

Office Use Only

Case No. \_\_\_\_\_ Received By: \_\_\_\_\_ Date: \_\_\_\_\_  
Application Fee: \_\_\_\_\_ Receipt No: \_\_\_\_\_ Road ID No: \_\_\_\_\_

**BALDWIN COUNTY HIGHWAY DEPARTMENT**

**PERMIT DIVISION**

**P.O. Box 220  
Silverhill, Alabama 36576  
Telephone: (251) 937-0371  
Fax No.: (251) 937-0227**

**INDUSTRIAL/COMMERCIAL/RESIDENTIAL MULTIUNIT  
RIGHT-OF-WAY ACCESS AND DRAINAGE IMPACT PERMIT**

**Applicant**

Are you the property owner? \_\_\_ yes \_\_\_ no  
(If you are not the property owner you must submit Owner Authorization Form signed by the property owner)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code \_\_\_\_\_ - \_\_\_\_\_

Telephone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_ Fax: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_ e-mail: \_\_\_\_\_

**Site Information**

Parcel ID Number(s): 05-\_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_  
05-\_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_  
05-\_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_ - \_\_\_\_

Development Name: \_\_\_\_\_  
Or Name of Business

Address of Site: \_\_\_\_\_ City \_\_\_\_\_

Site Acreage: \_\_\_\_\_ Number of Units or Type of Commercial Activity: \_\_\_\_\_

**Development Type**

Check One:

\_\_\_ Subdivision/Multifamily      \_\_\_ Retail/Commercial      \_\_\_ Industrial

Engineer: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code \_\_\_\_\_

Telephone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_ Fax: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_ e-mail: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_  
 (A copy of the contractor's current license must be submitted)

Mailing Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code \_\_\_\_\_

Telephone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_ Fax: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_ e-mail: \_\_\_\_\_

(Check all that apply)

Commercial Turnout <input type="checkbox"/>	Driveway Turnout <input type="checkbox"/>	Drainage <input type="checkbox"/>
Acceleration Lane <input type="checkbox"/>	Deceleration Lane <input type="checkbox"/>	Median Turn Lane <input type="checkbox"/>

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I hereby certify that the information stated on and submitted with this application is true and correct. I also understand that the submittal of incomplete or incorrect information will result in this application not being processed. I understand that payment of these fees does not entitle me to approval of this application and that no refund of these fees will be made. I have reviewed the attached applicable development standards as set forth in the Baldwin County Highway Department and I further understand that the decision of the Baldwin County Highway Department shall be final and conclusive on any question that may arise relating to this permit and/or to any work done or to be performed pursuant thereto.

Applicants Signature: \_\_\_\_\_ Date: \_\_\_\_\_

<b>FOR OFFICE USE ONLY</b>			
DATE APPLICATION REVIEWED: _____			
IS THIS A COUNTY MAINTAINED RD:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
ENGINEERING PLANS SUBMITTED:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
TRAFFIC STUDY SUBMITTED:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
ARE TURN LANES WARRANTED:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
COST ESTIMATE SUBMITTED:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
INSPECTION FEE PAID:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
HAS ENGINEER VISITED SITE:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
DOES THIS SITE DRAIN TO CO. ROW:	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A
COMMENTS: _____			
_____			
SIZE OF DRIVEWAY CROSS-DRAIN: _____		DATE PERMIT ISSUED: _____	
PERMITTING AGENT: _____		TITLE: _____	
SIGNATURE: _____			

## PERMIT DEVELOPMENT STANDARDS

### 1. Right-Of-Way Connectivity

#### 1. 1 General Policy

These standards apply to any Applicants proposing to construct any or all of the following on County Right-of-way: **Turnout, Driveway, Acceleration lane, Deceleration lane, and or Median turn lane.** All applications must be accompanied by all applicable engineering plans including plan/profile sheets, cross sections at no more than 100 ft stations, and typical cross sections for roadway build-up and construction, traffic markings, and an engineering cost estimate, all certified by a registered professional engineer licensed in the State of Alabama. All construction must be done by a contractor licensed to perform the proposed work.

All construction shall be constructed in accordance with the State of Alabama Highway Department Specifications and the Engineering Plans submitted to and approved by the Baldwin County Highway Department.

The access turnout and turn lanes must be constructed in such a manner that no damage will be occasioned to the County road, and no hazard to the traveling public, will be created. The work shall be expedited to facilitate completion as quickly as possible and delays encountered shall be reviewed with the County Engineering Department, the Contractor, and the Engineer of Record.

The applicant is not granted any right to, claim in, or control over any part of the highway right-of-way. The Applicant is not permitted to use the access turnout or adjacent highway Right-Of-Way for any purpose other than highway access and maintenance of turnout.

