

**Indian River County
Purchasing Division
1800 27th Street
Vero Beach, FL 32960
Phone (772) 226-1416**



ADDENDUM NO. 3

Date: **October 11, 2019**

Project Name: **SR 60 and 43rd AVENUE INTERSECTION IMPROVEMENTS
(IRC-0853)**

Bid Number: **2019073**

Bid Opening Date: **UPDATED to Wednesday, October 30, 2019 at 2:00 p.m.**

This addendum is released to answer questions received to date, modify the bid documents and extend the deadline for receipt of bids. All information provided herein is hereby incorporated into the bid documents.

The following language has been added to SECTION 101 MOBILIZATION of the Technical Specifications:

- A. The Contractor shall maintain all grassed and landscape areas within the project limits of construction in a satisfactory condition until final acceptance of the project. Such maintenance within the limits of construction shall include the mowing of all existing grassed areas within the Right-of-Way, removal of all trash and debris on a weekly basis, and keeping vegetation trimmed on all sidewalks. Grass height shall not exceed 6" without mowing. Clippings shall be removed from sidewalk.**

The following questions have been received:

- Question 1.** Will the County allow to close and detour traffic during the construction of 43rd avenue? Contractor to provide access to local traffic only.
- Answer 1.** ***43rd Avenue & SR 60 shall remain open during the course of construction. However, lane closures are permissible subject to review and approval.***
- Question 2.** On the City of Vero Beach Utility Relocation Plans, on plan sheet 2 of 58 the hatch legend for asphalt area to be open cut is used on side walk removal on plan sheet 11 of 58. Please clarify.
- Answer 2.** ***This is intended to note removal of the sidewalk is required.***
- Question 3.** Plan sheet 20 of 58 does not clarify what the legends are. Please provide additional information.
- Answer 3.** ***The Legends are remnants, see Addendum #2 response.***
- Question 4.** Can there be a time extension for the bid date due to only having 2.5 weeks to work on it with a good set of plans?
- Answer 4.** ***A two-week time extension to bid due date has been implemented as part of Addendum #3.***
- Question 5.** Could not find existing elevations for Retention Area #1 to do a proper takeoff on.

Answer 5. *Limited existing topographic information along 43rd Avenue in the area of the retention pond has been added to Sheet 24. The Bidder is cautioned that the use of this information is at their own risk and should be confirmed by the bidder.*

Question 6. Does temporary lighting have to be provided for this project?

Answer 6. *Temporary lighting will be dependent on the means and methods selected by the Contractor. If existing lighting is preserved until the proposed final lighting can be installed and activated then temporary lighting will not be required. If lighting is deactivated as a result of Contractor's phasing of work, they will be responsible for ensuring adequate lighting conditions are maintained.*

Question 7. Are we able to have a lane closure at night and if so, what is the time frame?

Answer 7. *Lane closures will be granted on a case-by-case basis. If granted, the hours will likely fall between 6:30 PM and 6:30 AM. However, this will be adjusted based on observed traffic conditions.*

Question 8. The milling quantity in the summary of pay items (2,944 sy) matches the hatched out milling areas in the plans, but what about the overbuild locations on SR 60, it calls out to be milled and resurfaced in the plan sheets, does the overbuild locations on SR 60 get milled?

Answer 8. *The entire area of existing pavement on SR 60 is to be milled a minimum of 1". Specific areas marked on the plans are to receive milling averaging 2.5". An additional Pay Item for 1-inch of milling has been added to the quantities.*

Question 9. If the overbuild locations on SR 60 does not get milled what are we supposed to do about the existing thermoplastic on SR 60, the oil and fuel from the cars at SR 60 and 43rd Ave, and the bad existing cracking at the intersection of SR 60 and 43rd Ave?

Answer 9. *The area of overbuild is to receive a minimum of 1-inch of milling as stated in the answer to Question 8 above. The overbuild quantity estimate reflects the difference from the milled surface to the bottom of the structural course in the overbuild area.*

Question 10. Does the overbuild locations get the 1.5" of 12.5C (Pay item 0334 1 13A), if so the 12.5C pay item (3,348 tons) would be way understated?

Answer 10. *The overbuild tonnage includes the 1 ½" structural course in the area of the overbuild.*

Question 11. In the typical sections for new construction and widening the plans call for SP-12.5 Traffic C but the pay item is for SP Traffic C, PG 76-22, please advise.

Answer 11. *Summary of Pay Items has been modified to call for SP-12.5*

Question 12. Plan sheets 39 & 40 of 99 indicate that there is milling & resurfacing; however, there is no legend indicating this operation. In addition, the limits of the milling and resurfacing are not cleared, (specifically on the east and west). I performed a take-off in such areas and the milling and resurfacing quantity will substantially exceed the pay item quantity for milling 2½" of 2,944 SY? Please clarify.

Answer 12. *A separate Pay Item for milling 1-inch in all areas of SR 60 has been added to the Summary of Pay Items. The legend for milling and marked areas on Sheets 38 and 41 indicate where milling exceeds the minimum 1" and averages 2.5".*

IRRIGATION QUESTIONS

Question 13. Are the sleeves to be open dirt trench? _____ Or are they to be bored? _____

Answer 13. *This is to be determined by the Contractors means and methods. Open cut of new sidewalk and pavement will not be permitted.*

Question 14. The landscape and hardscape overlays are making it difficult to read the irrigation plan. Can we get an irrigation plan with the underlays removed as need so we can perform an accurate take off?

Answer 14. *The plans provided are adequate for performing a detailed take-off.*

- Question 15.** Per Irrigation Plan Page IR 8, Irrigation Notes. The last note states, " These drawings are not complete unless accompanied by written specifications section NO. 02810 "Underground Irrigation System" and section NO 02731 "Irrigation Well "
- Please provide these sections as they do not appear to be in the bid docs or addendums.
- Answer 15.** *Above referenced specification sections have been provided as part of Addendum #3.*
- Question 16.** I am coming up with about 30% higher in quantity for pay item (0522 2) Conc. Sidewalk and Driveways, 6" thick, can you please review that pay item.
- Answer 16.** *Sidewalk and Driveway quantity has been adjusted.*
- Question 17.** Who is responsible for removing the building (Mobil) on the north west corner of 43rd an SR 60?
- Answer 17.** *FDOT*
- Question 18.** In the plan sheets all of the separators call for color treated/stamped concrete, with that the SY come up to almost double what the plans call for (575 SY) please advise.
- Answer 18.** *Plan quantity for color treated concrete has been verified to be correct. Some of the median islands are color treated concrete, but others are sod. There are designations on each of the islands that show which treatment is to be used and there is a station where the color treated concrete stops and sod begins on medians that have both treatments.*
- Question 19.** We are having trouble finding any prestressors to bid this project due to the odd beam design. Can the County provide an alternative to this issue?
- Answer 19.** *Bridge to be built per plans and specifications, due to existing conditions and permitting constraints.*

Attachments:

Revised Itemized Bid Schedule
Revised Plan Sheets 13, 24 of 99
Color Utility Plan Set
Revised Technical Specifications 01025-17
Well Specification 02731
Irrigation Specification 0281

ITEMIZED BID SCHEDULE

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PROJECT NAME: SR 60 AND 43RD AVENUE INTERSECTION IMPROVEMENTS
 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAME

Item No.	Description	Unit	Unit Price	Quantity	Total
ROADWAY CONSTRUCTION					
0101 1	MOBILIZATION	LS		1	\$ -
0102 1	MAINTENANCE OF TRAFFIC (INCLUDES PEDESTRIAN MOT)	LS		1	\$ -
0102 14	TRAFFIC CONTROL OFFICER (OFF DUTY LAW ENFORCEMENT)	MH		300	\$ -
0102 99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMPORARY (18)	ED		7,520	\$ -
0104	N.P.D.E.S. COMPLIANCE	LS		1	\$ -
0104 10 3	SEDIMENT BARRIER	LF		16,456	\$ -
0104 11	FLOATING TURBIDITY BARRIER	LF		560	\$ -
0104 18	INLET PROTECTION SYSTEM	EA		69	\$ -
0110 1 1	CLEARING & GRUBBING	LS		1	\$ -
0120 1	REGULAR EXCAVATION	CY		12,656	\$ -
0120 6	EMBANKMENT (COMPACTED IN PLACE)	CY		5,781	\$ -
0160 4	TYPE B STABILIZATION (12" SUBGRADE, LBR 40)	SY		44,072	\$ -
0285 707	OPTIONAL BASE, BASE GROUP 07 (9" CEMENTED COQUINA)	SY		40,580	\$ -
0286 1	TURNOUT CONSTRUCTION/DRIVEWAY BASE (CONCRETE)	SY		1,526	\$ -
0286 2	TURNOUT CONSTRUCTION-ASPHALT/DRIVEWAY BASE-ASPHALT MATERIAL	TN		98	\$ -
* 0327 70 1	MILL EXIST ASPH PAVT, 1" AVG DEPTH	SY		17,144	\$ -
* 0327 70 8	MILL EXIST ASPH PAVT, 2.5" AVG DEPTH	SY		2,944	\$ -
* 0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C (SP-12.5 OVERBUILD)	TN		7,200	\$ -
* 0334 1 13A	SUPERPAVE ASPHALTIC CONC, TRAFFIC C, PG 76-22, (SP-12.5, 1-1/2" THICK) (WITH POLYMER)	TN		4,760	\$ -
* 0337 7 82	ASPHALT CONCRETE FRICTION COURSE, FC-9.5, TRAFFIC C, PG 76-22, (WITH POLYMER) 1" THICK	TN		3,173	\$ -
0400 0 11	CONCRETE CLASS NS GRAVITY WALL	CY	00310-3	81.9	\$ -

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0400 1 2	CONCRETE CLASS I, ENDWALLS	CY		6.33	\$ -
0425 1311	INLETS, CURB, TYPE P-1, <10'	EA		5	\$ -
0425 1321	INLETS, CURB, TYPE P-2, <10'	EA		4	\$ -
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA		1	\$ -
0425 1351	INLETS, CURB, TYPE P-5, <10'	EA		16	\$ -
0425 1352	INLETS, CURB, TYPE P-5, >10'	EA		2	\$ -
0425 1361	INLETS, CURB, TYPE P-6, <10'	EA		12	\$ -
0425 1421	INLETS, CURB, TYPE J-2, <10'	EA		2	\$ -
0425 1451	INLETS, CURB, TYPE J-5, <10'	EA		1	\$ -
0425 1452	INLETS, CURB, TYPE J-5, >10'	EA		1	\$ -
0425 1461	INLETS, CURB, TYPE J-6, <10'	EA		2	\$ -
0425 1521	INLETS, DT BOT, TYPE C, <10'	EA		27	\$ -
0425 1521A	INLETS, DT BOT, TYPE C, <10' (MODIFIED)	EA		2	\$ -
0425 1559	INLETS, DT BOT, TYPE E, <10'	EA		2	\$ -
0425 1715	INLETS, GUTTER, TYPE V, <10'	EA		2	\$ -
0425 2 41	MANHOLES, P-7, <10'	EA		4	\$ -
0425 2 43	MANHOLES, P-7, PARTIAL	EA		1	\$ -
0425 2 61	MANHOLES, P-8, <10'	EA		3	\$ -
0425 2 71	MANHOLES, J-7, <10'	EA		3	\$ -
0425 2 91	MANHOLES, J-8, >10'	EA		11	\$ -
0425 4	INLETS, ADJUST	EA		7	\$ -

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0425 5	MANHOLE, ADJUST	EA		7	\$ -
0425 6	VALVE BOXES, ADJUST	EA		38	\$ -
0430 174 115	PIPE CULVERT, ROUND, 15" SD (RCP)	LF		30	\$ -
0430 174 118	PIPE CULVERT, ROUND, 18" SD (RCP)	LF		4,054	\$ -
0430 174 124	PIPE CULVERT, ROUND, 24" SD (RCP)	LF		1,143	\$ -
0430 174 130	PIPE CULVERT, ROUND, 30" SD (RCP)	LF		198	\$ -
0430 174 136	PIPE CULVERT, ROUND, 36" SD (RCP)	LF		2,231	\$ -
0430 174 142	PIPE CULVERT, ROUND, 42" SD (RCP)	LF		853	\$ -
0430 175 148	PIPE CULVERT, ROUND, 48" SD (RCP)	LF		85	\$ -
0430 982 140	MITERED END SECTION, 42" SD	EA		1	\$ -
0430 984 125	MITERED END SECTION, 18" SD	EA		1	\$ -
0430 984 138	MITERED END SECTION, 36" SIDE DRAIN	EA		1	\$ -
0430 984 141	MITERED END SECTION, 48" SD	EA		1	\$ -
0443 70 3	FRENCH DRAIN, 18"	LF		1,616	\$ -
0515 1 2	PIPE HANDRAIL - GUIDERAIL, ALUMINUM	LF		1,187	\$ -
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF		21,539	\$ -
0520 5 41	TRAFFIC SEPARATOR CONCRETE - TYPE IV, 4' WIDE	LF		457	\$ -
* 0520 70	CONCRETE TRAFFIC SEPARATOR, SPECIAL-VARIABLE WIDTH (COLOR TREATED AND STAMPED CONCRETE)	SY		832	\$ -
* 0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY		8,612	\$ -
0524 1 2	CONCRETE DITCH PAVEMENT, NON REINFORCED, 4"	SY		49	\$ -

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Item No.	Description	Unit	Unit Price	Quantity	Total
0527 2	DETECTABLE WARNINGS	SF		480	\$ -
0530 3 4	RIPRAP, RUBBLE, F&I, DITCH LINING	TN		146	\$ -
0550 10 222	FENCING, TYPE B, 5.1-6.0, W/ VINYL COATING	LF		1,040	\$ -
0570 1 2	PERFORMANCE TURF, SOD	SY		16,393	\$ -
0630 2 11A	CONDUIT, (F&I), (2-2" PVC)	LF		20	\$ -
0635 2 12	PULL & SPLICE BOX, F & I (30"x48"x24")	EA		2	\$ -
0999-1	RECORD DRAWINGS/AS-BUILTS	LS		1	\$ -
1050 31206	UTILITY PIPE - POLYVINYLCHLORIDE, F&I, 6"	LF		845	\$ -
1050 4126	6" HDPE FORCE MAIN CASING	LF		85	\$ -
SUB-TOTAL OF ROADWAY CONSTRUCTION					\$ -
SIGNING & PAVEMENT MARKINGS					
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS		73	\$ -
0700 1 13	SINGLE POST SIGN, F&I GROUND MOUNT, 21-30 SF	AS		1	\$ -
0700 1 50	SINGLE POST SIGN, RELOCATE	AS		15	\$ -
0705 11 1	DELINEATOR, FLEXIBLE TUBULAR	EA		18	\$ -
0706 3	RETRO-REFLECTIVE RAISED PAVEMENT MARKER	EA		796	\$ -
0710 11 290	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, ISLAND NOSE	SF		67	\$ -
0711 11 122	THERMOPLASTIC, STANDARD, WHITE, SOLID, 8"	GM		0.40	\$ -
0711 11 123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	LF		2,611	\$ -
0711 11 124	THERMOPLASTIC, STANDARD, WHITE, SOLID, 18" FOR DIAGONALS AND CHEVRONS	LF		455	\$ -
0711 11 125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	LF		585	\$ -

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Item No.	Description	Unit	Unit Price	Quantity	Total
0711 11 160	THERMOPLASTIC, STANDARD, WHITE, MESSAGE OR SYMBOL	EA		20	\$ -
0711 11 170	THERMOPLASTIC, STANDARD, WHITE, ARROW	EA		86	\$ -
0711 11 222	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONAL OR CHEVRON	LF		77	\$ -
0711 16 101	THERMOPLASTIC, STANDARD - OTHER SURFACES, WHITE, SOLID, 6"	GM		3.10	\$ -
0711 16 131	THERMOPLASTIC, STANDARD - OTHER SURFACES, WHITE, 6", 10-30 SKIP OR 3-9 LANE DROP	GM		3.59	\$ -
0711 16 201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	GM		2.37	\$ -
0711 16 231	THERMOPLASTIC, STANDARD - OTHER SURFACES, YELLOW, SKIP, 6"	GM		0.44	\$ -
SUB-TOTAL OF SIGNING & PAVEMENT MARKING IMPROVEMENTS					\$ -
SIGNALIZATION					
0630 2 11B	CONDUIT (F&I) (UNDERGROUND)	LF		12,072	\$ -
0630 2 12	CONDUIT (F&I) (UNDER PAVEMENT) (DIRECTIONAL BORE)	LF		1,083	\$ -
0630 2 15	CONDUITS (F&I) (BRIDGE MOUNTED)	LF		1,620	\$ -
0632 7 1	CABLE (SIGNAL) (F&I)	PI		1	\$ -
0633 1 123	FIBER OPTIC CABLE (F&I) (UNDERGROUND) (96 SINGLE MODE)	LF		7,296	\$ -
0633 3 15	FIBER OPTIC CONNECTION HARDWARE (F&I) (PRETERMINATED PATCH PANEL)	EA		1	\$ -
0635 2 11A	PULL & SPLICE BOXES (F&I)	EA		23	\$ -
0635 2 13	PULL & SPLICE BOXES (F&I) (FIBER OPTICS)	EA		26	\$ -
0639 1 123	ELECTRICAL POWER SERVICE (F&I) (UNDERGROUND)	AS		1	\$ -
0639 2 1	ELECTRICAL SERVICE WIRE (F&I) (POLE)	LF		200	\$ -
0639 3 11	ELECTRICAL SERVICE DISCONNECT (F&I) (POLE)	EA		1	\$ -

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Item No.	Description	Unit	Unit Price	Quantity	Total
0641 2 12	PRE-STRESSED CONCRETE POLE (F&I) (p-11)	EA		1	\$ -
0641 2 80	CONCRETE POLE REMOVAL (COMPLETE/DEEP)	EA		4	\$ -
0646 1 11	ALUMINUM SIGNAL POLES (F&I) (PEDESTAL)	EA		8	\$ -
0649 31 105	MAST ARM (F&I) (SINGLE ARM W/O LUM) (78')	EA		1	\$ -
0649 31 109	MAST ARM (F&I) (SINGLE ARM W/ LUM) (70.5')	EA		2	\$ -
0649 31 118	MAST ARM (F&I) (DOUBLE ARM W/O LUM) (70.5'-60')	EA		1	\$ -
0650 1 24	TRAFFIC SIGNAL (F&I) (3-SECT) (1 WAY) (ALUM)	AS		16	\$ -
0650 1 29	TRAFFIC SIGNAL (F&I) (5-SECT) (1 WAY) (ALUM)	AS		4	\$ -
0653 1 11	PEDESTRIAN SIGNAL (F&I) (LED, 1 WAY)	AS		8	\$ -
0660 4 11	VEHICLE DETECTION (F&I) (VIDEO) (CABINET EQUIPMENT)	EA		4	\$ -
0660 4 12	VEHICLE DETECTION (F&I) (VIDEO) (ABOVE GROUND)	EA		4	\$ -
0665 1 11	PEDESTRIAN DETECTOR (F&I) (STD)	EA		8	\$ -
0670 5 110	TRAFFIC CONTROLLER ASSEMBLY (F&I) (NEMA)	AS		1	\$ -
0670 5 600	CONTROLLER ASSEMBLY (REMOVE)	AS		1	\$ -
0682 1 133	CCTV CAMERA (F&I) (NON-PRESSURIZED) (IP, HIGH DEF)	EA		1	\$ -
0684 1 1	MANAGED FIELD ETHERNET SWITCH (F&I)	EA		1	\$ -
0685 106	SYSTEMS AUXILIARIES (UNINTERRUPTABLE POWER SOURCE) (F&I)	EA		1	\$ -
0700 3 201	SIGN PANEL (F&I) (OVERHEAD) (12 SF)	EA		4	\$ -
0700 5 21	INTERNALLY ILLUMINATED SIGN (F&I) (NAME) (OVERHEAD) (12 SF)	EA		4	\$ -
SUB-TOTAL OF SIGNALIZATION IMPROVEMENTS					\$ -

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Item No.	Description	Unit	Unit Price	Quantity	Total
HIGHWAY LIGHTING SYSTEM					
0635 2 11	PULL BOX (F&I) (ROADSIDE), MOULDED	EA		71	\$ -
0715 1 13	LIGHTING CONDUCTOR, F & I, INSULATED, NO. 4	LF		36,765	\$ -
0715 4 13	STANDARD LIGHT POLE COMPLETE W/ CONCRETE BASE, F&I, WIND SPEED 160	EA		30	\$ -
0715 4 33	CONFLICT LIGHT POLE COMPLETE W/ CONCRETE BASE, F&I, WIND SPEED 160	EA		36	\$ -
0715 5 30	LUMINAIRE AND BRACKET ARM MOUNTED ON SIGNAL POLE, F&I	EA		4	\$ -
0715 7 11	LOAD CENTER (INCLUDES ALL COMPONENTS LISTED ON SERVICE POINT DETAILS DRAWING)	EA		3	\$ -
0715 500 1	POLE CABLE DISTRIBUTION SYSTEM, IP-68	EA		70	\$ -
1050 31102	LIGHTING CONDUCTOR, F & I, UNDERGROUND, 2" PVC SCH. 40	LF		11,094	\$ -
SUB-TOTAL OF LIGHTING IMPROVEMENTS					\$ -
LANDSCAPE, HARDSCAPE AND IRRIGATION					
0520 2 13	HEADER CURB	LF		632	\$ -
0523 1	PATTERNED PAVEMENT, VEHICULAR AREAS (DURATHERM, INTEGRATED PAVING CONCEPTS, CINNAMON, WAGON WHEEL)	SY		800	\$ -
0526 1 2	PAVERS, ARCHITECTURAL, SIDEWALK (BELGARD, HOLLAND 4"x8" 80mm, RED/CHESTNUT/CHARCOAL, 45° HERRINGBONE)	SY		290	\$ -
0580 4 235	PHOENIX SYLVESTRIS (SYLVESTER DATE PALM) (16' CT)	EA		3	\$ -
0580 4 345	SABAL PALMETTO (SABAL PALM) (16-20' CT)	EA		5	\$ -
0580 5 5532	GORDONIA IASIANTHUS (LOBLOLLY BAY) (8-10'x4-5' 2.75 CAL.)	EA		9	\$ -
0580 5 572	LIGUSTRUM JAPONICUM (JAPANESE PRIVET) (8-10' OA MULTISTEM)	EA		14	\$ -
0580 7 177	ILEX BOMITORIA "SHILLINGS" (DWARF YAUPON HOLLY) (#7 FULL) (24" OC)	EA		48	\$ -
0580 7 337	MYRCIANTHES FRAGRANS (SIMPSON'S STOPPER) (#7) (24" O.C.)	EA		59	\$ -
E575 1	BAHIA SOD (PASPALUM NOTATUM)	SY		5,450	\$ -

