

# CIVIL ENGINEERING PLANS

1/8/2025

An aerial photograph of a suburban area with a grid of roads. A rectangular area, shaded with diagonal hatching, is located in the center of the map. A line points from the text 'PROJECT SITE' to this hatched area. The roads are labeled as follows: 'LURAY RD' runs horizontally across the middle; 'MUSTANG TRAIL' runs horizontally at the bottom; 'SW 136th AVE' runs vertically on the left side; 'HOLATEE TRAIL' runs vertically at the top; and 'MELALEUCA RD' runs vertically on the right side.

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HOLATEE TRAIL & LURAY RD  
DRAINAGE PROJECT  
TOWN OF SOUTHWEST RANCHES, FL 33330

COVER SHEET

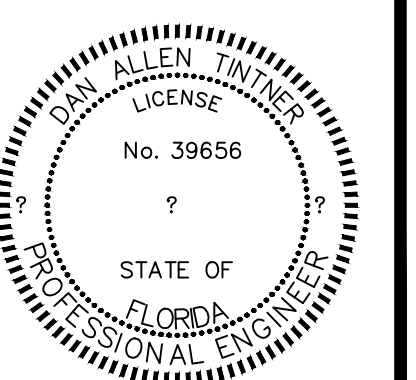


814 S. MILITARY TRAIL, DEERFIELD BEACH, FLORIDA 33442  
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SCALE:	AS SHOWN
DATE:	2/21/2025
DRAWN BY:	R.T.
CHECKED BY:	R.P.
DESIGNED BY:	R.P.

C-01



DAN TINTNER, P.E.  
FLORIDA REGISTRATION NO. - 39656

## I. APPLICABLE CODES

- ALL GENERAL:
- ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF SOUTHWEST RANCHES, BROWARD COUNTY DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION (BCDEP), FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP), SOUTH BROWARD DRAINAGE DISTRICT (SBD), SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD), AND ALL OTHER LOCAL AND NATIONAL CODES WHERE APPLICABLE.
- B. CONSTRUCTION SAFETY:
- ALL CONSTRUCTION SHALL BE DONE IN A SAFE MANNER, SPECIFICALLY, THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) SHALL BE STRICTLY OBSERVED.
- C. TRENCH SAFETY ACT
1. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLIANCE WITH THE STATE OF FLORIDA TRENCH SAFETY ACT.
  2. WHERE EXCAVATIONS TO A DEPTH IN EXCESS OF FIVE FEET (5') ARE REQUIRED THE CONTRACTOR SHALL INCLUDE THE FOLLOWING INFORMATION IN THE BID.
    - A. A REFERENCE TO THE SAFETY STANDARDS THAT WILL BE IN EFFECT DURING THE PERIOD OF CONSTRUCTION OF THE PROJECT.
    - B. WRITTEN ASSURANCES BY THE CONTRACTOR PERFORMING THE TRENCH EXCAVATION THAT SUCH CONTRACTOR WILL COMPLY WITH THE APPLICABLE TRENCH SAFETY STANDARDS.
    - C. A SEPARATE ITEM IDENTIFYING THE COST OF COMPLIANCE WITH THE APPLICABLE TRENCH SAFETY STANDARDS.
  3. WHERE A BID IS NOT SUBMITTED, THE CONTRACTOR SHALL SUBMIT THE INFORMATION LISTED IN ITEM 2. TO THE ENGINEER PRIOR TO STARTING WORK.
- D. SURVEY DATA:
- ALL ELEVATIONS ON THE PLANS OR REFERENCED IN THE SPECIFICATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

## II. PRECONSTRUCTION RESPONSIBILITY

- A. UPON RECEIPT OF NOTICE OF AWARD, THE CONTRACTOR SHALL ARRANGE A PRECONSTRUCTION CONFERENCE TO INCLUDE THE TOWN OF SOUTHWEST RANCHES ENGINEERING DIVISION, THE OWNER, AND THE ENGINEER, AFTER OBTAINING A CONSTRUCTION PERMIT FROM THE ENGINEERING DIVISION.
- B. THE CONTRACTOR SHALL OBTAIN A "SUNSHINE CERTIFICATION NUMBER" AT LEAST 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION.
- C. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE SIZE, LOCATION, ELEVATION, AND MATERIAL OF ALL EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION.
- D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ANY EXISTING UTILITIES FOR WHICH HE FAILS TO REQUEST LOCATIONS SUNSHINE CERTIFICATION NUMBER. HE IS RESPONSIBLE AS WELL FOR DAMAGE TO ANY EXISTING UTILITIES WHICH ARE PROPERLY LOCATED.
- E. IF UPON EXCAVATION, AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED CONSTRUCTION OR TO BE OF A SIZE OR MATERIAL DIFFERENT FROM THAT SHOWN ON THE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER, WHO WILL IN TURN NOTIFY THE TOWN OF SOUTHWEST RANCHES UTILITIES DEPARTMENT.

### III. INSPECTIONS

THE CONTRACTOR SHALL NOTIFY THE TOWN OF SOUTHWEST RANCHES ENGINEERING DIVISION 954-434-0008, SBDD 954-680-3337, AND THE ENGINEER OF RECORD AT LEAST 24 HOURS PRIOR TO THE INSPECTION OF THE FOLLOWING ITEMS:

- A.
  1. STORM DRAINAGE.
  2. SANITARY SEWER.
  3. WATER SYSTEM.
  4. SUBGRADE; SUBMIT AND HAVE APPROVED DENSITIES PRIOR TO PLACEMENT OF ROCK.
  5. LIMEROCK BASE; SUBMIT AND HAVE APPROVED DENSITIES AND AS-BUILT PRIOR TO THE PLACEMENT OF ANY ASPHALT.
  6. ASPHALTIC CONCRETE.
  7. FINAL.
- B. ALL INSPECTIONS MADE BY THE TOWN OF SOUTHWEST RANCHES, SBDD, AND FDOT THE ENGINEER OF RECORD WILL PROVIDE CONSTRUCTION OBSERVATION SERVICES.

#### IV. SHOP DRAWINGS

- A. PRIOR TO ISSUANCE OF A CONSTRUCTION PERMIT, A MATERIAL LIST SHALL BE SUBMITTED TO AND REVIEWED BY THE ENGINEER OF RECORD AND THE TOWN OF SOUTHWEST RANCHES FOR SATISFACTORY MANHOLES, HYDRANTS, VALVES, LIFT STATIONS AND OTHER ACCESSORIES. PRECAST STRUCTURES SHALL BE SUBMITTED FOR WATER AND SEWER PIPES, FITTINGS AND APPURTENANCES.
- B. ANY PRODUCT THAT IS NOT ON THIS LIST MUST BE APPROVED IN ADVANCE BY THE ENGINEER OF RECORD AND THE TOWN OF SOUTHWEST RANCHES ENGINEERING DIVISION. SUCH APPROVAL REQUIRES THE SUBMISSION OF A SHOP DRAWING (SIX COPIES) FOR EACH PRODUCT. SHOP DRAWINGS WILL ALSO BE REQUIRED FOR ALL NON-STANDARD ITEMS
- C. INDIVIDUAL SHOP DRAWINGS FOR ALL PRECAST STRUCTURES ARE REQUIRED. CATALOGUE LITERATURE WILL NOT BE ACCEPTED FOR PRECAST STRUCTURES.

## V. TEMPORARY FACILITIES

- A. TEMPORARY UTILITIES:
1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE FOR OR SUPPLY TEMPORARY WATER SERVICE, SANITARY FACILITIES AND ELECTRICITY TO HIS EMPLOYEE AND SUBCONTRACTORS FOR THEIR USE DURING CONSTRUCTION.
  2. OBTAIN CONSTRUCTION METER FOR ALL WATER USED ON JOB. ALL WATER USED FOR DRAINAGE, SEWER, PUMPING, ETC. WILL BE PAID FOR BY THE CONTRACTOR. IF WATER CANNOT BE METERED THEN IT WILL BE CALCULATED.
- B. TRAFFIC REGULATION:
1. MAINTENANCE OF TRAFFIC IN THE PUBLIC RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE MUTCD AND BCTCD.
  1. ALL OPEN TRENCHES AND HOLES ADJACENT TO ROADWAYS OR WALKWAYS SHALL BE MARKED AND BARRICADED TO ASSURE THE SAFETY OF BOTH VEHICULAR AND PEDESTRIAN TRAFFIC.
  3. NO TRENCHES OR HOLES NEAR WALKWAYS OR IN ROADWAYS OR THEIR SHOULDERS ARE TO BE LEFT OPEN DURING NIGHTTIME HOURS WITHOUT EXPRESS PERMISSION OF THE TOWN OF SOUTHWEST RANCHES.

## VI. PROJECT CLOSE OUT

- A. CLEANING UP:**
1. DURING CONSTRUCTION, THE PROJECT SITE AND ALL ADJACENT AREAS SHALL BE MAINTAINED IN A NEAT AND CLEAN MANNER. UPON FINAL CLEAN UP, THE PROJECT SITE SHALL BE LEFT IN CLEAR OF ALL SURPLUS MATERIAL OR TRASH. THE PAVED AREAS SHALL BE SWEEP BROOM CLEAN.
  2. THE CONTRACTOR SHALL RESTORE OR REPLACE, WHEN AND AS DIRECTED BY THE ENGINEER OR THE TOWN OF SOUTHWEST RANCHES, ANY PUBLIC OR PRIVATE PROPERTY DAMAGED BY HIS WORK, EQUIPMENT, EMPLOYEES OR THOSE OF HIS SUBCONTRACTORS. UNDER A CONDITION EQUIVALENT TO THAT EXISTING IMMEDIATELY PRIOR TO THE BEGINNING OF OPERATIONS. TO THIS END, THE CONTRACTOR SHALL DO AS REQUIRED, ALL NECESSARY MATERIALS, ROAD DRIVEWAYS, SIDEWALKS AND LANDSCAPING WORK, SUITABLE MATERIALS AND METHODS SHALL BE USED FOR SUCH RESTORATION.
  3. WHERE MATERIAL OR DEBRIS HAS WASHED OR FLOWED INTO OR BEEN PLACED IN WATER, WATER COURSES, GRAVITY SEWER, DITCHES, DRAINS, CATCH BASINS, OR ELSEWHERE AS A RESULT OF THE CONTRACTOR'S OPERATIONS, SUCH MATERIAL OR DEBRIS SHALL BE IMMEDIATELY REMOVED AND LEGITIMATELY DISPOSED DURING PROGRESS OF THE WORK, AND THE AREA KEPT IN A CLEAN AND NEAT CONDITION.
  4. WHEN WORKING IN AND AROUND EXISTING DRAINAGE CANALS, APPROPRIATE SILT BARRIERS SHALL BE INSTALLED AS REQUIRED BY SOUTH BROWARD DRAINAGE DISTRICT.
- B. PROJECT RECORD DOCUMENTS:**
1. THE CONTRACTOR SHALL MAINTAIN ACCURATE AND COMPLETE RECORDS OF ALL WORK ITEMS COMPLETED.
  2. ALL "AS-BUILT" INFORMATION SUBMITTED TO THE ENGINEER SHALL BE SUFFICIENTLY ACCURATE, CLEAR AND LEGIBLE TO SATISFY THE ENGINEER THAT THE INFORMATION PROVIDED IS TRUE REPRESENTATION OF THE IMPROVEMENTS CONSTRUCTED.

## BROWARD COUNTY DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION

1. NOTES ON WATER SEWER SEPARATION:
- A. SANITARY SEWERS AND FORCE MAINS SHOULD CROSS UNDER WATER MAINS WHENEVER POSSIBLE. SANITARY SEWERS AND FORCE MAINS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE WHENEVER POSSIBLE.
- WHERE SANITARY SEWERS OR FORCE MAINS MUST CROSS A WATER MAIN WITH LESS THAN 18 INCHES OF VERTICAL DISTANCE, BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (D.I.P.) AT THE CROSSING. SUFFICIENT LENGTHS OF D.I.P. MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY JOINTS. JOINTS ON THE WATER MAIN SHALL BE MAINTAINED AT A CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS WHEN THE WATER MAIN IS ABOVE THE SEWER MAIN. A MINIMUM VERTICAL CLEARANCE OF 12 INCHES MUST BE MAINTAINED AT ALL CROSSINGS WHEN THE WATER MAIN IS BELOW THE SEWER MAIN.
- ALL CROSSING SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUAL DISTANCE FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING).
- WHERE A NEW PIPE CONFLICTS WITH AN EXISTING PIPE WITH LESS THAN 18 INCHES VERTICAL CLEARANCE, THE NEW PIPE SHALL BE ARRANGED TO MEET THE CROSSING REQUIREMENTS ABOVE.
- B. A MINIMUM 10-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ANY TYPE OF SEWER AND WATER MAIN PARALLEL INSTALLATIONS WHENEVER POSSIBLE.
- IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN 10-FOOT HORIZONTAL SEPARATION, THE WATER MAIN AND THE SEWER OR FORCE MAIN CROSSING ON WATER MAINS UNDERGROUNDS SHALL BE LOCATED ON ONE SIDE OF THE SEWER OR FORCE MAIN AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.
- WHERE IT IS NOT POSSIBLE TO MAINTAIN A VERTICAL DISTANCE OF 18 INCHES IN PARALLEL INSTALLATIONS, THE WATER MAIN SHALL BE CONSTRUCTED OF D.I.P. AND THE SANITARY SEWER OR THE FORCE MAIN SHALL BE CONSTRUCTED OF D.I.P. WITH A MINIMUM VERTICAL DISTANCE OF 8 INCHES. IN THAT CASE THE WATER MAIN SHOULD BE LOCATED ON ONE SIDE OF THE SEWER OR FORCE MAIN AND BE MAINTAINED AS FAR APART AS POSSIBLE FROM JOINTS ON THE SEWER OR FORCE MAIN (STAGGERED JOINTS).
- C. ALL D.I.P. SHALL BE CLASS 50 OR HIGHER. ADEQUATE PROTECTIVE MEASURE AGAINST CORROSION SHALL BE USED AS DETERMINED BY DESIGN.

