This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

0012DEL_P28

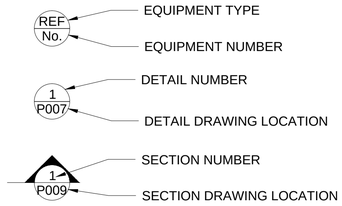
SYMBOLS	DESCRIPTION
	SHUT-OFF VALVE
	PRESSURE REGULATING VALVE
	PRESSURE RELIEF VALVE
	PRESSURE/TEMPERATURE RELIEF VALVE
	CHECK VALVE
	UNION
	"Y" STRAINER
	RISER DOWN (ELBOW)
	RISER UP (ELBOW)
	SLOPE DOWN IN DIRECTION OF FLOW
	BALANCING VALVE
	BRANCH CONNECTION OUT OF TOP
	BRANCH CONNECTION OUT OF BOTTOM
	CAP ON END OF PIPE
	ANCHOR POINT
SAN	SANITARY
SS	SANITARY
V	SANITARY VENT
SD	STORM DRAIN
OD	OVERFLOW DRAIN
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC HOT WATER RETURN
ICW	INDUSTRIAL COLD WATER
CA	COMPRESSED AIR
FOS	FUEL OIL SUPPLY
FOR	FUEL OIL RETURN
OW	OILY WASTE
FOV	FUEL OIL VENT
CWV	COMBINATION WASTE AND VENT
TP	TRAP PRIMER PIPING
G	GAS
IW	INDUSTRIAL WASTE
CD	CONDENSATE DRAIN
TW	TEMPERED WATER
TWR	TEMPERED WATER RETURN
DW	DOMESTIC WATER
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
T	PLUG VALVE
S	SOLENOID VALVE
	BUTTERFLY VALVE
M	MOTOR OPERATED VALVE

SYMBOLS	DESCRIPTION
FS	FLOW SWITCH
	FLEXIBLE PIPE CONNECTOR
DV	DRAIN VALVE
	SIGHT GLASS
	WATER HAMMER ARRESTOR
	ROOF DRAIN
	HOSE BIBB
	CLEANOUT TO GRADE
	FLOOR SINK/AREA DRAIN
	FLOOR DRAIN
	FLOOR CLEANOUT
	WALL CLEANOUT/PLUG CLEANOUT
RPZBFP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
W	WATER VALVE W/VALVE BOX
	WALL HYDRANT
TI	TEMPERATURE INDICATOR
PI	PRESSURE GAUGE (INDICATOR)
PSH	PRESSURE SWITCH HIGH
PSHH	PRESSURE SWITCH HIGH HIGH
PSL	PRESSURE SWITCH LOW
PSLL	PRESSURE SWITCH LOW LOW
PT	PRESSURE TRANSMITTER
	CENTRIFUGAL PUMP
	DEMOLITION LIMIT
	CONNECT NEW TO EXISTING
#	NEW WORK NOTE REFERENCE
	EXISTING PIPE, ETC.
	NEW PIPE, ETC.
	CONTINUATION SYMBOL (TYP.)

ABBREVIATIONS

ABV	ABOVE
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AP	ACCESS PANEL
ARCH	ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AV	ACID VENT
AW	ACID WASTE
BFP	BACKFLOW PREVENTER
BASE	BASEMENT
BEL	BELOW
BL	BASELINE
BLDG	BUILDING
BOP	BOTTOM OF PIPE
BP	BOOSTER PUMP
BV	BALANCING VALVE
CENT	CENTRIFUGAL
CD	CONDENSATE DRAIN
CFH	CUBIC FEET PER HOUR
CL	CENTERLINE
CLG	CEILING
CFM	CUBIC FEET PER MINUTE
C.O.	CLEANOUT
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUATION
COTG	CLEANOUT TO GRADE
CV	CENTRAL VACUUM
CW	DOMESTIC COLD WATER
CWV	COMBINATION WASTE & VENT
D	DRUM
DEPT	DEPARTMENT
DET	DETAIL
DFU	DRAINAGE FIXTURE UNIT
DIA	DIAMETER
D.I.P.	DUCTILE IRON PIPE
DN	DOWN
DW	DRINKING WATER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
ELECT	ELECTRICAL
EEW	EMERGENCY EYE WASH
EEWS	EMERGENCY EYE WASH AND SHOWER
EL	ELEVATION
E/G	EMERGENCY GENERATOR
EQUIP	EQUIPMENT
ET	EXPANSION TANK
EWH	ELECTRIC WATER HEATER
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FFE	FINISHED FLOOR ELEVATION
FIN	FINISHED
FLR	FLOOR
FLEX	FLEXIBLE
F.O.B.	FLAT ON THE BOTTOM
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
F.O.T.	FLAT ON THE TOP
FOV	FUEL OIL VENT
FPM	FEET PER MINUTE
FS	FAR SIDE
FT	FEET
GPH	GALLON PER HOUR
GPM	GALLON PER MINUTE
GPF	GALLON PER FLUSH
GV	GATE VALVE
G	GAS
GA	GAUGE
GAL	GALLONS
GALV	GALVANIZED
H	HEIGHT
HB	HOSE BIB
HDPE	HIGH DENSITY POLYETHYLENE
HEP	HEAD END POWER UNIT
HG	MERCURY
HORIZ	HORIZONTAL
HPG	HIGH PRESSURE GAS
H.P.	HIGH POINT
HP	HORSEPOWER
HR	HOUR
HT	HOLDING TANK
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HWR	DOMESTIC HOT WATER RETURN
HZ	HERTZ
ICW	INDUSTRIAL COLD WATER
ID	INSIDE DIAMETER
IN	INCH
INV	INVERT ELEVATION
IW	INDUSTRIAL WASTE
KS	KITCHEN SINK
KW	KILOWATT
LAV	LAVATORY
LBS	POUNDS
LOCO	LOCOMOTIVE
L.P.	LOW POINT
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NOM	NOMINAL
NO	NORMALLY OPEN
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
OD	OUTER DIAMETER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OS&Y	OUTSIDE SCREW AND YOKE VALVE
OW	OILY WASTE
P	PUMP
PD	PRESSURE DROP
PF	PRE-FILTER
PIV	POST INDICATOR VALVE
PLMG	PLUMBING
POC	POINT OF CONNECTION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
REF	REFERENCE
REQD	REQUIRED
RM	ROOM
RPZBFP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
RV	RELIEF VENT
S	SINK
SF	SQUARE FEET
SHR	SHOWER
SOV	SHUT-OFF VALVE
SP	SUMP PUMP
SPRINK	SPRINKLER
SS	SANITARY SEWER OR SERVICE SINK
SYS	SYSTEM
T	TANK
TEMP	TEMPERATURE
TOC	TOP OF CONCRETE
TP	TRAP PRIMER
T.O TOT	TOP OF TOTAL
TW	TEMPERED WATER
TYP	TYPICAL
UF	UNDER FLOOR
U/C	UNDER-CUT
UG	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	SANITARY VENT
VAC	VACUUM CLEANER SUCTION
VAV	VARIABLE AIR VOLUME
VE	VACUUM CLEANER EXHAUST
VB	VACUUM BREAKER
VEL	VELOCITY
VP	VACUUM PUMP
VTR	VENT THRU ROOF
VS	VENT STACK
W	WASTE
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER CLOSET
WCO	WALL CLEANOUT
WFSU	WATER FIXTURE SUPPLY UNIT
WG	WATER GAUGE
WH	WATER HEATER/WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WO	WASTE OIL
WOG	WATER-OIL-GAS
WOV	WASTE OIL VENT

EQUIPMENT DESIGNATION



GENERAL NOTES

1. ALL LEGEND SYMBOLS AND ABBREVIATIONS SHOWN ON THIS DRAWING DO NOT NECESSARILY APPEAR IN THESE CONTRACT DOCUMENTS.
2. THOROUGHLY INVESTIGATE AND VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
3. PROVIDE ITEMS OF MATERIAL, EQUIPMENT OR WORK SHOWN ON DOCUMENTS UNLESS SPECIFICALLY NOTED TO BE FURNISHED OR INSTALLED BY OTHERS.
4. THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC IN NATURE AND, DUE TO THE SCALE OF THE DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND OTHER APPURTENANCES NECESSARY TO MEET THE ACTUAL FIELD CONDITIONS. PROVIDE ALL OFFSETS, FITTINGS, VALVES, TRAPS AND OTHER MATERIAL AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM WITHOUT ADDITIONAL COST TO THE OWNER.

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/05/18
CHECKED BY E. LIWERANT DATE 03/16/18
DWG. NO. 1

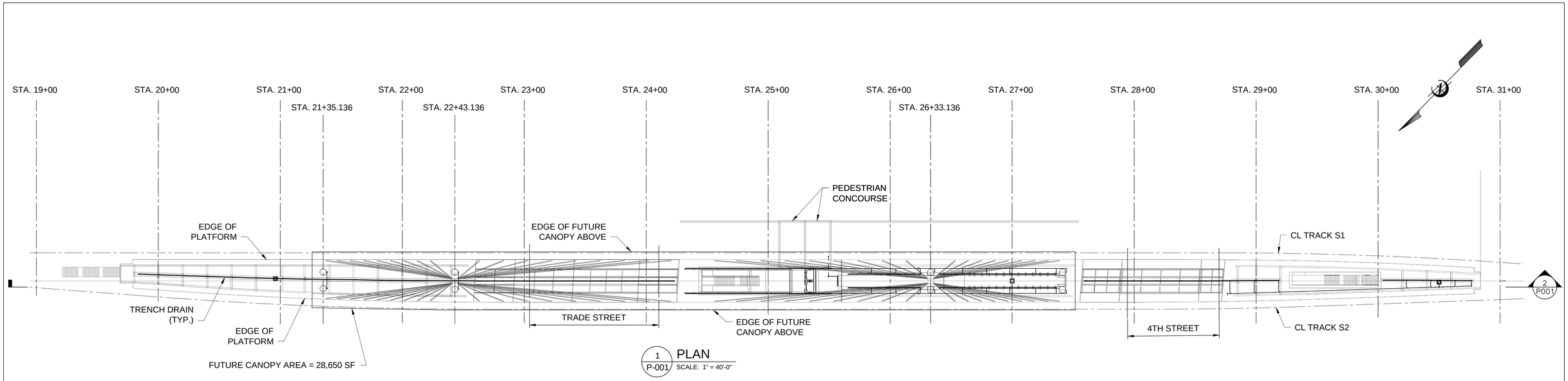
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

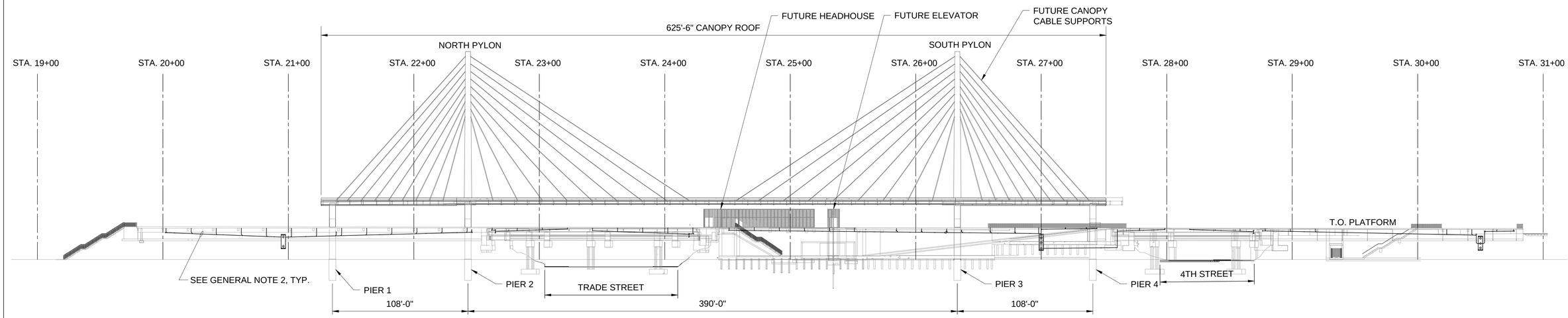
PLUMBING LEGEND, NOTES AND ABBREVIATIONS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-000
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



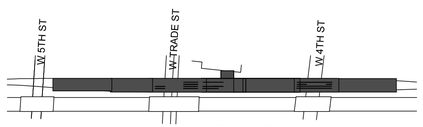
1 P-001 PLAN
SCALE: 1" = 40'-0"



2 P-001 SECTION
SCALE: 1" = 40'-0"

GENERAL NOTES:

1. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL ELEVATIONS AND STATION MARKINGS.
2. REFER TO THE ENTIRE PLUMBING DRAWING SET FOR ENLARGED PARTIAL PLANS AND ENLARGED PARTIAL SECTIONS FOR STORMWATER DRAINAGE PIPING, ETC.



