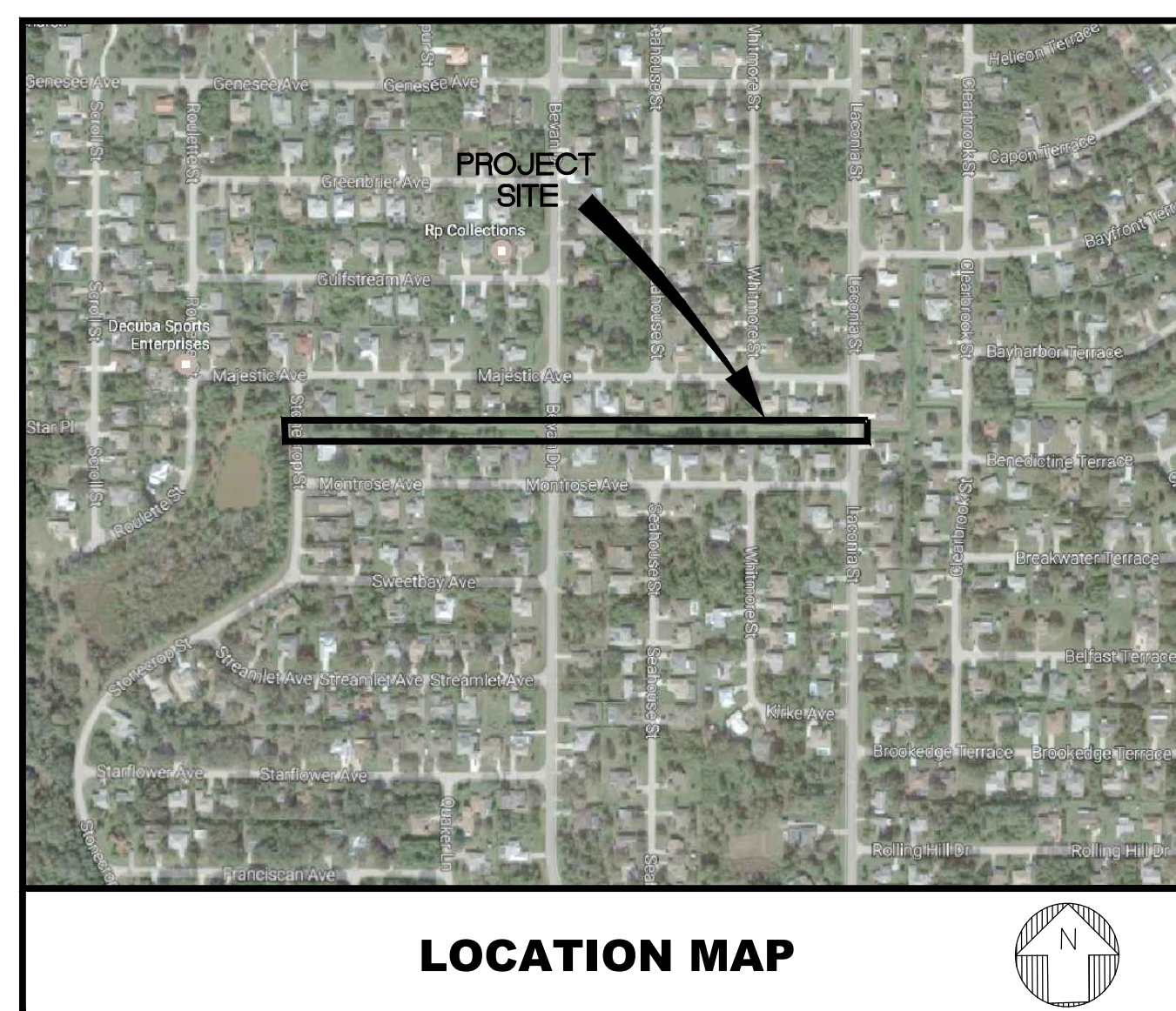
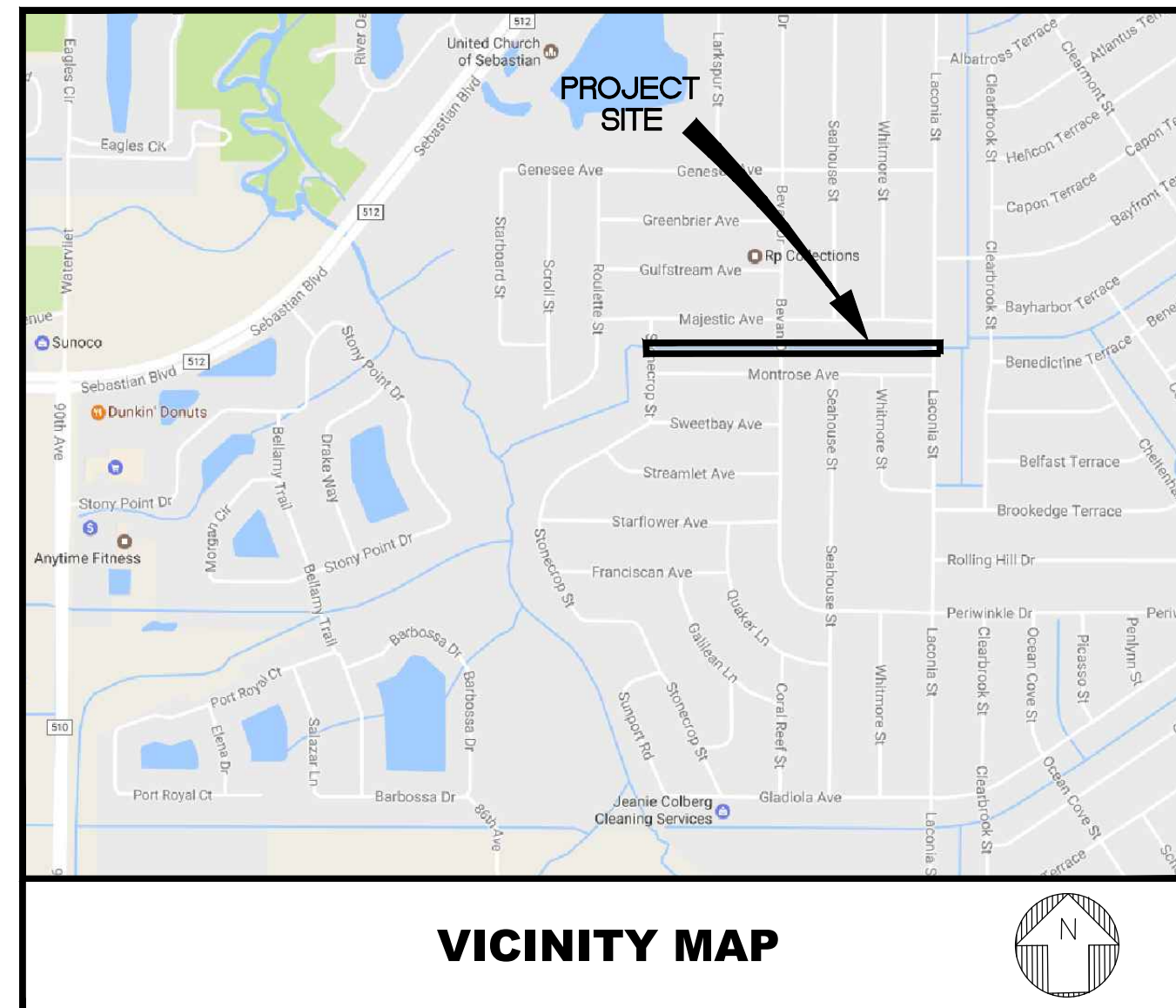


STONECROP CANAL REHABILITATION DESIGN

SECTION 26, TOWNSHIP 31 SOUTH, RANGE 38 EAST
CITY OF SEBASTIAN, FLORIDA
AUGUST 2018



OWNER/APPLICANT

CITY OF SEBASTIAN
1225 MAIN STREET
SEBASTIAN, FLORIDA 32958

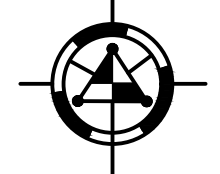
ENGINEER

MBV
ENGINEERING, INC.
MOIA BOWLES VILLAMIZAR & ASSOCIATES
CONSULTING ENGINEERING CA #3728

1835 20TH STREET
VERO BEACH, FL 32960
PH. (772) 569-0035
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MELBOURNE, FL - PH (321) 253-1510
FT. PIERCE, FL - PH (772) 468-9055

SURVEYOR



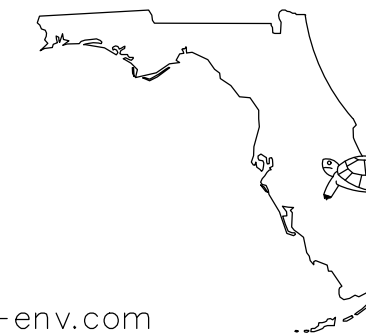
INDIAN RIVER SURVEY, INC.
Professional Surveying and Mapping

1835 20TH STREET
VERO BEACH, FL. 32960
PH: (772) 569-7880

ENVIRONMENTAL CONSULTANT

**Florida
Environmental
Consulting Inc.**

1835 20TH AVENUE VERO BEACH, FLORIDA 32960
T: 772-299-4791 F: 772-778-3617 eMAIL: flenv@fl-env.com



INDEX OF DRAWINGS

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C5	GRADING AND DRAINAGE PLAN
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C8	CROSS SECTIONS
C9	DETAILS AND SPECIFICATIONS
C10	EROSION CONTROL DETAILS



CONSTRUCTION NOTES:

- THE CONTRACTOR IS ADVISED TO THOROUGHLY REVIEW THIS PLAN PACKAGE SO AS TO BE TOTALLY PREPARED TO PRESENT HIS BID PRICES IN THE CONTRACT DOCUMENTS. THE PLAN PACKAGE SUFFICIENTLY DELINEATES THE SCOPE AND INTENT OF THE ROADWAY WORK TO BE ACCOMPLISHED. IT WILL THEREFORE BE INCUMBENT ON THE CONTRACTOR TO ADJUST HIS BID PRICES TO REFLECT ANY AND ALL ITEMS WHICH MAY NOT BE CLEARLY OUTLINED OR THOSE ITEMS WHICH MAY NOT BE INDICATED BUT WHICH ARE NECESSARY FOR THE SUCCESSFUL COMPLETION OF THIS PROJECT WITHOUT ADDITIONAL COSTS TO THE OWNER.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF SEBASTIAN & FDOT STANDARDS AND SPECIFICATIONS.
- THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS BASED ON AVAILABLE RECORDS AND IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO AND IS RESPONSIBLE FOR THE COORDINATION OF UTILITY RELOCATION.
- CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES IN THE FIELD WITH UTILITY OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION UTILITY OWNERS:

AT&T LUKE FOLKERTS 7747 ELLIS ROAD WEST MELBOURNE, FL 32904 (407) 496-6041	FLORIDA POWER & LIGHT 4200 FLAGLER AVE. MIAMI, FL 33134 MARIO ESCALONA (305) 219-9143 COMCAST CABLE (800) 289-8849	CITY OF SEBASTIAN 1225 MAIN STREET SEBASTIAN, FLORIDA (772) 388-8215
--	---	---
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ALL UTILITY COMPANIES A MINIMUM OF TWO WORKING DAYS PRIOR TO EXCAVATION, AS REQUIRED BY THE UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY ACT. NOTIFY SUNSHINE AT 811.
- UTILITIES ARE TO BE ADJUSTED BY UTILITY OWNER OR AS DIRECTED BY THE ENGINEER.
- SURFACE INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FOR USE IN ESTABLISHING DESIGN CRITERIA FOR THE PROJECT. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED AND IS NOT TO BE CONSIDERED AS PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INQUIRE OF THE ENGINEER IF ADDITIONAL INFORMATION IS AVAILABLE, TO MAKE ARRANGEMENTS TO REVIEW SAME PRIOR TO BIDDING, AND IS TO MAKE HIS OWN DETERMINATION AS TO ALL SUBSURFACE CONDITIONS.
- CONTRACTOR SHALL NOTIFY THE ENGINEER IF SOIL OR SUBSURFACE CONDITIONS UNSUITABLE FOR CONSTRUCTION ARE ENCOUNTERED.
- ALL EXCAVATED SOILS DEEMED SUITABLE AS FILL MATERIAL AS DETERMINED BY THE ENGINEER SHALL BE UTILIZED ON SITE BY THE CONTRACTOR AT HIS OWN EXPENSE. THE EXACT LOCATION OF DELIVERY ON SITE SHALL BE DETERMINED BY THE ENGINEER. ALL EXCAVATED SOILS DEEMED UNSUITABLE SHALL BE DISPOSED OF BY THE CONTRACTOR AT HIS OWN EXPENSE.
- ITEM IN CONFLICT WITH DESIGN SUCH AS EXISTING CURBS AND GUTTERS, SIDEWALKS, DRAINAGE STRUCTURES, PAVEMENT AND EXCESS EXCAVATIONS ARE TO BE REMOVED BY THE CONTRACTOR AND DISPOSED OF IN A LEGAL AND PROPER MANNER AWAY FROM THE JOB SITE AT HIS OWN EXPENSE.
- IT SHOULD BE NOTED THAT THE OCCUPATIONAL SAFETY AND HEALTH ACT PROHIBITS THE OPERATING OF EQUIPMENT OR MACHINES CLOSER THAN TEN (10) FEET TO ENERGIZED ELECTRIC LINES RATES AT FIFTY KILOVOLTS OR BELOW. ALSO, NO EXCAVATION IS PERMITTED WITHIN FIVE (5) FEET OF POWER POLE FACILITIES.
- ALL IRONS AND MONUMENTS (P.R.M.'S) SHOWN ON PLANS, OR FOUND, SHALL BE PRESERVED. THOSE SHOWN IN PROPOSED PAVEMENT SHALL BE PROTECTED WITH A CAST IRON VALVE BOX.
- ANY PUBLIC LAND CORNERS WITHIN THE LIMITS OF CONSTRUCTION ARE TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED OR DISTURBED, THE CONTRACTOR WILL NOTIFY THE ENGINEER.
- ALL EXISTING TREES WITHIN THE RIGHT OF WAY ARE TO BE REMOVED AS CLEARING AND GRUBBING UNLESS OTHERWISE NOTED.
- WHEN REFERENCED TO, FDOT REFERS TO FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS CURRENT EDITION.
- THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO A CONDITION EQUAL TO, OR BETTER THAN, THAT NOW EXISTING.
- BACKFILL, GRADE AND SOD AS REQUIRED AROUND ALL NEW CONSTRUCTION AND ALL DEVELOPED LOTS TO PREVENT EROSION. SEED AND MULCH WILL ONLY BE ALLOWED TO RESTORE UNDEVELOPED LOTS AFFECTED BY CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.

- SODDING TO BE USED AT LOCATIONS AS DIRECTED BY THE ENGINEER.
- PROPERTY OWNERS AND BUSINESSES WITHIN THE AREA OF CONSTRUCTION SHALL BE GIVEN ACCESS TO THEIR PROPERTY AT ALL TIMES DURING THE PERIOD OF CONSTRUCTION.
- ALL MAILBOXES SHALL BE RELOCATED BY THE CONTRACTOR AS DIRECTED BY THE U.S. POSTAL MAIL CARRIER.
- THE CONTRACTOR SHALL REMOVE, COVER OR OBLITERATE EXISTING ROADWAY SIGN AND PAVEMENT MARKINGS THAT CONFLICT WITH THE CONSTRUCTION TRAFFIC CONTROL PLANS.
- CONTRACTOR TO PROTECT ALL SPRINKLER HEADS NOT IN CONFLICT WITH DESIGN AND RELOCATE ALL THOSE WHICH ARE IN CONFLICT TO A LOCATION DETERMINED IN FIELD.
- SOD TWO (2) FEET MINIMUM ALONG SIDE PROPOSED EDGE OF PAVEMENT.
- THE CONTRACTOR IS REQUIRED TO PERFORM HIS WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE VARIOUS PERMITS WHICH WILL BE OBTAINED PRIOR TO BEGINNING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY DRAINAGE MEASURES AS REQUIRED TO ADEQUATELY DRAIN THE PROJECT AND ANY TEMPORARILY TRAVELED ROADWAYS. TEMPORARY DRAINAGE DESIGN, CONSTRUCTION AND MAINTENANCE IS THE CONTRACTOR'S RESPONSIBILITY, HOWEVER, ALL SUCH MEASURES MUST BE APPROVED BY THE ENGINEER.
- THE EXISTING SIDEWALK SHALL NOT BE DISTURBED UNLESS OTHERWISE NOTED.
- GRADES SHOWN ARE FINISHED GRADES.
- SAWCUT CONCRETE OR ASPHALT DRIVEWAYS AS REQUIRED FOR REPLACEMENT.
- ALL ABANDONED UTILITIES (INCLUDING PIPES, CABLES AND STRUCTURES) FOUND IN THE RIGHT OF WAY AND NOT SHOWN ON THE PLANS, ARE TO BE REMOVED AND PROPERLY DISPOSED OF AT THE EXPENSE OF THE CONTRACTOR. THIS INCLUDES ALL EXOTIC PIPES LIKE ASBESTOS-CEMENT PIPE. COST TO BE INCLUDED IN CLEARING AND GRUBBING ITEM.
- DRIVEWAY LOCATIONS AND WIDTHS ARE APPROXIMATE AND ARE TO BE ADJUSTED AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
- BENCHMARK DATUM IN NAVD 88.
- BACKFILL AND SOD AS REQUIRED BEYOND RIGHT OF WAY LINES ON INDIVIDUAL LOTS TO MAINTAIN POSITIVE DRAINAGE FLOW INTO CURB AND GUTTER.
- GRADE AND SOD SWALES TEN (10) FEET FROM PROPOSED DRAINAGE MODIFICATION.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN \varnothing (BASELINE) AND ∇ (CENTERLINE) CONSTRUCTION THROUGHOUT THE PROJECT.
- THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE (SEQUENCE OF OPERATIONS) PRIOR TO THE PRE-CONSTRUCTION MEETING.
- ALL EXISTING SWALES SHALL BE PROTECTED BY THE CONTRACTOR. ANY DAMAGE TO THE SWALE LINE SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- PAYMENT FOR INCIDENTAL ITEMS NOT SPECIFICALLY COVERED IN THE INDIVIDUAL BID ITEMS SHALL BE INCLUDED IN THE CONTRACT PRICES FOR BID ITEMS.
- WHEN ALL OTHER PERMANENT CONSTRUCTION IS COMPLETE, THE FINAL SURFACE COURSE SHALL BE PLACED.
- CONSTRUCTION OPERATIONS FOR PLACEMENT OF THE FINAL SURFACE COURSE SHALL BE LIMITED TO A DISTANCE, AS DIRECTED BY THE ENGINEER, THE CONTRACTOR CAN COMPLETE IN ONE (1) DAY.
- THE CONTRACTOR SHALL IMPLEMENT TEMPORARY PAVEMENT MARKINGS UNTIL THE FINAL SURFACE COURSE HAS CURED (MINIMUM THIRTY (30) DAYS AFTER FINAL SURFACE COURSE PLACEMENT), ANY TEMPORARY PAINTED MARKINGS PLACED ON THE FINAL.
- PAVEMENT TRANSITION SHALL BE MADE IN ACCORDANCE WITH PAVEMENT TRANSITION DETAIL.

