TIP PROJECT: EB-5829

CONTRACT:

K:\CHL_PRJ\011036526 - EB-5829 (Trade St Tunnel\Roadway\Proj\EB-5829_rdy_tsh.dgn

9/13/2022

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	EB-5829	1	30

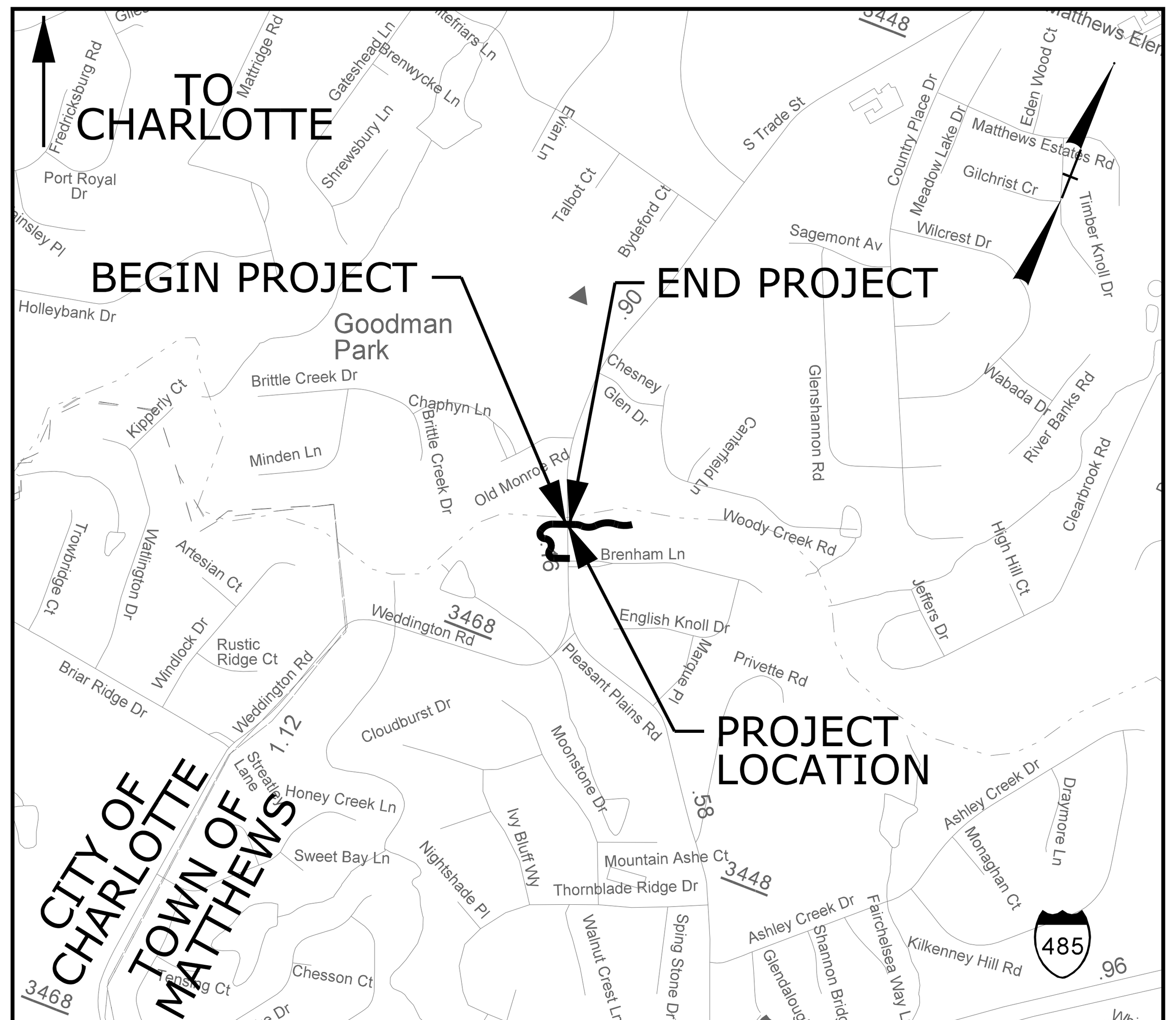
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45969.1.1	STBGDA-3448(001)	PE
45969.2.1	STBGDA-3448(001)	R/W
45969.3.1	STBGDA-3448(001)	CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

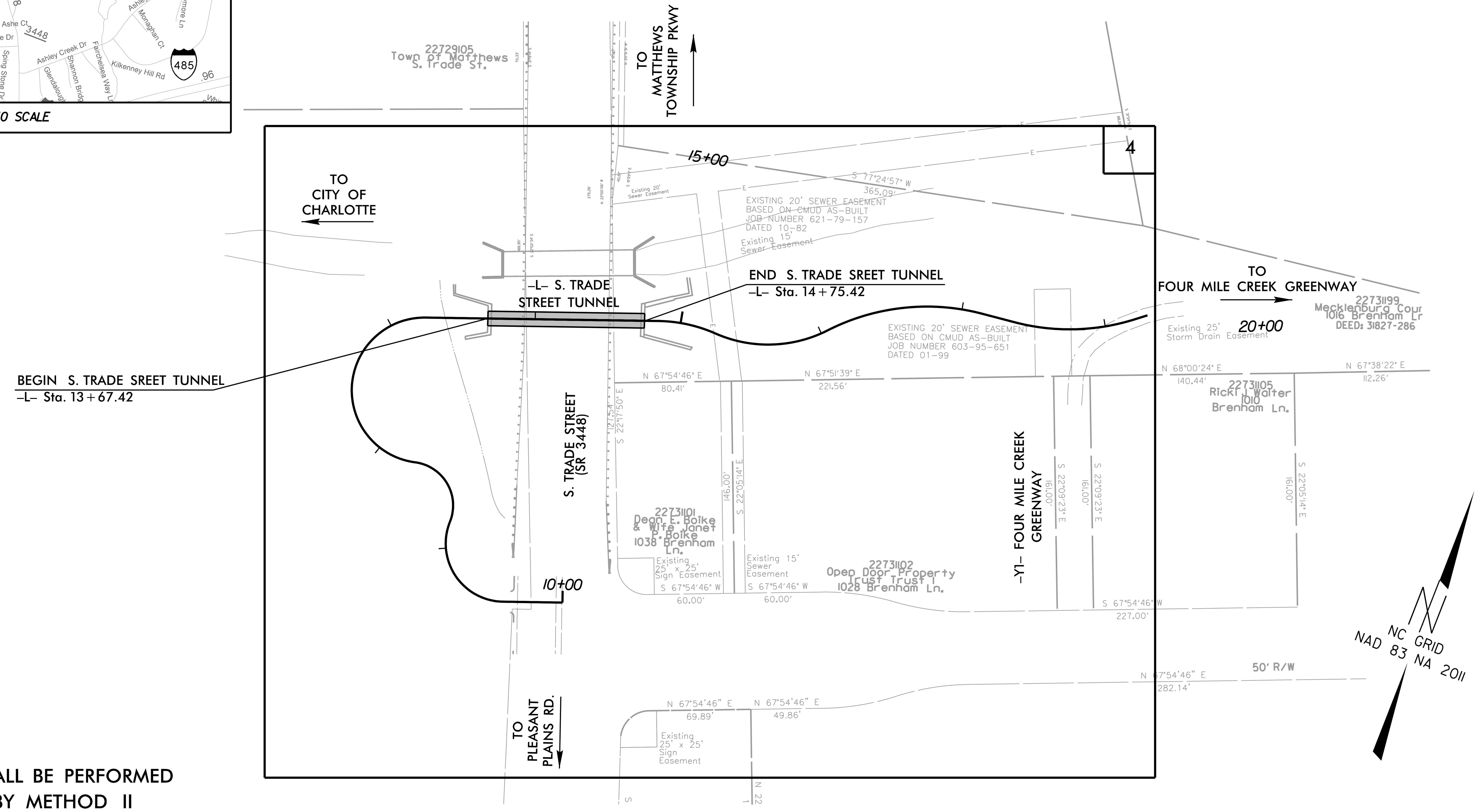
MECKLENBURG COUNTY

LOCATION: ***S. TRADE STREET TUNNEL CONNECTION FOR FUTURE FOUR MILE CREEK GREENWAY***

TYPE OF WORK: ***TUNNEL CONSTRUCTION***



VICINITY MAP - NOT TO SCALE



NCDOT CONTACT:
DUSTIN SIMPSON
NCDOT - DIVISION 10
716 W. MAIN STREET
ALBEMARLE, NC 28001

CLEARING ON THIS PROJECT SHALL BE PERFORMED BY THE LIMITS ESTABLISHED BY METHOD II

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

2018 = N/A
2040 = N/A
K = N/A
D = N/A
T = N/A
V = N/A

FUNCTIONAL CLASSIFICATION: N/A

* N/A TTST N/A DUAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT EB-5829 = 0.020 MILES
TOTAL LENGTH TIP PROJECT EB-5829 = 0.020 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: 10/5/2022

BEN TAYLOR, P.E.
PROJECT ENGINEER

DJ BEAVER, P.E.
PROJECT DESIGN ENGINEER

DUSTIN SIMPSON
NCDOT CONTACT
DM-STIP PROJECT MANAGER

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031788 BENJAMIN S. TAYLOR

9/13/2022

P.E.

SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS

9/13/2022

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, LIST OF ROADWAY STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS SHEET
2	TYPICAL SECTIONS
2B-1	BRACKET LIGHTING PLAN
4	PLAN SHEET
5	PROFILE SHEETS
EC-1	EROSION CONTROL TITLE SHEET
EC-2A	EROSION CONTROL DETAILS
EC-2B	EROSION CONTROL DETAILS
EC-2C	EROSION CONTROL DETAILS
EC-3	EROSION CONTROL SOIL STABILIZATION TIMEFRAMES
EC-4	EROSION CONTROL PLAN SHEET
T-1	TUNNEL PLAN AND GENERAL NOTES
T-2	TUNNEL SECTIONS AND DETAILS
T-3	TUNNEL SECTIONS AND DETAILS

GENERAL NOTES

2018 SPECIFICATIONS

EFFECTIVE: 06-03-2019
REVISED: 02-06-2020

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II. THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF UNION COUNTY.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:

UNION POWER
MARK MCCLAMROCK
704-221-2355
Mark.mclamrock@union-power.com

PIEDMONT NATURAL GAS
MICHAEL CORRIGAN
980-722-8705
MCorrigan@maserconsulting.com

SPECTRUM
RYAN GODWIN
980-406-1721
Timothy.Godwin@charter.com

SEGRA
ROBERT ROBINSON
803-726-8337
Robert.Robinson@SEGRA.com

WINDSTREAM
BRENT WHITLOCK
803-577-5888
Brent.Whitlock@BYERS.COM

CENTURYLINK
MICHAEL CASEY
980-215-5007
michael.e.casey@centurylink.com

CONTERRA
ERIC WOODS
540-605-0653
ewoods@conterra.com

VERIZON
ANTHONY PACE
980-505-2489
Anthony.pace@verizon.com

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

ROADWAY STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFFECTIVE: 01-16-2018
REVISED: 01-06-2020

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY, 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	METHOD OF CLEARING - METHOD II
225.02	GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL
225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT
DIVISION 3 - PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
310.03	CROSS PIPE END SECTION
310.10	DRIVEWAY PIPE CONSTRUCTION
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD I
DIVISION 8 - INCIDENTALS	
840.04	CONCRETE OPEN THROAT CATCH BASIN - 12" THRU 48" PIPE
840.18	CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.24	FRAMES AND NARROW SLOT SAG GRATES
846.01	CONCRETE CURB, GUTTER AND CURB & GUTTER
866.01	CHAIN LINK FENCE
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

Kimley»Horn ©2021

200 SOUTH TRYON, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

Docusigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031788 BENJAMIN S. TAYLOR
9/13/2022

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	1B

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

9/13/2022

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)
- Existing Historic Property Boundary (HPB)
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line (RW)
- Proposed Right of Way Line with Iron Pin and Cap Marker (RW)
- Proposed Right of Way Line with Concrete or Granite R/W Marker (RW)
- Proposed Control of Access Line with Concrete C/A Marker (CA)
- Existing Control of Access (CA)
- Proposed Control of Access (CA)
- Existing Easement Line (E)
- Proposed Temporary Construction Easement (E)
- Proposed Temporary Drainage Easement (TDE)
- Proposed Permanent Drainage Easement (PDE)
- Proposed Permanent Drainage / Utility Easement (DUE)
- Proposed Permanent Utility Easement (PUE)
- Proposed Temporary Utility Easement (TUE)
- Proposed Aerial Utility Easement (AUE)
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- U/G Power Line LOS B (S.U.E.*) (P)
- U/G Power Line LOS C (S.U.E.*) (P)
- U/G Power Line LOS D (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- U/G Telephone Cable LOS B (S.U.E.*) (T)
- U/G Telephone Cable LOS C (S.U.E.*) (T)
- U/G Telephone Cable LOS D (S.U.E.*) (T)
- U/G Telephone Conduit LOS B (S.U.E.*) (TC)
- U/G Telephone Conduit LOS C (S.U.E.*) (TC)
- U/G Telephone Conduit LOS D (S.U.E.*) (TC)
- U/G Fiber Optics Cable LOS B (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS C (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS D (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) (W)
- U/G Water Line LOS C (S.U.E*) (W)
- U/G Water Line LOS D (S.U.E*) (W)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- U/G TV Cable LOS B (S.U.E.*) (TV)
- U/G TV Cable LOS C (S.U.E.*) (TV)
- U/G TV Cable LOS D (S.U.E.*) (TV)
- U/G Fiber Optic Cable LOS B (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS C (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS D (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

5/14/99

REVISIONS

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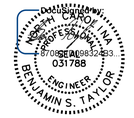
200 SOUTH TRYON, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	2
R/W SHEET NO.	

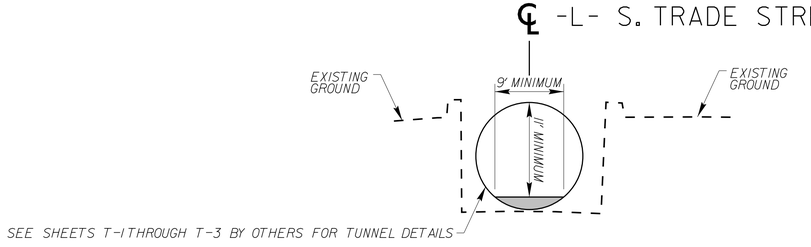
ROADWAY DESIGN ENGINEER



9/13/2022

HYDRAULICS ENGINEER

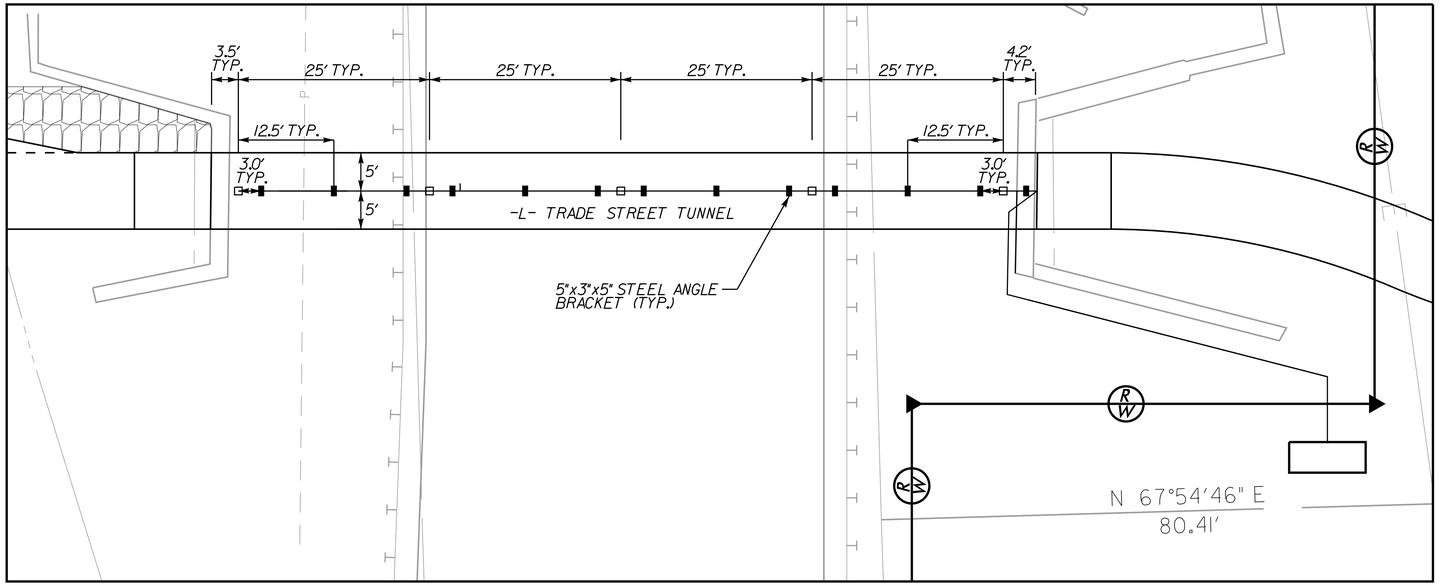
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

-L- STA 13+67.42 to 14+75.42

9/13/2022



GENERAL NOTES:

1. 5"x3"x5" STEEL ANGLE BRACKET REQUIRED FOR ALL PROPOSED LIGHT FIXTURES

BRACKET LIGHTING PLAN

SCALE: 1" = 10'

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200 SOUTH TRYON, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

Docusigned by:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031788 ENGINEER BENJAMIN S. TAYLOR
9/13/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

