

## STORM DRAIN STANDARD DETAILS INDEX

### DATE MODIFIED

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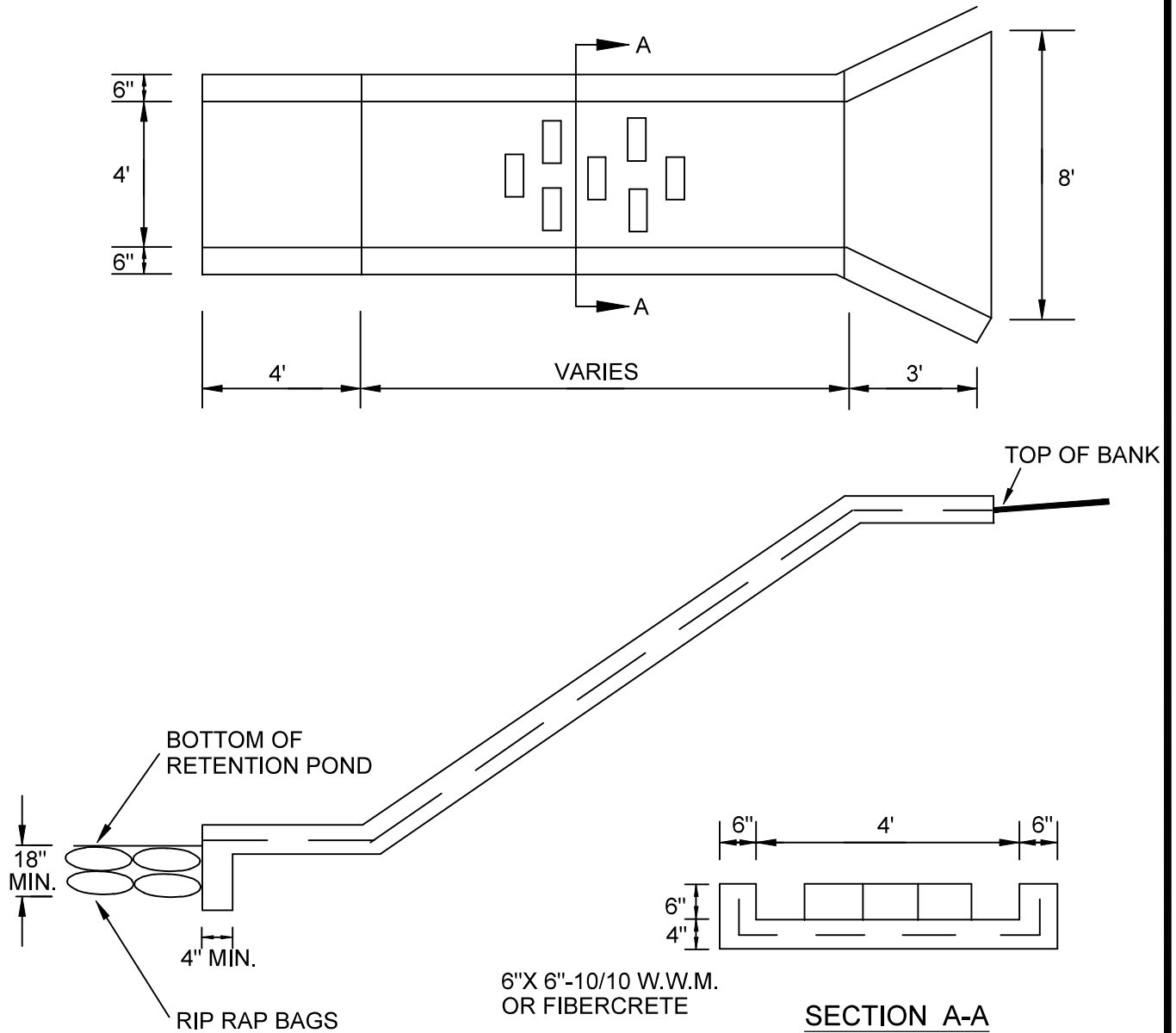
CITY OF HOLLY HILL, FLORIDA  
STANDARD CONSTRUCTION DETAILS

STORM DRAIN DETAILS

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**NOTES:**

1. CONCRETE SPILLWAY TO BE 28 DAY, 3000 P.S.I., 4" THICK.
2. PLACE SOD AT LEAST 5' AROUND ALL STRUCTURE EDGES ABOVE STANDING WATER.

