

**EXHIBIT "C"**

**PAVING AND DRAINAGE CHECK LIST FOR APPLICANTS**

*This checklist is provided to assist the applicant in providing the appropriate information to the District. It must be completed and included with the initial submittal package. When a question is answered NO or N/A, submit a brief statement as to why this information is not provided. This check list is not all-inclusive. Additional information may be required to confirm compliance with District regulations, standards, procedures, and design criteria.*

#	Submittal Item Description	Yes	No	N/A
<b>1. PROPERTY AND PROJECT INFORMATION</b>				
1.1	Boundary and topographic survey with:			
	• Legal description including property area			
	• Existing improvements			
	• Existing grades at no greater than a 100' grid extending sufficiently beyond the property boundaries to determine direction of off-site flows			
	• Vertical elevation datum and site-specific algebraic difference between NAVD88 and NGVD29			
	• FEMA FIRM panel number and flood zone			
	• All easements of record and known encumbrances			
	• Section lines, rights-of-way, property lines, reservations with references to official record book and page number or instrument number			
	• For District canals adjacent to or adjoining the property (includes canals on the opposite side of the adjacent right-of-way): all grades from top of bank to top of bank including any intermediate grade breaks in plan view and cross sections spaced 100' apart with grades and slopes			
1.2	PDF of all recorded easements and reservations			
1.3	Current and proposed zoning			
1.4	Current and proposed land use			
1.5	Development area in acres (total and for each phase)			
<b>2. ENGINEERING DOCUMENTS</b>				
2.1	Narrative of existing land use and drainage conditions			
2.2	Narrative of proposed development and stormwater management plan			
2.3	Engineering analyses:			
	• Land use breakdown (building, green, dry detention, pavement, lake/pond)			
	• Pervious/impervious land cover breakdown based on maximum impervious coverage that accounts for future phases and building expansion such as decks, patios and pools			
	• Water quality and exfiltration trench storage calculations			
	• 72-Hour drawdown or bleed-down calculations			
	• Soil storage calculations			
	• Existing and proposed stage-area-storage table by land use or land cover			
	• Floodplain encroachment (SFWMD Importer/Exporter) calculations			

#	Submittal Item Description	Yes	No	N/A
	<ul style="list-style-type: none"> <li>Site-specific maximum allowable discharge calculation</li> </ul>			
	<ul style="list-style-type: none"> <li>Discharge rating curves</li> </ul>			
	<ul style="list-style-type: none"> <li>Pre- and Post-Development Runoff computations</li> </ul>			
	<ul style="list-style-type: none"> <li>Surface water management model input and output data for 10-Year 1-Day, 25-Year 3-Day, and 100-Year 3-Day Zero Discharge design events</li> </ul>			
	<ul style="list-style-type: none"> <li>Storm sewer pipe sizing and hydraulic grade line calculations with map of contributory areas</li> </ul>			
	<ul style="list-style-type: none"> <li>Supporting documents and exhibits such as FEMA FIRM panel, SFWMD isohyetal maps, County flood maps, TR-55 Curve Number table, culvert sizing nomographs, FDOT intensity/duration/frequency curves, product-specific cut sheets or technical data, NRCS Soil Survey, etc.</li> </ul>			
2.4	Geotechnical engineering report with:			
	<ul style="list-style-type: none"> <li>Results of sub-surface exploration</li> </ul>			
	<ul style="list-style-type: none"> <li>Report and map of core borings</li> </ul>			
	<ul style="list-style-type: none"> <li>Laboratory testing results (sieve analyses, in-situ standard penetration test, usual open-hole test, double-ring infiltrometer, etc.)</li> </ul>			
	<ul style="list-style-type: none"> <li>Unified or AASHTO soil classification for each soil strata to a minimum depth of 5' below the water control elevation</li> </ul>			
	<ul style="list-style-type: none"> <li>Engineering evaluations and recommendations</li> </ul>			
<b>3. SUPPORTING DOCUMENTS</b>				
3.1	Biological assessment report			
3.2	Special geotechnical or hydrogeological investigation reports such as an ASTM Phase I or II Environmental Site Assessment for properties with known or suspected soil or groundwater contamination			
3.3	Remedial Action Plan when the results of a Phase I or Phase II assessment includes recommendations for site-specific remediation of soil or groundwater			
<b>4. CONSTRUCTION DRAWINGS</b>				
Construction drawings no larger than 24" x 36" (full size) and no smaller than 11" x 17" (half size) drawn to scale no smaller than 1"=40'				
4.1	Civil Engineering miscellaneous drawings:			
	<ul style="list-style-type: none"> <li>Key sheet with legal description, location map with scale and location of District canal(s), north arrow and sheet index</li> </ul>			
	<ul style="list-style-type: none"> <li>Specifications for paving, embankment materials, storm sewer materials, drainage structure materials, and as-built requirements</li> </ul>			
	<ul style="list-style-type: none"> <li>CBWCD General Notes</li> </ul>			
	<ul style="list-style-type: none"> <li>Demolition plan</li> </ul>			
	<ul style="list-style-type: none"> <li>Phasing plan</li> </ul>			
	<ul style="list-style-type: none"> <li>Aquatic planting plan, plant species list, and plant quantities</li> </ul>			
	<ul style="list-style-type: none"> <li>Erosion control plan</li> </ul>			
4.2	Civil Engineering Paving, Grading, and Drainage plans:			