GENERAL NOTE:

THE CONTRACTOR SHALL CONFORM TO THE MOST CURRENT AND MOST STRINGENT STANDARDS AND SPECIFICATION REQUIREMENTS FOR THE BROWARD COUNTY DEPARTMENT OF PLANNING AND ENVIRONMENTAL REGULATION AND THE TOWN OF SOUTHWEST RANCHES, PERTAINING TO ALL UTILITY PIPE SEPARATIONS.

## X. EARTHWORK AND COMPACTION

- A. GENERAL
1. NONE OF THE EXISTING MATERIAL IS TO BE INCORPORATED IN THE LIMEROCK BASE.
  2. ALL SUBGRADE UNDER PAVED AREAS SHALL HAVE A MINIMUM LBR VALUE OF 40 AND SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
  3. ALL FILL MATERIAL IN AREAS NOT TO BE PAVED SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
  4. A 2" BLANKET OF TOP SOIL SHALL BE PLACED OVER ALL AREAS TO BE SODDED.
  5. SOD SHALL BE ST. AUGUSTINE, BITTER BLUE OR FLORATAM AND SHALL BE PLACED ON THE GRADED TOP SOIL AND WATERED TO INSURE SATISFACTORY CONDITION UPON FINAL ACCEPTANCE OF THE PROJECT.
  6. WHEN WORKING IN AND AROUND EXISTING DRAINAGE CANALS OR LAKES, APPROPRIATE SILT BARRIERS SHALL BE INSTALLED.
- B. ON-SITE:
1. ALL ORGANIC AND OTHER UNSUITABLE MATERIAL WITHIN THREE FEET OF AREAS TO BE PAVED SHALL BE REMOVED.
  2. SUITABLE BACKFILL SHALL BE MINIMUM LBR 40 MATERIAL COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 FOR THREE (3) FEET BEYOND THE PERIMETER OF THE PAVING.

## XI. STORM DRAINAGE

- A. CONTRACTOR MAY UTILIZE ONE OF THE FOLLOWING MATERIALS:
1. ALUMINUM:
    - A. PIPE SHALL BE ALUMINUM, MANUFACTURED IN CONFORMANCE WITH ASTM B209.
    - B. PIPE SHALL BE SPIRAL RIB DRAINAGE PIPE WITH 3/4" BY 3/4" RIBS, APPROXIMATELY 7-1/2" ON CENTER. GAUGE THICKNESS SHALL MEET FDOT STANDARD 945-1.
    - C. PIPE COUPLING BANDS SHALL BE 12" WIDE STANDARD SPLIT BANDS OF THE SAME ALLOY AS THE PIPE AND MAY BE ONE GAUGE LIGHTER THAN THE PIPE.
    - D. POLYURETHANE OR OTHER SEALANT SHALL BE USED WITH COUPLING BANDS ON ALL NON-PERFORATED PIPE.
  2. REINFORCED CONCRETE PIPE (RCP):

CONCRETE PIPE FOR STORM SEWERS SHALL CONFORM TO ASTM L70-79, TABLE III, WALL B, OR LATEST REVISION. ALL PIPE SHALL HAVE MODIFIED TONGUE AND GROOVE JOINTS, AND HAVE RUBBER GASKETS, UNLESS OTHERWISE SPECIFIED.
  3. POLYPROPYLENE PIPE (PPP):

POLYPROPYLENE PIPE SHALL HAVE A SMOOTH INTERIOR AND ANNUALR EXTERIOR CORRUGATIONS. MANNING'S "N" VALUE FOR USE IN DESIGN SHALL BE 0.012. POLYPROPYLENE PIPE MEETS OR EXCEEDS AASHTO M330 OR ASTM F288 (12"-60"). PIPE SHALL BE JOINED BY WATERTIGHT, GASKETED INTEGRAL BELT REINFORCED BY A POLYMER COMPOSITE BAND & SPIGOT. THE JOINT SHALL BE WATERTIGHT ACCORDING TO THE REQUIREMENTS OF ASTM D3212. POLYPROPYLENE COMPOUND SHALL BE IMPACT MODIFIED COPOLYMER MEETING AASHTO M330 OR ASTM F2881 (12"-60"). INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D3221.
  4. MISCELLANEOUS:
    - A. BEDDING AND INITIAL BACKFILL OVER DRAINAGE PIPES SHALL BE SAND WITH NO ROCK LARGER THAN 1" DIAMETER.
    - B. BACKFILL MATERIAL UNDER PAVED AREAS SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
    - C. BACKFILL MATERIAL UNDER AREAS NOT TO BE PAVED SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
    - D. CATCH BASINS SHALL BE PRECAST MINIMUM 3000 PSI CONCRETE AND GRADE 40 REINFORCED STEEL.
  5. INSTALLATION:
    - A. PIPE SHALL BE PLACED ON STABLE GRANULAR MATERIAL FREE OF ROCK FORMATION OR OTHER FOREIGN FORMATIONS, AND CONSTRUCTED TO UNIFORM GRADE AND LINE.
    - B. BACKFILL MATERIAL SHALL BE WELL GRADED GRANULAR MATERIAL WELL TAMPED IN LAYERS NOT TO EXCEED SIX INCHES (6").
    - C. PROVIDE A MINIMUM PROTECTIVE COVER OF 18 INCHES OVER STORM SEWER AND AVOID UNNECESSARY CROSSING BY HEAVY CONSTRUCTION VEHICLES DURING CONSTRUCTION.
    - D. THE CONTRACTOR SHALL NOTIFY THE LOCAL WATER CONTROL DISTRICT AT LEAST 24 HOURS PRIOR TO THE START OF THE CONSTRUCTION AND INSPECTION.

## XII.

- A. ANY CONFLICT WITH EXISTING OR PROPOSED UTILITIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER. ANY IMPERMEABLE MATERIAL ENCOUNTERED IN THE EXCAVATION FOR THE DRAIN FIELD SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
- B. THE TRENCH LINER SHALL BE TYRAP SPUN BONDED POLYPROPYLENE FILTER FABRIC AS MANUFACTURED BY THE DUPONT COMPANY, OR APPROVED EQUAL. IT SHALL BE USED ON THE SIDES AND TOP OF THE DRAIN FIELD DITCH; THE TOP SECTION OF THE MATERIAL SHALL BE LAPPED A MINIMUM OF 24 INCHES. THE CONTRACTOR SHALL TAKE EXTREME CARE IN BACKFILLING TO AVOID BUNCHING OF THE FABRIC.
- C. PERFORATED PIPE WITHIN THE DRAIN FIELD SHALL HAVE 3/8 INCH PERFORATIONS 360° AROUND THE PIPE WITH APPROXIMATELY 120 PERFORATIONS PER FOOT OF PIPE.
- D. PERFORATED PIPE SHALL TERMINATE FIVE FEET (5') FROM THE DRAINAGE STRUCTURE. THE REMAINING FIVE FEET (5') SHALL BE NON-PERFORATED PIPE.
- E. PIPES SHALL TERMINATE TWO FEET (2') FROM THE END OF THE TRENCH OR CONNECT TO ADDITIONAL CATCH BASINS.