9/13/2022

5/14/99

REVISIONS

-L- TRADE STREET TUNNEL

PI Sta 10+99.24
△ = 111° 09' 07.4" (RT)
D = 143° 14' 22.0"
L = 77.60'
T = 58.37'
R = 40.00'
SE = 0.02

-L- TRADE STREET TUNNEL

PI Sta 12+48.88
△ = 17° 3' 24" 45.5" (RT)
D = 114° 35' 29.6"
L = 151.33'
T = 868.82'
R = 50.00'
SE = 0.02

-L- TRADE STREET TUNNEL

PI Sta 15+67.75
△ = 50° 52' 00.3" (LT)
D = 63° 39' 43.1"
L = 79.90'
T = 42.80'
R = 90.00'
SE = 0.02

-L- TRADE STREET TUNNEL

PI Sta 17+80.13
△ = 32° 14' 16.4" (LT)
D = 38° 11' 49.9"
L = 84.40'
T = 43.35'
R = 150.00'
SE = 0.02

-L- TRADE STREET TUNNEL

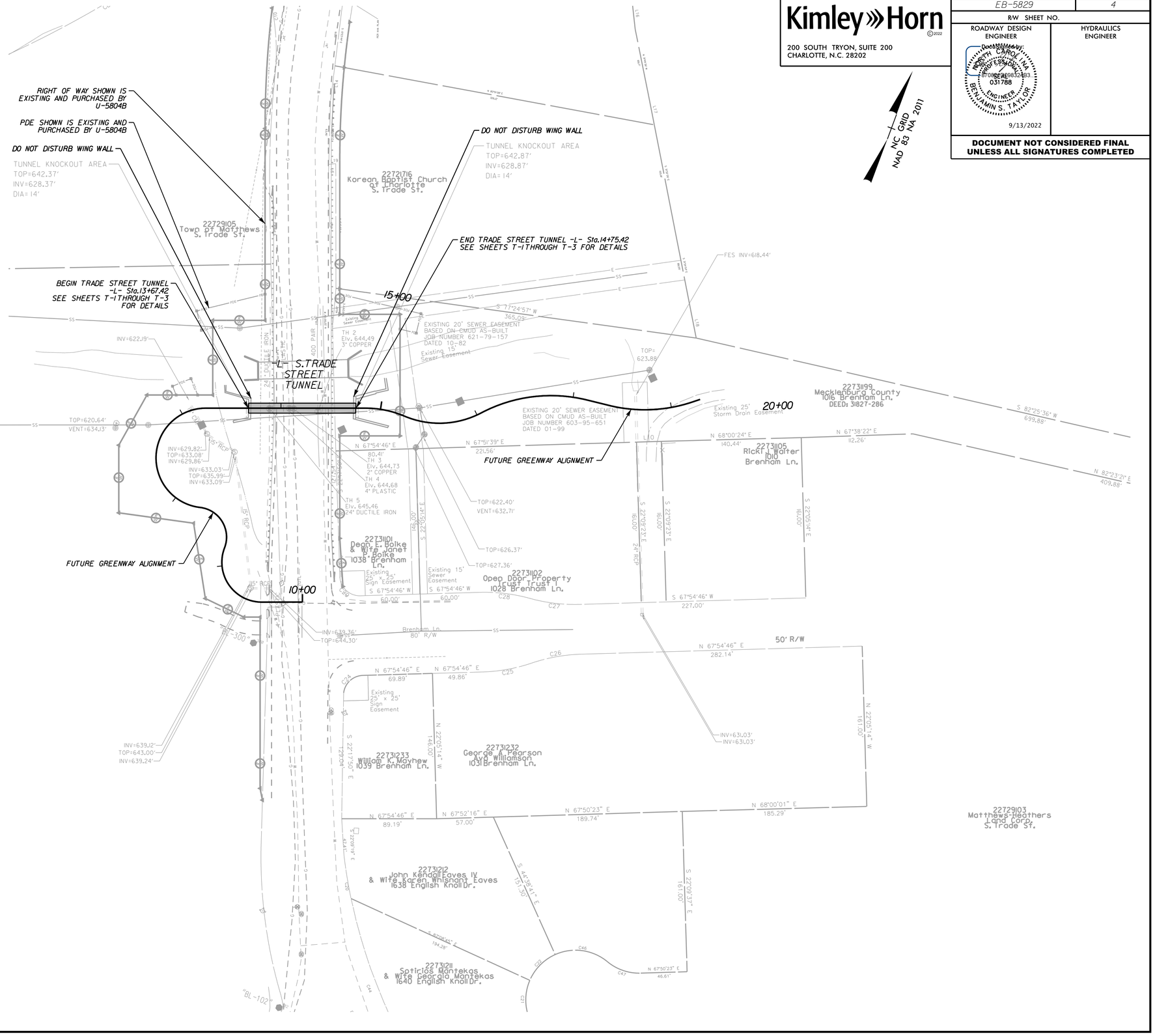
PI Sta 11+57.25
△ = 104° 32' 55.4" (LT)
D = 190° 59' 09.4"
L = 54.74'
T = 38.78'
R = 30.00'
SE = 0.02

-L- TRADE STREET TUNNEL

PI Sta 15+05.12
△ = 2° 3' 02" 16.2" (RT)
D = 57° 17' 44.8"
L = 40.21'
T = 20.38'
R = 100.00'
SE = 0.02

-L- TRADE STREET TUNNEL

PI Sta 16+62.03
△ = 41° 43' 48.8" (RT)
D = 38° 11' 49.9"
L = 109.25'
T = 57.17'
R = 150.00'
SE = 0.02



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200 SOUTH TRYON, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

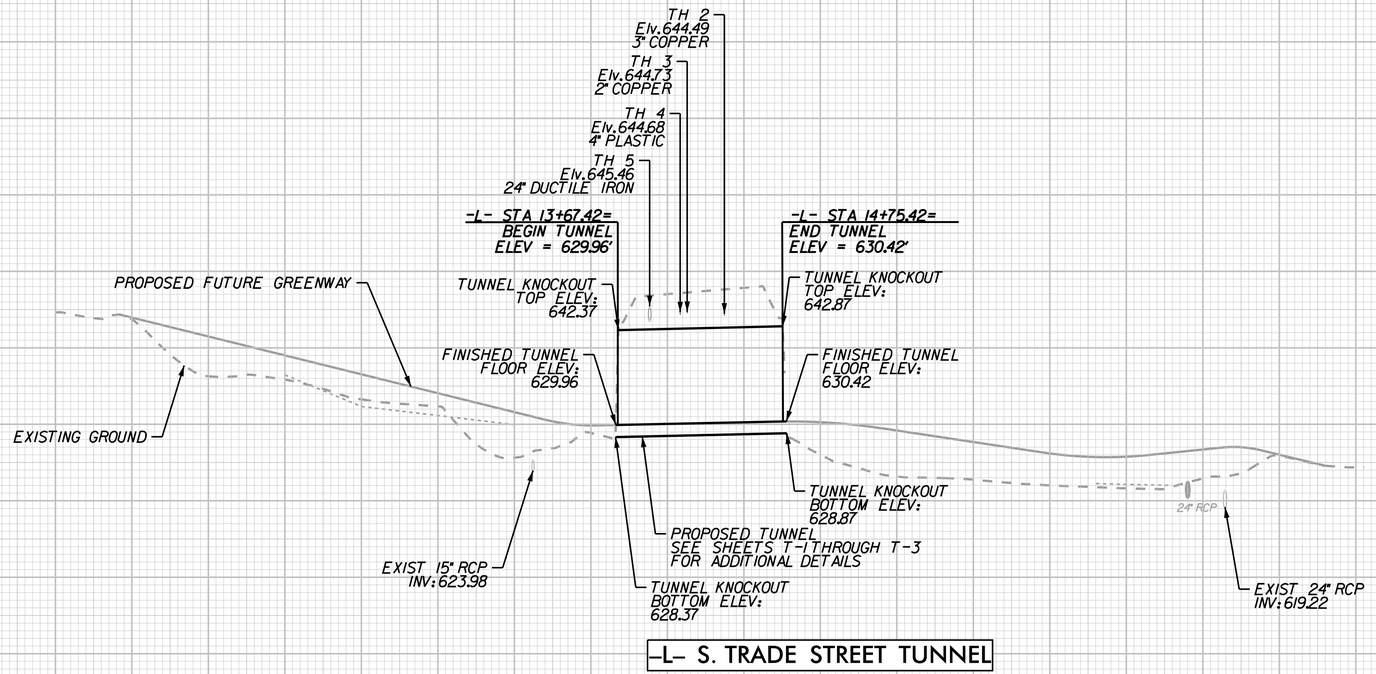
Docusigned by: BENJAMIN S. TAYLOR NORTH CAROLINA PROFESSIONAL SEAL 031788 ENGINEER
SEAL 031788
BENJAMIN S. TAYLOR
9/13/2022

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

9/13/2022

5/14/99



-L- S. TRADE STREET TUNNEL

FOR -L- PLAN, SEE SHEET 4

Kimley»Horn
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CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	5