#	Submittal Item Description	Yes	No	N/A
	<ul style="list-style-type: none"> <li>Construction phasing limits</li> </ul>			
	<ul style="list-style-type: none"> <li>Stormwater management design data table (see page 5)</li> </ul>			
	<ul style="list-style-type: none"> <li>Existing and proposed topography sufficient to identify high/low points and ridges</li> </ul>			
	<ul style="list-style-type: none"> <li>Location of District canals and proposed outfall</li> </ul>			
	<ul style="list-style-type: none"> <li>All stormwater management facilities depicted and annotated</li> </ul>			
	<ul style="list-style-type: none"> <li>Existing and proposed building limits with minimum finished floor elevation</li> </ul>			
	<ul style="list-style-type: none"> <li>Roof runoff controls (e.g., gutters connected to storm sewer structures)</li> </ul>			
	<ul style="list-style-type: none"> <li>Lot grading plan depicting maximum building footprint (including pools, decks, and patios)</li> </ul>			
	<ul style="list-style-type: none"> <li>Roadway gradients (or slopes) and elevations at sag and crest points</li> </ul>			
	<ul style="list-style-type: none"> <li>Location of drainage structures with rim (if manhole) or grate (if catch basin or yard drain) elevation, invert elevations, and pollution retardant baffle for each corresponding pipe invert included in structure callouts</li> </ul>			
	<ul style="list-style-type: none"> <li>Pipe type, size, and length to include overall length from center of structure to center of structure and separate length of exfiltration trench</li> </ul>			
	<ul style="list-style-type: none"> <li>Overland flow arrows</li> </ul>			
	<ul style="list-style-type: none"> <li>“Treatment Swales” and/or “Conveyance Swales” with flow arrows, top of bank and channel invert elevations and locations. Provide at least 15% change in slope at top of bank transition between swale bank and areas landward of the outer edge of swale.</li> </ul>			
	<ul style="list-style-type: none"> <li>Roof runoff control details (e.g., type and size of rain leaders)</li> </ul>			
	<ul style="list-style-type: none"> <li>Wet detention/retention limits of lake maintenance easement, top of bank and contours at each grade break down to bottom, area at water control elevation, and aquatic planting required vs. provided area</li> </ul>			
	<ul style="list-style-type: none"> <li>Dry detention/retention area limits of top of bank and contours at each grade break down to bottom. Provide at least 8% and 11% change in slope at the top of bank transition from 1:5 and 1:4 banks, respectively, to areas landward of the outer edge of the detention/retention area.</li> </ul>			
	<ul style="list-style-type: none"> <li>Existing and proposed guardrail limits</li> </ul>			
	<ul style="list-style-type: none"> <li>Proposed easements to be dedicated to the District depicted and annotated</li> </ul>			
	<ul style="list-style-type: none"> <li>Location of adjacent properties that will require accommodation for bypass drainage conveyance through the subject property</li> </ul>			
	<ul style="list-style-type: none"> <li>Location of air conditioner pads, electrical transformers, light poles, irrigation pump housing and control panels, and any other pad mounted electro-mechanical equipment</li> </ul>			
	<ul style="list-style-type: none"> <li>Perimeter berm alignment</li> </ul>			
	<ul style="list-style-type: none"> <li>Note prohibiting trees and plants within District easements</li> </ul>			
4.3	Typical sections depicting grades, slopes, fencing, and CBWCD easement limits, if applicable, for:			
	<ul style="list-style-type: none"> <li>Roads</li> </ul>			
	<ul style="list-style-type: none"> <li>Drive aisles</li> </ul>			
	<ul style="list-style-type: none"> <li>Parking spaces</li> </ul>			
	<ul style="list-style-type: none"> <li>Canals</li> </ul>			

