



City of Lilburn Site Development Plan Review

REVIEW DATE: _____ PLAN DATE: _____ REVIEW # _____

Project Type: Residential SFR/Residential TH /Commercial/ Redevelopment

Stand Alone / Common / Infrastructure

RE: Project Name: _____

Address and/or PIN: _____

Submittal From/Response To: _____

Phone/Email: _____

Submittal: Concept/Preliminary Plat C&G/Erosion Control Site Development Final Plat Other

1. Required Construction Documents/Hydrology:

- a. City of Lilburn reviews for zoning, development compliance, erosion control, and storm water management. Submit 2 sets printed construction documents and 2 certified storm water reports according to 2017 Gwinnett County Stormwater Management Manual (GCSWMM). Search city homepage www.cityoflilburn.com/ your government/ city code for maps or links to: [Lilburn Code of Ordinances](#), [Zoning Ordinance](#), [Development Regulations](#), [Subdivision Plans](#), and [CH109 Environment](#).
- b. Confirm Zoning District, Overlay district and zoning history. Note on cover page zoning case# and conditions, or note: **There are no zoning conditions on this property**. List all dimensional requirements of Articles 4, 5 and 8.
- c. Project may require additional submittals and permit may be contingent upon approval of:
 - i. Concept Plan, Preliminary Subdivision, Combination or Exemption Plat, Final Plat
 - ii. Administrative Variances from Director, Variances from Zoning Board of Appeals (ZBA)
 - iii. Environmental Variances from ZBA, GA EPD, USACE if applicable
 - iv. Easement agreement(s) for offsite work, common use of driveways, and utility easements.
- d. Plan sets shall include:
 1. Cover Page with all professional contacts, TOC, and data for b. and c. above:
 2. Existing Conditions Boundary and Topo Survey (sealed, signed and dated by a GA Registered Land Surveyor)
 3. Demolition plan (if applicable)
 4. Site Plan
 5. Grading and Drainage Plan
 6. Utility Plans (water, sewer, power/lighting, etc.) and Profiles (water/sewer review by Gwinnett County)
 7. Storm Sewer Profile Sheet
 8. Erosion Control Plans (as applicable)
 9. Standard construction and stormwater management details (GC or GA DOT as applicable)
 10. Tree Protection / Landscape Plan (*stamped/sealed by Landscape Architect, Forester, or Arborist*)
**Final Plan sets must be sealed, signed and dated across the seal by the licensed registered party responsible for the contents of the sheet. (Board Rule 180-12-.02, Sealing of Documents).*

2. Required Forms, Bonds, Agreements and Review Fees

- a. Plan Review fee (\$950.00) to City of Lilburn shall be paid prior to receiving comments.
- b. Application Form – LDP, SDP with owner and permitting/plan review contact info provided with plans
- c. Contractors’ occupational tax certificates, state license, photo ID and insurance provided prior to permit.
- d. Erosion Control Affidavit by responsible operator with appropriate state certification card.
- e. Erosion Control Bond or Letter of Credit \$3000 per disturbed acre, as may be required.

- f. Land Disturbance greater than 1 acre, NPDES permit required- submit:
 - i) Copy NPDES Notice of Intent (NOI) with approved ESPC plans, and GEOS receipt of submittal. .
 - ii) Payment of NPDES Fee (\$40/disturbed acre to Lilburn) and proof of same (\$40/ac) to EPD.
 - iii) Provide 3rd party inspector/monitoring/sampling with GSWCC qualifications.
- g. Certificate of Development Conformance (CDC) Package and Maintenance Agreement(s) required approximately 3 weeks prior to Final Plat or 1st Certificate of Occupancy. Review or submit draft CDC:
 - i) Attachments A, B, C, (& D,E, or F if Performance or Maintenance Surety required);
 - ii) Proof of Water/Sewer As-Builts approved by Gwinnett County;
 - iii) Attachment G –Storm Water BMP Maintenance Agreement with As-built hydrology, volume certification, maintenance schedule, access easement, inspection report, and 18 month BMP Maintenance Bond. Originals (2) to be recorded by applicant with Clerk of Court;
 - iv) Attachment H – 12 month Landscape Maintenance Warranty

3. **Resubmittal to City for Final Plan Approval and Permitting:**

- a. Return red-line plans and hydro with letter or annotated set explaining how each City comment was addressed.
*Allow **min. 14 business days** for re-review, or schedule a meeting to discuss comments.
- b. Submit 2 hard copies of plans and one hydrology study to the city for stamping.
- c. Final plans shall be approved by all other applicable agencies/departments prior to permit. Approved plans can be submitted to the city electronically.
 - 1. Gwinnett County Planning and Development (subdivisions/plats, parcels & street addresses)
 - 2. Gwinnett County Fire Marshal (fire safety and ADA compliance)
 - 3. Gwinnett County Department of Water Resources (water and/or sewer)
 - 4. Gwinnett County Tax Assessor's Office (confirm ownership/parcels, assign parcels to subdivisions)
 - 5. Gwinnett County Environmental Health (food sales, restaurant, c-store, etc. or septic sites)
 - 6. Gwinnett County DOT (adjacency or access to County road, sidewalks and street signs)
 - 7. Georgia DOT (adjacency or access to a GA state highway)
 - 8. Others as applicable: EPD, FEMA, Corps of Engineers, GA Dept of Agriculture, State Fire Marshal
- d. Building Permits require proof of water meter/sewer tap fee receipts from Gwinnett County.
- e. Submit 1 scanned electronic version (PDF) of all approved plans and studies.