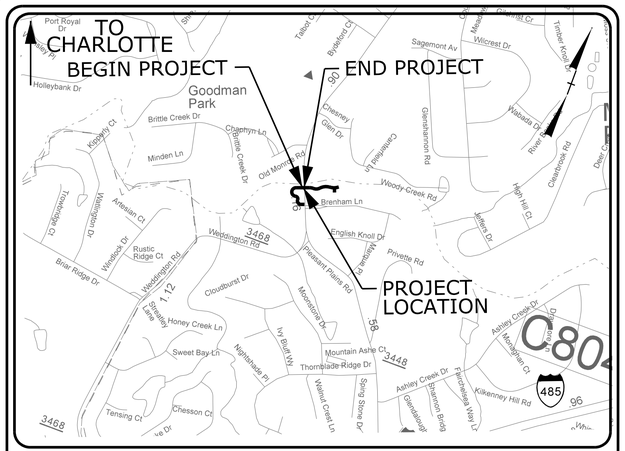
ROADWAY DESIGN ENGINEER

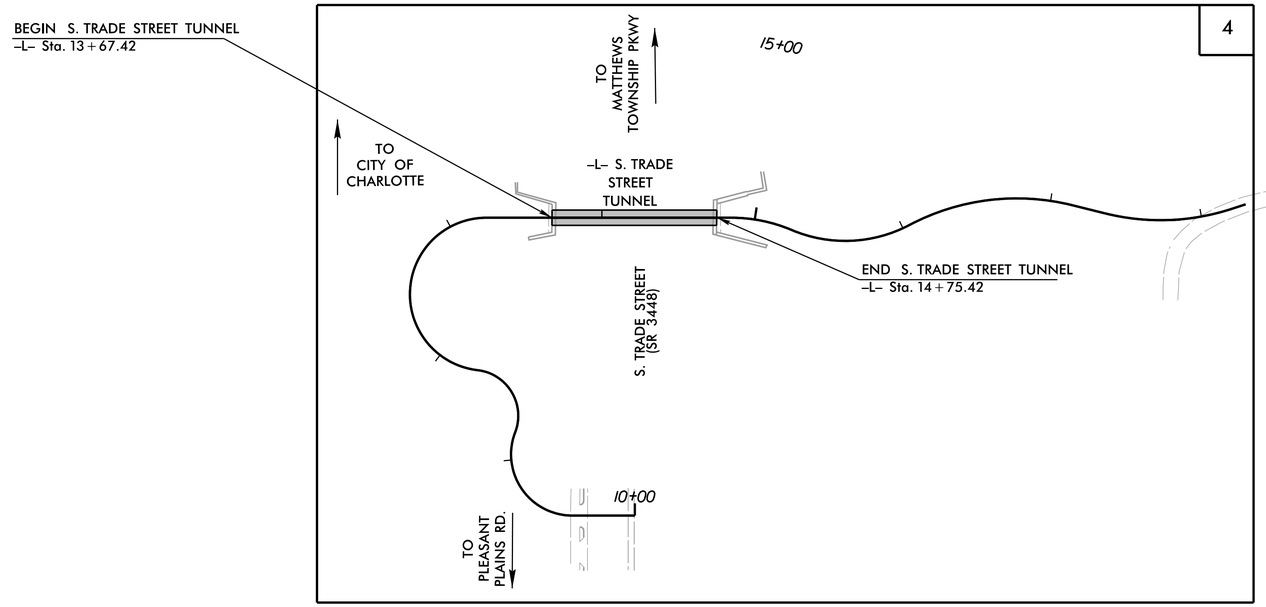
HYDRAULICS ENGINEER

9/13/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

9/13/2022





TIP PROJECT: EB-5829

VICINITY MAP

NOT TO SCALE

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MECKLENBURG COUNTY

LOCATION: S. TRADE STREET TUNNEL CONNECTION FOR FUTURE FOUR MILE CREEK GREENWAY

TYPE OF WORK: TUNNEL CONSTRUCTION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	EB-5829	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45969.1.1	STBGDA–3448(001)	PE
45969.2.1	STBGDA–3448(001)	R/W
45969.3.1	STBGDA–3448(001)	CONST.

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	—— TSD ——
1630.05	Temporary Diversion	→ TD →
1605.01	Temporary Silt Fence	—╫——╫——╫—
1606.01	Special Sediment Control Fence	╳╳╳
1622.01	Temporary Berms and Slope Drains	⊥ ← ←
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▩
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	◯
1633.02	Temporary Rock Silt Check Type-B	▶
	Wattle/ Coir Fiber Wattle	) —EW— —CFW—
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	◯
1634.01	Temporary Rock Sediment Dam Type-A	▒
1634.02	Temporary Rock Sediment Dam Type-B	◗
1635.01	Rock Pipe Inlet Sediment Trap Type-A	◡
1635.02	Rock Pipe Inlet Sediment Trap Type-B	◡
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	⊠
	Rock Inlet Sediment Trap:	
1632.01	Type A	A ▣
1632.02	Type B	B ▣
1632.03	Type C	C ▣
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭ ▭
	Infiltration Basin	▭

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

GRAPHIC SCALE

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Kimley»Horn

NC LICENSE #F-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

Prepared In the Office of:

KIMLEY HORN

200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202

Designed by:

SPENCER GREEN, P.E.	***#4244***
NAME	*LEVEL III CERTIFICATION NO.*

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.02	Silt Basin Type B
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1631.01	Matting Installation
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
1634.01	Temporary Rock Sediment Dam Type A
1634.02	Temporary Rock Sediment Dam Type B
1635.01	Rock Pipe Inlet Sediment Trap Type A
1635.02	Rock Pipe Inlet Sediment Trap Type B
1640.01	Coir Fiber Baffle
1645.01	Temporary Stream Crossing

5/14/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	EC-2A

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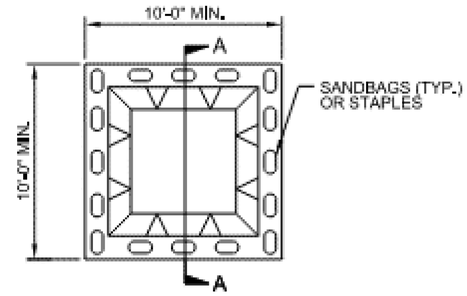
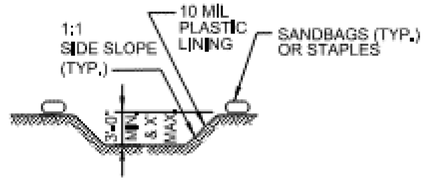
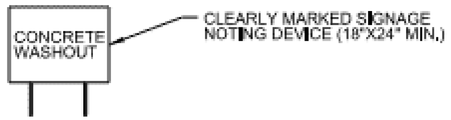
200 SOUTH TRYON, SUITE 200
CHARLOTTE, N.C. 28202

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







PLAN

SECTION A-A

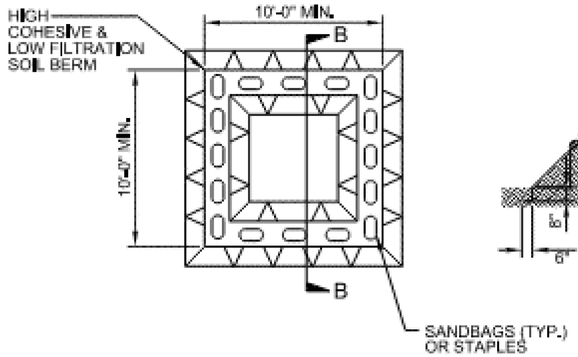
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

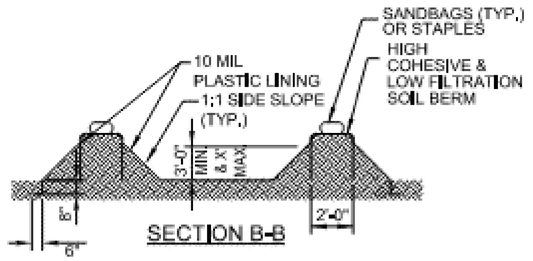
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

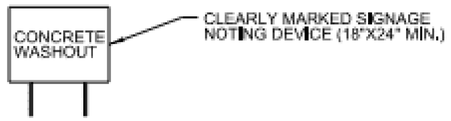
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

9/13/2022

5/14/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	EC-2B

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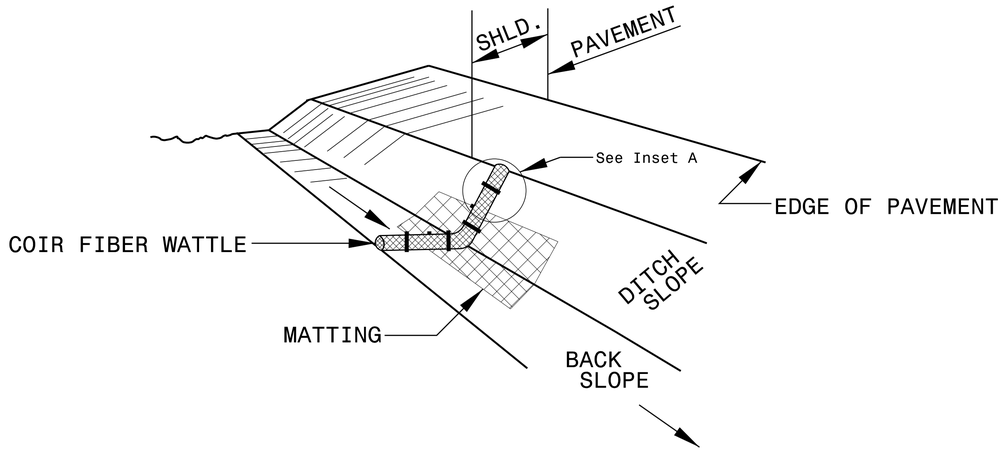
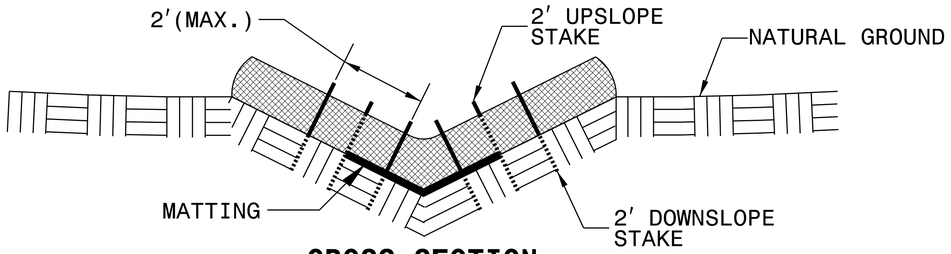
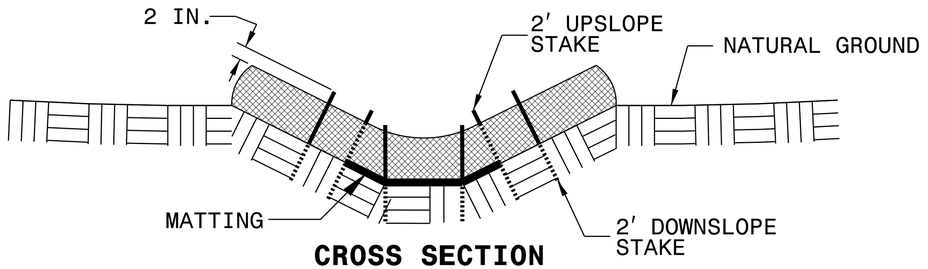
COIR FIBER WATTLE DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

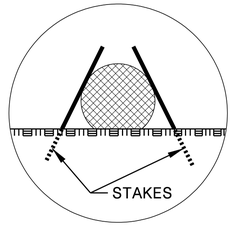
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

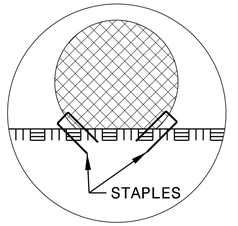
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



