CITY OF TAMPA

Jane Castor, Mayor **CONTRACT ADMINISTRATION DEPARTMENT**

Michael W. Chucran, Director

ADDENDUM 2

DATE: May 30, 2019

Contract 18-C-00009; 43rd Street Outfall Regional Stormwater Improvements

Bidders on the above referenced project are hereby notified that the following addendum is made to the Contract Documents. BIDS TO BE SUBMITTED SHALL CONFORM TO THIS NOTICE.

Item 1: The Bid Opening date for this project is hereby changed to June 25, 2019.

Item 2: Replace Proposal pages P-2 through P-4 with the attached pages P-2R through P-4R. Proposal includes removed, amended and new pay items.

Item 3: SP-45 Measurement and Payment items 4 through 9 shall apply to the project as a whole.

Item 4: Payment for CSX Inspectors and Flagmen shall be paid from the project contingency.

Item 5: CSX requires at least thirty (30) days of notification to schedule protection services and inspection prior to doing any work on CSX's right-of-way. The work can be scheduled through the CSX Property Portal.

Item 6: There is potential contamination south of 7th Avenue including the existing ditch. Please refer to the FDEP website https://ca.dep.state.fl.us/mapdirect/?focus=contamlocator for contaminated sites and information.

Item 7: Add SP-143 Temporary Construction Easement.
A temporary easement for access on the property located at 1601 43rd Street will be granted to the City. The recycle company located at 1607 43rd Street is willing to grant the Contractor a temporary access for turn around and construction access during a certain period of time. The contractor will be responsible for finalizing the temporary easements, staging and routes with the property owners after NTP.

Item 8: Contamination related discharge location shall be at the Howard F. Curren Advanced Wastewater Treatment Plant (HFC AWTP) at 2700 Maritime Blvd Tampa Fl 33605. This site requires Port Security access. Refer to the Tampa Port Authority's website for procedures on gaining access to the port. https://www.tampaport.com/about-port-tampa-bay/operations/security.aspx. The Port's Security and Operations departments are located in the Port Tampa Bay Security Operations Building (SOC) located at 2002 Maritime Blvd., Tampa, Florida 33605. All costs to comply with these procedures shall be included in the total Price for this project, and no separate payment shall be made, therefore. Refer to the Wastewater Discharge and Industrial Pretreatment Standards (Technical Manual) that establishes wastewater discharge criteria.

Item 9: Remove the last paragraph of SP-38 Inspection of Reinforced Concrete Pipe.
The Contractor shall obtain, review and submit to the Engineer four (4) copies of certified test reports made by the City's inspection engineer. All costs associated with shop testing shall be borne by the Contractor.

Item 10: For pay item 530-3 – Bedding Material for Pipe, add the following paragraph:
The Contractor shall only use crushed stone bedding material under pipe only if required due to field conditions or as directed by the Engineer.

Item 12: All temporary and permanent pavement markings including signage shall be paid under the Maintenance of Traffic pay item.

Item 13: All utility coordination and relocations shall be factored into the Contractor's construction schedule at no additional cost to the City.

Item 15: Add SP-144 Laboratory Testing.
Cost of all required laboratory testing shall be borne by the Contractor, including the cost of all re-testing due to defective materials or construction. The cost shall be included under Mobilization.

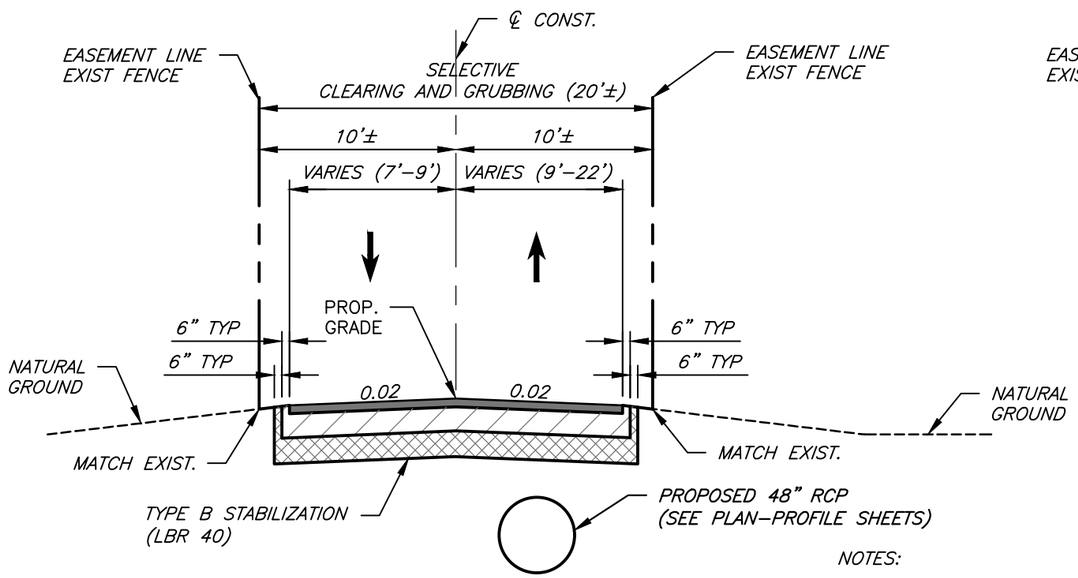
Item 16: Replace the following Plan Sheets with the attached sheets:
Sheets 9, 10, 20, 23-36, 39, 43-45, 54, 56, 60, 66, 67, 83, 91-93, 113,115, W3–W6, WW2-WW4, WW22

All other provisions of the Contract Documents and Specifications not in conflict with this Addendum shall remain in full force and effect. Questions are to be e-mailed to Contract Administration@tampagov.net.

Jim Greiner

Jim Greiner, P.E., Contract Management Supervisor

SW



TYPICAL SECTION NO. 1

N. 43RD ST.

STA. 19+50± TO STA. 23+50±

2 LANE SOUTH OF CSX RR TRACKS

RECONSTRUCTION

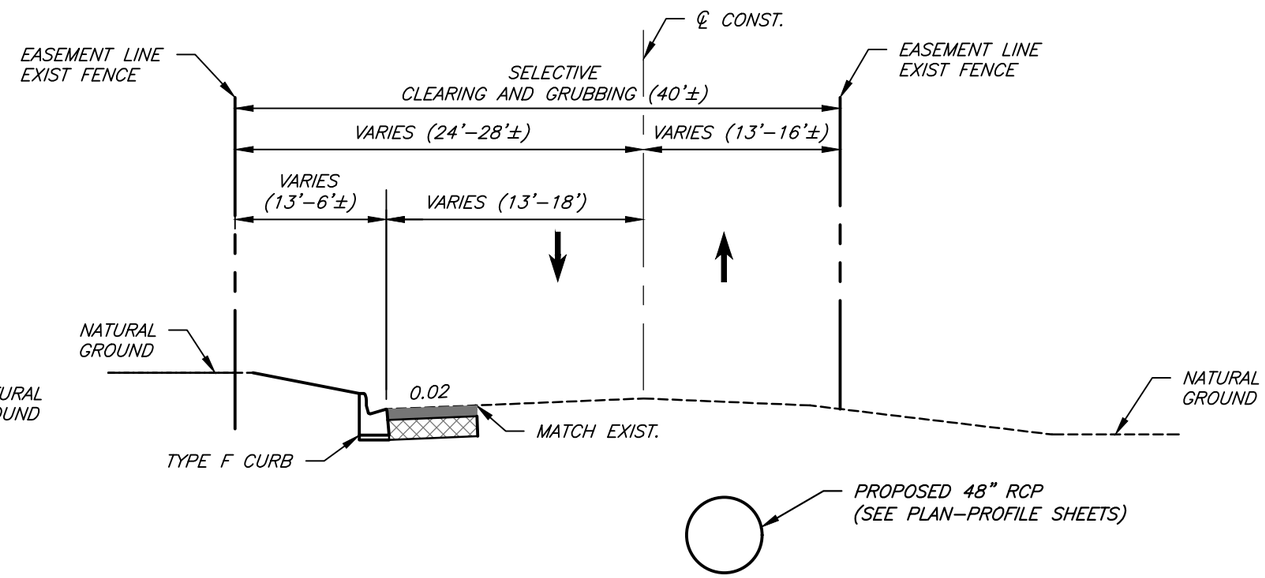
3" TYPE SP–12.5 ASPHALTIC CONCRETE SURFACE COURSE

OPTIONAL BASE GROUP 6 (8" CRUSHED CONC.) (LBR 150)

12" TYPE B STABILIZED SUBGRADE (LBR 40)

NOTES:

1. SEE ROADWAY PLAN SHEETS AND CROSS SECTIONS FOR LOCATION AND LIMITS OF EXISTING DRIVEWAYS AND FENCING.
2. SEE STORMWATER PLAN–PROFILE SHEETS AND CROSS SECTIONS FOR LOCATION AND LIMITS OF MICRO–TUNNELING PIPE ALIGNMENT AND SHAFT PITS.
3. POSTED SPEED LIMIT = 30 MPH. DESIGN SPEED LIMIT = 30 MPH.
4. OVERHEAD LINES ARE NOT SHOWN ON PLANS IN THIS AREA. CONTRACTOR SHALL BE AWARE, PROTECT AND ASSURE PROPER MEASURES ARE TAKEN WHEN WORKING IN THE VICINITY OF ALL AERIAL OVERHEAD LINES.
5. RED BRICK MAY BE ENCOUNTERED DURING EXCAVATION FOR ROADWAY RECONSTRUCTION.



TYPICAL SECTION NO. 2

N. 43RD ST.

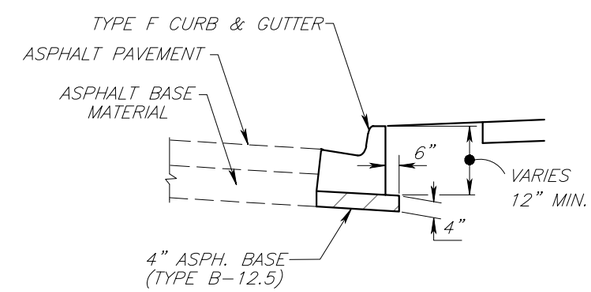
STA. 25+96± TO STA. 27+16±

2 LANE FROM CSX RR TRACKS TO E. 7TH AVE.

RECONSTRUCTION

3" TYPE SP–12.5 ASPHALTIC CONCRETE SURFACE COURSE

6" OPTIONAL BASE GROUP 9 (TYPE B–12.5 ONLY)



CURB PAD DETAIL

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

TYPICAL SECTIONS (I)

SHEET 9

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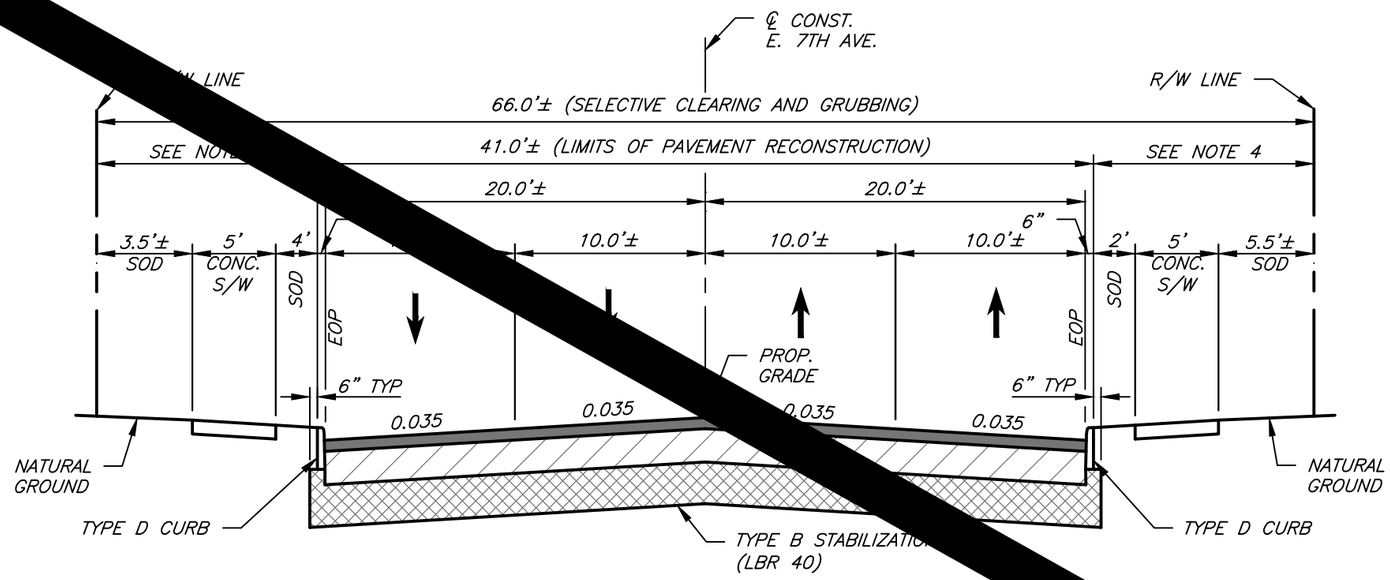
SW



TYPICAL SECTION NO. 3

E. 7TH AVE./ E. BROADWAY

STA. 71+62± TO STA. 72+58±

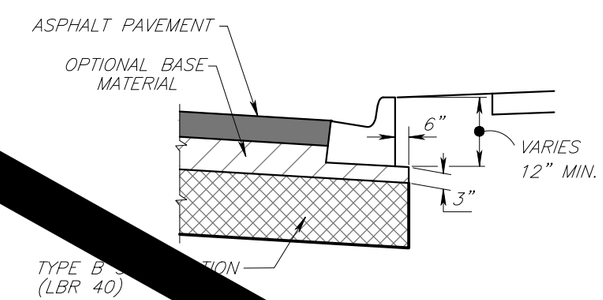
4 LANE SECTION AT N. 43RD ST. INTERSECTION

RECONSTRUCTION

3" TYPE SP-12.5 ASPHALTIC CONCRETE SURFACE COURSE
OPTIONAL BASE GROUP 6 (8" CRUSHED CONC.) (LBR 150)
12" TYPE B STABILIZED SUBGRADE (LBR 40)

NOTES:

1. PAVEMENT RESTORATION FOR LIMITS ALONG E. 7TH AVE. AND E. BROADWAY IS DUE TO THE UNDER GROUND UTILITY WORK FOR THE CITY OF TAMPA.
2. SEE STORMWATER, WATER AND SANITARY SEWER SHEETS AND DETAILS FOR LOCATION AND LIMITS OF PROPOSED UTILITY PIPING.
3. NOTE GRASS MOW STRIPS AND SIDEWALK WIDTHS VARY. SIDEWALK, DRIVEWAY AND GRASS AREA DIMENSIONS BEHIND PROP. CURB ARE TO BE FIELD VERIFIED TO MATCH EXIST. CONDITIONS.
4. POSTED SPEED LIMIT = 40 MPH. DESIGN SPEED LIMIT = 40 MPH.
5. OVERHEAD LINES ARE NOT SHOWN ON PLANS IN THIS AREA. CONTRACTOR SHALL BE AWARE, PROTECT AND ASSURE PROPER MEASURES ARE TAKEN WHEN WORKING IN THE VICINITY OF ALL AERIAL OVERHEAD LINES.
6. RED BRICK MAY BE ENCOUNTERED DURING EXCAVATION FOR ROADWAY RECONSTRUCTION.



CURB DETAIL AT RADIUS TURNS

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 11/16/18

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

TYPICAL SECTIONS (2)

SHEET 10

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SW

STORM SEWER STRUCTURE TABLE

ID	TYPE	STATION	OFFSET	RIM EL.	INV IN	INV OUT	SUMP EL
ST-47	CONC ENDWALL FDOT INDEX 251	10+33.87	0.00'	0.00	5.75 (NE)		
ST-48	MH RISER ON BOX CULVERT	11+65.77	0.01' LT	17.78			12.00
ST-49	4'X13' J-BOX TYPE J7T FDOT INDEX 200	12+12.42	0.00'	17.96			4.72
ST-50	MH RISER ON BOX CULVERT	13+15.37	0.00'	19.02			13.28
ST-51	COT TYPE T INLET RISER ON BOX CULVERT	13+28.27	0.00' LT	19.03			15.46
ST-52	MH RISER ON BOX CULVERT	13+39.35	0.00'	19.03	10.27 (NE)	10.27 (SW)	16.63
ST-53	COT TYPE T INLET RISER ON BOX CULVERT	13+50.24	0.00' RT	18.94			15.58
ST-54	4'X26' TYPE J7T J-BOX WITH WEIR FDOT INDEX 200 (MOD)	13+78.44	0.02' LT	18.59		10.48 (SW)	
ST-55	3.5'X10' J-BOX TYPE J7T FDOT INDEX 200	20+56.73	0.65' RT	19.78	10.88 (N)	10.83 (S) 10.83 (S)	10.83
ST-56	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	22+80.27	1.24' RT	22.76	11.04 (N)	10.99 (S)	10.99
ST-65	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	28+21.81	0.62' RT	31.60	21.79 (N)	11.31 (S)	11.31
ST-66	SUNTREE NSBB MODEL NO NSBB-8-14	29+12.30	6.89' RT	32.43	21.91 (N)	21.84 (S)	17.85
ST-67	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	31+56.57	6.43' RT	31.92	22.03 (N)	22.03 (S)	22.03
ST-68	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	33+35.27	5.71' RT	31.07	22.12 (N)	22.12 (S)	22.12
ST-72	MH TYPE J7 (7' DIA') FDOT INDEX NO. 200, 201	35+89.67	8.08' RT	30.23	22.31 (NW)	22.25 (S)	22.25
ST-73	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	36+44.93	9.22' RT	30.10	22.34 (W)	22.34 (SE)	22.34
ST-75	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	38+83.82	8.11' RT	31.70	22.46 (W)	22.45 (E)	22.45
ST-76	COT TYPE T INLET	40+39.01	21.01' RT	32.10	30.32 (W)	28.10 (S)	28.10
ST-77	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	40+38.80	8.04' RT	32.35	22.54 (W) 28.00 (N)	22.54 (E)	22.54
ST-80	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	43+57.36	7.73' RT	32.96	22.70 (W)	22.70 (E)	22.70

STORM SEWER STRUCTURE TABLE

ID	TYPE	STATION	OFFSET	RIM EL.	INV IN	INV OUT	SUMP EL
ST-83	MH TYPE J7T (6'X6') (CONFLICT) FDOT INDEX NO. 200, 201	46+82.19	6.36' RT	33.33	22.86 (W) 27.36 (N)	22.86 (E) 27.31 (S)	22.86
ST-84	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	48+93.53	6.38' RT	33.18	24.16 (W) 28.10 (S) 28.15 (N)	22.97 (E)	22.97
ST-85	DBI TYPE C W/ TRAVERSABLE SLOT FDOT INDEX NO. 232	48+93.50	17.93' LT	33.49		28.20 (N)	28.20
ST-86	DBI TYPE C W/ TRAVERSABLE SLOT FDOT INDEX NO. 232	48+93.71	18.10' RT	33.34		28.20 (S)	28.20
ST-87	MH TYPE J7 (7' DIA') FDOT INDEX NO. 200, 201	49+36.21	6.41' RT	33.17	24.18 (N)	24.18 (E)	24.18
ST-88	MH TYPE J7 (6'X6') (CONFLICT) FDOT INDEX NO. 200, 201	52+02.72	9.46' RT	33.09	24.31 (N) 22.58 (E)	24.30 (S) 22.55 (W)	21.99
ST-89	MH TYPE J7 (6'X6') (CONFLICT) FDOT INDEX NO. 200, 201	52+21.35	9.82' RT	33.02	24.32 (N) 27.16 (E)	24.32 (S) 27.16 (W)	23.17
ST-90	MH TYPE J7 (7'X6') (CONFLICT) FDOT INDEX NO. 200, 201	53+36.58	18.17' RT	33.44	24.39 (N) 28.08 (E)	24.38 (S) 28.05 (W)	24.38
ST-91	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	53+84.94	30.79' RT	33.40	24.41 (N)	24.41 (S)	24.41

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

PROPOSED STORM SEWER DATA (I)

SHEET 20

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SW

STORM SEWER STRUCTURE TABLE

ID	TYPE	STATION	OFFSET	RIM EL.	INV IN	INV OUT	SUMP EL
ST-92	MH TYPE J7 (6'X6') (CONFLICT) FDOT INDEX NO. 200, 201	54+42.38	30.93' RT	33.11	24.44 (N) 22.68 (E)	24.44 (S) 22.67 (W)	22.17
ST-93	MH TYPE J7T (6'X7') (CONFLICT) FDOT INDEX NO. 200, 201	56+24.25	31.38' RT	32.41	24.55 (N) 28.07 (SW)	24.53 (S) 28.06 (NE)	24.03
ST-94	MH TYPE J7T (6'X7') (CONFLICT) FDOT INDEX NO. 200, 201	56+93.71	31.33' RT	32.16	24.59 (N) 28.06 (W)	24.58 (S) 28.06 (E)	24.08
ST-96	MH TYPE J7T (7'X10') (CONFLICT) (MOD) FDOT INDEX NO. 200, 201	60+33.97	33.36' RT	31.46	24.77 (N) 26.05 (W)	24.76 (S) 26.04 (E)	22.10
ST-97	MH TYPE J7 (6' DIA') FDOT INDEX NO. 200, 201	62+22.56	41.40' RT	31.57	24.87 (N)	24.87 (S)	24.83
ST-98	MH TYPE J7T (6'X6') (CONFLICT) FDOT INDEX NO. 200, 201 (MOD)	63+08.49	39.77' RT	31.86	24.91 (N) 27.19 (E)	24.91 (S) 26.91 (W)	24.91
ST-99	MH TYPE J7 (7' DIA') FDOT INDEX NO. 200, 201	64+60.11	36.99' RT	31.90	23.96 (N)	24.98 (S)	23.96
ST-104	MES (4:1) FDOT INDEX 272	34+47.50	16.50' RT	30.14		28.93 (N)	
ST-105	MES (4:1) FDOT INDEX 272	34+90	16.50' RT	30.06	28.85 (S)		
ST-106	MES (4:1) FDOT INDEX 272	35+30.51	16.50' RT	29.56		28.35 (N)	
ST-107	MES (4:1) FDOT INDEX 272	36+04.07	16.50' RT	29.52	28.31 (S)		
ST-108	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	36+38.37	16.85' LT	29.87		27.91 (N)	
ST-109	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	36+40.23	22.98' RT	29.58	27.62 (S)		
ST-110	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	41+43.53	21.58' RT	32.35		30.43 (E)	
ST-112	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	41+98.89	22.34' RT	31.78	30.70 (W)		
ST-113	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	42+79.06	19.82' RT	1.08		31.03 (E)	
ST-114	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	43+59.64	20.51' RT	33.24	31.32 (W)		
ST-115	SAND-CEMENT ENDWALL FDOT INDEX 258 (MOD)	43+83.81	19.90' RT	33.32		31.40 (E)	

STORM SEWER PIPE TABLE					
STRUC. START	INV OUT	STRUC. END	INV IN	SIZE AND MATERIAL	LENGTH
ST–115	31.40	ST–114	31.32	12" RCP	24'
ST–113	31.03	ST–112	30.70	8" PVC	80'
ST–110	30.43	ST–76	30.32	12" RCP	105'
ST–108	27.91	ST–109	27.62	12"x18" ERCP	40'
ST–106	28.35	ST–107	28.31	12"x18" ERCP	74'
ST–104	28.93	ST–105	28.85	12"x18" ERCP	42'
ST–99	24.98	ST–98	24.91	48" RCP	152'
ST–98	24.91	ST–97	24.87	48" RCP	86'
ST–97	24.87	ST–96	24.77	48" RCP	189'
ST–96	24.76	ST–95	24.72	48" RCP	86'
ST–95	24.71	ST–94	24.59	48" RCP	255'
ST–94	24.58	ST–93	24.55	48" RCP	69'
ST–93	24.53	ST–92	24.44	48" RCP	182'
ST–92	24.44	ST–91	24.41	48" RCP	57'
ST–91	24.41	ST–90	24.39	48" RCP	50'
ST–90	24.38	ST–89	24.32	48" RCP	116'
ST–89	24.32	ST–88	24.31	48" RCP	19'
ST–88	24.30	ST–87	24.18	48" RCP	252'
ST–87	24.18	ST–84	24.16	48" RCP	43'
ST–86	28.20	ST–84	28.15	18" RCP	12'
ST–85	28.20	ST–84	28.10	18" RCP	24'
ST–84	22.97	ST–83	22.86	48" RCP	211'

STORM SEWER PIPE TABLE					
STRUC. START	INV OUT	STRUC. END	INV IN	SIZE AND MATERIAL	LENGTH
ST–83	22.86	ST–80	22.70	48" RCP	325'
ST–80	22.70	ST–77	22.54	48" RCP	319'
ST–77	22.54	ST–75	22.46	48" RCP	155'
ST–76	28.10	ST–77	28.00	18" RCP	13'
ST–75	22.45	ST–73	22.34	48" RCP	239'
ST–73	22.34	ST–72	22.31	48" RCP	52'
ST–72	22.25	ST–68	22.12	48" RCP	254'
ST–68	22.12	ST–67	22.03	48" RCP	179'
ST–67	22.03	ST–66	21.91	48" RCP	244'
ST–66	21.84	ST–65	21.79	48" RCP	91'
ST–65	11.31	ST–56	11.04	48" RCP	541'
ST–56	10.99	ST–55	10.88	48" RCP	224'
ST–55	10.83		10.80	36" RCP	52'
ST–55	10.83		10.80	36" RCP	52'
	23.96	ST–99	23.96	38"x60" ERCP	13'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

PROPOSED STORM SEWER DATA (3)

SHEET 22

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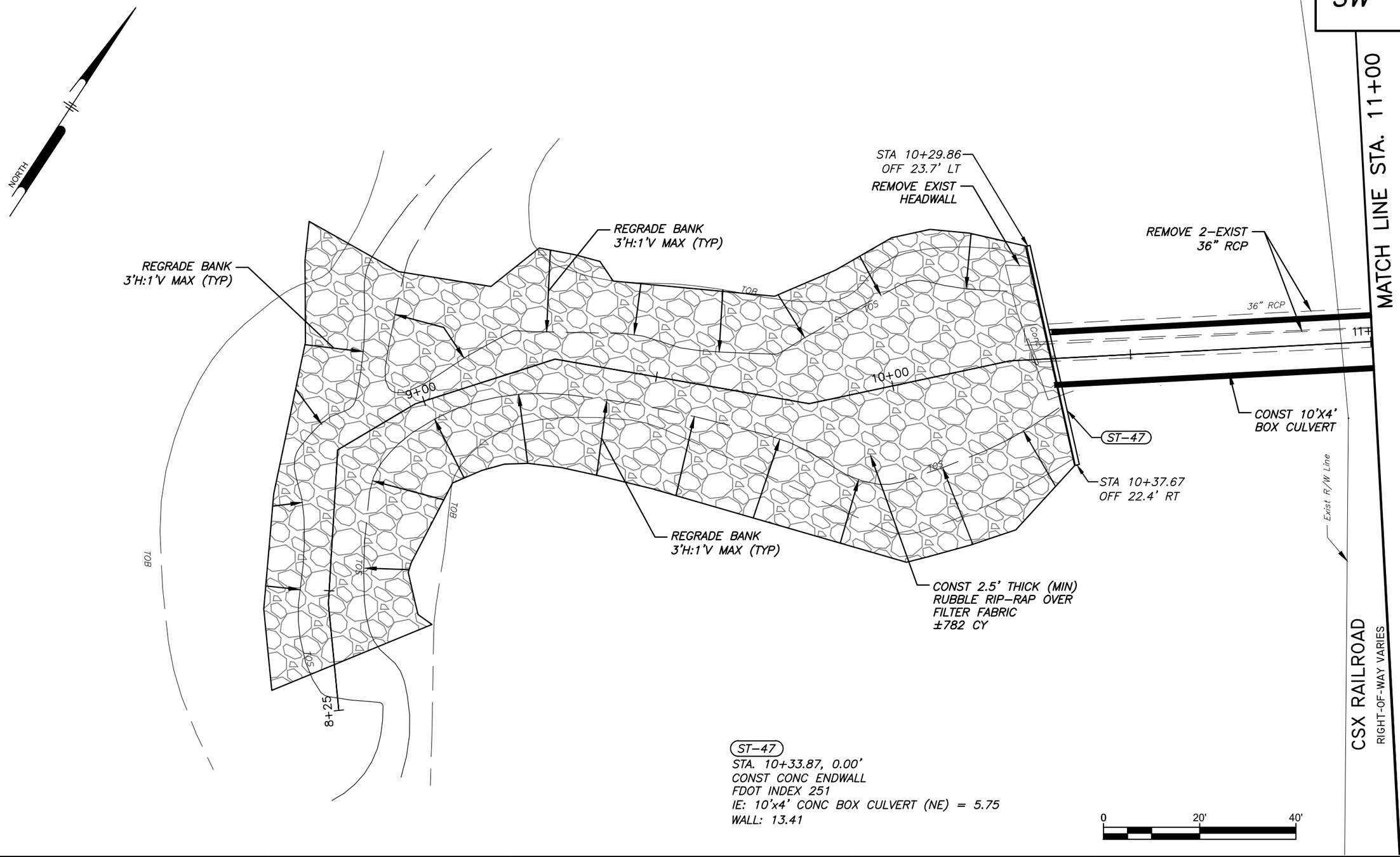

ST-47
STA. 10+33.87, 0.00'
CONST CONC ENDWALL
FDOT INDEX 251
IE: 10'x4' CONC BOX CULVERT (NE) = 5.75
WALL: 13.41

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Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN
STA 8+25 TO STA 11+00

SHEET 23

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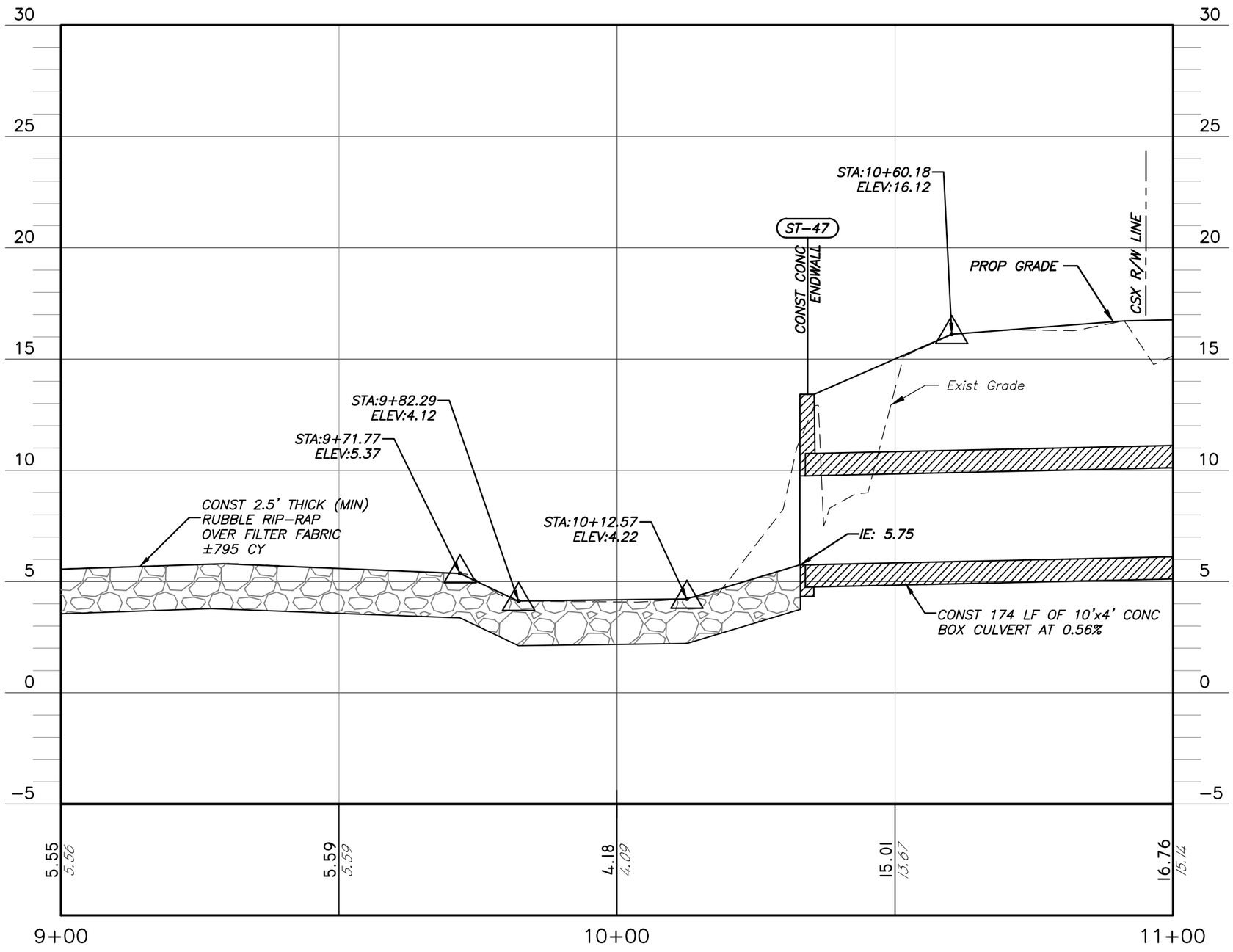
SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 9+00 TO STA 11+00

SHEET 24

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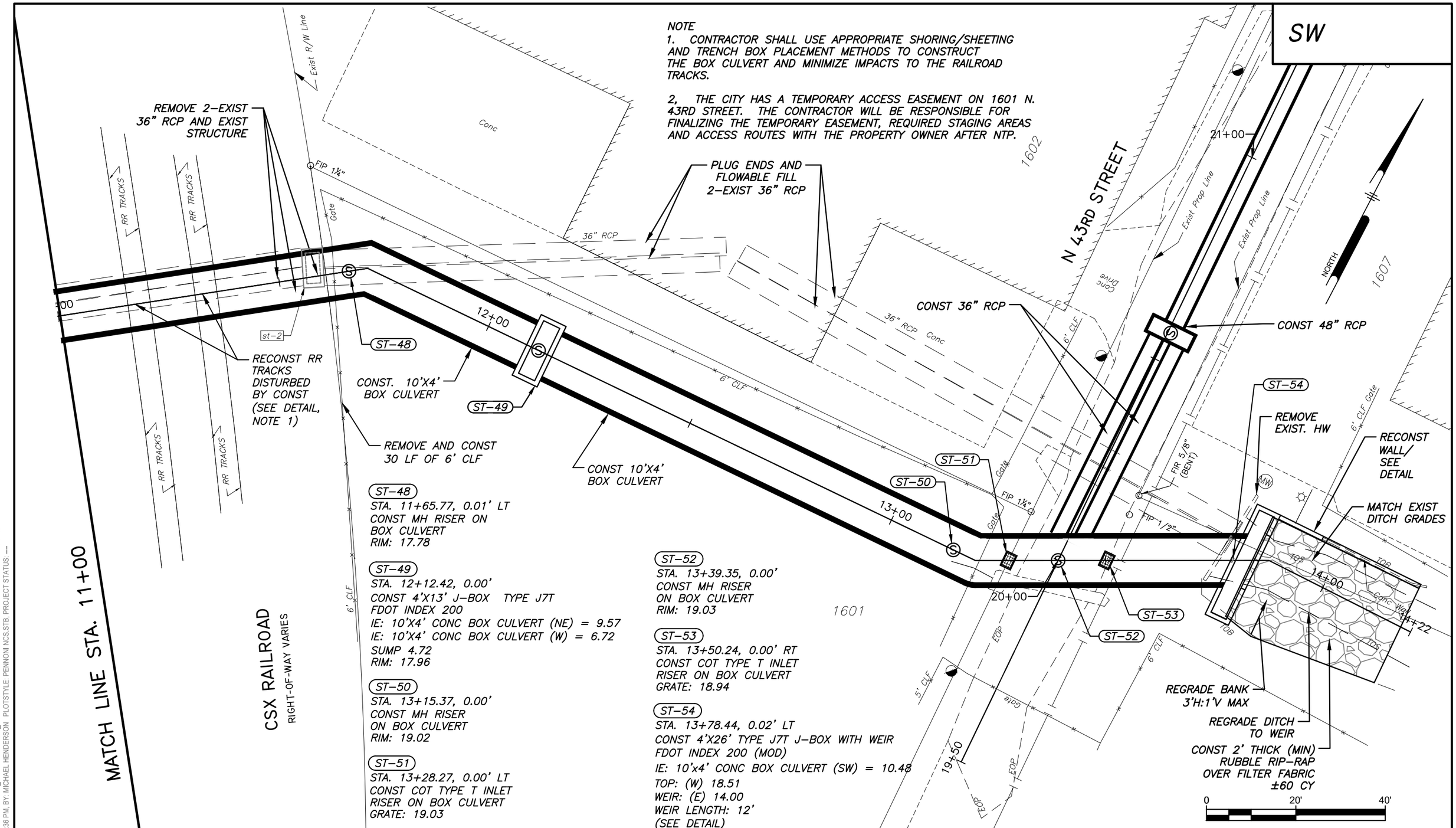
PLOTTED: 5/22/2019 1:33:06 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

NOTE
1. CONTRACTOR SHALL USE APPROPRIATE SHORING/SHEETING AND TRENCH BOX PLACEMENT METHODS TO CONSTRUCT THE BOX CULVERT AND MINIMIZE IMPACTS TO THE RAILROAD TRACKS.

2. THE CITY HAS A TEMPORARY ACCESS EASEMENT ON 1601 N. 43RD STREET. THE CONTRACTOR WILL BE RESPONSIBLE FOR FINALIZING THE TEMPORARY EASEMENT, REQUIRED STAGING AREAS AND ACCESS ROUTES WITH THE PROPERTY OWNER AFTER NTP.