DRAINAGE SPECIFICATIONS

STORM INLETS AND MANHOLES SHALL BE CONSTRUCTED IN GENERAL ACCORDANCE WITH SECTION 425 OF THE STANDARD SPECIFICATIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION.

CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 3000 PSI.

ALL REINFORCING STEEL TO BE ASTM A 615-72 GRADE 40, FYP = 40,000 PSI, AND SHALL BE HANDLED AND PLACED IN ACCORDANCE WITH ACI 318-71.

PRECAST CONCRETE MANHOLES AND STORM INLETS MAY BE USED UPON THE ENGINEER'S APPROVAL OF THE MANUFACTURER'S SHOP DRAWINGS.

STORM SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 430 AND RELATED SECTIONS OF THE STANDARD SPECIFICATIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION.

CONCRETE

UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 3000 PSI. ALL WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE AND THE APPLICABLE BUILDING CODES HAVING JURISDICTION IN THE AREA.

CULVERT PIPES

REINFORCED CONCRETE PIPE (R.C.P.) SHALL BE IN ACCORDANCE WITH SECTION 449 OF THE STANDARD SPECIFICATIONS.

PRECAST CONCRETE DRAINAGE PRODUCTS

ALL PRECAST CONCRETE DRAINAGE PRODUCTS (INCLUDING BUT NOT LIMITED TO ROUND CONC. PIPE, ELLIPTICAL CONC. PIPE, UNDERDRAINS, MANHOLES, INLETS, ENDWALLS, JUNCTION BOXES, THREE-SIDED CONC. CULVERTS, AND CONC. BOX CULVERTS) SHALL BE IN ACCORDANCE WITH SECTION 449 OF THE STANDARD SPECIFICATIONS.

RECORD DRAWINGS

CONTRACTOR SHALL KEEP AND MAINTAIN RECORD DRAWINGS ON THE PROJECT SITE AT ALL TIMES WHICH SHALL BE ANNOTATED BY THE CONTRACTOR DEPICTING ANY CHANGES MADE IN THE FIELD WHICH DIFFER FROM THE CONTRACT DRAWINGS. RECORD DRAWINGS SHALL INCLUDE, BUT NOT LIMITED TO, INVERT AND TOP ELEVATIONS OF CULVERTS AND INLET STRUCTURES. CONTRACTOR SHALL SUBMIT COMPLETE AND FINAL RECORD DRAWINGS TO ENGINEER UPON COMPLETION OF PROJECT AND PRIOR TO FINAL INSPECTION AND FINAL PAYMENT.

DRAINAGE SPECIFICATIONS (CONTINUED)

INSPECTION

- MINIMUM CONSTRUCTION INSPECTION CHECKPOINTS
- THE ENGINEER SHALL BE NOTIFIED:
- PRIOR TO ANY MAJOR DEVIATION FROM THE APPROVED PLANS.
 - PRIOR TO BACKFILLING ANY PIPE TRENCHES.
 - UPON COMPLETION OF SUBGRADE GRADING AND FABRIC INSTALLATION.
 - UPON BEGINNING OF INSTALLATION OF ARMOR MATERIAL.
 - IMMEDIATELY PRIOR TO AND UPON APPLICATION OF A.C.S.C.
 - UPON COMPLETION OF CONSTRUCTION.

CONSTRUCTION IN STREETS AND ROAD RIGHT-OF-WAYS

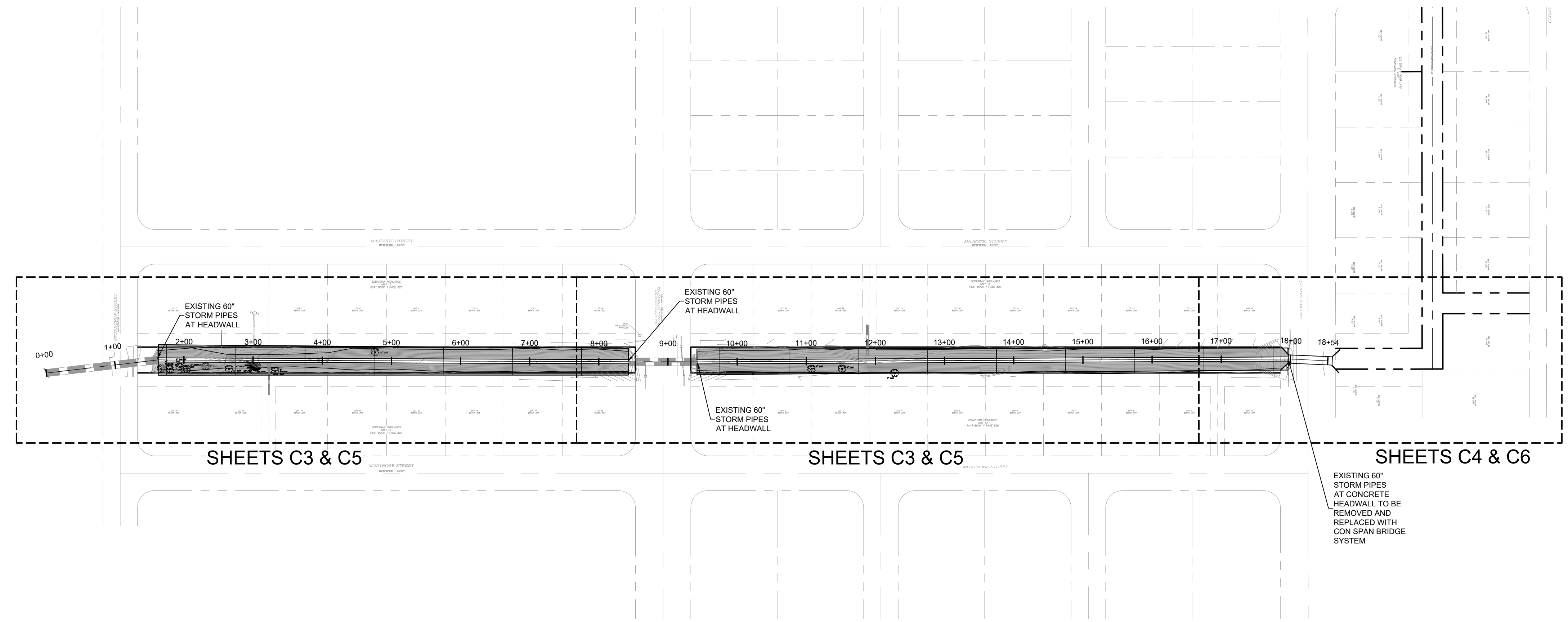
- OPEN ROAD CUTS REQUIRES PRIOR APPROVAL OF THE CITY, COUNTY, STATE OR ANY OTHER AGENCY WHICH MAY HAVE JURISDICTION.
- ALL CONSTRUCTION, MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS AND STANDARDS.
- ALL AREAS IN EXISTING RIGHT-OF-WAYS DISTURBED BY CONSTRUCTION SHALL RECEIVE SOLID SOD.
- STREET RESTORATION TO BE DONE AS PER CITY OF SEBASTIAN STANDARDS.
- THE CONTRACTOR SHALL COMPLY WITH ALL RULES AND REGULATIONS OF THE STATE, COUNTY AND CITY AUTHORITIES REGARDING CLOSING OR RESTRICTING THE USE OF PUBLIC STREETS OR HIGHWAYS.
- TRAFFIC CONTROL ON ALL COUNTY AND STATE HIGHWAY RIGHT-OF-WAYS SHALL MEET THE REQUIREMENTS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (U.S. DOT/FHWA) AND THE REQUIREMENTS OF THE STATE AND ANY LOCAL AGENCY HAVING JURISDICTION.

GENERAL NOTES:

- CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL SITE CONDITIONS BEFORE STARTING CONSTRUCTION.
- ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.
- CONTRACTOR SHALL OBTAIN COPIES OF ALL REQUIRED PERMITS BEFORE COMMENCING WORK. CONTRACTOR SHALL FAMILIARIZE HIMSELF OF ALL PERMIT CONDITIONS AND PERFORM ALL WORK IN ACCORDANCE WITH ALL SAID CONDITIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 72 HOURS IN ADVANCE FOR CONSTRUCTION OPERATIONS.
- NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- CONTRACTOR SHALL SUPPLY DENSITY TESTS TO ENGINEER ON ALL SUB-GRADE AND BASE. TESTS SHALL BE PREPARED PER AASHTO T-180 METHOD.
- SLOPE GRADES FROM ELEVATIONS SHOWN TO EXISTING GRADE AT PROPERTY LINE, MAXIMUM SLOPE 3:1.
- ENGINEER SHALL BE NOTIFIED AT LEAST 72 HOURS IN ADVANCE FOR ANY INSPECTION.
- ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH M.U.T.C.D. STANDARDS.

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
- THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTORS BID SHALL INCLUDE CONSIDERATION FOR ADDRESSING THIS ISSUE.
- EROSION CONTROL FENCING AND TURBIDITY BARRIERS MUST BE IN PLACE PRIOR TO SOIL DISTURBANCE.
- PIPE LENGTHS AND SLOPES SHOWN ARE APPROXIMATE.
- IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.
- ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUTED TO ASSURE CONNECTION AT STRUCTURE IS WATERTIGHT.
- CONTRACTOR SHALL ADJUST INLET/STRUCTURE OR CONNECTION LOCATION AS REQUIRED TO ENSURE PROPOSED STRUCTURES AND PIPES ARE IN PROPER ALIGNMENT AND MATCH SLOPE OF EXISTING PIPES OR CONNECTIONS.
- FILL MATERIAL MAY NOT BE STOCKPILED HIGHER THAN SIX (6) VERTICAL FEET ONSITE PER CITY OF SEBASTIAN CODE.
- DIMENSIONS SHOWN ARE TO EDGE OF GUTTER OR PAVEMENT. RADII SHOWN ARE TO FACE OF CURB.
- ALL SIGNS SHALL BE MUTCD STANDARD.
- THE USES PROPOSED AS PART OF THIS PLAN DO NOT REQUIRE A SUBMITTAL OF A RISK MANAGEMENT PLAN PURSUANT TO U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) REGULATIONS AND SHALL NOT EXCEED THE EPA'S RMP THRESHOLD QUANTITIES OF LISTED SUBSTANCES.
- REGARDLESS OF PRIVATE OR PUBLIC DEDICATIONS, THERE SHALL BE NO UTILITY CONNECTIONS, METER BOXES OR VALVE BOXES IN EXISTING OR PROPOSED SIDEWALK OR DRIVEWAY AREAS.
- CONTRACTOR SHALL ADJUST INLET/STRUCTURE OR CONNECTION LOCATION AS REQUIRED TO ENSURE PROPOSED STRUCTURES AND PIPES ARE IN PROPER ALIGNMENT AND MATCH SLOPE OF EXISTING PIPES OR CONNECTIONS.
- ANY STATE AND FEDERAL PERMITS THAT MAY BE REQUIRED AS A RESULT OF LAND CLEARING AND LANDSCAPING ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTRACTOR IS RESPONSIBLE TO PROTECT AND/OR REPLACE ALL SURVEY MONUMENTATION BY A LICENSED SURVEYOR IN THE STATE OF FLORIDA.

PRIMARY BENCHMARK:
 THE ELEVATION DATUM SHOWN HEREON ARE BASED ON BREVARD GPS 1016 STAMPED "GPS 1016 1993" ELEVATION = 26.77 N.G.V.D. (1929)
 CONVERSION FACTOR FROM NGVD (29) TO NAVD (88) SUBTRACT 1.365 FEET.



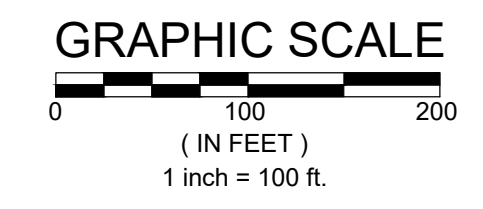
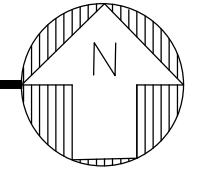
SHEETS C3 & C5

SHEETS C3 & C5

SHEETS C4 & C6

OVERALL PLAN AND KEY SHEET

SCALE: 1" = 100'



72 HOURS BEFORE DIGGING
CALL TOLL FREE
811
Know what's below.
Call before you dig.

NO.	REVISIONS	DATE
1		
2		
3		
4		
5		
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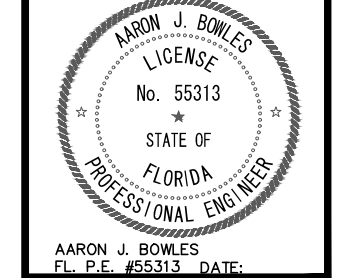
18-0197	RM	GWR	JULY 2018	AS NOTED
DESIGNED				
DRAWN				
CHECKED				
DATE				
ISSUED				
SCALE				

1835 - 20TH STREET
 VERO BEACH, FL 32960
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 FX. (772) 778-3617
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 FT. PIERCE FL - PH (772) 468-9095
 STUART, FL - PH (772) 266-9795

MBV ENGINEERING, INC.
 CONSULTING ENGINEERING ASSOCIATES
 MOA, BOWLES, VILLALBAZAR & ASSOCIATES
 CA #3728

OVERALL PLAN
 AND KEY SHEET

STONECROP CANAL
 REHAB DESIGN

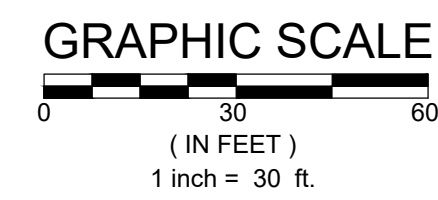
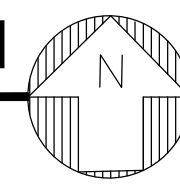


SHEET
C2
 OF 10
 18-0197

17-0116

EXISTING CONDITIONS, DEMOLITION AND EROSION CONTROL PLAN

SCALE: 1" = 30'

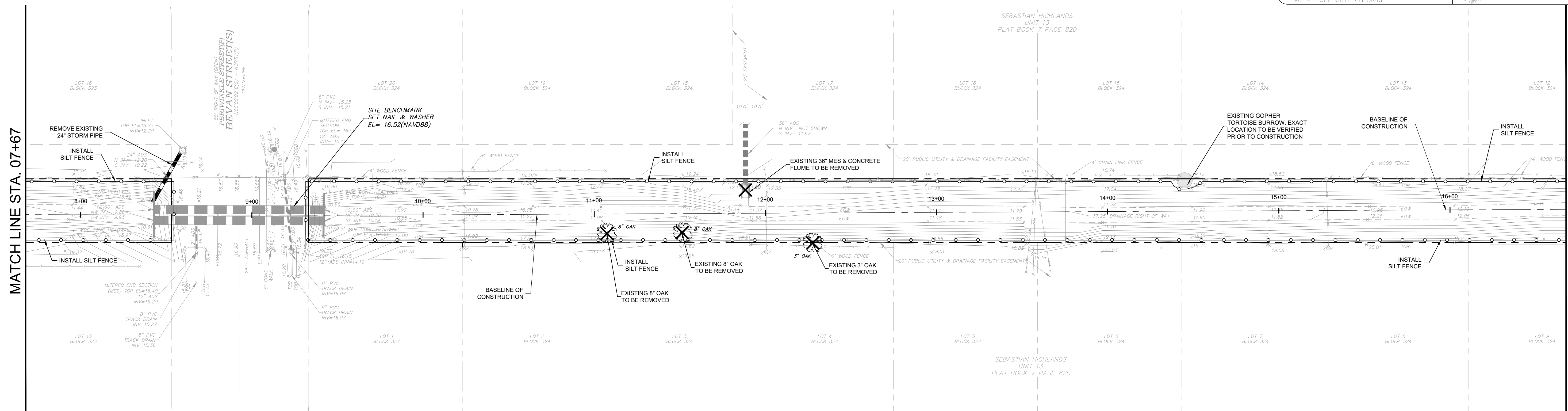


DEMO LEGEND

- SILT FENCE
- TURBIDITY BARRIER
- EXISTING DRAINAGE PIPE
- EXISTING CHAIN LINK FENCE
- EXISTING MES
- EXISTING ELEVATIONS
- EXISTING TREE/STRUCTURE TO BE REMOVED

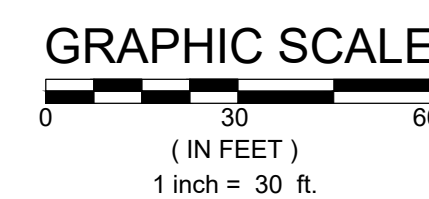
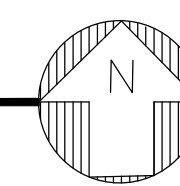
SURVEY LEGEND

- ADS = ADVANCED DRAINAGE SYSTEM
- BFP = BACKFLOW PREVENTER
- BOC = BACK OF CURB
- BWF = BARBED WIRE FENCE
- CLF = CHAIN LINK FENCE
- CM = CONCRETE MONUMENT
- ADS N-12 = CORRUGATED METAL PIPE
- CONC. = CONCRETE
- COVD. = COVERED
- (D) = DESCRIPTION
- EADS N-12 = ELLIPTICAL CORRUGATED METAL PIPE
- EDR = EDGE OF DRIVE
- EL. = ELEVATION
- EM = ELECTRIC METER
- EOP = EDGE OF PAVEMENT
- EDW = EDGE OF WATER
- FFE = FINISHED FLOOR ELEVATION
- FM = FORCE MAIN
- FND. = FOUND
- ID. = IDENTIFICATION
- IP = IRON PIPE
- IR = IRON ROD
- IRC = IRON ROD WITH CAP
- OHW = OVERHEAD WIRES
- O.R.B. = OFFICIAL RECORD BOOK
- (P) = PLAT
- P.S. = PLAT BOOK
- P.C. = PAGE
- PVC = POLY VINYL CHLORIDE
- RCP = REINFORCED CONCRETE PIPE
- (S) = SURVEYED
- TOS = TOP OF BANK
- TRANS = TRANSFORMER
- UG = UNDERGROUND
- WDF = WOODEN FENCE
- WL = WATER LINE
- WM = WATER METER
- ⊙ = FIRE HYDRANT
- ⊙ = GUY ANCHOR
- ⊙ = UTILITY POLE
- ⊙ = WATER GATE VALVE
- ⊙ = WELL
- ⊙ = GOPHER TORTOISE BURROW
- ⊙ = PALM
- ⊙ = OAK
- ⊙ = PINE



EXISTING CONDITIONS, DEMOLITION AND EROSION CONTROL PLAN

SCALE: 1" = 30'



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Know what's below.
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NO.	REVISIONS	DATE
1	DESIGNED	18-09-17
2	DRAWN	RM
3	CHECKED	GWR
4	DATE	JULY 2018
5	DATE	JULY 2018
6	DATE	JULY 2018
7	SCALE	AS NOTED

