

SUBDIVISION CHECKLIST

Subdivision Name _____

Account Number _____ Review Engineer _____

Prior To Review

_____ Preliminary plan approved by Planning Commission / Council as required.

_____ Review fee paid.

_____ Statement of Responsibility received.

_____ Submittal includes:

Transmittal letter.

Drainage calculations – narrative and drainage area maps (including off-site areas).

Pavement design calculations.

_____ Plan sealed and signed.

_____ If any of the above items are missing, send out incomplete letter.

Routing

_____ Send one copy to Department of Public Utilities.

_____ Send one copy to Planning Department.

_____ Send one copy to Fire Department.

_____ Send one copy to Traffic Engineering.

_____ Send one copy to City Arborist.

_____ Send one copy to Zoning Administrator, if there is a pump station on the plans.

_____ Send one copy to Parks and Recreation, if there is a public park on the plans.

Each routing should include one copy of the plans, one copy of the transmittal letter, and one copy of appropriate calculations.

Preliminary Items

- _____ Review Preliminary File, verify that preliminary plan in Public Works is the plan approved by the Planning Commission, check preliminary approval for stipulations, proffers, variances.
- _____ Ensure plan conforms to stipulations and proffers.
- _____ Check Preliminary File for Public Works Plat Committee comments, apply to review of construction plans.

Field Inspection

- _____ Check for the following items:
 - _____ Existing drainage conditions.
 - _____ Off-site drainage facilities.
 - _____ Outfall (does it appear adequate?)
 - _____ Perimeter ditches.
 - _____ Street alignments.
 - _____ Utilities that may affect construction.

Plan Requirements

Cover Sheet

- _____ States whether site plan or subdivision.
- _____ Developer's name and mailing address.
- _____ Construction plan assignment statement.
- _____ Benchmark and datum.
- _____ Tax map number.
- _____ Note that adjoining property owners must be notified in writing 30 days prior to construction.

- _____ Summary of BMP data.
- _____ Vicinity map not less than 1" = 1 mile.
- _____ Numbers of all associated preliminary plans.
- _____ Engineer's estimate of cost for land disturbing activities and public improvements (optional).
- _____ Table showing impervious area.
- _____ Total disturbed area.

General

- _____ North arrow on each sheet of plans.
- _____ All existing and proposed easements on or adjacent to development shown. Width and legal reference for all existing easements.
- _____ Details of non-standard public improvements shown.
- _____ All existing utilities and drainage pipes shown.
- _____ Utilities to be relocated shown with new location.
- _____ All improvements along existing right-of-way shown at a scale of 1" = 25' or larger.
- _____ Property line boundaries defined.
- _____ No items of work "by others" on plans.
- _____ Landscaping plan approved before plan approval.
- _____ Where "match grade" is indicated existing elevation shown.
- _____ Reduce plan and put on 400 scale planimetrics.

Drainage

General

- _____ Where off-site areas drain across development collection system and easement provided.

- _____ Wetlands delineated on the plans.
- _____ Typical sections for all ditches, swales, and detention areas shown.
- _____ No public water drains onto private property.
- _____ Side slopes and longitudinal slopes of private impoundments conforms to criteria for public impoundments.
- _____ Drainage basin (include sub-basin) _____ Pro-rate \$ _____ per CA.
- _____ Proposed development plan conforms to the proposed improvements to Master Drainage Plan.

Design Storms

- _____ Appropriate design storm used.
 - 0 < 300 acres 10 year.
 - > 300 and < 500 acres 25 year.
 - Equal to or greater than 500 acres 50 year.

Calculations

- _____ Drainage calculations accompanied by a drainage summary (i.e., narrative describing existing and proposed drainage patterns, methods of analysis, assumptions, conclusions, etc.), drainage area maps including all off-site areas, and explanations of all computer printouts and program methodology.
- _____ Calculations submitted to show proposed ditches, pipes, outlet structures, etc., have adequate capacity to accommodate the design storm.
- _____ Runoff from upstream areas based on ultimate development.
- _____ Calculations/data provided to show receiving facility has adequate capacity. Downstream improvements required if development increases peak flow in receiving facility more than 1% or increases HGL more than 0.01'.
- _____ Runoff coefficient acceptable.
- _____ Calculations/data to support starting tailwater elevation.

- _____ Minimum 2.5 ft/sec velocity during 5 year storm.
- _____ Lake routing calculations for design storm, 50 year storm and 100 year storm.
- _____ Calculations submitted to support times of concentration greater than 10 minutes.

Easements

- _____ All off-site public drainage easements obtained prior to plan approval.
- _____ All public drainage facilities located in drainage easements that conform to PFM.
- _____ Landscape easements do not overlap drainage easements.
- _____ Proposed impoundment easements to top of bank.
- _____ All proposed impoundments have 20' wide lake access easement.
- _____ Private drainage easement provided where lot drainage passes through adjacent lots.
- _____ Drainage and/or impoundment easements dedicate to design storm contour where development is adjacent to natural outfall.