The applicant shall install, maintain, and keep in satisfactory condition at the sole cost and expense of the applicant, any drainage structure(s) that may be necessary in connection with this construction and keep the same cleaned out at all times.

The applicant will not make any additions to or otherwise modify the approved engineering plans without prior written approval from the Baldwin County Highway Department, Permit Division. A new or modified permit may be required.

During construction, traffic control devices shall be installed and maintained in accordance with the **MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES -PART VI**, Latest Edition.

The Applicant shall, and does hereby, indemnify and save harmless the County, its officers, agents, servants, and employees from any and all causes of action of any kind or character, whatsoever, including, but not limited to, wrongful death, personal injury or property damage which may in any way arise or result from or be caused by any and all actions of the Applicant, its agents, servants, or employees, in the construction and maintenance of the improvements approved hereby. Said indemnification shall include the payment of any and all costs of defense of the County.

The access turnout, turn lanes and related work covered by this permit shall be completed within 60 days from the date the work on the right-of-way commences. This permit becomes null and void 12 months from the date of issuance. Once work has begun, the applicant shall pursue the work continuously and diligently until completed.

## 1.2 Traffic Studies and Warranted Improvements in County Right-Of-Ways

A Traffic Study Conducted by a Professional Engineer Licensed in the State of Alabama shall be required for the following developments:

- Any residential complex (apartments, town homes, condominiums, etc) with 50 or more residential units (all phases shall be included in determining the total number).
- High volume Commercial and Industrial sites.
- Service Stations/Convenience Stores.

The County will perform the Traffic Study using the services of a qualified traffic engineer acceptable to the Baldwin County Commission. The Developer shall advance to the Baldwin County Commission the cost of such traffic study. All recommendations of the study will be considered as minimum conditions of the Permit approval. However, the County Engineer, reserves the right to require improvements within the County Right-Of-Way that the study indicates are not warranted. At all times the applicant can choose to bypass the study and accept the improvements required by the County as conditions of Permit Approval.

If turn lanes are required, the applicant shall be required to pay a Road Construction Inspection Fee based on \$1.25 per linear feet of road as part of the permit application. This distance will be measured from milled section to milled section (Start of construction to end of construction).

## 1.3 Turnouts and Driveways

This section is applicable to PRIVATE, COMMERCIAL, INDUSTRIAL, and RESIDENTIAL developments where the applicant installs the side drain pipe and constructs the turnout.

**\*The purposed turnout site must be marked so as to be easily located for review.**

All culverts in the County ROW must be a minimum of 18" diameter round concrete pipe (or Arch equivalent) and culverts must be a minimum of 24 feet in length. In addition they must have 4 to 1 slope paved headwall ends (Which are not included in the 24 feet of culvert length). A sample detail has been provided in the appendix. In the event that more than 50 feet of driving surface is desired, a clean out box shall be required for maintenance.

Culverts must be sized by a Professional Engineer Licensed in the State of Alabama. Permit shall be accompanied by signed and sealed calculations and plans for the proposed turnout. Plans shall include cross sections of the modified ditch sections along the County Right-Of-Way. Positive flow must be verified once culvert is installed.

The minimum edge of pavement radius for turnouts is 25 feet. If ingress and egress is to accommodate large delivery trucks, minimum radius shall be increased to 40 feet.

All designs shall preserve a minimum 4'-0" shoulder with a slope no greater than 6%.

The turnout shall be sloped away from the existing edge of pavement to insure that no storm water is directed onto the County road surface.

The driveway apron shall be surfaced with material equal to or greater than surface of the connecting County road. (The extents of the apron shall be from existing road edge (pavement) to Right-Of-Way line.) For all paved county roads see the pavement build-up requirements of the *Baldwin County*

*Subdivision Regulations. For paved County Roads, only asphalt is to be used for the first 5'-0" from the edge of existing pavement. At that point the material can transition to concrete or other material equal to or greater than asphalt.*

For each proposed intersection (turnout) with an existing County maintained roadway, proposed sight distances shall be provided on a plan/profile sheets. Distances provided shall meet those required in the latest version of the AASHTO Policy on Geometric Design of Highways and Streets.

The turnout shall be constructed in accordance with Chapter 4 of the State of Alabama Highway Department Maintenance Manual and the State of Alabama Highway Department current Highway Design Standards. (Information is available through the Baldwin County Highway Department, Permit Division.)

If it becomes necessary to remove and/or reconstruct this access turnout, the Baldwin County Highway Department or its contractors have the right to remove and/or reconstruct said turnout without any payment whatsoever to the applicant.

At the option of the Baldwin County Highway Department the Applicant may be required to file a CERTIFIED CHECK or BOND payable to the BALDWIN COUNTY COMMISSION in the amount of **\$1000.00** for the faithful performance of the provisions of the permit. The bond or check will be returned to the Applicant upon the completion and acceptance of the turnout by the County, including restoration of the effected adjacent County right-of-way.