KEY MAP
SCALE: NTS

TOTAL BILL OF MATERIAL	
	PLATFORM STRUCTURE DRAINAGE SYSTEM
	LUMP SUM
PLATFORM	LUMP SUM

0 20' 40' 60' 80'

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT
5/26/2018
Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 2

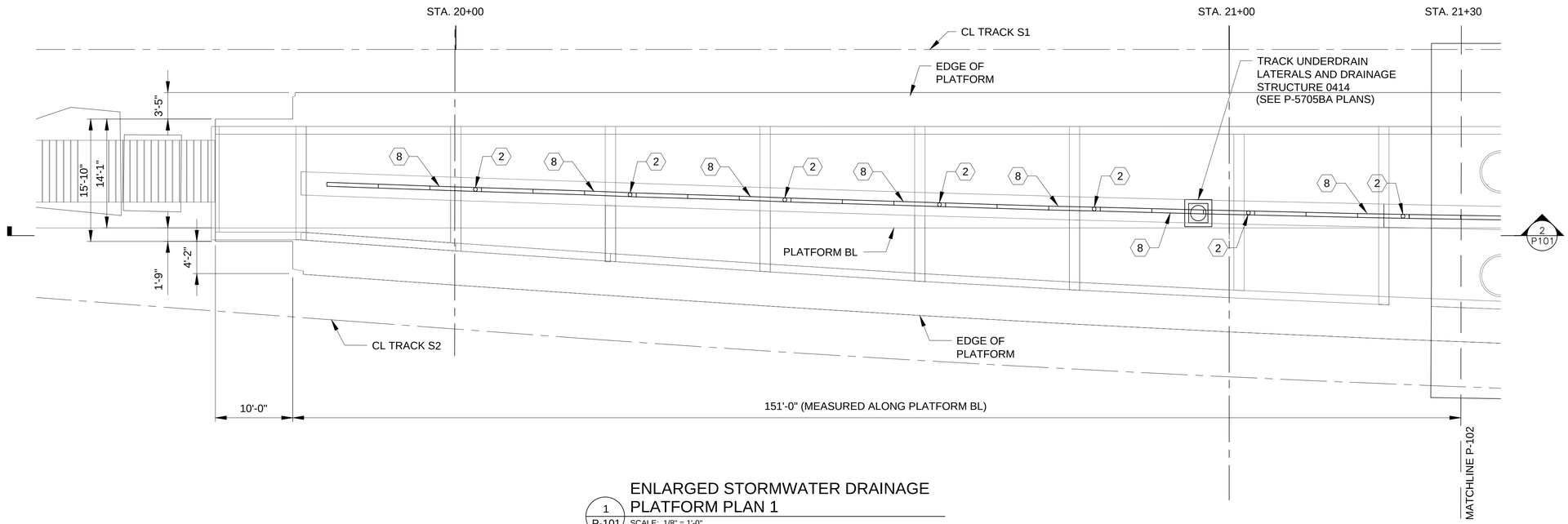
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

PLUMBING GENERAL PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-001
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28

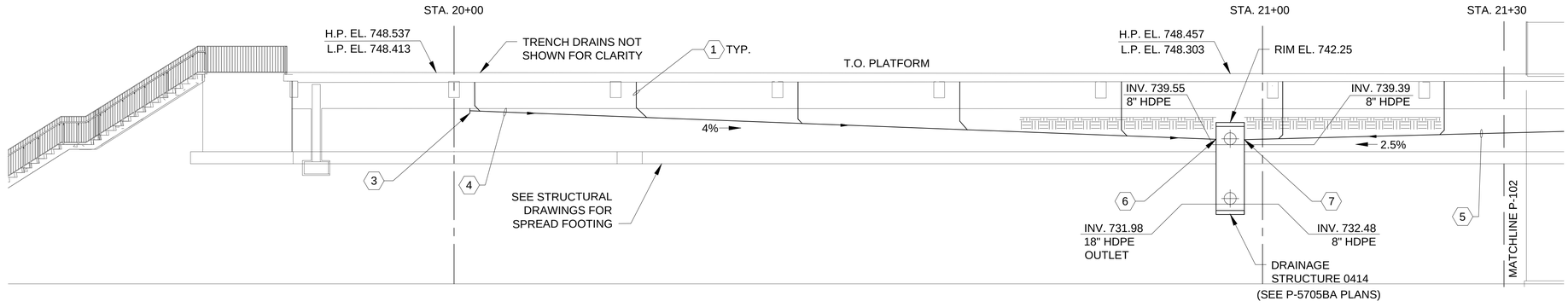


1 P-101 ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 1

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

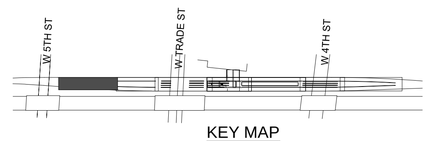
KEYNOTES:

1. 4" D.I.P
2. TRENCH BOTTOM OUTLET LOCATION
3. CLEAN-OUT
4. 6" D.I.P. AT 4% MINIMUM SLOPE
5. 8" D.I.P. AT 2.5% MINIMUM SLOPE
6. INVERT EL. 739.5
7. INVERT EL. 739.5
8. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501



2 P-101 ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 1

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



KEY MAP

SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

GENERAL NOTES:

1. SEE CONTRACT P-5705BA TRACK PLANS FOR DRAINAGE STRUCTURE 0414. DRAINAGE STRUCTURE SHOWN ON THIS DRAWING IS FOR REFERENCE ONLY.
2. H.P. EL. IS AT THE EDGE OF PLATFORM.
3. L.P. EL. IS AT THE T.O. TRENCH GRATING.
4. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
5. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0 4 8 16

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18

DWG. NO. 3

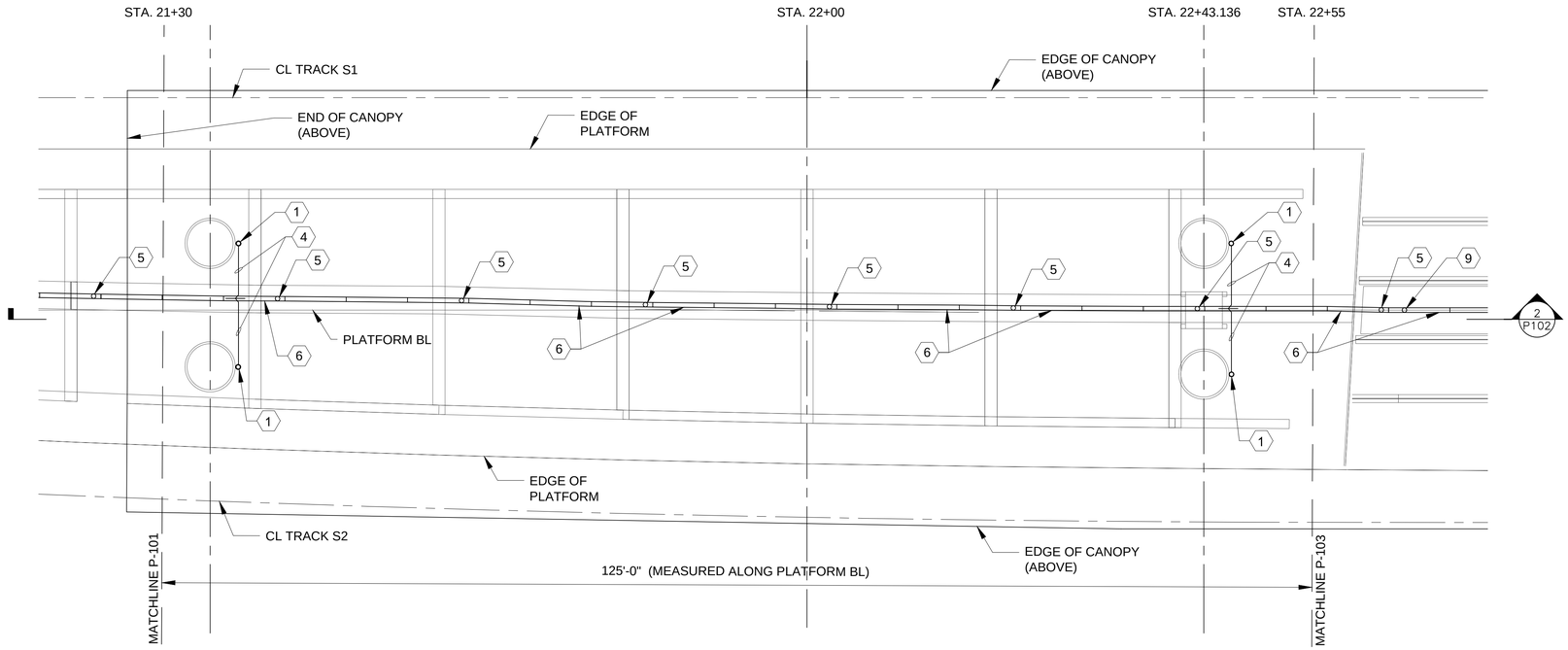
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-101
1			3			TOTAL SHEETS
2			4			17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

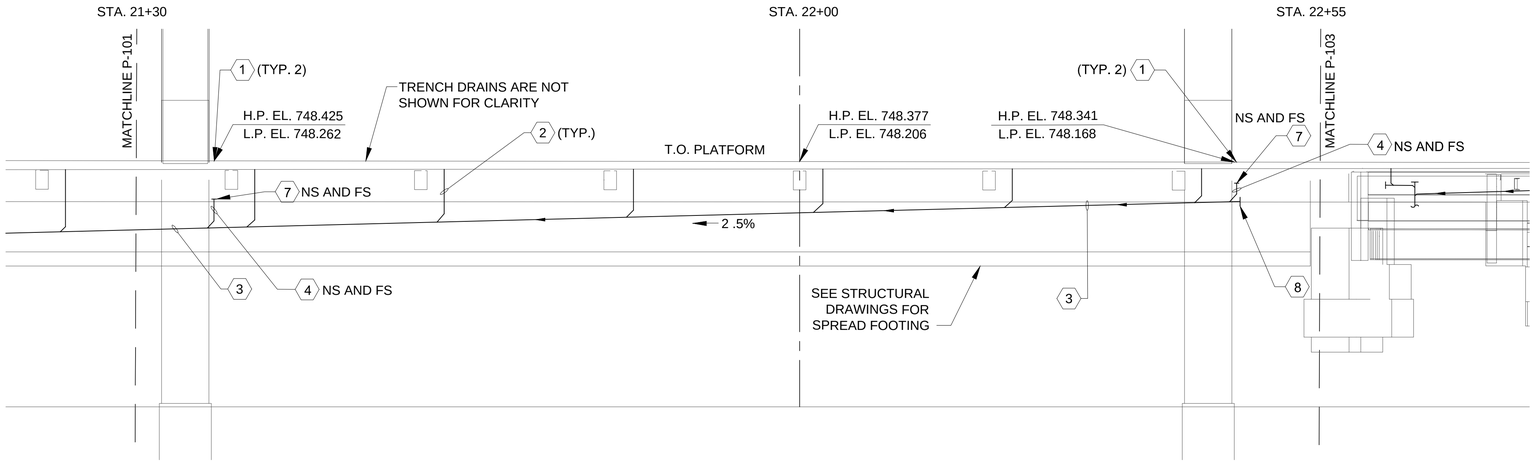
ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 1

0012DEL_P28



ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 2

1 P-102 SCALE: 1/8" = 1'-0"



GENERAL NOTES:

1. CANOPY IS NOT SHOWN FOR CLARITY.
2. H.P. EL. IS AT THE EDGE OF PLATFORM.
3. L.P. EL. IS AT THE T.O.TRENCH GRATING.
4. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
5. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.

