REVISIONS

No.	DATE	REVISION	APPROVED

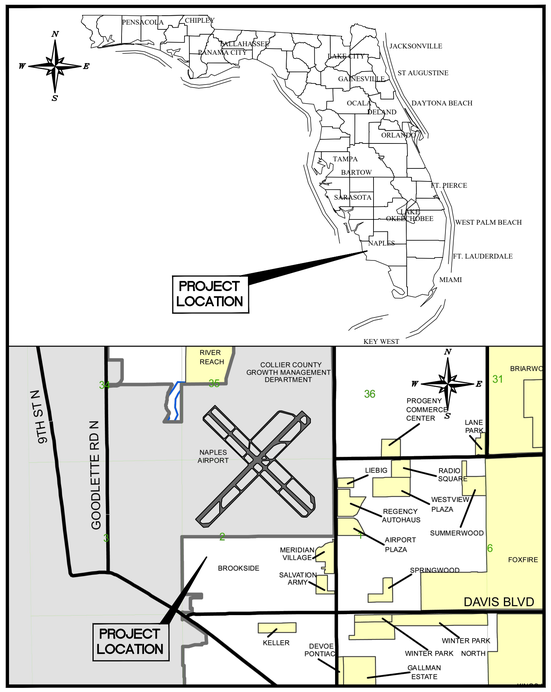
PLANS FOR
HARBOR AND HOLIDAY LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1

PART OF SECTION 2, TOWNSHIP 50 S, RANGE 25 E,
COLLIER COUNTY, FLORIDA

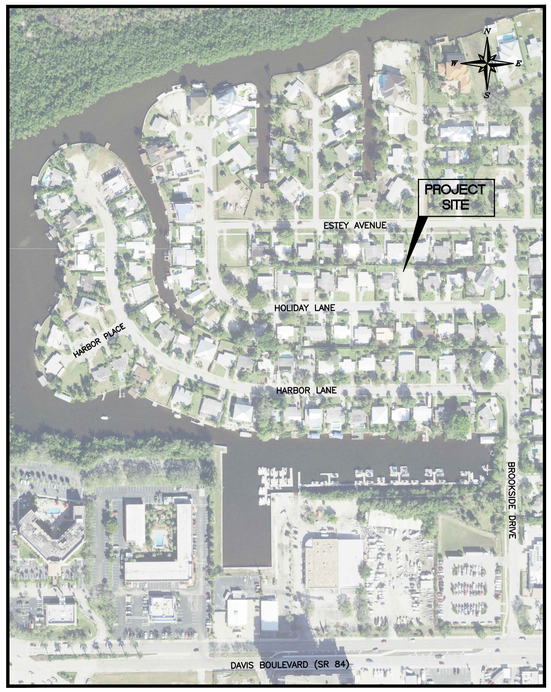
PREPARED FOR :

GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM
MANAGEMENT DIVISION, STORMWATER SECTION

2685 SOUTH HORSESHOE DRIVE, NAPLES, FL 34104
(239) 252-5736



LOCATION MAP



SITE MAP

REFERENCE BROOKSIDE
HARBOR LANE - HOLIDAY LANE
SECTION TOPOGRAPHY SURVEY
PRODUCED BY HOLE MONTES, INC.
DATED 5/13/21

CALL 48 HOURS BEFORE YOU DIG
811
IT'S THE LAW! DIAL 811
Know what's **below.** **Call** before you dig.
SUNSHINE STATE ONE CALL OF FLORIDA, INC.

PROPERTY IDENTIFICATION

BROOKSIDE SUBDIVISION, UNIT NO. 3, PLAT NO. 2 (PB3, PG 92)

HARBOR LANE, HARBOR PLACE, HOLIDAY LANE, ESTEY AVENUE AND BROOKSIDE LANE RIGHT OF WAY AND EXISTING DRAINAGE EASEMENTS

PROJECT INFORMATION

CONTRACT NO. 18-7432-CE
COLLIER COUNTY PROFESSIONAL SERVICES
ARCHITECTURAL AND ENGINEERING STORMWATER
STUDY, PLANNING AND/OR DESIGN #103-172929

STORMWATER MANAGEMENT SECTION
2685 SOUTH HORSESHOE DRIVE, SUITE 103
NAPLES, FL 34104
PROJECT MANAGER: TIMOTHY PENTON
WORK ORDER ID: 5665

12/12/2024:Z:\Shared\P\024-00-007 Holiday and Harbor Redesign & Construction Services\02_Constuction Plans\Rev00\02000017C01_CS.dwg:Miguel.Medrano

ROBAU
a Bowman company

Collier County

2770 Horseshoe Drive South, Suite 7, Naples, Florida 34104
Designs for Human Habitation and Environmental Conservation

SHEET INDEX

EMILIO ROBAU, PROFESSIONAL ENGINEER,
STATE OF FLORIDA, LICENSE NO. 42710
THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND
SEALED BY EMILIO ROBAU, PE, ON 12/12/2024
USING A SHA AUTHENTICATION CODE.

PRINTED COPIES OF THIS DOCUMENT ARE NOT
CONSIDERED SIGNED AND SEALED AND THE SHA
AUTHENTICATION CODE MUST BE VERIFIED ON
ELECTRONIC COPIES.

ATTACHMENTS

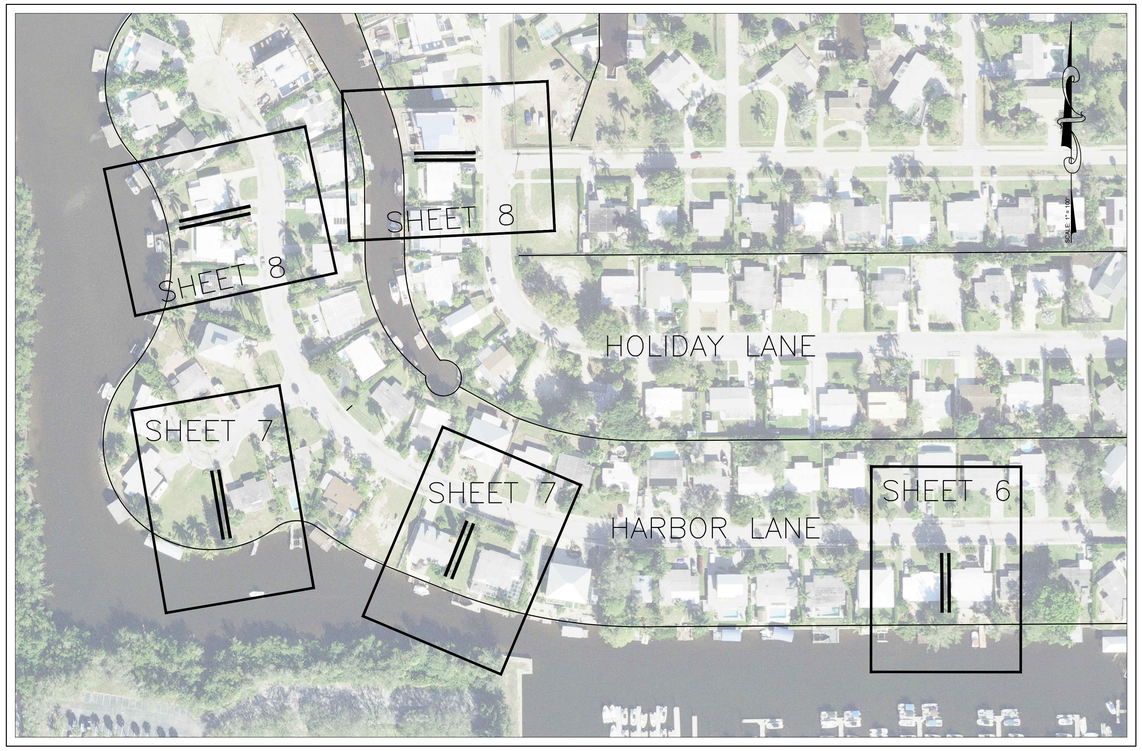
DESCRIPTION	NO. SHEETS

Emilio J. Robau, P.E. FL# 42710
Robau A Bowman Company Florida Certificate of Authorization No:30462

Emilio J Robau
Digitally signed by Emilio J Robau
Date: 2024.12.12 16:32:11 -05'00'
SIGNATURE ENGINEER'S SEAL

PROJECT START DATE:
OCTOBER, 2024
INITIAL SUBMITTAL DATE:
NOVEMBER, 2024

PROJECT #
024-00-007



PLAN & PROFILE KEY SHEET

LINETYPES

- PROPERTY BOUNDARY
- EASEMENT
- CENTER LINE
- RIGHT-OF-WAY
- D-X — EXISTING STORM PIPE
- D — PROPOSED STORM PIPE
- CONSTRUCTION LIMIT
- W-X — W-X — EXISTING WATER MAIN
- W — W — PROPOSED WATER MAIN
- S-X — S-X — EXISTING SANITARY SEWER MAIN

ABBREVIATIONS

D.E.	DRAINAGE EASEMENT
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
ESMT	EASEMENT
EX	EXISTING
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
HDPE	HIGH DENSITY POLYETHYLENE
INV	INVERT
LF	LINEAL FEET
MH	MANHOLE
MIN	MINIMUM
N	NORTH
NE	NORTHEAST
NW	NORTHWEST
NTS	NOT TO SCALE
NUM/#	NUMBER
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PL	PROPERTY LINE
RD	ROAD
R.O.W.	RIGHT OF WAY
RPM	REFLECTIVE PAVEMENT MARKER
S	SOUTH
SE	SOUTHEAST
SW	SOUTHWEST
SCH	SCHEDULE
STA	STATION
STD	STANDARD
STR	STRUCTURE
TYP	TYPICAL
UE	UTILITY EASEMENT
VERT	VERTICAL
VGI	VALLEY GUTTER INLET
W	WEST
WM	WATER MAIN
W	WITH
WO	WITHOUT
WV	WATER VALVE

