AIRPORT-SEARS MSBU

WATER MANAGEMENT IMPROVEMENT PLANS

CANAL C-1 / RAILROAD CANAL

SECTION 10, 15-16 & 21 TOWNSHIP 43 S, RANGE 30 E

HENDRY COUNTY, FLORIDA

INDEX OF ENGINEERING PLANS

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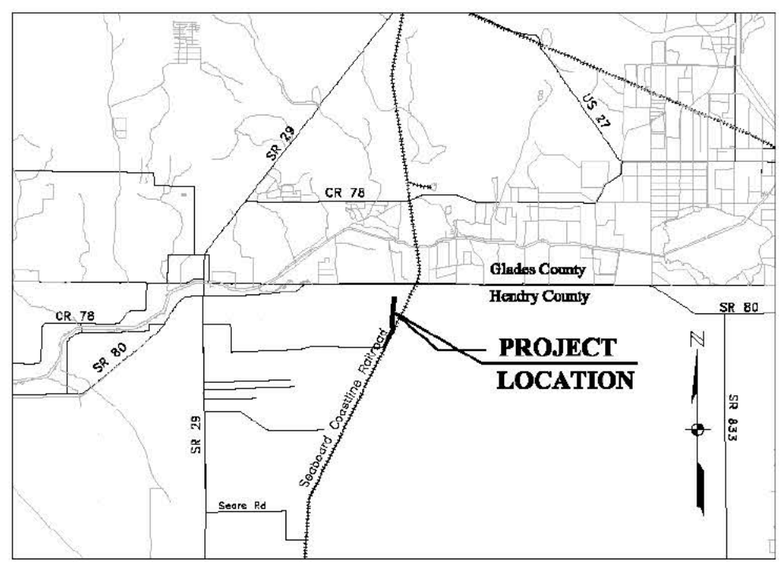

LOCATION MAP

0 2.5 5
SCALE IN MILES

January 2017

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

Prepared for

Hendry County
Board of County Commissioners
P.O.Box 1760
LaBelle, Florida 33975

Prepared by

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ANDREW D. TILTON
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NO. 33286
STATE OF FLORIDA
PROFESSIONAL ENGINEER

This item has been electronically signed and sealed by Andrew D. Tilton, PE on January 12, 2017 using an SHA-1 authentication code.

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SHEET
C-01

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ABBREVIATIONS

AC	ACRE
ALT	ALTERNATE
APPROX	APPROXIMATE
BM	BENCH MARK
BLDG.	BUILDING
BOT	BOTTOM
CB	CATCH BASIN
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CV	CHECK VALVE
℄	CENTER LINE
CLF	CHAIN LINK FENCE
CONC	CONCRETE
CONST	CONSTRUCTION
DIA, ø	DIAMETER
DIM	DIMENSION
DIST	DISTANCE
DE	DRAINAGE EASEMENT
EA	EACH
EL/ELEV	ELEVATION
ERCP	ELLIPTICAL CONCRETE PIPE
EX, EXIST	EXISTING
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FM	FORCE MAIN
FDC	FIRE DEPARTMENT CONNECTION
FT	FEET
G	NATURAL GAS
GV	GATE VALVE
GR	GRADE
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
IDD	IONA DRAINAGE DISTRICT
INV	INVERT
LAE	LAKE ACCESS EASEMENT
LF	LINEAL FEET
LME	LAKE MAINTENANCE EASEMENT
MH	MANHOLE
MES	MITERED END SECTION
MIN	MINIMUM
NTS	NOT TO SCALE
NUM/#	NUMBER
NG	NATURAL GAS
OC	ON CENTERS
OCEW	ON CENTER EACH WAY
PV	PLUG VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
POLY, PE	POLYETHYLENE
PAVT	PAVEMENT
PL	PROPERTY LINE
PW	POTABLE WATER
PUE	PUBLIC UTILITY EASEMENT
RD	ROAD
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
R/W	RIGHT OF WAY
SAN	SANITARY
SECT	SECTION
SEW	SEWER
TOE	TOE OF SLOPE
TOB	TOP OF BANK
TEL	TELEPHONE
TRANS	TRANSFORMER
TYP	TYPICAL
UE	UTILITY EASEMENT
W	WATER
WM	WATER MAIN
W/	WITH
W/O	WITHOUT
WV	WATER VALVE
WH	WALL HYDRANT

SYMBOLS

- GATE VALVE / PLUG VALVE
- TEE ASSEMBLY
- REDUCER
- BLOW OFF
- FIRE HYDRANT
- FIRE HYDRANT ASSEMBLY W/ GATE VALVE
- MITERED END SECTION
- MH-1 MANHOLE W/ NUMBER
- DIRECTION OF FLOW
- IRRIGATION SERVICE (DOUBLE)
- IRRIGATION SERVICE (SINGLE)
- SEWER SERVICE (DOUBLE)
- SEWER SERVICE (SINGLE)
- WATER SERVICE (DOUBLE)
- WATER SERVICE (SINGLE)
- HEADWALL
- CULVERT
- DRAINAGE INLET (SEE PLAN FOR TYPES)
- THROAT INLET

HATCH PATTERNS

- WETLAND PRESERVE
- UPLAND PRESERVE
- EXISTING WATER
- PROPOSED WATER
- BRICK PAVERS
- LITTORAL SHELF
- COMPENSATING LITTORAL PLANTING
- RIPRAP / GRAVEL
- NATURAL AREAS
- EARTH IN TYPICAL SECTIONS
- PHASE 1 CONSTRUCTION
- PHASE 2 CONSTRUCTION

NOTE:
HATCH PATTERNS ARE FOR ILLUSTRATIVE PURPOSES ONLY, ACTUAL HATCH PATTERNS ON DRAWING MAY VARY IN SCALE & ANGLE

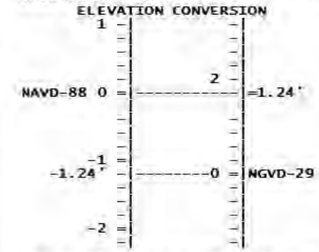
LINETYPES

EXISTING	PROPOSED
BASIN	
RIGHT-OF-WAY LINE	
LAKE MAINTENANCE EASEMENT	
PUBLIC UTILITY EASEMENT	
DRAINAGE EASEMENT	
CENTER LINE	
WETLAND BOUNDARY	
FORCE MAIN	FM
SANITARY SEWER	SS
WATER MAIN	WM
PERIMETER BERM	
RIGHT OF WAY	
FENCE LINE	X X X X
SILT FENCE	
BULKHEAD	
STRUCTURAL BUFFER	

NOTE: NOT ALL LINETYPES SHOWN ARE USED FOR EVERY PROJECT.

GENERAL NOTES:

ELEVATIONS ARE REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM N.G.V.D. OF 1929.



The North American Vertical Datum of 1988 lies 1.24' below the National Geodetic Vertical Datum of 1929 at this location.

Conversion to NAVD 1988 is NGVD29 - 1.24' = NAVD88

THE LOCATION OF EXISTING UTILITIES, PAVEMENT, VEGETATION, AND MISCELLANEOUS IMPROVEMENTS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.

ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE CONTRACTOR SHOULD NOTIFY THE OWNER/ENGINEER WITHOUT DELAY.

EXISTING FACILITIES SHALL BE RESTORED TO A CONDITION EQUIVALENT TO THAT WHICH EXISTED PRIOR TO COMMENCING CONSTRUCTION, AT NO ADDITIONAL COST TO OWNER.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS, (LATEST EDITION).

CONTRACTOR TO PROVIDE SILT FENCE, STAKED HAY BALES AND OTHER APPROPRIATE MEASURES TO EFFECT THE FILTRATION OF SURFACE WATER FLOWS AND TO PROVIDE EROSION PROTECTION DURING CONSTRUCTION ACTIVITIES. PROTECTION IS TO BE MAINTAINED DURING THE CONSTRUCTION PERIOD UNTIL DISTURBED SOILS HAVE BEEN STABILIZED WITH GRASS OR SUITABLE EROSION PROTECTION TREATMENT.

CONTRACTOR SHALL RETAIN, ON THE WORK SITE, COPIES OF ANY PERMITS NECESSARY FOR CONSTRUCTION.

CONTRACTOR SHALL PROMPTLY REPORT ALL FIELD CHANGES TO THE ENGINEER.

CONTRACTOR SHALL CLEAR ALL EXCAVATION AND FILL AREAS; ACTUAL LIMITS OF CLEARING SHALL BE DETERMINED IN THE FIELD BY OWNER OR ENGINEER.

CONTRACTOR SHALL REMOVE ALL MUCK AND OTHER UNSUITABLE MATERIAL FROM FILL AREAS PRIOR TO PLACEMENT OF FILL. ALL MUCK AND OTHER UNSUITABLE MATERIAL EXCAVATED FROM LAKES OR REMOVED FROM FILL AREAS SHALL BE STOCKPILED AT THE PROPOSED PROJECT AS DETERMINED BY THE OWNER.

SITE GRADES MAY BE ADJUSTED IN FIELD BY ENGINEER.

CONTRACTOR SHALL USE DESIGNATED CONSTRUCTION ENTRANCES FOR EMPLOYEES AND DELIVERY OF MATERIALS.

THE LOCATIONS OF EXISTING UTILITIES AND STORM SEWERS SHOWN ON THIS PLAN HAVE BEEN TAKEN FROM RECORD DRAWINGS AND FIELD INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXACT LOCATION PRIOR TO CONSTRUCTION AND PROVIDE IN WRITING ANY DISCREPANCIES TO THE ENGINEER.

THE CONTRACTOR SHALL ACCURATELY PLOT THE LOCATIONS AND DEPTHS OF ALL IMPROVEMENTS INSTALLED ON A FINAL SET OF RECORDED DRAWINGS WHICH SHALL BE DELIVERED TO THE ENGINEER.

CONTRACTOR IS REQUIRED TO OBTAIN FROM THE ENGINEER AND OWNER WRITTEN APPROVAL FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND USAGE OF THE EXISTING STREETS ADJACENT TO THE PROJECT. ALL TRAFFIC MAINTENANCE CONTROL SHALL BE IN ACCORDANCE WITH THE FLORIDA MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATONS.

CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY REQUIRED DEWATERING PERMITS.

PAVING, GRADING AND DRAINAGE NOTES:

LENGTH OF STORM DRAIN PIPES ARE APPROXIMATE AND ARE MEASURED FROM CENTER OF STRUCTURE.

LOCATIONS OF INLETS AND STORM DRAINS MAY BE FIELD ADJUSTED TO PRESERVE EXISTING VEGETATION.

EXISTING OFF-SITE DRAINAGE PATTERNS SHALL BE MAINTAINED DURING CONSTRUCTION.

CONTRACTOR SHALL NOTIFY THE OWNER AND CONTACT ALL UTILITY COMPANIES FOR LOCATIONS OF EXISTING UTILITIES IN THE AREA 72 HOURS (MIN.) PRIOR TO COMMENCING CONSTRUCTION.

PLACE 200 S.F. OF SOD AROUND ALL INLETS, HEADWALLS, AND CONTROL STRUCTURES. USE ARGENTINE BAHIA AND CONFORM TO FDOT SECTION 575.

PLACE 18" OF SOD CONTINUOUS ALONG EDGES OF PAVEMENT OF ALL ROADS AND/OR CURB, LAYING PARALLEL WITH THE ROAD MAINTAINING 1" BELOW FINISHED PAVEMENT GRADE.

ALL UNPAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE SEEDED AND MULCHED UNLESS NOTED OTHERWISE.

ALL SLOPES THAT DON'T DRAIN INTO THE SURFACE WATER MANAGEMENT SYSTEM ARE TO BE STABILIZED WITH SOD OR OTHER APPROVED STABILIZATION METHOD (NOT TO INCLUDE SEEDING OR MULCHING).

NOTE:
1) ALL SLOPES TO BE SODDED.

2) ALL SLOPES ADJACENT TO PRESERVE AREAS OR EXTERNAL TO THE STORM WATER MANAGEMENT SYSTEM TO BE STABILIZED WITH RIP-RAP OR SOD IMMEDIATELY AFTER CONSTRUCTION AND GRADING.

3) SILT FENCE TO BE INSTALLED PRIOR TO ANY SOIL DISTURBING ACTIVITIES AND REMOVED AFTER SLOPE HAS BEEN STABILIZED.

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\\Ftms01\proj-jei\20033945-02\WaterMgmt\Canal C-1 2017\General_Notes.dwg (LEGEND) jim Jan 12, 2017 - 12:05pm