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E575 1 4	ST. AUGUSTINE SOD	SY		3,400	\$ -
E580326 4	MULCH WOOD CHIPS	SY		16	\$ -
E580337 5	HERBICIDE, ROOT CONTROL FABRIC- 20" WIDE	LF		145	\$ -
0590 1	IRRIGATION SYSTEM	LS		1	\$ -
SUB-TOTAL OF LANDSCAPE, HARDSCAPE AND IRRIGATION IMPROVEMENTS					\$ -
STRUCTURAL					
BRIDGE					
0110 3	REMOVAL OF EXISTING STRUCTURE/BRIDGES	LS		1	\$ -
SUPERSTRUCTURE					
0400 2 4A	CONC CLASS II, BRIDGE SUPERSTRUCTURE	CY		138	\$ -
0400 2 4B	CONC CLASS II, BRIDGE SUPERSTRUCTURE (LIGHTWEIGHT)	CY		153.7	\$ -
0400 7	BRIDGE DECK GROOVING, LESS THAN 8.5"	SY		523	\$ -
0400 147	COMPOSITE NEOPRENE PADS	CF		1.64	\$ -
0415 1 4	REINFORCING STEEL-BRIDGE SUPERSTRUCTURE	LB		63,459.30	\$ -
0450 1 2	PRESTRESSED BEAMS TYPE III	LF		778.13	\$ -
0458 1 11	CONSTRUCTION, F&I POURED JOINT WITH BACKER ROD	LF		80.00	\$ -
0458 1 21	BRIDGE DECK EXPANSION JOINT, REHABILITATION, POURED JOINT WITH BACKER ROD	LF		180.00	\$ -
0515 4 2	BULLET ALUMINUM RAIL, DOUBLE RAIL	LF		348.67	\$ -
0521 5 4	CONCRETE TRAFFIC RAILING- BRIDGE, 32" VERTICAL FACE	LF		348.67	\$ -
SUBSTRUCTURE					
0400 2 5	CONCRETE CLASS II, BRIDGE SUBSTRUCTURE	CY		60	\$ -
0400 2 10	CONCRETE CLASS II, APPROACH SLABS	CY		62	\$ -

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0415 1 5	REINFORCING STEEL- BRIDGE SUBSTRUCTURE	LB		16,156	\$ -
0415 1 9	REINFORCING STEEL-APPROACH SLABS	LB		12,170	\$ -
0455 34 3A	PRESTRESSED CONCRETE PILING, 18" SQ (END BENTS)	LF		550	\$ -
0455 34 3B	PRESTRESSED CONCRETE PILING, 18" SQ (WING BENTS)	LF		100	\$ -
0455 34 3C	PRESTRESSED CONCRETE PILING, 18" SQ (INTERMEDIATE BENTS, DEBRIS PILES)	LF		650	\$ -
0455 137 1	LOAD TEST (DYNAMIC), INTERNAL GAUGES	EA		2	\$ -
0455 143 3A	TEST PILES-PRESTRESSED CONCRETE,18" SQ	LF		130	\$ -
0530 4 9	ARTICULATING CONCRETE BLOCK REVETMENT SYSTEM, THICKNESS 6"	SF		2,934	\$ -
1050 31204D	UTILITY PIPE- POLY VINYL CHLORIDE, FURNISH & INSTALL, WATER/SEWER, 4"	LF		1,400	\$ -
SUB-TOTAL OF STRUCTURAL IMPROVEMENTS					-
0999-25	FORCE ACCOUNT				\$ 1,300,000.00
TOTAL ROADWAY IMPROVEMENTS (INCLUDING FORCE ACCOUNT)					1,300,000.00
UTILITY WORK BY HIGHWAY CONTRACTOR (UWHC)					
0104 10 3A	EROSION CONTROL - SEDIMENT BARRIER	LS		1	\$ -
0110 1 1A	CLEARING AND GRUBBING	LS		1	\$ -
0160 4A	TYPE B STABILIZATION (DRIVEWAYS)	SY		1,085	\$ -
0334 1 13A	SUPERPAVE ASPHALTIC CONCRETE (SP-12.5) TRAFFIC "C" (1-1/2")	SY		1,085	\$ -
0425 2 71A	MANHOLE, J-7, LESS THAN 10'	EA		1	\$ -
0522 2A	R & R, 6" CONCRETE SIDEWALK	SY		1,255	\$ -
0570 1 1	INSTALL SEED & MULCH	SY		9,320	\$ -
0570 1 2A	INSTALL SOD - BAHIA	SY		1,860	\$ -
0570 1 2B	INSTALL SOD - FLORATAM	SY		200	\$ -

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ITEMIZED BID SCHEDULE

* ADDENDUM #3

**PROJECT NAME: SR 60 AND 43RD AVENUE INTERSECTION IMPROVEMENTS
 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAM**

Item No.	Description	Unit	Unit Price	Quantity	Total
0999 2	AS-BUILT SURVEYING	LS		1	\$ -
1050 16001	REMOVE & DISPOSE EXISTING 1" WATER MAIN AND APPURTENANCES (0-1.9")	LF		265	\$ -
1050 16002	REMOVE & DISPOSE EXISTING 2"-3" WATER MAIN AND APPURTENANCES (2-4.9")	LF		305	\$ -
1050 16002A	REMOVE & DISPOSE EXISTING 3" FORCE MAIN AND APPURTENANCES (2-4.9")	LF		560	\$ -
1050 16003	REMOVE & DISPOSE EXISTING 6" FORCE MAIN AND APPURTENANCES (5-7.9")	LF		2,120	\$ -
1050 16003A	REMOVE & DISPOSE EXISTING 6" WATER MAIN AND APPURTENANCES (5-7.9")	LF		790	\$ -
1050 16004	REMOVE & DISPOSE EXISTING 8" WATER MAIN AND APPURTENANCES (8-19.9")	LF		5,560	\$ -
1050 16004A	REMOVE & DISPOSE EXISTING 8" FORCE MAIN AND APPURTENANCES (8-19.9")	LF		2,330	\$ -
1050 16004B	REMOVE & DISPOSE EXISTING 6" SANITARY SEWER SERVICE PIPE	LF		100	\$ -
1050 18002	GROUT FILL AND ABANDON EXISTING 2" WATER MAIN (2-4.9")	LF		190	\$ -
1050 18002A	GROUT FILL AND ABANDON EXISTING 3" FORCE MAIN (2-4.9")	LF		795	\$ -
1050 18003	GROUT FILL AND ABANDON EXISTING 6" WATER MAIN (5-7.9")	LF		400	\$ -
1050 18003A	GROUT FILL AND ABANDON EXISTING 6" SANITARY MAIN (5-7.9")	LF		170	\$ -
1050 18004	GROUT FILL AND ABANDON EXISTING 8" WATER MAIN (8-19.9")	LF		990	\$ -
1050 18004A	GROUT FILL AND ABANDON EXISTING 8" SANITARY MAIN (8-19.9")	LF		55	\$ -
1050 31202	F & I, 2" PVC SDR21 (BLUE) WATER MAIN PRESSURE PIPE (ITEM TO INCLUDE ALL NECESSARY PVC OR BRASS FITTINGS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		20	\$ -
1050 31202A	F & I, 2" PVC SDR21 (GREEN) FORCE MAIN PRESSURE PIPE (ITEM TO INCLUDE ALL NECESSARY PVC OR BRASS FITTINGS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		20	\$ -
1050 31202B	F & I, 2 1/2" PVC SDR21 (BLUE) WATER MAIN PRESSURE PIPE (ITEM TO INCLUDE ALL NECESSARY PVC OR BRASS FITTINGS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		40	\$ -

ITEMIZED BID SCHEDULE

* ADDENDUM #3

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 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAM**

Item No.	Description	Unit	Unit Price	Quantity	Total
1050 31203	F & I, 3" PVC C-900 DR-18 (GREEN) FORCE MAIN PRESSURE PIPE. (ITEM TO INCLUDE ALL NECESSARY M.J. D.I. FITTINGS AND PIPE RESTRAINTS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		20	\$ -
1050 31204	F & I, 4" PVC C-900 DR-18 (GREEN) FORCE MAIN PRESSURE PIPE (ITEM TO INCLUDE ALL NECESSARY M.J. D.I. FITTINGS AND PIPE RESTRAINTS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		200	\$ -
1050 31206	F & I, 6" PVC C-900 DR-18 (BLUE) WATER MAIN PRESSURE PIPE (ITEM TO INCLUDE ALL NECESSARY M.J. D.I. FITTINGS AND PIPE RESTRAINTS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		180	\$ -
1050 31206A	F & I, 6" PVC C-900 DR-18 (GREEN) FORCE MAIN PRESSURE PIPE (ITEM TO INCLUDE ALL NECESSARY M.J. D.I. FITTINGS AND PIPE RESTRAINTS PER PLANS AND SPECIFICATIONS) (SEE APPENDIX E)	LF		140	\$ -
1050 31206B	F & I, 6" PVC C-900 DR-18 (GREEN) PRESSURE PIPE WITH SEWER FITTINGS (SEWER SERVICES)	LF		100	\$ -
1050 31208	F & I, 8" PVC C-900 DR-18 (BLUE) WATER MAIN PRESSURE PIPE	LF		3,380	\$ -
1050 31208A	F & I, 8" PVC SDR-35 (GREEN) SANITARY SEWER PIPE	LF		40	\$ -
1050 31208B	F & I, 8" PVC C-900 DR 18 CL150 (GREEN) FORCE MAIN PRESSURE PIPE	LF		2,480	\$ -
1050 31210	F & I, 10" PVC C-900 DR 18 CL150 (GREEN) FORCE MAIN PRESSURE PIPE	LF		20	\$ -
1050 31212	F & I, 12" PVC C-900 DR-18 (BLUE) WATER MAIN PRESSURE PIPE	LF		2,340	\$ -
1050 41201	F & I, 1" PE3408 SDR-9 PE (BLUE) WATER MAIN PRESSURE PIPE	LF		400	\$ -
1050 41202	F, I, & R 2" PE3408 SDR-9 PE (BLUE) WATER MAIN PRESSURE PIPE (REMOVE AFTER NEW W.M. IS IN SERVICE)	LF		1,040	\$ -
1050 42202A	F & I, 2" PE3408 SDR-9 PE (BLUE) WATER MAIN PRESSURE PIPE	LF		530	\$ -
1050 42202B	F & I, 2" PE3408 SDR-9 PE (GREEN) FORCE MAIN PRESSURE PIPE	LF		400	\$ -
1050 42208	F & I, 8" PE3408 SDR-11 PE (BLUE) WATER MAIN PRESSURE PIPE	LF		160	\$ -
1050 42208A	F & I, 8" PE3408 SDR-11 PE (GREEN) FORCE MAIN PRESSURE PIPE	LF		120	\$ -
1050 42212	F & I, 12" PE3408 SDR-11 PE (BLUE) WATER MAIN PRESSURE PIPE	LF		760	\$ -

ITEMIZED BID SCHEDULE

* ADDENDUM #3

**PROJECT NAME: SR 60 AND 43RD AVENUE INTERSECTION IMPROVEMENTS
 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAM**

Item No.	Description	Unit	Unit Price	Quantity	Total
1055 51108	F & I, 8" MJ C-153 11.25° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		4	\$ -
1055 51108A	F & I, 8" MJ C-153 11.25° BEND (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		4	\$ -
1055 51108B	F & I, 8" MJ C-153 22.5° BEND (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		7	\$ -
1055 51108C	F & I, 8" MJ C-153 45° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		34	\$ -
1055 51108D	F & I, 8" MJ C-153 45° BEND (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		36	\$ -
1055 51108E	F & I, 8" MJ C-153 90° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		3	\$ -
1055 51108F	F & I, 8" MJ C-153 90° BEND (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51112	F & I, 12" MJ C-153 11.25° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		4	\$ -
1055 51112A	F & I, 12" MJ C-153 22.5° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51112B	F & I, 12" MJ C-153 45° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		10	\$ -
1055 51112C	F & I, 12" MJ C-153 90° BEND (WATER) WITH MEGA-LUG RESTRAINTS	EA		4	\$ -
1055 51208	F & I, 8X8X6 MJ C-153 TEE (WATER) WITH MEGA-LUG RESTRAINTS	EA		7	\$ -
1055 51208A	F & I, 8X8X4 MJ C-153 TEE (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		2	\$ -
1055 51208B	F & I, 8X8X6 MJ C-153 TEE (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51208C	F & I, 8X8X8 MJ C-153 TEE (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		2	\$ -
1055 51212	F & I, 12X12X6 MJ C-153 TEE (WATER) WITH MEGA-LUG RESTRAINTS	EA		5	\$ -
1055 51212A	F & I, 12X12X12 MJ C-153 TEE (WATER) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51310	F & I, 10X8 MJ C-153 REDUCER (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51312	F & I, 12X8 MJ C-153 REDUCER (WATER) WITH MEGA-LUG RESTRAINTS	EA		2	\$ -
1055 51408	F & I, 8" MJ C-153 L.B. SLEEVE (WATER) WITH MEGA-LUG RESTRAINTS	EA		3	\$ -

ITEMIZED BID SCHEDULE

* ADDENDUM #3

**PROJECT NAME: SR 60 AND 43RD AVENUE INTERSECTION IMPROVEMENTS
 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAM**

Item No.	Description	Unit	Unit Price	Quantity	Total
1055 51408A	F & I, 8" MJ C-153 L.B. SLEEVE (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		6	\$ -
1055 51410	F & I, 10" MJ C-153 L.B. SLEEVE (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51412	F & I, 12" MJ C-153 L.B. SLEEVE (WATER) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51506	F & I, 6" MJ C-153 PLUG TAPPED 2" (WATER) WITH MEGA-LUG RESTRAINTS	EA		2	\$ -
1055 51508	F & I, 8" MJ C-153 PLUG TAPPED 2" (WATER) WITH MEGA-LUG RESTRAINTS	EA		2	\$ -
1055 51508A	F & I, 8" MJ C-153 PLUG TAPPED 2" (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51608	F & I, 8X8X4 MJ C-153 TEE WYE (SEWER-LINED) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51608A	F & I, 8X8X6 MJ C-153 TEE WYE (WATER) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1055 51608B	F & I, 8X8X8 MJ C-153 TEE WYE (WATER) WITH MEGA-LUG RESTRAINTS	EA		1	\$ -
1060 15	ADJUST EXISTING SANITARY SEWER MANHOLE RING & COVER	EA		2	\$ -
1060 16	REMOVE EXISTING SANITARY SEWER MANHOLE AND APPURTENANCES	EA		1	\$ -
1080 21101	F & I, 1" SINGLE SHORT (<20FT) WATER SERVICE	EA		28	\$ -
1080 21101A	F & I, 1" SINGLE LONG (>20FT) WATER SERVICE	EA		1	\$ -
1080 21102	F & I, 2" SINGLE LONG (>20FT) WATER SERVICE	EA		1	\$ -
1080 21102A	F & I, 2" DOUBLE SHORT (<20FT)WATER SERVICE	EA		2	\$ -
1080 23102	F & I, 8" X 2" MAIN TAP WITH 2" TAPPING VALVE (CORP.) BRANCH CONNECTION WATER MAIN	EA		8	\$ -
1080 23102A	F & I, 8" X 2" MAIN TAP WITH 2" TAPPING VALVE (CORP.) BRANCH CONNECTION FORCE MAIN	EA		1	\$ -
1080 23108	F & I, 8" X 8" MAIN TAP WITH 8" TAPPING VALVE, AND VALVE BOX WATER MAIN	EA		1	\$ -
1080 23108A	F & I, 8" X 8" TAPPING SLEEVE, 8" TAPPING VALVE, 8" MAIN TAP AND VALVE BOX FORCE MAIN	EA		1	\$ -
1080 23108B	F & I, 8"X 2" SERVICE TAPPING SADDLE WITH CORPORATION VALVE WITH FDEP JUMPER ASSEMBLY WATER MAIN	EA		3	\$ -

ITEMIZED BID SCHEDULE

* ADDENDUM #3

**PROJECT NAME: SR 60 AND 43RD AVENUE INTERSECTION IMPROVEMENTS
 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAM**

Item No.	Description	Unit	Unit Price	Quantity	Total
1080 23112	F & I, 12"X 2" SERVICE TAPPING SADDLE WITH CORPORATION VALVE WITH FDEP JUMPER ASSEMBLY WATER MAIN	EA		1	\$ -
1080 23118	F & I, 18" X 12" TAPPING SLEEVE, 12" TAPPING VALVE, 12" MAIN TAP, AND VALVE BOX WATER MAIN	EA		1	\$ -
1080 23118A	F & I, 18"X 2" SERVICE TAPPING SADDLE WITH CORPORATION VALVE WITH FDEP JUMPER ASSEMBLY WATER MAIN	EA		1	\$ -
1080 24102	F & I, 2" RESILIENT SEATED GATE VALVE AND VALVE BOX WATER MAIN	EA		2	\$ -
1080 24102A	F & I, 2" RESILIENT SEATED GATE VALVE AND VALVE BOX FORCE MAIN	EA		1	\$ -
1080 24102B	F & I, 2 1/2" RESILIENT SEATED GATE VALVE AND VALVE BOX WATER MAIN	EA		1	\$ -
1080 24103	F & I, 3" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX FORCE MAIN	EA		2	\$ -
1080 24104	F & I, 4" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX FORCE MAIN	EA		5	\$ -
1080 24106	F & I, 6" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX WATER MAIN	EA		4	\$ -
1080 24106A	F & I, 6" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX	EA		2	\$ -
1080 24108	F & I, 8" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX WATER MAIN	EA		14	\$ -
1080 24108A	F & I, 8" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX FORCE MAIN	EA		7	\$ -
1080 24108B	F & I, 8" CHECK VALVE WITH MEGA-LUG RESTRAINTS FORCE MAIN	EA		1	\$ -
1080 24112	F & I, 12" RESILIENT SEATED GATE VALVE WITH MEGA-LUG RESTRAINTS AND VALVE BOX WATER MAIN	EA		5	\$ -
1080 24500	ADJUST EXISTING VALVE BOX WATER MAIN	EA		3	\$ -
1080 24500A	ADJUST EXISTING VALVE BOX FORCE MAIN	EA		3	\$ -
1080 26102	F & I, 2" AUTOMATIC AIR RELEASE VALVE ASSEMBLY FORCE MAIN	EA		4	\$ -
1080 26112	2" AUTOMATIC AIR RELEASE VALVE ASSEMBLY WATER MAIN	EA		1	\$ -
1080 26400	F & I, RELOCATE 2" MANUAL AIR RELEASE VALVE ASSEMBLY FORCE MAIN	EA		2	\$ -

ITEMIZED BID SCHEDULE

* ADDENDUM #3

PROJECT NAME: SR 60 AND 43RD AVENUE INTERSECTION IMPROVEMENTS
 IRC PROJECT NO: IRC-0853, FM NO. 431759-2-54-01, BID NO. 2019073
 BIDDER'S NAME

Item No.	Description	Unit	Unit Price	Quantity	Total
1080 27106	F & I, 6" LINE STOP WATER MAIN	EA		1	\$ -
1080 27108	F & I, 8" LINE STOP WATER MAIN	EA		1	\$ -
1080 29104	F & I, 4" MEGA-LUG BELL RESTRAINTS WATER MAIN	EA		1	\$ -
1080 29106	F & I, 6" MEGA-LUG BELL RESTRAINTS ON EXIST. C.I.P. WATER MAIN	EA		5	\$ -
1080 29106A	F & I, 6" MEGA-LUG BELL RESTRAINTS FORCE MAIN	EA		4	\$ -
1080 29108	F & I, 8" MEGA-LUG BELL RESTRAINTS ON EXIST. C.I.P. WATER MAIN	EA		5	\$ -
1080 29108A	F & I, 8" MEGA-LUG BELL RESTRAINTS FORCE MAIN	EA		33	\$ -
1080 29112	F & I, 12" MEGA-LUG BELL RESTRAINTS WATER MAIN	EA		34	\$ -
1080 32108	F & I & R, TEMPORARY SAMPLE POINT AND BLOWOFF ASSEMBLY (8") WATER MAIN	EA		4	\$ -
1080 32112	F & I & R, TEMPORARY SAMPLE POINT AND BLOWOFF ASSEMBLY (12") WATER MAIN	EA		12	\$ -
1644 11308	F & I, FIRE HYDRANT ASSEMBLY, 6"GV, 2-6" ANCHOR COUPLINGS, WITH MAIN CONNECTION AND 42" RISER	EA		10	\$ -
SUB-TOTAL OF UTILITY WORK BY HIGHWAY CONTRACTOR (UWHC)					-
0999-25A	FORCE ACCOUNT				\$ 200,000.00
TOTAL BID AMOUNT UTILITY WORK BY HIGHWAY CONTRACTOR (INCLUDING FORCE ACCOUNT)					200,000.00
TOTAL BID AMOUNT (INCLUDING FORCE ACCOUNT) SR 60 AND 43RD AVENUE ROADWAY IMPROVEMENTS WITHOUT UWHC (PAGE 00310-11)					\$ 1,300,000.00
TOTAL BID AMOUNT SR 60 AND 43RD AVENUE ROADWAY IMPROVEMENTS AND UTILITY WORK BY HIGHWAY CONTRACTOR (PAGE 00310-11)					\$ 1,500,000.00

LS=Lump Sum MH=Man Hour ED=Each Day LF=Linear Foot EA=Each SY=Square Yard Cy=Cubic Yard
 TN=Ton LB=Pound AS=Assembly GM=Gross Mile PI=Per Intersection CF=Cubic Foot
 SF=Square Foot NM=Net Mile

NOTE: IF THERE IS A DISCREPANCY BETWEEN THE PLANS (SUMMARY OF PAY ITEMS) AND THE ITEMIZED BID SCHEDULE, THE BID SCHEDULE WILL BE UTILIZED FOR BIDDING PURPOSES.