ST-48
STA. 11+65.77, 0.01' LT
CONST MH RISER ON BOX CULVERT
RIM: 17.78

ST-49
STA. 12+12.42, 0.00'
CONST 4'X13' J-BOX TYPE J7T
FDOT INDEX 200
IE: 10'X4' CONC BOX CULVERT (NE) = 9.57
IE: 10'X4' CONC BOX CULVERT (W) = 6.72
SUMP 4.72
RIM: 17.96

ST-50
STA. 13+15.37, 0.00'
CONST MH RISER ON BOX CULVERT
RIM: 19.02

ST-51
STA. 13+28.27, 0.00' LT
CONST COT TYPE T INLET RISER ON BOX CULVERT
GRATE: 19.03

ST-52
STA. 13+39.35, 0.00'
CONST MH RISER ON BOX CULVERT
RIM: 19.03

ST-53
STA. 13+50.24, 0.00' RT
CONST COT TYPE T INLET RISER ON BOX CULVERT
GRATE: 18.94

ST-54
STA. 13+78.44, 0.02' LT
CONST 4'X26' TYPE J7T J-BOX WITH WEIR
FDOT INDEX 200 (MOD)
IE: 10'x4' CONC BOX CULVERT (SW) = 10.48
TOP: (W) 18.51
WEIR: (E) 14.00
WEIR LENGTH: 12'
(SEE DETAIL)

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

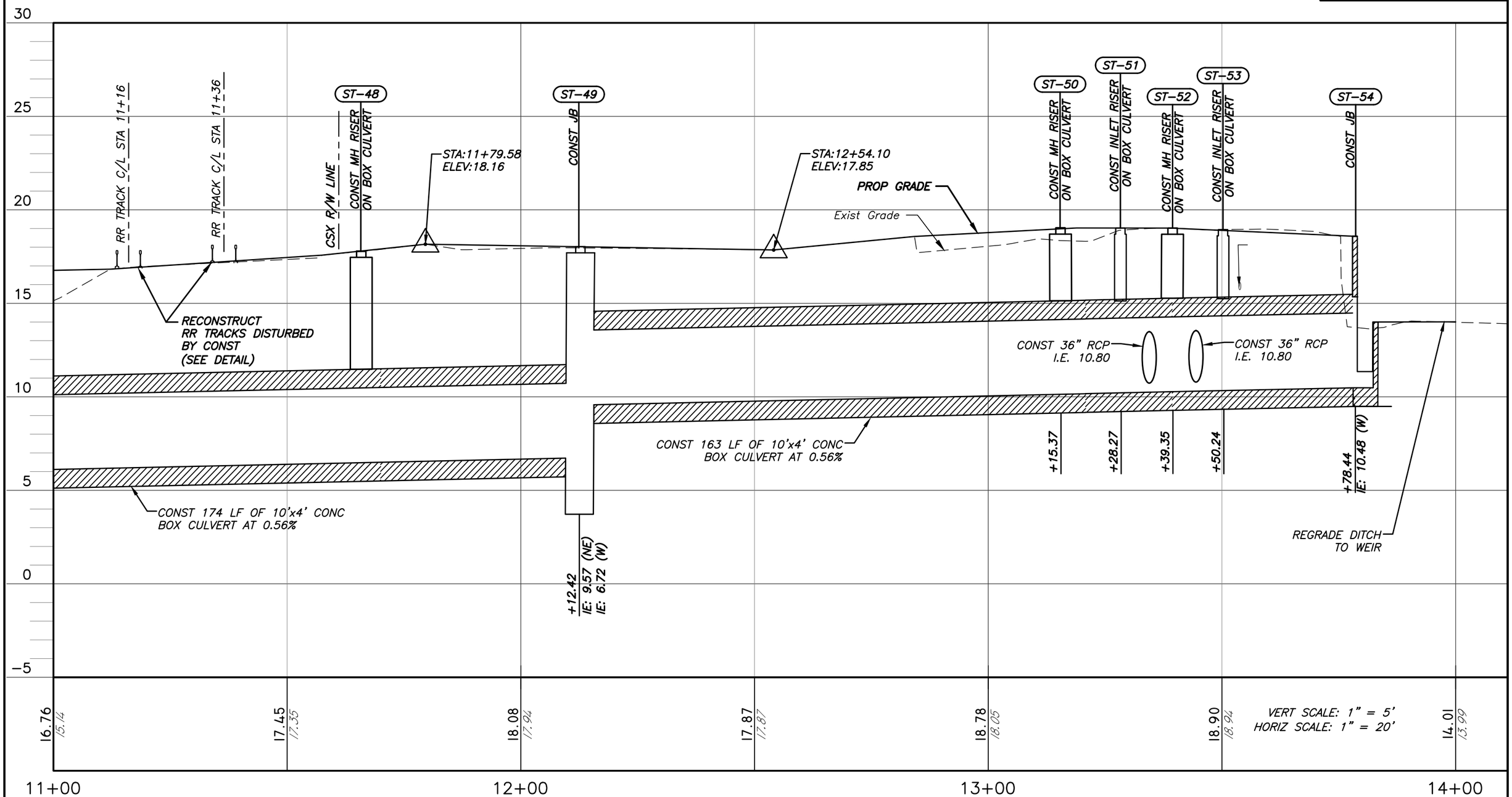
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN
STA 11+00 TO STA 14+22

SHEET 25

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T581 ALIGN A STORMWATER PLAN.DWG
PLOTTED: 5/28/2019 4:26:36 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



No.	DATE	REVISIONS

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Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

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CKD: EPN
DATE: 5/22/19

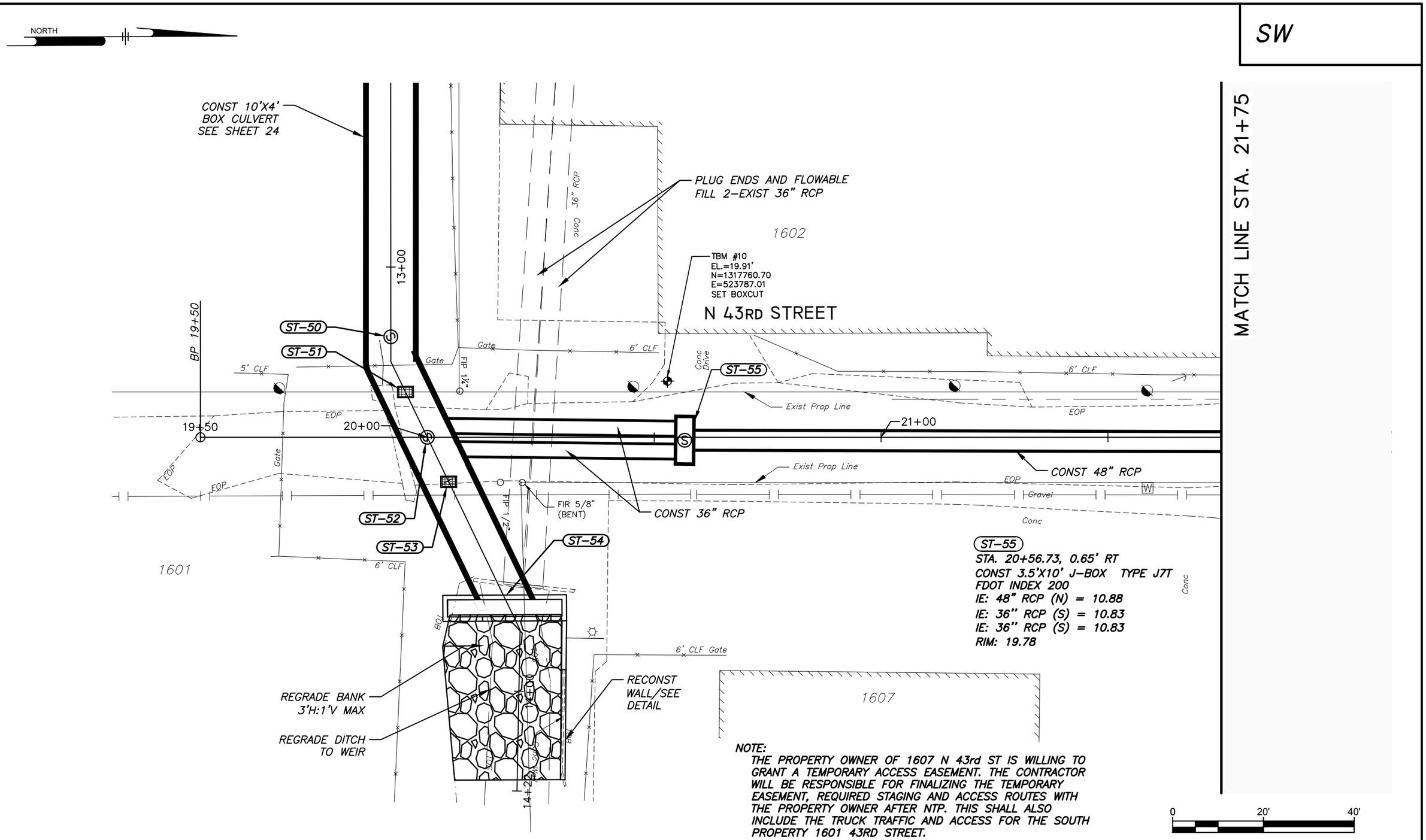
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

STORMWATER PROFILE STA 11+00 TO STA 14+22

SHEET 26

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/28/2019 4:26:52 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---



NOTE:
THE PROPERTY OWNER OF 1607 N 43rd ST IS WILLING TO GRANT A TEMPORARY ACCESS EASEMENT. THE CONTRACTOR WILL BE RESPONSIBLE FOR FINALIZING THE TEMPORARY EASEMENT, REQUIRED STAGING AND ACCESS ROUTES WITH THE PROPERTY OWNER AFTER NTP. THIS SHALL ALSO INCLUDE THE TRUCK TRAFFIC AND ACCESS FOR THE SOUTH PROPERTY 1601 43RD STREET.

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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Clearwater, FL 33764
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P.E. NO. 38766

DES: MCH
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DATE: 5/22/19

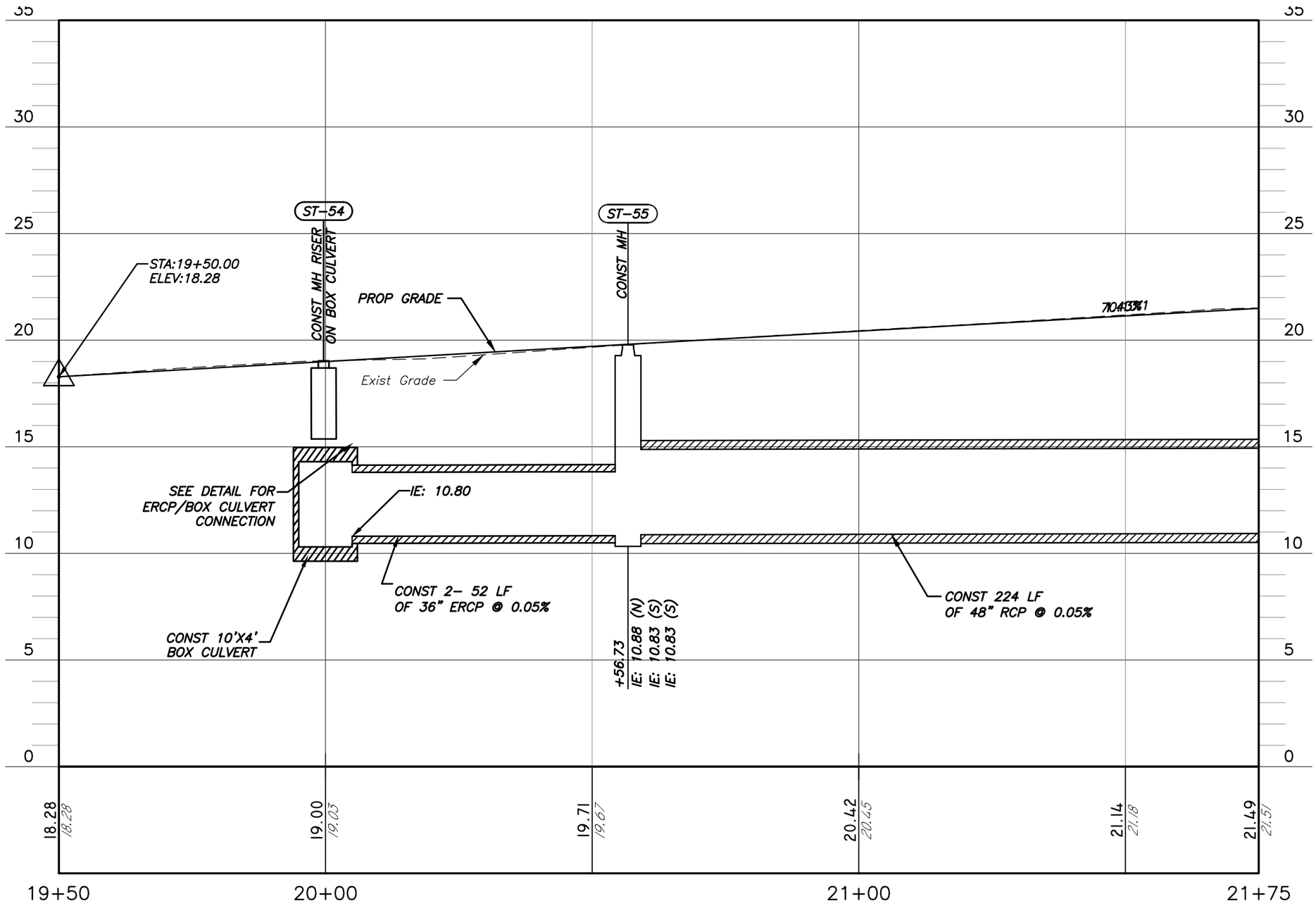
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN STA 19+50 TO STA 21+75

SHEET 27

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/28/2019 4:27:18 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

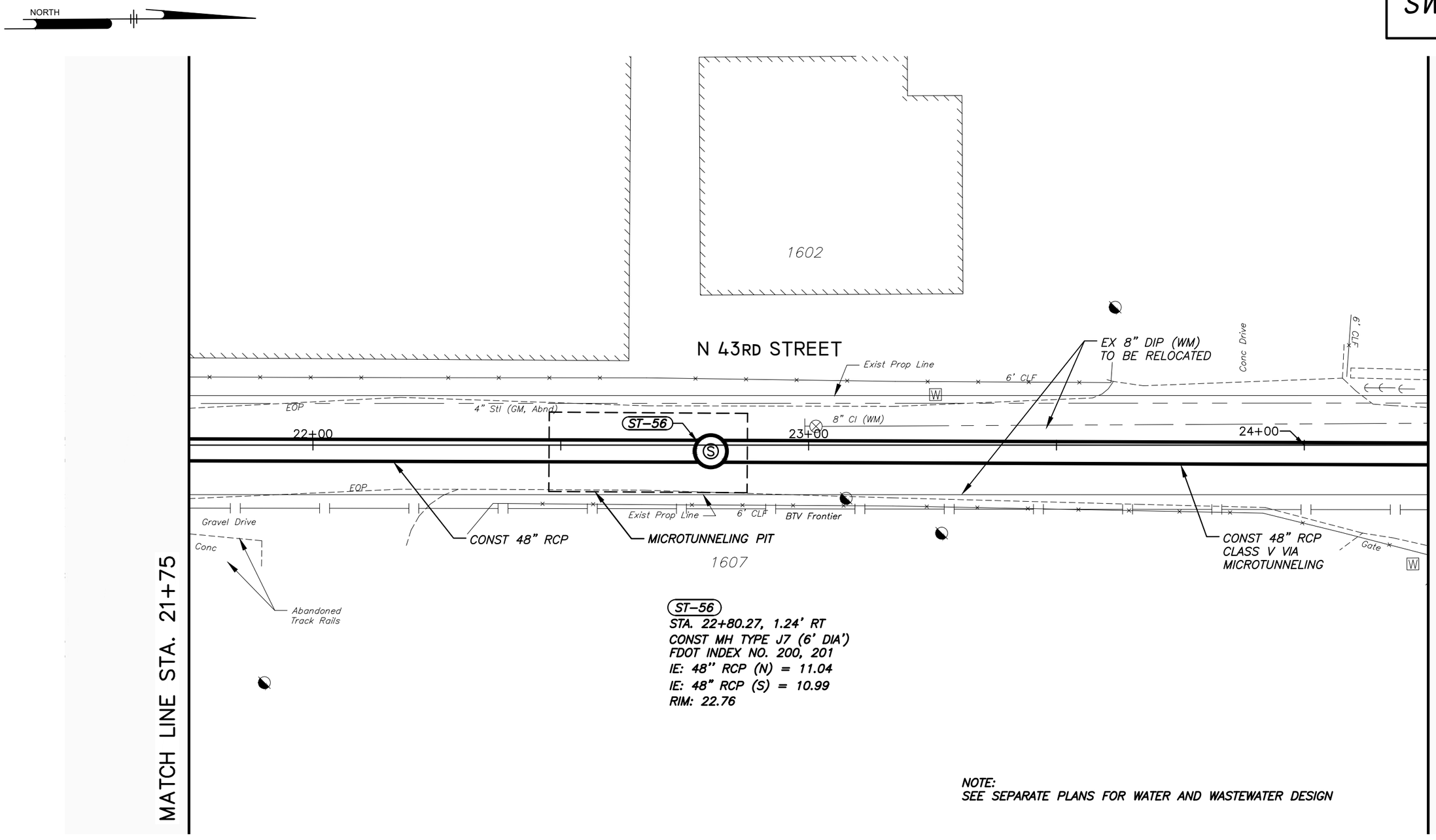
DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 19+50 TO STA 21+75

SHEET 28

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/28/2019 4:27:37 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---



No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
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DATE: 5/22/19

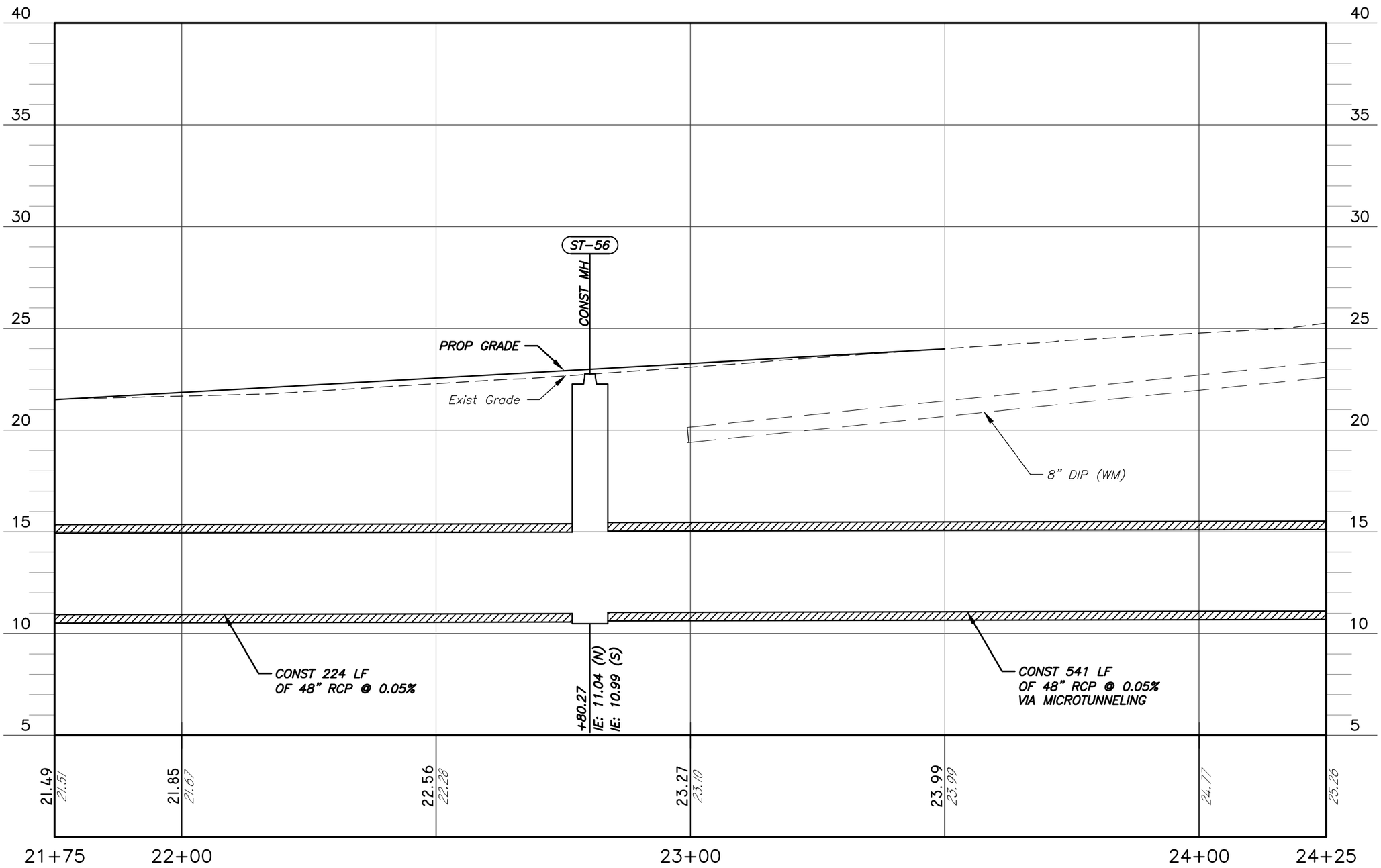
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN STA 21+75 TO STA 24+25

SHEET 29

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/28/2019 4:28:02 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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E. PETER NIKOLOV, P.E. DATE
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DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 21+75 TO STA 24+25

SHEET 30

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/28/2019 4:28:22 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW

NORTH

MATCH LINE STA. 24+25

MATCH LINE STA. 26+75

Exist RR R/W Line

Railroad Tracks

Railroad Tracks

Exist RR R/W Line

Railroad Obstruction Arm

Overhead Railroad Signal

4001 N 43RD STREET

FCIR 1/2" "LB 5985"

Exist R/W Line

Gate

Exist R/W Line

Gravel

4' Stack Conc Barricade Wall

EX 8" DIP (WM) TO BE RELOCATED

PI 24+61.84

UNK

8" CI (WM)

15" CONC CASING

8" CI (WM)

25+00

26+00

4" Stl (GM, Abnd)

4" Stl (GM, Abnd)

BTV Frontier

Exist R/W Line

Gate

6' CLF

6' CLF

CONST 48" RCP CLASS V VIA MICROTUNNELING

TBM #9
EL.=29.81'
N=1318360.39
E=523811.05
NAIL IN POLE

4301

Exist RR R/W Line

Railroad Obsturction Arm

FN&D "LB 7831"
N=1318189.58
E=523811.56
CENTER OF SECT.16-T29S-R19E

CSX RAILROAD

4" STL (MCI)

4" HDPE (AT&T)

3" PVC (MCI)
QWEST
CENTURY LINK

NOTES:

1. SEE SEPARATE PLANS FOR WATER AND WASTEWATER DESIGN

0 20' 40'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

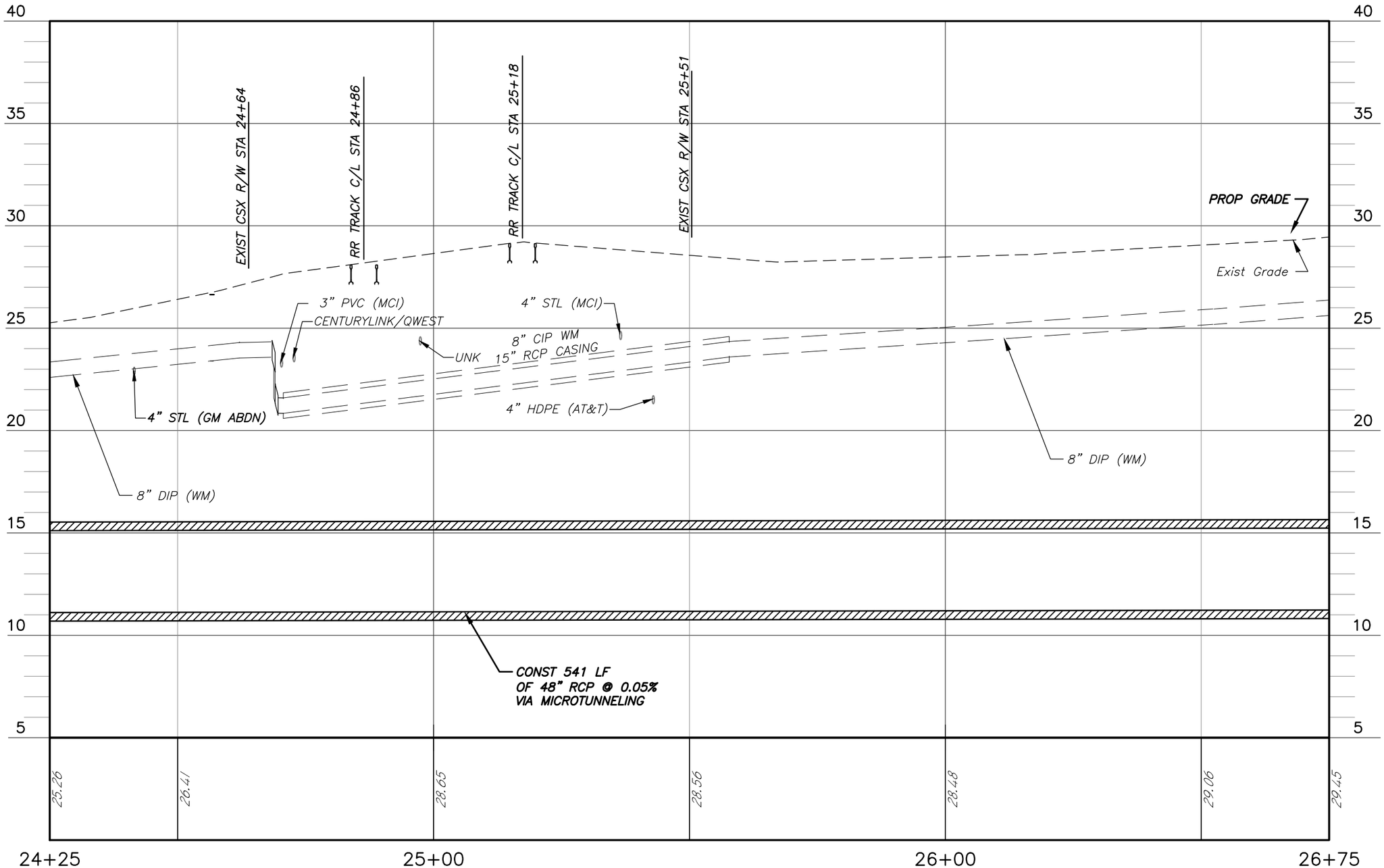
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN STA 24+25 TO STA 26+75

SHEET 31

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 21\582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/28/2019 4:28:48 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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E. PETER NIKOLOV, P.E. DATE
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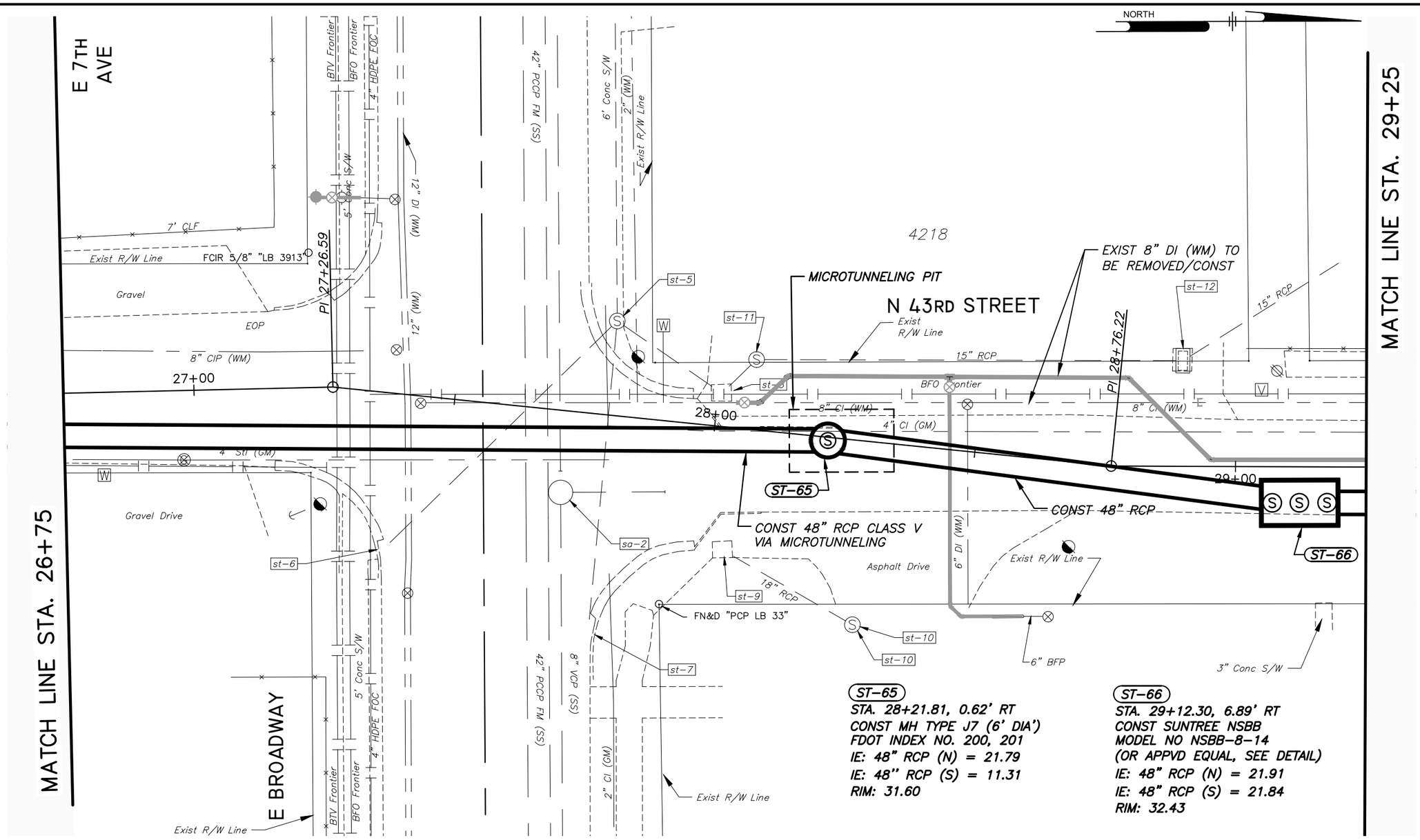
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 24+25 TO STA 26+75

SHEET 32

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/28/2019 4:29:07 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



ST-65
STA. 28+21.81, 0.62' RT
CONST MH TYPE J7 (6' DIA')
FDOT INDEX NO. 200, 201
IE: 48" RCP (N) = 21.79
IE: 48" RCP (S) = 11.31
RIM: 31.60

ST-66
STA. 29+12.30, 6.89' RT
CONST SUNTREE NSBB
MODEL NO NSBB-8-14
(OR APPVD EQUAL, SEE DETAIL)
IE: 48" RCP (N) = 21.91
IE: 48" RCP (S) = 21.84
RIM: 32.43

NOTES:

1. SEE SEPARATE PLANS FOR WATER AND WASTEWATER DESIGN

0 20' 40'

No.	DATE	REVISIONS

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Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
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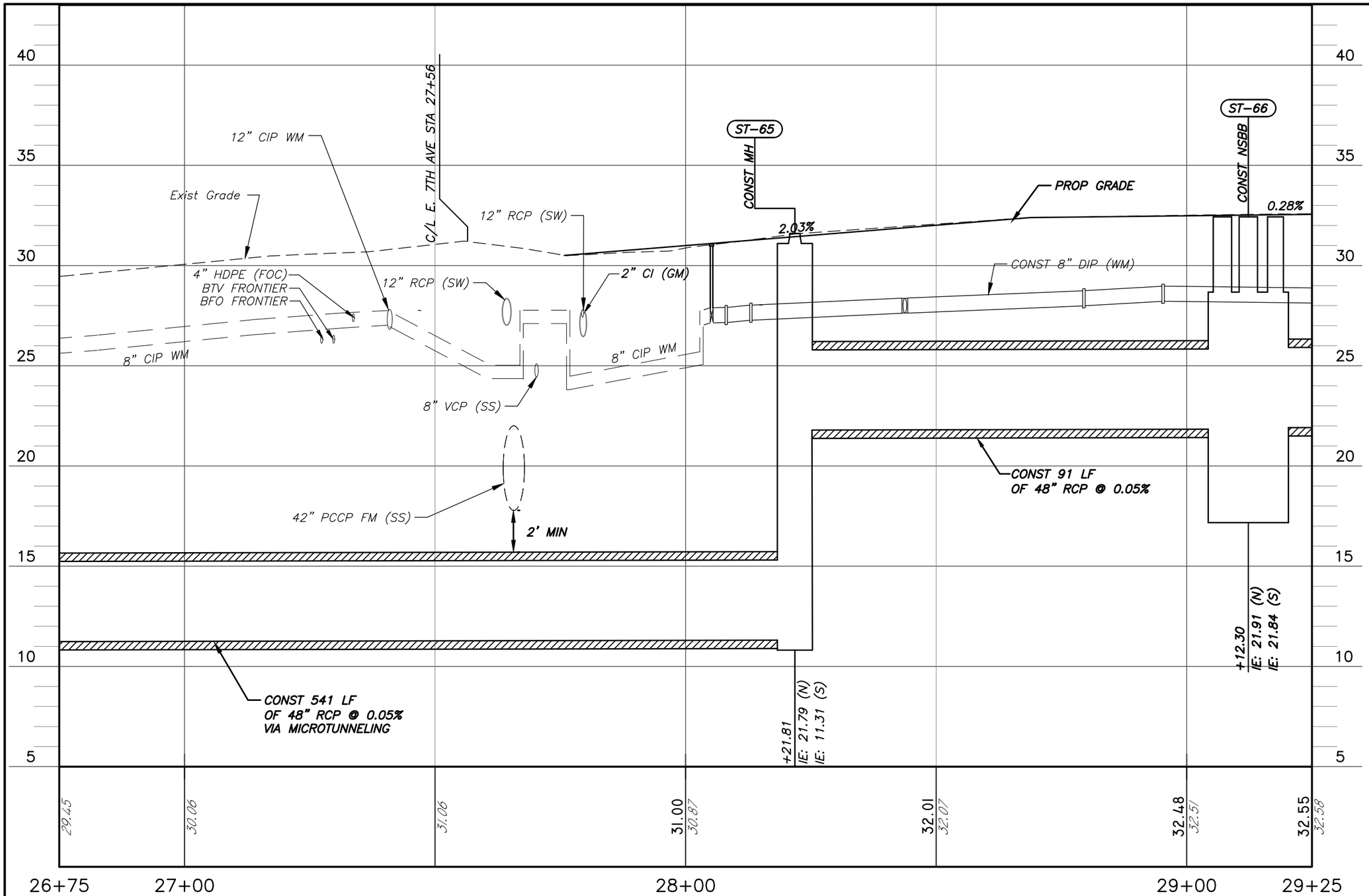
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN STA 26+75 TO STA 29+25

SHEET 33

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/28/2019 4:29:30 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

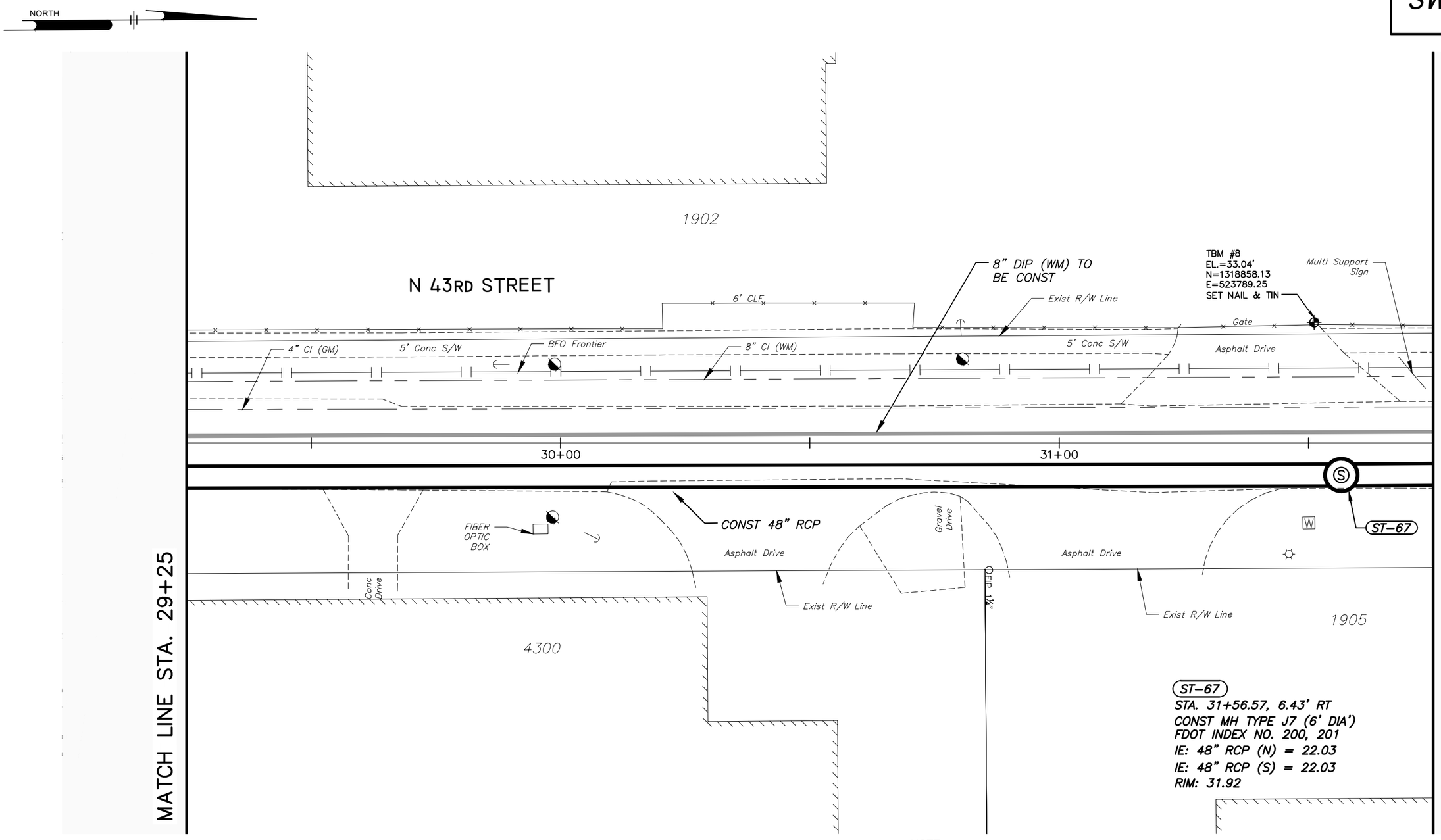
DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 26+75 TO STA 29+25

SHEET 34

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/28/2019 4:29:45 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---



NOTE:
SEE SEPARATE PLANS FOR WATER AND WASTEWATER DESIGN

0 20' 40'

No.	DATE	REVISIONS

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2555 Nursery Road, Suite 101
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P.E. NO. 38766

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DATE: 5/22/19

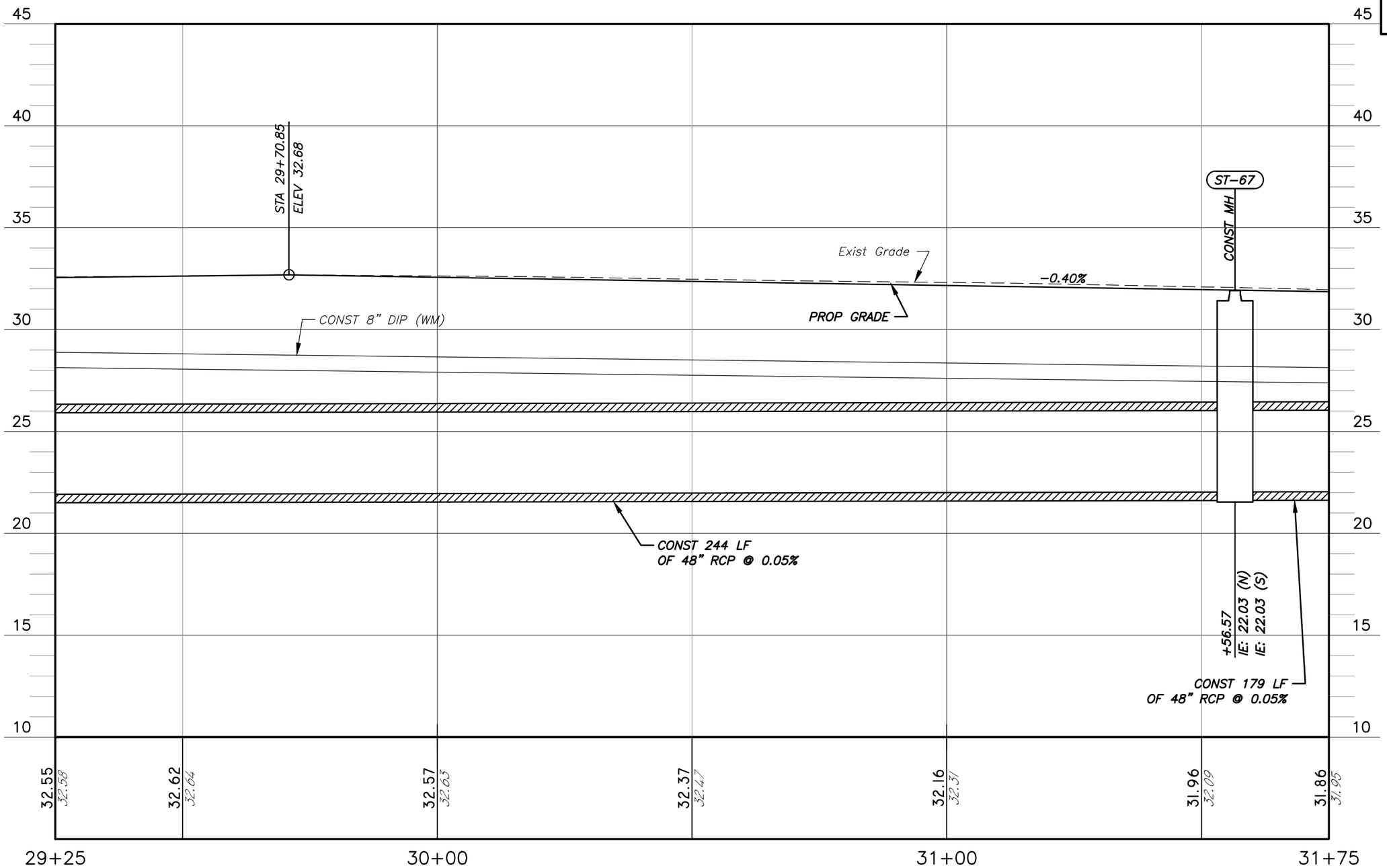
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN
STA 29+25 TO STA 31+75

SHEET 35

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/22/2019 1:38:20 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

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CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