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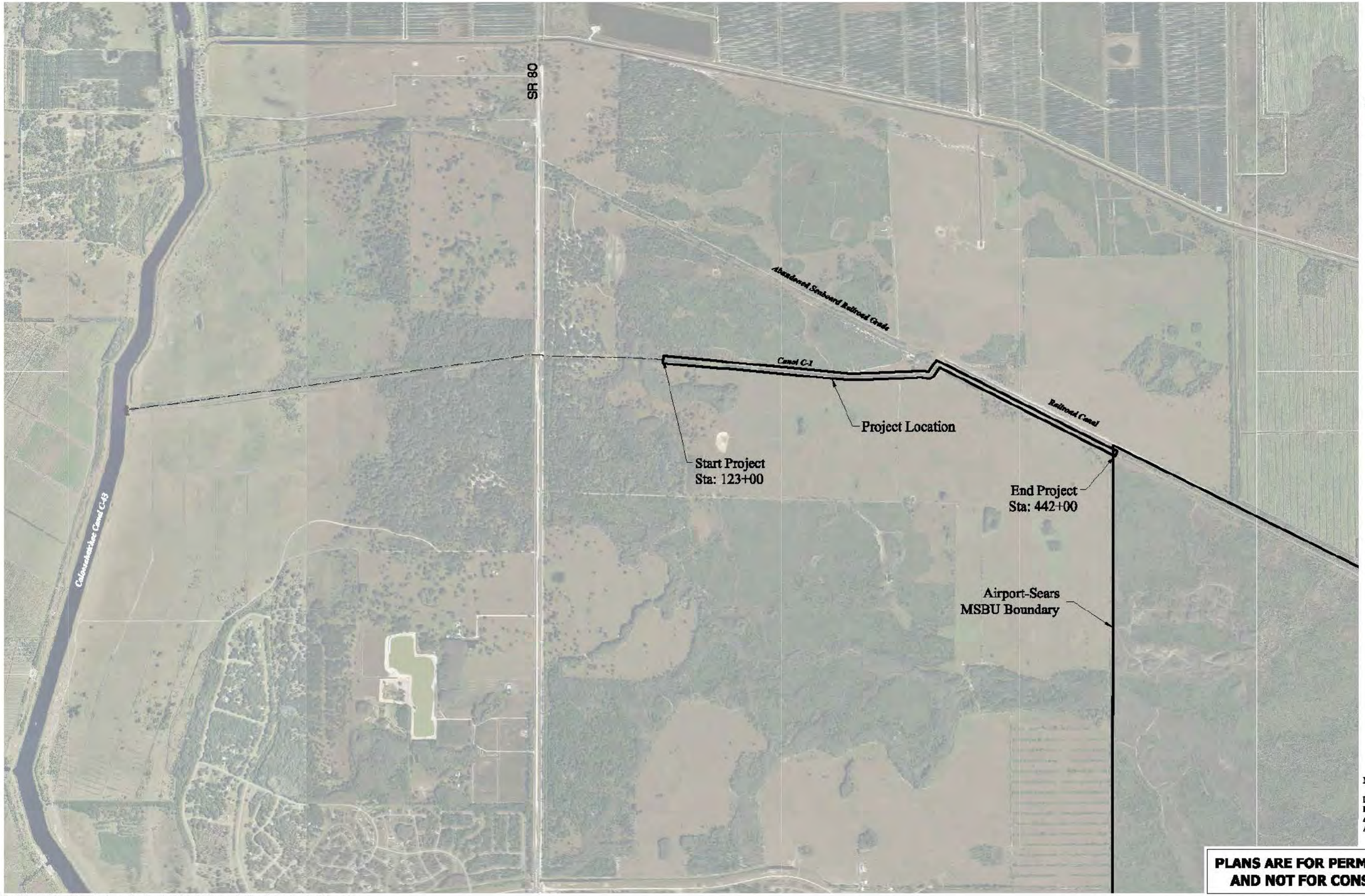
Abbreviations & Legend
And Miscellaneous Notes

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-02



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SCALE IN FEET

Note:

Imagery shown from the FDOT Aerial Photography Library, Hendry County Aerials are dated 2014, Glades County Aerials are dated 2015

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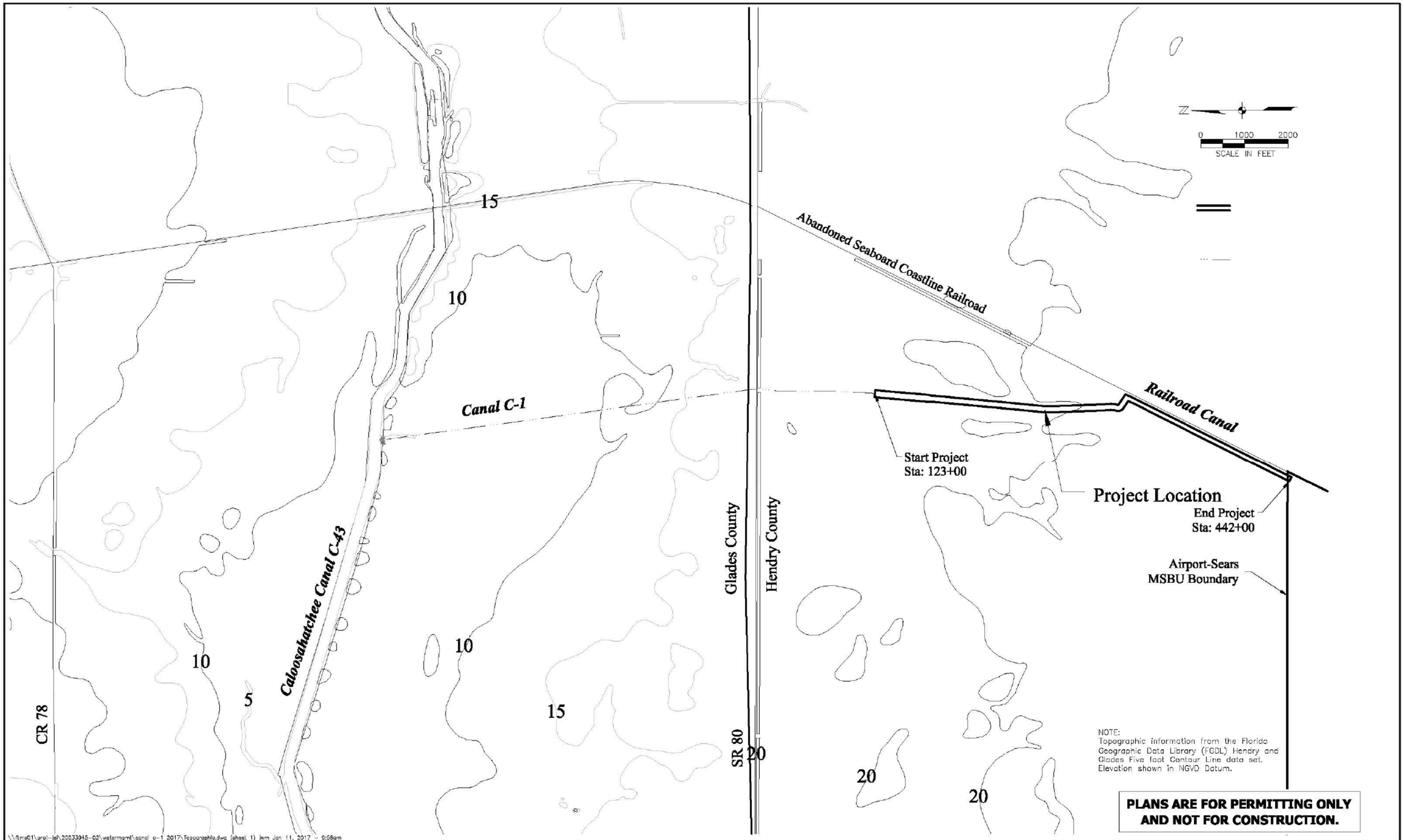
Aerial Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-03