#### **1.4 Turn Lanes**

Lane Marking requirements:

- All Striping shall be thermoplastic.
- All lines shall be 6" in width.
- The spacing of the 24" yellow chevron striping shall be 20'-0" maximum.
- The solid white channelizing stripe at all turn lanes shall be 8" in width.
- Plans shall include pavement marker (reflectors) schedule and details in plans per ALDOT specifications.

Geometric design shall be in accordance Turn Lane Design Table shown in the appendix.

All proposed designs shall insure that no utility structure (poles, pedestals, etc...) is located in any part of the modified ditch sections along County Right-Of-Way. Any required relocation of such utility structures will be at the expense of the developer.

Applicant is responsible for the resolution of all utility conflicts within the County Right-Of-Way.

Proposed design shall maintain a minimum 4'-0" shoulder with a maximum 6% slope.

The Applicant is required to file a certified check or bond approved by and payable to the Baldwin County Commission in the amount of 125% of the estimated construction cost of improvements within County Right-of-Way for the faithful performance of the provisions of this permit. The bond or check will be returned to the applicant upon completion and acceptance of the turn lanes by the County, including restoration of affected adjacent road right-of-way.

The Applicant is responsible for verifying all right-of-way requirements necessary for construction. Any additional right-of-way shall be acquired by the Applicant and dedicated to Baldwin County prior to construction commencing.

Engineering Plans shall include:

- Plan-profile of proposed road that shows the location, size, length of the proposed cross-drain, the dimensions of the existing and proposed asphalt;
- Cross-sections at no more than 100 ft. stations;
- Erosion Control Plan;
- Plan showing Traffic Markings and signage;
- Typical cross-section for the proposed roadway build-up and overlay;
- All necessary details including proposed headwalls;
- Temporary Traffic Control Plan;
- Verification of sight distance at new intersection;
- Calculations verifying the adequacy of all proposed drainage structures

## **2. Drainage**

### **2.1 General Policy**

The main objective of drainage design shall be the safety of the traveling public with the protection of County and private property consistent with good engineering practice.

### **2.2 Drainage and Storm Sewers**

(a) *General Requirements.* The responsible Design Engineer shall not submit any site plan which does not make adequate provision for storm or flood water runoff channels or basins. The storm water drainage system shall be separate and independent of any sanitary sewer system.

The applicant shall submit a design narrative and complete drainage calculations, including but not limited to, assumptions, maps, and computations for each inlet, pipe, or ditch section. The design data and calculations shall be prepared, sealed and submitted by a licensed, professional engineer in the State of Alabama. The design narrative shall summarize the assumptions, calculations, and results of the design for the whole project as well as each drainage basin.

All developments shall be provided with adequate storm drainage facilities.

When a proposed new drainage system will divert water into an unnatural water system or on private land adjacent to the development, appropriate drainage rights must be secured by the applicant and supported by the appropriate recorded instrument.

The applicant shall be required to carry away by pipe or open ditch any spring or surface water that may exist either previously to, or as a result of, the development. Such drainage facilities shall be placed in perpetual unobstructed drainage easements of appropriate width.

Adequate provision shall be made for the disposal of storm waters into existing channels, pipes, or body of water.

(b) *Accommodation of Upstream Drainage Areas.* A culvert or other drainage facility shall, in each case, be large enough to accommodate potential developed property runoff from its entire upstream drainage area, whether inside or outside the development.

(c) *Effect on Downstream Drainage Areas.* The Design Engineer shall review the effect of each development on existing downstream drainage facilities outside the area of the development. Where it is anticipated that the additional runoff incident to the development will overload an existing downstream drainage facility, the County Engineer, or his/her designee, may withhold approval of the permit until provision has been made for the necessary downstream improvement.

### **2.3 Drainage Design Requirements**

(a) Inlets shall be provided so that surface water is not carried across any intersection, or for a distance of more than 600 feet in the gutter. When calculations indicate that curb capacities are exceeded at a point, catch basins shall be used to intercept flow at that point. The spread of surface water carried in the gutter shall not exceed ½ of the design lane width.

(b) The drainage system(s) shall accommodate flows from at least a 100-year frequency design storm. In addition, adequate drainage-ways shall be provided to allow the run-off from a 100-year frequency design storm to be accommodated. Bridges and box culverts shall accommodate a minimum of a 100-year frequency design storm.

(c) All roadways cross drain pipes and turnout culvert pipes within the County Right-Of-Way shall be reinforced concrete and have a minimum size of 18 inches in diameter, or an equivalent arch pipe. Only pipe that meets specifications equaling Alabama Department of Transportation Specifications or Baldwin County Standards will be acceptable.