4. **Planning Comments:**

- a. On cover sheet: Provide name, address, phone number and email of 24 hr. contact person, owner/developer and each professional firm associated with the drawings.
- b. Provide site location map.
- c. Provide District and Land Lot and Parcel Number(s (if applicable). Bldg. Permit requires parcel and street address from Gwinnett County.
- d. Add notes to Cover:

APPROVAL OF THESE PLANS DOES NOT RELIEVE THE OWNER, DEVELOPER, AND/OR CONTRACTOR FROM COMPLYING WITH ALL APPLICABLE RULES, REGULATIONS, AND ORDINANCES.

DEVELOPER TO PROVIDE TO CITY CERTIFIED DETENTION POST-CONSTRUCTION (RECORD) DRAWINGS WITH THE SUBMITTAL OF THE FINAL PLAT OR ONE WEEK PRIOR TO REQUESTING A CERTIFICATE OF OCCUPANCY, SO THAT THE POST-CONSTRUCTION CONDITIONS MAY BE VERIFIED AND APPROVED. CERTIFIED RECORD DRAWINGS SHALL INCLUDE TOPOGRAPHY OF POND AND OUTLET STRUCTURE DETAIL USING POST-CONSTRUCTION SURVEY DATA. USING RECORD DRAWINGS, PROVIDE A CERTIFIED HYDROLOGY REPORT VERIFYING POND VOLUMES AND PEAK OUTFLOWS FROM REGULATED STORM EVENTS.

- e. Show total acreage of the site and disturbed acres. Indicate any disturbed acres offsite.
- f. Add Case Numbers: Zoning, date of approval and conditions; Special Use Permit; Conditional Use Permit; Variances; Administrative Variances.
- g. Show graphic scale (engineering) and north arrow on each sheet.
- h. List zoning(s) of each parcel and adjoining property owner name, jurisdiction (if not Lilburn) and zoning. Confirm property is zoned for proposed use.
- i. Add all buffers and/or setbacks to comply with Zoning, Buffer, and Stream Ordinances.

- j. Subdivision -show number of lots/units by type, calculated site density (SF/MF), Unit Numbers, Lot and Block Numbers if applicable.
- k. List use of each building or lot, building square footage, height at highest point including appurtenances, FFE.
- l. Show front, side and rear building setbacks, any special setback(s), easements and landscape strips.
- m. Show setbacks for any accessory use or building(s), including dumpsters (min. five feet).
- n. Show setback of any parking area from a required buffer (min. five feet).
- o. Show location, height, and material of any fence or wall. Include detail. Walls >4' height shall be engineered. See grading comments.
- p. Note provision for all utilities (GC to provide only water and sewer).
- q. Show locations of any areas to be dedicated to County, City, or HOA (easements, streets, open space, etc.). Note public or private maintenance responsibilities for each such area on concept and final plans.
- r. Show driveway widths/radii according to Dev. Regs. aligned with or offset from existing/proposed driveways.
- s. Show location of any existing or proposed signs – sign easement may be required. **Add note: All signs shall be permitted separately.**
- t. Contact the Lilburn Post Office Growth Manager for mail delivery/mail box requirements. Provide detail on plan for accessory structure.
- u. Label new roads as “Private” unless previously approved as public right of way by Gwinnett or City of Lilburn.
- v. Label driveway and parking area materials and provide details (HD/LD asphalt or concrete, or alternative).
- w. Show interior driveways, when used with 90-degree angle parking, min 22 feet wide. With 60-degree angle parking, 12 feet wide with one-way traffic, 22 feet wide with two-way traffic; where parallel parking or no parking, 10 feet wide for one-way traffic and 20 feet wide for two-way traffic.
- x. Show calculated required/proposed parking spaces by use in tabular form. Show location and size of accessible parking spaces (add details) as calculated by the Gwinnett County Fire Marshal.
- y. Show location, angle and size of parking spaces (9X18). A maximum 1’-6” may overhang a grassed area but not over a sidewalk or right-of-way and must allow adequate front-to-front parking. Adequate interior driveways shall connect each parking space with public right-of-way.
- z. Show location and size of any required loading/unloading spaces (10’x30 or alternate).
- aa. Show pedestrian connection from front of building to parking areas and public road.
- bb. Dumpster location to minimize conflicts with entrances, driveways or parking spaces.
- cc. Drive-up window or station -show ten-foot driveway and additional stacking lane outside driveway.
- dd. Overhangs max. 4 feet in residential districts and 10 feet in non-residential districts. Overhang shall not extend into the public right-of-way. See C-store canopy accommodations.

