

GDOT Quality Control and Quality Assurance Program

1. Introduction	2
1.1. QC/QA Objectives	2
1.2. Purpose	2
1.3. Definitions	3
1.4. Roles and Responsibilities	3
2. Quality Control Components	4
2.1. Introduction	4
2.2. Project Correspondence File	4
2.3. Coordination Meetings and Resolution of Design Issues	5
2.4. QA Review of State Waters and Stream Buffer Delineations	5
2.5. Constructability Review	5
2.6. Routine Formal Training	5
2.7. Design Standards and Guidelines	6
2.8. Design Software	6
2.9. Electronic Data Guidelines (EDG) and Plan Presentation Guidelines (PPG)	7
2.10. Engineering Calculations	7
3. Quality Assurance	7
4. QC/QA Documentation and Accountability	8
4.1. QA Review Stamp	9
4.2. Local/Consultant Projects	9
4.3. Quality Control Best Practices	9
5. QA Review Events	10
5.1. QA Concept Report & Layout Review	10
5.2. QA Geometric Design Review	11
5.3. QA PFPR Plans Review	12
5.4. QA Right-Of-Way Plans Review	13
5.5. QA FFPR Plans Review	14
5.6. QA Final Plans Submission Review	15
Appendix A: Form, QC/QA Record	
Appendix B: Template, QA Review of State Waters and Stream Buffer Delineation letter	
Appendix C: Template, Constructability Review Meeting letter	
Appendices D: Form, Design Calculation Review and Approval Certification	

1. Introduction

1.1. QC/QA Objectives

The GDOT Quality Control and Quality Assurance (QC/QA) Program has been developed by the Engineering Division of the Georgia Department of Transportation to ensure the engineering, design, plans and quantities developed by our design offices are supported by comprehensive studies and sound engineering judgment, comply with established policies, guidelines and standards, and contain appropriate design flexibility and cost saving measures.

The engineering managers within our design offices are responsible for reviewing and certifying the accuracy of the engineering and plans prepared by their staff. The QC/QA practices defined within this program focus on the roadway design office environment and may not reflect all business practices across the Department. This program may be modified to fit specific business practices and experience/skill levels within an office, design group, or design squad. This QC/QA Program is maintained by the State Design Policy Engineer who will routinely consult with Office Administrators to identify and document unique methods and practices that consistently result in higher quality work. These “Best Quality Control Practices” will be uniformly applied across the Department so that we are constantly improving our quality and efficiency in delivering projects.

In support of this QC/QA Program, the engineers within our design offices are committed to the application of established design policies, guidelines, and standards developed and published by the Georgia Department of Transportation (GDOT), the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), the National Highway Institute (NHI), the Transportation Research Board (TRB), and the National Cooperative Highway Research Program (NCHRP). In addition, our design offices are committed to recruiting qualified engineers and supporting the professional development of those engineers including providing fundamental training in the engineering disciplines of: Highway Capacity and Traffic Studies, Geometric Design of Roadways, Highway Hydraulics and Hydrology, Pavement Design, and Erosion and Sediment Control.

This QC/QA program also considers the coordination effort required between the Design Group Manager (DGM) and the project team during the development of the plans. This QC/QA program is in addition to any current QC/QA procedures and publications that are in use by the Department such as, but not limited to, the Plan Development Process (PDP), Plan Presentation Guide (PPG), Electronic Data Guidelines (EDG), the Field Plan Review process (PFPR/FFPR), and the “Checklist for R/W Plans” and the “Designer’s Checklist for Plans Submittal to Contracts Administration”.

1.2. Purpose

The purpose of this QC/QA program is to:

- define the QC/QA responsibilities of the Office Administrator, Assistant Office Administrator, Design Group Manager, and Lead Design Engineer;
- define the components of QC and QA required to develop roadway design projects;
- define the frequency of practicing QC activities and QA reviews;

Project: _____ AOH: _____ Date: _____
 GDOT QC/QA Program, Revision 4/16/2012 2

- define the methods of documenting QC/QA activities/reviews and individual accountability;
- prevent errors from being introduced to the engineering, design, plans and cost estimates;
- ensure decisions are supported by comprehensive studies and sound engineering judgment; and
- identify individuals and their unique methods that reflect Best Quality Control Practices and apply those methods uniformly across the Design Groups/Squads.