(d) On any single drainage structure within the County R.O.W. requiring 20 square feet or more of end area, a special design drawing will be required for approval. Concrete box culverts used shall be designed and constructed according to the latest edition of the ALDOT Standards and Specifications for Road and Bridge Construction. All proposed bridges must be submitted separate from other construction plans and must contain all plans, specification, design and construction data as required by The Federal Highway Administration and ALDOT. Any box culvert that spans 20 feet or more along the centerline of the road shall be considered as a bridge.

(e) Where the developer has open ditches, a maximum of 3 to 1 side slopes and flat bottom ditch is required. V-bottom ditches or other special designs will be permitted in special cases as approved by the County Engineer or his/her designee. Calculations shall show the volume and velocity for each different ditch section. Ditch lining shall be designed based on the stormwater velocity calculations. The longitudinal grade shall not be less than 0.3%.

(f) The method of determining storm runoff shall be as follows: for areas less than 200 acres, the engineer may use the Rational Method for determining inlet spacing, roadway spread, and the sizing of opened and closed pipe network and collection basins. The Kirpich Equation shall be the only method which may be used to determine the time of concentration. For areas greater than 200 acres, the engineer may use Regression Equations (rural or urban) or SCS Method only.

(g) Calculations shall include a scale map of the off-site and on-site drainage areas; and the slope, type, size, flow, velocity, and the headwater and tailwater elevations for each pipe and structure.

(h) *Headwalls and Riprap.* A minimum 4:1 concrete sloped paved headwall shall be required on all pipe culverts that are located in the County ROW. Special types of headwalls, rip-rap, and other materials may be required by the County Engineer or his/her designee when deemed necessary for erosion control, protection of existing downstream drainage facilities, and roadside safety.

## **2.4 Plan Requirements**

The Design Engineer shall submit detailed drainage plans to the County for review and approval. Said plans shall be prepared by a Professional Engineer licensed in the State of Alabama and shall contain the following information.

- (a) Topography map of proposed developed areas showing existing and proposed contours at 1 foot intervals of the entire property and full width of all adjacent right-of-ways. Topographic information shall be based on the NAVD 88 datum. Elevations must be field verified. Greater intervals may be allowed, if approved by the County Engineer or his/her designee.
- (b) Existing drainage structures, including, but not limited to, pipes, culverts, inlets, ditches, and ponds within 100' of the proposed connection.
- (c) Proposed drainage system, including pipes, culverts, junction boxes, inlets, ditches, retention/detention facilities, and an outline of the on-site drainage areas for each inlet and ditch cross-section. All proposed pipes, culverts, junction boxes and inlets shall be labeled and presented in tabular form on the overall drainage plan, and the plan view of all Plan/Profile sheets.
- (d) Structure location, type and size, and the Inlet and Outlet Flow line Elevation.
- (e) Cross-section of each ditch section. (See Appendix for Typical Cross Section)
- (f) Other pertinent information necessary for review of the drainage plans as may be required by the County Engineer, or his/her designee.

## **2.5 Drainage Construction Requirements within County R.O.W.**

- (a) All pipes shall be placed in excavated trenches to the line and grade shown on the plans.
- (b) Material used for backfilling pipe trenches shall consist of small diameter uniform material and shall be free of large rock or other unsuitable material. The backfill material shall be placed in uniform 8 inch lifts and mechanically compacted to 95% of relative density. The backfill shall be placed uniformly on each side of the pipe and all pipes shall be laid in accordance with County Standards. A detail must be provided that shows the proper backfilling of all pipe trenches.
- (c) A minimum of 12 inches cover shall be placed over each pipe 48 inches or less in diameter and 24 inches or more of cover shall be placed on all larger diameter pipes.
- (d) When a battery of pipes is used, a clear spacing of ½ the pipe diameter or span shall be provided between adjacent pipes.
- (e) The maximum cover allowed, pipe class, and strength requirements shall be in accordance with the manufacturer's recommendation.



(f) A junction box shall be provided every 100 feet for maintenance and inspection for all pipes under asphalt within the County R.O.W. For all other side drain pipes and pipes located within the right-of-way, a junction box suitable for maintenance and inspection access shall be provided at least every 300 feet for continuous pipes of 24 inches in diameter or less and at least every 400 feet for larger continuous pipes, and at each angle point and at each change in grade.

(g) Where type "S" inlets are used in conjunction with valley gutters, construction plans must show a smooth and gradual transition from gutter to inlet not less than 60 inches.

(h) Unless otherwise approved by the County Engineer, all junction boxes within the County Right-Of-Way shall be poured-in-place concrete or pre-cast concrete as per ALDOT Standard Drawings.