5. **Highway 29 Overlay District Comments:**

- 6. Provide inter-parcel access or justification according to code.
- 7. Provide sidewalks (5’) on all roads, with a 2’x8’ concrete pad every 300 feet of public right-of-way to accommodate pedestrian amenities. Decorative sidewalks must be approved by Director.
- 8. If proposing street trees on public road, sidewalk shall be located six feet from back of curb.
- 9. Show rumble strips, handicap ramps, and crosswalks at all street and driveway crossings. Provide details.
- 10. Submit graphics for accessories such as trash receptacles, railings, benches, bicycle racks for review.
- 11. Submit parking lot lighting plan and/or subdivision street lighting plan and light pole/globe spec for review. Place street lights adjacent to pedestrian amenity sidewalk pads, where applicable.
- 12. Provide min. 16 tree density units per acre according to landscape ordinance (do not include trees in required buffers (stream, zoning, etc. buffers).
- 13. Provide a minimum 10 foot wide landscape strip adjacent to all public rights-of-way and back of curb of all off-street parking.
- 14. Provide non-ornamental shade trees 50 feet on center or grouped 120 feet on center along US 29 right-of-way. Said trees shall be at least 4 inch caliper and placed 6 feet from back of curb.
- 15. Street trees shall be one or a combination of: Willow Oak, Overcup Oak, Nuttal Oak, Pin Oak, Shumard Oak, Lacebark Elm, and/or Japanese Zelkova.

16. Place dumpsters in the rear yard (may be 0' from property line if adjoining property is non-residential and 0' from buffer if adjoining property is residential). Screen dumpsters visible from adjacent properties on all four sides -three sides brick or stone, and fourth (gate) shall be of metal or wood construction.
17. Show HVAC location(s) and screen from street view.
18. Submit architectural renderings and color schemes for all elevations for Director's review.
19. Freestanding building or shopping center 7500 sf or less - provide no more than 20% of off-street parking in the front of the buildings and no more than one double row of parking. No more than 20% of parking to the sides of the building(s) with the balance to the rear.
20. Development exceeds 7500 sf -place buildings close to and oriented toward the public right-of-way, with majority of parking to the side and rear.
21. Commercial-retail development exceeds 50,000 sf floor area, provide 10% of parking spaces as porous or grass-paving systems.
22. Up to 25% of all parking may be reduced to 8'x16' for designated compact vehicle parking.
23. Building valuation of \$750,000 or more. Provide a single "Public Art" piece to be located in public view. Submit Public Art piece for review and approval by the City Council. A financial contribution may be made to the Art Fund in lieu of art on site.

24. **Zoning Buffers/Landscape Plan Comments (see Chapter 109 – Environment):**

- a. Landscape plan must be sealed by Registered Landscape Architect, Forester or an Arborist.
- b. Show and label boundary and dimensions of buffers (label undisturbed or landscaped) and show location of any non-vegetative screening used to meet screening requirements. Confirm buffers abutting residential property.
- c. If a portion of the required buffer is within an easement, provide 25' additional buffer outside easement.
- d. Show 10' no-access easements to be vegetated (evergreen trees, shrubs) with berm or fence or alternatives.
- e. Show location of any temporary construction buffers required by City, PC or ZBA.
- f. Buffer encroachments: swales, ditches, stormwater facilities/detention ponds, sanitary sewer conveyance facilities, and easements may encroach as near as perpendicular as possible, up to max 50' width. No further buffer encroachments without variance approval by Zoning Board of Appeals.
- g. Delineate tree protection areas. A reasonable effort must be made to preserve "specimen" trees, and preserve trees with trunk caliper more than five inches (5") in parking islands and buffers. Add tree protection detail and note: **Tree Protection fence must be installed prior to commencing land disturbing activities.**
- h. If supplemental buffer planting required to screen, spec trees minimum six feet in height (6') at the time of planting to reach min. 20 feet at maturity, from Buffer Ordinance appendix. Label existing and proposed trees if applying for TDU credits.
- i. Unless SFR subdivision, provide calculations for min. 16 Tree Density Units (TDU) per acre. Trees and acres within required buffers shall not be used to meet TDU requirements without Director's approval. Provide landscaping data in tabular form: Common and botanical names; plant quantities and spacing; percentage of each (not to exceed 33%); size and height; diameter and condition.
- j. Add Landscape Strip Planting adjacent to all rights-of-way: for each 10-foot LS strip install 1 tree and 1 shrub per 25 linear feet of frontage. Spec woody native plant with single trunk planted min. six feet height to reach min. 20 feet; or a flowering tree with min. six feet height. For 5' and 20+' strips, calculate accordingly. No landscaping 3-15' feet in height within 20 feet of right-of-way intersection.
- k. Add parking lot planting if more than 5 parking spaces: provide 1 tree for each 7 parking spaces. Demonstrate visually that every parking space is within 60 feet of the trunk of a tree. Landscape strip and buffer trees do not count toward this requirement.
 - a. Canopy tree min. planting area 200 sf. If shared, additional 80 square feet each additional tree.
 - b. Understory tree min. planting area 100 sf. If shared, additional 40 square feet each additional tree.
- l. Add five foot landscape strip around all accessory structures, including utility maintenance structures, ground level HVAC, storage buildings, and loading facilities.
- m. Provide note on the landscape plan: **No Certificate of Occupancy shall be issued until all requirements of the tree planting have been satisfactorily completed. Plant material shall be warrantied by owner or contractor for 12 months from date of CO, or a maintenance bond shall be provided prior to CO or final plat.**