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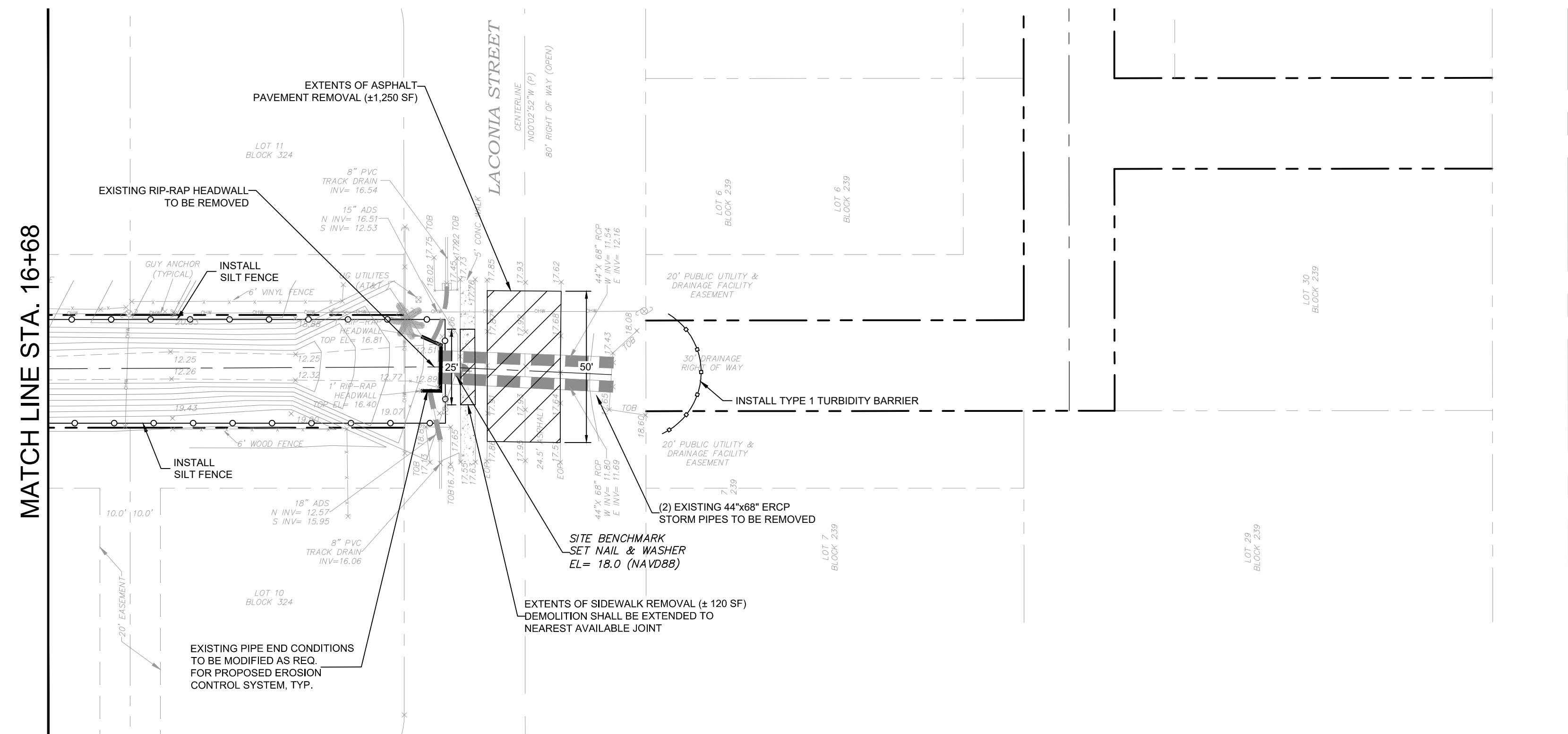
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CONSULTING ENGINEERING CA #3728

EXISTING CONDITIONS, DEMOLITION AND EROSION CONTROL PLAN

STONECROP CANAL
REHAB DESIGN
FLORIDA
CITY OF SEBASTIAN

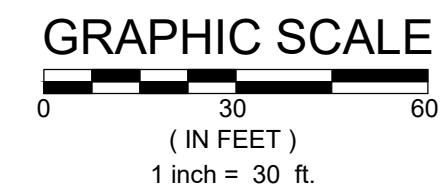
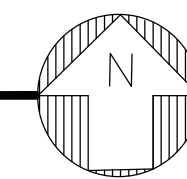
AARON J. BOWLES
LICENSED PROFESSIONAL ENGINEER
No. 55313
STATE OF FLORIDA

SHEET
C3
OF 10
18-0197



EXISTING CONDITIONS, DEMOLITION AND EROSION CONTROL PLAN

SCALE: 1" = 30'



DEMO LEGEND

- SILT FENCE
- TURBIDITY BARRIER
- EXISTING DRAINAGE PIPE
- EXISTING CHAIN LINK FENCE
- EXISTING MES
- EXISTING ELEVATIONS
- EXISTING TREE/STRUCTURE TO BE REMOVED
- AREA OF EXISTING PAVEMENT TO BE REMOVED

SURVEY LEGEND

- | | |
|--|--|
| <ul style="list-style-type: none"> ADS = ADVANCED DRAINAGE SYSTEM BFP = BACKFLOW PREVENTER BFC = BACK OF CURB BWF = BARBED WIRE FENCE CLF = CHAIN LINK FENCE CM = CONCRETE MONUMENT ADS N-12 = CORRUGATED METAL PIPE CONC. = CONCRETE COVD. = COVERED (D) = DESCRIPTION EADS N-12 = ELLIPTICAL CORRUGATED METAL PIPE EDR = EDGE OF DIRT DRIVE EL = ELEVATION EM=ELECTRIC METER EOP = EDGE OF PAVEMENT EW = EDGE OF WATER FFE = FINISHED FLOOR ELEVATION FM = FORCE MAIN FND. = FOUND ID = IDENTIFICATION IP = IRON PIPE IR = IRON ROD IRC = IRON ROD WITH CAP OHW = OVERHEAD WIRES O.R.B. = OFFICIAL RECORD BOOK (P) = PLAT P.B. = PLAT BOOK PG. = PAGE PVC = POLY VINYL CHLORIDE | <ul style="list-style-type: none"> RCP = REINFORCED CONCRETE PIPE (S) = SURVEYED TOB = TOP OF BANK TOS = TOE OF SLOPE TRANS = TRANSFORMER UG = UNDERGROUND WDF = WOODEN FENCE WL = WATER LINE WM = WATER METER ⊕ = FIRE HYDRANT ⊕ = GUY ANCHOR ⊕ = UTILITY POLE ⊕ = WATER GATE VALVE ⊕ = WELL ⊕ = GOPHER TORTOISE BURROW ⊕ = PALM ⊕ = OAK ⊕ = PINE |
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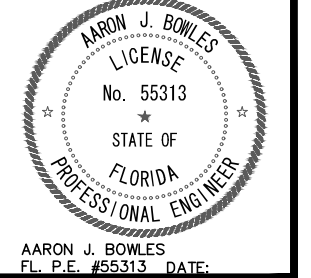
REVISIONS	DATE
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1835 - 20TH STREET
 VERO BEACH, FL 32960
 PH. (772) 569-0035
 FX. (772) 778-3617
 MELBOURNE, FL - PH (321) 253-1510
 FT. PIERCE, FL - PH (772) 468-9055
 STUART, FL - PH (772) 266-9795

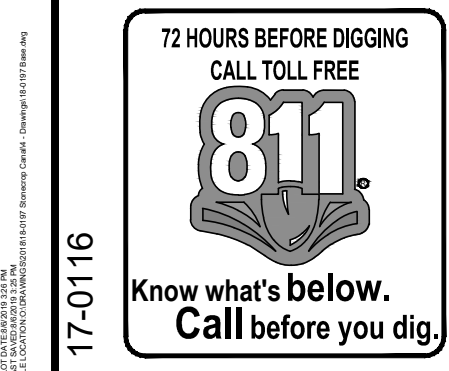


EXISTING CONDITIONS,
 DEMOLITION AND
 EROSION CONTROL PLAN

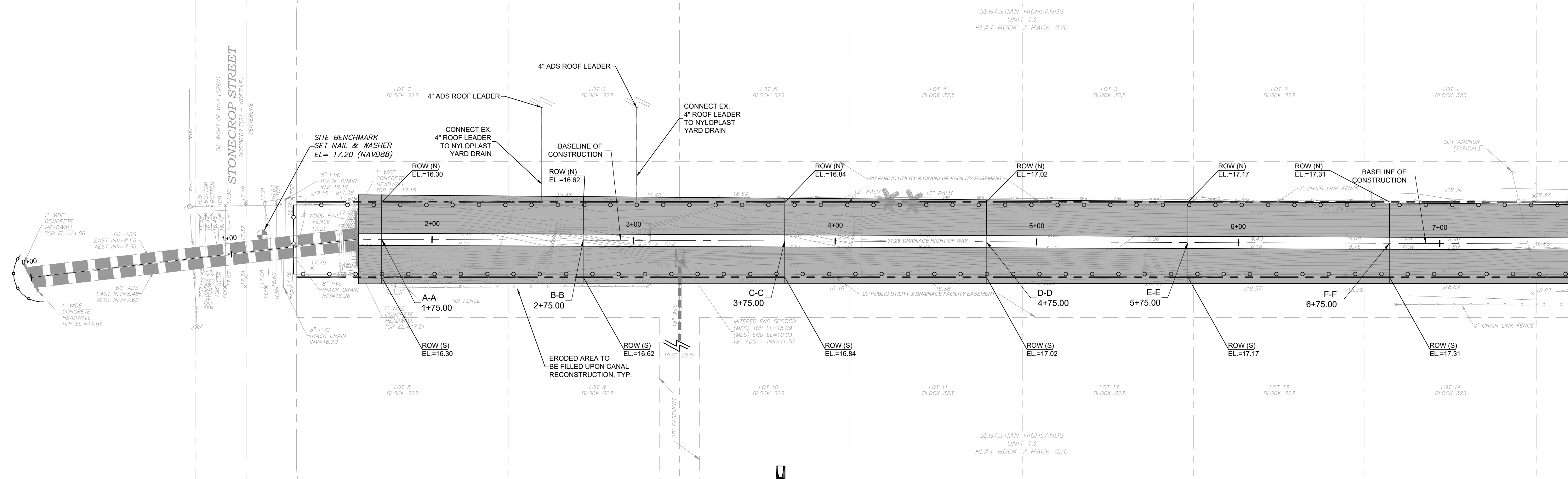
STONECROP CANAL
 REHAB DESIGN
 CITY OF SEBASTIAN
 FLORIDA



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C4
 OF 10
 18-0197

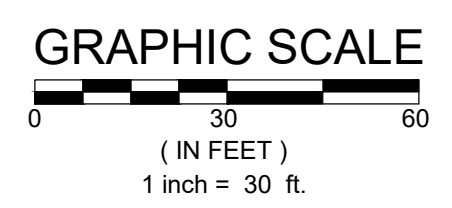
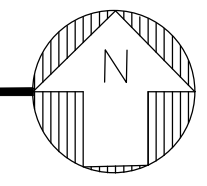


17-0116



GRADING AND DRAINAGE PLAN

SCALE: 1" = 30'



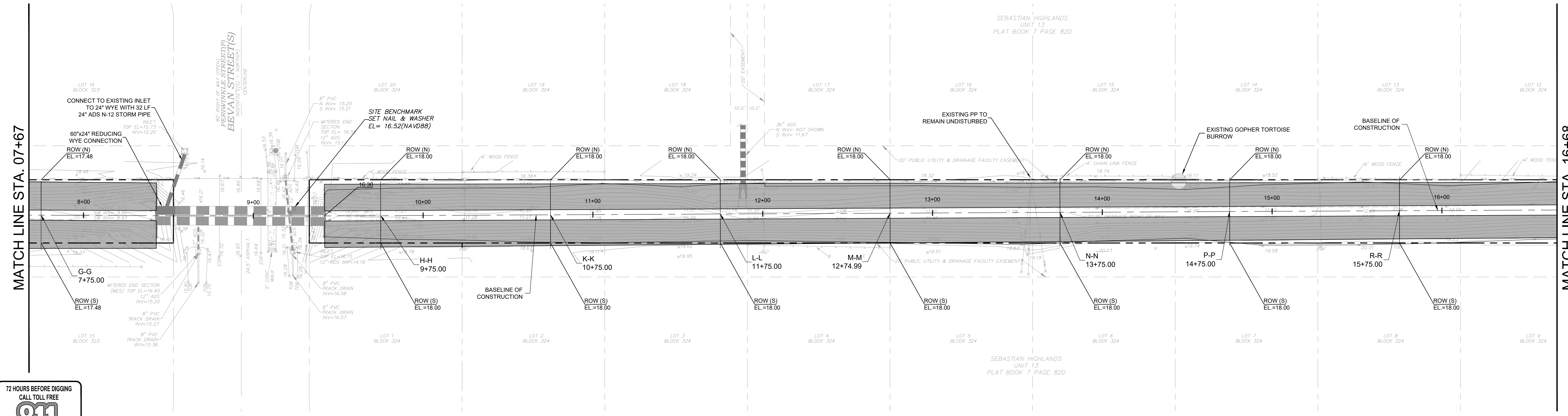
SITE LEGEND

- SILT FENCE
- TURBIDITY BARRIER
- EXISTING DRAINAGE PIPE
- LIMITS OF PROPOSED ARMORING
- EXISTING CHAIN LINK FENCE
- EXISTING MES

SURVEY LEGEND

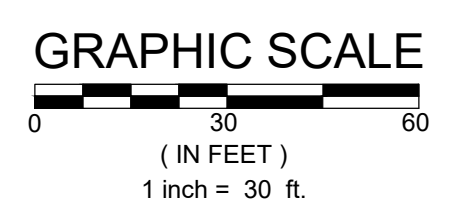
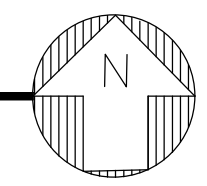
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MATCH LINE STA. 07+67



GRADING AND DRAINAGE PLAN

SCALE: 1" = 30'



MATCH LINE STA. 16+68

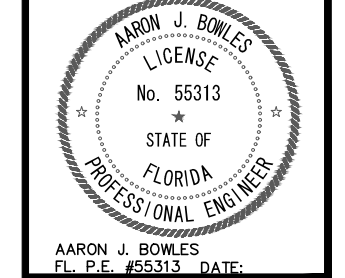
NO.	REVISIONS	DATE
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JOB NO. 18-0197
 DESIGNED RM
 DRAWN GWR
 DATE JULY 2018
 CHECKED JAB
 DATE ISSUED JULY 2018
 SCALE AS NOTED

1835 - 20TH STREET
 VERO BEACH, FL 32960
 PH. (772) 569-0035
 FX. (772) 778-3617
 MELBOURNE, FL - PH (321) 253-1510
 FT. PIERCE, FL - PH (772) 468-9055
 STUART, FL - PH (772) 266-9795

MBV
ENGINEERING, INC.
 MOA, BOWLES, VILLAMAZAR & ASSOCIATES
 CONSULTING ENGINEERING CA #3728

GRADING AND DRAINAGE PLAN
 STONECROP CANAL REHAB DESIGN
 CITY OF SEBASTIAN FLORIDA

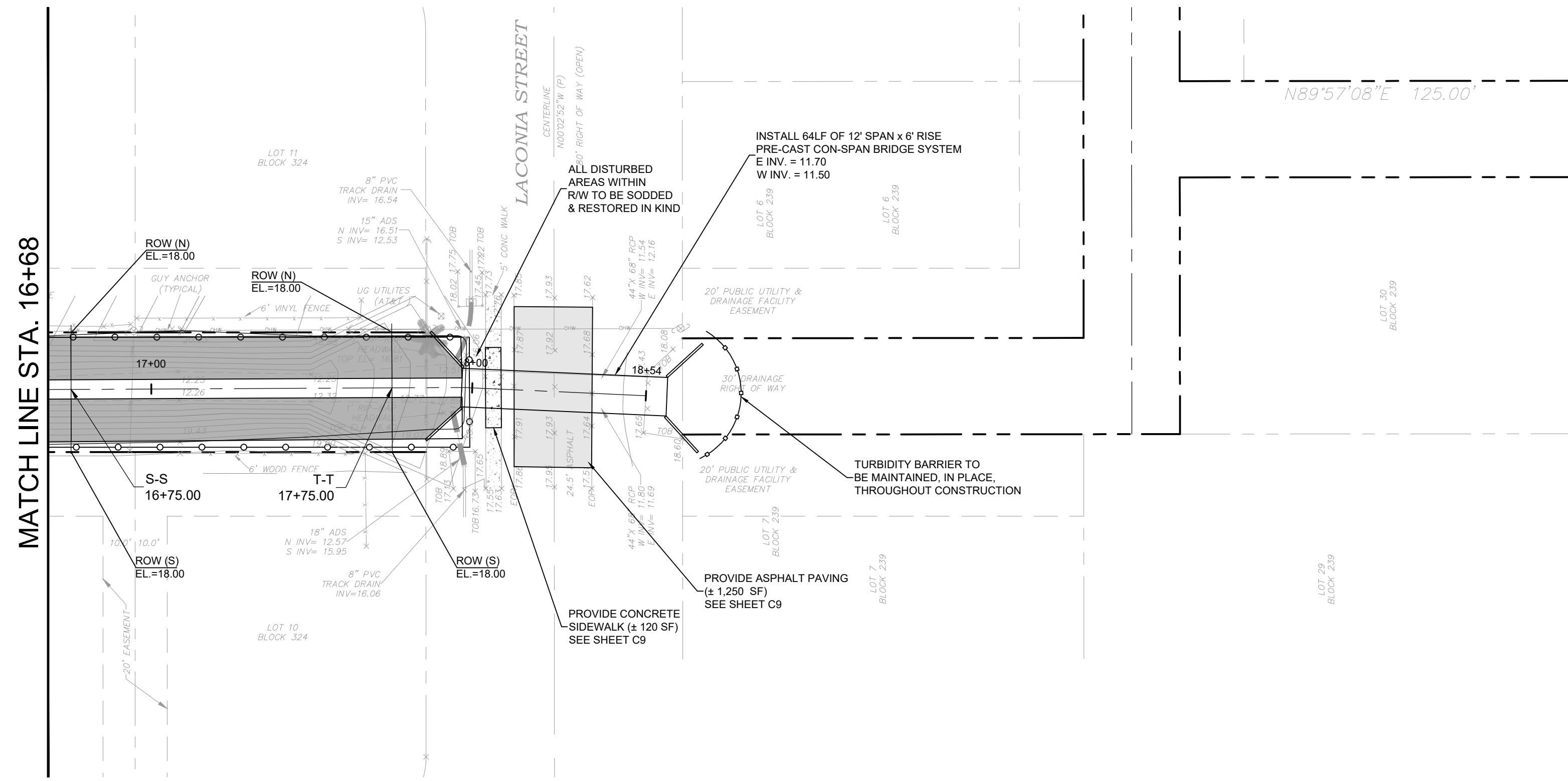


SHEET
C5
 OF 10
 18-0197

72 HOURS BEFORE DIGGING
 CALL TOLL FREE

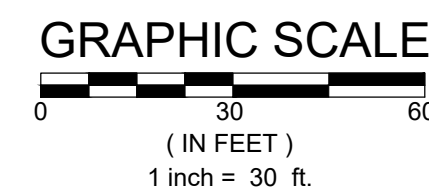
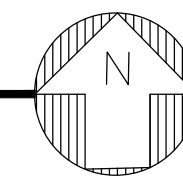
 Know what's below.
 Call before you dig.