### **3 Erosion and Sedimentation**

#### **3.1 General**

During construction accelerated erosion will occur during storm water runoff with a proportionate increase in visible erosion, scour and siltation both within and outside of the construction site. The following provisions impose requirements on persons engaged in land disturbing activities which require planning and implementation of effective sedimentation controls for subdivision development sites.

(a) *Construction Requirements.* An erosion and sedimentation control plan shall be a part of the construction plans and shall be approved by the County Engineer, or his/her designee prior to the commencement of any land-disturbing activity including but not limited to tree cutting and root removal.

(b) *Protection of Property.* Persons engaged in land-disturbing activities shall take all reasonable measures to protect all public and private property, including roadways, from damage by such activities.

(c) *More Restrictive Rules Shall Apply.* Whenever there is a conflict between Federal, State, or Local Laws, Ordinances, Rules and Regulations, Orders, and Decrees the more restrictive provision shall apply.

#### **3.2 Plan Requirements**

The Design Engineer shall submit an erosion and sediment control plan for review and approval. Said plan shall be prepared by a Professional Engineer licensed in the State of Alabama. If the County determines, upon review of such plan, that a significant risk of off-site sedimentation or erosion exists, it will require a revised plan to be prepared.

Erosion and sediment control plans shall contain engineering drawings, maps, assumptions, calculations, and narrative statements as needed to describe adequately the proposed development of the site and the measures planned to meet the Basic Control Objectives. Plan content may vary to meet the needs of specific site conditions. Large and/or complex sites shall include the proposed stages of construction and the proposed erosion and sediment control measures proposed to be used in each different stage of construction.

#### **3.3 Periodic Inspections and Maintenance**

(a) *Notification.* The applicant shall notify the County Engineer or his/her designee as soon as the initial BMPs have been installed so that an inspection of the BMPs can be made. Such inspection shall be made within 2 working days of said notice. No land disturbing activities, except those necessary to install the BMPs, shall take place until after the inspection is complete and approved.

(b) *Inspection.* The County may perform periodic inspections of the BMPs on the job site. Upon finding that erosion and sedimentation is taking place; or that the proposed BMPs are not installed, installed incorrectly, or not operating properly, the applicant will be notified verbally and in writing that all work affecting the BMPs in question shall be immediately suspended until proper, adequate, and functioning BMPs are installed. ADEM monitoring reports may be requested by the County Engineer from time to time.

(c) *Responsibility for maintenance.* The person engaged in or conducting the land-disturbing activity shall be responsible for maintaining all temporary and permanent erosion and sedimentation measures and facilities during the development of a site. Maintenance of these facilities lies with the landowner until assumed by other parties.

## **4 Storm Water Management**

### **4.1 General**

Developments which produce an increase in the amount of storm water runoff will be required to construct storm water management facilities. The design engineer shall submit, detailed engineering calculations and plans to the County including historical runoff, developed runoff, storm water facility details, method of discharge, and other information as required for review. Post development release rates shall not exceed pre-development rates. Provisions shall be made to address 100 year storm events to ensure that retention/detention facilities survive such events.

### **4.2 Minimum Requirements for Stormwater Retention/detention and Design Criteria**

(a) *Liability.* The design criteria establish minimum elements of design which must be implemented with good engineering and good workmanship. Use of the information contained herein for placement of any structure or use of land, shall not constitute a representation, guarantee, or warranty of any kind by Baldwin County, its offices or employees, of the practicability, adequacy or safety and shall not create liability upon or cause action against any such public body, office, or employee for any damage that may result pursuant thereto.

(b) *Engineer's Seal.* All plans, specifications, and calculations submitted for review and/or approval shall be prepared and signed by a licensed engineer, and shall meet the minimum standards and requirements of the County, and other applicable authorities. Each of the plan, profile and special drawing sheets for a project shall bear a legible stamp of the Professional Engineer in charge. If the name or license number is not clear, the signature and number shall be added. It is imperative that the professional design engineer be qualified in the area of drainage per the State of Alabama registration laws.

(c) *Pre-Design Conference.* The developer and Design Engineer are encouraged to contact the County for a pre-design conference at the conceptual stage of the project. Such conference would be mutually beneficial to outline the complexity and scope of design, applicability of criteria and elimination of possible items of conflict during the review process. Subsequent conferences, during the preparation of plans may be arranged by the consulting engineer or the developer to obtain preliminary, informal decisions on items in need of clarification.