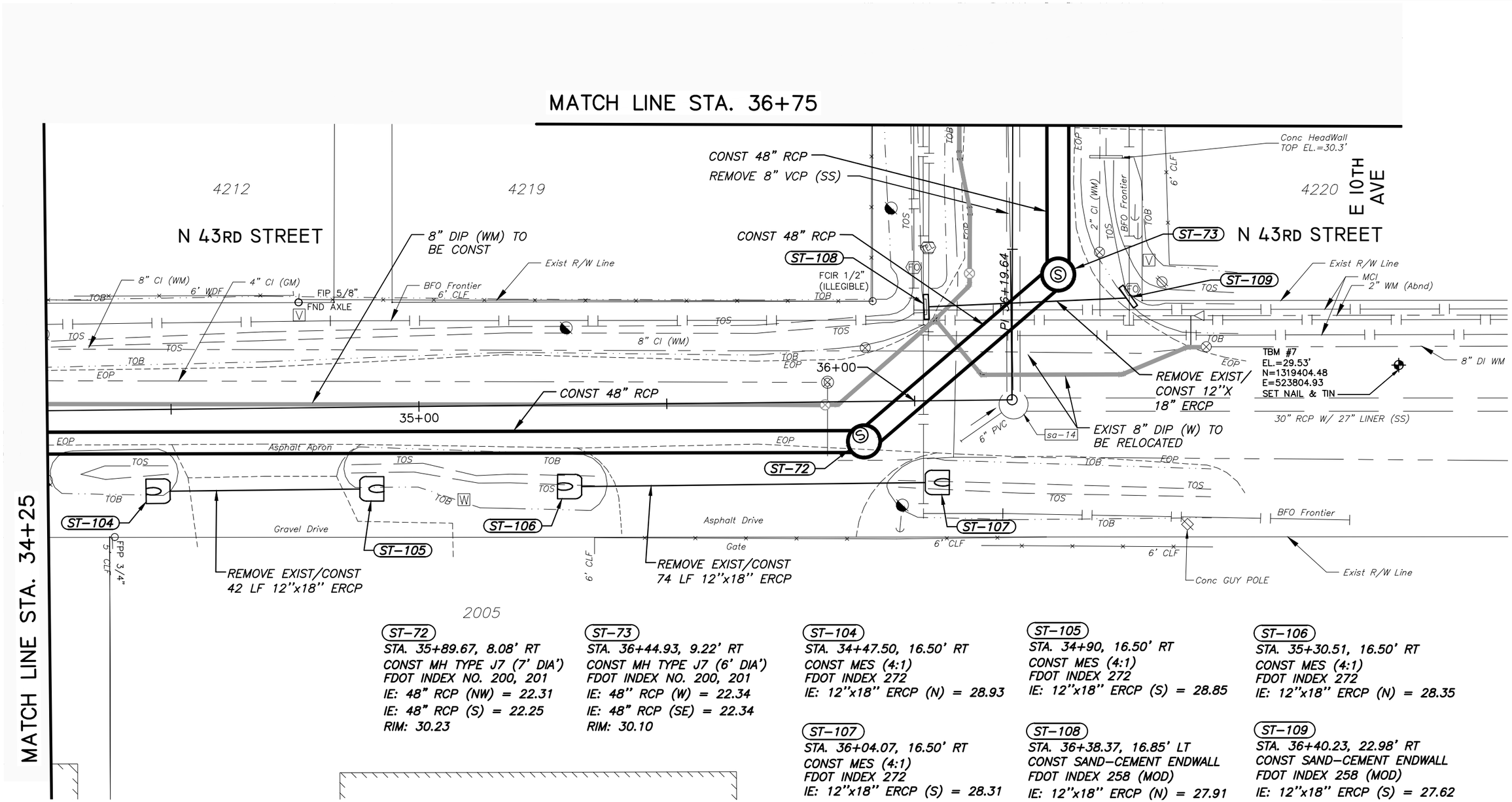
43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 29+25 TO STA 31+75

SHEET 36

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/22/2019 1:38:44 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB PROJECT STATUS: ---

NORTH

SW



ST-72
STA. 35+89.67, 8.08' RT
CONST MH TYPE J7 (7' DIA')
FDOT INDEX NO. 200, 201
IE: 48" RCP (NW) = 22.31
IE: 48" RCP (S) = 22.25
RIM: 30.23

ST-73
STA. 36+44.93, 9.22' RT
CONST MH TYPE J7 (6' DIA')
FDOT INDEX NO. 200, 201
IE: 48" RCP (W) = 22.34
IE: 48" RCP (SE) = 22.34
RIM: 30.10

ST-104
STA. 34+47.50, 16.50' RT
CONST MES (4:1)
FDOT INDEX 272
IE: 12"x18" ERCP (N) = 28.93

ST-105
STA. 34+90, 16.50' RT
CONST MES (4:1)
FDOT INDEX 272
IE: 12"x18" ERCP (S) = 28.85

ST-106
STA. 35+30.51, 16.50' RT
CONST MES (4:1)
FDOT INDEX 272
IE: 12"x18" ERCP (N) = 28.35

ST-107
STA. 36+04.07, 16.50' RT
CONST MES (4:1)
FDOT INDEX 272
IE: 12"x18" ERCP (S) = 28.31

ST-108
STA. 36+38.37, 16.85' LT
CONST SAND-CEMENT ENDWALL
FDOT INDEX 258 (MOD)
IE: 12"x18" ERCP (N) = 27.91

ST-109
STA. 36+40.23, 22.98' RT
CONST SAND-CEMENT ENDWALL
FDOT INDEX 258 (MOD)
IE: 12"x18" ERCP (S) = 27.62

NOTE:
SEE SEPARATE PLANS FOR WATER AND WASTEWATER DESIGN

0 20' 40'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
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Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

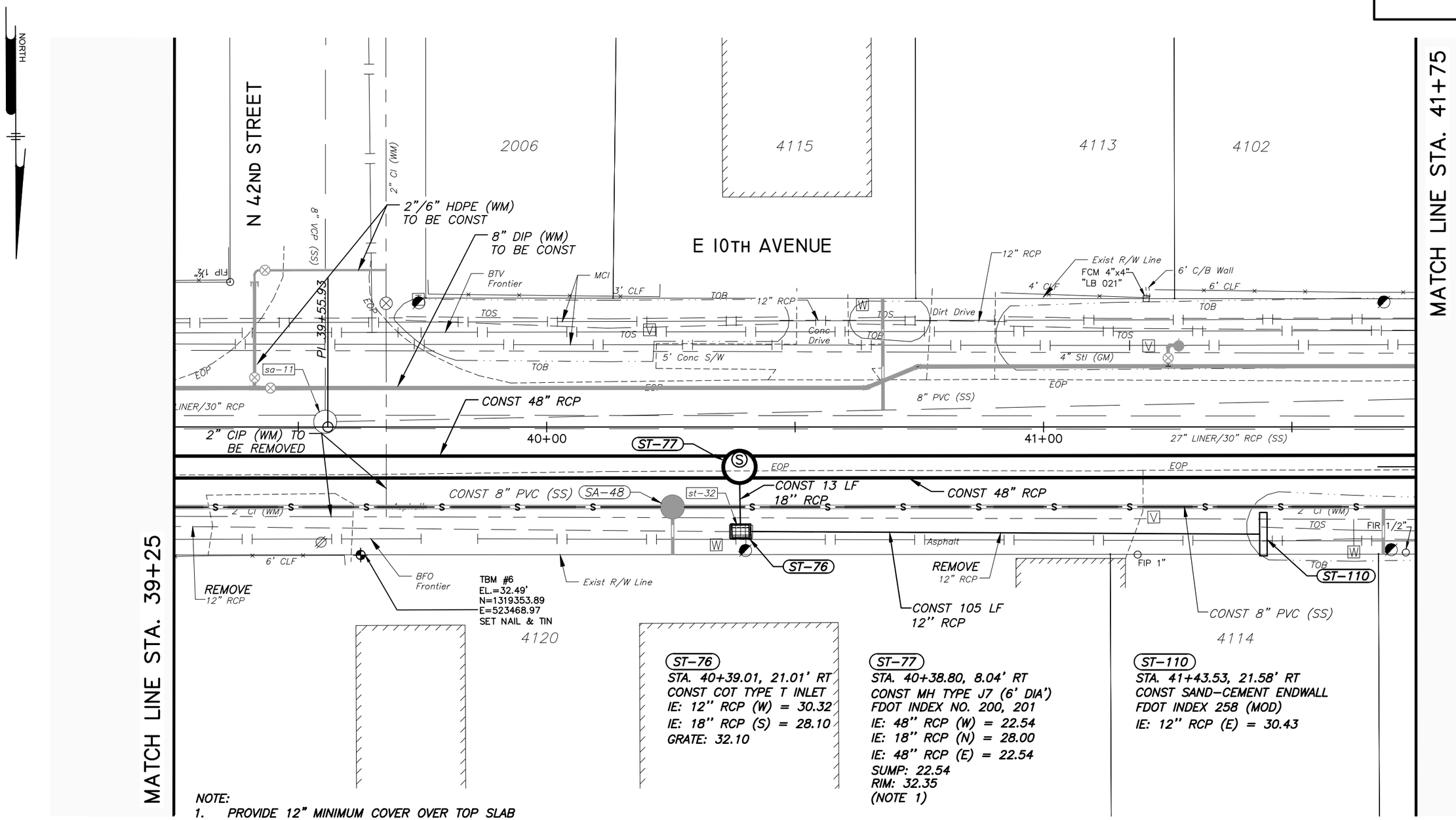
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN
STA 34+25 TO STA 36+75

SHEET 39

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/22/2019 1:39:15 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



NOTE:
1. PROVIDE 12" MINIMUM COVER OVER TOP SLAB
2. SEE SEPARATE SHEETS FOR WATER AND WASTEWATER DESIGN

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
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CKD: EPN
DATE: 5/22/19

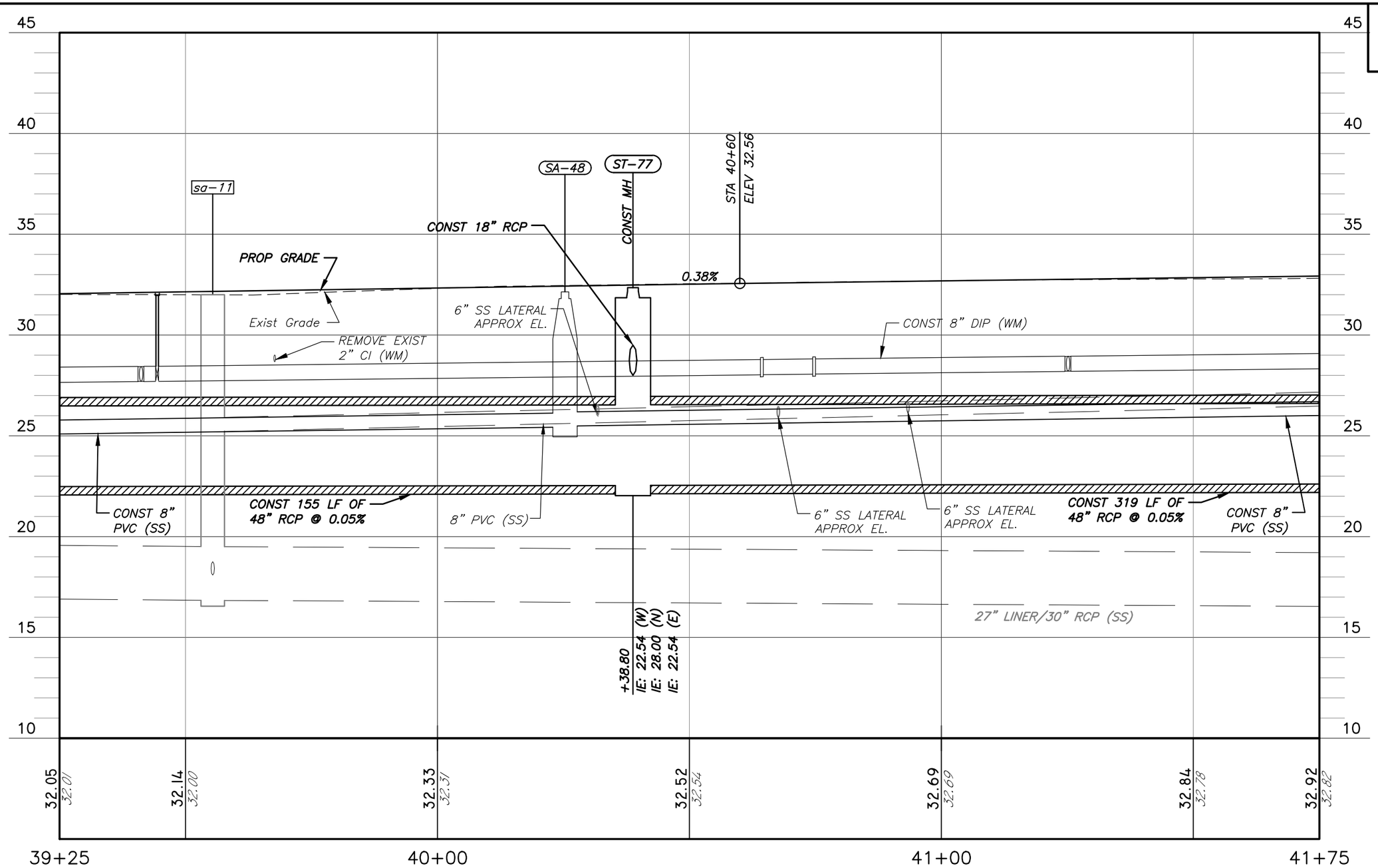
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN STA 39+25 TO STA 41+75

SHEET 43

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/22/2019 1:39:21 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
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Clearwater, FL 33764
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DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

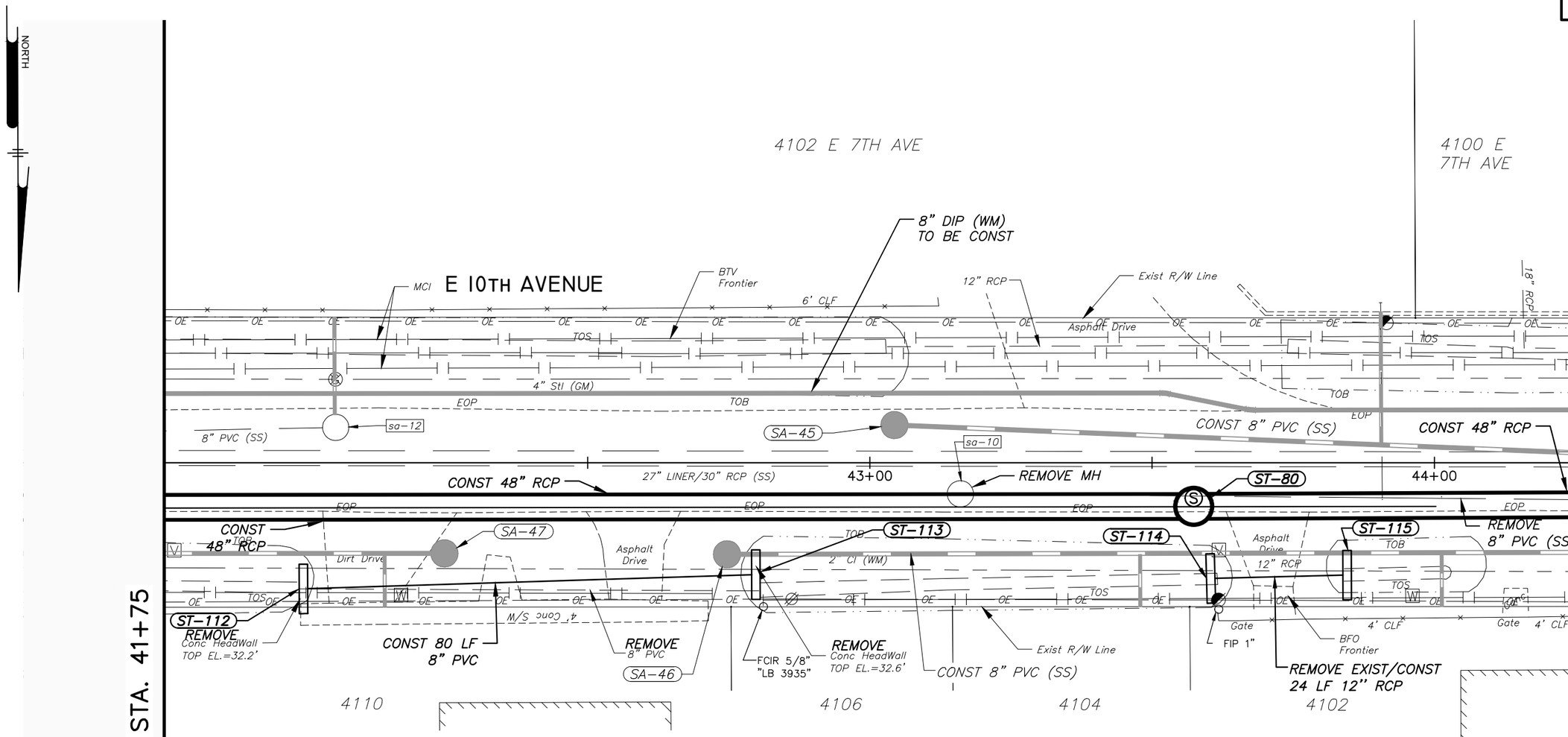
43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 39+25 TO STA 41+75

SHEET 44

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/22/2019 1:39:49 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW

MATCH LINE STA. 44+25



MATCH LINE STA. 41+75

ST-112
STA. 41+98.89, 22.34' RT
CONST SAND-CEMENT ENDWALL
FDOT INDEX 258 (MOD)
IE: 8" PVC (W) = 30.70

ST-113
STA. 42+79.06, 19.82' RT
CONST SAND-CEMENT ENDWALL
FDOT INDEX 258 (MOD)
IE: 8" PVC (E) = 31.03

ST-80
STA. 43+57.36, 7.73' RT
CONST MH TYPE J7 (6' DIA')
FDOT INDEX NO. 200, 201
IE: 48" RCP (W) = 22.70
IE: 48" RCP (E) = 22.70
SUMP: 22.70
RIM: 32.96
(NOTE 1)

ST-114
STA. 43+59.64, 20.51' RT
CONST SAND-CEMENT ENDWALL
FDOT INDEX 258 (MOD)
IE: 12" RCP (W) = 31.32

ST-115
STA. 43+83.81, 19.90' RT
CONST SAND-CEMENT ENDWALL
FDOT INDEX 258 (MOD)
IE: 12" RCP (E) = 31.40

NOTE:
1. PROVIDE 12" MINIMUM COVER OVER TOP SLAB
2. SEE SEPARATE SHEETS FOR WATER AND WASTEWATER DESIGN

0 20' 40'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

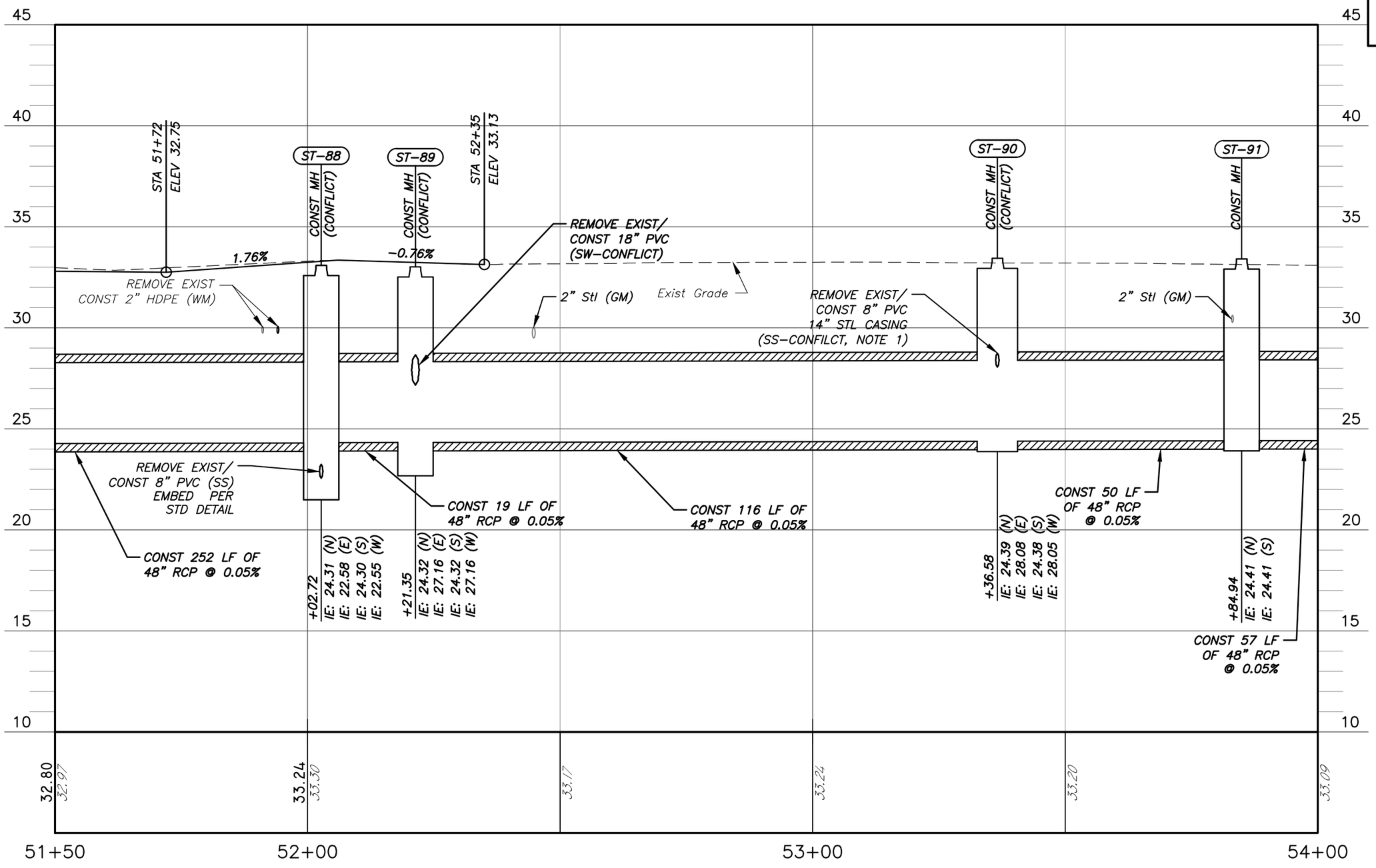
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER CONSTRUCTION PLAN STA 41+75 TO STA 44+25

SHEET 45

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T582 ALIGN B STORMWATER PLANS.DWG
PLOTTED: 5/22/2019 1:40:17 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ---

SW



NOTE:
1. VERIFY EXISTING SS PIPE SIZE AND INVERTS PRIOR TO ORDERING STRUCTURE

VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

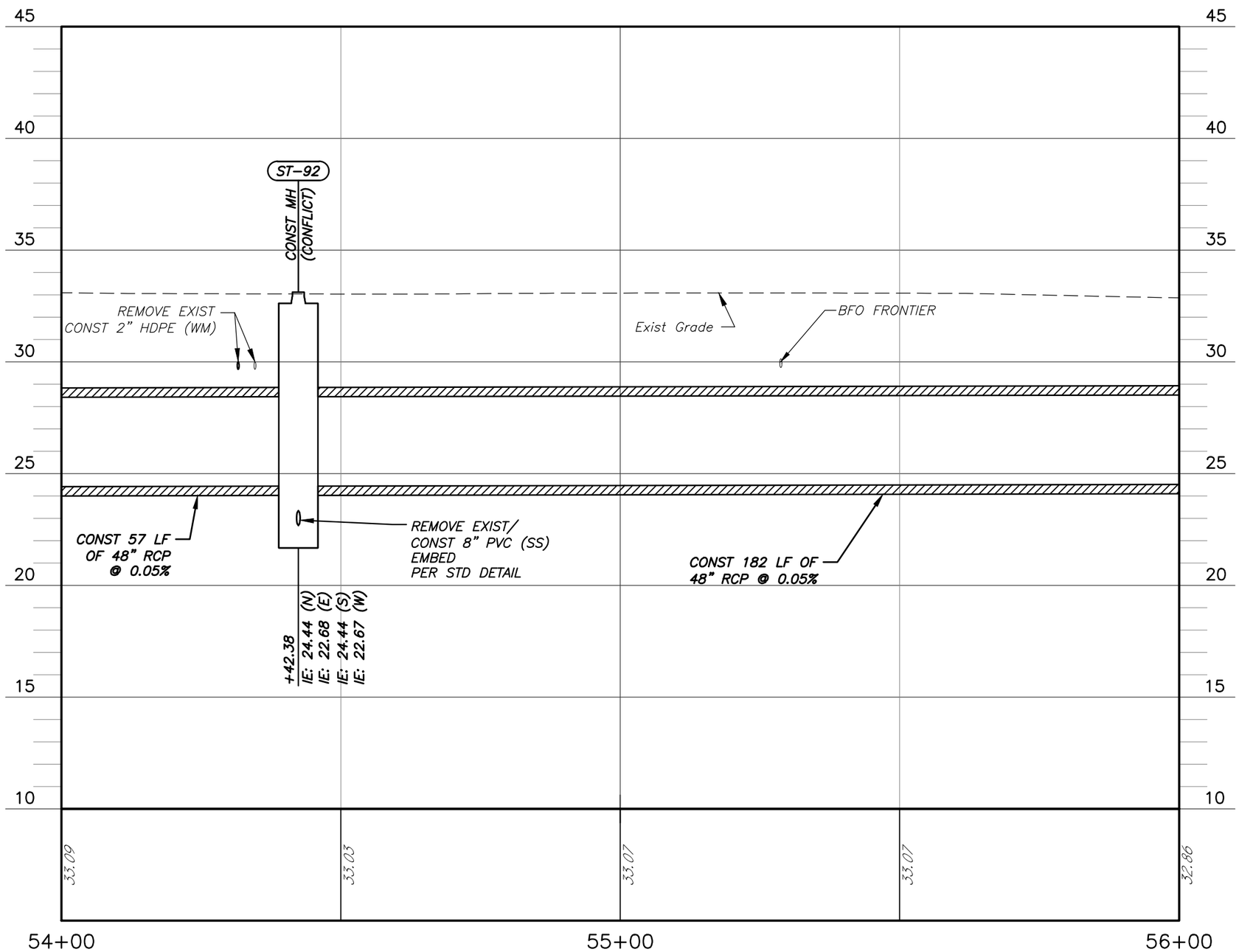
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 51+50 TO STA 54+00

SHEET 54

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/22/2019 1:40:43 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

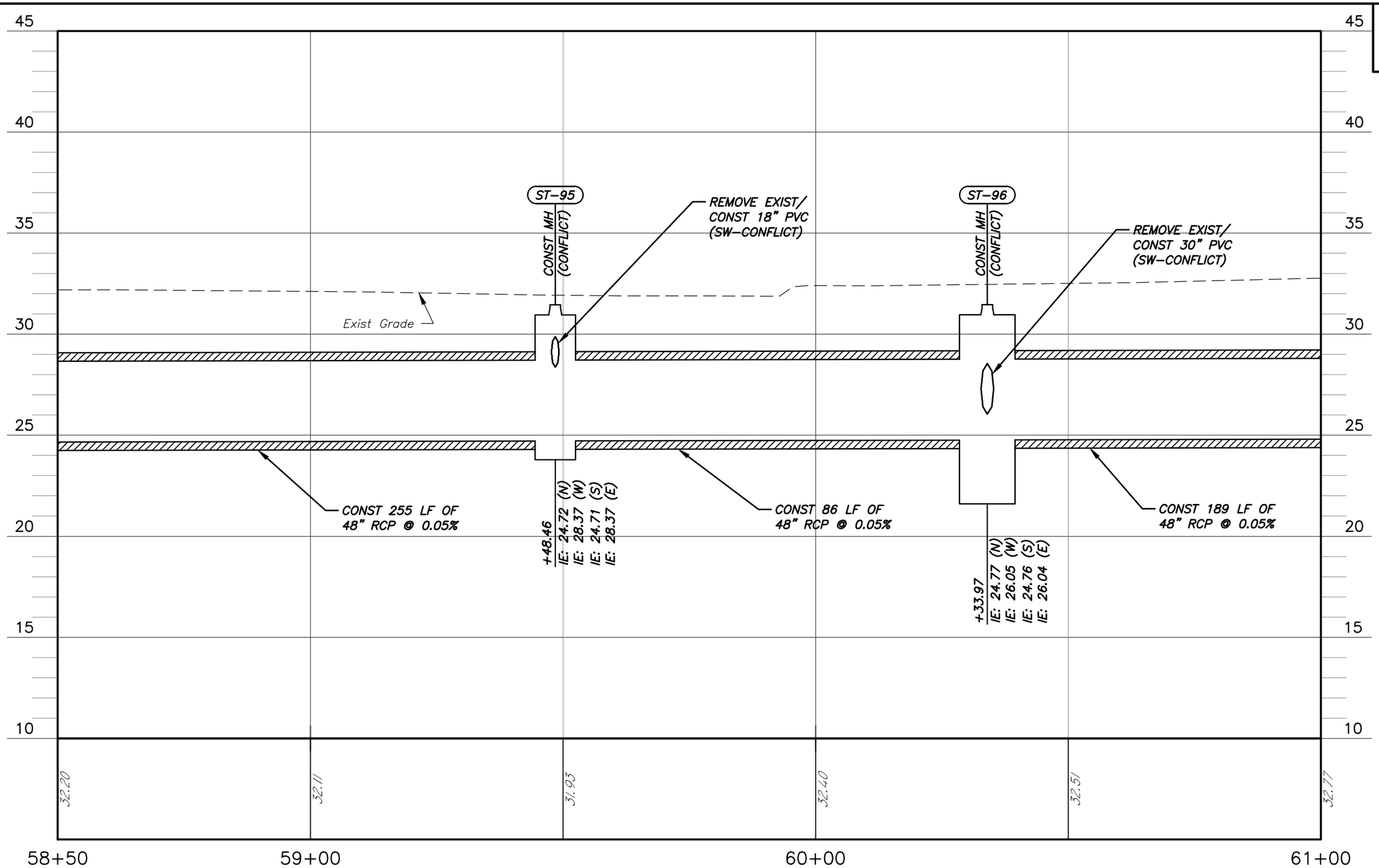
DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 54+00 TO STA 56+00

SHEET 56

M:\PROJECTS\TMPA\TMPA15\01-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/22/2019 1:40:50 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

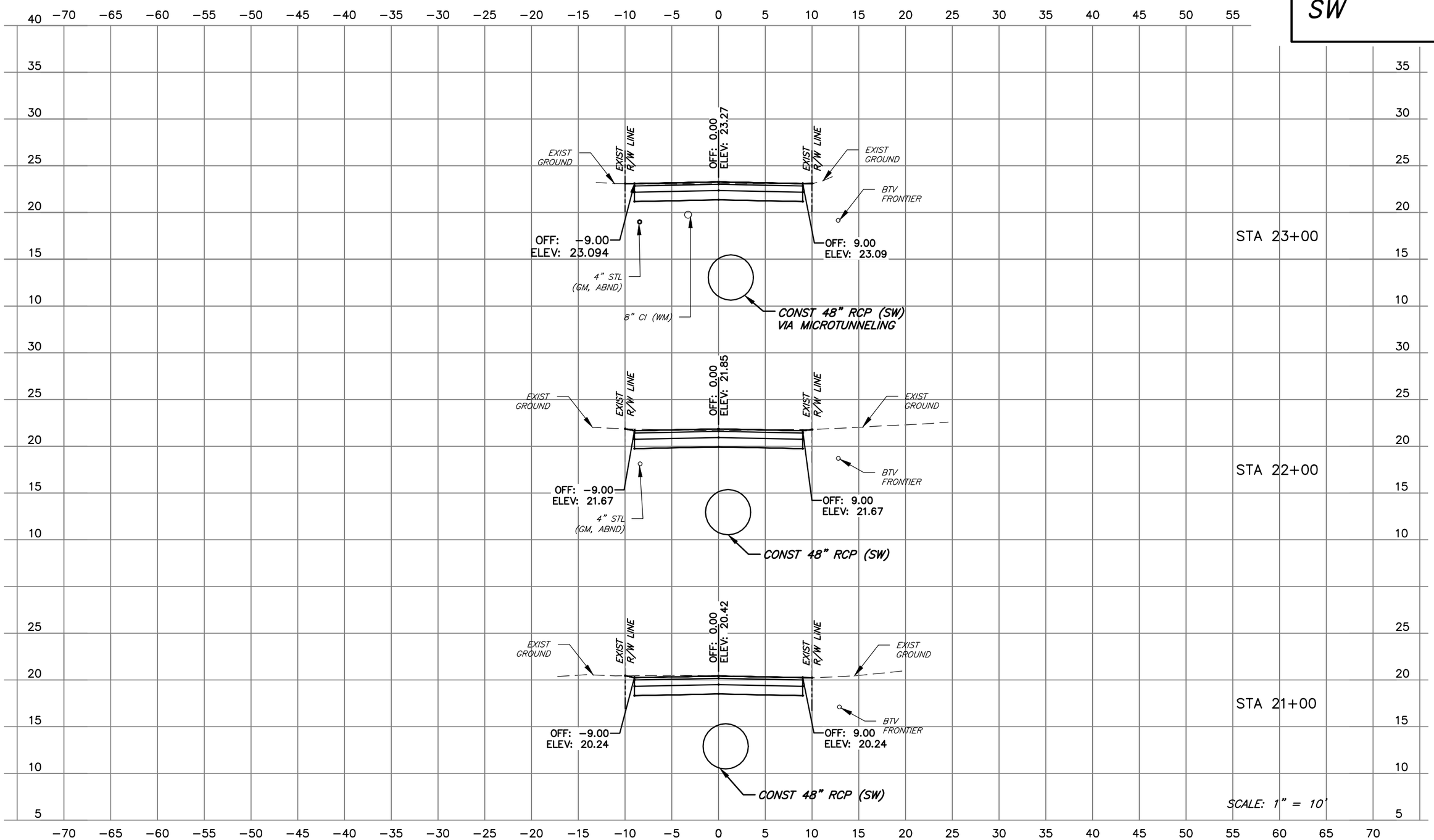
DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
STORMWATER PROFILE STA 58+50 TO STA 61+00

SHEET 60

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T601-T617 STORMWATER PROFILE.DWG
PLOTTED: 5/22/2019 1:40:55 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----



No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

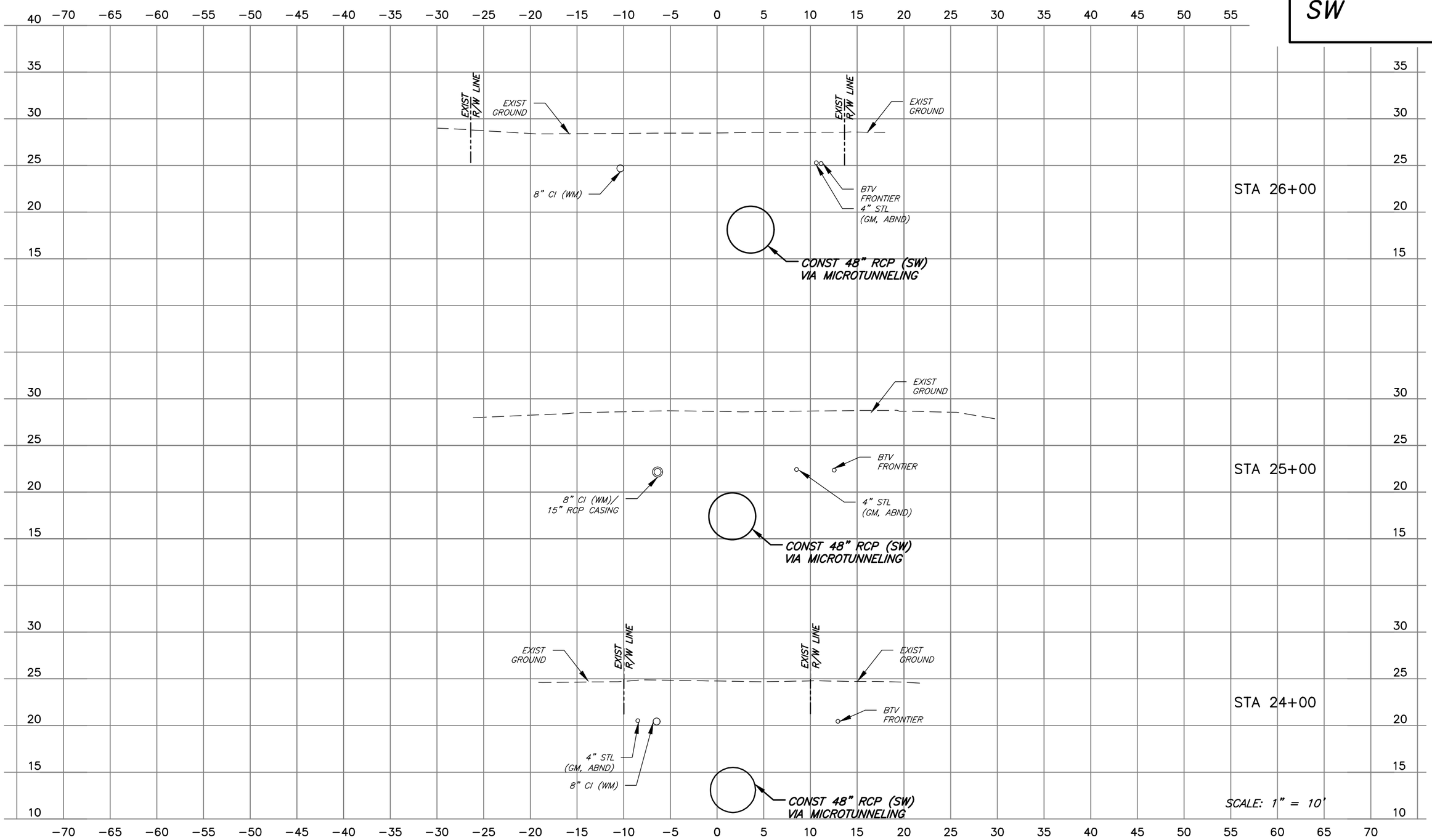
43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

CROSS SECTIONS NORTH 43RD ST (I)

SHEET 66

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T920 CROSS SECTIONS.DWG
PLOTTED: 5/22/2019 1:41:16 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW



No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

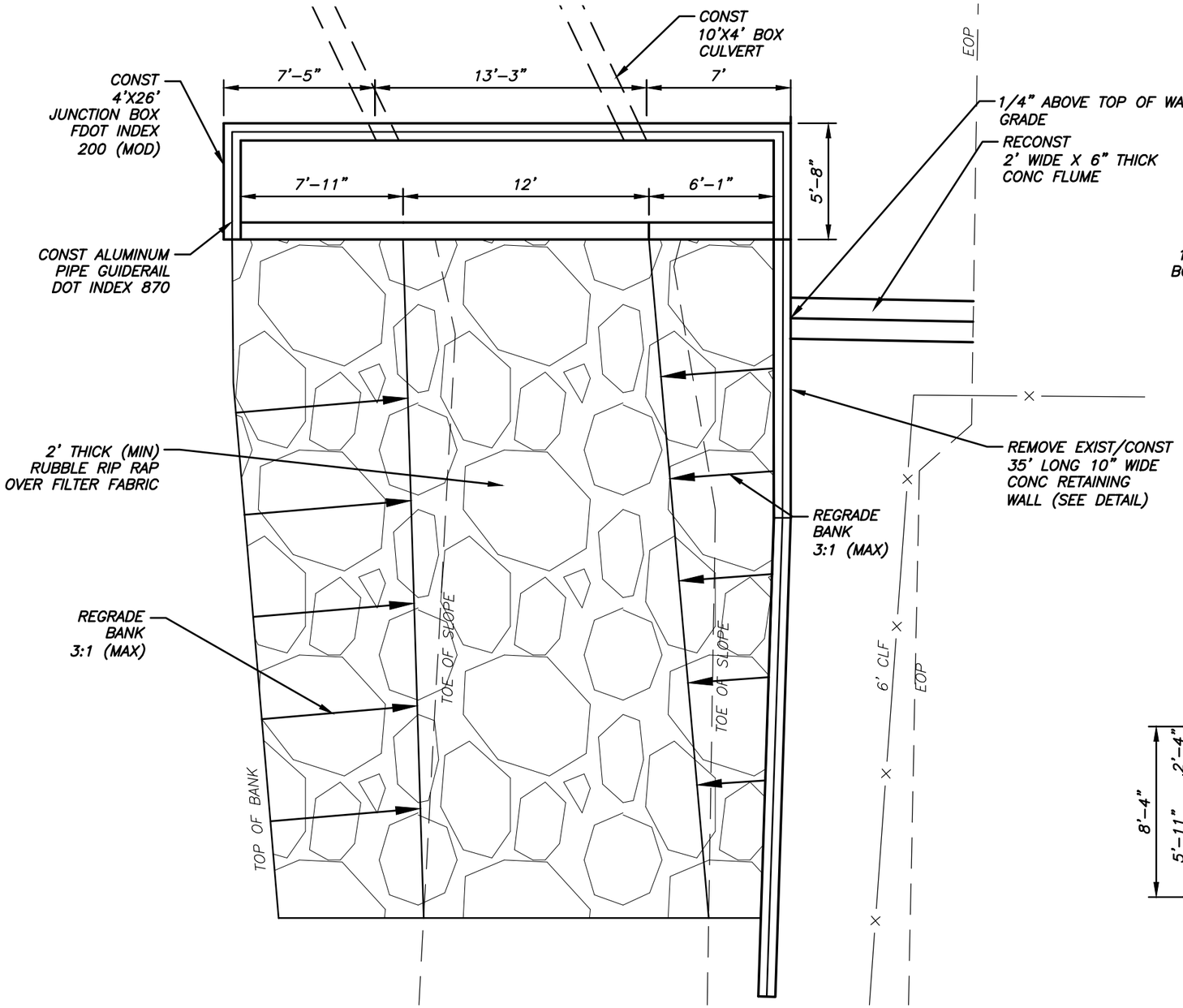
43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

