AND SAFETY PROTOCOLS WHICH ADDRESS POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE SPECIFIC HAZARDS POSED TO CONTRACTOR EMPLOYEES IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

The Contractor shall be responsible for the development, implementation and oversight of the HASP throughout the performance of work within the limits of the AOEC(s), as identified in the Contract Documents, and in other areas identified by the Engineer or by the HASP where site

conditions may pose a risk to worker health and safety and/or the environment. **No physical aspects of the work within the AOEC shall begin until the HASP is reviewed by the Engineer and is determined to meet the requirements of the specifications. However, the Contract time, in accordance with Article 1.03.08, will begin on the date stipulated in the Notice to Proceed.**

3-Regulatory Requirements: All construction related activities performed by the Contractor within the limits of the AOEC(s) or in other areas where site conditions may pose a risk to worker health and safety and/or the environment shall be performed in conformance with 29 CFR 1926, Safety and Health Regulations for Construction and 29 CFR 1910, Safety and Health Regulations for General Industry. Conformance to 29 CFR 1910.120, Hazardous Waste Site Operations and Emergency Response (HAZWOPER) may also be required, where appropriate.

4-Submittals: Three copies of the HASP shall be submitted to the Engineer within four (4) weeks after the Award of Contract or four (4) weeks prior to the start of any work in the AOEC, whichever is first, but not before the Award of the Contract.

The HASP shall be developed by a qualified person designated by the Contractor. This qualified person shall be a Certified Industrial Hygienist (CIH), Certified Hazardous Material Manager (CHMM), or a Certified Safety Professional (CSP). He/she shall have review and approval authority over the HASP and be identified as the Health and Safety Manager (HSM). The HASP shall bear the signature of said HSM indicating that the HASP meets the minimum requirements of 29 CFR 1910.120 and 29 CFR 1926.65.

The Engineer will review the HASP(s) within four (4) weeks of submittal and provide written comments as to deficiencies in and/or exceptions to the plan(s), if any, to assure consistency with the specifications, applicable standards, policies and practices and appropriateness given potential or known site conditions. Items identified in the HASP which do not conform to the specifications will be brought to the attention of the Contractor, and the Contractor shall revise the HASP to correct the deficiencies and resubmit it to the Engineer for determination of compliance with this item. The Contractor shall not be allowed to commence work activities in the AOEC(s), as shown on the Plans, or where site conditions exist which may pose a risk to worker health and safety and/or the environment, until the HASP has been reviewed and accepted by the Engineer. No claim for delay in the progress of work will be considered for the Contractor's failure to submit a HASP that conforms to the requirements of the Contract.

5-HASP Provisions:

(a) General Requirements: The Contractor shall prepare a HASP covering all Project site work regulated by 29 CFR 1910.120(b)/ 1926.65(b) to be performed by the Contractor and all subcontractors under this Contract. The HASP shall establish in detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated with each task performed under this Contract. The HASP shall address site-specific safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection. The level of detail provided in the HASP shall

be tailored to the type of work, complexity of operations to be performed, and hazards anticipated. Details about some activities may not be available when the initial HASP is prepared and submitted. Therefore, the HASP shall address, in as much detail as possible, all anticipated tasks, their related hazards and anticipated control measures.

The HASP shall interface with the Contractor's Safety and Health Program. Any portions of the Safety and Health Program that are referenced in the HASP shall be included as appendices to the HASP. All topics regulated by the 29 CFR 1910.120(b)(4) and those listed below shall be addressed in the HASP. Where the use of a specific topic is not applicable to the Project, the HASP shall include a statement to justify its omission or reduced level of detail and establish that adequate consideration was given the topic.

(b) Elements:

(i) Site Description and Contamination Characterization: The Contractor shall provide a site description and contaminant characterization in the HASP that meets the requirements of 29 CFR 1910.120/1926.65.

(ii) Safety and Health Risk Analysis/Activity Hazard Analysis: The HASP shall address the safety and health hazards on this site for every operation to be performed. The Contractor shall review existing records and data to identify potential chemical and physical hazards associated with the site and shall evaluate their impact on field operations. Sources, concentrations (if known), potential exposure pathways, and other factors as noted in CFR 1910.120/126.65, paragraph (c)(7) employed to assess risk shall be described. The Contractor shall develop and justify action levels for implementation of engineering controls and personal protective equipment upgrades and downgrades for controlling worker exposure to the identified hazards. If there is no permissible exposure limit (PEL) or published exposure level for an identified hazard, available information from other published studies may be used as guidance. Any modification of an established PEL must be fully documented.

The HASP shall include a comprehensive section that discusses the tasks and objectives of the site operations and logistics and resources required to complete each task. The hazards associated with each task shall be identified. Hazard prevention techniques, procedures and/or equipment shall be identified to mitigate each of the hazards identified.

(iii) Staff Organization, Qualifications and Responsibilities: The HASP shall include a list of personnel expected to be engaged in site activities and certify that said personnel have completed the educational requirements stipulated in 29 CFR 1910.120 and 29 CFR 1926.65, are currently monitored under a medical surveillance program in compliance with those regulations, and that they are fit for work under "level C" conditions.

The Contractor shall assign responsibilities for safety activities and procedures. An outline or flow chart of the safety chain of command shall be provided in the HASP. Qualifications, including education, experience, certifications, and training in safety and

health for all personnel engaged in safety and health functions shall be documented in the HASP. Specific duties of each on-site team member should be identified. Typical team members include but are not limited to Team Leader, Scientific Advisor, Site Safety Officer, Public Information Officer, Security Officer, Record Keeper, Financial Officer, Field Team Leader, and Field Team members.

The HASP shall also include the name and qualifications of the individual proposed to serve as Health and Safety Officer (HSO). The HSO shall have full authority to carry out and ensure compliance with the HASP. The Contractor shall provide a competent HSO on-site who is capable of identifying existing and potential hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate or control them. The qualifications of the HSO shall include completion of OSHA 40-hour HAZWOPER training and 8-hour HAZWOPER supervisory training; a minimum of one year of working experience with the regulated compounds that have been documented to exist within Project limits; a working knowledge of Federal and State safety regulations; specialized training or documented experience (one year minimum) in personal and respiratory protective equipment program implementation; the proper use of air monitoring instruments, air sampling methods and procedures; and certification training in first aid and CPR by a recognized, approved organization such as the American Red Cross.

The primary duties of the HSO shall be those associated with worker health and safety. The Contractor's HSO responsibilities shall be detailed in the written HASP and shall include, but not be limited to the following:

(A) Directing and implementing the HASP.

(B) Ensuring that all Project personnel have been adequately trained in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury (29 CFR 1926.21). All personnel shall be adequately trained in procedures outlined in the Contractor's written HASP.

(C) Authorizing Stop Work Orders, which shall be executed upon the determination of an imminent health and safety concern.

(D) Contacting the Contractor's HSM and the Engineer immediately upon the issuance of a Stop Work order when the HSO has made the determination of an imminent health and safety concern.

(E) Authorizing work to resume, upon approval from the Contractor's HSM.

(F) Directing activities, as defined in the Contractor's written HASP, during emergency situations; and

(G) Providing personal monitoring where applicable, and as identified in the HASP.

(iv) Employee Training Assignments: The Contractor shall develop a training program to inform employees, supplier's representatives, and official visitors of the special hazards and procedures (including PPE, its uses and inspections) to control these hazards during field operations. Official visitors include but are not limited to Federal Agency Representatives, State Agency Representatives, Municipal Agency Representatives, Contractors, subcontractors, etc. This program shall be consistent with the requirements of 29 CFR 1910.120 and 29 CFR 1926.65.

(v) Personal Protective Equipment: The plan shall include the requirements and procedures for employee protection and should include a detailed section on respiratory protection. The Contractor shall describe in detail and provide appropriate personal protective equipment (PPE) to insure that workers are not exposed to levels greater than the action level for identified hazards for each operation stated for each work zone. The level of protection shall be specific for each operation and shall be in compliance with all requirements of 29 CFR 1910 and 29 CFR 1926. The Contractor shall provide, maintain, and properly dispose of all PPE.

(vi) Medical Surveillance Program: All on-site Contractor personnel engaged in 29 CFR 1910.120/1926.65 operations shall have medical examinations meeting the requirements of 29 CFR 1910.120(f) prior to commencement of work.

The HASP shall include certification of medical evaluation and clearance by the physician for each employee engaged in 29 CFR 1910.120/1926.65 operations at the site.

(vii) Exposure Monitoring/Air Sampling Program: The Contractor shall submit an Air Monitoring Plan as part of the HASP which is consistent with 29 CFR 1910.120, paragraphs (b)(4)(ii)(E), (c)(6), and (h). The Contractor shall identify specific air sampling equipment, locations, and frequencies in the air-monitoring plan. Air and exposure monitoring requirements shall be specified in the Contractor's HASP. The Contractor's CIH shall specify exposure monitoring/air sampling requirements after a careful review of the contaminants of concern and planned site activities.

(viii) Site Layout and Control: The HASP shall include a map, work zone delineation (support, contamination, reduction and exclusion), on/off-site communications, site access controls, and security (physical and procedural).

(ix) Communications: Written procedures for routine and emergency communications procedures shall be included in the Contractor's HASP.

(x) Personal Hygiene, Personal Decontamination and Equipment Decontamination: Decontamination facilities and procedures for personnel protective equipment, sampling equipment, and heavy equipment shall be discussed in detail in the HASP.

(xi) Emergency Equipment and First Aid Requirements: The Contractor shall provide appropriate emergency first aid kits and equipment suitable to treat exposure to the hazards identified, including chemical agents. The Contractor will provide personnel that have certified first aid/CPR training on-site at all times during site operations.

(xii) Emergency Response Plan and Spill Containment Program: The Contractor shall establish procedures in order to take emergency action in the event of immediate hazards (i.e., a chemical agent leak or spill, fire or personal injury). Personnel and facilities supplying support in emergency procedures will be identified. The emergency equipment to be present on-site and the Emergency Response Plan procedures, as required 29 CFR 1910.120, paragraph (1)(1)(ii) shall be specified in the Emergency Response Plan. The Emergency Response Plan shall be included as part of the HASP. This Emergency Response Plan shall include written directions to the closest hospital as well as a map showing the route to the hospital.

(xiii) Logs, Reports and Record Keeping: The Contractor shall maintain safety inspections, logs, and reports, accident/incident reports, medical certifications, training logs, monitoring results, etc. All exposure and medical monitoring records are to be maintained according to 29 CFR 1910 and 29 CFR 1926. The format of these logs and reports shall be developed by the Contractor to include training logs, daily logs, weekly reports, safety meetings, medical surveillance records, and a phase-out report. These logs, records, and reports shall be maintained by the Contractor and be made available to the Engineer.

The Contractor shall immediately notify the Engineer of any accident/ incident. Within two working days of any reportable accident, the Contractor shall complete and submit to the Engineer an accident report.

(xiv) Confined space entry procedures: Confined space entry procedures, both permit required and non permit required, shall be discussed in detail.

(xv) Pre-entry briefings: The HASP shall provide for pre-entry briefings to be held prior to initiating any site activity and at such other times as necessary to ensure that employees are apprised of the HASP and that this plan in being followed.

(xvi) Inspections/audits: The HSM or HSO shall conduct Inspections or audits to determine the effectiveness of the HASP. The Contractor shall correct any deficiencies in the effectiveness of the HASP.

6-HASP Implementation: The Contractor shall implement and maintain the HASP throughout the performance of work. In areas identified as having a potential risk to worker health and safety, and in any other areas deemed appropriate by the HSO, the Contractor shall be prepared to immediately implement the appropriate health and safety measures, including but not limited to the use of personal protective equipment (PPE), and engineering and administrative controls.

If the Engineer observes deficiencies in the Contractor's operations with respect to the HASP, they shall be assembled in a written field directive and given to the Contractor. The Contractor shall immediately correct the deficiencies and respond, in writing, as to how each was corrected. Failure to bring the work area(s) and implementation procedures into compliance will result in a Stop Work Order and a written directive to discuss an appropriate resolution(s) to the matter. When the Contractor demonstrates compliance, the Engineer shall remove the Stop Work Order. If a Stop Work Order has been issued for cause, no delay claims on the part of the Contractor will be honored.

Disposable CPC/PPE, i.e. disposable coveralls, gloves, etc., which come in direct contact with hazardous or potentially hazardous material shall be placed into 55 gallon USDOT 17-H drums and disposed of in accordance with Federal, State, and local regulations. The drums shall be temporarily staged and secured within the WSA until the material is appropriately disposed.

7-HASP Revisions: The HASP shall be maintained on-site by the Contractor and shall be kept current with construction activities and site conditions under this Contract. The HASP shall be recognized as a flexible document which shall be subject to revisions and amendments, as required, in response to actual site conditions, changes in work methods and/or alterations in the relative risk present. All changes and modifications shall be signed by the Contractor's HSM and shall require the review and acceptance by the Engineer prior to the implementation of such changes.

Should any unforeseen hazard become evident during the performance of the work, the HSO shall bring such hazard to the attention of the Contractor and the Engineer as soon as possible. In the interim, the Contractor shall take action, including Stop Work Orders and/or upgrading PPE as necessary to re-establish and maintain safe working conditions and to safeguard on-site personnel, visitors, the public and the environment. The HASP shall then be revised/amended to reflect the changed condition.

Method of Measurement:

1-Within thirty (30) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for acceptance a breakdown of its lump sum bid price for this item detailing:

(a) The development costs associated with preparing the HASP in accordance with these Specifications.
(b) The cost per month for the duration of the Project to implement the HASP and provide the services of the HSM and the HSO.

2-If the lump sum bid price breakdown is unacceptable to the Engineer; substantiation showing that the submitted costs are reasonable shall be required.

3-Upon acceptance of the payment schedule by the Engineer, payments for work performed will be made as follows:

(a) The lump sum development cost will be certified for payment.

(b) The Contractor shall demonstrate to the Engineer monthly that the HASP has been kept current and is being implemented and the monthly cost will be certified for payment.

(c) Any month where the HASP is found not to be current or is not being implemented, the monthly payment for the Environmental Health and Safety Item shall be deferred to the next monthly payment estimate. If the HASP is not current or being implemented for more than thirty calendar days, there will be no monthly payment.

(d) Failure of the Contractor to implement the HASP in accordance with this Specification shall result in the withholding of all Contract payments.

Basis of Payment:

This work will be paid for at the Contract lump sum price for "Environmental Health and Safety" which price shall include all materials, tools, equipment and labor incidental to the completion of this item for the duration of the Project to maintain, revise, monitor and implement the HASP. Such costs include providing the services of the HSM and HSO, Contractor employee training, chemical protective clothing (CPC), personal protective equipment (PPE), disposal of PPE and CPC, medical surveillance, decontamination facilities, engineering controls, monitoring and all other HASP protocols and procedures established to protect the Health and Safety for all on-site workers.

Pay Item	Pay Unit
Environmental Health and Safety	L.S.

ITEM #0101117A - CONTROLLED MATERIALS HANDLING

Description:

Work under this Item is intended to provide specific procedural requirements to be followed by the Contractor during the excavation of Controlled Materials from within any AOEC, as shown on the Project Plans. This supplements Specification Sections 2.02, 2.03, 2.06, and 2.86, and Contract Special Provisions for excavation wherever contaminated materials are encountered. Work under this item shall include transporting and stockpiling materials at the WSA; and covering, securing, and maintaining the stockpiled materials throughout the duration of the Project. All materials, excluding the existing pavement structure (asphalt and subbase), rock, ledge, and concrete, excavated within AOEC(s) are to be considered Controlled Materials.

Controlled Materials consisting of non-hazardous levels of regulated substances have been documented to exist within the Project. Such contamination is documented in the reports listed in the "Notice to Contractor – Environmental Investigations." Where contaminated soils are excavated, such soil will not be reusable as backfill, unless authorized by the Engineer in writing, and will require special handling, disposal and documentation procedures.

Materials:

The required materials are detailed on the Project Plans. All materials shall conform to the requirements of the Contract.

Plastic Sheet: Polyethylene plastic sheeting for underlayment shall be at least 30 mil thick. Polyethylene plastic sheeting for covering excavated material shall be a thickness of 10 mil. Both shall be at least 10 feet wide.

Covers for roll-off/storage containers shall be made of polyethylene plastic, or similar water-tight material, that is of sufficient size to completely cover top opening and can be securely fastened to the container.

Sand Bags: Sandbags used to secure polyethylene covers shall be at least 30 pounds.

Sorbent Boom: Shall be 8 inches in diameter and 10 feet long and possess petrophilic and hydrophobic properties. Sorbent booms shall also have devices (i.e. clips, clasps, etc.) for connection to additional lengths of boom.

Construction Methods:

A. General

When Controlled Materials are encountered during the course of the work, health and safety provisions shall conform to the appropriate sections of the Contract. Provisions may include

implementation of engineering controls, air and personal monitoring, the use of chemical protective clothing (CPC), personal protective equipment (PPE), implementation of engineering controls, air and personal monitoring, and decontamination procedures.

Unless otherwise directed by the Engineer, materials removed from any excavation within an AOEC shall be transported directly from their point of origin on the Project to the WSA. The stockpiles of excavated Controlled Materials shall be maintained as shown on the Project Plans. The Contractor shall plan excavation activities within AOEC(s) in consideration of the capacity of WSA, and the material testing and disposal requirements of the applicable Contract item. **No claims for delay shall be considered based on the Contractor's failure to coordinate excavation activities as specified herein.**

The Engineer will sample the stockpiled Controlled Materials at a frequency and for the constituents to meet the acceptance criteria of the treatment/recycling/disposal facilities submitted by the Contractor. The Contractor is hereby notified that laboratory turnaround time is expected to be fifteen (15) working days. Turnaround time is the period of time beginning when the Contractor notifies the Engineer which facility it intends to use and that the stockpile is ready for sampling and ending with the Contractor's receipt of the laboratory analytical results. Any change of intended treatment/recycling/disposal facility may prompt the need to resample and will therefore restart the time required for laboratory turnaround. The laboratory will furnish such results to the Engineer. Upon receipt, the Engineer will make available to the Contractor the results of the final waste characterization determinations. **No delay claim will be considered based upon the Contractor's failure to accommodate the laboratory turnaround time as identified above.**

B. Transportation and Stockpiling

In addition to following all pertinent Federal, State and local laws or regulatory agency policies, the Contractor shall adhere to the following precautions during transport of non-hazardous materials:

- Transported Controlled Materials are to be covered prior to leaving the point of generation and are to remain covered until the arrival at the WSA;

- All vehicles departing the site are properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume and content of materials carried;

- All vehicles shall have secure, watertight containers free of defects for material transportation;

- No material shall leave the site until there is adequate lay down area prepared in the WSA; and,

- Documentation must be maintained indicating that all applicable laws have been satisfied and that the materials have been successfully transported and received at the WSA.

Construction of the WSA shall be completed prior to the initiation of construction activities generating Controlled Materials. Plastic polyethylene sheeting shall underlay all excavated Controlled Materials. Measures shall be implemented to divert rainfall away from the WSA.

No Controlled Materials shall be excavated or transported to the WSA until registration under the "General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)" has been obtained by ConnDOT.

Placement of sorbent boom along the perimeter of the WSA shall be conducted when soil is saturated with petroleum product.

Excavated materials shall be staged as shown on the Project Plans or as directed by the Engineer.

C. WSA Maintenance

The Contractor shall provide all necessary materials, equipment, tools and labor for anticipated activities within the WSA. Such activities include, but are not limited to, handling and management of stockpiles and drummed CPC/PPE; uncovering and recovering stockpiles; maintenance of WSA; replacement of damaged components (i.e. sand bags, plastic polyethylene sheeting, etc.); and waste inventory record management. The Contractor shall manage all materials in the WSA in such a way as to minimize tracking of potential contaminated materials across the site and off-site, and minimize dust generation.

Each stockpile shall be securely covered when not in active use with a cover of sufficient size to prevent generation of dust and infiltration of precipitation. The cover shall be to prevent wind erosion.

The staged stockpiles shall be inspected at least daily by the Contractor to ensure that the cover and containment have not been damaged and that there is no apparent leakage from the pile. If the cover has been damaged, or there is evidence of leakage from the piles, the Contractor shall immediately replace the cover or containment as needed to prevent the release of materials to the environment from the piles.

An inventory of stockpiled materials and drummed CPC/PPE shall be conducted on a daily basis. Inventory records shall indicate the approximate volume of material/drums stockpiled per day; the approximate volume of material/drums stockpiled to date; material/drums loaded and transported off-site for disposal; any materials loaded and transported for on-site reuse; and identification of stockpiles relative to their points of generation.

Following the removal of all stockpiled Controlled Materials, residuals shall be removed from surfaces of the WSA as directed by the Engineer. This operation shall be accomplished using

dry methods such as shovels, brooms, mechanical sweepers or a combination thereof. Residuals shall be disposed of as Controlled Materials.

D. Dewatering

Dewatering activities shall conform to Items in pertinent articles of the Contract.

E. Decontamination

All equipment shall be provided to the work site free of contamination. The Engineer may prohibit from the site any equipment that in his opinion has not been thoroughly decontaminated prior to arrival. Any decontamination of the Contractor's equipment prior to arrival at the site shall be at the expense of the Contractor. The Contractor is prohibited from decontaminating equipment on the Project that has not been thoroughly decontaminated prior to arrival.

