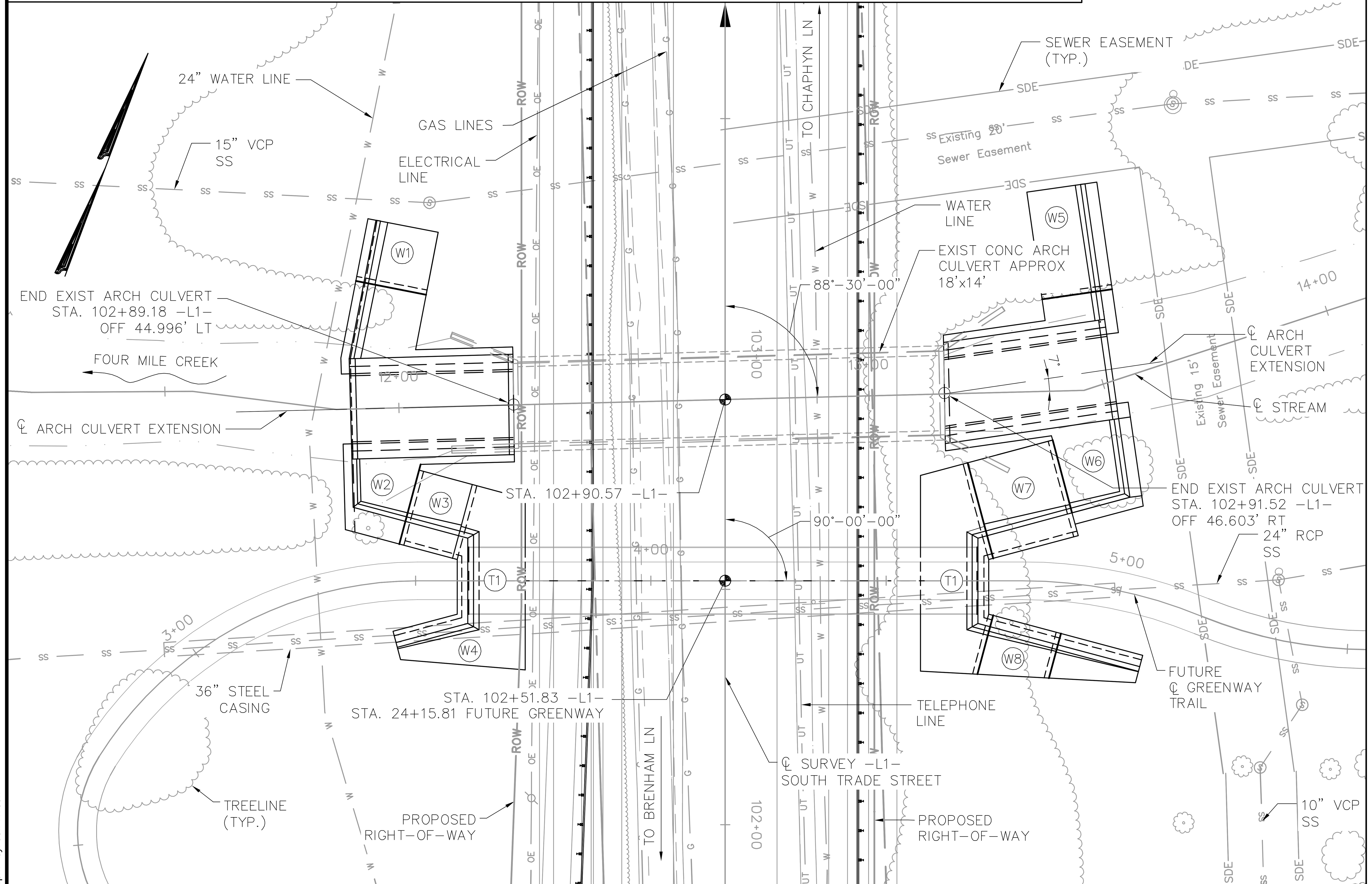
BENCHMARK: #599: NAIL FOUND IN 24" TWIN MAPLE STA 102+76.13, OFFSET 83.4681 RIGHT ELEV 621.06

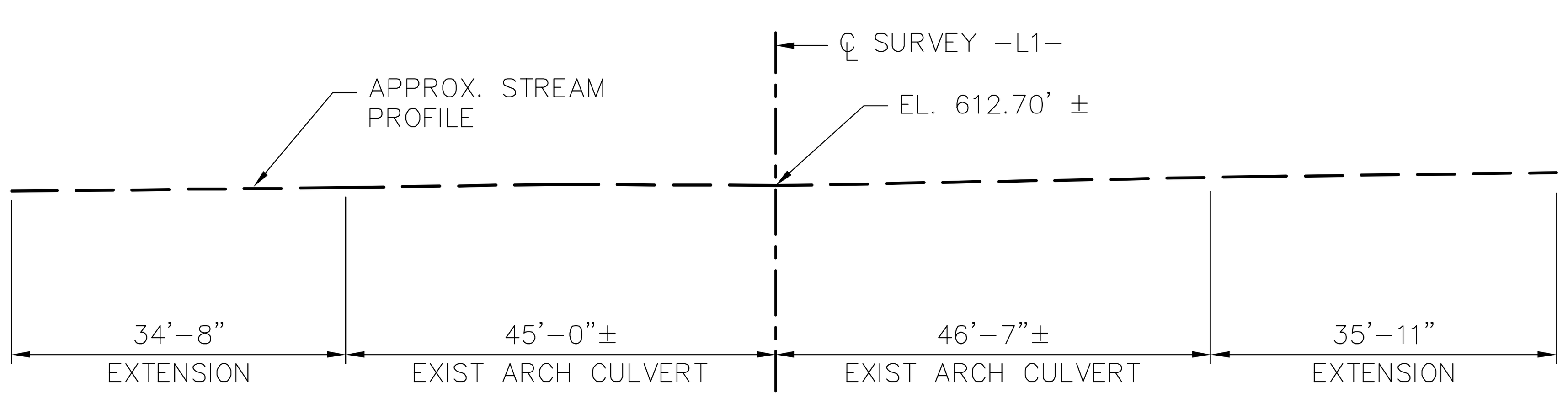


CULVERT: GRADE POINT EL. @ STA. 102+90.57 -L1- 649.82'
BED EL. @ STA. 102+90.57 -L1- 612.70'
ROADWAY SLOPES 2:1 MAX

FUTURE PEDESTRIAN TUNNEL: GRADE POINT EL. @ STA. 102+51.83 -L1- 648.27'
WALKWAY EL. @ STA. 102+51.83 -L1- 630.44'
ROADWAY SLOPES 2:1 MAX

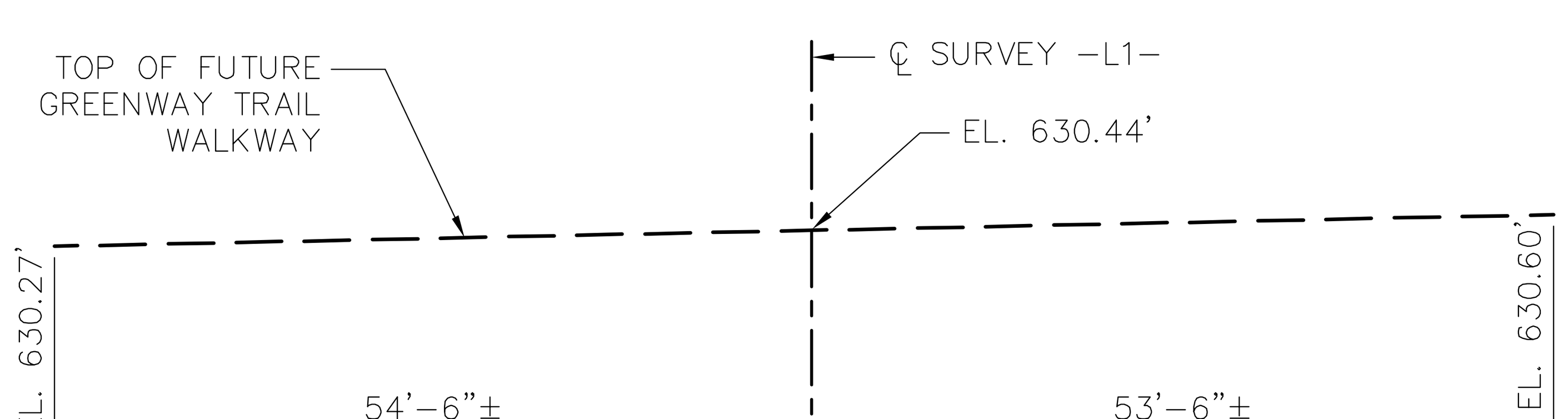
LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



PROFILE ALONG ℄ ARCH CULVERT

NTS



PROFILE ALONG ℄ FUTURE GREENWAY TUNNEL

NTS

HYDRAULIC DATA	
DESIGN DISCHARGE	2,927 CFS
FREQUENCY OF DESIGN FLOOD	50 YR.
DESIGN HIGH WATER ELEVATION	630.18 FT.
DRAINAGE AREA	4.1 SQ. MI.
BASIC DISCHARGE (Q100)	3,298 CFS
BASIC HIGH WATER ELEVATION	631.98 FT.
OVERTOPPING DATA	
OVERTOPPING DISCHARGE	5,614 CFS
FREQUENCY OF OVERTOPPING FLOOD	>500 YR.
OVERTOPPING FLOOD ELEVATION	644.00 FT.

BAR SIZE	SPLICE LENGTH
#4	1'-9"
#5	2'-2"
#6	2'-9"
#7	3'-9"
#8	4'-11"

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE		
BARREL @ 4.80 CY/FT	338.6	C.Y.
WING ETC.	560	C.Y.
TOTAL	898.6	C.Y.
REINFORCING STEEL		
BARREL	48,165	LBS.
WINGS ETC.	66,762	LBS.
TOTAL	114,927	LBS.
FOUNDATION EXCAVATION, STA. 102+90.57 -L-	1,500 CY	
FOUNDATION CONDITIONING MATERIAL	170 TONS	
REMOVAL OF EXIST WINGS	LS	
TUNNEL GATE	LS	

NOTES:

ASSUMED LIVE LOAD__________HL-93 OR ALTERNATE LOADING.

DESIGN FILL
ARCH CULVERT EXTENSION____________________ 22.0'
FUTURE GREENWAY TRAIL TUNNEL_____________ 5.9'

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

DESIGN PARAMETERS:
MINIMUM ALLOWABLE ROCK BEARING PRESSURE = 8,000 PSF
MINIMUM ALLOWABLE SOIL BEARING PRESSURE = 4,000 PSF
COEFFICIENT OF FRICTION FOR FOUNDATIONS BEARING ON ROCK = 0.60
COEFFICIENT OF FRICTION FOR FOUNDATIONS BEARING ON SOIL = 0.35
PHI ANGLE FOR SOIL BACKFILL = 28°
SOIL DENSITY = 120 PCF

ARCH CULVERT EXTENSIONS, WINGS W1, W2, W5, AND W6 SHALL BEAR ON ROCK
TUNNEL HEADWALL T1, WINGS W3, W4, W7, AND W8 SHALL BEAR ON SOIL

MINIMUM CONCRETE COMPRESSIVE STRENGTH = 3,000 PSI
ALL REINFORCING SHALL BE GRADE 60.

NO WORK SHALL BE COMPLETED ON WINGS W3, W4, W7, AND W8 UNTIL THE AREAS OF THE WINGS HAVE BEEN UNDERCUT A MINIMUM DEPTH OF 2' AND A GEOTECHNICAL ENGINEER HAS INSPECTED THE AREA TO VERIFY THE ASSUMED DESIGN SOIL PARAMETERS. UNSUITABLE MATERIAL SHALL BE REPLACED WITH SUITABLE SELECT MATERIAL, PROPERLY COMPACTED TO THE ELEVATION OF THE BOTTOM OF THE PROPOSED WING WALL FOUNDATION. THE LIMITS OF THIS UNDERCUT EXCAVATION SHALL BE A MINIMUM OF 1' LARGER THAN THE WING FOOTINGS.

NO SEPARATE PAYMENT WILL BE MADE FOR ANY TEMPORARY SHEETING, UNDERCUT, OR UNSUITABLE MATERIAL REPLACEMENT AS REQUIRED TO CONSTRUCT THE PROPOSED CULVERT, TUNNEL, OR WING FOUNDATIONS. PAYMENT IS INCLUDED IN THE PAY ITEM FOR CULVERT EXCAVATION.

CONCRETE IN CULVERT EXTENSIONS TO BE POURED IN THE FOLLOWING ORDER:

1. CULVERT AND WING FOUNDATIONS W1, W2, W5 AND W6 INCLUDING FOUNDATION STEPS AND 4" OF VERTICAL WALLS.
2. REMAINING PORTIONS OF THE CULVERT BARREL WALLS AND TOP SLAB.
3. REMAINING WING FOUNDATIONS INCLUDING FOUNDATION STEPS AND 4" OF VERTICAL WALLS. AT CONTRACTOR'S OPTION, W1, W2, W5 AND W6 WINGS FULL HEIGHT.
4. REMAINING VERTICAL WALLS.

3" ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH NCDOT SPECIFICATIONS.

THE CONTRACTOR SHALL CHECK THE LENGTH OF ARCH CULVERT EXTENSIONS AND GREENWAY TRAIL TUNNEL BEFORE STAKING IT OUT TO CONFIRM IT IS ADEQUATE TO RETAIN FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEETS.

AT THE CONTRACTOR'S OPTION HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE THE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

DOWELS SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR CULVERT EXTENSIONS SHALL BE SUBMITTED. SEE SHEET SN.

ARCH CULVERT EXTENSION AND ALL WING WALLS SHALL MAINTAIN CLEARANCE FROM WATER LINE, SANITARY SEWER, AND SEWER EASEMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE LINES DURING CONSTRUCTION OF THESE ITEMS.

IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE ARCH CULVERT EXTENSIONS. THE SOUTH WEST EXISTING ARCH CULVERT WING SHALL BE COMPLETELY REMOVED TO ALLOW THE CONSTRUCTION OF THE EXTENSION.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

NO PRECAST BOX CULVERT OPTION WILL BE ALLOWED.

THE SCOUR CRITICAL ELEVATION FOR THE CULVERT IS THE BOTTOM OF FOOTING. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Phone (919) 677-2000

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040384 JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson 11/1/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

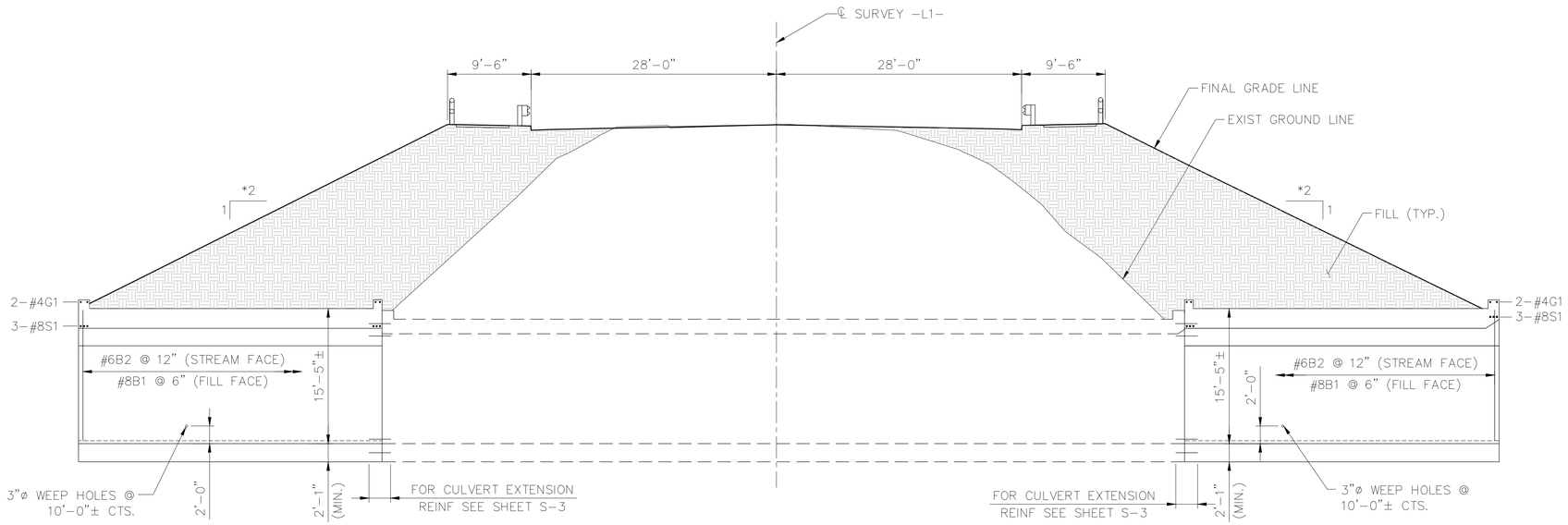
PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: LOCATION SKETCH & QUANTITIES
CULVERT PLANS SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	11/01/2017
PROJECT#:	015484010

S-1

Drawing name: K:\RDT_Structures_Culvert\Cad\Dwg\S1_LOC_QTY.dwg Layout 22 x 34 Nov 01, 2017 5:32pm by: Jeff.Wilson

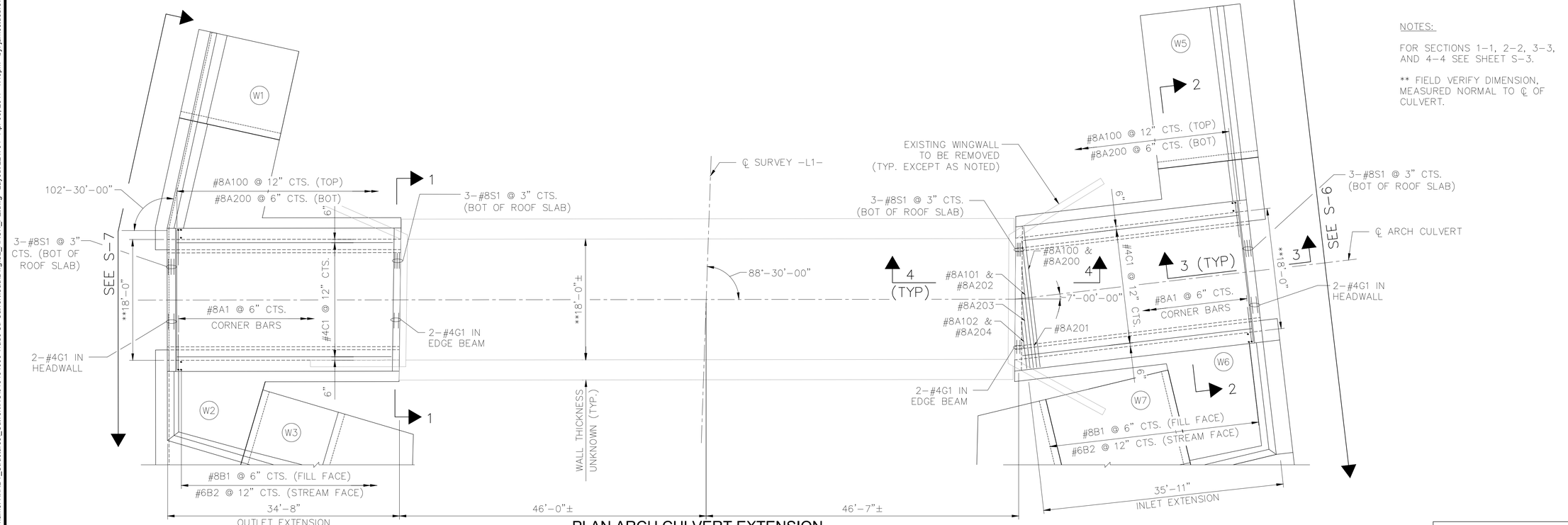


ELEVATION ALONG ℄ ARCH CULVERT

SCALE: 1/8" = 1'–0"

NOTES:

* MAX ROADWAY FILL SLOPES SHOWN MEASURED NORMAL TO ℄ SURVEY



PLAN ARCH CULVERT EXTENSION

SCALE: 1/8" = 1'–0"

NOTES:

FOR SECTIONS 1–1, 2–2, 3–3, AND 4–4 SEE SHEET S–3.