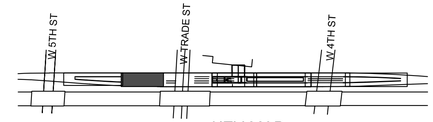
ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 2

2 P-102 SCALE: 1/8" = 1'-0"

0 4' 8' 16'

KEYNOTES:

1. 12" DIAMETER OPENING THROUGH PLATFORM SLAB FOR FUTURE STORMWATER DRAIN FROM CANOPY. PROVIDE BOLT-ON $\frac{1}{4}$" THICK ALUMINUM COVER PLATE.
2. 4" D.I.P
3. 8" D.I.P AT 2.5% MINIMUM SLOPE
4. 6" D.I.P, CONNECTION TO CANOPY DRAINAGE SYSTEM
5. TRENCH BOTTOM OUTLET
6. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501
7. BLIND FLANGE
8. CLEAN-OUT
9. 6" D.I.P. UNDER BRIDGE DECK SURFACE DRAINAGE, REFER TO STRUCTURE DRAINAGE DETAILS P-5705BA



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

DocuSigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50895
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 4

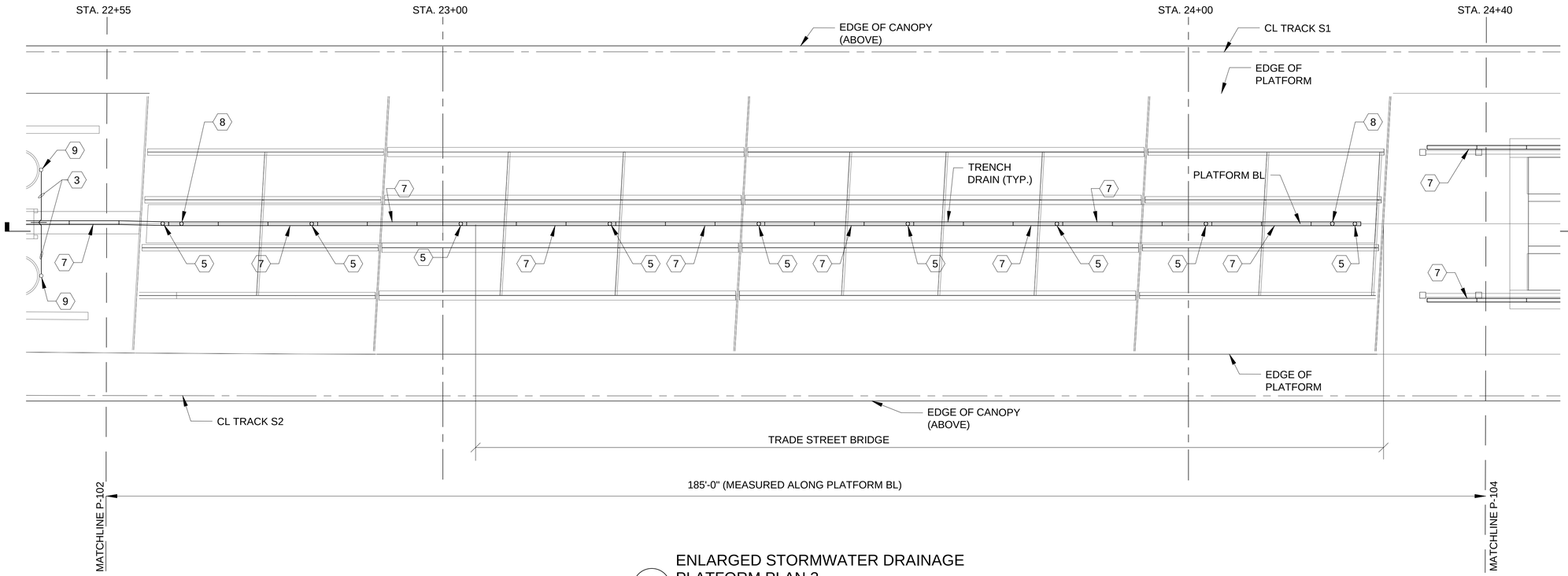
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-102
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28

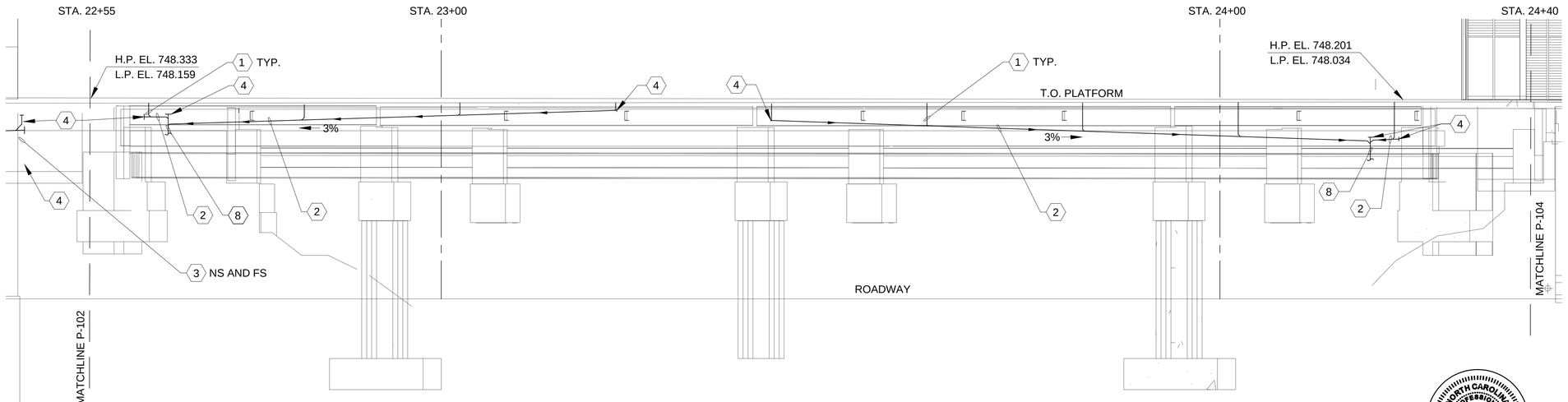


ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 3

1 P-103 SCALE: 1/8" = 1'-0"

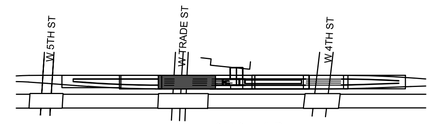
KEYNOTES:

1. 4" D.I.P
2. 6" D.I.P SLOPED AT 3% MINIMUM
3. 6" D.I.P., CONNECTION TO CANOPY DRAINAGE
4. CLEAN-OUT
5. TRENCH BOTTOM OUTLET LOCATION
7. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501
8. 6" D.I.P. UNDER BRIDGE DECK SURFACE DRAINAGE, REFER TO STRUCTURE DRAINAGE DETAILS P-5705BA
9. 12" DIAMETER OPENING THROUGH PLATFORM SLAB FOR FUTURE STORMWATER DRAIN FROM CANOPY. PROVIDE BOLT-ON $\frac{1}{4}$" THICK ALUMINUM COVER PLATE.



ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 3

2 P-103 SCALE: 1/8" = 1'-0"



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

GENERAL NOTES:

1. CANOPY NOT SHOWN FOR CLARITY.
2. H.P. EL. IS AT THE EDGE OF PLATFORM.
3. L.P. EL. IS AT THE T.O. TRENCH GRATING.
4. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
5. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

Edward Liwerant 3/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0 5' 8' 16'

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 5

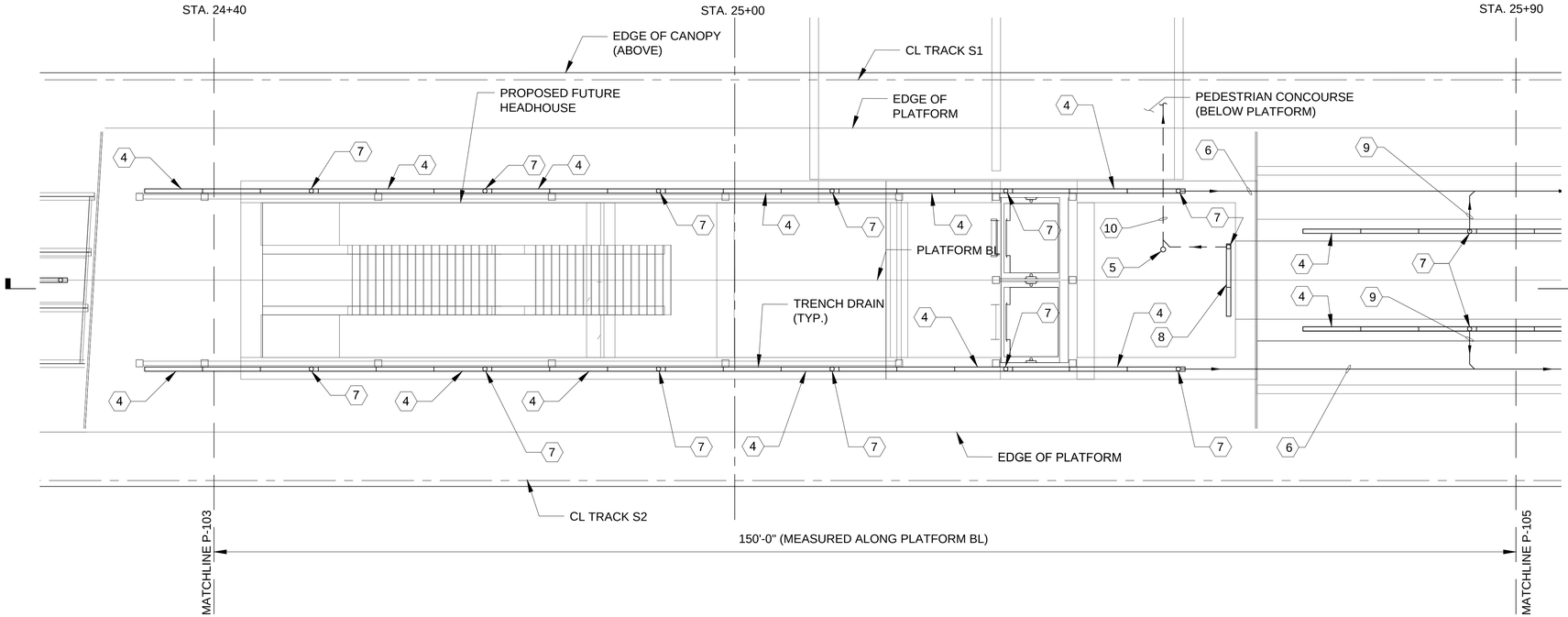
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 3

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-103
1			3			TOTAL SHEETS
2			4			17

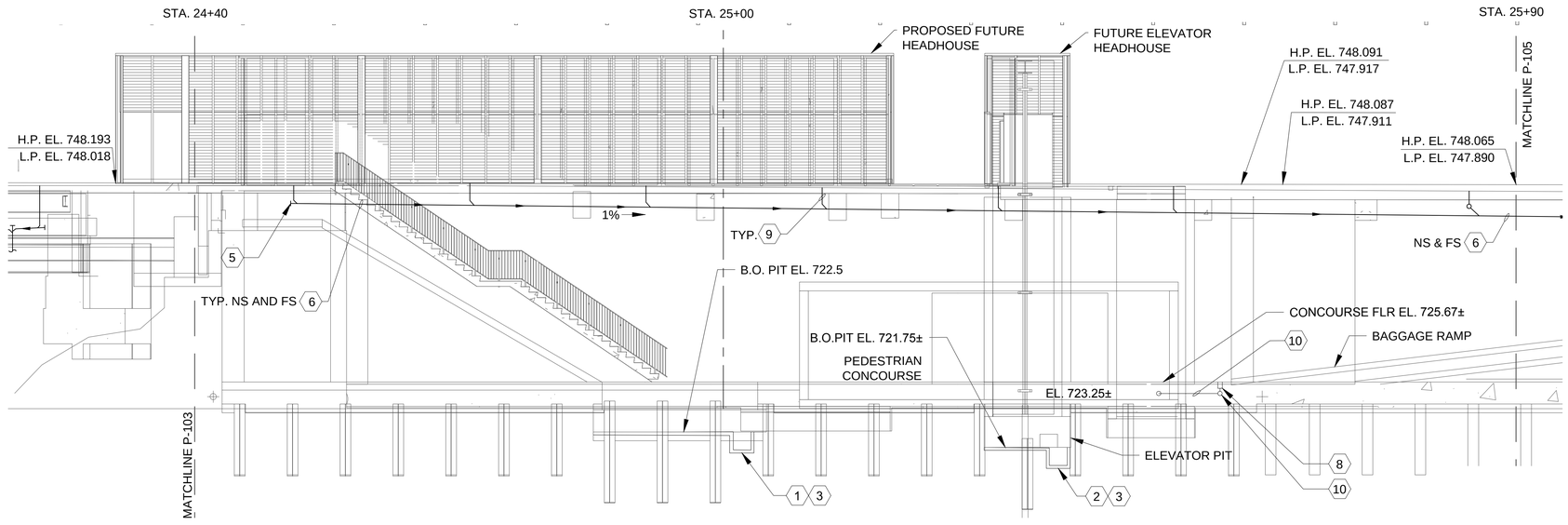
0012DEL_P28



1 P-104 ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 4
SCALE: 1/8" = 1'-0"

KEYNOTES:

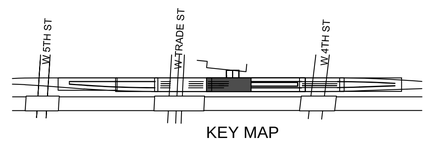
1. 24"x24"x24" SUMP PUMP PIT (QUANTITY = 2) FOR FUTURE SUMP PUMP.
2. 24"x24"x24" SUMP PIT (QUANTITY =2) FOR FUTURE SUMP PUMPS.
3. COORDINATE SUMP LOCATION WITH STRUCTURAL DRAWINGS.
4. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501
5. CLEAN-OUT
6. 6" D.I.P. SLOPED AT 1% MINIMUM.
7. BOTTOM TRENCH OUTLET LOCATION
8. ZURN TRENCH DRAIN SYSTEM, SIMILAR TO DRAWING P-501, 2 SECTIONS, 100" LG (8'-4").
9. 4" D.I.P.
10. 4" D.I.P., INSTALL PIPE AT 1% SLOPE TOWARD CONVENIENT DRAIN CONNECTION, UNDER THE CONCOURSE FALSE FLOOR.