25. Site Survey and Site Plan (also see additional comments per other checklist sections)

- a. Boundary lines must be expressed to 1/100 foot and nearest second.
- b. Show/note source of topography as well as the vertical and horizontal datum used (NAVD88 and NAD83). Provide benchmark used to establish elevations.
- c. Show/label /delineate the location and elevation of 100-year floodplain contour, floodway limits, and any future conditions floodplain.
- d. Provide topography at minimum 2' contour intervals. (DR 8.1.2).
- e. Survey must show/label all state waters and buffers measured from wretched vegetation/top of bank.
- f. Show all driveways and rights-of-way on the same side of the street and on the opposite side of the street adjacent to the project. Show the centerline to centerline offset. (DR 9.7.5) If no driveways exist, note on plans.
- g. Subdivision street design exceeds maximum cul-de-sac length of 2000 feet.
- h. Subdivision street design exceeds maximum stub street length. Provide alternate design.
- i. Show typical paving section for parking areas and drives. Min. 4" GAB and 2" E or F.
- j. Sight distance (vertical and/or horizontal) at the proposed driveway is not shown and/or insufficient information is given on plans to review for adequate sight distance. Provide engineer's certificate (DR 9.7.4).
- k. Show all roadway grades and vertical curves. Add note: **"12% to 15% street grades require an "As Graded" survey before installation of the curb."**
- l. Roadway horizontal curves must conform to Gwinnett County Standards.
- m. Show cul-de-sac right-of-way, pavement radii, and cul-de-sac slope (not to exceed a 6% slope).

26. Retaining Walls

Provide complete details of retaining walls, including all wall envelopes.

- a. Retaining wall (s) proposed for stormwater management facilities must be designed for hydrostatic load, as measured from the top of the bottom of the foundation to the highest elevation along the top of the wall.
- b. Walls are not to encroach into existing or proposed drainage easements, drainage features, floodplains or encumber the natural surface runoff of stormwater.
- c. Walls are to be located to allow for future access and maintenance, to prevent safety hazards or jeopardize the structural integrity of the wall. An easement may be required.
- d. Wall design must be completed by a registered professional engineer.
- e. Walls cannot be located closer than 5' from the property line and the footings cannot encroach upon adjacent properties or into the public right- of- way. Stormwater pond walls need to be 10' off the property line to accommodate a 10' access easement.

27. Floodplain/Wetlands/Buffered State Waters

Floodplain (Refer to Chapter 109 Article III for additional floodplain requirements)

- a. Provide Flood Insurance Rate Map (FIRM panel) and floodplain note on the plan (cover sheet). Refer to Gwinnett County Flood Information Portal (www.gwinnettffloodplain.com) for future conditions floodplain.
- b. Delineate any portion of the project that is within a Special Flood Hazard Area (SFHA), future conditions flood hazard area, or floodway.
- c. Significant changes or revisions to the flood data shown on the FIRM will require a Conditional Letter of Map Revision (CLOMR) prior to issuance of the land disturbance permit. Applicant may require a Letter of Map Revision (LOMR) from FEMA prior to final plat approval.
- d. Provide floodplain lot chart indicating lot square footage and area inside and outside the 100 year floodplain. (DR 10.2.5I)
- e. An engineering study is required (as appropriate to the proposed development activities on the site) when a base flood or future conditions floodplain is located on the property proposed for development. The study shall be prepared by a currently registered professional engineer and be made part of the application for a development permit. See Section 109-72 for study requirements.
- f. On residential lots show the minimum finished floor elevation to be at least 3 feet above the 100 year base flood elevation or at least 1 foot above the future conditions flood elevation.

- g. A FEMA Elevation Certificate is required for structure(s) both during and post construction and prior to CO or Final Plat approval. Add note(s) to plan and provide Certificate(s) to the Planning Department for review and approval.
- h. No construction or structures, including grading, filling, cutting or displacement of earth is allowed within the base flood or future conditions floodplain that could result in raising the base flood or future conditions flood elevation equal to or more than 0.01 foot.
- i. If changes to the future flood elevation, Base Flood Elevation, or Floodway elevation are proposed, submit profiles of the channel showing existing and proposed base flood elevations.

Wetlands

- a. Refer to National Wetland Inventory (NWI) Maps and add wetland note on the site survey. If any portion of the project will encroach on wetlands, **it is the applicant responsibility to obtain appropriate permits from United States Army Corps of Engineers.** See Nationwide Permit criteria.
- b. Wetland delineation shall include source and approvals from Corps of Engineers.