### XIII. PAVING

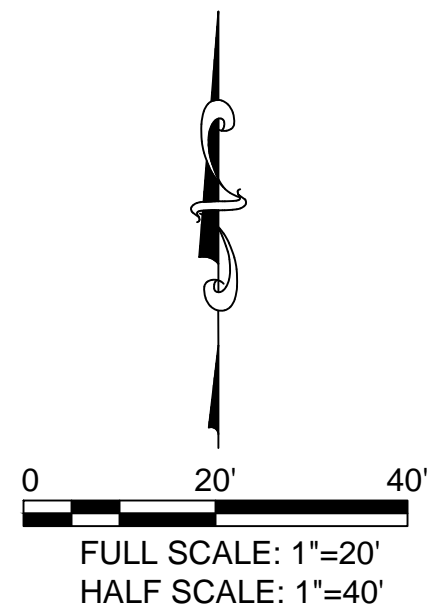
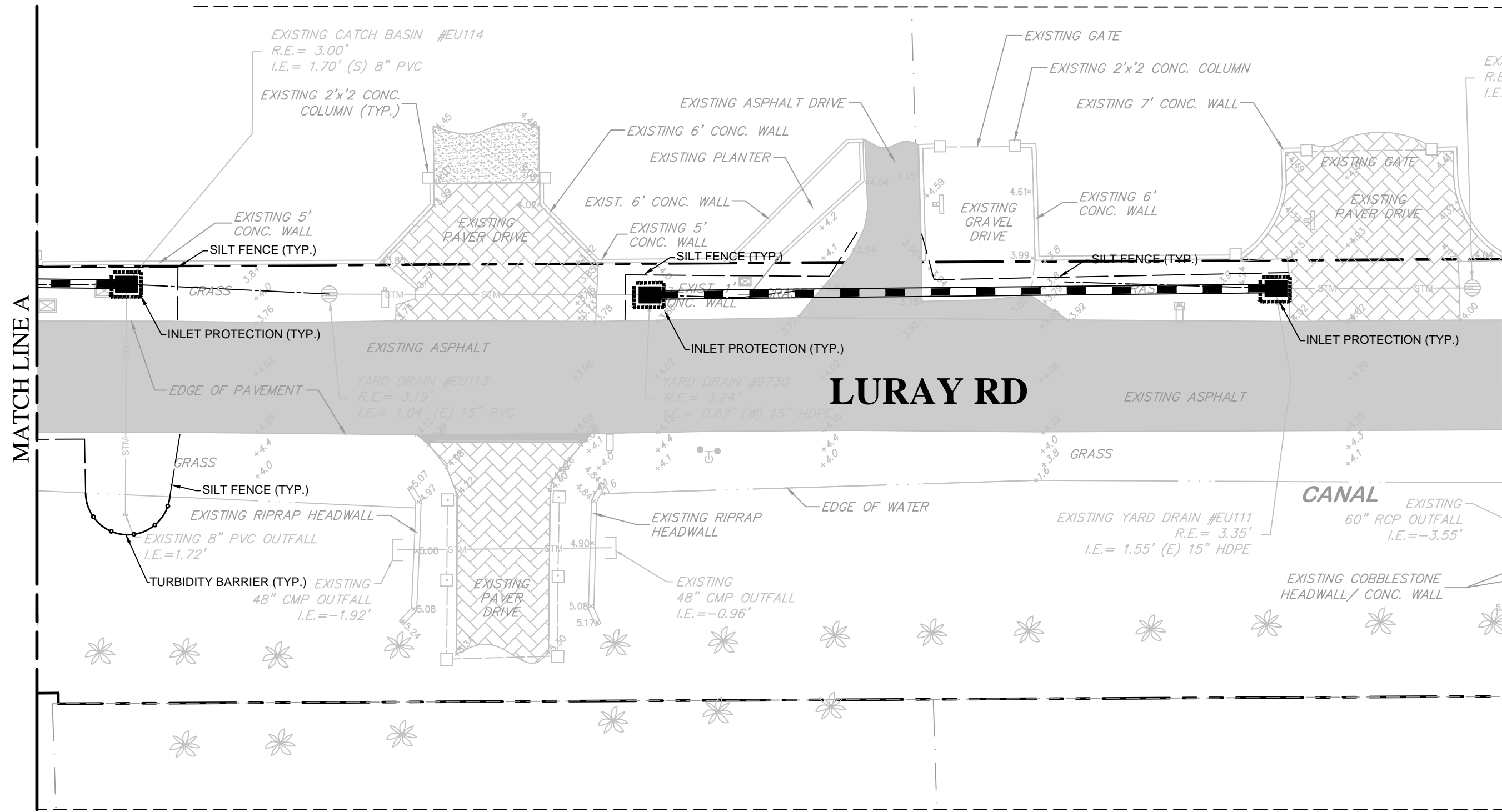
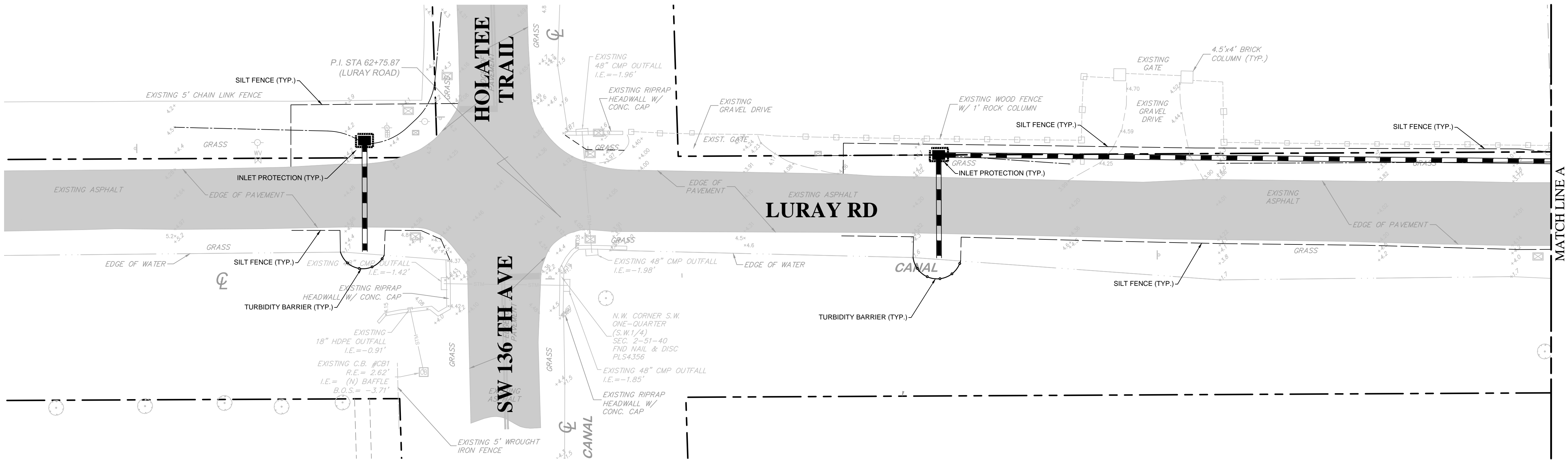
- # GENERAL:
1. ALL UNDERGROUND UTILITIES SHALL BE COMPLETED PRIOR TO THE CONSTRUCTION OF LIMEROCK BASE AND PRIOR TO PLACEMENT OF THE PAVEMENT.
  2. ALL EXISTING PAVEMENT CUT OR DAMAGED BY CONSTRUCTION SHALL BE PROPERLY RESTORED AT THE CONTRACTOR'S EXPENSE.
  3. WHERE PROPOSED PAVEMENT IS TO BE CONNECTED TO EXISTING PAVEMENT, THE EXISTING EDGE OF PAVEMENT SHALL BE SAW CUT.
  4. ALL STREET CORNER PAVEMENT RADII SHALL BE 25 FEET UNLESS OTHERWISE NOTED ON THE PLANS.
  5. UPON COMPLETION OF DRAINAGE IMPROVEMENTS AND LIMEROCK BASE CONSTRUCTION (AND BEFORE PLACING ASPHALT PAVEMENT) THE CONTRACTOR SHALL FURNISH THE ENGINEER OF RECORD AND THE TOWN OF SOUTHWEST RANGES "AS-BUILT" PLANS FOR THESE IMPROVEMENTS, SHOWING THE LOCATIONS AND THE PERTINENT GRADES OF ALL DRAINAGE INSTALLATIONS AND THE FINISHED ROCK GRADES OF THE ROAD CROWN AND EDGE OF PAVEMENT AT 50 FEET INTERVALS. THESE "AS-BUILTS" SHALL BE APPROVED BY THE CITY PRIOR TO THE PLACEMENT OF ASPHALT.
  6. REFER TO ARCHITECTURAL PLANS FOR BRICK PAVERS DESIGN, AS APPLICABLE.
- # B. MATERIALS:
1. BASE COURSE SHALL BE CRUSHED LIMEROCK MIAMI OOLITE WITH A MINIMUM OF 70% CARBONATES OF CALCIUM AND MAGNESIUM (60% FOR LOCAL STREETS AND PARKING AREAS) AND A MINIMUM LIMEROCK BEARING RATIO 100.
  2. PRIME COAT AND TACK COAT SHALL MEET F.D.O.T. STANDARDS.
  3. SURFACE COURSE SHALL BE EQUAL TO F.D.O.T. TYPE S-3 ASPHALT.
  4. REINFORCED CONCRETE SLABS SHALL BE CONSTRUCTED OF CLASS I CONCRETE WITH A MINIMUM STRENGTH OF 3,000 PSI AND SHALL BE REINFORCED WITH A 6" X 6" NO. 6 GAUGE WIRE MESH.
  5. REFER TO ARCHITECTURAL PLANS FOR BRICK PAVERS DESIGN, AS APPLICABLE.
- # C. INSTALLATION:
1. LIMEROCK BASE MATERIAL SHALL BE 8 INCHES THICK AND SHALL BE COMPACTED TO 98% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T80-C.
  2. LIMEROCK BASE MATERIAL SHALL BE PLACED IN MAXIMUM 6" LIFTS. BASES GREATER THAN 6" SHALL BE PLACED IN TWO OR MORE EQUAL LIFTS.
  3. ASPHALTIC CONCRETE SHALL BE A MINIMUM OF 1 1/2" THICK AND SHALL BE PLACED TWO 3/4" LIFTS. (NOTE: SECOND LIFT TO BE PLACED AFTER A MINIMUM OF 80% OF THE HOUSES HAVE BEEN COMPLETED OR AS DIRECTED BY THE CITY ENGINEER).
  4. PRIME COAT SHALL BE PLACED ON ALL LIMEROCK BASES IN ACCORDANCE WITH F.D.O.T. STANDARDS.
  5. TACK COAT SHALL BE PLACED AS REQUIRED IN ACCORDANCE WITH F.D.O.T. STANDARDS.
  6. REFER TO ARCHITECTURAL PLANS FOR BRICK PAVERS DESIGN, AS APPLICABLE.
- # D. TESTING:
- ALL SUBGRADE, LIMEROCK AND ASPHALT TESTS REQUIRED SHALL BE TAKEN AT THE DIRECTION OF THE ENGINEER AND/OR THE TOWN OF SOUTHWEST RANGES.
1. THE FINISHED SURFACE OF THE BASE COURSE AND THAT OF THE WEARING SURFACE SHALL NOT VARY MORE THAN 1/4" FROM THE TEMPLATE. ANY IRREGULARITIES EXCEEDING THIS LIMIT SHALL BE CORRECTED.
  2. DENSITY TESTS SHALL BE TAKEN BY AN INDEPENDENT TESTING LABORATORY, CERTIFIED BY THE STATE OF FLORIDA, AND TAKEN AS DIRECTED BY THE ENGINEER AND THE CITY OF SOUTHWEST RANGES.
  3. ALL TESTING COSTS (PAYING) SHALL BE PAID FOR BY THE OWNER EXCEPT THOSE TESTS FAILING TO MEET THE SPECIFIED REQUIREMENTS, WHICH ARE TO BE PAID BY THE CONTRACTOR.
- # IV. SIGNING AND MARKING
- A. ALL PAVEMENT MARKINGS SHALL BE HOT APPLIED THERMOPLASTIC MANUFACTURED AND APPLIED IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATION'S SECTION 711 AND BROWARD COUNTY TRAFFIC ENGINEERING DIVISION STANDARDS WHERE APPLICABLE.
  - B. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND BROWARD COUNTY TRAFFIC ENGINEERING DIVISION STANDARDS.
  - C. REFLECTIVE PAVEMENT MARKERS SHALL BE CLASS B MARKERS MANUFACTURED IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATIONS 706 AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES.

#### XIV. SIGNING AND MARKING

- A. ALL PAVEMENT MARKINGS SHALL BE HOT APPLIED THERMOPLASTIC MANUFACTURED AND APPLIED IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATION'S SECTION 711 AND BROWARD COUNTY TRAFFIC ENGINEERING DIVISION STANDARDS WHERE APPLICABLE.
- B. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND BROWARD COUNTY TRAFFIC ENGINEERING DIVISION STANDARDS.
- C. REFLECTIVE PAVEMENT MARKERS SHALL BE CLASS B MARKERS MANUFACTURED IN ACCORDANCE WITH F.D.O.T. STANDARD SPECIFICATIONS 708 AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES.

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## Legend

See Erosion Control Details

Symbol	Description
	INLET PROTECTION
	SILT FENCE
	TURBIDITY BARRIER

### EROSION CONTROL

PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.

CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.

CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.

CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.

UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

NO EXCAVATED MATERIAL SHALL BE STOCKPILED IN SUCH A MANNER AS TO DIRECT RUNOFF DIRECTLY OFF THE PROJECT SITE OR INTO ANY ADJACENT WATER BODY OR STORMWATER COLLECTION FACILITY.

### PERMANENT EROSION CONTROL

ALL AREAS WHICH HAVE BEEN DISTURBED BY CONSTRUCTION SHALL, AT A MINIMUM, BE SODDED.

STRIP SOD ONE FOOT WIDE OR GREATER SHALL BE PLACED ADJACENT TO ALL CURBS, WALKS AND PAVEMENT. IN AREAS WITH A SIDEWALK, THE ENTIRE AREA BETWEEN THE SIDEWALK AND THE BACK OF CURB AND/OR EDGE OF PAVEMENT SHALL BE SODDED.

ALL GRASSED AREAS WILL BE MAINTAINED TO ASSURE A GOOD STAND AND SUFFICIENT GROUND COVER TO MINIMIZE EROSION. IF AFTER 60 DAYS AN ADEQUATE GROUND COVER HAS NOT BEEN ESTABLISHED, THE AREA WILL BE REGRASSED.

HOLATEE TRAIL & LURAY RD  
DRAINAGE PROJECT  
TOWN OF SOUTHWEST RANCHES, FL 33330

EROSION CONTROL PLAN

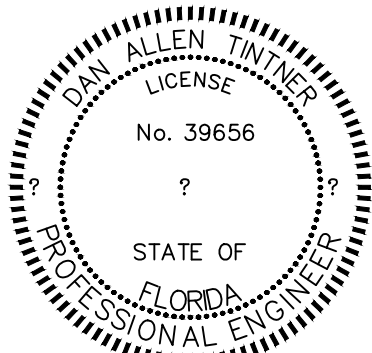


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814 S. MILITARY TRAIL, DEERFIELD BEACH, FLORIDA 33442  
PHONE: (854) 972-3569 FAX: (854) 972-4178

FILE NO. 241100

SCALE: AS SHOWN  
DATE: 2/21/2025  
DRAWN BY: R.T.  
CHECKED BY: R.P.  
DESIGNED BY: R.P.