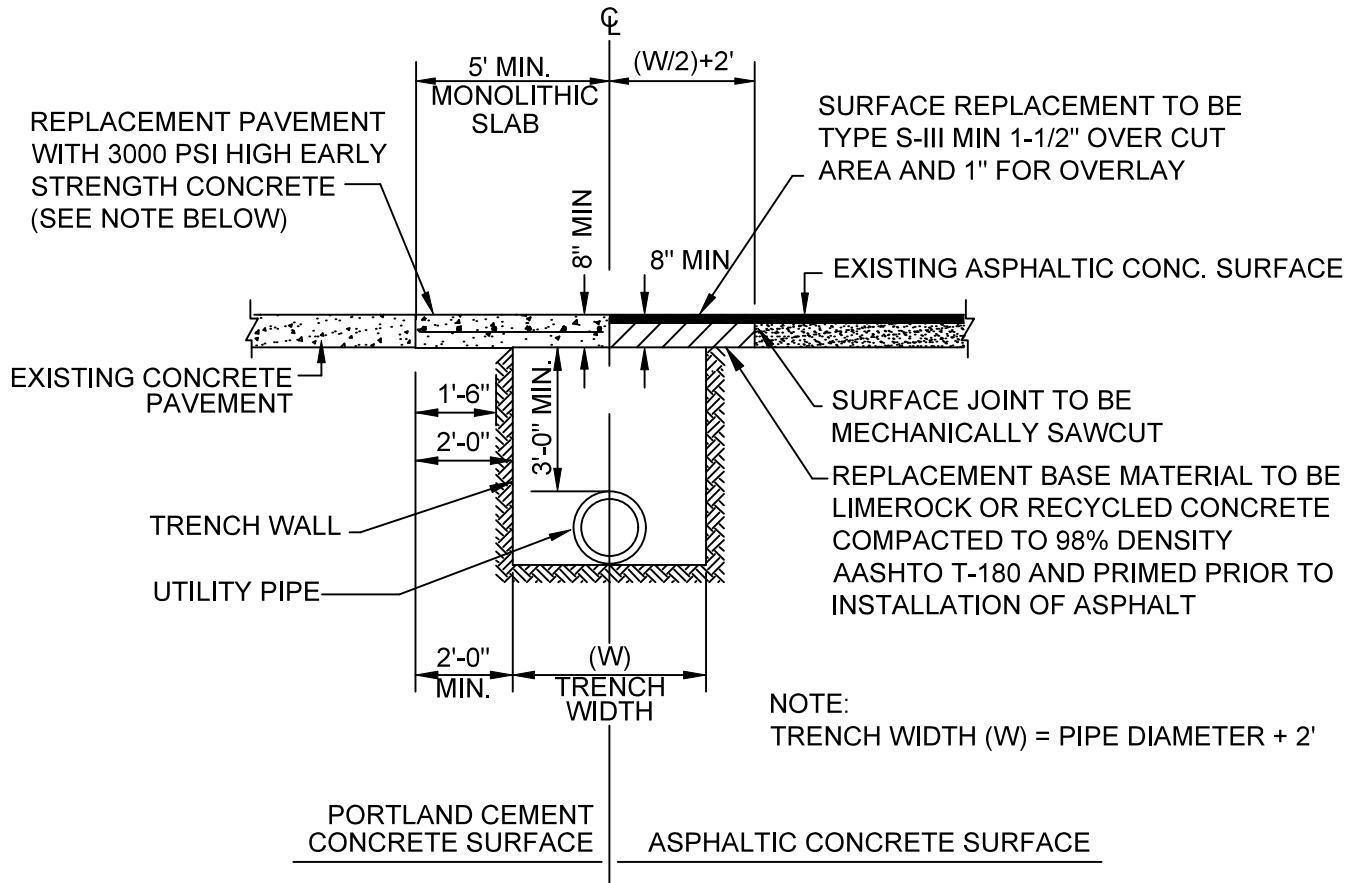


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**CONCRETE SPILLWAY**

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**NOTES:**

1. PAVING REPLACEMENT SHALL INCLUDE RAISING ALL MANHOLE FRAMES AND LIDS AND VALVE BOXES AND LIDS (AND SIMILAR APPURTENANCES) TO FINAL ELEVATION PRIOR TO RESURFACING.
2. SUBBASE TO BE COMPACTED TO 98% MAXIMUM DENSITY AASHTO T-180.
3. IN AREAS WHERE CONCRETE PAVEMENT IS TO BE UTILIZED, 3000 PSI - 28 DAY STRENGTH CONCRETE PAVEMENT MAY BE PERMITTED PROVIDED THAT THE SUBJECT AREA WILL REMAIN FREE OF VEHICULAR TRAFFIC FOR A MINIMUM OF 3 DAYS.



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**PAVEMENT TRENCH RESTORATION**

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## STORM DRAINAGE DESIGN AND CONSTRUCTION NOTES (1 OF 2)

ALL MATERIALS AND INSTALLATION METHODS USED FOR LAND DEVELOPMENT CODE REQUIRED IMPROVEMENTS FOR SUBDIVISIONS AND SITE PLANS SHALL BE IN CONFORMANCE WITH THE CITY, FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), AND THE FDOT STANDARDS PLANS (LATEST EDITION).