TOTAL PROJECT BID AMOUNT IN WORDS:

SUMMARY OF PAY ITEMS

NO.	ITEM	UNIT	QUANTITY
	ROADWAY CONSTRUCTION		
0101 1A	MOBILIZATION	LS	1
0102 1	MAINTENANCE OF TRAFFIC (INCLUDES PEDESTRIAN MOT)	LS	1
0102 14	TRAFFIC CONTROL OFFICER (OFF DUTY LAW ENFORCEMENT)	MH	300
0102 99	PORTABLE CHANGEABLE VARIABLE MESSAGE SIGN (8)	ED	7520
0104	N.P.D.E.S. COMPLIANCE	LS	1
0104 10 3	SEDMENT BARRIER	LF	16456
0104 11	FLOATING TURBIDITY BARRIER	LF	5850
0104 18	INLET PROTECTION SYSTEM	EA	69
0110 1 1	CLEARING AND GRUBBING	LS	1
0120 1	REGULAR EXCAVATION	CY	12656
0120 6	EMBANKMENT (COMPACTED IN PLACE)	CY	5281
0160 4	TYPE B STABILIZATION (12" SUBGRADE, LBR 40)	SY	44072
0285 707	OPTIONAL BASE, BASE GROUP 07 (9" CEMENTED COQUINA)	SY	40590
0286 1	TURNOUT CONSTRUCTION/DRIVEWAY BASE (CONCRETE)	SY	1526
0286 2	TURNOUT CONSTRUCTION-ASPHALT/DRIVEWAY BASE-ASPHALT MATERIAL	TN	98
0327 70 1	MIL EXIST ASPH PAVT, 1" AVG DEPTH	SY	17144
0327 70 8	MIL EXIST ASPH PAVT, 2.5" AVG DEPTH	SY	2944
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C (SP-12.5, OVERBUILT)	TN	7200
0334 1 13A	SUPERPAVE ASPHALTIC CONC, TRAFFIC C (SP-12.5, 1-17/8" THICK) (WITH POLYMER)	TN	4760
0337 7 82	ASPHALT CONCRETE FRICTION COURSE, FC-9.5, TRAFFIC C, PG 76-22, (WITH POLYMER) 1" THICK	CY	3173
0400 0 11	CONCRETE CLASS NS, GRAVITY WALL	CY	81.9
0425 1311	INLETS, CURB, TYPE P-1, <10"	EA	6.33
0425 1321	INLETS, CURB, TYPE P-2, <10"	EA	5
0425 1341	INLETS, CURB, TYPE P-4, <10"	EA	4
0425 1351	INLETS, CURB, TYPE P-5, <10"	EA	1
0425 1352	INLETS, CURB, TYPE P-5, >10"	EA	16
0425 1361	INLETS, CURB, TYPE P-6, <10"	EA	2
0425 1421	INLETS, CURB, TYPE J-2, <10"	EA	12
0425 1451	INLETS, CURB, TYPE J-5, <10"	EA	2
0425 1452	INLETS, CURB, TYPE J-5, >10"	EA	1
0425 1461	INLETS, CURB, TYPE J-6, <10"	EA	1
0425 1521	INLETS, DITCH BOTTOM, TYPE G, <10"	EA	2
0425 1521A	INLETS, DITCH BOTTOM, TYPE G, <10" (MODIFIED)	EA	2
0425 1559	INLETS, DITCH BOTTOM, TYPE E, <10"	EA	2
0425 1711	INLETS, GUTTER, TYPE V, <10"	EA	2
0425 2 41	MANHOLES, P-7, <10"	EA	4
0425 2 43	MANHOLES, P-7, PARTIAL	EA	1
0425 2 61	MANHOLES, P-8, <10"	EA	3
0425 2 71	MANHOLES, J-7, <10"	EA	3
0425 2 91	MANHOLES, J-8, <10"	EA	11
0425 4	INLETS, ADJUST	EA	7
0425 5	MANHOLE, ADJUST	EA	7
0425 6	VALVE BOXES, ADJUST	EA	38
0430174115	PIPE CULVERT, RCP, ROUND, 15" SD	LF	30
0430174118	PIPE CULVERT, RCP, ROUND, 18" SD	LF	4054
0430174124	PIPE CULVERT, RCP, ROUND, 24" SD	LF	1143
0430174130	PIPE CULVERT, RCP, ROUND, 30" SD	LF	198
0430174136	PIPE CULVERT, RCP, ROUND, 36" SD	LF	2231
0430174142	PIPE CULVERT, RCP, ROUND, 42" SD	LF	853
0430982140	MITERED END SECTION	LF	85
0430984125	MITERED END SECTION	EA	1
0430984138	MITERED END SECTION	EA	1
0430984141	MITERED END SECTION	EA	1
0443 70 3	FRENCH DRAIN, 18"	LF	1616
0515 1 2	PIPE HANDRAIL - GALVANAL ALUMINIUM	LF	1187
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	21539
0520 5 41	TRAFFIC SEPARATOR CONCRETE - TYPE IV, 4" WIDE	LF	457
0520 70	CONCRETE TRAFFIC SEPARATOR, SPECIAL-VARIABLE WIDTH (COLOR TREATED AND STAMPED CONCRETE)	SY	832
0522 2	CONCRETE AND DRIVEWAYS, 6" THICK	SY	8612
0524 1 2	CONCRETE DITCH PAVEMENT, NON REINFORCED, 4" THICK	SY	49
0527 2	DETECTABLE MARKING	EA	480
0530 3 4	RIPRAP, RUBBLE, F&I, DITCH LINING	TN	146
0550 10 222	FENCING, TYPE B, 5.1-6.0, W/MANT COATING	LF	1040

SUMMARY OF PAY ITEMS

NO.	ITEM	UNIT	QUANTITY
0570 1 2	PERFORMANCE TURF, SOD	SY	16393
0630 2 11A	2-2" PVC CONDUITS	LF	20
0635 2 12	PULL & SPICE BOX, F & I (30"x48"x24")	EA	2
0999 1	RECORD DRAWINGS/AS-BUILT	LS	1
1050 31206	UTILITY PIPE - PVC, F&I 6"	LF	845
1050 4126	6" HDPE FORCE MAIN CASING	LF	85
0700 1 11	SIGNING & PAVEMENT MARKINGS	AS	73
0700 1 13	SINGLE POST SIGN, F&I, <12 SF	AS	1
0700 1 50	SINGLE POST SIGN, F&I, 21-30 SF	AS	15
0705 111	DELINATOR, FLEXIBLE TUBULAR	EA	18
0706 3	RETRO-REFLECTIVE RAISED PAVEMENT MARKER	EA	796
0710 11290	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, ISLAND NOSE	SF	67
0711 11122	THERMOPLASTIC, STANDARD, WHITE, SOLID, 8"	LF	2135
0711 11123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12"	LF	2811
0711 11124	THERMOPLASTIC, STANDARD, WHITE, SOLID, 18"	LF	455
0711 11125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24"	LF	585
0711 11180	THERMOPLASTIC, STANDARD, WHITE, MESSAGE	EA	20
0711 11170	THERMOPLASTIC, STANDARD, WHITE, ARROW	EA	86
0711 11222	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18"	LF	77
0711 16101	THERMOPLASTIC, STANDARD, WHITE, SOLID, 6"	GM	3.10
0711 16131	THERMOPLASTIC, STANDARD, WHITE, SKIP, 6"	GM	3.59
0711 16201	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 6"	GM	2.37
0711 16231	THERMOPLASTIC, STANDARD, YELLOW, SKIP, 6"	GM	0.44
0630 2 11B	SIGNAL CONDUIT (F&I)(UNDERGROUND)	LF	12057
0630 2 12	CONDUIT (F&I)(UNDERPAVEMENT)(DIRECTIONAL BORE)	LF	1083
0630 2 15	CONDUITS (F&I)(BRIDGE MOUNTED)	LF	1820
0632 7 1	CABLE (SIGNAL)(F&I)	PI	1
0633 1 123	FIBER OPTIC CABLE (F&I)(UNDERGROUND)(96 SINGLE MODE)	LF	796
0633 3 15	FIBER OPTIC CONNECTION HARDWARE (F&I)(PRETERMINATED PATCH PANEL)	EA	1
0635 2 11A	PULL & SPICE BOXES (F&I)	EA	23
0635 2 13	PULL & SPICE BOXES (F&I)(FIBER OPTICS)	EA	26
0639 1 123	ELECTRICAL POWER SERVICE (F&I)(UNDERGROUND)	AS	1
0639 2 1	ELECTRICAL SERVICE WIRE (F&I)(POLE)	LF	200
0639 3 11	ELECTRICAL SERVICE DISCONNECT (F&I)(POLE)	EA	1
0641 2 12	PRE-STRESSED CONCRETE POLE (F&I)(6-11)	EA	1
0641 2 80	CONCRETE POLE REMOVAL (COMPLETE/DEEP)	EA	4
0646 1 11	ALUMINIUM SIGNAL POLES (F&I)(PEDESTAL)	EA	8
0649 31 105	MAST ARM (F&I)(SINGLE ARM W/O LUM)(78)	EA	1
0649 31 109	MAST ARM (F&I)(SINGLE ARM W/ LUM)(70.5)	EA	2
0649 31 118	MAST ARM (F&I)(DOUBLE ARM W/O LUM)(70.5-80)	EA	1
0650 1 24	TRAFFIC SIGNAL (F&I)(3-SECT)(1 WAY)(ALUM)	AS	16
0650 1 29	TRAFFIC SIGNAL (F&I)(5-SECT)(1 WAY)(ALUM)	AS	4
0653 1 11	PEDESTRIAN SIGNAL (F&I)(LED, 1 WAY)	AS	8
0660 4 11	VEHICLE DETECTION (F&I)(VIDEO)(CABINET EQUIPMENT)	EA	4
0660 4 12	VEHICLE DETECTION (F&I)(VIDEO)(ABOVE GROUND)	EA	4
0665 1 11	PEDESTRIAN DETECTOR (F&I)(STD)	EA	8
0670 5 110	TRAFFIC CONTROLLER ASSEMBLY (F&I)(NEW)	AS	1
0670 5 600	CONTROLLER ASSEMBLY (REMOVE)	AS	1
0682 1 133	CCTV CAMERA (F&I)(NON-PRESSURIZED)(IP, HIGH DEF)	EA	1
0684 1 1	MANAGED FIELD ETHERNET SWITCH (F&I)	EA	1
0685 106	SYSTEM AUXILIARIES (UNINTERFERIBLE POWER SOURCE)(F&I)	EA	1
0700 3 201	SIGN PANEL (F&I)(OVERHEAD)(12 SF)	EA	4
0700 5 21	INTERMEDIATE ILLUMINATED SIGN (F&I)(NAME)(OVERHEAD)(12 SF)	EA	4

PAY ITEMS & CONTINGENCY ITEMS FOOTNOTES:

- ITEM 0102 1 INCLUDES ALL ITEMS FOR MAINTENANCE OF TRAFFIC WHICH ARE NOT INCLUDED FOR PAYMENT UNDER SEPARATE ITEMS. COST OF MOT SHALL INCLUDE BUT NOT BE LIMITED TO SIGNS, TEMP BARRIER WALL INCLUDING BRIDGE PASSING, TEMP RAUPS, TEMP STRIPING, ADEQUATE AND PROPER DRAINAGE DURING PROCESS OF THE WORK AND PEDESTRIAN MOT.
- ITEM 0110 1 1 INCLUDES REMOVAL OF EXISTING DRAINAGE STRUCTURES & PIPES; CULVERTS; SIGNS; FENCE; CURBS; TRAFFIC SEPARATOR; SIDEWALKS; ASPHALT; BASE; CONCRETE; GUTTER; F.D.P.S; TEMPORARY CONSTRUCTION DETOURS; AND ANY OTHER ITEMS TO BE REMOVED THAT ARE NOT SPECIFICALLY COVERED UNDER ANOTHER SEPARATE PAY ITEM. INCLUDES ALL NECESSARY SAW CUTTING, INCLUDES TREE TRIMMING FOR UTILITY INSTALLATION AND OR RELOCATION AND FOR STREET LIGHTING INSTALLATION.
- ITEM 0120 1 INCLUDES ALL EARTHWORK ITEMS (EXCAVATION AND EMBANKMENT) FOR ROADWAY, CURB, SIDEWALK, AND DRIVEWAY CONSTRUCTION, INCLUDES FINAL GRADING & SHAPING AS NECESSARY FOR FINAL RESTORATION.
- ITEM 0120 6 INCLUDES COMPACTION OF SUBGRADE IN ACCORDANCE WITH SECTION 120-9 OF THE FOOT SPECIFICATIONS.
- ITEM 0334 1 13 INCLUDES BITUMINOUS MATERIAL, PRIME COAT AND TACK COAT, AS REQUIRED.
- ITEM 0120 6 THIS ITEM IS FILL COMPACTED IN PLACE.
- ITEM 0425 1311 INCLUDES TEMPORARY SHEET PILING AS NEEDED FOR DRAINAGE INSTALLATION.
- ITEM 0425 1705 2 PIECE COVER
- ITEM 0425 1321 2 PIECE COVER
- ITEM 0425 1421 THIS ITEM INCLUDES ALL LABOR, MATERIALS, & EQUIPMENT FOR THE CONTROL STRUCTURE.
- ITEM 0425 2 71 0425 2 63 0425 2 63 0425 4
- ITEM 0522 2 INCLUDES THICKENED EDGE. ALL CONC. SIDEWALKS AND DRIVEWAYS SHALL BE 6" THICK FIBER REINFORCED CONC.
- ITEM 1050 11223 INCLUDES MAGNETIC TRACER WIRE.
- ALL ITEMS MAY BE INCREASED, DECREASED OR DELETED AS DIRECTED BY THE ENGINEER.

LEGEND

- ⊕ ANCHOR
- ⊖ CLEAN OUT
- ⊓ CATCH BASIN
- ⊗ DRAINAGE MANHOLE
- ⊕ ELECTRIC MANHOLE
- ⊖ FIRE HYDRANT
- ⊙ SANITARY MANHOLE
- ⊖ SIGN
- ⊕ TELEPHONE MANHOLE
- ⊖ WATER METER
- ⊖ WOOD UTILITY POLE
- ⊖ CHAIN-LINK FENCE
- ⊖ WOOD FENCE
- ⊖ BLACK OLIVE TREE
- ⊖ PALM TREE
- ⊖ OAK TREE
- ⊖ UNKNOWN SPECIES TREE

GB310 / LC26000269

ARCADIS U.S., INC.

1500 Gateway Blvd, Suite 200
Boynton Beach, Florida 33426

Tel: (561) 697-7000 Fax: (561) 389-4731
www.arcadis-us.com

EB7917 / LB7082

No.:	Revision:	By:	Date:
1	REVISED QUANTITIES	BFR	10/9/19

INDIAN RIVER COUNTY

Department of Public Works
Engineering Division

Scale:	N.T.S.
Approved:	HWD
Drawn:	FM
Checked:	HWD
Date:	6/2017
Field Book No.:	

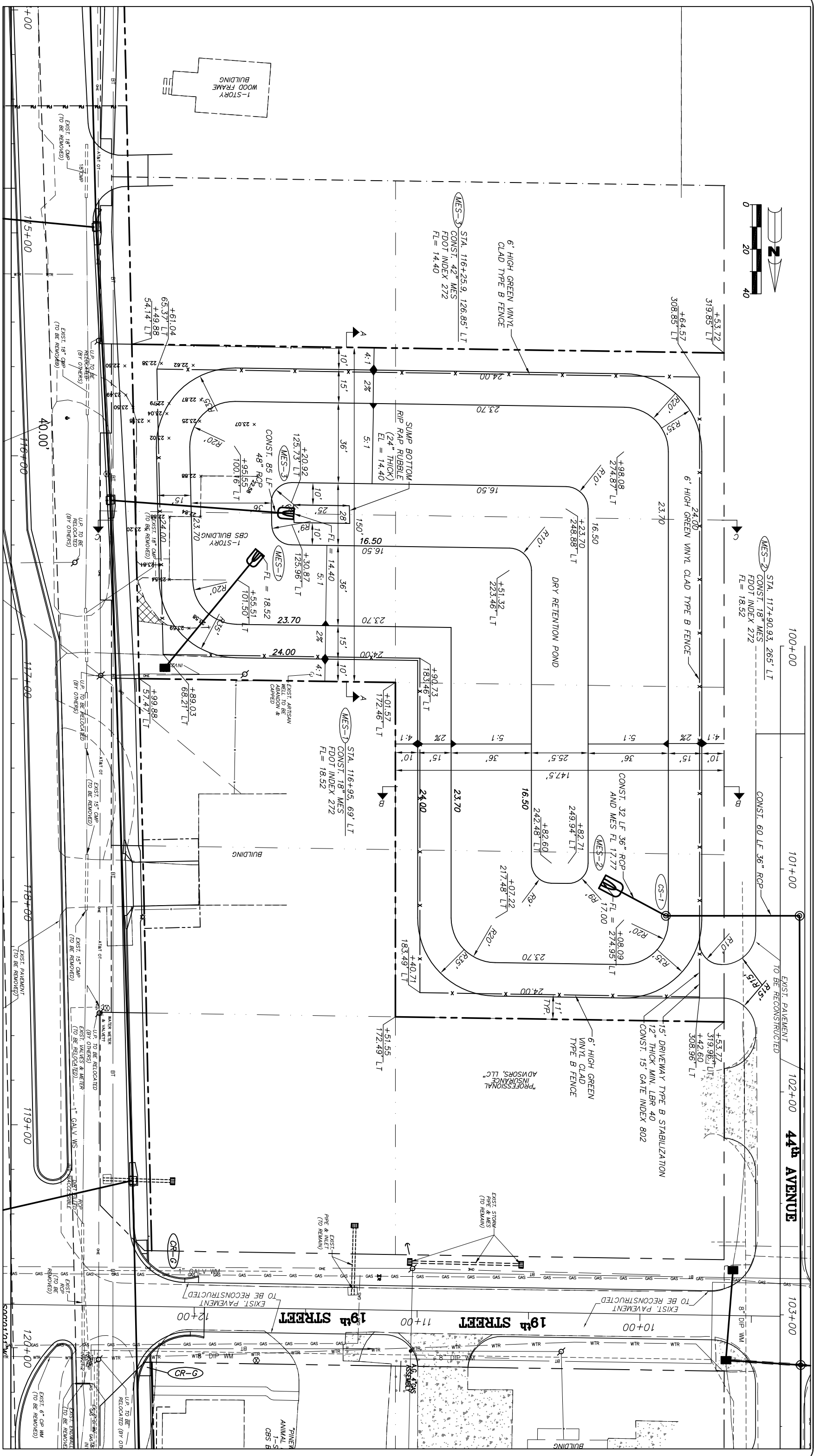
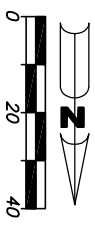
Project:

QUANTITIES & GENERAL NOTES

FOR

SR 60 & 43RD AVENUE

Sheet:	13
Of:	99
Project No.:	LHW# WP1027



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 EB7917 / LB7062

No.	Revision:	By:	Date:
1	ADDED GND EX EL FOR POND	BFR	10/9/19

Department of Public Works
Engineering Division

Scale:	1" = 40'
Approved:	HWD
Drawn:	FM
Checked:	HWD
Date:	6/2017
Field Book No.:	

Project:
 PLAN SHEETS
FOR
SR 60 & 43RD AVENUE

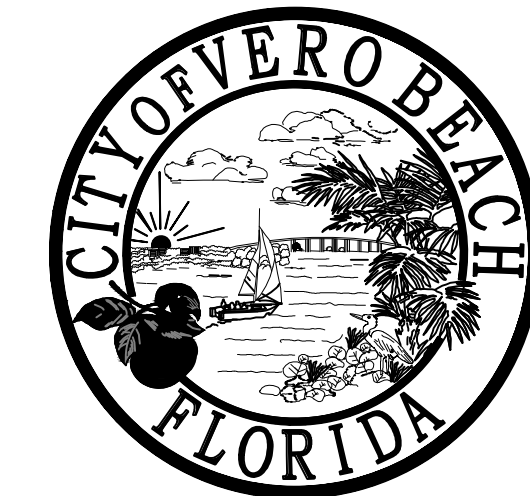
Sheet:	24
Of:	99
Project No.:	LNW# WP1027

C.O.V.B. UTILITY RELOCATION for I.R.C. ROAD WIDENING PROJECT on S.R. 60 (20TH ST.) FROM 44TH AVE. TO 38TH AVE. and on 43RD AVE. FROM 300' SOUTH OF 18TH ST. TO 26TH ST.

CITY OF VERO BEACH, FLORIDA

C.O.V.B. WATER AND SEWER DEPT.
PROJECT NO. WS16003

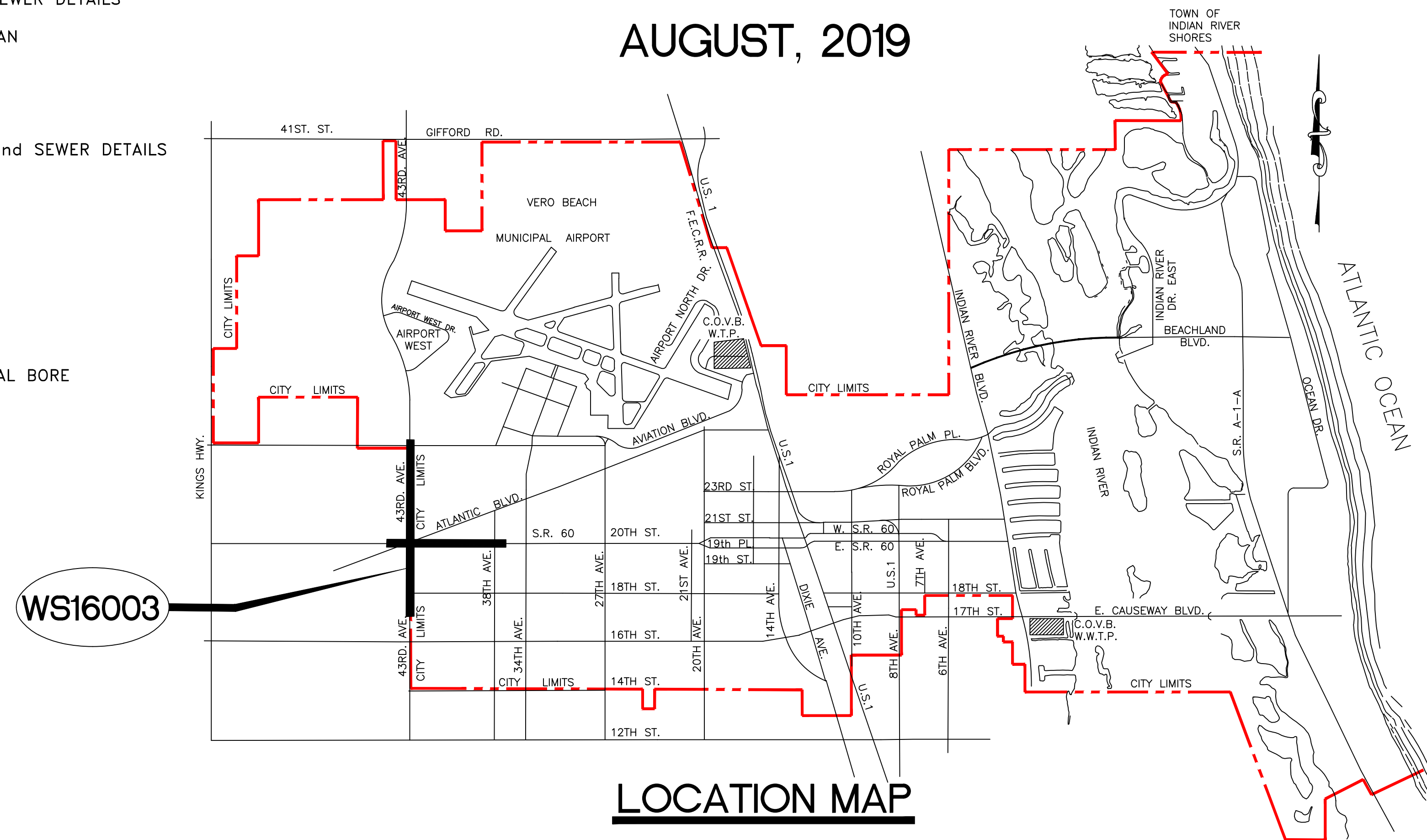
INDIAN RIVER COUNTY PROJECT NO. 0853



SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	INFORMATION SHEET & C.O.V.B WATER and SEWER DETAILS
3	F.D.E.P. PERMIT PLAN AND SAMPLE POINT PLAN
4	WATER MAIN DEMO PLAN
5	FORCE MAIN DEMO PLAN
6	SUMMARY OF QUANTITIES & C.O.V.B WATER and SEWER DETAILS
7-8	C.O.V.B WATER and SEWER DETAILS
9	PLAN SHEET INDEX
10-18	PLAN SHEETS - 43RD AVE.
19	PLAN SHEET - 19TH ST.
20-23	PLAN SHEETS - S.R. 60
24	PLAN SHEET - I.R.F.W.C.D. R.O.W. DIRECTIONAL BORE
25	PLAN SHEET - I.R.F.W.C.D. R.O.W.
26-34	PROFILE SHEETS - 43RD AVE.
35	PROFILE SHEET - 19TH ST.
36-40	PROFILE SHEETS - S.R. 60
41-51	CROSS SECTION SHEETS - 43RD AVE.
52-58	CROSS SECTION SHEETS - S.R. 60

AUGUST, 2019



LOCATION MAP

CITY COUNCIL

- MAYOR - VAL ZUDANS
- VICE MAYOR - TONY YOUNG
- COUNCILMEMBER - LAURA MOSS
- COUNCILMEMBER - ROBERT BRACKET
- COUNCILMEMBER - HARRY HOWLE

CITY ADMINISTRATION

- CITY MANAGER - MONTY K. FALLS, P.E.
- DIRECTOR WATER & SEWER DEPT. - ROBERT J. BOLTON, P.E.