CROSS SECTIONS NORTH 43RD ST (2)

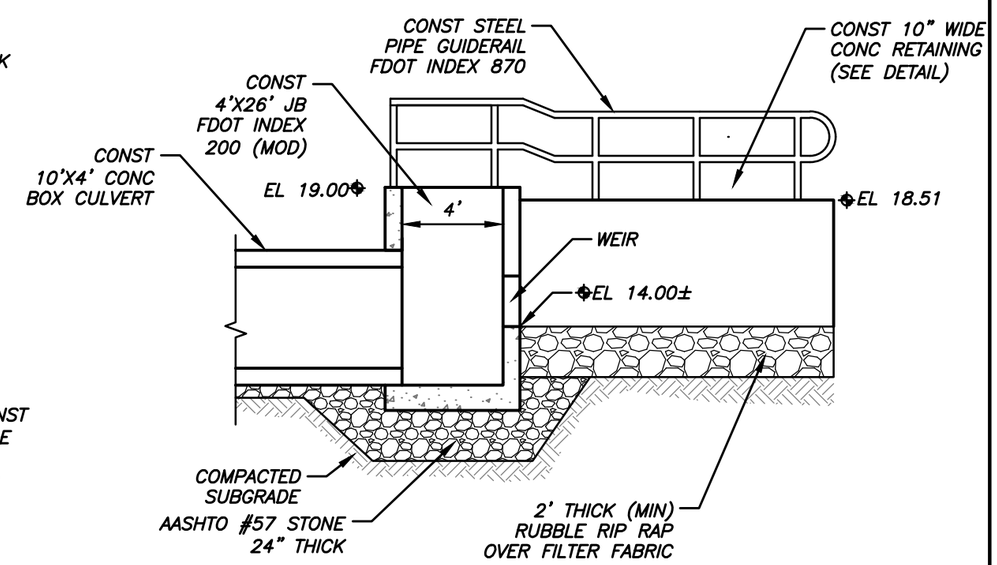
SHEET 67

M:\PROJECTS\TMPA\TMPA150014-3RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T920 CROSS SECTIONS.DWG
PLOTTED: 5/22/2019 1:41:23 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

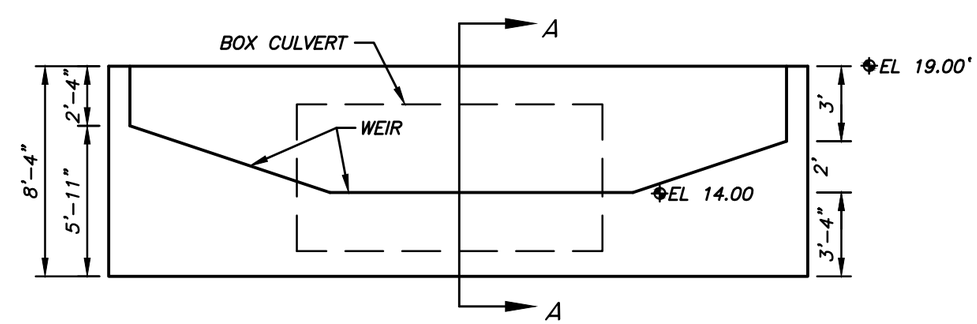
SW



PLAN VIEW



CROSS SECTION A-A



EASTERN ELEVATION

STRUCTURE S-54 DETAIL

N. T. S.

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

STORMWATER DETAILS (I)

SHEET 83

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\17\04 STORM DETAILS.DWG
PLOTTED: 5/22/2019 4:50:40 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW

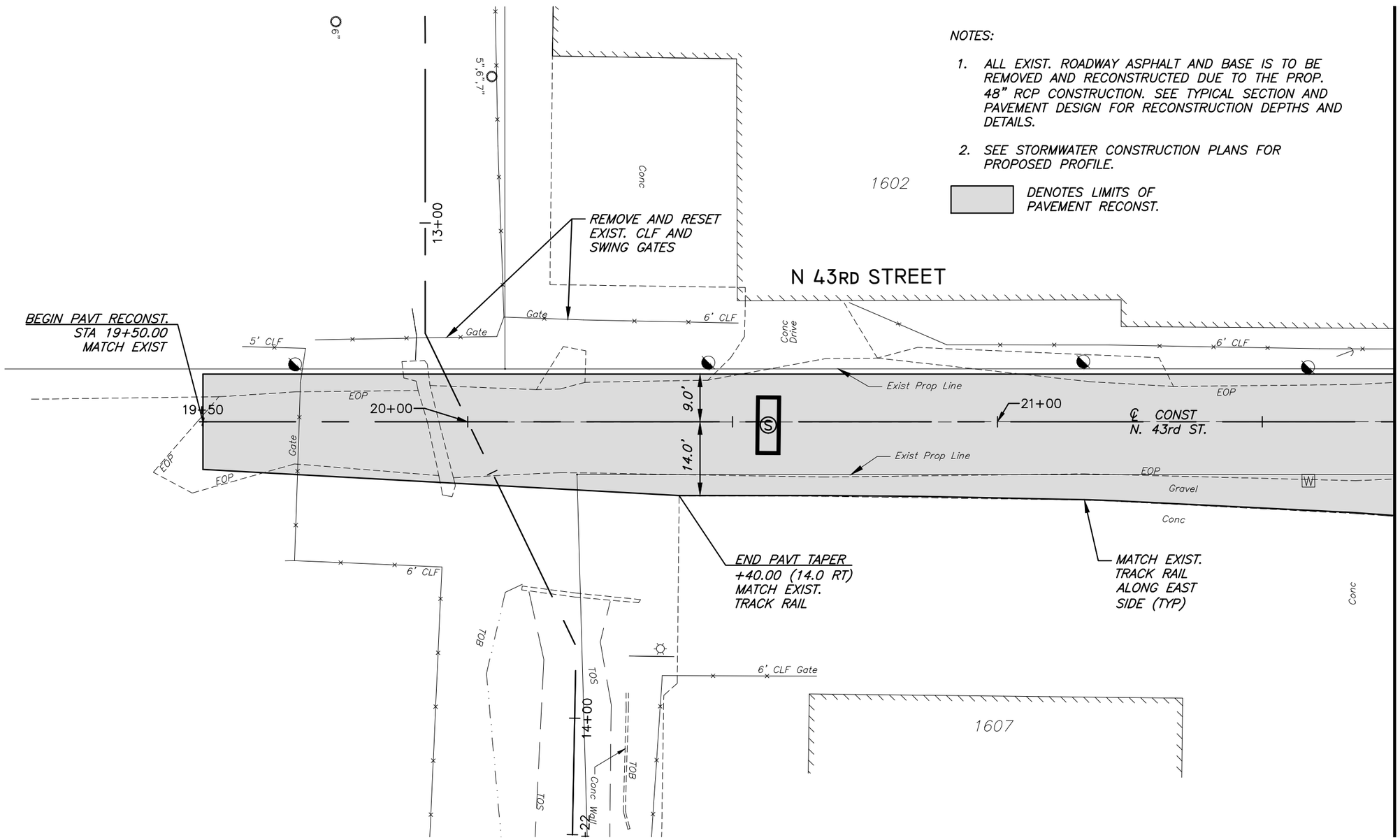
NORTH

NOTES:

1. ALL EXIST. ROADWAY ASPHALT AND BASE IS TO BE REMOVED AND RECONSTRUCTED DUE TO THE PROP. 48" RCP CONSTRUCTION. SEE TYPICAL SECTION AND PAVEMENT DESIGN FOR RECONSTRUCTION DEPTHS AND DETAILS.
2. SEE STORMWATER CONSTRUCTION PLANS FOR PROPOSED PROFILE.

DENOTES LIMITS OF PAVEMENT RECONST.

MATCH LINE STA. 21+75



0 20' 40'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: RJL
DRN: RJL
CKD: EPN
DATE: 11/16/18

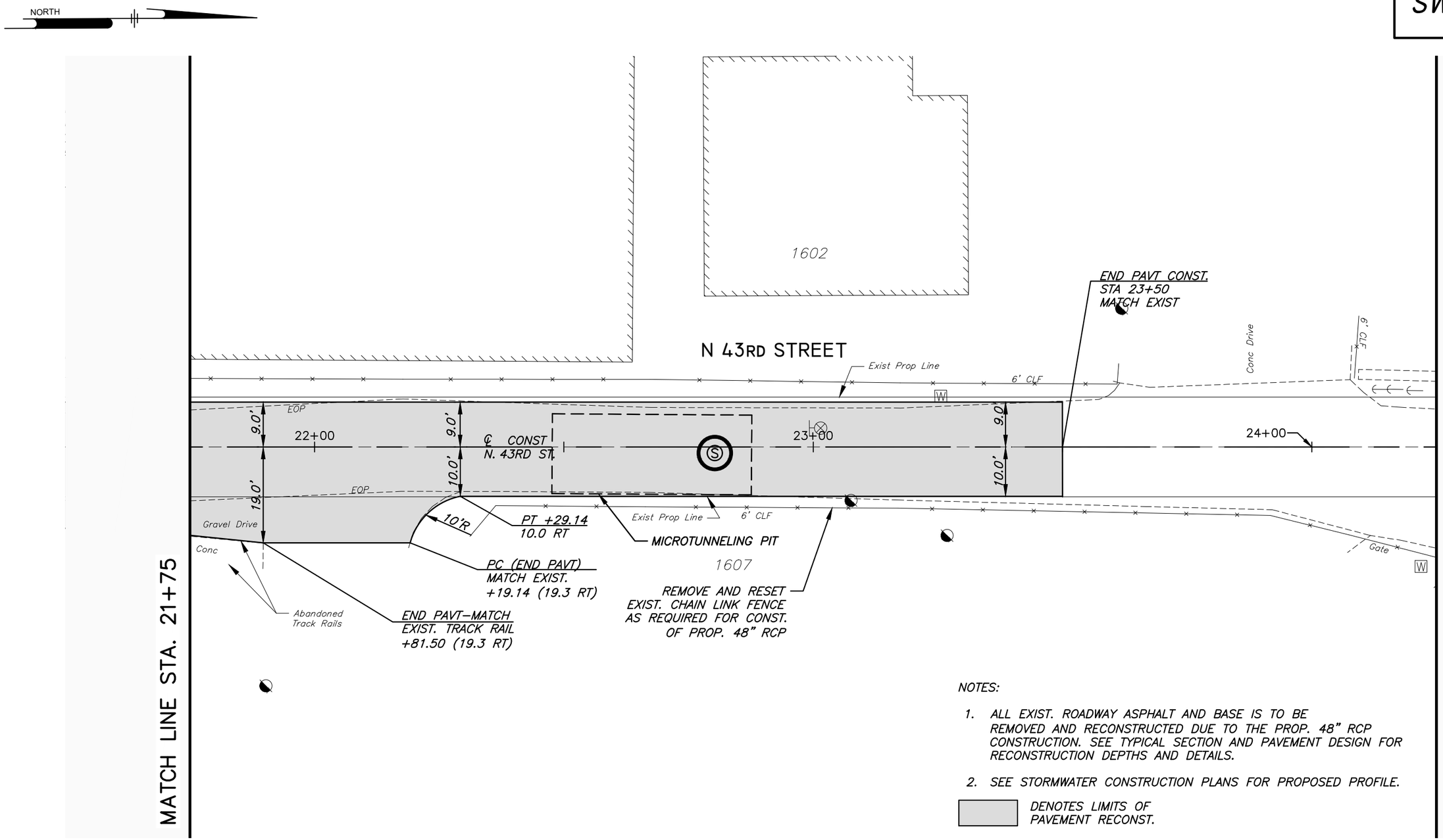
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

ROADWAY PLAN STA 19+50 TO STA 21+75

SHEET 90

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T520 ROADWAY PLAN.DWG
PLOTTED: 5/22/2019 2:23:17 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----



NOTES:

1. ALL EXIST. ROADWAY ASPHALT AND BASE IS TO BE REMOVED AND RECONSTRUCTED DUE TO THE PROP. 48" RCP CONSTRUCTION. SEE TYPICAL SECTION AND PAVEMENT DESIGN FOR RECONSTRUCTION DEPTHS AND DETAILS.
2. SEE STORMWATER CONSTRUCTION PLANS FOR PROPOSED PROFILE.

DENOTES LIMITS OF PAVEMENT RECONST.

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

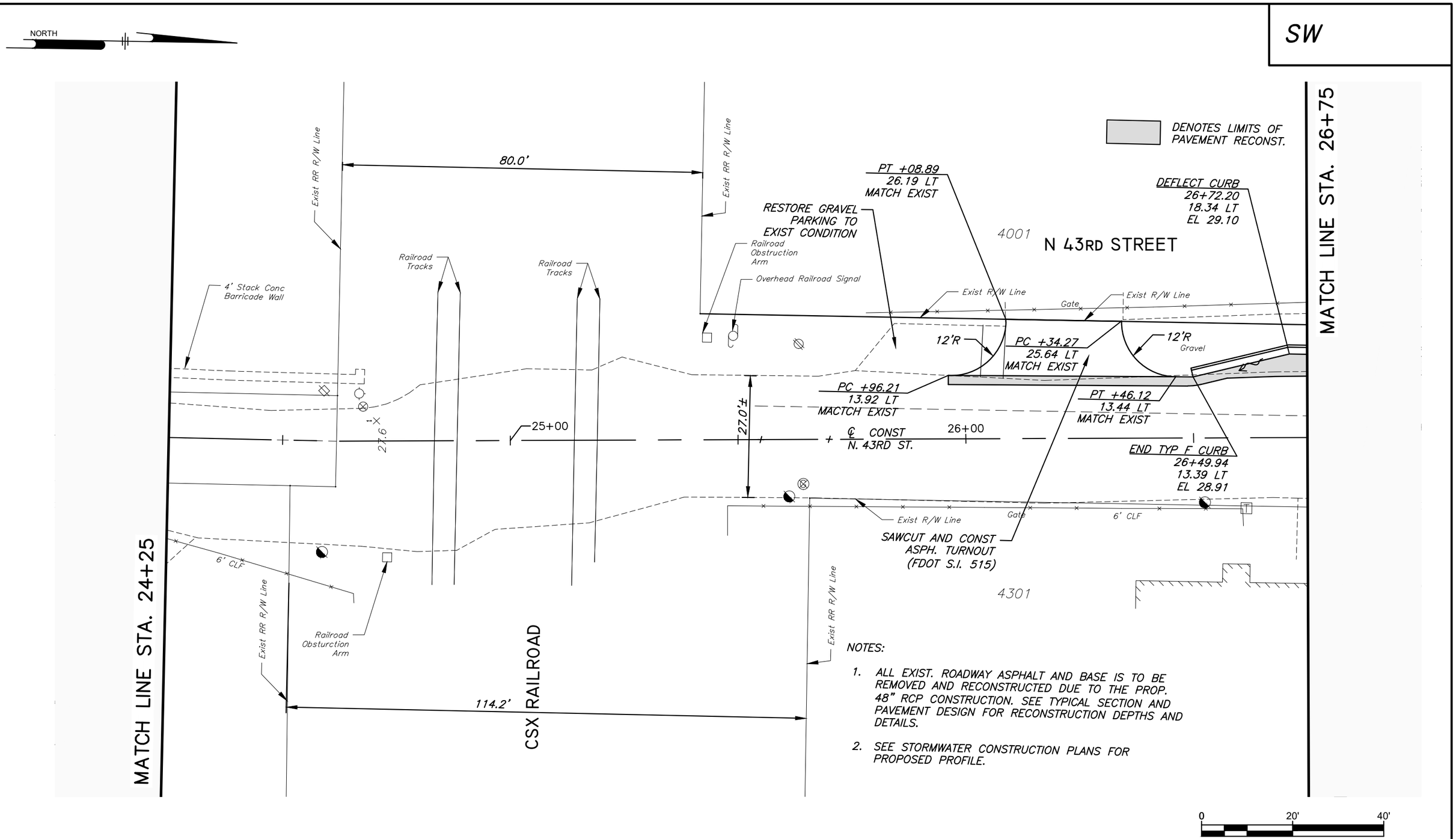
DES: RJL
DRN: RJL
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
ROADWAY PLAN STA 21+75 TO STA 24+25

SHEET 91

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T520 ROADWAY PLAN.DWG
PLOTTED: 5/22/2019 2:23:22 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----



NOTES:

1. ALL EXIST. ROADWAY ASPHALT AND BASE IS TO BE REMOVED AND RECONSTRUCTED DUE TO THE PROP. 48" RCP CONSTRUCTION. SEE TYPICAL SECTION AND PAVEMENT DESIGN FOR RECONSTRUCTION DEPTHS AND DETAILS.
2. SEE STORMWATER CONSTRUCTION PLANS FOR PROPOSED PROFILE.

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

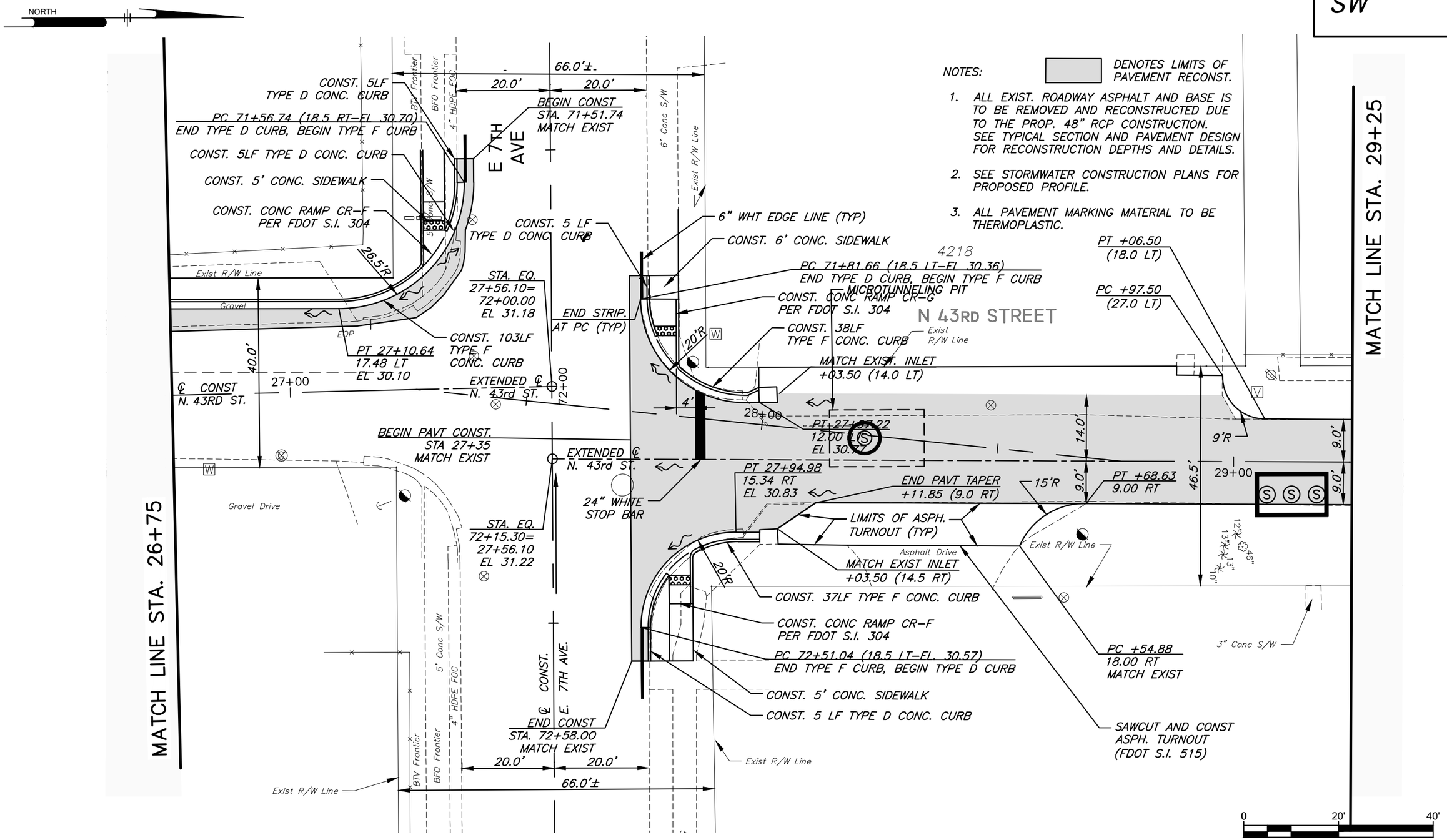
DES: RJL
DRN: RJL
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
ROADWAY PLAN STA 24+25 TO STA 26+75

SHEET 92

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T520 ROADWAY PLAN.DWG
PLOTTED: 5/22/2019 1:42:15 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----



NOTES:

DENOTES LIMITS OF PAVEMENT RECONST.

1. ALL EXIST. ROADWAY ASPHALT AND BASE IS TO BE REMOVED AND RECONSTRUCTED DUE TO THE PROP. 48" RCP CONSTRUCTION. SEE TYPICAL SECTION AND PAVEMENT DESIGN FOR RECONSTRUCTION DEPTHS AND DETAILS.
2. SEE STORMWATER CONSTRUCTION PLANS FOR PROPOSED PROFILE.
3. ALL PAVEMENT MARKING MATERIAL TO BE THERMOPLASTIC.

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

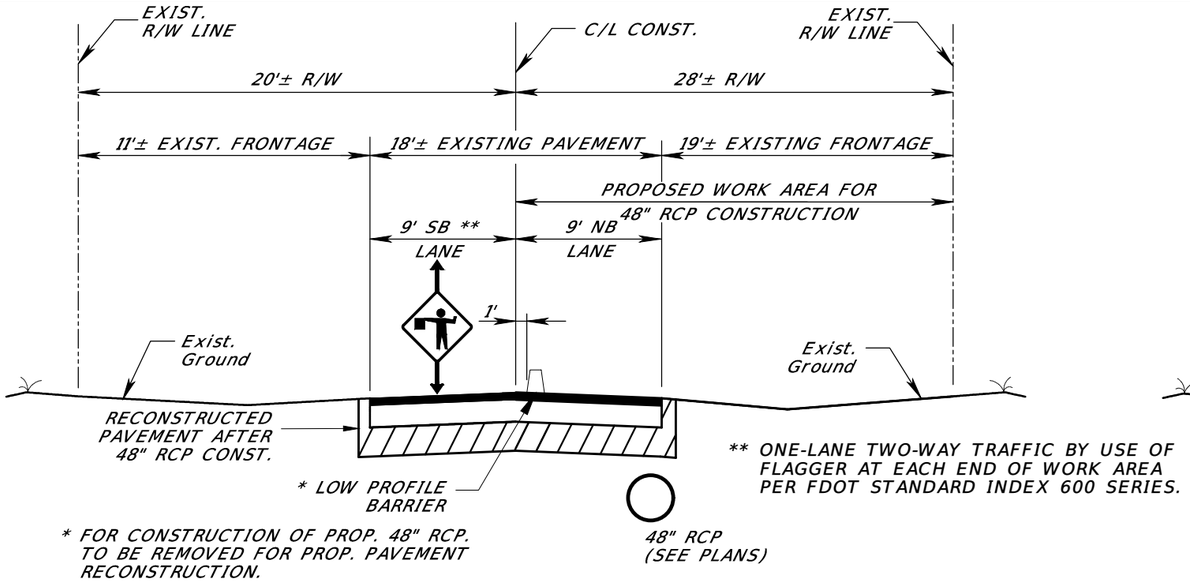
DES: RJL
DRN: RJL
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

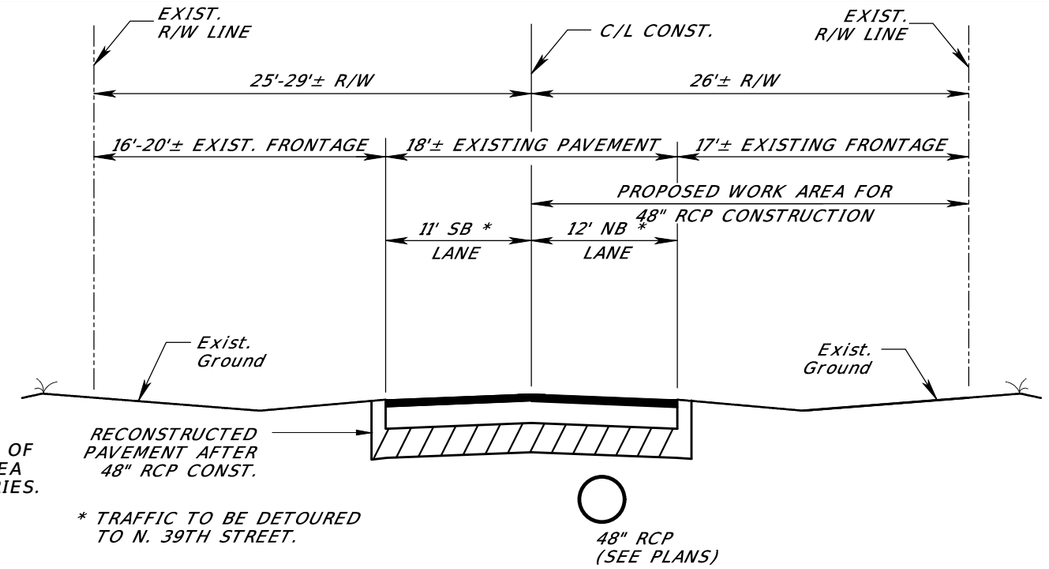
43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
ROADWAY PLAN STA 26+75 TO STA 29+25

SHEET 93

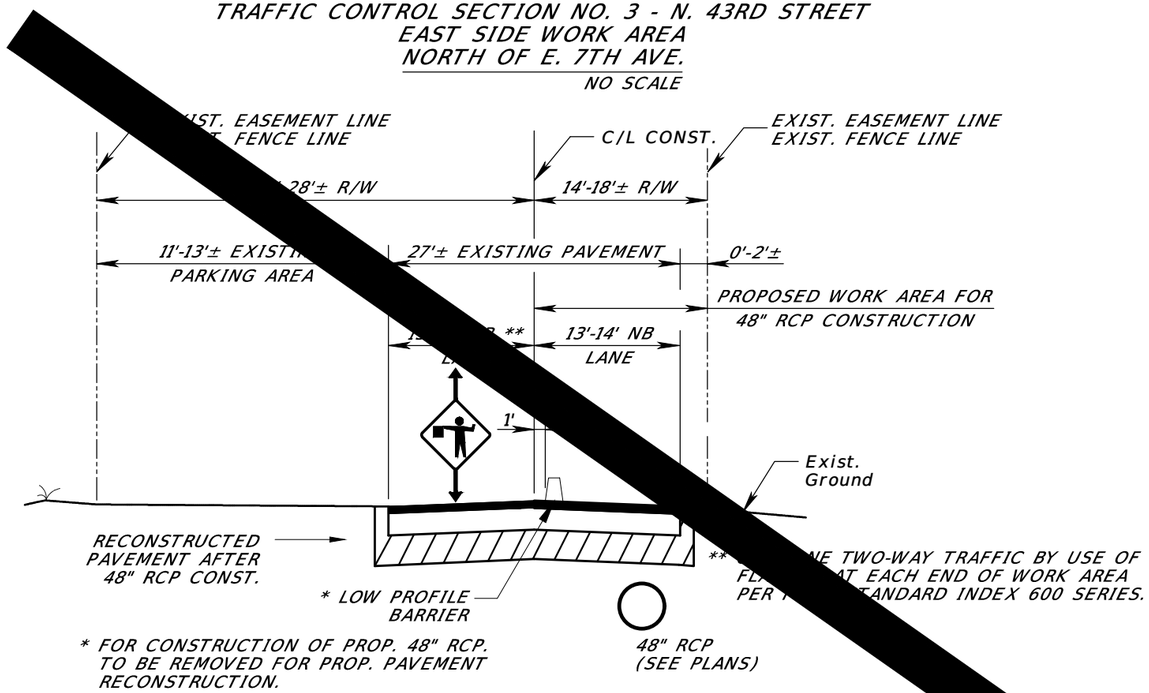
M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T520 ROADWAY PLAN.DWG
PLOTTED: 5/22/2019 1:42:23 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----



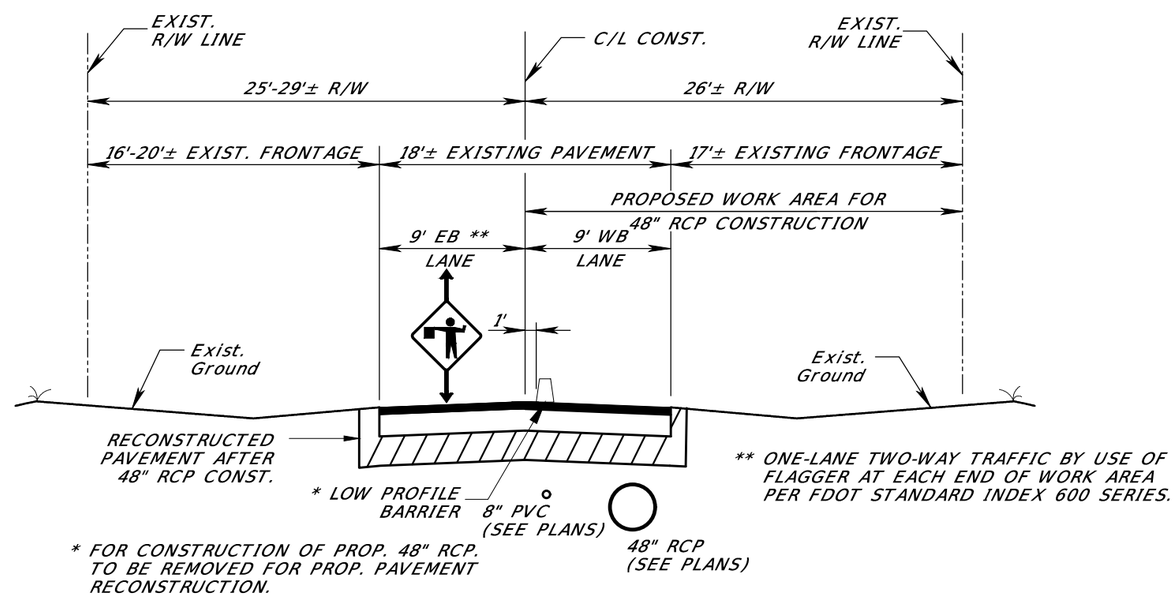
TRAFFIC CONTROL SECTION NO. 3 - N. 43RD STREET
EAST SIDE WORK AREA
NORTH OF E. 7TH AVE.
NO SCALE



TRAFFIC CONTROL SECTION NO. 5 - N. 40TH STREET
WORK AREA
BETWEEN E. 10TH AVE. AND E. 11TH AVE.
NO SCALE



TRAFFIC CONTROL SECTION NO. 2 - N. 43RD STREET
EAST SIDE WORK AREA
BETWEEN CSX RR AND E. 7TH AVE.
NO SCALE



TRAFFIC CONTROL SECTION NO. 4 - E. 10TH AVENUE
NORTH SIDE WORK AREA
NO SCALE

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

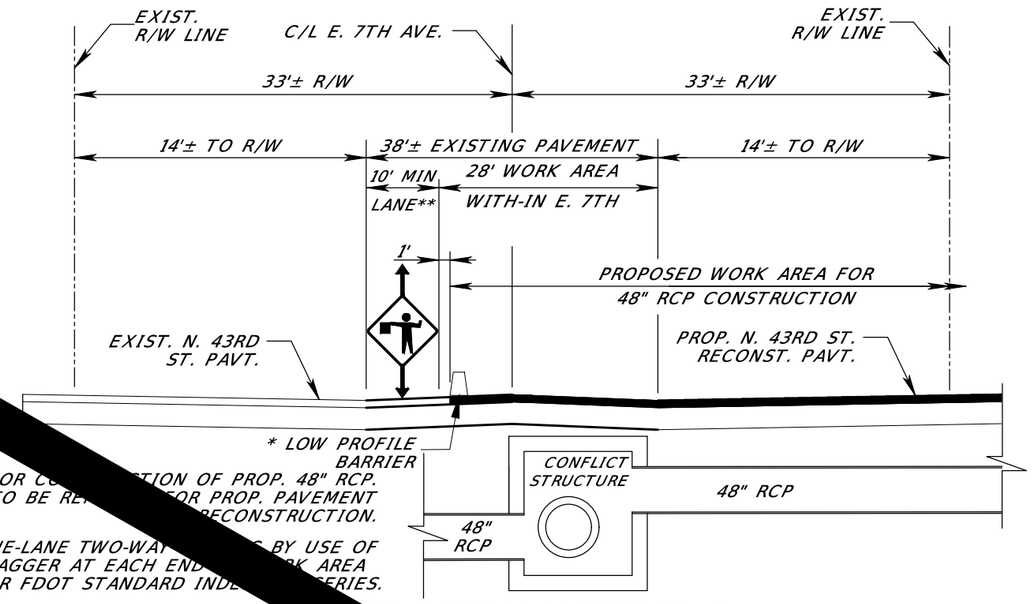
DES: RJL
DRN: RJL
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
TRAFFIC CONTROL PLAN - TYPICAL SECTION (2)

SHEET 113

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T1100 TRAFFIC CONTROL.DWG
PLOTTED: 5/22/2019 1:42:29 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

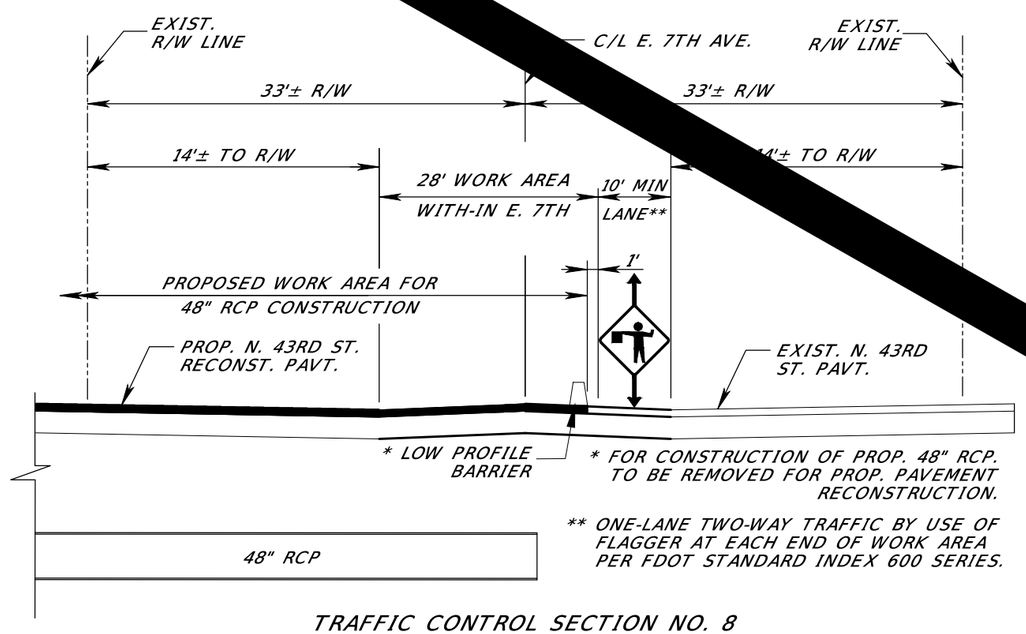


NOTE: CONTRACTOR SHALL PROVIDE AND INSTALL TEMPORARY SHEETING AND SHORING TO MAINTAIN ONE LANE OF TRAFFIC.

* FOR CO[illegible]TION OF PROP. 48" RCP. TO BE RE[illegible]OR PROP. PAVEMENT [illegible]RECONSTRUCTION.

** ONE-LANE TWO-WAY [illegible] BY USE OF FLAGGER AT EACH END [illegible]K AREA PER FDOT STANDARD INDE[illegible]ERIES.

TRAFFIC CONTROL SECTION NO. 9
E. 7TH AVEN[illegible]OADWAY - NORTH SIDE WORK AREA
NO SCALE



* FOR CONSTRUCTION OF PROP. 48" RCP. TO BE REMOVED FOR PROP. PAVEMENT RECONSTRUCTION.

** ONE-LANE TWO-WAY TRAFFIC BY USE OF FLAGGER AT EACH END OF WORK AREA PER FDOT STANDARD INDEX 600 SERIES.

NOTE: CON[illegible] SHALL PROVIDE AND INSTALL TEMPO[illegible]EETING AND SHORING TO MAINTAIN ONE [illegible] TRAFFIC.

TRAFFIC CONTROL SECTION NO. 8
E. 7TH AVENUE/ BROADWAY - SOUTH SIDE WORK AREA
NO SCALE

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 11/16/18

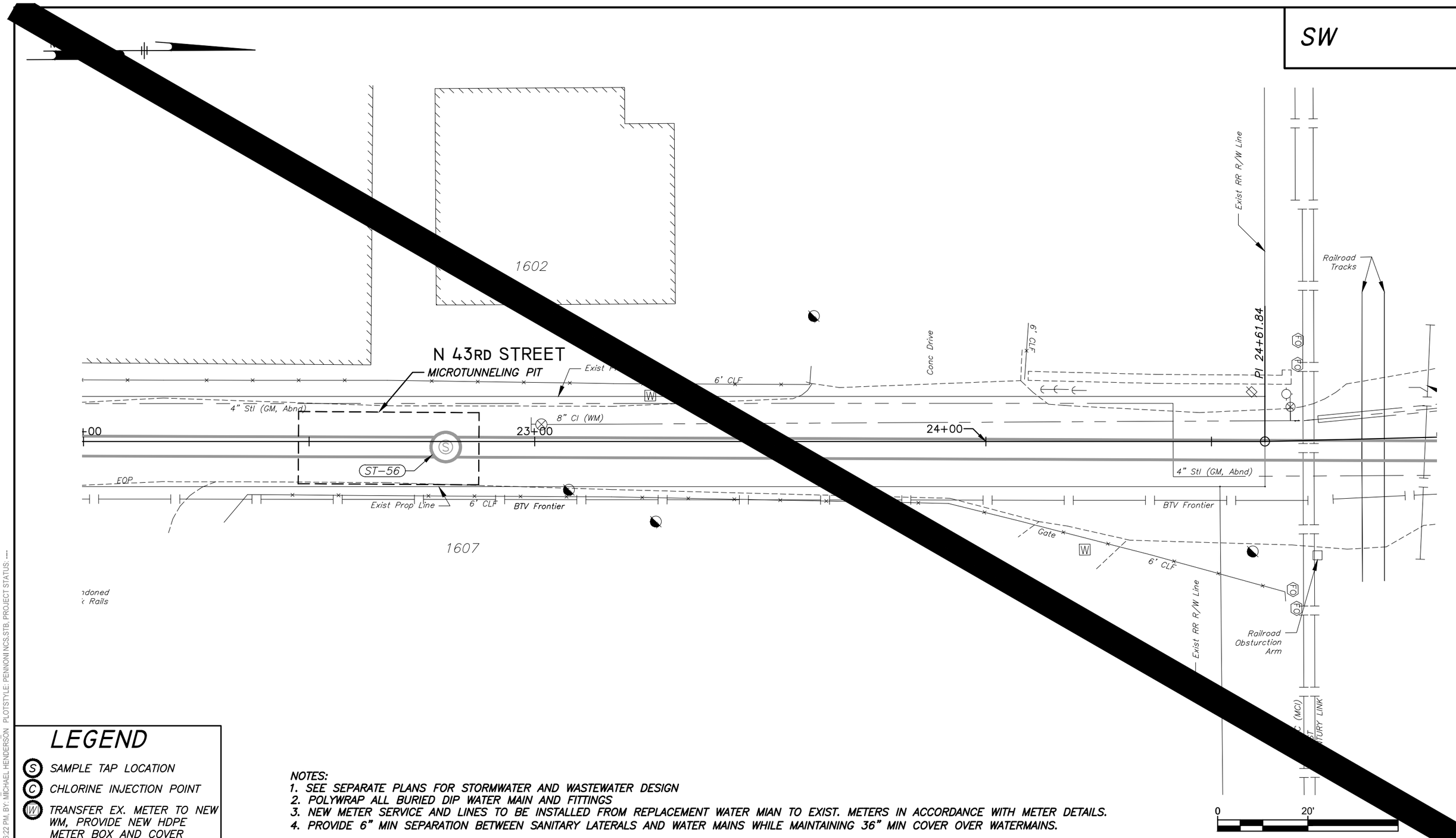
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
TRAFFIC CONTROL PLAN (4) TYPICAL SECTION (4)

SHEET 115

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T1100 TRAFFIC CONTROL.DWG
PLOTTED: 5/22/2019 1:42:31 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW



LEGEND

- (S) SAMPLE TAP LOCATION
- (C) CHLORINE INJECTION POINT
- (W) TRANSFER EX. METER TO NEW WM, PROVIDE NEW HDPE METER BOX AND COVER

NOTES:
1. SEE SEPARATE PLANS FOR STORMWATER AND WASTEWATER DESIGN
2. POLYWRAP ALL BURIED DIP WATER MAIN AND FITTINGS
3. NEW METER SERVICE AND LINES TO BE INSTALLED FROM REPLACEMENT WATER MIAN TO EXIST. METERS IN ACCORDANCE WITH METER DETAILS.
4. PROVIDE 6" MIN SEPARATION BETWEEN SANITARY LATERALS AND WATER MAINS WHILE MAINTAINING 36" MIN COVER OVER WATERMAINS.

