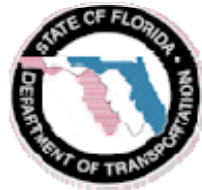




Revised Rule 14-86 F.A.C.

What's New About Drainage Connection Permitting at FDOT

An Introduction to the New Rule and Permit Application



presented by

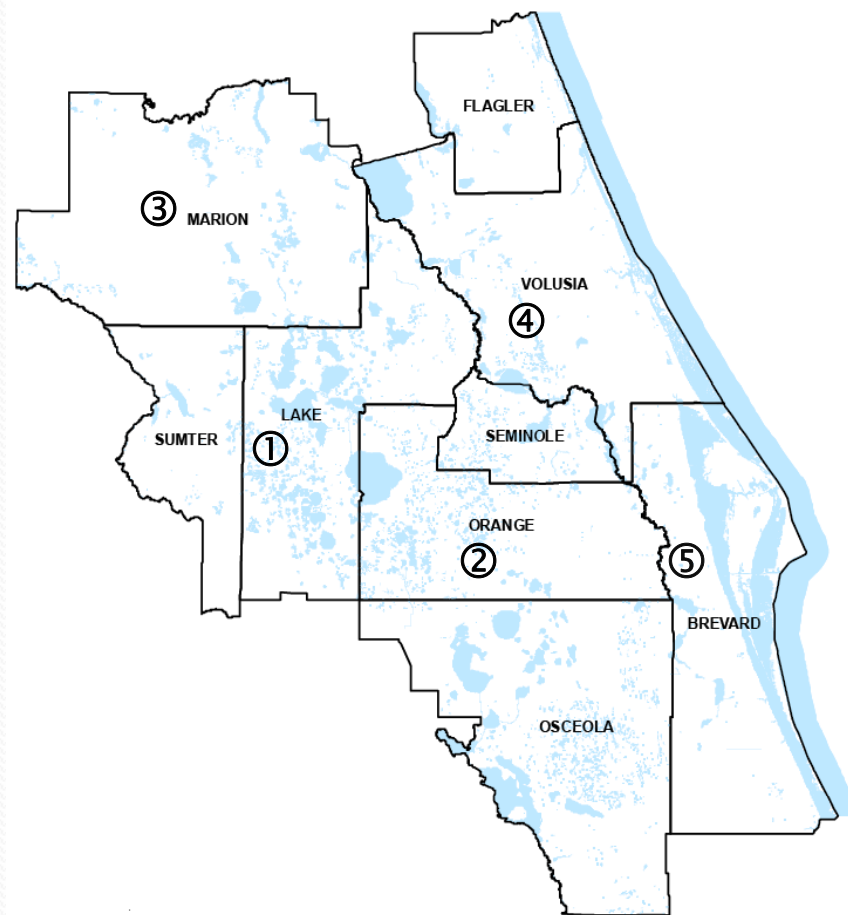
George Marek, P.E.

District 5 Maintenance Permits Section
Florida Department of Transportation

Schedule of Mini Permit Workshops in D5

- ① Leesburg Operations January 12, 2010
- ② Orlando Urban Office January 21, 2010
- ③ Ocala Operations February 4, 2010
- ④ DeLand Operations February 19, 2010
- ⑤ Cocoa Maintenance March 2, 2010
- ⑥ **Anywhere you need us...**

All workshops:
start at 9:00 AM and end at noon





Handouts

- Drainage Connection Permit Rule 14-86, F.A.C. - Amended 1/20/2009
- Side-by-side Comparison Chart of Old and New Rules
- Frequently asked questions and answers
- “Where do I apply and who can I talk to about my Drainage Connection Permit in District 5?”
- Paper copy of this presentation



Bonus Handout

- Critical Duration Explained:

Excerpt from previous presentation illustrates how we use critical duration analysis to issue you permit.



DRAINAGE CONNECTION PERMIT *

14-86.001 Purpose

14-86.002 Definitions

14-86.003 Permit Assurance Requirements, and
Exceptions

14-86.004 Permit Application Procedure

14-86.005 General Conditions for a Drainage Permit

14-86.006 Permit Suspension or Revocation

14-86.007 Forms

***Red Letter Edition (with some liberty taken...)**



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14-86.001 Purpose. The purpose of this rule chapter is to regulate and prescribe conditions for the transfer of stormwater to the Department of Transportation's right of way as a result of manmade changes to adjacent property(ies), through a permitting process designed to ensure the safety and integrity of the Department of Transportation's facilities and to prevent an unreasonable burden on lower properties. **This rule chapter does not regulate dewatering activities.**



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14-86.002 Definitions. As used in this rule chapter the following terms shall have the following meanings:

(1) “Adjacent Property” means any real property or easement with a shared boundary to the Department’s right of way.

(2) “Applicant” means the owner of adjacent property or the owner’s authorized representative.



(3) “Applicable Water Quality Standards” means rules and regulations of state or federal governmental entity(ies) pertaining to stormwater discharges from the Department’s facilities to which the drainage connection is made.



(4) “Approved Stormwater Management Plan” or “Master Drainage Plan” means a plan adopted or approved by a city, county, water management district, or other agency with specific drainage or stormwater management authority provided that:


(a) Such plan is actively being implemented;

(b) Any required construction is substantially complete;


(c) Downstream mitigation measures have been provided for in the plan; and

(d) The use of any Department facilities either existing or planned, which are part of such plan, have been approved by the Department.

(5) “Closed Basin” means a basin without any positive outlet, for the design storms applicable to this rule.



(6) “Critical Duration” means the length of time of a specific storm frequency which creates the largest volume or highest rate of net stormwater runoff (post-improvement runoff less pre-improvement runoff) for typical durations up through and including the 10-day duration for closed basins **and up through the 3-day duration for basins with positive outlets.**



The critical duration for a given storm frequency is determined by calculating the peak rate and volume of stormwater runoff for various storm durations and then comparing the pre-improvement and post-improvement conditions for each of the storm durations. The duration resulting in the highest peak rate or largest net total stormwater volume is the “critical duration” storm (volume is not applicable for basins with positive outlets).




(7) **“Department”** means the Florida Department of Transportation.