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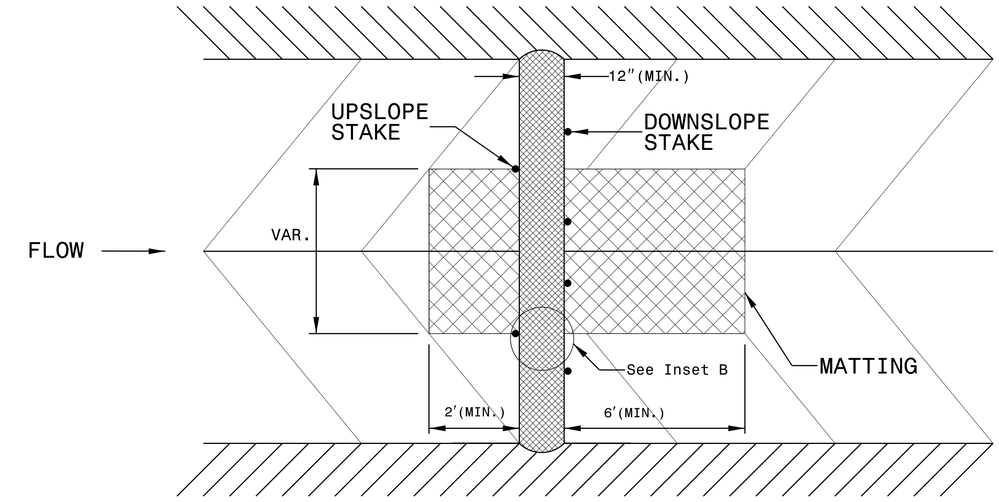

TOP VIEW

9/13/2022

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	EC-2C

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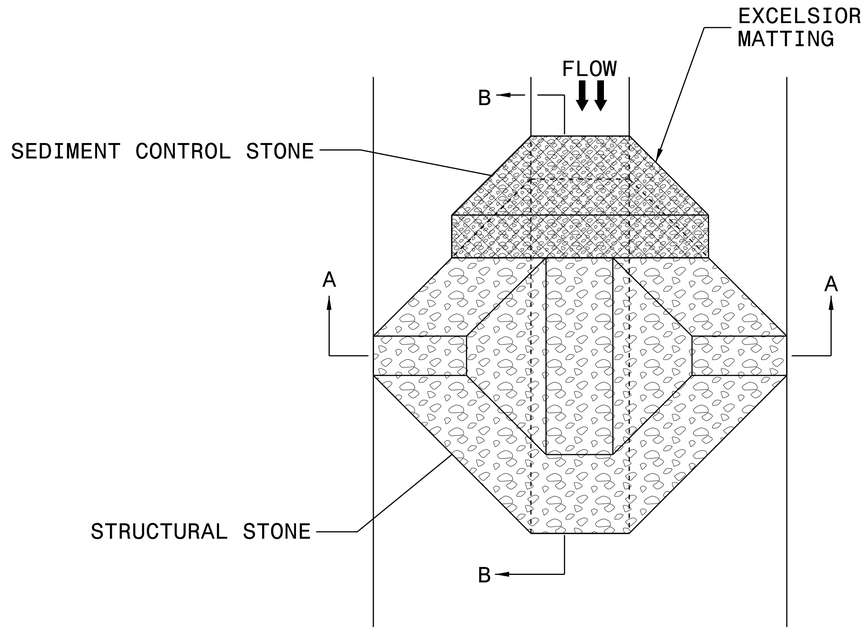
TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

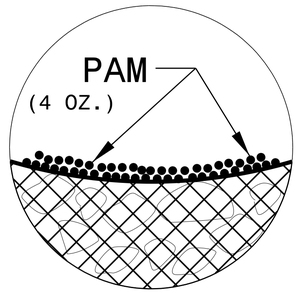
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

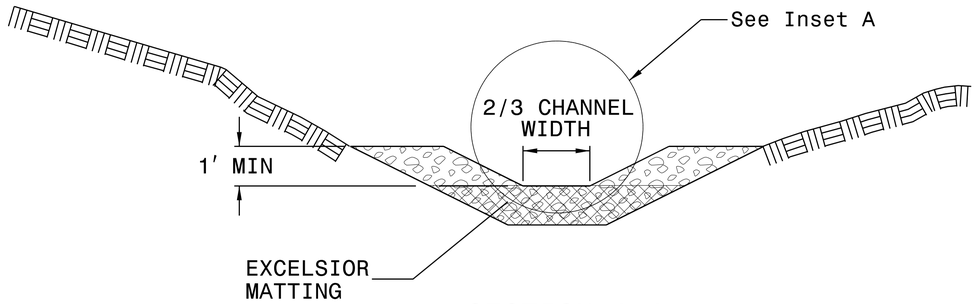
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

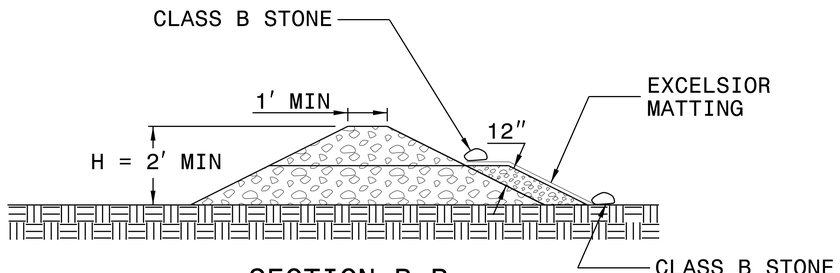
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

REVISIONS
5/14/99
9/13/2022

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CHARLOTTE, N.C. 28202

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

REVISIONS
5/14/99
9/13/2022

PROJECT REFERENCE NO.	SHEET NO.
EB-5829	EC-4/CONST.4

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CHARLOTTE, N.C. 28202

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NC GRID
NAD 83 NA 2011

REVISIONS
5/14/99
9/13/2022

TUNNEL KNOCKOUT AREA
TOP=642.37'
INV=628.37'
DIA=14'

22721716
Korean Baptist Church
of Charlotte
S. Trade St.

TUNNEL KNOCKOUT AREA
TOP=642.87'
INV=628.87'
DIA=14'

22729105
Town of Matthews
S. Trade St.

N 45°51'42" E
35.00'

N 68°33'16" E
641.85'

FES INV=618.44'

S 77°24'57" W
365.09'

EXISTING 20' SEWER EASEMENT
BASED ON CMUD AS-BUILT
JOB NUMBER 621-79-157
DATED 10-82

Existing 15'
Sewer Easement

TH 2
Elv. 644.49
3" COPPER

INV=622.19'

24" DUCTILE IRON

400 PAIR

℄- S.TRADE
STREET
TUNNEL

TOP=
623.88

EXISTING 20' SEWER EASEMENT
BASED ON CMUD AS-BUILT
JOB NUMBER 603-95-651
DATED 01-99

Existing 25'
Storm Drain Easement

22731199
Mecklenburg County
1016 Brenham Ln.
DEED: 31827-286

S 82°25'36" W
699.88'

TOP=620.64'
VENT=634.13'

INV=629.82'
TOP=633.08'
INV=629.86'

INV=633.03'
TOP=635.99'
INV=633.09'

N 67°54'46" E
80.41'

N 67°51'39" E
221.56'

N 68°00'24" E
140.44'

N 67°38'22" E
112.26'

22731105
Ricki J. Walter
1010
Brenham Ln.

N 82°23'21" E
409.88'

TH 3
Elv. 644.73
2" COPPER

TH 4
Elv. 644.68
4" PLASTIC

TH 5
Elv. 645.46
24" DUCTILE IRON

TOP=622.40'
VENT=632.71'

146.00'
S 22°05'14" E

S 22°09'23" E
161.00'

S 22°05'14" E
161.00'

22731101
Dean E. Bolke
& Wife Janet
E. Bolke
1038 Brenham
Ln.

Existing
25' x 25'
Sign Easement

S 67°54'46" W
60.00'

TOP=626.37'

TOP=627.36'

Existing 15'
Sewer
Easement

S 67°54'46" W
60.00'

22731102
Open Door Property
Trust I
1028 Brenham Ln.

HWY- FOUR MILE
CREEK GREENWAY

S 67°54'46" W
227.00'

15' R/W

INV=639.36'
TOP=644.30'

50' R/W

N 67°54'46" E
282.14'

N 67°54'46" E
69.89'

N 67°54'46" E
49.86'

Existing
25' x 25'
Sign
Easement

INV=631.03'
INV=631.03'

N 22°05'14" W
146.00'

S 22°17'40" E
146.00'

N 22°05'14" W
161.00'

22731233
William K. Mayhew
1039 Brenham Ln.

22731232
George A Pearson
AKA Williamson
1031 Brenham Ln.

SOUTH TRADE STREET
(SR 3448)

22729101
Williams Business Properties LLC
1700 Weddington Rd.
R. L. Williams
& Wife Jane F. Williams
DEED: 3168-295
*829,894 Sq. Ft.
(Comped)

INV=639.12'
TOP=643.00'
INV=639.24'

N 67°54'46" E
89.19'

N 67°52'16" E
57.00'

N 67°50'23" E
189.74'

N 68°00'01" E
185.29'

S 22°09'23" E
194.28'

S 44°38'41" E
151.30'

S 22°09'37" E
161.00'

22731212
John Kendall Eaves IV
& Wife Karen Whisnant Eaves
1638 English Knoll Dr.

22731211
Sotirios Mantekas
& Wife Georgia Mantekas
1640 English Knoll Dr.

N 67°50'23" E
46.61'

"BL-102"

22729103
Matthews-Heathers
Land Corp.
S. Trade St.

REVISIONS

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200 SOUTH TRYON, SUITE 200
CHARLOTTE, N.C. 28202