** FIELD VERIFY DIMENSION, MEASURED NORMAL TO ℄ OF CULVERT.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040384 JEFFREY C. WILSON

Documented by: Jeffrey C. Wilson 4/6/2017
CHARLES ASCOMBE

PROJ. REFERENCE NO.
44367.3.2

NO.	DATE	REVISIONS

CLIENT: STATE OF NORTH CAROLINA • NCDOT • DEPARTMENT OF TRANSPORTATION

PROJECT:
U - 5804B
SOUTH TRADE STREET
ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE:
ARCH CULVERT
PLAN & ELEVATION
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-2

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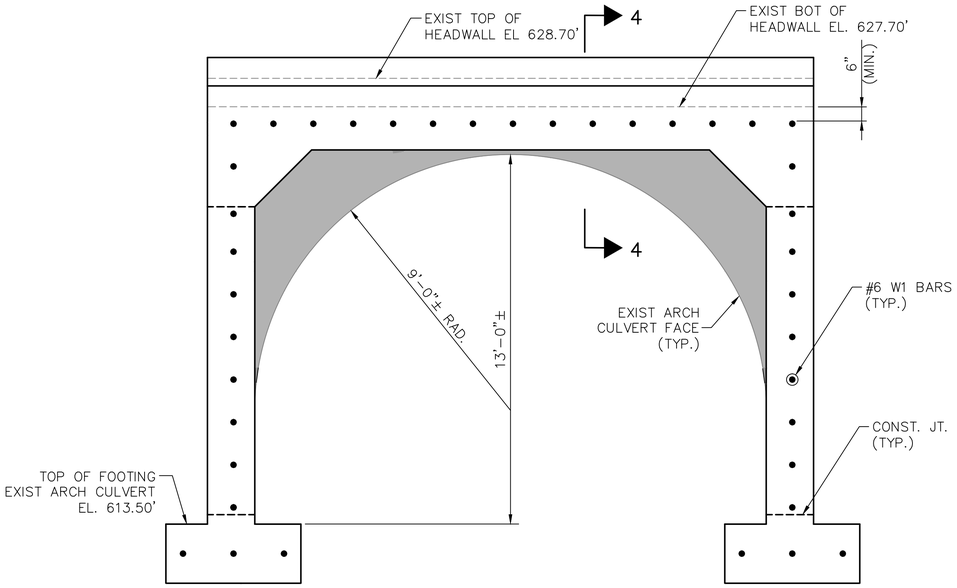
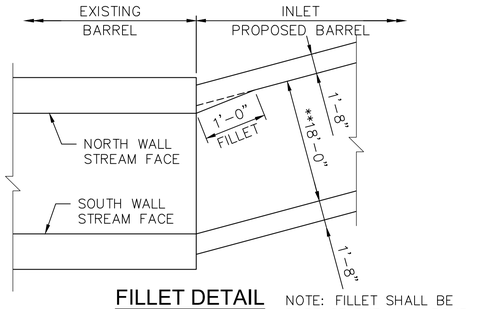


SECTION 1-1

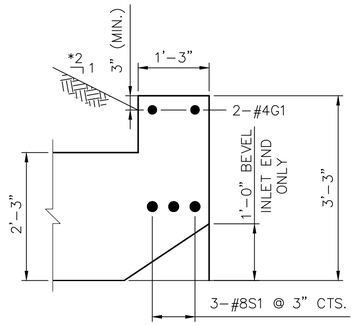
OUTLET SHOWN, INLET SIMILAR
SCALE: 3/8" = 1'-0"
THERE ARE 39 "W" BARS IN SECTION OF BARREL



FILLET DETAIL

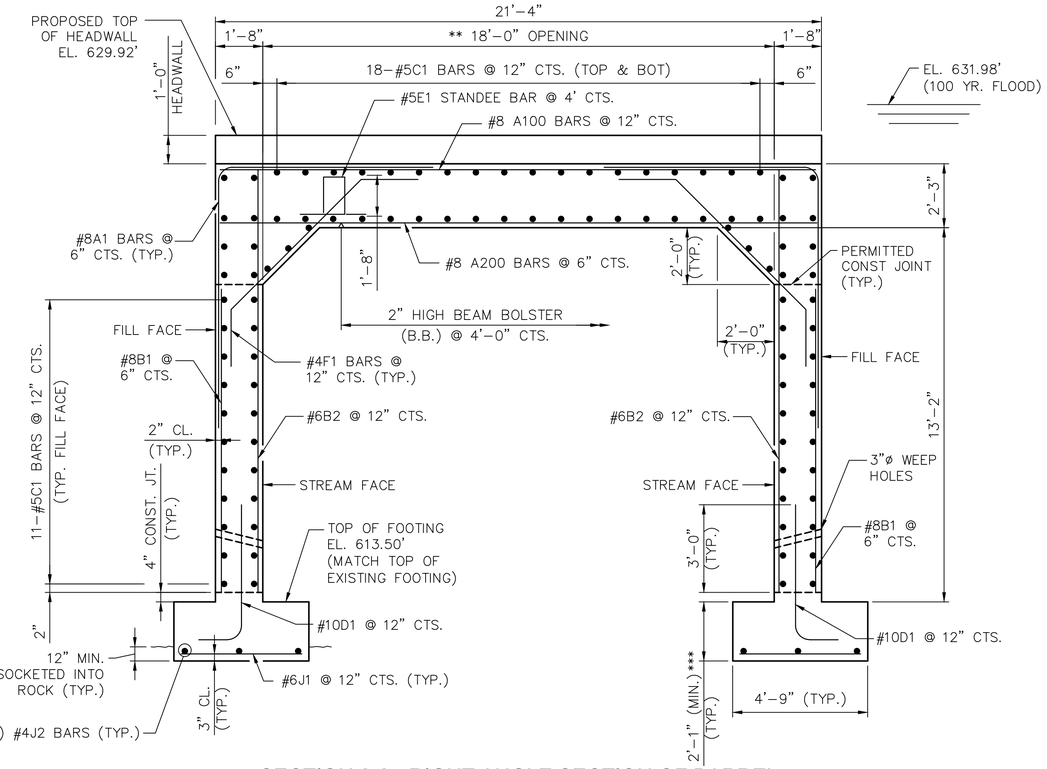
SCALE: NTS

NOTE: FILLET SHALL BE PART OF THE WALL POUR



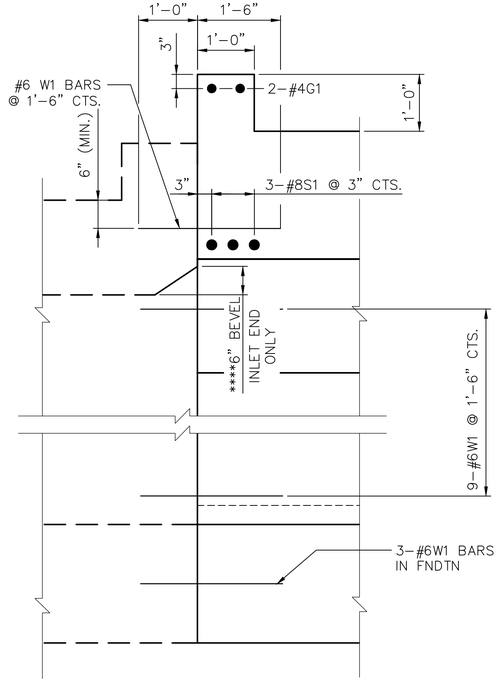
SECTION 3-3 - CULVERT HEADWALL

INLET SHOWN, OUTLET SIMILAR
SCALE: 3/4" = 1'-0"



SECTION 2-2 - RIGHT ANGLE SECTION OF BARREL

SCALE: 3/8" = 1'-0"
THERE ARE 192 "C" BARS IN SECTION OF BARREL

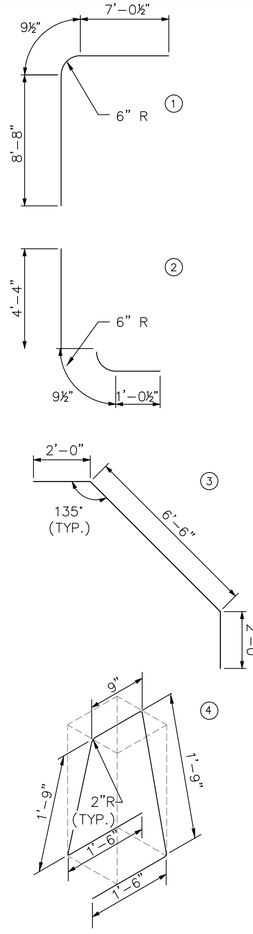


EXISTING BARREL PROPOSED BARREL

SECTION 4-4 - EXTENSION DOWELS

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

BAR TYPES



BARREL, FOOTING AND HEADWALL BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A100	66	8	STR	21'-0"	3701
A101	1	8	STR	15'-1"	40
A102	1	8	STR	7'-0"	19
A200	130	8	STR	21'-0"	7289
A201	1	8	STR	19'-0"	51
A202	1	8	STR	15'-1"	40
A203	1	8	STR	11'-1"	30
A204	1	8	STR	7'-0"	19
A1	284	8	1	16'-6"	12512
B1	284	8	STR	10'-8"	8088
B2	146	6	STR	14'-10"	3253
C1	408	4	STR	19'-3"	5246
D1	146	10	2	6'-2"	3874
E1	80	5	4	7'-3"	605
F1	146	4	3	10'-6"	1024
G1	8	4	STR	21'-0"	112
J1	146	6	STR	4'-6"	987
J2	24	4	STR	19'-3"	309
S1	12	8	STR	21'-0"	673
W1	78	6	STR	2'-6"	293
REINFORCING STEEL –LBS–					48,165

ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTES:

SECTIONS 1–1, 2–2, 3–3, AND 4–4 REFERENCED ON SHEET S–2.

CULVERT FOUNDATIONS MUST BE EMBEDDED A MINIMUM OF 12" INTO ROCK. IF ACTUAL SITE CONDITIONS PREVENT MINIMUM 12" EMBEDMENT AT TOP OF FOOTING ELEVATION SHOWN, CONTRACTOR SHALL NOTIFY ENGINEER.

OUTLET CULVERT EXTENSION STREAM FACE WALLS SHALL LINE UP WITH EXISTING ARCH CULVERT WALLS (18' WIDTH – FIELD VERIFY).

INLET CULVERT EXTENSION SOUTH FACE STREAM FACE WALL SHALL LINE UP WITH EXISTING ARCH CULVERT SOUTH WALL. THE NORTH EXTENSION SHALL HAVE A 1' FLARE TO LINE UP THE NORTH WALL FACE (SEE FILLET DETAIL).

* MAX ROADWAY FILL SLOPES SHOWN MEASURED NORMAL TO ℄ SURVEY

** FIELD VERIFY DIMENSION

*** MATCH ADJACENT WINGWALL FOOTING DEPTH

**** BEVEL INLET OF EXISTING CULVERT 6" WITH 1.5:1 SLOPE. CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING CULVERT OR DROP DEBRIS INTO STREAM WHILE CREATING BEVEL. BASED ON AVAILABLE INFORMATION THE EXISTING CULVERT IS UNREINFORCED. IF REINFORCING IS ENCOUNTERED, CONTACT ENGINEER IMMEDIATELY.

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Documents not considered fully executed by
Jeffrey C. Wilson 4/6/2017
CHARLOTTE, NC

PROJ. REFERENCE NO.
44367.3.2

NO.	DATE	REVISIONS

CLIENT: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT:
U - 5804B
SOUTH TRADE STREET
ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE:
ARCH CULVERT SECTIONS
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-3

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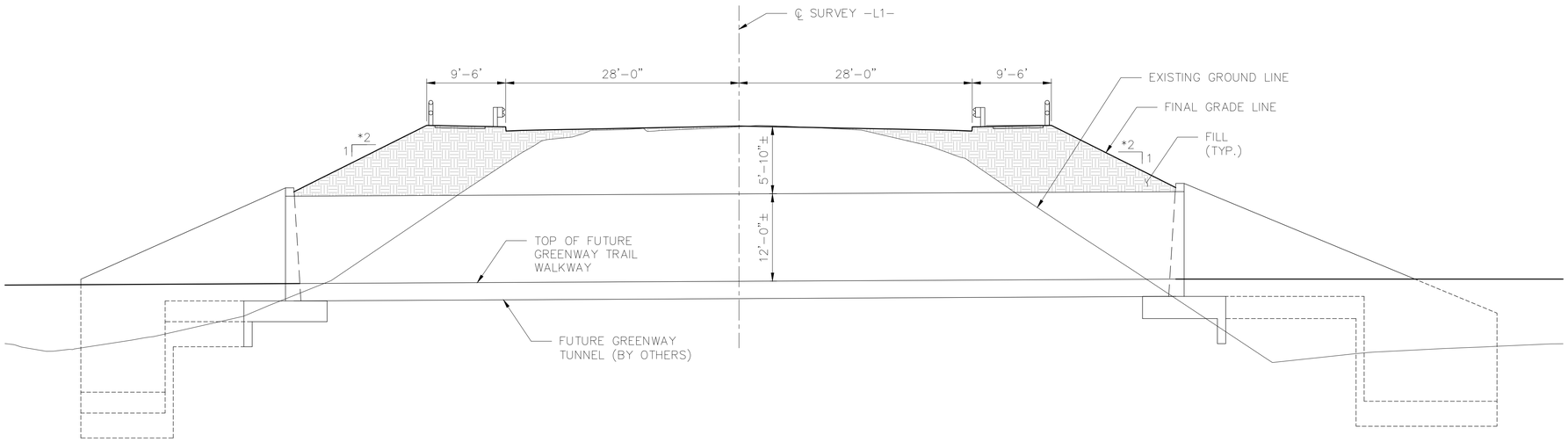
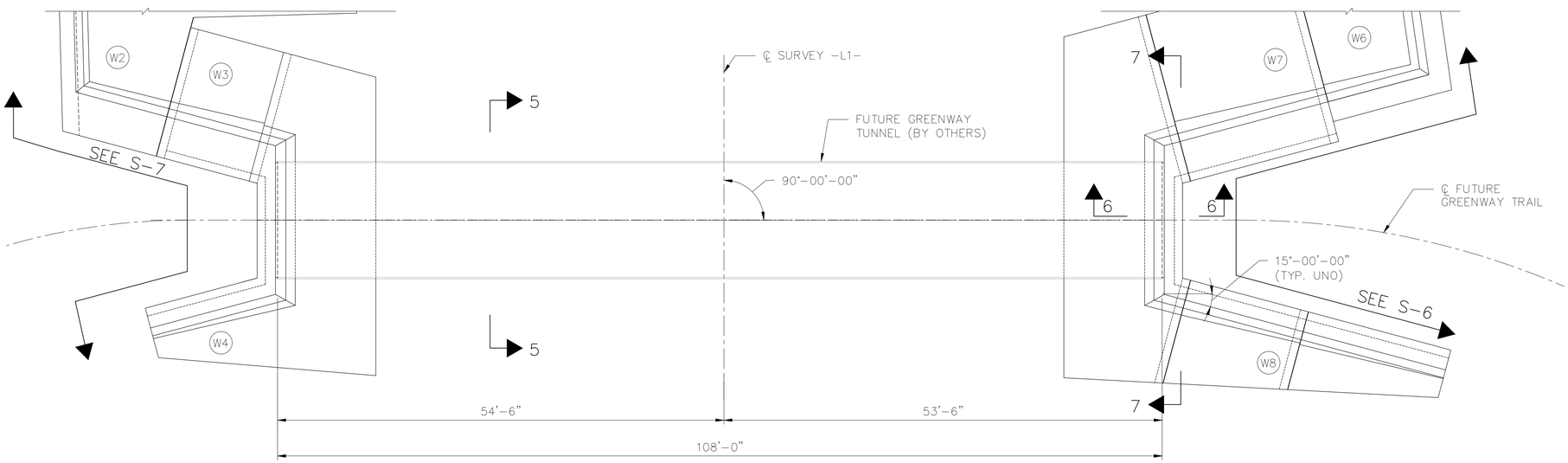


ELEVATION ALONG ℄ GREENWAY TRAIL TUNNEL

SCALE: 1/8" = 1'–0"

NOTES:

* MAX ROADWAY FILL SLOPES SHOWN MEASURED NORMAL TO ℄ SURVEY



NOTES:

FOR SECTIONS 5–5, 6–6, AND 7–7 SEE SHEET S–5.

PLAN GREENWAY TRAIL TUNNEL

SCALE: 1/8" = 1'–0"

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Documented by: Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

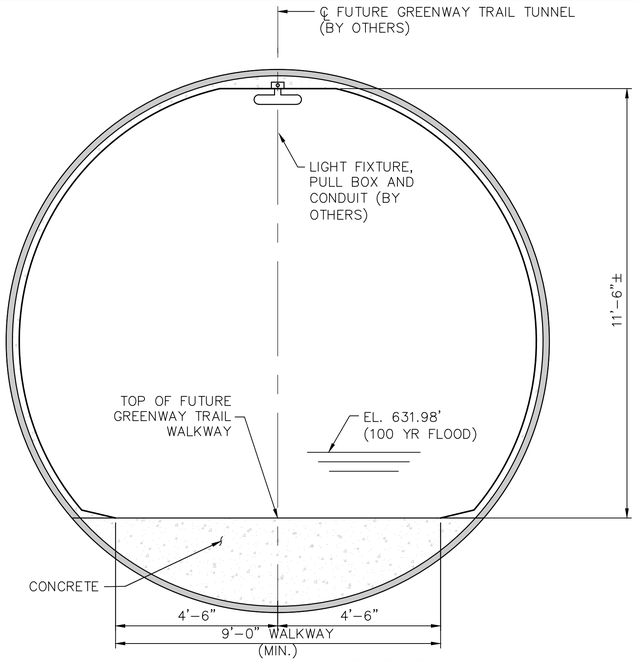
CLIENT: STATE OF NORTH CAROLINA • NCDOT • DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS — COUNTY: MECKLENBURG STATION: 102+51.83 -L1-

TITLE: PEDESTRIAN TUNNEL PLAN & ELEVATION — CULVERT PLANS SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-4



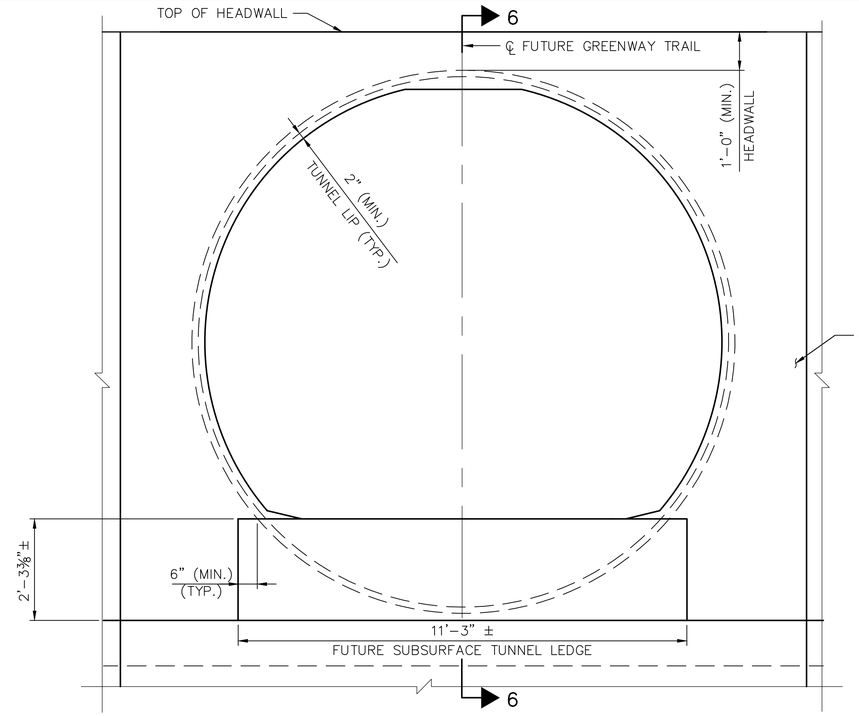
NOTES:

SECTION CUT REFERENCED ON SHEET S-4.

SECTION IS FOR INFORMATION ONLY.

GREENWAY TRAIL TUNNEL SECTION 5-5

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



NOTES:

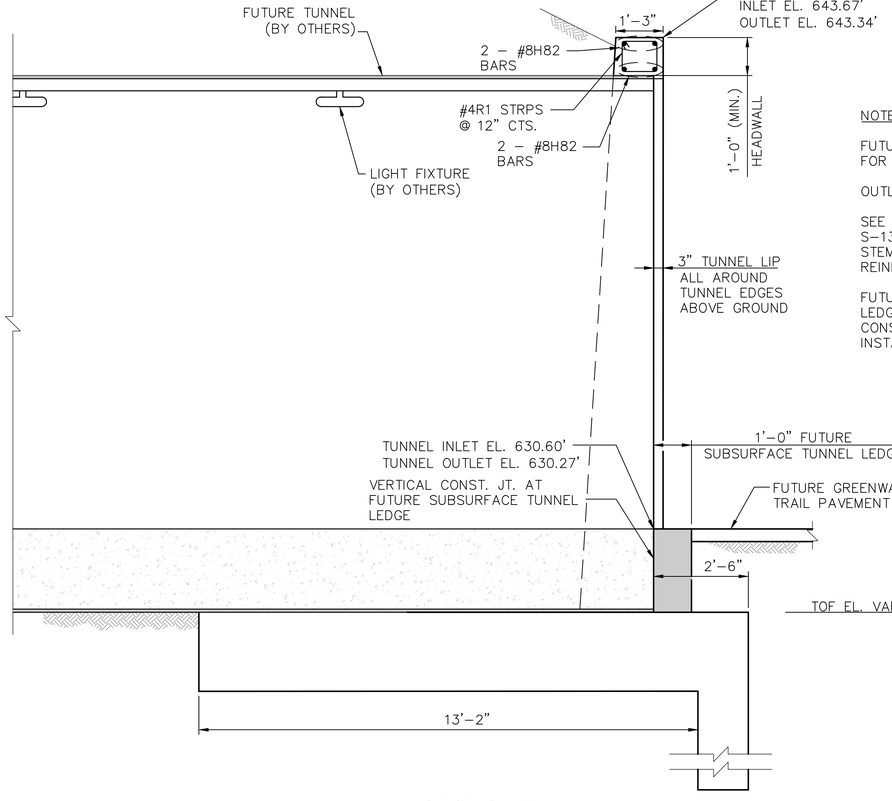
SECTION CUT REFERENCED ON SHEET S-4.

INLET SHOWN, OUTLET SIMILAR.

FOR TEMPORARY TUNNEL DETAILS SEE SHEET S-16.

GREENWAY TRAIL TUNNEL INLET VIEW 7-7

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



NOTES:

FUTURE TUNNEL SECTION SHOWN FOR INFORMATION ONLY.

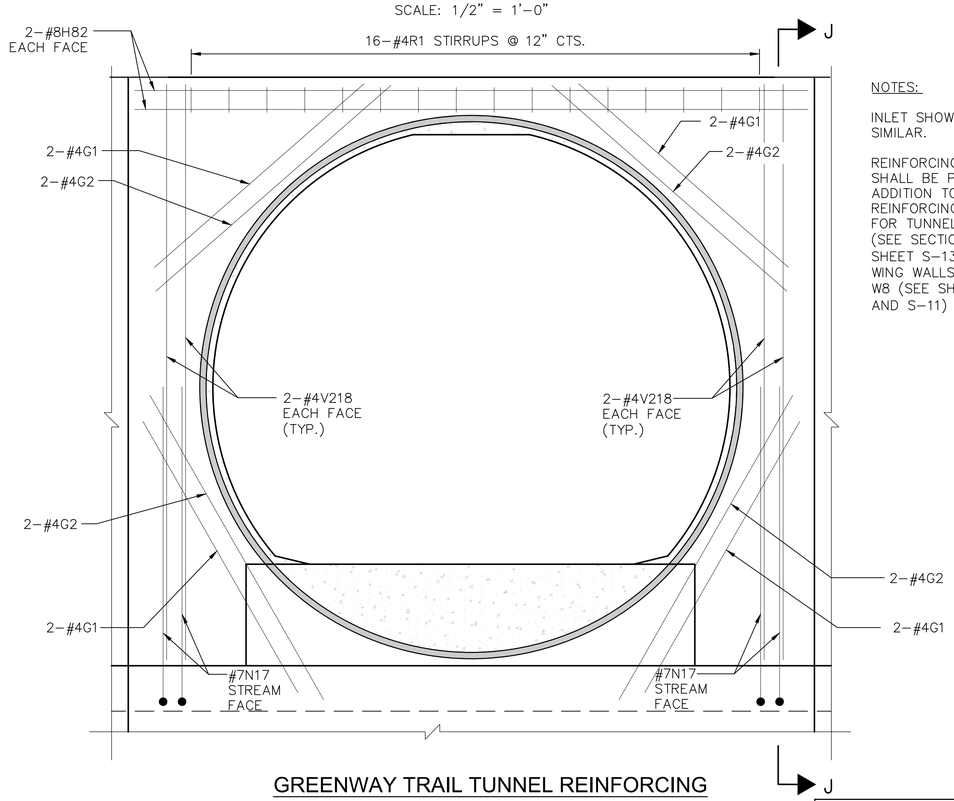
OUTLET SHOWN, INLET SIMILAR

SEE SECTION J-J ON SHEET S-13 FOR TUNNEL HEADWALL STEM AND FOUNDATION REINFORCEMENT.

FUTURE SUBSURFACE TUNNEL LEDGE IS SHOWN, BUT NOT CONSTRUCTED UNTIL TUNNEL IS INSTALLED.

SECTION 6-6

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



NOTES:

INLET SHOWN, OUTLET SIMILAR.