(8) **“Discharge”** means the event or result of stormwater draining or otherwise transferring from one property to another or into surface waters.

(9) **“Drainage Connection”** means any structure, pipe, culvert, device, paved or unpaved area, swale, ditch, canal, or other appurtenance or feature, whether naturally occurring or created, which is used or functions as a link to convey stormwater.


(10) **“Facility” or “Facilities”** means anything built, installed, or maintained by the Department within the Department’s right of way.



(11) “Impervious Area” means surfaces which do not allow, or minimally allow, the penetration of water. Examples of impervious areas are building roofs, all concrete and asphalt pavements, **compacted traffic-bearing areas such as limerock roadways**, lakes, wet ponds, pond liners, and other standing water areas, including some retention/detention areas.

(12) “**Improvement**” means any man-made change(s) to adjacent property.


(13) “**Licensed Professional**” means an individual licensed by a Florida professional licensing board, authorized by law to design and certify the stormwater management system under review.



(14) “Man-made Change” means any intentional physical change to or upon adjacent property resultant from an intentional physical change, which establishes or alters the rate, volume, or quality of stormwater.

(15) “Permit” or “Drainage Connection Permit” means an authorization to establish or alter a drainage connection to the Department’s right of way issued pursuant to this rule chapter.

(16) “Permittee” means the individual or entity to which a Drainage Connection Permit is issued.



(17) “Positive Outlet” means a point of stormwater runoff into surface waters which under normal conditions would drain by gravity through surface waters ultimately to the Gulf of Mexico, or the Atlantic Ocean, or into sinks, closed lakes, or recharge wells provided the receiving waterbody has been identified by the appropriate Water Management District as functioning as if it recovered from runoff by means other than transpiration, evaporation, percolation, or infiltration.




(18) “Post-improvement” means the condition of property after improvement.

(19) “Pre-improvement” means the condition of property:


(a) Before November 12, 1986; or

(b) On or after November 12, 1986, with connections which have been permitted under this rule chapter or permitted by another governmental entity based on stormwater management requirements equal to or more stringent than those in this rule chapter.




(20) “Right of Way” means land in which the Department owns the fee or less than the fee, or for which the Department has an easement, devoted to or required for use as a transportation or stormwater management facility.

(21) “Stormwater” or “Stormwater Runoff” means the flow of water which results from and occurs immediately following a rainfall event.



(22) “Stormwater Management System” means a system which is designed and constructed or implemented to control stormwater, incorporating methods to collect, convey, store, infiltrate, treat, use, or reuse stormwater to prevent or reduce flooding, overdrainage, pollution, and otherwise affect the quantity or quality of stormwater in the system.



(23) “Surface Water” means water upon the surface of the earth whether contained in bounds created naturally or artificially or diffused. Water from natural springs shall be classified as surface water when it exits onto the earth’s surface.

(24) “Watershed” means the region draining or contributing water to a common outlet, such as a stream, lake, or other receiving area.



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14-86.003 Permit, Assurance Requirements, and Exceptions.

(1) Permit.

(a) No permits are required for properties without improvements on or after November 12, 1986.


(b) All improvements on or after November 12, 1986, require a Drainage Connection Permit, Form 850-040-06 (10/08), whether or not the work is done in conjunction with a driveway connection, and whether or not the improvement retains stormwater runoff on the adjacent property up to and including the 100 year event of critical duration.

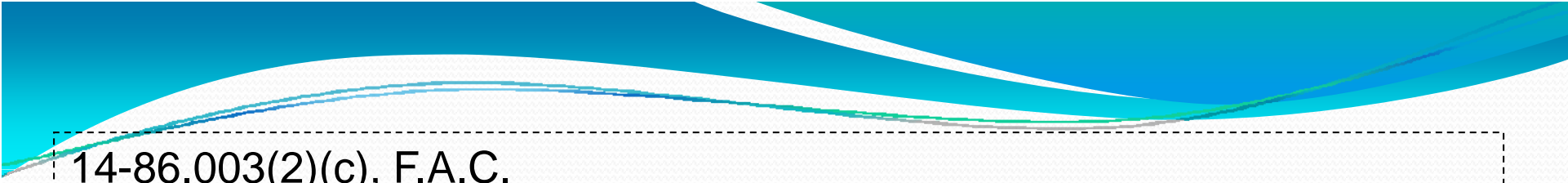


(2) Assurance Requirements.

(a) The applicant for a drainage connection permit shall provide reasonable assurances that:

1. The peak discharge rates and total volumes of stormwater discharging from the adjacent property to the Department's right of way are those provided for in an approved stormwater management plan or master drainage plan; otherwise the post-improvement stormwater runoff discharging from the adjacent property to the Department's right of way shall not exceed the more stringent of the following:


- 
- a. The peak discharge rates and total volumes allowed by applicable local regulation; or
 - b. The improvement shall not increase stormwater discharge rate above the pre-improvement discharge rate, and in watersheds which do not have a positive outlet, the post-improvement total volume of stormwater runoff shall not be increased beyond the pre-improvement volume considering worst case storms for up to the frequencies and durations contained in paragraph 14-86.003(2)(c), F.A.C.




14-86.003(2)(c), F.A.C.

(c) In providing reasonable assurances, the applicant shall:


1. Use a methodology which is compatible with the methodology employed in the design of the Department's facilities receiving the stormwater;
2. Determine the peak discharge rates considering various rainfall event frequencies up to and including a 100 year event of critical duration **of up to three days**; and
3. In watersheds without a positive outlet, determine the stormwater runoff total volumes considering various rainfall amounts up to a 100 year rainfall frequency of critical durations of up to ten days. The pond retention volume must recover at a rate such that one-half of the volume is available in seven days with the total volume available in 30 days, with a sufficient amount recovered within the time necessary to satisfy applicable water treatment requirements.




2. Any discharge pipe establishing or constituting a drainage connection to the Department's right of way is limited in size based on the pre-improvement discharge rate, downstream conveyance limitations, downstream tailwater influences, and design capacity restrictions imposed by other governmental entities.