17-0116



GRADING AND DRAINAGE PLAN

SCALE: 1" = 30'



SITE LEGEND

- SILT FENCE
- TURBIDITY BARRIER
- EXISTING DRAINAGE PIPE
- LIMITS OF PROPOSED ARMORING
- EXISTING FENCE
- EXISTING MES
- LIMITS OF PROPOSED ASPHALT REPAVING
- LIMITS OF PROPOSED CONCRETE SIDEWALK

SURVEY LEGEND

- | | |
|--|---|
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REVISIONS	DATE
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JOB NO.	18-0197
DESIGNED	RM
DRAWN	GWR
DATE	JULY 2018
CHECKED	AJB
DATE ISSUED	JULY 2018
SCALE	AS NOTED

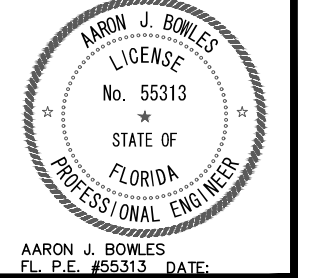
1835 - 20TH STREET
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MBV ENGINEERING, INC.
MOA, BOWLES, WILLAMAZAR & ASSOCIATES
CONSULTING ENGINEERING CA #3728

GRADING AND DRAINAGE PLAN

STONECROP CANAL
REHAB DESIGN

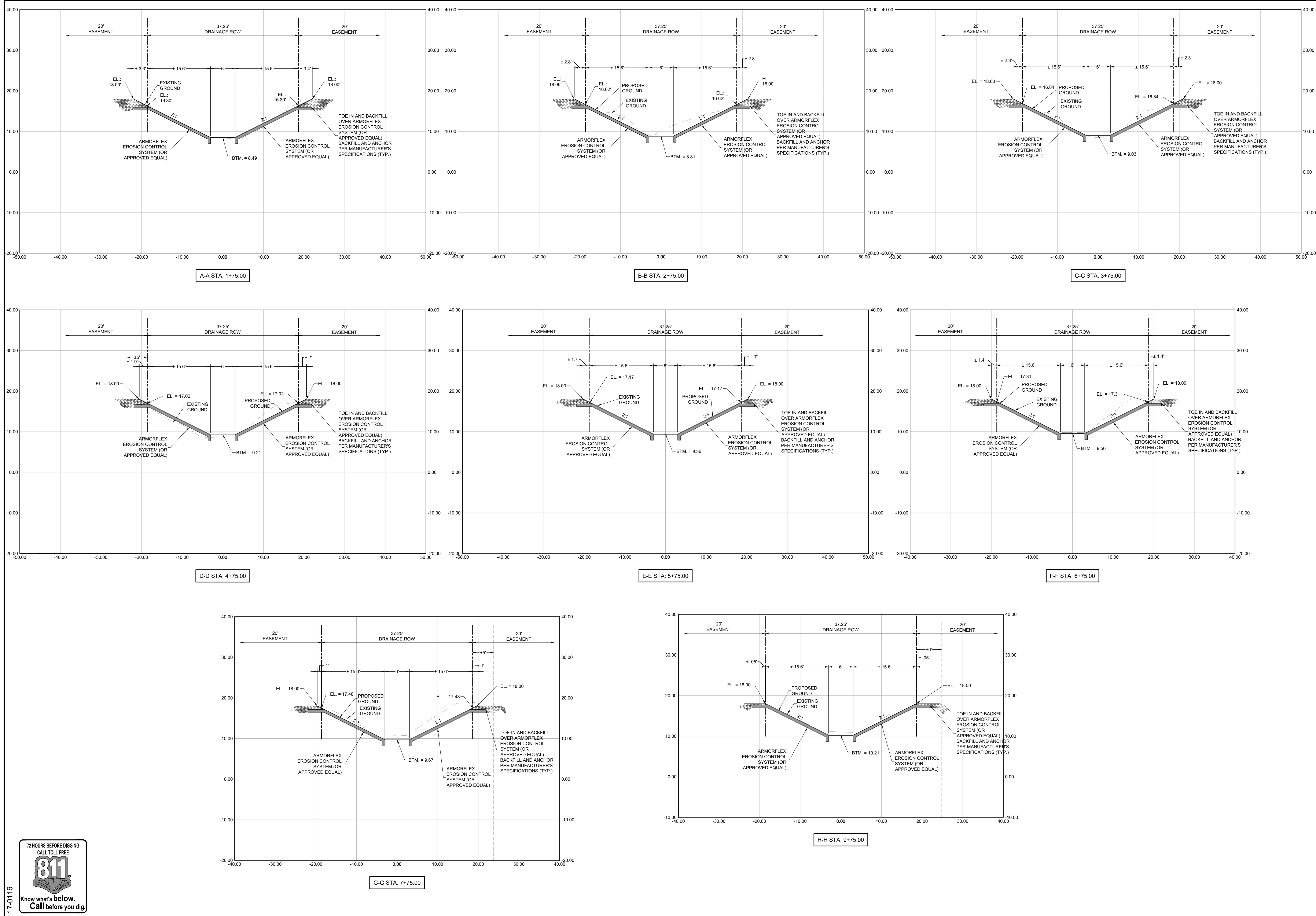
CITY OF SEBASTIAN
FLORIDA



SHEET
C6
OF 10
18-0197



17-0116



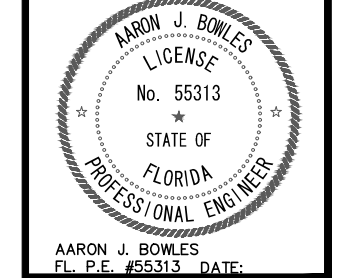
NO.	DATE	REVISIONS
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JOB NO. 18-0116
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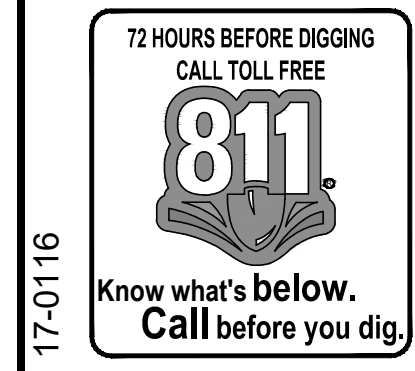
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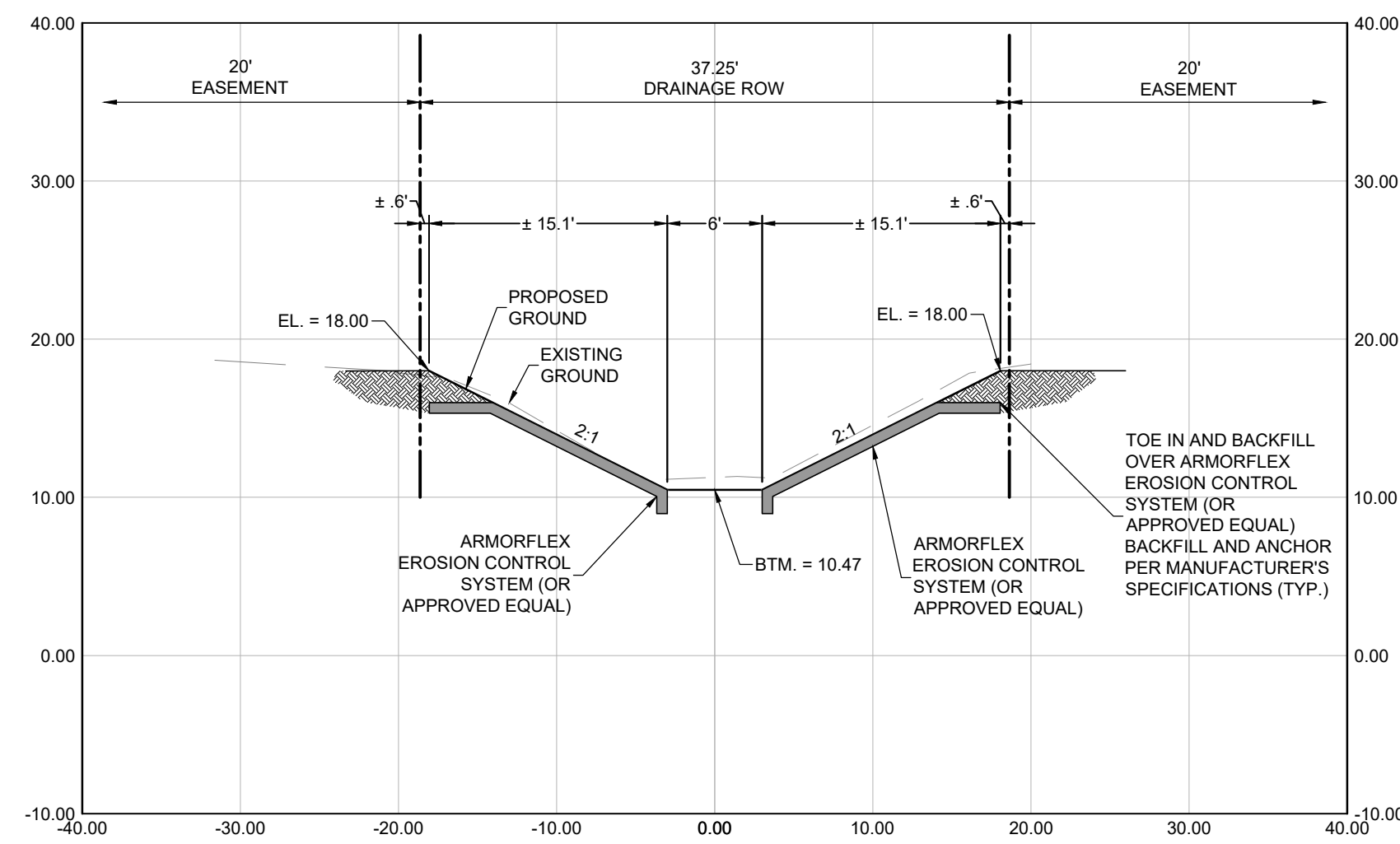
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STONECROP CANAL
 REHAB DESIGN