#	Submittal Item Description	Yes	No	N/A
	<ul style="list-style-type: none"> <li>Lakes/ponds with minimum/maximum slope ratios, minimum lake depth, top of bank annotated, aquatic planting notes, and muck layer</li> </ul>			
	<ul style="list-style-type: none"> <li>Dry detention/retention areas with top of bank, toe of slope, and water control elevation annotated</li> </ul>			
	<ul style="list-style-type: none"> <li>Lot grading</li> </ul>			
	<ul style="list-style-type: none"> <li>Perimeter berm</li> </ul>			
4.4	Civil Engineering Paving, Grading, and Drainage plan details:			
	<ul style="list-style-type: none"> <li>Paving such as pavement section</li> </ul>			
	<ul style="list-style-type: none"> <li>Grading details such as trench excavations</li> </ul>			
	<ul style="list-style-type: none"> <li>Drainage details such as typical manhole and catch basin details: <ul style="list-style-type: none"> <li>Inner and outer structure dimensions</li> <li>Sump callout with minimum depth</li> <li>Pollution Retardant Baffle (PRB) material and mounting details with minimum 24" separation between outside of PRB and interior wall or adjacent PRB</li> <li>Inverted PRB material and mounting details</li> </ul> </li> </ul>			
	<ul style="list-style-type: none"> <li>Control structure details: <ul style="list-style-type: none"> <li>Elevation (profile) view</li> <li>Plan view</li> <li>Cross section view</li> <li>Grate or top elevation</li> <li>Weir crest or overflow elevation and dimensions</li> <li>Orifice invert elevation and dimensions</li> <li>Outgoing pipe annotated to indicate proposed point of discharge (e.g., "To N-1 Canal")</li> </ul> </li> </ul>			
	<ul style="list-style-type: none"> <li>Exfiltration trench details: <ul style="list-style-type: none"> <li>Width, height and minimum cover over trench</li> <li>Elevations of top, bottom, pipe invert, and water control elevation</li> <li>Material specifications and installation instructions</li> </ul> </li> </ul>			
	<ul style="list-style-type: none"> <li>Specialty stormwater system component details (e.g., underground stormwater storage vaults), operation and maintenance requirements and inspection schedules</li> </ul>			
	<ul style="list-style-type: none"> <li>Boat ramp details</li> </ul>			
	<ul style="list-style-type: none"> <li>Headwall details with minimum top of cap elevation</li> </ul>			
	<ul style="list-style-type: none"> <li>Retaining wall schematics with the appropriate statements regarding compliance with the Florida Building Code</li> </ul>			
4.5	Landscape Architecture drawings:			
	<ul style="list-style-type: none"> <li>Tree disposition plan</li> </ul>			
	<ul style="list-style-type: none"> <li>Planting plan depicting easements to be dedicated to CBWCD</li> </ul>			
	<ul style="list-style-type: none"> <li>Planting notes and details including root barrier and details</li> </ul>			
	<ul style="list-style-type: none"> <li>Note regarding no trees or plant materials to be installed inside easements to be dedicated to the District</li> </ul>			

DESIGN DATA TABLE REQUIRED ON FIRST PAVING & DRAINAGE CONSTRUCTION DRAWING\*

<b>STORMWATER MANAGEMENT DESIGN DATA TABLE</b>		
ITEM	ELEVATION IN FEET	
	REQUIRED	PROVIDED
ELEVATIONS IN THESE DRAWINGS ARE BASED ON:	<b>A</b>	
NGVD29 TO NAVD88 CONVERSION FACTOR	0.00 NGVD29 = (-) <b>B.BB</b> NAVD88	
<b>MINIMUM FINISHED FLOOR ELEVATION CRITERIA</b>		
FEMA MIN. BASE FLOODPLAIN ELEVATION WITH ASCE 24 MODIFIER	<b>C</b>	<b>D</b>
BROWARD COUNTY 100-YEAR FLOOD ELEVATION	<b>E</b>	<b>D</b>
100-YEAR 3-DAY ZERO DISCHARGE PEAK STAGE	<b>F</b>	<b>D</b>
18" ABOVE NEAREST ROAD CROWN ELEVATION – RESIDENTIAL STRUCTURES	<b>G</b>	<b>D</b>
6" ABOVE NEAREST ROAD CROWN ELEVATION – NON-RESIDENTIAL STRUCTURES	<b>H</b>	<b>D</b>
<b>MINIMUM CROWN OF ROAD ELEVATION CRITERIA</b>		
BROWARD COUNTY 10-YEAR FLOOD ELEVATION	<b>I</b>	<b>D</b>
10-YEAR 1-DAY PEAK STAGE	<b>F</b>	<b>D</b>
<b>MINIMUM PERIMETER BERM ELEVATION</b>		
25-YEAR 3-DAY PEAK STAGE	<b>F</b>	<b>D</b>

Data insertion guidelines

- A:** Insert either “NGVD29” or “NAVD88”
- B.BB:** Insert value to two decimal places after the minus sign “(-)”
- C:** Insert the minimum FEMA Base Flood Elevation or Design Flood Elevation, including any adjustments per ASCE 24 (latest edition per the Florida Building Code)
- D:** Insert the minimum elevation provided. NOTE: The Provided minimum elevation must be the greater of all relevant criteria.
- E:** Insert the minimum elevation based on the Broward County 100-year Flood Map in CBWCD Criteria Manual Exhibit D, or latest Broward County 100-Year flood elevation map
- F:** Insert the peak stage from the site-specific engineering calculations
- G:** Insert the elevation of the crown of road nearest the lowest building entrance, or “N/A” if it is not a residential structure
- H:** Insert the elevation of the crown of road nearest the lowest building entrance, or “N/A” if it is not a non-residential structure
- I:** Insert the minimum elevation based on the Broward County 10-year Flood Map in CBWCD Criteria Manual Exhibit E, or latest Broward County 10-Year flood elevation map

\*See Section 2.02, Central Broward Water Control District Criteria Manual, latest edition