1. ALL STORM SEWERS AND CULVERTS LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE A MINIMUM OF CLASS III REINFORCED CONCRETE PIPE. OUTSIDE OF ROADWAY EASEMENTS AND R.O.W., PIPE MAY BE MADE OF ALTERNATE MATERIALS INCLUDING:
  - A. SMOOTH INNER WALL HIGH DENSITY POLYETHYLENE (HDPE) IN ACCORDANCE WITH AASHTO M-294, AASHTO MP7, ASTM D3350 AND ASTM D2412 FOR SIZES UP TO 42" IN DIAMETER
  - B. PVC IN ACCORDANCE WITH THE PROVISION NOTED IN THE "SEWER DETAILS" OF THESE SPECIFICATIONS.
2. ALL STORM SEWER PIPE JOINTS LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE ENTIRELY WRAPPED WITH FILTER FABRIC WITH A MINIMUM WIDTH OF 24" AND A MINIMUM OF 24" OVERLAP SECURED WITH PLASTIC OR STAINLESS BANDS. GASKETS ARE NOT PERMITTED AS AN EQUIVALENT SUBSTITUTE FOR MEETING THIS REQUIREMENT. THIS PRACTICE IS ENCOURAGED ON PRIVATE SITES ADDITIONALLY, ALL JOINTS SHALL BE RUBBER GASKETED FOR BOTH ROUND AND ELLIPTICAL PIPE.
3. DEPTH OF COVER MEASURED TO THE TOP OF PIPE (NOT INCLUDING THE BELL JOINT) SHALL BE A MINIMUM OF 1 FOOT. DEVIATION FROM THIS REQUIREMENT MAY BE ALLOWED BY INCREASING THE PIPE'S STRUCTURAL CAPACITY. THIS DEVIATION MUST BE SPECIFIED ON THE PLANS APPROVED FOR CONSTRUCTION AND SUBSEQUENTLY REFLECTED ON THE SHOP DRAWINGS AND AS-BUILT PLANS.
4. ALL STORM DRAINAGE PIPES LOCATED IN ROADWAY RIGHTS-OF-WAY AND ROADWAY EASEMENTS SHALL BE A MINIMUM OF FIFTEEN INCH (15") DIAMETER OR EQUIVALENT AND BE DESIGNED FOR A MINIMUM OF A TWENTY-FIVE (25) YEAR STORM OF TWENTY-FOUR (24) HOUR DURATION. STORM DRAINAGE PIPES SMALLER THAN 15" ARE PERMITTED ON PRIVATE SITE PLANS PROVIDING THAT MAINTENANCE SHALL BE PERFORMED BY THE OWNER.
5. STORM INLETS, MANHOLES, AND CATCH BASINS SHALL BE EITHER POURED IN PLACE OR PRECAST REINFORCED CONCRETE. STRUCTURES SHALL BE REQUIRED AT EACH CHANGE OF PIPE SIZE OR CHANGE IN PIPE DIRECTION. ALL STRUCTURES SHALL BE IN COMPLIANCE WITH ASTM C-478 AND SHALL HAVE 8" THICK WALLS. 6" THICK WALLS MAY BE PERMITTED PROVIDING THAT THE PLANS SPECIFY INCREASED REINFORCEMENT IN ACCORDANCE WITH FDOT STANDARD PLANS (LATEST EDITION). IN ADDITION, THIS REQUIREMENT MUST BE REFLECTED ON BOTH THE SHOP DRAWING AND AS-BUILT PLANS.
6. STORM INLETS SHALL BE SPACED IN SUCH A MANNER AS TO ACCEPT ONE HUNDRED (100) PERCENT OF THE DESIGN STORM RUNOFF WITHOUT IMPEDING THE FLOW OF TRAFFIC. FOR ROADWAY SECTIONS WITH DESIGN SPEEDS OF 45 MPH AND LESS AND WITHOUT FULL WIDTH SHOULDERS, SPREAD RESULTING FROM A RAINFALL INTENSITY OF FOUR INCHES (4") PER HOUR SHALL NOT EXCEED ONE-HALF OF THE TRAVEL LANE ADJACENT TO THE GUTTER. FOR SITE PLANS, INLET SPACING SHALL BE DESIGNED TO ACCEPT ONE HUNDRED (100) PERCENT OF THE RUNOFF FROM A RAINFALL INTENSITY OF FOUR INCHES (4") PER HOUR WITHOUT RESULTING IN PONDING OF WATER AROUND THE INLET.
7. RETENTION AREA WATER DEPTHS SHALL BE FOUR FEET(4') MINIMUM TO TWELVE FEET(12') MAXIMUM, MEASURED FROM THE N.W.L. (NORMAL WATER LEVEL).
8. FOR CONNECTIONS BETWEEN INLETS WITH PIPING 15" IN DIAMETER AND LARGER, THE MAXIMUM DISTANCES BETWEEN INLETS AND / OR CLEAN-OUT JUNCTION BOXES SHALL BE 300 FEET. CULVERTS SHALL BE SLOPED TO MAINTAIN A MINIMUM SELF-CLEANING VELOCITY OF 3 FEET PER SECOND USING A MANNING'S 'n' OF 0.012. SPACING FOR CLEAN-OUTS AND INLETS FOR SMALLER PIPING SHALL BE REDUCED AND EVALUATED ON A CASE BY CASE BASIS.



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### STORM DRAINAGE DESIGN AND CONSTRUCTION NOTES

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## STORM DRAINAGE DESIGN AND CONSTRUCTION NOTES (2 OF 2)