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

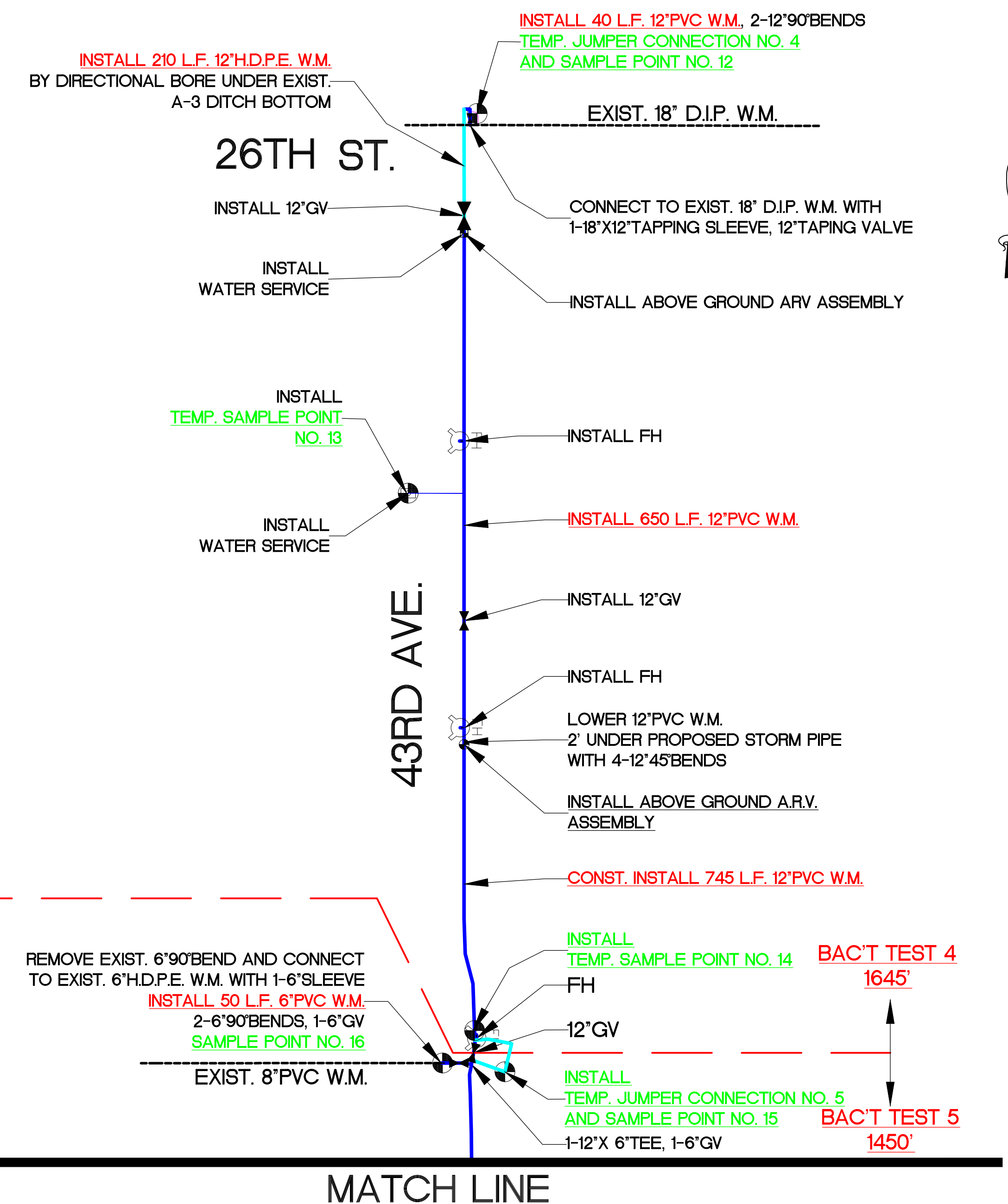
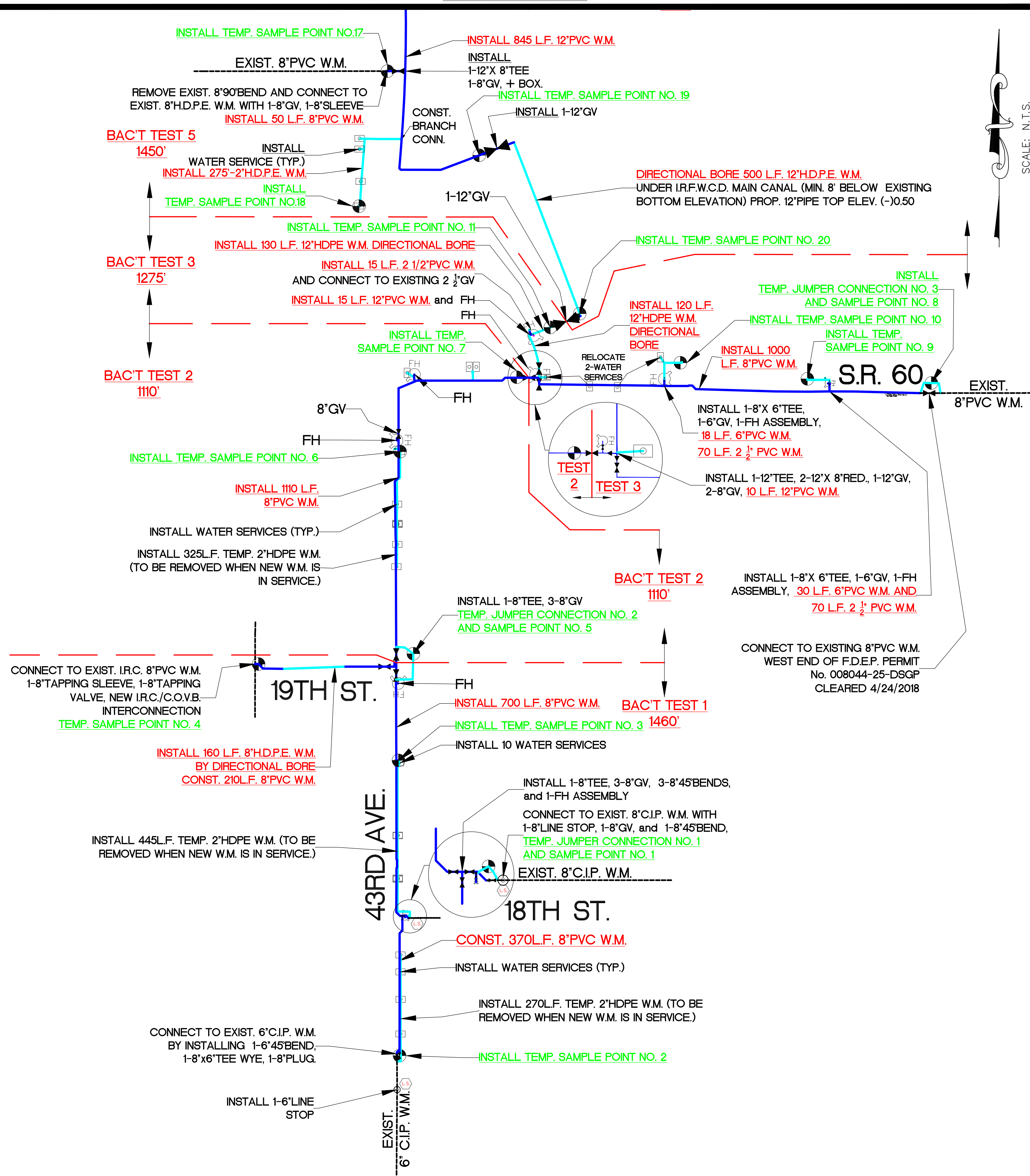
KNOWN UTILITIES IN THE AREA

- C.O.V.B. SEWER
 - C.O.V.B. WATER
 - C.O.V.B. ELECTRIC
 - A.T. & T.
 - CABLE VISION
 - FLORIDA CITY GAS CO.
 - INDIAN RIVER COUNTY TRAFFIC DIVISION
- CALL SUNSHINE STATE ONE CALL 1-800-432-4770

GOVERNING SPECIFICATIONS
THE FLORIDA DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS FOR ROAD & BRIDGE
CONSTRUCTION, 2017 EDITION, SUPPLEMENTS
THERE TO, AND SPECIAL PROVISIONS THERETO IF
NOTED IN THE CONTRACT SPECIFICATIONS FOR
THIS PROJECT.

CITY OF VERO BEACH
WATER AND SEWER DEPARTMENT
ENGINEERING DIVISION

MATCH LINE



REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	FDEP PERMIT PLAN and SAMPLE POINT PLAN	SCALE: N.T.S.	DRAWN BY: I.A.Y. CHECKED BY: R.J.B.	DATE: 1/30/19 DATE: 1/30/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 3 OF 58	

MATCH LINE

GROUTED 400 L.F. EXIST. 8" A.C.P. W.M.
AND REMAIN IN PLACE OUT OF SERVICE

REMOVE 40 L.F. EXIST. 8" A.C.P. W.M.

GROUTED 105 L.F. EXIST. 8" A.C.P. W.M.
AND REMAIN IN PLACE OUT OF SERVICE

REMOVE 440 L.F. EXIST. 12" D.I.P. W.M.

GROUT 380 L.F. EXIST. 6" C.I.P. W.M.
PIPE IS TO REMAIN IN PLACE OUT OF SERVICE.
CAP PIPE ENDS AFTER GROUTING

REMOVE 430 L.F. EXIST. 6" C.I.P. W.M.

REMOVE 205 L.F. EXIST. 2 1/2" W.M.

GROUT EXIST. 50 L.F. 8" C.I.P. W.M.
GROUT EXIST. 120 L.F. 8" C.I.P. W.M.

CUT EXIST. 6" C.I.P. W.M. AND REMOVE 10 L.F. EXIST. PIPE THEN CAP ENDS WITH 2-6" CAPS

EXIST. 6" GV TO REMAIN CLOSED REMOVE VALVE BOX AND CONC. PAD

EXIST. 6" C.I.P. W.M. I.R.C. WATER SYSTEM

REMOVE 1300 L.F. EXIST. 8" C.I.P. W.M.

REMOVE 1380 L.F. EXIST. 8" C.I.P. W.M.

S.R. 60

SCALE: N.T.S.

19TH ST.

43RD AVE.

CONST. 475 L.F. TEMP. 2" HDPE W.M. (TO BE REMOVED WHEN NEW W.M. IS IN SERVICE.)

REMOVE 250 L.F. EXIST. 6" C.I.P. W.M.

18TH ST.

26TH ST.

43RD AVE.

REMOVE 2300' EXIST. 8" C.I.P. W.M.

GROUTED 120 L.F. EXIST. 8" A.C.P. W.M. AND REMAIN IN PLACE OUT OF SERVICE

REMOVE 40 L.F. EXIST. 8" A.C.P. W.M.

GROUTED 200 L.F. EXIST. 8" A.C.P. W.M. AND REMAIN IN PLACE OUT OF SERVICE

REMOVE 40 L.F. EXIST. 8" A.C.P. W.M.

MATCH LINE

SCALE: N.T.S.

ROBERT J. BOLTON, P.E. FL. # 49429 DATE

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	WATER MAIN DEMO PLAN	SCALE N.T.S.	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 7/09/19 DATE 7/09/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 4 OF 58	

MATCH LINE



REMOVE 85' EXIST. 10" PVC F.M.

INSTALL ABOVE GROUND ARV ASSEMBLY

INSTALL NEW 8" PVC F.M. UNDER NEW 12" PVC W.M. AND EXIST. 10" PVC F.M. TO BE REMOVED.

INSTALL 10 L.F. 8" PVC F.M., 1-8" TEE, 1-8" GV, 1-8" CHECK VALVE, CONNECT TO EXIST. 10" PVC F.M. 2-8' 45" BENDS, 1-10" X 8" RED., 1-10" SLEEVE

CONNECT TO EXIST. 8" PVC F.M. 1-8' 45" BEND 1-8" GV

S.R. 60

INSTALL 120' 4" PVC F.M.

GROUT 100 L.F. EXIST. 3" PVC F.M. PIPE IS TO REMAIN IN PLACE OUT OF SERVICE. CAP PIPE ENDS AFTER GROUTING

CONNECT TO EXIST. FORCE MAINS. POT HOLE FOR PIPE SIZE AND MATERIAL WITH 1-4" TEE, 2-4" GV SELECT REDUCERS AS NECESSARY TO MAKE CONNECTIONS

GROUT 170 L.F. EXIST. 3" PVC F.M. PIPE IS TO REMAIN IN PLACE OUT OF SERVICE. CAP PIPE ENDS AFTER GROUTING

GROUT 40 L.F. EXIST. 6" PVC SAN. PIPE IS TO REMAIN IN PLACE OUT OF SERVICE. CAP PIPE ENDS AFTER GROUTING

REMOVE EXIST. SAN. MH and PLUG EAST INVERT

GROUT 54 L.F. EXIST. 8" D.I.P. SAN. PIPE IS TO REMAIN IN PLACE OUT OF SERVICE. CAP PIPE ENDS AFTER GROUTING

ADJUST EXISTING MANHOLE RING and COVER TO NEW FINISH GRADE, and PLUG WEST INVERT

19TH ST.

43RD AVE.

POT HOLE EXIST. 8" PVC F.M. PRIOR TO INSTALLING THE DRAINAGE PIPING. IF THE F.M. IS IN CONFLICT LOWER IT UNDER THE NEW DRAINAGE PIPE WITH 4-8' 45" BENDS + 1-8" SLEEVE. COORDINATE WITH C.O.V.B. W.S. DEPT. FORCE MAIN SHUT DOWN

CONNECT NEW 4" PVC F.M. TO EXIST. 4" GV.

GROUT 95 L.F. EXIST. 3" PVC F.M. PIPE IS TO REMAIN IN PLACE OUT OF SERVICE. CAP PIPE ENDS AFTER GROUTING

POT HOLE EXIST. 8" PVC F.M. PRIOR TO INSTALLING THE DRAINAGE PIPING. IF THE F.M. IS IN CONFLICT LOWER IT UNDER THE NEW DRAINAGE PIPE WITH 4-8' 45" BENDS + 1-8" SLEEVE. COORDINATE WITH C.O.V.B. W.S. DEPT. FORCE MAIN SHUT DOWN

EXISTING A.R.V. TO BE RELOCATED AWAY FROM THE PROPOSED SIDEWALK. SEE A.R.V. DETAILS.

POT HOLE EXIST. 8" PVC F.M. PRIOR TO INSTALLING THE DRAINAGE PIPING. IF THE F.M. IS IN CONFLICT LOWER IT UNDER THE NEW DRAINAGE PIPE WITH 4-8' 45" BENDS + 1-8" SLEEVE. COORDINATE WITH C.O.V.B. W.S. DEPT. FORCE MAIN SHUT DOWN

POT HOLE EXIST. 8" PVC F.M. PRIOR TO INSTALLING THE DRAINAGE PIPING. IF THE F.M. IS IN CONFLICT LOWER IT UNDER THE NEW DRAINAGE PIPE WITH 4-8' 45" BENDS + 1-8" SLEEVE. COORDINATE WITH C.O.V.B. W.S. DEPT. FORCE MAIN SHUT DOWN

EXISTING A.R.V. TO BE RELOCATED AWAY FROM THE PROPOSED SIDEWALK. SEE A.R.V. DETAILS.

POT HOLE EXIST. 8" PVC F.M. PRIOR TO INSTALLING THE DRAINAGE PIPING. IF THE F.M. IS IN CONFLICT LOWER IT UNDER THE NEW DRAINAGE PIPE WITH 4-8' 45" BENDS and 1-8" SLEEVE. COORDINATE WITH C.O.V.B. W.S. DEPT. FORCE MAIN SHUT DOWN

CONNECT TO EXIST. 8" PVC F.M. WITH 1-8" X 2" T.S. and 1-2" CORP. STOP. 10 L.F. 2" PVC F.M., 2-2" PVC 90° BENDS (STEP SYSTEM CONNECTION)

18TH ST.

INSTALL NEW 2" TAP and CONNECT TO EXIST. 1" SERVICE LINE

INSTALL 90 L.F. 2" HDPE F.M. BY DIRECTIONAL BORE

CONNECT NEW 2" HDPE F.M. TO EXIST. F.M. TAP

INSTALL 160 L.F. 2" HDPE F.M. OPEN CUT EXIST. ROADWAY

REMOVE 340 L.F. EXIST. 2" HDPE F.M.

INSTALL 120 L.F. 2" HDPE F.M.

26TH ST.

INSTALL 30 L.F. 8" PVC F.M. 1-8" GV 1-8" PLUG

INSTALL 90 L.F. 8" HDPE F.M. BY DIRECTIONAL BORE

INSTALL 20 L.F. 8" PVC F.M. 1-8" GV 1-8" PLUG

INSTALL 10 L.F. 3" PVC F.M., 1-8" X 4" TEE, 4" X 3" RED., 2-3' 45" BENDS, 1-3" SLEEVE, CONNECT TO EXIST. 3" PVC F.M.

INSTALL 1-8" TEE, 2-8" GV

INSTALL 1-8" TEE, 2-8" GV

REMOVE 60' EXIST. 3" PVC F.M.

REMOVE 40' EXIST. (ABANDONED) 8" PVC F.M.



43RD AVE.

INSTALL ABOVE GROUND ARV ASSEMBLY

INSTALL 1-8" GV

LOWER 8" PVC F.M. 2' UNDER PROPOSED STORM PIPE WITH 4-8' 45" BENDS

INSTALL 2200 L.F. 8" PVC F.M.

REMOVE 2210' EXIST. 8" PVC F.M.

CONNECT TO EXIST. 4" PVC F.M. 1-4" SLEEVE

REMOVE 2110' EXIST. (ABANDONED) 6" PVC F.M.