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 1/14/19

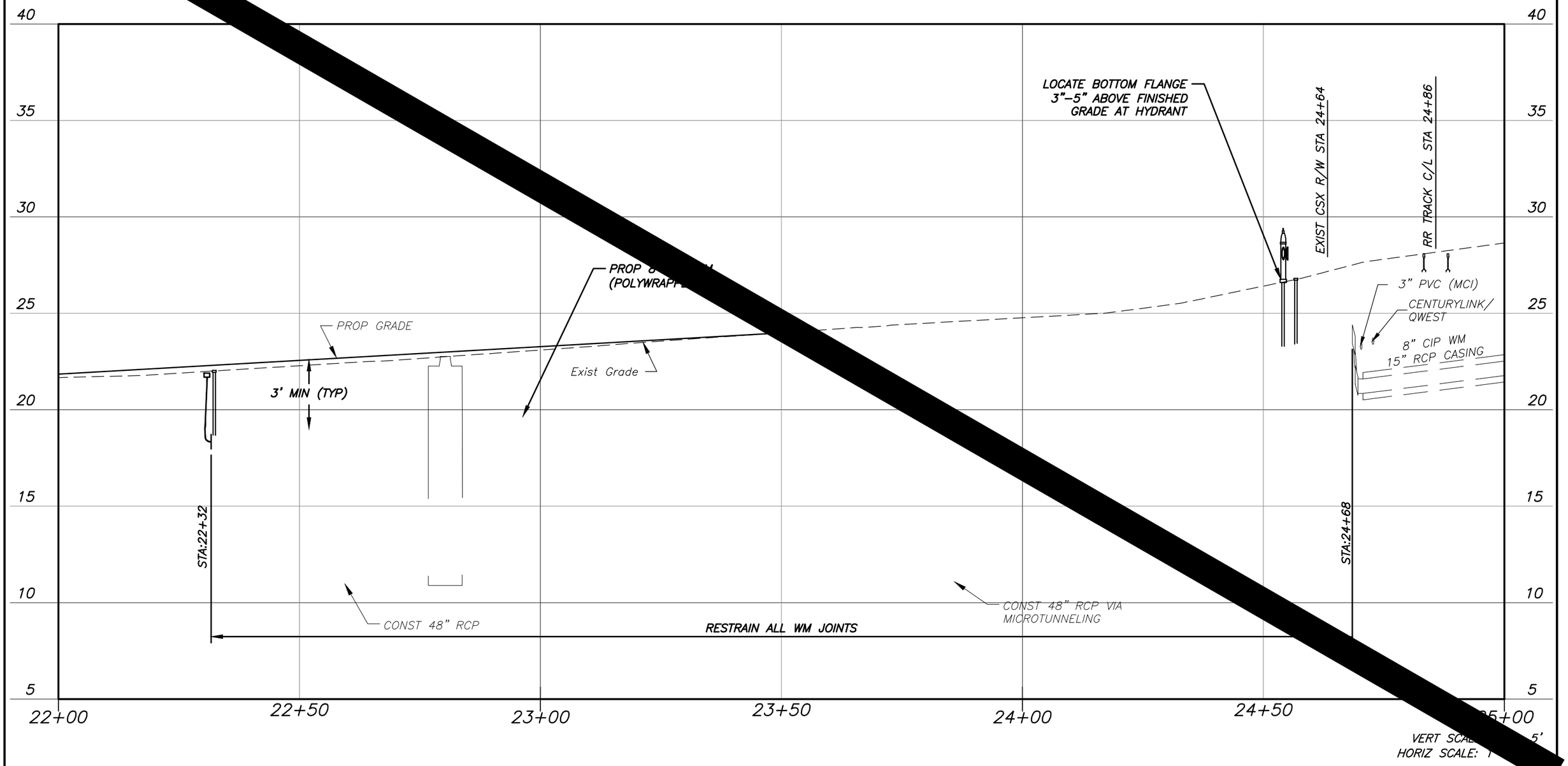
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
WATER CONSTRUCTION PLAN STA 22+00 TO STA 25+00

SHEET
W-3

M:\PROJECTS\TMPA\TMPA15001-43RD_STREET\DESIGN_PUBLISH\ADDENDUM 2\T804 WATER PLAN.DWG
PLOTTED: 5/22/2019 12:56:22 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

SW



No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 11/16/18

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
WATER PROFILE STA 22+00 TO STA 25+00

SHEET
W-4

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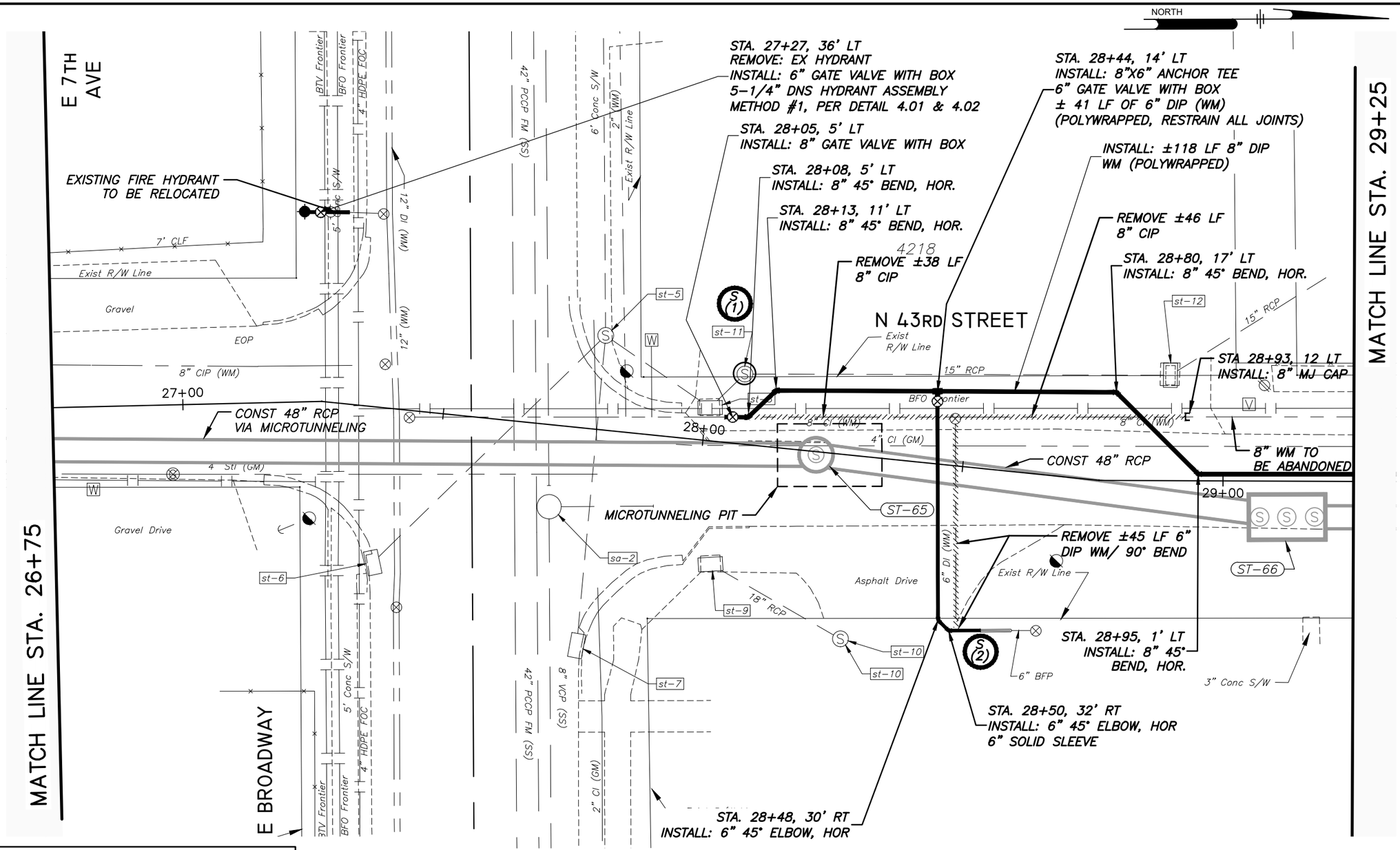

LEGEND

- (S) SAMPLE TAP LOCATION
- (C) CHLORINE INJECTION POINT
- (W) TRANSFER EX. METER TO NEW WM, PROVIDE NEW HDPE METER BOX AND COVER

NOTES:
1. SEE SEPARATE PLANS FOR STORMWATER AND WASTEWATER DESIGN
2. POLYWRAP ALL BURIED DIP WATER MAIN AND FITTINGS
3. NEW METER SERVICE AND LINES TO BE INSTALLED FROM REPLACEMENT WATER MIAN TO EXIST. METERS IN ACCORDANCE WITH METER DETAILS.
4. PROVIDE 6" MIN SEPARATION BETWEEN SANITARY LATERALS AND WATER MAINS WHILE MAINTAINING 36" MIN COVER OVER WATERMAINS.

0 20' 40'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
WATER CONSTRUCTION PLAN
STA 26+75 TO STA 29+25

SHEET
W-5

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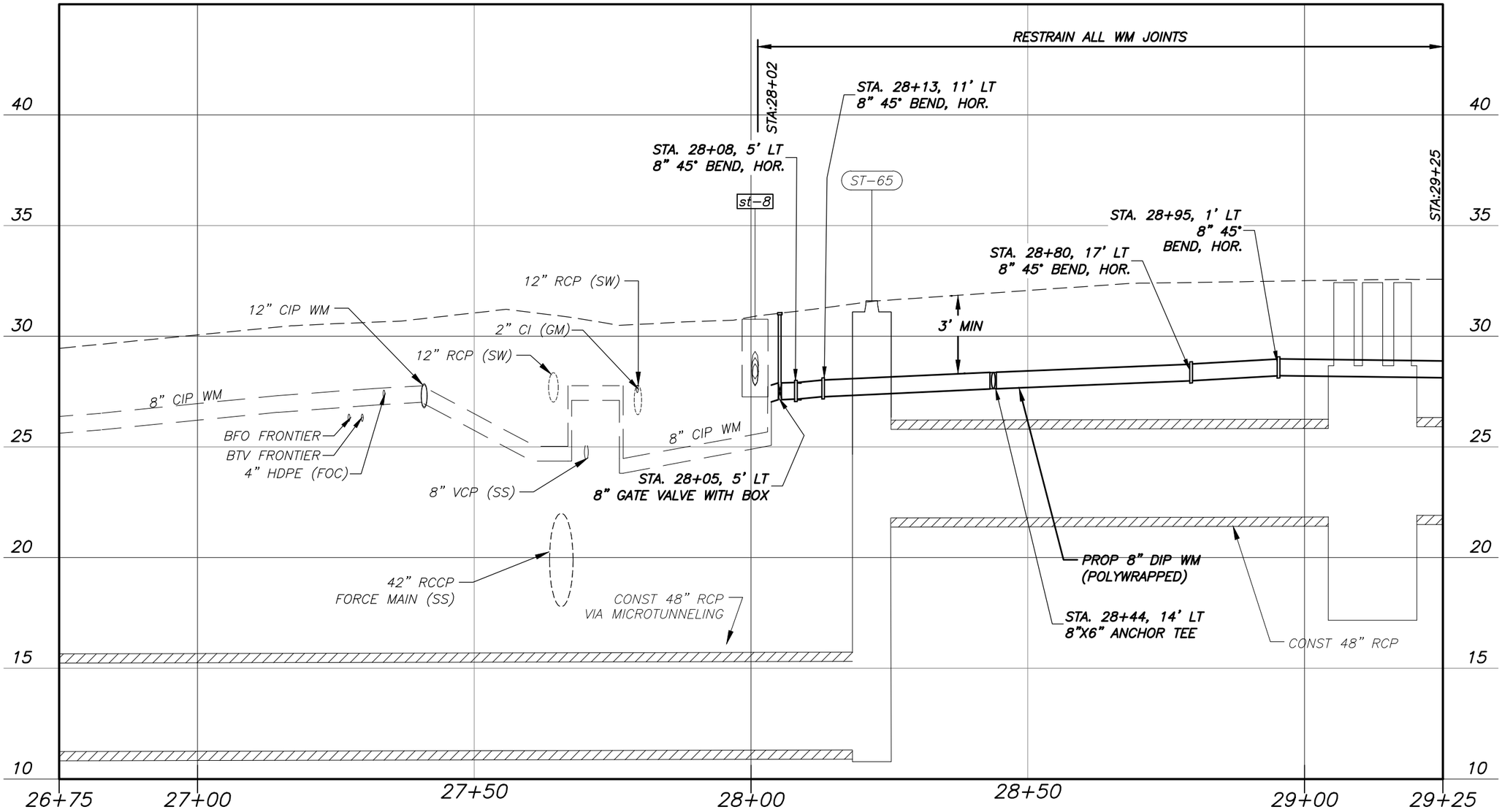
SW



VERT SCALE: 1" = 5'
HORIZ SCALE: 1" = 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
WATER PROFILE STA 26+25 TO STA 29+25

SHEET
W-6

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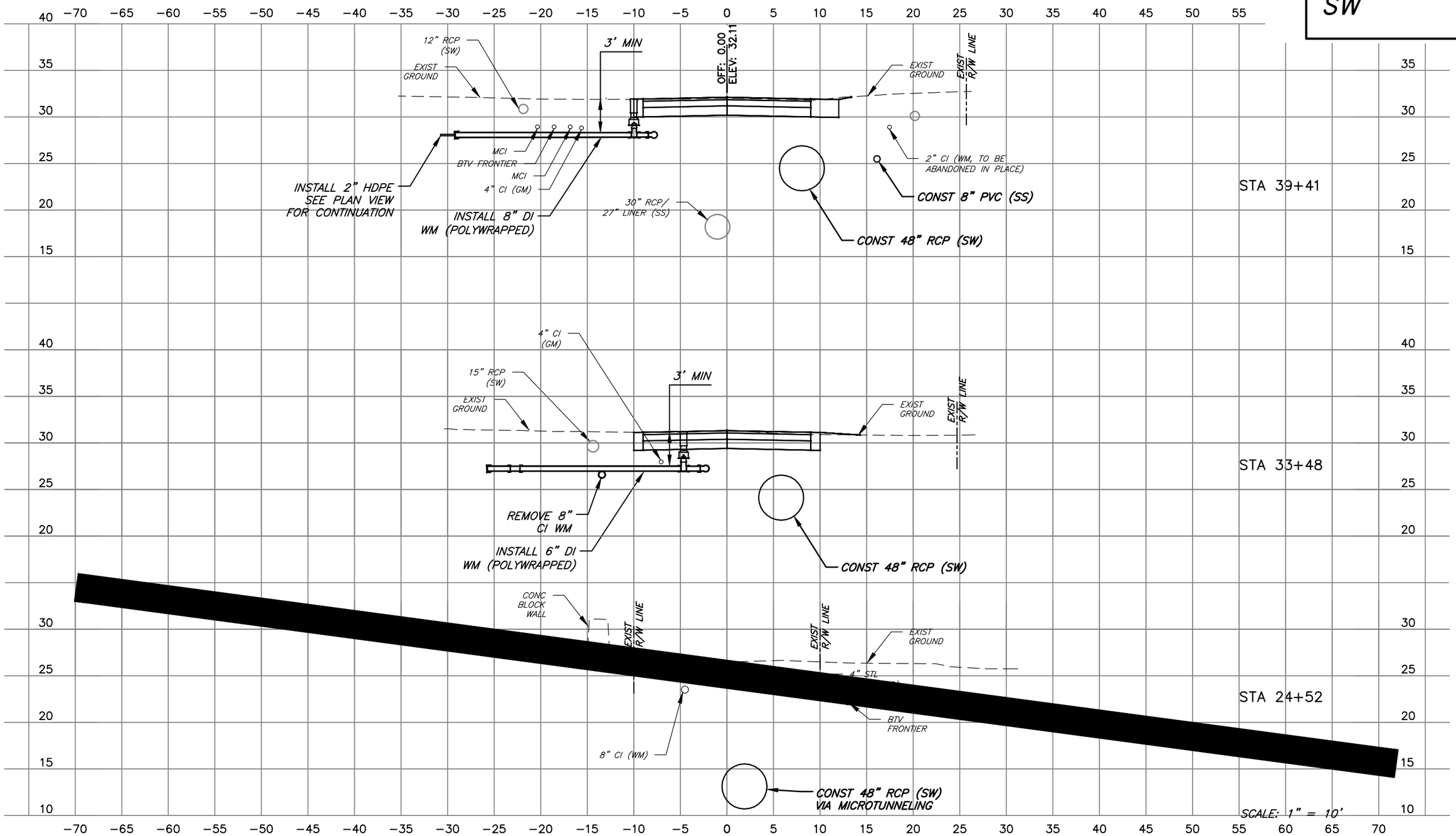

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
WATER CROSS SECTIONS NORTH
43RD ST

SHEET
W-29

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PROPOSED SANITARY SEWER DATA

PROPOSED SANITARY SEWER STRUCTURE TABLE

ID	RIM EL.	DESCRIPTION	STATION	OFFSET
SA-40	33.05	SAN MH (4' DIA)	48+77.81	2.40
SA-41	33.16	SAN MH (4' DIA)	46+07.97	5.81
SA-42	33.09	SAN MH (4' DIA)	45+71.39	6.41
SA-43	33.50	SAN MH (4' DIA)	45+65.31	15.94
SA-44	33.26	SAN DROP MH (4' DIA)	44+62.86	15.77
SA-45	33.13	SAN MH (4' DIA)	43+04.36	6.67
SA-46	33.11	SAN MH (4' DIA)	42+74.69	16.21
SA-47	32.72	SAN MH (4' DIA)	42+24.63	16.05
SA-48	32.14	SAN MH (4' DIA)	40+25.31	16.08
SA-49	31.65	SAN DROP MH (4' DIA)	38+41.35	16.23
SA-50	31.70	DOGHOUSE SAN MH (5' DIA)	38+48.18	0.65
SA-51	30.46	SAN MH (4' DIA)	36+77.90	4.53

PROPOSED SANITARY SEWER PIPE TABLE

STRUC. START	STRUC. END	PIPE SIZE AND MATERIAL	LENGTH (FT)	START INV.	END INV.	FALL IN FEET	SLOPE
SA-40	sa-5	8" PVC	168'	26.51	25.67	0.84	0.50%
SA-41	sa-5	8" PVC	102'	26.80	26.39	0.41	0.40%
SA-42	sa-6	8" PVC	117'	26.70	26.12	0.58	0.50%
SA-43	SA-44	8" PVC	102'	26.75	26.34	0.41	0.40%
SA-44	sa-6	8" PVC	18'	19.80	19.67	0.13	0.73%
SA-45	sa-6	8" PVC	151'	27.30	26.68	0.62	0.41%
SA-46	SA-44	8" PVC	188'	27.17	26.47	0.70	0.37%
SA-47	SA-48	8" PVC	199'	26.20	25.50	0.70	0.35%
SA-48	SA-49	8" PVC	184'	25.45	24.82	0.63	0.34%
SA-49	SA-50	8" PVC	18'	19.86	19.79	0.07	0.41%
SA-51	SA-50	8" PVC	170'	24.00	23.50	0.50	0.30%

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No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 5/22/19

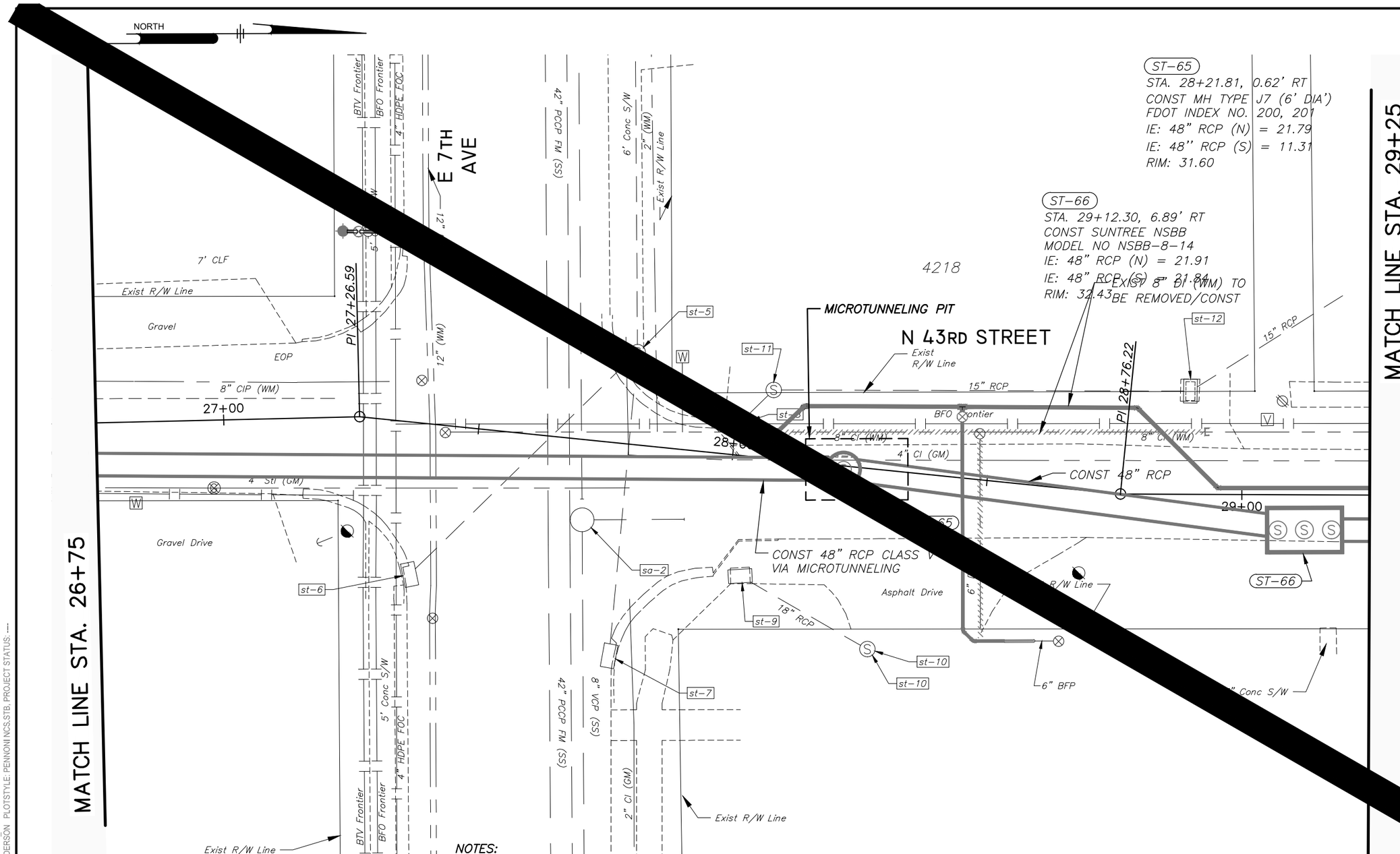
CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS

PROPOSED SANITARY SEWER DATA

SHEET WW2

SW



NOTES:

1. SEE SEPARATE PLANS FOR WATER AND WASTEWATER DESIGN
2. 14" AND 60" STL CASINGS SHALL EXTEND ONE FOOT BEYOND OUTER CONFLICT STRUCTURE WALLS
3. 42" PCCP FM (SS) TO REMAIN OPERATIONAL AND BE FULLY SUPPORTED THROUGHOUT CONSTRUCTION
4. CONTRACTOR SHALL PROVIDE AND INSTALL TEMPORARY SHEETING AND SHORING TO MAINTAIN VEHICULAR ACCESS TO PROPERTIES SOUTH OF E. 7TH AVE/ E BROADWAY

0 20'

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 11/16/18

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
SANITARY SEWER PLAN
STA 26+75 TO STA 29+25

SHEET
WW3

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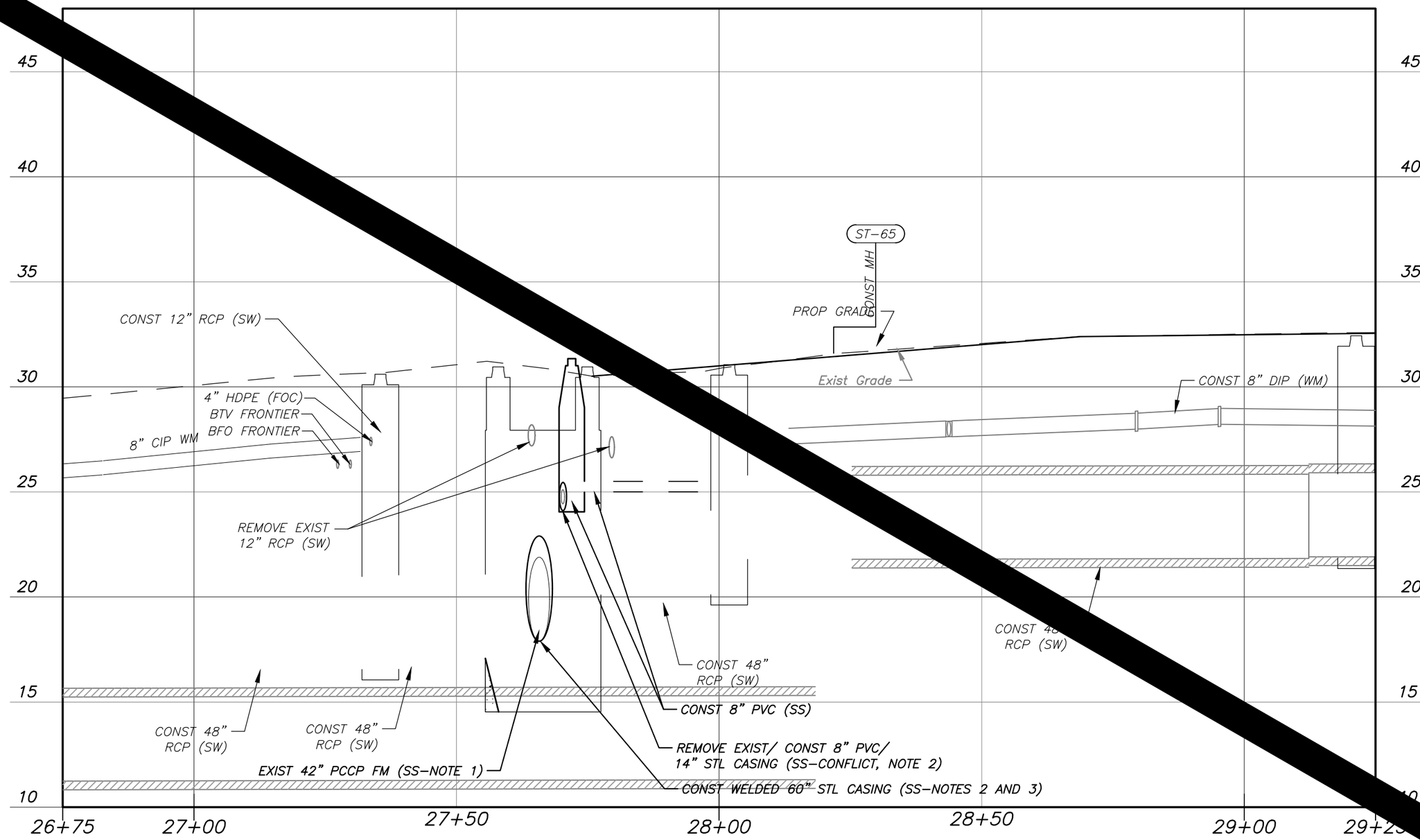

NOTES:
1. 42" PCCP TO REMAIN OPERATIONAL AND BE FULLY SUPPORTED THROUGH OUT CONSTRUCTION.
2. 14" AND 60" STL CASINGS SHALL EXTEND ONE FOOT BEYOND OUTER CONFLICT STRUCTURE WALLS
3. GROUT ANNULAR SPACE BETWEEN CASING AND PCCP WITH NON-SHRINK FLOWABLE FILL

VERT SCALE: 5'
HORIZ SCALE: 1

No.	DATE	REVISIONS

Pennoni
PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 11/16/18

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
SANITARY SEWER PROFILE
STA 26+75 TO STA 29+25

SHEET
WW4

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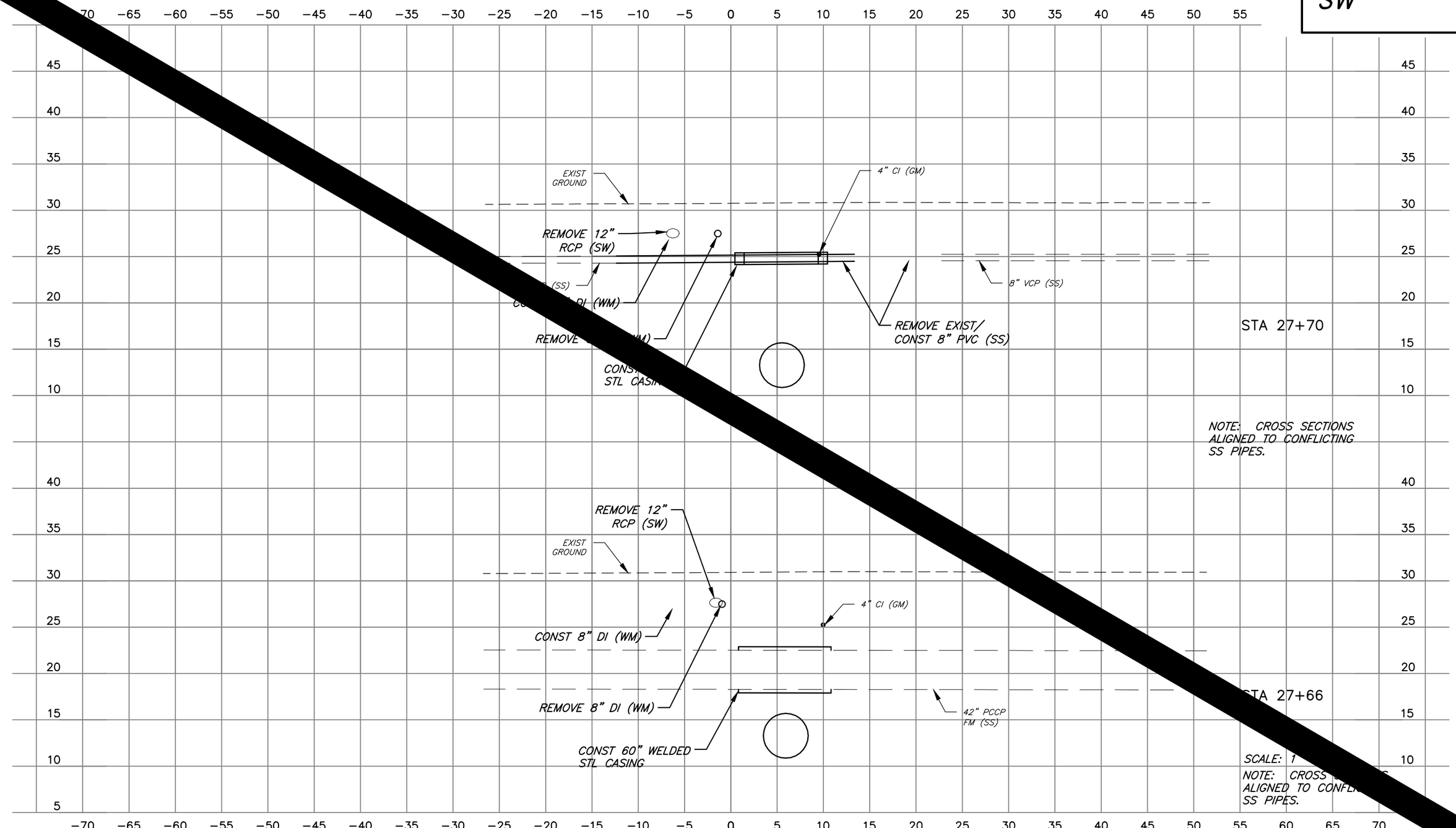

No.	DATE	REVISIONS

PENNONI ASSOCIATES INC.
2555 Nursery Road, Suite 101
Clearwater, FL 33764
Certificate of Authorization 7819

E. PETER NIKOLOV, P.E. DATE
P.E. NO. 38766

DES: MCH
DRN: MCH
CKD: EPN
DATE: 11/16/18

CITY of TAMPA
Department of Transportation and Stormwater Services
Stormwater Engineering Division

43RD STREET OUTFALL REGIONAL STORMWATER IMPROVEMENTS
SANITARY SEWER CROSS SECTIONS
E. 7TH AVE - E. BROADWAY

SHEET
WW22

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PLOTTED: 5/22/2019 1:25:25 PM, BY: MICHAEL HENDERSON PLOTSTYLE: PENNONI NCS.STB, PROJECT STATUS: ----

TIERRA

November 29, 2017

Pennoni
2555 Nursery Road, Suite 101
Clearwater, Florida 33764

Attn: E. Peter Nikolov, P.E.
Division Manager

RE: Level II Contamination Report
43rd Street Outfall – Regional Stormwater Improvements
Tampa, Hillsborough County, Florida
Tierra Project No: 6511-17-207E

Mr. Nikolov:

Tierra, Inc. (Tierra) has completed the Level II testing for the 43rd Street project. Level II testing was completed as a preliminary measure to determine if this project will include contamination involvement. This report presents the field and laboratory analytical results for soil and groundwater samples collected at 2 locations along 43rd Street.

We appreciate the opportunity to provide you with these services. If you have any questions or comments regarding this report, please feel free to contact us at your convenience.

Respectfully Submitted,

TIERRA, INC.

Michael J. Bair, ASP
Chief Scientist

Donald R. Polanis, CGC, PSSC
Regional Manager

J:\6511\2017 Files\6511-17-207E 43rd Street Level II testing\43rd St Level II Rpt.docx

7351 Temple Terrace Highway · Tampa, Florida 33637
(813) 989-1354 · Fax (813) 989-1355
Florida Certification No. 6486

Project Background

Pennoni is assisting the City of Tampa with the design of regional stormwater improvements along 43rd Street in Tampa, Hillsborough County. Several contamination sites are located adjacent to the project. Preliminary information regarding current contamination levels has been requested for soil and groundwater that may be disturbed during construction to determine if special handling procedures will be necessary.

The study area is located along 43rd Street, south of the CSX railroad tracks. This area is generally identified on plan sheets between Station 22+00 and 24+50. The plans indicate that a 48-inch reinforced concrete pipe is to be installed near the centerline of 43rd Street. The installation will be accomplished with a combination of jack/bore and open trenching and will require disturbance of subsurface soil to approximately 8 to 10 feet below grade. Short-term dewatering may be necessary.

Three contamination sites are located in this area. Because a full assessment of the area has not been requested at this time, limited sampling and testing was completed to provide preliminary information at locations most likely to detect contamination. Samples were collected adjacent to the following site:

Bonded Roofing
Address: 1607 N. 43rd Street, Tampa
Contamination Concern: unresolved petroleum product discharge, chromium, copper, arsenic
FDEP Facility ID: 86/25575, COM_65123

Background: A Discharge Reporting Form (DRF) was filed in 1994 in response to contamination discovered during the closure of a 2,000-gallon diesel fuel underground storage tank (UST). No testing or assessment of this petroleum discharge has been performed since the DRF was filed in 1994 so the extent of contamination is unknown. Although an assessment under the State's Low Score Site Initiative program is scheduled to be completed at some point during 2017, the discharge has not been resolved and is still considered "open" related to permitting for the National Pollutant Discharge Elimination System (NPDES).

A Site Assessment Status Report was issued on February 28, 2017 by Slow Horse, LLC. The report provided an evaluation of contamination levels related to wood treatment activities that were performed at the site from 1963 to 1989. Wood was pressure-treated on-site using Chromated Copper Arsenic, which was reportedly discharged to various portions of the property. The assessment activities identified arsenic, chromium, and copper as the primary contaminants of concern at the site in the soil and groundwater. Contour maps in the report estimate that the contamination plumes encroach into the right-of-way of 43rd Street.

Scope & Methodology

Tierra completed Level II field testing at 2 boring locations for the purpose of identifying contamination involvement with the proposed construction project. The project location and specific sample locations are depicted in **Appendix A**.

At each soil boring, soil samples were retained from two discrete intervals: land surface to 6 inches below grade (0 - 6") and 6 inches to 2 feet below grade (6" - 2'). Samples were collected within the 43rd Street right-of-way using a hand auger and submitted to the laboratory for analysis of arsenic, chromium, and copper by United States Environmental Protection Agency (EPA) Method 6010. These metals were selected to match those identified at the adjacent Bonded Roofing site.

Additionally, each boring was converted to a temporary monitoring well (TMW) to facilitate the collection of groundwater samples for laboratory analysis. Monitoring wells were installed to intersect the shallow groundwater table using a hand auger. Groundwater samples were submitted to the laboratory for analysis of arsenic, chromium, and copper by EPA Method 6010.

Upon completion of the groundwater sampling, the wells were removed and the boreholes backfilled with native material and imported silica sand, as needed. Equipment decontamination, sample collection, field documentation, sample custody, and laboratory analyses were performed in general accordance with the latest version of the Florida Department of Environmental Protection's Standard Operating Procedures (DEP-SOP-001/01). All field services were conducted and/or supervised by Tierra staff and a National Environmental Laboratory Accreditation Conference (NELAC) environmental laboratory performed the chemical testing (Pace Analytical Services, LLC; NELAC #E83079). Laboratory analytical results are presented in tabular form in **Appendix B**. A complete copy of the laboratory analytical report is included in **Appendix C**. Field forms including Soil Boring Logs, Well Construction and Development Logs, and Groundwater Sampling Logs are included in **Appendix D**.

Findings

The soil and groundwater analytical results were compared to the relevant Cleanup Target Levels (CTLs) of Chapter 62-777, Florida Administrative Code (F.A.C.). The findings are provided below.

- Arsenic was detected above Residential and/or Commercial/Industrial Direct Exposure Soil Cleanup Target Level for all four soil samples that were collected.
- The Leachability Soil Cleanup Target Level was exceeded for chromium at SB-2, 6"-2'.
- The depth-to-groundwater in the two temporary monitoring wells was measured between 3 and 4 feet below grade.
- Arsenic was detected in both groundwater samples above the Groundwater Cleanup Target Levels.
- Significantly, arsenic's Natural Attenuation Default Concentration was also exceeded for both groundwater samples.