Buffered State Waters (e. streams, lakes, springs)

- a. Refer to USGS, GC GIS maps, topo survey and field visit to locate waters of the U.S. and add stream buffer note.
- b. State waters must be field located.
- c. Show/label/delineate the top of bank on both sides of state waters.
- d. Buffers measured from top of bank shall be labeled on all sheets (25', 50', and 75').
- e. Add note to plan- **STREAM BUFFER EASEMENTS ARE TO REMAIN IN A NATURAL AND UNDISTURBED CONDITION.**
- f. Add note to plan- **STREAM BUFFER SHALL BE STAKED AND PROTECTED PRIOR TO LAND DISTURBANCE. BUFFERS ARE TO REMAIN IN A NATURAL AND UNDISTURBED CONDITION.**
- g. Obtain buffer variance for any encroachment into the 50' undisturbed or 75' no-impervious area.
- h. Stream bank mitigation/revegetation may be required. See Lilburn Stream Buffer Restoration Guidelines.

28. Grading Plan

- a. Add notes to grading plan:
 - 1. **MAXIMUM CUT OR FILL SLOPES IS 2H:1V**
 - 2. **CITY OF LILBURN/GWINNETT COUNTY ASSUMES NO RESPONSIBILITY FOR OVERFLOW OR EROSION OF NATURAL OR ARTIFICIAL DRAINS BEYOND THE EXTENT OF THE STREET RIGHT-OF-WAY, OR FOR THE EXTENSION OF CULVERTS BEYOND THE POINT SHOWN ON THE APPROVED AND RECORDED PLAN. THE CITY OF LILBURN/GWINNETT COUNTY DOES NOT ASSUME THE RESPONSIBILITY FOR THE MAINTENANCE OF PIPES IN DRAINAGE EASEMENTS BEYOND THE CITY/COUNTY RIGHT-OF-WAY.**
 - 3. **STRUCTURES ARE NOT ALLOWED IN DRAINAGE EASEMENTS.**
- b. Provide additional spot elevations in paved area(s) to clarify drainage and ADA accessibility.
- c. Show locations, structure type, top and invert elevations for all storm and sanitary sewer structures (existing or proposed).
- d. Show grading associated with widened road section. All shoulders to extend to right-of-way. Extend storm sewer cross drains, as necessary.
- e. Outlet discharge pipe must be no closer than six times its diameter to an adjoining property line. (DR 9.9.3a)
- f. Show top, bottom and ground elevations for all retaining walls.
- g. Show location(s) dimensions, and details for proposed stormwater management facilities.
- h. Show all drainage, access and maintenance easements for sanitary and storm pipes, and stormwater management facilities.

29. Stormwater Management Plan/Facilities.

- a. A Stormwater Management Plan is required for development and redevelopment projects below. The stormwater management plan and all components must be designed in accordance with the Gwinnett County Stormwater Management Manual (GCSWMM) and the Lilburn Post-Development Stormwater Ordinance.

1. New development that creates or adds 5,000 square feet or more new impervious surface area or that involves land disturbing activity of 1 acre of land or greater;
 2. Redevelopment (excluding routine maintenance and exterior remodeling) that creates, adds, or replaces 5,000 square feet or greater of new impervious surface area or that involves land disturbing activity of 1 acre or more;
 3. New development and redevelopment if (i) such new development or redevelopment is part of a subdivision or other common plan of development, and (ii) the sum of all associated impervious surface area or land disturbing activities that are being developed as part of such subdivision or other common plan of development exceeds the threshold in (a) and (b) above;
 4. Any commercial or industrial new development or redevelopment, regardless of size, with a Standard Industrial Classification (SIC) code that falls under the NPDES Industrial Stormwater Permit program or is a hotspot land use as defined in this Article; and
 5. Linear transportation projects that exceed the threshold in (a) and (b) above.
- b. Stormwater Runoff Reduction and (RRv) and/or Water Quality (WQ) Treatment:
1. RRv- The stormwater runoff volume generated by the first 1.0" of rainfall must be retained on-site through the use of green infrastructure practices in accordance with the GCSWMM. If any portion of the RRv cannot be retained due to site characteristics or constraints, proper documentation of said conditions must be presented and the remaining volume must be increased by a multiplier of 1.2. This remaining volume must be intercepted and treated to meet 80% Total Suspended Solids (TSS) removal using approved WQ treatment methods.
 2. WQ- Stormwater runoff volume generated by the first 1.2" of runoff must be adequately treated before discharge. WQ treatment (80% TSS removal) has been met if the RRv requirement above has been satisfied. Otherwise, runoff must be treated in accordance with the GCSWMM.
- c. Stream channel protection: *CP shall be provided by using all the following three approaches:
1. 24-hour extended detention storage of the 1-year, 24-hour return frequency storm event;
 2. Erosion prevention measures, such as energy dissipation and velocity control; and
 3. Preservation of any applicable stream buffer under state and local laws subject to any grandfathering clauses, exemptions, and variances that may otherwise be available under such state and local laws.
- *CP may be waived for sites that discharge directly into larger streams, rivers, wetlands, lakes, estuaries, tidal waters, or situations where reduction in flows will not impact stream bank or channel integrity.
- d. Overbank Flood Protection (**Q25**):
Overbank flood protection shall be provided by controlling the post-development peak discharge rate to the pre-development rate for the 25-year, 24-hour return frequency storm event. If stream channel protection is waived then overbank flood protection must be provided by controlling the post-development peak discharge rate to the pre-development rate for the 2-year through the 25-year return frequency storm events.
- e. Extreme Flood Protection:
Extreme flood protection shall be provided by controlling or safely conveying the 100-year, 24-hour storm event without any increase in the peak discharge rate such that flooding is not exacerbated.
- f. Downstream Analysis:
Provide a downstream hydrologic analysis to determine if there are any additional impacts in terms of peak flow increase or downstream flooding. The analysis must be performed at the outlet of the site and downstream at each tributary junction to a point in the conveyance system where the contributory area of the site draining into the system is less than or equal to 10% of the total drainage are above that point.
- g. Provide details and specifications for all proposed BMPs and stormwater management facilities.
- h. Above ground detention/OCS:
- 1) Detention pond located in a subdivision must be located on its own parcel owned by developer or a property owner's association. (DR 8.2.4.g)