INSTALL ABOVE GROUND ARV ASSEMBLY

INSTALL 60 L.F. 4" PVC F.M. LOWER F.M. PIPE 2' UNDER PROPOSED STORM PIPE and 12" PVC WATER MAIN WITH 4-4' 45" BENDS

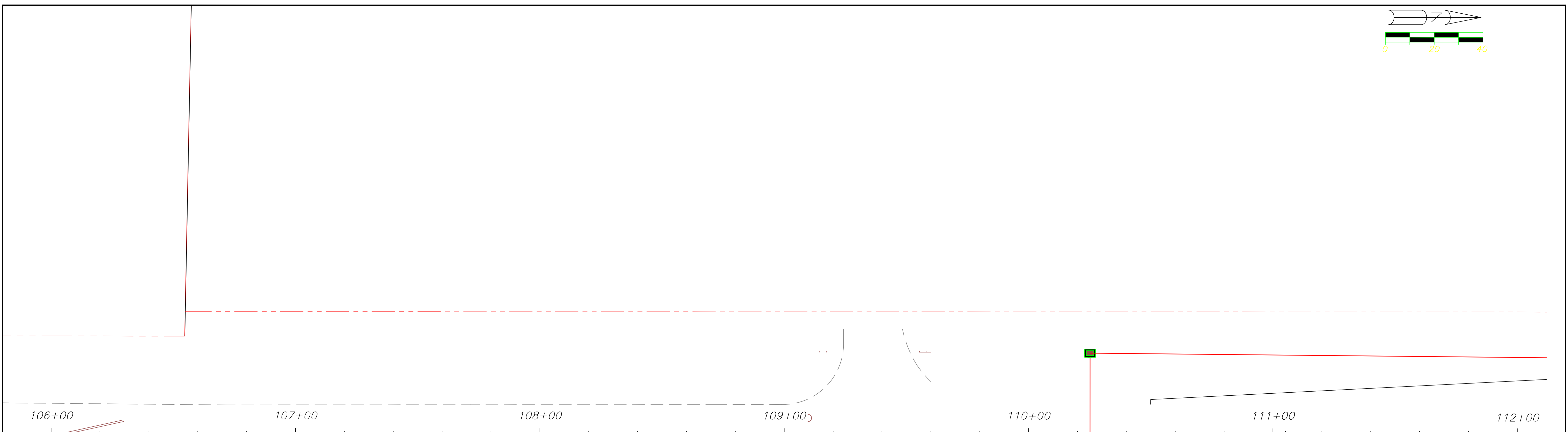
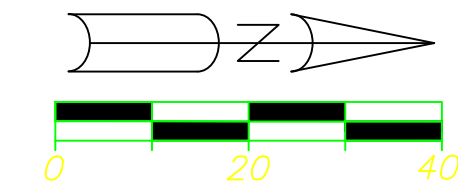
INSTALL 1-8" X 4" TEE 1-4" GV

INSTALL 1-8" GV

MATCH LINE

ROBERT J. BOLTON, P.E. DATE FL. # 49429

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	OVERALL F.M. PLAN & DEMO PLAN	SCALE N.T.S.	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 1/30/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 5 OF 54	



CONTRACTOR SHALL UTILIZE LINE STOP TO ISOLATE AND MINIMIZE THE DEPRESSURIZED PORTION OF WATER MAIN. STERILIZATION OF THE AFFECTED AREA SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SECTION TO A.W.W.A. C-651.
 INSTALL 1-6\"/>

RESTRAIN 85' MIN. EXIST. 6\"/>

CONNECT TO EXIST. 6\"/>

REMOVE 175 L.F. EXIST. 2\"/>

43 CONS. 2\"/>

- | LEGEND | |
|----------------|---|
| ① 1\"/> | ⑦ CONST. 2\"/> |
| ② 2\"/> | ⑧ CONST. 2\"/> |
| ③ 2\"/> | ⑨ EXISTING WATER METER WAS NOT FOUND. CONTACT CITY WATER DEPT. TO LOCATE. |
| ④ CONST. 2\"/> | ⑩ CONST. A SINGLE POTABLE WATER SERVICE FOR FUTURE USE AS ④ |
| ⑤ CONST. 2\"/> | ⑪ CONST. 2\"/> |
| ⑥ CONST. 2\"/> | ⑫ CONST. 2\"/> |
| | ⑬ CONST. 2\"/> |

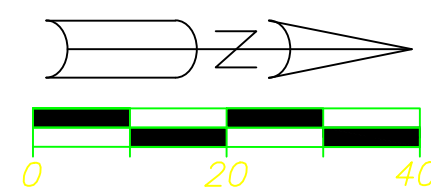
- GENERAL NOTES**
- PUNCH ALL WATER LINES 2 1/2\"/>
 - THERE SHALL BE 36\"/>

NOTE:
 ALL NEW PIPE IS TO BE INSTALLED WITH 36\"/>

INSTALL 220L.F. TEMP. 2\"/>

INSTALL 210L.F. 8\"/>

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	CONSTRUCTION PLANS 43rd AVE. STA. 106+00-STA. 112+00	SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 1/30/19 DATE 1/30/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 10 OF 58	



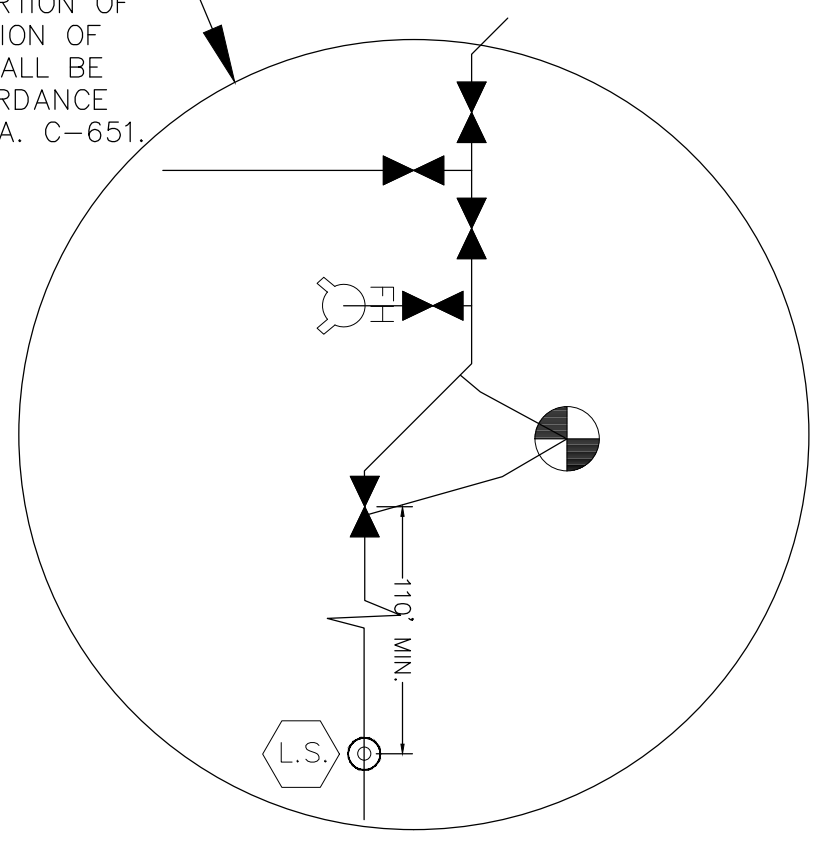
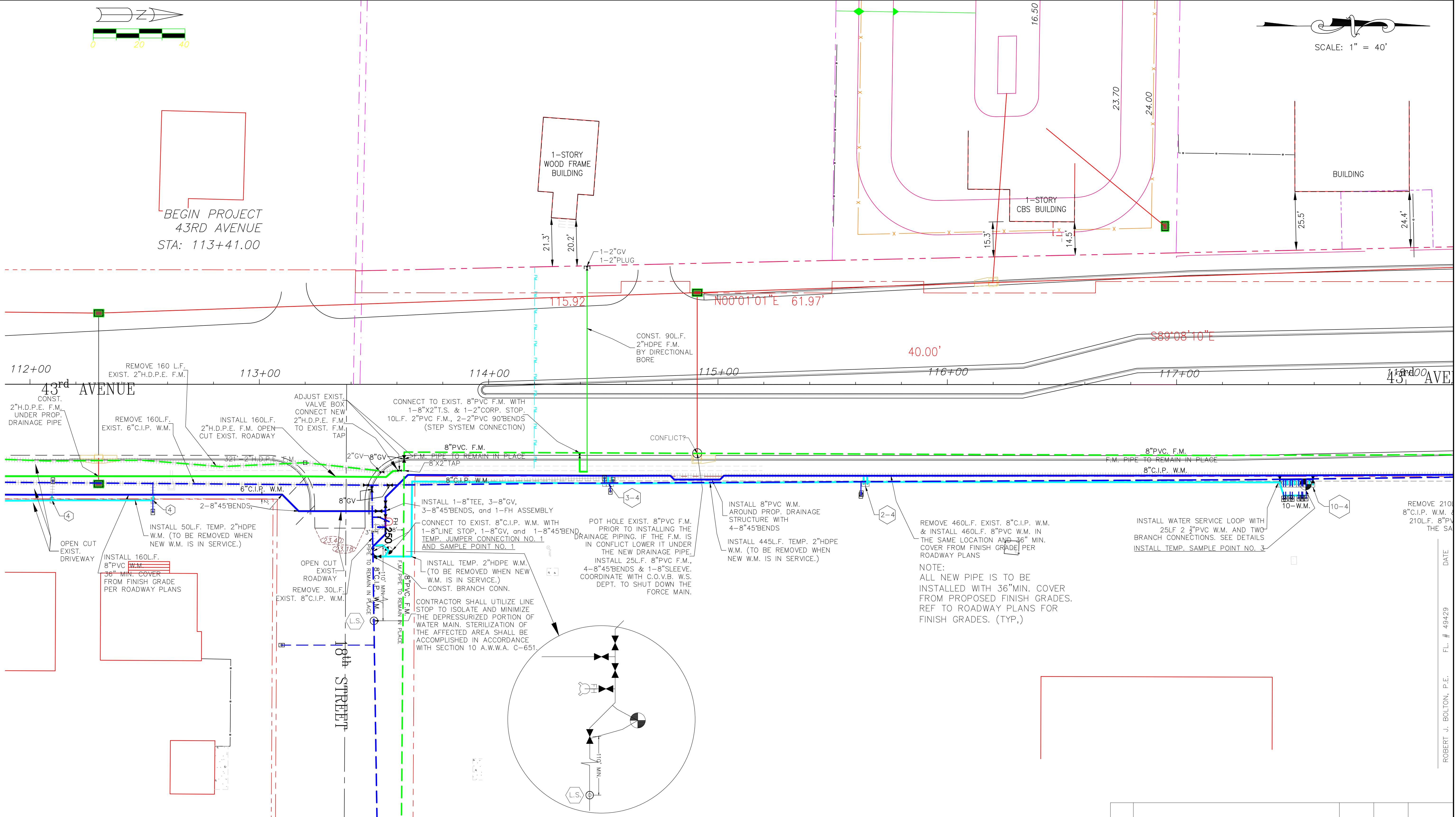
SCALE: 1" = 40'

BEGIN PROJECT
43RD AVENUE
STA: 113+41.00

1-STORY
WOOD FRAME
BUILDING

1-STORY
CBS BUILDING

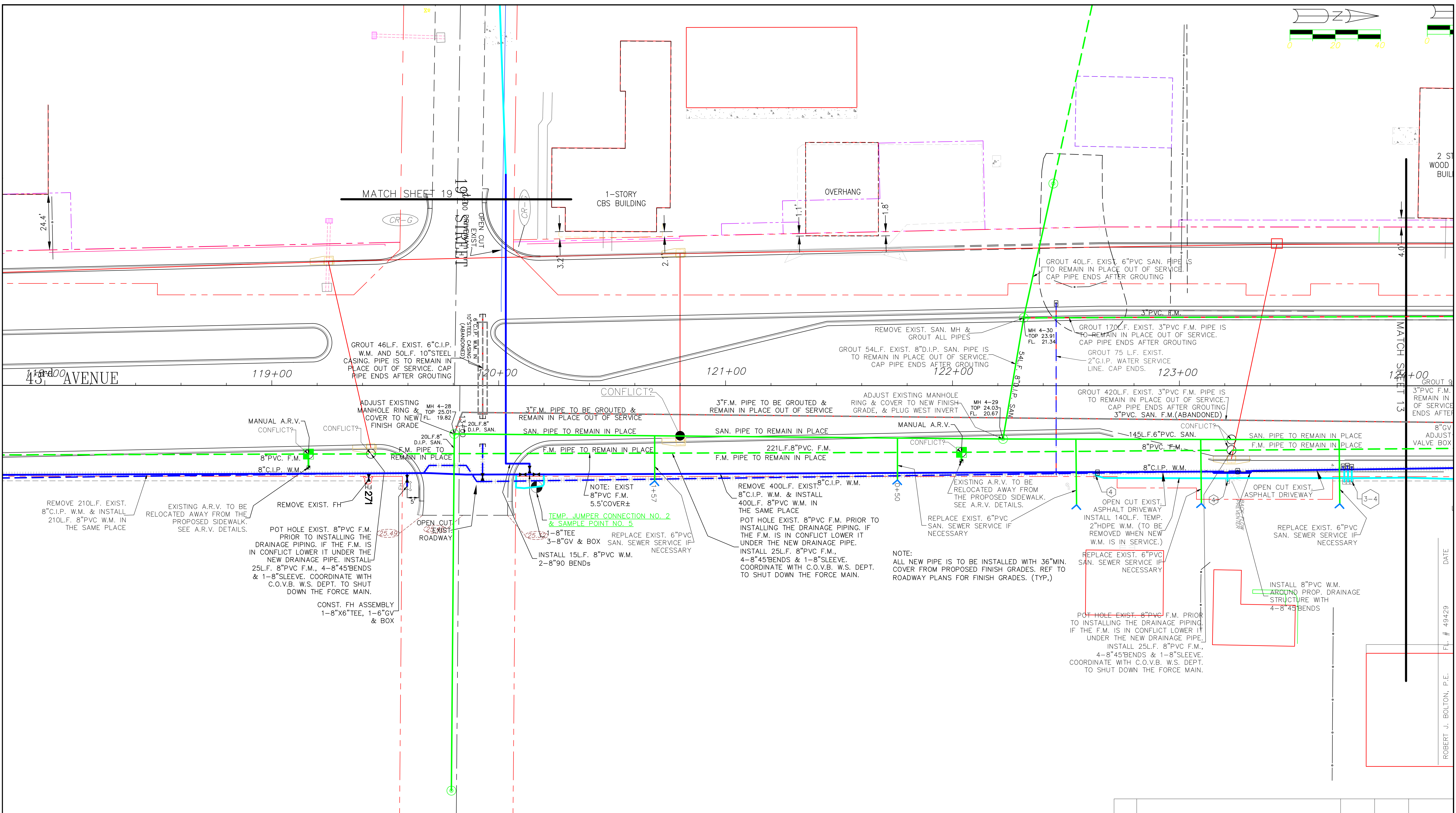
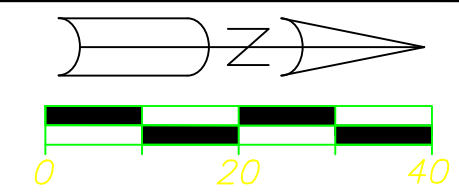
BUILDING



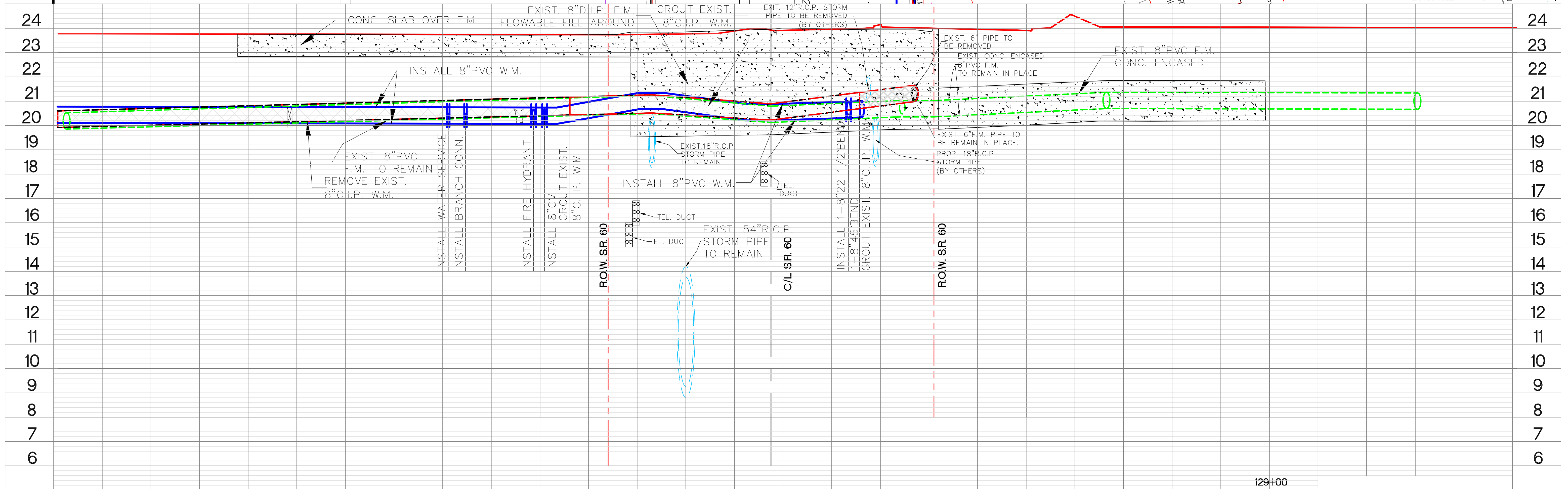
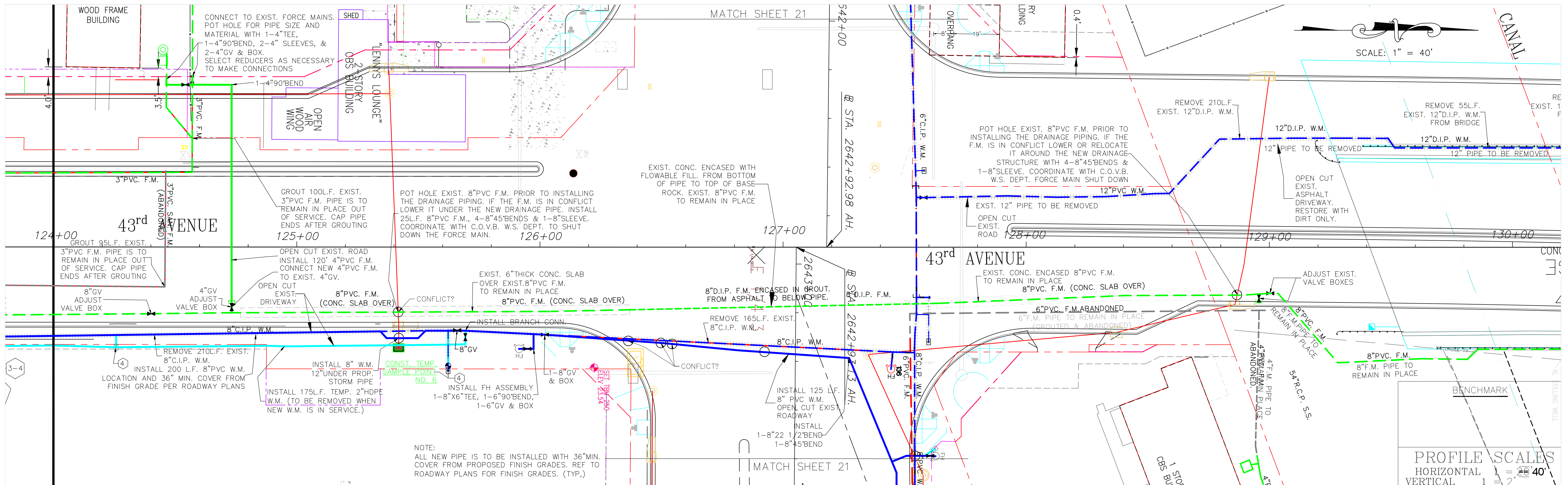
NOTE:
ALL NEW PIPE IS TO BE
INSTALLED WITH 36" MIN. COVER
FROM PROPOSED FINISH GRADES.
REF TO ROADWAY PLANS FOR
FINISH GRADES. (TYP.)

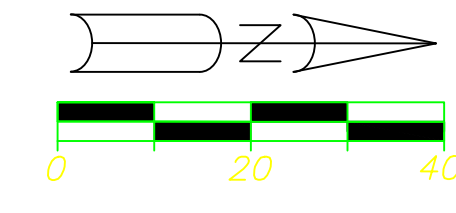
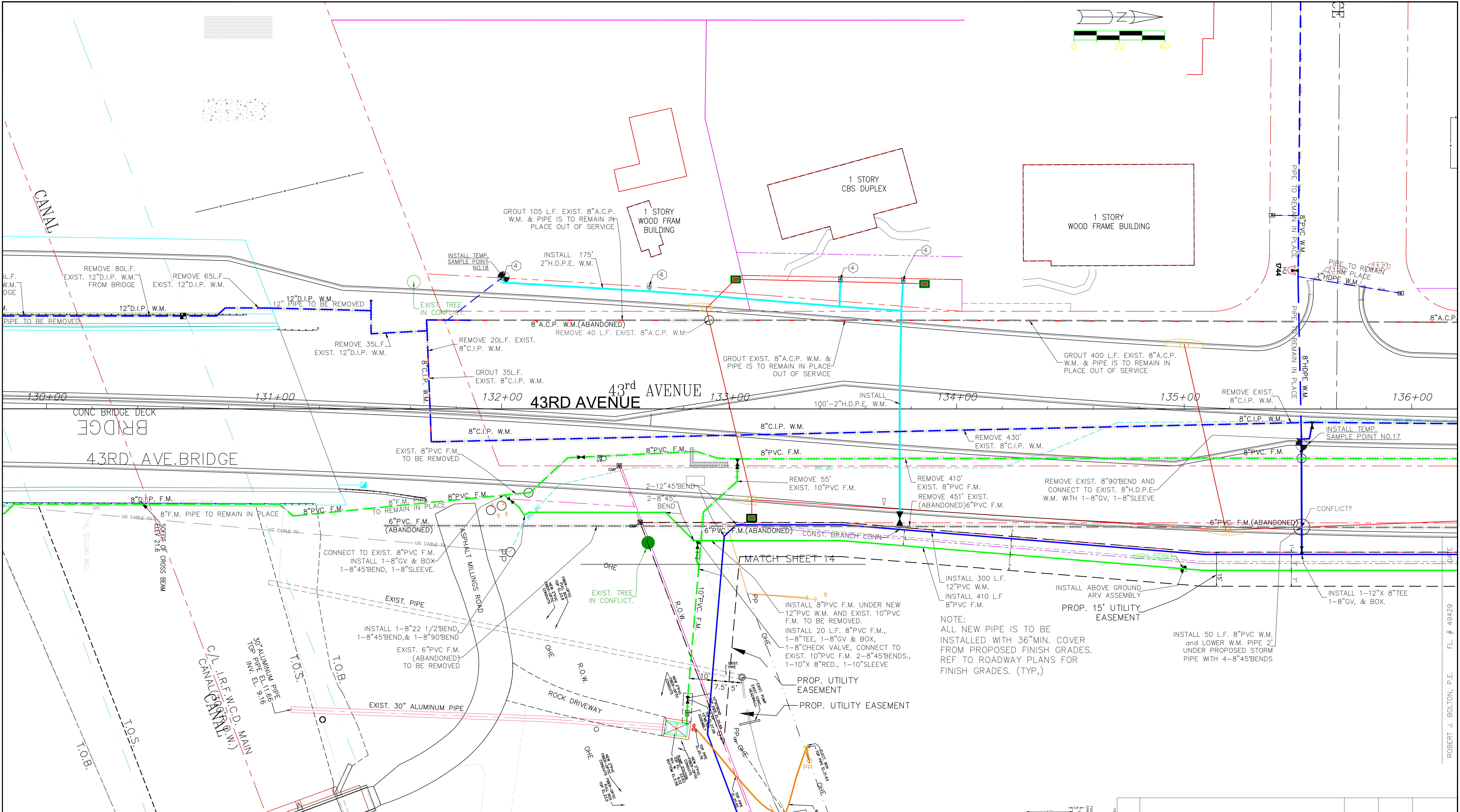
ROBERT J. BOLTON, P.E. FL. # 49429 DATE

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853				
CONSTRUCTION PLANS 43rd AVE. STA. 112+00-STA.118+00		SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 1/30/19 DATE 1/30/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 11 OF 58	



REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	CONSTRUCTION PLANS 43rd AVE. STA. 118+00-STA.124+00	SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 1/02/19 DATE 1/02/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 12 OF 58	