3. If the improvement changes the inflow pattern of stormwater or method of drainage connection to the Department's right of way, post-improvement discharge will not exceed the pre-improvement discharge to the Department's right of way, any new drainage connection will not threaten the safety or integrity of the Department's right of way, and will not increase maintenance costs to the Department.



At a minimum pavement hydraulics, ditch hydraulics, storm drain hydraulics, cross drain hydraulics, and stormwater management facilities shall be analyzed. The analysis must follow the methodology used in the design of the Department's facilities receiving the discharge and meet the criteria in chapters 2, 3, 4, and 6 of the Department's *Drainage Manual*, Topic Number 625-040-002-c, May 2008, incorporated herein by reference. The *Drainage Manual* is available from the Department at: <http://www.dot.state.fl.us/rddesign/dr/Manualsandhandbooks.shtm>.



4. The quality of water conveyed by the connection meets all applicable water quality standards, and such assurance shall be certified in writing. In the event the discharge is identified causing or contributing to a violation of applicable water quality standards, the permittee will be required to incorporate such abatement as necessary to bring the permittee's discharge into compliance with applicable standards.




(b) If the requirements set forth in paragraph 14-86.003(2)(a), F.A.C., cannot be fully complied with, the applicant may submit alternative drainage connection designs. The analysis supporting the proposed alternative connection must follow the methodology used in the design of the Department's facilities receiving the proposed alternative drainage connection **and meet the criteria in chapters 2, 3, 4, and 6 of the Department's *Drainage Manual*.**

Chapter 2 Open Channel

Chapter 3 Storm Drain Hydrology and Hydraulics

Chapter 4 Cross Drain Hydraulics

Chapter 6 Optional Culvert Materials



Deviation from a standard in the *Drainage Manual* must be approved by the District Drainage Engineer. Acceptance of any alternative design must serve the purpose of this rule chapter and shall be based upon consideration of the following:


1. The type of stormwater management practice proposed;
2. The efficacy and costs of alternative controls;
3. The impact upon the operation and maintenance of the Department's facilities; and
4. The public interest served by the drainage connection.



(c) In providing reasonable assurances, the applicant shall:

1. Use a methodology which is compatible with the methodology employed in the design of the Department's facilities receiving the stormwater;

2. Determine the peak discharge rates considering various rainfall event frequencies up to and including a 100 year event of critical duration **of up to three days**; and



3. In watersheds without a positive outlet, determine the stormwater runoff total volumes considering various rainfall amounts up to a 100 year rainfall frequency of critical durations of up to ten days. The pond retention volume must recover at a rate such that one-half of the volume is available in seven days with the total volume available in 30 days, with a sufficient amount recovered within the time necessary to satisfy applicable water treatment requirements.



(3) **Exceptions.** The following exceptions do not require a Drainage Connection Permit:

(a) Improvements to adjacent properties not draining to the Department's right of way in the pre-improvement and post-improvement condition.

(b) Single-family residential improvements which are not part of a larger common plan of improvement or larger common plan of sale.



(c) Agricultural and silvicultural improvements that:

1. Are subject to regulation by the Department of Environmental Protection or regional Water Management Districts;

2. Are exempt under the provisions of Section 373.406, F.S.; or

3. Are implementing applicable best management practices adopted by the Florida Department of Agriculture and Consumer Services in Rule Chapter 5M, F.A.C., or Rule Chapter 5I-6, F.A.C.



(d) Any other improvement, provided that all of the following apply:


1. The total impervious area, after improvement, is less than 5,000 square feet of cumulative impervious area and is less than 40% of that portion of the property that naturally drained to the Department's right of way;

2. The improvement does not create or alter a drainage connection;

3. The improvement does not change flow patterns of stormwater to the Department's right of way, and does not increase the surface area draining to the Department's right of way;

4. The property is located in a watershed which has a positive outlet; and

5. The site or improvement is not part of a larger common plan of improvement or larger common plan of sale.



(4) An exception provided in subsection 14-86.003(3), F.A.C., shall not apply if any drainage connection from the adjacent property threatens the safety and integrity of the Department's facilities or creates an unreasonable burden on lower properties, including violations of applicable water quality standards.



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14-86.004 Permit Application Procedure.


(1) An applicant shall submit a Drainage Connection Permit, **Form 850-040-06 (10/08)**, incorporated herein by reference. This form may be obtained from any of the Department's local area Maintenance Offices, District Offices, or on the internet at the Department's website: <http://www.dot.state.fl.us/onestoppermitting/>.

(2) The applicant shall submit four completed Drainage Connection Permits packages. Each completed Drainage Connection Permit package shall include all applicable attachments. **All applicable plans and supporting documentation shall be submitted on no larger than 11" X 17" multipurpose paper and included in PDF format on a compact disk.**



(3) The Drainage Connection Permit shall be accompanied by:

(a) A location map, included in the construction plans, sufficient to show the location of the improvement and any drainage connection to the Department's right of way, and shall include the state highway number, county, city, and section, range, and township.



(b) A grading plan drawn to scale showing pre-improvement and post-improvement site conditions including all pervious and impervious surfaces, land contours, spot elevations, and all drainage facilities of the Department and of the adjacent property. The benchmark datum for the plans (whether NGVD 29 or NAVD 88) shall be noted on the plans. Contour information shall extend 50 feet beyond the property boundaries or be sufficient to clearly define the portion of the watershed which drains through the property to the Department's right of way.




(c) Photographs which accurately depict pre-improvement and present conditions.

(d) Soil borings and water table data and, where percolation or infiltration is utilized in the design, appropriate percolation test methodology and results.

(e) Computations as required by subsection 14-86.003(2), F.A.C.

(f) The Drainage Connection Certification, Part 2 of the permit must be **certified by a Licensed Professional** that the complete set of plans and computations comply with either paragraph 14-86.003(2)(a) or 14-86.003(2)(b), F.A.C.



(4) Improvements which otherwise meet the criteria of subparagraphs 14-86.003(3)(d)1. and 14-86.003(3)(d)4., F.A.C., but which create or alter a drainage connection to the Department's right of way, will not require submittal of the information required by paragraphs 14-86.004(3)(d) through (f), F.A.C., but will otherwise require the submittal of all other required information.