(d) *Method of Evaluation.* Differential runoff evaluation consists of determination of rates of runoff before and after development, determination of required volume of retention/detention and verification of adequacy of discharge and control structures. Design shall be based on at least the worst case scenario of runoff up to and including a 100 year, 24 hour rainfall event or greater if required by the County Engineer

or his/her designee. This shall be based on sound engineering criteria and computations shall be submitted to the County Engineer for review. Post-development discharge from retention/detention facilities shall be equal to or less than pre-development conditions for a 2, 5, 10, 25, 50, and 100 year storm event. In no case shall the discharge from a drainage basin exceed the hydraulic capabilities of the downstream drainage structures and facilities.

A “pre” and “post” development discharge/duration graphic shall be submitted to illustrate compliance. See Example Figure 1.

The SCS Method will be the only accepted method used to determine the sizing of stormwater detention/retention areas.

(e) *General Location.* Retention/detention facilities shall be located within the parcel limits of the project under consideration. No retention/detention or ponding will be permitted within public road rights-of-way. Location of retention/detention facilities off-site will be considered by special request if proper documentation is submitted with reference to practicality, feasibility and proof of ownership or right-of-use of the area proposed.

(f) The hydraulic elevations resulting from channel retention/detention shall not adversely affect adjoining properties.

(g) *Verification of Adequacy.* Analysis of all elements of design is always performed by the Design Engineer. The following outline is provided to ascertain that certain critical elements of design are in workable compliance with the aims of design:

1. proof of adequacy of volume of retention for each drainage basin
2. tributary (Q) peak runoff to basin
3. balanced maximum outflow rate from the low-flow structure
4. ratios of inflow to outflow
5. sizing of the overflow facilities
6. stability of dikes
7. safety features
8. maintenance features
9. routing calculations in legible tabulated form
10. “Pre-development” and “Post-development” intensity/duration graphic shall be submitted to illustrate compliance. See Example Figure 1.
11. Projects involving complexity of design may require more documented verification

Features of stability and safety may also need to be documented if the scope of the project requires special attention in this area of design.

(l) *Control Structures.* Retention/detention facilities shall be provided with obvious and effective control structures. Plan view and sections of the structure with adequate detail shall be included in plans.

1. The maximum overflow opening or emergency spillway shall be designed to accept the total peak runoff of the improved tributary area during the base flood.
2. Proper engineering judgment shall be exercised in analysis of secondary routing of discharge of greater intensity than the basic design storm in order to avoid economic losses or damage downstream. Review with the maximum probable precipitation event is recommended.

3. When existing downstream pipe sizing, outside the developers control jurisdiction, is inadequate, an evaluation for under sizing of pipes may be undertaken by the County upon receipt of written request from the engineer specifying the run or runs desired to be undersized. Applicant shall submit a plan/profile view and appropriate calculations of the entire undersized system (if less than 600 feet in length), or a minimum of 600 feet. No under sizing will be allowed if the requested under sizing will affect the performance of an existing structure.

#### **4.3 Plan Requirements**

The Design Engineer shall submit detailed plans for review and approval. Said plans shall be prepared by a Professional Engineer licensed in the State of Alabama and shall contain the following information:

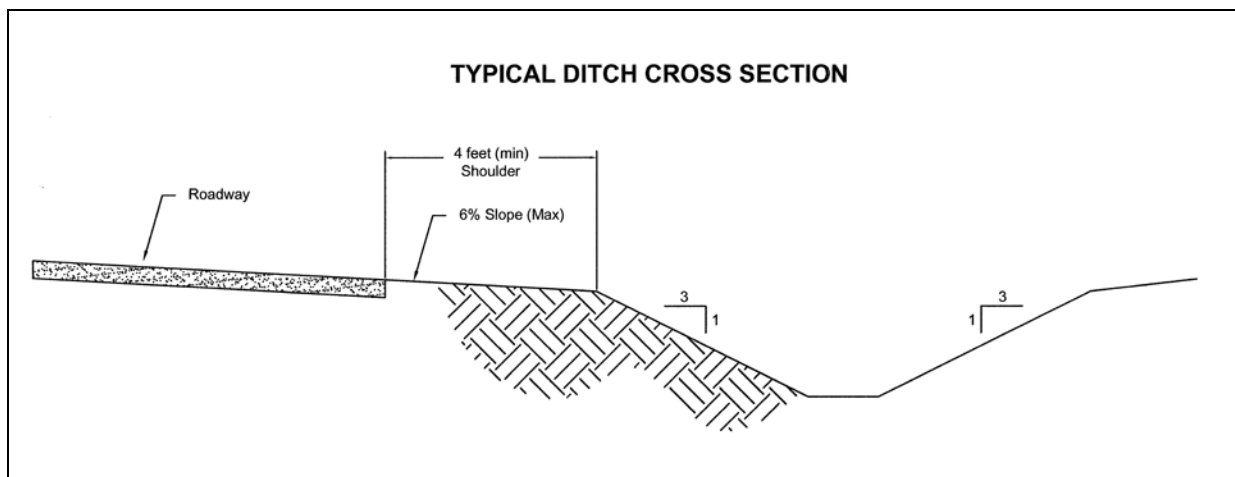
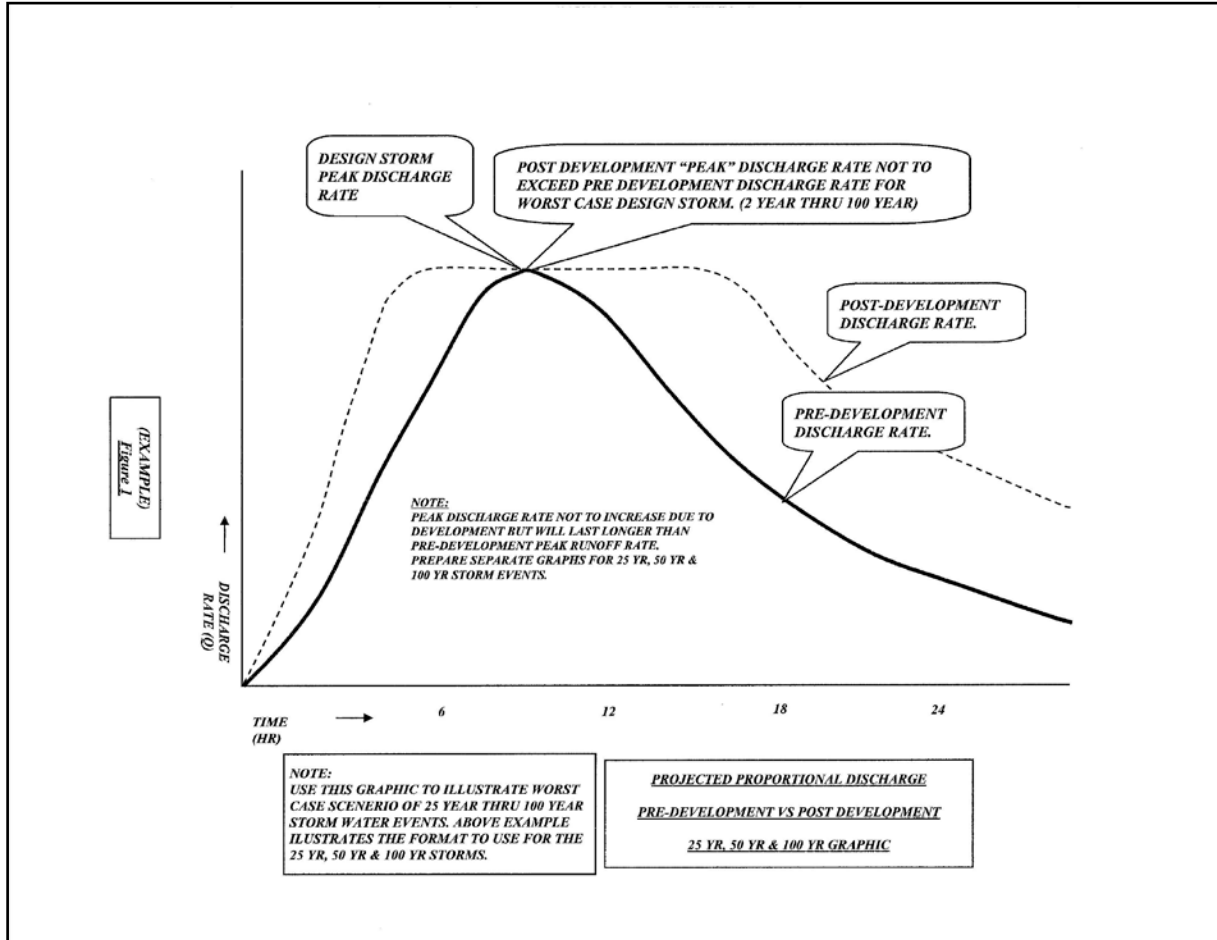
- (a) Topography map of the proposed retention/detention facility area(s);
- (b) Existing and proposed contour lines at 1 foot intervals of the entire property and full width of all adjacent right-of-ways. Topographic information shall be based on the NAVD 88 datum. Elevations must be field verified. Greater intervals may be allowed, if approved by the County Engineer or his/her designee;
- (c) All proposed pipes, control structures, headwalls, riprap, junction boxes, including location, size, and flow line elevations;
- (d) Detailed drawings of the control structure(s);
- (e) Cross sections of each storm water facility.