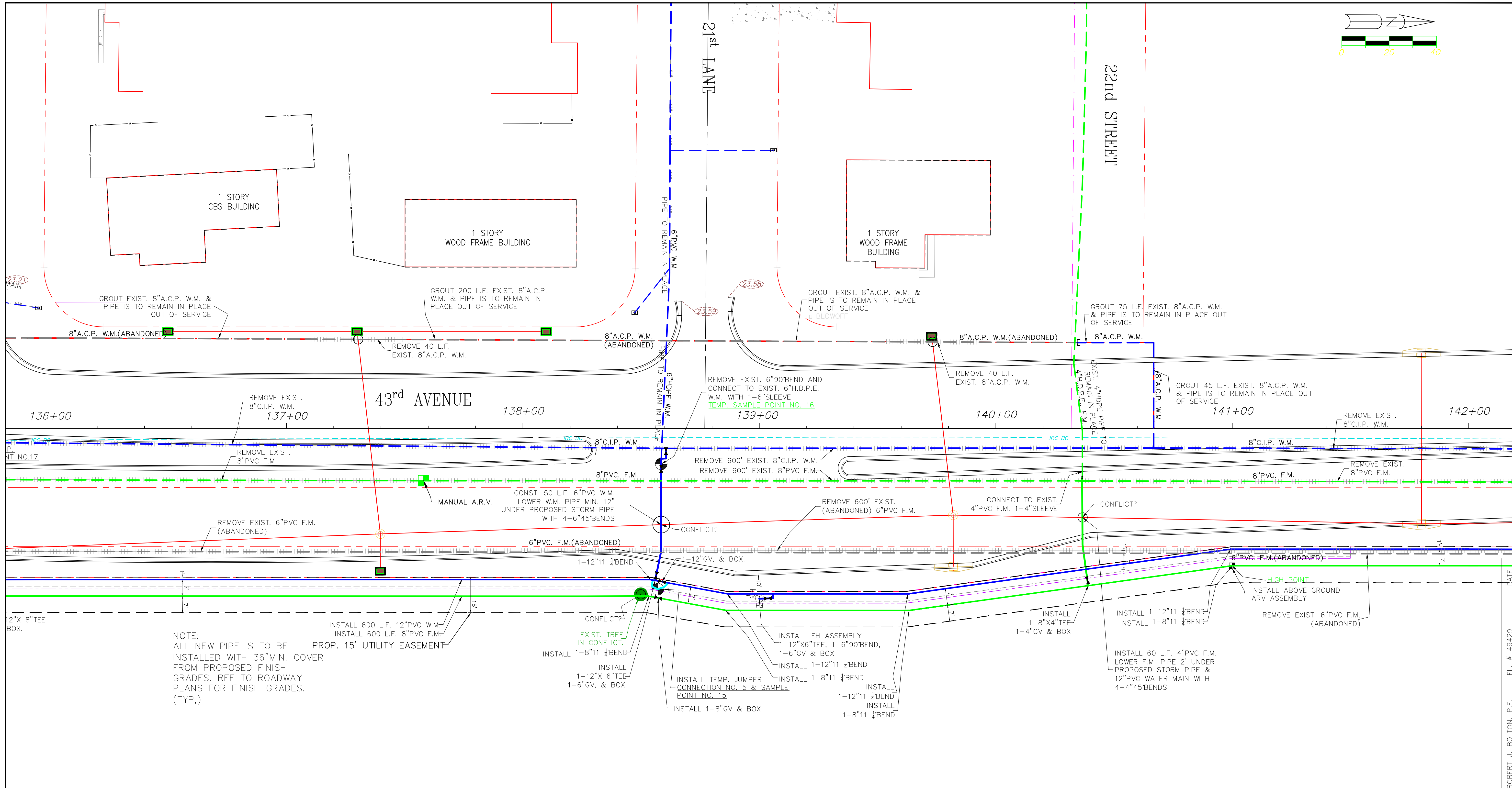
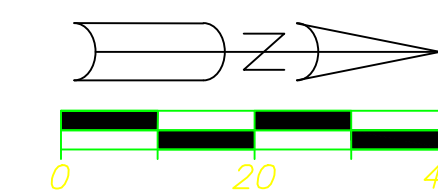




NOTE:
 ALL NEW PIPE IS TO BE
 INSTALLED WITH 36" MIN. COVER
 FROM PROPOSED FINISH GRADES.
 REF TO ROADWAY PLANS FOR
 FINISH GRADES. (TYP.)

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853				
CONSTRUCTION PLANS 43rd AVE. STA. 130+00-STA.136+00		SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 7/09/19 DATE 7/09/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 14 OF 58	

ROBERT J. BOLTON, P.E. FL. # 49429

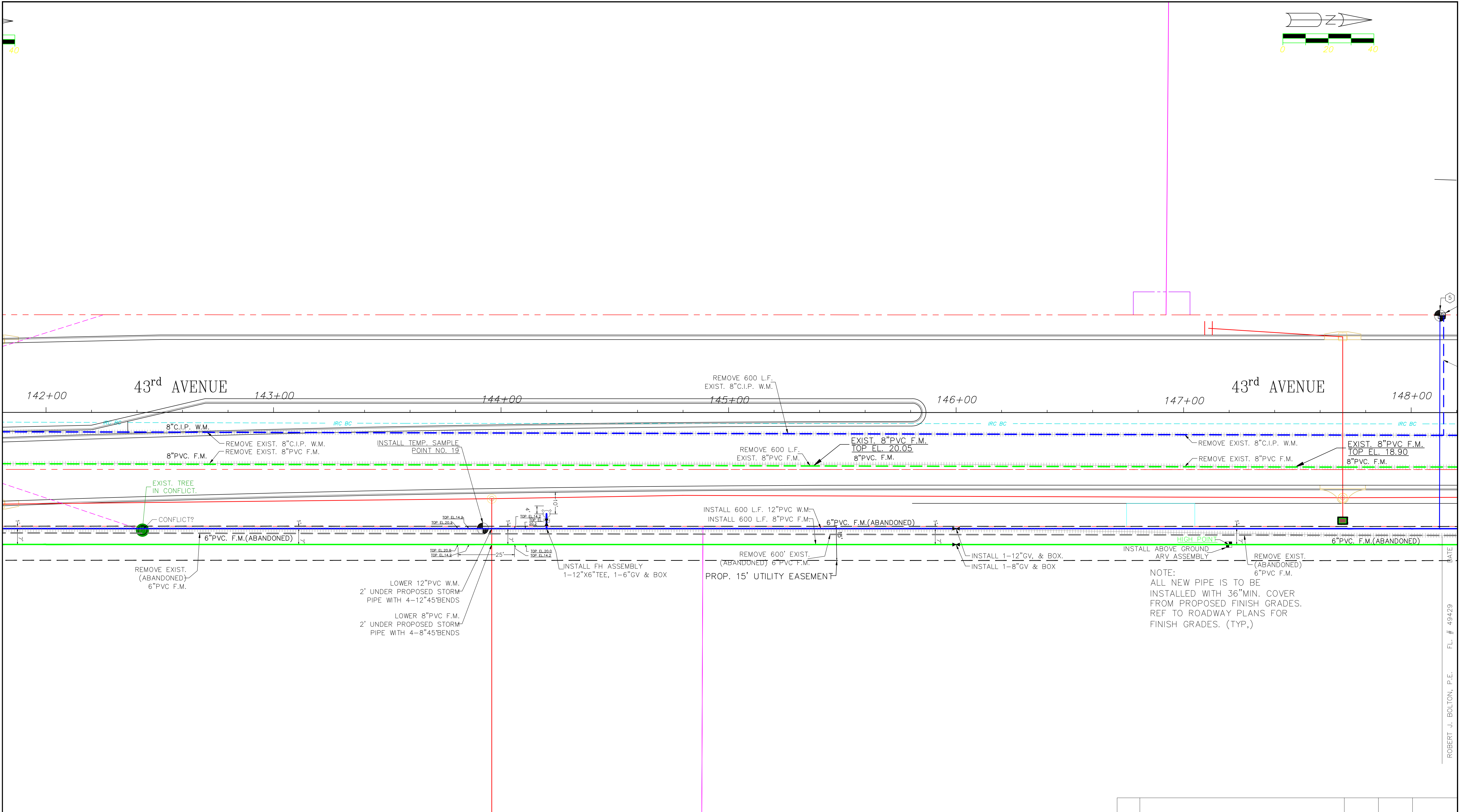


NOTE:
 ALL NEW PIPE IS TO BE INSTALLED WITH 36" MIN. COVER FROM PROPOSED FINISH GRADES. REF TO ROADWAY PLANS FOR FINISH GRADES. (TYP.)

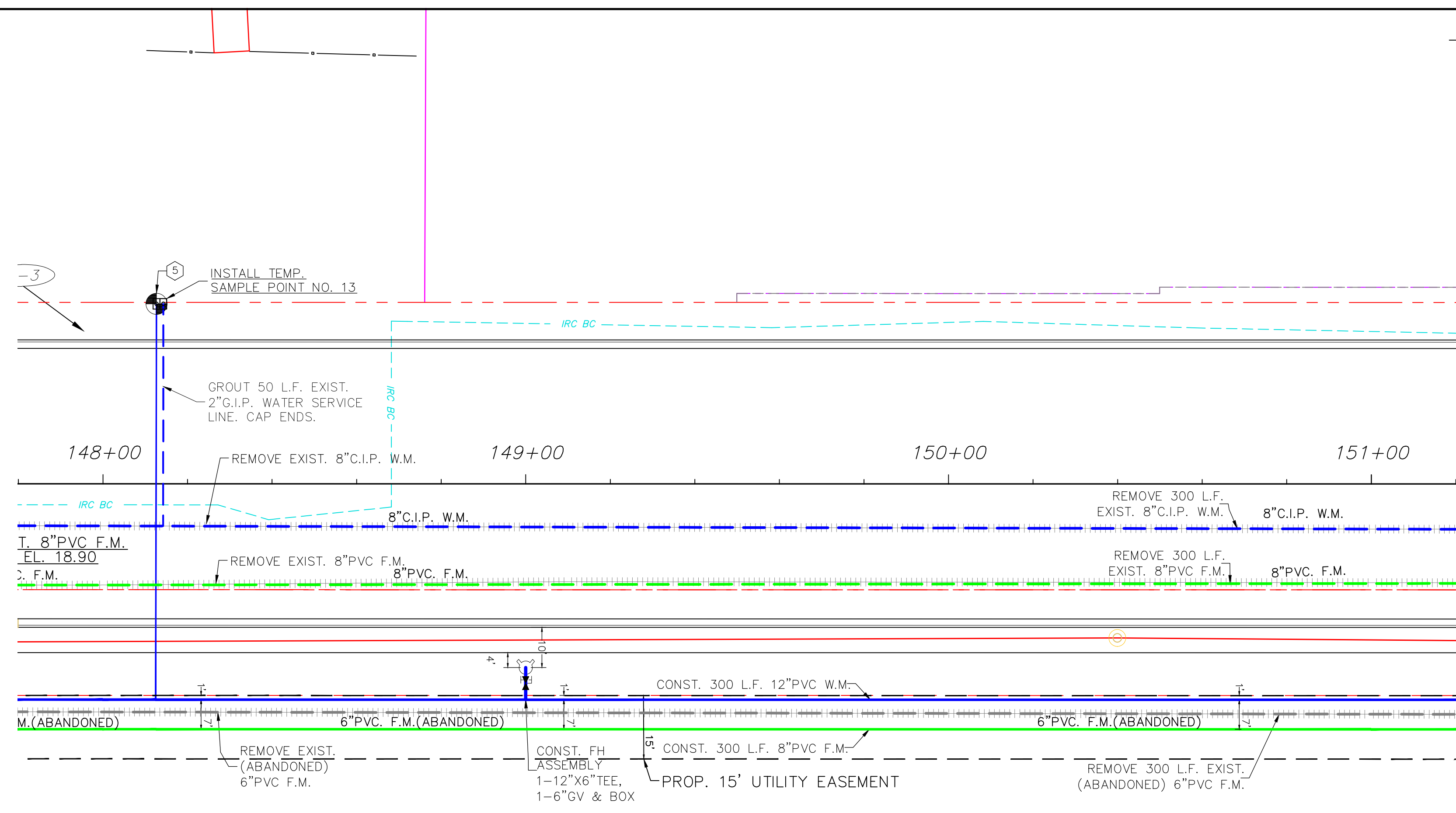
PROP. 15' UTILITY EASEMENT

ROBERT J. BOLTON, P.E. FL. # 49429

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	CONSTRUCTION PLANS 43rd AVE. STA. 136+00-STA.142+00	SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 7/09/19 DATE 7/09/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 15 OF 58	



REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	CONSTRUCTION PLANS 43rd AVE. STA. 142+00-STA.148+00	SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 1/30/19 DATE 1/30/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 16 OF 58	



LEGEND

- ① 1" TEMP. SAMPLE POINT ASSEMBLY
- ② 2" TEMP. BLOW-OFF & SAMPLE POINT ASSEMBLY
- ③ 2" TEMP. JUMPER CONNECTION WITH A 3/4" HOSE BIB FOR TEMP. SAMPLE POINT
- ④ CONST. 2" PE. SINGLE POTABLE WATER SERVICE FOR A 5/8" WATER METER
- ⑤ CONST. 2" PE. SINGLE POTABLE WATER SERVICE FOR A 3/4" WATER METER
- ⑥ CONST. 2" PE. SINGLE POTABLE WATER SERVICE FOR A 1" WATER METER
- ⑦ CONST. 2" PE. SINGLE POTABLE WATER SERVICE FOR A 1 1/2" WATER METER
- ⑧ CONST. 2" PE. SINGLE POTABLE WATER SERVICE FOR A 2" WATER METER
- ⑨ EXISTING WATER METER WAS NOT FOUND. CONTACT CITY WATER DEPT. TO LOCATE.
- ⑩ CONST. A SINGLE POTABLE WATER SERVICE FOR FUTURE USE AS ④
- ⑪ CONST. 2" PE. DOUBLE POTABLE WATER SERVICE FOR 2 5/8" WATER METERS
- ⑫ CONST. 2" PE. DOUBLE POTABLE WATER SERVICE FOR 2 3/4" WATER METERS
- ⑬ CONST. 2" PE. DOUBLE POTABLE WATER SERVICE FOR 2 1" WATER METERS

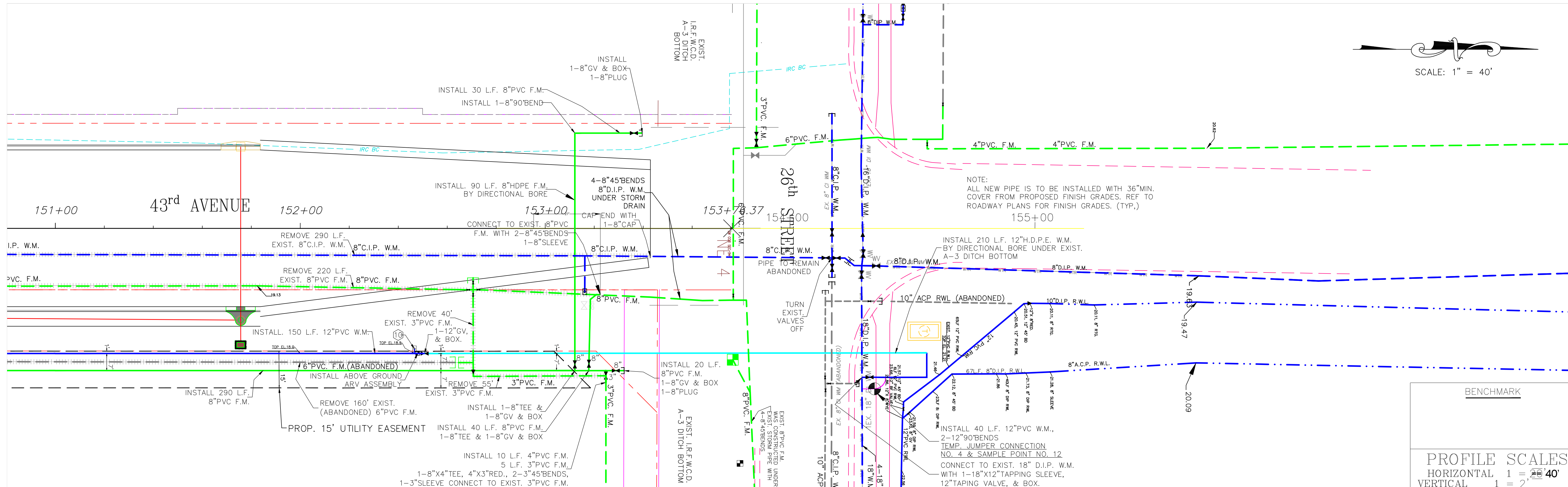
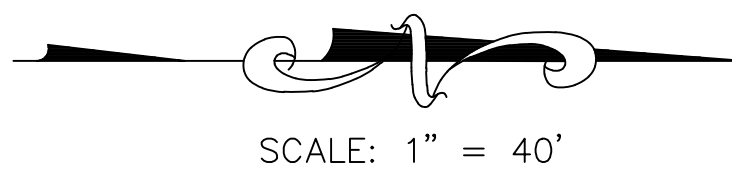
NOTE:
ALL NEW PIPE IS TO BE INSTALLED WITH 36" MIN. COVER FROM PROPOSED FINISH GRADES. REF TO ROADWAY PLANS FOR FINISH GRADES. (TYP.)

GENERAL NOTES

1. PUNCH ALL WATER LINES 2 1/2" AND SMALLER UNDER ALL ASPHALT AND CONCRETE DRIVEWAYS & UNDER ALL ASPHALT ROADS UNLESS SHOWN OTHERWISE.
2. THERE SHALL BE 36" MIN. COVER OVER ALL NEW WATER PIPE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

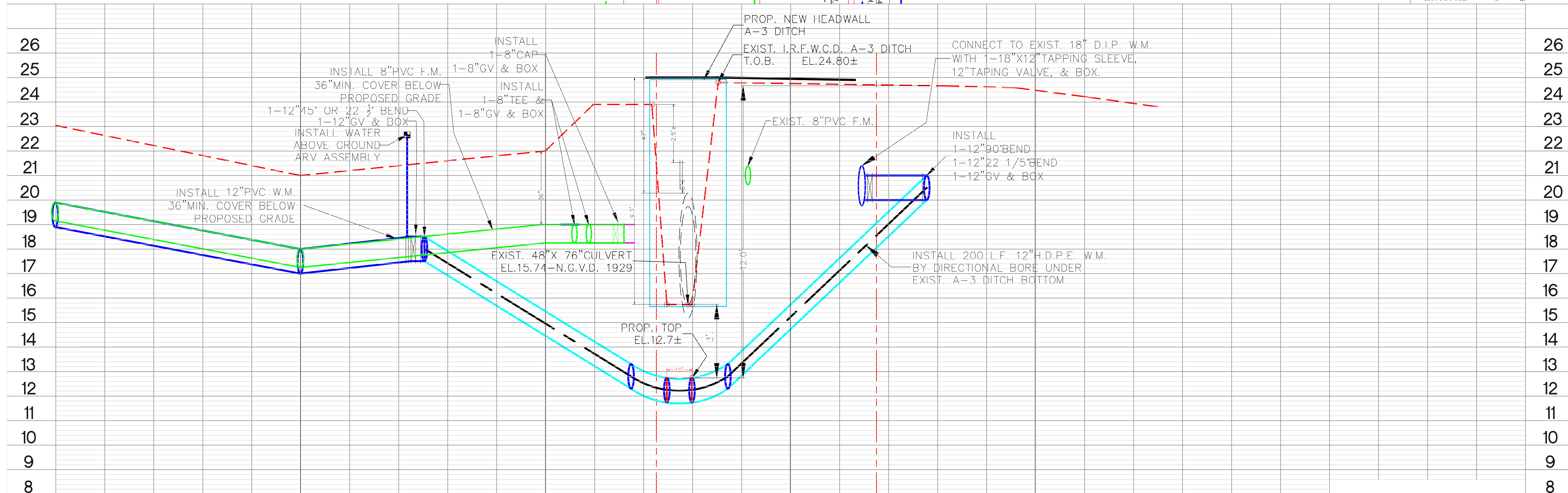
ROBERT J. BOLTON, P.E. FL. # 49429 DATE

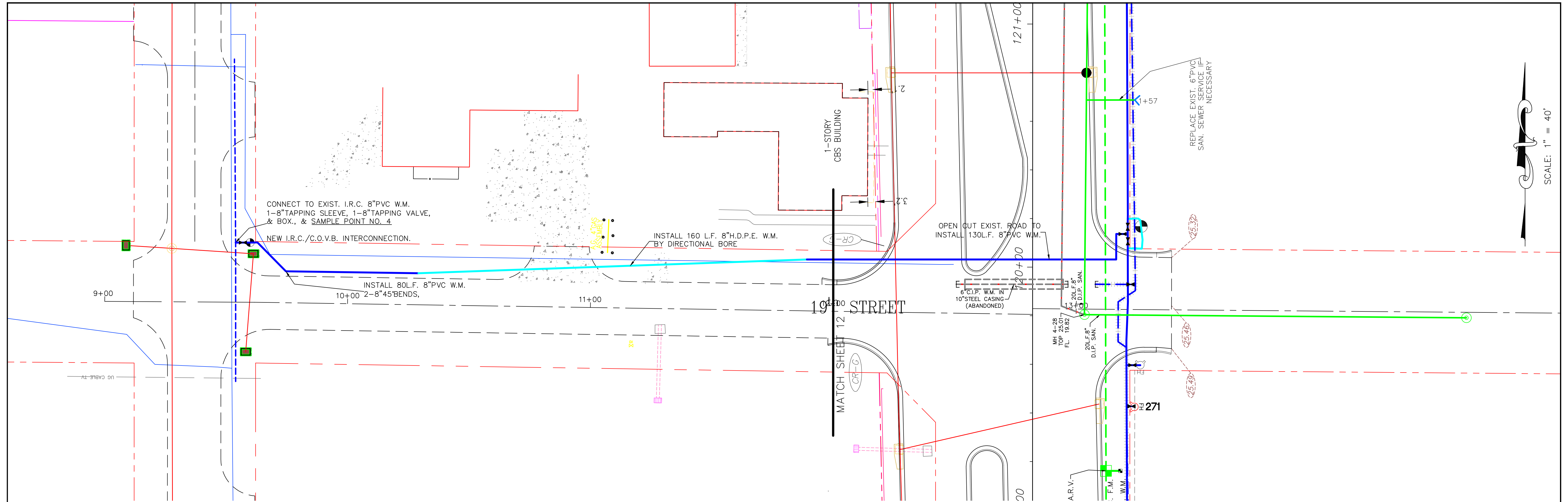
REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853				
CONSTRUCTION PLANS 43rd AVE. STA.148+00-STA.151+00		SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 1/30/19 DATE 1/30/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 17 OF 58	



BENCHMARK

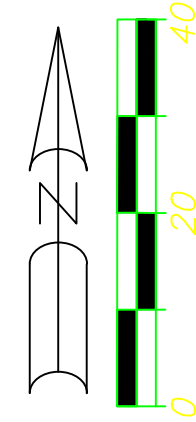
PROFILE SCALES
 HORIZONTAL 1" = 40'
 VERTICAL 1" = 20'





ROBERT J. BOLTON, P.E. FL. # 49429 DATE

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	CONSTRUCTION PLANS 19th STREET STA.	SCALE 1" = 40'	DRAWN BY I.A.Y. CHECKED BY R.J.B.	DATE 2/01/19 DATE 2/01/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 19 OF 58	



CANAL

SOFFIT OF CROSS BEAM
ELEV 19.2

2635+00 2636+00 2637+00 2638+00 2639+00 2640+00 2641+00
CONC BRIDGE DECK STATE ROUTE 60 STA. 2641+41.73

STATE ROUTE 60

E 60

STATE R

BEGIN PROJECT
STA. 2635+38.00

LANE BLVD

44th AVENUE

1 STORY MOBIL STATION

OVERHANG

MATCH SHEET NO. 43

REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
1	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
CONSTRUCTION PLANS		SCALE	DRAWN BY	DATE
S.R. 60 STA. 2635+00-STA.2641+00		1" = 40'	I.A.Y.	1/02/19
		CHECKED BY		DATE
		R.J.B.		1/02/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003			SHEET 20 OF 58	

EXIST. PIPE TO REMAIN IN PLACE
6" C.I.P. W.M. (WATER SYSTEM)

C.O.V.B. & I.R.C. INTERCONNECT
6" GV

EXIST. 6" GV TO REMAIN CLOSED. REMOVE VALVE BOX AND CONC. PAD.