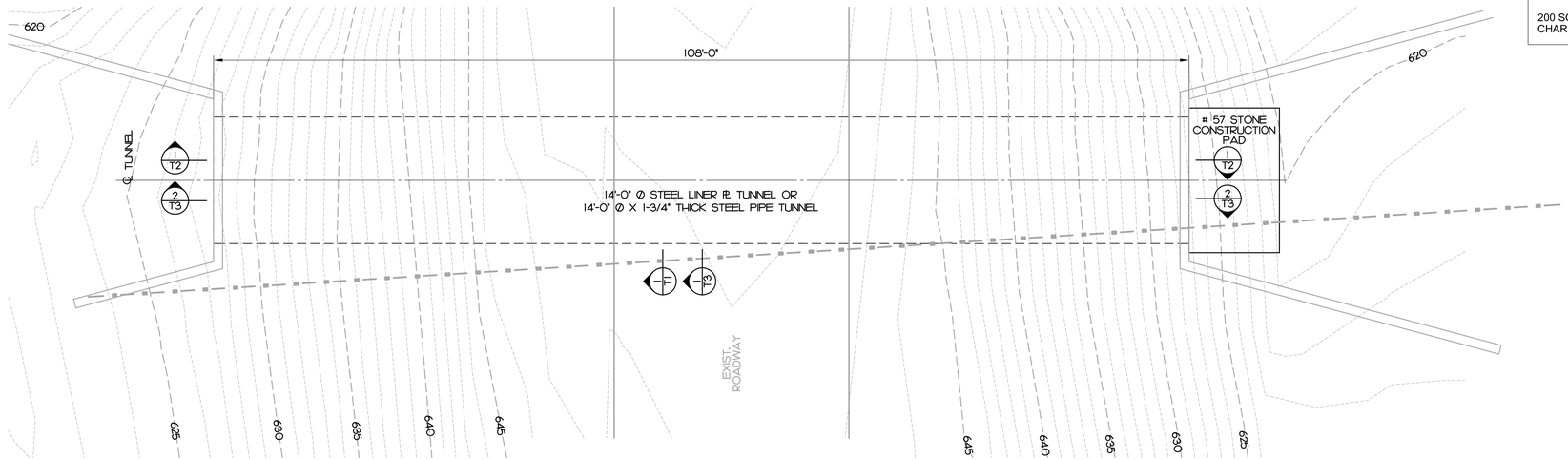
PROJECT REFERENCE NO.	SHEET NO.
EB-5829	T-1

MORRISON ENGINEERS PLLC
NCBELS: P-0184 | NCLBGC License: 63835
7701 Chapel Hill Road
Cary NC 27513
919.851.2021 office | 919.851.2024 fax
www.morrisonengineers.com
PROJECT NUMBER 2205

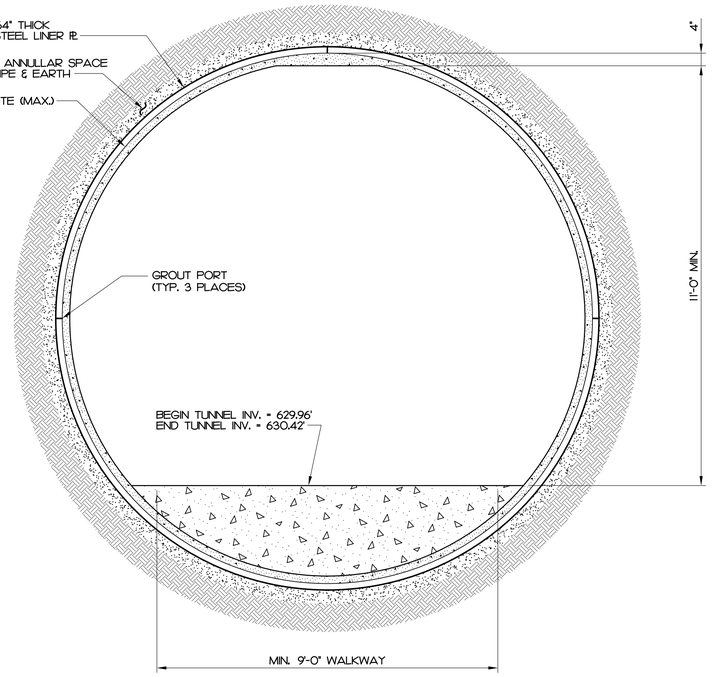
STRUCTURAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19756 ENGINEER JOHN T. MORRISON 9/19/2022

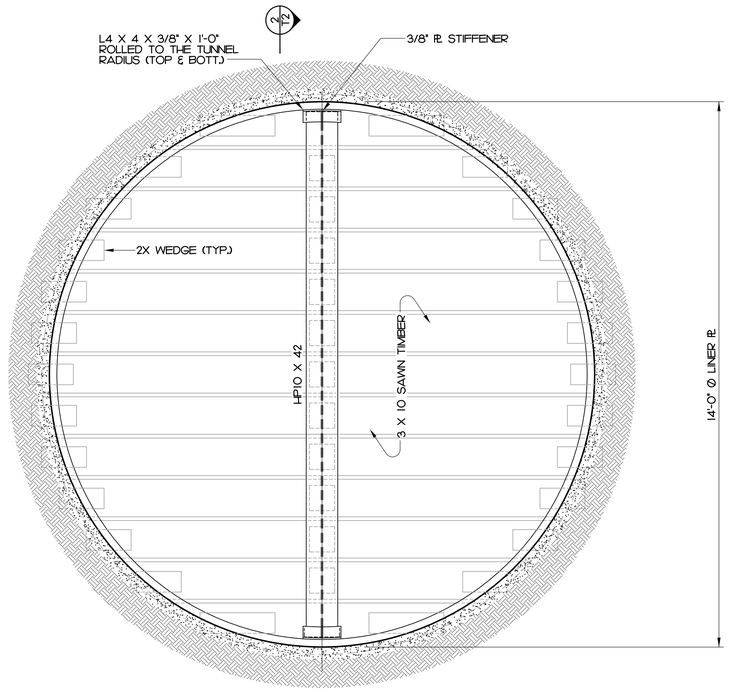
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TUNNEL PLAN
SCALE: 1/8" = 1'-0"



1/T1 SECTION
1/2" = 1'-0"



PROCEDURE

1. PLACE 3 X 10 SAWN TIMBER IN END OF PIPE.
2. WELD ROLLED ANGLES & HP10 POST INTO PLACE.
3. PLACE SOLID BLOCKING BETWEEN HP10 & SAWN TIMBER.
4. WEDGE 3 X 10 SAWN TIMBER TIGHT AS SHOWN IN SECTION 2/T2.

LINER ℞ TUNNEL BREAST BOARD

A/T1 DETAIL
1/2" = 1'-0"

GENERAL NOTES

A. MATERIAL SPECIFICATIONS:
   1. STEEL LINER PLATES OPTION:
      a. CARBON STEEL SHEETS OF PLATES CONFORMING TO ASTM A569 WITH A MINIMUM Fy = 29,000 psi.
      b. GALVANIZE ALL PLATES IN ACCORDANCE WITH AASHTO M111-94 AND ALL NUTS, BOLTS, WASHERS IN ACCORDANCE WITH ASTM A153.
      c. STEEL PIPE CONFORMING TO ASTM A36.
   2. STEEL CASING OPTION:
      a. STEEL CASING WILL CONFORM TO ASTM A252, GRADE 2. ASTM A139, GRADE B (WAIVE HYDRO) WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI. ALL MATERIAL SHALL MEET THE REQUIREMENTS OF THE ARRA.
   3. SHOTCRETE WILL COMPLY WITH ACI 506R AND HAVE A MINIMUM 2 DAY STRENGTH EQUAL TO 2000 PSI AND A MINIMUM 28-DAY STRENGTH EQUAL TO 4000 PSI. TEST SHOTCRETE IN ACCORDANCE WITH ACI 506R RECOMMENDATIONS.