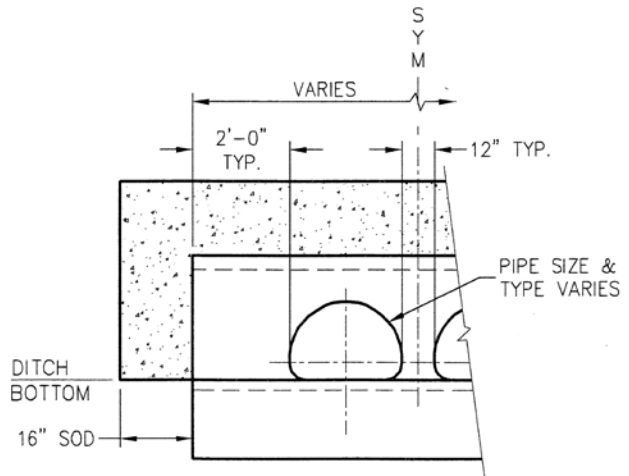
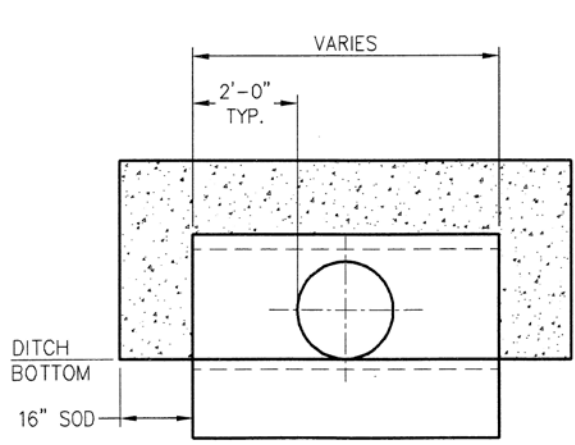
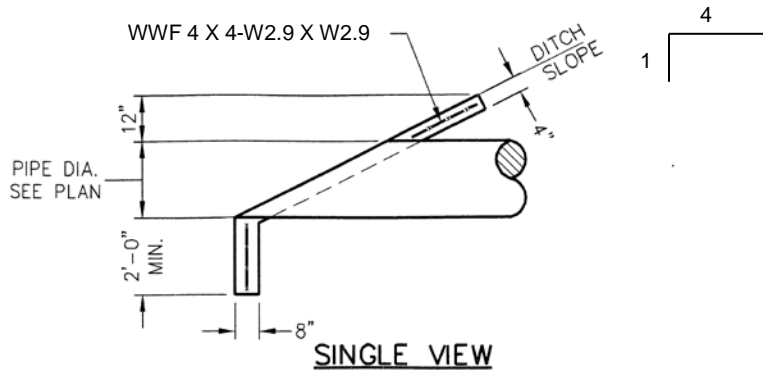
#### **4.4 Maintenance**

Retention/Detention facilities are to be built in conjunction with the storm sewer installation and/or grading. Since these facilities are intended to control increased runoff, they must be partially or fully operational prior to the clearing of the vegetation and subsequent construction. Silt and debris connected with early construction shall be removed periodically from the retention/detention area and control structure in order to maintain adequate storage capacity.

The responsibility for maintenance of the retention/detention facilities shall remain with the developer and or subsequent ownership entities. These entities shall clearly and explicitly accept responsibility for maintenance. These maintenance requirements do not imply that any drainage structures or systems are or will become the maintenance responsibility of Baldwin County. A letter from the owner/developer indicating the chain of responsibility for maintenance of all drainage structures or systems along with a copy of the proposed instrument of organization for the property owners' association shall be submitted with the Site Plan submittal.

# APPENDIX





**CONCRETE SLOPED HEADWALL DETAIL**

**DESIGN TABLE FOR AUXILIARY LANES  
BALDWIN COUNTY HIGHWAY DEPARTMENT**

	Posted Speed (mph)	Posted Speed (kmh)	Taper Length (9' lane)	Taper Length (10' lane)	Taper Length (11' lane)	Taper Length (12' lane)	Decel. Lane Length (ft)	Storage Length (ft)*	Lane Shift (9' lane)	Lane Shift (10' lane)	Lane Shift (11' lane)	Lane Shift (12' lane)
	25	40	50	50	50	50	60	50	95	105	115	125
	30	50	50	50	50	50	80	50	135	150	165	180
	35	55	50	50	75	75	100	50	185	205	225	245
	40	65	75	75	100	100	150	100	240	270	300	370
	45	70	100	100	100	100	200	100	405	450	495	540
	50	80	125	140	155	170	240	100	450	500	550	600
	55	90	135	150	165	180	300	100	495	550	605	660

\* - Storage Length (ft) shall be the minimum length shown or 20 times the # of vehicles anticipated in 2 minutes of the peak hour, whichever is greater.

Typical section shall provide an asphalt binder layer to be flush with existing asphalt surface, and then provide 125 #/SY of asphalt surface layer over the entire project limits.