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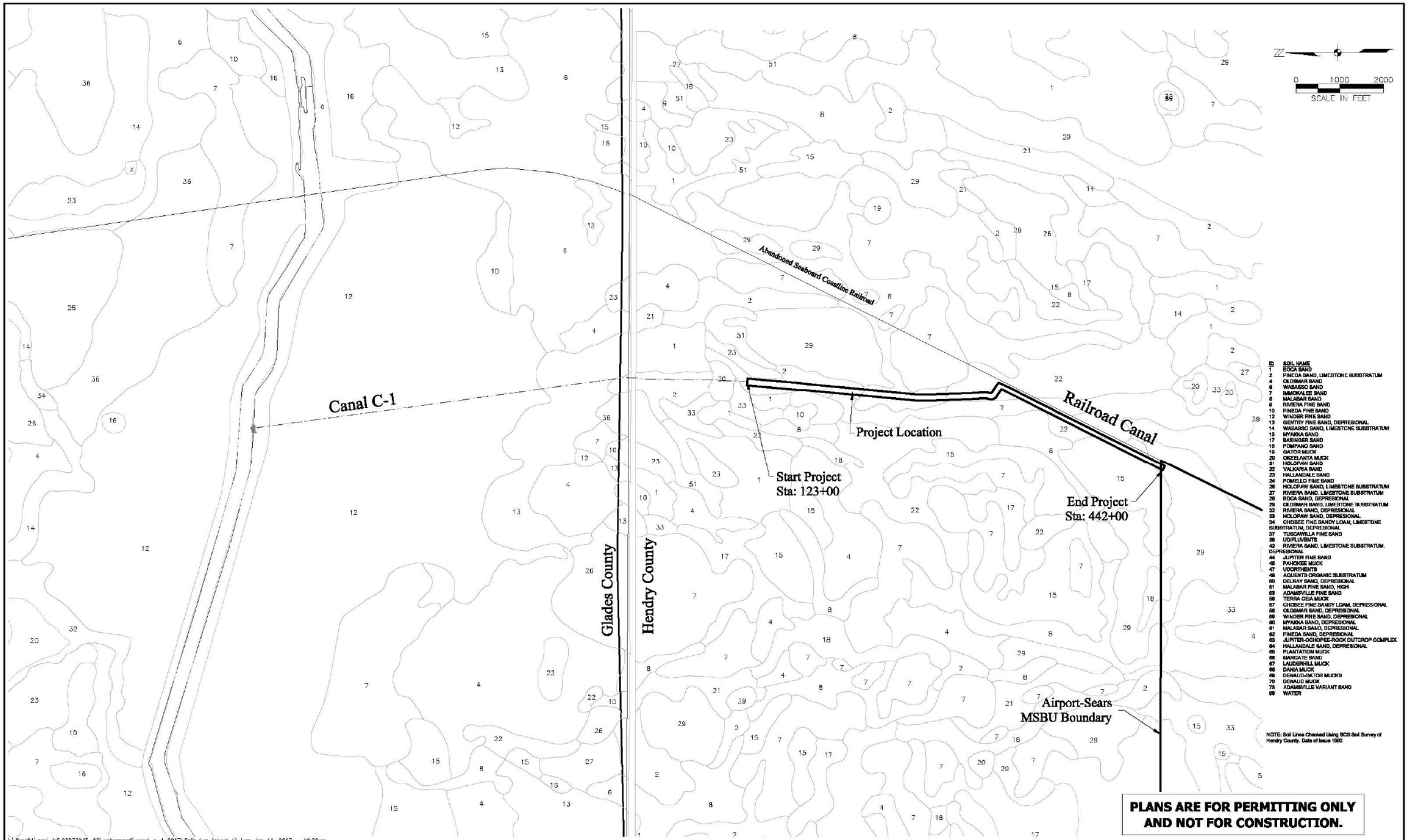
Topographic Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-04



PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

\\fltm01\proj-jel\20033945-02\watermgmt\canal c-1 2017\Soils.dwg (sheet 1) jwm Jan 11, 2017 - 10:20am

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Soils Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-05

(1636 ac)

Canal C-1

BRIDGE

(6) 72" CMP W/ RISERS

Project Location

Start Project
Sta: 123+00

End Project
Sta: 442+00

ABANDONED SEABOARD COAST LINE RAILROAD

(289 ac)

(3425 ac)

WCS #7 68cfs

(357 ac)

Airport-Sears MSBU Boundary

FLORILAND DRAINAGE BASIN
(4992 ac)

Airport-Sears MSBU Boundary

WCS #6 30cfs

Railroad Canal

Caloosahatchee River (C-43)

Glades County

Hendry County

WCS #5 135cfs

RAILROAD CANAL DRAINAGE BASIN
(7059 ac)

CITY DITCH DRAINAGE BASIN

WCS #4 14cfs

WCS #3 50cfs

Bailey Canal

WCS #3 (plugged) 0.0cfs

Helm's Rd Ditch

(2)36" CMP

(3)42" CMP

(2)36"X65" CMP

(3) 29"X43" METAL ARCH PIPE

42" CMP W/ RISER 42" CMP

(2) 72" CMP

BOX CULVERT

BOX CULVERT

FORD RD.

City Ditch

2" CMP

2" CMP

153 cfs

SR 29 DRAINAGE BASIN

25.8

26.5

23.0

25.0

26.4

26.5

25.0

26.1

27.5

24.2

14.5

15.0

26.0

27.0

0 2000 4000
SCALE IN FEET

LEGEND:

- Project Boundary
- Existing Drainage Basins
- Existing Ditches
- Existing Discharge Locations
- Existing Direction of Flow
- Existing Wetlands
- (26.5) Wet Season Water Table Elevation Per Aim Engineering, Inc.
- Railroad

Note:
WCS - discharging rates are per Barron Water Control District permits, all other discharge rates are based on 30 cam discharging from the drainage basin.

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

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Existing Drainage Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-06

(1636 ac)

Canal C-1

EXISTING BRIDGE SR-80

EXISTING 75' BOTTOM RW

Project Location

Start Project
Sta: 123+00

(3425 ac)

PROPOSED (4) 36" CMP

End Project
Sta: 442+00

Discharge = 119 cfs

PROPOSED WEIR WCS-1

(289 ac)

(357 ac)

WCS #7 68cfs

WCS #6 30cfs

WCS #5 135cfs

WCS #4 14cfs

WCS #3 50cfs

WCS #3 (plugged) 50cfs

ABANDONED SEABOARD COAST LINE RAILROAD

Airport-Sears MSBU Boundary

FLORILAND DRAINAGE BASIN
4992 AC.

Railroad Canal

RAILROAD CANAL DRAINAGE BASIN
7059 AC.

Glades County

Hendry County

Caloosahatchee River (C-43)

SR 80

Helm's Rd Ditch

CITY DITCH DRAINAGE BASIN

Bailey Canal

"B" ROAD

SR29 DRAINAGE BASIN

25.8 26.5 23.0 25.0 26.4 26.5 25.0 26.1

0 2000 4000
SCALE IN FEET

LEGEND:

- Project Boundary
- Proposed Drainage Basins
- Existing Ditches
- Proposed Water Control Structure
- Proposed/Existing Direction of Flow
- Existing Wetlands
- 25.5 Wet Season Water Table Elevations Per Aim Engineering Inc.