1.3. Definitions

Quality Control: Refers to the daily processes, practices, and checks in place to control the quality of the engineering, design, plans and quantities as they are being developed.

Quality Assurance: Refers to the formal high-level review of the project plans and quantities by an experienced engineering manager at strategic points in the plan development process, to certify that the plans and quantities meet established quality standards and provide for appropriate flexibility and cost savings before advancing to the next stage.

1.4. Roles and Responsibilities

Roles and responsibilities for QC/QA tasks are defined below in Table 1.

Table 1: Responsibility matrix for QC/QA

	Quality Control	Quality Assurance
Office of Roadway Design		
State Roadway Design Engineer	Implementation/Compliance/ Best Practices	Implementation/Compliance/ Best Practices
Assistant State Roadway Design Engineer		QA Review and certification for advancing design
Design Group Manager (DGM)	Practice & Certify QC. Maintain QC/QA Record	
Lead Design Engineer	Practice & Certify QC. Maintain QC/QA Record	
District Design Office		
District Design Engineer	Implementation/Compliance/ Best Practices	Implementation/Compliance/ Best Practices
District Design Squad Leader	Practice & Certify QC. Maintain QC/QA Record	QA Review and certification for advancing design
Design Engineer	Practice & Certify QC. Maintain QC/QA Record	

2. Quality Control Components

2.1. Introduction

QC refers to the daily processes, practices, and checks in place to control the quality of the engineering, design, plans and quantities as they are being developed. QC is the responsibility of the Design Group Manager and the Lead Design Engineer. QC includes providing constant training and supervision to junior design engineers, providing clear decisions and directions, and the immediate review and documentation of design calculations and studies for accuracy, completeness, and attention to detail.

The Department's formal Plan Development Process (PDP) establishes the general sequence of activities and events required to control the quality of a road design project throughout its development. It is the responsibility of the Design Group Manager and Lead Design Engineer to ensure that design activities and decisions are being accomplished at the appropriate time in the process and according to acceptable industry standards. This includes the accurate practice of transportation engineering and design, use and interpretation of design policy and guidelines, and use of civil software and CADD applications required to analyze and prepare the conceptual, right-of-way, and construction plans.

2.2. Project Correspondence File

A Project Correspondence File is developed and maintained in a clean and organized form and documents decisions and supporting project data. At a minimum, the project correspondence file structure and plan record should include the following information.

- 📁 Project Programming Document, Project Justification/Need & Purpose
- 📁 QC/QA Record
- 📁 Project Concept Report
- 📁 Concept Layout
- 📁 Project Estimates (Man-Hour-Estimate, Quantities, ROW, UTL, CST)
- 📁 Value Engineering Report, Responses, and Implementation
- 📁 Environmental Document
- 📁 Notice of Location & Design (L&D)
- 📁 Field Survey Control Package
- 📁 Public Hearing Display(s) and Comments/Responses
- 📁 Internal Letters of Transmittal
- 📁 External Letters of Transmittal
- 📁 Project Email Communications and Telephone Messages
- 📁 Project Design Data Book
- 📁 Highway Capacity Analysis and Traffic Studies
- 📁 Highway Hydraulics/Hydrology Studies and Drainage Design Calculations
- 📁 Soil Survey/Pavement Evaluation Report/BFI/WFI
- 📁 Approved Pavement Design
- 📁 Intersection Sight Distance Studies
- 📁 Design Exceptions & Variances
- 📁 Field Plan Review Report (PFPR/FFPR) and Responses
- 📁 Complete ½ size sets of "Right-of-Way Plans" and "Construction Plans".

Project: _____ AOH: _____ Date: _____
 GDOT QC/QA Program, Revision 4/16/2012

- 📁 Consultant Contract(s) and correspondence

Develop and maintain a Project Design Data Book (see Chapter 5 of the PDP for details).
<http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/PDP/4050-1.pdf>

2.3. Coordination Meetings and Resolution of Design Issues

Conduct meetings with the Project Manager (PM), design engineers, and project team members to review scope items, discuss and resolve design related issues, assign deadlines, and monitor progress. Project team members include: Planning, OFM, Environmental Services, Location Bureau, District Field Surveys, Geotechnical Bureau, Bridge Design, Utilities, Traffic Operations, Right-Of-Way, and Construction. Develop “Action Plans” with the PM to resolve design related issues with project team members. Action Plans are emailed to the appropriate Project Team Members. The Action Plan should:

- a. provide a brief history of the issue;
- b. clearly define the required action item(s);
- c. identify the individual(s) responsible for delivering the action item;
- d. state the date when the action item is due; and
- e. follow-up, close-out action items, update, and notify Project Team Members.