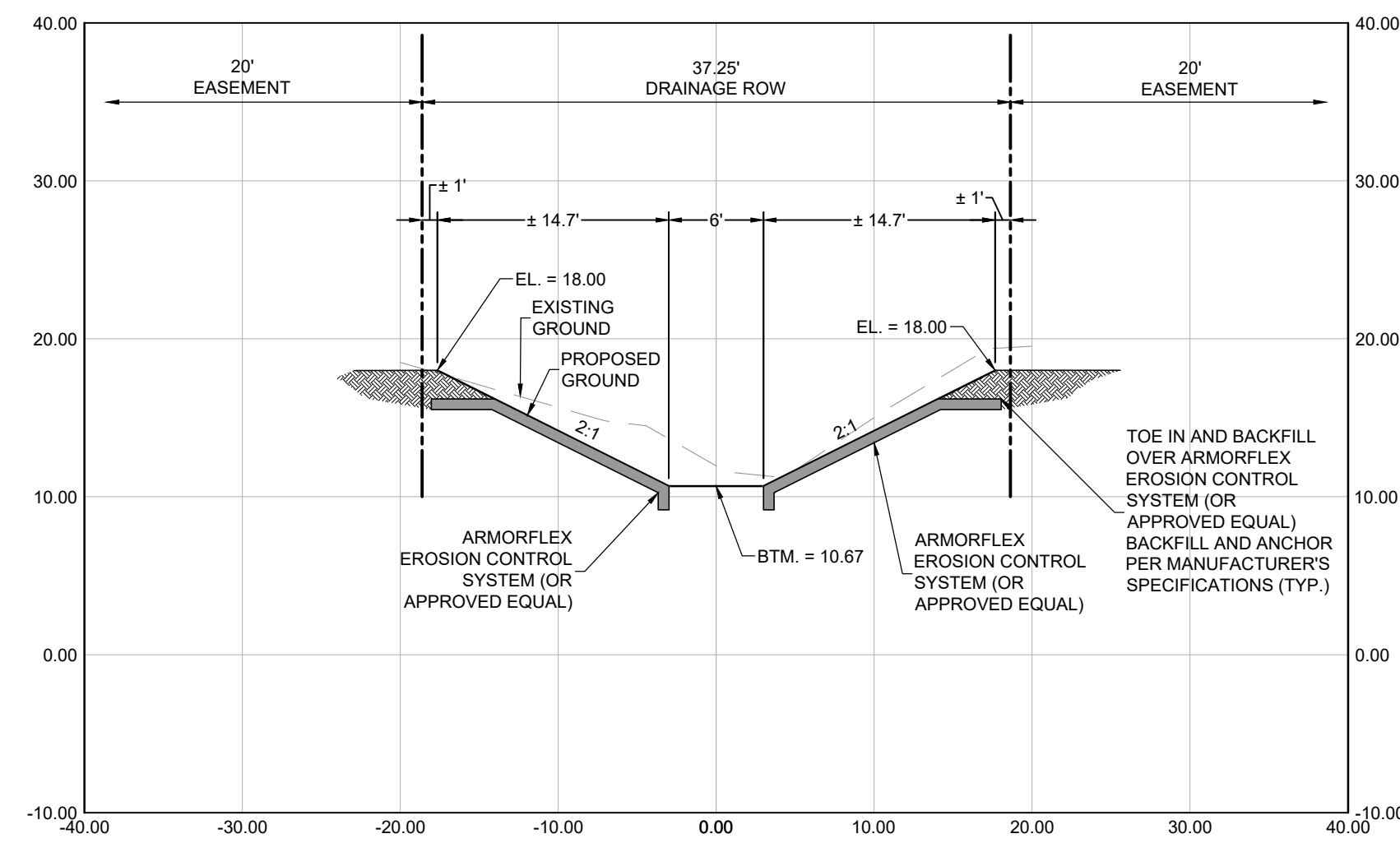


CITY OF SEBASTIAN FLORIDA
 SHEET
C7
 OF 10
 18-0116

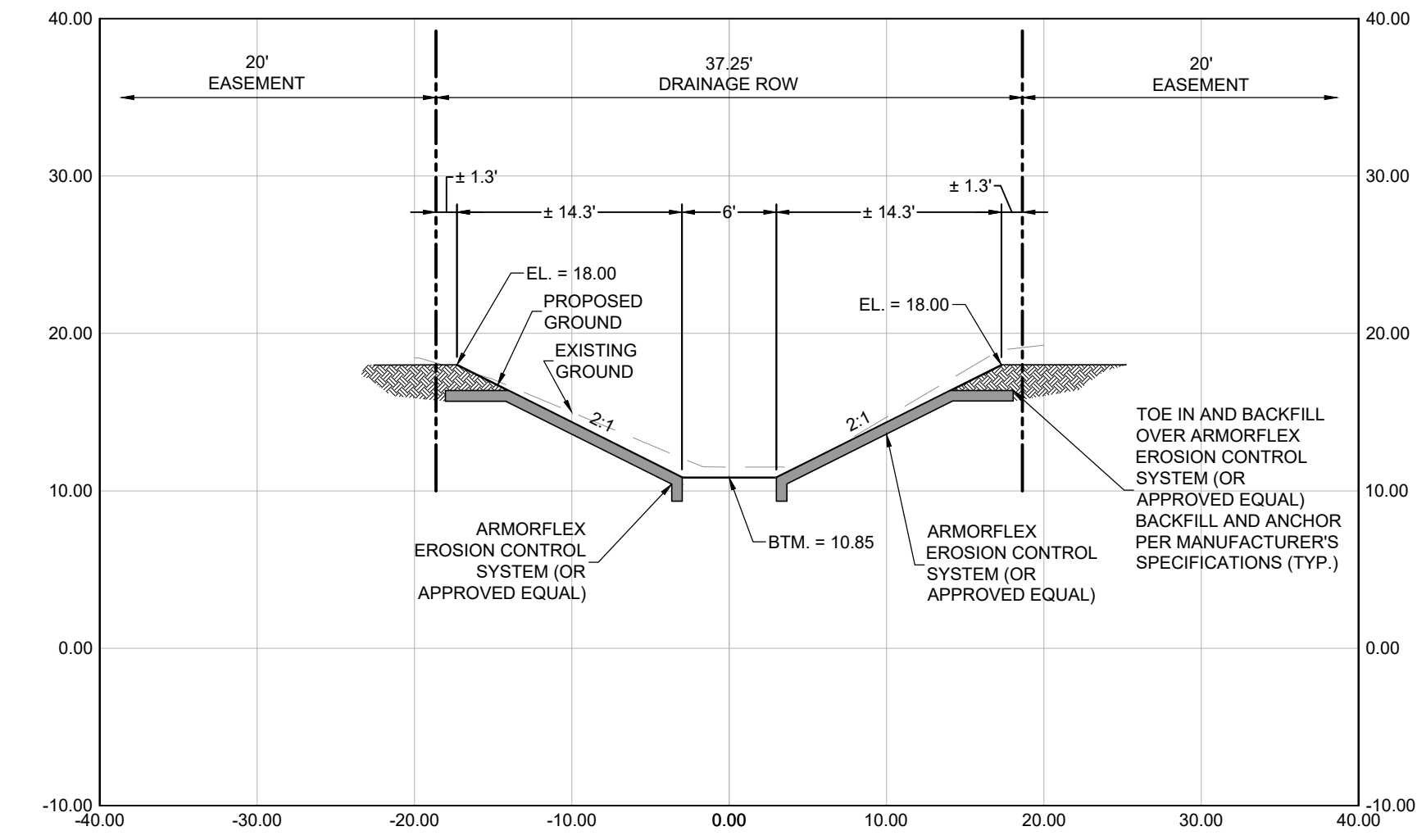




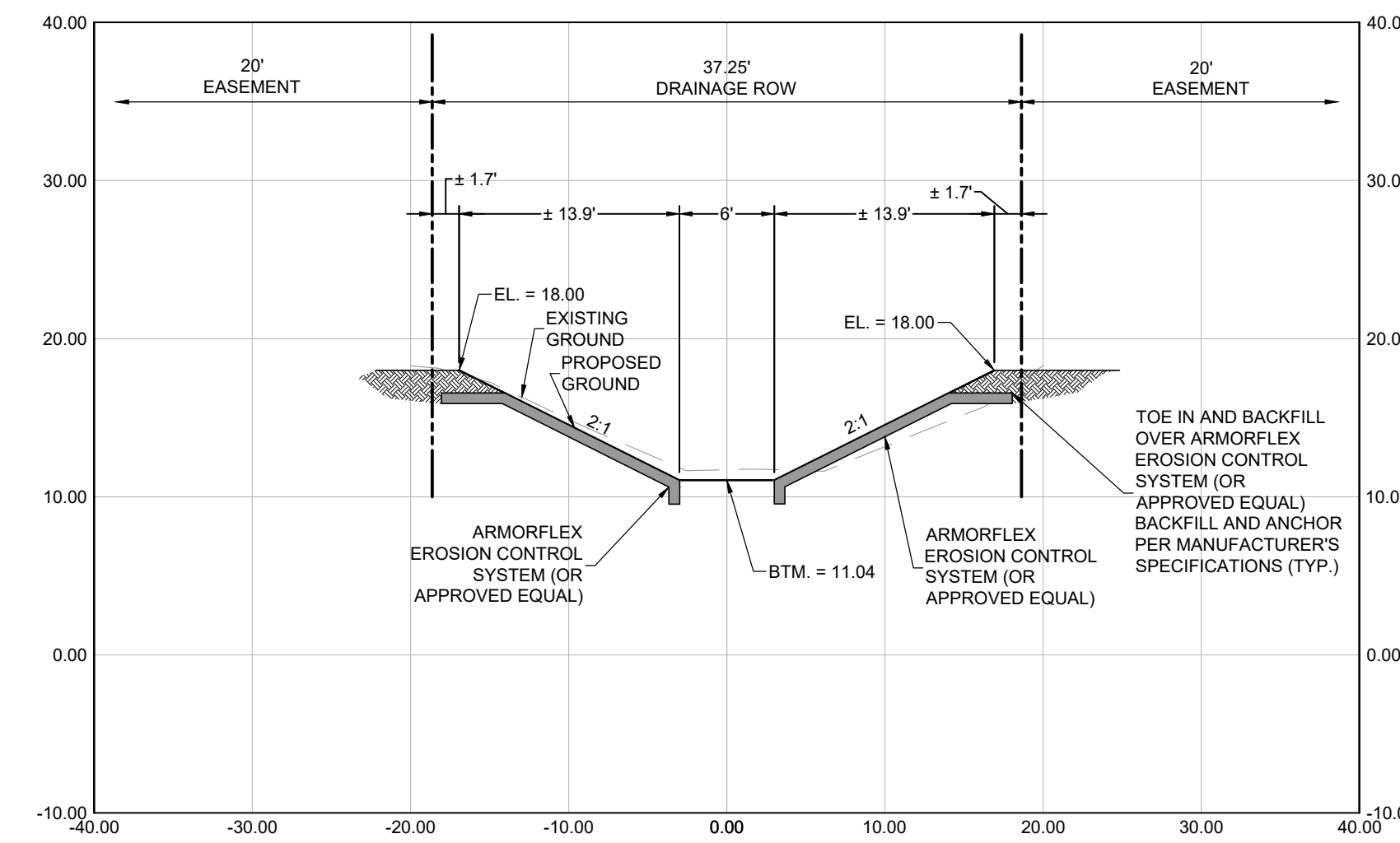
K-K STA: 10+75.00



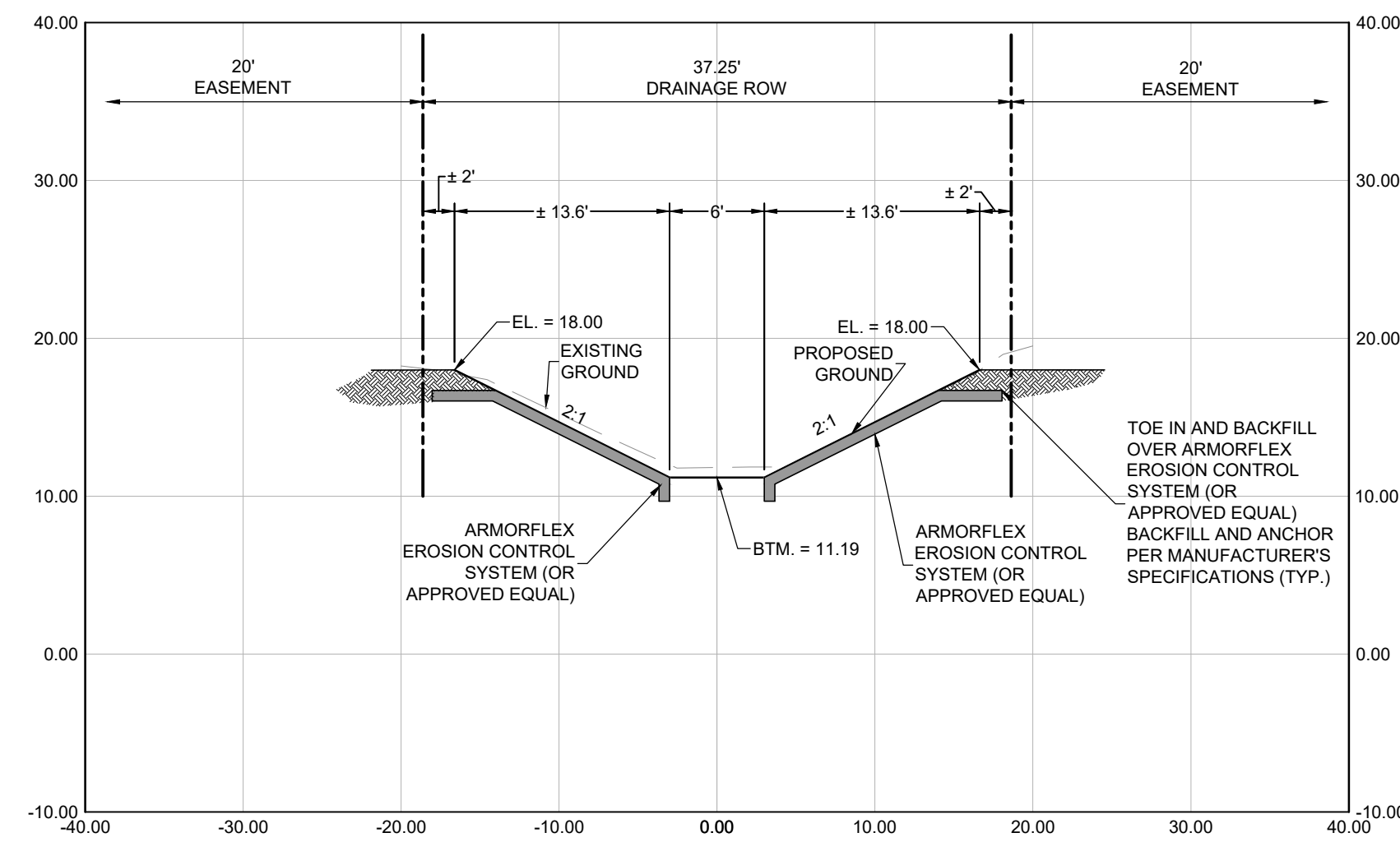
L-L STA: 11+75.00



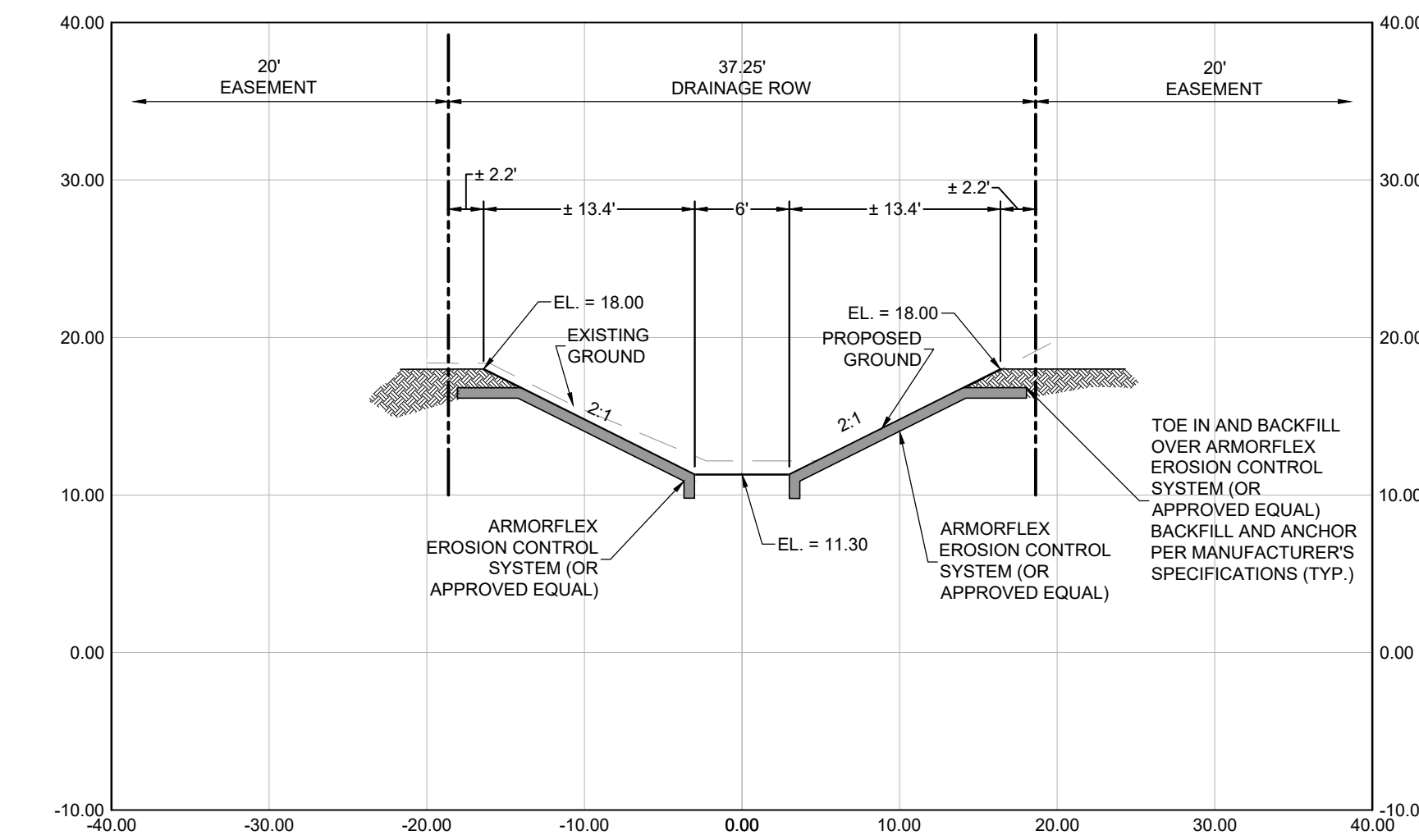
M-M STA: 12+74.99



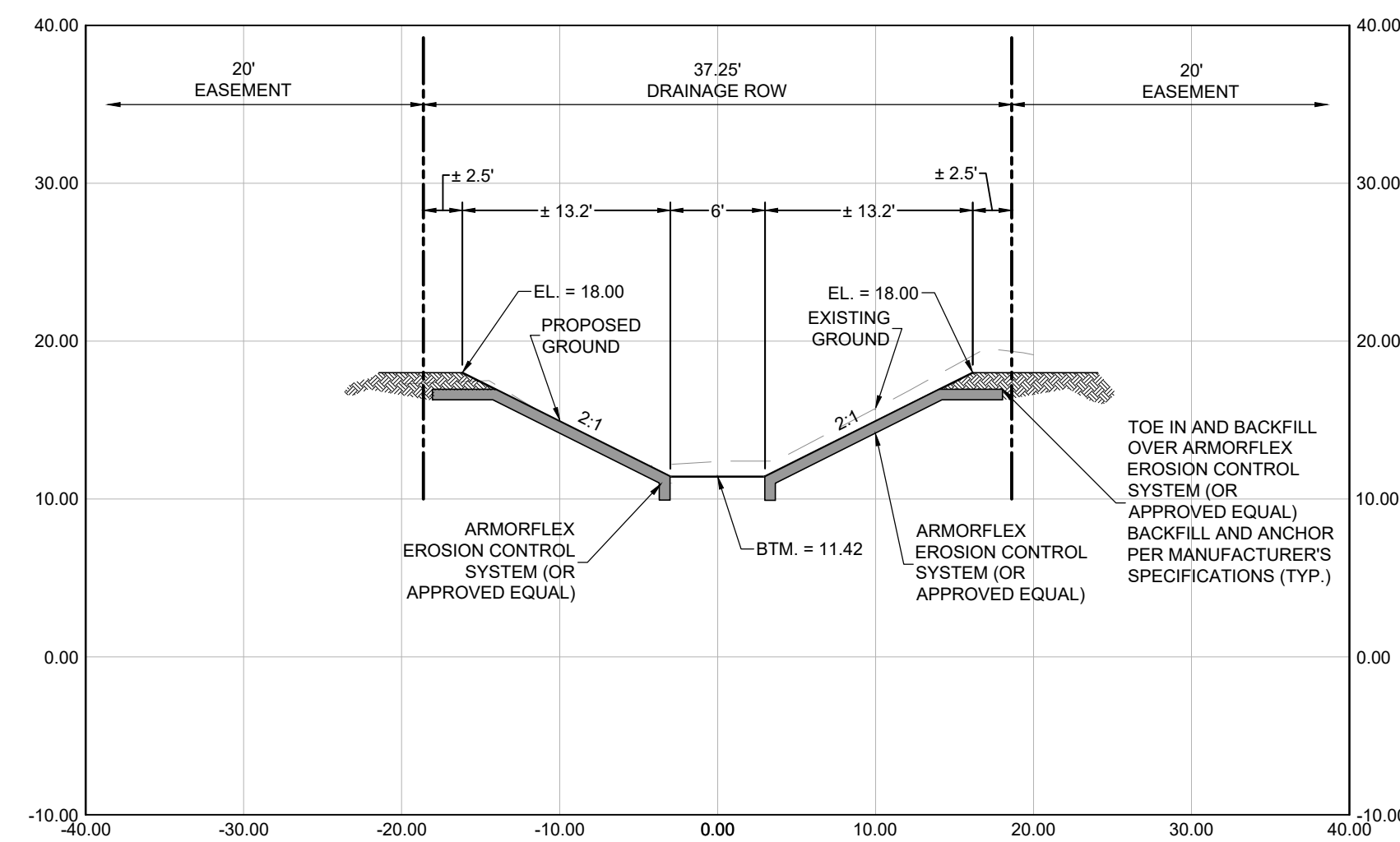
N-N STA: 13+75.00



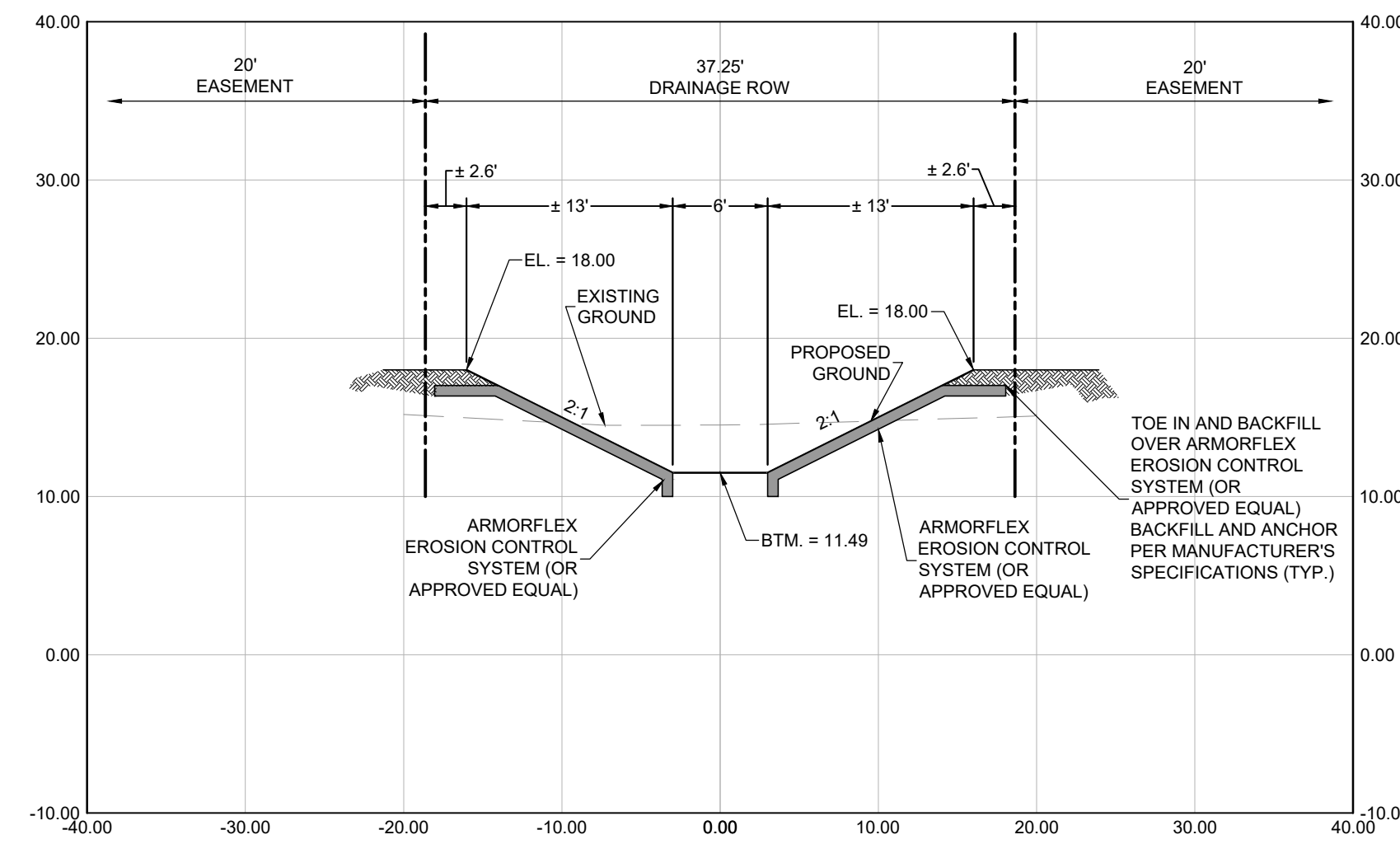
P-P STA: 14+75.00



R-R STA: 15+75.00



S-S STA: 16+75.00



T-T STA: 17+75.00

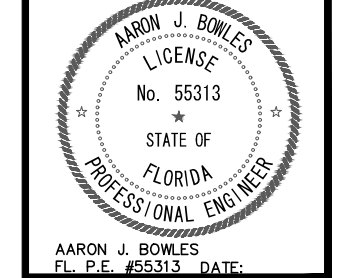
NO.	REVISIONS	DATE
1	DESIGNED	18-0197
2	DRAWN	RM
3	CHECKED	GWR
4	DATE	JULY 2018
5	DATE	JULY 2018
6	DATE	JULY 2018
7	SCALE	AS NOTED

1835 - 20TH STREET
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 MELBOURNE, FL - PH (321) 253-1510
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CROSS SECTIONS