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REVISIONS

Airport-Sears MSBU
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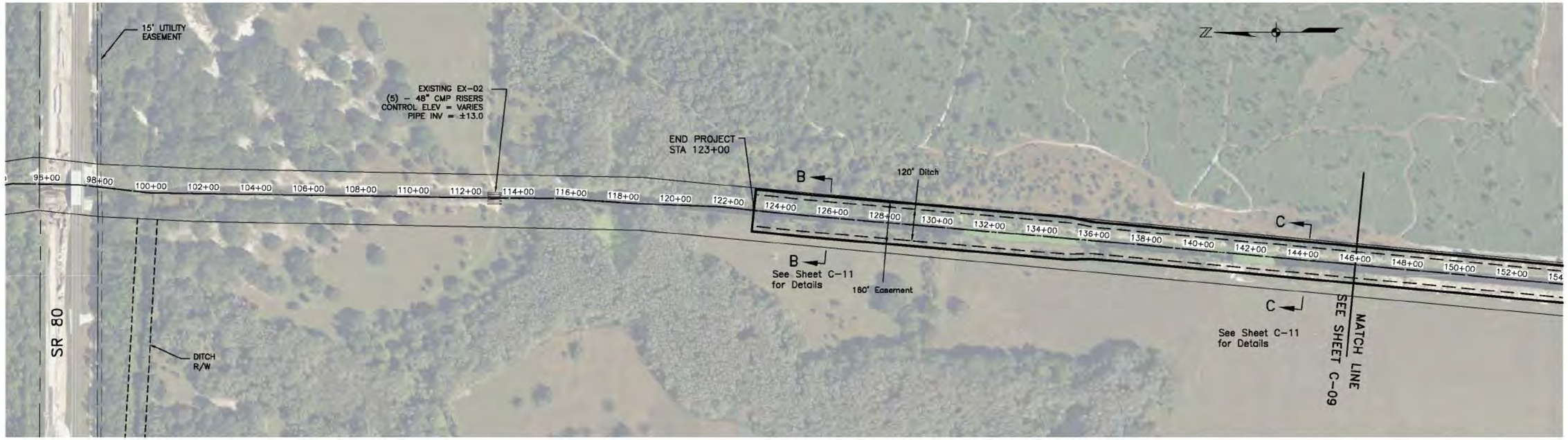
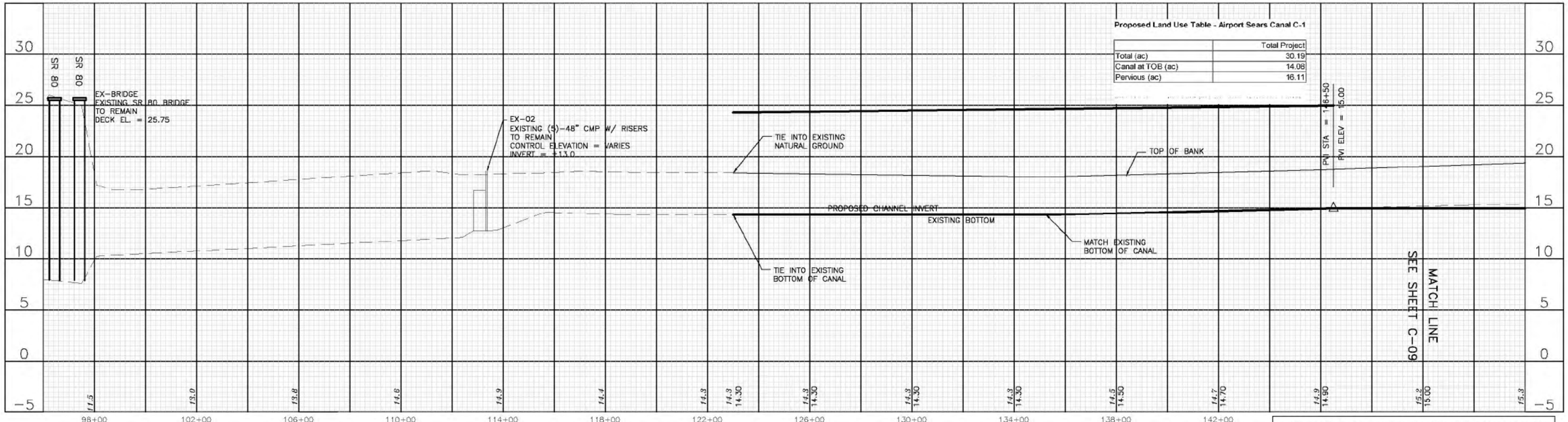
Proposed Drainage Plan

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-07



NOTE: STRUCTURE EX-02 WAS FIELD LOCATED AND MEASURED.
PRESENT RISER ELEVATION ±17.4'



Proposed Land Use Table - Airport Sears Canal C-1

	Total Project
Total (ac)	30.19
Canal at TOB (ac)	14.08
Pervious (ac)	16.11

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

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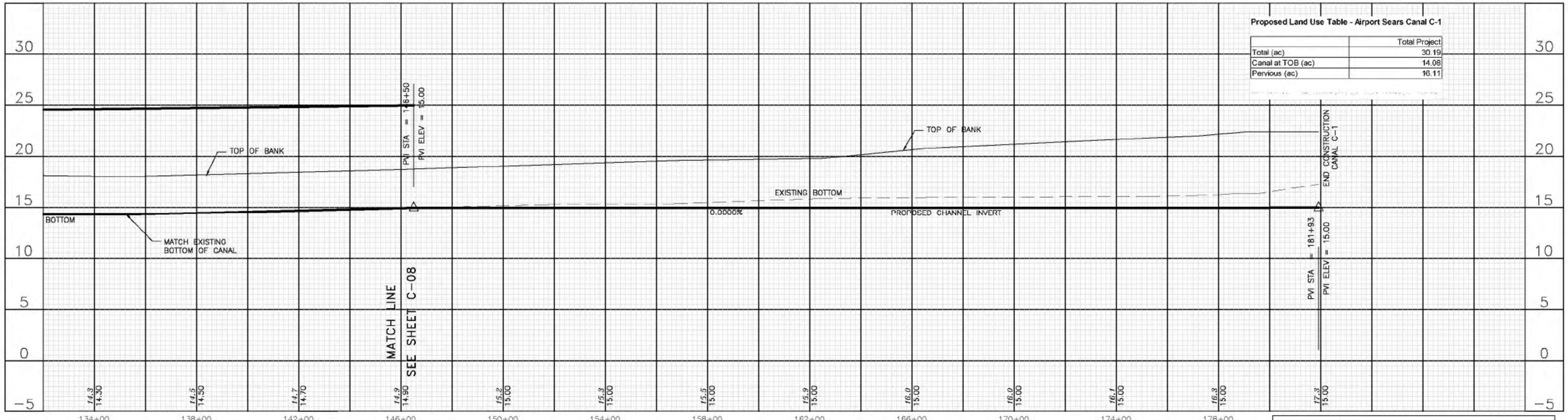
Canal C-1 Plan And Profile