9. THE MAXIMUM PERMISSIBLE SLOPE OF ANY NEW SITE GRADING IS 3:1 HORIZONTAL:VERTICAL). THIS LIMIT SHALL BE APPLIED TO ALL AREAS EXCEPT STORMWATER CONVEYANCE AND TREATMENT SYSTEMS WHICH HAVE A MAXIMUM SLOPE OF 4:1 (EXCEPT BELOW THE WATER TABLE WHERE SHARPER SLOPES ARE PERMISSIBLE).
10. PIPED STORMWATER SYSTEMS SHALL HAVE A MINIMUM DRAINAGE MAINTENANCE EASEMENT WIDTH OF 20 FEET, AND MAY BE INCREASED DEPENDING UPON THE SIZE AND DEPTH OF PIPE.
11. NORMAL ROADSIDE SWALES ARE PERMITTED TO BE CONSTRUCTED TO A MAXIMUM DEPTH OF 18" BELOW THE OUTSIDE EDGE OF PAVEMENT OR CONCRETE CURB.
12. CONCRETE EROSION CONTROL MUST BE PROVIDED WHERE SWALES OR CULVERTS INTERCEPT DRAINAGE DITCHES.
13. LAKE INFLOW AND OUTLET STRUCTURES SHALL GENERALLY BE CONSTRUCTED WITH REINFORCED CONCRETE AND SHALL BE SUBJECT TO THE APPROVAL OF THE CITY. SKIMMERS FOR WET PONDS SHALL BE CONSTRUCTED SUCH THAT THE BOTTOM EXTENDS 6" BELOW THE NORMAL WATER LEVEL AND 6" ABOVE THE OVERFLOW. FOR DRY PONDS, THE SKIMMER BOTTOM SHALL BE SET 6" BELOW THE LOWEST OVERFLOW ELEVATION AND 6" ABOVE THE HIGHEST POINT OF OVERFLOW. ALL SKIMMERS SHALL BE CONSTRUCTED OF MINIMUM 1/4" THICK ALUMINUM OR FIBERGLASS ADEQUATELY SUPPORTED TO PREVENT DEFLECTION.
14. SOIL EROSION CONTROL MEASURES, SATISFACTORY TO THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND THE CITY, SHALL BE EMPLOYED DURING CONSTRUCTION.
15. THE CITY MAY REQUEST THAT THE DEVELOPER SUBMIT A REPORT BY A QUALIFIED HYDROLOGIST ON THE IMPACT THE LAKE WILL HAVE ON NEIGHBORING WATER TABLE ELEVATIONS BOTH DURING CONSTRUCTION AND AFTER LAKE COMPLETION. THE CITY MAY REQUIRE GROUNDWATER MONITORING DURING THE LAKE EXCAVATION.
16. ADEQUATE MAINTENANCE EASEMENTS OR RIGHTS-OF-WAY AS APPROVED BY THE CITY SHALL BE PROVIDED AROUND THE ENTIRE PERIMETER OF ALL LAKES AND ASSOCIATED OUTFALLS DISCHARGING INTO AND OUT OF LAKES. APPLICABLE CROSS SECTIONS SHALL BE INCLUDED ON FINAL DEVELOPMENT PLANS.
17. DEVELOPMENT PLANS FOR ALL STORMWATER MANAGEMENT SYSTEMS SHALL CONTAIN POP-OFF DATA (OVERFLOW), BOTTOM ELEVATION, NORMAL WATER LEVELS, MEAN ANNUAL SEASONAL HIGH WATER TABLE ELEVATION, TREATMENT VOLUME AND CORRESPONDING ELEVATION, 100 YEAR HIGH WATER LEVELS, AND THE DESIGN TAILWATER ELEVATION (IF APPLICABLE).
18. IN GENERAL, ALL RETENTION / DETENTION SITES MUST BE CONSTRUCTED ON ALL PROJECTS PRIOR TO ANY ROAD, PARKING LOT, OR BUILDING CONSTRUCTION COMMENCING OR AS CURRENT PERMIT CONDITIONS DICTATE. SEWER AND WATER MAINS MAY BE INSTALLED PRIOR TO RETENTION/DETENTION SITE CONSTRUCTION IF DEWATERING IS NOT REQUIRED.
19. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ANY AND ALL DEWATERING PERMITS THAT MAY BE REQUIRED.
20. WHEN CULVERTS ARE INSTALLED TO MAINTAIN THE FLOW OF EXISTING DRAINAGE WAYS WHERE NEWLY PROPOSED ROADS WOULD OTHERWISE SEVER THE DRAINAGE WAY, THEN CULVERTS CROSSING RIGHTS-OF-WAY SHALL EXTEND FROM RIGHT-OF-WAY LINE TO RIGHT-OF-WAY LINE UNDER THE ROADWAY. CULVERTS SHALL BE DESIGNED TO ACCOMMODATE THE FLOW FROM THE 100 YEAR - 24 HOUR STORM EVENT WITHOUT FLOODING ADJACENT PROPERTY OR SURCHARGING THE SAID ROADWAY.
21. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND MAINTAIN A COPY OF THE SJRWMD PERMIT AND THE NPDES PERMIT AT THE CONSTRUCTION SITE, AND ABIDE BY ALL CONDITIONS OF THE PERMIT.
22. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORMWATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.



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### STORM DRAINAGE DESIGN AND CONSTRUCTION NOTES

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## CANAL AND WATERWAY DESIGN AND CONSTRUCTION NOTES

1. CANALS AND WATERWAYS SHALL BE AVOIDED EXCEPT WHEN APPROVED AND DEEMED BY THE CITY TO BE UNAVOIDABLE OR NECESSARY, WHEREIN LITERAL ENFORCEMENT OF THIS CHAPTER WOULD DEPRIVE THE DEVELOPER OF THE REASONABLE USE OF HIS LAND.
2. IN THE EVENT OF SUCH APPROVAL, THE CANALS OR WATERWAYS SHALL HAVE A MINIMUM OF TWENTY FEET (20') ADDITIONAL WIDTH ON EACH BANK MEASURED FROM THE TOP OF BANK AND LOCATED ALONG THE ENTIRE LENGTH OF THE CANAL FOR MAINTENANCE.
3. SUCH CANALS SHALL BE A MINIMUM OF FORTY FEET (40') IN WIDTH PLUS REQUIRED MAINTENANCE AREAS.
4. CANALS SHALL HAVE A MINIMUM BOTTOM WIDTH OF THREE FEET (3') AND MAXIMUM PERMISSIBLE SIDE SLOPES OF 4:1 (HORIZONTAL: VERTICAL). SHARPER SLOPES MAY BE CONSIDERED BELOW THE NORMAL WATER LEVEL PROVIDING THAT ADDITIONAL BANK STABILIZATION MEASURES ARE INSTALLED BASED UPON THE RECOMMENDATIONS OF A CERTIFIED GEOTECHNICAL ENGINEER. CANAL BANKS SHALL BE SODDED.
5. WATERWAYS AFFECTED BY TIDAL ACTION SHALL HAVE A MINIMUM DEPTH OF NINE FEET (9') BELOW SEA LEVEL REFERENCING THE NORTH AMERICAN VERTICAL DATUM (N.A.V.D.). THESE WATERWAYS SHALL BE SEPARATED FROM FRESH WATER BY SALINITY DAMS WITH SPILLWAY ELEVATIONS AS APPROVED BY THE CITY.
6. TWENTY FEET (20') WIDE DRAINAGE/MAINTENANCE EASEMENTS SHALL BE REQUIRED IN ORDER TO PROVIDE FOR THE NORMAL MAINTENANCE OF THESE WATER BODIES. THESE EASEMENTS SHALL BE ESTABLISHED BY THE CITY OF HOLLY HILL BASED ON EXISTING AND FUTURE CONDITIONS AS WELL AS THE TYPES OF MAINTENANCE EQUIPMENT AVAILABLE.