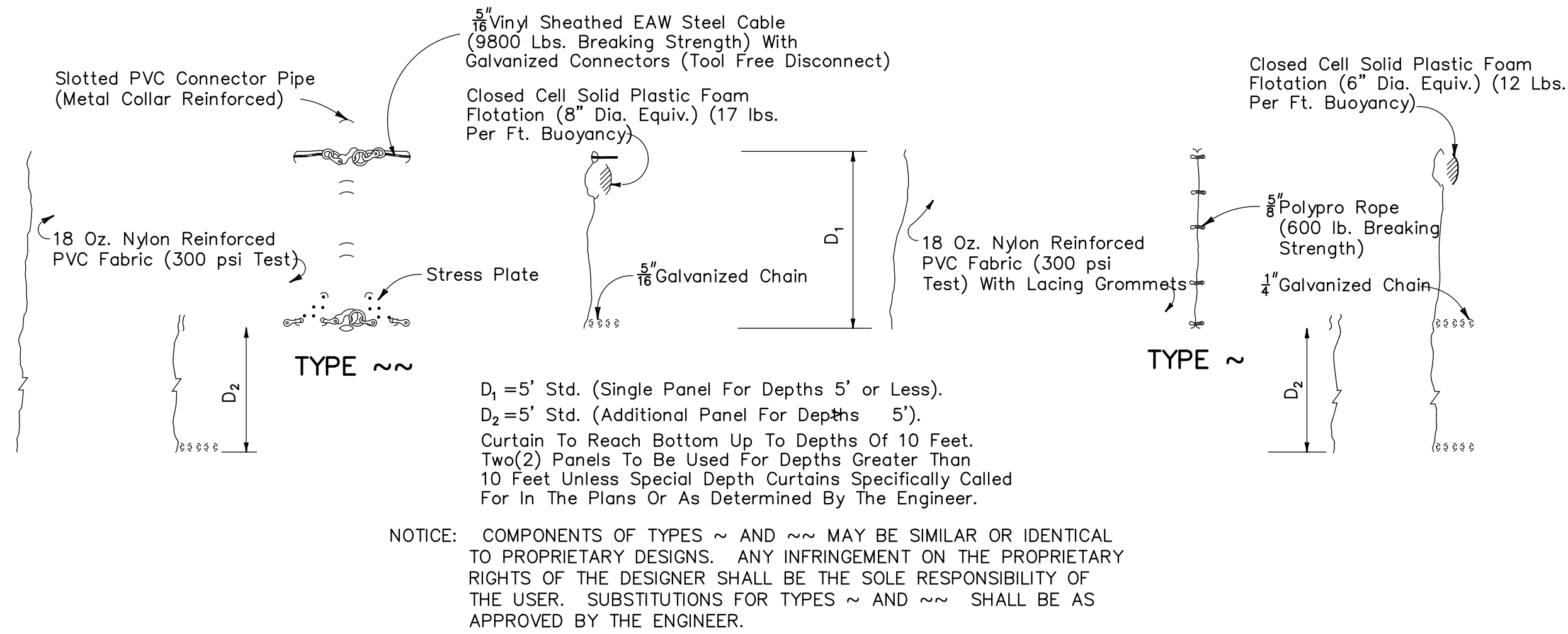
C-03



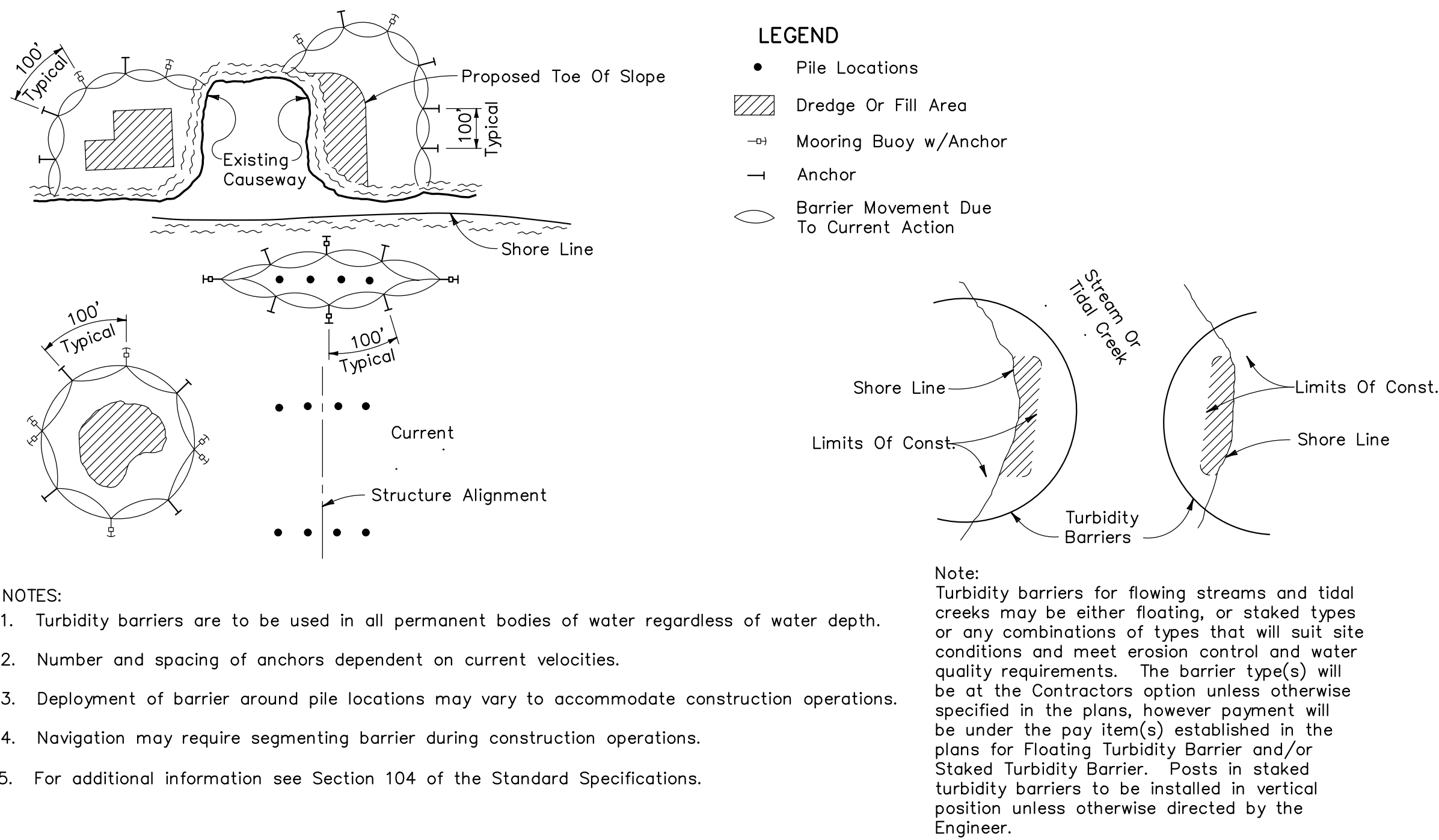
DAN TINTNER, P.E.  
FLORIDA REGISTRATION NO. - 39656

100% DESIGN DRAWINGS

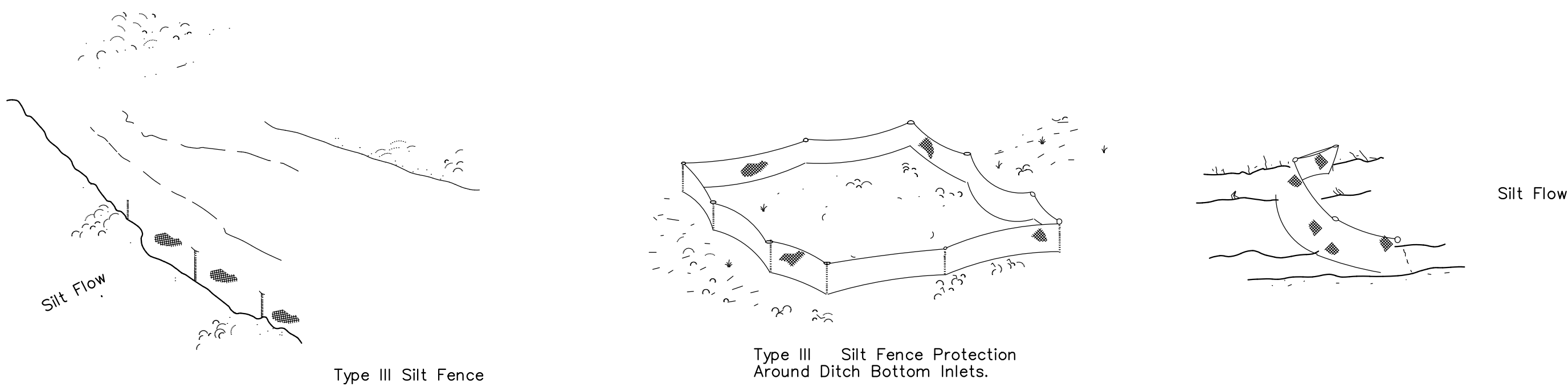
2/21/25 p:\projects\_2024\241100 - towrsr - drainage improvements for lurray road\engineering\Cad\plan\_sets\CP\241100 - TOWSR - Lurray Road - ECD.dwg



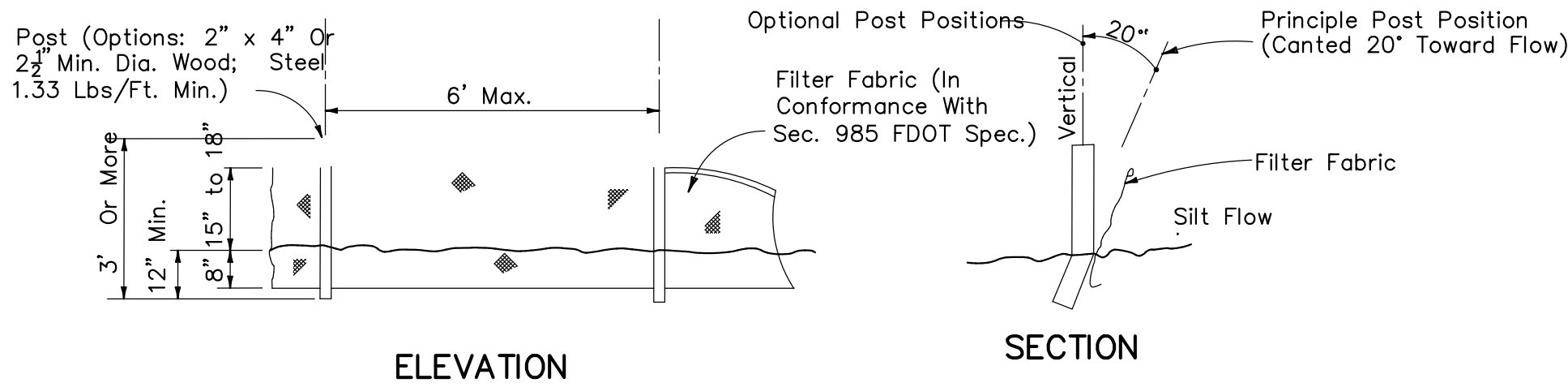
## FLOATING TURBIDITY BARRIERS



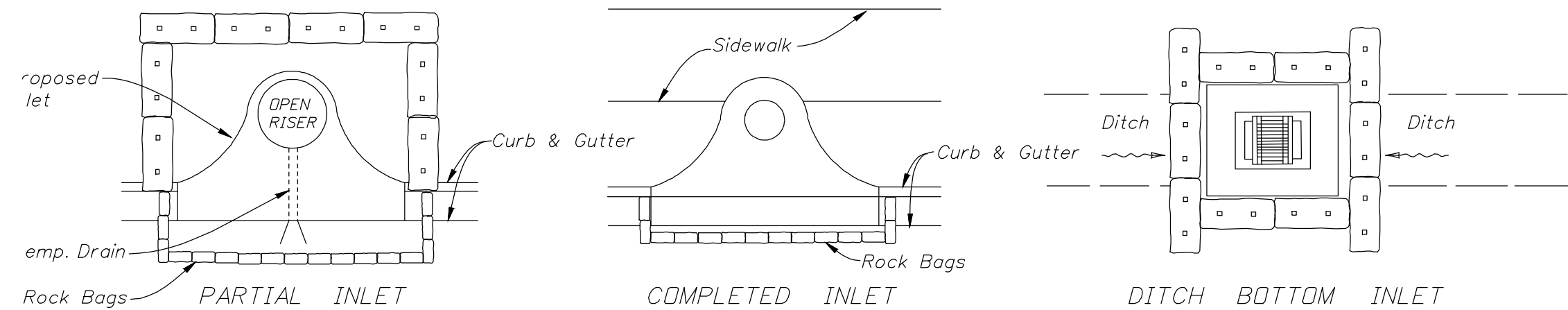
## TURBIDITY BARRIER APPLICATIONS



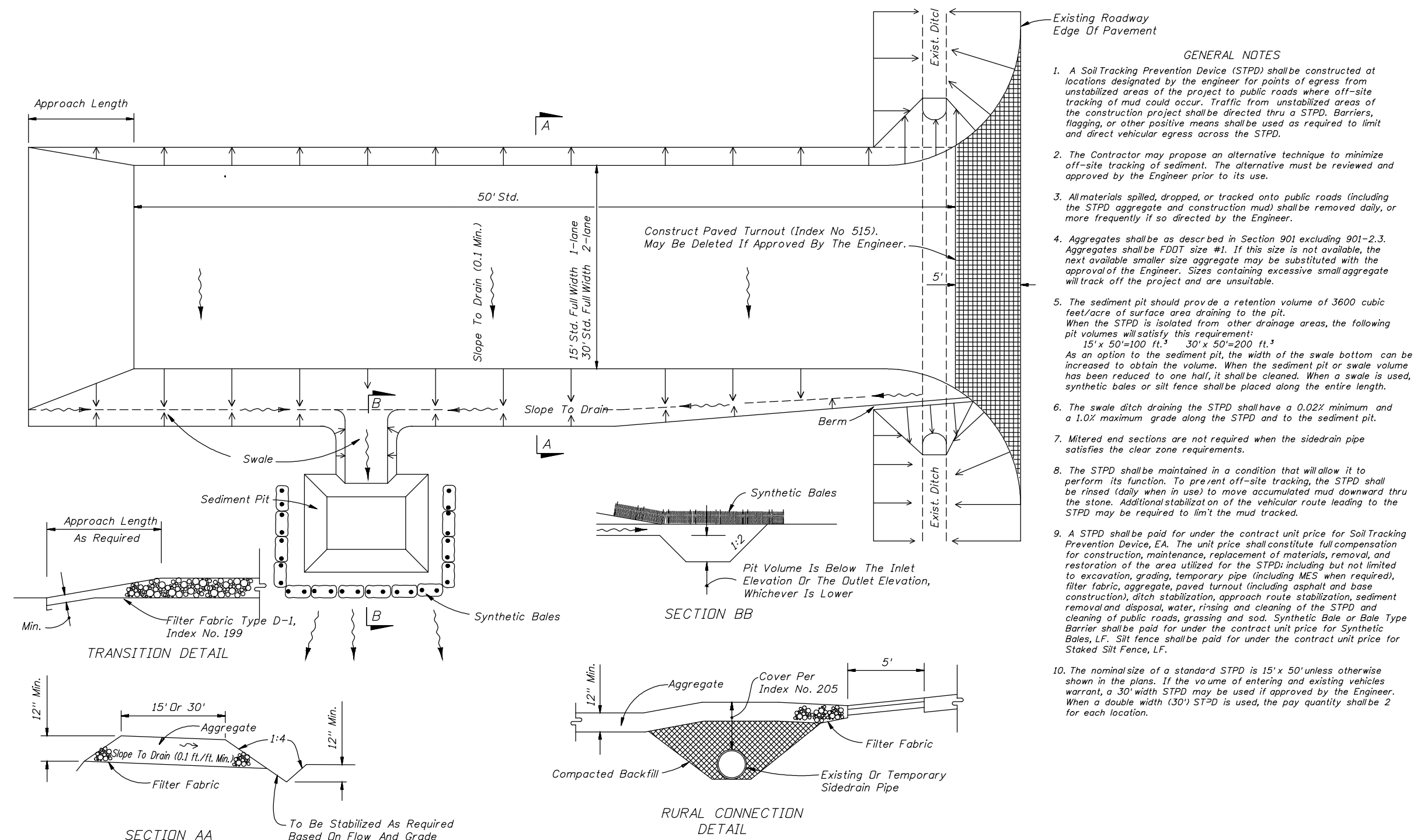
## SILT FENCE APPLICATIONS



## TYPE III SILT FENCE



## INLET PROTECTION DETAIL



## SOIL TRACKING DETAIL

NO	DATE	BY	APPR	REVISIONS

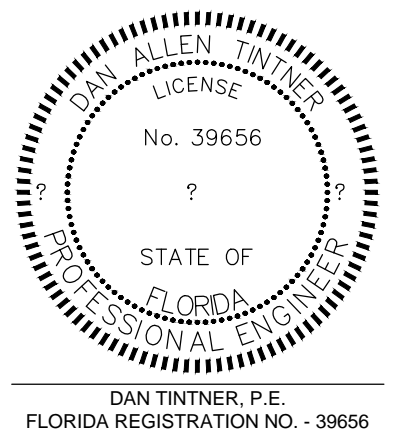
HOLATEE TRAIL & LURAY RD  
DRAINAGE PROJECT  
TOWN OF SOUTHWEST RANCHES, FL 33330