14-86.003(3)(d)1

The total impervious area, after improvement, is less than 5,000 square feet of cumulative impervious area and is less than 40% of that portion of the property that naturally drained to the Department's right of way;

14-86.003(3)(d)4


The property is located in a watershed which has a positive outlet;

14-86.004(3)(d) through (f)

Soils and water table data...


Computations...

Professional Certification...




(5) The Department recognizes that regulatory and permitting programs exist or may be developed in the future by local units of government, and state or federal agencies which may overlap with some or all of the requirements of this rule chapter. In order to avoid duplication the Department will:

(a) In lieu of the requirements in Rule 14-86.003 and subsection 14-86.004(3), F.A.C., accept a permit that accomplishes the purposes of this rule chapter so long as the permit is issued by a governmental entity with specific stormwater management authority and is based on requirements equal to or more stringent than those in Rule 14-86.003, F.A.C.; or



(b) Accept any form, plans, specifications, drawings, calculations, or other data developed to support an application for a permit required by a governmental entity, pursuant to any rule which establishes requirements equal to or more stringent than Rule 14-86.003, F.A.C.



(6) The Drainage Connection Permit serves as the application. Once approved by the Department, the form and supporting documents become the Drainage Connection Permit.



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14-86.005 General Conditions for a Drainage Permit.

(1) A Drainage Connection Permit does not exempt the permittee from meeting all other applicable regulations and ordinances governing stormwater management.

(2) All work done in conjunction with the drainage connection permit shall meet and adhere to all general and specific conditions and requirements contained on the Permit.



(3) Within 15 working days after completion of the work authorized by an approved Drainage Connection Permit, the permittee shall notify the Department in writing of the completion; and for all design work that originally required certification by a **Licensed Professional**, this notification shall contain the **As Built Certification, Part 8 of the Permit**. The certification shall state that work has been completed in substantial compliance with the Drainage Connection Permit.



(4) The permittee or property owner, will be required to reimburse the Department for any fines, penalties and costs, e.g., abatement costs, mitigation costs, remediation costs, etc. incurred by the Department in the event the permittee's discharge fails to meet the applicable water quality standards or minimum design and performance standards contrary to the permittee's assurances provided in subsection 14-86.003(2), F.A.C.



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14-86.006 Permit Suspension or Revocation. A permit will be suspended or revoked if:

(1) The permitted drainage connection is not constructed, operated, or maintained in accordance with the permit;

(2) Emergency conditions or hazards exist;

(3) False or misleading information is submitted to the Department in the Drainage Connection Permit package;



(4) Another governmental entity revokes or suspends a permit which was the basis upon which a Department Drainage Connection Permit was obtained;

(5) The As-built Certificate required for the Drainage Connection Permit is not submitted in accordance with subsection 14-86.005(3), F.A.C.

(6) Any discharge above the permitted design discharge.



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Specific Authority 334.044(2), (15) FS. Law Implemented 334.044(15) FS. History - New 11-12-86, Amended 1-20-09.

14-86.007 Forms.

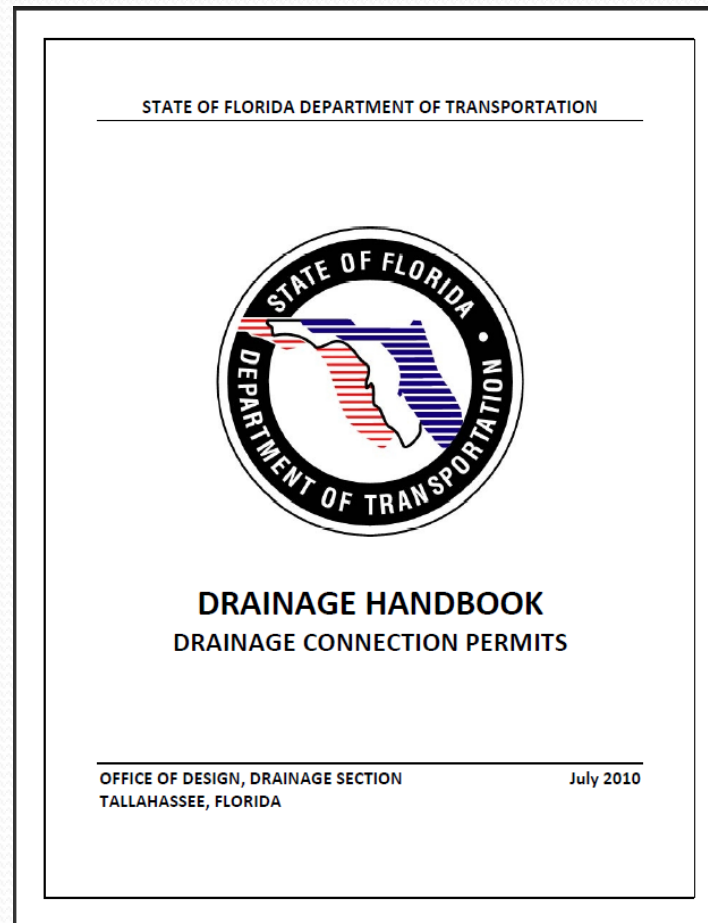
Specific Authority 334.044(2) FS. Law Implemented 120.53(1)(b), 120.60, 334.03(17), (22), 334.035, 334.044(1), (12), (13), (27), 335.04(2), 335.10(2), 339.155(2)(a), (f) FS. History - New 11-12-86, Repealed 1-20-09.