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### CANAL AND WATERWAY DESIGN AND CONSTRUCTION NOTES

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## BRIDGE DESIGN AND CONSTRUCTION NOTES

1. BRIDGES SHALL BE CONSTRUCTED WITH HEADER CURB ON BOTH SIDES RUNNING ITS COMPLETE LENGTH.
2. STANDARD 4'-WIDE SIDEWALKS SHALL BE PROVIDED ON BOTH SIDES AS FAR AWAY AS POSSIBLE FROM THE ROADWAY, BUT AT NO TIME CLOSER THAN TWO (2) FEET FROM THE EDGE OF THE FUTURE ROADWAY.
3. APPROACH GUARDRAILS OR FENCES SHALL BE PROVIDED WHERE REQUIRED FOR SAFETY BY THE CITY.
4. BRIDGE GEOMETRY, BRIDGE DESIGN, AND LOADING SHALL CONFORM TO THE DESIGN CRITERIA OF THE LATEST EDITION OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
5. PRIOR TO ACTUAL DESIGN OF THE BRIDGE, THE APPLICANT SHALL SUBMIT DESIGN LOAD CRITERIA TO THE CITY FOR APPROVAL.



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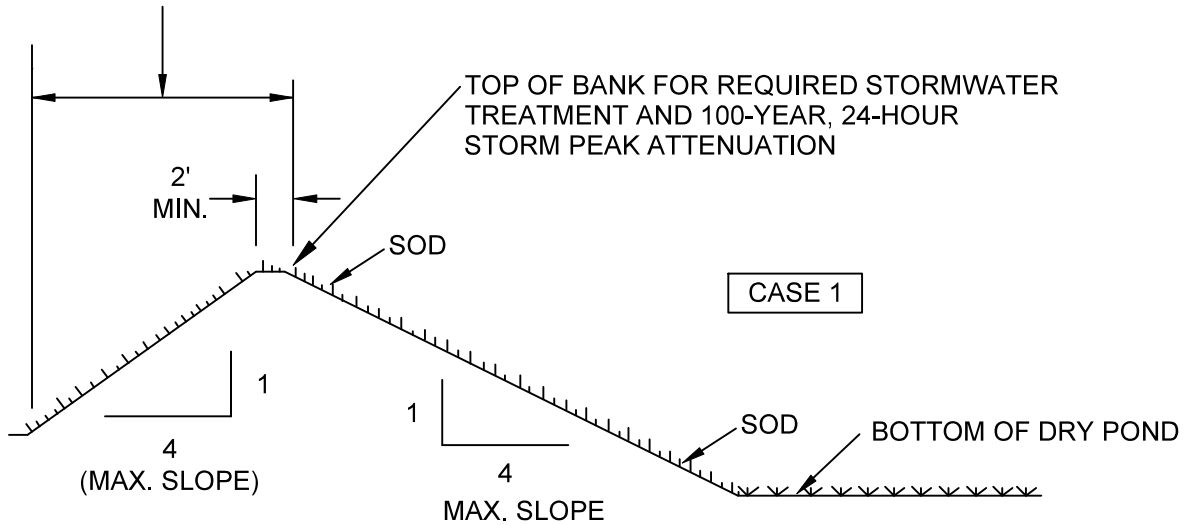
BRIDGE DESIGN AND  
CONSTRUCTION NOTES

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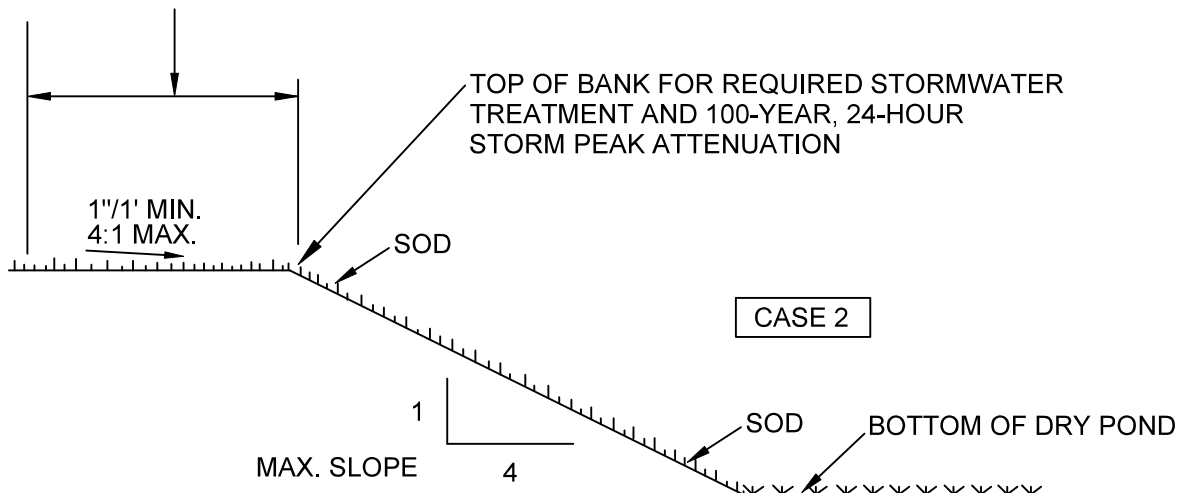
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ST-6



MAINTENANCE BERM /  
DRAINAGE EASEMENT  
(10' MIN.)