2.4. QA Review of State Waters and Stream Buffer Delineations

Upon receiving Database Mapping, the designer should plot roll-plots of the project alignment with all topo drainage features displayed. The designer should mark all USGS blue-line streams on the roll-plots with blue highlighter, all existing topo drainage features with yellow highlighter, and all streams and buffers previously identified by the ecologist with blue and orange highlighters respectively. The roll plots should be submitted to the Office of Environmental Services for QA review with cover letter (**Appendix B**) attached.

2.5. Constructability Review

During preliminary design, the PM is responsible for holding a Constructability Review with the District Construction Engineer (See **Appendix C** for cover letter). The meeting should be scheduled once the horizontal and vertical geometry has been established, the initial cross sections are available, and SUE survey data has been received (for SUE projects). The purpose of the meeting is to identify and resolve issues with staging and constructability before the geometric design of the project is completed and ROW Plans are developed (see **PDP, Chapter 6; Constructability Review in Preliminary Design**).

<http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/PDP/4050-1.pdf>

2.6. Routine Formal Training

Provide routine formal training (i.e., GDOT Practical Design Training program) to junior design engineers in the following engineering disciplines:

- a. Highway Capacity Analysis and Traffic Studies;
- b. Geometric Design of Roadways;

Project: _____ AOH: _____ Date: _____

- c. Highway Hydraulics and Hydrology;
- d. Pavement Design; and
- e. Erosion and Sediment Control.

The focus of the training is on the fundamental engineering principles, the current applicable design policy and guidelines, and hands-on practice of the required calculations and the use of the design software.

2.7. Design Standards and Guidelines

The GDOT Design Policy Manual is the primary resource for design policies required by the Georgia Department of Transportation. A complete listing of all design publications can be found within the online version of the GDOT Design Policy Manual at the following link: <http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/designpolicies/Pages/DesignPolicyManual.aspx>

2.8. Design Software

The following is a list of computer software which is routinely used to develop project designs. See R.O.A.D.S. web page to download the GDOT software noted below.

Highway Capacity and Traffic Studies

- HCS+ (Highway Capacity Software by McTrans) – implements the HCM2010.
- SYNCHRO – Traffic Simulation Modeling – optimizing traffic signal timing.
- CORSIM – Traffic Simulation Modeling – combined signal and freeway systems.
- SIDRA & Arcady – Roundabout Capacity

Geometric Design of Roadways

- Bentley MicroStation V8i (current) & J (Past) – Computer Aided Drafting & Design (CADD)
- INROADS/Bentley (current), CAiCE/Autodesk (past) – Civil Design Software.
- AUTOTURN – Automated Vehicle Turning Specifications and Geometry

Highway Hydraulics and Hydrology / Drainage Design / Erosion Control

- StormCAD (Bentley) – Longitudinal drainage system design.
- FlowMaster (Bentley) – Hydraulic calculator for gutter spread, spacing inlets, sizing pipes, and open channel flow.
- CulvertMaster (Bentley) – Culvert Design
- HY8 (FHWA) – Culvert Design
- HEC-RAS (COE) – Stream Modeling Software, primarily for bridge culverts that require FEMA coordination.
- PondPack (Bentley) – Design of Detention Ponds and Water Quality Ponds.
- Sediment Basin Program (GDOT) – Design of sediment basin and spillway.

- HEC 15/Ditch Protection (GDOT) – evaluate channel lining protection options.

Pavement Design

- WIN_APD Version B.12.01.01 (GDOT) – Asphalt Pavement Design.

Miscellaneous

- Deed Writer Program (GDOT) – generate parcel deed defined from the Civil Software right-of-way and easement chains.
- Tran*port CES (AASHTO) – construction quantities and cost estimates.

2.9. Electronic Data Guidelines (EDG) and Plan Presentation Guidelines (PPG)

The EDG and PPG are managed by committee chaired by the Design Services Manager in the Office of Design Policy and Support. The EDG and PPG can be found on the R.O.A.D.S webpage at the link below.