SYMBOLS

- WATER METER
- CABLE SERVICE
- IRON NAIL
- NAIL/DISK "LB1772"
- × X.X — EXISTING GRADE
- XX — PROPOSED GRADE
- EXISTING MANHOLE
- HEAVY DUTY WATER METER
- MAILBOX
- AUTOMATIC FLUSHING DEVICE
- GUY ANCHOR
- FIRE HYDRANT
- EXISTING FIRE HYDRANT
- SIGN
- EXISTING POWER POLE
- GATE VALVE
- REDUCER
- X-BOX
- JUNCTION BOX
- VALLEY GUTTER INLET
- REFLECTIVE PAVEMENT MARKER

GENERAL NOTES:

1. THE REVIEW AND APPROVAL OF IMPROVEMENT PLANS DOES NOT AUTHORIZE THE CONSTRUCTION OF REQUIRED IMPROVEMENTS WHICH ARE INCONSISTENT WITH THE EXISTING EASEMENTS OF RECORD.
2. EASEMENTS DEPICTED ARE FOR INFORMATIONAL PURPOSES ONLY.
3. ASBESTOS PIPE MAY BE PRESENT ON SITE, PLEASE REFER TO CITY TECHNICAL SPECIFICATIONS SECTION 02051 PRIOR TO DISTURBING ANY EXISTING PIPE.
4. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF EXISTING CONDITIONS ARE NOT AS DEPICTED IN THESE CONSTRUCTION PLANS.
5. THE EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS ARE APPROXIMATE. FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES.
6. ALL ELEVATIONS SHOWN REFER TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD).
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF TRAFFIC (MOT) AND ASSOCIATED MOT DOCUMENTS.
8. DAMAGE TO EXISTING UTILITIES AND PROPERTY DURING CONSTRUCTION SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.
9. ALL PROPERTY/TRACT LINE MARKERS (IRON RODS, CONCRETE MONUMENTS, ETC.) DESTROYED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER OR AFFECTED STAKEHOLDERS. A STATE REGISTERED LAND SURVEYOR SHALL RESET PROPERTY/TRACT CORNER MARKERS AT CONTRACTOR'S EXPENSE.
10. PROPERTY OWNERS SHALL BE CONTACTED 48 HOURS PRIOR TO WATER SERVICE INTERRUPTION AND IN COOPERATION WITH CITY OF NAPLES UTILITIES DEPARTMENT. THE CONTRACTOR SHALL RESTORE WATER SERVICE AT THE END OF THE WORK DAY.
11. THE CONTRACTOR IS REQUIRED TO MAINTAIN A "RED-LINE" "MARKUP" SET OF PLANS FOR THE PROJECT, CONVERTED AS THE CONTRACTOR'S AS-BUILTS, AND TURN THEM OVER TO THE ENGINEER. "THE CITY SHALL BE PROVIDED WITH A COPY OF THESE DOCUMENTS."
12. THE CONTRACTOR SHALL KEEP A RECORD OF ALL CHANGES AND MAINTAIN AN AS-BUILT PLAN. PRIOR TO FINAL ACCEPTANCE, THIS PLAN WILL BE FURNISHED TO THE ENGINEER, THE CONTRACTOR SHALL ALSO FURNISH THE ENGINEER WITH A STATEMENT THAT THE AS-BUILT PLAN REPRESENTS ALL CHANGES MADE AND THAT THE LOCATION OF UTILITY LINES SHOWN ARE WITHIN 2".
13. THE CONTRACTOR SHALL PROTECT ALL UTILITIES AND OTHER IMPROVEMENTS SHOWN ON THESE PLANS AND ALL OTHER UTILITIES AND OTHER IMPROVEMENTS NOT SHOWN WITHIN CONSTRUCTION AREAS. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR REPAIRS OF UTILITIES AND OTHER IMPROVEMENTS DAMAGED DURING CONSTRUCTION AND SHALL MAINTAIN SUFFICIENT PROTECTION TO ALL UTILITIES REQUIRED TO PROTECT THEM FROM DAMAGE AND TO PROTECT THE PUBLIC DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE SERVICE PROVIDERS AND UTILITY COMPANIES WHICH MAY HAVE THEIR UTILITIES WITHIN THE CONSTRUCTION AREAS, BEFORE BEGINNING CONSTRUCTION.
15. FIRE LANES SHALL HAVE ACCESS TO ALL FIRE PROTECTION DEVICES AND BUILDING IN THE EVENT OF AN EMERGENCY.
16. SOD, IRRIGATION, AND DRIVEWAYS IN THE RIGHT OF WAY AND EASEMENTS WILL NEED TO BE RESTORED.
17. CONTRACTORS SHALL PROVIDE COMPLETE LIST OF 24 HOUR EMERGENCY PHONE NUMBERS.
18. CONTRACTOR TO CONDUCT PRE-CONSTRUCTION MEETING WITH COUNTY REPRESENTATIVES PRIOR TO COMMENCEMENT OF CONSTRUCTION
19. CONTRACTOR TO MAINTAIN EXISTING TRAFFIC/ACCESS, EXISTING DRAINAGE & EXISTING UTILITIES DURING CONSTRUCTION.
20. THE CONTRACTOR IS REQUIRED TO OBTAIN WRITTEN APPROVAL FROM THE ENGINEER FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.
21. ACCESSIBILITY OF MAILBOXES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION WITH NO DISRUPTION OF MAIL SERVICE.
22. IF NECESSARY FOR CONSTRUCTION, ANY OBSTRUCTION WITHIN THE RIGHT OF WAY OR DRAINAGE EASEMENTS CAN BE REMOVED. REMOVAL TO BE CONFIRMED WITH THE COUNTY PROJECT MANAGER.

DRAINAGE NOTES

1. ALL NON-PAVEMENT/SIDEWALK ELEVATIONS SHALL BE AT TOP OF SOD.
2. THE TOP OF SOD AT ALL CATCH BASINS SHALL BE LEVEL WITH THE GRATE ELEVATION.
3. ALL PAVING, GRADING, SUBDIVISION REGULATIONS, AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE COLLIER COUNTY LAND DEVELOPMENT CODE.
4. ALL PIPE LENGTHS ARE PLUS OR MINUS AND ARE MEASURED FROM THE CENTER OF STRUCTURES.
5. THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTMENTS OF VALVE BOX COVERS, MANHOLE RIMS AND COVER, GRATES, ETC., NECESSARY TO MATCH FINAL GRADES AS SHOWN ON PLANS.
6. ALL UNPAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE GRASSED AND MULCHED UNLESS OTHERWISE SHOWN ON THE PLANS OR DETAILS.
7. EXISTING OFF-SITE DRAINAGE PATTERNS SHALL BE MAINTAINED DURING CONSTRUCTION.

CLIENT NAME:
GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME:
HOLIDAY AND HARBOR LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1
024-00-007

DRAWING TITLE:
GENERAL NOTES AND LEGENDS

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36):N.T.S.
HORIZ. SCALE (11X17):N.T.S.

DATE:

REVISION:

ROBAU a Bowman company

ENGINEER'S SEAL STAMPS

SHEET 2
OF 10

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

OUTFALL IMPROVEMENT LIMITS

OUTFALL IMPROVEMENT LIMITS

OUTFALL IMPROVEMENT LIMITS

OUTFALL IMPROVEMENT LIMITS

HOLIDAY LANE

HARBOR LANE

HARBOR PLACE

ESTEY AVENUE

HOLIDAY LANE

HARBOR LANE

BROOKSIDE DRIVE

1798
1783
1809
1812
1798
1800
1846
1848
1883
1897
1884
1898
2095
2123
2096
2120

12/12/2024;2:\Shared\P\024-00-007 Holiday and Harbor Redesign & Construction Services\02_Consturction Plans\Rev00\02000017C03_AER.dwg;Miguel.Medrano

Designs for Human Habitation and Environmental Conservation

2770 Horseshoe Drive South, Suite 7, Naples, Florida 34104 Emilio J. Robau, P.E. FL# 42710 Robau a Bowman Company, Florida Certificate of Authorization No:30462

CLIENT NAME:
GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME:
HARBOR AND HOLIDAY LANE DRAINAGE STORMWATER MANAGEMENT IMPROVEMENTS
024-00-007

DRAWING TITLE:
AERIAL

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36): 1" = 60'
HORIZ. SCALE (11X17): 1" = 120'

DATE:

REVISION:

ROBAU a Bowman company

ENGINEER'S SEAL STAMPS

SHEET 3
OF 10

ROCK CREEK

OUTFALL IMPROVEMENT LIMITS

EXISTING SIDEWALK AND FENCE WITHING DRAINAGE EASEMENT TO BE REMOVED AND REPLACED WITH LIKEKIND SEE SHEET 8 FOR DETAILS

3 SY CONCRETE SIDEWALK REMOVAL

81 SY OF EXISTING ASPHALT TO BE REMOVED AND REPLACED

EXISTING 119 LF 16" RCP

STR. # 1-2

4 SY CONCRETE SIDEWALK REMOVAL

EXISTING 135 LF 18" RCP

STR. # 1-1

STR. # 2-6

STR. # 2-5

EXISTING 55 LF 12" RCP

STR. # 2-4

ESTEY AVENUE

1783

1798

1800

1809

1820

1920

OUTFALL IMPROVEMENT LIMITS

43 SY OF EXISTING ASPHALT TO BE REMOVED AND REPLACED

STR. # 1-3

EXISTING LANDSCAPING AND FENCE WITHIN DRAINAGE EASEMENT TO BE REMOVED AND REPLACED WITH LIKEKIND SEE SHEET 8 FOR DETAILS

EXISTING 34 LF STORM PIPE

1812

HARBOR LANE

HOLIDAY LANE

BROOKSIDE DRIVE

HARBOR PLACE

EXISTING 26 LF 12" RCP (TO BE REMOVED)