MAINTENANCE BERM /  
DRAINAGE EASEMENT  
(10' MIN.)



NOTES:

1. SOD IS TO BE PLACED TO BOTTOM OF DRY POND.
2. BOTTOM OF DRY POND TO BE SEEDED AND MULCHED (EXCEPT WHERE "A"-TYPE SOILS ARE PRESENT WHICH REQUIRES SODDING OF ENTIRE BOTTOM OF POND).
3. CASE 1 BERM SHALL REQUIRE THE INSTALLATION OF IMPERVIOUS SOILS OR OTHER MATERIALS TO PREVENT TRANSMISSION OF WATER.



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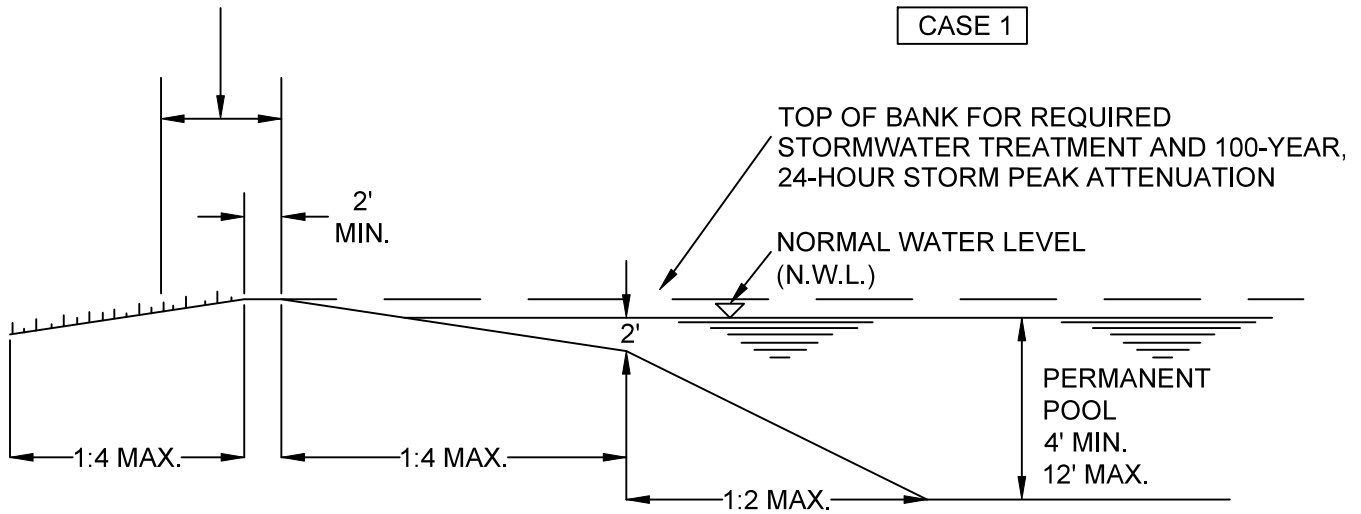
**DRY RETENTION POND**

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**ST-7**

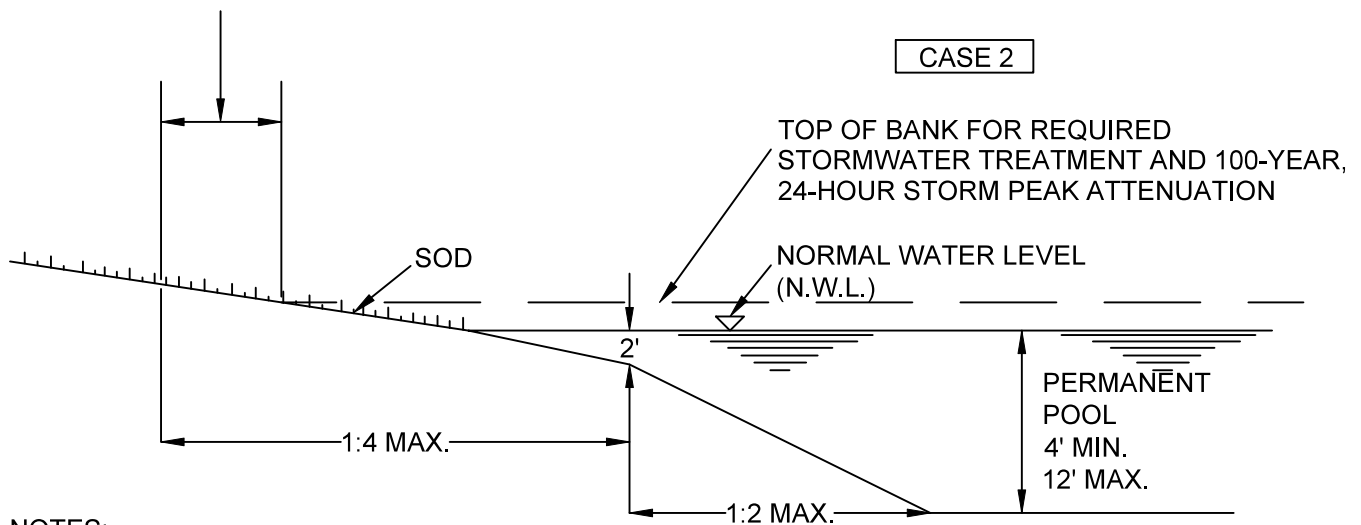
MAINTENANCE BERM /  
DRAINAGE EASEMENT  
(10' MIN.)