The Contractor shall furnish labor, materials, tools and equipment for decontamination of all equipment and supplies that are used to handle Controlled Materials. Decontamination shall be conducted at an area designated by the Engineer and may be required prior to equipment and supplies leaving the Project, between stages of the work, or between work in different AOEC's.

Dry decontamination procedures are recommended. Residuals from dry decontamination activities shall be collected and managed as Controlled Materials. If dry methods are unsatisfactory as determined by the Engineer, the Contractor shall modify decontamination procedures as required subject to the Engineer's approval.

F. Dust Control

The Contractor shall implement a fugitive dust suppression program in accordance with the Contract to prevent the off-site migration of particulate matter and/or dust resulting from excavation, loading and operations associated with Controlled Materials. It shall be the Contractor's responsibility to supervise fugitive dust control measures and to monitor airborne particulate matter. The Contractor shall:

1. Employ reasonable fugitive dust suppression techniques.
2. Visually observe the amounts of particulate and/or fugitive dust generated during the handling of Controlled Materials. If the apparent amount of fugitive dust and/or particulate matter is not acceptable to the Engineer, the Engineer may direct the Contractor to implement corrective measures at his discretion, including, but not limited to, the following:

    (a) apply water to pavement surfaces
    (b) apply water to equipment and excavation faces; and
    (c) apply water during excavation, loading and dumping.

G. Permit Compliance

The Contractor shall comply with the terms and conditions of the CTDEEP "General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)," including the General Operating Conditions and the Specific Operating Conditions, except that the Engineer will conduct all soil/sediment characterization and perform all record keeping. In particular, the Contractor shall:

1. Operate, maintain and repair the WSA in conformance with the requirements of the General Permit.
2. Maintain a communications system capable of summoning fire, police, and/or other emergency service personnel.
3. Prevent unauthorized entry onto the stockpiles by the use of fences, gates, or other natural or artificial barriers.
4. Separate incidental excavation waste to the satisfaction of the receiving facility or to an extent that renders the contaminated soil and/or sediment suitable for its intended reuse.
5. Isolate and temporarily store incidental waste in a safe manner prior to off-site transport to a facility lawfully authorized to accept such waste.
6. Not store more that 100 cubic yards of incidental waste at any one time.
7. Sort, separate and isolate all hazardous waste from contaminated soil and/or sediment.
8. Prevent or minimize the transfer or infiltration of contaminants from the stockpiles to the ground as detailed in "B. Transportation and Stockpiling" above.
9. Securely cover each stockpile of soil as detailed in "C. WSA Maintenance" above.
10. Minimize wind erosion and dust transport as detailed in "F. Dust Control" above.
11. Use anti-tracking measures at the WSA to ensure the vehicles do not track soil from the WSA onto a public roadway at any time.
12. Instruct the transporters of contaminated soil and/or sediment of best management practices for the transportation of such soil (properly covered loads, removing loose material from dump body, etc.).
13. Control all traffic related to the operation of the facility in such a way as to mitigate the queuing of vehicles off-site and excessive or unsafe traffic impact in the area where the facility is located.
14. Ensure that except as allowed in section 22a-174-18(b)(3)(C) of the Regulations of Connecticut State Agencies, trucks are not left idling for more than three (3) consecutive minutes.

Method of Measurement:

The work of Controlled Material Handling will be measured for payment by the number of cubic yards of controlled material excavated within the AOEC(s) and taken to the WSA. This measurement shall be in accordance with and in addition to the quantity measured for payment of the applicable excavation item in Specification Sections 2.02, 2.03, 2.06, and 2.86, or the Contract Special Provisions, as applicable. Excess excavations made by the Contractor beyond the payment limits specified in the Contract will not be measured for payment and the Contractor

assumes all costs associated with the appropriate handling, management and disposal of this material.

Equipment decontamination, the collection of residuals, and the collection and disposal of liquids generated during equipment decontamination activities will not be measured separately for payment.

Basis of Payment:

This work shall be paid for at the Contract unit price, which shall include all transportation from the excavation site to the final WSA, including any intermediate handling steps; stockpiling Controlled Materials at the WSA; covering, securing, and maintaining the individual stockpiles within the WSA throughout the duration of the Project; and all tools, equipment, material and labor incidental to this work.

This price shall also include equipment decontamination; the collection of residuals generated during decontamination and placement of such material in the WSA; and the collection and disposal of liquids generated during equipment decontamination activities.

All materials, labor and equipment associated with compliance with the General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer) will not be measured separately, but will be considered incidental to the item "Controlled Materials Handling."

Securing, construction and dismantling of the WSA shall be paid for under Item 101128A. Handling and disposal of contaminated groundwater will be paid for under Item 0204210A. Payment for dust control activities shall be made under the appropriate Contract items.

Pay Item	Pay Unit
Controlled Materials Handling	CY

ITEM #101128A - SECURING, CONSTRUCTION AND DISMANTLING OF A WASTE STOCKPILE AND TREATMENT AREA

Description:

Work under this Item shall consist of the securing, construction and dismantling of the temporary Waste Stockpile Area at the location designated on the Project Plans and in accordance with the Contract. All controlled and hazardous materials excavated during construction activities shall be stockpiled in the WSA. The WSA shown on the Plans is to be used exclusively for temporary stockpiling of excavated materials from within Project AOEC(s) and Hazardous AOEC(s) for determination of disposal classification.

Materials:

The required materials are detailed on the Project Plans. All materials shall conform to the requirements of the Contract.

Construction blocks shall be solid precast rectangular concrete six feet in length, three in height, and two feet in depth.

Polyethylene plastic sheeting for underlayment shall be a thickness of 30 mil and minimum width of ten feet.

Sand bags used to secure polyethylene sheeting soil covers shall have a minimum weight of thirty pounds.

Bedding sand shall conform to Section 6.51.02 of the Specifications.

Processed Aggregate Base shall conform to Section 3.04 of the Specifications.

Hay bales shall conform to the requirements of Section 2.18 of the Specifications.

Bituminous Concrete shall conform to Section 4.06 of the Specifications.

Roll-off/Storage Containers shall be of watertight, steel-body construction, of the size specified and able to handle the storage and subsequent transportation of material to the disposal facility.

Precast Concrete Barrier Curb shall conform to Section 8.22 of the Specifications.

Construction Methods:

The WSA shall be constructed in accordance with the Contract at the location shown on the Project Plans.

Construction of the WSA shall be completed prior to the initiation of construction activities generating Controlled or Hazardous Materials. The Contractor is responsible for the maintenance and protection of all utilities potentially affected during WSA construction. The Contractor shall locate and mark all existing utilities potentially affected prior to initiating WSA construction.

The proposed location of the WSA shall be cleared of any debris and vegetation as directed by the Engineer. Any objectionable materials, which may result in damage to the polyethylene sheeting underlayment, shall be removed prior to stockpiling excavated controlled or hazardous materials.

The Contractor shall comply with the terms and conditions of the DEP "General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)", including the General Operating Conditions and the Specific Operating Conditions, except that the Engineer will conduct all soil/sediment characterization and perform all record keeping. In particular, the Contractor shall:

1. Construct and repair the WSA in conformance with the requirements of the General Permit.
2. Prevent unauthorized entry onto the stockpiles by the use of fences, gates, or other natural or artificial barriers.
3. Install anti-tracking measures at the WSA to ensure the vehicles do not track soil from the WSA onto a public roadway at any time.
4. Post and maintain a sign that is visible from a distance of at least 25' at the WSA identifying the name of the permittee (State of CT, Department of Transportation), the DOT field office phone number, the hours of operation for the WSA, and the phrase, "Temporary Soil Staging Area". Lettering shall be at least one inch (1") high with a minimum overall sign dimension of four (4) feet wide by two (2) feet high. Such sign is only required if the capacity of the WSA is equal to or greater than 1,000 cubic yards. If initially the WSA capacity is less than 1,000 c.y. and the WSA capacity is subsequently increased, the Contractor shall post and maintain the required sign at no additional cost to the State, prior to stockpiling the additional material.

Following the removal of all stockpiled material, the Contractor shall use dry decontamination procedures for all surfaces of the WSA as directed by the Engineer. Residual materials shall be disposed of as Controlled or Hazardous Materials. If the results from dry methods are unsatisfactory to the Engineer, the Contractor shall modify decontamination procedures as required.

The Contractor shall be responsible for the collection and treatment/recycling/disposal of any liquid wastes that may be generated by its decontamination activities in accordance with applicable regulations.

Upon completion of the Project and following removal of all residual Controlled or Hazardous Materials, the Contractor shall dismantle the WSA and return the area to original condition. During dismantling, the Contractor shall remove all materials such as polyethylene sheeting and

sand bags. Materials shall be disposed of by the Contractor as solid waste in accordance with the Contract and all Federal, State and local regulations.

Operation and maintenance of the WSA shall be included under Item 101117A "Controlled Material Handling" and/or Item 101109A "Hazardous Materials Excavation".

Method of Measurement:

This work will be measured for payment at the Lump Sum cost for securing, construction, and dismantling of a WSA.

Basis of Payment:

This work will be paid for at the Contract Lump Sum, which shall include all materials, tools, labor, equipment, permits, and work needed to secure, construct, decontaminate and dismantle the WSA, including all clearing, grubbing, grading, clean up, site restoration and seeding.

All materials, labor and equipment associated with compliance with the General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer) will not be measured separately, but will be considered incidental to the item "Securing, Construction and Dismantling of a Waste Stockpile and Treatment Area".

Pay Item	Pay Unit
Securing, Construction and Dismantling Of a Waste Stockpile and Treatment Area	L.S.

ITEM #0107090A - CTDOT BOUNDARY MARKER (SURVEY MONUMENT)

Description: Work done under this item consists of setting survey boundary markers (monuments, disks in ledge or concrete structures, or capped rebar) along new Right–of–Way acquisition lines in the locations indicated on the plans or as directed by the Engineer.

Materials: CTDOT concrete boundary monuments, CTDOT boundary disks, and CTDOT capped reinforcing bars (rebars) will be provided by the Department. All other materials (Granular Fill or quick setting grout) shall be the responsibility of the Contractor. The Contractor shall arrange to pick up CTDOT-supplied materials from the District Office or other designated location within the District.

Construction Methods: The Contractor shall be responsible for all computations, location, staking, and setting of highway boundary markers at all P.C.'s, P.T.'s and any other angle points in the State's Property Acquisition and Defined Highway Easement Lines as shown on the plans and the attached details, or as directed by the Engineer.

The standard boundary marker will be the CTDOT concrete boundary monument. Boundary disks set in ledge or structures and capped rebar shall be set at locations as shown in the plans or where the Engineer determines that it is impractical to set a concrete boundary monument.

The setting of boundary markers shall not begin until all excavation, filling operations, grading and drainage has been completed and approval has been granted by the Engineer.

The Contractor shall retain the services of a Land Surveyor licensed in the State of Connecticut to serve as Project Surveyor to directly oversee this work and to ensure that each marker has been set in accordance with CTDOT Standards. The Contractor shall provide to the Engineer the name, place of professional employment, business address, phone number, and license number of the Project Surveyor to the Department.

All boundary and staking computations shall be provided by the Project Surveyor to the Engineer and shall be approved by the District Survey Office prior to staking the locations of the boundary markers.

The Project Surveyor shall stake the location of the boundary markers at the location(s) shown on the plans or as directed by the Engineer. This work shall meet or exceed a positional accuracy of 1:5000 (0.02 feet per 100 feet) as defined in Section 20-300b-11 of the Regulations of Connecticut State Agencies.

Excavation for the placement of the CTDOT Boundary Monuments shall be by hand or with a power auger. The use of a backhoe or other heavy equipment for excavation purposes will not be allowed. The bottom of the hole shall be hand-tamped granular fill and the concrete monument shall be set plumb to the finished grade and backfilled with granular fill and suitable native soil, as shown in the detail (attached). The remaining backfill shall be compacted in six (6) inch layers or as directed by the Engineer.

In locations where the Engineer determines that concrete monuments cannot be set, the Project Surveyor shall set CTDOT Boundary disks or CTDOT Boundary capped rebars as directed. Rebar driving sleeves shall be used in the setting of capped rebars. All disks set in ledge or concrete shall be secured with ROCKITE®, KWIXSET®, QUIKRETE®**,** or approved equal fast setting hydraulic anchoring cement compound.

Concrete boundary monuments must be allowed to settle for fourteen (14) days. Once all concrete boundary monuments are completed and allowed to settle and all other boundary markers are in place, the Contractor shall notify the Engineer that the boundary marker disks are ready to be drilled. The CTDOT District Survey Office will verify the location of the boundary markers or monuments by drilling the exact location of the highway acquisition or highway easement lines on the boundary monuments or markers within 60 days of notification from the Engineer.

If any boundary marker disks are found to be outside of the boundary point locations and are unable to be drilled, the boundary monuments or boundary markers shall be removed and replaced at the Contractor's expense. Once the boundary monuments or markers have been drilled and found to meet Contract requirements, the Engineer will notify the Contractor of this acceptance.

Method of Measurement: This work will be measured for payment by the number of CTDOT boundary markers, (either monuments, disks, or capped rebar) complete and accepted in place.

Basis of Payment: This work will be paid for at the Contract unit price each for "CTDOT Boundary Marker (Survey Monument)" complete and accepted in place, which price shall include all computations, equipment, tools, transportation of Department-supplied materials, non-Department supplied materials, and labor incidental to the location, staking and setting of boundary markers, and shall include any disposal of excess excavated materials. The removal and replacement of non-conforming markers will not be paid.

Pay Item	Pay Unit
CTDOT Boundary Marker (Survey Monument)	ea.

CONNECTICUT DEPARTMENT OF TRANSPORTATION
Boundary/Control Monument Setting Procedures

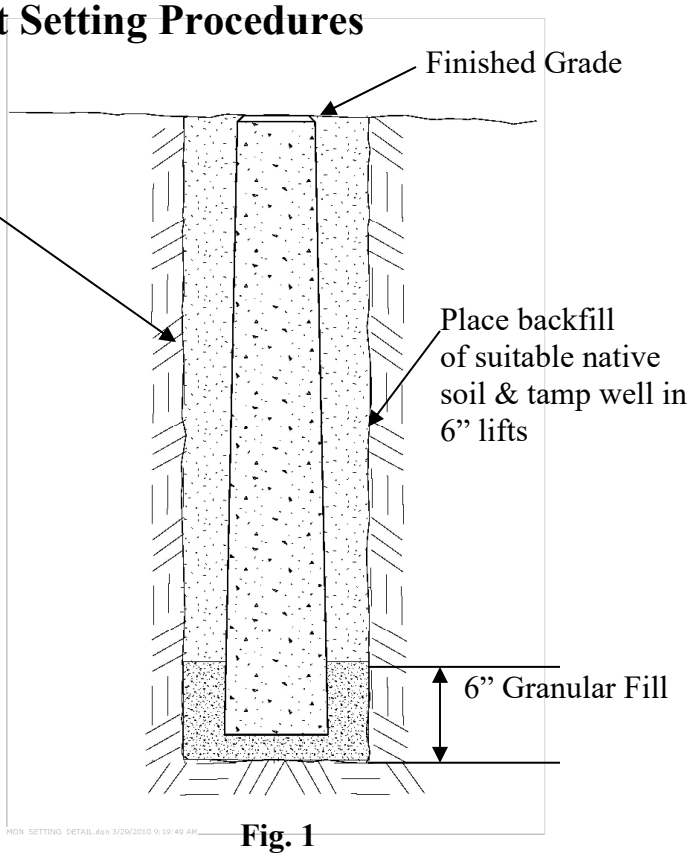
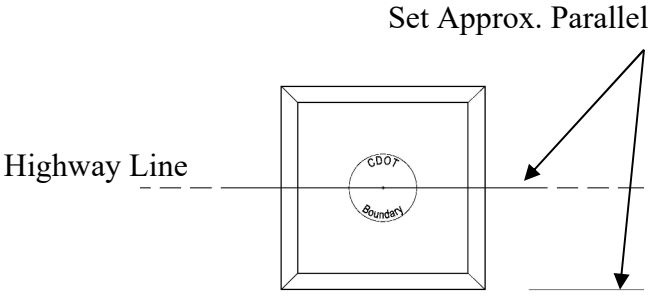


Fig. 1

Fig. 2



Procedure "A"
Setting CT DOT Survey Monuments to a specific point:
The Project Surveyor shall compute and stake the layout of each new CHD monument to be set. The stake shall be a 2" x 2" x 18" (or larger) hardwood stake and tack. The new monument shall be tied in to three points, the hole dug, and new monument placed as indicated above. The new monument is to be set plumb in the same horizontal position as the existing staked point to within three, one-hundredths (0.03') of a foot. It shall be positioned by the Contractor, to an exact point, within the specified tolerance. Any monuments not falling within the specified limits shall be reset at the Contractor's expense.

Procedure "B"
Setting CT DOT Survey Disc in ledge:
When a new CHD point falls on ledge which is exposed or within less than 2' of the ground surface, a CT DOT disc shall be set. A ¾" diameter hole shall be drilled to a depth of 3" and the surface of the ledge leveled so that the disc sits flush when complete. Discs shall be affixed using ROCKITE®, KWIXSET®, QUIKRETE®, or approved equal fast setting hydraulic anchoring cement compound in accordance with the manufacturer's recommended procedures.

Procedure "C"
Setting CT DOT "RECHD" (Capped Rebar)
This procedure shall follow the standards of Procedure "A" except a ¾" x 3' section of rebar is substituted for the traditional concrete monument. The rebar shall be driven with a protective sleeve and shall be set to within three one-hundredths (0.03') of a foot of the staked point, then topped with a two (2") inch diameter CT DOT aluminum cap, which receives the final precise drill hole. The capped "Re-CHD" shall be set flush to the ground.

ITEM #0202315A - DISPOSAL OF CONTROLLED MATERIALS

Description:

Work under this item shall consist of the loading, transportation and final off-site disposal/ recycling/treatment of controlled materials (excluding dewatering fluids) that have been generated from various excavations within the AOEC(s), brought to the WSA and determined to be contaminated with regulated substances at non-hazardous levels. This contamination is documented in the reports listed in the "Notice to Contractor – Environmental Investigations." The results contained in the environmental investigation reports listed in the "Notice to Contractor – Environmental Investigations" show levels of various contaminants that the Contractor may encounter during construction. Actual levels found during construction may vary and such variations will not be considered a change in condition provided the material can still be disposed as non-hazardous at one or more of the disposal facilities listed herein. The controlled materials, after proper characterization by the Engineer, shall be taken from the WSA, loaded, transported to and treated/recycled/disposed of at a permitted treatment/recycle/disposal facility listed herein.

The Contractor must use one or more of the following Department-approved treatment/recycle/ disposal facilities for the disposal of non-hazardous materials:

Phoenix Soil, LLC 58 North Washington Street Plainville, CT 06062 (860) 747-8888: Sandra Zac	ESMI of New Hampshire 67 International Drive Loudon, NH 03307 (603) 783-0228: Steve Bennitt
ESMI of New York 304 Towpath Road Fort Edward, New York 12828 (800) 511-3764: Peter Hanson	Allied Waste Niagara Fall Landfill, LLC 5600 Niagra Falls Blvd. Niagara, NY 14304 (716) 285-3344: David Hanson
Ted Ondrick Company, LLC 58 Industrial Road Chicopee, MA 01020 (413) 592-2566: David Costanzo	Clean Earth of Carteret 24 Middlesex Avenue Carteret, NJ 07008 (732) 541-8909: Cheryl Coffee
Clean Earth of Philadelphia 3201 S. 61 Street Philadelphia, PA 19153 (215) 724-5520: Mike Kelly	Cumberland County Landfill 135 Vaughn Road Shippensburg, PA 17257 (717) 729-2060: Don Demkovitz

The Southbridge Recycling and Disposal Park 165 Barefoot Road Southbridge, MA 01550 (603) 235-3597: Scott Sampson	Hazelton Creek Properties, LLC * 280 South Church Street Hazelton, PA 18201 (570) 501-5050: Allen Swantek
Colonie Landfill 1319 Louden Road Cohoes, NY 12047 (518) 951-0794: Eric Morales	

* Note: each bin will require an additional 10 days (or more) for PADEP to review analytical data and approve material for disposal prior to facility acceptance of material. This is in addition to all other restrictions and wait periods defined below.

The above list contains treatment/recycle/disposal facilities which can accept the waste stream generated by the project in quantities that may be limited by their permits and their operations restrictions. It is the responsibility of the contractor to verify that a facility will be available and capable of handling the volume as well as the chemical and physical characteristics of material generated by the project.