Drainage Divides

- _____ Sufficient topo to define all contributing off-site drainage areas. Check Master Drainage maps.
- _____ Natural drainage divides are honored.

Swales

- _____ No swales more than 2' deep, side slopes steeper than 4:1, invert slopes flatter than 0.5%, or carry more than 3 c.f.s. during 5 year storm.
- _____ No private swales drain more than 2 adjacent lots.

Ditches

- _____ Ditch and shoulder improvements required along all public roads that border the development.
- _____ Roadside ditches along frontage greater than 3' deep are piped.
- _____ Ditch and shoulder improvements provided for all off-site roadside ditches more than 3' deep that are deeper more than 6".
- _____ All perimeter ditches conform to pipe policy for new subdivisions.
- _____ Stub streets and cul-de-sacs constructed to ultimate top of bank and right-of-way dedicated to property line. Crossing to be designed.
- _____ All interior ditches piped or filled.
- _____ All earthen public ditches have bottom widths not less than 2' and side slopes not steeper than 2:1.
- _____ Paved inverts have bottom widths not less than 2' and side slopes not steeper than 1:1. Earthen portion above concrete not steeper than 4:1. Plans included section showing stone and filter fabric under paved portion.
- _____ Manning's "n" ditches acceptable:

1.	Roadside ditches	0.035
2.	Lead ditches	0.060
3.	Canals/channels	0.075
- _____ All ditches graded to prevent standing water.

Pipes

- _____ All except lake inflow pipes graded to prevent standing water.
- _____ All concrete pipe in right-of-way Class III RCP, railroad crossing Class V or as required by railroad.
- _____ Minimum pipe size in public system = 12".
- _____ Pipes at crossings have sufficient length to provide 2:1 slope from top of bank to pipe invert.

_____ No standing water in pipes; except lake inflow pipes which may have standing water for 100' or to first structure, whichever is less.

_____ Manning's "n" acceptable – RCP = 0.013, PVC or PE = 0.011, CMP varies with type, generally 0.015 is acceptable for fully coated pipe.

_____ Inverts of pipes connecting lakes no more than 4' below normal water elevation.

_____ PVC & PE pipes

_____ Cover less than 1.5 diameters must have manufacturer approval anchoring.

_____ Cover less than 3', must use VDOT type 57 stone for bedding, haunching, and backfill.

_____ Cover not less than manufacturer recommendation or 1', whichever is greater.

_____ Corrugated Metal pipes

_____ Will support HS-20 loading.

_____ Cover in accordance with VDOT standard method.

_____ 50 year service life calculation in accordance with Appendix 14.

_____ Bituminous coated, concrete coated or aluminized type Z.

Erosion Control

_____ Filter fabric under all erosion control stone.

_____ Minimum riprap thickness 2 times maximum stone diameter.

_____ Complete Erosion and Sediment Control checklist.

Street Drainage

_____ 5 year tidal elevation below gutter flow line.

_____ 50 year tidal elevation below crown of all streets.

_____ HGL below gutter flow.

_____ Maximum gutter spread 10 feet.

2 year storm for right-of-way 60' or less.

5 year storm for right-of-way greater than 60'.

_____ Valley gutters are generally unacceptable. Cost calculation required for each intersection.

Impoundments

_____ Impoundment area less than 20 acres at top of bank (total of all lakes).

_____ Maximum depth not more than 20 feet.

_____ Top of bank at least 25 feet from any existing or proposed right-of-way.

_____ Impoundment not larger than needed for drainage.

_____ Minimum width 100' (can be reduced to 80' if required by physical features).

_____ Side slopes 4:1 or flatter.

_____ Minimum normal water depth 8', at least 50% of area must have a depth of 8' at normal water elevation.

_____ Public detention designed for 50 year storm.

_____ Emergency drainage way provided, no property damage during 100 year storm.

_____ Calculations and tests submitted to show seasonal low water table will support proposed normal water elevation.

_____ Lot lines extend through impoundments.

_____ Lake detail on plans – side slopes, depth, and width.

_____ All lake inflow pipes have erosion protection.

Structures

_____ All lake outfall structures have a trash rack.

_____ Maximum distance between structures in piped system does not exceed 350'.

Lot Grading

- _____ Minimum of seven lot grades for each lot, four corners, midpoints of side yard and center of lot.
- _____ Minimum slopes of 0.5 percent.
- _____ Lots high-pointed at top of bank of detention lakes.
- _____ Plans note type A, B, or AB drainage for each lot.
- _____ Areas that require more than 0.4' of fill are clearly delineated.

Pavement

Borings

- _____ Soil borings a minimum of 10 feet deep, show elevation of ground water and projected seasonably high water table.
- _____ Not less than two borings.
- _____ Maximum spacing of borings 500 feet.
- _____ If no soil borings, preliminary design may be based on maximum CBR of 4. Soil boring data required prior to plat recordation.
- _____ Location of borings shown.