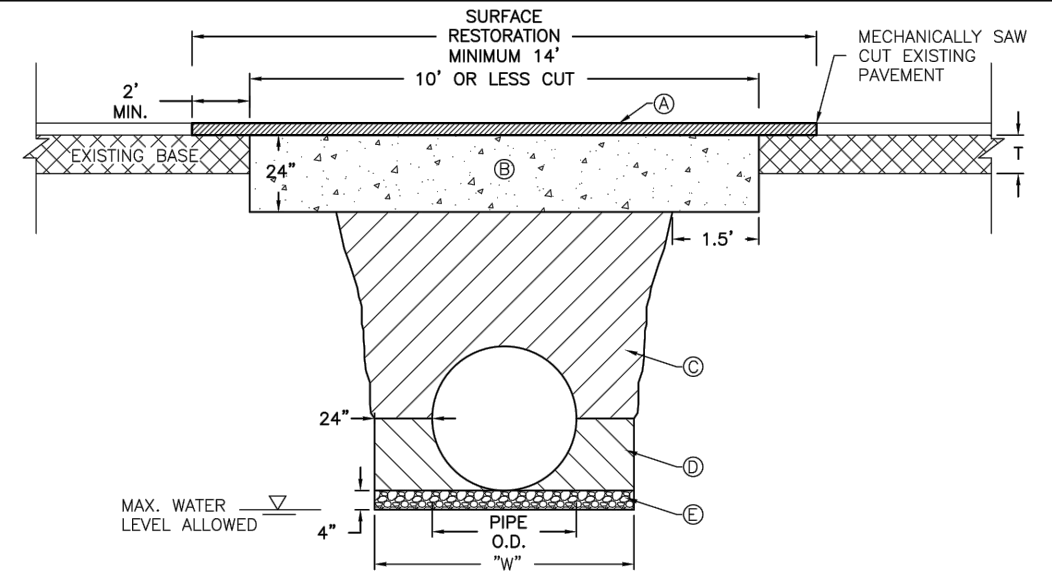
STONECROP CANAL
 REHAB DESIGN
 CITY OF SEBASTIAN
 FLORIDA



SHEET
C8
 OF 10
 18-0197



17-0116

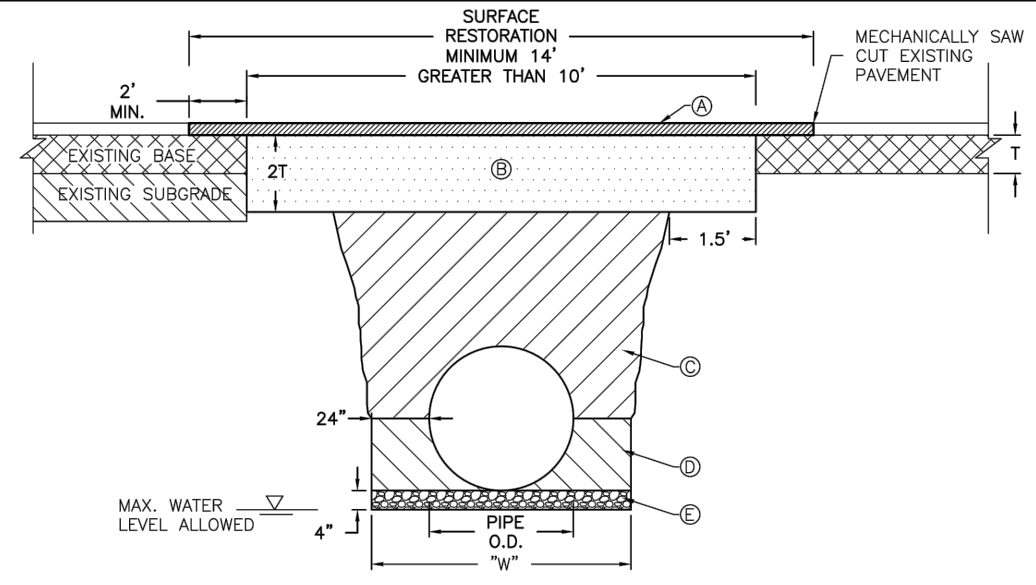


STORMWATER/UTILITY PIPE INSTALLATION

- NOTES:
- UTILITY CONSTRUCTION WITHIN THE RIGHT-OF-WAY SHALL COMPLY WITH COUNTY CODE CHAPTER 312.
 - ALL INSTALLATIONS LESS THAN 12" DIAMETER AND NON-GRAVITY UTILITIES SHALL BE BY DIRECTIONAL BORE.
 - PARTIAL LANE CUTS REQUIRE A MINIMUM OF SINGLE LANE RESTORATION.
 - WHERE SOIL CONDITIONS CANNOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE APPROVED METHOD OF CONSTRUCTION FOR APPROVAL BY THE COUNTY ENGINEER OR DESIGNER PRIOR TO INSTALLATION.
 - SHORING MAY BE REQUIRED IN ACCORDANCE WITH ALL INDUSTRY STANDARDS.
 - NEW SURFACING MATERIALS SHALL BE CONSISTENT OR BETTER THAN EXISTING CONDITIONS AND SHALL HAVE BUTT JOINTS (2.5 INCH MINIMUM THICKNESS).
 - ALL ROADWAY RESTORATION SHALL COMPLY WITH INDIAN RIVER COUNTY PUBLIC WORKS AND FOOT STANDARDS (LATEST EDITION).
 - MINIMUM TRENCH WIDTH "W" = PIPE O.D. PLUS 2'-0" ON EACH SIDE.
 - MINIMUM EXISTING PAVEMENT DEPTH OR PER COUNTY ROADWAY DESIGN CRITERIA DETAIL, WHICHEVER IS GREATER.
 - FLOWABLE FILL AS DEFINED AS NON-EXCAVATABLE IN ACCORDANCE WITH FOOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 121, WITH STRENGTH OF 125-300 PSI.
 - A.A.S.H.T.O. TYPE A-3 MATERIAL IN MAXIMUM 6" LIFTS COMPACTED AT 98% A.A.S.H.T.O. T-180.
 - A.A.S.H.T.O. TYPE A-3 MATERIAL IN MAXIMUM 4" LIFTS COMPACTED AT 98% A.A.S.H.T.O. T-180. EXCAVATABLE FLOWABLE FILL IS ALLOWED WITH PRIOR APPROVAL OF PROPOSED MATERIAL STRENGTH BY THE COUNTY ENGINEER OR DESIGNER.
 - 3/4" DIAMETER, WASHED BEDDING ROCK OR PEA ROCK WHERE UNSUITABLE BEDDING MATERIAL EXISTS OR IF DENWATERING IS REQUIRED. SUITABLE MATERIAL IS DEFINED AS STABLE GRANULAR MATERIAL FREE OF ROCK FORMATION, OTHER FOREIGN FORMATIONS AND CONSTRUCTED TO UNIFORM GRADE AND LINE.

AGENCY: INDIAN RIVER COUNTY, FL
PUBLIC WORKS DEPT./ENGINEERING DIV.
DATE: XX/XX/2016
SCALE: NTS
DETAIL: 2B OF 17

TRENCH (PAVED AREAS)
10' OR LESS CUT

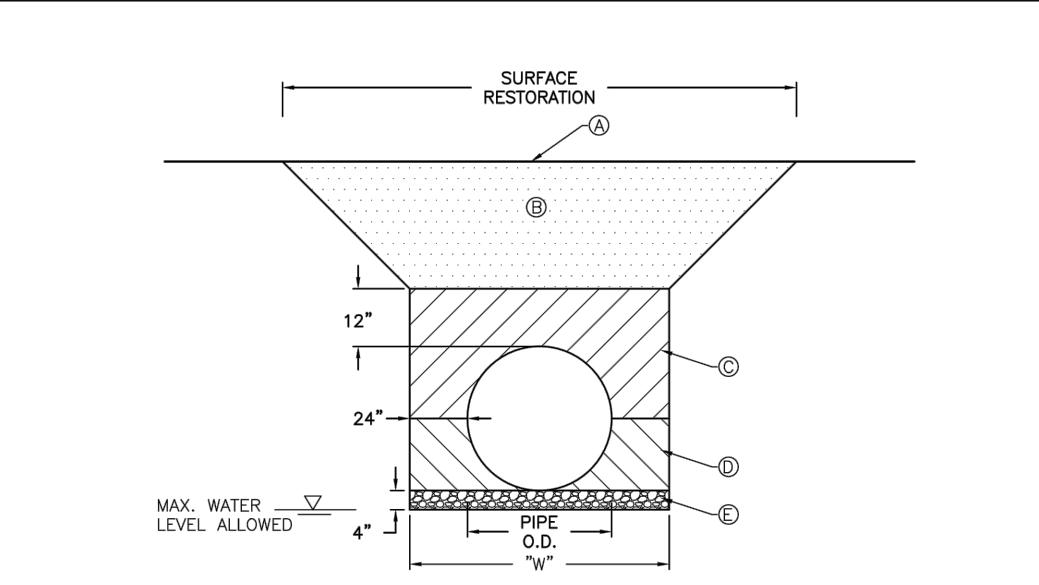


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 - SHORING MAY BE REQUIRED IN ACCORDANCE WITH ALL INDUSTRY STANDARDS.
 - NEW SURFACING MATERIALS SHALL BE CONSISTENT OR BETTER THAN EXISTING CONDITIONS AND SHALL HAVE BUTT JOINTS (2.5 INCH MINIMUM THICKNESS).
 - ALL ROADWAY RESTORATION SHALL COMPLY WITH INDIAN RIVER COUNTY PUBLIC WORKS AND FOOT STANDARDS (LATEST EDITION).
 - MINIMUM TRENCH WIDTH "W" = PIPE O.D. PLUS 2'-0" ON EACH SIDE.
 - MINIMUM EXISTING PAVEMENT DEPTH OR PER COUNTY ROADWAY DESIGN CRITERIA DETAIL, WHICHEVER IS GREATER.
 - REPLACEMENT LIMEROCK BASE WITH THICKNESS (2") PER COUNTY ROADWAY DESIGN CRITERIA DETAIL INSTALLED WITH MAXIMUM 6" LIFTS, MINIMUM 12" FINISHED THICKNESS. COMPACTION BY USE OF A 12 TON COMPACTION ROLLER.
 - A.A.S.H.T.O. TYPE A-3 MATERIAL IN MAXIMUM 6" LIFTS COMPACTED AT 98% A.A.S.H.T.O. T-180.
 - A.A.S.H.T.O. TYPE A-3 MATERIAL IN MAXIMUM 4" LIFTS COMPACTED AT 98% A.A.S.H.T.O. T-180. EXCAVATABLE FLOWABLE FILL IS ALLOWED WITH PRIOR APPROVAL OF PROPOSED MATERIAL STRENGTH BY THE COUNTY ENGINEER OR DESIGNER.
 - 3/4" DIAMETER, WASHED BEDDING ROCK OR PEA ROCK WHERE UNSUITABLE BEDDING MATERIAL EXISTS OR IF DENWATERING IS REQUIRED. SUITABLE MATERIAL IS DEFINED AS STABLE GRANULAR MATERIAL FREE OF ROCK FORMATION, OTHER FOREIGN FORMATIONS AND CONSTRUCTED TO UNIFORM GRADE AND LINE.

AGENCY: INDIAN RIVER COUNTY, FL
PUBLIC WORKS DEPT./ENGINEERING DIV.
DATE: XX/XX/2016
SCALE: NTS
DETAIL: 2A OF 17

TRENCH (UNPAVED AREAS)
GREATER THAN 10' CUT

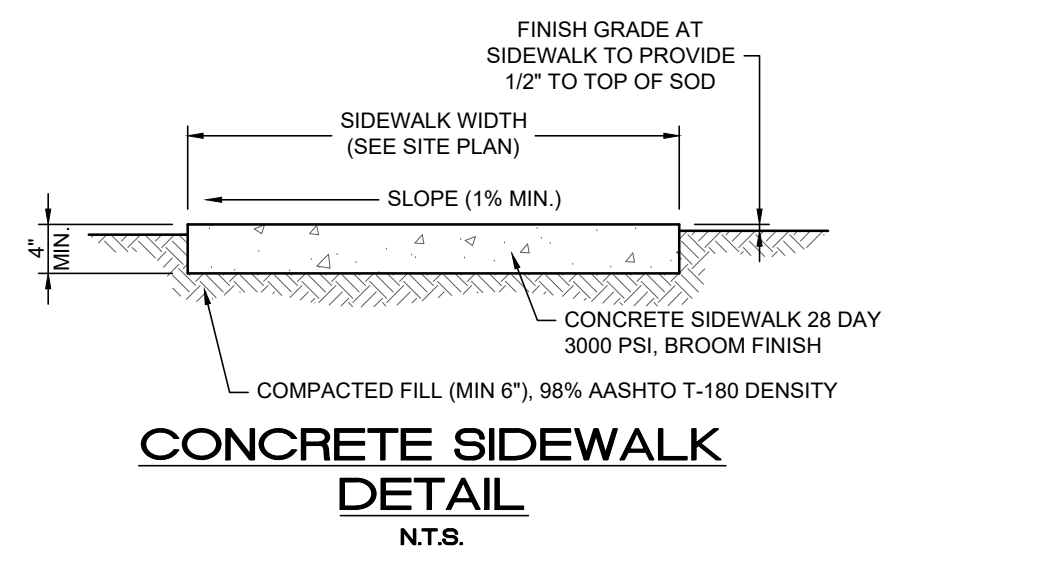


STORMWATER/UTILITY PIPE INSTALLATION

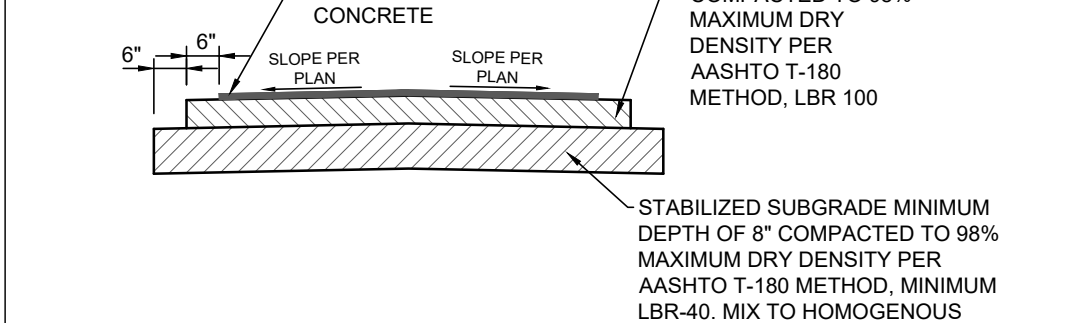
- NOTES:
- UTILITY CONSTRUCTION WITHIN THE RIGHT-OF-WAY SHALL COMPLY WITH COUNTY CODE CHAPTER 312.
 - WHERE SOIL CONDITIONS CANNOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE METHOD OF CONSTRUCTION FOR APPROVAL BY COUNTY ENGINEER OR DESIGNER PRIOR TO INSTALLATION.
 - SHORING MAY BE REQUIRED IN ACCORDANCE WITH ALL INDUSTRY STANDARDS.
 - MINIMUM TRENCH WIDTH "W" = PIPE O.D. PLUS 2'-0" ON EACH SIDE.
 - MATCH EXISTING GROUND WITH SMOOTH, LEVEL TRANSITION.
 - UNPAVED ROADS IN ROW SHALL CONSIST OF 8" LIMEROCK BASE OR COQUINA SHELL IN A MINIMUM OF (2) 4" LIFTS WITH A MINIMUM LBR OF 100 COMPACTED TO 98% MAXIMUM DENSITY PER A.A.S.H.T.O. T-180. WHEN INSTALLATION IS NOT LOCATED IN A TRAVEL LANE, RESTORATION SHALL BE ACCORDING TO G BELOW WITH SOO LAD WITHIN THREE DAYS OF FINAL GRADING.
 - A.A.S.H.T.O. TYPE A-3 MATERIAL IN MAXIMUM 6" LIFTS COMPACTED AT 98% A.A.S.H.T.O. T-180.
 - A.A.S.H.T.O. TYPE A-3 MATERIAL IN MAXIMUM 4" LIFTS COMPACTED AT 98% A.A.S.H.T.O. T-180. EXCAVATABLE FLOWABLE FILL IS ALLOWED WITH PRIOR APPROVAL OF PROPOSED MATERIAL STRENGTH BY COUNTY ENGINEER OR DESIGNER.
 - 3/4" DIAMETER, WASHED BEDDING ROCK OR PEA ROCK WHERE UNSUITABLE BEDDING MATERIAL EXISTS OR DENWATERING IS REQUIRED. SUITABLE MATERIAL IS DEFINED AS STABLE GRANULAR MATERIAL, FREE OF ROCK FORMATION, OTHER FOREIGN FORMATIONS AND CONSTRUCTED TO UNIFORM GRADE AND LINE.

AGENCY: INDIAN RIVER COUNTY, FL
PUBLIC WORKS DEPT./ENGINEERING DIV.
DATE: XX/XX/2016
SCALE: NTS
DETAIL: 3 OF 17

TRENCH (UNPAVED AREAS)
GREATER THAN 10' CUT



CONCRETE SIDEWALK DETAIL



REGULAR DUTY FLEXIBLE PAVEMENT DETAIL

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL SITE CONDITIONS BEFORE STARTING CONSTRUCTION.
- ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.
- CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS BEFORE COMMENCING WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 72 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.
- NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
- ENGINEER SHALL BE NOTIFIED AT LEAST 72 HOURS IN ADVANCE FOR ANY INSPECTION.
- ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION UNLESS NOTED OTHERWISE.
- SOO ALL DISTURBED AREAS UPON COMPLETION.
- CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH THE PROJECT, THESE PLANS AND SPECIFICATIONS, AND ALL LOCAL, STATE AND FEDERAL AGENCY REQUIREMENTS FOR CONSTRUCTION OF THE PROPOSED IMPROVEMENTS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS FOR CONSTRUCTION.
- ALL EXCESS CONSTRUCTION MATERIAL AND WASTE TO BE HAULED OFF-SITE AND DISPOSED OF PROPERLY AT CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL TAKE EXTREME CAUTION WHEN EXCAVATING NEARBY EXISTING UTILITIES.
- CONTRACTOR SHALL INFORM ENGINEER OF ANY CONFLICT BEFORE ANY FURTHER WORK IS COMPLETED.
- ALL MATERIALS AND LABOR UNDER THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE CITY, COUNTY, WATER MANAGEMENT DISTRICT, FDEP AND THESE PLANS AND SPECIFICATIONS.
- MAINTENANCE OF TRAFFIC SHALL BE ACCORDING TO FDOT INDEXES.
- ALL APPROVED PERMIT CONDITIONS, INCLUDING BUT NOT LIMITED TO FDOT, FDEP, CITY AND COUNTY, SHALL BE MET BY CONTRACTOR PRIOR TO CERTIFICATION OF COMPLETION BY ENGINEER.

TECHNICAL SPECIFICATIONS

- MATERIALS**
- A.) DRAINAGE PIPING:
- ALL STORM PIPING SHALL MEET MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO COORDINATE WITH MANUFACTURER TO ENSURE PROPOSED PIPING DOES NOT REQUIRE ADDITIONAL INSTALLATION MATERIALS, INCLUDING BUT NOT LIMITED TO, STRAPPING, ANCHORING, BUOYANCY, ETC.
 - ALL JOINTS SHALL BE WRAPPED WITH FILTER FABRIC.
- B.) DRAINAGE STRUCTURES:
- ALL DRAINAGE STRUCTURES SHALL MEET SPECIFIC PLANNED USE AS DETERMINED BY THE DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY.
 - ALL CATCH BASINS, INLETS OR MAN-HOLE STRUCTURES SHALL BE OF PRECAST REINFORCED TYPE PURSUANT TO FDOT DESIGN STANDARDS, LATEST EDITION, UNLESS OTHERWISE APPROVED.
 - ALL STRUCTURES SHALL BE FREE OF DEFECTS SUCH AS CRACKING, HONEY COMBS AND EXPOSED STEEL REINFORCING INCLUDING BLEED THROUGH.
 - SHOP DRAWINGS SHALL BE SUBMITTED BEFORE ORDERING MATERIAL FOR PLANNED PROJECT. CORRESPONDING SHALL BE BETWEEN THE DESIGN ENGINEER AND THE LOCAL GOVERNING AGENCY AND IS THE RESPONSIBILITY OF THE CONTRACTOR.

CLEAN-UP
THE CONTRACTOR MUST PROVIDE CLEAN-UP OF EXCESS CONSTRUCTION MATERIAL UPON COMPLETION OF THE PROJECT. THE SITE MUST BE LEFT IN A NEAT, CLEAN, GRADED CONDITION.