1883

1897

STR. # 1-6

43 SY OF EXISTING ASPHALT TO BE REMOVED AND REPLACED

2 SY CONCRETE SIDEWALK REMOVED

STR. # 1-4

EXISTING 150 LF 12" RCP

1846

1848

3 SY CONCRETE SIDEWALK REMOVED

STR. # 1-12

STR. # 1-7

1884

1898

EXISTING 121 LF 12"x14" RCP (TO BE REMOVED)

EXISTING LANDSCAPING AND FENCE WITHIN DRAINAGE EASEMENT TO BE REMOVED AND REPLACED WITH LIKEKIND SEE SHEET 7 FOR DETAILS

EXISTING LANDSCAPING WITHIN DRAINAGE EASEMENT TO BE REMOVED AND REPLACED WITH LIKEKIND SEE SHEET 7 FOR DETAILS

STR. # 1-5

STR. # 1-8 (TO BE REMOVED)

OUTFALL IMPROVEMENT LIMITS

OUTFALL IMPROVEMENT LIMITS

2095

2123

EXISTING 31 LF 12"x18" RCP

EXISTING STR. # 1-9

HARBOR LANE

3 SY CONCRETE SIDEWALK REMOVED

46 SY OF EXISTING ASPHALT TO BE REMOVED AND REPLACED

EXISTING PAVERS AND FENCE WITHIN DRAINAGE EASEMENT TO BE REMOVED AND REPLACED WITH LIKEKIND SEE SHEET 6 FOR DETAILS

EXISTING STR. # 1-10

2096

2120

EXISTING 121 LF OF 12"x18" RCP

EXISTING STR. # 1-11

OUTFALL IMPROVEMENT LIMITS

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

SCALE: 1"=60'

LEGEND:

- PAVEMENT REMOVAL
- CONCRETE SIDEWALK REMOVAL

CLIENT NAME:
GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME:
HARBOR AND HOLIDAY LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1

024-00-007

DRAWING TITLE:
DEMOLITION PLAN

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36):1" = 60'
HORIZ. SCALE (11X17):1" = 120'

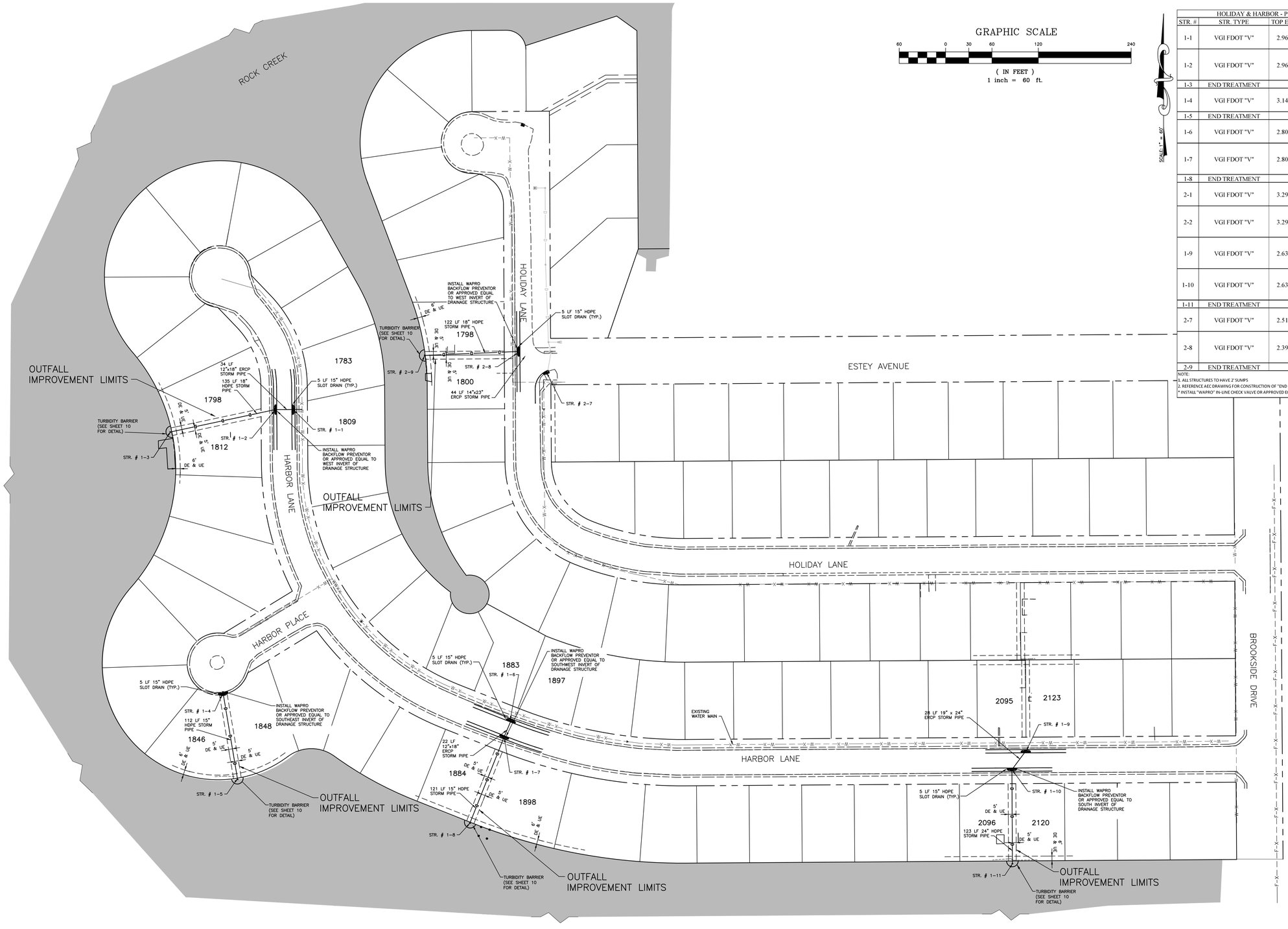
DATE:

REVISION:

ROBAU a Bowman company

ENGINEER'S SEAL STAMPS

SHEET 4
OF 10



GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

SCALE: 1" = 60'

HOLIDAY & HARBOR - PROPOSED STRUCTURE TABLE				
STR. #	STR. TYPE	TOP EL.	TOP EL. (RCRD)	INV. EL.
1-1	VGI FDOT "V"	2.96		INV. N. = -0.35
				INV. W. = -0.35
				INV. S. = 0.00
1-2	VGI FDOT "V"	2.96		INV. N. = -0.37
				INV. E. = -0.35
				INV. S. = 0.08
				INV. W. = -0.40*
1-3	END TREATMENT			INV. E. = -0.40
1-4	VGI FDOT "V"	3.14		INV. W. = -0.46
				INV. E. = 1.00
				INV. S.E. = -0.46*
1-5	END TREATMENT			INV. N.W. = -0.46
1-6	VGI FDOT "V"	2.80		INV. N.W. = -0.26
				INV. N.E. = -0.54
				INV. S.W. = -0.54
1-7	VGI FDOT "V"	2.80		INV. N.E.= -0.54
				INV. S.E. = -0.59
				INV. S.W. = -0.59*
				INV. N.W. = -0.14
1-8	END TREATMENT			INV. N.E. = -0.59
2-1	VGI FDOT "V"	3.29		INV. E. = -0.15
				INV. S. = -0.99
				INV. W. = -0.99
2-2	VGI FDOT "V"	3.29		INV. N. = -0.99
				INV. E. = -0.15
				INV. S. = -0.99
				INV. W. = -0.93
1-9	VGI FDOT "V"	2.63		INV. N. = -0.99
				INV. E. = -0.42
				INV. S. = -1.30
				INV. W. = -0.89
1-10	VGI FDOT "V"	2.63		INV. N. = -1.30
				INV. E. = -0.52
				INV. S. = -1.30*
				INV. W. = -0.78
1-11	END TREATMENT			INV. N. = -1.30
2-7	VGI FDOT "V"	2.51		INV. N. = -1.00
				INV. S.W. = -0.57
				INV. N.W. = -1.00
2-8	VGI FDOT "V"	2.39		INV. N. = -0.53
				INV. S.E = -1.00
				INV. S. = -0.91
				INV. W. = -1.00*
2-9	END TREATMENT			INV. E. = -1.00

NOTE:
1. ALL STRUCTURES TO HAVE 2' SUMPS
2. REFERENCE AEC DRAWING FOR CONSTRUCTION OF "END TREATMENT"
* INSTALL "WAPRO" IN-LINE CHECK VALVE OR APPROVED EQUAL TO RESPECTIVE INVERT

CLIENT NAME: GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME: HOLIDAY AND HARBOR LANE STORMWATER MANAGEMENT IMPROVEMENTS
024-00-007