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-08



Proposed Land Use Table - Airport Sears Canal C-1

	Total Project
Total (ac)	30.19
Canal at TOB (ac)	14.08
Pervious (ac)	16.11

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REVISIONS

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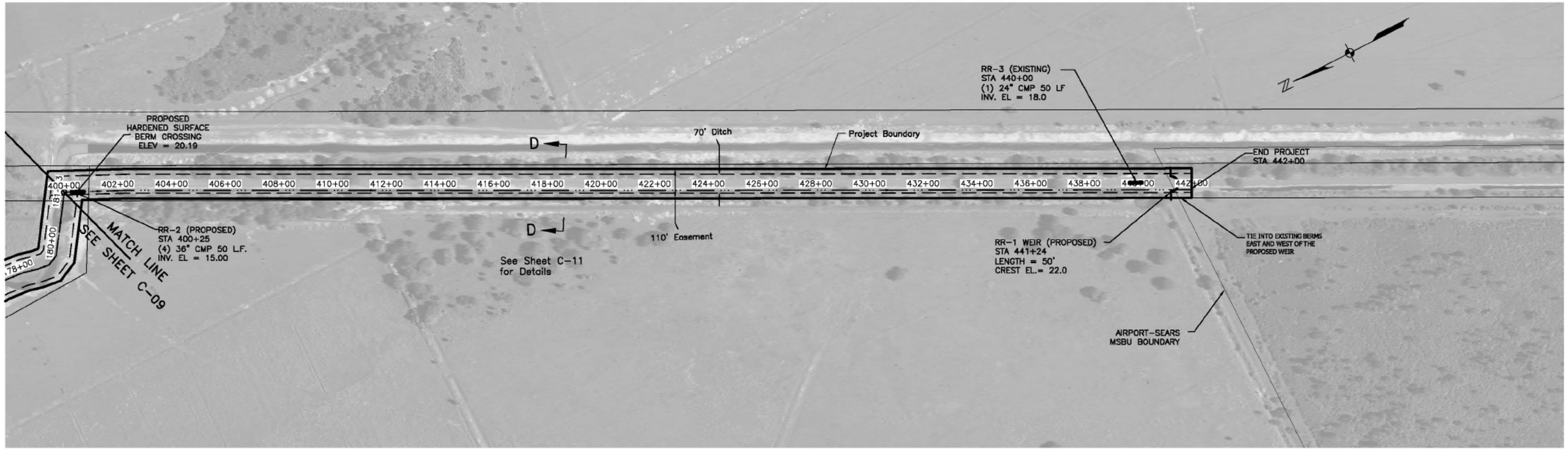
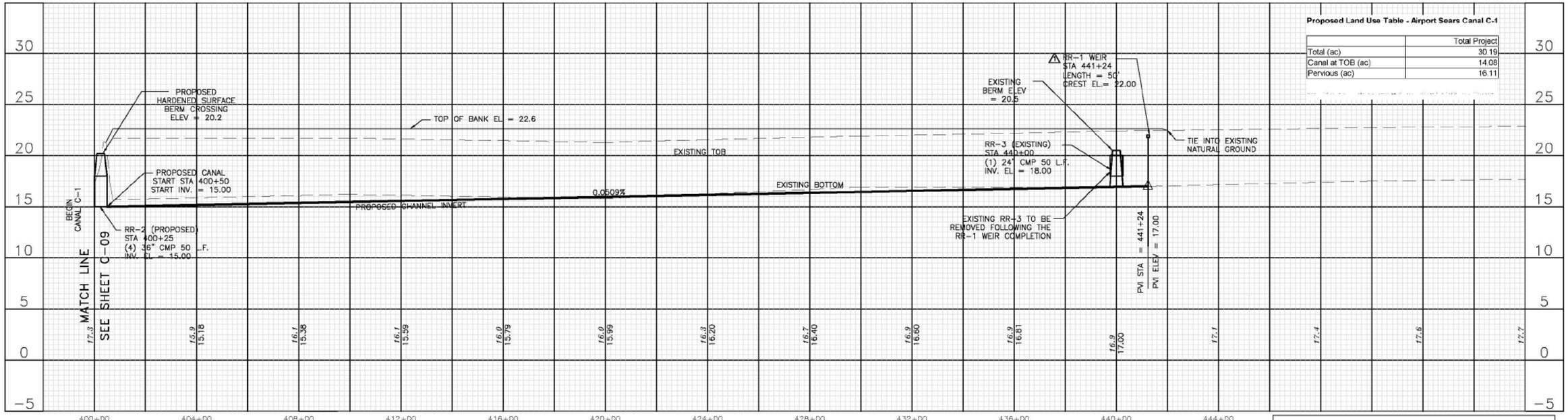
Canal C-1 Plan And Profile

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-09





Proposed Land Use Table - Airport Sears Canal C-1

	Total Project
Total (ac)	30.19
Canal at TOB (ac)	14.08
Pervious (ac)	16.11

0 200 400
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0 5 10
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REVISIONS

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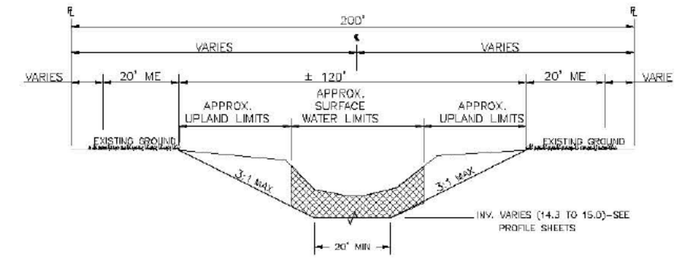
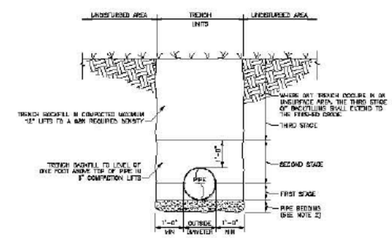
Railroad Canal Plan And Profile

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-10

Canal C-1



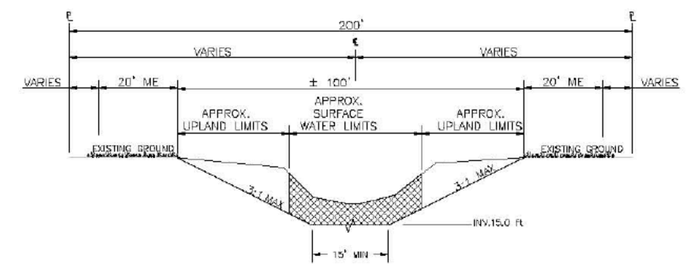
TYPICAL SECTION B-B
STA. 123+00 to STA. 135+00
N.T.S.



NOTES
1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, SANDY SILTY OR SANDY CLAY, SHALL CONTAIN UNIFORMAL OR OTHER APPROVED MATERIAL.
2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

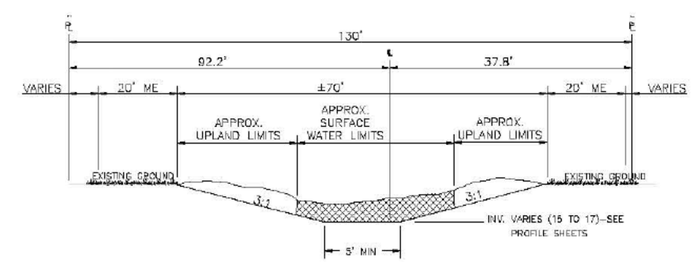
UNPAVED AREA TRENCH BACKFILL DETAIL
N.T.S.

C-1



TYPICAL SECTION C-C
STA. 136+00 to STA. 181+93
N.T.S.

Railroad Canal



TYPICAL SECTION D-D
STA. 400+00 to STA. 442+00
N.T.S.