[Drainage Connection Permit Form No. 850-040-06](#)

New Drainage Connection Permit Handbook

Available here:

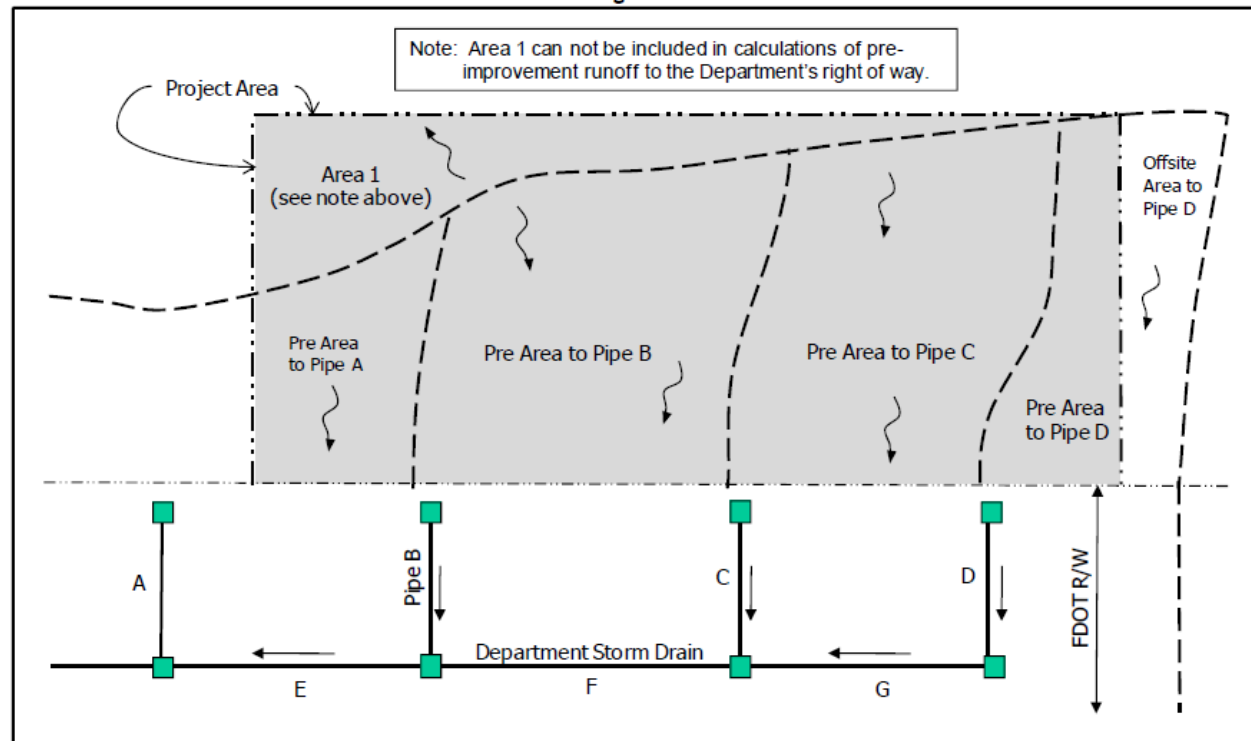
<http://www.dot.state.fl.us/rddesign/dr/files/DrConnPermitHB.pdf>



HELPFUL ILLUSTRATIONS

discharge to Pipe B and possibly cause runoff to pop-out of the inlet of Pipe B increasing the spread on the roadway. An even greater impact would occur if the entire site's pre-improvement runoff rate is discharged to Pipe D. This would increase the runoff to pipes D, E, F, and G.

Figure 7-3



If the post-improvement discharge is directed to only one pipe, the discharge would be limited to the pre-improvement discharge to that pipe. Another approach is to discharge to several pipes, but limit

Online Resources

- [Dept. of Transportation](#)
- [ADA Accessibility](#)
- [Highway Beautification](#)
- [Maps & Publications](#)
- [Permits](#)
- [Outdoor Advertising](#)
- [Overweight / Overdimensional Permit](#)
- [State Specifications Office](#)
- [Traffic Engineering & Operations](#)
- [Systems Planning Office](#)
- [State Utilities Office](#)
- **See your CD**





Questions and Answers



Closing Remarks



Critical Duration

Marek's 1st Maxim of Stormwater Management

“There is nothing like a little rain to bring people together.”



Corollary to 1st Maxim

“Into every
life,
a little rain
must fall.”

(not attributed to
anyone special)





My Ugly Slides

(You've been forewarned....)

What's Missing Here?



Big Mess



Collateral Damage



We Fixed It



No Steel



What Happened Here?