<http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Pages/Committee.aspx>

2.10. Engineering Calculations

Immediate review and approval of completed design calculations and studies developed by junior design engineers; for accuracy, completeness, and attention to detail. See **Appendix D** for method of documentation. Design calculations include but are not limited to:

- *Geometric Design Elements* (horizontal/vertical curves, superelevation, etc...)
- *Capacity Analysis* (number of turn lanes, length of turn lanes, etc...)
- *Intersection Design* (alignment, radii, islands, pedestrian access, etc...)
- *Intersection Sight Distance Study* (design veh., height of eye/object, graphical analysis)
- *Culvert Design* (existing conditions, allowable HW, energy dissipation, etc...)
- *Open Channel/Ditch Design* (width and depth of ditch, type of protection, etc...)
- *Longitudinal Drainage Design* (gutter spread, structure spacing, pipe sizing, etc...)
- *Sedimentation Basin Design* (warrants, sediment storage calc, primary spillway, etc...)
- *Pavement Design* (verify traffic volumes, truck percentages, soil support data, etc...)
- *Roundabout Studies* (fastest path, truck turning swept path, stopping sight distance, etc...)

3. Quality Assurance

Refers to the formal high-level review of the project plans and quantities by an experienced engineering manager at strategic points in the plan development process, to certify that the plans and quantities meet established quality standards and provide for appropriate flexibility and cost savings before advancing to the next stage. Essentially, quality assurance is the process of enforcing quality control standards at strategic points in project development. Quality Assurance is the responsibility of the Assistant Office Head position.

Project: _____ AOH: _____ Date: _____
 GDOT QC/QA Program, Revision 4/16/2012

A series of QA Reviews are conducted by the Assistant Office Head during project development with the support of the DGM, consultant (if applicable), the Lead Design Engineer, and appropriate members of the Project Team. At a minimum, a QA Review is required at the following milestones/strategic points in the plan development process.

1. Concept Report & Layout Review
2. Geometric Design Review
3. Preliminary Plans Review (**QA Stamp required on plans**) (defined on following page)
4. Right-Of-Way Plans Review
5. FFPR Plans Review (**QA Stamp required on plans**) (defined on following page)
6. Final Plans Submission Review.

It is the responsibility of the Assistant Office Head to schedule the QA Review meetings with the Design Group Manager and Lead Design Engineer. The DGM should provide the Assistant Office Head with the “QC/QA Record” (defined below) and the plans prior to the review meeting. Engineering calculations and summary of quantities, should also be provided at the review meeting if applicable. The Assistant Office Head should not allow a project design to advance to the next stage until they are satisfied that QC has occurred and the “QC/QA Record” is in order as defined by this Program.

4. QC/QA Documentation and Accountability

For each project, a hardcopy record of QC activities and QA Reviews should be maintained in one location by the Design Group Manager and Lead Design Engineer. A folder named, “QC/QA Record” should be placed in the front-end of the Project Correspondence Files for each project. See **Appendix A** of this program for form titled “QC/QA Record”. The purpose of the QC/QA Record is to document that QC activities and QA Reviews have occurred for critical design activities and to ensure individual accountability throughout project development. This includes, but is not limited to recording activities such as:

- QC - Periodic review of the Project Design Data Book for completeness and accuracy.
- QC - When junior design engineers attend training.
- QC - Review of design calculations and studies provided by junior design engineers (see Components of QC and **Appendix D** of this program for documentation).
- QC - Review of all software output results developed by junior design engineers.
- QA - When QA requests are sent to Project Team Members for action.
- QA - Formal QA Reviews (1-6) of reports, calculations, plans, and quantities.

The Assistant Office Head shall complete the QA Review (1-6) checklist(s) and sign and date the report at the bottom of the page and file in the project “QC/QA Record” folder.

The “QC/QA Record” folder shall also contain major recommendations resulting from the formal QA Reviews (1-6) conducted by the Assistant Office Head.

When requesting PFPR and FFPR, the letter addressed to Engineering Services shall also include the respective QA Review checklist signed and dated by the Assistant Office Head. The Office Head should not allow a project to advance to PFPR or FFPR without the

Project: _____ AOH: _____ Date: _____

respective QA Review checklist signed and dated for accountability.

Plans undergoing a QA Review for “Preliminary Plans Review” and “FFPR Plans Review” should be stamped, signed, and dated by the Assistant Office Head, DGM, Lead Design Engineer, and Designer according to the directions provided in Section 4.1 of this manual.