NOTE:
TRANSITION FROM SECTION B–B TO C–C BETWEEN STA 135+00 AND STA 136+00.
TRANSITION FROM SECTION C–C TO D–D BETWEEN CANAL C–1 AND RAILROAD CANAL.

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

\\ftms01\proj-jeh\20033945-02\watermgmt\canal c-1 2017\Details_Sections.dwg (Typ Sections) jwm Jan 11, 2017 – 12:19pm

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Airport-Sears MSBU
Hendry County, Florida

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ANDREW D. TILTON, PE
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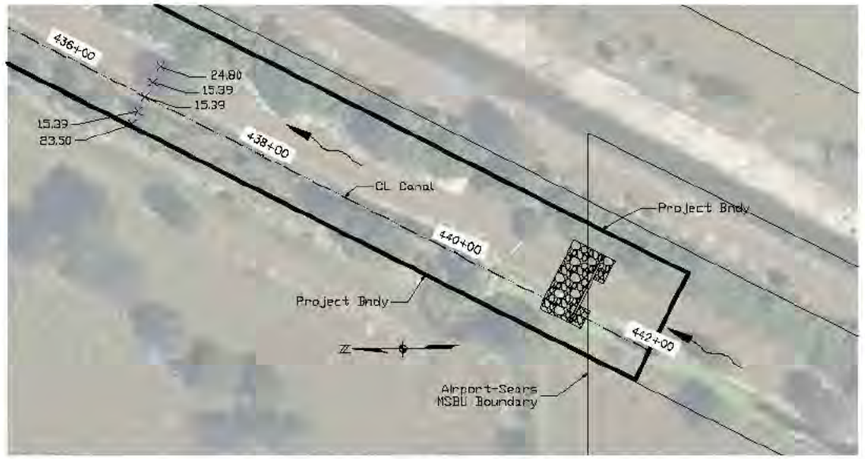
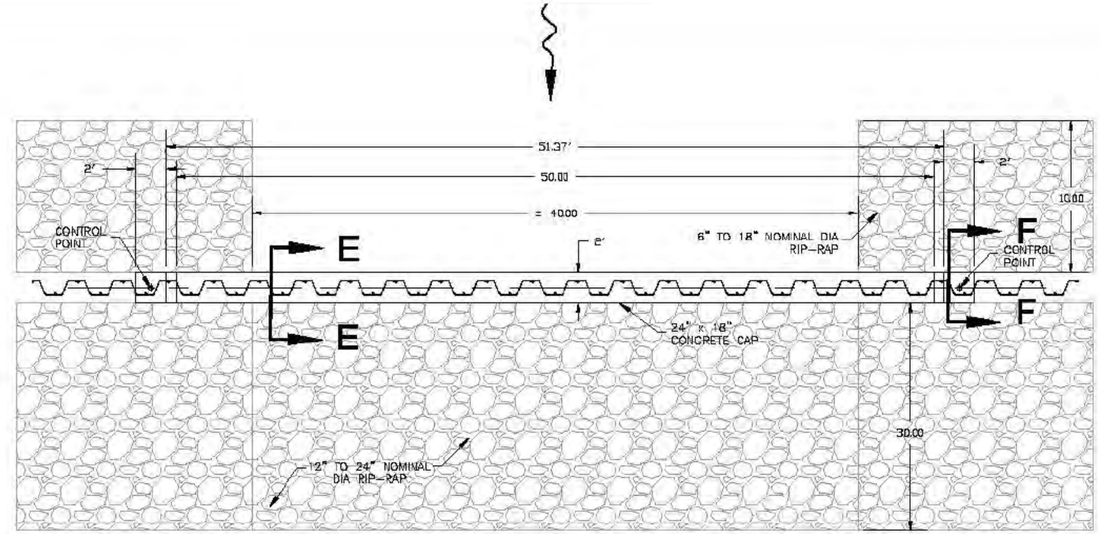
Typical Sections & Drainage Details

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-11



SITE LOCATION

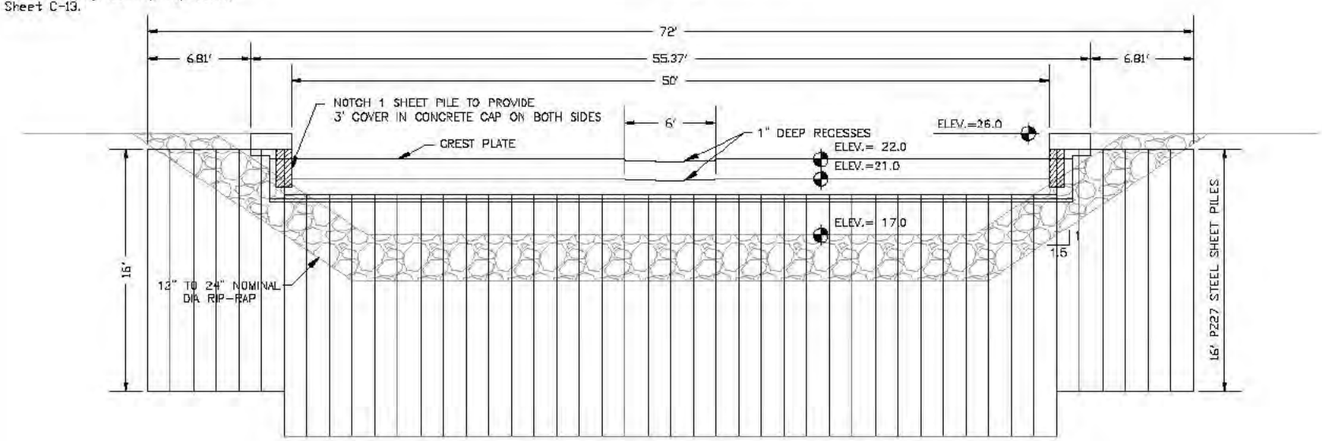
N.T.S.



NOTE:
Construct Rip Rap for 30' downstream of downstream apron banks and bottom. Construct Rip Rap for 10' Upstream of upstream apron on banks only. See Rip Rap detail Sheet C-13.

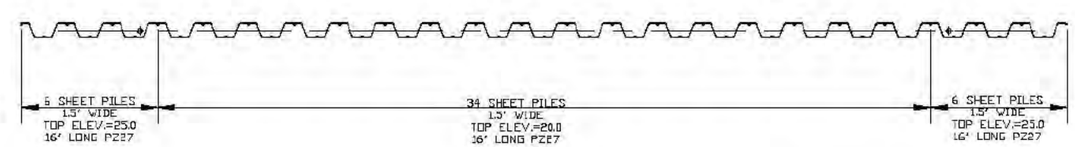
PLAN VIEW

N.T.S.



FRONT VIEW – SECTION (A–A)

N.T.S.



SHEET PILE – PLAN VIEW

N.T.S.