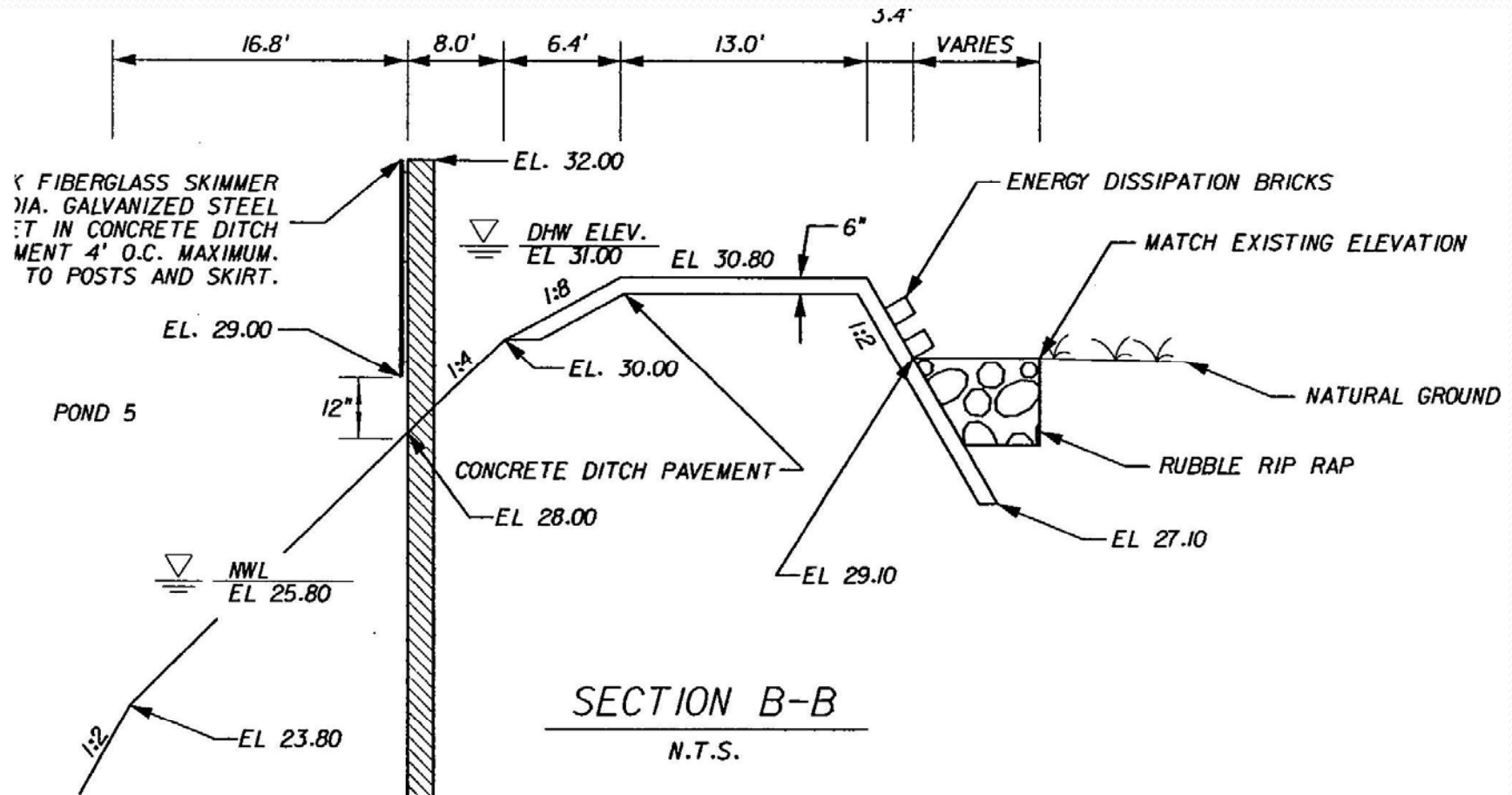
A Closer Look



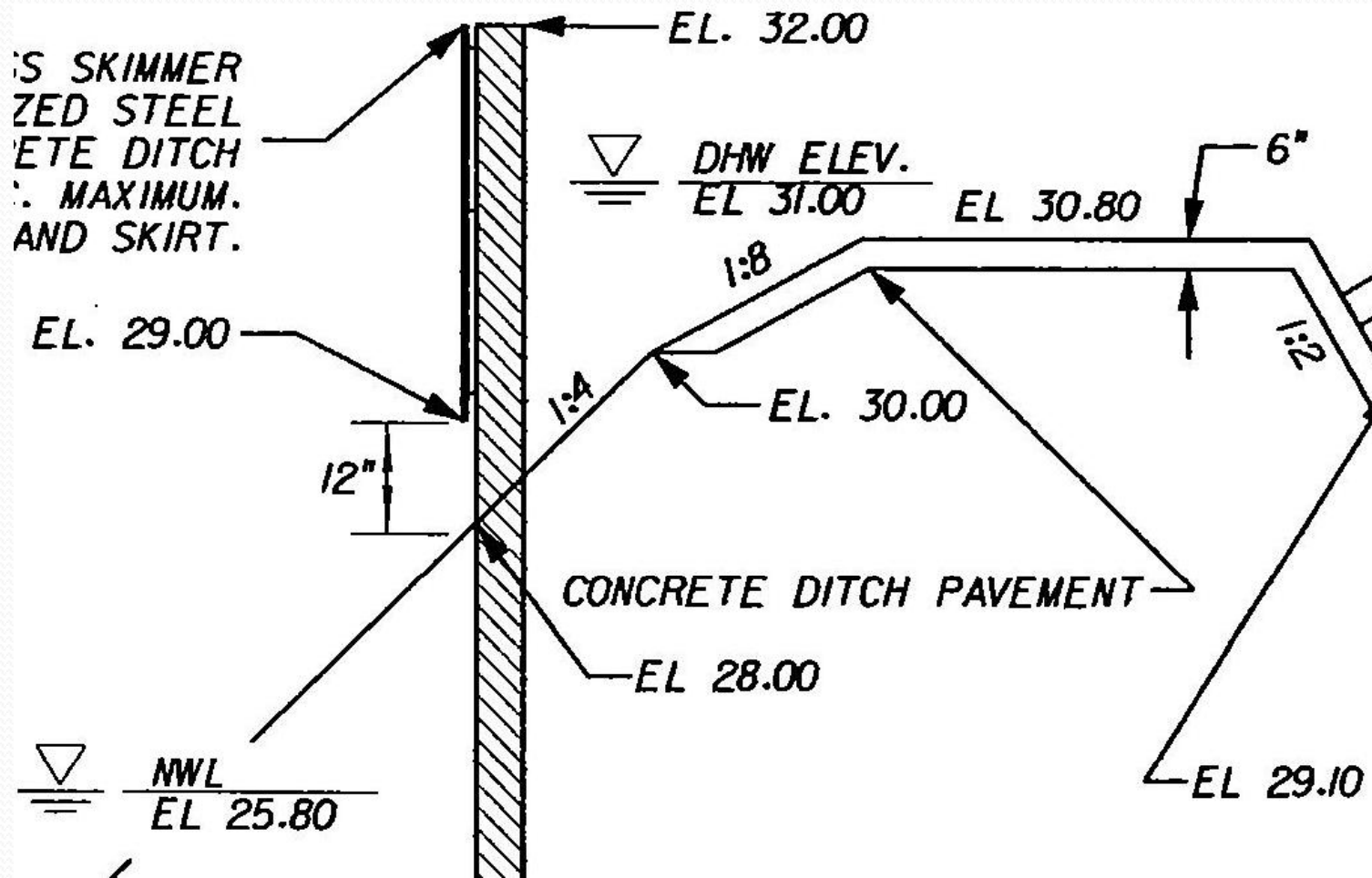
An Even Closer Look