DRAINAGE SPECIFICATIONS
STORM INLETS AND MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD DESIGN CRITERIA OF THE FLORIDA DEPARTMENT OF TRANSPORTATION, LATEST EDITION. PRECAST CONCRETE MANHOLES AND STORM INLETS MAY BE USED UPON THE ENGINEER'S APPROVAL OF THE MANUFACTURER'S SHOP DRAWINGS.

CONCRETE
UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 3000 PSI. ALL WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE AND THE APPLICABLE BUILDING CODES HAVING JURISDICTION IN THE AREA.

GROUNDWATER
GROUND WATER MAY BE ENCOUNTERED ON SITE. CONTRACTOR TO PLAN ACCORDINGLY.

RECORD DRAWINGS
THE CONTRACTOR SHALL KEEP AND MAINTAIN RECORD DRAWINGS ON THE PROJECT SITE AT ALL TIMES WHICH SHALL BE ANNOTATED BY THE CONTRACTOR DEPICTING ANY CHANGES MADE IN THE FIELD WHICH DIFFER FROM THE CONTRACT DRAWINGS. RECORD DRAWINGS SHALL INCLUDE, BUT NOT LIMITED TO, INVERT AND TOP ELEVATIONS OF CULVERTS AND INLET STRUCTURES. CONTRACTOR SHALL SUBMIT COMPLETE AND FINAL RECORD DRAWINGS TO ENGINEER UPON COMPLETION OF PROJECT AND PRIOR TO FINAL INSPECTION AND FINAL PAYMENT.

ARMORFLEX CLASS 30 SMALL STANDARD TERMINATION DETAILS

CT1 = CT2

ARMORFLEX CLASS 30 SMALL STANDARD TERMINATION DETAILS

CT2 = CT1

NYLOPLAST YARD DRAIN
N.T.S.

8" DRAIN BASIN

8" DUCTILE IRON GRATE

CASTINGS ARE RATED FOR LIGHT WHEEL LOAD TRAFFIC

QUALITY: MATERIAL SHALL CONFORM TO ASTM A48 - CLASS 30B

PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT

O-Series® Precast Details

BRIDGE PLAN

BRIDGE ISOMETRIC

BRIDGE SECTION

DESIGN SPECIFICATIONS

ASHTO Specifications for Highway Bridges - Section 16.8

ASHTO Specifications for Highway Bridges - Section 13.14

MANUFACTURING SPECIFICATIONS

ASTM C1304

O-Series Precast Details

STRIP FOOTING

BASE SLAB

WINGWALL DETAIL

FOOTING DETAILS

PEDESTAL WALL FOOTING

MULTI CELL PER FOOTING

DESIGN SPECIFICATIONS

ASHTO Specifications for Highway Bridges - Section 16.8

ASHTO Specifications for Highway Bridges - Section 13.14

MANUFACTURING SPECIFICATIONS

ASTM C1304

DATE	REVISIONS	JOB NO.	DESIGNED	DRAWN	CHECKED	DATE ISSUED	SCALE
18-0197	1	18-0197	RM	GWR	ABJ	JULY 2018	AS NOTED
2	2						
3	3						
4	4						
5	5						
6	6						
7	7						

1835 - 20TH STREET
VERO BEACH, FL 32960
PH: (772) 569-0035
FX: (772) 778-3617
MELBOURNE, FL - PH (321) 253-1510
FT. PIERCE, FL - PH (772) 468-9095
STUART, FL - PH (772) 266-9795

MBV ENGINEERING, INC.
ASSOCIATES
CONSULTING ENGINEERING & CA #3728

DETAILS AND SPECIFICATIONS

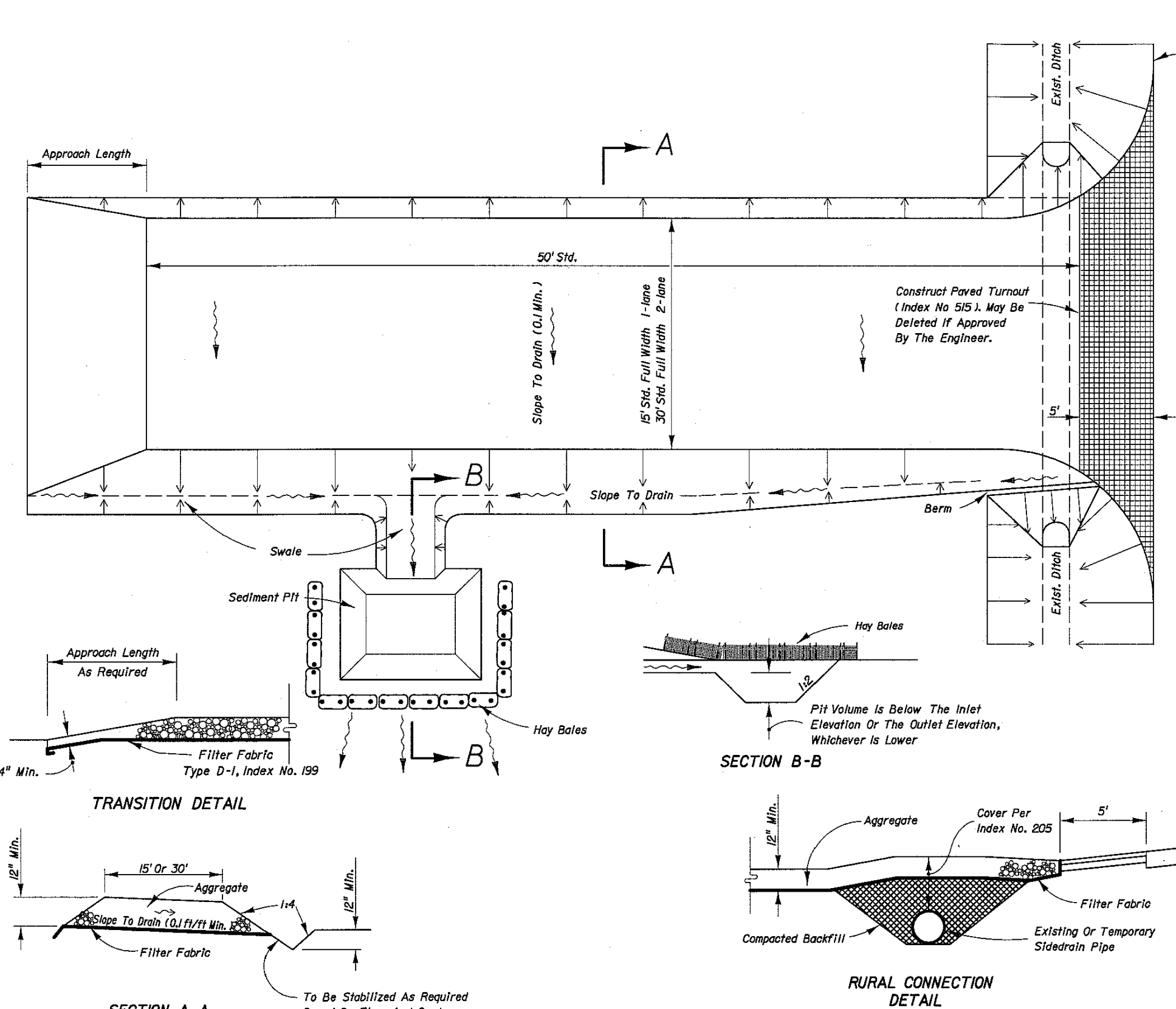
STONECROP CANAL REHAB DESIGN

CITY OF SEBASTIAN FLORIDA

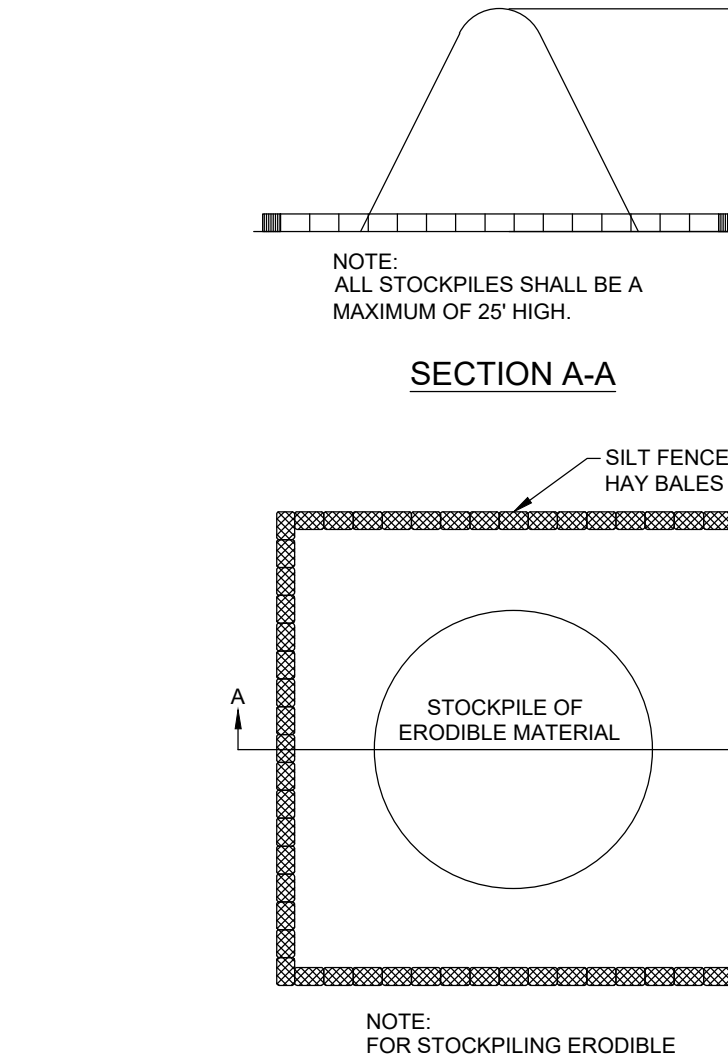
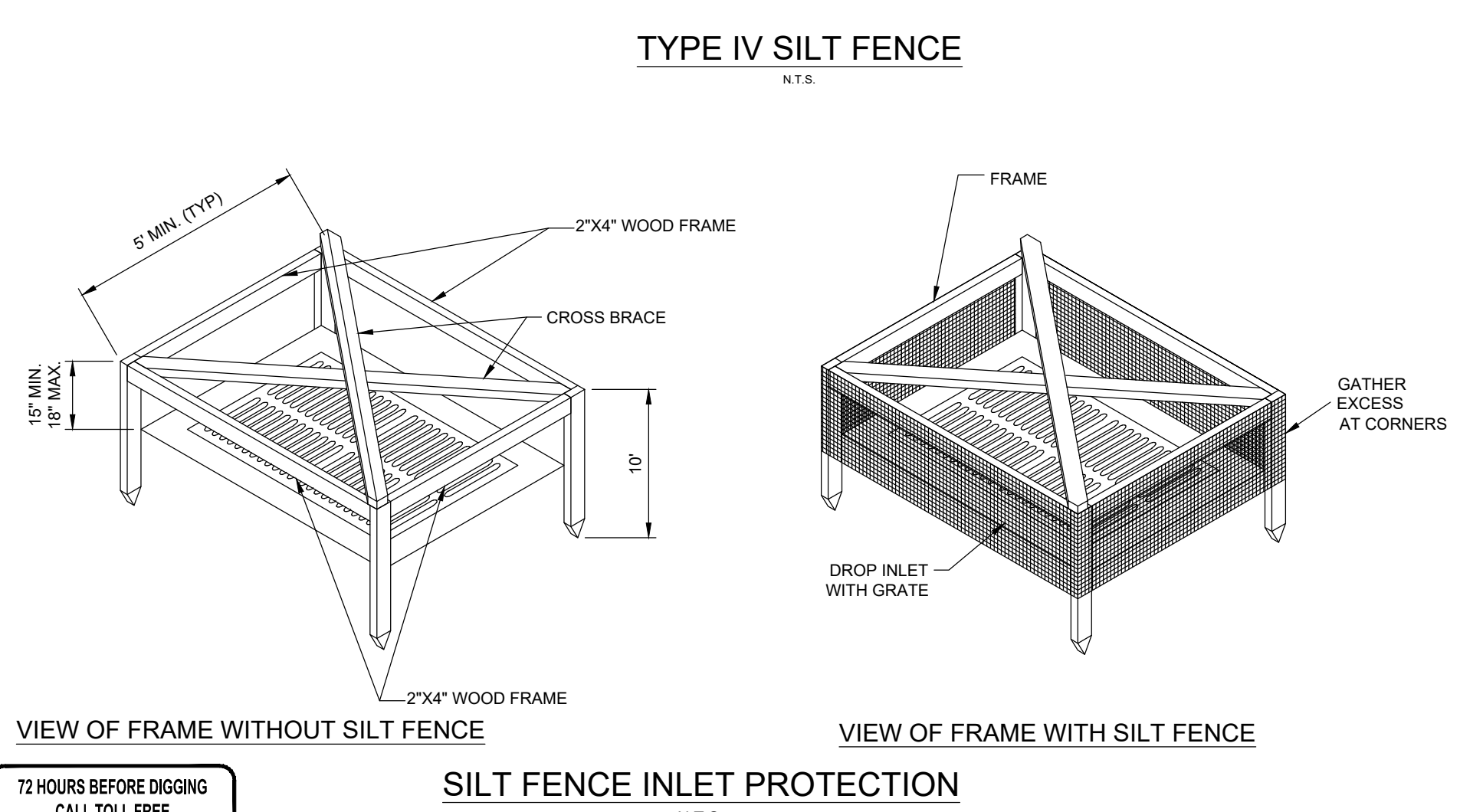
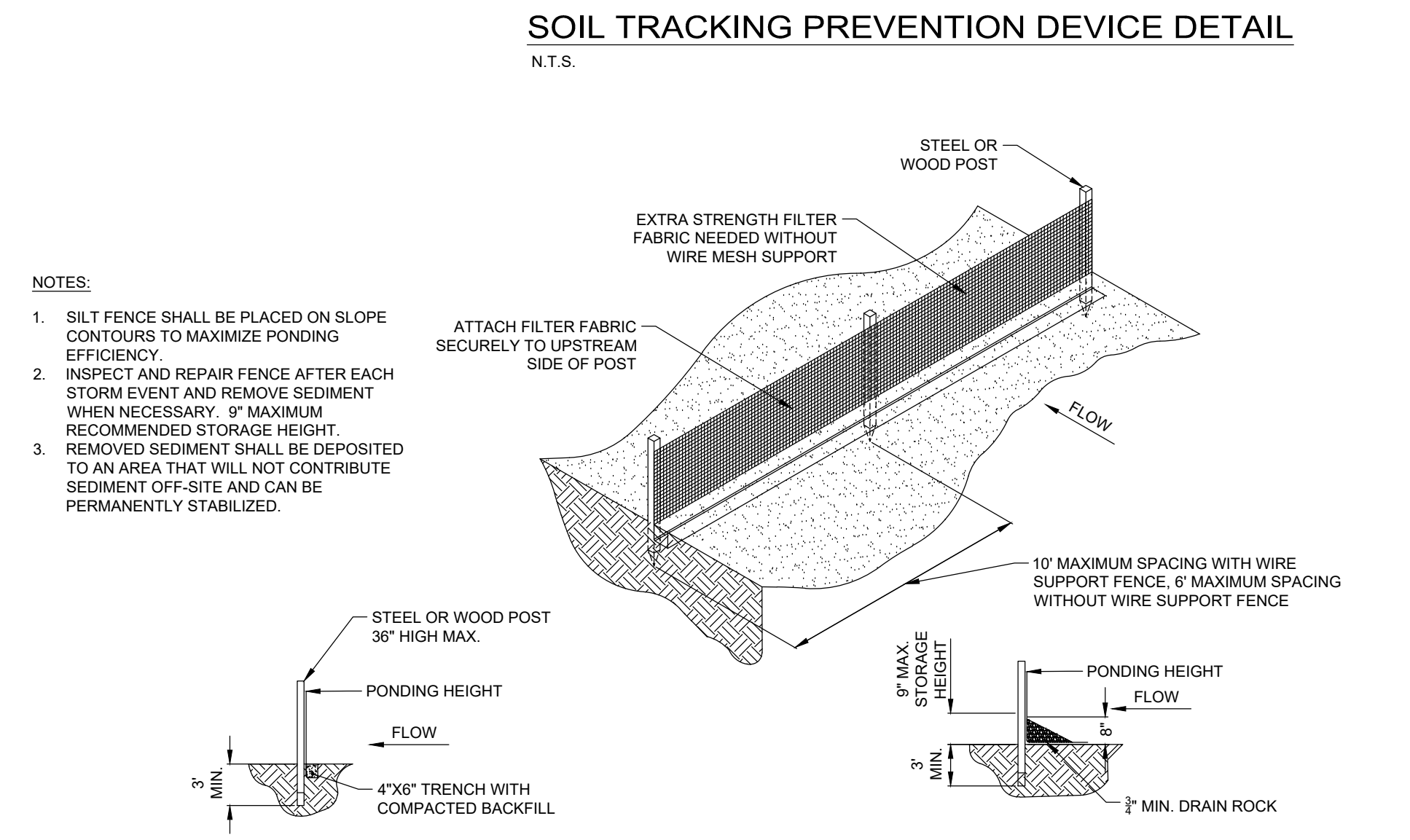
PROFESSIONAL ENGINEER