6" C.I.P. W.M. PIPE TO REMAIN IN PLACE OUT OF SERVICE

CUT EXIST. 6" C.I.P. W.M. AND REMOVE 10 L.F. EXIST. PIPE THEN CAP ENDS WITH 2-6" CAPS

GROUT 300 L.F. EXIST. 6" C.I.P. W.M. PIPE IS TO REMAIN IN PLACE OUT OF SERVICE. CAP PIPE ENDS AFTER GROUTING

6" C.I.P. W.M. CAP EXIST. 6" C.I.P. W.M. WITH 1-6" CAP

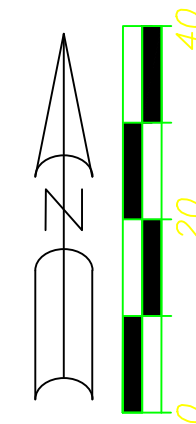
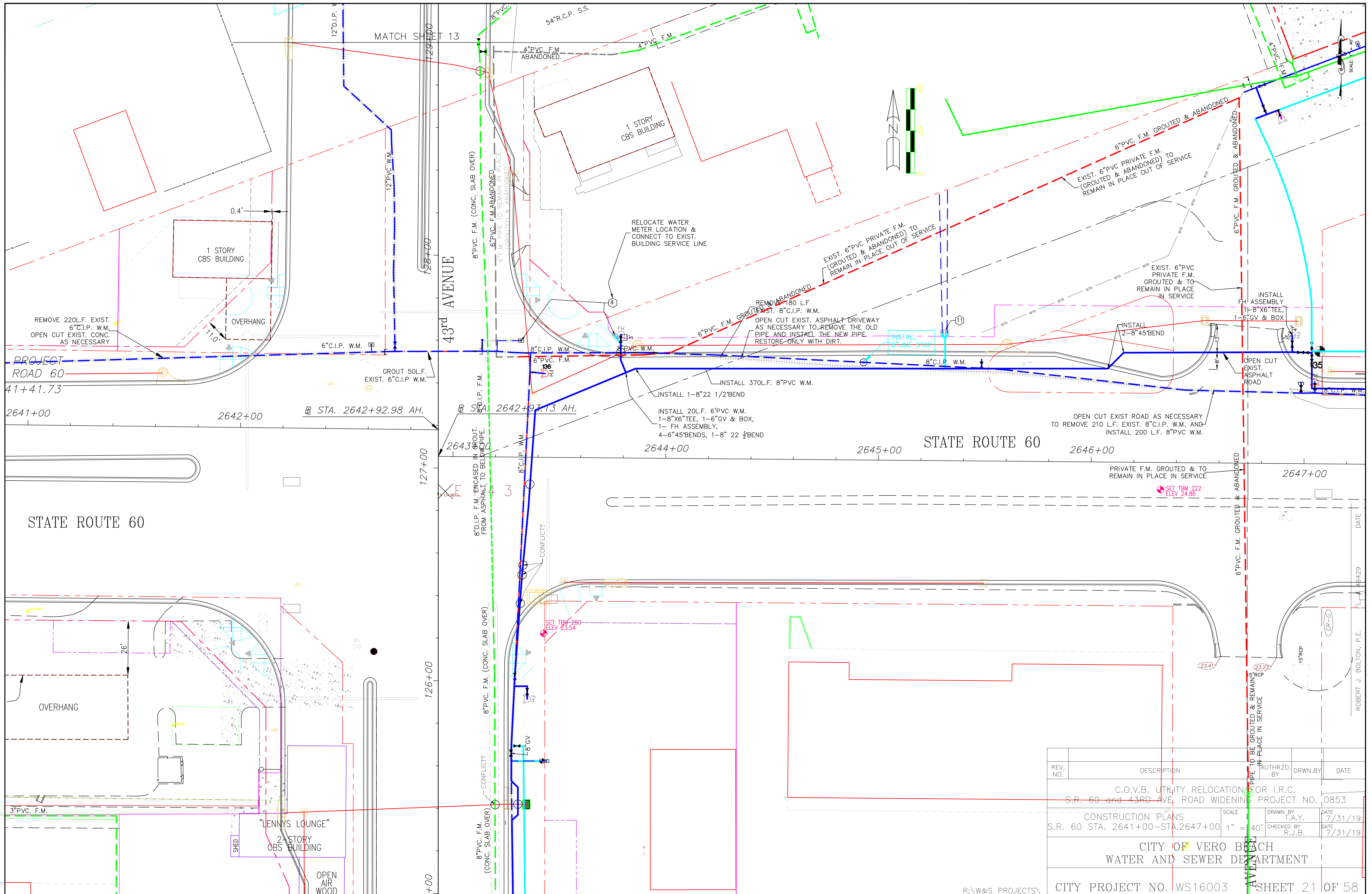
6" C.I.P. W.M.

REMOVE 210 L.F. EXIST. 6" C.I.P. W.M.

BEGIN PROJECT STATE ROAD 60

ROBERT J. BOLTON, P.E. L. # 49829

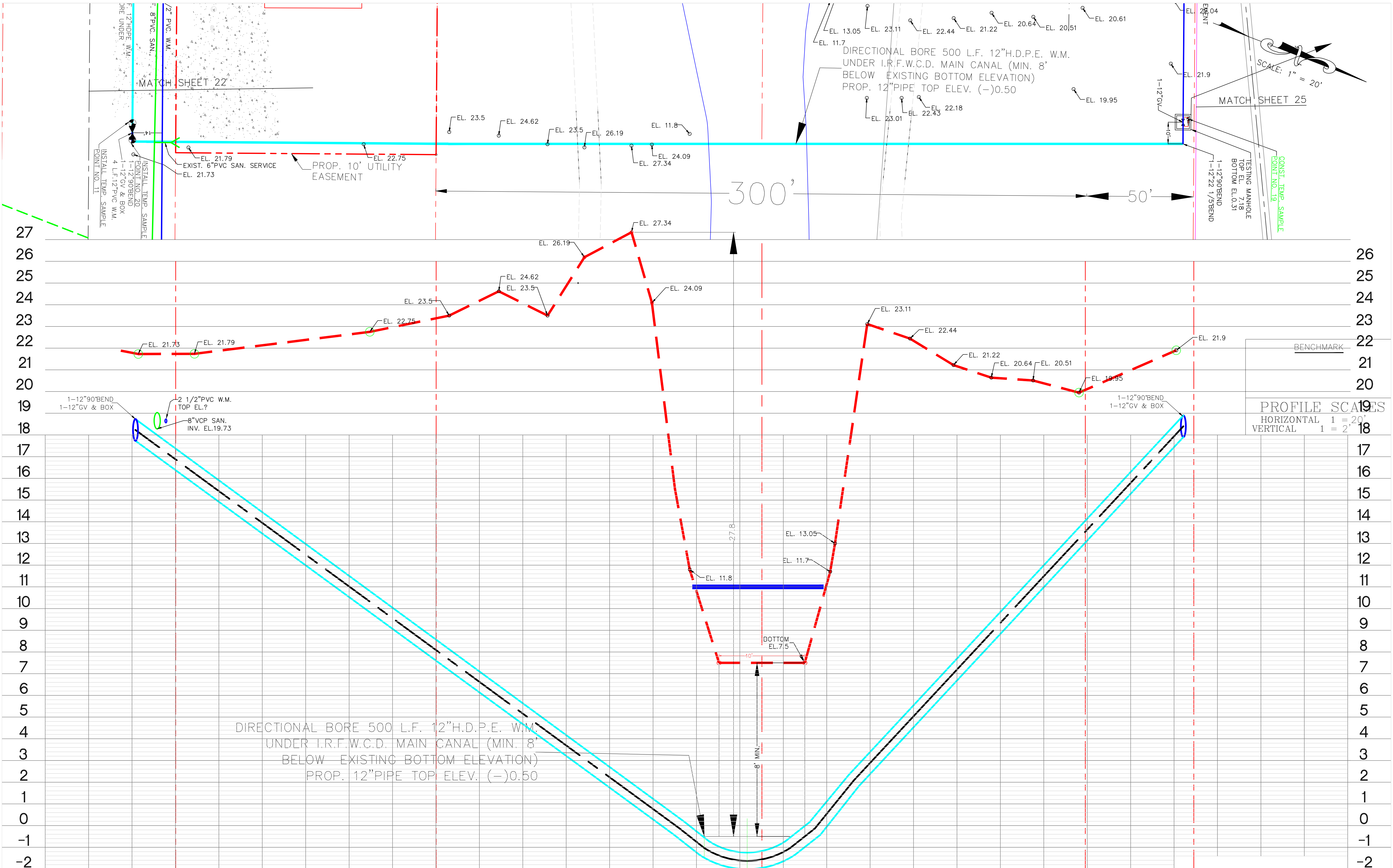
R:W&S PROJECTS



REV. NO.	DESCRIPTION	AUTHRZD. BY	DRWN. BY	DATE
	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853			
	CONSTRUCTION PLANS			
	S.R. 60 STA. 2641+00-STA.2647+00	SCALE 1" = 40'	DRAWN BY I.A.Y. DATE 7/31/19	CHECKED BY R.J.B. DATE 7/31/19
CITY OF VERO BEACH WATER AND SEWER DEPARTMENT				
CITY PROJECT NO. WS16003				SHEET 21 OF 58

R:\W&S PROJECTS\

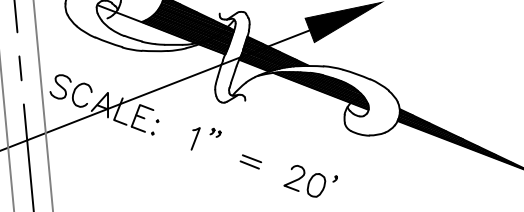
ROBERT J. BOLTON, P.E. FL # 48429 DATE



DIRECTIONAL BORE 500 L.F. 12" H.D.P.E. W.M. UNDER I.R.F.W.C.D. MAIN CANAL (MIN. 8' BELOW EXISTING BOTTOM ELEVATION) PROP. 12" PIPE TOP ELEV. (-)0.50

MATCH SHEET 22

MATCH SHEET 25



CONST. TEMP. SAMPLE POINT NO. 19

BENCHMARK

PROFILE SCALES
 HORIZONTAL 1" = 20'
 VERTICAL 1" = 2'

DIRECTIONAL BORE 500 L.F. 12" H.D.P.E. W.M. UNDER I.R.F.W.C.D. MAIN CANAL (MIN. 8' BELOW EXISTING BOTTOM ELEVATION) PROP. 12" PIPE TOP ELEV. (-)0.50

REV. NO.	DESCRIPTION	R.J.B. AUTHRZD. BY	T.A.Y. DRAWN BY	DATE	C.O.V.B. UTILITY RELOCATION FOR I.R.C. S.R. 60 and 43RD AVE. ROAD WIDENING PROJECT NO. 0853	CITY OF VERO BEACH WATER AND SEWER DEPARTMENT	PLAN & PROFILE - I.R.F.W.C.D. PERMIT DWG. 43RD AVE. STA. 127+00-STA.133+00	DRWN BY T.A.Y. DATE 1/02/19	CHKD BY R.J.B. DATE 1/02/19	ROBERT J. BOLTON 15+00 FL. # 49429 DATE:	CITY PROJECT NO. WS16003	SHEET 24 OF 58
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SECTION 286 – TURNOUT CONSTRUCTION

The work specified in this item shall conform to Section 286 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

Item of Payment

Payment for the work specified in this item shall be made under:

Bid Item No. 0286 1 – Turnout Construction/Driveway Base (Concrete) – Per Square Yard

Bid Item No. 0286 2 – Turnout Construction-Asphalt/Driveway Base-Asphalt Material – Per Ton

SECTION 327 - MILLING OF EXISTING ASPHALT PAVEMENT

The work specified in this item shall conform to Section 327 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

Item of Payment

Payment for the work specified in this item shall be made under:

Bid Item No. 0327 70 1 – Mill Exist Asph Pavt, 1" Avg Depth – Per Square Yard

* Bid Item No. 0327 70 8 – Mill Exist Asph Pavt. 2.5" Avg Depth – Per Square Yard

SECTION 334 - SUPERPAVE ASPHALT CONCRETE

The work specified in this item shall conform to Section 334 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. No thickness adjustments are to be made unless directed by the Engineer.

Sub article 0334 8.1 through 0334 8.3 – Basis of Payment shall be deleted in its entirety.

Sub article 0334 8.4 – Payment shall be amended as follows:

Item of Payment

Payment for the work specified in this item shall be made under:

Bid Item No. 0334 1 13 – Superpave Asphaltic Conc, Traffic C (SP-12.5 Overbuild) – Per Ton

Bid Item No. 0334 1 13A – Superpave Asphaltic Conc, Traffic C, PG 76-22, with Polymer (SP-12.5, 1-1/2" Thick) – Per Ton

Bid Item No. 0334 1 13A – Superpave Asphaltic Conc, Traffic C, PG 76-22, with Polymer (SP-12.5, 1-1/2" Thick) – Per Square Yards (UWHC)

Section 02731

Irrigation Water Well

IRRIGATION WATER WELL

PART 1 GENERAL

1.1 Section includes:

- A. The work shall consist of furnishing all labor, material, equipment and services necessary for the drilling of irrigation water well as described in this section.
 - 1. Drilling and casing water well.
 - 2. Pump and controller.
 - 3. Water and system testing and certification.
- B. Specifications are intended to include everything required and necessary for proper installation of the irrigation water well whether each item is mentioned or not, and Contractor is expected to provide for a complete working system.

1.2 References

- A. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
- B. ASTM A120 - Pipe, Steel, Black and Hot-Dipped, Zinc Coated (Galvanized) Welded and Seamless, for Ordinary Uses.
- C. AWWA A100 - Water Wells.
- D. NEMA MG 1 - Motors and Generators.

1.3 Description of the work

- A. Provide a 4" diameter screened water well that continuously provides a minimum of 60 gpm at a maximum of 15' of total suction lift. Provide alternate quote for same well depth and specifications for a 2" well with the alternate for the centrifugal pump station.
- B. Water well work is based on following criteria:
 - 1. Install screened well to the depth required, to obtain good quality irrigation water with a minimum amount of iron or other staining chemicals. For the purpose of the base bid, the depth of the well should be assumed to be 120'.
 - 2. Install 20' of 4" diameter stainless steel screen and gravel pack.
 - 3. Install 100" of 4" diameter well casing.
 - 4. Provide 18" diameter concrete well seal 4" thick or larger as required by code.
 - 5. Provide irrigation water of the quality specified and with a total suction lift of less than 15' at 60 GPM.
- C. Water well work includes the following:
 - 1. Applications and permits for drilling and developing well, including SFWMD consumptive use permit.
 - 2. Installation of a surface casing, if deemed necessary by the Well Driller and Architect
 - 3. Drilling for final water well depth.
 - 4. Development of well.
 - 5. Testing and reporting.

Section 02731

Irrigation Water Well

1.4 Bidders responsibility

- A. Bidders submitting a proposal are responsible for inspecting the site to acquaint themselves with nature of conditions that will be encountered during construction. This includes awareness of all existing and/or proposed utilities in area of work

1.5 Submittals

- A. Samples, Records and Reports: The Contractor shall take samples of the sub-strata formation at ten-foot intervals and at changes in formation throughout the entire depth of the well.
- B. Provide Architect/Owner the following information:
 - 1. Prior to beginning the drilling of the well, the Contractor shall submit in writing to the Architect the well driller's recommendations for the drilling of the well based upon the well driller's knowledge of the area. The recommendations shall include the anticipated depth of the casing and the well, and address any concerns that the Contractor may have concerning the water quality or availability. The Contractor shall not proceed with the well installation until the Architect has received and approved the preliminary report from the well driller.
 - 2. After the well installation, but prior to installation of the pump system, the well driller shall perform and report on pumping tests as specified in this section.
 - 3. The well driller shall report on the static water level.
 - 4. The well driller shall estimate the maximum safe yield of the well and the anticipated drawdown at maximum safe yield.
 - 5. The well driller should provide the results of the required Non-Filterable Residue tests from an approved testing laboratory. Two test samples are required. One test sample should be taken at the beginning of the pump test, and one test sample taken at the end of the pump test.
 - 6. The well driller shall provide an information log indicating strata encountered for the well.
 - 7. The well driller shall provide a certification that each well is aligned and plumb, within the specified tolerances.
- C. Provide the Architect/Owner physical and chemical analysis of water from the finished well. Make the analysis, certified by an approved testing laboratory, in accordance with local authority requirements, including the following:
 - 1. Test and report results for the iron and salt content of the water from the well. Two test samples are required. One test sample should be taken at the beginning of the pump test, and one test sample taken at the end of the pump test.
 - 2. Test and report results for any other analysis necessary in order to conform with the requirements or regulations of the Florida DER or other government body having jurisdiction.

1.6 Quality assurance

- A. Perform Work in accordance with AWWA A100.
- B. Drilling Firm: Company specializing in performing the work of this section with minimum five years documented experience.
- C. Submit proof of state license to perform this work.

Section 02731

Irrigation Water Well

1.7 Regulatory requirements

- A. Underground piping shall comply with Florida Building Code.
- B. Conform to applicable code, state regulatory authority or regulations for water well flow capabilities and water quality.

1.8 Abandonment of drilling

- A. If necessary to abandon drilling operation before completion of water producing well, follow regulations as required by authorities having jurisdiction.
- B. Should abandonment of drilling be necessary due to poor workmanship or negligence on the part of the Contractor, no compensation will be allowed.
- C. If abandonment of drilling is necessary due to inadequate water supply or other reason that the Architect and Owner deem no fault of the Contractor, base compensation on the unit prices in the in this section.

1.9 Protection of well and well field

- A. The Contractor shall take precautions to prevent contaminated water or water having undesirable physical or chemical characteristics from entering stratum from which well is to draw its supply. The Contractor shall prevent contaminated water, gasoline, etc., from entering well either through opening or by seepage through the ground surface.
- B. If the well becomes contaminated or water having undesirable physical or chemical characteristics enters well due to neglect, the Contractor shall provide casings, seals, sterilizing agents or other materials as necessary to eliminate contamination or shut off undesirable water. Remedial work shall be at no additional cost to the Owner.
- C. Exercise care in performance of work to prevent breakdown or caving in of strata overlaying that from which water is to be drawn. Develop, pump, or bail well until water pumped from well is substantially free from sand.
- D. Protect work to prevent either tampering with well or entrance of foreign matter. Upon completion, provide temporary well cap.
- E. An experienced foreman or driller shall be constantly in control of well site and have authority to furnish well drilling information desired by Architect and Owner.

1.10 Supervision

- A. Contractor shall provide a competent superintendent and any necessary assistants on the project when work is in progress.
- B. Contractor shall notify the Owner of any change in the job Superintendent's status on the job
- C. Superintendent shall supervise Contractor's employees and is responsible for their actions and conduct on job site.

Section 02731

Irrigation Water Well

1.11 Protection of work and property

- A. Contractor shall continuously maintain adequate protection of all his work from damage and shall protect Owner's property from injury or loss arising in connection with his work.
- B. Contractor shall avoid damage to any existing construction, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, landscaping, or any other above ground or underground installations or structures on Owner's or adjacent property and is responsible for any damage that occurs as a result of his work as provided and required by law.

1.12 Cleaning premises

- A. Contractor shall keep the construction area of the system neat and orderly at all times, providing continually disposal of rubbish and waste material resulting from installation.
- B. Upon completion of the system, Contractor shall remove from property, at his own expense, all temporary structures, rubbish, and waste materials resulting from installation.

1.13 Guarantee

- A. Contractor shall guarantee the water well for one-year from date of final acceptance by Owner and Architect This includes all material, workmanship, and performance of the well.

PART 2 PRODUCTS

2.1 Well components

- A. Casing: The well casing shall be Schedule 40 black steel, suitable for water well installations.
- B. Grout: Grout shall be ANSI/ASTM C150, type to suit project conditions.
- C. Well Screen: Construct screen of AISI type 302/304 stainless steel continuous slot type fabricated by welding.
 - 1. Provide V-shaped openings, widening inwardly.
 - 2. For joints connecting screen sections, use butt-type stainless steel coupling rings.
 - 3. Provide screen with necessary fittings to install tailpiece and to provide tight seal between top of screen and well casing.
 - 4. Size the screen and gravel pack so that the maximum diameter of any particle entering the well is not larger than .030".

PART 3 EXECUTION

3.1 Examination

- A. Verify site conditions under provisions of Section 01039.
- B. Verify that site conditions will support equipment for performing drilling operations and testing.

Section 02731

Irrigation Water Well

3.2 Preparation

- A. Protect structures near the well from damage.
- B. Conform to well and wellfield requirements of the authorities having jurisdiction.

3.3 Well construction

- A. Drill well as required to provide required water quality and quantity. The Contractor shall perform water chemical analysis test as necessary during drilling in order to locate the water bearing formation that yields water with an acceptable iron and salt content. The Contractor shall make all reasonable efforts to obtain water on the site that has less than 0.3-ppm iron content and less than 300-ppm salt content. Provide information to Architect/Owner as noted in paragraph 1.5 of this section.
- B. The well casing shall be aligned and plumb.
- C. Provide permanent casing with a temporary well cap. Coordinate well cap construction with pump system installer.
- D. Well Capacity: It shall be the responsibility of the Contractor to construct a well of the type and size so that the water quality and capacity specified in this section will be produced continuously.