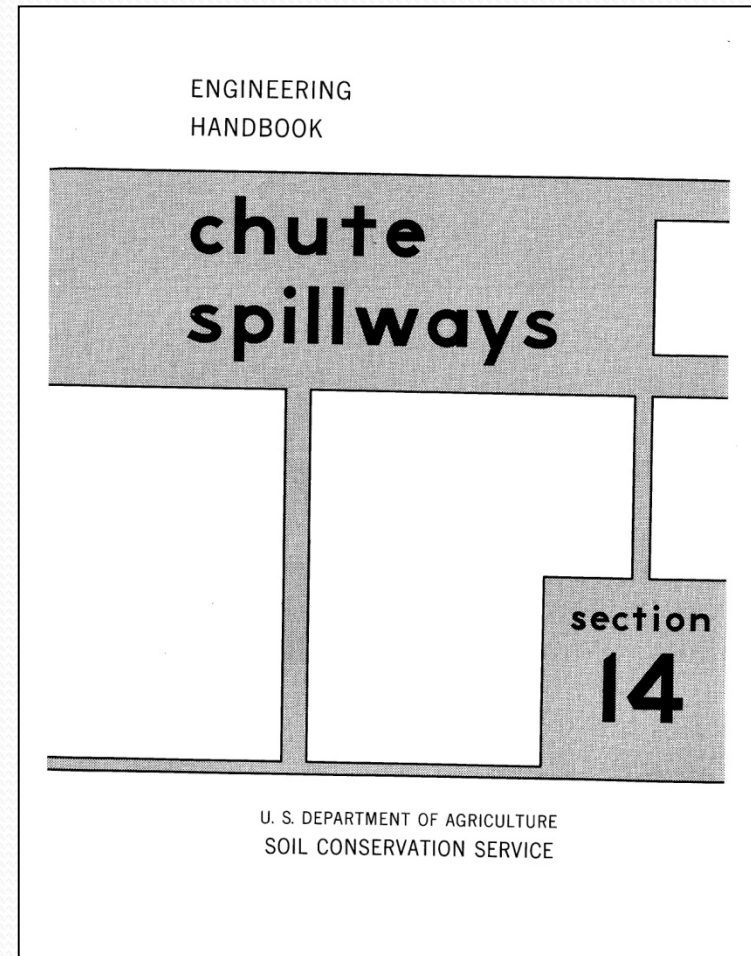
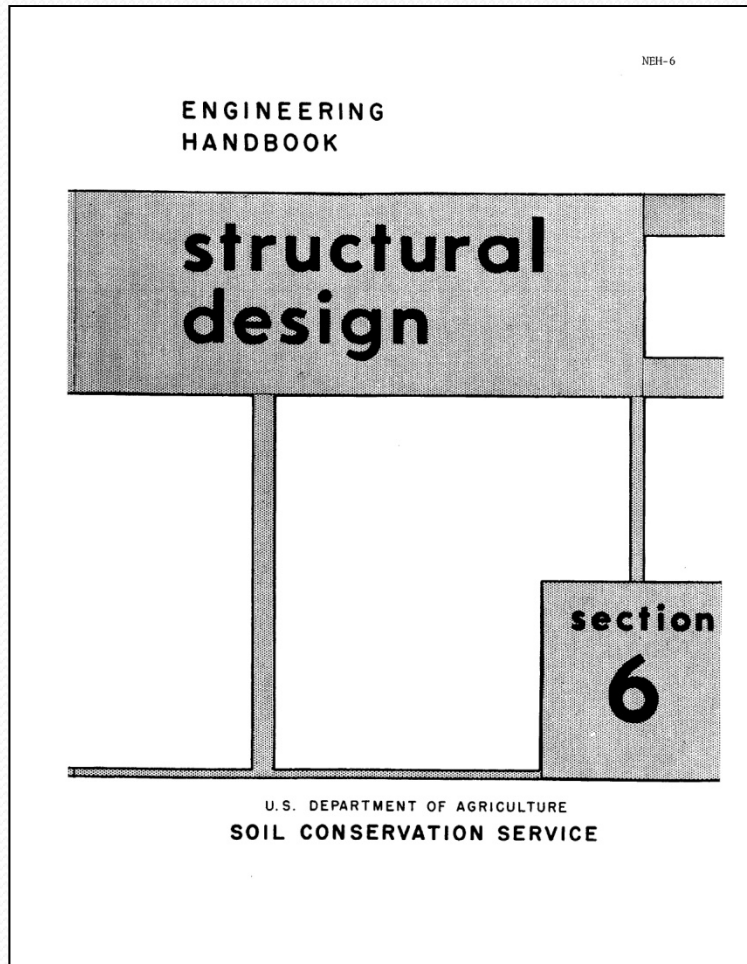
Here's The Problem