2 P-104 ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 4
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. CANOPY NOT SHOWN FOR CLARITY.
2. H.P. EL. IS AT THE EDGE OF PLATFORM.
3. L.P. EL. IS AT THE T.O. TRENCH GRATING.
4. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
5. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT
5/26/2018
Digitally signed by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 6

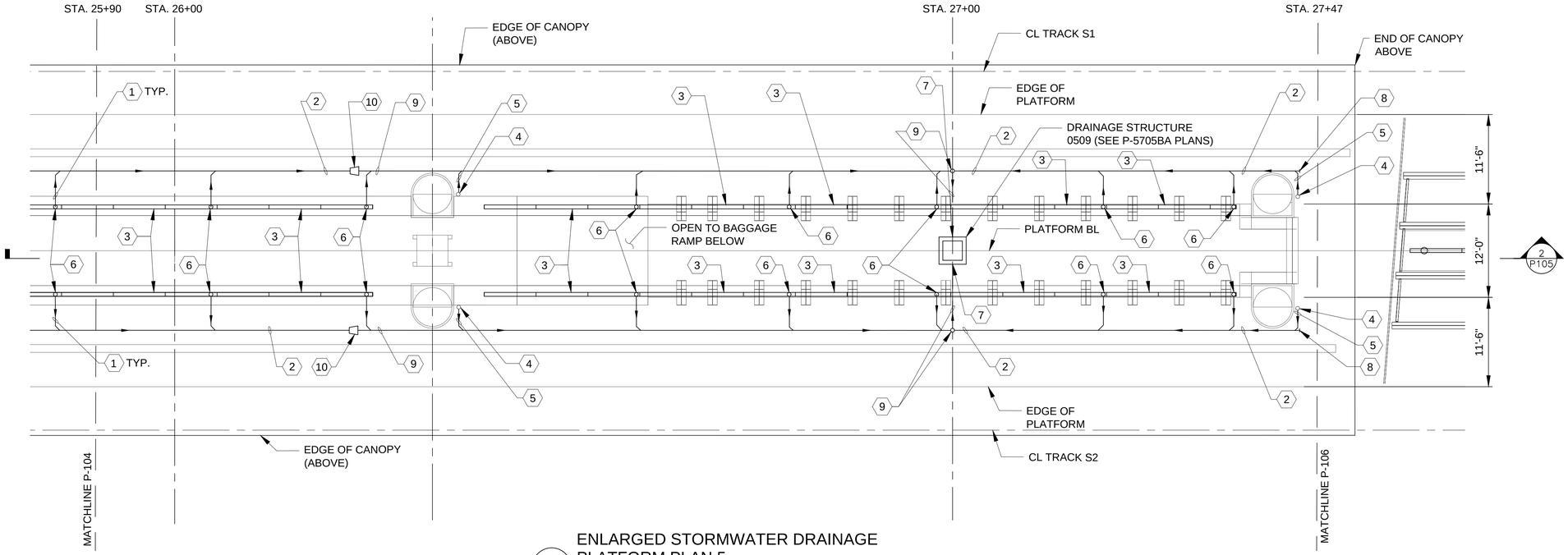
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 4

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-104
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28

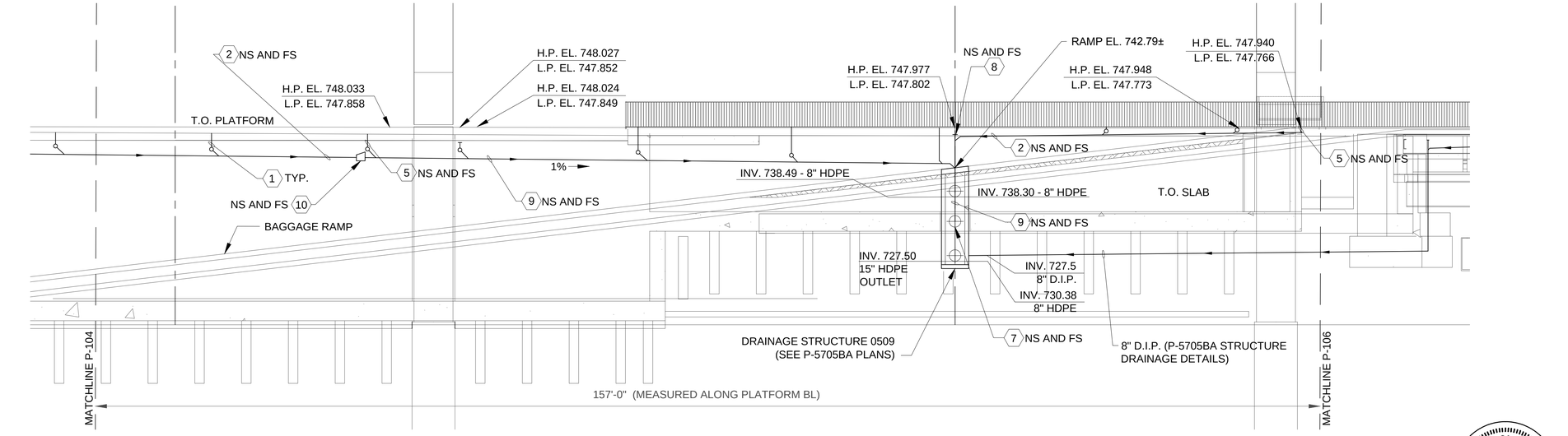


ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 5

1 P-105 SCALE: 1/8" = 1'-0"

KEYNOTES:

1. 4" D.I.P.
2. 6" D.I.P. HORIZONTAL RUN SLOPED AT 1% MINIMUM
3. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501
4. 12" DIAMETER OPENING THROUGH PLATFORM SLAB FOR FUTURE STORMWATER DRAIN FROM CANOPY. COVER WITH BOLTED $\frac{1}{4}$ ALUMINUM DIAMOND PLATE
5. 6" D.I.P. WITH BLIND FLANGE, FOR CANOPY DRAINAGE
6. BOTTOM TRENCH OUTLET LOCATION
7. INVERT EL. 734.3
8. CLEAN-OUT
9. 8" D.I.P. SLOPED AT 1% MINIMUM
10. 6X8 F.O.B. INCREASER

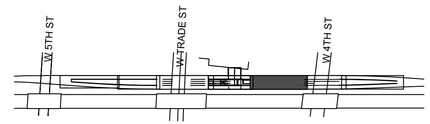


ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 5

2 P-105 SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. CANOPY NOT SHOWN FOR CLARITY.
2. H.P. EL. IS AT THE EDGE OF PLATFORM.
3. L.P. EL. IS AT THE T.O. TRENCH GRATING.
4. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
5. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

DocuSigned by: Edward Liwerant

5/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0 4' 8' 16'

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 7

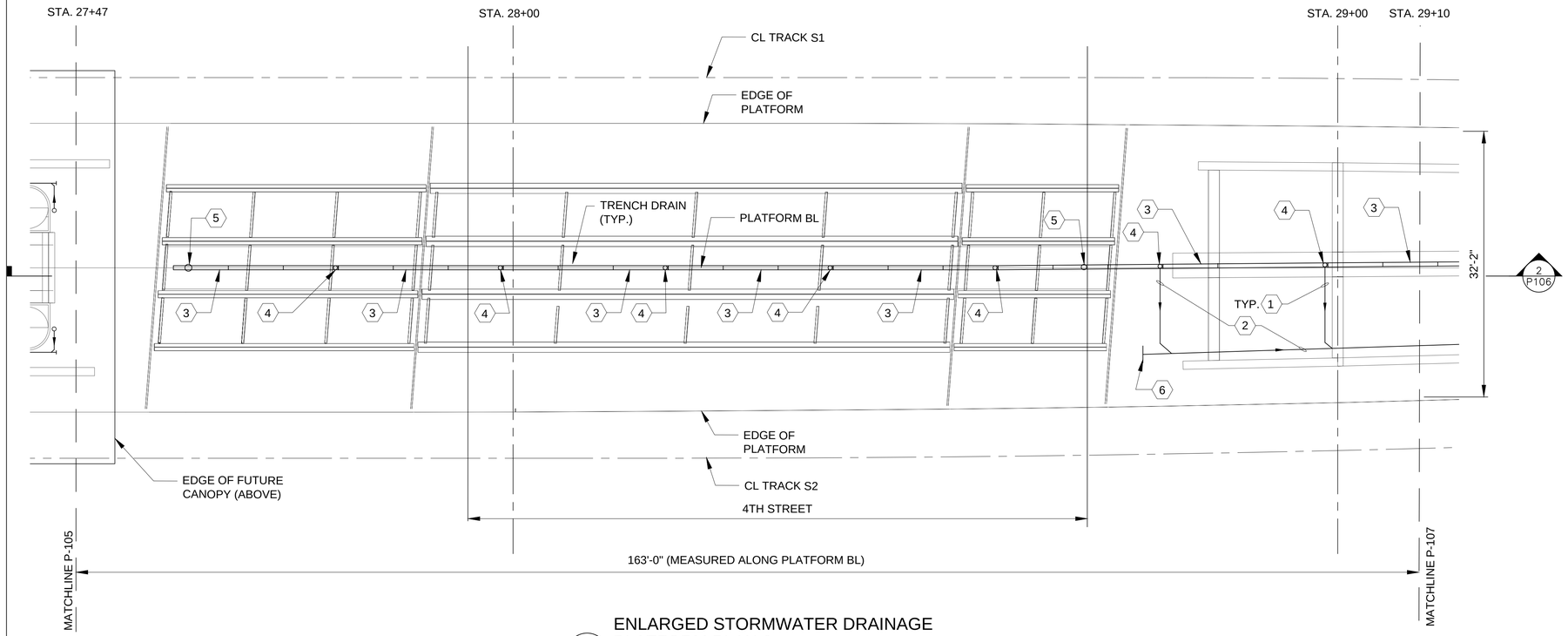
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 5

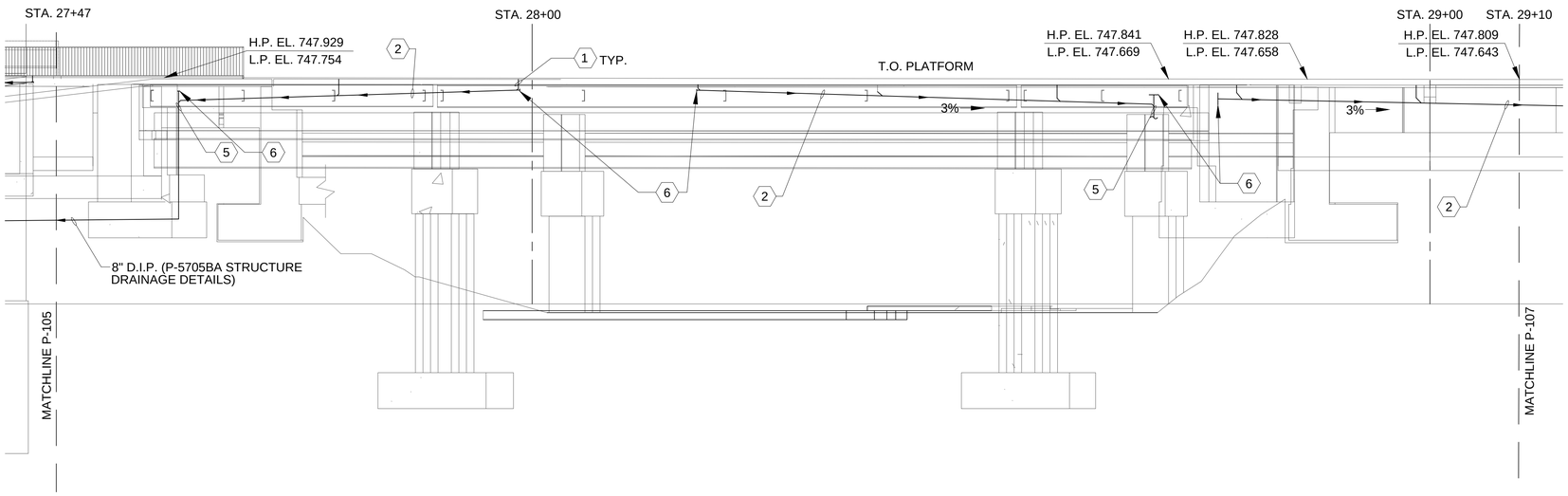
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-105
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 6

1 P-106 SCALE: 1/8" = 1'-0"

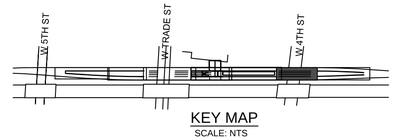


ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 6

2 P-106 SCALE: 1/8" = 1'-0"

KEYNOTES:

1. 4" D.I.P. HORIZONTAL RUN SLOPED AT 1% MINIMUM.
2. 6" D.I.P. HORIZONTAL RUN SLOPED AT SLOPED 3% MINIMUM.
3. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501
4. BOTTOM TRENCH OUTLET LOCATION
5. 4TH STREET BRIDGE DECK DRAINAGE, REFER TO STRUCTURE DRAINAGE DETAILS P-5705BA
6. CLEAN-OUT



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

GENERAL NOTES:

1. CANOPY NOT SHOWN FOR CLARITY.
2. H.P. EL. IS AT THE EDGE OF PLATFORM.
3. L.P. EL. IS AT THE T.O. TRENCH GRATING.
4. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
5. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

Digitally signed by: Edward Liwerant
DocuSigned by:

5/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0 5 8 16

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 8

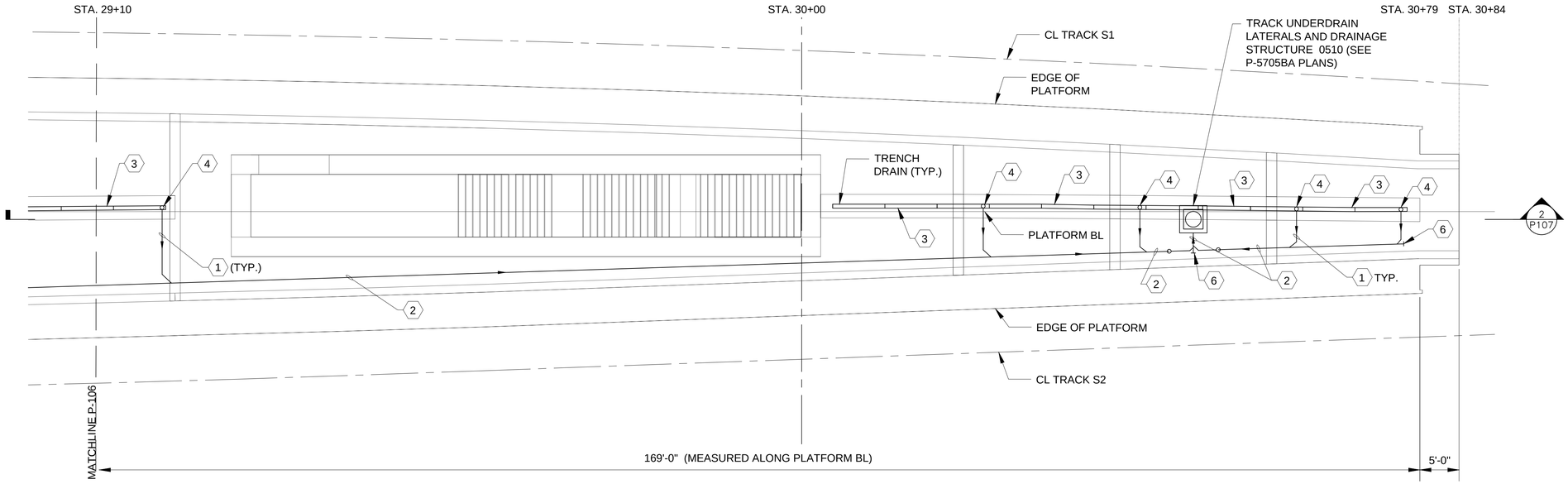
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 6

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-106
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28

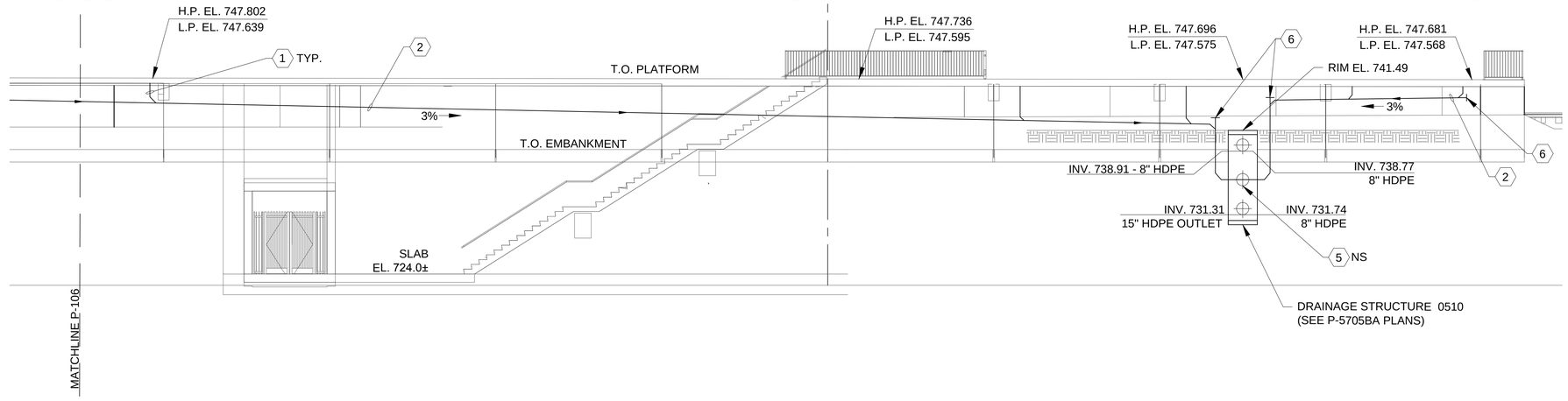


1 P-107 ENLARGED STORMWATER DRAINAGE PLATFORM PLAN 7

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

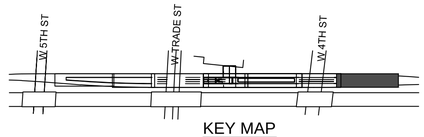
KEYNOTES:

1. 4" D.I.P. HORIZONTAL RUN SLOPED AT 1% MINIMUM.
2. 6" D.I.P. HORIZONTAL RUN SLOPED AT 3% MINIMUM
3. ZURN TRENCH DRAIN SYSTEM, SEE DRAWING P-501
4. BOTTOM TRENCH OUTLET LOCATION
5. INVERT EL. 734.6
6. CLEAN-OUT



2 P-107 ENLARGED STORMWATER DRAINAGE PLATFORM SECTION 7

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



KEY MAP

SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

GENERAL NOTES:

1. H.P. EL. IS AT THE EDGE OF PLATFORM.
2. L.P. EL. IS AT THE T.O. TRENCH GRATING.
3. D.I.P. UNDER SOIL OR CONCRETE COVER SHALL HAVE MECHANICAL JOINTS.
4. D.I.P. ABOVE BACKFILL, OR EXPOSED UNDER PLATFORM SHALL HAVE FLANGED JOINTS.

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0 4 8 16

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A RASELEY DATE 03/05/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 9

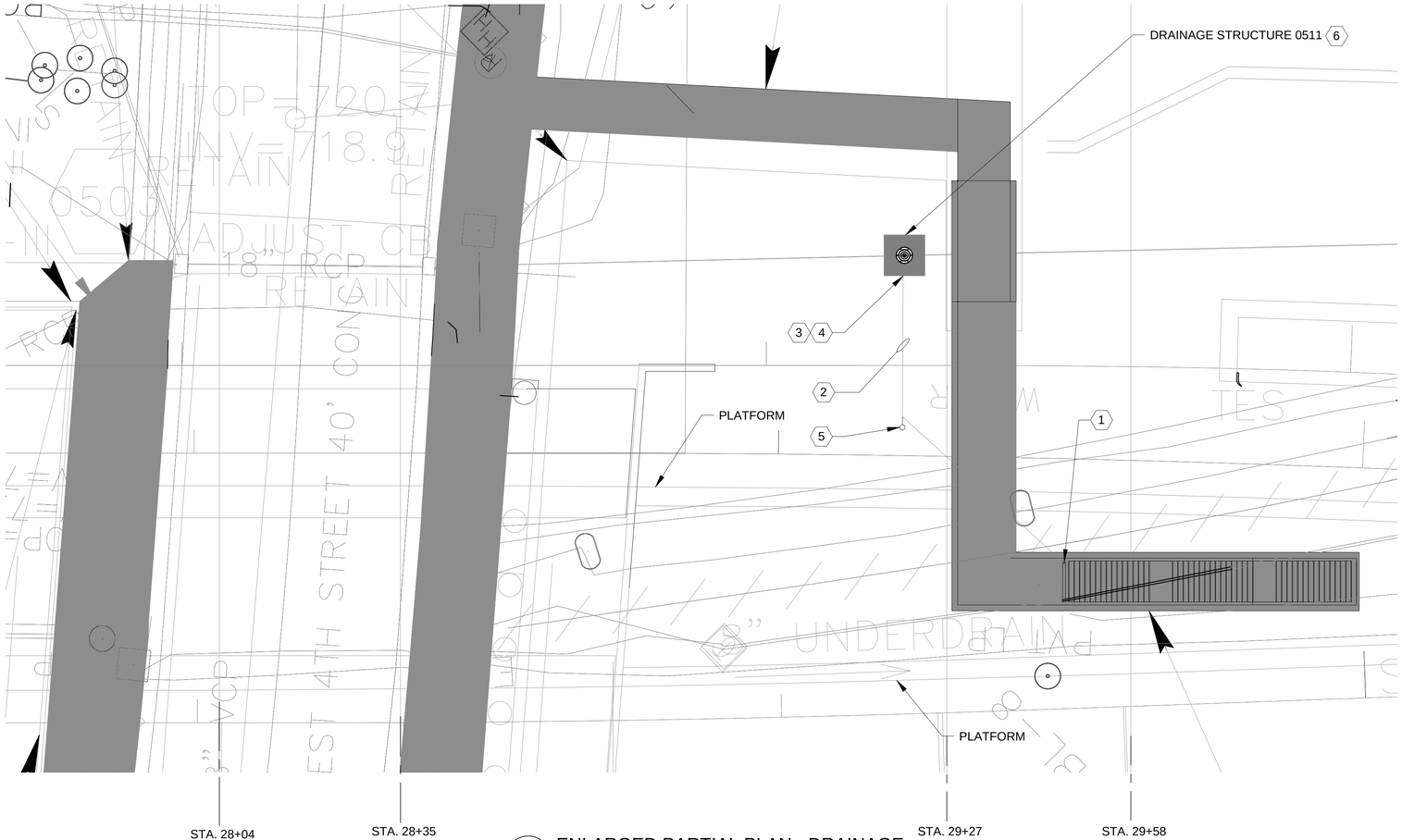
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

ENLARGED PLATFORM STORMWATER DRAINAGE PLAN 7

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-107
1			3			TOTAL SHEETS
2			4			17

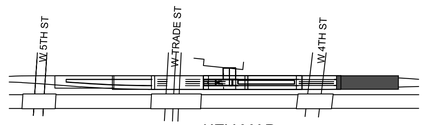
0012DEL_P28



1 / P-108 ENLARGED PARTIAL PLAN - DRAINAGE
SCALE: 1" = 1'-0"

KEYNOTES:

1. ZURN TRENCH DRAIN, SIMILAR TO DRAWING P-501, 1 SECTION 80" LG (6'-10").OR APPROVED EQUAL. PROVIDE 4" OUTLET, INTERNAL DOME STRAINER, CLOSED END CAPS, TYPE 304 SS TOP FRAME, BOTTOM STRAINER, STAINLESS STEEL HEEL-PROOF GRATE.
2. 4" D.I.P. SLOPED AT 1% MINIMUM
3. EXCAVATE TO EXPOSE DRAINAGE STRUCTURE. CORE DRILL 8" DIAMETER OPENING. EXTEND NEW PIPE INTO MANHOLE. PROVIDE LINK-SEAL.
4. NEW PIPE PENETRATION, INVERT TO BE FIELD VERIFIED
5. CLEANOUT
6. SEE STRUCTURAL DRAWINGS FOR FOUNDATION PERIMETER DRAINAGE TERMINATING INTO DRAINAGE STRUCTURE 0511



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

3/26/2018

Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

0' 1' 2' 4'

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASLEY DATE 03/14/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 10