REINFORCING SHOWN SHALL BE PROVIDED IN ADDITION TO TYPICAL REINFORCING SHOWN FOR TUNNEL HEADWALL (SEE SECTION J-J SHEET S-13) AND WING WALLS W4, W7, W8 (SEE SHEETS S-9 AND S-11)

GREENWAY TRAIL TUNNEL REINFORCING

(TYPICAL INLET AND OUTLET)

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

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Docusigned by: Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

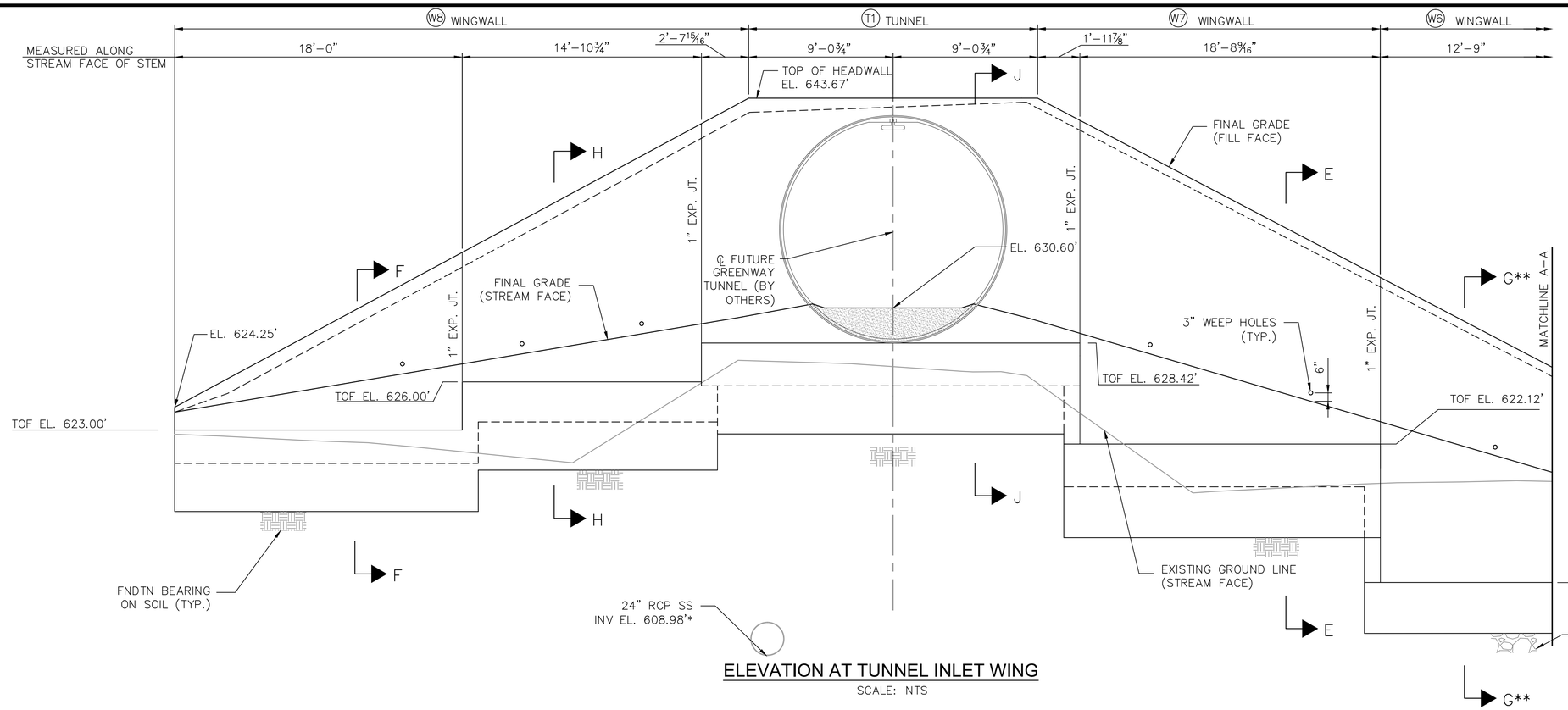
CLIENT: STATE OF NORTH CAROLINA • NOTHING • DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: PEDESTRIAN TUNNEL SECTIONS
CULVERT PLANS
SOUTH TRADE STREET

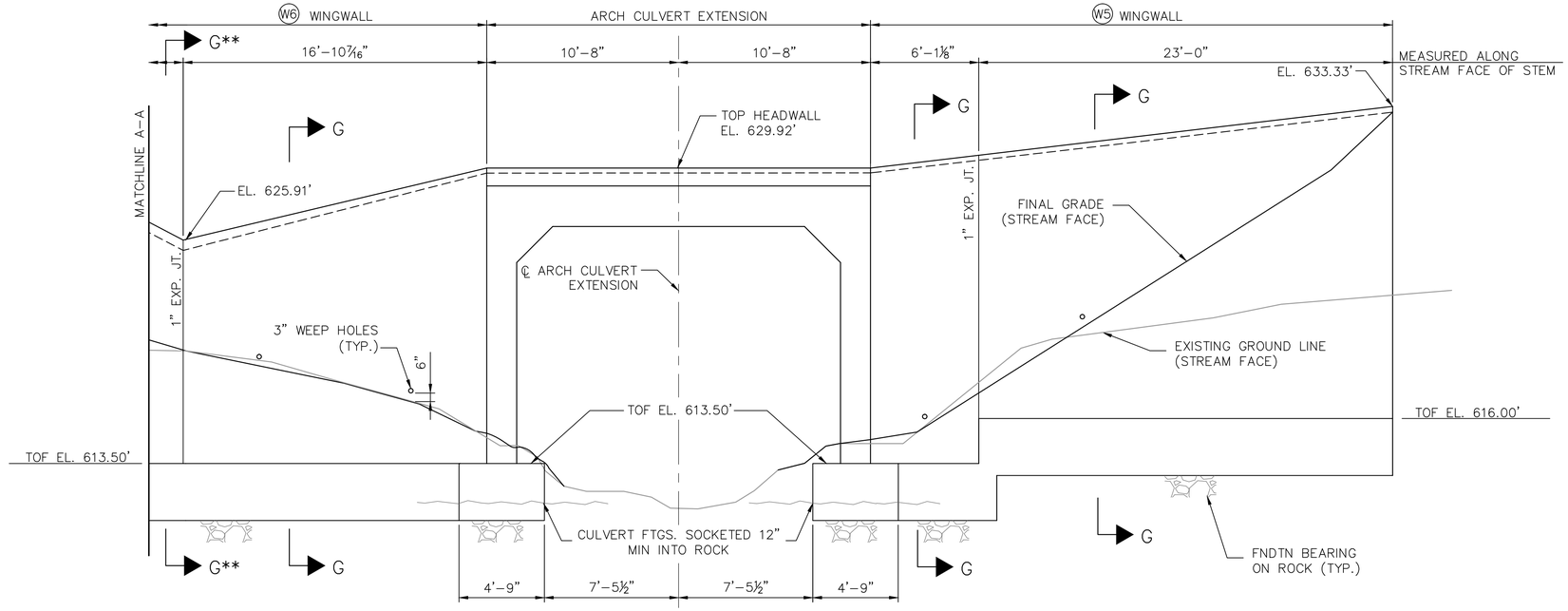
DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-5



ELEVATION AT TUNNEL INLET WING

SCALE: NTS



ELEVATION AT ARCH CULVERT EXTENSION INLET WINGS

SCALE: NTS

NOTES:

THE CONTRACTOR SHOULD NOTIFY THE ENGINEER IF ROCK IS NOT ENCOUNTERED 12 INCHES ABOVE BOTTOM OF FOOTING ELEVATION FOR FOUNDATIONS ASSUMED TO BEAR ON ROCK.

SECTIONS ARE CUT ALONG STREAM FACE OF WINGS.

* CONTRACTOR TO PROTECT UTILITIES DURING EXCAVATION, CONSTRUCTION, AND BACKFILLING OPERATIONS. IN THE EVENT OF DAMAGE TO THE UTILITY, CONTRACTOR WILL REPLACE DAMAGED UTILITY AT NO COST TO THE PROJECT. APPROXIMATE LOCATION OF UTILITY SHOWN FOR INFORMATION ONLY. REFERENCE CIVIL PLANS FOR MORE INFORMATION. FIELD VERIFY UTILITY LOCATIONS.

** "Z" BARS SHALL HAVE 3" OF CONCRETE COVER

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Documents signed by: Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

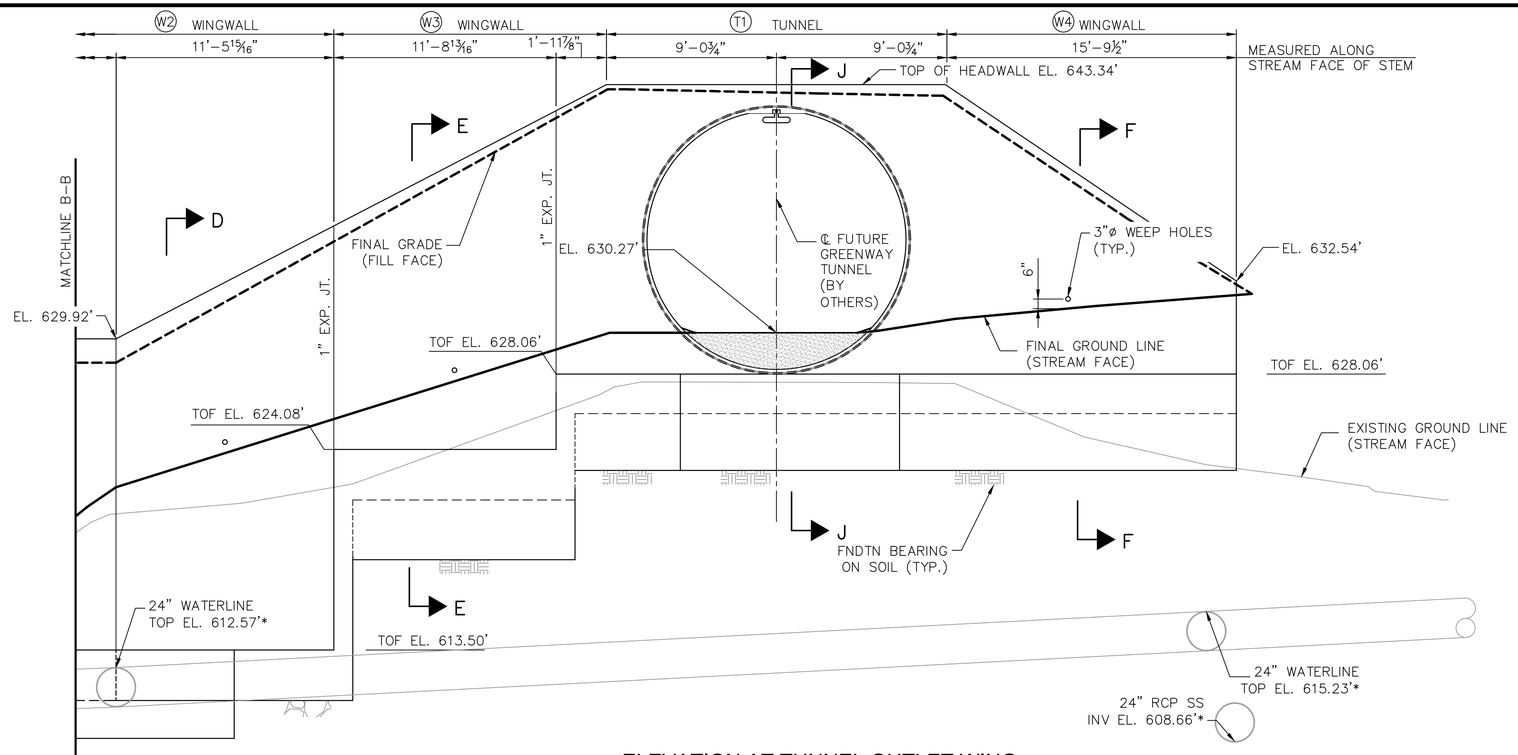
TITLE: INLET WING ELEVATION
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-6

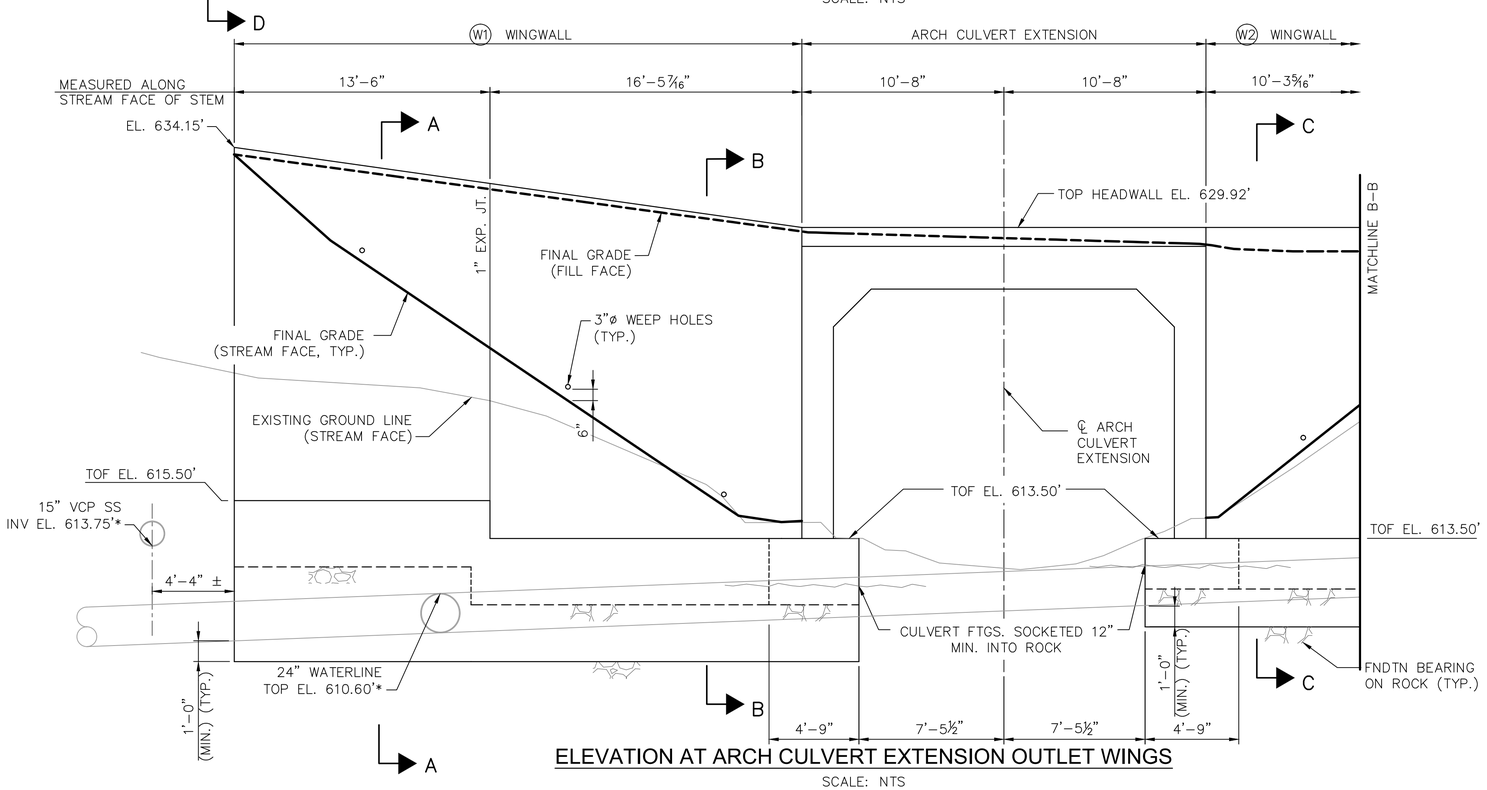
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Drawing name: K:\RDT_Structures_Culvert\NC\015484006 Trade Str Culvert\CadDwg\S6_WING_INLET_EL.dwg Layout 22 x 34 Apr 06, 2017 1:49pm by: james.debrow



ELEVATION AT TUNNEL OUTLET WING

SCALE: NTS



ELEVATION AT ARCH CULVERT EXTENSION OUTLET WINGS

SCALE: NTS

NOTES:

THE CONTRACTOR SHOULD NOTIFY THE ENGINEER IF ROCK IS NOT ENCOUNTERED 12 INCHES ABOVE BOTTOM OF FOOTING ELEVATION FOR FOUNDATIONS ASSUMED TO BEAR ON ROCK.

SECTIONS ARE CUT ALONG STREAM FACE OF WINGS.

* CONTRACTOR TO PROTECT UTILITIES DURING EXCAVATION, CONSTRUCTION, AND BACKFILLING OPERATIONS. IN THE EVENT OF DAMAGE TO THE UTILITY, CONTRACTOR WILL REPLACE DAMAGED UTILITY AT NO COST TO THE PROJECT. APPROXIMATE LOCATION OF UTILITY SHOWN FOR INFORMATION ONLY. REFERENCE CIVIL PLANS FOR MORE INFORMATION. FIELD VERIFY UTILITY LOCATIONS.

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Documents not for regulatory approval, permitting, or construction unless sealed and signed. Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

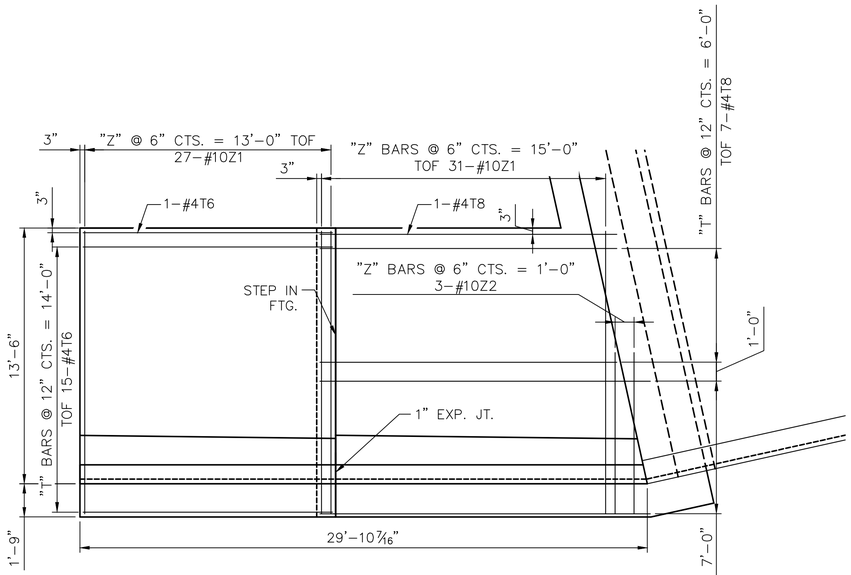
PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS — COUNTY: MECKLENBURG STATION: 102+51.83 -L1-

TITLE: OUTLET WING ELEVATIONS CULVERT PLANS SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

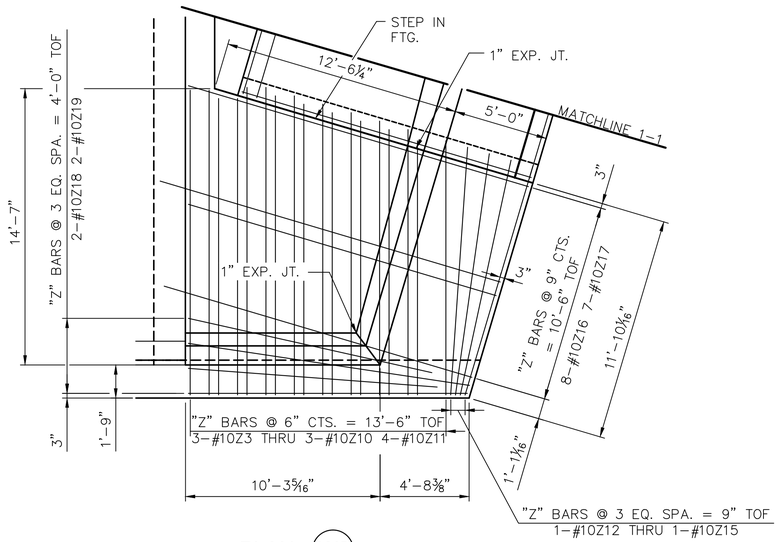
S-7

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



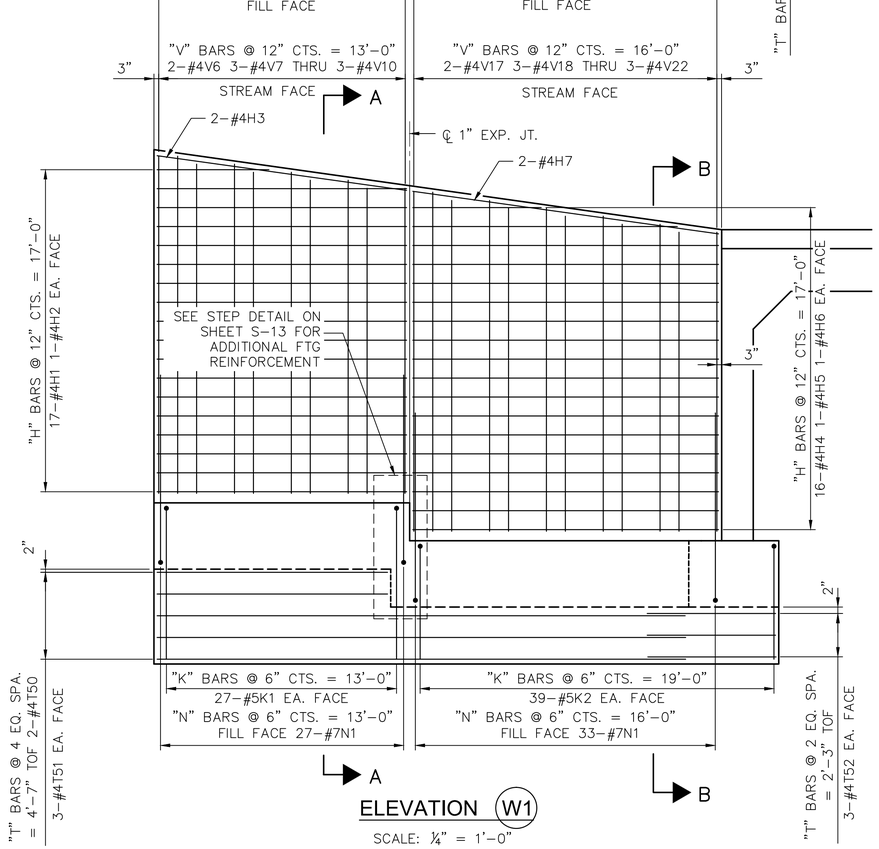
PLAN W1

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



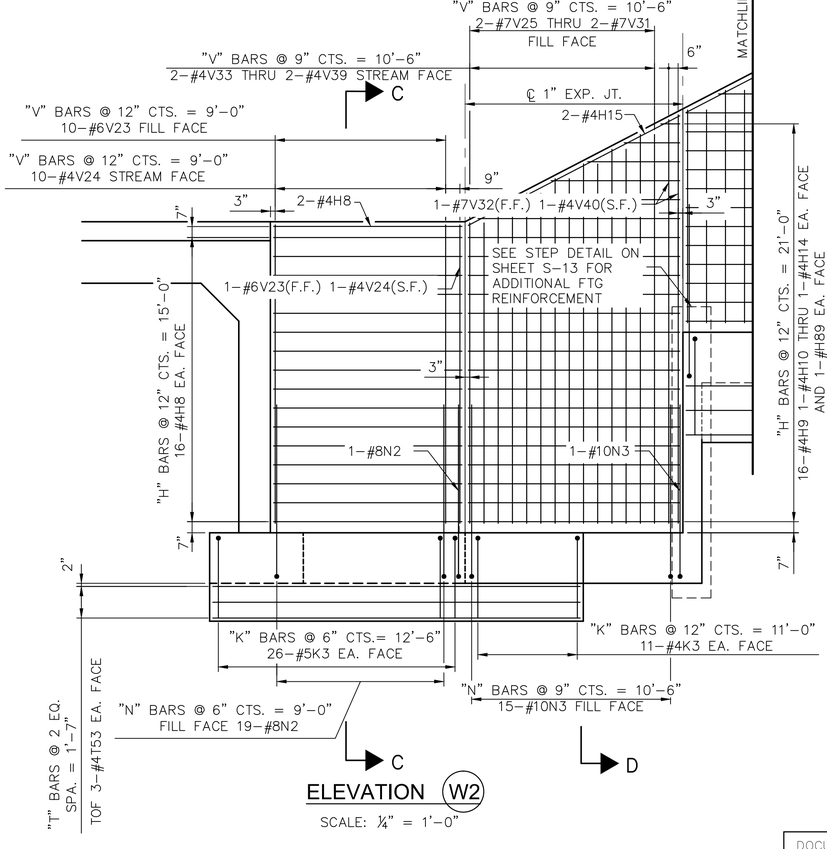
PLAN W2

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



ELEVATION W1

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



ELEVATION W2

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

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Docusigned by: Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO.
44367.3.2