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

\\ftme01\proj-jal\20033945-02\watermgmt\canal c-1 2017\Details_Sections.dwg (Weir RR-1) jwm Jan 12, 2017 - 12:36pm

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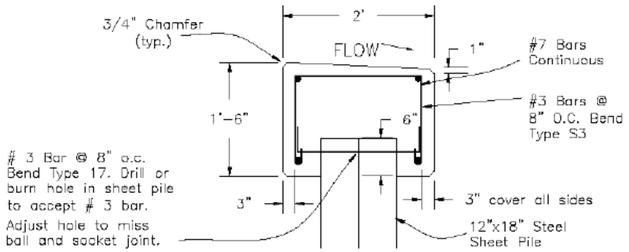
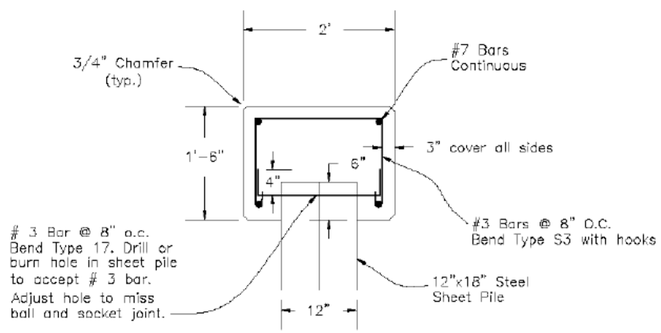
Weir RR-1 - STA 441+24

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-12



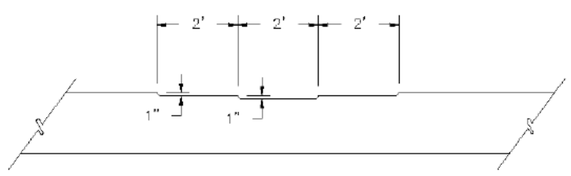
TYPICAL STEEL PILE WEIR CAP E-E

SCALE 1" = 1'

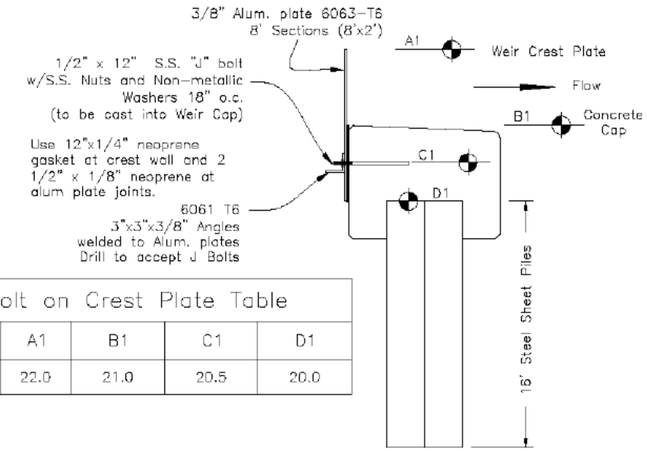


TYPICAL STEEL PILE CAP F-F

SCALE 1" = 1'



WEIR CREST & CREST PLATE RECESS DETAIL



Bolt on Crest Plate Table				
	A1	B1	C1	D1
RR-1	22.0	21.0	20.5	20.0

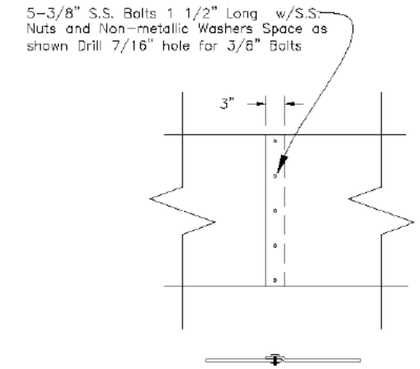
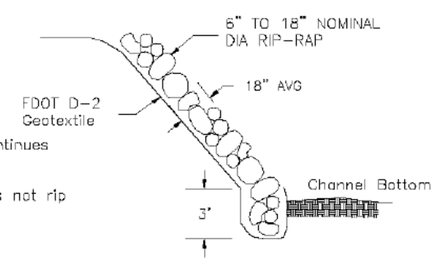


PLATE JOINT

Construct Crest Plates for RR-1 only. See Table A for dimensions.

BOLT ON CREST PLATE DETAIL

N.T.S.



1. Downstream Rip-Rap continues across stream bottom.

2. All berm and bank areas not rip rapped will be sodded.

FDOT DITCH LINING RIP RAP DETAIL

N.T.S.

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

\\ftms01\proj-jel\20033945-02\watermgmt\canal a-1 2017\Details_Sections.dwg (Weir Details) jwm Jan 12, 2017 - 12:39pm

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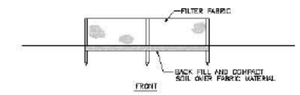
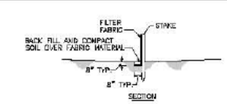
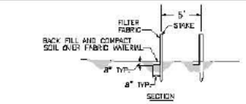
Sheet Pile Weir Details

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-13

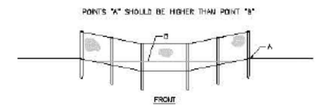


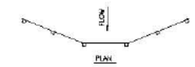
FILTER BARRIER
N.T.S.



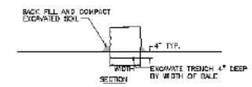


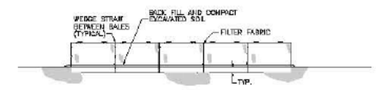
DOUBLE FILTER BARRIER
N.T.S.



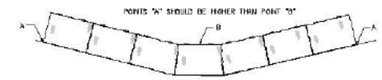


PROPER PLACEMENT OF FILTER BARRIER IN DRAINAGE WAY
N.T.S.





STRAW BALE BARRIER
N.T.S.



PROPER PLACEMENT OF STRAW BALE BARRIER IN DRAINAGE WAY
N.T.S.

NOTES:

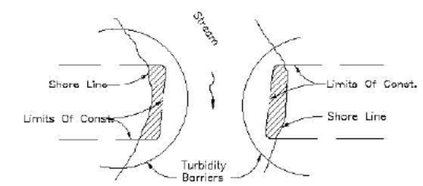
ALL EROSION CONTROL MEASURES SHOWN ARE RECOMMENDED AND MAY BE MODIFIED AS NEEDED BY THE CONTRACTOR DEPENDING ON SITE CONDITIONS.

CONTRACTOR TO UTILIZE ADDITIONAL EROSION CONTROL MEASURES AS NECESSARY TO PREVENT EROSION.

ALL SILT FENCE AND SAFETY BARRIER/SNOW FENCE TO REMAIN IN PLACE UNTIL COMPLETION OF CONSTRUCTION.

SILT FENCE AND/OR SAFETY BARRIER/SNOW FENCE TO BE PLACED AROUND ALL "NATIVE VEGETATION TO REMAIN"

DOUBLE SILT FENCE TO BE PLACED AROUND ALL PRESERVE AREAS. SEE DOUBLE FILTER BARRIER TYPICAL SECTION FOR DETAIL.



Note:
Turbidity barriers for flowing streams may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however payment will be under the pay item(s) established in the plans for Floating Turbidity Barrier and/or Staked Turbidity Barrier. Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.

PLANS ARE FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.

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Erosion Control Details

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
January 2017	20033945-02	16-43-29	As Shown	C-14