Conclusions & Recommendations

Based on the results of this Level II field testing, soil and groundwater contamination has been confirmed at two locations along 43rd Street. Arsenic and/or chromium have been detected above their respective Cleanup Target Levels per Chapter 62-777, F.A.C. The soil samples were collected in the upper 2 feet at the site. Groundwater samples were collected from the surficial aquifer which was detected between 3 and 4 feet below grade.

Additional soil and groundwater samples could be collected to further define the vertical and lateral extent of contamination. The sampling program completed to date was limited in nature. Based on these preliminary results, construction tasks such as soil excavations, horizontal drilling, jack and bore, and dewatering will require special handling procedures based on the presence of contamination in the soil and groundwater.

Soil that is disturbed as part of this project should be removed from the site for off-site disposal at an approved landfill. Drilling spoils may have similar contamination levels. Additional characterization testing such as the Toxicity Characterization Leaching Procedure may be requested by the landfill. Any material removed from the project should be replaced with clean fill that has been confirmed to be free of similar contamination levels.

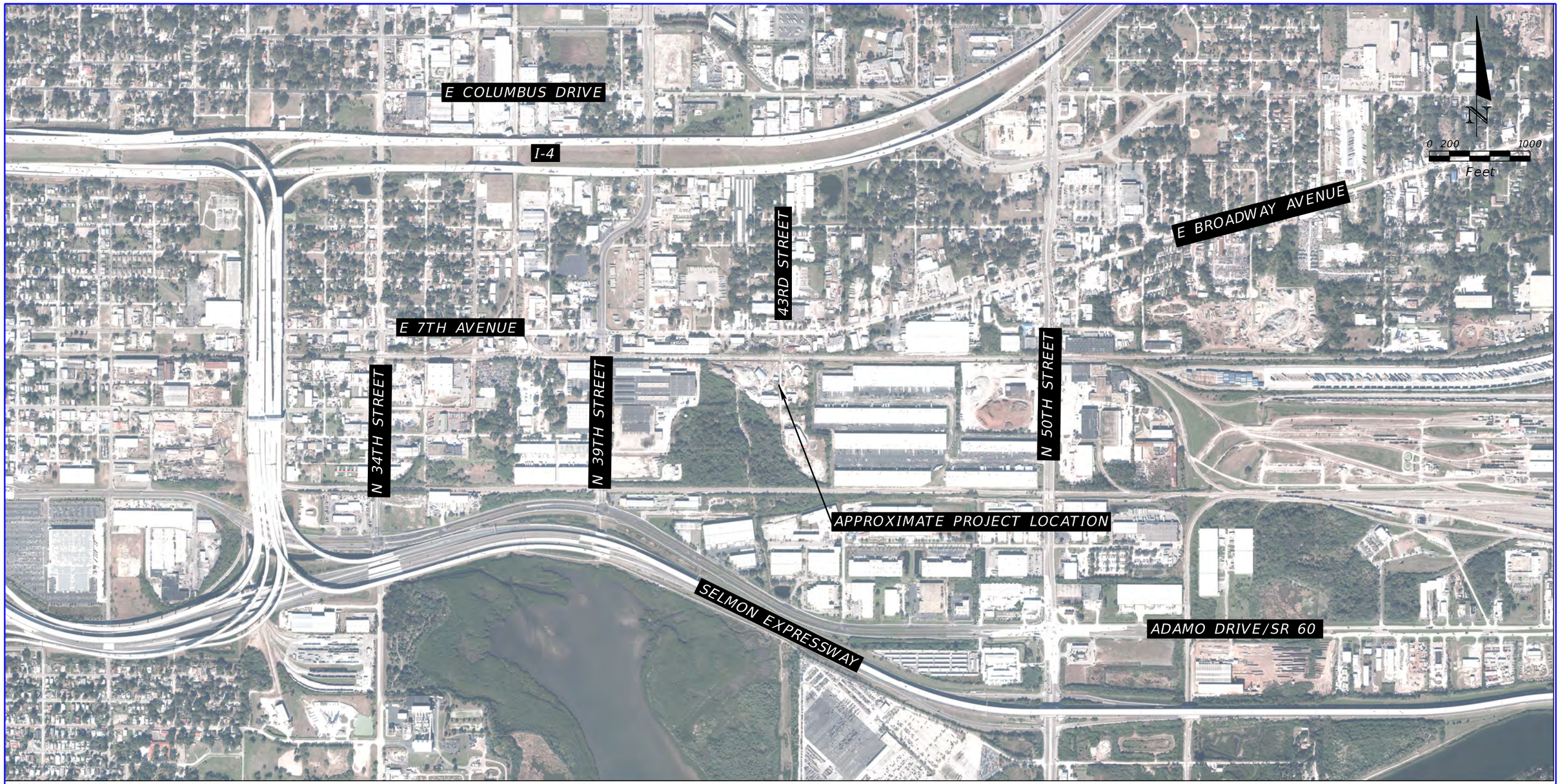
Contaminated groundwater may also be encountered during this project during any necessary dewatering. Based on the contamination levels, coverage under an NPDES permit will not be granted. Alternate groundwater disposal options should be considered such as containerizing the dewatering system effluent, testing, and off-site disposal at a treatment facility.

For this project, the Construction Plans should be marked to alert the Construction Contractor of contamination involvement with the soil and groundwater on this project. All site activities should be completed in accordance with federal, state, and local rules and regulations, including those contained within the Occupational Safety and Health Act (OSHA).

Appendix A

Project Location Map

Sample Location Map



PROJECT LOCATION MAP

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-207E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

CITY OF TAMPA

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	NA

43RD STREET OUTFALL
REGIONAL STORMWATER IMPROVEMENTS

SHEET NO.
A-1

bsawaska 11/27/2017 11:14:31 AM J:\6511\2017 Files\6511-17-207E 43rd Street Level II testing\Microstation\rdgeoEnvProj

SOURCE: FDOT SURVEY AND MAPPING DATED 2016

SAMPLE LOCATION MAP

● SAMPLE LOCATION

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION
			TIERRA PROJECT NO.: 6511-17-207E

TIERRA, INC.
7351 TEMPLE TERRACE HIGHWAY
TAMPA, FLORIDA 33637
CERTIFICATE OF AUTHORIZATION 6486

CITY OF TAMPA

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	HILLSBOROUGH	NA

43RD STREET OUTFALL
REGIONAL STORMWATER IMPROVEMENTS

SHEET NO.
A-2

bsawaska 11/20/2017 12:19:01 PM J:\6511\2017 Files\6511-17-207E 43rd Street Level II testing\microstation\rdgeoENVSAM

Appendix B

Tables

TABLE 1: SOIL ANALYTICAL SUMMARY

43rd Street Stormwater Improvements

Tierra Project No. 6511-17-207E

Sample Information				Laboratory Results		
Boring No.	**Date Collected**	**Depth to Water (ft)**	**Sample Interval (fbls)**	**Arsenic**	**Chromium**	**Copper**
				(mg/kg)	(mg/kg)	(mg/kg)
SB-1, 0-6"	11/08/2017	~ 3	0 - 6"	**5.9**	**2.7**	**1.1**
SB-1, 6"-2'	11/08/2017	~ 3	6" - 2'	**17.1**	**16.8**	**10.7**
SB-2, 0-6"	11/08/2017	~3.5	0 - 6"	**39.5**	**21.3**	**0.81**
SB-2, 6"-2'	11/08/2017	~3.5	6" - 2'	**78.3**	**99.0**	**3.0**
Leachability SCTL Based on Groundwater Criteria (mg/kg)				*	*38*	*
Direct Exposure Residential SCTL (mg/kg)				*2.1*	*210*	*150*
Direct Exposure Commercial/Industrial SCTL (mg/kg)				*12*	*470*	*89,000*

Notes:

mg/kg = milligrams per kilogram

SCTL = Soil Cleanup Target Level per Chapter 62-777, F.A.C.

* = Leachability value may be determined using Synthetic Precipitation Leaching Procedure (SPLP)

Exceeds Leachability SCTL

Exceeds Direct Exposure Residential SCTL

Exceeds Direct Exposure Commercial/Industrial SCTL

TABLE 2: GROUNDWATER ANALYTICAL SUMMARY

43rd Street Stormwater Improvements

Tierra Project No. 6511-17-207E

Sample Information		Laboratory Results		
Location	**Date**	**Arsenic**	**Chromium**	**Copper**
		(ug/L)	(ug/L)	(ug/L)
TMW-1	11/08/2017	**114**	2.5 U	2.5 U
TMW-2	11/08/2017	**379**	**17.8**	2.5 U
	GCTLs	*10*	*100*	*1,000*
	NADCs	*100*	*1,000*	*10,000*

Notes:

ug/L = micrograms per liter

U = not detected above noted concentration

GCTLs = Groundwater Cleanup Target Levels per Chapter 62-777, F.A.C.

NADCs = Natural Attenuation Default Concentrations per Chapter 62-777, F.A.C.

Exceeds GCTL Limit

Exceeds NADC Limit

Appendix C

Laboratory Analytical Report

Pace Analytical Services, LLC
110 South Bayview Blvd.
Oldsmar , FL 34677
(813)881-9401

November 15, 2017

Michael Bair
Tierra, Inc.
7351 Temple Terrace Highway
Tampa, FL 33637

RE: Project: 43rd Street
Pace Project No.: 35346726

Dear Michael Bair:
Enclosed are the analytical results for sample(s) received by the laboratory on November 08, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

LA Palmer

Lori Palmer
lori.palmer@pacelabs.com
(813)881-9401
Project Manager

Enclosures

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Pace Analytical Services, LLC
110 South Bayview Blvd.
Oldsmar , FL 34677
(813)881-9401

CERTIFICATIONS

Project: 43rd Street
Pace Project No.: 35346726

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

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Oldsmar , FL 34677
(813)881-9401

SAMPLE SUMMARY

Project: 43rd Street
Pace Project No.: 35346726

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35346726001	**SB-1 0-6''**	Solid	11/08/17 09:00	11/08/17 12:07
35346726002	**SB-1 6''-2'**	Solid	11/08/17 09:00	11/08/17 12:07
35346726003	**SB-2 0-6''**	Solid	11/08/17 09:40	11/08/17 12:07
35346726004	**SB-2 6''-2'**	Solid	11/08/17 09:40	11/08/17 12:07
35346726005	**TMW-1**	Water	11/08/17 10:41	11/08/17 12:07
35346726006	**TMW-2**	Water	11/08/17 11:15	11/08/17 12:07

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SAMPLE ANALYTE COUNT

Project: 43rd Street
Pace Project No.: 35346726

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35346726001	**SB-1 0-6''**	EPA 6010	BTS	3	PASI-O
		ASTM D2974-87	RAK	1	PASI-O
35346726002	**SB-1 6''-2'**	EPA 6010	BTS	3	PASI-O
		ASTM D2974-87	RAK	1	PASI-O
35346726003	**SB-2 0-6''**	EPA 6010	BTS	3	PASI-O
		ASTM D2974-87	RAK	1	PASI-O
35346726004	**SB-2 6''-2'**	EPA 6010	BTS	3	PASI-O
		ASTM D2974-87	RAK	1	PASI-O
35346726005	**TMW-1**	EPA 6010	MMT	3	PASI-O
35346726006	**TMW-2**	EPA 6010	MMT	3	PASI-O

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ANALYTICAL RESULTS

Project: 43rd Street
Pace Project No.: 35346726

Sample: SB-1 0-6" **Lab ID: 35346726001** Collected: 11/08/17 09:00 Received: 11/08/17 12:07 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Arsenic	**5.9**	mg/kg	0.63	0.31	1	11/09/17 07:17	11/13/17 03:13	7440-38-2	
Chromium	**2.7**	mg/kg	0.31	0.16	1	11/09/17 07:17	11/13/17 03:13	7440-47-3	
Copper	**1.1**	mg/kg	0.31	0.16	1	11/09/17 07:17	11/13/17 03:13	7440-50-8	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**20.8**	%	0.10	0.10	1		11/15/17 10:34		

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ANALYTICAL RESULTS

Project: 43rd Street
Pace Project No.: 35346726

Sample: SB-1 6''-2' **Lab ID: 35346726002** Collected: 11/08/17 09:00 Received: 11/08/17 12:07 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Arsenic	**17.1**	mg/kg	0.62	0.31	1	11/09/17 07:17	11/13/17 03:19	7440-38-2	
Chromium	**16.8**	mg/kg	0.31	0.16	1	11/09/17 07:17	11/13/17 03:19	7440-47-3	
Copper	**10.7**	mg/kg	0.31	0.16	1	11/09/17 07:17	11/13/17 03:19	7440-50-8	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**31.9**	%	0.10	0.10	1		11/15/17 10:34		

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ANALYTICAL RESULTS

Project: 43rd Street
Pace Project No.: 35346726

Sample: SB-2 0-6" **Lab ID: 35346726003** Collected: 11/08/17 09:40 Received: 11/08/17 12:07 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Arsenic	**39.5**	mg/kg	0.66	0.33	1	11/09/17 07:17	11/13/17 03:24	7440-38-2	
Chromium	**21.3**	mg/kg	0.33	0.16	1	11/09/17 07:17	11/13/17 03:24	7440-47-3	
Copper	**0.81**	mg/kg	0.33	0.16	1	11/09/17 07:17	11/13/17 03:24	7440-50-8	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**8.8**	%	0.10	0.10	1		11/15/17 10:34		

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ANALYTICAL RESULTS

Project: 43rd Street
Pace Project No.: 35346726

Sample: SB-2 6''-2' **Lab ID: 35346726004** Collected: 11/08/17 09:40 Received: 11/08/17 12:07 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Arsenic	**78.3**	mg/kg	0.71	0.36	1	11/09/17 07:17	11/13/17 03:29	7440-38-2	
Chromium	**99.0**	mg/kg	0.36	0.18	1	11/09/17 07:17	11/13/17 03:29	7440-47-3	
Copper	**3.0**	mg/kg	0.36	0.18	1	11/09/17 07:17	11/13/17 03:29	7440-50-8	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**26.9**	%	0.10	0.10	1		11/15/17 10:34		J(D6)

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ANALYTICAL RESULTS

Project: 43rd Street
Pace Project No.: 35346726

Sample: TMW-1 **Lab ID: 35346726005** Collected: 11/08/17 10:41 Received: 11/08/17 12:07 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**114**	ug/L	10.0	5.0	1	11/09/17 12:03	11/15/17 15:42	7440-38-2	
Chromium	**2.5 U**	ug/L	5.0	2.5	1	11/09/17 12:03	11/15/17 15:42	7440-47-3	
Copper	**2.5 U**	ug/L	5.0	2.5	1	11/09/17 12:03	11/15/17 15:42	7440-50-8	

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ANALYTICAL RESULTS

Project: 43rd Street
Pace Project No.: 35346726

Sample: TMW-2 **Lab ID: 35346726006** Collected: 11/08/17 11:15 Received: 11/08/17 12:07 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Arsenic	**379**	ug/L	10.0	5.0	1	11/09/17 12:03	11/15/17 15:47	7440-38-2	
Chromium	**17.8**	ug/L	5.0	2.5	1	11/09/17 12:03	11/15/17 15:47	7440-47-3	
Copper	**2.5 U**	ug/L	5.0	2.5	1	11/09/17 12:03	11/15/17 15:47	7440-50-8	

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QUALITY CONTROL DATA

Project: 43rd Street
Pace Project No.: 35346726

QC Batch: 404329 | Analysis Method: EPA 6010
QC Batch Method: EPA 3050 | Analysis Description: 6010 MET Solid
Associated Lab Samples: 35346726001, 35346726002, 35346726003, 35346726004

METHOD BLANK: 2207030 | Matrix: Solid
Associated Lab Samples: 35346726001, 35346726002, 35346726003, 35346726004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	0.28 U	0.57	0.28	11/13/17 01:35	
Chromium	mg/kg	0.14 U	0.28	0.14	11/13/17 01:35	
Copper	mg/kg	0.14 U	0.28	0.14	11/13/17 01:35	

LABORATORY CONTROL SAMPLE: 2207031

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	14.2	14.5	102	80-120	
Chromium	mg/kg	14.2	15.6	110	80-120	
Copper	mg/kg	14.2	15.9	112	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2207032 2207033

Parameter	Units	35346231001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	0.38 U	15	14.7	13.7	14.2	90	94	75-125	3	20	
Chromium	mg/kg	3.9	15	14.7	20.5	20.5	111	113	75-125	0	20	
Copper	mg/kg	1.5	15	14.7	17.3	17.7	106	110	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 43rd Street
Pace Project No.: 35346726

QC Batch: 404394 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET
Associated Lab Samples: 35346726005, 35346726006

METHOD BLANK: 2207600 | Matrix: Water
Associated Lab Samples: 35346726005, 35346726006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	ug/L	5.0 U	10.0	5.0	11/15/17 14:29	
Chromium	ug/L	2.5 U	5.0	2.5	11/15/17 14:29	
Copper	ug/L	2.5 U	5.0	2.5	11/15/17 14:29	

LABORATORY CONTROL SAMPLE: 2207601

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	250	255	102	80-120	
Chromium	ug/L	250	262	105	80-120	
Copper	ug/L	250	265	106	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2207602 2207603

Parameter	Units	35346890002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	ug/L	14.6	250	250	271	268	103	101	75-125	1	20	
Chromium	ug/L	2.5 U	250	250	245	248	98	99	75-125	1	20	
Copper	ug/L	2.5 U	250	250	261	264	103	105	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 43rd Street
Pace Project No.: 35346726

QC Batch: 405682 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 35346726001, 35346726002, 35346726003, 35346726004

SAMPLE DUPLICATE: 2215069

Parameter	Units	35345983025 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	8.7	13.4	42	5	J(D6)

SAMPLE DUPLICATE: 2215070

Parameter	Units	35346726004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	26.9	29.2	8	5	J(D6)

SAMPLE DUPLICATE: 2215071

Parameter	Units	35347022003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.9	13.8	0	5	

SAMPLE DUPLICATE: 2215072

Parameter	Units	35347248005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.6	17.5	25	5	J(D6)

SAMPLE DUPLICATE: 2215073

Parameter	Units	35347654003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	12.2	11.3	8	5	J(D6)

SAMPLE DUPLICATE: 2215074

Parameter	Units	35347881008 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.8	5.6	3	5	

SAMPLE DUPLICATE: 2215075

Parameter	Units	35347881017 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.6	5.8	3	5	

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QUALITY CONTROL DATA

Project: 43rd Street
Pace Project No.: 35346726

SAMPLE DUPLICATE: 2215076

Parameter	Units	35347881027 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.9	7.6	4	5	

SAMPLE DUPLICATE: 2215077

Parameter	Units	35347881036 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.2	6.2	1	5	

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QUALIFIERS

Project: 43rd Street
Pace Project No.: 35346726

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-O	Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

U	Compound was analyzed for but not detected.
J(D6)	Estimated Value. The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 43rd Street
Pace Project No.: 35346726

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35346726001	**SB-1 0-6"**	EPA 3050	404329	EPA 6010	404376
35346726002	**SB-1 6"-2'**	EPA 3050	404329	EPA 6010	404376
35346726003	**SB-2 0-6"**	EPA 3050	404329	EPA 6010	404376
35346726004	**SB-2 6"-2'**	EPA 3050	404329	EPA 6010	404376
35346726005	**TMW-1**	EPA 3010	404394	EPA 6010	404488
35346726006	**TMW-2**	EPA 3010	404394	EPA 6010	404488
35346726001	**SB-1 0-6"**	ASTM D2974-87	405682		
35346726002	**SB-1 6"-2'**	ASTM D2974-87	405682		
35346726003	**SB-2 0-6"**	ASTM D2974-87	405682		
35346726004	**SB-2 6"-2'**	ASTM D2974-87	405682		

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WO# : 35346726

35346726

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Do

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields mus

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Tierra, Inc.	Report To: Bair, Mike	Attention:
Address: 7351 Temple Terrace Highway	Copy To:	Company Name:
Tampa, FL 33637		Address:
Email: MBair@tierraeng.com	Purchase Order #:	Pace Quote:
Phone: Fax:	Project Name: 43rd Street	Pace Project Manager: lori.palmer@pacelabs.com,
Requested Due Date: Standard	Project #: 6511-17-207E	Pace Profile #: 7371-17 and 18

Regulatory Agency
State / Location
FL

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Cr,Cu,As in soil	Cr,Cu,As in water	Residual Chlorine (Y/N)
1	SB-1 0-6"	SL	C			11/8/17	0900		1										✓		
2	SB-1 6"-2'	SL	C			11/8/17	0900		1										✓		
3	SB-2 0-6"	SL	C			11/8/17	0940		1										✓		
4	SB-2 6"-2'	SL	C			11/8/17	0940		1										✓		
5	TMW-1	WT	/			11/8/17	1041		2											✓	
6	TMW-2	WT	/			11/8/17	1115		2											✓	
7																					
8																					
9																					
10																					
11																					
12																					

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Empty Containers	[signature]	10/31/17	0620	[signature] Tierra	10/31/17	0620	TBD
	[signature]	11/8/17	1205	[signature] Tierra	11/8/17	12:07	9.6
Proj # 6511-17-207E							

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER: Sammy Alwad			
SIGNATURE of SAMPLER: [signature]	DATE Signed: 11/8/17		
TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical Florida Laboratory	Document Name: Sample Condition Upon Receipt Form	Document Revised: August 2, 2017
	Document No.: F-FL-C-007 rev. 12	Issuing Authority: Pace Florida Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project # WO#: 35346726

Project Manager: PM: LAP Due Date: 11/15/17

Client: CLIENT: 37-TIETPA

Date and Initials of person:
Examining contents: DS
Label: 11/8/17
Deliver:
pH:

Thermometer Used: T-203 Date: 11/8/17 Time: 12:07 Initials: DS

State of Origin: FL

Cooler #1 Temp.°C 9.6	(Visual) 0.0	(Correction Factor) 9.6	(Actual)	☐ Samples on ice, cooling process has begun
Cooler #2 Temp.°C	(Visual)	(Correction Factor)	(Actual)	☐ Samples on ice, cooling process has begun
Cooler #3 Temp.°C	(Visual)	(Correction Factor)	(Actual)	☐ Samples on ice, cooling process has begun
Cooler #4 Temp.°C	(Visual)	(Correction Factor)	(Actual)	☐ Samples on ice, cooling process has begun
Cooler #5 Temp.°C	(Visual)	(Correction Factor)	(Actual)	☐ Samples on ice, cooling process has begun
Cooler #6 Temp.°C	(Visual)	(Correction Factor)	(Actual)	☐ Samples on ice, cooling process has begun

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ Other

Shipping Method: ☐ First Overnight ☐ Priority Overnight ☐ Standard Overnight ☐ Ground ☐ International Priority ☐ Other

Billing: ☐ Recipient ☐ Sender ☐ Third Party ☐ Credit Card ☐ Unknown

Tracking #

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No **Seals intact:** ☐ Yes ☑ No **Ice:** Wet Blue Dry None

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other

Samples shorted to lab (If Yes, complete) Shorted Date: Shorted Time: Qty:

Comments:

Chain of Custody Present	☑ Yes	☐ No	☐ N/A	
Chain of Custody Filled Out	☑ Yes	☐ No	☐ N/A	
Relinquished Signature & Sampler Name COC	☑ Yes	☐ No	☐ N/A	
Samples Arrived within Hold Time	☑ Yes	☐ No	☐ N/A	
Rush TAT requested on COC	☐ Yes	☑ No	☐ N/A	
Sufficient Volume	☑ Yes	☐ No	☐ N/A	
Correct Containers Used	☑ Yes	☐ No	☐ N/A	
Containers Intact	☑ Yes	☐ No	☐ N/A	
Sample Labels match COC (sample IDs & date/time of collection)	☑ Yes	☐ No	☐ N/A	
All containers needing acid/base preservation have been checked.	☑ Yes	☐ No	☐ N/A	Preservation Information: Preservative: Lot #/Trace #: Date: Time: Initials:
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	☑ Yes	☐ No	☐ N/A	
Headspace in VOA Vials? (>6mm):	☐ Yes	☐ No	☑ N/A	
Trip Blank Present:	☐ Yes	☐ No	☑ N/A	

Client Notification/ Resolution:
Person Contacted: Date/Time:

Comments/ Resolution (use back for additional comments):

Project Manager Review: Date:

Appendix D

Field Forms

BORING LOG

Boring/Well Number: SB-1 / TMW-1	Permit Number: NA		FDEP Facility Identification Number: NA
Site Name/No.: 6511-17-207E 43rd Street Outfall	Borehole Start Date: 11/8/17 End Date: 11/8/17	Borehole Start Time: 0845 End Time: 0910	☑ AM ☐ PM ☑ AM ☐ PM
Environmental Contractor: TIERRA, INC.	Geologist's Name: NA		Environmental Technician's Name: Sammy A.

Drilling Company: TIERRA, INC.	Pavement Thickness (inches): NA	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 6
Drilling Method(s): HA	Apparent Borehole DTW (in feet from soil moisture content): 3	Measured Well DTW (in feet after water recharges in well): 3.16	OVA (list model and check type): NA ☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☐ Spread ☑ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☑ Well TMW-1 ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
HA						NA		Rocks			
							1	Gr F/S w rocks		D	SB-1 @0-6" → SB-1 @6"-2'
							2	Br F/S + wood debris → Dr Br F/S			
							3	▼		W	
							4			S	
							5				
							6	EOB			
							7				
							8				
							9				
							10				
							11				
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

Florida Department of Environmental Protection - Division of Waste Management - Bureau of Petroleum Storage Systems

BORING LOG

Boring/Well Number: SB-2/TMW-2	Permit Number: NA		FDEP Facility Identification Number: NA
Site Name/No.: 6511-17-207E 43rd Street Outfall	Borehole Start Date: 11/8/17 End Date: 11/8/17	Borehole Start Time: 0920 End Time: 0940	☑ AM ☐ PM ☑ AM ☐ PM
Environmental Contractor: TIERRA, INC.	Geologist's Name: NA		Environmental Technician's Name: Sammy A.
Drilling Company: TIERRA, INC.	Pavement Thickness (inches): 1"	Borehole Diameter (inches): 3.25	Borehole Depth (feet): 6'12
Drilling Method(s): HA	Apparent Borehole DTW (in feet from soil moisture content): 3'12	Measured Well DTW (in feet after water recharges in well): 3.62	OVA (list model and check type): NA ☐ FID ☐ PID

Disposition of Drill Cuttings [check method(s)]: ☐ Drum ☐ Spread ☑ Backfill ☐ Stockpile ☐ Other

(describe if other or multiple items are checked):

Borehole Completion (check one): ☑ Well TMW-2 ☐ Grout ☐ Bentonite ☐ Backfill ☐ Other (describe)

Sample Type	Sample Depth Interval (feet)	Sample Recovery (inches)	SPT Blows (per six inches)	Unfiltered OVA	Filtered OVA	Net OVA	Depth (feet)	Sample Description (include grain size based on USCS, odors, staining, and other remarks)	USCS Symbol	Moisture Content	Lab Soil and Groundwater Samples (list sample number and depth or temporary screen interval)
HA						NA		Asphault			
							1	Orange Fill w/rocks		D	SB-2@0-6" ↓ SB-2@6"2'
							2	Dr Br Silty Sand			
							3	Br F/S			
							4	▼		W → S	
							5				
							6				
							7	EOB			
							8				
							9				
							10				
							11				
							12				

Sample Type Codes: **PH** = Post Hole; **HA** = Hand Auger; **SS** = Split Spoon; **ST** = Shelby Tube; **DP** = Direct Push; **SC** = Sonic Core; **DC** = Drill Cuttings

Moisture Content Codes: **D** = Dry; **M** = Moist; **W** = Wet; **S** = Saturated

Florida Department of Environmental Protection - Division of Waste Management - Bureau of Petroleum Storage Systems

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number: TMW-1

Site Name: 6511-17-207E 43rd Street Outfall

FDEP Facility I.D. Number: NA

Well Install Date(s): 11/8/17

Well Location and Type (check appropriate boxes): ☑ On-Site ☑ Right-of-Way ☐ Off-Site Private Property ☐ Above Grade (AG) ☑ Flush-to-Grade

If AG, list feet of riser above land surface: NA

Well Purpose: ☐ Perched Monitoring ☑ Shallow (Water-Table) Monitoring ☐ Intermediate or Deep Monitoring ☐ Remediation or Other (describe)

Well Install Method: ~~Direct Push~~ hand auger

Surface Casing Install Method: NA

Borehole Depth (feet): 6

Well Depth (feet): 6

Borehole Diameter (inches): 3.00

Manhole Diameter (inches): NA

Well Pad Size: NA feet by _____ feet

Riser Diameter and Material: 1.0'' PVC

Riser/Screen Connections: ☑ Flush-Threaded ☐ Other (describe)

Riser Length: 1 feet from 0 feet to 1 feet

Screen Diameter and Material: 1.0'' PVC

Screen Slot Size: 0.010

Screen Length: 5 feet from 1 feet to 6 feet

1st Surface Casing Material: also check: ☐ Permanent ☐ Temporary n/a

1st Surface Casing I.D. (inches):

1st Surface Casing Length: _____ feet from _____ feet to _____ feet

2nd Surface Casing Material: also check: ☐ Permanent ☐ Temporary

1st Surface Casing I.D. (inches):

2nd Surface Casing Length: _____ feet from _____ feet to _____ feet

3rd Surface Casing Material: also check: ☐ Permanent ☐ Temporary

1st Surface Casing I.D. (inches):

3rd Surface Casing Length: _____ feet from _____ feet to _____ feet

Filter Pack Material and Size: 20/30 Silica Sand

Pre-packed Filter Around Screen (check one): ☑ Yes ☐ No

Filter Pack Length: 5 feet from 1 feet to 6 feet

Filter Pack Seal Material and Size:

Filter Pack Seal Length: 6 feet from 0 feet to 6 feet

Surface Seal Material:

Surface Seal Length: _____ feet from _____ feet to _____ feet

WELL DEVELOPMENT DATA

Well Development Date: 11/8/17

Well Development Method (check one): ☐ Surge/Pum ☑ Pump ☐ Compressed Air ☐ Other (describe)

Development Pump Type (check): ☐ Centrifugal ☑ Peristaltic ☐ Submersible ☐ Other (describe)

Depth to Groundwater (before developing in feet): 3.16

5:0920
5:0946

Pumping Rate (gallons per minute): .20

Maximum Drawdown of Groundwater During Development (feet): 5.18

Well Purged Dry (check one): ☐ Yes ☑ No

Pumping Condition (check one): ☑ Continuous ☐ Intermittent

Total Development Water Removed (gallons): 4

Development Duration (minutes): 20

Development Water Drummed (check one): ☐ Yes ☑ No

Water Appearance (color and odor) At Start of Development: Br. /None

Water Appearance (color and odor) At End of Development: Clear/None

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

Florida Department of Environmental Protection - Division of Waste Management - Bureau of Petroleum Storage Systems

WELL CONSTRUCTION AND DEVELOPMENT LOG

WELL CONSTRUCTION DATA

Well Number: TMW-2	Site Name: 6511-17-207E 43rd Street Outfall	FDEP Facility I.D. Number: NA	Well Install Date(s): 11/8/17

Well Location and Type (check appropriate boxes):
- [x] On-Site
- [x] Right-of-Way
- [ ] Off-Site Private Property
- [ ] Above Grade (AG)
- [x] Flush-to-Grade

If AG, list feet of riser above land surface: NA

Well Purpose:
- [ ] Perched Monitoring
- [x] Shallow (Water-Table) Monitoring
- [ ] Intermediate or Deep Monitoring
- [ ] Remediation or Other (describe)

Well Install Method: ~~Direct Push~~ hand auger

Surface Casing Install Method: NA

Borehole Depth (feet): 6'12	Well Depth (feet): 6'12	Borehole Diameter (inches): 3.00	Manhole Diameter (inches): NA	Well Pad Size: NA feet by ____ feet

Riser Diameter and Material: 1.0'' PVC	Riser/Screen Connections: [x] Flush-Threaded [ ] Other (describe)	Riser Length: 1.5 feet; from 0 feet to 1.5 feet
Screen Diameter and Material: 1.0'' PVC	Screen Slot Size: 0.010	Screen Length: 5 feet; from 1.5 feet to 6.5 feet
1st Surface Casing Material: also check: [ ] Permanent [ ] Temporary n/a	1st Surface Casing I.D. (inches):	1st Surface Casing Length: ____ feet; from ____ feet to ____ feet
2nd Surface Casing Material: also check: [ ] Permanent [ ] Temporary	1st Surface Casing I.D. (inches):	2nd Surface Casing Length: ____ feet; from ____ feet to ____ feet
3rd Surface Casing Material: also check: [ ] Permanent [ ] Temporary	1st Surface Casing I.D. (inches):	3rd Surface Casing Length: ____ feet; from ____ feet to ____ feet
Filter Pack Material and Size: 20/30 Silica Sand	Pre-packed Filter Around Screen (check one): [x] Yes [ ] No	Filter Pack Length: 5 feet; from 1.5 feet to 6.5 feet
Filter Pack Seal Material and Size:		Filter Pack Seal Length: 0.5 feet; from 0 feet to 0.5 feet
Surface Seal Material:		Surface Seal Length: ____ feet; from ____ feet to ____ feet

WELL DEVELOPMENT DATA

Well Development Date: 11/8/17

Well Development Method (check one): [ ] Surge/Pum [x] Pump [ ] Compressed Air [ ] Other (describe)

Development Pump Type (check): [ ] Centrifugal [x] Peristaltic [ ] Submersible [ ] Other (describe)

Depth to Groundwater (before developing in feet): 3.62

1060
1020

Pumping Rate (gallons per minute): .20	Maximum Drawdown of Groundwater During Development (feet): 4.22	Well Purged Dry (check one): [ ] Yes [x] No	
Pumping Condition (check one): [x] Continuous [ ] Intermittent	Total Development Water Removed (gallons): 4	Development Duration (minutes): 20	Development Water Drummed (check one): [ ] Yes [x] No

Water Appearance (color and odor) At Start of Development: Br. /None	Water Appearance (color and odor) At End of Development: Clear /None

WELL CONSTRUCTION OR DEVELOPMENT REMARKS

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME/No.: 6511-17-207E 43rd Street Outfall	SITE LOCATION: Hillsborough County
WELL NO: TMW- 1	SAMPLE ID: TMW- 1 / DATE: 11/8/17

PURGING DATA

WELL DIAMETER (inches): 1.0	TUBING DIAMETER (inches): 1/4	WELL SCREEN INTERVAL DEPTH: 1 feet to 6 feet	STATIC DEPTH TO WATER (feet): 3.16	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: (only fill out if applicable) **1 WELL VOLUME** = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
= (6 feet – 3.16 feet) X .04 gallons/foot = .11 gallons

EQUIPMENT VOLUME PURGE: (only fill out if applicable) **1 EQUIPMENT VOL.** = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
= gallons + (gallons/foot X feet) + 0.13 gallons =

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 4	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 4	PURGING INITIATED AT: 1025	PURGING ENDED AT: 1038	TOTAL VOLUME PURGED (gallons): .50

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN mg/L and % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1032	.32	.32	.03	3.35	6.74	27.17	559	7.86/99.1	7.31	Clear	None
1035	.09	.41	.03	3.35	6.72	27.26	561	7.82/99.1	5.35	" "	" "
1038	.09	.50	.03	3.35	6.73	27.20	559	7.85/99.1	4.68	" "	" "
								/			
								/			
								/			
								/			
								/			
								/			
								/			
								/			

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Sammy A / Tierra	SAMPLER(S) SIGNATURE(S): [signature]	SAMPLING INITIATED AT: 1039	SAMPLING ENDED AT: 1041
PUMP OR TUBING DEPTH IN WELL (feet): 4	TUBING MATERIAL CODE: HDPE,S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
TMW- 1	2	P	250mL	Nitric	Lab	Lab	Cr, Cu, As	APP	113.55

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **SM** = Straw Method (Tubing Gravity Drain); **RFPP** = Reverse Flow Peristaltic Pump; **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5%
Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater)
Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

DEP Form FD 9000-24: GROUNDWATER SAMPLING LOG

SITE NAME/No.: 6511-17-207E 43rd Street Outfall	SITE LOCATION: Hillsborough County

WELL NO: TMW- 2	SAMPLE ID: TMW- 2	DATE: 11/8/17

PURGING DATA

WELL DIAMETER (inches): 1.0	TUBING DIAMETER (inches): 1/4	WELL SCREEN INTERVAL DEPTH: 1.5 feet to 6.5 feet	STATIC DEPTH TO WATER (feet): 3.62	PURGE PUMP TYPE OR BAILER: PP

WELL VOLUME PURGE: 1 WELL VOLUME = (TOTAL WELL DEPTH – STATIC DEPTH TO WATER) X WELL CAPACITY
(only fill out if applicable) = (6.5 feet – 3.62 feet) X .04 gallons/foot = .11 gallons

EQUIPMENT VOLUME PURGE: 1 EQUIPMENT VOL. = PUMP VOLUME + (TUBING CAPACITY X TUBING LENGTH) + FLOW CELL VOLUME
(only fill out if applicable) = gallons + (gallons/foot X feet) + 0.13 gallons =

INITIAL PUMP OR TUBING DEPTH IN WELL (feet): 4	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 4 1/2	PURGING INITIATED AT: 1055	PURGING ENDED AT: 1111	TOTAL VOLUME PURGED (gallons): .50

TIME	VOLUME PURGED (gallons)	CUMUL. VOLUME PURGED (gallons)	PURGE RATE (gpm)	DEPTH TO WATER (feet)	pH (standard units)	TEMP. (°C)	COND. (circle units) µmhos/cm or µS/cm	DISSOLVED OXYGEN mg/L and % saturation	TURBIDITY (NTUs)	COLOR (describe)	ODOR (describe)
1105	.32	.32	.03	3.72	6.83	26.85	765	6.54/82.0	18.6	Clear	None
1108	.09	.41	.03	3.72	6.83	26.94	768	6.50/82.5	14.1	" "	" "
1111	.09	.50	.03	3.72	6.83	26.94	766	6.52/82.4	11.6	" "	" "
								/			
								/			
								/			
								/			
								/			
								/			
								/			
								/			

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **2"** = 0.16; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88
TUBING INSIDE DIA. CAPACITY (Gal./Ft.): **1/8"** = 0.0006; **3/16"** = 0.0014; **1/4"** = 0.0026; **5/16"** = 0.004; **3/8"** = 0.006; **1/2"** = 0.010; **5/8"** = 0.016

PURGING EQUIPMENT CODES: **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **PP** = Peristaltic Pump; **O** = Other (Specify)

SAMPLING DATA

SAMPLED BY (PRINT) / AFFILIATION: Sammy A / Tierra	SAMPLER(S) SIGNATURE(S): [signature]	SAMPLING INITIATED AT: 1112	SAMPLING ENDED AT: 1115
PUMP OR TUBING DEPTH IN WELL (feet): 4 1/2	TUBING MATERIAL CODE: HDPE,S	FIELD-FILTERED: Y (N) Filtration Equipment Type:	FILTER SIZE: _____ µm
FIELD DECONTAMINATION: PUMP Y (N)	TUBING Y (N) (replaced)	DUPLICATE: Y (N)	

SAMPLE CONTAINER SPECIFICATION				SAMPLE PRESERVATION (including wet ice)			INTENDED ANALYSIS AND/OR METHOD	SAMPLING EQUIPMENT CODE	SAMPLE PUMP FLOW RATE (mL per minute)
SAMPLE ID CODE	# CONTAINERS	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOL ADDED IN FIELD (mL)	FINAL pH			
TMW-2	2	P	250ML	Nitric	Lab	Lab	Cr, Cu, As	APP	113.55

REMARKS:

MATERIAL CODES: **AG** = Amber Glass; **CG** = Clear Glass; **HDPE** = High Density Polyethylene; **LDPE** = Low Density Polyethylene; **PP** = Polypropylene; **S** = Silicone; **T** = Teflon; **O** = Other (Specify)

SAMPLING EQUIPMENT CODES: **APP** = After (Through) Peristaltic Pump; **B** = Bailer; **BP** = Bladder Pump; **ESP** = Electric Submersible Pump; **SM** = Straw Method (Tubing Gravity Drain); **RFPP** = Reverse Flow Peristaltic Pump; **O** = Other (Specify)

NOTES: 1. The above do not constitute all of the information required by Chapter 62-160, F.A.C.