NO.	DATE	REVISIONS

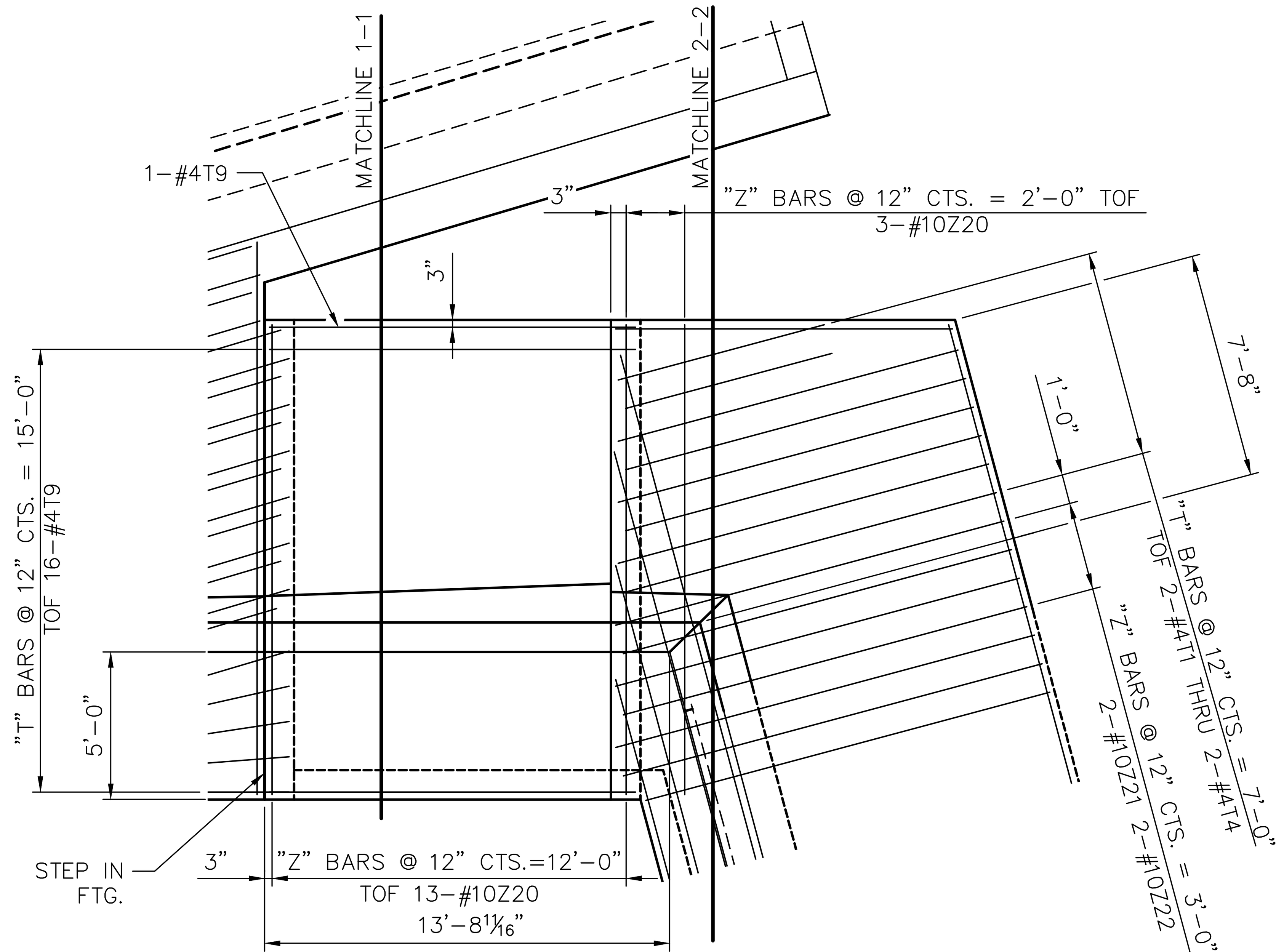
CLIENT: STATE OF NORTH CAROLINA • NCDOT • DEPARTMENT OF TRANSPORTATION

PROJECT:
U - 5804B
SOUTH TRADE STREET
ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE:
OUTLET WING REINFORCING
AT ARCH CULVERT
CULVERT PLANS
SOUTH TRADE STREET

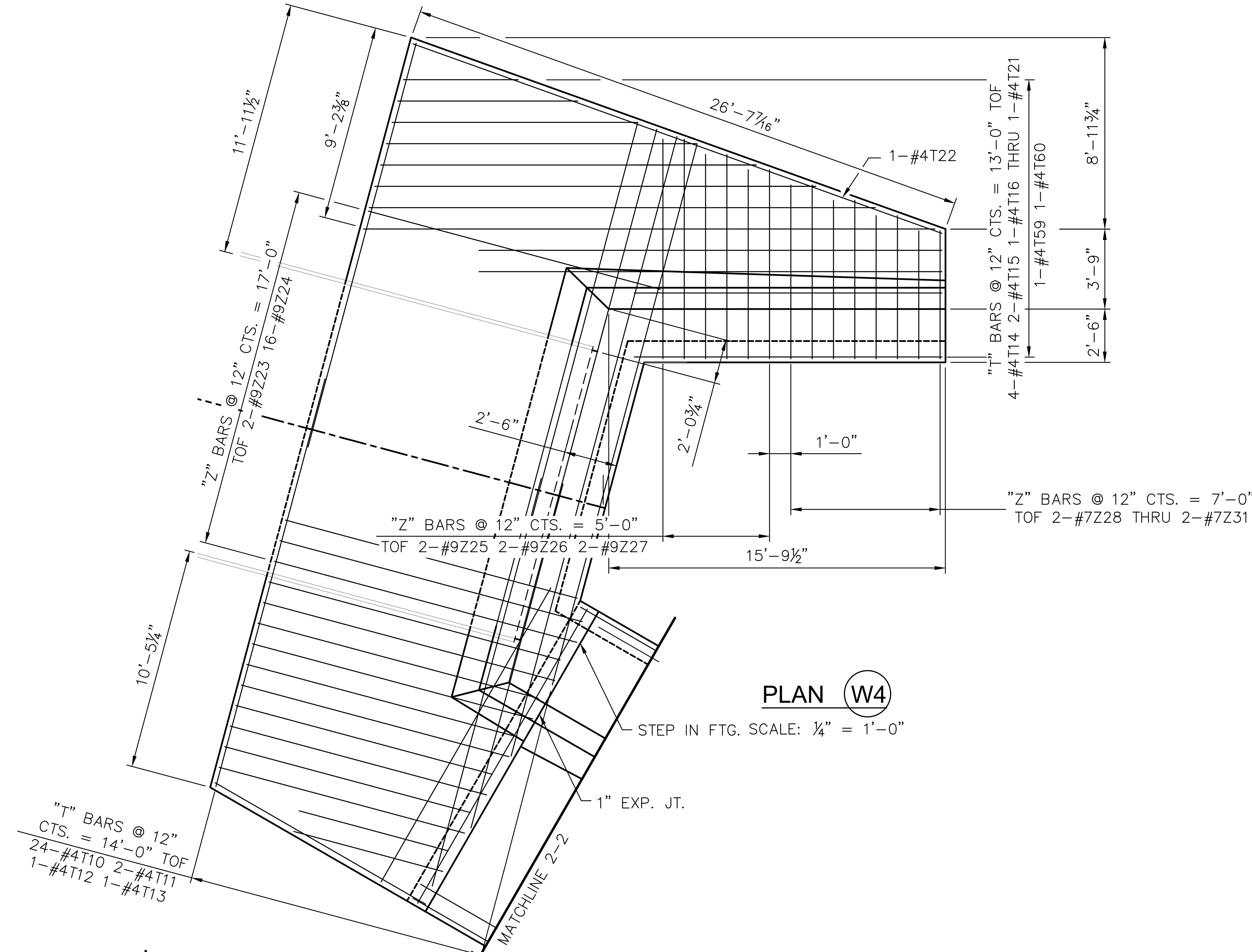
DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-8



PLAN (W3)

SCALE: ¼" = 1'-0"



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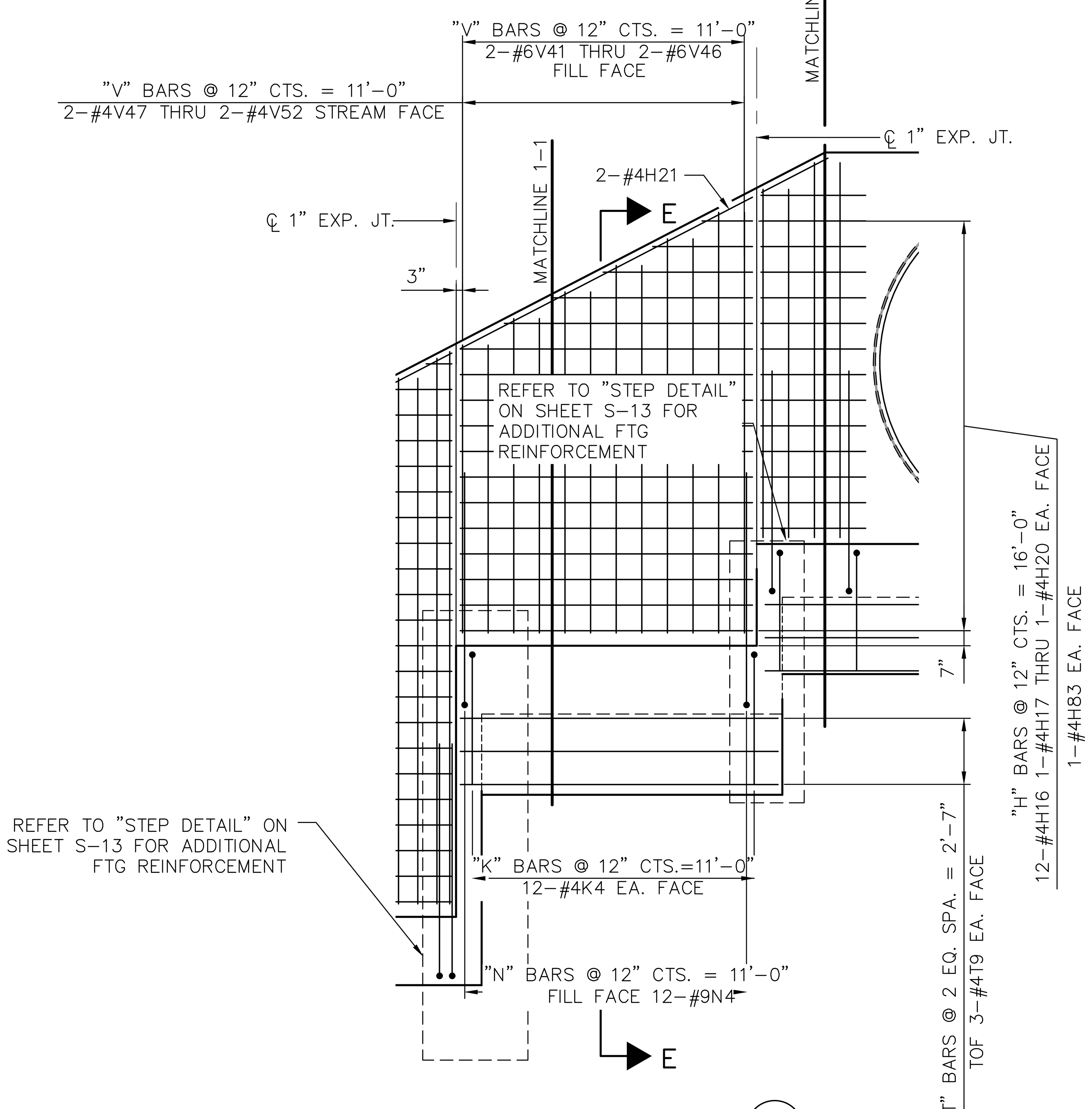

ELEVATION (W3)

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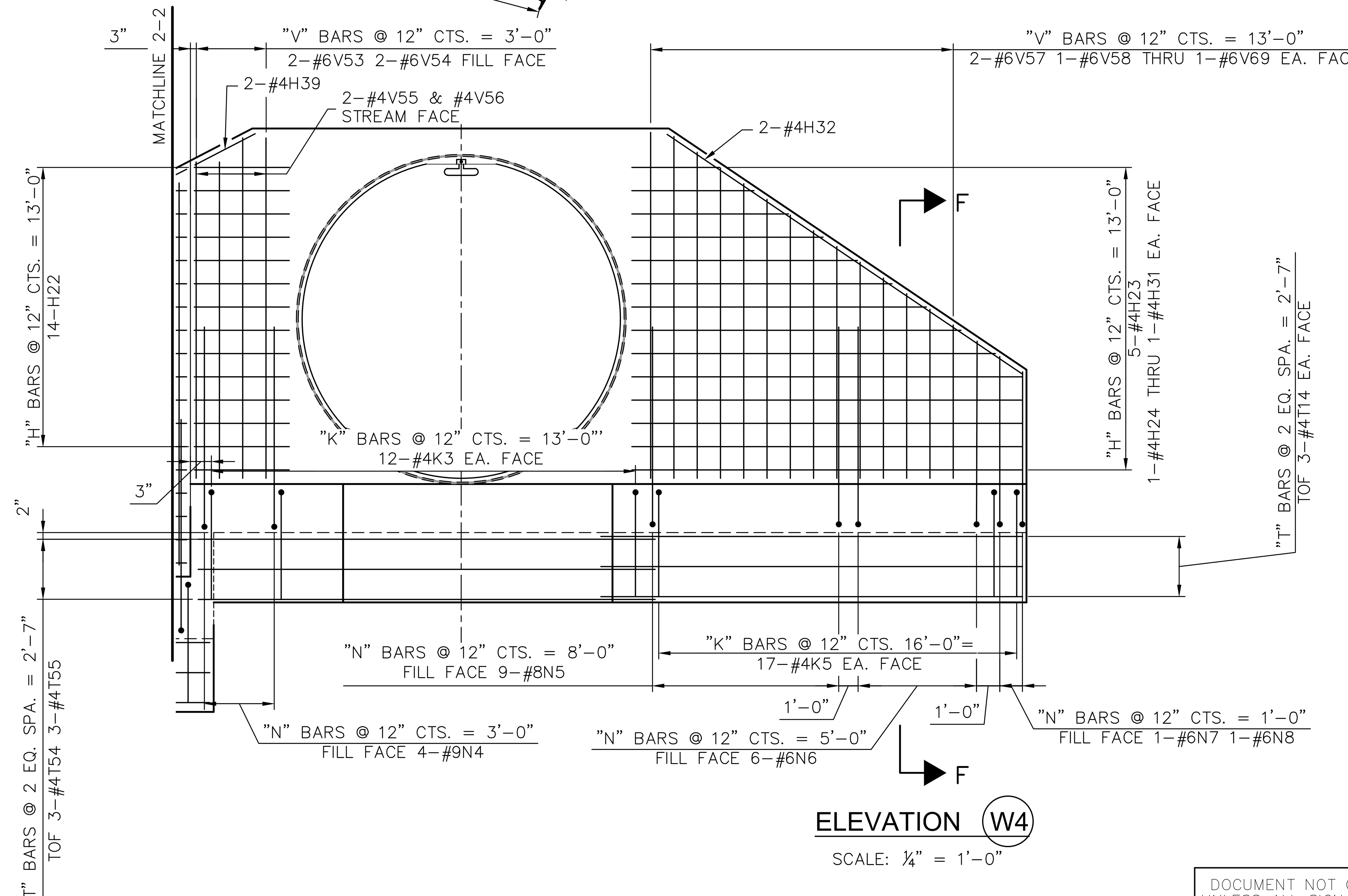

ELEVATION (W4)

SCALE: ¼" = 1'-0"

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040384 JEFFREY C. WILSON 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

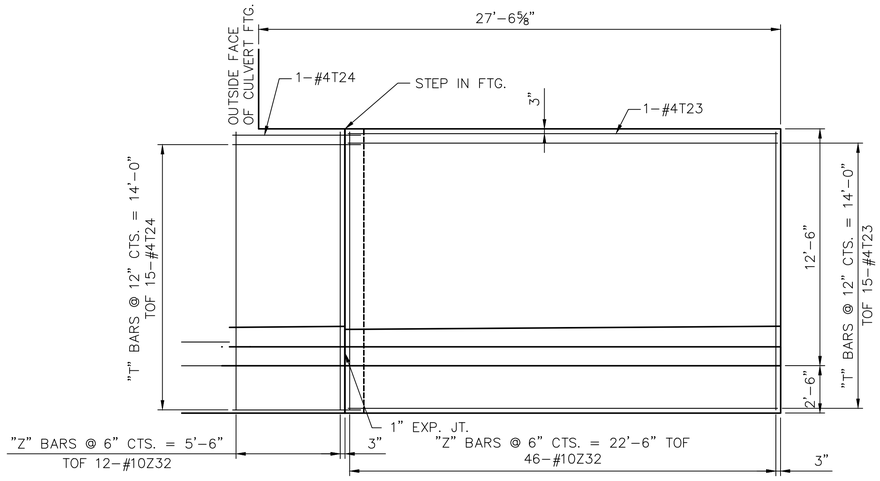
CLIENT: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: OUTLET WING REINFORCING AT ARCH CULVERT
CULVERT PLANS SOUTH TRADE STREET

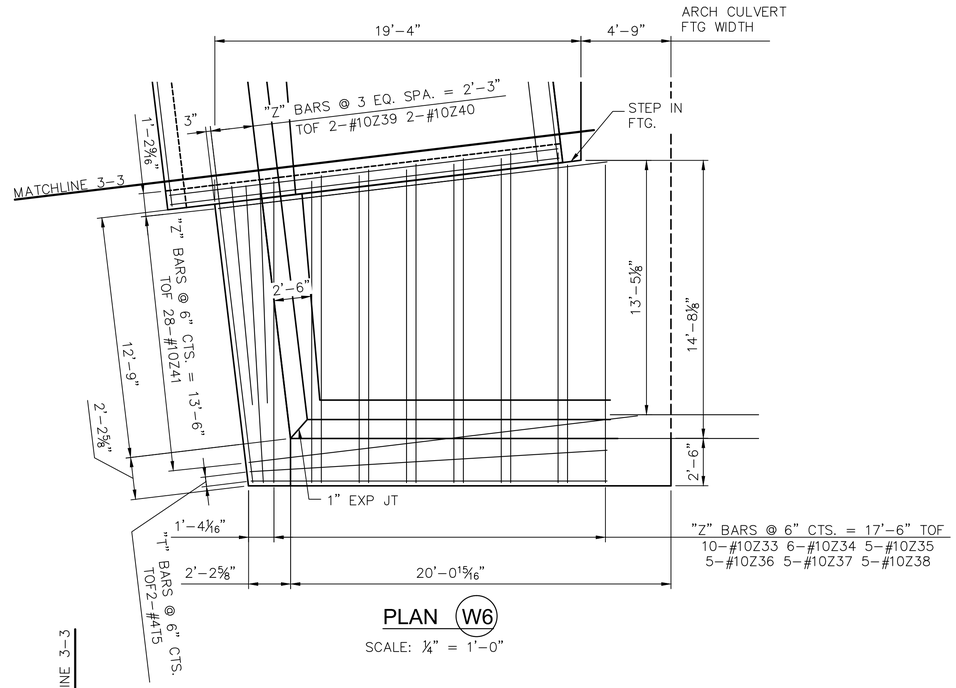
DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-9



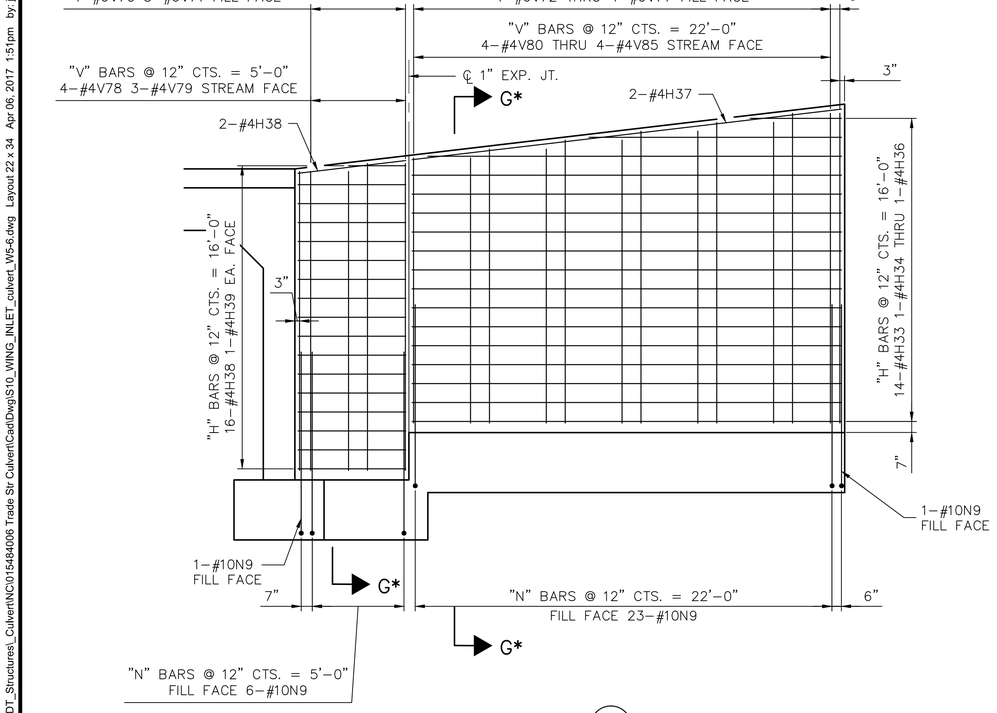
PLAN (W5)