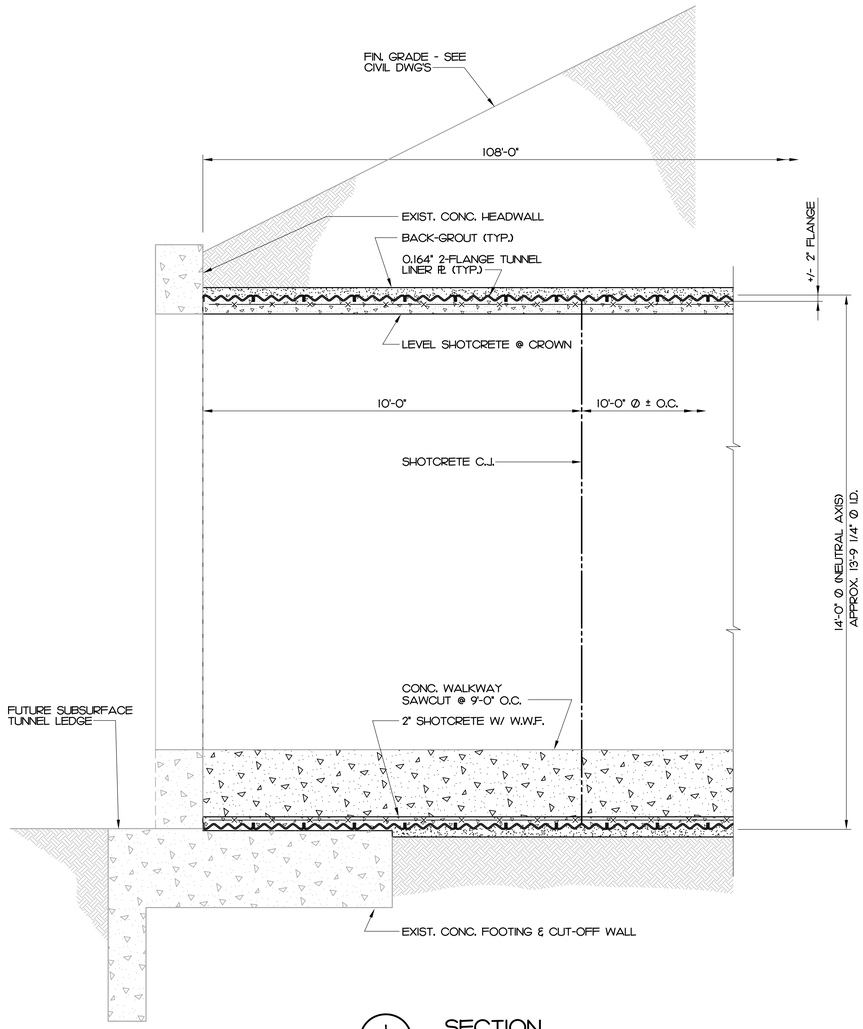
B. INSTALLATION:
   1. LINER PLATE OPTION:
      a. CONSTRUCT LEVEL STONE CONSTRUCTION PAD SUFFICIENT TO ESTABLISH LINE AND GRADE.
      b. THE TUNNEL SHALL BE CONSTRUCTED USING 0.164 INCH (8 GAGE) X 18 INCH WIDE (2) FLANGE LINER PLATES OR STEEL PIPE AND SHALL CONFORM TO THE LINE AND GRADE SHOWN ON THE CONTRACT DOCUMENTS. LINER PLATES SHALL BE ASSEMBLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COURSES OF PLATES SHALL BE STAGGERED 1/2 PLATE WHEN THE COURSE CONTAINS ALL WHOLE PLATES. WHEN THE COURSE CONTAINS A 1/2 PLATE, THE COURSE SHALL BE STAGGERED 1/4 PLATE WITH THE 1/2 PLATES BEING PLACED ON OPPOSITE SIDES OF THE TUNNEL IN ALTERNATE COURSES.
      c. THE TUNNELING OPERATION SHALL PROCEED ONLY A DISTANCE SUFFICIENT FOR PLACING TWO SECTIONS OF TUNNEL LINER AND MUST CONFORM TO THE REQUIREMENTS GIVEN IN NCDOT STANDARD SPECIFICATIONS SECTION 1550-4 (C). THE TUNNEL LINER PLATES MUST BE PLACED BEFORE PROCEEDING FURTHER.
      d. THE SPACE OUTSIDE THE LINER PLATES IS TO BE HELD TO A MAXIMUM OF (1) INCH AND SHALL BE GROUTED WITH 1:3 PORTLAND CEMENT AND SAND GROUT PUMPED AT A PRESSURE NO GREATER THAN 10 PSI. COMPLETELY FILL ALL VOIDS CREATED BY EXCAVATION AND INSTALLATION OF THE LINER PLATES THROUGH 2 INCH OPENINGS PROVIDED IN THE TOP OF THE STEEL LINER PLATES. TUNNEL CONTRACTOR MAY CHOOSE TO GROUT WITH A "NEAT CEMENT" MIX USING (5) GALLONS OF WATER TO EACH 94 LB. BAG OF PORTLAND CEMENT. GROUTING WILL BE DONE WITH INSTALLATION OF THE LINER PLATES SO THAT AT NO TIME WILL THE GROUTING OPERATION BE FURTHER THAN 10 FEET FROM THE FRONT END OR HEAD OF TUNNEL CONSTRUCTION. AT THE END OF EACH DAY'S OPERATIONS THE SPACE OUTSIDE THE LINER PLATES IS TO BE GROUTED. GROUT WILL BE PRESSURE INJECTED INTO EACH GROUT HOLE. IF THE GROUT FROM ONE HOLE SHOULD FLOW ALONG THE LINER PLATE SO AS TO PLUG THE NEXT GROUT HOLE, THE PLUGGED HOLE WILL BE OPENED BY PUNCHING THROUGH THE GROUT LAYER SO THAT EACH HOLE MAY BE USED FOR GROUTING. THE GROUTING OPERATION WILL BE CONTINUED AT EACH HOLE UNTIL ALL SPACES OUTSIDE THE LINER PLATES ARE FILLED AND NO GROUT WILL FLOW.
      e. PROVIDE BREASTBOARD CLOSURE PER DETAIL A/T1 WHEN THE TUNNELLING OPERATION IS HALTED FOR MORE THAN (6) HOURS OR WHENEVER GROUND CONDITIONS AT THE FACE OF THE TUNNEL REQUIRE BREASTBOARDING.
      f. THE ENTIRE OPERATION SHALL BE SUBJECT TO INSPECTION BY THE NCDOT RESIDENT ENGINEER, NCDOT STRUCTURAL ENGINEER, OR A THIRD PARTY SPECIAL INSPECTOR. ALL MATERIALS SHALL BE SUBJECT TO INSPECTION BY THE SAME.
   2. B&J STEEL CASING OPTION - SEE SHEET T-3

C. TUNNEL CONTRACTOR WILL ESTABLISH A BASELINE SURVEY, PRIOR TO START OF TUNNELING. TUNNEL CONTRACTOR WILL TAKE SHOTS ON A DAILY BASIS PROVIDING A COPY OF FIELD NOTES TO NCDOT RESIDENT ENGINEER AND KIMLEY-HORN & ASSOCIATES. SEE SETTLEMENT MONITORING PLAN ON SHEET T-2.

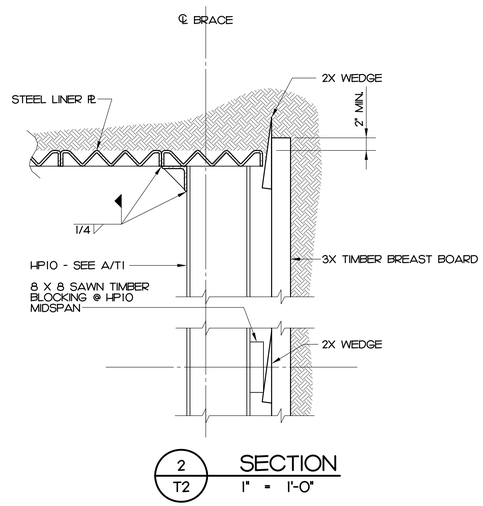
D. TUNNEL CONTRACTOR SHALL ADHERE TO CONSTRUCTION REQUIREMENTS AS OUTLINED IN NCDOT STANDARD SPECIFICATIONS SECTION 1550-3.

E. SHOP DRAWINGS SUBMITTAL:
   1. PROVIDE LINER PLATE MANUFACTURER'S DATA SHEET SHOWING PLATE THICKNESS, RING GEOMETRY AND GROUT HOLE LOCATIONS.
   2. SHOTCRETE MIX DESIGN, NOZZLE MAN CERTIFICATION AND DATA SHEET FOR WWF. INCLUDE WWF CONNECTION TO LINER PLATE DETAIL.

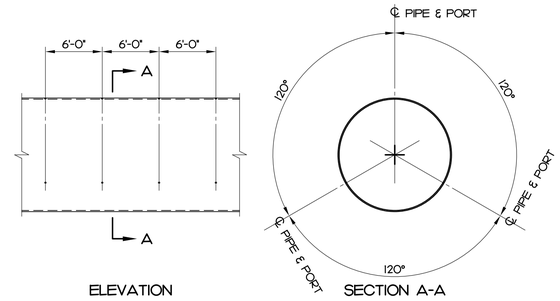
REVISIONS



1 / T2 SECTION
1/2" = 1'-0"



2 / T2 SECTION
1" = 1'-0"

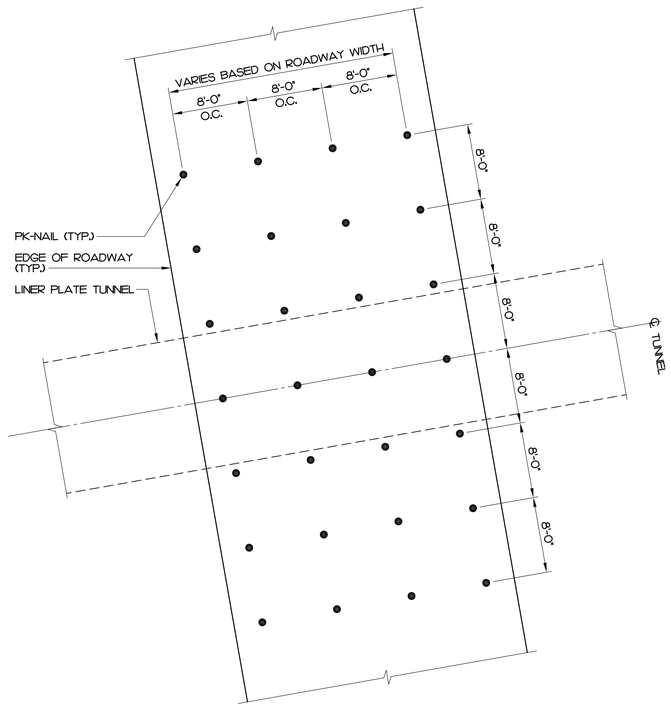


ELEVATION SECTION A-A

NOTES

1. PROVIDE SET OF (3) 2" Ø HOLES IN EVERY 4TH LINER PLATE RING OR 6' O.C. AS SHOWN. PORTS SHALL BE FACTORING INSTALLED AND THREADED TO RECEIVE PIPE THREAD PLUGS.