4.1. QA Review Stamp

For Accountability, during the QA Review for “Preliminary Plans Review” and “FFPR Plans Review”, each sheet within the plan-set should be stamped with the red stamp below and signed and dated by the individual(s) responsible for the QA Review, back-checking to verify the issue is valid, correcting the plans, and verifying that the plans have been corrected appropriately. These record sets of plans should be retained until after the project has been constructed and “Final Acceptance” has been received.

<i>Assistant Office Head</i> →	QA REVIEW
<i>DGM or Lead Design Engr.</i> →	Checked.....Date.....
<i>Design Engineer</i> →	Back-checked.....Date.....
<i>DGM or Lead Design Engr.</i> →	Corrected.....Date.....
	Verified.....Date.....

4.2. Local/Consultant Projects

At the discretion of the Office Head, projects developed by consultant engineering firms for local governments may be processed through these six QA Review events. The Assistant Office Head will not stamp or certify the quality of plans developed by a consultant, but will make comments or request additional information required to support decisions or judgments. Under no circumstance does a QA Review by GDOT release the consultant from their contractual responsibilities involving QC/QA or from professional liability involving the engineering, plans, quantities and cost estimates, or from recovery of damages that result from errors and omissions in the plans.

4.3. Quality Control Best Practices

In order to constantly look for ways to improve the quality of the engineering, design, plans and cost estimates, the State Design Policy Engineer will consult with the Office Head and Assistant Office Heads (at a minimum annually) to identify individuals and methods that reflect Best Quality Control Practices. Performance Measures (P&P 2440-2) documented by Engineering Services at Concept Review, PFPR, and FFPR may be used to supplement this assessment. Those individuals with an outstanding record of quality design will be consulted to identify their specific training, methods, and practices. Those QC methods and practices will be documented by the State Design Policy Engineer and uniformly applied across the Design Groups/Squads by the Office Administrators on a continuous basis.

5. QA Review Events

5.1. QA Concept Report & Layout Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer

Review Schedule: Hold review 4 weeks prior to submission of the concept or revised concept reports.

Review Elements:

- Project addresses the Project Justification and is consistent with Project Termini.
- Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
- Traffic volumes reflect current and design year estimates and cover side roads adequately.
- Geometric design policy has been adequately identified – functional classification, design speed, design vehicle, min radius, max grades, max SE rate, access control, clear zone, median usage. See Chapters 3, 4, and 5 of the GDOT DPM.
- Typical Sections (see Chapter 6 of the GDOT DPM).
- Capacity Analysis demonstrates acceptable Level of Service (LOS) for Functional Classification.
- Lane configuration (number of lanes, turn lanes) is consistent with the Capacity Analysis.
- Provisions for u-turns have been assessed at appropriate locations along the roadway.
- Accident/Crash History - the concept addresses critical locations along the project?
- Avoidance of environmental resources has been adequately considered.
- State Waters and Stream Buffers have been identified by the ecologist and noted on plans.
- FEMA Flood Plains, Biota Impaired Streams, Fish Passage has been assessed.
- If in MS4 area, project has been adequately assessed for water quality design and stormwater detention.
- Avoidance of major utilities has been adequately considered. PIDP has been considered.
- Considerations for pedestrian and bicycle access has been adequately addressed.
- Constructability has been assessed (staging, detours, road closures, access, major utilities, etc.).
- Structural elements have been adequately considered (bridge, culvert, retaining wall, noise wall).
- Vertical clearances are addressed (see GDOT Bridge and Structures Design Policy Manual).
- FAA coordination has occurred (if project is within 5 miles of an airport or aviation facility).
- Design Exceptions and Variances are addressed.
- Coordination with stakeholders has occurred (FHWA, local governments, civic groups, utility companies, railroad companies, other federal and state agencies, etc...).
- R/W & easement limits are reasonable (see Chapter 3 of the GDOT DPM).
- V.E. study recommendations have been implemented, if applicable.
- Feasible alternative alignments have been adequately considered and noted.
- Roadway Quantities have been reviewed and are satisfactory.**
- Revised Concept Report – if the revision involves splitting an original project into additional project phases, the revised report must clearly note the new project limits for each phase along with the related cost estimate for each phase.