CASE 1



MAINTENANCE BERM /  
DRAINAGE EASEMENT  
(10' MIN.)

CASE 2



**NOTES:**

1. SOD IS TO BE PLACED TO N.W.L.
2. A PLANTED LITTORAL ZONE IS NOT PERMISSIBLE FOR SLOPES EXCEEDING 6:1.
3. AS AN OPTION TO A LITTORAL ZONE, THE DESIGNER CAN EITHER:
  - A. PROVIDE AN ADDITIONAL 50% OF THE PERMANENT POOL VOLUME, AS REQUIRED, OR
  - B. PROVIDE PRETREATMENT OF THE STORMWATER PRIOR TO ENTERING THE WET DETENTION POND.
4. CASE 1 BERM SHALL REQUIRE THE INSTALLATION OF IMPERVIOUS SOILS OR OTHER METHODS TO PREVENT TRANSMISSION OF WATER.



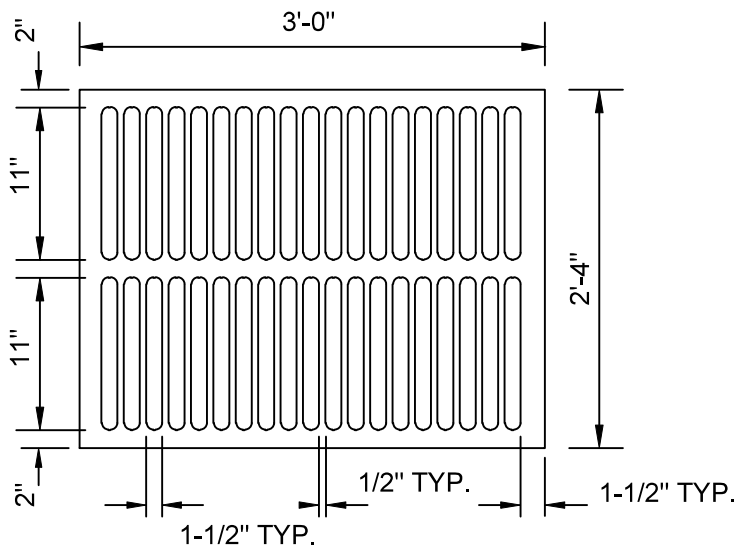
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WET DETENTION POND

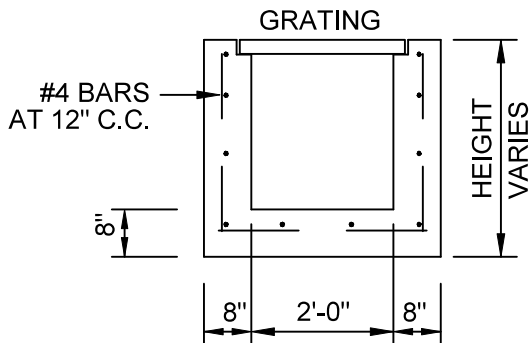
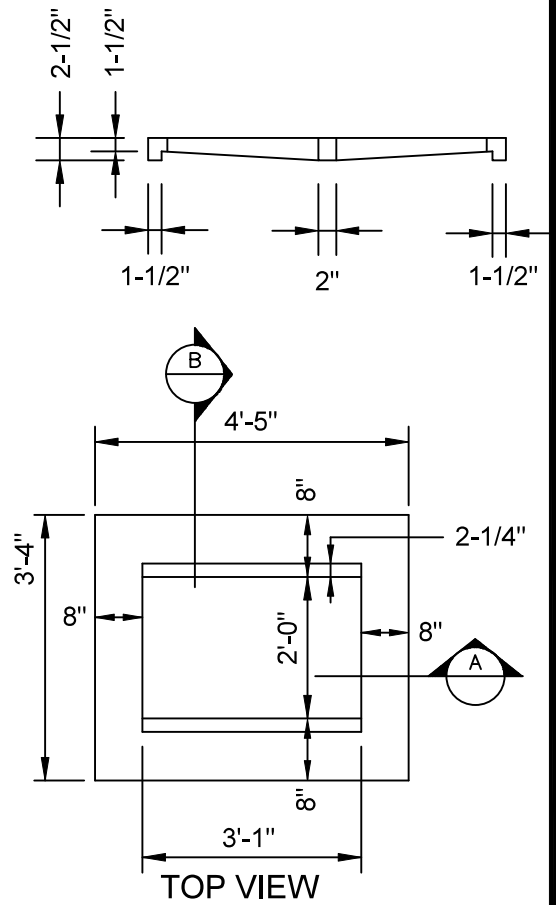
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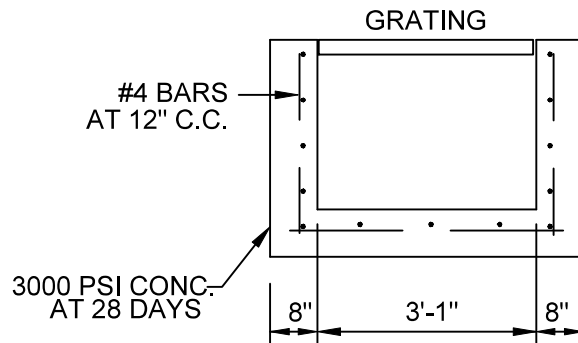
ST-8



CAST IRON GRATE



SECTION -B-



SECTION -A-

NOTE:

1. 6" THICK WALLS MAY BE PERMITTED, PROVIDING THAT THE INCREASED REINFORCEMENT IN ACCORDANCE WITH FDOT STANDARD PLANS (LATEST EDITION) IS INSTALLED. THIS MUST BE REFLECTED ON THE DESIGN PLANS, SHOP DRAWINGS, AND AS-BUILTS.