SCALE: ¼" = 1'-0"



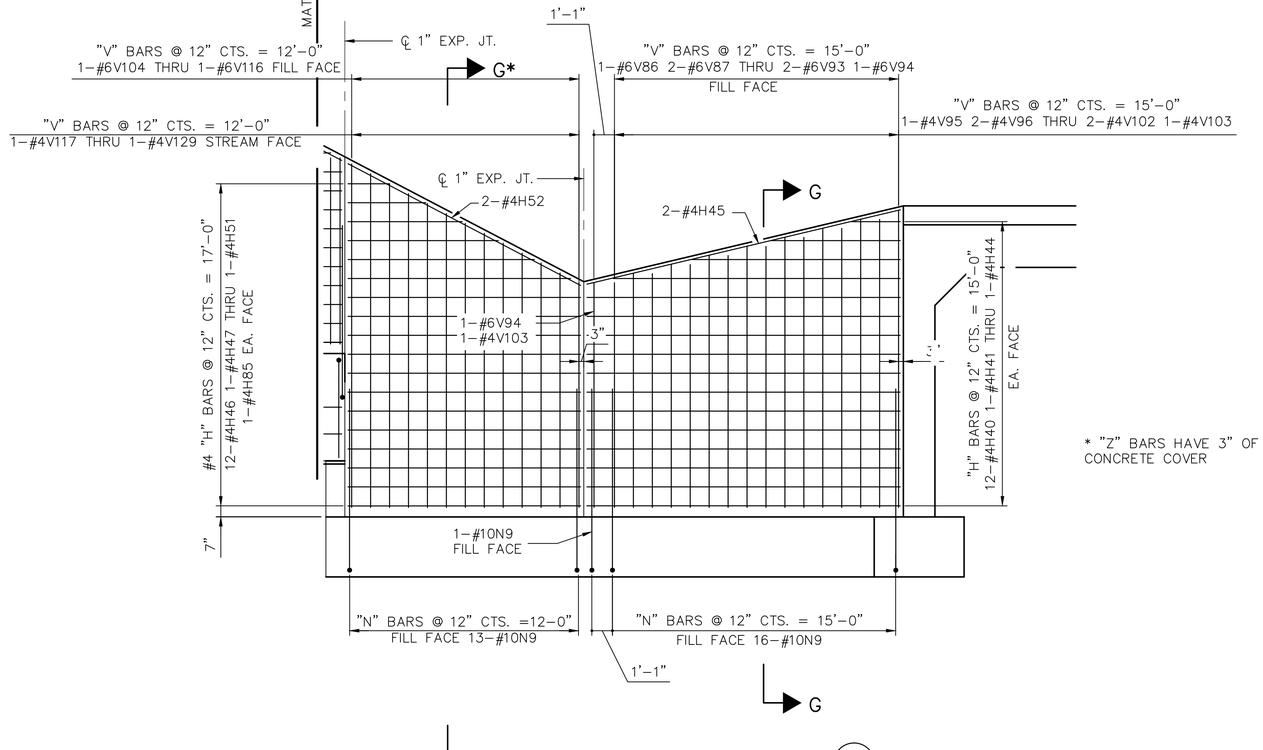
PLAN (W6)

SCALE: ¼" = 1'-0"



ELEVATION (W5)

SCALE: ¼" = 1'-0"



ELEVATION (W6)

SCALE: ¼" = 1'-0"

* "Z" BARS HAVE 3" OF CONCRETE COVER

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Documents prepared by: Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

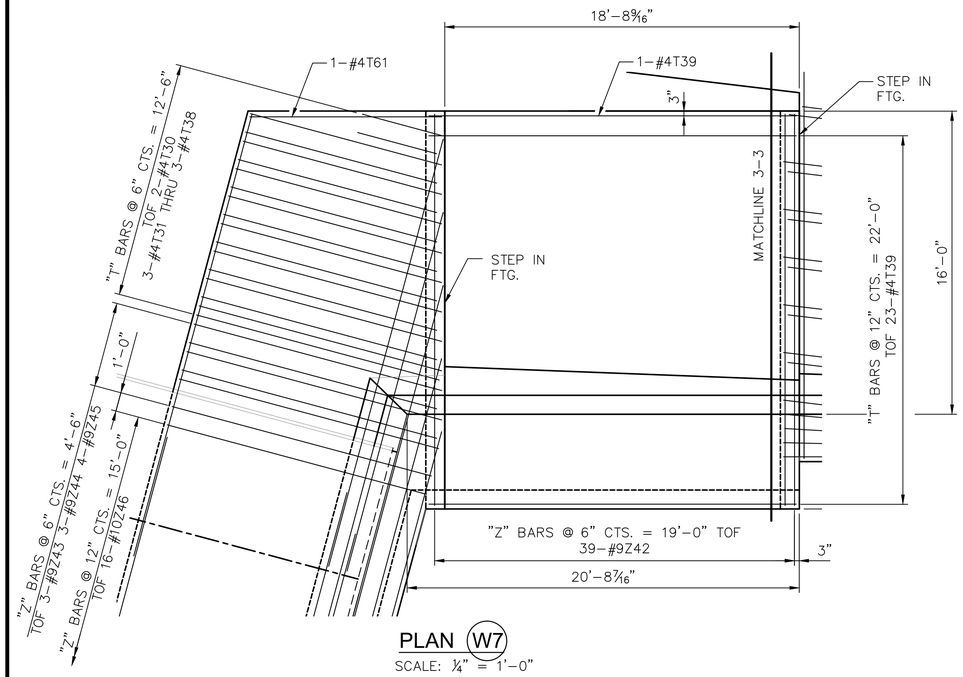
PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: INLET WING REINFORCING AT ARCH CULVERT
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

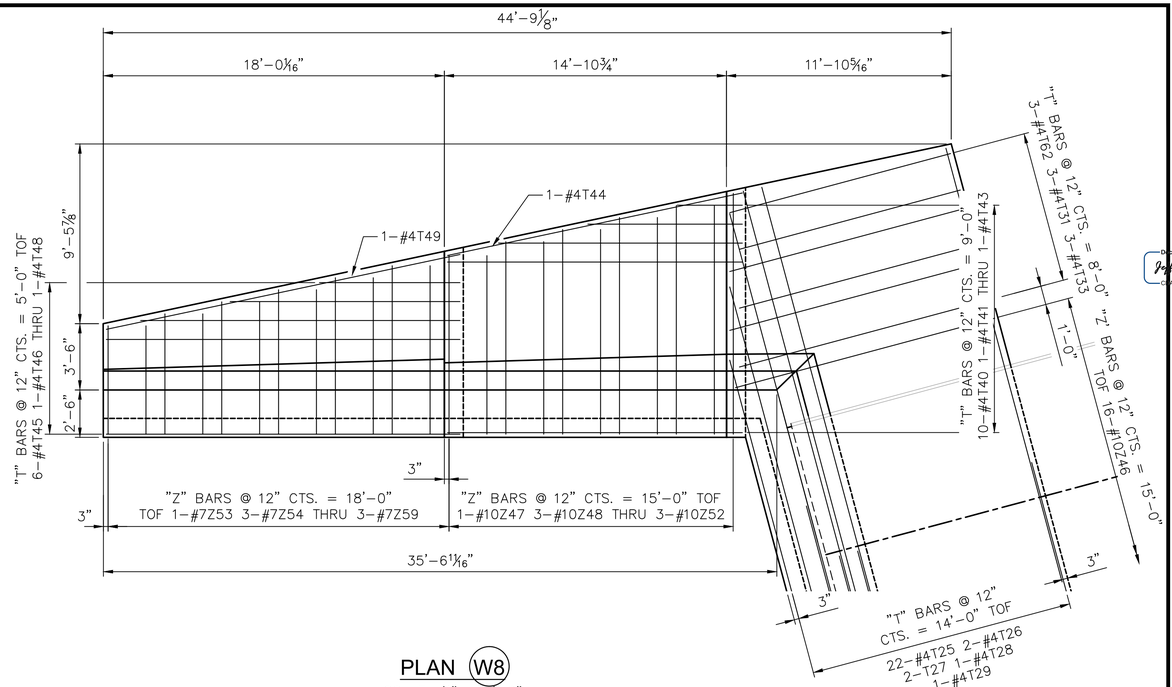
S-10

Drawing name: K:\RDT_Structures_Culvert\NC\015484006 Trade Str Culvert\Cad\Dwg\S10_WING_INLET_culvert_W5-6.dwg Layout 22 x 34 Apr 06, 2017 1:51pm by: james.debrow



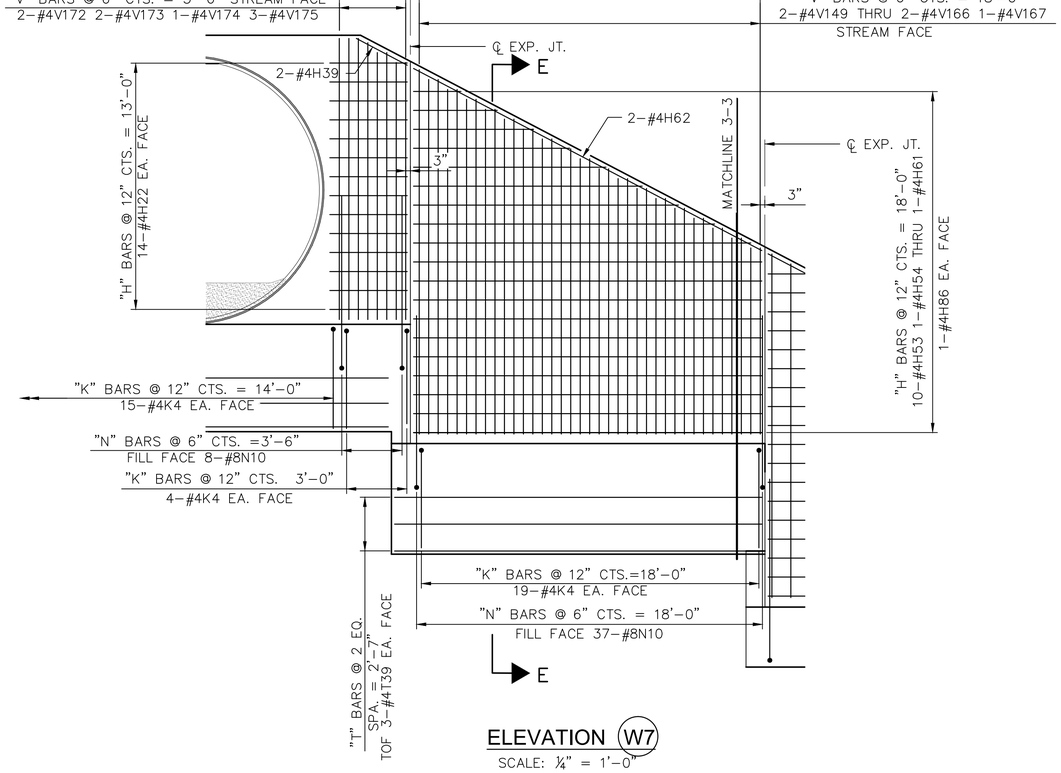
PLAN (W7)

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



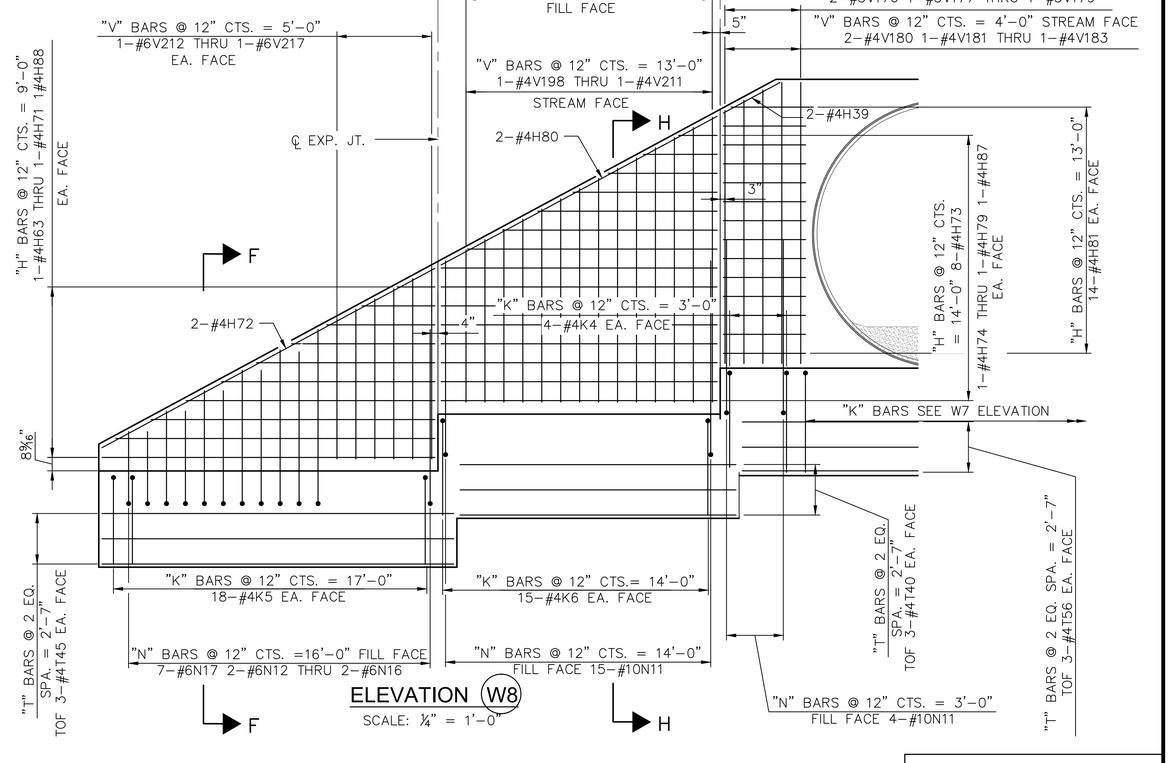
PLAN (W8)

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



ELEVATION (W7)

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



ELEVATION (W8)

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

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Documents not considered sealed by NCBELS
Jeffrey C. Wilson 4/6/2017
DATE

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

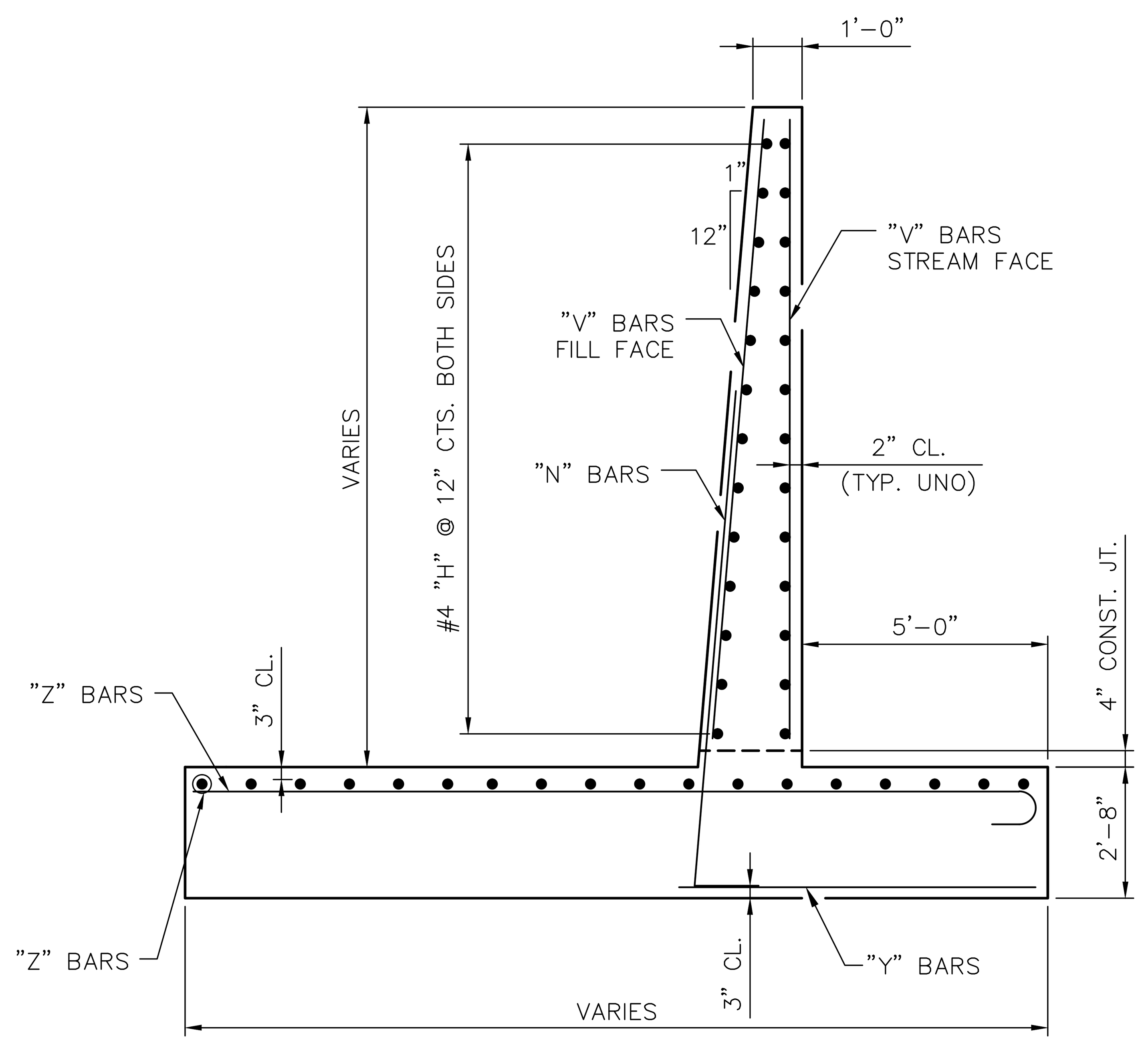
CLIENT: STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

PROJECT: U-5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: INLET WING REINFORCING AT GREENWAY TUNNEL
CULVERT PLANS
SOUTH TRADE STREET

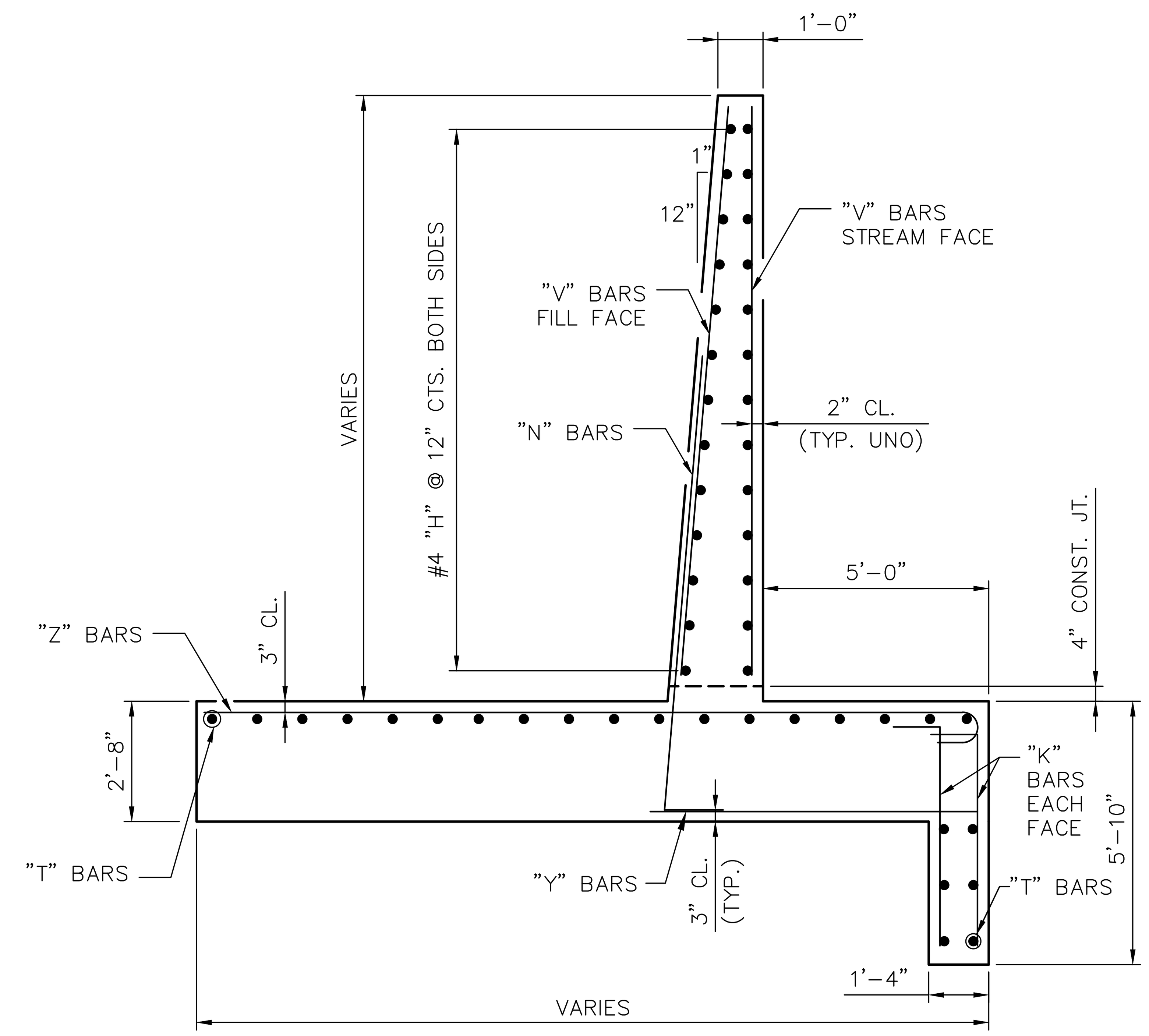
DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-11