- 2) Provide a cleared access easement to the detention pond (20-foot commercial projects, 30-foot residential projects). Within the access easement, add 15-foot wide road graded at a maximum 20% grade to the facility. Show grading and label road as **grassed or paved**.
- 3) If pond is greater than 10 feet deep or 50 feet wide the road shall extend to bottom of pond at OCS.
- 4) Provide note with arrow pointing to access easement: **ACCESS EASEMENT TO BE CLEARED AND GRUBBED**.
- 5) Show minimum top width of detention pond, earthen dam to be 8'-0". (DR 9.8.2d(5))
- 6) Pond walls, toe of slope can be no closer than 10 feet to adjoining property line. (DR 8.2.5 a&B)
- 7) Provide a cross-section of detention pond embankment including outlet pipe, forebay, benches, emergency spillway, embankment slopes, minimum embankment top width, outlet control structures, headwalls, and riprap.
- 8) Verify minimum 1'-6" freeboard above maximum water surface elevation is provided for earthen dams.
- 9) Provide OCS details with trash rack (per Gwinnett County Standards).
- 10) Show/label/note the WQ, CPv, and 100 year ponding elevation and volumes on the OCS detail.
- 11) Show the detention pond 100-year ponding contour and elevation on plan.
- 12) Provide a 10-foot drainage easement around detention pond outside the 100-year ponding limit.
- 13) Design inlet and outlet of detention pond at opposite ends of the pond to maximize flow length. Baffles or islands may be installed to increase the flow path length.
- 14) Outlet orifices shall be protected from clogging. Recommend perforated double "Y", surrounded by a 48" perforated 1/2 round (if OCS is flat) or 3/4 round (if OCS is round), surrounded by #4 stone or smaller. Include standard details.
- 15) Provide a forebay equaling 10% of the water quality volume for each inlet to the pond. Provide calculations in report and show grading details on plans.

30. Soil Erosion & Sediment Pollution Control Plan

- a. For Land Disturbance greater than 2000 sf or within 200' of state waters, submit complete Soil Erosion, Sedimentation and Pollution Control Plans according to the Manual for Erosion and Sediment Control in GA (6th edition). Provide appropriate GSWCC checklist and certifications.
- b. Schedule of activities on all sheets shall be divided into min. 3 phases: Preliminary/Clearing, Intermediate/Grading and Final/Stabilization phases.
- c. Provide Energy dissipation calculations/designs for outlet headwalls of pipes and detention ponds.
- d. Include the GSWCC Erosion Control Plan Checklist (latest version) and for each checklist item, address and include plan sheet reference:
 - Stand Alone Project
 - Common Development Project (provide 2ndary permittees if applicable)
 - Infrastructure Project
- e. Provide the following NOTE(S) on ESPC plan:
 1. **(ESCO 5.3.2f) THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENTATION CONTROL MEASURES AND PRACTICES PRIOR TO OR CONCURRENT WITH LAND DISTURBING ACTIVITIES.**
 2. **(ESCO 5.3.2j) EROSION AND SEDIMENTATION CONTROL MEASURES AND PRACTICES SHALL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES AND PRACTICES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.**
 3. **SEDIMENT STORAGE MAINTENANCE INDICATORS MUST BE INSTALLED IN SEDIMENT STORAGE STRUCTURES, INDICATING THE 1/3 FULL VOLUME.**
 4. **(ESCO 5.3.4) MAINTENANCE OF ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND PRACTICES, WHETHER TEMPORARY OR PERMANENT SHALL BE AT ALL TIMES THE RESPONSIBILITY OF THE PROPERTY OWNER.**
 5. **THE SOIL EROSION AND SEDIMENT CONTROL ORDINANCE REQUIRES THAT A 25 STATE AND 50 FOOT CITY UNDISTURBED BUFFER ADJACENT TO ALL STATE WATERS BE MAINTAINED (ARTICLE 4 SECTION 4.3 PARAGRAPH 15). EXCEPTION IS GRANTED TO HOMEOWNERS WHO PERFORM MINOR LAND DISTURBING**

ACTIVITIES SUCH AS HOME LANDSCAPING, HOME GARDENS, REPAIRS AND MAINTENANCE WORK (ARTICLE 3, SECTION 3.1, PARAGRAPH 3).