EROSION CONTROL DETAILS

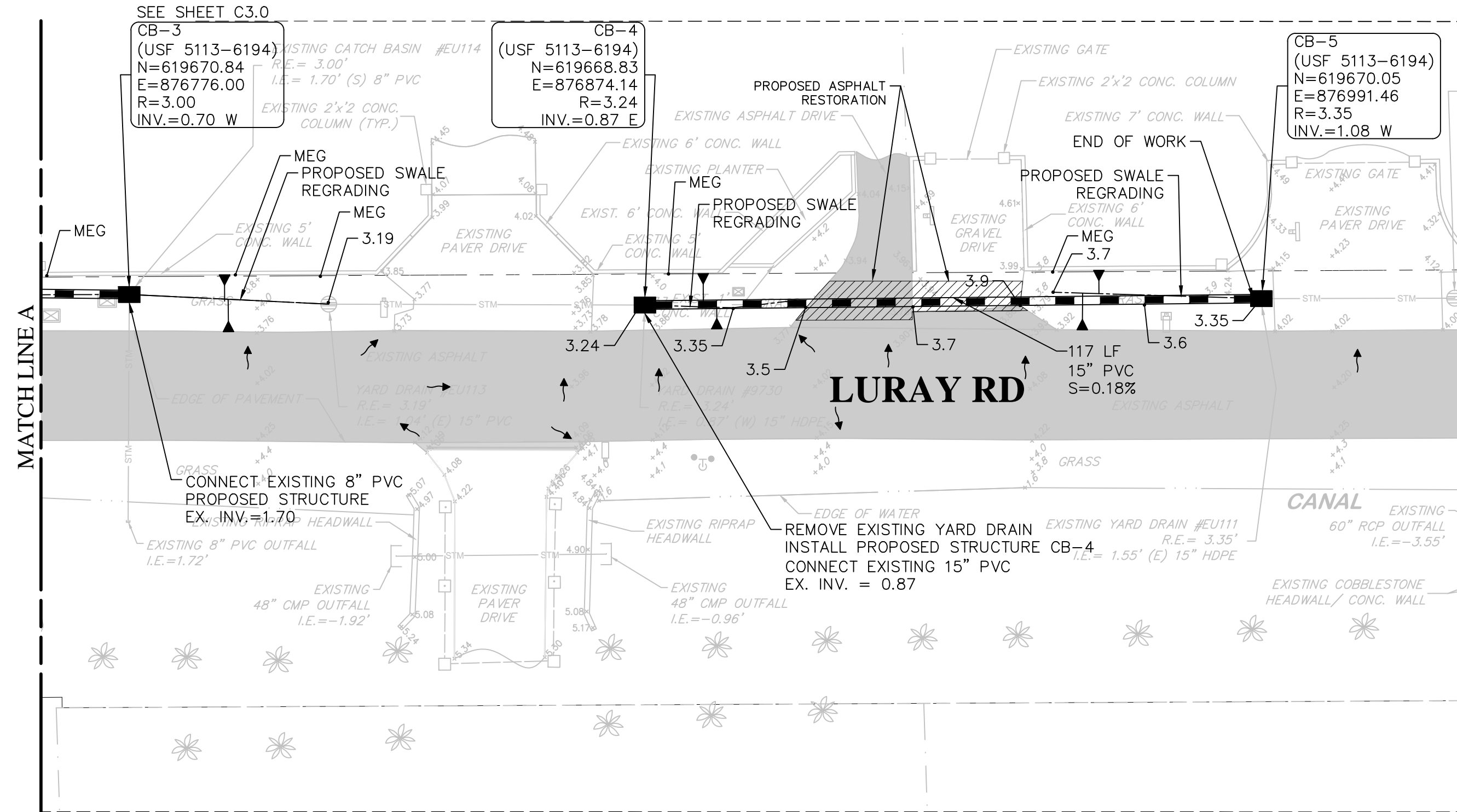
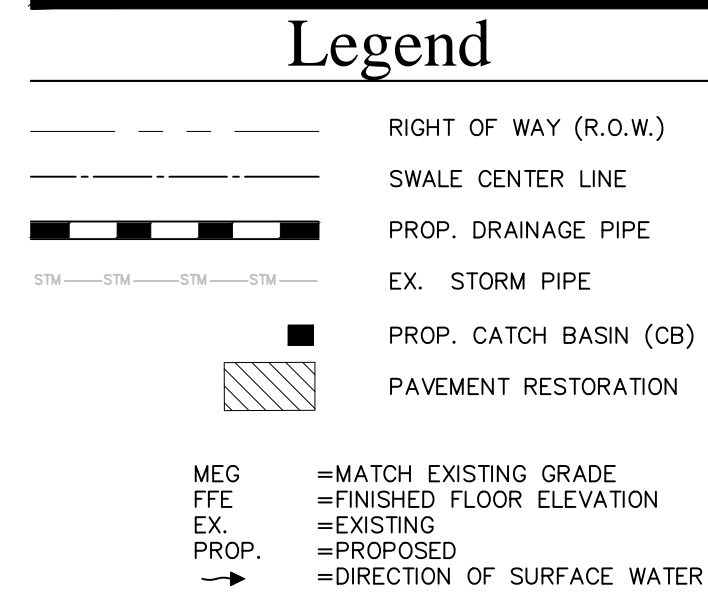
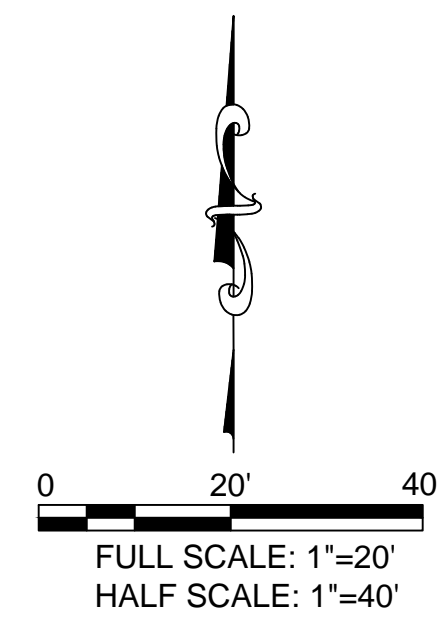
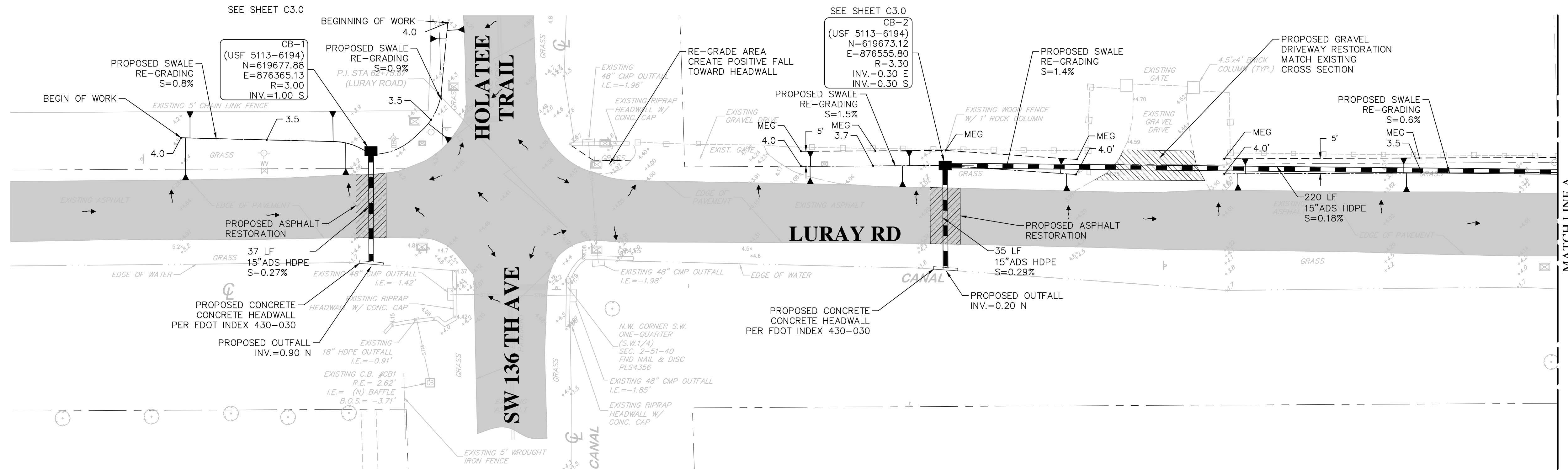


SCALE:	AS SHOWN
DATE:	2/21/2025
DRAWN BY:	R.T.
CHECKED BY:	R.P.
DESIGNED BY:	R.P.

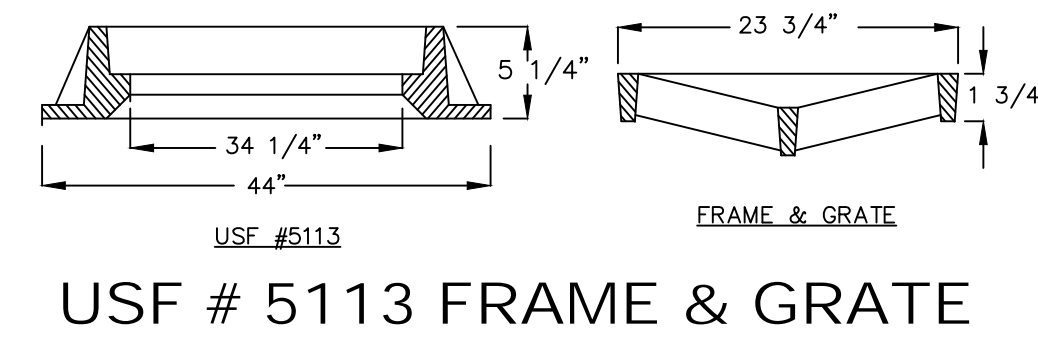
C-04



100% DESIGN DRAWINGS



- GENERAL NOTES:**
- ALL SOIL DENSITY TESTING, SUBSURFACE INVESTIGATIONS AND ALL OTHER GEOTECHNICAL ACTIVITY ONSITE SHALL BE SUPERVISED AND CERTIFIED BY A PROFESSIONAL GEOTECHNICAL ENGINEER.
  - CONTRACTOR(S) SHALL FIELD VERIFY EXISTING TOPOGRAPHY DATA, LOCATION OF EXISTING STRUCTURES AND ALL OTHER SITE CONDITIONS PRIOR TO BEGINNING OF CONSTRUCTION. CONTRACTOR(S) SHALL NOTIFY THE ENGINEER AND ARCHITECT OF ANY DISCREPANCIES.
  - SIDEWALKS, CROSSWALKS AND PATHWAYS CROSS SLOPES SHALL NOT EXCEED 2%. SIDEWALK LONGITUDINAL SLOPES SHALL NOT EXCEED 5%. COURTYARD/ PAVILION AREAS SHALL NOT EXCEED 2% IN ANY DIRECTIONS.
  - ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
  - CONVERSION FROM NAVD88 DATUM TO NGVD29 DATUM = NAVD88+1.51
  - DAMAGED SIDEWALK, CURB & GUTTER, OR PAVEMENT WITHIN APPROVED PERMIT LIMITS SHALL BE REMOVED AND REPLACED IN ACCORDANCE WITH TOWN OF SOUTHWEST RANCHES MINIMUM DESIGN & CONSTRUCTION STANDARDS.
  - MAINTAIN 18" MINIMUM VERTICAL SEPARATION BETWEEN WATER MAIN AND ALL OTHER UTILITIES (E.G. STORM SEWER, SANITARY SEWER).
  - PRIOR TO CONSTRUCTION, CONTRACTOR TO CLEAN OUT EXISTING DRAINAGE INLETS AND JET PIPE.
  - CONTRACTOR TO PROVIDE MAINTENANCE OF TRAFFIC.
  - ALL NON PAVEMENT AREAS DISTURBED SHALL BE SODDED TO ORIGINAL CONDITIONS.



U.S. FOUNDRY  
FRAME & GRATE  
DRAWING NO. 5113-6194  
(OR APPROVED EQUAL)

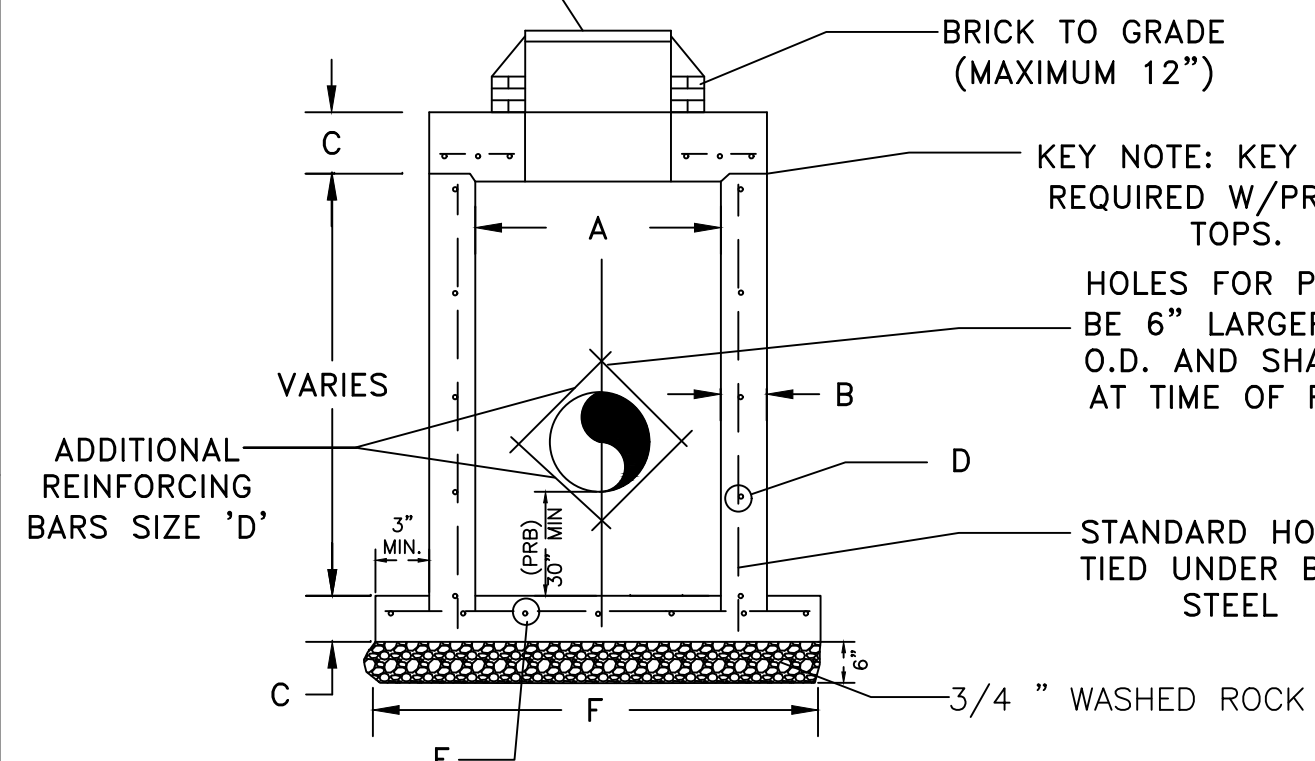
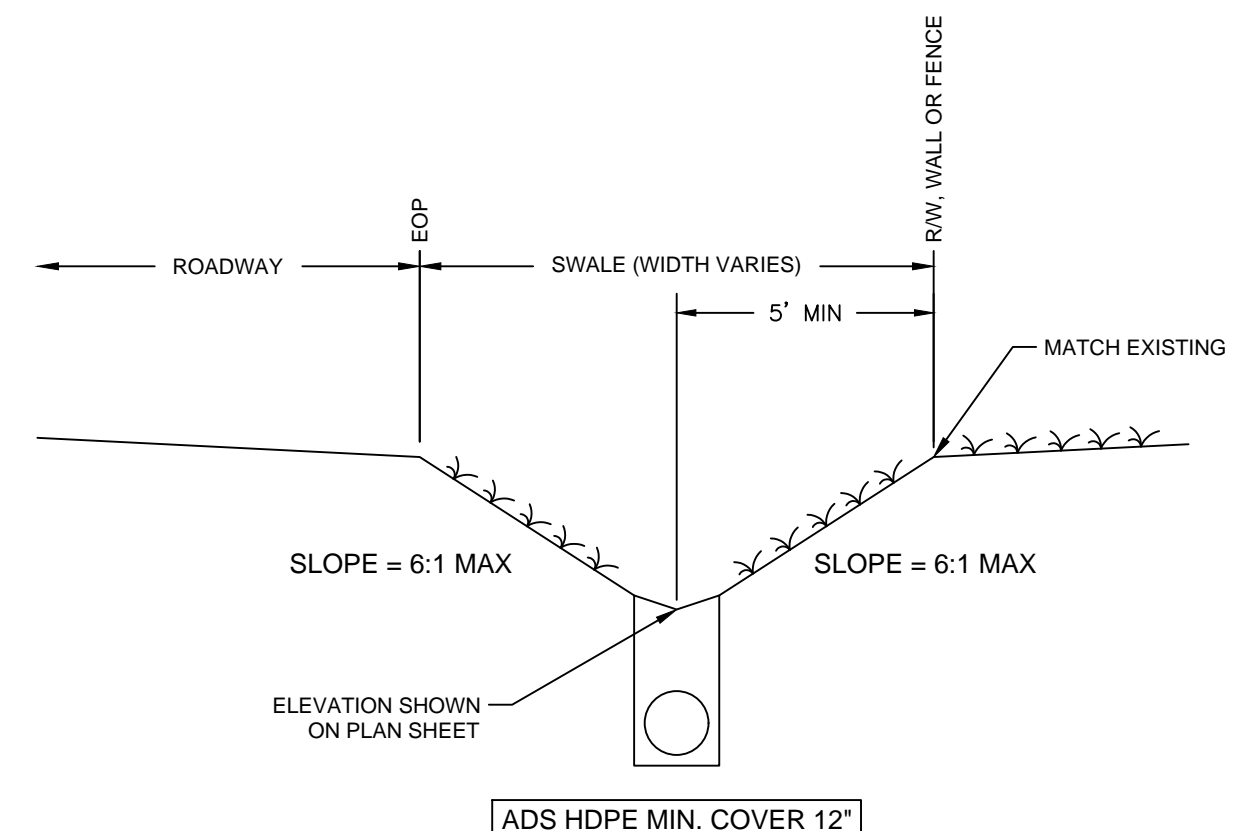


TABLE OF DIMENSIONS						
TYPE	A	B	C	D-C.C.E.W.	E-C.C.E.W.	F
Pe, Pp	3'-6"	6"	8"	#4 AT 12"	#4 AT 12"	4'-10"
C-4, C-4P	4'-0"	8"	8"	#4 AT 12"	#4 AT 12"	5'-10"
C-5	5'-0"	8"	8"	#5 AT 12"	#5 AT 12"	6'-10"
C-6	6'-0"	8"	10"	#5 AT 12"	#5 AT 6"	7'-10"
C-7	7'-0"	8"	10"	#5 AT 12"	#5 AT 6"	8'-10"
C-8	8'-0"	10"	10"	2-W.W.M. W/#4	#5 AT 6"	10'-2"
12" C.C. VERT.						

NOTE:  
1. STRUCTURES SHALL BE CONSTRUCTED PER FDOT STANDARDS



TYPICAL SWALE SECTION

PRECAST ROUND OR RECTANGULAR CATCH BASIN

100% DESIGN DRAWINGS

HOLATEE TRAIL & LURAY RD  
DRAINAGE PROJECT  
TOWN OF SOUTHWEST RANCHES, FL 33330

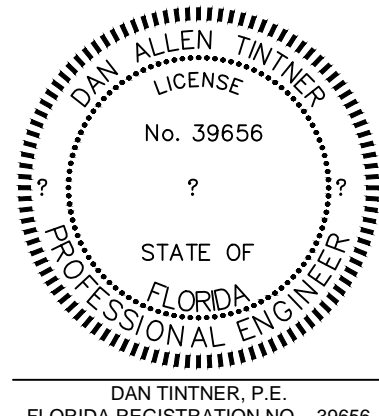
ENGINEERING PLAN



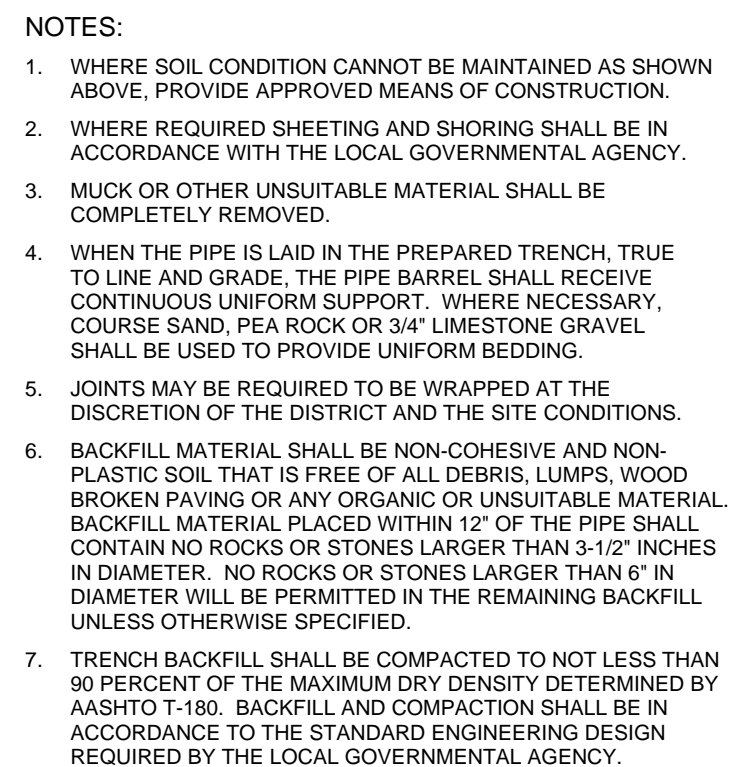
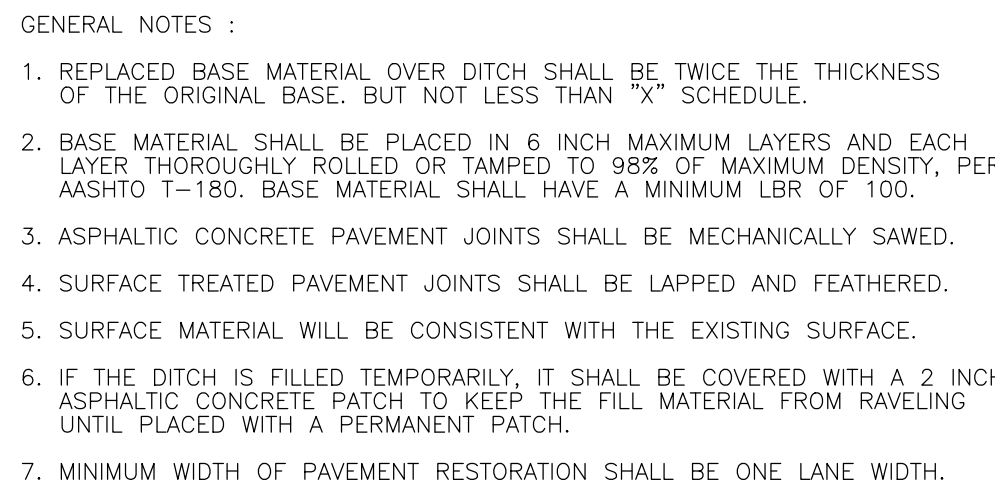
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814 S. MILITARY TRAIL, DEERFIELD BEACH, FLORIDA 33442  
PHONE: (854) 972-3859 FAX: (854) 972-4178

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DRAWN BY: R.T.  
CHECKED BY: R.P.  
DESIGNED BY: R.P.

C-05



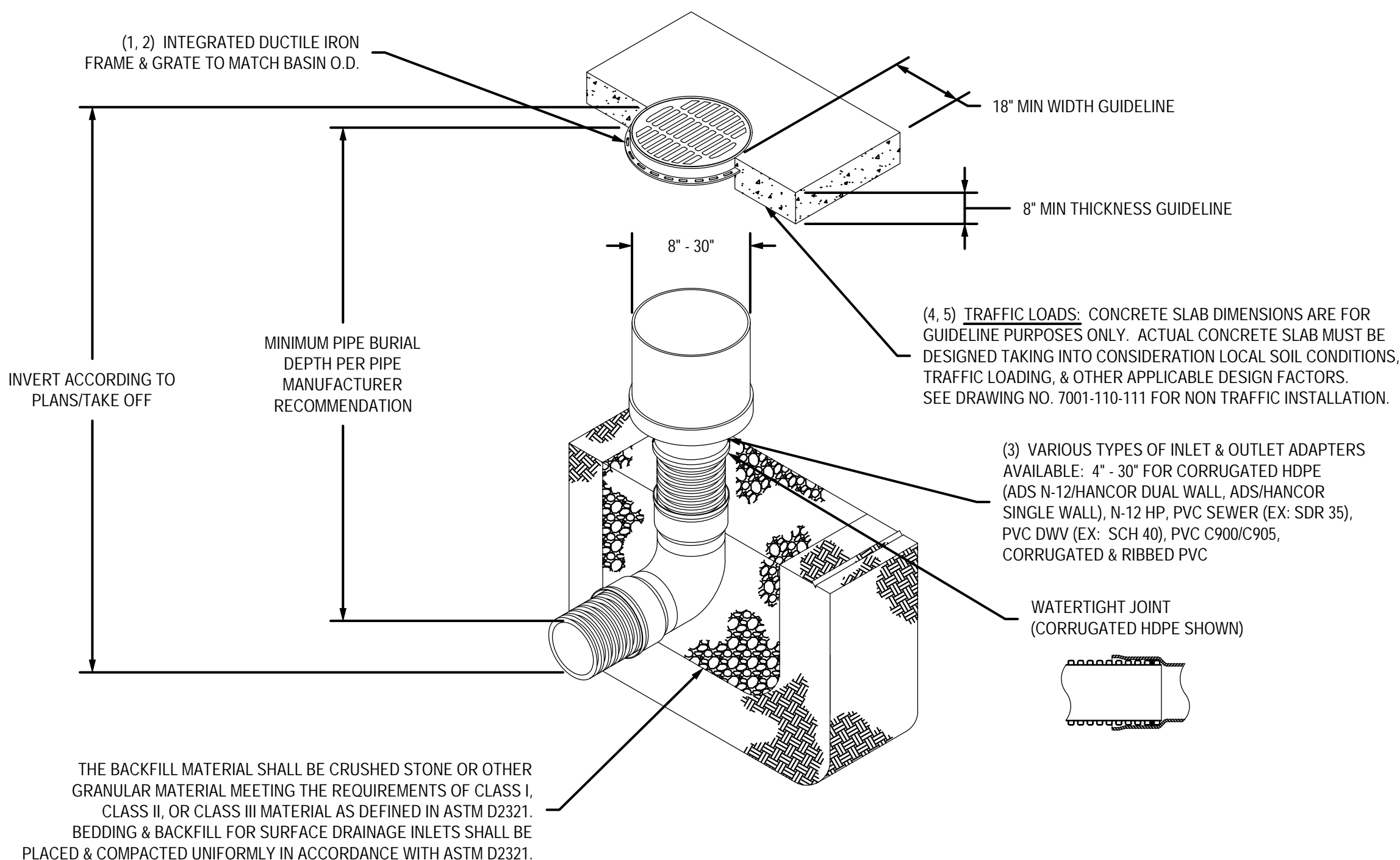
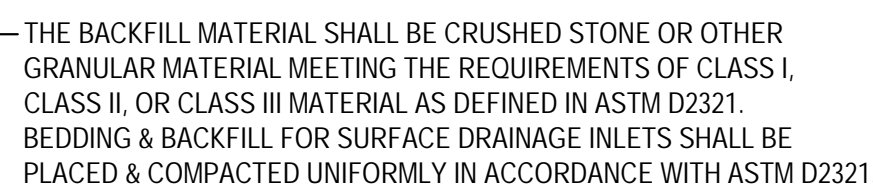
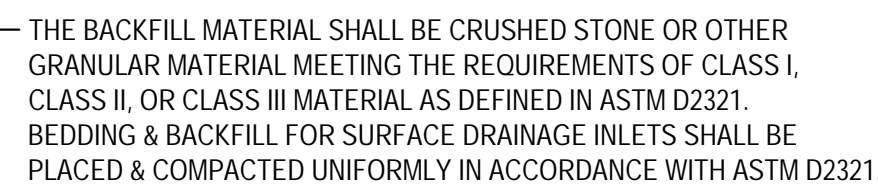
DAN TIMMER, P.E.  
FLORIDA REGISTRATION NO. - 39656



TRENCH EXCAVATION DETAIL  
N.T.S.

THE FOLLOWING GENERAL NOTES ARE REQUIRED BY THE SOUTH BROWARD DRAINAGE DISTRICT (SBDD). THEY ARE NOT MEANT TO BE ALL INCLUSIVE. IT IS THE ENGINEER'S RESPONSIBILITY TO ADD ANY NOTES WHICH WILL INFORM THE OWNER AND THE CONTRACTOR OF ANY ADDITIONAL REQUIREMENTS OF SBDD.


- 1 THE CONTRACTOR SHALL CONTACT SBDDBD 48 HOURS OR TWO (2) WORKING DAYS PRIOR TO ANY REQUIRED INSPECTION. TO SCHEDULE INSPECTIONS, PLEASE CALL SBDDBD AT (954)880-3337. SBDDBD'S WORKING HOURS ARE FROM 8:00 AM TO 4:30 PM. MONDAY THROUGH FRIDAY EXCEPT HOLIDAYS.
- 2 ANY REVISIONS TO PLANS PERMITTED BY SBDDBD MUST BE APPROVED BY THE DISTRICT ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
- 3 A PRECONSTRUCTION MEETING SHALL BE SCHEDULED AND HELD AT LEAST FIVE (5) DAYS PRIOR TO BEGINNING CONSTRUCTION.
- 4 A SET OF SHOP DRAWINGS SHALL BE SUBMITTED TO SBDDBD AFTER APPROVAL BY THE ENGINEER OF RECORD, PRIOR TO BEGINNING CONSTRUCTION
- 5 DURING CONSTRUCTION, SBDDBD PERSONNEL WILL INSPECT THE FOLLOWING:
  - INSTALLATION OF ALL UNDERGROUND DRAINAGE FACILITIES BEFORE BACKFILLING.
  - INSTALLATION OF DRAINAGE FACILITIES.
  - SHAPING OF CANAL AND LAKE BANKS FROM THE DEEP CUT TO THE UPLAND EASEMENT LINE OR AS REQUIRED BY SBDDBD.
  - AND ANY OTHER DRAINAGE RELATED CONSTRUCTION WORK.
  - RE-INSPECTIONS, EXTRAORDINARY INSPECTIONS AND FINAL INSPECTIONS WILL BE SUBJECT TO ADDITIONAL FEE CHARGES BY SBDDBD.
- 6 THE CONTRACTOR CONSTRUCTING OR EXCAVATING LAKES OR OTHER WATER BODIES SHALL EXERCISE EXTREME CAUTION TO ENSURE THAT THE SIDE SLOPES AND DEEP CUT LINES ARE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS FOR THE DISTRICT. THE CONTRACTOR OR OWNER SHALL PERIODICALLY OR AS REQUIRED BY SBDDBD, OBTAIN A SURVEY, FROM A FLORIDA REGISTERED SURVEYOR OF THE LOCATION OF THE DEEP CUT LINES PRIOR TO FORMING THE SIDE SLOPES. THIS SURVEY SHALL BE PERFORMED PRIOR TO THE OWNER/CONTRACTOR BEGINNING CONSTRUCTION OF ANY REVISIONS TO THE PLANS. IN THE EVENT THAT THE CONTRACTOR OR OWNER OVER DIGS THE WATER BODY, THE OWNER/CONTRACTOR SHALL SUBMIT TO SBDDBD ITS SOLUTION TO CORRECT THE OVER DIGGING. ANY SUGGESTED REMEDY OR CORRECTION MUST BE APPROVED BY SBDDBD BEFORE THE CONTRACTOR BEGINS THE PROPOSED CORRECTION/REMEDY.
- 7 PAVING AND DRAINAGE "AS-BUILT" PLANS CERTIFIED BY THE ENGINEER OF RECORD AND APPROVED BY THE DISTRICT'S ENGINEER SHALL BE REQUIRED BEFORE THE REPAIR OF ANY ROAD OR DRAINAGE. "AS-BUILT" PLANS SHALL BE PROVIDED AS AN OVERLAY OF THE APPROVED CONSTRUCTION DRAWINGS AND AT THE SAME SCALE AS ORIGINALLY SUBMITTED. AS-BUILT SUBMITTALS SHALL CONFORM TO THE REQUIREMENTS OF SBDDBD'S CRITERIA MANUAL. AS-BUILT'S MUST ALSO BE PROVIDED IN ELECTRONIC FORMAT.
- 8 AS-BUILT DRAWINGS OF WATER BODIES SHALL INCLUDE THE DATA REQUIRED UNDER EXHIBIT 39 OF SBDDBD'S CRITERIA MANUAL. THE AS-BUILT CROSS SECTIONS SHALL BE PROVIDED AT LEAST EVERY 100 TO NOT MORE THAN 100 FOOT INTERVALS AND AT ALL OUTFALL PIPES CONSTRUCTED WITHOUT HEADWALLS.
- 9 SBDDBD WILL NOT COMPLETE THE FINAL INSPECTION UNTIL RECEIPT OF THE AS-BUILT PACKAGE WHICH MUST INCLUDE THE DISTRICT'S CERTIFICATION AND TEST RESULTS FOR STABILIZATION OF LAKE/CANAL MAINTENANCE EASEMENTS, ARE RECEIVED.



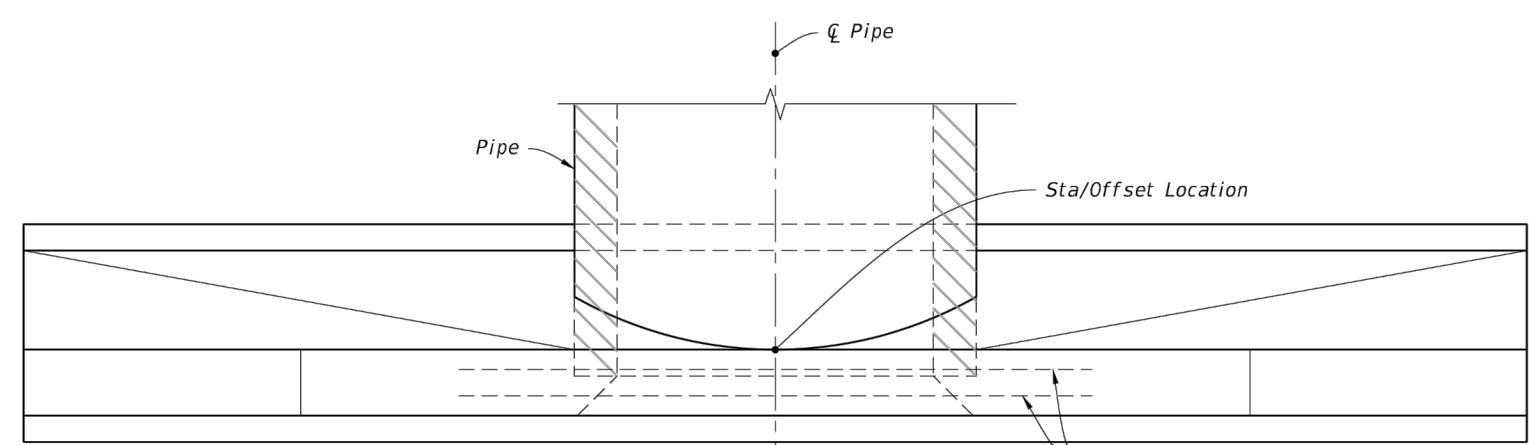
1. 8" - 30" STANDARD GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. 8" & 10" STANDARD GRATES FIT DIRECTLY ONTO INLINE DRAINS SEE DRAWING NO. 7003-110-000 & 7003-110-001.
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (AETS N-12/HANCOR DUAL WALL), 12" ID & PVC SEE DETAIL 100-100-001.
5. 12" - 30" STANDARD GRATES SHALL MEET N-12 LOAD RATING.
6. 8" & 10" STANDARD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY. NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

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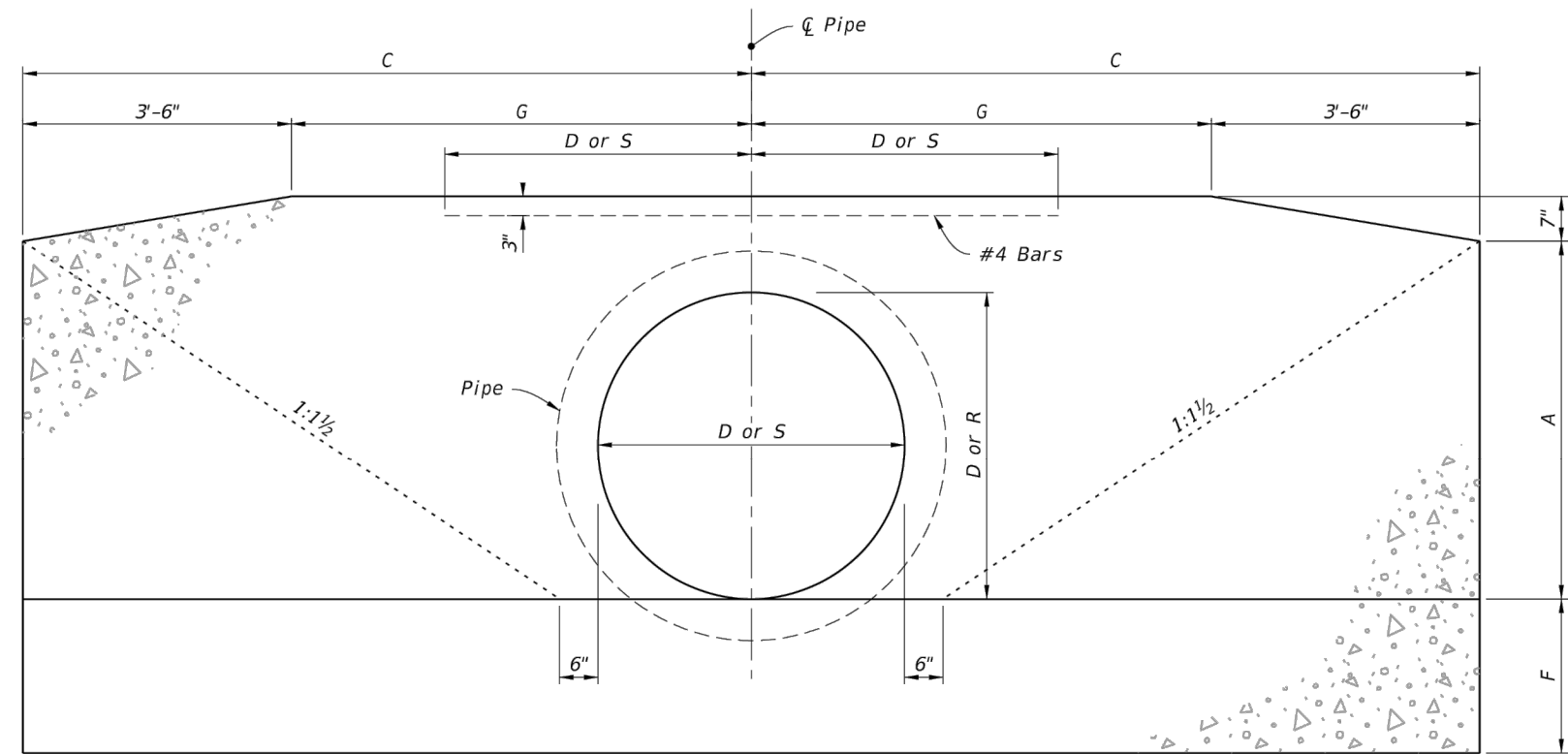
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DRAWN BY	ETC	MATERIAL	 3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 <a href="http://www.nyploplast-us.com">www.nyploplast-us.com</a>
DATE	1-23-06		
REVISED BY	NMH	PROJECT NO./NAME	<b>TITLE</b> INLINE DRAIN WITH STANDARD GRATE QUICK SPEC INSTALLATION DETAIL
DATE	03-15-16		
DWG SIZE	A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7003-110-022 REV J

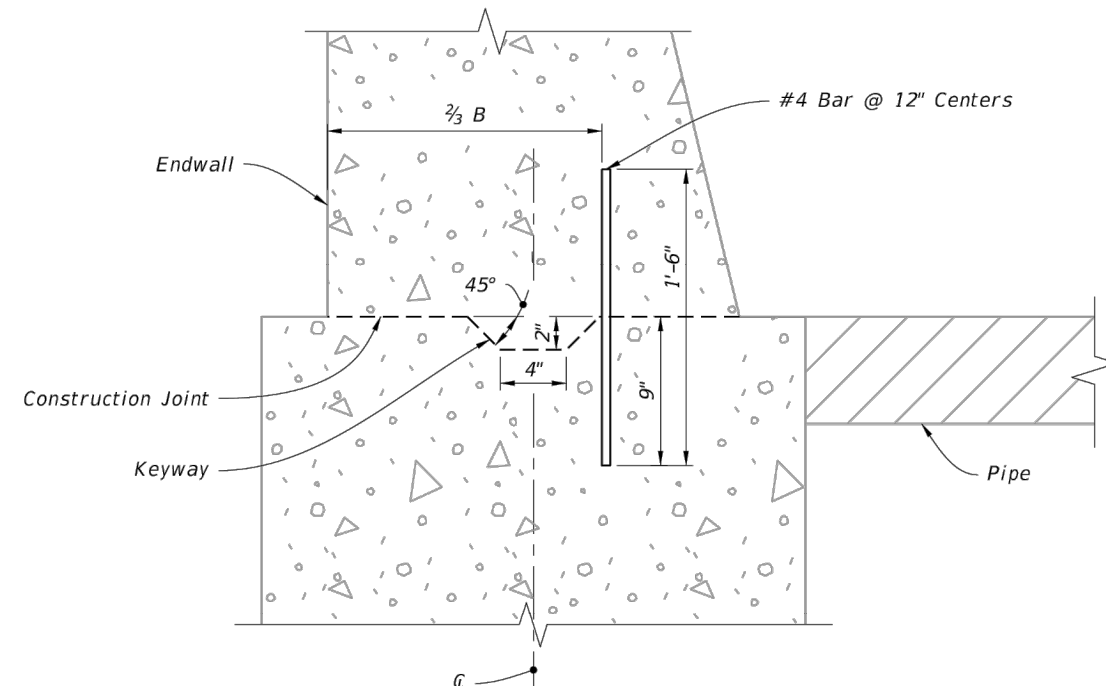
## 100% DESIGN DRAWINGS



### PLAN

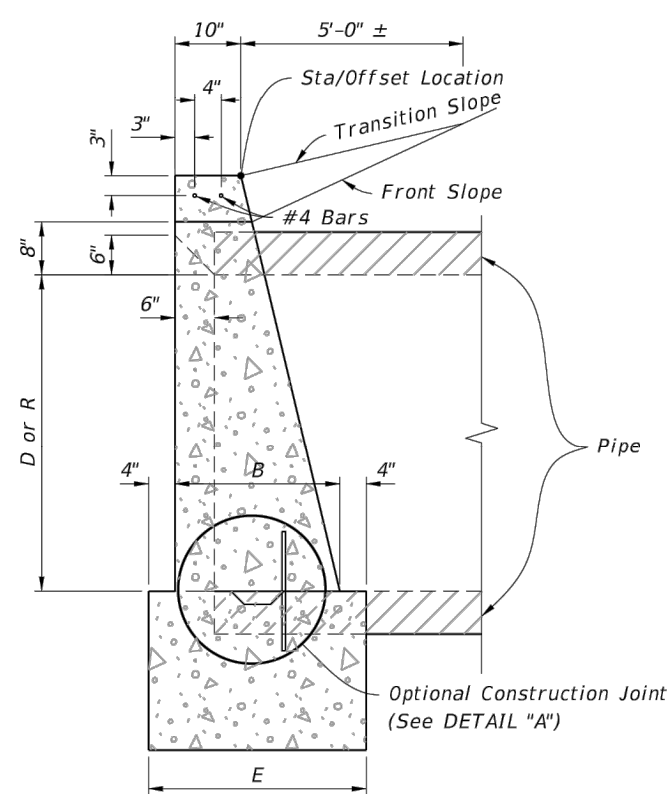


FRONT ELEVATION




NOTE: Keyway and Dowels are required for optional construction joint.

DETAIL "A"



*SIDE ELEVATION*

### CONCRETE ENDWALL DETAILS

LAST REVISION 11/01/19	DESCRIPTION:	 FY 2023-24 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX 430-030	SHEET 2 of 4
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[illegible]


ELLIPTICAL CONCRETE AND CORRUGATED METAL PIPE ARCH																																										
Pipe Span	Rise Span	Opening Area (SF)										Dimensions										Class II Concrete (CY)																		Rise Span	Span	Approx. Equiv. Span
		Number of Pipes					D					F					X					Number of Pipe and Skew Angle (a)									Y											
		1	2	3	4	A	B	C	E	F	G	Y	0°	15°	30°	45°	Single	Double				Triple					Quadruple															
Concrete	12"	18"	1.8	3.6	5.4	7.2	1-10"	3-9"	1-2"	3-9"	1-10"	1-2"	3-9"	2-10"	2-10"	2-11"	3-3"	4-0"	1.09	1.45	1.46	1.51	1.60	1.80	1.82	1.91	2.09	2.16	2.20	2.33	2.60	12"	18"	15"								
	14"	23"	1.8	3.6	5.4	7.2	1-10"	3-9"	1-2"	3-9"	1-10"	1-2"	3-9"	2-10"	2-10"	2-11"	3-3"	4-0"	1.36	1.82	1.84	1.89	2.01	2.29	2.32	2.43	2.68	2.75	2.80	2.97	3.33	14"	23"	18"								
	16"	28"	1.8	3.6	5.4	7.2	1-10"	3-9"	1-2"	3-9"	1-10"	1-2"	3-9"	2-10"	2-10"	2-11"	3-3"	4-0"	1.43	1.91	1.93	1.98	2.10	2.38	2.42	2.53	2.78	2.85	2.90	3.07	3.43	16"	28"	18"								
	24"	38"	1.8	3.6	10.2	15.3	2.0	2-8"	1-5"	6-2"	2-1"	5-1"	5-2"	5-4"	6-0"	6-4"	6-0"	6-4"	2.64	3.55	3.58	3.69	3.93	4.48	4.54	4.77	5.24	5.39	5.49	5.82	6.53	24"	38"	24"								
	28"	45"	1.8	3.6	14.8	22.2	2.96	3-1"	1-6"	7-0"	2-2"	1-6"	3-6"	6-0"	6-0"	6-3"	6-11"	8-6"	3.32	4.48	4.52	4.66	4.96	5.64	5.72	6.00	6.60	6.80	6.92	7.34	8.24	28"	45"	30"								
	34"	55"	1.8	3.6	20.4	30.6	4.00	3-10"	1-7"	7-11"	2-3"	1-7"	4-9"	7-1"	7-1"	7-11"	8-2"	10-0"	4.24	5.76	5.81	6.00	6.39	7.29	7.40	7.76	8.55	8.81	8.97	9.57	10.70	34"	55"	42"								
	38"	62"	1.8	3.6	23.8	36.7	5.16	3-10"	1-7"	8-0"	2-4"	1-7"	4-9"	7-1"	7-1"	7-11"	8-2"	10-0"	4.67	6.26	6.31	6.50	6.90	7.95	8.06	8.42	9.21	9.47	9.63	10.25	11.65	38"	62"	48"								
	43"	68"	1.8	3.6	26.6	40.8	6.64	4-3"	1-10"	9-8"	2-6"	1-10"	6-2"	8-10"	8-10"	9-2"	10-7"	12-6"	6.24	8.01	9.09	9.38	10.00	11.39	11.56	12.13	13.36	13.77	14.02	14.88	16.73	43"	68"	54"								
	48"	76"	1.8	3.6	30.1	45.1	8.20	4-8"	1-10"	10-8"	2-10"	1-10"	6-2"	9-9"	9-9"	10-1"	11-3"	13-9"	8.66	11.14	11.85	12.22	13.02	14.82	15.04	15.77	17.37	17.91	18.23	19.34	21.74	48"	76"	60"								
	54"	84"	1.8	3.6	33.8	50.8	9.88	4-8"	1-10"	11-8"	2-10"	1-10"	6-2"	10-11"	10-11"	12-2"	13-11"	15-10"	9.66	12.26	12.62	13.16	14.06	16.04	16.26	17.09	19.00	19.61	20.00	21.21	23.94	54"	84"	66"								
	58"	91"	1.8	3.6	36.5	55.0	11.85	5-10"	1-10"	12-6"	3-6"	2-10"	9-0"	11-4"	11-4"	11-9"	13-1"	16-0"	10.46	12.26	12.62	13.16	14.06	16.04	16.26	17.09	19.00	19.61	20.00	21.21	23.94	58"	91"	72"								
	68"	108"	1.8	3.6	42.4	64.6	14.16	5-10"	1-10"	13-10"	3-6"	2-10"	10-0"	12-6"	12-6"	13-11"	15-10"	18-0"	12.16	14.16	14.52	15.16	16.06	18.04	18.26	19.09	21.00	21.61	22.00	23.21	26.44	68"	108"	84"								
Corrugated Metal	12"	18"	1.1	2.2	3.3	4.4	1-9"	1-2"	3-10"	1-10"	1-2"	4-0"	2-6"	2-6"	2-7"	2-11"	3-6"	1.16	1.47	1.48	1.52	1.60	1.78	1.80	1.88	2.04	2.09	2.12	2.23	2.48	13"	17"	15"									
	14"	21"	1.6	3.2	4.8	6.4	1-11"	2-2"	4-10"	1-10"	2-2"	4-10"	2-6"	2-6"	2-7"	2-11"	3-6"	1.28	1.61	1.62	1.66	1.74	2.04	2.06	2.13	2.33	2.40	2.44	2.57	2.84	15"	21"	18"									
	20"	28"	2.8	5.6	8.4	11.2	2-4"	3-3"	5-2"	1-11"	3-3"	1-8"	3-5"	3-5"	3-6"	3-11"	4-10"	1.78	2.31	2.33	2.39	2.53	2.83	2.87	2.99	3.26	3.36	3.42	3.60	4.01	20"	28"	24"									
	24"	34"	4.8	9.6	12.9	17.2	2-8"	4-4"	6-11"	2-0"	1-4"	2-5"	4-0"	4-0"	4-2"	4-7"	5-8"	2.34	3.03	3.05	3.14	3.32	3.72	3.77	3.93	4.29	4.40	4.47	4.72	5.25	24"	34"	30"									
	28"	40"	6.4	12.8	17.2	23.6	2-8"	4-4"	6-11"	2-0"	1-4"	2-5"	4-0"	4-0"	4-2"	4-7"	5-8"	2.61	3.38	3.40	3.49	3.68	4.10	4.15	4.31	4.67	4.78	4.85	5.04	5.56	28"	40"	36"									
	33"	49"	8.4	16.8	25.2	33.6	3-5"	5-6"	7-8"	2-6"	1-6"	4-2"	5-6"	5-6"	5-8"	6-4"	7-9"	3.83	5.00	5.04	5.18	5.48	6.16	6.24	6.52	7.12	7.32	7.44	7.86	8.76	33"	49"	42"									
	38"	55"	10.6	21.2	31.8	42.4	3-10"	7-2"	8-7"	2-3"	1-2"	5-1"	6-4"	6-4"	6-7"	7-4"	8-11"	4.87	6.31	6.36	6.53	6.91	7.74	7.84	8.18	8.93	9.18	9.33	9.85	10.96	38"	55"	48"									
	43"	62"	13.2	26.4	39.6	52.8	4-10"	8-2"	9-11"	3-3"	1-3"	6-11"	7-10"	7-10"	7-11"	8-11"	9-11"	6.11	7.80	7.85	8.03	8.51	10.11	10.25	10.65	11.61	11.95	12.12	12.56	13.84	43"	62"	54"									
	48"	71"	16.9	33.8	50.7	67.6	4-7"	7-10"	10-4"	2-6"	1-0"	6-10"	7-10"	7-10"	8-1"	9-1"	11-1"	7.80	10.13	10.26	10.51	11.12	12.49	12.65	13.22	14.43	14.85	15.10	15.94	17.77	48"	71"	60"									

**NOTES:**

1. Dimension  $X$  is calculated as:  $X = Y^{\circ} \text{SEC } \alpha$ .
2. Select tabular quantities using skew values as follows:
 

End Skew to Pipe	Use Tabulated Value
0° to 5°	0°
6° to 15°	15°
16° to 30°	30°
31° or Over	45°

## CONCRETE AND METAL PIPE TABLES

LAST REVISION 11/01/21	DESCRIPTION:	 FY 2023-24 STANDARD PLANS	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX 430-030	SHEET 3 of 4
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HOLATEE TRAIL & LURAY RD  
DRAINAGE PROJECT  
TOWN OF SOUTHWEST RANCHES, FL

## ENGINEERING DETAILS



CIVIL ENGINEERING | CONSTRUCTION SERVICES | GEOMATICS  
814 S. MILITARY TRAIL, DEERFIELD BEACH, FLORIDA 33442  
PHONE: (561) 979-2050 FAX: (561) 979-4178

FILE NO. 241100

SCALE: AS SHOWN

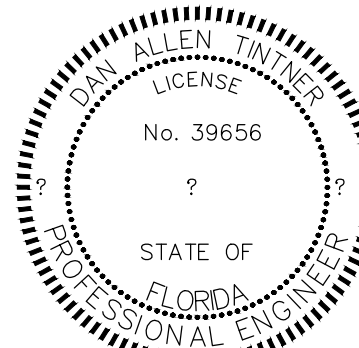
DATE: 2/21/2025

DRAWN BY: R.T.

CHECKED BY: R.P.

DESIGNED BY: R.P.

C-07



DAN TINTNER, P.E.  
FLORIDA REGISTRATION NO. - 3965