SECTION D-D

SCALE: NTS



SECTION E-E

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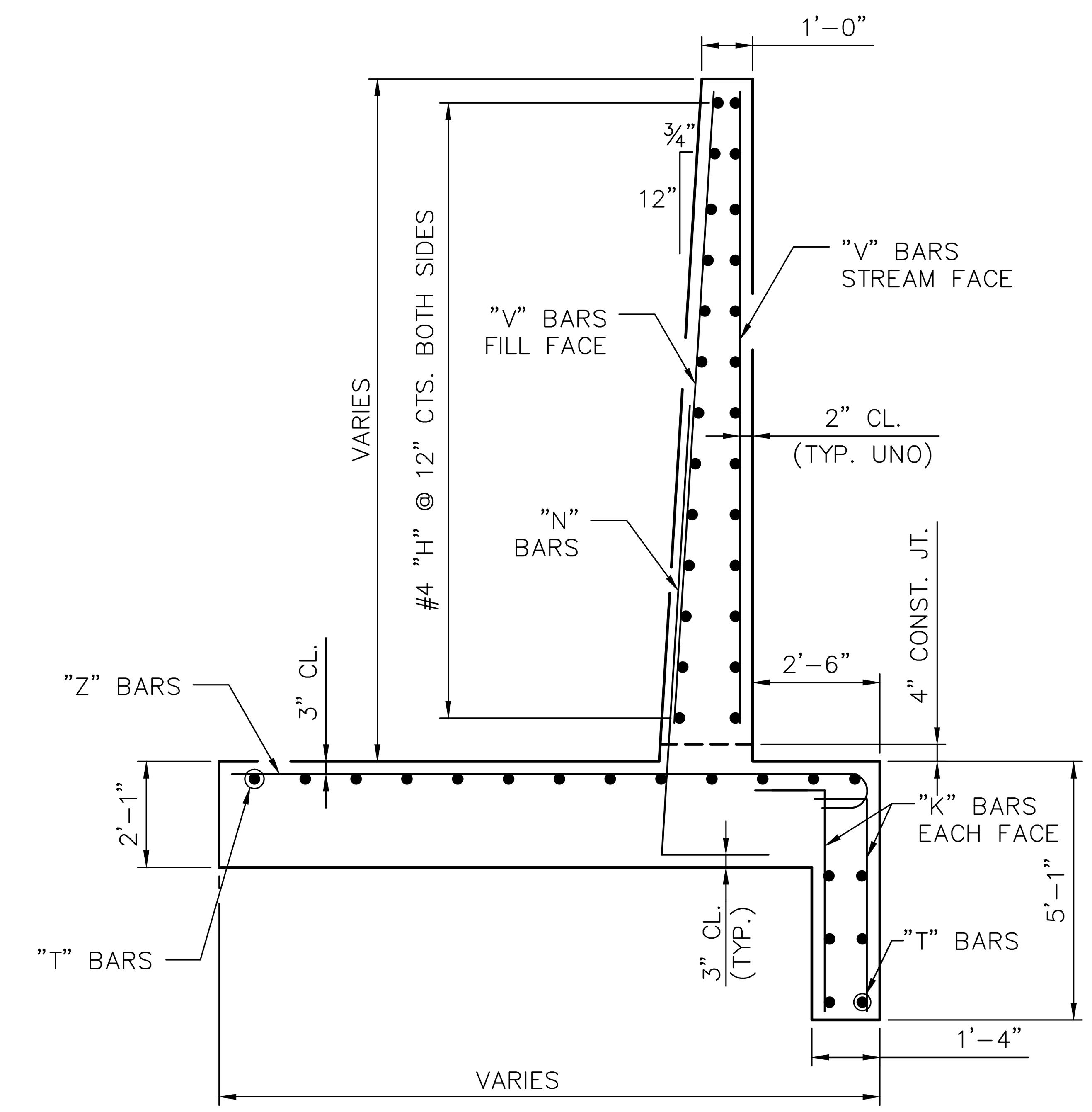

SECTION F-F

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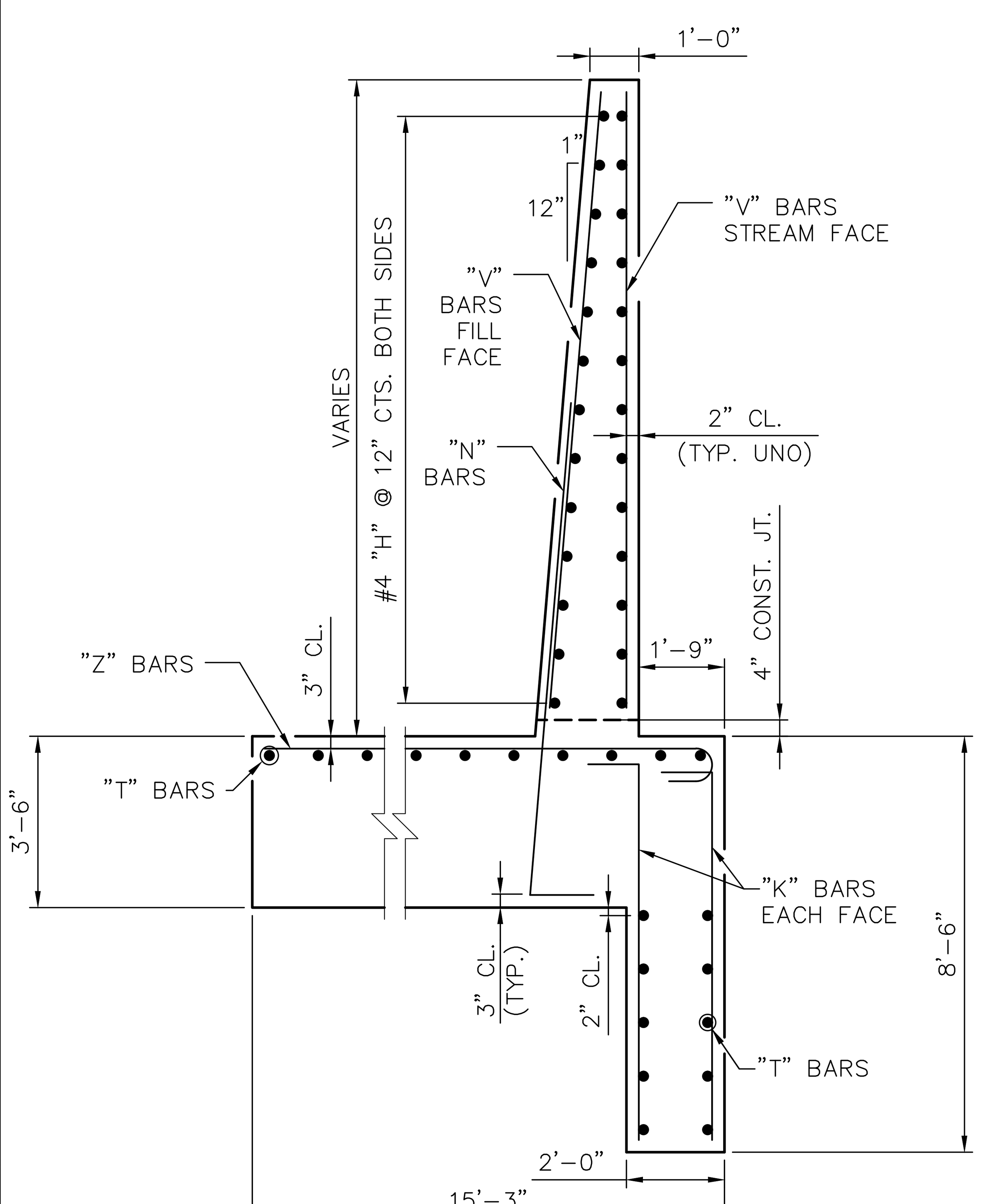

SECTION A-A

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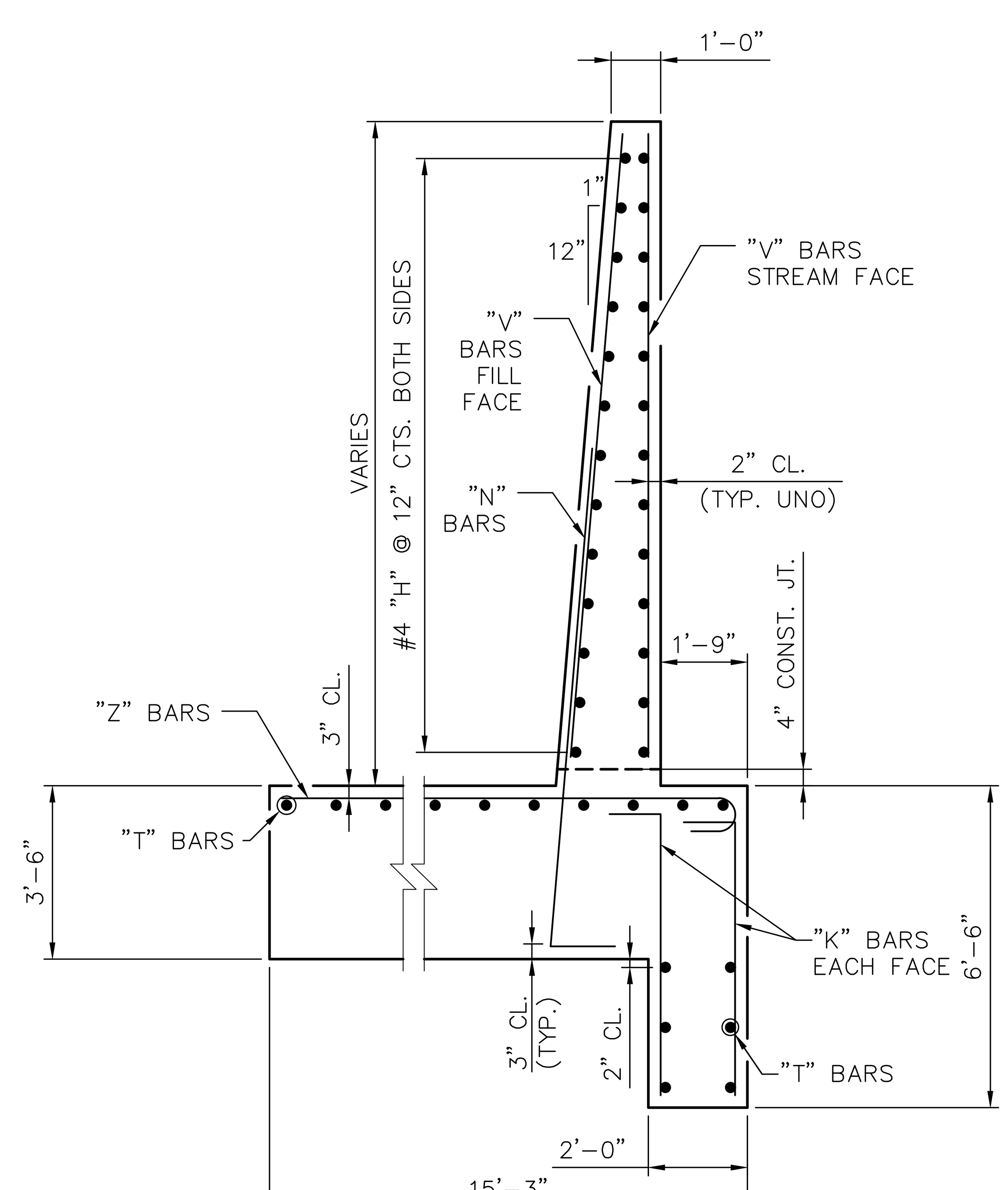

SECTION B-B

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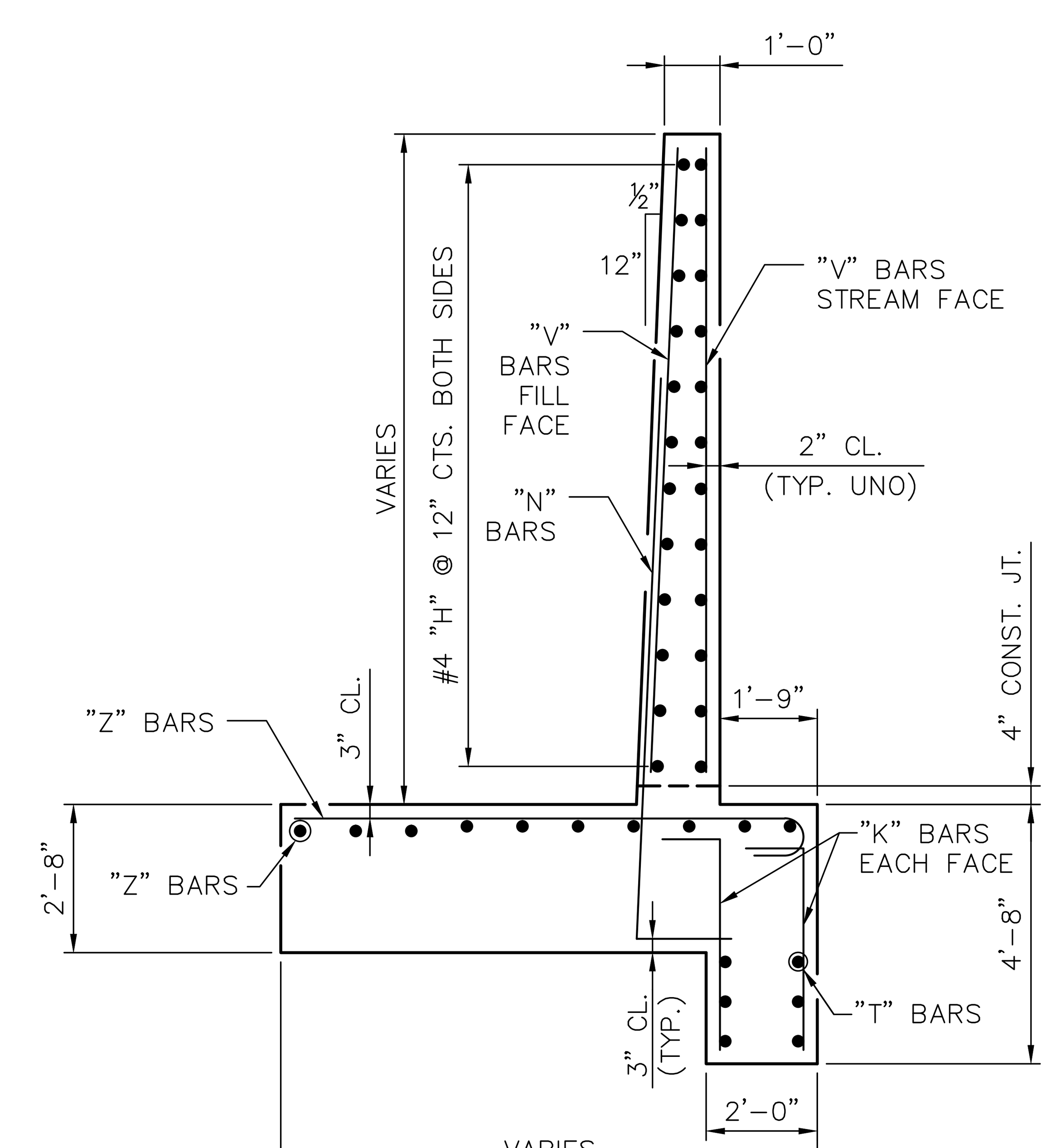

SECTION C-C

SCALE: NTS

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040384 JEFFREY C. WILSON

4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS

COUNTY: MECKLENBURG STATION: 102+51.83 -L1-

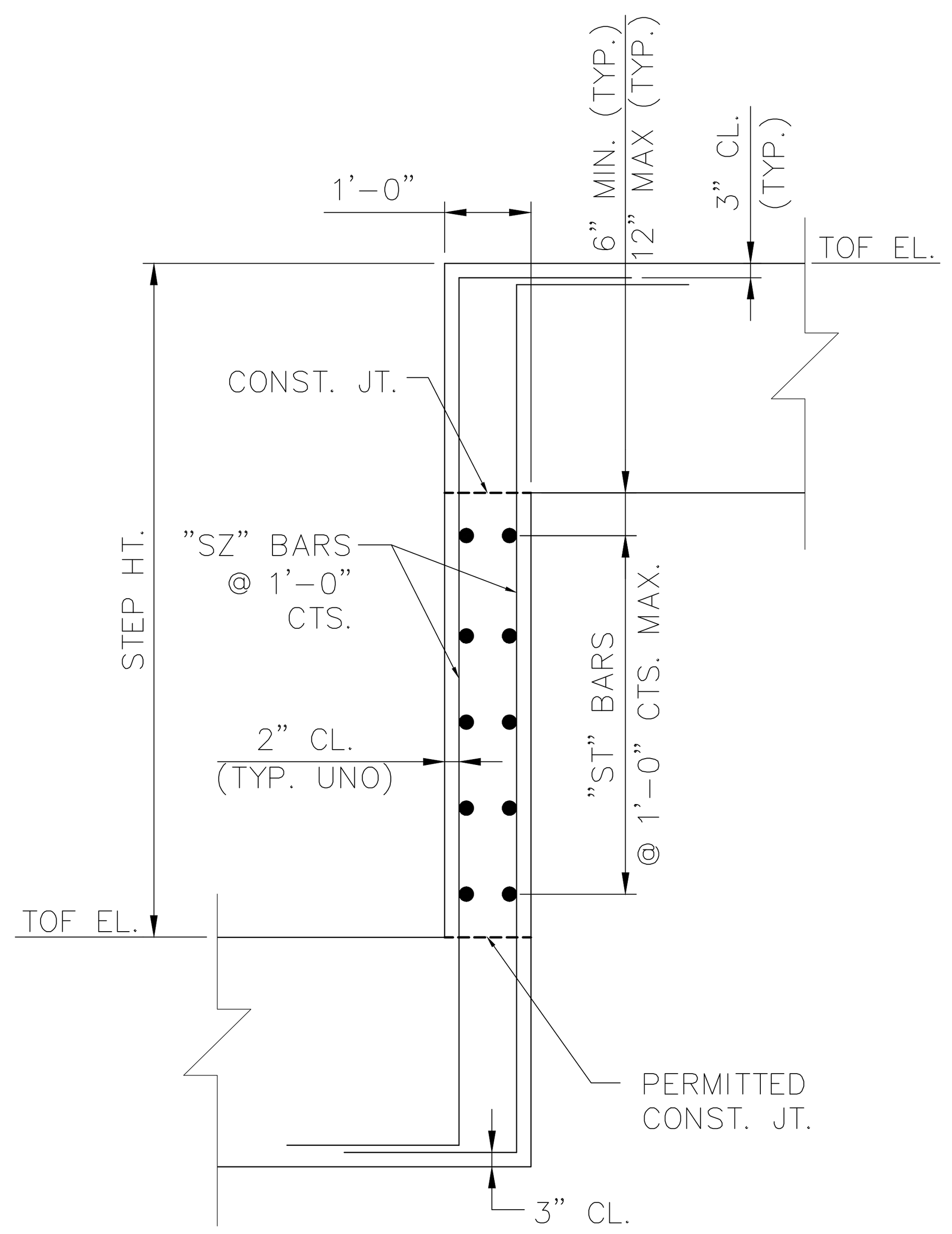
TITLE: INLET WING REINFORCING DETAILS

CULVERT PLANS SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-12

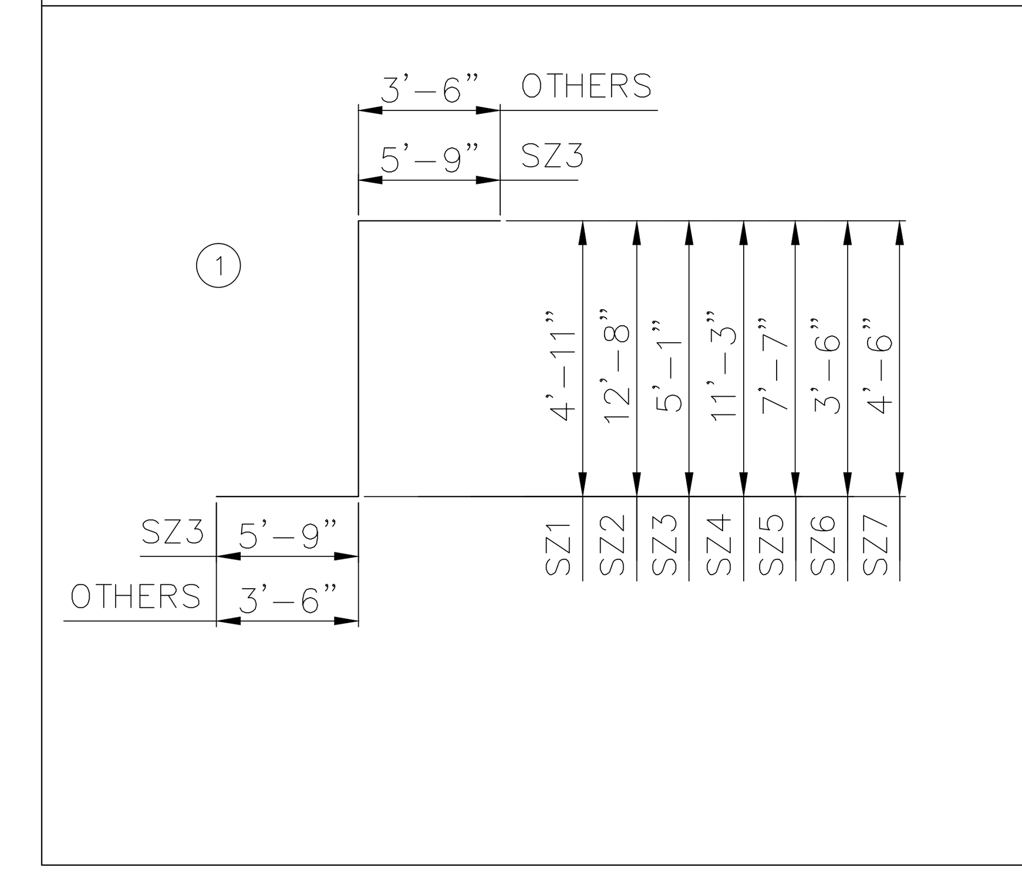
Drawing name: K:\RDT_Structures_Culvert\NC\015484006 Trade Str Culvert\Cad\Dwg\S12_WING_INLET_SECTIONS.dwg Layout 22 x 34 Apr 06, 2017 1:51pm by: james.debrow