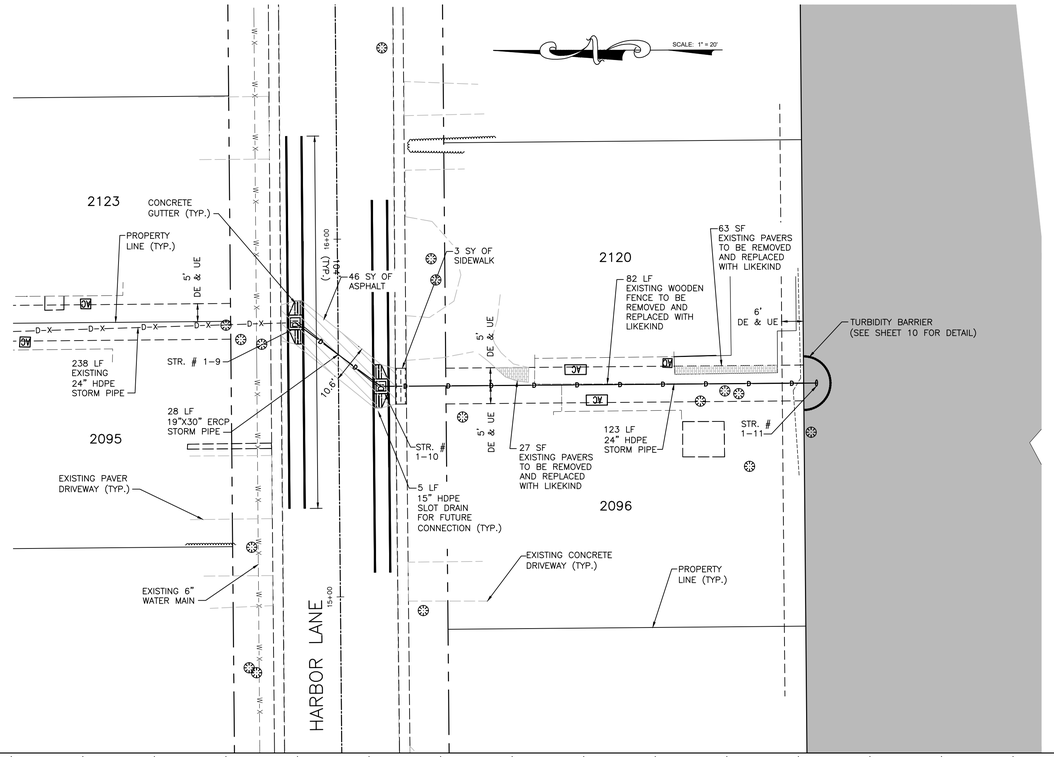
DRAWING TITLE: MASTER SITE PLAN PAVING and DRAINAGE

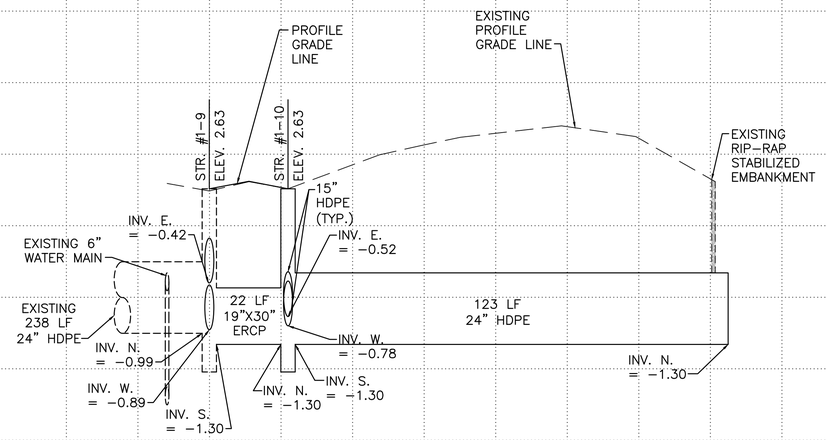
DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36):1" = 60'
HORIZ. SCALE (11X17):1" = 120'
DATE:
REVISION:

ROBAU a Bowman company

ENGINEER'S SEAL STAMPS

SHEET 5 OF 10





CLIENT NAME: GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME: HARBOR AND HOLIDAY LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACMENTS: PHASE I
024-00-007

DRAWING TITLE: PLAN AND PROFILE - SHEET 1

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36): 1" = 20'
HORIZ. SCALE (11X17): 1" = 2'
VERTICAL SCALE: VERT_SCAL

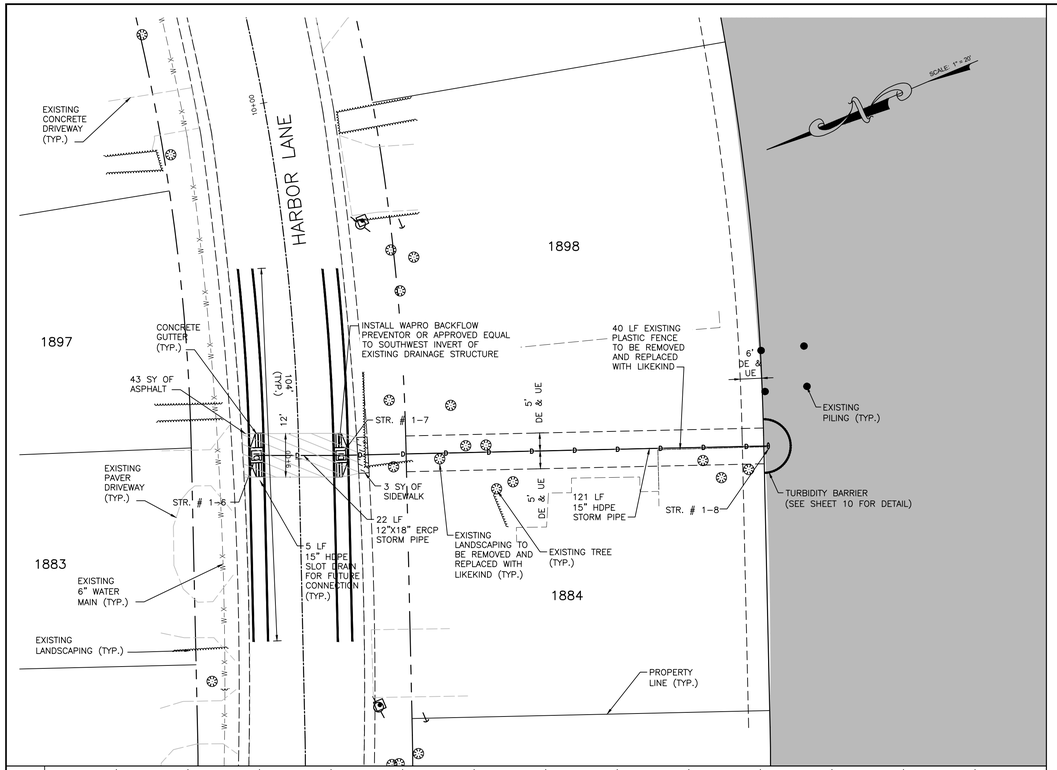
DATE:

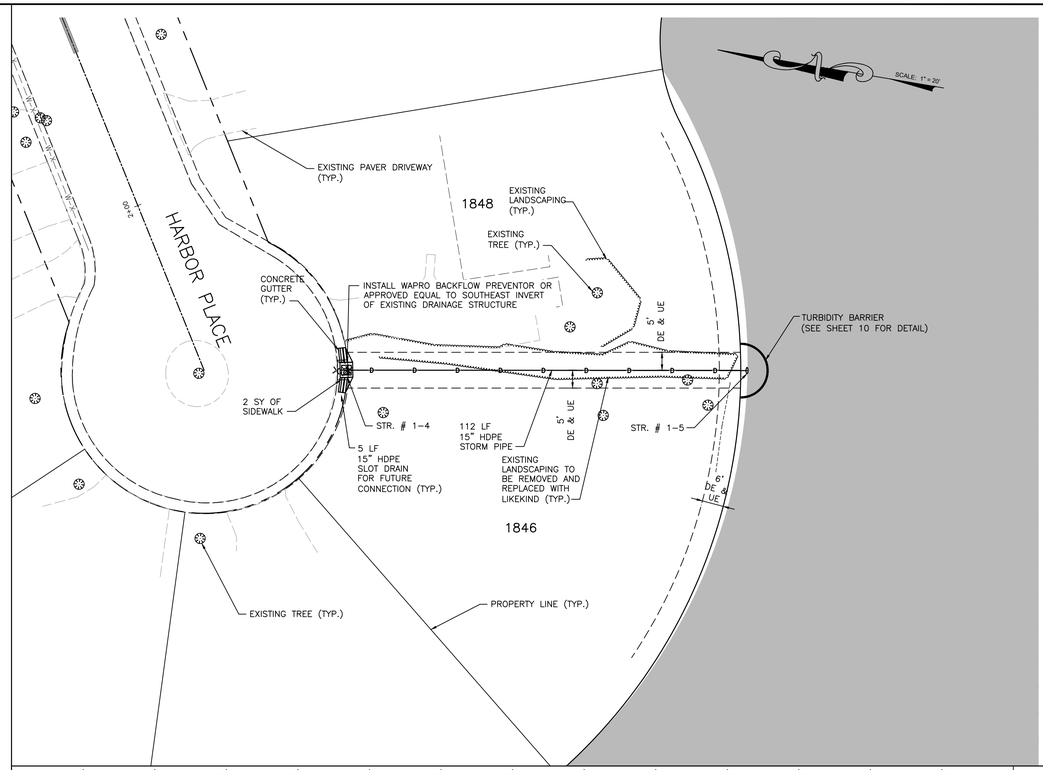
REVISION:

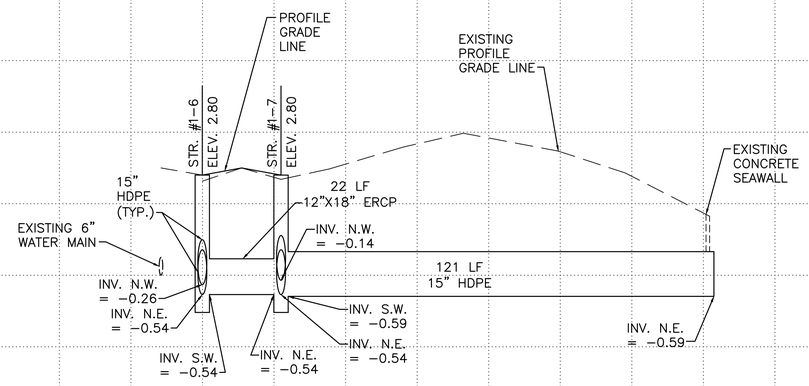
ROBAU a Bowman company

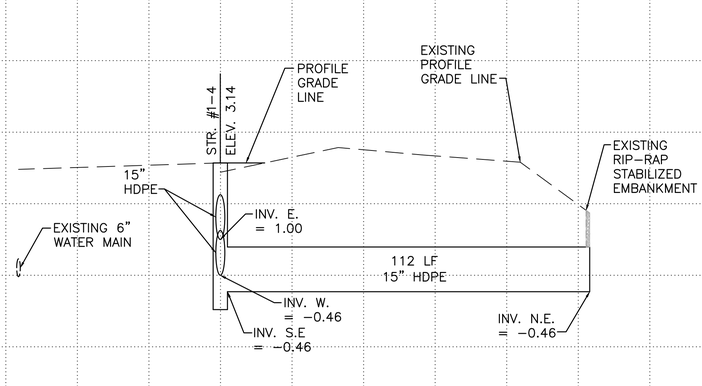
ENGINEER'S SEAL STAMPS

SHEET 6 OF 10









CLIENT NAME: GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME: HARBOR AND HOLIDAY LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1
024-00-007

DRAWING TITLE: PLAN AND PROFILE - SHEET 2

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36): 1" = 20'
HORIZ. SCALE (11X17): 1" = 40'
VERTICAL SCALE: 1" = 2'

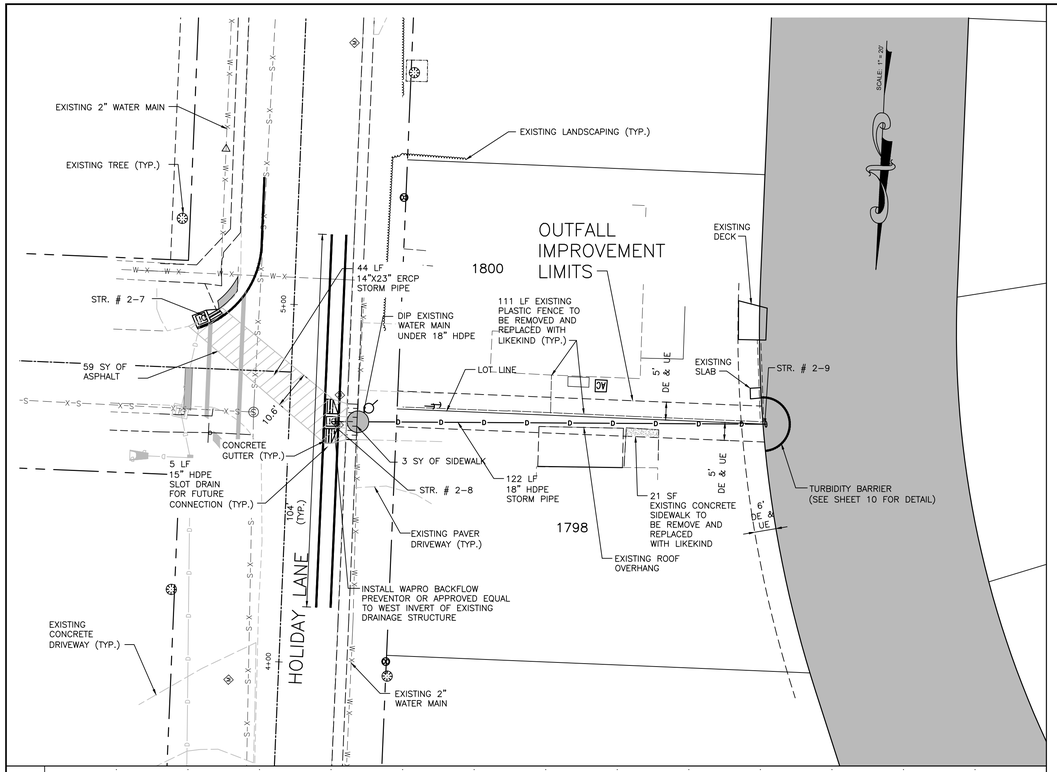
DATE:

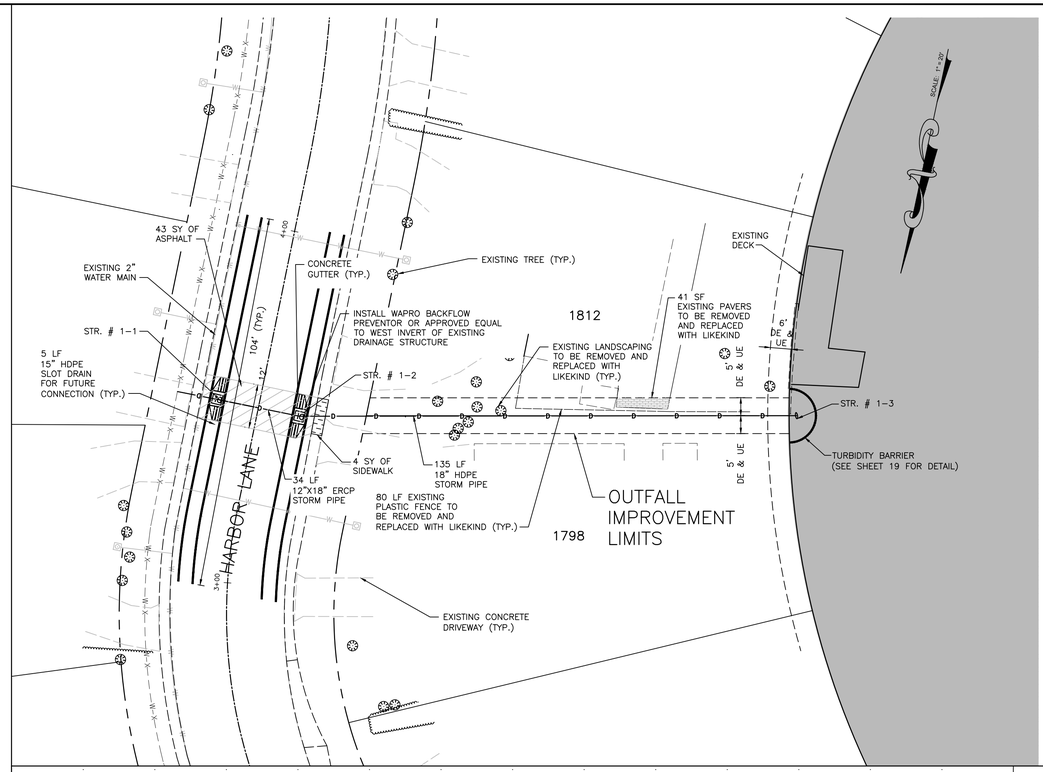
REVISION:

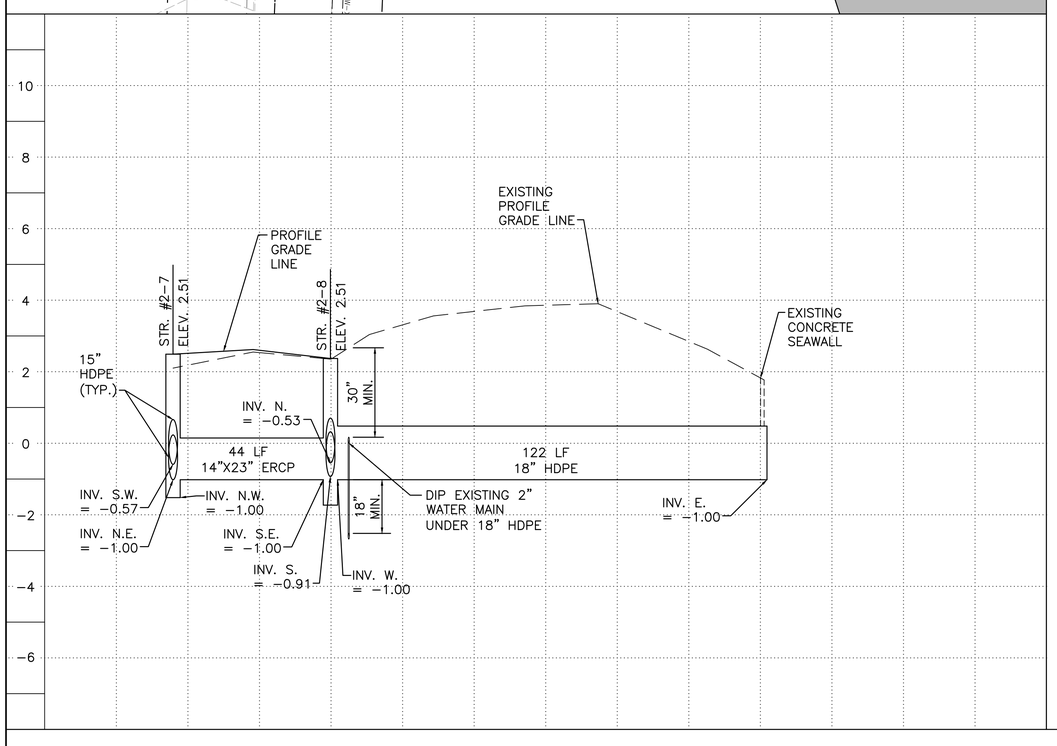
ROBAU a Bowman company

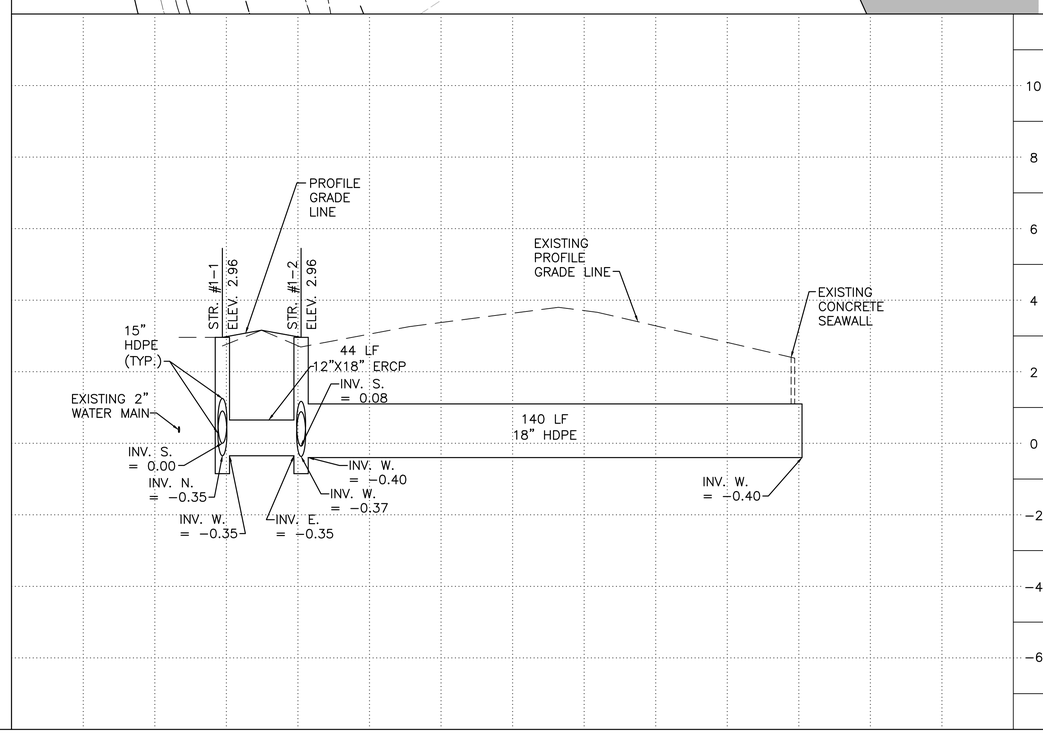
ENGINEER'S SEAL STAMPS

SHEET 7 OF 10









CLIENT NAME: GROWTH MANAGEMENT DEPARTMENT

CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME: HARBOR AND HOLIDAY LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1

024-00-007

DRAWING TITLE: PLAN AND PROFILE - SHEET 3

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36): 1" = 20'
HORIZ. SCALE (11X17): 1" = 40'
VERTICAL SCALE: 1" = 2'

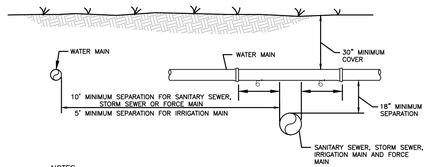
DATE:

REVISION:

ROBAU a Bowman company

ENGINEER'S SEAL STAMPS

SHEET 8 OF 10



NOTES:

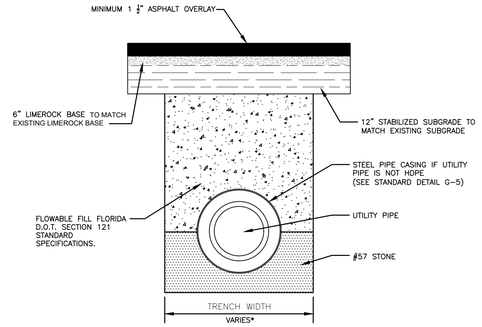
1. WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER, NON-POTABLE IRRIGATION MAINS, AND FORCE MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18 INCHES MEASURED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE TOP OF THE LOWER PIPE. THE 18 INCHES MINIMUM VERTICAL SEPARATION DISTANCE DOES NOT APPLY TO SEPARATIONS OF SEWER LATERALS AND POTABLE WATER MAIN PIPELINE INSTALLATIONS. ALSO, WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER AND FORCE MAINS BY 10 FEET AND FROM IRRIGATION MAINS BY 5 FEET MEASURED HORIZONTALLY BETWEEN OUTSIDE OF PIPES.
2. ALL CROSSINGS WITH VERTICAL CLEARANCE LESS THAN 18 INCHES SHALL REQUIRE SUBMISSION AND APPROVAL OF A DEVIATION. IF A DEVIATION IS SUBMITTED, THE FOLLOWING MINIMUM STIPULATIONS APPLY: THE CROSSING SHALL BE MADE USING A FULL LENGTH OF THICKNESS CLASS 200 (DR14) AWWA C-900 PVC OR CLASS 235 (DR18) AWWA C-905 PVC PIPE CENTERED ON THE CROSSING.
3. 18 INCHES CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.
4. WATER MAINS, SANITARY SEWER, STORM SEWER, AND NON-POTABLE IRRIGATION MAINS SHALL BE IN SEPARATE TRENCHES.
5. WATER MAINS CROSSING ANY TYPE OF SANITARY SEWER, INCLUDING FORCE MAIN, OR STORM SEWER SHALL HAVE THE ONE FULL LENGTH OF WATER MAIN CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THAT THE WATER JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, FAC, AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRESSURE-TYPE SANITARY SEWERS, FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610.
6. IF THE VERTICAL SEPARATION BETWEEN GRAVITY SANITARY SEWER AND STORMWATER LINES IS LESS THAN 18 INCHES, THEN 57 STONE SHALL BE UTILIZED BETWEEN THE TWO LINES.
7. SEE SECTION 1- DESIGN CRITERIA FOR ADDITIONAL REQUIREMENTS.

PIPE SEPARATION DETAIL
NTS

Section
STORMWATER INLINE CHECK VALVE SPECIFICATION

1. GENERAL
The check valves shall be used as specified by engineers in drawings, or as per owners requirements.
Standard materials of construction:
Body: Stainless steel EN1.4301/AISI 304 or EN1.4404/AISI 316 alternatively PE/PVC
Membrane: Polyurethane (PU), Silicone (MVQ)
Sealing/Gasket: EPDM or chloroprene
1.3. Submittals
1.3.1. Shop drawings available on request
1.3.2. Submit product literature including installation with maintenance recommendations.
1.3.3. Submit technical specification including head loss, flow data, pressure ratings, vertical and horizontal opening pressures
1.3.4. Submit White Paper on Head loss testing on request
1.3.5. Certification for EN 13564-12002 available on request
1.2. Quality assurance
1.2.1. Wapro AB has a quality assurance program to verify that the check valves fulfill the specified backpressure, capabilities, opening and closing pressure. All Wastop® inline check valves are quality tested prior to delivery. The manufacturer shall have at least 15 years' experience designing and manufacturing of WaStop® style inline membrane check valves.
1.2.2. Documented head loss tests are to be provided by the manufacturer. These are to be third party test performed by a hydraulic testing institute and should show head loss in open air and submerged conditions and vertical opening pressure.
1.2.3. Check Valves shall be tested and certified according the European standard EN 13564-12002 for anti-flooding devices where applicable.8
2. PRODUCTS
2.1. Function
The inline check valves should be designed to operate in installation using flanges, flat irons, slide muffs, joint couplings or custom made brackets. The check valve should be able to be installed on an inlet, or outlet, vertically, horizontally, inside existing pipes, or between two pipes. The housing of the valve should be of stainless steel and less than or equal to 3mm (0,12") thick. The membrane should be conical and should be attached to the housing along the top of the membrane, and the outlet side of the housing allowing maximum flow through the membrane.
The check valve should have a pulsating flow, opening and closing at the specific levels specified in the technical specification.
When the pressure on the upstream side of the valve exceeds the opening pressure the valve will open and allow flow through the valve. At a pre-determined pressure the valve will close leaving a pre-determined level of water upstream and prevent the upstream pipe drying out.
2.2. Installation
Installation shall be conducted according to the manufacturers written instructions. All valves shall be marked with a unique serial number and flow direction reference.

2.3. Manufacturer
All valves shall have the manufacturers name, model number, description and serial number shall be marked on the check valve.
2.4. Construction
2.1.1.
2.4.1. Housing/Tube
Rolled sheet metal or press detail, (EN1.4301/AISI 304 or EN1.4404/AISI 316)
Cut and lathed (PVC/PE)
2.4.2. Membrane
Polyurethane (PU) – moulded eccentric conical membrane
Silicone (MVQ) – pressure moulded conical membrane
2.4.3. Fixation material
Collar plate
Stainless steel (EN1.4301/AISI 304 or EN1.4404/AISI 316)
Bracket
Stainless steel (EN1.4301/AISI 304 or EN1.4404/AISI 316)
Nuts, bolts and washers
Stainless steel (EN1.4404 / AISI316)
Mounting tabs
Stainless steel (EN1.4404 / AISI316)
2.4.4. Flanges (if provided)
Standard DIN or ANSI #150 or,
Custom-made Stainless steel (EN1.4301/AISI 304 or EN1.4404/AISI 316)
2.4.5. Mounting tabs
Stainless steel EN1.4404 / AISI316
2.4.6. Seal / Gasket
CR, EPDM
2.5. DESIGN REQUIREMENTS
2.5.1. Inline check valve shall withstand up to 8 meters / 26' (7,25 psi) back pressure depending on the dimension and durometer of the membrane.
2.5.2. Inline check valve membrane shall be fully closed and sealed in the normal state when no flow of water/liquid occurs through the pipe
2.5.3. Each inline check valve shall be labelled with flow direction and unique serial number.
2.5.4. Inline check valve shall be reversible allowing installation at inlet or outlet.
2.5.5. Inline check valve shall not allow the upstream pipe to empty completely.
2.5.6. The membrane shall theoretically only cover 10 % of the open area of the pipe when fully open.
2.5.7. Inline check valve shall not create a step inside the pipe greater than 6,35mm (1/4")
2.5.8. The membrane shall withstand abrasives such as sand, detritus and normal chemicals found in waste water and shall be made of polyurethane (PU) or silicone (MVQ)
2.5.9. The inline check valve membrane shall create a pulsating flow through the valve which flushes the pipe clean from debris such as sand, mud, sediment.
2.5.10. Inline check valve membrane shall be:
(1) mounted in a stainless steel housing that, during installation, is to be inserted as-is on site into an existing pipe, or;
(2) mounted in a stainless steel housing or in a PVC housing that, during installation, is to be installed as an intermediate pipe between two existing pipe ends with flexible couplings or flange installation;
(3) Made of polyurethane (PU) or silicone and designed as one single eccentric conical membrane with radius all around its conical periphery (up to DN300 (NPS 12")).
(4) inherently resistant to microbiological attack over long periods
(5) resistant to oxygen, ozone and UV light