Construction Methods:

A. Material Disposal

The Engineer will sample materials stored at the WSAs at a frequency established by the selected treatment/recycling/disposal facilities. The Contractor shall designate to the Engineer which facility it intends to use, as well as the facility acceptance criteria and sampling frequency, prior to samples being taken. The Contractor is hereby notified that laboratory turnaround time is expected to be fifteen (15) working days. Turnaround time is the period of time beginning when the Contractor notifies the Engineer which facility it intends to use and that the bin within the WSA is full and ready for sampling and ending with the Contractor's receipt of the laboratory analytical results. Any change of intended treatment/recycling/disposal facility may prompt the need to resample and will therefore restart the time required for laboratory turnaround. The laboratory will furnish such results to the Engineer. Upon receipt, the Engineer will make available to the Contractor the results of the final waste characterization determinations. **No delay claim will be considered based upon the Contractor's failure to accommodate the laboratory turnaround time as identified above.**

The Contractor shall obtain and complete all paperwork necessary to arrange for material disposal (such as disposal facility waste profile sheets). It is solely the Contractor's responsibility to co-ordinate the disposal of controlled materials with its selected treatment/recycling/disposal facility(s). Upon receipt of the final approval from the facility, the Contractor shall arrange for the loading, transport and treatment/recycling/disposal of the materials in accordance with all Federal and State regulations. **No claim will be considered**

based on the failure of the Contractor's selected disposal facility(s) to meet the Contractor's production rate or for the Contractor's failure to select sufficient facilities to meet its production rate.

Any material processing (including but not limited to the removal of woody debris, scrap metal, pressure-treated and untreated wood timber, large stone, concrete, polyethylene sheeting or similar material) required by the Contractor's selected facility will be completed by the Contractor prior to the material leaving the site. It is solely the Contractor's responsibility to meet any such requirements of its facility. Any materials removed shall be disposed of or recycled in a manner acceptable to the Engineer at no additional cost. If creosote treated timbers are removed, they will be disposed of under the item "Disposal of Contaminated Timber Piles", "Disposal of Contaminated Railroad Ties" or in accordance with Article 1.04.05 in the absence of such items.

All manifests or bills of lading utilized to accompany the transportation of the material shall be prepared by the Contractor and signed by an authorized Department representative, as Generator, for each truck load of material that leaves the site. The Contractor shall forward the appropriate original copies of all manifests or bills of lading to the Engineer the same day the material leaves the Project.

A load-specific certificate of treatment/recycling/disposal, signed by the authorized agent representing the disposal facility, shall be obtained by the Contractor and promptly delivered to the Engineer for each load.

B. Material Transportation

In addition to all pertinent Federal, State and local laws or regulatory agency polices, the Contractor shall adhere to the following precautions during the transport of controlled materials off-site:

- Transported controlled materials are to be covered sufficiently to preclude the loss of material during transport prior to leaving the site and are to remain covered until the arrival at the selected treatment/recycling/disposal facility.

- All vehicles departing the site are to be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume, and contents of materials carried.

- No materials shall leave the site unless a treatment/recycling/disposal facility willing to accept all of the material being transported has agreed to accept the type and quantity of waste.

C. Equipment Decontamination

All equipment shall be provided to the work site free of gross contamination. The Engineer may prohibit from the site any equipment that in his opinion has not been thoroughly decontaminated prior to arrival. Any decontamination of the Contractor's equipment prior to arrival at the site shall be at the expense of the Contractor. The Contractor is prohibited from decontaminating equipment on the Project that has not been thoroughly decontaminated prior to arrival.

The Contractor shall furnish labor, materials, tools and equipment for decontamination of all equipment and supplies that are used to handle Controlled Materials. Decontamination shall be conducted at an area designated by the Engineer and shall be required prior to equipment and supplies leaving the Project, between stages of the work, and between work in different AOEC's.

The Contractor shall use dry decontamination procedures. Residuals from dry decontamination activities shall be collected and managed as Controlled Materials. If the results from dry methods are unsatisfactory to the Engineer, the Contractor shall modify decontamination procedures as required.

The Contractor shall be responsible for the collection and treatment/recycling/disposal of any liquid wastes that may be generated by its decontamination activities in accordance with applicable regulations.

Method of Measurement:

The work of "DISPOSAL OF CONTROLLED MATERIALS" will be measured for payment as the actual net weight in tons of material delivered to the treatment/recycling/disposal facility. Such determinations shall be made by measuring each hauling vehicle on the certified permanent scales at the treatment/recycling/disposal facility. Total weight will be the summation of weight bills issued by the facility specific to this Project. Excess excavations made by the Contractor beyond the payment limits specified in Specification Sections 2.02, 2.03, 2.06, and 2.86, or the Contract Special Provisions (as appropriate) will not be measured for payment and the Contractor assumes responsibility for all costs associated with the appropriate handling, management and disposal of this material.

The disposal of excavated materials, originally anticipated to be controlled materials, but determined by characterization sampling <u>not</u> to contain concentrations of regulated chemicals (non-polluted or "clean" materials) will <u>not</u> be measured for payment under this item but will be considered as surplus excavated materials and will be paid in accordance with Article 1.04.05.

Any materials stored in the WSAs, and which are reused within Project limits, will not be measured for payment under this item. This material will be paid for under Item 0202318A – Management of Reusable Controlled Material or in accordance with Article 1.04.05 in the item's absence.

Equipment decontamination, the collection of residuals, and the collection and disposal of liquids generated during equipment decontamination activities will not be measured separately for payment.

Any material processing required by the Contractor-selected disposal facility, including the proper disposal of all removed materials other than creosote treated wood, will not be measured for payment.

Basis of Payment:

This work will be paid for at the Contract unit price, which shall include the loading and transportation of controlled materials from the WSAs to the treatment/recycling/disposal facility; the fees paid to the facility for treatment/recycling/disposal; the preparation of all related paperwork; and all equipment, materials, tools, and labor incidental to this work. **This unit price will be applicable to all of the listed disposal facilities and will not change for the duration of the Project.**

This price shall also include equipment decontamination; the collection of residuals generated during decontamination and placement of such material in the WSA; and the collection and disposal of liquids generated during equipment decontamination activities.

Pay Item	Pay Unit
Disposal of Controlled Materials	Ton

ITEM #0202452A - TEST PIT

Description: This work shall consist of the excavation of test pits where necessary to locate or examine utilities, subsurface structures, pipes, soils, groundwater, or any other obstacles or conditions.

This work shall consist of the satisfactory removal of all materials including, but not limited to, sawcutting pavements and sidewalks, pavement and sidewalk removal, excavation, shoring and bracing, water removal from within pit, stockpiling, satisfactory disposal of surplus or unsuitable material, backfilling, compacting, pavement repair, sidewalk repair, etc.

Test pits shall be dug as necessary for the Contractor to determine subsurface conditions as indicated on the Contract Drawings or as directed by the Engineer.

This work shall include the coordination with the affected utility companies. Any damage caused by the Contractor or Subcontractors, as determined by the Engineer, shall be corrected by the Contractor in accordance with these specifications.

Materials: All materials shall be provided by the Contractor and shall meet the current standards of the affected service.

Construction Methods: Coordinate excavation of test pits with respective utility company, or other owners having facilities in the vicinity. Check with "Call Before You Dig", 1/800/922-4455 before digging.

Give sufficient notice and allow ample delay time for others to perform necessary work.

Notify the Engineer one-week in advance of digging each test pit.

Perform all work in conformance with applicable safety codes.

Sawcut pavement, sidewalk, curbs, or other hard surface materials in neat and straight lines. Excavate pits, providing clean-cut vertical sides. Provide sheeting, bracing, and dewatering wherever necessary.

Dig test pits ensuring that underground utilities or structures are not damaged. The Contractor shall excavate by hand methods where necessary to ensure that underground utilities or structures are not damaged. It shall be the Contractor's sole responsibility for any damages incurred during excavation operations. Any damages shall be repaired or replaced by the Contractor to the satisfaction of the Engineer at the Contractor's own expense.

The Contractor shall measure and record the size, configuration, exact horizontal and vertical location of all utilities, pipes or other obstacles uncovered in the pits. Submit information in written or sketch form to the Engineer and respective utility companies for review. Notify the Engineer of any revealed conflicts which may require design revisions, relocations and/or

adjustments as early as possible to avoid unnecessary delays. No work shall be started within areas of conflict until so authorized.

Test pits shall be filled and area restored by end of work shift.

Do not backfill pits until authorized. Compact backfill materials to at least 95% of maximum density to the subgrade elevation or as otherwise directed.

The surface of test pit areas shall be restored to a condition equal or better than original as approved by the Engineer.

Method of Measurement: When previously approved by the Engineer, the item, Test Pit will be measured for payment by the number of test pits performed on the project.

Corrective work required repairing damage caused by the Contractor or its Subcontractors shall not be measured for payment.

Basis of Payment: The item, "Test Pit", will be paid for at the Contract unit price each for "Test Pit", which price shall include all materials, equipment, labor and tools necessary for or incidental to the satisfactory completion if this work.

Pay Item	Pay Unit
Test Pit	EA.

ITEM #0202911A – CONDITION SURVEY (SITE NO. X)

Description: Work under this item consists of performing a condition survey and monitoring of the existing historic properties during construction located at the following sites:

150 Main Street (Site No. 1)
22 Hooker Court (Site No. 2)
95 Riverside Avenue (Site No. 3)
106 Riverside Avenue (Site No. 4)
89 / 119 Riverside Avenue (Site No. 5)
165 Riverside Avenue (Site No. 6)
273 Riverside Avenue (Site No. 7)
284 Riverside Avenue (Site No. 8)
300 Riverside Avenue (Site No. 9)
380 Riverside Avenue (Site No. 10)

Work shall include, but not necessarily be limited to:

1. Conducting pre- and post-construction condition surveys.

2. Laying out, furnishing, installing, protecting, maintaining, monitoring, and preparing reports for all monitoring instrumentation: Crack Monitors, Deformation Monitoring Points, and Vibration Monitors.

3. Replacement of failed, damaged or stolen instrumentation.

4. Notifying the Engineer at 50% of Limiting Value and taking immediate remedial action to prevent the Limiting Values from being reached. Meeting with the Engineer to review current field conditions to determine further steps to be taken, before exceeding the Limiting Values.

5. Adjusting roadway and sidewalk excavation means and methods in order not to exceed the Limiting Values.

6. Removal of all monitoring instruments, Crack Monitors, Deformation Monitoring Points, and Vibration Monitors as specified herein, or as directed by the Engineer at the completion of construction activities.

Materials:
Crack Monitors:
Crack monitors shall be two-piece acrylic plate type monitors with crosshairs on one piece and fine grid on the other, mounted on each side of the crack with appropriate screws or quick setting epoxy as manufactured by Avongard Products, U.S.A., Ltd., Preservation Resource Group, Inc.

(PRG) or approved equal.

Deformation Monitoring Points (DMPs):
DMPs shall be bolts, targets or other such devices used for monitoring by conventional survey methods. The target shall be the head of a stainless or galvanized steel bolt drilled and grouted into the structure or other devices approved by the Engineer that will allow repeatable and reproducible elevation readings when measured with conventional survey equipment.

Vibration Monitors:
Provide seismographs or vibration monitors, capable of measuring and recording particle velocity data and frequency in three mutually perpendicular directions. The Contractor's vibration specialist shall install, maintain, and calibrate the vibration monitoring instruments in accordance with the instrument manufacturer's recommendations. Any instrument showing indication of damage, malfunction, or erratic functioning shall be replaced within 24 hours with a calibrated, functioning instrument.

Construction Methods:
Pre and Post-Conditions Surveys and Crack Monitoring:
The Contractor shall engage the services of a qualified, independent professional, acceptable to the Engineer to conduct pre- and post- construction surveys of the main structure, and other attached structures, plant, or facilities at each site. Work under this item included furnishing all necessary labor, equipment and materials to perform the condition surveys and monitor cracks. Work also includes contacting the owners by certified letter to obtain permission for entry required for the work.

A pre-construction condition survey shall be completed, and 5 copies of the survey and initial monitoring measurements submitted at least 10 days prior to the start of any roadway and sidewalk excavation, or other operations using impact or vibratory equipment within 200 feet of the structures, or at an earlier stage of construction if requested by the Engineer. Initial crack monitoring measurements shall be included in this report.

The pre-construction condition survey shall consist of a visual inspection, photograph and video documentation, and written description of the exterior basement and first floor levels of the various structures examined with an emphasis on the foundation walls and any brick facade. Readily accessible portions of the interior of the structures shall also be inspected. Descriptions shall identify any existing cracks, damage, or other defects and shall include such information to make it possible to determine the effect, if any, of the construction operations on the defect. Where significant cracks or damage exists, or for defects too complicated to describe in words, photographs shall be taken and made part of the record. In addition, the significant cracks shall, with consent of the owner, be instrumented with crack monitors to record any movement of the crack. Where crack monitors are not installed, crack width measurements shall be made with suitable measuring devices. Initial crack monitoring measurements shall be recorded in the presence of Engineer and Owner's representative. All parties shall sign the record copy of the form used to record the initial readings.

The initial record of each property examined shall be signed by the representatives present and, if practicable, by the Owners of the property, whether or not they are present at the examinations.

A post-construction condition survey will be conducted upon completion of all construction activities or prior to extended construction shut down periods, i.e. winter shutdowns or contractor downtime, or at a later date if requested by the Engineer.

The post-construction condition survey shall repeat the process used in the pre-construction survey, paying particular attention to any areas where complaints of damage have been received or damage claims have been filed. Notice shall be given to all interested parties so that they may be present during the post-construction condition survey. A form shall be provided to all representatives attending the post-construction survey showing the initial crack reading measurements and shall provide a location to record the final measurements. Crack monitors shall be read during the final examination and can be removed if no change is noted from the initial readings. If a change is noted, the crack gauge shall remain in place until approval is given by the Engineer to remove the crack monitor. Mounting hardware or adhesives shall be removed and the surface restored when the crack gauges are removed. Representatives present shall sign the record copy of the monitoring form used to record the final readings. Crack monitors shall not be removed until the Owner or Owner's representative signs the record copy of the form recording the final crack monitoring readings.

The final record of each property examined shall be signed by the representatives present and, if practicable, by the Owners of the property, whether or not they are present at the examinations.

The Contractor shall submit 5 copies of the post-construction condition surveys including all documentation to the Engineer within 10 days of the completion of the post- construction condition survey.

Monitoring Requirements:

A. Monitoring Instrumentation Installation:

1. Install DMPs and Vibration Monitors at the locations directed by the Engineer. For bidding purposes, assume that:
   - three (3) Vibration Monitors will be required per site for simultaneous deployment (thirty [30] total); and
   - three (3) DMPs will be required on each of the structures (thirty [30] total).

2. Crack Monitor locations will be determined and installed as part of the pre-construction condition survey.

3. All DMPs and Crack Monitors shall be installed in the presence of the Engineer.

4. Contractor to coordinate uninterrupted access, power supply (if applicable) and wireless signal (if applicable) for Vibration Monitors.

5. All DMPs and crack monitors shall be securely fixed at the approved locations and position, so that the instruments are capable of resisting disturbance from vandalism. Establish the initial elevation of DMPs to a precision of 1/8 inch (3 mm).

6. DMP benchmarks shall be selected by the Contractor and protected from damage for the duration of the work. Replace damaged or lost benchmarks at no cost to the Owner.

7. The Engineer reserves the right to modify the DMP and Vibration Monitor layout as is deemed necessary to monitor the impact of the Contractor's proposed method of construction. The DMPs shall be arranged so that monitoring can continue until completion without interruption. Adequate access for maintenance and reading of the DMPs shall be provided.

B. Monitoring Schedules and Submittal:

1. All DMPs and Crack Monitors / crack measurement points shall be installed and initial readings completed with the Pre-construction condition survey as noted above.

   In addition to the initial readings, DMPs and Crack Monitors / crack measurement points shall be monitored:

   - Prior to the start of and then at least weekly when performing roadway or sidewalk excavation, or other activities using impact or vibratory equipment within 100 feet of the structures.

   - One week after completion of all roadway and sidewalk excavation, or other activities using impact or vibratory equipment within 200 feet of the structures, and then weekly until there is no change in readings for at least three consecutive readings.

   The Engineer may increase the frequency of monitoring at no additional cost should there be any changes in the measurements or other indications of movement.

   Measurements shall be submitted on a form showing both the past and current measurements. A hard copy of the form with any changes from the previous days measurements circled shall be given to the Engineer by the morning after the day the readings were taken. A typed and signed form shall be submitted on a weekly basis during periods requiring monitoring, unless the Engineer approves submittal less frequently.

2. The Contractor shall monitor construction induced vibrations continuously when performing roadway or sidewalk excavating using impact/vibratory methods or using

other impact equipment within 200 feet of any given site. If monitoring results associated with construction activities at certain distances from the structures result in readings less than 25 percent of the limiting values, the Engineer solely at his discretion may reduce the continuous monitoring requirement.

3. The Contractor's vibration specialist shall maintain a log of all vibration producing activities for which ground vibrations were monitored. The vibration monitoring log shall include the recorded maximum peak particle velocity and the associated frequency and the date and time for each event recorded and the type and location of the vibration producing activity, location of monitoring instruments, and the closest distance from the vibration producing activity to the monitoring instrument. In addition to immediate verbal and email notifications of significant vibrations, the vibration specialist shall submit weekly reports of vibration monitoring to the Engineer during periods when such monitoring is required. The monitoring reports shall include the vibration monitoring record data, a location plan showing areas of construction activity and monitoring locations, and a written narrative summarizing the vibration monitoring performed and the results.

C. The Contractor shall respond to the monitored readings from instrumentation as follows:

1. Implement remedial action if readings approach the Limiting Values of ½" for DMPs, 1/8" for Crack Monitors / crack measurement points, and a peak particle velocity (i.e. ground vibrations) at vibration monitoring locations of 0.5 inch per second. The term "peak particle velocity" shall be considered to mean the resultant vector sum of particle velocities in three mutually perpendicular directions at any instant in time.

2. Take all necessary steps so that the limiting values are not exceeded. The Contractor may be directed to suspend activities in the affected area with the exception of those actions necessary to avoid exceeding the limiting value.

3. If any readings exceed 50 percent of the Limiting Values, the Contractor shall:

   a. Halt operations that are causing the instrument response values to reach 50 percent of the Limiting Value.

   b. Meet with the Engineer to present response actions.

   c. Implement the reviewed plan of action, which includes modifications to the Contractor means and methods necessary to reduce the potentially damaging effects of the construction activities such that the Limiting Values are not reached.

D. Damage to Instrumentation:

1. The Contractor shall protect all DMPs, Crack Monitors, and Vibration Monitors from damage due to construction operations, weather, and vandalism.

If an instrument is damaged or unusable, the Contractor's instrumentation personnel shall replace the damaged DMP or Crack Monitor within 72 hours, at no additional cost to the State. The Engineer will be the sole judge of work stoppage in the vicinity of the damaged or unusable instrument until it is again operational, at no additional cost to the State.

E. Removal of Instruments:

1. Upon approval of the Engineer, the Contractor shall remove all above instrumentation and restore the surfaces to the Owner's satisfaction.

2. All instruments or portions hereof removed by the Contractor shall remain the property of the Contractor.

Method of Measurement: Within sixty (60) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for approval a cost breakdown of his lump sum bid prices by site for these items. The submission must include substantiation showing that the cost breakdowns submitted are reasonable based on the Contractor's lump sum bids. The cost breakdown shall be in accordance with the following payment schedule:

Pre-Construction Surveys: The cost to develop and perform pre-construction surveys meeting site requirements.

Furnishing and Installation of Monitoring Devices: The cost to procure and install all required devices at each site.

Monitoring and Maintenance of Devices: The number of months and monthly cost to perform the required monitoring and prepare documentation at each site.

Post-Construction Surveys and Removal of Monitoring Devices: The cost to perform the post-construction surveys and remove monitoring devices at each site.

Basis of Payment: This work will be paid for at the contract lump sum price for each site, which price shall include all materials, tools, equipment and labor for the required work at each site including: the services of an independent professional to perform the pre- and post- construction surveys; furnishing, installation, monitoring, and removal of crack monitor gauges/measurement points and DMPs; furnishing, installation, monitoring, and removal of instrumentation to record vibration; preparation of reports; notification of the Engineer of any readings which reach 50 percent of the Limiting Values; and adjusting the means and methods in order not to exceed the Limiting Values.

Pay Item	Pay Unit
Condition Survey (Site No. 1)	L.S.
Condition Survey (Site No. 2)	L.S.
Condition Survey (Site No. 3)	L.S.

Condition Survey (Site No. 4)	L.S.
Condition Survey (Site No. 5)	L.S.
Condition Survey (Site No. 6)	L.S.
Condition Survey (Site No. 7)	L.S.
Condition Survey (Site No. 8)	L.S.
Condition Survey (Site No. 9)	L.S.
Condition Survey (Site No. 10)	L.S.

ITEM #0216012A – CONTROLLED LOW STRENGTH MATERIAL

Description: Controlled Low Strength Material (CLSM) is a self consolidating, rigid setting material to be used in backfills, fills, structural fills and elsewhere as indicated on the plans, or as directed by the Engineer. The flow and set time characteristics of CLSM shall be designed to meet the specific job conditions. All CLSM material covered by this specification shall be designed to be hand excavatable at any time after placement. It shall be composed of a mixture of portland cement, aggregate, and water with the option of using fly ash, slag cement, air-entraining agents, and other approved admixtures.

Materials: All materials utilized in the CLSM mix design shall be in accordance with the applicable requirements of Article M.03.01

Composition: The composition of the CLSM shall be in accordance with the requirements set forth in Article M.03.01-General Composition of Concrete Mixes, as well as the applicable sections of ACI 229R. The Contractor shall submit each proposed mix design, with all supporting data, to the Engineer for review and approval at least two weeks prior to its use.

The setting time of CLSM materials shall be designed so as to achieve the strength necessary to comply with the time constraints called for under the Maintenance and Protection of Traffic requirements of the project specifications. The use of chloride accelerators is not permitted.

The minimum compressive strength of the CLSM material shall be 30 pounds per square inch (psi) and the maximum compressive strength of the CLSM shall be 150 pounds per square inch (psi) when tested in accordance with ASTM D4832 after 56 days.

The CLSM mix design shall utilize a nominal maximum size of No. 8 aggregate as specified in M.01.01.

CLSM mixes shall have a minimum of 20% entrained air when tested in accordance with AASHTO T152.

Construction Methods: CLSM shall only be placed when the ambient temperature is at least 32° F and rising. CLSM material shall be deposited within 2 hours of initial mixing.

CLSM may be placed by chutes, conveyors, buckets or pumps depending upon the application and accessibility of the site. Should voids or cavities remain after the placement of the CLSM, the Contractor shall modify the placement method or flow characteristics of the CLSM. Voids or cavities which have not been filled properly shall be corrected as directed by the Engineer and at the Contractor's expense.

Method of Measurement: This work will be measured for payment by the actual number of cubic yards of "Controlled Low Strength Material installed and accepted within the pay limits

shown on the contract plans or as directed by the Engineer.

Basis of Payment: This work will be paid at the contract unit price per cubic yard "Controlled Low Strength Material," which price shall include all materials, equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
Controlled Low Strength Material	c.y.

ITEM #0686860.12A – 12" SLOTTED DRAIN PIPE

Description: This item shall consist of furnishing and installing slotted drain pipe to the dimensions, details and of the size, length and location shown on the plans or ordered by the Engineer.

Materials: The pipe shall be as specified in Article M.08.01-2. The inlet aperture shall be longitudinal on top of the pipe and may be continuous or intermittent. The opening in the pipe wall may be fabricated in the form of continuous bar risers and spacers as indicated in the plans. End caps shall be as provided by the manufacturer.

The pipe shall be helically corrugated with a continuous welded or lock seam. Pipe ends shall have two rolled annular corrugations on each end for jointing.

Concrete backfill shall be as specified in Article M.03.01, Class PCC04460 or pavement type. Concrete shall be cured as specified in Section M.03.

Expansion joint filler shall meet the requirements of Article M.03.08-4(a).

Protective compound shall meet the requirements of Article M.03.09.

Bar Riser and Spacer Type:

> Riser assemblies shall be fabricated from structural steel, in accordance with the dimensions on the plans. The riser assemblies shall be hot dip galvanized in accordance with ASTM A123. The assemblies shall be welded to the corrugated pipe on each side of the riser at the location of the solid web spacers. The riser shall terminate 1 inch from the ends of each pipe length to allow clearance for single bolt coupling bands. The ends of the riser shall be closed with a suitable welded plate where solid web spacers do not come to the ends of the riser.
>
> The maximum deviation from straight in both the vertical and horizontal plane of the riser assembly shall not exceed 3/4 inch per 20-foot length.

Construction Methods: All slotted drain pipe and related fittings shall be handled and assembled in accordance with the manufacturer's instructions except as modified in the Contract or as ordered by the Engineer.

Placement of concrete shall be in accordance with Article 6.01.03-II. The Contractor shall ensure all voids are filled with the concrete.

Care shall be taken in placing concrete backfill immediately adjacent to the slotted drain pipe risers to avoid damage to the pipe and to prevent pipe misalignment. The concrete shall be thoroughly consolidated using internal vibrators. Sufficient hold-downs shall be provided by the Contractor to prevent the slotted drain pipe from floating during concrete placement.

The Contractor shall slope the surface of the concrete towards the slotted drain pipe as detailed in the Contract. The Contractor shall provide a suitable cover for the openings to prevent concrete backfill or any other foreign debris from entering the pipe or sealing the opening during the installation and subsequent curing periods.

Transverse contraction joints shall be either formed or sawed in the concrete backfill at 20-foot intervals unless the concrete abuts concrete curbing. In this case, the transverse joints shall be 3/8-inch wide and 2 1/2 inches deep. Sawing shall be done within 24 hours after placement. Care shall be taken not to saw into the slotted drain pipe.

An expansion joint shall be provided in the concrete backfill at every 500 feet of continuous slotted drain pipe installed, or at every location where the concrete backfill abuts a drop inlet, manhole, or other similar structure. This joint shall be formed for the full depth of the backfill concrete and shall be a minimum of 3/4 inch wide.

A longitudinal joint shall be provided if the concrete backfill is placed adjacent to concrete pavement. This joint shall either be formed or sawed 1/4-inch wide and 2 1/2 inches deep. Finish of concrete will be similar to burlap drag finish.

After curing, the transverse, expansion, and longitudinal joints shall be thoroughly cleaned to remove any contaminants or laitance remaining from forming or saw cutting. Before sealing, a backer rod bond breaking material such as closed cell polyurethane rod shall be placed so that a sealer width to depth ratio of 1:1 will be achieved. The joints shall then be sealed with an elastomeric polymer sealer. The methods and materials used to construct the various joints shall be chosen by the Contractor subject to the approval by the Engineer.

Movement of construction equipment and all other vehicles and loads over and adjacent to any slotted drain pipe shall be at the Contractor's risk. Any pipe or backfill which becomes damaged or disturbed shall be replaced or repaired as directed by the Engineer at the expense of the Contractor. Suitable temporary crossovers consisting of steel plates or other materials approved by the Engineer shall be employed for a minimum of 7 days following concrete backfill operations in all areas where vehicular traffic must be maintained or until such time as the slotted drain pipe installation can withstand loading without damage. All concrete surfaces shall receive a protective coating.

End cap installation shall be as recommended by the manufacturer.

Method of Measurement: Slotted Drain Pipe will be measured in linear feet along the top centerline, including elbow, as designated on the plans, or as directed by the Engineer.

Basis of Payment: This work will be paid for at the Contract unit price per linear foot for "12” Slotted Drain Pipe", complete and accepted in place, which price shall include all excavation, pipe, saw cutting, end caps, elbows, concrete, protective coating, grate, and all materials, tools, equipment, and labor incidental thereto.

Pay Item	Pay Unit
12” Slotted Drain Pipe	l.f.

ITEM #0686860.12A

Rev. Date 06/23/2021

ITEM #0915000A – TREE PROTECTION

Article 9.15.01 – Description: This item shall consist of the protection of selected trees, and others as indicated by the Engineer, by furnishing and installing systems to protect the main trunk and root system of trees designated to remain within the proximity of the construction areas. This item shall include furnishing and installing fencing to delineate tree protection zones and furnishing and installing trunk armoring in areas where delineation of tree protection zones is not feasible, as shown on the drawings or as directed by the Engineer, and in accordance with these specifications.

Article 9.15.02 – Materials: The materials for trunk armoring shall consist of 2" x 4" lumber tied to the trunk with 9 gauge wire top and bottom. The materials for the drip-line fencing shall consist of heavy-duty oval orange mesh fence, 9 gauge tension wire, and heavy gauge steel u-channel posts. All materials shall be installed as shown on the plans.

Article 9.24.03 – Construction Methods: Where tree protection is required, the area to be protected shall be thoroughly cleared of all vegetation. Care shall be taken to assure that the trees, shrubs, or other woody plants which are to be preserved in place are not scarred or damaged by operations under this item. The area to be protected shall be the area of ground surface lying within the drip line of the outermost branches of the tree concerned.

While grading near crab apple trees, and others as indicated by the Engineer, if roots are found, located or exposed, the contractor shall regrade the slope as approved by the Engineer, to ensure tree roots are no longer exposed or vulnerable to being damaged.

Article 9.24.04 – Method of Measurement: Tree Protection will be paid on a Lump Sum basis, for all trees requiring and receiving protection per the plan.

Article 9.24.05 – Basis of Payment: This work shall be paid for at the Contract unit price for "Tree Protection" which price shall be full compensation for protective fencing, trunk armoring, wiring, fencing, heavy gauge steel u-channel posts, for clearing the ground surface, for placing the pervious material and all materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
Tree Protection	L.S.

ITEM #0969062A - CONSTRUCTION FIELD OFFICE, MEDIUM

Description: Under the item included in the bid documents, adequate weatherproof office quarters with related furnishings, materials, equipment, and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of CTDOT forces and others who may be engaged to augment CTDOT forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment, and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	Small	Med.	Large	Extra Large
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	720	1400	2800
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Unless otherwise approved by the Engineer, office space shall be partitioned into segregated work areas for each user as follows:

A. Each work area (or cubicle) shall be a minimum of 8 feet × 8 feet, with full height walls or tall cubicle partitions (minimum 6 feet high), placed to provide a minimum of 6 feet walking space around and between each user work area (for social distancing).
B. Only one user (workstation/desk) per work area.
C. Desks, tables, and other work surfaces shall be arranged so that adjacent users do not face each other.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by CTDOT personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds, and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the CTDOT and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred, or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel, wiring, outlets, etc., to serve the electrical requirements of the field office, including lighting, general outlets, computer outlets, electronics, etc., and meet the following minimum specifications:

A. 120/240 volt, 1 phase, 3 wire
B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
D. Additional 120-volt, single phase, 20-amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
E. Additional 120-volt, single phase, 20-amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120-volt, straight blade.
H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)

I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient and properly operating, heating, air conditioning, and ventilation equipment to maintain a temperature range of 68º-80º Fahrenheit within the field office. The Contractor shall increase ventilation rates and increase the percentage of outdoor air that circulates into the system where possible.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium, and Large field office this shall consist of the installation of one (1) telephone line for phone/voice service. For an Extra-Large field office this shall consist of three (3) telephone lines for phone/voice service. The Contractor shall pay all charges.

The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02.

Data Communications Facility Wiring: As soon as the field office is in place, the Contractor shall propose a central wiring location, to designated CTDOT District personnel for the review and approval of CTDOT OIS. The central wiring location shall be large enough to house the Contractor supplied modem, Contractor supplied patch panel (if applicable), and CTDOT OIS supplied LAN switch and router. The Contractor shall supply the number of Category 6A 568B patch panels necessary to support the anticipated number of networked devices. The central wiring location shall also house the data circuit with appropriate power requirements and Category 6A cable run to the location of the installed data circuit. Power shall be provided at the central wiring location to power the hardware installed.

The Contractor shall install CAT 6A cables from the central wiring location to each workstation, Smart Board/TV location, Multifunction Laser Printer/Copier/Scanner and any other networked devices. The CAT 6A cables shall terminate in a (Category 6A 568B) wall or surface mount data jack at each networked device. Each run / jack shall be clearly labeled with an identifying Jack Number. The CAT 6A cables shall be terminated at the central wiring location with a service loop and RJ45 connectors. The Contractor shall also supply CAT6A cables of adequate length to reach from the wall or surface mount jack to the device being networked.

The number of networked devices anticipated shall be at least equal to the number of personal computer tables, Multi-Function Laser Printer/Copier/Scanner, Contractor supplied devices, and smartboards listed below.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field office at least the following to the satisfaction of the Engineer:

Furnishing Description	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-	-	-	1
Personal computer tables (4 ft. x 2.5 ft.).	2	3	5	8
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafter's stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Conference table, 3 ft. x 12 ft.	-	-	-	1
Table – 3 ft. x 6 ft.	-	-	-	1
Office Chairs.	2	4	8	20
Mail slot bin – legal size.	-	-	1	1
Non-fire-resistant cabinet.	-	-	2	4
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Storage racks to hold 3 ft. x 5 ft. display charts.	-	-	1	2
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1	1	2	2
Double door supply cabinet with 4 shelves and a lock – 6 ft. x 4 ft.	-	-	1	2
Case of cardboard banker boxes (Min 10 boxes/case)	1	1	2	3
Open bookcase – 3 shelves – 3 ft. long.	-	-	2	2
White Dry-Erase Board, 36" x 48" min. with markers and eraser.	1	1	1	1
Interior partitions – 6 ft. x 6 ft., soundproof type, portable and freestanding.	-	-	6	6
Coat rack with 20 coat capacity.	-	-	-	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electric wall clock.	-	-	-	2
Electronic Level	1	1	1	2

Furnishing Description (continued)	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Telephone.	1	2	3	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8
8 Outlet Power Strip with Surge Protection	3	4	6	9
Rain Gauge	1	1	1	1
Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.	-	-	-	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1
Hot and cold-water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f., 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Multi-Function Laser Printer/Copier/Scanner combination unit, network capable, as specified below under Field Office Technology	1	1	1	1
Field Office Internet Service and Hardware as specified below under Field Office Technology	1	1	1	1
Digital Camera as specified below under Field Office Technology	1	1	3	3
Teleconferencing Equipment as specified below under Field Office Technology	-	-	-	-
Infrared Thermometer, including annual third-party certified calibration, case, and cleaning wipes.	1	1	1	2
Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1
T-handle concrete cylinder mold splitter as specified below under Concrete Testing Equipment	1	1	1	1
Smart Phones as specified under Computer Related Hardware and Software.	-	-	-	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Field Office Technology:
The Contractor shall supply the internet service connection, Contractor supplied modem, associated hardware, Digital Camera(s), Smart Phones, Multifunction Laser Printer/Copier/Scanner, Conference Room Teleconferencing Equipment, associated hardware and software meeting the requirements of this specification, as well as the latest minimum specifications posted, as of the Project advertising date, at CTDOTs Construction Field Office Technology web site.

Within 10 calendar days after the signing of the Contract, but before ordering/purchasing the required Digital Camera(s), Smart Phones, Multifunction Laser Printer/Copier/Scanner, Teleconferencing Equipment, as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The modem, digital cameras, smart phones, and Teleconferencing Equipment will be reviewed by CTDOT District personnel for approval. The Multifunction Laser Printer/Copier/Scanner will be reviewed by the CTDOT OIS. The Contractor shall not purchase the hardware, software, or services until the Administering CTDOT District informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation, setup of the internet service connection and the configuration of the modem with a static IP address. Installation shall be coordinated with CTDOT District and Project personnel. Specifically, the Contractor shall supply the District with a Static IP Address, Subnet Mask Address and Gateway Address immediately upon establishment of internet service connection to assist with OIS equipment installation.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the CTDOT administering District, a minimum of 2 working days in advance of the proposed delivery or installation of the modem / Internet Service Connection, Digital Camera(s), Smart Phones, Multifunction Laser Printer/Copier/Scanner, Teleconferencing Equipment, as well as associated hardware, software, supplies, and support documentation. The hardware and cabling shall be installed in the field office to and at locations acceptable to the Engineer. Adequate electric service shall be supplied at all hardware and workstation locations to support the Department staff and hardware specified.

The Contractor shall provide all supplies, paper, maintenance, service, and repairs (including labor and parts) for the printer(s), copiers, field office Wi-Fi / internet service, and other equipment and facilities required by this specification for the duration of the Contract. All repairs of contractor supplied equipment and internet service must be performed with-in 48 hours. If the repairs require more than 48 hours, then an equal or better replacement must be provided.

Once the Contract has been completed, the Contractor supplied hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply, install and maintain a rain gauge for the duration of the Project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rainwater from the top of the post into the rain gauge. The location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches. If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Electronic Level: The Contractor shall supply and maintain in working order, for the duration of the Contract, the number of electronic levels, identified in the Additional Equipment, Facilities and Services table of this specification. The electronic level(s) shall meet the following requirements:

A. 48-inch length, box beam type
B. IP65 water and dust proof
C. 0.1-degree accuracy
D. Backlit display
E. Carrying case included
F. New or like new condition

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

A. Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
B. Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
C. Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T 119, Standard Test Method for Slump of Hydraulic-Cement Concrete.
D. T-handle concrete cylinder mold splitter.

All testing equipment will remain the property of the Contractor at the completion of the Project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars ($5,000) to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the CTDOT shall be an additional named insured on the policy. Insured losses shall include, but not be limited to, theft, fire, and physical damage. The CTDOT will be responsible for all

maintenance costs of CTDOT owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current CTDOT equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, CTDOT may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, CTDOT will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During field office occupancy by CTDOT, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of professional cleaning including vacuuming carpet, washing and waxing floors, cleaning restrooms, removal of trash, general cleaning, etc.

Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance way areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the Construction Field Office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer related hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, (Type)," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements specified herein.

Pay Item	Pay Unit
Construction Field Office, (Type)	Month

ITEM NO. 0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description *is supplemented by the following:*

The Contractor shall maintain and protect traffic as described by the following and as limited in the special provision for Section 1.08 - Prosecution and Progress:

Route 72 (Riverside Avenue)

The Contractor shall maintain and protect a minimum of 1 lane of traffic in each direction with each lane on a paved travel path not less than 11 feet in width, with the following exceptions:

1. During the allowable periods when the Contractor is actively working, the Contractor will be permitted to maintain and protect at least an alternative one-way traffic operation on a paved travel path not less than **11 feet in width and no more than 300 feet in length**, unless specified elsewhere in the Contract. There shall be no more than one alternative one-way traffic operation within the Project Limits without prior approval of the Engineer.
2. The Contractor will NOT be permitted to close Route 72 to through traffic and detour traffic.
3. The Contractor will be permitted to close pedestrian sidewalks and detour pedestrian traffic as shown in the Construction Traffic Control Plans, Plans 31 through 33 in this document. The Contractor shall notify the Engineer at least 14 days in advance of implementing the pedestrian detour.

All Other Roadways

The Contractor shall maintain and protect a minimum of 1 lane of traffic in each direction with each lane on a paved travel path not less than 11 feet in width, with the following exceptions:

1. During the allowable periods when the Contractor is actively working, the Contractor will be permitted to maintain and protect at least an alternative one-way traffic operation on a paved travel path not less than **11 feet in width and no more than 300 feet in length**, unless specified elsewhere in the Contract. There shall be no more than one alternative one-way traffic operation within the Project Limits without prior approval of the Engineer.

Commercial and Residential Driveways

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the Project limits. The Contractor will be permitted to temporarily close affected driveways while actively working with coordination and permission from the owner or proprietor.

Intermediate Term Sidewalk Closures

The Contractor shall maintain and protect existing pedestrian accommodations, or a minimum of 4 feet in width, on all existing sidewalks, sidewalk ramps, and access to pedestrian pushbuttons, with the following exception:

- During the allowable periods and when the Contractor is actively constructing pedestrian amenities or installing signal equipment, the Contractor will be allowed to close pedestrian sidewalks and sidewalk ramps and restrict access to pedestrian pushbuttons for no more than a continuous 48 hour period of time.

No more than two corners of an intersection may be closed for an intermediate term sidewalk closure at any time. Where all four corners of an intersection have sidewalks and sidewalk ramps, diagonal corners shall not be closed at the same time.

During the intermediate term sidewalk closure, all approaches to the sidewalk shall be blocked by Construction Barricade Detectable with Sidewalk Closed signs.

The Contractor shall ensure that traffic control signals with pedestrian phases where access to the pushbuttons cannot be provided are revised at the start of the closure to automatically activate the pedestrian phase every signal cycle.

Intermediate term sidewalk closures may be extended to 72 hours with prior approval of the Engineer.

Pedestrians:

The Contractor shall provide and maintain clear pedestrian travel paths (minimum 4 feet wide) on new or existing sidewalk or temporary walks on at least one side of the street at all times at the Project site.

If the Contractor proposes changes to the plans, or the Contract does not include plans, 30 days in advance of implementation, the Contractor shall submit plans and procedures to the Engineer for review. The submittal shall be in accordance with typical details of the Manual on Uniform Traffic Control Devices (MUTCD) for maintaining pedestrian sidewalk access during the reconstruction of the sidewalk. When a sidewalk or pedestrian route is closed, pedestrian traffic must be detoured or temporary sidewalk must be provided. Pedestrian detours and temporary sidewalks must meet ADA requirements. The appropriate signs for the pedestrian detour shall be installed in accordance with the MUTCD. All approaches to the closed sidewalks shall be blocked by Pedestrian Barricade with Sidewalk Closed signs. Temporary bituminous sidewalk and ramps, if required, will be paid under Contract Item "Temporary Pavement" and all pedestrian detour signage will be paid under Contract Item "Construction Signs."

When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility. Pedestrian traffic signal displays controlling closed crosswalks shall be covered or deactivated.

Pedestrians shall be detoured to existing crosswalks, or temporary crosswalks, which shall be located at intersections. If this is not possible, temporary midblock crosswalks may be installed, if directed by the Engineer. On-street parking shall be restricted for at least 50 feet in advance of any temporary crosswalk.

Article 9.71.03 - Construction Methods *is supplemented as follows:*

General

Unpaved travel paths will only be permitted for areas requiring full depth and full width reconstruction. The unpaved section shall be the full width of the road and shall be perpendicular to the travel lanes. The Contractor will be allowed to maintain traffic on processed aggregate for a duration not to exceed 10 calendar days and opposing traffic lane dividers shall be used as a centerline.

The Contractor is required to delineate any raised structures within the travel lanes, so that the structures are visible day and night, unless there are specific Contract plans and provisions to temporarily lower these structures prior to the completion of work.

The Contractor shall schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway or bridge section by the end of a work shift, or as directed by the Engineer.

When the installation of all intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall then install the final course of bituminous concrete pavement.

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3 foot shoulder between the work area and travel lanes, with traffic drums spaced every 50 feet. At the end of the work shift if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary bituminous concrete traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor, during the course of any active overhead construction work, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken.

At no time shall an overhead sign be left partially removed or installed.

When an existing sign is to be relocated or replaced, the work shall be completed during the same work shift.

The field installation of a signing pattern shall constitute interference with existing traffic operations and shall not be allowed, except during the allowable periods.

On limited-access highways, construction vehicles entering travel lanes shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at the posted speed limit, in order to merge with existing traffic.

Existing Signing

The Contractor shall maintain all existing overhead and side-mounted signs within the Project limits throughout the duration of the Project. The Contractor shall temporarily relocate signs and sign supports as many times as deemed necessary, and shall install temporary sign supports if necessary and as directed by the Engineer.

Requirements for Winter

The Contractor shall schedule a meeting with representatives of the Department, including the offices of Maintenance and Traffic, and the Town/City to determine any interim traffic control measures the Contractor shall accomplish prior to winter to provide safety to motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

Pavement Markings - Non-Limited Access Roadways

During construction, the Contractor shall maintain all pavement markings on paved surfaces on all roadways throughout the limits of the Project.

Temporary pavement markings shall be installed on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work shift.

Permanent Epoxy Resin Pavement Markings shall be installed on the final course of bituminous concrete pavement within 10 calendar days of the final pavement installation if no Pavement Marking Grooves are proposed.

Temporary Pavement Markings

Temporary pavement markings that will be in place for less than 72 continuous hours may consist of temporary plastic pavement marking tape at the Contractor's expense. Additionally;

1. These temporary pavement markings shall include centerlines, lane lines (solid and broken), and stop bars.
2. Centerlines shall consist of two 4 inch wide yellow markings, 2 feet in length, side by side, 4 inches apart, at 40 foot intervals.
3. Lane lines shall consist of 4 inch wide white markings, 2 feet in length, at 40 foot intervals.
4. No passing zones shall be posted with signs in those areas where the final centerlines have not been established on two-way roadways.
5. Stop bars may consist of two 6 inch wide white markings or three 4 inch wide white markings placed side by side.
6. The temporary plastic pavement marking tape shall be installed in accordance with Section 12.12.
7. The Contractor shall remove and dispose of the temporary plastic pavement marking tape prior to another course of bituminous concrete pavement being installed.

Temporary pavement markings that will be in place for 72 continuous hours or more should consist of temporary painted pavement markings and shall be installed in accordance with Section 12.09. The markings shall include centerlines, edge lines, lane lines (solid and broken), lane-use arrows, and stop bars on each intermediate course of bituminous concrete pavement and on any milled surface by the end of the work shift Edge lines and lane-use arrows are not required if the next course of bituminous concrete pavement will be placed within 10 calendar days.

All temporary pavement markings exposed throughout the winter shall be Epoxy Resin Pavement Markings, unless directed otherwise by the Engineer.

Temporary pavement markings, as described above, shall be maintained until the permanent pavement markings are installed.

Final Pavement Markings

Refer to Pavement Marking Groove special provisions for pavement marking requirements. Permanent epoxy resin pavement markings shall be installed in accordance with Section 12.10 and the applicable Traffic Engineering Standard Drawings.

If Temporary Plastic Pavement Marking Tape is installed, then the Contractor shall remove and dispose of these markings during the same work shift that the permanent epoxy resin pavement markings are to be installed. The cost of furnishing, installing and removing the Temporary Plastic Pavement Marking Tape shall be at the Contractor's expense.

Traffic Control During Construction Operations

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for a safer and more efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

Traffic Control Patterns

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder or is within the clear zone. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic.
- Duration of operation.
- Exposure to hazards.

Traffic control patterns shall be uniform, neat, and orderly in order to command respect from the motorist.

Lane reduction tapers should be placed so that the entire length of the taper is installed on a tangent section of roadway and the entire taper area can be seen by the motorist.

All existing conflicting signs shall be removed, covered with an opaque material, or turned so that they are not legible to oncoming traffic prior to implementing a traffic control pattern. The existing signs shall be uncovered or reinstalled once the pattern is removed.

A buffer area should be provided during installation of a traffic control pattern and maintained for the duration of the work. The buffer area shall be free of any equipment, workers, materials, and parked vehicles.

Construction Traffic Control Plans 19 through 25 should be used for moving operations such as line striping, rumble strips, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns are not required for vehicles on an emergency patrol type activity or for a short duration stop of up to one hour, as long as the equipment is contained within the shoulder. Flashing lights, arrow boards, truck-mounted or trailer-mounted impact attenuators, and appropriate Trafficperson(s) shall be used when required.

In a situation not adequately covered by the Construction Traffic Control Plans, the Contractor shall contact the Engineer for assistance prior to setting up a traffic control pattern.

Placement of Signs

Signs shall be placed in a position that allows motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs shall be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads) where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

Allowable Adjustment of Signs and Devices Shown on the Construction Traffic Control Plans

The Construction Traffic Control Plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans.

The proper application of the Construction Traffic Control Plans and installation of traffic control devices is dependent upon actual field conditions.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

Adjustments to the Construction Traffic Control Plans shall only be made at the direction of the Engineer.

Table 1 indicates the minimum taper lengths required for a lane closure based on the posted speed limit and lane width of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the Construction Traffic Control Plans cannot be achieved.

Table 1 – Minimum Taper Length

POSTED SPEED LIMIT (MPH)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE (FEET)	
	FREEWAYS	SECONDARY ROADS
30 OR LESS	180	165
35	245	225
40	320	295
45	540	495
50	600	550
55	660	605
65	780	715

1. Work Zone Safety Meetings

1.a) Prior to the commencement of work, a Work Zone Safety Meeting shall be conducted with representatives from DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the Project. DOT Traffic Engineering shall be invited to the Work Zone Safety Meeting. Other Work Zone Safety Meetings during the course of the Project should be scheduled as needed.

1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the Meeting to outline the anticipated traffic control issues during the construction of this Project. Any issues that can't be resolved at these Meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda shall include:

i. Review Project scope of work and time;
ii. Review Section 1.08, Prosecution and Progress;
iii. Review Section 9.70, Trafficpersons;
iv. Review Section 9.71, Maintenance and Protection of Traffic;
v. Review Contractor's schedule and method of operations;
vi. Review special concern areas: ramps, turning roadways, medians, lane drops, etc.;
vii. Open discussion of work zone questions and issues;
viii. Discussion of review and approval process for changes in Contract requirements as they relate to work zone areas.

2. General

2.a) Traffic control patterns shall only be installed if the required minimum number of signs, traffic cones, traffic drums, and other equipment (i.e. one Arrow Board for each lane closed, two Truck-Mounted or Trailer-Mounted Attenuators (TMAs), Changeable Message Sign, etc.) are on Site.

2.b) The Contractor shall have spare maintenance and protection of traffic equipment (TMAs, Arrow Board, Changeable Message Sign(s), construction signs, traffic cones, traffic drums, etc.) available at all times in case of mechanical failures, etc. Spare maintenance and protection of traffic equipment installed as a result of a sudden equipment breakdown shall be replaced by the Contractor within 24 hours.

2.c) Failure of the Contractor to have the required minimum number of signs, personnel, and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for lost time.

2.d) In cases of differences of opinion between the Contractor and the Inspection staff, the Contractor shall follow the directions of the Engineer. The matter shall be brought to the District Office for resolution immediately or, in the case of work after regular business hours, on the next business day.

3. Installing and Removing Traffic Control Patterns

3.a) Lane closures shall be installed beginning with the advance warning signs and proceeding forward toward the work area.

3.b) Lane closures shall be removed in the reverse order, beginning at the end of the work area, or traffic control pattern, and proceeding back toward the advance warning signs.

3.c) Stopping traffic may be allowed within the allowable hours stated in Section 1.08.04:

i. For those activities stated within the Contract.
ii. During paving, milling operations, or similar activities where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway so traffic does not travel across the longitudinal joint or difference in roadway elevation.
iii. To move slow moving equipment across live traffic lanes into the work area.

3.d) The Contractor shall adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

3.e) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging with or exiting from the mainline traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

3.f) Workers are prohibited from crossing the travel lanes on limited access roadways to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

4. Implementation of Rolling Road Block (RRB)

4.a) Temporary road closures using a RRB may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:

i. Refer to the Limitation of Operations Chart provided in Section 1.08.04 for the hours allowed for implementing a RRB operation. The Contractor shall only implement a RRB operation within the hours shown in the Chart.
ii. In areas with good sight lines and full shoulders, signs on the side of the road opposite the traffic pattern should be installed in a separate operation.
iii. TMAs equipped with Arrow Boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including TMAs and police vehicles, leave the shoulder or on-ramp and accelerate to normal roadway speeds in each lane. The vehicles will then position themselves side by side and decelerate to the RRB speed on the highway.

iv. A Pre-Warning Vehicle, as specified elsewhere in the Contract, shall be used to advise the motorists that sign pattern installation or removal is underway.

v. The RRB duration shall not exceed 15 minutes from the start of the traffic block until all lanes are opened as designated in the Limitation of Operations chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the District.

vi. RRB shall not be used to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. TMAs (and State Police if available) shall be used to protect the workers installing the taper in the additional lane.

vii. Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days shall be allowed for review and comment by the District.

viii. The Engineer and the Contractor will review and discuss the RRB procedures (including any revisions) in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety Meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, then the work will proceed as recommended by the Department. Any unresolved issues shall be addressed the following day.

5. Use of Arrow Boards

5.a) On limited access roadways, one Arrow Board shall be used for each lane that is closed. The Arrow Board shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the Construction Traffic Control Plans. Additional Arrow Boards shall be deployed if sight distances are limited.

5.b) On non-limited access roadways, the use of an Arrow Board for lane closures is optional. The roadway geometry, sight distance, and traffic volume shall be considered in the decision to use the Arrow Board.

5.c) A vehicle displaying an arrow board shall be equipped with high-intensity rotating, flashing, oscillating, or strobe lights.

5.d) The flashing arrow mode shall be used for lane closure (merge) tapers.

5.e) The flashing arrow mode shall not be used for temporary alternating one-way traffic operations or to laterally shift lanes of traffic.

5.f) The flashing double arrow mode shall only be used for closing a center lane on a multilane roadway where adjacent left and right lanes remain open.

5.g) For shoulder work or roadside work near the shoulder, the Arrow Board shall be positioned in the shoulder and the flashing alternating diamond mode should be used.

5.h) The flashing alternating diamond caution mode should also be used when supplemental Arrow Boards are positioned in an already closed lane.

6. Use of Truck-Mounted or Trailer-Mounted Impact Attenuators (TMAs)

6.a) On limited access roadways, lane closures shall use a minimum of two TMAs to install and remove traffic control patterns. If two TMAs are not available, then the pattern shall not be installed.

6.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to utilize the TMAs.

6.c) On limited access roadways, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane to establish the advance and transition signing. The Arrow Board mounted on the TMA shall be in the arrow mode when taking the lane. The sign truck and workers shall be at sufficient distance ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Portable Changeable Message Signs, signs, Arrow Boards, and cones/drums are installed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when traveling in the closed lane.

6.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when in the closed lane.

6.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to Section 18.06. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) shall be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

6.f) TMAs will be paid for in accordance with how the unit is used. If it is used as a TMA and is in the proper location as specified, then it will be paid for at the specified hourly rate for Truck-Mounted or Trailer-Mounted Impact Attenuator. When the TMA is used as an Arrow Board, it will be paid for at the daily rate for Arrow Board. If a TMA is used to install and remove a pattern

and is also used as an Arrow Board in the same day, then the unit will be paid for as a Truck-Mounted or Trailer-Mounted Impact Attenuator for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as an Arrow Board during the same day, then the unit will only be paid for at the daily rate as an Arrow Board.

7. Use of Traffic Drums and Traffic Cones

7.a) On limited-access highways, ramps, and turning roadways:

i. Traffic drums shall be used for taper channelization.
ii. Traffic drums shall be used to delineate raised catch basins and other hazards.
iii. Traffic cones with a minimum height of 42 inches may be used in place of drums in the tangent section of a closed lane or shoulder.
iv. Traffic cones less than 42 inches in height shall not be used.

7.b) On all roadways:

i. Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.
ii. Traffic cones shall not be left unattended.
iii. Traffic cones with a minimum height of 42 inches shall be used when the posted speed limit is 45 MPH or above.

7.c) Typical spacing of traffic drums and/or cones shown on the Construction Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

8. Use of Barricade Warning Lights

8.a) Barricade Warning Lights may be installed on channelizing devices when used in a merge taper. The Barricade Warning Lights shall flash in a sequential pattern when used in a merge taper. The successive flashing shall occur from the upstream end (beginning) of the merge taper to the downstream end (end) of the merge taper.

8.b) Type C Barricade Warning Lights may be used at night to delineate the edge of the travel way.
c) Type B Barricade Warning Lights shall be used on post-mounted advanced warning signs.

9. Use of Portable Changeable Message Signs (PCMS)

9.a) On limited access roadways, one PCMS shall be used in advance of the traffic control pattern for all lane closures. Prior to installing the pattern, the PCMS shall be installed and in operation, displaying the appropriate lane closure information. The PCMS shall be positioned ½ to 1 mile ahead of the start of the lane closure taper. If the distance to the nearest exit ramp is greater than the specified ½ to 1 mile distance, then an additional PCMS shall be positioned a sufficient distance

ahead of the exit ramp (and before the previous on-ramp where practical) to alert motorists to the work and therefore offer them an opportunity to take the exit.

9.b) On non-limited access roadways, the use of PCMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to use the PCMS.

9.c) PCMS should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the PCMS, it should be placed off the shoulder and outside of the clear zone. If a PCMS has to be placed on the shoulder of the roadway or within the clear zone, it should be placed on the paved shoulder with a minimum of five traffic drums placed in a taper in front of it to delineate its position. The taper shall meet minimum distance requirements for a shoulder closure. The PCMS shall be protected if it is used for a continuous duration of 36 hours or more.

9.d) The PCMS shall be removed from the clear zone and have the display screen cleared and turned 90 degrees away from the roadway when the PCMS is no longer required.

9.e) The PCMS should not be used within 1,000 feet of an existing PCMS or Variable Message Sign (VMS).

9.f) A PCMS message shall:

i. consist of no more than two phases;
ii. contain no more than three lines of text per phase;
iii. have no more than eight characters per line, including spaces.

9.g) The PCMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs. The PCMS should not be used for generic messages (ex.: Road Work Ahead, Bump Ahead, Gravel Road, etc.) or for messages that need to be displayed for long periods of time, such as during stage construction. These types of messages should be displayed with construction signs. Special signs shall be coordinated with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.

9.h) Typical messages that are allowed on the PCMS are shown below. Approval must be received from the Office of Construction for any message(s) different than the typical messages shown in Figure 1.

9.i) All messages shall comply with the information provided in Tables 2 and 3.

Message No.	Phase 1	Phase 2	Message No.	Phase 1	Phase 2
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	EXIT XX CLOSED	USE EXIT YY
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	EXIT XX CLOSED USE YY	FOLLOW DETOUR
5	RIGHT LANE CLOSED	MERGE LEFT	13	2 LANES SHIFT AHEAD	USE CAUTION
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	3 LANES SHIFT AHEAD	USE CAUTION
7	RIGHT LANE CLOSED	REDUCE SPEED			
8	2 RIGHT LANES CLOSED	REDUCE SPEED			

Figure 1: Typical PCMS Messages

Table 2: Acceptable Abbreviations

Word Message	Standard Abbreviation	Word Message	Standard Abbreviation
Access	ACCS	Minimum	MIN
Afternoon / Evening	PM	Minor	MNR
Ahead	AHD	Minute(s)	MIN
Alternate	ALT	Monday	MON
Avenue	AVE, AV	Morning / Late Night	AM
Bicycle	BIKE	Mount	MT
Blocked	BLKD	Mountain	MTN
Boulevard	BLVD	National	NATL
Bridge	BR	Normal	NORM
CB Radio	CB	North	N
Center	CTR	Northbound	NBND
Center	CNTR	Oversized	OVRSZ
Chemical	CHEM	Parking	PKING
Circle	CIR	Parkway	PKWY
Compressed Natural Gas	CNG	Pavement	PVMT
Condition	COND	Pedestrian	PED
Congested	CONG	Place	PL
Construction	CONST	Pounds	LBS
Court	CT	Prepare	PREP
Crossing	XING	Quality	QLTY
Crossing (other than highway-rail)	XING	Right	RT
Downtown	DWNTN	Road	RD
Drive	DR	Roadwork	RDWK
East	E	Route	RT, RTE
Eastbound	EBND	Saint	ST
Electric Vehicle	EV	Saturday	SAT
Emergency	EMER	Service	SERV
Entrance, Enter	ENT	Shoulder	SHLDR
Exit	EX	Slippery	SLIP
Express	EXP	South	S
Expressway	EXPWY	Southbound	SBND
Feet	FT	Speed	SPD
Freeway	FRWY, FWY	State, county, or other non-US or non-Interstate numbered route	[Route Abbreviation determined by highway agency]**
Friday	FRI	Street	ST
Frontage	FRNTG	Sunday	SUN
Hazardous	HAZ	Telephone	PHONE

Hazardous Material	HAZMAT	Temporary	TEMP
High Occupancy Vehicle	HOV	Terrace	TER
Highway	HWY	Thruway	THWY
Highway-Rail Grade Crossing	RR XING	Thursday	THURS
Hospital	HOSP	Tons of Weight	T
Hour(s)	HR, HRS	Traffic	TRAF
Information	INFO	Trail	TR
International	INTL	Travelers	TRVLRS
Interstate	I-	Tuesday	TUES
Junction / Intersection	JCT	Turnpike	TPK
Lane	LN	Two-Way Intersection	2-WAY
Left	LFT	Two-Wheeled Vehicles	CYCLES
Liquid Propane Gas	LP-GAS	Upper	UPR
Local	LOC	US Numbered Route	US
Lower	LWR	Vehicle(s)	VEH, VEHS
Maintenance	MAINT	Warning	WARN
Major	MAJ	Wednesday	WED
Maximum	MAX	West	W
Mile(s)	MI	Westbound	WBND
Miles Per Hour	MPH		

** A space and no dash shall be placed between the abbreviation and the number of the route.

Table 3: Unacceptable Abbreviations

Unacceptable Abbreviation	Intended Word	Common Misinterpretation
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong

10. Use of State Police Officers

10.a) State Police may be used only on limited access highways and secondary roadways that are under their primary jurisdiction. A minimum of one Officer may be used per critical sign pattern; however, a State Police presence is not required. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Left lane closures may also be implemented without State Police presence in areas with only moderate traffic and wide, unobstructed medians. It may be desirable to have a State Police presence, when available, under specific situations, such as nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur; however, they are not required.

10.b) If a State Police presence is provided, once the pattern is in place, the State Police Officer should be positioned in a non- hazardous location in advance of the pattern to provide advance warning to the motorist. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall reposition so that they are located prior to the backup. The State Police Officer should not be located immediately behind or within the roll ahead area of any TMA or within the work zone buffer area. The State Police Officer shall not be positioned in such a way that the State Police Officer obstructs any construction warning signs or PCMS from view of the motorist.

10.c) Other functions of the State Police Officer(s) may include:

i. Assisting construction vehicles entering and exiting the work area.
ii. Enforcement of motor vehicle laws within the work area, if specifically requested by the Engineer.

10.d) State Police Officers assigned to a work site shall take direction from the Engineer.

11. Equipment Operation and Protection on Parkways

11.a) The following roads are designated as Parkways in the State of Connecticut:

i. Route 15 (Merritt Parkway) - New York State Line, Greenwich to west begin of Housatonic River Bridge, Stratford

ii. Route 15 (Wilbur Cross Parkway) - West begin of Housatonic River Bridge, Stratford to begin overpass Interstate Route 91, Meriden

iii. State Route 796 (Milford Parkway - Officer Daniel S. Wasson, Milford Police Department, Connector) - United States Route 1 (Boston Post Road) to Route 15 (Wilbur Cross Parkway), Milford

11.b) All trucks using any road designated as a Parkway must be equipped with a lighting/signal system that shall be in operation continuously while on the Traveled Way, as follows:

i. Two (2) amber strobe type flashers, visible from the rear only.
ii. Two (2) reflectorized “slow moving vehicle triangles” 14 inches H x 16 inches W mounted on the rear of the vehicle.
iii. The lights must show the full overall width of the vehicle.
iv. Each light shall be mounted on a hinged or telescoping post, so that the center of the light will not be less than 10 feet above the ground in the operating position.

11.c) In accordance with Section 14-298-237(b) of the State Traffic Administration Regulations, the Engineer has the authority to allow the Contractor's trucks and equipment to travel over portions of the Parkway from which they are normally excluded. Prior to authorization the following must occur:

i. The Contractor shall provide the Engineer with a list of all trucks and equipment that will need to access the Parkway. The list shall include those truck and equipment specifications requested by the Engineer. The Engineer will contact the Department's Oversize/Overweight Permit Section at DOT.OSOWPermits@ct.gov to request a review of the Contractor's trucks and equipment to ensure they can safely travel on the Parkway to and from the work site. This will include verifying that any structures the trucks and equipment will have to travel under or traverse will have sufficient vertical clearance or weight carrying capacity. The Engineer shall inform the Contractor of the results of the review.

ii. The Contractor shall obtain oversize/overweight permits for any trucks and equipment requiring them as determined by the Oversize/Overweight Permit Section.

iii. The Engineer has inspected each vehicle and has found them to meet the specifications included within this section.

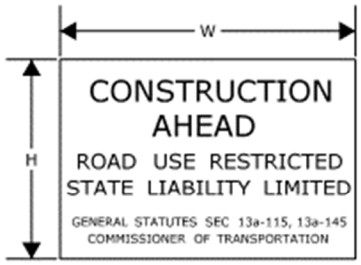
11.d) Each operator of such equipment shall be given instructions by the Contractor concerning the manner of operation while on the Parkway.

11.e) All vehicles shall be limited in travel between the nearest Parkway interchange and the work site.

11.f) The Contractor will not be permitted to park equipment on the median strip and will not be permitted to cross the median strip without specific permission of the Engineer.

11.g) The Engineer reserves the right to revoke authorization if the Contractor fails to abide by the regulations herein prescribed.

SERIES 16 SIGNS



		W H
16-E	80-1605	84" x 60"
16-H	80-1608	60" x 42"
16-M	80-1613	30" x 24"



		W H
16-S	80-1619	48" x 30"

SIGN 16-S SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS. SERIES 16 SIGNS SHOULD BE LOCATED TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHOULD BE INSTALLED ON MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHOULD BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL FREEWAYS AND EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

CONSTRUCTION TRAFFIC CONTROL PLAN

SERIES 16 SIGNS

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

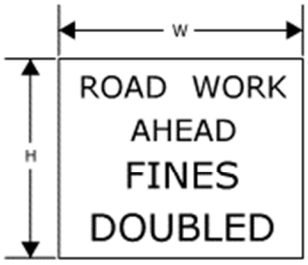
APPROVED Tracy L Fogarty Tracy L. Fogarty, P.E. 2013.10.09 16:30:32-04'00'
PRINCIPAL ENGINEER

REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY AND MUNICIPAL ROAD IN CONNECTICUT WHERE THERE ARE WORKERS PRESENT ON THE HIGHWAY.

THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

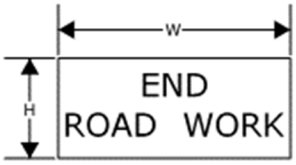
	W	H
31-1906	48"	42"
31-1907	60"	54"



"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN SHALL BE THE "END ROAD WORK" SIGN.

	W	H
80-9606	36"	18"
80-9612	48"	24"



CONSTRUCTION TRAFFIC CONTROL PLAN

ROAD WORK AHEAD SIGNS

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

Tracy L. Fogarty, P.E.
2019.09.12 15:54:44 -04'00'

PRINCIPAL ENGINEER

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.
2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED IN ADVANCE TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.
3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.
4. TRAFFIC CONES AND PORTABLE CONSTRUCTION SIGNS SHALL NOT BE LEFT UNATTENDED.
5. ALL CONFLICTING SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.
6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 48 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.
7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT $\leq$ 40 MPH).
8. IF THIS PLAN IS TO REMAIN IN OPERATION FROM SUNSET TO SUNRISE, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.
9. A PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF MILE TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.
10. SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180'
35	245'
40	320'
45	540'
50	600'
55	660'
65	780'

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

SCALE: NONE

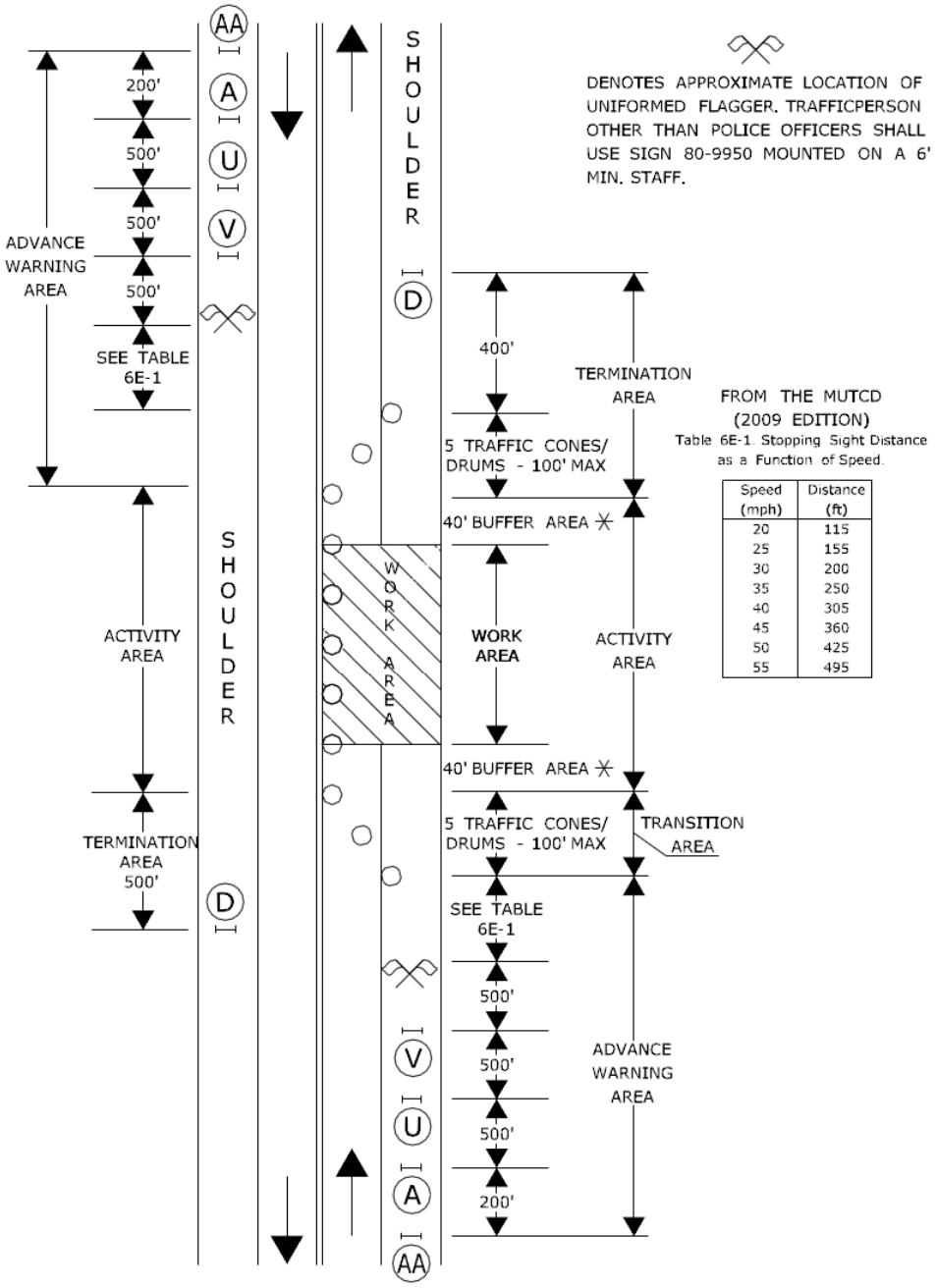
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Tracy L Fogarty Tracy L. Fogarty, P.E. 2019.09.13 08:47:47-04'00'

PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)

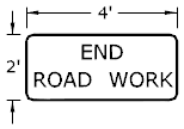


DENOTES APPROXIMATE LOCATION OF UNIFORMED FLAGGER. TRAFFICPERSON OTHER THAN POLICE OFFICERS SHALL USE SIGN 80-9950 MOUNTED ON A 6' MIN. STAFF.

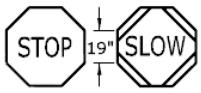
FROM THE MUTCD (2009 EDITION)
Table 6E-1 Stopping Sight Distance as a Function of Speed

Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495

D 80-9612



80-9950
SIDE A SIDE B



V 80-9803



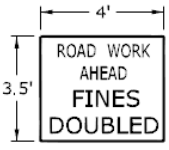
U 80-9834



A 80-9603



AA 31-1906



TRAFFIC CONE **OR** TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 13 - SHEET 1 OF 2

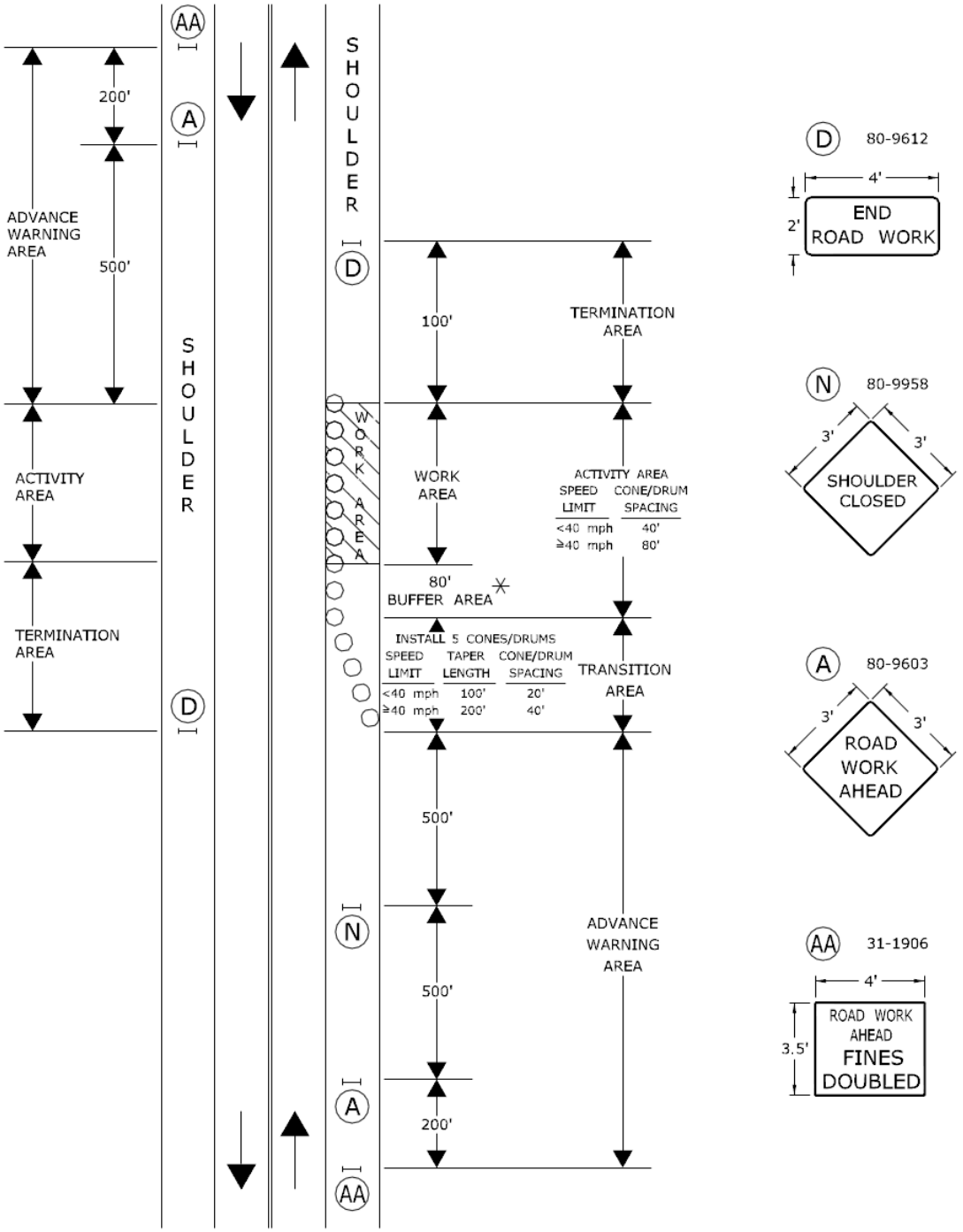
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:55:23-04'00'
PRINCIPAL ENGINEER

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



D 80-9612

N 80-9958

A 80-9603

AA 31-1906

TRAFFIC CONE **OR** TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 14

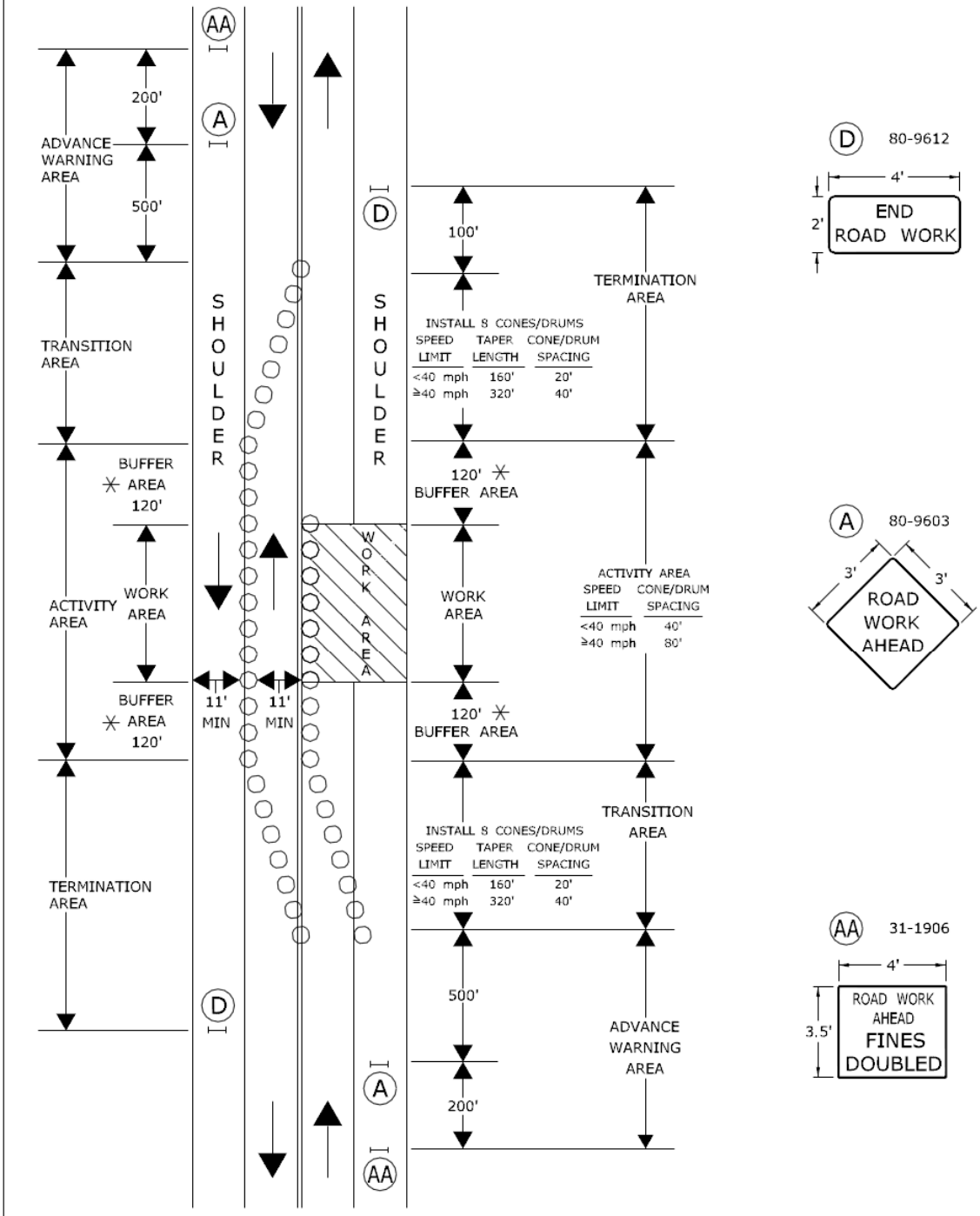
SEE NOTES 1, 2, 4, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:09-04'00'
PRINCIPAL ENGINEER

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 SQ. FT (MIN.)



TRAFFIC CONE **OR** TRAFFIC DRUM
OPTIONAL TRAFFIC DRUM PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 15

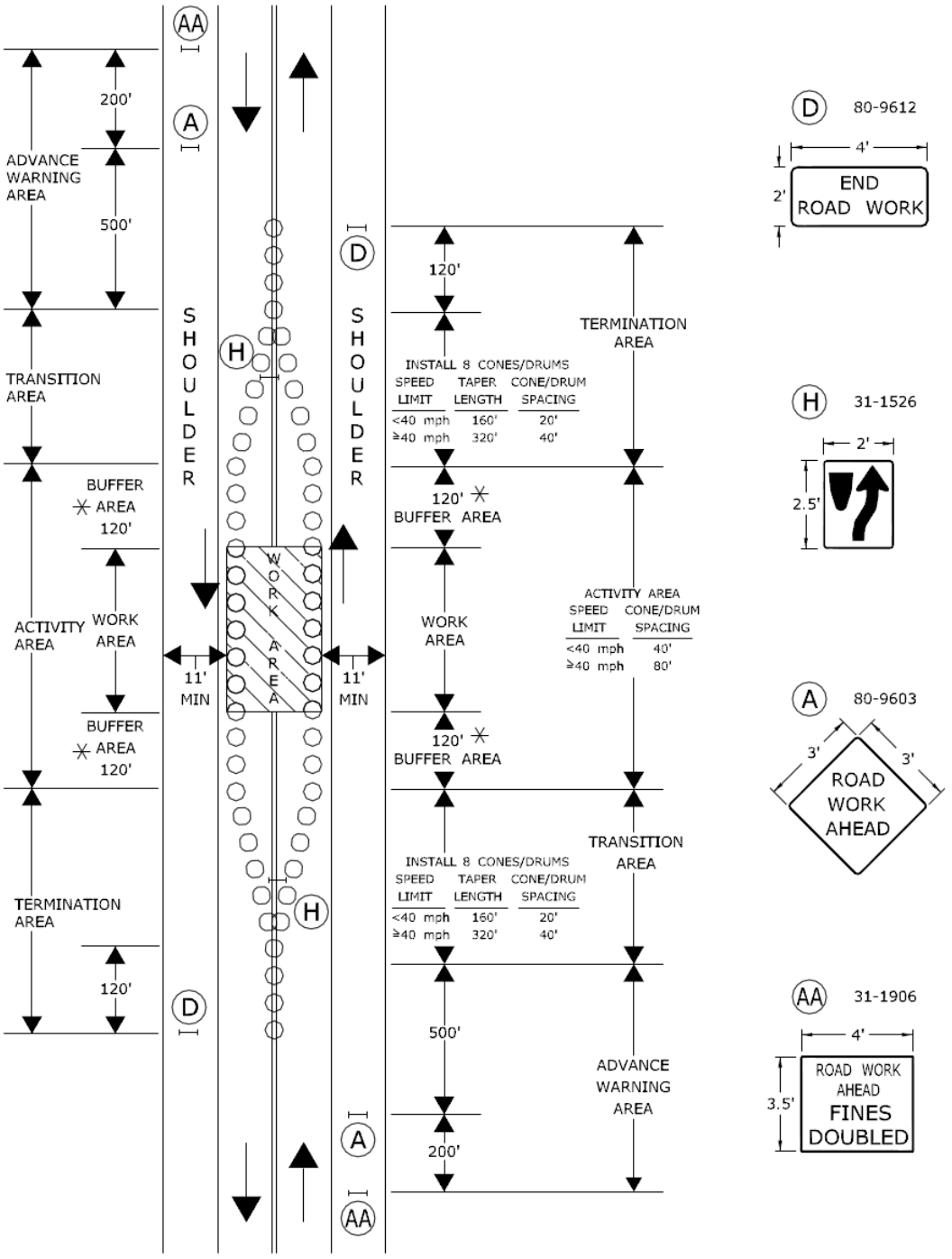
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:29-04'00'
PRINCIPAL ENGINEER

WORK IN MIDDLE OF ROADWAY
TWO LANE HIGHWAY

SIGN FACE
72 SQ. FT (MIN.)



◯ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⟵ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 16

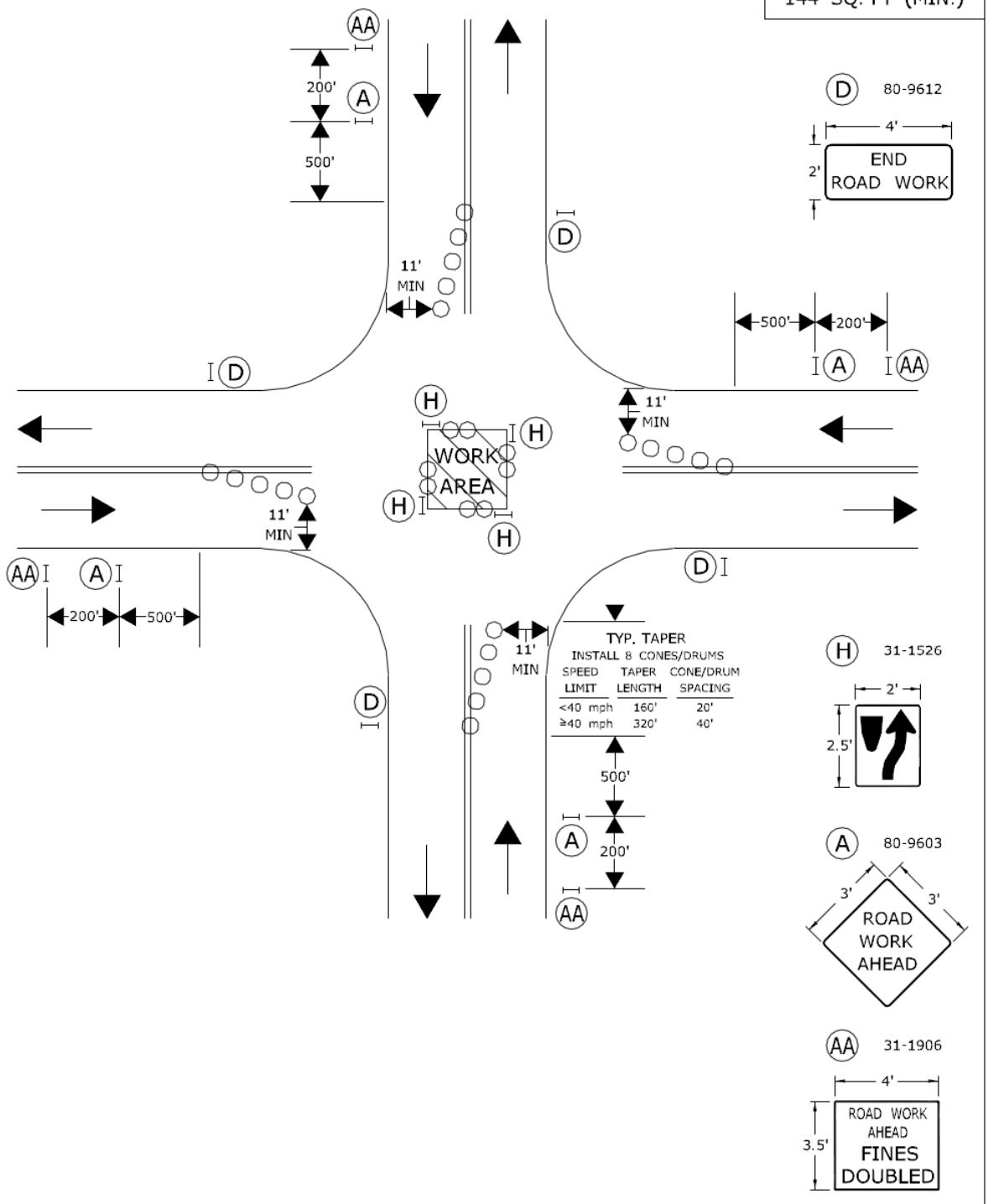
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:51-04'00'
PRINCIPAL ENGINEER

WORK IN MIDDLE OF ROADWAY AT INTERSECTION

SIGN FACE
144 SQ. FT (MIN.)



◯ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⇐ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

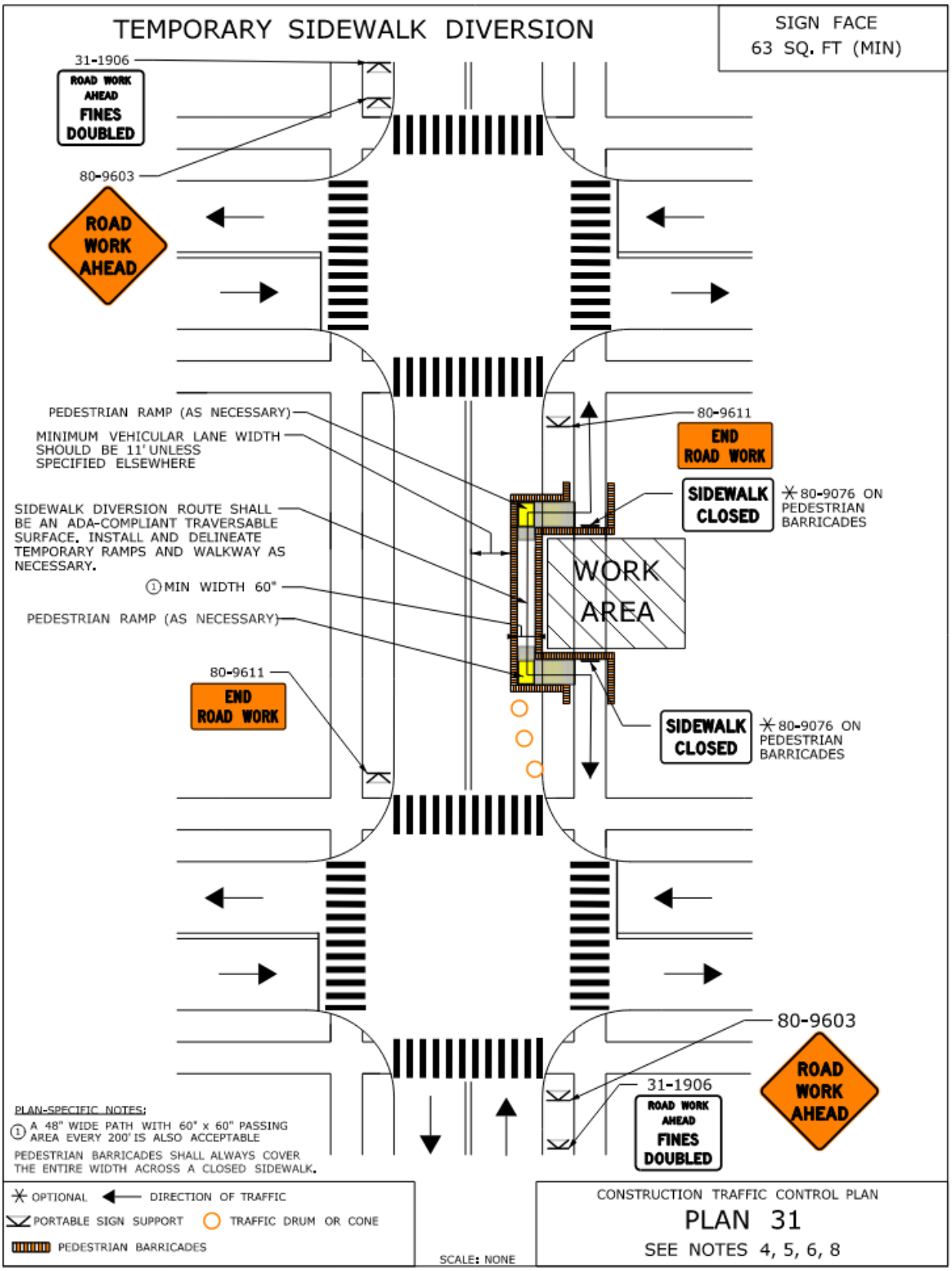
CONSTRUCTION TRAFFIC CONTROL PLAN

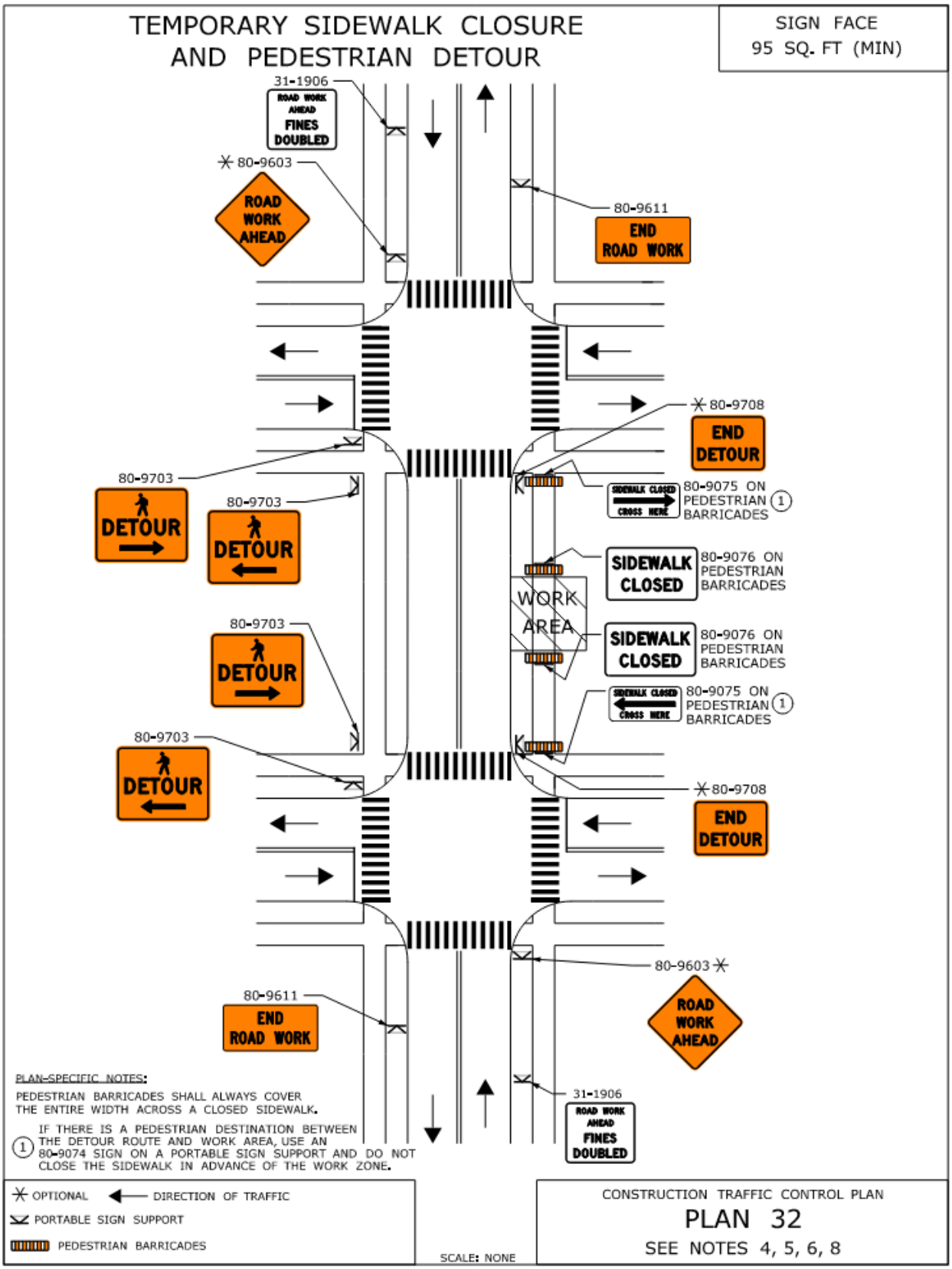
PLAN 17

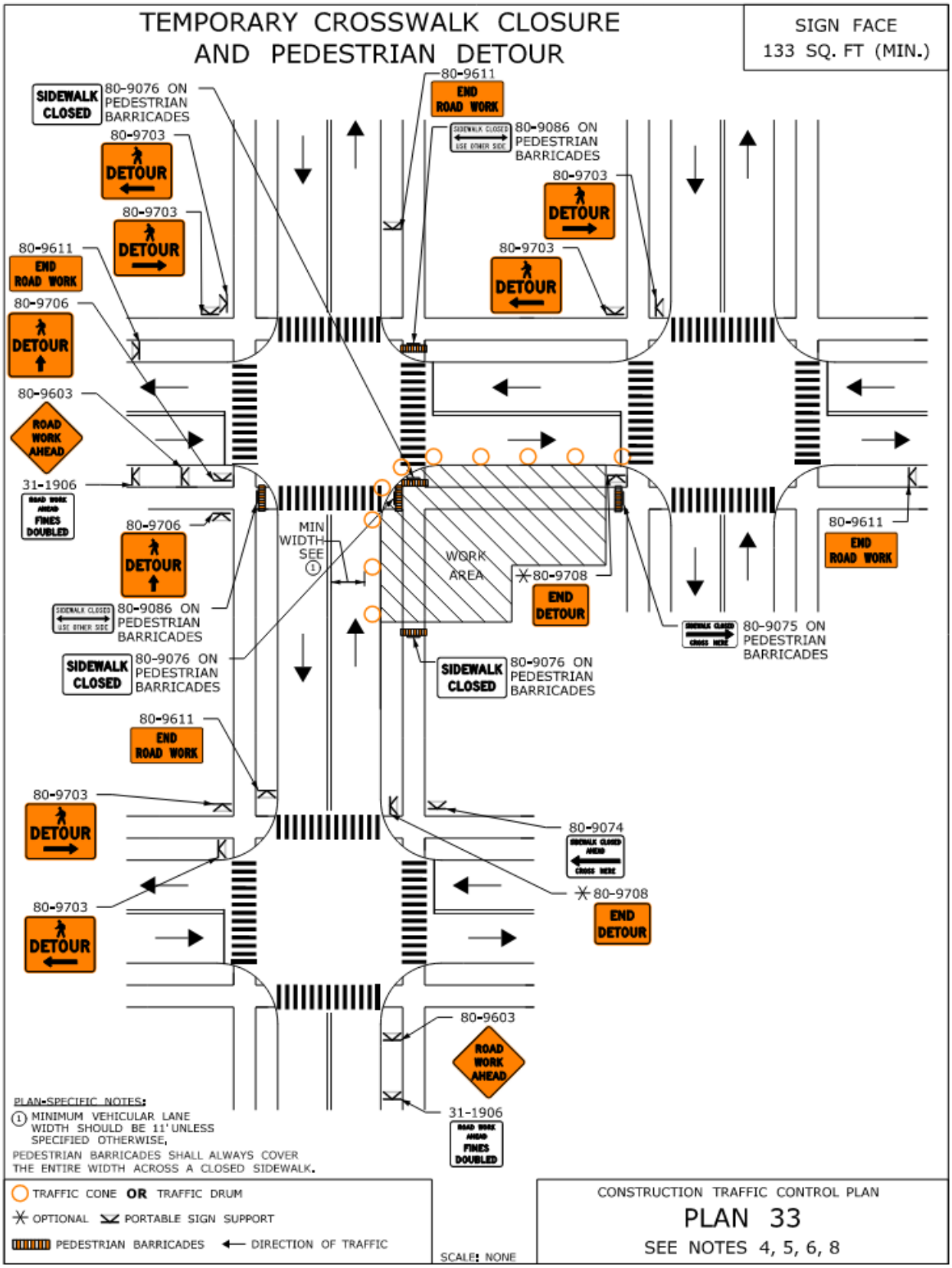
SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED _____ PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:57:16-04'00'


TEMPORARY SIDEWALK DIVERSION
SIGN FACE
63 SQ. FT (MIN)
31-1906
ROAD WORK AHEAD
FINES DOUBLED
80-9603
ROAD WORK AHEAD
PEDESTRIAN RAMP (AS NECESSARY)
MINIMUM VEHICULAR LANE WIDTH SHOULD BE 11' UNLESS SPECIFIED ELSEWHERE
SIDEWALK DIVERSION ROUTE SHALL BE AN ADA-COMPLIANT TRAVERSABLE SURFACE. INSTALL AND DELINEATE TEMPORARY RAMPS AND WALKWAY AS NECESSARY.
① MIN WIDTH 60"
PEDESTRIAN RAMP (AS NECESSARY)
80-9611
END ROAD WORK
SIDEWALK CLOSED
✳ 80-9076 ON PEDESTRIAN BARRICADES
WORK AREA
80-9611
END ROAD WORK
SIDEWALK CLOSED
✳ 80-9076 ON PEDESTRIAN BARRICADES
80-9603
ROAD WORK AHEAD
31-1906
ROAD WORK AHEAD
FINES DOUBLED
PLAN-SPECIFIC NOTES:
① A 48" WIDE PATH WITH 60" x 60" PASSING AREA EVERY 200' IS ALSO ACCEPTABLE
PEDESTRIAN BARRICADES SHALL ALWAYS COVER THE ENTIRE WIDTH ACROSS A CLOSED SIDEWALK.
✳ OPTIONAL
DIRECTION OF TRAFFIC
PORTABLE SIGN SUPPORT
TRAFFIC DRUM OR CONE
PEDESTRIAN BARRICADES
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 31
SEE NOTES 4, 5, 6, 8


TEMPORARY SIDEWALK CLOSURE
AND PEDESTRIAN DETOUR
SIGN FACE
95 SQ. FT (MIN)
31-1906
ROAD WORK AHEAD
FINES DOUBLED
80-9603
ROAD WORK AHEAD
80-9611
END ROAD WORK
80-9708
END DETOUR
80-9703
DETOUR
80-9703
DETOUR
SIDEWALK CLOSED CROSS HERE
80-9075 ON PEDESTRIAN BARRICADES (1)
SIDEWALK CLOSED
80-9076 ON PEDESTRIAN BARRICADES
WORK AREA
80-9703
DETOUR
SIDEWALK CLOSED
80-9076 ON PEDESTRIAN BARRICADES
SIDEWALK CLOSED CROSS HERE
80-9075 ON PEDESTRIAN BARRICADES (1)
80-9703
DETOUR
80-9708
END DETOUR
80-9603
ROAD WORK AHEAD
80-9611
END ROAD WORK
31-1906
ROAD WORK AHEAD
FINES DOUBLED
PLAN-SPECIFIC NOTES:
PEDESTRIAN BARRICADES SHALL ALWAYS COVER THE ENTIRE WIDTH ACROSS A CLOSED SIDEWALK.
(1) IF THERE IS A PEDESTRIAN DESTINATION BETWEEN THE DETOUR ROUTE AND WORK AREA, USE AN 80-9074 SIGN ON A PORTABLE SIGN SUPPORT AND DO NOT CLOSE THE SIDEWALK IN ADVANCE OF THE WORK ZONE.
OPTIONAL
DIRECTION OF TRAFFIC
PORTABLE SIGN SUPPORT
PEDESTRIAN BARRICADES
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 32
SEE NOTES 4, 5, 6, 8


TEMPORARY CROSSWALK CLOSURE
AND PEDESTRIAN DETOUR
SIGN FACE
133 SQ. FT (MIN.)
SIDEWALK CLOSED
80-9076 ON PEDESTRIAN BARRICADES
80-9703
DETOUR
80-9611
END ROAD WORK
80-9086 ON PEDESTRIAN BARRICADES
80-9706
80-9603
ROAD WORK AHEAD
31-1906
ROAD WORK AHEAD FINES DOUBLED
MIN WIDTH SEE (1)
WORK AREA
80-9708
END DETOUR
80-9075 ON PEDESTRIAN BARRICADES
80-9074
PLAN-SPECIFIC NOTES:
(1) MINIMUM VEHICULAR LANE WIDTH SHOULD BE 11' UNLESS SPECIFIED OTHERWISE,
PEDESTRIAN BARRICADES SHALL ALWAYS COVER THE ENTIRE WIDTH ACROSS A CLOSED SIDEWALK.
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
PORTABLE SIGN SUPPORT
PEDESTRIAN BARRICADES
DIRECTION OF TRAFFIC
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 33
SEE NOTES 4, 5, 6, 8

Article 9.71.05 – Basis of Payment *is supplemented by the following:*

The temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item "Maintenance and Protection of Traffic". Temporary overhead sign supports and foundations shall be paid for under the appropriate item(s).

The cost of furnishing, installing, and removing the material for the 4H:1V traversable slope shall be paid for under the item "Maintenance and Protection of Traffic".

ITEM #1002110A – DECORATIVE LIGHT POLE FOUNDATION

DESCRIPTION: This item shall consist of furnishing and installing a pre-cast concrete decorative light pole foundation at the location and to the dimensions and details shown on the plans, or as directed by the Engineer, and in accordance with this specification.

MATERIALS: The materials for this work shall conform to Article 10.02.02. The foundation shall be pre-cast and shall be dimensioned as indicated in the details. The foundation shall be constructed with appropriate reinforcing as indicated in the details and as recommended by the manufacturer.

PVC conduit sweeps shall be schedule 80 and shall conform to Article M.15.09-3. The conduit diameter shall be as indicated on the plan details.

Anchor bolts (4) shall conform to Article M.15.02. The anchor bolt diameter and bolt circle diameter shall be verified prior to casting the anchor bolts into the foundation.

The ground rod shall be as detailed on the plans and shall conform to Article M.15.15-7 with the following exception: the ground wire to ground rod connection shall be made with an exothermic weld.

CONSTRUCTION METHODS: The decorative light pole foundation shall be installed at the location as indicated on the plans, and in accordance with Article 10.02.03. The foundation shall be installed as indicated in the details with the top ¾" of the foundation extending above finished grade. The foundation shall be installed plumb, with the anchor bolts located parallel to the edge of pavement. The area around the installed foundation shall be graded and finished to match the surrounding grade.

METHOD OF MEASUREMENT: This work will be measured for payment by the number of decorative light pole foundations installed, complete and accepted.

BASIS OF PAYMENT: This work will be paid for at the contract unit price each for "Decorative Light Pole Foundation " complete and accepted in place, which price shall include the foundation, concrete, reinforcing bars, ties, conduit, anchor bolts, ground rod, excavating, backfilling, grading, replacement of surrounding surface material, and all equipment, tools, labor, and work incidental thereto.

Pay Item	Pay Unit
Decorative Light Pole Foundation	EA.

ITEM NO. 1206023A - REMOVAL AND RELOCATION OF EXISTING SIGNS

Section 12.06 is supplemented as follows:

Article 12.06.01 – Description is supplemented with the following:
Work under this item shall consist of the removal and/or relocation of designated side-mounted extruded aluminum and sheet aluminum signs, sign posts, sign supports, and foundations where indicated on the plans or as directed by the Engineer. Work under this item shall also include furnishing and installing new sign posts and associated hardware for signs designated for relocation.