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the Concept Report and layout; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel

Project: _____ AOH: _____ Date: _____

5.2. QA Geometric Design Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer

Review Schedule: Hold meeting 3 weeks prior to scheduled completion of the preliminary alignments and other roadway geometrics.

Review Elements:

- Proposed horizontal and vertical alignments comply with design speed and AASHTO criteria for geometric design (e.g., stopping, decision, and intersection sight distance).
- Maximum super-elevation rate is appropriate for the design speed and functional classification of the mainline and side-roads (see Chapter 4 of the GDOT DPM).
- Vertical clearance and lateral offsets are in compliance; with respect to bridge structures, drainage structures, and other rigid fixed structures.
- Graphical studies verifying intersection sight distance have been conducted and recorded in the Design Data Book. See Chapter 4.1.5 of the GDOT DPM.
- Coordination with FAA has occurred if project is within 5 miles of an airport or aviation facility.
- Typical sections, cross sections, and construction limits are consistent.
- The effect of geometric design on driveway access along the roadway has been adequately assessed.
- The effect of the median on access (u-turns) for large design vehicles (SU, BUS, and WB-67) along the roadway has been adequately assessed and addressed where appropriate.
- Soil Survey Summary findings (if available) have been considered.
- The effect of geometric design on environmental resources has been adequately addressed.
- The effect of geometric design on major utilities has been adequately addressed.
- The effect of geometric design with respect to constructability has been adequately addressed (e.g., earthwork staging, maintenance of traffic, bridge construction, utilities, etc...).
- Review Project Design Data Book and randomly check that data is being documented properly.

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the Preliminary Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

5.3. QA PFPR Plans Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer

Review Schedule: Preferably 6 weeks (NLT 3 weeks) prior to requesting PFPR.

Review Elements:

- Preliminary plans are consistent with approved concept report and/or revised concept report.
- Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
- Horizontal and vertical curves and SE rates meet design speed criteria.
- Typical Sections accurately reflect the “TYPICAL” roadway design features along the project.
- Soil Survey/Pavement Evaluation/UST recommendations have been adequately addressed.
- At-grade intersection design meets GDOT guidelines and AASHTO Green Book, and is appropriate for the applicable design vehicle. Graphical studies verifying intersection sight distance have been conducted and recorded in the Design Data Book.
- Bicycle and pedestrian accommodations are appropriately addressed within the project design, if warranted.
- Construction limits are consistent with the typical sections, horizontal and vertical alignments, and specific roadway design features along the project.
- Survey/mapping/topo information is “current” and accurately shown on the plans.
- QA Review of State Waters and Stream Buffer Variances has been received from the ecologist.
- FEMA Flood Plains, Biota Impaired Streams, Fish Passage has been addressed if applicable.
- If in MS4 area, stormwater structures such as vegetative swales, wetlands, and filter strips, and detention structures are included on design.
- Drainage design is supported by appropriate studies/calculations/software applications.
- The effects of backwater (headwater) and tailwater have been properly addressed.
- Environmental resources are identified and Environmental Commitments addressed on the plans.
- Access is addressed for each parcel along the roadway, including provisions for u-turns where appropriate.
- Existing utilities are adequately shown on the plans (reimbursable/non-reimb/prior-rights noted).
- Preliminary Bridge Plans are consistent with the roadway geometric design.
- Railroad coordination has occurred including RR concurrence of the Preliminary Bridge Layouts.
- Constructability Review has been held with District Construction and Utility staff.
- Preliminary Staging Plans and Detours are adequately designed.
- Preliminary ESPCP is adequately designed and complies with NPDES Permit No. GAR100002.
- Required R/W and Easements are adequate and reasonable for the functional classification and access control along the roadway.
- Plans are clean, legible, proper scale, weight, north arrow, match lines, etc... (EDG & PPG).
- Roadway quantities have been reviewed and are satisfactory.**

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the Preliminary Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

Project: _____ AOH: _____ Date: _____

5.4. QA Right-Of-Way Plans Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer

Review Schedule: Hold meeting 2 weeks prior to submitting plans to the Office of Right-of-Way.