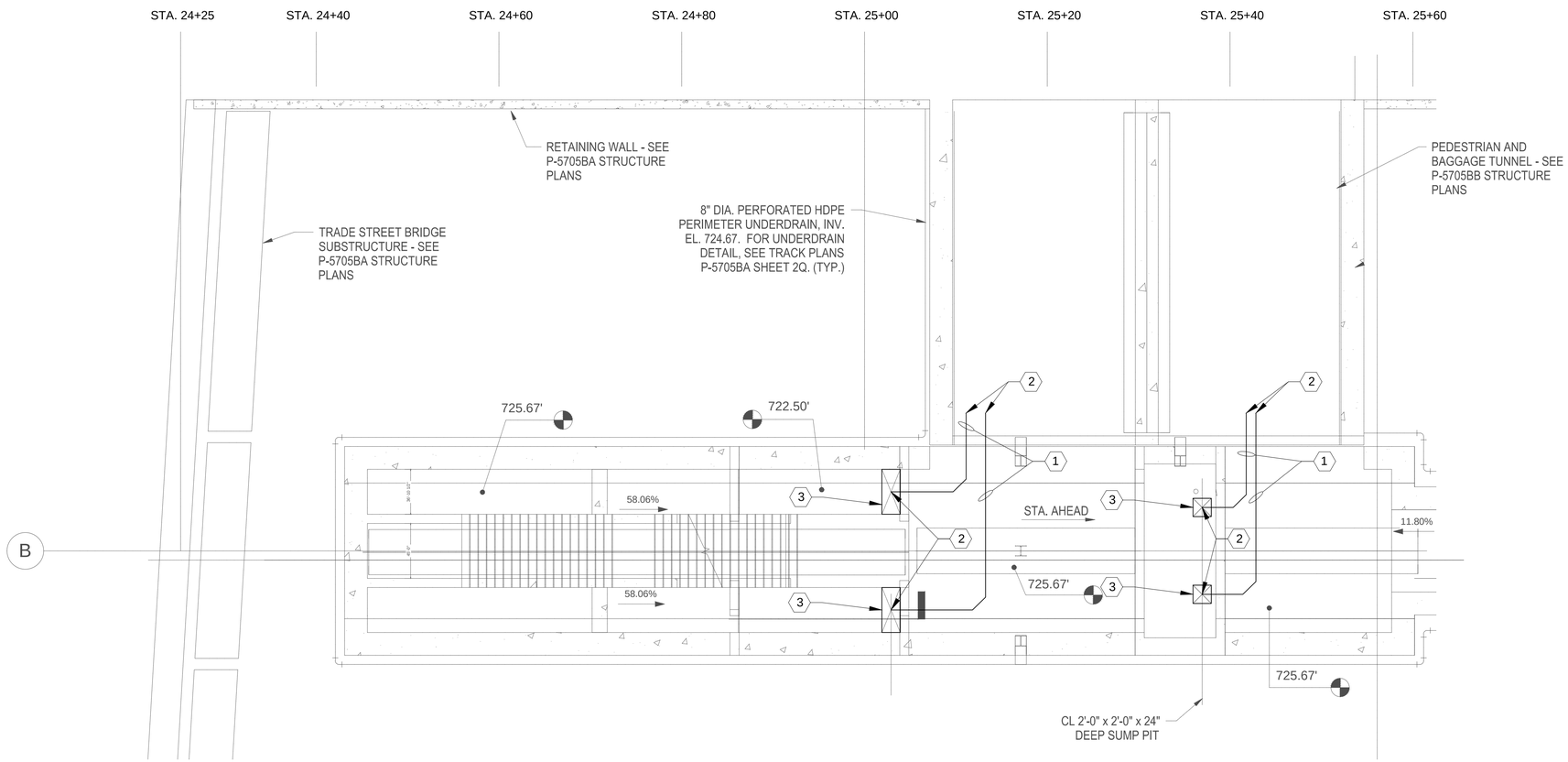
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

4TH STREET EMERGENCY EGRESS TUNNEL DRAINAGE PLAN 8

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-108
1			3			TOTAL SHEETS
2			4			17

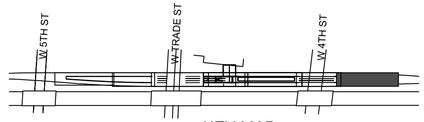
0012DEL_P28



1 / P-109 PARTIAL PLAN - SUMP PIT DRAINAGE
SCALE: NONE

KEYNOTES:

1. 2" SCH. 80 HOT-DIPPED GALVANIZED PIPE A-53, EMBEDDED IN CONCRETE AS SHOWN, FOR FUTURE SUMP PUMPS. SUMP PUMPS ARE N.I.C. LOCATE UNDER FALSE FLOOR IN CONCOURSE
2. PROVIDE 10" THREADED PIPE EXTENSION PAST CONCRETE WALL SURFACE, TO ENABLE FUTURE CONNECTION. PROVIDE SEAL-OFF PIPE CAPS
3. SUMP PIT, SEE DWG P-104 AND STRUCTURAL DRAWINGS



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

DocuSigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

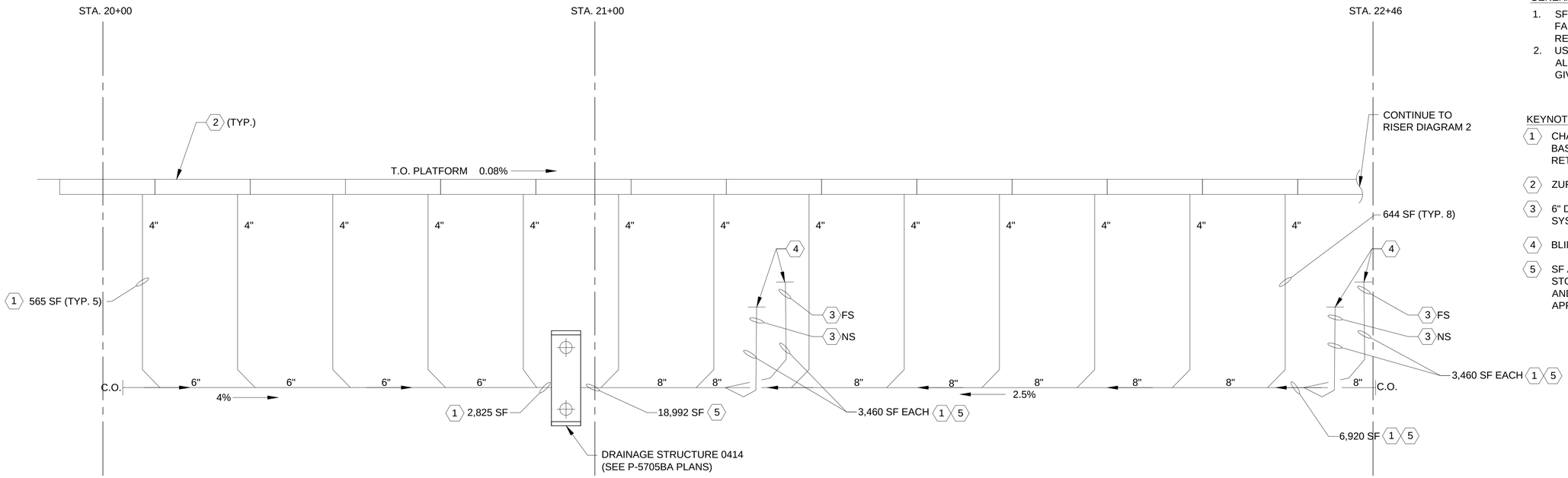
SUMP PIT DRAINAGE PLAN 9

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASLEY DATE 03/14/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 11

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-109
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



1 / P-401 STORMWATER DRAINAGE RISER DIAGRAM 1
SCALE: NONE

GENERAL NOTES:

1. SF SHOWN ON DRAINAGE PIPING REPRESENTS FAIR ALLOCATION OF SURFACE AREA ABOVE RECEIVING RAIN WATER.
2. USE PLUMBING CODE TABLES TO EVALUATE ALLOCATED SF VS. PERMITTED PIPE SIZE AT A GIVEN SLOPE.

KEYNOTES:

1. CHARLOTTE N.C. RAINFALL RATE IS 3.7 IN/HR BASED ON 1 HOUR DURATION AND 100-YEAR RETURN PERIOD.
2. ZURN TRENCH DRAIN SYSTEM, SEE DWG. P-501
3. 6" D.I.P. CONNECTION TO CANOPY DRAINAGE SYSTEM
4. BLIND FLANGE
5. SF ALLOWANCE INCLUDES SIMULTANEOUS STORMWATER FLOW FROM THE PLATFORM AND CANOPY ABOVE - CONSERVATIVE APPROACH

TABLE 1106.3
SIZE OF HORIZONTAL STORM DRAINGE PIPING[a]

SIZE OF HORIZONTAL PIPING (inches)	HORIZONTALLY PROJECTED ROOF AREA (square feet) Rainfall rate (inches per hour)					
	1	2	3	4	5	6
1/8 unit vertical in 12 units horizontal (1-percent slope)						
3	3,288	1,644	1,096	822	657	548
4	7,520	3,760	2,506	1,800	1,504	1,253
5	13,360	6,680	4,453	3,340	2,672	2,227
6	21,400	10,700	7,133	5,350	4,280	3,566
8	46,000	23,000	15,330	11,500	9,200	7,600
10	82,800	41,400	27,600	20,700	16,580	13,800
12	133,200	66,600	44,400	33,300	26,650	22,200
15	218,000	109,000	72,800	59,500	47,600	39,650
1/4 unit vertical in 12 units horizontal (2-percent slope)						
3	4,640	2,320	1,546	1,160	928	773
4	10,600	5,300	3,533	2,650	2,120	1,766
5	18,880	9,440	6,293	4,720	3,776	3,146
6	30,200	15,100	10,066	7,550	6,040	5,033
8	65,200	32,600	21,733	16,300	13,040	10,866
10	116,800	58,400	38,950	29,200	23,350	19,450
12	188,000	94,000	62,600	47,000	37,600	31,350
15	336,000	168,000	112,000	84,000	67,250	56,000
1/2 unit vertical in 12 units horizontal (4-percent slope)						
3	6,576	3,288	2,295	1,644	1,310	1,096
4	15,040	7,520	5,010	3,760	3,010	2,500
5	26,720	13,360	8,900	6,680	5,320	4,450
6	42,800	21,400	13,700	10,700	8,580	7,140
8	92,000	46,000	30,650	23,000	18,400	15,320
10	171,600	85,800	55,200	41,400	33,150	27,600
12	266,400	133,200	88,800	66,600	53,200	44,400
15	476,000	238,000	158,800	119,000	95,300	79,250

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m².

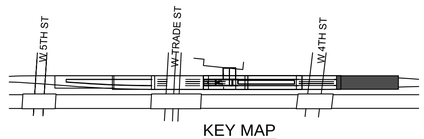
a. For Tables 1106.3 and 1106.6, when rainfall rates exceed 6 inches per hour, then the figures for roof area shall be adjusted proportionally by multiplying the figure by six and dividing by the maximum rate of rainfall in inches per hour [see Figure 1106.1(a)].

TABLE 1106.2(1)
SIZE OF CIRCULAR VERTICAL CONDUCTORS AND LEADERS

DIAMETER OF LEADER (inches)[a]	HORIZONTALLY PROJECTED ROOF AREA (square feet) Rainfall rate (inches per hour)											
	1	2	3	4	5	6	7	8	9	10	11	12
2	2,880	1,440	960	720	575	480	410	360	320	290	260	240
3	8,800	4,400	2,930	2,200	1,760	1,470	1,260	1,100	980	880	800	730
4	18,400	9,200	6,130	4,600	3,680	3,070	2,630	2,300	2,045	1,840	1,675	1,530
5	34,600	17,300	11,530	8,650	6,920	5,765	4,945	4,325	3,845	3,460	3,145	2,880
6	54,000	27,000	17,995	13,500	10,800	9,000	7,715	6,750	6,000	5,400	4,910	4,500
8	116,000	58,000	38,660	29,000	23,200	19,315	16,570	14,500	12,890	11,600	10,545	9,600

For SI: 1 inch = 25.4 mm, 1 square foot = 0.0929 m².

a. Sizes indicated are the diameter of circular piping. This table is applicable to piping of other shapes, provided the cross-sectional shape fully encloses a circle of the diameter indicated in this table. For rectangular leaders, see Table 1106.2(2). Interpolation is permitted for pipe sizes that fall between those listed in this table.