2. STABILIZATION CRITERIA FOR RANGE OF VARIATION OF LAST THREE CONSECUTIVE READINGS (SEE FS 2212, SECTION 3)

pH: ± 0.2 units **Temperature:** ± 0.2 °C **Specific Conductance:** ± 5%
Dissolved Oxygen: all readings ≤ 20% saturation (see Table FS 2200-2); optionally, ± 0.2 mg/L or ± 10% (whichever is greater)
Turbidity: all readings ≤ 20 NTU; optionally ± 5 NTU or ± 10% (whichever is greater)

US Environmental Rental Corporation

(888) 550-8100 www.usenvironmental.com

166 Riverview Ave, Waltham, MA 02453 (781) 899-1560
91 Prestige Park Circle, Suite 5, East Hartford, CT 06108 (860) 289-8700
5C South Gold Dr, Hamilton, NJ 08691 (609) 570-8555
1202 Tech Blvd., Suite 108, Tampa, FL 33619 (813) 628-4200

Order No.: 45444
Date: 11/7/2017
Technician: JS

YSI

Company: Tierra
Contact: Sammy Awad
Phone #: #N/A

Packing List

Item	Serial Number	Tech	QC
556	0	✓	
Handheld Display	08K100598	✓	

Item	Tech	QC	Item	Tech	QC
Cable 4 M '	✓		AC Adaptor		
Flow Cell	✓		Stand		
Barb Kit	✓		D.O Kit	✓	
Storage / Cal Cup	✓		Calibration Kit	✓	
Sensor Guard	✓				
Manual					
Sonde Cap					
Software					
Extra Batteries	✓				
Display Comm. Cable					
Sonde Comm. Cable					

Calibration Report

556			0	
Parameter	***Accuracy***	***Before***	***After***	***Lot #***
Conductivy 1000 µs/cm	*(+/-.5%)*	1415	1413	170803B
pH 7 Buffer	*(+/- .2)*	7.02	7.00	170622I
pH mV for 7 Buffer	*(0 +/- 50)*		**-1.3**	
pH 4 Buffer	*(+/- .2)*	4.07	4.00	170803C
pH mV for 4 Buffer	*(180 +/- 50)*		**170.5**	
pH 10 Buffer	*(+/- .2)*	9.95	10.00	170622J
pH mV for 10 Buffer	*(-180 +/- 50)*		**-170.4**	
ORP mV, 237.5	*(+/- 20 mV)*	197.3	200.00	7GI780
DO 100% Sat	*(+/- 2%)*	98.9%	100.5%	
0% DO Check	*(+/- 2%)*		1.80	
Turbidity 0 NTU	*(+/- 5%)*			
Turbidity 126 NTU	*(+/- 5%)*			
Lab Conditions during calibration				

All calibration standards are NIST traceable. Calibration must be performed according to manufacturer's specifications.

This document certifies that US Environmental Rental Corporation has provided this rental equipment and all accessories in good working order. It is the renter's responsibility to: a) review all included items upon receipt, b) verify that all items are in acceptable condition and function properly, and c) contact a US Environmental associate immediately if any item is missing, damaged, and/or not functioning properly. Any delay in notifying US Environmental will be considered as the Renter taking responsibility for such missing, damaged, and/or malfunctioning item.

Missing, damaged, and/or malfunctioning equipment and accessories will result in additional fees.

43rd Street 6511-17-207E

Form FD 9000-8: FIELD INSTRUMENT CALIBRATION RECORDS

INSTRUMENT (MAKER/MODEL#) Hach 2100 Q **INSTRUMENT #** 12090020275

PARAMETER: *[check only one]*

☐ TEMPERATURE ☐ CONDUCTIVITY ☐ SALINITY ☐ pH ☐ ORP

☒ TURBIDITY ☐ RESIDUAL Cl ☐ DO ☐ OTHER _____

STANDARDS: *[Specify the type(s) of standards used for calibration, the origin of the standards, the standard values, and the date the standards were prepared or purchased]*

Standard A 10 NTU Lot# A7081 Exp June-18

Standard B 20 NTU Lot# A7083 Exp June-18

Standard C 100 NTU Lot# A7074 Exp June-18

DATE (yy/mm/dd)	TIME (hr:min)	STD (A, B, C)	STD VALUE	INSTRUMENT RESPONSE	% DEV	CALIBRATED (YES, NO)	TYPE (INIT, CONT)	SAMPLER INITIALS
17/11/08	0830	A	10	10	0	Yes	Cont	SA
	↓	B	20	19.95	.25	Yes		SA
	↓	C	100	101	1	Yes		SA
	1130	A	10	9.97	.3	Yes		SA
	↓	B	20	19.98	.1	Yes		SA
↓	↓	C	100	100	0	Yes	↓	SA

Boldly "X" this box if there is qualified data on this page.

Form FD9000-8 **CALIBRATION LOG (FDEP SOP FT 1000-FT 1500, FD 1000-FD 4000)** *11-10-05*

Project/Site: 65/1-17-207E 43rd St. Outfall Date: 11/8/17 Meter # 08K100598

Temperature (Quarterly) *For Date of Last Temperature Verification see* _____ *in log book*

Dissolved Oxygen	DEP SOP FT 1500	Initials	Date	Time	Probe Charge	Probe Gain	mg/L	Temp °c	% DO	Saturation mg/L (from chart)	Pass or Fail
										Acceptance Criteria: +/-0.3mg/l	
CAL (ICV) CCV		SA	11/8/17	0830	NA	NA	8.016	25.81	98.7	8.143	(P) F
CAL ICV (CCV)		SA	↓	1140	↓	↓	8.105	26.40	99.5	8.055	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Specific Conductance	DEP SOP FT 1200	Initials	Date	Time	Standard µmhos/cm	Exp. Date	Lot #	Bottle #	Cell Constant	Reading µmhos/cm	Pass or Fail
										Acceptance Criteria: +/- 5%	
CAL (ICV) CCV		SA	11/8/17	0830	1413	Oct-18	7GJ129	NA	NA	1414	(P) F
CAL ICV (CCV)		SA	↓	1140	1413	" "	" "	NA	NA	1410	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

pH	DEP SOP FT 1100	Initials	Date	Time	Standard SU	Exp. Date	Lot #	Bottle #	Slope	Reading SU	Pass or Fail
										Acceptance Criteria: +/- 0.2 SU	
CAL (ICV) CCV		SA	11/8/17	0830	7.0	Oct-19	7GJ130	NA	NA	7.01	(P) F
CAL (ICV) CCV		SA	↓		4.0	Oct-19	7GJ128	↓	↓	4.00	(P) F
CAL (ICV) CCV		SA		↓	10.0	June-19	7GF1003			10.00	(P) F
CAL ICV (CCV)		SA		1140	7.0	" "	" "			6.95	(P) F
CAL ICV (CCV)		SA			4.0	" "	" "			3.98	(P) F
CAL ICV (CCV)		SA		↓	10.0	" "	" "			9.97	(P) F
CAL ICV CCV											P F
CAL ICV CCV											P F
CAL ICV CCV											P F

Maintenance: Weekly pH Slope: NA Specific Conductance Probe Cleaned? (Yes) No Dissolved Oxygen Membrane Changed: Yes (No)

Notes:

Perform only in Calibrate Mode: **CAL** - Calibrate -
Perform only in Run Mode: **ICV** - Initial Calibration Verification
Perform only in Run Mode: **CCV** - Continuing Calibration Verification

TIERRA

May 23, 2017
Revised: June 23, 2017

Pennoni, Inc.
2555 Nursery Road
Suite 104
Clearwater, FL 33764

Attn: Mr. E. Peter Nikolov, P.E.

RE: Report of Geotechnical Engineering Services
43rd Street – Drainage Improvements
Hillsborough County, Florida
Tierra Project No.: 6511-15-082

Mr. Nikolov:

Tierra, Inc. (Tierra) has completed the geotechnical engineering study for the above referenced project. The results of the study are provided herein.

Should there be any questions regarding the report, please do not hesitate to contact our office at (813) 989-1354. Tierra would be pleased to continue providing geotechnical services throughout the implementation of the project. We look forward to working with you and your organization on this and future projects.

Respectfully Submitted,

TIERRA, INC.

William P. Rovira IV, P.E.
Geotechnical Engineer
Florida License No. 74586

Erick M. Frederick, P.E.
Senior Geotechnical Engineer
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USDA Soil Survey & USGS Quadrangle Maps (Sheet 1)
Boring Location Plan (Sheets 2 through 4)
Soil Profiles (Sheets 5 and 6)
Pavement Data Sheet (Sheet 7)
Photographs of Pavement Cores (Sheets 8 through 12)

PROJECT DESCRIPTION

Project Information

Based on the project information provided by the design team, the City of Tampa proposes to perform drainage improvements. It is our understanding that these improvements will consist of the installation of a 48-inch diameter reinforced concrete pipe (RCP) pipeline and box culvert.

The proposed 48-inch RCP outfall pipeline will follow N. 40th Street from E. Columbus Drive southward to E. 10 Avenue. The proposed pipeline will then follow E. 10th Avenue eastward to N. 43rd Street and turn southward and tie into a drainage easement that flows to the southwest. According to plans provided by Pennoni, pipe invert elevations are anticipated to range from approximately +10 to +25 feet, NAVD 88. Directional drilling or Jack and Bore techniques will be utilized to traverse under the CSX railroad tracks along the project and open trench construction is anticipated along the remaining portions of the pipe alignment.

Scope of Services

The objective of our study was to obtain information concerning subsurface conditions at the site to base engineering estimates and recommendations in each of the following areas:

1. Identification of subsurface conditions along the project alignment.

2. General location and description of potentially deleterious materials or conditions discovered in the borings which may interfere with project progress including existing fills or organic soils.

3. Identification of groundwater levels.

In order to meet the preceding objectives, we provided the following services:

1. Reviewed the “Tampa, Florida” Quadrangle Map published by the United States Geological Survey (USGS), as well as the Soil Survey of Hillsborough County, Florida, published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).

2. Obtained the required Right of Way Use and Maintenance of Traffic Permits prior to beginning our field exploration.

3. Performed Maintenance of Traffic (MOT) in accordance with FDOT Indices (as necessary) during the field exploration.

4. Executed a program of subsurface exploration consisting of borings, pavement cores, subsurface sampling and field testing. A total of twelve (12)

Standard Penetration Test (SPT) borings were performed to depths ranging from 10 to 20 feet below existing site grades or the existing pavement surface along the proposed pipe and box culvert alignment. Performed a total of ten (10) pavement cores within the travel lanes along the proposed pipeline alignment.

5. Visually classified the samples in the laboratory using the Unified Soil Classification System (USCS) and conducted laboratory classification testing. Identified soil conditions at each boring location.

6. Identified the asphalt pavement thickness, base type/thickness and measured the crack depth (if any) at each core location.

7. Collected groundwater level measurements.

8. Prepared this engineering report that summarizes the course of study pursued, the field data generated, subsurface conditions encountered and our engineering recommendations in each of the pertinent topic areas.

The scope of our services did not include an environmental assessment for determining the presence or absence of wetlands or hazardous or toxic materials in the soil, bedrock, groundwater, or air, on or below or around this site. The scope of our services did not include determination of the potential for sinkhole activity. Any statements in this report or on the boring logs regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of our client.

SITE AND SUBSURFACE CONDITIONS

General Site Information

The proposed outfall pipeline will follow N. 40th Street from E. Columbus Drive southward to E. 10 Avenue. The proposed pipeline will then follow E. 10th Avenue eastward to N. 43rd Street and turn southward and tie into a drainage easement that flows to the southwest.

USGS Quadrangle Maps

Based on the “Tampa, Florida” USGS Quadrangle Map, the natural ground surface elevations along the project alignment range from approximately +20 to +30 feet, National Geodetic Vertical Datum of 1929 (NGVD).

Hillsborough County Soil Survey

Based on a review of the Hillsborough County Soil Survey published by the USDA NRCS, it appears that there are four (4) primary soil-mapping units noted within the vicinity of the project limits.

Arents (4) - The Arents component makes up 100 percent of the map unit. Slopes are 0 to 5 percent. This component is on rises on marine terraces on coastal plains, fills. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during June, July, August, September, October, and November. Organic matter content in the surface horizon is about 0 percent.

Myakka Urban land complex (32) - The Myakka component makes up 50 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 1 percent.

Ona Urban land complex (34) - The Ona component makes up 52 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent.

Urban land (56) - The Urban Land component of the current and previously mentioned soil types consists of areas where most of the soil surface is covered with impervious materials, such as buildings and paved areas. This land type consists of areas where the original soil has been modified through cutting, grading, filling, and shaping or has been generally altered for urban development.

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

SUMMARY OF USDA SOIL SURVEY HILLSBOROUGH COUNTY, FLORIDA							
USDA Map Symbol and Soil Name	Depth (in)	Soil Classification		Permeability (in/hr)	pH	Seasonal High Water Table	
		USCS	AASHTO			Depth (feet)	Months
(4) Arents	0-10	SP, SP-SM	A-1-b, A-2-4, A-3	6.0 - 20.0	6.6-8.4	1.5-3.0	June-Nov
	10-32	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-8.4		
	32-60	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-6.5		
(32) Myakka-Urban Land	0-5	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.5	0.5-1.5	June-Sept
	5-20	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.5		
	20-30	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	3.5-6.5		
	30-80	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.5		
	-	-	-	0.0 - 0.0	-		
(34) Ona-Urban Land	0-4	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.0	0.5-1.5	June-Sept
	4-18	SM, SP-SM	A-2-4, A-3	0.6 - 2.0	3.5-6.0		
	18-80	SP, SP-SM	A-3	6.0 - 20.0	3.5-6.0		
	-	-	-	0.0 - 0.0	-		
(56) Urban Land	-	-	-	-	-	-	-

It should be noted that information contained in the USDA NRCS Soil Survey may not be reflective of current subsurface conditions, particularly if recent development in the project vicinity has modified existing soils or surface/subsurface drainage.

Review of Potentiometric Information

Based on a review of the "Potentiometric Surface Elevation of the Upper Floridan Aquifer, West-Central Florida" maps published by the USGS, the potentiometric surface elevation of the upper Floridan Aquifer along the alignment of the proposed pipeline ranges from approximately +10 to +20 feet, NGVD 29.

As indicated above, the natural ground elevations along the alignment of the proposed pipeline ranges on the order of +20 to +30 feet, NGVD 29. Artesian flow conditions were not encountered during the field exploration. However, the contractor's tools and construction methods should be adequate to handle a potentiometric level up to +20 feet, NGVD 29, at no additional cost to the city.

Subsurface Conditions

Prior to commencing our subsurface explorations, a boring location plan was developed based on project information provided by the design team. The subsurface conditions along the proposed pipeline alignment were explored using ten (10) Standard Penetration Test (SPT) borings drilled to depths ranging from 10 to 20 feet below the existing ground surface and pavement surface. A total of ten (10) pavement cores were performed within the travel lanes along the proposed pipeline alignment. In addition, one (1) SPT boring was performed to a depth of 20 feet below grade at the proposed jack and bore location.

The locations of the pavement cores and borings were staked by Tierra. The boring coordinates of the SPT borings and pavement cores were determined using hand-held Garmin Etrex® Global Positioning System (GPS) equipment with a reported accuracy of 10 feet. The **Boring Location Plan Sheets** depicting the locations of the pavement cores and SPT borings performed are presented in the **Appendix**.

The SPT borings were performed with the use of a drill rig using Bentonite Mud drilling procedures. The soil sampling was performed in general accordance with American Society for Testing and Materials (ASTM) Test Designation D-1586 titled "Penetration Test and Split-Barrel Sampling of Soils." Within the SPT borings, the initial 4 to 6 feet were manually augered to verify utility clearance. SPT resistance N-values were then recorded continuously to a depth of 10 feet and on intervals of 5 feet thereafter to the boring termination depth. The soil samples were classified in the field and transported to our laboratory for review.

The pavement cores extended through the pavement and base materials and were performed with the use of a 4-inch diameter core bit. Hand auger borings were also performed at the pavement core locations to depths of approximately 5 feet below the pavement surface to evaluate the subgrade material. Upon completion of the core and boring, the hole was backfilled with sand to the bottom of the base depth and then patched with asphalt cold patch. The asphalt cores and samples of the base and subgrade materials were collected and transported to our Tampa laboratory for visual classification.

The soil strata encountered in the borings performed at the project site are summarized in the following table:

Stratum Number	Soil Description	USCS Symbol
P	Pavement and Base Material	--(1)
1	Pale Brown to Brown SAND to SAND with Silt	SP/SP-SM
2	Brown Silty SAND	SM
3	Gray to Brown Sandy CLAY to CLAY	CL/CH
4	Gray to Brown Clayey SAND	SC

(1) USCS nomenclature do not include a soil classification for pavement and base material

The subsurface soil stratification is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The soil profiles included in the **Appendix** should be reviewed for specific information at individual boring locations. These profiles include soil descriptions, stratifications, and penetration resistances when applicable. The stratifications shown on the boring profiles represent the conditions only at the actual boring location. Variations did occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface soils and the actual transition may be gradual.

Groundwater Information

The groundwater table, when encountered, was measured at depths ranging from 5 to 9 feet below existing grades/pavement surface within the borings performed. The **Soil Profiles** sheets should be reviewed for specific groundwater information at each project site location.

It should be noted that groundwater levels tend to fluctuate during periods of prolonged drought and extended rainfall and may be affected by man-made influences. In addition, a seasonal effect will also occur in which higher groundwater levels are normally recorded in rainy seasons.

Seasonal High Groundwater Information

Based on the subsurface conditions encountered in the borings performed, Seasonal High Groundwater Table could not be determined due to the disturbed nature of the soils along the proposed pipeline alignment. A review of the Soil Survey of Hillsborough County, Florida published by the USDA NRCS indicated a Seasonal High Groundwater Table ranging from approximately 0.5 to 3.0 feet below the existing ground surface and pavement surface within the vicinity of the proposed pipeline alignment.

LABORATORY TESTING

General

Representative soil samples collected from the proposed pipeline alignment were classified and stratified in general accordance with the Unified Soil Classification System (USCS). Our classification was based on visual observations, using the results from the laboratory testing as confirmation. These tests included fines content, Atterberg Limits and natural moisture content determination. In addition, environmental corrosion tests were performed on selected soil samples to evaluate the corrosive nature of the subsurface soils encountered.

Test Designation

The following list summarizes the laboratory tests performed and respective test methods.

- Fines Content - The fines content tests were conducted in general accordance with the AASHTO test designation T-088 (ASTM test designation D-422).

- Atterberg Limits - The liquid limit and plastic limits ("Atterberg Limits") were conducted in general accordance with the AASHTO test designation T-089 and T-090, respectively (ASTM test designation D-4318).

- Environmental Corrosion - The environmental corrosion tests were conducted in general accordance with the FDOT test designations FM 5-550, FM 5-551, FM 5-552 and FM- 553.

- Natural Moisture Content - The moisture content tests were conducted in general accordance with the AASHTO test designation T-265 (ASTM test designation D-2216).

The laboratory test results are shown adjacent to their respective boring profiles on the **Soil Profiles** sheet in the **Appendix**.

EVALUATION AND RECOMMENDATIONS

General

The results of the borings performed along the proposed pipeline alignment are presented on the **Soil Profiles** sheet in the **Appendix**. Based on the results of the field exploration, sands, silty sands, clayey sands, and clays were encountered within the depths of the proposed pipe elevations.

The Contractor shall be responsible for construction requirements based on the subsurface soil and groundwater conditions encountered. If buried organic soils, debris, or unsuitable material is encountered during construction that is not identified in this report, they should be removed and replaced with clean, compacted engineered fill in accordance with project requirements.

Tierra recommends utilizing the current FDOT Standard Specifications for Road and Bridge Construction (SSRBC), Section 125 and project specifications for construction of the proposed drainage piping. The following report sections provide our recommendations for site preparation and construction considerations.

It should be noted that if final design criteria deviates from what is stated in this report, Tierra should be given the opportunity to review the new information and amend our recommendations, if necessary.

Protection of Existing Structures

Several structures (i.e. I-4 Overpass, Commercial buildings, and Residential structures) are located within close proximity of the proposed improvements. Depending on the means and methods of construction/installation of the pipeline, vibration concerns may become critical to the project.

Project specifications are to be followed concerning protection of existing structures. Tierra recommends addressing the protection of existing structures within the plans by stating that it is the responsibility of the Contractor to take necessary precautions to protect existing structures and that it is the Contractor's responsibility to repair at his expense any damage to adjacent structures caused by construction activities. Pre and post condition surveys and additional plan notes can be added in coordination with Pennoni prior to the final submittal.

On-Site Soil Suitability

The suitability of the soil for reuse along the project should be evaluated against the project engineering fill requirements. Variations in the subsurface stratifications should be expected between borings. Fill should be placed in accordance with project requirements.

In general, the soils of Stratum 1 (SP/SP-SM) may be moved and used for grading purposes, site leveling, general engineering fill, and trench backfill, provided the fill is free of organic materials, clay, debris or any other material deemed unsuitable for construction and evaluated against engineering fill requirements in the project specifications.

Site Preparation

Prior to construction, the location of any existing underground utilities within the construction area should be established. Material suitable for re-use may be stockpiled; however, any material stockpiled for re-use shall be tested for conformance to material specifications as indicated in the following sections of this report. Provisions should then be made to relocate any interfering utility lines within the construction area to appropriate locations and backfilling the resulting excavations with compacted structural fill. In this regard, it should be noted that if abandoned underground pipes are not properly removed or plugged, they might serve as conduits for subsurface erosion, which subsequently may result in excessive settlement.

Drainage and Groundwater Concerns

The groundwater levels presented in this report are the levels that were measured at the time of our field activities. Fluctuation should be anticipated. We recommend that the Contractor determine the actual groundwater levels at the time of the construction to determine groundwater impact on his construction procedure. Care should be given to open excavations and site grading to minimize ponding of surface water.

Trench Subgrade Preparation, Pipe Bedding Material and Trench Backfill

In areas where open trench construction is planned, the exposed trench subgrade should be evaluated to confirm that unsuitable materials have been removed. The exposed subgrade should then be compacted to provide a stable/unyielding surface prior to placing pipe bedding material. For subgrade, pipe bedding material and trench backfill, project specifications are to be followed in regards to required soil compaction. Pipe bedding material and trench backfill should be placed and compacted in 12-inch maximum lifts, based on loose measure.

Compaction should be completed with a vibratory plate compactor or similar equipment in order to meet the minimum density requirements stated herein. Careful observations should be made during compaction activities to help identify any areas of soft/yielding soils that may require over-excavation and replacement filling. The subgrade compaction requirements shall be in accordance with project specifications. A program of field density

testing should be incorporated into the construction specifications to confirm compaction requirements are met.

Engineered Fill

Any off site fill imported for the project should consist of clean fine sand with less than 10 percent by dry weight passing the U.S. Standard No. 200 sieve. Additionally, the material should be free of rubble, organics, clay, debris and other deleterious material. Fill should be tested and approved prior to import and placement. Each lift should have a loose thickness not exceeding 12 inches. Density tests should be performed to confirm the required compaction is being achieved prior to placing the next lift.

Excavations

Temporary side slopes and excavations should comply with the Occupational Safety and Health Administration's (OSHA) trench safety standards, 29 C.F.R., s. 1926.650, Subpart P, subsequent revisions or updates of OSHA's referenced standard adopted by the Department of Labor and Employment Security and Florida's Trench Safety Act, Section 553.62, Florida Statutes. Excavated materials should not be stockpiled at the top of the slope within a horizontal distance equal to the excavation depth.

REPORT LIMITATIONS

The analyses, conclusions and recommendations contained in this report are opinions based on the site conditions and project layout described herein and further assume that the conditions observed in the exploratory borings are representative of the subsurface conditions throughout the site, i.e., the subsurface conditions elsewhere on the site are the same as those disclosed by the borings. If, during construction, subsurface conditions different from those encountered in the exploratory borings are observed or appear to be present beneath excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse in time between the submittal of this report and the start of work at the site, or if conditions or project layout are changed due to natural causes or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of conclusions and recommendations considering the changed conditions and time lapse.

This report was prepared for the exclusive use of Pennoni, Inc. and their clients for evaluating the design of the project as it relates to the geotechnical aspects discussed herein. It should be made available to prospective contractors for information on factual data only and not as a warranty of subsurface conditions included in this report. Unanticipated soil conditions may require that additional expense be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

Appendix

USDA Soil Survey & USGS Quadrangle Maps (Sheet 1)

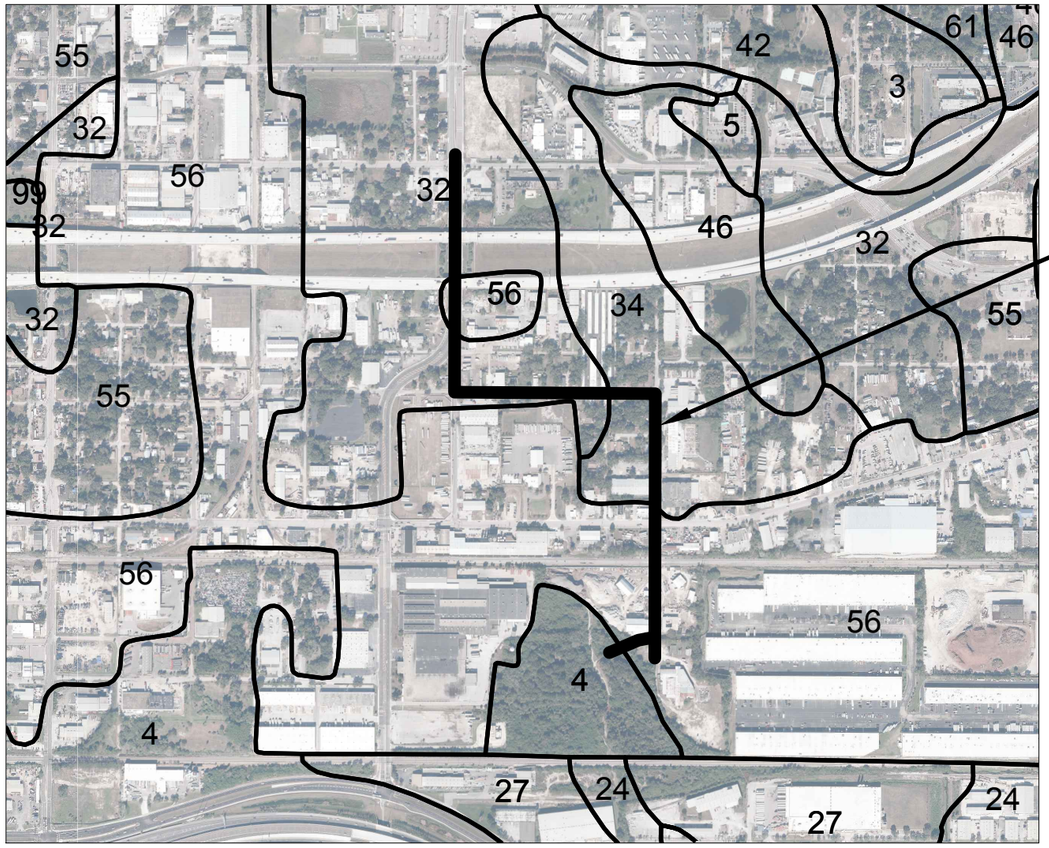
Boring Location Plan (Sheets 2 through 4)

Soil Profiles (Sheets 5 and 6)

Pavement Data Sheet (Sheet 7)

Photographs of Pavement Cores (Sheets 8 through 12)

USDA SOIL SURVEY MAP



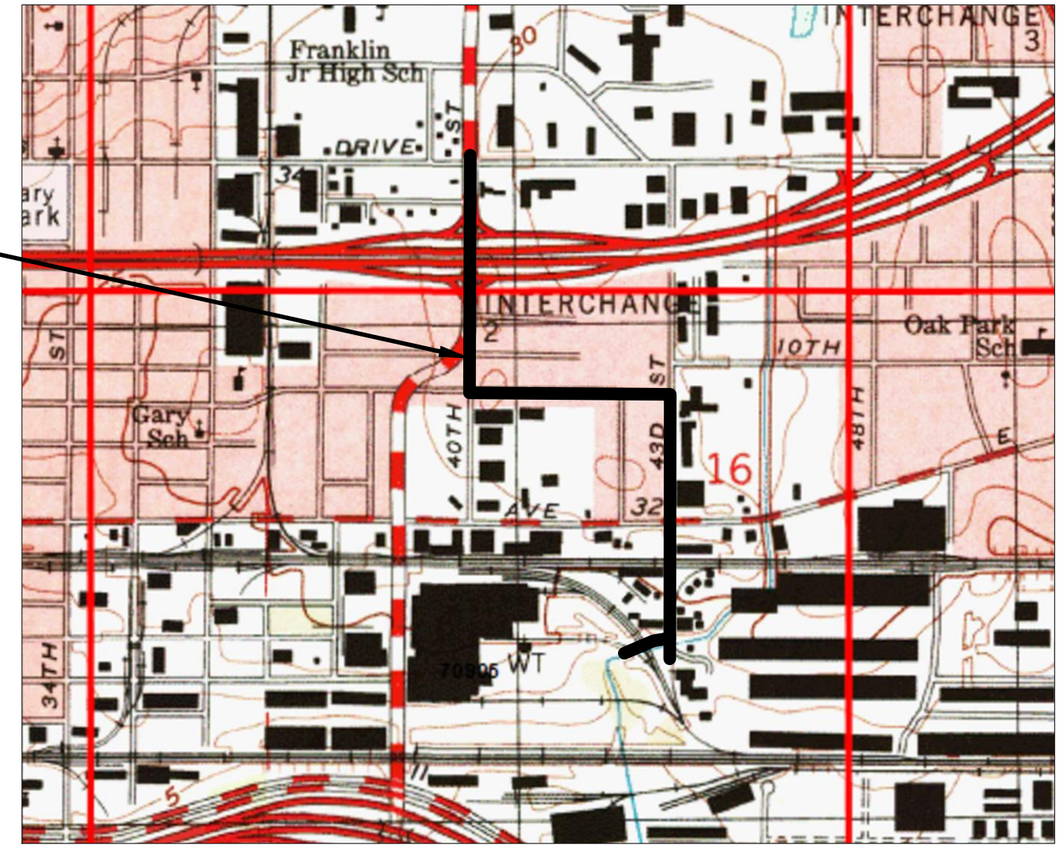
REFERENCE: USDA SOIL SURVEY OF HILLSBOROUGH COUNTY, FLORIDA

APPROXIMATE PROJECT ALIGNMENT

0 1000'

PLAN SCALE

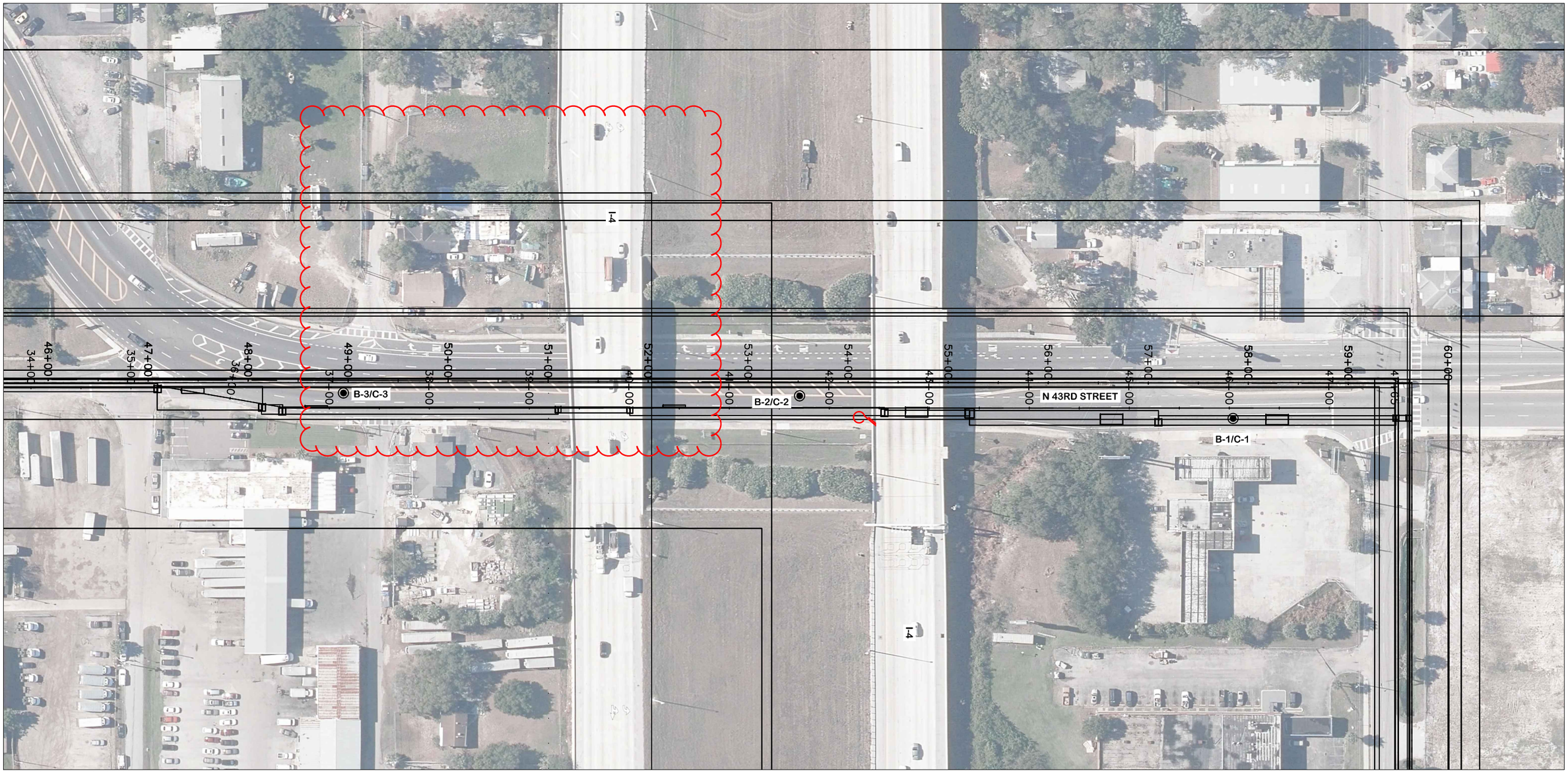
USGS QUADRANGLE MAP



REFERENCE: "TAMPA, FLORIDA" USGS QUADRANGLE MAP

TOWNSHIP:	29 S
RANGE:	19 E
SECTION:	16

DRAWN BY: SW CHECKED BY: EMF	APPROVED BY: WPR DATE: MAY 2017	ENGINEER OF RECORD: WILLIAM P. ROVIRA IV, P.E. FLORIDA LICENSE NO.: 74586	TIERRA 7351 Temple Terrace Highway Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-15-082	GEOTECHNICAL ENGINEERING SERVICES 43RD STREET DRAINAGE IMPROVEMENTS HILLSBOROUGH COUNTY, FLORIDA	SHEET 1



NOTE: BASE MAP PROVIDED BY PENNONI, INC.

BORING LOCATION PLAN

0 100'

PLAN SCALE

LEGEND

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND HAND AUGER BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND SPT BORING

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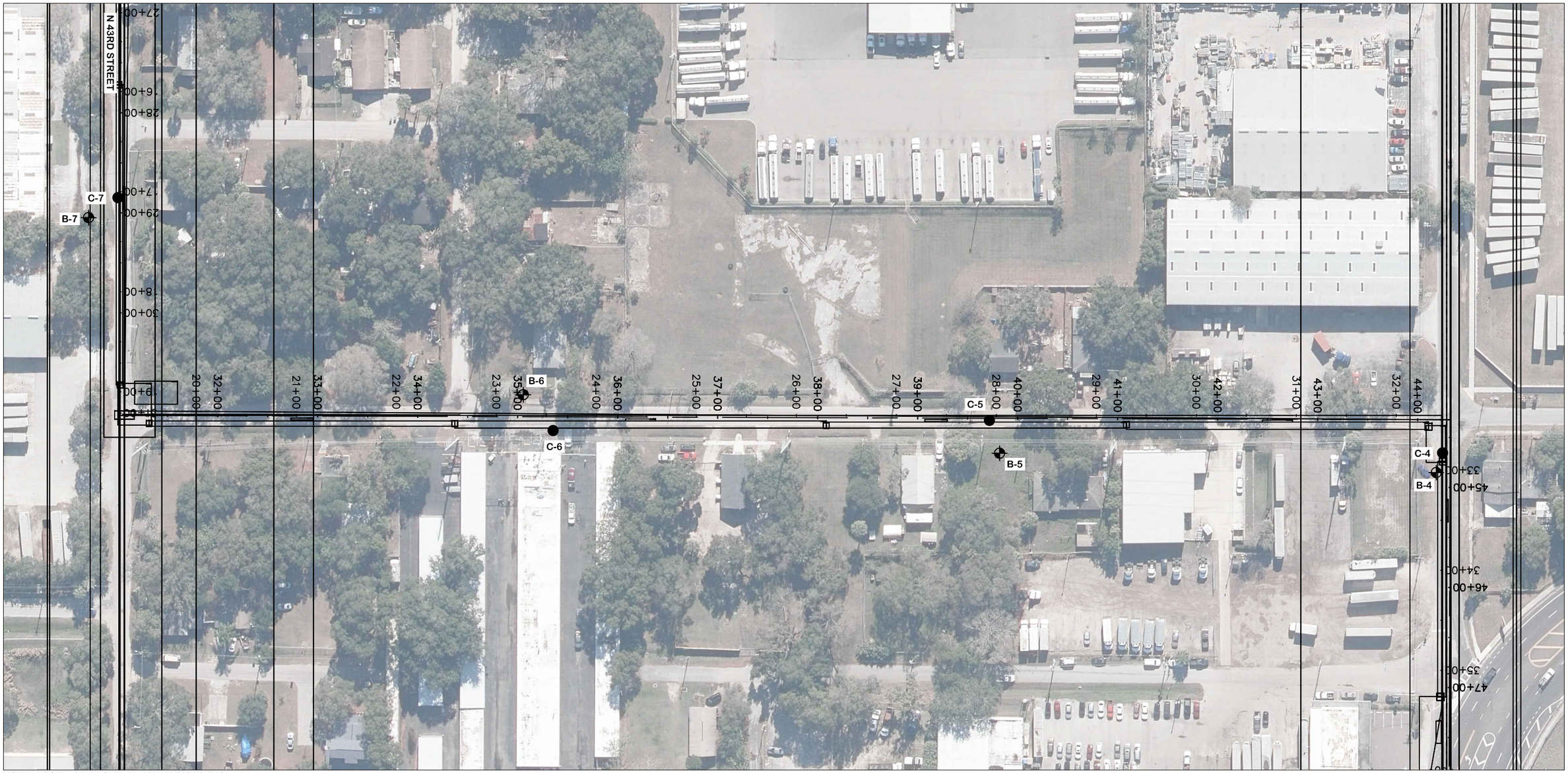


NOTE: BASE MAP PROVIDED BY PENNONI, INC.