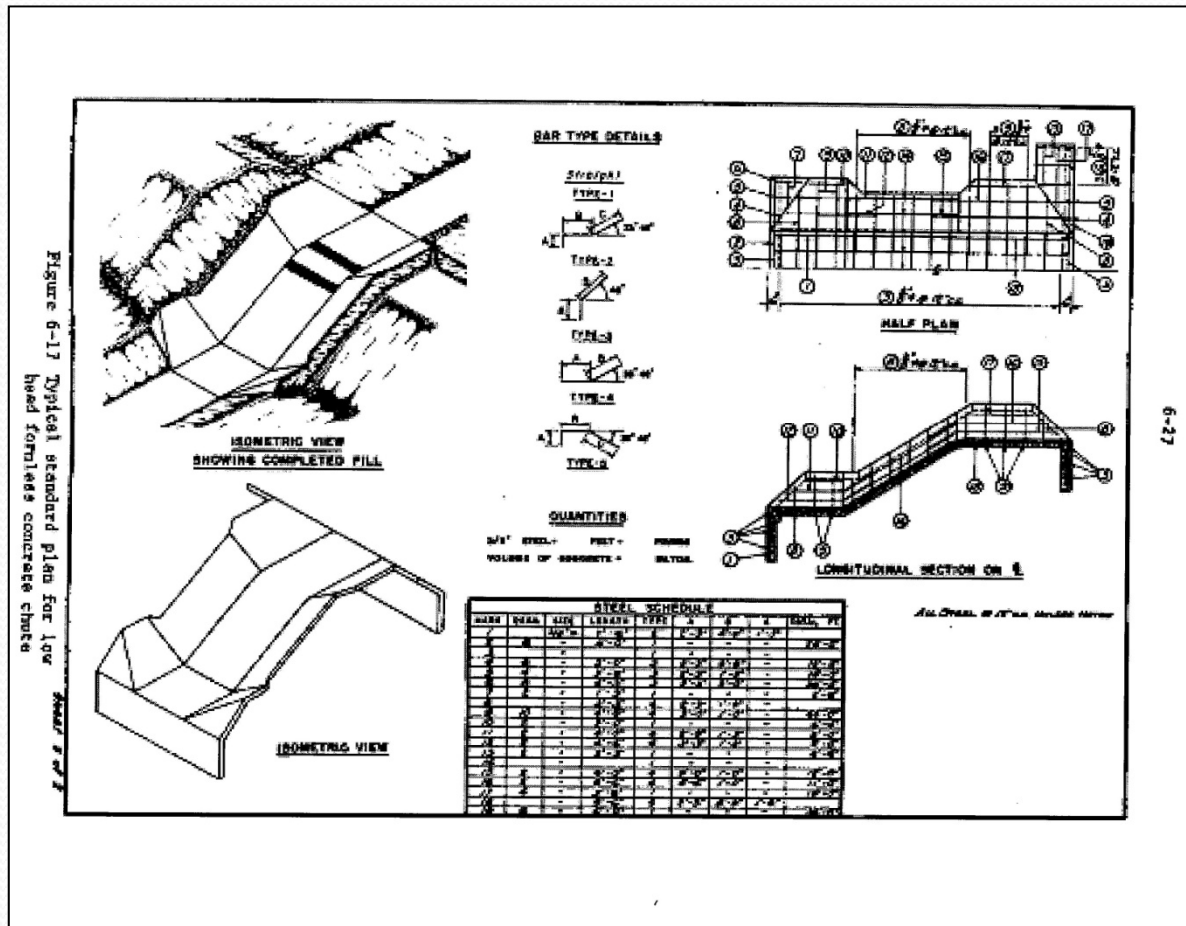
Take A Closer Look



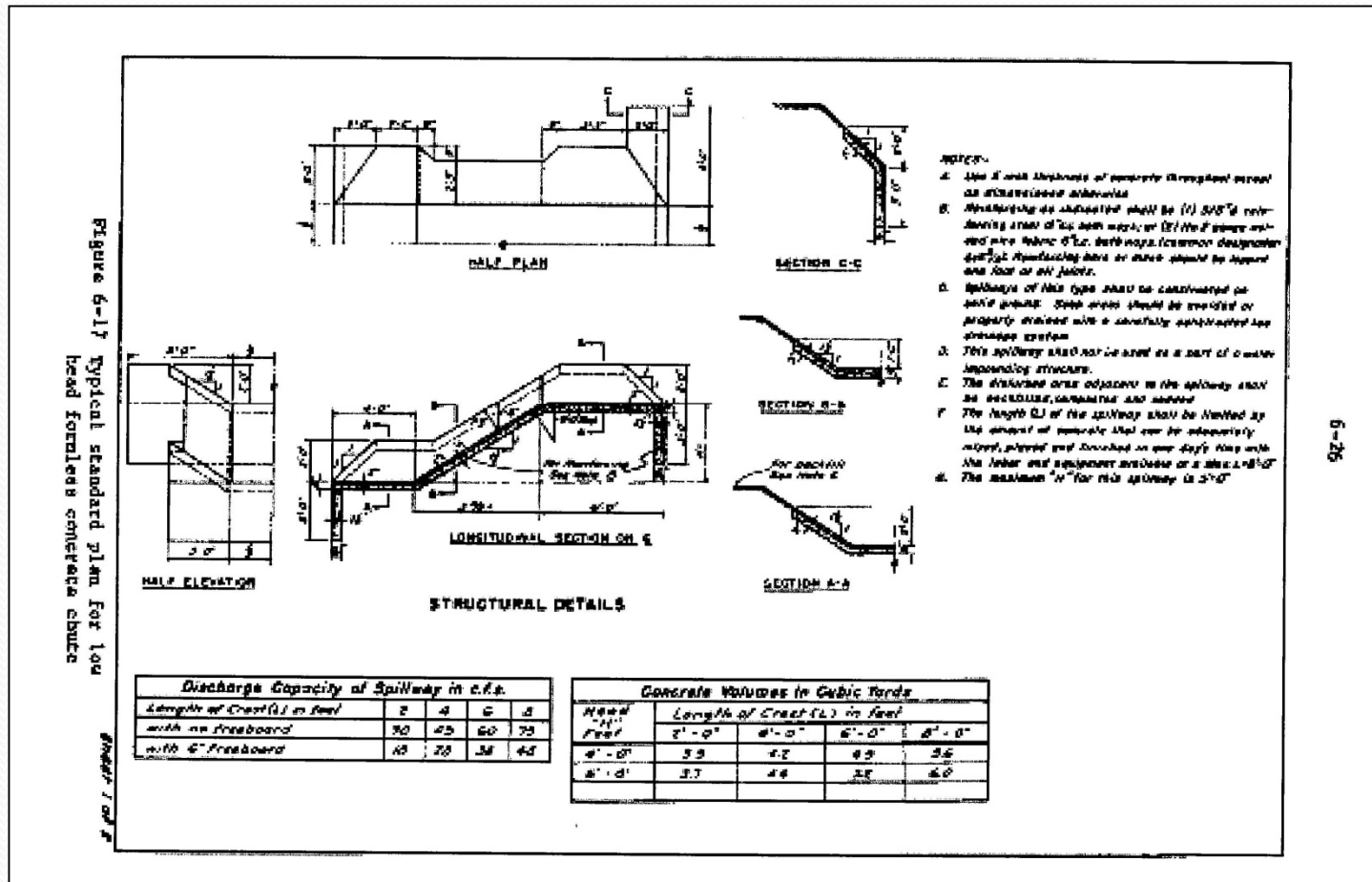
Structural Design Literature



Sample Design Index




Can Be Scaled For Design "Q"





We need a FLORIDA design
index for spillways



Design spillways for structural integrity using steel reinforced concrete, if you must use a spillway.

Better to use drop inlet control structures carefully designed & strategically placed to minimize risk to earthen embankments.