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT
5/26/2018
Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASLEY DATE 03/13/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 12

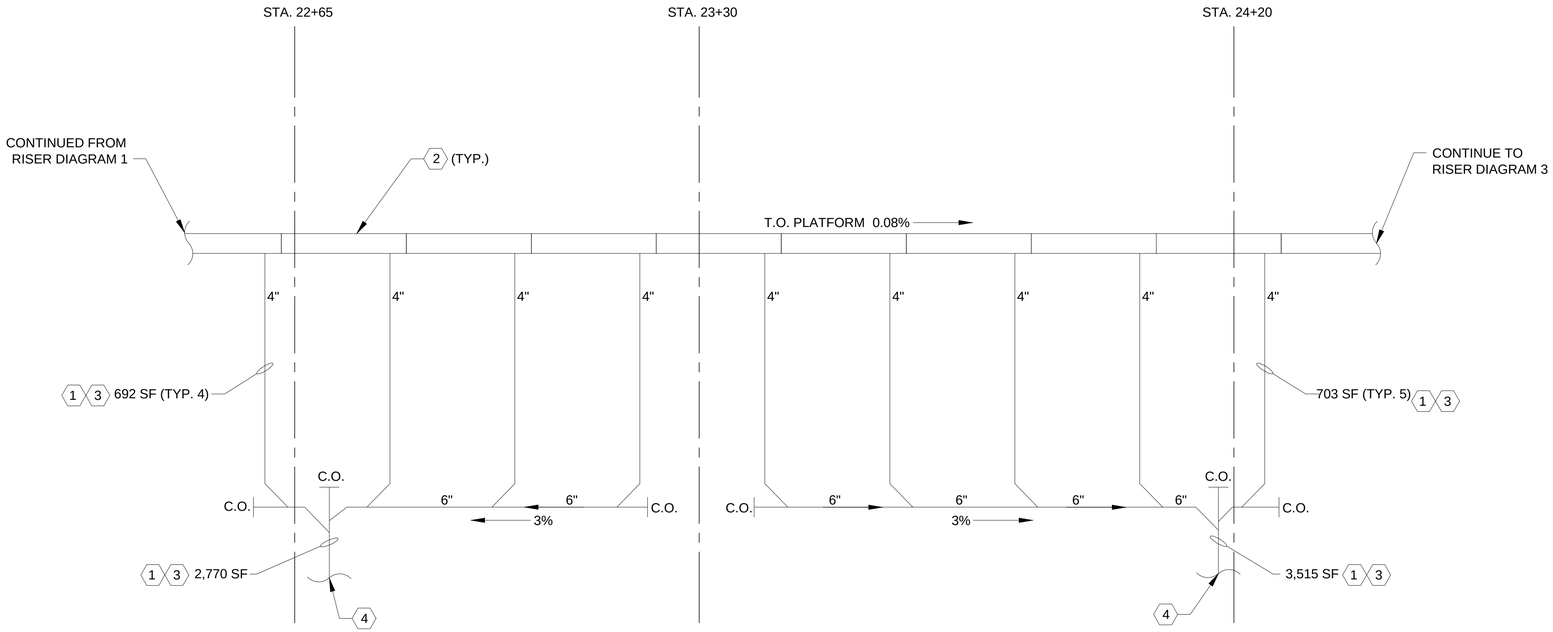
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

STORMWATER DRAINAGE RISER DIAGRAM 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-401
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



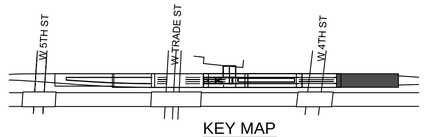
1 / P-402 STORMWATER DRAINAGE RISER DIAGRAM 2
SCALE: NO SCALE

GENERAL NOTES:

1. SF SHOWN ON DRAINAGE PIPING REPRESENTS FAIR ALLOCATION OF SURFACE AREA ABOVE RECEIVING RAIN WATER.
2. USE PLUMBING CODE TABLES TO EVALUATE ALLOCATED SF VS. PERMITTED PIPE SIZE AT A GIVEN SLOPE.

KEYNOTES:

1. CHARLOTTE N.C. RAINFALL RATE IS 3.7 IN/HR BASED ON 1 HOUR DURATION AND 100-YEAR RETURN PERIOD.
2. ZURN TRENCH DRAIN SYSTEM, SEE DWG. P-501
3. REFER TO DRAWING P-401 TABLES 1106.2 & 1106.3 FOR DRAINAGE PIPE SIZING .
4. REFER TO P-5705BA BRIDGE DECK DRAINAGE FOR CONNECTION LOCATION.



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

DocuSigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/13/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 13

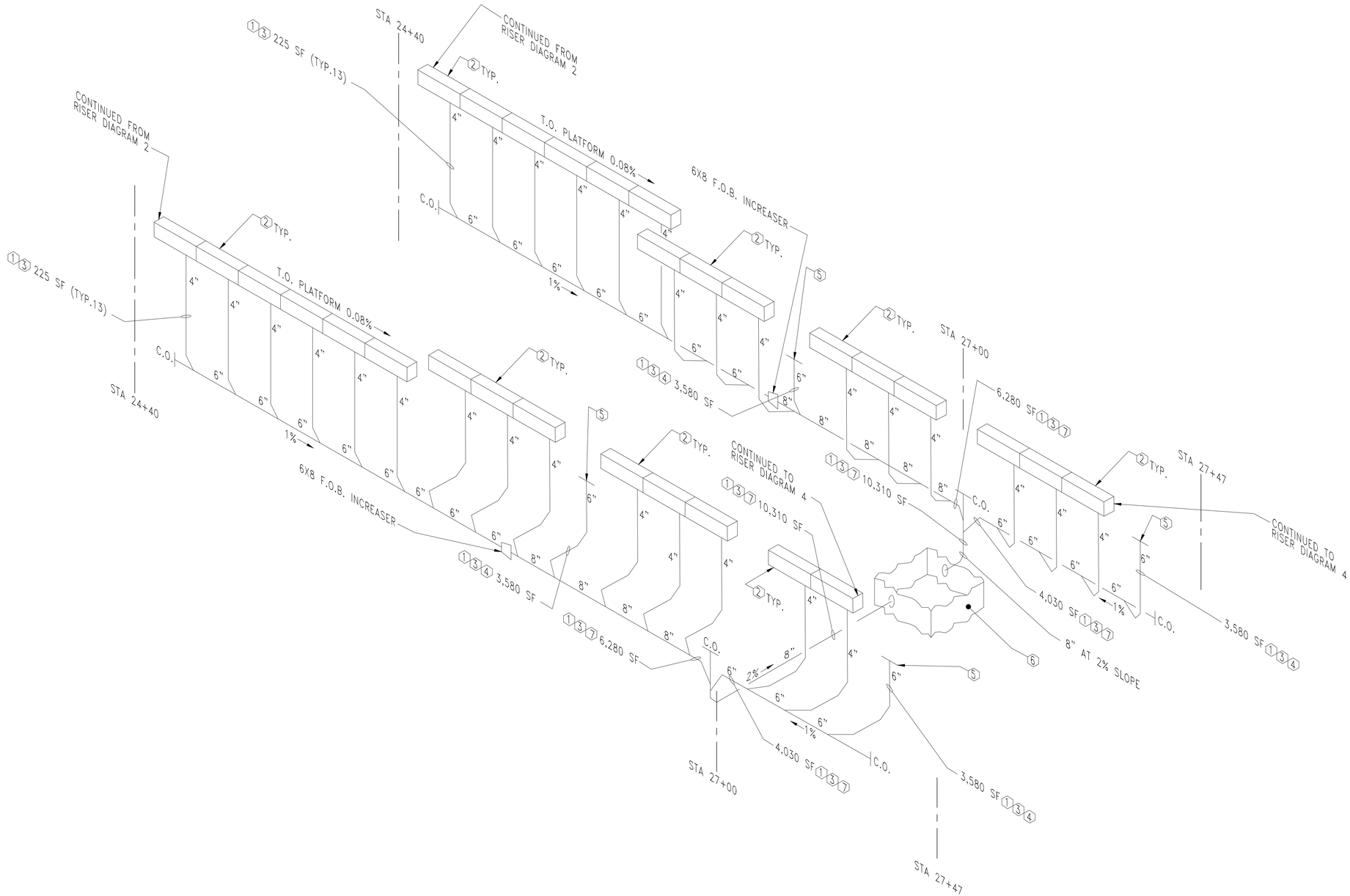
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

STORMWATER DRAINAGE RISER DIAGRAM 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-402
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



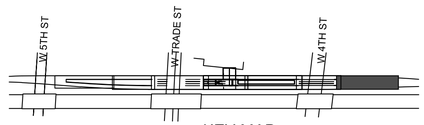
1 P-403 STORMWATER DRAINAGE RISER DIAGRAM 3
SCALE: NONE

GENERAL NOTES:

1. SF SHOWN ON DRAINAGE PIPING REPRESENTS FAIR ALLOCATION OF SURFACE AREA ABOVE RECEIVING RAIN WATER.
2. USE PLUMBING CODE TABLES TO EVALUATE ALLOCATED SF VS. PERMITTED PIPE SIZE AT A GIVEN SLOPE.

KEYNOTES:

1. CHARLOTTE N.C. RAINFALL RATE IS 3.7 IN/HR BASED ON 1 HOUR DURATION AND 100-YEAR RETURN PERIOD.
2. ZURN TRENCH DRAIN SYSTEM, SEE DWG. P-501
3. REFER TO DRAWING P-401 TABLES 1106.2 AND 1106.3 FOR DRAINAGE PIPE SIZING
4. 6" FUTURE CANOPY DRAINAGE
5. BLIND FLANGE
6. DRAINAGE STRUCTURE 0509
7. SF ALLOWANCE INCLUDES SIMULTANEOUS STORMWATER FLOW FROM THE PLATFORM AND CANOPY ABOVE - CONSERVATIVE APPROACH



KEY MAP
SCALE: NTS

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT
3/26/2018
Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50696
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/13/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 14

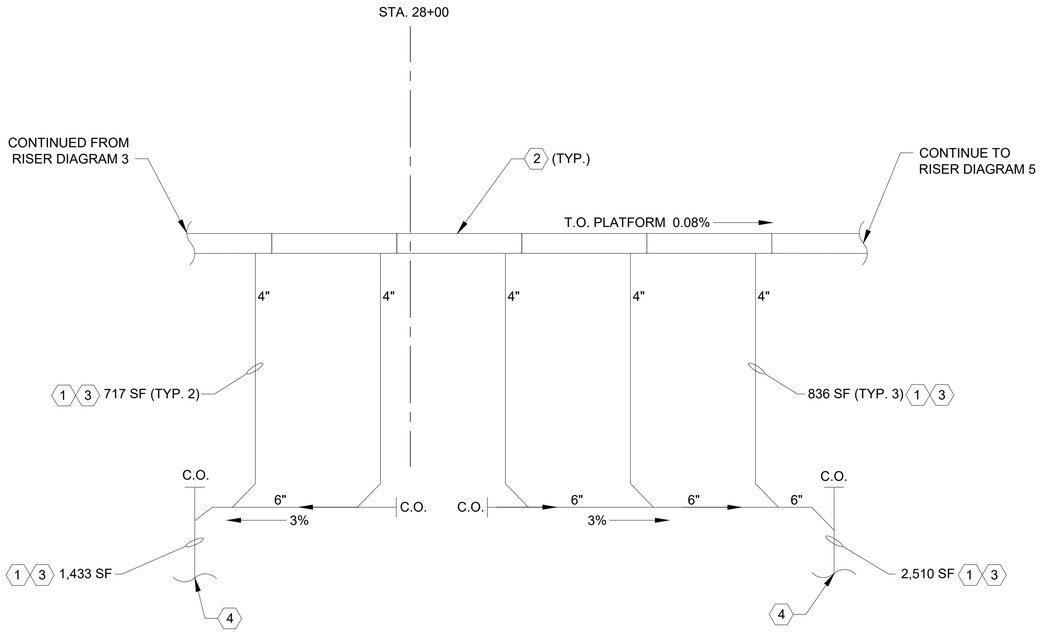
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

STORMWATER DRAINAGE RISER DIAGRAM 3

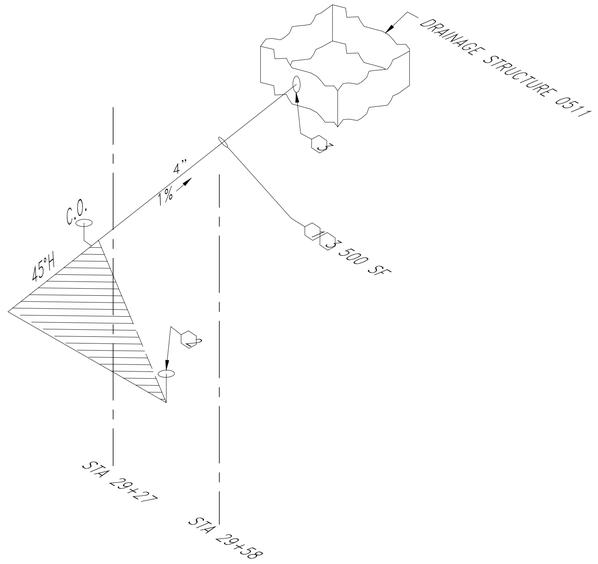
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-403
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