- 6. TEMPORARY SEDIMENT POND FEATURES, DETENTION POND, AND DETENTION OUTLET STRUCTURES ARE TO BE CONSTRUCTED AND FULLY OPERATIONAL PRIOR TO ANY OTHER CONSTRUCTION OR GRADING.**
- 7. DEVELOPER TO CLEAN OUT ACCUMULATED SILT IN DETENTION POND AT END OF CONSTRUCTION WHEN DISTURBED AREAS HAVE BEEN STABILIZED.**

31. Hydrology Study

All design, calculations and details shall be in accordance with the 2017 Gwinnett County Storm Water Management Manual (GCSMM) and any subsequent amendments

- a. Provide storm water management report certified by a Professional Engineer. (DR 8.2.1a) Include a narrative explaining the purpose of the report, an executive summary of findings, including pre-developed and post-developed flow comparisons, energy dissipation summary, times of concentration summary, curve number summary, and pond report.
- b. Provide a map showing drainage areas used for pipe design and all hydrographs. Preferably using Gwinnett County GIS unless site analysis reveals gross inaccuracies. (DR 8.2.1b)
- c. Provide a map showing all on-site drainage areas, off-site drainage areas, and all pond bypass areas considered in detention calculations. (DR 8.2.1b)
- d. Calculate existing (pre-development) and proposed impervious surface area. If disturbance >5000 s.f. or >50% of site, or parking lot expanding >50%, or <1 acre but part of larger common development >1 acre, provide site assessment, Storm Water Management Report, and/or existing BMP facility volume certification.
- e. Provide runoff coefficient calculations (for pipe and channel design only) showing offsite upstream areas as fully developed. (DR 8.3.4a & DR 8.4.1h)
- f. Provide Time of Concentration calculations for all hydrographs.
- g. Provide Curve Number calculations for both pre-developed and post-developed conditions for all hydrographs.
- h. Provide detention pond computer output for the 1, 2, 5, 10, 25 and 100-year storms in basins where detention becomes necessary. (DR8.2.3i).
- i. Provide Runoff Reduction (RRv) and/or Water Quality BMP calculations. (DR 8.9.1) & (GCSWMM)
- j. Provide details, calculations, and specifications for all proposed BMPs and stormwater management facilities. Refer to GCSWMM for BMP selection, design and standard details.
- k. Rational Method may not be used for detention pond design.
- l. Provide downstream analysis (DR8.2.1c) to include:
 - 1) On a topographic map, all culverts, obstructions, existing and potential erosion problems, elevations of existing improvements, and existing drainage complaints, between the downstream property line and the 10% point.
 - 2) Analyze downstream watercourses and receiving conveyance to ensure channel velocities do not exceed values recommended in the Gwinnett County Storm Water Management Manual (GCSWMM).
 - 3) Analyze existing pipe systems and culverts for compliance with current development regulation design criteria. Culverts should pass Q100.
 - 4) Provide Hydrograph comparisons for the 1, 2, 5, 10, 25, 50 and 100 year storms for both the downstream property line study point and the point where the drainage basin equals 10 times the project area.
 - 5) All hydrographs shall be based on a 24-hour storm.
- m. Show calculations for Channel Protection Volume. (GCSWMM)
- n. Use the Storm Water Quality Performance Review form (from www.gwinnettstormwater.com) to perform the TSS or RRv analysis for the project site. The modeled TSS load shall not exceed 850 lbs./acre/yr.
- o. Provide 1" Runoff Reduction Volume (RRv) or treat runoff from the first 1.2 inches of rainfall (TSS) (DR 8.9.1) and/or on the project site as outlined in the Gwinnett County Storm Water Design Manual.
- p. Off-site runoff that flows to the BMP must be treated along with on-site runoff. Off-site runoff may bypass the BMP. (DR 8.9.1)
- q. Provide a map delineating the different land use types for water quality analysis purposes. (i.e. Impervious Area, Disturbed Pervious Area, Undisturbed Upland Area, Undisturbed Stream Buffer Area)
- r. Do not model off-site areas. The analysis should only consider areas included in the property being developed.

- s. No orifices less than 3" in diameter are permitted that are not part of a water quality BMP. A trash rack with a surface area of at least 10 square feet shall protect all orifices less than 15" diameter. Provide detail.
- t. For the site, use pre-developed CN less than or equal to 55 unless approved by city's consulting engineer.
- u. Post-developed flows in every basin must be less than or equal to pre-developed flows.
- v. Provide calculations showing emergency spillway is designed to pass the 100-year storm event and that freeboard for earthen dams is at least 1.5 feet above 100-year ponding elevation and 0.5 feet for non-earthen dams.
- w. Provide storm water detention in indicated Basin(s) for the 2, 5, 10, and 25-year storms. Route the 100-year storm through the pond so that the earth embankment will not overflow.

32. Storm Sewer /Open Channel Construction

Unless specifically set forth in the Gwinnett County Standard Drawings, all materials, methods of the construction, and workmanship for stormwater conveyance facility construction shall conform to the most recent Standard Specifications of Georgia DOT.