Review Elements:

- Survey/mapping/topo information is “current” and accurately shown on the plans.*
- Required R/W and Easements are adequate and reasonable for the functional classification and access control along the roadway (see GDOT Design Policy Manual, Chapter 3, Right-Of-Way Controls).
- Access to remainders of split parcels (potential land-locked) has been assessed adequately. It is appropriate to design access breaks to avoid costly damages to the remainders of split parcels provided there is a low risk of negative effect on the capacity and operation of the route in the design year.
- Access (u-turns) for appropriate design vehicles (Passenger Car, SU, BUS, and WB-67) along the roadway has been adequately assessed and addressed where appropriate and practical.
- Potential utility replacement easements have been assessed and addressed in the plans if applicable.
- If applicable, adequate R/W for MS4 structures has been addressed in the plans.
- Environmental Commitments (Green Sheet) are addressed in the plans.
- R/W Plans are developed in accordance with the guidelines “Checklist for R/W Plans” located within the Plan Presentation Guide on the R.O.A.D.S. website.
<http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Pages/Committee.aspx>

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the R/W Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

*If survey/mapping/topo has been provided by consultant, verify that the Statewide Location Bureau has conducted a QA review of database elements and determined to be within allowable tolerances.

5.5. QA FFPR Plans Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer

Review Schedule: Preferably 4 weeks (NLT 2 weeks) before requesting FFPR.

Review Elements:

- All applicable PFPR comments have been adequately addressed within the Final Plans.
- Final plans are consistent with approved concept report and/or revised concept report.
- Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).
- Survey/mapping/topo information is “current” (e.g., reflects new developments, etc...).
- Cover Sheet contains all required information as defined in the Plan Presentation Guide (PPG).
- Typical Sections accurately represent the project limits, approved pavement design, and contain all required information as defined in the PPG.
- Summary of quantities have been estimated by subordinate engineer(s) and verified by the Lead Engineer and DGM.
- Procedure for summarizing pavement quantities and earthwork quantities is accurate.
- Utility pay-items are properly summarized, if applicable.
- Bridge Plans are consistent with the roadway geometric design.
- Coordination with FAA has occurred if project is within 5 miles of an airport or aviation facility.
- Signing & Marking & Signal Plans are consistent with the final roadway plans.
- ADA requirements are appropriately addressed within the project design.
- Staging plans and detours are adequately designed.
- ADA requirements are appropriately addressed through Temporary Traffic Control Zones.
- All utility relocations/notes are adequately shown on the plans.
- All State Waters and Stream Buffers are delineated on the plans according to the ecologist.
- If applicable, MS4 design has been adequately addressed in project.
- Environmental Commitments (Green Sheet) are addressed in the plans.
- ESPCP is adequately designed and complies with the NPDES Permit No. GAR100002.
- Required R/W and easements are adequate and reasonable for the functional classification and access control along the roadway.
- Recommendations from supporting offices have been incorporated into the plans (i.e. Special Provisions, Railroad and/or Utility Agreements, R/W options, etc...)
- Final Plans reflect Design Exceptions and/or Design Variances if applicable.

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the Final Plans; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

Project: _____ AOH: _____ Date: _____
 GDOT QC/QA Program, Revision 4/16/2012

5.6. QA Final Plans Submission Review

Review Panel: Assistant Office Head, Design Group Manager, Lead Design Engineer

Review Schedule: Hold meeting 2 weeks prior to submitting plans to the Office of Construction Bidding Administration.

Review Elements:

- All applicable FFPR comments have been adequately addressed within the Final Plans.
- Review and verify the “Designer’s Checklist for Plans Submittal to Construction Bidding Administration”.
- Final Bridge Plans are complete and are consistent with the final roadway plans.
- Signing & Marking & Signal Plans are complete and consistent with the final roadway plans.
- ESPCP is consistent with the latest GDOT “NPDES General Permit Guidelines” published on the R.O.A.D.S. website.
- Notice of Intent (NOI) is accurate and complete.
- Environmental Commitments (Green Sheet) are addressed in the Final Plans.
- Summary-of-Quantities are complete and reflect all final design elements in the plans (roadway, bridge, utility, landscaping, etc...) - coordination has occurred with Engineering Services and District Construction staff if necessary.
- Project conforms to RTP/TIP/STIP (model yr/open to traffic, # of lanes, termini, cost estimates).