1 P-404 STORMWATER DRAINAGE RISER DIAGRAM 4

SCALE: NONE



NOTE: SEE DRAWING P-108 FOR LOCATION

3 P-404 STORMWATER DRAINAGE RISER DIAGRAM 6

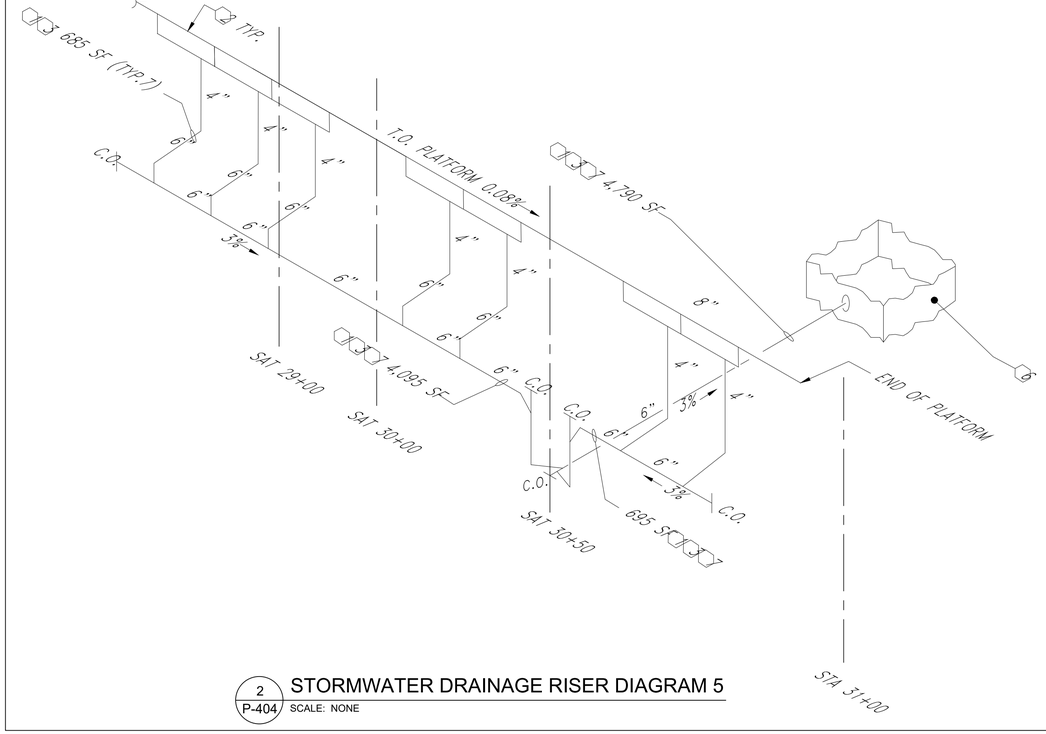
SCALE: NONE

GENERAL NOTES:

1. SF SHOWN ON DRAINAGE PIPING REPRESENTS FAIR ALLOCATION OF SURFACE AREA ABOVE RECEIVING RAIN WATER.
2. USE PLUMBING CODE TABLES TO EVALUATE ALLOCATED SF VS. PERMITTED PIPE SIZE AT A GIVEN SLOPE.

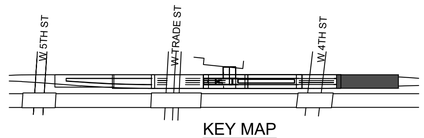
KEYNOTES:

1. CHARLOTTE N.C. RAINFALL RATE IS 3.7 IN/HR BASED ON 1 HOUR DURATION AND 100-YEAR RETURN PERIOD.
2. ZURN TRENCH DRAIN SYSTEM, SEE DWG. P-501
3. REFER TO DRAWING P-401 TABLES 1106.2 AND 1106.3 FOR DRAINAGE PIPE SIZING
4. REFER TO P-5705BA BRIDGE DECK DRAINAGE FOR CONNECTION LOCATION
5. BLIND FLANGE
6. DRAINAGE STRUCTURE 0510, SEE P-5705BA FOR DETAILS



2 P-404 STORMWATER DRAINAGE RISER DIAGRAM 5

SCALE: NONE



KEY MAP

SCALE: NTS

PROJECT NO. P-5705BB

MECKLENBURG COUNTY

STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT

5/26/2018

Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/13/18
CHECKED BY E LIWERANT DATE 03/16/18

DWG. NO. 15

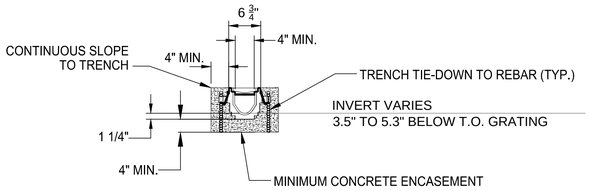
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

STORMWATER DRAINAGE RISER DIAGRAMS 4, 5, AND 6

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-404
1			3			TOTAL SHEETS
2			4			17

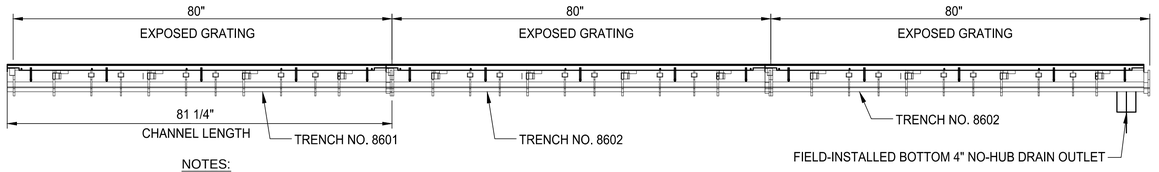
0012DEL_P28



NOTES:

1. TRENCH DRAIN SYSTEM IS BASED ON ZURN Z886 TRENCH DRAIN SYSTEM AS BASIS OF DESIGN, OR APPROVED EQUAL.
2. TRENCH DRAIN SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS.
3. PROVIDE DOMED STRAINER ABOVE BOTTOM OUTLET (NOT SHOWN FOR CLARITY).
4. TRENCH SECTIONS ARE 80" LONG NOMINAL IN LENGTH, CAN BE CUT IN THE FIELD IN 20" INCREMENTS TO MATCH COVER GRATING.
5. PROVIDE ALL REQUIRED OPTIONS AND HARDWARE FOR A COMPLETE DRAINAGE SYSTEM.

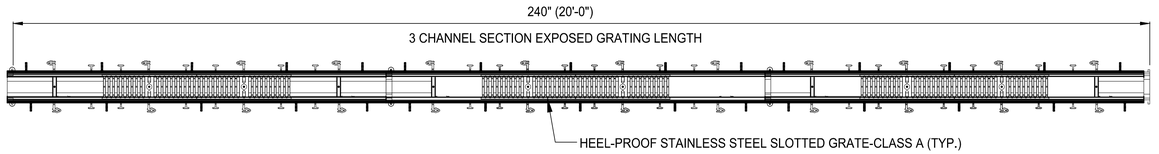
1 P-501 TRENCH DRAIN CROSS-SECTION
SCALE: NONE



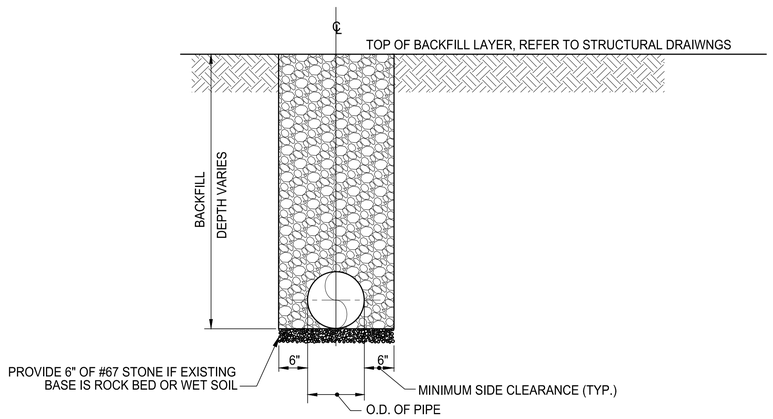
NOTES:

1. DRAIN OUTLET IS NEEDED EVERY 3 TRENCH SECTIONS, NOT TO EXCEED 20'-0' SPACING.
2. TRENCH DRAINS CAN BE INSTALLED IN A CONTINUOUS MANNER, HOWEVER THE DRAINAGE HUB IS REQUIRED PER NOTE 1 ABOVE.
3. TREAT 3 SECTION DRAINAGE DRAIN AS 1 DRAINAGE SYSTEM. PROVIDE WATERTIGHT SEPARATIONS BETWEEN EVERY 3 SECTIONS.

2 P-501 TRENCH DRAIN LONGITUDINAL-SECTION
SCALE: NONE



3 P-501 TRENCH DRAIN PLAN VIEW
SCALE: NONE



NOTES:

1. DO NOT USE ROCKS OR STONES LARGER THAN 1" FOR BACKFILL.
2. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE OR IMPORTED MATERIAL.
3. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
4. ACHIEVE 95% COMPACTION IN BACKFILL AND BEDDING.

4 P-501 TYPICAL D.I.P. TRENCH DETAIL
SCALE: NONE

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

NORTH CAROLINA PROFESSIONAL SEAL 046093 ENGINEER EDWARD LIWERANT
5/26/2018
Docusigned by: Edward Liwerant

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

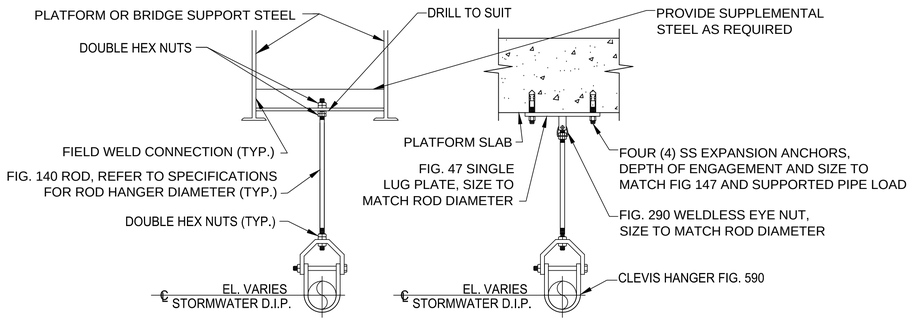
STORMWATER DRAINAGE DETAILS

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/14/18
CHECKED BY E. LIWERANT DATE 03/16/18
DWG. NO. 16

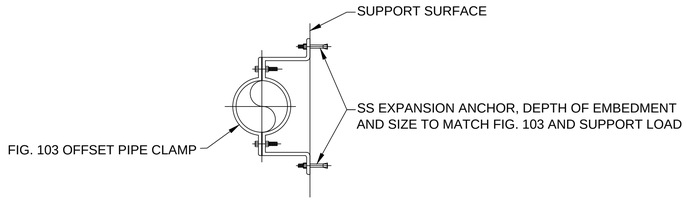
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-501
1			3			TOTAL SHEETS
2			4			17

0012DEL_P28



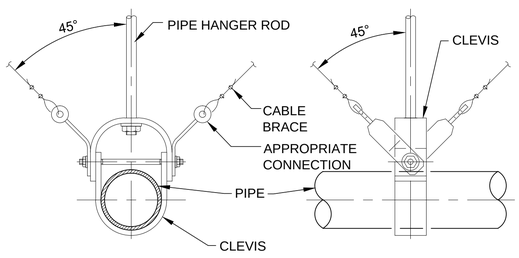
NOTES:
1. HANGER COMPONENTS FIGURE NUMBERS ARE BY ANVIL INTERNATIONAL, OR APPROVED EQUAL. OTHER COMPARABLE HARDWARE COMPONENTS MAYBE USED UPON APPROVAL.
2. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED.
3. SUPPLEMENTAL STEEL SHALL BE HOT-DIP GALVANIZED.

1 P-502 TYPICAL D.I.P. HANGER DETAIL
SCALE: NONE

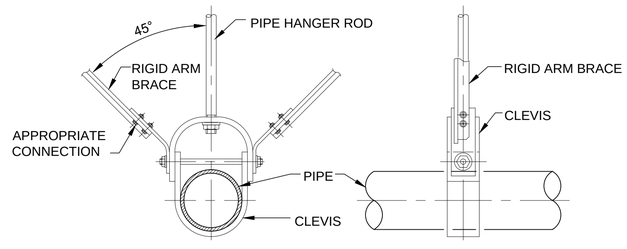


NOTES:
1. HANGER COMPONENTS FIGURE NUMBERS ARE BY ANVIL INTERNATIONAL, OR APPROVED EQUAL. OTHER COMPARABLE HARDWARE COMPONENTS MAYBE USED UPON APPROVAL.
2. THIS CLAMP IS SUITABLE FOF D.I.P. UP TO 8" SIZE.
3. USE THIS CLAMP FOR VERTICAL D.I.P. SUPPORTS, AND HORIZONTALS SUPPORTS WHEN IN CLOSE PROXIMITY TO THE SUPPORTING SURFACES.
4. ALL HARDWARE SHALL BE HOT-DIP GALVANIZED.
5. SUPPLEMENTAL STEEL SHALL BE HOT-DIP GALVANIZED.

2 P-502 TYPICAL OFFSET D.I.P. HANGER OR SUPPORT DETAIL
SCALE: NONE



3 P-502 TYPICAL SEISMIC CABLE PIPE BRACE DETAIL
SCALE: NONE



4 P-502 TYPICAL SEISMIC RIGID ARM PIPE BRACE DETAIL
SCALE: NONE

PROJECT NO. P-5705BB
MECKLENBURG COUNTY
STATION: 19+68.93 -S1-

SEAL 046093 NORTH CAROLINA PROFESSIONAL ENGINEER EDWARD LIWERANT
3/26/2018
DocuSigned by: Edward Liwerant
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. 50896
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. RASELEY DATE 03/13/18
CHECKED BY E LIWERANT DATE 03/16/18
DWG. NO. 17

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLUMBING

STORMWATER PIPING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	PL-502
1			3			TOTAL SHEETS
2			4			17