STEP DETAIL
SCALE: NTS

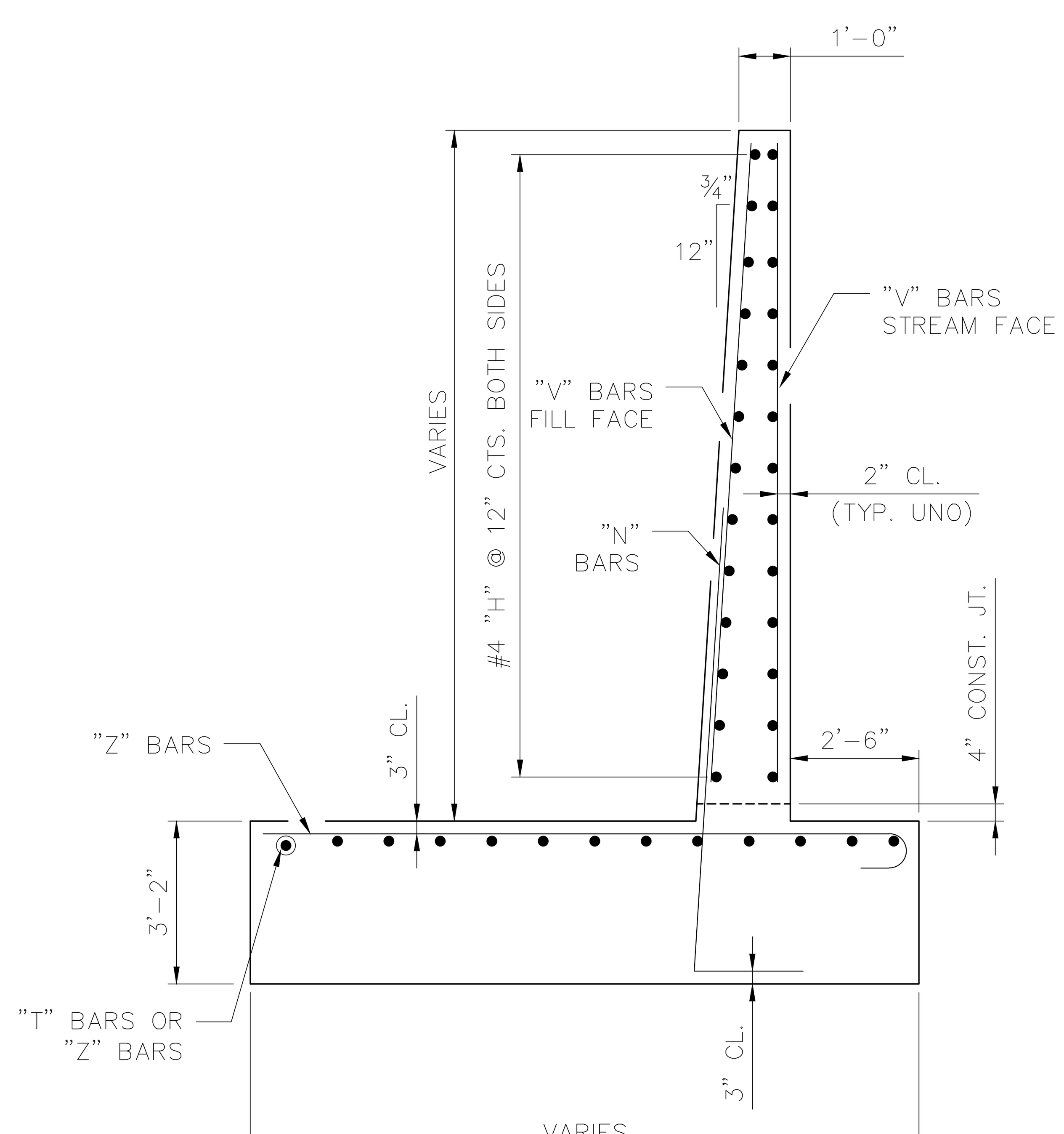
STEP SIZE AND LOCATION					
WINGWALL	STEP HT.	"SZ" BAR	NO. OF "SZ" BARS	"ST" BAR	NO. OF "ST" BARS
W1	2'-0"	SZ1	32	–	–
W2–W3	10'-7"	SZ2	34	ST1	16
W3–T1	3'-0"	SZ3	34	ST1	2
W5	2'-6"	SZ3	32	–	–
W6–W7	8'-7½"	SZ4	40	ST2	12
W7–T1	5'-6"	SZ5	44	ST3	6
T1–W8	1'-7½"	SZ6	30	–	–
W8	3'-0"	SZ7	22	ST4	2

BAR TYPES

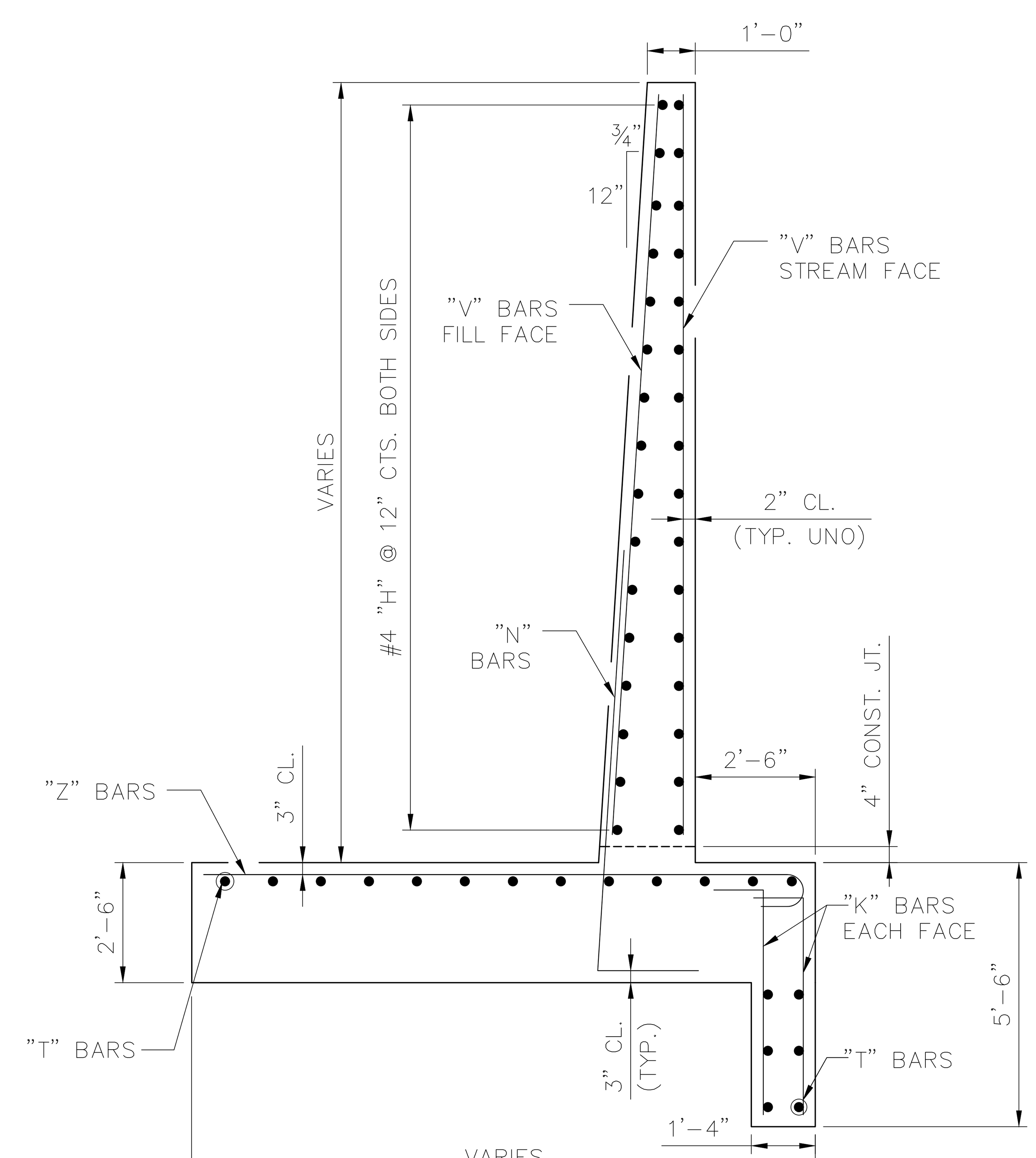


ALL BAR DIMENSIONS ARE OUT TO OUT.

STEP BILL OF MATERIAL					
BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
SZ1	32	7	1	11'-11"	779
SZ2	34	9	1	24'-2"	2794
SZ3	66	7	1	12'-1"	1630
SZ4	40	7	1	18'-3"	1492
SZ5	44	7	1	14'-7"	1312
SZ6	30	7	1	10'-6"	644
SZ7	22	7	1	11-6"	517
ST1	18	4	STR	15'-9"	189
ST2	12	4	STR	18'-0"	144
ST3	6	4	STR	20'-6"	82
ST4	2	4	STR	9'-4"	12
REINFORCING STEEL -LBS-					9,595



SECTION G-G
SCALE: NTS



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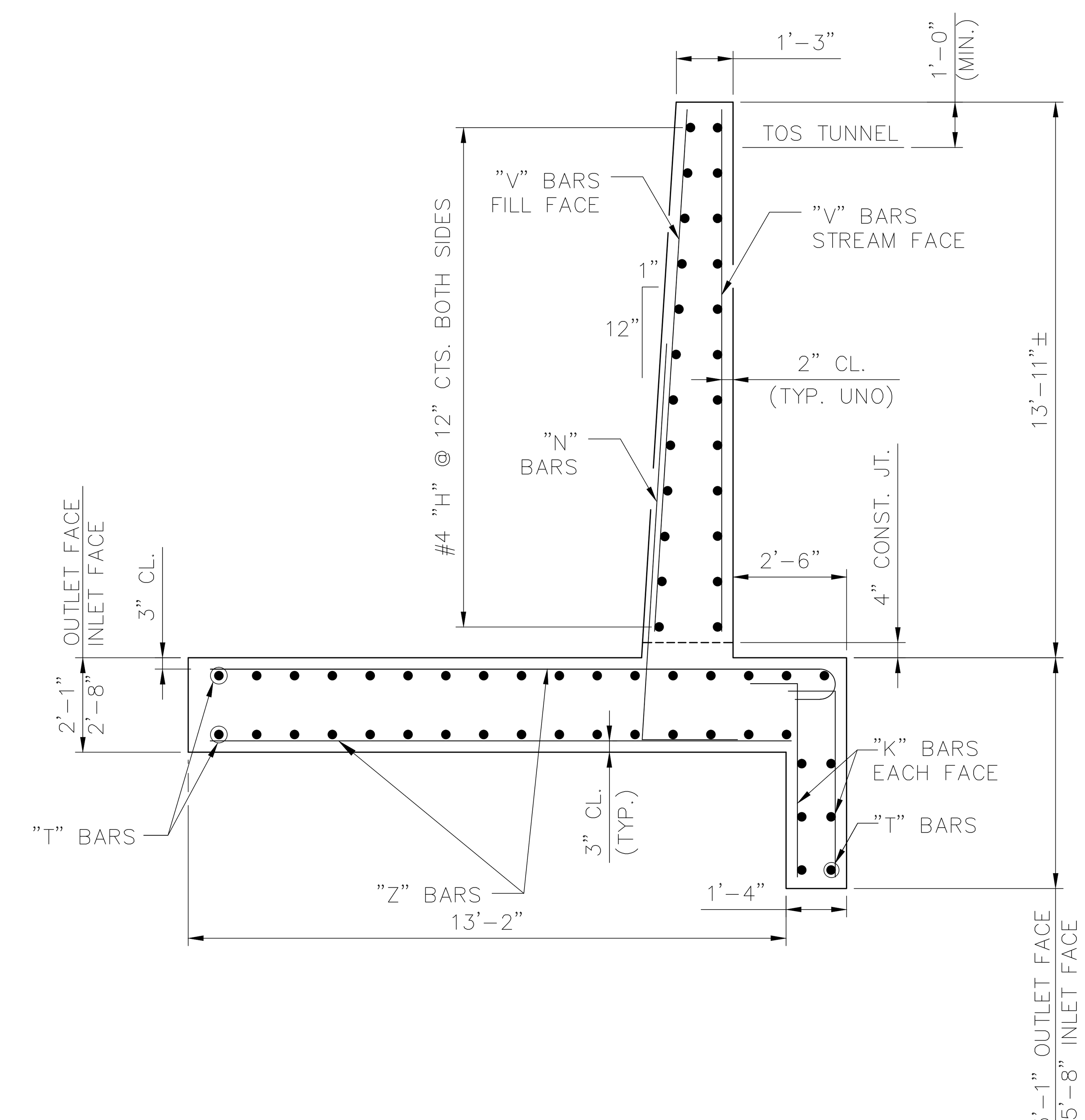

SECTION J-J
SCALE: NTS

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Drawing name: K:\RDT_Structures_Culvert\NC\015484006 Trade Str Culvert\Cad\Dwg\S13_WING_OUTLET_SECTIONS.dwg Layout 22 x 34 Apr 06, 2017 1:52pm by: james.debrow

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040384 JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson 4/6/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

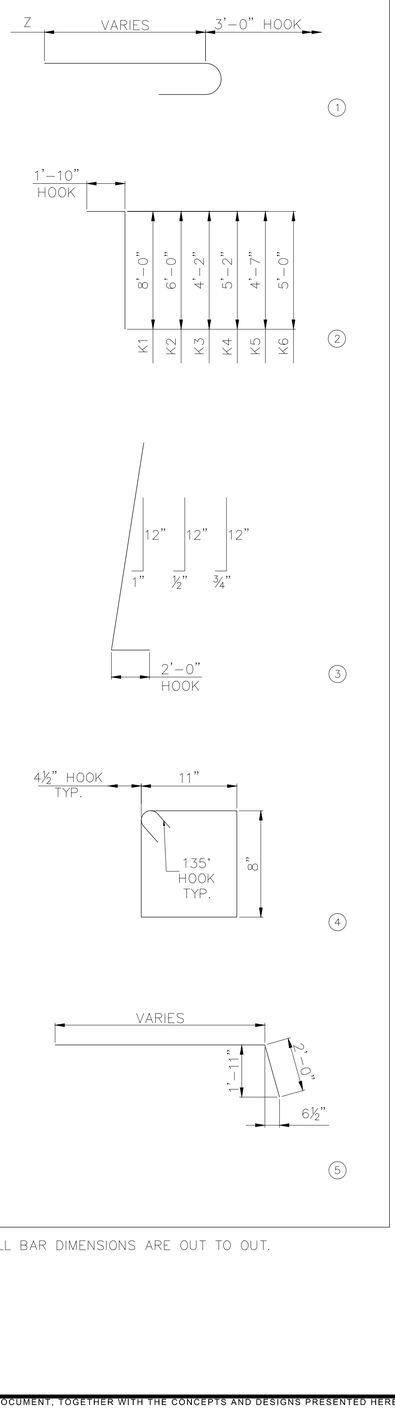
PROJECT: U - 5804B
SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: OUTLET WING REINFORCING DETAILS
CULVERT PLANS SOUTH TRADE STREET

DESIGNED BY: CTP
DRAWN BY: JJD
CHECKED BY: JCW
DATE: 04/06/2017
PROJECT#: 015484010

S-13

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

WING 1 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	34	4	STR	13'-2"	299
H2	2	4	STR	5'-10"	8
H3	2	4	STR	13'-3"	18
H4	32	4	STR	16'-1"	344
H5	2	4	STR	13'-11"	19
H6	2	4	STR	6'-9"	9
H7	2	4	STR	16'-3"	22
K1	54	5	2	9'-10"	554
K2	78	5	2	7'-10"	637
N1	60	7	3	12'-11"	1584
T6	16	4	STR	13'-2"	141
T7	8	4	STR	17'-5"	93
T8	8	4	STR	15'-8"	84
T50	4	4	STR	12'-2"	33
T51	6	4	STR	27'-10"	112
T52	6	4	STR	6'-10"	27
V1	2	7	STR	17'-9"	73
V2	3	7	STR	17'-4"	106
V3	3	7	STR	16'-11"	104
V4	3	7	STR	16'-6"	101
V5	3	7	STR	16'-1"	99
V6	2	6	STR	17'-9"	53
V7	3	6	STR	17'-4"	78
V8	3	6	STR	16'-11"	76
V9	3	6	STR	16'-6"	74
V10	3	6	STR	16'-1"	72
V11	2	7	STR	17'-10"	73
V12	3	7	STR	17'-7"	108
V13	3	7	STR	17'-0"	104
V14	3	7	STR	16'-7"	102
V15	3	7	STR	16'-2"	99
V16	3	7	STR	15'-9"	97
V17	2	4	STR	17'-10"	24
V18	3	4	STR	17'-5"	35
V19	3	4	STR	17'-0"	34
V20	3	4	STR	16'-7"	33
V21	3	4	STR	16'-2"	32
V22	3	4	STR	15'-9"	32
Z1	58	10	1	17'-11"	4472
Z2	3	10	1	11'-6"	148

WING 7 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H53	20	4	STR	18'-4"	245
H54	2	4	STR	17'-9"	24
H55	2	4	STR	15'-10"	21
H56	2	4	STR	13'-11"	19
H57	2	4	STR	12'-0"	16
H58	2	4	STR	10'-1"	13
H59	2	4	STR	8'-2"	11
H60	2	4	STR	6'-3"	8
H61	2	4	STR	4'-5"	6
H62	2	4	STR	20'-8"	28
H39	2	4	STR	3'-0"	4
H86	2	4	STR	2'-6"	3
H22	28	4	STR	4'-1"	76
K4	76	4	2	7'-0"	355
N10	45	8	3	11'-3"	1352
T25	22	4	STR	24'-5"	359
T26	2	4	STR	21'-11"	29
T27	2	4	STR	18'-11"	25
T28	1	4	STR	27'-4"	18
T29	1	4	STR	19'-10"	13
T30	2	4	STR	13'-3"	18
T31	3	4	STR	12'-10"	26
T32	3	4	STR	12'-5"	25
T33	3	4	STR	12'-0"	24
T34	3	4	STR	11'-7"	23
T35	3	4	STR	11'-2"	22
T36	3	4	STR	10'-10"	22
T37	3	4	STR	10'-5"	21
T38	3	4	STR	4'-4"	9
T39	30	4	STR	19'-4"	387
T61	1	4	STR	10'-1"	7
V130	2	5	STR	9'-10"	21
V131	2	5	STR	10'-5"	22
V132	2	5	STR	10'-11"	23
V133	2	5	STR	11'-5"	24
V134	2	5	STR	11'-11"	25
V135	2	5	STR	12'-6"	26
V136	2	5	STR	13'-0"	27
V137	2	5	STR	13'-6"	28
V138	2	5	STR	14'-0"	29
V139	2	5	STR	14'-7"	30
V140	2	5	STR	15'-1"	31

WING 2 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H8	34	4	STR	9'-11"	225
H9	32	4	STR	11'-1"	237
H10	2	4	STR	10'-7"	14
H11	2	4	STR	8'-8"	12
H12	2	4	STR	6'-9"	9
H13	2	4	STR	4'-10"	6
H14	2	4	STR	2'-11"	4
H15	2	4	STR	12'-6"	17
H89	2	4	STR	1'-0"	1
K2	74	5	2	6'-0"	463
N2	20	8	3	11'-3"	601
N3	16	10	3	11'-3"	775
T53	6	4	STR	19'-4"	77
V23	11	6	STR	15'-9"	260
V24	11	4	STR	15'-9"	116
V25	2	7	STR	15'-11"	65
V26	2	7	STR	16'-8"	68
V27	2	7	STR	17'-5"	71
V28	2	7	STR	18'-3"	75
V29	2	7	STR	19'-0"	78
V30	2	7	STR	19'-9"	81
V31	2	7	STR	20'-7"	84
V32	2	7	STR	21'-4"	88
V33	2	4	STR	15'-11"	21
V34	2	4	STR	16'-8"	22
V35	2	4	STR	17'-5"	23
V36	2	4	STR	18'-3"	24
V37	2	4	STR	19'-0"	25
V38	2	4	STR	19'-9"	26
V39	2	4	STR	20'-7"	27
V40	2	4	STR	21'-7"	29
Z3	3	10	1	19'-1"	246
Z4	3	10	1	18'-7"	240
Z5	3	10	1	19'-2"	247
Z6	3	10	1	18'-9"	242
Z7	3	10	1	18'-4"	237
Z8	3	10	1	17'-10"	230
Z9	3	10	1	17'-5"	225
Z10	3	10	1	17'-0"	219
Z11	4	10	1	16'-5"	283
Z12	1	10	1	16'-1"	69
Z13	1	10	1	15'-10"	68
Z14	1	10	1	15'-8"	67
Z15	1	10	1	15'-7"	67
Z16	8	10	1	21'-8"	746
Z17	7	10	1	19'-11"	600
Z18	2	10	1	16'-8"	143
Z19	2	10	1	18'-0"	155

WING 7 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
V141	2	5	STR	15'-7"	33
V142	2	5	STR	15'-2"	32
V143	2	5	STR	16'-8"	35
V144	2	5	STR	17'-3"	36
V145	2	5	STR	17'-8"	37
V146	2	5	STR	18'-3"	38
V147	2	5	STR	18'-9"	39
V148	1	5	STR	19'-3"	20
V149	2	4	STR	9'-10"	13
V150	2	4	STR	10'-5"	14
V151	2	4	STR	10'-11"	15
V152	2	4	STR	11'-5"	15
V153	2	4	STR	11'-11"	16
V154	2	4	STR	12'-6"	17
V155	2	4	STR	13'-0"	17
V156	2	4	STR	13'-6"	18
V157	2	4	STR	14'-0"	19
V158	2	4	STR	14'-7"	19
V159	2	4	STR	15'-1"	20
V160	2	4	STR	15'-7"	21
V161	2	4	STR	15'-2"	20
V162	2	4	STR	16'-8"	22
V163	2	4	STR	17'-3"	23
V164	2	4	STR	17'-8"	24
V165	2	4	STR	18'-3"	24
V166	2	4	STR	18'-9"	25
V167	1	4	STR	19'-3"	13
V168	2	5	STR	13'-6"	28
V169	2	5	STR	14'-1"	29
V170	1	5	STR	14'-7"	15
V171	3	5	STR	14'-10"	46
V172	2	4	STR	13'-6"	18
V173	2	4	STR	14'-1"	19
V174	1	4	STR	14'-7"	10
V175	3	4	STR	14'-10"	30
Z42	39	9	1	26'-6"	3514
Z43	3	9	1	16'-6"	168
Z44	3	9	1	16'-11"	173
Z45	4	9	1	17'-2"	233

WING 3 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H16	24	4	STR	11'-4"	182
H17	2	4	STR	9'-8"	13
H18	2	4	STR	7'-9"	10
H19	2	4	STR	5'-9"	8
H20	2	4	STR	3'-10"	5
H21	2	4	STR	12'-10"	17
H22	22	4	STR	4'-1"	60
H83	2	4	STR	1'-11"	3
H39	2	4	STR	2'-11"	4
K4	24	4	2	7'-0"	112
N4	12	9	3	11'-3"	459
T1	2	4	STR	7'-2"	10
T2	2	4	STR	11'-10"	16
T3	2	4	STR	12'-5"	17
T4	2	4	STR	12'-11"	17
T9	23	4	STR	12'-4"	189
V41	2	6	STR	11'-3"	34
V42	2	6	STR	12'-4"	37
V43	2	6	STR	13'-4"	40
V44	2	6	STR	14'-5"	43
V45	2	6	STR	15'-5"	46
V46	2	6	STR	16'-5"	49
V47	2	4	STR	11'-3"	15
V48	2	4	STR	12'-4"	16
V49	2	4	STR	13'-4"	18
V50	2	4	STR	14'-5"	19
V51	2	4	STR	15'-5"	21
V52	2	4	STR	16'-5"	22
V53	2	6	STR	13'-7"	41
V54	2	6	STR	14'-7"	44
V55	2	4	STR	13'-7"	18
V56	2	4	STR	14'-7"	19
Z20	16	10	1	18'-11"	1302
Z21	2	10	1	16'-7"	143
Z22	2	10	1	17'-1"	147