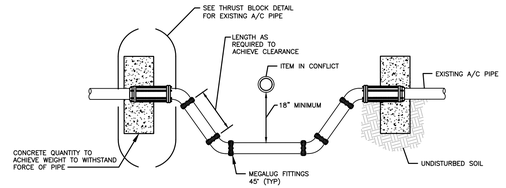


NOTES:

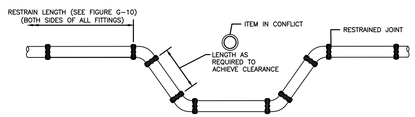
*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

1. **BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.**
2. **ALL PIPES SHALL BE CONSTURCTED WITHIN A STEEL CASING PIPE IF INSTALLED ON A ROAD TO BE WIDENED, UNLESS THE UTILITY PIPE IS HDPE.**

ROADWAY CROSSING TRENCH BACKFILL DETAIL
NTS



EXISTING A/C PIPE – HEADWALL

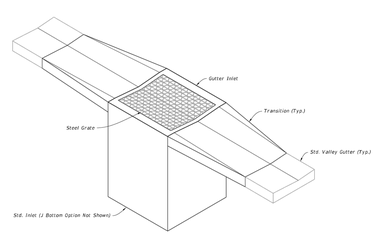


NEW & EXISTING PIPE – RESTRAINED JOINT

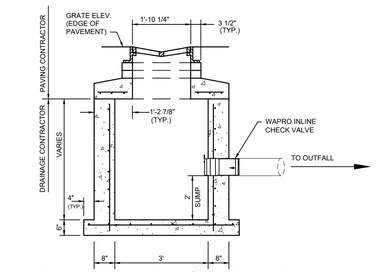
NOTES

1. SEE SECTION 1 – DESIGN CRITERIA FOR AIR RELEASE VALVE REQUIREMENTS.

PIPE CONFLICT DETAILS
NTS

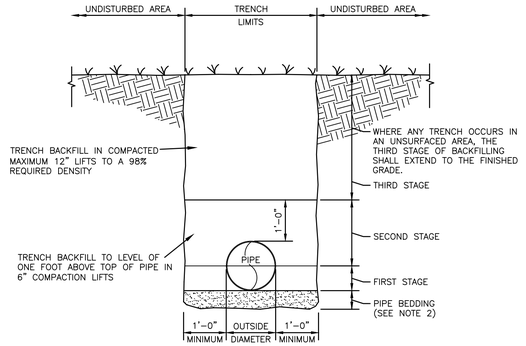


GUTTER INLET TYPE V
(Pipe Opening Not Shown)
(REF: FDOT INDEX # 425-041)



VALLEY GUTTER INLET W/ WAPRO INSTALL
N.T.S.

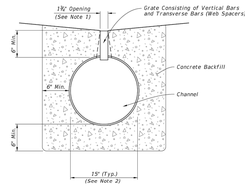
(REF: WAPRO INLINE CHECK VALVE :INLET INSTALLATION STAINLESS STEEL (OUTLET FROM CHAMBER))



NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.
2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

UNPAVED AREA TRENCH BACKFILL DETAIL
NTS



ROUND PIPE CHANNEL
(REF: FDOT INDEX # 436-001)

NOTE:

1. **THE SHORT LENGTH OF SLOTTED DRAIN ARE INTENDED TO ACCOMMODATED FUTURE DESIGN CONSIDERATIONS. EVENTUAL HARBOR AND HOLIDAY LANE IMPROVEMENTS IS LIKELY TO INCLUDE SLOTTED DRAIN ALONG THE FULL LENGTH OF BOTH ROADWAYS.**

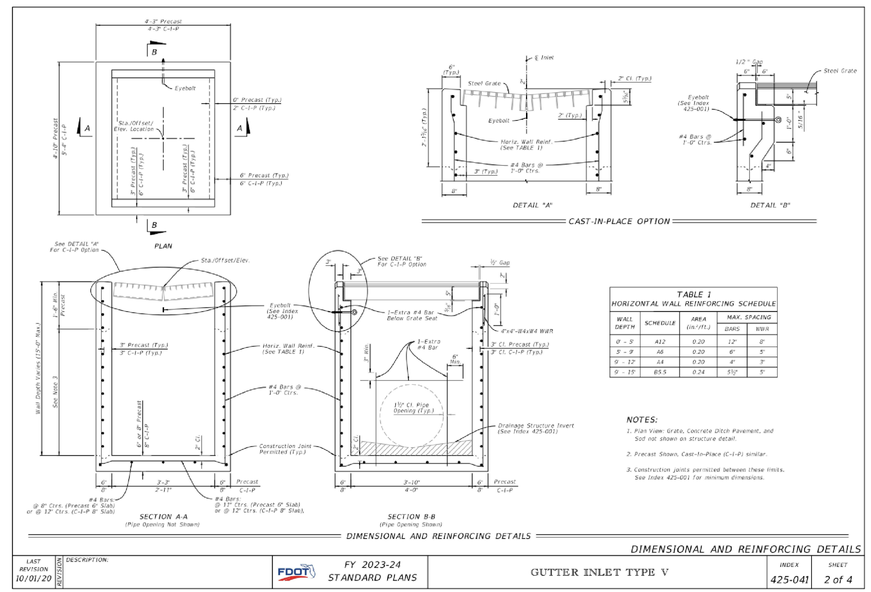


TABLE 1
HORIZONTAL WALL REINFORCING SCHEDULE

WALL DEPTH	SCHEDULE	AREA (in²/ft.)	MAX. SPACING DARS	WWR
0' - 5'	A12	0.20	12"	8"
5' - 9'	A6	0.20	6"	5"
9' - 12'	A4	0.20	4"	3"
9' - 15'	B5.5	0.24	5½"	5"

NOTES:

1. Plan View: Grate, Concrete Ditch Pavement, and Soil not shown on structure detail.
2. Precast Shown, Cast-in-Place (C-I-P) similar.
3. Construction joints permitted between these limits. See Index 425-001 for minimum dimensions.

LAST REVISION	DESCRIPTION:	FDOT FY 2023-24 STANDARD PLANS	GUTTER INLET TYPE V	INDEX 425-041	SHEET 2 of 4
10/01/20					

CLIENT NAME: GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME: HOLIDAY AND HARBOR LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1

023-66-007

DRAWING TITLE: PAVING and DRAINAGE DETAILS

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.A.M.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36): N.T.S.
HORIZ. SCALE (11X17): N.T.S.

DATE:

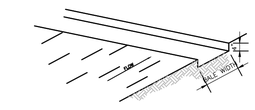
REVISION:

ROBAU a Bowman company

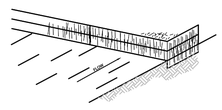
ENGINEER'S SEAL STAMPS

SHEET 9 OF 10

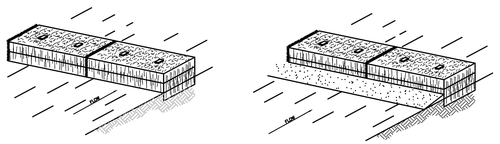
2770 Horseshoe Drive South, Suite 7, Naples, Florida 34104 Emilio J. Robau, P.E. FL# 42710 Robau a Bowman Company, Florida Certificate of Authorization No:30462



3. WEDGE LOOSE STRAW BETWEEN BALES.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

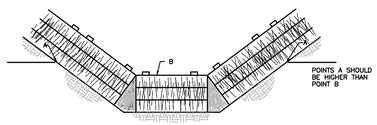


CONSTRUCTION OF A STRAW BALE BARRIER

N.T.S.

PLATE 1.05c

SOURCE: INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD and WYANT

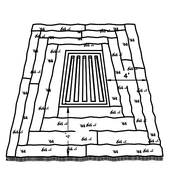


ELEVATION

PROPER PLACEMENT OF STRAW BALE BARRIER IN DRAINAGE WAY

PLATE 1.05d N.T.S.

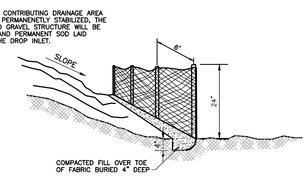
BMP 1.05 STRAW BALE BARRIER



4-12" WIDE STRIPS OF TEMPORARY BAHIA OR APPROVED EQUAL SOD ON EACH SIDE OF THE DROP INLET.

AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, THE BLOCK AND GRAVEL STRUCTURE WILL BE REMOVED AND PERMANENT SOD LAID AROUND THE DROP INLET.

SOD DROP INLET PROTECTION



SEDIMENT FENCE DETAIL

SEDIMENTATION / EROSION CONTROL DETAIL

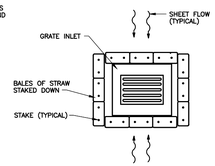
N.T.S.