Design

- _____ Pavement design accounts for any through traffic.
- _____ Not less than 33% of flexible pavement strength from bituminous materials.
- _____ Design conforms to Vaswani Method, Appendix 5.
- _____ Design traffic volume on existing streets based on existing traffic volume and projected 20 year volume. Projection based on 5 percent growth per year.

Sections

- _____ Proposed pavement section for each street shown on plans in tabular form.
- _____ Proposed pavement sections show tack/prime coat.
- _____ No pavement section within 6” of seasonal high water table.
- _____ Geotextile fabric under all sections with less than 3” bituminous concrete.
- _____ No pavement sections less than minimums required by pages 7-3 and 7-4.

Patches

- _____ Patches in accordance with PFM, Volume II, page 90.1

Streets

General

- _____ Street system ties to an existing paved accepted street or one improved and bonded pending acceptance.
- _____ Centerline of intersecting streets meet at a common point and as near as practical to a right angle.
- _____ Maximum block length = 1400 feet.
- _____ Streets located to align with existing streets.
- _____ Check the need for turn lanes.
- _____ Where existing pavement is widened ensure plans have note requiring old pavement to be cut back as necessary to provide a full pavement section.
- _____ Pavement widening does not reduce shoulder width to less than recommended.
- _____ Spacing of median cuts conforms to PFM.
- _____ More than 100 lots requires two public street access points.
- _____ Sidewalks on both sides of all new streets.

_____ A traffic control plan must be included on the plan.

_____ All traffic control devices, signs and pavement markings to be shown on the plans.

Right-of-Way

_____ Plans show existing right-of-way lines, width and centerline of original right-of-way. Dedication/reservation conform to City Code, Master Road Plan and approved preliminary plan.

_____ Off-site right-of-way acquired prior to plan approval.

_____ Plan addresses restoration of right-of-way.

Cross Sections

_____ Typical street cross section for each section for each right-of-way width shown on plans conforms to PFM, Volume II.

_____ Existing streets that are widened have constant cross-slope from crown to edge of pavement. Cross slopes between 1 / 4" per foot and 3 / 8" per foot. Milling at crown.

_____ Lot grades result in slope of 1 / 4 " per foot from back of curb to right-of-way line.

_____ Shoulders have a minimum width of 10' and a slope of 1" per 1'.

Intersections

_____ Cross section of most traveled street should be maintained through intersection.

_____ Intersections involving collector streets to have minimum 40' curb radii.

_____ Minimum curb radius 25'.

_____ Intersections involving streets larger than collector streets to be designed to accommodate AASHTO type WB-50 semi-trailer combination.

_____ Minimum one percent cross-slope maintained.

_____ Handicap ramps required at all intersections.

Grades

- _____ Street grades minimum of 0.2 percent.
- _____ Vertical curves required for change in grade of one percent or greater.

Centerline Radii

- _____ Radius and stationing for the centerline of all streets shown on plans.
 1. 50' right-of-way minimum radius 125'.
 2. 60' - 80' right-of-way minimum radius 650'.
 3. 90' or greater right-of-way minimum radius 1400'.
 4. 70' or greater right-of-way and ADT greater than 5,000 vpd to have designed centerline radii and superelevation per Appendix 6.

Curb Radii

- _____ Radius and stationing of all radial curbs shown on plans.

Curb & Gutter

- _____ Curb and gutter extensions required if curb and gutter exists within 500 feet.
- _____ CG-5 for all rights-of-way 60' or less; CG-6 for all rights-of-way greater than 60'.

Cul-de-sacs & Barricades

- _____ Barricaded streets not more than one lot deep.
- _____ All barricaded streets and cul-de-sacs subject to extension have "Future Street Extension" sign.

Pavement Cuts & Overlays

- _____ Recently overlaid streets or street having ADT greater than 7500 v.p.d. should not be open-cut to install utilities.
- _____ Utility line installed down center of street requires a complete overlay.
- _____ Three or more pavement cuts within 500' requires a complete overlay.

_____ Three or more pavement cuts within 500' on one-half of a street requires milling and overlay to the crown of the street.

_____ Minimum thickness of SM-2A overlay is 1 1/2 "

Paper Streets

_____ Paper streets must be vacated prior to plan approval unless they will be constructed to City standards as a part of the development.

_____ Prior to plan approval developer must post bond to cover the cost of improvements.

Railroad Crossings

_____ Three party agreement needed for construction within railroad right-of-way.

_____ Railroad crossings to have rubberized surface.

_____ Flashing lights and gates to be installed at railroad crossings.

Driveways

_____ Existing driveways affected by construction to be restored with identical material of equal or greater thickness.

_____ Plans to have a note stating that concrete driveways are to be removed to the nearest joint, if in the right-of-way. If nearest joint is beyond the right-of-way to be removed to the nearest joint with owner's permission. If owner does not agree, driveway to be sawcut at right-of-way and expansion joint installed.

_____ Townhouse plan shows driveway for each lot.

Traffic Control and Signs

_____ Double-bladed street name signs to be used on all streets.

_____ Plan to include note stating that developer is responsible for all signage and roadway lighting.

_____ Location of street lights shown on the plan.