WING 8 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H63	2	4	STR	17'-6"	23
H64	2	4	STR	16'-10"	22
H65	2	4	STR	14'-11"	20
H66	2	4	STR	13'-1"	17
H67	2	4	STR	11'-3"	15
H68	2	4	STR	9'-5"	13
H69	2	4	STR	7'-6"	10
H70	2	4	STR	5'-8"	8
H71	2	4	STR	3'-10"	5
H72	2	4	STR	19'-11"	27
H73	16	4	STR	14'-6"	155
H74	2	4	STR	13'-2"	18
H75	2	4	STR	11'-3"	15
H76	2	4	STR	9'-5"	13
H77	2	4	STR	7'-7"	10
H78	2	4	STR	5'-8"	8
H79	2	4	STR	3'-10"	5
H80	2	4	STR	16'-6"	22
H81	28	4	STR	4'-4"	81
H39	2	4	STR	3'-0"	4
H87	2	4	STR	2'-0"	3
H88	2	4	STR	1'-11"	3
K4	8	4	2	7'-0"	37
K5	36	4	2	6'-5"	154
K6	30	4	2	6'-10"	137
N11	19	10	3	12'-3"	1002
N12	2	6	3	10'-2"	31
N13	2	6	3	9'-1"	27
N14	2	6	3	8'-0"	24
N15	2	6	3	6'-11"	21
N16	2	6	3	5'-10"	18
N17	7	6	3	11'-3"	118
T40	16	4	STR	15'-6"	166
T41	1	4	STR	12'-10"	9
T42	1	4	STR	8'-1"	5
T43	1	4	STR	3'-5"	2
T44	1	4	STR	15'-10"	11
T45	12	4	STR	18'-8"	150
T46	1	4	STR	16'-10"	11
T47	1	4	STR	12'-1"	8
T48	1	4	STR	7'-5"	5
T49	1	4	STR	19'-1"	13
T57	3	4	STR	6'-5"	13
T31	3	4	STR	12'-10"	26
T33	3	4	STR	12'-0"	24
T62	3	4	STR	13'-8"	27

WING 8 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
V176	2	5	STR	14'-10"	31
V177	1	5	STR	14'-5"	15
V178	1	5	STR	13'-10"	14
V179	1	5	STR	13'-4"	14
V180	2	4	STR	14'-10"	20
V181	1	4	STR	14'-5"	10
V182	1	4	STR	13'-10"	9
V183	1	4	STR	14'-4"	10
V184	1	6	STR	15'-1"	16
V185	1	6	STR	14'-7"	15
V186	1	6	STR	14'-0"	15
V187	1	6	STR	13'-6"	14
V188	1	6	STR	12'-11"	13
V189	1	6	STR	12'-5"	13
V190	1	6	STR	11'-10"	12
V191	1	6	STR	11'-4"	12
V192	1	6	STR	10'-9"	11
V193	1	6	STR	10'-3"	11
V194	1	6	STR	9'-8"	10
V195	1	6	STR	9'-2"	10
V196	1	6	STR	8'-7"	9
V197	1	6	STR	8'-1"	8
V198	1	4	STR	15'-1"	10
V199	1	4	STR	14'-7"	10
V200	1	4	STR	14'-0"	9

WING 4 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H23	10	4	STR	16'-9"	112
H24	2	4	STR	15'-7"	21
H25	2	4	STR	14'-2"	19
H26	2	4	STR	12'-7"	17
H27	2	4	STR	11'-2"	15
H28	2	4	STR	9'-8"	13
H29	2	4	STR	8'-2"	11
H30	2	4	STR	6'-8"	9
H31	2	4	STR	5'-2"	7
H32	2	4	STR	18'-5"	25
H84	2	4	STR	3'-9"	5
K5	58	4	2	6'-5"	249
N4	4	9	3	11'-3"	153
N5	9	8	3	10'-8"	256
N6	6	6	3	10'-8"	96
N7	1	6	3	9'-3"	14
N8	1	6	3	8'-8"	13
T10	24	4	STR	19'-9"	317
T11	2	4	STR	19'-2"	26
T12	1	4	STR	30'-0"	20
T13	1	4	STR	26'-3"	18
T14	10	4	STR	14'-5"	96
T15	2	4	STR	21'-8"	29
T16	1	4	STR	26'-9"	18
T17	1	4	STR	23'-8"	16
T18	1	4	STR	20'-8"	14
T19	1	4	STR	17'-7"	12
T20	1	4	STR	14'-6"	10
T21	1	4	STR	11'-6"	8
T22	1	4	STR	26'-4"	18
T54	3	4	5	14'-0"	28
T55	3	4	5	14'-8"	29
T59	1	4	STR	8'-5"	6
T60	1	4	STR	5'-4"	4
V57	4	6	STR	14'-6"	87
V58	2	6	STR	14'-0"	42
V59	2	6	STR	13'-4"	40
V60	2	6	STR	12'-7"	38
V61	2	6	STR	11'-11"	36
V62	2	6	STR	11'-3"	34
V63	2	6	STR	10'-7"	32
V64	2	6	STR	9'-11"	30
V65	2	6	STR	9'-3"	28
V66	2	6	STR	8'-7"	26
V67	2	6	STR	7'-11"	24
V68	2	6	STR	7'-3"	22
V69	2	6	STR	6'-7"	20
Z23	2	9	1	17'-8"	120
Z24	16	9	1	17'-2"	934
Z25	2	9	1	13'-3"	90
Z26	2	9	1	12'-7"	86
Z27	2	9	1	11'-10"	80
Z28	2	7	1	11'-1"	45
Z29	2	7	1	10'-5"	43
Z30	2	7	1	9'-8"	40
Z31	2	7	1	9'-0"	37

WING 5 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H33	28	4	STR	22'-8"	424
H34	2	4	STR	21'-10"	29
H35	2	4	STR	13'-3"	18
H36	2	4	STR	4'-9"	6
H37	2	4	STR	22'-9"	30
H38	34	4	STR	5'-8"	129
H39	2	4	STR	3'-0"	4
N9	31	10	3	11'-9"	1567
T23	16	4	STR	22'-8"	242
T24	16	4	STR	6'-9"	72
V70	4	6	STR	15'-9"	95
V71	3	6	STR	16'-2"	73
V72	4	6	STR	14'-0"	84
V73	4	6	STR	14'-5"	87
V74	4	6	STR	14'-11"	90
V75	4	6	STR	15'-4"	92
V76	4	6	STR	15'-10"	95
V77	4	6	STR	16'-4"	98
V78	4	4	STR	15'-9"	42
V79	3	4	STR	15'-2"	30
V80	4	4	STR	14'-0"	37
V81	4	4	STR	14'-5"	39
V82	4	4	STR	14'-11"	40
V83	4	4	STR	15'-4"	41
V84	4	4	STR	15'-10"	42
V85	4	4	STR	16'-4"	44
Z32	58	10	1	17'-8"	4409

WING 8 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
V201	1	4	STR	13'-6"	9
V202	1	4	STR	12'-11"	9
V203	1	4	STR	12'-5"	8
V204	1	4	STR	11'-10"	8
V205	1	4	STR	11'-4"	8
V206	1	4	STR	10'-9"	7
V207	1	4	STR	10'-3"	7
V208	1	4	STR	9'-8"	6
V209	1	4	STR	9'-2"	6
V210	1	4	STR	8'-7"	6
V211	1	4	STR	8'-1"	5
V212	2	6	STR	10'-1"	13
V213	2	6	STR	9'-7"	13
V214	2	6	STR	9'-0"	12
V215	2	6	STR	8'-6"	11
V216	2	6	STR	7'-11"	11
V217	2	6	STR	7'-5"	10
Z46	16	10	1	17'-2"	1182
Z47	1	10	1	15'-8"	67
Z48	3	10	1	15'-0"	194
Z49	3	10	1	14'-5"	186
Z50	3	10	1	13'-9"	177
Z51	3	10	1	13'-2"	170
Z52	3	10	1	12'-5"	160
Z53	1	7	1	12'-5"	25
Z54	3	7	1	11'-10"	73
Z55	3	7	1	11'-3"	69
Z56	3	7	1	10'-7"	65
Z57	3	7	1	9'-11"	61
Z58	3	7	1	9'-4"	57
Z59	3	7	1	8'-8"	53

WING 6 BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H40	24	4	STR	16'-6"	265
H41	2	4	STR	15'-1"	20
H42	2	4	STR	10'-11"	15
H43	2	4	STR	6'-9"	9
H44	2	4	STR	2'-6"	3
H45	2	4	STR	17'-1"	23
H46	24	4	STR	12'-3"	196
H47	2	4	STR	11'-9"	16
H48	2	4	STR	9'-10"	13
H49	2	4	STR	7'-11"	11
H50	2	4	STR	6'-0"	8
H51	2	4	STR	4'-1"	5
H52	2	4	STR	13'-10"	18
H85	2	4	STR	2'-2"	3
N9	36	10	3	11'-9"	1820
T5	2	4	STR	18'-9"	25
V86	1	6	STR	15'-8"	24
V87	2	6	STR	15'-2"	46
V88	2	6	STR	14'-8"	44
V89	2	6	STR	14'-3"	43
V90	2	6	STR	13'-9"	41
V91	2	6	STR	13'-3"	40
V92	2	6	STR	12'-9"	38
V93	2	6	STR	12'-4"	37
V94	2	6	STR	11'-10"	36
V95	1	4	STR	15'-8"	10
V96	2	4	STR	15'-2"	20
V97	2	4	STR	14'-8"	20
V98	2	4	STR	14'-3"	19
V99	2	4	STR	13'-9"	18
V100	2	4	STR	13'-3"	18
V101	2	4	STR	12'-9"	17
V102	2	4	STR	12'-4"	16
V103	2	4	STR	11'-10"	16
V104	1	6	STR	11'-11"	18
V105	1	6	STR	12'-5"	19
V106	1	6	STR	12'-11"	19
V107	1	6	STR	13'-6"	20
V108	1	6	STR	14'-0"	21
V109	1	6	STR	14'-6"	22
V110	1	6	STR	15'-0"	23
V111	1	6	STR	15'-7"	23
V112	1	6	STR	16'-1"	24
V113	1	6	STR	16'-7"	25
V114	1	6	STR	17'-2"	26
V115	1	6	STR	17'-8"	27
V116	1	6	STR	18'-2"	27
V117	1	4	STR	11'-11"	8
V118	1	4	STR	12'-5"	8
V119	1	4	STR	12'-11"	9
V120	1	4	STR	13'-6"	9
V121	1	4	STR	14'-0"	9
V122	1	4	STR	14'-6"	10
V123	1	4	STR	15'-0"	10
V124	1	4	STR	15'-7"	10
V125	1	4	STR	16'-1"	11
V126	1	4	STR	16'-7"	11
V127	1	4	STR	17'-2"	11
V128	1	4	STR	17'-8"	12
V129	1	4	STR	18'-2"	12
Z33	10	10	1	19'-9"	850
Z34	6	10	1	20'-4"	525
Z35	5	10	1	20'-1"	432
Z36	5	10	1	19'-6"	420
Z37	5	10	1	19'-2"	412
Z38	5	10	1	18'-10"	405
Z39	2	10	1	14'-6"	125
Z40	2	10	1	18'-8"	161
Z41	28	10	1	23'-7"	2841

TUNNEL BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
G1	16	4	STR	8'-6"	91
G2	16	4	STR	9'-6"	102
H82	8	8	STR	17'-9"	379
N17	8	7	3	9'-3"	151
R1	32	4	4	3'-9"	80
V218	16	4	STR	14'-10"	159

REINFORCING STEEL –LBS– 57,167

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040384 JEFFREY C. WILSON

Documents sealed by: Jeffrey C. Wilson 4/6/2017

CHARLES MCCRAE

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: STATE OF NORTH CAROLINA • NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

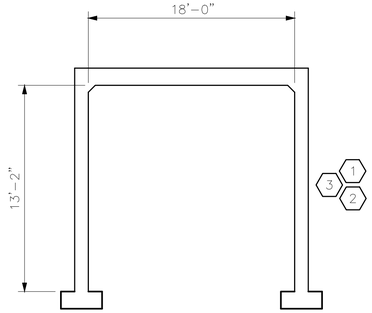
TITLE: WING REINFORCING QUANTITIES
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-14

LOAD AND RESISTANCE FACTOR RATING (LRFR)SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER
								MOMENT				SHEAR			
							LIVE-LOAD FACTORS (γ_{LL})	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	⟨1⟩	4.58	--	1.75	4.58	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		HL-93 (OPERATING)	N/A	--	5.93	--	1.35	5.93	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		HS-20 (INVENTORY)	36.000	⟨2⟩	4.58	164.88	1.75	4.58	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		HS-20 (OPERATING)	36.000	--	5.93	213.48	1.35	5.93	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	5.72	77.22	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNGARBS2	20.000	--	5.72	114.40	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNAGRIS2	22.000	--	5.72	125.84	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNCOTTS3	27.250	--	5.72	155.87	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNAGGRS4	34.925	--	5.72	199.77	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNS5A	35.550	--	5.72	203.35	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNS6A	39.950	--	5.72	228.51	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		SNS7B	42.000	--	5.72	240.24	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	5.72	188.76	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNT4A	33.075	--	5.72	189.19	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNT6A	41.600	--	5.72	237.95	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNT7A	42.000	--	5.72	240.24	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNT7B	42.000	--	5.72	240.24	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNAGRIT4	43.000	--	5.72	245.96	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNAGT5A	45.000	⟨3⟩	5.72	257.40	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	
		TNAGT5B	45.000	--	5.72	257.40	1.40	5.72	1	EXT WALL	6.58	54.72	1	EXT WALL	0.00	



LRFR SUMMARY

(LOOKING DOWNSTREAM)

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

1.
2.
3.
4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING * *

* * SEE CHART FOR VEHICLE TYPE

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Document signed by: Jeffrey C. Wilson 4/6/2017

CHARLES ASCOMBE

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT:

PROJECT:
U - 5804B
SOUTH TRADE STREET
ROADWAY IMPROVEMENTS

COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE:
LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	04/06/2017
PROJECT#:	015484010

S-15

ASSEMBLED BY :	DATE :
CHECKED BY :	DATE :
DRAWN BY : WMC 7/11	REV. 10/1/11 MAA/GM
CHECKED BY : GM 7/11	:

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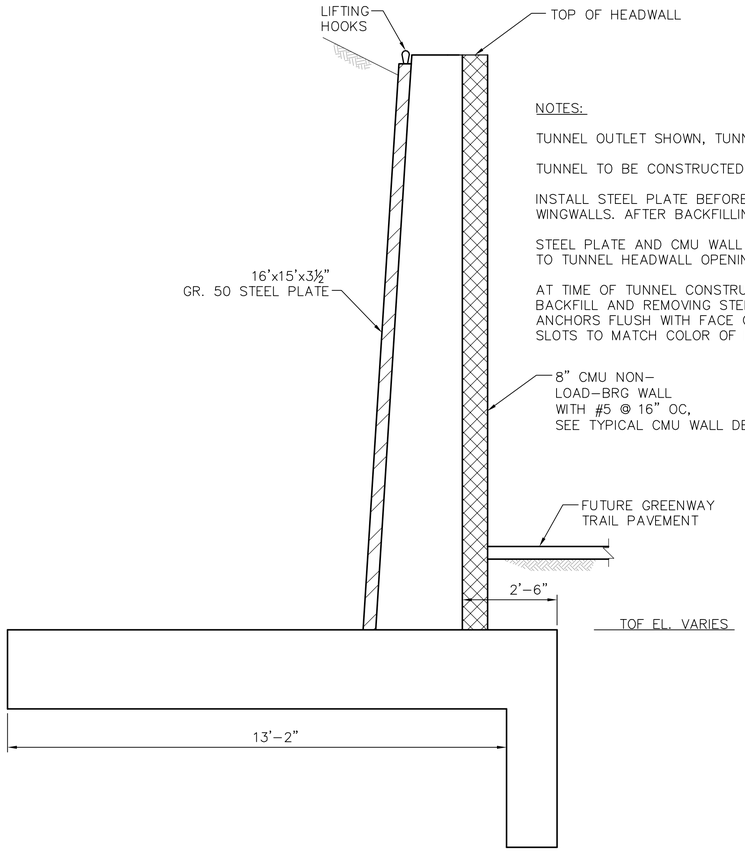
STD. NO. LRFR5



NOTES:

TUNNEL OUTLET SHOWN, TUNNEL INLET SIMILAR.

TUNNEL TO BE CONSTRUCTED AT A FUTURE DATE.

INSTALL STEEL PLATE BEFORE BACKFILLING TUNNEL HEADWALL AND ADJACENT WINGWALLS. AFTER BACKFILLING CONSTRUCT CMU WALL.

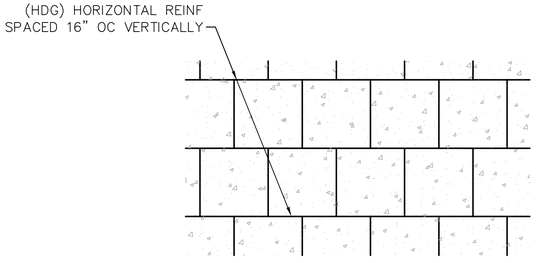
STEEL PLATE AND CMU WALL ARE TEMPORARY AND WILL SERVE AS BARRIERS TO TUNNEL HEADWALL OPENING.

AT TIME OF TUNNEL CONSTRUCTION, DEMO CMU WALL BEFORE EXCAVATING BACKFILL AND REMOVING STEEL PLATE. DURING CMU DEMO, CUT BENT TAB ANCHORS FLUSH WITH FACE OF HEADWALL AND EPOXY DOVETAIL ANCHOR SLOTS TO MATCH COLOR OF HEADWALL.

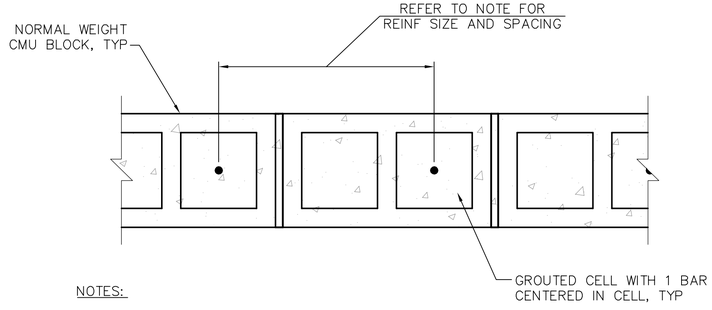
TEMPORARY TUNNEL SECTION

NOTES:

1. FOR TUNNEL GATE, SEE SPECIAL PROVISIONS.
2. ALL REINFORCED MASONRY WORK SHALL CONFORM TO CURRENT EDITION OF ACI 530 AND ACI 530.1.
3. CONCRETE MASONRY UNITS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C90.
4. MINIMUM COMPRESSIVE STRENGTH OF MASONRY ASSEMBLAGE, f'm, IS 1500 PSI.
5. MORTAR SHALL CONFORM TO THE REQUIREMENTS OF ASTM C270 AND SHALL BE TYPE S.
6. GROUT FOR HOLLOW MASONRY UNITS SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI AND SHALL CONFORM TO ASTM C476.
7. ALL CMU BELOW GRADE SHALL BE FILLED WITH 3,000 PSI STRENGTH GROUT.
8. SLUMP OF GROUT SHALL BE IN THE RANGE OF 7 TO 11 INCHES AND SHALL BE RECONSOLIDATED BY MECHANICAL VIBRATION TO ELIMINATE VOIDS CREATED BY BLEED OFF OF THE WATER IN THE GROUT ½ HOUR FOLLOWING PLACEMENT.
9. PROVIDE HORIZONTAL LADDER TYPE WIRE REINFORCING AT 16" OC MAXIMUM.
10. PROVIDE 1–#5 VERTICAL REINFORCING EACH SIDE OF ALL OPENINGS IN MASONRY WALLS.
11. PROVIDE 1–#5 VERTICAL REINFORCING AT ALL WALL CORNERS, ENDS, AND INTERSECTIONS.
12. SPLICES IN HORIZONTAL AND VERTICAL REINFORCING SHALL BE LAPPED 48 BAR DIAMETERS OR A MINIMUM OF 24", WHICHEVER IS GREATER.
13. ALL HEAD AND BED JOINTS SHALL BE FULL, UNLESS OTHERWISE DIRECTED BY ARCHITECTURAL PLANS.
14. DOVETAIL ANCHORS IN CONCRETE FOR MASONRY ANCHORAGE SHALL BE HOT–DIP GALVANIZED–STEEL SHEET NOT LESS THAN 0.034" THICK WITH BENT TAB ANCHORS.



ELEVATION



NOTES:

1. UNLESS NOTED OTHERWISE ON THE DRAWINGS, REINFORCE ALL CMU WALLS WITH (1) #5 BAR @ 16" OC. FULLY GROUT ALL CELLS CONTAINING REINF.

PLAN

TYPICAL CMU WALL DETAIL

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Docusigned by: Jeffrey C. Wilson 11/1/201

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT: STATE OF NORTH CAROLINA • NOTTOWAY • DEPARTMENT OF TRANSPORTATION

PROJECT: U - 5804B SOUTH TRADE STREET ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

TITLE: TUNNEL GATE DETAILS
CULVERT PLANS
SOUTH TRADE STREET

DESIGNED BY:	CTP
DRAWN BY:	JJD
CHECKED BY:	JCW
DATE:	11/01/2017
PROJECT#:	015484010

S-16

Drawing name: K:\RDT_Structures_Culvert\NC\015484006 Trade Str Culvert\Cadd\Dwg\S16_MISCELLANEOUS_DETAILS.dwg Layout 22 x 34 Nov 01, 2017 5:34pm by: Jeff.Wilson

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL – AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
– AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
– AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER – TREATED OR	
UNTREATED – EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1–1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" ø SHEAR STUDS FOR THE 3/4" ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 – 7/8" ø STUDS FOR 4 – 3/4" ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" ø STUDS BASED ON THE RATIO OF 3 – 7/8" ø STUDS FOR 4 – 3/4" ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'–0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS " BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES,ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR HAND RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON–UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105–4.

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

Doc Signed by: Jeffrey C. Wilson 10/23/2017

PROJ. REFERENCE NO. 44367.3.2

NO.	DATE	REVISIONS

CLIENT:

NORTH CAROLINA • NOTHING BUT NET • DEPARTMENT OF TRANSPORTATION

PROJECT:
U - 5804B
SOUTH TRADE STREET
ROADWAY IMPROVEMENTS
COUNTY: MECKLENBURG
STATION: 102+51.83 -L1-

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SN

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DRAWN BY :	WMC 7/11	REV. 10/1/11	MAA/GM
CHECKED BY :	GM 7/11	:	

REV. 12-12-07 LEW √( ) RGW
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