BORING LOCATION PLAN

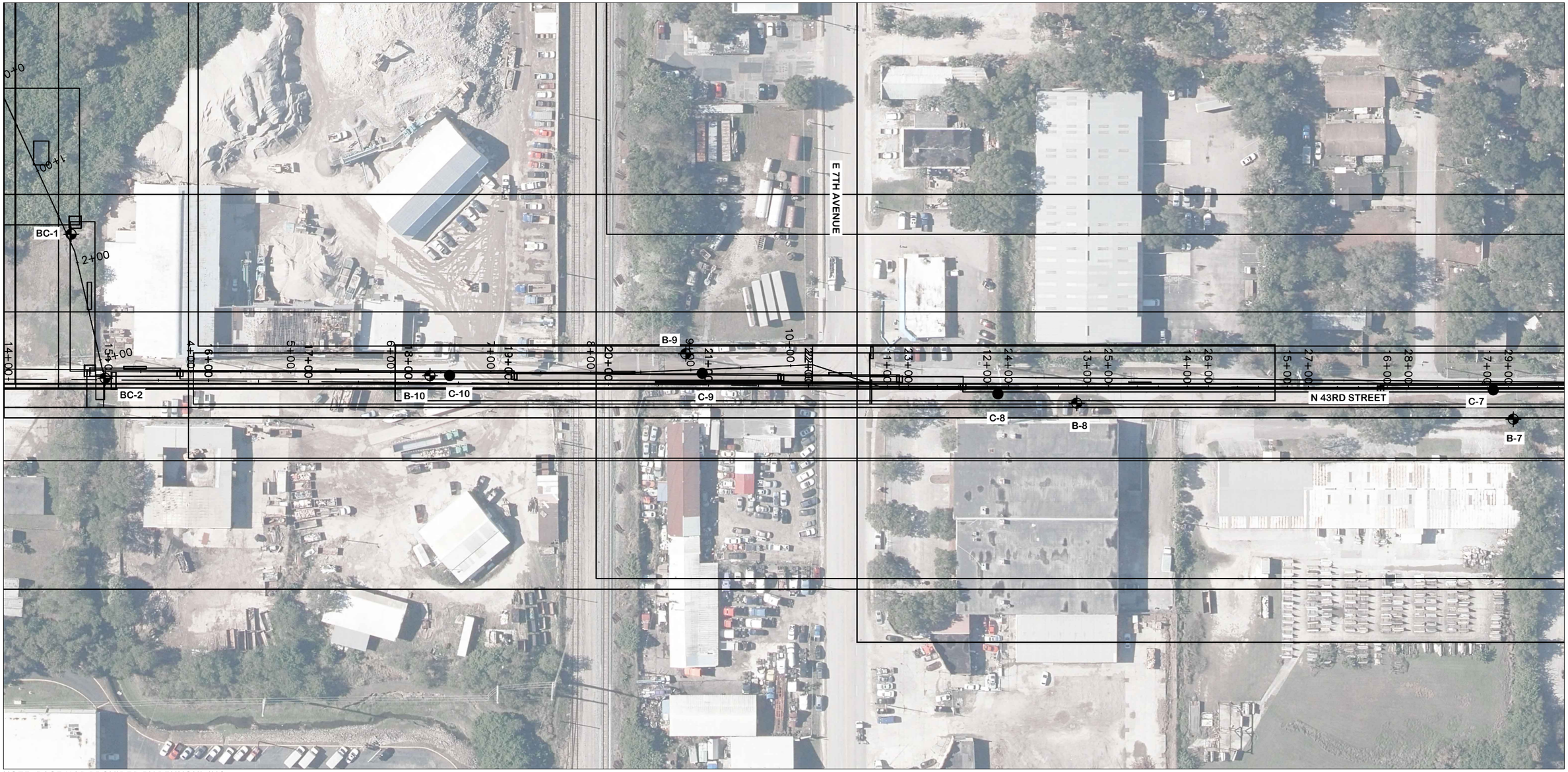
0 100'

PLAN SCALE

LEGEND

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND HAND AUGER BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND SPT BORING

DRAWN BY: SW CHECKED BY: EMF	APPROVED BY: WPR DATE: MAY 2017	ENGINEER OF RECORD: WILLIAM P. ROVIRA IV, P.E. FLORIDA LICENSE NO.: 74586	TIERRA 7351 Temple Terrace Highway Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-15-082	GEOTECHNICAL ENGINEERING SERVICES 43RD STREET DRAINAGE IMPROVEMENTS HILLSBOROUGH COUNTY, FLORIDA	SHEET 3



NOTE: BASE MAP PROVIDED BY PENNONI, INC.

BORING LOCATION PLAN

0 100'

PLAN SCALE

LEGEND

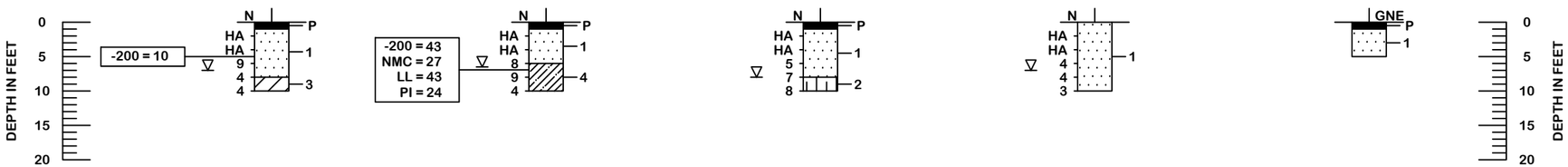
- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND HAND AUGER BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND SPT BORING

DRAWN BY: SW CHECKED BY: EMF	APPROVED BY: WPR DATE: MAY 2017	ENGINEER OF RECORD: WILLIAM P. ROVIRA IV, P.E. FLORIDA LICENSE NO.: 74586	TIERRA 7351 Temple Terrace Highway Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-15-082	GEOTECHNICAL ENGINEERING SERVICES 43RD STREET DRAINAGE IMPROVEMENTS HILLSBOROUGH COUNTY, FLORIDA	SHEET 4

SOIL PROFILES

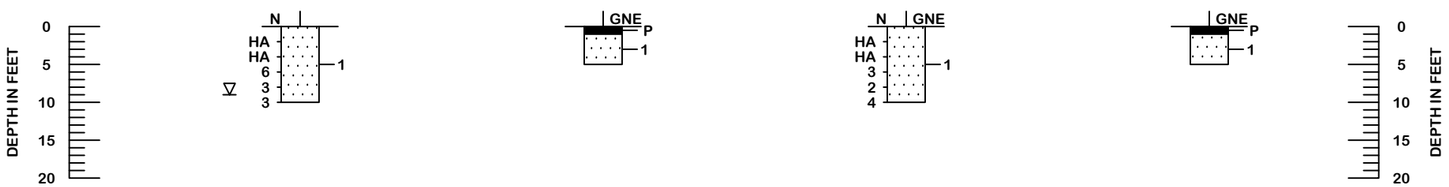
48" RCP

	B-1/C-1	B-2/C-2	B-3/C-3	B-4	C-4
BOR #	B-1/C-1	B-2/C-2	B-3/C-3	B-4	C-4
NORTHING	1320684	1320251	1319795	1319385	1319365
EASTING	522525	522502	522500	522500	522493
DATE	5/9/2017	5/9/2017	5/9/2017	5/27/2017	5/9/2017
DRILLER	I. POORAN	I. POORAN	I. POORAN	I. POORAN	
HAMMER	AUTOMATIC	AUTOMATIC	AUTOMATIC	AUTOMATIC	
RIG	D-25	D-25	D-25	D-25	



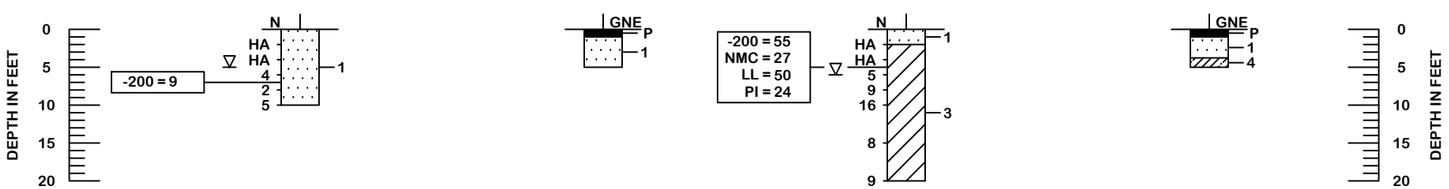
48" RCP

	B-5	C-5	B-6	C-6
BOR #	B-5	C-5	B-6	C-6
NORTHING	1319365	1319333	1319307	1319343
EASTING	522936	522946	523412	523383
DATE	5/27/2017	5/9/2017	5/27/2017	5/9/2017
DRILLER	I. POORAN		I. POORAN	
HAMMER	AUTOMATIC		AUTOMATIC	
RIG	D-25		D-25	



48" RCP

	B-7	C-7	B-8	C-8
BOR #	B-7	C-7	B-8	C-8
NORTHING	1319130	1319110	1318694	1318615
EASTING	523847	523818	523831	523822
DATE	5/9/2017	5/9/2017	5/9/2017	5/9/2017
DRILLER	I. POORAN		I. POORAN	
HAMMER	AUTOMATIC		AUTOMATIC	
RIG	D-25		D-25	



NOTE:

BASED ON A REVIEW OF THE "POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA" MAPS PUBLISHED BY THE USGS, THE POTENTIOMETRIC SURFACE ELEVATION OF THE UPPER FLORIDAN AQUIFER ALONG THE PROJECT ALIGNMENT IS APPROXIMATELY +10 TO +20 FEET NGVD 29. THE CONTRACTOR SHOULD BE PREPARED TO HANDLE A POTENTIOMETRIC LEVEL UP TO +20 FEET, NGVD 29, AT NO ADDITIONAL COST TO THE CITY.

LEGEND

1. PALE BROWN TO BROWN SAND TO SAND WITH SILT (SP/SP-SM)
2. BROWN SILTY SAND (SM)
3. GRAY TO BROWN SANDY CLAY TO CLAY (CL/CH)
4. GRAY TO BROWN CLAYEY SAND (SC)
P. PAVEMENT AND BASE MATERIAL

∇	GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION
N	SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)
SP	UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW
GNE	GROUNDWATER TABLE NOT ENCOUNTERED
HA	HAND AUGERED TO VERIFY UTILITY CLEARANCES
EASTING	EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX EQUIPMENT WITH A REPORTED ACCURACY OF 10 FEET
NORTHING	NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX EQUIPMENT WITH A REPORTED ACCURACY OF 10 FEET
-200	PERCENT PASSING #200 SIEVE
NMC	NATURAL MOISTURE CONTENT (%)
LL	LIQUID LIMIT (%)
PI	PLASTICITY INDEX (%)

SOIL TEST RESULTS:

RESISTIVITY	6,500 TO 35,000 OHM-CM
CHLORIDES	15 TO 30 PPM
SULFATES	<5 TO 110 PPM
pH	6.6 TO 10.2

RECOMMENDED ENVIRONMENTAL CLASSIFICATION:

SUBSTRUCTURE	STEEL: MODERATELY AGGRESSIVE (SOIL-pH=6.6)
SUBSTRUCTURE	CONCRETE: SLIGHTLY AGGRESSIVE

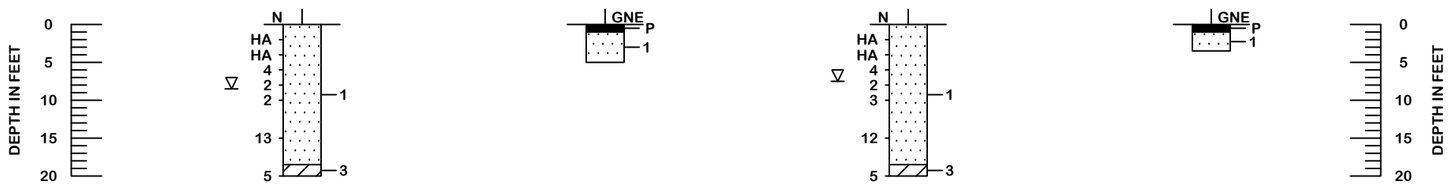
	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS-RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 to 10	3 to 8
MEDIUM DENSE	10 to 30	8 to 24
DENSE	30 to 50	24 to 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 to 4	1 to 3
FIRM	4 to 8	3 to 6
STIFF	8 to 15	6 to 12
VERY STIFF	15 to 30	12 to 24
HARD	GREATER THAN 30	GREATER THAN 24

DRAWN BY: SW	APPROVED BY: WPR	ENGINEER OF RECORD: WILLIAM P. ROVIRA IV, P.E.	TIERRA 7351 Temple Terrace Highway Tampa, Florida 33637 Phone: 813-989-1354 Fax: 813-989-1355 FL Cert. No.: 6486	SCALE: NOTED	PROJECT NUMBER: 6511-15-082	GEOTECHNICAL ENGINEERING SERVICES 43RD STREET DRAINAGE IMPROVEMENTS HILLSBOROUGH COUNTY, FLORIDA
CHECKED BY: EMF	DATE: MAY 2017	FLORIDA LICENSE NO.: 74586				SHEET 5

SOIL PROFILES

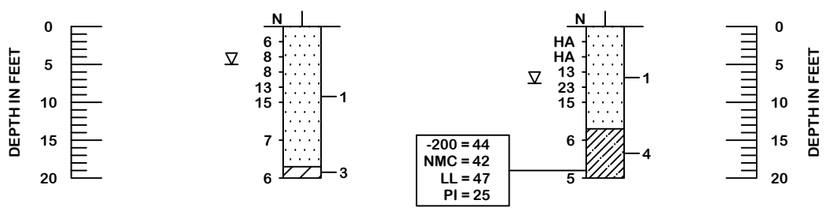
48" RCP

	B-9	C-9	B-10	C-10
BOR #	B-9	C-9	B-10	C-10
NORTHING	1318303	1318319	1318047	1318067
EASTING	523782	523801	523803	523803
DATE	5/27/2017	5/9/2017	5/27/2017	5/9/2017
DRILLER	I. POORAN		I. POORAN	
HAMMER	AUTOMATIC		AUTOMATIC	
RIG	D-25		D-25	



10' X 5' BOX CULVERT

	BC-1	BC-2
BOR #	BC-1	BC-2
NORTHING	1317688	1317722
EASTING	523662	523806
DATE	5/9/2017	5/9/2017
DRILLER	I. POORAN	I. POORAN
HAMMER	AUTOMATIC	AUTOMATIC
RIG	D-25	D-25



LEGEND

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2 — BROWN SILTY SAND (SM)

3 — GRAY TO BROWN SANDY CLAY TO CLAY (CL/CH)

4 — GRAY TO BROWN CLAYEY SAND (SC)

P — PAVEMENT AND BASE MATERIAL

∇ — GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION

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-200 — PERCENT PASSING #200 SIEVE

NMC — NATURAL MOISTURE CONTENT (%)

LL — LIQUID LIMIT (%)

PI — PLASTICITY INDEX (%)

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DRAWN BY: SW
CHECKED BY: EMF
APPROVED BY: WPR
DATE: MAY 2017
ENGINEER OF RECORD: WILLIAM P. ROVIRA IV, P.E.
FLORIDA LICENSE NO.: 74586

TIERRA
7351 Temple Terrace Highway
Tampa, Florida 33637
Phone: 813-989-1354 Fax: 813-989-1355
FL Cert. No.: 6486

SCALE: NOTED
PROJECT NUMBER: 6511-15-082

GEOTECHNICAL ENGINEERING SERVICES
43RD STREET DRAINAGE IMPROVEMENTS
HILLSBOROUGH COUNTY, FLORIDA

PAVEMENT DATA SHEET

Project Name: 43rd Street Drainage Improvements

Tierra Project Number: 6511-15-082

Core No.	State Plane Coordinates (FL West NAD 83)[1]		Roadway/Lane	Pavement Layers (inches)[2]	Base		Subgrade		Crack Depth (inches)	Pavement Condition[3]	Cross Slope (%)	Comments
	Easting	Northing		Asphalt	Type	Thickness (inches)	Type	Depth				
B-1/C-1	522525	1320684	40th St./Outside Northbound Lane	4.00	Limerock	10.00	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	14" to 8'	--	Fair	2.9	
							Gray to Brown Sandy Clay to Clay (CL/CH)	8' to 10'				
B-2/C-2	522502	1320251	40th St./Inside Northbound Lane	4.25	Limerock	8.75	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	13" to 6'	--	Fair	1.6	
							Gray to Brown Clayey Sand (SC)	6' to 10'				
B-3/C-3	522500	1319795	40th St./Inside Northbound Lane	3.75	Limerock	8.25	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	12" to 8'	--	Fair	0.0	
							Brown Silty Sand (SM)	8' to 10'				
C-4	522493	1319365	40th St./Northbound Lane	3.50	Limerock	9.50	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	13" to 5'	--	Poor	--	
C-5	522946	1319333	10th Av./Westbound Lane	1.75	Limerock	8.25	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	10" to 5'	1.75	Poor	0.5	
C-6	523383	1319343	10th Av./Westbound Lane	3.60	Limerock	5.40	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	9" to 5'	--	Poor	2.1	
C-7	523818	1319110	43rd St./Northbound Lane	1.50	Limerock	5.50	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	7.0" to 5.0'	1.50	Poor	3.1	
C-8	523822	1318615	43rd St./Northbound Lane	1.00	Limerock	5.60	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	6.6" to 3.75'	1.00	Poor	2.6	
							Gray to Brown Clayey Sand (SC)	3.75' to 5'				
C-9	523801	1318319	43rd St./Northbound Lane	4.25	Shell/Limerock	8.75	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	13" to 5'	--	Poor	--	
C-10	523803	1318067	43rd St./Northbound Lane	5.50	None	--	Pale Brown to Brown Sand to Sand with Silt (SP/SP-SM)	5.5" to 5'	--	Poor	--	

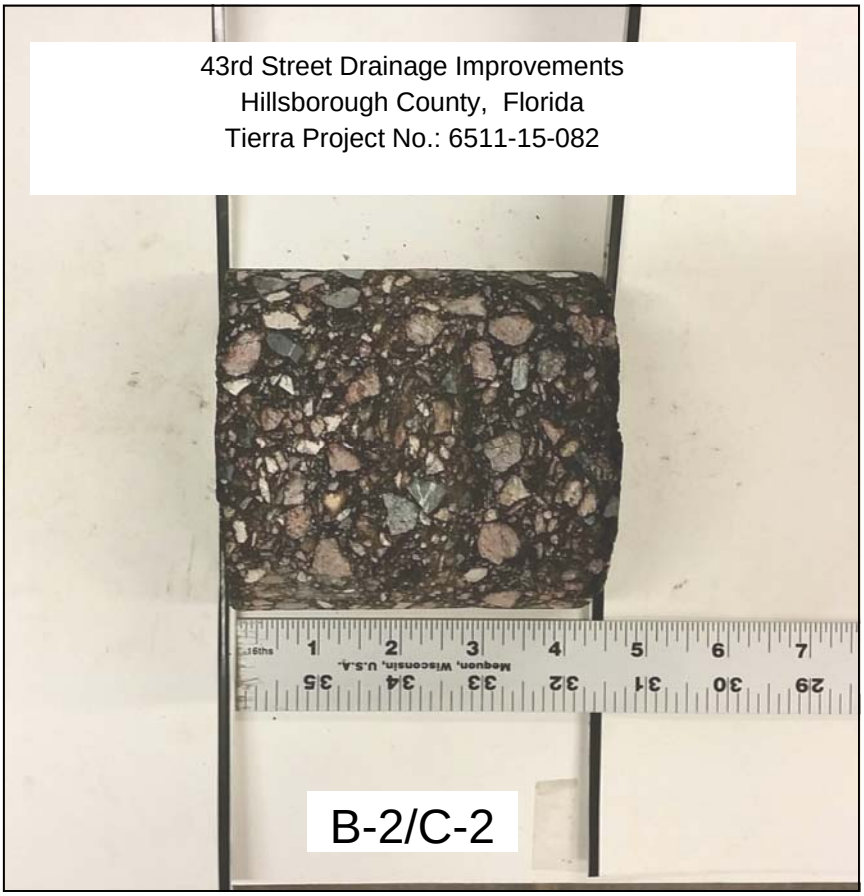
Notes:

(1) Core locationswere estimated based on the GPS coordinates obtained by Tierra and should be considered approximate.

(2) Pavement layer indentification based on visual review.

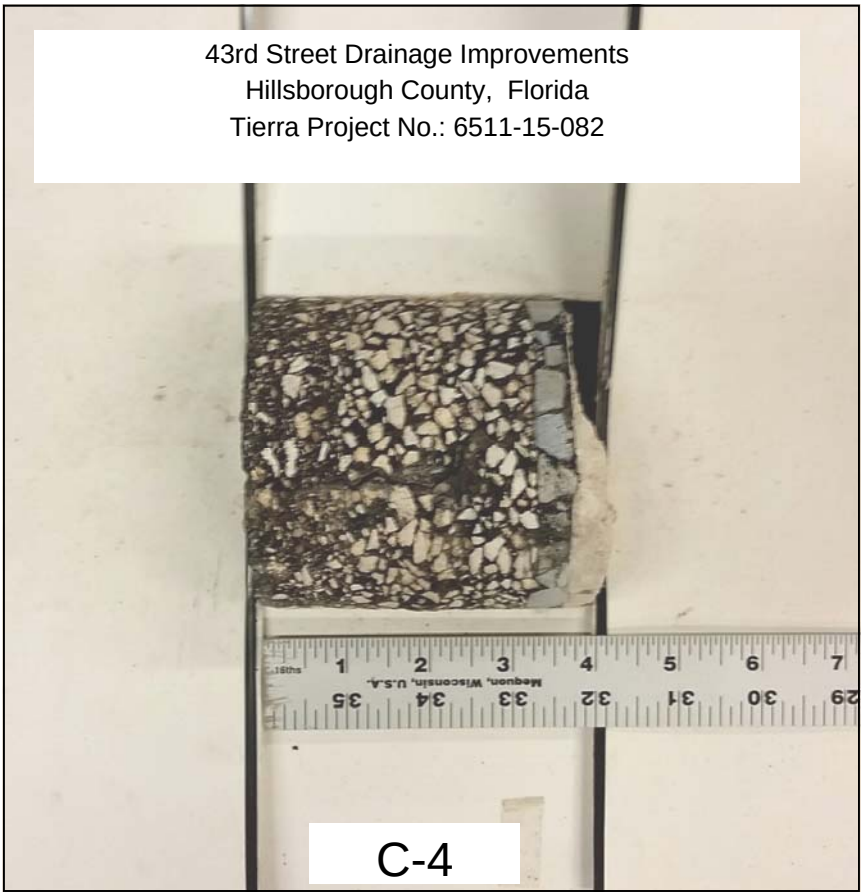
(3) Pavement condition based on visual observation only: Good, Fair, or Poor.

B-1/C-1 Side View



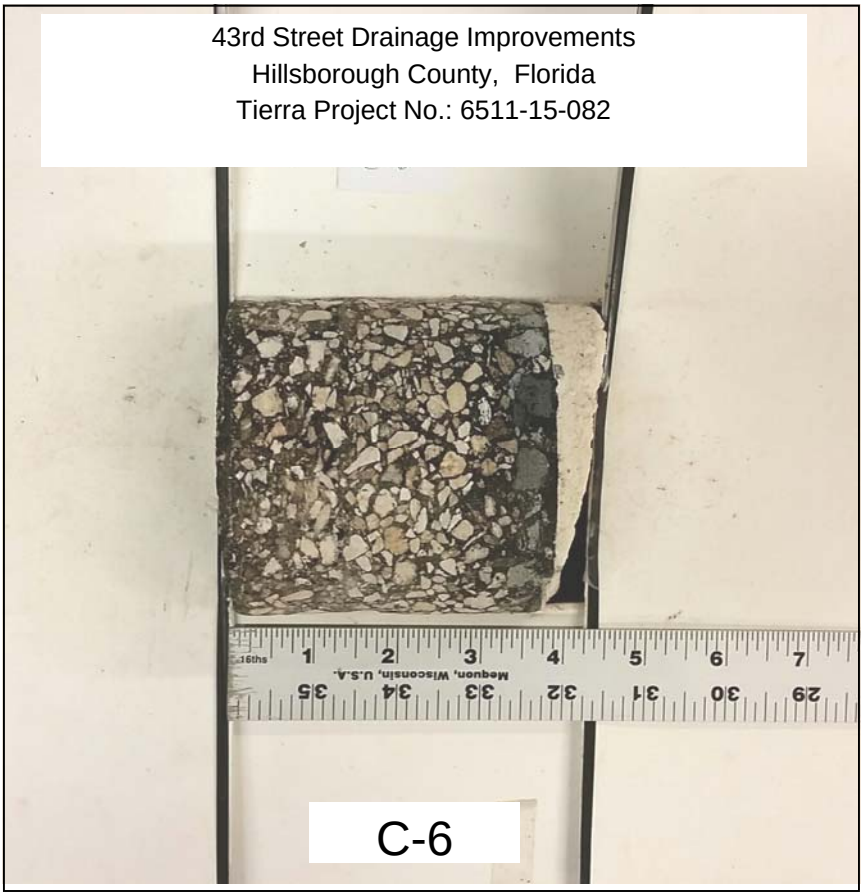
B-2/C-2 Side View

B-3/C-3 Side View



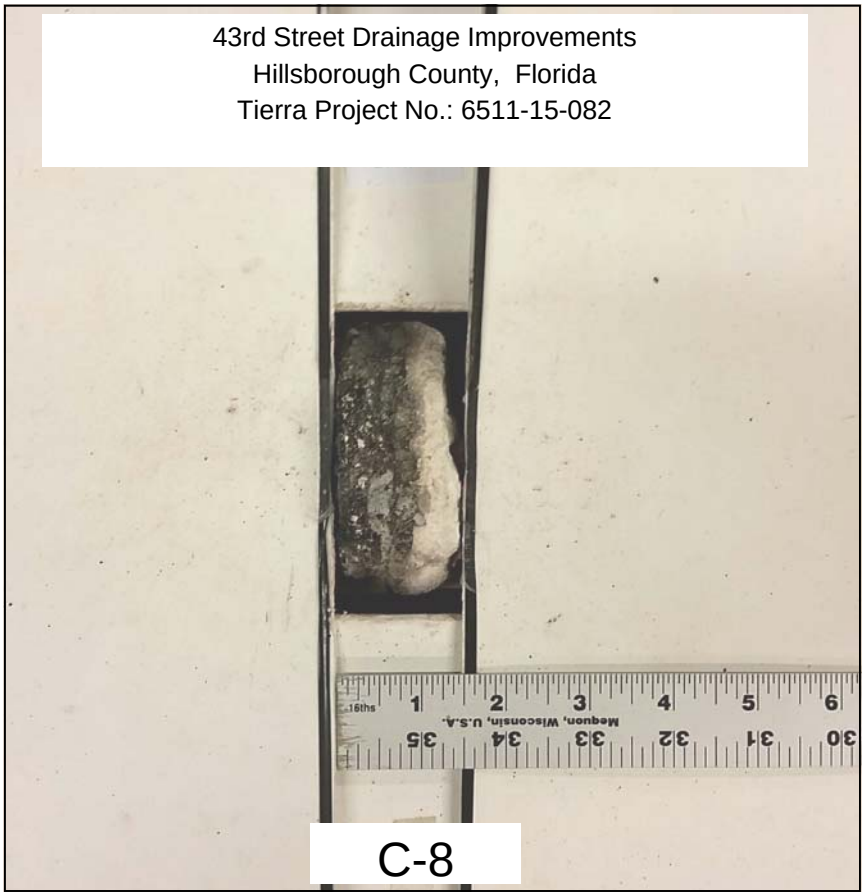
C-4 Side View

C-5 Side View



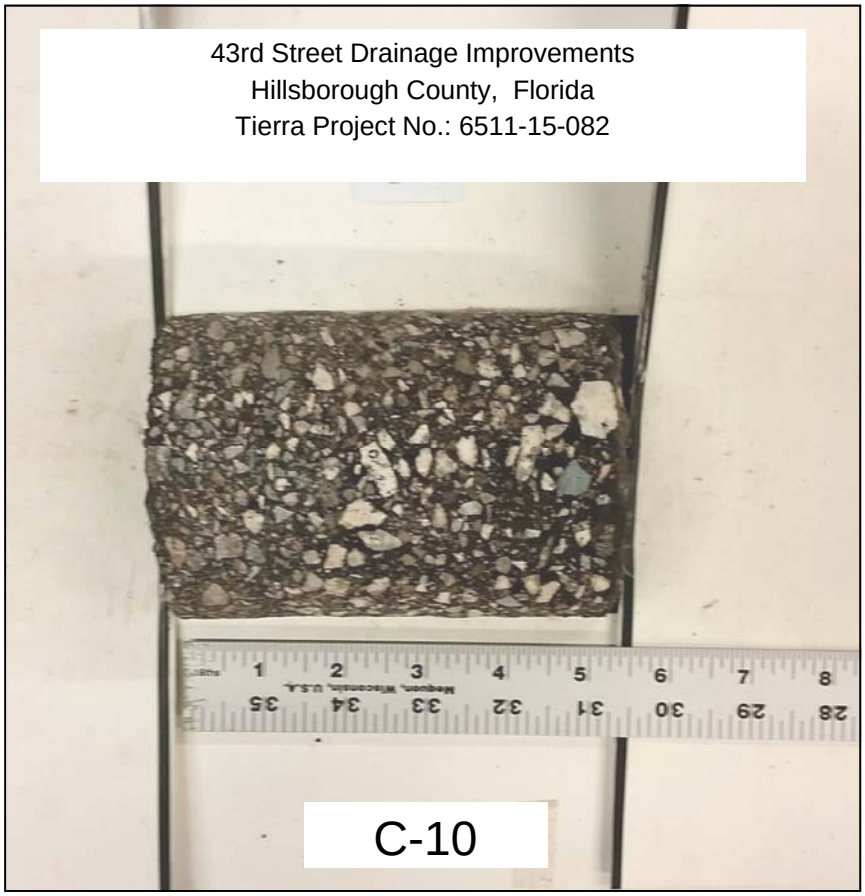
C-6 Side View

C-7 Side View



C-8 Side View

C-9 Side View



C-10 Side View

Item No.	Description	Unit	Quantity	Unit Price in Words		Unit Price		Total Computed Price
SCHEDULE A - STORMWATER / ROADWAY / SANITARY								
100	CONTINGENCY ALLOWANCE	EA	1	Six Hundred Fifty Five Thousand and No Cents	$	655,000.00	$	655,000.00
100-1	CSX ALLOWANCE	EA	1	Twenty Five Thousand and No Cents	$	25,000.00	$	25,000.00
101	MOBILIZATION	LS	1		$		$	
102	MAINTENANCE OF TRAFFIC	LS	1		$		$	
104-1	SILT FENCE AND EROSION CONTROL	LF	7,200		$		$	
104-2	FLOATING TURBIDITY BARRIER	LF	200		$		$	
104-18	INLET PROTECTION SYSTEM	EA	14		$		$	
110	CLEARING AND GRUBBING	LS	1		$		$	
110-3	GROUTING OF EXISTING STORM PIPE (FLOWABLE FILL)	CY	88		$		$	
120	GRADING	LS	1		$		$	
120-2	DISPOSAL OF UNSUITABLE SOILS	CY	700		$		$	
160	TYPE B STABILIZATION (12")	SY	9,590		$		$	
170	SUNTREE NSBB, MODEL 8-14	EA	1		$		$	
285-1	OPTIONAL BASE, BASE GROUP 06 (CRUSHED CONC) (8")	SY	6,640		$		$	
285-2	OPTIONAL BASE, BASE GROUP 09 (TYPE B-12.5) (6")	TN	990		$		$	
286	TURNOUT CONSTRUCTION - 2" ASPHALT (SP-12.5) AND OPTIONAL BASE GROUP 03	SY	1,000		$		$	
327	MILLING, 1-1/2" THICKNESS	SY	5,200		$		$	
334	SUPERPAVE ASPHALTIC CONCRETE, SP-12.5 (TRAFFIC C)	TN	1,520		$		$	
337	ASPHALTIC CONCRETE FRICTION COURSE, FC-12.5 (TRAFFIC C)	TN	680		$		$	
400-1	CONCRETE RETAINING WALL, CLASS IV	CY	20		$		$	
410-2	BOX CULVERT, PRECAST, 10'X4'	LF	337		$		$	
425-1-60	MANHOLE, TYPE J7, 6' DIA (<10')	EA	2		$		$	
425-1-61	MANHOLE, TYPE J7, 6' DIA (>10')	EA	8		$		$	
425-1-62	MANHOLE, TYPE J7T, CONFLICT, 6'X6' (<10')	EA	1		$		$	
425-1-63	MANHOLE, TYPE J7, CONFLICT, 6'X6' (>10')	EA	3		$		$	
425-1-64	MANHOLE, TYPE J7T, CONFLICT, 6'X7' (<10' UNDER I-4 BRIDGE)	EA	2		$		$	
425-1-65	MANHOLE, TYPE J7T, CONFLICT, 6'X7' (<10')	EA	1		$		$	
425-1-66	MANHOLE, TYPE J7, CONFLICT, 6'X7' (>10')	EA	1		$		$	
425-1-67	MANHOLE, TYPE J7T, CONFLICT 6'X6' (>10')	EA	3		$		$	
425-1-69	MANHOLE, TYPE J7, 7' DIA (<10')	EA	3		$		$	
425-1-71	MANHOLE, TYPE J7T, CONFLICT,(MOD) 7'X10' (<10')	EA	1		$		$	
425-2-41	MANHOLE RISER, TYPE P7 ON BOX CULVERT (<10')	EA	3		$		$	
425-2-42	JUNCTION BOX, TYPE J7T (MOD), 4'X26' WITH WEIR (<10')	EA	1		$		$	
425-2-43	JUNCTION BOX, TYPE J7T, 4'X13' (>10')	EA	1		$		$	
425-1-44	JUNCTION BOX, TYPE J7T, 3.5'X10' (<10')	EA	1		$		$	
425-3-10	DITCH BOTTOM INLET, TYPE C WITH TRANSVERSABLE SLOT (<10')	EA	2		$		$	
425-3-11	INLET, COT TYPE T INLET ON BOX CULVERT (<10')	EA	2		$		$	
425-3-12	INLET, COT TYPE T INLET (<10')	EA	1		$		$	
425-3-13	INLET, FDOT TYPE 5 (<10')	EA	4		$		$	
430-173-218	PIPE CULVERT, 12"x18" ELLIPTICAL (ERCP)	LF	160		$		$	
430-173-260	PIPE CULVERT, 38"x60" ELLIPTICAL (ERCP)	LF	13		$		$	
430-174-112	PIPE CULVERT, 12" ROUND (RCP)	LF	135		$		$	

430-174-118	PIPE CULVERT, 18" ROUND (RCP)	LF	49		$		$	
430-174-136	PIPE CULVERT, 36" ROUND (RCP)	LF	104		$		$	
430-174-148	PIPE CULVERT, 48" ROUND (RCP)	LF	3,704		$		$	
430-174-248	PIPE CULVERT, 48" ROUND (RCP) (UNDER I -4 BRIDGES)	LF	145		$		$	
430-175-008	8" DIA. PVC PIPE (ASTM D 3034)	LF	85		$		$	
430-200-118	END SECTION, MITERED, 12"x18" (4:1)	EA	4		$		$	
515-1	PIPE GUIDERAIL, ALUMINUM	LF	73		$		$	
520-1-10	CONCRETE CURB, TYPE F	LF	2,070		$		$	
520-2-4	CONCRETE CURB, TYPE D	LF	55		$		$	
520-2-9	CONCRETE CURB, VALLEY	LF	110		$		$	
522-1	SIDEWALK CONCRETE, 4" THICK (SIDEWALKS)	SY	1,200		$		$	
522-2	SIDEWALK CONCRETE, 6" THICK (DRIVEWAYS)	SY	250		$		$	
522-3	CURB RAMPS W/ DETECTABLE WARNINGS	EA	11		$		$	
530-1	RUBBLE RIPRAP (OUTFALL)	TN	1,700		$		$	
530-2	ENDWALL, SAND CEMENT (SIDE DRAINS)	CY	20		$		$	
530-3	BEDDING MATERIAL FOR PIPE	TN	600		$		$	
535-1	ENDWALL, CONCRETE, (OUTFALL) PER FDOT INDEX 251	CY	22		$		$	
550-102-18	EXISTING FENCE, (TYPE B), RESETTING	LF	305		$		$	
550-102-19	EXISTING FENCE, (TYPE B), SWING GATE, RESETTING	EA	3		$		$	
556-1	MICROTUNNEL UNDER CSX, 48" RCP CLASS V	LF	541		$		$	
556-2	MICROTUNNEL UNDER CSX, PIT CONSTRUCTION	LS	1		$		$	
700-1-50	SINGLE POST SIGN, RELOCATE	EA	12		$		$	
800-1	ADJUSTMENT OF EXISTING STRUCTURE, SANITARY/STORM MANHOLE	EA	16		$		$	
8901-1	LAWN REPLACEMENT AND SODDING (BAHIA)	SF	73,500		$		$	
8920	CSX RAILROAD TRACK RECONSTRUCTION (BY OUTFALL)	LF	120		$		$	
8950-1	DISPOSAL OF CONTAMINATED SOIL	TN	2,000		$		$	
8950-2	DISPOSAL OF CONTAMINATED SOIL AND GROUNDWATER	GAL	300,000		$		$	
907	6" DIA. PVC PIPE (SS - ASTM D 3034)	LF	10		$		$	
908	8" DIA. PVC PIPE (SS - ASTM D 3034)	LF	1,485		$		$	
1706	6" DIA. PVC PIPE HOUSE LATERAL (SDR-35)	LF	400		$		$	
4000	PRECAST CONCRETE STANDARD OR DOGHOUSE MANHOLE BASE	EA	13		$		$	
4100	PRECAST CONCRETE MANHOLE BARREL	VF	45		$		$	
4200	PRECAST CONCRETE MANHOLE CONE	EA	12		$		$	
4600	CAST IRON MANHOLE FRAME AND COVER	EA	12		$		$	
4660	6" DIAMETER PVC CLEANOUT AND COVER	EA	24		$		$	
4700	DROP MANHOLE PIPE CONNECTION	LF	20		$		$	
4900	CONNECT TO EXISTING MANHOLE	EA	5		$		$	
						Total Schedule A	$	

SCHEDULE B - WATER								
2100	F&I 2" HDPE WM W/FITTINGS	LF	140		$		$	
2102	F&I 6" DUCTILE IRON PIPE	LF	240		$		$	
2104	F&I 8" DUCTILE IRON PIPE	LF	2,090		$		$	
2106	F&I 12" DUCTILE IRON PIPE	LF	80		$		$	
2500	REMOVE 1" - 3" DIAMETER ABANDONED PIPE	LF	900		$		$	
2501	REMOVE 4" - 12" DIAMETER ABANDONED PIPE	LF	800		$		$	
2600	CUT AND PLUG 3" AND SMALLER PIPE	EA	6		$		$	
2601	CUT AND PLUG 4", 6" and 8" PIPE	EA	4		$		$	
2800	F&I 3" AND SMALLER TAPPED CONNECTION (0-15')	EA	3		$		$	
3041	F&I 6" BELL RESTRAINTS ON EXISTING PIPE	EA	1		$		$	
3042	F&I 8" BELL RESTRAINTS ON EXISTING PIPE	EA	6		$		$	
3043	F&I 12" BELL RESTRAINTS ON EXISTING PIPE	EA	3		$		$	
3071	FURNISH 6" PUSH-ON RESTRAINT GASKETS	EA	8		$		$	
3072	FURNISH 8" PUSH-ON RESTRAINT GASKETS	EA	80		$		$	
3073	FURNISH 12" PUSH-ON RESTRAINT GASKETS	EA	4		$		$	
4005	F&I 6" DUCTILE IRON MJ BEND OR SLEEVE	EA	21		$		$	
4006	F&I 6" DUCTILE IRON MJ TEE	EA	1		$		$	
4007	F&I 6" DUCTILE IRON MJ CAP OR PLUG	EA	4		$		$	
4008	F&I 8" DUCTILE IRON MJ CAP OR PLUG	EA	3		$		$	
4009	F&I 8" DUCTILE IRON MJ BEND, SLEEVE OR REDUCER	EA	42		$		$	
4010	F&I 8" X 6" DUCTILE IRON MJ TEE	EA	6		$		$	
4011	F&I 8" X 8" DUCTILE IRON MJ TEE	EA	1		$		$	
4013	F&I 12" DUCTILE IRON MJ BEND OR SLEEVE	EA	9		$		$	
4014	F&I 12" DUCTILE IRON MJ TEE	EA	1		$		$	
5000	F&I FULL FIRE HYDRANT ASSEMBLY ON NEW OR EXISTING MAINS	EA	5		$		$	
5200	REMOVE AND SALVAGE HYDRANT	EA	2		$		$	
6000	F&I 2" GATE VALVE WITH BOX ON DIP, CIP or PVCP	EA	5		$		$	
6001	F&I 6" GATE VALVE OR TAPPING VALVE WITH BOX ON DIP, CIP or PVCP	EA	9		$		$	
6002	F&I 8" GATE VALVE OR TAPPING VALVE WITH BOX ON DIP, CIP or PVCP	EA	9		$		$	
6003	F&I 12" GATE VALVE OR TAPPING VALVE WITH BOX ON DIP, CIP or PVCP	EA	2		$		$	
6108	F&I 12" LINE STOP ON EXISTING WATER MAIN	EA	1		$		$	
7004	F&I 16" TAPPING SLEEVE AND TAP	EA	1		$		$	
7005	F&I 16" TAPPING SADDLE AND TAP (FOR 2" SERVICE LINE)	EA	2		$		$	
8100	FURNISH, TAP AND INSTALL 3/4" OR 1" METER SERVICE (0-15')	EA	4		$		$	
8110	FURNISH, TAP AND INSTALL 3/4" METER SERVICE (+15-80')	EA	20		$		$	
9980	CONTINGENCY ALLOWANCE	EA	1	Fifty Five Thousand and No Cents	$	55,000.00	$	55,000.00
						Total Schedule B	$	
						Total Schedule A and B	$	