FDOT TYPE "C" INLET

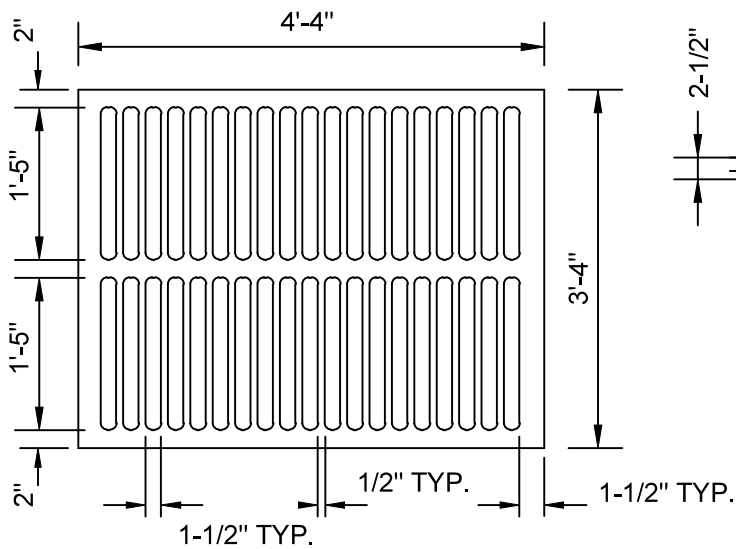


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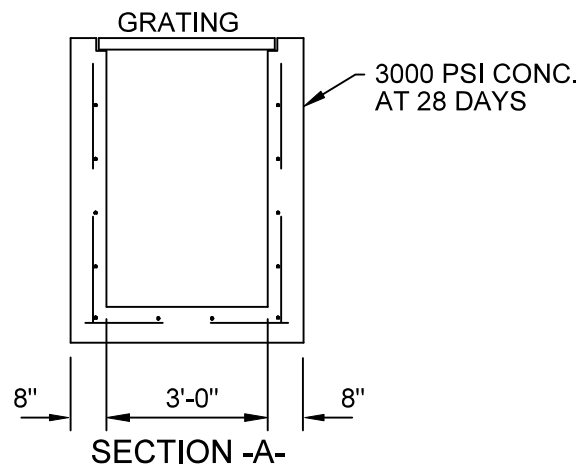
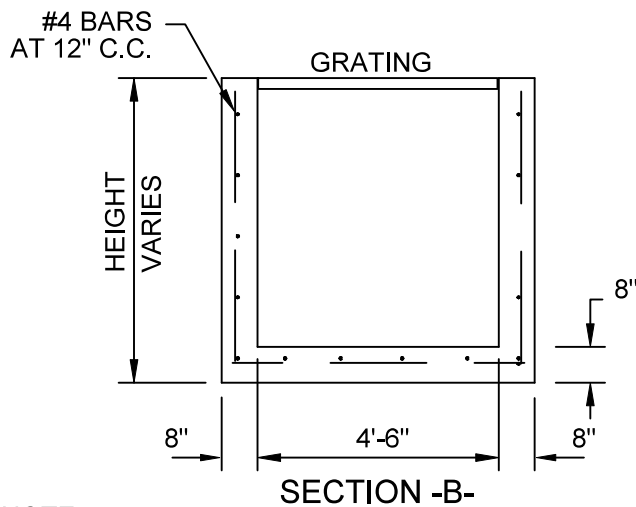
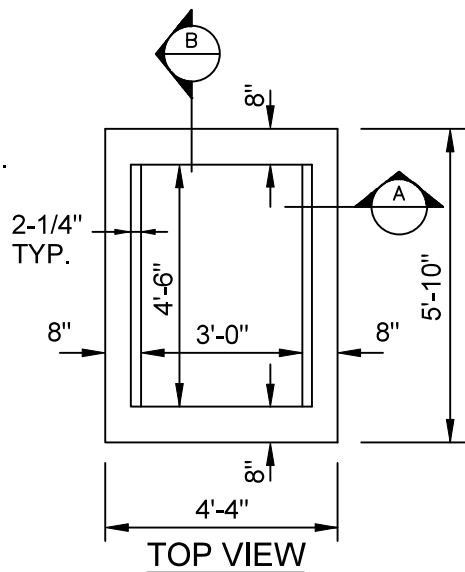
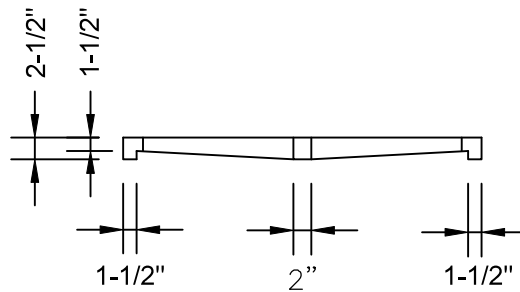
TYPE "C" STORM INLET

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ST-9



CAST IRON GRATE



NOTE:

1. 6" THICK WALLS MAY BE PERMITTED, PROVIDING THAT THE INCREASED REINFORCEMENT IN ACCORDANCE WITH FDOT STANDARD PLANS (LATEST EDITION) IS INSTALLED. THIS MUST BE REFLECTED ON THE DESIGN PLANS, SHOP DRAWINGS, AND AS-BUILTS.

FDOT TYPE "E" INLET



CITY OF HOLLY HILL, FLORIDA  
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FDOT TYPE "E" INLET

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