A / T2 SECTION
1/8" = 1'-0"



SETTLEMENT MONITORING PLAN
SCALE: 1/8" = 1'-0"

SETTLEMENT MONITORING NOTES

1. PK-NAILS WILL BE INSTALLED AS SHOWN ON THIS PLAN & BASELINE ELEVATIONS SURVEYED PRIOR TO THE START OF PIT EXCAVATION.
2. PK-NAILS SHALL BE 2" LONG AND HAVE A RIBBED THREAD ALONG ITS SHANK WITH A CONICAL POINT. THE NAIL HEAD SHALL HAVE AN INDENT IN THE CENTER TO RECEIVE A SURVEYOR'S PLUMB BOB. THE NAILS SHALL BE MANUFACTURED FROM HARDENED, ZINC-PLATED STEEL.
3. EACH NAIL SHALL HAVE AN IDENTIFICATION TAG WHICH WILL BE 1-1/2" IN DIAMETER AND 3/32" THICK AND HAVE A PUNCH NUMBER FOR IDENTIFICATION. EACH NAIL SHALL BE DRIVEN INTO THE ASPHALT THROUGH A CENTRAL HOLE IN THE IDENTIFICATION TAG.
4. THE CONTRACTOR'S SURVEYOR WILL TAKE DAILY SHOTS AT LOCATIONS SHOWN ON THIS DRAWING ONCE TUNNEL IS WITHIN THE THEORETICAL 1:1 MEASURED FROM THE EDGE OF THE ROADWAY SURFACE.
5. SURVEY DATA WILL BE SUBMITTED TO THE ENGINEER ON A WEEKLY BASIS, HOWEVER TUNNEL OPERATIONS SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY IF MEASURED SETTLEMENT REACHED 0.02' OR ANY LESSER AMOUNT REQUIRED BY NCDOT.
6. MONITORING WILL CONTINUE ON A DAILY BASIS UNTIL TUNNEL IS COMPLETE.

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PROJECT REFERENCE NO.	SHEET NO.
EB-5829	T-2

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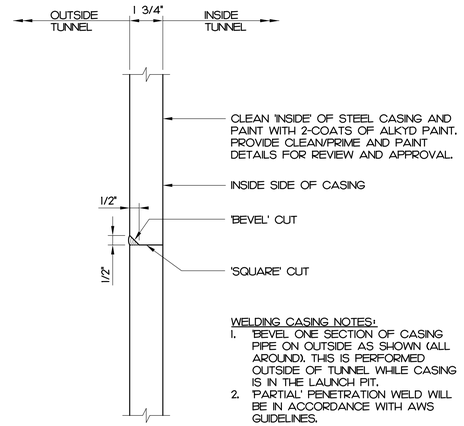
PROJECT NUMBER 2205

STRUCTURAL ENGINEER

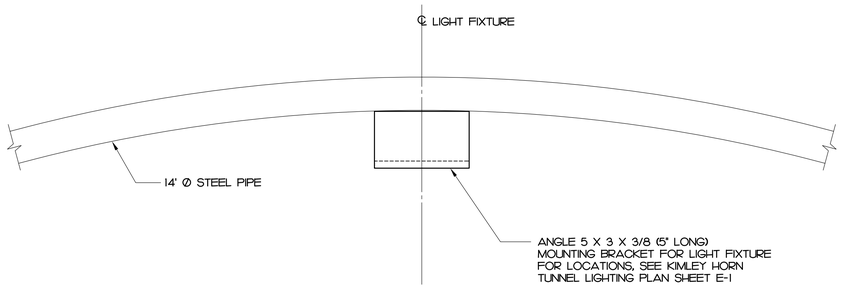
NORTH CAROLINA PROFESSIONAL SEAL 10756 ENGINEER JOHN T. MORRISON 9/19/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

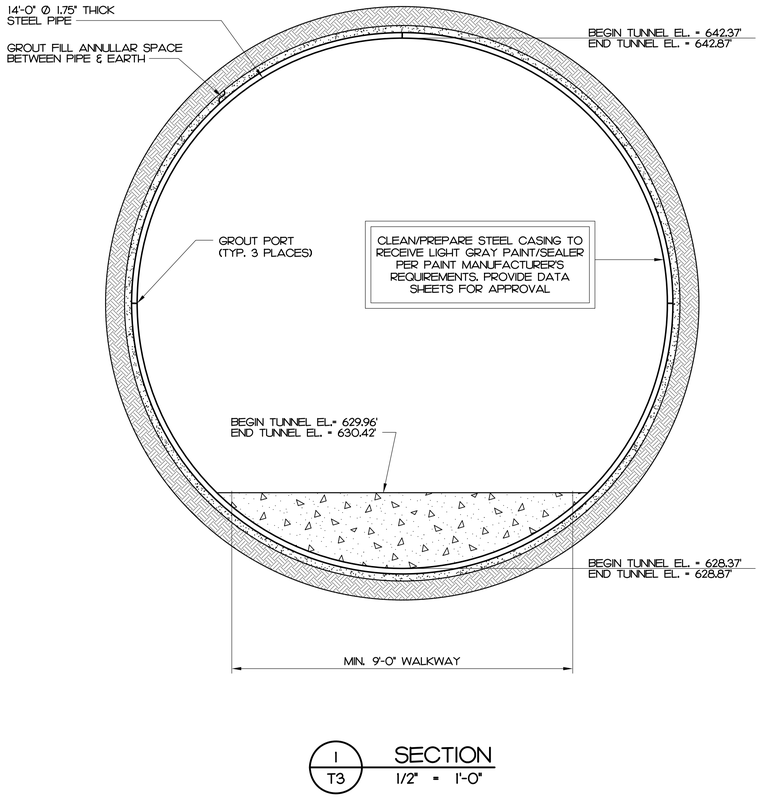
REVISIONS



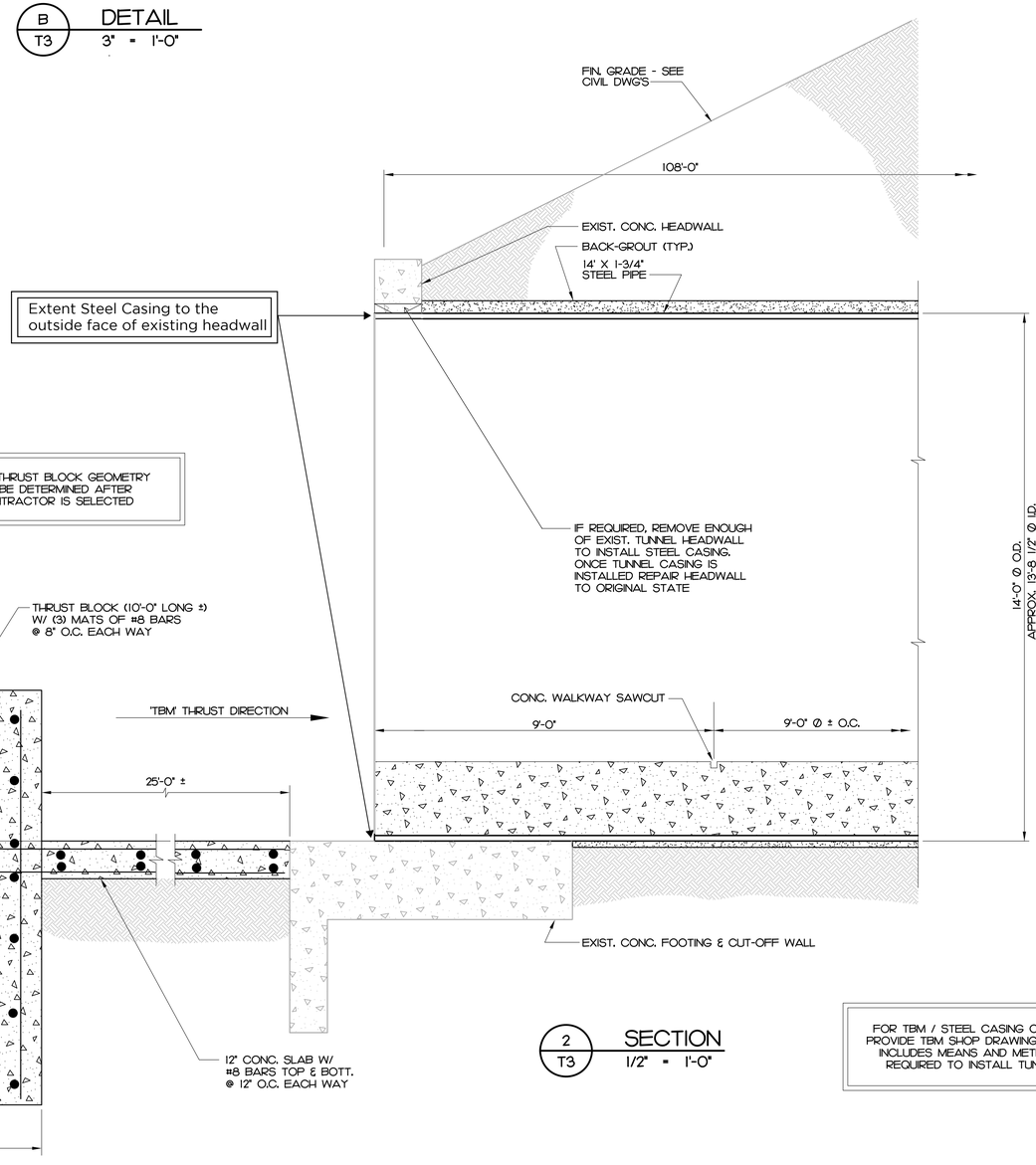
A / T3 'CASING' JOINT CONNECTION DETAIL
3" = 1'-0"



B / T3 DETAIL
3" = 1'-0"



1 / T3 SECTION
1/2" = 1'-0"



2 / T3 SECTION
1/2" = 1'-0"

FOR TBM / STEEL CASING OPTION, PROVIDE TBM SHOP DRAWINGS THAT INCLUDES MEANS AND METHODS REQUIRED TO INSTALL TUNNEL

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