PROFILE

ANCHORING BALES

NOTE:

1. SINGLE ROW OF STRAW BALES TO BE PLACED PRIOR TO THE START OF ROUGH GRADING
2. SECURELY BOUND BALES REQUIRED FOR DURABILITY

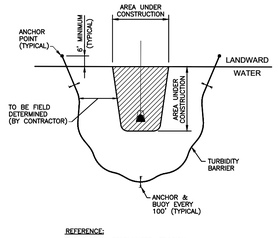


PLAN

TEMPORARY

STRAW BALE SEDIMENT BARRIER

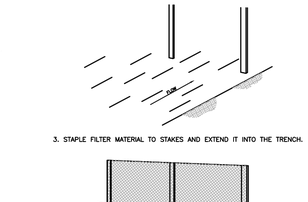
(TYPICAL FOR ALL GRATE INLETS) N.T.S.



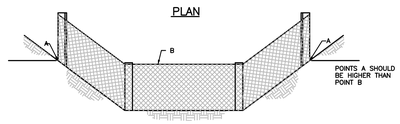
REFERENCE:

THE FLORIDA STORMWATER, EROSION, AND SEDIMENTATION CONTROL INSPECTOR'S MANUAL (4-122 TYPICAL INSTALLATION LAYOUTS)

TURBIDITY BARRIER



PLAN

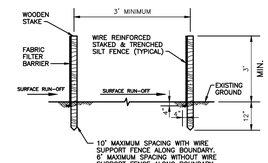


ELEVATION

PROPER PLACEMENT OF A FILTER BARRIER IN A DRAINAGE WAY

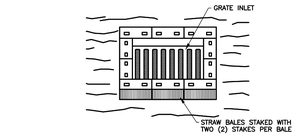
N.T.S.

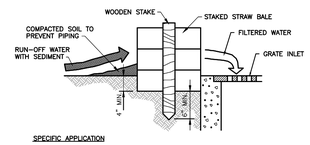
BMP 1.06 SILT FENCE PLATE 1.06b



DOUBLE ROW

STAKED SILT FENCE





SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 PERCENT) WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 cfs) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

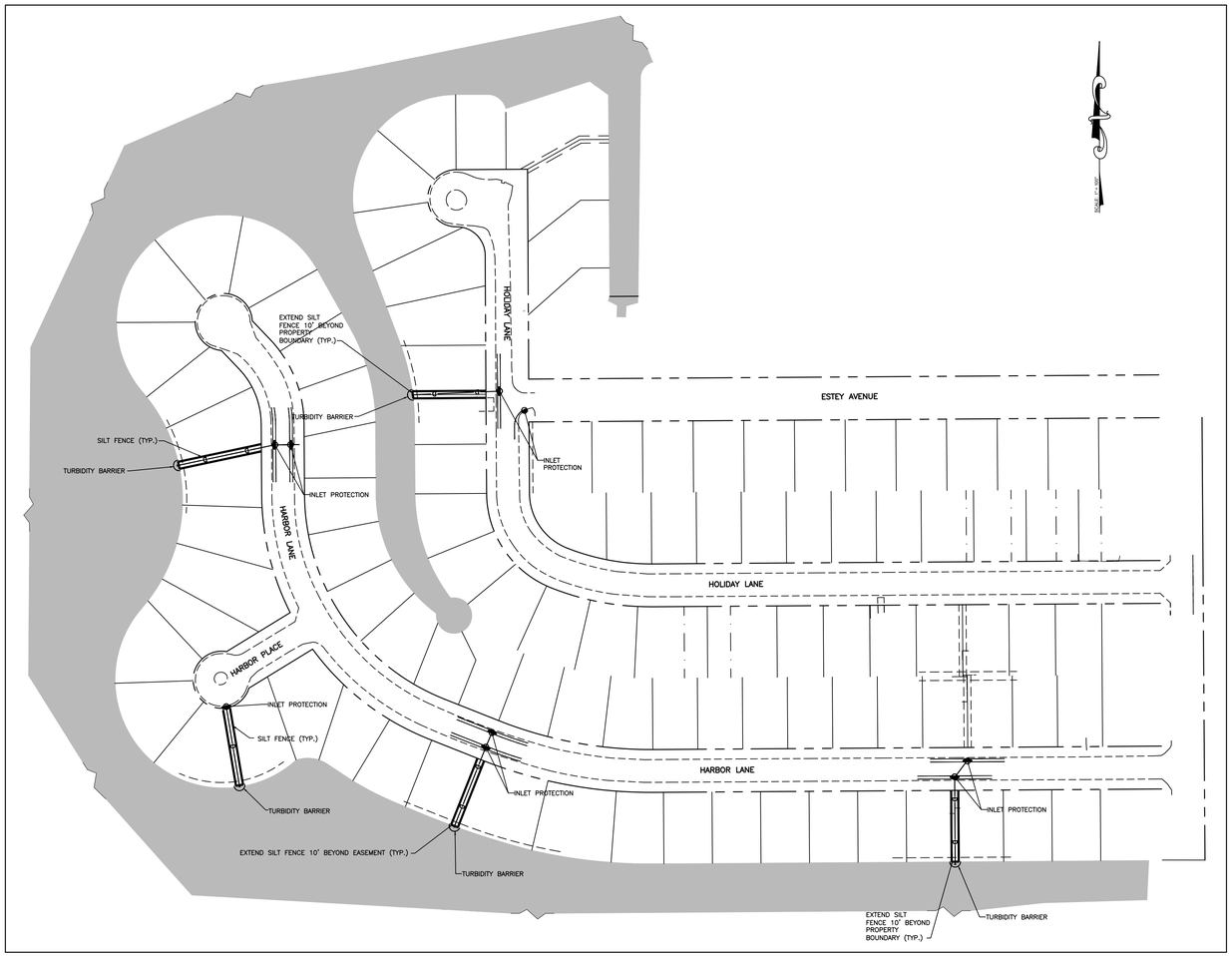
STRAW BALE DROP INLET

SEDIMENT FILTER

N.T.S. PLATE 1.08a

SOURCE: MICHIGAN SOIL EROSION AND SEDIMENTATION CONTROL GUIDEBOOK, 1975

BMP 1.08 STORM INLET DRAIN PROTECTION



SILT FENCE LOCATION

FABRIC FILTER BARRIER

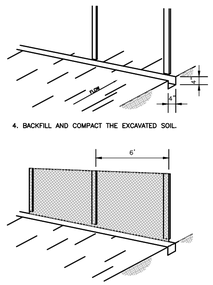
EXISTING GROUND

4"

12" MIN.

FABRIC BURIAL DETAIL

STAKE & FILTER



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

CONSTRUCTION OF A FILTER BARRIER

N.T.S.

PLATE 1.06a

SOURCE: INSTALLATION OF STRAW AND FABRIC FILTER BARRIERS FOR SEDIMENT CONTROL, SHERWOOD and WYANT

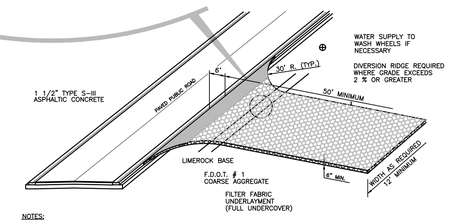
GENERAL NOTES:

PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITY APPROPRIATE EROSION CONTROL DEVICES SHALL BE INSTALLED TO CONTROL AND REDUCE SOIL EROSION AND SEDIMENT TRANSPORT TO OFF-SITE AREAS. THE CONTRACTOR SHALL MAINTAIN THESE DEVICES THROUGHOUT THE DURATION OF CONSTRUCTION. ALL DEVICES SHALL REMAIN IN PLACE UNTIL THE SURROUNDING AREAS ARE ESTABLISHED.

THE FOLLOWING MINIMUM REQUIREMENTS ARE RECOMMENDED: (REFERENCE FLORIDA DEVELOPMENT MANUAL, FDER, PPS 6-301 TO 6-500).

THESE BEST MANAGEMENT PRACTICES (BMP) ARE TYPICAL OF REQUIREMENTS FOR SOIL EROSION CONTROL PER LOCAL REQUIREMENTS. THEY MAY NOT CONSTITUTE COMPLETE REQUIREMENTS FOR COMPLIANCE WITH REGULATORY AGENCIES AND SPECIFIC PERMIT CONDITIONS.

A) BMP 1.01 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
B) BMP 1.05 STRAW BALE BARRIER
C) BMP 1.06 SILT FENCE
D) BMP 1.08 STORM INLET DRAIN PROTECTION



NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

N.T.S.

BMP 1.01 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE
SOURCE: VIRGINIA DIVISION OF SOIL AND WATER CONSERVATION

SOURCE: Va SWCC PLATE 1.01a BMP 1.01 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

CLIENT NAME: GROWTH MANAGEMENT DEPARTMENT
CAPITAL PROJECT PLANNING, IMPACT FEES AND PROGRAM MANAGEMENT DIVISION, STORMWATER SECTION

PROJECT NAME: HOLIDAY and HARBOR LANE DRAINAGE IMPROVEMENTS OUTFALL REPLACEMENTS: PHASE 1

024-00-007

DRAWING TITLE: EROSION CONTROL

DESIGNED BY: E.J.R.
DRAWN BY: P.W.B.
CHECKED BY: M.W.D.
REVIEWED BY: E.J.R.
HORIZ. SCALE (24X36):AS SHOWN
HORIZ. SCALE (11X17):AS SHOWN

DATE:

REVISION:

ROBAU a Bowman company

ENGINEER'S SEAL STAMPS

SHEET 10 OF 10

Designs for Human Habitation and Environmental Conservation 2770 Horseshoe Drive South, Suite 7, Naples, Florida 34104 Emilio J. Robau, P.E. FL# 42710 Robau a Bowman Company, Florida Certificate of Authorization No:30462