3.4 Tolerances

- A. Maximum Variation From Plumb: In accordance with ANSI/AWWA A100.
- B. Maximum Offset From True Position: 1"

3.5 Cleaning

- A. Clean work under provisions of 01700.

3.6 Well development

- A. Develop well by such methods as will effectively extract from water-bearing formation maximum practical quantity of sand, drilling mud and other fine materials in order to bring well to a maximum yield per foot of draw down and to a sand-free condition.
- B. Perform work in a manner that does not cause undue settlement and disturbance of strata above water bearing formation nor disturb seal affected around casing.
- C. Continue well development until water pumped from well at maximum testing pumping rate is clear and free from sand and other debris larger than .030" in diameter.
 - 1. Water shall be considered sand-free when no samples, taken during test pumping, contain more than 2 parts per million of suspended solids by weight.
 - 2. The Contractor shall submit a certified document from an approved testing laboratory to the Architect and Owner indicating the results of the "Non-Filterable Residual" (total suspended solids) test, EPA Manual 160.2.
 - 3. Sufficient water must be filtered in order to insure a detection limit of less than 2 PPM (mg/l).
 - 4. Maximum iron allowed in the well water shall be less than 0.3 PPM.

3.7 Testing well for plumbness and alignment

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- A. Set casing plumb and true to line. Tests for plumbness and alignment must be made after construction of well and before its acceptance. Additional tests however, may be made during performance of work.
- B. Test alignment of well by lowering into well, to a depth of 75', a section of pipe approximately 40' long. Provide outer diameter of pipe not more than ½" smaller than diameter of that part of casing or hole being tested.
- C. Well casing shall not be out of plumb more than 2/3 of the diameter of the casing per 100' of length.

3.8 Testing well for yield and draw down

- A. After the well has been constructed and cleaned out, the depth of well accurately measured, conduct final pumping tests.
- B. Provide a variable capacity test pump with minimum capacity of maximum expected yield at a total head equal to draw down in well, plus head loss in pump column and discharge pipe.
- C. Provide necessary discharge piping for pumping unit to conduct water to a point of disposal so as to avoid a nuisance or endanger adjacent property.
- D. Provide and maintain equipment of adequate size and type for measuring flow of water, such as weir box, orifice or water meter.
- E. Measure elevation of water level in well.
- F. Provide labor, motive power and other necessary materials, equipment and supplies required to operate pumping unit.
- G. After test pump and auxiliary equipment have been installed, make arrangements for conducting pumping test and notify Owner and Architect 3-days prior to starting test.
 - 1. Note water level elevations, referred to an assigned datum in well.
 - 2. Start test pump and adjust pumping rate as necessary.
 - 3. Record readings of water level in well and pumping rate at 30-minute intervals.
 - 4. Take water samples for analysis at the beginning and the ending of the pump test.
- H. Final testing for each well to consist of 4-hours of continuous pumping after reaching maximum draw down.
 - 1. After completion of final test, remove by necessary means any sand, stones or other foreign materials from the in well.
- I. Upon completion of pumping test, record returning water levels in well for a sufficient period, at timed 15 minute intervals, to achieve 95% recovery, so that a curve of the recovery rate of the well may be plotted.
- J. Provide all test results and other required submittals to the Owner and Architect prior to installation of the pump.

3.9 Unit prices for well construction

- A. Bid all well work as indicated on the drawings and described in these specifications. The base bid shall be based upon the well being 140' deep, with 20' of stainless steel screen, and 120' of 6" casing. The Contractor shall submit the following unit price items and they shall govern additions to or deductions from quantities included in Base Bid for work under this section.
 - 1. Cost per foot of drilling.
 - 2. Cost per foot of casing (in place).

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3. Cost per foot of grouting (in place).
4. Cost per foot of well screen (in place).
5. Cost per foot of gravel pack (in place).
6. Cost of testing and well development (including submittals).

END OF SECTION

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IRRIGATION SYSTEM

PART 1: GENERAL

1.01 Scope

.1 The intent of these Specifications is to provide a complete irrigation system, which shall operate in an effective and satisfactory manner so that it shall effectively irrigate all areas to be covered. The Specifications, design details, and irrigation designs are to be considered a part of the system irrigation contract. The Work shall consist of furnishing all labor, material, equipment, and services required for all Work as described in this Section of the Specifications and the Drawings. The Drawings and Specifications are intended to include everything obviously required and necessary for the proper installation of the system whether each necessary item is mentioned herein or not, and the system Contractor is expected to provide for the same, including the electrical service to power the pump stations. All Work specified or called for on the Drawings shall be executed in accordance with all governing ordinances, laws, codes, and regulations, and shall meet all local conditions and any changes and/or additions shall be made without additional expends to Owner.

1.03 Bidding: Each bidder submitting a proposal for this Contract shall be responsible to inspect the site to acquaint himself with the nature of conditions which will be encountered during construction. Bidder shall make himself aware of all existing and/or proposed utilities in area of work. Submission of the proposal shall be considered as evidence that the examination has taken place.

1.04 Dimensions: All dimensions indicated for the irrigation design are approximate. Prior to proceeding with the Work, the Contractor shall carefully check and verify all dimensions and shall report all variation from those indicated in the irrigation plan to the Landscape Architect in writing.

1.05 Ordinances, Regulations, Codes, Permits and Inspections: The Contractor shall follow all applicable regulations, ordinances, codes, and laws governing the Work. Permits and inspections that are required for the installation of the Work shall be obtained and paid for by the Contractor. The Contractor shall arrange for and be present during all required inspections. Any additional Work or furnishing of materials required due to inspection by the authorities of jurisdiction shall be furnished at no cost to the Owner.

1.06 Guarantee: The Contractor shall guarantee the system for one (1) year from date of final acceptance by the Owner and the Landscape Architect. The guarantee shall include all material and workmanship. The guarantee shall also cover the repair of damage to any part of the premises resulting from leaks or other defects in materials, equipment and/or workmanship. Repairs shall be made promptly, to the satisfaction of the Owners representative, and at no cost to the Owner.

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- 1.07 As-Built Record Drawings: The Contractor shall provide and keep up to date a complete set of as-built drawings which shall be corrected daily to show changes in the locations of sprinklers, sleeves, landscape features, plants, structures, piping, and other deviations from the original irrigation design drawing. All valve locations shall be shown with actual measured dimensions to reference points so they may be located easily in the field. The drawings shall also indicate and show all approved substitutions, material, manufacturers name, catalog name, and number. Upon completion of the Work, the Contractor shall furnish the Owner with a complete set of as-built drawings (on reproducible mylar) showing the irrigation system as installed. This is the responsibility of the Contractor and shall not be construed to be the responsibility of any other party. These drawings shall be delivered to the Owners representative before final acceptance of the work.
- 1.08 Training of Maintenance Personnel: Upon completion of the Work and final acceptance by the Owner, the Contractor shall be responsible for the training of maintenance personnel in the operation, maintenance, and repair of the system. The Contractor shall furnish copies of all parts list, trouble shooting lists, Specification sheets, and catalog sheets to the Owner and the Landscape Architect as a pre-requisite to final payment.
- 1.09 Supervision: Installer shall be experienced in completing irrigation systems similar in material, design and extent to that indicated for the Project that have resulted in construction with a record of successful in-service performance. The Contractor shall provide a competent superintendent and any necessary assistants on the Project when Work is in progress. The superintendent shall not be changed during the Project without the consent of the Owner's representative unless the superintendent ceases his status as an employee of the Contractor. The superintendent shall represent the Contractor in the Contractor's absence, and all directions given to him by the Owner's representative shall be binding as if they were given to the Contractor. The Contractor's superintendent shall supervise the Contractor's employees on the job site and be responsible for their actions and conduct on the job site.
- 1.10 Protection of Work and Property: The Contractor shall continuously maintain adequate protection of all his Work from damage and shall protect the Owner's property from injury or loss arising in connection with his Work. The Contractor shall take care to avoid damage to any existing or transplanted plant material, existing buildings, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, landscaping, grounds, aboveground or underground installations of structures of any kind, and shall be responsible for any damage that occurs as result of his Work. Contractor shall adequately protect his Work and all adjacent property as provided and required by law. The Contractor shall securely cover all openings of the section of the system he is working on and components of the system as it is being installed to prevent obstructions in the pipe and breakage, misuse, or disfigurement of equipment.

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- 1.13 Cleaning Premises: The Contractor shall keep neat and orderly all of the area where this system is being installed. Disposal of rubbish and waste material resulting from the installation shall be continual. Upon completion of the system, the Contractor shall remove from the property, at his own expense, all temporary structures, rubbish, and waste materials resulting from the installation of system.
- 1.12 Submittals:
- .1 Product Data: The Contractor shall submit technical data and installation instructions for all underground sprinkler system components. Provide component and control system wiring diagrams, seasonal activation and shutdown and manufacturer's parts catalog. Provide these items a minimum of 30 days prior to any work beginning. Also, provide a schedule indicating length of time each valve is required to open to provide a determined amount of water.
- 1.13 Related Work:
- .1 Lawn and Grasses, section 02400
 - .2 Trees, plants and Ground Covers, 02300
 - .3 Earth Work, section 02200
 - .4 Tree Relocation, section 02100

PART 2: PRODUCTS

- 2.01 Materials: Any material specified by name and/or model number in the Specifications or on the irrigation drawings is used for the specific purpose of identifying the materials and insuring the specific use of that material in the construction of the system. No substitutions will be permitted without prior written acceptance from the Landscape Architect. All materials used in the system shall be new and without flaws or defects of any type and shall be the best of their class and kind. All materials shall have a minimum guarantee of one year against material defects or defective workmanship. If the Contractor proposes substitution of material, sufficient descriptive literature and material samples shall be furnished to establish the material as an equivalent substitute. In addition, the Contractor shall state, in writing, the specific reasons for proposing substitute materials.
- 2.02 PVC Pipe and Fittings:
- .1 All pipes shall be new, free from defects, and continuously marked with identification of the manufacturer, type, class and size. All PVC piping shall be in accordance with ASTM D2241.
 - .2 All main lines shall be schedule 40 type 1120-1220- polyvinyl chloride (PVC) piping and shall conform to CS-256-63. All lateral pipes shall be schedule 40 solvent weld conforming to ASTM D-1784 and D-2241. All

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main line fittings shall be schedule 80 solvent weld polyvinyl chloride (PVC) heavy weight as manufactured by Sloane, Lasco, or approved equal. Zone lateral fittings shall be schedule 40 solvent weld polyvinyl chloride (PVC) standard weight as manufactured by Sloane, Lasco, or approved equal.

- .3 All taps on mains and laterals shall be made with tees. All connections to gasketed type main line shall follow the manufacturers' recommendations and specifications and will utilize approved lubricants and techniques to meet industry standards. All non-thread type joints on lateral lines shall be socket type, designated for solvent-cement type application. Prior to connection of any lateral joint with PVC cement, all fittings and pipes shall be treated with a high etch PVC cleaner. Solvent cement shall meet ANSI/ASTM D2564.
 - .4 Screw joints shall be made with an acceptable screw joint pipe joint compound.
 - .5 All sleeves shall be sized at least two sizes minimum in diameter larger than the size of pipe to be accommodated.
- 2.03 Swing joints and pipes:
- .1 All swing pipes shall be 18" in length, Hunter Pro-Flex tubing or equal. All swing joints shall be ½" male NPT x .490" barb elbow, Hunter model # HSBE-050 or equal.
- 2.04 Sprinkler Heads:
- .1 All sprinkler heads and nozzles shall be as called for on the irrigation design drawings or an equal accepted in writing to be approved by the Landscape Architect.
 - .2 All sprinkler nozzles shall perform to the manufacturer's specifications concerning diameter of throw and gallonage at given pressures.
 - .3 All sprinkler heads within one zone shall have nozzles, which provide a balanced precipitation, rate throughout the zone.
- 2.05 Control Wire:
- .1 All electric control and ground wire shall be irrigation control cable minimum of AWG size 14. All common wire shall be AWG size 12.
 - .2 Insulation shall be 4/64" thick minimum covering for positive waterproof protection of sizes AWG14 through and including AWG size 10. AWG size 8 through AWG size 00 shall be insulated with 5/64" thick minimum covering.

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- .3 Verification of wire types, sizes and installations procedures shall be checked to conform to local codes.
 - .4 All sleeves for control wiring shall be a Schedule 40 gray electrical PVC pipe.
- 2.06 Lightning Protection: Lightning protection shall be installed in accordance with Manufacturer's recommendations to protect the automatic controller.
- 2.07 Pump Stations: Pre-fabricated pump stations and wells shall be installed per the irrigation plan pump station details, notes and written Well Specifications Section 02731. Power to the pump stations shall be determined and coordinated. The electrical service, disconnect and all equipment shall be installed by a licensed electrician to code.
- 2.08 Automatic Controllers:
- .1 The controller shall be Hunter I-CORE IC-1201-M. The controllers shall each have 12 stations, metal cabinet and a Hunter "Solar-Sync" combination ET sensor and rain sensor installed on the pump station.
 - .2 Controller Housing: Weatherproof, watertight with stainless steel hinge latch to accept padlocks or a lockable access door.
- 2.09 Remote Control Valves and Valve Boxes:
- .1 Valves – Hunter ICV Filter Sentry Series remote zone control valves, or approved equal. See plans for sizes.
 - .2 Valve Boxes - Each valve will be individually sleeved in a covered valve box. Valve boxes will be 12" rectangular box with lid as manufactured by Ametek model #170106.

PART 3: EXECUTION

- 3.01 Installation:
- .1 All materials and equipment shall be installed in a neat and workmanlike manner following the recommendations of the manufacturers of the materials. The Landscape Architect retains the right to order removal or replacement of any items, which, in his opinion, do not present a reasonably neat and workmanlike appearance. Any required removal and replacing of materials shall be performed and completed without additional expense to the Owner.
 - .2 Installers shall be companies specializing in the work of this section with a minimum of 3 years experience.

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- .3 Verify that field conditions are acceptable and are ready to receive work. Verify that utilities are available, in proper location and ready for use. Verify all existing utilities. Commencement of work means the installer accepts existing conditions.
- 3.02 Sleeve Installation: All PVC piping and all control lines that cross roadways or pavement more than 5' in width, shall be sleeved. All sleeves shall be schedule 40 PVC.
- 3.03 Excavation:
 - .1 The Contractor shall perform all excavation necessary to install the system indicated on Drawings, with any modifications made on site by Landscape Architect to avoid existing vegetation or accommodate transplanted material. This shall include all necessary clearing as approved by the Landscape Architect and grubbing of any foreign substance encountered in trench area. Extreme care shall be taken around existing vegetation or vegetation that has been recently transplanted. Excavation material suitable for backfill shall be piled at a sufficient distance from trench to avoid overloading, slides, and/or cave-ins. All organic or unsuitable foreign materials removed during excavation shall be disposed of off the site. Provide and install additional suitable fill materials required for back filling of excavated areas.
 - .2 Trench bottoms shall be smooth, clean, and free of all stones, stumps and rock. If such materials are encountered in trenching, the trench shall be excavated 6 inches deeper than ordinarily required and a 6" layer of sand shall be spread to provide a firm bedding for the pipe.
 - .3 The minimum depth of cover over main lines shall be 24". The minimum depth of cover over laterals shall be 12".
 - .4 It is the responsibility of the Contractor to determine exact location of existing underground utilities and to avoid damage to such during construction. In event of damage to existing utilities, the Contractor shall restore same to their original condition.
 - .5 Trenches should be excavated to a sufficient width to allow a minimum of 4" between parallel pipe lines.
- 3.04 Installation of Pipe and Equipment:
 - .1 PVC pipe shall be protected from direct sunlight while in storage. Pipe shall be kept clean and checked for presence of organic or foreign material prior to installation. Each pipe shall be laid in accordance with lines shown on the Drawings, and the pipe manufacturer's instructions.
 - .2 Prior to backfill, PVC pipe in trench shall be protected from direct sunlight by covering with a layer of clean sandy material. Pipe shall also be covered

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with fill material, or otherwise anchored, to prevent floating in event water enters trench prior to complete back filling.

- .3 Substantial deviations from the piping layout shall be approved by the Landscape Architect and shall be recorded as Work progresses and as-built drawings of complete irrigation system shall be furnished to the Landscape Architect as previously specified in this Section.
- .4 Installation of piping shall be in accordance with manufacturer's instructions and shall proceed from point of connection of supply. All piping and equipment joints shall be watertight. Main shall be flushed and pressure tested. All lateral lines shall be thoroughly flushed prior to installation of any sprinkler heads.
- .5 Pipe Sizing: The size of all main and lateral piping (indicated in inside diameters) shall be as indicated on the plan. If the diameter of the pipe is not indicated on the plan, the following criteria shall be used to determine the pipe size:

Accumulated Theoretical GPM as shown on the Head Schedule	Pipe Size
0 - 8 GPM	3/4"
9 - 16 GPM	1"
17 - 24 GPM	1-1/4"
25 - 32 GPM	1-1/2"
33 - 55 GPM	2"
56 - 80 GPM	2-1/2"
81 - 120 GPM	3"

- .6 Install blue or metallic irrigation tape 6" below grade , over all main lines only.

3.12 Back-filling:

- .1 Over-excavation of trenches under pipe shall be back filled with clean sandy fill material, free of organic materials and objects larger than 1/4" diameter.
- .2 Trenches from bottom of trench to 2" above top of pipe shall be back filled with clean sandy fill material free of organic materials and objects larger than 1/2" diameter.
- .3 Trenches from 2" above top of pipe and up to finish grade shall be back filled with clean sandy fill material removed by excavation, or, if required for pipe stabilization, other fill material as recommended by the pipe manufacturer.

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3.12 Sprinkler Heads:

- .1 All rotor heads shall be installed on swing joints as shown on Drawings. The sprinkler head shall be installed so that the top is in accordance with the manufacturer's recommendations with respect to the finished grade level, and marked with a flag to assist in preventing damage to sprinkler heads. Backfill around swing joints and sprinklers shall be clean sand fill materials, free of large rocks, organics, or other foreign debris (see detail on the plans).
- .2 All sprinkler heads shall be located a minimum of 8" away from the edge of any bed line, curb, roadway, or sidewalk, and a minimum of 12" away from any building.
- .3 All bubblers that are shown on the plans shall be installed immediately adjacent to the ball of the tree to be irrigated. If the tree is located on a slope, the bubbler should be located at the tree ball near the high side of the slope.
- .4 If required, provide additional compactible soils as required to stabilize soil in area of sprinkler heads.
- .5 The design location of irrigation heads is approximate. The Contractor shall make minor adjustments as necessary to avoid plantings and other obstructions. Layout may be modified, if necessary to obtain coverage, to suit manufacturer's heads, and with the written approval of the Landscape Architect. Do not decrease the number of heads indicated unless otherwise acceptable to the Landscape Architect.
- .6 The Contractor shall add extension risers to all 12" pop-up pistons so that, while operating, the nozzle is a minimum of 3" above the top of the adjacent plant material.

3.12 Valve Boxes and Markers: All valve boxes or any other miscellaneous marker or access box shall be installed so the top of said structure is at finished grade. Valve boxes shall be installed as noted on the Drawings. All groups of valve boxes shall be installed so that the tops of all boxes are level with each other, and the sides of all boxes are parallel to each other.

3.12 Electric Control Lines:

- .1 All electric control wire shall be sized as previously stated. It shall be installed in the piping trenches wherever possible and be placed under the PVC piping. Control wires shall be taped together with electrical tape not more than 5" O.C. Wire shall be snaked into the trench as loose as possible and with as much slack as possible to allow for the expansion and contraction of the wire. Provide a 10" expansion coil at 100' intervals along

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the length of the control wire. Where it is necessary to run control wire in a separate trench, the wire shall be encased in a PVC sleeve and have a minimum cover of 12".

- .2 All wire connections at remote control valves and at all wire splices, the wire shall be left with sufficient "slack" (minimum 12" coil) so that in case of repair the valve bonnet or splice may be brought to the surface without disconnecting the wires. All splicing of wire shall take place in valve boxes. All splicing of wires shall be made by using UL listed waterproof wire connectors as recommended by the wire manufacturer.
- .3 Each remote control valve or group of remote control valves, which is to be connected to one station of a controller, shall have wire sizes as recommended by the manufacturer. All remote control valves, which are to be connected to the same controller, shall be connected to a common ground wire of a size as recommended by the manufacturer.
- .4 Provide a 10" expansion coil at each valve to which controls are connected and at 100' intervals.
- .5 Connection of wires from multiple valves operating from one controller circuit shall take place at the controller location. A wire shall be installed from the controller to each valve in the system.
- .6 Provide 2 extra control wires from the controller to the furthest zones including the zones where the main line ends.
- .7 Utilize different color control lines for each controller. White will be used for all common wires. A separate common is to be used for each controller. The wire color should also be varied for the spare control wires. All pairing of control lines shall be made at the controller.

3.12 Controller:

- .1 The controller shall be installed following the recommendations of the manufacturer of equipment. The location of the controller shall be approved by the Landscape Architect and/or his authorized representative before actual installation of the controller.
- .2 Controller shall be hard wired to a waterproof toggle switch provided within 5' of the controller.

3.12 Control valves: Electric remote control valves shall be installed as indicated on the drawings and according to manufacturer's recommendations. The flow control stem on all remote control zone valves shall be adjusted downward to minimize any over pressurization before any individual nozzle adjustments on the sprinklers are performed.

3.12 Testing, Balancing and Adjustments:

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- .1 Upon completion of the irrigation main installation and after sufficient time as been allowed for solvent weld joints to cure, the main line shall be tested for proper operation. After all air is flushed from the irrigation main, it shall be tested with 125-psi hydrostatic pressure for a minimum of two hours. After the pressure has been stabilized within the main, no drops in pressure will be allowable over the two-hour period. Mainlines should be tested with the remote control valves closed. Any facilities of system, which do not comply with test, shall be removed and/or replaced and the main then again tested until satisfactory test results are obtained.
- .2 Upon completion of the irrigation system and after sufficient time has been allowed for solvent weld joints to cure, the entire system shall be tested for proper operation. All air shall be flushed from the irrigation system and the Contractor shall check all components for proper operation. A system demonstration shall be arranged with the Landscape Architect.
- .3 Balancing and Adjustment: The Contractor shall balance and adjust the various components of the sprinkler system so the overall operation of the system is effective. Balancing and adjustment shall include adjustments to sprinkler heads, individual nozzles, valves, and all other components of the system. The Contractor shall adjust all sprinkler nozzles so that there is minimal overthrow of water onto sidewalks and roadways, and so that overthrow onto buildings or automobile-parking areas is eliminated, change heads as directed.

END OF SECTION

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