Action:

- Lead Design Engineer will incorporate revisions resulting from the review into the Final Plans Package if needed; and/or conduct additional studies to support decisions or resolve questions, and follow-up with Assistant Office Head for closure.
- Document and file, in QC/QA folder, a copy of the review notes and any actions taken by the review panel.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: *PI Number and County
Project Description*

OFFICE: *Name*

DATE: *Date*

FROM: *Office Head for the Design Phase Leader*

TO: *Name, State Environmental Administrator
Attn: Name NEPA Coordinator*

SUBJECT: QA Review of State Waters and Stream Buffer Delineations (QA Review)

Attached is a set of preliminary layout roll plots for the above listed project. The Design Phase Leader (DPL) has highlighted all “blue-line streams” (in blue) identified on USGS Quad Maps and drainage features (in yellow) located through mapping and field surveys. Also highlighted are state waters and stream buffers previously identified by the ecologist.

Please complete a comprehensive QA review of the state water, stream buffers and drainage features highlighted on the layouts and verify that all state waters and stream buffers have been correctly identified and located. In addition, identify (i.e., mark in red on the provided layouts) any additional state waters and stream buffers and note the classification of streams as either cold or warm water and as either perennial, intermittent, or ephemeral. Upon completion of the review, return the marked up roll plots to the DPL by the date shown below.

We recommend that the project ecologist notify the DPL prior to reviewing these roll plots and/or conducting a field visit so that the DPL can review the project layout and limits with the ecologist. After the roll plots are returned to the DPL, the roll plots will be scanned (in color) and placed on Pccommon within a PI-numbered folder, and the ecologist will then be notified.

The current **MGMT R/W DATE** is: _____.

The current **MGMT LET DATE** is: _____.

Please provide this QA Review by: _____.

If you have any questions, please contact *Design Phase Leader*, at *phone number*.

Attachments

cc:	Gail D’Avino, Assistant State Environmental Administrator	(letter only)
	Rich Williams, Assistant State Environmental Administrator	(letter only)
	Lisa Westberry, Section 404 Permitting	(letter only)
	<i>Name</i> , Project Manager	(letter only)

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: *PI Number and County*
Project Description

OFFICE: *Name*

DATE: *Date*

FROM *Office Head for Project Manager*

TO *Name, State Construction Engineer*

SUBJECT **CONSTRUCTABILITY REVIEW MEETING**

The Office of *Name* has scheduled a Constructability Review Meeting for the above listed project to be held on day of *week date from time to time at the Name area office located at address*. Attached is one half-size set on plans and special provisions. Please advise should you require additional sets.

This project consists of *provide a brief description of the project including project limits, project length and propose typical section*.

The purpose of this meeting will be to ensure this project is buildable, cost effective, biddable and maintainable as discussed in Chapter 6 of the Plan Development Process (PDP) manual. After the meeting, the project will be driven and walked to compare site conditions to the project design shown on plans and specifications.

By copy of this letter the District Utility Engineer to notify utility company representatives if deemed necessary.

If there are any questions please contact *Project Manager at phone number*.

Attachments

cc:	<i>Name</i> , District Engineer	(1 half-size plans)
	<i>Name</i> , District Construction Engineer	(1 half-size plans)
	<i>Name</i> , State Utilities Engineer	(1 half-size plans)
	<i>Name</i> , State Project Review Engineer	(1 half-size plans)
	<i>Name</i> , District Preconstruction Engineer	(1 half-size plans)
	<i>Name</i> , District Maintenance Engineer	(1 half-size plan)
	<i>Name</i> , District Utilities Engineer	(1 half-size plans)
	<i>Name</i> , Area Engineer	(2 half-size plans)
	<i>Name</i> , Area Transportation Engineer – FHWA (if full-oversight)	(1 half-size plans)
	<i>Name</i> , Design Phase Leader	(letter only)

Design Calculation

Review and Approval Certification

Project #: _____ **PI #:** _____ **County** _____

Description: _____

TITLE OF CALCULATIONS _____

Calculations prepared by: (Originator)	Signature _____	DATE _____
	Printed Name and Title _____	

Design criteria and procedures checked by: (Lead Design Engineer or Senior Design Engineer)	Signature _____	DATE _____
	Printed Name and Title _____	

Computations checked by: (Lead Design Engineer or Senior Design Engineer)	Signature _____	DATE _____
	Printed Name and Title _____	

Calculation back-checked And/or corrected by: (Originator)	Signature _____	DATE _____
	Printed Name and Title _____	

Calculation approved by: (Lead Design Engineer or Senior Design Engineer)	Signature _____	DATE _____
	Printed Name and Title _____	

Notes:
