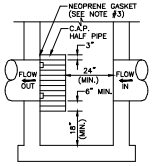
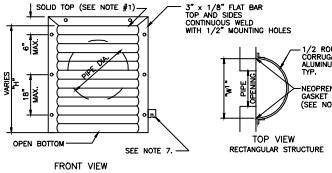


SIDE VIEW



FRONT VIEW

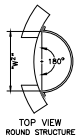
TOP VIEW
RECTANGULAR STRUCTURE

NOTES:

1. ALUMINUM SHEET OF SAME THICKNESS (GAUGE) AS PIPE SHALL BE WELDED TO CLOSE OPENING AT THE TOP.
2. NEOPRENE ADHESIVE BACKED GASKET, OR APPROVED EQUAL (1" x 3") SHALL BE INSTALLED ON THE SIDES AND TOP OF ALL BAFFLES.
3. POLLUTION RETARDANT BAFFLE TO BE FASTENED IN PLACE WITH 3/8"x4" STAINLESS STEEL "RED HEADS", OR APPROVED EQUAL.
4. ALL EXFILTRATION TRENCHES SHALL HAVE A POLLUTION RETARDANT BAFFLE AT EACH CONNECTION POINT TO A STRUCTURE (SEE EXFILTRATION TRENCH DETAIL). THE BOTTOM OF THE BAFFLE SHALL BE A MIN. OF 12" BELOW C.W.E.
5. FIBERGLASS BAFFLES ARE NOT PERMITTED.
6. MOUNTING BRACKETS MAY BE ADDED TO FLAT BARS TO EASE INSTALLATION IN ROUND STRUCTURES. SPACING TO MATCH HOLES IN FLAT BARS.
7. FOR POLLUTION RETARDANT BASINS THE BOTTOM ELEVATION OF THE BAFFLE MUST BE A MINIMUM OF 2' BELOW THE CONTROL WATER ELEVATION.

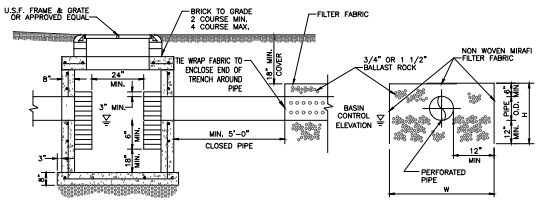
PIPE DIA.	W[1] (IN)	W[2] (IN)	T (GAUGE)	H (IN)
15"	21"	21"	16	VARIES
18"	24"	24"	16	VARIES
21"	30"	30"	16	VARIES
24"	30"	36"	16	VARIES
30"	36"	42"	14	VARIES
36"	42"	48"	14	VARIES
42"	48"	54"	14	VARIES
48"	54"	60"	14	VARIES
54"	60"	66"	14	VARIES

1. RECTANGULAR STRUCTURE
2. ROUND STRUCTURE



TOP VIEW
ROUND STRUCTURE

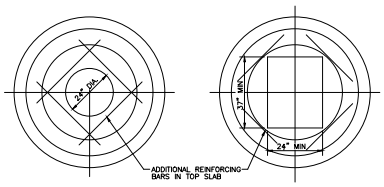
POLLUTION RETARDANT BAFFLE DETAIL



NOTES:

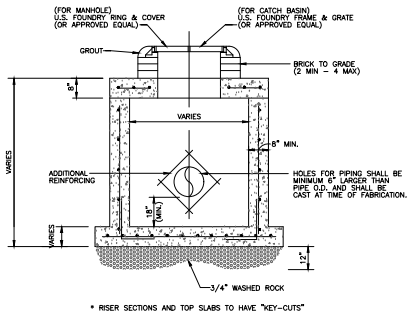
1. SIDES AND TOP OF TRENCH ONLY TO BE LINED WITH FILTER FABRIC. OVERLAP LINER A MINIMUM OF 2' AT THE TOP OF THE TRENCH.
2. BALLAST ROCK SHALL BE FROM FRESH WATER, WASHED AND FREE OF DELETERIOUS MATTER.
3. ALL EXFILTRATION TRENCHES SHALL HAVE A POLLUTION RETARDANT BAFFLE AT EACH CONNECTION POINT TO A STRUCTURE. (SEE POLLUTION RETARDANT BAFFLE DETAIL, EXHIBIT 28)
4. GASKETS SHALL BE USED WITH RCP IN EXFILTRATION TRENCH.

EXFILTRATION TRENCH DETAIL



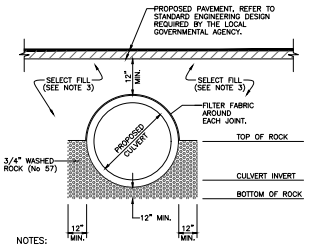
MANHOLE TOP SLAB PLAN

CATCH BASIN TOP SLAB PLAN



* RISER SECTIONS AND TOP SLABS TO HAVE "KEY-CUTS"

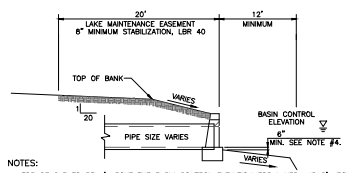
PRECAST CATCH BASIN AND MANHOLE DETAIL



NOTES:

1. WHERE SOIL CONDITIONS CANNOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE APPROVED METHOD OF CONSTRUCTION.
2. SHEETING WILL BE REQUIRED AS DETERMINED IN THE FIELD.
3. BACKFILL IN 6"-12" LAYERS, TO 98% COMPACTION, WITH MATERIALS NOT LARGER THAN 3 1/2".
4. IF A CULVERT IS CORRUGATED ALUMINUM STRUCTURAL PLATE, FILTER FABRIC SHALL BE PLACED THE ENTIRE LENGTH OF THE PIPE.
5. FILTER FABRIC SHALL BE PLACED THE FULL LENGTH OF ANY SECTION OF CULVERT UNDER ASPHALT.

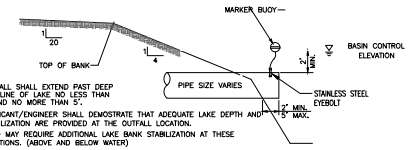
LAKE/CANAL INTERCONNECT BEDDING DETAIL



NOTES:

1. TOP OF CAP TO BE 1' ABOVE THE BASIN CONTROL ELEVATION FOR LAKES AND 2' ABOVE BASIN CONTROL ELEVATION FOR CANALS, UNLESS OTHERWISE APPROVED BY THE DISTRICT.
2. HEADWALLS ARE REQUIRED FOR ALL LAKE AND CANAL INTERCONNECTS.
3. CONCRETE AND RIP-RAP ENDWALLS ARE ACCEPTED PER FDOT INDEX 250-255 AND INDEX 258 WITH EXCEPTIONS AS NOTED IN SECTION 3.7.7 OF THE SBDD DESIGN CRITERIA MANUAL.
4. CHANNEL IN FRONT OF PIPE TO BE MIN 6" BELOW THE INVERT OF THE PIPE AND AT LEAST 1 1/2 TIMES THE DIA. OF THE PIPE TO THE DEEP CUT LINE AND CENTERED ON THE PIPE.
5. FACE OF HEADWALL TO BE LOCATED AT DESIGN EDGE OF WATER.

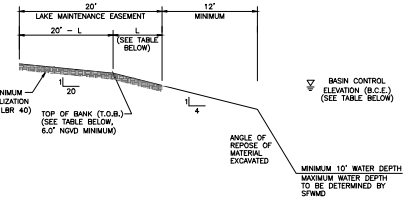
LAKE OUTFALL DETAIL WITH HEADWALL



NOTE:

1. OUTFALL SHALL EXTEND PAST DEEP CUT LINE OF LAKE NO LESS THAN 2' AND NO MORE THAN 5'.
2. APPLICANT/ENGINEER SHALL DEMOSTRATE THAT ADEQUATE LAKE DEPTH AND STABILIZATION ARE PROVIDED AT THE OUTFALL LOCATION.
3. SBDD MAY REQUIRE ADDITIONAL LAKE BANK STABILIZATION AT THESE LOCATIONS. (ABOVE AND BELOW WATER)
4. IF DISSIMILAR PIPE MATERIAL ARE TO BE USED REFER TO EXHIBIT 29.
5. OUTFALL PIPE SHALL HAVE A STAINLESS STEEL EYEBOLT AND MARKER BUOY.

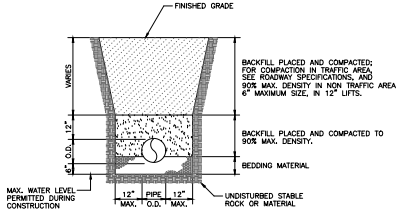
LAKE OUTFALL DETAIL WITHOUT HEADWALL



BASIN No.	B.C.E. (FT–NGVD)	T.O.B. (FT–NGVD)	L (FT)	BASIN No.	B.C.E. (FT–NGVD)	T.O.B. (FT–NGVD)	L (FT)
S–1	2.50	6.50	16.00	S–8	3.50	6.00	10.00
S–2 & S–7	2.70	6.00	13.20		4.00	6.50	10.00
S–3	3.00	6.50	14.00	S–9 & S–10	3.50	6.50	12.00
S–4	3.50	6.00	10.00		4.00	6.50	10.00
S–5	4.00	6.00	8.00	S–12	3.00	6.50	14.00
	4.25	6.50	9.00	S–13	3.00	6.50	14.00
	4.50	6.50	8.00				

* EXISTING LAKE BANKS AND SLOPES SHALL BE CLEARED AND REGRADED AS PER SBDD CRITERIA ALONG THE ENTIRE LIMITS OF ALL DEVELOPMENT AND REDEVELOPMENT PROJECTS.

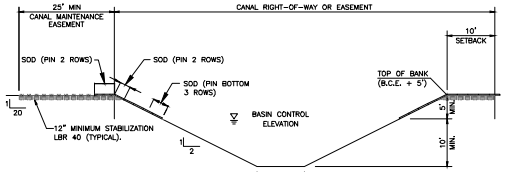
LAKE CROSS SECTION AND LAKE MAINTENANCE EASEMENT



NOTES:

1. WHERE SOIL CONDITION CANNOT BE MAINTAINED AS SHOWN ABOVE, PROVIDE APPROVED MEANS OF CONSTRUCTION.
2. WHERE REQUIRED SHEETING AND SHORING SHALL BE IN ACCORDANCE WITH THE LOCAL GOVERNMENTAL AGENCY.
3. MUCK OR OTHER UNSUITABLE MATERIAL SHALL BE COMPLETELY REMOVED.
4. WHEN THE PIPE IS LAID IN THE PREPARED TRENCH, TRUE TO LINE AND GRADE, THE PIPE BARREL SHALL RECEIVE CONTINUOUS UNIFORM SUPPORT. WHERE NECESSARY, COURSE SAND, PEA ROCK OR 3/4" LIMESTONE GRAVEL SHALL BE USED TO PROVIDE UNIFORM BEDDING.
5. JOINTS MAY BE REQUIRED TO BE WRAPPED AT THE DISCRETION OF THE DISTRICT AND THE SITE CONDITIONS.
6. BACKFILL MATERIAL SHALL BE NON–COHESIVE AND NON–PLASTIC SOIL THAT IS FREE OF ALL DEBRIS, LUMPS, WOOD BROKEN PAVING OR ANY ORGANIC OR UNSUITABLE MATERIAL. BACKFILL MATERIAL PLACED WITHIN 12" OF THE PIPE SHALL CONTAIN NO ROCKS OR STONES LARGER THAN 3–1/2" INCHES IN DIAMETER. NO ROCKS OR STONES LARGER THAN 6" IN DIAMETER WILL BE PERMITTED IN THE REMAINING BACKFILL UNLESS OTHERWISE SPECIFIED.
7. TRENCH BACKFILL SHALL BE COMPACTED TO NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY AASHTO T–180. BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE TO THE STANDARD ENGINEERING DESIGN REQUIRED BY THE LOCAL GOVERNMENTAL AGENCY.

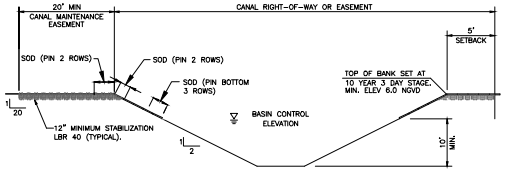
TRENCH ECAVATION DETAIL



NOTES:

1. ALL CANALS MUST HAVE A MINIMUM DEPTH OF 10' FROM CONTROL ELEVATION TO BOTTOM OF EXCAVATION
2. MINIMUM CANAL BOTTOM IS 10' WIDE
3. ALL PROPERTIES ADJACENT TO THE CANAL MUST SLOPE BANKS, SOD AND PROVIDE AS–BUILTS TO THE ABOVE DESIGN.
4. THERE SHALL BE NO MUCK WITHIN THE CANAL RIGHT OF WAY AND MAINTENANCE EASEMENT.
5. SOD PINS MUST BE WOOD.

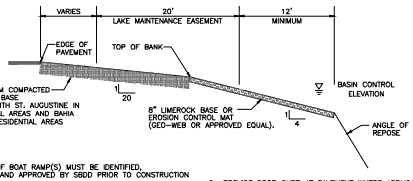
PRIMARY CANAL MINIMUM DESIGN SECTION AND CANAL MAINTENANCE EASEMENT



NOTES:

1. ALL CANALS MUST HAVE A MINIMUM DEPTH OF 10' FROM CONTROL ELEVATION TO BOTTOM OF EXCAVATION
2. MINIMUM CANAL BOTTOM IS 10' WIDE
3. ALL PROPERTIES ADJACENT TO THE CANAL MUST SLOPE BANKS, SOD AND PROVIDE AS–BUILTS TO THE ABOVE DESIGN.
4. THERE SHALL BE NO MUCK WITHIN THE CANAL RIGHT OF WAY AND MAINTENANCE EASEMENT.
5. SOD PINS MUST BE WOOD.

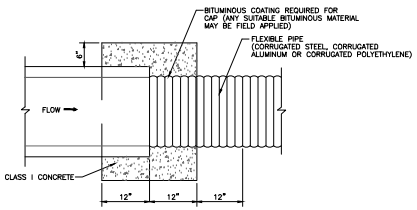
SECONDARY CANAL MINIMUM DESIGN SECTION AND CANAL MAINTENANCE EASEMENT



NOTES:

1. LOCATION OF BOAT RAMP(S) MUST BE IDENTIFIED, INSPECTED AND APPROVED BY SBDD PRIOR TO CONSTRUCTION
2. SLOPE DETAILS AS OUTLINED ABOVE MUST BE INSPECTED AND APPROVED BY THE DISTRICT PRIOR TO INSTALLATION OF EROSION CONTROL MAT.
3. UPON COMPLETION OF BOAT RAMP, DISTRICT MUST BE NOTIFIED FOR FINAL APPROVAL.
4. BOAT RAMP MUST INTERSECT ADJACENT ROAD AND WATER BODY AT 90° ANGLE UNLESS OTHERWISE APPROVED.
5. THE BOAT RAMP(S) MUST BE MINIMUM 12' WIDE.
6. PROVIDE DROP CURB AT PAVEMENT WHERE APPLICABLE.
7. FOR BOAT RAMP CONSTRUCTED ON AN SBDD CANAL A SLOPE OF 3:1 CAN BE USED FROM EDGE OF WATER UP TO TOP OF BANK.
8. BOAT RAMPS SHALL BE CONSTRUCTED OF LIMEROCK OR EROSION CONTROL MAT, AT THE DISCRETION OF THE DISTRICT.
9. IF SBDD OPTS FOR AN EROSION CONTROL MAT, THE MAT SHALL BE FILLED WITH AT LEAST 4" OF 3/4" ROCK.

BOAT RAMP DETAIL



NOTES:

1. A CONCRETE JACKET SHALL NOT BE USED TO JOIN:
   a) METAL PIPE OF DISSIMILAR MATERIALS.
   b) FLEXIBLE PIPE WHEN THE MAXIMUM COVER REQUIRED IN ACCORDANCE WITH F.D.O.T. INDEX No. 205 CANNOT BE OBTAINED.
2. OPTIONAL FOR LAKE OR CANAL OUTFALL.
3. WHEN USED FOR LAKE OUFALL, JACKET SHALL BE CENTERED 8' LANDWARD OF THE BASIN CONTROL ELEVATION.

(PER FDOT INDEX 280)

CONCRETE JACKET DETAIL

GENERAL NOTES

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 SBDD 48 HOURS OR TWO (2) WORKING DAYS PRIOR TO ANY REQUIRED INSPECTION. TO SCHEDULE INSPECTIONS, PLEASE CALL SBDD AT (954)480–3337. SBDD'S WORKING HOURS ARE FROM 8:00 AM TO 4:30 PM, MONDAY THROUGH FRIDAY EXCEPT HOLIDAYS.
2. ANY REVISIONS TO PLANS PERMITTED BY SBDD MUST BE APPROVED BY THE DISTRICT ENGINEER PRIOR TO 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 SBDD AFTER APPROVAL BY THE ENGINEER OF RECORD, PRIOR TO BEGINNING CONSTRUCTION
5. DURING CONSTRUCTION, SBDD PERSONNEL WILL INSPECT THE FOLLOWING:
   .. INSTALLATION OF ALL UNDERGROUND DRAINAGE FACILITIES BEFORE BACKFILLING,
   .. BACKFILLING OF DRAINAGE TRENCHES,
   .. SHAPING OF CANAL AND LAKE BANKS FROM THE DEEP CUT TO THE UPLAND EASEMENT LINE OR AS REQUIRED BY SBDD,
   AND ANY OTHER DRAINAGE RELATED CONSTRUCTION WORK.
   RE–INSPECTIONS, EXTRAORDINARY INSPECTIONS AND FINAL INSPECTIONS WILL BE SUBJECT TO ADDITIONAL FEE CHARGES BY SBDD.
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 DEVELOPMENT. THE CONTRACTOR OR OWNER SHALL PERIODICALLY, OR AS REQUIRED BY SBDD, 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 BUILDING PADS ADJACENT TO THE WATER BODY. IN THE EVENT THAT THE CONTRACTOR OVER DIGS THE WATER BODY, THE OWNER/CONTRACTOR SHALL SUBMIT TO SBDD ITS SOLUTION TO CORRECT THE OVER DIGGING. ANY SUGGESTED REMEDY OR CORRECTION MUST BE APPROVED BY SBDD 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 RELEASE OF THE BOND OR LETTER OF CREDIT. AS–BUILTS 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 SBDD'S CRITERIA MANUAL. AS–BUILTS MUST ALSO BE PROVIDED IN ELECTRONIC FORMAT.
8. AS–BUILT DRAWINGS OF WATER BODIES SHALL INCLUDE THE DATA REQUIRED UNDER EXHIBIT 39 OF SBDD'S CRITERIA MANUAL. THE AS–BUILT CROSS SECTIONS SHALL BE PROVIDED AT NOT MORE THAN 100 FOOT INTERVALS AND AT ALL OUTFALL PIPES CONSTRUCTED WITHOUT HEADWALLS.
9. SBDD WILL NOT COMPLETE THE FINAL INSPECTION UNTIL RECEIPT OF THE AS–BUILT PACKAGE WHICH MUST INCLUDE THE ENGINEER'S CERTIFICATION AND TEST RESULTS FOR STABILIZATION OF LAKE/CANAL MAINTENANCE EASEMENTS, ARE RECEIVED.

UPDATED 3/26/2015

EXHIBIT 16

SEAL

SOUTH BROWARD DRAINAGE DISTRICT — Created June 6, 1961

SOUTH BROWARD DRAINGE DISTRICT DESIGN CRITERIA MANUAL

EXHIBIT TITLE

STANDARD DETAIL SHEET