- a. Provide note on plan: **STORM SEWER PIPE MUST EXTEND AT LEAST 50 FEET PAST THE FRONT BUILDING SETBACK LINE.**
- b. Provide calculations verifying adequacy of existing pipe to carry the proposed discharges.
- c. Provide gutter spread calculations. Max. spread 10', 16' combined from both sides of the street, during 10-year storm event. (DR 8.3.5e)
- d. Provide calculations showing outlet pipe for detention ponds will accommodate 125% of Q₁₀₀ routed, if no earthen embankment emergency spillway is proposed. (DR 9.8.4b)
- e. Provide calculations showing discharge of concentrated flows into streets shall not exceed rates in Table 9-G. (DR 9.9.5a)
- f. Show drainage easement on pipes consistent with Table 7-A. (DR 7.4.2)
- g. Show 100-year ponding limits above pipes. (DR8.3.4b)
- h. Show 100-year hydraulic grade line in all culverts. (DR 8.2.3j)
- i. All pipes within public right-of-way and drainage easements to be Reinforced Concrete Pipe, unless authorized and specified according to GC Storm Sewer Pipe Standards with all supporting soil studies supporting proposed alternative material and notes added to grading plan sheets.
 1. If using RCP pipe, add NOTE: **RCP shall be in not less than 8 foot joint lengths. All joints shall be bell & spigot type with a rubber gasket conforming to ASTM C-443. Pipe shall be manufactured in accordance with AASHTO M-170 and/or ASTM C-76. Class of pipe and wall thickness shall be in accordance with 1030-D, Georgia DOT specification, Table No. 1. Installation shall be in accordance with Section 550 of the Georgia DOT Standard Specifications, Construction of Roads and Bridges.**
 2. If using HDPE pipe, add NOTE: **HDPE pipe shall conform to the requirements of AASHTO M-294 and AASHTO MP7, Type S & D. Joints shall be as recommended by the manufacturer. Connections shall create a soil tight joint at a minimum and shall use a rubber gasket which conforms to ASTM F-477. Installation shall be in accordance with ASTM Recommended Practice D-2321, AASHTO Section 30, or with Section 550 of the Georgia DOT Standard Specifications, Construction of Roads Bridges.**
 3. If using Aluminum Coated (Type 2) steel pipe or corrugated aluminum alloy pipe, add NOTE: **All aluminum coated Type 2 steel pipe or aluminum alloy pipe, which will carry a live stream, shall have paved inverts in accordance with AASHTO M-190, type C, except that the pipe need not be fully coated. Installation shall be in accordance with Section 550 of the Georgia DOT Standard Specifications, Construction of Roads and Bridges.**
- j. Specify gauge and corrugation for all pipes. (DR 8.3.7(2))
- k. All pipes carrying a live stream must have paved inverts. (DR 8.3.7)
- l. Minimum pipe size shall be 15" diameter for public piped collection systems. (DR 8.3.5d)
- m. Minimum culvert size shall be 18" diameter. (DR 8.3.4c)
- n. 25 year hydraulic grade line must be 1 foot below the gutter line or top of grate. (DR 8.3.5a)
- o. Slope of RCP pipe may not exceed 10%. (DR 9.9.2.c)
- p. Slope of ACMP or HDPE pipe may not exceed 14%.
- q. Use anchor collars on pipes exceeding 10% slope. (DR 9.9.2.c)
- r. Velocity in pipes may not exceed 15 fps.

- s. Bed storm drain pipes using Gwinnett County Pipe Bedding Standards and add details.
- t. Show minimum ground cover of 1'-0" for storm pipes.
- u. Provide pipe profiles. Show existing and proposed contours, pipe lengths, slopes, inverts, and 25 year hydraulic grade lines. (DR 10.2.7.c).
- v. Provide complete pipe chart:
 - 1. Pipe numbers
 - 2. Pipe size
 - 3. Pipe length
 - 4. Pipe slope
 - 5. Contributing drainage area
 - 6. Design discharge (Q_{25} for piped drainage; Q_{100} for culverts)
 - 7. Design storm frequency (25 year for piped drainage; 100 year for culverts)
 - 8. Runoff coefficient (per future land use plan and assuming no detention)-(DR 8.3.4a)
 - 9. Pipe material/coating
 - 10. Velocity (V_{25} may not exceed non-erosive velocity at outlet headwall)
- x. Include Gwinnett County detail manhole casting – non-traffic areas, for all non-traffic bearing manholes.
- y. Open Channels:
 - 1. Provide transition channel profiles from inlet and outlet ends of all pipes to natural drainage swales.
 - 2. Provide channel profiles. Show existing and proposed contours, channel lengths, 25-year normal flow depth and slopes. Minimum freeboard to be 20% of the flow depth. (DR 8.4.1b)
 - 3. Channel velocities for fully developed 25 year flow shall not exceed the non-erosive velocity as shown in 5.4 of the Gwinnett County Storm Water Management Manual (GCSWMM). (DR 8.3.6a).