AARON J. BOWLES
LICENSE # 55313
STATE OF FLORIDA

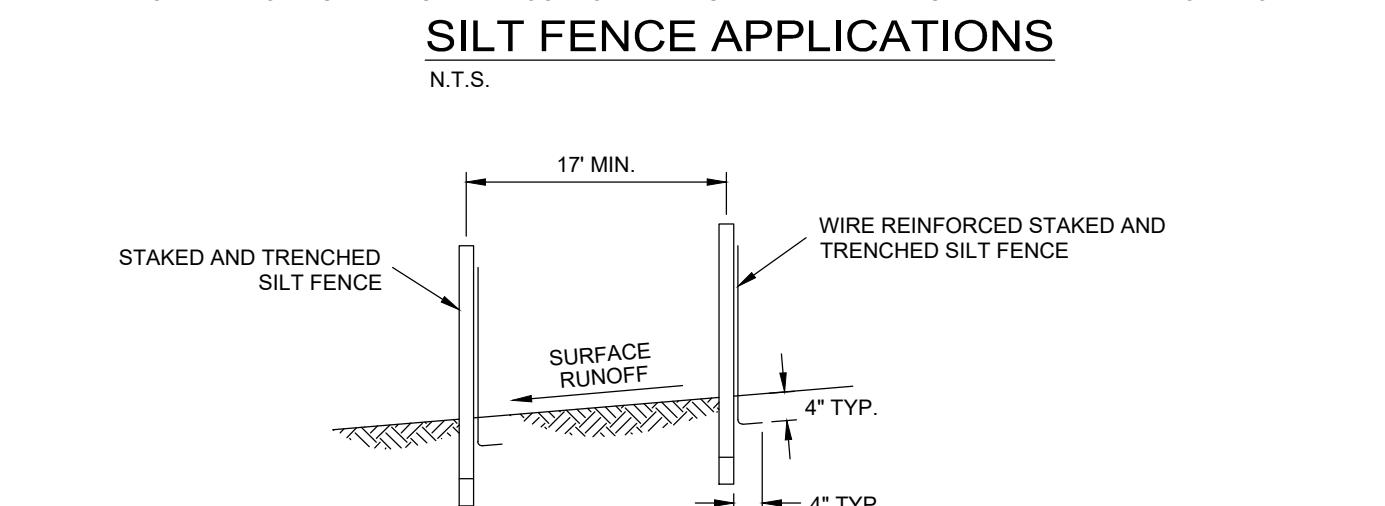
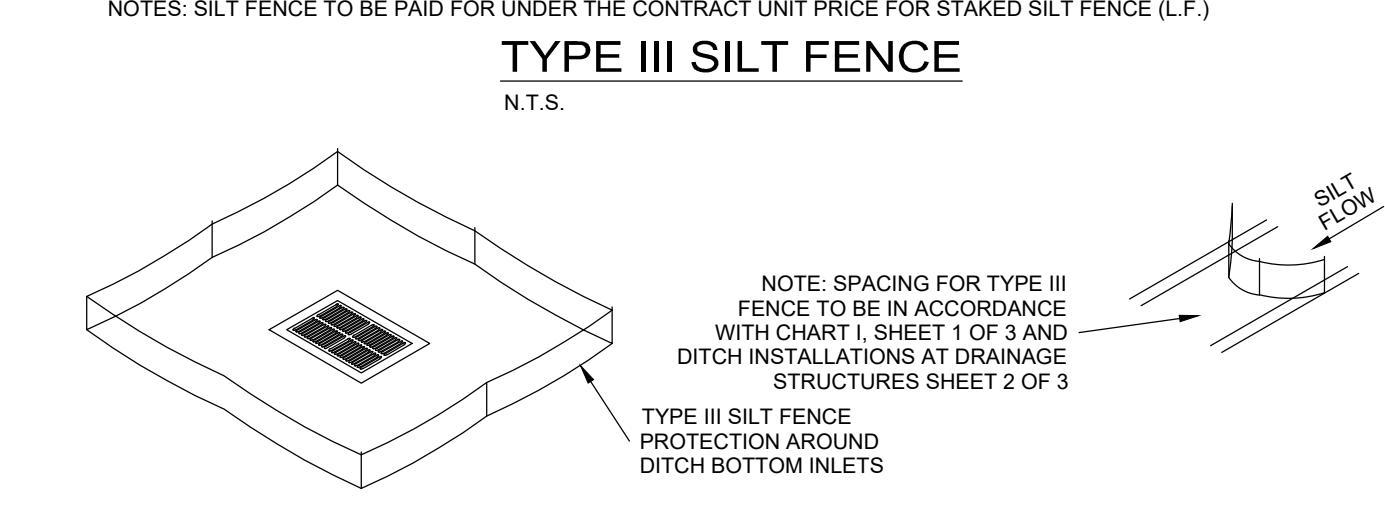
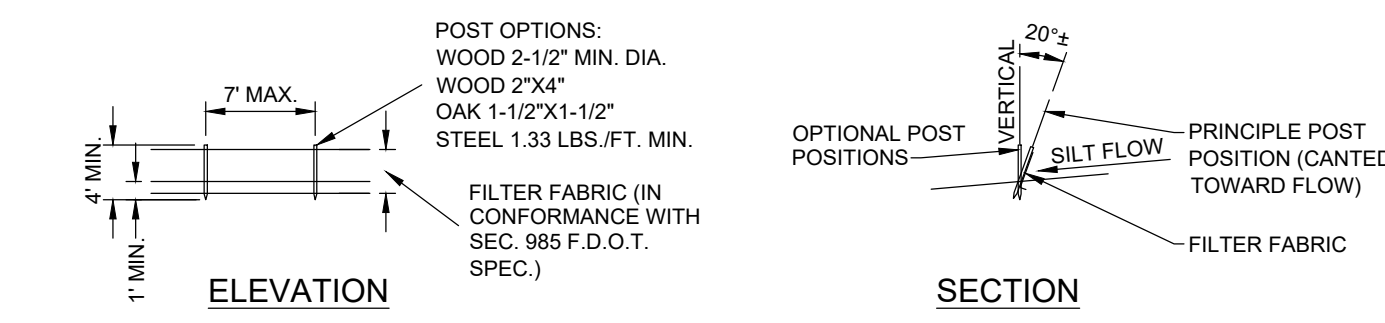
SHEET **C9**
OF 10
18-0197



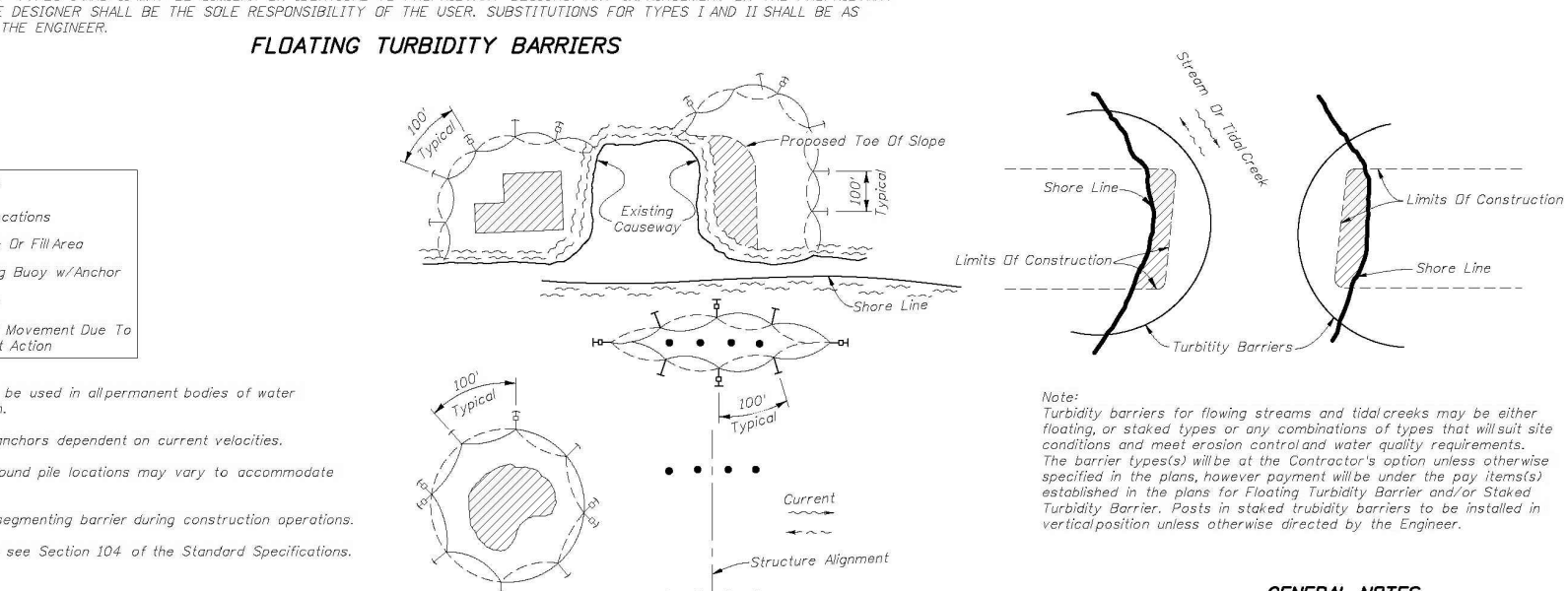
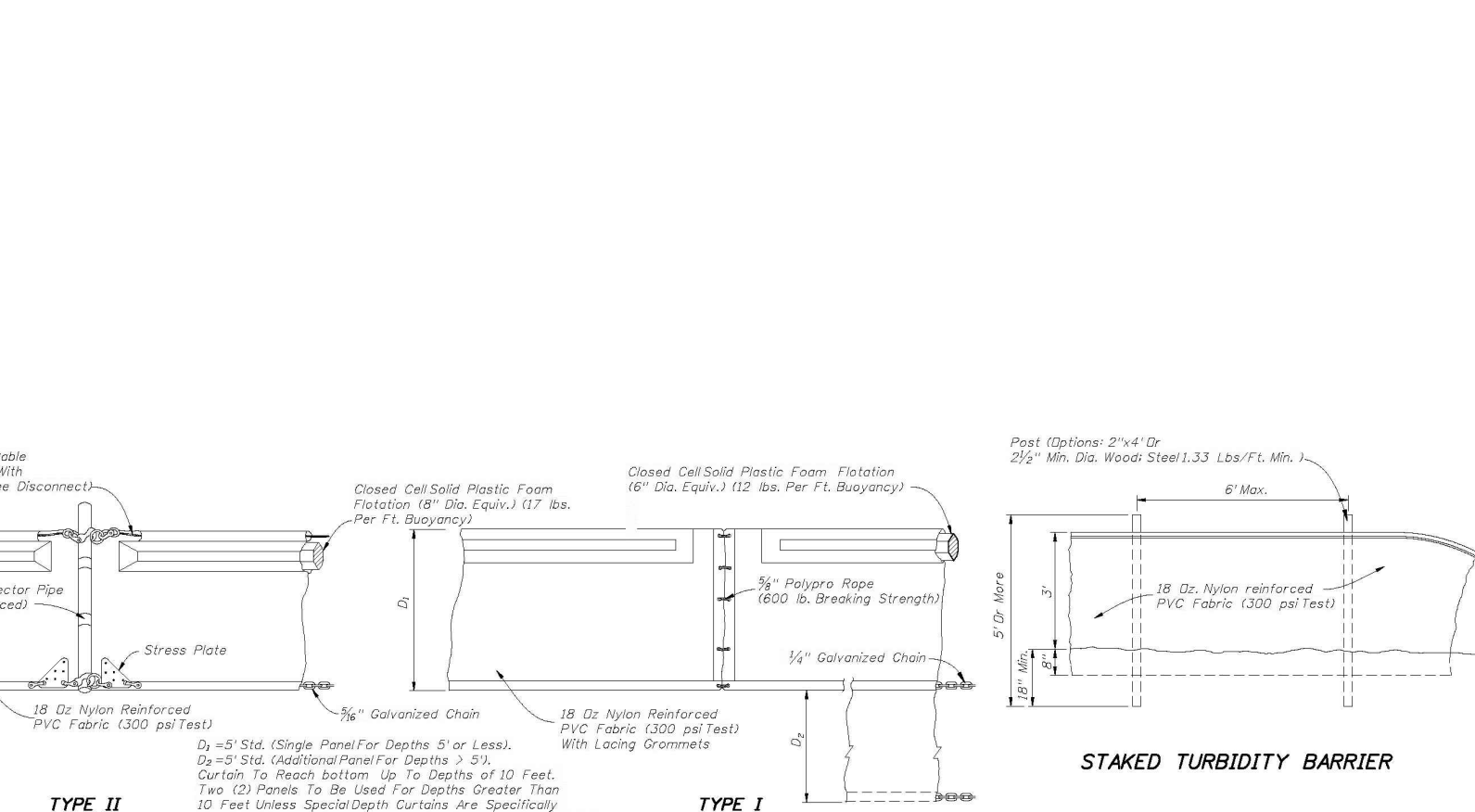
- GENERAL NOTES**
- A Soil Tracking Prevention Device (STPD) shall be constructed at locations designated by the engineer for points of ingress from undeveloped areas of the project to public roads where off-site tracking of soil occurs. Traffic from unimproved areas of the construction project shall be directed through a STPD. Barriers, flagging, or other positive means shall be used as required to limit and direct vehicular ingress across the STPD.
 - The Contractor may propose an alternative technique to minimize off-site tracking of sediment. The alternative must be reviewed and approved by the Engineer prior to its use.
 - All materials rolled, dragged, or tracked onto public roads (including the STPD aggregate and construction area) shall be removed daily or more frequently if so directed by the Engineer.
 - Aggregates shall be as described in Section 903 excluding 903-2.3. Aggregates shall be "DOT" size #1. If this size is not available, the next available smaller size aggregate may be substituted with the approval of the Engineer. Sizes containing excessive sand aggregate will track off the project and are unacceptable.
 - The sediment pit should provide a retention volume of 3600 cubic feet/acre of surface area draining to the pit. When the STPD is installed from other drainage areas, the following pit volumes will satisfy this requirement:
 $15' \times 50' \times 20' = 15,000 \text{ ft}^3$
 $30' \times 50' \times 20' = 30,000 \text{ ft}^3$
 As an option to the sediment pit, the width of the swale bottom can be increased to obtain the volume. When the sediment pit or swale volume has been reduced to one half, it shall be cleaned. When a swale is used, hay bales or silt fence shall be placed along the entire length.
 - The swale drain draining the STPD shall have a 0.2% minimum and a 1% maximum grade along the STPD and to the sediment pit.
 - Waters and sediments are not required when the sidewalk pipe satisfies the clear zone requirements.
 - The STPD shall be maintained in a condition that will allow it to perform its function. To prevent off-site tracking, the STPD shall be raised early when it is used to separate unimproved areas from the site. Additional stabilization of the vehicular route leading to the STPD may be required to limit the soil tracking.
 - A STPD shall be paid for under the contract unit price for Soil Tracking Prevention Device, EA. The unit price shall constitute full compensation for construction, maintenance, replacement of materials, repair, and restoration of the area utilized for the STPD, including but not limited to excavation, grading, temporary pipe (including MSW when required), filter fabric, aggregate, paved turnout (including asphalt and base construction), ditch stabilization, approach route, vegetation, sediment report and disposal, water, rinsing and cleaning of the STPD and cleaning of public roads, vegetation and etc. Hay bales shall be paid for under the contract unit price for Hay or Straw Bales, EA. Silt fence shall be paid for under the contract unit price for Staked Silt Fence.
 - The nominal size of a standard STPD is 15' x 50' unless otherwise shown in the plans. If the volume of entering and exiting vehicles warrants a 30' width STPD, it shall be approved by the Engineer. When a double width (30') STPD is used, the pay quantity shall be 2' for each section.



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- EROSION AND SEDIMENTATION CONTROL NOTES**
- CONSTRUCTION ACTIVITIES CAN RESULT IN THE GENERATION OF SIGNIFICANT AMOUNTS OF POLLUTANTS WHICH MAY REACH SURFACE OR GROUND WATERS. ONE OF THE PRIMARY POLLUTANTS OF SURFACE WATERS IS SEDIMENT DUE TO EROSION. EXCESSIVE QUANTITIES OF SEDIMENT WHICH REACH WATER BODIES OF FLOOD PLAINS HAVE BEEN SHOWN TO ADVERSELY AFFECT THEIR PHYSICAL, BIOLOGICAL AND CHEMICAL PROPERTIES. TRANSPORTED SEDIMENT CAN OBSTRUCT STREAM CHANNELS, REDUCE HYDRAULIC CAPACITY OF WATER BODIES OF FLOOD PLAINS, REDUCE THE DESIGN CAPACITY OF CULVERTS AND OTHER WORKS, AND ELIMINATE BENTHIC INVERTEBRATES AND FISH SPAWNING SUBSTRATES BY SILTATION. EXCESSIVE SUSPENDED SEDIMENTS REDUCE LIGHT PENETRATION AND THEREFORE, REDUCE PRIMARY PRODUCTIVITY.
- MINIMUM STANDARDS**
- SEDIMENT BASIN AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UNDESIRABLE LAND DISTURBANCE TAKES PLACE.
 - ALL SEDIMENT CONTROL MEASURES ARE TO BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. ON BALANCE OF SITE, PERIMETER SEDIMENT BARRIERS SHALL BE CONSTRUCTED TO PREVENT SEDIMENT OR TRASH FROM FLOWING OR FLOATING ON TO ADJACENT PROPERTIES.
 - PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN UNDISTURBED FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT UNDISTURBED FOR MORE THAN ONE YEAR.
 - DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
 - A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE REVIEWER, IS UNIFORM MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
 - STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
 - SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE SEDIMENT BASIN SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE ANTICIPATED SEDIMENT LOADING FROM THE LAND-DISTURBING ACTIVITY. THE OUTFALL DEVICE OR SYSTEM DESIGN SHALL TAKE INTO ACCOUNT THE TOTAL DRAINAGE AREA FLOWING THROUGH THE DISTURBED AREA TO BE SERVED BY THE BASIN.
 - AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE CORRECTED IMMEDIATELY.
 - CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
 - WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
 - SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAIN SYSTEM, DITCH OR CHANNEL. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
 - BEFORE TEMPORARY OR NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
 - WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COVERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
 - WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES, A TEMPORARY STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
 - THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
 - PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES MUST BE PROVIDED TO ENSURE INTENDED PURPOSE IS ACCOMPLISHED. THE DEVELOPER, OWNER AND/OR CONTRACTOR SHALL BE CONTINUALLY RESPONSIBLE FOR ALL SEDIMENT LEAVING THE PROPERTY. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
 - UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
 - NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
 - EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
 - EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
 - RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
 - WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY TRACKING ONTO THE PAVED SURFACE, WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE WITH CURBS AND GUTTERS. THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL SUBDIVISION LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
 - ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED. IN THE OPINION OF THE REVIEWER, DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
 - PROPERTIES AND WATERWAYS DOWNSTREAM FROM CONSTRUCTION SITE SHALL BE PROTECTED FROM SEDIMENT DISPOSITION AND EROSION.
 - PHASED PROJECTS SHOULD BE CLEARED IN CONJUNCTION WITH CONSTRUCTION OF EACH PHASE.
 - EROSION CONTROL DESIGN AND CONSTRUCTION SHALL FOLLOW THE REQUIREMENTS IN INDEX NOS. 104 AND 105 OF FOOT ROADWAY AND TRAFFIC DESIGN STANDARDS.
 - THE REVIEWER MAY APPROVE MODIFICATIONS OR ALTER PLANS TO THESE EROSION CONTROL CRITERIA DUE TO SITE SPECIFIC CONDITIONS.



TURBIDITY BARRIER APPLICATIONS
N.T.S.

STONECROP CANAL REHAB DESIGN

EROSION CONTROL DETAILS

CITY OF SEBASTIAN

FLORIDA

PROFESSIONAL ENGINEER
 ARON J. BOWLES
 LICENSE NO. 55313
 STATE OF FLORIDA

SHEET C10
OF 10
18-0197

DATE	REVISIONS	JOB NO.	DESIGNED	DRAWN	CHECKED	DATE ISSUED	SCALE
18-0197 <td>1</td> <td>1835 - 20TH STREET VERO BEACH, FL 32960 <td>RM <td>GWR <td>JULY 2018 <td></td> <td></td> </td></td></td></td>	1	1835 - 20TH STREET VERO BEACH, FL 32960 <td>RM <td>GWR <td>JULY 2018 <td></td> <td></td> </td></td></td>	RM <td>GWR <td>JULY 2018 <td></td> <td></td> </td></td>	GWR <td>JULY 2018 <td></td> <td></td> </td>	JULY 2018 <td></td> <td></td>		
	2	PH. (772) 569-0035 <td></td> <td></td> <td></td> <td></td> <td></td>					
	3	FX. (772) 778-3617 <td></td> <td></td> <td></td> <td></td> <td></td>					
	4	MELBOURNE, FL - PH (321) 253-1510 <td></td> <td></td> <td></td> <td></td> <td></td>					
	5	FT. PIERCE, FL - PH (772) 468-9045 <td></td> <td></td> <td></td> <td></td> <td></td>					
	6	STUART, FL - PH (772) 266-9795 <td></td> <td></td> <td></td> <td></td> <td></td>					
	7	ASSOCIATES CONSULTING ENGINEERING & CA #3728 <td></td> <td></td> <td></td> <td></td> <td></td>					