Article 12.06.03 – Construction Methods is supplemented with the following:
The Contractor shall take care during the removal and relocation of existing signs, sign posts, and sign supports that are to be relocated so that they are not damaged. Any material that is damaged shall be replaced by the Contractor at no cost to the State.

Foundations and other materials designated for removal shall be removed and disposed of by the Contractor as directed by the Engineer and in accordance with existing standards for Removal of Existing Signing.

Sheet aluminum signs designated for relocation are to be re-installed on new sign posts.

Article 12.06.04 – Method of Measurement is supplemented with the following:
Payment under Removal and Relocation of Existing Signs shall be at the contract lump sum price which shall include all extruded aluminum and sheet aluminum signs, sign posts, and sign supports designated for relocation, all new sign posts and associated hardware for signs designated for relocation, all extruded aluminum signs, sheet aluminum signs, sign posts and sign supports designated for scrap, and foundations and other materials designated for removal and disposal, and all work and equipment required.

Article 12.06.05 – Basis of Payment is supplemented with the following:
This work will be paid for at the contract lump sum price for "Removal and Relocation of Existing Signs" which price shall include relocating designated extruded aluminum and sheet aluminum signs, sign posts, and sign supports, providing new posts and associated hardware for relocated signs, removing and disposing of foundations and other materials, and all equipment, material, tools and labor incidental thereto. This price shall also include removing, loading, transporting, and unloading of extruded aluminum signs, sheet aluminum signs, sign posts, and sign supports designated for scrap and all equipment, material, tools and labor incidental thereto.

Pay Item	Pay Unit
Removal and Relocation of Existing Signs	L.S.

ITEM #1220027A – CONSTRUCTION SIGNS

Section 12.20 *is supplemented and amended as follows:*

Article 12.20.01 – Description:

Add the following:

The Contractor shall also furnish, install, maintain, and remove Bipartisan Infrastructure Law project signs. The Bipartisan Infrastructure Law project signs shall be of the details, colors and materials as shown on the attached detail sheet.

The sign legend for this Project shall include the U.S. Department of Transportation pictograph on the lower right side of the sign with the legend [insert Project funding source: Federal Highway Administration, FTA, FRA, or NHTSA.]

Article 12.20.03 — Construction Methods:

Add the following:

The Contractor shall install the Bipartisan Infrastructure Law (BIL) project signs prior to initiating construction.

The Contractor shall install BIL project sign 80-5957 on each major roadway approach to the construction Site in advance of the Project limit(s).
The sign detail is included and is also available at 80-5957.

The Contractor shall maintain the BIL project signs for the entire duration of the Project. The Contractor shall relocate the BIL project signs during construction as needed and shall remove the signs after construction work is completed.

Article 12.20.05 – Basis of Payment:

Add the following:

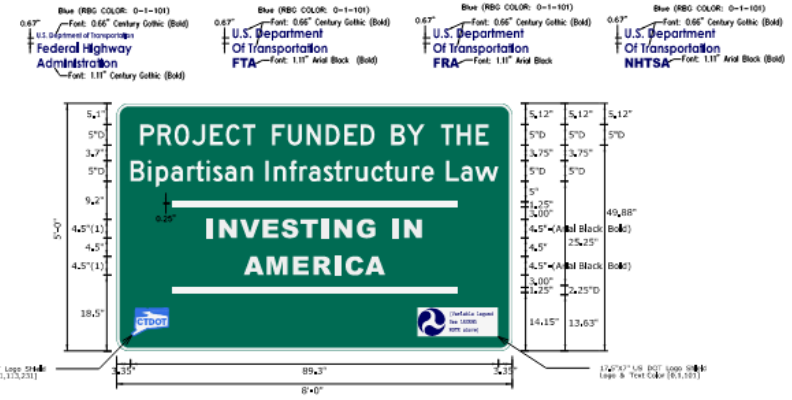
The price shall also include furnishing, installing, maintaining, relocating, and removing the Bipartisan Infrastructure Law project signs and sign posts and all hardware, materials, and labor incidental thereto.

Rev. Date 10/2025

SIGN DETAIL

1:35

LEGEND NOTE: THE LEGEND NEXT TO THE US DOT LOGO SHALL BE ONE OF THE FOLLOWING BASED ON PROJECT FUNDING SOURCE:



SIGN NUMBER	80-5957
PANEL SIZE	8'-0" x 5'-0"
TOTAL AREA	40.0 Sq.Ft.
MUTCD	N/A
BDR INSET/WIDTH	0" / 0.75"
CORNER RADIUS	3"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
WHEN COLOR IS BLACK TYPE IS "PLAIN".

SYMBOL	ROT	X	Y	WID	HT
CT DOT LOGO	0	3.5	3.5	9.21	7
US DOT LOGO	0	75.0	3.5	17.5	7

REV'D 7/24

Dimensions are In Inches
Material : 0.125" Thick Sheet Aluminum
Ground Mounted

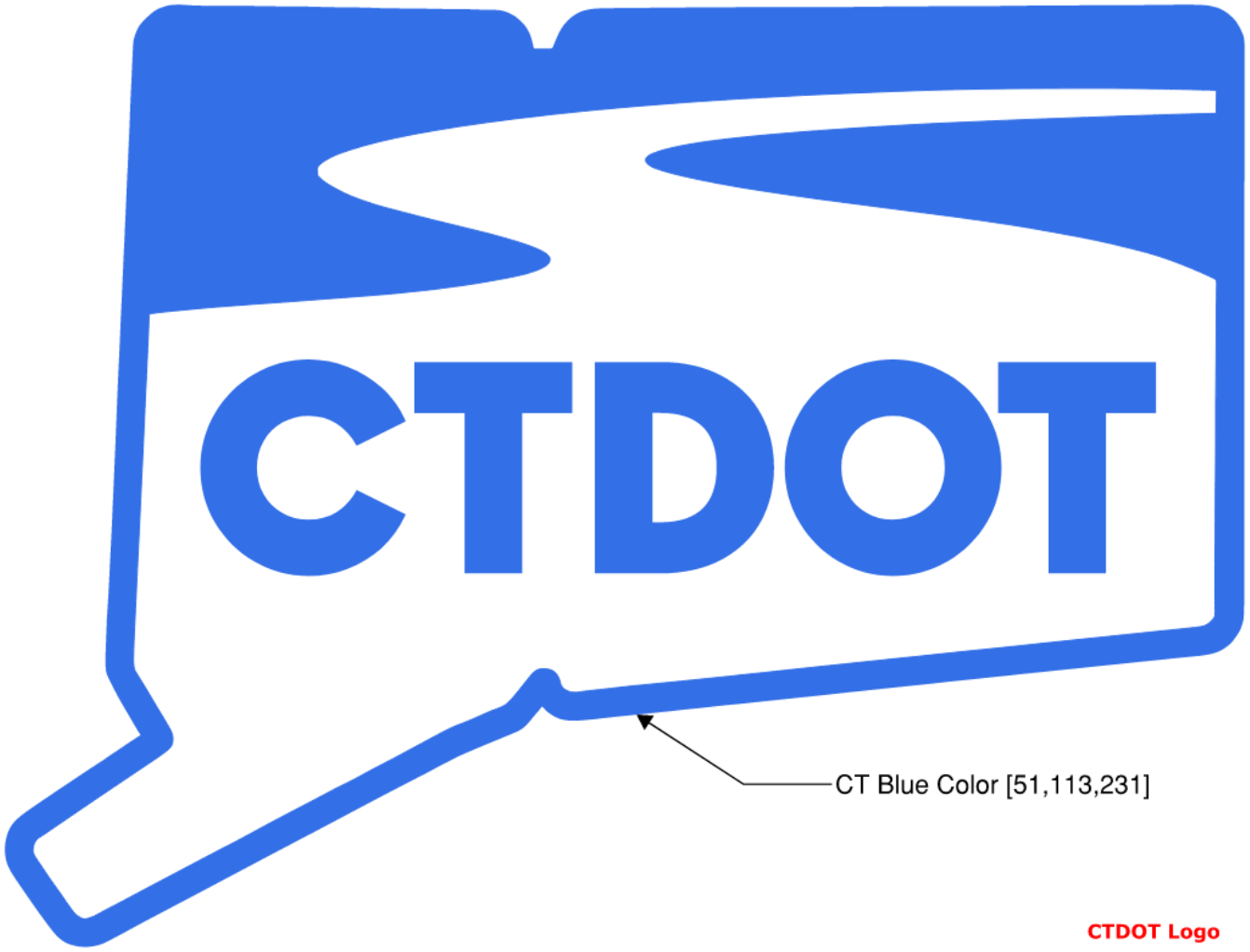
File name: 80-5957

Printed: 9/13/2024

LETTER POSITIONS (X)

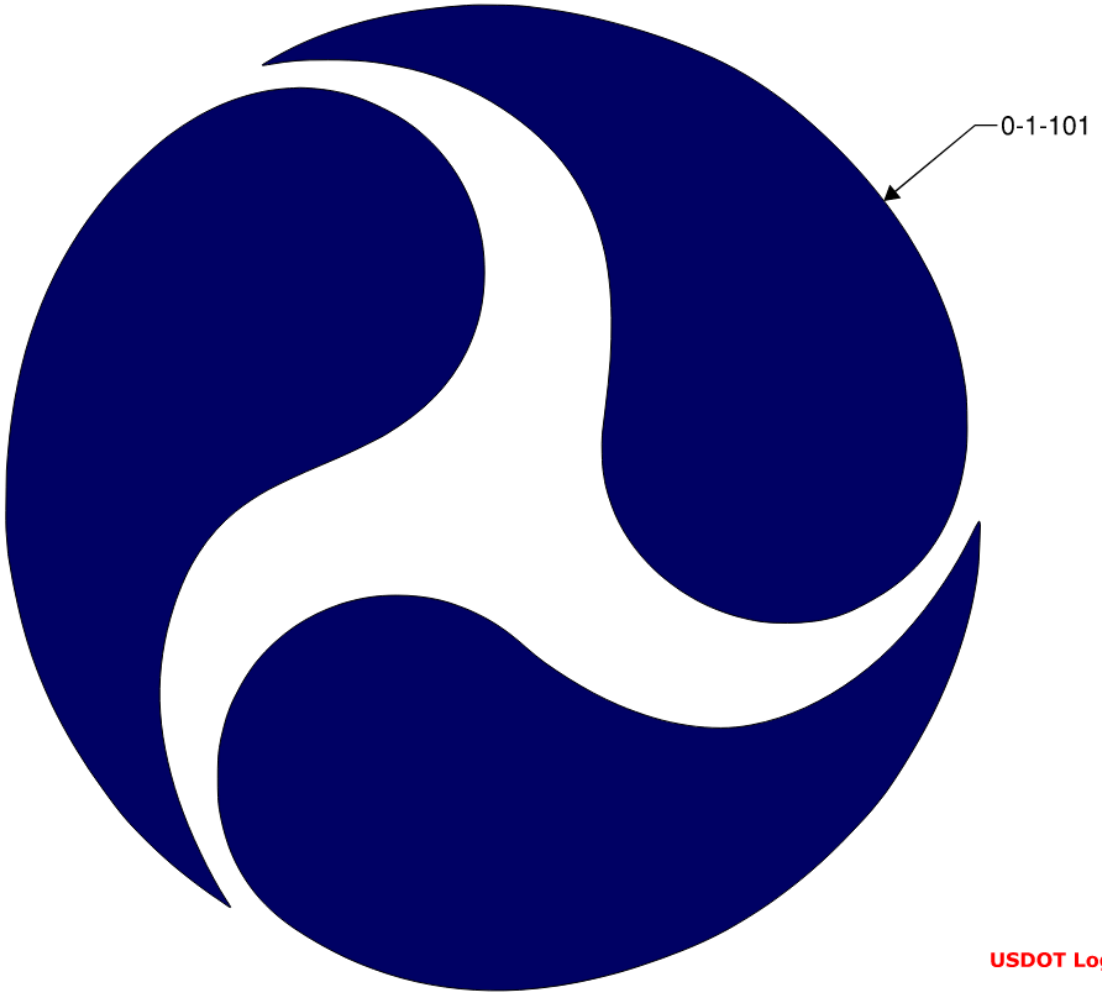
P	R	O	J	E	C	T	F	U	N	D	E	D	B	Y	T	H	E					LENGTH	SERIES/SIZE
5.8	9.9	14.1	18.3	22.7	26.5	30.6	37.7	41.5	46.1	50.7	55.2	59.2	66.6	70.4	78.7	82.6	87.2					84.5	D 2000 5
B	I	p	a	r	t	I	s	a	n														
3.4	7.6	9.6	13.2	17.1	19.2	21.8	23.4	26.2	30.2														
I	n	f	r	a	s	t	r	u	c	t	u	r	e	L	a	w							D 2000
36.1	38.2	41.8	44.3	46.6	50.2	52.8	55.4	57.9	61.8	65	67.6	71.6	74	79.9	83.5	87						89.3	5/3.8
I	N	V	E	S	T	I	N	G	I	N													Arial Black
22	24.9	29.9	35.4	40	44.7	49.9	52.8	58.2	66.8	69.7												52.1	4.5
A	M	E	R	I	C	A																	Arial Black
30.8	36.4	42.8	47.7	52.9	55.5	60.3																34.3	4.5

ITEM #1220027A



CTDOT Logo

Link to .dgn file: New_CTDOT_Logos.dgn



USDOT Logo

Link to .dgn file: USDOT_logo.dgn

ONLY STANDARD SHEETS MARKED WITH AN "✓" ARE IN THIS PROJECT # 0017-0196

****REVISED OR ADDED**

	SHEET NO.	TITLE	APPROVAL DATE**
☐	TR-1000_01	GENERAL CLAUSES (TEST PROCEDURES)	1/2014
☐	TR-1001_01	TRENCHING & BACKFILLING, ELECTRICAL CONDUIT	2/2024
☐	TR-1002_01	TRAFFIC CONTROL FOUNDATIONS	2/2024
☐	TR-1010_01	CONCRETE HANDHOLE	2/2024
☐	TR-1102_01	PEDESTALS, PEDESTRIAN SIGNALS	4/2012
☐	TR-1105_01	TRAFFIC SIGNALS AND CABLE ASSIGNMENTS	8/2018
☐	TR-1107_01	PEDESTRIAN PUSH BUTTON	8/2018
☐	TR-1108_01	CONTROLLERS	5/2013
☐	TR-1111_01	LOOP VEHICLE DETECTOR AND SAWCUT	4/2014
☐	TR-1113_01	CONTROL CABLE	4/2014
☐	TR-1114_01	BONDING & UTILITY POLE ATTACHMENT DETAILS, SIGN HANGER, "Y" CLAMP DETAILS	8/2018
☐	TR-1208_01	SIGN PLACEMENT AND RETROREFLECTIVE STRIP DETAILS	8/2018
☑	TR-1208_02	METAL SIGN POSTS AND SIGN MOUNTING DETAILS	6/2017

STANDARD SHEETS SHALL BE USED WITH STANDARD SPECIFICATIONS

	NOT TO SCALE	SIGNATURE BLOCK: OFFICE OF ENGINEERING 2800 BERLIN TURNPIKE NEWINGTON, CT 06111	SUBMITTED BY:	APPOVED BY:	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION	CTDOT STANDARD SHEET	STANDARD SHEET TITLE: TRAFFIC STANDARD SHEET INDEX	STANDARD SHEET NO.: TR-STD_INDEX

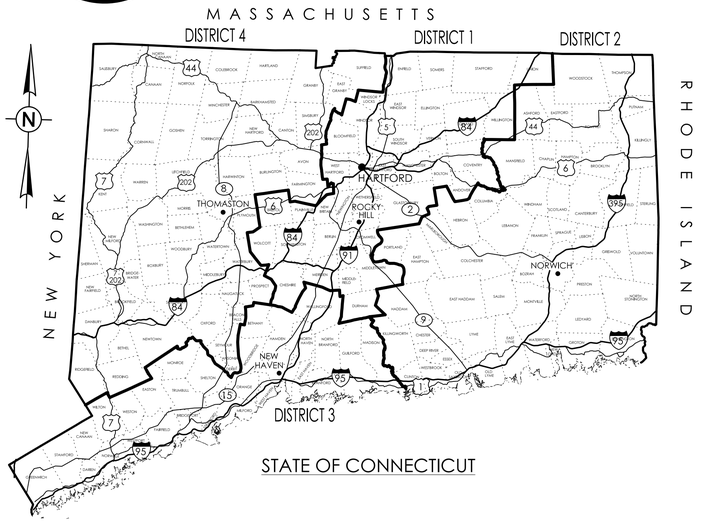
CONNECTICUT DEPARTMENT OF TRANSPORTATION

Plans For

ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

City of

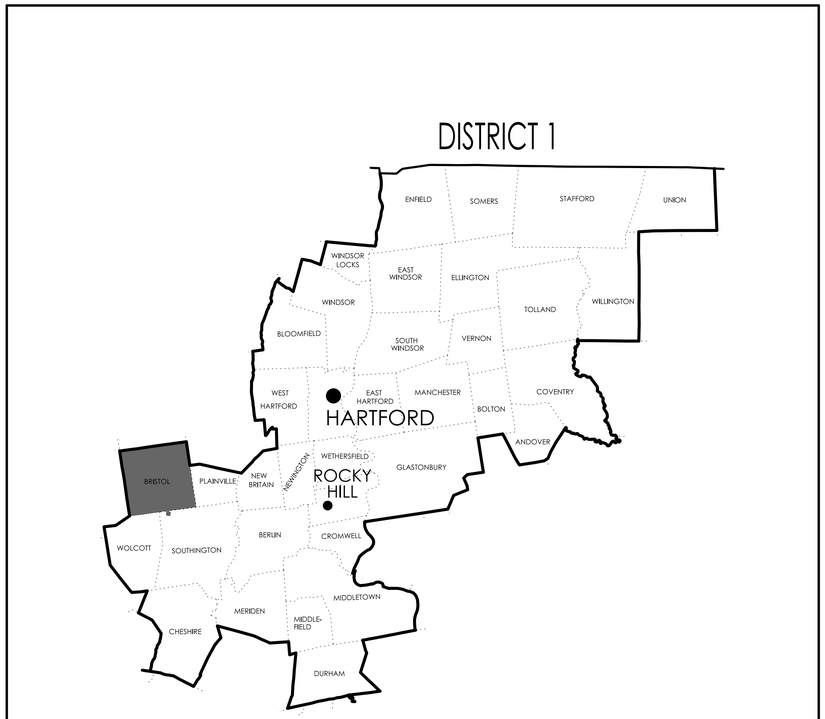
BRISTOL, CT



STATE OF CONNECTICUT

ROAD	MAINTENANCE RESPONSIBILITY	LENGTH
Route 72	STATE	4700 FEET

F.A.P. #	MAINTENANCE RESPONSIBILITY	PROJECT #
####(###)	STATE	0017-0196



LOCATION PLAN
NOT TO SCALE

GENERAL NOTES:

1. FEDERAL AID PROJECT NO.
2. CONSTRUCTION SPECIFICATIONS:
   Connecticut Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 819 dated 2024; Supplemental Specifications, dated July 2025; and Special Provisions
3. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1983
4. VERTICAL DATUM BASED ON NAVD 1988
5. Surveyed By: ROBERT GREEN ASSOCIATES

DISCLAIMER:

IT IS THE RESPONSIBILITY OF EACH BIDDER AND ALL OTHER INTERESTED PARTIES TO OBTAIN ALL BIDDING RELATED INFORMATION AND DOCUMENTS FROM OFFICIAL SOURCES WITHIN THE DEPARTMENT.

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LIST OF SUBSETS

*THE INITIAL SUBSET SHEET COUNT DOES NOT INCLUDE ADDENDUM AND CHANGE ORDERS

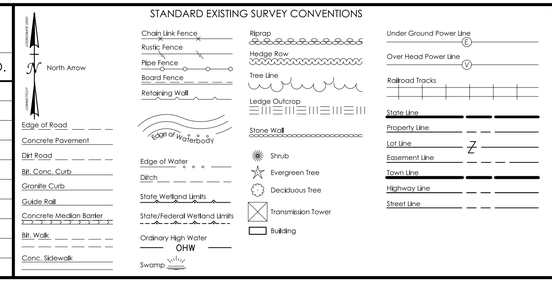
SUBSET NO.	SUBSET TITLE	*SUBSET SHEET COUNT
#01	GENERAL	1
#02	REVISIONS	
#03	CIVIL	88
#04	STRUCTURES	5

SEMI FINAL DESIGN REVIEW

LIST OF DRAWINGS
SUBSET 01 - GENERAL

DRAWING TITLE	DRAWING NO.
TITLE SHEET	G-1

STANDARD EXISTING SURVEY CONVENTIONS



THE DESIGN APPEARS TO CONFORM TO APPLICABLE CRITERIA. APPROVAL IS NOT TO BE CONSTRUED TO MEAN THAT ALL ASPECTS OF THE DESIGN HAVE BEEN PERSONALLY CHECKED BY THE UNDERSIGNED.

Plans For

ROUTE 72 (RIVERSIDE AVENUE) STREETSCAPE IMPROVEMENTS

City

BRISTOL, CT

STATE PROJECT NO.

0017-0196

DRAWING NO.

G-1

SHEET NO.

01.01